

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF LOUISIANA

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE, DR.
ALICE WASHINGTON, STEVEN HARRIS,
ALEXIS CALHOUN, BLACK VOTERS
MATTER CAPACITY BUILDING
INSTITUTE, and THE LOUISIANA STATE
CONFERENCE OF THE NAACP,

Plaintiffs,

v.

R. KYLE ARDOIN, in his official capacity as
Secretary of State of Louisiana,

Defendant.

CIVIL ACTION NO. 3:22-cv-00178
SDD-SDJ

**PLAINTIFFS' MOTION TO EXCLUDE THE
PROPOSED EXPERT TESTIMONY OF SEAN TRENDE, DR. DOUGLAS JOHNSON,
AND DR. TUMULESH K.S. SOLANKY**

Plaintiffs, through undersigned counsel, hereby move to exclude the proposed expert testimony of Sean Trende, Dr. Douglas Johnson, and Dr. Tumulesh K.S. Solanky, in accordance with the requirements of Federal Rule of Evidence 702 and the reasons stated in the attached Memorandum of Law.

Plaintiffs respectfully request that this Court grant the motion to exclude the proposed expert testimony of Mr. Trende, Dr. Johnson, and Dr. Solanky.

DATED: October 6, 2023

Respectfully submitted,

Leah Aden*
Stuart Naifeh*
Victoria Wenger*
NAACP Legal Defense & Educational Fund

/s/ Sarah Brannon
Sarah Brannon*
Megan C. Keenan*
American Civil Liberties Union Foundation
915 15th St. NW

40 Rector Street, 5th Floor
New York, NY 10006
laden@naacpldf.org
snaifeh@naacpldf.org
vwenger@naacpldf.org

I. Sara Rohani*
NAACP Legal Defense & Educational Fund
700 14th Street, Suite 600
Washington, DC 20005
srohani@naacpldf.org

John Adcock (La. Bar No. 30372)
Adcock Law LLC
Louisiana Bar No. 30372
3110 Canal Street
New Orleans, LA 70119
jnadcock@gmail.com

Michael de Leeuw*
Amanda Giglio*
Cozen O'Connor
3 WTC, 175 Greenwich St.,
55th Floor
New York, NY 10007
MdeLeeuw@cozen.com
AGiglio@cozen.com

Josephine Bahn**
Cozen O'Connor
1200 19th Street NW
Washington, D.C. 20036
JBahn@cozen.com

Washington, DC 20005
sbrannon@aclu.org
mkeenan@aclu.org

Sophia Lin Lakin*
Dayton Campbell-Harris*
American Civil Liberties Union Foundation
125 Broad Street, 18th Floor
New York, NY 10004
slakin@aclu.org
dcampbell-harris@aclu.org
lroman@aclu.org

T. Alora Thomas-Lundborg*
Daniel J. Hessel*
Election Law Clinic
Harvard Law School
6 Everett Street, Ste. 4105
Cambridge, MA 02138
tthomaslundborg@law.harvard.edu
dhessel@law.harvard.edu

Nora Ahmed (N.Y. Bar. No. 5092374)
ACLU Foundation of Louisiana
1340 Poydras St., Suite 2160
New Orleans, LA 70112
NAhmed@laaclu.org

Ron Wilson (La. Bar No. 13575)
701 Poydras Street, Suite 4100
New Orleans, LA 70139
cabral2@aol.com

Attorneys for Plaintiffs

*Admitted Pro Hac Vice

**Pro Hac Vice Motion Forthcoming

CERTIFICATE OF SERVICE

I hereby certify that on October 6, 2023, a copy of the foregoing motion was filed electronically with the Clerk of Court via the CM/ECF system. Notice of this filing will be sent to all counsel of record by operation of the court's electronic filing system.

/s/ Sarah Brannon

Sarah Brannon*

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**PLAINTIFFS' MEMORANDUM OF LAW IN SUPPORT OF
MOTION TO EXCLUDE PROPOSED EXPERT TESTIMONY**

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INTRODUCTION

Only months ago, in *Allen v. Milligan*, the Supreme Court declined to “remake [its] § 2 [of the Voting Rights Act] jurisprudence anew.” 599 U.S. 1, 23 (2023). That jurisprudence includes the familiar *Gingles* pre-conditions—(1) a minority group must be sufficiently large and geographically compact to constitute the majority in a single district; (2) the minority group must be politically cohesive; and (3) white majority voters vote sufficiently as a bloc to enable it to defeat the minority group’s preferred candidate—and a totality of the circumstances analysis. *Id.* at 18; *see also Thornburg v. Gingles*, 478 U.S. 30, 36, 51 (1986). Plaintiffs have offered experts to prove that each of these pre-conditions and the totality of the circumstances demonstrate that Louisiana’s state legislative maps violate Section 2.

Undeterred by *Milligan* and unable to rebut Plaintiffs’ showing of the *Gingles* preconditions, Defendants instead seek to muddle this case by asking this Court to stray from the clear tests set out to meet each of the three preconditions in defiance of the Supreme Court’s clear directives. Specifically, their experts—Sean Trende, Dr. Douglas Johnson, and Dr. Tumulesh K.S. Solanky—offer testimony that has no bearing on the prevailing Section 2 inquiry and is based on unreliable methodology and expertise. The Court should exclude their testimony, in accordance with the requirements of Federal Rule of Evidence 702.

LEGAL STANDARD

Expert testimony must be qualified, reliable, and relevant to be admissible. *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993); Fed. R. Ev. 702. Courts act as gatekeepers to ensure expert testimony meets these requirements. The “Federal Rules of Evidence ‘assign to the trial judge the task of ensuring that an expert’s testimony both rests on a reliable foundation and is relevant to the task at hand.’” *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999) (quoting *Daubert*, 509 U.S. at 597). “The proponent of expert testimony bears the burden of establishing

the reliability of the expert’s testimony.” *Sims v. Kia Motors of Am., Inc.*, 839 F.3d 393, 400 (5th Cir. 2016). A court may exclude “opinion evidence that is connected to existing data only by the *ipse dixit* of the expert.” *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997).

Courts apply a “five-factor, non-exclusive, flexible test” to determine reliability under *Daubert*: (1) whether the theory has been tested; (2) whether it has been subject to peer review and publication; (3) its known or potential rate of error; (4) the existence and maintenance of standards and controls; and (5) the degree to which the theory has been generally accepted in the scientific community. *Moore v. Ashland Chem. Inc.*, 151 F.3d 269, 275 (5th Cir. 1998) (en banc). The testimony offered by Mr. Trende, Dr. Johnson, and Dr. Solanky fails this test.

ARGUMENT

I. Sean Trende’s testimony is unreliable and irrelevant to *Gingles* I.

Defendants offer Sean Trende as a rebuttal expert to Plaintiffs’ *Gingles* I expert, William Cooper. As required by *Gingles* I, Mr. Cooper has created illustrative House and Senate plans that include additional Black-majority districts to “establish that Black voters as a group are ‘sufficiently large and geographically compact to constitute a majority in some reasonably configured legislative district.’” *Robinson v. Ardoin*, 605 F. Supp. 3d 759, 778 (M.D. La. 2023) (subsequent history omitted) (quoting *Cooper v. Harris*, 581 U.S. 285, 301 (2017)).

Mr. Trende uses two algorithms “to identify compact population clusters” and find “the most compact Black population” *within* each of Mr. Cooper’s illustrative districts—purporting to focus on the compactness of the Black community, rather than the whole district Mr. Cooper has drawn. *See* Ex. A, Trende Report at 15–16. Trende’s first algorithm uses the moment of inertia (“MOI”) algorithmic method to draw what he considers “the most compact” groupings of the Black voting age population (“BVAP”) that can constitute a majority within a district, based on the smallest population distribution. *Id.* at 15. He does this by weighting BVAP, combining

neighboring precincts into clusters, and having the algorithm stop once a BVAP sufficient to meet the number necessary for 50%-plus-one BVAP is reached. *Id.* at 15–16. His second algorithm, purportedly derived from the method used by Professors Jowei Chen and Jonathan Rodden (the “Chen and Rodden” method, discussed in more detail below), is similar to the first, but weights precinct size instead of BVAP. *Id.* at 16. These algorithms do not create whole districts, but rather draw shapes that group together a threshold number of Black adults; once the shape includes enough Black adults to constitute a majority in a whole district, the algorithm goes no further. *Id.* at 16–17. Trende then opines whether the Black population within Mr. Cooper’s illustrative districts is compact based on his subjective visual inspection. Ex. B, Trende Dep. Tr. 88:4. His novel approach finds no support in peer-reviewed literature and seeks to redefine the Court’s *Gingles* I inquiry.

A. Trende’s method is unreliable.

Trende’s analysis fails *Daubert*’s reliability test because it is untested and has no identifiable support in political science literature or by courts. *See Moore*, 151 F.3d at 275; *see also* Ex. B, Trende Dep. Tr. 66:10–67:1. As indicated above, Trende uses two algorithms to draw BVAP groupings within a district, stopping once the algorithm has grouped together enough BVAP to constitute a majority within a district. Trende references several papers to bolster his first algorithm, in which he uses a MOI method based on BVAP. Ex. A, Trende Report at 14–15. But all of those cited papers focus on generating or measuring *whole districts*¹—something

¹ *See* Micah Altman, *Modeling the Effect of Mandatory District Compactness on Partisan Gerrymanders*, 17 Pol. Geog. 989, 990 (1998) (using MOI to draw “thousands of compact district plans”); James B. Weaver & Sidney W. Hess, *A Procedure for Nonpartisan Districting: Development of Computer Techniques*, 73 Yale L. J. 228, 304–05 (1963) (drawing districting proposals in Delaware); Isobel M.L. Robertson, *The Delimitation of Local Government Electoral Areas in Scotland*, 33 J. Operational Rsch. Soc. 51, 517 (1982) (districting proposals in Scotland); S.W. Hess, et al., *Nonpartisan Political Redistricting by Computer*, 13 Operations Rsch. 998, 1001–03 (1965) (drawing whole districts for New Castle County Council, Delaware Legislature, and Connecticut Legislature); Henry F. Kaiser, *An Objective Method for Establishing Legislative Districts*, 10 Midwest J. Pol. Sci. 200, 208 (1966) (using MOI to generate compactness scores of existing Illinois districts).

Trende does not do. Instead, his algorithm draws the most compact BVAP grouping within an area using only BVAP, with a control to combine nearby precincts that have high Black populations. This method ignores other redistricting criteria that might inform a whole district, such as equal population, contiguity, communities of interest, and others. Ex. B, Trende Dep. Tr. 59:4–9; *see also* Ex. A, Trende Report at 15–17 (drawing BVAP configuration using MOI method that is non-contiguous). Trende concedes that his approach does not generate viable districts, let alone whole maps, and draws shapes that are neither contiguous nor equal in population. Ex. B, Trende Dep. Tr. 84:18–19 (“[T]he point here is not to the draw the district.”).

Similarly, Trende’s second method stands in contrast to the Chen and Rodden method he invokes. Unlike Trende, Chen and Rodden focus on *whole* districts and create statewide maps, using an algorithm to simulate hundreds of maps. *See* Ex. C, Jowei Chen & Jonathan Rodden, *Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures*, 8 Q.J. Poli. Sci. 239 (2013). And unlike Trende’s, Chen and Rodden’s algorithm controls for both equal population and contiguity. *Compare id.* at 249 (“Our challenge is to guarantee equal apportionment of population while requiring geographic contiguity for all simulated districts.”), *with* Ex. A, Trende Report at 17, 107, 116 (images where BVAP groupings have holes); *id.* at 117 (image where BVAP grouping includes noncontiguous islands); Ex. B, Trende Dep. Tr. 83:4–84:18 (Trende conceding non-contiguous shapes); *id.* at 100:16–19 (Trende conceding his algorithm does not equalize population). Trende further deviates from Chen and Rodden’s methodologies by *altering* factors in the analysis, namely weights for district size and population; this causes his analysis to more heavily favor the packing of urban populations than the Chen and Rodden method. *See* Ex. B, Trende Dep. Tr. 109:4–109; 110:21–24; 113:16–18. At best, the existing literature “only provide[s] an arguable inferential starting point” for using an MOI-based algorithm in the way

Trende does, casting doubts on his method's reliability. *LeBlanc ex rel. Est. of LeBlanc v. Chevron USA, Inc.*, 396 F. App'x 94, 99 (5th Cir. 2010); *see also Johnson v. Arkema, Inc.*, 685 F.3d 452, 459, 467 (5th Cir. 2012) (absence of testing in peer-reviewed publication makes method less reliable); Ex. B, Trende Dep. Tr. 66:6–24.

Even worse, no court has ever used or credited Trende's modified methods. Trende admitted that he has never before used MOI to assess compactness, even though he has previously served as an expert in redistricting cases, advised independent redistricting commissions, and drawn statewide district maps.¹ *See* Ex. B, Trende Dep. Tr. 54:23–55:11; 75:18–76:15. While Trende attempted to argue in rebuttal that, until recently, his novel methodology employed here was “impractical” due to “technological constraints,” Ex. D, Trende Reply at 2; *see also* Ex. B, Trende Dep. Tr. 74:20–21, he admitted at deposition that the necessary technology has existed for *twenty (20) years*, *id.* at 74:22–75:1. Despite this, Trende cannot point to any court cases where this methodology was utilized, let alone credited, to assess compactness. *Id.* at 75:2–11. Trende admitted in his deposition that he has only employed the methodology here, as opposed to his other redistricting work, at the request of counsel to meet their new legal theory. *Id.* at 73:6–19; 75:2–11.

Trende's unreliable and untested methodology culminates in his *ipse dixit* opinion. Once his algorithm has generated a shape, Trende deems population clusters non-compact, based only on “[l]ooking at the map.” Ex. B, Trende Dep. Tr. 88:4. The Court should exclude this “opinion

² In his prior redistricting work, Trende has most often used Reock and Polsby-Popper as metrics of compactness. Ex. B, Trende Dep. Tr. 62:25–64:18, 125:22–130:21; *see also, e.g.,* Ariz. Indep. Redistricting Comm'n, *Overview of Decennial Redistricting Process and Maps*, Appendix B at 12–13 (Jan. 2022), <https://rb.gy/vp2rr> (Reock and Polsby-Popper) (acting as Voting Rights Act expert); Expert Report of Sean P. Trende at 17, *Harkenrider v. Hochul*, 38 N.Y.3d 494 (2022) (Polsby-Popper), <https://rb.gy/4h6a1>; Report of the Special Magistrate at 25, In the Matter of the 2022 Legislative Districting of the state, 481 Md. 507 (Md. 2022) <https://rb.gy/r5cnq>, (Reock, Polsby-Popper, Schwartzberg, and Convex Hull); Memo from Bernard Grofman and Sean Trende to the Supreme Court of Virginia (Dec. 27, 2021), <https://rb.gy/xvuqz> (Reock and Polsby-Popper).

evidence that is connected to existing data only by the *ipse dixit* of the expert.” *Joiner*, 522 U.S. at 146; *see also* *Matosky v. Manning*, 428 F. App’x 293, 298 (5th Cir. 2011) (opinion properly excluded when based on “conclusory assertion”). Further, Trende’s conclusory opinion encroaches on the Court’s role. “The use of any eyeball test to assess irregularities . . . is necessarily a matter for the factfinder.” *Alpha Phi Alpha Fraternity, Inc. v. Raffensperger*, No. 1:21-CV-5337-SCJ, 2023 WL 5674599, at *11 (N.D. Ga. July 17, 2023) (internal quotations omitted); *see also* Ex. B, Trende Dep. Tr. 87:13–24 (“[T]he finder of fact is going to have to decide whether it is reasonable or not. In my opinion . . . that’s not compact under any reasonable definition of the term. The fact finder might ultimately disagree with that though.”).

In short, Trende’s modified methods to assess compactness are untested, lack peer review, and have never been used by Trende, other experts in this field, or by fellow courts. They culminate in a conclusory say-so based on subjective visual assessments. Trende’s testimony should be precluded.

B. Trende’s testimony is irrelevant.

Even if Trende’s testimony were reliable (it is not), it is plainly irrelevant. Rule 702 requires expert testimony to be relevant. Fed. R. Civ. P. 702(a); *see also* *Daubert*, 509 U.S. at 591 (“Expert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful.” (citation omitted)); *In re: Taxotere (Docetaxel) Prod. Liab. Litig.*, 26 F.4th 256, 268 (5th Cir. 2022) (“To be relevant, the expert’s reasoning or methodology [must] be properly applied to the facts in issue.” (citing *Puga v. RCX Sols., Inc.*, 922 F.3d 285, 293 (5th Cir. 2019))).

Trende’s testimony does not speak to the *Gingles* I question before the Court. The first *Gingles* precondition “focuse[s] on geographical compactness and numerosity, [and] is ‘needed to establish that the minority has the potential to elect a representative of its own choice in some single-member district.’” *Milligan*, 599 U.S. at 18 (quoting *Grove v. Emison*, 507 U.S. 25, 40

(1993)). This precondition is satisfied by showing that “the minority group [is] sufficiently large and geographically compact to constitute a majority in a reasonably configured district.” *Id.* “A district will be reasonably configured . . . if it comports with traditional districting criteria, such as being contiguous and reasonably compact” and “respect[ing] existing political subdivisions, such as counties, cities, and towns.” *Id.* at 18, 20 (citing *Ala. Legis. Black Caucus v. Alabama*, 575 U.S. 254, 272 (2015)); *see also* *Bush v. Vera*, 517 U.S. 952, 977 (1996). In other words, this inquiry requires showing that a *Gingles* I illustrative majority-minority *district* is compact. *See, e.g.,* *Milligan*, 599 U.S. at 20 (accepting the district court’s factual finding that the plaintiffs’ “eleven illustrative maps—that is, example districting maps that Alabama could enact” were sufficiently compact); *Robinson v. Ardoin*, 37 F.4th 208, 217 (5th Cir. 2022) (accepting the district court’s “holding that the plaintiffs satisfied *Gingles*’s compactness requirement” with their “new majority-minority district”). Plaintiffs make this showing through drawing a district that is 50% plus one in minority population, in accordance with the traditional redistricting criteria, and then running standard compactness measures to score the district. *See, e.g.,* *Milligan*, 599 U.S. at 20 (favorably citing William Cooper’s illustrative plans).

Bucking this question, Defendants seemingly seek to invoke *League of United Latin American Citizens v. Perry* (“*LULAC*”), 548 U.S. 399 (2006), as prohibiting illustrative districts that draw different minority communities together when the distance between them exceeds some unspecified threshold, or when there is a white population interspersed between them. *LULAC* does no such thing: the Court “accept[ed] that in some cases members of a racial group in different areas—for example, rural and urban communities—could share similar interests and therefore form a compact district if the areas are in reasonably close proximity.” *Id.* at 435. Just recently, *Milligan* held that an illustrative district joining an urban city with a rural community was

reasonably configured. 599 U.S. at 19–21. Notwithstanding the Supreme Court’s recent reaffirmation of the familiar *Gingles* framework, Defendants seek to use Trende’s testimony to upend it.

Trende’s testimony does not reference data applicable to the recently reaffirmed *Gingles* I test—*i.e.*, assessing whether *districts* are sufficiently compact. Ex. B, Trende Dep. Tr. 128:20–22 (“I haven’t done any work one way or the other on the district level compactness of the maps.”). Instead, Trende assesses the compactness of the minority population, generally. *See* Ex. A, Trende Report 14 (“I utilize the moment of inertia method of calculating the compactness *of a population*.”). Trende acknowledges that his approach reflects a novel legal theory offered by Defendants. Ex. B, Trende Dep. Tr. 73:17–19 (“[M]y understanding is that the legal theory being propounded here isn’t one that’s been thoroughly explored.”). Trende further acknowledges—as he must—that *Gingles* I centers on *district* compactness, not the compactness of the minority population. *Id.* at 62:25–63:2 (“I’m not really aware of cases where people have tried to quantify the compactness of the population.”); Ex. D, Trende Reply at 2 (“It’s true that most litigation focuses on the compactness of the district shape.”). Indeed, Trende himself has conducted analyses of district compactness in connection with Section 2 claims in the past. *See supra* n.2.

By failing to analyze compactness in the ways courts do, Trende’s analysis—which ignores district compactness and offers no assessment of the compactness of Plaintiffs’ illustrative districts—bears no relevance to Plaintiffs’ Section 2 claims. The Court should preclude it.

C. Trende is not qualified to offer his opinion.

Finally, Trende is not qualified to provide the opinions offered. He lacks “experience, skill, training or specialized knowledge in the simulation analysis methodology that he employed to reach his conclusions.” *Robinson*, 605 F. Supp. 3d at 825. While Plaintiffs acknowledge that Trende has served as an expert in similar cases previously, Trende admits he has never used his

novel method for assessing compactness before now, has never published peer reviewed articles on MOI or other algorithmic computation, and has never used the algorithms used here in his prior academic work. Ex. B, Trende Dep. Tr. 72:13– 73:5; 40:7–41:22. This Court has rejected the conclusions of experts with similarly “novice” level experience with simulations. *Robinson*, 605 F. Supp. 3d at 825. And Trende’s inexperience is all the more concerning because of the novel, population-level assessment he uses here. Accordingly, Trende lacks the expertise and experience to offer a novel methodology unmoored from the *Gingles* preconditions, and his opinion should be precluded. *See Koppell v. N.Y. State Bd. of Elections*, 97 F. Supp. 2d 477, 481–82 (S.D.N.Y. 2000) (excluding testimony of political scientist who had “significant political experience,” but “lack[ed] any particular expertise” on the election practices at issue, and whose work in the area “has neither been tested nor subject to peer review”).

II. Dr. Douglas Johnson’s purported racial predominance analysis of Mr. Cooper’s illustrative maps is both irrelevant to Section 2’s legal requirements and unreliable.

Dr. Johnson describes his “primary opinion” as the conclusion that “race was the predominant factor in the changes” that Mr. Cooper made to his illustrative maps. Ex. E, Johnson Surrebuttal at 2. His report (Ex. F at 2) indicates that he was asked to analyze “whether race appears to be the predominate consideration used in drawing” Mr. Cooper’s illustrative maps in this case, and he devotes 17 pages in his initial report (Ex. F at 26–42) and nearly half of his surrebuttal report (Ex. E at 2–3, 6–10) to his purported conclusions that race “drove” the district boundaries that Mr. Cooper drew. Ex. F, Johnson Report at 26, 35.

Rather than making an actual showing that race predominated, Dr. Johnson’s reports merely indicate that Mr. Cooper intentionally drew districts that are “majority-Black,” Ex. F, Johnson Report at 26, and that those districts were drawn to (a) exceed 50% BVAP, *id.* at 37–42; and (b) “perform[] for black preferred candidates,” Ex. E, Johnson Surrebuttal at 2. Dr. Johnson

then asserts that these facts on their own would amount to proof that “race was the predominant factor” in drawing Mr. Cooper’s illustrative maps. *Id.*

To the extent that Defendants offer Dr. Johnson’s opinions to support the proposition that an intentional effort to satisfy the *Gingles* preconditions renders the illustrative maps unlawful, then Dr. Johnson’s opinions are irrelevant to the current *Gingles* inquiry. His opinions would only be relevant if this Court were to overrule *Gingles*. That is what Alabama asked the Supreme Court to do in *Milligan*, and the Supreme Court declined the invitation. 599 U.S. at 30; *id.* at 42 (Kavanaugh, J., concurring). Accordingly, the Court should preclude Dr. Johnson’s testimony as irrelevant to the actual legal standard that governs Section 2 claims.

Even if Dr. Johnson’s conclusions were relevant (and they are not), they are unhelpful and unreliable. Dr. Johnson has no specialized knowledge that would permit him to opine as to Mr. Cooper’s subjective motivations in drawing the illustrative maps. Indeed, Plaintiffs have not identified a single court that has accepted Dr. Johnson’s racial predominance analysis. In contrast, courts have repeatedly rejected Dr. Johnson’s opinions, and he has done nothing in this case to assuage the specific concerns that prior courts have enumerated about his methodology and conclusions about the intent of other mapdrawers. This Court should likewise reject his speculative opinions.

A. Dr. Johnson’s opinions are irrelevant under the *Gingles* framework that the Supreme Court recently reaffirmed in *Milligan*.

Dr. Johnson’s “primary opinion” (Ex. E, Johnson Surrebuttal at 2)—that “race was the predominant factor in the changes [Mr. Cooper] made” between his 2022 and 2023 illustrative maps²²²³—has no bearing on the legal analysis in a Section 2 claim.

³ It is worth emphasizing the limited scope of Dr. Johnson’s testimony: his conclusions address the changes between the illustrative maps Mr. Cooper submitted in 2022 and the revised illustrative maps Mr. Cooper submitted in 2023.

As an initial matter: *Milligan* reaffirms that it is permissible to consider race when developing illustrative maps to satisfy the first *Gingles* precondition. Indeed, as the majority stressed, “[t]he very reason a plaintiff adduces a map at the first step of *Gingles* is precisely *because of its racial composition*—that is, because it creates an additional majority-minority district that does not then exist.” 599 U.S. 1, 34 n.7 (emphasis in original); *see also id.* at 41 (“[T]his Court and the lower federal courts . . . have authorized race-based redistricting as a remedy for state districting maps that violate § 2.”). In holding that the consideration of race does not preclude satisfying *Gingles* I, the Supreme Court rejected the argument that the *Milligan* plaintiffs’ illustrative plans failed *Gingles* I because race was a consideration in their design. *See Milligan*, 599 U.S. at 24 (rejecting argument that “the illustrative plan that plaintiffs adduce for the first *Gingles* precondition cannot have been ‘based’ on race”).

Because the *Milligan* majority never reached the question of whether illustrative maps developed to satisfy the first *Gingles* precondition must survive the racial predominance analysis discussed in racial gerrymandering cases brought under the Equal Protection Clause of the Fourteenth Amendment,³⁴ Fifth Circuit precedent establishing that a racial predominance analysis is not necessary at *Gingles* I remains controlling. *See Clark v. Calhoun Cnty.*, 88 F.3d 1393, 1406–07 (5th Cir. 1996) (racial predominance analysis is not necessary at *Gingles* I); *see also Robinson*, 37 F.4th at 223 (citing *Clark* and holding that this Circuit has “rejected the

As a result, Dr. Johnson’s report zooms in on a series of minor changes: as Dr. Johnson admitted in his deposition, Mr. Cooper’s changes between the 2022 and 2023 illustrative House plans affected less than 2% of the Louisiana population, and his changes between the 2022 and 2023 illustrative Senate plans affected less than 1% of the Louisiana population. Ex. G, Johnson Dep. Tr. 90:11–91:17. In discussing compactness, communities of interest, and race predominance, Dr. Johnson does not compare either set of illustrative maps to the enacted plan. *See generally* Exs. H & I; Ex. G, Johnson Dep. Tr. 56:15–19, 57:14–58:7.

⁴ The plurality concluded that race had not predominated in the plaintiffs’ illustrative plans, and therefore did not need to resolve the question of how to apply *Gingles* I if race does predominate in the creation of an illustrative map. *See Milligan*, 599 U.S. at 30–33 (plurality opinion). Justice Kavanaugh also did not address the point directly, but he voted to affirm the district court’s finding that *Gingles* I was satisfied notwithstanding the acknowledgment of the plaintiffs’ experts that they considered race as a factor in developing their illustrative plans. *See id.* at 31 (describing testimony of demographer Bill Cooper, the same mapdrawer used in this case).

proposition that a plaintiff’s attempt to satisfy the first *Gingles* precondition is invalid if the plaintiff acts with a racial purpose.”).

Even in racial gerrymandering cases brought under the Fourteenth Amendment, the Supreme Court has never precluded an illustrative plan from satisfying *Gingles* I based on a finding that race predominated. Rather, in such cases, the Supreme Court has focused its *Gingles* I inquiry into the map drawing process on questions of whether the map has concluded that the districts at issue in those cases did not satisfy traditional redistricting principles. *See Milligan*, 599 U.S. at 27 (in *Shaw v. Reno*, 509 U.S. 630 (1993), Section 2 did not justify “proposed district [that] was not reasonably compact”); *id.* at 27–28 (in *Miller v. Johnson*, 515 U.S. 900 (1995), VRA provided no justification for districts that “flout[ed] traditional criteria”); *id.* at 28 (in *Bush v. Vera*, 517 U.S. 952 (1996), Section 2 did not provide justification for districts that did not adhere to traditional redistricting criteria). Put another way, no Supreme Court cases hold that *Gingles* I cannot be satisfied where, as here, Plaintiffs’ illustrative map is reasonably configured because it does comply with traditional redistricting principles.

What’s more, even assuming *arguendo* that Dr. Johnson’s assertions about Mr. Cooper’s subjective motivations in drawing district lines are correct (*but see infra* at Section II.B), longstanding precedent precludes this Court from holding that the particular bases on which Dr. Johnson critiques Mr. Cooper for considering race are examples of impermissible race predominance. For example, Dr. Johnson fixates on Mr. Cooper’s efforts to create districts that are majority-Black (Ex. F, Johnson Report at 26), or that have a BVAP exceeding 50% (*id.* at 27, 32)—as the Supreme Court requires in a Section 2 case, *see Bartlett v. Strickland*, 556 U.S. 1, 19–20 (2009)—as support for his conclusion about Mr. Cooper’s “predominate consideration of race in drawing the illustrative map.” As a matter of law, such a position is foreclosed by Supreme

Court precedent. In *Milligan*, the majority recognized that the “very reason a plaintiff adduces a map at the first step of *Gingles* is precisely *because of* its racial composition—that is, because it creates an additional majority-minority district that does not then exist.” 599 U.S. at 34 n.7. This is what *Gingles* I, as construed in *Bartlett*, 556 U.S. at 19–20, demands, and *Milligan* makes clear that attempting to make the required showing does not amount to racial gerrymandering.^{4F4F4F}⁵

Dr. Johnson’s call-out of Mr. Cooper’s alteration of districts to ensure that they perform to enable Black voters to elect the candidates of their choice (Ex. E, Johnson Surrebuttal at 2) is similarly irrelevant to the legal analysis of Section 2 claims. The *Gingles* preconditions *require* plaintiffs “to establish that the minority has the potential to elect a representative of its own choice in some single-member district.” *Grove*, 507 U.S. at 40. In fact, Dr. Johnson himself admits this factor is critical for mapdrawers to consider. His own report includes conclusions about the importance of considering the “sensitivity” of a district, which measures its “likel[i]hood” to elect the candidate preferred by Black voters.” Ex. F, Johnson Report at 38. Dr. Johnson acknowledged that, when he draws maps, he tries to consider whether a district is likely to elect the candidate preferred by Black voters. Ex. G, Johnson Dep. Tr. 258:24–259:2; *id.* at 259:3–7 (“If we’re trying to [e]mpower a region that has historically been underrepresented, we want to be sure that we get the right share of the voters to actually [e]mpower them.”). When asked if he thinks it is important to consider “how to [e]mpower voters and make sure their districts are effective” in drawing maps, Dr. Johnson responded: “You know, that is very roughly speaking the definition of Section 2 of the Vot[ing] Rights Act. It’s definitely important.” *Id.* at 259:8–14. Both the relevant legal

⁵ See 143 S. Ct. at 1512 (plurality) (rejecting the argument that racial predominance invalidates illustrative maps created with goal of satisfying *Gingles*); *id.* at 1518–19 (Kavanaugh, J., concurring) (explaining that in certain circumstances, “*Gingles* requires the creation of a majority-minority district” and that the Constitution does permit “race-based redistricting”).

framework and Dr. Johnson’s own concessions confirm that whether Mr. Cooper considered this “definitely important” factor is not relevant to whether race impermissibly predominated.

B. Dr. Johnson’s methodology is just as unreliable as it was the last time(s) it was rejected by a court.

Dr. Johnson purports to offer expert conclusions that race was the predominant factor animating Mr. Cooper’s changes between his 2022 and 2023 maps. Dr. Johnson’s assertions about Mr. Cooper’s motivations stand in express contradiction to Mr. Cooper’s explanation that, while he “was aware of race, given that the purpose of the *Gingles I* analysis is to see if additional compact majority minority districts can be drawn,” he “drew the maps based on traditional redistricting criteria,” and not predominantly “based on race.” Ex. H, Cooper Rebuttal at 8. But Dr. Johnson has “no special knowledge that allows [him] to opine as to [Mr. Cooper’s] subjective intent” when he drew the illustrative maps, *Advanced Tech. Incubator, Inc. v. Sharp Corp.*, No. 2:07-CV-468, 2009 WL 4669854, at *5 (E.D. Tex. Sept. 15, 2009), and he did not employ any statistical analysis or review all available evidence to rule out the other non-discriminatory alternative criteria that Mr. Cooper considered. Because Rule 702’s use of the word “knowledge” to describe an expert’s qualifications “connotes more than subjective belief or unsupported speculation.” *Daubert*, 509 U.S. at 590, Dr. Johnson’s testimony should be excluded.

As a general matter, “[i]nferences about the intent or motive of parties or others lie outside the bounds of expert testimony,” because “[t]he question of intent is a classic jury question and not one for the experts.”^{5F5F5F} Even in redistricting cases that allege an intentional gerrymander, where legislative intent is an element of the claim and experts are called upon to analyze evidence

⁶ *In re Rezulin Prod. Liab. Litig.*, 309 F. Supp. 2d 531, 546–47 (S.D.N.Y. 2004) (internal citations and quotation marks omitted); see also *Marlin v. Moody Nat. Bank, N.A.*, 248 F. App’x 534, 541 (5th Cir. 2007) (“an expert’s conclusory assertions regarding a defendant’s state of mind are not helpful or admissible”); *DePaepe v. Gen. Motors Corp.*, 141 F.3d 715, 720 (7th Cir. 1998) (holding expert “could not testify *as an expert* that [a party] had a particular motive”) (emphasis in original).

for the purpose of inferring “the reasons behind the State’s actions,” courts have “caution[ed] the experts not to . . . comment on the subjective intent of any individual legislator or staff member.” *Perez v. Texas*, No. 11-CA-360-OLG-JES-XR, 2014 WL 12480146, at *3 (W.D. Tex. July 9, 2014). Here—where no intent claim is at issue, and without the benefit of the “testimonial and documentary evidence on legislative process, procedure, and tradition” that forms the core basis for expert testimony on legislative intent, *id.* at *3—Dr. Johnson purports to identify the motivations of one individual mapdrawer. Such “interpretations of conduct or views as to the motivation of parties” are classically excluded as improper expert testimony. *In re Rezulin*, 309 F. Supp. 2d at 541.

Unsurprisingly, then, courts have not accepted Dr. Johnson’s purported expert opinions on the motivation of other mapdrawers. In *Common Cause v. Lewis* (opinion attached as Ex. I), for instance, a court rejected Dr. Johnson’s opinions about, among other things, the intent of another mapdrawer. There, Dr. Johnson opined that one senate district was “drawn to capture as much of” the Charlotte suburbs as possible into a single district, and that another Senate District similarly reflected an effort to “unite[] the southern suburbs” of Charlotte. Ex. I at 112. In a 2019 decision in that case, the court “reject[ed] Dr. Johnson’s explanations” as they “appear[ed] to be purely speculative, and in any event his speculation d[id] not withstand minimal scrutiny.” *Id.* at 112. That court also noted that, at that time, “Dr. Johnson ha[d] testified as a live expert witness in four cases previously, and the courts in all four cases ha[d] rejected his analysis,”⁶ and it “join[ed] these other courts in rejecting Dr. Johnson’s methodologies, analyses, and conclusions.” *Id.* at 270.

⁷ *Id.* at 270 (collecting cases that called Dr. Johnson’s expert testimony “unreliable and not persuasive,” and his analysis or methodology as “unsuitable,” “troubling,” “lack[ing] merit” or “inappropriate”).

In *Covington v. North Carolina* (opinion attached as Ex. J), the court rejected Dr. Johnson’s race predominance analysis specifically. There, “Dr. Johnson opined as to the Special Master’s ‘[a]pparent [p]redominant [u]se of [r]ace [d]ata’ and that ‘certain racial quotas were targeted by the Special Master when drawing the districts’ or ‘dictated the configuration’ of the districts.” Ex. J at 74 (noting that Dr. Johnson also “opin[ed] as to the Special Master’s ‘apparent quota of the African-American percentage of the voting-age population’”). There, too, Dr. Johnson had highlighted “the remarkable similarity in the African-American percentages of the Voting Age Population in the districts.” *Id.* at 74–75. And the court found “Dr. Johnson’s analysis and opinion as to the alleged racial targeting in the Recommended Plans unreliable and not persuasive.” *Id.* The court emphasized that “Dr. Johnson conceded that the fact that several districts’ BVAPs fall in a particular range does not prove that a racial quota was being employed,” and that “correlation [is] not evidence of causation.” *Id.* at 75 (internal quotation marks omitted). The court also explained that Dr. Johnson had neither provided any “basis for determining whether the BVAPs of the districts are ‘similar’ from a statistical perspective,” nor offered “any controlled statistical analysis ruling out non-discriminatory explanations for the [similar] BVAPs,” and that “any such similarity may be attributable to the underlying demographic make-up of the geographic areas in which the districts are drawn or other nondiscriminatory districting considerations, not racial targeting.” *Id.* at 75–76. Finally, the Court noted that “Dr. Johnson conceded that minor differences between two proposed maps do not signal that one version is legally unacceptable or better achieves traditional redistricting goals.” *Id.* at 77.

These same flaws in Dr. Johnson’s methodology persist. Dr. Johnson admitted that he did not “provide any empirical basis for comparing the BVAPs in these districts from a statistical perspective,” and that he had not “offered any controlled statistical analysis ruling out

nondiscriminatory explanations for the BVAP percentages” in his report. Ex. G, Johnson Dep. Tr. 234:1–236:6. Instead, he resorted to the conclusory assertion that “[i]t just doesn’t happen.” *Id.* at 235:24–25. “[T]he existence of sufficient facts and a reliable methodology is in all instances mandatory. [W]ithout more than credentials and a subjective opinion, an expert’s testimony that ‘it is so’ is not admissible.” *Hathaway v. Bazany*, 507 F.3d 312, 318 (5th Cir. 2007) (citation and quotation marks omitted).

Dr. Johnson’s unsupported speculation about what must have happened is especially unreliable because he plainly did not rule out all other nondiscriminatory explanations. Indeed, in his deposition, Dr. Johnson conceded that he is “not contending that Mr. Cooper didn’t rely on anything other than race in drawing lines in this map,” and admits that “[t]here are a number of factors he cited, and there are a number of districts that follow those factor[s].” Ex. G, Johnson Dep. Tr. 214:22–215:3.

Worse yet, Dr. Johnson did not even review all of the evidence supporting other non-discriminatory explanations. Dr. Johnson explained in his deposition that, because “correlation, itself, does not indicate causation,” “it’s so important to have the other explanation” for “why that line is somewhere for a reason other than race.” Ex. G, Johnson Dep. Tr. 207:8–19. Conversely, Dr. Johnson agreed that, “generally speaking,” “the existence of some other reason for a line” that the mapdrawer drew “is a cut against the argument that the predominant factor is race.” *Id.* at 208:20–24. But Dr. Johnson didn’t consider all of the other available explanations, including (but not limited to^{7F7F7F8}) an expert report about communities of interest that specifically responded

⁸ Dr. Johnson’s report also failed to rule out other factors that Mr. Cooper expressly mentions in his report, such as Mr. Cooper’s “least change method,” which aims to preserve the core of districts and to minimize disruption to incumbents where possible. Ex. H, Cooper Rebuttal at 7; *see* Ex. L, Cooper Report at 8 n.14 (noting that Cooper “relied on incumbent addresses of legislators”); Ex. G, Johnson Dep. Tr. 265:2–5 (didn’t consider incumbent addresses).

to Dr. Johnson’s critiques and explained why Mr. Cooper’s illustrative maps were consistent with communities of interest in Louisiana. *See* Ex. K, Colten Rebuttal Report.

This omission is especially glaring in light of Mr. Cooper’s explanation in his reports that the changes made between the 2022 and 2023 illustrative plans he drew were made “to better reflect communities of interest and include other technical changes,” Ex. L, Cooper Report at 5, and that the changes “reflect conversations I had with the attorneys for the Plaintiffs, who in turn had requested commentary about the 2022 Illustrative Plan from the Plaintiffs and other experts for the Plaintiffs,” Ex. H, Cooper Rebuttal at 3; *see also id.* at 8 (“As stated in my July 2023 report, the changes between my 2022 Illustrative Plan and the now-current Illustrative Plan were primarily made to better respect communities of interest.”).

Dr. Johnson seemed to agree that, if the districts complied with communities of interest in Louisiana, that “would make it difficult to conclude that the predominant factor was race”⁹—but he has not even reviewed the available evidence that would undermine his conclusion. Because Dr. Johnson’s methodology “fail[s] to adequately account for contrary evidence,” it is “not reliable or scientifically sound.” *In re Lipitor (Atorvastatin Calcium) Mktg., Sales Pracs. & Prod. Liab. Litig.*, 174 F. Supp. 3d 911, 932 (D.S.C. 2016) (collecting cases).

Absent a reliable methodology or consideration of all relevant facts, Dr. Johnson’s opinions are not helpful to this Court, and should therefore be excluded.

III. Dr. Solanky’s analyses are irrelevant under *Gingles* and are otherwise unreliable.

Defendants also offer Dr. Solanky—a mathematician with no training or experience on redistricting, political science, or the Voting Rights Act—to “statistically study the voting patterns

⁹ Ex. G, Johnson Dep. Tr. 219:18–220:7 (“Q. [If] the districts did comply with communities of interest in Louisiana in a way that was describable in a report, where you could explain which communities were kept together by the individual districts that you’re challenging. Do you agree that would make it difficult to conclude that the predominant factor was race? ... THE WITNESS: That’s exactly the kind of report I would have issued with the map if I [had] drawn it.”).

and the composition of the enacted state house (H.B. 14) and senate (S.B.1)” and to rebut the opinions of Plaintiffs’ experts, Dr. Lisa Handley and William Cooper.^{9F9F9F}¹⁰ Ex. N, Solanky Report at 3. But Dr. Solanky’s methodology amounts to nothing more than unreliable *ipse dixit* and the few conclusions Dr. Solanky renders are irrelevant to the effects-based racially polarized voting analysis required by *Gingles* II and III.

A. Dr. Solanky’s opinions are the product of unreliable methodological application and must be excluded.

“Rule 104(a) requires the judge to conduct preliminary fact-finding and to make a ‘preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue.’” *Moore*, 151 F.3d at 276 (quoting *Daubert*, 509 U.S. at 592–93). “[T]he party seeking to have the district court admit expert testimony must demonstrate that the expert’s findings and conclusions are based on the scientific method, and, therefore, are reliable. This requires some independent validation of the expert’s methodology.” *Id.* However, “[t]he expert’s assurance[] that he has utilized generally accepted scientific methodology is insufficient” by itself to establish that the expert’s testimony is reliable. *Id.* (citing *Daubert v. Merrell-Dow Pharms., Inc.*, 43 F.3d 1311, 1316 (9th Cir. 1995) (“*Daubert II*”). Moreover, a court may exclude “opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.” *Joiner*, 522 U.S. at 146.

In his report, Dr. Solanky conducts three analyses to identify “trends” in voting across Louisiana. *First*, Dr. Solanky conducts a statewide analysis to get an “overall picture” of voter

¹⁰ Dr. Solanky acknowledged that he did not render an opinion on Cooper’s report, despite being retained to do so. Ex. M, Solanky Dep. Tr. 21:17–22:22. Accordingly, this Court should exclude any testimony Dr. Solanky purports to offer on Cooper’s report.

partisan preference. *Second*, Dr. Solanky conducts a parish-wide analysis to assess the voting trends within five self-selected parishes in Louisiana (some of which have no bearing on Plaintiffs' claims). And *third*, Dr. Solanky conducts a precinct-level analysis to assess how changes in population density impact voting trends in four self-selected parishes in Louisiana. In rendering these analyses, Dr. Solanky either failed to disclose what methodology he used to structure his analyses or applied his methodology in an unreliable manner, and the conclusions based on those unreliable methodologies should accordingly be excluded.

1. Dr. Solanky's statewide analysis of voter partisan preference is mere *ipse dixit*.

Dr. Solanky opines that the proper starting point for a statistical analysis of racially polarized voting is examining statewide trends in voter partisan preference. Ex. M, Solanky Dep. Tr. 50:24–52:22. But Dr. Solanky does not cite any peer-reviewed literature for this assertion, and does not draw on his past experience in conducting statistical analysis under the Voting Rights Act because he has none. Instead, Dr. Solanky justifies his analysis with his own say-so, testifying that examining statewide trends was important because “as a scientist, before we look into anything in particular, you cannot ignore the overall picture, and this gives you an overall picture.” Ex. M, Solanky Dep. Tr. 51:24–52:2.

Further, Dr. Solanky does now explain *how* he drew any conclusions about racially polarized voting in the challenged districts from his analysis of “the overall picture.” Dr. Solanky testified that, “[t]he overall picture is always relevant, because all the parishes' precincts, you're looking at it are subset of this data.” Ex. M, Solanky Dep. Tr. 52:5–7. But other than his personal belief that it does, Dr. Solanky does not communicate how statewide trends impact an analysis of racially polarized voting, generally, let alone in the challenged districts. *See Matosky*, 428 F. App'x at 298 (upholding exclusion of expert opinion who failed to explain how the expert reached a

conclusion other than based on the expert’s “conclusory assertion”). Nor does Dr. Solanky analyze how statewide trends impact an analysis of racially polarized voting, generally (let alone in the challenged districts). *See* Ex. N, Solanky Report at 4–10; Ex. M, Solanky Dep. Tr. 52:8–22, 57:16–22, 62:2–10.

Accordingly, any conclusions rendered by Dr. Solanky rooted in his statewide analysis—or any efforts to connect his statewide analysis to conclusions related to racially polarized voting—are *ipse dixit* and insufficient, and should be excluded. *See Joiner*, 522 U.S. at 146.

2. Dr. Solanky’s parish-level analysis is not reliable because there was no reproducible methodology in the selection of parishes or elections considered.

Dr. Solanky next conducts a parish-level analysis of voting patterns by race. *See* Ex. N, Solanky Report at 11–17. In Section III of his report, Dr. Solanky examines voting patterns in five parishes—East Baton Rouge, East Carroll, Natchitoches, Orleans, and West Baton Rouge—to support his conclusion that “there is significant variation in the percentage of white voters voting for a democrat,” particularly in Orleans Parish. *Id.* at 17, 29. Dr. Solanky did not implement any methodology in picking these parishes for analysis. Indeed, Dr. Solanky acknowledges that he selected these parishes to prove his *pre-determined conclusion* about inter-parish variance, not based on an objective sampling criteria. Initially, Dr. Solanky claimed that he chose these parishes because “they seemed [] to be part of the analysis which was presented in the other expert reports.” Ex. M, Solanky Dep. Tr. 113:20–114:1. But when Dr. Solanky realized that Dr. Handley did not consider Orleans or East Carroll parishes because neither parishes are included within the challenged districts, Dr. Solanky changed his rationale, testifying that “[y]ou know, one of the basic ideas was to show that all of Louisiana doesn’t vote similarly, and Orleans Parish happens to be one such illustration.” *Id.* at 114:22–115:2.

Dr. Solanky's choice of elections was equally arbitrary. Dr. Solanky admits to having no objective parish selection criteria, stating simply that he wanted a "good mixture" of elections "where more voters are turning out," "some overlap with Dr. Handley's elections," and "some elections . . . when there is no [B]lack candidate . . . to get a . . . more clearer picture." Ex. M, Solanky Dep. Tr. 84:22–85:21. Nowhere does Dr. Solanky define what constitutes a "good mixture," what threshold meant "more voters are turning out," or why considering some elections with no Black candidates offered a "clearer picture." Dr. Solanky's failure to adopt a reproducible methodology prevents any assessment of whether he selected elections in a reliable manner.

Accordingly, Dr. Solanky's selection of parishes and elections is supported by no discernible, reproducible methodology, and the conclusions rooted in that analysis should be excluded. *See, e.g., Rink v. Cheminova, Inc.*, 400 F.3d 1286, 1293 n.7 (11th Cir. 2005) ("In evaluating the reliability of an expert's method, however, a district court may properly consider whether the expert's methodology has been contrived to reach a particular result."); *Moore*, 151 F.3d at 278 n.10 ("Under Daubert, 'any step that renders the analysis unreliable . . . renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology.'" (quoting *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 745 (3d Cir. 1994))).

3. Dr. Solanky's failure to consider sufficient precincts to support his precinct-level density analysis renders it unreliable.

Dr. Solanky's final analysis purports to examine trends in voting at the precinct-level by assessing whether voting trends change as population density increases. But Dr. Solanky's analysis relies on an unreliable application of ecological inference ("EI").

For this analysis, Dr. Solanky used the census bureau population data to determine which voting tabulation districts ("VTDs") in the parishes studied had higher population density, Ex. M,

Solanky Dep. Tr. 167:20–25, and then he had to match election precincts (which are products of election administrators) with VTDs (which are the Bureau of the Census’s geographic equivalent of a precinct)¹⁰ to use the voter level data available from the SOS. Ex. N, Solanky Report at 20, n.10. He then performed EI analysis on this data.

As Dr. Solanky explained, as he increased the “population density” considered, he considered fewer and fewer VTDs, which meant that he considered fewer and fewer election precincts. Ex. M, Solanky Dep. Tr. 175:6–18, 178:8–14, 181:3–16, 183:5–184:2, 184:21–185:16. And as Dr. Solanky himself admits, EI analysis becomes less reliable when dealing with a smaller sampling of data. *Id.* at 178:3–179:15. But the “high density” areas of the parishes that Dr. Solanky chose to consider contained *less than ten* and sometimes as *few as two* precincts. Ex. N, Solanky Report at 26 n.11; Ex. O, Handley Rebuttal at 7 n.11; Ex. M, Solanky Dep. Tr. 178:8–14, 181:3–16, 183:5–17, 183:22–184:2, 184:21–25, 185:1–13. The unreliability of this analysis is reflected in the sheer size of Dr. Solanky’s confidence intervals, which became so wide that it was possible nearly *no* white voters supported Democrats or Republicans or nearly *most* white voters supported Democrats or Republicans. *See* Ex. N, Solanky Report at 53–54. For example, in the “most dense” areas of East Baton Rouge, Dr. Solanky estimated that *somewhere between* 18.4% and 60.7% of white voters voted for a Republican in the 2022 Senate election. *Id.* at 53. Indeed, Dr. Solanky acknowledged that these wide confidence intervals meant his estimates were “non-informative.” Ex. M, Solanky Dep. Tr. 179:6–15, 186:14–25. Notwithstanding that, Dr. Solanky reaches a

¹¹ *See* Voting Districts, Glossary, Bureau of the Census, https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_31 (last visited Oct. 3, 2023). The primary difference being that VTDs are based on the precincts at the time of census. Precincts can then change in the 10 years between censuses whereas VTDs remain constant until the next census.

definitive conclusion that his estimates “reflect a negative polarization by white voters to defeat the republican candidates” based on this data. *Id.* at 20, 21, 30.¹¹¹¹¹¹¹²

Moreover, Dr. Solanky ran his density analysis using only two elections, the 2020 Presidential and 2022 Senate elections,^{12F12F12F13} because he lacked the experience necessary to analyze more. As explained, in order to conduct his precinct-level analysis, Dr. Solanky had to match VTDs with election precinct. *See* Ex. N, Solanky Report at 20 n.10. Dr. Solanky admits that he had *never conducted this task* prior to writing this report, and found the task “laborsome.” Ex. M, Solanky Dep. Tr. 203:9–20. Indeed, Dr. Solanky found the task so “laborsome” that he limited his density analysis to just the 2020 Presidential and 2022 Senate elections because those VTDs and elections precincts were easy to match, and Dr. Solanky acknowledged that the “tedious effort” of matching VTDs and precincts was “the reason [he] did not look at even more elections.” *Id.* at 170:15–24.^{13F13F13F14} But Dr. Solanky *needed* to evaluate more elections for his conclusions to have any reliability here. The results from only one to two individual elections do not support or negate a conclusion about whether there is legally significant bloc voting. *Gingles*, 478 U.S. at 57.

¹² Tellingly, other experts proffered by Plaintiffs and Defendants have been more careful in conducting EI analysis. Defense expert Dr. Jeffrey Lewis noted in his report in this matter that he considered no “fewer than 10 voting precincts” in his analysis, *see* Ex. Q, Lewis Report at 4 n.2; *see also* Ex. O, Handley Rebuttal at 6. Dr. Solanky thus knew his analysis produced uncertain estimates, yet described his results as “drastic difference in voting patterns.” Ex. N, Solanky Report at 29. Such a definitive opinion does not flow from Dr. Solanky’s data, meaning he only reached the conclusion through *ipse dixit*. *See Joiner*, 522 U.S. at 146. Dr. Solanky’s density analysis—unreliable in its design and conclusion—should be excluded.

¹³ See generally Ex. N, Solanky Report at 17–28.

¹⁴ It is not surprising that Dr Solanky struggled with this process. Dr. Solanky is not a political scientist. *See* Ex. N, Solanky Report at 32–43 (CV). He has no experience in analyzing voting patterns or election data. *Id.* Nor does Dr Solanky have specialized training on racially polarized voting analyses under the Voting Rights Act. *Id.* Rather, Dr. Solanky has a general training in statistics and teaches courses on mathematics and statistical methods. Ex. M, Solanky Dep. Tr. 12:12–15:20. Dr. Solanky’s training and coursework has never involved application of statistical methods (including the methods he applied in this case) to study voting patterns or election data. *See* Ex. N, Solanky Report at 32–43 (CV); Ex. M, Solanky Dep. Tr. 14:2–15:20. Dr. Solanky has never published an article or other scholarly work on political science, voting patterns, redistricting, or the Voting Rights Act. Ex. M, Solanky Dep. Tr. 14:2–11. In fact, this Court has previously recognized in *Robinson*, “there is little, if any, connection between [Dr. Solanky’s] expertise and his opinions.” 605 F. Supp. 3d at 841.

And, notably, all other experts proffered by Defendants looked at many more in support of their conclusions. *See* Ex. P, Alford Report at 4–14; Ex. Q, Lewis Report at 2.

Dr. Solanky’s density analysis—unreliable in its design and conclusion and conducted on just two elections—should accordingly be excluded.

4. Dr. Solanky’s rebuttal of Dr. Handley must be excluded because it is unsubstantiated.

Dr. Solanky offers a singular critique of Dr. Handley’s report: he contends that Dr. Handley’s allocation of early and absentee votes “biased” Dr. Handley’s results. *See* Ex. N, Solanky Report at 29; Ex. R, Solanky Rebuttal at 2–8. It is undisputed that, in Louisiana, early and absentee votes are reported at the parish level, not by precinct. To overcome this issue, Dr. Handley deployed a method to allocate early and absentee votes from the parish level to precinct level based on each candidate’s proportional election-day vote share by precinct. *See* Ex. S, Handley Report at 6 n.5. Dr. Solanky asserts that there is some uncertainty caused by this allocation method, and he alleges that it impacted the accuracy of Dr. Handley’s EI results. Ex. N, Solanky Report at 12. But Dr. Solanky did not provide any information as to how he knew Dr. Handley’s results were “biased,” nor did he provide an opinion as to what the bias actually is.^{14F14F14F¹⁵}

Dr. Solanky’s report also did not propose an alternative allocation methodology to be used to account for early and absentee votes. But during his deposition, Dr. Solanky offered, for the first time, a new methodology to allocate early and absentee votes. Dr. Solanky’s new methodology involved starting with total voter turnout in a precinct, subtracting the total votes cast on Election Day in each precinct, and noting the remainder as the likely total number of early and absentee votes to allocate to that precinct. Ex. M, Solanky Dep. Tr. 216:7–217:13. Dr. Solanky

¹⁵ On September 29, 2023, Plaintiffs served a supplemental report in which Dr. Handley summarized the results of diagnostic tests that confirmed her allocation method did not bias her results.

then proposes to allocate the early votes for each precinct using the proportions of early and absentee votes that each candidate got from the entire parish, where the early and absentee candidate vote totals are available. Ex. M, Solanky Dep. Tr. 217:14-20. But Dr. Solanky provides no explanation for why this allocation process is better than the allocation Dr. Handley used for creating the database necessary for the EI analysis. And Dr. Solanky acknowledged that he did not perform an analysis using his proposed allocation method in his rebuttal report even though he had Dr. Handley's data for over a year. Ex. M, Solanky Dep. Tr. 220:25–221:4.

Critically, Dr. Solanky also fails to explain how this alleged “bias” impacted or influenced Dr. Handley's results. Ex. M, Solanky Dep. Tr. 222:20–223:2 (Q: “[Y]ou didn't conduct any alternative analysis with respect to the early and absentee data in your report, or in your Rebuttal Report; is that right?” A: “That is right. So in my report, I followed what she had, but in order to understand that this has created bias, I have constantly mentioned that these numbers are biased.”). Yet Dr. Solanky claimed—without supporting facts or analysis—that the alleged “bias” created by Dr. Handley's allocation methodology tainted Dr. Handley's analysis of all 16 elections she studied. Ex. R, Solanky Rebuttal at 4–7; Ex. M, Solanky Dep. Tr. 242:23–243:9, 249:16–21. Without revealing how he reached his conclusion about Dr. Handley's analysis, Dr. Solanky has given this Court no basis to conclude that he applied a reliable methodology at “each and every step” in forming his opinion on Dr. Handley's allocation method. *See Knight v. Kirby Inland Marine Inc.*, 482 F.3d 347, 355 (5th Cir. 2007) (“The expert's testimony must be reliable at each and every step or else it is inadmissible.”). This Court should therefore exclude Dr. Solanky's rebuttal of Dr. Handley's report.

B. Dr. Solanky’s analyses of voting patterns have no bearing on a *Gingles* II or III inquiry and are therefore not relevant.

Daubert instructs district courts to ensure expert testimony is “both reliable and relevant.” *Curtis v. M & S Petroleum, Inc.*, 174 F.3d 661, 668 (5th Cir. 1999) (citing *Daubert*, 509 U.S. at 597). Even if the expert’s methodology for developing an opinion is reliable, that methodology must also have been correctly applied to the facts in order for the testimony to be relevant. *See Daubert*, 509 U.S. at 593. Dr. Solanky admittedly offers no conclusions regarding racially polarized voting as required by *Gingles* II and III, and his analysis as designed fails to support any conclusions related to racially polarized voting as required by *Gingles* II and III, rendering his opinions irrelevant and inadmissible.

1. Dr. Solanky admittedly offers no conclusions related to racially polarized voting.

Gingles II and III call for a results-based analysis of racially polarized voting in the challenged districts. *See Gingles*, 478 U.S. at 62 (“For purposes of § 2, the legal concept of racially polarized voting incorporates neither causation nor intent. It means simply that the race of voters correlates with the selection of a certain candidate or candidates; that is, it refers to the situation where different races (or minority language groups) vote in blocs for different candidates.”). To carry their burden under the second and third *Gingles* preconditions, Plaintiffs must establish through a racial bloc voting analysis that (1) “the minority group . . . is politically cohesive” and (2) “the white majority votes sufficiently as a bloc to enable it . . . to defeat the minority’s preferred candidate.” *Milligan*, 599 U.S. at 18 (quoting *Gingles*, 478 U.S. at 51).

Dr. Solanky disclaims any opinion on the presence or absence of racially polarized voting. Instead, Dr. Solanky made clear that his analyses were intended to observe “trends” in party affiliation, voter turnout, and intra-parish differences in partisan preference. He testified that his opinions make *no assessment* of racially polarized voting in the challenged districts. Ex. M,

Solanky Dep. Tr. 41:19–24, 52:11–22, 57:16–22; 62:2–10; 201:4–15. Indeed, Dr. Solanky stated that he is “not making any opinion on what is cohesive, what is not.” *Id.* at 41:22–24. And by his own admission, Dr. Solanky “would rather not characterize” his own opinion as one on racially polarized voting. *Id.* at 41:5–24; *see also id.* at 201:4–15 (admitting that does not state in his report that voting in Louisiana is not racially polarized). Dr. Solanky’s testimony, therefore, has no bearing on whether Plaintiffs can sustain their *Gingles* II and III burden. *See Solomon v. Liberty Cnty. Comm’rs*, 221 F.3d 1218, 1226 n.7 (11th Cir. 2000) (explaining that evidence in a vote dilution case is relevant if it would “allow the trier of fact reasonably to infer anything about whether or not the voting strength of the minority group has been impermissibly diluted”).¹⁵^{F15F15F16}

Dr. Solanky did not design his analyses to detect the presence or absence of racially polarized voting in the challenged districts. Dr. Solanky explained, instead, that he intended to document (1) trends in statewide party registration and voter turnout by party and race; (2) that “different parishes vote differently”; and (3) that “different precincts within parishes vote differently.” Ex. M, Solanky Dep. Tr. 97:7–100:25, 117:1–4. But even as to these observations, Dr. Solanky stressed that he neither considered the possibility of statewide racially polarized voting nor intended to analyze racial bloc voting in parishes within the challenged districts. *Id.* at 41:19–24, 67:5–14, 70:3–24, 114:22–115:8. The content of Dr. Solanky’s analyses, therefore, is not relevant to rebutting Plaintiffs’ showing of racially polarized voting in the challenged districts.

¹⁶ This Court has already acknowledged the “limited utility” of similar expert testimony offered by Dr. Solanky related to *Gingles* II and III. As here, Dr. Solanky’s prior opinion before this Court “d[id] not offer any opinion about majority bloc voting in any [legislative] district under the enacted or illustrative plans,” and his conclusions were reached with a “narrow data set” about “outlier” parishes not “probative of voting patterns districtwide.” *Robinson*, 605 F. Supp. 3d at 841. This Court can and should exclude Dr. Solanky’s instant report for the same reasons.

2. Dr. Solanky’s proffered analysis does not otherwise support conclusions related to racially polarized voting.

Dr. Solanky conducts three analyses to identify “trends” in voting in Louisiana. *First*, Dr. Solanky conducts a statewide analysis to get an “overall picture” of party affiliation and voter turnout. *Second*, Dr. Solanky conducts a parish-wide analysis to assess the voting trends within five self-selected parishes in Louisiana, some of which have no bearing on Plaintiffs’ claims. And *third*, Dr. Solanky conducts a precinct-level analysis to assess how changes in population density impact voting trends in four parishes in Louisiana. For the reasons laid out below, Dr. Solanky’s analyses are fundamentally flawed and bear no relevance to whether voting in Louisiana is racially polarized. These opinions should be excluded.

a. Dr. Solanky’s analysis of party affiliation and voter turnout have no bearing on racially polarized voting in the challenged districts.

Dr. Solanky testified that he conducted a statewide analysis to get an “overall picture” of party affiliation and turnout in Louisiana. Ex. M, Solanky Dep. Tr. 50:15–23. But Dr. Solanky clarified that he performed no analysis to determine relationship between his “overall picture” of statewide trends and parish- or precinct-level racially polarized voting in the challenged districts. *Id.* at 64:17–65:9. In *Gingles*, the Court found that the District Court had applied the correct standard because it “relied on data that were specific to each individual district in concluding that each district experienced legally significant racially polarized voting.” *Gingles*, 478 U.S. at 59 n.28; *Miss. State Chapter, Operation Push, Inc. v. Mabus*, 932 F.2d 400, 410 (5th Cir. 1991) (“In *Gingles*, statistical proof of racially polarized voting in other districts was not relevant to the issue of vote dilution in the specific challenged district.”). Dr. Solanky’s “overall picture,” therefore, is irrelevant to a racially polarized voting analysis without some analysis linking his statewide observations to voting patterns in the challenged districts, which Dr. Solanky does not provide. Ex. M, Solanky Dep. Tr. 64:17–65:25.

Nor can the data Dr. Solanky gathered on statewide trends in party affiliation and turnout be repurposed into a racially polarized voting analysis. For instance, Table 4 of Section II Dr. Solanky’s report, sums the total number of white voters registered as Democrats and white voters registered as Republicans who turned out to vote, as well as the total number of Black voters registered as Democrats and Black voters registered as Republicans who turned out to vote. Ex. N, Solanky Report at 10. To calculate the percentages cited, Dr. Solanky did not compare, for example, the number of Black voters registered as Democrats who voted against the total number of Black voters who voted. Instead, Dr. Solanky used as his denominator the total number of *all* voters who voted on that election day. Ex. M, Solanky Dep. Tr. 79:14–80:23. Table 4, columns 7–10 thus present a picture of the statewide electorate by race and party on a given election day. But Dr. Solanky’s observations in Table 4 have no bearing on whether the statewide electorate exhibited racially polarized voting.¹⁶^{F16F16F16F¹⁷}

The remainder of Dr. Solanky’s statewide analyses party affiliation and turnout are similarly unhelpful to an analysis of racially polarized voting. Each measure party *affiliation*, not whether race has an impact on election *results*, even at a statewide level. *See Gingles*, 478 U.S. at 62 (racially polarized voting “means simply that the race of voters correlates with the *selection of a certain candidate or candidates*; that is, it refers to the situation where different races (or minority language groups) vote in blocs for different candidates” (emphasis added)). This Court should thus exclude Dr. Solanky’s testimony on his statewide analyses of party affiliation and

¹⁷ As explained *infra*, when Dr. Solanky compared the number of Black voters who voted for Democratic candidates against the total number of Black voters who voted in certain parishes, he discovered that Black voters tended to vote cohesively. *See* Ex. N, Solanky Report at 46–47. Dr. Solanky also observed that white voters tended to vote as a bloc for Republican candidates within those parishes. *See id.* at 48–51; *see also* Ex. M, Solanky Dep. Tr. 72:11–73:8 (clarifying that Appendix 4 measures the number of white voters voting for Republican candidates).

turnout because it is not relevant to assessing whether Plaintiffs carried their burden to demonstrate racially polarized voting under *Gingles*.

b. Dr. Solanky’s parish-level analysis only focused on party preference and depends on consideration of an irrelevant parish.

Dr. Solanky testified that he examined voting patterns in certain parishes to examine inter-parish differences in *party preference*, not whether Black voters and white voters consistently preferred different *candidates*. Ex. M, Solanky Dep. Tr. 97:7–16, 103:17–24, 106:9–107:13, 107:22–108:2, 110:17–111:6. While examining whether Black voters preferred Black candidates “sounded meaningless to” Dr. Solanky because that question was not probative of party preference, *id.* at 101:20–102:1, 109:11–21, that precise assessment is key when examining voting data under *Gingles* II and III. *See, e.g., Westwego Citizens for Better Gov’t v. City of Westwego*, 872 F.2d 1201, 1208 n.7 (5th Cir. 1989) (“[E]vidence most probative of racially polarized voting must be drawn from elections including both black and white candidates.”). For instance, the 2022 Senate election featured two Democratic candidates who received more than 3% of the vote: Gary Chambers, Jr., who is Black, and Luke Mixon, who is white. Instead of analyzing whether Black voters preferred Chambers, Jr. and white voters preferred Mixon, Dr. Solanky pooled all the votes cast for a Democrat in the 2022 Senate election into one Democratic “candidate.” Ex. M, Solanky Dep. Tr., 97:7–15. Dr. Solanky found it “meaningless” to assess whether Black voters preferred a Black Democratic candidate and white voters preferred a white Democratic candidate because Dr. Solanky was concerned with examining racial trends in *party* preference, not *candidate* preference. *Id.* at 100:15–102:1. In other words, Dr. Solanky’s parish-level analysis avoided assessing racially

polarized voting at the parish level and as such, is not relevant to the required *Gingles* analysis.¹⁷¹⁷¹⁷¹⁷¹⁸ This testimony should be excluded.

Furthermore, this analysis included parishes which are not relevant to the challenged districts in this matter, including Orleans Parish. There is no overlap between Orleans Parish and the challenged districts in this case. Analysis of racially polarized voting required by *Gingles* must be specific to each individual district at issue in the Section 2 claim. *Gingles*, 478 U.S. at 59 n.28. Dr. Solanky evaluated voting patterns in Orleans Parish as part of supporting his observation that “different parishes vote differently.” Ex. M, Solanky Dep. Tr. 114:22–115:8, 117:1–7. Orleans, in Dr. Solanky’s view, displayed greater variance in the number of white voters who voted for Democrat and white voters who voted for a Republican compared to the other parishes Dr. Solanky studied. *Id.* Dr. Solanky studied Orleans because, as he explained, he did not conduct his analysis to study parishes in the challenged districts; he simply wanted to show how a sampling of parishes across Louisiana proved his point about inter-parish variance. Ex. M, Solanky Dep. Tr. 114:22–115:8, 117:1–7. But the conclusion he draws about Orleans Parish compared to other parishes is irrelevant to a racially polarized voting assessment in the challenged districts, and Dr. Solanky’s testimony on this opinion should be excluded *Cf. Gingles*, 478 U.S. at 64 (rejecting the state’s attempt to inject “irrelevant variables” into the racially polarized voting analysis because doing so

¹⁸ In any event, Dr. Solanky’s parish-level analyses *confirm* the existence of racially polarized voting in parishes containing challenged districts. In Appendix 3 to his report, Dr. Solanky’s calculated the percentage of Black voters who voted for a Democratic candidate in five self-selected parishes, including some within the challenged districts. In the 2015 Lieutenant Governor’s race, for example, Dr. Solanky observed that 96.3% of Black voters in Natchitoches Parish voted for the Democratic candidate. Ex. N, Solanky Report at 46-47; Ex. M, Solanky Dep. Tr. 132:3–5. Dr. Solanky confirmed that White voters in Natchitoches were similarly polarized in the 2015 Lieutenant Governor’s election: according to Dr. Solanky, 78.8% of White voters voted for the Republican candidate and 21.2% of White voters voted for the Democratic candidate. Ex. N, Solanky Report at 48–51; Ex. M, Solanky Dep. Tr. 132:20–22. Dr. Solanky agreed his analysis similarly demonstrated racially polarized voting in Natchitoches for *every* election Dr. Solanky studied. *See* Ex. N, Solanky Report at 46–51; Ex. M, Solanky Dep. Tr. 133:5–137:8. Natchitoches is not a one-off; Dr. Solanky’s data reveals a consistent pattern of racial bloc voting in parishes containing challenged districts in each election Dr. Solanky studied. *See* Ex. N, Solanky Report at 46–51.

“distorts the equation and yields results that are indisputably incorrect under § 2 and the Senate Report”).

c. Dr. Solanky’s density analysis provides no insight on racially polarized voting in the challenged districts.

Dr. Solanky also conducted a density analysis assessing voting patterns in a small collection of precincts in Caddo Parish. *See* Ex. N, Solanky Report at 18—19. From this analysis, Dr. Solanky observed that, as population density of the precinct increases (*i.e.*, in looking at the City of Shreveport), more white voters tend to vote for Democratic candidates compared to white voters in less dense areas. Dr. Solanky also conducted similar EI analyses of the voting patterns of areas with more population density in East Baton Rouge Parish; Iberville Parish, and Point Coupee. *See* Ex. N, Solanky Report at 20–28. But again, Dr. Solanky testified that he did not draw any conclusions about racially polarized voting from this analysis; he simply showed that “different parishes vote differently” and “different precincts within parishes vote differently.” Ex. M, Solanky Dep. Tr. 157:6–17.

Moreover, Dr. Solanky’s observations do not and cannot tend to prove or disprove the existence of racially polarized voting in the challenged districts. *Gingles* assumed there will always be some level of “crossover” voting, *Gingles*, 478 U.S. at 56, and accordingly defines “legally significant white bloc voting” as “a white bloc vote that normally will *defeat* the combined strength of minority support *plus* white ‘crossover’ votes.” *Id.* (emphasis added). Dr. Solanky’s density analysis makes no effort to determine whether the increase in Democratic votes from white voters is sufficient to disprove the existence of white bloc voting in those precincts and areas he examined. *See* Ex. N, Solanky Report at 18–28.

Nor could a fact finder extrapolate Dr. Solanky’s density analysis into a conclusion about the impact of crossover voting on election results *in the challenged districts* because Dr. Solanky

does not provide the data needed to do so. Dr. Solanky did not analyze what (if any) portions or proportions of those areas with more population density he examined fell within the challenged districts. Ex. M, Solanky Dep. Tr. 168:13–19; 182:24–183:4. Without linking the areas considered with the challenged districts, neither Dr. Solanky nor this Court can determine the effect that an alleged increase in white voting for Democratic candidates would have on the majority bloc that indisputably exists in the challenged districts.

Accordingly, Dr. Solanky’s analyses and opinions have no bearing on Plaintiffs’ burden of proof under the second and third *Gingles* preconditions. And in the instances where Dr. Solanky analyzes racially polarized voting, he confirms, not rebuts, Plaintiffs’ claim that Black voters and white voters in the challenged districts vote in blocs. This Court should therefore exclude Dr. Solanky’s testimony as irrelevant.

CONCLUSION

This Court should exclude the proposed testimony of Sean Trende, Dr. Douglas Johnson, and Dr. Tumulesh K.S. Solanky.

DATED: October 6, 2023

Leah Aden*
 Stuart Naifeh*
 Victoria Wenger*
 NAACP Legal Defense & Educational Fund
 40 Rector Street, 5th Floor
 New York, NY 10006
 laden@naacpldf.org
 snaifeh@naacpldf.org
 vwenger@naacpldf.org

I. Sara Rohani*
 NAACP Legal Defense & Educational Fund
 700 14th Street, Suite 600

Respectfully submitted,

/s/ Sarah Brannon
 Sarah Brannon*
 Megan C. Keenan*
 American Civil Liberties Union Foundation
 915 15th St. NW
 Washington, DC 20005
 sbrannon@aclu.org
 mkeenana@aclu.org

Sophia Lin Lakin*
 Dayton Campbell-Harris*
 American Civil Liberties Union Foundation
 125 Broad Street, 18th Floor
 New York, NY 10004

Washington, DC 20005
srohani@naacpldf.org

John Adcock (La. Bar No. 30372)
Adcock Law LLC
Louisiana Bar No. 30372
3110 Canal Street
New Orleans, LA 70119
jnadcock@gmail.com

Michael de Leeuw*
Amanda Giglio*
Cozen O'Connor
3 WTC, 175 Greenwich St.,
55th Floor
New York, NY 10007
MdeLeeuw@cozen.com
AGiglio@cozen.com

Josephine Bahn**
Cozen O'Connor
1200 19th Street NW
Washington, D.C. 20036
JBahn@cozen.com

slakin@aclu.org
dcampbell-harris@aclu.org
lroman@aclu.org

T. Alora Thomas-Lundborg*
Daniel J. Hessel*
Election Law Clinic
Harvard Law School
6 Everett Street, Ste. 4105
Cambridge, MA 02138
tthomaslundborg@law.harvard.edu
dhessel@law.harvard.edu

Nora Ahmed (N.Y. Bar. No. 5092374)
ACLU Foundation of Louisiana
1340 Poydras St., Suite 2160
New Orleans, LA 70112
NAhmed@laaclu.org

Ron Wilson (La. Bar No. 13575)
701 Poydras Street, Suite 4100
New Orleans, LA 70139
cabral2@aol.com

Attorneys for Plaintiffs

*Admitted Pro Hac Vice

**Pro Hac Vice Motion Forthcoming

CERTIFICATE OF SERVICE

I hereby certify that on October 6, 2023, a copy of the foregoing memorandum was filed electronically with the Clerk of Court via the CM/ECF system. Notice of this filing will be sent to all counsel of record by operation of the court's electronic filing system.

/s/ Sarah Brannon

Sarah Brannon*

Expert Report of Sean P. Trende
in *Nairne, et al. v. Ardoin, et al.*

July 28, 2023

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1 Expert Qualifications

1.1 Career

I serve as Senior Elections Analyst for Real Clear Politics. I joined Real Clear Politics in January of 2009 after practicing law for eight years. I assumed a fulltime position with Real Clear Politics in March of 2010. Real Clear Politics is a company of approximately 50 employees, with its main offices in Washington D.C. It produces one of the most heavily trafficked political websites in the world, which serves as a one-stop shop for political analysis from all sides of the political spectrum and is recognized as a pioneer in the field of poll aggregation. Real Clear Politics produces original content, including both data analysis and traditional reporting. It is routinely cited by the most influential voices in politics, including David Brooks of *The New York Times*, Brit Hume of Fox News, Michael Barone of *The Almanac of American Politics*, Paul Gigot of *The Wall Street Journal*, and Peter Beinart of *The Atlantic*.

My main responsibilities with Real Clear Politics consist of tracking, analyzing, and writing about elections. I collaborate in rating the competitiveness of Presidential, Senate, House, and gubernatorial races. As a part of carrying out these responsibilities, I have studied and written extensively about demographic trends in the country, exit poll data at the state and federal level, public opinion polling, and voter turnout and voting behavior. In particular, understanding the way that districts are drawn and how geography and demographics interact is crucial to predicting United States House of Representatives races, so much of my time is dedicated to that task.

I am currently a Visiting Scholar at the American Enterprise Institute, where my publications focus on the demographic and coalitional aspects of American Politics.

1.2 Publications and Speaking Engagements

I am the author of the 2012 book *The Lost Majority: Why the Future of Government is up For Grabs and Who Will Take It*. In this book, I explore realignment theory.

It argues that realignments are a poor concept that should be abandoned. As part of this analysis, I conducted a thorough analysis of demographic and political trends beginning in the 1920s and continuing through modern times, noting the fluidity and fragility of the coalitions built by the major political parties and their candidates.

I also co-authored the 2014 *Almanac of American Politics*. The *Almanac* is considered the foundational text for understanding congressional districts and the representatives of those districts, as well as the dynamics in play behind the elections. PBS's Judy Woodruff described the book as "the oxygen of the political world," while NBC's Chuck Todd noted that "Real political junkies get two *Almanacs*: one for the home and one for the office." My focus was researching the history of and writing descriptions for many of the newly-drawn districts, including tracing the history of how and why they were drawn the way that they were drawn. Because the 2014 *Almanac* covers the 2012 elections, analyzing how redistricting was done was crucial to my work. I have also authored a chapter in Larry Sabato's post-election compendium after every election dating back to 2012.

I have spoken on these subjects before audiences from across the political spectrum, including at the Heritage Foundation, the American Enterprise Institute, the CATO Institute, the Bipartisan Policy Center, and the Brookings Institution. In 2012, I was invited to Brussels to speak about American elections to the European External Action Service, which is the European Union's diplomatic corps. I was selected by the United States Embassy in Sweden to discuss the 2016 elections to a series of audiences there and was selected by the United States Embassy in Spain to fulfill a similar mission in 2018. I was invited to present by the United States Embassy in Italy, but was unable to do so because of my teaching schedule.

1.3 Education

I am currently enrolled as a doctoral candidate in political science at The Ohio State University. I have completed all my coursework and have passed comprehensive

examinations in both methods and American Politics. As of this writing, my dissertation has been approved for defense by my committee, and awaits formatting review. Chapter 3 of the dissertation involves the use of communities of interest in redistricting simulations. In pursuit of this degree, I have also earned a Master's Degree in Applied Statistics. My coursework for my Ph.D. and M.A.S. included, among other things, classes on G.I.S. systems, spatial statistics, issues in contemporary redistricting, machine learning, non-parametric hypothesis tests and probability theory.

In the winter of 2018, I taught American Politics and the Mass Media at Ohio Wesleyan University. I taught Introduction to American Politics at The Ohio State University for three semesters from Fall of 2018 to Fall of 2019, and again in Fall of 2021. In the Springs of 2020, 2021, 2022 and 2023, I taught Political Participation and Voting Behavior at The Ohio State University. This course spent several weeks covering all facets of redistricting: how maps are drawn, debates over what constitutes a fair map, measures of redistricting quality, and similar topics.

1.4 Prior Engagements and Court Appointments

A full copy of all cases in which I have testified or been deposed is included on my c.v, attached as Exhibit 1. In 2021, I served as one of two special masters appointed by the Supreme Court of Virginia to redraw the districts that will elect the Commonwealth's representatives to the House of Delegates, state Senate, and U.S. Congress in the following decade. The Supreme Court of Virginia accepted those maps, which were praised by observers from across the political spectrum. *E.g.*, "New Voting Maps, and a New Day, for Virginia," *The Washington Post* (Jan. 2, 2022), *available at* <https://www.washingtonpost.com/opinions/2022/01/02/virginia-redistricting-voting-maps-gerrymandering/>; Henry Olsen, "Maryland Shows How to do Redistricting Wrong. Virginia Shows How to Do it Right," *The Washington Post* (Dec. 9, 2021), *available at* <https://www.washingtonpost.com/opinions/2021/12/09/maryland-virginia-redistricting/>; Richard Pildes, "Has VA Created a New Model for a Reasonably Non-Partisan Redistricting Process,"

Election Law Blog (Dec. 9, 2021), available at <https://electionlawblog.org/?p=126216>.

In 2019, I was appointed as the court's expert by the Supreme Court of Belize. In that case I was asked to identify international standards of democracy as they relate to malapportionment claims, to determine whether Belize's electoral divisions (similar to our congressional districts) conformed with those standards, and to draw alternative maps that would remedy any existing malapportionment.

I served as a Voting Rights Act expert to counsel for the Arizona Independent Redistricting Commission in 2021 and 2022.

2 Scope of Engagement

I have been retained by the law firm of Nelson Mullins on behalf of Secretary of State Kyle Ardoin to evaluate Louisiana's legislative maps ("Enacted Maps" or "Enacted Plan") and the demonstration maps proposed by their expert, Mr. William Cooper ("Cooper Illustrative Maps" or "Illustrative Maps"). I am being compensated at a rate of \$400.00 per hour to provide my expert analysis. I have been asked to explore the following questions in reference to the minority-majority districts that Mr. Cooper created, in addition to those contained in the Enacted Map:

- Whether the minority populations in the new minority-majority districts in the Illustrative Maps are compact?
- Whether the portion of the minority group that appears compact, if any, is sufficient to constitute a majority of the district?

3 Summary of Opinions

Based on the work performed as addressed in the following sections of the report, I hold to the following opinions to a reasonable degree of professional certainty:

- The newly created minority-majority districts in the Cooper Illustrative Map are not based upon compact minority populations. While some minority-majority districts using such populations are certainly possible in Louisiana, these new districts are created by aggregating geographically distant clusters of residents.
- Most (but not all) of these newly drawn districts do include a large, compact cluster of minority residents of voting age. However, the populations in these clusters are not large enough to constitute a majority of the district.

4 Data Relied Upon and Construction of Datasets

For purposes of this report, I reviewed and/or relied upon the following materials:

- Shapefiles for Louisiana political materials and demographic information at the block, precinct, and parish level, downloaded from the Redistricting Data Hub, available at <https://redistrictingdatahub.org/>;
- Data and maps provided by Plaintiffs' Experts;
- The computer code accompanying this report;
- Other documents referenced in this report.

In defining “Black Voting Age Population,” or “BVAP” for purposes of this report, at the instruction of counsel I am using the “any part Black” definition based upon data from the United States Census. That is to say, if a person informs the census that they identify, in whole or in part, as Black, I will count that individual as Black. The voting age population is calculated by summing the members of ethnic groups over the age of 18. Residents are counted as White only if they identify themselves as being White, with no other racial or ethnic identity specified.

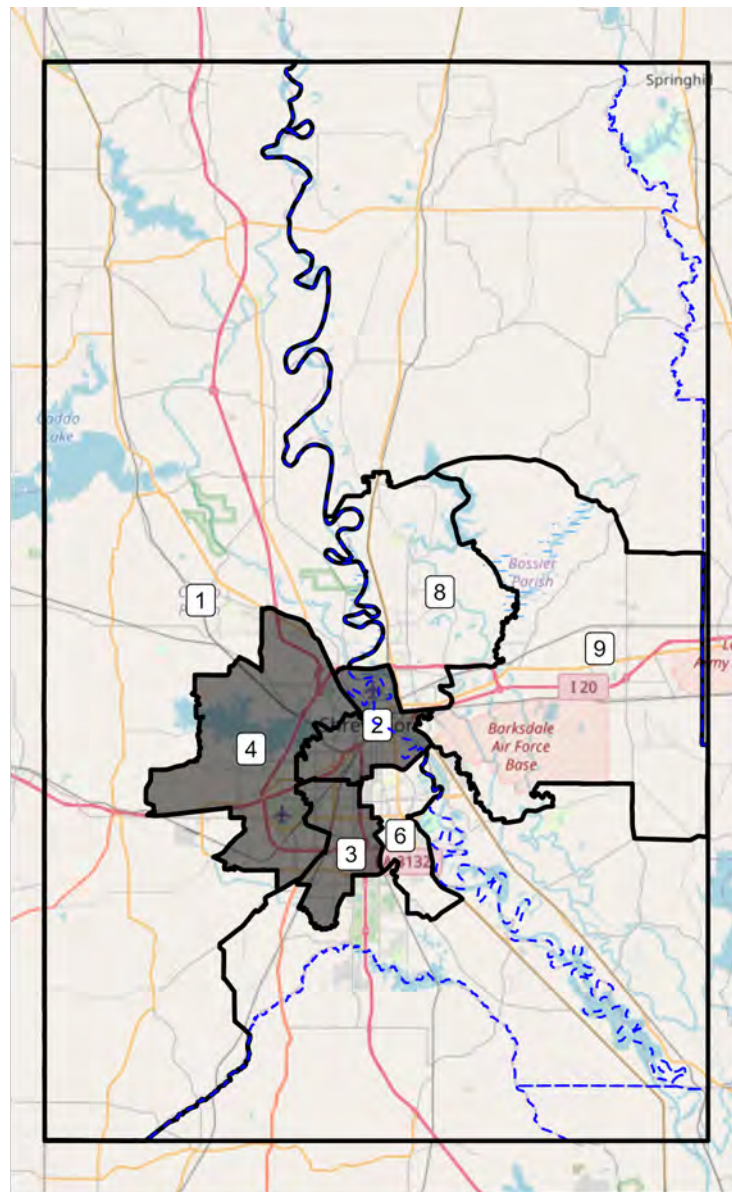
All shapefiles are projected using the WGS 84 projection. Calculations are performed using R, a computer programming package that is frequently used for data analysis in the statistics and political science disciplines.

5 Discussion of Additional Cooper House Districts

5.1 Shreveport Area

The Enacted Plan creates three majority Black districts in the Shreveport area: Districts 2, 3 and 4. District 2 is centered on downtown Shreveport and has a BVAP of 67.4%. District 3 is centered on southern Shreveport and has a BVAP of 73.9%. District 4 is located west of Shreveport and the areas around most of Cross Lake; the BVAP is 72.1%. They are depicted in Fig. 1 (Here, Black lines denote district boundaries, while dashed blue lines denote parish boundaries).

Figure 1: Black Majority BVAP Districts in the Shreveport Area, Enacted Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



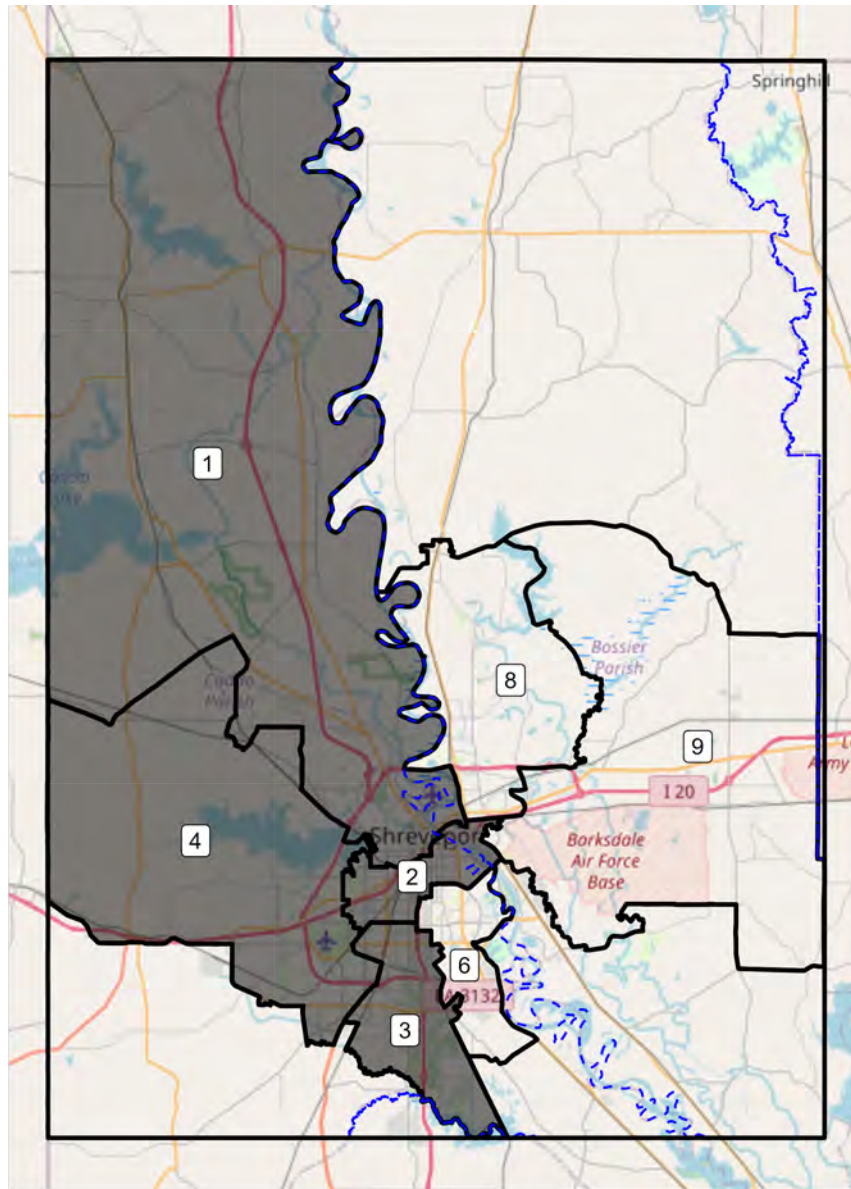
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Mr. Cooper's Illustrative Map, by contrast, creates four minority-majority districts in the Shreveport area: Districts 1, 2, 3 and 4 (Fig. 2). Illustrative Districts 2 and 3 are still centered on Shreveport, although they are pushed southward. Illustrative District 4 is pushed south and westward and extended to the Texas border. Illustrative District 1 is pushed into Downtown Shreveport relative to the Enacted Map, but still

extends out to the Texas and Arkansas borders. The BVAPs of districts 1, 2, 3 and 4 are, respectively, 55.3%, 67.3%, 58.8%, and 57.5%.

An individual analysis of these districts reveals that the populations included in Cooper's districts were not reasonably compact. In this analysis, I employ two approaches. First, I utilize a qualitative approach, relying in part on Justice O'Connor's instruction that redistricting is one area where "appearances do matter." *Shaw v. Reno*, 509 U.S. 630 (1993). Second, I utilize a quantitative approach, described below.

Figure 2: Black Majority BVAP Districts in the Shreveport Area, Cooper Illustrative Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



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5.1.1 Cooper Illustrative District 1

Consider an example of a district that my analysis suggests does not contain a compact minority population that is capable of comprising a majority in a reasonably configured district: Illustrative District 1. Figure 3 depicts a map, referred to as a choropleth map, which shows the census blocks included in the Illustrative Map's version of District 1. Each block is color coded by its BVAP; empty blocks are shaded in white.

This map nicely illustrates the non-compact nature of the population enclosed by the new Black majority Illustrative districts. Heavily Black areas are separated by overwhelmingly White neighborhoods, as the district stretches from downtown Shreveport to the Arkansas border.

Of course, choropleth maps have their limitations, because we cannot readily see whether the geographic (or, to use the jargon from spatial analysis, "areal") units (here, census blocks) contain one Black resident, or 100; these are simply percentages. However, there are other types of maps that allow us to see the distribution of people more clearly. For example, dot density maps take a geographic unit, such as a precinct or census block, and then fill it not with colors, but with dots according to the number of residents. Figure 4 provides an example of such a map, where one blue dot represents 10 Black residents (rounded to the nearest 10). We can see that the Black population of the district is quite spread out. There is a large cluster around downtown Shreveport, and then another cluster just past I-220. Other clusters occur in the small towns between Caddo Lake and Black Bayou Lake, along with smattering of Black residents in the rural areas across the countryside.

In this type of map, however, the intervening spaces are not necessarily empty. For example, there may be White voters residing in those blocks. Figure 5 provides one solution to this problem, by placing an orange "x" for every 10 White residents of voting age (rounded to the nearest 10). As you can see, there are also strong concentrations of White voters, particularly west of I-49 near Shreveport, extending northward to Caddo Lake and beyond.

Figure 3: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 1. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.

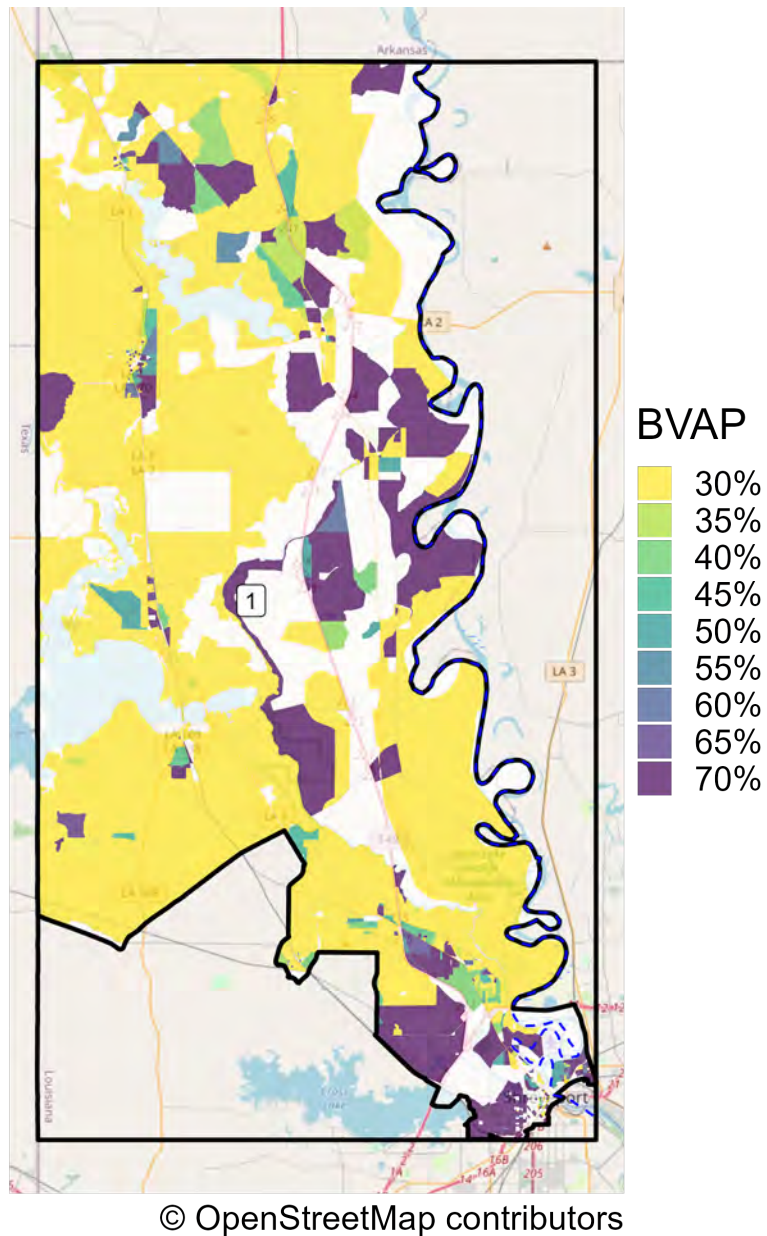


Figure 4: Location of Black population in Cooper Illustrative District 1. One blue dot represents 10 Black residents of voting age. Dashed blue lines reflect Parish boundaries.

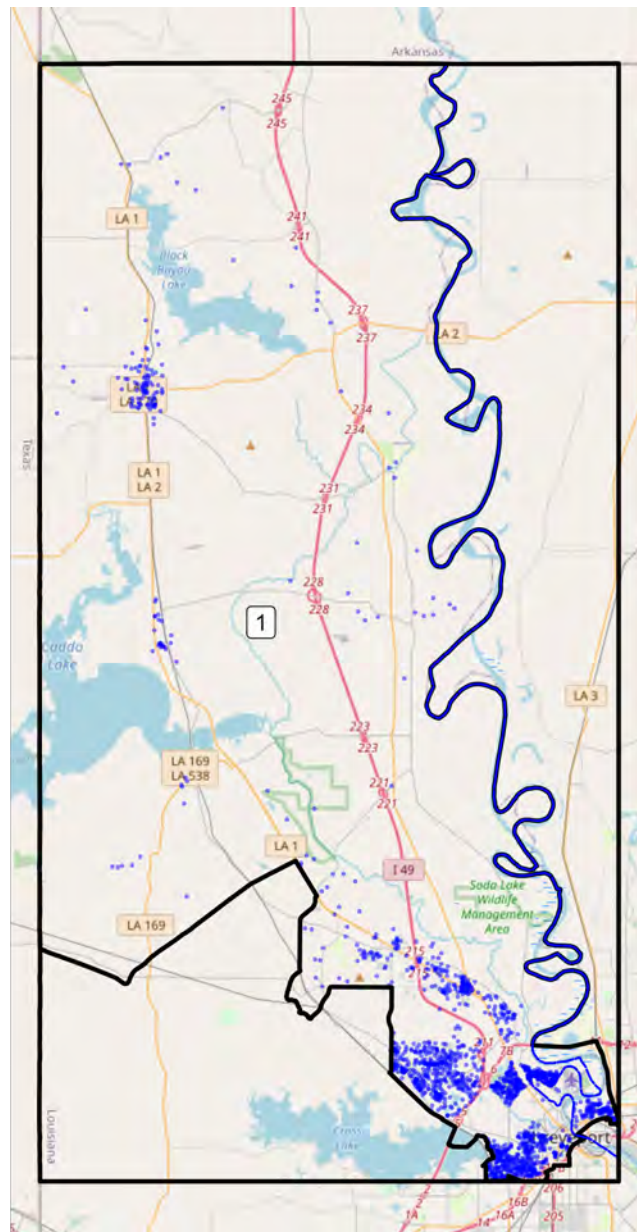
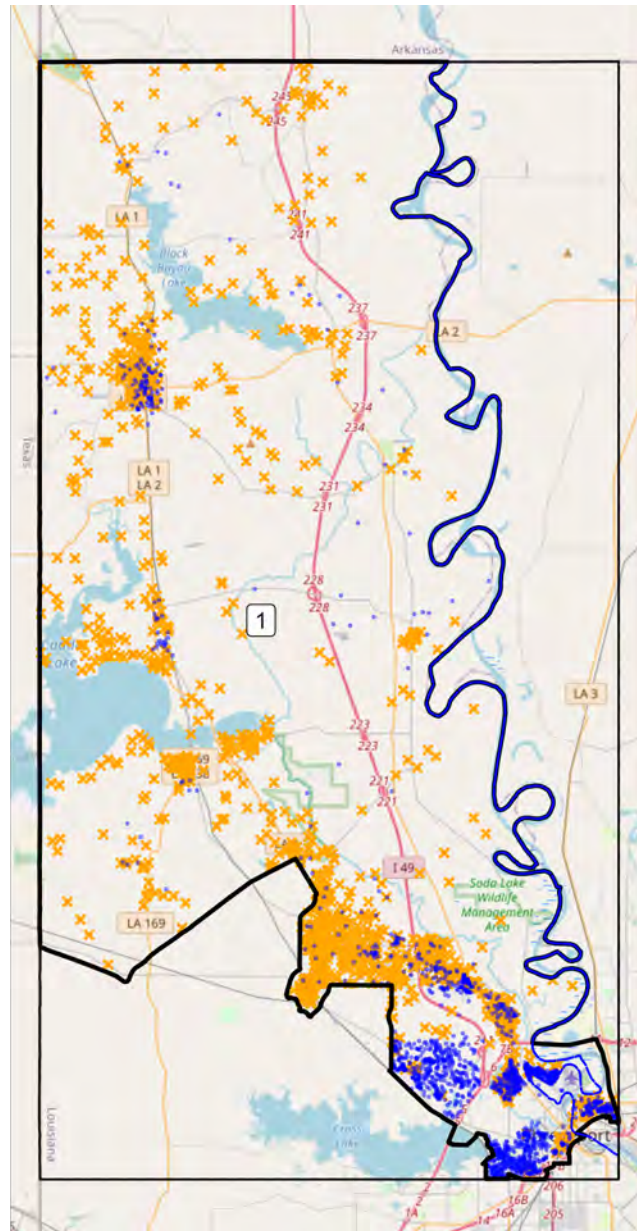


Figure 5: Location of Black and White populations in Cooper Illustrative District 1. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.



In other words, it is not necessarily the case that some fluke of geography is responsible for the dispersion of the Black population in this district. Much of the district is populated, but it is a mix of Black and White population centers.

Of course, we know that districts must comply with the one-person-one-vote constitutional requirement. It may be that there is a compact minority population sufficient to create a majority in a district in one discrete area, but that the district also extends out into neighboring areas simply to comply with constitutional requirements, capturing Black residents as a byproduct of geography. Put differently, if there were a Black population within, say, the boundaries of State Route I-220 in Shreveport, it would likely be irrelevant that there also happened to be a dispersed Black population included elsewhere in the district as it sought to comply with one-person-one-vote.

Illustrative District 1 has a VAP of 33,473, meaning that 16,737 residents are needed to constitute a majority. The area of greatest Black population concentration in the district – the portion of the district located within Shreveport south of I-220 and I-49 – contains only 11,556 Black residents of voting age. In other words, the portion of the district containing a compact Black population is well short of a majority, constituting just a third of the population of the district.

To create an additional district in the Shreveport area where the minority group is a numeric majority, Illustrative District 1 must extend well beyond the city limits, across heavily White areas to take in pockets of Black populations. This practice is colloquially known among redistricters as “baconmandering.” The Illustrative Map doesn’t do this because it must accumulate a sufficient number of residents; it does so because it must accumulate a sufficient number of *Black* residents.

I also explore this using a more quantitative approach. In particular, I utilize the moment of inertia method of calculating the compactness of a population. *See, e.g.*, Micah Altman, “Modeling the Effect of Mandatory District Compactness on Partisan Gerrymanders,” 17 *Pol. Geog.* 8, 995 (1998). The moment of inertia metric is actually among the oldest of the redistricting metrics. See James B. Weaver & Sidney W. Hess, “A

Procedure for Nonpartisan Districting: Development of Computer Techniques,” 73 *The Yale Law Journal* 228, 297-300 (Dec. 1963) (describing the moment of inertia metric and its use in redistricting); Isobel M.L. Robertson, “The Delimitation of Local Government Electoral Areas in Scotland,” 33 *Jrnl. Op. Rsrch. Soc.* 517, 518 (June 1982) (describing a redistricting algorithm employing the moment of inertia approach for population compactness); Henry F. Kaiser, “An Objective Method for Establishing Legislative Districts,” 10 *Midwest Jrnl. Pol. Sci.* 200 (1966) (providing a lengthy mathematical description of the moment of inertia as applied to redistricting); S.W. Hess, et al, “Nonpartisan Political Redistricting by Computer,” 13 *Op. Rsrch.* 998, 999 (1965).

The moment of inertia approach is defined as the “sum of squared distances from each person to [their] district’s center.” Hess et al., at 999. To find the most compact Black population in each proposed district, we first find the centroids of each individual precinct. We (really, a computer) pick a precinct to begin with and identify all adjacent precincts. We pick one of those adjacent precincts and determine what the population centroid would be if they were in the same district. Next, we calculate the distance from each precinct to the population centroid, square that distance, and multiply by the population of the precinct. The moment of inertia will be the sum of these weighted squared distances. We calculate this value for every adjacent precinct and select the smallest moment. These two precincts are then locked together in the same district, and the process then repeats, until the BVAP of the precincts equals half of the total population of the original district. We then perform the entire algorithm such that it begins once for every precinct in the proposed district and identify the district with the smallest moment of inertia as the most compact grouping of Black residents over the age of 18 in the district.

One problem with the moment of inertia approach is that after a heavily populated cluster is identified, it will tend to avoid other heavy population clusters. In this context, it is a relatively minor problem, as the entire point of the exercise is to see if multiple clusters separated by substantial distances are required to be combined in order to create

a 50% + 1 BVAP district.

Regardless, counsel has also asked me to employ an area-based algorithm to identify compact population clusters. The algorithm employed here is similar to that utilized in some redistricting simulations. *See, e.g.*, Jowei Chen & Jonathan Rodden, “Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures,” 8 Q. J. of Poli. Sci. 239 (2013). It is also consistent with the definition of “compact” as an area-based metric in some contemporary dictionaries. E.g., Webster’s New Twentieth Century Dictionary, Unabridged 368 (2d ed. 1980) (defining the adjective version of compact as “1. Closely and firmly united, as the particles of solid bodies; solid; dense; as a compact mass of people; a compact body or substance. . . . 5. taking little space; arranged neatly in a small space. 6. Designating or of a relatively small, light, economical model of automobile. Syn. – close, condensed, hard, solid) (including other irrelevant definitions such as 2. Composed of, 3. Held together, 4. Brief, as in “compact discourse”).

To identify this, I used the same basic algorithm as above, except that rather than using the BVAP to weight squared distances, I instead utilized the area of precincts. By favoring precincts with centroids that are near one another, and favoring smaller precincts over larger precincts, the algorithm will build groups that take up little area. Once again, the algorithm will repeat for every precinct until the BVAP of the grouping is equivalent to 50% + 1 of the overall population of the district. Note that I do not always provide results for both techniques in the interest of brevity, however either approach may be calculated from the provided computer code implementing these approaches.

Figures 6 - 7 show the results of both algorithms for District 1. The first map shows the most compact grouping of Black residents sufficient to constitute a majority of Illustrative District 1’s population using the moment of inertia method, while the second map shows the most compact grouping using the areal/Chen & Rodden method. Note that the approach sometimes produces “holes” on the map. This is because we are searching for a minimally compact group; the contiguity requirement of redistricting may, in fact, require an even less compact group to be drawn into a district.

Figure 6: Most compact group of Black residents of voting age in Cooper Illustrative District 1 sufficient to constitute a majority of the population in the district, using the moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,737 Black residents of voting age this approach identifies within the boundaries of of Illustrative District 1.

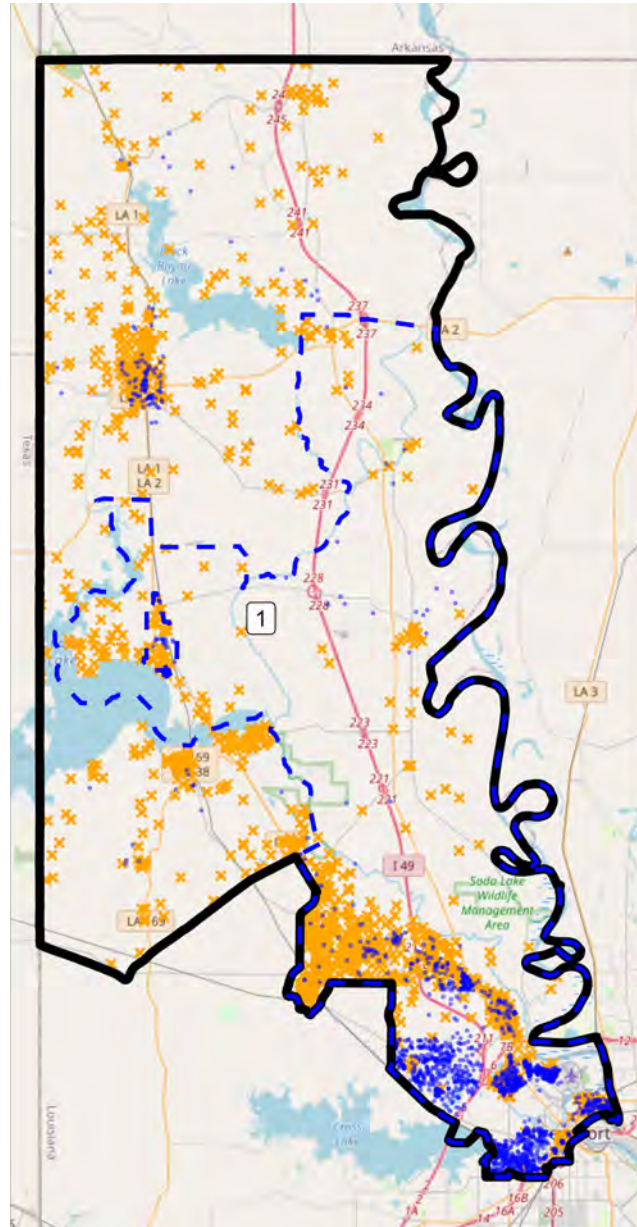
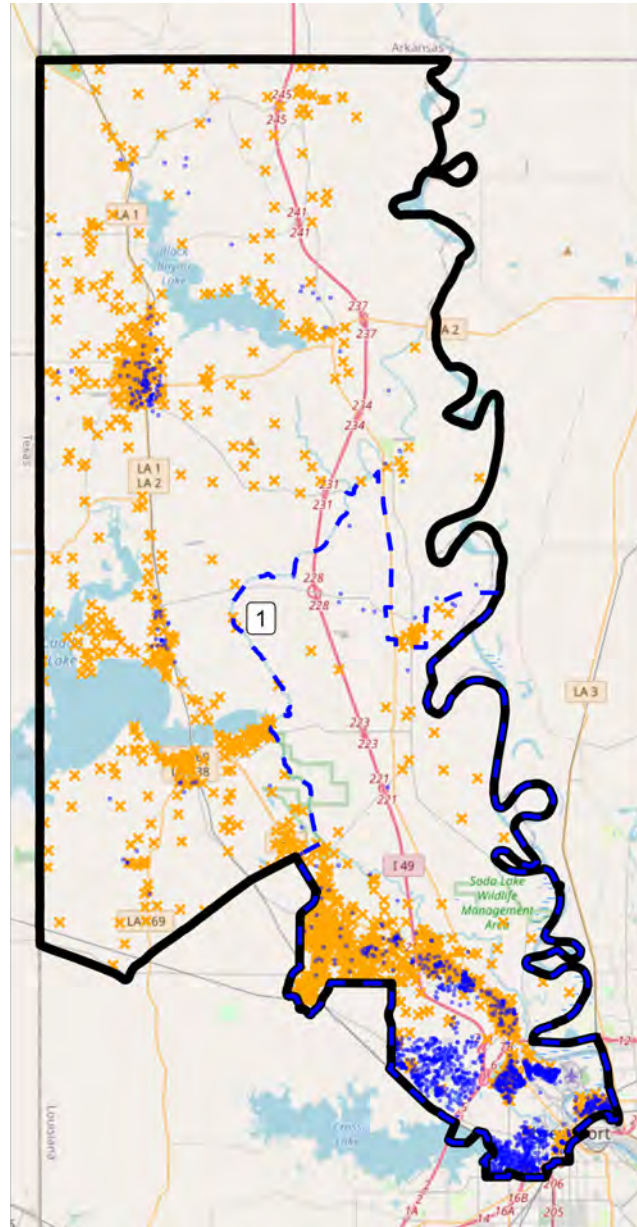


Figure 7: Most compact group of Black residents of voting age in Cooper Illustrative District 1 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,737 Black residents of voting age this approach identifies within the boundaries of Illustrative District 1.



These maps show that the most compact Black population in this district configuration that would be sufficient to constitute a majority of the district's population stretches beyond Shreveport, out to Caddo Lake, and to the outskirts of Mooringsport and Belcher, which are located almost halfway to the Arkansas border. In the process, the most compact configuration of Black residents in the district that would be sufficient to constitute a majority of the district also crosses heavily White areas and depopulated areas as well. The same is true using the areal method.

In other words, this analysis shows that the heavily White, rural precincts in this District are not just added to achieve population equality. They are added to join isolated Black residents with a more compact Black population in Shreveport in order to meet the minority-majority threshold.

That is to say, here, these isolated Black population pockets are not incidental to the 50%+1 district, they are needed to draw such a district in the configuration Mr. Cooper attempts to create while attempting to draw four Black majority districts in the Shreveport area. In short, while there appears to be a compact minority population near the Shreveport area that can support three Black majority districts, that population is not sufficient to constitute a majority of the population in the four majority Black districts drawn in the Illustrative Map.

5.1.2 Cooper Illustrative District 2

To be clear, this is not an approach that will intrinsically defeat a minority-majority district. Consider districts 2, 3 and 4 in the Shreveport Area. District 2 is a bit tricky, because the Black population exists in three clusters, separated by a heavily white area and the Red River. Nevertheless, there exists a sufficient number of Black residents on the western side of the river to create a majority of the population in the district, and most of the blocks separating the two clusters are at least diverse. Figures 8 - 9 illustrate this.

Whichever population compactness metric we employ, we come up with the same grouping of Black voters. The data show that there are a sufficient number of Black voters over the age of 18 in Cooper Illustrative District 2 to comprise a majority of residents in the district in a relatively compact group. In other words, the remaining residents of Cooper's Illustrative District 2, white or Black, would not have to be added to achieve a majority-BVAP district, but rather are added to meet the equal population requirement.

Figure 8: Most compact group of Black residents of voting age in Cooper Illustrative District 2 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,457 Black residents of voting age this approach identifies within the boundaries of Illustrative District 2.

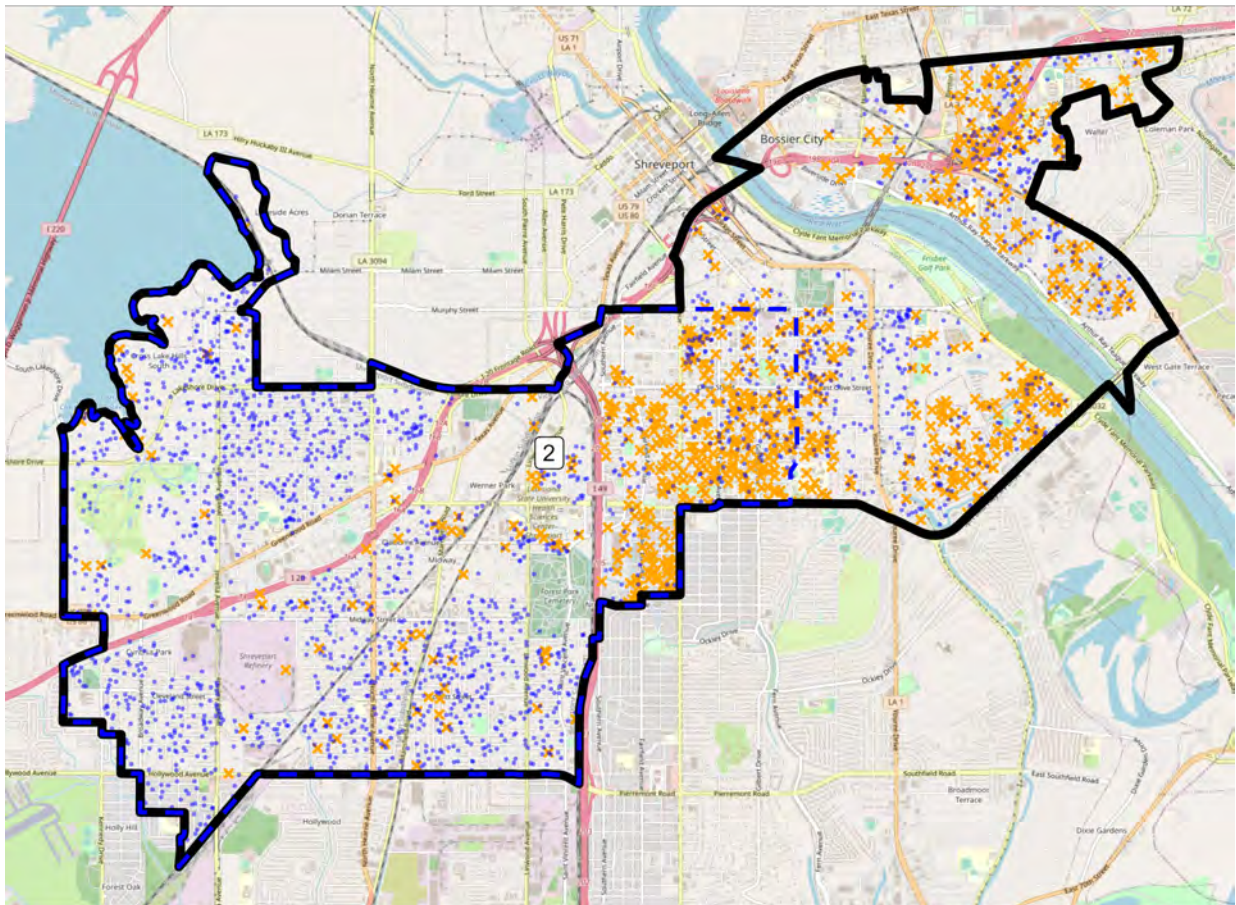
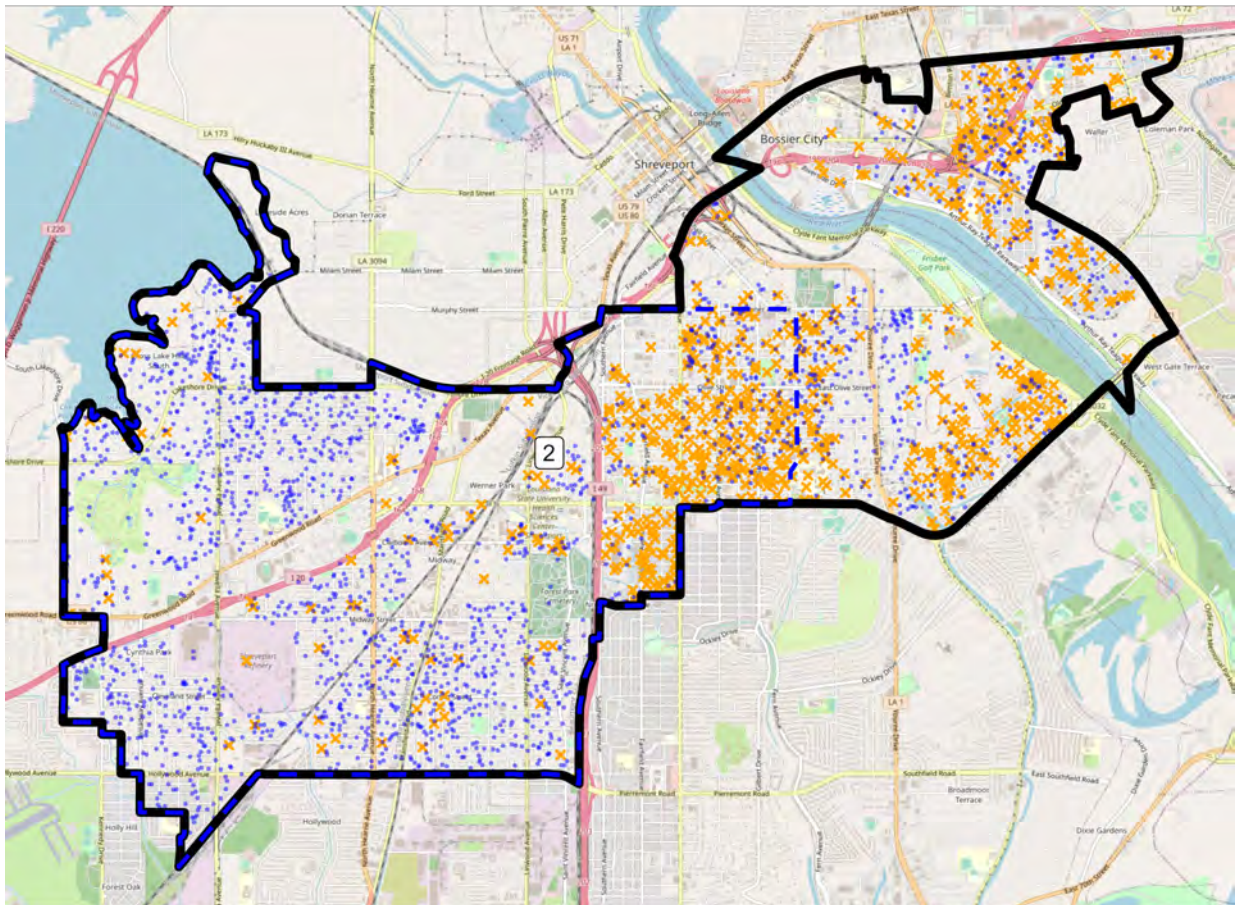


Figure 9: Most compact group of Black residents of voting age in Cooper Illustrative District 2 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,457 Black residents of voting age this approach identifies within the boundaries of Illustrative District 2.



5.1.3 Cooper Illustrative District 3

Likewise, Illustrative District 3 involves compact Black populations that comprise a majority of the voting age population of the district. As illustrated in figures 10 - 13, it contains a large Black population north of Louisiana Highway 3132 that is almost sufficient to constitute a majority on its own.

In Illustrative District 3, we see that the most compact grouping of Black voters over the age of 18 that would comprise a majority in the districts drawn by Mr. Cooper does extend out away past the most heavily Black precincts. But it is not as disparate a grouping as some of the districts that follow.

Figure 10: Percent BVAP in census blocks contained in Cooper Map, Illustrative District 3. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.

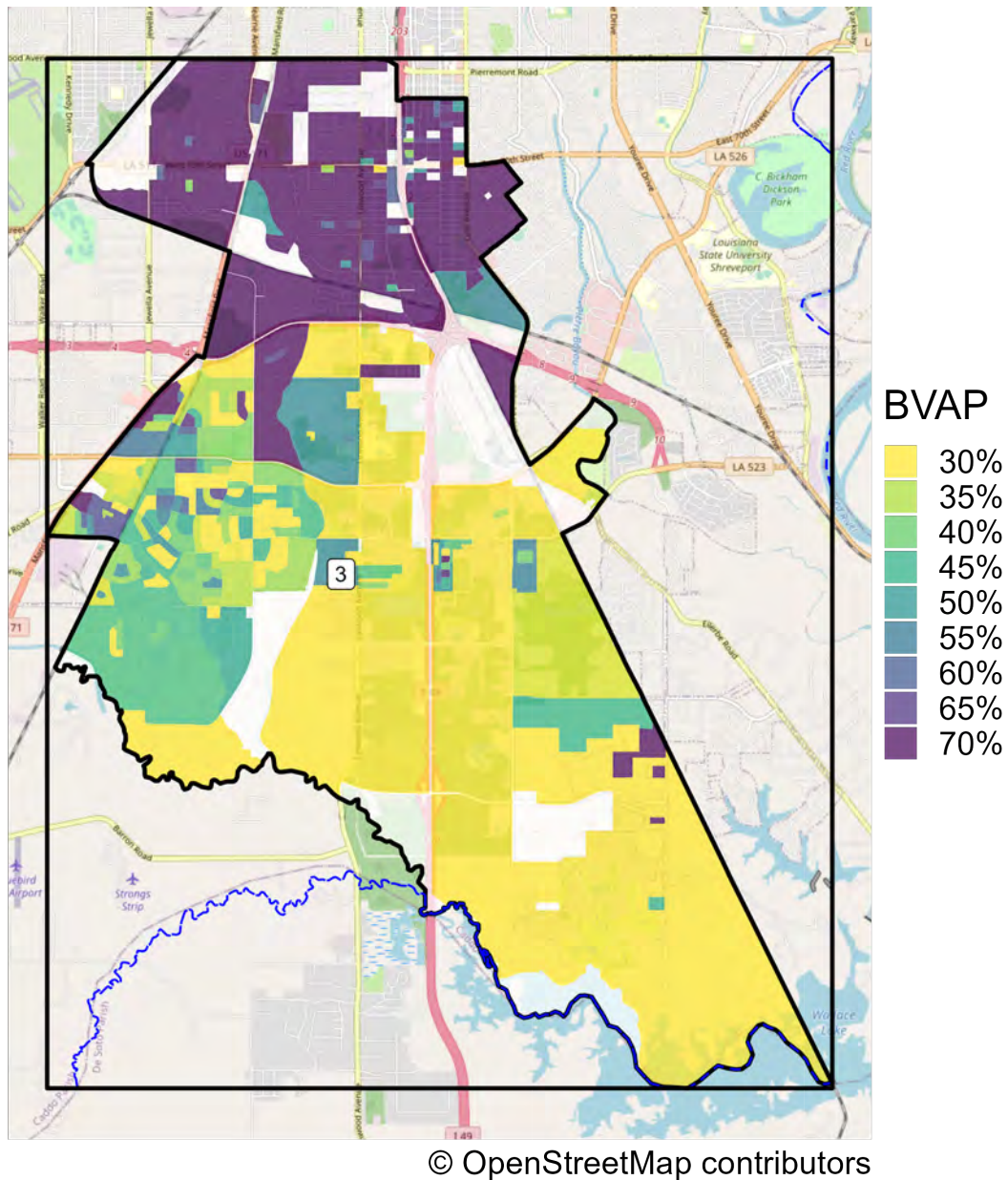


Figure 11: Location of Black and White populations in Cooper Illustrative District 3. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

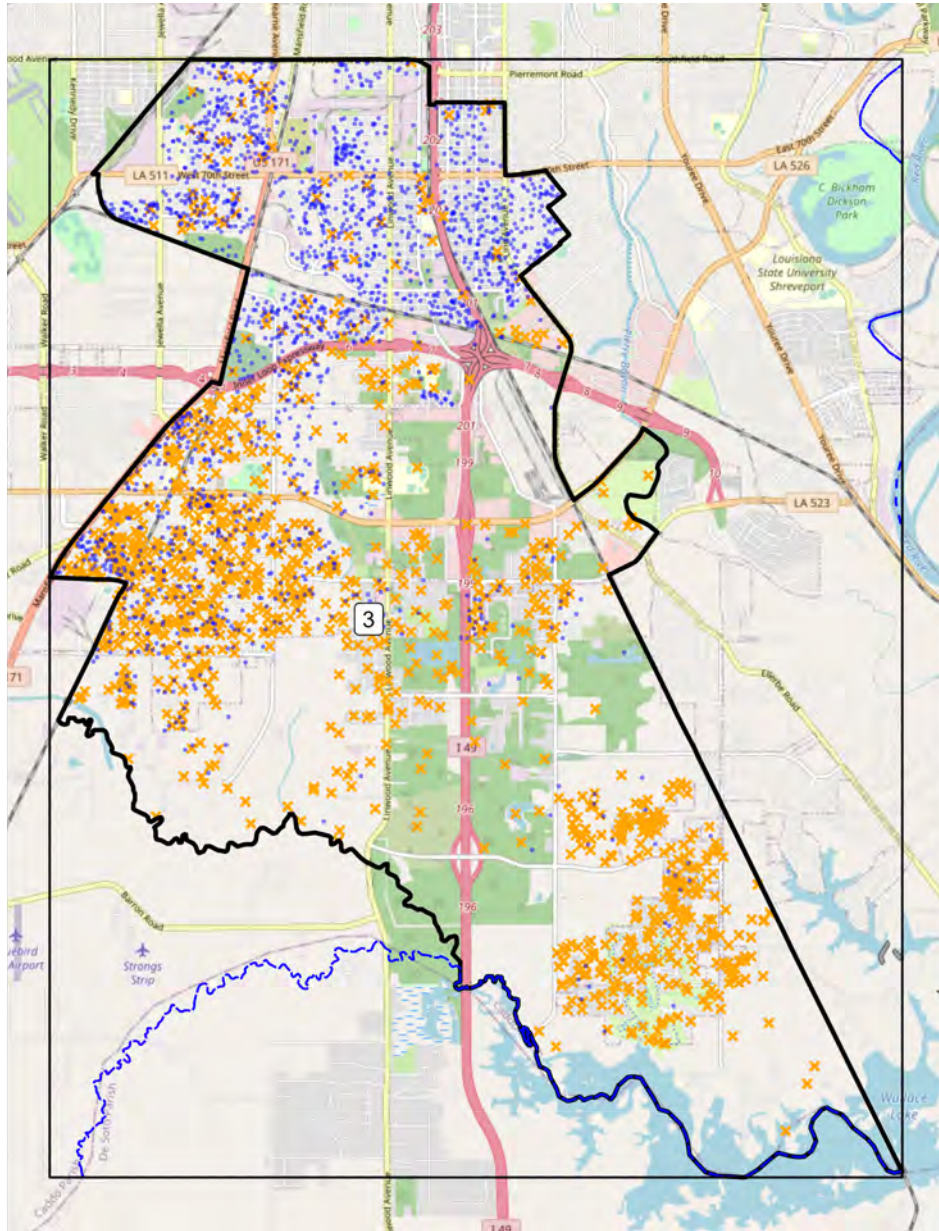


Figure 12: Most compact group of Black residents of voting age in Cooper Illustrative District 3 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,558 Black residents of voting age this approach identifies within the boundaries of Illustrative District 3.

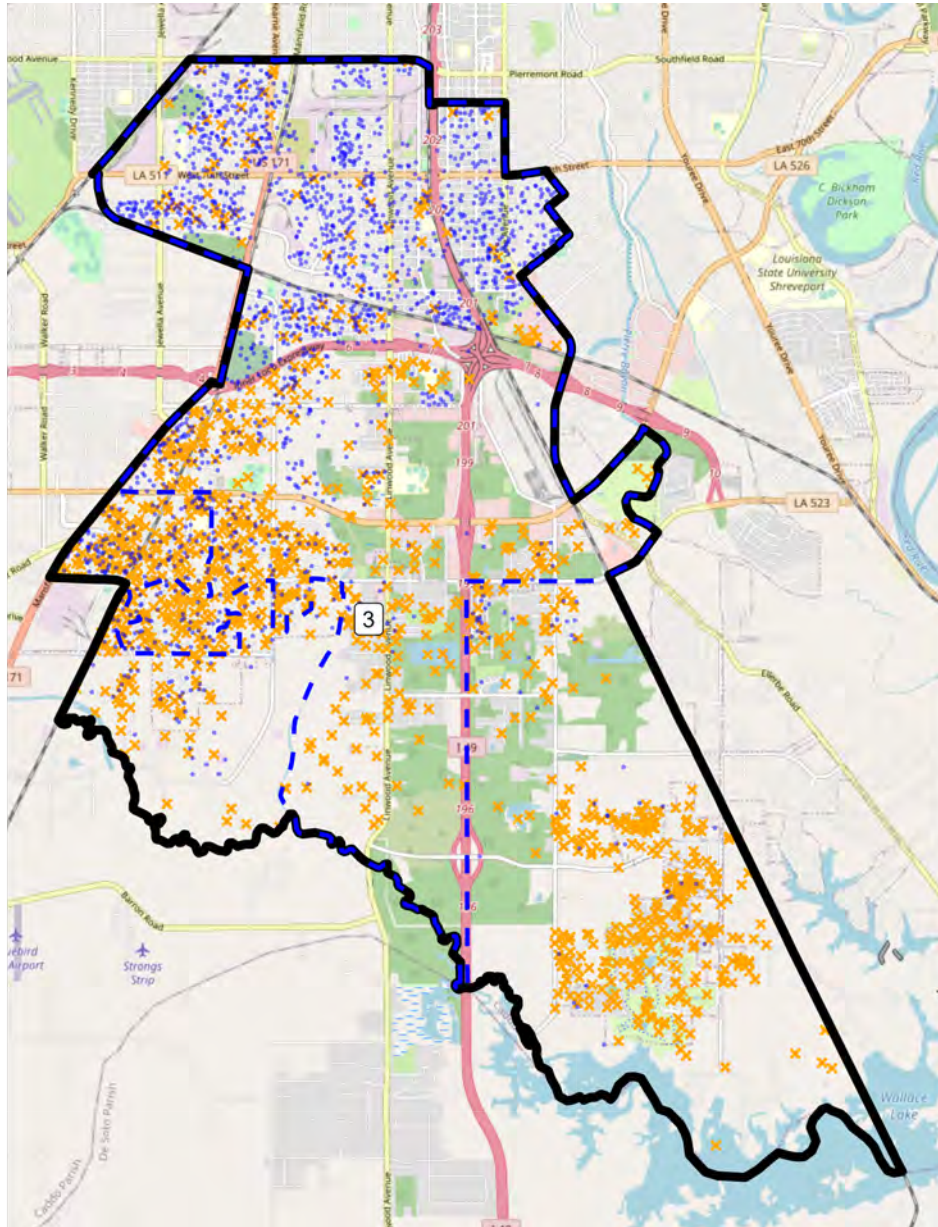
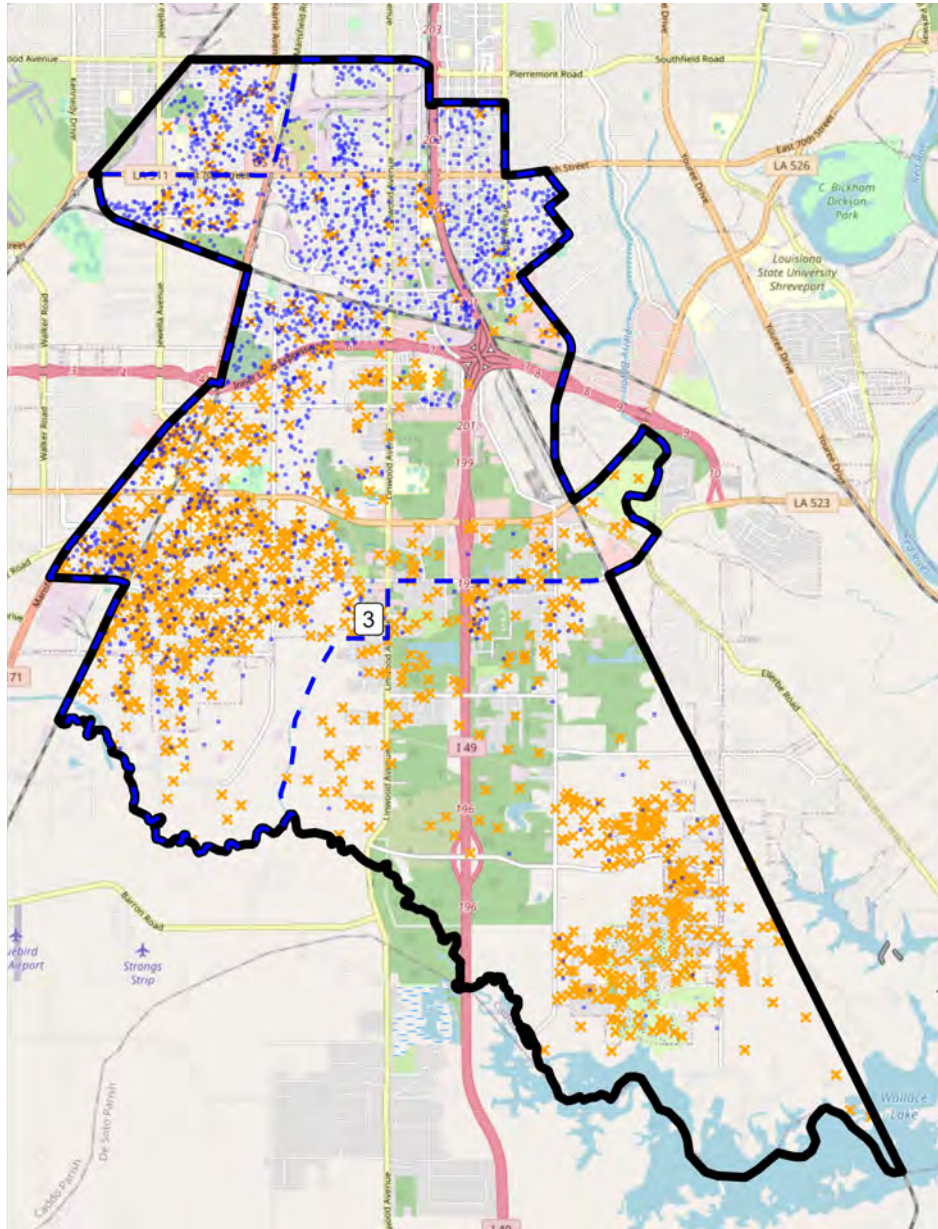


Figure 13: Most compact group of Black residents of voting age in Cooper Illustrative District 3 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,558 Black residents of voting age this approach identifies within the boundaries of Illustrative District 3.

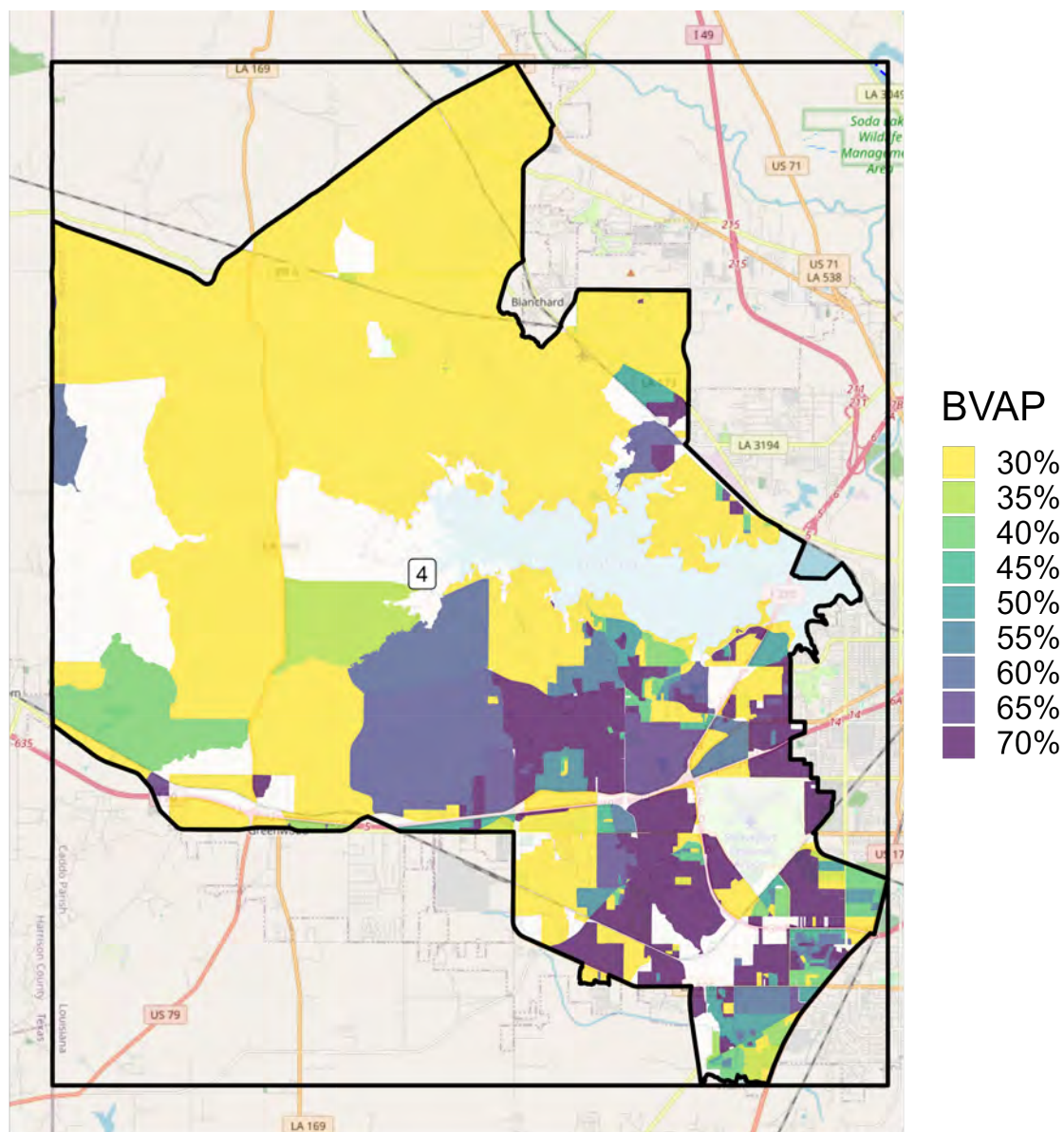


5.1.4 Cooper Illustrative District 4

The same is true of Illustrative Map District 4 in this area. As you can see from the choropleth map and dotplot maps, the bulk of the district's Black population is contained in a single area in the southeastern portion of the district. The rest of the district is more rural and is heavily White.

But this heavily rural, White area is not added to the district to find disparate Black residents who can fill out a district at 50% + 1. While the moment of inertia (compact population) approach does reach out into those areas (because adding the heavily populated, heavily Black precinct southwest of Cross Lake would move the population moment of inertia considerably), the compact area/Chen & Rodden approach avoids them altogether.

Figure 14: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 4. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



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Figure 15: Location of Black population in Cooper Illustrative District 4. One blue dot represents 10 Black residents of voting age. Dashed blue lines reflect Parish boundaries.

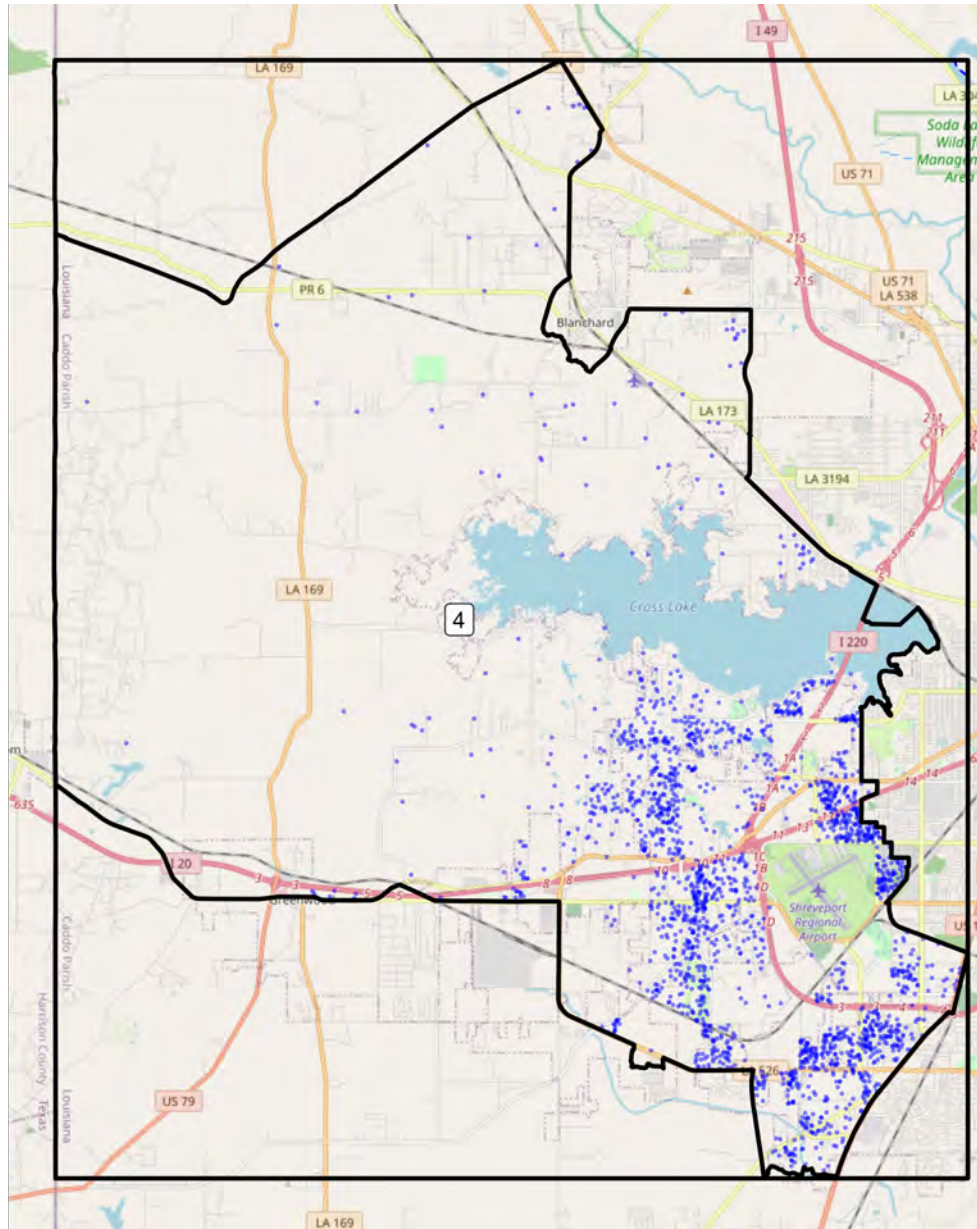


Figure 16: Location of Black and White populations in Cooper Illustrative District 4. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

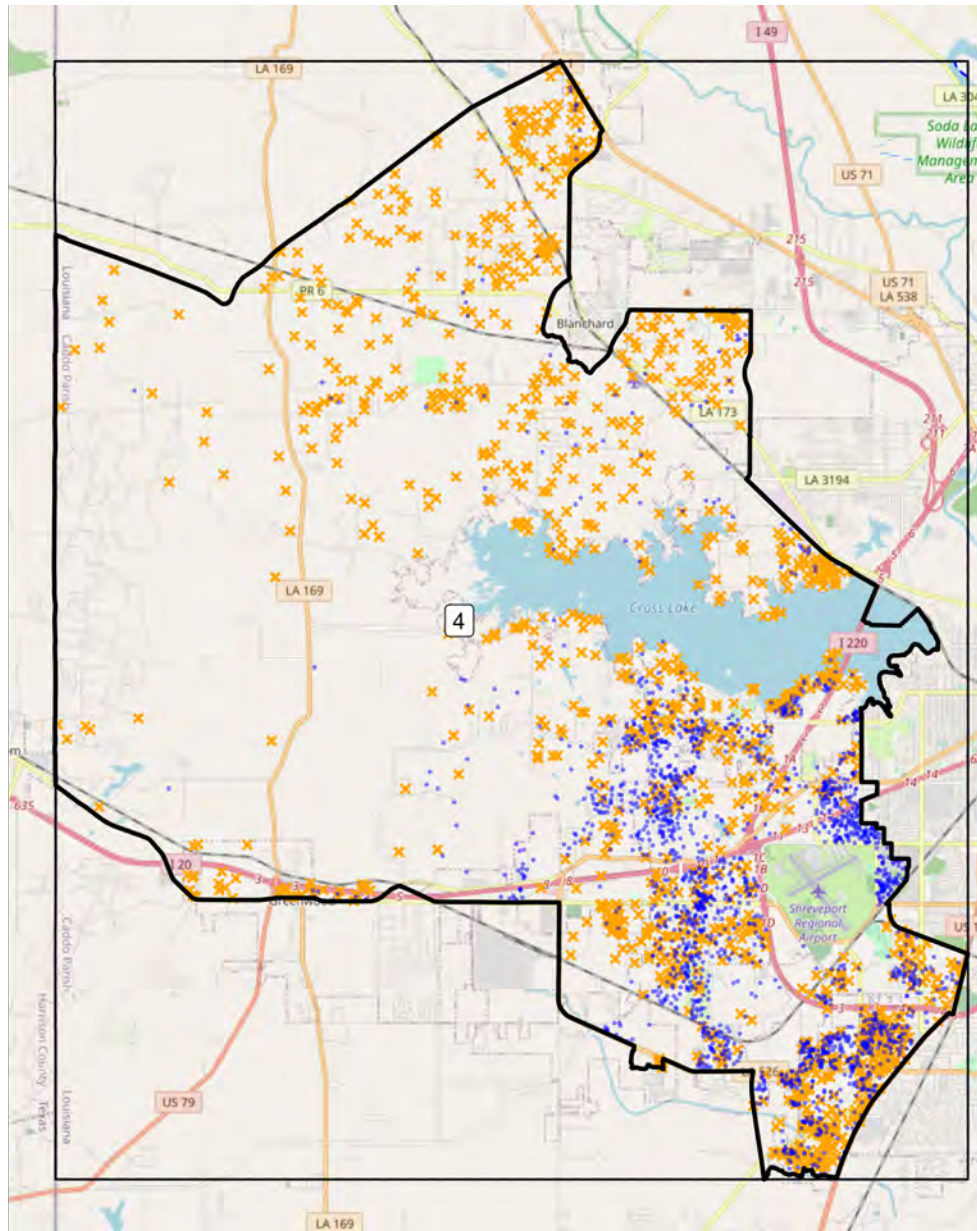


Figure 17: Most compact group of Black residents of voting age in Cooper Illustrative District 4 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 17,553 Black residents of voting age this approach identifies within the boundaries of Illustrative District 4.

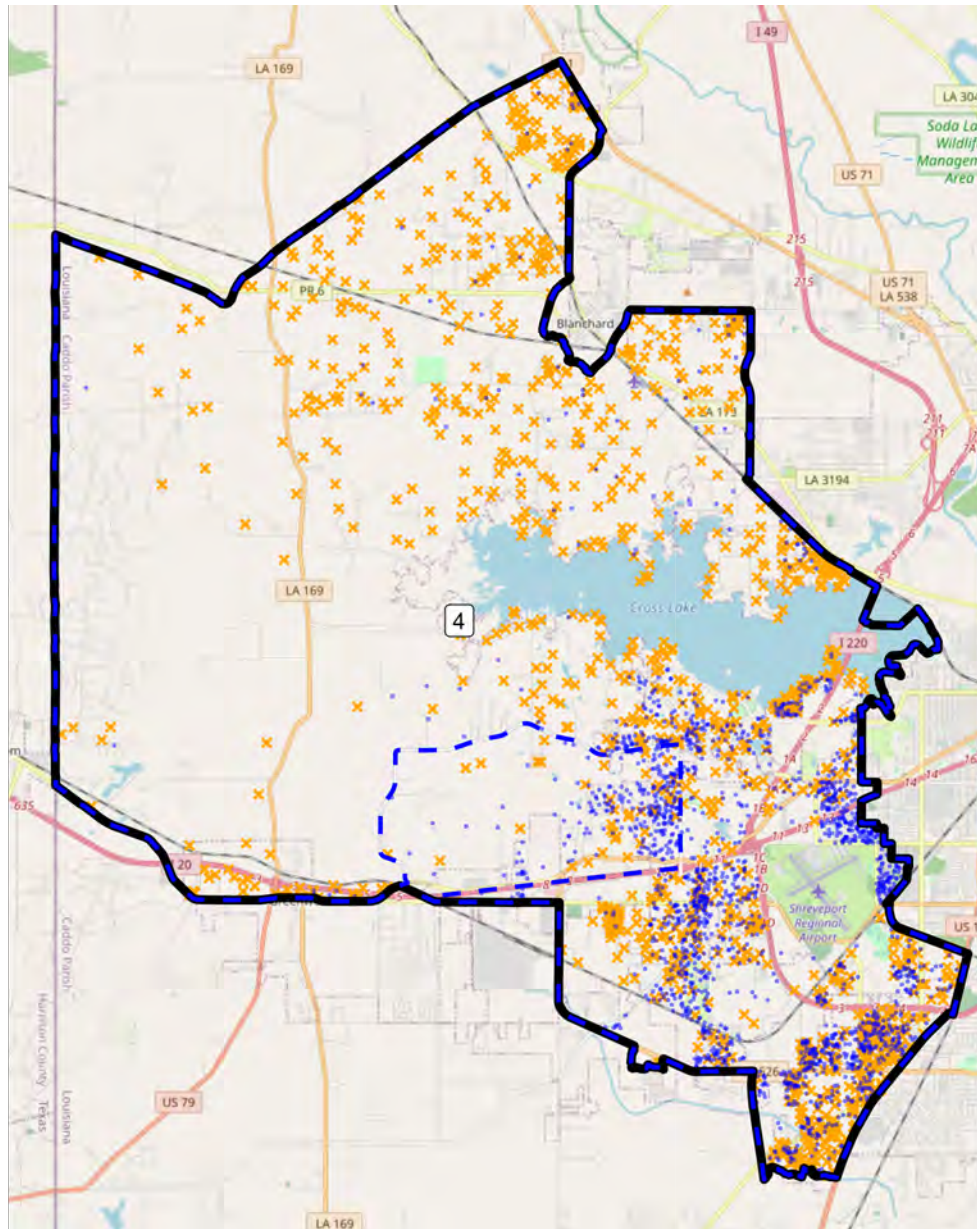
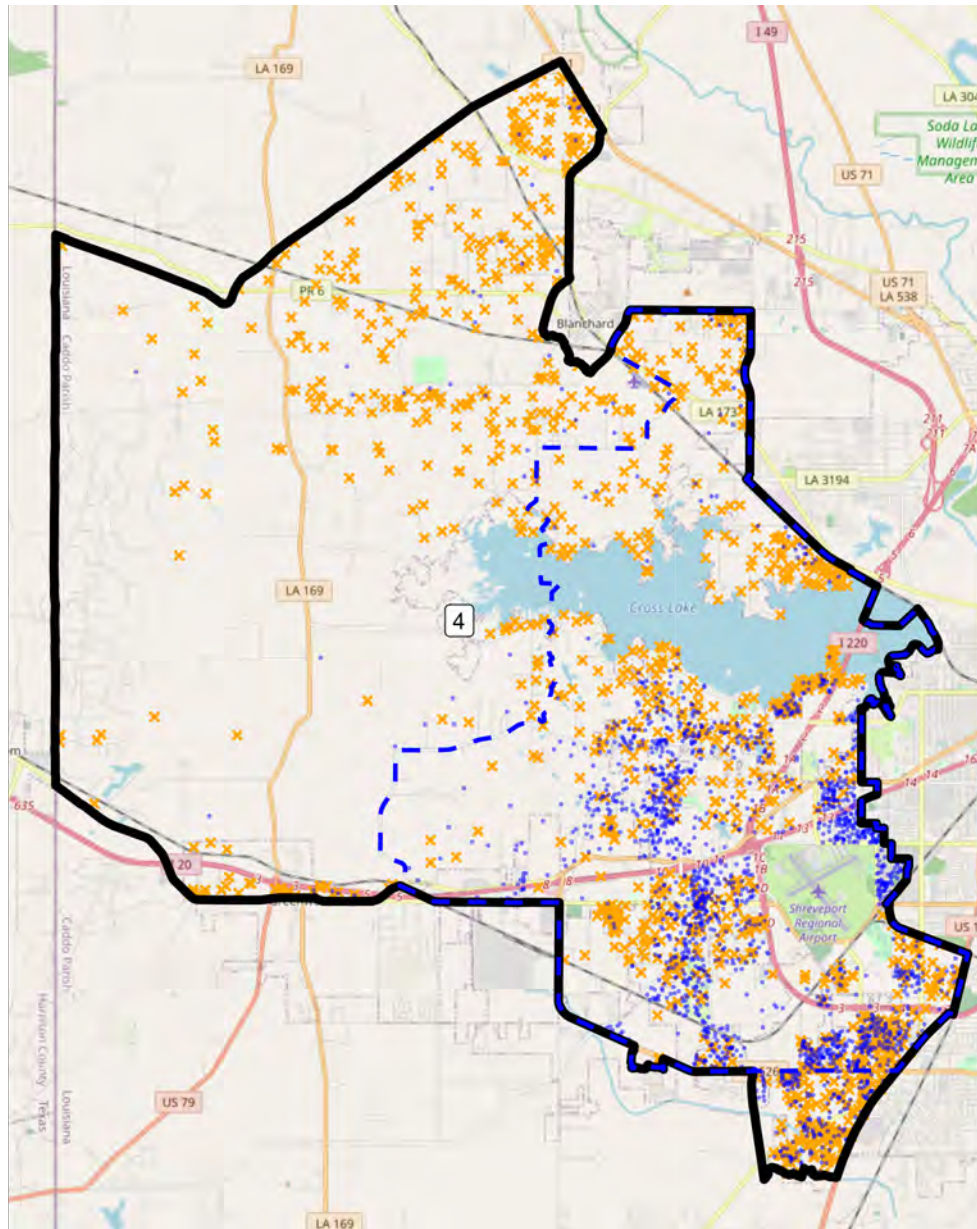


Figure 18: Most compact group of Black residents of voting age in Cooper Illustrative District 4 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 17,553 Black residents of voting age this approach identifies within the boundaries of Illustrative District 4.



5.2 Natchitoches Area

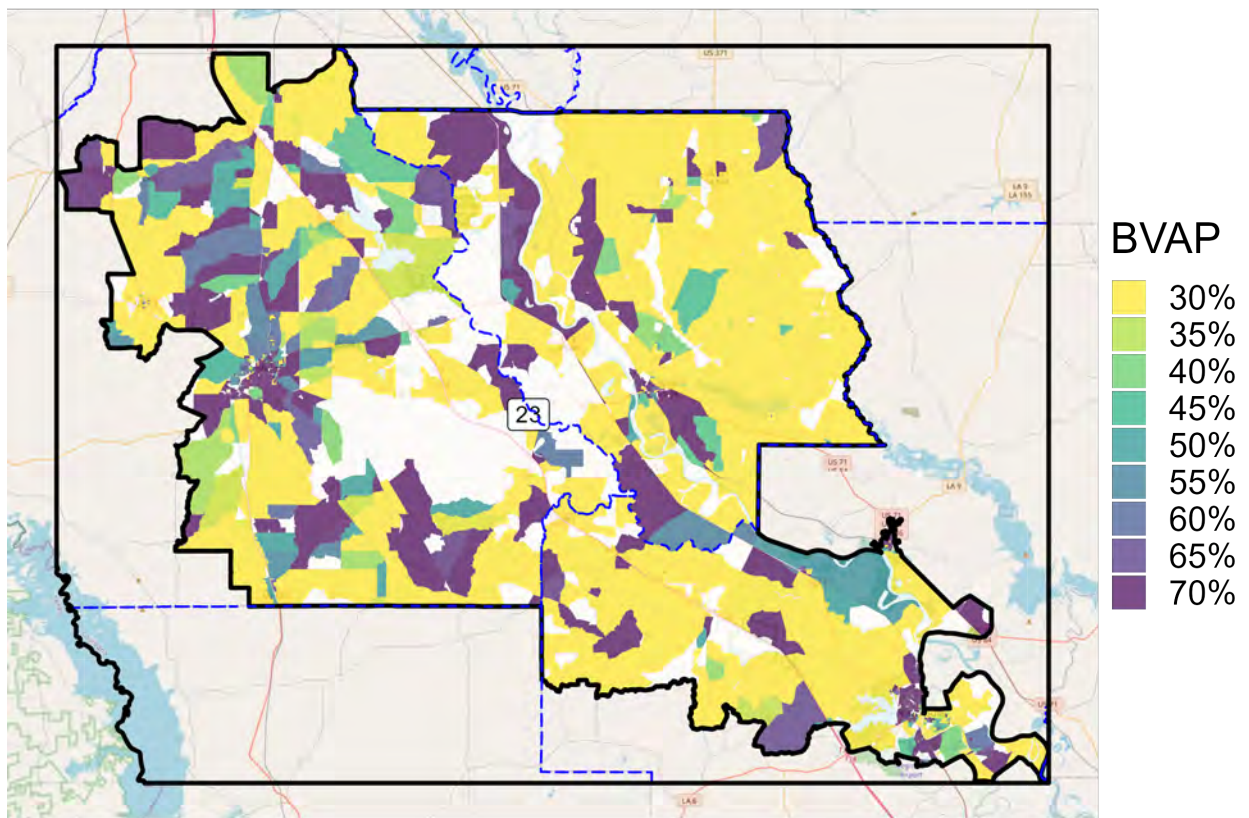
5.2.1 Cooper Illustrative District 23

Cooper's Illustrative House District 23 creates a Black majority district in northwestern Louisiana. It is 50.56% Black. The Enacted Map has no Black majority district in this area. This is because the district Mr. Cooper creates does not contain a compact minority population; no such district can be drawn here. Instead, it plucks geographically distant populations from Natchitoches and Campti in the southeast, Coushatta in the northeast, and Mansfield in the West, and collects them in a single district. The Voting Age Population of the district is 34,987, meaning that to consist of a majority of the VAP would require a group to have a population of at least 17,494 individuals; the BVAP of the district contained in the Illustrative Map is 17,690.

The precincts around Natchitoches and Campti have a Black population of 9,261; the precincts around Coushatta and Edgefield have a Black population of 1,825, and the precincts around Mansfield and South Mansfield have a BVAP of 4,246. Even aggregating these numbers is insufficient to push the district to minority-majority status. Achieving that requires picking up Black voters living in heavily White rural blocks east of Coushatta and north of Mansfield. We see this illustrated in Figures 19 - 23.

None of the disparate population clusters in the district come close to containing Black populations of 17,494, and even combined they fail to hit $50\% + 1$. In other words, there's no compact minority grouping in this district that can constitute a majority of the voting age population in the district; any minority-majority district in this area will necessarily sprawl across heavily White, rural precincts. Note that because the BVAP of the district is so close to the minimal BVAP required to draw a $50\% + 1$ BVAP district, the most compact Black population sufficient to constitute a majority in the district is contained in an area that is coterminous with the district boundaries; the blue dashed lines in the maps above overlap with the black district edge.

Figure 19: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 23. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



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Figure 20: Location of Black population in Cooper Illustrative District 23. One blue dot represents 10 Black residents of voting age. Dashed blue lines reflect Parish boundaries.

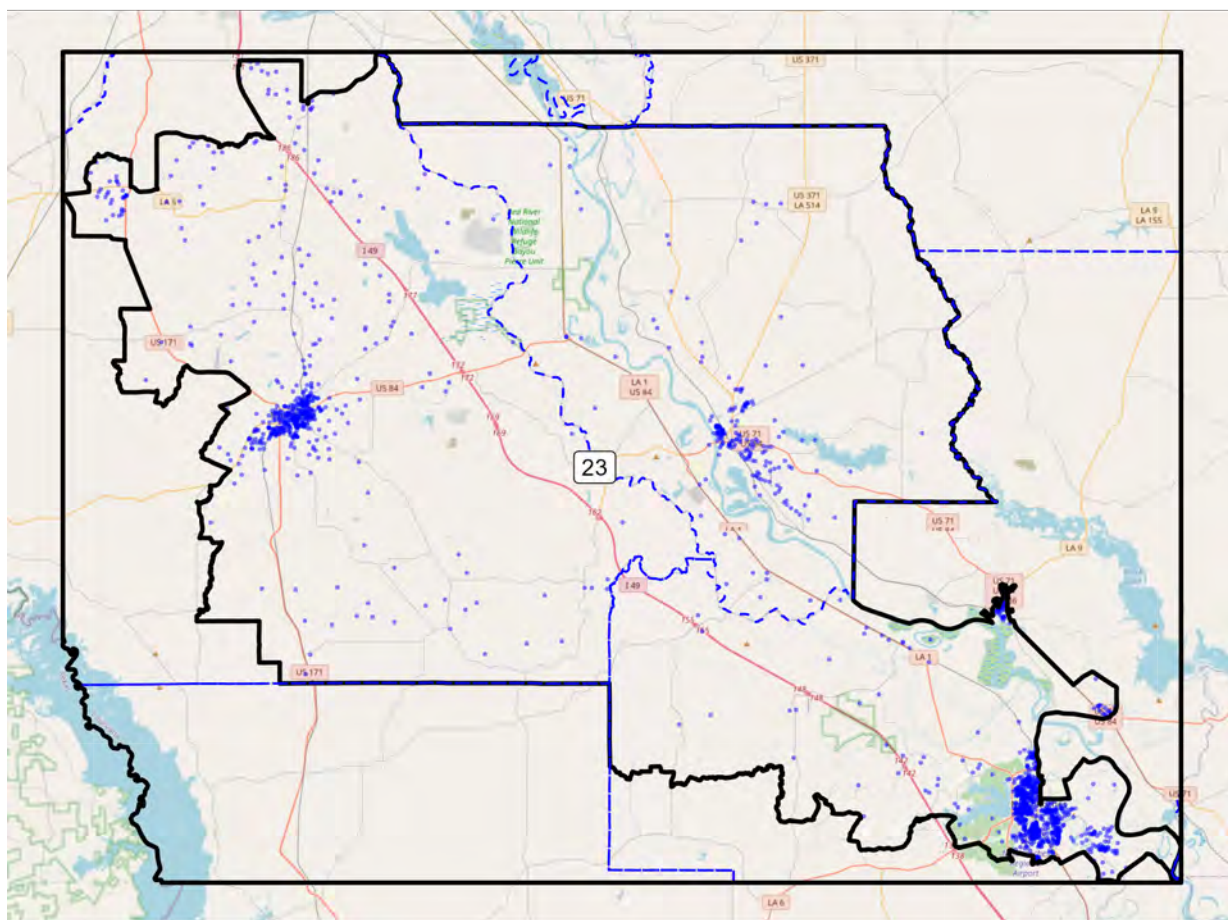


Figure 21: Location of Black and White populations in Cooper Illustrative District 23. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

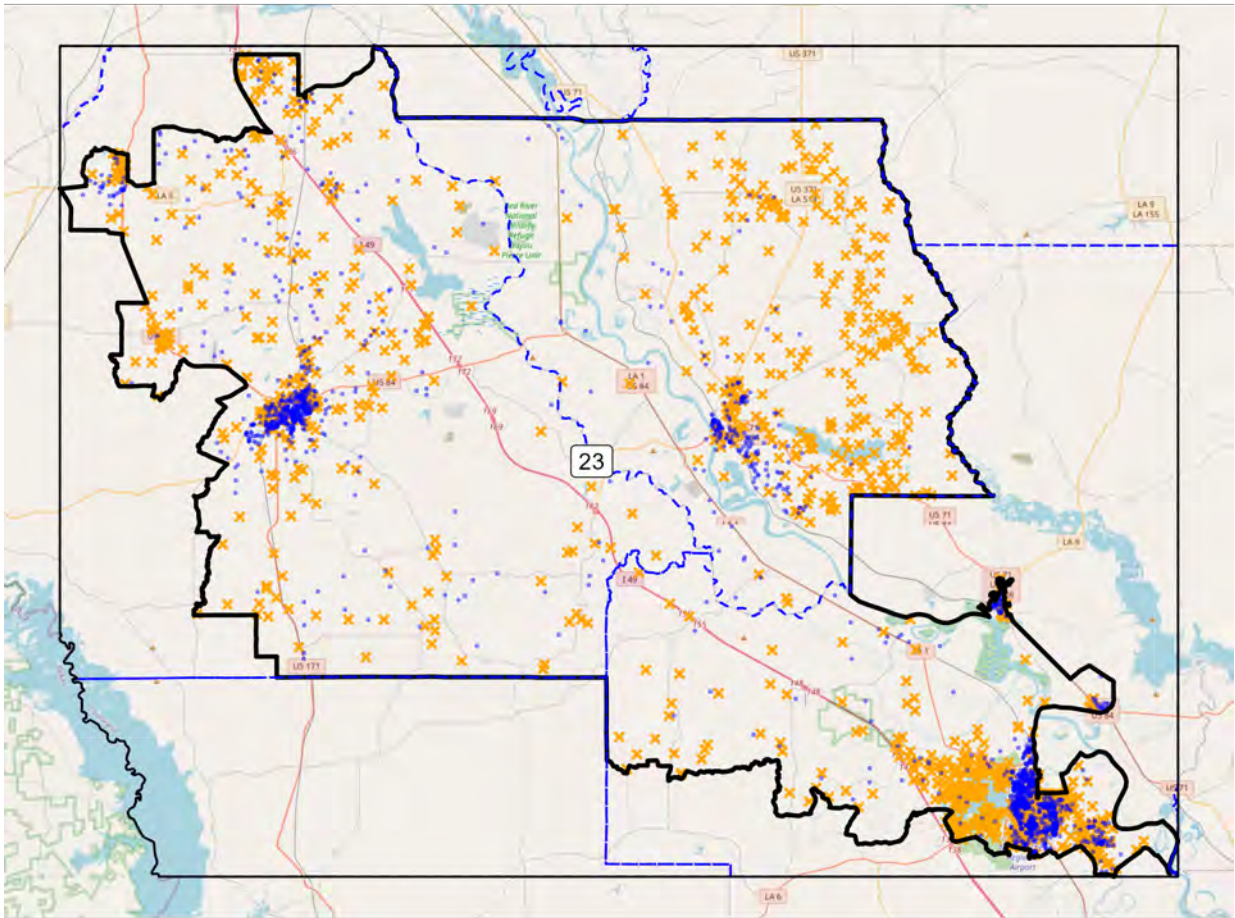


Figure 22: Most compact group of Black residents of voting age in Cooper Illustrative District 23 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 17,494 Black residents of voting age this approach identifies within the boundaries of Illustrative District 23. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

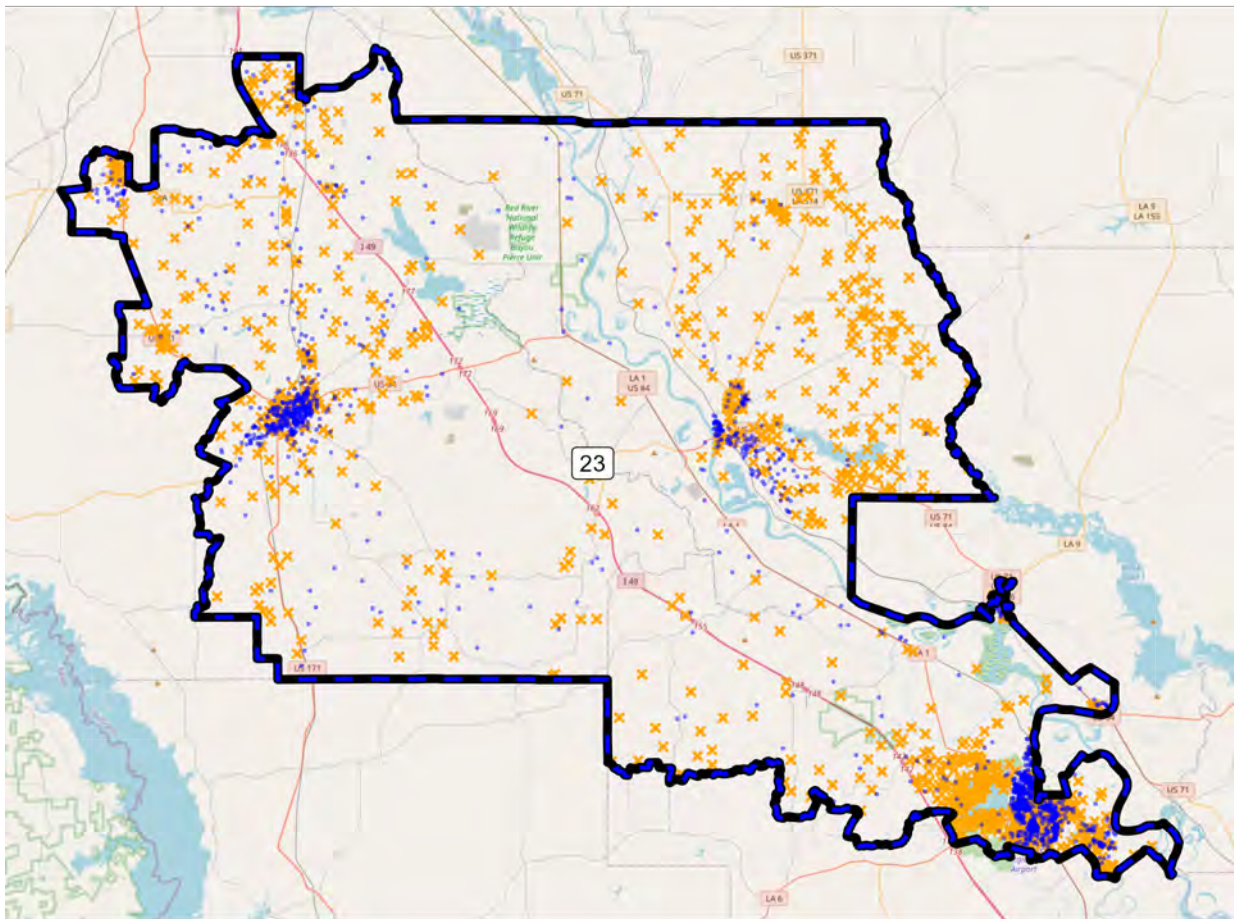


Figure 23: Most compact group of Black residents of voting age in Cooper Illustrative District 23 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 17,494 Black residents of voting age this approach identifies within the boundaries of Illustrative District 23. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

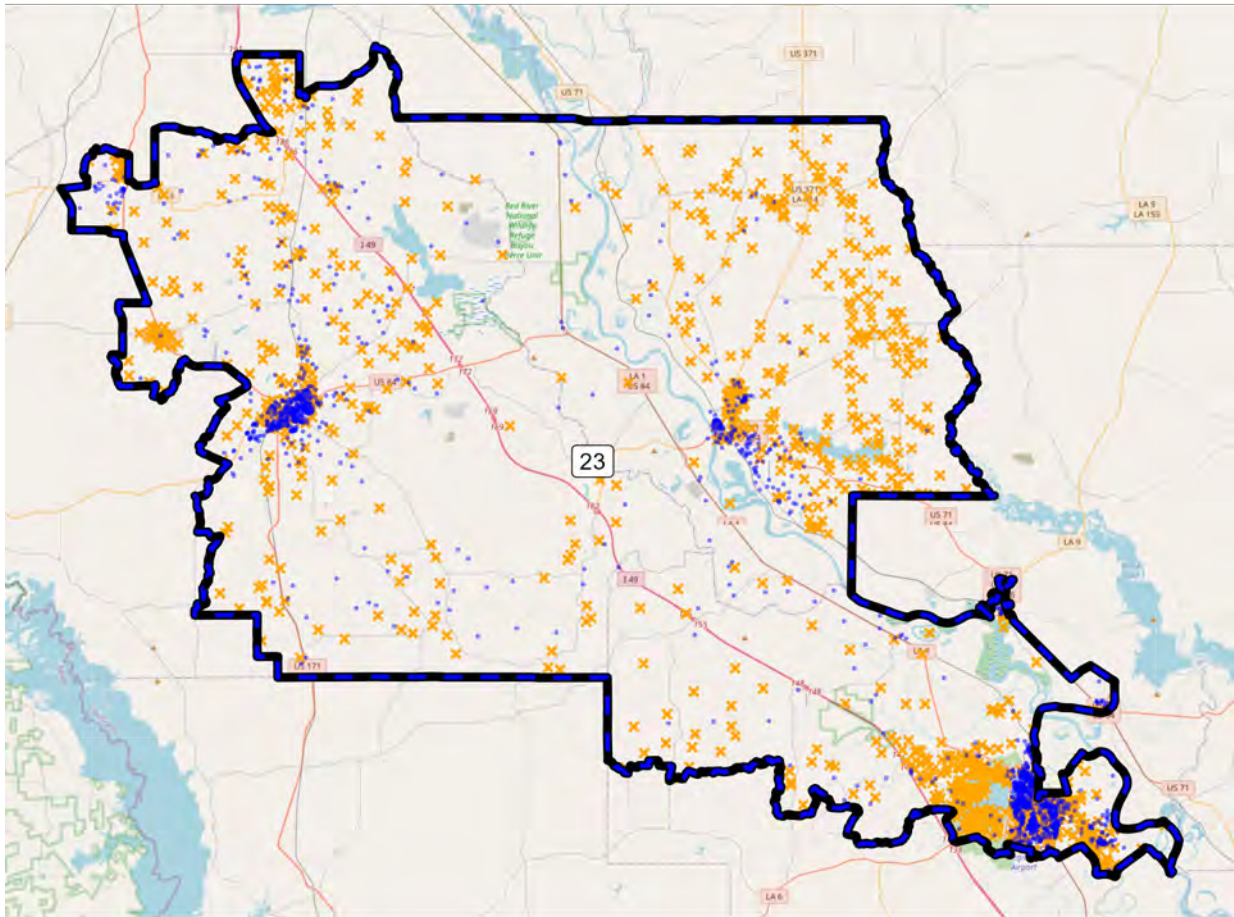
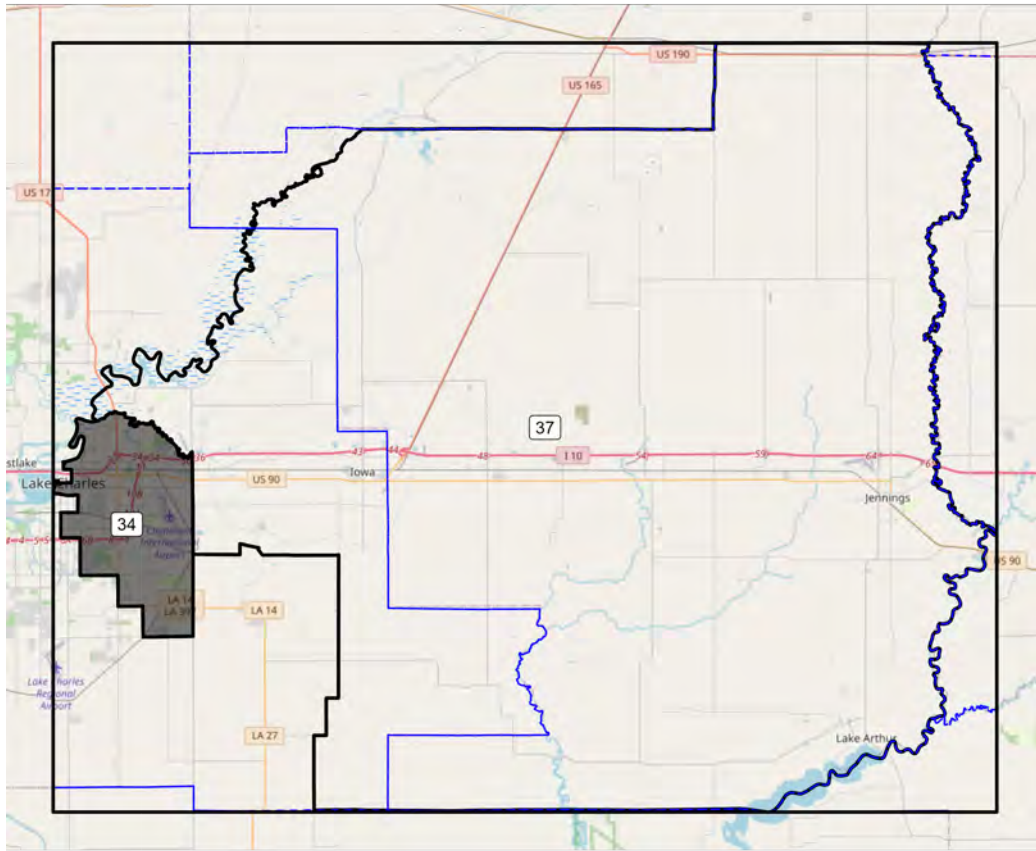


Figure 24: Black Majority BVAP Districts in the St. Charles Area, Enacted Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.

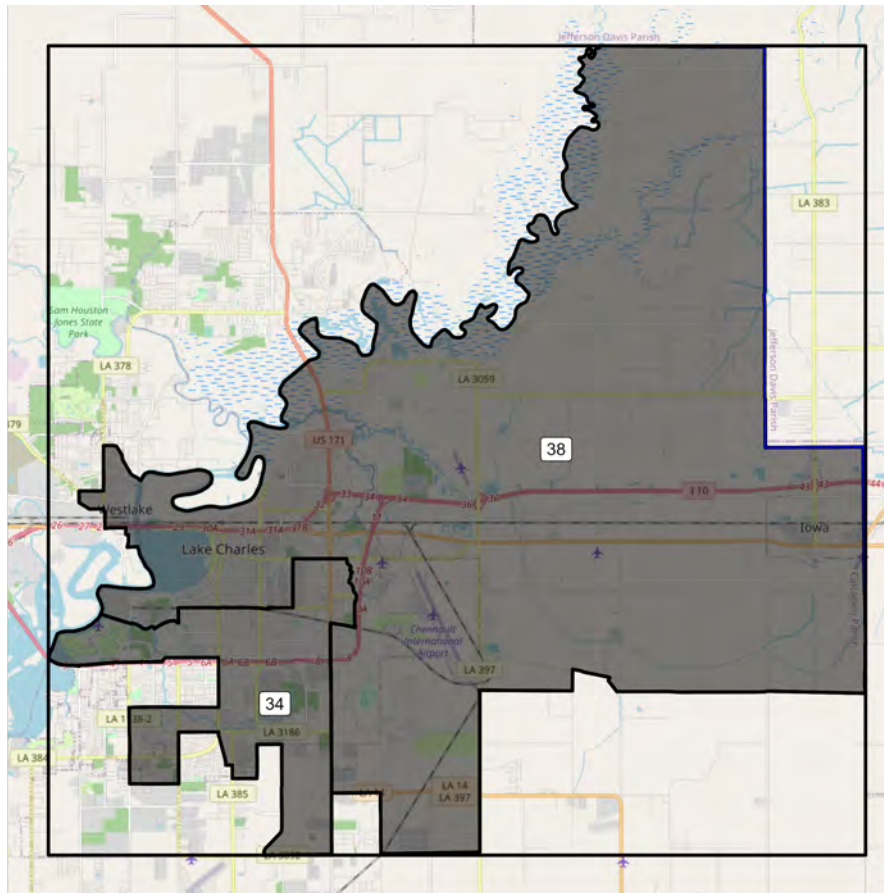


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5.3 St. Charles Area

The Enacted Plan creates one minority majority district in the Lake Charles area. As depicted in Figures 24 and 25, Mr. Cooper splits this district to create two minority majority districts: Districts 34 and 38.

Figure 25: Black Majority BVAP Districts in the St. Charles Area, Cooper Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



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5.3.1 Cooper Illustrative Districts 34 and 38

Cooper's District 34 (Figs. 26 - 30, which looks like a pointer dog about to identify a duck), has a VAP of 32,241 and a BVAP of 16,131, meaning that it is majority Black by ten residents. District 38 has a VAP of 32,365, such that a group must have a population of 16,183 to constitute a numeric majority in the district. The district has a BVAP of 16,455. The minority population in District 34 is not particularly compact; to achieve his ten-person majority here Mr. Cooper has to scrape together Black residents from heavily white tendrils in the district. Moreover, because every precinct in the district has at least ten adult Black residents, all of these precincts are needed to achieve the minimum BVAP; the district in its entirety is the most compact group within the district of Black voters that gets to $50\% + 1$ of the population (hence, the blue dashed lines in those maps are coterminous with the black district boundary). There is no compact group of Black voters sufficient to constitute a majority of the Voting Age Population in this district.

District 38 (Figs. 31 - 38) fares even worse in terms of minority compactness. There is a cluster of Black residents of voting age around Lake Charles, but this cluster does not have the necessary population of 16,183. To achieve this, Mr. Cooper once again has to reach out into the surrounding countryside, and over to the town of Iowa. In fact, if one removes just the two (heavily White) Iowa precincts from the map, the BVAP of the district falls to 15,758. Likewise, if one removes the three (heavily White) rural precincts in the northern arm of the district, the district's BVAP falls to 16,055, short of a majority (removing two rural precincts here is how one draws the most compact district). In other words, Cooper's District 38 is more like District 1 than District 4: It ranges into rural, White areas not to pick up population, but to pick up isolated census blocks that happen to contain Black individuals, without which the map cannot reach a majority BVAP status.

There is a sufficiently compact Black population in the Lake Charles area to support one minority-majority district. There is not a compact Black population capable of sustaining two, at least given the Illustrative Maps. To draw two (barely) minority-

Figure 26: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 34. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.

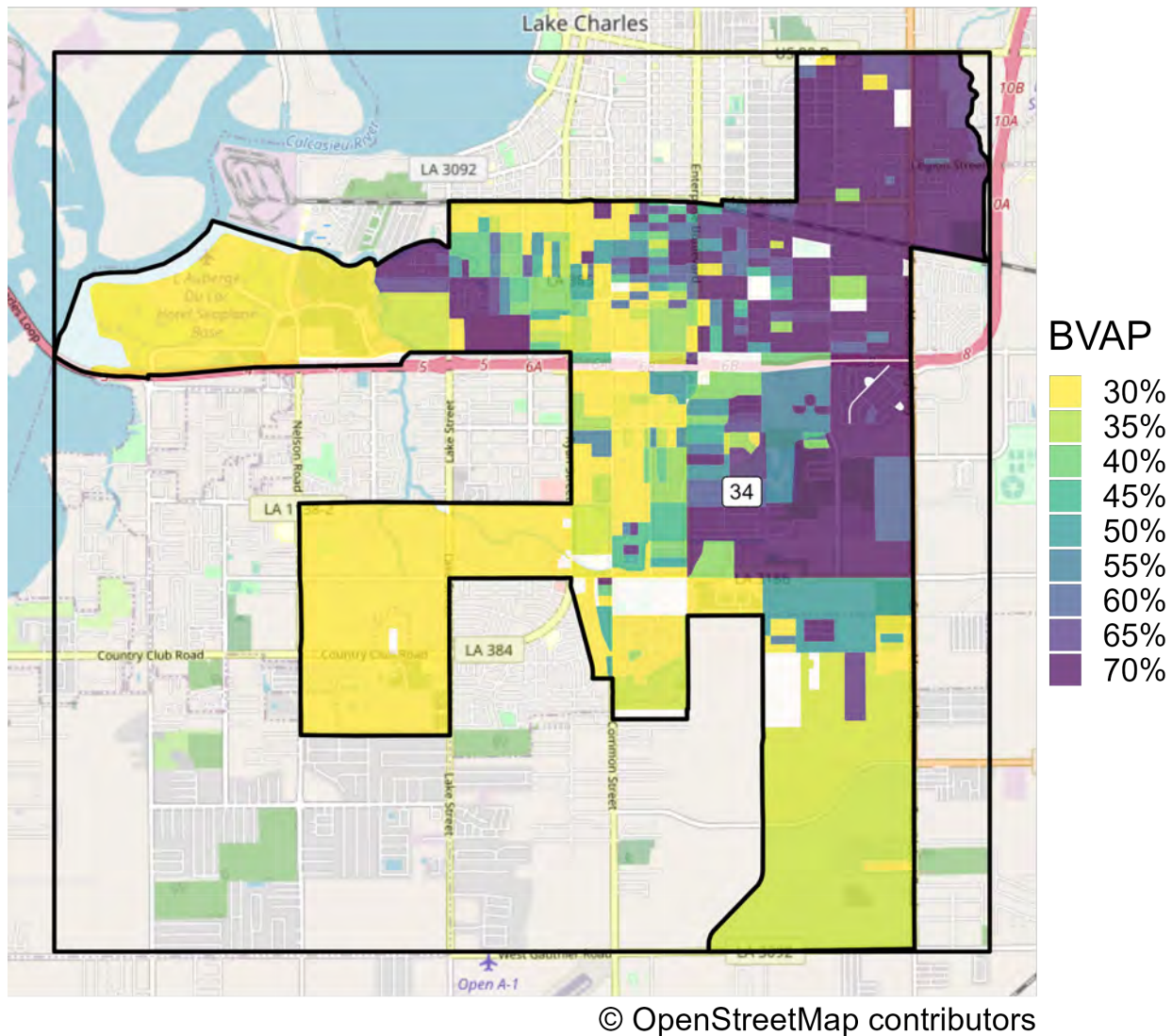


Figure 27: Location of Black population in Cooper Illustrative District 34. One blue dot represents 10 Black residents of voting age. Dashed blue lines reflect Parish boundaries.

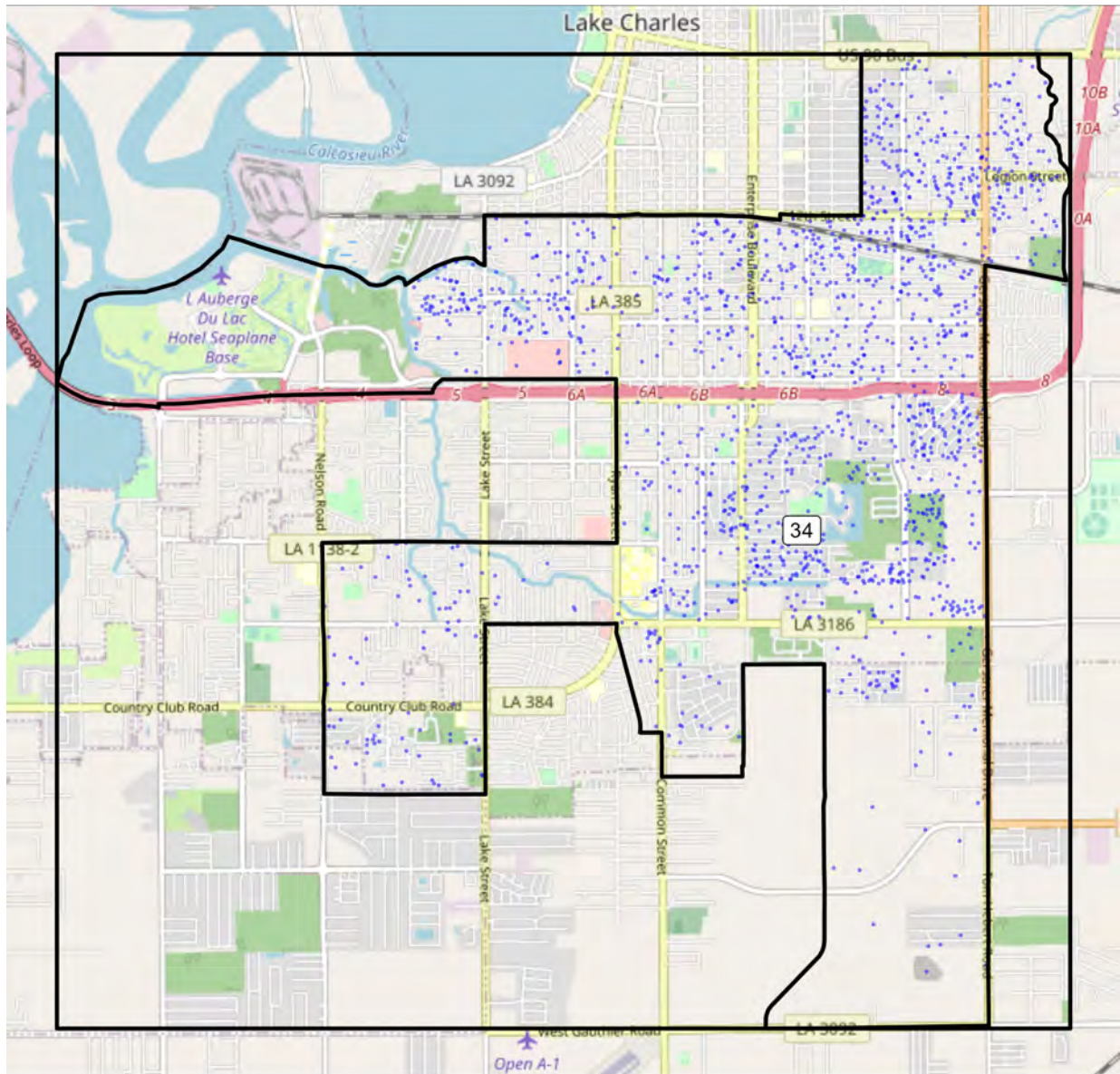


Figure 28: Location of Black and White populations in Cooper Illustrative District 34. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

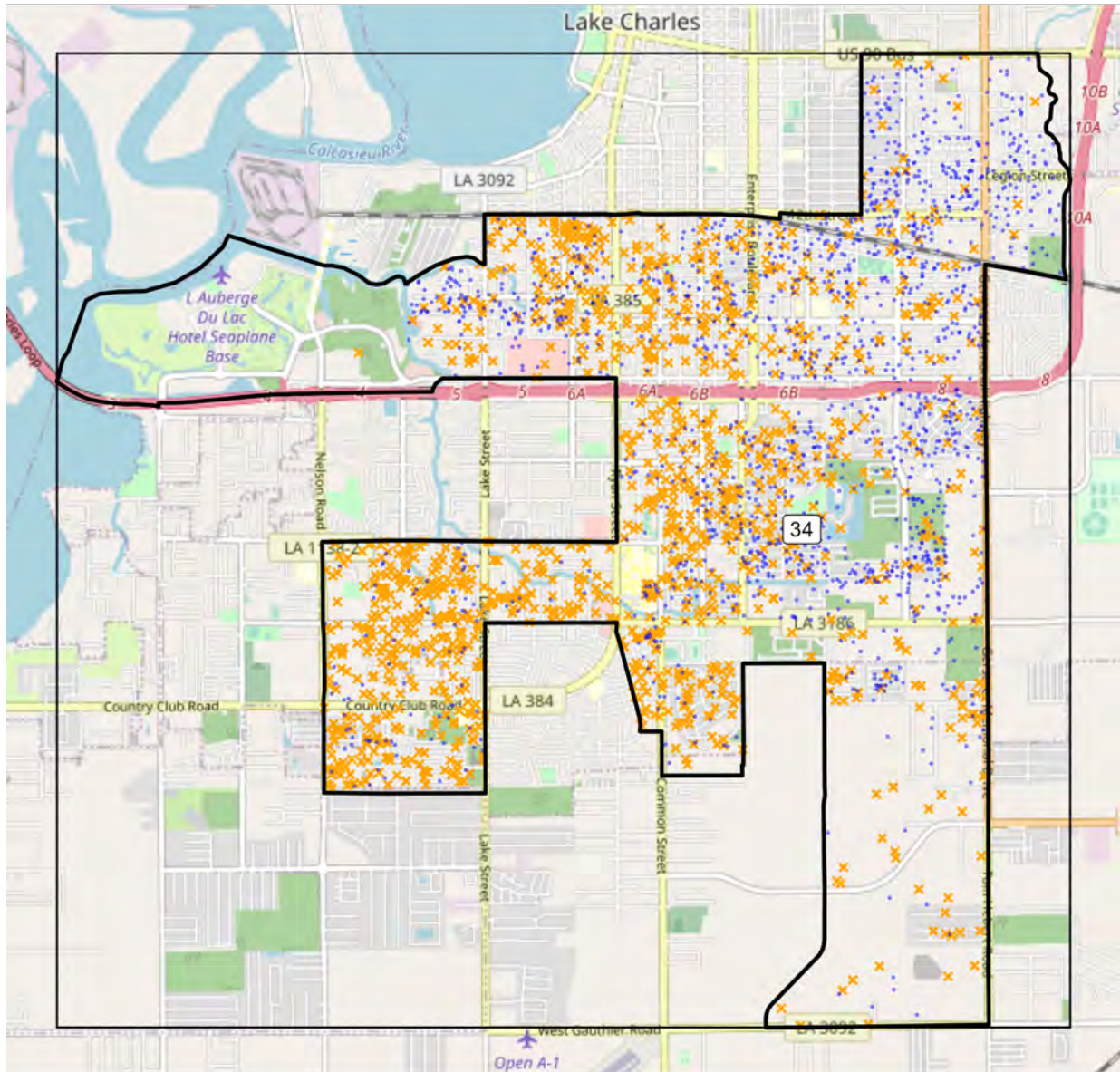


Figure 29: Most compact group of Black residents of voting age in Cooper Illustrative District 34 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,121 Black residents of voting age this approach identifies within the boundaries of Illustrative District 34. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

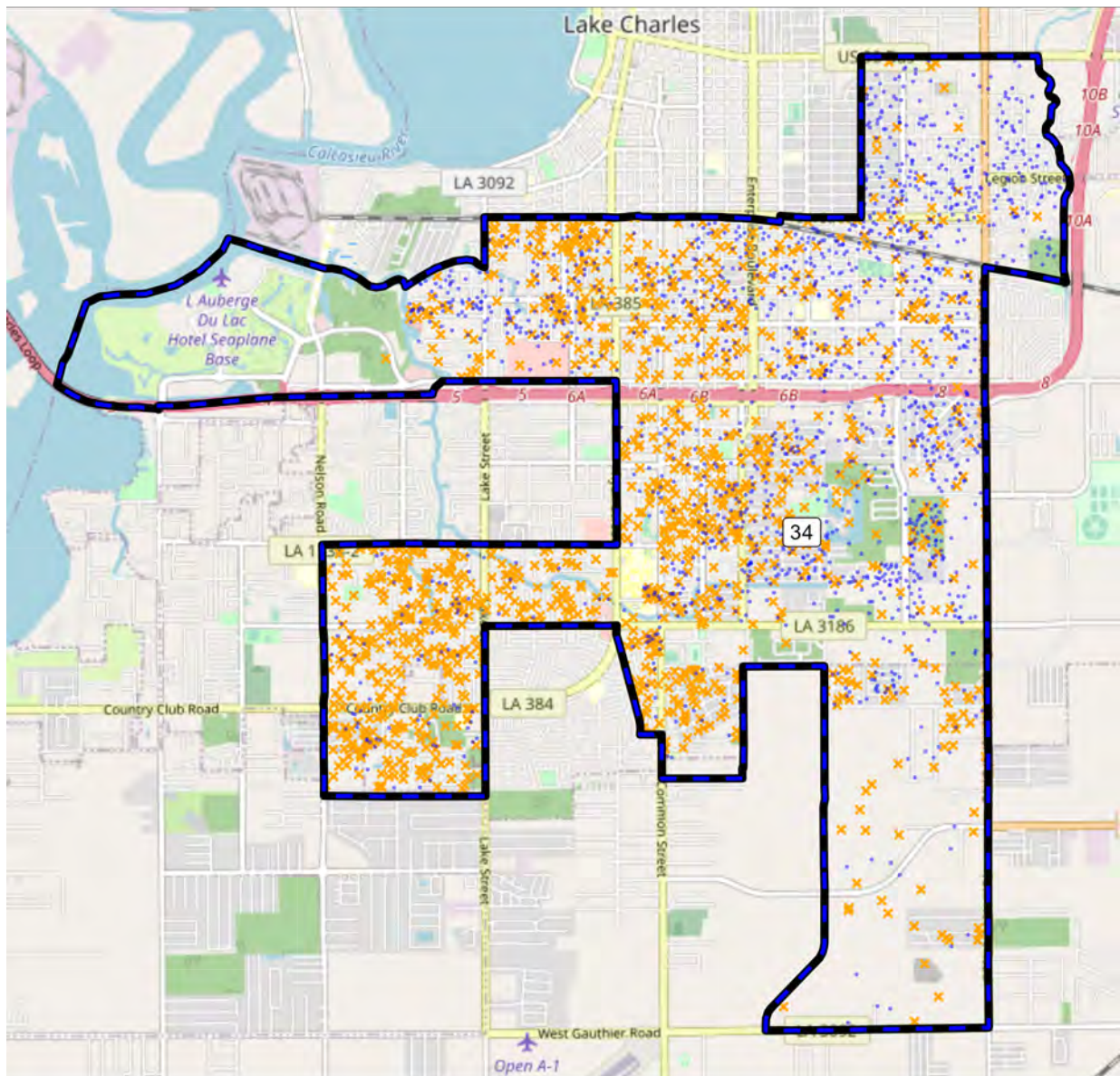


Figure 30: Most compact group of Black residents of voting age in Cooper Illustrative District 34 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,121 Black residents of voting age this approach identifies within the boundaries of Illustrative District 34. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

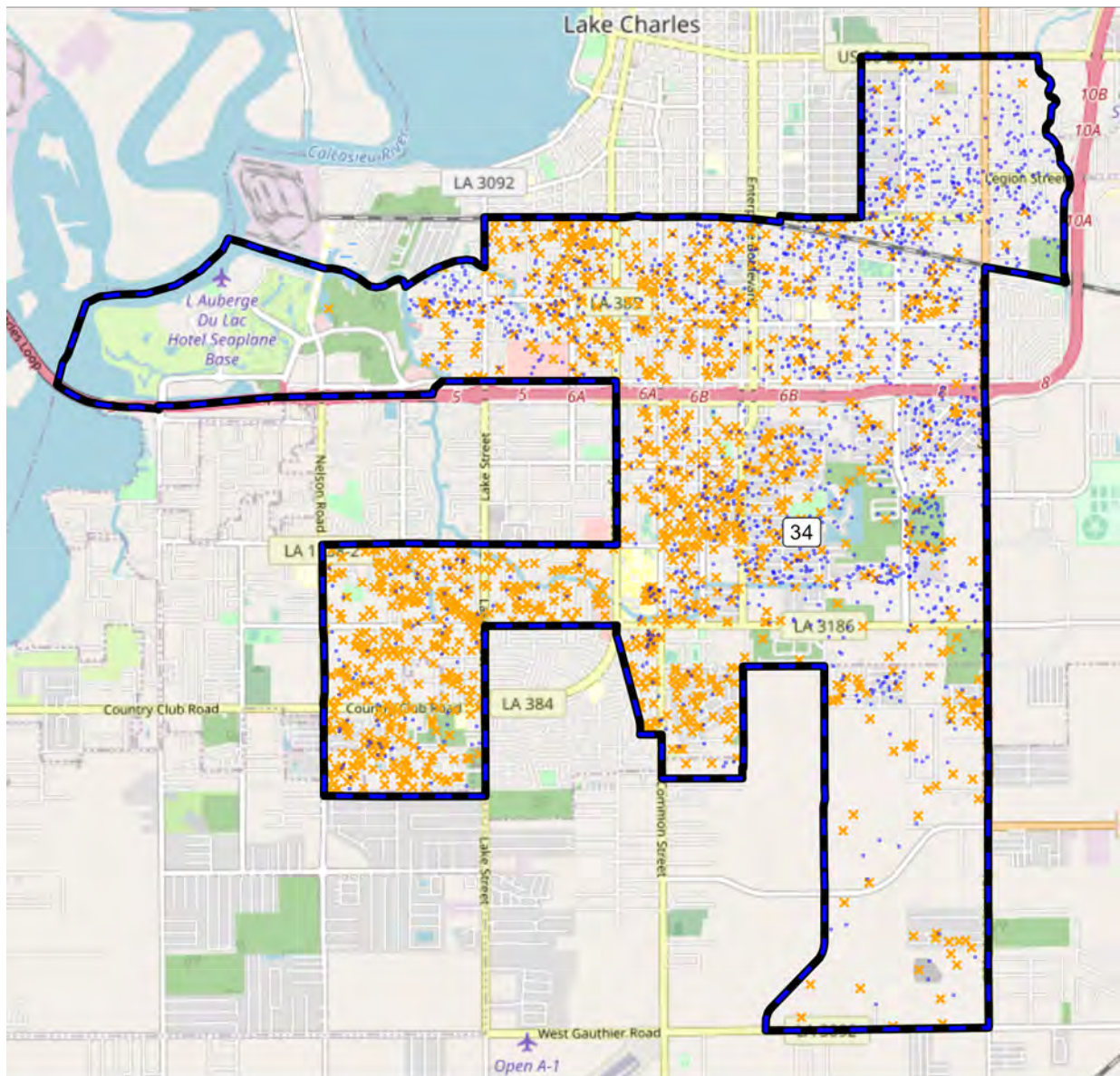
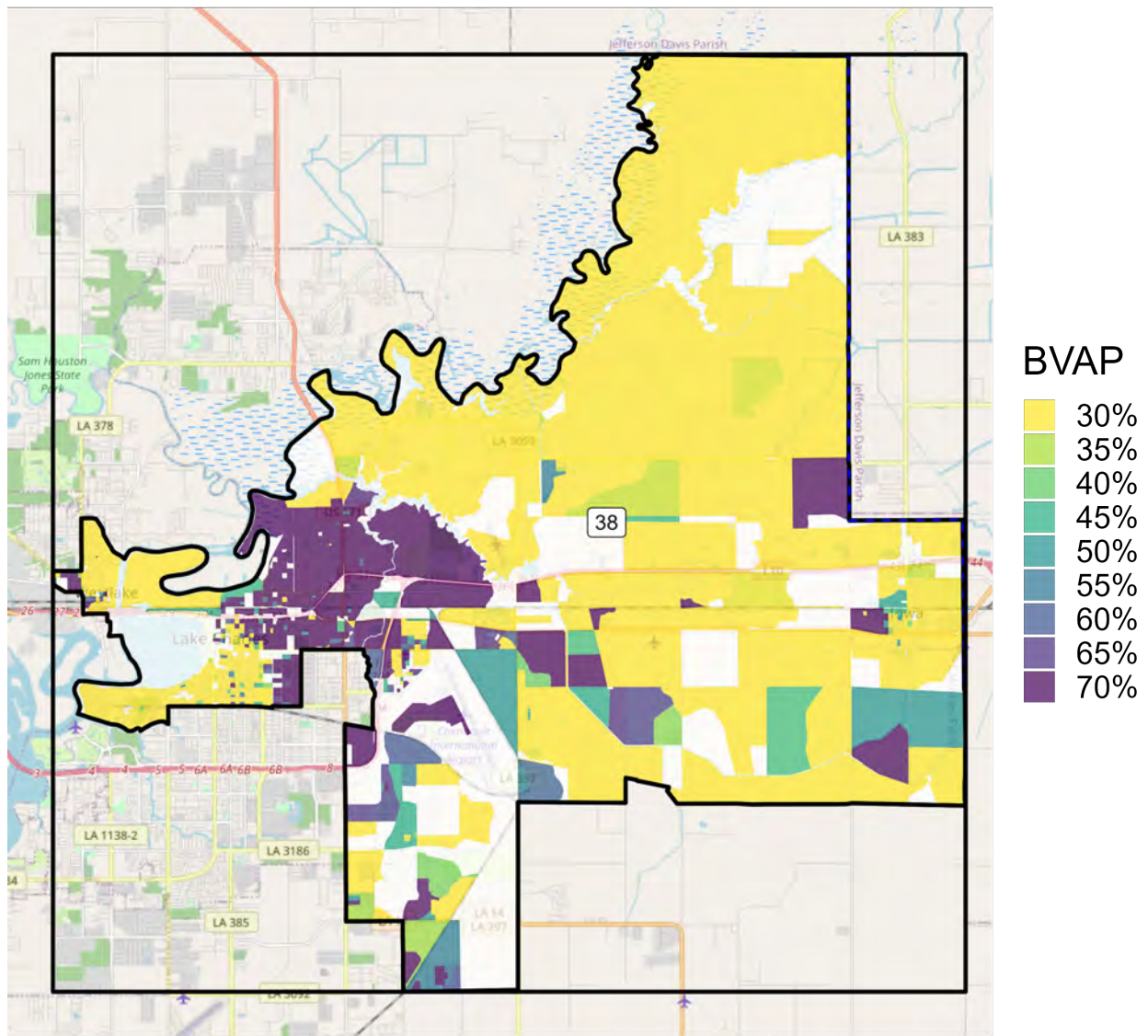


Figure 31: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 38. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



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Figure 32: Location of Black population in Cooper Illustrative District 38. One blue dot represents 10 Black residents of voting age. Dashed blue lines reflect Parish boundaries.

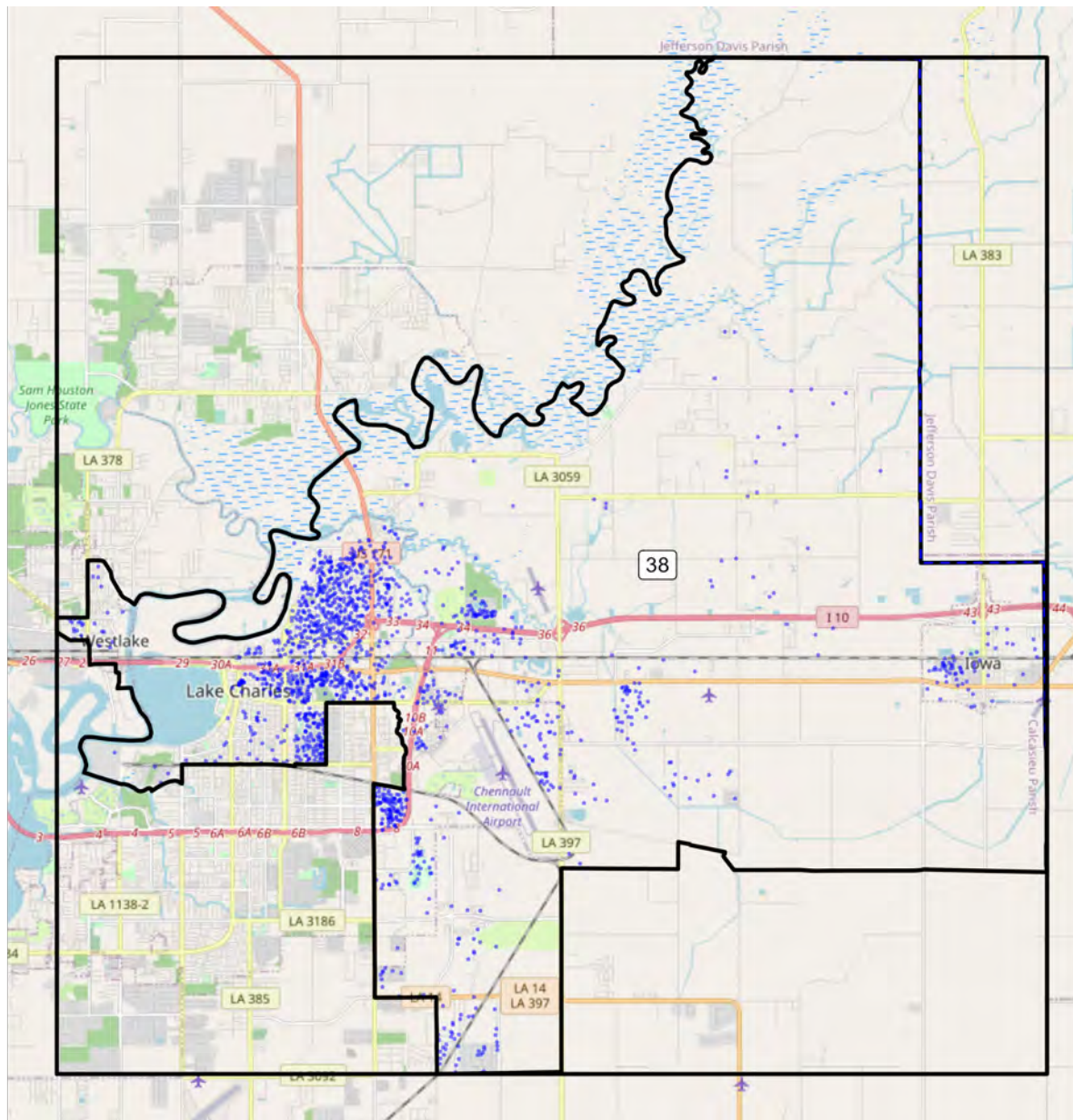


Figure 33: Location of Black and White populations in Cooper Illustrative District 38. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

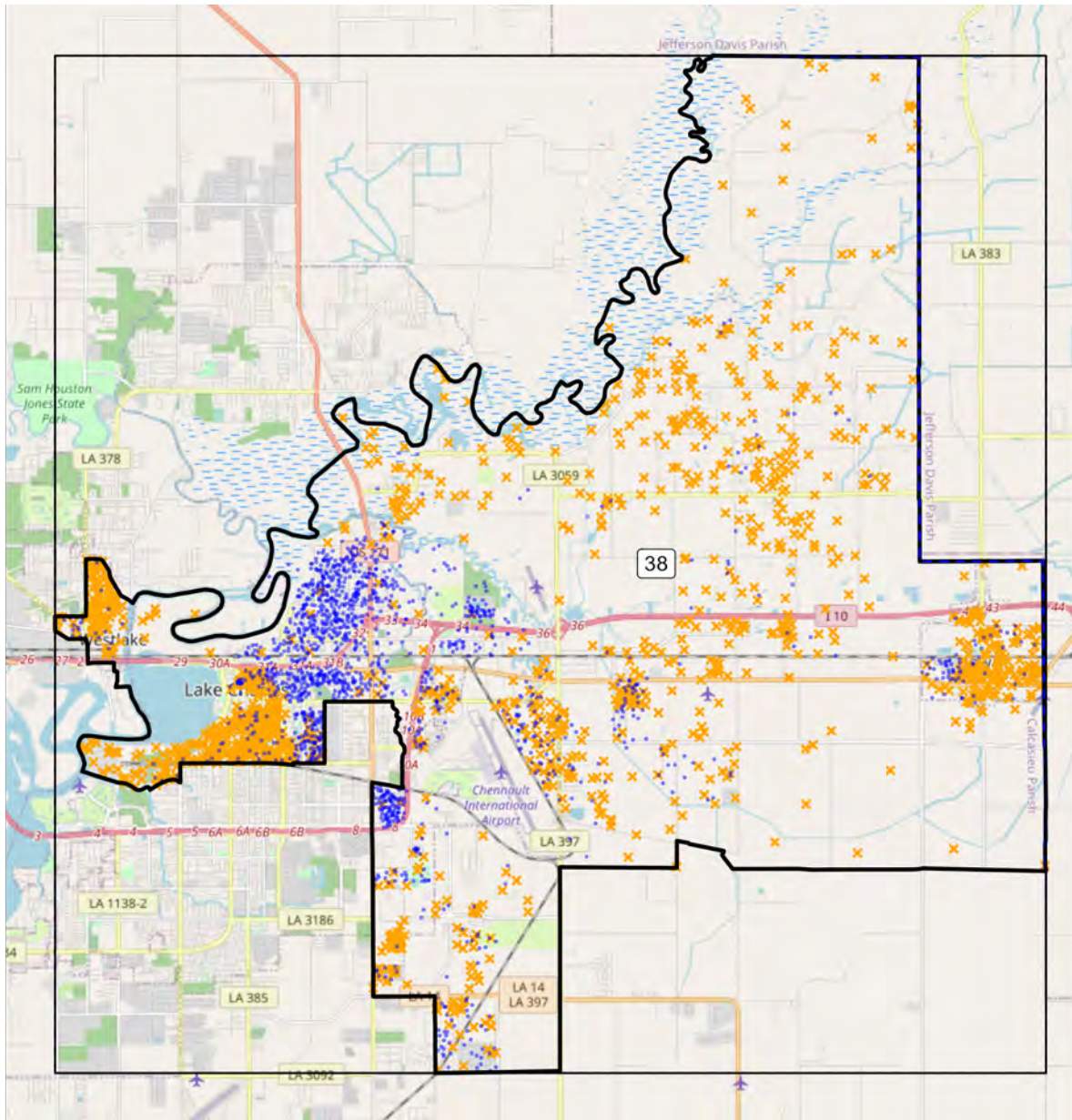


Figure 34: Most compact group of Black residents of voting age in Cooper Illustrative District 38 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,183 Black residents of voting age this approach identifies within the boundaries of Illustrative District 38. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

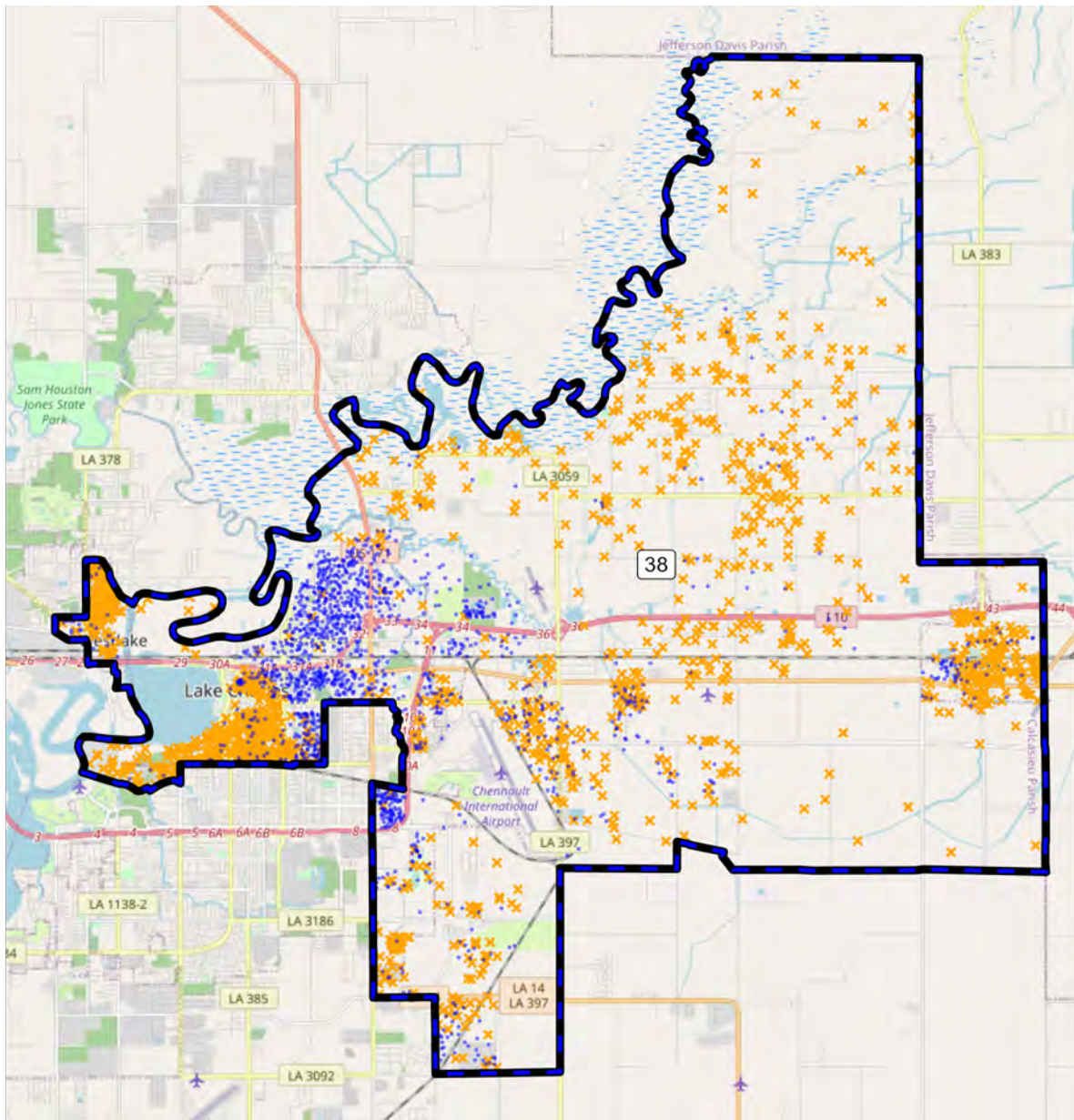
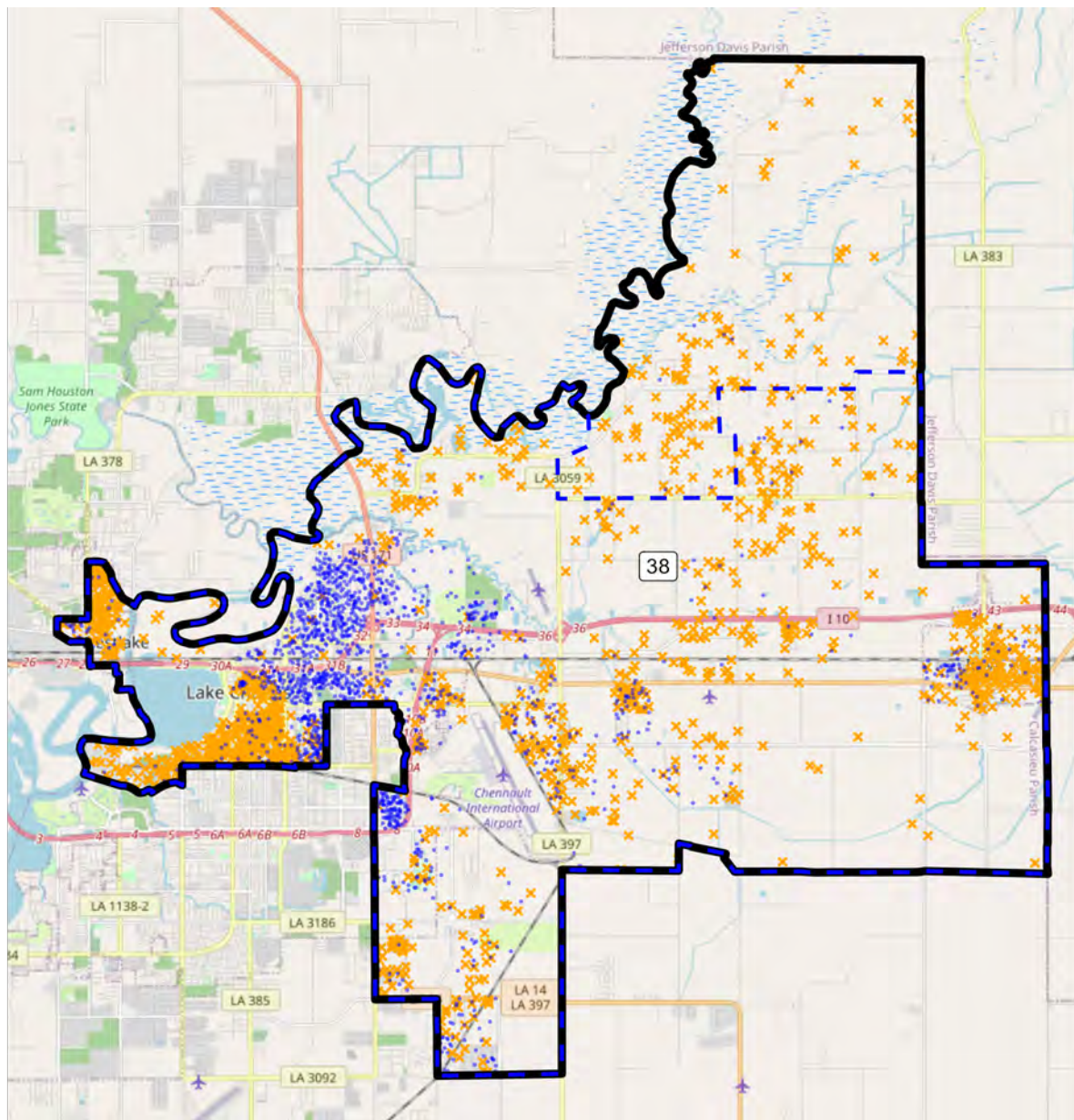


Figure 35: Most compact group of Black residents of voting age in Cooper Illustrative District 38 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,183 Black residents of voting age this approach identifies within the boundaries of Illustrative District 38. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

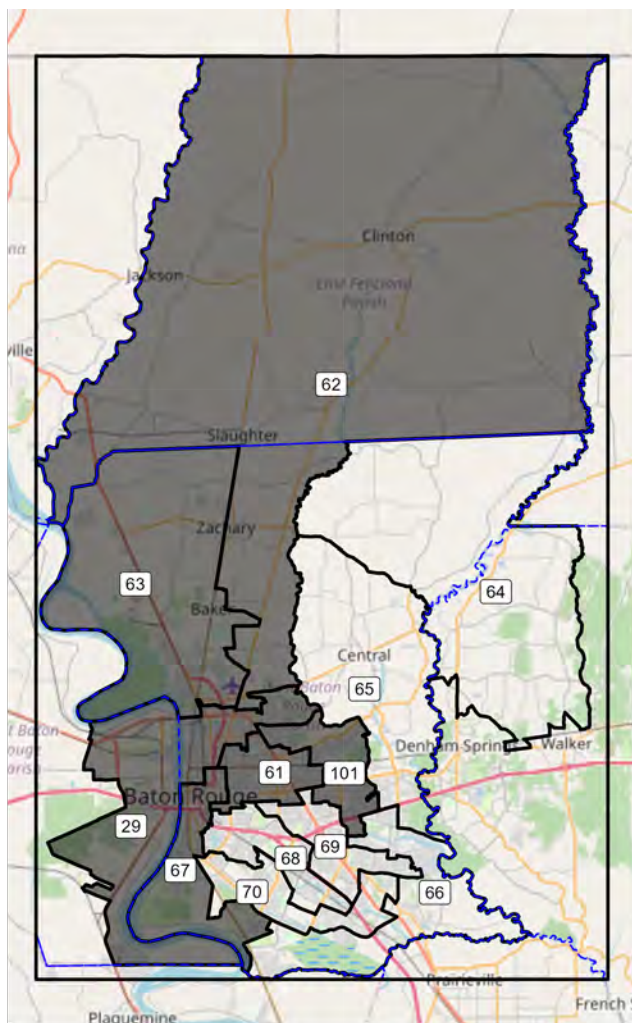


majority districts, Mr. Cooper is forced to rely on Black populations in outlying towns or precincts, often in heavily White areas of the parish.

5.4 Baton Rouge Area

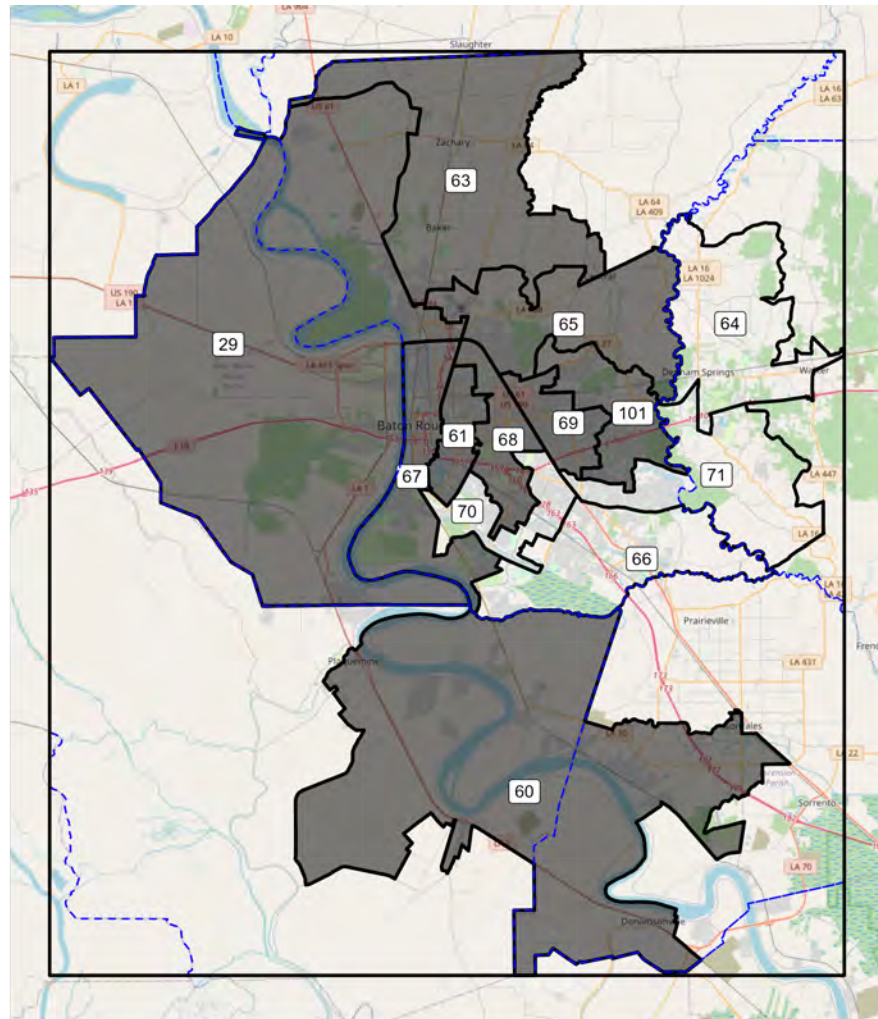
Mr. Cooper draws new majority Black districts in the Baton Rouge area with Illustrative Districts 60, 65, 68 and 69. (Compare Figure 36 with Figure 37). He then removes a minority-majority district that exists in the Enacted Plan: District 62. Illustrative Districts 60, 65, 68 and 69 have BVAP percentages of 52.8%, 56%, 54.2% and 50.2%, respectively. However, by splitting up the core of Black voters in Baton Rouge, he is forced to "baconmander" the remaining districts into far-flung areas of the map, creating several districts where the Black population is not geographically compact. Thus, the question is how Cooper accomplished the feat of drawing three additional minority-majority districts here.

Figure 36: Black Majority BVAP Districts in the Baton Rouge Area, Enacted Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



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Figure 37: Black Majority BVAP Districts in the Shreveport Area, Cooper Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



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5.4.1 Cooper Illustrative District 29

The resulting districts provide good contrasts that help explain what a compact minority group sufficient to constitute a majority in a district would look like. Thus, this report first compares three districts that Mr. Cooper redrew to their counterparts in the Enacted Map. Consider the Enacted District 29, in Figure 39.

Here, the district stretches through heavily White areas, meandering along the banks of the Mississippi River. However, there exists in the area on the East side of the Mississippi a geographically compact Black population that could be sufficient to constitute a majority in a district. The wanderings on the west side of the Mississippi River exist to meet the equal population requirement, and are not necessary for making the district one where Black voters are a majority of the voting age population.

Contrast that with the Illustrative Maps' version of District 29 (which resembles a guinea pig climbing up the side of the map), in Figure 40.

In this district there is also a geographically compact Black population east of the Mississippi River, but it is insufficient to constitute a majority of the population. To achieve this, the Illustrative Map must cross over into rural, White areas to pick up isolated Black residents.

Figure 38: Most compact group of Black residents of voting age in Enacted District 29 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,519 Black residents of voting age this approach identifies within the boundaries of Enacted District 29.

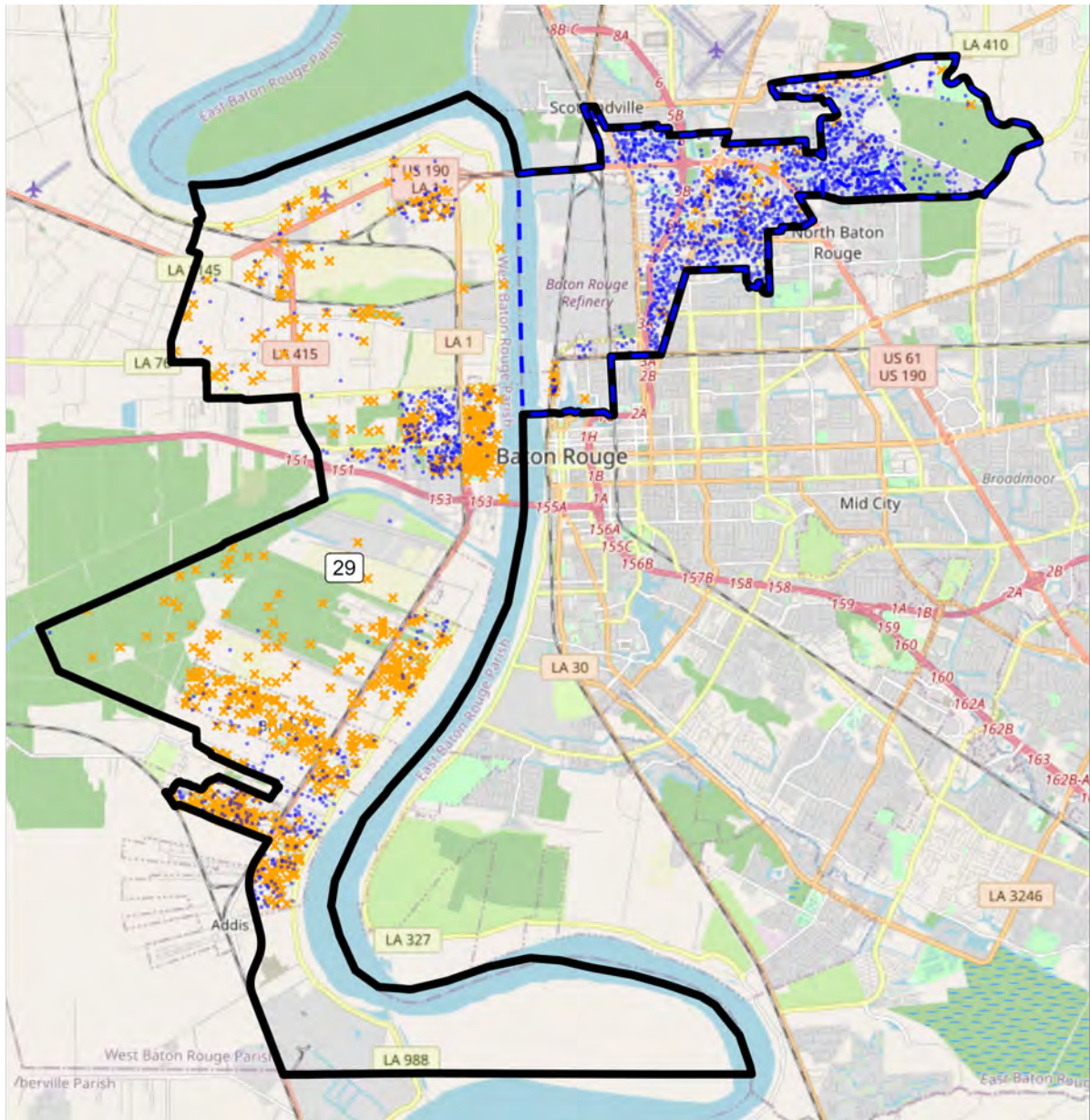


Figure 39: Most compact group of Black residents of voting age in Cooper Illustrative District 29 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 17,076 Black residents of voting age this approach identifies within the boundaries of Illustrative District 29.

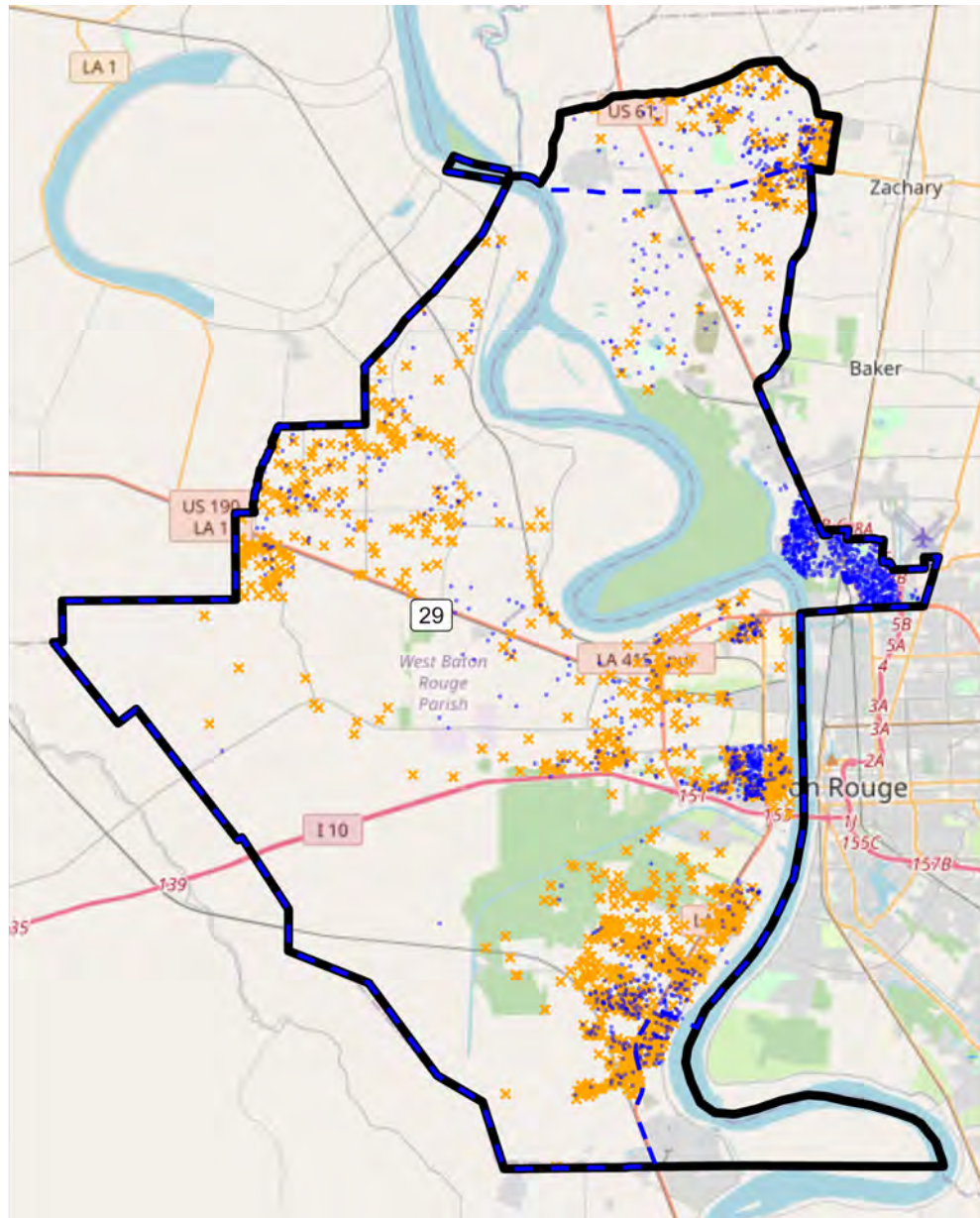
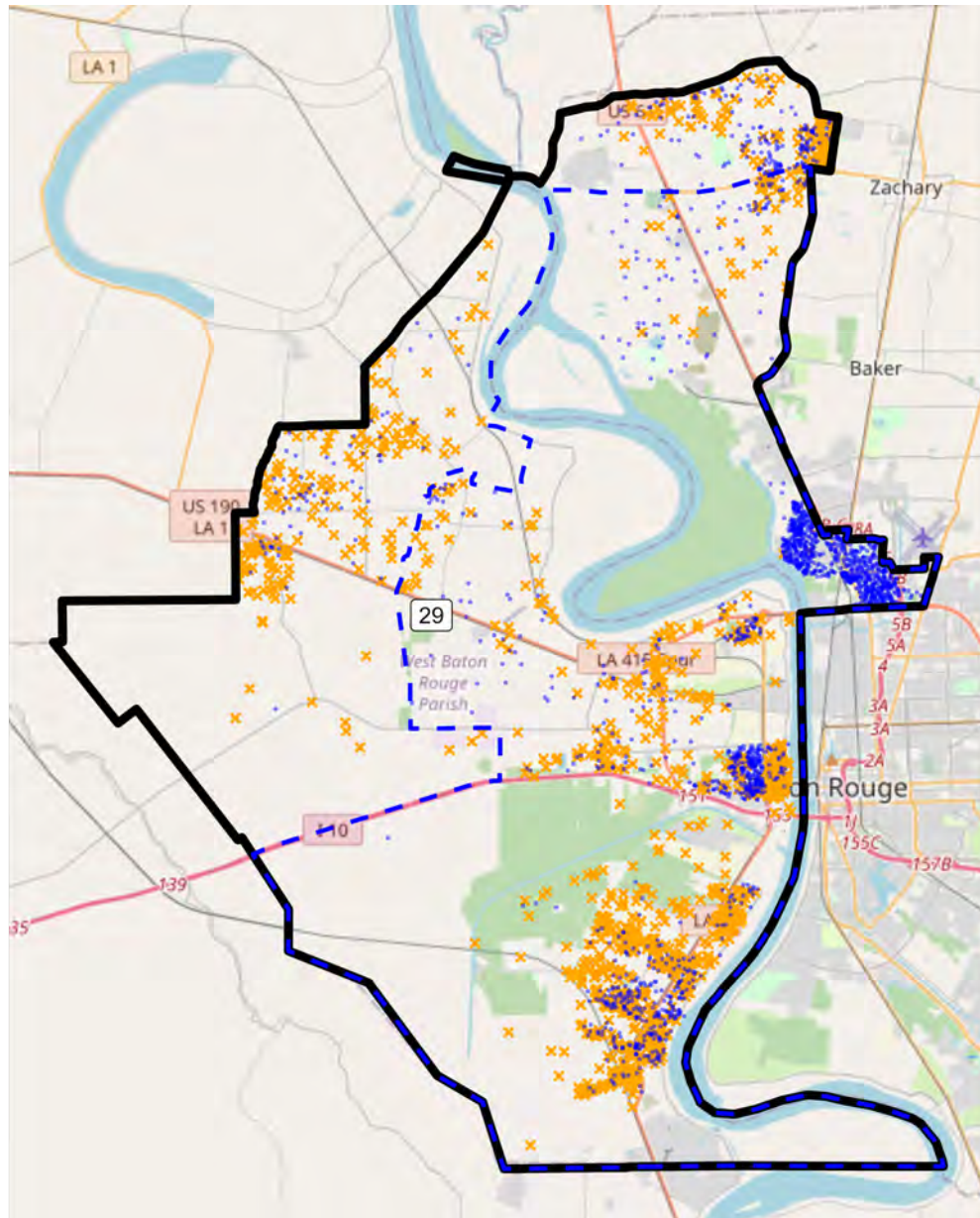


Figure 40: Most compact group of Black residents of voting age in Cooper Illustrative District 29 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 17,076 Black residents of voting age this approach identifies within the boundaries of Illustrative District 29.



5.4.2 Cooper Illustrative District 61

The Enacted and Illustrative versions of District 61 further illustrate this phenomenon. Compare Figure 41 with Figure 42.

Once again, the Black population in the Enacted version of District 61 is geographically distinct, and it is sufficient to constitute a majority of the population. It is true that there are heavily White areas and isolated Black residents included in the district, but they are not necessary to create a 50% + 1 BVAP district. They are necessary to create a district that complies with one-person-one-vote in this configuration.

The Illustrative Map's District 61, takes a very different approach (Figures 42 - 43).

Because this district is barely majority-minority (BVAP 50.2%) every Black resident in the district is needed to cross the majority threshold (it is 166 Black residents over the 50% + 1 threshold). Thus, unlike the Enacted Map, the Illustrative Map here ventures out into heavily White areas not simply to comply with one-person-one-vote, but to cross the 50% + 1 threshold under *Gingles*. In other words, the minority group that is sufficient to comprise 50% + 1 of the district is not compact under the Illustrative Map.

Figure 41: Most compact group of Black residents of voting age in Enacted District 61 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,812 Black residents of voting age this approach identifies within the boundaries of Enacted District 61.

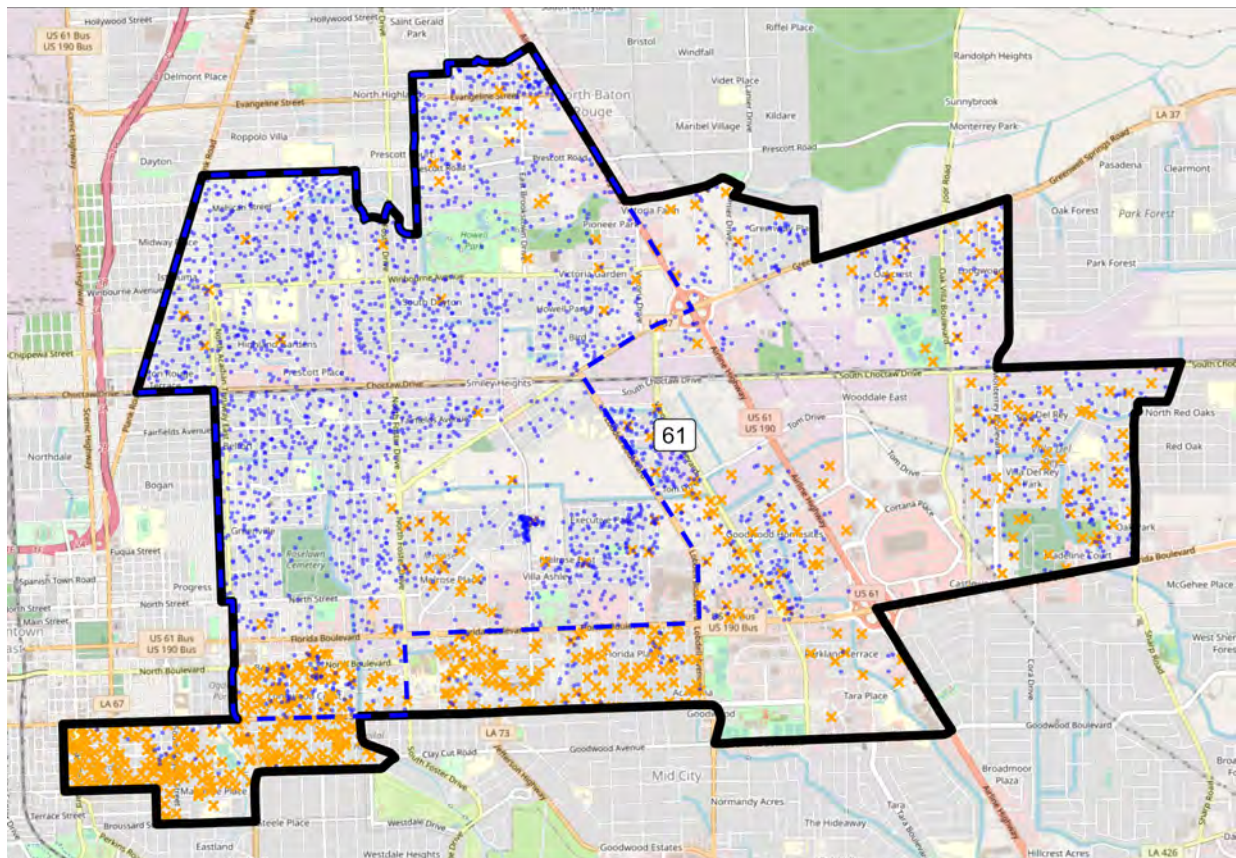


Figure 42: Most compact group of Black residents of voting age in Cooper Illustrative District 61 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 17,766 Black residents of voting age this approach identifies within the boundaries of Enacted District 61. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

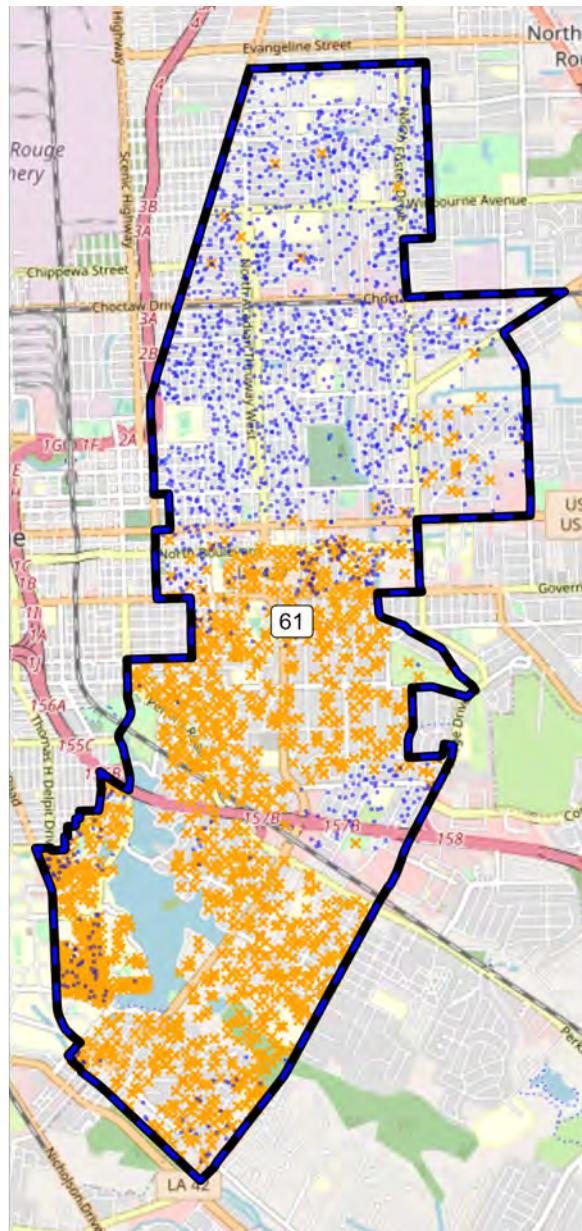
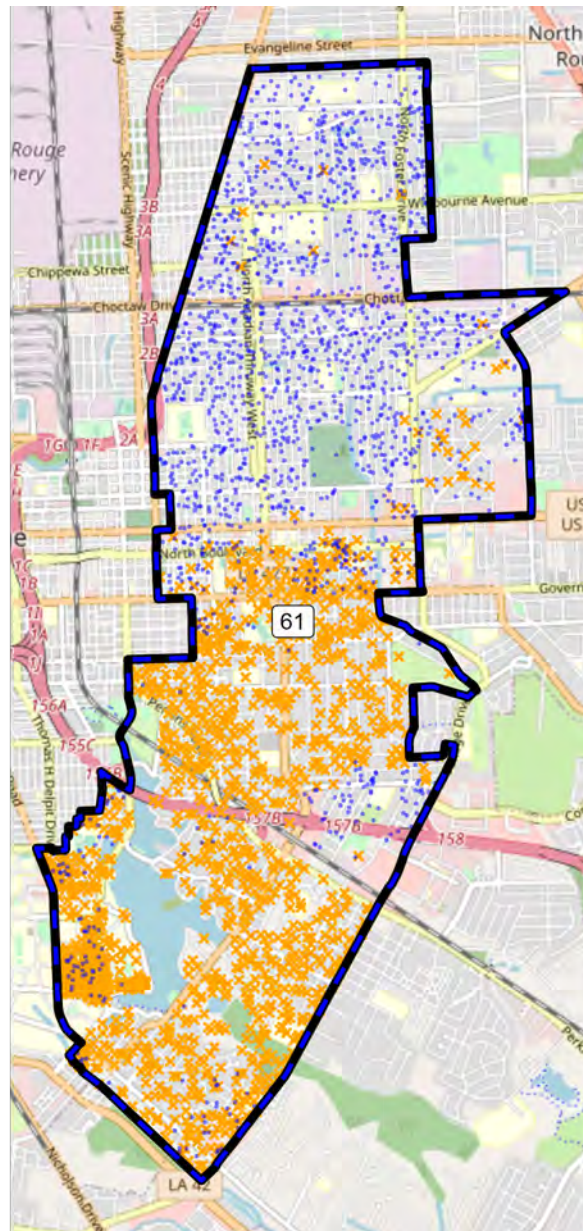


Figure 43: Most compact group of Black residents of voting age in Cooper District 61 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 17,766 Black residents of voting age this approach identifies within the boundaries of Enacted District 61. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line



5.4.3 Cooper Illustrative District 63

In the same vein, the Enacted Map's version of District 63, depicted in Figure 44, extends into lightly populated, rural areas, but there exists a heavily compact cluster of Black residents in the southeast of the map that constitutes a majority of the Voting Age population.

The Illustrative Map, however, Figures 45 - 46, ranges far and wide across the outskirts of East Baton Rouge Parish to collect isolated Black individuals to cross the 50% + 1 threshold. In other words, its most compact Black population that could comprise 50% + 1 of the district is necessarily less compact than in the Enacted Plan, and is non-compact in general.

Figure 44: Most compact group of Black residents of voting age in Enacted District 63 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,793 Black residents of voting age this approach identifies within the boundaries of Enacted District 63.

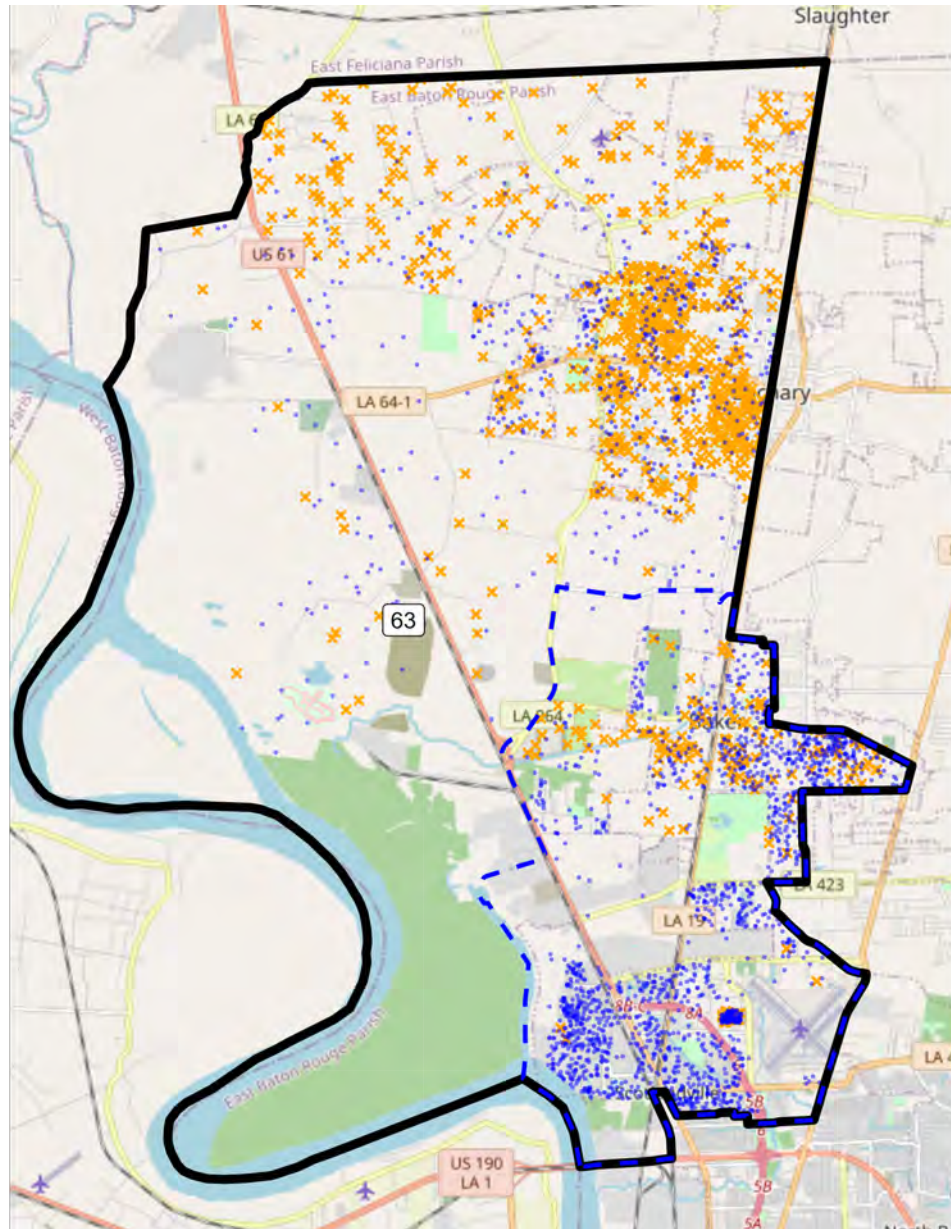


Figure 45: Most compact group of Black residents of voting age in Cooper Illustrative District 63 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,937 Black residents of voting age this approach identifies within the boundaries of Enacted District 63.

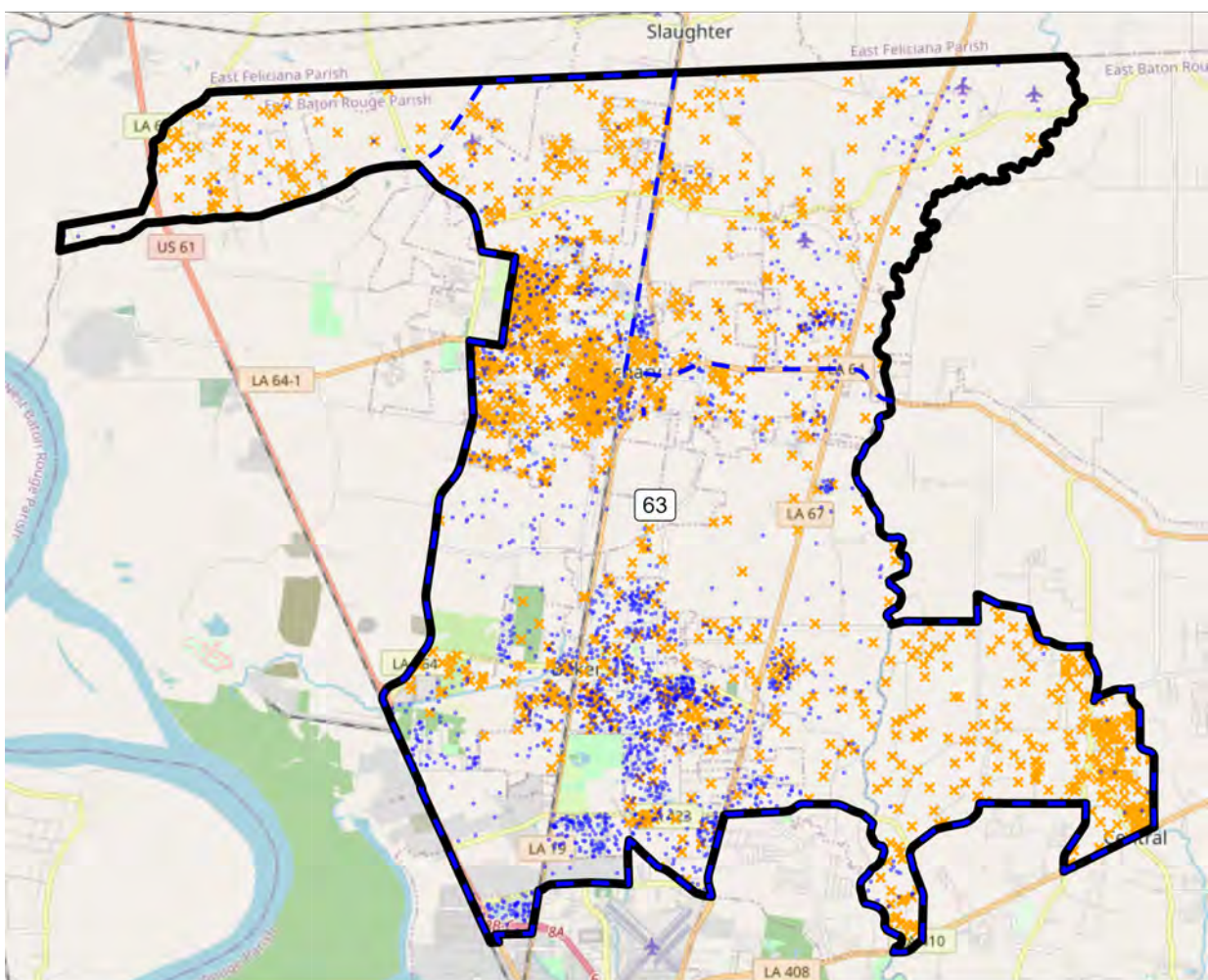
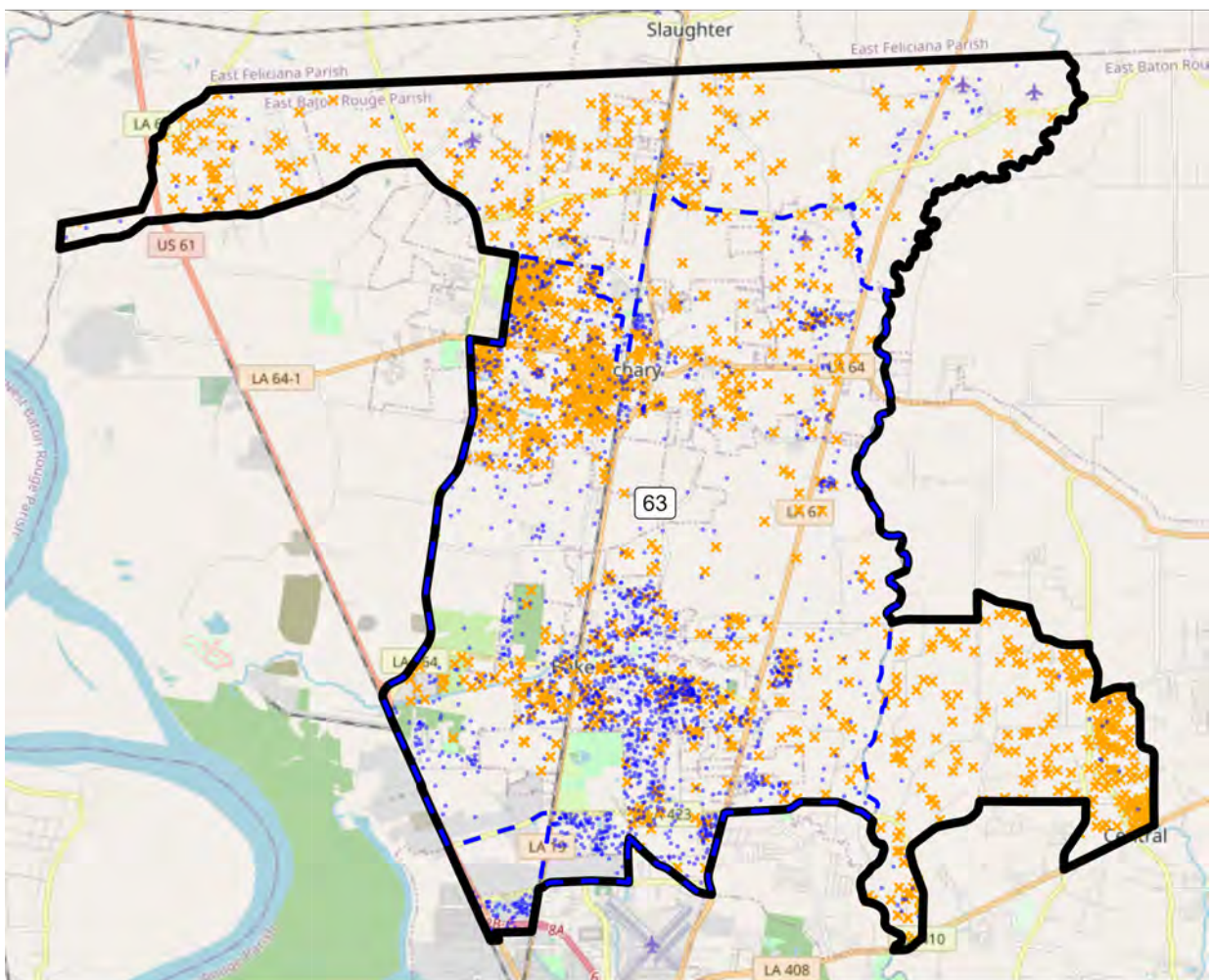


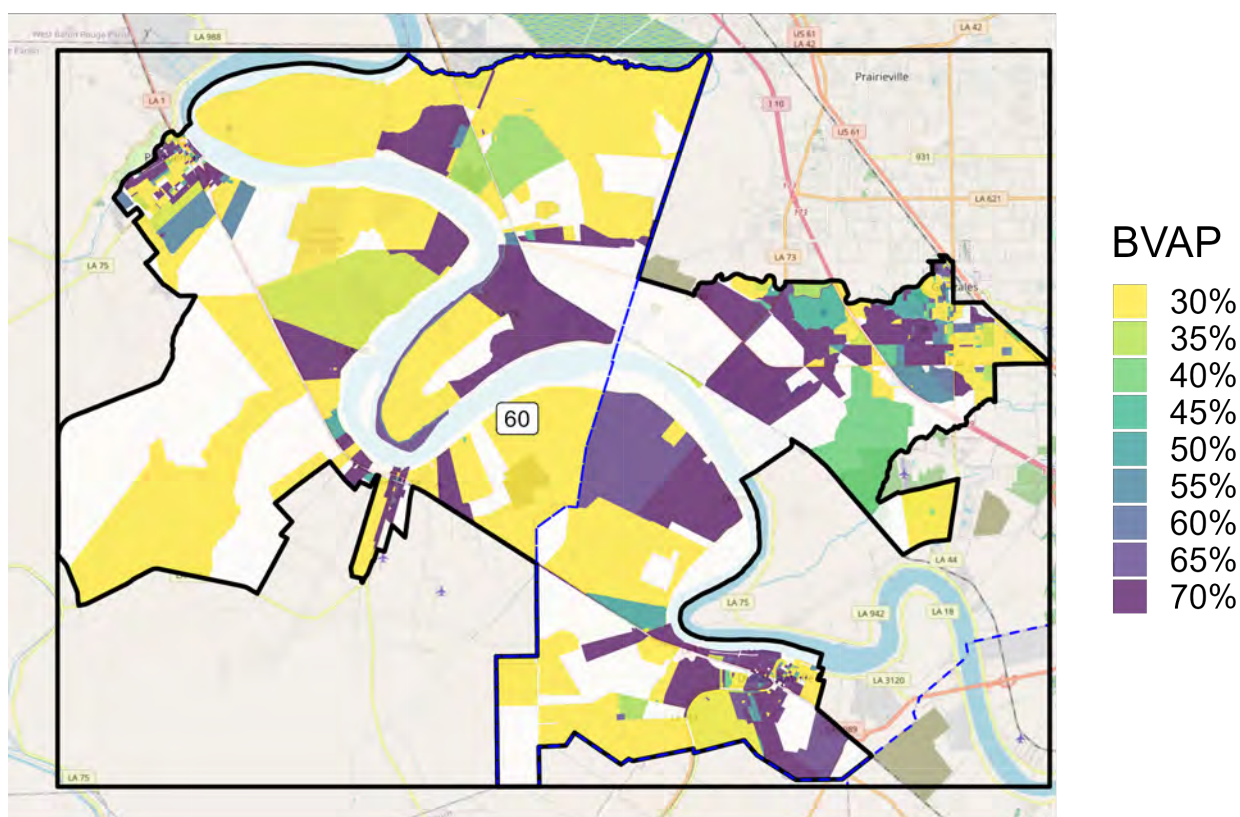
Figure 46: Most compact group of Black residents of voting age in Cooper Illustrative District 63 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,937 Black residents of voting age this approach identifies within the boundaries of Enacted District 63.



5.4.4 Cooper Illustrative District 60

The other districts that Mr. Cooper creates deploy the same techniques. The Illustrative Map's newly created District 60 relies on cobbling together minority groups from dispersed portions of the area, connecting Black voters in Gonzales, White Castle, and Plaquemine. These areas are not functionally contiguous – that is, one must travel outside of the district to go across the Mississippi River. As with District 23 above, none of these groups approaches 50% of the BVAP. The overall VAP of the district is 33,620. The cluster around Plaquemines has 3,760 Black residents of voting age, the precincts around White Castle have 1,307 Black residents of voting age, and the precincts around Gonzales have a BVAP of 5,531. Again, this is a district created by stitching together heavily Black clusters with mostly White areas with the occasional Black resident included. *See* Figs. 47 - 50.

Figure 47: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 60. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



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Figure 48: Location of Black and White populations in Cooper Illustrative District 60. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

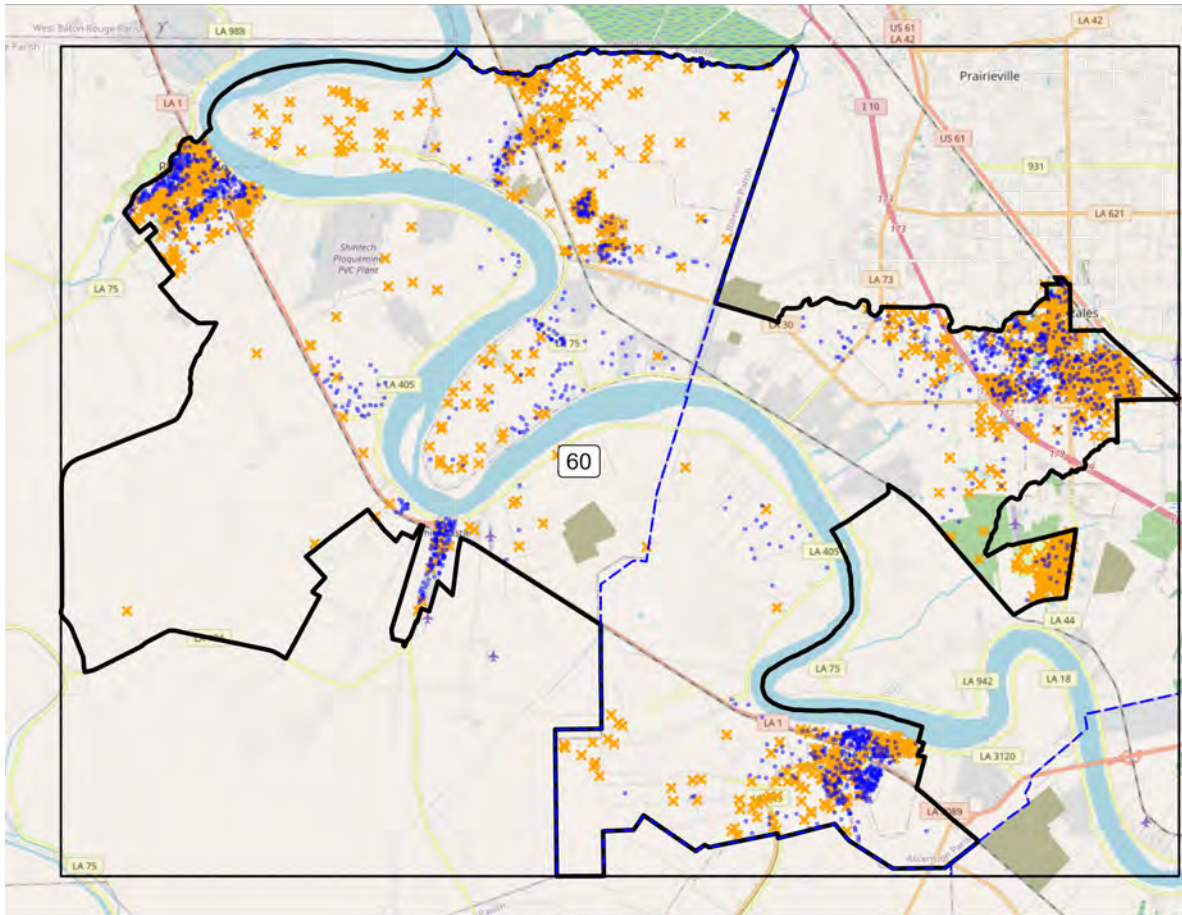


Figure 49: Most compact group of Black residents of voting age in Cooper Illustrative District 60 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,936 Black residents of voting age this approach identifies within the boundaries of Illustrative District 60. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

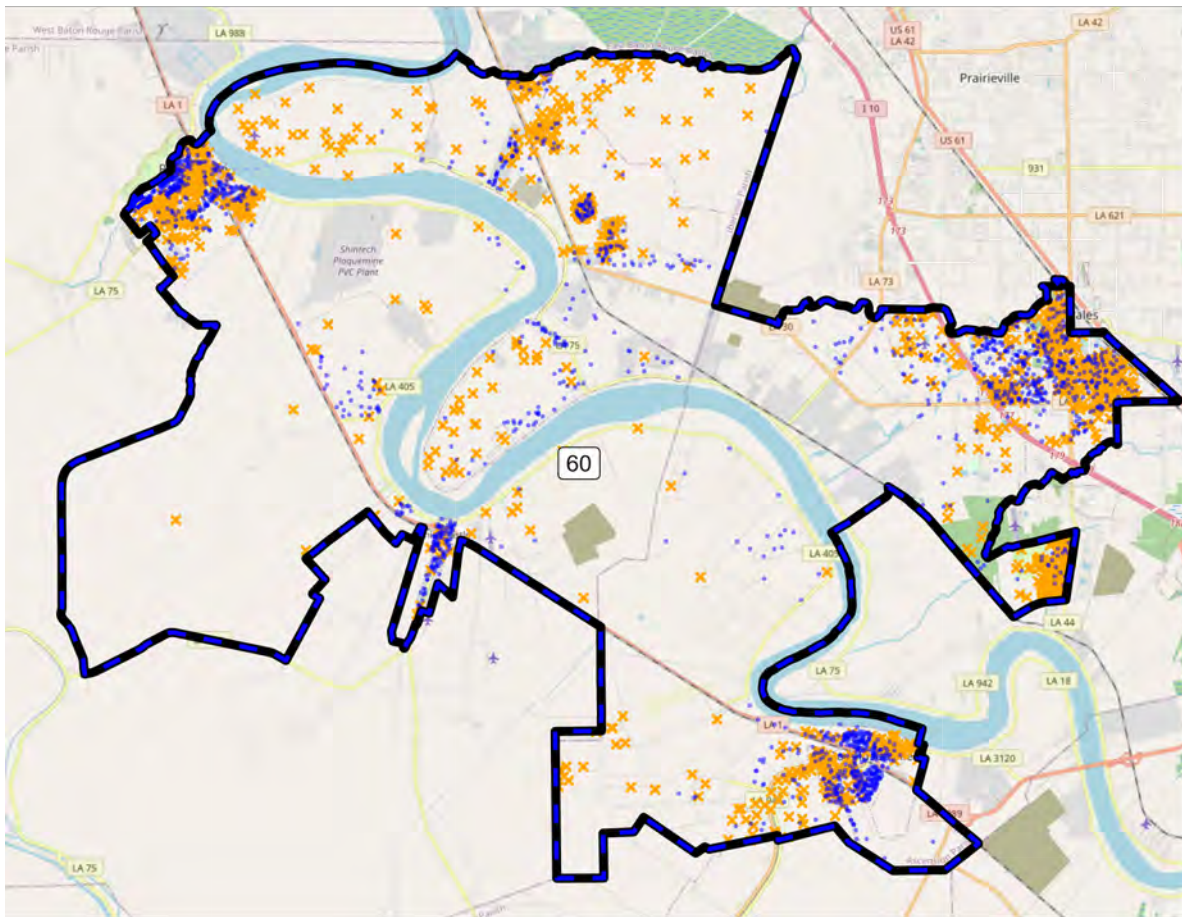


Figure 50: Most compact group of Black residents of voting age in Cooper Illustrative District 60 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,936 Black residents of voting age this approach identifies within the boundaries of Illustrative District 60. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

5.4.5 Cooper Illustrative District 65

Likewise, in District 65, the Black population is concentrated in the overwhelmingly Black western portion of the district. Getting to a BVAP of 16,758 (50% of the district) requires taking in Black voters from outlying, heavily White areas surrounding the district. As the final two maps show, the most compact Black population in the district that reaches 50%+1 of the district's population can't be drawn entirely, or even almost entirely, within this area; once again it's only achieved by pulling the Black residents in heavily White precincts and blocks in the outskirts/rural areas of Baton Rouge. *See* Figs. 51 - 54.

Figure 51: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 65. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.

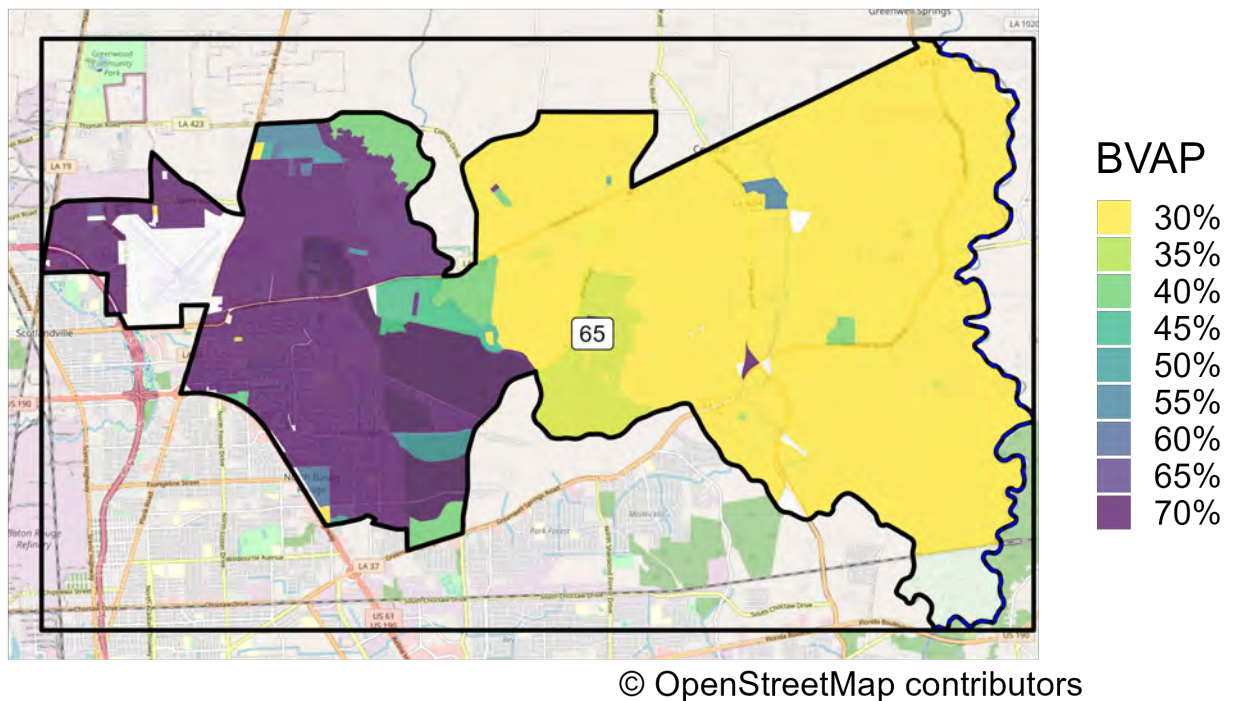


Figure 52: Location of Black and White populations in Cooper Illustrative District 65. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

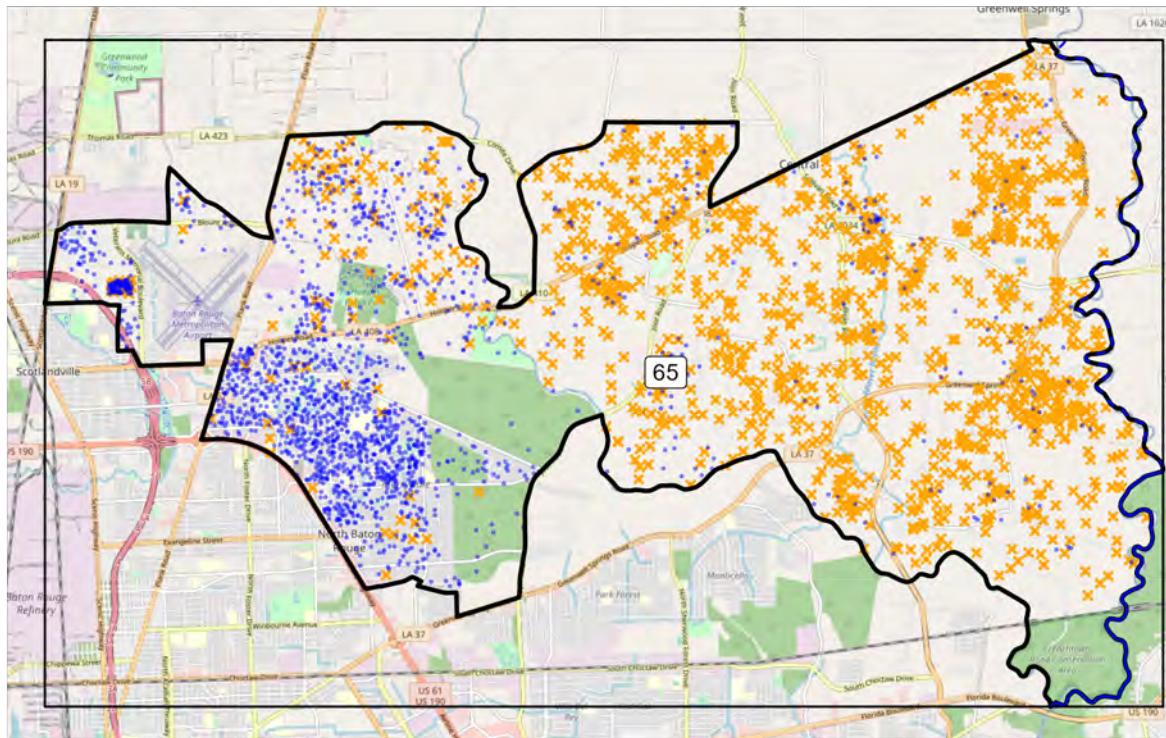
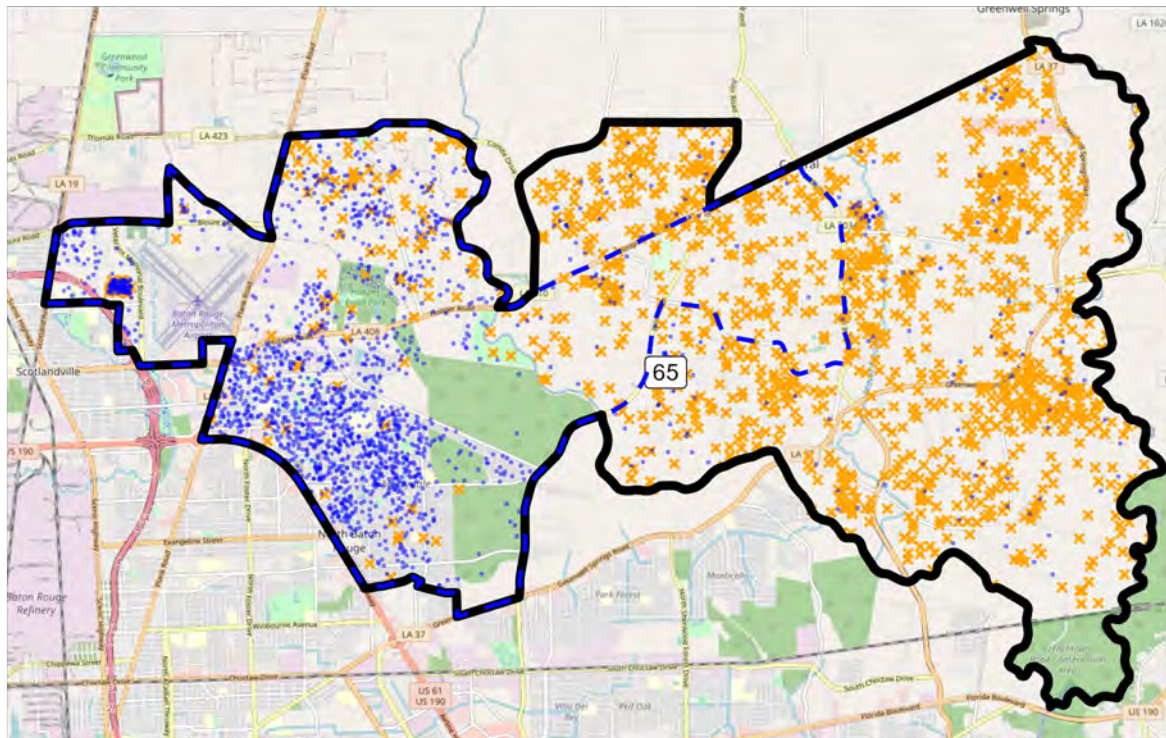


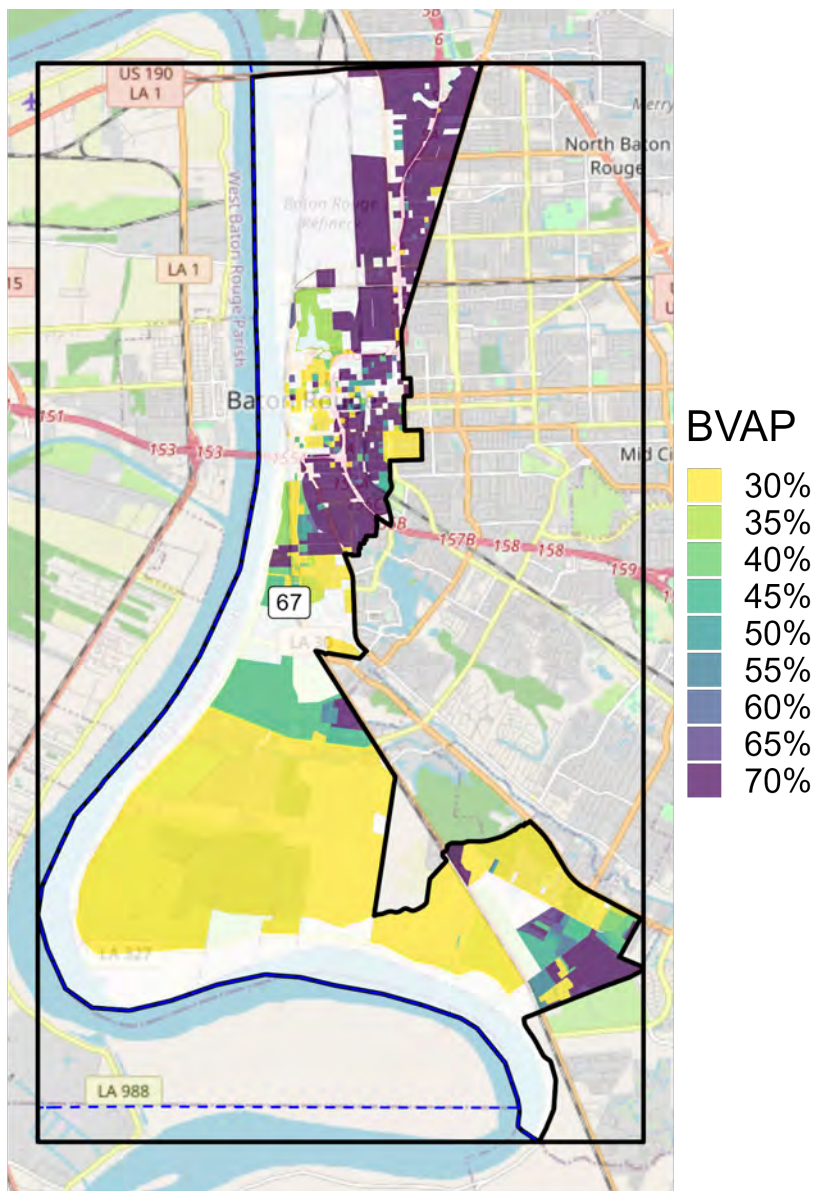
Figure 54: Most compact group of Black residents of voting age in Cooper Illustrative District 65 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,759 Black residents of voting age this approach identifies within the boundaries of Illustrative District 65.



5.4.6 Cooper Illustrative District 67

District 67 is much the same. Because it is only marginally 50% + 1 BVAP, the entire district is necessary to cross that threshold. It takes in the downtown area of Baton Rouge, but then passes through almost exclusively White areas to take in a patch of Black residents at the southeastern end of the district. *See* Figs. 55 - 58

Figure 55: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 67. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



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Figure 56: Location of Black and White populations in Cooper Illustrative District 67. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

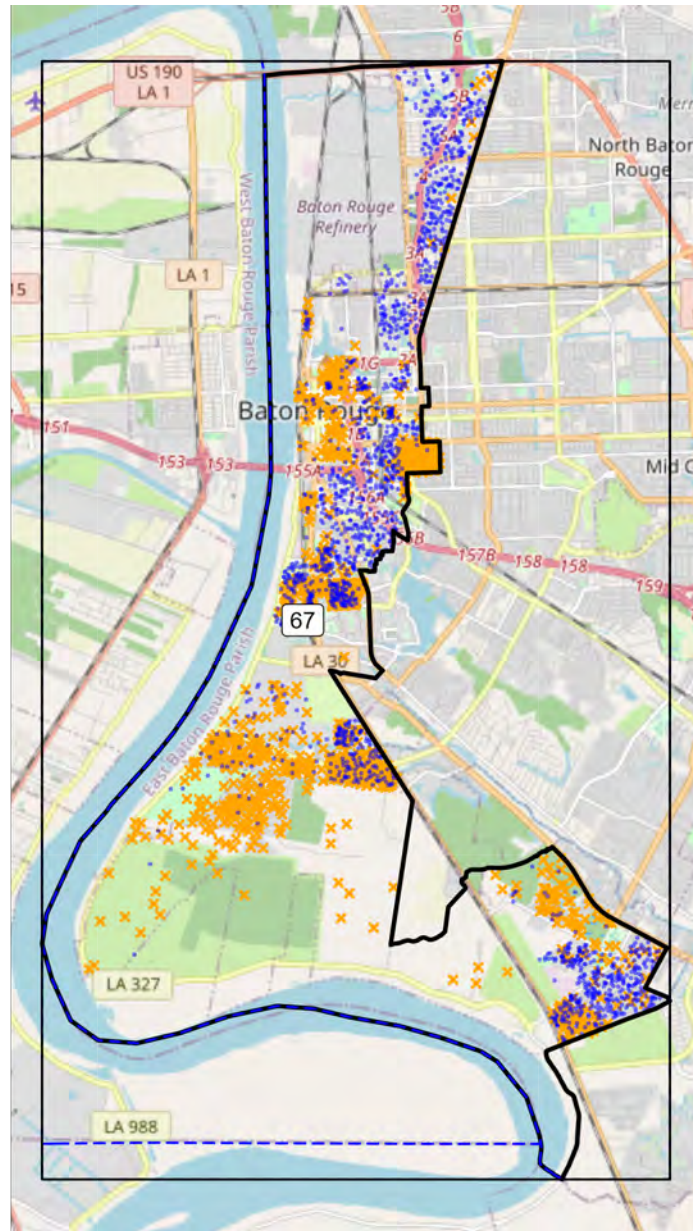


Figure 57: Most compact group of Black residents of voting age in Cooper Illustrative District 67 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 18,238 Black residents of voting age this approach identifies within the boundaries of Illustrative District 67. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

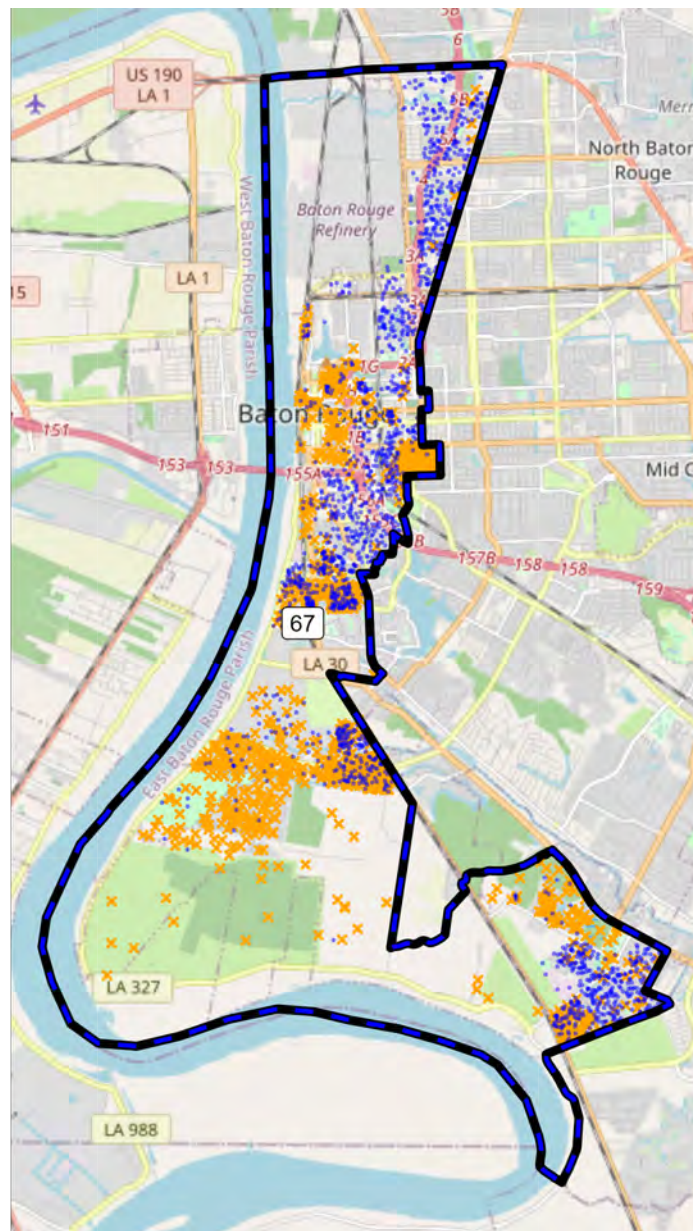
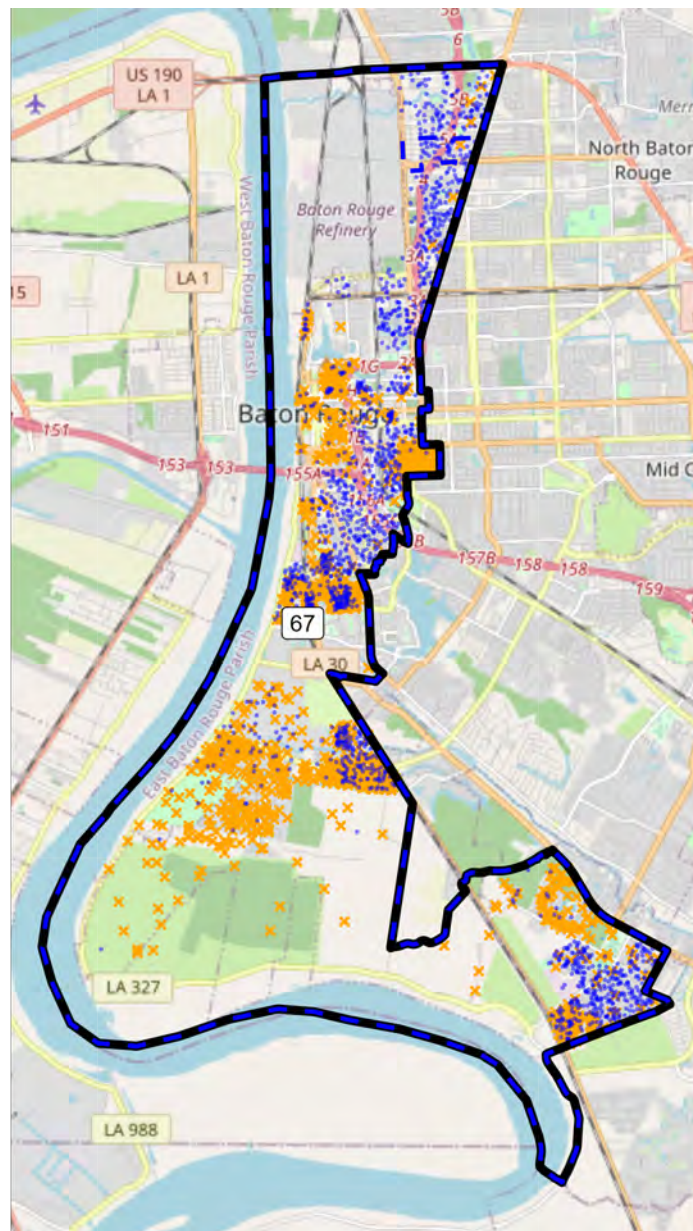


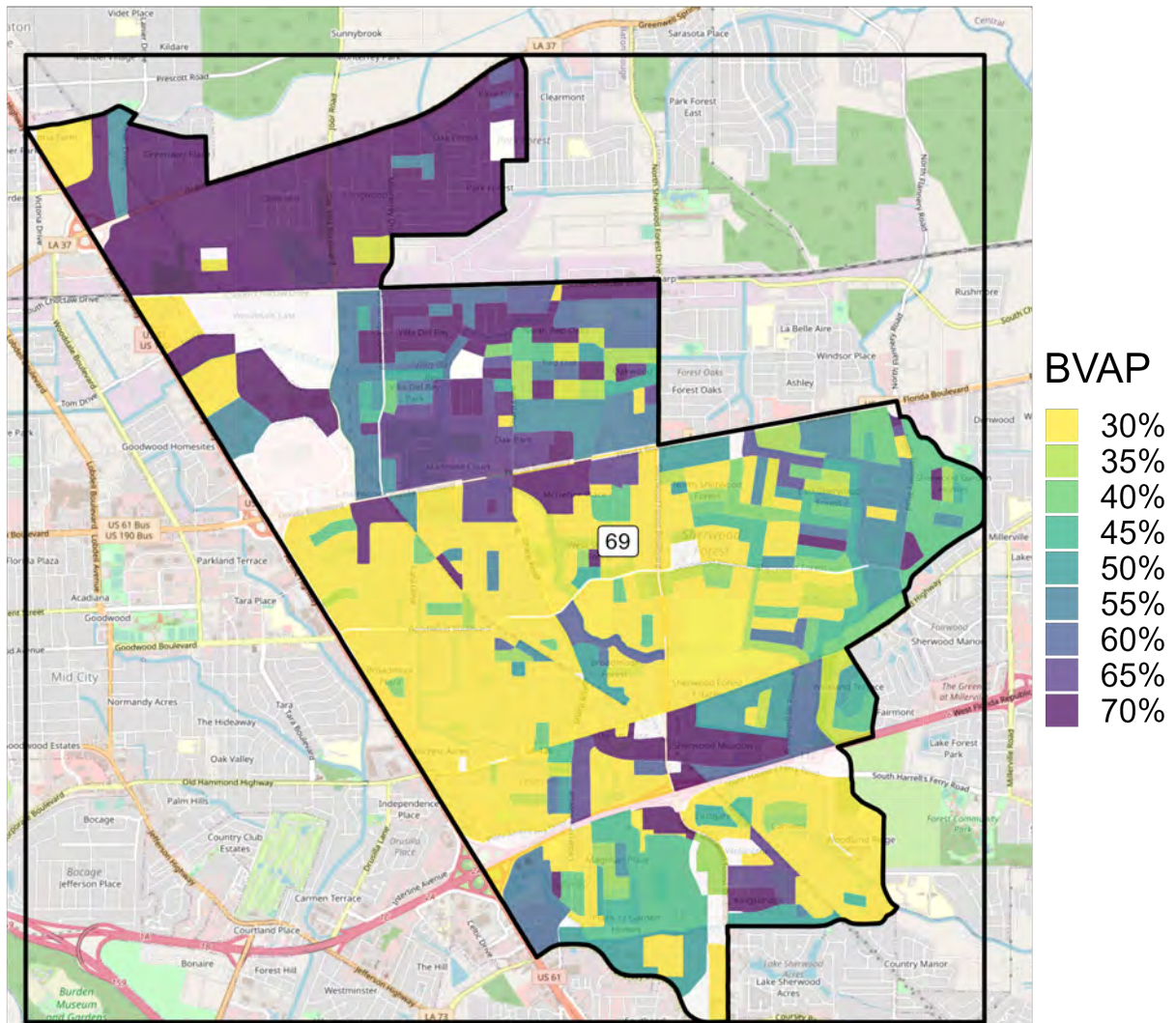
Figure 58: Most compact group of Black residents of voting age in Cooper Illustrative District 67 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 18,238 Black residents of voting age this approach identifies within the boundaries of Illustrative District 67. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.



5.4.7 Cooper Illustrative District 69

District 69 is almost entirely reliant on isolated Black individuals living in heavily White pockets to (barely) cross the 50% + 1 threshold. While there is a heavy concentration of majority Black precincts in the northern edge of the district, those blocks do not even come close to containing 50% of the Black population of the district. Instead, the district ranges southward into mixed and even overwhelmingly White areas of the region to cross that threshold. *See* Figs. 59 - 62.

Figure 59: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 69. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



© OpenStreetMap contributors

Figure 60: Location of Black and White populations in Cooper Illustrative District 69. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

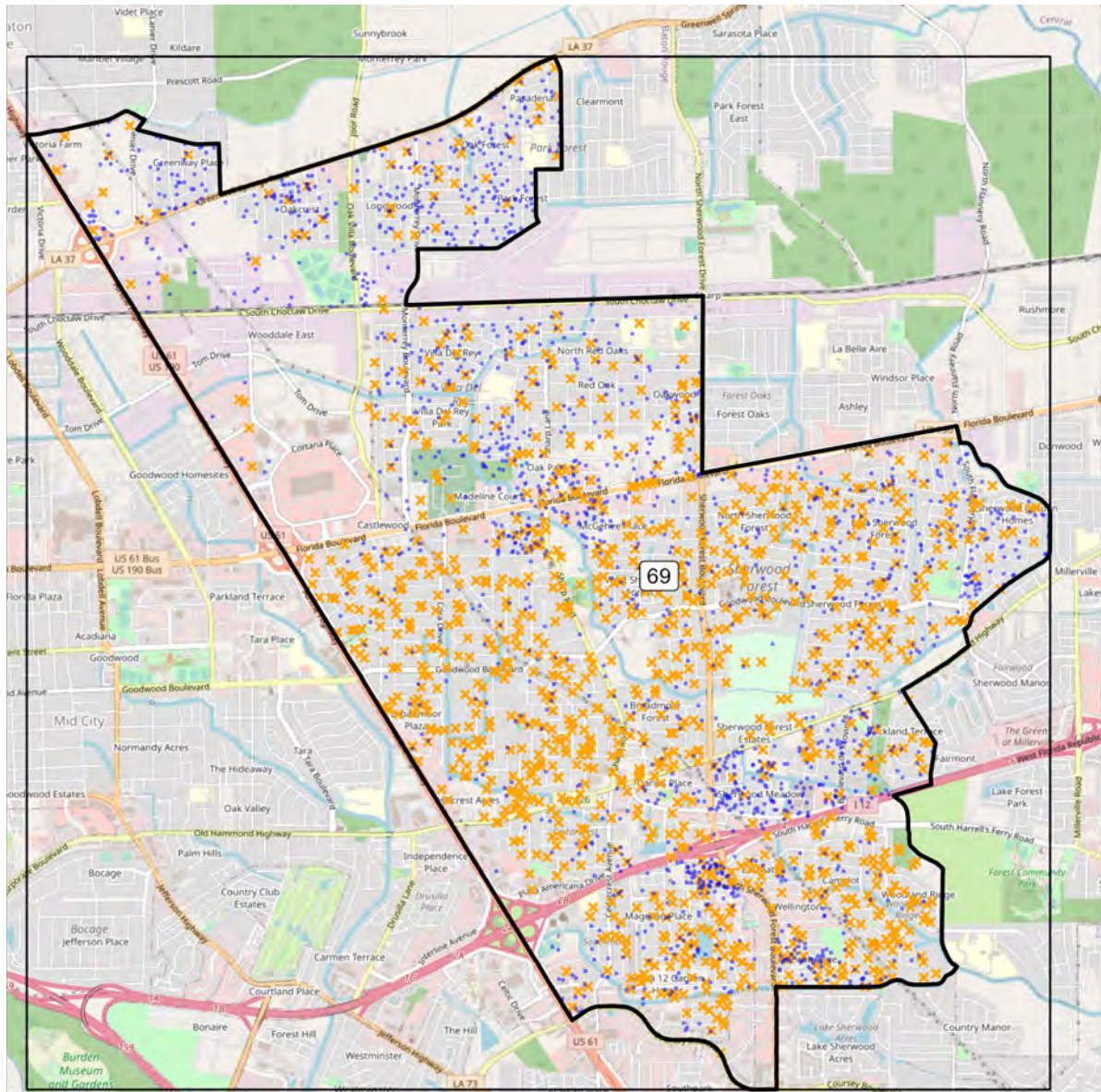


Figure 61: Most compact group of Black residents of voting age in Cooper Illustrative District 69 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,419 Black residents of voting age this approach identifies within the boundaries of Illustrative District 69. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

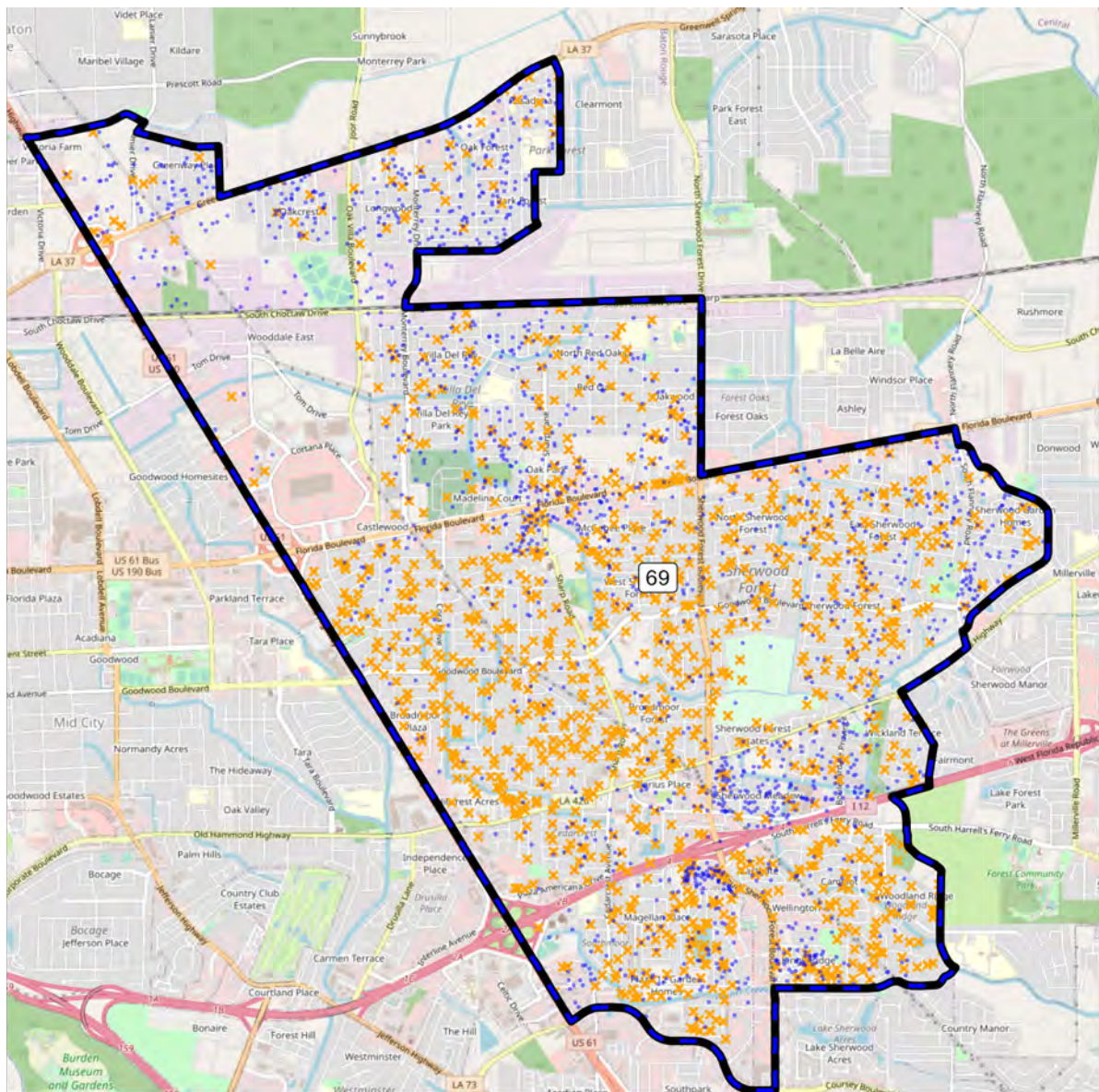
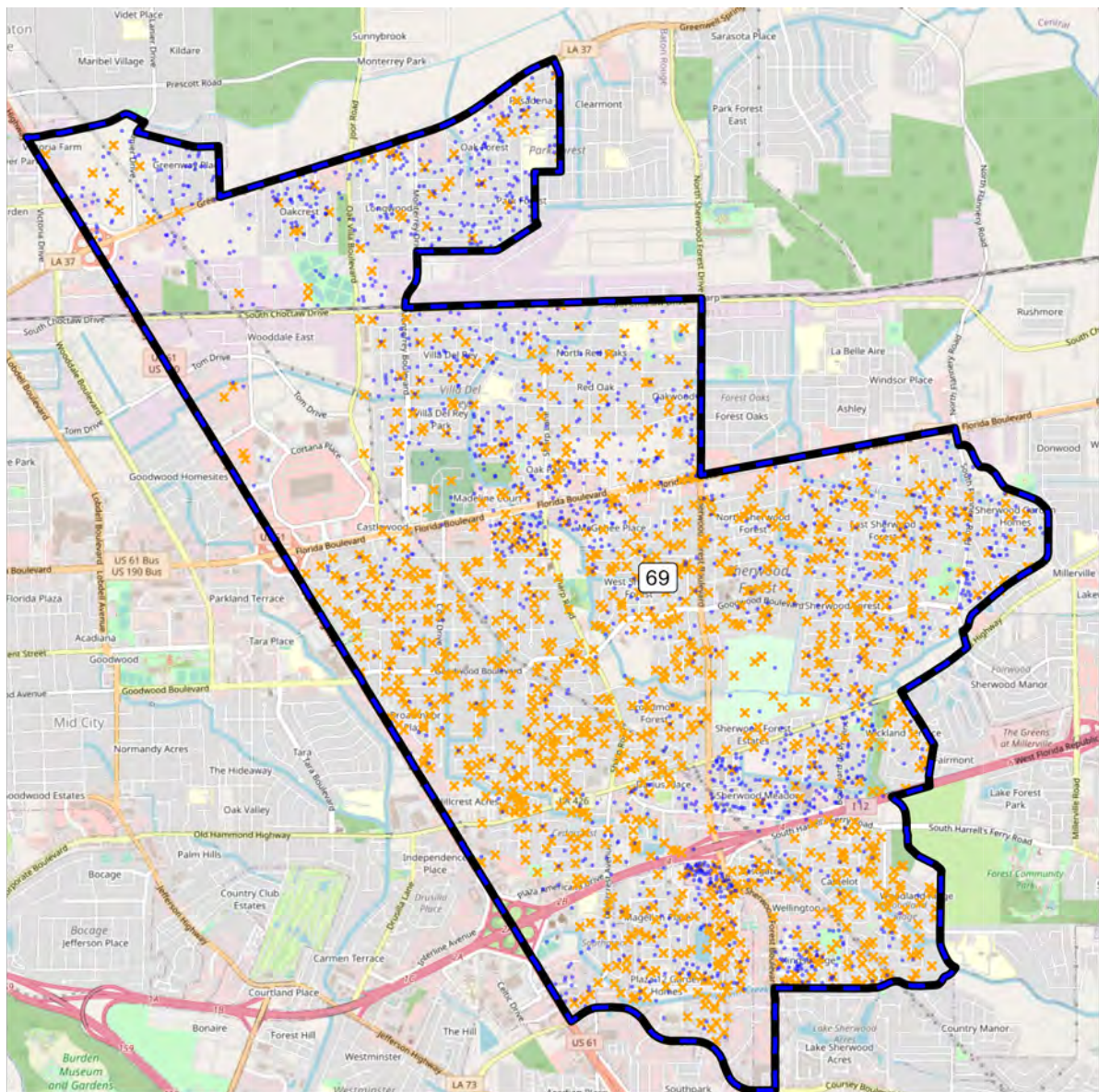


Figure 62: Most compact group of Black residents of voting age in Cooper Illustrative District 69 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,419 Black residents of voting age this approach identifies within the boundaries of Illustrative District 69. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

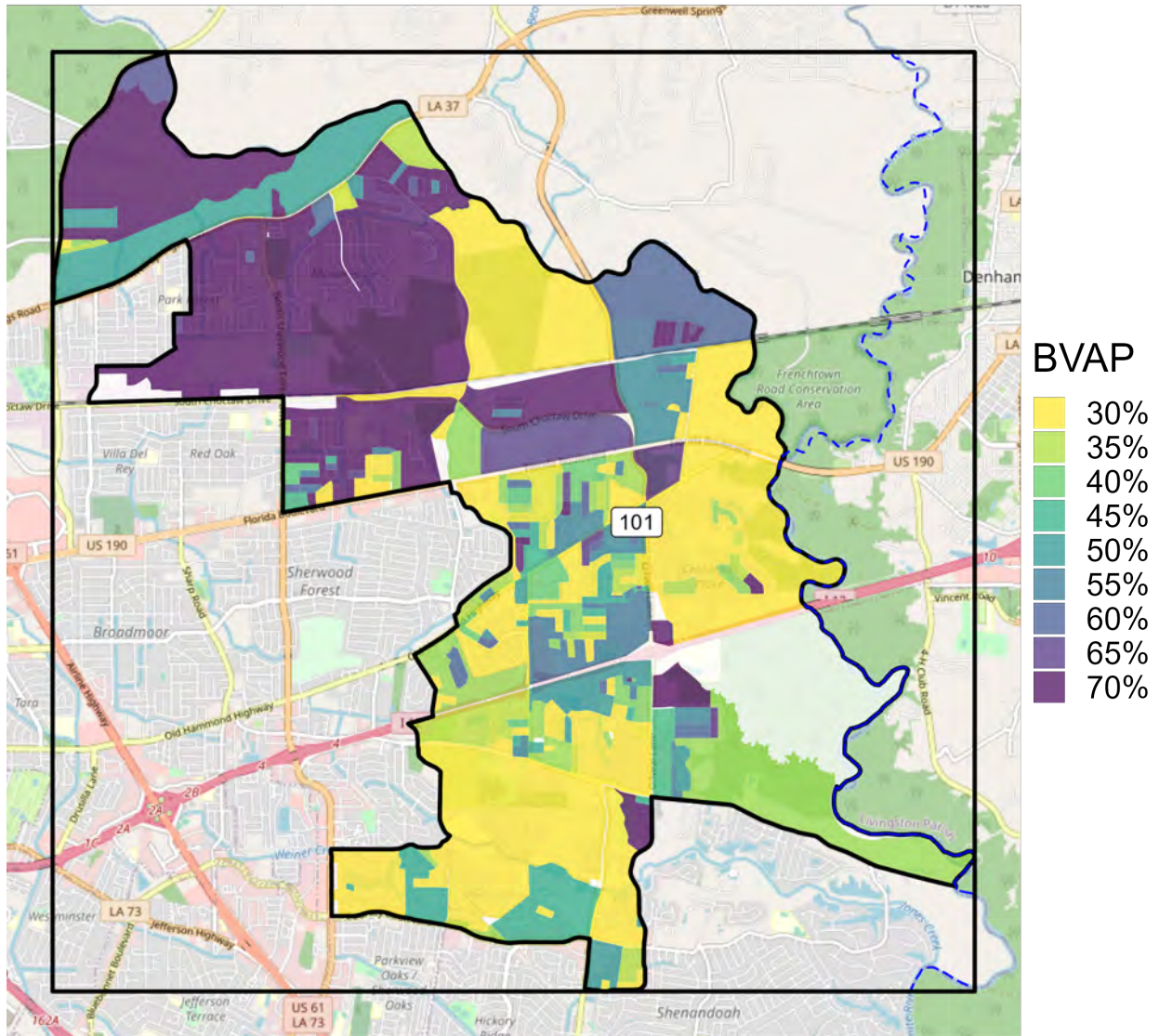


5.4.8 Cooper Illustrative District 101

Finally District 101, which calls to mind Godzilla bending over, likewise does not contain a consolidated Black population at its core. While there is a compact grouping in the northwestern portion of the district, it is only by ranging out toward the parish line that the 50% + 1 threshold is crossed. *See* Figs. 63 - 66.

The Illustrative Maps do provide additional districts where Black voters are more than 50% of the Voting Age Population. It does so, however, at the expense of districts that actually contain compact groups that can constitute a majority of the population in a reasonably configured district.

Figure 63: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 101. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



© OpenStreetMap contributors

Figure 64: Location of Black and White populations in Cooper Illustrative District 101. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

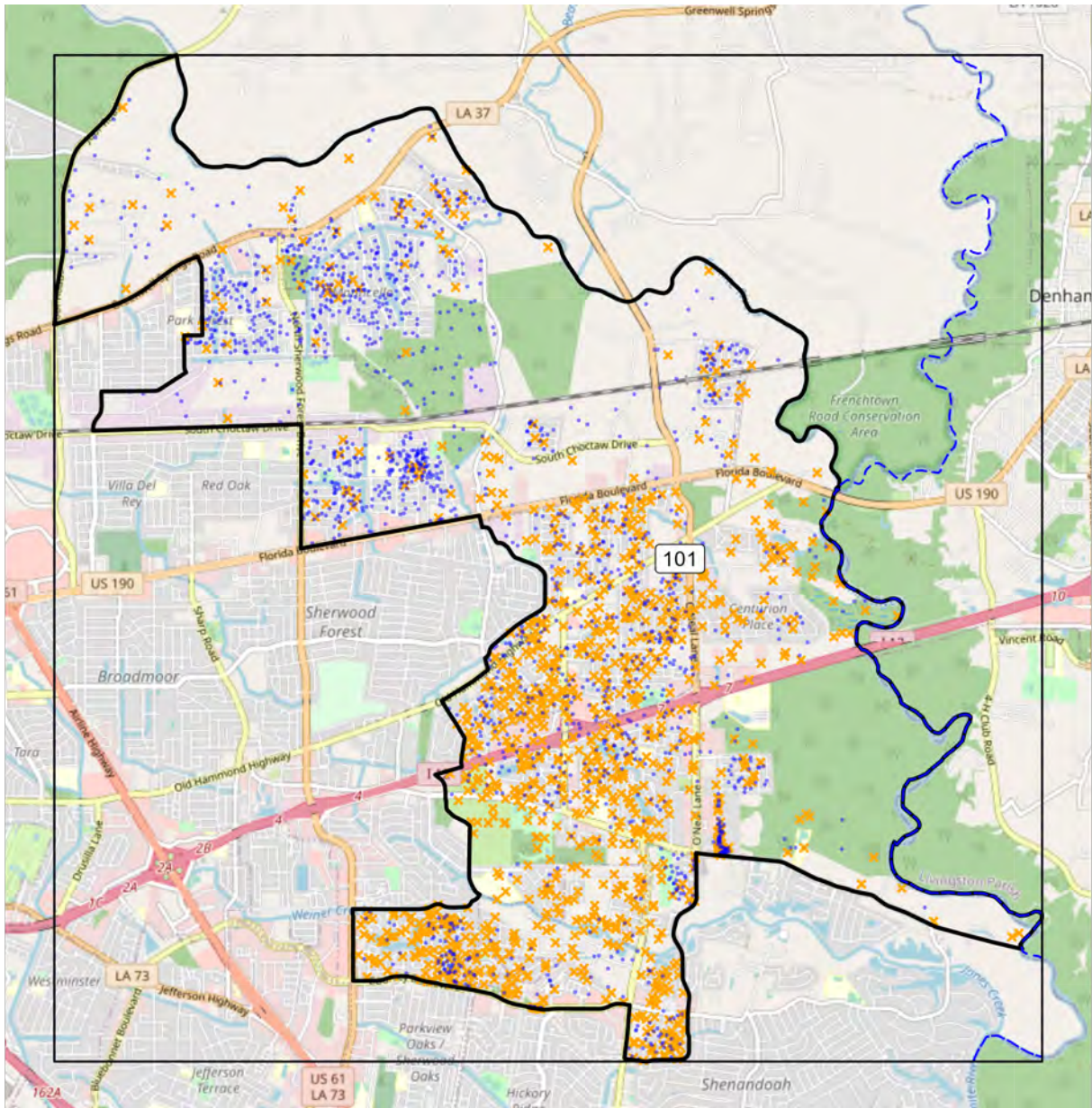


Figure 65: Most compact group of Black residents of voting age in Cooper Illustrative District 101 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,477 Black residents of voting age this approach identifies within the boundaries of Illustrative District 101. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.

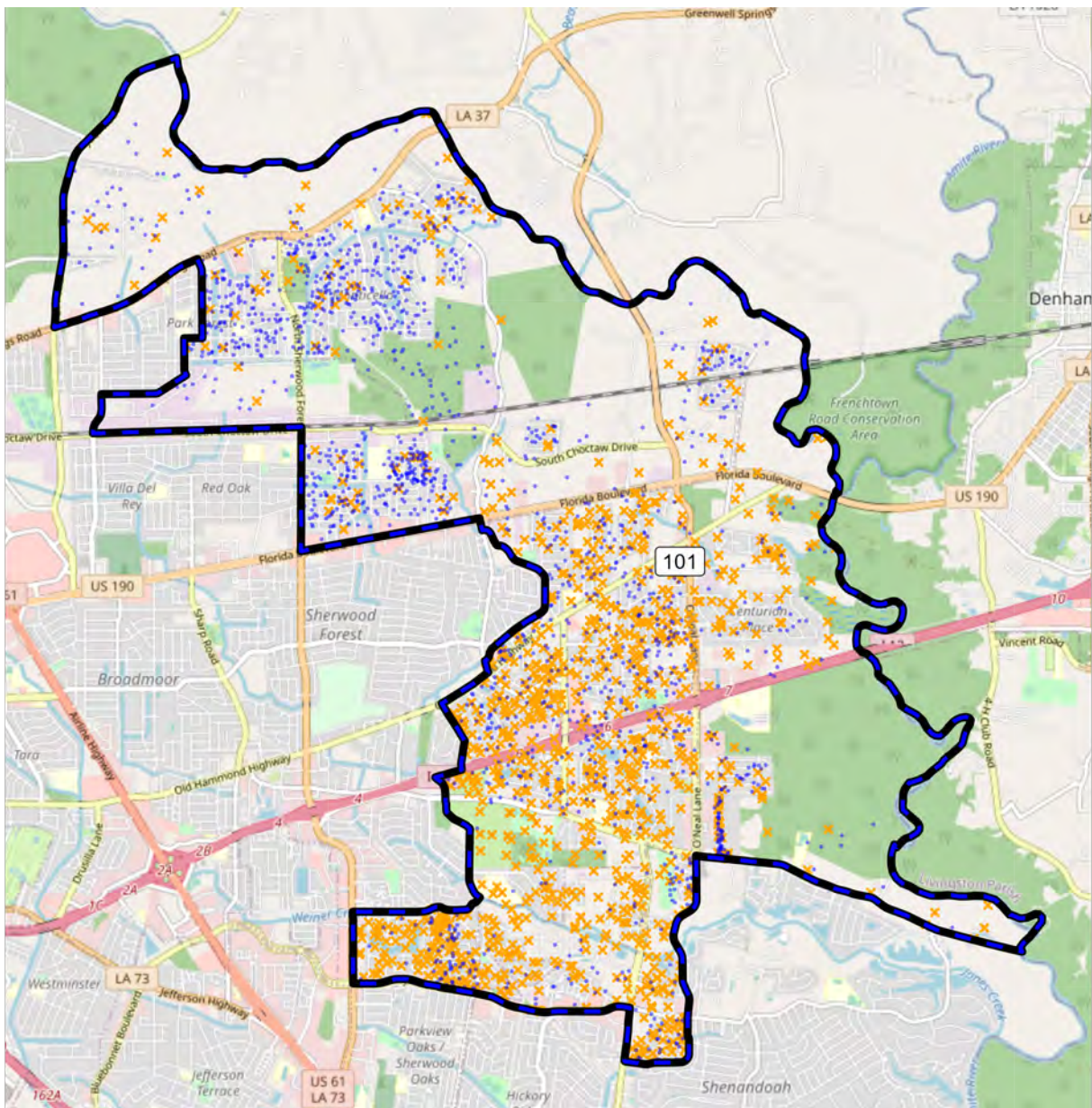
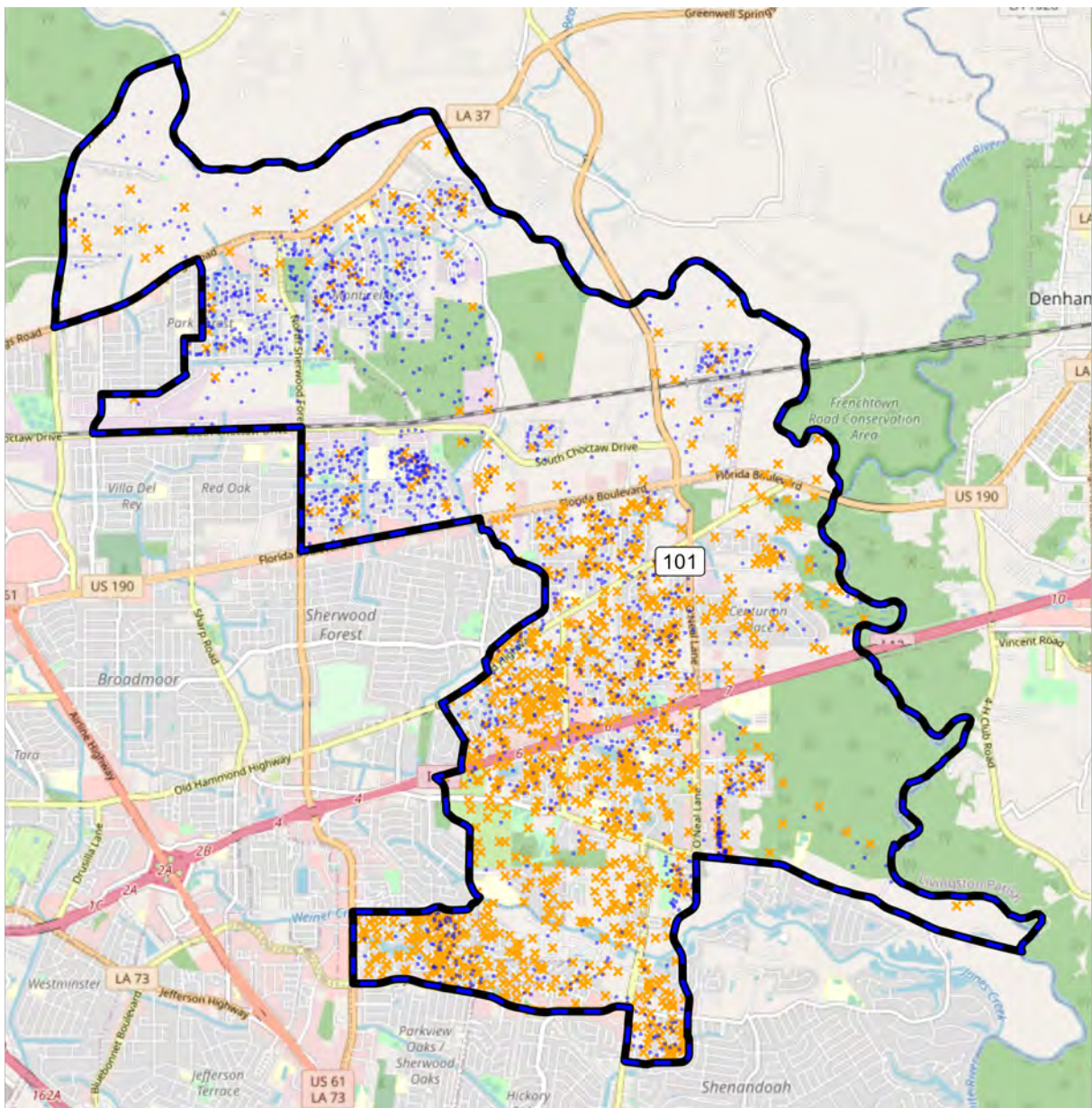


Figure 66: Most compact group of Black residents of voting age in Cooper Illustrative District 101 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group. This is the most compact collection of at least 16,477 Black residents of voting age this approach identifies within the boundaries of Illustrative District 101. Note that, in this map, the dashed blue line mostly sits on top of the district boundary line.



6 Discussion of Additional Cooper Senate Districts

The Illustrative Map for the state senate offers more of the same. It creates three more Black majority districts than the Enacted Map. However, the populations in all three of these districts are dispersed. The ideal population for a district here in the Senate map is 119,430 residents.

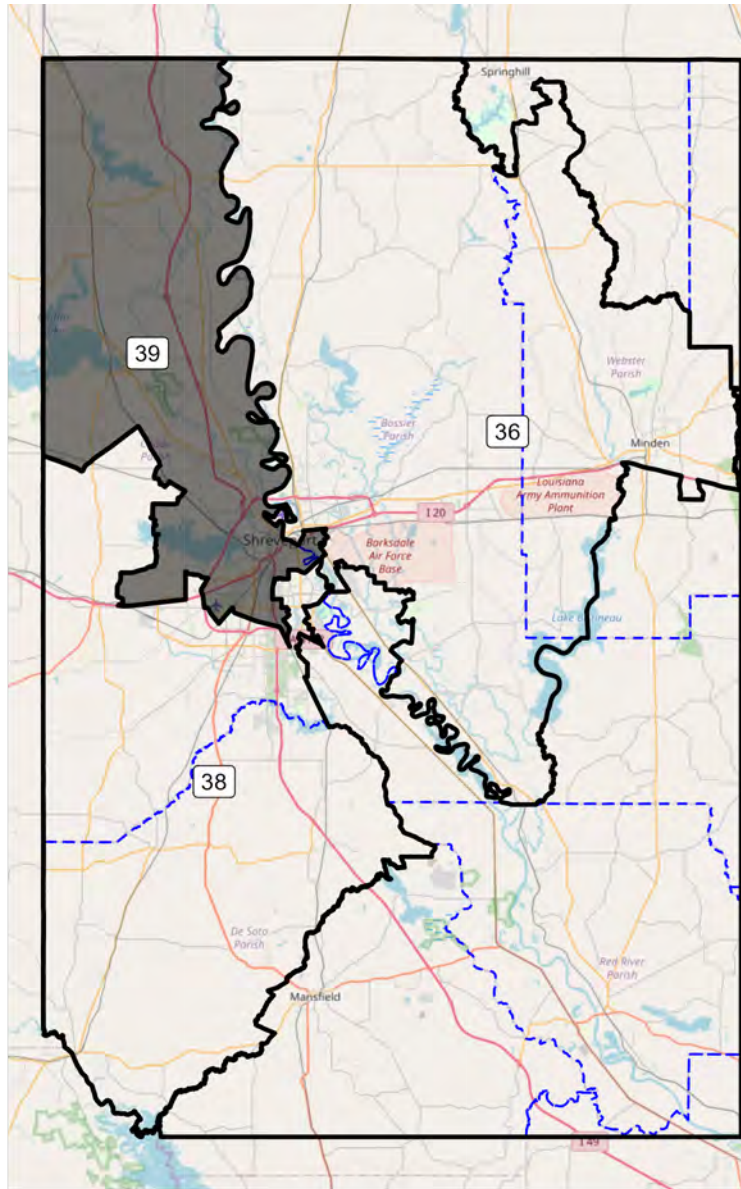
6.1 Shreveport Area

The first new district Mr. Cooper creates is in the Shreveport area. The Enacted Map (Figure 67) creates one Black majority district in the area. District 39 has a BVAP of 60,190, which constitutes 63.7% of the overall voting age population. While the district is sprawling, there are over 40,000 Black residents in the portion of the district in the City of Shreveport alone, who are enough to constitute a majority of the population in the district on their own.

The Illustrative Map (Figure 68), by contrast, splits this population in Shreveport to create an additional Black majority district. It is difficult to say whether the "new" district is District 38 or District 39. But regardless, both districts rely upon sprawling collections of Black residents to reach the 50% + 1 threshold under *Gingles*' first prong. The net effect is to take a district based upon a compact population and split it into two districts based upon non-compact populations.

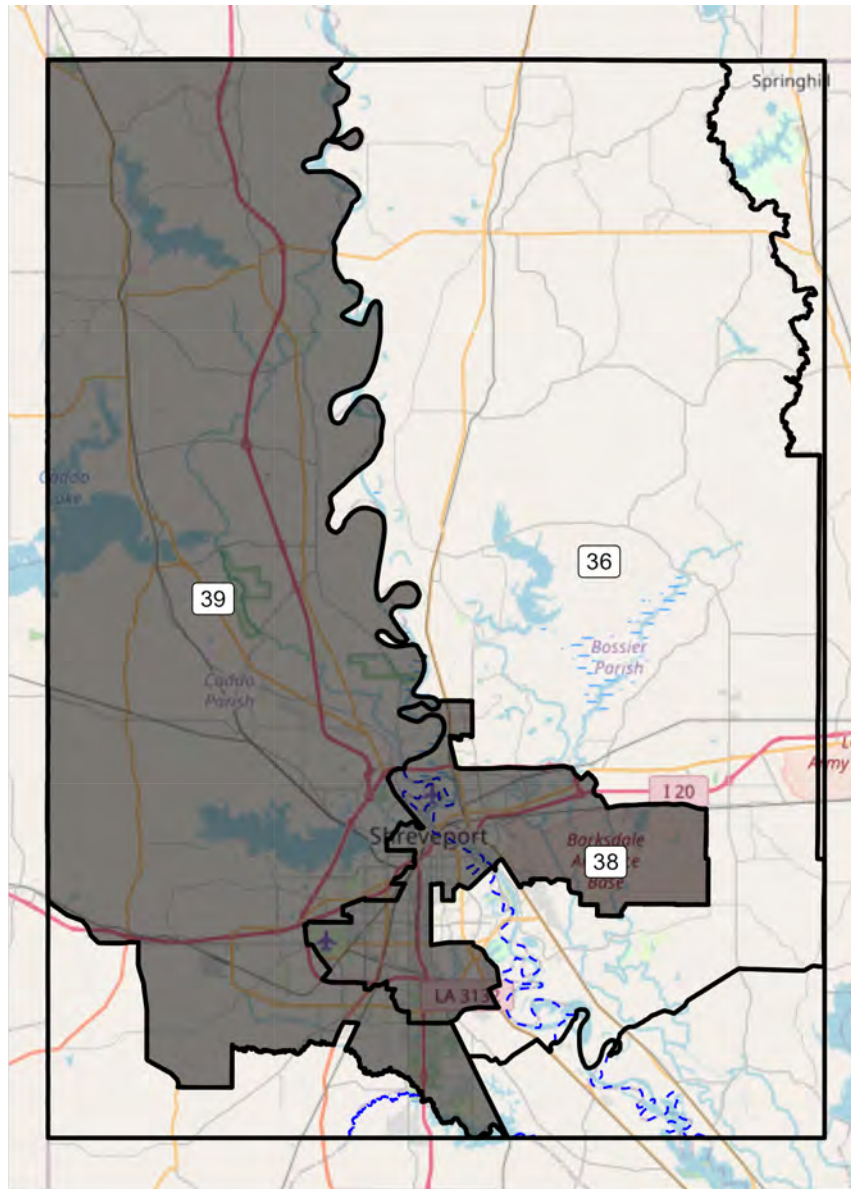
The two districts here are discussed individually below.

Figure 67: Black Majority VAP District in the Shreveport Area, Enacted Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



© OpenStreetMap contributors

Figure 68: Black Majority VAP Districts in the Shreveport Area, Cooper Illustrative Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



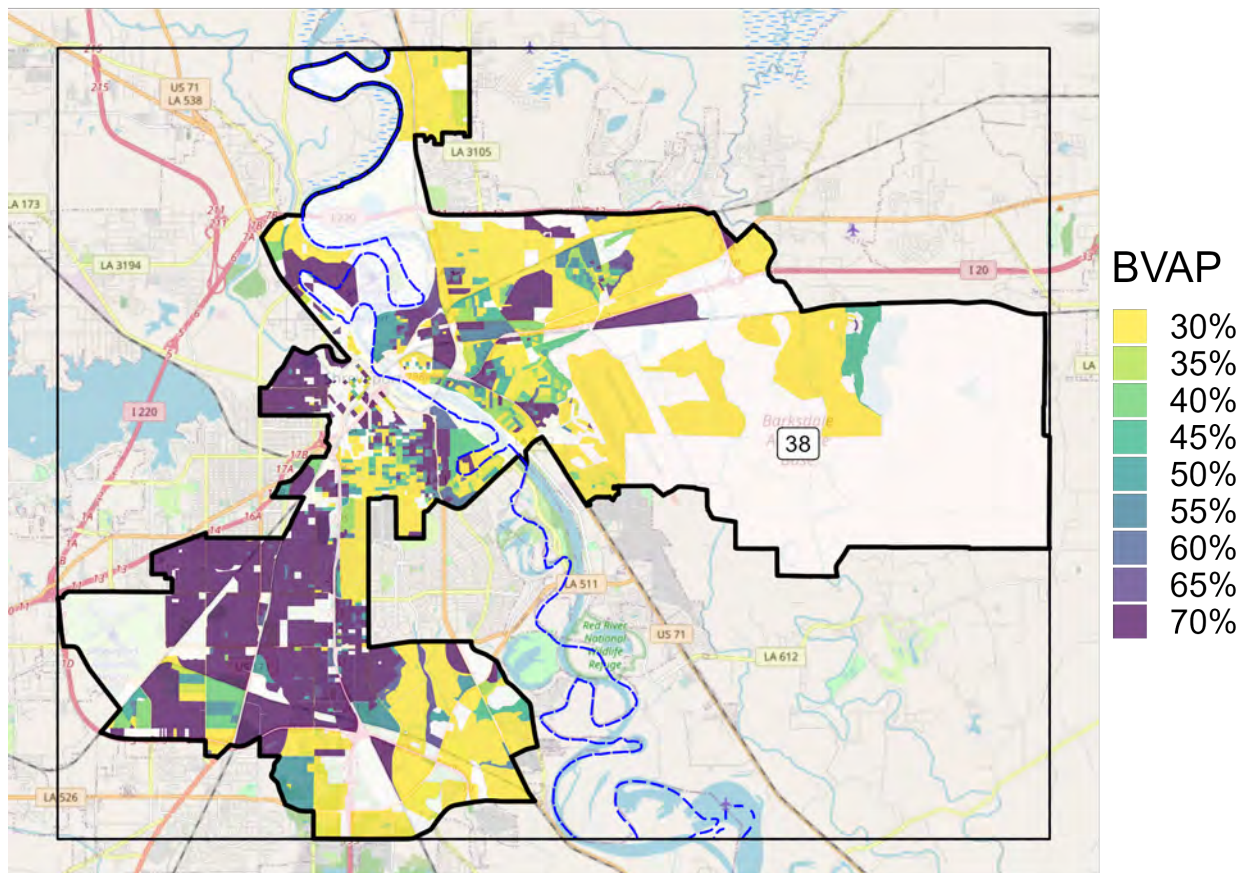
© OpenStreetMap contributors

6.1.1 Cooper Illustrative District 38

District 38 is the less egregious of the two districts. For a group to constitute a majority of the district as drawn, it would need a VAP of 43,212. There are 45,955 Black adult residents in the district as drawn, or 53.2% of the overall VAP.

But this again relies on drawing together Black populations from across the area, as the maps provided in Figures 69 - 73 demonstrate. The portion of the district in Caddo Parish is multi-racial – about 60% Black, with that population spread out over the city. There are 34,954 Black residents of voting age in this portion of the district - not enough to constitute a majority. To get to a Black VAP of 43,212, the district must instead cross the Red River to take in downtown Bossier City and then extend further into Bossier Parish past another layer of predominately White precincts. In other words, this is not a compact population group.

Figure 69: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 38. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



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Figure 70: Location of Black population in Cooper Illustrative District 38. One blue dot represents 10 Black residents of voting age. Dashed blue lines reflect Parish boundaries.

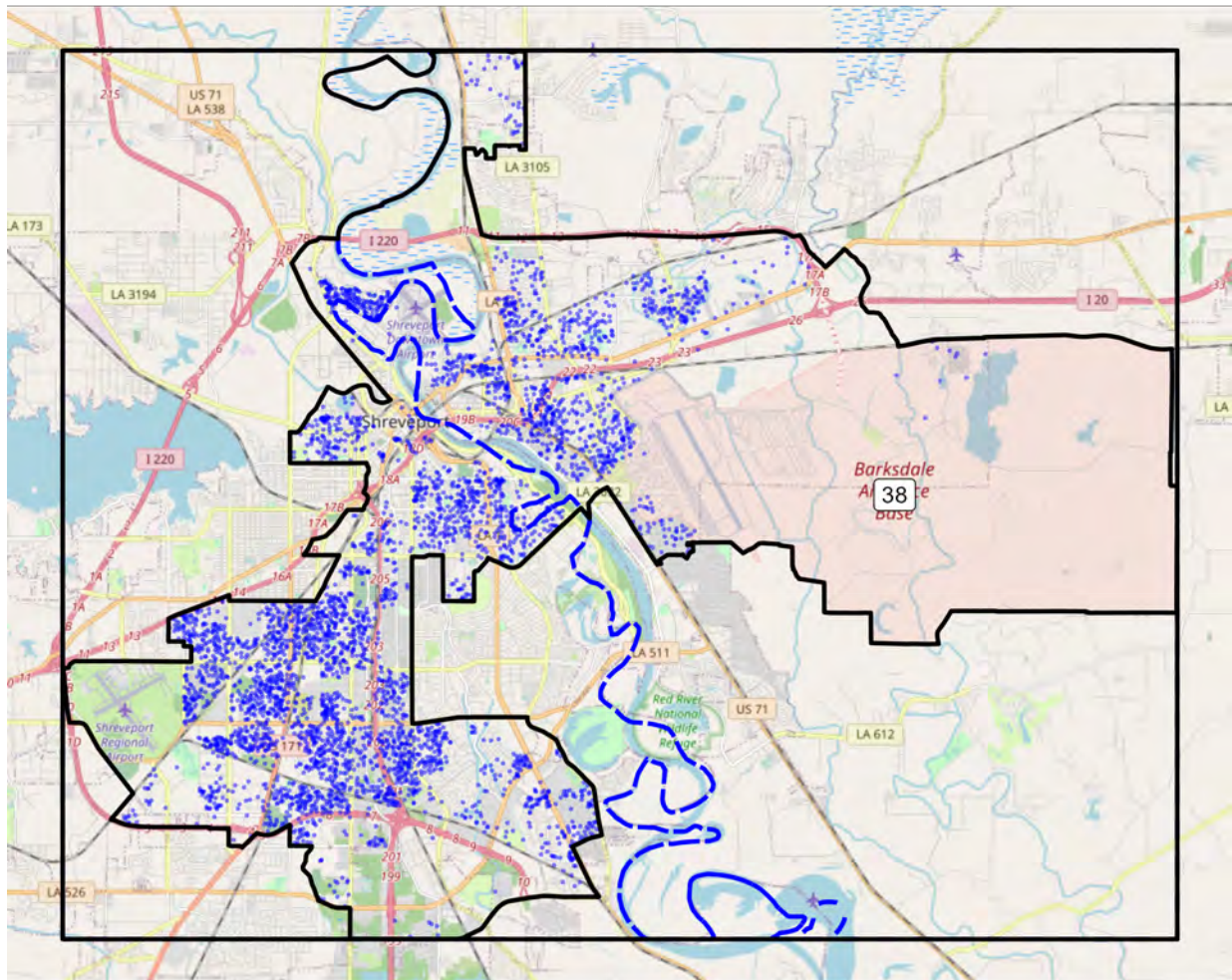


Figure 71: Location of Black and White populations in Cooper Illustrative District 38. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

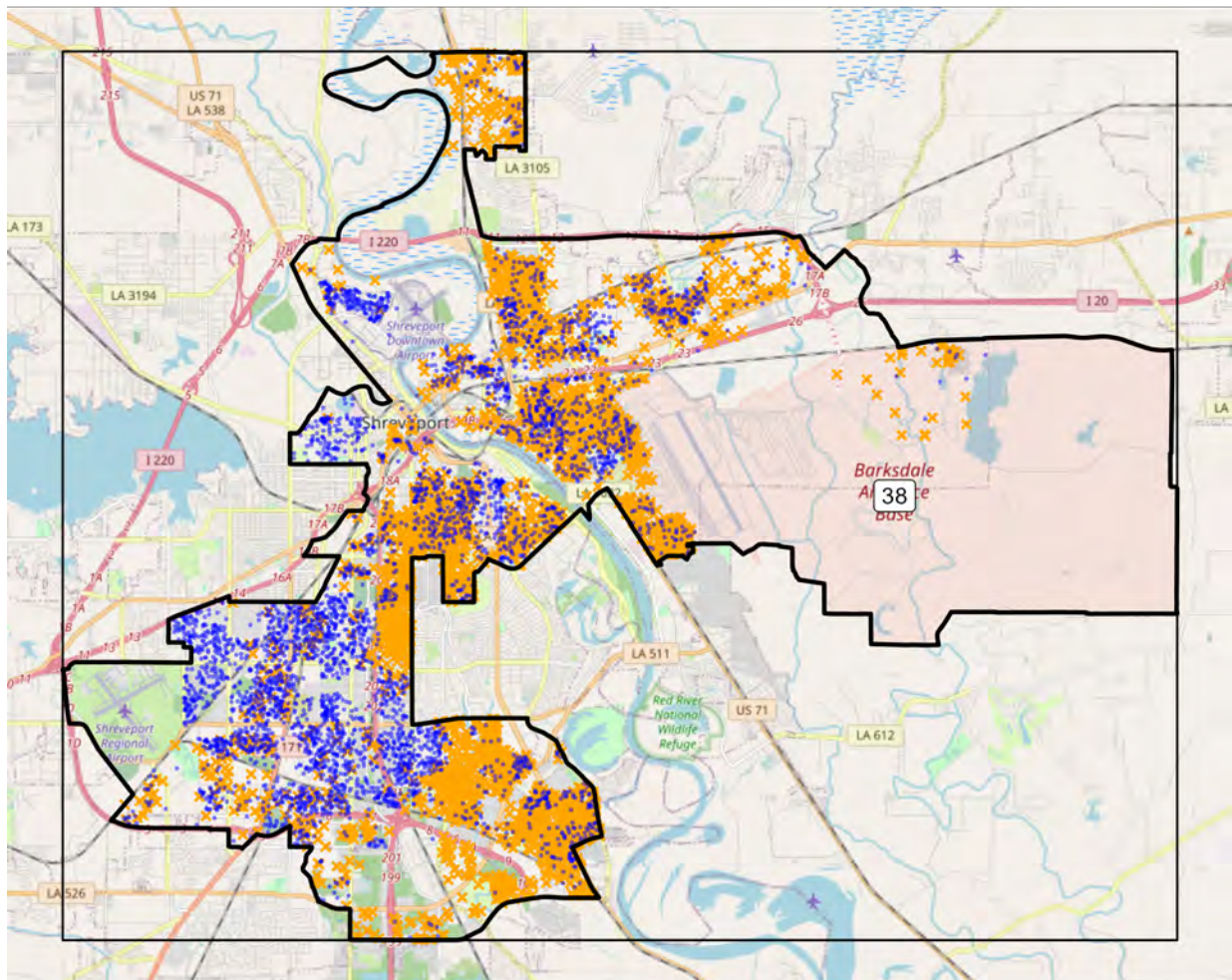


Figure 72: Most compact group of Black residents of voting age in Cooper Illustrative District 38 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group.

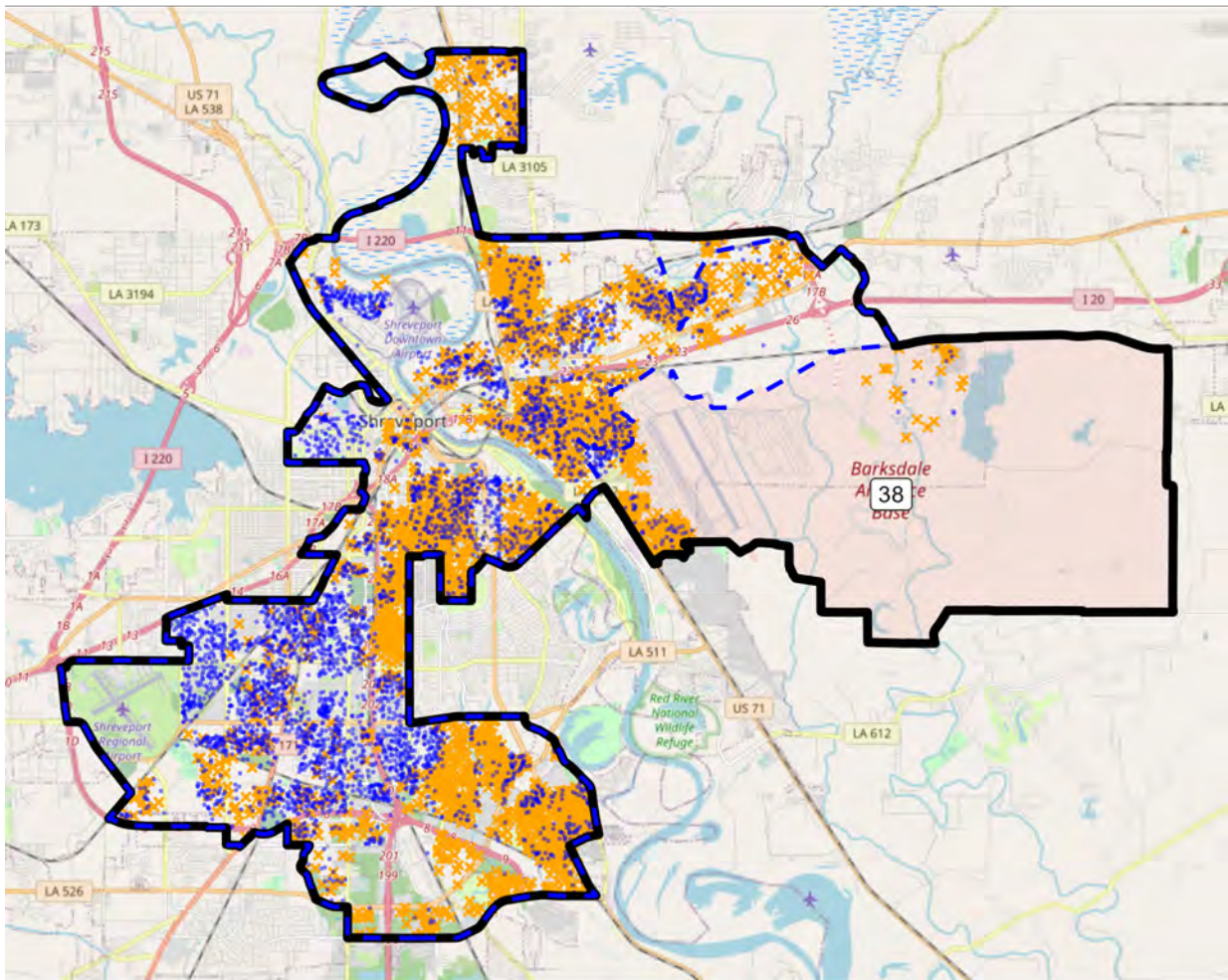
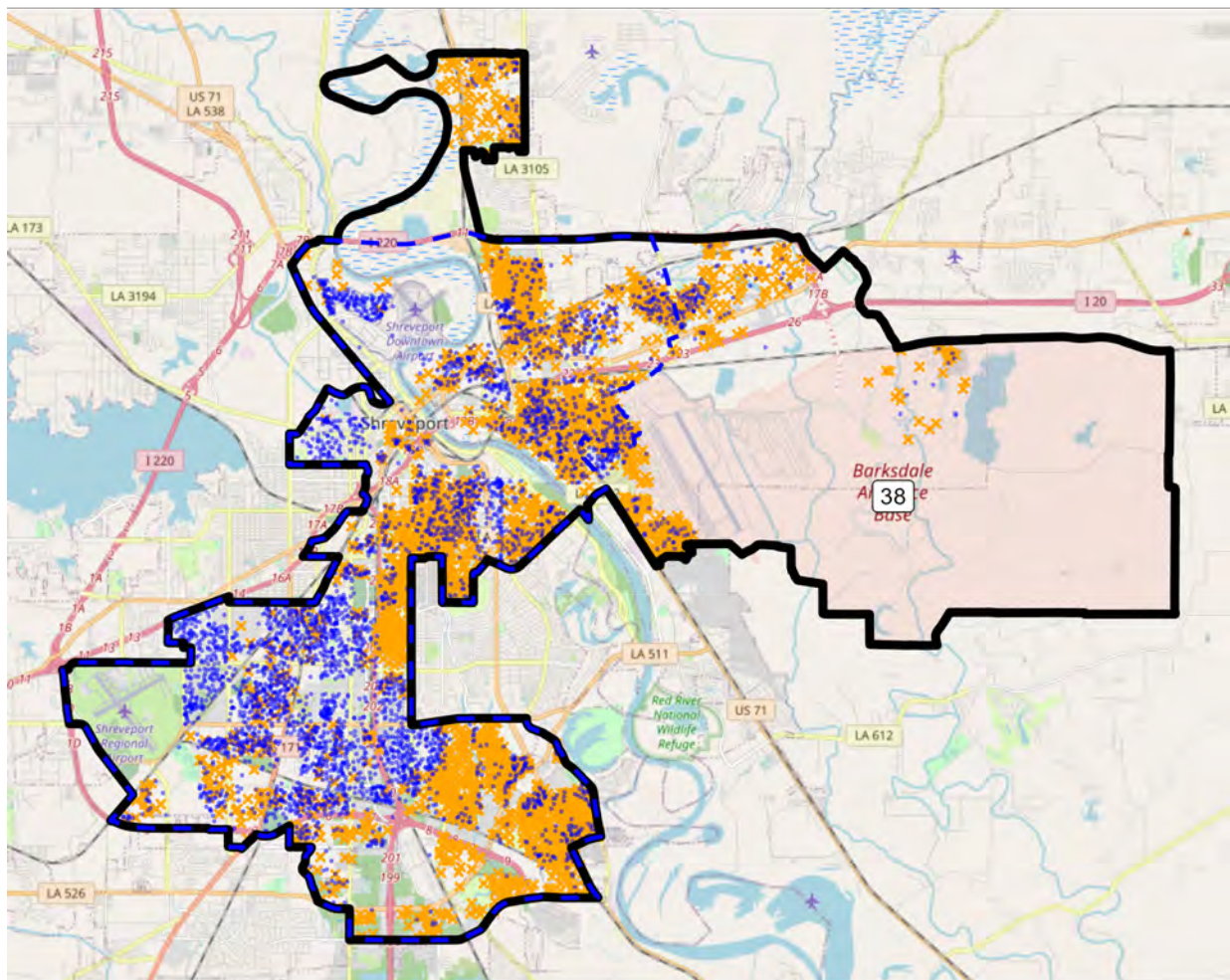


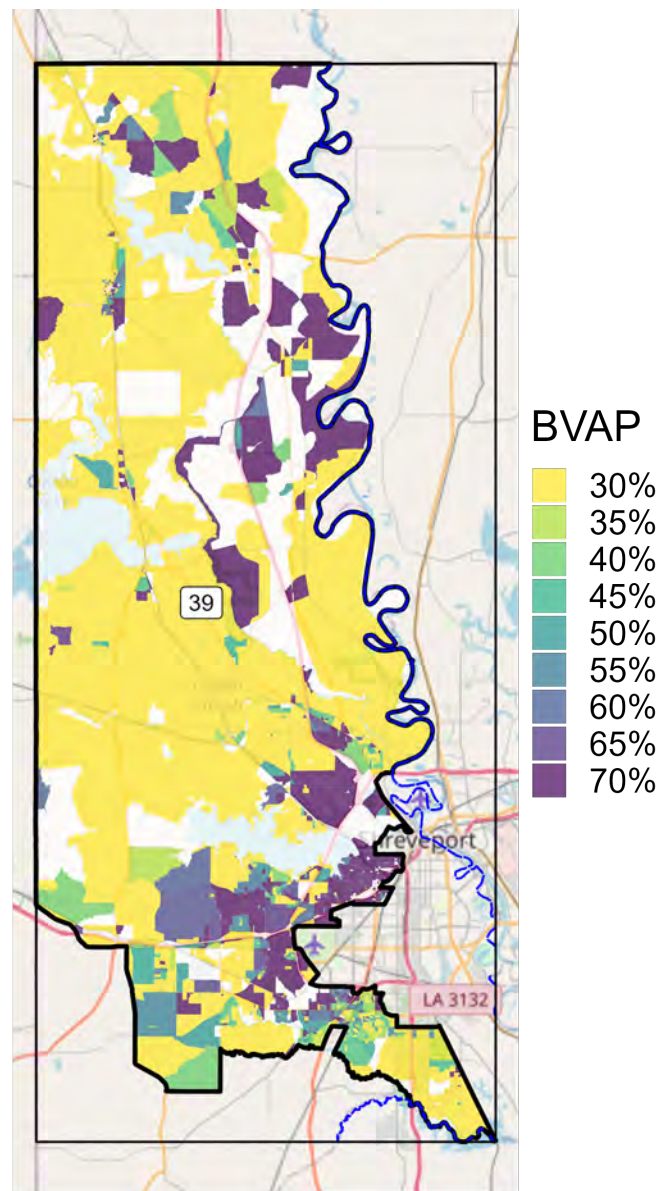
Figure 73: Most compact group of Black residents of voting age in Cooper Illustrative District 38 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group.



6.1.2 Cooper Illustrative District 39

Nor is Illustrative District 39 based on a compact majority population. As a price of creating a second majority-Black district in the area, it sees its BVAP substantially reduced to 52.5% vis-a-vis the Enacted Map. Not only that, but, like Illustrative District 1 in the House map, it must now reach out into rural Caddo Parish to reach the 50%+1 threshold, taking in isolated pockets of Black residents in small towns and individual Black residents. This is illustrated in Figures 74 - 78.

Figure 74: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 39. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



© OpenStreetMap contributors

Figure 75: Location of Black population in Cooper Illustrative District 39. One blue dot represents 10 Black residents of voting age. Dashed blue lines reflect Parish boundaries.

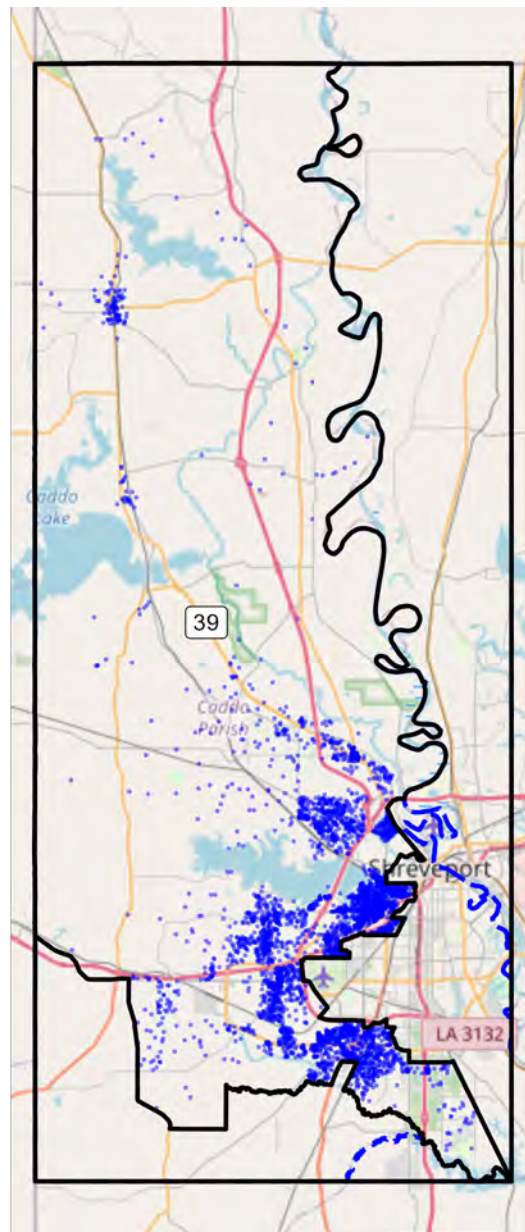


Figure 76: Location of Black and White populations in Cooper Illustrative District 39. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

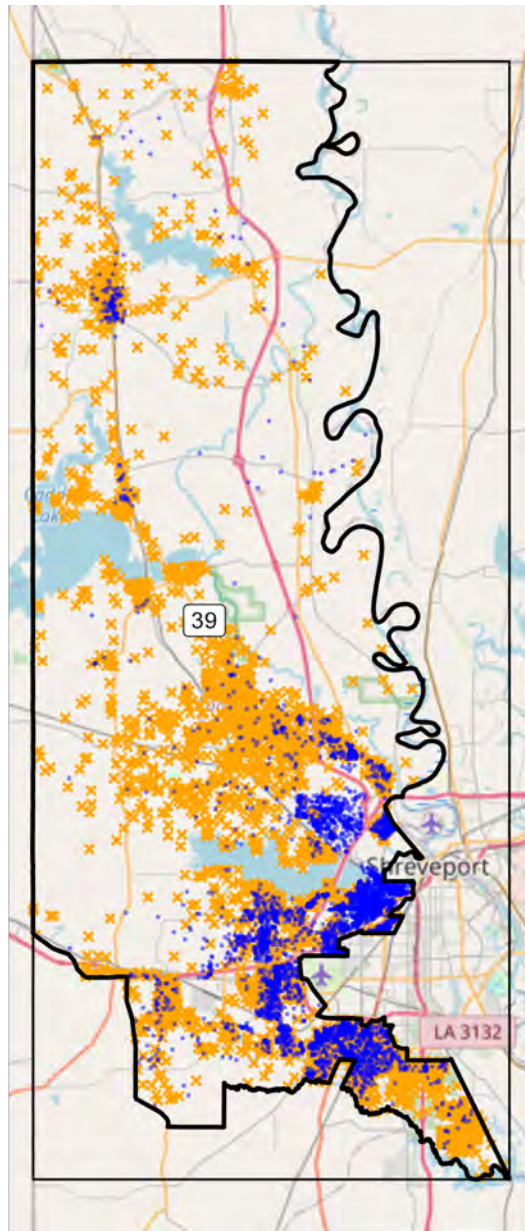


Figure 77: Most compact group of Black residents of voting age in Cooper Illustrative District 39 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group.

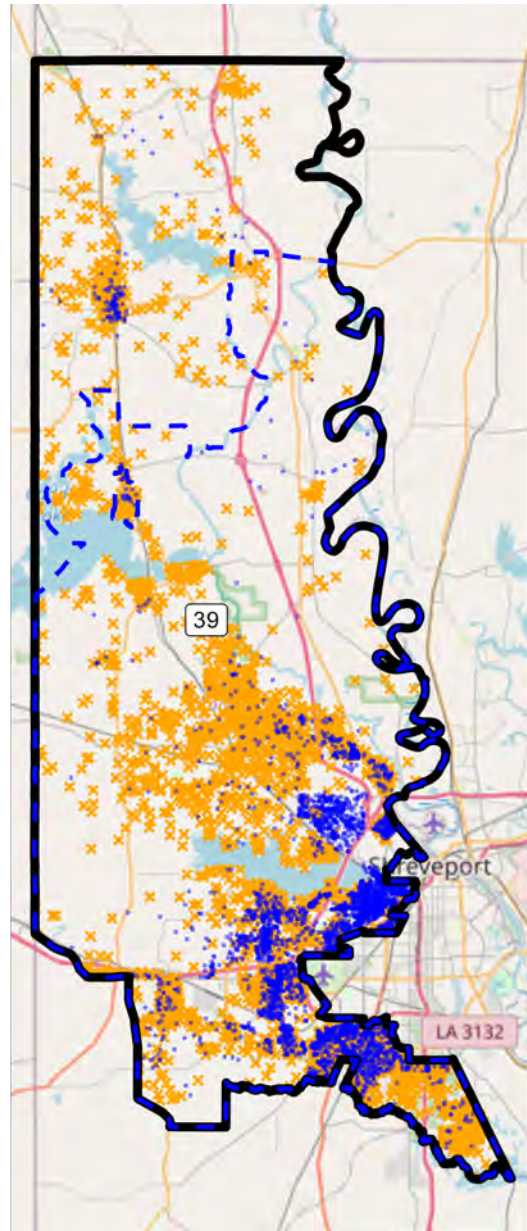
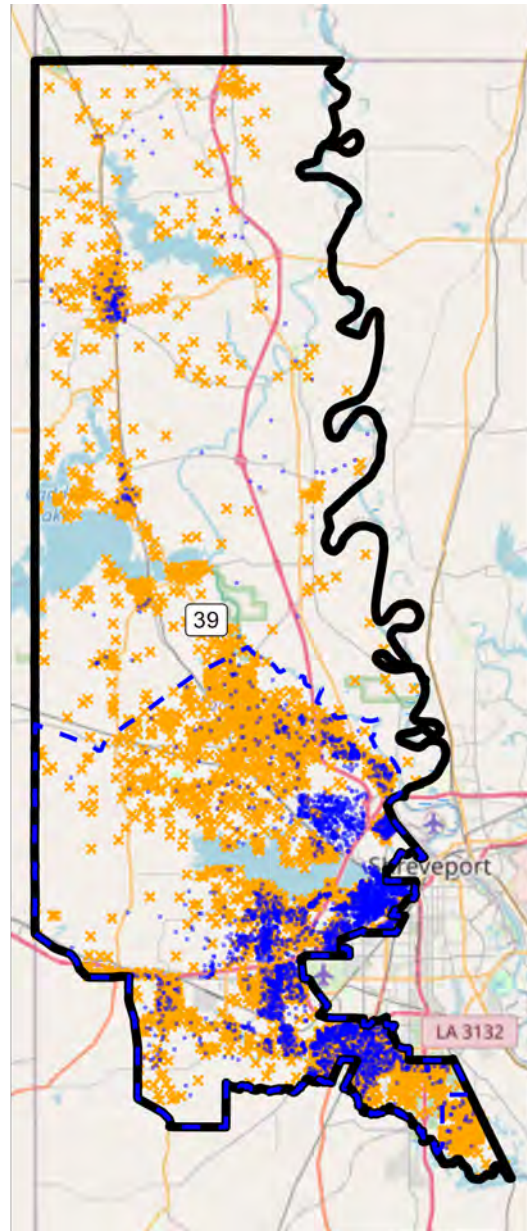


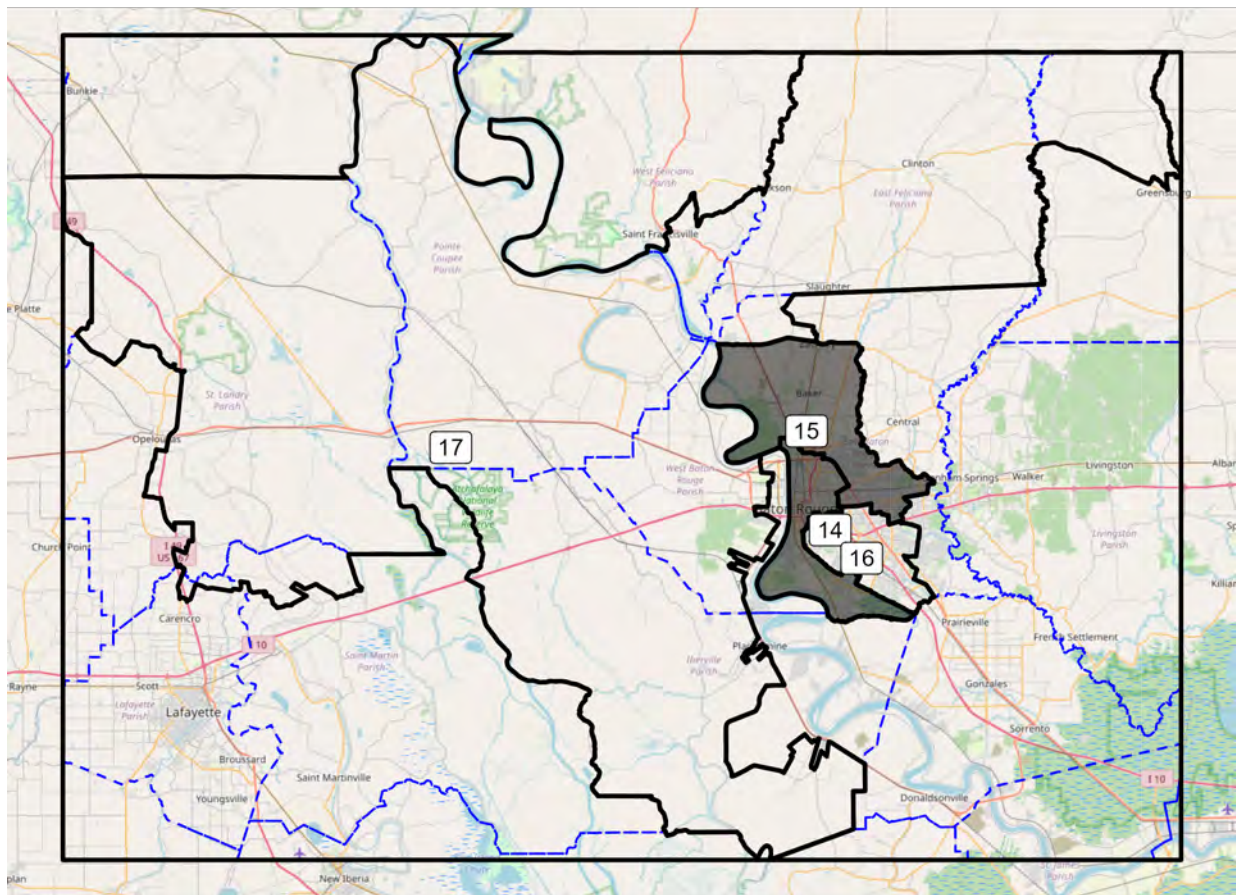
Figure 78: Most compact group of Black residents of voting age in Cooper Illustrative District 39 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group.



6.2 East/West Baton Rouge Area

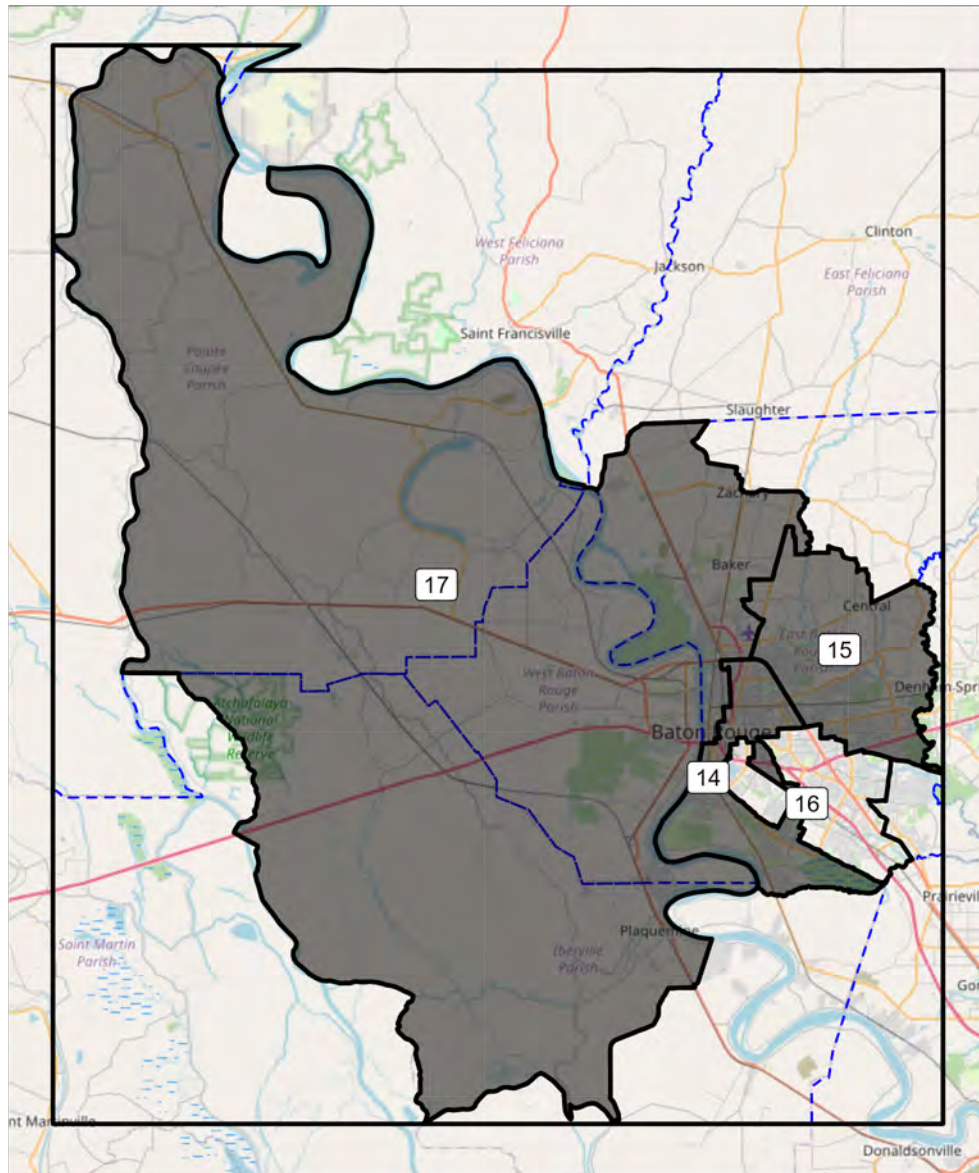
Mr. Cooper draws an additional majority Black district in the Baton Rouge area. As shown in Figure 79, the Enacted Map draws two majority Black districts here: Districts 14 and 15. Mr. Cooper's Illustrative Map (Figure 80), by contrast, takes the Black population in Baton Rouge and divvies it up among three districts, creating a new majority-Black 17th District.

Figure 79: Black Majority VAP Districts in the Baton Rouge Area, Illustrative Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



© OpenStreetMap contributors

Figure 80: Black Majority VAP Districts in the Baton Rouge Area, Illustrative Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



© OpenStreetMap contributors

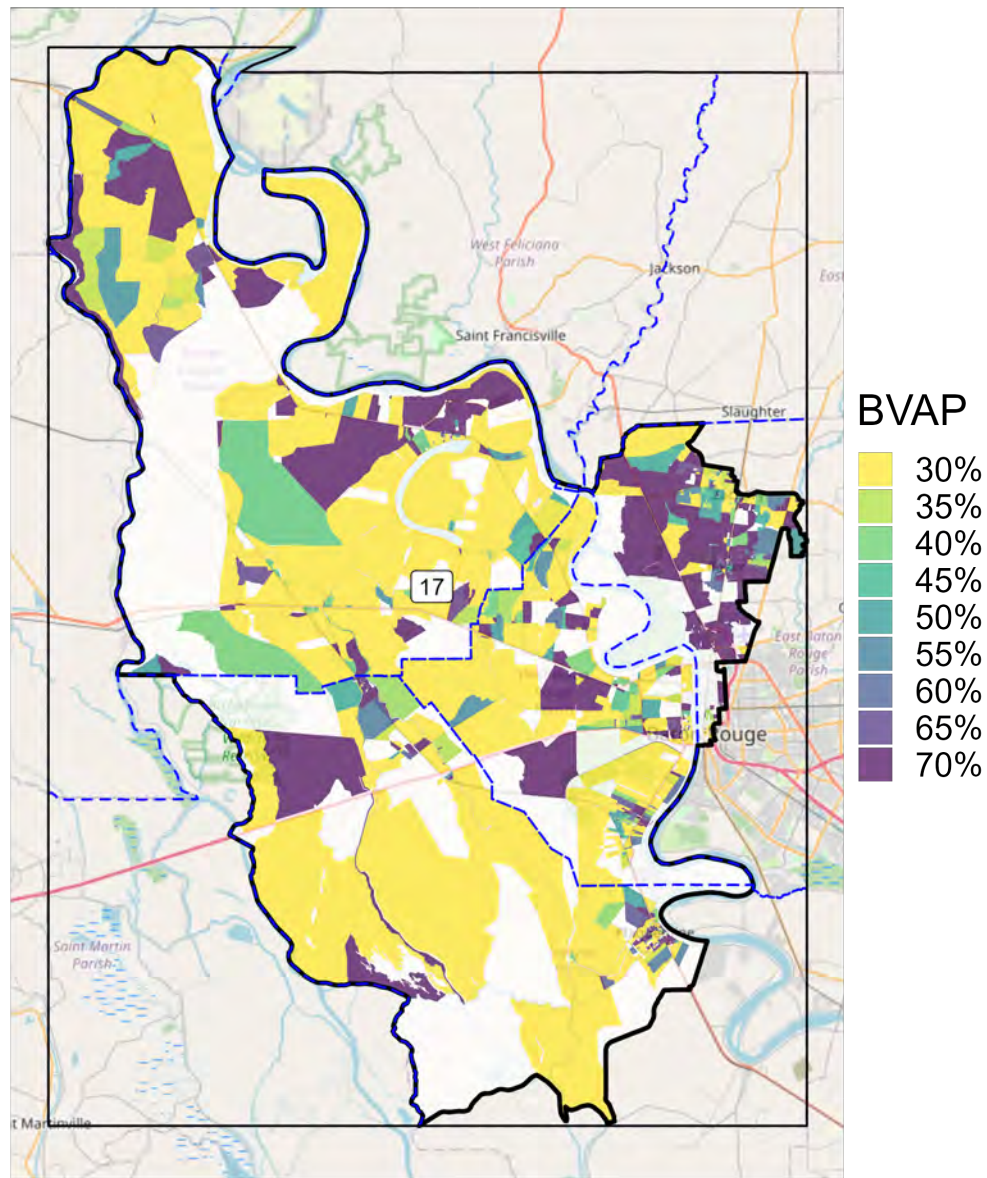
6.2.1 Cooper Illustrative District 17

The new 17th Senate district in the Illustrative Map has a VAP of 91,461. This means that a group would have to have a population of 45,731 to form a majority in the district. The BVAP as drawn is 47,997, giving the district a percent BVAP of 52.5%.

But as with the other districts reviewed in this report, this Black population is not compact. As the maps below show, the Black population is most concentrated east of the Mississippi River, in East Baton Rouge Parish. That accounts for 28,437 Black residents of voting age. When combined with the Black residents of voting age in West Baton Rouge Parish, the combined Black population is 36,586. This is still well short of what would be needed to constitute a majority of the district's population (even this requires crossing over heavily White enclaves like Brusly to reach Black areas around Addis).

To achieve a majority Black population in this district requires pairing large portions of Iberville and Pointe Coupee parishes with the remaining district core. In particular, the Illustrative Map includes New Roads and Plaquemine in the district to crosses the minimum 45,731 threshold. But doing so requires crossing large swathes of lightly populated, heavily White territory to achieve the population minimum required by the Voting Rights Act. In short, the district achieves its majority Black population only by uniting geographically disparate clusters of Black voters.

Figure 81: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 17. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



© OpenStreetMap contributors

Figure 82: Location of Black population in Cooper Illustrative District 17. One blue dot represents 10 Black residents of voting age. Dashed blue lines reflect Parish boundaries.

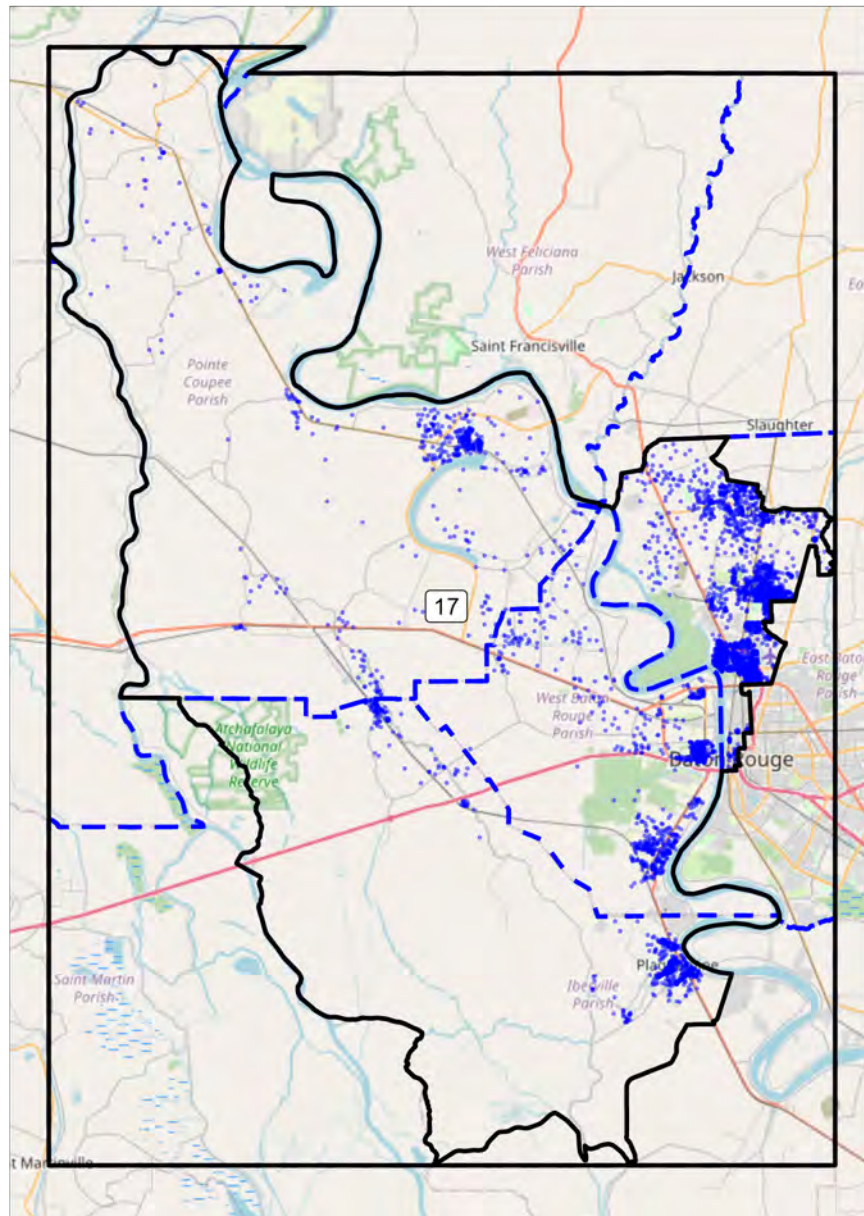


Figure 83: Location of Black and White populations in Cooper Illustrative District 17. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

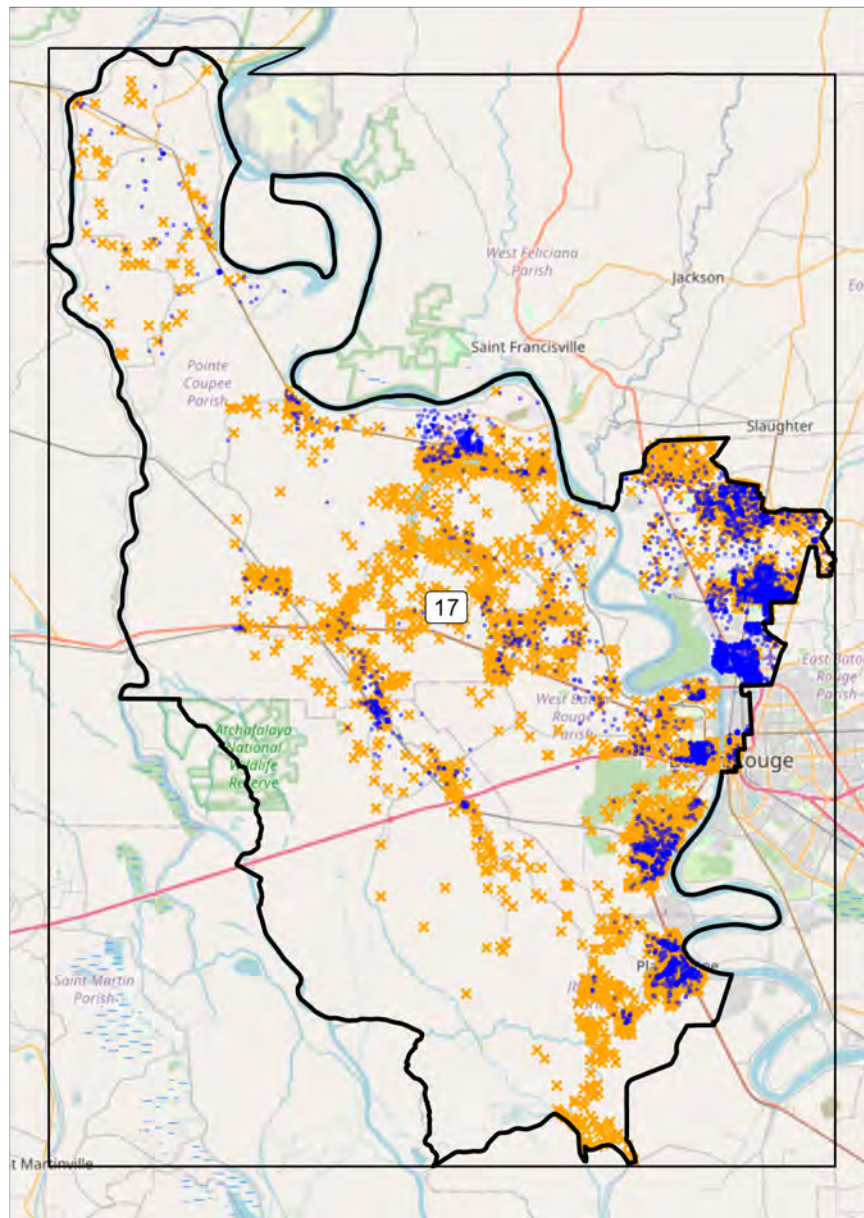


Figure 84: Most compact group of Black residents of voting age in Cooper Illustrative District 17 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group.

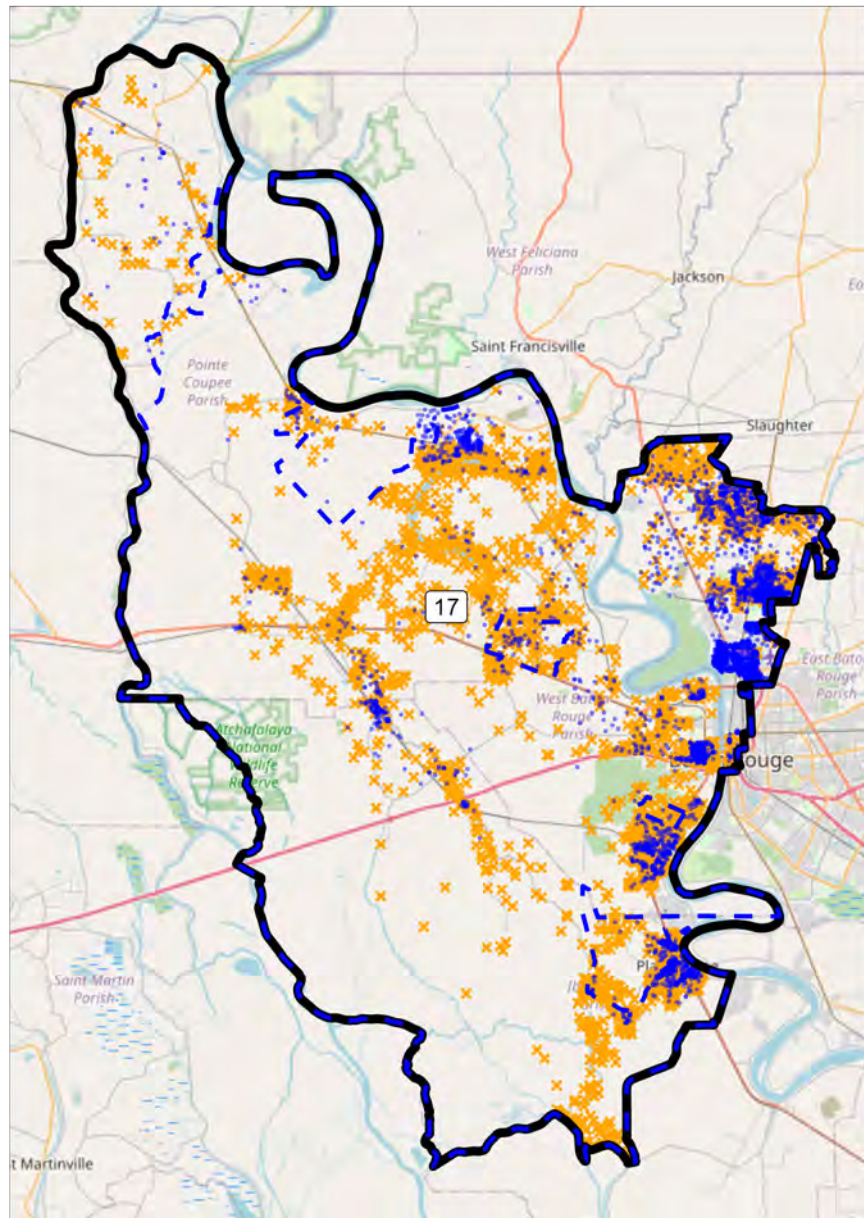
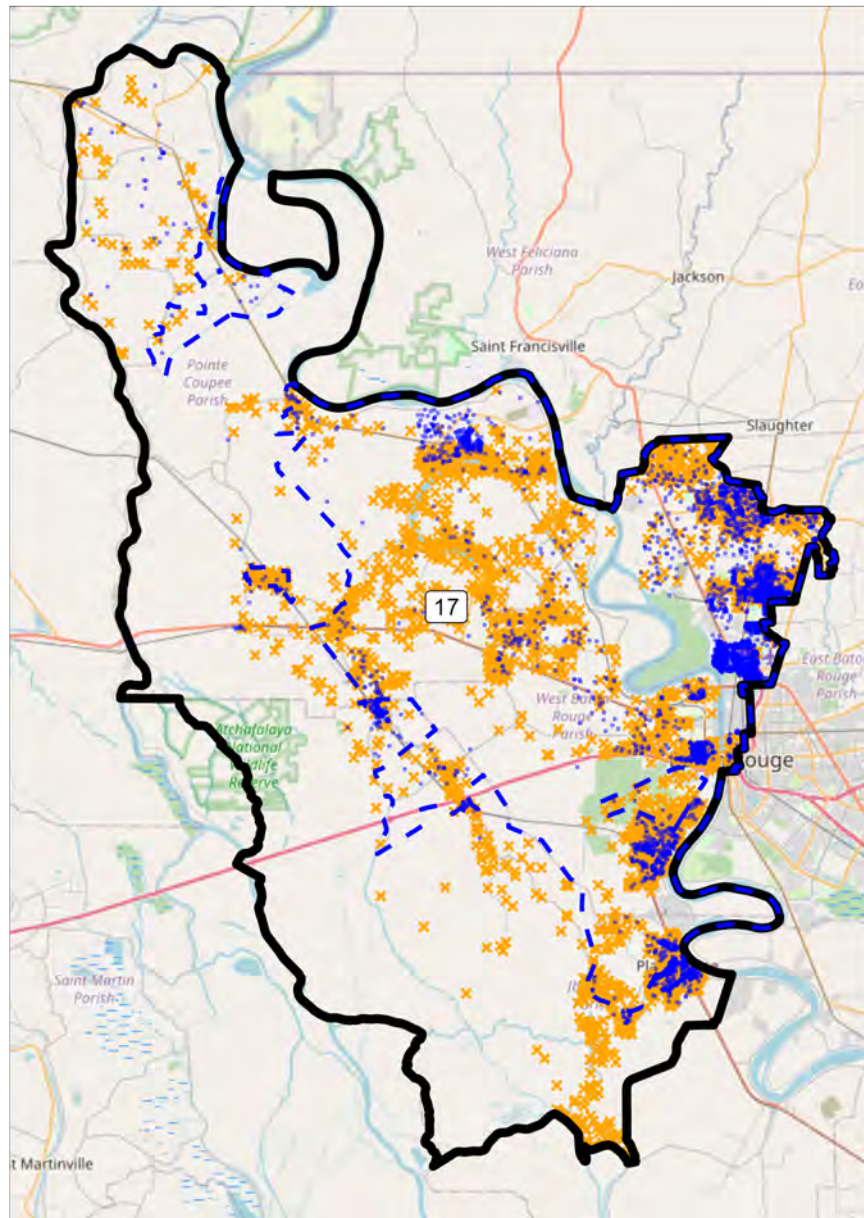


Figure 85: Most compact group of Black residents of voting age in Cooper Illustrative District 17 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group.



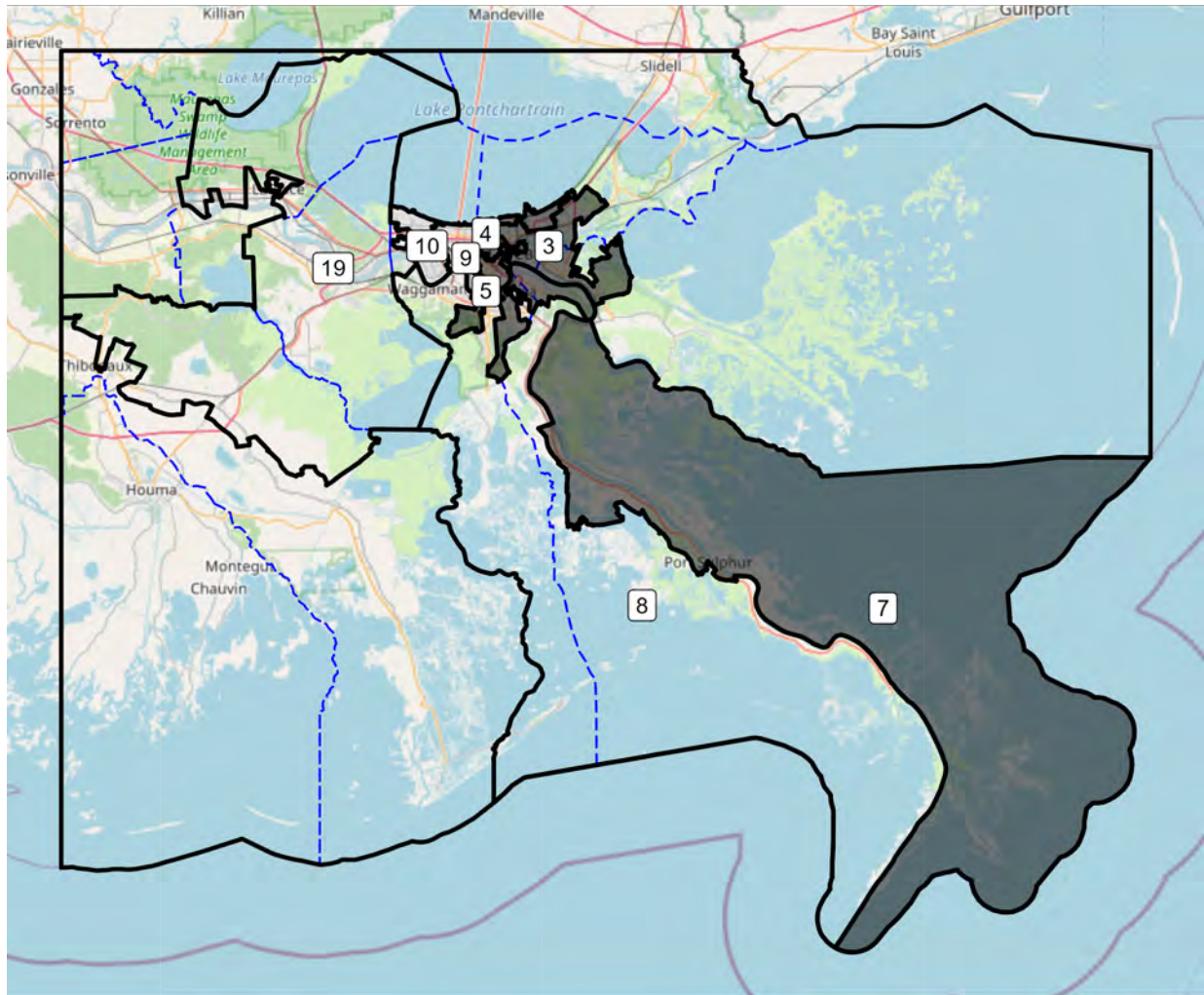
6.3 New Orleans Area

Mr. Cooper makes creates substantial changes to the districts in the New Orleans area. His Illustrative Map creates a new minority-majority district by first making minor changes to districts 4, 5 and 7 from the Enacted Map. He then implements more significant changes to District 3. All told, these changes allow him to reconfigure District 19 as a minority-majority district. Compare Figures 86 and 87.

The problem with Mr. Cooper's approach is that he actually ends up reducing the number of districts that contain compact Black populations. The first set of changes, to districts 4, 5 and 7, are not problematic. Districts 4 and 5 have majorities clearly anchored in a single urban center (though District 5 resembles nothing so much as a dragon in flight). District 7 seems to meander across parish lines to rural portions of the state, but it has a compact majority of Black residents in New Orleans.

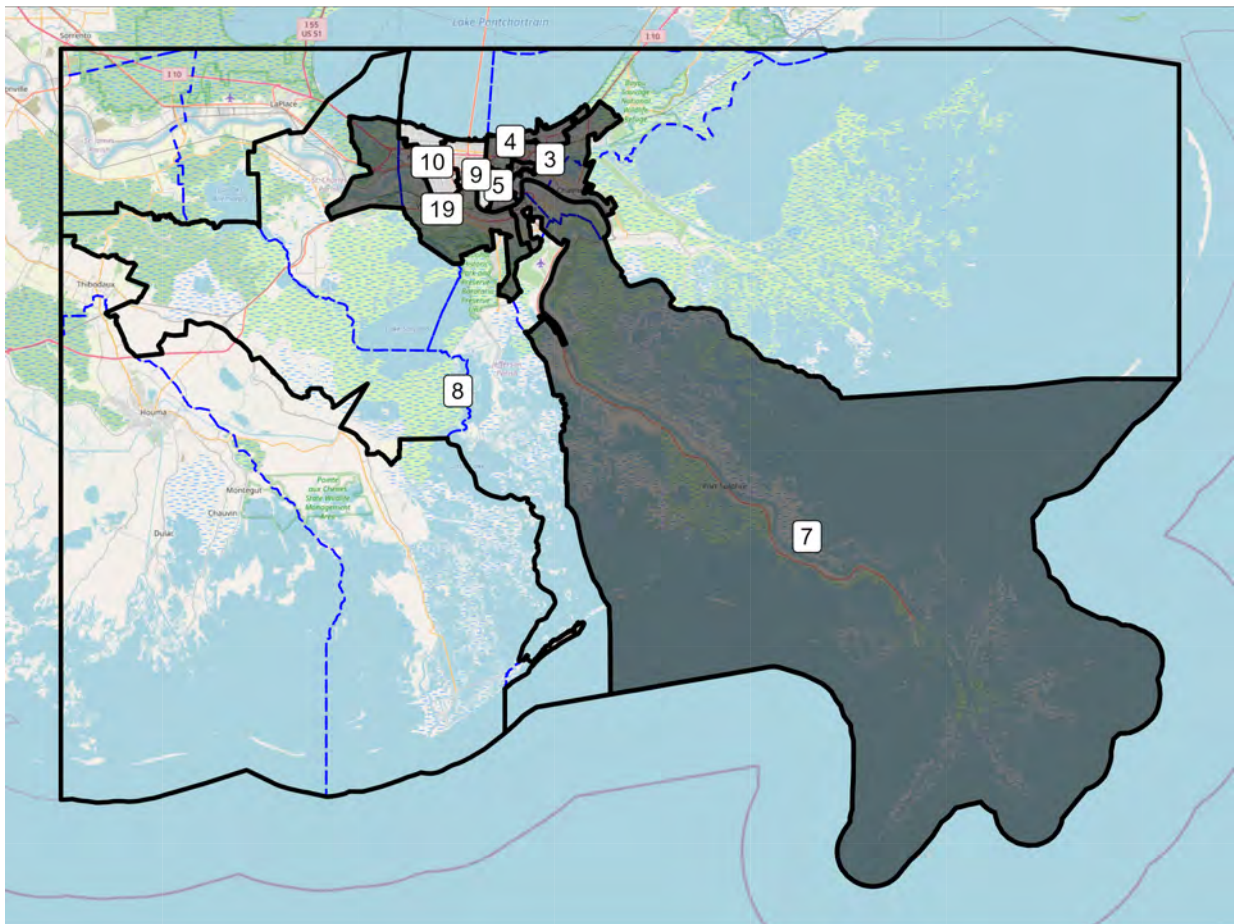
Because districts 4, 5, and 7 involve minor changes, I only discuss District 4 briefly, in order to illustrate what districts with compact Black majorities might look like, even though the overall district shape might be questionable.

Figure 86: Black Majority VAP Districts in the New Orleans Area, Enacted Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



© OpenStreetMap contributors

Figure 87: Black Majority VAP Districts in the New Orleans Area, Illustrative Map. Here, the dashed blue line depicts parish boundaries. Shaded districts are Black majority.



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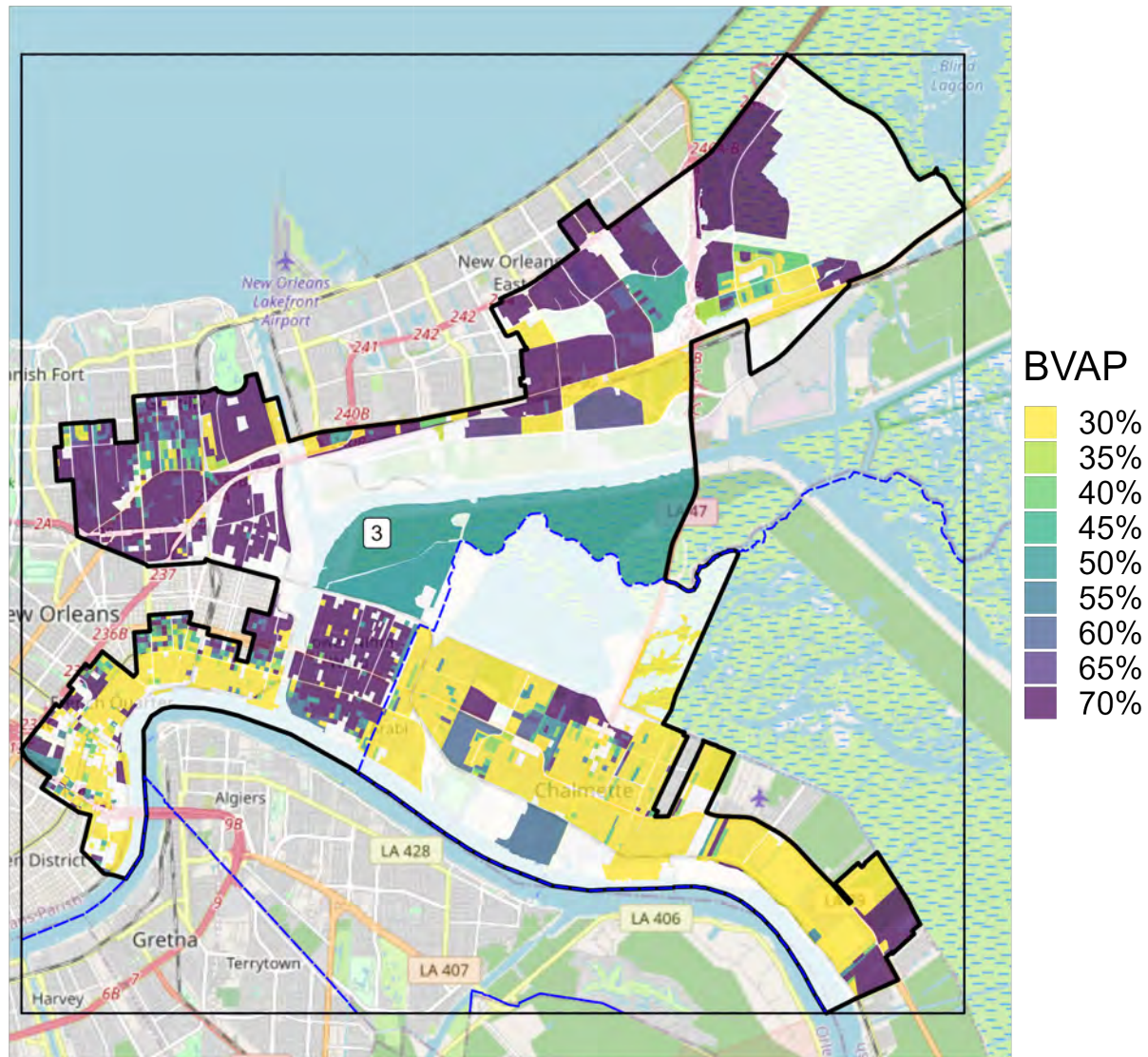
6.3.1 Cooper Illustrative District 4

At first blush, Illustrative District 4 looks like it might be another "baconman-dered" district. But upon closer inspection, we can see that there is, in fact, a compact Black population contained wholly within the eastern portion of the district. Although there are Black individuals, and even a few concentrations of Black residents, in the western part of the district, they are not necessary to create a majority Black district in this configuration. This district would therefore contain a compact Black population numerous enough to constitute a majority in the district.

6.3.2 Cooper Illustrative District 3

The reconfigured District 3, however, no longer is anchored in a compact population center. Instead, the new district – which resembles a horse galloping southward across the map, takes in heavily Black precincts across the map, interspersed with unpopulated or heavily White areas in the middle. Because the BVAP of this district is relatively low, the Black population isn't based in a single portion of the district, but rather is spread across the area. Moreover, all that can be eliminated while keeping the district minority-majority is a handful of precincts in the front “hoof” of the horse, in St. Bernard Parish. In other words, all of these disparate population centers are needed to create a 50% + 1 district.

Figure 89: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 3. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



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Figure 90: Location of Black population in Cooper Illustrative District 3. One blue dot represents 10 Black residents of voting age. Dashed blue lines reflect Parish boundaries.

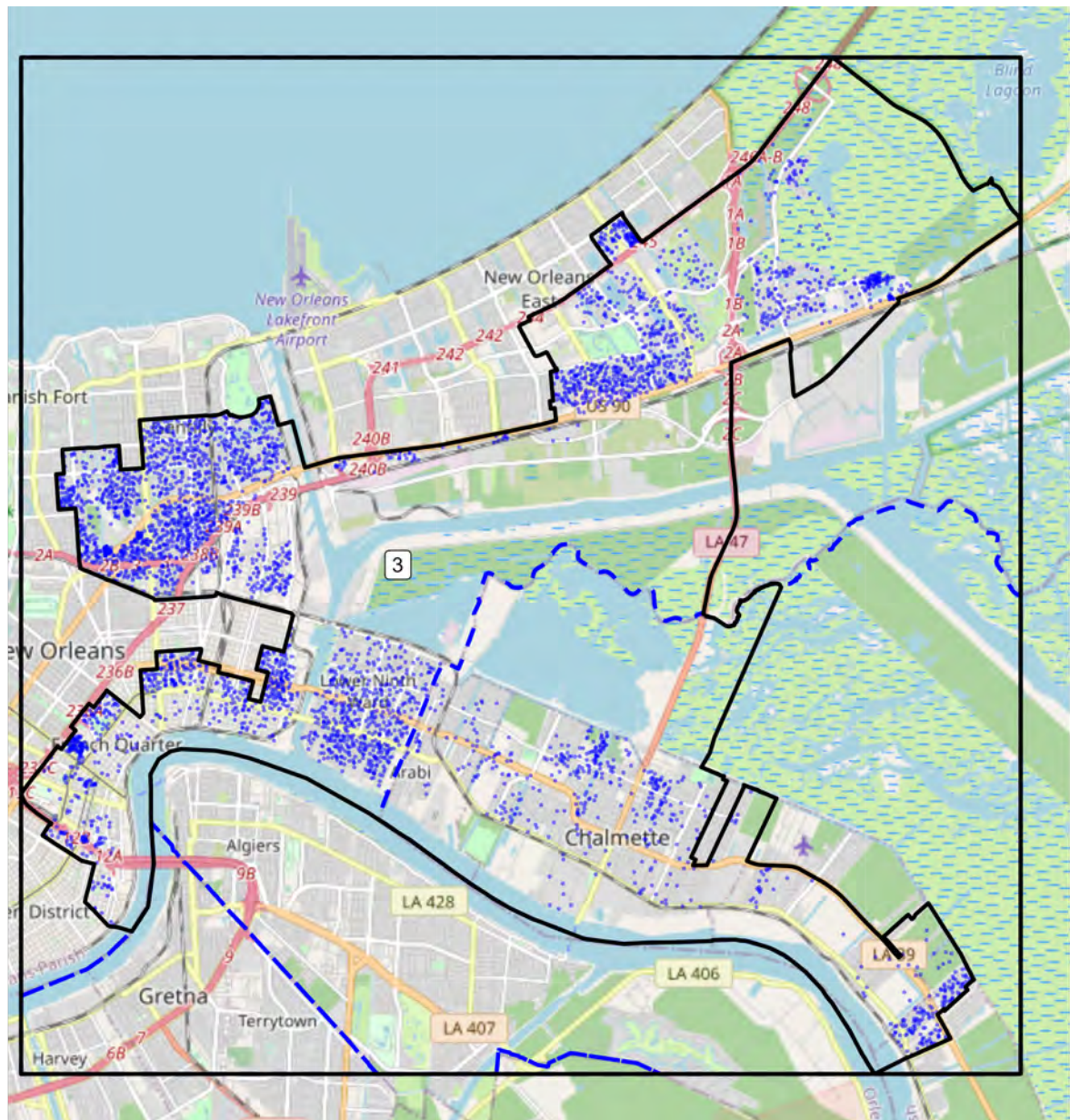


Figure 91: Location of Black and White populations in Cooper Illustrative District 3. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

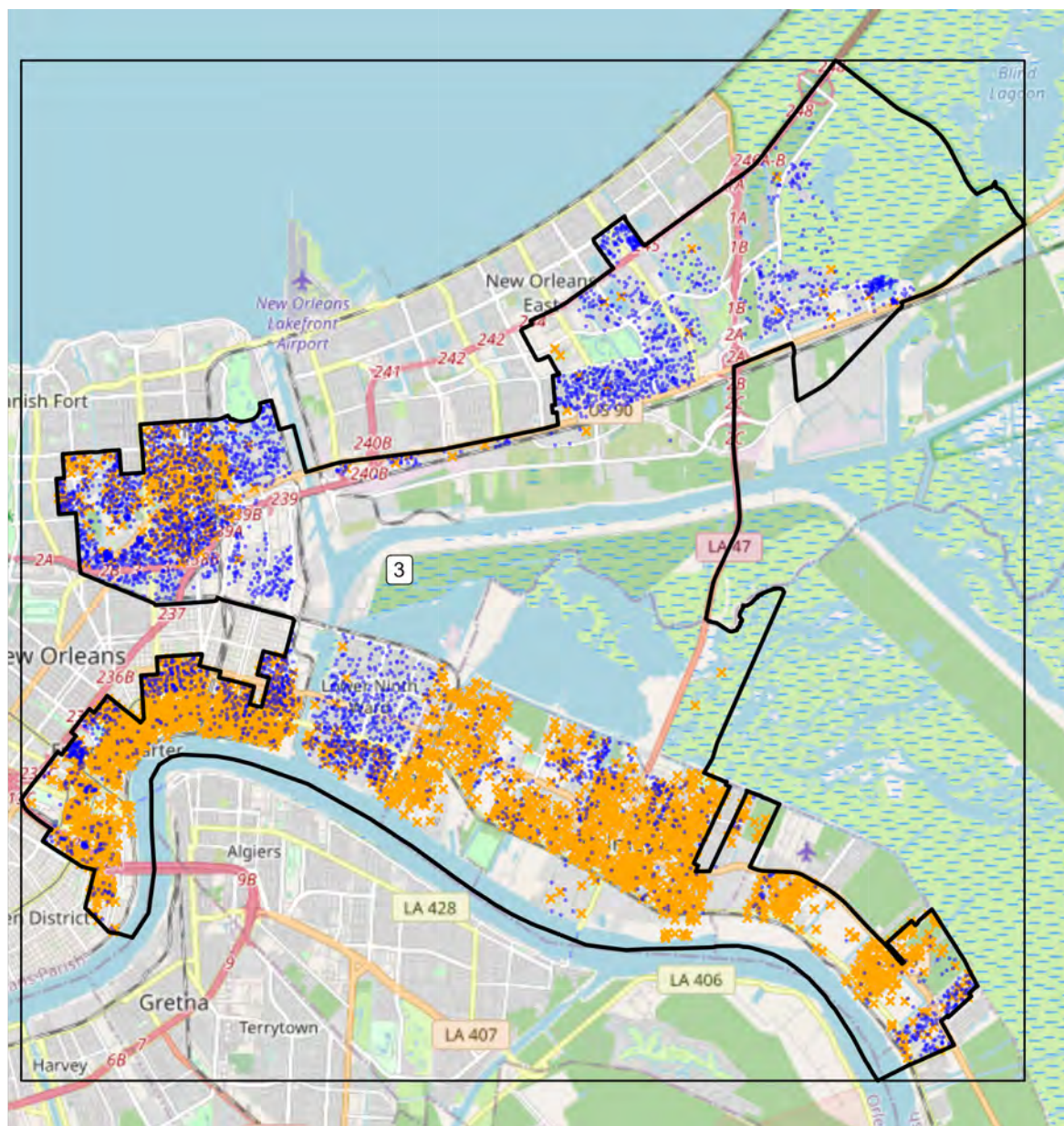


Figure 92: Most compact group of Black residents of voting age in Cooper Illustrative District 3 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group.

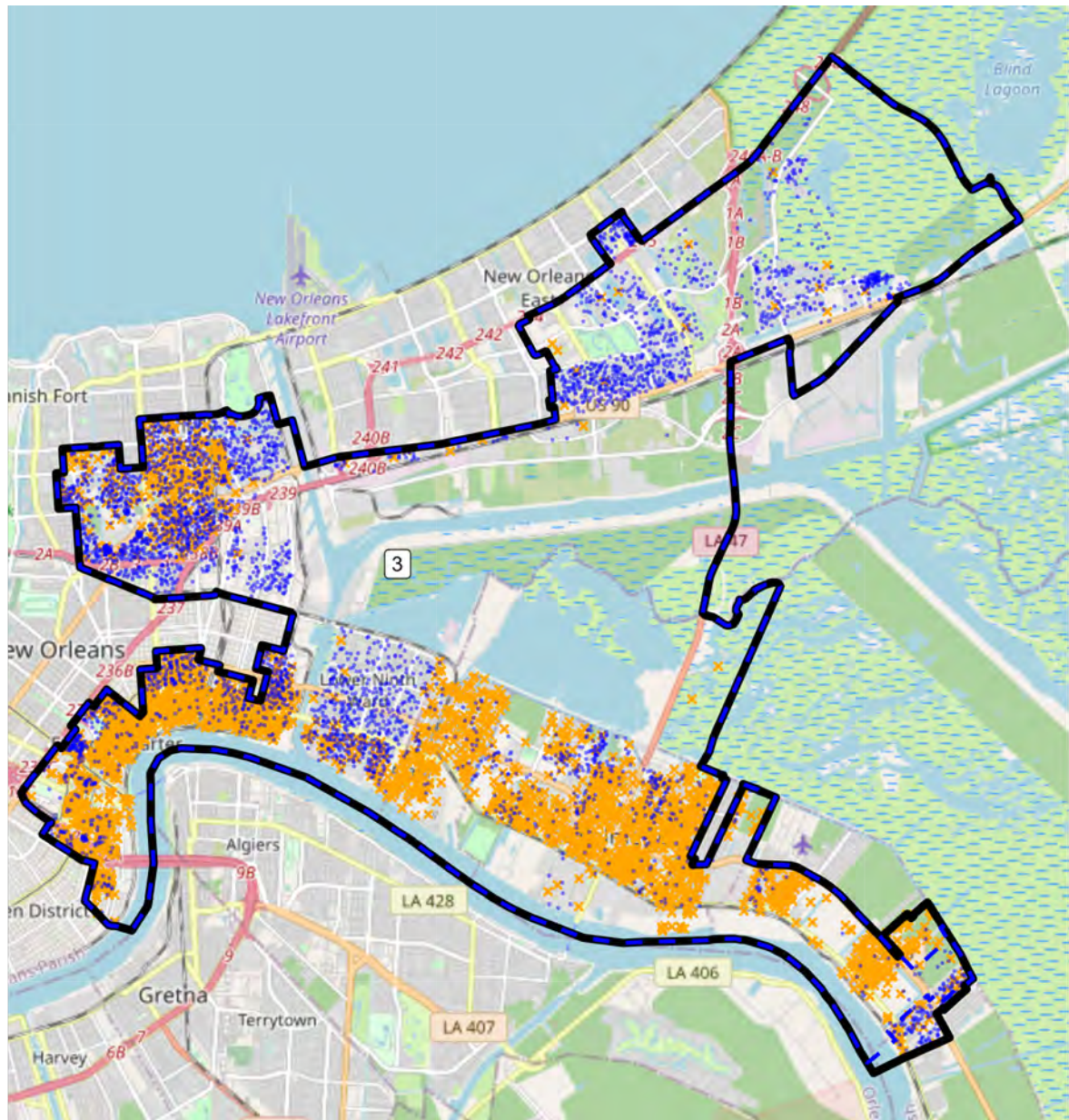
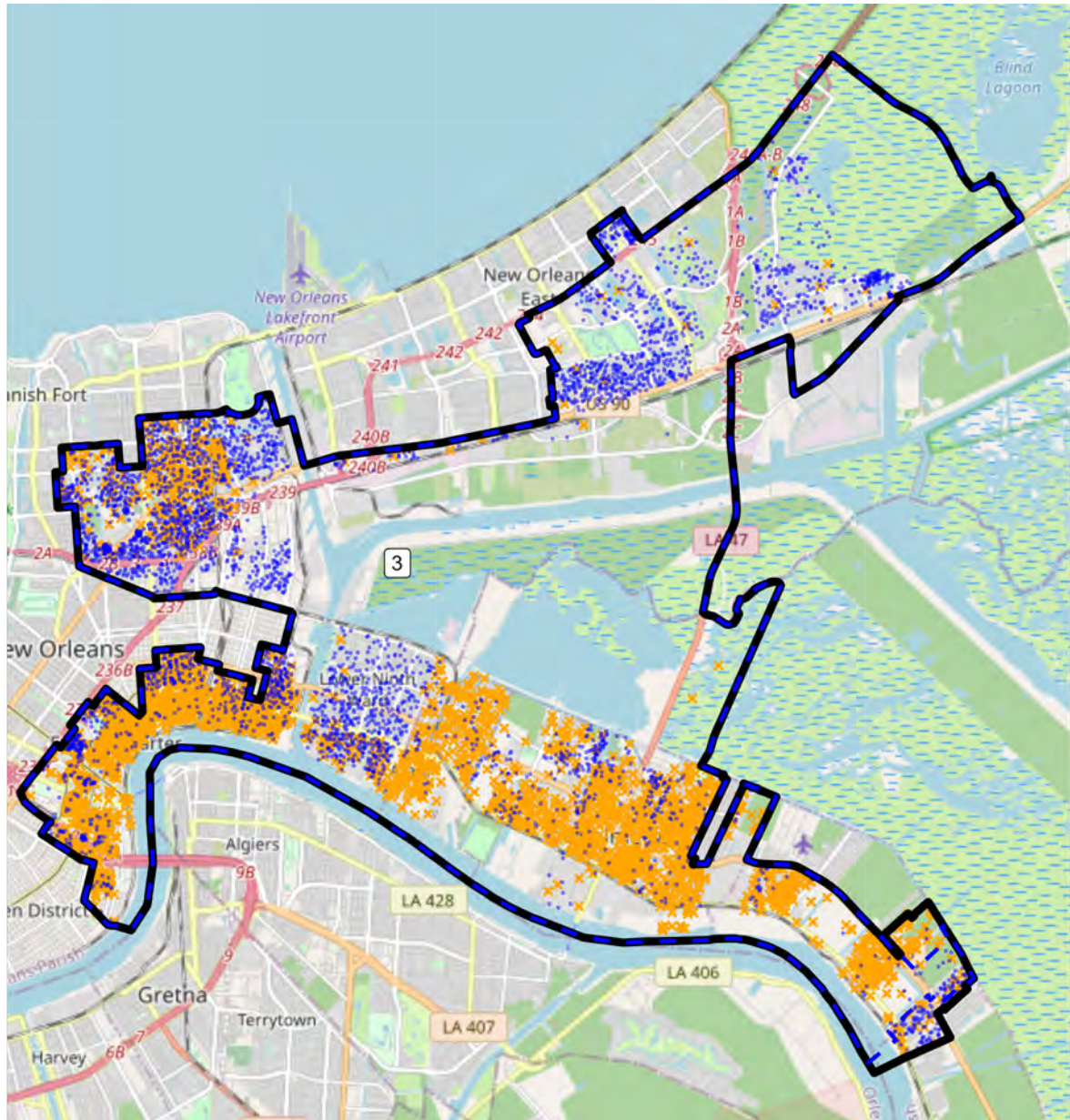


Figure 93: Most compact group of Black residents of voting age in Cooper Illustrative District 3 sufficient to constitute a majority of the population in the district, using Chen & Rodden approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group.

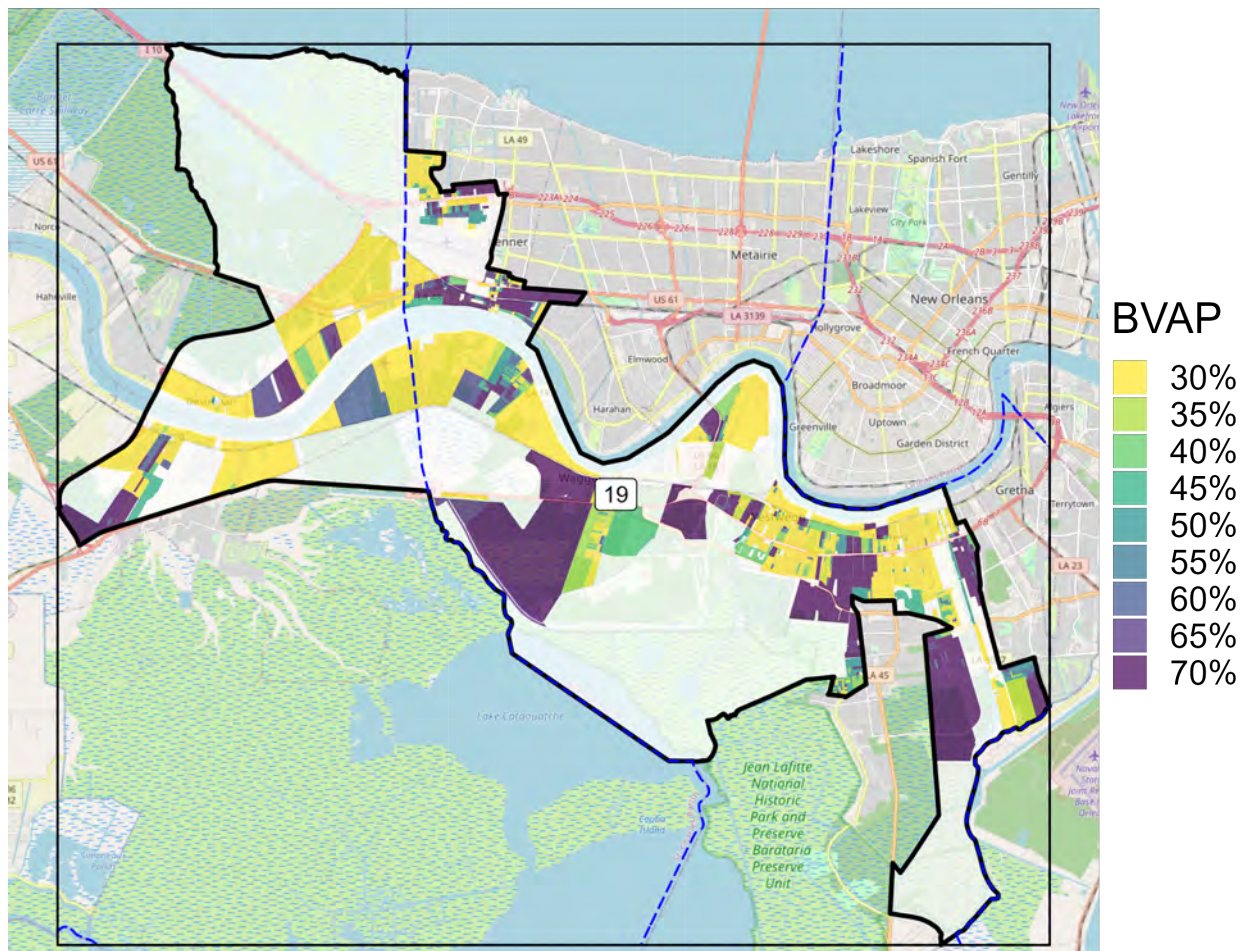


6.3.3 Cooper Illustrative District 19

We see the same thing with the reconstituted Senate District 19. This district, based in New Orleans, has a VAP of 91,184, meaning that a group must have a population of 45,593 to constitute a majority in the district. The district has a BVAP of 46,472, meaning that the Black population exceeds the 50%+1 threshold by around 900 residents of voting age.

In order to (barely) cross the threshold, the district grabs Black voters from across northern Jefferson Parish, and into portions of St. Charles Parish. Along the way, it takes in heavily Black towns, like Woodmere and Waggaman along with White plurality cities like Westwego and Destrehan. Of course, almost all of this is necessary to make the district work, given that it is just barely majority Black. In other words, unlike other district in the New Orleans area, the Black population in District 19 is spread out across multiple towns, and even parishes, stitched together to barely cross the 50% + 1 threshold.

Figure 94: Percent BVAP in census blocks contained in Cooper Illustrative Map, District 19. White areas indicate empty blocks. Dashed blue lines reflect Parish boundaries.



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Figure 95: Location of Black population in Cooper Illustrative District 19. One blue dot represents 10 Black residents of voting age. Dashed blue lines reflect Parish boundaries.

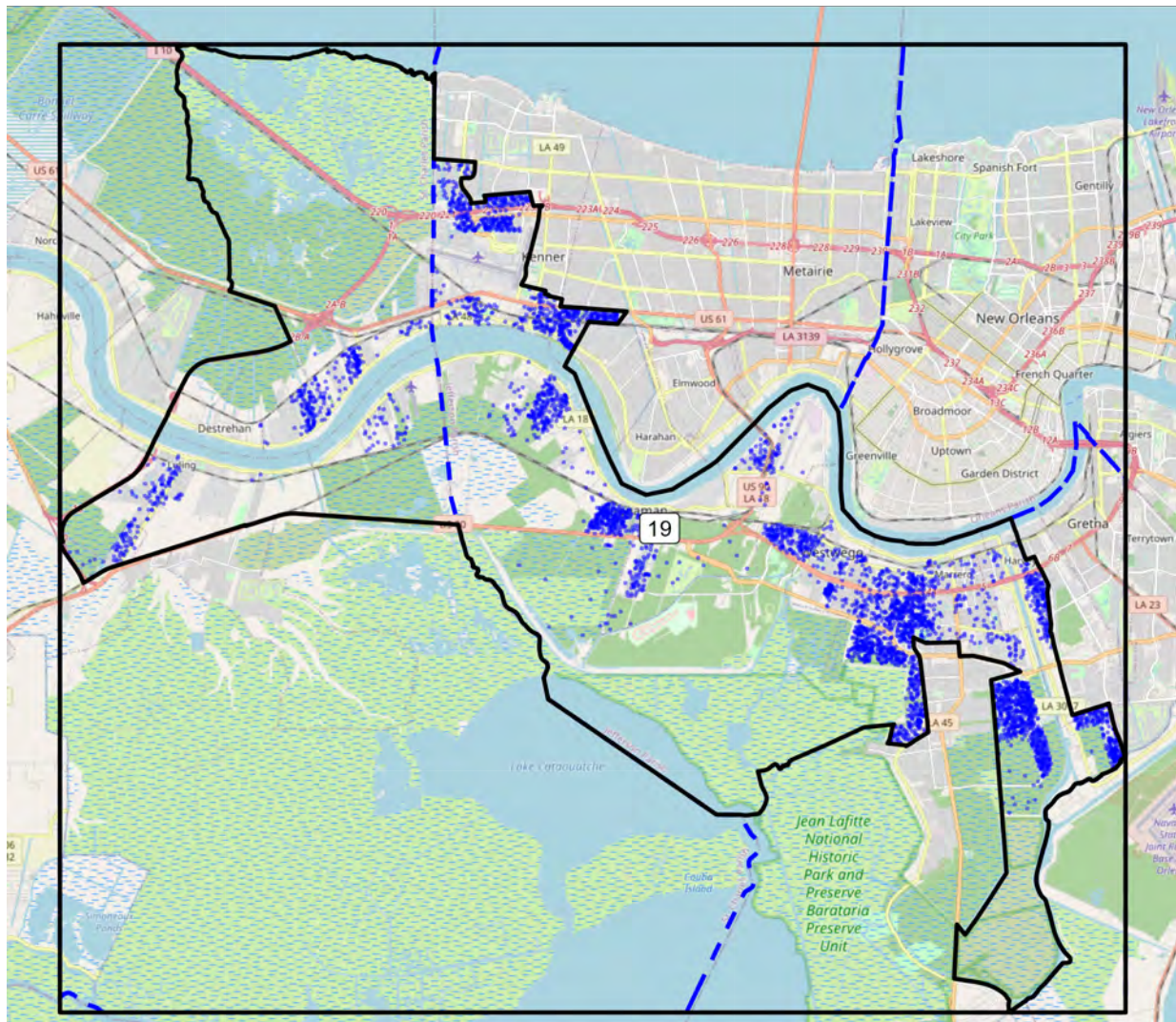


Figure 96: Location of Black and White populations in Cooper Illustrative District 19. One blue dot represents 10 Black residents of voting age. One orange 'x' represents 10 White residents of voting age. Dashed blue lines reflect Parish boundaries.

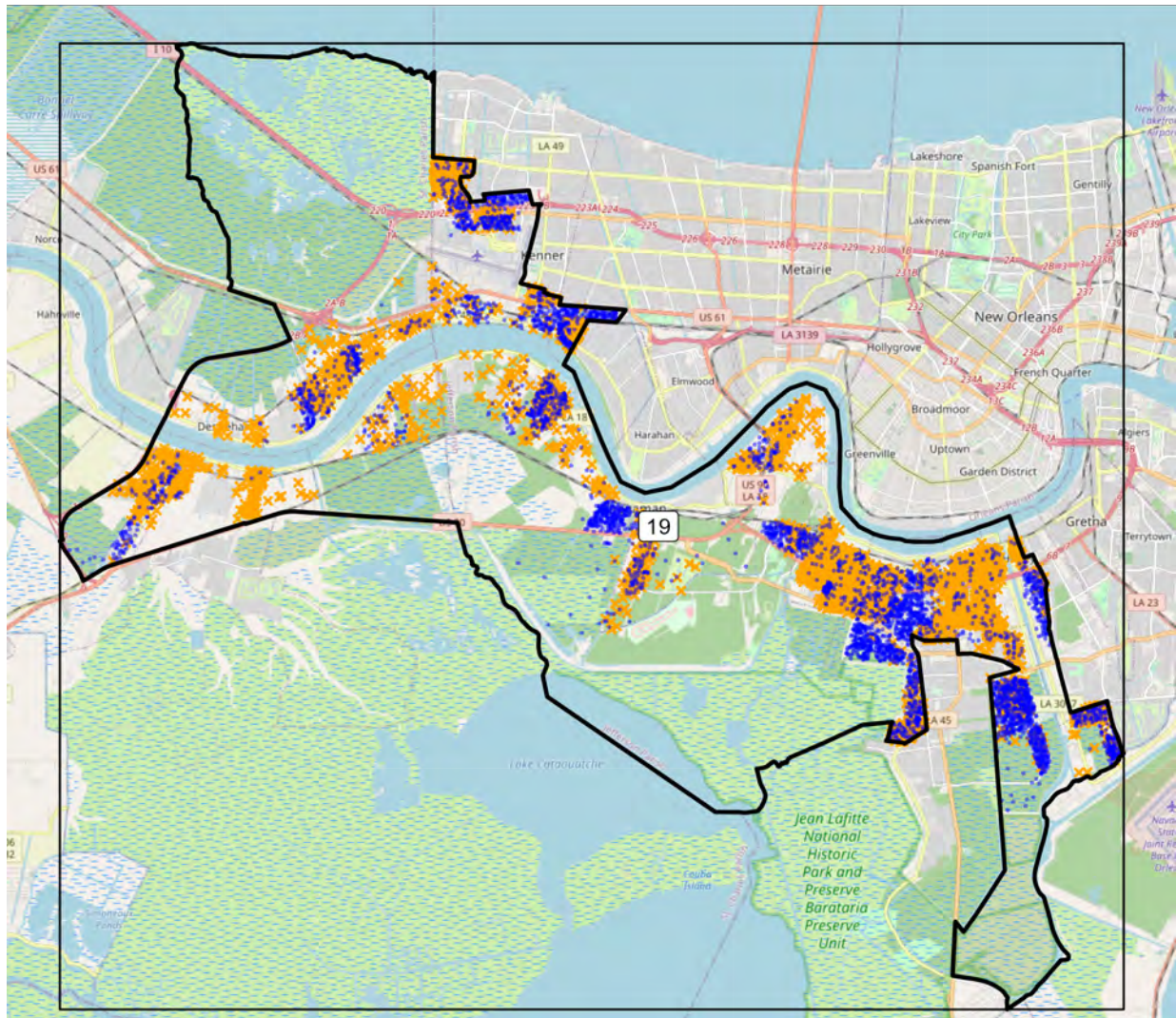
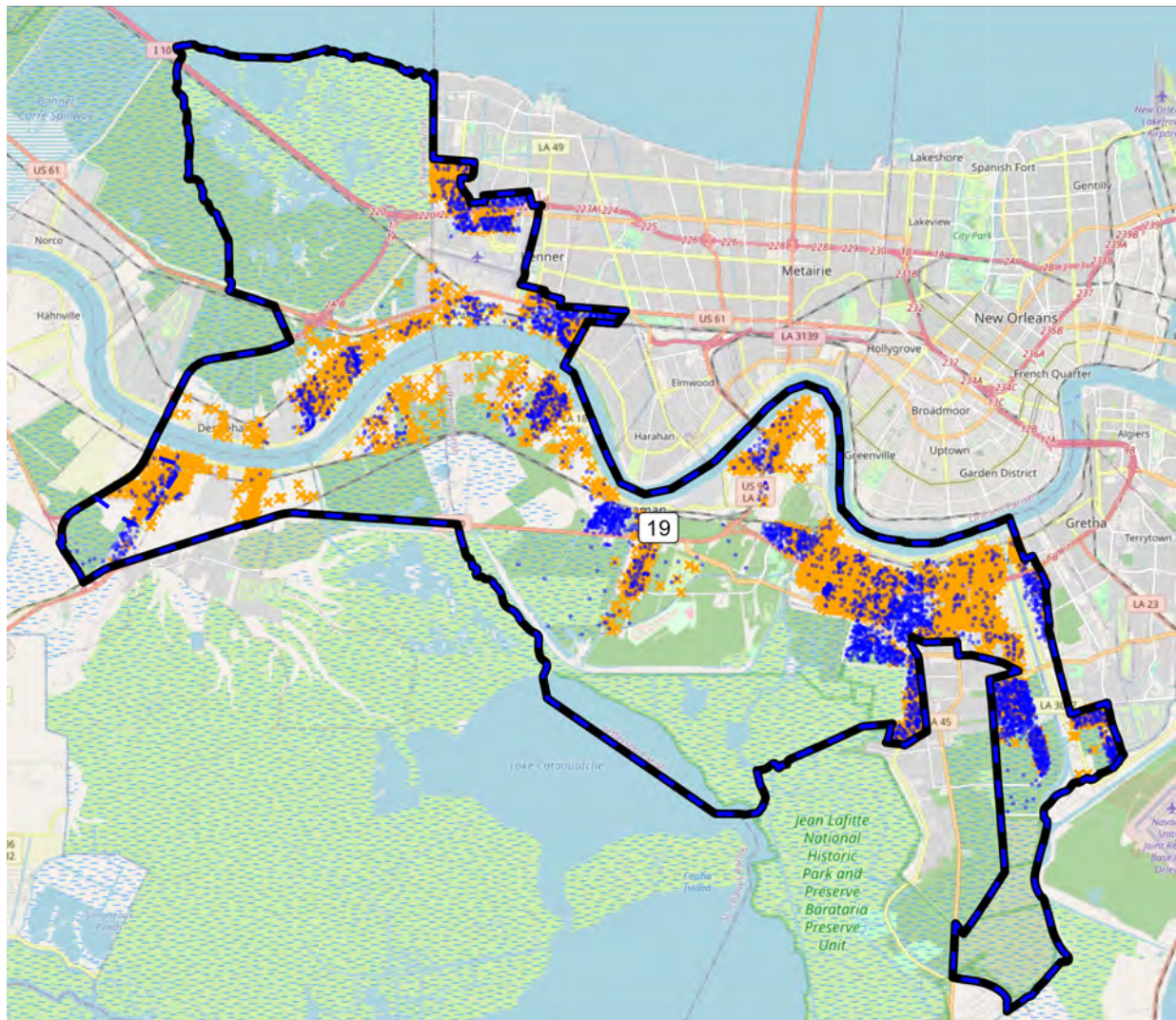


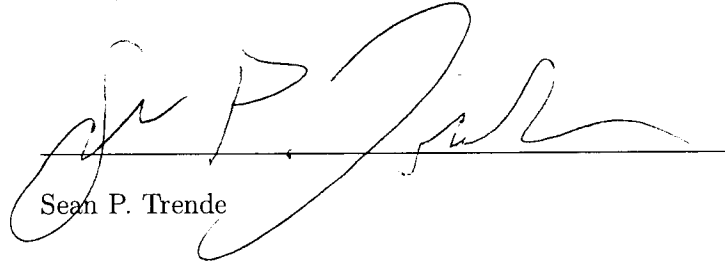
Figure 97: Most compact group of Black residents of voting age in Cooper Illustrative District 19 sufficient to constitute a majority of the population in the district, using moment of inertia approach. Here, dashed blue lines indicate the outer boundary of precincts containing the most compact group.



7 Conclusion

Mr. Cooper's Illustrative Map does produce districts with Black populations sufficient to constitute majorities in districts. However, those Black populations, either upon visual inspection or using typical techniques employed by political scientists, are not compact populations. In other words, this does not demonstrate the existence of additional districts beyond the baseline established by the Enacted Map that can be comprised of compact Black populations sufficient to constitute a majority in a reasonably configured district.

I declare under penalty of perjury under the laws of the State of Ohio that the foregoing is true and correct to the best of my knowledge and belief. Executed on 28 July 2023 in Delaware, Ohio.



Sean P. Trende

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

CIVIL ACTION NO. 3:22-cv-00178 SDD-SDJ

DR. DOROTHY NAIRNE, JARRETT LOFTON, REV. CLEE
EARNEST LOWE, DR. ALICE WASHINGTON, STEVEN
HARRIS, ALEXIS CALHOUN, BLACK VOTERS MATTER
CAPACITY BUILDING INSTITUTE, AND THE LOUISIANA
STATE CONFERENCE OF THE NAACP
Plaintiffs,

vs.

R. KYLE ARDOIN, IN HIS OFFICIAL CAPACITY AS
SECRETARY OF STATE OF LOUISIANA

Defendant.

Deposition of SEAN P. TRENDE, given
the above-entitled cause, pursuant to the
following stipulation, before Lori L. Marino,
Certified Shorthand Reporter, in and for the
State of Louisiana, via Zoom videoconference
on Tuesday, September 26, 2023, commencing at
8:05 AM.

REPORTED BY:
Lori L. Marino
Certified Court Reporter

3

1 APPEARANCES (CONTINUED):
2 AMERICAN CIVIL LIBERTIES UNION FOUNDATION
3 915 15TH STREET LAKESHORE DRIVE
4 WASHINGTON, DC 20005
5 TELEPHONE: (202) 457-0800
6
7 BY: DAKOTA KNEHANS, ESQ.
8 dknehans@aclu.com
9 REPRESENTING THE PLAINTIFF
10
11 LOUISIANA DEPARTMENT OF JUSTICE
12 1885 3RD STREET
13 BATON ROUGE, LOUISIANA 70802
14 TELEPHONE: (225) 326-6005
15
16 BY: AMANDA M. LAGROUE, ESQ.
17 lagrouea@ag.louisiana.gov
18 REPRESENTING ATTORNEY GENERAL
19
20 SHOWS, CALI & WALSH, LLP
21 628 ST. LOUIS STREET
22 BATON ROUGE, LOUISIANA 70802
23 TELEPHONE: (225) 346-1461
24
25 BY: JOHN C. WALSH, ESQ.
26 john@scwllp.com
27 REPRESENTING: SECRETARY OF STATE
28
29 ALSO PRESENT:
30 CHRISTINA WILLIAMS
31 MARISA WRIGHT
32 NITHIN VENKATRAMAN
33 ELIZA ESTRELLA
34 JASON KURTYKA
35

2

1 APPEARANCES:
2 (ALL PARTICIPANTS PRESENT VIA ZOOM
3 VIDEOCONFERENCE:)

4 HARVARD LAW SCHOOL
5 ELECTION LAW CLINIC
6 4105 WASSERSTEIN HALL (WCC)
7 6 EVERETT STREET
8 CAMBRIDGE, MASSACHUSETTS 02138
9 TELEPHONE: (617)998-1582

10 BY: T. ALORA THOMAS-LUNDBORG, ESQ.
11 tthomaslundborg@law.harvard.edu
12 AND

13 BY: DANIEL HESSEL, ESQ.
14 dhessel@law.harvard.edu
15 REPRESENTING THE PLAINTIFF

16 NELSON MULLINS
17 301 HILLSBOROUGH STREET, SUITE 1400
18 RALEIGH, NORTH CAROLINA 27602
19 TELEPHONE: (919) 329-3800

20 BY: PHILLIP J. STRACH, ESQ.
21 phil.strach@nelsonmullins.com
22 REPRESENTING THE DEFENDANTS

23 ELIAS LAW GROUP, LLP
24 250 MASSACHUSETTS AVENUE, NW SUITE 400
25 WASHINGTON, D.C. 20001
TELEPHONE: (202) 968-4490

26 BY: DANIEL COHEN, ESQ.
27 dcohen@elias.law
28 REPRESENTING THE GALMON PLAINTIFFS
29
30
31
32
33
34
35

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1 INDEX

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3 SEAN P. TRENDE
4 1146 ELDERBERRY LOOP
5 DELAWARE, OHIO 43015

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<p style="text-align: right;">5</p> <p>1 EXHIBIT INDEX</p> <p>2 EXHIBIT 1 - 13</p> <p>3 EXHIBIT 2 - 13</p> <p>4 EXHIBIT 3 - 14</p> <p>5 EXHIBIT 4 - 16</p> <p>6 EXHIBIT 5 - 17</p> <p>7 EXHIBIT 6 - 18</p> <p>8 EXHIBIT 7 - 18</p> <p>9 EXHIBIT 8 - 18</p> <p>10 EXHIBIT 9 - 19</p> <p>11 EXHIBIT 10 - 20</p> <p>12 EXHIBIT 11 - 20</p> <p>13 EXHIBIT 12 - 20</p> <p>14 EXHIBIT 13 - 20</p> <p>15 EXHIBIT 14 - 36</p> <p>16 EXHIBIT 15 - 59</p> <p>17 EXHIBIT 16 - 90</p> <p>18 EXHIBIT 17 - 97</p> <p>19 EXHIBIT 18 - 106</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>	<p style="text-align: right;">7</p> <p>1 SEAN P. TRENDE, having been</p> <p>2 first duly sworn was examined and</p> <p>3 testified on his oath as follows:</p> <p>4 EXAMINATION</p> <p>5 BY MS. THOMAS-LUNDBORG:</p> <p>6 Q Good morning, Mr. Trende. If you</p> <p>7 could, please, state your full name and</p> <p>8 address for the record.</p> <p>9 A Sean, S-E-A-N, Patrick Trende</p> <p>10 T-R-E-N-D-E. It's 1146 Elderberry Loop,</p> <p>11 Delaware, Ohio 43015.</p> <p>12 Q And you understand that you're under</p> <p>13 oath today, correct?</p> <p>14 A Yes.</p> <p>15 Q You understand that it's the same</p> <p>16 oath that you would take in a court of law?</p> <p>17 A Yes.</p> <p>18 Q Is there anything that would prevent</p> <p>19 you from answering my questions truthfully</p> <p>20 today?</p> <p>21 A No.</p> <p>22 Q You're not taking any medications or</p> <p>23 other substances that might impede your</p> <p>24 ability to answer truthfully?</p> <p>25 A No.</p>
<p style="text-align: right;">6</p> <p>1 STIPULATION</p> <p>2 It is stipulated and agreed by and</p> <p>3 between Counsel for the parties hereto that</p> <p>4 the deposition of SEAN P. TRENDE, is hereby</p> <p>5 being taken pursuant to the Federal Rules of</p> <p>6 Civil Procedure for all purposes in accordance</p> <p>7 with law;</p> <p>8 That the formalities of</p> <p>9 certification and filing are specifically</p> <p>10 waived;</p> <p>11 That the formalities of reading and</p> <p>12 signing are specifically not waived.</p> <p>13 That all objections, save those as</p> <p>14 to the form of the question and/or</p> <p>15 responsiveness of the answer, are hereby</p> <p>16 reserved until such time as this deposition or</p> <p>17 any part thereof is used or sought to be used</p> <p>18 in evidence.</p> <p>19 * * * * *</p> <p>20 LORI L. MARINO, Certified Court</p> <p>21 Reporter, in and for the State of Louisiana,</p> <p>22 officiated in administering the oath to the</p> <p>23 witness.</p> <p>24</p> <p>25</p>	<p style="text-align: right;">8</p> <p>1 Q Nice to meet you again. We met once</p> <p>2 five years ago now, but my name is Alora</p> <p>3 Thomas-Lundborg. I am an attorney for the</p> <p>4 plaintiffs currently at Harvard Law Election</p> <p>5 Clinic.</p> <p>6 A Nice to meet you again, as well.</p> <p>7 Q I know others have put their</p> <p>8 representations in the chat. So I will not go</p> <p>9 through those right now on the record. I've</p> <p>10 deposed you before. So I know you've been</p> <p>11 deposed before. Have you done a Zoom</p> <p>12 deposition before?</p> <p>13 A Yes.</p> <p>14 Q So I'm just going to remind you of</p> <p>15 some very quick ground rules that I'm sure you</p> <p>16 know very well. The first is to have verbal</p> <p>17 responses to all of my questions. Do you</p> <p>18 understand that?</p> <p>19 A Yes.</p> <p>20 Q And so that the record is clear, it's</p> <p>21 important that we do not talk over one</p> <p>22 another. You understand that?</p> <p>23 A Yes.</p> <p>24 Q If you don't understand a question of</p> <p>25 mine, please, ask me to repeat it or to</p>

<p style="text-align: right;">9</p> <p>1 rephrase. 2 A Yes. 3 Q If you want to take a break, that's 4 fine. I will be taking periodic breaks. If 5 in a time crunch, I think we're going to try 6 to power through as much as possible and take 7 shorter breaks, but if you need to take a 8 break for some reason, just let me know, and 9 the only thing I ask is not to take a break 10 while a question is pending. Do you 11 understand that? 12 A Yes. 13 Q So counsel may object to certain 14 questions I ask today. Unless you're 15 instructed not to answer, you shall answer all 16 the questions whether or not they're objected 17 to. Do you understand that? 18 A Yes. 19 Q Where are you located today? Since 20 this is Zoom deposition, we're all in 21 different locations. 22 A I'm located at the law office of 23 BakerHostetler here in Columbus, Ohio. 24 Q And who else is present in the room 25 with you?</p>	<p style="text-align: right;">11</p> <p>1 Louisiana House or the Louisiana Senate map 2 that was passed by the Louisiana Legislature 3 in 2021. Do you understand that? 4 A Yes. 5 Q And then, I will also be using the 6 term "illustrative map." When I say 7 illustrative map, I'll be referring to the 8 maps drawn as a part of the Gingles 1 inquiry 9 by Mr. Bill Cooper. Do you understand that? 10 A Yes. 11 Q Did you do anything to prepare for 12 today's deposition? 13 A Yes. 14 Q What did you do? 15 A I spoke briefly with counsel and 16 spent some time looking over my report and 17 reply. 18 Q You said you met with counsel. How 19 many meetings did you have with counsel? 20 A In preparation for this deposition, 21 one. 22 Q How long was that meeting? 23 A Maybe, a half hour. 24 Q And by counsel, do you mean 25 Mr. Strach, or do you mean someone else?</p>
<p style="text-align: right;">10</p> <p>1 A Phil Strach. 2 Q Do you have any documents in front of 3 you? 4 A I do not. 5 Q Okay. Were you able to download the 6 exhibits to see today? 7 A I did look at them, yes. I'm sorry. 8 Do you want me to open them on my laptop or 9 something to that effect? 10 Q I think when I will be putting 11 documents on the screen, I find that it's 12 helpful if you have your own version as I'm 13 putting on Zoom a version of the document in 14 case you want to look at sections that I will 15 not be pointing you to when I'm sharing my 16 screen. 17 A I may do that at the break then. I'm 18 assuming -- well, we'll see how it goes. I 19 might ask to take a quick break to do that 20 depending which documents you're pulling up. 21 Q So we're going to use some terms of 22 art today, and I'd like to go over those just 23 briefly. The first term of art that I'll be 24 using is the "enacted map," and when I say 25 enacted map, I may be referring to the</p>	<p style="text-align: right;">12</p> <p>1 A I think Mr. Strach was present. 2 Yeah, I was with Mr. Strach actually. Yeah. 3 Q Was anyone else present? 4 A I believe Mr. Farr was on the call, 5 as well, and Ms. Riggins, R-I-G-G-I-N-S, 6 joined intermittently. 7 MS. THOMAS-LUNDBORG: 8 So, I'm going to enter the first 9 exhibit, just give me one second. 10 One thing about Zoom depositions, 11 they should be faster but they tend 12 to be much slower, I find. So your 13 screen now should be deposition 14 notice of Sean Trende, and I will 15 scroll through. This deposition 16 notice is dated yesterday 17 September 25, 2023. Were you given a 18 copy of this -- actually. Sorry 19 strike that. I'm going to do it in 20 the reverse order. I'm going to 21 actually show you something first, 22 another document first. 23 So now, I've put on the screen a 24 document entitled "Deposition Notice 25 of Sean P. Trende," dated</p>

<p style="text-align: right;">13</p> <p>1 August 23, 2023. Do you see that?</p> <p>2 THE WITNESS:</p> <p>3 Yes.</p> <p>4 MS. THOMAS-LUNDBORG:</p> <p>5 I'm going to have this document</p> <p>6 marked as Exhibit 1. This is the</p> <p>7 initial notice of your deposition</p> <p>8 that plaintiffs served on defense</p> <p>9 counsel.</p> <p>10 BY MS. THOMAS-LUNDBORG:</p> <p>11 Q Did you so see a copy of this</p> <p>12 deposition notice?</p> <p>13 A Yes.</p> <p>14 Q We should be able to do the rest of</p> <p>15 this fairly quickly.</p> <p>16 MS. THOMAS-LUNDBORG:</p> <p>17 Now, I'm going to show you what</p> <p>18 I'm going to have marked as</p> <p>19 Exhibit 2. This is the deposition</p> <p>20 notice of Sean P. Trende dated</p> <p>21 yesterday, September 25th. Do you</p> <p>22 see that?</p> <p>23 THE WITNESS:</p> <p>24 Yes.</p> <p>25 BY MS. THOMAS-LUNDBORG:</p>	<p style="text-align: right;">15</p> <p>1 as Exhibit 3.</p> <p>2 BY MS. THOMAS-LUNDBORG:</p> <p>3 Q Here you see there is a cover page</p> <p>4 titled "Expert report of Sean P. Trende in the</p> <p>5 Nairne, et al v. Ardion, et al" from July 28,</p> <p>6 2023, and I'm going to quickly scroll through,</p> <p>7 hopefully, quickly scroll through.</p> <p>8 A And I believe I'm now in receipt of</p> <p>9 hard copies of the exhibits.</p> <p>10 Q Oh, great.</p> <p>11 A This is my report.</p> <p>12 MR. STRACH:</p> <p>13 From July 18th?</p> <p>14 THE WITNESS:</p> <p>15 Yeah.</p> <p>16 MR. STRACH:</p> <p>17 July 28th, I mean.</p> <p>18 THE WITNESS:</p> <p>19 Yeah.</p> <p>20 BY MS. THOMAS-LUNDBORG:</p> <p>21 Q You'll see on the last page is your</p> <p>22 signature.</p> <p>23 A Yes.</p> <p>24 Q And I have it pulled up on the</p> <p>25 screen, and you say you have it in front of</p>
<p style="text-align: right;">14</p> <p>1 Q We revised your deposition notice and</p> <p>2 served it on counsel to accommodate for</p> <p>3 another case beginning sometime with you</p> <p>4 today. Are you aware of that?</p> <p>5 A Yeah. I have to testify in New</p> <p>6 Mexico tomorrow morning, and so I have to fly</p> <p>7 out tonight. I don't know that they'll get</p> <p>8 time for me, because I typically don't bill</p> <p>9 travel, but yeah.</p> <p>10 Q Yes. I think I'm talking about our</p> <p>11 deposition, assuming there is time, there will</p> <p>12 be another deposition in the Louisiana</p> <p>13 Congressional case. Are you aware of that?</p> <p>14 A Yeah, I knew that both were going to</p> <p>15 be covered today.</p> <p>16 Q Okay. So I'm going to stop sharing</p> <p>17 what I'm going to have marked as Exhibit 2,</p> <p>18 which is the revised deposition notice, and</p> <p>19 move on. Now, you said that you reviewed your</p> <p>20 reports, correct, --</p> <p>21 A Correct.</p> <p>22 Q -- as part of your deposition prep.</p> <p>23 MS. THOMAS-LUNDBORG:</p> <p>24 So I am now going to share the</p> <p>25 screen what I'm going to have marked</p>	<p style="text-align: right;">16</p> <p>1 you. Do you recognize this as a true and</p> <p>2 accurate copy of your expert report for this</p> <p>3 case?</p> <p>4 A As far as I can tell, yes.</p> <p>5 MS. THOMAS-LUNDBORG:</p> <p>6 I find it helpful if you just</p> <p>7 mark a bunch of exhibits at the</p> <p>8 start. So we're going to do a few</p> <p>9 more. I have now put on the screen</p> <p>10 what I will have marked as Exhibit 4,</p> <p>11 and if you look at the cover page, it</p> <p>12 is the rebuttal report of Sean P.</p> <p>13 Trende in Nairne, et al v. Ardoin, et</p> <p>14 al. This one should be easier to</p> <p>15 scroll all the way through.</p> <p>16 BY MS. THOMAS-LUNDBORG:</p> <p>17 Q You'll see that your signature is on</p> <p>18 the final page, do you see that?</p> <p>19 A Yes.</p> <p>20 Q Does this appear to be a true and</p> <p>21 accurate copy of your rebuttal report in this</p> <p>22 case?</p> <p>23 A Yes.</p> <p>24 Q As part of your deposition prep, did</p> <p>25 you review the expert report written by Bill</p>

<p style="text-align: right;">17</p> <p>1 Cooper in June 2023?</p> <p>2 A No.</p> <p>3 Q Did you review the expert report of</p> <p>4 Bill Cooper from June 2023 in writing your</p> <p>5 expert report?</p> <p>6 A Yes.</p> <p>7 MS. THOMAS-LUNDBORG:</p> <p>8 I am now sharing my screen, and</p> <p>9 I'm going to have marked as Exhibit 5</p> <p>10 the declaration of William S. Cooper.</p> <p>11 We'll briefly scroll through it. His</p> <p>12 signature is on page 60, with the</p> <p>13 date of June 29, 2023.</p> <p>14 BY MS. THOMAS-LUNDBORG:</p> <p>15 Q Does this appear to be a copy of the</p> <p>16 expert report of Bill Cooper that you reviewed</p> <p>17 in writing your expert report?</p> <p>18 A Yes.</p> <p>19 Q Do you recall that Mr. Cooper's</p> <p>20 expert report included exhibits to his</p> <p>21 declaration?</p> <p>22 A I don't, but I believe that's right.</p> <p>23 MS. THOMAS-LUNDBORG: So I'm now</p> <p>24 going to introduce two of the exhibits to</p> <p>25 the June report. I'll do them together.</p>	<p style="text-align: right;">19</p> <p>1 report, he included exhibits. Do you recall</p> <p>2 that?</p> <p>3 A No.</p> <p>4 Q So I'm going to put on the screen</p> <p>5 what I will represent to you are accurate</p> <p>6 copies of the exhibits attached to</p> <p>7 Mr. Cooper's rebuttal report, at least a</p> <p>8 selection of the exhibits, and I think once we</p> <p>9 go through these, we'll have marked the first</p> <p>10 set of exhibits. We can go into some</p> <p>11 substantive questions.</p> <p>12 A I don't know I kind of like this easy</p> <p>13 part.</p> <p>14 MS. THOMAS-LUNDBORG:</p> <p>15 So I'm having marked as Exhibit</p> <p>16 9 to your deposition what was Exhibit</p> <p>17 A to Mr. Cooper's rebuttal report it</p> <p>18 is Mr. Cooper's revised initial</p> <p>19 report, and I believe he revised his</p> <p>20 report after several of defense</p> <p>21 experts noted that Mr. Cooper had</p> <p>22 used a map that was not, in fact, the</p> <p>23 enacted map in doing some of his</p> <p>24 analysis. So the revised report is</p> <p>25 the same as the initial report that</p>
<p style="text-align: right;">18</p> <p>1 We'll have marked as Exhibit 6, Bill</p> <p>2 Cooper's Exhibit K-1. As Exhibit 7, Bill</p> <p>3 Cooper's exhibit to his expert report</p> <p>4 K-2.</p> <p>5 BY MS. THOMAS-LUNDBORG:</p> <p>6 Q Did you rereview the rebuttal report</p> <p>7 of Mr. Bill Cooper?</p> <p>8 A Not for this deposition.</p> <p>9 Q Did you do review it in your work for</p> <p>10 this case in writing your reply or your</p> <p>11 rebuttal report?</p> <p>12 A Yes.</p> <p>13 MS. THOMAS-LUNDBORG:</p> <p>14 I'm going to have marked as</p> <p>15 Exhibit 8. I've now put on the</p> <p>16 screen what I'm going to have marked</p> <p>17 as Bill Cooper's rebuttal Exhibit 8.</p> <p>18 Quickly scrolling through it, you'll</p> <p>19 see on page 14 was executed on</p> <p>20 August 11, 2023, and it has</p> <p>21 Mr. Cooper's signature.</p> <p>22 BY MS. THOMAS-LUNDBORG:</p> <p>23 Q Do you see that?</p> <p>24 A I do.</p> <p>25 Q As part of Mr. Cooper's rebuttal</p>	<p style="text-align: right;">20</p> <p>1 we discussed earlier except it</p> <p>2 updates all the tables with the</p> <p>3 enacted map. Did you understand that</p> <p>4 prior to today?</p> <p>5 THE WITNESS:</p> <p>6 No.</p> <p>7 MS. THOMAS-LUNDBORG:</p> <p>8 I have -- I'm going to actually</p> <p>9 go through them all together so we</p> <p>10 can go through them quickly. So I'm</p> <p>11 now going to share my screen, and I'm</p> <p>12 going to have marked as I just wanted</p> <p>13 to make sure I have the right thing</p> <p>14 on the screen. One second. I'm</p> <p>15 going to have marked as Exhibit 10,</p> <p>16 Exhibit B-1 to Bill Cooper's rebuttal</p> <p>17 report. I'm going to have marked as</p> <p>18 Exhibit 11, Exhibit B-2 to</p> <p>19 Mr. Cooper's rebuttal report. I'm</p> <p>20 going to have marked as Exhibit 12,</p> <p>21 Exhibit C-1 to Mr. Cooper's rebuttal</p> <p>22 report, and then, I'm going to have</p> <p>23 marked as Exhibit 13, Exhibit C-2 to</p> <p>24 Mr. Cooper's rebuttal report. So</p> <p>25 that the record is clear, we'll be</p>

<p style="text-align: right;">21</p> <p>1 spending more time with these 2 exhibits later in the deposition, but 3 exhibits B-1, B-2, C-1 and C-2 are 4 Mr. Cooper's comparative compactness 5 measures for the illustrative map and 6 the enacted map. I'm going to stop 7 sharing. 8 BY MS. THOMAS-LUNDBORG: 9 Q I'd like to go back -- now that we 10 have entered a bunch of exhibits that we will 11 come back to later in this deposition, I'd 12 like go back to your deposition prep. Did you 13 review the deposition transcript of Mr. Bill 14 Cooper in your prep for today? 15 A No. 16 Q Were you aware that he had been 17 deposed? 18 A Yes. 19 Q Did knowledge of his deposition play 20 any role in your prep today? 21 A No. 22 Q Did you review any of the other 23 expert reports in this case? 24 A I might have early on in the case, 25 and I think I saw the report of McCartan when</p>	<p style="text-align: right;">23</p> <p>1 Q Did you review other documents in 2 preparation for your deposition? 3 A Not to my recollection. 4 Q I'm now going to shift gears a little 5 bit and ask you some questions about your 6 involvement in this case. When were you 7 officially retained as an expert in this case? 8 A Gosh, I don't know. Probably before 9 the stay was put into place. 10 Q So that would have been in 2022? 11 A Yeah. I want to say June of 2022, 12 but I'm not entirely sure. 13 Q And when did you begin work on this 14 case? 15 A It would probably have been around 16 that time. 17 Q When you joined the case, what were 18 you told the subject matter was? 19 A I believe -- I mean, this is trying 20 to remember more than a year ago, but my 21 understanding of this case all along has been 22 that it was a Section 2 case. 23 Q And what was your understanding of 24 what the main issues were in the case? 25 A Well, as a Section 2 case, you know,</p>
<p style="text-align: right;">22</p> <p>1 it was filed, but other than that, no. I 2 don't think so. 3 Q You said that you saw -- you may have 4 seen the report of Dr. McCartan. Do you 5 intend to render any opinions on his report? 6 A I don't know if counsel will ask me 7 at trial, but I don't have anything prepared 8 or in my reports on him. 9 Q Do you intend to render opinions on 10 any of the other experts in this case? 11 A Yeah, it's the same basic answer. I 12 don't really know what I'm going to testify to 13 at trial. I'll answer the questions that I'm 14 asked, you know, that aren't objected to and 15 sustained, but to my recollection, I haven't 16 seen the reports. I would imagine the only 17 relevance of my reports to theirs would be in 18 direct. 19 Q Did you render any opinions about 20 other experts in the two reports that you 21 submitted thus far? 22 A I don't believe so. Without knowing 23 the substance of what their reports is about, 24 there may be things in my report that are 25 applicable to them, but I don't know.</p>	<p style="text-align: right;">24</p> <p>1 my understanding is always that it's going to 2 be about Gingles prongs one to three and then 3 the totality of the circumstances. I knew 4 that my involvement was going to be limited 5 probably to Gingles prong one. 6 Q Then, you anticipated my next 7 question, which is what were you asked to do 8 when you were retained in this case? 9 A I honestly -- I don't remember, 10 because I believe when I was retained, it was 11 in a sort of -- real professional term, a fire 12 drill trying to get ready for a hearing when 13 everything was on fast tracks back then; and 14 then, when the stay was put into place, things 15 calmed down. So I don't remember initially 16 exactly what my marching orders were. 17 Q What were your marching orders before 18 you submitted what we have marked as Exhibit 19 3, which is your initial report in this case? 20 A It was to examine the districts drawn 21 by Mr. Cooper to determine -- first to 22 illustrate the location of the black 23 population of voting age in the districts, and 24 second, to render an opinion as to whether 25 they were reasonably compact.</p>

25

27

1 Q Sorry. I'm just taking some notes.
2 And we've spent some time just now referencing
3 Gingles. Are you familiar with the Gingles
4 preconditions?

5 A Yes.

6 Q And what is your understanding of
7 what the Gingles preconditions are?

8 A The first precondition, numerosity
9 and compactness. You have a reasonably
10 compact -- well, I guess the nature of what
11 the group has to be is the prime legal issue
12 you all will be fighting over, but it's a
13 reasonably compact minority group sufficient
14 to be a majority in a reasonably configured
15 district. The second prong is whether the
16 minority group posed as a block -- shows
17 cohesion in its voting, and then, the third
18 prong is whether the majority votes as a block
19 sufficient such that the minority group
20 typically wouldn't be able to elect its
21 candidate of choice.

22 Q Did you, when you were retained,
23 understand that Mr. Cooper is a Gingles 1
24 expert for the plaintiffs?

25 A That's my understanding, yes.

1 reports of Mr. Cooper, did you do any other
2 research to prepare for the expert reports
3 that you submitted in this case?

4 A So as I was writing this report, I'd
5 also done the research for my dissertation.
6 My third paper in my dissertation deals with
7 redistricting simulations. So I had done a
8 lot of work on different ways to execute
9 simulations, and part of that is different
10 measures of compactness; and a lot of that
11 research was directly relevant to my
12 engagement in this matter. So it's kind of a
13 tricky question to answer, because in a sense
14 the answer is no, because most of the research
15 that I utilized here came out of work for a
16 separate project, but it's not really no,
17 because there is other research that is
18 relevant to this report.

19 Q Okay, we will spend some time
20 discussing your dissertation a little bit
21 later, but just focusing in on the work you
22 did for this report, was there any research
23 that you did for the report that did not
24 coincide with the research that you were doing
25 for your dissertation?

26

28

1 Q Was it your understanding that you
2 would be a rebuttal Gingles 1 expert for the
3 defendants or for defendant Secretary of
4 State?

5 A Yes, that's right.

6 Q Do you intend to render any opinions
7 on Gingles 2 and 3?

8 A No.

9 Q Outside of counsel, did you discuss
10 the case with anyone else?

11 A My wife.

12 Q Did you have any discussions with any
13 of the defense side experts in this case?

14 A I don't think so, no. I assume -- I
15 understand that question to ask if I have had
16 discussion with defense side experts about the
17 subject matter of this case.

18 Q That is correct. Not -- I'm sure
19 folks meet casually and have all kinds of
20 discussions not relevant to today.

21 A Yes, that's right.

22 Q So we've spent sometime talking about
23 your preparation for the deposition. I'd like
24 to ask you about your preparation for writing
25 your expert report. Aside from reading the

1 A If we -- I don't remember any. If as
2 we go through the report, I spot things that I
3 need to update this answer, I'll do it, but I
4 don't remember any.

5 Q Now, you said -- I believe you
6 answered yes, that you did review Mr. Cooper's
7 expert reports. Did you receive Mr. Cooper's
8 shape files and block equivalency files for
9 his illustrative maps?

10 A Yes.

11 Q Did you upload these files into a GIS
12 system?

13 A I would have read them in R.

14 Q So did you not upload his map files
15 into a GIS system to actually see the output?

16 A Well, you can see the output in R.
17 That's how all the maps in my report are
18 generated.

19 Q Then, when you uploaded them into R,
20 did you use any other program to see the maps
21 or simply used your R code and had them
22 displayed through R?

23 A My R code. I may have put them in
24 today's redistricting, as well, but it was
25 mostly my R code, if not exclusively.

<p style="text-align: right;">29</p> <p>1 Q Have you set up your R code to have 2 outputs of visual maps that can be looked at? 3 A Yes. That's how all the maps in my 4 report were generated. 5 Q I would like to go back to the 6 sources of your report versus the sources of 7 your dissertation. Were there any sources 8 that you have used in your dissertation that 9 you did not cite in your expert report or your 10 expert reports for this case? So I'm now 11 referencing Exhibit 3 and 4. 12 A The bibliography to my dissertation 13 is something like 10 pages long. So yeah, 14 there are a lot of things that I cite to in my 15 dissertation that I don't cite to here. 16 Q How did you decide which literature 17 review to cite in your expert report and which 18 to leave out? 19 A Well, so the first dissertation paper 20 is about the Supreme Court. So all those 21 cites are irrelevant and the second 22 dissertation is about paper was about 23 integrated nested Laplace approximations -- 24 the second paper is about integrated nested 25 Laplace approximations in spatial modeling of</p>	<p style="text-align: right;">31</p> <p>1 coincided with your expert report -- with your 2 dissertation, did you write any new code for 3 the expert report in this case? 4 A Yes. 5 Q Can you explain that process to us? 6 A Well, you open up the R programming 7 environment in a program called RStudio, and 8 you begin -- you think about what it is that 9 you need your code to do, what it is you're 10 trying to accomplish, and you write a series 11 of commands that R will execute to carry out 12 those tasks. 13 Q And this process was separate from 14 the process that you used in your 15 dissertation; meaning, you went into RStudio 16 and wrote brand new code for your report work 17 in this case? 18 A I mean, you never write brand new 19 code. I shouldn't say never. You rarely 20 write brand new code, because there might be 21 snippets you've used before rather than 22 reinvent the wheel you can use. So the 23 template for drawing these maps, I've used 24 probably for about a year now. So I'm sure 25 that language is reused, but in terms of, you</p>
<p style="text-align: right;">30</p> <p>1 elections data. So that stuff wasn't 2 relevant. And then, the third paper, which is 3 the one on redistricting, has some things, 4 such as different redistricting, simulations 5 that have been proposed over the years that 6 just weren't relevant. So I tried to pull out 7 the relevant pieces of information or 8 citations. 9 Q Then, how did you determine whether 10 the literature from this third simulations 11 chapter was relevant for not relevant. 12 A Well, if related to population 13 compactness, which is what my report is about, 14 that's the first cut on what's relevant. I am 15 not aware of any, as you might call it, 16 negative authority on the citations that I've 17 put in. So to the extent I didn't include 18 citations, it was just because I figured I had 19 proved the point sufficiently and didn't need 20 to list every single possible citation the way 21 you might in a dissertation. Just like in 22 writing a legal brief, you might not cite 23 every single piece of authority for a 24 proposition. 25 Q In addition to the work that</p>	<p style="text-align: right;">32</p> <p>1 know, making sure that everything does what it 2 needed to do here, it was all examined and 3 executed on my computer. 4 Q You said that you may have used 5 snippets in your code that you've used before, 6 and one example you gave is the template for 7 actually drawing the maps. Are there other 8 examples of snippets of the codes that you 9 used in this case that you have used 10 previously? 11 A I'm sure there are. I just -- I'd 12 have to think. I'm kind of trying to think 13 through the code. You know, the dot plots -- 14 well, that's part of the maps. The dot plots, 15 I've used the code before. The call to pull 16 up the open street map background, I've used 17 before. I think those are the main things 18 that would have been important, but gosh, 19 there's just stuff that like -- well, there's 20 a couple of -- in the R code at the very top, 21 there's called source get packages and then, 22 source -- there's another source command that 23 will pull up the census data or ways to 24 interpret the census data. So that would have 25 been used before, and I'm sure there are other</p>

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35

1 things here and there that rather than try to
2 reinvent the wheel, you would just import the
3 code from a previous application, but those
4 are the main ones that I can recall.

5 Q When you say you've used these
6 snippets before, is that in other expert work,
7 or is that in your other either academic work
8 or professional work?

9 A I mean, probably both. So now,
10 whenever I open up R, I always just execute
11 that get packages command, because it imports
12 all the packages that I typically use, because
13 it's really frustrating to write a bunch of
14 code and then execute it and have it crash,
15 because you forgot to load the geomander
16 G-E-O-M-A-N-D-E-R, package. So there's really
17 not a clean delineation that this line of
18 questioning might suggest.

19 Q How have you used this code -- let's
20 focus on the academic work. How have you used
21 this code in your academic work?

22 A Well, like I said, I tend to use the
23 get packages command just as a matter of
24 course. To pull up the background for the
25 maps, the stuff that's borrowed from open

1 Q Do you know how much time you've
2 billed on this case so far?

3 A No.

4 Q Did you send the bill to counsel?

5 A Yes.

6 Q Okay, and you have a record of that
7 time?

8 A Yes.

9 Q Do you recall when you last sent a
10 bill to counsel?

11 A Probably August.

12 Q Do you recall what time you included
13 in your August bill?

14 A I think it went back to November.

15 Q Do you recall how much time you
16 billed for in your August bill?

17 A I want to say it was in the
18 neighborhood of 120 hours.

19 Q All right, so we actually are going
20 to open another exhibit. Give me one second.
21 I've seen various versions of these, but this
22 was the version that was submitted with what
23 is Exhibit 3 in this case, so with your
24 initial report, and this is your CV. It was
25 from this summer. So this is your CV as of

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1 street maps, there's a script called gets the
2 tiles that anytime I'm making a map, I'll use
3 that script. So yeah.

4 Q I'm going back to your preparation
5 for your expert report. Did you read the
6 pleadings in this case?

7 A No.

8 Q Did you read any of the intervention
9 papers in this case?

10 A No.

11 Q How many hours did you put into
12 research and writing for this case?

13 A I don't know.

14 Q Do you have a ballpark estimate?

15 A No.

16 Q Would you say it was less than 20
17 hours?

18 A I honestly don't even have a
19 ballpark. And I'm sorry, but this is just a
20 process that's gone on, you know, over the
21 course of a year. So I definitely couldn't do
22 it that way.

23 Q Have you billed any time on this case
24 yet?

25 A Yes.

1 this summer that we received. I'm just going
2 to scroll through.

3 MS. THOMAS-LUNDBORG:

4 I'm going to have this exhibit
5 marked as Exhibit 14.

6 BY MS. THOMAS-LUNDBORG:

7 Q Do you recognize Exhibit 14 as a true
8 and accurate copy of your CV?

9 A Yes.

10 Q I think you said you have it in front
11 of you, but I can also scroll on the screen.
12 Are there any updates to this version of your
13 CV?

14 A Let's see. Yeah. The New Mexico
15 redistricting case, I've been deposed in now
16 and will be testifying tomorrow or Thursday.

17 Q Anything else?

18 A I guess the report in the
19 Congressional case here.

20 Q Is there anything else?

21 A I don't believe so.

22 Q Could you give me a brief overview of
23 your educational background?

24 A Sure. I graduated Yale University in
25 1995 with a double major in history and

<p style="text-align: right;">37</p> <p>1 political science. In 2001, I graduated from 2 Duke Law School. While I was at Duke, I also 3 earned my master's degree in political 4 science. In 2016, and -- I apologize for 5 having to say it this way, but I matriculated 6 at the Ohio State University. I earned a 7 Master's of Applied Statistics from OSU in 8 2019, and I should earn my -- have my Ph.D. in 9 December, December 17th to be exact. 10 Q So I'd like to just ask you a couple 11 of follow-up questions. You have a JD. Do 12 you intend to render any legal opinions in 13 this case? 14 A I won't be acting in any capacity as 15 a lawyer, and I'm going to try to avoid legal 16 opinions. 17 Q Then, you mentioned your Ph.D. 18 graduation date. Do you recall being deposed 19 in South Carolina? 20 A Yes. 21 Q Okay. In April of 2022. At that 22 time, you testified that your expected 23 graduation date for your Ph.D. program was May 24 of 2022. Do you recall that? 25 A Yes.</p>	<p style="text-align: right;">39</p> <p>1 G-I-M-P-E-L. 2 Q When did you formally form this 3 current iteration of your committee? 4 A Oh, gosh, the current iteration was 5 about two weeks ago. Jim came onboard -- we 6 had -- it was Greg, Tom and Jim. So the 7 original committee that was formed was Greg, 8 Tom and -- Skyler Cranmer agreed to only do it 9 for purposes of the prospectus; and if I'm 10 getting my timeline right, because it's been a 11 long strange trip, he was replaced by a guy 12 named Bryce Acree, A-C-R-E-E, and then, Bryce 13 committed suicide in December of 2019, and so 14 it took awhile to find someone to replace him, 15 and that's how Jim came on; and then, Alex 16 came on a few weeks ago, because it turned 17 out, you need three Ohio State faculty members 18 on your committee. There was some confusion 19 on reading the rules on external faculty 20 members, and so he was added. I guess it was 21 over Labor Day that he came on. So yeah, that 22 would be about three weeks ago. 23 Q Sorry to hear about Professor Acree. 24 A Thank you. 25 Q I think we've already gone over the</p>
<p style="text-align: right;">38</p> <p>1 Q What happened regarding your 2 graduation? 3 A I wasn't able to complete the third 4 paper as quickly as I'd like, and things got 5 incredibly busy on the work front. 6 Q I believe when you and I met back 7 in -- well, forever ago in 2018, your third 8 paper was on the efficiency gap. When did you 9 change your third dissertation topic? 10 A I believe I changed it after the 11 Rucho opinion came down. It might be after 12 Gill v. Whitford, but I think it was after 13 Rucho. 14 Q I believe you defended your 15 dissertation yesterday; is that correct? 16 A That's correct. 17 Q How did that go? 18 A Great. I passed or completed it or 19 however you want to word it. 20 Q Congratulations. 21 A Thank you. 22 Q Who was on your committee? 23 A My adviser is Greg Caldeira 24 C-A-L-D-E-I-R-A, and then, the committee is 25 Alex Acs, A-C-S, Tom Wood and Jim Gimpel,</p>	<p style="text-align: right;">40</p> <p>1 chapters of your dissertation. I believe when 2 I deposed you five years ago, your plan was to 3 publish your chapters. Have any of those 4 chapters been published in any peer-reviewed 5 publication? 6 A No, I haven't submitted any of them. 7 Q Have you submitted any work for peer 8 review. 9 A Yeah. Two papers. 10 Q And what's the status of those 11 papers? 12 A One of them is on my CV -- when you 13 say papers, do you mean the papers from the 14 dissertation or just in general? 15 Q In general. 16 A Yeah. So one of them is on my CV, 17 and one of them was a piece on COVID that I 18 did with a couple of public health 19 professionals that sat on a desk until someone 20 else published the same research, at which 21 point, it was pretty much moot. 22 Q You said one of them is on your CV. 23 That is the -- on page six with James Gimpel 24 and Reeves and yourself, "Reconsidering 25 Bellwether Locations in U.S. Presidential</p>

<p style="text-align: right;">41</p> <p>1 Elections." Is that what you're discussing?</p> <p>2 A Correct.</p> <p>3 Q On your CV, it says that it's</p> <p>4 forthcoming, but it also has a 2022 date.</p> <p>5 What is the status of this publication?</p> <p>6 A I'll have to check to see if that</p> <p>7 should be updated. Yeah, it should have been</p> <p>8 published by now.</p> <p>9 Q Are you aware of whether it's been</p> <p>10 published?</p> <p>11 A No. I have to check the status of</p> <p>12 it.</p> <p>13 Q What's the subject matter of this</p> <p>14 publication?</p> <p>15 A Bellwether locations. Counties that</p> <p>16 predict presidential elections well.</p> <p>17 Q Does this publication involve</p> <p>18 compactness?</p> <p>19 A No.</p> <p>20 Q Do you have any other publications</p> <p>21 currently pending publication?</p> <p>22 A No.</p> <p>23 Q Now, I believe you said that the code</p> <p>24 you used is R, correct?</p> <p>25 A That's correct.</p>	<p style="text-align: right;">43</p> <p>1 A So for the third chapter on</p> <p>2 communities of interest and redistricting, I</p> <p>3 wrote code for constructive Monte Carlo</p> <p>4 simulations. So when you're trying to</p> <p>5 generate compact districts with a constructive</p> <p>6 Monte Carlo simulation, you build the</p> <p>7 districts out by finding precincts that have</p> <p>8 centroids that are close to the centroids of</p> <p>9 the main district. So that's similar to one</p> <p>10 of the approaches utilized in finding a</p> <p>11 population compactness.</p> <p>12 Q But it sounds like in your</p> <p>13 dissertation, you're actually running</p> <p>14 simulations. Do those simulations create</p> <p>15 maps?</p> <p>16 A Yes.</p> <p>17 Q Do they create maps for whole sets of</p> <p>18 geography? So what I mean is if, for example,</p> <p>19 your simulation would be run in this case, you</p> <p>20 would have created a whole map for the</p> <p>21 Louisiana Senate?</p> <p>22 A Yes. It could be used to generate</p> <p>23 map -- whole maps for the Louisiana Senate.</p> <p>24 Q And the same thing for the Louisiana</p> <p>25 House?</p>
<p style="text-align: right;">42</p> <p>1 Q Do you write code in any other</p> <p>2 languages?</p> <p>3 A I've done some coding in Stata</p> <p>4 S-T-A-T-A. Or Stata if you prefer. Those are</p> <p>5 the main languages for coding.</p> <p>6 Q That you coded?</p> <p>7 A That I coded, yes, sorry.</p> <p>8 Q Because there's also Java,</p> <p>9 C-plus-plus?</p> <p>10 A Correct. Python.</p> <p>11 Q Have you written any code as part of</p> <p>12 your Ph.D. dissertation?</p> <p>13 A Yes.</p> <p>14 Q And what code is that?</p> <p>15 A That was in R.</p> <p>16 Q Was it this map code that we</p> <p>17 discussed earlier, or did you write different</p> <p>18 code for your Ph.D. dissertation?</p> <p>19 A Different code.</p> <p>20 Q As part of your Ph.D. dissertation,</p> <p>21 did you write any algorithms that are similar</p> <p>22 to the algorithms that you used in this</p> <p>23 report?</p> <p>24 A Yes.</p> <p>25 Q And what was that?</p>	<p style="text-align: right;">44</p> <p>1 A Correct.</p> <p>2 Q And as part of your dissertation, you</p> <p>3 are, in fact, running simulations to create</p> <p>4 whole maps; is that right?</p> <p>5 A Correct.</p> <p>6 Q Have you ever presented at an</p> <p>7 academic conference regarding redistricting?</p> <p>8 A No.</p> <p>9 Q Have you ever presented at an</p> <p>10 academic conference regarding voting rights?</p> <p>11 A No.</p> <p>12 Q I think you just mentioned that the</p> <p>13 algorithm you used is based on MCMC, which is</p> <p>14 Markov Chain Monte Carlo, right?</p> <p>15 A It's a constructive Monte Carlo.</p> <p>16 When people talk about Markov, MCMC</p> <p>17 approaches, I usually think of the kind of the</p> <p>18 flip programs where you iterate through the</p> <p>19 map and flip precincts in and out. It's a</p> <p>20 constructive Monte Carlo approach.</p> <p>21 Q If I use MCMC, will you understand</p> <p>22 that to be constructive MCMC? Will you</p> <p>23 understand that to be the same thing we were</p> <p>24 just discussing?</p> <p>25 A Yeah, as long as you get the word</p>

<p style="text-align: right;">45</p> <p>1 "constructive" in, I'll know what you're 2 talking about. 3 Q Have you taught constructive MCMC? 4 A Yes. 5 Q And in which course was that? 6 A My voting rights -- my voter turnout 7 and participation class. 8 Q How do you teach it in that class? 9 A We talk about -- well, a good portion 10 of that class covers gerrymandering. So we 11 talk about redistricting simulations and the 12 various approaches that have been taken. I 13 usually demonstrate the constructive Monte 14 Carlo since you can actually put it up on the 15 screen and draw a map every time a district 16 flips so they can see how the algorithm works. 17 I always think it's way more interesting than 18 they do, but -- 19 Q Do you teach students to run 20 constructive MCMC, or do you just demonstrate 21 it? 22 A No. I teach how it works and 23 demonstrate it. 24 Q You teach students to write their own 25 constructive MCMC codes?</p>	<p style="text-align: right;">47</p> <p>1 switched over formally. I been writing 2 full-time for them since then. You know, I've 3 always had side projects, which 4 RealClearPolitics has been fine with along the 5 way, but that's been my main employer. RCP 6 has been the only employer I've had a W-2 from 7 since 2010 is perhaps the cleanest way to do 8 that. 9 Q What is RealClearPolitics? 10 A RealClearPolitics is a company of 11 about 50 people that produces a website that 12 publishes daily. 13 Q And how would you describe the nature 14 of the content on RealClearPolitics? 15 A Well, most of what we do is 16 aggregation. So we'll aggregate poles. We 17 aggregate articles from across the political 18 spectrum. We do produce some original 19 content, which is part of what I do, but it's 20 mostly polling and elections focused. 21 Q And then, when you say you produced 22 original contents, would that content be 23 considered peer-reviewed? 24 A No. 25 Q And is your work at RealClearPolitics</p>
<p style="text-align: right;">46</p> <p>1 A No. 2 Q Have any of your courses taught 3 coding as part of the course? 4 A Yeah. So the -- there is one other 5 update that should be on this as I look this 6 over, which is -- so the political 7 participation and voting behavior I taught in 8 springs of 2022 and 2023, as well; and in the 9 fall of 2022, I taught a course -- I can't 10 remember the name, but the gist of it is 11 survey methodology; and in both of those 12 courses, students have to do a fair amount of 13 R coding to be able to pass. 14 Q Now, I'm going to shift gears 15 slightly. Can you give us a brief overview of 16 your professional background? 17 A Starting when? I'm old now. 18 Q Well, that's why I said brief. So I 19 know that you were a lawyer prior to your 20 current kind of iteration. So just a summary 21 of the facets of your professional life. 22 A Yeah, I practiced law until 2009, 23 when I switched over to RealClearPolitics. 24 I've been writing full-time at 25 RealClearPolitics -- I guess it was 2010 I</p>	<p style="text-align: right;">48</p> <p>1 still considered full-time? 2 A Yes. 3 Q I'd like to, if you have the time, 4 just go through a couple more questions about 5 your background, about prior testimony and 6 then, we can take a short break. 7 A Sure. 8 Q So staying on Exhibit 14, your resume 9 pages four through six lists the cases that 10 you've served as an expert witness; is that 11 correct? 12 A Yeah, with a couple of additions we 13 discussed earlier. 14 Q Okay. Do you have a process for 15 updating this list in your resume? 16 A Usually, when I'm getting ready to 17 submit the report, I'll add new cases on. 18 That's usually how I do it. And then, this 19 resume just kind of gets cut and pasted from 20 report to report with the updated cases on it. 21 Q I see that you have some demarcations 22 of the subject matter of the expert testimony. 23 Do you distinguish between cases where you 24 wrote reports and cases where you testified 25 live in court?</p>

<p style="text-align: right;">49</p> <p>1 A I think this is all the cases where I 2 wrote reports, but there may be other ones 3 that I missed. I know the rule is cases where 4 you've been deposed or testified, but I don't 5 know. I just put it all on there. It's also, 6 I guess, only the last four years, but that's 7 a pain to keep up with too. 8 Q Do you know how many of these cases 9 you've actually testified in court? 10 A Most of them. 11 Q But there are examples here like, I 12 believe you did not testify in court in the 13 Philip Randolph Institute v. Smith case? 14 A That's correct. 15 Q Are there other examples that you can 16 recall? 17 A I didn't testify in court in Dixon v. 18 Rucho, and I guess I would say in both of 19 those cases, I wasn't called. I didn't 20 testify in Carter v. Chapman because we were 21 just amicus there. Didn't testify in NAACP v. 22 McMaster because the case settled before we 23 went to trial. I haven't testified yet in 24 LULAC v. Abbott because that case hasn't gone 25 to trial yet and the same is true of Agee v.</p>	<p style="text-align: right;">51</p> <p>1 A I can't remember if they filed one in 2 the McMaster case or in the state racial 3 gerrymandering case in South Carolina. I 4 can't remember if they filed one in Jacobson. 5 Well, I guess Montana, that case would be 6 state court. So it wouldn't be Daubert, but 7 so yes, if there's one in either of the South 8 Carolina cases, that would probably be the 9 most recent. 10 Q In the cases where you've testified 11 in court, do you ever -- strike that. In 12 cases where you've testified in court, has the 13 court ever found your testimony unpersuasive 14 to your knowledge? 15 A Yes. 16 Q And in which instances was that? 17 A So in the a -- in Feldman, the judge 18 didn't seem to like any of the expert 19 testimony. It wasn't struck, but he didn't 20 find it terribly persuasive. The recent 21 South Carolina case, the judges didn't find it 22 persuasive. I'm sure there's others. 23 Q Now, looking at your resume, you 24 again demarcated the subject matter generally 25 of each case. How many of your prior cases</p>
<p style="text-align: right;">50</p> <p>1 Benson. You know there is another case which 2 is a Dodge City case. I think Coca is the 3 name of it that I put a report in and been 4 deposed on. 5 Q Are you familiar with the term 6 "Daubert motion"? 7 A Yes. 8 Q Have you ever been the subject of a 9 Daubert motion? 10 A Yes. 11 Q Do you recall which of these cases 12 you may have been the subject of a Daubert 13 motion? 14 A I mean, most of the early cases, it 15 was at least -- I had Daubert motions filed 16 against me. I don't think there was one in 17 Feldman. I'm not sure there was one in Hobbs 18 or Mecinas. Wasn't one in possibly Yaqui 19 Tribe v. Rodriguez, and that's become less 20 common in the more recent cases but every now 21 and again. 22 Q Do you remember the case where you 23 may have been the most -- let me strike that. 24 Let me rephrase. Do you recall which case is 25 your most recent Daubert motion?</p>	<p style="text-align: right;">52</p> <p>1 have been Section 2 Voting Rights Act cases? 2 A Well, the Dodge City case is a 3 Section 2 case. The Agee v. Benson case is a 4 Voting Rights Act case. The LULAC v. Abbott 5 is a Voting Rights Act case, at least in part. 6 Q Sorry. Go ahead. 7 A I'll just say I can't remember if 8 McMaster had a VRA component or either Rucho 9 or the Covington cases had VRA components. I 10 assume when we say Section 2, you mean Section 11 2 redistricting cases. 12 Q I think for the general question, you 13 can tell me all Section 2 cases, and then, we 14 can drill down on which of those were vote 15 denial versus votes dilution. Are there any 16 cases that we haven't mentioned that would 17 have been vote denial? 18 A NAACP versus McCrory, the two 19 Southern District of Ohio cases, Lee versus 20 Board of Elections, Feldman, which eventually 21 became Brnovich. Mecinas v. Hobbs. The 22 Rodriguez case in Arizona, I think was a 23 Section 2 case. 24 Q Then, you said of the vote dilution 25 cases, I count three Dodge City, LULAC and</p>

<p style="text-align: right;">53</p> <p>1 then, Acee v. Benson, I'm probably pronouncing 2 that incorrectly. 3 A Agee. 4 Q Agee? 5 A I think the "G" is soft, but for the 6 court reporter, it's A-G-E-E. 7 Q And have any of these cases proceeded 8 to a final judgment? 9 A No. The trial in Agee is in 10 November, but it hasn't gone to final judgment 11 yet, and we're still kind of waiting in LULAC. 12 Q And what is the timing on the Dodge 13 City case? 14 A Oh, yeah, the Dodge City case, I 15 think, goes to trial in February. 16 MS. THOMAS-LUNDBORG: 17 All right. I think with that, 18 we can take a five-minute break. 19 Thank you for powering through this 20 kind of first hour and 15 minutes. 21 Thank you for bearing with us. 22 THE WITNESS: 23 Thank you. 24 (Recess taken.) 25 BY MS. THOMAS-LUNDBORG:</p>	<p style="text-align: right;">55</p> <p>1 have discussed your case law related to 2 Section 2. Sorry. Have you ever used the 3 exact analysis you're proffering here in 4 another case. 5 A No. 6 Q Are you aware of any court accepting 7 the exact analysis that you are proffering 8 here in another case? 9 A No. I'm not aware of other cases 10 where the lawyers have wanted to argue about 11 population compactness. 12 Q I think we spent some time earlier 13 discussing the fact that you were critiquing a 14 Gingles 1 expert; is that correct? 15 A That's my understanding, yes. 16 Q Is it your understanding that a 17 Gingles 1 expert must draw a whole map? 18 A I don't -- I actually don't know the 19 exact answer to that. I thought I did once, 20 and then, there was that 2018 Supreme Court 21 decision that was in the Fourteenth Amendment 22 context, but I don't know if it has any 23 implications for Gingles 1. 24 Q So just to be clear, you're not sure 25 that whether a Gingles 1 expert must show that</p>
<p style="text-align: right;">54</p> <p>1 Q I'd like to just ask you one 2 follow-up question about your background. Is 3 there anything else that you need to do to 4 meet your December 17th graduation date? 5 A My committee members need to sign the 6 form, and -- if they haven't already done so. 7 I didn't check this morning. File my 8 application to graduate and application for 9 exam. There may be like some more paperwork, 10 but I don't think so. 11 Q You said file your application for 12 exam. What is that? 13 A I filed it. I'm sorry. 14 Q Oh, you filed it. 15 A Yeah. 16 Q So it's just a form by your committee 17 members is all that's needed? 18 A That's my understanding. Like I 19 said, there may be some other paperworks, but 20 there's no revisions that have to be made to 21 the dissertation or anything like that. It 22 wasn't a conditional pass. 23 Q So I'd like to go back to your work 24 in this case. We spent sometime just before 25 break discussing Section 2 and Gingles, and we</p>	<p style="text-align: right;">56</p> <p>1 a majority-minority district can be drawn 2 within the whole configuration of the state or 3 not? 4 A I'm not sure. 5 Q Are you familiar with the term 6 "traditional redistricting criteria"? 7 A Yes. 8 Q What are traditional redistricting 9 criteria? 10 A Well, if you ask different people, 11 you'll get different answers, but they are 12 qualitative factors that people have 13 traditionally -- I hate to make an ipse dixit, 14 but that people have traditionally used to 15 evaluate districting maps. I guess 16 theoretically to draw them, as well. So 17 things such as compactness and contiguity and 18 so forth. 19 Q Can you name other traditional 20 redistricting criteria? I think you just 21 named contiguity and compactness? 22 A Yeah. I mean so equal population -- 23 the way it's understood today isn't 24 necessarily traditional criteria, but some 25 degree of ethnic population is. Communities</p>

<p style="text-align: right;">57</p> <p>1 of interest, some states -- I know Dr. Chen 2 has suggested that that shouldn't be 3 considered one, or at least that's my 4 understanding of his article on the subject 5 matter. I don't know that the Voting Rights 6 Act is a traditional redistricting criteria. 7 I'd probably put it in that bucket now since 8 it effects all the redistricting decisions 9 but, obviously, you know, not before 1965 or 10 '82. 11 Q What about respect for county and 12 municipal lines? 13 A Yeah, yes, respect for county and 14 municipal lines. 15 Q You said that One Person One Vote 16 could be one. Are you aware of -- could you 17 expound upon what One Person One Vote means? 18 A This is a legislative case. So the 19 maps have to be drawn within plus or minus 20 five percent. Even that's not quite 21 necessarily a safe harbor. There's that case 22 out of Georgia -- I'm blanking on the name 23 right now -- that struck down a map that still 24 fell within those numbers, but basically, you 25 can feel pretty good about your math if you're</p>	<p style="text-align: right;">59</p> <p>1 to determine whether the populations in the 2 districts were compact -- the minority 3 populations in the districts were compact. 4 Q Did you consider other traditional 5 redistricting criteria in answering this 6 question? 7 A No. I just looked at each district 8 that was drawn and the minority population 9 within it. 10 Q Do you know whether Louisiana has 11 mandated through legislation that traditional 12 redistricting criteria be used when drawing 13 maps? 14 A There is certainly a list of factors 15 that have to be examined. I don't know or 16 recall exactly which factors are on it. 17 Q Okay. 18 MS. THOMAS-LUNDBORG: 19 I'm going to introduce another 20 exhibit. I am going to have this 21 mark as Exhibit 15. So what I've put 22 on the screen and what I'm having 23 marked as Exhibit 15 is Joint Rule 24 21. As you see the top, I downloaded 25 this directly from the Louisiana</p>
<p style="text-align: right;">58</p> <p>1 within plus or minus five percent, and you're 2 probably going to get struck down if you go 3 outside of that. 4 Q I'm sorry. I'm just going to grab my 5 charger. So we're not taking a five minute 6 break. I just need one second to plug in my 7 computer. 8 So going back to traditional 9 redistricting criteria, would you agree that 10 there is a tension between meeting the various 11 traditional redistricting criteria? 12 A There can be, yeah. Frequently is. 13 Q Would you also agree that in drawing 14 maps, tradeoffs are simply inevitable between 15 traditional redistricting criteria? 16 A Yes. 17 Q When you began your expert work in 18 this case, was your goal to capture 19 compactness only or other traditional 20 redistricting criteria in your analysis? 21 A My goal was -- well, like I said, I 22 honestly don't remember what I was doing at 23 the very beginning, because that was a fire 24 drill situation; but at least once the dust 25 settled and the stay was in place, my job was</p>	<p style="text-align: right;">60</p> <p>1 laws, Louisiana State Legislature 2 website we all have been using, and 3 you can see the web address at the 4 bottom of the exhibit. We all have 5 been using this version throughout 6 deposition. I'd like to look at some 7 of the traditional redistricting 8 criteria here briefly. 9 BY MS. THOMAS-LUNDBORG: 10 Q Actually for a second, I'd like to go 11 back to Cooper's July 23 report. So this is 12 Exhibit 5. 13 A Is this the first or second report? 14 Q Technically, it's his second report 15 in that he has a June report, a June 2022 16 report, but I am going to just focus on the 17 2023 reports for the purpose of your 18 deposition. 19 A Okay. 20 Q I'm now going to page eight, 21 paragraph -- no, I think I'm in the wrong -- 22 well, it's page seven spilling over to page 23 eight. So at the top -- bottom of page seven, 24 beginning in paragraph eight, he states, "I 25 drew the Illustrative Legislative Plan based</p>

<p style="text-align: right;">61</p> <p>1 on traditional redistricting principles, 2 including population equality, compactness, 3 contiguity, respect for communities of 4 interest, and the non-dilution of minority 5 voting strength. I followed the guidelines 6 spelled out by the Legislature in Joint Rule 7 21, the legislative guidelines for the 2022 8 map," and then, there's citation. Do you see 9 that? 10 A Yes. 11 Q When you were conducting your 12 analysis, were you aware that Mr. Cooper -- do 13 you recall reading this paragraph? 14 A I don't recall it, but I'm sure I 15 did. 16 Q Were you generally aware that 17 Mr. Cooper was using Joint Rule 21 when 18 drawing his map? 19 A I don't know if I was aware of that, 20 because I wasn't really looking at his 21 compliance with state law. 22 Q Do you know what effect incorporating 23 traditional redistricting criteria would have 24 had on your analysis if you would have 25 included it?</p>	<p style="text-align: right;">63</p> <p>1 where people have tried to quantify the 2 compactness of the population, but this is the 3 only measure of population compactness I'm 4 aware of. 5 Q Are you aware of cases where -- I 6 think you just mentioned Reock and 7 Polsby-Popper -- where Reock and Polsby-Popper 8 have been used in a Gingles 1 analysis? 9 A Yeah. So you'll frequently use Reock 10 or Polsby-Popper to measure the analogies, 11 Reock and Polsby-Popper, convex hull, to 12 measure the compactness of the district lines 13 themselves, but I'm not aware of them being 14 used to measure the compactness of 15 populations. 16 Q You've used Polsby-Popper, convex 17 hull and Reock in cases -- in instances where 18 Section 2 compliance is important? 19 MR. STRACH: 20 Objection. Go ahead. 21 THE WITNESS: 22 Yeah. I think that's right but 23 only to measure the compactness of 24 the district. 25 BY MS. THOMAS-LUNDBORG:</p>
<p style="text-align: right;">62</p> <p>1 A None. 2 Q I think we'll explore that answer 3 some more. I'll stop the share now. Now, you 4 said that you were asked to look at the 5 compactness of the minority community; is that 6 correct? 7 A Yes, of the minority voting age 8 population. 9 Q How did you define compactness when 10 beginning your work? 11 A So for the population, you can't 12 really use the Reock or Polsby-Popper, because 13 those types of measures -- Reock is R-E-O-C-K. 14 Polsby-Popper is two hyphenated names -- 15 because those deal with the shape of the 16 district, not with the shape or density of 17 populations within the district. So I used 18 the only approach to population compactness 19 I'm aware of, which is this moment of inertia 20 approach. 21 Q And I think you testified no in the 22 past, but are you aware of any other expert in 23 a Gingles 1 case using this moment of inertia 24 analysis when looking at compactness? 25 A No, I'm not really aware of cases</p>	<p style="text-align: right;">64</p> <p>1 Q Would one of those instances be your 2 work in Virginia? 3 A So we never did a full Gingles 4 analysis in Virginia. So I'm -- I have to be 5 careful what I say, because I know there's a 6 published report on that, but I did also sign 7 a confidentiality order. So I can't stipulate 8 that the Voting Rights Act is important, 9 because I don't know whether Section 2 is 10 triggered. I assume at least in some places 11 it is, but we did use, I think, Reock and 12 Polsby-Popper there, maybe, convex hull if 13 we're looking at the compactness of districts 14 to comply with the state law mandating compact 15 districts. 16 Q What about in Arizona? 17 A Yeah. In Arizona, we used Reock and 18 Polsby-Popper. There may have been a third 19 metric there to measure the compactness of 20 districts. 21 Q And Section 2 compliance was at issue 22 in Arizona? 23 A Yes. 24 Q I have a question about how you 25 conceptually approached this idea of</p>

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1 compactness of the minority population. When
2 looking at your figures, I noticed at multiple
3 times you used the term "most compact," and
4 actually, rather than speaking from memory,
5 let's get an example up.

6 A I can stipulate to that.

7 Q Okay. You recall that without me
8 needing to put it in front of you. What did
9 you mean by most compact?

10 A Within a district, it is the group of
11 minority voters who could constitute 50
12 percent plus one of the district's voting age
13 population, and it's the group that had the
14 smallest moment of inertia metric.

15 Q Is it your understanding that the
16 Voting Rights Act requires districts to be
17 drawn at their most compact level?

18 A No. The question is if you're going
19 to make a determination about -- let me step
20 back. Within a district, there may only be
21 one group, because some districts, you need
22 every black individual of voting age that
23 Cooper identified to meet the threshold in the
24 district; but in a district like the far
25 northwest of Louisiana, north of Shreveport,

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1 where I think the BVAP was around 55 percent,
2 there are multiple ways you might describe the
3 group within the district that gets you to 50
4 percent plus one. So the question in my mind
5 was okay, what's the best case scenario for
6 Mr. Cooper? What's the most compact cluster
7 of minority voters that could constitute 50
8 percent plus one of the district's voting age
9 population?

10 Q Is there any peer-reviewed local
11 science literature on this most compact
12 concept?

13 A Well, yeah, the point of the
14 redistricting simulations that I cite to that
15 were using population compactness was to draw
16 an optimized plan that minimized compactness,
17 and so they were trying to draw using the
18 moment of inertia method, the most compact
19 districts they could.

20 Q Is it your testimony that those
21 articles -- and I can look at one of them --
22 uses most compact concept in the exact same
23 way that you do?

24 A Well -- no, they weren't using it for
25 Section 2 compliance, but they were using it

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1 to identify compact populations.

2 Q So let's spend some time talking
3 about moment of inertia, which you previewed
4 for us, and I do want to get your report up.
5 So give me one second to pull it up. Let me
6 share my screen. So I'm going to go to page
7 15 of your report. I want to make sure that
8 we're looking at the right thing. Give me one
9 second. This first full paragraph of the
10 moment of inertia approach, I think this is
11 where you preview what you've described as the
12 moment of inertia. Could you just tell us now
13 in your own words what the moment of inertia
14 approach is that you use here?

15 A Sure. If you have like a bike tire
16 and you want to spin it, you spin it right on
17 the center of the tire, and the reason is that
18 the bike tires are perfectly balanced, and so
19 the place that spins is in the middle. Let's
20 say the top half for whatever reason of the
21 bike tire gets -- it's made of lead. It's no
22 longer going to spin around that center axle,
23 right. You're going to spin it once, and the
24 lead part is going to drop to the bottom. The
25 reason is the mass isn't equally distributed

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1 anymore. So the centroid, the physical center
2 of the tire is no longer the spinning point.
3 The spinning point is going to be much lower
4 down in the area of the bike tire. So that's,
5 basically, what the moment of inertia is
6 trying to find. It's the point that the --
7 it's the center of the mass in some ways of
8 the object. So the way you calculate it is
9 you find the sum of square distances to the
10 district center and go from there.

11 Q Okay.

12 A So it punishes outliers, right,
13 because you're squaring the distance as you
14 even square there a loss. So that's a portion
15 of it, but it, basically, a way to use the
16 weighted square distances from the center.

17 Q I noticed that in your report, you've
18 referred to the moment of inertia as a metric
19 and also as a method. Is there a difference
20 between a method and a metric?

21 A You know, when I used them -- I guess
22 when I used it, I probably had in mind the
23 method being the algorithm to calculate it,
24 and the metric as the actual output, but I
25 don't think -- there's no great importance to

<p style="text-align: right;">69</p> <p>1 the difference when I used them.</p> <p>2 Q Well, what in way is moment of</p> <p>3 inertia a metric?</p> <p>4 A Because it will give you the sum of</p> <p>5 squared distances of individuals from the</p> <p>6 district center, which is the moment of</p> <p>7 inertia, and you can use it to compare across</p> <p>8 different iterations to see which has more a</p> <p>9 compact population.</p> <p>10 Q Now, you said it gives you the sum</p> <p>11 squared of districts. How is that output</p> <p>12 actually relayed in your report? Is it</p> <p>13 relayed through a number?</p> <p>14 A It's some squared distances. No,</p> <p>15 it's stored in R.</p> <p>16 Q So then, how do you relay the final</p> <p>17 metric in your report?</p> <p>18 A It's the district -- it's relayed</p> <p>19 with a map. It's the district with -- it's</p> <p>20 the group of black voters of voting age within</p> <p>21 the district with the smallest moment of</p> <p>22 inertia, and it can be recalculated through</p> <p>23 the R code that I provided.</p> <p>24 Q You said you linked through map and</p> <p>25 the purpose was to compare across districts;</p>	<p style="text-align: right;">71</p> <p>1 A It would be -- I believe it's stored</p> <p>2 in memory.</p> <p>3 Q Right, but what's stored in memory?</p> <p>4 Is it visual depiction of the map, or is there</p> <p>5 an actual number that could be used to compare</p> <p>6 across districts?</p> <p>7 A The number is calculated at some</p> <p>8 point, and I think it's stored. You might</p> <p>9 have to edit one of the functions to return</p> <p>10 the moment of inertia value instead of the</p> <p>11 map, but it gets calculated over the course of</p> <p>12 the -- actually no, you could just run the</p> <p>13 function by itself and not with the function</p> <p>14 call, and it would give you the value.</p> <p>15 Q If I wanted to compare two moment of</p> <p>16 inertia values, how would I do that? How</p> <p>17 would I know which value was giving me a more</p> <p>18 compact value and which value was giving me a</p> <p>19 less compact value?</p> <p>20 A The smaller value is more compact.</p> <p>21 Q Did you for any of these simulations</p> <p>22 that you've read here report the moment of</p> <p>23 inertia values?</p> <p>24 A No, because I wasn't doing cross</p> <p>25 district comparisons I was just looking for</p>
<p style="text-align: right;">70</p> <p>1 is that correct?</p> <p>2 A Within districts across clusters.</p> <p>3 Q Within districts across clusters. Is</p> <p>4 there a way to compare across districts using</p> <p>5 this metric?</p> <p>6 A I'm sure you could, but I didn't do</p> <p>7 that.</p> <p>8 Q How would you do that if you wanted</p> <p>9 to compare across districts?</p> <p>10 A You could look at the moment of</p> <p>11 inertia for District A for the most compact</p> <p>12 block of black population and then look at it</p> <p>13 for District B. If someone wanted to do that,</p> <p>14 the code is there for them to extract those</p> <p>15 particular numbers, but I was not doing</p> <p>16 comparisons across district. I was just</p> <p>17 identifying the most compact black populations</p> <p>18 sufficient to constitute 50 percent plus one</p> <p>19 of the district's voting age population in</p> <p>20 each district.</p> <p>21 Q Okay, and if I want to compare across</p> <p>22 districts, in your code, would it spit out a</p> <p>23 numerical output that I could compare, or</p> <p>24 would I have to look visually at the two maps</p> <p>25 to do that comparison?</p>	<p style="text-align: right;">72</p> <p>1 the most compact population within each</p> <p>2 district.</p> <p>3 Q Right.</p> <p>4 A What's the best case scenario for</p> <p>5 Mr. Cooper's maps.</p> <p>6 Q Right. Did you do any comparison of</p> <p>7 Mr. Cooper's map and values to the enacted map</p> <p>8 on the moment of inertia method?</p> <p>9 A No. I don't know whether any of the</p> <p>10 districts in the enacted map are VRA</p> <p>11 compliant. So I don't even have that baseline</p> <p>12 to go off of.</p> <p>13 Q Do you use the moment of inertia</p> <p>14 metric or method as you have described here</p> <p>15 today in your dissertation in that Chapter 3?</p> <p>16 A No, because the dissertation</p> <p>17 Chapter 3 isn't dealing with the Voting Rights</p> <p>18 Act.</p> <p>19 Q Have you published any peer-reviewed</p> <p>20 academic research on the moment of inertia</p> <p>21 method or metric as you've described here</p> <p>22 today?</p> <p>23 A No. The moment of inertia method</p> <p>24 slash metric is one of the oldest in the</p> <p>25 compactness literature for determining the</p>

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1 compactness of a population. I haven't
2 published my own peer-reviewed literature, and
3 I doubt it would be publishable since this is
4 such a venerable method for evaluating
5 population compactness.

6 Q You say it's one of the oldest, but
7 has it appeared in any of the many Gingles's
8 cases that you're aware of?

9 A No, because from my understanding,
10 the legal approach hasn't really been to
11 explore population compactness. As I
12 explained in my rebuttal report, up until
13 fairly recently, it would have been
14 extraordinarily computationally demanding to
15 the point where it probably would have been
16 infeasible to do it until fairly recently. So
17 no, because my understanding is that the legal
18 theory being propounded here isn't one that's
19 been thoroughly explored.

20 Q Great. So just picking up on the
21 last thing that you said, how long has --
22 well, let me ask a different question. Did
23 your algorithm calculate moment of inertia for
24 the whole map or just for the selected
25 districts that you were asked to study?

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1 A I only calculated the moment of
2 inertia for minority populations within the
3 remedial maps that -- or within the
4 demonstration maps that would have been new
5 VRA compliance suggested new VRA districts.

6 Q And how long have experts had access
7 to computers that could calculate the moment
8 of inertia for a handful of districts?

9 A Well, I have a pretty
10 state-of-the-art computer, and for a state
11 Senate district to iterate through the
12 different precinct's starting points, probably
13 takes a half hour. So I guess it depends how
14 big your districts are and how much time you
15 have, but the first redistricting simulation
16 to do -- the first published redistricting
17 simulations over statewide maps were in the
18 1990s. When you go back to like the 70s and
19 80s, they're only doing it on 40 precinct
20 blocks. So it would be fairly recently that
21 you would realistically be able to do this.

22 Q What do you mean by fairly recently?
23 Are we talking the last 10 years?

24 A No. I assume you could have done in
25 on a state district in maybe, the last 20,

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1 done it efficiently.

2 Q Are you aware of any cases in the
3 last 20 years where the moment of inertia was
4 calculated in the way that you've calculated
5 it here?

6 A Well, again, I'm not the lawyer in
7 this case, and I haven't done the thorough
8 legal research that I'm sure the lawyers here
9 have done. To my understanding, this is not a
10 legal approach that's been explored at least
11 recently. So no, I'm not aware of any, --

12 Q Okay.

13 A -- but that's something I would have
14 left the lawyers to research. All I knew is
15 that when you're trying to measure the
16 compactness of a population, this is the way
17 to do it.

18 Q Great, but even in your own
19 redistricting work in which Section 2
20 compliance may have been at issue, you have
21 not run moment of inertia in other instances?

22 A Well, when I did the work for the
23 Arizona case, I wouldn't have been familiar
24 with the moment of inertia approach yet; and
25 in the other cases, I wasn't asked to look at

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1 population compactness.

2 Q Okay.

3 A It was hinted at in the Texas case,
4 and in that -- as I talk it through, in that
5 Kansas case. In that Kansas case, -- well, I
6 can't get into why we made choices that we did
7 in that case; and in the Michigan case, we're
8 plaintiffs. So, obviously, we think our
9 demonstration maps have compact minority
10 populations, and the segregation in Michigan
11 is so stark, it's almost impossible not to.

12 Q So you said in Texas, it was hinted
13 at, but you didn't actually run the moment of
14 inertia analysis that you ran here in Texas?

15 A No. No, that was a 200 plus page
16 report and a lot of issues to cover, and so
17 population compactness -- I got pressed in my
18 deposition about ways to measure population
19 compactness, metrics for it, but I didn't have
20 time to actually run it.

21 Q So I think you've mentioned that you
22 partly came up with this moment of inertia
23 approach based on what you were asked to do by
24 counsel; is that correct?

25 A Counsel asked me to explore

<p style="text-align: right;">77</p> <p>1 population compactness, because their 2 interpretation of the Voting Rights Act is 3 that it requires compact minority groups. I'm 4 guessing defense disagrees with that. I was 5 asked how would you do it, and I, in the 6 course of doing research for my dissertation, 7 had come across the moment of inertia 8 approach, because that's the metric that the 9 earliest redistricting simulations were using. 10 So I was familiar with it. So I didn't come 11 up with it at the invitation of counsel. It's 12 a question I was asked, and I at least had 13 some sense of what the answer was from my 14 outside research. 15 Q You said you came across this 16 research in your research for your 17 dissertation, but did you actually use the 18 algorithms that you're using here in your 19 dissertation? 20 A No. No. I was aware of how you 21 would measure population compactness, because 22 the articles that I cite here are all articles 23 that I came across in the course of my 24 dissertation research, and so the algorithms 25 are described within the articles, or at least</p>	<p style="text-align: right;">79</p> <p>1 because going into these other densely 2 populated areas will move your moment of 3 inertia substantially. So that's a known 4 issue with it. 5 Q Are there any other limitations? 6 A Not that I can recall sitting here. 7 Q I'd like to -- and maybe, this will 8 jog our memory about what potential 9 limitations could be. I've put your report 10 back up. I'm going to move to page 17. This 11 is Figure 6. Let me zoom in a little bit, but 12 you have in front of you. So maybe, we're 13 fine. That seems to be the whole figure. So 14 this is -- I believe, your testimony was the 15 output of your moment of inertia were these 16 maps; is that correct? 17 A Yes. 18 Q And Figure 6 is the output of your 19 first algorithm, which weighed BVAP; is that 20 correct? 21 A That's correct. 22 Q And the black lines, it's my 23 understanding, that was the district that 24 Mr. Cooper drew? 25 A Yes.</p>
<p style="text-align: right;">78</p> <p>1 how to calculate the moment of inertia. So 2 after being asked well, how would you find a 3 compact population, it was a matter of going 4 back to the articles, seeing the metric and 5 then coding the metrics up. 6 Q Now, in your report -- and I can put 7 it back up if it's helpful -- you discussed 8 two separate algorithms; is that correct? 9 A That's correct. I have a hard copy 10 in front of me now. So I can flip back and 11 forth as need be. 12 Q I believe the first algorithm, you 13 said weights BVAP, and you're seeking to 14 pair -- use the moment of inertia to pair 15 clusters until you reach a 50 percent BVAP; is 16 that correct? 17 A Fifty percent plus one, yeah. 18 Q Fifty percent plus one, yeah. Does 19 this method, the first method, have any 20 limitations? 21 A Yes. So one limitation of it that's 22 discussed in the literature is that it will 23 tend to avoid -- if you have one densely 24 populated area, it will tend to avoid other 25 densely populated areas and skirt them,</p>	<p style="text-align: right;">80</p> <p>1 Q And then, the dotted line is -- the 2 dotted lines -- are the lines that your 3 algorithm determined was the most compact area 4 within that district? 5 A That's right. 6 Q And then, there are other blue dots. 7 What are those other blue dots represent? 8 A Every blue dot represents, I believe, 9 10 black residents of voting age. 10 Q Is it exactly 10? Do you know? 11 A No. No. It wouldn't work that way. 12 Most of them would be exactly 10, but because 13 you have to round, the last one -- if there's 14 only one in a precinct -- or the last one in 15 the precinct may not be 10. 16 Q And the orange, what does that 17 represent? 18 A White residents of voting age, 10 as 19 well, with the caveat that the last one may be 20 rounded. 21 Q Looking at the blue and orange, the 22 orange just visually looks larger to me, but 23 do the blue and orange dots represent the same 24 population size? 25 A They represent the same population</p>

<p style="text-align: right;">81</p> <p>1 size. The reason that the orange is larger is 2 because the blue is overlaid -- when you draw 3 these maps, you draw them in layers, and since 4 we're mostly interested in the black voting 5 age population, that's layered on top of the 6 white population; and so to minimize the 7 effect of overplotting, you make the orange 8 dots a little bit larger, or the orange "X"s a 9 little larger, and that allows them to stick 10 through and avoid some of the overplotting 11 concerns. 12 Q So you said you made the orange dots 13 a little larger. I think that means -- or at 14 least my understanding is in your code, you 15 set the alpha code, the orange process to one 16 and then the blue dot to point five. Does 17 that sound correct? 18 A The alpha in the code determines the 19 transparency, not the size. 20 Q Okay. But is it correct that in 21 addition to the sizing that you just 22 mentioned, the color the transparency is one 23 for the orange and point five for the blue? 24 A That's right, because you're layering 25 the blue on top of the orange, making the blue</p>	<p style="text-align: right;">83</p> <p>1 has been drawn, the figure itself does not 2 appear to be contiguous; is that right? 3 A The cluster is contiguous. 4 Q Right, but they don't -- it looks 5 like there are two doughnut holes in there. 6 So it looks like at least the visual depiction 7 seems to be an non-contiguous space. 8 A The group is contiguous. There's one 9 doughnut hole in the group, because the idea 10 isn't to -- you could include that grouping 11 there, north of I think that's -- well, -- 12 it's not Caddo Lake. I can't remember what 13 the name of that lake is, but just to the 14 north of the lake, you can include it, and 15 that would make the moment of inertia method 16 even less compact. 17 Q You asked me -- 18 A I'm sorry. I'm sorry. I don't know 19 where that second doughnut hole you referred 20 to is. 21 Q Well, it looks like there are two 22 right next to each other, and it probably just 23 depending on the Zoom, there's like -- it 24 looks like there's a closed hole, and then, 25 above that is like another hole. So they're</p>
<p style="text-align: right;">82</p> <p>1 somewhat transparent. All it does is lighten 2 the color a bit, but it also allows some of 3 the orange to show through. Again, if you 4 have a blue dot and an orange "X" that are the 5 exact same size and the blue dot has the same 6 transparent as -- is opaque, which is the 7 alpha one, that orange "X" will be completely 8 covered. So these differences are to allow 9 you to understand that yes, there are still 10 some white individuals that live in these 11 heavily black areas that you would not 12 otherwise be able to see. 13 Q So looking at this visual depiction 14 of moment of inertia through your code, do you 15 know what the total population is within the 16 blue dots, the blue dotted line? 17 A Can you ask that again? 18 Q Do you know what the total population 19 is? Not just the black population. I know 20 that you set the algorithm to meet black 21 population threshold. Do you know what the 22 total population is in this part of the map? 23 A No. I don't really know how that 24 would be relevant. 25 Q Okay. Do you know -- looking at what</p>	<p style="text-align: right;">84</p> <p>1 right on top of each other, but that's the 2 reference of two doughnut holes. 3 A So the one -- I guess, are you saying 4 so -- I think we agree where that first one is 5 just to the north of that lake. Are you 6 saying there's another one to north? 7 Q They're right on top of each other, 8 and it appears, when I zoom in, there's a 9 closed hole, and on top of it, there's like a 10 little triangle? 11 A I think that's just the boundary 12 zigging and zagging. 13 Q I don't know that material, whether 14 it's one or two visually -- to me, it appears 15 to be two. Your testimony is that it's one. 16 Regardless, it seems to be a non-contiguous 17 space within the depiction, correct? 18 A Right. So the point here is not to 19 draw the district. The point is to find the 20 most compact black population. Perhaps, you'd 21 need to make it even less compact. If you 22 wanted to -- why would you even ever draw it 23 as the group by itself, because that 24 population is insufficient to maintain the 25 population of a district? So this isn't</p>

<p style="text-align: right;">85</p> <p>1 redistricting directly. It's a way of 2 identifying a compact population within a 3 district that's already been drawn. 4 Q I think you anticipated where I'm 5 going here. This visual depiction would not, 6 in fact, tell someone here's the most compact 7 district, because it doesn't account for 8 contiguity or One Person One Vote, and we 9 don't know how many people you'd need to add 10 have a full population of a district. 11 MR. STRACH: 12 Objection. Go ahead. 13 THE WITNESS: 14 Yeah. This isn't a metric for 15 determining the district's 16 compactness. It's a metric for 17 determining the population 18 compactness; and since you're only 19 looking for 50 percent plus one BVAP, 20 generally speaking, you're going to 21 need to add additional population to 22 fill out an entire district, but the 23 whole point of this is, you know, I 24 didn't just want to just look at 25 where the black population of the</p>	<p style="text-align: right;">87</p> <p>1 50 percent plus one of the voting age 2 population that's reasonably compact. 3 BY MS. THOMAS-LUNDBORG: 4 Q I think you testified earlier that 5 this is both a method and a metric. Using the 6 metric portion of the moment of inertia 7 displayed here, what numbers were you using to 8 determine whether or not a population was 9 sufficiently compact to pass your metric? 10 A Well, as I understand it, and it's 11 admittedly been awhile since I practiced law, 12 but reasonability is a question ultimately for 13 the finder of fact to determine. So the 14 finder of fact is going to have to decide 15 whether it is reasonable or not. In my 16 opinion, when you have a district that the 17 most compact black population sprawls over 18 heavily white suburbs, places where there 19 appear not to be black residents and goes out 20 into rural areas, where it picks up isolated 21 pockets here and there, that's not compact 22 under any reasonable definition of the term. 23 The fact finder might ultimately disagree with 24 that though. 25 Q But did you have a numerical metric</p>
<p style="text-align: right;">86</p> <p>1 district is residing, because you can 2 have a circumstance where, you know, 3 you draw a district -- there are 4 actually of couple of examples in 5 here of this -- where you can draw a 6 district that has a very compact 7 black population that's capable of 8 being 50 percent plus one of the 9 district's population; and then, you 10 just kind of go out into other areas, 11 because you need One Person One Vote 12 and there just happened to be black 13 residents of voting age in that area 14 that you go out into, and that's not 15 something that is -- you know, that 16 would want to follow the Voting 17 Rights Act or would fail to satisfy 18 the Voting Rights Act. So that's 19 what this exercise is meant to do. 20 You have this district that's drawn, 21 and the district itself sprawls a 22 bit, but we don't really care about 23 that. We care about knowing if the 24 black population that reaches -- if 25 there is a black cluster that reaches</p>	<p style="text-align: right;">88</p> <p>1 that you were using when making this 2 determination, or were you looking at the map 3 as we're doing here today? 4 A Looking at the map. You know, as 5 Justice O'Connor wrote in Shaw, redistricting 6 is an area where appearances do matter, and I 7 don't think there's anyway you can look at 8 this and say that is a reasonably compact 9 population, but the fact finder might 10 disagree. It's just the same way that a 11 Polsby-Popper of point two or .21 or .22 is 12 ultimately meaningless. You know, there's 13 ultimately a question of reasonability when 14 the court in Allen v. Milligan was talking 15 about the demonstration districts there. They 16 said we don't see strange appendages. It 17 doesn't seem to be extremely distended. 18 There's, obviously, judgment calls being made 19 there that the court is comfortable with. 20 Q But Polsby-Popper and Reock, I think 21 as you just mentioned, do give a numerical 22 output that can be used by the court and 23 compared across this district and the old 24 district or this district and other 25 configurations, correct?</p>

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1 A This gives a numerical output if you
2 really wanted to go down that road, but at the
3 end of the day, all the Reock score is telling
4 you is what percentage of the area of the
5 minimum bounding circle is being filled. I
6 mean, okay, why point to or not point to .21
7 or .22? It all requires some degree of
8 judgment call.

9 Q But again, the Polsby-Popper and
10 Reock produced scores that are frequently
11 actually recorded, and while your testimony
12 today is that there is a recorded number for
13 the moment of inertia, you did not provide
14 those numbers in this report?

15 A No, but if you wanted to do a
16 cross-district comparison, it would be easy to
17 do from my code. If you wanted to run it
18 under any other district, all you would have
19 to do is go into my code and change the
20 district number that you're drawing the map
21 for, but population compactness is one of
22 those things, especially in the context of the
23 Voting Rights Act, that's tricky to do across
24 districts, because for example, some districts
25 don't have -- most of the districts don't have

1 of those changes, and I believe you also
2 criticized the fact that Mr. Cooper redrew
3 this district, District 62. Do you remember
4 the part of your report where you discussed
5 the Baton Rouge area?

6 A I remember the part of my report with
7 the Baton Rouge area, but I don't remember
8 what I said about District 62.

9 Q We can probably pull that up. Just
10 give me one second. I am just getting myself
11 organized. So I'm going to stop my share for
12 a second, and we'll go back. I'm going to go
13 back to your report. Just give me one second
14 while I go to page 54. I'm on page 54 of your
15 initial report, and I'll just read the first
16 two sentences: "Mr. Cooper draws new black
17 majority districts in the Baton Rouge area
18 with Illustrative Districts 60, 65, 68 and 69.
19 He then removes a minority-majority district
20 that exists in the Enacted Plan: District
21 62." Do you see that?

22 A Yes, and so now, I can answer your
23 previous question unless you had some
24 follow-up you wanted to do before I get there.

25 Q You can go ahead.

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1 a 50 percent plus one black population. So
2 you'd never be able to -- the process would
3 run infinitely had that happened once or
4 twice. So it's a different approach than you
5 would get with something like Polsby-Popper,
6 but at the end of the day, they all involve
7 some degree of judgment call.

8 Q I'm going to put something else on
9 the screen. I just want to make sure I get
10 the right exhibit number. So I think you just
11 testified that it would be easy to run your
12 analysis on another district using your code
13 and we did just that.

14 MS. THOMAS-LUNDBORG:

15 I am now sharing on the screen
16 what I am going to have marked as
17 Exhibit 16. This is a demonstrative
18 exhibit where we did, in fact, run
19 your code on one of the enacted map's
20 districts. This is House District
21 62.

22 BY MS. THOMAS-LUNDBORG:

23 Q In your report, you spent some time
24 talking about the changes that Mr. Cooper made
25 in the Baton Rouge area. District 62 is one

1 A That's not a criticism of
2 Dr. Cooper -- or Mr. Cooper. What's going on
3 here is I was trying to figure out what the
4 new districts were, and so there were to my
5 view four new districts, but there were really
6 only three additional minority-majority
7 districts in the region.

8 Q In one of the districts that you note
9 was changed in the Baton Rouge area was this
10 district District 62, which I've now put back
11 up on the screen. Do you see that?

12 A Yes.

13 Q Do you know, just going back to
14 District 62, whether District 62 existed in
15 its current configuration in the 2010 map?

16 A I don't.

17 Q Do you know whether District 62
18 crosses from an urban to suburban and rural
19 population?

20 A It certainly does.

21 Q Does it surprise you that we were
22 able to find in the enacted map a district
23 like 62, which based on the eyeball test seems
24 to fail your moment of inertia method?

25 A I think it clearly fails. Does it

<p style="text-align: right;">93</p> <p>1 surprise me? Kind of indifferent one way or 2 the other, because there's lots of district I 3 didn't look at. But I wouldn't defend this as 4 a VRA district. 5 MS. THOMAS-LUNDBORG: 6 You know, I think we can take 7 another five-minute break. I just -- 8 so everyone on the phone is aware, if 9 we keep going at this rate, I think I 10 have another couple of hours, but I 11 should be done after lunch. So my 12 idea would be let's take a 13 five-minute break now, and then, take 14 a lunch break at 12:40ish for maybe, 15 half an hour or so; and then, I would 16 come back on the record, and maybe, 17 only have an hour of time left, and 18 then, I could turn it over to the 19 Congressional folks. Now, that's 20 assuming we're going at this rate. 21 I'm assuming we're not going to get 22 bogged down in this kind of next 23 portion. 24 We can go off the record if 25 we're not already off the record.</p>	<p style="text-align: right;">95</p> <p>1 Q Did you consult with any other 2 sources to help you in your implementation of 3 the Chen & Rodden method? 4 A No. This is the basic method that I 5 used for compactness in my dissertation. So 6 it was familiar to me from that. 7 Q Okay. 8 A It's useful, because rather than 9 defining compactness by the district shape, it 10 defines compactness by the distance between 11 centroids; and while populations are point 12 reference data and don't really have shapes, 13 they do have centroids. 14 Q When thinking about how to implement 15 the Chen & Rodden method for this litigation, 16 did you discuss implementation with anyone? 17 A No. Other than the attorneys. 18 Q And I asked you this about the first 19 algorithm, I'll ask it here. Have you written 20 any peer-reviewed articles on the 21 implementation of this second method? 22 A No. 23 Q Now, you write that your algorithm is 24 similar to the Chen & Rodden method. Why 25 didn't you use the Chen & Rodden method</p>
<p style="text-align: right;">94</p> <p>1 (Recess taken.) 2 BY MS. THOMAS-LUNDBORG: 3 Q So I'd like to shift back to your 4 second algorithm. We spent some time before 5 the break dealing with the first. So let me 6 pull up your report again. In efficient use 7 of my break, I did order lunch though. Okay, 8 let's get this going. 9 So this is just by reference, I'm 10 sure you recall, but on page 16, you claim 11 that your second algorithm is based on a Chen 12 & Rodden method; is that right? 13 A Yes. 14 Q In support of this second algorithm, 15 you cite an article from Chen & Rodden from 16 2013 titled "Unintentional Gerrymandering: 17 Political Geography in Electoral Bias and 18 Legislatures" from the Quarterly Journal of 19 Political Science; is that right? 20 A Oh, yes. It's similar to the 21 algorithm outlined by Chen & Rodden, yeah. 22 Q And this is the primary article that 23 you cite in support of this second algorithm; 24 is that right? 25 A Correct.</p>	<p style="text-align: right;">96</p> <p>1 itself? 2 A Because the Chen & Rodden method is 3 used for drawing compact districts as such, 4 and here, we're not interested in the district 5 shape. We're interested in the population. 6 So rather than using the centroid of the 7 precinct, it uses the centroid of the 8 population, because we're dealing with point 9 reference data in trying to find the centroids 10 there, not with areal data, A-R-E-A-L. 11 Q So to rephrase, you can tell me if I 12 got this correct. The Chen & Rodden method 13 draws actual districts where your method is 14 not drawing districts in and of itself. 15 A That's right. We're both trying to 16 find compact groupings by comparing distances 17 between centroids, which is the basic 18 approach. It's just a different application 19 of how to do that. They're trying to draw 20 districts. I'm trying to find compact 21 populations. It's areal units versus point 22 reference units. 23 Q So let me just get that article up on 24 the screen. 25 MS. THOMAS-LUNDBORG:</p>

<p style="text-align: right;">97</p> <p>1 I'm going to have marked as 2 Exhibit 17 the Chen & Rodden article 3 that we were just discussing 4 "Unintentional Gerrymandering 5 "Political Geography and Electoral 6 Bias in Legislatures," and I will 7 scroll quickly through it for 8 identification purposes. 9 BY MS. THOMAS-LUNDBORG: 10 Q The only one difference is I have 11 highlighted in my version some phrases that we 12 may have discussed together, but otherwise, do 13 you recognize this as the Chen & Rodden 14 article that you cite? 15 A Yes. 16 Q Okay. Now, this method is similar to 17 the algorithm that we were discussing prior to 18 the break. I think the main difference is 19 that in the first algorithm, you weight BVAP, 20 but in this algorithm, you're weighting the 21 precinct size; is that correct? 22 A Let me just -- 23 Q If you're looking at your report, I 24 believe you describe the differences between 25 the two on pages 15 and 16 of your report.</p>	<p style="text-align: right;">99</p> <p>1 is how most maps are drawn is at the precinct 2 level. I don't know if there's split 3 precincts within districts in this map. So 4 they're a good unit of mapping, almost 5 certainly what Mr. Cooper was using when he 6 drew his map; but if someone really wanted to 7 challenge it and they had say a super 8 computer, you could conceivably run it at the 9 block level. I tried, and after a day, I gave 10 up on the endeavor. 11 Q You said that precincts can change 12 over time. Is it your understanding that they 13 do change over time in Louisiana? 14 A Yes. 15 Q Do you know who's responsible for 16 precinct changes in Louisiana? 17 A I don't. 18 Q And to go over some of the aspects we 19 discussed in the first method, like the first 20 method, the second method does not necessarily 21 fully populate districts; is that right? 22 A Right, because the point isn't to 23 draw a district. The point is to identify the 24 compact population that could be 50 percent 25 plus one.</p>
<p style="text-align: right;">98</p> <p>1 A Right, I'm looking at page 16. I 2 just take this to be an important point, so I 3 want to make sure I get it right. (Witness 4 peruses document.) Yeah, that's right. 5 Q Okay, all right. So focusing on 6 precincts for a minute, why did you decide to 7 weight precinct size? 8 A Well, because, I have the lengthy 9 definition beforehand of compact from around 10 the time that the amendments to the Voting 11 Rights Act were passed, talking about it being 12 closely and firmly united, taking little 13 space, relatively little, small, light 14 economical model of the automobile not as 15 relevant, but the idea being that compact 16 means small areas, and so that was the 17 weighting here. 18 Q But why is precinct versus some other 19 form of geography percent? 20 A Well, you could run it off blocks, 21 but it would take forever. 22 Q Do you understand precincts to be a 23 static form of geography, meaning a form of 24 geography that doesn't change? 25 A No, they change over time, but this</p>	<p style="text-align: right;">100</p> <p>1 Q We talked about the ways in which 2 your method might be related to what Chen & 3 Rodden did. I'd like to look at page 249 of 4 their report of their article. So I'm on page 5 249, and I'll just read for the record the 6 first highlighted part of this article. It 7 says, "Our goal is to design a districting 8 algorithm that uses only traditional 9 geographic criteria of the kind favored by 10 reform advocates. Our challenge is to 11 guarantee equal apportionment of population 12 while requiring geographic contiguity for all 13 simulated districts, paying no attention to 14 either voter partisanship or any demographic 15 information other than simple population 16 counts. Another concern is geographic 17 compactness." Do you see that? 18 A Yes. 19 Q Based on their description of what 20 they were doing here, it seems that there are 21 a few key differences between your approaches 22 there. Is that fair to say? 23 A There are a few differences, but I 24 don't think they're key. 25 Q Well, one difference is they sought</p>

<p style="text-align: right;">101</p> <p>1 to guarantee equal apportionment of 2 population, and you did not. 3 A Well, they're applying it in a 4 different way. They're applying it to draw 5 district maps. What I'm taking is their 6 concept of compactness. 7 Q Right, but they said that they sought 8 to guarantee equal apportionment, and your 9 algorithm did not. 10 A Right, because it's the concept of 11 compactness that I'm borrowing from them, not 12 the exact application, because they're using 13 it to run redistricting simulations, but the 14 compactness conception is still the same. 15 Q They also say that they are required 16 geographic contiguity, and we at least saw the 17 last algorithm. Your algorithm does not 18 necessarily require contiguity; is that right? 19 A First off, the minority population is 20 compact in the last map. Secondly, that's 21 using a different algorithm than this one. 22 Q Do you know if this algorithm that 23 the Chen & Rodden, your version of Chen & 24 Rodden would guarantee contiguity? 25 A The minority group should be -- or</p>	<p style="text-align: right;">103</p> <p>1 be 50 percent plus one of the districts should 2 be contiguous. 3 Q They also say that they did not pay 4 attention to any demographic information, 5 which I take to mean race included, but your 6 algorithm did, in fact, take demography into 7 account, correct? 8 A So in a sense. The algorithm that I 9 have, when it's selecting precincts, isn't 10 looking at race here. It's tallying race as 11 it goes, because that's how the algorithm 12 knows when to stop, but for this particular 13 algorithm being an aeral-based metric, it's 14 going to pay attention to, you know, making 15 the district compact or the grouping compact 16 as it builds out. 17 Q Okay. What role does increase in the 18 weighting of precincts size play in your 19 compactness algorithms? 20 A Well, since this looking is at 21 compactness as a closely grouped area, it's 22 trying to avoid sprawling precincts when it 23 builds out the districts. Or not the 24 districts. The clusters. 25 Q Have you ever been an expert witness</p>
<p style="text-align: right;">102</p> <p>1 the most compact minority group should be 2 contiguous. 3 Q Do you know that whether the output 4 of your algorithm would guarantee a contiguous 5 shape? We saw in the moment of what you're 6 calling your moment of inertia algorithm, it 7 did not guarantee a contiguous shape. Do you 8 know if this algorithm would? 9 A Well, it does produce a contiguous 10 shape. It can render other portions of the 11 district noncontiguous that will have to be 12 filled in when you actually draw the district; 13 but as far as the most compact population 14 cluster, that which is what we're interested 15 in, that would be contiguous. 16 Q But would the output have 17 noncontiguous shapes as we saw in the last 18 algorithm? 19 A The area that's not necessary to 20 constitute 50 percent of the population may be 21 noncontiguous. 22 Q Okay. 23 A -- but the shape of the unit of 24 interest, which is the most compact population 25 of black residents of voting age sufficient to</p>	<p style="text-align: right;">104</p> <p>1 on the other side of Chen? 2 A Yes. 3 Q Have you ever in that expert work 4 criticized the use of the Chen & Rodden 5 method? 6 A So certainly for trying to enumerate 7 the possible maps on top of a map where it 8 hasn't been enumerated, you can't do that, but 9 you can enumerate the possibilities here; and 10 so the traditional challenge that's been 11 lodged against the Chen & Rodden method that 12 you don't know the target distribution would 13 be completely inapplicable here, because this 14 isn't sampling. This is enumeration. 15 Q Have you had any other criticisms of 16 the Chen & Rodden method? 17 A Gosh, I've been doing this such a 18 long-time, as you said way back when, when we 19 first met, I don't remember; but that's my 20 main criticism today is that for sampling, 21 producing an unbiased sample, there's good 22 evidence it won't -- if left to run an 23 infinite number of times, it wouldn't produce 24 every map, but it will produce every compact 25 cluster here.</p>

<p style="text-align: right;">105</p> <p>1 Q I believe you said you're going to 2 testify in New Mexico, and New Mexico is one 3 of those instances where Chen is on the other 4 side of you? 5 A Correct. 6 Q Do you have any other criticisms of 7 Chen in the New Mexico case? 8 A Well, Dr. Chen -- Dr. Chen filed his 9 rebuttal report and I don't think we got a 10 reply there. So I'm not sure even how much 11 I'm even going to be allowed to testify 12 against him, if at all. You know, I think 13 there -- at the deposition, their counsel 14 asked me about criticisms that I had, but I 15 don't know how much of that is going to come 16 out. I don't know if we're even going to get 17 to do rebuttal testimony there. 18 Q Do you recall being deposed in 19 New Mexico? 20 A Yes. 21 Q Do you recall in that deposition in 22 New Mexico criticizing the Chen method as a 23 method to capture compactness? 24 A Actually, no, but I think -- 25 Q Okay.</p>	<p style="text-align: right;">107</p> <p>1 tiny, as well? Oh, that's perfect. 2 Q Wait. Wait. Cutting off some of the 3 lines. If you need me to scroll down, let me 4 know, because I'd like you to go to line 22. 5 Okay. 6 A Okay. 7 Q So does this refresh your 8 recollection about whether you've had any 9 criticisms about the use of Dr. Chen's method 10 and compactness? 11 A So Dr. Chen was pretty emphatic that 12 in this case, he wasn't using the Chen & 13 Rodden method from the 2013 article, and I was 14 able to see from the code that there was at 15 the very least an add-on to the end of it that 16 uses a MCMC flip thing to try to smooth out 17 the edges, but yeah, I agree with this; that 18 when these the districts are being drawn, they 19 don't use Polsby-Popper or Reock as the 20 metric. So if you're trying to compare 21 district compactness, they won't map well 22 necessarily onto Polsby-Popper or Reock, 23 because it's a different concept of what 24 compactness is. 25 Q I'd like to go back to the Chen &</p>
<p style="text-align: right;">106</p> <p>1 A I will take from the phrasing of your 2 question that I did. 3 Q Give me one second. 4 MS. THOMAS-LUNDBORG: 5 I'm going to have marked as 6 Exhibit 18 just for deposition 7 purposes, your testimony in New 8 Mexico. 9 BY MS. THOMAS-LUNDBORG: 10 Q I've put on the screen -- it was 11 previously sent to your counsel -- your 12 testimony in what is Republican Party of New 13 Mexico, et al versus Oliver, and it's a 14 deposition from September 6, 2023, and I'm 15 just going to have your read your testimony on 16 page 113, lines four through 22. It's long so 17 I'm not going to read it all into the record. 18 I would ask that you read it to yourself, and 19 we can see if it refreshes your recollection 20 about whether you've had any criticisms of 21 Dr. Chen's method as a method to capture 22 compactness. 23 A Counsel, I apologize, I left my 24 readers in the car. Is there any way you can 25 zoom in on that, because the print on there is</p>	<p style="text-align: right;">108</p> <p>1 Rodden method itself, and I'm going to go back 2 to their article, which is Exhibit 17. Okay. 3 So now I'm back on page 249, and I'm going to 4 ask you a question about this second 5 highlighted portion. In it, they say "A 6 procedure for simulating compact district" -- 7 oh, wait. Sorry. I want to ask you a 8 different question. Let me just find where it 9 is and highlight that part. I'm going to find 10 the exact place where they discuss it. It's 11 right above. Let me see if I can highlight it 12 in realtime probably. Here we go. So I'm now 13 going to read what is now the highlighted 14 portion in which they say, "Our approach is to 15 experiment with alternative algorithms that 16 approach compactness in different ways or 17 ignore it altogether. Due to space 18 constraints, we focus on two algorithms: One 19 that aims for compactness, and one that does 20 not." Do you know which of the two algorithms 21 your method is based upon, the compact 22 algorithm or the non-compact algorithm? 23 A The one that aims for compactness. 24 Q And then, so now, that we're on the 25 same page about which algorithm you used, they</p>

<p style="text-align: right;">109</p> <p>1 go on to describe their compact algorithm. 2 They state, "Our procedure for simulating 3 compact districts is as follows," and then, 4 they list steps that they used. They refer 5 step one through 2c and then on the following 6 page, they have 3a, 3b, 3c, 3d. Out of all 7 the steps that they used, do they weight 8 precinct size in any of their steps? 9 A No. They're weighting distances from 10 centroids. 11 Q Why wouldn't you use the same 12 weighting approach that they used? 13 A Because the question that I was asked 14 to answer was to look at the area of the 15 districts that are drawn. 16 Q Why wouldn't it be weighted districts 17 between centroids look at the area? 18 THE COURT REPORTER: 19 Can you repeat the question? 20 BY MS. THOMAS-LUNDBORG: 21 Q Why wouldn't the weighted districts 22 between centroid answer the area of question? 23 A Because you may end up bringing in a 24 massive precinct that inflates the size of the 25 district, and since this is looking for a</p>	<p style="text-align: right;">111</p> <p>1 doesn't weight districts, they wouldn't 2 necessarily have the same favoritism. I mean, 3 instead of weight -- sorry -- precincts sizes. 4 A Well, indirectly, because their 5 weighting the distances between centroids, and 6 larger precincts are going to have larger 7 distances between the centroids. 8 Q Though I believe your testimony was 9 that it is less likely to happen in your 10 methodology, which is partly why you changed 11 your methodology from what they did, correct? 12 A I don't know if I -- I'm not trying 13 to be obstreperous, but I don't know if I 14 would put it in exactly those words. The 15 reason that I used this methodology is that 16 there was a different definition of 17 compactness that was relying on area. 18 Q Well, right, and so I previously 19 asked you why their weighting of the distances 20 between centroids wouldn't answer the area 21 question, and I believe your answer was about 22 precinct size. So if the record is unclear 23 here, I think this is the time to make it 24 clear what the differences were between your 25 weighting of precincts sizes and their</p>
<p style="text-align: right;">110</p> <p>1 small -- districts that are a small area, 2 using a definition of compactness that focuses 3 on area, that was the more appropriate 4 application. 5 Q So by weighting the district size, 6 and I think this is what your answer was just 7 now, your algorithm favored smaller precincts? 8 A Right. When given a choice, it will 9 choose a smaller precinct by area. 10 Q And precincts should have a similar 11 number of individuals in them, correct? 12 A No. 13 Q Do they tend to? 14 A Oh, I haven't looked at that, but I 15 don't think I'm going to testify to that, 16 because I don't think it's probably true. 17 Q Okay. Do you know if it's more 18 likely to find smaller precincts in urban 19 geography? 20 A Yes. 21 Q So by favoring smaller precincts, 22 your algorithm would favor urban geography 23 over rural geography? 24 A Right. 25 Q Since the Chen & Rodden method</p>	<p style="text-align: right;">112</p> <p>1 weighting of distances between centroids? 2 A Yeah, I think the confusion or 3 disagreement is in the way that the question 4 was proposed the second time. It's not that 5 the centroid distances are going to have 6 nothing to do with precinct size, because 7 larger precincts are going to tend to have 8 centroids that are further from the 9 boundaries, but not necessarily. You could 10 have like a long, skinny district, where 11 coming at it from a certain angle, the 12 centroid is very close to the boundary. So 13 the area is a more direct way of getting at 14 the precinct area, but there's still going to 15 be a relationship between the size of the 16 precinct favored and the location of precinct 17 centroid. 18 Q So then, why not again use the Chen & 19 Rodden centroid district approach versus your 20 weighted precinct approach? 21 A I suppose you could use the centroid, 22 and someone could check to see if it got a 23 different answer. I used area because rather 24 than using their centroid method to try to 25 approximate area, you could just use area.</p>

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1 Q I'd like to just focus for a second
2 on their steps 3a through 3d, and I'm going to
3 start reading the paragraph that begins with
4 "Steps 2a through 2c are repeated until the
5 total number of districts is exactly d. At
6 this point in the procedure, these d districts
7 are geographically contiguous and reasonably
8 compact, due to the nearest distant criteria
9 employed in step 2b. However, the districts
10 are not guaranteed to be equally populated.
11 Hence, repeated iterations of steps 3a through
12 3c are designed to achieve an equitable
13 distribution of population across the
14 simulated districts." Do you see that?

15 A Yes.

16 Q And you did not run steps 3a through
17 3c in your algorithm, correct?

18 A Oh, that's right, because we're not
19 trying to sample whole district maps. The
20 borrowing doesn't come from a way to draw full
21 district maps, which isn't something I was
22 looking into. The borrowing was the concept
23 of geography as something unrelated to the
24 shape of the district, Polsby-Popper or Reock.
25 Or compactness, not geography.

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1 Q So getting back to this question of
2 precinct size and the favoring of smaller
3 precincts, how would your approach work in a
4 primarily suburban district?

5 A Well, since the idea of compactness
6 that this is trying to explore is compact as
7 in taking in little area, it will start with
8 the precincts, and it will continue to pick up
9 suburban precincts, which will tend to be
10 smaller until you reach whatever 50 percent
11 plus one of the population is for that
12 clusters BVAP.

13 Q Okay. What about a rural area?
14 Same?

15 A It will go through the precincts that
16 it can find that are the smallest.

17 Q Okay.

18 A But part of the reason that you run
19 this algorithm with every precinct in the
20 House -- or in the district as a starting
21 point is to ensure that every precinct is
22 selected at least once. So it controls to a
23 certain degree for that precinct size issue by
24 starting in every precinct in the district.

25 Q But, I think we saw in the visual

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1 that I can put back up on the screen, not
2 every precinct is in the end going to be
3 depicted in your analysis; and in fact, I
4 don't think we put up the Chen & Rodden
5 version. So it probably helps ground our
6 discussion. Let me just put up the right
7 exhibit. So I'm back to Exhibit 3. I believe
8 this is Figure 7 on page 18, which is that
9 Chen & Rodden version of this particular
10 district. Do you see that?

11 A Yes.

12 Q So I think you just testified that
13 your method wouldn't necessarily select all of
14 the precincts, but in the output, there is a
15 kind of dotted line around the precincts that
16 are eventually selected; is that correct?

17 A Right. So it tries out every
18 precinct as a starting point in the district
19 and takes the one that leads to the most
20 compact area as defined by area.

21 Q Okay.

22 A And I think maybe, part of where
23 we're getting wrapped around the axle here is
24 just remembering that this analysis is
25 starting with the definition of compact as

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1 being a small area. Maybe, that's not a good
2 definition to use. That's something the court
3 will have to decide, but if we were to use an
4 understanding of compact as being a small
5 dense area, this is the way of approaching it.

6 Q Could I ask a question about how this
7 approach would work in a scenario where a town
8 or municipality on its own would never be
9 large enough to constitute a full district,
10 and you would necessarily -- whether the
11 district is majority-minority or majority --
12 majority have to draw from the suburban and
13 rural areas?

14 A Well, if it's majority-majority, it's
15 not going to work, because you're never going
16 to find that 50 percent plus one compact
17 population. The algorithm will run infinitely
18 and never converge. If you are running it on
19 a small town -- I mean, that's the whole point
20 of this is that that cluster up south of -- I
21 think that's Caddo Lake. It might be Cross
22 Lake up in the top -- yeah. I remember I used
23 to fish on Caddo Lake with my dad, and I think
24 that's what that one is. That small town to
25 the south of it has a cluster of black

<p style="text-align: right;">117</p> <p>1 individuals of voting age, but they aren't 2 sufficient to constitute 50 percent plus one 3 of the district. So the question would be can 4 you ground a VRA compliant district based on 5 that population, and the answer would appear 6 to be no. You know, in Shreveport, if that 7 district had a little bit more of the black 8 population of Shreveport in it, you would 9 probably have a compact 50 percent plus one 10 district, but nevertheless sprawled out into 11 rural Louisiana, and that would be fine, 12 because you would have that compact population 13 that's 50 percent plus one as the grounding 14 for the district. 15 Q Yeah. I mean -- so let me rephrase 16 my question. This is a hypothetical that I 17 would pose to you, and I'm curious to know how 18 your analysis would deal with it. You have a 19 town that on its own is not sufficient to 20 constitute a district and will need to go out 21 into the suburban and rural population no 22 matter what. The map drawer has a choice. It 23 could go west or east. To the west, there 24 would be minority population. To the east, 25 there would be majority population. Under</p>	<p style="text-align: right;">119</p> <p>1 population. So depending on how the 2 districts and the precincts are laid 3 out, it probably will favor the 4 population, the suburban population 5 to the west for exploring, but it 6 still has to reach 50 percent plus 7 one of the black population or the 8 population of the district. So if 9 it's not going to get that in the 10 suburban area to the west, it's still 11 going to have to explore the area to 12 the east. 13 BY MS. THOMAS-LUNDBORG: 14 Q Are you familiar with the -- 15 A And on subsequent runs of the 16 district, it's going to start out in that -- 17 in the rural area to the east. So if there 18 was ultimately a very compact black population 19 to be discovered out east, it would do so when 20 it uses those precincts as it's starting 21 point. 22 Q Right, but then, there is the method, 23 which is drawing the line, and then, there is 24 the then visual analysis, and sometimes, 25 numerical, though, we don't have the numbers</p>
<p style="text-align: right;">118</p> <p>1 that scenario, would your analysis ever find 2 that the compactness requirement had been met 3 by going west and picking up the majority 4 population versus going east and picking up 5 the white population? 6 MR. STRACH: 7 Objection. 8 THE WITNESS: 9 So that's a bit of a lengthy 10 hypothetical, and I tried to ground 11 it in this map we have in front of 12 us, the House District 1. The answer 13 is that that cluster in the small 14 town probably isn't sufficient to 15 sustain a minority-majority district. 16 Now, as far as what this approach 17 would detect, it's going to -- the 18 first approach would look for the 19 most compact cluster of black 20 residents. This metric is going to 21 look for the smallest area. So 22 depending on how the precincts are 23 laid out, just how much pop -- but 24 it's going to keep adding area until 25 it gets to 50 percent plus one black</p>	<p style="text-align: right;">120</p> <p>1 here that happens as a second step. In this 2 hypothetical, assuming we did, in fact, pick 3 up on the west, my understanding is the 4 visuals might fail your test still. 5 A Well, yeah. You might end up with -- 6 I guess I'm a little confused about this 7 hypothetical and the questions we're running 8 through. It's going to look at compact 9 population from an areal perspective in rural, 10 Louisiana, and it's going to look to compact 11 population from an areal perspective in 12 suburban and urban Louisiana. If area -- when 13 Congress passed the Voting Rights Act, if it 14 understood compactness -- or I'm sorry. The 15 1982 amendments to the Voting Rights Act, it 16 understood compactness to be defined in terms 17 of area. Then, this is going to explore what 18 Congress was getting at when it passed the 19 Voting Rights Act and when the Gingles's 20 factors were later announced. If that's a bad 21 definition of compactness, if that's not what 22 the words meant in the 1980s, well, then, you 23 would use a different technique to explore it, 24 but it is what it is. It's looking for the 25 smallest area that can be 50 percent plus one</p>

<p style="text-align: right;">121</p> <p>1 under the assumption that that's what compact 2 means. 3 Q Right. I'm not trying to hide the 4 ball here with my hypothetical. So I'll give 5 the game away. What I'm really trying to 6 figure out is are there circumstances under 7 your analysis in which a combination of an 8 urban, suburban and rural area would meet your 9 test, and the underlying assumption here is 10 that they're going to be times in which you 11 will have to combine urban, suburban and 12 perhaps, even rural areas to meet the equal 13 population requirements. 14 A Well, it doesn't matter what you're 15 doing to meet the equal population 16 requirements. It only matters -- this 17 analysis only tells us where the most compact 18 black population is. If there is a compact 19 black population that can be 50 percent plus 20 one of the district, you can do whatever you 21 want with the rest of the district, at least 22 from my analysis. So like I said, if this 23 district had taken in a little bit more of the 24 black population of Shreveport, so it wouldn't 25 have had to reach out halfway to the Arkansas</p>	<p style="text-align: right;">123</p> <p>1 basis of their race, that's packing. It could 2 be packing in a Voting Rights Act context if 3 there were, in fact, more districts that could 4 be drawn that would elect the minority 5 candidate of choice under the -- and also meet 6 the Gingles's preconditions, but that's the 7 question here is whether this district is 8 meeting the Gingles's preconditions. 9 Q You are familiar with the idea of 10 packing in a racial context where a minority 11 would be concentrated into a certain number of 12 districts? 13 A Yes. 14 Q Okay. 15 A They're concentrated into a certain 16 number of districts here. 17 MS. THOMAS-LUNDBORG: 18 I actually think we're at a good 19 place to take a lunch break. I think 20 after lunch I'm going to circle up, 21 but I probably have a half an hour to 22 an hour of questions. Then, I can 23 turn it over to the Congressional 24 folks. 25 We can go off the record.</p>
<p style="text-align: right;">122</p> <p>1 border to get it's sufficient black 2 population, we probably are having a very 3 different discussion here even though the 4 district would still sprawl over a large area 5 to meet the equal population requirement. 6 Q Right, and that would be true if the 7 black population in your answer was 8 concentrated in a particular area. I think 9 you said multiple times that it is area that 10 you're looking at, correct? 11 A With this metric, it's measuring 12 area, correct. 13 Q And are you familiar with the term 14 packing? 15 A Yes. 16 Q What is packing? 17 A Packing is when you intentionally 18 place partisans within a district to reduce 19 their impact, I guess, on elections. 20 Q Are you familiar with the term 21 "packing in a racial context"? 22 A Yeah. So if you intentionally draw a 23 district using race as a predominant factor to 24 reduce the ability or to separate people in 25 our context, I guess black individuals on the</p>	<p style="text-align: right;">124</p> <p>1 (Lunch recess taken.) 2 BY MS. THOMAS-LUNDBORG: 3 Q So I have just a few more questions 4 for you, and I can turn you over. I think 5 though, I probably will in case -- well, let's 6 get there when we get there. 7 You would agree that there are a 8 varying waves of statistical measures of 9 compactness that have been accepted by the 10 courts in redistricting cases? 11 A Yes. 12 Q So I'd like to go through some of the 13 measures of compactness that have been 14 accepted by the court. Well, I'll ask one 15 more question. The measures that have been 16 accepted by the courts today are expressed as 17 mathematical formulas, correct? 18 A Yes, as mathematical output, I guess. 19 Sure. 20 Q Which measures have been the most 21 prominent that you are aware of? 22 A Probably Reock and Polsby-Popper. 23 Q You just mentioned the Reock measure, 24 and I think we've talked about it a bunch 25 today. Do you know who the person is who's</p>

<p style="text-align: right;">125</p> <p>1 credited with coming up with the Reock score?</p> <p>2 A Ernest Reock.</p> <p>3 Q Who is he?</p> <p>4 A He was someone who published in 1961,</p> <p>5 well before I was learning who professors</p> <p>6 were. I just know he wrote the article.</p> <p>7 Q Did you ever write an expert report</p> <p>8 in a case where you credited Professor Reock</p> <p>9 with the Reock method?</p> <p>10 A I believe so, yes.</p> <p>11 Q Do you recall whether in that expert</p> <p>12 report you also listed Professor Reock's</p> <p>13 university affiliations?</p> <p>14 A I don't know.</p> <p>15 Q Does it sound familiar to that</p> <p>16 Professor Reock may have been the director of</p> <p>17 Rutgers University's Center for Government</p> <p>18 Service?</p> <p>19 A I have no reason to believe you would</p> <p>20 make something like that up. So I can go</p> <p>21 along with that.</p> <p>22 Q Okay. How does Reock measure</p> <p>23 compactness?</p> <p>24 A It takes the district, and it draws</p> <p>25 the smallest circle around the district that</p>	<p style="text-align: right;">127</p> <p>1 something of that nature.</p> <p>2 Q I think we've discussed this a little</p> <p>3 bit in the morning. Have you ever run the</p> <p>4 Reock measure score?</p> <p>5 A Yes.</p> <p>6 Q Have you done so in your expert</p> <p>7 redistricting work?</p> <p>8 A Yes.</p> <p>9 Q And I believe you ran the Reock</p> <p>10 measure for the Louisiana Congressional case;</p> <p>11 is that correct?</p> <p>12 A If I don't remember, I should</p> <p>13 probably remember quickly. I think that's</p> <p>14 right.</p> <p>15 Q Why did you run it there?</p> <p>16 A I think because I was asked to find</p> <p>17 the compactness of the district.</p> <p>18 Q Are you aware of whether courts have</p> <p>19 ever credited the use of the Reock score in an</p> <p>20 expert's Gingles 1 analysis?</p> <p>21 A As I understand it, most of these</p> <p>22 cases are tried using district compactness as</p> <p>23 the theory. So yeah, you would -- it's been</p> <p>24 credited, and you would use Reock or</p> <p>25 Polsby-Popper for district compactness. My</p>
<p style="text-align: right;">126</p> <p>1 it can without cutting the district edge. So</p> <p>2 it's the minimum bounding circle, and</p> <p>3 effectively, it's the percentage of that</p> <p>4 circle that the district fills. It's the area</p> <p>5 of the district over the area of the minimum</p> <p>6 bounding circle.</p> <p>7 Q And do you know who Reock was scored?</p> <p>8 A It's on a range from zero to one.</p> <p>9 Q And is it your opinion that the</p> <p>10 moment of inertia and Chet & Rodden method</p> <p>11 that you describe in your report is superior</p> <p>12 for measuring compactness for real?</p> <p>13 MR. STRACH:</p> <p>14 Objection. Go ahead.</p> <p>15 THE WITNESS:</p> <p>16 To measure the compactness of</p> <p>17 the population, yeah, because you're</p> <p>18 dealing with points, not district</p> <p>19 boundaries.</p> <p>20 BY MS. THOMAS-LUNDBORG:</p> <p>21 Q Okay, and for measuring the</p> <p>22 compactness of a district?</p> <p>23 A If you're looking to measure the</p> <p>24 compactness of a district boundary, you would</p> <p>25 use something like Reock or Polsby-Popper or</p>	<p style="text-align: right;">128</p> <p>1 understanding is that defense has a district</p> <p>2 different theory.</p> <p>3 Q Do you recall that Mr. Cooper ran the</p> <p>4 Reock scores on both his illustrative map and</p> <p>5 the enacted map?</p> <p>6 A Yes.</p> <p>7 Q Do you recall what his results found?</p> <p>8 A No. I wasn't interested in district</p> <p>9 compactness. I was interested in population</p> <p>10 compactness.</p> <p>11 Q Would it surprise you that district</p> <p>12 compactness, that Mr. Cooper's maps either met</p> <p>13 or beat the enacted maps?</p> <p>14 A On average, it would not surprise me.</p> <p>15 Q Do you have any reason as you sit</p> <p>16 here today to -- strike that. Is it your</p> <p>17 opinion as you sit here today that</p> <p>18 Mr. Cooper's maps are non-compact on a</p> <p>19 district compactness basis?</p> <p>20 A I haven't done any work one way or</p> <p>21 the other on the district level compactness of</p> <p>22 the maps.</p> <p>23 Q I think I have just a few follow-up</p> <p>24 questions. You mentioned Reock, and you have</p> <p>25 run Reock in your redistricting work. I think</p>

<p style="text-align: right;">129</p> <p>1 you've also mentioned Polsby-Popper; is that 2 right? 3 A That's right. 4 Q And generally, what is the 5 Polsby-Popper method? 6 A The Polsby-Popper method takes -- 7 instead of the minimum bounding circle, it 8 takes the perimeter of the district and looks 9 at the area of the circle with the same 10 perimeter as the district and asks what 11 percentage, and then, it's the ratio of the 12 area of that district to the area of the 13 circle with the same perimeter. 14 Q You've also run Polsby-Popper in the 15 past? 16 A Yes. 17 Q And you've done that in your expert 18 redistricting work? 19 A Yes. 20 Q And Mr. Cooper did it here on his 21 maps and the enacted maps? 22 A I will certainly accept your 23 representation on that. 24 Q Okay, and I'm going to ask the same 25 questions about convex hull. Are you familiar</p>	<p style="text-align: right;">131</p> <p>1 A After Dr. Duchin pointed out that 2 it's just the square route of Polsby-Popper. 3 Q Do you recall when that was? 4 A I believe it was during the Texas 5 litigation before it got stayed. So sometime 6 last year. 7 Q Let me just check quickly. 8 MS. THOMAS-LUNDBORG: 9 Let me just check quickly. I 10 think I'm done. Just in case 11 anything else comes up, I will close 12 out your deposition by the end of the 13 day, but I am going to turn it over 14 to the Congressional case, and just 15 leave it open for a second if 16 anything comes up, but we will at 17 least close out my deposition by the 18 end of today, but I'll close it out 19 to Dan in the Congressional case 20 before doing that. 21 I think we're in a different 22 zoom room. Do we want to go off the 23 record and rejoin the others in Link 24 with the other one? 25 (Whereupon, the deposition was</p>
<p style="text-align: right;">130</p> <p>1 with convex hull metric? 2 A Yes. 3 Q Have you run the convex hull metric 4 in your prior redistricting work? 5 A I have. 6 Q I don't think I asked this question 7 about Polsby-Popper. So let me go back 8 quickly. Does Polsby-Popper give a score? 9 A Yes. 10 Q Does convex hull give a score? 11 A Yes. 12 Q And did you run convex hull in this 13 case? 14 A No, because I wasn't interested in 15 district compactness. 16 Q And then, a similar question about 17 the Schwartzberg metric. Are you familiar 18 with the Schwartzberg metric? 19 A I am. 20 Q Have you run that metric before? 21 A I have. Though, I don't anymore. 22 Q You said you don't anymore? 23 A I don't. 24 Q When did you stop running that 25 metric?</p>	<p style="text-align: right;">132</p> <p>1 concluded at 12:24 PM.) 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p>

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WITNESS CERTIFICATE

I, SEAN P. TRENDE, do hereby certify that the foregoing testimony was given by me, and that the transcription of said testimony, with corrections and/or changes, if any, is true and correct as given by me on the aforementioned date.

DATE SIGNED SEAN P. TRENDE

Signed with corrections as noted.

Signed with no corrections noted.

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CERTIFICATE

I, LORI L. MARINO, Certified Court Reporter, in and for the State of Louisiana, as the officer before whom this testimony was taken, do hereby certify that SEAN P. TRENDE, after having been duly sworn by me upon authority of R.S. 37:2554, did testify as hereinbefore set forth in the foregoing 133 pages; that this testimony was reported by me in the stenotype reporting method, was prepared and transcribed by me or under my personal direction and supervision, and is a true and correct transcript to the best of my ability and understanding; that the transcript has been prepared in compliance with transcript format guidelines required by statute or by rules of the board, that I have acted in compliance with the prohibition on contractual relationships, as defined by Louisiana Code of Civil Procedure Article 1434 and in rules and advisory opinions of the board; that I am not related to counsel or to the parties herein, nor am I otherwise interested in the outcome of this matter.

Dated this 2nd day of October, 2023.

Lori L. Marino

LORI L. MARINO, CCR
CCR #87069
STATE OF LOUISIANA



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Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures

Jowei Chen¹ and Jonathan Rodden^{2,*}

¹*Department of Political Science, University of Michigan, 5700 Haven Hall, 505 South State Street, Ann Arbor, MI 48109-1045, USA; jowei@umich.edu*

²*Department of Political Science and Hoover Institution, Stanford University, Encina Hall West, Suite 100, Stanford, CA 94305-6044, USA; jrodden@stanford.edu*

ABSTRACT

While conventional wisdom holds that partisan bias in U.S. legislative elections results from intentional partisan and racial gerrymandering, we demonstrate that substantial bias can also emerge from patterns of human geography. We show that in many states, Democrats are inefficiently concentrated in large cities and smaller industrial agglomerations such that they can expect to win fewer than 50% of the seats when they win 50% of the votes. To measure this “unintentional

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gerrymandering,” we use automated districting simulations based on precinct-level 2000 presidential election results in several states. Our results illustrate a strong relationship between the geographic concentration of Democratic voters and electoral bias favoring Republicans.

In majoritarian political systems like the United States, the extent to which electoral support for a party translates into legislative representation is driven by the geographic distribution of votes across districts. For instance, in a set of hotly contested U.S. states including Florida, Michigan, Ohio, Missouri, Indiana, and Pennsylvania, the Democrats have had far more statewide success in winning presidential, U.S. Senate, and gubernatorial races than in winning control of state legislatures. Party strategists and pundits as well as academics (King and Gelman, 1991; Hirsch, 2003; McDonald, 2009a) have noticed that this disconnect between statewide partisanship and representation is driven by a disadvantageous distribution of Democratic voters across legislative districts. A window into this phenomenon is provided by Florida’s notorious tied presidential election of November 2000, in which votes for George W. Bush outnumbered votes for Al Gore in 68% of Florida’s Congressional districts.

Why does this type of electoral bias emerge? One source of bias is intentional gerrymandering, whereby district maps are drawn to favor partisan or racial groups. Another source is unintentional gerrymandering, whereby one party’s voters are more geographically clustered than those of the opposing party due to residential patterns and human geography.

Ever since Elbridge Gerry proposed his famous Massachusetts district, the U.S. literature on electoral bias has been dominated by the notion of intentional gerrymandering. The machinations of politically motivated cartographers take center stage in the theory literature (e.g., Gilligan and Matsusaka, 1999; Gul and Pesendorfer, 2010) as well as in empirical studies (e.g., Abramowitz, 1983; Cain, 1985; Cox and Katz, 2002; Herron and Wiseman, 2008; McCarty *et al.*, 2009). Likewise, studies of racial gerrymandering have used theoretical (e.g., Shotts, 2001, 2003) and empirical analyses (e.g., Brace *et al.*, 1988; Hill, 1995; Lublin, 1997; Cameron *et al.*, 1996; Griggs and Katz, 2005) to show that efforts at enhanced minority representation inexorably pack Democrats into relatively few districts.

A significant reform movement in the United States is predicated on the notion that observed electoral bias stems from intentional gerrymandering.

Districting reformers in many states have advanced various statutory and constitutional proposals to prohibit partisan gerrymandering and enforce more neutral, objective criteria and procedures in the redistricting process. In Florida, for example, in response to a striking pattern of pro-Republican electoral bias, a coalition of left-wing interest groups invested significant energy and resources into passing Amendments 5 and 6, which voters approved in November 2010. These ballot initiatives mandate that newly drawn congressional and state legislative districts be compact and contiguous in shape, and the initiatives prohibit redistricting plans drawn with the intent to favor either political party.

Such reforms are based on the assumption that human geography plays no significant role in generating electoral bias. Reformers are betting that the inefficient distribution of Democrats across districts in a number of states would disappear if the process of districting could only be sufficiently insulated from Republican cartographers and minority interest groups.

This article examines the possibility that human geography plays a far greater role in generating electoral bias in the United States than commonly thought. Building on existing literature, we explore the argument that Democrats are often more clustered in space than Republicans as a result of the industrial revolution, great migration, and subsequent patterns of suburbanization (Fenton, 1966; Dixon, 1968; Erikson, 1972, 2002; Jacobson, 2003; McDonald, 2009a, 2009b). This argument dovetails with the emphasis on similar aspects of human geography in the comparative literature (e.g., Johnston, 1976; Taylor and Gudgin, 1976; Gudgin and Taylor, 1979; Johnston and Hughes, 2008; Rodden, 2010).

We show that in many urbanized states, Democrats are highly clustered in dense central city areas, while Republicans are scattered more evenly through the suburban, exurban, and rural periphery. We illuminate this pattern with an in-depth case study of Florida and demonstrate that it holds up in many other states. Precincts in which Democrats typically form majorities tend to be more homogeneous and extreme than Republican-leaning precincts. When these Democratic precincts are combined with neighboring precincts to form legislative districts, the nearest neighbors of extremely Democratic precincts are more likely to be similarly extreme than is true for Republican precincts. As a result, when districting plans are completed, Democrats tend to be inefficiently packed in homogeneous districts.

This observation raises some vexing empirical questions: To what extent is observed pro-Republican electoral bias a function of human geography rather

than intentional gerrymandering? To what extent might pro-Republican bias persist in the absence of partisan and racial gerrymandering?

The main contribution of this paper is to answer these questions by generating a large number of hypothetical alternative districting plans that are blind as to party and race, relying only on criteria of geographic contiguity and compactness. We achieve this through a series of automated districting simulations. The simulation results provide a useful benchmark against which to contrast observed districting plans. We show that in general, pro-Republican partisan bias is quite persistent in the absence of intentional gerrymandering. Moreover, consistent with our argument about human geography, we demonstrate that the highest levels of electoral bias against Democrats occur in states where Democratic voters are most concentrated in urban areas.

1 Political Geography and the Roots of Electoral Bias in the United States

Electoral maps from recent U.S. presidential elections illustrate clearly that in much of the United States, support for Democrats is highly clustered in densely populated city centers, declines gradually as one traverses the suburbs and exurbs, and levels off in moderately Republican rural areas. Additionally, in the rural periphery, there are scattered pockets of strong support for Democrats in smaller agglomerations associated with nineteenth century industrial activity along railroad lines, canals, lakes, and rivers, as well as in college towns.

To illustrate the relationship between population density and voting behavior, we match precinct-level results from the 2000 presidential election to precinct boundary files produced by the U.S. Census. We are able to obtain such 2000 precinct-level data for 20 states. We then generate block group estimates of election results, which we plot against population density data from the census in Figure 1. The relationship between population density and Democratic voting is generally widespread, but there is some cross-state heterogeneity. This relationship is most pronounced in the most industrialized and urbanized states, but it is less pronounced or absent in less industrialized Southern states with large rural African American populations and in relatively sparse Western states.

It is important to note that the densely populated urban block groups in the lower-right corners of the scatter plots in Figure 1 are not randomly

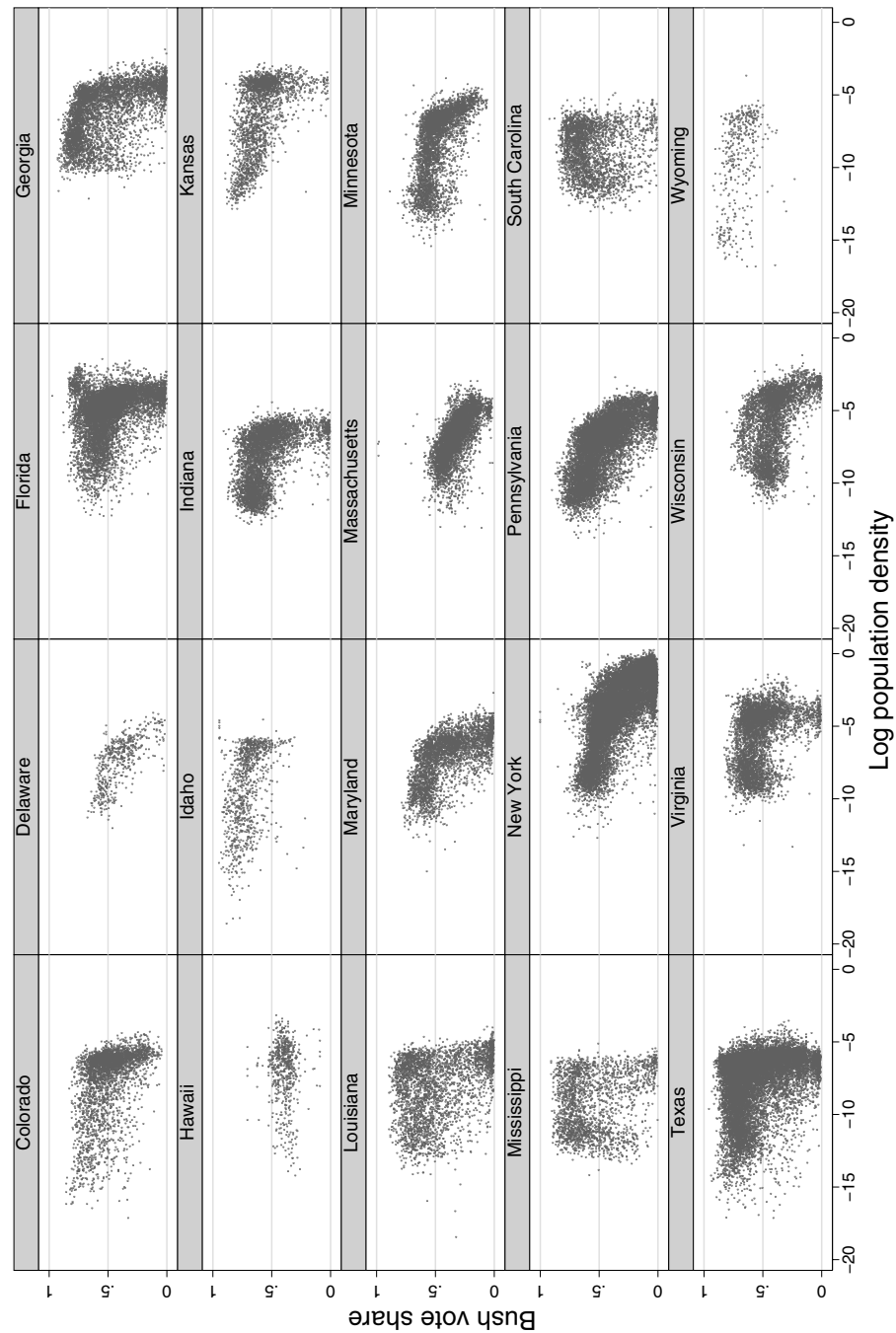


Figure 1. Population density and Republican Presidential Vote Share, census block groups.

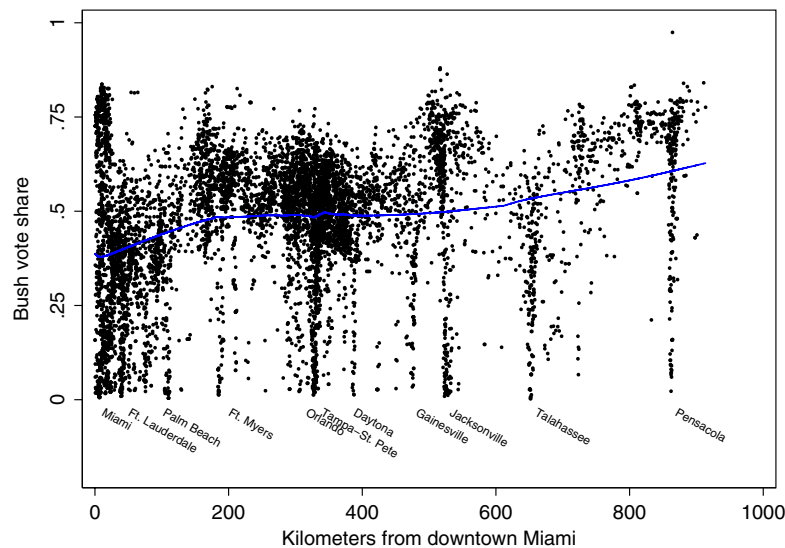


Figure 2. The spatial arrangement of partisanship in Florida.

distributed in space; many of them are in close proximity to one another. For example, support for Democrats in Florida is highly concentrated in downtown Miami and the other coastal cities to its immediate North, as well as downtown Orlando, Tampa, St. Petersburg, Daytona, Gainesville, Jacksonville, Tallahassee, and Pensacola, as well as a few other smaller railroad and college towns. The suburbs of these cities, along with rural Florida, are generally Republican, but only moderately so.

Figure 2 displays the distance in kilometers between the center of Miami's central business district and the location of every census block group in Florida. Figure 2 displays this distance on the horizontal axis, and the vertical axis displays the block group's Bush vote share. Block groups toward the right of this plot are further away from Miami, and the extreme right side of the plot depicts block groups in the Florida panhandle. The lower left corner of the plot displays the large number of overwhelmingly Democratic precincts in downtown Miami, Ft. Lauderdale, and Palm Beach. Above these urban cores in the graph are more heterogeneous suburban neighborhoods where the Bush vote share, on average, only slightly exceeds 50%.

The tips of each of the other “stalactites” in Figure 2 are city centers where Al Gore's vote share in November 2000 often exceeded 90%. In each case, as one moves outward from the city center, the Bush vote increases, and each

city is surrounded first by a very mixed area, second by a suburban periphery that produced solid but not overwhelming support for Bush, and then finally by a rather heterogeneous but moderately Republican periphery. Analogous plots are quite similar in all of the other states that are characterized by high correlations between population density and voting in Figure 1.

These depictions illustrate two important patterns with consequences for districting. First, Democrats are far more clustered within homogeneous precincts than are Republicans. For example, while Bush received over 80% of the vote in only 80 precincts, Gore received over 80% in almost 800 precincts. Second, the stalactite shape of cities and their surroundings in Figure 2 illustrate that Democratic precincts tend to be closer to one another in space than Republican precincts. That is, the nearest neighbors of predominantly Democratic precincts are more likely to be predominantly Democratic than is the case for Republican precincts.

Some simple spatial statistics allow us to demonstrate this. First, we can identify the nearest neighbor of every precinct, defined as the precinct with the most proximate centroid, and ask whether that neighbor has the same partisan disposition. For any reasonable cut-off used to differentiate “Democratic” and “Republican” precincts (e.g., lower than 40th vs. higher than 60th percentile values of Bush share, 30th vs. 70th, etc.), we find that indeed, the nearest neighbors of Democratic precincts are significantly more likely to be Democratic than is the case for Republicans, whose neighbors are more heterogeneous.

Alternatively, rather than forcing precinct partisanship to be binary, it is useful to examine the extent to which each precinct’s election results are correlated with those of its neighbors, and ask whether the extent of this spatial autocorrelation is higher in Democratic than in Republican districts. Anselin’s (1995) local Moran’s I is well suited to this task. For each precinct i , the local Moran’s I is given by:

$$I_i = \frac{Z_i}{m_2} \sum_j W_{ij} Z_j$$

where

$$m_2 = \frac{\sum_i Z_i^2}{N}$$

and Z_i is the deviation of Bush share with respect to the mean across all precincts, N is the number of precincts, and W_{ij} is a matrix of weights with ones in position i, j whenever precinct i is a neighbor of precinct j ,

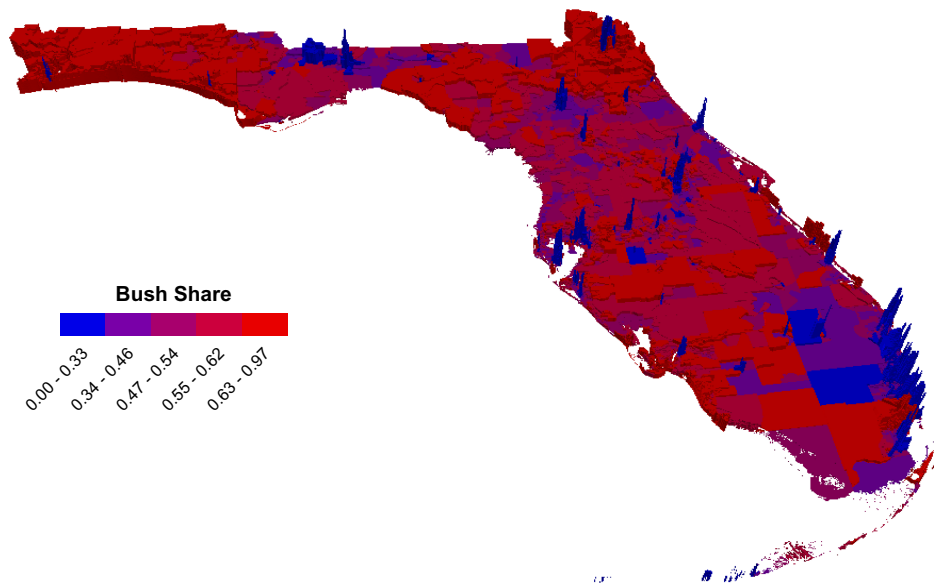


Figure 3. 2000 Bush vote share. Colors correspond to Bush vote share, heights correspond to local Moran's I .

and zero otherwise. We define neighbors as precincts that share any part of any boundaries or vertices (Queen Contiguity), although we get very similar results when using Rook contiguity or distance-based spatial weights.

Overall, I_i is much higher for majority-Democratic precincts than for Republican precincts, indicating that Democratic precincts are far more spatially clustered. Figure 3 displays I_i for each precinct using an extruded map, in which the height of each extrusion corresponds to the extent of spatial autocorrelation, and the color moves from blue to red as the precinct's Bush vote share increases. Figure 3 illustrates clearly that the most Democratic precincts in Florida's city centers are also those with the highest levels of local spatial autocorrelation; that is, they are surrounded by other very Democratic precincts. While there are some Republican-leaning areas of high spatial autocorrelation in little Havana, suburban Jacksonville, and the Panhandle, Republican precincts overall tend to be located in more heterogeneous neighborhoods.

The process of building electoral districts involves someone — incumbent politicians, judges, or districting boards — stringing together contiguous census blocks. Drawing on the rhetoric of reform advocates, let us consider a districting process in which these census blocks are assembled without

political or racial manipulation. To illustrate, consider a process of randomly selecting one of the dots in Figure 2 and randomly connecting it with surrounding dots until enough dots have been selected to form a state legislative district or Congressional district.

This process is likely to undermine the representation of Democrats for three reasons. First, suppose that the initial seed is a precinct in one of the stalactites representing Florida's large cities, such as Miami, Jacksonville, or Tampa. Such a city is sufficiently large that this process will likely combine extremely Democratic districts with other extremely Democratic districts, thereby forming a district that is overwhelmingly Democratic.

Second, outside of little Havana, it is difficult to find a Florida precinct that, when randomly chosen as the initial seed, would produce an analogously extreme Republican district. In addition to being more internally heterogeneous, Republican precincts tend to be located in heterogeneous suburban and rural areas of the state where their nearest neighbors are more diverse. For instance, suppose the initially chosen precinct is rural and extremely pro-Republican. If one strings together neighboring precincts until reaching the population threshold for a district, this will usually require the inclusion of some rather heterogeneous precincts, often including pockets of Democrats in small cities or towns and on the fringes of larger cities.

A third reason concerns the locations of small Democratic-leaning towns throughout Florida. Although dense, pro-Democratic cities are often combined together to form Democratic districts along the Eastern Coast, there are also small, isolated, inland pockets of Democratic voters in the manufacturing and transportation agglomerations that sprung up along railroad tracks in the nineteenth century, such as Ocala or Pensacola, and the college towns of Tallahassee and Gainesville. When the size of districts is large relative to these small clusters of Democrats, these towns are often subsumed into predominantly rural, moderately Republican districts, thus wasting Democratic votes in districts that are won by Republicans.

The roots of unintentional gerrymandering in Florida can be summarized as follows. The complex process of migration, sorting, and residential segregation that generated a spatial distribution of partisanship has left the Democrats with a more geographically concentrated support base than Republicans. When compact, contiguous districts are imposed onto this geography without regard for partisanship, the result will be a skew in the distribution of partisanship across districts such that with 50% of the votes, Democrats can expect fewer than 50% of the seats.

2 Automated Districting and Electoral Bias

Studies of electoral bias typically flow from the normative premise that in a two-party system, a party with 50% of the votes should receive 50% of the seats. Empirical studies use either aggregate data over several elections or transformations of district-level data from individual elections to examine the seat share that would be obtained by the parties under a hypothetical scenario of a tied election. Our goal is different. Rather than examining the bias associated with existing districting plans, many of which were undoubtedly influenced by efforts at partisan and racial gerrymandering, we seek to estimate the electoral bias that would emerge under hypothetical districting plans that are not intentionally gerrymandered.

Rather than using information from existing districts to simulate hypothetical tied elections, we use information from precinct-level election results, and we perform a large number of automated, computer-based simulations of legislative districting plans. Our computer simulations construct these districting plans in a random, partisan-blind manner, using only the traditional districting criteria of equal apportionment and geographic contiguity and compactness of single-member legislative districts. For each of these simulated districting plans, we calculate the Bush–Gore vote share of each simulated single-member district, and we use this vote share to determine whether the district would have returned a Democratic or Republican majority. We begin with Florida’s 2000 presidential race because of its unique quality as a tied election.

Since the early 1960s, scholars have suggested automated districting as a solution to the problem of partisan gerrymandering (e.g., Vickrey, 1961; Weaver and Hess, 1963; Nagel, 1965). More recently, scholars have used hypothetical districting experiments to examine partisan polarization (McCarty *et al.*, 2009), partisan representation (Altman, 1998), and the impact of various districting criteria (McDonald, 2009b). These previous studies have often used automated redistricting in order to obtain a baseline against which to detect the intentions of those drawing the lines. Cirincione *et al.* (2003) use a simulated districting algorithm to detect racial gerrymandering in South Carolina’s congressional districting plan, while Altman and McDonald (2004) propose an enhanced method of this algorithm for detecting partisan gerrymandering. Johnston and Hughes (2008) apply an automated districting algorithm in Brisbane, Australia in order to gain a baseline against which to compare the boundaries chosen by neutral

commissioners. Extending this past work, we use simulations to examine the electoral consequences of a hypothetical districting process without any intentional partisan or racial gerrymandering.

As of the November 2000 election, Florida consisted of 6,045 voting precincts. These precincts are the smallest geographic unit at which election results are publicly announced, so we use the precinct as the building block for our simulations. Hence, a complete districting plan consists of assigning each one of Florida's precincts to a single legislative district. Florida voters cast 5.96 million Presidential election ballots in 2000, so the average precinct cast a total of 986 presidential votes.

Our goal is to design a districting algorithm that uses only traditional geographic criteria of the kind favored by reform advocates. Our challenge is to guarantee equal apportionment of population while requiring geographic contiguity for all simulated districts, paying no attention to either voter partisanship or any demographic information other than simple population counts. Another concern is geographic compactness. Many districting reform proposals include explicit (if vague) compactness requirements, and reformers sometimes equate compactness with fairness. Moreover, an algorithm that makes no attempt to achieve compactness might create districts that seem too far removed from the real world. On the other hand, if we build some strict compactness criteria into the algorithm, we run the risk that any pro-Republican bias observed in the simulated plans could be driven exclusively by compactness criteria that, for instance, force the most extreme Democratic precincts in Miami to be joined together.

Our approach is to experiment with alternative algorithms that approach compactness in different ways or ignore it altogether. Due to space constraints, we focus here on two algorithms: one that aims for compactness and one that does not.

Our procedure for simulating compact districts is as follows. Suppose that we begin with n precincts and wish to create d districts with equal population.

- (1) To begin the simulation procedure, each of the n precincts represents a single district. Hence, there are n districts, each containing only one precinct at the outset.
- (2a) Randomly select one of the n districts and denote it as district i .
- (2b) Among the neighboring districts that border district i , select the one that is geographically closest, and denote it as district j . Geographic

proximity is measured as the distance between district i 's centroid and the respective centroids of i 's neighboring districts.

- (2c) Merge district i together with district j in order to form a single, new district. There are now $n - 1$ total districts remaining.

Steps 2a through 2c are repeated until the total number of districts is exactly d . At this point in the procedure, these d districts are geographically contiguous and reasonably compact, due to the nearest distance criterion employed in step 2b. However, the districts are not guaranteed to be equally populated. Hence, repeated iterations of steps 3a through 3c are designed to achieve an equitable distribution of population across the simulated districts. These steps iteratively reassign precincts to different districts until equally populated districts are achieved.

- (3a) Among all pairs of districts that border one another, identify the pair with the greatest disparity in district population. Within this pair, let us denote the more populated district as i and the less populated district as j .
- (3b) Identify the set of all precincts currently within district i that could be reassigned to district j without violating the geographic contiguity of either district i or j .
- (3c) For each precinct p satisfying the criterion in step 3b, define D_p as precinct p 's geographic distance to the centroid of district i , minus precinct p 's distance to the centroid of district j .
- (3d) Among the set of precincts satisfying the criteria in step 3b, select the precinct, p , with the highest value of D_p . Reassign this precinct from district i to district j .

Steps 3a through 3d are repeated until every district's population is within 5% of the ideal district population. The ideal district population is defined as the statewide population, divided by d , the total number of districts. Hence, these steps iteratively reassign precincts in order to achieve equal population across the districts. However, steps 3c and 3d perform such precinct reassignment in a manner that preserves the geographic compactness of the districts. Compactness is preserved because step 3d generally reassigns a precinct that was geographically distant from its old district's centroid and geographically close to the centroid of its new district.

In order to simulate non-compact districts, steps 1 and 2a are performed in the same manner as in the compact districting algorithm. The procedure for non-compact districts then proceeds as follows:

- (2b) Select one of district i 's bordering districts at random and denote it as district j .
- (2c) Merge district i together with district j in order to form a single, new district. There are now $n - 1$ total districts remaining.

Steps 2a through 2c are repeated until the total number of groups is exactly d . At this point in the procedure, these d districts are geographically contiguous but not guaranteed to be equally populated. Hence, repeated iterations of steps 3a through 3c are designed to achieve an equitable distribution of population across the simulated districts.

- (3a) Identify the most populated district and denote it as district i .
- (3b) Randomly select one of the precincts lying within district i and denote it as precinct p .
- (3c) If precinct p can be reassigned from district i to a new district without violating the geographic contiguity of either this new district or district i , then reassign p to this new district. If two or more new districts satisfy this criterion, then reassign precinct p to one of these new districts at random.

Steps 3a through 3c are repeated until every district's population is within 5% of the ideal district population. The ideal district population is defined as the statewide population, divided by d , the total number of districts.

In order to help illustrate the output of these simulations, the Appendix displays sample maps of both compact and non-compact plans for Florida's 25 Congressional districts, as well as maps that zoom in on Miami and Jacksonville.

3 Simulation Results

For each procedure, we perform 25 simulations of Florida districting plans for each of a range of reasonable legislature sizes, ranging from 2 to 200 districts. For each simulation, we can simply aggregate the precinct-level Bush–Gore vote counts within each district and count up the number of districts in

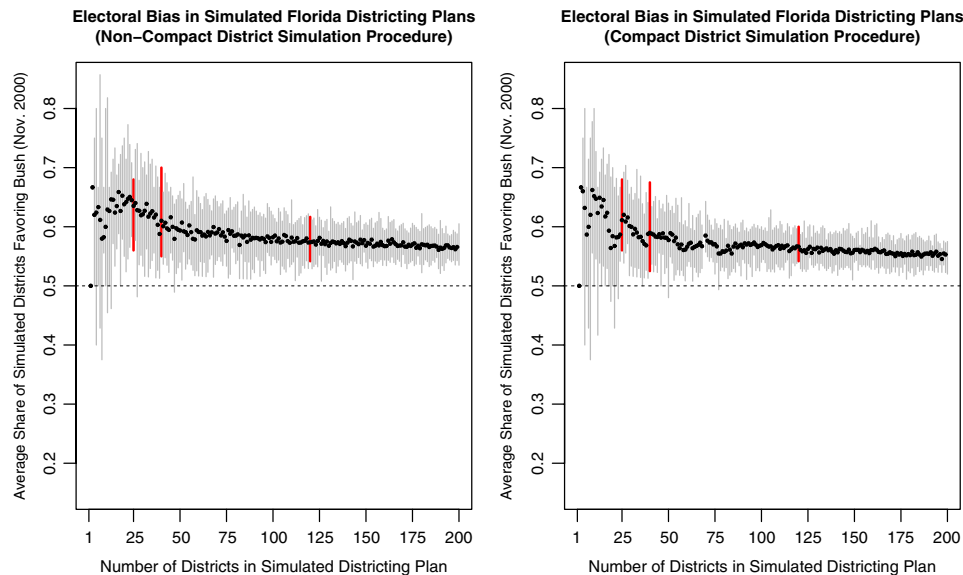


Figure 4. Republican electoral bias in simulated Florida districting plans.

Note: Black dots indicate the average share of simulated districts that have pro-Bush majorities in the simulated plans. Gray bars depict the entire range of pro-Bush district shares that were observed across all simulations for each given legislature size. Red bars depict the range of simulated outcomes for legislatures of 25 districts (Florida’s Congressional Delegation), 40 districts (the Florida State Senate), and 120 districts (the Florida State House).

which Bush received a majority. The expectation is that if there is no partisan bias, the average share of pro-Bush districts should be around 50%.

Our simulations reveal pro-Republican bias in the partisan distribution of seats in any realistically sized legislature; that is, significantly over one-half of the legislative seats have Republican majorities. Figure 4 summarizes the distribution of seat shares produced under our simulations. The left panel presents results using the non-compact procedure, and the right panel reports results for the compact procedure. In this figure, the horizontal axis represents the number of single-member districts in each simulated plan. The vertical axis reports the percentage of these districts that have Republican majorities. For each different hypothetical legislature size, the dot represents the average share of simulated districts with pro-Bush majorities across all simulated plans, and the gray bars depict the entire range observed across all simulations for each given legislature size. The red colored

bars depict the entire range of simulated outcomes for legislatures of 25 districts (Florida's Congressional Delegation), 40 districts (the Florida State Senate), and 120 districts (the Florida State House).

The figure illustrates, for example, that when we conducted random simulations that divided Florida into 25 districts using the compact procedure, Republicans won an average of 61% of the seats. The most biased of the simulated plans gave the Republicans 68% of the seats, and the least biased plan gave them 56%. Overall, this plot illustrates the significant pro-Republican bias that results from a districting procedure that is based solely on geography and population equality. Moreover, this result is not driven by the compactness of the simulated districts. The results are just as striking when we use the non-compact simulation procedure.

We find that the real-life districting plans enacted by the Republican-controlled Florida legislature in 2002 are all within the range of districting plans produced by our simulation procedures. For example, in 2002, the state legislature enacted a Congressional districting plan in which Bush voters outnumbered Gore voters in 17 out of 25 districts, or 68%. This level of pro-Republican electoral bias falls just within the tail of the distribution of electoral biases produced across all of the randomly simulated, compact districting plans (56–68%), as illustrated in Figure 4. Hence, because the enacted districting plan falls within the range of plans produced by our compact districting procedure, we are simply unable to prove beyond a doubt that the enacted districting plan represents an intentional, partisan, Republican gerrymander.

Both panels of Figure 4 show that a legislature consisting of only two single-member districts will always have exactly one Democratic and one Republican seat, a result that follows naturally from Florida's 50–50 Bush–Gore vote share. But as the legislature grows in size, the partisan division of legislative seats quickly begins to favor the Republicans. When the simulated legislature has 25 seats — the size of Florida's Congressional delegation after the 2000 reapportionment — Republicans win an average of 61.2% of the districts when we use the compact procedure and 63.5% of the districts when we use the non-compact procedure.

As the size of the legislature increases further, some of the medium-density Democratic clusters in suburbs and small towns that had previously been subsumed in their surrounding Republican peripheries begin to win their own seats, and thus the Republican seat share slowly declines. However, a striking result is that the Republicans always continue to control over

one-half of the total seats. For any districting plan of realistic size, the pro-Republican bias exhibited in our simulations is significant. With only a few exceptions, the entire range of simulations produces a hypothetical legislature with a solid Republican majority in spite of the tied election.

To provide a closer illustration of the distribution of districting plans produced by the simulations, we conduct 250 independent simulations in which Florida is divided into 25 congressional districts using the non-compact procedure. Figure A6 in the Online Appendix depicts the partisan breakdown of districts produced under these 250 simulations.

This figure illustrates that all of the 250 simulated plans result in pro-Republican electoral bias: In each plan, at least 14 of the 25 districts (56%), and as many as 19 of the 25 districts (76%), have a pro-Bush majority. Moreover, the figure reveals that the distribution of partisan bias across the simulations follows a normal distribution. Most of the simulations resulted in the production of 15, 16, or 17 pro-Bush districts. Drawing 14 or 18 pro-Bush districts was a rarer outcome, and only an exceedingly small number of simulations produced as many as 19 Bush-leaning districts. Hence, these simulations demonstrate that a range of partisan outcomes is achievable under the simulations, but most of the simulations result in a predictable partisan distribution of seats that indicates significant pro-Republican electoral bias.

4 A Closer Look at Political Geography

Next, we use the simulation results to take a closer look at political geography as an explanation for this persistent Republican advantage. In Figure 5, we present the results of 200 independent random simulations in which Florida is divided into 25 districts.

Each plotted point in Figure 5 represents one of Florida's 6,045 precincts, and we plot high, medium, and low density precincts separately, referring to them loosely as urban, suburban/town, and rural. For each plotted point, the horizontal axis measures the partisanship of the precinct, as measured by Bush–Gore vote share in November 2000. The vertical axis measures the average partisanship of the 200 simulated districts to which the precinct was assigned during our simulations.

The patterns of spatial autocorrelation reported above give rise to the generally positive correlation between the partisanship of a precinct and the

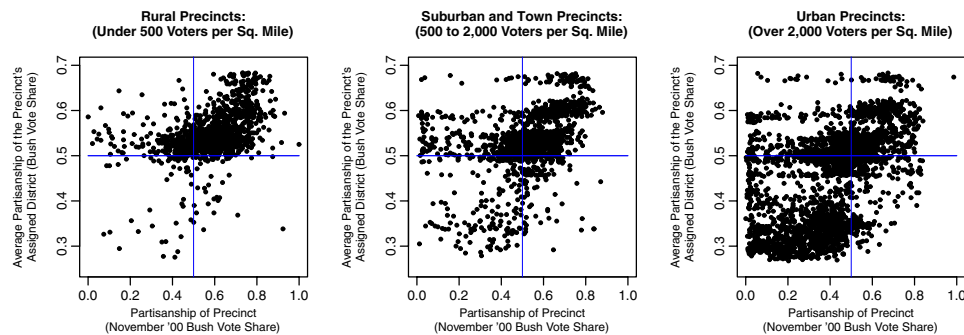


Figure 5. The partisanship of precincts' assigned districts.

Note: Each point represents a single Florida precinct. The horizontal axis indicates the precinct's partisanship, as measured by George Bush's November 2000 share of the two-party vote. The vertical axis measures the average partisanship (George Bush vote share) of the simulated district to which the precinct was assigned. This measure is based on 25 independent random simulations of dividing Florida into 40 Senate districts, using the non-compact simulation algorithm.

partisanship of the legislative district to which the precinct was assigned. In other words, pro-Bush precincts are typically assigned to pro-Bush districts. In particular, the left and middle plots reveal that outside of dense city centers, pro-Bush precincts were almost always assigned to majority-Bush districts. Hence, the lower-right quadrants of these plots — where pro-Republican precincts are assigned to majority-Democratic districts — are generally empty.

By contrast, majority-Gore precincts outside of dense urban neighborhoods are often in the upper-left quadrant of the plots. In other words, rural, small town, and suburban precincts that lean Democratic are often subsumed into moderately Republican districts. As described above, there are isolated pockets of support for Democrats in African-American enclaves in the suburbs of big cities and in smaller towns with a history of railroad industrialization or universities. However, these Democratic pockets are generally surrounded by Republican majorities, thus wasting these Democratic votes. As a result, the Democrats are poorly situated to win districts outside of the urban core.

Figure 5 illustrates that pro-Gore precincts in urban areas are generally assigned to overwhelmingly Democratic districts in our simulations. There is a large cluster of observations at the bottom of the lower-left

quadrant of the bottom graph, indicating that Democratic precincts are assigned to extremely Democratic districts. By contrast, there are very few corresponding Republican precincts in the extreme upper right of any of the plots. Taken together, these plots show that because of their geographic support distribution, Democrats not only waste more votes in the districts they lose, but they also accumulate more surplus votes in the heavily Democratic districts they win. These two phenomena explain the rather extreme pro-Republican bias revealed by our simulations.

5 Does Geography Constrain Partisan Gerrymandering?

Taken together, the simulation results presented thus far suggest that residential geography alone generates significant partisan bias in Florida's districting plans. As Figure 4 illustrates, almost the entire range of simulated districting plans for every reasonable legislature size produces at least some pro-Republican bias. Among all of the randomly simulated plans consisting of 25 districts (U.S. Congressional delegation), 40 districts (Florida Senate), and 120 districts (Florida House), not a single simulated plan produces at least as many Gore-leaning districts as Bush-leaning districts. Hence, both the compact and the non-compact simulation procedures are unable to produce a single Congressional, Senate, or House districting plan for Florida that is either neutral or pro-Democratic in its distribution of seats. This finding reflects the significant pro-Republican bias in Florida that results from the geographic constraint that each district must be contiguous, even if non-compact district shapes are permitted. Our simulation results show that this contiguity requirement alone is sufficient to consistently produce pro-Republican districting outcomes in Florida.

Could a sufficiently creative Democratic gerrymander work around these geographic constraints and produce a neutral or pro-Democratic districting plan in Florida? In theory, it seems that a clever Democratic cartographer might generate radial districts emanating from the city centers so as to break up the major agglomerations and create snake-like districts to connect some of the smaller cities. Such a hypothetically contorted districting arrangement would possibly neutralize the inherent Republican advantages in geographic districting. Is such a hypothetically neutral or pro-Democratic gerrymander achievable in real-life practice?

First, the key finding of our simulation results is that for the Florida Congressional, Senate, or House districts, our two simulated districting procedures are unable to produce a single districting plan that is neutral or pro-Democratic in terms of electoral bias. Hence, a real-life Democratic gerrymanderer would have to draw districting maps with even more creativity than our simulated non-compact districting plans in order to achieve a hypothetically neutral outcome. Moreover, human geography makes the task of a Democratic cartographer far more difficult than that facing a Republican-favoring cartographer, whom we have shown can do strikingly well by literally choosing precincts at random.

Second, to determine whether an electorally neutral districting plan in Florida is achievable in real-life practice, we examine the districting plans proposed by Democrats in the state legislature. Even though Florida's state legislature was controlled by the Republican Party during the 2002 redistricting cycle, Democratic legislators are nevertheless permitted to propose their own districting plans, and many did so in 2002. We examine these Democrat-proposed districting plans in order to measure how the most Democrat-favorable districting proposals fared in terms of electoral bias.

Specifically, we obtained district-level statistics for every proposed districting plan submitted to the Florida Senate during the 2002 redistricting cycle. To see how these real-world districting proposals compare against our non-compact, simulated districting plans, Figure 6 displays the number of Bush-leaning districts in the Congressional (Figure 6A) and Florida Senate (Figures 6B) districting plans adopted by the Republican-dominated legislature in 2002. Additionally, Figure 6 also displays the number of Bush-leaning districts in each of the alternative districting proposals submitted during the redistricting process by various Republican legislators, by various Democratic legislators, and by the League of Women Voters (hereinafter: LWV) in the Florida legislature.¹

Figure 6 displays the share of majority-Republican seats generated by each proposed plan and each computer-simulated plan, as well as a histogram displaying the distribution of Republican seat shares generated by 100 of our simulations. Figure 6A displays plans for the Florida delegation

¹ The Florida Senate provides information on all plans submitted to the Senate Committee on Reapportionment by Senators or the public at archive.flsenate.gov, accessed on September 20, 2012.

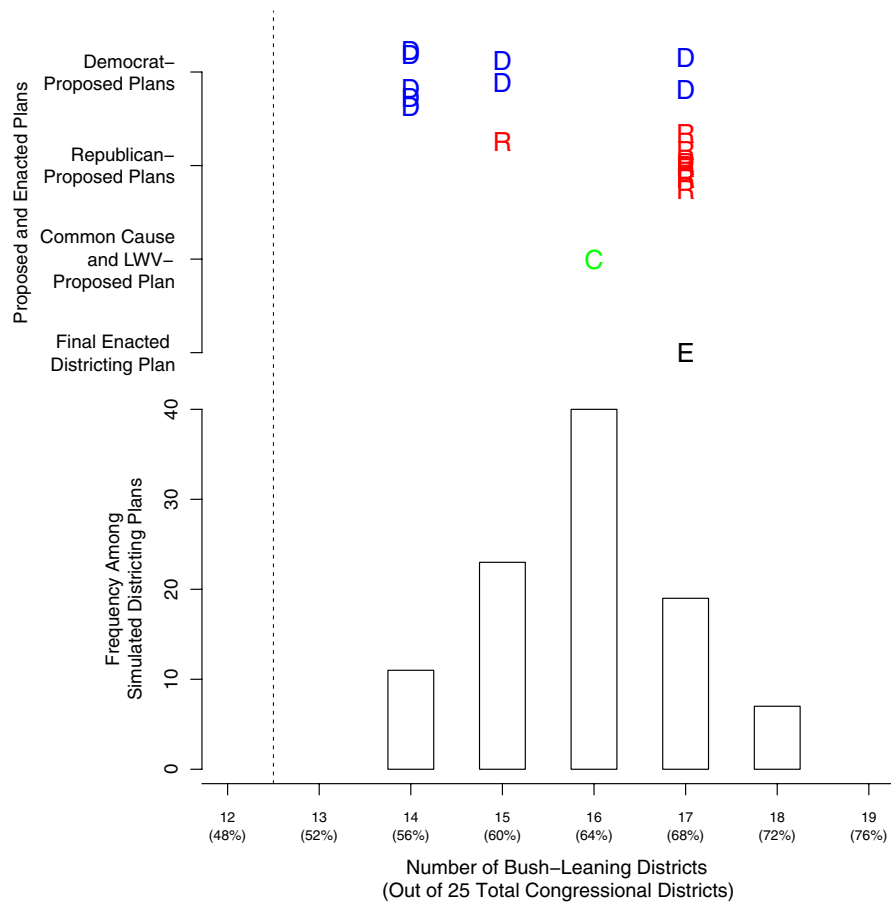


Figure 6A. Enacted, proposed, and simulated districting plans for Florida's 25 congressional districts.

Note: Proposed plans include all Congressional districting plans submitted for consideration to the Florida State Senate Committee on Reapportionment in 2002.

to the U.S. House, and Figure 6B displays plans for the Florida Senate. In terms of electoral bias, every one of the submitted plans falls well within the range of the simulated districting plans. Not surprisingly, the Republican plans tend to produce larger Republican majorities than Democratic or LWV plans, but remarkably, not a single unbiased or pro-Democratic plan was submitted by any of the Democratic legislators. Of course, we cannot conclude from Figure 6 that Democrats submit biased plans solely because

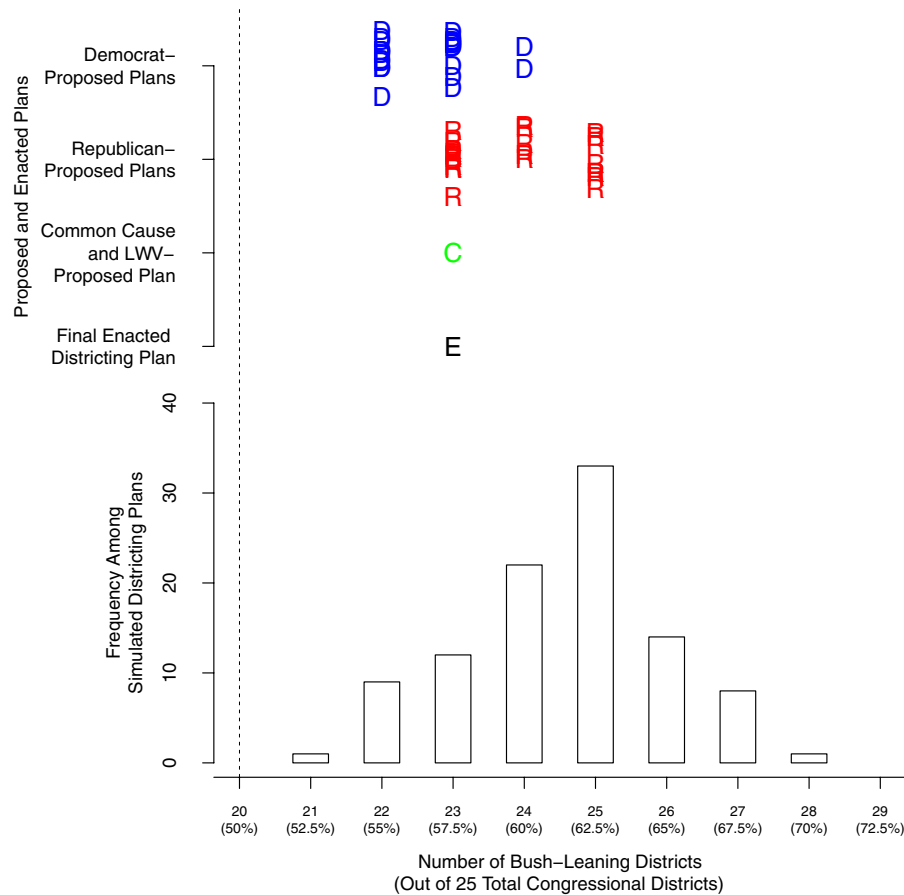


Figure 6B. Enacted, proposed, and simulated districting plans for Florida's Senate (40 districts).

Note: Proposed plans include all Senate districting plans submitted for consideration to the Florida State Senate Committee on Reapportionment in 2002.

of the constraints generated by human geography. However, at a minimum, Figure 6 suggests that the level of bias produced in the real world of strategic partisan cartographers, courts, and the Voting Rights Act is not radically different from that produced by human geography alone.

We acknowledge, however, that various political considerations may have influenced the drawing of the various Democrat-submitted plans. For example, important considerations for Democratic cartographers include

minority representation and protection of incumbents, especially those incumbents submitting the districting proposals. An additional possibility is that Democratic mapmakers understood that a pro-Democratic redistricting plan would never secure passage in the Republican-controlled state legislature; hence, perhaps only plans with built-in Republican bias were even worth submitting.

6 Simulation Results across U.S. States

The most striking result thus far is the rather consistent size of the pro-Republican bias in Florida; additionally, much of this bias would have occurred with a simple, random districting scheme that is blind to race or partisanship. This finding raises at least two broad questions. First, to what extent does an urban concentration of Democrats generate a similar political geography of electoral bias in other states? Second, building upon Figure 6, to what extent does the electoral bias that would be generated by our automated districting algorithm track electoral bias observed in actual districting plans?

In order to provide the necessary cross-state perspective, we have linked November 2000 precinct-level data reported by county governments with corresponding GIS boundary files provided by the U.S. Census Bureau. The reprecincting and the use of completely different precinct identifiers in the two data sets make this a difficult challenge. While improved coordination between the census department and state election officials will soon allow for a more complete data set for more recent elections, for the November 2000 elections we have been able to match 20 states. We have applied exactly the same automated districting algorithm introduced above and produced graphs like those in Figure 4.

The only difference is that because elections in other states were not tied, before performing the simulations we applied a uniform swing to the precinct-level results in order to examine the seat share in a “hypothetical” tied election. We then calculate the average bias estimates across all simulations corresponding to the number of districts in each state’s lower chamber, its upper chamber, and its U.S. Congressional delegation. A useful feature of the 2000 presidential election is the fact that it was very close in a number of states, so that the uniform swing used to achieve a hypothetical tie is not

a far stretch of the imagination. However, in consistently lopsided states like Massachusetts or Oklahoma, close statewide elections are less frequent.

Figure 1 revealed that the extent to which Democrats are spatially concentrated in urban areas varies considerably across states. We capture this heterogeneity in a simple way by using block group-level data and regressing, state by state, the Democratic vote share in the 2000 presidential election on logged population density, weighting by the block group's population. The coefficient from this regression is displayed on the horizontal axis of the first panel of Figure 7. The vertical axis displays the average estimated Republican vote share obtained from 50 simulations of the state's Congressional and state legislative districts. Observations above 0.5 indicate that on average, the districting algorithm produced districts that would turn tied elections into Republican legislative majorities.

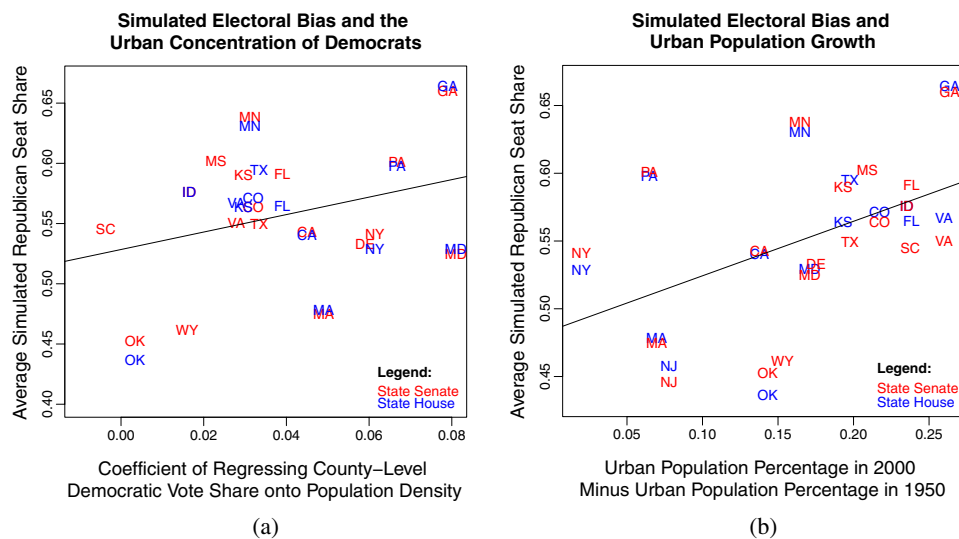


Figure 7. Simulated electoral bias in state legislatures and the urban concentration of democrats.

Note: The solid lines represent least-squares regression fits. The horizontal axis in the left plot is measured as the estimated coefficient of population density when county-level Gore (November 2000) vote share is regressed onto county-level population density within each state. The vertical axis represents the simulated electoral bias for state legislative chambers, measured as the percentage of simulated congressional districts with Republican majorities when the statewide Republican vote share is exactly 50%.

Figure 7 suggests that Florida is not an outlier. The correlation between population density and Democratic voting is even higher in several other states, and in most of them, the simulations consistently produced similar or even higher levels of pro-Republican bias than in Florida. Average bias in favor of Republicans is substantial — surpassing 5% of legislative seats — in around half the states for which simulations were possible. It appears that in some of the largest and most urbanized U.S. states, even without overt racial or partisan gerrymandering, the Democrats are at a disadvantage in translating votes to seats simply because their voters are inefficiently clustered in urban areas. According to the simulations, this problem is less severe for the Democrats in Western and Southern states, where their voters are more efficiently spread out in space. The second panel in Figure 7 provides a different perspective on urbanization and electoral bias by plotting the simulation results against the extent to which the state has urbanized since 1950, suggesting that the Democrats face the most inefficient geographic support distributions in states that have experienced the most urbanization.

Next, we compare the bias generated by our simulated plans to that created by the districting plans that were in place both before and after the 2002 redistricting cycle. To calculate the latter, we superimpose the actual legislative district boundaries on the November 2000 precinct-level presidential election results and aggregate Bush and Gore votes, then apply the uniform swing in order to examine the share of districts that would be won by Bush in a hypothetical tied state legislature election. In Figure 8, this quantity is plotted on the vertical axis, and the simulated Republican seat shares are plotted on the horizontal axis, with lower chambers displayed in red and the upper chambers in blue.

The positive correlation between the simulation estimates and those based on actual districts suggests the strong ability of our simulations to predict the direction and extent of electoral bias across states. In general, the states where the simulations produced large pro-Republican bias, like Texas and Pennsylvania, are the same states where the actual districting plans produced similar bias. As with the simulations, observed electoral bias in these states tends to favor Republicans, sometimes quite dramatically so.

Figure 8 plots include a 45-degree line, such that any observation above (below) the line indicates that the observed pro-Republican bias associated with the existing plan exceeds (falls short of) the bias found in our race- and partisan-blind simulations. Most of the districting plans are clustered fairly close to this 45-degree line, suggesting that in most states, observed

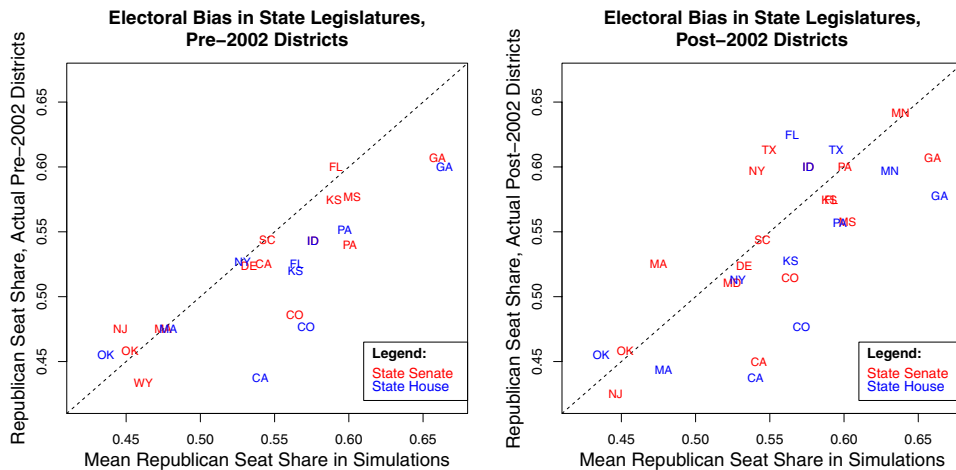


Figure 8. Electoral bias in simulated districting plans versus actual districting plans.

Note: In both plots, the horizontal axis plots estimates of the share of seats in the legislature that would have Republican majorities from districting simulations under the hypothetical scenario of a tied statewide 2000 presidential vote. Also using 2000 presidential results, the vertical axis plots the percent of seats that would be won by Republicans after applying the uniform swing to votes aggregated to the level of actual districting plans. Each measure is displayed separately for the upper and lower chambers of each state's legislature.

electoral bias would not necessarily disappear in the absence of intentional partisan and racial gerrymandering. Moreover, the 45-degree line provides a useful benchmark against which to compare observed districting plans. For instance, the plans drawn by Democrats in California and Georgia are friendlier to Democrats than the average of the simulated plans. Yet, in a state like Georgia, where the simulations reveal an especially bad geography for Democrats, even an aggressive pro-Democratic gerrymander was unable to completely erase the built-in pro-Republican bias. The simulations also identify cases, like the Florida House of Representatives and the Texas State Senate, where Republican cartographers appear to have done better for themselves than would be predicted from the simulations.

We must stop short of characterizing the deviation from the 45-degree line in Figure 8 as a measure of partisan gerrymandering because this deviation is also driven by a variety of factors including court interventions and efforts at racial representation. Nevertheless, automated districting simulations place

observed plans into useful perspective. If one encounters a districting plan characterized by 7 or 8% pro-Republican bias in a state like Georgia or Pennsylvania, one cannot necessarily infer that partisan manipulation has taken place. Nor can one necessarily infer that efforts at minority representation are to blame, because party- and race-blind simulations produce even larger levels of bias.

On the other hand, in a state like New Jersey, Democrats are evenly dispersed throughout an urban corridor that lacks a sprawling and heterogeneous rural periphery, thus avoiding the phenomenon described in the Florida example above. As a result, the simulations predict modest pro-Democratic bias in New Jersey, and this is reflected in the actual adopted plans. If Republicans in New Jersey and neighboring Pennsylvania submitted plans that produced an identical 10% bias in their favor, claims of partisan manipulation should carry more weight in New Jersey.

7 Discussion

This article has demonstrated that in contemporary Florida and several other urbanized states, voters are arranged in geographic space in such a way that traditional districting principles of contiguity and compactness will generate substantial electoral bias in favor of the Republican Party. This result is driven by a partisan asymmetry in voters' residential patterns: Democrats live disproportionately in dense, homogeneous neighborhoods in large cities that aggregate into landslide Democratic districts, or they are clustered in minor agglomerations that are small relative to the surrounding Republican periphery. Republicans, on the other hand, live in more sparsely populated suburban and rural neighborhoods that aggregate into districts that are geographically larger, more politically heterogeneous, and moderately Republican. We have explained how these geographic patterns can explain a large part of the pro-Republican bias observed in recent legislative elections in Florida and several other states.

Together, our theoretical explanation and our simulation results contribute to the literature on legislative districting and electoral bias in three ways. First, we have built upon and extended the work of political geographers who have noticed that electoral bias emerges in two-party systems when one party's voters are more concentrated in space. For example, Gudgin and Taylor (1979) show that in a competitive two-party system, if

the cross-district support distributions of the two parties are skewed, the party with too many of its supporters packed into the districts of the tail of the distribution will suffer in the transformation of votes to seats. Writing in the 1970s about Britain, they conjecture that due to the inevitability of densely packed support in coalfields and manufacturing districts, the Labour Party faced a right-skewed support distribution, causing it to suffer from a less efficient transformation of votes to seats than the Conservatives. Rydon (1957) and Johnston (1976) provide similar descriptive accounts of pro-Conservative electoral bias in Australia and New Zealand, respectively.

Erikson (1972, 2002), Jacobsen (2003), and McDonald (2009a, 2009b) have made similar observations about the relative concentration of Democrats in urban U.S. House districts in the post-war period. However, perhaps because the process of redistricting is typically more politicized in the United States than in Commonwealth countries, the U.S. literature tends to focus overwhelmingly on the partisan and racial motivations of those drawing the lines. This article has attempted to provide a window into the role of human geography in U.S. electoral bias through the use of automated simulations. It shows that pro-Republican bias can be quite pronounced even in the absence of intentional gerrymandering, and is greatest in states where Democratic voters are more geographically concentrated than Republican voters. A goal for future research is to complete simulations for all 50 states, and develop more sophisticated explanations for cross-state and time-series variation in the partisan bias owing to human geography.

Second, our findings show that voter geography confounds the traditionally hypothesized relationship between gerrymandering and the partisan control of legislatures. Past scholars have taken sharp positions in favor (e.g., Carson *et al.*, 2007) and against (Abromowitz *et al.*, 2006; Mann, 2007; McCarty *et al.*, 2009) the hypothesis that gerrymandering affects polarization in the House of Representatives, and scholars have also examined the impact of gerrymandering on the incumbency advantage (Friedman and Holden, 2009). Other studies have analyzed the effect of racial gerrymandering (e.g., Hill, 1995; Shotts, 2001, 2003) and respect for municipal boundaries (e.g., McDonald, 2009b) on electoral bias.

Our findings caution that the relationships between intentional gerrymandering and observed electoral bias are not necessarily identical across different states. Rather, the nexus between districting strategies and partisan control of legislatures is confounded by the electoral bias that emerges from underlying residential patterns in each state. Because geographic patterns

of Democratic voter concentration vary widely across states, each state has a different baseline partisan seat distribution that would emerge under a districting process without overt gerrymandering. Hence, our work suggests the possibility that each state's unique voter geography may either open up or restrict opportunities for mapmakers wishing to implement politically motivated gerrymandering strategies. Simulation results like those presented in this article might provide a useful baseline for future empirical studies.

Third, our simulation results offer insight into the likely effect of various redistricting reforms, such as Amendments 5 and 6 in Florida, that attempt to mandate the seemingly objective districting criteria of compactness, contiguity, and respect for municipal boundaries. Our simulation method mimics the type of districting process mandated by such reforms. Our results suggest that in Florida, New York, Pennsylvania, and other urbanized states with substantial rural peripheries, such reforms are likely to lock in a powerful source of pro-Republican electoral bias that emanates from the distinct voter geography of these states. Hence, our simulations suggest that reducing the partisan bias observed in such states would require reformers to give up on what Dixon (1968) referred to as the “myth of non-partisan cartography,” focusing not on the *intentions* of mapmakers, but instead on an empirical standard that assesses whether a districting plan is likely to treat both parties equally (e.g., King *et al.*, 2006; Hirsch, 2009).

Although presidential and statewide elections have been quite close over the last decade, the Republicans have consistently controlled between 60 and 70% of the seats in Florida's state legislature and Congressional delegation. Beyond the electoral bias in the transformation of votes to seats that we illustrate in this paper, Ansolabehere *et al.* (2012) describe another, more subtle impact of the asymmetric distribution of partisans across districts. It is conceivable that because of the extent to which liberals are packed into urban districts, the Democratic platform, or at least its perception by Florida voters, is driven by its legislative incumbents — a small group of leftists from Miami-Dade and Broward counties who never face Republican challengers — which in turn makes it difficult for the party to compete in the crucial moderate districts. This hypothesis may help to explain why the Democrats consistently receive higher vote shares in presidential than in state races.

It is striking that political geography can turn a party like the Florida Democrats, with a persistent edge in statewide registration and presidential voting, into something approaching a permanent minority in legislative

racess. One might imagine that a future Supreme Court would entertain the notion that this situation reaches the rather high bar for justiciability of partisan gerrymandering laid out in *Davis v. Bandemer* (1986), where a gerrymander must be shown to have essentially locked a party out of power in a way that frustrates “the will of the majority.” The recent opinions of the pivotal justices, however, suggest that a claimant would need to demonstrate that an “egregious” gerrymander is intentional. Proving such intent in court will be difficult in states where equally egregious electoral bias can emerge purely from human geography.

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Rebuttal Report of Sean P. Trende
in *Nairne, et al. v. Ardoin, et al.*

1. I have been asked by counsel to review the Declaration of William Cooper, dated August 11, 2023, and respond to it insofar as it critiques my previous report in this matter. Mr. Cooper's response, on my read, is confined to ¶¶50-52 of my report.

2. First, Cooper doesn't respond to the meat of my report. For example, he does not dispute that I've calculated the moment of inertia statistic correctly, nor does he dispute that the moment of inertia is a legitimate approach for calculating the compactness of a population, nor does he dispute that I have identified the most compact groups of Black residents of voting age sufficient to constitute a majority in each district. In fact, he suggests that with some more work, the "unorthodox" approach outlined may be worthy of a peer-reviewed article.

3. To the extent this is a critique, it isn't clear why this approach would be called "unorthodox." Mr. Cooper doesn't dispute that this method of measuring population compactness is among the oldest metrics for compactness in the redistricting literature. That its *application* **may** be unorthodox has nothing to do with the reliability or legitimacy of the technique itself, which is peer-reviewed and well-established.

4. With those concessions in place, Mr. Cooper simply offers legal argumentation that, in my view, is best reserved for counsel to make and judges to decide. He writes "In a Section 2 redistricting lawsuit, compactness is not measured by where part of a minority population is located in a district. Rather, it is measured based on the distribution of the entire population of the district and the district shape."

5. That is pure legal analysis; the way to measure compactness is something for the lawyers to argue and judges to decide. To the extent it is even proper for me to respond, I would simply note that the language of *Gingles* prong 1 references the compactness of the *minority population*, not the compactness of the district itself (which must simply be 'reasonably configured'). Opining on the implications of this is not something I was retained to do, nor would I be particularly inclined to do so. I was simply retained to determine whether the minority populations were reasonably compact, upon which plaintiffs' experts do not appear to engage.

6. Cooper notes that he has never been involved in a case that involves the moment of inertia approach, and that his (and my) Maptitude for Redistricting software doesn't include this metric. What of this? It's true that most litigation focuses on the compactness of the district shape. My understanding is that defendants wish to focus on the compactness of the population. My understanding is that this reflects multiple references in *Gingles*, *LULAC* and other cases to the compactness of the population. That Mr. Cooper has never been involved in a case involving population compactness has nothing to do with the proper legal standard, in my view. But that's also something, in my view, for lawyers to argue and judges to decide. At best, the only thing relevant from his opinion here is that he doesn't dispute that the MOI approach is an accepted way to measure the compactness of populations.

7. In ¶52, Mr. Cooper indirectly explains why he likely hasn't been involved in cases involving population compactness. Until fairly recently, undertaking the venture that he suggests (measuring the MOI for White and Black populations in every district in the state) would have been, as he suggests, a "monumental" project. First, shapefile data was not widely available until the 2010s. Even today, state legislative shapefiles pre-2010 can be difficult to obtain. But one can easily obtain congressional district shapefiles going back to the Founding, census shapefiles going back to the 1910s, and election return data going back decades. But this is a new development. Second, computing power has increased dramatically. Running computer simulations on a statewide basis wasn't achieved until the 1990s, and didn't become commonplace until the 2000s. Chen & Rodden ran a ground-breaking, state-of-the-art simulation in the early 2010s that produced a thousand simulated maps.

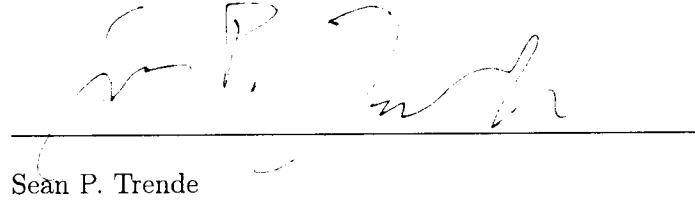
8. Today, however, my desktop computer can produce millions of simulated maps using more accurate and computationally involved techniques than those found in Chen & Rodden in a few hours. The "monumental" task Mr. Cooper describes – which would have previously been monumental indeed – would involve a few hours gathering data, a few more hours adapting the code I've written (my senate code currently takes 135 lines

to produce five separate analyses), and then leaving my computer to run overnight. In other words, the reason Mr. Cooper hasn't encountered this type of analysis is not that it is incorrect, it is that until relatively recently it would have been infeasible.

9. The closest Mr. Cooper comes to offering expert rebuttal testimony is his final paragraph, where he suggests that my failure to look at the MOI for all of the Black and White populations in the Enacted Plan renders my analysis "topological gobbledygook." Five-syllable words aside, this is not reasoning, it is *ipse dixit*. Mr Cooper offers no actual justification for why a proper analysis would need to do this. I struggle to imagine such a justification.

10. Perhaps under an equal protection theory one would want to see if Whites and Blacks of voting age are treated differently. In a Section 2 case, however, I'm unsure what such an endeavor would tell us. After all, most of the districts in Louisiana don't have minority populations sufficient to comprise a majority of the population in their districts, whether compact or not. The VRA also doesn't require compact White populations, nor, to my understanding, does Louisiana law. In short, undertaking the task Mr. Cooper describes would not be difficult. To my understanding of the issues in this case, however, it would not provide useful insight either.

I declare under penalty of perjury under the laws of the State of Ohio that the foregoing is true and correct to the best of my knowledge and belief. Executed on 21 Aug. 2023 in Delaware, Ohio.



Sean P. Trende

**UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF LOUISIANA**

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE, DR.
ALICE WASHINGTON, STEVEN HARRIS,
ALEXIS CALHOUN, BLACK VOTERS
MATTER CAPACITY BUILDING
INSTITUTE, and THE LOUISIANA STATE
CONFERENCE OF THE NAACP,

Plaintiffs,

v.

R. KYLE ARDOIN, in his capacity as Secretary of
State of Louisiana,

Defendant.

Case No. 3:22-cv-00178-SDD-SDJ

SURREBUTTAL DECLARATION OF DOUGLAS JOHNSON, PH.D.
AUGUST 21, 2023

1. I am over the age of eighteen (18) and am competent to testify to the matters set forth herein. The following is true of my own personal knowledge and I otherwise believe it to be true.

2. I am the President of National Demographics Corporation (“NDC”) and have consulted on over 400 redistricting projects across the country. A copy of my current CV was attached to my prior expert report in this case. My CV lists my history of redistricting and related expert-witness experience.

3. I have been retained by counsel for the Legislative Intervenors, the Honorable Clay Schexnayder, in his official capacity as Speaker of the Louisiana House of Representatives, and the Honorable Patrick Page Cortez, in his official capacity as President of the Louisiana Senate. My compensation is \$300 per hour for my work on this case and is not contingent upon the outcome of the case.

Scope of Work

4. Counsel asked me to respond to the August 11, 2023, rebuttal report of plaintiffs' expert, Mr. Cooper. Mr. Cooper creates and then "rebutts" inaccurate paraphrases of my previous report. In this report I will respond to Mr. Cooper's actual quotations, not some creative but distorted paraphrasing.

Mr. Cooper's Use of Race

5. In paragraph 30 of his rebuttal report, Mr. Cooper admits that he changed his illustrative plans on the basis of race:

"I also made changes to improve the performance of the districts for black preferred candidates based on the feedback counsel received from Dr. Handley."

6. Mr. Cooper provides no elaboration on how he increased the Black percentage of voters "based on the feedback counsel received from Dr. Handley." Nor does Mr. Cooper state in which districts he increased the percentage of Black voters based on the unspecified "feedback" he received from plaintiffs' counsel, but at least in this statement he admits race was the predominant factor in the changes he made. This confirms the primary opinion of my earlier report.

Mr. Cooper's Lack of Use of, or Lack of Disclosure of, CVAP Data

7. In paragraph 19 of his rebuttal report, Mr. Cooper makes this statement:

"Dr. Johnson claims that I did not import CVAP data into Maptitude. This is not true. Disaggregated block-level CVAP data is available in Maptitude running on my desktop computer. . . . I only examined CVAP by district at the summary level as I drew the plans."

8. The CVAP data are not in the Census Block file that Mr. Cooper disclosed as the Census Block file he used while drawing his maps.

9. The assumption underlying the statement in my report was that Mr. Cooper did, in fact, turn over the files he said he used when drawing the maps. He now states his mapping files included data that was not in the file he turned over. This apparent conflict means either that the

statement in his rebuttal report is incorrect, or he has failed to turn over the data files he used while drawing his maps. Only Mr. Cooper can answer which is the case.

10. Mr. Cooper also asserted that he provided block-level CVAP data from the Redistricting Data Hub in a file that he turned over. This is an irrelevant statement. Maptitude for Redistricting can only tabulate data “at the summary level,” as Mr. Cooper asserts he did (in paragraph 19), if that data are available in the Census Block file Maptitude is using for mapping. No block-level CVAP data are in the mapping Block file that Mr. Cooper provided.

Mr. Cooper’s Inaccurate and Misleading List of “New” Majority-Black Districts

11. In paragraph 19 Mr. Cooper creates a fake paraphrase of my report:

“Dr. Johnson makes additional false claims that I overcounted the number of additional majority-Black districts in the Illustrative Plan.”

12. I find it telling that he did not actually quote my report. Here is my actual statement from my opening report:

78. Plaintiffs’ expert claims the 2023 Illustrative Plans shows the Legislature could have drawn three more majority-Black Senate Districts (Mr. Cooper’s June 30, 2023, report at paragraph 73, claiming new majority-AP Black VAP SDs 17, 19 and 38) and six more majority-Black House Districts (paragraph 103, claiming new majority-AP Black VAP HDs 1, 23, 38, 60, 65 and 68).

79. Unfortunately, plaintiffs’ expert’s data are incorrect. As his own June 30, 2023, report’s Exhibit N-1 shows, HD23 is already majority-Black in the Enacted Map:

[table omitted from quotation]

80. And plaintiffs’ expert also fails to mention that his 2023 House Illustrative Map eliminates a majority-Black VAP district: HD62, as shown in his June 30, 2023, report’s own Exhibit I-1 and N-1

[table omitted from quotation]

81. In summary, plaintiffs’ expert’s claimed list of “six additional majority-Black districts” incorrectly includes HD23 as an “additional” district, when HD23 was already majority-AP Black VAP in the enacted map. And plaintiffs’ expert’s

claimed list also fails to acknowledge that the 2023 House Illustrative Map also eliminates majority-AP Black VAP HD62.”

13. Mr. Cooper’s “rebuttal” ignores the fact that each of my statements is accurate:

- a. HD23 is not a new majority-AP Black VAP district. It is already majority-AP Black VAP in the Enacted map; and
- b. His list of majority-AP Black VAP districts fails to acknowledge that he redrew Enacted HD62 so that it is no longer majority-AP Black VAP.

14. Mr. Cooper’s paragraph 35 is accurate when it says new majority-Black districts “can easily be determined by doing a manual count comparing the district-level percentages.” But this just adds to the mystery of why the list in his earlier report was wrong, as I accurately noted in my report.

Illustrative Map New Majority-Black Districts Are Not More Compact

15. In paragraph 13 of his rebuttal report, Mr. Cooper again gets creative in his paraphrasing:

“I have prepared additional exhibits to counter Dr. Johnson’s claims in ¶¶ 15-29 that the majority Black districts in the Illustrative Plan are not compact.”

16. However, Mr. Cooper’s report in this section reacts to a straw-man argument. My argument, as stated in paragraph 15 of my opening report, was that “the twenty-one districts changed between the 2022 House Illustrative Map and the 2023 House Illustrative Map made the 2023 map even less compact than the 2022 House Illustrative Map.” That statement, and the analysis that followed, compared Mr. Cooper’s 2022 House Illustrative Map to his 2023 House Illustrative Map. Since the changes between the 2022 Illustrative Map and the 2023 Illustrative Map did not improve compactness, clearly improving compactness was not a significant consideration in that 2023 redraw. Yet again, the evidence is clear that race was the predominate

factor when Mr. Cooper was drawing the districts. Since my point was that the 2023 districts are not more compact than the 2022 districts, Mr. Cooper's rebuttal that the Illustrative Map districts are more compact than the Enacted Map districts is irrelevant.

17. In Mr. Cooper's paragraphs 14, 15, 16 and 17, he dwells entirely on plan-wide compactness scores of his 2023 Illustrative Map compared to the Enacted Map.

18. Mr. Cooper claims to rebut my statements about "the majority Black districts in the Illustrative Plan" but never mentions the majority Black districts.

19. Even more oddly, the referenced paragraphs of my report also did not mention "the majority Black districts." Mr. Cooper seems confused about what he is rebutting in this portion of his report.

20. In this section of his "rebuttal" Mr. Cooper simply claims the raw numbers presented in the Maptitude reports declare his maps are "more compact" than the Enacted Maps. He does not state, and thus I cannot respond or reply to, how he came to that conclusion. There are many ways to look at compactness data. One common, but mistaken, approach is to look at average scores. This is a poor approach. Consider two maps: one map where every district is reasonably compact, and another map where half the districts are highly compact and the other half are extremely non-compact. The average score for both maps would be the same, despite the significant compactness problems in the second map. A second way to analyze compactness data is to select a threshold below which a district is considered non-compact and then count how many districts in each map are non-compact. (And to repeat that for each compactness measure in use). These are just two of the ways compactness data can be evaluated – there are many others. Mr. Cooper does not state how he is reviewing the data. He simply makes a questionable, unsupported, and overly broad blanket claim that his map is "more compact."

21. What is clear, however, is that Mr. Cooper’s “Rebuttal” report does not raise any concerns with nor rebut the compactness analysis contained in my report.

22. Despite Mr. Cooper’s statement that his compactness rebuttal also addresses Paragraphs 22 through 26 of my report, those paragraphs of my report describe the way Mapitude for Redistricting software works, not compactness.

23. Similarly, Paragraphs 27 through 29 of my report address how Mr. Cooper’s own report states that the number of majority-Black House and Senate districts has increased faster than the rate of increase in the Black population according to Mr. Cooper’s own data. Despite Mr. Cooper’s reference to them, those paragraphs also are not part of my report’s discussion of compactness.

Being “Aware” of Data Does Not Equal Using that Data

24. In paragraph 23, Mr. Cooper writes:

“Contrary to Dr. Johnson’s claim in ¶¶ 36-37, I was aware of cultural regions, MSAs, and Planning Districts as I developed the Illustrative Plans. Of course, there is no way to avoid multiple regional splits and comply with one-person, one-vote and the Voting Rights Act.”

25. Mr. Cooper frames his entire discussion of cultural regions, MSAs and Planning Districts as factors other than race that he claims to consider when drawing his illustrative plans. As a professional demographer and someone who has created hundreds of redistricting plans in my career, I find Mr. Cooper’s statement that “I was aware” noteworthy for its omission—that is, that he made no claim to have actually drawn any lines based on those regions. One can be “aware” that the Mississippi is a river, or that Texas is west of Louisiana, but being “aware” of something provides no evidence that one factored something into the drawing of maps.

26. I agree with Mr. Cooper that one or two crossings of a regional border may be necessary to “comply with one-person, one-vote” requirements. But the Illustrative Maps cross

numerous regional borders five, six, seven or even eight times. One-person, one-vote requirements can require that one district cross a regional boundary on one side and that another district cross the same regional boundary on the other side, as one or two crossings may be necessary to ensure that districts on each side of the region in question can share the region's population to meet equal population requirements.

27. Equal population requirements do not require more than two boundary crossings. Yet, Mr. Cooper's 2023 Illustrative Senate and House maps cross many regional boundaries five, six, seven and even eight times. Those crossings cannot be explained by the need to meet population requirements.

28. It may be true that Mr. Cooper was "aware" of those regional boundaries. But the five, six, seven and eight crossings of those boundaries prove that race, not the regional boundaries, was his predominate consideration when drawing his district lines.¹

Pure Luck Is Unlikely to Result in Eight House Districts between 50.2 and 50.9% AP Black VAP

29. In paragraph 29 of his rebuttal report, Mr. Cooper states:

"I did not shade or color-code census blocks by race percentages, nor did I know the exact racial percentage of any VTD while I was drawing the map."

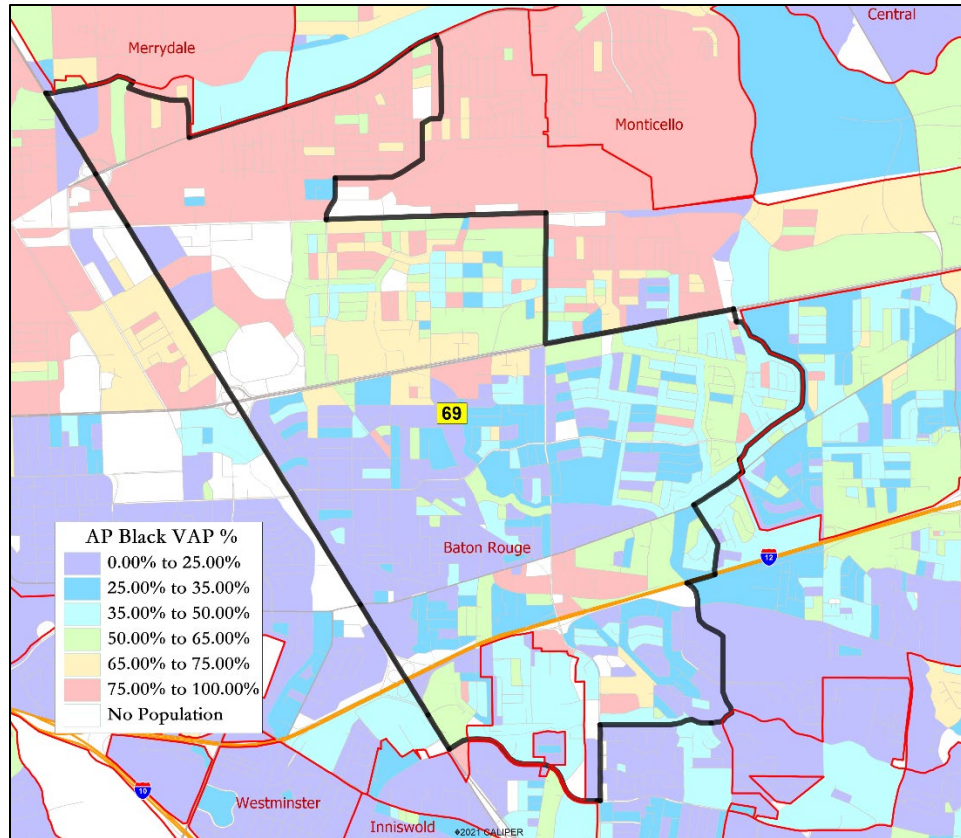
30. Yet the precision of his 2023 Illustrative House map, where eight House districts are between 50.2% and 50.9% AP Black VAP, the unusual shape of some of those districts, and the way those districts ignore city, region, and major roads as their borders, prove one of three scenarios had to be true:

¹ The 2023 Illustrative Senate map crosses the Houma-Thibodaux MSA border five times and the New Orleans – Metairie MSA border five times; the Baton Rouge MSA border six times; the Lafayette MSA border six times; the Delta "Key Multi-Parish Cultural Region" border six times; and the Acadiana "Key Multi-Parish Cultural Region" border ten times. The 2023 Illustrative House map crosses the Lafayette MSA border seven times; the Baton Rouge MSA border eight times, and the Acadiana "Key Multi-Parish Cultural Region" eight times.

- a. Mr. Cooper had AP Black VAP data on his screen;
- b. Mr. Cooper has so much experience drawing maps in Louisiana that he knows the AP Black VAP percentage of each Vote Tabulation District without needing to put the shading on his screen; or
- c. Mr. Cooper did a trial-and-error approach of adding in ‘this or that’ Vote Tabulation District until the districting in question reached his desired barely-over-50% target in each of those districts.

31. Any of these three scenarios prove Mr. Cooper used race as the predominant factor when drawing the Illustrative Maps.

32. 2023 Illustrative House Map District 69 provides an illustration of what Mr. Cooper asks the Court to believe: that the district boundary shown below arrived at precisely 50.2 percent AP Black VAP without Mr. Cooper looking at – or using pre-existing detailed knowledge of – racial data. Note how the lines in the north go almost, but not quite, to the Baton Rouge – Merrydale border; how the lines zig and zag through northeast Baton Rouge (near Monticello) seemingly randomly; how the border goes all the way to the City’s eastern boundary along the Lively Bayou, then veers back in through Baton Rouge neighborhoods just north of Interstate 12, and extends outside Baton Rouge to include the unincorporated Cottages at Southfork / Regency Club Apartments area rather than staying in Baton Rouge and including the section of the City below I-12 along Harrells Ferry Road:



33. Each of these decisions contributed to the creation of a district that is precisely 50.2% AP Black VAP. In my experience, it is extremely unlikely that one district would end up at such a barely-majority figure purely by luck if drawn by a mapper who “did not shade or color-code census blocks by race percentages, nor did I know the exact racial percentage of any VTD while I was drawing the map.”

34. HD69 is not unique. In the Illustrative House Map a total of eight districts ended up – we are apparently supposed to believe ‘by luck’ – at 50.2 to 50.9 percent AP Black VAP.

35. Mr. Cooper presents two conflicting claims in paragraphs 29 and 30 of his rebuttal report:

“I did not shade or color-code census blocks by race percentages, nor did I know the exact racial percentage of any VTD while I was drawing the map”

AND

“I made changes to improve the performance of the districts for black preferred candidates based on the feedback counsel received from Dr. Handley.”

36. These eight very precisely-drawn districts and the lack of any explanation from Mr. Cooper regarding how he arrived at these lines (other than that they created majority-AP Black VAP districts) can only lead to the conclusion that his use of race as a predominate factor when making “changes to improve the performance of the district for black preferred candidates” is the accurate statement.

Parish Splits

37. In Paragraph 37, Mr. Cooper lauds that his map contains fewer Parish Splits than the Enacted Map. But in his Paragraph 26 Mr. Cooper acknowledges that dividing a Parish can “make perfect sense.”

38. I agree with Mr. Cooper’s opinion in Paragraph 26 of his Rebuttal report that a Parish split is not automatically negative, which leads to the logical conclusion that raw counts of the number of split Parishes is not a conclusive factor in one map being preferable to another.

39. I also note that Mr. Cooper seems unaware that his statement that it “makes perfect sense” for both the Enacted and Illustrative House District 54 to cross the Parish, Planning District, MSA and “Key Cultural Region” border undermines the eleven pages he spent in his original report trying to assert these were important boundaries.

“Minor” Changes

40. In Paragraph 7, Mr. Cooper repeats his “minor” characterization of the differences between the original Illustrative Maps and the 2023 Illustrative Maps:

“The changes I made between the 2022 Illustrative Plan and the now-current Illustrative Plan are minor.”

41. As I demonstrated in my prior report, and as Mr. Cooper acknowledged as accurate in paragraph 12 of his Rebuttal report, the 2023 Illustrative House Map moves 83,489 people into a different district assignment than in the original Illustrative House Map.

42. As I demonstrated in my prior report, and as Mr. Cooper acknowledged as accurate in paragraph 12 of his Rebuttal report, the 2023 Illustrative Senate Map moves 35,276 people into a different district assignment than in the original Illustrative Senate Map.

43. I disagree that changing over 118,000 district assignments is “Minor.”

44. In paragraph 28 of his report, Mr. Cooper makes a similar (and also inaccurate) claim that the differences between the House and Senate maps he incorrectly analyzed as the “Enacted” maps and the actual Enacted maps are “substantially similar.”

45. Since Mr. Cooper has yet to provide the geographic files for the map he incorrectly analyzed as the “Enacted” maps, I cannot calculate the precise count of how many people he had in the wrong districts. From a visual review of the images in his reports and an eyeball comparison of those images with the population data in Maptitude, there are at least tens of thousands of people moved between the different versions of the maps. My previous report maps the substantial differences between the different versions. In my opinion, maps that reassign tens of thousands of people are rarely “substantially similar.”

46. The attached exhibits 1 (for the Senate) and 2 (for the House) report the total population, population deviation, percentage population deviation and AP Black VAP percentage for each House and Senate district in each plan. A comparison of these exhibits, in addition to the maps in my earlier reports, reinforce the significant, or non-“minor,” racial and other differences between the enacted plans and Mr. Cooper’s various rounds of illustrative maps.

All opinions in this report are subject to amendment in the event additional relevant information is received.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 21st day of August, 2023.

A handwritten signature in black ink, appearing to read "Douglas Johnson", written in a cursive style.

Douglas Johnson, Ph.D.

Exhibit 1

Dr. Douglas Johnson

Enacted Senate Map

Population Deviation

District	Population	Deviation	% Deviation	% 18+_AP_Blkc
37	113,500	-5,930	-5.0%	24.9%
34	113,538	-5,892	-4.9%	63.7%
30	113,737	-5,693	-4.8%	12.2%
17	114,040	-5,390	-4.5%	30.1%
32	114,168	-5,262	-4.4%	18.1%
12	114,171	-5,259	-4.4%	22.3%
28	114,358	-5,072	-4.2%	22.7%
11	114,481	-4,949	-4.1%	8.4%
13	114,815	-4,615	-3.9%	7.7%
1	115,622	-3,808	-3.2%	21.4%
2	115,780	-3,650	-3.1%	57.7%
15	115,848	-3,582	-3.0%	73.9%
33	116,896	-2,534	-2.1%	23.0%
27	117,231	-2,199	-1.8%	28.8%
6	117,595	-1,835	-1.5%	22.9%
35	117,819	-1,611	-1.3%	15.5%
4	117,821	-1,609	-1.3%	57.2%
21	118,105	-1,325	-1.1%	26.5%
18	118,250	-1,180	-1.0%	15.3%
16	119,031	-399	-0.3%	19.6%
3	119,519	89	0.1%	57.3%
29	119,834	404	0.3%	56.6%
14	120,750	1,320	1.1%	58.0%
31	120,902	1,472	1.2%	23.4%
8	120,920	1,490	1.2%	25.8%
25	122,998	3,568	3.0%	20.8%
10	123,168	3,738	3.1%	12.2%
19	123,416	3,986	3.3%	28.7%
20	123,445	4,015	3.4%	12.7%
5	123,995	4,565	3.8%	50.2%
26	124,178	4,748	4.0%	16.0%
38	124,283	4,853	4.1%	31.0%
7	124,487	5,057	4.2%	59.5%
36	124,512	5,082	4.3%	25.2%
9	124,537	5,107	4.3%	11.9%
24	124,799	5,369	4.5%	53.1%
39	124,908	5,478	4.6%	63.7%
23	125,014	5,584	4.7%	12.8%
22	125,286	5,856	4.9%	26.1%
	120,116	686	0.57%	Ave for Black-Majority
	119,160	-270	-0.23%	Ave for Not-Black-Majority

Population Deviation

District	Population	Deviation	% Deviation	% 18+_AP_Black
5	113,653	-5,777	-4.8%	51.8%
18	113,880	-5,550	-4.6%	14.7%
4	113,887	-5,543	-4.6%	58.1%
12	114,171	-5,259	-4.4%	22.3%
3	114,295	-5,135	-4.3%	51.3%
29	114,304	-5,126	-4.3%	50.9%
35	114,324	-5,106	-4.3%	20.1%
37	114,442	-4,988	-4.2%	22.0%
11	114,481	-4,949	-4.1%	8.4%
38	114,693	-4,737	-4.0%	53.2%
15	114,959	-4,471	-3.7%	54.5%
34	115,559	-3,871	-3.2%	63.0%
36	116,808	-2,622	-2.2%	15.5%
39	116,965	-2,465	-2.1%	52.5%
1	117,408	-2,022	-1.7%	21.9%
6	118,131	-1,299	-1.1%	26.5%
7	118,604	-826	-0.7%	52.3%
16	119,031	-399	-0.3%	19.6%
17	119,166	-264	-0.2%	52.5%
8	119,463	33	0.0%	18.9%
31	119,801	371	0.3%	25.9%
19	120,000	570	0.5%	51.0%
14	120,105	675	0.6%	58.1%
24	120,600	1,170	1.0%	52.0%
13	120,616	1,186	1.0%	11.2%
22	121,992	2,562	2.1%	28.2%
20	122,493	3,063	2.6%	13.4%
28	123,409	3,979	3.3%	20.3%
27	123,854	4,424	3.7%	35.8%
26	123,880	4,450	3.7%	15.2%
2	124,072	4,642	3.9%	51.7%
30	124,341	4,911	4.1%	13.7%
32	124,599	5,169	4.3%	18.4%
23	124,628	5,198	4.4%	13.9%
33	124,802	5,372	4.5%	26.6%
21	124,879	5,449	4.6%	25.5%
25	125,021	5,591	4.7%	13.6%
10	125,111	5,681	4.8%	11.4%
9	125,330	5,900	4.9%	12.2%
	117,204	-2,226	-1.86%	Ave for Black-Majority
	120,676	1,246	1.04%	Ave for Not-Black-Majority

Population Deviation

District	Population	Deviation	% Deviation	% 18+_AP_Black
5	113,653	-5,777	-4.8%	51.8%
18	113,880	-5,550	-4.6%	14.7%
4	113,887	-5,543	-4.6%	58.1%
15	114,100	-5,330	-4.5%	54.8%
12	114,171	-5,259	-4.4%	22.3%
3	114,295	-5,135	-4.3%	51.3%
29	114,304	-5,126	-4.3%	50.9%
35	114,324	-5,106	-4.3%	20.1%
37	114,442	-4,988	-4.2%	22.0%
11	114,481	-4,949	-4.1%	8.4%
38	114,693	-4,737	-4.0%	53.2%
14	114,973	-4,457	-3.7%	55.9%
34	115,559	-3,871	-3.2%	63.0%
7	115,744	-3,686	-3.1%	52.7%
36	116,808	-2,622	-2.2%	15.5%
39	116,965	-2,465	-2.1%	52.5%
1	117,408	-2,022	-1.7%	21.9%
20	117,817	-1,613	-1.4%	12.8%
6	118,131	-1,299	-1.1%	26.5%
16	119,031	-399	-0.3%	19.6%
31	119,801	371	0.3%	25.9%
24	120,600	1,170	1.0%	52.0%
13	120,616	1,186	1.0%	11.2%
22	121,992	2,562	2.1%	28.2%
19	122,620	3,190	2.7%	50.1%
28	123,409	3,979	3.3%	20.3%
27	123,854	4,424	3.7%	35.8%
26	123,880	4,450	3.7%	15.2%
2	124,072	4,642	3.9%	51.7%
30	124,341	4,911	4.1%	13.7%
8	124,379	4,949	4.1%	19.8%
32	124,599	5,169	4.3%	18.4%
23	124,628	5,198	4.4%	13.9%
33	124,802	5,372	4.5%	26.6%
21	124,879	5,449	4.6%	25.5%
25	125,021	5,591	4.7%	13.6%
10	125,111	5,681	4.8%	11.4%
17	125,157	5,727	4.8%	54.5%
9	125,330	5,900	4.9%	12.2%
	117,187	-2,243	-1.88%	Ave for Black-Majority
	120,685	1,255	1.05%	Ave for Not-Black-Majority

Exhibit 2

Dr. Douglas Johnson

Enacted House Map

8/20/2023

Population Deviations

District	Population	Deviation	% Deviation	% 18+_AP_Black
20	42,204	-2,156	-4.86%	15.5%
39	42,262	-2,098	-4.73%	28.4%
38	42,309	-2,051	-4.62%	23.1%
30	42,313	-2,047	-4.61%	20.4%
16	42,328	-2,032	-4.58%	62.5%
32	42,409	-1,951	-4.40%	14.4%
11	42,458	-1,902	-4.29%	56.4%
44	42,506	-1,854	-4.18%	59.5%
91	42,508	-1,852	-4.17%	40.7%
84	42,520	-1,840	-4.15%	19.9%
88	42,542	-1,818	-4.10%	13.4%
43	42,630	-1,730	-3.90%	14.5%
24	42,692	-1,668	-3.76%	10.2%
57	42,697	-1,663	-3.75%	57.9%
23	42,708	-1,652	-3.72%	50.9%
17	42,807	-1,553	-3.50%	63.3%
72	42,817	-1,543	-3.48%	52.7%
54	42,849	-1,511	-3.41%	3.1%
28	42,851	-1,509	-3.40%	26.8%
62	42,969	-1,391	-3.14%	55.1%
71	43,001	-1,359	-3.06%	11.3%
25	43,136	-1,224	-2.76%	23.5%
53	43,160	-1,200	-2.71%	20.2%
52	43,163	-1,197	-2.70%	14.7%
19	43,183	-1,177	-2.65%	27.5%
50	43,190	-1,170	-2.64%	32.1%
76	43,228	-1,132	-2.55%	26.1%
22	43,238	-1,122	-2.53%	24.7%
7	43,279	-1,081	-2.44%	29.4%
77	43,291	-1,069	-2.41%	8.3%
95	43,337	-1,023	-2.31%	13.6%
105	43,366	-994	-2.24%	35.9%
45	43,372	-988	-2.23%	14.0%
9	43,401	-959	-2.16%	21.1%
98	43,431	-929	-2.09%	17.8%
90	43,451	-909	-2.05%	21.0%
67	43,566	-794	-1.79%	51.9%
46	43,596	-764	-1.72%	21.2%
81	43,632	-728	-1.64%	11.8%
66	43,703	-657	-1.48%	18.5%
103	43,764	-596	-1.34%	25.0%
15	43,934	-426	-0.96%	6.2%
83	43,956	-404	-0.91%	54.6%

Dr. Douglas Johnson

Enacted House Map
Population Deviations

61	44,049	-311	-0.70%	75.3%
10	44,137	-223	-0.50%	32.9%
6	44,174	-186	-0.42%	16.5%
74	44,185	-175	-0.39%	6.8%
13	44,187	-173	-0.39%	27.0%
65	44,189	-171	-0.39%	21.9%
93	44,224	-136	-0.31%	56.6%
27	44,225	-135	-0.30%	11.0%
33	44,243	-117	-0.26%	7.7%
14	44,279	-81	-0.18%	22.2%
85	44,303	-57	-0.13%	35.5%
21	44,329	-31	-0.07%	55.4%
100	44,360	0	0.00%	80.8%
29	44,544	184	0.41%	73.6%
78	44,584	224	0.51%	9.3%
68	44,607	247	0.56%	20.2%
26	44,636	276	0.62%	64.3%
63	44,638	278	0.63%	69.7%
41	44,744	384	0.87%	20.1%
60	44,864	504	1.14%	37.7%
1	44,941	581	1.31%	23.1%
36	45,062	702	1.58%	15.0%
55	45,124	764	1.72%	24.3%
92	45,176	816	1.84%	30.2%
58	45,194	834	1.88%	56.8%
104	45,197	837	1.89%	14.0%
89	45,218	858	1.93%	3.7%
102	45,264	904	2.04%	65.6%
40	45,296	936	2.11%	54.6%
8	45,325	965	2.18%	19.9%
48	45,339	979	2.21%	17.9%
101	45,346	986	2.22%	60.2%
5	45,375	1,015	2.29%	19.4%
70	45,398	1,038	2.34%	21.2%
75	45,463	1,103	2.49%	27.8%
87	45,538	1,178	2.66%	59.1%
79	45,579	1,219	2.75%	11.6%
64	45,619	1,259	2.84%	6.6%
2	45,642	1,282	2.89%	67.4%
42	45,662	1,302	2.94%	18.7%
49	45,670	1,310	2.95%	10.1%
37	45,672	1,312	2.96%	17.5%
94	45,685	1,325	2.99%	9.4%
59	45,699	1,339	3.02%	18.7%

Dr. Douglas Johnson

Enacted House Map
Population Deviations

96	45,706	1,346	3.03%	55.1%
97	45,713	1,353	3.05%	72.3%
86	45,736	1,376	3.10%	23.9%
34	45,879	1,519	3.42%	72.6%
12	45,889	1,529	3.45%	19.0%
99	45,922	1,562	3.52%	78.1%
35	45,975	1,615	3.64%	12.4%
3	46,122	1,762	3.97%	73.9%
82	46,202	1,842	4.15%	11.6%
80	46,249	1,889	4.26%	14.9%
51	46,319	1,959	4.42%	21.6%
56	46,361	2,001	4.51%	20.2%
4	46,405	2,045	4.61%	72.1%
47	46,480	2,120	4.78%	11.3%
18	46,494	2,134	4.81%	30.9%
73	46,503	2,143	4.83%	15.0%
31	46,510	2,150	4.85%	17.0%
69	46,550	2,190	4.94%	23.7%
	44,344	-16	-0.04%	Ave for Not-Black-Majority
	44,401	41	0.09%	Ave for Black-Majority

Population Deviations

District	Population	Deviation	% Deviation	% 18+_AP_Blk
19	42,229	-2,131	-4.80%	13.2%
39	42,262	-2,098	-4.73%	28.4%
16	42,314	-2,046	-4.61%	59.8%
14	42,319	-2,041	-4.60%	37.7%
35	42,335	-2,025	-4.56%	8.7%
34	42,400	-1,960	-4.42%	50.0%
51	42,400	-1,960	-4.42%	22.2%
21	42,463	-1,897	-4.28%	54.3%
28	42,508	-1,852	-4.17%	24.5%
91	42,508	-1,852	-4.17%	40.7%
84	42,520	-1,840	-4.15%	19.9%
43	42,630	-1,730	-3.90%	14.5%
38	42,695	-1,665	-3.75%	50.8%
57	42,703	-1,657	-3.74%	53.4%
5	42,708	-1,652	-3.72%	50.9%
22	42,723	-1,637	-3.69%	18.7%
2	42,776	-1,584	-3.57%	67.3%
69	42,827	-1,533	-3.46%	50.2%
54	42,849	-1,511	-3.41%	3.1%
56	42,898	-1,462	-3.30%	20.4%
46	42,944	-1,416	-3.19%	17.9%
30	42,952	-1,408	-3.17%	20.6%
17	43,007	-1,353	-3.05%	54.5%
50	43,010	-1,350	-3.04%	20.4%
7	43,102	-1,258	-2.84%	18.0%
53	43,160	-1,200	-2.71%	20.2%
52	43,163	-1,197	-2.70%	14.7%
15	43,211	-1,149	-2.59%	8.3%
76	43,228	-1,132	-2.55%	26.1%
77	43,291	-1,069	-2.41%	8.3%
27	43,325	-1,035	-2.33%	9.1%
105	43,366	-994	-2.24%	35.9%
45	43,372	-988	-2.23%	14.0%
9	43,401	-959	-2.16%	21.1%
98	43,431	-929	-2.09%	17.8%
90	43,451	-909	-2.05%	21.0%
47	43,617	-743	-1.67%	9.0%
88	43,658	-702	-1.58%	11.8%
41	43,722	-638	-1.44%	26.8%
103	43,764	-596	-1.34%	25.0%
11	43,867	-493	-1.11%	55.5%
60	43,920	-440	-0.99%	52.8%
61	43,938	-422	-0.95%	50.2%

Population Deviations

83	43,956	-404	-0.91%	54.6%
20	43,964	-396	-0.89%	35.8%
36	44,017	-343	-0.77%	11.9%
101	44,038	-322	-0.73%	50.8%
10	44,137	-223	-0.50%	32.9%
73	44,181	-179	-0.40%	21.3%
74	44,185	-175	-0.39%	6.8%
66	44,223	-137	-0.31%	18.8%
93	44,224	-136	-0.31%	56.6%
85	44,303	-57	-0.13%	35.5%
100	44,360	0	0.00%	80.8%
1	44,473	113	0.25%	55.3%
78	44,584	224	0.51%	9.3%
72	44,738	378	0.85%	50.6%
25	44,786	426	0.96%	16.2%
13	44,864	504	1.14%	24.2%
65	44,864	504	1.14%	56.0%
29	44,991	631	1.42%	57.8%
3	45,006	646	1.46%	58.8%
12	45,007	647	1.46%	18.9%
55	45,124	764	1.72%	24.3%
40	45,170	810	1.83%	54.9%
92	45,176	816	1.84%	30.2%
23	45,186	826	1.86%	50.6%
104	45,197	837	1.89%	14.0%
49	45,204	844	1.90%	11.6%
89	45,218	858	1.93%	3.7%
102	45,264	904	2.04%	65.6%
96	45,266	906	2.04%	55.5%
8	45,325	965	2.18%	19.9%
33	45,338	978	2.20%	7.7%
63	45,354	994	2.24%	57.2%
67	45,379	1,019	2.30%	51.6%
48	45,413	1,053	2.37%	18.2%
58	45,435	1,075	2.42%	51.3%
37	45,438	1,078	2.43%	18.7%
75	45,463	1,103	2.49%	27.8%
86	45,487	1,127	2.54%	20.0%
87	45,538	1,178	2.66%	59.1%
62	45,579	1,219	2.75%	26.8%
79	45,579	1,219	2.75%	11.6%
94	45,685	1,325	2.99%	9.4%
59	45,699	1,339	3.02%	18.7%
97	45,713	1,353	3.05%	72.3%

Population Deviations

71	45,787	1,427	3.22%	14.5%
44	45,853	1,493	3.37%	60.9%
68	45,870	1,510	3.40%	54.2%
99	45,922	1,562	3.52%	78.1%
42	45,959	1,599	3.60%	16.1%
70	45,990	1,630	3.67%	16.8%
64	45,997	1,637	3.69%	9.2%
24	46,036	1,676	3.78%	11.8%
95	46,063	1,703	3.84%	8.8%
82	46,202	1,842	4.15%	11.6%
18	46,226	1,866	4.21%	25.7%
4	46,232	1,872	4.22%	57.5%
80	46,249	1,889	4.26%	14.9%
6	46,262	1,902	4.29%	16.0%
32	46,476	2,116	4.77%	13.4%
81	46,481	2,121	4.78%	8.2%
31	46,510	2,150	4.85%	17.0%
26	46,544	2,184	4.92%	63.4%
	44,325	-35	-0.08%	Ave for Not-Black-Majority
	44,428	68	0.15%	Ave for Black-Majority

Population Deviations

District	Population	Deviation	% Deviation	% 18+_AP_Blk
19	42,229	-2,131	-4.80%	13.2%
39	42,262	-2,098	-4.73%	28.4%
48	42,289	-2,071	-4.67%	18.2%
16	42,314	-2,046	-4.61%	59.8%
14	42,319	-2,041	-4.60%	37.7%
35	42,335	-2,025	-4.56%	8.7%
34	42,400	-1,960	-4.42%	50.0%
21	42,463	-1,897	-4.28%	54.3%
28	42,508	-1,852	-4.17%	24.5%
91	42,508	-1,852	-4.17%	40.7%
58	42,518	-1,842	-4.15%	50.5%
84	42,520	-1,840	-4.15%	19.9%
29	42,617	-1,743	-3.93%	58.6%
43	42,630	-1,730	-3.90%	14.5%
38	42,695	-1,665	-3.75%	50.8%
5	42,708	-1,652	-3.72%	50.9%
22	42,723	-1,637	-3.69%	18.7%
73	42,733	-1,627	-3.67%	22.5%
2	42,776	-1,584	-3.57%	67.3%
54	42,849	-1,511	-3.41%	3.1%
46	42,944	-1,416	-3.19%	17.9%
30	42,952	-1,408	-3.17%	20.6%
17	43,007	-1,353	-3.05%	54.5%
7	43,102	-1,258	-2.84%	18.0%
53	43,160	-1,200	-2.71%	20.2%
52	43,163	-1,197	-2.70%	14.7%
50	43,190	-1,170	-2.64%	32.1%
15	43,211	-1,149	-2.59%	8.3%
76	43,228	-1,132	-2.55%	26.1%
49	43,234	-1,126	-2.54%	10.3%
77	43,291	-1,069	-2.41%	8.3%
27	43,325	-1,035	-2.33%	9.1%
105	43,366	-994	-2.24%	35.9%
45	43,372	-988	-2.23%	14.0%
9	43,401	-959	-2.16%	21.1%
98	43,431	-929	-2.09%	17.8%
90	43,451	-909	-2.05%	21.0%
57	43,462	-898	-2.02%	57.3%
47	43,617	-743	-1.67%	9.0%
88	43,658	-702	-1.58%	11.8%
41	43,722	-638	-1.44%	26.8%
103	43,764	-596	-1.34%	25.0%
63	43,863	-497	-1.12%	57.4%

Dr. Douglas Johnson

2022 Illustrative Map
Population Deviations

11	43,867	-493	-1.11%	55.5%
61	43,938	-422	-0.95%	50.2%
83	43,956	-404	-0.91%	54.6%
20	43,964	-396	-0.89%	35.8%
36	44,017	-343	-0.77%	11.9%
10	44,137	-223	-0.50%	32.9%
69	44,159	-201	-0.45%	51.8%
74	44,185	-175	-0.39%	6.8%
66	44,223	-137	-0.31%	18.8%
93	44,224	-136	-0.31%	56.6%
96	44,255	-105	-0.24%	51.7%
85	44,303	-57	-0.13%	35.5%
100	44,360	0	0.00%	80.8%
1	44,473	113	0.25%	55.3%
78	44,584	224	0.51%	9.3%
25	44,786	426	0.96%	16.2%
13	44,864	504	1.14%	24.2%
3	45,006	646	1.46%	58.8%
12	45,007	647	1.46%	18.9%
55	45,124	764	1.72%	24.3%
40	45,170	810	1.83%	54.9%
92	45,176	816	1.84%	30.2%
23	45,186	826	1.86%	50.6%
60	45,195	835	1.88%	50.5%
104	45,197	837	1.89%	14.0%
89	45,218	858	1.93%	3.7%
102	45,264	904	2.04%	65.6%
8	45,325	965	2.18%	19.9%
33	45,338	978	2.20%	7.7%
67	45,379	1,019	2.30%	51.6%
37	45,438	1,078	2.43%	18.7%
75	45,463	1,103	2.49%	27.8%
87	45,538	1,178	2.66%	59.1%
79	45,579	1,219	2.75%	11.6%
62	45,595	1,235	2.78%	27.6%
56	45,596	1,236	2.79%	20.2%
86	45,632	1,272	2.87%	16.9%
101	45,672	1,312	2.96%	51.6%
94	45,685	1,325	2.99%	9.4%
59	45,699	1,339	3.02%	18.7%
97	45,713	1,353	3.05%	72.3%
65	45,747	1,387	3.13%	52.3%
71	45,787	1,427	3.22%	14.5%
44	45,853	1,493	3.37%	60.9%

Dr. Douglas Johnson

2022 Illustrative Map
Population Deviations

68	45,870	1,510	3.40%	54.2%
99	45,922	1,562	3.52%	78.1%
42	45,959	1,599	3.60%	16.1%
70	45,990	1,630	3.67%	16.8%
64	45,997	1,637	3.69%	9.2%
24	46,036	1,676	3.78%	11.8%
72	46,041	1,681	3.79%	51.7%
95	46,063	1,703	3.84%	8.8%
82	46,202	1,842	4.15%	11.6%
4	46,232	1,872	4.22%	57.5%
80	46,249	1,889	4.26%	14.9%
6	46,262	1,902	4.29%	16.0%
51	46,319	1,959	4.42%	21.6%
18	46,417	2,057	4.64%	20.4%
32	46,476	2,116	4.77%	13.4%
81	46,481	2,121	4.78%	8.2%
31	46,510	2,150	4.85%	17.0%
26	46,544	2,184	4.92%	63.4%
	44,334	-26	-0.06%	Ave for Not-Black-Majority
	44,411	51	0.12%	Ave for Black-Majority

**UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF LOUISIANA**

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE, DR.
ALICE WASHINGTON, STEVEN HARRIS,
ALEXIS CALHOUN, BLACK VOTERS
MATTER CAPACITY BUILDING
INSTITUTE, and THE LOUISIANA STATE
CONFERENCE OF THE NAACP,

Plaintiffs,

v.

R. KYLE ARDOIN, in his capacity as Secretary of
State of Louisiana,

Defendant.

Case No. 3:22-cv-00178-SDD-SDJ

DECLARATION OF DOUGLAS JOHNSON, PH.D.

1. I am over the age of eighteen (18) and am competent to testify to the matters set forth herein. The following is true of my own personal knowledge and I otherwise believe it to be true.
2. I am the President of National Demographics Corporation (“NDC”) and have consulted on over 400 redistricting projects across the country. A copy of my current CV is attached. My CV lists my history of redistricting and related expert-witness experience.
3. I have been retained by counsel for the Legislative Intervenors, the Honorable Clay Schexnayder, in his official capacity as Speaker of the Louisiana House of Representatives, and the Honorable Patrick Page Cortez, in his official capacity as President of the Louisiana Senate. My compensation is \$300 per hour for my work on this case and is not contingent upon the outcome of the case.

Scope of Work

4. Counsel asked me to undertake the following tasks:
 - a. Analyze plaintiffs’ illustrative State House and State Senate plans for Louisiana served with plaintiffs’ July 22, 2022, report of William Cooper (the “Illustrative Maps” or “2022 Illustrative Plans”), and the illustrative State House and Senate maps served with Plaintiffs’ June 30, 2023, report of William Cooper (the “2023 Illustrative Plans”) to analyze, among other things, whether race appears to be the predominate consideration used in drawing those maps;
 - b. Compare the 2022 Illustrative Maps and the 2023 Illustrative Maps to identify the scope of changes between the two sets of maps;
 - c. Review the “Key Regions” referenced by Plaintiffs’ expert, Mr. Cooper, to identify whether there is sufficient evidence provided to support such designations and examine the degree to which the 2023 House and Senate Illustrative Maps follow and respect those “Key Regions” boundaries.
 - d. Review the other sections of plaintiffs’ expert reports and comment on any areas I viewed as noteworthy or questionable.

Data Used

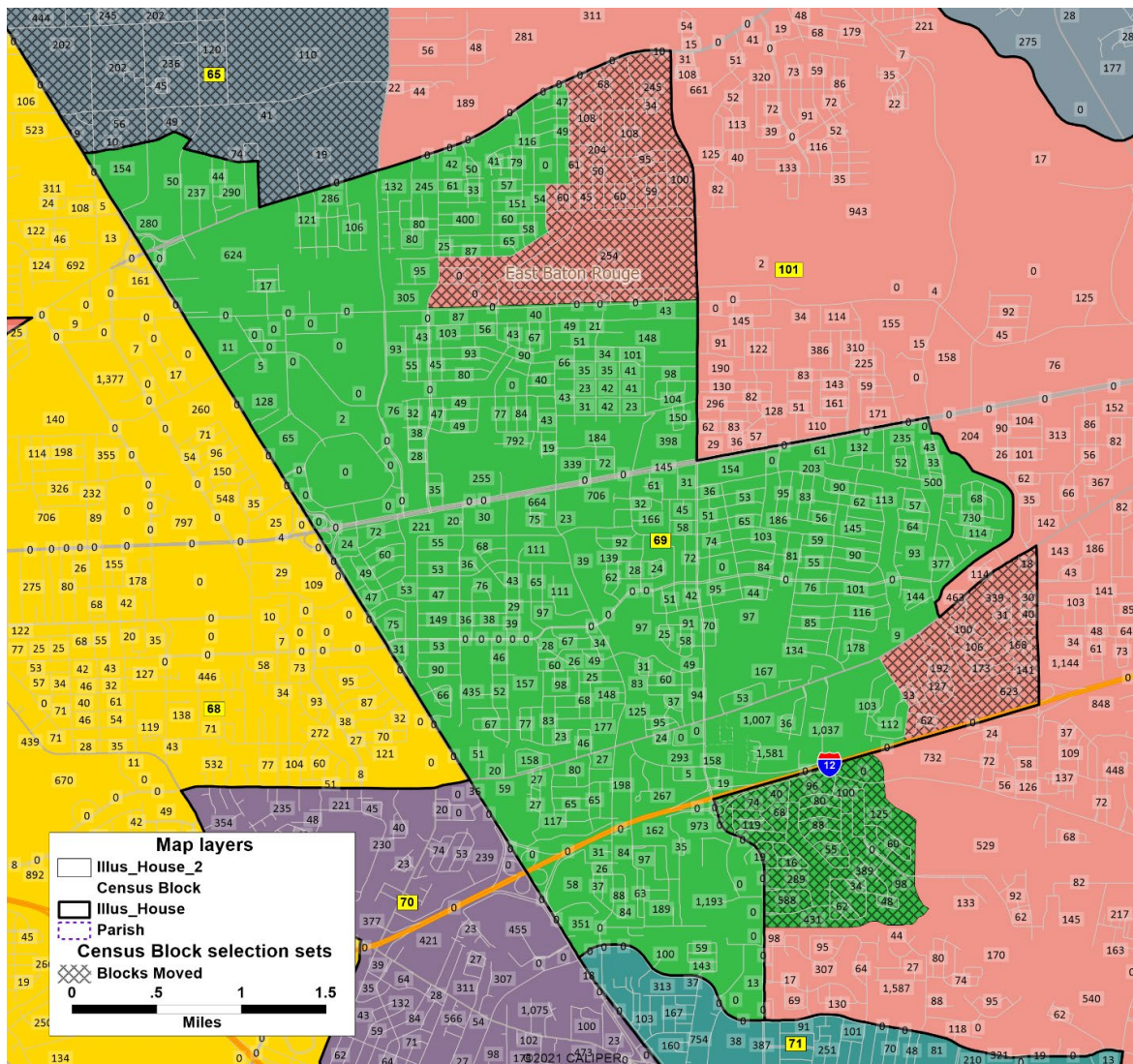
5. For my analysis, I acquired and loaded into my computer the Louisiana state redistricting geography and data from Caliper Corporation, the Enacted House and Senate map geographic shapefile from the state’s redistricting data website, and the 2022 and 2023 Illustrative House and Senate Plan files and other data from Plaintiffs’ expert-witness disclosures in this case.

Scope of Changes from 2022 to 2023 Illustrative Maps

7. On June 30, 2023, Mr. Cooper served a supplemental expert report that included his 2023 Illustrative Plans. Mr. Cooper asserted (in paragraph 11 of his supplemental report) that his new plans “update the illustrative plans described in [his] July 22, 2022, declaration to better reflect communities of interest and include other technical changes.”
8. Using Maptitude, industry-standard GIS software for redistricting, and other software tools, I analyzed the four maps to determine the number of Census Blocks and population counts that were changed between the 2022 and 2023 State House illustrative maps, and between the 2022 and 2023 State Senate illustrative maps.
9. The Illustrative 2 House map makes changes to 21 House Districts (20.0% of the 105 total House Districts) from the Illustrative House map. The changed House Districts are Districts 1, 2, 18, 29, 48, 49, 50, 51, 56, 57, 58, 60, 62, 63, 65, 69, 72, 73, 86, 96, 101. In total, 2,464 Census Blocks change House district assignments. These Census Blocks contain 83,489 people, of whom 44.6% (37,238) are Any Part Black. In other words, Illustrative House Map 2 changes the district assignments of 83,489 Louisiana residents (nearly the population equivalent of two entire House districts).
10. Mr. Cooper’s Exhibit B-2 from his June 30, 2023, report purports to highlight in red the changed districts. It does not highlight HD1 and HD2, even though there was a change made to those districts—one that involved the reassignment of a single zero-population Census Block.
11. Mr. Cooper’s Exhibit B-2 highlights as changed HD8, but in fact HD8 is unchanged, as can be confirmed by comparing this Exhibit B-2 from his June 30, 2023, report with Exhibit I-1 from his original July 22, 2022, report.

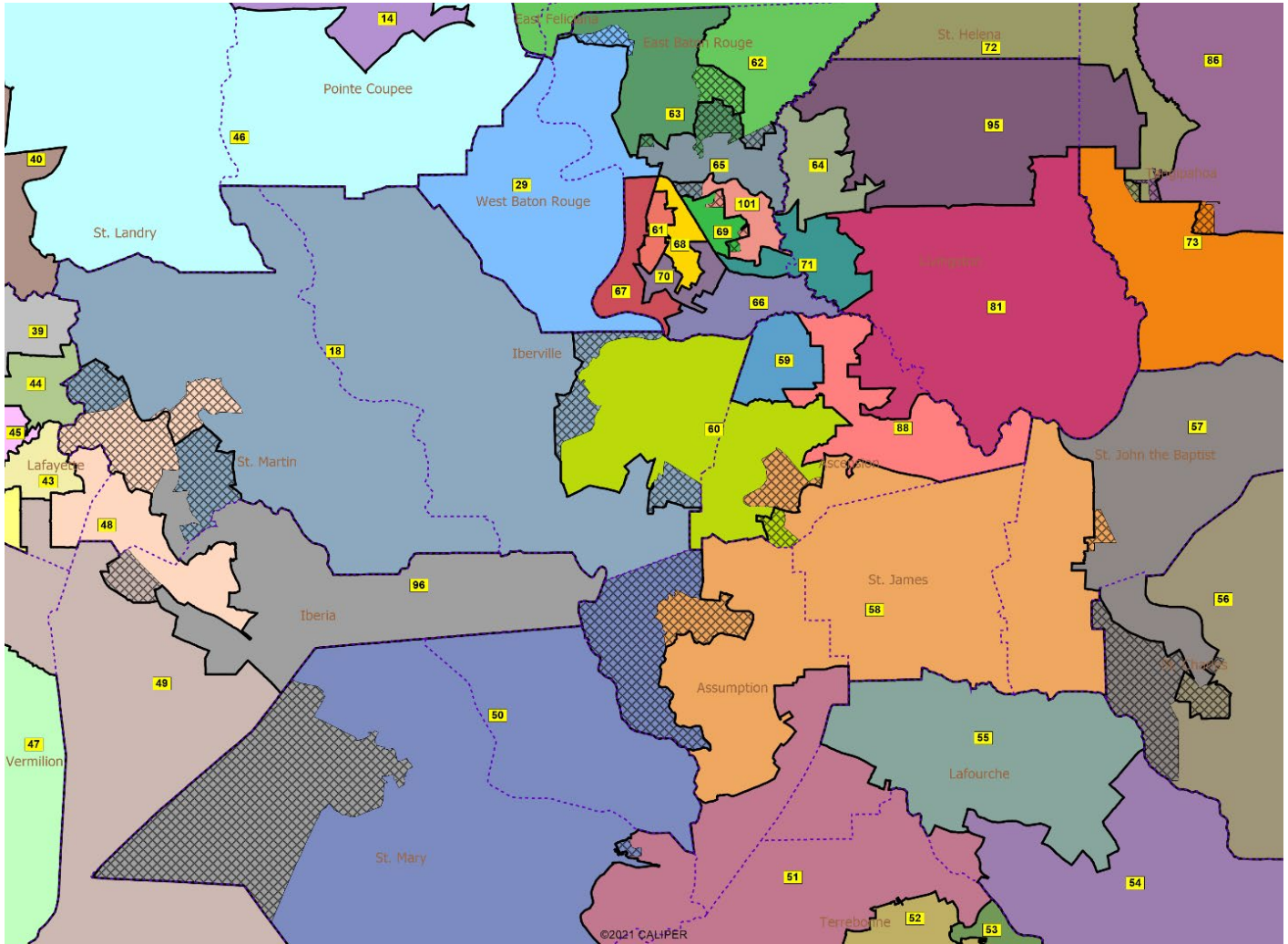
12. Mr. Cooper's Exhibit B-2 does not highlight as changed HD69, but both a comparison with his original July 22, 2022, report's Exhibit I-1 and a look at the map reveals HD69 is significantly changed. In the image below, the colored areas are the Illustrative 2 House Districts. The black lines are the Illustrative House Districts. And the Census Blocks with the black cross-hatching are the Blocks that changed assignments between plaintiff's expert's Illustrative map and his Illustrative 2 map. The numbers shown are the total population of each Census Block:

Figure 1



13. The changed House Districts stretch across Southern Louisiana from Lafayette to Baton Rouge and south to the border of the St Charles and Lafourche Parishes:

Figure 2



14. Turning to the State Senate maps, I have determined that 665 Census Blocks were moved from one Senate District in the Illustrative Senate map to a different Senate District in the Illustrative 2 Senate map. These Census Blocks contain 35,276 people, of whom 49.5% (17,467) are Any Part Black. The Census Blocks assigned to new Senate Districts in the Illustrative 2 Senate map change seven Senate Districts: SD7, SD8, SD14, SD15, SD17, SD19 and SD20 (18 % of the 39 total Senate districts).

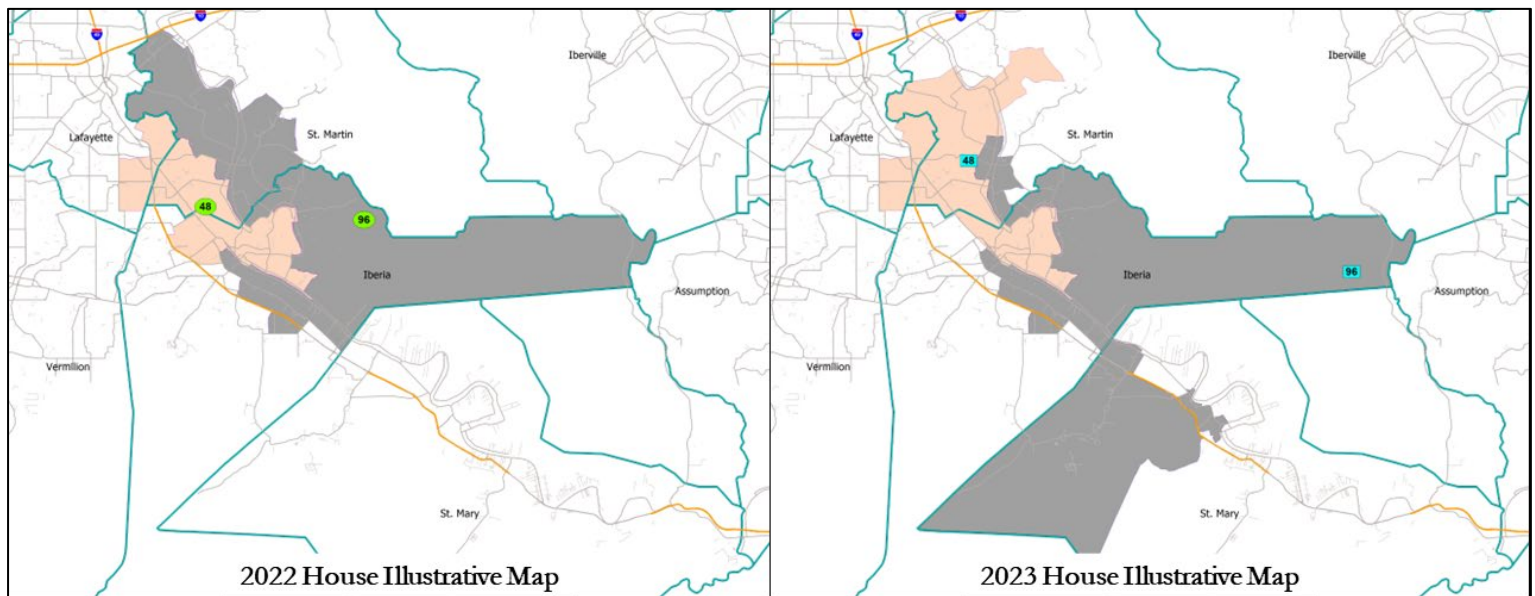
Illustrative House and Senate Map Revisions Resulted in Less-Compact 2023 Maps

15. Oddly enough, the twenty-one districts changed between the 2022 House Illustrative Map and the 2023 House Illustrative Map made the 2023 map even *less* compact than the 2022 House Illustrative Map.
16. Both plaintiff's expert and I use the Maptitude for Redistricting software. I used Maptitude to compute the ten measures of compactness built into the software. The results are attached as an appendix to this report. The results show that only two compactness measures that improved were the Ehrenburg and Length-Width measures (focusing on the "minimum," or least-compact, district by each measure). HD96, which was the least-compact district in the 2022 House Illustrative Map, improved from a 0.12 Ehrenburg score to a 0.18 Ehrenburg score in the 2023 House Illustrative Map – still an extremely non-compact district by that measure, but no longer the least-compact district in the map.
17. The 0.06 improvement in HD96's Ehrenburg score was accompanied by a 0.09 improvement in neighboring HD48's Ehrenburg score. But those improvements were more than offset by the combination of a newly-added extra split of the St. Mary Parish, a 0.04 decrease in neighboring HD18's Ehrenburg score, and a significant 0.22 drop in neighboring HD50's Ehrenburg score.
18. But the Ehrenburg improvement in HD96 did not improve the overall map score, which remained a median 0.36 under Ehrenburg. Similarly, the average score remained constant or essentially constant at a 0.01 difference between the 2022 and 2023 maps under eight of the eleven compactness scores built into Maptitude.¹

¹ The eight constant or 0.01 change compactness measures are Reock, Schwartzberg, alternate Schwartzberg, Polsby-Popper, Population Polygon, Area/Convex Hull/ Population Circle, and Ehrenburg.

19. The scores for the three other compactness measures built into Maptitude² became less compact for the 2023 House Illustrative Map than they were in the 2022 House Illustrative Map.
20. The changes to HD50 between the 2022 and 2023 Illustrative Maps further violate traditional redistricting principles by taking HD96 from being a simple combination of the southern non-contiguous portion of St Martin Parish and as much of St. Mary Parish as possible within the equal population requirements in the 2022 map³, to now adding a 5,000-person piece of Assumption Parish into HD50 and having HD96 become a third district dividing up St Mary Parish.

Figure 3



21. The changes from the 2022 Senate Illustrative Map to the 2023 Senate Illustrative Map similarly make the 2023 Senate Illustrative map less-compact than the 2022 Senate

² Cut Edges, Perimeter, and Length-Width.

³ HD50 in the 2022 House Illustrative Map is identical to HD50 in the Enacted Map.

Illustrative according to the average score on eight of the eleven Maptitude compactness measures⁴. The least-compact district is less compact in the 2023 Senate Illustrative Map than the least-compact district in the 2022 Senate Illustrative Map according to two Maptitude compactness measures⁵ and unchanged by the other seven district-specific measures⁶.

Maptitude Data Does Not Corroborate The Claim That Plaintiffs’ Expert Used Socio-Economic Data When Mapping

22. Despite plaintiffs’ expert’s claims to have used “socio-economic characteristics” and data when drawing his maps (e.g., Cooper June 30, 2023, supplemental report in paragraphs 10, 75, and 105–106), the data used in his redistricting system do not include socio-economic data. To understand how clear this fact is, one must understand a little bit about how the Maptitude for Redistricting software (which both plaintiffs’ expert and I use for most of our work) operates.
23. Maptitude stores data at the Census Block level and reports that data at the District level by aggregating all the Block-level data in a given District. The data and potential changes are displayed live in real time. But only data available in the Block level of geography can be calculated at the District level.
24. For illustrative purposes, below is a screen shot of my Maptitude window with the Enacted Senate map visible. In the image below, the area marked “1” is the list of layers available in the map (those with the green check mark are currently showing in the map, while those

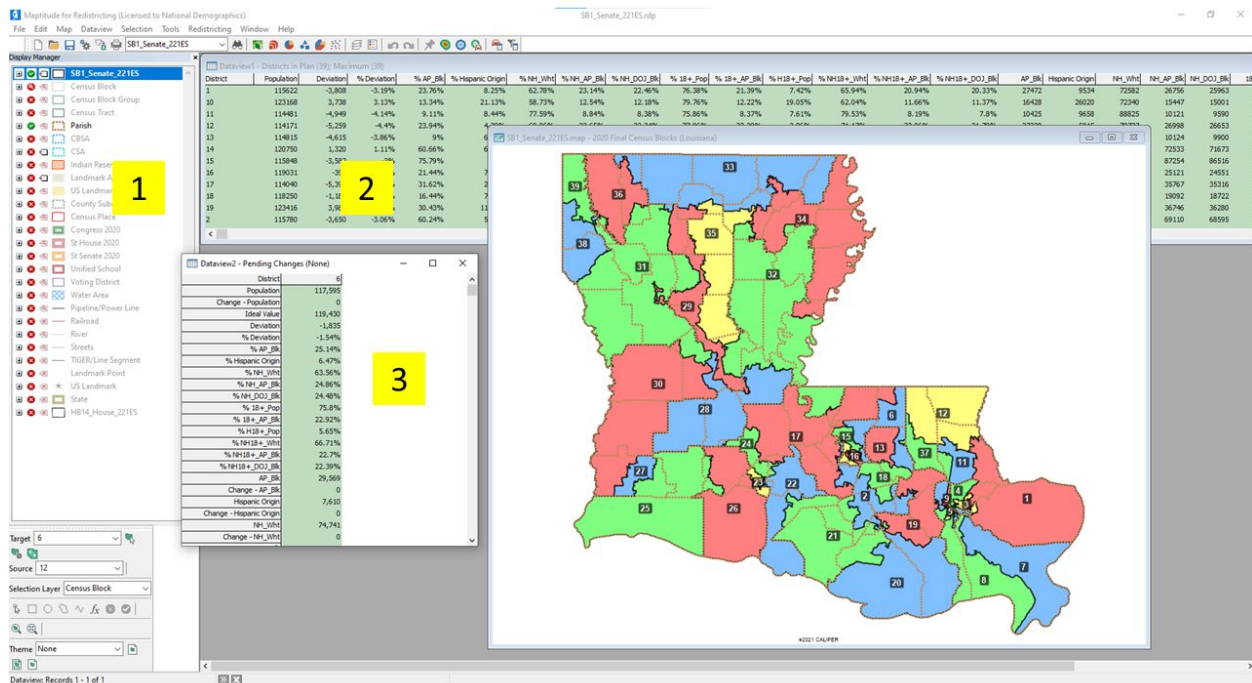
⁴ Less-compact: Reock, Schwartzberg, Alternate Schwartzberg, Polsby-Popper, Area/Convex Hull, Ehrenburg, Length-Width and Cut Edges. More-compact (by the absolute minimum change possible of 0.01 in each case): Population Polygon and Population Circle, along with the Perimeter measure.

⁵ Reock and Population Polygon

⁶ The “cut edges” and Perimeter tests do not give useful individual district scores – they are only useful as whole-map measurements – so they are not included in this count.

with an “x” in a red circle are currently hidden). While the other layers are available as overlays, Maptitude does its calculations using only the data available in the Census Block layer. The area marked “2” are the demographics for each district as drawn in the map at the time the screen shot was taken. And the area marked “3” is a “Pending Changes” window that currently shows no pending changes, but where the demographics of any impacted district(s) would be shown live corresponding to every mouse click in the map.

Figure 4



25. The Census Block data provided by Mr. Cooper contains only (1) the total population by race and ethnicity and (2) the voting age population by race and ethnicity that come standard from Caliper Corporation. Those are the full contents of the Census Bureau's PL94-171 redistricting data file, released after each decennial Census. No Citizen Voting Age Population data nor any other socio-economic data are included in the Maptitude Census Block data file provided by Mr. Cooper as the file he used for drawing his map.

26. Separately Mr. Cooper provided the Citizen Voting Age Population (CVAP) data compiled by HaystaqDNA (which he footnotes as coming from the “Redistricting Data Hub”). But he did not merge that into the Census Block file he claims was used while drawing his maps. He did not provide any socio-economic data compiled at the Census Block level. So the CVAP and socio-economic data would not have been compiled by, nor reported in, the Maptitude software as he drew the map and as he made decisions regarding where to place his illustrative map lines.

Population Change, 2000 (1991 lines) to 2022

27. Plaintiffs’ expert’s discussion of the changes in the state’s Black population between 2000 and 2020 seems to undermine the claim that the 2022 enacted plans undermine Black representation. As Mr. Cooper notes in his June 30, 2023, report (at paragraph 34), from 2000 to 2020 the state’s “Any Party Black Voting Age Population” increased from 29.95% to 31.25% -- an increase of 1.3%. And from 2000 to the enacted 2022 House map, the number of majority-Black seats increased from 26 (24.8% of 105) to 29 (27.6% of 105) majority-Black House seats, according to plaintiffs’ expert’s Paragraphs 53, 54 and 55 – a 2.8% increase. In other words, the Black-majority number of House seats increased more than twice as fast as the Black share of the state’s Voting Age Population (2.8% versus 1.3%).
28. Similarly, as plaintiffs’ expert notes in his June 30, 2023, report’s paragraphs 53, 54 and 56, the number of majority-Black Senate seats increased from 10 in 2000 (25.6% of 39) to 11 (28.2% of 39) – an increase of 2.6%, or exactly double the increase in the Black share of the state’s Voting Age Population.

Figure 5

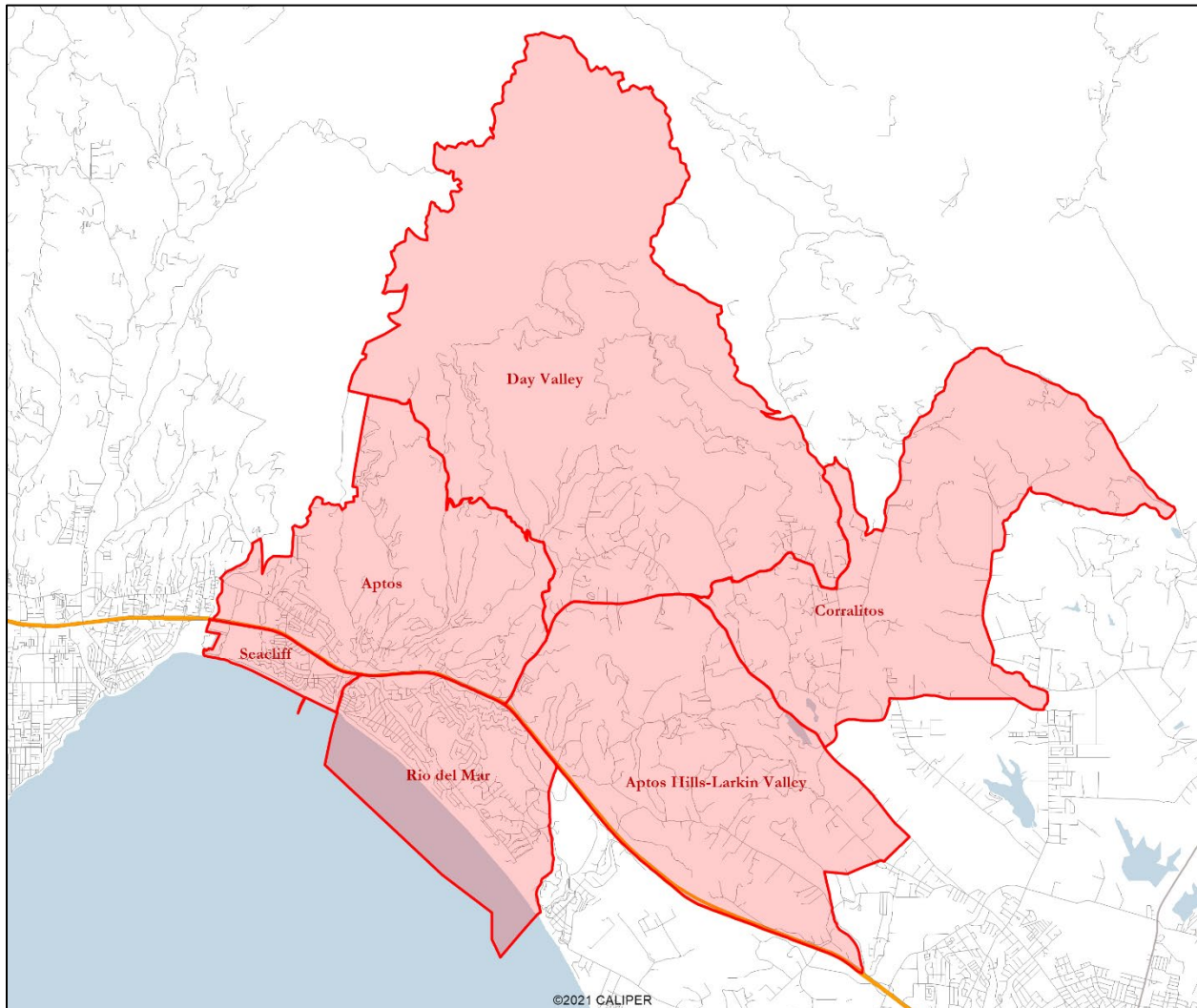
	2000	2020/2022 with % increase
Black % of Voting Age Population	29.95%	(2020 Census) 31.25% +1.3%
Majority-Black % of House Districts	26	(2022 Enacted Map) 29 +2.8%
Majority-Black % of Senate Districts	10	(2022 Enacted Map) 11 +2.6%

29. It is also worth noting that plaintiffs' expert's statement in his paragraph 58 is simply false, even according to his own math. His Figure 11 shows that three, not two, Black-majority House districts have been added between the map in place in 2000 and the 2022 enacted House map.

Communities of Interest splits report (Exhibits L-1 and P-1)

30. In Exhibits L-1 and P-1 of his June 30, 2023, report, Mr. Cooper provides his list of "municipalities" split by the 2023 Illustrative Plans. These reports are misleading, however, as Census Places are not the same thing as municipalities or communities of interest. In fact, Census Places consist of incorporated towns and cities PLUS unofficial areas designated near-randomly by someone either in the Parish (possibly decades ago) or by someone in Washington DC.
31. As one example that I am personally very familiar with, my (unincorporated) community of Aptos, California, self-identifies as one community called "Aptos" and shares one high school, one primary shopping area, and is geographically isolated – all classic indications of a "community of interest." But the Census Bureau subdivides even our small 27,000-resident unincorporated community into six different CDP's:

Figure 6



32. Plaintiffs' expert has not provided any support or explanation for his claims that such randomly-designated Census Designated Places – not recognized by state or local governments – constitute communities of interest worthy of consideration (in his view) in redistricting.

Wikipedia Is Not A Reliable Source For Defining “Key Multi-Parish Community Regions”

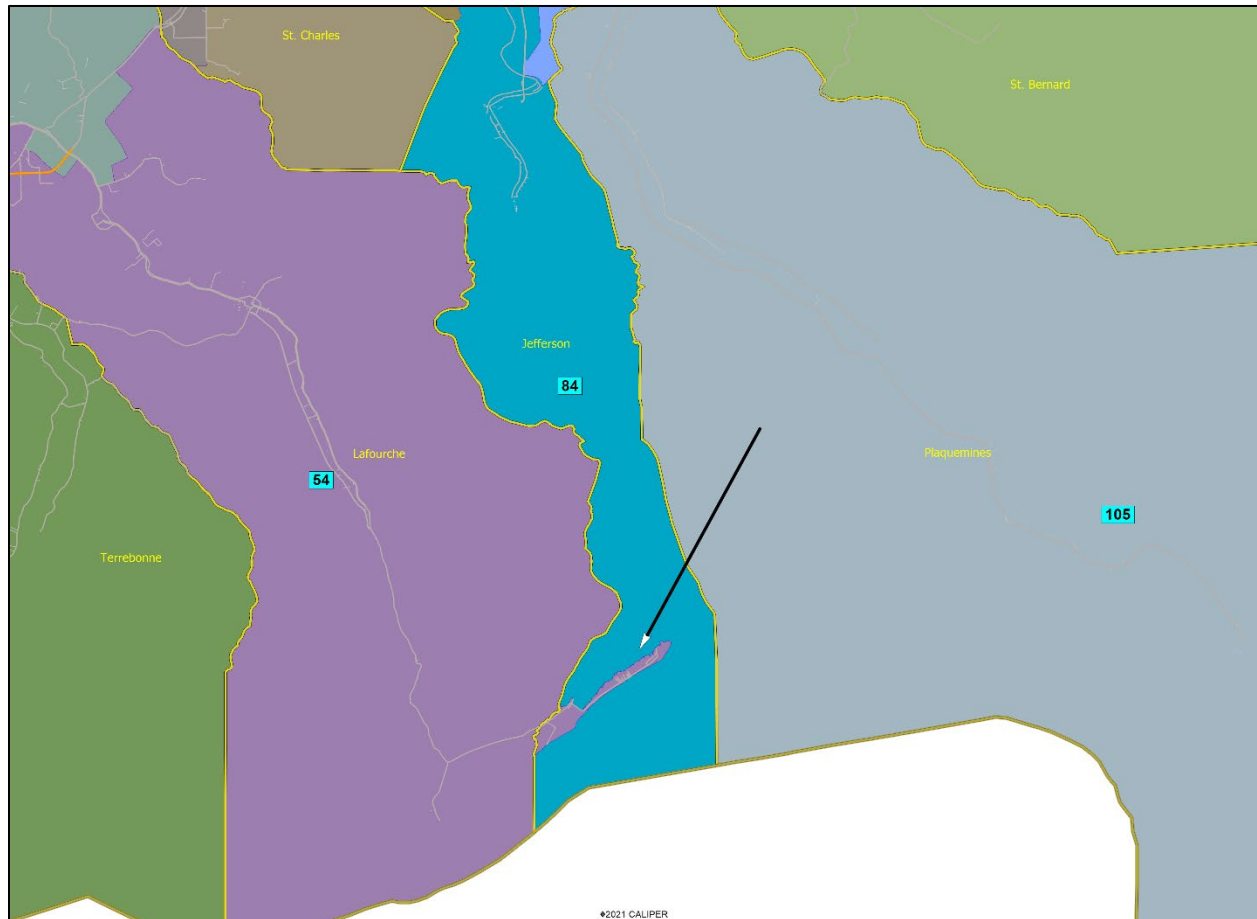
33. Plaintiffs’ expert identifies, in paragraph 27 and Figure 2 of the Cooper June 30, 2023, report, what he terms “key multi-parish cultural regions.” In my view, however, the sources of evidence he uses to define these “key multi-parish cultural” regions are not sufficiently reliable to be used for such a political-science analysis or when mapping.
34. While the “Acadiana” region’s 22 parishes are sourced to the Legislative website (see plaintiffs’ expert’s footnote 17) or a geography quiz from the state’s Common Core curriculum asking students to identify the 12 delta parishes (footnote 19), his other regions are sourced to either an academic website that lists no shared characteristics since Louisiana achieved statehood in 1812 (footnote 18), or, even worse, uses Wikipedia as the source of a “key multi-parish community regions” (footnote 20). I am unconvinced that either Wikipedia or five pre-1812 characteristics are sufficiently accurate and reliable to allow plaintiffs’ expert to accurately identify “key” communities of interest relevant to redistricting in 2023.

Plaintiffs’ Expert’s Map Repeatedly Divides His Own “Key Regions”

35. Mr. Cooper’s June 20, 2023, report’s Figure 2 shows the state divided into “key multi-parish cultural regions”; his Figure 3 shows the state divided into eight “Planning Districts” that he analyzes by race and ethnicity; and Figure 9 shows the Census-drawn Metropolitan Statistical Areas, or MSA’s, which he also analyzes by race and ethnicity.
36. If plaintiffs’ expert actually considered any of these true “key regions” in the state, the illustrative map would cross the region boundaries no more than twice (as one entry split and one exit split might be necessary to balance populations in a given region and the bordering region).

37. Plaintiff's 2023 Illustrative House map, to its credit, does unite the southeastern "PD-1 New Orleans Area" Planning District as much as possible, crossing its border only once (though even that crossing is notable, as it is the 1,005-person 'finger' extending east out of HD 54 along the shoreline highlighted by the arrow in the following figure):

Figure 7



38. Returning to the question of plaintiffs' "Key Regions," every other Planning District boundary is crossed by anywhere from three to seven House districts. If someone drawing a map truly considered Planning Districts as key communities of interest, that person would not draw a map in that way.

39. The 2023 Illustrative Senate map (where SD20 shares the same “finger” into Jefferson Parish shown above for HD54) pays even less attention to Planning Districts. PD-5, Imperial Calcasieu, is crossed by only two districts, but every other Planning District border is crossed by three to eight times.
40. The 2023 House and Senate Illustrative maps clearly show that plaintiffs’ expert did not consider Planning Districts to be important when drawing maps.
41. Mr. Cooper’s June 30, 2023, report’s Figure 2 shows the state divided into eight “Key Cultural Regions.”
42. But, again, if plaintiffs’ expert actually considered these true “key regions,” the illustrative map would cross the region boundaries no more than twice (as one entry split and one exit split might be necessary to balance populations in a given region and the bordering region).
43. Analysis of the 2023 Illustrative House Map shows that each “Cultural Region” border is crossed once (the unnamed Southeast Cultural Region), twice (Ark-La-Tex and Florida Parishes), three (Delta), five (unnamed area between Ark-La-Tex and Acadiana), or seven (Acadiana) times.
44. Analysis of the 2023 Illustrative Senate Map shows that each “Cultural Region” border is crossed three (Ark-La-Tex, Delta, and Florida), four (unnamed southeast region), five (unnamed area between Ark-La-Tex and Acadiana), or eight (Acadiana) times.
45. Again, one or two districts crossing can be explained by the need to equalize populations, but five or eight crossings prove even plaintiffs’ expert did not consider these to actually be “key regions” for redistricting.

46. Similarly, plaintiffs' expert's 2023 Illustrative Maps do not respect or follow Metropolitan Statistical Area, or MSA, boundaries⁷ – the other geographic regions for which plaintiffs' expert provides racial and ethnic data in his discussion of key regions. As with “Key Cultural Regions” and Planning Districts, in the 2023 Senate Illustrative Map only one MSA has just the one or two border crossings arguably required for population balancing (Lake Charles, with two border crossings). The other eight MSA borders are crossed three, four, five and even six times by districts in the 2023 Senate Illustrative Map. In the 2023 House Illustrative Map, the Baton Rouge MSA border is crossed by eight different districts, while the Lafayette MSA border is crossed in seven places by six different districts (HD50 crosses the Lafayette MSA border twice). Clearly, the 2023 House and Senate Illustrative Maps do not consider MSA boundaries communities of interest whose boundaries should be respected.

Plaintiffs' Expert's “Enacted Maps” are not the Actual Enacted Maps

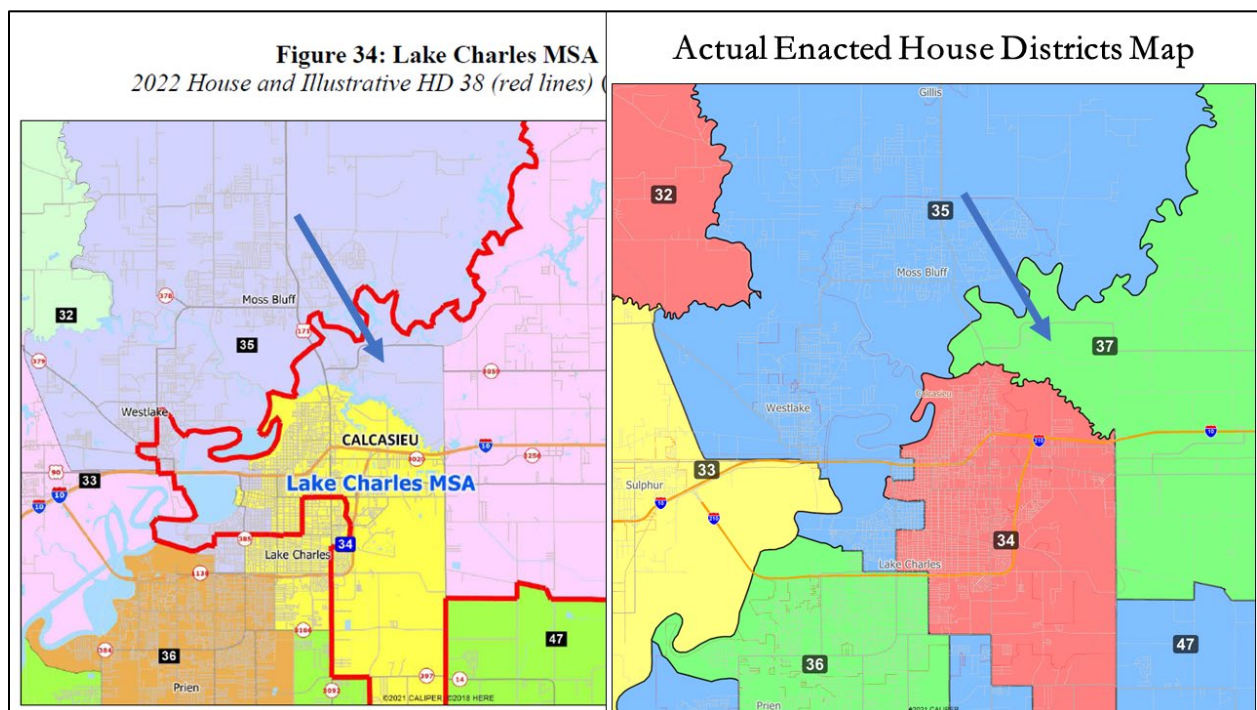
47. A comparison of the official House and Senate enacted map population figures to the population figures plaintiffs' expert says are from the “official” enacted maps reveals that he has misdrawn or miscounted numerous House and Senate districts in the maps he claims are the enacted maps. Mr. Cooper's reported population totals do not match the actual population totals in all of the following districts:

- a. House: HDs 19, 21, 24, 30, 32, 35, 37, 48 and 49
- b. Senate: SDs 6, 17, 22, 23, 24, 28, 30 and 37

⁷ Plaintiff's expert did not provide any MSA geographic file. I downloaded the national Core Based Statistical Areas shapefile from Data.gov and exported the Louisiana MSAs out of that file: <https://catalog.data.gov/dataset/tiger-line-shapefile-2020-nation-u-s-core-based-statistical-areas-cbsa>

48. In the Senate maps, the population differences range from 33 to 1,428. In the House maps, the population differences range from 113 to 697. Those population differences flag where there are problems, but they do not indicate the scale of the problem. For example, as shown in Figure 8 below, plaintiff's expert's Figure 34 clearly shows the wrong lines for House Districts 36 and 37. on the left is a cropped screen shot of plaintiff's expert's Figure 34. On the right is an image I prepared showing the actual enacted border between House Districts 35 and 37. The clearly visible error is highlighted by the blue arrow, which is placed in the same spot over both images:

Figure 8



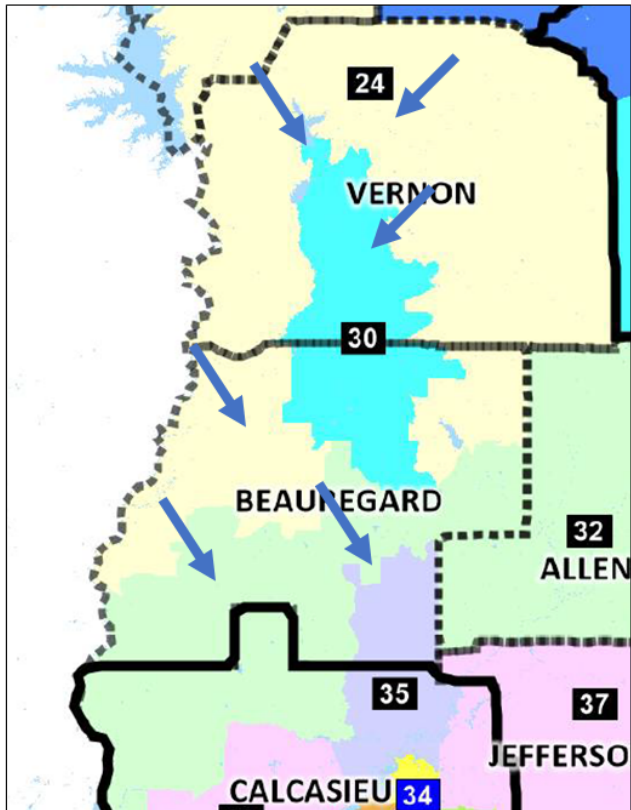
49. The blue arrow indicates the region plaintiffs' expert thinks is part of the enacted House District 35 (purple-colored in his map), but this area is actually in House District 37.
50. There are 805 people in the erroneously-assigned area. plaintiffs' expert's version of the "enacted" map draws 805 more people into House District 35 than are there in the actual

enacted map. But the population numbers in Mr. Cooper's June 30, 2023, Exhibit I-1 report that House District 35 is over by only 113 people (compared to the actual enacted map). The population differences prove that somewhere else in his map is one or more additional errors in the boundaries of these districts, though those errors cannot be seen in the cropped view of the District he included in his Figure 34.

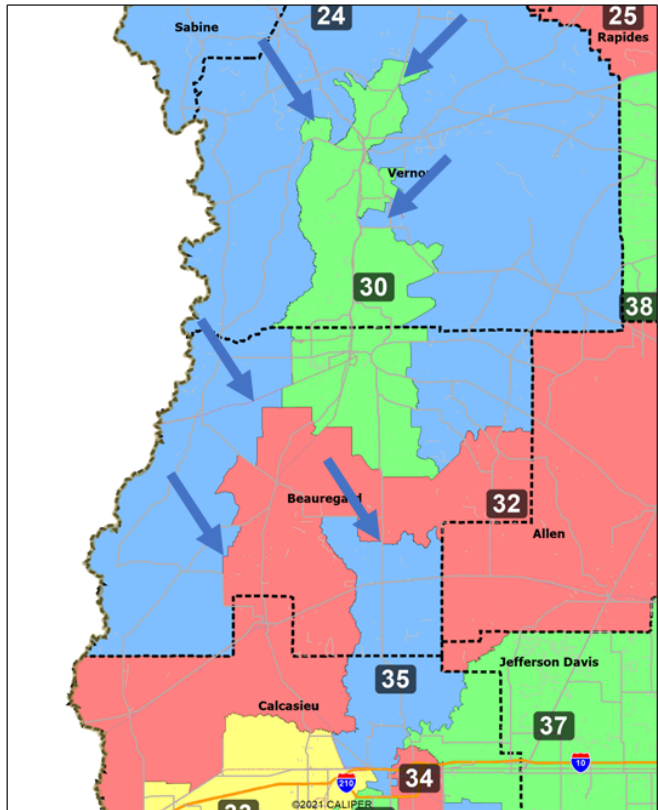
51. Normally identifying all the differences between two maps in the Maptitude software is easy, using the Maptitude files for each plan. But in this project I cannot run that analysis because plaintiffs' expert did not provide the computer files that he used to draw what he erroneously called the "enacted" maps. In the absence of those computer files any analysis is limited to just what can be seen in the blurry enlargements of the statewide PDF-format maps provided in plaintiff's expert's exhibits.
52. Looking at plaintiffs' expert's statewide map of House Districts (Mr. Cooper's June 30, 2023, report's Exhibit I-2) does provide a bit more insight, as in the area at the north end of House District 35 and around House District 30 there are at least six errors visible in plaintiff's expert's version of the "enacted" map, again with blue arrows highlighting the visible errors:

Figure 9

Mr. Cooper's Exhibit I-2



Actual Enacted House Districts Map



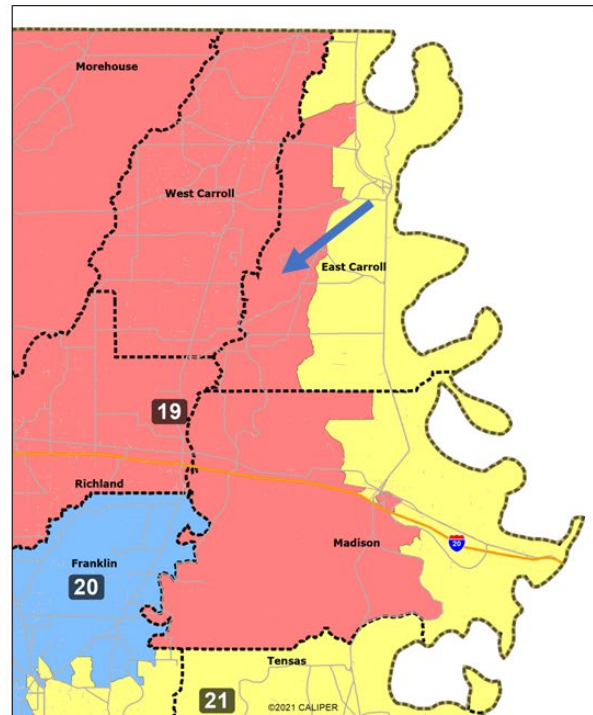
53. Here are the similar errors between House Districts 19 and 21, showing the incorrect assignment nearly half the territory of East Carroll County:

Figure 10

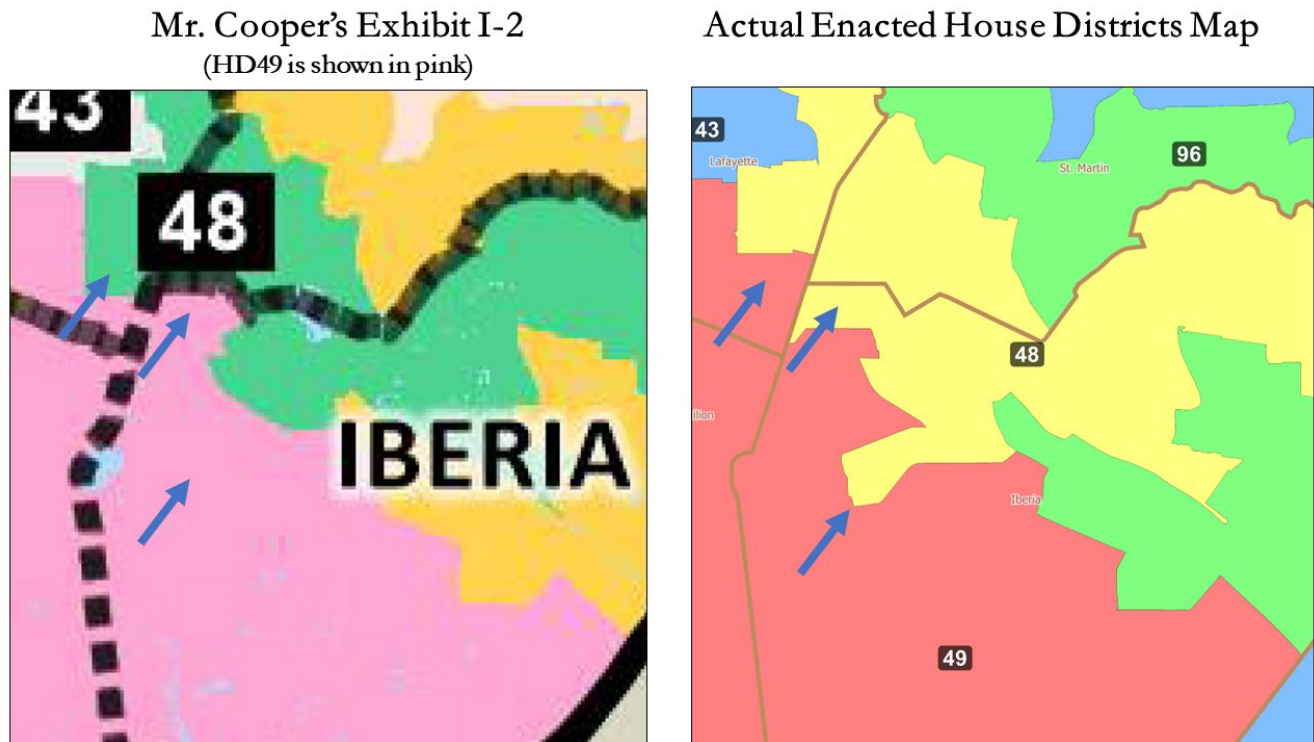
Mr. Cooper's Exhibit I-2



Actual Enacted House Districts Map



54. Finally (for the House map), here are the visible errors between House Districts 48 and 49:

Figure 11

55. This area is another good example of how those numbers fail to capture the scale of the error: while the net difference between the official populations of HD48 and 49 and plaintiff's expert's version of these two districts is only 697 people, plaintiff's expert's map of HD48 and HD49 has 6,700 people assigned to the wrong districts. The area indicated by the northwesternmost arrow in Figure 11, which plaintiffs' expert assigns to HD48 but is officially in HD49, mistakenly shifts over 3,000 people from HD49 to HD48. The yellow "foot" of HD48 indicated by the southernmost arrow is an area of 1,700 people mistakenly shifted by plaintiff's expert from HD48 to HD49. And the middle arrow highlights an area right along the border of the St. Martin and Iberia Parishes that is mistakenly assigned to HD49 instead of HD48. This area includes over 2,000 people. While the total district population numbers report a net error of 697 between these two House Districts, in fact the

errors involve the erroneous assignment of 6,700 Louisiana residents – fifteen percent (15%) of the population of a full House District.

Figure 12

	Cooper Ex. I-1	NDC Fields	
District	2020 Pop.	Official Pop	Net Diff.
19	42,717	43,183	466
21	44,795	44,329	-466
24	42,460	42,692	232
30	42,952	42,313	-639
32	42,415	42,409	-6
35	46,088	45,975	-113
37	45,146	45,672	526
48	44,642	45,339	697
49	46,367	45,670	-697

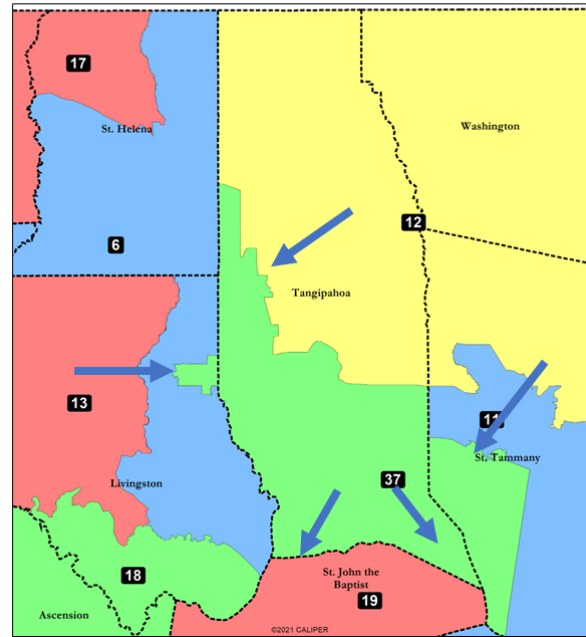
56. Plaintiffs’ expert’s exhibits and data related to what he calls the Enacted Senate map are similarly erroneous. The following images show zoomed-in details of Mr. Cooper’s Exhibit H-2, which he claims show the 2022 Enacted Senate Districts, compared to the actual 2022 Enacted Senate Districts. The images are followed by a table showing the population differences between his erroneously labeled “Enacted” Senate Districts and the actual Enacted Senate Districts, similar to the table above for House Districts. The errors among the Senate Districts are larger than, and represent an even higher percentage of the total number of Senate Districts than, his errors in the House Districts.
57. The map below shows the clear visible errors between what plaintiffs’ expert presents as the Enacted Senate map of Senate Districts 6 and 37 and the actual Enacted Senate map of Senate Districts 6 and 37:

Figure 13

Mr. Cooper's Exhibit H-2



Actual Enacted Senate Districts Map



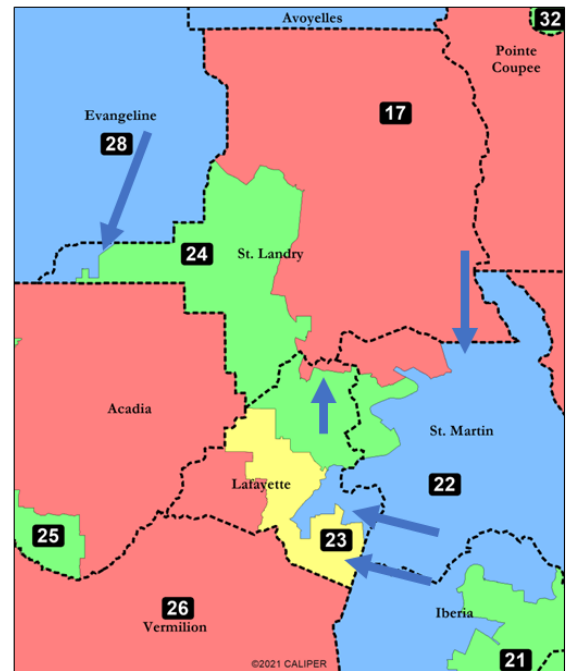
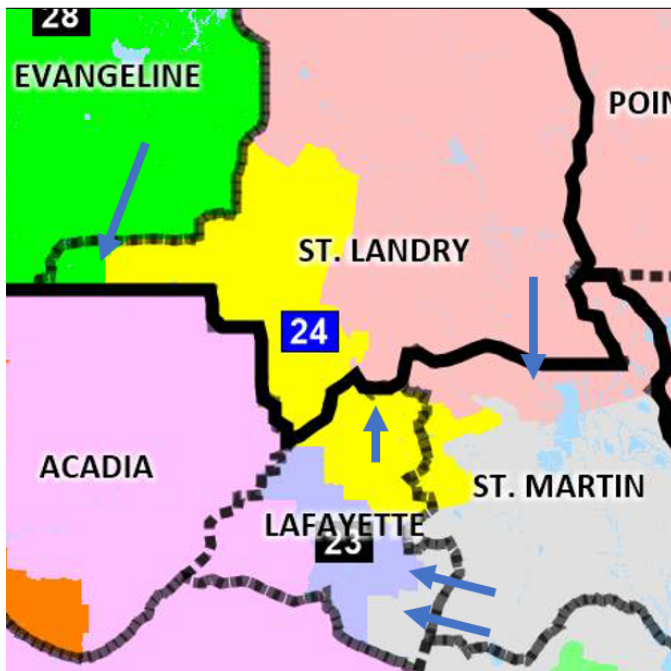
58. Plaintiffs' expert's portrayal of the eastern end of SD6 bears very little resemblance to the actual eastern end of Enacted SD6: where plaintiffs' expert shows SD6 going into Tangipahoa Parish with a small piece of Livingston Parish, the actual enacted SD6 never enters Tangipahoa Parish and travels all the way through Livingston County to the St. John the Baptist Parish border.
59. Plaintiffs' expert also shows what he says is Enacted SD37 with a major portion of Livingston Parish, a narrow arm into St. Tammany Parish, and not including the southwestern and southeastern corners of Tangipahoa Parish, while the actual Enacted SD37 has only a geographically small piece of Livingston Parish, covering the entire southern end of Tangipahoa Parish, and with a much geographically larger pieces of St. Tammany Parish.

60. Mr. Cooper's map of what he says are the Enacted Senate Districts around Lafayette show even larger errors:

Figure 14

Mr. Cooper's Exhibit H-2
(SD17 is shown in pink, SD22 in Grey)

Actual Enacted Senate Districts Map



61. On the smaller scale of errors, the population numbers (shown below) reflect an error in SD30 that Mr. Cooper's Exhibit H-1 does not contain enough detail to identify. Had plaintiffs' expert provided his computer files for what he claims are the Enacted Senate Districts that error could be identified, but he did not provide those files.
62. The next-smallest error is the visibly clear differences in the borders of SD24 and 28 at the western end of SD24 in St. Landry Parish.
63. Plaintiffs' expert claimed "Enacted SD" map also fails to reflect the actual Enacted SD17's inclusion of territory and population from the north edge of Lafayette Parish, which plaintiffs' expert's map erroneously shows as being entirely in SD24.

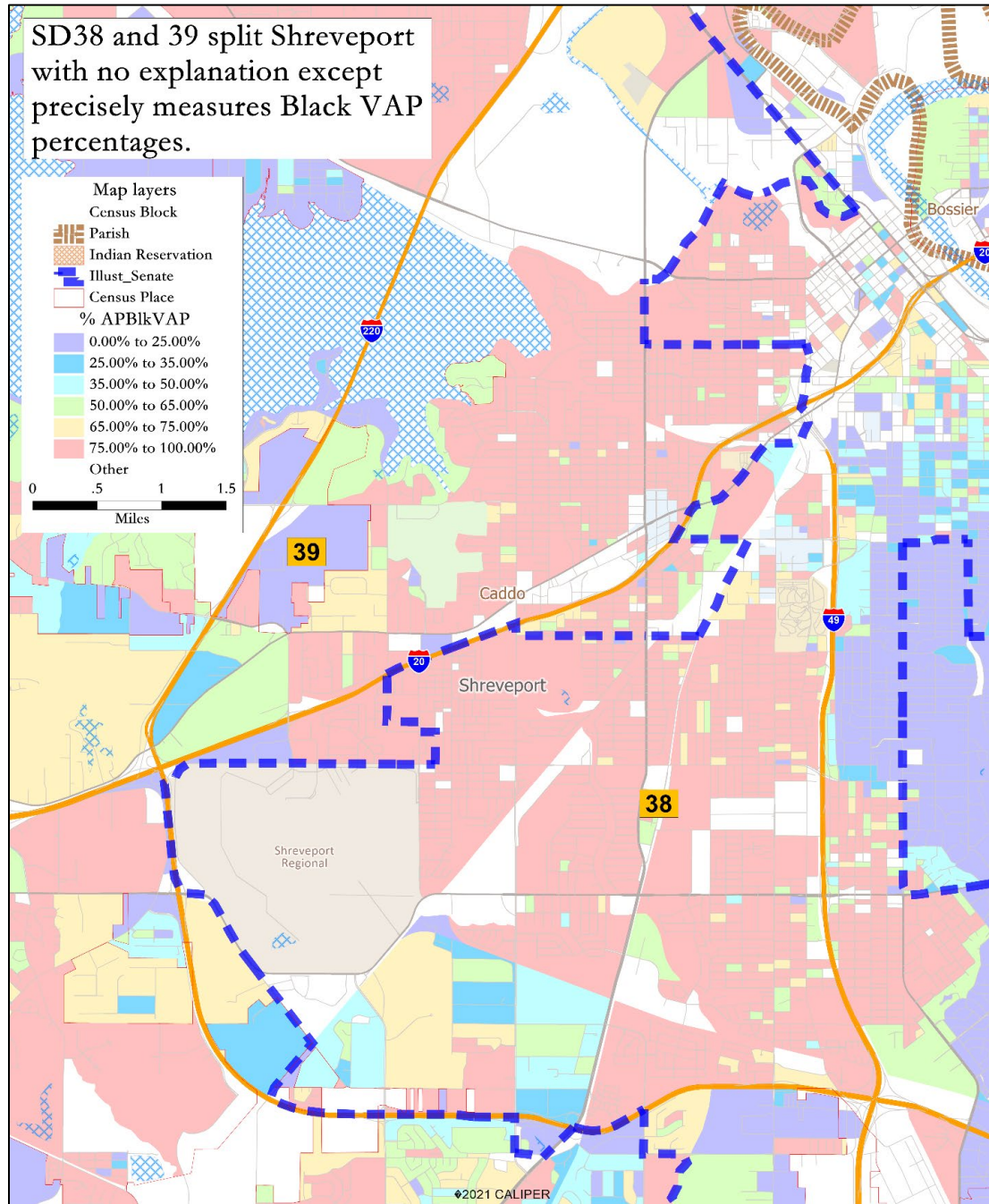
64. Getting into much geographically larger errors, plaintiffs' expert's map shows the entire northern section of St. Martin Parish inside SD17 (the pink SD in his Exhibit H-2 map shown on the left in the side-by-side image above), but in reality SD22 goes all the way north to the St. Landry Parish border east of the BYU Portage and Henderson Levee Road.
65. Finally, and most significantly from a 'wrong population' perspective, plaintiffs' expert's version of the Senate District borders between SD23 and SD22 in Lafayette are off by tens of thousands of people. Again, exact numbers are impossible to calculate in the absence of plaintiffs' expert's computer file for whatever he thought was the Enacted map, but it appears that he has nearly 30,000 Lafayette Parish residents in SD23 who actually reside in SD22, and vice versa.
66. So where the table below shows the total population of SD23 in plaintiffs' expert's version of the map varies from the actual enacted map by only -33 people, that is a NET error – in reality tens of thousands of people are in his version of SD23 who do not belong there, while tens of thousands of people who do belong there are not included – nearly half of the actual population of Enacted SDs 22 and 23 are not in plaintiffs' expert's versions of SD22 and 23.
67. As a result of these foregoing errors, the figures, data, and analysis of the 2022 enacted plans that are reported in plaintiffs' expert's two expert reports are unreliable.

Figure 15

District	Cooper H-1	NDC Data	
	2020 Pop.	Official Pop	# Diff
6	116,653	117,595	942
17	113,778	114,040	262
22	123,858	125,286	1428
23	125,047	125,014	-33
24	125,094	124,799	-295
28	115,710	114,358	-1352
30	113,747	113,737	-10
37	114,442	113,500	-942

Correlation of Race and the Illustrative Plan District Lines

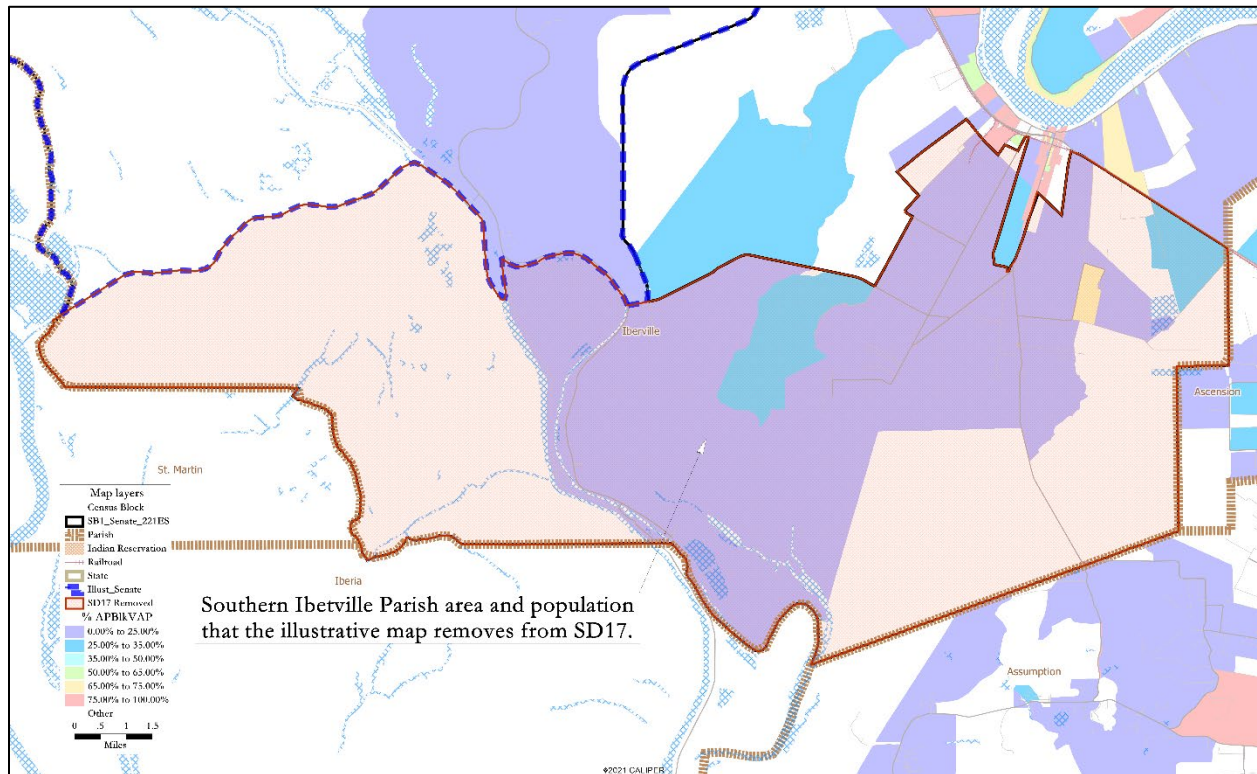
68. As a professional political scientist and demographer, I have created or analyzed many hundreds of districting plans in my career in jurisdictions throughout the country, including in jurisdictions with significant minority voting-age populations. Leveraging this training and experience, I analyzed plaintiffs' expert's 2022 and 2023 House and Senate Illustrative Plans to assess the degree to which the racial characteristics of the plan correlated to, and drove, the district boundaries employed in those plans.
69. Plaintiffs' expert clearly drew his "new" majority-Black SD38 by precisely dividing the Black population of Shreveport along lines that provide the precise racial percentages needed to make Senate Districts 38 and 39 majority-Black – without any reference to compactness, major roads, communities, neighborhoods, clear visible features or any other traditional redistricting principle. The only reason Mr. Cooper provides for drawing the line where he drew it is race:

Figure 16

70. Similarly, plaintiffs' expert carves the southern portion of Iberville Parish out of illustrative Senate District 17 with no explanation and following no traditional redistricting principle

– the only explanation is race, as this change carves a region with few Blacks out of his majority-Black illustrative District 17:⁸

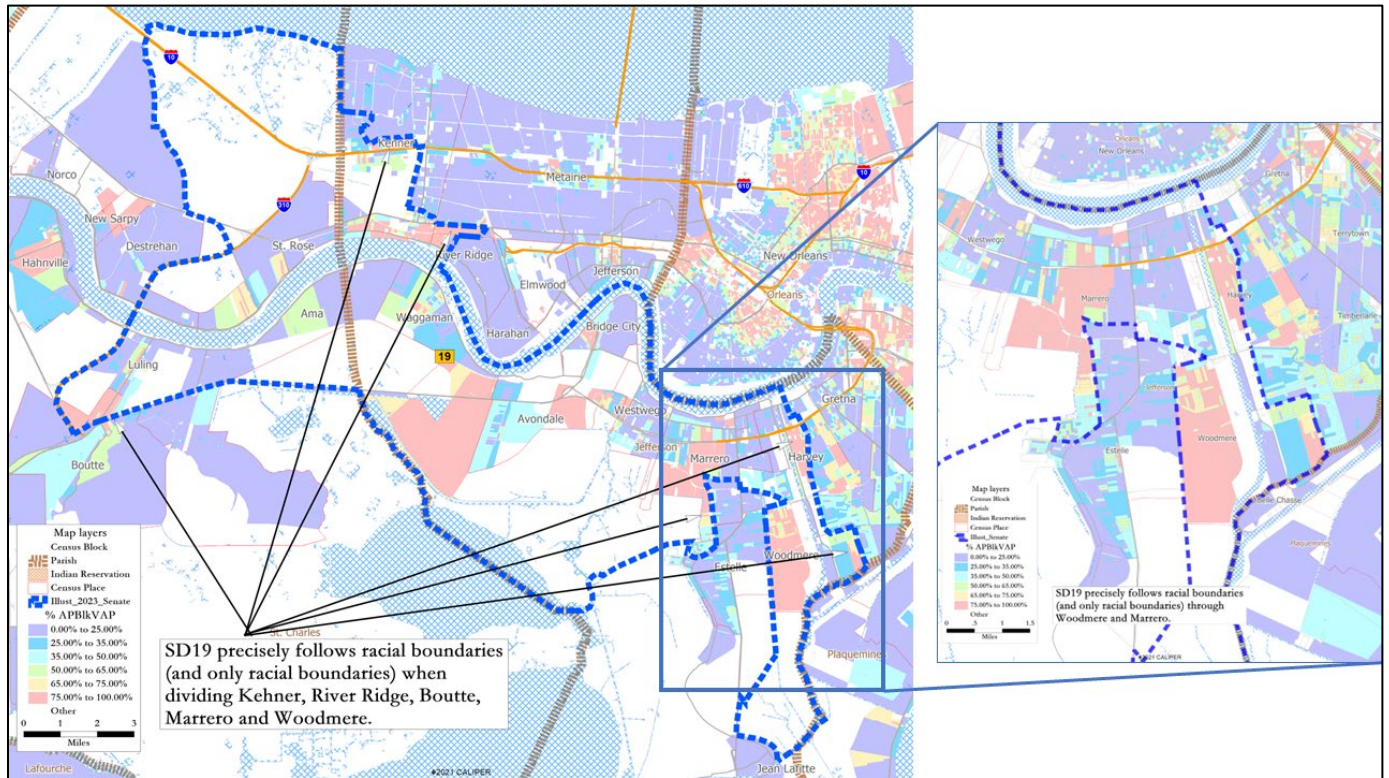
Figure 17



71. Plaintiffs' expert's third and final new majority-Black Senate District in his illustrative plan (Senate District 19) also has no explanation except a predominate reliance on race in deciding where to draw the District's boundary lines. Of particular note is the use of the Mississippi River as the District's northern border – except where concentrations of Black population on the north side of the river lead plaintiffs' expert to subordinate following the river to his predominate consideration (race). With no explanation other than race, plaintiffs' expert draws the district line across the river to precisely follow the Census Blocks containing higher densities of Black voters.

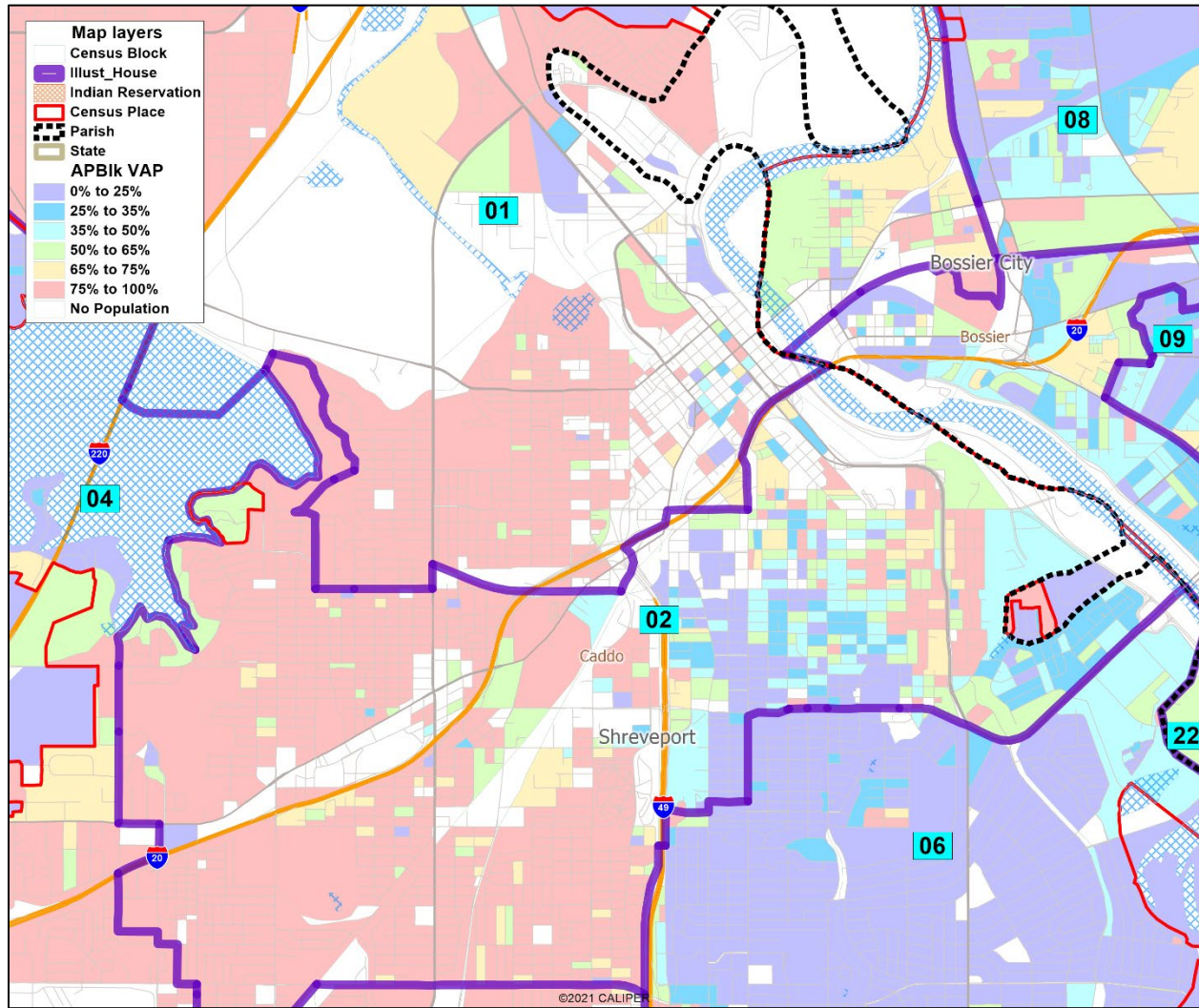
⁸ Of the 1,727 total population in the highlighted area (which is removed from SD17 in the illustrative map), only 2.52% is AP Black VAP.

Figure 18



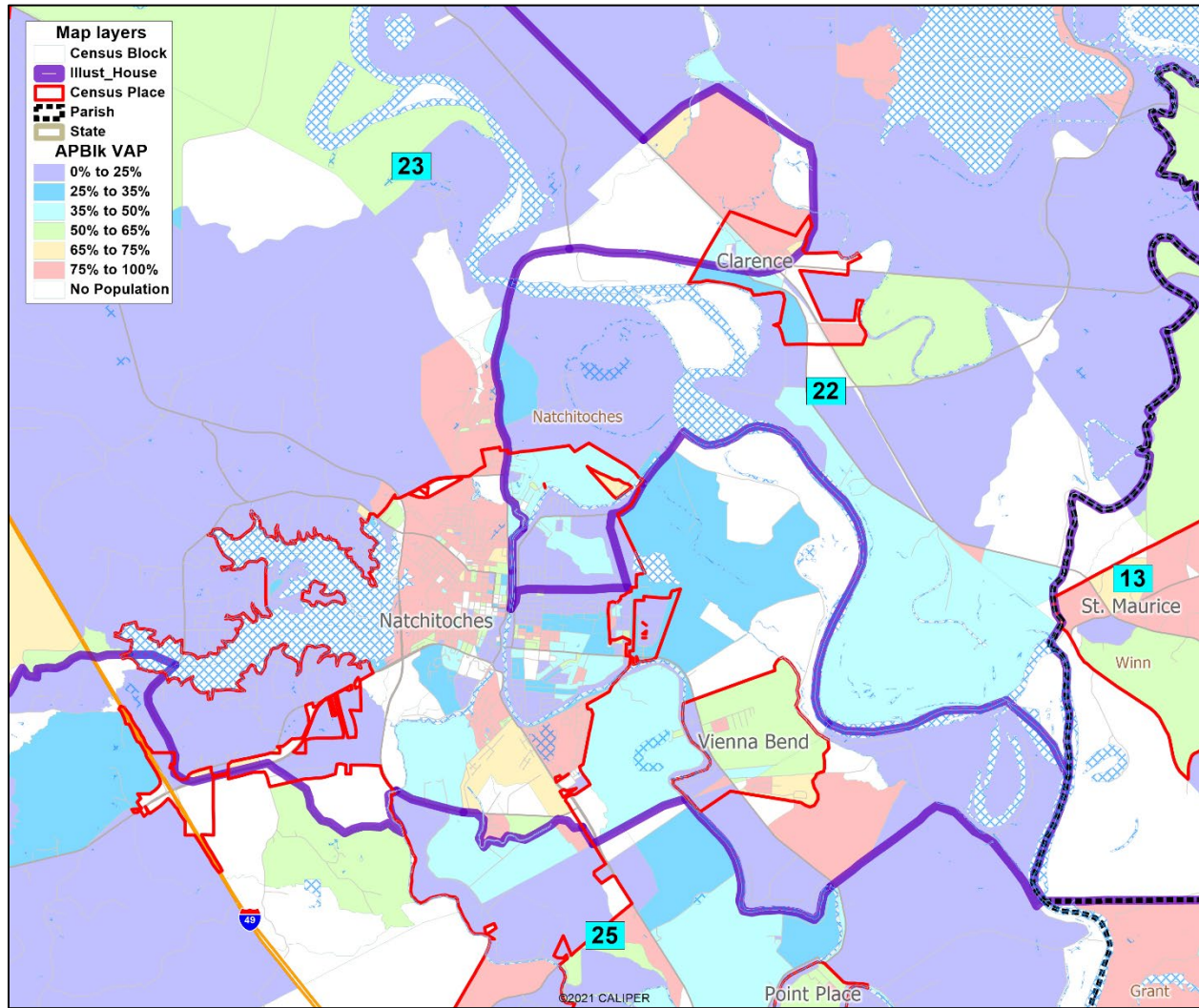
72. Plaintiffs' expert drew his "new" majority-Black HD1 by precisely dividing the Black population of Shreveport along lines that provide the precise racial percentages needed to make Senate Districts 38 and 39 majority-Black – without any reference to compactness, major roads, communities, neighborhoods, clear visible features or any other traditional redistricting principle. The only reason plaintiffs' expert provides for drawing the line where he drew it is race, with the majority-Black area carefully carved up to ensure both HD1 and HD2 end up as majority-Black, as a simple look at the map disproves any claim that the boundaries follow major roads, rivers, city borders, parish borders and even the socio-economic data plaintiff's expert spends so much time discussing (but did not provide in his disclosures, since they were not in his redistricting database):

Figure 19

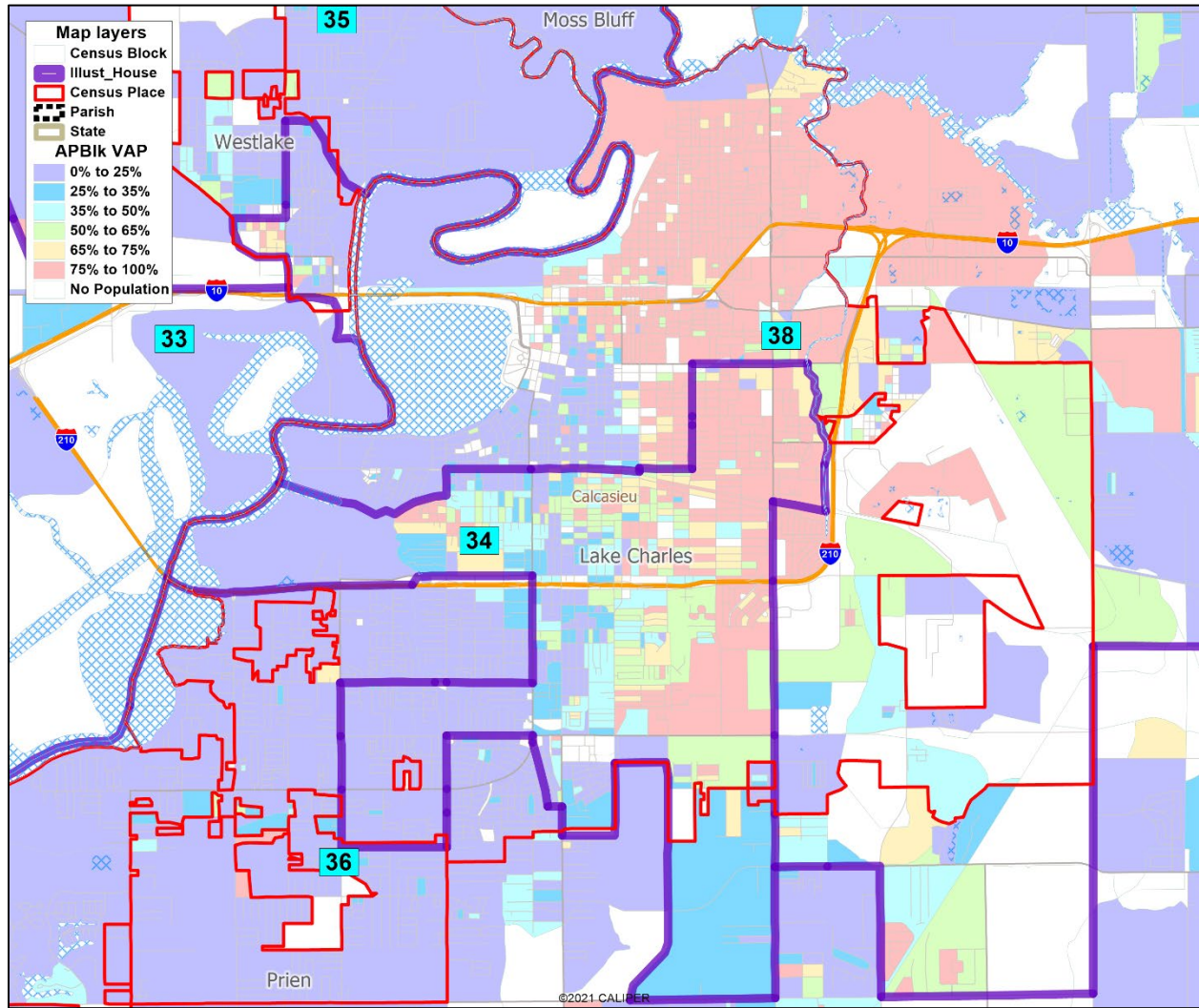


73. Just to the south, in Natchitoches, HD23 similarly wanders across City and community boundaries, ignoring the freeway and other major roads, to focus on including majority-Black Census Blocks:

Figure 20



74. In Lake Charles Parish, Illustrative HD38 sweeps west to carve the majority-Black Census Blocks out of Westlake, sweeps south out of Lake Charles to pull in a few majority-Black Census Blocks, again ignoring City borders, freeways, communities, and even socio-economic data, and then carefully carves through the city to ensure that both HD38 and HD34 end up just barely majority-Black at 50.8% and 50.3% AP Black18+, respectively:

Figure 21

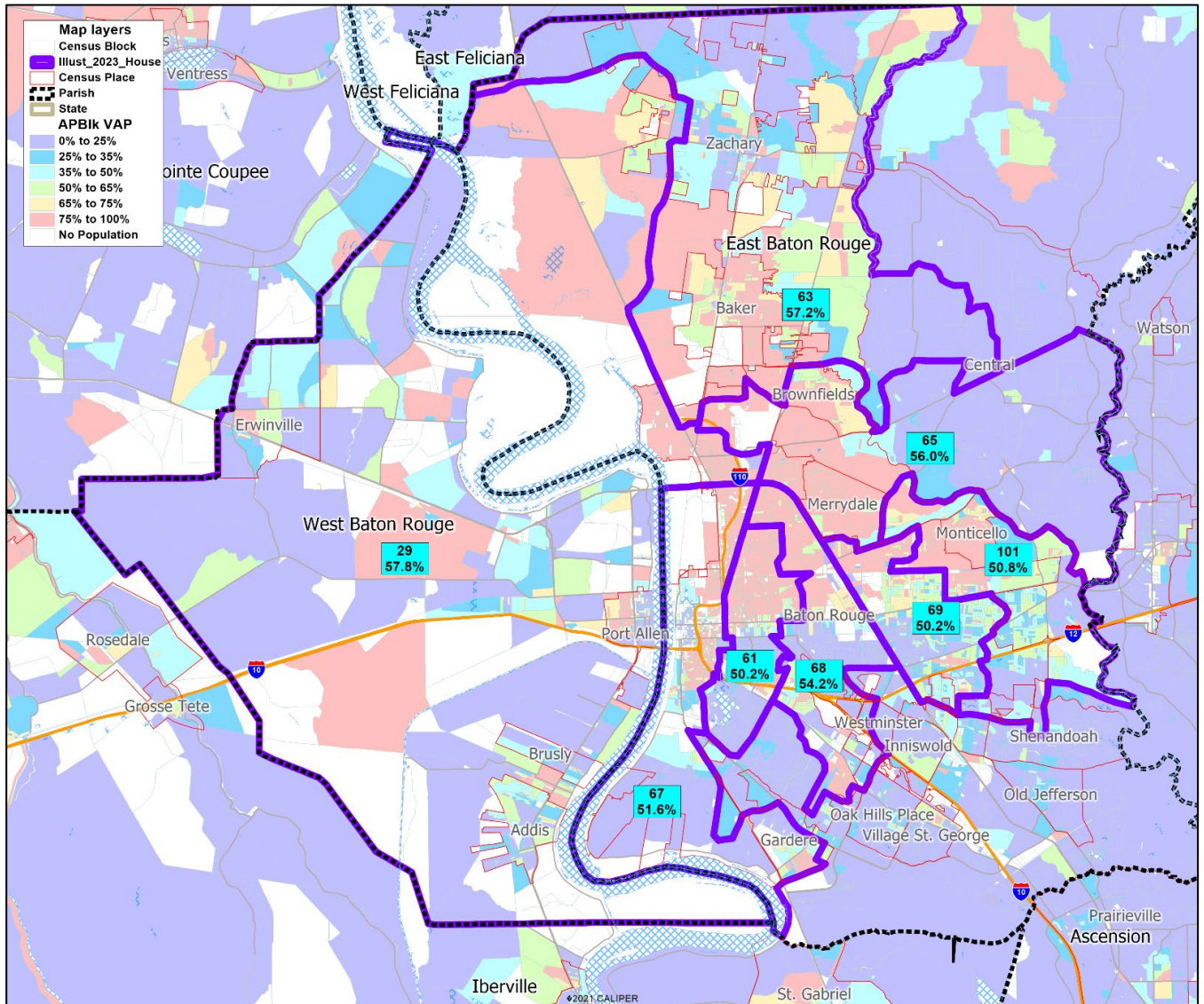
75. The 2023 Illustrative House Plan's divisions of the East Baton Rouge Parish starkly illustrates the blatant use of race as the predominate factor when carving up the region in a "pinwheel" fashion to maximize the number of House Districts that are just barely over 50% AP Black18+%. The following map shows each Illustrative House District's number and its AP Black18+%. Each district clearly carves into the most-Black areas of East Baton Rouge without regard to city borders, community boundaries, major roads, socio-economic areas or community boundaries – clearly only the careful division of the Black population

to get as many districts as possible just over 50% drove the decisions on where to draw the lines.⁹

76. With only 29,565 residents, Central is only two-thirds the size of a single House district. Population density is just one of the differences between relatively rural Central and nearby Baton Rouge, as Central has 472 residents per square mile while Baton Rouge has 2,567. The Enacted House Map leaves Central intact, entirely in HD65, while Mr. Cooper's Illustrative 2023 House map splits it into three districts (HD62, 63 and 65). Two of the Illustrative Districts each combine just roughly one-third of Central with the much more densely populated Baton Rouge or Baker (population density: 1,481 per square mile) across the Comite River (the Comite River is the western border of Central). The lack of attention paid to any consideration other than race is clearly illustrated by the fate of the City of Central in plaintiffs' expert's 2023 Illustrative House map:

⁹ As will be discussed below, with the new "differential privacy" introducing margins of error into the 2020 Census data, there is a good chance these carefully-fine-tuned districts are not actually over 50% AP Black VAP.

Figure 22



77. While this report highlights how racial considerations predominated in the drawing of the illustrative maps' claimed new majority-Black districts, those new districts are only the beginning of plaintiffs' expert's reliance on race as his predominate factor. It is logically obvious that if plaintiffs' expert is using race as the predominate factor when drawing the new districts, by definition plaintiffs' expert is also using race as the predominate factor in drawing the (many more) districts surrounding the "new" districts.

Racial Percentage Targets Drove the Drawing of the New Illustrative Districts

78. Plaintiffs' expert claims the 2023 Illustrative Plans shows the Legislature could have drawn three more majority-Black Senate Districts (Mr. Cooper's June 30, 2023, report at paragraph 73, claiming new majority-AP Black VAP SDs 17, 19 and 38) and six more majority-Black House Districts (paragraph 103, claiming new majority-AP Black VAP HDs 1, 23, 38, 60, 65 and 68).
79. Unfortunately, plaintiffs' expert's data are incorrect. As his own June 30, 2023, report's Exhibit N-1 shows, HD23 is already majority-Black in the Enacted Map:

Figure 23

Population Summary Report											
Louisiana State House -- Illustrative Plan											
District	2020 Pop.	% Deviation	18+ Pop	18+ AP Black	% 18+ AP Black	18+ NH White	% 18+ NH White	18+ Latino	% 18+ Latino	2016-2020 NH SR BCVAP	July 2021 Registered Black Voters
01	44473	0.25%	33473	18520	55.33%	13,247	39.58%	873	2.61%	58.65%	57.09%
02	42776	-3.57%	32912	22164	67.34%	8,142	24.74%	1,717	5.22%	67.78%	71.86%
03	45006	1.46%	33115	19487	58.85%	11,725	35.41%	938	2.83%	61.40%	58.46%
04	46232	4.22%	35104	20197	57.53%	12,928	36.83%	1,052	3.00%	55.16%	57.10%
05	42708	-3.72%	35751	18183	50.86%	12,647	35.38%	4,012	11.22%	59.90%	53.59%
06	46262	4.29%	36840	5889	15.99%	27,343	74.22%	1,390	3.77%	17.10%	13.48%
07	43102	-2.84%	33286	5987	17.99%	23,596	70.89%	1,014	3.05%	15.48%	17.93%
08	45325	2.18%	33068	6571	19.87%	22,697	68.64%	1,875	5.67%	20.59%	17.31%
09	43401	-2.16%	31974	6742	21.09%	20,834	65.16%	2,669	8.35%	20.82%	20.81%
10	44137	-0.50%	34617	11395	32.92%	21,696	62.67%	557	1.61%	33.15%	31.75%
11	43867	-1.11%	35553	19749	55.55%	14,068	39.57%	980	2.76%	59.48%	57.66%
12	45007	1.46%	35392	6685	18.89%	26,166	73.93%	1,393	3.94%	20.26%	18.58%
13	44864	1.14%	35197	8507	24.17%	23,649	67.19%	2,017	5.73%	28.74%	25.44%
14	42319	-4.60%	32389	12217	37.72%	18,584	57.38%	798	2.46%	39.40%	38.10%
15	43211	-2.59%	32579	2695	8.27%	27,392	84.08%	1,003	3.08%	7.95%	6.82%
16	42314	-4.61%	32063	19160	59.76%	11,021	34.37%	678	2.11%	56.47%	62.64%
17	43007	-3.05%	31497	17158	54.48%	11,636	36.94%	1,765	5.60%	57.80%	61.13%
18	46417	4.64%	35794	7310	20.42%	26,708	74.62%	1,047	2.93%	20.24%	21.16%
19	42229	-4.80%	32254	4250	13.18%	26,052	80.77%	642	1.99%	12.58%	11.68%
20	43964	-0.89%	33646	12053	35.82%	20,538	61.04%	522	1.55%	33.94%	36.03%
21	42463	-4.28%	32737	17771	54.28%	13,990	42.73%	571	1.74%	54.32%	57.40%

80. And plaintiffs' expert also fails to mention that his 2023 House Illustrative Map eliminates a majority-Black VAP district: HD62, as shown in his June 30, 2023, report's own Exhibit I-1 and N-1:

Figure 24

Population Summary Report Louisiana State House -- Illustrative Plan												
District	2020 Pop.	% Deviation	18+ Pop	18+ AP Black	% 18+ AP Black	18+ NH White	% 18+ NH White	18+ Latino	% 18+ Latino	2016-2020 NH SR BCVAP	July 2021 Registered Black Voters	
61	43938	-0.95%	35532	17836	50.20%	15,550	43.76%	1,204	3.39%	50.47%	55.95%	
62	45595	2.78%	37162	10271	27.64%	24,940	67.11%	1,125	3.03%	38.89%	30.43%	
63	43863	-1.12%	32530	18656	57.35%	12,270	37.72%	904	2.78%	58.90%	57.31%	

Population Summary Report Louisiana State House -- 2022 Plan												
District	2020 Pop.	% Deviation	18+ Pop	18+ AP Black	% 18+ AP Black	18+ NH White	% 18+ NH White	18+ Latino	% 18+ Latino	2016-2020 NH SR BCVAP	July 2021 Registered Black Voters	
61	44049	-0.70%	33624	25314	75.29%	6,273	18.66%	1,531	4.55%	72.11%	75.90%	
62	42969	-3.14%	33763	18597	55.08%	13,972	41.38%	634	1.88%	57.12%	56.01%	
63	44638	0.63%	33586	23394	69.65%	8,793	26.18%	875	2.61%	72.13%	69.53%	

81. In summary, plaintiffs' expert's claimed list of "six additional majority-Black districts" incorrectly includes HD23 as an "additional" district, when HD23 was already majority-AP Black VAP in the enacted map. And plaintiffs' expert's claimed list also fails to acknowledge that the 2023 House Illustrative Map also eliminates majority-AP Black VAP HD62.
82. Plaintiffs' expert also fails to note that a portion of the AP Black VAP used to create the "new" majority-AP Black VAP House Districts were taken out of some already-narrowly-majority districts. In fact, there are seven House Districts that (1) were already majority-AP Black VAP in the enacted map and (2) are between 50% and 53% AP Black VAP in the 2023 House Illustrative Map, and all seven had their AP Black share of Voting Age Population reduced. The smallest reductions were tiny 0.3% reductions in HD67 (now 51.6% AP Black VAP in the 2023 House Illustrative Map) and in HD23 (now 50.6% AP

Black VAP in the 2023 House Illustrative Map). But the other reductions were significant: already-borderline HD72 went from just 52.7% AP Black VAP in the Enacted Map to just 50.6% AP Black VAP in the 2023 House Illustrative Map. And HD58, HD101, HD34, and HD61 all went from solidly majority-AP Black VAP to well within the margin-of-error of no longer being majority-AP Black VAP:

Figure 25

% AP Black VAP			
HD	Enacted	2023 Illust.	Change
67	51.9%	51.6%	-0.3%
23	50.9%	50.6%	-0.3%
72	52.7%	50.6%	-2.1%
58	56.8%	51.3%	-5.5%
101	60.2%	50.8%	-9.5%
34	72.6%	50.0%	-22.5%
61	75.3%	50.2%	-25.1%

83. As shown in the maps shown earlier in this report, plaintiffs' expert uses race as a predominate factor to draw the lines that create these districts. It is worth noting how precisely race has been used: In the 2023 Illustrative Map, eleven majority-AP Black VAP House Districts are less than 53% AP Black VAP. That is 8 more than the 3 such borderline House Districts in the Enacted Map. The 2023 Senate Illustrative Map is even more extreme: eleven of the Senate map's sixteen majority-AP Black VAP districts are just barely majority-AP Black VAP at less than 53% AP Black VAP.
84. One significant risk associated with drawing districts so close to the 50% "line" as plaintiffs' expert does is the impact of a new statistical method employed in 2020 by the Census Bureau called "differential privacy." This policy was intended to protect

respondent privacy.¹⁰ The methodology adds noise, or “blurring,” to the Census data, which means that Census data now has a “margin of error” in its population counts. The Census Bureau estimates the margin of error to be very roughly 1% for total population counts at the Congressional level, with higher margins of error in smaller geographic areas (such as legislative districts) and for racial or ethnic counts within that total population figure. And the margin of error grows significantly for sub-groups within a geographic area, such as the ethnic breakdowns within each district. With plaintiffs’ expert’s carefully tailored razor-thin majority-Black percentages, there is a statistically significant chance that some or even many of those districts are in fact not 50% Black.

85. There is also the sensitivity analysis to consider. Plaintiffs’ expert uses 50% AP Black VAP as his target for a district likely to elect the candidate preferred by Black voters, without citing any support for that number. Even if 50% is a statistically-estimated figure, any polarized voting analysis used to calculate that “likely to elect” percentage is a statistical analysis with a margin of error and chance of mischaracterizing the data.¹¹
86. As a simple illustration of this concept, suppose that the true “effective” percentage is 53% AP Black VAP for all the districts in the State. In that hypothetical example, the enacted Senate map would elect more Black-preferred candidates (10) than the 2022 and 2023 Senate Illustrative plans (6 and 5, respectively).
87. In Mr. Cooper’s 2023 Illustrative House plan, nearly one-third – 11 of his 35 claimed “majority-Black” districts – are less than 53% AP Black VAP. So, if 53% is the real-world

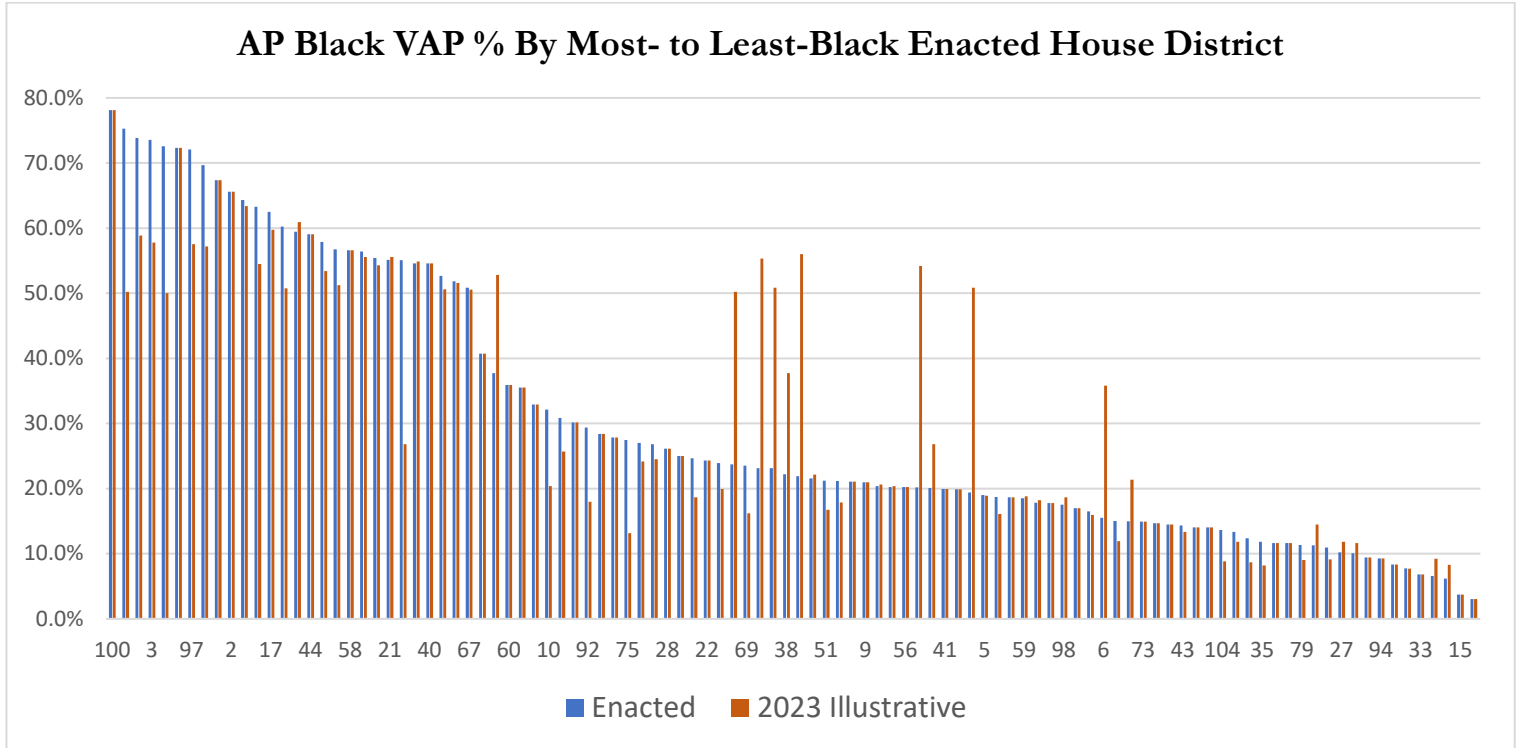
¹⁰ For the Census Bureau’s explanation of differential privacy, see <https://www.census.gov/programs-surveys/decennial-census/decade/2020/planning-management/process/disclosure-avoidance/differential-privacy.html> (last accessed May 29, 2023).

¹¹ One proof of this is the result of the *LULAC* case in Texas, where a Section 2 case ordered a Congressional District redrawn to elect a Latino-preferred (Democratic) candidate, and a Republican won the redrawn district.

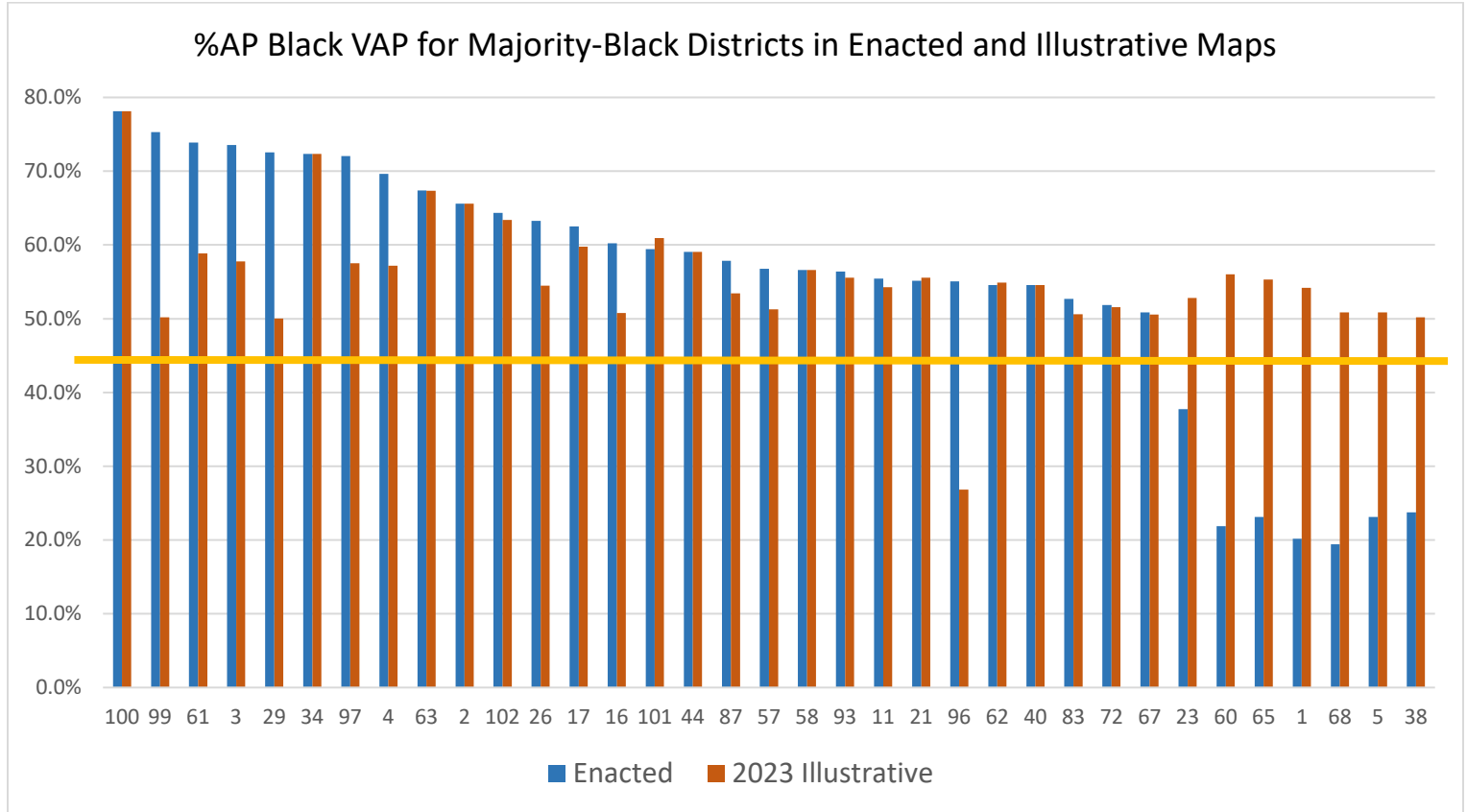
“effective” percentage, the Enacted Senate Map would elect 26 Black-voter-preferred candidates, compared to only 22 in the 2022 House Illustrative Map and only 24 in the 2023 House Illustrative Map.

88. Given the margin of error in the Census’s “differential privacy” 2020 Census data, the AP Black VAP Census data could easily be off by at least one to three percent, and the statistical margin of error in any polarized voting analysis could easily be 3% or more.
89. A sensitivity analysis in the other direction – asking how many districts would elect the Black-preferred candidate if the true effectiveness percentage is 45% AP Black VAP instead of 50% – finds that there are no districts where the AP Black VAP percentage is between 41 and 50 percent in the Enacted Map, in the 2022 Illustrative Map, or in the 2023 Illustrative Map. This means that, as noted above, a Census or polarized voting error that under-estimates the “effective” percentage could have a major impact on the number of effective districts in the 2022 and 2023 Illustrative House Maps and leave the House and Senate Illustrative Maps with fewer effective districts than the Enacted Maps. But a Census or polarized voting error that over-estimates the “effective” percentage would have to be larger than a 9% error before it changed the number of “effective” districts in any of the Enacted or Illustrative maps.
90. The chart below shows the AP Black VAP percentage of all House districts in the enacted (blue bars) and illustrative (orange bars) plans.

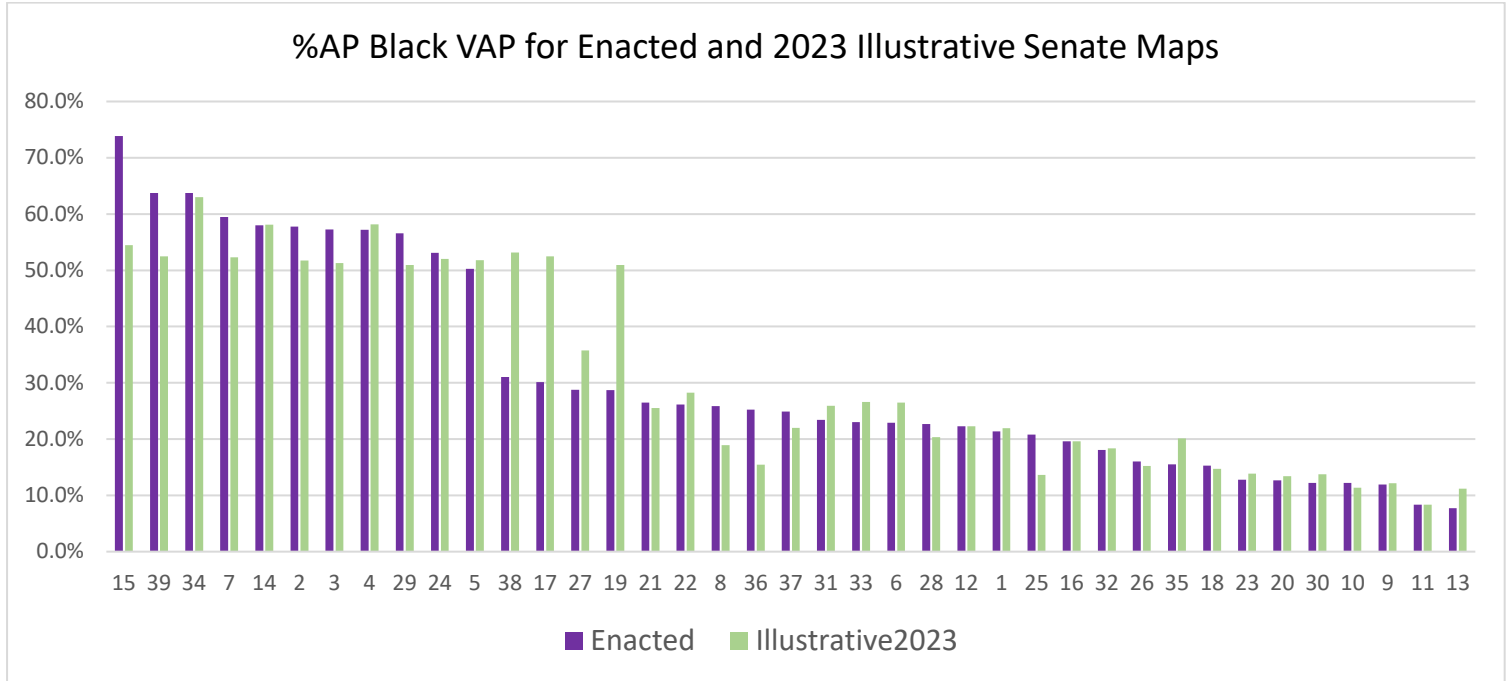
Figure 26



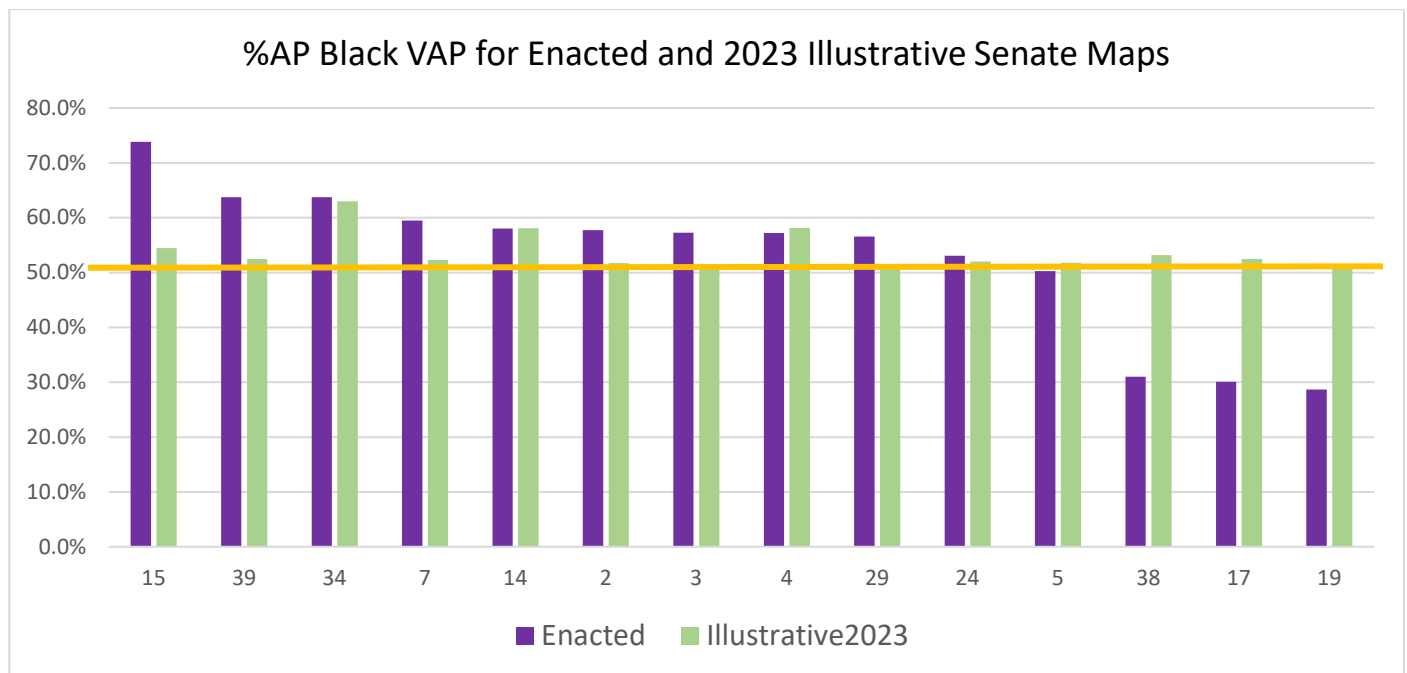
91. The chart below shows the same data, but has been simplified to show only the districts that are majority-AP Black VAP in either plan. The way the majority-AP Black VAP districts were drawn to just-barely cross the 50% line is clear, as the grouping of districts precisely above 50% makes clear the predominate consideration of race in drawing the illustrative map:

Figure 27

92. The same precision targeting on 50% AP Black VAP occurs in the illustrative Senate map. If anything the illustrative Senate map is even more racially focused than the illustrative House map, as the illustrative Senate map are even more precisely drawn just above 50% AP Black than the illustrative House districts (and thus are even more vulnerable to inaccuracies in the Census data resulting from the differential privacy “noise” in the data).
93. The enacted map performs much better in a sensitivity / robustness test. In the hypothetical case where the true effectiveness level is 53% AP Black VAP, only 5 districts in the 2023 Illustrative Senate Plan would elect the Black-preferred candidate, compared to 10 Senate districts in the Enacted Map that would elect the Black-preferred candidate in that hypothetical case.

Figure 28

94. As the full chart above and the more focused chart below reveal, the illustrative districts are drawn to just barely exceed the 50 percent line.

Figure 29

All opinions in this report are subject to amendment in the event additional relevant information is received.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 28th day of July, 2023.

A handwritten signature in cursive script, appearing to read "Douglas Johnson", written in dark ink.

Douglas Johnson, Ph.D.

<p style="text-align: right;">Page 1</p> <p>UNITED STATES DISTRICT COURT MIDDLE DISTRICT OF LOUISIANA</p> <p>DR. DOROTHY NAIRNE, JARRETT LOFTON, REV. CLEE EARNEST LOWE, DR, ALICE WASHINGTON, STEVEN HARRIS, ALEXIS CALHOUN, BLACK VOTERS MATTER CAPACITY BUILDING INSTITUTE, AND THE LOUISIANA STATE CONFERENCE OF THE NAACP</p> <p>CIVIL ACTION NO. 3:22-cv-00178</p> <p>VERSUS</p> <p>SSD-SDJ</p> <p>R. KYLE ARDOIN, IN HIS OFFICIAL CAPACITY AS SECRETARY OF STATE OF LOUISIANA</p> <p>Deposition of DR. DOUGLAS JOHNSON, taken on September 27, 2023, via Zoom Videoconference, commencing 10:12 A.M. Eastern Standard Time.</p>	<p style="text-align: right;">Page 3</p> <p>1 APPEARANCES (CONTINUED): 2 OFFICE OF ATTORNEY GENERAL LOUISIANA DEPARTMENT OF JUSTICE 3 BY: CAREY T. JONES, 1885 N. Third Street 4 Baton Rouge, Louisiana 70804 Phone: (225)975-2410 5 Email: JonesCar@ag.louisiana.gov 6 7 ALSO PRESENT: 8 9 Garrett Muscatel 10 11 REPORTED BY: 12 Cecilia M. Henderson 13 Certified Court Reporter 14 15 16 17 18 19 20 21 22 23 24 25</p>
<p style="text-align: right;">Page 2</p> <p>1 APPEARANCES (ALL PARTICIPATING BY ZOOM): 2 REPRESENTING THE PLAINTIFFS: AMERICAN CIVIL LIBERTIES UNION FOUNDATION 3 BY: MEGAN C. KEENAN, ESQ. AND SARAH BRANNON, ESQ. 4 915 15th Street NW Washington, DC 20005 5 Phone: (202)457-0800 Email: mkeenana@aclu.org 6 7 COZEN O'CONNOR 8 BY: DAKOTA KNEHANS, ESQ. The Promenade 9 1230 Peachtree Street NE Suite 400 10 Atlanta, Georgia Phone: (404)572-2081 Email: knehans@aclu.com 11 12 REPRESENTING THE LEGISLATIVE INTERVENORS BAKER HOSTETLER 13 BY: PATRICK T. LEWIS, ESQ. 127 Public Square 14 Suite 2000 Cleveland, Ohio 44114 15 Phone: (216)861-7096 Email: plewis@bakerlaw.com 16 17 SHOWS, CALI & WALSH 18 JOHN C. CONINE, JR. ESQ. 628 St. Louis Street Baton Rouge, Louisiana 70821 19 Phone: (225) 346-1461 Email: coninejc@gmail.com 20 21 NELSON, MULLINS 22 BY: JOHN BRANCH, ESQ. 301 Hillsborough Street Suite 1400 23 Raleigh, North Carolina 27603 24 25</p>	<p style="text-align: right;">Page 4</p> <p>1 EXAMINATION INDEX 2 Page 3 4 MS. KEENAN6 5 6 EXHIBIT INDEX 7 Page 8 Exhibit 19 Exhibit 238 9 Exhibit 338 Exhibit 438 10 Exhibit 542 Exhibit 643 11 Exhibit 764 Exhibit 865 12 Exhibit 966 Exhibit 1094 13 Exhibit 11126 Exhibit 12126 14 Exhibit 13126 Exhibit 14126 15 Exhibit 15159 Exhibit 16184 16 Exhibit 17248 Exhibit 18248 17 Exhibit 19248 Exhibit 20248 18 Exhibit 21252 19 20 21 22 23 24 25</p>

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<p style="text-align: right;">Page 5</p> <p>1 S T I P U L A T I O N</p> <p>2</p> <p>3 It is stipulated and agreed by and</p> <p>4 between counsel that the deposition of DOUGLAS</p> <p>5 M. JOHNSON, PH.D is hereby being taken under</p> <p>6 Federal Rules of Civil Procedure for all</p> <p>7 purposes in accordance with law;</p> <p>8 That the formalities of filing and</p> <p>9 certification are hereby waived; that the</p> <p>10 formalities of reading and signing are hereby</p> <p>11 specifically not waived;</p> <p>12 That all objections, except those as</p> <p>13 to the form of the question and/or</p> <p>14 responsiveness of the answer, are hereby</p> <p>15 reserved until such time as this deposition or</p> <p>16 any part thereof may be used in evidence.</p> <p>17 * * * * *</p> <p>18 CECILIA M. HENDERSON, Certified Court</p> <p>19 Reporter, in and for the State of Louisiana,</p> <p>20 officiated in administering the oath to the</p> <p>21 witness.</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>	<p style="text-align: right;">Page 7</p> <p>1 Q We have a court reporter</p> <p>2 participating today and so we need to make</p> <p>3 sure your responses are verbal, because the</p> <p>4 court reporter can't take down gestures, nods</p> <p>5 or grunts. There's also going to be lawyers</p> <p>6 here attending for other parties, including</p> <p>7 the defense counsel who retained you. They</p> <p>8 have the right to object to my questions as we</p> <p>9 on go, so if defense counsel or others on the</p> <p>10 Zoom call start speaking when I complete a</p> <p>11 question, please give them a moment to get any</p> <p>12 of their objections on the record. Does that</p> <p>13 make sense?</p> <p>14 A Of course.</p> <p>15 Q Once the objections are stated, you</p> <p>16 should typically answer the question I pose,</p> <p>17 unless either I withdraw it or your counsel</p> <p>18 specifically instructs you not to answer the</p> <p>19 question. Does that work for you?</p> <p>20 A Yes.</p> <p>21 Q If at any point you don't understand</p> <p>22 a question that I ask, I'd ask that you please</p> <p>23 tell me, and I'll try to explain it or</p> <p>24 otherwise rephrase the question. Is that</p> <p>25 okay?</p>
<p style="text-align: right;">Page 6</p> <p>1 DOUGLAS M. JOHNSON, PH.D, 1520</p> <p>2 N. PACIFIC AVENUE, GLENDALE, CALIFORNIA</p> <p>3 91202, AFTER FIRST BEING DULY SWORN IN THE</p> <p>4 ABOVE-ENTITLED MATTER, DID TESTIFY AS FOLLOWS:</p> <p>5 EXAMINATION</p> <p>6 BY MS. KEENAN:</p> <p>7 Q Good morning. We're now on the</p> <p>8 record. It's September 27th, 2023. Thank you</p> <p>9 for being here today. Could you please state</p> <p>10 your name one more time for the record?</p> <p>11 A Douglas Mark Johnson.</p> <p>12 Q Great. How many times have you been</p> <p>13 deposed before, Mr. Johnson -- or Dr. Johnson?</p> <p>14 I'm sorry.</p> <p>15 A I don't know, eight or ten, something</p> <p>16 like that.</p> <p>17 Q I'm sure you're generally familiar,</p> <p>18 but I'm going to walk us through a few ground</p> <p>19 rules just as a reminder of today's</p> <p>20 deposition. Everything, as you know, is being</p> <p>21 transcribed. We have a court reporter here,</p> <p>22 and so we all need to speak clearly and avoid</p> <p>23 speaking over each other. Is that okay with</p> <p>24 you?</p> <p>25 A Yes.</p>	<p style="text-align: right;">Page 8</p> <p>1 A Yes.</p> <p>2 Q All right. And if you need a break</p> <p>3 at any time, please just tell me. We're going</p> <p>4 to do our best to accommodate that, as long as</p> <p>5 there's not a question outstanding.</p> <p>6 Can I ask -- based on this being a</p> <p>7 Zoom deposition -- is anyone else in the room</p> <p>8 with you?</p> <p>9 A No.</p> <p>10 Q Okay. And, obviously, you are on a</p> <p>11 computer that linked into this Zoom. Can you</p> <p>12 tell me how many screens you have up in front</p> <p>13 of you?</p> <p>14 A Just the Zoom screen.</p> <p>15 Q Nothing opened on your computer,</p> <p>16 other than the computer Zoom screen; is that</p> <p>17 right?</p> <p>18 A I have some of the marked deposition</p> <p>19 exhibits open.</p> <p>20 Q Okay. I'm going to ask that you</p> <p>21 leave your email and chat or other messaging</p> <p>22 programs aside during the deposition. Is that</p> <p>23 okay with you?</p> <p>24 A Sure, of course.</p> <p>25 Q And same thing with a smart phone or</p>

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<p style="text-align: right;">Page 9</p> <p>1 any phone that you might be using just that 2 you keep it on the side while we're on the 3 record. Can you agree to that for the day? 4 A Yes. 5 Q Can you think of any reason why you 6 might not be able to understand or respond 7 accurately and truthfully to my questions 8 today? 9 A No. 10 Q The last note, just in light of this 11 being a virtual deposition, if for any reason 12 our internet connection breaks up or if it 13 becomes hard to hear you or if there's any 14 freezing, we're just going to go off the 15 record until we figure out what the problem is 16 and then we'll get everyone here back in the 17 session. Does that sound okay? 18 A Yes. 19 Q I'm going to start by sharing an 20 exhibit, which has been premarked as be 21 Exhibit 1. 22 Hold on one second while I get that 23 pulled up. Are you able to see what I'm 24 sharing on my screen? 25 A Yes.</p>	<p style="text-align: right;">Page 11</p> <p>1 Q Anyone else on the counsel team you 2 remember while you were drafting your report? 3 A Not that I recall. It's possible. I 4 don't remember those specific calls. 5 Q Did you review any particular 6 documents in advance of this deposition? You 7 mentioned a couple of reports. It would help 8 to spell them out, just so I know which ones 9 you've looked at. 10 A Mr. Cooper's reports. 11 Q Did you review both of your own 12 reports you submitted, as well? 13 A Yes. 14 Q Which of Mr. Cooper's reports did you 15 review in advance of the deposition? 16 A He had his -- all of them that I had. 17 So his original report, his -- I don't know 18 the titles of all of them. His amended report 19 and his rebuttal report. 20 Q Okay. So in particular, have you 21 reviewed the corrected initial 2023 report, 22 the amended one that was attached to the 23 rebuttal? 24 A Yes. 25 Q And you reviewed the rebuttal report</p>
<p style="text-align: right;">Page 10</p> <p>1 Q You agree this is the deposition 2 notice that you received in this case? 3 A Yes. 4 Q Did you do anything when you were 5 preparing for today's deposition? 6 A Just reviewed the various reports 7 that Mr. Cooper had written. 8 Q Did you speak with defense counsel in 9 advance of the deposition? 10 A Of course. 11 Q How many times? 12 A Two, maybe three. 13 Q Do you know how long in total you met 14 with defense counsel? 15 A No. Maybe an hour, maybe two. 16 Q Okay. And who was present for that 17 meeting, or those meetings, rather? 18 A Mr. Lewis certainly was. I don't 19 recall if anyone else was. 20 Q Okay. How often did you stay in 21 touch with defendant's counsel while you were 22 drafting your report? 23 A We spoke a couple of times. 24 Q Okay. Was that also Mr. Lewis? 25 A Yes.</p>	<p style="text-align: right;">Page 12</p> <p>1 itself? 2 A Yes. 3 Q Any other reports of plaintiffs' or 4 defendants' experts that you reviewed in 5 advance of this deposition? 6 A Not that come to mind. This case has 7 been going on a long time, so it's possibly I 8 did some time ago. But to prepare for this, I 9 did not. 10 Q Okay. And did you review any of the 11 deposition testimony that has already taken 12 place in this case in preparing for your own 13 deposition? 14 A No. 15 Q Other than Mr. Lewis and the counsel 16 we've already discussed, have you spoken with 17 anyone else about today's deposition? 18 A I mean, people that make logistical 19 arrangements, travel and how to get the Zoom 20 address and those kind of things. I don't 21 remember if there were other people on the 22 calls with Mr. Lewis. There may have been. 23 There may not have been. I just don't 24 remember. 25 Q Did you speak with anyone other than</p>

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<p style="text-align: right;">Page 13</p> <p>1 Mr. Lewis or counsel team about the substance 2 of what we might discuss in the deposition 3 today? 4 A Only if they were on the call with 5 Mr. Lewis. I don't remember. 6 Q Since writing your report, have you 7 done any independent research or other work 8 involving this case? 9 MR. LEWIS: 10 Objection; vague. You may 11 answer. 12 THE WITNESS: 13 No, just what's in my reports. 14 BY MS. KEENAN: 15 Q And how many total hours do you think 16 you've spent working on this case? 17 A I would have to look that up in my 18 time sheets. I don't know off the top of my 19 head. 20 Q Have you submitted time sheets in 21 this case? 22 A Not yet, but I have them tallied. 23 Q We may reserve the right to request 24 the time sheets, but we can let Mr. Lewis know 25 about that later.</p>	<p style="text-align: right;">Page 15</p> <p>1 than 2022, back in 2021? 2 A It's possible. I have no idea. 3 Q Had you ever worked with any members 4 of the defendants' legal team before your 5 involvement in this case? 6 A Yes. 7 Q About how many times, to your 8 knowledge? 9 A I don't know. Three, four, probably. 10 Somewhere around there. 11 Q Okay. And do you know if that's how 12 the lawyers for the legislative intervenor 13 defendants came to contact you based on that 14 prior relationship? 15 A I have no idea. I try not to guess 16 what lawyers are thinking. 17 Q Okay. How long have you been doing 18 work as an expert witness? 19 A Oh, back since the 2001 redistricting 20 cycle. I don't know exactly when that first 21 case would have been. Probably the Arizona 22 2001 case, which -- filed in 2001, but really 23 went to court in 2002. I started as an expert 24 witness, although I didn't end up as an expert 25 witness. They changed my status to a funky</p>
<p style="text-align: right;">Page 14</p> <p>1 So you don't have any ballpark amount 2 of time that you've spent preparing the report 3 in this case? 4 A I would rather just send you the 5 actual numbers than take a wild guess. 6 Q Have you received any compensation 7 yet related to this case? 8 A No. 9 Q Okay. How did you first learn about 10 this case? 11 A It's so long ago, I don't recall. 12 Somebody called me and asked me to help, I'm 13 sure. 14 Q And do you remember when you were 15 first contacted by the defendants' legal team 16 about being a potential expert? 17 A No -- 18 Q I'm sorry. Go ahead, finish your 19 answer. 20 A No, it was a long time ago. 21 Q Do you recall if it was back in 2022, 22 at least the year, you were first contacted by 23 them? 24 A Probably. 25 Q Is it possible that it was earlier</p>	<p style="text-align: right;">Page 16</p> <p>1 Arizona option instead. But somewhere around 2 there. 3 Q In your time doing work as an expert 4 witness, have you ever been an expert for a 5 plaintiff in a redistricting case? 6 A Yes. 7 Q Were those plaintiffs political 8 parties or government entities? 9 A It was the Harris versus The Arizona 10 Independent Redistricting Commission. So I 11 guess, technically, it was an individual. 12 Q What percentage of the time do you 13 think you worked for plaintiffs in 14 redistricting cases? 15 A Out of what? 16 Q Out of the total number of times 17 you've worked in redistricting cases as an 18 expert? 19 A Okay. Litigations are a very tiny 20 part of my work. Most of them, certainly. 21 Q And would you say most of your work 22 is for government entities or political 23 parties? 24 A We usually don't work for political 25 parties.</p>

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<p style="text-align: right;">Page 17</p> <p>1 Q Okay. So just for government 2 entities, then? 3 A The overwhelming majority of it, yes. 4 Q Just focusing on the litigation work 5 you do for a minute. Do all of your 6 litigation cases involve redistricting? 7 A No. 8 Q About how many of the litigation 9 cases you've worked on have involved 10 redistricting? 11 A Most of them. 12 Q And is that -- I'm just trying to get 13 a sense of the numbers here. Is that most of 14 the eight to twelve cases you mentioned 15 earlier or all of the eight to twelve cases 16 that you mentioned earlier are redistricting 17 cases. 18 A Most of the eight to twelve cases I 19 worked on are redistricting-related there was 20 a Redondo Beach case where it was not 21 redistricting-related, off the top of my head. 22 Q So somewhere in the ballpark of 23 ten redistricting cases is your guess? 24 A Somewhere in that ballpark, yeah. 25 Q Do you have --</p>	<p style="text-align: right;">Page 19</p> <p>1 A Yes. 2 Q So in your work as an expert in 3 redistricting litigation, do you have a 4 standard methodology that you would use? 5 A It depends on what question is being 6 asked. 7 Q Does that mean that your methodology 8 across the various redistricting cases that 9 you've worked on is different, depending on 10 the question that's asked of you? 11 A Some of it is probably similar and 12 some of it is probably different. It depends 13 on what I'm looking at. 14 Q Is there any methodology that you 15 have used consistently across all of your past 16 cases as an expert in redistricting 17 litigation? 18 A It depends on how broad a scope you 19 want to throw on under the rubric of 20 methodology. 21 Q What's the narrowest answer you can 22 provide to that question where it would be 23 consistent across all of your cases? If there 24 isn't one, that's okay. I just want to make 25 sure I understand the answer you're providing.</p>
<p style="text-align: right;">Page 18</p> <p>1 A Just to clarify, you meant as an 2 expert witness, right? 3 Q Yes, as an expert witness in those 4 cases, yes. 5 A Yes. 6 Q Does that number expand when we're 7 not just talking about witnesses expert work 8 in those cases? 9 A Sorry. Can you clarify that 10 question? 11 Q Sure. You specified, just as an 12 expert witness. I'm wondering why you made 13 that specification. Does the number get 14 bigger or smaller, based on whether I wasn't 15 just asking about your time as an expert 16 witness in those cases? 17 A Oh, I've also done consulting work 18 with legal teams where I wasn't an expert 19 witness. 20 Q I won't ask you too many details 21 about the consulting work that you've done. 22 When I'm asking you questions, I want you to 23 assume -- unless I state otherwise -- that I'm 24 asking about your litigation experience. Is 25 that okay with you?</p>	<p style="text-align: right;">Page 20</p> <p>1 A I mean -- I would say probably all of 2 them involved using Maptitude for 3 redistricting and a wide array of demographic 4 data. 5 Q And is Maptitude your platform that 6 you use consistently in redistricting 7 litigation work? 8 A Almost all the time, yes. 9 Q Did you use Maptitude for your work 10 in this case? 11 A Yes. 12 Q Now, you told us you've been deposed 13 eight to ten times. How many times have you 14 testified at trial as an expert in 15 redistricting cases? 16 A Slightly fewer than eight to ten. 17 Q Okay. Were any of your -- were any 18 parts of your prior testimony or reports ever 19 limited by a court, to your knowledge? 20 A Yes. 21 Q And when was that, to the best of 22 your recollection? 23 A So, in Arizona, I started and went 24 through disclosure as an expert and then got 25 reclassified through various motions and</p>

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<p style="text-align: right;">Page 21</p> <p>1 debates as -- I think the phrase was a 306(b), 2 which was a person most knowledgeable about 3 the process, rather than an expert. And then 4 in North Carolina, in the Covington case, 5 there was a programming error that was found 6 in one section of my report, so that section 7 was stricken, but the rest of the report 8 stayed in. 9 Q And are those the only two cases 10 where you recall your testimony or reports 11 being limited by a court? 12 A Yes. 13 Q Just to clarify for the record, is it 14 possible that in the Arizona case, you were 15 used as a 30(b)6 witness on behalf of the 16 Commission? 17 A Yeah. The exact number, I certainly 18 could have wrong. But it's primarily the 19 person most knowledgeable about the process. 20 Q That's okay. I just want to make 21 sure the record is straight. I think we're on 22 the same page. We may talk a little bit more 23 about the Covington case in a minute. But has 24 your testimony ever been excluded for any 25 other reason, to your recollection?</p>	<p style="text-align: right;">Page 23</p> <p>1 set list that I knew I was going to talk 2 about. So there's going to be a couple that 3 we'll handle just electronically today. But 4 I'll share on my screen -- that I'm happy to 5 send you a copy, it that will be helpful. 6 Give me one second to share the screen. Can 7 you see my screen now? 8 A Yes. 9 Q Can you see this is a case called, 10 "Common Cause versus David R. Lewis," based on 11 the case caption here? 12 A Yes. 13 Q And this is in the State of North 14 Carolina, like you said, right? 15 A Yes. 16 Q You can see it's a Superior Court 17 Division case, so it's a state court, rather 18 than federal court. 19 A Yes. 20 Q I'm going to flip to page 112 of this 21 decision. You see in Paragraph 249 they talk 22 about "Legislative Defendants' expert 23 Dr. Johnson." Do you believe that to be you? 24 A I'll take your word for it. 25 Q In this case, do you recall offering</p>
<p style="text-align: right;">Page 22</p> <p>1 A No. 2 Q What about, has your testimony ever 3 been criticized in a judicial decision, if not 4 outright excluded? Do you have any 5 recollection of that? 6 A Oh, sure. 7 Q Do you remember any particular cases 8 in which that may have happened? 9 A Oh, Palmdale is the obvious one. 10 Q Is it the only one? 11 A It's the only one that comes to mind. 12 Q Do you recall offering expert 13 opinions in a case called, Common Cause versus 14 Lewis? 15 A Is that the other North Carolina 16 case? 17 Q It is. 18 A Is it the one in the federal court? 19 Q No, this one, I believe, is in the 20 state court in that case. 21 A It's possible. The name doesn't 22 trigger the specifics for me. 23 Q That's okay. I'm going to share an 24 exhibit on my screen. This one has been 25 premarked as Exhibit 10. This was not in the</p>	<p style="text-align: right;">Page 24</p> <p>1 opinions about -- among other things -- the 2 intent of another map drawer? 3 A I mean, I don't recall the specifics 4 of it. I can see what's written there. 5 Q But in 249, you can see that you 6 stated that "A senate district was drawn to 7 capture as much of the Charlotte suburbs as 8 possible into a single district and that 9 another senate district reflected an effort to 10 unite the southern suburbs of Charlotte," 11 right? 12 A Yes. 13 Q Paragraph 250 of this opinion says: 14 "The Court rejects Dr. Johnson's explanations 15 as it appears to be purely speculative and in 16 any event his speculation does not withstand 17 minimal scrutiny." Did I read that correctly? 18 A Yes. 19 Q Would you agree that -- looking ahead 20 to page 270 of this same opinion, looking at 21 Paragraph 647, again, the Court writes: "The 22 Court finds Dr. Johnson's analysis 23 unpersuasive and gives his opinions little 24 weight." Did I read that correctly? 25 A Yes.</p>

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<p style="text-align: right;">Page 25</p> <p>1 Q It then goes on to say that:</p> <p>2 "Dr. Johnson has testified as a live expert</p> <p>3 witness in four cases previously and the</p> <p>4 courts in all four cases have rejected his</p> <p>5 analysis." Did I read that directly?</p> <p>6 A Yes.</p> <p>7 Q I see four cases cited here. One is</p> <p>8 Covington and one is Palmdale, which you</p> <p>9 mentioned earlier. Is that the same two cases</p> <p>10 you were referring to?</p> <p>11 A Yes.</p> <p>12 Q But I also see a case called, "Luna</p> <p>13 versus County of Kern" and "Garret versus City</p> <p>14 of Highland." Do you see those cases cited</p> <p>15 here?</p> <p>16 A Yes.</p> <p>17 Q Do you agree that the Court in those</p> <p>18 cases found that your analysis, quote, "Lacks</p> <p>19 merits" or that your methodology was, quote,</p> <p>20 "Inappropriate," or did you dispute what the</p> <p>21 Court held here?</p> <p>22 A I would -- I mean, I would say yes to</p> <p>23 both. I think you're reading them correctly,</p> <p>24 but I would dispute both of those findings --</p> <p>25 actually, dispute both those quotes as being</p>	<p style="text-align: right;">Page 27</p> <p>1 litigation experience as we've already</p> <p>2 discussed or do you view that work as</p> <p>3 separate?</p> <p>4 A I mean, it's all part of my</p> <p>5 experience.</p> <p>6 Q Sure. Let me ask a clearer question.</p> <p>7 In any of the eight to ten redistricting cases</p> <p>8 that we've talked about here, were you</p> <p>9 retained to draw the map for a governmental</p> <p>10 entity in question or are you always called in</p> <p>11 to criticize the map that somebody else has</p> <p>12 drawn?</p> <p>13 A It's a mix.</p> <p>14 Q About how many maps have you drawn in</p> <p>15 the redistricting context, both in litigation</p> <p>16 and outside of the litigation context?</p> <p>17 A Thousands.</p> <p>18 Q And do you know how many of those</p> <p>19 maps led to litigation?</p> <p>20 A Five -- four or five.</p> <p>21 Q Okay. Have any of those maps in the</p> <p>22 subject of Voting Rights Act challenged?</p> <p>23 A Yes.</p> <p>24 Q Given the thousands of maps that</p> <p>25 you've drawn, would it be fair to assume that</p>
<p style="text-align: right;">Page 26</p> <p>1 somewhat taken out of context.</p> <p>2 Q Are you disputing the</p> <p>3 characterization by the underlying court or</p> <p>4 are you saying this court was wrong that those</p> <p>5 courts rejected your testimony?</p> <p>6 A Saying that, for example, the</p> <p>7 inappropriate methodology is not that it was</p> <p>8 inappropriate for the situation, but was not</p> <p>9 what the judge felt was the ideal remedy.</p> <p>10 Q But you're not saying that any of the</p> <p>11 quotes here are incorrect, right?</p> <p>12 A I'm saying they're taken out of</p> <p>13 context.</p> <p>14 Q Okay. In any event, you'd agree that</p> <p>15 at the bottom of Paragraph 648, the Court</p> <p>16 wrote: "This Court joins these other courts</p> <p>17 in rejecting Dr. Johnson's methodologies,</p> <p>18 analyses and conclusions." Did I read that</p> <p>19 correctly?</p> <p>20 A Yes.</p> <p>21 Q I'm going to stop sharing the screen</p> <p>22 now. Am I right that you've also drawn maps</p> <p>23 in the redistricting context?</p> <p>24 A Yes.</p> <p>25 Q Are you including that in your</p>	<p style="text-align: right;">Page 28</p> <p>1 over the course of your career, you've had</p> <p>2 lawyers or other experts come in after the</p> <p>3 fact that point out different ways to make</p> <p>4 your maps a little bit better?</p> <p>5 A I don't have lawyers that -- it</p> <p>6 probably happened once or twice, but typically</p> <p>7 lawyers would raise legal issues and I could</p> <p>8 adjust them from the mapmaker side. It</p> <p>9 wouldn't be really how to make them better.</p> <p>10 Q Sure. But there might be -- whether</p> <p>11 it's a legal issue or traditional</p> <p>12 redistricting factor that they think you could</p> <p>13 adjust and you'll try to make that adjustment;</p> <p>14 is that what you're describing?</p> <p>15 MR. LEWIS:</p> <p>16 Objection; you may answer.</p> <p>17 THE WITNESS:</p> <p>18 I'm not sure what the question</p> <p>19 was.</p> <p>20 BY MS. KEENAN:</p> <p>21 Q Let me try it another way. Would you</p> <p>22 agree there is virtually always more than one</p> <p>23 way to draw a map?</p> <p>24 A Most of the time.</p> <p>25 Q And do you think that the fact that a</p>

7 (Pages 25 to 28)

<p style="text-align: right;">Page 29</p> <p>1 map could be drawn in more than one way 2 inherently suggests that there's something 3 wrong with any one version of the maps that 4 could be drawn? 5 MR. LEWIS: 6 Objection. It calls for 7 speculation. Go ahead. 8 THE WITNESS: 9 I think it's way too vague. I'm 10 not sure I can answer that. 11 BY MS. KEENAN: 12 Q Sure. Maybe I'll be a little 13 narrower. Does the fact that a district could 14 be drawn in two different ways in a state, 15 does that mean that one of those two ways must 16 be illegal? 17 MR. LEWIS: 18 Objection. 19 THE WITNESS: 20 Not by definition. 21 BY MS. KEENAN: 22 Q Okay. I'm going to go back to the 23 maps you've drawn for a minute. Has a court 24 ever rejected one of the maps that you drew in 25 the redistricting context?</p>	<p style="text-align: right;">Page 31</p> <p>1 MR. LEWIS: 2 Sorry. I'm trying to get the 3 objection on the record. It calls 4 for a legal conclusion. Go ahead. 5 THE WITNESS: 6 That was what we shared with the 7 client, was our fear and that a judge 8 ultimately had found, yes. The map 9 in Morgan Hill was not contiguous. 10 BY MS. KEENAN: 11 Q I see. 12 A So it was pretty straight forward. 13 Q And when you submitted that map to 14 the Court, did you provide any sort of expert 15 analysis along with it or did you just provide 16 the map itself? 17 A I didn't provide anything, the City 18 brought in a special counsel who submitted the 19 City records to the Court. That case took 20 about 20 minutes. 21 Q Did you submit any opinions or 22 testimony in that case about whether that map 23 was illegal or were you just the map drawer in 24 that context? 25 A Well, the map in the City records had</p>
<p style="text-align: right;">Page 30</p> <p>1 A Yes. 2 Q And when was that? 3 A In Jacksonville and in Morgan Hill. 4 And it should be noted, in Morgan Hill, we 5 told the client the map was illegal. And, 6 actually, the City Attorney in open session 7 told the client the map they wanted was 8 illegal, but they adopted it anyways. And 9 then it was overturned. 10 Q And you put that map forward with the 11 understanding that it was illegal; is that 12 what you mean? 13 A No, it was a map that had been 14 requested to be drawn, so we drew it to 15 illustrate the problems with it. 16 Q In Morgan Hill, the client requested 17 that you draw a map, and you followed those 18 instructions, right? 19 A Yes. 20 Q And that map was illegal; is that 21 right? 22 MR. LEWIS: 23 Objection; calls for legal -- 24 THE WITNESS: 25 That was our opinion --</p>	<p style="text-align: right;">Page 32</p> <p>1 a big stamp that I and my team had put on it, 2 saying, "Not contiguous." That was our 3 opinion. But there was no expert -- there 4 were no declaration or any formal filing. 5 Q Okay. Got it. What about in 6 Jacksonville? Do you recall what the basis 7 for rejecting the map was in that case? 8 A Yes. It was a Voting Rights based 9 challenge. 10 Q Okay. And did the Court conclude 11 that your map didn't provide adequate 12 opportunities to for minorities to elect the 13 candidates of their choice? 14 MR. LEWIS: 15 Objection; vague. 16 THE WITNESS: 17 Yeah. I don't believe that was 18 actually the finding. 19 BY MS. KEENAN: 20 Q Do you remember what the finding was? 21 I'm not familiar with that case, so I'm just 22 trying to get a sense of what happened there. 23 A Yeah. They actually wanted the 24 downtown core of Jacksonville divided up. 25 They wanted fewer majority Black districts.</p>

8 (Pages 29 to 32)

<p style="text-align: right;">Page 33</p> <p>1 Q What about -- shifting gears a little 2 bit -- what about the Department of Justice 3 back when preclearance was still in place 4 under the Section 5 of the Voting Rights Act? 5 Did you have the Department of Justice object 6 to any map that you drew? 7 A Yes. 8 Q Was that in Arizona, as well, that we 9 talked about earlier? 10 A It was the Arizona Legislative Map, 11 yes. 12 Q You drew that map on behalf of the 13 Arizona Independent Redistricting Commission; 14 is that correct? 15 A Yes. 16 Q Do you recall if the Department of 17 Justice determined that the Commission had not 18 met its burden of establishing the minority 19 voters will continue to be able to elect 20 candidates of their choice? 21 A I don't know the exact wording of the 22 Department's letter. It was a very unusual 23 letter, but it was expected. We had gone into 24 it knowing that it required -- getting that 25 through the Department of Justice would have</p>	<p style="text-align: right;">Page 35</p> <p>1 voters could elect candidates of their choice, 2 right? 3 A Based on Latino Coalition's changed 4 opinion. 5 Q I'm going to share my screen again 6 for a moment here. Are you able to see what's 7 on my screen? 8 A Yes. 9 Q Okay. And this is the Voting 10 Determination Letter filed by the Department 11 of Justice in that case; is that right? 12 A I'll take your word for it. I never 13 saw the actual letter. 14 Q I'm going to apologize, because I 15 think that I've not been asking the court 16 reporter to mark some of these exhibits, so I 17 go back in a minute and just through each of 18 these to make sure we have them all in the 19 record correctly. 20 Just while we're on this letter, I'm 21 going to go to page 2. And looking at the 22 third whole paragraph here, the first sentence 23 is: "According to your submission, AIRC 24 claims the proposed plan contains ten 25 districts, Districts 2, 13-16, 23-25, 27 and</p>
<p style="text-align: right;">Page 34</p> <p>1 required the endorsement of the Arizona 2 Minority Coalition, which we had at the time 3 it was adopted, and they thanked us for 4 adopting, and then the Arizona Minority 5 Coalition changed their mind. After adoption, 6 they then objected to the map that they 7 thanked the Commission for adopting. As we 8 warned the Commission, without that 9 endorsement, it was rejected. 10 Q So you're saying this DOJ objection 11 was expected because of the objection by the 12 Minority Coalition, just so I'm understanding 13 what you're saying here? 14 A Even at the time it was adopted, the 15 Commission was warned that it was, what you 16 might call, a stretch map for looking for 17 empowerment, which was the big Latino group 18 that was involved in the process had asked 19 for. And then after it was adopted, the big 20 Latino group changed their mind and wanted a 21 different map. 22 Q And you'd agree that's not just that 23 the Coalition changed its mind. The Justice 24 Department actually reached findings about 25 this map, not establishing that minority</p>	<p style="text-align: right;">Page 36</p> <p>1 29, in which minority voters will be able to 2 elect candidates of their choice." 3 Did I read that first sentence 4 correctly? 5 A Yes. 6 Q The next sentence says: "However, 7 based on the information provided, we have 8 determined that the AIRC has not met its 9 burden of establishing that minority voters 10 will continue to be able to elect candidates 11 of their choice in five districts." 12 Did I read that correctly? 13 A Yes. 14 Q The next sentence also explains that 15 the proposed plan results in a net loss of 16 three districts from the benchmark plan in 17 which minority voters can effectively exercise 18 their electoral franchise. Did I read those 19 words correctly? 20 A Yes. 21 Q And the letter, as a result, called 22 the proposed plan, quote, "Retrogressive." 23 Did I read that correctly? 24 A I mean, it does have the word 25 "Retrogressive," yes.</p>

<p style="text-align: right;">Page 37</p> <p>1 MS. KEENAN: 2 Just to clean up the record 3 here, I'm going to ask the court 4 reporter to mark each of the exhibits 5 we've go gone through so far. The 6 first, the deposition notice for Dr. 7 Douglas M. Johnson should be marked 8 as Exhibit 1. The second, the CV -- 9 I don't think we've talked about the 10 CV. We just talked about it in 11 advance of the deposition; is that 12 right? I'll move that, just so we're 13 going in the right order. The second 14 is the -- sorry. My screen is not 15 allowing me to move with the exhibit 16 screen happening. Give me one 17 second. 18 Again, the deposition notice 19 will be marked as Exhibit 1. The 20 Common Cause versus Lewis decision 21 will be marked as Exhibit 2. And 22 then the Voting Determination Letter 23 will be marked as Exhibit 3, just for 24 the record. Thanks with your 25 patience with all of that.</p>	<p style="text-align: right;">Page 39</p> <p>1 Q And that client list you're talking 2 about is starting on page 5 of the CV; is that 3 right? 4 A Yes, this is prior to 2021. It's got 5 the 2021 states on it, not -- and it's got the 6 note in here about how many we had in 2021 and 7 2022, but not the list. 8 Q Do you recall whether you've taken on 9 additional clients since the time that this CV 10 was prepared in addition to the ones mentioned 11 in the note here? 12 A Sure. I've got about 25 active 13 clients right know. 14 Q Okay. Give me one second. Sometimes 15 your CV specifies that work was done by NDC, 16 which I take to be the corporation that you 17 work for; is that right? 18 A Yes, and I'm the president of. 19 Q So, for example, at the bottom of -- 20 I'm sorry. At the bottom of page 4 here under 21 "Voting Rights Act and Racial Bloc Voting 22 Analysis," you say: "NDC has performed racial 23 bloc voting analysis for the clients of the 24 following law firms." 25 Do you see where I'm reading from in</p>
<p style="text-align: right;">Page 38</p> <p>1 BY MS. KEENAN: 2 Q I'm not going to move on to what's 3 been premarked as Exhibit 2, but what I'll ask 4 the court reporter to mark for the record as 5 Exhibit 4, and that's the CV that we talked 6 about before the deposition began. Do you 7 recognize this CV, Dr. Johnson? 8 A Yes. 9 Q Did you review the CV before your 10 deposition today? 11 A I mean, long ago. 12 Q And so do you know if this still 13 accurately summarizes your education, work 14 experience and qualifications? 15 A Up to the time in which it was 16 printed, yes. 17 Q Okay. Do you recall when this CV was 18 last revised? I don't think there's a date 19 included on the CV that you submitted. 20 A Yeah. I don't -- I know -- I think 21 the client list -- this is just the pre-2021 22 client list. 23 Q Uh-huh. 24 A Yeah, so I had 215 clients in the 25 2021-2022 redistricting cycle.</p>	<p style="text-align: right;">Page 40</p> <p>1 your CV? 2 A Yes. 3 Q When you say NDC has performed 4 certain work, did you have a role in each of 5 those analyses that NDC worked on? 6 A Yes. At a minimum, I oversee and 7 supervise the work. Sometimes some of the 8 actual JS work or statistical runs are done by 9 people on my team, but I'm always overseeing 10 and involved in those. 11 Q In your CV when you talk about things 12 that NDC has done, rather than work that just 13 you, yourself, have done, is it safe to assume 14 that others have assisted with that work? 15 A In some of it, yes. 16 Q Do you know -- if I look at page 5 17 where you say your firm, NDC, has 21 18 redistricting clients in the 2021-2022 19 redistricting cycle, did you have a role in 20 each of those 225 client cases, as well? 21 A They're not cases, just to be sure. 22 They're projects. But, yes, I'm always, you 23 know, supervising and getting status reports. 24 The degree of hands-on I get with each project 25 varies widely. Everyone is always giving me</p>

10 (Pages 37 to 40)

<p style="text-align: right;">Page 41</p> <p>1 status reports and telling me how things are 2 going and raising concerns, so that I'm aware. 3 Q In some of these 225 projects, you're 4 not the person doing the line analysis that 5 the client is requesting; is that right? 6 A By "Line analysis," what do you mean? 7 Q Sorry. I'm using "Line" as term of 8 art. Sort of the actual analysis that they've 9 requested of NDC, you're not the person 10 running through the analysis that they've 11 requested for each of those 225 clients, 12 right? 13 A In most of these projects, we're 14 drawing maps and running demographics on those 15 maps and then presenting them in forms. So on 16 some of them, I am; some of them, I'm not. 17 Q In each of the sections of your CV, 18 though, are you representing that you had at 19 least a role, even if not the first level 20 role, in each of the cases that you represent 21 in your CV? 22 A On the case work, that's me. 23 Q Okay. I think that's all I have on 24 the CV. 25 You've written an expert report in</p>	<p style="text-align: right;">Page 43</p> <p>1 MS. KEENAN: 2 I'm going to ask the court 3 reporter to mark this as Exhibit 6. 4 BY MS. KEENAN: 5 Q You've seen both of these reports 6 before I take it? 7 A I wrote them, yes. 8 Q And you stand by all of the opinions 9 in each of these reports? 10 A Yes. 11 Q Do you recall when you did the work 12 necessary to form the opinions in your initial 13 report? 14 A Not off of the top of my head, no. 15 Q How did you identify the sources that 16 you've relied upon in your initial report? 17 A What do you mean by, how I identified 18 the sources? 19 Q So how did you determine which 20 sources to consider in writing this report? 21 A The ones relevant to the questions I 22 was addressing. 23 Q Did counsel provide with you any 24 specific sources that they wanted you to 25 review in coming to your conclusions in this</p>
<p style="text-align: right;">Page 42</p> <p>1 this case, correct? 2 A Yes. 3 Q And then also sort of a rebuttal 4 report in this case? 5 A Correct. 6 Q I'm now going to share what's been 7 premarked as Exhibit Number 3. Give me one 8 second to get it up on my screen. 9 Can you see what I'm showing on my 10 screen is the declaration of Douglas Johnson, 11 Ph.D? 12 A Yes. 13 Q This is the initial report that you 14 authored in this case? 15 A Yes. 16 MS. KEENAN: 17 For the record, I'm going to ask 18 the court reporter to mark this as 19 Exhibit 5. 20 BY MS. KEENAN: 21 Q I'm now going to share on my screen 22 what was premarked as Exhibit 4. This is the 23 Surrebuttal Declaration that you submitted; is 24 that correct? 25 A Yes.</p>	<p style="text-align: right;">Page 44</p> <p>1 case? 2 MR. LEWIS: 3 Objection. I instruct the 4 witness not to answer beyond any 5 facts or data that were, you know, 6 incorporated into your report. 7 THE WITNESS: 8 Sure. I received Mr. Cooper's 9 reports from legal counsel. I don't 10 remember if legal counsel told me 11 where with website was with the 12 public state data or if I found that 13 on my own. 14 BY MS. KEENAN: 15 Q Okay. Did you work with anybody, 16 other than legal counsel, in the identifying 17 and reviewing the sources that you relied on 18 in your report? 19 A Not that I recall. 20 Q Did anyone else at NDC helped you 21 with reviewing the sources that you worked on 22 in your report? 23 A No. 24 Q No outside sort of consulting firms 25 or other individuals other than counsel,</p>

11 (Pages 41 to 44)

<p style="text-align: right;">Page 45</p> <p>1 right?</p> <p>2 A Not that I recall.</p> <p>3 Q Were there ever any documents or</p> <p>4 other information that you asked counsel to</p> <p>5 see that you did not get to see?</p> <p>6 A Just so I understand, are you asking</p> <p>7 if there's anything I asked legal counsel to</p> <p>8 share with me that they didn't give me?</p> <p>9 Q Sure. For example, are there any</p> <p>10 expert reports from other defense experts or</p> <p>11 plaintiff experts that you asked to review but</p> <p>12 you weren't given an opportunity to see?</p> <p>13 A No.</p> <p>14 Q Is there any other document or</p> <p>15 information you would have wanted to review to</p> <p>16 help form your opinions or prepare your</p> <p>17 reports?</p> <p>18 A As I mentioned many times, there's</p> <p>19 quite a bit of data for Mr. Cooper that I</p> <p>20 would have liked him to turn over that he did</p> <p>21 not.</p> <p>22 Q Are you aware of the other defense</p> <p>23 experts who are involved in this case?</p> <p>24 A I probably heard their names, but I</p> <p>25 couldn't tell them to you off the top of my</p>	<p style="text-align: right;">Page 47</p> <p>1 review any expert reports other than those</p> <p>2 prepared by Mr. Cooper?</p> <p>3 A I think there was just a reference to</p> <p>4 Mr. Cooper had -- his original line is --</p> <p>5 amended reports at that time. I haven't</p> <p>6 looked at any others. Keep in mind, there's</p> <p>7 multiple cases going on right here in the</p> <p>8 state, so that's why I'm not crystal clear on</p> <p>9 it. But I don't recall reviewing anything</p> <p>10 else for this case.</p> <p>11 Q I just wanted to clarify it. So to</p> <p>12 the best of your recollection, you didn't</p> <p>13 offer any opinions regarding any of the other</p> <p>14 plaintiffs' experts in this case, right?</p> <p>15 A Right. I only offered the opinions</p> <p>16 that are actually in the reports.</p> <p>17 Q And you don't remember any of the</p> <p>18 other reports from Dr. Handley or Dr. Colton</p> <p>19 or any of the other experts that plaintiffs</p> <p>20 have offered in this case; is that right?</p> <p>21 A Yeah. Again, only in this case</p> <p>22 covering the things I cover in my report.</p> <p>23 MS. KEENAN:</p> <p>24 Okay. We're at about an hour</p> <p>25 now. I think it's a good time to</p>
<p style="text-align: right;">Page 46</p> <p>1 head.</p> <p>2 Q And have you reviewed any of their</p> <p>3 work in this case?</p> <p>4 A No.</p> <p>5 Q And other than Mr. Cooper, have you</p> <p>6 reviewed any of the plaintiffs' experts'</p> <p>7 reports in coming to your opinions in this</p> <p>8 case?</p> <p>9 A No. Everything I reviewed is mention</p> <p>10 in the report.</p> <p>11 Q In your report, though, you do</p> <p>12 mention -- give me one second. I'm going to</p> <p>13 pull it up on the screen. I'm on page 2 of</p> <p>14 your report, which we've marked as Exhibit 5.</p> <p>15 Do you see where I am on Subsection D on</p> <p>16 page 2 of your report?</p> <p>17 A Yes.</p> <p>18 Q It says you were asked -- this is the</p> <p>19 "Scope of Work." It says: "Counsel asked me</p> <p>20 to undertake the following tasks." And</p> <p>21 Subsection D says: "Review the other sections</p> <p>22 of plaintiffs' expert reports and comment on</p> <p>23 any areas I viewed as noteworthy or</p> <p>24 questionable."</p> <p>25 In undertaking that task, did you</p>	<p style="text-align: right;">Page 48</p> <p>1 take about a five-minute break. Is</p> <p>2 that okay with counsel?</p> <p>3 MR. LEWIS:</p> <p>4 Sure.</p> <p>5 MS. KEENAN:</p> <p>6 Okay. We can go off the record,</p> <p>7 then and we'll come back around</p> <p>8 11:07.</p> <p>9 (BRIEF RECESS 11:02 A.M. TO 11:07 A.M. EST)</p> <p>10 MS. KEENAN:</p> <p>11 We can go back on the record.</p> <p>12 BY MS. KEENAN:</p> <p>13 Q Dr. Johnson, what's your</p> <p>14 understanding of your assignment in this</p> <p>15 litigation?</p> <p>16 A I mean, as laid out in my report</p> <p>17 briefly, to review Mr. Cooper's report and</p> <p>18 respond to it.</p> <p>19 Q Okay. I'm going to pull the report</p> <p>20 back up, just so we can walk through each of</p> <p>21 the tasks that you were asked to perform. So</p> <p>22 we're back to Exhibit 5. Starting on page 2,</p> <p>23 again, under "Scope of Work," you say:</p> <p>24 "Counsel asked me to perform the following</p> <p>25 tasks." Can you review A and B, just so we</p>

12 (Pages 45 to 48)

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1 have everything in precise terms and just let
2 me know when you're done reading it?
3 A Okay.
4 Q So to complete these first two tasks,
5 you looked at the illustrative maps that
6 Mr. Cooper provided in 2022, right?
7 A Yes.
8 Q And you also looked at the
9 illustrative maps that Mr. Cooper provided in
10 2023, right?
11 A Yes.
12 Q You also studied Mr. Cooper's
13 reports, as you've mentioned a couple of times
14 now?
15 A Yes.
16 Q Are you familiar with the term,
17 "Enacted Map"?
18 A Of course.
19 Q What is it, to your knowledge?
20 A The map that was adopted into law by
21 the legislature.
22 Q Did you analyze the enacted maps as
23 part of your assignment in this case?
24 A It's part of the report, yes.
25 Q What all did you do in analyzing the

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1 enacted map for the purposes of this report?
2 A The primary focus was in looking
3 at -- as is documented extensively in the
4 report -- looking at how the enacted map in
5 reality is different than what Mr. Cooper
6 repeatedly discussed as the enacted map.
7 Q Sure. And that's the error
8 Mr. Cooper corrected in the exhibit attached
9 to his rebuttal report, right?
10 A Yes. He acknowledged the mistake
11 later on. I don't know exactly which report
12 it was, off the top of my head.
13 Q Sure. Are you aware of which parts
14 of the illustrative map tracked the enacted
15 map?
16 MR. LEWIS:
17 Objection; vague. You may
18 answer?
19 THE WITNESS:
20 Patrick, did you say something?
21 MR. LEWIS:
22 I said: "Objection; vague."
23 THE WITNESS:
24 I have overlaid and looked at
25 the two maps quite a bit.

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1 BY MS. KEENAN:
2 Q Is it your testimony that you are
3 aware of where the illustrative map and the
4 enacted map have the same borders?
5 A Off the top of my head, no. But,
6 yes, in my analysis, I did look at that in
7 many places?
8 Q Okay. So you did analysis of where
9 Mr. Cooper's boundaries are the same as the
10 boundaries in the enacted map; is that your
11 recollection?
12 A It wasn't something I was
13 specifically analyzing. It is something I
14 would have seen as I was doing analysis.
15 Q Okay. But you didn't reach any
16 opinions about where Mr. Cooper's boundaries
17 overlapped with the boundaries in the enacted
18 map, right?
19 A That wouldn't be an opinion. That
20 would be facts.
21 Q Did you analyze whether Mr. Cooper's
22 illustrative maps performed better than the
23 enacted maps on any traditional redistricting
24 criteria?
25 A I talk in many places in the report

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1 about compactness and communities of interest
2 and things like that that would be traditional
3 redistricting principles.
4 Q I want to be specific, though. I'm
5 asking whether you analyze those traditional
6 redistricting criteria as compared between the
7 illustrative maps and the enacted map. Did
8 you do any of those types of analysis across
9 the illustrative and the enacted map?
10 A Separate from what I write up in the
11 report? No.
12 Q Just to be clear, your report is
13 analyzing how the two sets of the illustrative
14 maps compare to each other, correct?
15 A And there are some references to the
16 enacted map, as well.
17 Q But other than what you write in your
18 report, you didn't any analysis or how Mr.
19 Cooper's illustrative maps compared to the
20 enacted maps, right?
21 A Sorry. Could you restate that?
22 Q Sure. Other than what's in your
23 report, you didn't do any analysis of how
24 Mr. Cooper's illustrative maps compared to the
25 enacted maps, right?

13 (Pages 49 to 52)

<p style="text-align: right;">Page 53</p> <p>1 A Correct.</p> <p>2 Q Are you aware of whether Mr. Cooper's</p> <p>3 illustrative maps performed better than the</p> <p>4 enacted maps when it comes to compactness?</p> <p>5 A In some districts, they do; and in</p> <p>6 some districts, they don't.</p> <p>7 Q What's the basis for that conclusion?</p> <p>8 A Mr. Cooper's own compactness numbers.</p> <p>9 Q Okay. So you're relying on the</p> <p>10 numbers that Mr. Cooper published in this</p> <p>11 report, right?</p> <p>12 A Yeah. I think I -- I also looked at</p> <p>13 the maps, and as there are illustrations in my</p> <p>14 report, illustrated how some districts are</p> <p>15 less compact.</p> <p>16 Q Where in your report do you talk</p> <p>17 about how the illustrative districts are more</p> <p>18 or less packed than the enacted districts?</p> <p>19 A Not in the enacted districts, I mean,</p> <p>20 compared to his earlier maps.</p> <p>21 Q Right. And so for now, I'm just</p> <p>22 asking about the comparison between the</p> <p>23 illustrative and the enacted maps. We'll talk</p> <p>24 about the illustrative to illustrative</p> <p>25 comparisons a little later. But you'd agree,</p>	<p style="text-align: right;">Page 55</p> <p>1 A Yes.</p> <p>2 Q Do you see that on the screen now?</p> <p>3 A Yes.</p> <p>4 Q Okay. This section is entitled</p> <p>5 "Illustrative House and Senate Map Revisions</p> <p>6 Resulted in Less Compact 2023 Maps," right?</p> <p>7 A Yes.</p> <p>8 Q Paragraph 15 reads: "Oddly enough,</p> <p>9 the twenty-one districts changed between the</p> <p>10 2022 House Illustrative Map and the 2023 House</p> <p>11 Illustrative Map made the 2023 map even less</p> <p>12 compact than the 2022 House Illustrative Map."</p> <p>13 Did I read that correctly?</p> <p>14 A Yes.</p> <p>15 Q Where in this section do you compare</p> <p>16 either the 2023 map or the 2022 illustrative</p> <p>17 map to the enacted districts?</p> <p>18 A I am rebutting Mr. Cooper's claims</p> <p>19 where he is comparing his map to the enacted</p> <p>20 map.</p> <p>21 Q But in rebutting those claims, do you</p> <p>22 say anything about the compactness of the</p> <p>23 enacted map itself?</p> <p>24 A No.</p> <p>25 Q Okay. So in what sense, are you</p>
<p style="text-align: right;">Page 54</p> <p>1 you didn't reach any conclusions about the</p> <p>2 compactness of Mr. Cooper's illustrative maps</p> <p>3 as compared to the enacted maps, right?</p> <p>4 A I don't think I'd agree with that</p> <p>5 characterization.</p> <p>6 Q Can you show me where in your report</p> <p>7 you do reach such conclusions?</p> <p>8 A Yeah. There are points where</p> <p>9 Mr. Cooper claims improved compactness scores,</p> <p>10 and I rebut those claims.</p> <p>11 Q Can you show me where -- you have a</p> <p>12 copy of your report with you, right?</p> <p>13 A Yes.</p> <p>14 Q Can you show me where in your report</p> <p>15 that you do that?</p> <p>16 A Sure. I think it's in the</p> <p>17 surrebuttal, the one that's coming to mind.</p> <p>18 Q Sure.</p> <p>19 A Yes. It's actually in my original</p> <p>20 report, starting at Paragraph 15 going through</p> <p>21 Paragraph 21. It's talking about rebutting</p> <p>22 his claims to being more compact districts.</p> <p>23 Q I'm going to share my screen. We're</p> <p>24 talking about Paragraphs 15 to 21 in your</p> <p>25 original report, right?</p>	<p style="text-align: right;">Page 56</p> <p>1 rebutting his claims about the compactness of</p> <p>2 the illustrative map as compared to the</p> <p>3 enacted map?</p> <p>4 A He's making claims that his regional</p> <p>5 map was more compact in other cases and that</p> <p>6 his revised map is even more compact, and I'm</p> <p>7 rebutting those claims.</p> <p>8 Q But you did not -- in looking at</p> <p>9 either of those maps, the 2022 or the 2023,</p> <p>10 and comparing the compactness measured across</p> <p>11 them, that is what you did in your report,</p> <p>12 right?</p> <p>13 A And just looking at the districts,</p> <p>14 you can -- as in Figure 3, you can look at it.</p> <p>15 Q Right. But nothing in your report</p> <p>16 compares either the 2022 or the 2023</p> <p>17 illustrative maps to the compactness measures</p> <p>18 of the enacted map, correct?</p> <p>19 A Correct.</p> <p>20 Q And did you run any of the numbers on</p> <p>21 the compactness measures to compare the 2022</p> <p>22 or the 2023 illustrative maps to the</p> <p>23 compactness measures of the enacted maps?</p> <p>24 A I mean, when you run compactness</p> <p>25 measures, you just run them on one map, and</p>

14 (Pages 53 to 56)

<p style="text-align: right;">Page 57</p> <p>1 then you compare the results. You don't run 2 one map versus the other map. 3 Q Did you run them for the enacted map? 4 A It's possible I did, just to confirm 5 what Mr. Cooper provided. 6 Q But you certainly didn't include any 7 of those numbers or any opinions about 8 compactness measures of the enacted map in 9 your report, did you? 10 A I'm not sure if yes or no is 11 confirming what you said. But, no, I did not 12 compare -- I did not opine on the compactness 13 measures of the enacted map. 14 Q Moving on to compactness. Did you do 15 anything to assess the communities of 16 interests as reflected in the enacted map? 17 A No. 18 Q And so you did not compare how 19 communities of interests are treated from the 20 enacted map to any of Mr. Cooper's 21 illustrative maps, right? 22 A Well, arguably, most of my report is 23 about how communities of interest are treated 24 in the illustrative maps. 25 Q Right. But I'm not just asking about</p>	<p style="text-align: right;">Page 59</p> <p>1 boundaries." Did I read that correctly? 2 A Yes. 3 Q I want to focus on the first half of 4 that sentence when you were asked to identify 5 whether there is sufficient evidence provided 6 to support such designations. Do you recall 7 doing work to assess whether there was 8 sufficient evidence provided to support the 9 "Key Regions" designations referenced in 10 Mr. Cooper's report? 11 A Yes. 12 Q Is that something you've been asked 13 to do in other cases where you've served as an 14 expert? 15 A Sort of. 16 Q Can you explain? 17 A Communities of interests are often a 18 significant factor in districting, 19 redistricting and in the related litigation. 20 So how those are defined often comes up. 21 Q But in terms whether there was 22 sufficient evidence provided to support the 23 designations as "Key Regions" referenced in 24 Mr. Cooper's report, is there any sort of 25 standard methodology for identifying which</p>
<p style="text-align: right;">Page 58</p> <p>1 how they're treated in the illustrative maps. 2 I'm asking about how the illustrative maps 3 compare to the enacted maps, and you didn't 4 make that comparison to the enacted maps when 5 it comes to how they treat Communities of 6 interest; is that right? 7 A Correct. 8 Q I'm going to move on the next task in 9 your report. It's going to be back up on 10 page 2. 11 A Let me just cover one thing. There 12 is the discussion about the one county split 13 that's in Mr. Cooper's report and in my report 14 that does go back to the enacted map. But 15 that would be the only example of that, the 16 peninsula down in the south. 17 Q Sure. I think we'll talk about that 18 a little bit later. Thanks for raising that. 19 The next task in Part C says: "To review the 20 'Key Regions' referenced by plaintiff's 21 expert, Mr. Cooper, to identify whether there 22 is sufficient evidence provided to support 23 such designations and examine the degree to 24 which the 2023 House and Senate Illustrative 25 Maps follow and respect those 'Key Regions'</p>	<p style="text-align: right;">Page 60</p> <p>1 regions in a state are considered "Key 2 Regions"? 3 A Sure. You look at the traditional 4 redistricting definitions of -- and court 5 definitions of communities of interest and see 6 if those apply. 7 Q Did you do that in this case? 8 A I wasn't attempting to create key 9 regions, so, no, I didn't. I was simply 10 looking at whether the provided definitions 11 stood up to that bar, and Wikipedia is not 12 that bar. 13 Q But when you were -- let me ask in a 14 different way. Are you reaching any 15 conclusions about whether the "Key Regions" 16 defined in Mr. Cooper's report are in fact key 17 regions in the State of Louisiana? 18 A Yes. As Mr. Cooper defines them, I 19 don't think they measure up to what he's 20 claiming their role -- well, he doesn't then 21 use them in that role, but what he claims 22 should be the role, his definition does not 23 support. 24 Q We'll talk about the way he used them 25 a little bit later. In terms of what the key</p>

15 (Pages 57 to 60)

<p style="text-align: right;">Page 61</p> <p>1 regions are in Louisiana, you didn't do any 2 affirmative work to identify what key regions 3 or communities of interest might exist in 4 Louisiana; is that right? 5 A Correct. Other than review what 6 Mr. Cooper had written and the support he 7 cited for it -- the sources that he cited to 8 support that opinion. 9 Q I know you don't remember for sure 10 whether you reviewed any other plaintiffs' 11 expert reports. But you would agree that you 12 don't mention Dr. Colton's report in either 13 your report or your rebuttal? 14 A Correct. 15 Q You don't offer any opinions about 16 the regions referenced in Dr. Colton's report, 17 then, right? 18 A Yeah, if it's not mentioned in my 19 reports -- I think Dr. Colton is also an 20 expert in the other case, so that's why I'm 21 hesitating. But, no, if it's not mentioned in 22 my reports, no, I'm not offering an opinion on 23 that. And he's not mentioned, either, in his 24 report. 25 Q I think I'm ready to move into the</p>	<p style="text-align: right;">Page 63</p> <p>1 A No. Certainly not that I recall, as 2 I sit here. 3 Q Okay. You say you've used the 2022 4 and 2023 Illustrative House and Senate Plan 5 files. Again, does that just include the 6 lines or does that include any demographic or 7 other information? 8 A Everything that was provided by 9 Mr. Cooper. 10 Q You also say you used other data from 11 plaintiffs' expert witness disclosures in this 12 case. Does that also just include the data 13 relied on by Mr. Cooper or what other data are 14 you referencing here? 15 A Yes, Mr. Cooper's files that he 16 turned over. 17 Q Okay. And does Paragraph 5 provide a 18 complete list of the data on which you relied 19 in coming to your conclusions in this case? 20 A Yes. I would -- implied in there, 21 hopefully, is when Mr. Cooper footnoted 22 something, I would look at that footnote 23 source. 24 Q In comparing the two sets of 25 illustrative maps, you used Maptitude industry</p>
<p style="text-align: right;">Page 62</p> <p>1 "Data Used" section of your report. When you 2 discuss the data that you used, you reference 3 the Louisiana State redistricting geography 4 and data from Caliper Corporation. Can you 5 describe a little bit about what kinds of 6 information that includes? 7 A It's actually the same data that 8 Mr. Cooper had where it's the geographic 9 shapes of all the census blocks and other 10 levels of geography in the state and then 11 it's -- what's cited as the PL 94-171 census 12 data on Total Population and Voting Age 13 Population by race and ethnicity for each of 14 those units of geography. 15 Q You also say that you used the 16 Enacted House and Senate Map, geographic 17 shapefile from the state's redistricting data 18 website. Does that shapefile just include the 19 enacted maps district lines or does it include 20 any additional information? 21 A Just the lines and identifying 22 information for which district was which. 23 Q So it doesn't include any additional 24 demographic or socioeconomic information, 25 right?</p>	<p style="text-align: right;">Page 64</p> <p>1 standard GIS software for redistricting and 2 other software tools. That's in Paragraph 8 3 of your report. Is that right? 4 A Yes. 5 Q What GIS software did you use? 6 A Industry standard GIS software for 7 redistricting is a reference to Maptitude. 8 Q Got it. And which other software 9 tools did you use? 10 A Mostly Microsoft Excel. 11 MS. KEENAN: 12 I guess I haven't introduced 13 Mr. Cooper's reports yet, so I'm 14 going to go ahead and do that and 15 some of his exhibits in his reports, 16 as well. First, I'm going to share 17 on my screen the "Declaration of 18 William S. Cooper," his initial 19 report, which I'll ask the court 20 reporter to mark as Exhibit 7. 21 BY MS. KEENAN: 22 Q Are you familiar with this 23 declaration? 24 A Yes. 25 Q And then next I'm going to share --</p>

16 (Pages 61 to 64)

<p style="text-align: right;">Page 65</p> <p>1 this one is, although titled "Declaration of 2 William S. Cooper," but you can see that this 3 says, "This is an additional expert 4 declaration to provide analysis and expert 5 opinion relating to the July 28, 2023 expert 6 reports of certain experts, including Douglas 7 Johnson." Do you see that here in Paragraph 8 2?</p> <p>9 A Yes.</p> <p>10 Q So you would agree this is the 11 rebuttal report that Mr. Cooper submitted?</p> <p>12 A Yes.</p> <p>13 MS. KEENAN: 14 We'll go ahead and mark that 15 rebuttal report as Exhibit 8 for the 16 record.</p> <p>17 BY MS. KEENAN: 18 Q Are you familiar with any of the 19 exhibits attached to Mr. Cooper's reports; did 20 you have a chance to review those, as well?</p> <p>21 A Yes.</p> <p>22 MS. KEENAN: 23 I am going to share on my screen 24 Exhibit B to Mr. Cooper's report, 25 which I'll ask the court reporter to</p>	<p style="text-align: right;">Page 67</p> <p>1 Q Okay. But you did review that PL 2 94-171 redistricting data file in Maptitude 3 while reviewing Mr. Cooper's maps; is that 4 right?</p> <p>5 A I guess you could say that. I'm not 6 double checking it or otherwise reviewing it. 7 I'm just using it.</p> <p>8 Q How would you describe the difference 9 between checking or reviewing or using in the 10 way that you just now gave that answer?</p> <p>11 A When you draw a district, the 12 software adds all the block level data to give 13 you the totals for the district. The data is 14 intimately involved in that process, 15 obviously, and gives you the resulting 16 numbers. I didn't go back and compare the 17 2020 Census data that I got from Maptitude or 18 that I got from -- I got from Caliper -- 19 sorry -- or that I got from Mr. Cooper to 20 check it and see if it matches with what's 21 actually on the Census website as the 2020 22 Census data.</p> <p>23 Q Okay. I understand. Next Mr. Cooper 24 talks about using data from the one-year 2019 25 American Community Survey and the 2015-2019</p>
<p style="text-align: right;">Page 66</p> <p>1 mark as Exhibit 9.</p> <p>2 BY MS. KEENAN: 3 Q Have you reviewed this exhibit titled 4 "Exhibit B-Methodology and Sources"?</p> <p>5 A Yes.</p> <p>6 Q I want to walk through each of these 7 sources and get an understanding of the extent 8 on which you relied on the information in 9 here. So first, Mr. Cooper talks about 10 analyzing population or geographic data from 11 the 1990 to 2020 Decennial Census. Did you 12 review that population or geographic data?</p> <p>13 A Only his references to it. I didn't 14 go and get it myself.</p> <p>15 Q So when you were reviewing this work 16 in Maptitude, was any information from the 17 Decennial Census included in the software you 18 were using? Can you explain a little bit 19 about what you mean about how that impacted 20 your work?</p> <p>21 A So the PL 94-171 data that I 22 referenced is in the 2020 Decennial Census.</p> <p>23 Q Right.</p> <p>24 A So that was in the Maptitude database 25 and GIS. The 1990 and other data was not.</p>	<p style="text-align: right;">Page 68</p> <p>1 and 2017-2021 American Community Survey 2 published by the U.S. Census Bureau. Did you 3 examine those sources?</p> <p>4 A No, I did not go back and check any 5 of the original source data. I just used -- 6 just looked at what Mr. Cooper provided.</p> <p>7 Q When you say you looked at what 8 Mr. Cooper provided, do you mean the 9 conclusions in his report or do you mean 10 something else about what he provided?</p> <p>11 A I also looked at the files, the 12 actual data files he provided, to see -- 13 primarily to see what level of geography they 14 were compiled at, if they were at the Census 15 block level or something larger.</p> <p>16 Q What about the other charts and other 17 tables that he provided compiling information 18 from the various sources, did you review those 19 or just the reports and the underlying data 20 files?</p> <p>21 A I read through them and looked at 22 them. I did not doublecheck their math.</p> <p>23 Q When you say you went through and 24 looked at them, did they impact the 25 conclusions that you offered about</p>

17 (Pages 65 to 68)

<p style="text-align: right;">Page 69</p> <p>1 Mr. Cooper's districts in any way?</p> <p>2 A To the degree I cited them in the</p> <p>3 report, yes.</p> <p>4 Q Okay. But did you assess the</p> <p>5 districts to see whether they were consistent</p> <p>6 with any of the data in the ACS surveys?</p> <p>7 MR. LEWIS:</p> <p>8 Objection; vague. You may</p> <p>9 answer.</p> <p>10 THE WITNESS:</p> <p>11 There wasn't any relationship</p> <p>12 between his socioeconomic section of</p> <p>13 his report and the districts he drew.</p> <p>14 So I don't think there was any</p> <p>15 connection, like you're describing,</p> <p>16 for me to review.</p> <p>17 BY MS. KEENAN:</p> <p>18 Q We can talk more about socioeconomic</p> <p>19 data in a little bit. I'm going to move on to</p> <p>20 Number 2 up on the screen here. This says</p> <p>21 that he -- for his redistricting analysis, he</p> <p>22 used a GIS software package called Maptitude</p> <p>23 for Redistricting developed by the Caliper</p> <p>24 Corporation. Is this the same software</p> <p>25 package you used?</p>	<p style="text-align: right;">Page 71</p> <p>1 A Just the ones that were in his</p> <p>2 report.</p> <p>3 Q What about the additional charts and</p> <p>4 tables that he provided in his files. Did you</p> <p>5 review those or just the ones in the report</p> <p>6 itself?</p> <p>7 A If they were just in the files, I</p> <p>8 didn't take care and find every one of them.</p> <p>9 I just looked at the ones in this report.</p> <p>10 Q What about Paragraph Number 7 where</p> <p>11 he says: "I obtained and relied on July 2021</p> <p>12 voter registration data, Louisiana state</p> <p>13 produced data for Census 2020 redistricting,</p> <p>14 as well as the 2016-2020 American Community</p> <p>15 Survey disaggregated Citizen VAP data from the</p> <p>16 non-partisan redistricting data website called</p> <p>17 Redistricting Data Hub."</p> <p>18 Did you review any of the voter</p> <p>19 registration data? Let's just start with</p> <p>20 that.</p> <p>21 A Just what was in the State's files.</p> <p>22 I didn't open Mr. Cooper's files.</p> <p>23 Q And by the State files, you mean the</p> <p>24 ones on the public State website that we</p> <p>25 talked about earlier?</p>
<p style="text-align: right;">Page 70</p> <p>1 A Yes.</p> <p>2 Q Next he says, the geographic boundary</p> <p>3 files he used with Maptitude are created from</p> <p>4 the U.S. 2020 TIGER files and versions from</p> <p>5 earlier decades, 1990, 2000 2010. Did you</p> <p>6 review these boundary files, as well?</p> <p>7 A I looked at the ones for the</p> <p>8 Illustrative Maps and what he said for the</p> <p>9 Enacted Map, I did not review any earlier</p> <p>10 decade ones.</p> <p>11 Q We've already talked about the</p> <p>12 PL 94-171 data files, right?</p> <p>13 A Yes.</p> <p>14 Q He talks about how the software</p> <p>15 merges the demographic data from the PL 94-171</p> <p>16 files to match the relevant Decennial Census</p> <p>17 geography. Is that true of the software you</p> <p>18 were using, as well?</p> <p>19 A Yes.</p> <p>20 Q For the socioeconomic analysis, he</p> <p>21 used the one-year 2019 ACS and the five-year</p> <p>22 2015-2019 ACS data files published by the</p> <p>23 Census Bureau. He used charts and tables</p> <p>24 produced by Microsoft Excel and Microsoft</p> <p>25 Access. Did you review those?</p>	<p style="text-align: right;">Page 72</p> <p>1 A Correct.</p> <p>2 Q What about this 2017-2020 ACS</p> <p>3 disaggregated Citizen VAP data? Did you</p> <p>4 review any of that data from the Redistricting</p> <p>5 Data Hub?</p> <p>6 A Yes, I did open that up, those files</p> <p>7 up to see what level of geography they were</p> <p>8 at. I was curious if they were at the block</p> <p>9 level or at a larger geography.</p> <p>10 Q Do you recall whether they are at a</p> <p>11 the block level?</p> <p>12 A They were not.</p> <p>13 Q Why are you focused on the block</p> <p>14 level analysis throughout your report?</p> <p>15 A Because when you're drawing</p> <p>16 districts, Maptitude gives you the numbers and</p> <p>17 the data for those districts so that you can</p> <p>18 analyze whatever demographic or socioeconomic</p> <p>19 factors you want to analyze and see if the</p> <p>20 districts you're drawing achieve that. And to</p> <p>21 do that, Maptitude has to have the data at the</p> <p>22 block level. If the data is not the block</p> <p>23 level, Maptitude can't compile the data. So</p> <p>24 one of the key things to doing redistricting</p> <p>25 is to get all of the data down to the block</p>

18 (Pages 69 to 72)

<p style="text-align: right;">Page 73</p> <p>1 level, such the registration data and any 2 socioeconomic data you want to use in drawing 3 maps. And once you do that, then Maptitude 4 very easily, on the fly, gives you updates on 5 whatever data you have at the block level. So 6 without it at the block level, you're not -- 7 you're clearly -- nothing a really basic thing 8 that would give you that socioeconomic data as 9 you worked and it would compile it district by 10 district. Any data that you're using in your 11 mapping process that can be at the block 12 level, the standard practice is to put it in 13 the block level, so you can see the results as 14 you work. 15 Q Is it your understanding that if 16 something isn't disaggregated down to the 17 block level, you are unable to consider it in 18 drawing districts? 19 A It depends on what you mean by 20 consider. 21 Q Can you explain? 22 A You can -- normally, we would use a 23 more colorful term. You can guess at it by 24 having a paper map next to you or map on 25 another screen that you just kind of wing it</p>	<p style="text-align: right;">Page 75</p> <p>1 Q Census blocks are the building blocks 2 for VTDs, typically, as you're building them, 3 based on Census data? 4 MR. LEWIS: 5 Objection. You can answer. 6 THE WITNESS: 7 There's a lot more to it. 8 Sometimes they follow; sometimes they 9 don't. But VTDs, yes, come from 10 blocks. Precincts sometimes don't. 11 BY MS. KEENAN: 12 Q Just focusing on VTDs. VTDs are 13 composed as Census blocks, right? 14 A Yes. 15 Q You can agree that moving one 16 precinct or one VTD can result in moving 17 upwards of 50 Census blocks, right? 18 A I don't know the specific numbers for 19 VTD, but there may be a bunch, yes. 20 Q And so if you weren't drawing maps at 21 the block level, you were drawing them using a 22 larger metric, do you agree that it would be 23 less important to have the data disaggregated 24 down to the individual block? 25 A You would want it at the lowest level</p>
<p style="text-align: right;">Page 74</p> <p>1 and say: Oh, I think this sort of follows 2 that, or you can have the actual specific 3 numbers and details generated live as you draw 4 your map. So if having a map next to you and 5 saying: Oh, I kind of looked at that map and 6 sort of tried to follow it, just eyeball, is 7 considering it, well, then, yeah, that's 8 possible. But why would you do that when you 9 can simply just aggregate it and use it. 10 Q Are you aware that in Louisiana maps 11 are generally drawn at the precinct or VTD 12 level, rather than at the block level? 13 A Yes. 14 Q And are you familiar with Joint Rule 15 21 in Louisiana? 16 A I can't cite it off the top of my 17 head. 18 Q Are you familiar with redistricting 19 criteria in Louisiana that prioritizes keeping 20 VTDs whole? 21 A Yes. 22 Q You'd agree that VTDs are 23 significantly larger than Census blocks, 24 right? 25 A Often, yes.</p>	<p style="text-align: right;">Page 76</p> <p>1 of geography that your Maptitude software is 2 using. So Maptitude, you can have everything 3 at the block level and then just tell it, just 4 move VTDs, don't move individual blocks, and 5 that would be the natural way of doing it. If 6 you want to draw the data, you could set up 7 Maptitude to only work at the VTD level, and 8 then that would be your base level of 9 geography. And then you'd want the 10 socioeconomic data in there by VTD, but the 11 standard way to get it there would be to break 12 it down to block level and then aggregated it 13 back up into the VTDs. 14 Q When you talking about getting it 15 there or getting it into Maptitude, the way 16 you were talking about viewing it is the sort 17 of pop-up window in Maptitude that explains 18 the different metrics as you draw the 19 different lines; is that right? 20 MR. LEWIS: 21 Objection. It mischaracterizes 22 the report. You may answer. 23 THE WITNESS: 24 I would say roughly speaking, 25 yes.</p>

19 (Pages 73 to 76)

<p style="text-align: right;">Page 77</p> <p>1 BY MS. KEENAN: 2 Q And there's the window that you've 3 talked about a little bit here today that 4 shows you the data as you're drawing. That's 5 a window that's in Maptitude, right? 6 A Yes. It's in Figure 4 of my report. 7 Q Are you aware that window can be 8 disabled in Maptitude? 9 A Well, there's two windows. One of 10 them is kind of the district summary window 11 and the other is kind of the area you're 12 working in at the time window. You can 13 disable the area you're working in, the second 14 window. The first window, you cannot. 15 Q Is the first window the one with the 16 demographic information or is it a different 17 one? 18 A They both have demographic 19 information. 20 Q Is that demographic window or windows 21 in Maptitude the primary way that you are able 22 to view the block level data that you're 23 discussing? 24 A No. 25 Q What is the way that you review block</p>	<p style="text-align: right;">Page 79</p> <p>1 A The data for the districts is always 2 there. You can resize your map to cover it 3 and hide it, but you can't turn that screen 4 off in Maptitude. 5 Q Okay. Which version of Maptitude are 6 you using, like which software? 7 A Maptitude for Redistricting. 8 Q Do you know which year? 9 A I've used every year since 2001. 10 Q And you would -- 11 A Go ahead. 12 Q Do you know if all of those years 13 have the windows functioning in the way that 14 you've described them? 15 A Yes, they do. 16 Q I'm going to pull back up Exhibit 7, 17 Mr. Cooper's report. On page 27 of this 18 report, there's a Section called, 19 "Redistricting Guidelines." Do you see that? 20 A Yes. 21 Q In Paragraph 69, Mr. Cooper says that 22 he applied traditional redistricting 23 principles; one-person/one-vote, compactness, 24 contiguity, the non-dilution of minority 25 voting strength and the preservation of</p>
<p style="text-align: right;">Page 78</p> <p>1 level data in Maptitude if not in those 2 windows that display demographic information? 3 A You can either open -- well, there's 4 really three ways. Maptitude is an info tool 5 there's button in. When you turn it on, you 6 click on a block and it pops up a special 7 window for that block. You can also open an 8 additional data window that would just be all 9 the Census block data, block by block. But 10 that would be -- you'd have to know the 11 15-digit number identifying the block you're 12 looking at. So that's not very useful. The 13 other is, you just put a -- what we call a 14 thematic coloring scheme on your screen so 15 that you can -- there are software colors in 16 the blocks that tell you key data points. 17 Q But if somebody wasn't using the 18 coloring scheme and wasn't looking at either 19 of those two windows that you described, 20 either the pop-up that contains the whole set 21 or the individual block level district, then 22 none of the data that you're describing would 23 be available on their screen as they were 24 drawing the individual districts; is that 25 right?</p>	<p style="text-align: right;">Page 80</p> <p>1 communities of interest when he was drawing 2 the illustrative plans. Did you assess each 3 of these metrics when you were comparing the 4 2022 and the 2023 Illustrative Plans to each 5 other? 6 A Yes. 7 Q I'm going to walk through each of 8 them and ask you a little about how you 9 considered them. How did you consider 10 one-person/one-vote in comparing the 2022 and 11 2023 Illustrative Plans? 12 A I looked at the numbers he provided 13 for the total population for each district. 14 Obviously, that one-person/one-vote is a 15 comparison of that to the ideal for each 16 district and confirming the numbers matched 17 with what he had provided. 18 Q Okay. And you didn't reach any 19 conclusions about how the 2022 and 2023 20 Illustrative Plans compare from the 21 one-person/one-vote perspective, right? 22 A Yes. 23 Q I'm going to skip compactness. We'll 24 talk a little bit more about that later on. 25 How did you consider contiguity?</p>

20 (Pages 77 to 80)

<p style="text-align: right;">Page 81</p> <p>1 A I just looked to see if the districts 2 were contiguous. 3 Q So is that sort of an eyeball test 4 rather than any sort of statistical 5 comparison? 6 A The computer actually has a check. 7 You just have a check for non-contiguous 8 districts, and it comes back and tells you if 9 there are any. 10 Q How did you consider the non-dilution 11 of minority voting strength in comparing the 12 2022 and 2023 Illustrative Maps? 13 A I reviewed, as I discussed in my 14 report, his claims -- various of his claims 15 about those numbers. 16 Q Can you elaborate a little bit? 17 A It's a large part of the report, 18 right, citing which districts -- he had some 19 districts that he had claimed he had switch to 20 make them into majority Black districts that 21 actual were already majority Black and things 22 like that. Essentially, I'd be reading my 23 report, which you've read. 24 Q We'll get to those sections later. 25 Thanks for clarifying which sections you</p>	<p style="text-align: right;">Page 83</p> <p>1 What do you mean by, 2 "Overlapping"? 3 BY MS. KEENAN: 4 Q Would you agree that, if you look at 5 any of these factors in isolation, you might 6 run into a problem with one of the other 7 factors? 8 A It's possible. 9 Q So just as an example, if I draw one 10 line differently to make a district more 11 compact, I may then have had to draw another 12 line differently to comply with 13 one-person/one-vote, right? 14 A It's possible. 15 Q In that sense, some of these factors 16 may not stand alone; they might be considered 17 in conjunction with other traditional 18 redistricting factors, right? 19 A You mean separate from this list? 20 Q No. I'm sorry. I mean the ones in 21 this list. That's what I mean by they're 22 overlapping. 23 A I'm sorry. I'm not following the 24 question. 25 Q Yeah. So I guess, maybe, to put it</p>
<p style="text-align: right;">Page 82</p> <p>1 meant. How do you consider the preservation 2 of communities of interest? 3 A Mr. Cooper claimed to have guided his 4 map in using these and key regions and 5 planning districts and things like that. So I 6 reviewed whether his illustrative maps 7 actually followed and respected those key 8 region in planning region boundaries or not 9 and found that they did not. 10 Q Did you consider incumbent addresses 11 in analyzing Mr. Cooper's map? 12 A No, I do not. 13 Q So that's not data that you 14 considered in Maptitude when you were looking 15 at the boundaries that Mr. Cooper drew; is 16 that right? 17 A Correct. 18 Q Do you agree that when you're drawing 19 maps, all of these traditional redistricting 20 principles are overlapping considerations 21 about where to draw a line? 22 MR. LEWIS: 23 Objection; vague. You may 24 answer. 25 THE WITNESS:</p>	<p style="text-align: right;">Page 84</p> <p>1 another way would you agree that considering 2 each of the traditional redistricting factors 3 we've just gone through, but disaggregated, 4 might not be the full picture of what someone 5 considers when they draw each individual line 6 or district? 7 MR. LEWIS: 8 Objection; vague. It calls for 9 speculation. You may answer. 10 THE WITNESS: 11 It's a really vague question. 12 Yes, you could just draw a map. I 13 mean, there are many, many maps you 14 can draw that are purely equal 15 population, you know, that are purely 16 compact. 17 BY MS. KEENAN: 18 Q Right. But often that's to consider 19 both of those factors the same time in 20 determining whether to draw a line in a 21 certain place, right? 22 A I guess so. 23 Q We'll talk a little bit later about 24 the maps that you've drawn. Maybe that will 25 help be a little more specific. Now I want to</p>

21 (Pages 81 to 84)

<p style="text-align: right;">Page 85</p> <p>1 switch over to the part of your report, going 2 back to Exhibit 5, about the scope of the 3 changes from 2022 to 2023 Illustrative Maps. 4 Illustrative House Map makes change to 21 5 House districts; is that right? 6 A Compared to the original Illustrative 7 House Map, yes. 8 Q We talked earlier about how you 9 looked at the Census block level data. So you 10 also said that 2,464 Census blocks changed 11 from the 2022 to the 2023 Illustrative House 12 Map; is that right? 13 A Yes. 14 Q Like I said earlier, that's a 15 significantly smaller number when it comes to 16 the number of VTDs or precincts that were 17 moved, right? 18 A I don't know the actual number. 19 Q You agree it's not 2000 precincts 20 that were moved? 21 A Yes. 22 Q Do you know whether all of that 2,464 23 Census blocks are populated? 24 A Do I know? Yes, I know. 25 Q And you know that they aren't all</p>	<p style="text-align: right;">Page 87</p> <p>1 essentially the dirt between a freeway on-ramp 2 and the freeway -- or might have been highway. 3 But, yeah, that's what -- Mr. Cooper would 4 have to say why he did that. 5 Q So you don't know why Mr. Cooper 6 moved that Census block, right? 7 A Right. 8 Q What's the basis for you -- are you 9 offering the opinion that he moved it to 10 "Juice the compactness measures," in your 11 words, or is that just your guess? 12 A That was my guess. 13 Q So you're not offering that as an 14 opinion in this case? 15 A No. I don't know what's in his mind. 16 Q But you do -- in Paragraph 10 here, 17 you do criticize him for not highlighting HD-1 18 and HD-2, even though the only reassignment 19 was a single zero population Census block, 20 right? 21 A Correct. 22 Q Is there any reason why that critique 23 matters to your opinions in this case? 24 A Yes. He said, here's a list of all 25 the changed districts, and it was not an</p>
<p style="text-align: right;">Page 86</p> <p>1 populated, right? 2 A Correct. 3 Q It's true that some of those Census 4 blocks have zero people in them, right? 5 A Yes. 6 Q Some may have a really small number 7 of folks in the Census block? 8 A Yes. 9 Q Do you know how many of the Census 10 blocks that you've calculated here have zero 11 people? 12 A No. 13 Q In your opinion, is there any 14 significance in moving a Census block that has 15 zero people in it? 16 A There can be. 17 Q Can you explain what it would be? 18 A I mean, for example, there's one 19 district where Mr. Cooper just moved one block 20 that was zero population. That was the only 21 change that he made. 22 Q Can you explain why that's 23 significant? 24 A I think he was trying to juice the 25 compactness numbers by moving be what was</p>	<p style="text-align: right;">Page 88</p> <p>1 accurate list. 2 Q Right. But if the change is moving a 3 Census block with zero people in it, why does 4 that matter? 5 A It can be significant. It can have 6 -- it can change the compactness scores. It 7 could be a politically significant spot on the 8 map. It could be an important building to a 9 community of interest. There are lots of 10 reasons that a zero population block can be 11 significant in the characteristics of a 12 district. 13 Q But just to be clear, you're not 14 suggesting that any of those reasons are 15 actually true in these two districts in 16 Louisiana, right? 17 A I do not know why Mr. Cooper moved 18 that block and why he did not make clear in 19 his list of changed districts that he had 20 moved that block. 21 Q It sounds a little bit like you're 22 suggesting there's something nefarious about 23 including a zero population Census block to 24 make a district more compact. Am I 25 understanding that correctly? Or is there</p>

22 (Pages 85 to 88)

<p style="text-align: right;">Page 89</p> <p>1 some problem with moving a zero population 2 Census block to make a district more compact? 3 MR. LEWIS: 4 Objection; mischaracterizes the 5 testimony. You may answer. 6 THE WITNESS: 7 It can -- as you were just 8 describing -- disrupt some other 9 considerations, such as keeping 10 community of interest together or 11 following a -- Mr. Cooper didn't 12 mention this, but often a traditional 13 redistricting principles to follow a 14 major physical feature. So it can 15 disrupt other traditional principles. 16 BY MS. KEENAN: 17 Q How can you explain how a single 18 zero -- a zero-person Census block would 19 impact a community of interests? 20 A Sure. Many communities of interest 21 are often -- community around a church or 22 around an elementary school, you know, it 23 could be a downtown area. And in those cases, 24 just going through that list, where the church 25 is or where the school is would be significant</p>	<p style="text-align: right;">Page 91</p> <p>1 A I wouldn't be surprised. 2 Q And even by your math, you state that 3 this is, quote, "Nearly the population 4 equivalent of two entire House districts," 5 right? 6 A Yes. 7 Q So 83,489 is less than the population 8 of two House districts, right? 9 A Yes. 10 Q There are over a hundred House 11 districts in the State of Louisiana, right? 12 A Yes. 13 Q So you would agree this is less than 14 two percent of the population of Louisiana 15 that was moved in Mr. Cooper's illustrative 16 maps? 17 A Yes. 18 Q I'm going to move down to Paragraph 19 12 here, where you say that: "Mr. Cooper's 20 Exhibit B-2 does not highlight as changed 21 HD-69, but both in comparison with his 22 original July 22, 2022 report, Exhibit I-1 and 23 a look at the map reveals HD-69 is 24 significantly changed." Did I read that 25 correctly?</p>
<p style="text-align: right;">Page 90</p> <p>1 if you kept the elementary school attendance 2 families together but took the school out. 3 Sometimes politicians -- 4 Q And what -- sorry. Go ahead. 5 A Sometimes politicians will do that 6 when there's big, you know, 7 fundraising-related building, such as a port 8 or a major office building. There can 9 definitely can be zero population blocks that 10 are relevant to a community of interest. 11 Q You also mentioned that there are -- 12 in your report, going back up -- 83,489 people 13 in the Census blocks that Mr. Cooper moved in 14 the House Map. Is that right? 15 A Yes. 16 Q Is that all residents or is that CVAP 17 population only? 18 A That's total population. 19 Q Do you know how many Louisiana 20 residents there are in total? 21 A Not off the top of my head. 22 Q Would you be surprised to learn there 23 are more than 4.6 million or is that 24 consistent with your understanding of the 25 state?</p>	<p style="text-align: right;">Page 92</p> <p>1 A Yes. 2 Q I just want to understand what your 3 criticism is here is. So I'm going to put on 4 my screen a new exhibit. This one was 5 premarked as Exhibit 7, but I'm going to ask 6 the court reporter to mark it as Exhibit 9. 7 I'm going to represent that this is 8 Exhibit B-2 from Mr. Cooper's report, which 9 you referenced in Paragraph 12 of your own 10 report. Does that seem fair to you, based on 11 your understanding of where Mr. Cooper 12 highlighted the various districts that he 13 changed? 14 A Yes. 15 Q I'm going to go down to 69. Are you 16 able to see up here? 17 A Yes. 18 Q Am I understanding correctly that the 19 problem is that Mr. Cooper didn't mark this in 20 red text? 21 A That is the result of the problem. 22 Q What do you mean, that's the result 23 of the problem? 24 A The problem is that he changed it and 25 then in his list of: These are the districts</p>

23 (Pages 89 to 92)

<p style="text-align: right;">Page 93</p> <p>1 I changed, he did not include it.</p> <p>2 Q Okay. But are you asserting that any</p> <p>3 of the data about District 69 that's included</p> <p>4 in this Exhibit B-2 is incorrect?</p> <p>5 A I take that back. None of the</p> <p>6 numbers are incorrect. Obviously, the data</p> <p>7 includes the fact that he's shading the</p> <p>8 districts that are changed in red, and he did</p> <p>9 not do so. The claim that this exhibit</p> <p>10 reports which districted changed is inaccurate</p> <p>11 data in this report.</p> <p>12 Q Sure. But the only mistake in this</p> <p>13 exhibit is that it's not in red texts and not</p> <p>14 any of the numbers that he includes, right?</p> <p>15 A Correct.</p> <p>16 Q You'd agree this exhibit does show</p> <p>17 that Exhibit 69 -- HD-69 is a</p> <p>18 majority/minority district, right?</p> <p>19 A Just barely.</p> <p>20 Q It lists it 50.20 percent BVAP,</p> <p>21 right?</p> <p>22 A Yes.</p> <p>23 MS. KEENAN:</p> <p>24 I'm now going to put up on my</p> <p>25 screen the other exhibit that you</p>	<p style="text-align: right;">Page 95</p> <p>1 change from the first 2022 Illustrative Map</p> <p>2 that he submitted to the second illustrative</p> <p>3 2023 districts that he submitted, right?</p> <p>4 A Yes.</p> <p>5 Q In reviewing the maps, you can see</p> <p>6 that those boundaries had changed, right?</p> <p>7 A Once I zoomed in on them and looked</p> <p>8 at them, yes.</p> <p>9 Q Okay. That's helpful. I want to go</p> <p>10 to the next page of your report, back over to</p> <p>11 Exhibit 5. Are you able to see Figure 2 on</p> <p>12 your screen?</p> <p>13 A Yes.</p> <p>14 Q Does Figure 2 show all of the changes</p> <p>15 across the 2022 and 2023 Illustrative Plans?</p> <p>16 A Across the region that's shown in the</p> <p>17 figure, yes.</p> <p>18 Q But there are -- are you suggesting</p> <p>19 there are also additional districts that</p> <p>20 changed that are not depicted in Figure 2?</p> <p>21 A I don't recall off the top of my</p> <p>22 head.</p> <p>23 Q Why did you include this figure or</p> <p>24 this specific region; do you remember?</p> <p>25 A Because the -- number one, this</p>
<p style="text-align: right;">Page 94</p> <p>1 mentioned, Exhibit I-1, which was</p> <p>2 premarked as Exhibit 8 that will now</p> <p>3 be -- I'm going to ask the court</p> <p>4 reporter to mark it Exhibit 10.</p> <p>5 BY MS. KEENAN:</p> <p>6 Q There is the same Population Summary</p> <p>7 Report, but as it relates to the 2022</p> <p>8 Illustrative Plan that Mr. Cooper provided,</p> <p>9 right?</p> <p>10 A Yes.</p> <p>11 Q I'm going to go back down to HD-69.</p> <p>12 You would agree that this report shows HD-69</p> <p>13 as 23.75 percent BVAP, right?</p> <p>14 A Yes.</p> <p>15 Q So you would agree that the</p> <p>16 population numbers that Mr. Cooper provided</p> <p>17 across the two reports do show that Mr. Cooper</p> <p>18 made a change to that district as well, right?</p> <p>19 A Yes.</p> <p>20 Q And you also are asserting that</p> <p>21 Mr. Cooper's maps depicted Illustrative HD-69</p> <p>22 as unchanged from 2022 to 2023, right?</p> <p>23 A His maps did not indicate which</p> <p>24 districts changed and did not change.</p> <p>25 Q But the boundaries of HD-69 did</p>	<p style="text-align: right;">Page 96</p> <p>1 region is so densely populated and has so many</p> <p>2 small House Districts that you can't really</p> <p>3 see it well on a statewide map. And because</p> <p>4 just the scope of the changes you can see even</p> <p>5 just on this region belies Mr. Cooper's claim</p> <p>6 that the changes are minor.</p> <p>7 Q So I guess a couple of questions from</p> <p>8 that. The crosshatching here in Figure 2 that</p> <p>9 you see in various places, that indicates</p> <p>10 which Census Blocks were changed, right?</p> <p>11 A It indicates the whole area that was</p> <p>12 changed, yes.</p> <p>13 Q Does this map indicate how many</p> <p>14 people are in any of the areas that were</p> <p>15 changed here?</p> <p>16 A No. I'd go through those numbers. I</p> <p>17 handled the illustrative samples separately.</p> <p>18 Q But we can't tell how many, if any,</p> <p>19 people are any of these areas that are</p> <p>20 crosshatched in this Figure 2, right?</p> <p>21 A Not specific numbers. But,</p> <p>22 obviously, we know -- if you spend enough time</p> <p>23 knowing the population centers, you know which</p> <p>24 areas are populated and which ones are more</p> <p>25 rural.</p>

24 (Pages 93 to 96)

<p style="text-align: right;">Page 97</p> <p>1 Q Is it possible that any of these 2 areas of crosshatching have zero people in 3 them? 4 A It's possible. 5 Q I'm going to move on to Paragraph 14 6 just below that figure. Here you explain that 7 the changes of the Illustrative Senate Map 8 moved 35,276 people in the new districts, 9 right? 10 A Yes. 11 Q Again, that's all people, not just 12 CVAP population? 13 A Yes. 14 Q And so here, based on the math we did 15 earlier, we're talking about less than 16 one percent of the Louisiana's overall 17 population, right? 18 A I don't know the exact percentage. 19 Somewhere around there. 20 Q If 86,000 was less than -- sorry. If 21 83,000 was less than two percent, than 35,000 22 is less than one percent, right, just basic 23 math? 24 A Yes. 25 MS. KEENAN:</p>	<p style="text-align: right;">Page 99</p> <p>1 MS. KEENAN: 2 Patrick, do you have a 3 preference? 4 MR. LEWIS: 5 Yeah, I think either we take the 6 lunch now or we take it at the next 7 break in one hour from now. 8 MS. KEENAN: 9 Either is fine with me, whatever 10 you guys prefer. 11 MR. LEWIS: 12 Madam Court Reporter, do you 13 have a preference? 14 THE COURT REPORTER: 15 I do not. 16 MS. KEENAN: 17 Sounds like no one is super 18 hungry yet. Let's take a quick break 19 now and we can back for lunch after 20 afterwards. All right? 21 MR. LEWIS: 22 Sounds good. 23 MS. KEENAN: 24 We can go back on the record 25 around 12:18.</p>
<p style="text-align: right;">Page 98</p> <p>1 I see we've reached another hour 2 mark and I'm about to start at the 3 next section of my outline here. Do 4 we want to take another five-minute 5 break, or are we thinking -- do you 6 need a longer break than that? I'm 7 just curious how you're feeling? 8 THE WITNESS: 9 It depends on how long a day -- 10 you think we still have multiple 11 hours to go? 12 MS. KEENAN: 13 I think we still do have 14 multiple hours to go. I'm happy to 15 either, you know, take a short break 16 and do the next session or take a 17 slightly longer break and then 18 continue ahead from there. Whatever 19 you're more comfortable with is fine 20 with me. 21 THE WITNESS: 22 I'm flexible, as long as we 23 don't go -- take lunch in an hour or 24 take lunch in a half an hour or 25 whatever makes more sense to you.</p>	<p style="text-align: right;">Page 100</p> <p>1 (BRIEF RECESS 12:13 P.M. to 12:21 EST) 2 BY MS. KEENAN: 3 Q I am going to share my screen again, 4 because I want to talk a little about your 5 opinions regarding compactness. 6 Is it your opinion that the 2023 7 House Illustrative Map is less compact than 8 the 2022 House Illustrative Map? 9 A As I state here, the districts change 10 became less compact. 11 Q What is your basis of your 12 conclusions that the districts -- the change 13 became less compact? 14 A As described here, looking at both 15 the numbers from Maptitude and actually just 16 looking at the district shapes. 17 Q So I want to talk about the measure 18 of compactness first. Paragraph 16 here says 19 that you use Maptitude to compute the ten 20 measures of compactness built into the 21 software. Did I read that correctly? 22 A Yes. 23 Q Paragraph 18 refers to eleven 24 compactness scores built into Maptitude in the 25 last line there. Am I reading that correctly?</p>

25 (Pages 97 to 100)

Page 101

1 A Yes.

2 Q Do you know which of those statements

3 about the number of measure of compactness

4 built into Maptitude is correct?

5 A Well, both of them. There are ten

6 that measure each district's compactness and

7 then one that only gives a plan-wide

8 compactness measure.

9 Q Okay. Great. So there are eleven

10 total, but ten that operate at the district

11 level. Is that what I'm understanding?

12 A Yes.

13 Q Thank you for clarifying. So of the

14 ten district level measures that you

15 considered, two of them actually improved

16 across the districts; is that right?

17 A Yes, as described there.

18 Q And that's the Ehrenburg and the

19 Length-Width measures, right?

20 A Yes.

21 Q Are you offering any opinion about

22 whether these are legitimate measures of

23 compactness?

24 A All these measures are legitimate in

25 their own way.

Page 102

1 Q Okay. You also concluded that the

2 average score remained constant, or

3 essentially constant, at .01 difference

4 between 2022 and 2023 maps under eight

5 additional compactness scores built into

6 Maptitude, right?

7 A Are you reading from the report?

8 Q Yes, Paragraph 18, the second

9 sentence there.

10 A Yes.

11 Q One of those eight measures, though,

12 that you list in the footnote to Paragraph 18

13 is Ehrenburg. That's one of the measures you

14 agree showed improvement in the least compact

15 district, right?

16 A Yes.

17 Q And in Paragraphs 16 and 17, there is

18 a greater than .01 percent improvement in the

19 Ehrenburg score, right?

20 A Different scores.

21 Q So even the Ehrenburg metric, or the

22 ten metrics, can be scored differently,

23 depending on whether you're looking at the

24 district level or the full plan level, right?

25 MR. LEWIS:

Page 103

1 Objection. You may answer.

2 THE WITNESS:

3 The individual district scores

4 will definitely be different than the

5 overall plan score.

6 BY MS. KEENAN:

7 Q Does that mean that the measure is

8 applied the same way, just in a different

9 level or are they actually two different

10 tests? I'm just trying to understand the

11 difference between how the metrics work at the

12 district level and the plan level.

13 A I mean, it's just as described there.

14 The report gives a district by district score.

15 And then it offers the median score for the

16 whole plan. And it offers minimum and maximum

17 scores. It also offers a standard deviation,

18 but that's rarely referenced.

19 Q So based on Paragraph 18, am I

20 understanding that the median score under

21 Ehrenburg is .36, but the mean or the average

22 is .01?

23 MR. LEWIS:

24 Objection. It mischaracterizes

25 the report. You may answer.

Page 104

1 THE WITNESS:

2 No.

3 BY MS. KEENAN:

4 Q So can you explain what you're saying

5 here. It looks like the numbers are

6 different. I might just be misreading. I'm

7 just trying to understand what I'm not

8 understanding about the numbers here.

9 A It's the difference between median,

10 average and least, the three numbers, three

11 different numbers. Do you need me -- I can

12 explain that, if you want me to.

13 Q No, I've got that. Are you saying

14 that both of the maps, the 2022 and the 2023

15 maps, have the same median of .36?

16 A Under Ehrenburg, yes.

17 Q Got it. So it's an essentially

18 constant Ehrenburg score across the two maps

19 when evaluated at the full plan level?

20 A No.

21 Q Okay. Can you explain, then, what is

22 staying constant about the Ehrenburg score

23 between the 2022 and 2023 maps?

24 A The median score stays constant.

25 Q Okay. I thought that's what I said.

26 (Pages 101 to 104)

<p style="text-align: right;">Page 105</p> <p>1 I must have misstated it. I'm sorry. 2 But the median score, as it relates 3 to the overall map and not the individual 4 districts; is that right? 5 A I'm sorry. What's the question 6 there? 7 Q So the median score remains constant 8 across the two maps at the plan-wide level 9 rather than at the district specific level; is 10 that what you mean? Or is this the district 11 specific measure? 12 A Median, by definition, means half the 13 districts are above it and half the districts 14 are below it. 15 Q Right. I think I understand. Give 16 me one second to just look at this for a 17 minute to make sure there's nothing else I 18 have a question on this. 19 Can I ask -- when you say there's a 20 .01 difference between the 2022 and '23 maps 21 under certain compactness scores, does that 22 mean the scores actually got slightly better 23 under any of those tests? 24 A Under some tests, they may have 25 gotten 0.01 better, and then there's some that</p>	<p style="text-align: right;">Page 107</p> <p>1 -- I guess this is what I'm trying to ask. In 2 Paragraph 18, you refer to the overall map 3 score, right? 4 A Yes. 5 Q Is Paragraph 19 also operating at the 6 overall map score level? 7 A Yes. 8 Q Because at the district level, you 9 agree length-width was one of the measures 10 that actually improved, right? 11 A At the lowest score -- as described 12 there, focusing on the least compact district 13 in each map. 14 Q Right. And so in that sense, at the 15 district level, the length-width score 16 improved. But in Paragraph 19, you're saying 17 that at the overall map level, the 18 length-width score decreased, right? 19 A Go back up. 20 Q Sure. 21 A So for the least compact district, 22 the length-width score is higher or better in 23 the new plan than the old plan. 24 Q Right. 25 A Yes.</p>
<p style="text-align: right;">Page 106</p> <p>1 might have gotten 0.01 worse. But that's such 2 a tiny difference that -- on a statewide 3 average that can't be a policy consideration, 4 making one map better than another. It's that 5 tiny of a difference. 6 Q Do you know how many of eight got 7 better as compared to stayed constant or 8 worse, even at a small level? 9 A No, because -- no. 10 Q Okay. 11 A I didn't dig into the mathematical 12 irrelevant level of how many were better, 13 worse. It's all mathematically irrelevant. 14 Q So the scores for the other three 15 compactness measures built into Maptitude, you 16 concluded that less compact from the 2023 17 House Illustrative Map than the 2022 House 18 Illustrative Map, right? 19 A Yes. 20 Q The three measures where you say the 21 scores became less compact are cut edges, 22 perimeter and length-width? 23 A I can't see the footnote, but, yeah, 24 they're cited there in the footnote. 25 Q You can see that now? That is at the</p>	<p style="text-align: right;">Page 108</p> <p>1 Q So it's the overall map score that 2 you say became less compact in the 2023 plan, 3 right? Down here, in Paragraph 19? 4 A Yes, uh-huh. 5 Q How much less compact under the 6 length-width score was the overall map in 7 2023? 8 A I'd have to pull it from the files. 9 I don't know off the top of my head. 10 Q You don't offer a number for how much 11 less compact you think the map became in 2023, 12 right? 13 A I mean, it's there in my supporting 14 documents. 15 Q Okay. But the report doesn't explain 16 the numbers for the cut edges, the perimeter 17 or the length-width measure? 18 A I mean, it explains them, because 19 Paragraph 19 is talking about them. 20 Q But in Paragraphs 16, 17 and 18, you 21 provide specific numbers that each metric 22 produces when you're comparing the 2022-2023 23 reports, right? 24 A Eighteen only does that for 25 Ehrenburg.</p>

27 (Pages 105 to 108)

<p style="text-align: right;">Page 109</p> <p>1 Q And it provides the change is either 2 zero or .01 for the remaining numbers, right? 3 A Right. 4 Q But we don't have any sense from this 5 report -- or at least Paragraph 19 in this 6 report, as a numerical difference in the 7 compactness measures for cut edges, perimeter 8 or length-width, right? 9 A No. It's obviously bigger than 0.01. 10 Q When you say it's obviously bigger, 11 do you know how much bigger? 12 A Not off the top of my head, but it's 13 in the supporting documents. 14 Q And in your opinion, is it bigger 15 than the point at which it's -- what you just 16 called mathematically relevant? 17 A Yes. 18 Q And you can be sure of that -- 19 A Yes. 20 Q -- looking at the numbers? Okay. 21 Now, I'm going to take a look at 22 Paragraph 20, where you talk about the changes 23 of HD-50 and 96. First I just have a question 24 about the way you describe HD-96 as it existed 25 in the 2022 Illustrative Map. I'm reading it</p>	<p style="text-align: right;">Page 111</p> <p>1 included as much of St. Mary Parish as 2 possible within the equal population 3 requirements in the 2022 map? 4 A Was that a question? 5 Q Yes. Am I reading that correctly? 6 A Yes. 7 Q So I'm going to zoom in here for a 8 minute. You are saying that in this 2022 9 House Illustrative Map, HD-96 already includes 10 a portion of St. Mary Parish. Is that what 11 you're saying there? 12 A That's what I say. That may be a 13 typo. I may have meant St. Martin, obviously. 14 Q Okay. So it's possible you meant a 15 combination of the southern non-contiguous 16 portion of St. Martin Parish and as much of 17 St. Martin Parish as possible within the equal 18 population requirements? 19 A Yes, just like the map. 20 Q Okay. And so you're not saying that 21 HD-96 included any portion of St. Mary in the 22 2022 House Illustrative Map; is that right? 23 A Right. 24 Q I just wanted to make sure that I 25 understood that. Do you agree that Figure 3</p>
<p style="text-align: right;">Page 110</p> <p>1 from this paragraph here. You say: "Taking 2 HD-96 from being" -- then you proceed here to 3 describe former HD-96 in the 2022 House 4 Illustrative Map, right? Is that what this 5 highlighted portion is purporting to do? 6 A I'm sorry. I didn't follow that 7 question. 8 Q Sure. So the full paragraph in 20 9 explains that the 2023 map changes the 2022 10 map by taking HD-96 from being one thing to 11 then adding other areas to it, right? That's 12 the general structure of this sentence? 13 A Yes. 14 Q So what I have highlighted right 15 here -- can you see the highlighting on your 16 screen? 17 A Yes. 18 Q Starting with, "By taking," ending 19 "In the 2022 map," right before Footnote 3. 20 That is the description of what HD-96 was in 21 the 2022 House Illustrative Map; is that 22 right? 23 A Yes. 24 Q And am I understanding that you say 25 HD-96 in the 2022 House Illustrative Map</p>	<p style="text-align: right;">Page 112</p> <p>1 does not depict waterways in this map? 2 A I mean, you can make out the river 3 curling around in St. Mary's there, but it 4 doesn't have a water layer. 5 Q Why did you choose -- did you create 6 these photos? 7 A Yes. 8 Q And where did you pull them from? 9 A From the Maptitude mapping software. 10 Q Why did you choose not to display the 11 waterways in this image? 12 A It wasn't a conscious choice to do it 13 or not. I was looking at the district 14 configurations. 15 Q Does that mean that you, as a default 16 matter, do not display the waterways when 17 you're reviewing Maptitude; is that just the 18 way that it was configured in your computer? 19 A Depending on what I'm doing. I look 20 at it sometimes and don't look at it at other 21 times. I mean, when we're looking at 22 compactness, I usually don't look at water. 23 Q Okay. Do you agree that rivers, 24 lakes and other waterways can be geographical 25 features that shape communities?</p>

28 (Pages 109 to 112)

<p style="text-align: right;">Page 113</p> <p>1 A They can be.</p> <p>2 Q And are waterways something that you</p> <p>3 ever consider in drawing maps?</p> <p>4 A Sure.</p> <p>5 Q But not at the compactness level?</p> <p>6 MR. LEWIS:</p> <p>7 Objection; vague. You may</p> <p>8 answer.</p> <p>9 THE WITNESS:</p> <p>10 The map in compactness analysis,</p> <p>11 when you're doing the formulas, does</p> <p>12 not treat water geography as special</p> <p>13 compared to any other geography.</p> <p>14 BY MS. KEENAN:</p> <p>15 Q Okay. And so do you think displaying</p> <p>16 the water feature in an image will alter the</p> <p>17 way a district meets the eye test about</p> <p>18 compactness or contiguity any other</p> <p>19 traditional redistricting principle?</p> <p>20 MR. LEWIS:</p> <p>21 Objection; you may answer.</p> <p>22 THE WITNESS:</p> <p>23 I'm not sure I follow the</p> <p>24 question.</p> <p>25</p>	<p style="text-align: right;">Page 115</p> <p>1 A Yes.</p> <p>2 Q Is it typical for you to assess</p> <p>3 compactness on both the district-by-district</p> <p>4 basis and on a plan-wide basis?</p> <p>5 A Depends on the law in a given</p> <p>6 jurisdiction when I'm drawing the maps. And</p> <p>7 when I'm looking at another expert's claims</p> <p>8 about compactness, it depends on what they're</p> <p>9 claiming, and would probably look at both.</p> <p>10 Q Did law in Louisiana or in federal</p> <p>11 court influence your decision to look at</p> <p>12 either plan-wide basis or district-by-district</p> <p>13 basis?</p> <p>14 A No.</p> <p>15 Q I'm going to move on to the Senate.</p> <p>16 Is it your opinion that the 2023 Senate</p> <p>17 Illustrative Map is less compact than the 2022</p> <p>18 House Illustrative Map?</p> <p>19 A As written right there in Paragraph</p> <p>20 21, it does under the average scores.</p> <p>21 Q And is that under --</p> <p>22 A I should get a full -- as noted there</p> <p>23 on the average scores of the eight of the</p> <p>24 eleven compactness measures.</p> <p>25 Q Is this assessing on both the</p>
<p style="text-align: right;">Page 114</p> <p>1 BY MS. KEENAN:</p> <p>2 Q Okay. Do you think that being able</p> <p>3 to see a water feature on a map could change</p> <p>4 the way you perceive whether it complies with</p> <p>5 any traditional redistricting principles?</p> <p>6 MR. LEWIS:</p> <p>7 Objection; you may answer.</p> <p>8 THE WITNESS:</p> <p>9 Sure.</p> <p>10 BY MS. KEENAN:</p> <p>11 Q Before I move on to the Senate, I</p> <p>12 just have another couple questions about the</p> <p>13 House here. Would you agree that Paragraph 16</p> <p>14 and 17 here talk about measures of compactness</p> <p>15 as applied to the individual changed districts</p> <p>16 in the 2022 and 2023 Illustrative Maps?</p> <p>17 A Sorry. Can you ask that again?</p> <p>18 Q Sure. So Paragraphs 16 and 17, they</p> <p>19 refer to changes to in compactness in the</p> <p>20 individual changed districts between the 2022</p> <p>21 and 2023 Illustrative Maps, right?</p> <p>22 A Yes.</p> <p>23 Q And Paragraphs 18 and 19 focus on</p> <p>24 overall map score changes across the 2022 and</p> <p>25 2023 districts, right?</p>	<p style="text-align: right;">Page 116</p> <p>1 district-by-district and a plan-wide basis as</p> <p>2 well, or is this focusing on one or the other?</p> <p>3 A That paragraph is focusing on the</p> <p>4 average score -- I'm sorry. That sentence is</p> <p>5 focusing on the average score. And the next</p> <p>6 sentence is focusing on the least compactness</p> <p>7 district score.</p> <p>8 Q On the eight measures that you say</p> <p>9 are less compact at the average score level,</p> <p>10 those are listed in Footnote 4 here, right?</p> <p>11 A Yes.</p> <p>12 Q Do you know how big the difference is</p> <p>13 between the scores on these eight measures?</p> <p>14 A Not off the top of my head. It's in</p> <p>15 is the supporting documents.</p> <p>16 Q But you say that, in Paragraph 20 --</p> <p>17 sorry -- Paragraph 21 has the footnote about</p> <p>18 the eight of the eleven Maptitude compactness</p> <p>19 measures. You say in Footnote 4 to that</p> <p>20 paragraph that the 2023 Senate Map was more</p> <p>21 compact by the absolute minimum change</p> <p>22 possible of .01 in each case under the</p> <p>23 remaining three measures. Is that right?</p> <p>24 A Yes.</p> <p>25 Q So, again, are you certain that the</p>

29 (Pages 113 to 116)

<p style="text-align: right;">Page 117</p> <p>1 other eight measures are not by that same 2 minimum change possible of .01? 3 A We can just pull up the document and 4 see for certain. 5 Q And do you know where in your file 6 that document is? 7 A It should be a file called, 8 "Compactness Scores." 9 Q We can take a look after the next 10 break, if we need to. But you don't know, 11 sitting here today, whether the difference in 12 the scores that became less compact were 13 bigger than .01 difference or are you sure? 14 A I'm not certain off the top of my 15 head. 16 Q And you would agree the map does 17 improve, even if slightly, on those remaining 18 three measures, right? 19 A I wouldn't consider 0.01 change an 20 improvement. 21 Q It is literally more compact by .01, 22 using that score? 23 A It's essentially random noise. 24 Q But that is what the metric says, 25 yes?</p>	<p style="text-align: right;">Page 119</p> <p>1 that operated at the district level? 2 A Yeah. I don't know off the top of my 3 head. 4 Q Okay. So it's possible there's one 5 more measure that's not included in here? 6 A Yes. 7 Q All of these compactness measures 8 that we've discussed measure the compactness 9 scores of the 2022 Illustrative Map and the 10 2023 Illustrative Map, correct? 11 A Yes. 12 Q None of these compactness scores that 13 we've just discussed measure the compactness 14 of the Enacted map, right? 15 A Correct. 16 MS. KEENAN: 17 I have one more short section 18 that I think I can get through 19 relatively quickly or we can break 20 here, because I'm at a section break 21 for lunch. Do you all have a 22 preference for doing that? 23 MR. LEWIS: 24 How short is the short segment, 25 15, 20 minutes?</p>
<p style="text-align: right;">Page 118</p> <p>1 A Yes. The measure says that it's 2 changed by 0.01, yes. 3 Q Your report also says in Paragraph 21 4 that the least compact district is less 5 compact in the 2023 Senate Illustrative Map 6 than the least compact district in the 2022 7 Senate Illustrative Map, according to two 8 Maptitude compactness measures, right? 9 A Yes. 10 Q But you agree it's unchanged by the 11 other seven district specific measures, right? 12 A The least compact district is 13 unchanged? Yes. 14 Q So on the majority of the compactness 15 measures, the least compacts in a district 16 actually doesn't fair differently across the 17 two maps, right? 18 A Sure. 19 Q Hopefully, my last question about the 20 numbers or measure of compactness. But here 21 you say there are two Maptitude compactness 22 measures where the least compact district is 23 less compact and there are seven other ones, 24 which adds up to nine. Why is that nine, 25 rather than ten? You told us there were ten</p>	<p style="text-align: right;">Page 120</p> <p>1 MS. KEENAN: 2 I think it's probably about 15 3 or 20 minutes. Actually, it might 4 not be. We can do the break now. 5 MR. LEWIS: 6 How much time do we need? I'm 7 easy. I run across the hall to our 8 office kitchen, but I think for 9 others, it may take some more time. 10 MS. KEENAN: 11 I think 30 minutes to an hour is 12 standard. I'm really open to either. 13 So, Dr. Johnson, what do you 14 think? 15 THE WITNESS: 16 Probably an hour is better. 17 MR. LEWIS: 18 Just to be clear, we're talking 19 about 1:50 p.m. Eastern Time? 20 MS. KEENAN: 21 Yeah. That's sounds great. 22 MR. LEWIS: 23 Fabulous. 24 (LUNCH BREAK FROM 12:50 P.M. TO 1:50 P.M. EST) 25</p>

30 (Pages 117 to 120)

<p style="text-align: right;">Page 121</p> <p>1 BY MS. KEENAN:</p> <p>2 Q So before we move on to compactness,</p> <p>3 I want to make sure I want to understand some</p> <p>4 of the limitations you were just drawing</p> <p>5 before we went off the record. When you say</p> <p>6 that a .1 change is -- I think you said</p> <p>7 mathematically irrelevant. What are you --</p> <p>8 what's the basis for that kind of conclusion?</p> <p>9 A It's .01 changes.</p> <p>10 Q Sorry, .01, of course, yes.</p> <p>11 A It's such a tiny change that it has</p> <p>12 no significant difference in the compactness</p> <p>13 of one versus another.</p> <p>14 Q Is there any accepted statistical</p> <p>15 significance measure for compactness measures;</p> <p>16 is there, like -- is there a threshold that</p> <p>17 you have to cross for the change to be</p> <p>18 statistically significant, in your opinion?</p> <p>19 MR. LEWIS:</p> <p>20 Objection. You may answer.</p> <p>21 THE WITNESS:</p> <p>22 I mean, you could get into the</p> <p>23 standard air stuff, but that all</p> <p>24 assumes that the average is relevant</p> <p>25 at all. So compactness is much more</p>	<p style="text-align: right;">Page 123</p> <p>1 Q Okay. What about, like, .03; is that</p> <p>2 mathematically relevant, if .01 is</p> <p>3 mathematically irrelevant?</p> <p>4 A Again, you would have to be more</p> <p>5 specific to a given situation.</p> <p>6 Q When you say .01 is mathematically</p> <p>7 irrelevant, is that also specific to a</p> <p>8 situation or is that just, like, true across</p> <p>9 the board, .01 definitely insignificant?</p> <p>10 A Yeah. I can't imagine a situation</p> <p>11 where .01 would be significant. I mean,</p> <p>12 especially given that these numbers are</p> <p>13 reported to two decimals. So .01 could be</p> <p>14 .005. These are just tiny, tiny differences</p> <p>15 in fairly abstract measuring tools.</p> <p>16 Q So I found the backup file that you</p> <p>17 mentioned. I'm going to pull it up, just so</p> <p>18 we can look at it together. I'm going to</p> <p>19 share my screen for a moment. Are you able to</p> <p>20 see what I'm sharing on my screen?</p> <p>21 A Yes.</p> <p>22 Q Okay. I'm going to show you two</p> <p>23 different -- these are from your backup file.</p> <p>24 I think the subfolder is "Plans" and then the</p> <p>25 subfolder "Stats," and then you have a series</p>
<p style="text-align: right;">Page 122</p> <p>1 a case of avoiding significantly</p> <p>2 non-compact districts than it is, is</p> <p>3 this district an 80 percent perfectly</p> <p>4 compact district or is this district</p> <p>5 a 90 percent perfectly compact</p> <p>6 district? So some states have</p> <p>7 compactness written in their</p> <p>8 constitution. I don't know that any</p> <p>9 actually put a mathematical measure</p> <p>10 into their constitution or into their</p> <p>11 state laws. Some state legislatures</p> <p>12 adopt their local rules and will</p> <p>13 adopt a measure in -- a specific</p> <p>14 named measure in a value that</p> <p>15 matters, but there's no accepted --</p> <p>16 nationally accepted or universally</p> <p>17 accepted value.</p> <p>18 BY MS. KEENAN:</p> <p>19 Q Just so I understand sort of the</p> <p>20 reach of your opinion about the .01 being</p> <p>21 mathematically irrelevant. What if a change</p> <p>22 was -- I don't know, .05 in the compactness</p> <p>23 measure; still mathematically irrelevant?</p> <p>24 A We'd have to be more situation</p> <p>25 specific, as you start to get bigger.</p>	<p style="text-align: right;">Page 124</p> <p>1 of compactness reports. Does sound familiar</p> <p>2 to you, based on the files you submitted with</p> <p>3 your report?</p> <p>4 A Yes.</p> <p>5 Q So this is the measures of</p> <p>6 compactness report that you have titled,</p> <p>7 "Illustrative Senate Measures of Compactness</p> <p>8 Report." And then the next document I'm</p> <p>9 showing on my screen is titled in your file,</p> <p>10 "Illustrative Map 2023 Senate Measures of</p> <p>11 Compactness Report." Do you recall putting</p> <p>12 those in the backup file?</p> <p>13 A It was a long time ago. I don't</p> <p>14 recall. It certainly seems like something I</p> <p>15 would do to.</p> <p>16 Q These look like the standard exports</p> <p>17 from Maptitude for the two Illustrative Senate</p> <p>18 Plans, right?</p> <p>19 A Yes.</p> <p>20 MR. LEWIS:</p> <p>21 Before you get to your next</p> <p>22 question, are you going to mark these</p> <p>23 as exhibits?</p> <p>24 MS. KEENAN:</p> <p>25 I was planning to mark this</p>

31 (Pages 121 to 124)

<p style="text-align: right;">Page 125</p> <p>1 third document as an exhibit instead, 2 just to make sure that he could 3 confirm this was an accurate 4 demonstrative of those two together, 5 just to make it a little easier for 6 the questioning. Let me ask 7 Dr. Johnson first. 8 BY MS. KEENAN: 9 Q Can you tell that these two tables 10 are the same as the ones that we've just 11 reviewed? This one is for the Illustrative 12 Senate at the top here. And then the one on 13 the bottom of this document you have in front 14 of you, it has, "Plan Name Ales_2023_Senate in 15 the same way your document Ales_2023_Senate 16 says that? Does that look right to you? 17 A Short of going through each 18 individual number, yes, they all look correct. 19 MS. KEENAN: 20 Let's mark them all as exhibits 21 just to be safe for the record. I 22 think we were up to 11. So we'll 23 mark the file reflecting the Measures 24 of Compactness for the Illustrative 25 2022 Senate as Exhibit 12. We'll</p>	<p style="text-align: right;">Page 127</p> <p>1 Senate Plan on the bottom. Would you agree 2 that the difference in the average Reock score 3 is .01? 4 A Yes. 5 Q The Schwartzberg score is be next 6 one. That looks likes a 1.96 mean in the 2022 7 Illustrative Plan, right? 8 A Yes. 9 Q 1.99 in the 2023 Illustrative Plan? 10 A Yes. 11 Q So that's .03 as the difference, 12 right? 13 A Yes. 14 Q I'm going to go to Alternate 15 Schwartzberg. This is 2.17 in the 2022 Senate 16 Plan to 2.22 in the 2023 Senate Plan; is that 17 right? 18 A Yes. 19 Q So that's .04 for the Alt Swartzberg, 20 right? 21 A .05. 22 Q .05, that's right. Polsby-Popper is 23 next. That one, the mean goes from .24 to 24 .22. Did I read that right? 25 A Yes.</p>
<p style="text-align: right;">Page 126</p> <p>1 mark the file that shows the Measures 2 of Compactness Report for the 3 Illustrative 2023 Senate as Exhibit 4 13. And we will mark this to 5 demonstrative showing the Measures of 6 Compactness Report for both the 2022 7 and 2023 Illustrative Senate Maps as 8 Exhibit 14. 9 I realized I was talking a 10 little quickly. Did the court 11 reporter catch those? And I will, of 12 course, send over marked exhibits for 13 afterwards. 14 THE COURT REPORTER: 15 Yes, I did. 16 BY MS. KEENAN: 17 Q So, Dr. Johnson, I want to talk about 18 the differences in the senate measures that we 19 were discussing shortly before the break. 20 When you talk about the average score, you're 21 looking at the mean number, right? 22 A Yes. 23 Q So would you agree that the Reock 24 score on the Measure of Compactness Report 25 from the 2022 Senate Plan on the top, 2023</p>	<p style="text-align: right;">Page 128</p> <p>1 Q So the change between the 2022 to 2 2023 plan is .02, right? 3 A Yes. 4 Q I think the Population Polygon and 5 the Population Circle, you did discuss the 6 numbers in your report, right? You can see 7 the difference in the mean for those two is 8 both .01 across the 2022 and 2023 maps, right? 9 A Yes. And same for Area Convex/Hull. 10 Q That's right. I do want to talk 11 about that one, because that's not highlighted 12 in the report. The 2022 Senate measure is .71 13 and the 2023 Illustrative Senate measure is 14 .70; is that right? 15 A Yes. 16 Q So that's a .01 change, as well? 17 A Yes. 18 Q And for then Length-Width, we go from 19 -- I'm sorry. For Ehrenburg, first -- we go 20 from .34 to .32, which is a .02 change from 21 the 2022 and the 2023 maps, right? 22 A Yes. 23 Q My other question on the Senate Map 24 is -- I'm going back to your report, again, 25 which is marked Exhibit 5. The Perimeter</p>

32 (Pages 125 to 128)

<p style="text-align: right;">Page 129</p> <p>1 Plan -- sorry. Give me one second. So in 2 Paragraph 21 is where you're talking about the 3 scores on the Senate measures, right? 4 A Yes. 5 Q And Footnote Number 4 attached to 21 6 mentions that the Senate Map became more 7 compact by the absolute minimal change 8 possible of .01 in each case in the Population 9 Polygon and population Circle, along with the 10 perimeter measure. Did I read that correctly? 11 A I think so. I didn't follow the 12 first part of it. 13 Q I'm sorry. This last sentence in 14 Footnote 4 says it became more compact by the 15 absolute minimal change possible of 0.01 in 16 each case. And then it lists the three 17 measures, Population Polygon, Population 18 Circle, along with the Perimeter measure, 19 right? 20 A Yes. 21 Q I just want to go back to this chart, 22 again, for a second. You agree that perimeter 23 measure is not measured by mean like the other 24 ones we've talked about so far, right? 25 A Right.</p>	<p style="text-align: right;">Page 131</p> <p>1 derived. 2 Q Okay. So is it your opinion that 3 perimeter is not a very important measure in 4 compactness? 5 A No. It can be useful if you're 6 looking within the perimeters in which it is 7 useful, such as I just described. 8 Q Okay. Is the jump here from -- you 9 know, the dropoff from 9,672 to 9,625, is not 10 statistically significant or mathematically 11 relevant, in your view? 12 A It depends on how that was achieved. 13 Q So the metric itself doesn't tell you 14 whether there's been a statistically 15 significant change in the perimeter category 16 for comparison; is that what you're saying? 17 A Speaking out of context of the map 18 itself? I guess it I would agree with that. 19 Q Okay. Give one second to see if I 20 have any more questions on this. Just to go 21 back to your report, Exhibit 5, again, for a 22 second. You would agree that in Paragraph 19, 23 you say: "The scores for the three other 24 compactness measures built into Maptitude 25 became less compact for the 2023 House</p>
<p style="text-align: right;">Page 130</p> <p>1 Q So that change from the 2022 to 2023 2 Senate Map; actually jumps from 9,672.35 down 3 to 9,625.98, right? 4 A Yes. 5 Q And the lower perimeter score, the 6 better; is that right? 7 A Depending on what you're comparing. 8 The total number per perimeter is not -- 9 perimeter is very quirky measure. 10 Q Okay. But this is one that you had 11 listed as -- that you listed in your report as 12 becoming more compact, right, in the 2023? 13 A Technically, yes. 14 Q Why do you say, "Technically, yes"? 15 A Well, because perimeter is driven 16 really by how many rural districts there are. 17 Because that's where the perimeter comes from. 18 It's just measuring the perimeter of every 19 district. So it really is more of a regional 20 comparison. It really only becomes useful if 21 you compare a district or a group of districts 22 in one map to a district or group of districts 23 in the same area in another map. It's a very 24 limited usefulness measure. But it gets cited 25 all the time because it's really easy and fast</p>	<p style="text-align: right;">Page 132</p> <p>1 Illustrative Map than in the 2022 House 2 Illustrative Map," right? 3 A Yes. 4 Q So that would be the House, not the 5 Senate now? 6 A Yes. 7 Q But you'd agree, based on this 8 footnote, that one of those three measures is 9 actually perimeter, right? 10 A Yes. 11 Q Okay. I think I'm done with 12 compactness. I will move on now to the 13 section of your report about socioeconomic 14 data beginning at Paragraph 22. So in 15 Paragraph 22, you state that the data used in 16 Mr. Cooper's redistricting system do not 17 include socioeconomic data; is that right? 18 A Yes. 19 Q Can you describe the basis for that 20 conclusion? 21 A The data that Mr. Cooper turned over 22 and represented as the data from his 23 redistricting system does not include the 24 socioeconomic data. 25 Q A couple of times in the report you</p>

33 (Pages 129 to 132)

<p style="text-align: right;">Page 133</p> <p>1 talked about CVAP datasets and socioeconomic 2 data together. Do you consider CVAP data to 3 be socioeconomic data or is that separate? 4 A CVAP could be a subset of 5 socioeconomic data. 6 Q And you told us earlier you had an 7 opportunity to review the Redistricting Data 8 Hug CVAP dataset that Mr. Cooper provided to 9 defendants, right? 10 A Yes. 11 Q Do you agree that disaggregated block 12 level CVAP data is available in that dataset? 13 A The file he provided was not at the 14 block level. 15 Q How did you determine that? 16 A I opened it up and looked at it. 17 Q Do you agree that publically 18 available ACS data on the U.S. Census Bureau 19 website contains socioeconomic data at the 20 municipal and parish level? 21 A Yes. 22 Q But you didn't analysis that data 23 like you told us earlier, right? 24 A I'm sorry. Which of my earlier 25 comments you're referring to?</p>	<p style="text-align: right;">Page 135</p> <p>1 A Certainly, the -- I mean, the Census 2 website has thousands, if not tens of 3 thousands of variables in it. Mr. Cooper had 4 his socioeconomic section of his report that I 5 read through. 6 Q Right. And he -- in Mr. Cooper's 7 report -- give me one minute to get to it. 8 I'm going to stop sharing the screen for just 9 a moment while I find the relevant section. 10 I'm going to share my screen again. We are 11 back in Exhibit Number 7, Mr. Cooper's initial 12 report. Can you see this on my screen? 13 A Yes. 14 Q Okay. You agree Mr. Cooper had a 15 section of his report called "Socioeconomic 16 Profile of Louisiana," like we discussed, 17 right? 18 A Yes. 19 Q But you'd agree that he also says 20 that he depicts some of the information in 21 this section, quote, "With further detail in 22 charts in Exhibit E-1 and table in Exhibit 23 E-2." Do you see where he says that? 24 A Yes. 25 Q Throughout his reference he makes</p>
<p style="text-align: right;">Page 134</p> <p>1 Q I think earlier when we looked at 2 Mr. Cooper's Exhibit B, which -- I'll pull it 3 back up. This is Exhibit 9, for the purposes 4 of the deposition. We got to Paragraph 6 we 5 talk about these charts and tables that 6 Mr. Cooper had pulled together, and you said 7 you didn't look at those specific charts and 8 tables. Do you recall that? 9 A I didn't go back and look at the 10 original files on the Census website. 11 Q So is it your testimony that, apart 12 from what was in Mr. Cooper's report, you did 13 look at the charts and tables that were 14 attached as exhibits to his report regarding 15 the socioeconomic data? 16 A And the GIS files, yes. 17 Q You would degree that the ACS data 18 includes information about income? 19 A You mean Mr. Cooper's or on the 20 Census website? 21 Q Well, the ACS data on the census 22 website -- I guess both -- also the charts and 23 the tables that Mr. Cooper created. Would you 24 agree that those included information about 25 income?</p>	<p style="text-align: right;">Page 136</p> <p>1 reference to Exhibit E-1 and Exhibit E-2, 2 correct? 3 A Yes. 4 Q He also depicts charts with 5 socioeconomic disparities in Exhibit F and 6 Exhibit G, right? 7 A Yes. 8 Q And additional socioeconomic contrast 9 charts that he provides a link to in Paragraph 10 51; is that right? 11 A Is what right? 12 Q Is it right that he prepared 13 socioeconomic contrast charts and provided a 14 link to that in Paragraph 51? 15 A Yes. 16 Q Did you review the Exhibits E, F and 17 G in reaching your conclusions in this case? 18 A Briefly, yes. 19 Q What about the link at 51? 20 A I did click on it and looked at the 21 data there. I didn't spend much time with it. 22 Q Okay. But these -- you didn't spend 23 a lot of time studying these exhibits in 24 conducting your analysis in this case; is that 25 fair to say?</p>

34 (Pages 133 to 136)

<p style="text-align: right;">Page 137</p> <p>1 A As a very general statement, 2 probably. 3 Q What do you mean when you say, 4 "Briefly"? I want to make sure we're using 5 your words? 6 A Mainly, I was looking for any 7 connection between these data tables and these 8 data charts and his actual mapping work. So I 9 and wasn't looking to prove the data or double 10 check the data or anything like that. I was 11 trying to figure out any sign that he actually 12 used in any of these data or let any of these 13 data drive any of his mapping decisions. 14 Q I think you said earlier that you 15 thought there was no connection between the 16 socioeconomic data and the maps that 17 Mr. Cooper drew. Can I understand you 18 correctly when you said that? 19 A Other than the discussion I had 20 about, maybe, he had a map next to him that he 21 kind of eyeballed and ball-parked. From the 22 files that he provided that he said were his 23 mapping system files, there's no socioeconomic 24 data in them. 25 Q So I think I want to break apart the</p>	<p style="text-align: right;">Page 139</p> <p>1 asking if it's possible for someone to draw a 2 district without eyeballing the metrics that 3 are displayed in Maptitude? Would you agree 4 that's possible that they're not eyeballing 5 those metrics as they're drawing every line in 6 their map? 7 A Yes. 8 Q And you would agree that someone 9 instead could be eyeballing the types of 10 tables or charts or other maps that Mr. Cooper 11 has provided that he did not input at the 12 block level in Maptitude, right? 13 A I suppose, but that would be really 14 weird and unspecific and a horrible way to 15 actually try to follow that data when you're 16 drawing lines. 17 Q Okay. I just want to make sure I 18 understood. You agree that it's possible to 19 do it without looking at those metrics. And 20 you agree that it is -- I guess let me ask it 21 a different way. Do you have any basis to 22 conclude that Mr. Cooper did not consider any 23 of the sources that we've just discussed when 24 drawing his maps? 25 A Yes.</p>
<p style="text-align: right;">Page 138</p> <p>1 two things that are being conflated here. 2 You're talking about the data that is entered 3 into Maptitude at the block level when you say 4 there's no socioeconomic data available in his 5 Maptitude software; is that right? 6 A Yes, because that is the data that is 7 compiled into districts and that Maptitude 8 tells you what's changing as you make 9 decisions in the map, and that you can map and 10 overlay thematics as you're mapping. 11 Q And that is because that is the way 12 that you assess various metrics while you're 13 drawing maps, right? 14 A It's the only way to assess metrics 15 as would you're drawing maps. 16 Q Right. But is it possible for 17 someone to draw a district line without 18 eyeballing those metrics at every step of the 19 way? 20 A Sure. If they're not using those 21 factors as decision points. If they're 22 ignoring the socioeconomic factors as reasons 23 to draw the lines, sure. 24 Q I'm not specifically asking about the 25 socioeconomic metrics in that question. I'm</p>	<p style="text-align: right;">Page 140</p> <p>1 Q And what's your basis for that 2 conclusion? 3 A None of the lines reflect any 4 considerations of those factors in any 5 significant way as he claim that they used. 6 So where he said he was improving the map to 7 follow the key regions, he didn't follow the 8 key regions. Where he said he was following 9 various socioeconomic factors, he didn't -- 10 the lines don't actually follow socioeconomic 11 factors. The lines follow race. 12 Q How do you know that the lines don't 13 follow socioeconomic factors? 14 A All the maps in my reports. We 15 have -- 16 Q Are you -- go ahead. 17 A We have his maps of the socioeconomic 18 factors and we have his actual maps drawn, and 19 they don't connect. 20 Q But you'd agree that some of the 21 socioeconomic factors that Mr. Cooper 22 considered were not entered into Maptitude at 23 the block level, right? 24 A That's part of my whole point. 25 Q So the maps that you are showing and</p>

35 (Pages 137 to 140)

<p style="text-align: right;">Page 141</p> <p>1 the various shading, and things like that, 2 don't reflect all of the data that Mr. Cooper 3 considered, right? 4 A You're saying that -- is it possible 5 that -- rather than put the actual data into 6 the Maptitude and use it to actually guide 7 your mapping, instead he chose to have an 8 eight and a half by eleven printout of the 9 state and just guesstimated the lines from 10 that eight and a half by eleven printout next 11 to him. I guess that's possible. But then 12 that would not -- the map he's looking at 13 would be nowhere near specific enough to 14 actually make detailed line decisions, which 15 would explain why he then ended up seeming to 16 follow race in his lines. 17 Q But you would agree that the data 18 that you look at to say Mr. Cooper's lines are 19 not consistent with the socioeconomic shading 20 that you put in your report, that does not 21 include all of the socioeconomic data that 22 Mr. Cooper purports to have relied upon in 23 this report, right? 24 A It also doesn't follow those lines in 25 the maps that he provided in his report.</p>	<p style="text-align: right;">Page 143</p> <p>1 Q If you were drawing a map in 2 California -- let's say you weren't looking at 3 any metrics at all. You're drawing a map. 4 You're covering up those metrics in Maptitude 5 in a way -- you said hide someone could hind 6 behind the map itself. Do you recall saying 7 that earlier? 8 A Yes. 9 Q Are there certain places where you 10 would know information about the socioeconomic 11 information of the community without looking 12 at those metrics? 13 A In general, in terms of, like, the 14 community level or the city level? Sure. But 15 even in my home town, if I was trying to 16 isolate or divide areas along socioeconomic 17 lines, I would want the data live, so that I 18 could be sure I was getting it in the right 19 spot and able to actually attribute it to the 20 data as opposed to -- you know, socioeconomic 21 change. Things are different now than they 22 were years ago. 23 Q I understand that. But you agree 24 that without that sort of gut check, without 25 looking at numbers, there are areas in the</p>
<p style="text-align: right;">Page 142</p> <p>1 Q Doesn't follow which lines? 2 A The maps you were just referring to. 3 The district lines are not drawn to follow 4 those, either. 5 Q And how do you know that? 6 A Because you can look at them. And 7 there are lines in the maps he generates and 8 there are lines in the district map, and they 9 don't match. 10 Q Do you agree that it's possible for a 11 demographer to become sufficiently familiar 12 with a region to have a general understanding 13 of socioeconomic information in that region? 14 A Yes. 15 Q How long have you been working on 16 redistricting maps in California? 17 A 1990. 18 Q Are there places in California where 19 you have a decent understanding of the 20 communities that live there? 21 A Sure. 22 Q So you agree it's possible for a 23 demographer to become familiar with a place 24 over decades of working there? 25 A Yes.</p>	<p style="text-align: right;">Page 144</p> <p>1 place where you live and places you're 2 familiar with where you would have a sense of 3 the socioeconomic information without looking 4 at that table; is that right? 5 A In general, yes, in terms of where 6 those socioeconomic split at the level you 7 would want to see them to draw actual lines, I 8 would always prefer to actually have the data 9 live so I could be sure I was being precise 10 and up-to-date. 11 Q Have you done work in Louisiana 12 before? 13 A Just on other cases that are going 14 on. 15 Q How many? 16 A Well, there's the Robinson case going 17 on and then done some preliminary work -- it's 18 consulting work on another project a couple of 19 years ago. 20 Q Okay. How many times have you been 21 in the State of Louisiana, physically? 22 A Three or four. 23 Q And what would you say is your level 24 of familiarity with communities in Louisiana? 25 A You mean in terms of socioeconomic</p>

36 (Pages 141 to 144)

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1 data?

2 Q Sure.

3 A Relatively basic from my own personal

4 observation, obviously. I would have to look

5 at the data.

6 Q Certainly less familiar than you are

7 in a state, like California, where you've been

8 working since the '90s, right?

9 A Of course.

10 Q I do want to share my screen again to

11 talk about Mr. Cooper's rebuttal report.

12 That's Exhibit 6 -- sorry -- Exhibit 8. Under

13 Paragraph 19 -- where Mr. Cooper writes in

14 Paragraph 26: "Dr. Johnson claims that I did

15 not import CVAP data into Maptitude. This is

16 not true. Disaggregated block-level CVAP data

17 is available in Maptitude running on my

18 desktop computer. I referenced the source in

19 my declaration, the Redistricting Data Hub.

20 As Dr. Johnson notes in Paragraph 27, I

21 provided the block-level Redistricting Data

22 Hub CVAP dataset to the defendants." Did I

23 read that correctly?

24 A Yes.

25 Q Are you contending that's false?

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1 A Yes. The Redistricting Hub Data that

2 was provided was at the block group or tract

3 level. It wasn't at the block level.

4 Q It what was at the what level? I'm

5 sorry.

6 A It was at the block group or tract

7 level. I don't recall which, but it was not

8 at the block level.

9 Q How would you describe the difference

10 between the block tract group and the block

11 level?

12 A Well, block group level data is the

13 level at which the data comes from the Census

14 Bureau for the special tabulation. And the

15 tract level is which -- it the level at which

16 the data comes from the Census Bureau for the

17 regular ACS data and to get those into

18 redistricting, we have to break them down or

19 disaggregate them to the block level.

20 Q How many -- if it works this way --

21 how many blocks are in a tract?

22 A It varies wildly from-- I don't

23 know -- ten to a hundred. I don't know the

24 exact number -- to lots.

25 Q And do the tracts have any

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1 relationship to VTDs?

2 A I don't think so. Actually, no. I'm

3 sure they don't, actually. They do not.

4 Q Okay. When you're analyzing

5 Mr. Cooper's maps, did you have any

6 disaggregated block-level CVAP data in

7 Maptitude?

8 A No.

9 Q In the next section of your report

10 called, "Black Population Change from 2000 to

11 2020," I want to look at Paragraph 27. Oops,

12 I'm so sorry. I'm in the wrong report. In

13 your report, which is Exhibit 5. It's called,

14 "Population Change 2000 (1991 lines) to 2022."

15 Do you see where I am now?

16 A Yes.

17 Q Sorry for the confusion there. In

18 Paragraph 27, you state that: "Plaintiffs'

19 expert's discussion of the changes in the

20 state's Black population between 2000 and 2020

21 seems to undermine the claim that the 2022

22 enacted plans undermine Black representation."

23 Did I read that directly?

24 A Yes.

25 Q Am I understanding from your report

Page 148

1 that the basis for that statement is that --

2 I'm reading again from the end of this

3 paragraph -- "The Black majority number of

4 House seats increased more than twice as fast

5 as the Black share of the state's Voting Age

6 Population from 2000 to 2022"?

7 A Yes.

8 Q Are you offering any opinion that the

9 maps enacted in 2001 following the 2000 Census

10 fairly represented Black voters in Louisiana?

11 A No.

12 Q Is it possible that Black voters were

13 underrepresented in the 2001 maps in

14 Louisiana?

15 MR. LEWIS:

16 Objection; you may answer.

17 THE WITNESS:

18 It's possible. I did not look

19 at that.

20 BY MS. KEENAN:

21 Q Would that affect the baseline for

22 your assessment of whether the 2022 Enacted

23 Maps undermine the Black representation?

24 A If the 2001 Map undermine the Black

25 representation?

<p style="text-align: right;">Page 149</p> <p>1 Q Yes.</p> <p>2 A That would actually strengthen my</p> <p>3 point.</p> <p>4 Q How so?</p> <p>5 A Because if the 2001 map undermined</p> <p>6 Black representation and the overall state</p> <p>7 from 2000 to 2020 has growth in representation</p> <p>8 more than twice the growth rate, that means</p> <p>9 there's been even stronger improvement in the</p> <p>10 maps since 2001 than the percentages would</p> <p>11 indicate.</p> <p>12 Q I'm not sure I follow. Give me one</p> <p>13 second. By underrepresented, I mean that the</p> <p>14 Black population should have had more</p> <p>15 districts in the map than they actually did.</p> <p>16 Are we understanding underrepresented the same</p> <p>17 way?</p> <p>18 A Okay.</p> <p>19 Q Is that how you were understanding it</p> <p>20 when you said that would make your argument</p> <p>21 stronger, or were you understanding it the</p> <p>22 opposite way?</p> <p>23 A No, that's my understanding.</p> <p>24 Q So when you say the Black majority</p> <p>25 number of House seats increased more than</p>	<p style="text-align: right;">Page 151</p> <p>1 the data differently here.</p> <p>2 In Paragraph 29 -- I want to discuss</p> <p>3 next. You claim that Mr. Cooper's "Statement</p> <p>4 in his Paragraph 58 is simply false, even</p> <p>5 according to his own math." You say that "His</p> <p>6 Figure shows three, not two, Black majority</p> <p>7 House districts have been added between the</p> <p>8 map in place in 2000 and the 2022 Enacted</p> <p>9 House Map." Did I read that correctly?</p> <p>10 A Yes.</p> <p>11 Q I'm going to pull Mr. Cooper's report</p> <p>12 back up, and we're going to go to Figure 11.</p> <p>13 There we go. And you were talking about</p> <p>14 Paragraph 58 in Mr. Cooper's report. The</p> <p>15 relevant part of that paragraph reads: "All</p> <p>16 told, since 2000 one majority Black Senate</p> <p>17 District, compared to the 1990 Senate Plan,</p> <p>18 and two majority Black House districts,</p> <p>19 compared to the 2000 House Plan Have been</p> <p>20 added." Did I read that sentence correctly?</p> <p>21 A Yes.</p> <p>22 Q You agree that Mr. Cooper</p> <p>23 differentiates in this sentence between the</p> <p>24 1990 Senate Plan and the 2000 House Plan,</p> <p>25 right?</p>
<p style="text-align: right;">Page 150</p> <p>1 twice as fast as the Black share of the</p> <p>2 state's Voting Age Population, if it turns out</p> <p>3 that that increase in number of House seats is</p> <p>4 artificially large because they were starting</p> <p>5 from the baseline of having too few seats, how</p> <p>6 does that help your claim?</p> <p>7 A Keep in mind, the 2001 Map is not the</p> <p>8 baseline. So that may be part of the source</p> <p>9 of confusion.</p> <p>10 Q What's the baseline?</p> <p>11 A His comparison was between</p> <p>12 representation in 2000, which would be the</p> <p>13 1991 lines.</p> <p>14 Q I guess I could ask the same</p> <p>15 question, then, about 1991. Are you offering</p> <p>16 any opinion that those maps fairly represented</p> <p>17 Black voters in Louisiana?</p> <p>18 MR. LEWIS:</p> <p>19 Objection. He may answer.</p> <p>20 THE WITNESS:</p> <p>21 I'm not offering opinion either</p> <p>22 way about those lines.</p> <p>23 BY MS. KEENAN:</p> <p>24 Q I think we can move on from this line</p> <p>25 of questioning. We may just be understanding</p>	<p style="text-align: right;">Page 152</p> <p>1 A Yes.</p> <p>2 Q I'm going to go up to Figure 11</p> <p>3 again. The first two rows in this figure -- I</p> <p>4 guess the second and third row, if you include</p> <p>5 the title rows -- relate to the 2000 Decennial</p> <p>6 Census, right?</p> <p>7 A Yes.</p> <p>8 Q And there are two sets of plans that</p> <p>9 he assessing in these rows, right?</p> <p>10 A You mean, where he says 1990 versus</p> <p>11 2001?</p> <p>12 Q Right. The second column shows that</p> <p>13 he looked at the 1990 Legislative Plan and</p> <p>14 2001 Legislative Plan, right?</p> <p>15 A Yes.</p> <p>16 Q In 1990 plan, there's 26 majority</p> <p>17 Black House districts, right?</p> <p>18 A Yes.</p> <p>19 Q That's the number that shows there</p> <p>20 are three -- that's the number you're using to</p> <p>21 say that there were three new districts added,</p> <p>22 right?</p> <p>23 A Yes.</p> <p>24 Q Okay. But you'd agree the second row</p> <p>25 focuses on the plan passed after the 2000</p>

38 (Pages 149 to 152)

<p style="text-align: right;">Page 153</p> <p>1 Decennial Census, which is the 2001 plan, 2 right? 3 A I mean, it is the 2001, yes. 4 Q Right. And in that one, there's 27 5 majority Black House districts, right? 6 A Yes. 7 Q And so Mr. Cooper talks about the 8 2000 plan as distinct from the 1990 plan. Are 9 you disputing that he's just talking about 10 this plan that's passed after the 2000 Census, 11 the order referring to in this row where 12 there's a 27 instead of a 26? 13 A I mean, I took him at this word that, 14 when he said 2000, he meant the House Plan 15 that was in place in 2000. 16 Q Okay. But if he's talking about the 17 2001 Plan that was passed after the 2000 18 Decennial Census, then you'd agree that, 19 according to his own math, he's right, there's 20 a two-district increase from 27 to 29, right? 21 A True. It could be that the reference 22 in his paragraph is wrong. If he meant the 23 comparison to a different year than 2000, then 24 the comparison would be different. 25 Q Right. So if he's calculating the</p>	<p style="text-align: right;">Page 155</p> <p>1 this section. I'm going to go back to your 2 report now. So we're on Exhibit 5. 3 Your next section is about the 4 communities of interest splits report. Do you 5 see where I am on page 11? 6 A Yes. 7 Q Is it still your opinion that 8 Mr. Cooper's list of municipality splits is 9 misleading? 10 A In his followup report, he talked 11 about he had -- rather than using the Census 12 Places level, he had selected out just the 13 incorporated municipalities -- 14 Q Right. 15 A -- which would -- yes, that was my 16 concern is that he was including the Census 17 designated places in it. If he selected those 18 out without saying so, then that would be 19 better. 20 Q Okay. And do you have any basis to 21 rebut Mr. Cooper's statement in his subsequent 22 I report that he did remove unincorporated 23 places and so his split count includes only 24 municipalities? 25 A No, it would have been -- I would</p>
<p style="text-align: right;">Page 154</p> <p>1 difference between these two plans, he is 2 right to the say the difference between 27 and 3 29 is two, right? 4 A But that's not the calculation he 5 said he was making. 6 Q You would agree that he's assessing 7 the change in the Black population from 2000 8 to 2022, right? That's what the report is 9 focused on? 10 A Well, in this case, he's just saying 11 he's comparing the 2022 map to the 2000 House 12 Plan. In 2000, there were 26 majority Black 13 seats. 14 Q But you would agree that the data -- 15 the map in 2001 is based on the Census data in 16 2000, right? 17 A I would assume so. 18 Q And the 1990 plan could not have been 19 based on the population data that came out in 20 2000, right? 21 A Well, it was still in place in 2000. 22 When you start the 2001 cycle, you begin by 23 looking at the 1990 seats with 2000 data in 24 them. 25 Q Okay. I think that's all I have on</p>	<p style="text-align: right;">Page 156</p> <p>1 have expected him to provide that layer as a 2 layer of geography, but I can see there are 3 ways he would have done it without separating 4 that layer. It would odd, but he could have 5 done it. 6 Q And if he only counted the 7 municipalities in his split count, that 8 wouldn't be misleading, right? 9 A Well, it's a little misleading in 10 that municipalities are just one kind of 11 community of interest. So it should have been 12 labeled a municipalities list report, not a 13 community of interest split report. 14 Q Do you offer that opinion in your 15 report anywhere? 16 A I mean, it's as all part of this 17 misleading piece of this report. As I say 18 right here in this in the Paragraph in front 19 of is: "Census Places are not the same as 20 municipalities or communities of interest." 21 Q Right. But you don't offer any 22 opinion that just the use of municipalities is 23 misleading in this report, do you? 24 A Labeling it community of interests 25 split when it's actually a municipalities</p>

39 (Pages 153 to 156)

<p style="text-align: right;">Page 157</p> <p>1 split is a somewhat misleading labeling. It's 2 not as bad as what I thought it was, but it's 3 still misleading. 4 Q And you told us that you haven't 5 personally analyzed or come to have any 6 conclusions about which regions are 7 communities of interests in Louisiana, right? 8 A Correct. 9 Q Your report does take issue with 10 treating, quote, "Randomly Designated Census 11 Places as communities of interests for the 12 consideration" -- that's in paragraph 32, 13 here, right? 14 A More or less, yes. 15 Q But you do agree that municipality 16 boundaries themselves are worthy of 17 consideration, right? 18 A Yes. 19 Q You talked a little about how 20 municipalities are different from communities 21 of interest. How would you define the term, 22 "Community of Interest"? 23 A I think typically a lot of this is 24 jurisdiction-specific. But typically 25 municipalities would be one piece of the</p>	<p style="text-align: right;">Page 159</p> <p>1 A Yes. 2 Q I'm going to go down do page 4. In 3 this case, you testified that you, quote -- 4 this is a quote from the opinion -- "Attempted 5 to create districts that maximum the number of 6 council districts that contain a substantial 7 population on both sides of Highway 14, which 8 runs north/south and bisects the City of 9 Palmdale." Is that right? 10 A Yes. 11 Q Would you agree that the Court 12 concluded that that highway actually served as 13 a physical, social and psychological divide of 14 the city? 15 A Yes. 16 Q In the case, they thought that trying 17 to join two parts of the city across the clear 18 division was not an appropriate factor to 19 consider. That's the quote from their 20 decision; is that right? 21 A Yes. 22 Q More specific to Louisiana, do you 23 consider yourself an expert in historical ties 24 between communities in Louisiana? 25 A No.</p>
<p style="text-align: right;">Page 158</p> <p>1 communities of interest puzzle. There are 2 other pieces. School districts could be 3 communities of interest. Counties or 4 parishes, in this case, could be communities 5 of interest. Other areas that have policy 6 links could be communities of interest. So 7 municipalities are a subset -- are typically a 8 subset of communities of interest. 9 Q Would you agree that you previously 10 run into some trouble when it comes to drawing 11 maps that foster certain communities of 12 interest that you've identified? 13 A It's always difficult to draw maps to 14 achieve every community of interest's goal, 15 certainly. That's why this work is always 16 hard. 17 Q Do you recall testifying in a case 18 called, "Jauregui versus The City Palmdale," 19 which I think you mentioned earlier? 20 A Yes. 21 Q I'm going to share my screen again. 22 This will be Exhibit -- I think the numbers 23 are off now. We've added three more. So I 24 Think this is Exhibit 15 now. I'm sorry. Are 25 you able to see the decision from --</p>	<p style="text-align: right;">Page 160</p> <p>1 Q What about settlement history in 2 Louisiana? 3 A No. 4 Q Cultural or religious ties in 5 Louisiana? 6 A No. I mean, I know what the average 7 Joe knows about a lot of this, and I visited 8 Lafayette, but I'm no expert, that's for sure. 9 Q What about shared industry in 10 Louisiana, same thing? 11 A Yeah. Again, I have some loose 12 familiarity, but I'm no expert. 13 Q Would any of those factors be worthy 14 of consideration in considering communities of 15 interest, in your opinion? 16 A They could be. Depending on the 17 circumstances on what you're doing with them. 18 Q Now, your report talks a bit about 19 the key cultural regions that are identified 20 in Mr. Cooper's report, right? 21 A Yes. 22 Q Are you aware of whether Mr. Cooper's 23 illustrative maps split those cultural regions 24 more or less often than then the Enacted Map? 25 A No, I didn't look at Enacted Map</p>

40 (Pages 157 to 160)

<p style="text-align: right;">Page 161</p> <p>1 splits. I just know that Mr. Cooper did map 2 splits in a lot. 3 Q Do you agree some cultural 4 communities do not have rigid boundaries? 5 MR. LEWIS: 6 Objection. You may answer. 7 THE WITNESS: 8 I'm sure there are some, yes. 9 BY MS. KEENAN: 10 Q They might have more general 11 contours, for example, than a political 12 boundary, like a municipality order, right? 13 MR. LEWIS: 14 Objection. You may answer. 15 THE WITNESS: 16 What do you mean by that 17 question? 18 BY MS. KEENAN: 19 Q Do you think that every community of 20 interest can be drawn up in precise's lines in 21 the way that a city can be drawn up with a 22 boundary with precise lines? 23 A When you're mapping, you have to draw 24 precise lines. You either have to figure it 25 out or not follow that.</p>	<p style="text-align: right;">Page 163</p> <p>1 divided. 2 Q And when you criticize the divisions, 3 do you mean even the ones that are only 4 encompassed within the cultural regions that 5 he's working within or only the ones that 6 split across two different cultural regions? 7 MR. LEWIS: 8 Object to form. You can answer. 9 THE WITNESS: 10 If a district is entirely within 11 a cultural region, then you're 12 drawing all the lines of that 13 district based on factors other than 14 the cultural region, because it's 15 entirely within. So that region 16 boundary has no role in where those 17 lines go. It's only when you get 18 close to the edge of the region that 19 the region would be a factor in how 20 the lines are drawn. If you follow 21 the region boundary, then you're 22 respecting it. If you cross it, then 23 you'd be disrespecting that community 24 of interest. You might have to do 25 that once or twice for population</p>
<p style="text-align: right;">Page 162</p> <p>1 Q So is it your testimony that in order 2 to consider a community of interest for the 3 purpose every redistricting, you have to 4 either capture that community exactly, or you 5 are not considering that community at all? 6 A No. 7 Q Right. There's some play of the 8 margins, right, in terms of how you capture 9 community of interests? 10 A I would not describe it that way. 11 Q How would you describe it, in terms 12 of the level of specificity? 13 A I mean, there are many communities 14 that are larger than a district. And by 15 federal population requirements, you can't put 16 them all in one district. The number 17 scenarios are huge. 18 Q Okay. Relatedly to that point about 19 how communities of interest can be larger than 20 a district, do you have any critiques about 21 the number of times Mr. Cooper splits these 22 cultural regions internally, for example, 23 creating multiple districts within Acadiana? 24 A In discussing the report, that he's 25 dividing them more than they need to be</p>	<p style="text-align: right;">Page 164</p> <p>1 reasons. But when you do it eight 2 times, you're making it obvious that 3 that region is not a serious 4 consideration for mapping. 5 BY MS. KEENAN: 6 Q I want to talk about a specific one 7 of the cultural regions that comes up in the 8 report about Acadiana. Are you familiar with 9 that region at all? 10 A Yes. 11 Q Do you know about how many people 12 live in Acadiana? 13 A Not off the top of my head. 14 Q If I represented to you that it was 15 over 600,000 people, would you have any basis 16 to dispute that? 17 A No. 18 Q So if more than 600,000 people live 19 in Acadiana, then you have to split that 20 region, at least internally, many times to 21 create appropriately sized State/House 22 districts, right? 23 A Yes. 24 Q And are you taking issue with that? 25 A With what?</p>

41 (Pages 161 to 164)

<p style="text-align: right;">Page 165</p> <p>1 Q With dividing Acadiana internally to 2 comply with population equality? 3 MR. LEWIS: 4 Object to form. You may answer. 5 THE WITNESS: 6 No. You have to follow federal 7 law. 8 BY MS. KEENAN: 9 Q And your critiques are just about the 10 crossing of the -- from Acadiana into a 11 different cultural region that Mr. Cooper 12 identifies? 13 MR. LEWIS: 14 Objection; mischaracterizes the 15 report. You may answer. 16 THE WITNESS: 17 My opinion is that because he 18 was crossing those lines almost willy 19 nilly, they clearly were not driving 20 his mapping decisions. 21 BY MS. KEENAN: 22 Q Do you have any opinion about whether 23 the size of a community affects whether it 24 needs to be preserved in whole in order for 25 that community to achieve effective political</p>	<p style="text-align: right;">Page 167</p> <p>1 regions if he's saying part of a city is in a 2 key cultural region and part of it is not. 3 Q Do you agree that every city is 4 comprised of a model of the community of 5 interest? 6 A No. 7 Q So you would agree that parts of 8 cities can be a part of a different community 9 of interest than other parts of a city, right? 10 A They could be, but that would be 11 really, really super bazaar to have part of 12 the city in and out of a community of interest 13 that's charge large as communities of interest 14 that he's claiming in these regions. 15 Q What about geographical features. Do 16 you know whether any of the instances where 17 Mr. Cooper crosses one of these key regions is 18 tracking, for example, a river or another 19 geographic feature instead of the boundary 20 line? 21 A I mean, he crosses them so many 22 times, I'm sure some of them do. 23 Q What is the basis for your conclusion 24 that equal population requirements do not 25 require more than two boundary crossings?</p>
<p style="text-align: right;">Page 166</p> <p>1 representation? 2 A Sure. It's a topic that comes up all 3 the time in my work. 4 Q Do you believe that the smaller the 5 community, the more important that it is 6 preserved whole in order for it to be able to 7 achieve political representation? 8 A Sometimes; sometimes not. 9 Q Would you agree that sometimes larger 10 communities might not need to be preserved in 11 whole in order for them to achieve political 12 representation? 13 A That can be true. 14 Q Do you know whether the instances in 15 which Mr. Cooper crosses the regional 16 districts that you focused on are ever the 17 result of tracking a different boundary line? 18 A What do you mean by, "A different 19 boundary line"? 20 Q For example, did you assess whether 21 any of the times that Mr. Cooper crosses a key 22 regional district line whether he is tracking 23 a city or municipality line? 24 A Well, that would kind of undermine 25 his whole claim to those being key cultural</p>	<p style="text-align: right;">Page 168</p> <p>1 A Math. 2 Q Can you explain it a little bit, just 3 to make sure I understand it? 4 A Sure. If you have the state divided 5 in large regions and you say that your goal is 6 to respect and represent those regions and 7 those communities of interest regions are 8 driving their map, then you want to follow 9 their boundaries to the greatest degree 10 possible. 11 Now, you will get population 12 imbalances. And so to make those work, you 13 know -- unless you get a miracle region that 14 exactly divides into the number of people 15 needed for a district, then you would have to 16 have one district cross in order to make a 17 shortage or offset an overage. Physically, in 18 terms of mapping, usually will take two, 19 because you'll have to balance the districts 20 on one side of you and the districts on the 21 other -- in the region on one side of you and 22 the districts in the region on the other side 23 of you. But that's it. You can meet all the 24 population requirements and respect the 25 community of interest and treat that as a</p>

42 (Pages 165 to 168)

<p style="text-align: right;">Page 169</p> <p>1 guide to your mapping with one or, at most, 2 two crossings of that boundary. 3 Q What if there are multiple 4 communities of interest that you're trying to 5 represent and those borders overlap? Let me 6 give you an example. Let's say there's a 7 school district that you might consider a 8 community of interest, so that has a sort of 9 boundary where you can say, people that live 10 here, send their children to this school. Are 11 you following me so far? 12 A Yes. 13 Q Next to that school district on 14 either side are two churches of different 15 denominations. And so people within the 16 school district might be go to one church and 17 some people in the school district might go to 18 the other church. Are you still following me 19 so are? 20 A Sure. 21 Q You agree that a line can either 22 respect the community of interest that affects 23 the school or, in that example, the community 24 of interest can respect the two faith 25 communities, right?</p>	<p style="text-align: right;">Page 171</p> <p>1 other one. If you know you're violating a 2 community of interest, I guess that counts as 3 considering it, but you're not -- you're line 4 is not justified based on that community of 5 interest if you intentionally divide it. 6 Q But you would agree that the district 7 -- I'm trying to think of the clearest way to 8 explain this. Let's say, in the hypothetical 9 that I've given, we've got one school 10 district, two faith communities, and I'm 11 trying to draw districts that respect all of 12 those things. I split the school district, 13 but now the two groups that I have have two 14 factors in common. They share their faith and 15 they share their school system in each of the 16 districts. Haven't I considered both 17 communities of interest in drawing those maps? 18 A If the school district is divided 19 between two election districts, then it's 20 divided, if you're just drawing two districts. 21 Q Yes. But I thought we talked earlier 22 about how some communities don't need to be 23 preserved whole in order for them to have 24 representation, right? 25 A In which case, you're not basing your</p>
<p style="text-align: right;">Page 170</p> <p>1 MR. LEWIS: 2 Objection. Incomplete 3 hypothetical. You can answer. 4 THE WITNESS: 5 Yeah. I mean, ideally you would 6 respect all of them, but the 7 population numbers may not allow 8 that. 9 BY MS. KEENAN: 10 Q Right. Especially if the community 11 of interest within the school system is itself 12 divided in two faith communities, you would 13 agree there may not be a way to respect both 14 those communities completely, right? 15 A Hypothetically? Correct. 16 Q If I make a choice between one or the 17 other -- let's say I choose in a specific 18 instance to draw a line that leans more toward 19 faith community than the school community, but 20 I've been looking at them in drawing my maps. 21 I consider both factors. Is it your belief 22 that that choice between the two means I just 23 not consider the other one? 24 A It's explicitly clear that you are 25 choosing to ignore one in order to follow the</p>	<p style="text-align: right;">Page 172</p> <p>1 lines on those communities. 2 Q So you would say in the situation 3 that I just described that I'm not considering 4 that educational community at all; is that way 5 how you perceive that hypothetical? 6 MR. LEWIS: 7 Objection. You may answer it. 8 THE WITNESS: 9 As you described it in the 10 hypothetical, you're subdividing the 11 school district. There's only two 12 districts. 13 BY MS. KEENAN: 14 Q Okay. I think we can move on from 15 here. I want to go to Paragraph 37 in your 16 report. Give me one second to pull that up. 17 In Paragraph 37, you call attention to the 18 shape of HD-54; is that right? 19 A Yes. 20 Q Are you offering any opinion that 21 that district is problematic? 22 A According to Mr. Cooper's regions, it 23 is problematic. It's dividing a region 24 boundary and it's also dividing a parish. He 25 talks at length about his view minimizing</p>

43 (Pages 169 to 172)

<p style="text-align: right;">Page 173</p> <p>1 parish splits is one of the strengths of his 2 map. One of his points is that his map 3 divides fewer parishes. 4 Q You talk about this part that crosses 5 the Parish line and what you call the 6 community of interest or the key cultural 7 region line. 8 A I don't call it that. He does. 9 Q Right. He calls it a key cultural 10 region, I believe, right? 11 A Yes. 12 Q You call this part that crosses that 13 border a finger, right? 14 A Yes. 15 Q You actually call attention to that 16 same finger again in Paragraph 39 of your 17 report; is that right? 18 A Yes. 19 Q You're saying SD-20 contains that 20 same crossing from Lafourche Parish into 21 Jefferson Parish, right? 22 A Yes. 23 Q Are you now aware that the crossing 24 from Lafourche Parish into Jefferson Parish 25 that you call a finger represents an island?</p>	<p style="text-align: right;">Page 175</p> <p>1 A Not necessarily. 2 Q Okay. Do you think that somebody who 3 respects -- do you think that somebody who 4 draws a line to bring that island into the 5 community that it's accessible by necessarily 6 does not respect parish boundaries? 7 A They're certainly choosing that 8 something is more important than parish 9 boundaries. 10 Q Do you think that the person who 11 draws a map to capture an island that can be 12 accessed by land with the district that's now 13 joined within the map, do you think that 14 person necessarily doesn't respect key 15 cultural regions? 16 A I think more likely it's evidence 17 that definition of your key region is flawed. 18 Q Are you aware that HD-54 is the same 19 in both the Enacted and the Illustrative maps? 20 A Yes. 21 Q Are you aware that Mr. Cooper 22 employed a least changed principle in drawing 23 his maps? 24 A He makes reference to such an 25 approach.</p>
<p style="text-align: right;">Page 174</p> <p>1 A I was at the time. 2 Q And are you aware that the only way 3 to get to that island in Jefferson Parish is 4 by land through Lafourche Parish? 5 A Yes. 6 Q Again, this figure, Figure 7, doesn't 7 display waterways in the city, right? 8 A Correct. 9 Q Do you agree this is an example where 10 seeing the water feature might explain why a 11 district is drawn the way that it is? 12 A I suppose, but that doesn't change my 13 point. 14 Q Would you agree this an example of 15 how competing considerations can justify 16 drawing lines that might not comply with the 17 Parish or community of interest boundaries 18 that you focused on? 19 A I didn't focus on them. Mr. Cooper 20 did. 21 Q But do you think there's something 22 wrong with having drawn a district to 23 encompass a community that can only be reached 24 by land in the parish that it's now 25 represented with?</p>	<p style="text-align: right;">Page 176</p> <p>1 Q Do you agree that's another approach 2 that could conflict with something like a 3 cultural region or a parish boundary that a 4 map drawer has to balance when they're 5 considering how to draw a region? 6 A I would be very surprised if that 7 island's only connection is by a bridge to the 8 west if it was a different cultural region 9 than the area to the west. 10 Q Do you agree with the rest of the 11 question as I asked it? Can you the court 12 reporter read back the question? 13 (WHEREUPON THE REQUESTED MATERIAL WAS READ 14 BY THE COURT REPORTER) 15 BY MS. KEENAN: 16 Q Do you agree that the least changed 17 principal that Mr. Cooper employed is 18 something that could conflict with parish 19 lines, for example, which Mr. Cooper generally 20 tried to follow? 21 A That would kind of internally 22 conflict with itself. 23 Q Well, literally in Figure 7, the 24 enacted map crosses the parish line, right? 25 A Yes.</p>

44 (Pages 173 to 176)

<p style="text-align: right;">Page 177</p> <p>1 Q So if Mr. Cooper is trying to employ 2 a least changed method, where he's trying to 3 keep districts in place as much as possible, 4 but he's also trying to prioritize keeping 5 parishes a whole -- that's another example 6 where he's considering two factors, but he's 7 just going to have to make a choice about how 8 to best draw the district while trying to 9 respect them both as much as possible, right? 10 A Those two factors would be pretty 11 clear to either do or not do. It would be 12 very strange to have that decision made on a 13 case-by-case basis. 14 Q Why? 15 A Because you're either going to keep 16 all the parish crossings that are in the 17 enacted map and thus have a least changed map 18 or you're going to say your map is better on 19 dividing fewer parishes, and anywhere you run 20 into just a few people, be better on dividing 21 parishes. 22 Q But you would agree that least change 23 doesn't imply all of the districts are the 24 same, right? The whole point was that 25 Mr. Cooper was redrawing certain districts.</p>	<p style="text-align: right;">Page 179</p> <p>1 A Yes. 2 Q That is calling attention 3 Mr. Cooper's use of the enrolled rather than 4 the enacted maps in this initial report; is 5 that right? 6 A He didn't provide the data files, so 7 I couldn't confirm what map he was actually 8 using. I just know it was not the enacted 9 map. 10 Q Do you agree that Mr. Cooper's 11 rebuttal report uses the enacted map as a 12 basis for comparison? 13 A Yes. 14 Q So do any of the critiques 15 articulated in this section apply to the 16 illustrative map included in Mr. Cooper's 17 rebuttal report? 18 MR. LEWIS: 19 Object to form. You may answer. 20 THE WITNESS: 21 Everything is addressed except 22 his continuing lack of providing 23 data. 24 MS. KEENAN: 25 Okay. I think now is a good</p>
<p style="text-align: right;">Page 178</p> <p>1 A So you're saying he randomly made a 2 choice whether to keep a parish split or not? 3 Q I'm saying that in deciding whether 4 to keep a district that was in the enacted map 5 or trying to keep parishes together, you might 6 have to make a decision about which of those 7 two factors that matter to your analysis to 8 follow in an instant case, right? 9 A You would make that as a universal 10 decision. 11 Q Okay. Just so I'm clear, are you 12 offering any opinion that something is wrong 13 with the configuration of HD-54 or just that 14 it calls into question the key cultural 15 regions that Mr. Cooper has identified in his 16 report? 17 A The latter. And the same thing that 18 his claims of focusing on parish unification. 19 Q We are now -- I have two question in 20 this next section, and then we can take our 21 next break, if that's okay with you. The next 22 section that starts on page 16 here called, 23 "Plaintiffs' Expert's Enacted Maps and Not the 24 Actual Enacted Maps." Do you see where I am 25 in your report?</p>	<p style="text-align: right;">Page 180</p> <p>1 time for a break before I start into 2 the next section. I can do five or 3 ten minutes. Do you have a 4 preference? 5 MR. LEWIS: 6 From my perspective, ten 7 minutes. I don't know about others. 8 MS. KEENAN: 9 Ten works for me. So we'll come 10 back at 3:19. 11 MR. LEWIS: 12 Fabulous. All right. Thank 13 you. Off the record. 14 (BRIEF RECESS 3:09 P.M. TO 3:21 P.M. EST) 15 BY MS. KEENAN: 16 Q So I am going to go back to your 17 report, Dr. Johnson. 18 A If you could -- before you start your 19 next section of questions, I just want to 20 clarify one thing. Earlier we were talking 21 about cases where my testimony was limited. I 22 mentioned Covington. I had the right state, 23 but the wrong case name. It was the Lewis 24 case rather than the Covington case. 25 Q I see. Okay. Thank you for</p>

45 (Pages 177 to 180)

<p style="text-align: right;">Page 181</p> <p>1 clarifying.</p> <p>2 A I have in my mind North Carolina, but</p> <p>3 I said the wrong case name. Sorry about that.</p> <p>4 Q That's okay. I'm going to go to the</p> <p>5 next section of your report. I'm going to</p> <p>6 share my screen in just a second. You're able</p> <p>7 to see your report on your screen now?</p> <p>8 A Yes.</p> <p>9 Q I'm going into the next section. I'm</p> <p>10 getting past the enrolled/enacted distinction.</p> <p>11 Okay. This section is called "Correlation of</p> <p>12 Race and the Illustrative Plan District</p> <p>13 Lines," right?</p> <p>14 A Yes.</p> <p>15 Q In Paragraph 68, you say that you</p> <p>16 "Analyze Plaintiffs' experts' 2022 and 2023</p> <p>17 House and Senate Illustrative Plans to access</p> <p>18 the degree to which the racial characteristics</p> <p>19 of the plan correlated to and drove the</p> <p>20 district boundaries employed in those plans."</p> <p>21 Am I reading that correctly?</p> <p>22 A Yes.</p> <p>23 Q In Paragraph 68, do you say: "As a</p> <p>24 professional political scientist and</p> <p>25 demographer, I have created or analyzed many</p>	<p style="text-align: right;">Page 183</p> <p>1 racial predominance analysis that you've done?</p> <p>2 A No.</p> <p>3 Q Do you recall anytime that a court</p> <p>4 has relied on or accepted the racial</p> <p>5 predominance analysis that you have done?</p> <p>6 A Sure.</p> <p>7 Q When?</p> <p>8 A There have been a couple of cases</p> <p>9 where they didn't cite me explicitly, but the</p> <p>10 same thoughts that I had written appeared in</p> <p>11 the Court's opinion.</p> <p>12 Q Do you remember which cases or</p> <p>13 projects those were?</p> <p>14 A Off the top of my head, no.</p> <p>15 Q So you can't point to any</p> <p>16 specific case where that's happened?</p> <p>17 A It's definitely happened. I just</p> <p>18 don't have it straight off the top of my head.</p> <p>19 Q You know, you just mentioned</p> <p>20 testifying in a case called, "Covington versus</p> <p>21 North Carolina," and you said you meant,</p> <p>22 "Common Cause versus Lewis" earlier, right?</p> <p>23 A Right. I testified in both cases.</p> <p>24 Q Right. But you do recall testifying</p> <p>25 as an expert in a case called, "Covington</p>
<p style="text-align: right;">Page 182</p> <p>1 hundreds of districting plans in my career in</p> <p>2 jurisdictions throughout the country,</p> <p>3 including in jurisdictions with significant</p> <p>4 minority Voting Age Populations," right?</p> <p>5 A Yes.</p> <p>6 Q You also state that you leverage this</p> <p>7 training and experience to access how much</p> <p>8 race correlated to and drove the boundaries in</p> <p>9 Mr. Cooper's maps, right?</p> <p>10 A Yes.</p> <p>11 Q I want to dive into that a little</p> <p>12 bit. So you told us earlier you testified as</p> <p>13 an expert in slightly fewer than ten</p> <p>14 redistricting cases in the past, right?</p> <p>15 A Somewhere around that number. I</p> <p>16 don't remember the exact number.</p> <p>17 Q In terms of your expertise in</p> <p>18 litigation, how many of those cases involved</p> <p>19 racial predominance analysis in a Section 2</p> <p>20 case like what you're doing in these next two</p> <p>21 sections of your reports?</p> <p>22 A Certainly a majority of them;</p> <p>23 probably most of them.</p> <p>24 Q Do you recall, if at all, how many</p> <p>25 times a court has relied on that type of</p>	<p style="text-align: right;">Page 184</p> <p>1 versus North Carolina," right?</p> <p>2 A Yes.</p> <p>3 Q I'm going to share my screen with an</p> <p>4 opinion if that case next. Give me one</p> <p>5 second. Let me get that pulled up. Are you</p> <p>6 able to see my screen?</p> <p>7 A Yes.</p> <p>8 Q This is the Memorandum Opinion and</p> <p>9 Order as Amended in Covington versus North</p> <p>10 Carolina. You can see from the caption up</p> <p>11 top?</p> <p>12 A Yes.</p> <p>13 MS. KEENAN:</p> <p>14 I'm going to have the court</p> <p>15 reporter mark this as Exhibit 16.</p> <p>16 BY MS. KEENAN:</p> <p>17 Q So in this report -- I'm going to</p> <p>18 stop sharing for one second while I get to the</p> <p>19 relevant portion. So we're at page -- sorry.</p> <p>20 It's not sharing. Give me one second. We're</p> <p>21 at page 74 of that decision now. Do you see</p> <p>22 your name here in the decision?</p> <p>23 A Yes.</p> <p>24 Q I'm going to read a couple of</p> <p>25 portions of this, and you can tell me if I've</p>

46 (Pages 181 to 184)

<p style="text-align: right;">Page 185</p> <p>1 read it correctly. I'll highlight along, just 2 so you can see where I'm reading. Here the 3 Court said: "Dr. Johnson opined as to the 4 Special Master's apparent predominant use of 5 race data and that certain racial quotas were 6 targeted by the Special Master when drawing 7 the districts or dictated the configuration of 8 the districts." Did I read that correctly? 9 A Yes. 10 Q And next paragraph, the Court says: 11 "For several reasons, we find Dr. Johnson's 12 analysis and opinion as to the alleged racial 13 targeting in the recommended plans unreliable 14 and not persuasive." Did I read that correct 15 correctly? 16 A Yes. 17 Q In the next paragraph at the end 18 here, it says: "Dr. Johnson conceded the fact 19 that several districts BVAPs fall in a 20 particular range does not prove that a racial 21 quota was being employed." Did I read that 22 correctly? 23 A Yes. 24 Q Going on to the next paragraph, the 25 Court says: "Correlation is not evidence of</p>	<p style="text-align: right;">Page 187</p> <p>1 expected whenever a plan replaces racial 2 predominance with other redistricting 3 principles." Did I read that correctly? 4 A Yes. 5 Q The Court thought that explanation 6 was credible, right? 7 A Their own Special Master, yes. 8 Q And then in the next paragraph, it 9 says: "Dr. Johnson conceded that minor 10 differences between two proposed maps do not 11 signal that one version is legally 12 unacceptable or better achieves traditional 13 redistricting goals." Did I read that 14 correctly? 15 A Yes. 16 Q So is it fair to say that at least 17 some courts have not accepted your racial 18 predominance analyses in redistricting cases; 19 is that right? 20 A Sure. 21 Q You've explained that you've drawn 22 maps -- I think you said thousands of times in 23 the redistricting context before, right? 24 A Yes. Thousands of maps, yes. 25 Q Do you have a sense of how many of</p>
<p style="text-align: right;">Page 186</p> <p>1 causation." Did I read that correctly? 2 A Yes. 3 Q In that same paragraph, it says: 4 "Dr. Johnson provides no basis for determining 5 whether the BVAPs of the districts are similar 6 from a statistical perspective and that any 7 such similarity may be attributable to the 8 underlying demographic makeup of the 9 geographic areas in which the districts are 10 drawn or other nondiscriminatory districting 11 considerations, not racial targeting." Did I 12 read that correctly? 13 A Yes. 14 Q It also says that "Neither 15 legislative defendants nor Dr. Johnson offer 16 any controlled statistical analysis ruling out 17 the nondiscriminatory explanations for the 18 four district BVAPs." Did I read that 19 correctly? 20 A Yes. 21 Q They call it the Special Master in 22 that case. In the next paragraph as saying: 23 "The fact that the districts happen to reduce 24 the BVAP in the redrawn districts while 25 increasing it in adjoining districts is to be</p>	<p style="text-align: right;">Page 188</p> <p>1 those maps were state legislative maps? 2 A There would have been the two rounds 3 of Arizona maps. So for those, 50 to 70, 4 maybe. 5 Q Okay. Are you familiar in general 6 with the -- I'm sorry. One more question 7 before I get to that. When you are drawing 8 those state legislative maps, did you use 9 Maptitude in those cases? 10 A Most of the time, yes. 11 Q Are you familiar, in general, with 12 the Gingles framework? 13 A Of course. 14 Q Would you agree that the purpose of 15 the Gingles 1 analysis is to see if additional 16 compact majority/minority districts can be 17 drawn that comply with traditional 18 redistricting factors? 19 MR. LEWIS: 20 Objection; calls for legal 21 conclusion. You may answer. 22 THE WITNESS: 23 Generally speaking, yes. 24 BY MS. KEENAN: 25 Q Have you ever drawn maps that sought</p>

47 (Pages 185 to 188)

<p style="text-align: right;">Page 189</p> <p>1 to comply with the Gingles 1 requirement?</p> <p>2 A As part of the mix, yes. Obviously,</p> <p>3 it's federal law, and we want all of our maps</p> <p>4 to comply with federal law.</p> <p>5 Q In trying to comply with federal law,</p> <p>6 in your experience drawing maps, do you agree</p> <p>7 it's common to be aware of race data when</p> <p>8 you're drawing those maps?</p> <p>9 A Sure.</p> <p>10 Q When you were drawing you were maps,</p> <p>11 did you strive to ensure that race wasn't the</p> <p>12 predominantly factor in the maps that you</p> <p>13 draw?</p> <p>14 A Definitely.</p> <p>15 Q But was race a factor you considered</p> <p>16 at all when drawing those maps?</p> <p>17 MR. LEWIS:</p> <p>18 Objection; vague. Go ahead and</p> <p>19 answer.</p> <p>20 THE WITNESS:</p> <p>21 Sometimes.</p> <p>22 BY MS. KEENAN:</p> <p>23 Q When you're looking at race when you</p> <p>24 draw a maps, are you looking at any part Black</p> <p>25 or Black alone or some other measure?</p>	<p style="text-align: right;">Page 191</p> <p>1 testimony. You may answer.</p> <p>2 THE WITNESS:</p> <p>3 When I do it, it certainly does,</p> <p>4 because it very clearly explains why</p> <p>5 the lines are where they are, and we</p> <p>6 can tie the precise lines to the</p> <p>7 precise community or neighborhood or</p> <p>8 jurisdiction boundary.</p> <p>9 BY MS. KEENAN:</p> <p>10 Q How would you draw the line between</p> <p>11 racial predominance and race just being a</p> <p>12 factor in redistricting?</p> <p>13 MR. LEWIS:</p> <p>14 Objection; calls for a legal</p> <p>15 conclusion. You may answer.</p> <p>16 THE WITNESS:</p> <p>17 The way we explain it -- I and</p> <p>18 my team, when we -- the public</p> <p>19 processes is to say, we want to look</p> <p>20 at neighborhoods and communities that</p> <p>21 are a heavily given protected class</p> <p>22 and keep them together. So that the</p> <p>23 building block is the neighborhood or</p> <p>24 community of interest. It's not the</p> <p>25 Census blocks that contain the</p>
<p style="text-align: right;">Page 190</p> <p>1 A It varies based on the jurisdiction.</p> <p>2 Q Does that distinction impact anything</p> <p>3 about whether race was a predominant factor?</p> <p>4 A I've not thought through that</p> <p>5 question detail. I don't think so, but --</p> <p>6 Q Okay. That's not an opinion you're</p> <p>7 offering in this case?</p> <p>8 A Correct.</p> <p>9 Q How do you go about ensuring that</p> <p>10 race isn't a predominant factor when you draw</p> <p>11 a map?</p> <p>12 A I make sure to be able to draw the</p> <p>13 lines and to be able to explain how I drew the</p> <p>14 lines to follow precise other factors, often</p> <p>15 community or county or city lines or something</p> <p>16 like that.</p> <p>17 Q And why do you do that?</p> <p>18 A To protect against a potential</p> <p>19 challenge to the map.</p> <p>20 Q So in your view, does the fact that</p> <p>21 another factor besides race can explain a</p> <p>22 line, does that help protect against the</p> <p>23 challenge of race predominance?</p> <p>24 MR. LEWIS:</p> <p>25 Objection; mischaracterizes the</p>	<p style="text-align: right;">Page 192</p> <p>1 protected class.</p> <p>2 BY MS. KEENAN:</p> <p>3 Q If something else is the building</p> <p>4 block that you use, like a community or a</p> <p>5 neighborhood, is there ever a case where race</p> <p>6 might be, say, a tiebreaker in choosing</p> <p>7 between two Census blocks or precincts that</p> <p>8 follow your community building block?</p> <p>9 A I strongly try to avoid that, because</p> <p>10 that would be arguably jumping race to be</p> <p>11 predominant factor.</p> <p>12 Q So let's say you've got a</p> <p>13 neighborhood that you're using as building</p> <p>14 block, and because of a population of quality</p> <p>15 reason, you can't keep the neighborhood</p> <p>16 entirely whole and you've got to choose which</p> <p>17 of two precincts to include with the district.</p> <p>18 It's your belief that using race as a factor</p> <p>19 to help decide which of two precincts to</p> <p>20 include in that context would be race</p> <p>21 predominance?</p> <p>22 A It would certainly be dangerously</p> <p>23 close. Because it certainly could fall into</p> <p>24 that category.</p> <p>25 Q Is there any circumstance where race</p>

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<p style="text-align: right;">Page 193</p> <p>1 might be able to be, you know, a tiebreaker 2 or, you know, might merit additional weight in 3 your consideration? 4 A Well, back when Section 4 of the 5 Voting Rights Act was still in effect, we had 6 our benchmark numbers we had to meet for 7 Section 4 and 5 compliance. So back in those 8 days, you would have talked about numbers a 9 lot. Nowadays, they really make every effort 10 to avoid that, because it does veer into 11 territory to get our map sued, and we prefer 12 not to get our maps sued. 13 Q Back when Section 4 and Section 5 14 were in effect, why were you using numbers all 15 the time then? Can you explain a little bit 16 the use of those numbers? 17 A Sure, because Section 5 of the Voting 18 Rights Act has a retrogression standard. And 19 so the Department of Justice would closely 20 look at the numbers and make sure that the 21 actual percentages themselves have not gone 22 down. And there were other complicated 23 factors that could justify it going down, but 24 certainly the thing best for you to get 25 preclearance and get your map approved was to</p>	<p style="text-align: right;">Page 195</p> <p>1 ask you for a legal opinion about strict 2 scrutiny or anything like that. I just 3 need -- as you're drawing maps that are trying 4 to comply with federal law, like you said 5 earlier, is there any way that you think it's 6 important to consider race just for the 7 purpose of complying with Section 2 or you 8 don't think that's true, now that Section 4 9 and Section 5 are gone? 10 MR. LEWIS: 11 Objection; vague. It calls for 12 a legal conclusion. You may answer. 13 THE WITNESS: 14 As we started this discussion, 15 we start our process by looking at 16 neighborhoods and communities of 17 interest that are a heavily protected 18 class, and that is both -- in their 19 interest and the interest of ensuring 20 compliance with Section 2. 21 Certainly, race is a factor that gets 22 looked at a lot. But if we're going 23 into get into a scenario where 24 arguably it's becoming a 25 predominantly factor, we get a lot of</p>
<p style="text-align: right;">Page 194</p> <p>1 make sure those numbers did not go down. In 2 that case, yes, you're looking at race, but 3 you're looking at it in the context of 4 compliance with Section 5 of the Voting Rights 5 Act, not as race on its own as a 6 nonconstitutional predominant factor. 7 Q Do you believe there is any way to 8 look at race as a matter of compliance with 9 Section 2 of the Voting Rights Act and not 10 just race as its own for the sake of race 11 factor? 12 MR. LEWIS: 13 Objection; vague. It calls for 14 a legal conclusion. You may answer. 15 THE WITNESS: 16 There's a whole realm of the 17 law -- I think it's referred to as 18 strict scrutiny or something, that I 19 know this come into the context of. 20 And I do not claim to be an expert in 21 the ins and outs of strict scrutiny 22 versus other levels of scrutiny and 23 when predominance might become okay. 24 BY MS. KEENAN: 25 Q I should be clear. I don't want to</p>	<p style="text-align: right;">Page 196</p> <p>1 lawyers involved before doing any of 2 that. 3 BY MS. KEENAN: 4 Q When you say neighborhoods -- can you 5 repeat that phrase that you've been using with 6 protected class? 7 A Neighborhoods or communities of 8 interest that are heavily made up of one 9 protected class. 10 Q And so do you mean Black 11 neighborhoods; is that what you're trying to 12 talk about or can you explain in a little more 13 specifics what you're talking about? 14 A Well, keep in mind, most of my work 15 is California. So we have Black 16 neighborhoods, Latino neighborhoods, 17 Asian-American neighborhoods. I do a lot of 18 work in Arizona where's a lot of Native 19 American neighborhoods. That's why I use the 20 more universal "Protected Class" rather than a 21 specific ethnic group. 22 Q And so you're starting in those cases 23 by identifying and neighborhoods or 24 communities that are heavily represented by 25 Black or Latino populations; is that what</p>

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<p style="text-align: right;">Page 197</p> <p>1 you're saying?</p> <p>2 A No.</p> <p>3 Q Can you explain it, then?</p> <p>4 A Yeah. We're starting by identifying</p> <p>5 neighborhoods and communities of interest</p> <p>6 universally -- hopefully, across the whole</p> <p>7 jurisdiction. Once we have a map made of up</p> <p>8 be neighborhoods and communities of interest,</p> <p>9 then we're flagging which ones of those</p> <p>10 predefine neighborhoods and communities of</p> <p>11 interest happen to have a large percentage of</p> <p>12 their population be a protected class.</p> <p>13 Q Okay. So your testimony is that you</p> <p>14 just start with neighborhoods or communities.</p> <p>15 And only after you've drawn the map, do you</p> <p>16 consider the race data surrounding the</p> <p>17 communities or neighborhoods that you use as</p> <p>18 the building blocks; is that that you saying?</p> <p>19 A No.</p> <p>20 Q Could you explain it, then? Where am</p> <p>21 I going wrong?</p> <p>22 A So we start by identifying</p> <p>23 neighborhoods and communities of interest</p> <p>24 across the whole map. We're not drawing any</p> <p>25 districts at that point. We're just</p>	<p style="text-align: right;">Page 199</p> <p>1 Q Okay. But don't think that that kind</p> <p>2 of a decision is race predominance, right?</p> <p>3 MR. LEWIS:</p> <p>4 Objection. You may answer.</p> <p>5 THE WITNESS:</p> <p>6 Correct, because the predominant</p> <p>7 factor is the neighborhood or</p> <p>8 community of interest.</p> <p>9 BY MS. KEENAN:</p> <p>10 Q Right. And so what would you say is</p> <p>11 the role of race; is it sort of a protected</p> <p>12 class? Is it sort of a tiebreaker in that</p> <p>13 instance?</p> <p>14 A I suppose when the federal equal</p> <p>15 population requirement dictates something be</p> <p>16 split, then, yeah, maybe race can be described</p> <p>17 as a tiebreaker in addition to other</p> <p>18 tiebreakers. There also is, if dividing one</p> <p>19 neighborhood allows me to unify three others,</p> <p>20 that's better than dividing one neighborhood</p> <p>21 that only allows me to unify two others. So</p> <p>22 there's lots of factors. It's still not</p> <p>23 predominant, but it's one of the factors.</p> <p>24 Q Right. In those circumstances, you</p> <p>25 know, race may be a factor that you consider,</p>
<p style="text-align: right;">Page 198</p> <p>1 identifying neighborhoods and communities of</p> <p>2 interest across the whole jurisdiction. And</p> <p>3 then we're determining which of those</p> <p>4 predefined neighborhoods and communities of</p> <p>5 interest also happen to be made of up a large</p> <p>6 percentage of the population are a protected</p> <p>7 class.</p> <p>8 Q And then once you make that</p> <p>9 determination, what do you do with it?</p> <p>10 A We make sure that when we have to</p> <p>11 divide a neighborhood or community of interest</p> <p>12 for population reasons or to bring a different</p> <p>13 neighborhood or community of interest</p> <p>14 together, the one we're dividing is not one of</p> <p>15 the ones that's heavily made up of protected</p> <p>16 class.</p> <p>17 Q So in that instance, you have to make</p> <p>18 a decision about which communities to divide,</p> <p>19 is what you just said, right?</p> <p>20 A Sometimes, yes.</p> <p>21 Q And the way you're deciding which</p> <p>22 ones not to divide is based on which ones have</p> <p>23 members of protected classes? That's what you</p> <p>24 just said, right?</p> <p>25 A It's one of the factors.</p>	<p style="text-align: right;">Page 200</p> <p>1 but you wouldn't consider that to be using</p> <p>2 race as the predominant factor, right?</p> <p>3 A It definitely is not.</p> <p>4 Q And so for that reason, you would</p> <p>5 agree that having you know, awareness of race</p> <p>6 as you're drawing the map doesn't mean that</p> <p>7 race is the number one factor as you're</p> <p>8 drawing, right?</p> <p>9 A I don't know what you mean by,</p> <p>10 "Awareness."</p> <p>11 Q Being aware that a community is</p> <p>12 comprised of people in a protective class or</p> <p>13 being aware that the Census block you're</p> <p>14 moving has a protected class inside of it,</p> <p>15 that doesn't mean that drawing a map to</p> <p>16 include that Census block is done for the</p> <p>17 number one reason based on race, is it?</p> <p>18 MR. LEWIS:</p> <p>19 Object to form. You may answer.</p> <p>20 THE WITNESS:</p> <p>21 That's where we're always clear</p> <p>22 to have another predominant</p> <p>23 justification that is clearly and</p> <p>24 visibly on the map guiding our</p> <p>25 decision and predominant to race.</p>

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<p style="text-align: right;">Page 201</p> <p>1 BY MS. KEENAN:</p> <p>2 Q Have you ever been asked to draw a</p> <p>3 minority/majority district, by which I mean a</p> <p>4 district with more than 50 percent BVAP?</p> <p>5 A Sure.</p> <p>6 Q Does your process change at all, the</p> <p>7 one that you just described to me when you're</p> <p>8 trying to draw a majority/minority district or</p> <p>9 same process?</p> <p>10 A Well, it depends on the purpose.</p> <p>11 Q What if the purpose is to draw a</p> <p>12 majority/minority district that's compliant</p> <p>13 with federal law?</p> <p>14 MR. LEWIS:</p> <p>15 Objection; calls for legal</p> <p>16 conclusion. You may answer.</p> <p>17 THE WITNESS:</p> <p>18 Then we follow our same process</p> <p>19 that we just discussed.</p> <p>20 BY MS. KEENAN:</p> <p>21 Q Okay. In that process we just</p> <p>22 discussed, you know, you've identified the</p> <p>23 communities of interest in the neighborhoods.</p> <p>24 You figured out which of them have protected</p> <p>25 classes. Now you're starting to draw the</p>	<p style="text-align: right;">Page 203</p> <p>1 or is it something you have to seek out? How</p> <p>2 do you make the racial data show up or not</p> <p>3 show up on your screen?</p> <p>4 A Anyone that's using Maptitude,</p> <p>5 there's a little click box in the bottom</p> <p>6 corner that has whole bunch of thematic maps.</p> <p>7 You know, Caliper comes -- when they give you</p> <p>8 the data, it's built in with total population</p> <p>9 and voting age population. We actually</p> <p>10 changed that for our projects that we're doing</p> <p>11 to make it a whole range of socioeconomic</p> <p>12 factors. Because we have -- with one click,</p> <p>13 you can switch between race to renters to</p> <p>14 income to child at home to multifamily versus</p> <p>15 owner-occupied family. That's all one click</p> <p>16 in Maptitude.</p> <p>17 Q Got it. So you can select a view</p> <p>18 that does show the race data or doesn't show</p> <p>19 the race data, depending on whether you think</p> <p>20 it's necessary based on, you know, what stage</p> <p>21 you're in on the map drawing?</p> <p>22 A More or less.</p> <p>23 Q When you choose to show the racial</p> <p>24 data on your screen, does that data show the</p> <p>25 racial breakdown of whatever subdivision, you</p>
<p style="text-align: right;">Page 202</p> <p>1 lines. When you're drawing the districts, is</p> <p>2 racial data on the screen in Maptitude?</p> <p>3 A Sometimes.</p> <p>4 Q When is it and when isn't it?</p> <p>5 A Part of it can depend on how well we</p> <p>6 know the area. Part of it can depend on what</p> <p>7 stage in the mapping process we're looking at.</p> <p>8 You know, if we're early on and just focusing</p> <p>9 on neighborhoods and communities of interest</p> <p>10 in building the overall map, then, no, it's</p> <p>11 not. If we're at that stage of: Okay. Some</p> <p>12 community of interest or neighborhood has to</p> <p>13 be split, so let's make sure we don't randomly</p> <p>14 pick one that is a heavily protected class.</p> <p>15 It could get us into Section 2 trouble, and it</p> <p>16 might be on there.</p> <p>17 Q When you say, it might be on there,</p> <p>18 it might not, is that a choice you're making</p> <p>19 or how -- what determines whether race is or</p> <p>20 is not shown on your screen?</p> <p>21 A I feel like I needed to make a</p> <p>22 mapping decision and be sure I'm not getting</p> <p>23 in trouble with Section 2.</p> <p>24 Q I'm sorry. I guess, I mean -- so it</p> <p>25 is a function, like, you can turn on and off,</p>	<p style="text-align: right;">Page 204</p> <p>1 know, city, neighborhood, precinct, Census</p> <p>2 block that you're looking at, or is it only a</p> <p>3 specific unit that the racial data is</p> <p>4 available at?</p> <p>5 A I'm not sure. What do you mean by</p> <p>6 "Unit"?</p> <p>7 Q I guess I mean, are you able to</p> <p>8 review the racial breakdown of a district --</p> <p>9 let me stop there. You're able to view the</p> <p>10 racial breakdown of just the district that</p> <p>11 you're drawing, right?</p> <p>12 A Sure. When we're doing all of these</p> <p>13 projects, all of those demographics I just</p> <p>14 described are all in the data table and live</p> <p>15 and active.</p> <p>16 Q Got it. Can you also see the</p> <p>17 breakdown of various subcomponents of the</p> <p>18 district; so, for example, of a VTD or of a</p> <p>19 Census block or of a municipality, or is it</p> <p>20 just at the district level? I'm just trying</p> <p>21 to figure out how granular the data is.</p> <p>22 A This is why the system requires it be</p> <p>23 the block level, as it can flip from level to</p> <p>24 level. So as you're changing what unit of</p> <p>25 geography you're picking at, the socioeconomic</p>

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<p style="text-align: right;">Page 205</p> <p>1 data is changing at the same time. 2 Q Got it. And that's true of the race 3 data, as well? 4 A Yes. 5 Q So you mentioned that it sort of 6 depends on what stage you're at in the map 7 drawing process in terms of how often you're 8 turning race on versus off in terms of what 9 you can view on the screen; is that right? 10 A In terms of what we call a thematic 11 map, what coloring scheme is being used on the 12 map, yes. 13 Q How often would you say you look at 14 that race data when you're drawing maps? 15 MR. LEWIS: 16 Objection; vague. You may 17 answer. 18 THE WITNESS: 19 Not very often. 20 BY MS. KEENAN: 21 Q Okay. And what are the circumstances 22 that you think call for looking at it? 23 A That we're looking at racial data? 24 Q Yes. 25 A Whether we're concerned with Section</p>	<p style="text-align: right;">Page 207</p> <p>1 there are -- I'm offering the opinion that 2 there are multiple places throughout the map 3 where none of Mr. Cooper's other explanations 4 explain why the line is drawn where it is and 5 race is -- and the line closely correlates 6 with race, leaving race the only remaining 7 explanation. 8 Q Okay. You would agree, though, that 9 correlation, itself, does not indicate 10 causation, right? 11 A Yes. That's why it's so important to 12 have the other explanation, to be able to say: 13 Yes, this line perfectly follows the protected 14 class coloring on the map because that's the 15 edge of the city and the city had exclusionary 16 zoning until the '90s. You need to be able to 17 explain why that line is somewhere for a 18 reason other than race, and then give that 19 explanation. 20 Q And so from your line of work, trying 21 to reverse engineer it, it's important to rule 22 out other possibilities, right? 23 A Yes. I mean, Mr. Cooper goes through 24 all these different sections of his report, 25 trying to say what -- he claims were the</p>
<p style="text-align: right;">Page 206</p> <p>1 2 compliance or -- well, I should say Section 2 2 compliance and ensuring we're not doing any 3 intentional discrimination of dividing up an 4 area, even if it's not going to be 50 percent. 5 Q Of course. So we talked a lot about 6 how you draw maps. I want to talk about now 7 the considerations when you're evaluating a 8 map that someone else has drawn, rather than 9 drawing your own map. How do you go about 10 conducting racial predominance analysis of a 11 map someone else has drawn? 12 A It can vary from situation to 13 situation, but the primary goal is to take the 14 explanation that that map drawer provided for 15 how they decided where the line should go and 16 how they ensure that race is not the 17 predominant factor, and see if those 18 explanations actually match where the lines 19 are drawn. 20 Q Okay. And are you offering the 21 conclusion that race was the predominant 22 factor in Mr. Cooper's drawing of specific 23 districts or the entire map? 24 A That may be a legal question more 25 than an expert question. But I would say</p>	<p style="text-align: right;">Page 208</p> <p>1 reasons why he drew the lines where they were 2 drawn, claiming that those explanations don't 3 explain. 4 Q Right. I'm sorry. I keep thinking 5 you're done. Go ahead. 6 A No, that's all. 7 Q Okay. And so if there is another 8 reason that supports the maps that Mr. Cooper 9 drew that you haven't ruled out, that makes it 10 harder for you to conclude that race was the 11 predominant factor in drawing the district; is 12 that right? 13 A I'm not sure I follow that question. 14 Q Sure. So you said earlier that when 15 you're drawing a map, it's important for you 16 that there's some other explanation than race 17 to explain the lines that you draw. Do I have 18 that right? 19 A Yes. 20 Q So the existence of some other reason 21 for a line that somebody drew, that is a cut 22 against the argument that the predominant 23 factor is race, right? 24 A Generally speaking, yes. 25 Q Okay. So you talked about a number</p>

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<p style="text-align: right;">Page 209</p> <p>1 of districts in your report, and I want to 2 just walk through to make sure I understand 3 your conclusions about them. I'm going to 4 share my screen now, just to show Exhibit 5 5 again, your report. Okay. Are you able to 6 see it? 7 A Yes. 8 Q So Paragraph 69 here talks about 9 SD-38 of the illustrative map; is that right? 10 A Yes. 11 Q Are you offering the conclusion that 12 race was the predominant factor in 13 Mr. Cooper's drawing of SD-38? 14 A Yes. 15 Q I'm going down to Paragraph 70. Here 16 you mentioned SD-17. Are you offering the 17 conclusion that race was the predominant 18 factor in Mr. Cooper's drawing of SD-17? 19 A In both these cases, all the reasons 20 he cite in his report where lines are drawn 21 don't explain these lines, so that only leaves 22 race. 23 Q We'll get back to the reasons why. 24 Right now I just want to confirm which 25 districts are the focus on your conclusions</p>	<p style="text-align: right;">Page 211</p> <p>1 Q And then in 75 and 76, you talk about 2 a number of different districts, so I'm just 3 going to go down to the figure here to get the 4 numbers. I can see them a little bit because 5 I see that's not fully on your screen. 6 A It's fine. 7 Q You can? Okay. I see HD-29, 61, 63, 8 65, 67, 68, 69 and 101. Are you offering the 9 conclusion that race was the predominant 10 factor in his drawing all of these districts? 11 A In how those lines were drawn, yes. 12 Q Are those the only districts you are 13 offering the conclusion that race was the 14 predominant factor for? 15 A Yes, those are the clearest examples 16 I found and the ones I called out in my 17 report. 18 Q When you say, "Clearest examples," 19 are you offering an opinion that any other 20 districts use race as the predominant factor? 21 A Yes, ma'am. I'm not identifying any 22 other districts that I think he used race as a 23 predominant factor. I think given the trend, 24 it's pretty clear this was a significant 25 factor everywhere, that there were racial</p>
<p style="text-align: right;">Page 210</p> <p>1 that race was the predominant factor. So 2 going down here to 71, now you talk about -- 3 I'm sorry -- to 72. 4 I can't remember if I asked you about 5 that on. Did I ask about Senate District 19 6 whether you opined that race was a predominant 7 factor? 8 A You did not ask it yet, but, yes, I 9 do. 10 Q What about HD-1, are you offering 11 that race is the predominant factor for HD-1? 12 A Yes. 13 Q Same with HD-23, are you offering the 14 conclusion that race was a predominant factor? 15 A Given the lack of -- in all of these 16 cases, given the lack of applicability of all 17 other Mr. Cooper's claim motivations for where 18 he drew lines, that only leaves race. 19 Q Okay. Going down next to HD-38, same 20 conclusion, that race was a predominant 21 factor? 22 A You can scroll down a little more. 23 It's just the way -- 24 Q To this (Indicating). 25 A Oh, yeah, yeah.</p>	<p style="text-align: right;">Page 212</p> <p>1 concentrations in the map. But these are the 2 ones I'm specifically pointing to as examples 3 of what he was using as he drew the map, as a 4 whole. 5 Q Going back to Paragraph 70 now. You 6 actually go farther, saying race was the 7 predominant factor. Here in Paragraph 70, for 8 example, you state that, quote: "The only 9 explanation is race." Do I see that correctly 10 here? 11 A Out of his list of the 12 justifications, none of them apply to the 13 lines that he's drawn out. 14 Q So you -- go ahead. 15 A We all know the vulnerability -- all 16 of us are drawing maps know the vulnerability 17 of a map is -- one potential of vulnerability 18 is that race is a predominant factor. So we 19 give our explanations and are careful to use 20 other reasons and save them, which points a 21 pretty big spotlight. If the other reasons 22 don't explain a line, then race is probably 23 the predominant factor. 24 Q I'm focusing on the word, "Only" in 25 Paragraph 70, which I think goes even further</p>

53 (Pages 209 to 212)

<p style="text-align: right;">Page 213</p> <p>1 than predominate. Do you agree that "Only" is 2 an even bigger claim than predominant factor, 3 or to you view those two things as the same? 4 MR. LEWIS: 5 Objection. It calls for a legal 6 conclusion. You may answer. Sorry. 7 THE WITNESS: 8 Yeah, in this context, I'm using 9 it interchangeably that none of 10 Mr. Cooper's offered explanations 11 explain the line, which then leaves 12 race as the standing predominant 13 consideration, given that the data 14 and the map show a high relationship 15 between where the line is drawn and 16 race. 17 BY MS. KEENAN: 18 Q I want to make sure I parse that. So 19 the lines show a high relationship between 20 where they were drawn in race, right? Is what 21 you just said? 22 A Yes. 23 Q But a high relationship can be 24 correlation as well as causation. Would you 25 agree with that?</p>	<p style="text-align: right;">Page 215</p> <p>1 A No. There are a number of factors he 2 cited, and there are a number of districts 3 that follow those factoring. 4 Q But when you say in Paragraph 70 -- 5 and I'm going to highlight a couple of other 6 examples. In Paragraph 69, you say: "The 7 only reason that Mr. Cooper provides for 8 drawing the line where he drew it is race." 9 Do you see that? 10 A Yes. 11 Q And 72 as well. Here, again, you 12 say: "The only reason plaintiffs' experts 13 provides for drawing the lines where he drew 14 it is race." Am I reading that correctly? 15 A Yes. 16 Q Can you tell me one more time what 17 you mean when you say, "The only reason he 18 provided for drawing the lines is race." 19 A So as he showed in the data he turned 20 over -- he had racial data, and then he talked 21 all about all of these communities of interest 22 and least change, parishes and compactness and 23 all of those factors they use in drawing the 24 lines. All of those other factors don't 25 explain why these lines are where they are and</p>
<p style="text-align: right;">Page 214</p> <p>1 A Yes. 2 Q And so are you actually offering the 3 opinion that Mr. Cooper relied on race and 4 nothing else when we drew the lines in his 5 illustrative maps that you're challenging? 6 MR. LEWIS: 7 Objection. You may answer. 8 THE WITNESS: 9 No, I'm offering the example 10 that Mr. Cooper -- I'm sorry. I'm 11 offering the opinion that Mr. Cooper 12 provided a list of explanations for 13 where he drew the lines, and none of 14 those explanations explain any of 15 these lines. So it's the -- as you 16 say -- correlation between the racial 17 data and where the lines ended up 18 combined with his lack of any other 19 explanation and being able to rule 20 out all of his other explanations. 21 BY MS. KEENAN: 22 Q I want to make sure I have that 23 clear. You're not contending that Mr. Cooper 24 didn't rely on anything other than race in 25 drawing lines in this map, or are you?</p>	<p style="text-align: right;">Page 216</p> <p>1 how the numbers ended up so precisely at 50.1 2 and 50.2 and 50.3 percent. The only factor in 3 data -- in his dataset that explains where 4 these lines are drawn is race. 5 Q You would agree, though that Mr. 6 Cooper does offer other reasons as bases for 7 as the lines, right? 8 A In general reference to the maps, he 9 does offer other reasons. They just don't 10 hold up in these cases. 11 Q And how did you determine that those 12 other reasons didn't hold up? 13 A Because when he says he followed his 14 key regions, the lines don't follow key 15 regions. When he says he followed 16 socioeconomic data, the lines don't follow the 17 socioeconomic data. When he says he followed 18 jurisdictions boundaries, the lines don't 19 follow judicial boundaries. The one thing the 20 lines do do is just barely make it over 21 50 percent. 22 Q You talk about socioeconomic lines. 23 You talk about how the lines don't track 24 socioeconomic characteristics that Mr. Cooper 25 reviewed. How are you able to make that</p>

54 (Pages 213 to 216)

<p style="text-align: right;">Page 217</p> <p>1 determination about the socioeconomic data 2 that Mr. Cooper referenced in his report? 3 A All I can rely on is what Mr. Cooper 4 provided as what he said he was looking at. 5 Q Would you agree that some of 6 Mr. Cooper's data was not in map format -- or 7 not the Maptitude format? I'm sorry. 8 MR. LEWIS: 9 Objection; vague. You may 10 answer. 11 THE WITNESS: 12 Yes. 13 BY MS. KEENAN: 14 Q You told us that in particular that 15 some of this socioeconomic data was not 16 uploaded into Maptitude, right? 17 A Right. 18 Q So how are you able to determine that 19 the lines don't follow data that is not in 20 Maptitude? 21 A Because I did everything that he says 22 he did. You know, if he held a map, you 23 know -- if he has a statewide map that he 24 created, I was looking at the statewide map. 25 If it's just an Excel table, well, then, he</p>	<p style="text-align: right;">Page 219</p> <p>1 lines and sub-municipality lines. 2 Yeah. So these are all being drawn 3 through jurisdictions that are 4 smaller than the data that are in his 5 Excel table. 6 BY MS. KEENAN: 7 Q What about the general familiarity 8 that we talked about earlier, that you can 9 gain with a region over decades of experience 10 working there? Are you able to assess that 11 sort of a thing based on the report that you 12 provided in this case? 13 A No. If the legal standard is that 14 anyone who knows the area really, really well 15 can say they didn't consider race and that 16 passes legal muster, then these cases all get 17 a lot easier. 18 Q Would you agree that the districts 19 did comply with communities of interest in 20 Louisiana in a way that was describable in a 21 report where you could explain which 22 communities were kept together by the 23 individual districts that you're challenging. 24 Do you agree that would make it difficult to 25 conclude that the predominant factor was race?</p>
<p style="text-align: right;">Page 218</p> <p>1 couldn't have used it, either. 2 Q Why couldn't somebody use information 3 in a chart or an Excel table to help make 4 decisions about where to draw lines on map? 5 A Because these lines going through the 6 jurisdictions that are in the tables as 7 totals. So when a line is going through the 8 middle of Shreveport, you can't use data from 9 an Excel table that just has the total for 10 Shreveport, for example. Because that doesn't 11 tell you anything about where to draw the line 12 through the jurisdiction. 13 Q Is that true of every single line 14 that you criticized? 15 A What true? 16 Q That it doesn't run along any sort 17 of other boundary where you could have 18 assessed the sociological characteristics of 19 the region? 20 MR. LEWIS: 21 Objection; mischaracterizes the 22 testimony. You may answer. 23 THE WITNESS: 24 If you can scroll back through, 25 I think most of these are sub-parish</p>	<p style="text-align: right;">Page 220</p> <p>1 MR. LEWIS: 2 Objection; calls for legal 3 conclusion and speculation. 4 THE WITNESS: 5 That's exactly the kind of 6 report I would have issued with the 7 map if I drawn it. I know judges -- 8 in my experience, judges tend to be 9 reluctant to look at post -- what do 10 you call it, post facto 11 justifications? 12 BY MS. KEENAN: 13 Q Okay. Can you rule out the least 14 change principle that Mr. Cooper followed as a 15 basis for drawing any of these lines that you 16 criticize in his report? 17 A I think all of these maps are -- I 18 think all these maps are in areas where 19 there's brand new districts drawn and the 20 existing districts are fairly massively 21 redrawn. 22 Q I'm going to take you down to a 23 specific example that I have in mind. I'm 24 looking at Paragraph 73 about HD-23, in 25 particular. Are you aware of whether HD-23 in</p>

55 (Pages 217 to 220)

<p style="text-align: right;">Page 221</p> <p>1 Mr. Cooper's Illustrative Plan actually tracks 2 the HD-23 that formerly existed in the 2010 3 Enacted Plan? 4 A Not off the top of my head, but that 5 would have been in his table that we looked in 6 earlier. 7 Q Sure. And do you know if the Enacted 8 Map 2022 eliminated the House district that 9 spanned this territory in Natchitoches that 10 you see here? 11 A I believe Mr. Cooper made a reference 12 to something like that in his report. 13 Q Do you agree that retaining district 14 from a former map is consistent with incumbent 15 protection? 16 MR. LEWIS: 17 Objection; vague and calls for 18 legal conclusion. You may answer. 19 THE WITNESS: 20 There's a lot. There is more 21 that goes into it than just that. 22 BY MS. KEENAN: 23 Q Would you agree that keeping a 24 district where an incumbent lives is more 25 consistent with incumbent protection than</p>	<p style="text-align: right;">Page 223</p> <p>1 MR. LEWIS: 2 Objection. It assumes facts not 3 in evidence. You may answer. 4 THE WITNESS: 5 I would say both could be true 6 in the process of recreating a 7 district for an incumbent, race could 8 be predominant in how that recreated 9 district is drawn. 10 BY MS. KEENAN: 11 Q I want to go to something in 12 Mr. Cooper's report for a moment. That's in 13 Exhibit 7. Going up to Paragraph -- Paragraph 14 11 of Mr. Cooper's report. He says: "The 15 Illustrative Plans presented this declaration 16 update the illustrative plans described in my 17 July 22, 2022 declaration to better reflect 18 communities of interest and include other 19 technical changes." Did I read that 20 correctly? 21 A Yes. 22 Q I understand that in attacking his 23 communities of interest, you focused on those 24 key cultural regions and on the Census 25 designated places in your report; is that</p>
<p style="text-align: right;">Page 222</p> <p>1 completely dismantling that district and 2 moving it across the state? 3 A As a hypothetical, that's probably a 4 reasonable conclusion, but there's a lot -- 5 it's a very limited hypothetical. 6 Q Sure. Are you aware that Mr. Cooper 7 did consider incumbent addresses in drawing 8 his districts? 9 A He didn't provide that data, I don't 10 think. 11 Q But are you aware of whether he 12 considered it in his report? 13 A We're back to my usual frustration 14 of -- I don't recall off the top of my head 15 whether he mentioned it. I presume, if he was 16 looking at that, he would have provided the 17 data in his dataset. 18 Q Okay. If Mr. Cooper considered 19 incumbent addresses and he drew a line that 20 better preserved an incumbent's district -- 21 let's just say hypothetically, because I 22 understand you were saying you didn't review 23 that data. Would you agree that sort of 24 line-drawing decision is a reason other than 25 race?</p>	<p style="text-align: right;">Page 224</p> <p>1 correct? 2 A I focused on the communities of 3 interest that he described in his report. 4 Q Sure. I am now in Exhibit 8, which 5 is Mr. Cooper's rebuttal report. I'm going to 6 stop sharing my screen to find the line that 7 I'm looking for. Give me one second. 8 This is Paragraph 30 of Exhibit 8. 9 Again, Mr. Cooper states that the changes 10 between his 2022 Illustrative Plan and now 11 current Illustrative Plan were primarily made 12 to better respect communities of interest. Am 13 I reading that correctly? 14 A Yes. 15 Q I know you focused on a couple of 16 regions that are highlighted in Mr. Cooper's 17 report. Did you happen to rule out a 18 communities of interest as a different expert 19 named Dr. Colton has defined them? 20 A No. 21 Q Are you even aware that Dr. Colton 22 actually offered a district level response to 23 your conclusions about race predominance in a 24 report he offered in this case? 25 A I don't know if I read his rebuttal</p>

56 (Pages 221 to 224)

<p style="text-align: right;">Page 225</p> <p>1 report or not.</p> <p>2 Q You didn't offer any responses to his</p> <p>3 critiques in your surrebuttal report, right?</p> <p>4 A Right.</p> <p>5 Q So if those communities of interest</p> <p>6 were something that Mr. Cooper considered in</p> <p>7 drawing the maps, you haven't offered any sort</p> <p>8 of response to those communities of interest</p> <p>9 in your report, have you?</p> <p>10 A I've only focused on things that</p> <p>11 Mr. Cooper said he focused on.</p> <p>12 MR. LEWIS:</p> <p>13 I'm going about an hour. Is</p> <p>14 this a good time for a five-minute</p> <p>15 break?</p> <p>16 MS. KEENAN:</p> <p>17 I think I'm actually wrapping up</p> <p>18 this section as well. So now is a</p> <p>19 good time for a five to ten-minute</p> <p>20 break for me.</p> <p>21 MR. LEWIS:</p> <p>22 Perfect.</p> <p>23 MS. KEENAN:</p> <p>24 You want to do five or you want</p> <p>25 to do ten? What's your preference?</p>	<p style="text-align: right;">Page 227</p> <p>1 attorneys for the plaintiffs who in turn had</p> <p>2 requested commentary about the 2022</p> <p>3 Illustrative Plan from the plaintiffs and</p> <p>4 other experts for the plaintiffs." Did I read</p> <p>5 that correctly?</p> <p>6 A Yes.</p> <p>7 Q In response to that paragraph in the</p> <p>8 rebuttal report, which I know you had before</p> <p>9 your surrebuttal report, did you ask defense</p> <p>10 counsel to review the reports of any of the</p> <p>11 other experts?</p> <p>12 MR. LEWIS:</p> <p>13 I'm going to object to that on</p> <p>14 the ground of privilege and instruct</p> <p>15 the witness not to answer.</p> <p>16 BY MS. KEENAN:</p> <p>17 Q Okay. I can move on from this, then.</p> <p>18 I'm going to go back over your report. So the</p> <p>19 next section of the report is called, "Racial</p> <p>20 Percentage Targets Drove the Drawing of the</p> <p>21 New Illustrative Districts." That's on page</p> <p>22 35. Am I reading that correctly?</p> <p>23 A Yes.</p> <p>24 Q The first three paragraphs -- I'll</p> <p>25 give you a chance to read them. But they seem</p>
<p style="text-align: right;">Page 226</p> <p>1 I know we're getting toward the</p> <p>2 longer end.</p> <p>3 MR. LEWIS:</p> <p>4 Why don't we do ten, just to be</p> <p>5 on the safe side.</p> <p>6 MS. KEENAN:</p> <p>7 That's good.</p> <p>8 MR. LEWIS:</p> <p>9 Thanks so much.</p> <p>10 MS. KEENAN:</p> <p>11 Okay, 4:28 Eastern, we'll be</p> <p>12 back on the record.</p> <p>13 (BRIEF RECESS FROM 4:18 P.M. TO 4:28 EST)</p> <p>14 BY MS. KEENAN:</p> <p>15 Q I have one more question about</p> <p>16 Mr. Cooper's rebuttal report. I'm going to</p> <p>17 share my screen on that again. Do you see</p> <p>18 Paragraph 7 from Mr. Cooper's rebuttal report,</p> <p>19 which I believe is Exhibit 8?</p> <p>20 A Yes.</p> <p>21 Q In the second sentence there, he's</p> <p>22 referring to the changes he made between the</p> <p>23 2022 Illustrative Plan and the now current</p> <p>24 Illustrate Plan. He said those changes,</p> <p>25 quote, "Reflect conversations I had with the</p>	<p style="text-align: right;">Page 228</p> <p>1 to be about what you contend is a counting</p> <p>2 error, so I'm a little confused about what</p> <p>3 with 78 through 80 have to do with the title.</p> <p>4 Can you take a second to review those and then</p> <p>5 let me know how they relate to the title of</p> <p>6 this section?</p> <p>7 A Well, it's just part of a larger</p> <p>8 section of this report. That title isn't</p> <p>9 specific to just those two paragraphs.</p> <p>10 Q Sure. But are you contending that</p> <p>11 the counting error has anything to do with</p> <p>12 racial percentage targets driving the drawing</p> <p>13 of the new illustrative districts, or is that</p> <p>14 just in this section but not related to the</p> <p>15 title?</p> <p>16 A It's all part of the topic. His</p> <p>17 discussion of majority Black seats is part of</p> <p>18 the reflection his focus was on, getting in</p> <p>19 more just barely majority seats. As part of</p> <p>20 that discussion, he also refers to the wrong</p> <p>21 districts.</p> <p>22 Q Okay. I think I see how you're</p> <p>23 trying to draw the connection. Thanks for</p> <p>24 explaining that. I want to talk a little bit</p> <p>25 about those paragraphs, though.</p>

57 (Pages 225 to 228)

<p style="text-align: right;">Page 229</p> <p>1 In Paragraph 79, you said that HD-23 2 is already majority Black in the Enacted Map, 3 right? 4 A Yes. 5 Q Would you agree that HD-23 is in a 6 completely different location than the Enacted 7 Map? 8 A I don't have it right in front of me. 9 I would need to look at that. 10 Q If I represented to you that HD-23 11 was in Orleans Parish in the Enacted Map 12 rather than in Natchitoches, does that ring 13 any bells for you or you're just not -- 14 A I know where those two areas are, but 15 I would -- 16 Q Sure. I'm sorry. I meant the 17 location of the district. 18 A I'd be more comfortable looking at 19 the two maps, if you're asking me about where 20 the district is on the two maps than trying to 21 pull it from memory. 22 Q I'm going to go to Mr. Cooper's 23 report for a minute, because I believe he 24 discusses this point. Do you see Mr. -- this 25 is Exhibit 8, Mr. Cooper's rebuttal report.</p>	<p style="text-align: right;">Page 231</p> <p>1 majority Black district in northwest 2 Louisiana, right? 3 A If that's what the numbers show, 4 that's what it does. 5 Q Right. And are you aware of whether 6 the Illustrative Map also leaves in place the 7 majority Black district that's in Orleans 8 Parish? 9 MR. LEWIS: 10 Objection; vague. You may 11 answer. 12 THE WITNESS: 13 Yeah. Sorry. Can you be more 14 specific? 15 BY MS. KEENAN: 16 Q Sure. This might be easier if I have 17 a copy of the Enacted Map, which I'll try to 18 get. But do you agree there is a majority 19 Black district in Orleans Parish in the 20 Illustrative Map. 21 A Isn't that one of the maps that we 22 were just looking at? Are you as racially 23 driven? 24 Q I believe that is one of the areas 25 you talked about in your report, as we</p>
<p style="text-align: right;">Page 230</p> <p>1 Do you see this sentence that says: "The 2 Enacted House Plan" in Paragraph 36 -- "HD-23 3 is eliminated as a majority Black House 4 District in northwest Louisiana and shifted to 5 New Orleans." Do you see that sentence? 6 A Yes. 7 Q Do you have any basis to dispute 8 that? I don't have a copy of the Enacted Map 9 on me. I can try to find it on the next 10 break. But do you disagree that HD-23 is in 11 Orleans Parish in the new map? In the enacted 12 Map? Sorry. 13 A I don't have an opinion about where 14 it is or where it isn't. 15 Q Let's just assume for the moment 16 that -- and I can confirm this before we close 17 the deposition. Assume with me for a second 18 that HD-23 is in Orleans Parish in the Enacted 19 Map. You're familiar with the two locations 20 that I'm talking about, Natchitoches and 21 Orleans, right? 22 A Yes. 23 Q You would agree that if the Enacted 24 Map moves HD-23 to Orleans Parish, then HD-23 25 in the Illustrative Map does create a distinct</p>	<p style="text-align: right;">Page 232</p> <p>1 discussed. Give me one second. I'll show 2 you. 3 A Yeah, right there. 4 Q So you would agree there is a 5 majority Black district in Orleans, right? 6 A Yeah. I would need to compare the 7 numbers of the maps to see. I'd be surprised 8 if there's just one, but there might be just 9 one. 10 Q I think it will be helpful to get a 11 copy. I'll handle that on the next break. 12 You also say that 2023 -- I'm going back to 13 your report and to Paragraphs 80 now. So I'll 14 just scroll back down there. Here you say 15 that the 2023 House Illustrative Map 16 eliminates a majority Black VAP district 17 HD-62? 18 A Yes. 19 Q Are you unfamiliar with where HD-62 20 is in the Enacted Map? 21 A Off the top of my head, yes. I've 22 looked at it many times. I just don't know 23 off the top of my head. 24 Q I'll ask these questions in a 25 separate section when I have a copy of both in</p>

58 (Pages 229 to 232)

<p style="text-align: right;">Page 233</p> <p>1 front of me. I'll return to that later. 2 Moving down to Paragraph 83, you say: 3 "Plaintiffs' expert uses race as a predominant 4 factor to draw the lines that create these 5 districts." Am I reading that correctly? 6 A Yes. 7 Q And then you say: "It's worth noting 8 how precisely race has been used in the 2023 9 Illustrative Map, eleven majority AP Black VAP 10 House districts are less than 53 percent AP 11 Black VAP." You also state that "Eleven of 12 the Senate maps, 16 majority AP Black VAP 13 districts are just barely majority AP Black 14 VAP at less than 53 percent, AP Black VAP." 15 Did I read all of that correctly? 16 A Yes. 17 Q And then, again, down in Paragraph 18 91, you also state that: "The way the 19 majority AP Black VAP districts were drawn to 20 just barely cross the 50 percent line is clear 21 as the grouping of districts precisely above 22 50 percent makes clear the predominant 23 consideration of race in drawing the 24 illustrative map." Did I read that correctly? 25 A Yes.</p>	<p style="text-align: right;">Page 235</p> <p>1 A It's based on my experience drawing 2 thousands of these maps. 3 Q But not on any statistical or 4 empirical analysis? 5 A I think it's so obvious that I don't 6 even know how you would test that. 7 Q Have you offered any controlled 8 statistical analysis ruling out 9 nondiscriminatory explanations for the BVAP 10 percentages you highlight in your report? 11 A I only analyze the explanations 12 Mr. Cooper offered. I didn't think or try to 13 guess or come up with other justifications for 14 this map. 15 Q I'm definitely not asking you to 16 guess. I'm asking you if you've offered any 17 controlled statistical analysis ruling out 18 nondiscriminatory explanations for the BVAP 19 percentages you highlight in your report? 20 MR. LEWIS: 21 Objection; vague. You may 22 answer. 23 THE WITNESS: 24 I go back to the answer: It 25 just doesn't happen.</p>
<p style="text-align: right;">Page 234</p> <p>1 Q How did you distinguish between 2 correlation and causation here? 3 A The fact that you don't precisely end 4 up just over 50 percent. And if you scroll to 5 the next page, it shows -- you don't end up 6 just over 50 percent with nothing just below 7 50 percent randomly. 8 Q Other than just providing the BVAP 9 percentages like you do in Figure 27, which 10 you just referenced, did you provide any 11 empirical basis for comparing the BVAPs in 12 these districts from a statistical 13 perspective? 14 A No. 15 Q Do you have any empirical basis to 16 say that certain districts are so close to 17 50 percent that they must be caused by race? 18 A Just the reality is that you would 19 never end up with this many seats precisely 20 over 50 percent and nothing just under 21 50 percent, unless you were intentionally 22 targeting over 50 percent. It just -- 23 it's not -- 24 Q Again, that's just your assertion; 25 there is no empirical basis for that, right?</p>	<p style="text-align: right;">Page 236</p> <p>1 BY MS. KEENAN: 2 Q But that's a no? 3 A That's -- 4 Q That's a no whether you've offered 5 controlled statistical analysis in ruling out 6 those alternatives? 7 MR. LEWIS: 8 Objection; vague. You may 9 answer. 10 THE WITNESS: 11 No, I do not. 12 BY MS. KEENAN: 13 Q And have you ruled out whether any 14 similarity in the BVAPs across these 15 communities could be attributable to be 16 underlying demographic makeup of the 17 geographic areas where those districts are 18 drawn? 19 A Yes. That's obvious from the maps 20 shown earlier in the report. 21 Q How so? 22 A If you scroll up to any of those maps 23 that we were looking at in the last 24 discussion, Baton Rouge or any of those -- if 25 you go to the Baton Rouge map is probably the</p>

59 (Pages 233 to 236)

<p style="text-align: right;">Page 237</p> <p>1 best.</p> <p>2 Q Here (Indicating)?</p> <p>3 A Yes, exactly. What you're talking</p> <p>4 about would be -- would make sense if the</p> <p>5 whole region was right about 50 percent. So</p> <p>6 however you divided up the districts, they're</p> <p>7 going to come out right about 50 percent. But</p> <p>8 in reality, you can see in this map, each of</p> <p>9 these districts puts together areas that are</p> <p>10 red are well over -- 75 percent and over. And</p> <p>11 in areas that are purple, it's below</p> <p>12 25 percent. So it's definitely not as you</p> <p>13 were describing just coincidence. They're</p> <p>14 carefully balanced between heavily Black and</p> <p>15 very, very low Black in order to arrive at</p> <p>16 that just barely majority Black number.</p> <p>17 Q Okay. I'm not sure I have any other</p> <p>18 questions on that. Give me one second. I</p> <p>19 know you're looking at the individual shaded</p> <p>20 areas, but does your -- does the analysis you</p> <p>21 just gave me account for sort of the average</p> <p>22 BVAP across this area? Like if I took this</p> <p>23 entire shape and removed all of the lines</p> <p>24 dividing it up, have you figured out what the</p> <p>25 average BVAP would be in that larger shape?</p>	<p style="text-align: right;">Page 239</p> <p>1 this.</p> <p>2 MR. LEWIS:</p> <p>3 Sure.</p> <p>4 MS. KEENAN:</p> <p>5 We'll be back -- let's say at</p> <p>6 4:50. And then I'll be right back.</p> <p>7 MR. LEWIS:</p> <p>8 Okay.</p> <p>9 (BRIEF RECESS FROM 4:46 TO 4:50 EST)</p> <p>10 MS. KEENAN:</p> <p>11 I think I've got it. I may have</p> <p>12 to take screenshots to use as</p> <p>13 exhibits. We need to mark these.</p> <p>14 But what I'm going to use for now is</p> <p>15 a link that's provided in Paragraph</p> <p>16 109 of Bill Cooper's report. I'll</p> <p>17 show you that first, just so you can</p> <p>18 see that you have access to this.</p> <p>19 BY MS. KEENAN:</p> <p>20 Q Do you see Paragraph 109 in Exhibit</p> <p>21 7, Mr. Cooper's report, where it shows that</p> <p>22 there's a statewide interactive map depicting</p> <p>23 the House Illustrative Map, and it shows the</p> <p>24 House Plan can be turned on and off to the</p> <p>25 Enacted Map using that link. Are you familiar</p>
<p style="text-align: right;">Page 238</p> <p>1 MR. LEWIS:</p> <p>2 Objection; vague.</p> <p>3 THE WITNESS:</p> <p>4 I have not calculated, but you</p> <p>5 can just look, if you took those</p> <p>6 eight numbers and averaged them,</p> <p>7 since they're all right about equal</p> <p>8 population, you'd be around 53,</p> <p>9 55 percent.</p> <p>10 BY MS. KEENAN:</p> <p>11 Q Okay. So before I switch topics, I</p> <p>12 want to try to go back to this enacted map</p> <p>13 issue. Give me one moment to handle that. So</p> <p>14 I think we can make this work, but we'll see</p> <p>15 if we run into any issues.</p> <p>16 I'm going to share my screen now. So</p> <p>17 this is the Enacted House Map as depicted in</p> <p>18 Exhibit I-2 in the corrected version of Bill</p> <p>19 Cooper's report. Can you see this map okay?</p> <p>20 A Yes.</p> <p>21 MS. KEENAN:</p> <p>22 This is too small. Can I ask</p> <p>23 for three minutes off the record just</p> <p>24 to sort this out, and then I can be a</p> <p>25 little clearer in my presentation of</p>	<p style="text-align: right;">Page 240</p> <p>1 with that link?</p> <p>2 A Yes.</p> <p>3 Q Did you use that link at all or did</p> <p>4 you review it in preparing your report?</p> <p>5 A I probably clicked on it, but I</p> <p>6 didn't use it to any significant extent.</p> <p>7 Q I'm going to pull it up, and I'm just</p> <p>8 going to show you two areas. I'll zoom all</p> <p>9 the way out first, and I'll take a screenshot</p> <p>10 of this, so we can mark it as an exhibit. But</p> <p>11 do you see House District 62 in purple here?</p> <p>12 A Yes.</p> <p>13 Q And I'm going to zoom in now. I'll</p> <p>14 take a screenshot of the region. Would you</p> <p>15 agree this is in East Feliciana, part of East</p> <p>16 Baton Rouge in terms of where it's located in</p> <p>17 the map of Louisiana?</p> <p>18 A Generally speaking, yes.</p> <p>19 Q Are you aware of whether this</p> <p>20 district was created in an area where the</p> <p>21 Black candidate of choice was already being</p> <p>22 elected under the 2010 maps?</p> <p>23 A I did not look at the information of</p> <p>24 where Black candidates of choice were being</p> <p>25 elected or not.</p>

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<p style="text-align: right;">Page 241</p> <p>1 Q Are you aware that Districts 65 and 2 68, also shown in this same region, are new 3 majority Black districts in the Illustrative 4 Map? 5 A The number being shown are the 6 Enacted Map numbers. I don't know what the -- 7 Q I'm sorry. The red borders show 65 8 and 68 as they're drawn in the Illustrative 9 Map. 10 A Okay. 11 Q Does that makes sense? 12 A Sure. 13 Q I'm just going to make sure I have 14 the reference exactly right. I'll go back to 15 the way he describes it in his report. What 16 he says is the purple line overlay shows the 17 boundaries that can be clicked on and off. So 18 I'll go back and I'll show you the purple 19 ones, just to make sure we have the right 20 boundaries here. So when I click Illustrative 21 House on and off, you can see that's where the 22 boundaries are. For the illustrative ones, it 23 may be easier to go back to your report where 24 you can see the 65 and 68 are among the 25 districts you've discussed here in Figure 22</p>	<p style="text-align: right;">Page 243</p> <p>1 in Mr. Cooper's district, as well, right? 2 A Yes. It looks like it's got the same 3 borders in his map. 4 Q So when Mr. Cooper says that he 5 creates an additional majority Black district 6 in northwest Louisiana with Illustrative 7 HD-23, you would agree that's not the same as 8 the majority Black district in Enacted HD-23, 9 right? 10 MR. LEWIS: 11 Object to form. 12 THE WITNESS: 13 Go ahead, Patrick. 14 MR. LEWIS: 15 Object to form. 16 BY MS. KEENAN: 17 Q I'll go back here to clear it up. So 18 in 79, you say HD-23 is already majority Black 19 in the Enacted Map, right? 20 A Yes. 21 Q But in your images, you show how 22 HD-23 in the Illustrative Map is actually up 23 in Natchitoches, right? 24 A Yes. 25 Q So you would agree that when you say</p>
<p style="text-align: right;">Page 242</p> <p>1 of your report, right? 2 A Yes. 3 Q And so those are both new majority 4 Black districts in the Illustrative Plan, to 5 your knowledge, right? 6 A As he's describing them, yes. 7 Q I'm going to go back to the link 8 again. And now I'm going to scroll over to 9 Orleans. Can you tell we're in Orleans Parish 10 now? 11 A Yes, the river is very distinct. 12 Q Okay, great. Can you tell that HD-23 13 in the -- as labeled in the Enacted Map -- is 14 in Orleans Parish? 15 A Yes. 16 Q Okay. And like I said, these purple 17 borders -- not the red ones. I apologize for 18 that -- are the Illustrative House district 19 borders that you can click on and offer. Do 20 you can see that? 21 A Yes. 22 Q As you can see, the Illustrative 23 House District that Mr. Cooper proposes also 24 keeps the district that is labeled HD-23 in 25 the Enacted Map. That district is preserved</p>	<p style="text-align: right;">Page 244</p> <p>1 in Paragraph 79, HD-23 is already majority 2 Black in the Enacted Map, we're talking about 3 two totally different districts, right? 4 A They have the same number. 5 Q Correct. They have the same number. 6 But Cooper's Illustrative District 23 is an 7 additional majority Black district additional 8 to -- I'm going back to the link -- the 9 Enacted HD-23, which takes on a different 10 number in the Illustrative Map, right? 11 A What number does it take on? Does 12 this give it? 13 Q I'll slow you. I think it's in your 14 report. Give me one second. We'll go back to 15 the Orleans part. I'm not sure yours does 16 have the number, actually. 17 I'll ask just one more question on 18 this. Would you agree that the district that 19 is currently -- it's labeled as HD-23 on this 20 map, the Enacted version of the map. If you 21 agree that it's preserved in the Illustrative 22 Map, then do you agree that that district plus 23 the Illustrative District 23 represent two 24 different majority Black districts that are 25 present in the illustrative map?</p>

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<p style="text-align: right;">Page 245</p> <p>1 A There's a lot of ifs.</p> <p>2 Q Sure. I believe it is HD-5 in the</p> <p>3 Cooper Illustrative Map, if that is helpful.</p> <p>4 So if you replace this 23 with a 5 -- because</p> <p>5 that's what it's labeled in Illustrative</p> <p>6 Map -- would you agree that Illustrative 5 in</p> <p>7 Orleans and Illustrative District 23 in</p> <p>8 Natchitoches are both majority Black districts</p> <p>9 in Cooper's Illustrative Map?</p> <p>10 A I agree with the percentages he shows</p> <p>11 in his chart.</p> <p>12 Q Okay. Thank you. I'm going to move</p> <p>13 on. You mentioned a concept of Differential</p> <p>14 Privacy in your report. Can you explain that</p> <p>15 concept to me as you understand it?</p> <p>16 A That's opening a bag of worms. The</p> <p>17 Census Bureau has done hours and hours on</p> <p>18 Differential Privacy. But essentially, the</p> <p>19 Decennial Census data used to be taken as an</p> <p>20 absolute number. It is a head count; no</p> <p>21 surveys, no sampling. It was just a number.</p> <p>22 And we, of course, treat it as a number. The</p> <p>23 Census Bureau began to get concerned that</p> <p>24 marketers and others could kind of reverse</p> <p>25 engineer the block level data to identify the</p>	<p style="text-align: right;">Page 247</p> <p>1 impact of Differential Privacy or are you just</p> <p>2 flagging it as a potential concern?</p> <p>3 A At the time I was working on this,</p> <p>4 the data wasn't out, and I don't think the</p> <p>5 data is out yet, where it would be possible to</p> <p>6 do a mathematical measure of the level -- of</p> <p>7 the likely level of noise in the data. But</p> <p>8 the Bureau has said that at a congressional</p> <p>9 district level, it's plus or minus</p> <p>10 one percent. And that as your level of</p> <p>11 geography gets smaller, the error goes up.</p> <p>12 It's somewhere higher than one percent margin</p> <p>13 of error in the data.</p> <p>14 Q In this -- the end of this paragraph,</p> <p>15 you say: "With plaintiffs' experts carefully</p> <p>16 tailored razor-thin majority Black</p> <p>17 percentages, there is a statistically</p> <p>18 significant chance that some or even many of</p> <p>19 those districts are in fact not 50 percent</p> <p>20 Black." If the math isn't there yet, what's</p> <p>21 the basis for your opinion that the chance is</p> <p>22 statistically significant?</p> <p>23 A Because we know that the error factor</p> <p>24 is more than one percent. We just don't know</p> <p>25 how much more than one percent. These numbers</p>
<p style="text-align: right;">Page 246</p> <p>1 Census response of an individual. And so they</p> <p>2 went through years of development to come up</p> <p>3 with a method of adding -- essentially, noise</p> <p>4 to the block level data to make it much harder</p> <p>5 for marketers and others to reverse engineer</p> <p>6 and know exactly what an individual responded</p> <p>7 to their Decennial Census form. So that noise</p> <p>8 is essentially a block-by-block error factor</p> <p>9 that has never been intentional induced in the</p> <p>10 Census data before but now is a decently</p> <p>11 significant percentage difference when you</p> <p>12 start looking at state legislative and smaller</p> <p>13 jurisdiction numbers.</p> <p>14 Q So you mentioned Differential Privacy</p> <p>15 in your report. Really just in one paragraph</p> <p>16 substantively. Do you agree with that? I can</p> <p>17 show it to you.</p> <p>18 A I'll take your word for it.</p> <p>19 Q I'm just going to show my screen to</p> <p>20 be safe. We're back to Exhibit 5. We're at</p> <p>21 Paragraph 84. Sorry. I'm just getting it</p> <p>22 to -- I know I just saw it. Do you see</p> <p>23 Paragraph 84 here?</p> <p>24 A Yes.</p> <p>25 Q Did you do anything to analyze the</p>	<p style="text-align: right;">Page 248</p> <p>1 are all two and three times of a percent down.</p> <p>2 That's definitely statistically significant.</p> <p>3 Q How do you know it's greater than</p> <p>4 one percent? Do you take any steps to</p> <p>5 calculate the standard of error or how did you</p> <p>6 get that number?</p> <p>7 A The Census Bureau did it.</p> <p>8 Q You provided a link in your footnote</p> <p>9 to the Census Bureau's explanation of</p> <p>10 Differential Privacy, right?</p> <p>11 A Yes.</p> <p>12 Q I'm going to share that link for just</p> <p>13 a moment here. I am going to mark and send</p> <p>14 over those three different screenshots I</p> <p>15 showed you, just for the records purpose, the</p> <p>16 full Enacted Map, the zoom-in on 62 and the</p> <p>17 zoom-in on Orleans at 23 will be three</p> <p>18 exhibits, those three different views I gave</p> <p>19 you, which I think will be Exhibits 17, 18 and</p> <p>20 19 respectively. I will mark this as Exhibit</p> <p>21 20. This is the Census Bureau's paper on</p> <p>22 Differential Privacy that I'm about to share.</p> <p>23 Are you able to see that on your screen?</p> <p>24 A Yes.</p> <p>25 Q Now, I'm going to scroll down to page</p>

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<p style="text-align: right;">Page 249</p> <p>1 6. So the first bullet in this first column 2 of this paper that the Census Bureau put out 3 says: "Data for very small demographic groups 4 and geographic areas, such as census blocks, 5 may be too noisy for a particular use and 6 should be aggregated into larger geographic 7 areas before use." Did I read that correctly? 8 A Yes. 9 Q We chat a lot about this today. But 10 a Census block is a pretty small unit of 11 measurement, right? 12 A Yes. 13 Q As we discussed earlier, there could 14 be upwards of 50 Census blocks in one 15 precinct? 16 A Yes. 17 Q And there can be tons of precincts or 18 or VTDs in any given district, right? 19 A Yes. 20 Q Are you offering an opinion that 21 looking at the district level is inconsistent 22 with the Census Bureau's guidance to aggregate 23 Census blocks into larger geographic areas 24 before use? 25 A No.</p>	<p style="text-align: right;">Page 251</p> <p>1 more likely to result in estimating. 2 Q Why do you say that? 3 A Because the number of districts that 4 are just barely over 50 percent is barely 5 significant. So a half of a percent there in 6 data will drop a whole bunch of seats under. 7 And the number of seats that are just under 8 50 percent is essentially zero. Where a half 9 a percent there would drop a whole bunch of 10 seats below 50, you need something -- you can 11 bring up my chart -- but it's something like a 12 10 percent there before you get one seat 13 moving up into to the majority Black range. 14 Q But you are basing that likelihood on 15 the numbers in the Illustrative plan, right, 16 not on how the Differential Privacy process 17 works? 18 A The whole basis of the question is to 19 compare the likely marginal of error with 20 Differential Privacy data with the number of 21 districts that can be impacted, so it has to 22 be a plan-specific analysis. 23 Q Are you aware, though, that studies 24 have concluded that is Differential Privacy is 25 more likely to underestimate the number of</p>
<p style="text-align: right;">Page 250</p> <p>1 Q So it's possible that aggregating the 2 Census blocks up to the district level reduces 3 the risk that this noise will cause a 4 statistically significant difference in 5 assessing the BVAP in a given district; is 6 that right? 7 A No. 8 MR. LEWIS: 9 Objection. 10 BY MS. KEENAN: 11 Q Why is that not right? 12 A A statistically significant 13 difference is a very different concept in what 14 they say here, which is, don't use it at all. 15 This is something we run into all the time 16 with the Census Bureau, conflict between the 17 Census Bureau advice and Department of Justice 18 advice. 19 Q I'm going to stop sharing my screen 20 with this. Are you aware of whether the 21 Differential Privacy process is more likely to 22 result of overestimating or underestimating 23 the number of majority BVAP districts in a 24 plan? 25 A Well, in this case, it's definitely</p>	<p style="text-align: right;">Page 252</p> <p>1 majorities BVAP districts in a plan? 2 A That's probably mischaracterizing 3 those studies. 4 Q I'm going to share on my screen what 5 I'll ask the court reporter to mark as Exhibit 6 18. Are you able to see this study? 7 A It's tiny, but I can see it. 8 Q I agree. I'm going to try to get it 9 to zoom in a little bit. 10 A You can get rid of the bookmarks. 11 Q Good point. How's that? Is that any 12 better? 13 A That's better. 14 Q I'm going to go to page 14 of this 15 report. 16 A Just before you do that, is this 17 published? 18 Q This is the report as I have it. 19 I'll make sure I send it over to your counsel 20 afterwards for your review. I'm just asking 21 you to tell me if I've misrepresented the 22 question I've read. And if you can't answer 23 that, that's totally fine. But I'll read you 24 the part that I'm quoting from, so you'll have 25 it. So the bottom paragraph here on page 14</p>

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<p style="text-align: right;">Page 253</p> <p>1 talks about how the paper is attempting to 2 examine how the predictions of individual race 3 and ethnicity based on the 2010 Census and DAS 4 12.2 data result in different districting 5 outcomes. Did I read that correctly? 6 A Yes. 7 Q And the sentence here says: "We find 8 that the predictions based on the DAS 12.2 9 tend to produce blocks with more White voters 10 than those based on the original Census data. 11 As a consequence, the predicted proportions of 12 Black and Hispanic registrants are much 13 smaller, especially in the blocks where they 14 form a majority group." Did I read that 15 correctly? 16 A Yes. 17 Q It says: "The precise reasons for 18 these biases is unclear." Did I read that 19 correctly? 20 A Yes. 21 Q And then this paragraph here, which 22 I'm highlighting, it says, after simulating 23 10,000 redistricting plans using DAS 12.2 24 population and a 5 percent population parity 25 tolerance, we find that the systematic</p>	<p style="text-align: right;">Page 255</p> <p>1 Q Are you aware of any studies 2 regarding the estimated percentage change as 3 it relates to the percentage of the Black 4 Voting Age Population as a result of the 5 Differential Privacy process? 6 A You just showed me one. 7 Q Are you aware of others? 8 A There have been a lot of attempts to 9 use some data on the formula that the Census 10 Bureau put out in 2010 Census data to predict 11 the likely impact on 2020 Census data, but 12 it's all -- difficult to figure out until the 13 Bureau gives more specifics. 14 Q Sure. Are you aware of any studies 15 showing that state House District level the 16 bias in percentage BVAP can average to be less 17 than .2 percent? 18 A The bias in what? 19 Q The percentage of the BVAP -- the 20 effect on the percentage of the BVAP, in other 21 words, is less than .2 percent. 22 A If I read it, I don't recall it. 23 Q When you said earlier that this 24 percentage change is likely to be greater than 25 one percent, would that be inconsistent with</p>
<p style="text-align: right;">Page 254</p> <p>1 differences and racial prediction identified 2 above results in the underestimation of the 3 number of MMD in these plans as in the 4 original court case. An MMD is defined as a 5 district in which more than 50 percent of its 6 registered voters are either Black or 7 Hispanic. Did I read that correctly? 8 A Yes. 9 Q Are you also aware of any studies 10 regarding the estimated percentage change in a 11 district's percentages of the Black Voting Age 12 Population, that results in the Differential 13 Privacy Process? 14 A Can you restate that? 15 Q Sure. I think earlier you talk about 16 how the Census Bureau may have been put out a 17 paper or a guidance -- you didn't really say 18 the source -- but about a one percent change 19 in the congressional districts. Do you recall 20 that? 21 A Yes. 22 Q And what is the one percent change 23 in? Like, what does it represent? A change 24 for what? 25 A Total population.</p>	<p style="text-align: right;">Page 256</p> <p>1 studies showing that effect on the BVAP may 2 actually be less than .2 percent or do you 3 think those two things are consistent? 4 MR. LEWIS: 5 Objection. You may answer. 6 THE WITNESS: 7 If what you're describing is the 8 average impact on the BVAP is .2 9 percent, then considering that the 10 average BVAP nationwide is what, 11 10 percent? And you get an average 12 .2 variation, then, yeah, if you get 13 up to a 50 percent BVAP district, 14 you're going to be up around a full 15 percent error margin. 16 BY MS. KEENAN: 17 Q Okay. But you haven't performed any 18 sort of analysis as to the specific margin of 19 error that the Differential Privacy Analysis 20 may introduce as it relates to this map; is 21 that right? 22 A Like I said, the data is not out from 23 the Bureau that would enable that study. What 24 we do know is that the percentage is going to 25 be at least one percent.</p>

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<p style="text-align: right;">Page 257</p> <p>1 Q Okay. I want to move on to the</p> <p>2 opinions you offer about what you call</p> <p>3 sensitivity or robustness of the districts.</p> <p>4 Do you recall that section of your report?</p> <p>5 A Sure.</p> <p>6 Q Im going to share my screen again</p> <p>7 while we're discussing it. Starting at</p> <p>8 Paragraph 85, you say: "There is also</p> <p>9 sensitivity analysis to consider. Plaintiffs'</p> <p>10 expert uses 50 percent AP Black VAP at his</p> <p>11 target for a district likely to elect the</p> <p>12 candidate preferred by Black voters without</p> <p>13 citing support for that number. Even if 50</p> <p>14 percent is a statistically estimated figure,</p> <p>15 any polarized voting analysis used to</p> <p>16 calculate that likely to elect percentage is a</p> <p>17 statistical analysis with a margin of error</p> <p>18 and a chance of mischaracterizing the data."</p> <p>19 And then in the next paragraph you say: "As a</p> <p>20 simple illustration of this concept, suppose</p> <p>21 that the true effective percentage is 53</p> <p>22 percent AP Black VAP for all the districts in</p> <p>23 the state." Have a read those correctly?</p> <p>24 A Yes.</p> <p>25 Q And then you go on to compare whether</p>	<p style="text-align: right;">Page 259</p> <p>1 you try to consider when you're drawing maps?</p> <p>2 A Yes.</p> <p>3 Q In what way?</p> <p>4 A If we're trying to empower a region</p> <p>5 that has historically been underrepresented,</p> <p>6 we want to be sure that we get the right share</p> <p>7 of the voters to actually empower them.</p> <p>8 Q You think that's important to</p> <p>9 consider when you're drawing a map is how to</p> <p>10 empower voters and make sure their districts</p> <p>11 are effective?</p> <p>12 A You know, that is very roughly</p> <p>13 speaking the definition of Section 2 of the</p> <p>14 Voters Rights Act. It's definitely important.</p> <p>15 Q How do you try to account for</p> <p>16 sensitivity or robustness when you're drawing</p> <p>17 maps?</p> <p>18 A Usually -- it's a combination of</p> <p>19 data, community factors and community input.</p> <p>20 Q And what do the combination of those</p> <p>21 factors try to tell you?</p> <p>22 A How to bring representation to a</p> <p>23 history unrepresented area.</p> <p>24 Q Do they generate a percentage, like</p> <p>25 the 53 or the 45 percent that you're listing</p>
<p style="text-align: right;">Page 258</p> <p>1 the Enacted or Illustrative Maps would elect</p> <p>2 more Black preferred candidates, assuming the</p> <p>3 effectiveness percentage is 53 percent AP</p> <p>4 BVAP. Is that right?</p> <p>5 A Yes.</p> <p>6 Q That 53 percent number that you use</p> <p>7 to assess the sensitivity or robustness of the</p> <p>8 districts, that's hypothetical, right?</p> <p>9 A Yes.</p> <p>10 Q And so is the 45 percent number that</p> <p>11 you later use in Paragraph 89?</p> <p>12 A Yes.</p> <p>13 Q Would you agree that in real life,</p> <p>14 there's not one effectiveness number, of</p> <p>15 course, that applies to every district?</p> <p>16 A In all likelihood, it varies by</p> <p>17 region of the state, yes.</p> <p>18 Q It's likely depending on the district</p> <p>19 or the region or the people that live there,</p> <p>20 right?</p> <p>21 A Yes. Generally -- as a general</p> <p>22 summary of it. It's a very complicated</p> <p>23 analysis.</p> <p>24 Q Sure. When you talk about the</p> <p>25 sensitivity analysis, is that something that</p>	<p style="text-align: right;">Page 260</p> <p>1 here, or what's the format of the way that you</p> <p>2 receive that data?</p> <p>3 A Sometimes if we're in a highly, like,</p> <p>4 sensitive legalistic formula or situation, we</p> <p>5 can, you know -- the lawyers will want to know</p> <p>6 the percentages. We do report the</p> <p>7 percentages, but it also is important to look</p> <p>8 at the makeup of the area, the age of</p> <p>9 residents, things like that.</p> <p>10 Q Okay. I take it, based on your other</p> <p>11 answers, that you're not familiar with Lisa</p> <p>12 Handley's report in this case?</p> <p>13 A I know she wrote one. I may have</p> <p>14 skimmed through it long ago. I don't recall.</p> <p>15 I worked with her all of the time. I've seen</p> <p>16 lots of reports. I don't recall if I saw this</p> <p>17 one.</p> <p>18 Q Sure. And we already also talked</p> <p>19 about how Mr. Cooper, in this rebuttal report,</p> <p>20 explained that you received feedback from</p> <p>21 plaintiffs based on communications they had</p> <p>22 had with other experts; is that right?</p> <p>23 A You've read that line out of his</p> <p>24 report, yes.</p> <p>25 Q Do you know whether Mr. Cooper</p>

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<p style="text-align: right;">Page 261</p> <p>1 received feedback about the effectiveness of</p> <p>2 his districts from Lisa Handley?</p> <p>3 A I believe he said he strengthened the</p> <p>4 Black percentages of this district based on</p> <p>5 direction from counsel if -- I don't recall</p> <p>6 the word-for-word quote, but they were words</p> <p>7 to that effect.</p> <p>8 Q Sure. But you don't know whether he</p> <p>9 received information from counsel about the</p> <p>10 type of effectiveness of the districts that</p> <p>11 Lisa Handley analyzed, do you?</p> <p>12 A All I know is what Mr. Cooper wrote</p> <p>13 in his report.</p> <p>14 Q So you don't know whether</p> <p>15 effectiveness or sensitivity or robustness</p> <p>16 analysis that you're discussing here is part</p> <p>17 of what factored into his line drawing?</p> <p>18 A All he reported is all I know, which</p> <p>19 is that he increased the racial performance of</p> <p>20 his districts based on direction from counsel.</p> <p>21 Q I'm going to go page 30 of his</p> <p>22 rebuttal -- I'm sorry. His -- I think it's</p> <p>23 his initial report. I'm going to stop sharing</p> <p>24 my screen. I haven't found it just yet. I'm</p> <p>25 going back to Exhibit 8 now. I lost it on my</p>	<p style="text-align: right;">Page 263</p> <p>1 yes.</p> <p>2 Q You did just testify a few moments</p> <p>3 ago that trying to make a district effective</p> <p>4 is literally the point of the Gingles</p> <p>5 framework, in your understanding, right?</p> <p>6 A No.</p> <p>7 MR. LEWIS:</p> <p>8 Objection; misstates the</p> <p>9 testimony. You may answer.</p> <p>10 MS. KEENAN:</p> <p>11 We can rely on the testimony</p> <p>12 that was given. I don't need to ask</p> <p>13 it again. I'll withdraw the</p> <p>14 question.</p> <p>15 I think I'm ready to go off the</p> <p>16 record for, let's say, ten minutes,</p> <p>17 just to be safe, and hopefully just</p> <p>18 clean up with any the final questions</p> <p>19 here.</p> <p>20 MR. LEWIS:</p> <p>21 Okay.</p> <p>22 MS. KEENAN:</p> <p>23 Thank you.</p> <p>24 (BRIEF RECESS FROM 5:24 TO 5:30 P.M. EST)</p> <p>25 MS. KEENAN:</p>
<p style="text-align: right;">Page 262</p> <p>1 screen. I'm going to share it with you.</p> <p>2 Paragraph 30 of Exhibit 8, which is</p> <p>3 Mr. Cooper's rebuttal report. We've read his</p> <p>4 first line, "As stated in my July 2023 report,</p> <p>5 the changes between my 2022 Illustrative Plan</p> <p>6 and the now current Illustrative Plan were</p> <p>7 primarily made to better respect communities</p> <p>8 of interest." Second sentence says: "I also</p> <p>9 made changes to improve the performance of the</p> <p>10 districts for Black preferred candidates based</p> <p>11 on the feedback counsel received from</p> <p>12 Dr. Handley." Did I read that right?</p> <p>13 A Yes.</p> <p>14 Q Are you able to rule out that</p> <p>15 performance or effectiveness analysis as a</p> <p>16 basis for where Mr. Cooper drew certain lines</p> <p>17 in his report?</p> <p>18 A He says that he changed the Black</p> <p>19 percentages to increase the numbers, so I'll</p> <p>20 take him at his word.</p> <p>21 Q If a line is drawn to make a district</p> <p>22 effective or to improve its performance, is it</p> <p>23 your conclusion that that line is drawn on the</p> <p>24 basis of race?</p> <p>25 A A highly polarized voting situation,</p>	<p style="text-align: right;">Page 264</p> <p>1 So I have a handful of</p> <p>2 additional questions to run through.</p> <p>3 I did want to note for the record</p> <p>4 that the paper we've marked as an</p> <p>5 exhibit regarding Differential</p> <p>6 Privacy was published in "Science</p> <p>7 Advances" in October of 2021.</p> <p>8 BY MS. KEENAN:</p> <p>9 Q I want to go back to something we</p> <p>10 talked about a little bit earlier about</p> <p>11 Mr. Cooper's use of incumbency addresses. You</p> <p>12 mentioned that you didn't think that you had</p> <p>13 seen that information; is that right?</p> <p>14 A Correct. I don't recall seeing it.</p> <p>15 Q Do you recall if you ever asked for</p> <p>16 that information?</p> <p>17 A Good, Lord. I don't think I ever</p> <p>18 did.</p> <p>19 Q So you don't think there's any</p> <p>20 outstanding asked for that incumbency</p> <p>21 information that plaintiffs' counsel didn't</p> <p>22 comply with; is that right?</p> <p>23 A I'll leave to y'all to decide. My</p> <p>24 understanding of what you need to turn over is</p> <p>25 all the data you used to compile your map and</p>

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<p style="text-align: right;">Page 265</p> <p>1 report.</p> <p>2 Q So you didn't consider the incumbent</p> <p>3 addresses as you were reviewing Mr. Cooper's</p> <p>4 maps, right?</p> <p>5 A Correct.</p> <p>6 Q I want to confirm that you aren't</p> <p>7 offering any opinions that we haven't</p> <p>8 discussed today or that aren't offered in your</p> <p>9 report. Can you confirm that for me?</p> <p>10 A Correct.</p> <p>11 Q Do your reports offer any opinion</p> <p>12 about the concept of natural packing?</p> <p>13 A I don't use that term, but I suppose</p> <p>14 some of the description included in my report</p> <p>15 could be considered related to that.</p> <p>16 Q What sorts of descriptions might be</p> <p>17 related to the concept of natural packing, as</p> <p>18 you understand it?</p> <p>19 A I wouldn't bring it up, myself, as an</p> <p>20 idea. But if asked about it, I think in</p> <p>21 natural packing is kind of historical patterns</p> <p>22 that have led to concentrations of given</p> <p>23 protected class populations, and that would</p> <p>24 relate to many things like the maps we were</p> <p>25 looking at of Baton Rouge, where some parts</p>	<p style="text-align: right;">Page 267</p> <p>1 everything. Okay, I think we're</p> <p>2 ready to close the deposition.</p> <p>3 Thanks you so much for your time</p> <p>4 today. I don't know if Mr. Lewis has</p> <p>5 any question, but that's all for</p> <p>6 plaintiffs' counsel.</p> <p>7 MR. LEWIS:</p> <p>8 No questions for us, and we will</p> <p>9 read and sign.</p> <p>10 (AT THIS TIME, 5:35 P.M., TESTIMONY WAS</p> <p>11 CONCLUDED AND THE RECORD WAS CLOSED.)</p> <p>12 * * *</p> <p>13</p> <p>14 * * *</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>
<p style="text-align: right;">Page 266</p> <p>1 are 75 percent and other parts are under</p> <p>2 25 percent.</p> <p>3 Q But just to be clear, your opinions</p> <p>4 don't offer -- like you said, you didn't offer</p> <p>5 any opinions proactively about the historical</p> <p>6 formation of black communities of Louisiana,</p> <p>7 right?</p> <p>8 A Correct.</p> <p>9 Q Or about the movement of black</p> <p>10 populations in Louisiana?</p> <p>11 A Right. I'm fascinated by demographic</p> <p>12 trends and movements in different areas, but</p> <p>13 certainly not an expert in the historical</p> <p>14 trends and movements in Louisiana.</p> <p>15 Q So it's safe to say, you might have a</p> <p>16 reaction to the phrase, "Natural packing," if</p> <p>17 asked about it, but you didn't offer natural</p> <p>18 packing conclusions in your expert opinion,</p> <p>19 right?</p> <p>20 A I certainly didn't bring them up,</p> <p>21 myself. To the degree my report is relevant</p> <p>22 to a discussion of natural packing, then it</p> <p>23 would be.</p> <p>24 MS. KEENAN:</p> <p>25 Okay. I'm double checking</p>	<p style="text-align: right;">Page 268</p> <p>1 WITNESS' CERTIFICATE</p> <p>2</p> <p>3 I, DOUGLAS M. JOHNSON, PH.D, do</p> <p>4 hereby certify that the foregoing testimony</p> <p>5 was given by me, and that the transcription of</p> <p>6 said testimony, with corrections and/or</p> <p>7 changes, if any, is true and correct as given</p> <p>8 by me on the aforementioned date.</p> <p>9</p> <p>10</p> <p>11 Dated: _____ Signed: _____</p> <p>12 DOUGLAS M. JOHNSON, PH.D</p> <p>13</p> <p>14</p> <p>15 _____ Signed with corrections as noted.</p> <p>16</p> <p>17 _____ Signed with no corrections noted.</p> <p>18</p> <p>19</p> <p>20</p> <p>21 DATE TAKEN: September 27, 2023</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>

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CERTIFICATE

I, CECILIA M. HENDERSON, Certified
Court Reporter, in and for the State of
Louisiana, as the officer before whom this
testimony was taken, do hereby certify that
DOUGLAS JOHNSON, PH.D. after having been duly
sworn by me upon authority of R.S. 37:2554,
did testify as hereinbefore set forth in the
foregoing 268 pages; that this testimony was
reported by me in the stenotype reporting
method, was prepared and transcribed by me or
under my personal direction and supervision,
and is a true and correct transcript to the
best of my ability and understanding; that the
transcript has been prepared in compliance
with transcript format guidelines required by
statute or by rules of the board, that I have
acted in compliance with the prohibition on
contractual relationships, as defined by
Louisiana Code of Civil Procedure Article 1434
and in rules and advisory opinions of the
board; that I am not related to counsel or to
the parties herein, nor am I otherwise
interested in the outcome of this matter.

Dated this 3rd day of October, 2023

CECILIA M. HENDERSON, CCR
CCR #84099
STATE OF LOUISIANA

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IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF LOUISIANA

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE,
DR. ALICE WASHINGTON, STEVEN
HARRIS, ALEXIS CALHOUN, BLACK
VOTERS MATTER CAPACITY BUILDING
INSTITUTE, and THE LOUISIANA STATE
CONFERENCE OF THE NAACP,

Plaintiffs,

v.

R. YLE ARDOIN, in his official capacity as
Secretary of State of Louisiana

Defendant.

CIVIL NO. 3:22-cv-00178

DECLARATION OF WILLIAM S. COOPER

WILLIAM S. COOPER, acting in accordance with 28 U.S.C. § 1746, Federal Rule of Civil Procedure 26(a)(2)(B), and Federal Rules of Evidence 702 and 703, does hereby declare and say:

I. INTRODUCTION

1. I serve as a demographic and redistricting expert for the Plaintiffs for the above-captioned case and submitted declarations in this lawsuit on July 22, 2022 and June 29, 2023.

2. I submit this additional expert declaration to provide analysis and expert opinion relating to the July 28, 2023 expert reports of Dr. Douglas Johnson, Dr. Allan Murray, and Mr. Sean Trende (“experts for the Defendants”).

3. As all three experts for the Defendants have noted, my initial declarations mistakenly relied on plans that were developed in legislative committees during the 2022 redistricting process rather than the final plans enacted by the Legislature and signed into law by Governor Edwards. I have updated my June 29, 2023 Declaration to accurately reflect the Enacted Plan.

4. The opinions expressed by the experts for the Defendants do not change my conclusions in the July 22, 2022 Declaration and the June 29, 2023 Declaration. There were minor differences in some of the metrics but none sufficient enough to change my assessment of the illustrative plans that I presented to the Court. However, given that there were slight changes, I have updated my prior report to reflect the Enacted Plan and attached it as my **Rebuttal Exhibit A** declaration (signed on August 11, 2023). **Rebuttal Exhibit A** analyzes the same Illustrative Legislative Plan as presented in my June 29, 2023 Declaration. The only difference is that it is now compared to the Enacted Plan.

5. In my opinion, both the Illustrative Legislative Plan presented in my July 22, 2022 Declaration (“2022 Illustrative Plan”) and the Illustrative Legislative Plan (“Illustrative Plan”) presented in my June 29, 2023 Declaration adhere to traditional redistricting principles – including

population equality, compactness, contiguity, respect for communities of interest, and the non-dilution of minority voting strength.

6. The fact that there are differences between the two illustrative plans that I have prepared underscores that there are a variety of different ways to draw legislative plans that adhere to traditional redistricting principles and protect the voting rights of the African American community in Louisiana.

7. The changes I made between the 2022 Illustrative Plan and the now-current Illustrative Plan are minor. They reflect conversations I had with the attorneys for the Plaintiffs, who in turn had requested commentary about the 2022 Illustrative Plan from the Plaintiffs and other experts for the Plaintiffs.

8. The Illustrative Plan is designed to fit into the Enacted Plan. The Illustrative House Plan contains 40 House districts as drawn in the Enacted House Plan. The Illustrative Senate Plan contains 21 Senate districts as drawn in the Enacted Senate Plan. Thus, at the outset, there are built-in biases against the Illustrative Plan that are reflected in how the additional majority-Black districts can be drawn absent a complete statewide redraw from scratch.

II. ANALYSIS OF DEFENDANTS' EXPERT REPORTS

9. The reports of the experts for the Defendants contain errors, inaccuracies, and methodological flaws. All three experts critique majority-Black districts in the Illustrative Plan and its 2022 predecessor but fail to rigorously examine districts in the Enacted Plan – a critical omission.

10. The Illustrative Plan is superior to or on par with the Enacted Plan across almost every metric used to assess the extent to which an election plan adheres to traditional redistricting

principles – compactness, communities of interest, political subdivision splits, and the non-dilution of minority voting strength.

11. In the sections below, I highlight some of the most glaring problems associated with the analyses conducted by the three experts beginning, in alphabetical order, with Dr. Johnson.

A. Expert Report of Dr. Douglas Johnson

12. I agree with ¶¶ 7-14, which describe changes between the 2022 Illustrative Plan and the Illustrative Plan.

(a) Compactness Scores – Enacted Plans vs. Illustrative Plans

13. I have prepared additional exhibits to counter Dr. Johnson’s claims in ¶¶ 15-29 that the majority Black districts in the Illustrative Plan are not compact.

14. According to all 12 compactness measures available in the Maptitude for Redistricting software, the Illustrative Senate Plan is more compact than the Enacted Senate Plan. **Rebuttal Exhibit B-3** contains information about these measures as detailed in the Maptitude software documentation.

15. **Rebuttal Exhibit B-1** presents compactness scores for the Enacted Senate Plan. **Rebuttal Exhibit B-2** presents the same information for the Illustrative Senate Plan.

16. All told, the Illustrative House Plan is slightly more compact than the Enacted House Plan. According to five compactness measures, the Illustrative House Plan is as compact as the Enacted House Plan. According to four compactness measures, the Illustrative House Plan is more compact than the Enacted House Plan. According to three compactness measures, the Illustrative House Plan is less compact than the Enacted House Plan.

17. **Rebuttal Exhibit C-1** presents compactness scores for the Enacted House Plan, as reported by Maptitude for Redistricting. **Rebuttal Exhibit C-2** presents the same information for the Illustrative House.

(b) ACS – Socio-economic Characteristics and Citizen Voting Age

18. In ¶¶ 22-25, Dr. Johnson erroneously implies that I had to use disaggregated block-level socio-economic data from the American Community Survey (“ACS”) when drawing the Illustrative Plans in order to consider socio-economic information as part of my map drawing process. This is not true. As I explain in ¶ 75 and ¶ 105 in **Rebuttal Exhibit A**, I considered and reviewed socio-economic data (in tabular and chart format) at the municipal and parish level in order to gain some perspective on the underlying communities. I prepared the socio-economic charts and tables from publicly available ACS data found on the U.S. Census Bureau website. Thus, while map drawing, I was generally aware of socio-economic information for the regions when deciding where to draw my lines.

19. In ¶ 26, Dr. Johnson claims that I did not import CVAP data into Maptitude. This is not true. Disaggregated block-level CVAP data is available in Maptitude running on my desktop computer. I referenced the source in my declaration: the Redistricting Data Hub¹. As Dr. Johnson notes in ¶ 27, I provided the block-level Redistricting Data Hub CVAP dataset to the Defendants.² I only examined CVAP by district at the summary level as I drew the plans.

(c) Black Population Change from 2000 to 2020

20. Dr. Johnson’s analysis in ¶¶ 27-28 regarding percentage changes in the Black population assumes that Black voters were not under-represented in prior plans. The Black-White

¹ <https://redistrictingdatahub.org/state/louisiana/>

² <https://redistrictingdatahub.org/dataset/louisiana-cvap-data-disaggregated-to-the-2020-block-level-2021/>

representation gap only narrows if the number of majority-Black districts outpaces Black population growth for a period of time. The gap has barely nudged this century.

21. Dr. Johnson’s claim that ¶ 58 in my declaration is false is incorrect. In ¶ 58, I state that since the 2000 Census redistricting cycle (*i.e.*, the 2001 Plan), just two House districts have been added – from 27 to 29 – or a total of two House districts over the past 22 years. As I explain in my declaration, during this two-decade period, the Black population grew in urban areas and declined in rural areas, making it possible to draw majority-Black districts in and around several of the metropolitan statistical areas (“MSAs”) in Louisiana.

(d) Municipal Split Analysis

22. In ¶¶ 30-32, Dr. Johnson claims that my analysis of municipal splits by plan is based on all Census Designated Places in Louisiana (304 municipalities and 184 unincorporated communities). This is not true. The municipal split counts in the Maptitude-generated reports (Exhibits H-5, I-5, J-5 and N-5 attached to **Rebuttal Exhibit A**) are based solely on 304 municipalities (cities, towns, and villages) as identified by the U.S. Census Bureau. Maptitude allows you to remove 184 unincorporated places by creating a selection set, which I did to make sure that I only included split counts for municipalities as required by the Legislature’s Joint Rule No. 21 “Redistricting criteria” (“JR 21”).³

(e) Louisiana Regional Split Analysis

23. Contrary to Dr. Johnson’s claim in ¶¶ 36-37, I was aware of cultural regions, MSAs, and Planning Districts as I developed the Illustrative Plans. Of course, there is no way to avoid multiple regional splits and comply with one-person, one-vote and the Voting Rights Act.

³ See Joint Rule No. 21, <https://www.legis.la.gov/Legis/Law.aspx?d=1238755>.

24. Nonetheless, the Illustrative Plan contains fewer splits of Planning Districts (**Rebuttal Exhibits D-1 and D-2**) than the Enacted Plan (**Rebuttal Exhibits D-3 and D-4**). Likewise, the Illustrative Plan contains fewer splits of MSAs (**Rebuttal Exhibits E-1 and E-2**) than the Enacted Plan (**Rebuttal Exhibits E-3 and E-4**).

(f) Enacted and Illustrative House District 54

25. In ¶ 37, Dr. Johnson critiques the manner in which HD 54 was drawn. HD 54 is the same in both the Enacted Plan and in the Illustrative Plan. Where possible, I used a least change method when drawing the Illustrative Plan in order to preserve the core of districts and to minimize disruption to incumbents.

26. Even assuming I had changed the district, Dr. Johnson fails to account for an important geographic feature of the district. HD 54 includes all of Lafourche Parish and the Grand Isle portion of Jefferson Parish. This makes perfect sense because the only way to get to Grand Isle from Jefferson Parish is by land through Lafourche Parish.

27. Dr. Johnson's failure to show water features on his maps of Louisiana is a major oversight. Figure 7 on page 14 of his report would look entirely different with the Gulf Coast and marshland of Lafourche Parish. The "finger", as Dr. Johnson characterizes it, is Grand Isle (a beautiful barrier island – not a finger).

(g) Not the Actual Enacted Maps

28. With respect to ¶¶ 47-67 in Dr. Johnson's report, I have explained *supra* that by mistake I did not use the final Enacted Plan as a comparator. This mistake has been corrected in **Rebuttal Exhibit A**. The committee maps I analyzed in my previous declarations are substantially similar to the Enacted Plan.

(h) Block-level Maps and Analysis

29. In ¶¶ 68-77, Dr. Johnson implies that I made certain line drawing decisions based on race. However, as discussed in my initial report, I drew the maps based on traditional redistricting criteria and at the VTD level. While I was aware of race, given that the purpose of the *Gingles I* analysis is to see if additional compact majority minority districts can be drawn, I did not shade or color-code census blocks by race percentages, nor did I know the exact racial percentage of any VTD while I was drawing the map. The color-coded block level maps as depicted in Figures 16 to 22 of Dr. Johnson's report are foreign to me. Those maps completely misrepresent my VTD-level approach to plan drawing. (The same holds true for the block-level maps prepared by Dr. Murray and Mr. Trende. All three experts misunderstand how I draw legislative voting plans.)

30. As stated in my July 2023 report, the changes between my 2022 Illustrative Plan and the now-current Illustrative Plan were primarily made to better respect communities of interest. I also made changes to improve the performance of the districts for black preferred candidates based on the feedback counsel received from Dr. Handley.

31. I incorporated traditional redistricting principles throughout the Illustrative Plan. As revealed in Figures 14 and 25 of **Rebuttal Exhibit A**, the majority-Black legislative districts (14 in the Illustrative Senate Plan and 35 in the Illustrative House Plan) are, on balance, more compact than those in the Enacted Senate Plan (11) and Enacted House Plan (29).

32. For example, in the Shreveport area, new majority-Black Illustrative SD 38 (Reock .37 and Polsby-Popper .17) scores slightly lower than majority-White Enacted SD 38 (Reock .39 and Polsby-Popper .23) but within the norm, and about the same as majority-Black Enacted SD 39

(Reock .31 and Polsby-Popper .19). About two-thirds of the population in Illustrative SD 38 comes from Enacted SDs 38 and 39.

33. Also, in the Shreveport area, new majority-Black Illustrative HD 1 (Reock .36 and Polsby-Popper .26) is clearly within the norm and scores higher than majority-White Enacted HD 1 (Reock .26 and Polsby-Popper .21) but lower than majority-White Enacted HD 4 (Reock .45 and Polsby-Popper .28). Nearly three-quarters of the population in Illustrative HD 1 comes from majority-White Enacted HDs 1 and 4.

34. This same pattern of on-par or superior compactness scores for the new majority-Black Illustrative districts vis-a-vis their Enacted Plan counterparts is for the most part replicated throughout the Illustrative Plan.

(i) The Number of Additional Majority-Black Districts – HD 23 and HD 62

35. In ¶¶ 78-81, Dr. Johnson makes additional false claims that I overcounted the number of additional majority-Black districts in the Illustrative Plan. In fact, the Illustrative Plan contains six additional majority-Black House districts and three additional majority-Black Senate districts. This can easily be determined by doing a manual count comparing the district-level percentages in exhibits attached to **Rebuttal Exhibit A** (H-1, I-1, J-1 and N-1).

36. Compared to the Enacted Plan, some district numbers and geographic locations do change under the Illustrative Plan. For example, Illustrative HD 23 would be a new majority-Black House district in northwest Louisiana. In the Enacted House Plan, HD 23 is eliminated as a majority-Black House district in northwest Louisiana and shifted to New Orleans. Majority-Black Enacted HD 62 in East Feliciana Parish and part of East Baton Rouge becomes a majority-White district under the Illustrative House Plan. It is replaced with two new majority-Black districts in East Baton Rouge Parish – Illustrative HD 65 and Illustrative HD 68.

B. Expert Report of Dr. Allan Murray

(a) Split Counts

37. In ¶ 8, Dr. Murray fails to make a distinction between “split parishes” and “parish splits.” “Split parishes” are the total number of parishes that are split. Those parishes may be split one time, two times, etc. The sum total for split parishes plus parishes not split, as shown in the Maptitude reports which I have included as exhibits, always adds up to the total number of parishes in Louisiana (*i.e.*, 64). This is not the case for parish splits, which represent unique parish/district combinations. Parishes can be split into pieces of districts in any number of ways. There is no “nuanced accounting” as described by Dr. Murray in ¶ 8. As shown in Exhibit I-4 attached to **Rebuttal Exhibit A**, there are 116 populated parish splits in the Enacted House Plan versus 113 in the Illustrative House Plan (Exhibit N-4).

(b) Compactness Measures

38. With respect to ¶¶ 14-15, Dr. Murray is stating the obvious. The Reock score is an area-based measure and the Polsby-Popper measure is perimeter-based. One would not necessarily expect a high correlation between the two measures. This is why more than one compactness measure should be reported.

39. In ¶¶ 21-22, Dr. Murray repeats the same obvious points he made with respect to correlation between the Reock and Polsby-Popper scores in reference to the House Plans.

(c) Municipal Splits

40. Like Dr. Johnson, Dr. Murray claims in ¶ 17 that I reported splits for all 488 Census Designated Places in the state. This is not true. I report splits only for the 304 municipalities – excluding the 184 unincorporated communities.

(d) Same-race VAP-majority Districts

41. Dr. Murray's claims in ¶ 18 are incorrect. He misunderstands the point of Figure 16 in my declaration. The percentages in Figure 16 do not represent a mean average of the Black VAP percentages for the majority-Black districts in the Enacted Senate Plan (11) and Illustrative Senate Plan (14). Nor do the percentages in Figure 16 represent a mean average of the NH White VAP percentages for the majority-White districts in the Enacted Senate Plan (28) and Illustrative Senate Plan (25).

42. Figure 16 in **Rebuttal Exhibit A** is correct. For the Enacted Senate Plan, it reveals the percentage of the total statewide Black VAP residing in majority-Black Senate districts (53.6%) vs. the percentage of the total statewide NH White VAP residing in majority-White Senate districts (84.4%). The Black-White gap narrows under the Illustrative Senate Plan.

43. In ¶ 24, Dr. Murray repeats the same mistake for House districts that he made for Senate districts.

44. Figure 27 in **Rebuttal Exhibit A** is correct. It reveals the percentage of the total statewide Black VAP residing in majority-Black House districts (55.6%) vs. the percentage of the total statewide NH White VAP residing in majority-White Senate districts (83.4%). The Black-White gap narrows under the Illustrative House Plan.

(e) Neighborhood Splits

45. In ¶ 28, Dr. Murray claims that the Enacted Senate Plan contains 375 block group splits. This is an undercount. Statewide, there are a total of 433 populated block group splits in the Enacted Senate Plan (**Rebuttal Exhibit F-1**), as compared to 337 in the Illustrative Senate Plan (**Rebuttal Exhibit F-2**).

46. In ¶ 29, Dr. Murray also undercounts the number of split block groups in the Enacted House Plan. Statewide, there are a total of 490 populated block group splits in the Enacted House Plan (**Rebuttal Exhibit F-3**), as compared to 507 in the Illustrative House Plan (**Rebuttal Exhibit F-4**).

47. In response to ¶¶ 27-30 in Dr. Murray’s report, I have prepared a set of map exhibits which demonstrate that the additional majority-Black districts in the Illustrative Plan generally keep together low- and moderate-income neighborhoods – independent of race.

48. **Rebuttal Exhibits G-1 to G-3** (Illustrative Senate Plan) and **Rebuttal Exhibits H-1 to H-6** (Illustrative House Plan) zoom in on the additional majority-Black districts. For perspective, black lines show boundaries for the Enacted Plan. Diagonal shading identifies block groups⁴ that qualify for Fiscal Year 2023 USDA subsidies provided to local governments, school districts, and non-profits under the Summer Meals Program and Child and Adult Care Food Programs.⁵ The shaded block groups qualify as eligible for subsidies as individual 50%+ block groups or block groups within or adjacent to census tracts that contain 50% or more of the under-19 population living below 185% of the poverty line.⁶

⁴ The U.S. Census Bureau defines “Block Groups” as “statistical divisions of census tracts and are generally defined to contain between 600 and 3,000 people.”
See https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_4.

⁵ The specific factors of eligibility in this program can be found at <https://www.fns.usda.gov/area-eligibility>.

⁶ These maps are part of a nationwide mapping project that I conduct on an annual basis for the Food Research and Action Center. A statewide block group map for Louisiana in a color-coded format is accessible via: <https://frac.org/research/resource-library/summer-food-mapper>

(e) One-Person One-Vote Deviation Calculation

49. In ¶ 30, Dr. Murray fails Redistricting 101. As every plan drawer knows, an overall deviation percentage is calculated by summing the absolute value of the district with the largest negative deviation with the percentage deviation of the district with the highest positive deviation. An overall deviation that is under 10% would comply with one-person, one-vote requirements for the Louisiana Legislative Plan. The overall deviation I report for the Illustrative Senate Plan in Exhibit J-1 is correct – 9.78%.

C. Expert Report of Mr. Sean Trende

50. Mr. Trende's compactness analysis is unorthodox. In a Section 2 redistricting lawsuit, compactness is not measured by where part of a minority population is located in a district. Rather, it is measured based on the distribution of the entire population of the district and the district shape.

51. I have testified in over 55 Section 2 redistricting cases. To my knowledge, the moment of inertia compactness measure has never been reported by the *Gingles I* experts in any of the 55. Generally, two compactness measures are reported by *Gingles I* experts – Reock and Polsby-Popper. As I noted *supra*, 12 compactness measures can now be calculated using Maptitude for Redistricting software – the premier redistricting software used by most state legislatures and consultants. The moment of inertia measure is not included in the Maptitude software.

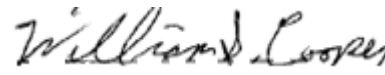
52. Mr. Trende's analysis is one-sided and incomplete. He fails to conduct a similar analysis for both the White population and the Black population in all of the Enacted districts that overlay onto the additional Illustrative majority-Black districts. This would be a monumental project, perhaps worthy of an extensive analysis in a peer-reviewed academic journal if carried to its logical endpoint – *i.e.*, a statewide two-sided analysis of all districts under the Illustrative and

Enacted Plans. Because of this gaping analytic hole, Mr. Trende's report is topological gobbledygook.

###

53. I reserve the right to continue to supplement my reports in light of additional facts, testimony, and/or materials that may come to light during the pendency of the above-captioned case.

Executed on: August 11, 2023

A handwritten signature in cursive script, reading "William S. Cooper", written in black ink. The signature is positioned above a horizontal line.

WILLIAM S COOPER

STATE OF NORTH CAROLINA
WAKE COUNTY

IN THE GENERAL COURT OF JUSTICE
SUPERIOR COURT DIVISION
18 CVS 014001

COMMON CAUSE, *et al.*
Plaintiffs,

V.

JUDGMENT

Representative DAVID R. LEWIS,
in his official capacity as Senior
Chairman of the House Select
Committee on Redistricting, *et al.*,
Defendants.

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The People of North Carolina have delegated, through the State’s Constitution, the drawing of the State’s legislative districts to the General Assembly. The delegation of this task, however, is not so unconstrained that legislative discretion is unfettered. Rather, the power entrusted by the People to the General Assembly to draw districts is constrained by other constitutional provisions that the People have also ordained. Some of these constitutional constraints are explicit—for example, the Whole County Provision of the Constitution limits a mapmaker’s discretion to traverse county boundaries. But other constitutional constraints that limit the legislative process of map drawing are not explicit or limited in applicability only to map drawing—some constraints apply to all acts of the General Assembly, and indeed all acts of government. These principles include the obligation that our government provide all people with equal protection under law, that our government not restrict all peoples’ rights of association and political expression, and that our government allow for free elections. Plaintiffs in this case challenge the legislative districts enacted by the General Assembly in 2017 and assert that the General Assembly has exceeded the map drawing discretion afforded to it by the People by creating maps that impermissibly infringe upon the equal protection, speech, association, and free election rights of citizens.

The People of North Carolina have also entrusted, through the State’s Constitution, the task of reviewing acts of other branches of government to the judicial branch. While it is solely the province of the General Assembly to make law reflecting the policy choices of the People, it is the province—and indeed the duty—of the courts of our State through judicial review to ensure that enacted law comports with the State’s Constitution. The Court cannot indiscriminately wield this power because the Court is also appropriately constrained by long-standing principles of law. Significantly, the Court must presume the constitutionality of acts of the General Assembly and must declare acts unconstitutional

only when such a conclusion is so clear that no reasonable doubt can arise or the statute cannot be upheld on any ground.¹

The voters of this state, since 2011, have been subjected to a dizzying succession of litigation over North Carolina’s legislative and Congressional districts in state and federal courts. Today marks the third time this trial court has entered judgment. Two times, the North Carolina Supreme Court has spoken. Eight times, the United States Supreme Court has ruled. Yet, as we near the end of the decade, and with another decennial census and round of redistricting legislation ahead, the litigation rages on with little clarity or consensus. The conclusions of this Court today reflect the unanimous and best efforts of the undersigned trial judges—each hailing from different geographic regions and each with differing ideological and political outlooks—to apply core constitutional principles to this complex and divisive topic. We are aided by advances in data analytics that illuminate the evidence; we are aided by learned experts who inform our analysis; and, we are aided by skilled lawyers who have masterfully advanced the positions of their clients. But, at the end, we are guided, and must be guided, by what we conclude the North Carolina Constitution requires.

The issue before the Court is distilled to simply this: whether the constitutional rights of North Carolina citizens are infringed when the General Assembly, for the purpose of retaining power, draws district maps with a predominant intent to favor voters aligned with one political party at the expense of other voters, and in fact achieves results that manifest this intent and cannot be explained by other non-partisan considerations. In this

¹ “It is well settled in this State that the courts have the power, and it is their duty in proper cases, to declare an act of the General Assembly unconstitutional—but it must be plainly and clearly the case. If there is any reasonable doubt, it will be resolved in favor of the lawful exercise of their powers by the representatives of the people.” *City of Asheville v. State*, 369 N.C. 80, 87-88, 794 S.E.2d 759, 766 (2016) (quoting *Glenn v. Bd. of Educ.*, 210 N.C. 525, 529-30, 187 S.E. 781, 784 (1936)); *State ex rel. Martin v. Preston*, 325 N.C. 438, 449, 385 S.E.2d 473, 478 (1989).

case, as is set out in detail below, the Court finds as fact that Plaintiffs have met their burden of proof on several critical points. Plaintiffs have established that:

- the General Assembly, in enacting the 2017 legislative maps, had a partisan intent to create legislative districts that perpetuated a Republican-controlled General Assembly;
- the General Assembly deployed this intent with surgical precision to carefully craft maps that grouped many voters into districts predominantly based upon partisan criteria by packing and cracking Democratic voters to dilute their collective voting strength, thereby creating partisan gerrymandered legislative maps;
- the 2017 legislative maps throughout the state and on a district-by-district level, when compared on a district-by-district level to virtually all other possible maps that could be drawn with neutral, non-partisan criteria, are, in many instances, “extreme outliers” on a partisan scale to the advantage of the Republican party;
- partisan intent predominated over all other redistricting criteria resulting in extreme partisan gerrymandered legislative maps; and,
- the effect of these carefully crafted partisan maps is that, in all but the most unusual election scenarios, the Republican party will control a majority of both chambers of the General Assembly.

In other words, the Court finds that in many election environments, it is the carefully crafted maps, and not the will of the voters, that dictate the election outcomes in a significant number of legislative districts and, ultimately, the majority control of the General Assembly. Faced with these facts, as proven by the evidence, the Court must now say whether this conduct violates the constitutional guarantees afforded to all citizens—

Democrats, Republicans, and others—of equal protection, the right to associate, to speak freely through voting, and to participate in free elections.

Recently, the United States Supreme Court, in *Rucho v. Common Cause*, 139 S. Ct. 2484 (2019), held that even where enacted maps – *i.e.*, North Carolina’s 2016 Congressional Map – were “blatant examples of partisanship driving districting decisions,” challenges of partisan gerrymandering were “beyond the reach of the federal courts” because the federal Constitution provides no “constitutional directive or legal standard” to guide the courts. *Id.* at 2507-08. However, the Supreme Court added that “our conclusion does not condone excessive partisan gerrymandering” and does not “condemn complaints about redistricting to echo into a void.” *Id.* at 2507. Rather, the Supreme Court observed that provisions of “state constitutions can provide standards and guidance for state courts to apply.” *Id.* The case before this Court asserts only North Carolina constitutional challenges to the enacted legislative maps. Hence, this Court considers whether the North Carolina Constitution provides the “standards and guidance” necessary to address extreme partisan gerrymandering.

Of particular significance to this Court is Article I, § 10 of the North Carolina Constitution. This provision, originally enacted in 1776 and contained in the “Declaration of Rights” of our Constitution, simply states that “[a]ll elections shall be free.” The North Carolina Supreme Court has long and consistently held that “our government is founded on the will of the people,” that “their will is expressed by the ballot,” *People ex rel. Van Bokkelen v. Canady*, 73 N.C. 198, 220 (1875), and “the object of all elections is to ascertain, fairly and truthfully the will of the people,” *Hill v. Skinner*, 169 N.C. 405, 415, 86 S.E. 351, 356 (1915) (quotation omitted). The Court has also held that it is a “compelling interest” of the state “in having fair, honest elections.” *State v. Petersilie*, 334 N.C. 169, 184, 432 S.E.2d

832, 840 (1993). This Court concludes, for these and other reasons more fully set out below, that the Free Elections Clause of the North Carolina Constitution guarantees that all elections must be conducted freely and honestly to ascertain, fairly and truthfully, the will of the People and that this is a fundamental right of North Carolina citizens, a compelling governmental interest, and a cornerstone of our democratic form of government.

Our understanding of the Free Elections Clause shapes the application of the Equal Protection Clause, N.C. Const. art. I, § 19, the Freedom of Speech Clause, *id.* at art. I, § 12, and the Freedom of Assembly Clause, *id.* at art. I, § 14, to instances of extreme partisan gerrymandering. In the context of the constitutional guarantee that elections must be conducted freely and honestly to ascertain, fairly and truthfully, the will of the People, these clauses provide significant constraints against governmental conduct that disfavors certain groups of voters or creates barriers to the free ascertainment and expression of the will of the People.

Six years ago, this three-judge panel observed, perhaps presciently, the competing principles that are at the heart of the case before it today: “Political losses and partisan disadvantage are not the proper subject for judicial review, and those whose power or influence is stripped away by shifting political winds cannot seek a remedy from courts of law, but they must find relief from courts of public opinion in future elections.” *Dickson v. Rucho*, No. 11 CVS 16896 (N.C. Super Ct. July 8, 2013). This, the Court believes, is as true today as it was then. It is not the province of the Court to pick political winners or losers. It is, however, most certainly the province of the Court to ensure that “future elections” in the “courts of public opinion” are ones that freely and truthfully express the will of the People. All elections shall be free—without that guarantee, there is no remedy or relief at all.

This Court is acutely aware that the process employed by the General Assembly in crafting the 2017 Enacted House and Senate maps is a process that has been used for decades—albeit in less precise and granular detail—by Democrats and Republicans alike. However, long standing, and even widespread, historical practices do not immunize governmental action from constitutional scrutiny. *See, e.g., Citizens United v. FEC*, 558 U.S. 310, 365, 130 S. Ct. 876, 913 (2010); *Reynolds v. Sims*, 377 U.S. 533, 582, 84 S. Ct. 1362, 1392 (1964) (holding that malapportionment of state legislative districts violates the Equal Protection Clause, notwithstanding that malapportionment was widespread in the Nineteenth and early Twentieth Centuries).

With this as our guide, this Court, in exercising its duty of reviewing acts of other branches of government to ensure that those governmental acts comport with the rights of North Carolina citizens guaranteed by the North Carolina Constitution, concludes that the 2017 Enacted House and Senate Maps are significantly tainted in that they unconstitutionally deprive every citizen of the right to elections for members of the General Assembly conducted freely and honestly to ascertain, fairly and truthfully, the will of the People. The Court bases this on the inescapable conclusion that the 2017 Enacted Maps, as drawn, do not permit voters to freely choose their representative, but rather representatives are choosing voters based upon sophisticated partisan sorting. It is not the free will of the People that is fairly ascertained through extreme partisan gerrymandering. Rather, it is the carefully crafted will of the map drawer that predominates. This Court further concludes that the 2017 Enacted Maps are tainted by an unconstitutional deprivation of all citizens' rights to equal protection of law, freedom of speech, and freedom of assembly. These conclusions are more fully set out in the following Findings of Fact and Conclusions of Law.

FINDINGS OF FACT

A. Republicans Drew the 2017 Plans to Maximize Their Political Power

1. Republican Mapmakers Drew the 2011 Plans

1. In the 2010 elections, as part of a national Republican effort to flip state legislative chambers in order to gain control of redistricting after the 2010 Census, Republicans won majorities in the North Carolina House of Representatives and the North Carolina Senate for the first time since 1870. PX587 ¶ 5; Tr. 867.

2. With their newfound control of both chambers of the General Assembly, Republican legislative leaders set out to redraw the boundaries of the State's legislative districts. In North Carolina, legislative redistricting is performed exclusively by the General Assembly. The Governor cannot veto redistricting bills. N.C. Const. art. II, § 22(5)(b),(c).

3. Legislative Defendant Representative David Lewis and Senator Robert Rucho oversaw the drawing of the 2011 state House and state Senate plans (the "2011 Plans"). PX587 ¶ 8 (Leg. Defs.' Responses to Requests for Admission); Tr. 95:17-21 (Sen. Blue). They hired Dr. Thomas Hofeller to draw the plans. *Id.* ¶ 7; Tr. 95:8-9. Dr. Hofeller and his team drew the plans at the North Carolina Republican Party's headquarters in Raleigh using mapmaking software licensed by the North Carolina Republican Party. PX587 ¶¶ 10-11.

4. Legislative Defendants did not make Dr. Hofeller available to Democratic members of the General Assembly during the 2011 redistricting process, nor did Dr. Hofeller communicate with any Democratic members in developing the 2011 Plans. PX587 ¶¶ 12-13. No Democratic member of the General Assembly saw any part of any draft of the 2011 Plans before they were publicly released. *Id.* ¶ 14.

5. Legislative Defendants have stated in court filings that the 2011 Plans were “designed to ensure Republican majorities in the House and Senate.” PX575 at 55 (Defs.-Appellees’ Br. on Remand, *Dickson v. Rucho*, No. 201PA12-3, 2015 WL 4456364 (N.C. July 13, 2015)); *see id.* at 16 (“Political considerations played a significant role in the enacted [2011] plans.”). Legislative Defendants asserted that they were “perfectly free” to engage in constitutional partisan gerrymandering, and that they did so in constructing the 2011 Plans. PX574 at 60 (Defs.-Appellees’ Br., *Dickson v. Rucho*, No. 201PA12-2, 2013 WL 6710857 (N.C. Dec. 9, 2013)).

6. To “ensure Republican majorities in the House and Senate,” PX575 at 55, Legislative Defendants and Dr. Hofeller used prior election results to construct the district boundaries to advantage Republicans. PX587 ¶¶ 6, 17. “[T]he recommendation of Tom Hofeller” was to “create a master database that would contain all [statewide] NC elections from the past decade . . . , each processed into a form that matches up with the 2010 VTD geography.” PX769 at 3 (Jan. 14, 2011 memorandum to Senator Rucho). Legislative Defendants obtained Census block-level election results from “all statewide election contests for each general election [from] 2004-2010.” PX760.

7. When reviewing the draft plans, all members of the General Assembly had access to a “Stat Pack” containing data on how the districts would perform using the results of prior statewide elections. Tr. 98:4-99:9 (Sen. Blue). Specifically, the Stat Pack showed the partisan vote share for each drafted district for each specific prior election. *Id.* Members of the General Assembly viewed the Stat Pack as containing “pretty reliable predictors of how [draft] districts would perform in the future based on how they performed in the past.” Tr. 99:6-9 (Sen. Blue).

8. In July 2011, the General Assembly enacted the 2011 Plans. N.C. Sess. Laws 2011-404 (House), 2011-402 (Senate). No Democrat voted for either plan, and only one Republican voted against them. PX587 ¶¶ 23-24.

9. In the 2012 elections, the parties' vote shares for the House were nearly evenly split across the state, with Democrats receiving 48.4% of the two-party statewide vote. Joint Stipulation of Facts ("JSF") ¶ 41. But Democrats won only 43 of 120 seats (36%). *Id.* ¶ 42. Republicans thus won a veto-proof majority in the state House—64% of the seats (77 of 120)—despite winning just a bare majority of the statewide vote. In the Senate, Democrats won nearly half of the statewide vote (48.8%) but won only 17 of 50 seats (34%). *Id.* ¶¶ 44-45.

10. In 2014, Republican candidates for the House won 54.4% of the statewide vote, and again won a super-majority of seats (74 of 120, or 61.6%). JSF ¶ 66. In the 2014 Senate elections, Republicans won 54.3% of statewide vote and 68% of the seats (34 of 50). *Id.* ¶ 66.

11. In 2016, Republicans again won 74 of 120 House seats, or 61.6%, this time with 52.6% of the statewide vote. *Id.* ¶ 66. In the 2016 Senate elections, Republicans won 55.9% of the statewide vote and 70% of the seats (35 of 50). *Id.* ¶ 66.

2. The *Covington* Court Struck Down Certain 2011 Districts as Unconstitutional Racial Gerrymanders

12. On May 19, 2015, a group of individual plaintiffs initiated a lawsuit—*Covington v. North Carolina*, No. 1:15-CV-00399 (M.D.N.C.)—against the State Board of Elections, Speaker Timothy Moore, President Pro Tempore Philip Berger, Chair of the Senate Redistricting Committee, Robert Rucho, and Chair of the House Redistricting Committee, David Lewis challenging 28 total House and Senate districts under the 2011

Plans as unconstitutional racial gerrymanders. This case was referenced at trial, the related briefs, and in these findings as the “*Covington* case” or “*Covington* litigation.”

13. On August 11, 2016, the federal district court ruled for the plaintiffs as to all of the challenged districts. *Covington v. North Carolina*, 316 F.R.D. 117 (M.D.N.C. 2016). The *Covington* court found that racial considerations rather than political considerations “played a primary role” with respect to the specific 28 “challenged districts” in *Covington*. 316 F.R.D. at 139. The *Covington* litigation did not involve any of the districts drawn in 2011 that are at issue in the present case.

14. Following appeal, on June 5, 2017, the U.S. Supreme Court summarily affirmed the district court’s decision invalidating the 28 challenged districts as racial gerrymanders. 137 S. Ct. 2211 (mem.).

15. The district court subsequently ordered briefing on whether to order enactment of remedial maps under a timeline that would enable special elections in 2017. Ultimately, the court declined to order special elections in 2017 and instead allowed a longer timeline for the General Assembly to enact remedial plans. *Covington v. North Carolina*, 267 F. Supp. 3d 664 (M.D.N.C. 2017).

3. The General Assembly Enacted the 2017 Plans

16. On June 30, 2017, Senator Berger appointed 15 senators—10 Republicans and 5 Democrats—to the Senate Committee on Redistricting. PX587 ¶ 44. Senator Hise was appointed Chair. *Id.* Also on June 30, 2017, Representative Moore appointed 41 House members—28 Republicans and 13 Democrats—to the House Select Committee on Redistricting. PX629 at 4-5. Representative Lewis was appointed Senior Chair. PX587 ¶ 45.

17. On July 26, 2017, the Senate Redistricting Committee and the House Select Committee on Redistricting met jointly (“Redistricting Committee”) for organizational and

informational purposes. *Covington v. North Carolina*, 1:15-cv-00399, ECF No. 184-7 at 3-4. At the meeting, Representative Lewis and Senator Hise stated that Republican leadership would again employ Dr. Hofeller to draw the new plans. PX601 at 23:3-6; *see* PX587 ¶¶ 46-47. When Democratic Senator Van Duyn asked whether Dr. Hofeller would “be available to Democrats and maybe even the Black Caucus to consult,” Representative Lewis answered “no.” PX601 at 22:24-23:6. Representative Lewis explained that, “with the approval of the Speaker and the President Pro Tem of the Senate,” “Dr. Hofeller is working as a consultant to the Chairs,” *i.e.*, as a consultant only to Legislative Defendants. *Id.* at 23:3-6; Tr. 101:6-18 (Sen. Blue).

18. In explaining the choice of Dr. Hofeller to draw the 2017 Plans, Representative Lewis stated that Dr. Hofeller was “very fluent in being able to help legislators translate their desires” into the district lines using “the [M]aptitude program.” PX590 at 36:17-19.

19. On August 4, 2017, at another joint meeting of the Redistricting Committees, Representative Lewis and Senator Hise advised Committee members that the *Covington* decision invalidating 28 districts on federal constitutional grounds had rendered a large number of additional districts invalid under the Whole County Provision of the North Carolina Constitution, and those districts would also have to be redrawn. PX602 at 2:14-11:23.

20. At the same August 4, 2017, meeting, the Redistricting Committees allowed 31 citizens to speak for two minutes each. PX602 at 28:3-68:23. All speakers urged the members to adopt fair maps free of partisan bias. *See id.*

21. At another joint meeting on August 10, 2017, the House and Senate Redistricting Committees voted on criteria to govern the creation of the new plans. PX603 at 4:23-5:5.

22. Representative Lewis proposed as one criterion, “election data[:] Political consideration[s] and election results data may be used in drawing up legislative districts in the 2017 House and Senate plans.” PX603 at 132:10-13. Representative Lewis provided no further explanation or justification for this proposed criterion, stating only: “I believe this is pretty self-explanatory, and I would urge members to adopt the criteria.” *Id.* at 132:13-15.

23. Democratic members pressed Representative Lewis for details on how Dr. Hofeller would use elections data and for what purpose. Democratic Senator Ben Clark asked: “You’re going to collect the political data. What specifically would the Committee do with it?” PX603 at 135:11-13. Representative Lewis answered that “the Committee could look at the political data as evidence to how, perhaps, votes have been cast in the past.” *Id.* at 135:15-17. When Senator Clark inquired why the Committees would consider election results if not to predict future election outcomes, Representative Lewis stated only that “the consideration of political data in terms of election results is an established districting criteria, and it’s one that I propose that this committee use in drawing the map.” *Id.* at 141:12-16.

24. Representative Lewis had also stated that Dr. Hofeller used ten specific prior statewide elections in drawing the 2017 Plans: the 2010 U.S. Senate election, the 2012 elections for President, Governor, and Lieutenant Governor, the 2014 U.S. Senate election, and the 2016 elections for President, U.S. Senate, Governor, Lieutenant Governor, and Attorney General. PX603 at 137:22-138:3.

25. The House and Senate Redistricting Committees adopted Representative Lewis’s “election data” criterion on a straight party-line vote. PX603 at 141-48.

26. Senator Clark proposed an amendment that would prohibit the General Assembly from seeking to maintain or establish a partisan advantage for any party in redrawing the plans. PX603 at 166:9-167:3. Representative Lewis opposed the amendment,

stating he “would not advocate for [its] passage.” *Id.* at 167:10-11. The Redistricting Committees rejected Senator Clark’s proposal, again on a straight party-line vote. *Id.* at 168-74.

27. As explained in extensive detail below, Dr. Hofeller’s own files establish that he used prior elections results and partisanship formulas to draw district boundaries to maximize the number of seats that Republicans would win in the House and the Senate, and to ensure that Republicans would retain majorities in both chambers. PX123 at 48-76 (Chen Rebuttal Report); PX329 at 3-35 (Cooper Rebuttal Report); PX153, PX166; PX167; PX168; PX170; PX171; PX172; PX241; PX244; PX246; PX248; PX330; PX332; PX333; PX334; PX335; PX336; PX337; PX340; PX342; PX344; PX345; PX346; PX347; PX350; PX352; PX353; PX354; PX724; PX730; PX731; PX732; PX733; PX734; PX735; PX736; PX738; PX739; PX742; PX744; PX746; PX748; PX753; PX754; PX755; PX756.

28. As a further criterion, Representative Lewis proposed incumbency protection—namely that “reasonable efforts and political considerations may be used to avoid pairing incumbent members of the House or Senate with another incumbent in legislative districts drawn in 2017 House and Senate plans. The Committee may make reasonable efforts to ensure voters have a reasonable opportunity to elect non-paired incumbents of either party to a district in the 2017 House and Senate plans.” PX603 at 119:9-17. He clarified that the second sentence of this proposed criterion meant “simply” that “the map makers may take reasonable efforts not to pair incumbents unduly.” *Id.* at 122:16-18; *see* PX606 at 9:24-10:1 (Sen. Hise: “The Committee adopted criteria pledging to make reasonable efforts not to double-bunk incumbents.”).

29. The House and Senate Redistricting Committees adopted Representative Lewis’s incumbency-protection criterion, once more on a straight-party line vote. PX603 at 125-32.

30. The Redistricting Committees also adopted as criteria, yet again on straight party-line votes, that they (1) would make “reasonable efforts” to “improve the compactness of the current districts,” PX603 at 24:24-25:2; (2) would make “reasonable efforts” to “split fewer precincts” than under the 2011 Plans, *id.* at 79:8-12; and (3) “may consider municipal boundaries” in drawing the new districts, *id.* at 66:15-16; *see id.* at 98-104, 112-19 (adopting criteria). Representative Lewis clarified that these criteria meant “trying to keep towns, cities and precincts whole where possible.” PX607 at 10:5-6; *see, e.g.*, PX603 at 66:22-23 (Rep. Lewis explaining that the Committees would “consider not dividing municipalities where possible”).

31. As a final criterion, Representative Lewis proposed prohibiting the consideration of racial data in drawing the new plans. PX603 at 148:11-15.

32. The full criteria adopted by the Committees for the 2017 Plans (the “Adopted Criteria”) read as follows:

Equal Population. The Committees shall use the 2010 federal decennial census data as the sole basis of population for drawing legislative districts in the 2017 House and Senate plans. The number of persons in each legislative district shall comply with the +/- 5 percent population deviation standard established by *Stephenson v. Bartlett*, 355 N.C. 354, 562 S.E. 2d 377 (2002).

Contiguity. Legislative districts shall be comprised of contiguous territory. Contiguity by water is sufficient.

County Groupings and Traversals. The Committees shall draw legislative districts within county groupings as required by *Stephenson v. Bartlett*, 355 N.C. 354, 562 S.E. 2d 377 (2002) (*Stephenson I*), *Stephenson v. Bartlett*, 357 N.C. 301, 582 S.E.2d 247 (2003) (*Stephenson II*), *Dickson v. Rucho*, 367 N.C. 542, 766 S.E.2d 238 (2014) (*Dickson I*) and *Dickson v. Rucho*, 368 N.C. 481, 781 S.E.2d 460 (2015) (*Dickson II*). Within county groupings, county lines shall not be traversed except as authorized by *Stephenson I*, *Stephenson II*, *Dickson I*, and *Dickson II*.

Compactness. The Committees shall make reasonable efforts to draw legislative districts in the 2017 House and Senate plans that improve the compactness of the current districts. In doing so, the Committees may use

as a guide the minimum Reock (“dispersion”) and Polsby-Popper (“perimeter”) scores identified by Richard H. Pildes and Richard G. Neimi in *Expressive Harms, “Bizarre Districts,” and Voting Rights: Evaluating Election-District Appearances After Shaw v. Reno*, 92 Mich. L. Rev. 483 (1993).

Fewer Split Precincts. The Committees shall make reasonable efforts to draw legislative districts in the 2017 House and Senate plans that split fewer precincts than the current legislative redistricting plans.

Municipal Boundaries. The Committees may consider municipal boundaries when drawing legislative districts in the 2017 House and Senate plans.

Incumbency Protection. Reasonable efforts and political considerations may be used to avoid pairing incumbent members of the House or Senate with another incumbent in legislative districts drawn in the 2017 House and Senate plans. The Committees may make reasonable efforts to ensure voters have a reasonable opportunity to elect non-paired incumbents of either party to a district in the 2017 House and Senate plans.

Election Data. Political considerations and election results data may be used in the drawing of legislative districts in the 2017 House and Senate plans.

No Consideration of Racial Data. Data identifying the race of individuals or voters shall not be used in the drawing of legislative districts in the 2017 House and Senate plans.

PX587 ¶ 53; LDTX007.

33. On August 11, 2017, Representative Lewis and Senator Hise notified Dr. Hofeller of the criteria adopted by the redistricting committees and “directed him to utilize those criteria when drawing districts in the 2017 plans.” PX629 at 7. The criteria were also placed on legislative websites for the public to view and comment. *Covington v. North Carolina*, 1:15-cv-00399, ECF No. 184-9 at 193.

34. Dr. Hofeller drew the 2017 Plans under the direction of Legislative Defendants and without consultation with any Democratic members. PX587 ¶¶ 48-51, 55-56. Representative Lewis claimed that he “primarily . . . directed how the [House] map was produced,” and that he, Dr. Hofeller, and Republican Representative Nelson Dollar were

the only “three people” who had even “seen it prior to its public publication.” PX590 at 40:14-21. None of Legislative Defendants’ meetings with Dr. Hofeller about the 2017 redistricting were public. PX587 ¶ 51. Legislative Defendants did not make Dr. Hofeller available to Democratic members during the 2017 redistricting process, nor did Dr. Hofeller communicate with any Democratic members in developing the 2017 Plans. PX587 ¶¶ 48-49; Tr. 126:16-18 (Sen. Blue). No Democratic member of the General Assembly saw any part of any draft of the 2017 Plans before they were publicly released. PX587 ¶ 50.

35. On August 19, 2017, the proposed 2017 House plan was released on the General Assembly website. PX629 at 7. The House Redistricting Committee made only minor adjustments to Dr. Hofeller’s draft, swapping precincts between a few districts. PX605 at 16:2-17:16.

36. On August 20, 2017, the proposed 2017 Senate plan was released on the General Assembly website. PX629 at 7. At a Senate Redistricting Committee hearing on August 24, 2017, Senator Van Duyn asked Senator Hise how prior elections data had been used in drawing the proposed maps. PX606 at 26:4-6. Senator Hise replied that the mapmaker, Dr. Hofeller, “did make partisan considerations when drawing particular districts.” *Id.* at 26:9-10.

37. The Senate Redistricting Committee adopted only two minor amendments to the district boundaries drawn by Dr. Hofeller. One change, proposed by Senator Clark, moved a small population from Senate District 19 to District 21. PX606 at 49:20-52:9. The other change, proposed by Democratic Senator Daniel Blue, swapped a few precincts between Senate Districts 14 and 15, two heavily Democratic districts in Wake County. *Id.* at 52:19-53:19. Senator Blue’s amendment passed by a unanimous vote. *Id.* at 67:13-19.

38. As in 2011, Stat Packs measuring the partisan performance of the draft districts under recent elections were made available to members of the Redistricting

Committees. Tr. 113:17-115:15 (Sen. Blue). The Stat Packs, released on August 21, 2017, *see* PX629 at 7, contained information for each proposed district based on the ten statewide elections that Representative Lewis had claimed would be used in drawing the 2017 Plans. PX591; PX597.

39. Following the public release of the draft House and Senate maps, Legislative Defendants held public meetings on August 22, 2017, in Raleigh and at six satellite locations across the state. PX607 at 7:22-8:11, 9:1-3. Many citizens spoke at the meetings and expressed grave concerns about the draft maps. As Senator Blue testified, “overwhelmingly they were saying that they wanted districts drawn that were not partisan in nature.” Tr. 105:8-12.

40. On August 24, 2017, the Senate Redistricting Committee adopted the Senate plan drawn by Dr. Hofeller with the minor modifications discussed above. PX606 at 131:10-23. The next day, the House Redistricting Committee adopted Dr. Hofeller’s proposed House plan, also with the minor modifications discussed above. PX605 at 120:2-125:25.

41. During a Floor Session Hearing on August 28, 2017, Representative Lewis proposed an amendment to modify several House districts in Wake County. PX590 at 30:13-32:2. The amendment passed on a straight party-line vote. *Id.* at 31:18-32:2.

42. On August 31, 2017, the General Assembly passed the House plan (designated HB 927) and the Senate plan (designated SB 691), with only a few minor modifications from the versions passed by the Committees. PX629 at 8-9; *see* PX627 (HB 927); PX628 (SB 691). No Democratic Senator voted in favor of either plan. PX587 ¶ 71. The lone Democratic member of the House who voted for the plans was Representative William Brisson, who switched to become a Republican several months later. *Id.*

43. The 2017 Plans altered 79 House districts and 35 Senate districts from the 2011 Plans. JSF ¶¶ 169-70.

4. The *Covington* Special Master Redrew Several Districts That Remained Racially Gerrymandered

44. On September 15, 2017, the *Covington* plaintiffs filed an objection to the 2017 draft plans, alleging that Senate Districts 21 and 28 and House Districts 57 and 21 were still racial gerrymanders. *Covington v. North Carolina*, 283 F. Supp. 3d 410, 429 (M.D.N.C. 2018). The *Covington* Court agreed. *Id.* at 429-42. The court further held that the General Assembly's changes to five House districts (36, 37, 40, 41, and 105) violated the North Carolina Constitution's prohibition on mid-decade redistricting. *Id.* at 443-45.

45. The court appointed Dr. Nathaniel Persily as a Special Master to assist in redrawing the districts for which the court had sustained the plaintiffs' objections. To cure the racially gerrymandered districts, the Special Master made adjustments to certain neighboring districts as well. *Covington*, ECF No. 220 at 46, 64. The court adopted the Special Master's recommended changes to all of these districts. 283 F. Supp. 3d at 458.

46. The Special Master also restored the districts that the court had found were redrawn in violation of the ban on mid-decade redistricting to the 2011 versions of those districts. *Covington*, 283 F. Supp. 3d at 456-58. The court adopted these changes as well. *Id.*

47. On June 28, 2018, the U.S. Supreme Court affirmed the district court's adoption of the Special Master's remedial plans for House Districts 21 and 57 (and the adjoining districts, 22, 59, 61, and 62) and Senate Districts 21 and 28 (and the adjoining districts, 19, 24, and 27). *North Carolina v. Covington*, 138 S. Ct. 2548, 2553-54 (2018). But the U.S. Supreme Court reversed the district court's adoption of the Special Master's plans for the districts allegedly enacted in violation of the mid-decade redistricting prohibition, holding that the court's remedial authority was limited to curing the racial gerrymanders and nothing more. *Id.* at 2554-55.

48. Ultimately, the Special Master’s Final Report altered the following districts: Senate Districts 19, 21, 24, 27, 28; House Districts 21, 22, 57, 59, 61. LDTX159. The Special Master also reviewed the 2017 Enacted Plan and chose to keep the General Assembly’s version of House Districts 58 and 60 in his recommended changes. *Id.*

49. Plaintiffs in this case do not challenge the following districts that were altered by the *Covington* Special Master: House Districts 21, 22, 57, 61, 62; Senate Districts 19, 21, 24, 28.

B. The 2017 Plans Were Designed Intentionally and Effectively to Maximize Republican Partisan Advantage on a Statewide Basis

1. Legislative Defendants Admitted That They Were Drawing the 2017 Plans for Partisan Gain

50. At trial, there was little meaningful dispute that Legislative Defendants drew the 2017 Plans to advantage Republicans and reduce the effectiveness of Democratic votes.

51. The 2017 Adopted Criteria expressly provided for the use of “election data” in drawing the 2017 Plans. LDTX007. The Joint Select Committee on Redistricting considered results from 10 statewide elections, captured in Stat Packs available to legislators when they considered whether to adopt Dr. Hofeller’s draft House and Senate plans. Tr. 113:17-115:15. The Stat Packs demonstrated that, under those 10 statewide elections, Republicans would be expected to win between 72 and 82 seats in the House and between 31 and 35 seats in the Senate. PX591; PX597. In other words, Republicans would win a supermajority in both chambers of the General Assembly under each and every one of the 10 statewide elections used to evaluate the 2017 Plans (72 seats provides a supermajority in the House and 30 seats does in the Senate).

52. As Senator Blue testified, the election data used by Legislative Defendants—and in particular the performance of the proposed House and Senate plans under the range

of 10 prior statewide elections—revealed that the plans were “designed specifically to preserve the supermajority” that the Republican Party had gained under the 2011 Plans. Tr. 115:19-22.

53. At the Senate Redistricting Committee hearing on August 24, 2017, Senator Hise confirmed that the mapmaker, Dr. Hofeller, “did make partisan considerations when drawing particular districts” in 2017. PX606 at 26:9-10. And as discussed above, Legislative Defendants stated in prior court filings that the districts drawn in 2011 were “designed to ensure Republican majorities in the House and Senate.” PX575 at 16, 55 (*Dickson v. Rucho*, No. 201PA12-3, 2015 WL 4456364 (N.C. July 13, 2015)).

2. Dr. Hofeller’s Files Establish That the Predominant Goal Was to Maximize Republican Partisan Advantage

54. Files from Dr. Hofeller’s storage devices provide direct evidence of Dr. Hofeller’s predominant focus on maximizing Republican partisan advantage in creating the 2017 Plans. The Court specifically finds, based upon the direct and circumstantial evidence of record, that the partisan intent demonstrated in Dr. Hofeller’s files, as detailed below, is attributable to Legislative Defendants inasmuch that Dr. Hofeller, at all relevant times, worked under the direction of, and in concert with, Legislative Defendants. *See, e.g.*, FOF § F.7.

55. Plaintiffs obtained this evidence through a subpoena to Dr. Hofeller’s daughter. PX676; PX781 (S. Hofeller deposition). Plaintiffs issued the subpoena to Ms. Hofeller on February 13, 2019 and provided notice to all other parties the same day. PX676. After no party objected to the subpoena, on March 13, 2019, Ms. Hofeller produced 22 electronic storage devices that had belonged to her father and that her mother gave her after Dr. Hofeller’s death. PX781 at 1-43. The Hofeller files admitted into evidence at trial

all came from these storage devices. PX123 at 2, 39, 48 (Chen Rebuttal Report); PX329 at 3-4 (Cooper Rebuttal Report).²

56. This Court granted Plaintiffs’ pretrial motion *in limine* to admit the relevant files from Dr. Hofeller’s storage devices, finding sufficient evidence of authenticity and chain of custody. As the Court suggested in its pretrial ruling, and now holds, these files are public records pursuant to N.C. Gen. Stat. § 120-133(a) and Dr. Hofeller’s contract with the General Assembly to draw the 2017 Plans. PX641. The Court denied Legislative Defendants’ motion *in limine* to exclude the Hofeller files based on purported misconduct by Plaintiffs or their counsel.

57. Dr. Hofeller maintained two folders related to the 2017 redistricting, titled “NC 2017 Redistricting” and “2017 Redistricting.” Tr. 449:20-450:5. Plaintiffs’ expert Dr. Chen reviewed the entire contents of these two folders and found that, other than verifying that draft districts met the equal population and county grouping requirements, the files exhibited a consistent focus on partisan considerations. PX123 at 76 (Chen Rebuttal Report); Tr. 450:6-13. Among the hundreds of files in these two folders, there were a “few files” that report on VTD and county splits, “[b]ut beyond these few files,” these hundreds of files focused overwhelmingly on each party’s expected vote share in the draft districts and on the identities and party affiliations of the incumbent members in each district. PX123 at 76 (Chen Rebuttal Report). The fact that these folders focused overwhelmingly on partisan considerations is persuasive evidence that partisan intent predominated in the drawing of the 2017 Plans.

² The Court at trial allowed the parties to admit expert reports as “corroborative evidence”—*i.e.*, as evidence that “tends to add weight or credibility” to the experts’ testimony. *State v. Garcell*, 363 N.C. 10, 40, 678 S.E.2d 618, 637 (2009); *see* Tr. 537:8-538:7.

a. Dr. Hofeller's partisanship formulas

58. The specific contents of the two folders confirm Dr. Hofeller's focus on Republican partisan advantage. In the folders, Dr. Hofeller had three partisanship formulas. First, as reflected in a Microsoft Word document titled "FORMULA FOR POLITICAL ANALYSIS OF LEGISLATIVE DISTRICTS," Dr. Hofeller used a formula that measured the average Republican vote share in each VTD across nine statewide elections from 2008 to 2014. Tr. 450:24-451:15; PX123 at 49-52 (Chen Rebuttal Report). These nine elections were different from the ten elections Representative Lewis claimed would be used. Tr. 451:20-452:6. Dr. Hofeller used this partisanship formula based on 2008-2014 elections to measure the partisanship of his draft districts through at least July 2017, Tr. 452:7-10, by which point he had already substantially completed drawing preliminary drafts for most of the final districts, FOF § F.7. Plaintiffs' Exhibit 153 is a screenshot of Dr. Hofeller's Microsoft Word document containing this partisanship formula:

Dr. Hofeller's "FORMULA FOR POLITICAL ANALYSIS OF LEGISLATIVE DISTRICTS.doc"

**FORMULA FOR POLITICAL ANALYSIS OF LEGISLATIVE DISTRICTS
USING 2-PARTY VOTE**

$$\frac{(G08P_RV + G08G_RV + G08S_RV + G08K_RV + G12P_RV + G12G_RV + G12O_RV + G10S_RV + G14S_RV)}{(G08P_DV + G08P_RV + G08G_DV + G08G_RV + G08S_DV + G08S_RV + G08K_DV + G08K_RV + G12P_DV + G12P_RV + G12G_DV + G12G_RV + G12O_DV + G12O_RV + G10S_DV + G10S_RV + G14S_DV + G14S_RV)}$$

2008 President
2008 Governor
2008 U. S. Senate
2008 Insurance Commissioner
2010 U. S. Senate
2012 President
2012 Governor
2012 Commissioner of Labor
2014 U. S. Senate

59. Dr. Hofeller's second partisanship formula was based on the ten statewide elections from 2010-2016 that Representative Lewis claimed would be used in 2017. Tr. 452:12-453:21. Dr. Hofeller did not employ this formula, however, in the Excel worksheets where he analyzed the partisanship of his draft districts. Tr. 453:12-17.

60. Dr. Hofeller's final partisanship formula, titled "Off Year," was based on the results of statewide elections during non-Presidential election years, namely 2010 and 2014. Tr. 453:22-454:9; PX123 at 65 (Chen Rebuttal Report). It is apparent that Dr. Hofeller used this formula to evaluate how his districts might perform in non-Presidential years. Tr. 454:10-17.

61. Dr. Hofeller's "NC 2017 Redistricting" and "2017 Redistricting" folders contain numerous Microsoft Excel spreadsheets analyzing partisan considerations, using his partisanship formulas, for the draft House and Senate plans that he was developing and modifying from November 2016 through June 2017. *See* PX123 at 53-64 (Chen Rebuttal Report).

62. First, Dr. Hofeller placed a special focus on how many of his draft House and Senate districts had an average Republican vote share of 53% or higher using his partisanship formulas. For instance, in a spreadsheet last modified on November 26, 2016, analyzing a draft Senate plan, Dr. Hofeller wrote "23 Under 53%" at the bottom to indicate the number of draft districts for which Democrats had less than a 53% vote share and Republicans had a 53% or higher vote share. Tr. 456:14-20; PX248 at 2. In other words, as shown in Plaintiffs' Exhibit 248 below, Dr. Hofeller projected that 27 of the 50 districts in this draft Senate plan would have a Republican vote share at or above 53%.

Dr. Hofeller's Draft Plan File: "Senate Minimum-Partisan-Members.xlsx" (November 26, 2016)

New 2016 Senate Plan

Group Type	Dist	Avg R	Incumbent	Pty	Note	Old Ave R
New	1	52.70%	Cook	R		
Old	2	60.16%	Sanderson	R		
New	3	35.11%	Smith-Ingram	D		
New	4	37.39%	Horner	R	##	
New	5	45.94%	Davis	D		
Old	6	59.16%	Brown	R		
New	7	50.94%	Pate	R		
Old	8	54.69%	Rabon	R		
Old	9	53.05%	Lee	R		
New	10	55.32%	Jackson	R		
New	11	54.35%	Bryant	D	##	
New	12	56.83%	Rabin	R		
Old	13	41.09%	Britt	R	##	
Wake-Franklin	14	24.66%	Blue	D		
Wake-Franklin	15	52.46%	Alexander	R		
Wake-Franklin	16	40.50%	Chaudhuri	D		
Wake-Franklin	17	54.36%	Barringer	R		
Wake-Franklin	18	52.70%	Barefoot	R		
Cumberland	19	50.64%	Meredith	R		
New	20	27.50%	McKissick	D		
Cumberland	21	29.64%	Clark	D		
New	22	33.39%	Woodard	D		
Old	23	34.84%	Foushee	D		
New	24	56.91%	Gunn	R		
New	25	51.51%	McInnis	R		
New	26	59.18%	Berger	R		
New	27	58.05%	Wade	R		
New	28	23.67%	Robinson	D		
New	29	60.90%	Tillman	R		
New	30	60.87%	Randleman, Ballard	R,R	#	
New	31	64.87%	Brock, Krawiec	R,R	#	
New	32	30.42%	Lowe	D		
Old	33	65.39%	Dunn	R		
New	34	66.29%	Vacant	R	#	
Old	35	65.63%	Tucker	R		
Old	36	61.81%	Newton	R		
Mecklenburg	37	32.84%	Vacant	D	#	
Mecklenburg	38	26.55%	Jackson	D		
Mecklenburg	39	63.97%	Bishop	R		
Mecklenburg	40	28.50%	Waddell	D		
Mecklenburg	41	49.66%	Ford, Tarte	D,R	###	
Old	42	65.81%	Wells	R		
New	43	62.82%	Jarromgtpm	R		
New	44	62.81%	Curtis	R		

New	45	64.46%	Vacant	R	#	
New	46	63.85%	Danniel	R		
Old	47	59.28%	Hise	R		
Old	48	58.81%	Edwards	R		
Old	49	40.90%	Van Duyn	D		
Old	50	56.29%	Davis	R		

Notes: # = Double Bunk or Vacant, ## = Partisan Mismatch

23 Under 53%

63. In subsequent June 2017 spreadsheets analyzing draft House and Senate plans, Dr. Hofeller color-coded the districts to differentiate between districts that had slightly-under and slightly-over a 53% expected Republican vote share. Dr. Hofeller shaded the “Avg R” column yellow for draft districts with an expected Republican vote share of 50-53%, and shaded cells in the column a peach color for districts with an expected Republican vote share of 53-55%. Tr. 460:6-461:8, 464:19-465:11; PX244; PX241; PX246; PX123 at 66 (Chen Rebuttal Report).

64. Dr. Hofeller stratified all of the Republican-leaning districts in his draft House and Senate plans using highly granular gradations. Tr. 461:1-8, 463:6-25, 465:16-466:20; PX241 at 3; PX244 at 2; PX246 at 3. As illustrated in Plaintiffs’ Exhibits 244 below, Dr. Hofeller counted how many districts in each draft House and Senate plan had between a 50-53%, 53-55%, 55-60%, 60-65%, and 65%-100% expected Republican vote share. *Id.* In contrast, Dr. Hofeller did not analyze Democratic-leaning districts with such granularity. Whereas Dr. Hofeller analyzed the Republican-leaning districts in five different bands, he analyzed Democratic-leaning districts in just two bands of 0-45% Republican vote share and 45-50% Republican vote share. Tr. 466:1-20; PX241 at 3; PX244 at 2; PX246 at 3.

Dr. Hofeller's Draft Plan File: "NC Senate Minimum Partisan J-2" (June 13, 2017)

New 2016 Senate Plan

Group Type	Dist	Avg R	14 Sen%	Incumbent	Pty	Note	Old Ave R	11 ti 17
New	1	47.94%	52.31%	Cook	R		53.54%	-5.60%
Old	2	60.16%	63.13%	Sanderson	R		60.16%	0.00%
New	3	40.10%	43.10%	Smith-Ingram	D		34.18%	5.93%
New	4	37.39%	39.24%	Horner	R	##	31.88%	5.51%
New	5	45.94%	48.68%	Davis	D		36.80%	9.15%
Old	6	59.16%	64.83%	Brown	R		59.16%	0.00%
New	7	50.94%	53.60%	Pate	R		59.37%	-8.43%
Old	8	54.69%	56.14%	Rabon	R		54.69%	0.00%
Old	9	53.05%	51.05%	Lee	R		53.05%	0.00%
New	10	54.75%	57.91%	Jackson	R		57.13%	-2.38%
New	11	54.47%	56.42%	Bryant	D	##	57.61%	-3.13%
New	12	57.19%	58.83%	Rabin	R		57.19%	0.00%
Old	13	41.09%	47.12%	Britt	R	##	41.09%	0.00%
Wake-Franklin	14	25.37%	22.89%	Blue	D		25.54%	-0.17%
Wake-Franklin	15	53.04%	49.97%	Alexander	R		53.32%	-0.28%
Wake-Franklin	16	39.77%	35.22%	Chaudhuri	D		38.80%	0.97%
Wake-Franklin	17	54.36%	51.52%	Barringer	R		53.45%	0.91%
Wake-Franklin	18	52.57%	53.26%	Barefoot	R		52.76%	-0.19%
Cumberland	19	50.79%	53.27%	Meredith	R		49.30%	1.48%
New	20	20.93%	18.06%	McKissick	D		24.15%	-3.23%
Cumberland	21	29.52%	29.98%	Clark	D		30.53%	-1.01%
New	22	40.57%	39.77%	Woodard	D		37.71%	2.86%
Old	23	34.84%	31.50%	Foushee	D		34.84%	0.00%
New	24	56.91%	58.10%	Gunn	R		59.06%	-2.14%
New	25	51.51%	54.18%	McInnis	R		55.19%	-3.68%
New	26	59.18%	62.59%	Berger	R		57.51%	1.67%
New	27	57.95%	56.89%	Wade	R		55.06%	2.90%
New	28	22.97%	22.18%	Robinson	D		18.65%	4.32%
New	29	60.90%	64.77%	Tillman	R		67.04%	-6.14%
New	30	60.87%	63.71%	Randleman,Ballard	R,R	#	66.15%	-5.28%
New	31	64.87%	65.07%	Brock, Krawiec	R,R	#	62.71%	2.16%
New	32	30.42%	29.53%	Lowe	D		31.20%	-0.78%
Old	33	65.39%	68.87%	Dunn	R		65.39%	0.00%
New	34	66.29%	67.96%	Vacant	R	#	63.53%	2.76%
Old	35	65.63%	65.84%	Tucker	R		65.36%	0.27%
Old	36	61.81%	60.28%	Newton	R		62.18%	-0.38%
Mecklenburg	37	31.35%	29.21%	Vacant	D	#	37.87%	-6.52%
Mecklenburg	38	28.06%	23.76%	Jackson	D		23.36%	4.70%
Mecklenburg	39	63.96%	59.63%	Bishop	R		61.93%	2.03%
Mecklenburg	40	29.05%	25.80%	Waddell	D		20.96%	8.09%
Mecklenburg	41	49.59%	45.44%	Ford, Tarte	D,R	###	57.53%	-7.94%
Old	42	65.81%	67.05%	Wells	R		65.81%	0.00%
New	43	62.82%	63.14%	Jarromgtpm	R		62.82%	0.00%
New	44	62.81%	64.31%	Curtis	R		65.66%	-2.85%

Group Type	Dist	Avg R	14 Sen%	Incumbent	Pty	Note	Old Ave R	11 ti 17
New	45	64.46%	65.33%	Vacant	R	#	61.05%	3.41%
New	46	63.85%	65.80%	Danniel	R		58.59%	5.26%
Old	47	59.28%	61.81%	Hise	R		59.28%	0.00%
Old	48	58.81%	58.70%	Edwards	R		58.81%	0.00%
Old	49	40.90%	38.15%	Van Duyn	D		40.90%	0.00%
Old	50	56.29%	58.76%	Davis	R		56.29%	0.00%

Pressure Points for GOP Incumbents:

1. Sen. Cook in District 1 (Northeast Coast) is now in a toss-up district
2. Sentors Randleman & Ballard are double-bunked in a strong GOP District 30 (Northwest of State).
3. Senators Brock & Krawiec are double-bunked in a strong GOP District 31 (Davie & Forsyth)
4. Senators Tate [R] & Ford [D] are double-bunked in a leaning-Dem. District 41 (N. Mecklenburg).
5. There are 2 strong GOP and 1 Strong Dem vacant districts (34, 37 and 45).
6. 34% (12) of Republican Incumbents do not have to run in a Special Election.
7. 12% (2) Democrats do not have to run in a Special Election.

Notes: # = Double Bunk or Vacant, ## = Partisan Mismatch

Average Republican		
65-100	4	4
60-65	10	14
55-60	8	22
53-55	6	28
50-53	4	32
45-50	3	35
0-45	15	50

50

2014 Republican Senate		
65-100	7	7
60-65	9	16
55-60	9	25
53-55	4	29
50-53	3	32
45-50	4	36
0-45	14	50

50

65. The Court finds that Dr. Hofeller’s granular sorting and analysis of Republican-leaning districts—and his particular emphasis on districts with an over-53% expected Republican vote share—provide substantial evidence of the partisan intent and effects of the 2017 plans. The evidence establishes that Dr. Hofeller drew the 2017 Plans very precisely to create as many “safe” Republican districts as possible, so that Republicans would maintain their supermajorities, or at least majorities even in a strong election year for Democrats. Tr. 456:21-457:25. For instance, Dr. Hofeller’s June 13, 2017, spreadsheet above estimated that 28 of 50 draft Senate districts had an expected Republican vote share above 53%, PX244 at 2, and Dr. Hofeller’s June 14, 2017 spreadsheet for a draft House map estimated that 74 of 120 districts in the draft House plan had an expected Republican vote share above 53%, PX246 at 3. The Court is persuaded that Dr. Hofeller drew the maps with an intent to preserve Republicans’ control of the House and Senate.

66. As further evidence of partisan intent, using his partisanship formula, Dr. Hofeller calculated the difference in the Republican vote share between the new draft version of each district and the prior 2011 version of that district, showing precisely how his draft plans would alter the partisanship of each district. Tr. 459:8-460:5; PX241; PX244; PX246; PX248.

67. Dr. Hofeller's spreadsheets also highlighted in yellow many of North Carolina's largest and most-Democratic counties, such as Wake, Mecklenburg, Cumberland, Forsyth, and Guilford Counties. Tr. 461:9-462:2, 468:9-20; PX244; PX246. As Dr. Chen explained, the spreadsheets show Dr. Hofeller's specific focus on trying to "squeeze out" as many Republican-leaning districts as he could in these counties. *Id.*

68. For both his draft House and Senate plans, Dr. Hofeller analyzed what he described as "Pressure Points for GOP Incumbents." Tr. 462:3-463:5, 467:7-468:8; PX244 at 2; PX246 at 2. He analyzed draft districts that could create concerns or vulnerabilities for Republican incumbents. *Id.* Dr. Chen did not find any comparable analysis by Dr. Hofeller of "pressure points" for Democratic incumbents. *Id.* Dr. Hofeller's spreadsheets contradict Legislative Defendants' contention at trial that the 2017 Plans sought to place *all* incumbents in politically favorable districts. It is clear from Dr. Hofeller's files that the mapmaker predominantly focused on benefitting and electorally protecting Republican incumbents and not Democratic incumbents.

69. Dr. Hofeller's spreadsheets also reveal that he evaluated the partisanship of draft maps created by Campbell University Law students at an exercise by Common Cause. In 2017, Common Cause invited two Campbell Law students to draw new legislative maps without using political data. Bob Phillips, the Executive Director of Common Cause North Carolina, testified that the purpose of the exercise was to raise awareness and show how a nonpartisan redistricting process could occur. Tr. 53:17-54:14.

70. Emails introduced at trial reveal that, in late June 2017, an aide to Legislative Defendants asked the General Assembly’s legislative services office for copies of the “block assignments files” for the simulated maps created by the Campbell Law students. PX757. Common Cause had the Campbell Law students create the maps using the General Assembly’s public computer because it had Maptitude installed on it. Tr. 55:18-56:17. Within roughly a week, Dr. Hofeller had created Excel spreadsheets analyzing the partisanship of the Campbell Law students’ simulated districts. Tr. 471:6-472:15; PX167; PX170; PX123 at 70-75 (Chen Rebuttal Report). In spreadsheets last modified on July 5 and 8, 2017, Dr. Hofeller scored every one of the Campbell Law students’ House and Senate districts using his partisanship formula derived from the 2008-2014 statewide elections. *Id.* Dr. Hofeller then evaluated, for every district, whether Republicans could obtain a “Better Possible” district than the version the Campbell Law students had drawn, with Dr. Hofeller writing “No,” “Yes,” or “Little” for each district. Tr. 473:8-474:6; PX168; PX123 at 70-71 (Chen Rebuttal Report).

71. The final enacted 2017 House plan contains two county groupings, with four districts in total, that match the districts in those county groupings drawn by the Campbell Law students. Tr. 474:7-475:23; PX123 at 71. Those two groupings—Nash-Franklin and Granville-Person-Vance-Warren—are two small groupings for which there are a very limited number of ways to draw the groupings, and the Campbell Law students happened to draw these groupings in the way that is most favorable to Republicans. *Id.*

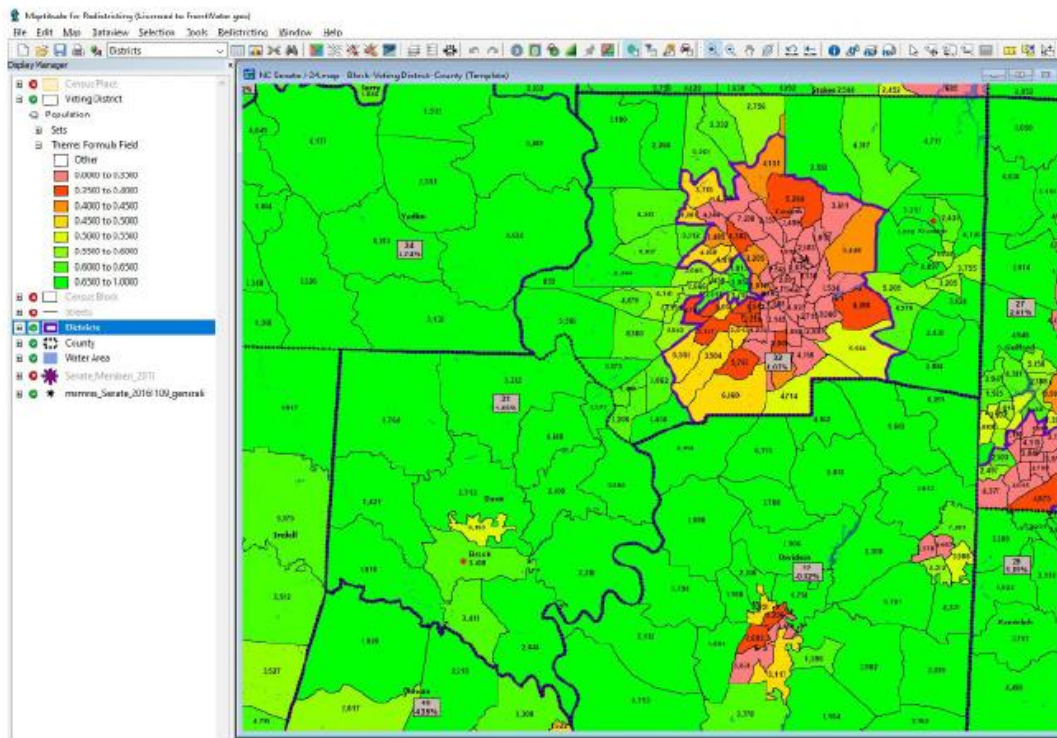
72. Dr. Chen thus concluded that Dr. Hofeller evaluated the partisanship of all of the Campbell Law students’ districts and then included in the 2017 maps four districts for which the students happened to draw the districts in the way maximally favorable to Republicans. *Id.* The Court agrees with Dr. Chen’s assessment, which went un rebutted by Legislative Defendants at trial.

b. Dr. Hofeller's Maptitude files

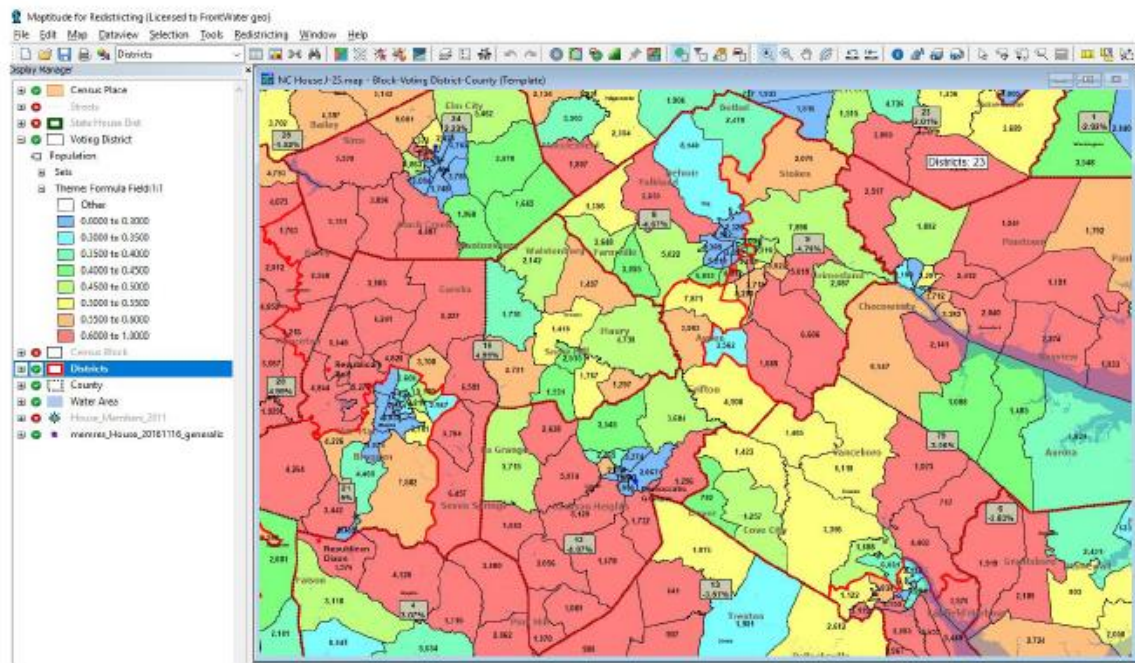
73. Dr. Hofeller's Maptitude files from his storage devices further demonstrate that partisanship considerations were "front and center" in his drafting of the relevant districts in both 2011 and 2017. Tr. 944:5-15, 968:4-5 (Dr. Cooper). The Maptitude files remove any doubt that Dr. Hofeller "was clearly working with partisan data on the same maps at the same time that he [was] drawing lines for our state," all to maximize Republican partisan advantage. Tr. 945:4-11.

74. As Dr. Cooper explained, the Maptitude files indicate that Dr. Hofeller used partisanship formulas, along with multiple color-coding systems to visually depict partisanship on his draft maps, in order to deliberately pack and crack Democratic voters into particular districts with precision. Tr. 939:1-940:12, 944:9-945:8; PX329 at 3-4 (Cooper Rebuttal Report).

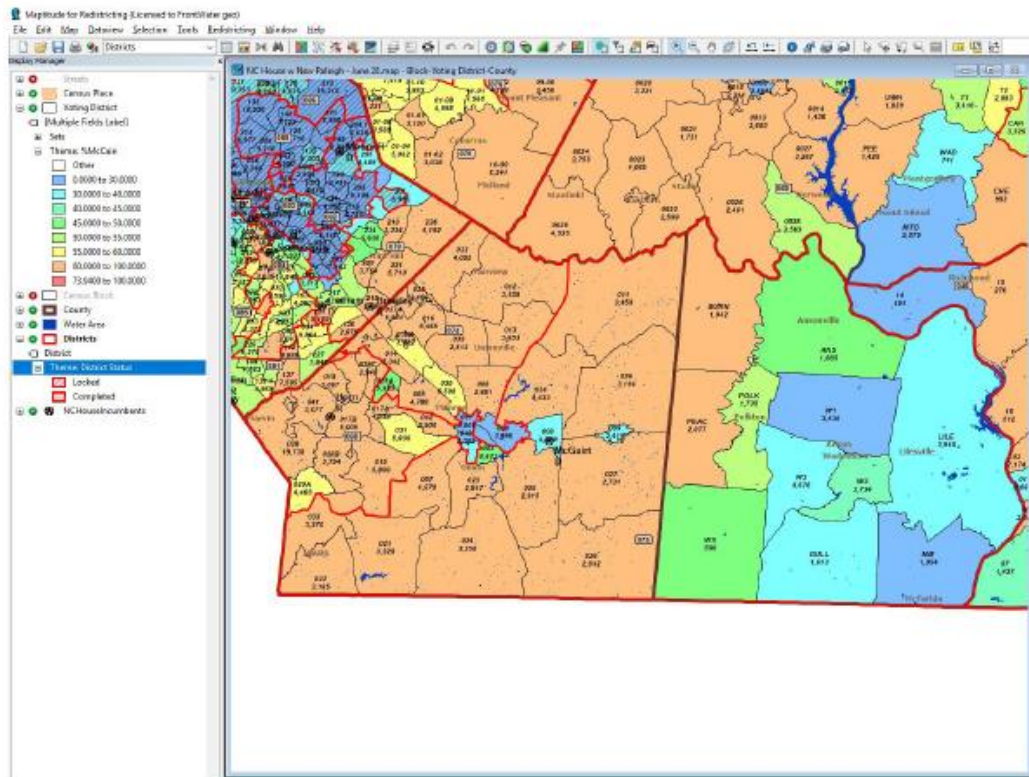
75. In the "NC Senate J-24" Maptitude file last modified in July 2017, Dr. Hofeller calculated the Republican vote share for each North Carolina VTD based on his formula using nine statewide elections from 2008-2014. PX330; Tr. 939:9-940:2, 942:22-943:2; PX565. Dr. Hofeller then color-coded the VTDs on the "Map" window based on this partisanship formula, using more granular stratifications for competitive and Republican-leaning VTDs than for Democratic-leaning VTDs, just as he had done in his Excel spreadsheets assessing district-wide partisanship. Tr. 944:16-21. Dr. Hofeller used a "traffic light" color-coding scheme, in which he shaded Democratic-leaning VTDs pink and red, Republican-leaning VTDs green, and more competitive VTDs yellow. Tr. 940:23-941:4. Plaintiffs' Exhibit 335 below is one example of Dr. Hofeller's use of this color-coding scheme. As is apparent in the example below and discussed in more detail with respect to additional county groupings discussed below, Dr. Hofeller drew district boundaries based on this color-coded partisanship data with remarkable precision.

Figure 6: Partisan Targeting in Senate Districts 31 and 32

76. Dr. Hofeller used the same partisanship formula in his Maptitude files containing draft 2017 House districts. Tr. 979:6-19; PX337; PX329 at 13 (Cooper Rebuttal Report). Dr. Hofeller also employed a color-coding system to visually represent the partisanship scores for each VTD in his 2017 House plan, but with the more familiar red coloring for Republican-leaning VTDs, blue for Democratic-leaning VTDs, and yellow and green for more competitive VTDs. Tr. 979:20-980:19; PX329 at 13 (Cooper Rebuttal Report). For example, Dr. Hofeller's Maptitude file labeled "NC House J-25," which he created on June 26, 2017, and last modified on August 7, 2017, depicted boundaries (in red) of House Districts 8, 9, and 12 in the Pitt-Lenoir House county grouping. Tr. 981:2-5; PX340; PX562. Plaintiffs' Exhibit 340 below shows that Dr. Hofeller used his color-coding system to pack the bluest VTDs in Pitt County into House District 8. Tr. 982:1-7, 983:5-984:7; PX340; PX329 at 16 (Cooper Rebuttal Report).

Figure 11: Partisan Targeting in House Districts 8, 9, and 12

77. Dr. Hofeller similarly used a partisanship formula and color-coding scheme in drawing the districts at issue in this case enacted in 2011 and kept unchanged in 2017. Tr. 991:9-992:6, 994:4-996:11; PX347; PX350; PX352; PX329 at 23, 27, 30 (Cooper Rebuttal Report). For example, Dr. Hofeller’s Maptitude file titled “NC House w New Raleigh - June 28,” which was last modified on June 30, 2011, contained Dr. Hofeller’s drafts of the 2011 House districts at issue in this case. Tr. 995:20-997:11; PX329 at 30-35; PX564. There, Dr. Hofeller scored the partisanship of each VTD using the results of the 2008 Presidential election and then colored each VTD based on those results, with Democratic-leaning VTDs shaded blue, Republican-leaning VTDs shaded red, and competitive VTDs shaded yellow and tan. *Id.* Plaintiffs’ Exhibit 353 below is an example of Dr. Hofeller’s use of this partisanship data to draw the 2011 House districts—in this example, to crack Democratic voters across House Districts 55, 68, and 69.

Figure 25: Partisan Targeting in House Districts 55, 68, and 69

78. Legislative Defendants offered no additional files from Dr. Hofeller’s storage devices to rebut Dr. Chen’s and Dr. Cooper’s analyses. They offered no plausible alternative explanation of Dr. Hofeller’s intent as he drew the State’s House and Senate districts in 2011 and 2017.

3. Plaintiffs’ Experts Established that the Plans Are Extreme Partisan Gerrymanders Designed to Ensure Republican Control

79. The analysis and conclusions of Plaintiffs’ experts further establish that the 2017 Plans are extreme partisan outliers intentionally and carefully designed to maximize Republican advantage and to ensure Republican majorities in both chambers of the General Assembly. Three of Plaintiffs’ experts—Drs. Chen, Mattingly, and Pegden—employed computer simulations to generate alternative House and Senate plans to serve as a baseline for comparison to each enacted plan. Even though these experts employed different

methodologies, each expert found that the enacted plans are extreme outliers that could only have resulted from an intentional effort to secure Republican advantage on a statewide basis. Plaintiffs' fourth expert, Dr. Christopher Cooper, explained how this gerrymandering was carried out across the State. The Court gives great weight to the analysis and conclusions, to the extent set forth below, of each of Plaintiffs' experts individually, and the Court finds that the consistent findings of each of these experts, using different methodologies, powerfully reinforce that the 2017 Plans are extreme, intentional, and effective partisan gerrymanders.

a. Dr. Jowei Chen

80. Plaintiffs' expert Jowei Chen, Ph.D., is an Associate Professor in the Department of Political Science at the University of Michigan, Ann Arbor. Tr. 237:6-9. Dr. Chen has extensive experience in redistricting matters. Tr. 238:2-239:3 (Dr. Chen). By the admission of Intervenor Defendants' own expert, Dr. Chen is one of the "foremost political science scholars on the question of political geography" and how it can impact the partisan composition of a legislative body. Tr. 2220:14-18 (Dr. Barber). Dr. Chen also helped pioneer the methodology of using computer simulations to evaluate the partisan bias of a redistricting plan, and he has published four peer-reviewed articles employing this approach since 2013. Tr. 240:1-241:2; PX2. The Court accepted Dr. Chen in this case as an expert in redistricting, political geography, and geographic information systems ("GIS"). Tr. 245:4-8.

81. Dr. Chen has presented expert testimony regarding his simulation methodology in numerous prior partisan gerrymandering lawsuits, and his analysis has been consistently credited and relied upon by the courts in these cases. Tr. 241:15-242:19; *see League of Women Voters v. Commonwealth*, 178 A.3d 737, 818 (Pa. 2018) (finding "Dr. Chen's expert testimony" to be "[p]erhaps the most compelling evidence" in invalidating

Pennsylvania’s congressional plan as an unconstitutional partisan gerrymander); *Raleigh Wake Citizens Ass’n v. Wake Cty. Bd. of Elecs.*, 827 F.3d 333, 344 (4th Cir. 2016) (“[T]he district court clearly and reversibly erred in rejecting Dr. Chen’s expert testimony.”); *League of Women Voters of Mich. v. Benson*, 373 F. Supp. 3d 867, 907 (E.D. Mich. 2019) (“[T]he Court has determined that Dr. Chen’s data and expert findings are reliable.”); *Common Cause v. Rucho*, 279 F. Supp. 3d 587, 666 (M.D.N.C.), *vacated on other grounds*, 138 S. Ct. 2679 (2018) (“Dr. Mattingly’s and Dr. Chen’s simulation analyses not only evidence the General Assembly’s discriminatory intent, but also provide evidence of the 2016 Plan’s discriminatory effects.”); *City of Greensboro v. Guilford Cty. Bd. of Elecs.*, 251 F. Supp. 3d 935, 943 (M.D.N.C. 2017) (relying upon the “computer simulations by Dr. Jowei Chen” to find impermissible partisan intent).

82. Using his simulation methodology, Dr. Chen analyzed whether partisan intent predominated in the drawing of the 2017 Plans and subordinated the traditional nonpartisan districting principles of compactness and avoiding the splitting of municipalities and VTDs. Tr. 245:13-17, 248:6-18. Dr. Chen further analyzed the effects of the 2017 Plans on the number of Democratic-leaning House and Senate districts statewide. Tr. 247:6-10.

83. Based on his analysis, Dr. Chen concluded that partisan intent predominated over the traditional districting criteria in drawing the current House and Senate districts, that the Republican advantage under the 2017 Plans cannot be explained by North Carolina’s political geography, and that the effect of the 2017 Plans is to produce fewer Democratic-leaning districts than would exist if the map-drawing process had followed traditional districting principles. Tr. 246:18-22, 247:12-18, 248:20-249:1; PX1 at 3-4 (Chen Report). With respect to the effects in particular, Dr. Chen found that the gap between the enacted 2017 Plans and the nonpartisan simulated plans in terms of Democratic-leaning

districts gets wider in electoral environments more favorable to Democrats, and is widest around the point when Democrats would win majorities in the House or Senate under the simulated nonpartisan plans. Tr. 247:25-248:3, 296:7-24, 330:17-23. The Court gives great weight to Dr. Chen's findings and, to the extent set forth below, adopts his conclusions.

84. In what Dr. Chen described as his Simulation Set 1, Dr. Chen programmed his algorithm to follow the traditional districting principles embodied within the Adopted Criteria. Tr. 281:12-16. In addition to following the equal population and contiguity requirements, as well as conforming to the same county groupings and number of county traversals that exist under the 2017 Plans, Dr. Chen programmed his algorithm to prioritize the traditional districting principles set forth in the Adopted Criteria of compactness, avoiding splitting municipalities, and avoiding splitting VTDs. Tr. 251:18-259:10; PX1 at 10-18 (Chen report).

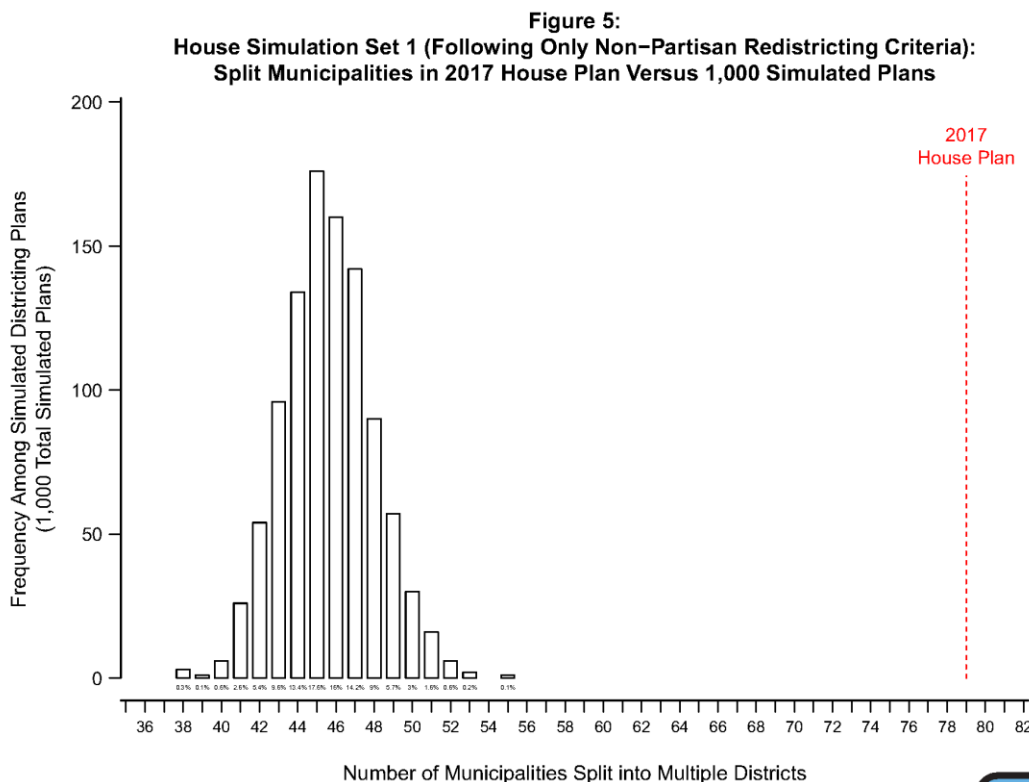
85. Dr. Chen explained that, other than the county traversals requirement, his algorithm did not attempt to "maximize or optimize" any one criterion. Tr. 262:24-263:3. Rather, the algorithm equally weighted the criteria of compactness, avoiding splitting municipalities, and avoiding splitting VTDs. Tr. 263:4-12. In creating districts within each county grouping, the algorithm considered thousands of random iterations, measuring for each proposed iteration whether the change would make the districts in the grouping better or worse on net across these three criteria. Tr. 261:18-263:19. The algorithm accepted a change only if it would improve the districts across these three criteria on net. *Id.*

86. In his Simulation Set 1, Dr. Chen ran the algorithm 1,000 times for each House county grouping and 1,000 times for each Senate county grouping, producing 1,000 unique statewide maps for both the House and the Senate. Tr. 263:23-264:16.

87. Beginning with the House, Dr. Chen compared the 1,000 simulated plans in his House Simulation Set 1 to the enacted 2017 House plan along a number of measures.

First, Dr. Chen compared the number of municipalities that the simulated and enacted plans split. The enacted House plan splits 79 municipalities. Tr. 266:22-269:15; PX1 at 38, 41 (Chen Report). The 1,000 plans in House Simulation Set 1 split a range of only 38 to 55 municipalities, with most splitting just 43 to 48 municipalities. *Id.* From this, Dr. Chen concluded with over 99.9% statistical certainty that the enacted House plan subordinates the traditional districting criterion of following municipal boundaries, and splits substantially more municipalities than would be split if the map-drawing process had prioritized, and not subordinated, this traditional districting principle. Tr. 269:21-270:4; PX1 at 38 (Chen Report).

88. Plaintiffs' Exhibit 15 depicts the number of municipalities split under the enacted plan and the 1,000 simulations in House Simulation Set 1:

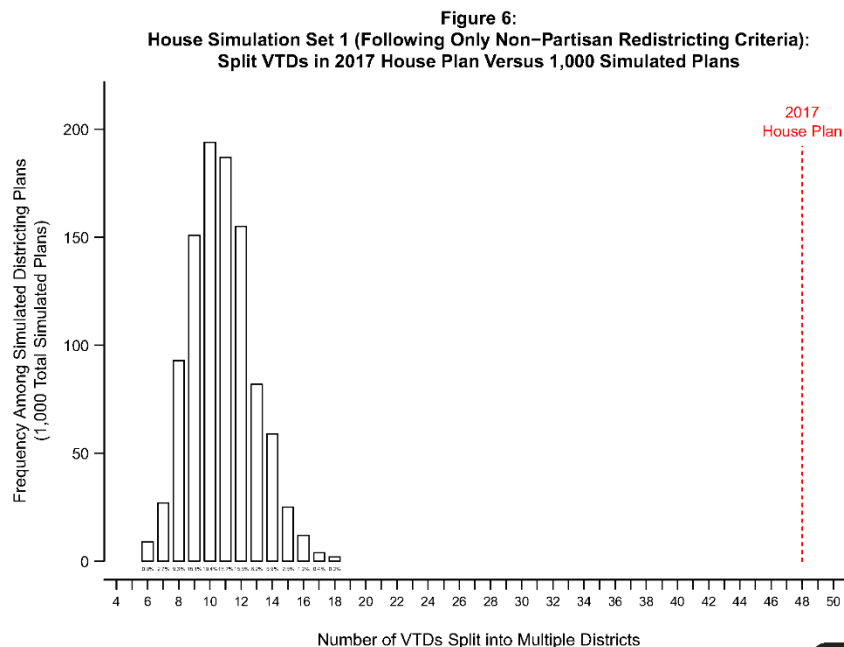


89. The Court finds that the enacted House plan subordinates to partisanship the traditional districting principle of avoiding the unnecessary splitting of municipalities.

The Court finds that the current House plan splits substantially more municipalities than would be split if the map-drawing process had not subordinated to partisanship this traditional districting principle.

90. Dr. Chen also compared the number of VTDs split in the enacted 2017 House plan and the 1,000 simulations in House Simulation Set 1. Dr. Chen found that, while the simulated House plans split between 6 and 18 VTDs, the enacted House plan splits 48 VTDs, more than four times as many as the vast majority of the simulations. Tr. 270:6-271:3; PX1 at 38, 42 (Chen Report). From this, Dr. Chen concluded with over 99.9% statistical certainty that the enacted House plan subordinates the traditional districting criterion of following VTD boundaries, and splits far more VTDs than is reasonably necessary. Tr. 271:5-12.

91. Plaintiffs' Exhibit 16 depicts the number of VTDs split under the enacted House plan and the 1,000 simulations in House Simulation Set 1:

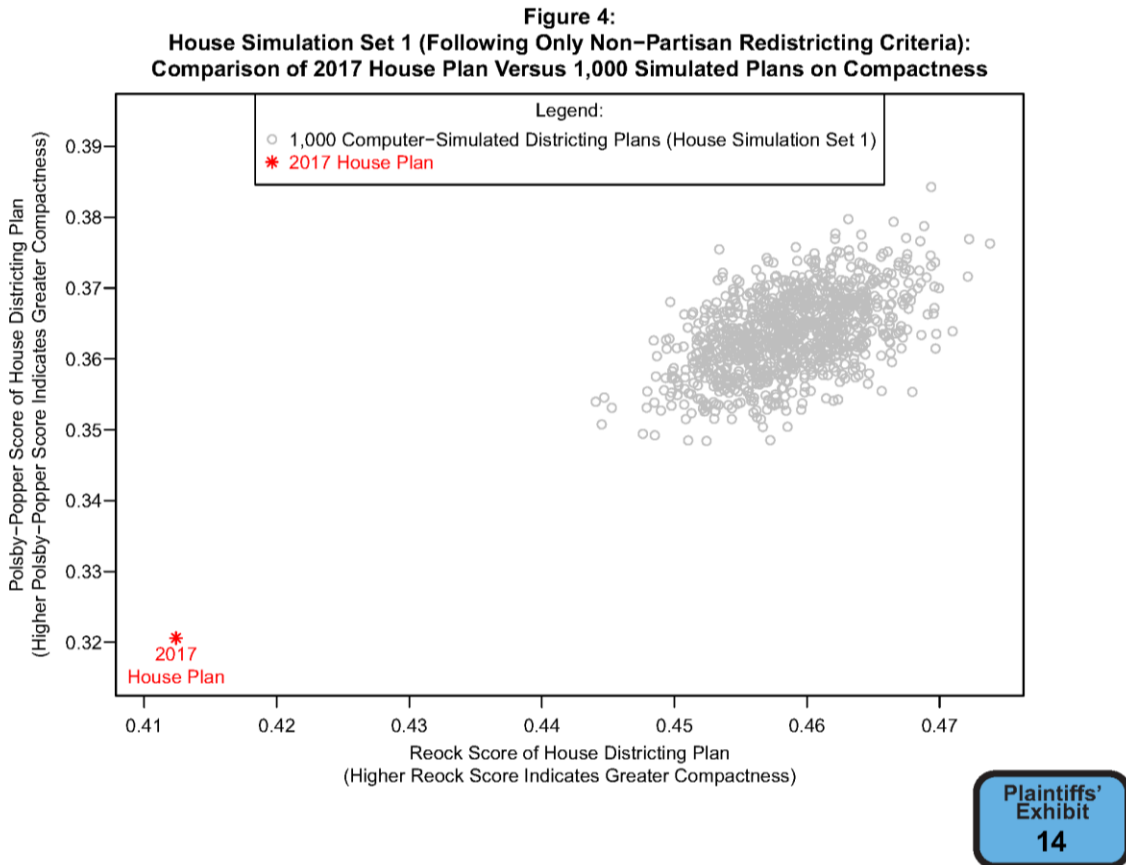


Plaintiffs'
Exhibit
16

92. The Court finds that the enacted House plan subordinates to partisanship the traditional districting principle of avoiding the unnecessary splitting of VTDs. The Court finds that the current House plan splits substantially more VTDs than would be split if the map-drawing process had not subordinated to partisanship this traditional districting principle.

93. Dr. Chen found the enacted House plan is also less compact than all 1,000 of his simulations in House Simulation Set 1. Dr. Chen employed the measures of compactness set forth in the Adopted Criteria, known as Reock and Polsby-Popper scores. Tr. 271:16-273:15; PX1 at 38 (Chen Report). For both measures, a higher score indicates that a plan's districts are more compact. *Id.* Dr. Chen found that, as measured by both Reock and Polsby-Popper scores, the compactness of the enacted House plan is outside the range of scores produced by the 1,000 simulated House plans. *Id.* From this, Dr. Chen concluded with over 99% statistical certainty that the enacted House plan subordinates the traditional districting criterion of compactness, and that the current districts are less compact than they would be under a map-drawing process that prioritizes and follows the traditional districting criteria. Tr. 273:18-274:4.

94. Plaintiffs' Exhibit 14 depicts the compactness of the enacted House plan and the 1,000 simulations in House Simulation Set 1:



95. The Court finds that the enacted House plan subordinates to partisanship the traditional districting principle of compactness. The Court finds that the current House districts are less compact than they would be under a map-drawing process that had not subordinated to partisanship this traditional districting criteria.

96. To compare the partisanship of his simulated plans to the enacted House and Senate plans, Dr. Chen used Census Block-level election results from recent statewide elections in North Carolina. Tr. 274:5-275:20; PX1 at 19-20 (Chen Report). For most of his analysis, Dr. Chen used the following ten statewide elections: 2010 U.S. Senate, 2012 U.S. President, 2012 Governor, 2012 Lieutenant Governor, 2014 U.S. Senate, 2016 U.S. President, 2016 U.S. Senate, 2016 Governor, 2016 Lieutenant Governor, and 2016 Attorney

General. *Id.* Dr. Chen provided several reasons for his choice of these ten statewide elections.

97. First, Representative Lewis indicated at an August 10, 2017, hearing that these ten statewide elections would be the elections that the Joint Redistricting Committees would use to evaluate the 2017 Plans. Tr. 275:8-11; PX1 at 20 (Chen Report).

98. Second, Dr. Chen testified that it is well-accepted in academic literature and in redistricting practice that statewide elections, rather than legislative elections, provide the best basis for measuring the partisanship of a district and for comparing the partisanship of districts across alternative possible plans. Tr. 276:3-27:18; PX1 at 19-20 (Chen Report). Dr. Chen explained that legislative elections, such as state House and state Senate elections, do not provide a sound basis for measuring the partisanship of Census Blocks and districts because the results of legislative elections can be skewed by various factors. *Id.* For instance, if districts are gerrymandered or otherwise uncompetitive, the results of the legislative elections can be biased by the district boundaries in a way that they would not be under an alternative plan. *Id.* As Dr. Chen noted, the General Assembly did not have Dr. Hofeller use legislative elections to measure partisanship in drawing the 2017 Plans. Tr. 277:9-14.

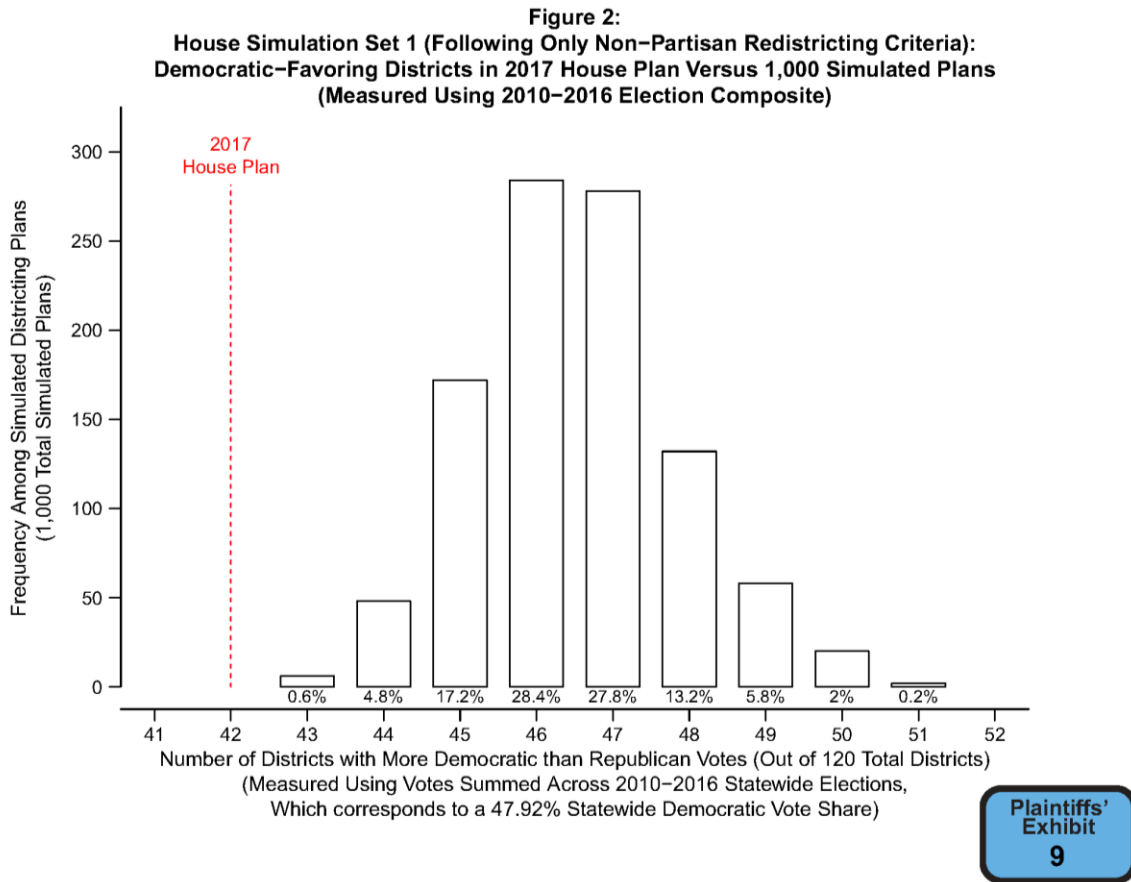
99. Third, Dr. Chen testified he did not use party registration to measure the partisanship of districts because it is well-known in academic literature and in the redistricting community that party registration is not a reliable indicator of actual partisan voting behavior. Tr. 277:19-278:10. That is particularly true in southern states such as North Carolina, where many registered Democrats now consistently vote for Republicans. *Id.* As Dr. Chen again noted, Legislative Defendants did not have Dr. Hofeller use party registration to measure partisanship in drawing the 2017 Plans. Tr. 278:11-15.

100. The Court finds the use of statewide elections by Plaintiffs' experts to measure the partisanship of simulated and enacted districts is a reliable methodology.

101. To measure the partisanship of his simulated districts and the enacted districts, Dr. Chen determined the set of Census Blocks that comprise each district. Tr. 278:24-283:10; PX1 at 20-22 (Chen Report). Dr. Chen then aggregated the elections results from the ten 2010-2016 statewide elections for that set of Census Blocks. *Id.* In other words, Dr. Chen calculated the total votes cast for Democratic candidates in those ten 2010-2016 statewide elections across the relevant set of Census Blocks and the total votes cast for Republican candidates in that set of Census Blocks. *Id.* If there were more votes in aggregate for the Democratic candidates, Dr. Chen classified the district as a Democratic district, and if there were more votes for the Republican candidates, Dr. Chen classified the district as a Republican district. *Id.*

102. Using this measure of partisanship, Dr. Chen compared the number of Democratic districts under the enacted 2017 House plan and under the 1,000 simulated plans in his House Simulation Set 1. While the enacted House plan has 42 Democratic districts using the 2010-2016 statewide elections, not a single one of the 1,000 simulated plans produce so few Democratic districts. Tr. 285:15-287:8; PX1 at 29-30 (Chen Report). The vast majority of simulated plans produce 46 to 51 Democratic districts using the 2010-2016 statewide elections, with the two most common outcomes in the simulations being 46 or 47 Democratic districts—*i.e.*, four or five more Democratic districts than exist under the enacted House plan. *Id.* From these results, Dr. Chen concluded with over 99% statistical certainty that the current House plan is an extreme partisan outlier, and one that could not have occurred under a districting process that adhered to the traditional districting criteria. Tr. 287:2-8; PX1 at 29 (Chen Report).

103. Plaintiffs' Exhibit 9 depicts the distribution of Democratic seats under the enacted House plan and under the 1,000 simulations in Dr. Chen's House Simulation Set 1:



104. Dr. Chen explained that the number of Democratic districts estimated for his simulated plans is depressed by the fact that the 2010-2016 statewide elections he used were relatively favorable for Republicans. Tr. 284:1-285:12; PX1 at 29 (Chen Report). Three of the four elections cycles in this period—2010, 2014, and 2016—were favorable for Republicans nationally. *Id.* Consequently, the aggregate Democratic share of the two-party vote across the ten statewide elections in the 2010-2016 composite used by Dr. Chen was just 47.92%. *Id.*

105. Dr. Chen also measured the number of Democratic districts that would exist under his simulated plans and the enacted House plan under electoral environments that

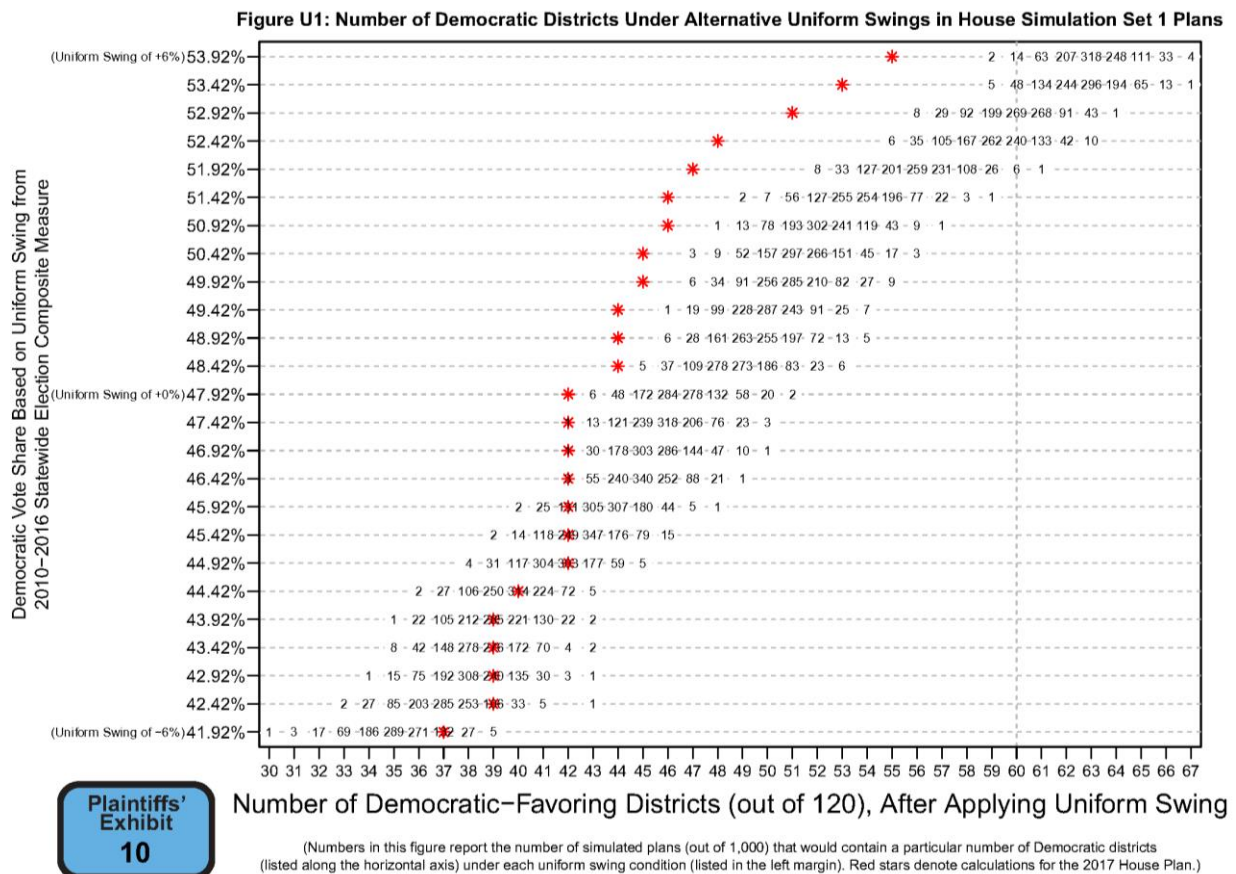
are more neutral or even favorable to Democrats. Tr. 287:15-22. First, Dr. Chen analyzed the number of Democratic districts using only the 2016 Attorney General election, which was a near tie. Tr. 287:19-289:14; PX1 at 29 (Chen Report). Using the 2016 Attorney General results, the enacted House plan produces 44 Democratic districts, while the 1,000 simulated House plans produce 48 to 55 Democratic districts, with the most common outcome being 52 Democratic districts. Tr. 287:24-289:14; PX119; PX1 at 29, 174, A1. The gap between the enacted House plan and the simulated plans therefore grows to eight Democratic seats in the most common outcome under the neutral electoral environment that was the 2016 Attorney General election. *Id.*

106. Dr. Chen also performed a “uniform swing” analysis to compare the enacted plan and the simulated plans under different electoral environments. Uniform swing analysis is a common technique used in academic literature and the redistricting community to measure how districts would perform under varying electoral conditions. Tr. 289:25-290:8. For his uniform swing analysis, Dr. Chen started with the Democratic vote share in every enacted and simulated district using the 2010-2016 statewide elections, and then increased or decreased the Democratic vote share uniformly in every district in 0.5% increments. Tr. 290:4-296:3.

107. Dr. Chen’s uniform swing analysis revealed a “striking trend.” Tr. 296:7. As the uniform swing increases in the direction of more favorable Democratic performance, the gap between the number of Democratic districts under the enacted plan and the simulated plans grows more and more. Tr. 296:7-20. In other words, “in electoral environments that are more favorable to Democrats, the gap between the enacted plan and all of the computer-simulated plans is widened.” Tr. 296:18-20.

108. Plaintiffs’ Exhibit 10 below depicts Dr. Chen’s uniform swing analysis for House Simulation Set 1. The starting point is the row on the vertical axis for “47.92%,”

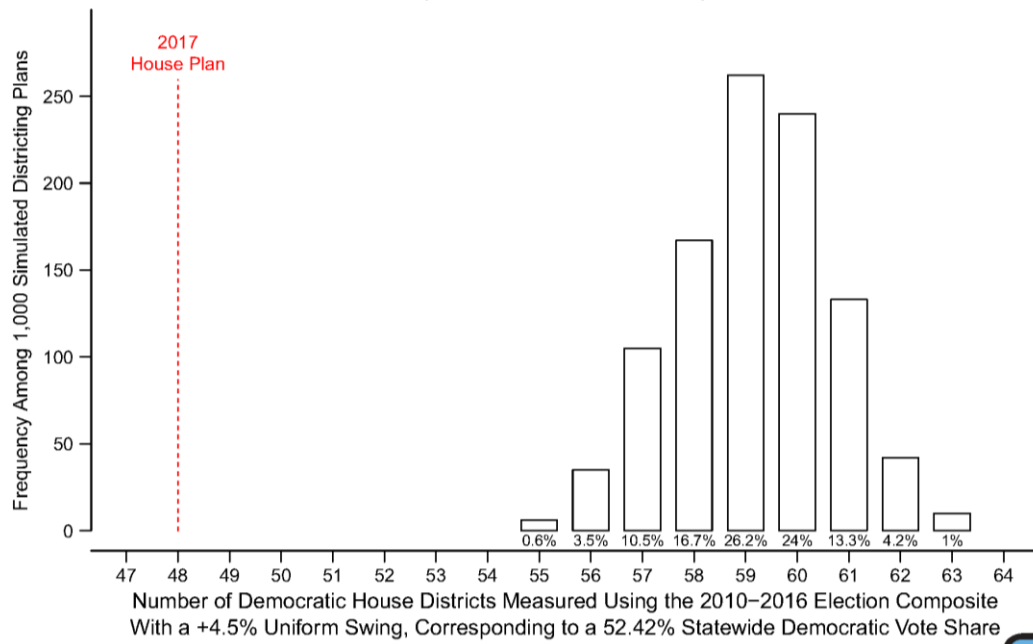
which represents the statewide Democratic vote share under the ten 2010-2016 statewide elections. Tr. 290:23-296:3; PX1 at 31-33 (Chen Report). Each row above this point represents the results when increasing the Democratic vote share in every enacted and simulated district by increments of 0.5%. *Id.* The red stars in each row represent the number of Democratic districts under the enacted 2017 House plan, and the numbers to the right of each red star represent the number of simulations (out of 1,000) that produce the number of Democratic districts found on the horizontal axis below. *Id.* For instance, for the starting row of a 47.92% statewide Democratic vote share, the enacted plan (the red star) produces 42 Democratic districts, six simulated plans produce 43 Democratic districts, 48 simulated plans produce 44 Democratic districts, 172 simulated plans produce 45 Democratic districts, and so on. *Id.*



109. Dr. Chen found that the gap between the enacted and simulated plans not only grew as the electoral environment became more favorable for Democrats, but the gap is “widest” at the point when Democrats would start winning a majority of House seats under the simulated plans. Tr. 296:20-297:21. Plaintiffs’ Exhibit 11 (Figure U2) below depicts Dr. Chen’s results for a uniform swing corresponding to a statewide Democratic vote share of 52.42%. In this scenario, the enacted House plan contains only 48 Democratic districts, but roughly one-third of the 1,000 simulations produce 60 or more Democratic districts, with a 60-60 tie being the second most common outcome. Tr. 298:2-299:7. Plaintiffs’ Exhibit 12 (Figure U3) below depicts Dr. Chen’s results for a uniform swing corresponding to a statewide Democratic vote share of 52.92%. In this scenario, there are 60 or more Democratic districts in nearly two-thirds of the simulations, and Democrats would win a majority (61 or more seats) in more than 40% of the simulations. Tr. 299:16-301:12. But Democrats would hold just 51 districts under the enacted House plan. *Id.*

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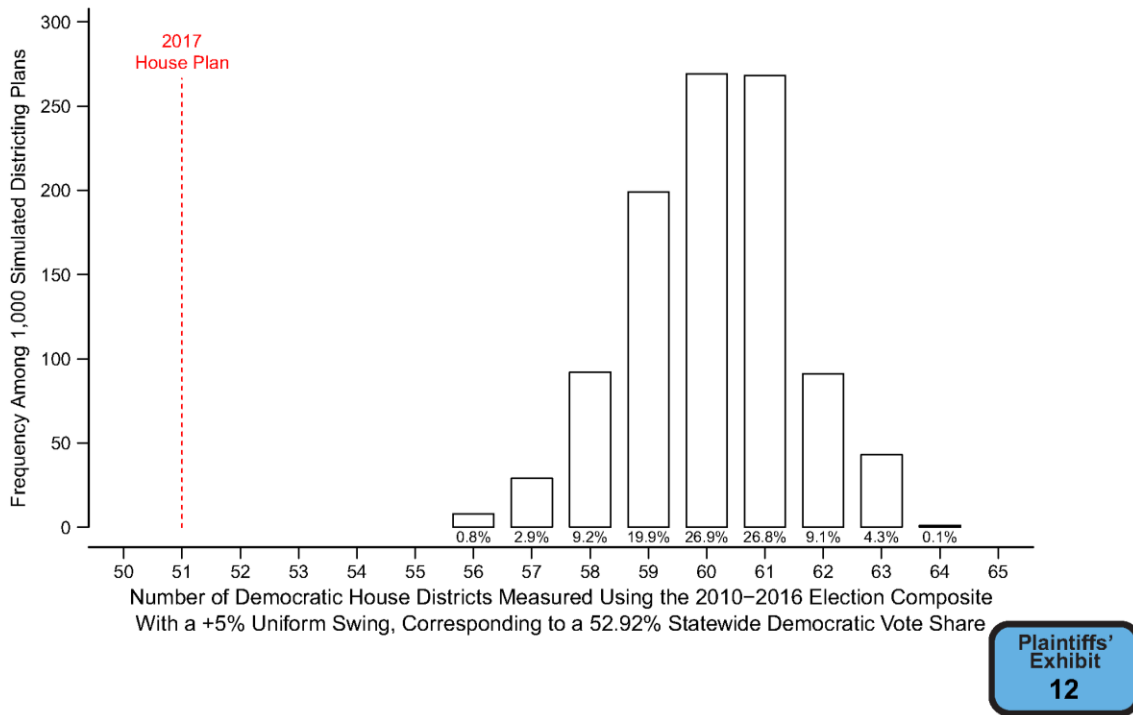
Figure U2:
Number of Democratic House Districts Measured Using the 2010–2016 Election Composite
With a +4.5% Uniform Swing, Corresponding to a 52.42% Statewide Democratic Vote Share
(House Simulation Set 1)



Plaintiffs'
Exhibit
11

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**Figure U3:
Number of Democratic House Districts Measured Using the 2010–2016 Election Composite
With a +5% Uniform Swing, Corresponding to a 52.92% Statewide Democratic Vote Share
(House Simulation Set 1)**



110. Dr. Chen analyzed the type of electoral environment that would produce 55 Democratic districts under the enacted House plan, which is the number of House districts that Democrats won in 2018. Tr. 301:16-302:14. Dr. Chen found that, in the type of electoral environment that would produce 55 Democratic districts under the enacted plan in his uniform swing analysis, Democrats would win 60 or more House districts in over 99% of his simulated plans, and would win a majority of districts in over 98% of the simulated plans. *Id.*; PX10. In other words, while Democrats improved their seat share in 2018, they may well have won a majority had a nonpartisan plan been in place.

111. The Court finds Dr. Chen's uniform swing analysis to be substantial evidence of the intent and effects of Legislative Defendants' partisan gerrymander. The analysis establishes that the effects of the gerrymander are most extreme in electoral environments that are better for Democrats, specifically in electoral environments where Democrats could

win a majority of House seats under a nonpartisan map. Dr. Chen's uniform swing analysis is persuasive evidence the enacted House plan was designed specifically to ensure that Democrats would not win a majority of House seats under any reasonably foreseeable electoral environment.

112. The Court further gives weight to Dr. Chen's overall conclusions from his House Simulation Set 1. Dr. Chen concluded with over 99% statistical certainty that partisanship predominated in the drawing of the enacted House plan and subordinated the traditional districting criteria of compactness, avoiding splitting municipalities, and avoiding splitting VTDs. Tr. 307:12-24. The Court adopts these conclusions and finds the current House districts, regardless of whether they were drawn in 2017 or 2011, subordinated these three traditional districting criteria in order to accomplish Legislative Defendants' predominant partisan goals.

113. In his House Simulation Set 2, Dr. Chen programmed his algorithm to add avoiding pairing incumbents as an additional criterion. Dr. Chen performed this analysis to determine whether a hypothetical, nonpartisan effort to avoid pairing the incumbents in place at the time each of the relevant districts was drawn could account for the extreme partisan bias and subordination of traditional districting principles that Dr. Chen found in his Simulation Set 1. Tr. 308:15-21. Dr. Chen programmed his algorithm in Simulation Set 2 to avoid pairing the maximum number of incumbents possible who were in office at the time of the relevant redistrictings, and to ensure that the very same incumbents who were not paired with another incumbent under the enacted plans were not paired in the simulations. Tr. 308:3-14, 310:21-311:16; PX1 at 43 (Chen Report).

114. The method by which Dr. Chen avoided pairing incumbents in Simulation Set 2 is consistent with the Adopted Criteria's incumbency protection provision. The Court gives no weight to Legislative Defendants' contention that the Adopted Criteria required

incumbency protection beyond merely avoiding pairing incumbents; namely, that the Adopted Criteria required creating districts politically favorable to incumbents. As Representative Lewis stated, this criterion was interpreted as simply an intent to avoid pairing incumbents. *See* FOF ¶ 28. At the time of the 2017 redistricting, Republicans held supermajorities in both chambers of the General Assembly. Hence, seeking to enhance the reelection chances of every incumbent, Democrat and Republican alike, would have been a means of seeking to lock-in the Republican supermajorities. It would also have been particularly inappropriate to seek to preserve the “core” of the existing districts, as Legislative Defendants’ expert Dr. Brunell suggested, since many of the existing districts had been found to constitute illegal racial gerrymanders.

115. In addition, the Court finds that Legislative Defendants did not seek to protect Democratic and Republican incumbents alike in a neutral manner. For example, in Buncombe County, the enacted plan paired two Democratic incumbents who were in office at the time these House districts were drawn in 2011, but Dr. Chen’s algorithm was able to avoid pairing these two Democratic incumbents in all 1,000 of his simulations. Tr. 312:14-313:9; PX1 at 45, 47 (Chen Report). Legislative Defendants thus unnecessarily paired these two Democratic incumbents in creating the Buncombe County House districts, ensuring that one of the two would not be reelected. *Id.* Dr. Hofeller’s Excel files further show that, in 2017, Dr. Hofeller focused solely on concerns for Republican incumbents and not Democratic incumbents. FOF § B.2.a. Dr. Hofeller analyzed “Pressure Points for GOP Incumbents” in both the House and the Senate, but performed no similar analysis for Democratic incumbents. *Id.*

116. Based on his House Simulation Set 2 analysis, Dr. Chen found that a nonpartisan effort to avoid pairing incumbents cannot explain the extreme partisan bias of the enacted House plan or its subordination of traditional districting criteria. Dr. Chen

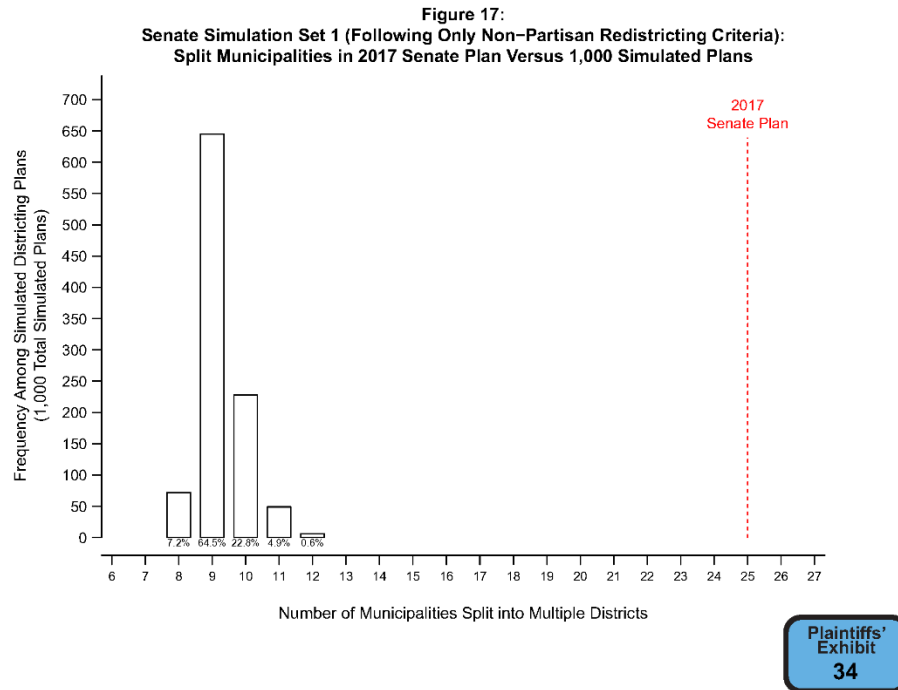
found that the enacted House plan is an extreme outlier with respect to the number of Democratic districts it produces, the number of municipalities and VTDs it splits, and the compactness of its districts compared to the 1,000 simulated plans in House Simulation Set 2. Tr. 313:11-317:24; PX7; PX18; PX23; PX1 at 44-56 (Chen Report). The Court gives weight to Dr. Chen's findings in House Simulation Set 2 and finds that a nonpartisan effort to protect incumbents cannot explain the extreme partisan bias and subordination of traditional districting principles in the enacted House plan.

117. For the Senate, Dr. Chen ran two sets of 1,000 simulations just as he did for the House. Tr. 318:11-319:9. Dr. Chen's Senate Simulation Set 1 applied the same algorithm used for House Simulation Set 1, prioritizing and equally weighting the traditional districting principles within the Adopted Criteria of compactness and avoiding splitting municipalities and VTDs.³ Dr. Chen ran his algorithm 1,000 times for each Senate county grouping, producing 1,000 unique statewide plans in Senate Simulation Set 1. Tr. 319:10-320:10.

118. With respect to municipal splits, Dr. Chen found the enacted Senate plan splits 25 municipalities, while the 1,000 simulated plans in Senate Simulation Set 1 split between just 8 and 12 municipalities. Tr. 320:12-321:9; PX1 at 69, 71 (Chen Report). From this, Dr. Chen concluded with over 99.9% statistical certainty that the enacted Senate plan subordinates the traditional districting criterion of following municipal boundaries, and splits far more municipalities than is reasonably necessary. Tr. 321:12-17.

³ Dr. Chen used the same Senate county groupings that exist under the enacted Senate plan, minimized the number of county traversals, and applied the Adopted Criteria's equal population and contiguity requirements. Tr. 318:11-319:9.

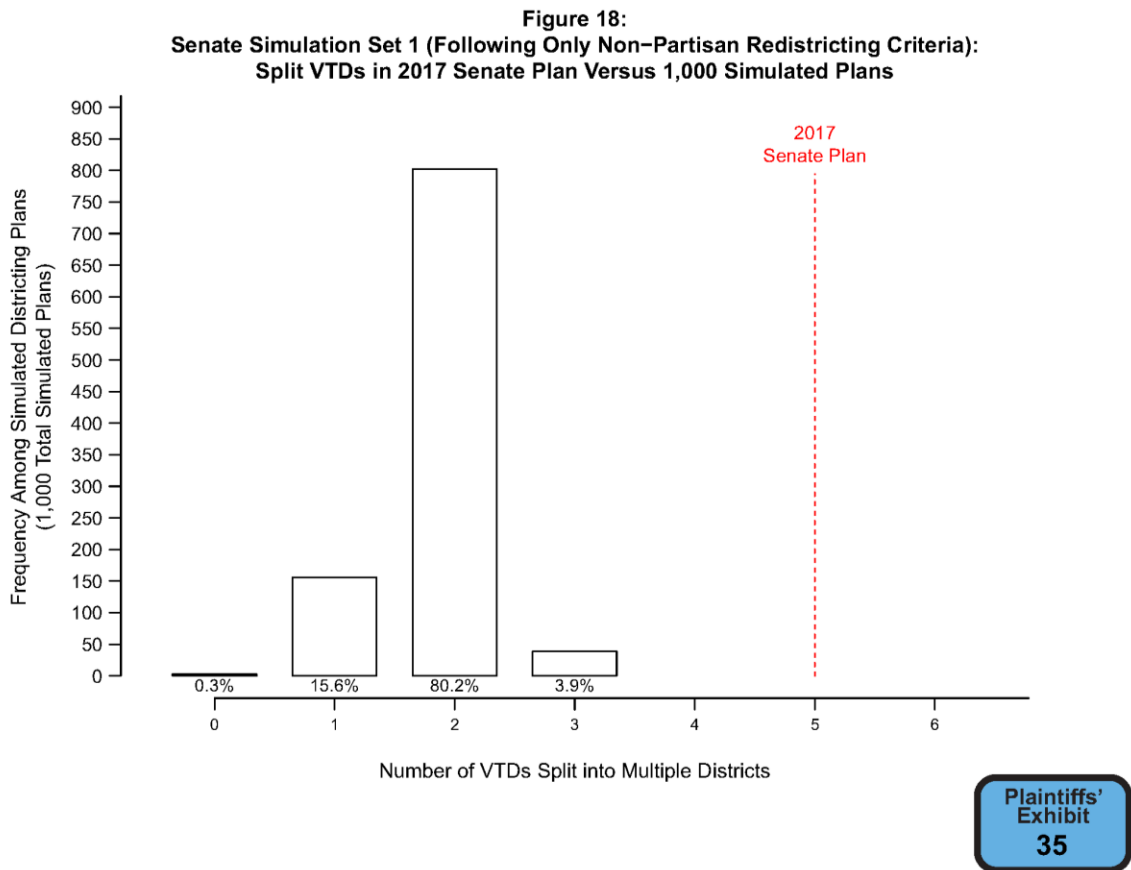
119. Plaintiffs' Exhibit 34 depicts the number of municipalities split under the enacted Senate plan and the 1,000 simulations in Senate Simulation Set 1:



120. The Court finds the enacted Senate plan subordinates to partisanship the traditional districting principle of avoiding the unnecessary splitting of municipalities. The Court finds the current Senate districts split substantially more municipalities than would be split if the map-drawing process had not subordinated to partisanship this traditional districting principle.

121. With respect to VTDs, Dr. Chen found the enacted Senate plan splits 5 VTDs, while his simulations split between 0 and 3 VTDs. Tr. 321:19-322:9; PX1 at 69, 72 (Chen Report). From this, Dr. Chen concluded with over 99.9% statistical certainty that the enacted Senate plan subordinates the traditional districting criterion of following VTD boundaries, and splits more VTDs than is reasonably necessary. Tr. 322:12-15.

122. Plaintiffs' Exhibit 35 depicts the number of VTDs split under the enacted Senate plan and the 1,000 simulations in Senate Simulation Set 1:

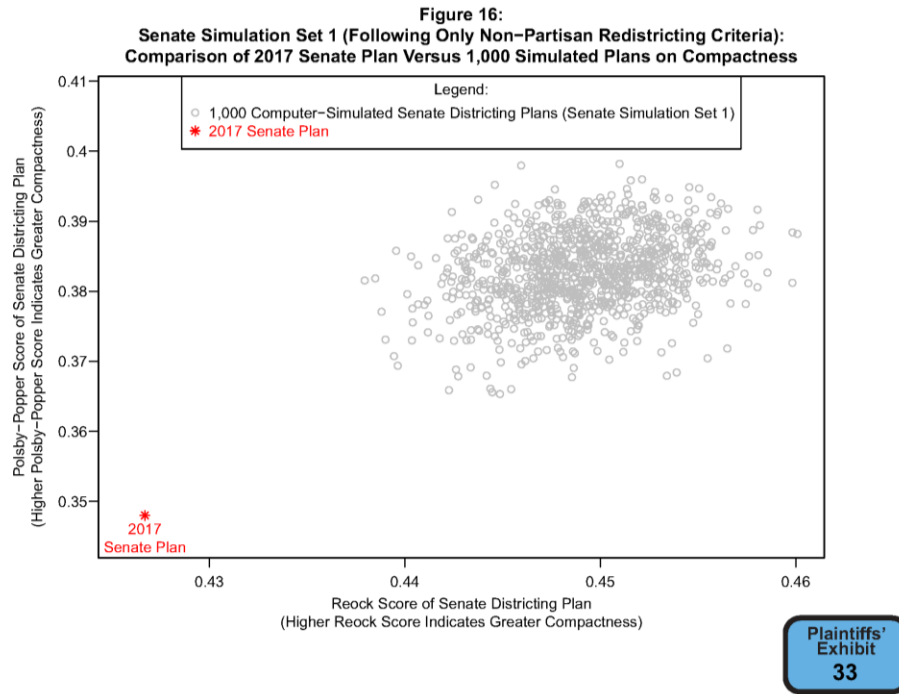


123. The Court finds the enacted Senate plan subordinates to partisanship the traditional districting principle of avoiding the unnecessary splitting of VTDs. The Court finds the current Senate districts split more VTDs than would be split if the map-drawing process had not subordinated to partisanship this traditional districting principle.

124. Dr. Chen found the enacted Senate plan is also less compact than all 1,000 of his Senate simulations. Using both the Reock and Polsby-Popper measures of compactness, all 1,000 simulated plans in Senate Simulation Set 1 are more compact than the enacted Senate plan. Tr. 322:17-324:3; PX1 at 67-69 (Chen Report). From this, Dr. Chen concluded with over 99% statistical certainty that the enacted Senate plan subordinates the traditional districting criterion of compactness, and that the current districts are less

compact than they would be under a map-drawing process that prioritizes and follows the traditional districting criteria. Tr. 324:6-15.

125. Plaintiffs' Exhibit 33 depicts the compactness of the enacted Senate plan and the 1,000 simulations in Senate Simulation Set 1:



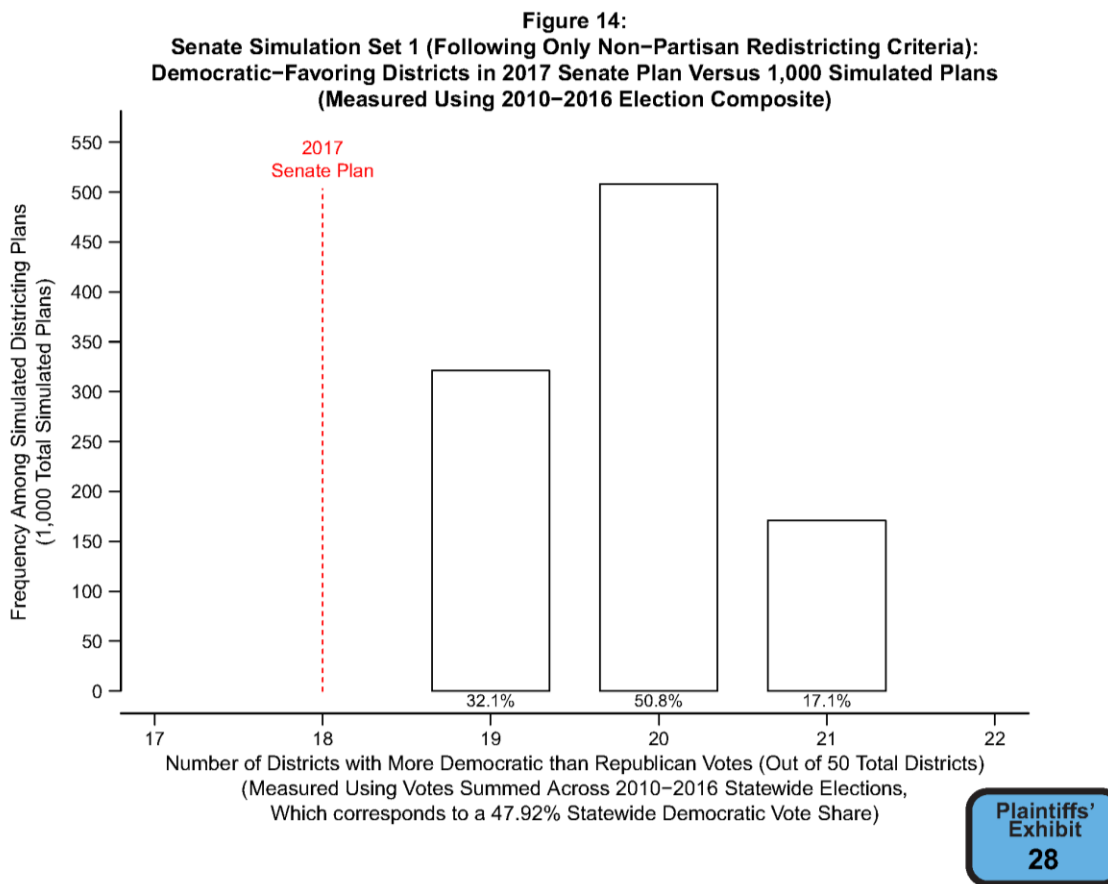
126. The Court finds the enacted Senate plan subordinates to partisanship the traditional districting principle of compactness. The Court finds the current Senate districts are less compact than they would be under a map-drawing process that had not subordinated to partisanship this traditional districting criteria.

127. As with the House, Dr. Chen compared the partisanship of his simulated Senate plans to the partisanship of the enacted Senate plan using the same ten statewide elections from 2010-2016 that Representative Lewis stated would be used. Tr. 324:16-325:5.

128. Using the 2010-2016 statewide elections, Dr. Chen found that the enacted Senate plan produces 18 Democratic districts. Tr. 325:7-326:11; PX1 at 57, 60 (Chen

Report). In contrast, none of the 1,000 simulated plans produce such an outcome. *Id.* The simulated Senate plans produce 19 to 21 Democratic districts using the 2010-2016 statewide elections, with the most common outcome in the simulations being 20 Democratic districts—*i.e.*, two more Democratic districts than exist under the enacted Senate plan. *Id.* From these results, Dr. Chen concluded with over 99% statistical certainty that the current Senate plan is an extreme partisan outlier, and one that could not have occurred under a districting process that adhered to the traditional districting criteria. Tr. 326:12-21; PX1 at 59 (Chen report).

129. Plaintiffs' Exhibit 28 depicts the distribution of Democratic seats under the enacted Senate plan and under the 1,000 simulations in Senate Simulation Set 1:



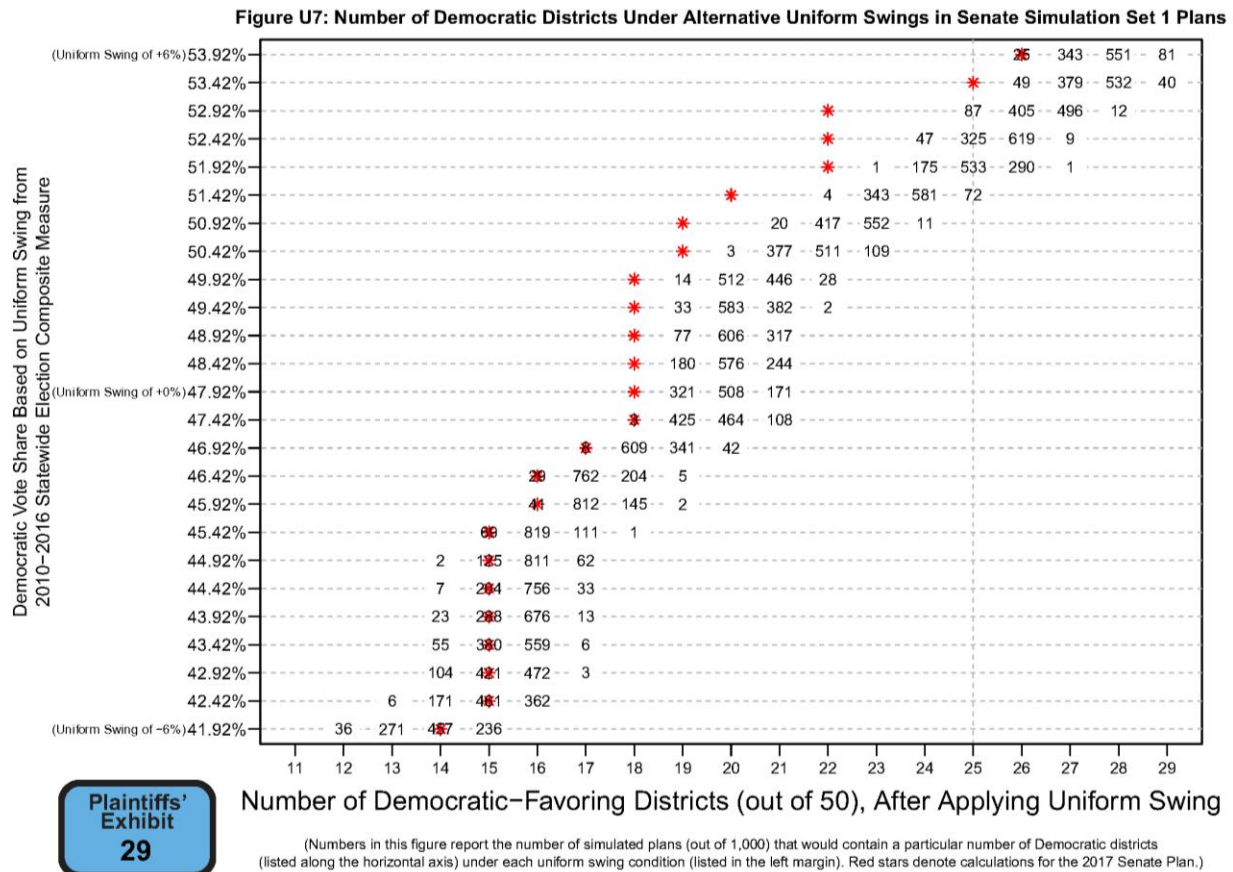
130. Like he did for the House, Dr. Chen measured the number of Democratic districts that would exist under his simulated plans and the enacted plan under electoral environments that are more neutral or even favorable to Democrats. Dr. Chen again analyzed the number of Democratic districts when using just the 2016 Attorney General election, which was a near tie. Tr. 327:8-11; PX121; PX1 at 59, 61, A3 (Chen Report). Dr. Chen found that the enacted Senate plan produces 20 Democratic districts using the 2016 Attorney General results, while the 1,000 simulated Senate plans most commonly produce 23 Democratic districts under the 2016 Attorney General results. Tr. 328:1-13. The gap between the enacted Senate plan and the simulated plans therefore grows to three Democratic seats in the most common outcome under the neutral electoral environment of the 2016 Attorney General election. *Id.*

131. Dr. Chen also performed a uniform swing analysis to compare the enacted Senate plan to the simulated Senate plans under different electoral environments. Just as he did for the House, in his uniform swing analysis for the Senate, Dr. Chen started with the Democratic vote share in every enacted and simulated district using the 2010-2016 statewide elections and then increased or decreased the Democratic vote share uniformly in every district in 0.5% increments. Tr. 328:25-329:7.

132. Dr. Chen found the same trend in his uniform swing analysis of the Senate that he found for the House. Tr. 330:7-23. He found that as he increases the uniform swing in the more Democratic direction, the gap between the number of Democratic districts under the enacted Senate plan and the simulated plans grows. *Id.* And the gap again becomes widest around the points where Democrats would come close to gaining a majority or would actually gain a majority under the nonpartisan simulated plans. *Id.*

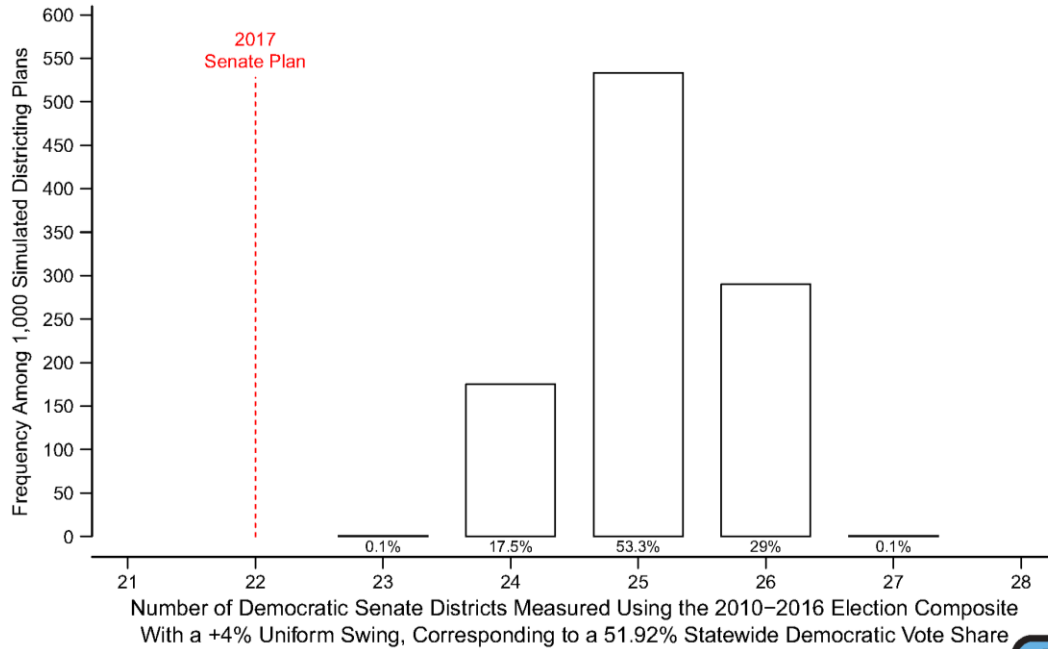
133. Plaintiffs' Exhibit 29 below depicts Dr. Chen's uniform swing analysis for the Senate. The red stars again reflect the number of Democratic districts under the enacted

Senate plan and the numbers to the right of the red stars reflect the number of simulations (out of 1,000) that produce the number of Democratic districts listed on the horizontal axis.



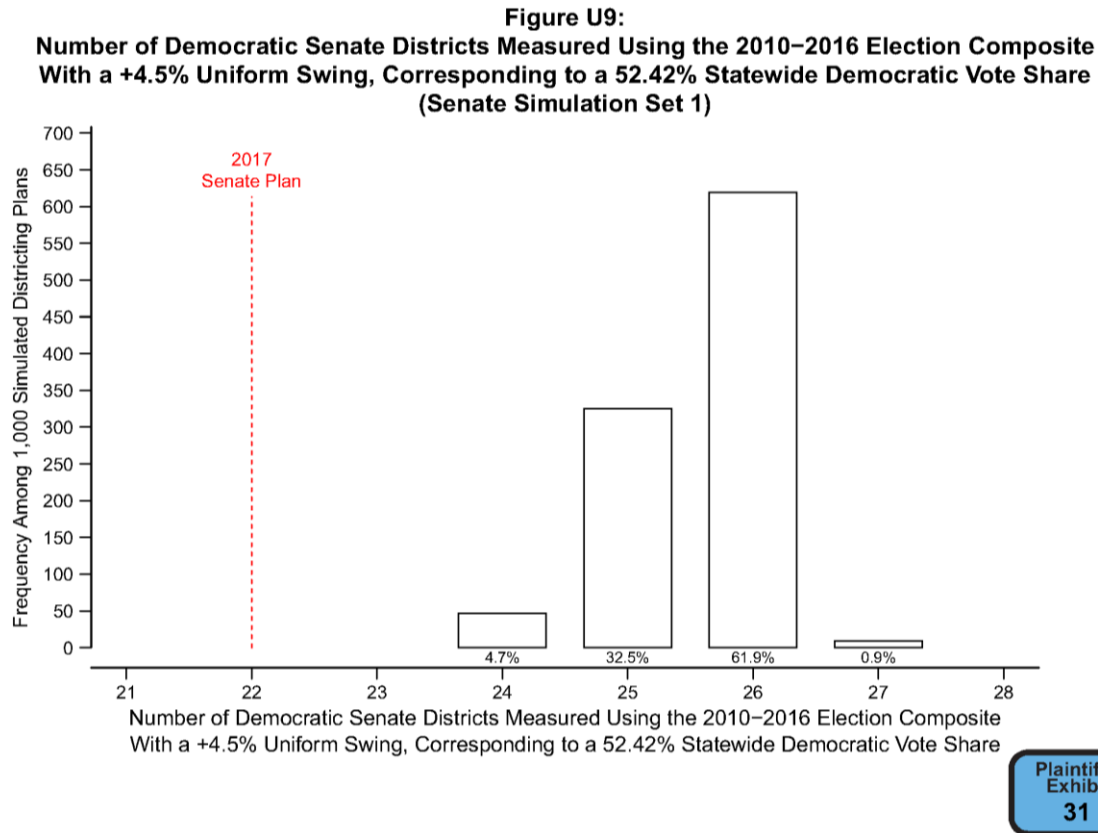
134. Plaintiffs' Exhibit 30 (Figure U8) below depicts Dr. Chen's Senate results for a uniform swing corresponding to a statewide Democratic vote share of 51.92%. The figure reveals that, in this scenario, the enacted Senate plan contains only 22 Democratic districts, but the vast majority of simulations would give Democrats a tie or an outright majority in the Senate. Tr. 331:2-332:23. Plaintiffs' Exhibit 31 (Figure U9) below depicts Dr. Chen's Senate results for a uniform swing corresponding to a statewide Democratic vote share of 52.42%. In this environment, Democrats would win half or more of the districts in over 95% of the simulations and would win an outright majority in over 62% of the simulations. Tr. 333:7-334:2. Yet, under the enacted Senate plan, Democrats would hold just 22 Senate districts in this scenario. *Id.*

**Figure U8:
Number of Democratic Senate Districts Measured Using the 2010–2016 Election Composite
With a +4% Uniform Swing, Corresponding to a 51.92% Statewide Democratic Vote Share
(Senate Simulation Set 1)**



Plaintiffs'
Exhibit
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135. Dr. Chen also analyzed the type of electoral environment that would produce 21 Democratic districts under the enacted plan, which is the number of Senate districts that Democrats won in 2018. Tr. 334:3-335:7. Dr. Chen found that, in the type of environment that would produce 21 Democratic districts under the enacted plan in his uniform swing analysis, Democrats would win *25 or more* Senate districts in the vast majority of simulations. *Id.*; PX29. In other words, while Democrats improved their seat share in 2018, they may well have won a majority had a nonpartisan plan been in place.

136. The Court again finds Dr. Chen's uniform swing analysis to be substantial evidence of the intent and effects of the partisan gerrymander. Dr. Chen's analysis establishes that the effects of the gerrymander are most extreme in electoral environments that are better for Democrats, and in particular in environments under which Democrats could win a majority of Senate seats under a nonpartisan map. Dr. Chen's uniform swing

analysis is persuasive evidence that the enacted Senate plan was designed specifically to ensure that Democrats would not win a majority of Senate seats under any reasonably foreseeable electoral environment.

137. The Court further gives weight to Dr. Chen's overall conclusions from his Senate Simulation Set 1. Dr. Chen concluded with over 99% statistical certainty that partisanship predominated in the drawing of the enacted Senate plan and subordinated the traditional districting criteria of compactness, avoiding splitting municipalities, and avoiding splitting VTDs. Tr. 336:22-337:7. The Court adopts these conclusions and finds the current Senate districts, regardless of whether they were drawn in 2017 or 2011, subordinated these three traditional districting criteria in order to accomplish Legislative Defendants' predominant partisan goals.

138. Dr. Chen generated 1,000 more simulated plans in his Senate Simulation Set 2, adding the same incumbency criteria he used for the House. Dr. Chen found that a hypothetical, nonpartisan effort to avoid pairing the incumbents in place at the time each of the relevant districts was drawn could not explain the extreme partisan bias of the enacted Senate plan and its subordination of traditional districting principles. Tr. 341:18-342:8. Dr. Chen found the enacted Senate plan is an extreme outlier with respect to the number of Democratic districts it produces, the number of municipalities and VTDs it splits, and the compactness of its districts compared to the 1,000 simulated plans in Senate Simulation Set 2. Tr. 337:8-341:22, 26, 37, 42; PX1 at 73-85 (Chen Report). The Court gives weight to Dr. Chen's findings in Senate Simulation Set 2 and finds a nonpartisan effort to protect incumbents cannot explain the extreme partisan bias and subordination of traditional districting principles in the enacted Senate plan.

139. The Court also gives weight to and adopts Dr. Chen's conclusions that the partisan bias of the 2017 House and Senate Plans cannot be explained by North Carolina's

political geography, meaning the geographic locations of Republican and Democratic voters. Tr. 307:3-11, 336:11-19. Political geography can create a natural advantage for Republicans in winning seats where, for example, Democratic voters are clustered in urban areas. Tr. 304:9-18; PX1 at 7-8 (Chen Report). But Dr. Chen designed his simulations with the specific purpose of accounting for North Carolina's political geography and any other built-in advantages either party may have in redistricting. Tr. 304:19-305:19; *see* PX1 at 7-8 (Chen Report). The simulations build districts using the *same* Census geographies and population data that existed when the enacted plans were drawn; thus, the simulated plans capture any natural advantage one party may have had based on population patterns when the General Assembly passed the enacted plans. *Id.*

140. Dr. Chen found that Republicans may have a small degree of natural advantage in winning districts in both the House and Senate; Dr. Chen's analysis suggests that even under his nonpartisan plans, Democrats may win less than 50% of the seats when they win 50% of the votes. Tr. 305:21-307:2, 335:17-336:10; PX1 at 36, 66 (Chen Report). But Dr. Chen concluded, and the Court finds, that the enacted House and Senate plans are extreme partisan outliers compared to Dr. Chen's simulations that account for political geography and any other built-in advantages Republicans may have, and thus political geography and other built-in advantages cannot explain the enacted plans' extreme partisan bias. Tr. 307:3-11, 336:11-19.

141. The Court also rejects Legislative Defendants' critiques of the way in which Dr. Chen's simulation algorithm applied the traditional districting principles of compactness and avoiding splitting municipalities and precincts.

142. Dr. Chen's interpretation and application of the traditional districting principles is fully consistent with the guidance provided by Legislative Defendants at the time of the 2017 redistricting. At the first public hearing after the draft plans were

unveiled, Representative Lewis explained the Adopted Criteria meant “trying to keep towns, cities and precincts whole where possible.” PX607 at 10:5-6. Representative Lewis made similar statements at the committee hearing where the Adopted Criteria were proposed and debated; he asserted, for example, that the criterion regarding municipal splits “says that the map drawer may and rightfully should consider municipality boundaries when they can.” PX603 at 67:16-18. Representative Lewis added that “municipality, precinct lines are things that are all community-of-interest-type things that we’re going to seek to preserve.” *Id.* at 77:12-14. Representative Lewis did not qualify in these statements that the Redistricting Committees would seek only to promote these traditional principles up to a point, or would seek to intentionally split some *minimum* number of municipalities and VTDs.

143. The Court further gives weight to Dr. Chen’s testimony that his application of these criteria is consistent with generally accepted redistricting principles and practice. Dr. Chen testified that no jurisdiction in the country prefers to split a *higher* number of municipalities or VTDs or wants *less* compact districts. Tr. 603:2-605:21, 774:5-21. Nor does any jurisdiction seek to split some *minimum* number of municipalities or VTDs or impose a *cap* on how compact the districts should be. *Id.*

144. Legislative Defendants did not introduce persuasive evidence of nonpartisan reasons why the enacted plans split particular municipalities or VTDs or made particular districts less compact.

145. The Court also rejects any suggestion that Dr. Chen should not have applied these traditional districting criteria in simulating county groupings that were drawn in 2011 because these principles were not expressly stated as official criteria during the 2011 redistricting process. *See* Tr. 629:19-636:12. The principles of compactness and avoiding split municipalities and VTDs were traditional districting criteria since well before 2011.

Tr. 776:8-777:8; *see, e.g., Stephenson v. Bartlett*, 355 N.C. 354, 371, 562 S.E.2d 377, 389 (2002). That the General Assembly did not list these traditional districting principles as official criteria in 2011 does not change the fact that Legislative Defendants subordinated these principles to partisan considerations in drawing the 2011 districts at issue in this case. *Id.* And the fact that the General Assembly reenacted these districts without change in 2017 does not mean these districts no longer subordinate traditional districting principles to partisan considerations. *Id.*

146. Dr. Chen's analysis demonstrates the current districts subordinate these nonpartisan traditional principles to partisan intent.

b. Dr. Mattingly

147. Jonathan Mattingly, Ph.D., is a North Carolina native, the chairman of the Duke University Mathematics Department, and the James B. Duke Professor of Mathematics at Duke University. Tr. 1080:7-20. He also is a professor in the Duke Statistics Department. *Id.* Dr. Mattingly was accepted as an expert in applied mathematics, probability, and statistical science. Tr. 1083:1-10.

148. Dr. Mattingly developed his method of evaluating partisan gerrymandering in his academic research. Tr. 1086:20-24. He has since created a project at Duke called "Quantifying Gerrymandering." Tr. 1084:9-1085:4. In the one previous case in which Dr. Mattingly testified, a federal partisan gerrymandering case relating to North Carolina's congressional districts, the federal court credited Dr. Mattingly's testimony and concluded his analysis "provide[d] strong evidence" of partisan gerrymandering. *Rucho*, 279 F. Supp. 3d at 644. The court found his simulations "not only evidence[d] the General Assembly's discriminatory intent, but also provide[d] evidence of the 2016 Plan's discriminatory effects." *Id.* at 666.

149. For this case, Dr. Mattingly generated a collection, or “ensemble,” of nonpartisan, alternative redistricting maps using the Markov chain Monte Carlo computer algorithm, which is a well-established algorithm dating back at least to the Manhattan Project. Tr. 1089:11-24; Tr. 1090:19-22. Dr. Mattingly generated approximately 1.1×10^{108} statewide maps in the House (of which 6.6×10^{86} were unique), and approximately 3.7×10^{93} statewide maps in the Senate (of which 5.3×10^{30} were unique). Tr. 1090:1-14; PX359 at 4. The number of maps that Dr. Mattingly generated is greater than the number of atoms in the known universe. Tr. 1090:12-14.

150. To generate the maps, Dr. Mattingly used all of the nonpartisan redistricting criteria identified by the General Assembly in its Adopted Criteria. The Markov chain Monte Carlo algorithm that Dr. Mattingly employed ensured that the collection of maps was a random and representative sample from the distribution of nonpartisan maps that adhere to North Carolina’s political geography and nonpartisan redistricting criteria. Tr. 1094:5-1095:3. All of Dr. Mattingly’s simulated maps followed North Carolina’s Whole County Provision and split no counties that were kept whole under the enacted plans; he ensured population deviations were within the 5% threshold; he required contiguity; and he tuned his algorithm to ensure that the nonpartisan qualities of the simulated maps were similar to the nonpartisan qualities of the enacted map with respect to compactness and the number of counties, municipalities, and precincts split. Tr. 1091:3-1093:1; PX359 at 3-4. Dr. Mattingly did not try to optimize or maximize any particular criterion such as compactness; instead, he took a random, representative sample of the distribution of all maps that are comparable to the enacted maps in terms of compactness and municipal splits. Tr. 1091:3-23.

151. The Court finds that Dr. Mattingly’s simulated maps provide a reliable and statistically accurate baseline against which to compare the 2017 Plans. Tr. 1089:11-24.

Dr. Mattingly's collection of nonpartisan maps tracked all the nonpartisan criteria adopted by the Committees. By comparing Dr. Mattingly's simulated plans to the enacted plans, the Court can reliably assess whether the characteristics and partisan outcomes under the enacted plans could plausibly have resulted from a nonpartisan process or be explained by North Carolina's political geography. The Court can also reliably assess whether the enacted plans reflect extreme partisan gerrymanders. The partisan bias Dr. Mattingly identified by comparing the enacted plans to his nonpartisan ensemble of plans could not be explained by political geography or natural packing. Tr. 1095:9-1096:8. Moreover, Dr. Mattingly's analysis did not rest on any assumption about proportional representation. Tr. 1132:6-1133:5; Tr. 1103:24-1104:5.

152. After creating a representative sample of hundreds of trillions of nonpartisan maps, Dr. Mattingly used votes from 17 prior North Carolina statewide elections to compare the partisan performance and characteristics of the 2017 Plans to the simulated plans. Dr. Mattingly chose all major statewide elections from 2008-2016 that were available to him, and those 17 elections demonstrated a range of Democratic support and Republican support and a range of spatial structures and vote patterns. Tr. 1097:8-1098:8; PX487 at 5.

153. The elections Dr. Mattingly considered and their statewide Democratic vote share are listed in the table below (PX778 at 7; Tr. 1097:8-1098:8):

17 Elections	Democratic Vote Share
AG08	61.06%
USS08	54.32%
CI08	53.57%
LG08	52.64%
CI12	51.81%
GV08	51.70%
AG16	50.20%
PR08	50.11%
GV16	50.04%
LG12	49.87%
USS14	49.16%
PR12	48.91%
PR16	48.02%
USS16	46.97%
LG16	46.58%
GV12	44.13%
USS10	43.98%

154. Dr. Mattingly concluded that the 2017 Plans displayed a “systematic, persistent bias toward the Republican Party, both on the statewide level and on the county cluster level.” Tr. 1087:22-25. He concluded that the enacted plans were “extreme partisan outlier[s]” when compared to maps that respect the political geography of North Carolina and are similar to the enacted plans in terms of the nonpartisan Adopted Criteria such as compactness and splitting municipalities. Tr. 1088:1-7. He concluded that the “extreme partisan bias” was durable and persisted across a broad range of possible voting patterns and election results. Tr. 1088:1-7. He concluded that the gerrymander was particularly effective at preventing Democrats from breaking the Republican supermajority in both chambers when they would expect to do so under a nonpartisan plan, and from breaking

the Republican majority in both chambers when they would expect to do so under a nonpartisan plan. Tr. 1088:8-11. And Dr. Mattingly concluded that the probability that the General Assembly would have enacted the 2017 Plans without intentionally searching for such a biased plan was “astronomically small.” Tr. 1088:12-14, Tr. 1158:3-8. The Court gives great weight to those conclusions.

155. With respect to the Senate, Dr. Mattingly concluded that the enacted Senate plan shows a systematic bias toward the Republican Party. Tr. 1110:22-1111:3. In 15 of the 17 elections he considered, the enacted Senate plan produces an atypical bias toward the Republican Party with respect to the number of expected Democrat and Republican seats using the results of these prior statewide elections. Tr. 1116:2-12. The probability of seeing such a consistent pro-Republican bias across so many elections was 0.005%, Tr. 1116:18-21; PX487 at 23, meaning that the chance the General Assembly would have picked such a partisan map if it were not looking for it is five in a million, Tr. 1116:22-1117:2.

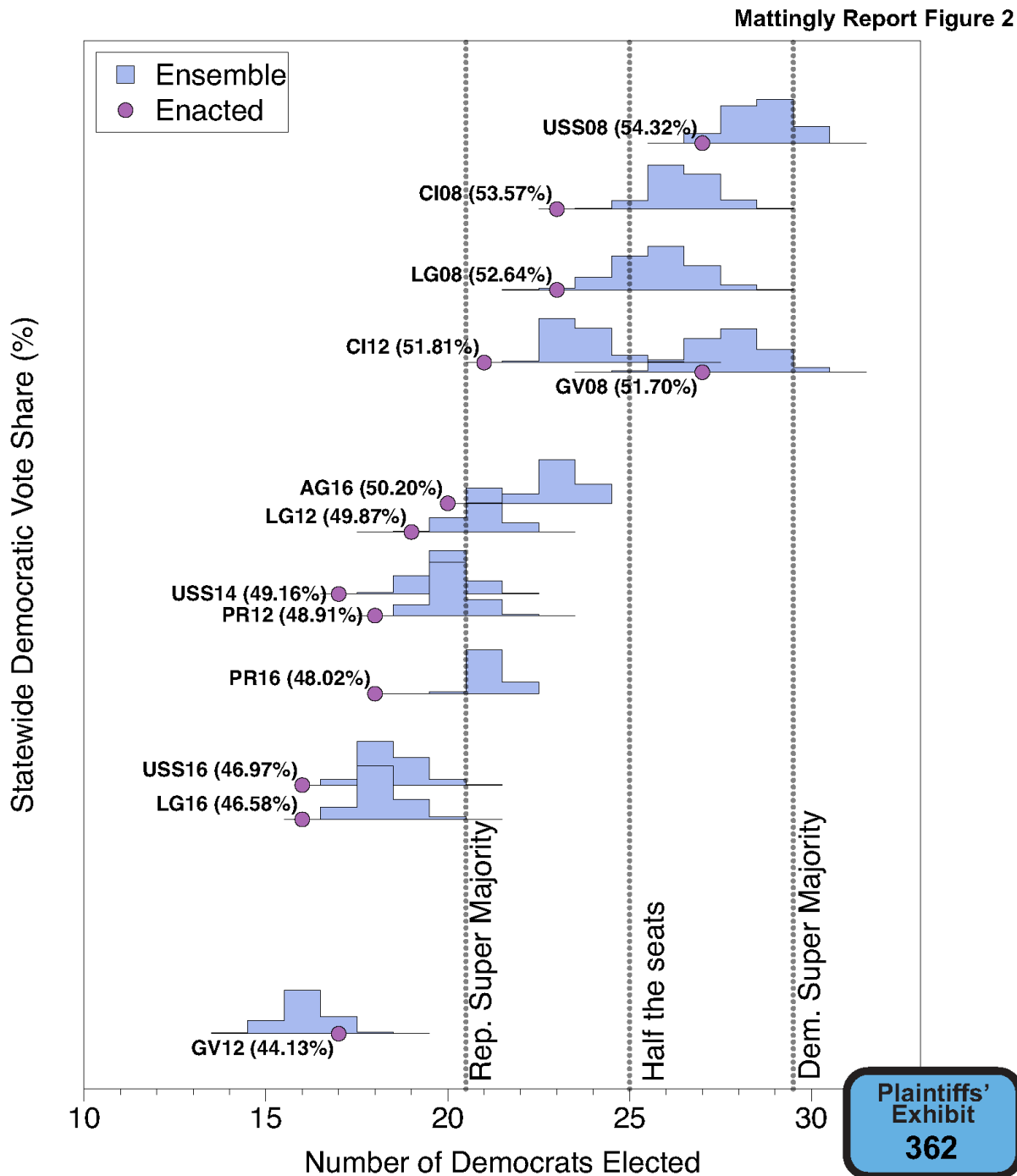
156. Dr. Mattingly concluded that the enacted Senate plan is an extreme outlier not just with respect to how consistently it favors Republicans, but with respect to the *amount* by which it favors Republicans. PX363 (Mattingly Report Figure 3). The enacted map caused Democrats to lose between 2 to 3 seats in the Senate in 13 of the 17 elections that Dr. Mattingly analyzed. *Id.* The Court finds this seat deviation to be significant. Tr. 1106:12-15.

157. Dr. Mattingly concluded that the 2017 Senate Plan’s extreme partisan bias was responsible for creating firewalls protecting the Republican supermajority and majority in the Senate. He plotted the results of the statewide elections using the enacted Senate plan and his nonpartisan simulations (PX362). Tr. 1106:17-1110:4. He ordered the elections vertically from bottom (most Republican vote share) to top (most Democratic vote share), and then plotted the number of seats that Democrats would expect to receive under

the nonpartisan plans using blue histograms. *Id.* Using nonpartisan maps, the Democratic seat count would be expected to fall in the tallest part of the blue histogram. Tr. 1108:7-24. Dr. Mattingly used purple dots to report how many seats Democrats would win in the Senate using the results of each statewide election under the enacted Senate plan. Tr. 1109:3-10. Dr. Mattingly then used three vertical dotted lines to represent the point at which Democrats would break the Republican supermajority, the Republican majority, or win a supermajority themselves. Tr. 1111:5-24.⁴ If the enacted plan is a pro-Republican outlier, the purple dot is to the left of the blue histogram (meaning the enacted plan elects fewer Democratic seats). If a purple dot is to the left of the Republican supermajority or majority line, and the bulk of the blue histogram is to the right, that is an election in which the enacted plan protects the Republican supermajority or majority where Democrats would break the firewalls in a nonpartisan plan. Tr. 1111:5-1112:24.

⁴ Dr. Mattingly plotted only 13 of the 17 elections he considered in PX362 for visual clarity reasons, Tr. 1115:1-12, but he provided all the data for all 17 elections in Figure 3 (PX363) and Table 3 of his report (PX417).

158. Plaintiffs' Exhibit 362 is reproduced below:



159. Dr. Mattingly's analysis demonstrates that the enacted Senate plan creates two "firewalls," protecting Republican supermajorities and majorities which Democrats would break under a nonpartisan plan. Dr. Mattingly testified that, in elections where

Democrats win enough votes that they would typically be expected to break the Republican supermajority under nonpartisan plans, the Republicans win the supermajority in the enacted plan. Tr. 1112:8-24. This is visually demonstrated by Plaintiffs' Exhibit 362, which shows that the Democratic seat count in the enacted plan consistently stays to the left of the supermajority line even as the Democratic vote share rises and the nonpartisan plans break through the Republican supermajority line. PX362. In many cases the enacted plan is completely outside the distribution of nonpartisan plans. Tr. 1112:8-24.

160. The results of the Attorney General 2016 election illustrate Dr. Mattingly's conclusion that the enacted map is an extreme, pro-Republican partisan gerrymander. Tr. 1114:9-11. This was a relatively even election where Democrats won 50.20% of the statewide vote, and in 99.999% of the nonpartisan maps, the Democrats broke the Republican supermajority. But, using the results of this election, the enacted map preserves the Republican supermajority. Tr. 1112:25-1114:11.

161. Overall, in 5 of the 17 elections that Dr. Mattingly considered, the Democrats would have almost certainly broken the Republican supermajority in the nonpartisan plans but failed to do so under the enacted plan (the 2012 Lieutenant Governor; 2016 President, 2008 President, 2016 Governor, and 2016 Attorney General elections). PX363; PX487 at 25 (Mattingly Rebuttal Report). In two others (the 2014 U.S. Senate and 2012 President elections), the Democrats would have had a chance of breaking the Republican supermajority in the nonpartisan plans, but never do in the enacted plan. PX362; PX417. In all seven of those elections where the Democrats would be expected to break the supermajority under nonpartisan plans, the enacted plan is an "extreme outlier." See PX363 (fifth column).

162. In elections where the Democrats won so many votes that the enacted Senate plan's Republican supermajority firewall breaks, Dr. Mattingly showed that the enacted

Senate plan creates a second firewall preventing the Democrats from breaking the Republican majority. Tr. 1114:14-25. Using the results of the 2008 Commissioner of Insurance and 2008 Lieutenant Governor elections—both elections in which the Democrats won over 52.5% of the statewide vote—the enacted plan protects a Republican majority even where the overwhelming majority of nonpartisan plans would break its majority. *Id.*; PX362.

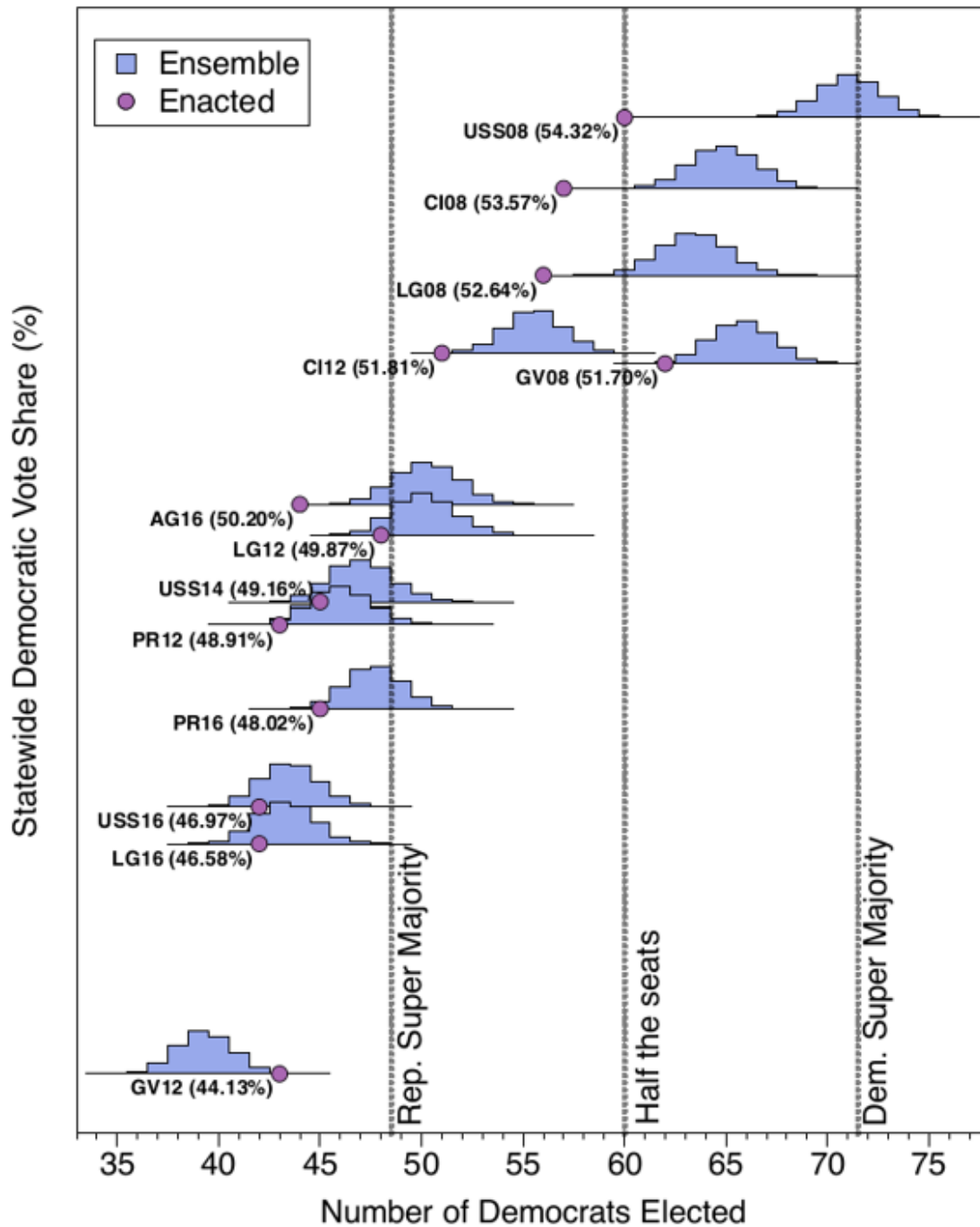
163. Dr. Mattingly found similar results for the House. Tr. 1087:22-25. Once again, in 15 of the 17 elections he considered, the enacted House Plan produced an atypical bias toward the Republican Party with respect to the number of Democrat and Republican seats. Tr. 1121:23-1122:5. The probability of seeing such a consistent pro-Republican bias across so many elections was 1.4%, Tr. 1122:6-13; PX359 at 11 (Mattingly Report), making it extremely unlikely that the General Assembly would have picked such a partisan map if it were not looking for it, Tr. 1122:14-17.

164. Dr. Mattingly concluded that the enacted House plan is an extreme outlier not just with respect to how consistently it favors the Republicans, but with respect to the *amount* by which it favors the Republicans. PX359 at 11 (“We never see any plans that favor the Republican Party to the same extent” in terms of seats); PX366 (Mattingly Report Figure 6). The House plan becomes a greater and greater pro-Republican outlier under elections that have more Democratic votes, and becomes an “incredibly extreme outlier” in such elections. Tr. 1120:4-11; Tr. 1119:14-20. The enacted map caused Democrats to lose between 2 and 11 seats in the House in 13 of the 17 elections that Dr. Mattingly analyzed. PX366. The Court finds this seat deviation to be significant.

165. Dr. Mattingly concluded that the enacted House plan’s extreme partisan bias is responsible for creating firewalls protecting the Republican supermajority and majority in the House. Tr. 1120:15-1121:18. As with the Senate, Dr. Mattingly plotted the results of

various statewide elections using the enacted House plan and his nonpartisan simulations in Figure 5 of his report (PX365). Tr. 1118:5-1120:14.

166. Plaintiffs' Exhibit 365 is reproduced below:



167. As Dr. Mattingly testified, Plaintiff's Exhibit 365 illustrates how the enacted House plan becomes a greater and greater pro-Republican outlier as Democrats win more votes statewide, and how the enacted House plan creates firewalls protecting the Republican supermajority and majority which Democrats would break under a nonpartisan plan. Tr. 1120:4-1121:18. In the elections in the lower left of the figure where the Republicans have more statewide votes and have a supermajority even in the nonpartisan plans, the enacted plan is generally within the distribution of nonpartisan plans. PX365 (see, e.g., the 2016 Lieutenant Governor and 2016 U.S. Senate elections). Dr. Mattingly explained that this makes sense from the mapmaker's perspective, because the mapmaker would not design the map for environments where Republicans are assured a "commanding supermajority" no matter what. Tr. 1123:17-24.

168. Plaintiffs' Exhibit 365 shows that in elections where the Democrats begin to break the Republican supermajority in the nonpartisan plans, the enacted plan becomes an outlier and consistently protects the Republican supermajority. Tr. 1120:15-1121:8. Dr. Mattingly testified that the enacted map "has a firewall that retards the advance of the Democratic Party particularly when they're about to break through and break the Republican supermajority." Tr. 1121:6-8.

169. Overall, in 4 of the 17 elections that Dr. Mattingly considered, the Democrats would have almost certainly broken the Republican supermajority in the nonpartisan plans but failed to do so under the enacted plan (2008 President, 2012 Lieutenant Governor, 2016 Attorney General, 2016 Governor). See PX366 (Mattingly Report Figure 6). By contrast, the enacted map never creates a Democratic supermajority in the House when one would not be expected under the nonpartisan ensemble. PX359 at 13-14.

170. In elections where the Democrats win so many votes that the enacted House plan's Republican supermajority firewall breaks, Dr. Mattingly showed that the enacted

House plan creates a second firewall preventing the Democrats from breaking the Republican majority. Tr. 1119:14-20; Tr. 1121:9-18. Using the results of the 2008 U.S. Senate, 2008 Lieutenant Governor, or 2008 Commissioner of Insurance elections, where the Democrats virtually always have a majority in the collection of hundreds of trillions of nonpartisan plans and sometimes have a supermajority, the Democrats never win a majority under the enacted plan. Tr. 1121:11-18; PX365 (Mattingly Report Figure 5); PX359 at 13.

171. In a race like the 2008 U.S. Senate election—where the Democrats won 54.32% of the statewide vote—the enacted map is a particularly extreme pro-Republican outlier. Tr. 1121:11-18. Using that election, the Republicans win 11 more seats in the enacted House plan than they would expect to win under the nonpartisan collection of plans. PX366 (Mattingly Report Figure 6). In more than 40.1% of the plans in the nonpartisan collection, Democrats actually win a supermajority, but the Democrats do not even win a majority under the enacted plan. PX359 at 14; PX418 (Mattingly Report Table 4). By contrast, there were no historical elections under which the Republicans would have been expected to receive a majority under the nonpartisan House plans but would not receive a majority in the enacted House plan. PX359 at 13.

172. Dr. Mattingly also performed a uniform swing analysis that confirmed the enacted plan's persistent, durable, and extreme bias toward the Republican party. Tr. 1123:25-1131:5. Using six different historical elections ranging from very pro-Republican (e.g., 2012 Governor, where the Democrats won 44.13% of the statewide vote) to very pro-Democratic (e.g., 2008 U.S. Senate, where the Democrats won 54.32% of the statewide vote), Dr. Mattingly showed that the House plan's gerrymandered protection of the Republican supermajority and majority was highly robust over many different electoral structures and statewide vote fractions. Tr. 1127:15-18; Tr. 1129:5-1131:5; PX488

(Mattingly Rebuttal Report Figure 1). Each of the elections end up looking “remarkably the same” as the Democratic vote share increases; in all of the elections, the enacted map creates a firewall protecting the Republican supermajority and majority. Tr. 1129:11-1130:2; Tr. 1130:23-1131:5. Dr. Mattingly concluded on the basis of his uniform swing analysis that the House plan was “designed” to “consistently protect” the Republican supermajority and majority across all of the “very different” elections he studied, which contain many different “spatial vote patterns” and “historical voting patterns from the state of North Carolina.” Tr. 1130:23-1131:5.

173. In particular, under the nonpartisan maps, the Republicans do not win a supermajority when the Democratic statewide vote share rises above 50 percent, but in the enacted plan, the Republicans do. Tr. 1130:7-19. And the uniform swing analysis shows that the enacted plan becomes an especially extreme outlier whenever the Democrats would win a majority of seats under the ensemble of nonpartisan plans. Tr. 1128:12-1129:4; Tr. 1130:3-6. Dr. Mattingly’s uniform swing analysis shows that the enacted map prevents Democrats from winning a majority of the seats in the House unless they have around 55% of the statewide vote. Tr. 1131:6-16. That is well more than the Democrats would need in a non-gerrymandered plan to win a majority of House seats. *See* PX488 (Mattingly Rebuttal Report Figure 1).

174. Plaintiffs' Exhibit 488 (Mattingly Rebuttal Report Figure 1) shows Dr.

Mattingly's uniform swing analysis of the House plans:

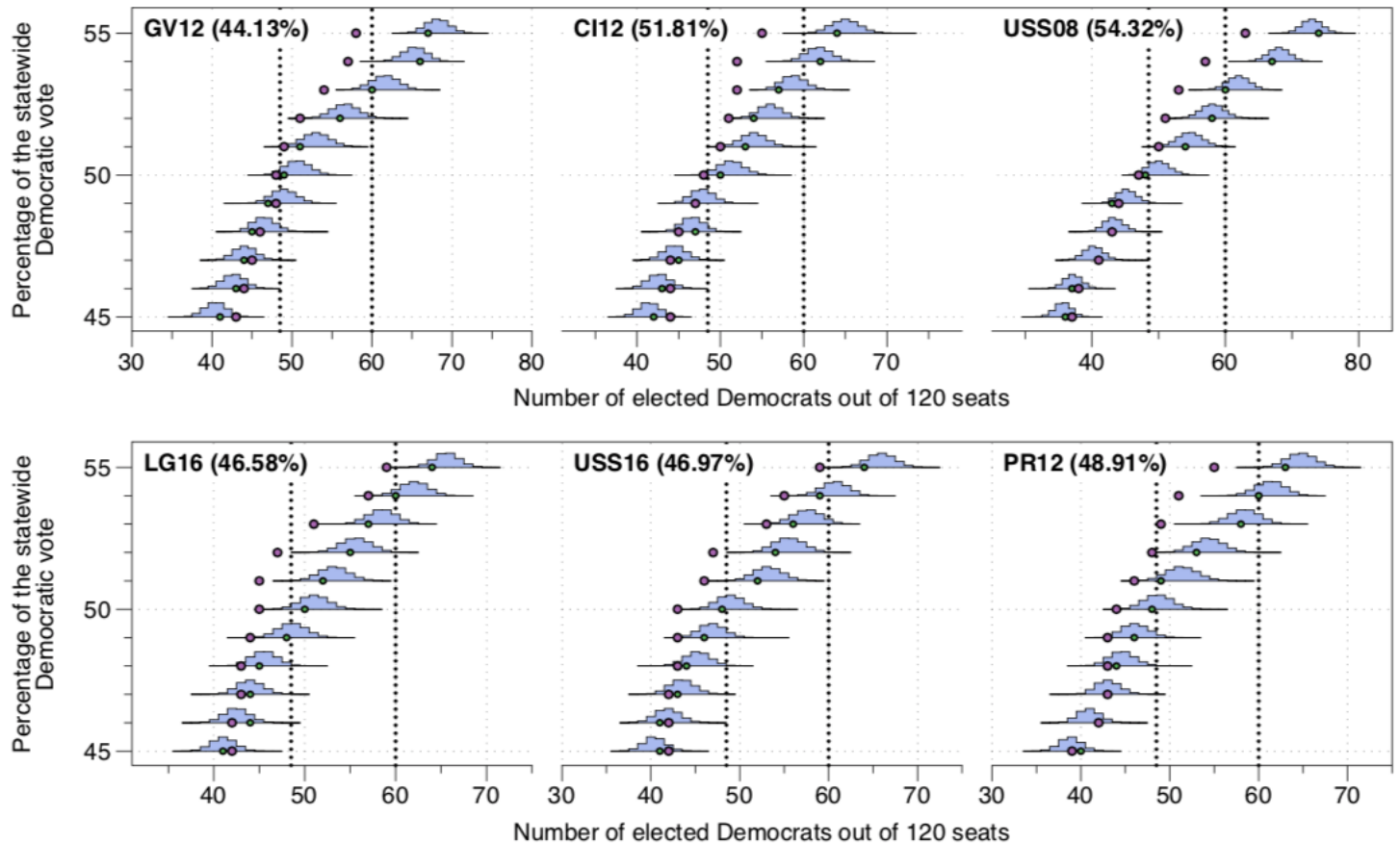


FIGURE 1. Purple dots show the enacted plan; the green dots show a plan in the ensemble. The dashed line at 60 seats shows the majority, and the dashed line at 48.5 seats shows the Republican supermajority threshold. The number of Democrats elected in the Senate which has a total of 120 seats.

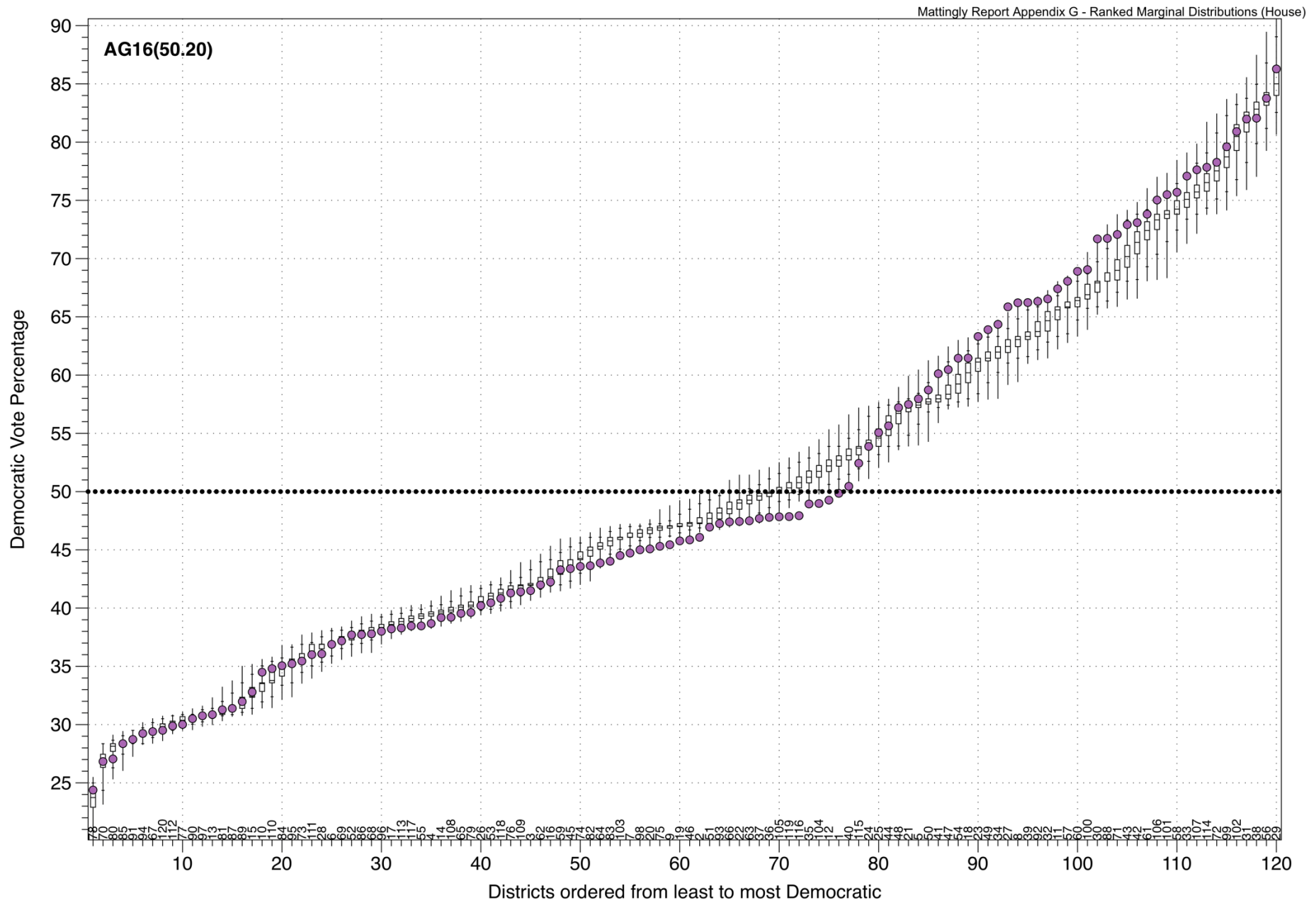
175. Dr. Mattingly preferred to compare the enacted plan to nonpartisan plans election-by-election, because taking an average seat shift across a set of elections can obscure a gerrymander's effect in close elections where control of the Senate or House is at issue. Tr. 1214:8-13, 1216:16-19, 1216:22-1217:3. Even considering the average, however, Dr. Mattingly found that the enacted plan is an extreme pro-Republican outlier. Tr. 1216:4-12. Comparing the enacted Senate plan to the median Senate plan in the ensemble for each of the 17 elections, the enacted plan causes Democrats to lose on average 1.94 seats

in the Senate across all 17 elections. PX363. Not a single one of Dr. Mattingly's 3.7×10^{93} statewide maps in the Senate favors the Republican Party as much as the enacted plan under this metric. PX363 (bottom right image); PX487 at 23 (Mattingly Rebuttal Report). Similarly, comparing the enacted House plan to the median House plan in the ensemble for each of the 17 elections, the enacted plan causes Democrats to lose on average 3.35 seats in the House across all 17 elections. Not a single one of Dr. Mattingly's 1.1×10^{108} statewide maps in the House favors the Republican Party as much as the enacted plan under this metric. PX366 (bottom right image); PX359 at 11 (Mattingly Report) (noting that the average seat difference in favor of the Republicans across all 17 elections is "greater than all plans in the ensemble").

176. Dr. Mattingly's separate analysis of the structure of the enacted House and Senate plans provided further confirmation that both plans are extreme partisan gerrymanders, even putting aside the effect on seat count in any particular election. He demonstrated that the General Assembly cracked and packed Democratic voters for partisan gain across the House and the Senate plans, with a particular focus on cracking Democratic voters out of the middle seats that determine supermajority and majority control of both Chambers.

177. Dr. Mattingly ordered the 120 districts in the House in his ensemble of nonpartisan plans from lowest to highest based on the Democratic vote fraction in each district. He did this for each of the 17 statewide elections he analyzed. Tr. 1159:4-15; PX483.

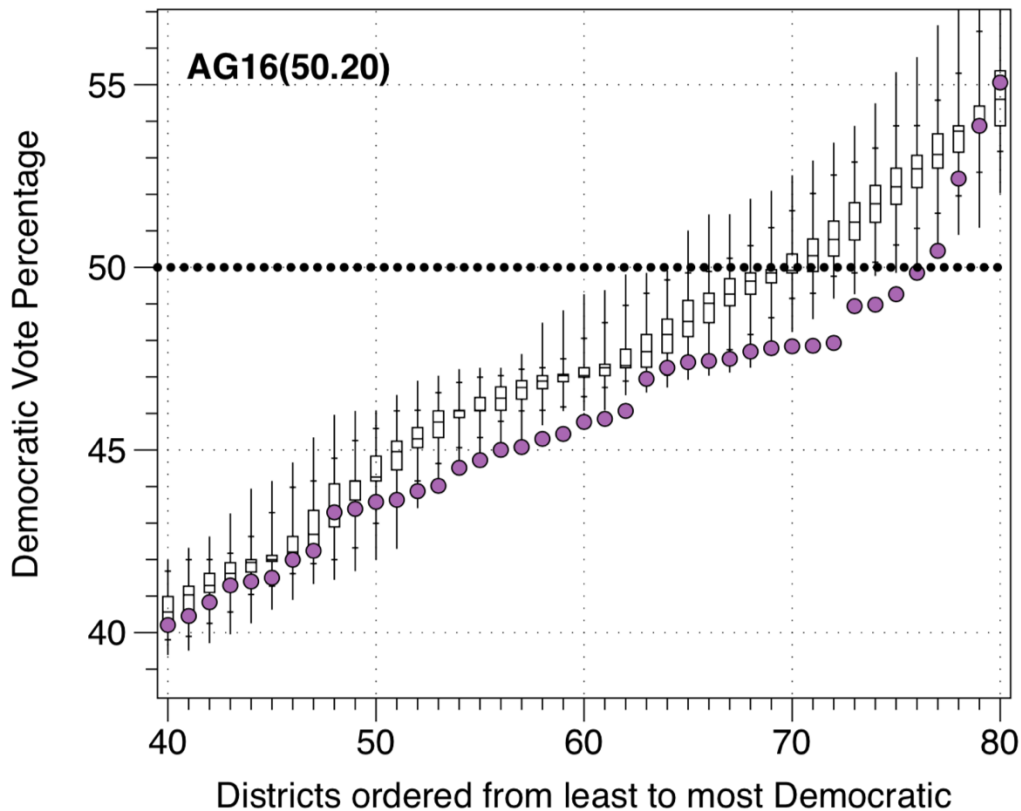
178. Below is an example of Dr. Mattingly's structural analysis of the 120 districts in the House using the votes from the 2016 Attorney General's Election. *See* PX483 at 13; PX778 at 33 (Mattingly PowerPoint presentation).



179. The purple dots in the ranked-ordered box plots from Plaintiffs' Exhibit 483 represent the Democratic vote fraction in the enacted plan for each district ordered from least to most Democratic; the boxes represent the Democratic vote fraction across Dr. Mattingly's ensemble of nonpartisan plans. Tr. 1159:4-1162:1. The key in the top left-hand corner shows the statewide election and the Democratic statewide vote fraction in that election.

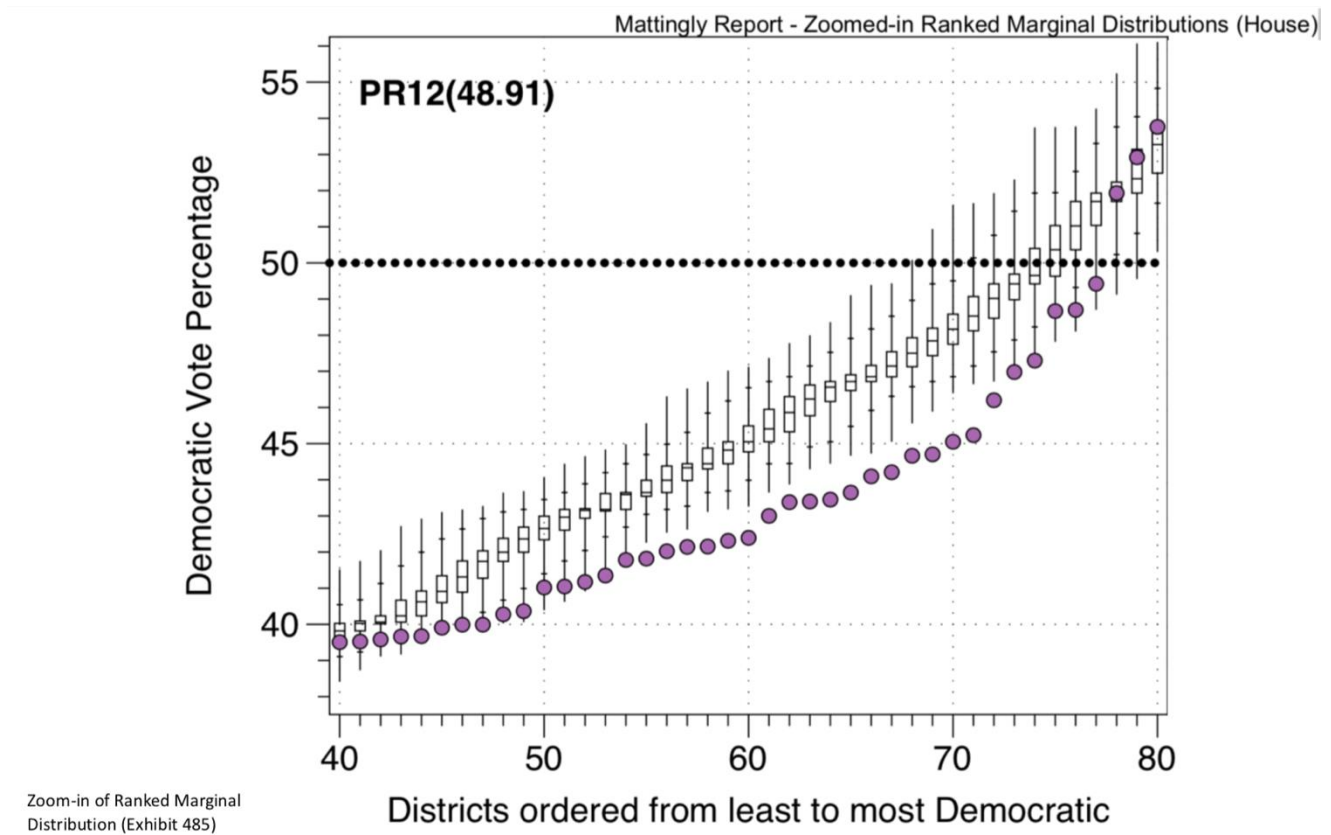
180. Dr. Mattingly explained that in the 40 seats in the middle—between the 40th most Democratic seat and the 80th most Democratic seat—the Democratic vote fraction in the enacted plan is far below the boxes representing the nonpartisan plans. Tr. 1162:7-25. Those “are the seats that determine who has a supermajority and who has the majority,” and they are the “critical seats for the structure of the House.” Tr. 1162:19-25. But in the most Democratic districts, beginning around the 99th least Democratic seat, the Democratic vote fraction is much higher in the enacted plan. Tr. 1162:7-12. In other words, across the map, Democrats have been cracked out of the districts that determine control of the House and packed into districts they would win anyway. Tr. 1162:7-25. In the 2016 Attorney General election, this structural gap between the Democratic vote share in the enacted plan and the nonpartisan plans in the critical districts means that the Republicans kept the supermajority even though they would have lost it under the ensemble of nonpartisan plans. Tr. 1163:3-25.

181. An examination of the districts between the 40th least Democratic district and the 80th least Democratic district in the House using the 2016 Attorney General election further demonstrates the cracking of Democratic voters in these critical seats. (PX485 at 13; PX778 at 34):



182. Dr. Mattingly testified that the large gap between the Democratic vote fraction in the enacted plan and in the ensemble at the 72-seat marker is the structural feature of the House map that is responsible for the firewall protecting the Republican supermajority. Tr. 1164:1-9.

183. Dr. Mattingly's ranked-order box plot using the results of the 2012 Presidential election revealed that same structural anomaly (PX485 at 11; PX778 at 35):

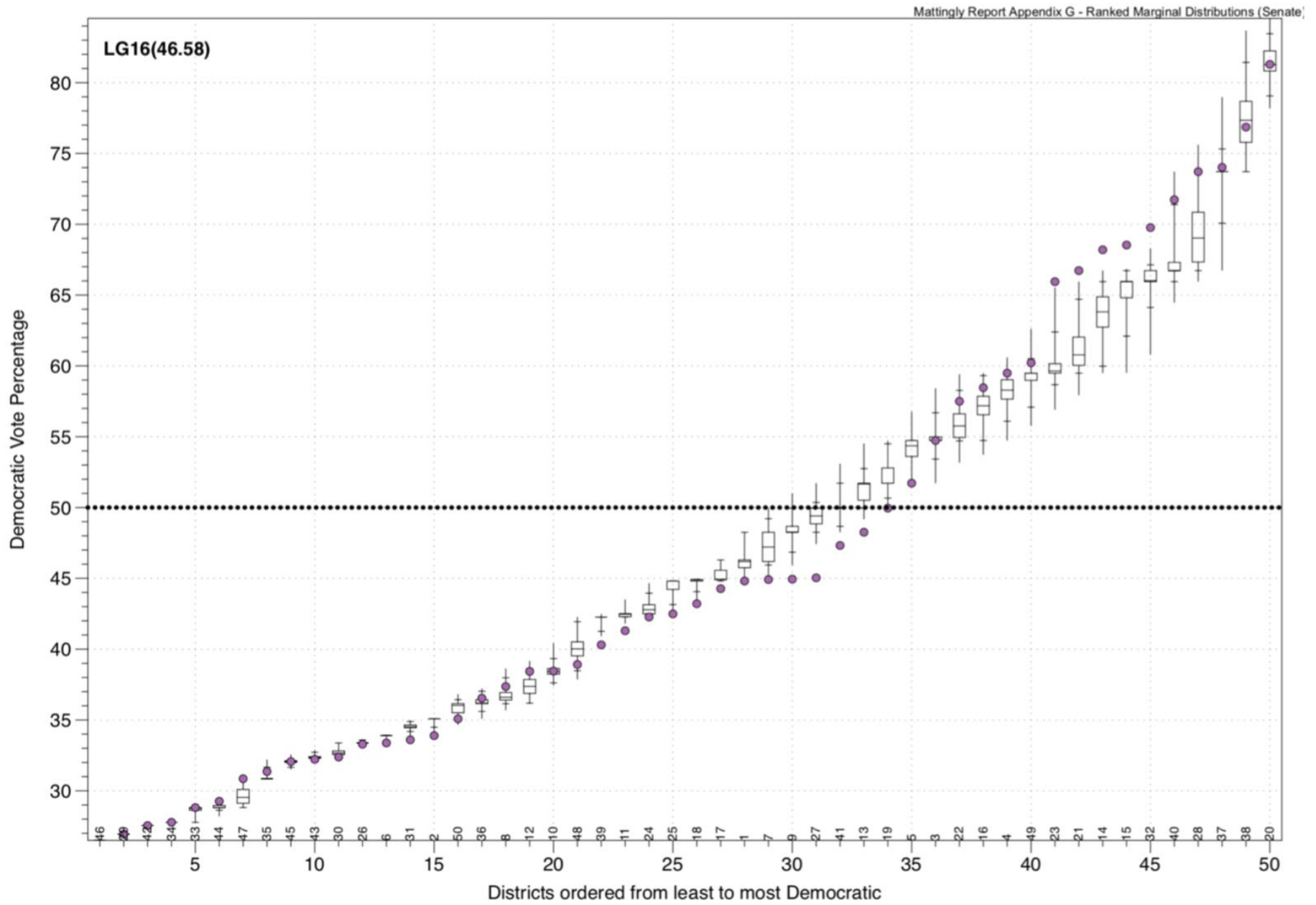


184. Using the results of the 2012 Presidential election, Dr. Mattingly testified that again the enacted map shows a “huge depletion of Democratic voters” in these districts that matter for supermajority and majority control. Tr. 1164:17-1165:7; PX485 at 11. Dr. Mattingly explained that, although the Presidential 2012 election was a fairly Republican election where the Republicans would win a House majority even under the nonpartisan plans, the significant deviation in the Democratic vote fraction in the seats that matter most will have a “dramatic effect” in elections where the Democrats get more votes statewide. Tr. 1166:1-17.

185. Plaintiffs’ Exhibit 484 contains Dr. Mattingly’s ranked-ordered box plots for the Senate. Dr. Mattingly ordered all 50 Senate districts in his ensemble from lowest to highest based on the Democratic vote fraction in each district. He did this for each of the 17 statewide elections he analyzed. PX484. Below is an example of Dr. Mattingly’s structural

analysis of the 50 Senate districts using the 2016 Lieutenant Governor election. PX484 at 15; PX778 at 40.

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186. The ranked-ordered box plot using the 2016 Lieutenant Governor results demonstrates the same significant suppression of Democratic votes in the enacted plan in the districts that matter most—the 25th most Democratic district, which determines who wins the majority in the Senate, and the 29th least Democratic district, which the Democrats need to win to break the supermajority. Tr. 1175:12-24; PX484 at 15. Dr. Mattingly testified that the gap between the enacted plan and the ensemble around the 25th and 29th/30th district shows that the enacted plan is an “extreme outlier.” Tr. 1176:5-9. In turn, in the most Democratic districts, the enacted plan has significantly more Democrats than in the nonpartisan ensemble, PX484 at 15—representing packing of Democrats into these districts. Tr. 1175:4-9.

187. As noted, Dr. Mattingly performed this same structural analysis of the House and Senate enacted plans using all 17 of his statewide elections. PX483, PX484. He testified that all 34 of his ranked-ordered box plots overwhelmingly show the same gaps between the enacted plan and the ensemble in the Democratic vote fraction in the seats that matter most in the Senate and the House, and overwhelmingly show the firewalls protecting the Republican supermajorities and majorities. Tr. 1176:10-23. Dr. Mattingly testified that it would “almost be impossible to build this structure” in the absence of an intentional choice to do so. Tr. 1176:24-1177:2. The Court gives great weight to this conclusion.

188. In his report, Dr. Mattingly conducted a statistical analysis to quantify the statewide cracking and packing of Democratic voters in the House and Senate plans that the ranked-ordered box plots from Plaintiffs’ Exhibits 483 and 484 visually illustrate. That analysis confirms to a high degree of statistical significance that the structure of the enacted plans reflects extreme bias in favor of the Republicans that will persist in election after election.

189. Specifically, in the House, Dr. Mattingly analyzed the 48th to the 72nd least Democratic districts (again, the range that determines majority and supermajority control). PX359 at 13 (Mattingly Report). Dr. Mattingly found that in 15 of the 17 elections, there is less than a 0.0005% chance of finding a plan in the ensemble that had fewer Democratic votes across those districts than did the enacted plan. *Id.*; PX359 at 13. In the remaining 2 elections, there was less than a 0.02% and 0.3% chance of finding a plan in the ensemble with as much cracking of Democrats out of the middle districts as the enacted plan. *Id.*

190. Dr. Mattingly's statewide quantification of the Senate showed the same extreme cracking of Democrats out of the districts that determine majority and supermajority control. For the Senate, Dr. Mattingly considered the 20th to 30th least Democratic districts. PX359 at 9. He found that in 14 of the 17 statewide elections, there is less than a 0.0005% chance of finding an ensemble plan with fewer Democratic votes across those districts than the enacted plan. *Id.* In two other elections, the enacted plan was still an extreme outlier, at the 0.1% level. *Id.*

191. Dr. Mattingly also created video animations of his uniform swing analysis using six different elections in both the House and Senate. PX772 (video animations). In the videos, the blue histograms represent the distribution of seats using Dr. Mattingly's nonpartisan plans; the "enacted" marker represents the enacted plan, and the three vertical lines represent the Republican supermajority, Republican majority, and Democratic supermajority lines. *Id.* Dr. Mattingly played two of the videos for the Court, representing uniform swing analysis in the House using the results of the 2012 Presidential election and 2016 Lieutenant Governor election. Tr. 1168:4-8, 1169:17-1172:15; PX778 at 37, 38 (PowerPoint slides); PX772 (video animations). The 2012 Presidential election video showed that the enacted plan started out looking fairly typical of the ensemble of nonpartisan plans; that is the video starts with a 45% Democratic vote share where

Republicans retain the supermajority under the nonpartisan plans as well. Tr. 1169:17-25. As the Democratic vote fraction increases, the blue histograms representing the nonpartisan plans shifts to the right and the number of seats that Democrats win increase. Tr. 1169:25-1170:9. But the enacted plan begins to lag “dramatically” behind the nonpartisan plans. Tr. 1170:6-13. In particular, at the Republican supermajority and majority lines, the enacted plan “sticks” on the Republican side of the line even as the blue histogram representing the nonpartisan plans move completely past those lines. Tr. 1171:8-21. The gerrymander is sometimes so effective that it retains a Republican supermajority in the enacted plan even where the Democrats win a majority in the nonpartisan plans. Tr. 1172:6-10.

192. Dr. Mattingly’s video animation of a uniform swing analysis of the 2016 Lieutenant Governor election showed the same thing, Tr. 1172:17-1174:20, as do Dr. Mattingly’s four remaining videos, PX772.

193. The Court finds that these video animations provide significant evidence confirming Dr. Mattingly’s conclusions that the enacted House and Senate maps exhibit extreme partisan bias and create partisan firewalls protecting the Republican supermajority and majority. The Court finds that Dr. Mattingly’s uniform swing videos are also significant evidence that the gerrymanders cause the enacted House and Senate maps to be largely nonresponsive to the actual votes cast in North Carolina’s elections. Moreover, as Dr. Mattingly explained, the ranked-ordered box plots that he created using all 17 statewide elections showing the systematic suppression of Democratic vote fractions in the districts that matter most for the House and Senate demonstrate—without any need to conduct uniform swing analysis—that the enacted plan will be nonresponsive to the votes actually cast in North Carolina elections. Tr. 1174:25-1176:9.

194. Dr. Mattingly's findings regarding the firewall to protect the Republican majorities in the General Assembly are significantly similar to Dr. Chen's findings. Dr. Chen, like Dr. Mattingly, found that the gap between the number of Democratic districts under the enacted plans and under his simulated plans gets wider in electoral environments that are better for Democrats, and are at their widest around the point where Democrats would win a majority of seats in the House or Senate in his simulated plans. The independent findings of Drs. Chen and Mattingly strengthen and reinforce the conclusion that Legislative Defendants drew the enacted House and Senate plans with the specific goal of making it extremely difficult, if not impossible, for Democrats to take control of either chamber of the General Assembly.

195. Dr. Mattingly's county-grouping analysis, discussed in greater detail below, also allowed him to draw statistically significant conclusions about the intent of the mapmaker in creating the statewide Senate and House plans. Tr. 1157:24-1158:8. In particular, he explained that the design of each county grouping in the House and Senate plans represented an independent choice by the mapmaker, because "how you redistrict one county cluster does not affect how you redistrict the next one since you can't cross county cluster lines." Tr. 1157:17-23. Dr. Mattingly found that numerous county groupings in the House and Senate were extreme pro-Republican partisan outliers at the 100% or 99% level. PX778 at 29-30. He testified that the probability that the extreme partisan bias in the enacted maps was unintentional was "astronomically small," because the chance of making so many independent choices "with such extreme bias" in one map was "astronomically small if you are not looking for it." Tr. 1158:3-8.

196. Dr. Mattingly conducted a secondary analysis in which he only considered plans that preserved incumbents "to the same extent, or better, than they are preserved" in the enacted plan in each grouping. PX359 at 81. Dr. Mattingly found that accounting for

the effects of incumbency did not change his conclusion that the enacted plans are extreme pro-Republican gerrymanders. Tr. 1093:21-1094:3. Defendants failed to offer evidence sufficient to rebut Dr. Mattingly's conclusion that the enacted plan's extreme bias could not be explained by a nonpartisan effort to avoid pairing incumbents.

197. Dr. Mattingly performed extensive robustness checks establishing that his results were insensitive to the choices he made and criteria he used to generate the distribution of nonpartisan plans. Among other things: Dr. Mattingly went through every district in every grouping he analyzed to confirm that the compactness and municipal splits in the ensemble tracked those qualities in the enacted plan. PX359 at 57-80 (Mattingly Report). He performed a secondary analysis considering only plans that were equal to or better than the enacted plan along the dimension of compactness and municipal splits and found that it did not affect his results. PX359 at 82; PX468, 472-473. He created different collections of nonpartisan maps using six different sets of weights for compactness and other nonpartisan criteria and confirmed that changing the weights did not change the results. PX487 at 11 (Mattingly Rebuttal Report). And when Defendants' experts raised various speculative critiques in their reports—asking whether changing one criterion or another would make a difference—Dr. Mattingly performed a follow-up analysis in his rebuttal report confirming that it did not. *Id.* at 6-11.

198. The Court finds that none of Legislative Defendants' objections to Dr. Mattingly's analysis calls into question its persuasive value. The fact that, in a few individual elections, the enacted plan is not an extreme outlier relative to the ensemble of plans in terms of seat count alone does not undermine Dr. Mattingly's conclusion that the enacted plans are extreme partisan gerrymanders designed to protect Republican supermajorities and majorities. Tr. 1117:9-11 (Senate); Tr. 1122:18-1123:24 (House). First, Dr. Mattingly explained that the underlying structure of the enacted plans reflected a

trade-off. To crack Democrats out of districts where it matters, the mapmaker had to pack Democrats into other districts. Tr. 1123:5-24. Under certain circumstances—*i.e.*, in Republican wave elections—the packing of Democratic voters in the enacted plan causes Republicans to lose districts that they would have won in nonpartisan plans that did not pack Democratic voters into these districts. But such an electoral environment is one in which Republicans would already win a commanding supermajority. *Id.* As Dr. Mattingly explained, someone gerrymandering a map would happily hold the supermajority or the majority in elections where their control is at risk, even if the cost is a few less seats in elections where they will always have a commanding supermajority anyway. *Id.*

199. The 2012 Governor election—a highly Republican election where the Republicans win a supermajority in Dr. Mattingly’s nonpartisan plans—provides an example. When Dr. Mattingly conducted a uniform swing analysis using the 2012 Governor election, the enacted map became an “extreme outlier in favor of the Republican Party” as the statewide vote swings to the Democrats and the Democrats approached the point where they would break the Republican supermajority and majority under his nonpartisan plans. Tr. 1126:7-1127:9; PX488. Although the 2012 Governor election may not appear to be a partisan outlier for the Republicans, Dr. Mattingly testified that in fact “it is.” Tr. 1127:19-1128:11.

200. During Dr. Mattingly’s cross examination, Legislative Defendants suggested that he should have included other purportedly nonpartisan criteria in his simulated plans beyond the ones listed in the adopted criteria. The Court, however, gives no weight to Legislative Defendants’ suggestions that secret and undisclosed nonpartisan agreements between “representatives of different political parties” might explain the partisan bias that Dr. Mattingly identified. *E.g.*, Tr. 1204:11-14. The Court also gives no weight to the suggestion that Dr. Mattingly should have accounted for “communities of interest” in a

manner other than by avoiding splitting counties, cities, and towns, *see, e.g.*, Tr. 1192:19-1193:4, considering Legislative Defendants expressly declined to include “communities of interest” as a criterion for the 2017 Plans. Tr. 1223:8-1224:1; *see* PX603 at 67:14-25 (Rep. Lewis stating that “communities of interest” is not a “criteria that we have proposed” because the Committee “couldn’t find a concise definition”); *id.* at 73:16-20 (Rep. Lewis stating that he opposed listing “communities of interest” as a criteria because “municipalities are defined and understood” but the Committee couldn’t “agree[]” on what a community of interest was beyond that); *id.* at 77:3-25 (Rep. Lewis again rejecting the use of “communities of interest”); *id.* at 106:10-11 (Rep. Lewis stating that “I don’t believe [communities of interest] belongs in this criteria”).

201. When asked by interrogatory to “identify and describe all criteria that were considered or used in drawing or revising districting boundaries for the 2017 Plans,” Legislative Defendants made a binding concession that the only “criteria used to draw the 2017 plans is the criteria adopted by the Redistricting Committees.” PX579 at 13. As such, the Court gives little credence to Legislative Defendants’ critique that Plaintiffs’ experts failed to include criteria not in the Adopted Criteria, or a claim that other considerations purportedly explain the contours of the 2017 Plans.

c. Dr. Pegden

202. Wesley Pegden, Ph.D., is an Associate Professor in the Department of Mathematical Sciences at Carnegie Mellon University, and testified as an expert in probability. Tr. 1294:19-21, 1302:6-12; PX509. Dr. Pegden has published numerous papers on discrete mathematics and probability in high-impact, peer-reviewed journals, and has been awarded multiple prestigious grants, fellowships, and awards. Tr. 1295:4-20; PX509. He has been appointed by the Governor of Pennsylvania to that state’s Redistricting Reform Commission. Tr. 1301:24-1302:5.

203. Dr. Pegden’s academic work on redistricting involves Markov chains. A Markov chain is “a random walk around some abstract space.” Tr. 1295:23-1296:1. For example, if a person walks around a city, and whenever she reaches an intersection, she chooses which way to turn at random, her position over time “would evolve as a Markov chain.” Tr. 1296:5-7. In the context of redistricting, one can imagine taking a random walk “over the space of maps.” Tr. 1296:8-14.

204. In 2017, before Dr. Pegden had ever served as an expert in redistricting litigation, he published a peer-reviewed article (PX510) entitled “Assessing Significance in a Markov Chain Without Mixing” in the Proceedings of the National Academy of Sciences—a top-ranked, science-wide journal. Tr. 1295:13-17, 1296:24-1297:1. This article provides a new way to demonstrate that a given object is an outlier compared to a set of possibilities. Tr. 1297:2-7.

205. Dr. Pegden explained that there are three ways to show that a given object is an outlier. The first, most basic way is simply to examine every single member of the entire set of possibilities, and then determine whether the object in question is different than all or most of those possibilities. The second form of outlier analysis is to take a random sample from the set of possibilities, and then compare the object in question to that sample. This type of analysis is the basis of most modern statistics, and is the form of outlier analysis used by Drs. Chen and Mattingly in generating nonpartisan simulated plans and comparing the enacted plans to those random nonpartisan plans. Tr. 1297:10-1298:11, 1309:10-18.

206. The third form of outlier analysis, developed by Dr. Pegden and his co-authors, is a kind of “sensitivity analysis” that begins with the object in question, uses a Markov chain to make a series of small, random changes to the object, and then compares the objects generated by making the small changes to the original object. Tr. 1298:16-

1299:4. Dr. Pegden’s article illustrates this methodology using a redistricting plan. Tr. 1299:8-18. The article demonstrates that, by using an existing plan as a starting point and then making small random changes to the district boundaries, one can prove the extent to which the existing plan is an outlier compared to all possible maps meeting certain criteria. Dr. Pegden’s article proves mathematical theorems showing that this approach can establish a redistricting plan’s outlier status in a way that is “completely statistically rigorously grounded in mathematics.” Tr. 1299:1-4.

207. In mid-2018, before this case was filed, Dr. Pegden began working on a new article entitled “Practical Tests for Significance in Markov Chains.” Tr. 1300:8-1301:4; PX511. This article further develops this new, third form of outlier analysis with new, more powerful statistical tools. Tr. 1301:5-12. Though unpublished, this second article has been vetted by the mathematical community, including through detailed presentations Dr. Pegden gave at the Duke Statistical and Applied Mathematical Sciences Institute and the Harvard Center for Mathematical Sciences and Applications. Tr. 1300:13-23.

208. In this case, Dr. Pegden used this new, third form of outlier analysis to evaluate whether and to what extent the 2017 Plans were drawn with the intentional and extreme use of partisan considerations. Tr. 1302:24-1303:1. To do so, using a computer program, Dr. Pegden began with the enacted plans, made a sequence of small random changes to the maps while respecting certain nonpartisan constraints, and then evaluated the partisan characteristics of the resulting comparison maps. Tr. 1304:1-1306:21. As explained in further detail below, Dr. Pegden found that the enacted House and Senate plans are more favorable to Republicans than 99.999% of the comparison maps his algorithm generated by making small random changes to the enacted plans. Tr. 1304:14-18, 1342:10-18, 1344:18-1345:3; PX515; PX519. And based on these results, Dr. Pegden’s theorems prove that the enacted House and Senate maps are more carefully crafted to favor

Republicans than at least 99.999% of all possible maps of North Carolina satisfying the nonpartisan constraints imposed in his algorithm. Tr. 1342:13-25, 1344:18-1345:7; PX515; PX519.

209. Dr. Pegden's analysis proceeded in several steps. He began with the enacted House or Senate map. His computer program then randomly selected a geographic unit on the boundary line between two districts and attempted to move or "swap" the unit from the district it is in into the neighboring district. Tr. 1309:19-24, 1311:1-5; PX508 at 9 (Pegden Report).

210. Dr. Pegden's method uses two different geographic units, VTDs and geounits. Tr. 1309:25-1310:2; PX508 at 9 (Pegden Report). His method uses VTDs when analyzing enacted maps that split few or no VTDs. Such maps include the enacted Senate map and the Senate county groupings Dr. Pegden analyzed. Tr. 1310:3-6; PX508 at 9 (Pegden Report). When analyzing enacted maps that split many VTDs—including the enacted House map and certain House county groupings Dr. Pegden analyzed—Dr. Pegden's method uses a sub-VTD geographic unit known as a "geounit." Tr. 1310:3-11; PX508 at 9 (Pegden Report). Created by a computer program, geounits are compact collections of census blocks that lie entirely within one VTD and one district, containing roughly 500-1000 people. There are roughly six or seven geounits per VTD. Tr. 1310:12-25; PX508 at 9 (Pegden Report).

211. When attempting to swap a randomly selected VTD or geounit from one district to another, Dr. Pegden allowed the swap to occur only if certain constraints were satisfied. Tr. 1311:1-8; PX508 at 7-8 (Pegden Report). These constraints were based on the 2017 Adopted Criteria, and were designed to ensure that the comparison maps generated by Dr. Pegden's algorithm are "good, reasonable comparisons to the enacted map." Tr. 1311:9-12, 1317:25-1318:25. The constraints that Dr. Pegden imposed included contiguity,

population deviation, compact districts, county preservation, municipality preservation, precinct preservation, and incumbency protection. Tr. 1311:13-1317:10; PX508 at 7-8 (Pegden Report). Dr. Pegden also froze boundary lines redrawn by the Special Master in 2017. Tr. 1319:1-22.

212. Dr. Pegden applied these constraints in a conservative way, so as to “accept choices the mapmaker made.” Tr. 1312:19-22. For example, with respect to population deviation, while the 2017 enacted criteria allows districts to vary between plus-or-minus 5% from the ideal district population, the actual enacted House map does not use all of that range, and instead varies between plus 5% to minus 4.97% from ideal. Dr. Pegden accepted that choice by the mapmaker and required all of his comparison maps to fall within that slightly narrower range. Tr. 1312:1-22; PX508 at 8 (Pegden Report). Similarly, with respect to county preservation, Dr. Pegden’s algorithm not only respected North Carolina’s county groupings, capped the number of county traversals, and preserved the same number of counties as in the enacted map—his algorithm also preserved whole the very same counties preserved whole in the enacted plan. Tr. 1314:9-1315:3. Likewise, with respect to municipality preservation, Dr. Pegden’s algorithm not only preserved the same number of municipalities preserved in the enacted map, but also preserved the very same municipalities, and preserved them within the very same districts as in the enacted plan. Tr. 1315:4-19.

213. Dr. Pegden’s conservative application of these constraints “ties [his] comparisons very strongly to the enacted map itself.” Tr. 1315:22-24. This makes it all the more remarkable that the enacted maps are such outliers in his analysis, even against this very similar comparison set. Tr. 1315:24-1316:2, 1331:6-10.

214. Dr. Pegden also constrained the compactness of his comparison maps. In his main analysis, Dr. Pegden required that the average compactness score for each

comparison map not exceed the corresponding average for the enacted plan, with an error of up to 5%. Tr. 1312:23-1313:5; PX508 at 8 (Pegden Report). Dr. Pegden also ran robustness checks using several other compactness constraints—a 10% error, a 0% error, and a completely different measure based on total district perimeter—and found that altering the compactness constraint did not affect his results. Tr. 1313:6-1314:8; PX508 at 32-34 (Pegden Report).

215. For some county groupings, because of Dr. Pegden’s conservative application of his constraints, it was impossible for his algorithm to find a swap that satisfied all of the constraints. Tr. 1319:25-1320:10. When this occurred, Dr. Pegden ran a modification of his algorithm allowing multiple swaps in one step. Tr. 1320:11-25; PX508 at 9-10 (Pegden Report).

216. For some county groupings, even with multi-move swaps, Dr. Pegden’s algorithm still was unable to generate any comparison maps—or only a very small number—meeting all of his constraints. Where this occurred, Dr. Pegden was unable to draw any conclusions about the county groupings in question. Tr. 1321:1-16. Dr. Pegden, however, credibly explained that this does not mean that the maps in those groupings were *not* drawn with the intentional use of partisanship. For example, partisan considerations could have predominated in choosing which municipalities to preserve whole in which districts, a choice Dr. Pegden’s comparison maps took as a given. Tr. 1321:17-25, 1349:11-1350:4; PX508 at 10-11 (Pegden Report).

217. Once Dr. Pegden’s algorithm made a swap satisfying his constraints, his algorithm evaluated the partisan characteristics of the comparison map that resulted from the swap. Tr. 1322:1-6. For his main analysis, Dr. Pegden used data from the 2016 Attorney General race to analyze the whole House and Senate maps, the subset of House and Senate districts redrawn in 2017, and any House or Senate county grouping last

changed in 2017. Dr. Pegden then used data from the 2008 Commissioner of Insurance race to analyze the subset of House and Senate districts last changed in 2011, as well as any House or Senate county grouping last changed in 2011. Dr. Pegden used these particular elections because they were reasonably close, statewide, down-ballot elections that were available to the General Assembly at the relevant times. Tr. 1322:7-24. Dr. Pegden explained that the “point of [his] analysis is really to get at the intent of the legislature,” to “understand the decisions they made with information available to them at the time.” Tr. 1322:25-1323:3.

218. Dr. Pegden also re-ran his analysis using four additional elections—the 2016 Governor election, the 2014 U.S. Senate election, the 2012 Presidential election, and the 2012 Lieutenant Governor election. Tr. 1323:4-12; PX508 at 35-36 (Pegden report). Using these different historical elections did not alter Dr. Pegden’s conclusions. Tr. 1323:13-15.

219. To evaluate the partisan characteristics of each comparison map, Dr. Pegden’s algorithm calculates the number of seats Republican candidates would win, on average, if a random uniform swing were repeatedly applied to the historical voting data being used. This metric captures how a given comparison map would perform over a range of electoral environments centered around the base election being used (i.e., the 2016 Attorney General’s election for Dr. Pegden’s primary analysis). Tr. 1324:8-1326:20.

220. Dr. Pegden also re-ran his analysis using a different partisan metric, which measures the Republican vote share in the 61st-most Republican House district, or the 26th-most Republican Senate district. This metric captures, for a given comparison map, how comfortably Republicans would win the seat that would give them the majority in the relevant chamber of the General Assembly. Put differently, this metric captures how large of a Democratic wave election the Republican House or Senate majority could withstand. Tr. 1326:21-1327:20.

221. In his rebuttal report, in response to certain criticisms by Legislative Defendants' experts, Dr. Pegden also re-ran his analysis yet again, this time using a third partisanship metric. In this analysis, Dr. Pegden's algorithm simply measured the number of seats Republicans would have won in an election precisely mirroring the 2016 Attorney General election, without any uniform swing or rank-ordering of districts by Republican vote share. Tr. 1327:21-1328:10.

222. Dr. Pegden's analysis is statistically robust across three different partisanship metrics, none of which altered his conclusions. Tr. 1326:21-1327:15.

223. Dr. Pegden's algorithm repeats the foregoing steps billions or trillions of times in sequence. The algorithm begins with the enacted map, makes a small random change complying with certain constraints, and uses historical voting data to evaluate the partisan characteristics of the resulting map. The algorithm then repeats those steps, each time using the comparison map generated by the previous change as the starting point. By repeating this process many times, Dr. Pegden's algorithm generates a large number of comparison maps in sequence, each map differing from the previous map only by one small random change. Tr. 1328:22-1329:12.

224. Each sequence of billions or trillions of small changes in Dr. Pegden's analysis is one "run." His algorithm performs multiple runs for each map being analyzed, with each run beginning with the enacted plan as the starting point. Dr. Pegden ran his algorithm with a sufficient number of steps and runs in order to generate results that are statistically significant but capable of being replicated within a reasonable time. Tr. 1329:3-22.

225. The comparison maps generated by Dr. Pegden's algorithm are not intended to provide a baseline for what neutral, nonpartisan maps of the North Carolina House or Senate should look like. Instead, Dr. Pegden's comparison maps are intended to be similar

to the enacted map in question with respect to each map's relevant nonpartisan characteristics, in order to assess how carefully created the enacted plan is to maximize partisan advantage. Tr. 1308:4-12, 1309:10-18, 1329:23-1330:6, 1362:23-1363:6, 1369:25-1370:4.

226. Dr. Pegden performed two levels of analysis on the comparison maps generated by his algorithm. Dr. Pegden's first-level analysis simply "report[s] what happened" in each run when his algorithm made random swaps to the enacted plan's district boundaries. Tr. 1332:8-16. For the enacted House and Senate maps, Dr. Pegden reports that—in every run—the enacted map was more favorable to Republicans than 99.999% of the comparison maps generated by his algorithm making small random changes to the district boundaries. PX515; PX519.

227. Dr. Pegden's first-level analysis provides clear, intuitive evidence that the 2017 Plans were meticulously crafted for Republican partisan advantage.

228. Dr. Pegden provided a stark illustration from his first-level analysis of how precisely the enacted plans are drawn to maximize partisan advantage. Dr. Pegden explained that, in his runs for the Wake-Franklin county grouping in the Senate, after "the first fraction of a second," his algorithm "never again" encountered a "single comparison map as advantageous to the Republican Party as the enacted plan itself." Tr. 1308:15-1309:7.

229. Dr. Pegden's second-level analysis provides mathematically precise calculations of how "carefully crafted" the 2017 Plans are—that is, how precisely the district boundaries align with partisan voting patterns so as to advantage Republicans—when compared not just to the comparison maps generated in each run of his algorithm, but to *all possible maps of North Carolina* that satisfy his constraints. Tr. 1332:24-1335:20. In other words, Dr. Pegden is able to determine—to a mathematical certainty—the extent to

which the enacted plan is an outlier relative to every single other possible House or Senate map of North Carolina that could exist meeting the contiguity, equal population, compactness, political subdivision, and Special Master constraints that his algorithm applies. For the enacted House and Senate maps, Dr. Pegden reports that under this second-level analysis the enacted map is more carefully crafted for Republican partisan advantage than at least 99.999% of all possible maps of North Carolina satisfying his constraints. PX515; PX519.

230. The results of Dr. Pegden's second-level analyses follow from his theorems, which have been validated by other mathematicians. Tr.1337:9-18. And the results of Dr. Pegden's second-level analyses are intuitive. In effect, Dr. Pegden's analysis shows that the 2017 Plans not only are quite advantageous to Republicans, but also are surrounded in the space of maps by a plethora of other maps that are *less* advantageous to Republicans. It is simply not possible, even in principle, for a typical map of North Carolina (or any other state) to be favorable to Republicans and be surrounded by maps that are less favorable. The only explanation is that the map drawer intentionally crafted the district boundaries to maximize partisan advantage. Tr. 1337:9-1340:8; *see* PX508 at 7 ("In other words, it is mathematically impossible for any state, with any political geography of voting preferences and any choice of districting criteria, to have the property that a significant fraction of the possible districtings of the state satisfying the chosen districting criteria appear carefully crafted.")

231. For both the House and the Senate, Dr. Pegden performed three different analyses. First, using voting data from the 2016 Attorney General election, Dr. Pegden analyzed the entire House and Senate maps. Second, again using voting data from the 2016 Attorney General election, Dr. Pegden analyzed only the districts that were redrawn in 2017, while freezing the districts that were last changed in 2011. Third, using voting

data from the 2008 Commissioner of Insurance election, Dr. Pegden analyzed only the districts that were last changed in 2011, while freezing the districts that were redrawn in 2017. Tr. 1340:14-1341:15.

232. Dr. Pegden's statewide analyses conclusively show that the pertinent districts drawn in 2011, the districts drawn in 2017, and the maps as a whole were all drawn with the intentional and extreme use of partisan considerations. The following demonstrative chart summarizes Dr. Pegden's statewide results:

Map Analyzed	First-level Analysis (% of algorithm maps less partisan than enacted map)	Second-level Analysis (% of all maps less carefully crafted than enacted map)
<i>House</i>		
Whole state	99.99984%	99.9991%
2017 districts only	99.9982%	99.99%
2011 districts only	99.9999988%	99.999993%
<i>Senate</i>		
Whole state	99.99999983%	99.999999%
2017 districts only	99.99999975%	99.9999985%
2011 districts only	99.9995%	99.997%

Sources: Plaintiffs' Exhibits 515-517, 519-521

PX904; *see also* PX515-517, 519-521; Tr. 1341:18-1346:16.

233. These results cannot be explained by North Carolina's political geography. Dr. Pegden's algorithm compares the enacted map to other maps of North Carolina, with the very same political geography. And Dr. Pegden's theorems do not depend on any aspect of North Carolina's political geography—the theorems are mathematically valid for any state with any political geography. Indeed, Dr. Pegden's theorems are mathematically valid not just for redistricting plans, but for any abstract space on which one could imagine taking a random walk using a Markov chain. Tr. 1333:14-24, 1401:9-1402:5.

234. The results of Dr. Pegden’s statewide analyses also conclusively show that it is possible for a North Carolina map drawer to make intentional and extreme use of partisan considerations even within the Whole County Provision and the other constraints set forth in the 2017 Adopted Criteria. All of Dr. Pegden’s comparison maps respect the Whole County Provision and the other constraints set forth in the 2017 Adopted Criteria. And in his algorithm, Dr. Pegden applied those constraints in a very conservative way that respects the choices made by the map drawer with respect to compactness and the divisions and preservation of particular counties and municipalities. Even within those tight constraints, there were many different maps for a map drawer to choose from, and the enacted maps demonstrate that the map drawer intentionally chose maps that were more carefully crafted for Republican partisan advantage than at least 99.999% of all possible alternatives. Tr. 1402:15-1403:8; PX515; PX519.

235. The Court gives great weight to Dr. Pegden’s testimony, analysis, and conclusions.

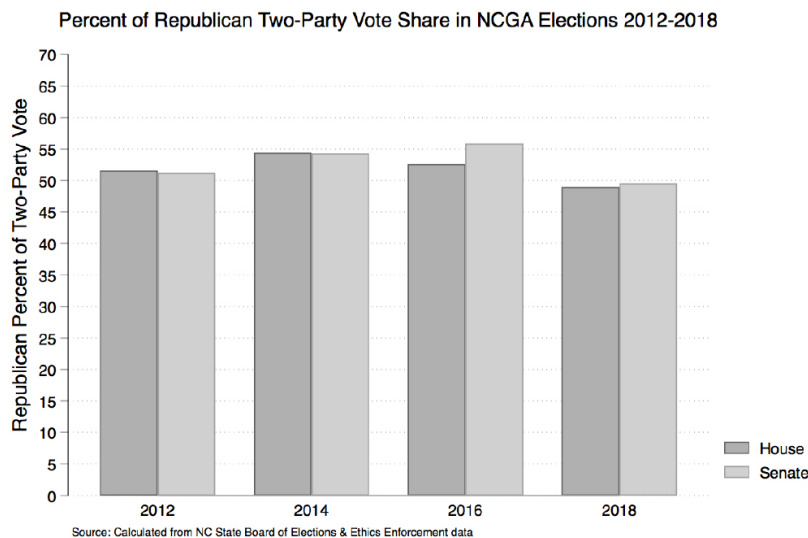
d. Dr. Cooper

236. Christopher A. Cooper, Ph.D., has resided in North Carolina for 17 years and is the Robert Lee Madison Distinguished Professor and Department Head of Political Science and Public Affairs at Western Carolina University. Tr. 848:18-849:7. Dr. Cooper was accepted as an expert in political science with a specialty in the political geography and political history of North Carolina. Tr. 861:21-862:5.

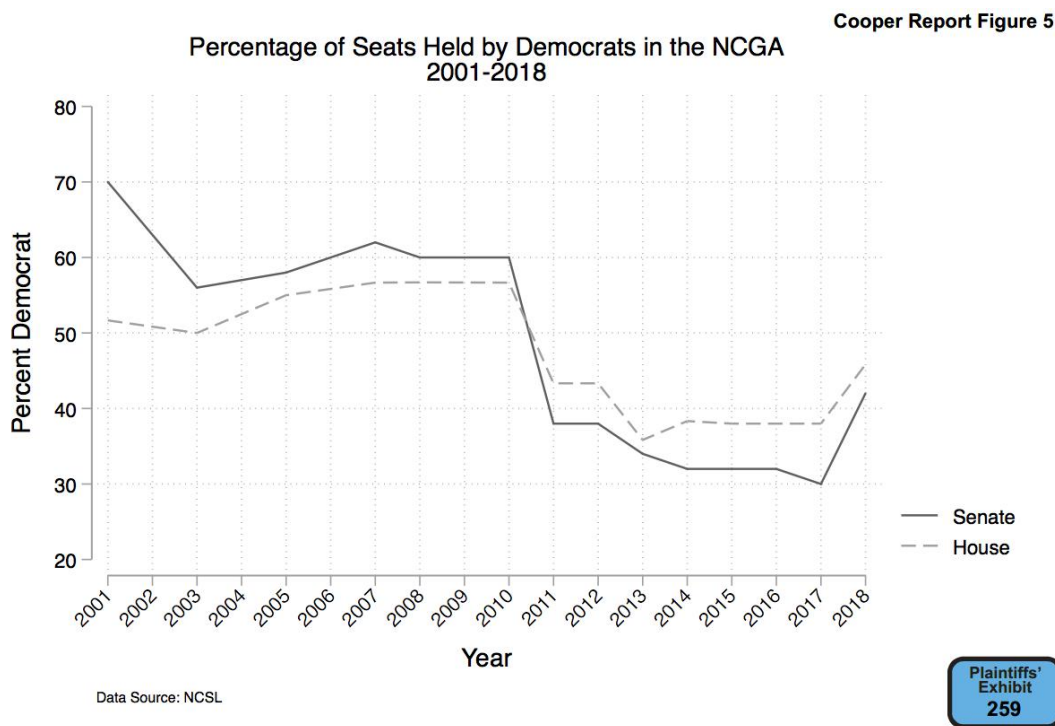
237. As Dr. Cooper explained, North Carolina is a “purple state” that, on the whole, is politically moderate. Tr. 862:21-22. In statewide elections, which are not susceptible to gerrymandering, Democratic candidates perform as well as Republican candidates. Tr. 859:14-18, 864:1-8, 865:5-18. Dr. Cooper’s analysis demonstrated that North Carolina is a “two-party” state where Democrats can compete and succeed with

respect to U.S. Presidential elections, Tr. 863:2-864:8; PX255; PX253 at 5-6 (Cooper Report), and elections for North Carolina’s Council of State, Tr. 864:21-865:18; PX256; PX253 at 6-7 (Cooper Report).

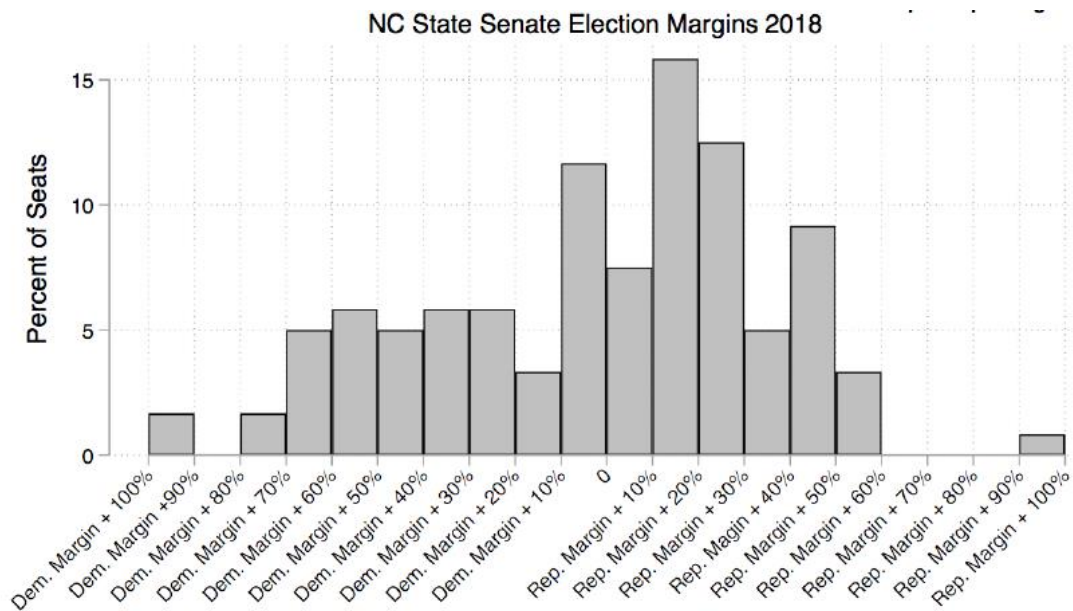
238. Dr. Cooper also analyzed the aggregate vote share of Democratic and Republican candidates in General Assembly elections since 2012, finding that Democrats received close to or over 50% of the vote in each election. Tr. 865:23-866:16; PX257. But over the same period, Republicans controlled the North Carolina General Assembly, winning supermajorities in both chambers from 2012-2016 and majorities in 2018. Tr. 866:24-868:12; PX259. Despite winning close to or more than 50% of the statewide vote in General Assembly elections since 2012, Democrats have “never approached” a roughly corresponding percentage of seats, a sign of “gross disproportionality.” Tr. 868:4-12; PX257; PX259; PX264; PX253 at 8, 11 (Cooper Report).



Plaintiffs'
Exhibit
257

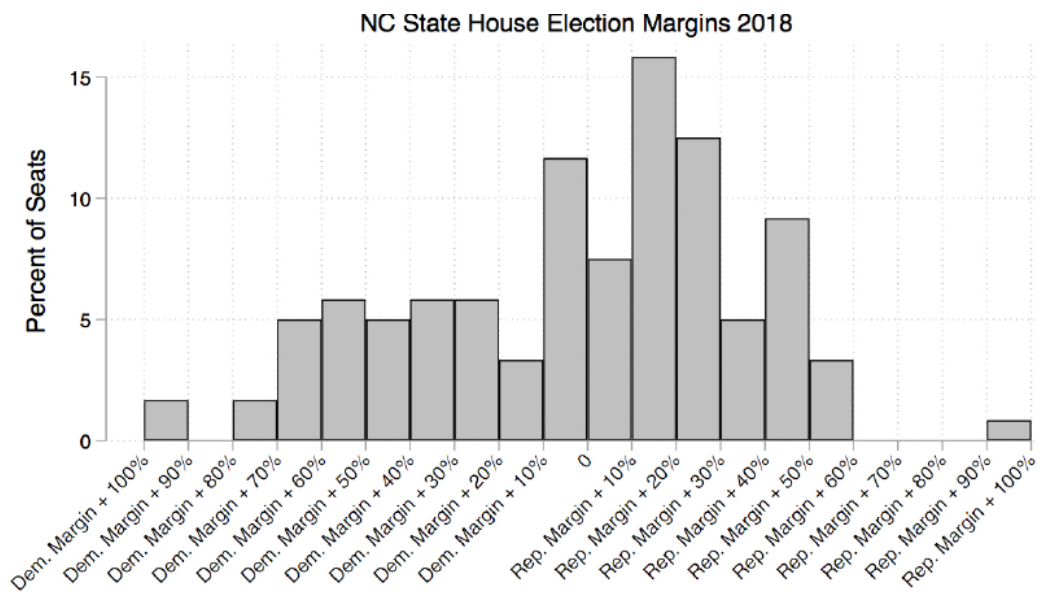


239. Dr. Cooper also used the results of the 2018 elections to show how, under the enacted House and Senate plans, Democratic votes translate to seats far less efficiently than Republican votes. Consistent with the packing and cracking of Democratic voters, when Democrats win seats in the House and Senate, they win by large margins, meaning that many votes tend to be “wasted.” Republicans win by significantly narrower margins. Tr. 869:23-871:3; PX262; PX263; PX253 at 14-16 (Cooper Report).



2018 Senate Vote Margin

Source: NC State Board of Elections

Plaintiffs'
Exhibit
262


2018 House Vote Margin

Source: NC State Board of Elections

Plaintiffs'
Exhibit
263

240. The Court finds Dr. Cooper's analysis of the 2018 elections to be persuasive and consistent with Plaintiffs' experts' findings regarding the packing and cracking of Democratic voters within individual county groupings, described below.

C. The 2017 Plans Were Designed Intentionally and Effectively to Maximize Republican Partisan Advantage Within Specific County Groupings

241. Each of Plaintiffs' four experts analyzed seven county groupings in the Senate and 16 county groupings in the House. Plaintiffs' experts concluded that partisan gerrymandering and bias in these groupings was responsible for the extreme partisan bias that they found in their statewide analysis of the House and Senate. Tr. 1134:1-5 (Dr. Mattingly).

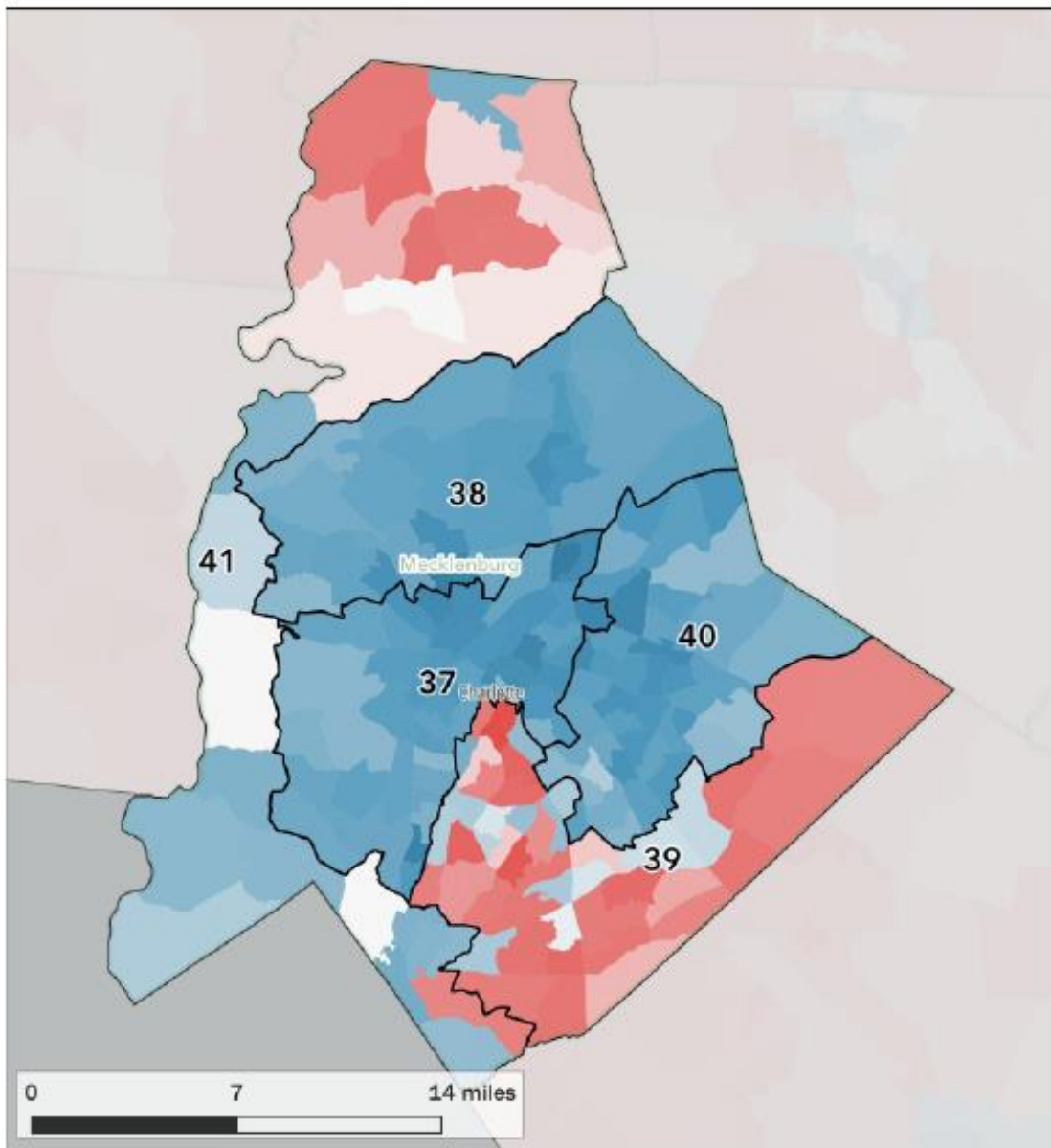
1. Senate County Groupings

a. Mecklenburg

242. The Mecklenburg Senate county grouping contains Senate Districts 37, 38, 39, 40, and 41. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

243. For each House and Senate county grouping that Plaintiffs' experts analyzed, Dr. Cooper produced a map showing the district boundaries within the grouping and the partisanship of every VTD within the grouping using the results of the 2016 Attorney General election. In each map, darker red shading indicates a larger Republican vote share in the VTD, darker blue shading indicates a larger Democratic vote share in the VTD, and lighter colors indicate VTDs that were closer to evenly split in Democratic and Republican vote shares.

244. Plaintiffs' Exhibit 285 is Dr. Cooper's map for this county grouping:



245. As Dr. Cooper explained, the mapmaker packed Democratic voters into Senate Districts 37, 38, and 40 to make Senate Districts 39 and 41 as favorable for Republicans as possible. Tr. 901:16-20; PX253 at 47 (Cooper Report).

246. Senate District 41 stretches from the farthest northern boundaries of Mecklenburg County all the way to the farthest south, traversing two narrow passageways. One passageway is so narrow that the district's contiguity is maintained only by the Martin

Marietta Arrowood Quarry, which is less than a mile wide. Tr. 902:22-903:4; PX287; PX253 at 48 (Cooper Report). The Court is persuaded that the clear intent of this elongated district is to connect the Republican areas north of Charlotte with the Republican-leaning areas in the southern tip of Charlotte. Tr. 902:5-8.

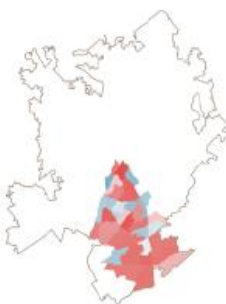
247. Senate District 39 contains the Republican-leaning VTDs in the southern portion of Charlotte, which resemble a “pizza slice” in Dr. Cooper’s maps. Tr. 901:11-15, 902:7-10; PX285; PX286. Those Republican VTDs in Charlotte are grouped with the Republican-leaning areas in the south of Mecklenburg County, outside of Charlotte, so that Senate District 39 is more favorable to Republicans. Tr. 901:18-20; PX253 at 47.

248. Dr. Cooper also illustrated the packing and cracking of Democratic voters in this grouping by focusing just on the division of Charlotte. As illustrated in Plaintiffs’ Exhibit 286 below, the enacted plan places Charlotte’s most Democratic VTDs in Senate Districts 37, 38, and 40, while placing all of Charlotte’s Republican-leaning VTDs in Senate Districts 39 and 41. Tr. 902:1-9; PX253 at 47 (Cooper Report). As Dr. Cooper explained, with large municipalities such as Charlotte, the mapmaker’s partisan intent is not apparent from the mere fact that a municipality is split, but rather from “where do those municipal splits take place and what are the partisan effects.” Tr. 900:12-21; *see* Tr. 877:24-25. In the Mecklenburg Senate county grouping, the Court is persuaded the mapmaker split Charlotte strictly along partisan lines for partisan gain.

Portions of Charlotte City Limits (Shaded)
in Senate Districts 37, 38, and 40



Portions of Charlotte City Limits (Shaded)
in Senate District 39



Portions of Charlotte City Limits (Shaded)
in Senate District 41



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Plaintiffs'
Exhibit
286

249. Legislative Defendants' expert Dr. Johnson offered alternative explanations for the configuration of this grouping. While Dr. Johnson admitted that he had no personal knowledge as to why Dr. Hofeller or the General Assembly drew the districts this way, Tr. 1972:18-1973:6, Dr. Johnson stated that Senate District 41 was "drawn to capture as much of" the Charlotte suburbs as possible into a single district, Tr. 1844:11-12, and that Senate 39 similarly reflected an effort to "unite[] the southern suburbs" of Charlotte, LDTX289 at 4; Tr. 1845:4-9.

250. The Court rejects Dr. Johnson's explanations as it appears to be purely speculative, and in any event his speculation does not withstand minimal scrutiny. Rather than seeking to create a "suburban" district, Senate District 41 stretches to Mecklenburg County's southern tip in order to pick up areas of the City of Charlotte itself, and specifically Republican-leaning VTDs in Charlotte. Tr. 1972:7-1974:15. In so doing, Senate

District 41 *avoids* suburban areas north of Charlotte, with those suburbs packed into Senate District 38 instead because they are Democratic-leaning. *Id.* Similarly, Senate District 39 cuts into the heart of Charlotte, taking all of Charlotte's most Republican-leaning areas, while avoiding suburbs in southeast Mecklenburg County. Tr. 1975:5-1976:14. The Court finds Dr. Johnson's speculative alternative explanations for the configuration of the Mecklenburg Senate county grouping not credible.

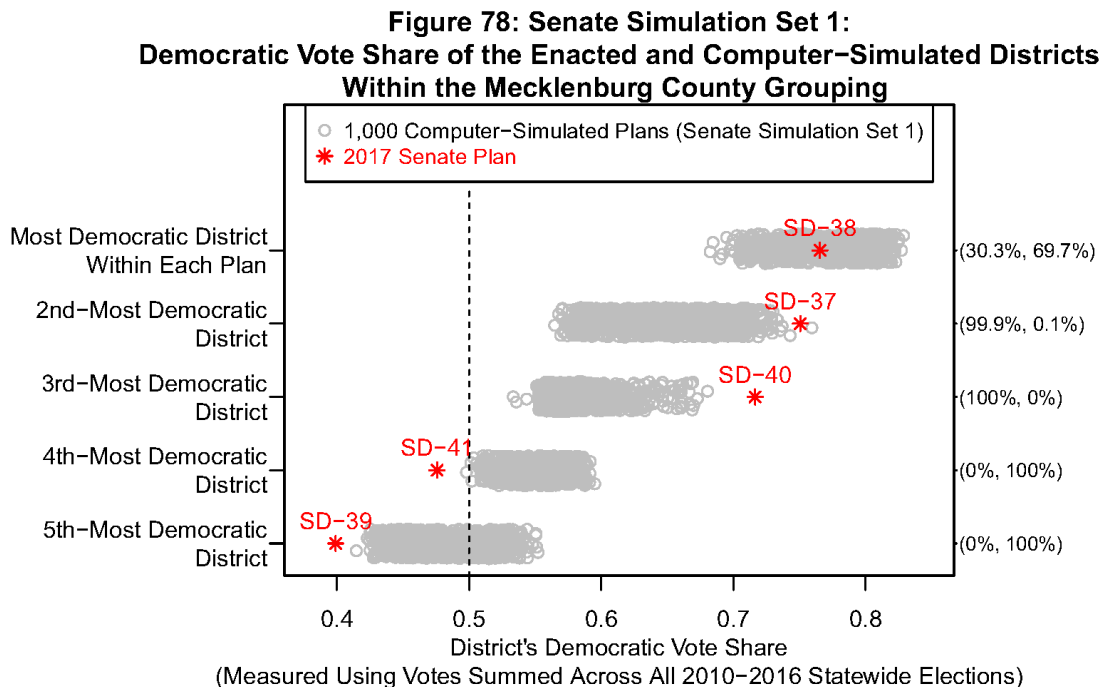
251. Dr. Johnson also opined at trial that the enacted plan version of this county grouping is not the most favorable possible configuration of this grouping for Republicans. Dr. Johnson created an alternative version of this grouping that he asserted would be even more favorable for Republicans. Tr. 1840:17-1841:19. However, Dr. Johnson's alternative map suffered from a critical error: it paired the two Republican incumbents who were in office at the time of the 2017 redistricting. Tr. 1977:2-1978:7. Clearly, the most favorable possible configuration of this grouping for Republicans would not pair the only two Republican incumbents together, and Dr. Johnson conceded that he did not analyze whether the enacted plan represents the most favorable possible configuration of this grouping possible that would not have paired those two Republican incumbents. *Id.*

252. The simulations of Plaintiffs' other experts confirm and independently establish that this county grouping is an extreme partisan gerrymander.

253. Dr. Chen analyzed individual county groupings by comparing the most Democratic district in the grouping under the enacted plan with the most Democratic district in the grouping under the simulated plans, comparing the second most Democratic district in the grouping under the enacted plan with the second most Democratic district in the grouping under the simulated plans, and so on.

254. Using this methodology, Dr. Chen found that the Mecklenburg Senate county grouping has four districts in the enacted plan that are extreme partisan outliers. PX098;

see Tr. 377:8-14. Dr. Chen found that Senate Districts 39 and 41 have a lower Democratic vote share than their corresponding districts in all 1,000 of his simulated plans of this grouping, and that Senate Districts 37 and 40 have a higher Democratic vote share than 99.99% and 100% than their corresponding districts in his simulations. Dr. Chen's findings show the packing of Democratic voters into certain districts in this grouping and the cracking of Democratic voters in Senate Districts 39 and 41, in an effort to create two districts as favorable for Republicans as possible. The Court gives weight to Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 98 below:⁵

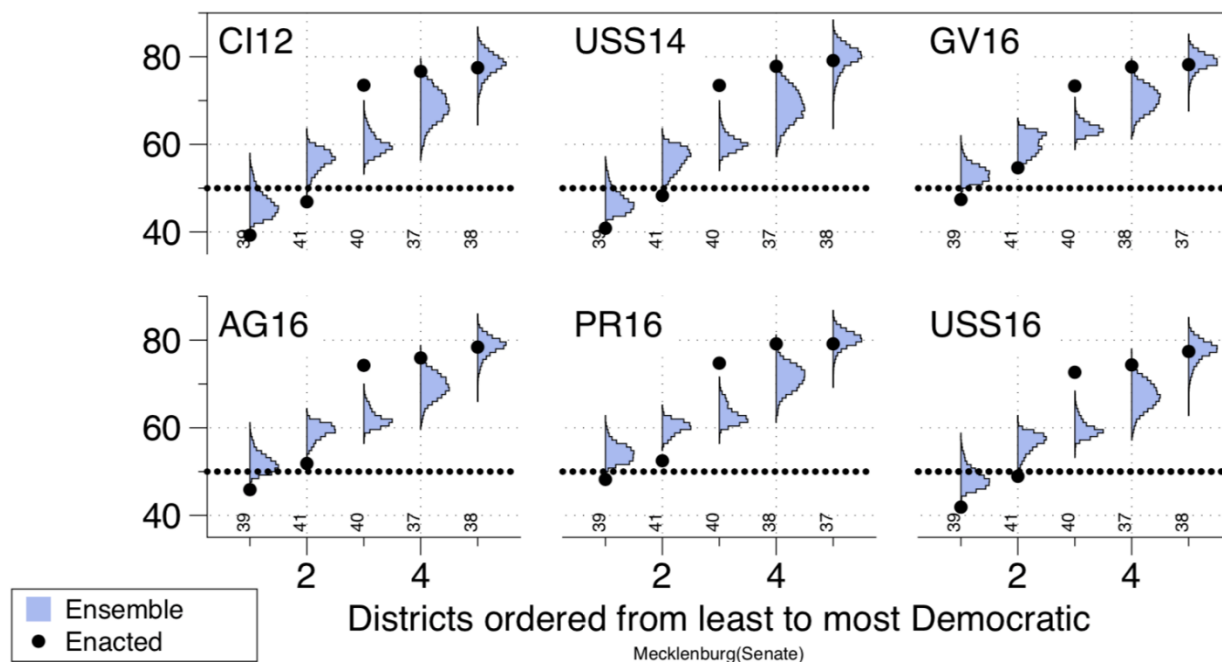


255. Dr. Mattingly analyzed individual county groupings by plotting the Democratic vote fraction in each district in the grouping, ordered from least to most Democratic. He conducted this analysis for the enacted plan (represented by a black dot in his county-grouping-level figures) and for his ensemble of nonpartisan plans (represented

⁵ Unless otherwise noted, Dr. Chen's results for individual House and Senate county groupings were materially the same for his Simulation Set 2 as for his Simulation Set 1. Tr. 349:12-18.

by the blue histograms), using six prior statewide elections. Tr. 1134:14-1138:6. If the black dot representing the enacted plan is above the dotted black line at 50%, the Democrats win that district under the enacted plan. Tr. 1135:23-1136:6. If all or the bulk of the blue histogram representing the ensemble is above the dotted black line at 50%, the Democrats would expect to win that district under the ensemble. Tr. 1137:8-1138:6. Dr. Mattingly labeled the historical election whose statewide vote counts he was using in the upper left corner of the plots. Black dots that are at the bottom of the corresponding blue histogram represent districts that Democrats have been cracked out of, because the enacted plan has many fewer Democrats than would be expected in the nonpartisan plans; black dots that are at the top of the corresponding blue histogram represent districts that Democrats have been packed into. Tr. 1138:14-1139:4.

256. Plaintiffs' Exhibit 370 shows Dr. Mattingly's analysis of the Mecklenburg Senate county grouping:



257. As the figure above shows, Democrats were cracked out of the two most Republican districts in this grouping, and packed into heavily Democratic districts. In the enacted plan, there is a significant jump in Democratic vote share between: (i) the two least Democratic districts (Senate Districts 39 and 41), and (ii) the three most Democratic districts (Senate Districts 40, 37, and 38). PX370; PX 359 at 16 (Mattingly Report). Dr. Mattingly testified that the jump signifies intentional gerrymandering—he called it “signature gerrymandering”—and means that elections in the grouping will be nonresponsive to the votes cast. Tr. 1139:19-21; *see* 1146:13-21; *see* PX 359 at 14-15 (Mattingly Report). As the figure above shows, the gerrymander cost Democrats one or two seats in certain electoral environments, because the black dots for Senate Districts 39 and 41 often fall below the 50% line while the blue histograms often rise above it. Tr. 1142:22-1143:1.

258. Dr. Mattingly mathematically quantified the “jump”—*i.e.*, the cracking and packing in this grouping—using all 17 statewide elections he studied. Specifically, Dr. Mattingly calculated the average Democratic vote share in the two least Democratic districts and the average Democratic vote share in the three most Democratic districts, for both the enacted plans and his ensemble plans. PX 359 at 16 (Mattingly Report). He found that the two least Democratic districts in the enacted plan had fewer Democratic voters than 100% of the comparable districts in the nonpartisan ensemble, while the three most Democratic districts in the enacted plan had more average Democratic votes than 100% of the comparable Democratic districts in the nonpartisan ensemble, meaning that *not a single plan* in his nonpartisan ensemble showed as much of a jump—*i.e.*, as much cracking and packing—as the enacted plan. Tr. 1143:2-20. Dr. Mattingly concluded that the Mecklenburg Senate grouping is an extreme pro-Republican partisan gerrymander, Tr. 1143:21-24, and the Court gives weight to his conclusion.

259. Dr. Pegden found that the Mecklenburg Senate county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.9985% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.995% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1356:25; PX540. The Court gives weight to Dr. Pegden's analysis and conclusions.

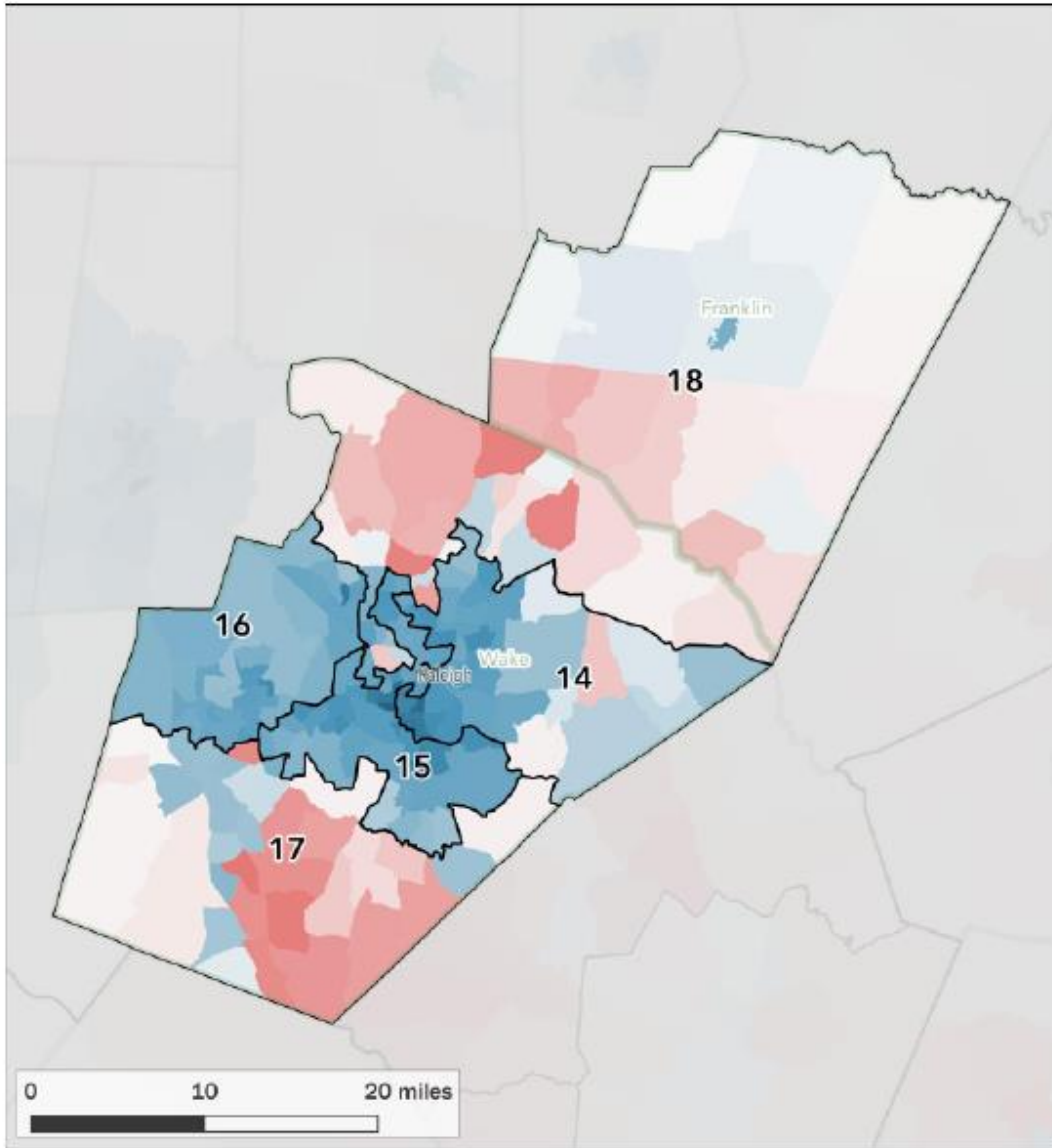
260. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme and intentional partisan gerrymander.

b. Franklin-Wake

261. The Franklin and Wake Senate county grouping contains Senate Districts 14, 15, 16, 17, and 18. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

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262. Plaintiffs' Exhibit 276 is Dr. Cooper's map for this county grouping:

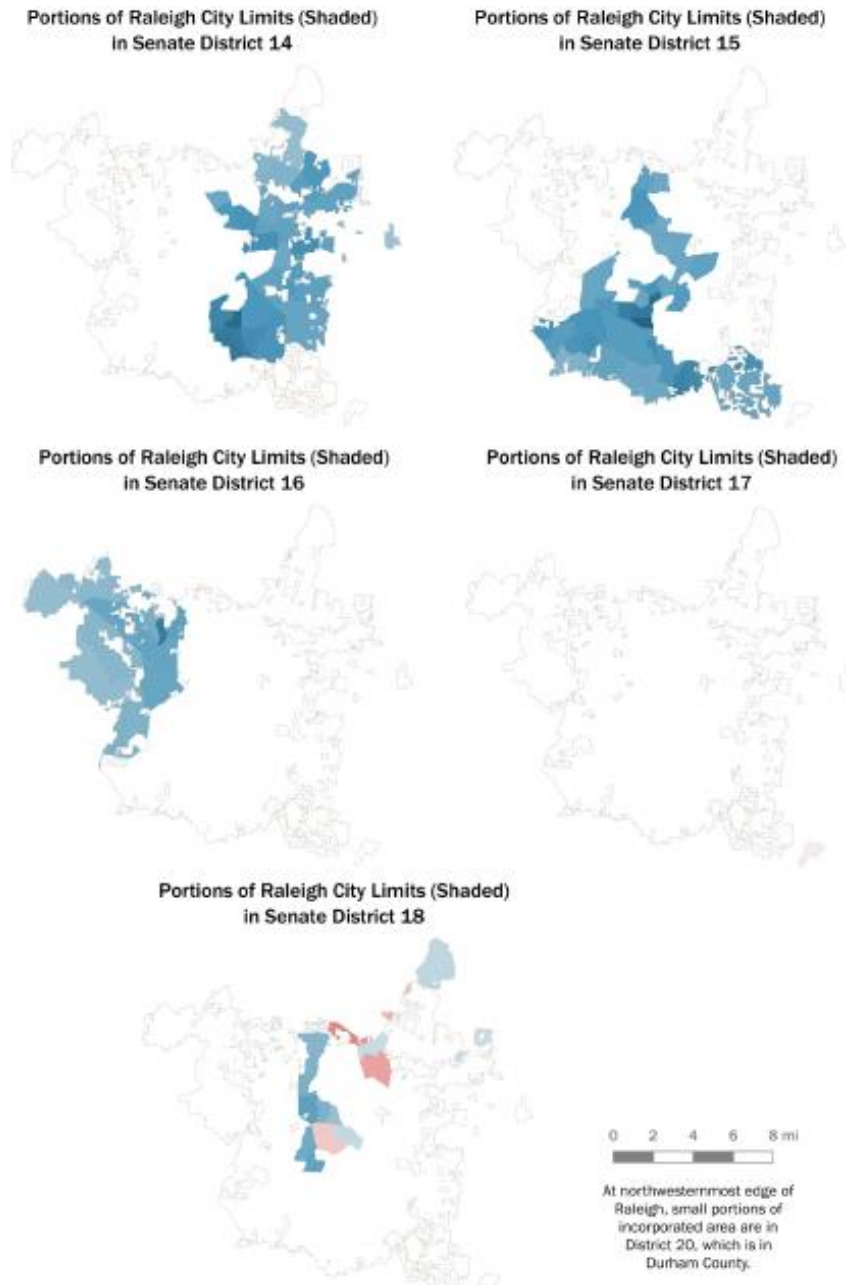


263. As Dr. Cooper testified and is clear from a visual inspection, this grouping packs Democratic voters into Senate Districts 14, 15, and 16 in order to make Senate Districts 17 and 18 as favorable for Republicans as possible. Tr. 892:11-13; PX253 at 36 (Cooper Report).

264. Senate District 18 includes Franklin County and the only Republican-leaning VTDs within Raleigh, near the center of the city. Tr. 892:13-23; PX278; PX253 at 37-38 (Cooper Report).

265. As with Charlotte, the fact that Raleigh is split is not itself revealing, but how and “where Raleigh is split” illustrates the partisan intent behind the districts in this grouping. Tr. 893:16-894:21; PX253 at 37-38. Plaintiffs’ Exhibit 278, reproduced below, shows how the mapmaker put the most Democratic VTDs in Raleigh in Senate Districts 14, 15, and 16, and put all of Raleigh’s moderate and Republican-leaning VTDs in Senate District 18. *Id.*

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266. Senate District 17 includes all of the Republican VTDs in southern Wake County while carefully avoiding heavily Democratic areas. PX276; PX253 at 36 (Cooper Report).

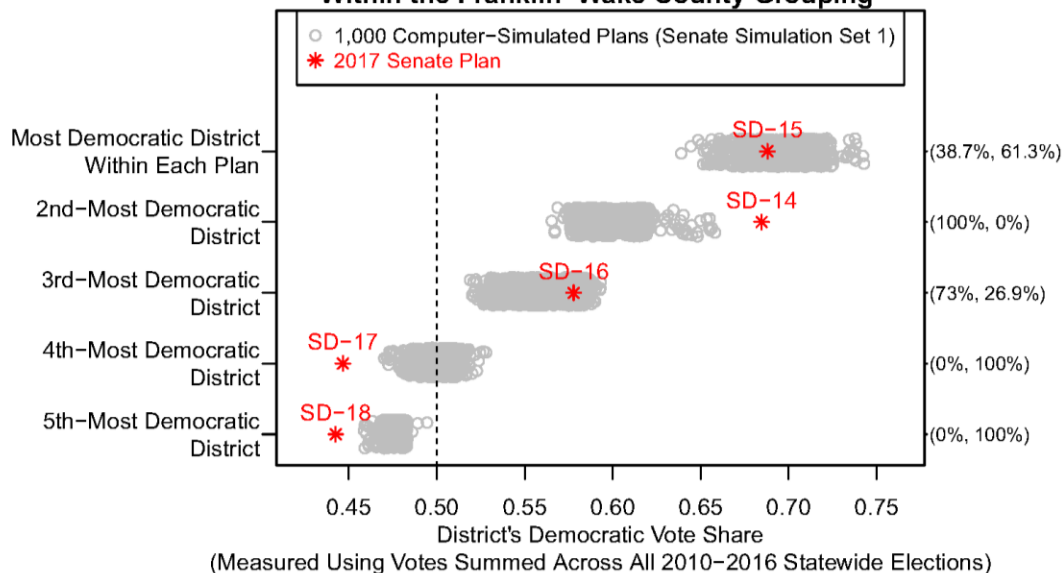
267. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of Senate Districts 17 and 18. At trial, Legislative Defendants focused on an amendment that Democratic Senator Daniel Blue

introduced that altered this grouping, but that amendment did *not* affect the contours of Senate Districts 17 and 18. Senator Blue testified that he was told by Republican leadership that he could not change the boundaries of Senate Districts 17 and 18, but instead could only shift population between the heavily Democratic districts in this grouping. Tr. 155:20-156:15. Senator Blue's amendment did just that, as it only shifted population between Senate Districts 14 and 15, both of which had been packed with Democratic voters. Tr. 150:5-8; PX619. Senator Blue's amendment did not result in, and cannot explain, the composition of Senate Districts 17 and 18 and their extreme partisan outlier status.

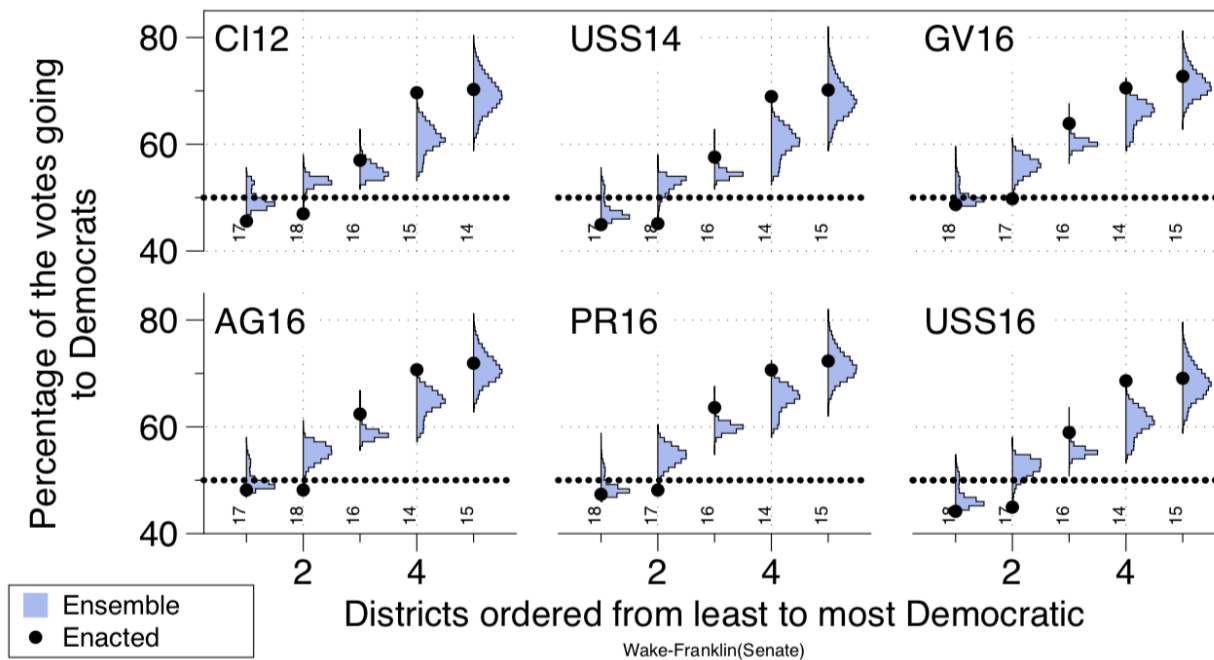
268. The simulations of Plaintiffs' other experts confirm and independently establish that this county grouping is an extreme partisan gerrymander.

269. Dr. Chen found that this county grouping contains three districts that are extreme partisan outliers. Tr. 381:2-18. Senate District 14 has a higher Democratic vote share than its corresponding district in all of the simulations, while Senate Districts 17 and 18 have lower Democratic vote shares than their corresponding districts in all of the simulations. *Id.*; PX97. Dr. Chen's findings show the packing of Democratic voters into districts in this grouping in an effort to create two districts (Senate Districts 17 and 18) that are as favorable for Republicans as possible. The Court gives weight to Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 97 below.

**Figure 77: Senate Simulation Set 1:
Democratic Vote Share of the Enacted and Computer-Simulated Districts
Within the Franklin-Wake County Grouping**



270. Plaintiffs' Exhibit 372 shows Dr. Mattingly's analysis of this grouping:



271. Dr. Mattingly's analysis shows that Democrats were cracked out of the two least Democratic districts in this grouping (Districts 17 and 18), and packed into heavily Democratic districts. PX372; Tr. 1145:2-7. In the enacted plan, there is a significant jump

between the Democratic vote share in the least two Democrats districts and the three most Democratic districts. PX372. Dr. Mattingly found that not a single plan in his ensemble showed as much of a jump between these sets of districts as the enacted plan, Tr. 1145:11-14, and concluded that this grouping showed more pro-Republican advantage than 100% of the maps in his ensemble. Tr. 1153:24-1154:4. As the figure above shows, the gerrymander causes Democrats to lose two seats in this grouping in many electoral environments, because the black dots for Senate Districts 17 and 18 fall below the 50% line while the blue histograms often rise above it. *See* Tr. 1142:22-1143:1. Dr. Mattingly concluded that the Wake-Franklin Senate grouping is an extreme pro-Republican partisan gerrymander, Tr. 1153:17-23, and the Court gives weight to his conclusion.

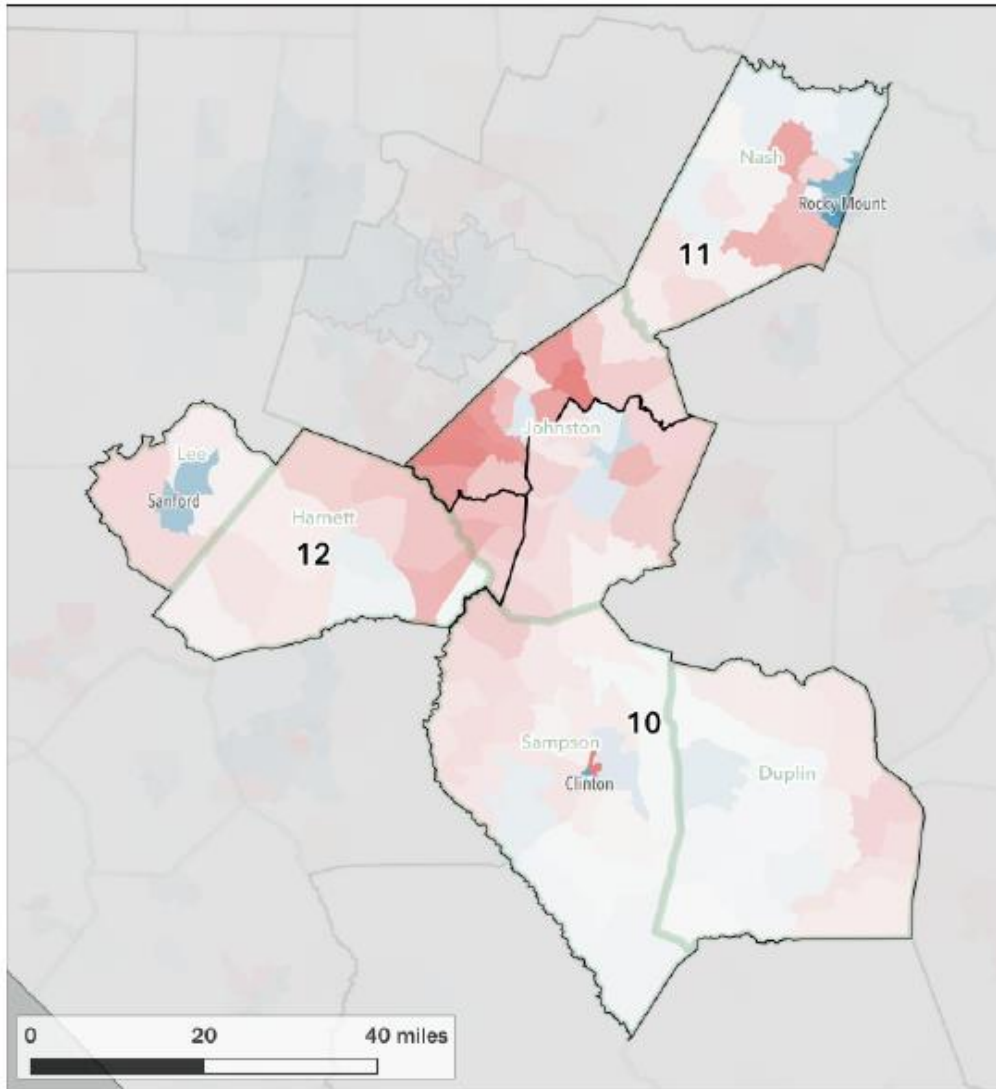
272. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.99999995% of the maps that his algorithm encountered by making small changes to the district boundaries. Tr. 1356:23-24; PX539. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.99999985% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. *Id.* Dr. Pegden also testified that the changes made by Senator Blue to the boundaries between Senate Districts 14 and 15 cannot explain his results for this county grouping. *See* Tr. 1352:2-1354:22. The Court gives weight to Dr. Pegden's analysis and conclusions.

273. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

c. Nash-Johnston-Harnett-Lee-Sampson-Duplin

274. The Nash-Johnston-Harnett-Lee-Sampson-Duplin Senate county grouping contains Senate Districts 10, 11, and 12. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

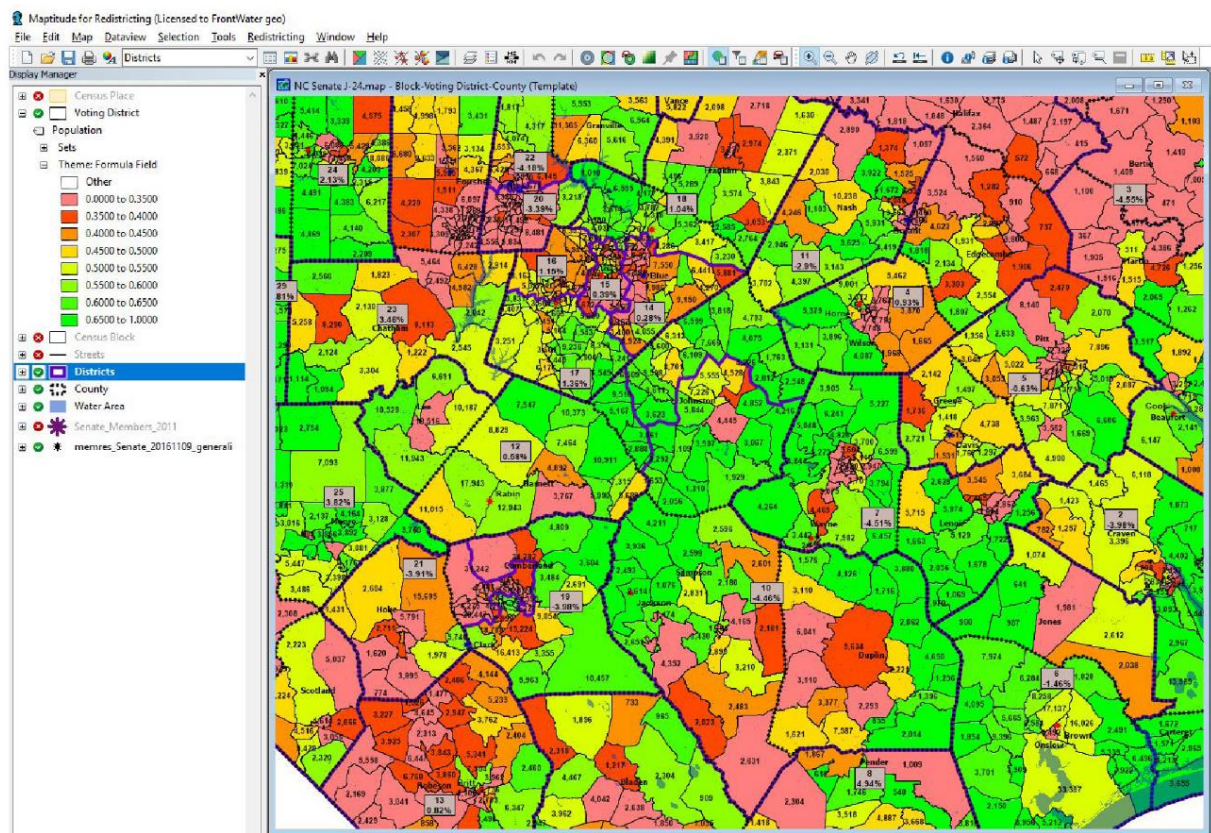
275. Plaintiffs' Exhibit 274 is Dr. Cooper's map of this county grouping:



276. Dr. Cooper explained how the district boundaries connect the most Republican VTDs in Johnston County with the Democratic stronghold of Rocky Mount in Senate District 11, ensuring that those Rocky Mount Democratic voters are separated from

the moderate and Democratic-leaning VTDs in Johnston County, diluting the voting strength of these various Democratic voters. Tr. 890:4-891:17; PX253 at 33 (Cooper Report). Dr. Hofeller's Maptitude files further illustrate this intentional cracking of Democratic voters. Dr. Hofeller's file, below in Plaintiffs' Exhibit 332, reveals how he drew these districts with "remarkable precision" by "building a fence" around the moderate and Democratic-leaning VTDs in central Johnston County—shaded yellow and red in the image below—making sure to keep these VTDs in Senate District 10 separate from Rocky Mount's voters in Senate District 11. Tr. 968:12-969:8.

Figure 3: Partisan Targeting in Senate Districts 10, 11, and 12



277. Dr. Hofeller's Microsoft Excel files provide evidence that Dr. Hofeller placed special attention on this country grouping and its partisan composition. In a file titled "Johnston Senate Switch," Dr. Hofeller compared two alternative drafts of this county

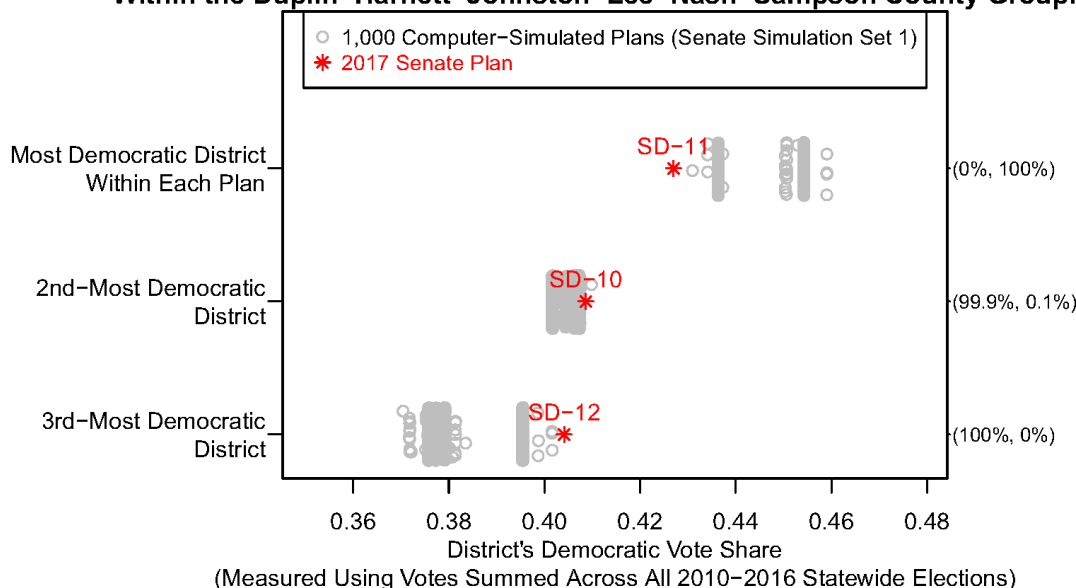
grouping and the expected Republican performance of the three districts in this grouping under each of the two alternatives. Tr. 469:5-470:3; PX166; PX123 at 68-69 (Chen Rebuttal Report). The file analyzed no information other than partisanship considerations, demonstrating Dr. Hofeller's predominant partisan intent in constructing the districts in this grouping. *Id.*

278. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

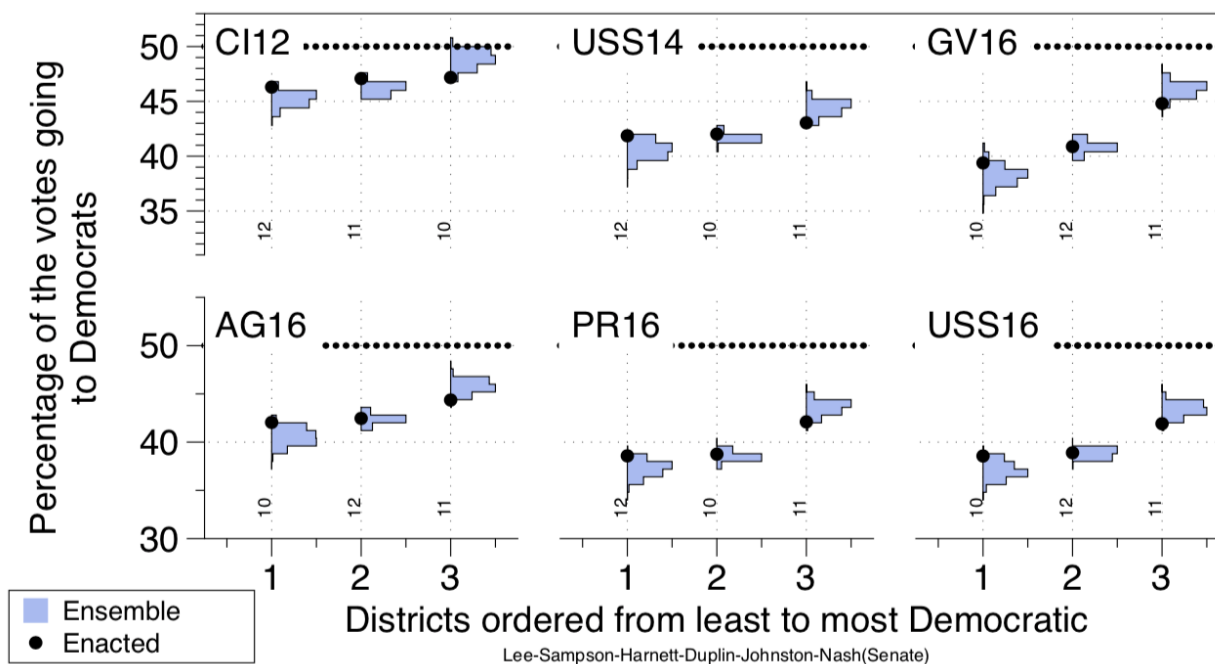
279. The simulations of Plaintiffs' other experts confirm and independently establish that this county grouping was gerrymandered to favor Republicans.

280. Dr. Chen found that all three districts in this county grouping are extreme partisan outliers. Tr. 375:14-25. Senate District 11 has a lower Democratic vote share than its corresponding district in all the simulations, while Senate Districts 10 and 12 have a higher Democratic vote share than their corresponding districts in all the simulations. PX96. Dr. Chen's findings demonstrate the cracking of Democratic voters across all three districts in this grouping to ensure that all three districts are safe Republican seats. The most Democratic district in this grouping would be far more competitive or even Democratic-leaning under a nonpartisan plan, particular in electoral environments that are more neutral or favorable for Democrats than the 2010-2016 statewide elections. Tr. 376:1-8. The Court gives weight to Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 96 below:

**Figure 76: Senate Simulation Set 1:
Democratic Vote Share of the Enacted and Computer-Simulated Districts
Within the Duplin-Harnett-Johnston-Lee-Nash-Sampson County Grouping**



281. Plaintiffs' Exhibit 382 shows Dr. Mattingly's analysis of this grouping:



282. Dr. Mattingly concluded that this grouping reflects a pro-Republican partisan bias, Tr. 1154:20-1155:1, and the Court gives weight to Dr. Mattingly's conclusion. Dr. Mattingly's analysis shows that, in this grouping, the number of Democrats in the districts

was flattened or squeezed to advantage the Republicans. PX778 at 29; Tr. 1154:20-22. Squeezing represents pure cracking, Tr. 1150:22-1151:2. Here, Democrats were cracked out of the most Democratic district and placed in the two least Democratic districts where their presence would not affect the results. When Dr. Mattingly mathematically quantified the cracking in this grouping using all 17 statewide elections, he found that the least two Democratic districts in the enacted plan had more Democratic voters than 77.21% of the comparable districts in the nonpartisan ensemble. Although Dr. Mattingly did not label this grouping an “outlier” because he used a 90% threshold, he explained that the pro-Republican bias evidence in this grouping still contributed to the extreme pro-Republican bias he found statewide. Tr. 1151:21-1153:2, 1154:23-1155:1. Because the lines in each county grouping are independent of each other, if the mapmaker time after time makes choices that systematically bias each grouping to one party, that effect accumulates across the map. Tr. 1151:21-1153:2.

283. Moreover, while Dr. Mattingly’s “jump” analysis evaluated the districts in this grouping using all 17 statewide elections, analyzing the most Democratic district in this grouping based on the more recent elections depicted in the figure above reveals the intent and effects of the gerrymander. Dr. Mattingly’s figure shows that the most Democratic district in this grouping under the enacted plan, which is Senate District 11 in most of the elections shown, has less Democrats than the most Democratic district in almost all of his simulations under these more recent six statewide elections. PX382.

284. Dr. Pegden found evidence that this county grouping is an extreme partisan gerrymander. Due to Dr. Pegden’s conservative methodology, his algorithm was only able to generate 18 comparison maps for this Senate county grouping. Tr. 1355:5-23; PX542. Of those 18 maps, Dr. Pegden found that the enacted map for this county grouping is more

favorable to Republicans than every single one. Tr. 1356:3-8. The Court gives weight to Dr. Pegden's analysis and conclusions.

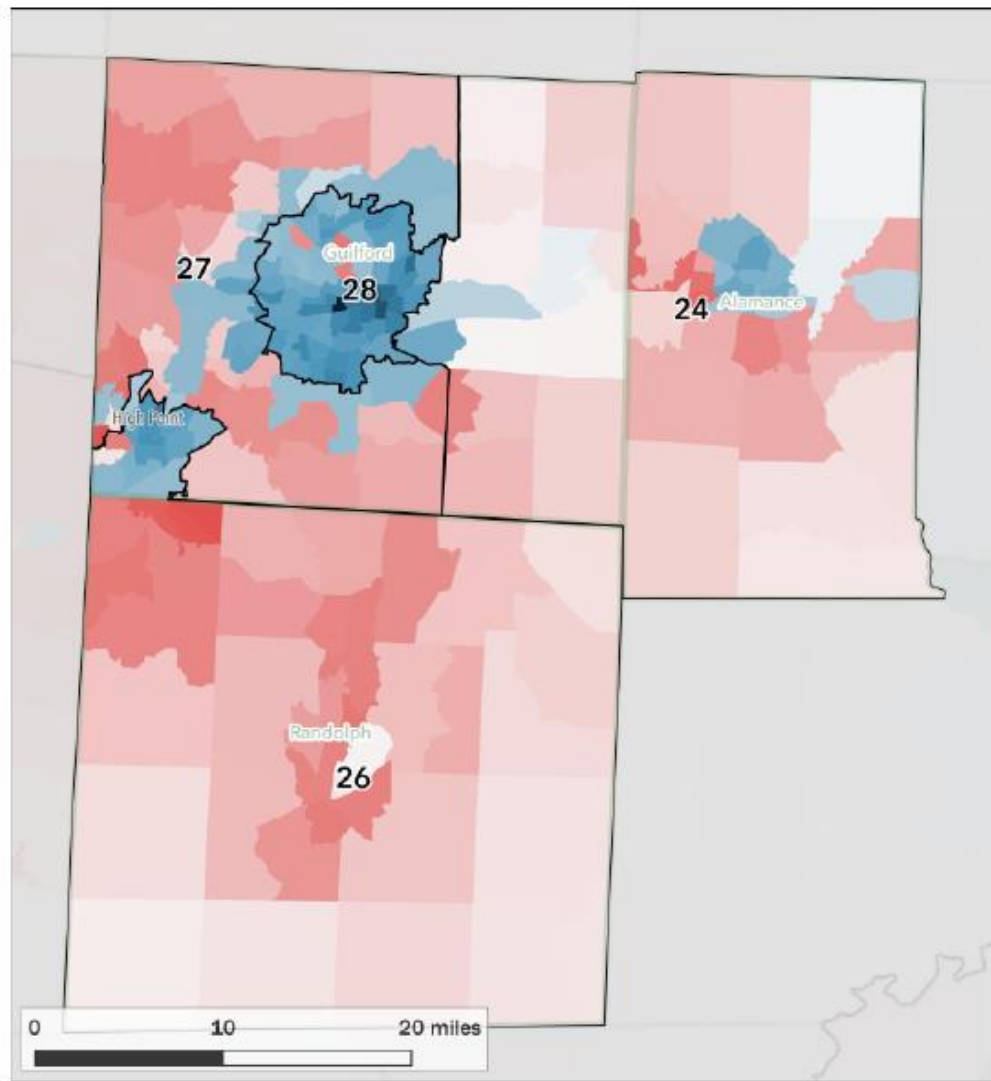
285. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

d. Guilford-Alamance-Randolph

286. The Guilford-Alamance-Randolph Senate county grouping contains Senate Districts 24, 26, 27, and 28.

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287. Plaintiffs' Exhibit 281 is Dr. Cooper's map for this county grouping:



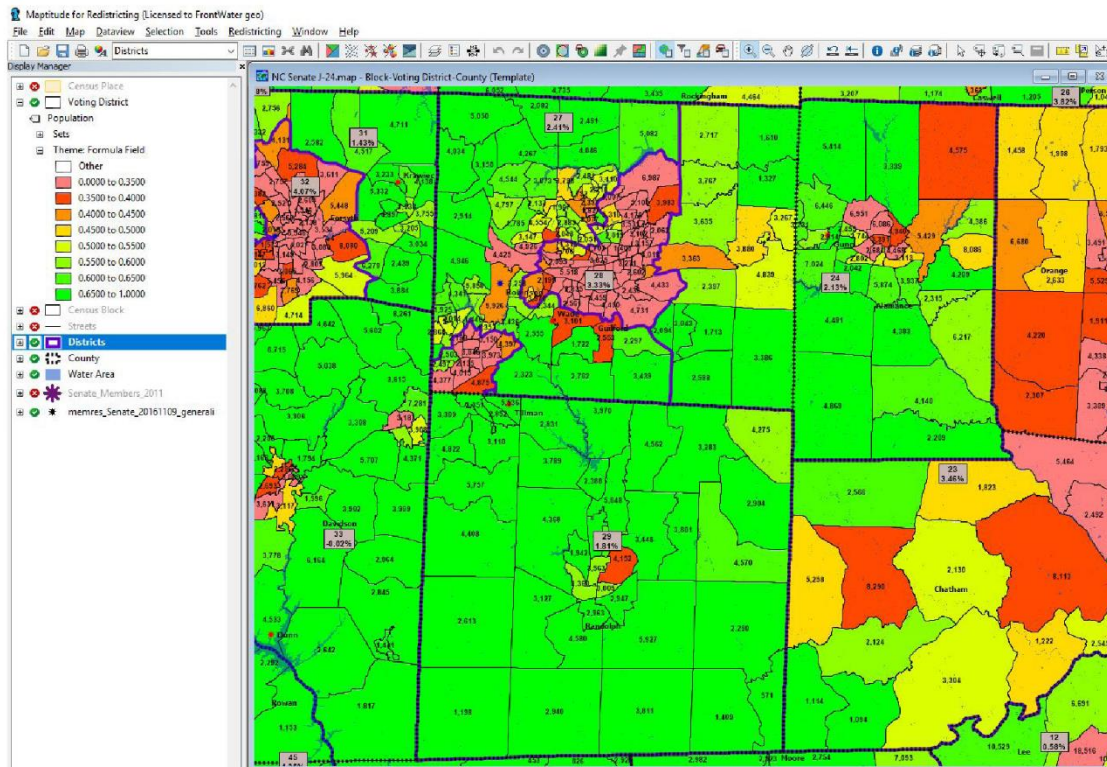
288. For this county grouping, the *Covington* court tasked the Special Master with redrawing Senate District 28 because the General Assembly's enacted version of Senate District 28 did not cure the racial gerrymander. 2017 WL 11049096, at *1-2 (M.D.N.C. Nov. 1, 2017). In redrawing Senate District 28, the Special Master also made changes to Senate District 24. See LDTX159 at 19; *Covington*, ECF No. 220 at 34. Plaintiffs do not challenge Senate Districts 24 and 28 in this case and do not seek relief with respect to them.

289. Unlike Senate Districts 24 and 28, the Special Master did *not* make any changes to the General Assembly’s enacted version of Senate District 26. *See Covington*, ECF No. 220 at 34 (“2017 Enacted Senate District 26 remains untouched”); Tr. 378:9-16. The Special Master made certain changes to Senate District 27 in carrying out his assignment to redraw Senate District 28, but in so doing, the Special Master did not alter any part of the border between Senate Districts 27 and 26. *See Chen Demonstrative D6* at 3; LDTX159 at 19. According to estimates presented at trial by Legislative Defendants’ expert Dr. Johnson, of the current population of Senate District 27, 77% of the population was put into the district by the General Assembly under the enacted 2017 Senate plan.

290. In drawing Senate District 26, the mapmaker cracked Democratic voters in Guilford County, placing the Democratic stronghold of High Point in Senate District 26 and separating these voters from Democratic voters in the Greensboro suburbs. Tr. 895:15-896:25; PX254 at 42-43 (Cooper Report). This has the effect of “washing out” the influence of High Point’s Democratic voters, who are joined with the heavily Republican Randolph County in a safe Republican district (Senate District 26), preventing them from influencing the competitive Senate District 27 and thereby making Senate District 27 more favorable for Republicans. *Id.*

291. Dr. Hofeller’s Maptitude files confirm that he was using VTD-level partisanship data in constructing the districts in this and other county groupings. Tr. 971:16-18; 975:2-5. For example, Dr. Hofeller drew the boundaries of Senate District 26 to grab only the most Democratic VTDs on the border of Randolph County. Tr. 975:10-13, 974:19-975:5. The partisan implications of which are illustrated by Dr. Hofeller’s draft map, which is Plaintiffs’ Exhibit 334:

Figure 5: Partisan Targeting in Senate Districts 24, 26, 27, and 28



292. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the decision to place High Point’s most-Democratic VTDs in Senate District 26.

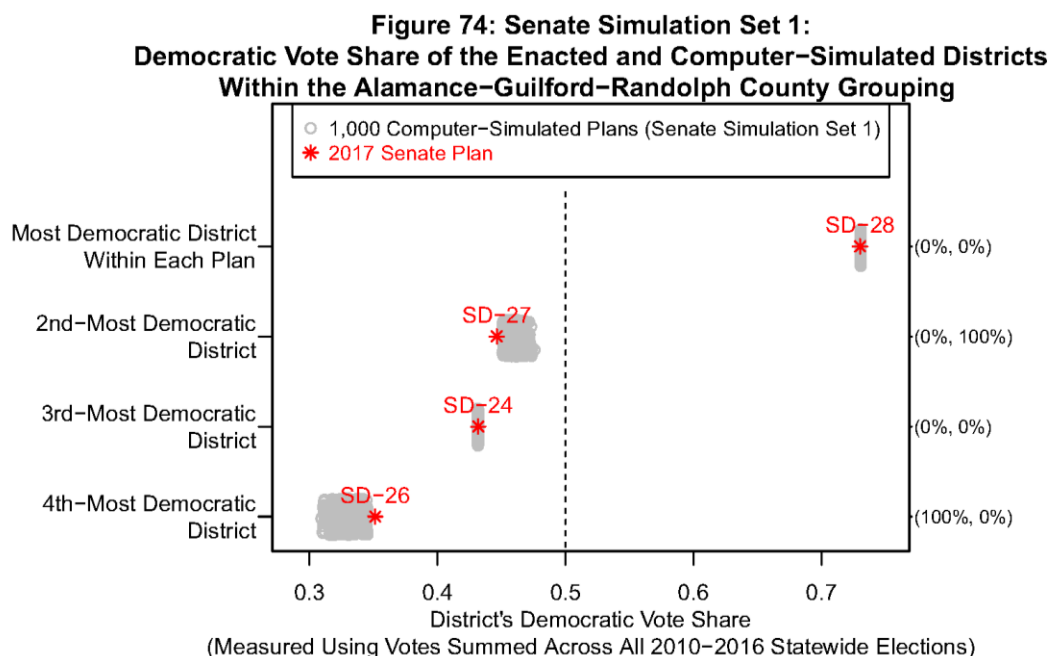
293. The simulations of Plaintiffs’ other experts confirm and independently establish that Senate Districts 26 and 27 are extreme partisan gerrymanders.

294. Drs. Chen, Mattingly, and Pegden all froze Senate Districts 24 and 28 in this grouping. Tr. 378:17-379:19; PX359 at 23 (Mattingly Report); PX508 at 30 (Pegden Report).

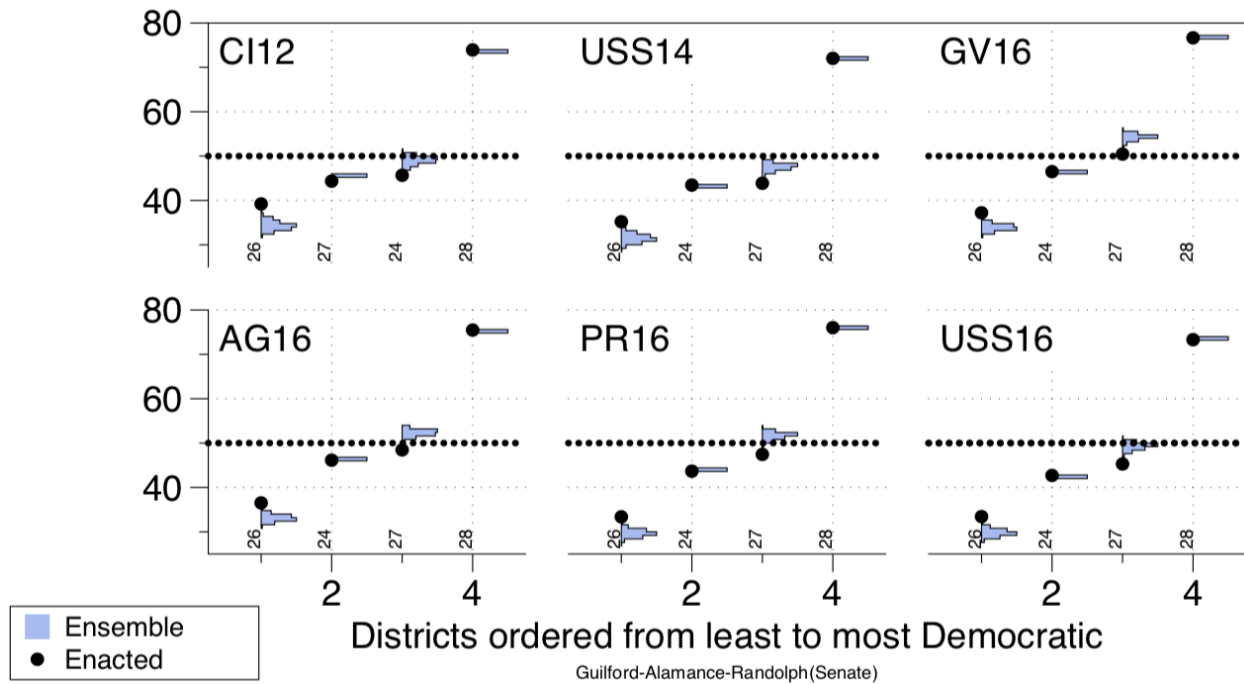
295. Dr. Chen explained in unrebutted testimony that his simulations of the Alamance-Guilford-Randolph House county grouping did not make any changes to the portion of Senate District 27 added by the *Covington* Special Master, and instead altered only the southwest portion of Senate District 27 that borders Senate District 26. Tr. 773:8-22; Chen Demonstrative D6 at 4, 5; PX1 at 18-19 (Chen Report). The Court finds that

because Dr. Chen's simulations altered only portions of Senate District 27 drawn by the mapmaker, and did not touch the portions of the district added by the Special Master, the mapmaker necessarily is responsible for the extreme partisan bias that Dr. Chen finds for Senate District 27.

296. Dr. Chen found that both districts in this county grouping that he did not freeze are extreme partisan outliers. Senate District 26 has a higher Democratic vote shares than its corresponding district in all of the simulations, while Senate District 27 has a lower Democratic vote share than its corresponding district in all of the simulations. Tr. 380:1-18; PX94. Dr. Chen's findings show the mapmaker's intentional placing of High Point's Democratic voters into Senate District 26 to make Senate District 27 as favorable for Republicans as possible. The Court gives weight to Dr. Chen's findings and analysis for this grouping, which are reflected in Plaintiffs' Exhibit 94 below:



297. Plaintiffs' Exhibit 380 shows Dr. Mattingly's analysis of the Guilford-Alamance-Randolph Senate county grouping:



298. Setting aside the frozen districts, Dr. Mattingly's analysis shows that Democrats were cracked between the grouping's two remaining districts—an example of what Dr. Mattingly called flattening or squeezing. PX380; PX778 at 29; PX359 at 23. Not a single plan in Dr. Mattingly's nonpartisan ensemble showed as much cracking of Democratic voters in the grouping as was present in the enacted plan, PX359 at 23, and thus the grouping has more pro-Republican advantage than 100% of the maps in his nonpartisan ensemble. Tr. 1153:24-1154:4. Dr. Mattingly concluded that this grouping is an extreme pro-Republican partisan gerrymander, Tr. 1153:17-23; PX778 at 29; PX359 at 23, and the Court gives weight to this conclusion.

299. Dr. Pegden found that this Senate county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.95% of the maps that his

algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.85% of all possible districtings of this grouping that satisfy the criteria Dr. Pegden used. Tr. 1357:1; PX543. The Court gives weight to Dr. Pegden's analysis and conclusions.

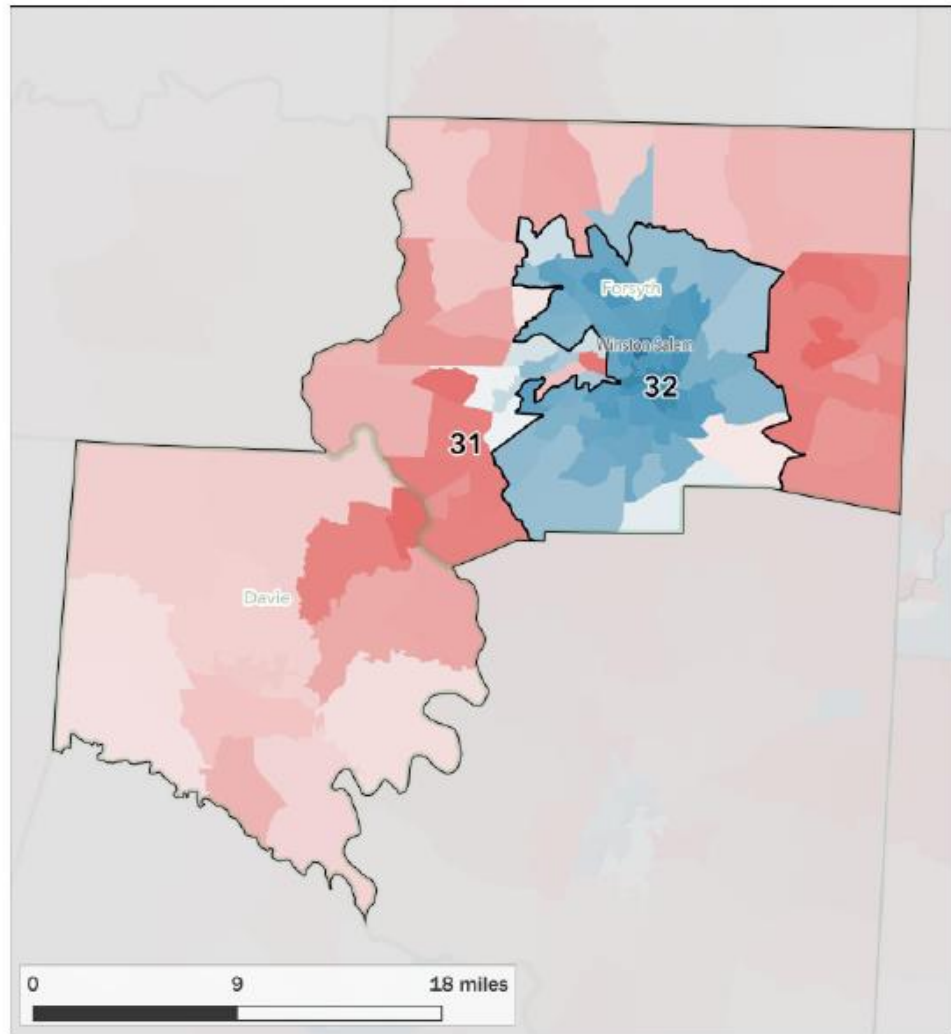
300. The analyses of Plaintiffs' experts independently and together demonstrate that Senate Districts 26 and 27 are extreme partisan gerrymanders.

e. Davie-Forsyth

301. The Davie-Forsyth Senate county grouping contains Senate Districts 31 and 32. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

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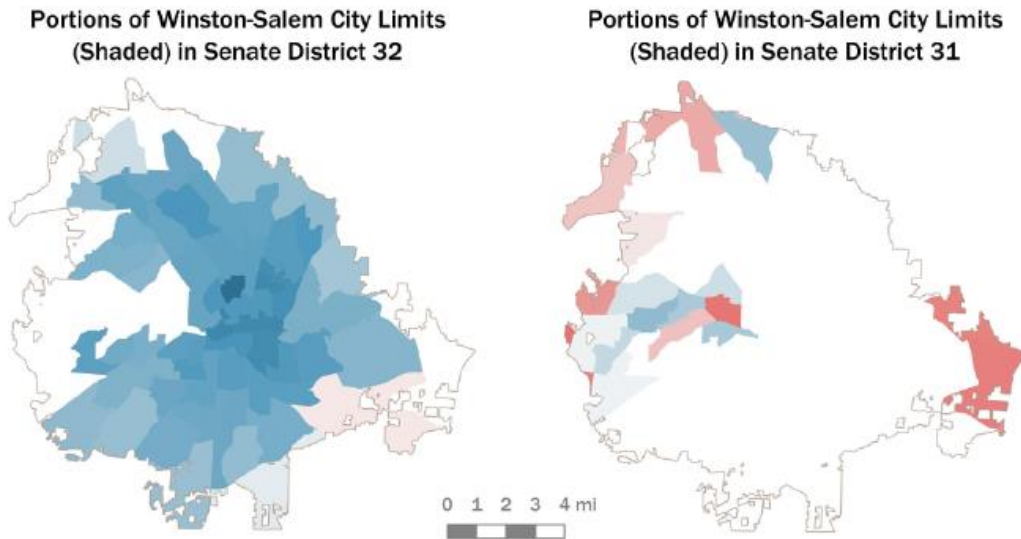
302. Plaintiffs' Exhibit 282 is Dr. Cooper's map for this county grouping:



303. Dr. Cooper explained what is apparent from the above map: the mapmaker packed Democratic voters into Senate District 32, thereby ensuring that Senate District 31 would be a safe Republican district. Tr. 897:9-24; PX253 at 44 (Cooper Report).

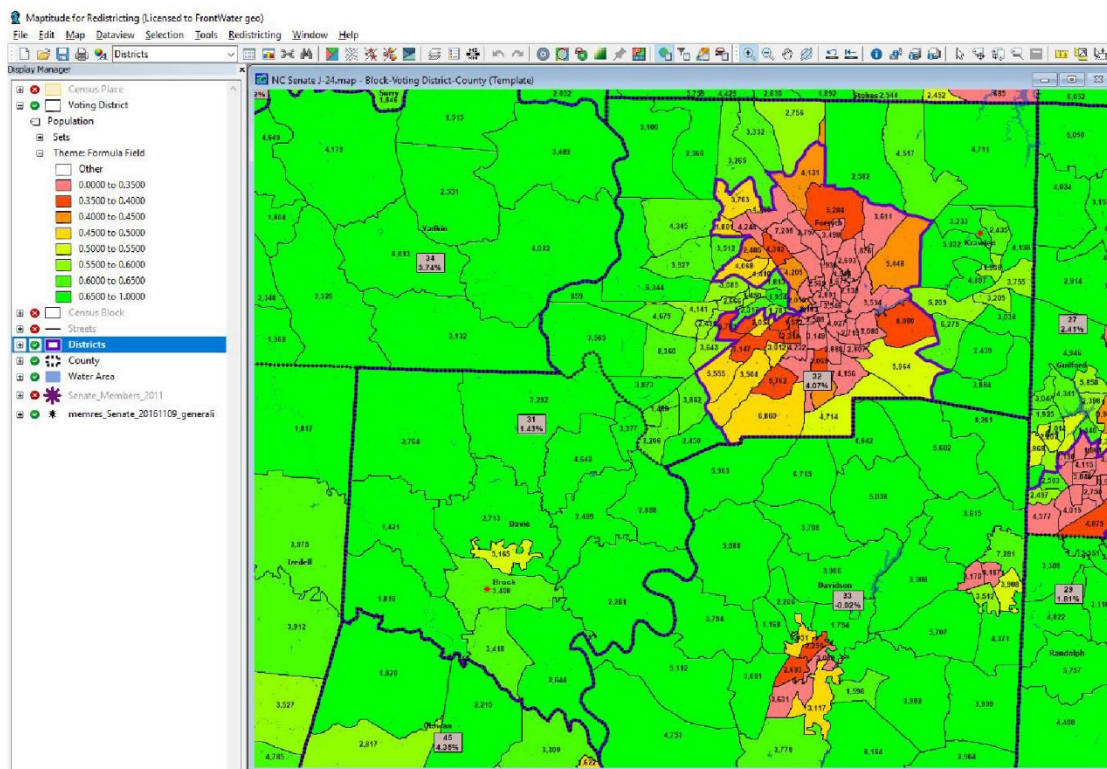
304. This packing occurred not only at the grouping-level, but within Winston-Salem. The map packs all of Winston-Salem's most Democratic VTDs into Senate District 32, and puts almost all of the city's Republican-leaning VTDs in Senate District 31. Tr.

898:1-16; PX283; PX253 at 44 (Cooper Report). As shown in Plaintiffs' Exhibit 283 below, Senate District 31 wraps around Winston-Salem to avoid the Democratic-leaning VTDs in the city, while taking in the Republican-leaning VTDs on the western, northern, and eastern sides of the city:



305. Dr. Hofeller's Maptitude files confirm his predominant partisan intent in drawing this grouping. The district boundaries are drawn "almost perfectly" so that the green areas on the map, which reflect Republican VTDs, are all placed in Senate District 31. Tr. 976:24-977:4; PX335; PX329 at 11 (Cooper Rebuttal Report). The "bite mark" on the west side of Winston-Salem, where Republican-leaning VTDs were carved out of Senate District 32, is evident on Dr. Hofeller's draft map of these districts, which is Plaintiffs' Exhibit 335:

Figure 6: Partisan Targeting in Senate Districts 31 and 32

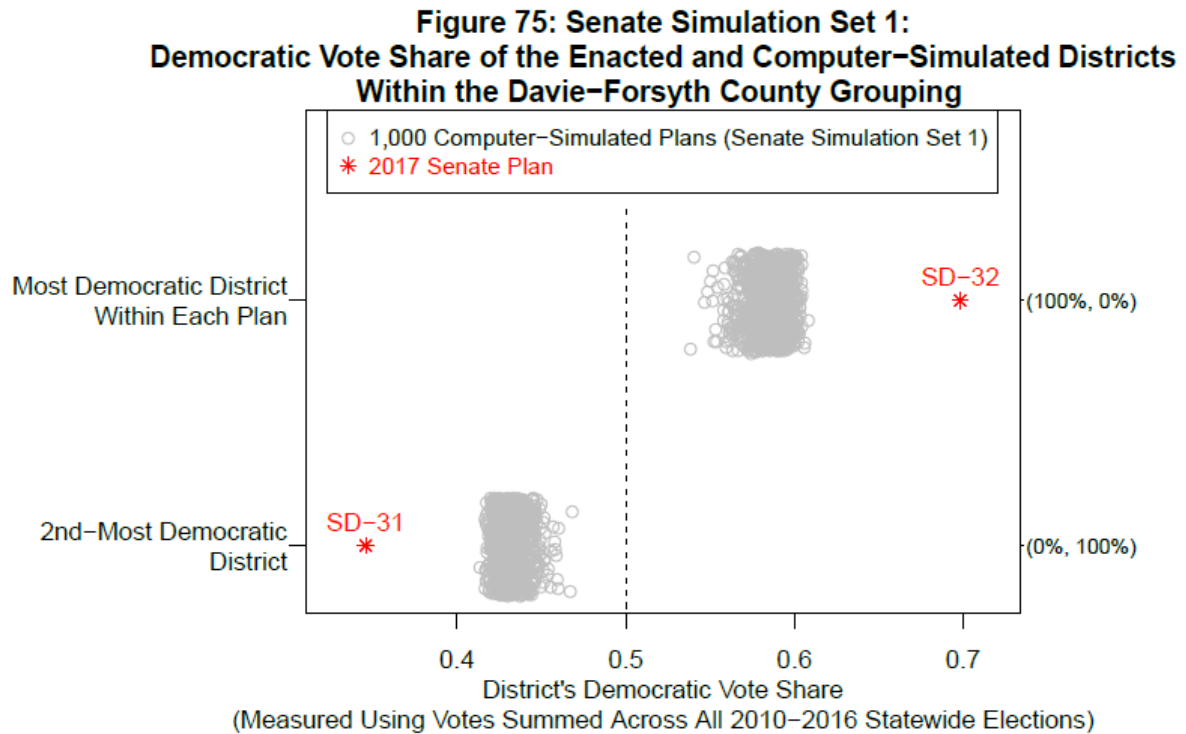


306. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

307. The simulations of Plaintiffs' other experts confirm and independently establish that the Davie-Forsyth county grouping is an extreme partisan gerrymander.

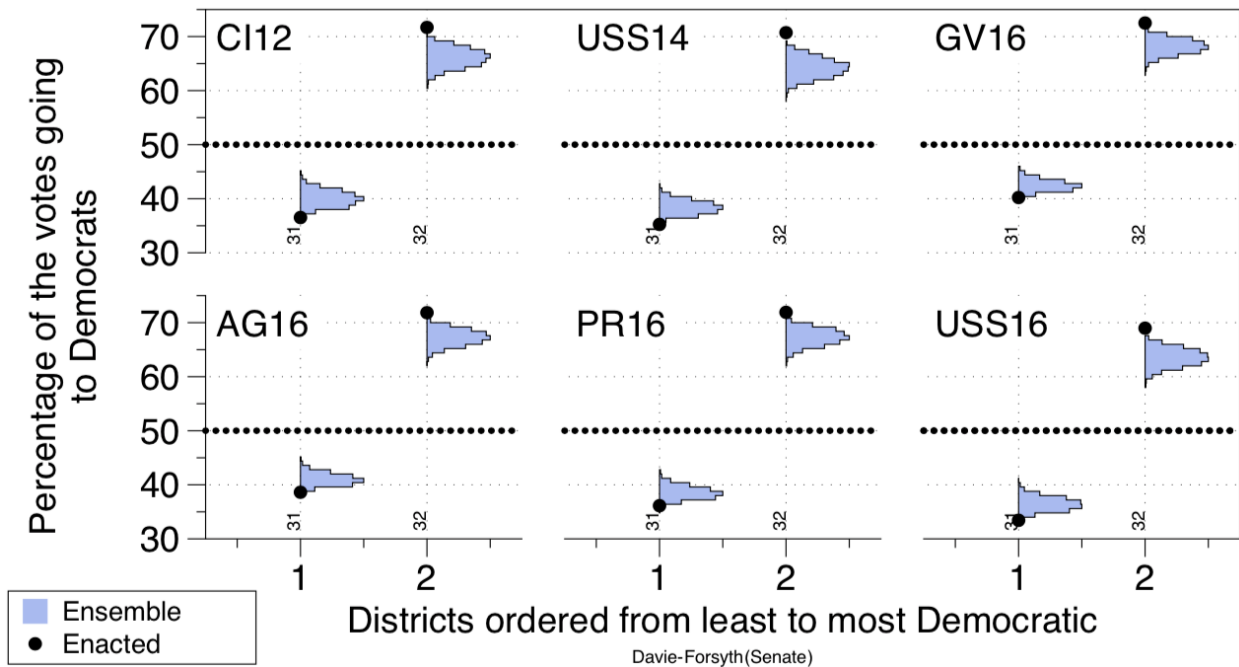
308. Dr. Chen found that both districts in this grouping are extreme partisan outliers. Tr. 373:18-374:12. Senate District 32 has a far higher Democratic vote share than its corresponding district in all of the simulations, while Senate District 31 has a far lower Democratic vote share than its corresponding district in all of the simulations. PX95. Dr. Chen's findings demonstrate the packing of Democratic voters into Senate District 32 in order to make Senate District 31 a safe Republican seat. As Dr. Chen explained, the less Democratic district in this grouping would be far more competitive for Democrats under a nonpartisan plan, particularly in electoral environment that are more neutral or favorable

for Democrats than the 2010-2016 statewide elections. Tr. 374:13-23. The Court gives weight to Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 95 below:



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309. Plaintiffs' Exhibit 374 shows Dr. Mattingly's analysis of this county grouping:



310. Dr. Mattingly's analysis shows that Democrats were cracked out of the most Republican district in this county grouping, and packed into the most Democratic district. PX374; PX778 at 29. Dr. Mattingly found that not a single plan in his nonpartisan ensemble showed as much packing of Democratic voters in the Davie-Forsyth Senate grouping as was present in the enacted plan, PX359 at 18, and thus the grouping has a more pro-Republican advantage than 100% of the maps in his nonpartisan ensemble, Tr. 1153:24-1154:4. Dr. Mattingly concluded that this grouping is an extreme pro-Republican partisan gerrymander, Tr. 1153:17-23; PX778 at 29; PX359 at 18, and the Court gives weight to his conclusion.

311. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of the grouping is more favorable to Republicans than 99.993% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second

level analysis, Dr. Pegden found that the grouping is more carefully crafted to favor Republicans than at least 99.98% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1356:25; PX538. The Court gives weight to Dr. Pegden's analysis and conclusions.

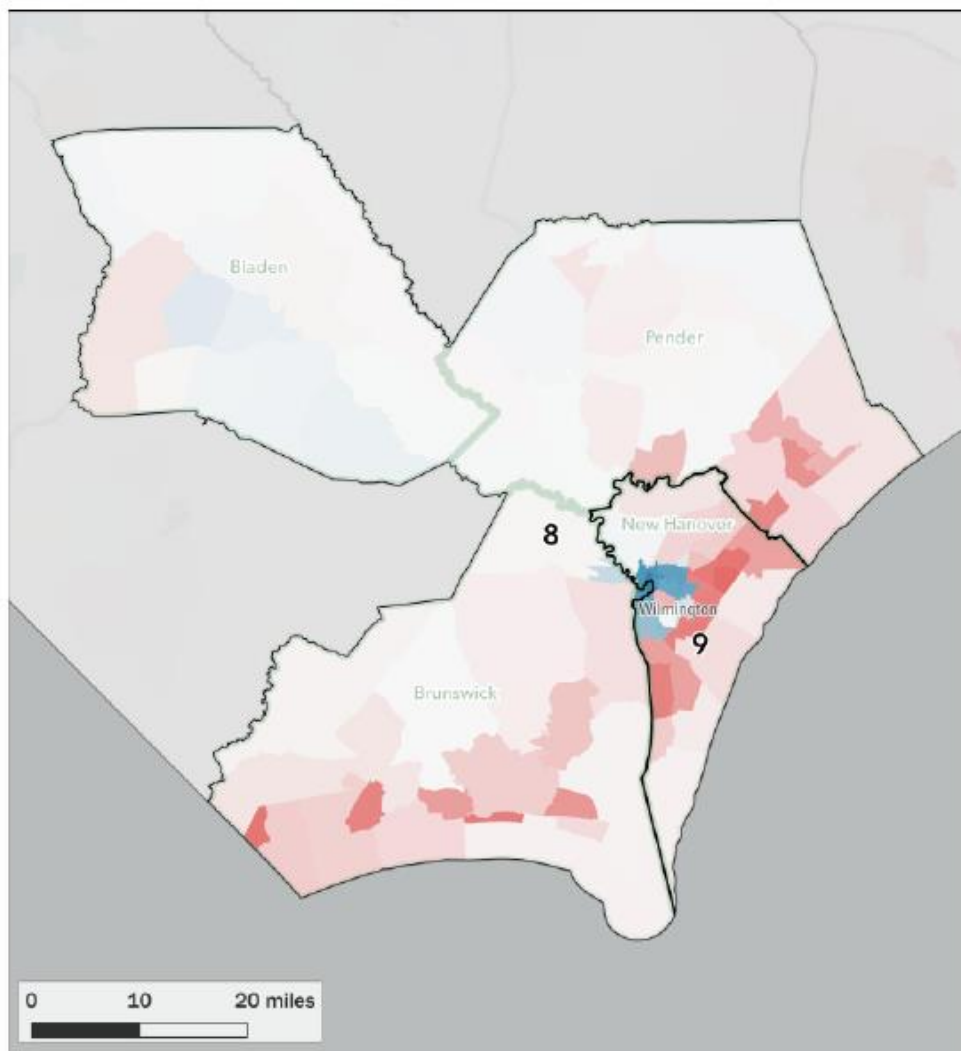
312. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

f. Bladen-Pender-New Hanover-Brunswick

313. The Bladen-Pender-New Hanover-Brunswick Senate county grouping, drawn in 2011 and left unchanged in 2017, contains Senate Districts 8 and 9. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

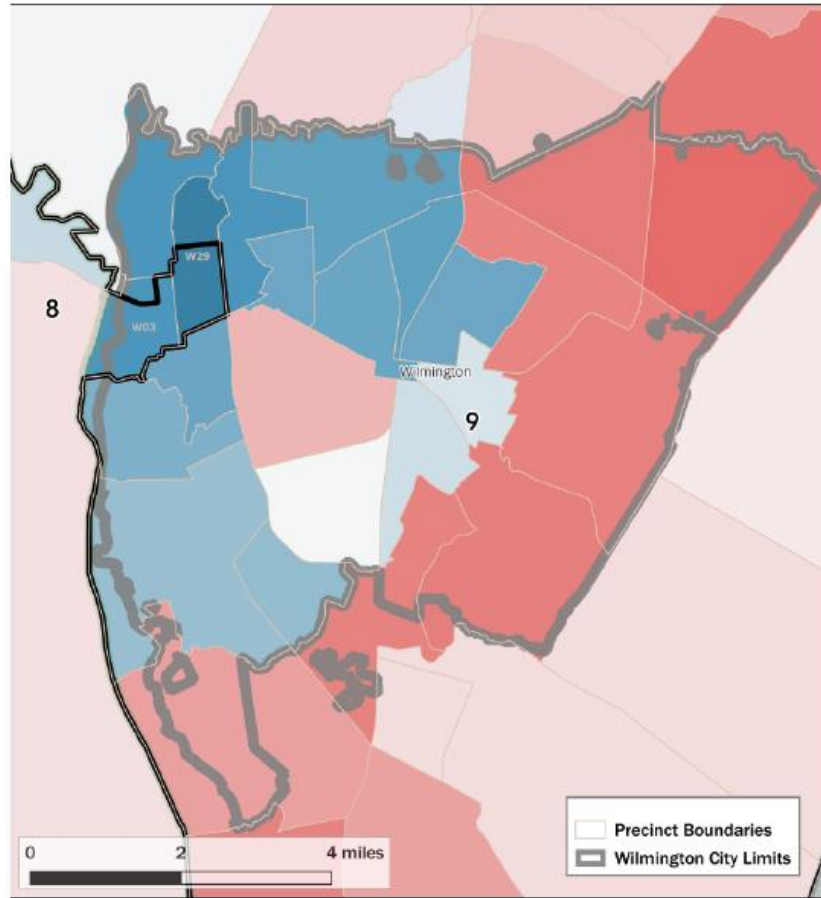
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314. Plaintiffs' Exhibit 272 is Dr. Cooper's map of this county grouping:



315. In this grouping, the population of New Hanover County is slightly too large to fit into one Senate district, and thus the mapmaker had to place a small portion of New Hanover in Senate District 8. Tr. 887:8-9. The mapmaker chose to take heavily Democratic VTDs in Wilmington, separating them from the rest of Wilmington (which is in Senate District 9) and grouping them instead with heavily Republican areas in Bladen, Pender, and Brunswick counties. Tr. 887:5-888:8; PX253 at 29-31 (Cooper Report). As Dr. Cooper explained, the clear intent and effect of this decision was to waste the votes of the

Democratic voters in these Wilmington VTDs, placing them in a heavily Republican district (Senate District 8) and removing them from a highly competitive district (Senate District 9) where their votes could make a difference. *Id.* Plaintiffs' Exhibit 273 provides a zoomed-in view of the cracking of the Democratic voters in these two VTDs, which has come to be known as the "Wilmington Notch":



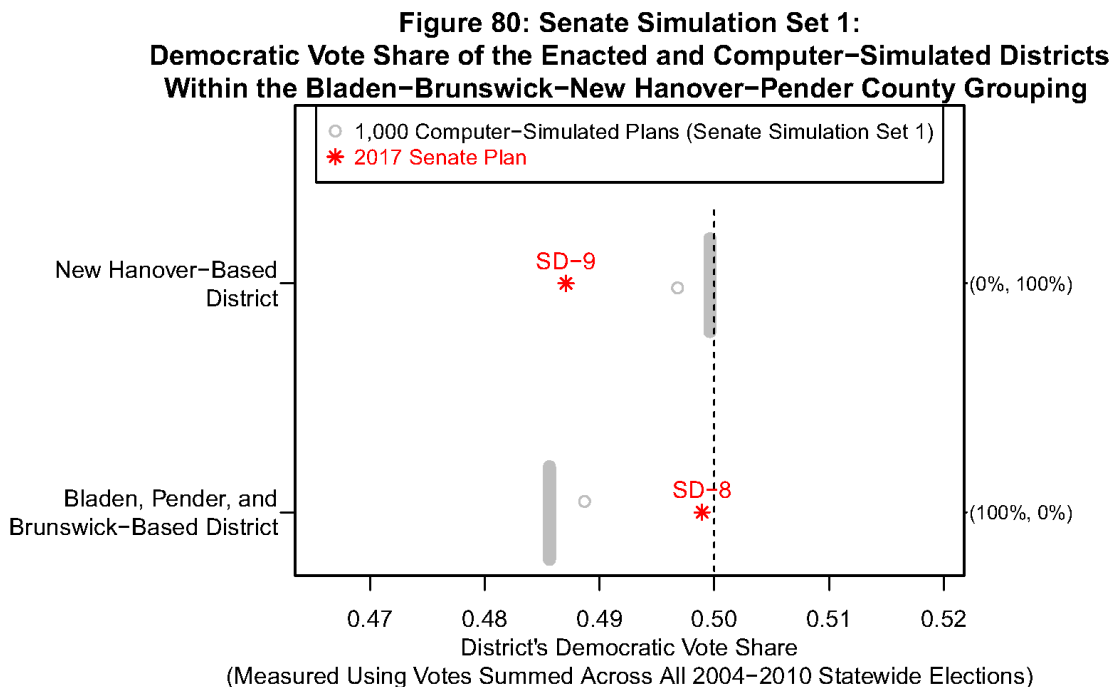
316. Dr. Cooper credibly testified that the enacted plan is the most maximally favorable construction of the grouping possible for Republicans. Tr. 887:24-25. This grouping illustrates Dr. Cooper's conclusion about all of the groupings he analyzed: "whenever there's discretion to be exercised, that discretion tended to go in favor of one party, in this case the Republican Party, and against the other party, in this case the Democrat party." Tr. 889:22-25.

317. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts. While they noted that some portion of New Hanover County must be placed in Senate District 9 for equal population purposes, Legislative Defendants failed to rebut the fact that alternative ways to draw the grouping would not split municipalities in the manner that the enacted plan does. Over 97% of Dr. Mattingly's simulations of this county grouping do not split Wilmington. PX429.

318. The simulations of Plaintiffs' other experts confirm that the Bladen-Brunswick-New Hanover-Pender Senate county grouping is an outlier.

319. Because this county grouping was drawn in 2011 and remained unchanged in 2017, in analyzing this individual county grouping, Dr. Chen used the statewide elections from 2004 to 2010 that the General Assembly used during the 2011 redistricting process, rather than the 2010-2016 statewide elections. Tr. 366:8-367:1, 382:23-383:11; PX720. Dr. Chen used these 2004-2010 statewide elections because, to assess the question of partisan intent, he wanted to use the same elections data that the mapmaker had available and was considering when it drew this grouping in 2011. Tr. 367:2-23; PX1 at 21-24 (Chen Report).

320. Dr. Chen found that both districts in this county grouping are extreme partisan outliers. Tr. 384:2-386:19. Senate District 9 has a lower Democratic vote share than all of its corresponding districts in all of the simulations, while Senate District 8 has a higher Democratic vote share than all of its corresponding districts in all of the simulations. *Id.*; PX100. Dr. Chen's analysis demonstrates that the moving of Democratic voters in the Wilmington Notch into Senate District 8 made Senate District 9 as favorable for Republicans as possible. The Court gives weight to Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 100 below:



321. Dr. Mattingly similarly concluded that the Bladen-Pender-New Hanover-Brunswick Senate grouping was “certainly an outlier” but when on to state that “there were some features of [the Bladen] district that meant that the type of analysis that [he] had initially chosen was not as illuminating in that district. So [he] couldn’t say something is conclusive.” Tr. 1154:11-16. When he mathematically quantified cracking in the Bladen grouping across all 17 statewide elections, he found that the most Democratic district in the Bladen grouping had fewer Democrats than in 92.46% of plans in the nonpartisan ensemble. PX359 at 19-20 (Mattingly Report); PX778 at 29.⁶

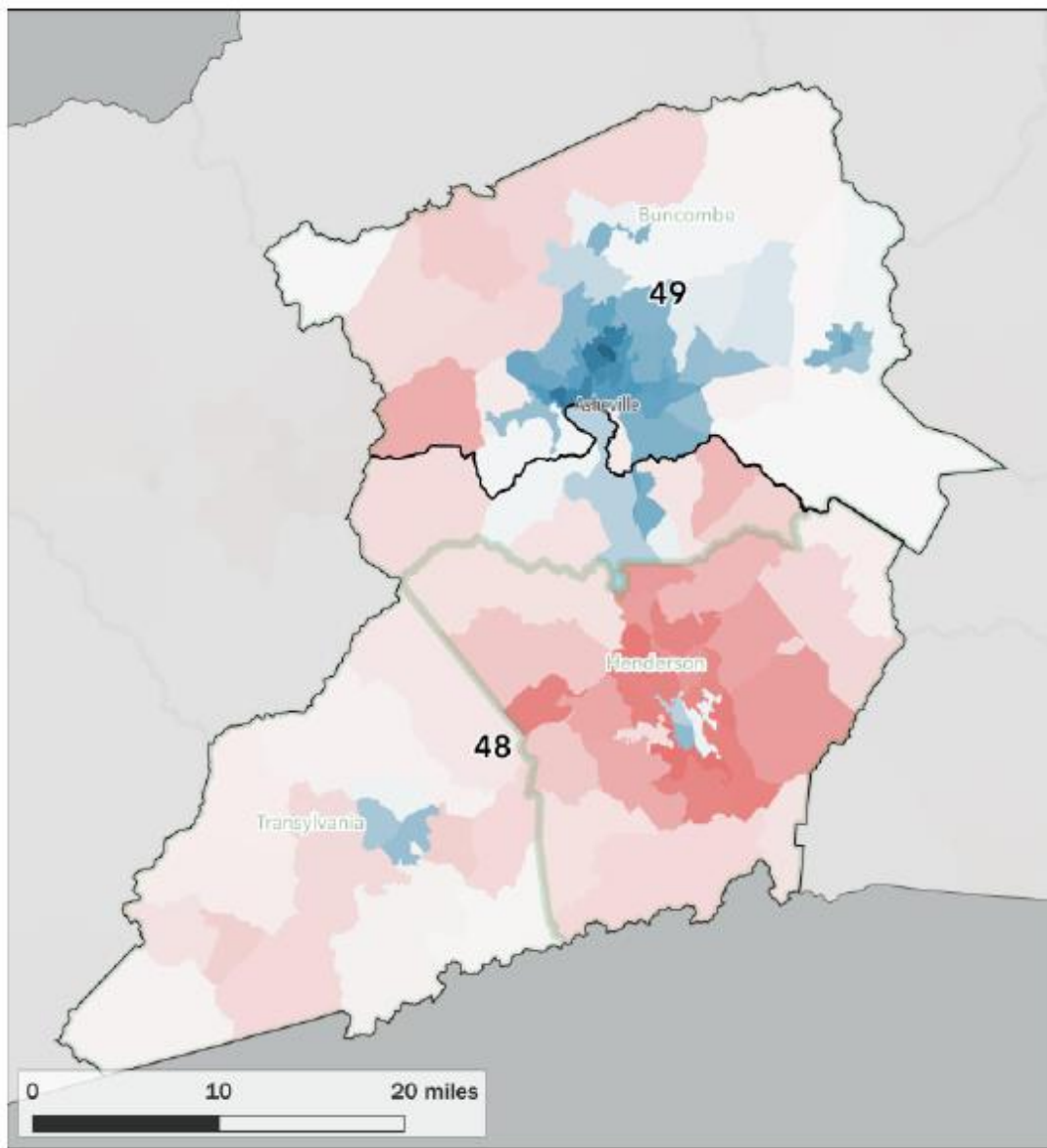
322. The Court finds that the analyses of Plaintiffs’ experts independently and together demonstrate that this county grouping is an extreme and intentional partisan gerrymander.

⁶ Dr. Pegden was unable to generate any comparison districtings of this county grouping due to his conservative methodology. Tr. 1357:12-23; PX544. As Dr. Pegden testified, the fact that his algorithm does not generate any comparison districtings for a given county grouping does *not* mean that the mapmaker did not make extreme and intentional use of partisan considerations in that county grouping. See Tr. 1321:17-25, 1349:11-1350:4.

g. Buncombe-Henderson-Transylvania

323. The Buncombe-Henderson-Transylvania Senate county grouping, drawn in 2011 and left unchanged in 2017, contains Senate Districts 48 and 49. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

324. Plaintiffs' Exhibit 288 is Dr. Cooper's map of this county grouping:



325. Dr. Cooper explained how these district boundaries combine the heavily Democratic VTDs in Asheville with Democratic VTDs in Black Mountain, packing those Democratic voters to create a safe Democratic district in Senate District 49, allowing Senate District 48 to comfortably favor Republicans. Tr. 903:23-904:13; PX253 at 50 (Cooper Report).

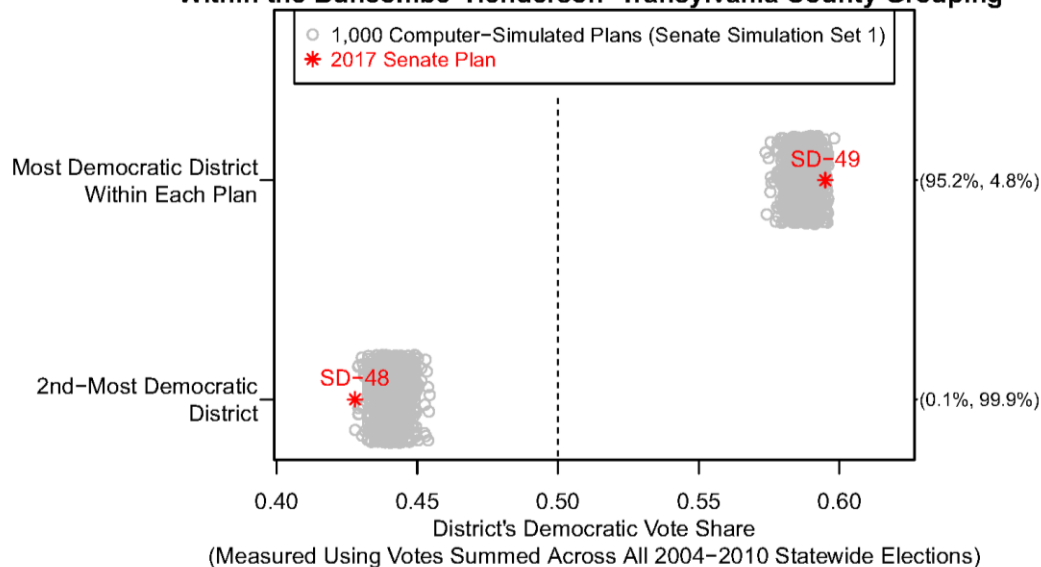
326. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

327. The simulations of Plaintiffs' other experts confirm and independently establish that this county grouping is an extreme partisan gerrymander.

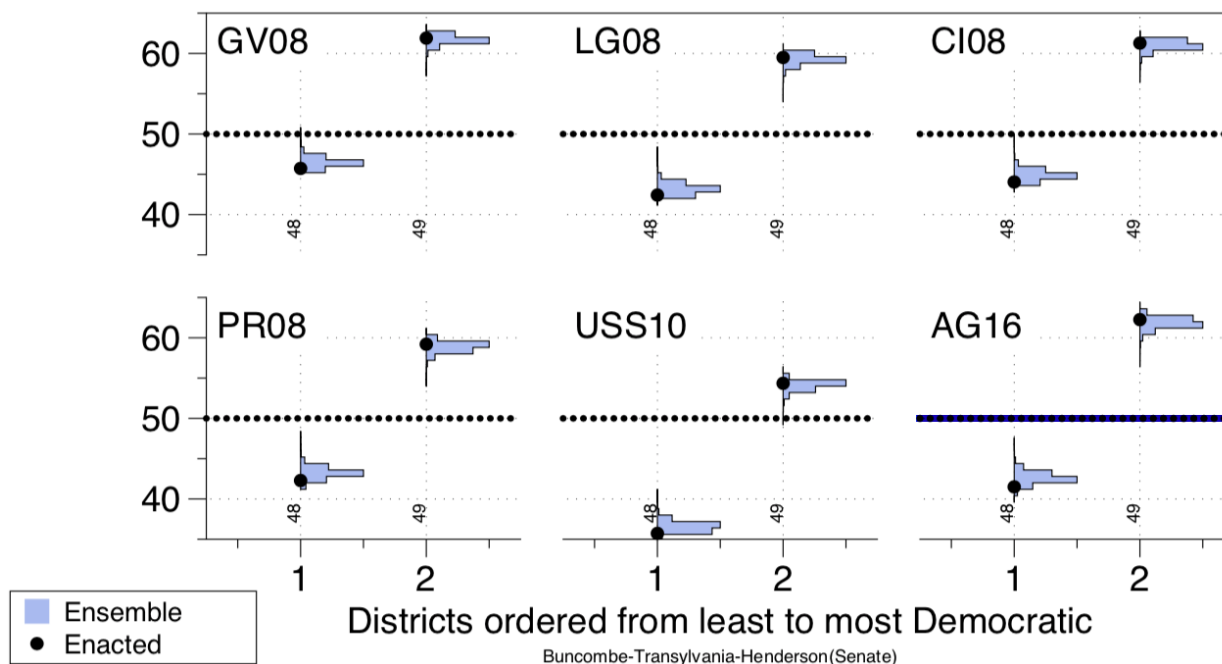
328. Dr. Chen found that both districts in this county grouping are extreme partisan outliers. Tr. 383:12-19.⁷ Senate District 49 has a higher Democratic vote share than its corresponding district in nearly all of the simulations, while Senate District 48 has a lower Democratic vote share than its corresponding district in nearly all of the simulations. PX99. Dr. Chen's findings demonstrate the packing of Democratic voters into Senate District 49 to make Senate District 48 a safe Republican seat. The Court gives weight to Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 99 below:

⁷ Because this county grouping was drawn in 2011, Dr. Chen used the 2004 to 2010 statewide elections to analyze this county grouping. Tr. 383:16-22; PX99.

**Figure 79: Senate Simulation Set 1:
Democratic Vote Share of the Enacted and Computer-Simulated Districts
Within the Buncombe-Henderson-Transylvania County Grouping**



329. Plaintiffs' Exhibit 378 shows Dr. Mattingly's analysis of the Buncombe-Transylvania-Henderson Senate county grouping:



330. Dr. Mattingly's analysis shows that Democrats were cracked out of Senate District 48 and packed into Senate District 49. PX378; PX778 at 29; Tr. 1153:7-1154:9. Dr.

Mattingly found that the least Democratic district in the enacted plan has fewer Democratic votes than in 95.44% of the plans in his ensemble, meaning that the grouping showed more pro-Republican partisan advantage than 95.44% of the nonpartisan plans. PX778 at 29; PX359 at 21-22. Dr. Mattingly concluded that this grouping reflects a pro-Republican partisan gerrymander, Tr. 1154:6-10; PX778 at 29; PX359 at 21-22, and the Court gives weight to his conclusion.

331. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of the grouping is more favorable to Republicans than 99.8% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that the grouping is more carefully crafted to favor Republicans than at least 99.4% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1357:2; PX541. The Court gives weight to Dr. Pegden's analysis and conclusions.

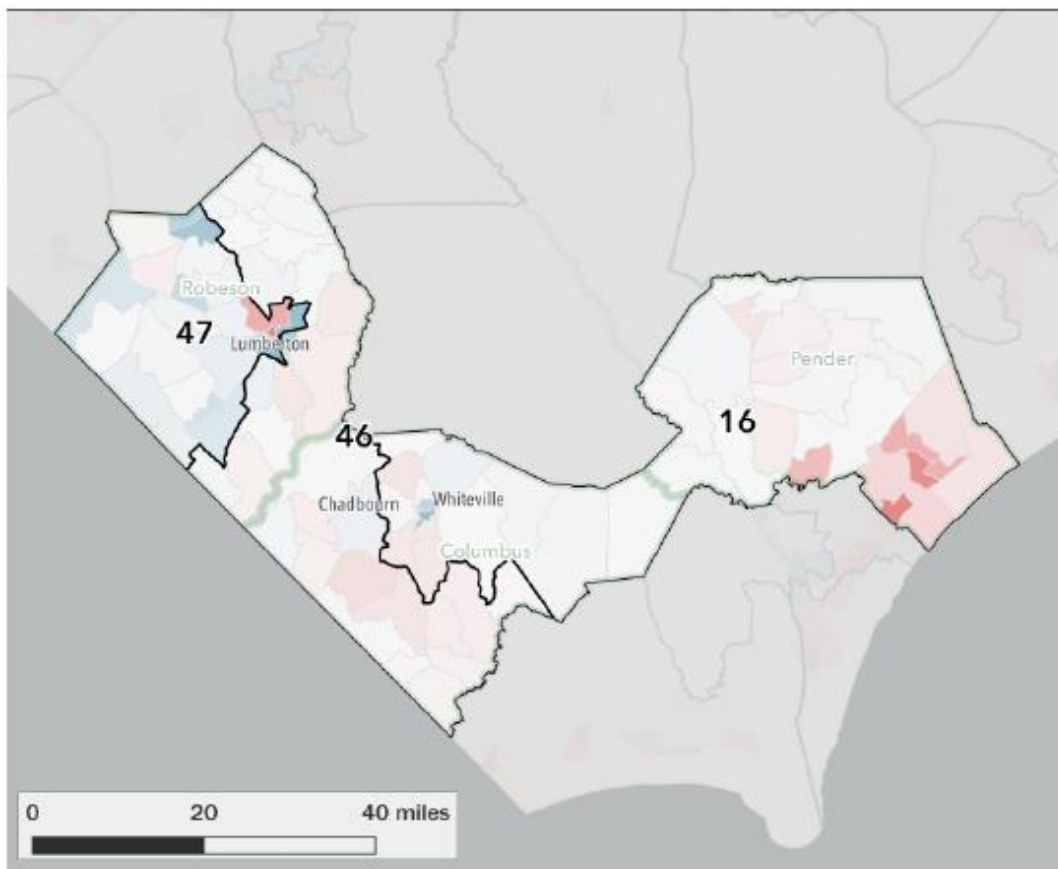
332. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

2. House County Groupings

a. Robeson-Columbus-Pender

333. The Robeson-Columbus-Pender House county grouping contains House Districts 16, 46, and 47. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

334. Plaintiffs' Exhibit 301 is Dr. Cooper's map of this county grouping:

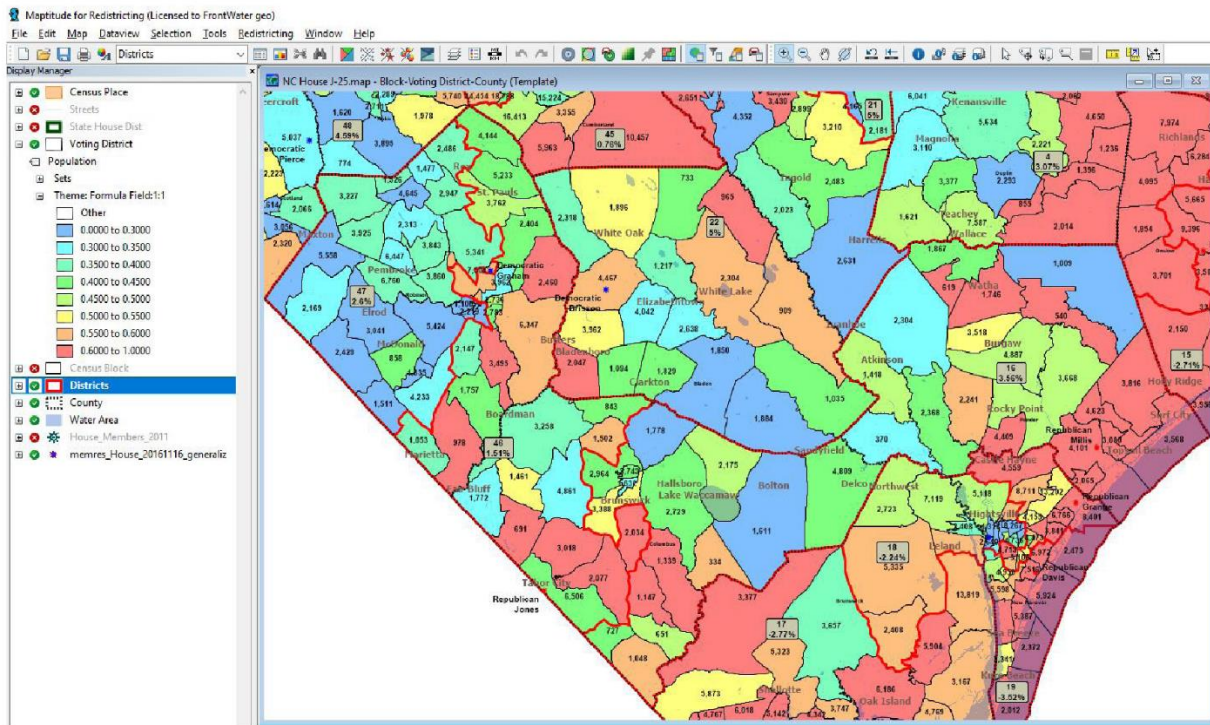


335. Dr. Cooper explained that House District 47 packs as “many . . . Democratic voters as possible” into that district, including in Lumberton and the area around UNC Pembroke. The packing of Democrats in House District 47 makes House Districts 16 and 46 more favorable to Republicans. Tr. 912:19-913:3; PX253 at 70 (Cooper Report).

336. Dr. Hofeller's Maptitude files confirm he “had full knowledge of the partisan effects of drawing those lines exactly where they were drawn, essentially drawing a fence between districts 47 and 46 . . . between Democratic and Republican voters.” Tr. 985:15-19; PX342; PX329 at 18 (Cooper Rebuttal Report). In the files for his draft House plan, Dr. Hofeller shaded more Democratic VTDs darker blue, more Republican VTDs red and orange, and moderate VTDs green and yellow. Tr. 979:20-980:19. As shown in Plaintiffs'

Exhibit 342, Dr. Hofeller placed all of the Republican-leaning VTD near Lumberton (shaded orange and red) on the right side of the red line, in House District 46, rather than in House District 47:

Figure 13: Partisan Targeting in House Districts 16, 46, and 47

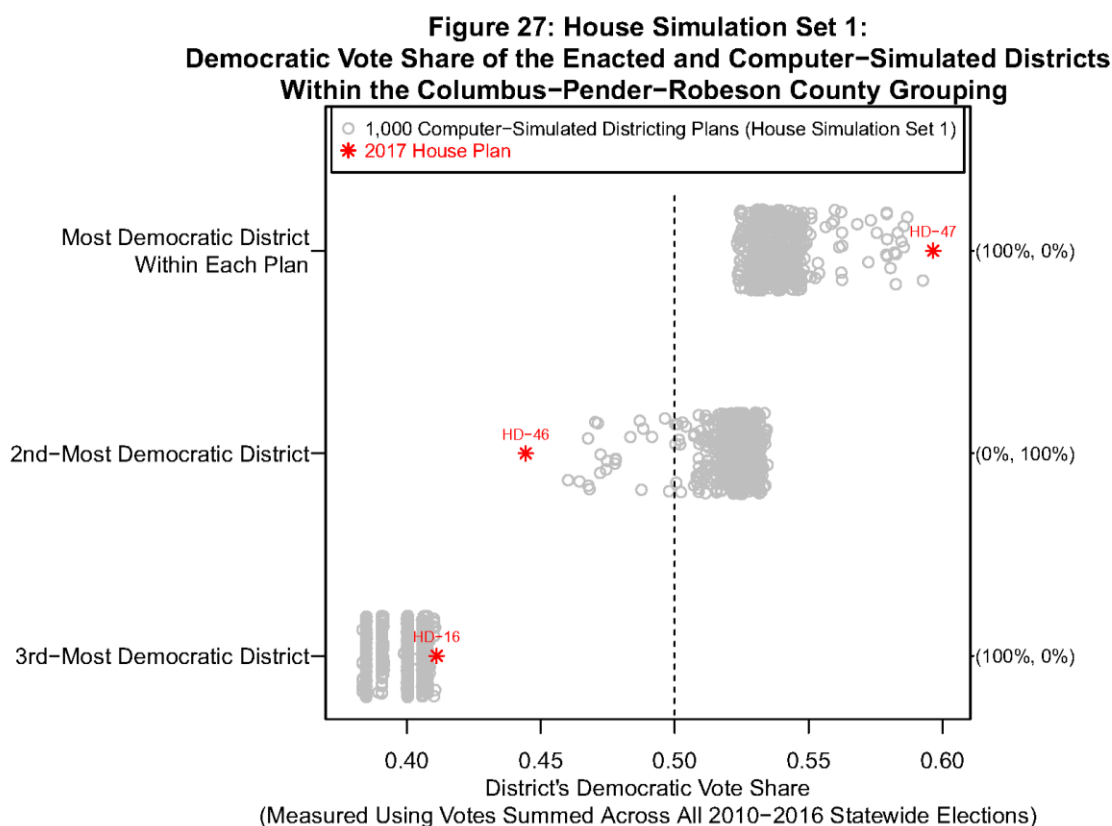


337. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of the districts in this county groupings.

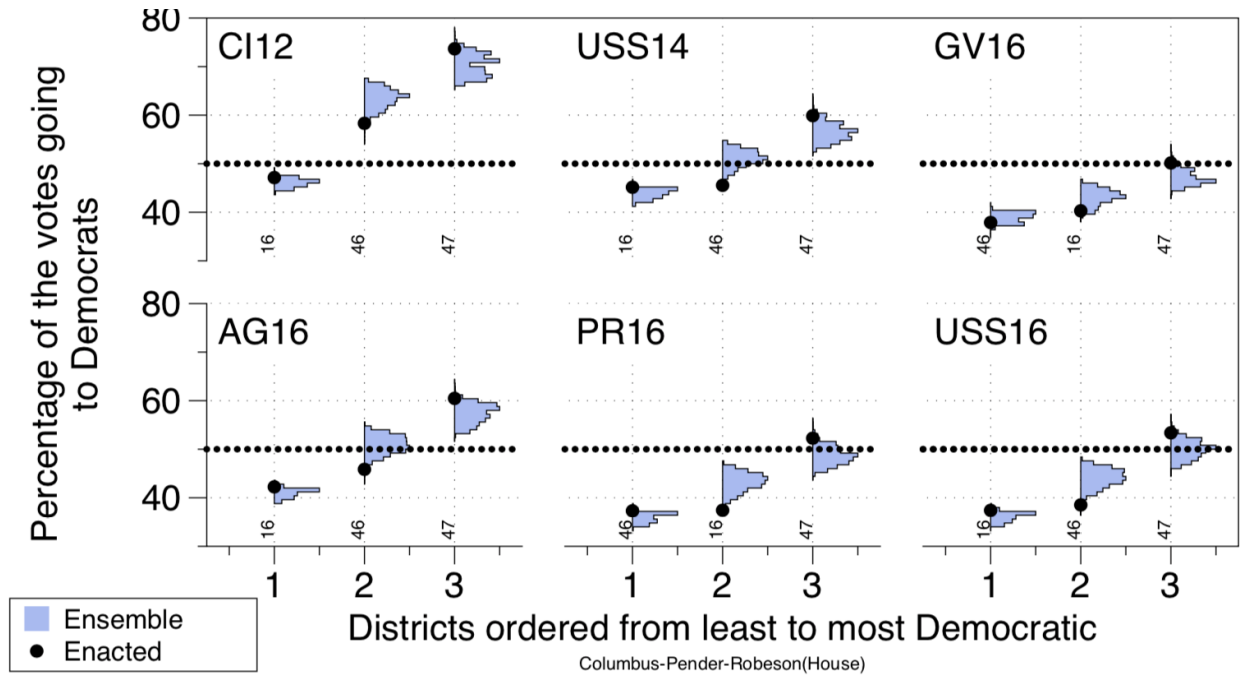
338. The simulations of Plaintiffs' other experts independently establish that the Columbus-Pender-Robeson county grouping is an extreme partisan gerrymander.

339. Dr. Chen found that all three House districts in this county are extreme partisan outliers. Dr. Chen found that House District 47 has a higher Democratic vote share than the corresponding districts in all of Dr. Chen's simulated plans. Tr. 346:4-347:14. Dr. Chen found that House District 46 has a lower Democratic vote share than the corresponding districts across all of Dr. Chen's simulations, while House District 16 has a

higher Democratic vote share than the corresponding districts in all of Dr. Chen's simulations. Tr. 347:16-348:7. Dr. Chen's findings demonstrate the packing of Democratic voters into House District 47 and the cracking of Democratic voters across House Districts 16 and 46. Dr. Chen finds that, as a result of this packing and cracking, almost all of his simulations would produce two Democratic-leaning districts in this county grouping, while the enacted House plan produces just one such district in this grouping. Tr. 348:8-23. The Court gives weight to Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 47 below:



340. Plaintiffs' Exhibit 388 shows Dr. Mattingly's analysis of the Columbus-Pender-Robeson House county grouping:



341. Dr. Mattingly's analysis shows that Democrats were cracked in the two least Democratic districts in this grouping (Districts 16 and 46) and packed into the most Democratic district (District 47). PX388; PX359 at 28; PX778 at 30. There is a significant jump between the number of Democratic votes in the two least and the most Democratic districts in the enacted plan. *Id.* Dr. Mattingly found that the two least Democratic districts in the enacted plan have fewer Democratic voters than 97.98% of the comparable districts in the nonpartisan ensemble. *Id.* As the figure above shows, the gerrymander causes Democrats to lose a seat in this grouping in certain electoral environments. Dr. Mattingly concluded that this grouping reflects a clear pro-Republican partisan gerrymander, PX778 at 30; Tr. 1155:17-21; PX359 at 28, and the Court gives weight to Dr. Mattingly's conclusion.

342. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version

of this grouping is more favorable to Republicans than 98.7% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 96% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:8; PX526. The Court gives weight to Dr. Pegden's analysis and conclusions.

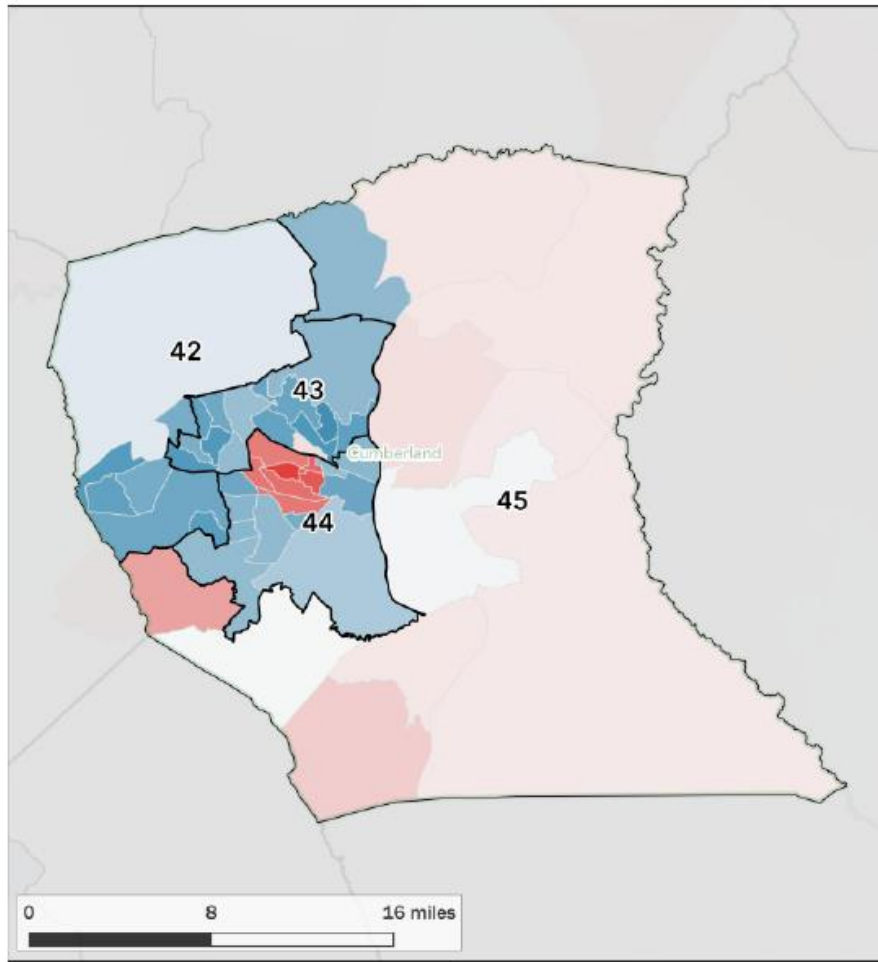
343. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

b. Cumberland

344. The Cumberland House county grouping contains House Districts 42, 43, 44, and 45. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

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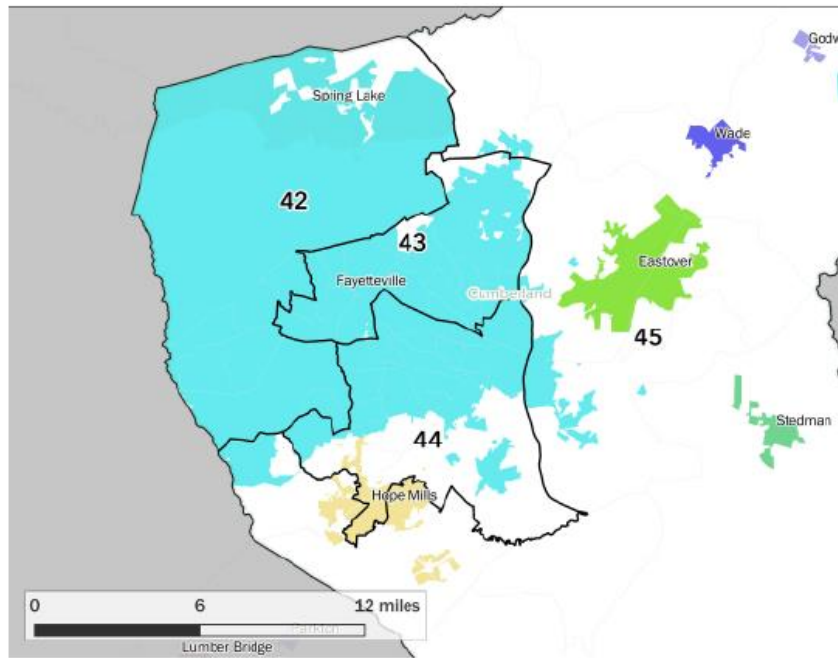
345. Plaintiffs' Exhibit 305 is Dr. Cooper's map of this county grouping:



346. Dr. Cooper described how House District 45 has a “backwards C-shape” that is “a very clear attempt to connect these Republican leaning [VTDs] all together and avoid . . . the Democratic leaning VTDs.” Tr. 917:7-14. In such a way, the district boundaries make House District 45 more favorable for Republicans, while packing the Democratic-leaning VTDs in the Fayetteville area into House Districts 42 and 43. Tr. 917:14-16; PX253 at 76 (Cooper Report).

347. The district boundaries in this grouping, shown below in Plaintiffs' Exhibit 306, divide Fayetteville between all four districts in a way that does not correspond to

Fayetteville's boundaries of or any other municipality. Tr. 917:23-918:5; PX253 at 76 (Cooper Report).

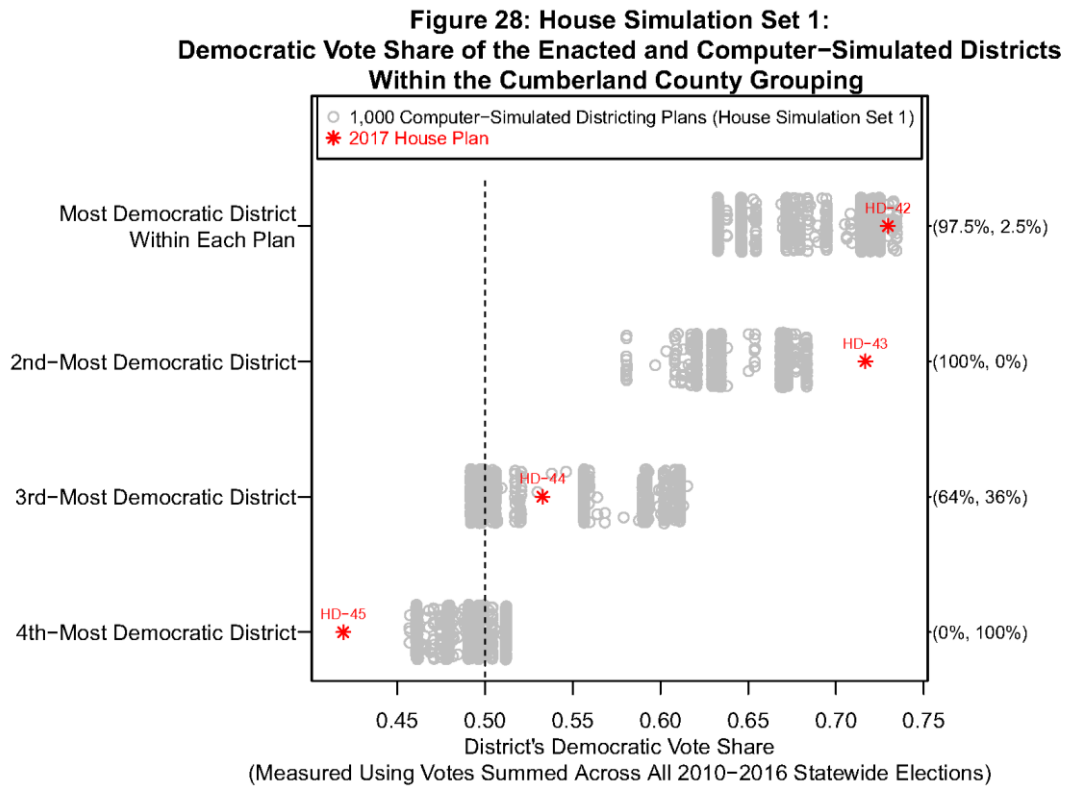


348. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

349. The simulations of Plaintiffs' other experts independently establish that the Cumberland county grouping is an extreme partisan gerrymander.

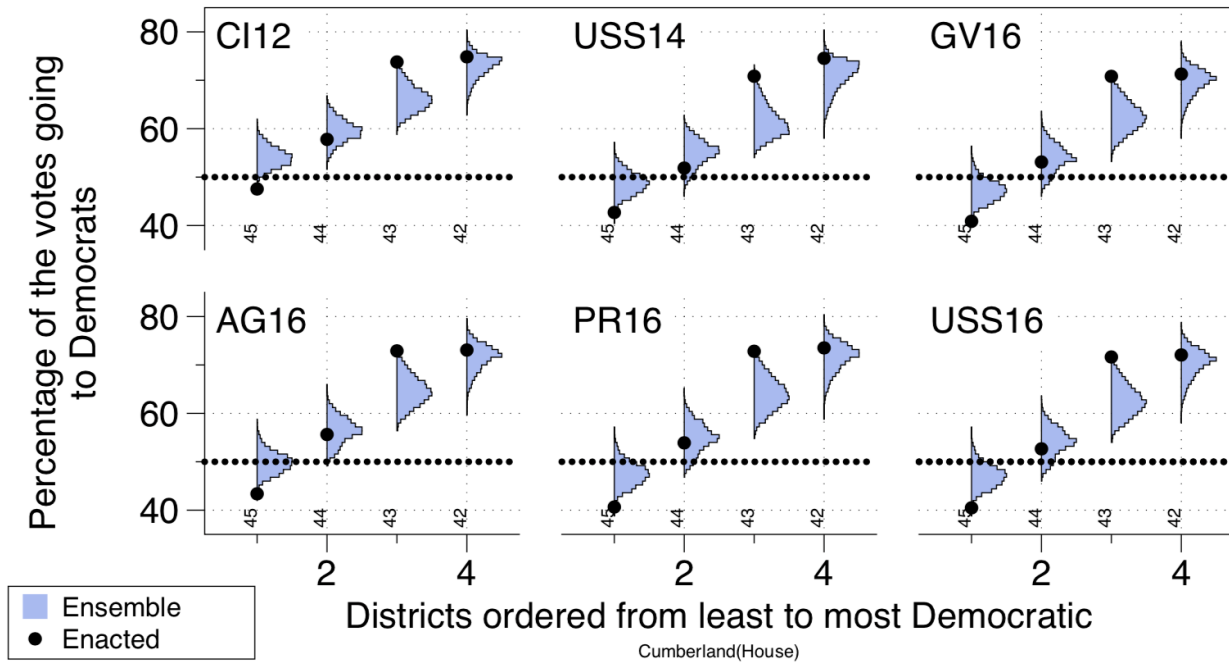
350. Dr. Chen found that this county grouping contains three districts that are extreme partisan outliers. Dr. Chen found that House Districts 42 and 43 have a higher Democratic vote shares than their corresponding districts in all or almost all of Dr. Chen's simulated plans, while House District 45 has a much lower Democratic vote share than the corresponding district in all of the simulations. Tr. 350:2-12. Dr. Chen's findings demonstrate the packing of Democratic voters into House Districts 42 and 43 in order to make House District 45 as favorable for Republicans as possible. Indeed, the least Democratic district in this grouping would be very competitive or even Democratic-leaning

in Dr. Chen's simulations. The Court gives weight to Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 48 below:



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351. Plaintiffs' Exhibit 390 shows Dr. Mattingly's analysis of the Cumberland House county grouping:



352. Dr. Mattingly's analysis shows that the least Democratic district (District 45) show cracking of Democrats, while the two most Democratic districts (District 43 and 42) show extreme packing of Democrats, in comparison to the nonpartisan plans. PX390; PX778 at 30; PX359 at 29. He found that the two most Democratic districts in the enacted plan have more Democratic votes than 99.79% of the comparable Democratic districts in the nonpartisan ensemble. *Id.* As the figure above shows, the gerrymander causes Democrats to lose a seat in this grouping in certain electoral environments, because the black dot in House District 45 always falls below the 50% line while the blue histogram often rises above it. Dr. Mattingly concluded that the Cumberland House grouping is an extreme pro-Republican partisan gerrymander, Tr. 1155:5-16; PX778 at 30; PX359 at 29; PX390, and the Court gives weight to Dr. Mattingly's conclusion.

353. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version

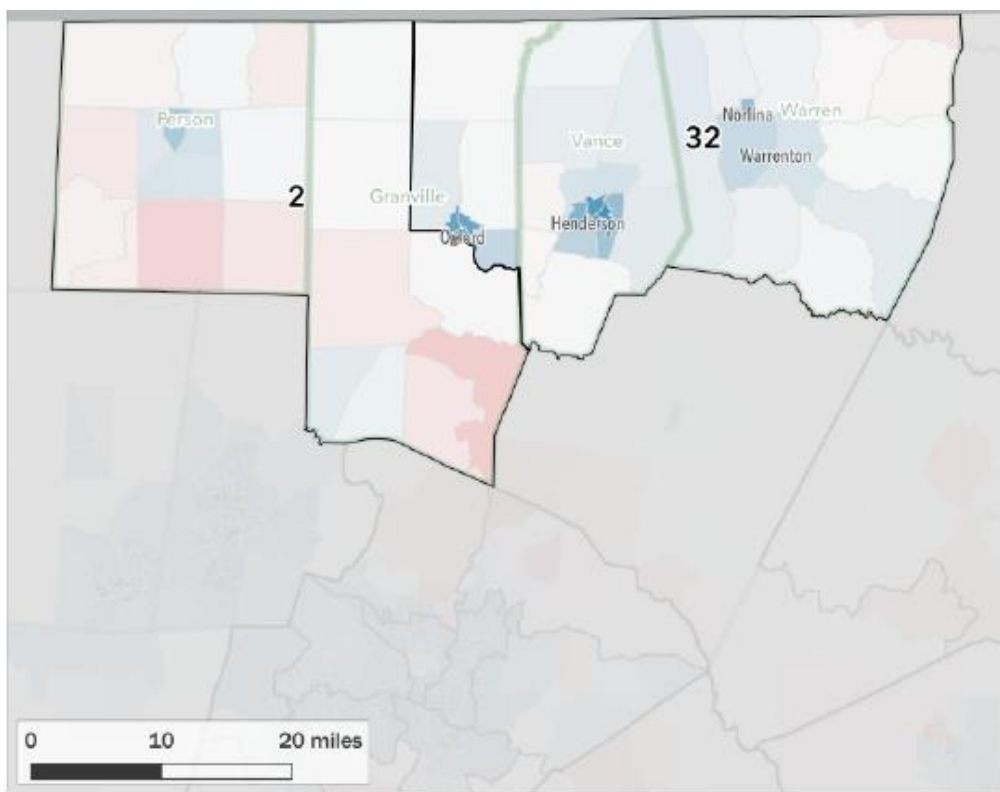
of this grouping is more favorable to Republicans than 98.3% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 95% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:9; PX529. The Court gives weight to Dr. Pegden's analysis and conclusions.

354. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

c. Person-Granville-Vance-Warren

355. The Person-Granville-Vance-Warren House county grouping contains House Districts 2 and 32.

356. Plaintiffs' Exhibit 289 is Dr. Cooper's map of this county grouping:



357. Several of Plaintiffs' experts testified that there are only a limited number of possible ways to draw this county grouping. Tr. 359:4-360:2 (Dr. Chen), 905:17-19 (Dr. Cooper); 1156:25-1157:16 (Dr. Mattingly). Because of the Whole County Provision, the only differences between the alternative ways to draw this grouping involve which of Granville County's few VTDs are placed in each of the two districts. *See id.*

358. This county grouping is one of two drawn by Campbell Law students and ultimately adopted by Dr. Hofeller. Tr. 474:7-475:23; PX123 at 71. The evidence from Dr. Hofeller's files suggests that Dr. Hofeller intentionally chose to include this configuration because it most favored Republicans, to the detriment of Democratic voters. *See* Tr. 905:21-906:8.

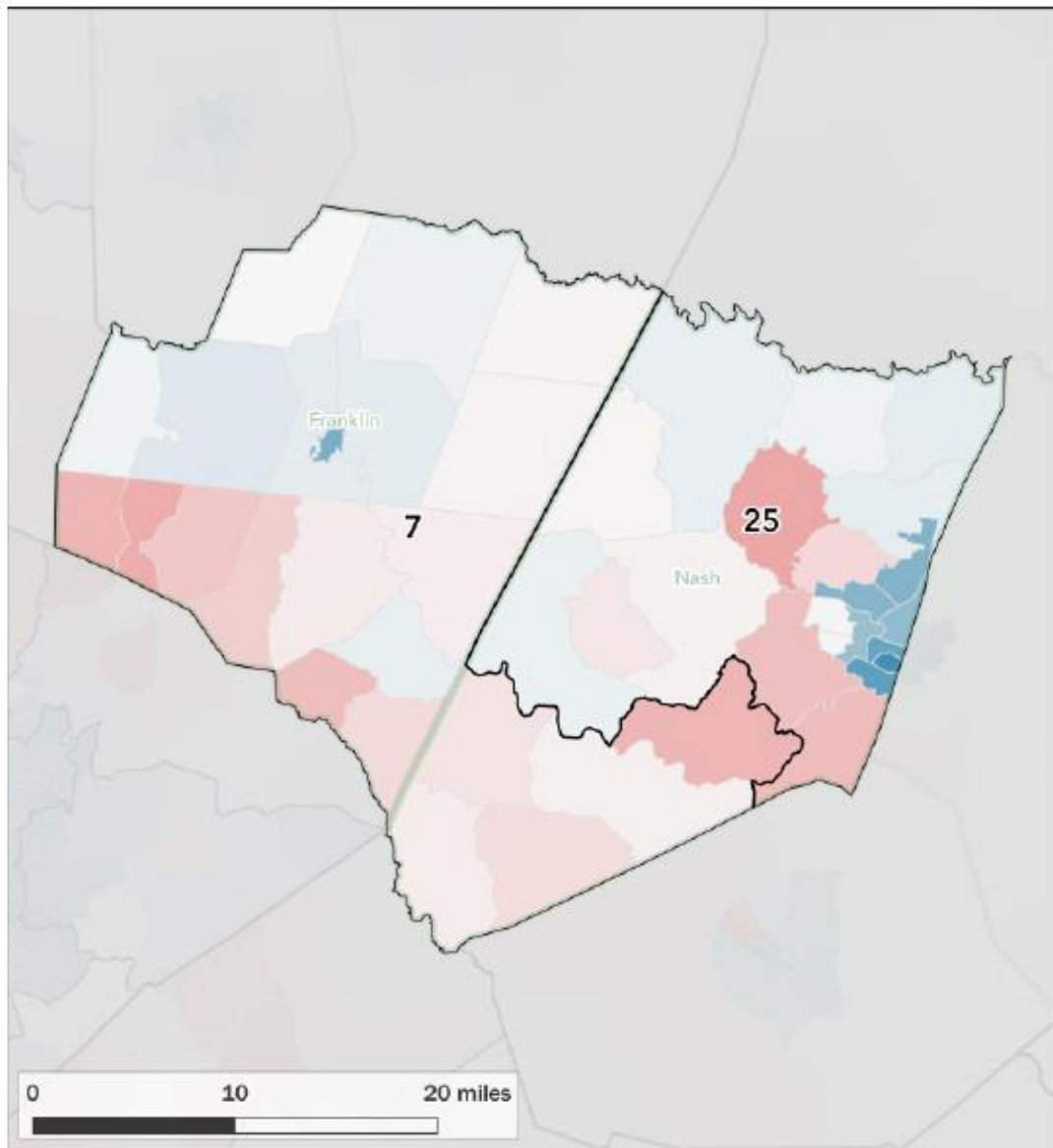
359. However, because of the limited possible configurations for this county grouping, and the limited statistical evidence that could be generated by Plaintiffs' experts, the Court does not find that this grouping, or the districts contained therein, constitute an extreme partisan gerrymander. *See* PX051 (Dr. Chen Figure 31 showing Democratic vote share of each district well below his extreme partisan outlier threshold); Tr. 1156:25-1157:16 (Dr. Mattingly found very few possible unique maps for this grouping that satisfied his criteria); Tr. 1349:11-1350:4; PX536 (Dr. Pegden was unable to generate any comparison districtings of this House county grouping due to his conservative methodology).

360. The Court, though, does find that this county grouping does reflect a clear pro-Republican partisan tilt that can contribute to the extreme pro-Republican bias statewide.

d. Franklin-Nash

361. The Franklin-Nash House county grouping contains House Districts 7 and 25. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

362. Plaintiffs' Exhibit 293 is Dr. Cooper's map of this county grouping:



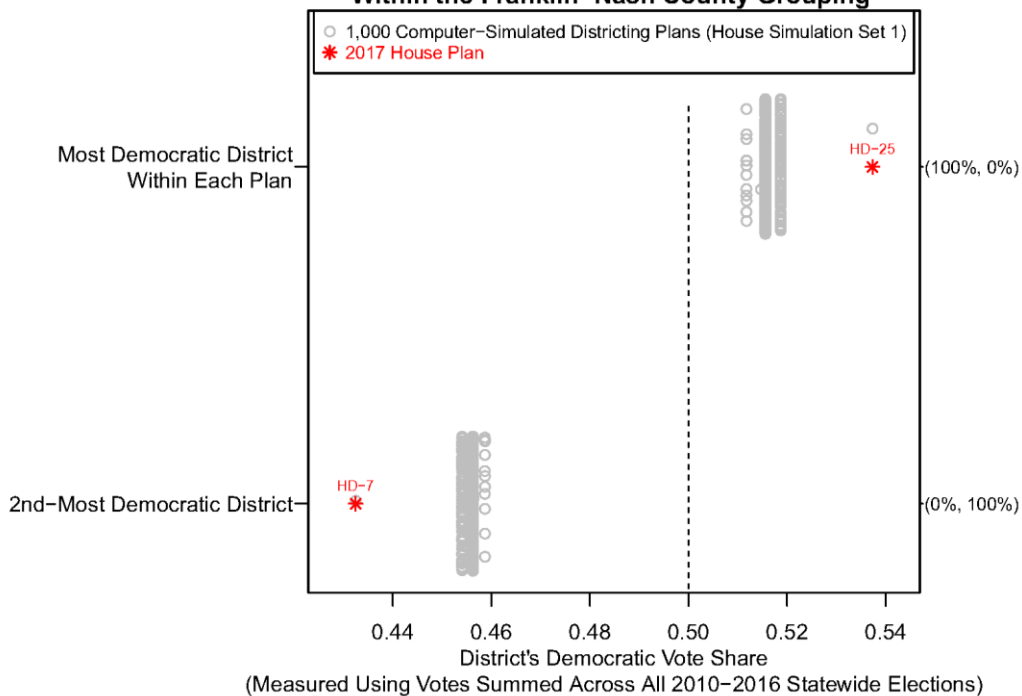
363. These district boundaries avoid grouping the more Democratic-leaning and competitive VTDs on Nash County's western border in House District 7, instead stretching

House District 7 into the southeast corner of Nash County to grab the heavily Republican VTDs there. The placement of this district boundary made House District 7 more favorable to Republicans. As Dr. Cooper explained, if the mapmaker had included “any other VTD” in House District 7 from Nash County, House District 7 would have been less favorable to Republican candidates. Tr. 907:4-13; PX253 at 59 (Cooper Report).

364. The Court gives little weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts. They noted that the enacted version of this county grouping matches the draft drawn by the Campbell Law students, but the mapmaker adopted these districts because they were maximally favorable for Republicans, FOF § B.2.a., and as the simulations of Plaintiffs’ experts Dr. Chen and Dr. Mattingly confirm and independently establish, the Nash-Franklin House county grouping is indeed an extreme partisan gerrymander.

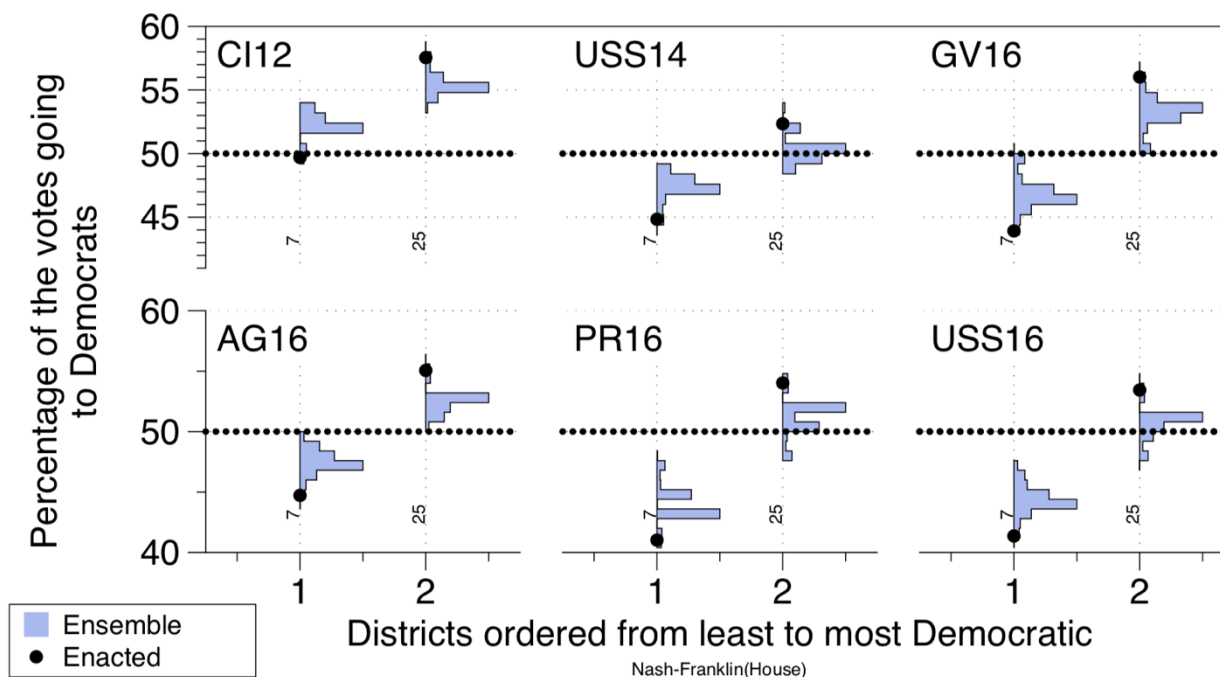
365. Dr. Chen found that both districts in county grouping are extreme partisan outliers. Dr. Chen found that House District 25 has a higher Democratic vote share than its corresponding district in all of Dr. Chen’s simulated plans, while House District 7 has a lower Democratic vote share than the corresponding district in all of the simulations. Tr. 356:8-17. Dr. Chen’s findings demonstrate the packing of Democratic voters into House Districts 25 in order to make House District 7 a safe Republican seat. In Dr. Chen’s simulations, the less Democratic district in this grouping would be more competitive for Democrats, particularly in a more favorable electoral environment for them than the 2010-2016 statewide elections. Tr. 356:18-357:1. The Court gives weight to Dr. Chen’s analysis and findings for this county grouping, which are reflected in Plaintiffs’ Exhibit 50 below:

**Figure 30: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer-Simulated Districts
Within the Franklin-Nash County Grouping**



366. Plaintiffs' Exhibit 402 shows Dr. Mattingly's analysis of the Nash-Franklin

House county grouping:



367. Dr. Mattingly concluded that the most Democratic district shows extreme packing of Democrats, while the most Republican district shows extreme cracking of Democrats, in comparison to the nonpartisan plans. Tr. 1149:2-9. He found that the least Democratic district in the enacted plan has fewer Democratic voters than 95.58% of the comparable districts in the nonpartisan ensemble, demonstrating packing. PX778 at 30; PX359 at 36-37. As the figure above shows, the gerrymander could cause the Democrats to lose a seat in this grouping in certain electoral environments, because the black dot for House District 7 falls below the 50% line while the blue histogram sometimes rises above it or gets very close. Dr. Mattingly concluded that the Nash-Franklin House grouping is a pro-Republican partisan gerrymander, PX778 at 30; Tr. 1155:17-21; PX359 at 36-37, and the Court gives weight to Dr. Mattingly's conclusion.⁸

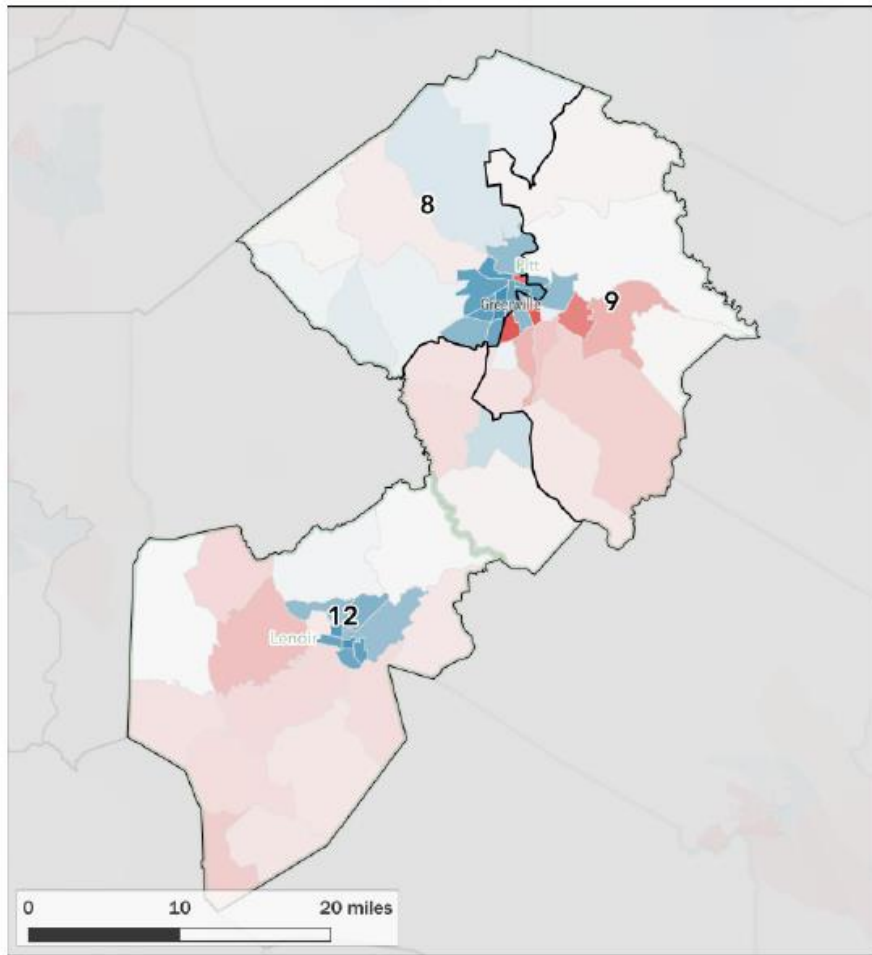
368. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

e. Pitt-Lenoir

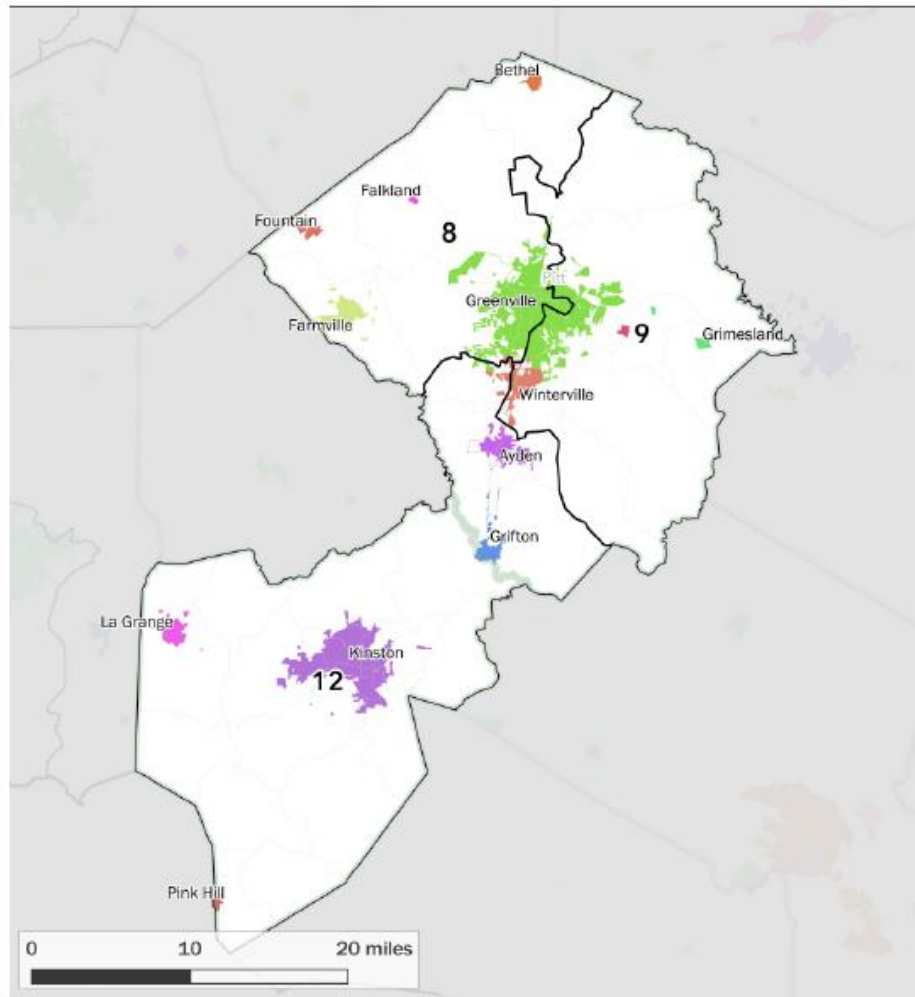
369. The Pitt-Lenoir House county grouping contains House Districts 8, 9, and 12. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

⁸ Dr. Pegden was unable to generate any comparison districtings of this House county grouping due to his conservative methodology. Tr. 1351:22-1352:10; PX537.

370. Plaintiffs' Exhibit 294 is Dr. Cooper's map of this county grouping:

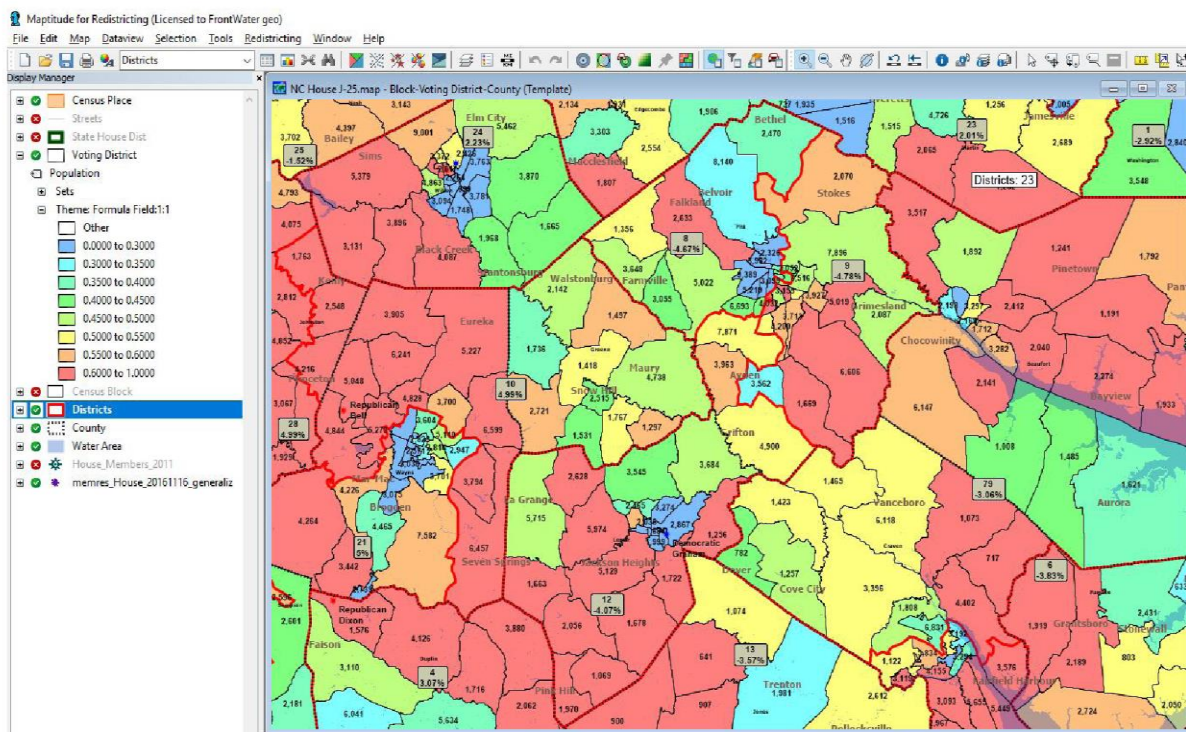


371. The districts in this county grouping split Greenville between all three House districts and even bisect East Carolina University's campus. The district lines pack the most Democratic-leaning VTDs in Greenville into House District 8, while placing all but one of the Republican-leaning VTDs into House District 9. Tr. 908:3-8, 909:23-910:8; PX253 at 61 (Cooper Report). Plaintiffs' Exhibit 295 below shows the municipalities within this county grouping and how the districts split Greenville. Tr. 908:16-23.



372. The Maptitude files from Dr. Hofeller’s hard drive confirm he used VTD-level partisanship data with “surgical precision” to construct the districts in this grouping. Tr. 983:5-984:7; PX340; PX329 at 16 (Cooper Rebuttal Report). Dr. Hofeller’s Maptitude file, reproduced below in Plaintiffs’ Exhibit 340, demonstrates how Dr. Hofeller meticulously packed all of Greenville’s bluest VTDs into House District 8 (on the left side of the red line), in order to make House Districts 9 and 12 favorable for Republicans.

Figure 11: Partisan Targeting in House Districts 8, 9, and 12

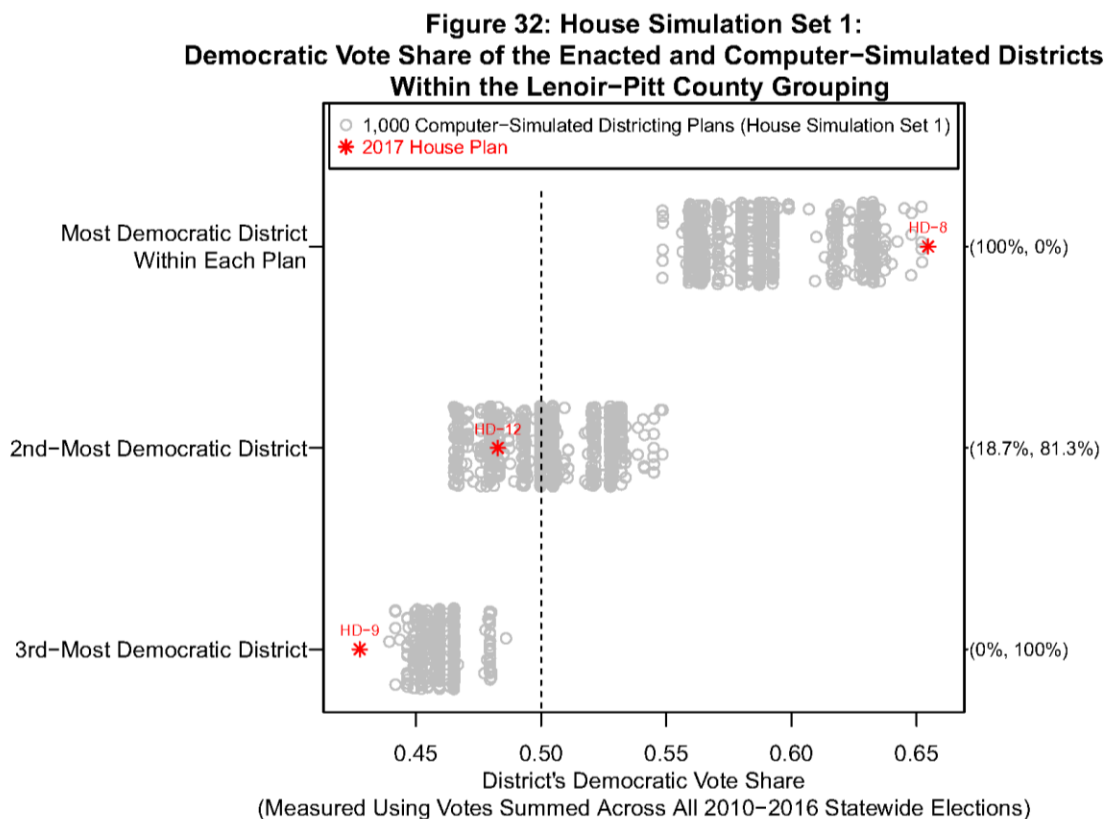


373. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of the districts in this county grouping.

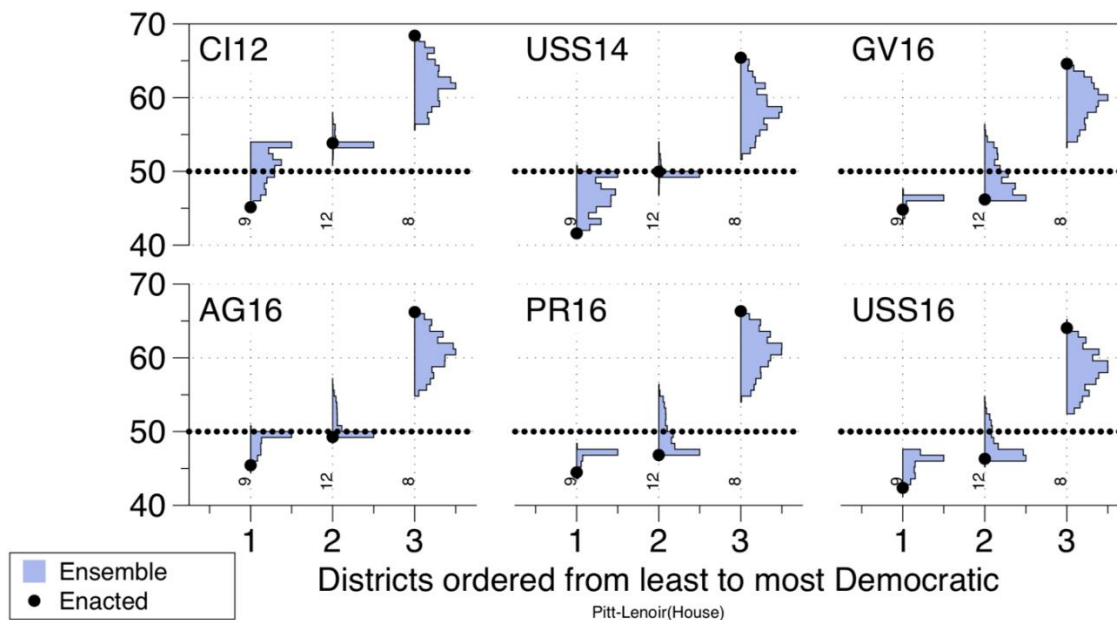
374. The simulations of Plaintiffs' other experts independently establish that the Lenoir-Pitt county grouping is an extreme partisan gerrymander.

375. Dr. Chen found that House District 8 has a higher Democratic vote shares than its corresponding districts in all Dr. Chen's simulated plans, while House District 9 has a lower Democratic vote share than the corresponding district in all of the simulations. PX52; Tr. 360:16-22. Dr. Chen further found that the remaining district in this grouping, House District 12, is less Democratic than over 81% of the corresponding districts across Dr. Chen's simulations. *Id.* Dr. Chen's findings demonstrate the packing of Democratic voters into House District 8 and the cracking of Democratic voters in House Districts 9 and,

to some extent, 12. The Court gives weight to Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 52 below:



376. Plaintiffs' Exhibit 408 shows Dr. Mattingly's analysis of this grouping:



377. Dr. Mattingly concluded that the two most Republican districts show extreme cracking of Democrats, while the most Democratic shows extreme packing of Democrats, as evidence by the “jump” between these sets of districts. PX408; PX778 at 30; PX359 at 41. Dr. Mattingly found that the two least Democratic districts in the enacted plan have fewer Democratic voters than 99.98% of the comparable districts in the nonpartisan ensemble, while the most Democratic district in the enacted plan has more Democratic votes than 99.95% of the comparable Democratic districts in the ensemble. PX778 at 30; PX359 at 43. As the figure above shows, the gerrymander causes the Democrats to lose one or possibly two seats in this grouping in certain electoral environment, because the black dot in House Districts 9 and 12 often falls below the 50% line while the blue histograms rise above it. Dr. Mattingly concluded that the Pitt-Lenoir House grouping is an extreme pro-Republican partisan gerrymander, Tr. 1155:5-16; PX778 at 30; PX359 at 41; PX408, and the Court gives weight to Dr. Mattingly’s conclusion.

378. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan’s version of this grouping is more favorable to Republicans than 99.97% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.91% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:6; PX532. The Court gives weight to Dr. Pegden’s analysis and conclusions.

379. The Court finds that the analyses of Plaintiffs’ experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

f. Guilford

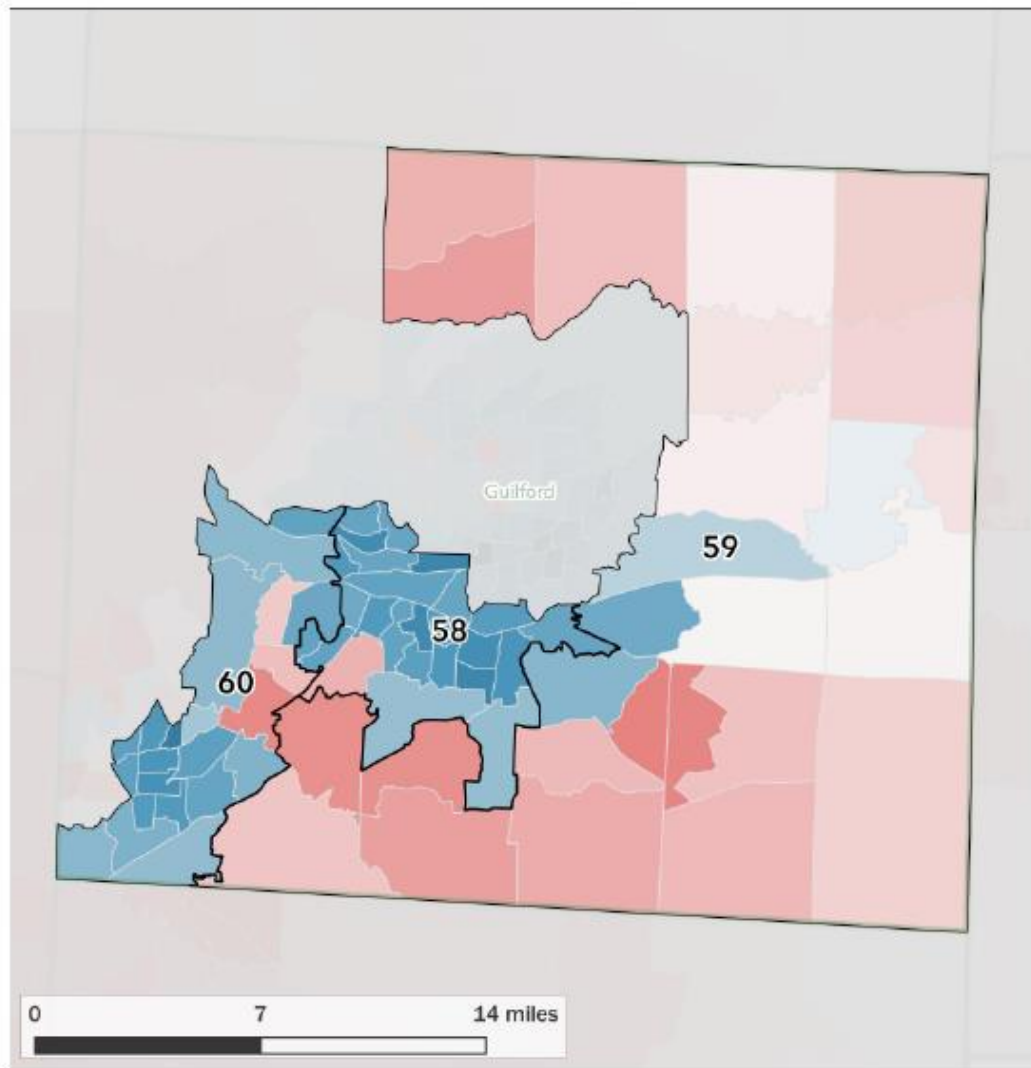
380. The Guilford House county groupings contains House Districts 57, 58, 59, 60, 61, and 62. The Court gives weight to the analysis of Plaintiffs’ experts and finds that this county grouping is an extreme partisan gerrymander.

381. This grouping contains several districts that were altered by the *Covington* Special Master. The *Covington* court tasked the Special Master with redrawing House District 57 after the court found that the enacted House plan did not cure the racial gerrymander of the district. *Covington*, 2017 WL 11049096, at *1-2. In directing the Special Master to redraw House District 57, the court further directed that “the redrawn lines shall also ensure that the unconstitutional racial gerrymanders in 2011 Enacted House Districts 58 and 60 are cured.” *Id.* at *2. The *Covington* court did *not* direct the Special Master to redraw House District 59, and did not even mention House District 59 in its order.

382. Consistent with the court’s guidance, the Special Master redrew House District 57, and in so doing, also made substantial changes to House District 61 and 62. Tr. 351:14-25; *see* LDTX 159 at 27-29 (Special Master’s Recommend Plan). In redrawing these three districts, the Special Master also made what he described as “minor changes” to House District 59 to equalize population. *Covington*, ECF No. 220 at 46. The Special Master explained that he altered House District 59 “only a little.” LDTX 159 at 28. Specifically, the Special Master moved one precinct from the enacted District 59 into the Special Master’s District 57, and added “two additional precincts” to the northwest corner of House District 59 to equalize population. *Covington*, ECF No. 220 at 46; *see* Chen Demonstrative D5 at 3; Tr. 352:1-21. According to estimates presented at trial by Legislative Defendants’ expert Dr. Johnson, of the current population of House District 59, 92% of the population was put into the district by the General Assembly under the enacted

House plan. LDTX314; Tr. 1978:19-22. The Special Master did not make any changes at all to House Districts 58 and 60. Plaintiffs do not bring allegations, and do not seek relief, with respect to the three House districts that the Special Master substantially redrew, House Districts 57, 61, and 62.

383. Plaintiffs' Exhibit 310 is Dr. Cooper's map for this grouping:

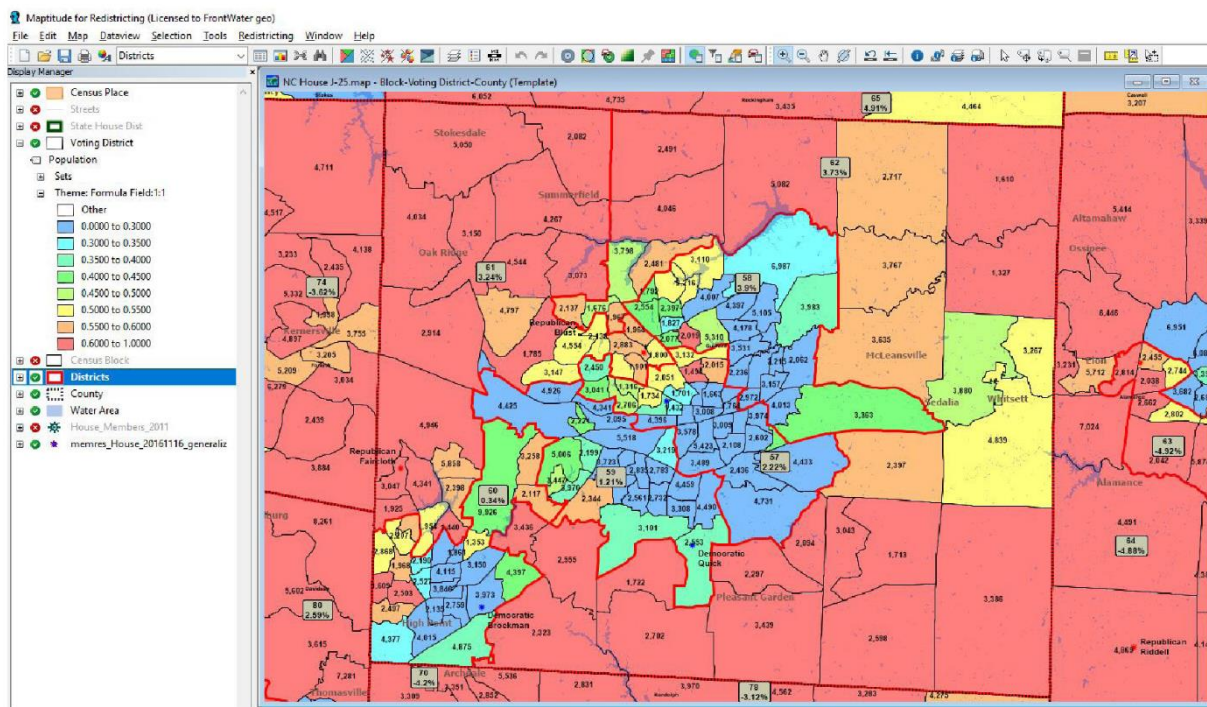


384. The mapmaker packed Democratic voters into House Districts 58 and 60 to make House District 59 favorable to Republicans. Tr. 923:3-23; PX253 at 82 (Cooper

Report). House District 58 has “boot-like appendages” to grab Democratic VTDs and ensure these voters could not make House District 59 competitive or Democratic-leaning. *Id.*

385. The Maptitude files from Dr. Hofeller’s hard drive confirm Dr. Hofeller drew this grouping with extreme partisan intent. Tr. 986:13-987:9. Specifically, Dr. Hofeller drew the boundaries of House Districts 58, 59, and 60 “almost like a fence” “separating [Republican voters] from the Democratic voters” in the southern portion of Guilford County. Tr. 987:20-988:5; PX344; PX329 at 20 (Cooper Rebuttal Report). Plaintiffs’ Exhibit 344 depicts the Dr. Hofeller’s Maptitude file showing the Guilford grouping.

Figure 15: Partisan Targeting in House Districts 58, 59, and 60



386. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries the mapmaker drew for House Districts 58, 59, and 60.

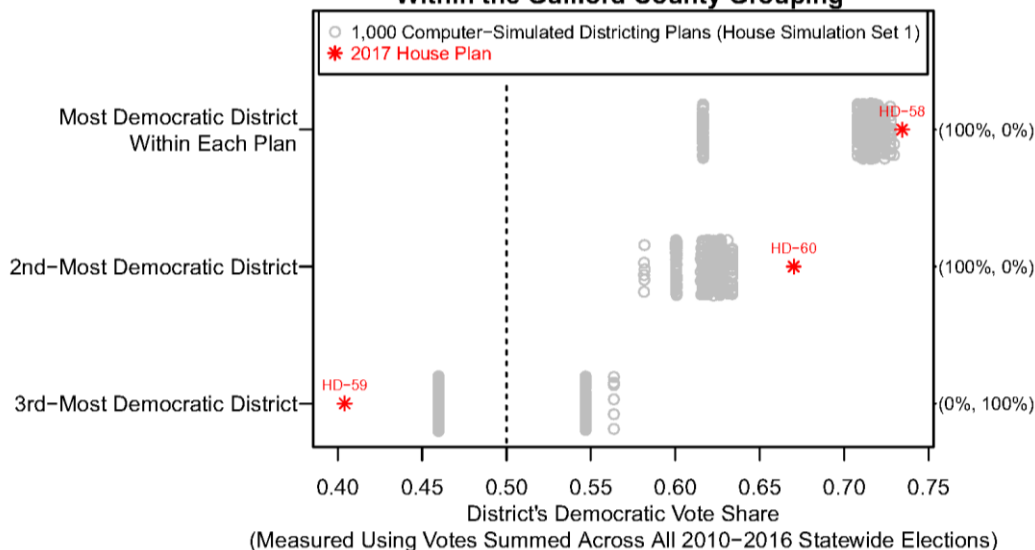
387. The simulations of Plaintiffs' other experts independently establish that the Guilford county grouping is an extreme partisan gerrymander.

388. Drs. Chen, Mattingly, and Pegden all froze three districts in this grouping that were substantially redrawn by the *Covington* Special Master: House Districts 57, 61, and 62. Tr. 352:24-353:3; PX359 at 33 (Mattingly Report); PX508 at 19 (Pegden Report).

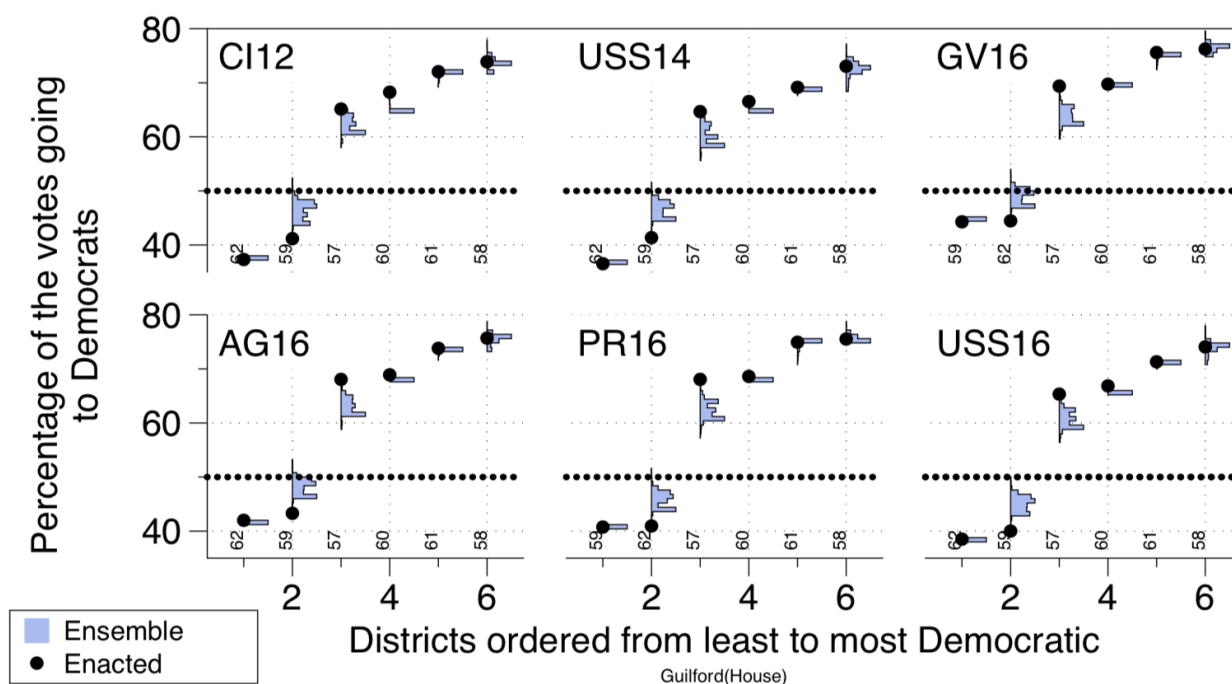
389. Dr. Chen explained in un rebutted testimony that his simulations of the Guilford House grouping did not make any changes to the portion of House District 59 added by the Special Master. Tr. 770:12-771:12; Chen Demonstrative D5 at 4. The Court finds that because Dr. Chen's simulations altered only portions of House District 59 drawn by the mapmaker, and did not touch the very small portions of the district added by the Special Master, the mapmaker necessarily is responsible for the extreme partisan bias that Dr. Chen finds for House District 59.

390. Dr. Chen found that all three districts in the Guilford grouping that he did not freeze are extreme partisan outliers. He found that House Districts 58 and 60 have higher Democratic vote shares than their corresponding districts in all of Dr. Chen's simulations, while House District 59 has a much lower Democratic vote share than the corresponding district in all of the simulations. Tr. 353:17-21; PX45. Dr. Chen's findings demonstrate the packing of Democratic voters into House Districts 58 and 60 to make House District 59 favorable for Republicans. Indeed, the least Democratic district in this grouping would be competitive or Democratic-leaning in Dr. Chen's simulations, whereas House District 59 under the enacted plan is much less favorable for Democrats using the 2010-2016 statewide elections. The Court gives weight to Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 45 below.

**Figure 25: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer-Simulated Districts
Within the Guilford County Grouping**



391. Plaintiffs' Exhibit 398 shows Dr. Mattingly's analysis of the Guilford grouping:



392. Setting aside the frozen districts, Dr. Mattingly concluded that the least Democratic district (House District 59) shows extreme cracking of Democrats, while the remaining two districts (House Districts 58 and 60) shows extreme packing of Democrats,

in comparison to the nonpartisan plans. PX398; PX778 at 30; PX359 at 33-34. Dr. Mattingly found that House 59 has fewer Democratic voters than 99.89% of the comparable districts in the nonpartisan ensemble, while House Districts 58 and 60 have more average Democratic votes than 99.86% of the comparable Democratic districts in the nonpartisan ensemble. PX778 at 30; PX359 at 33-34; PX398. As the figure above shows, the gerrymander could cause the Democrats to lose a seat in this grouping in certain electoral environments, because the black dot for House District 59 falls below the 50% line while the blue histogram sometimes rises above it or gets very close. Dr. Mattingly concluded that the Guilford House grouping is an extreme pro-Republican partisan gerrymander, Tr. 1155:5-16; PX778 at 30; PX359 at 33-34; PX398, and the Court gives weight to Dr. Mattingly's conclusion.

393. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 93.9% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 82% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:10; PX527. The Court gives weight to Dr. Pegden's analysis and conclusions.

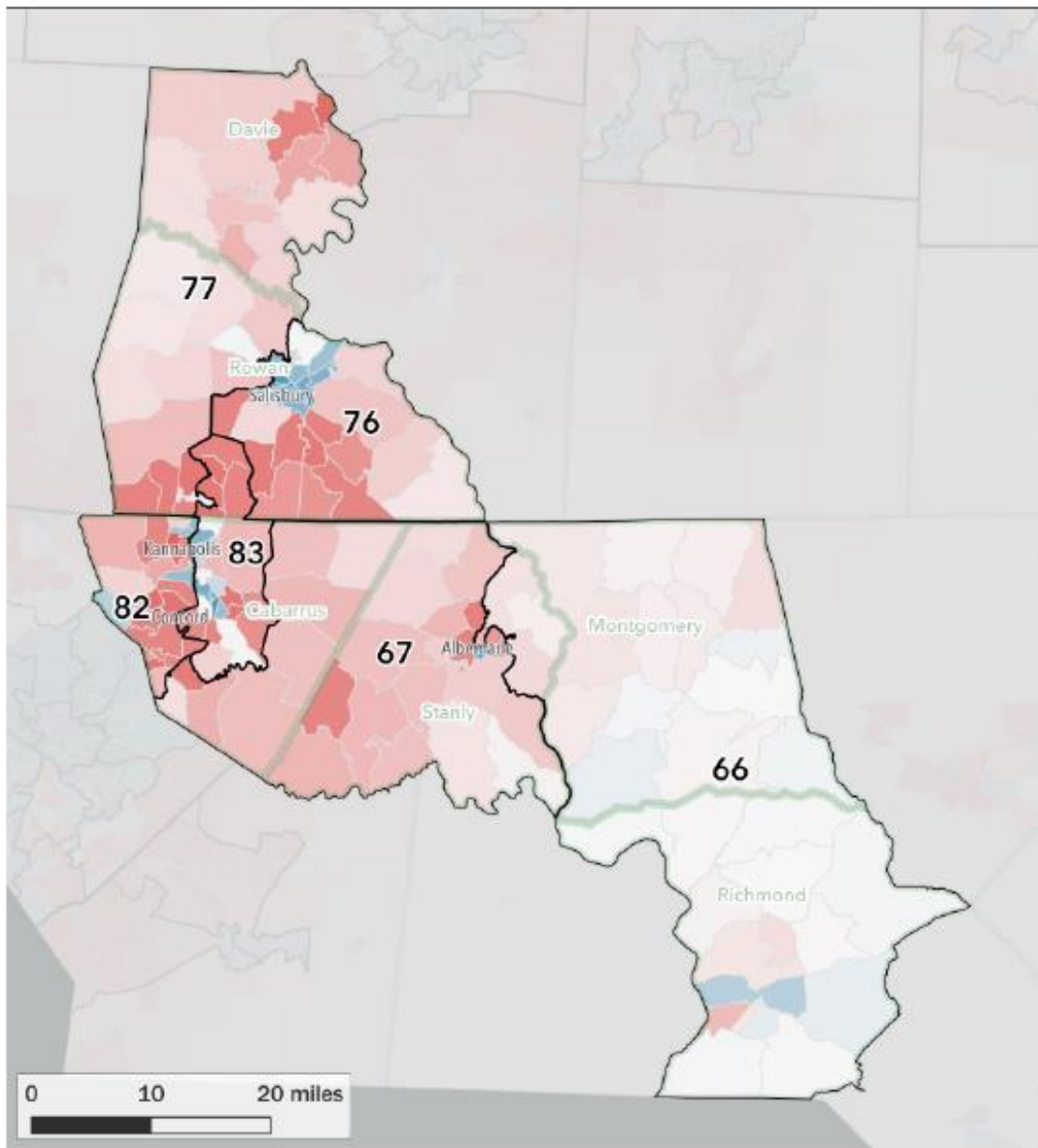
394. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

g. Davie-Rowan-Cabarrus-Stanly-Montgomery-Richmond

395. The Davie-Rowan-Cabarrus-Stanly-Montgomery-Richmond House county grouping contains House Districts 66, 67, 76, 77, 82, and 83. The Court gives weight to the analysis of Plaintiffs' experts and finds that significant portions of this county grouping are an extreme partisan gerrymander.

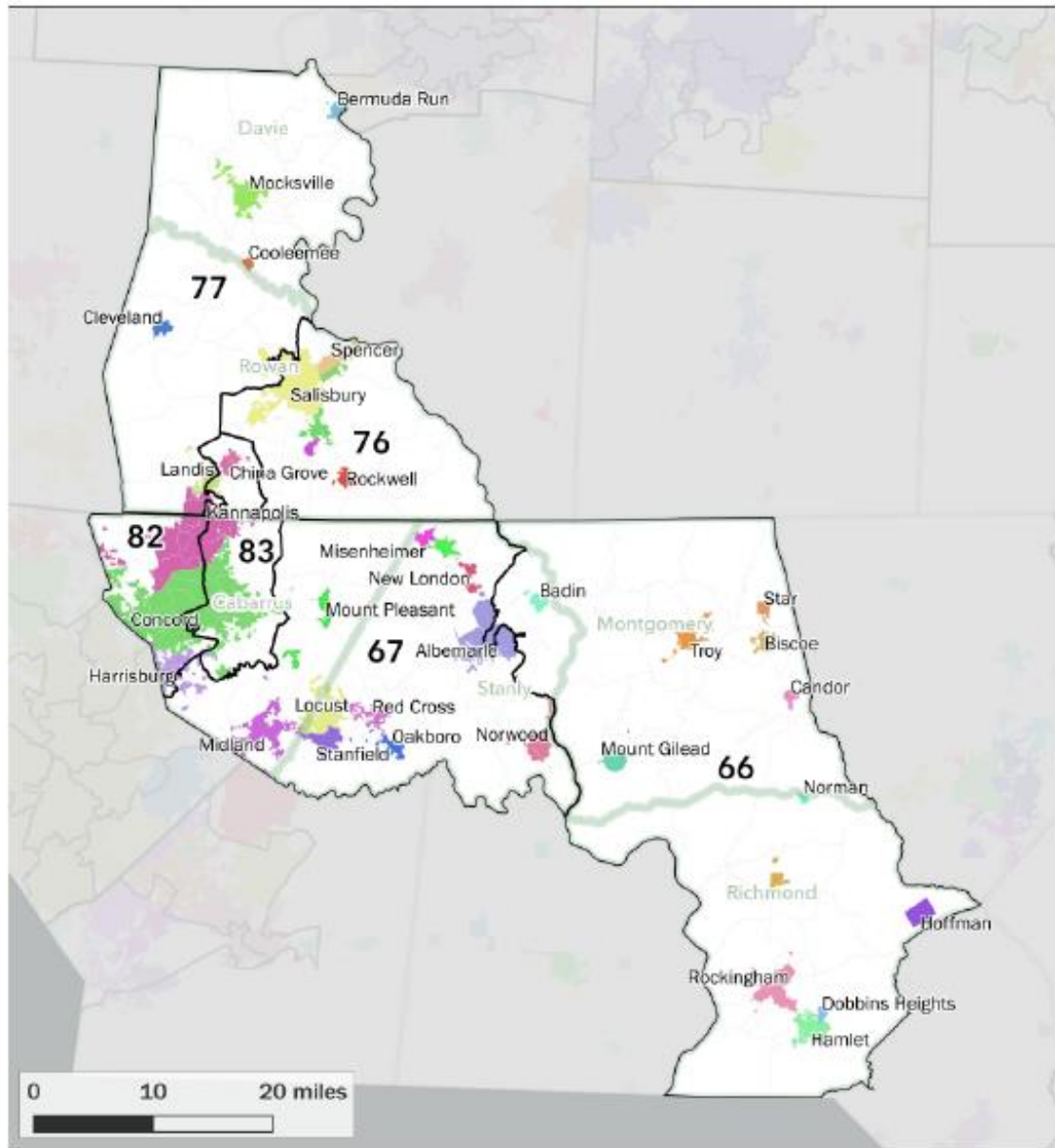
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396. Plaintiffs' Exhibit 314 is Dr. Cooper's map for this county grouping:



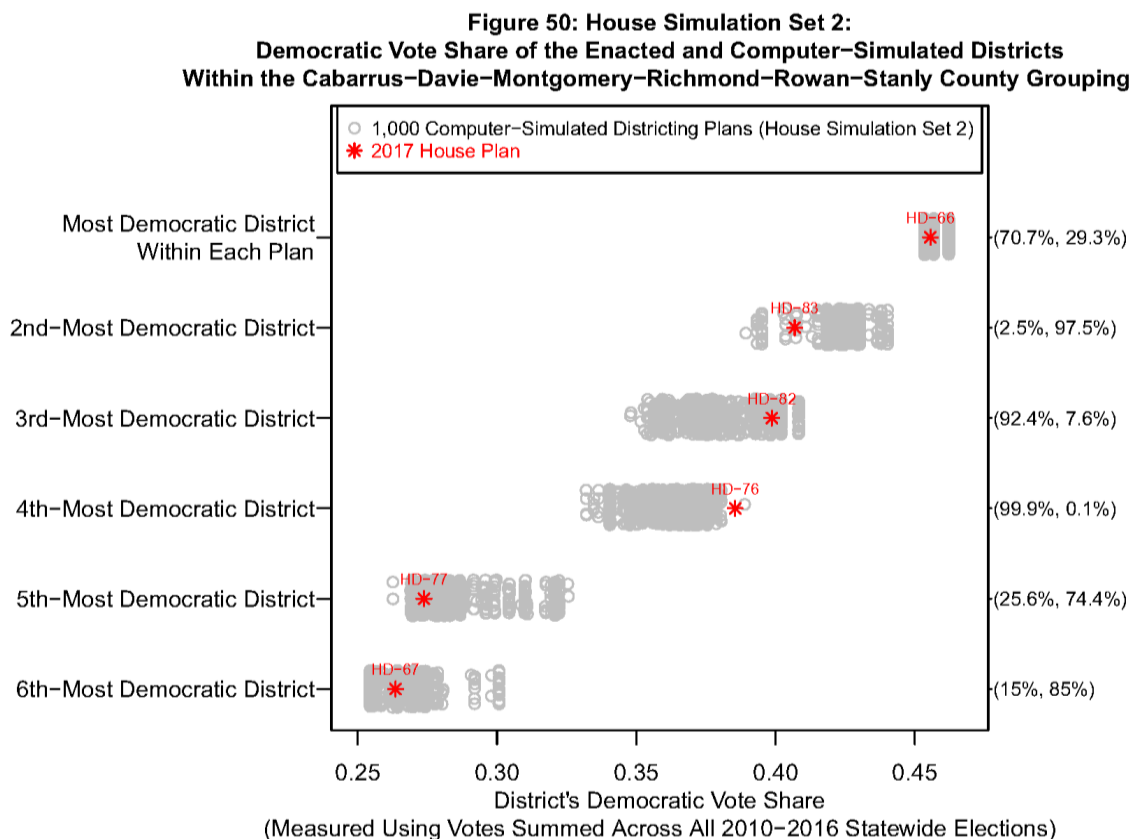
397. This county grouping cracks Democratic voters across its districts. In particular, Dr. Cooper explained how the mapmaker “maximize[d] partisan advantage” by splitting municipalities in “critical ways” that crack Democratic voters. Tr. 926:18-24. The cities of Kannapolis and Concord are both split across House Districts 82 and 83, cracking the Democratic voters across these districts to dilute their voting power. Tr. 926:23-927:24;

PX253 at 87-88 (Cooper Report). The Democratic voters from both of these cities are kept separate from the Democratic voters in Salisbury, which is placed in House District 76. *Id.* Plaintiffs Exhibit 315 depicts the splitting and treatment of these municipalities (Concord is shaded green, Kannapolis is pink, and Salisbury is yellow).

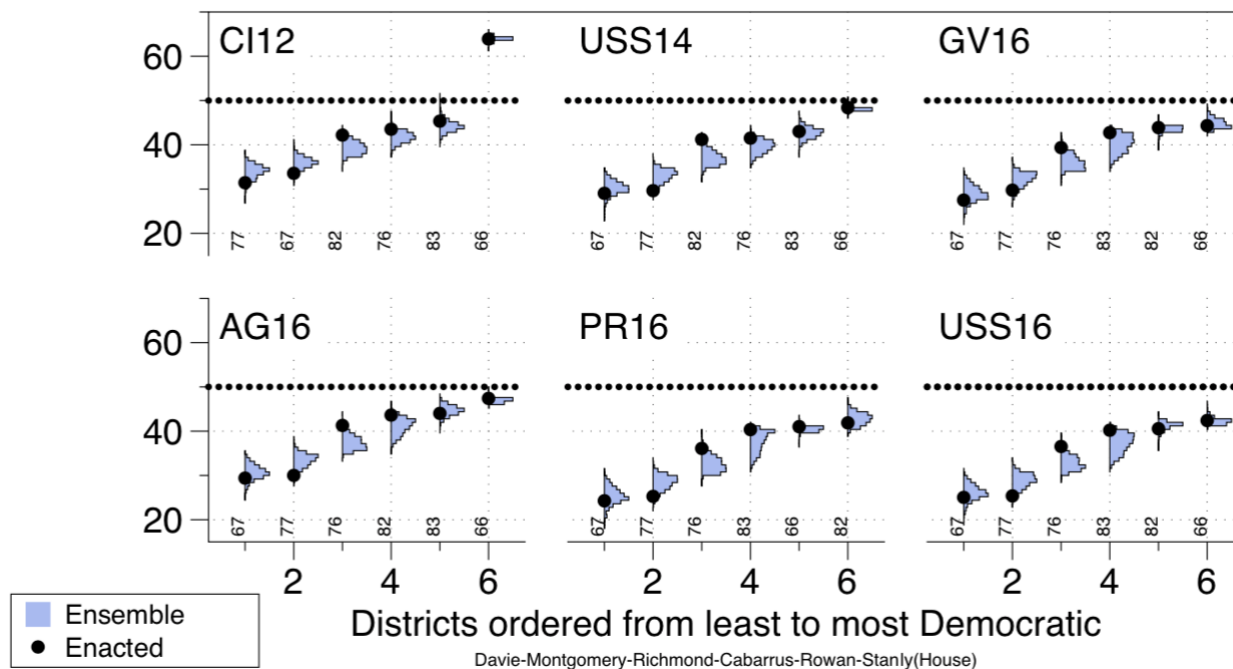


398. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

399. Dr. Chen found that, in his House Simulation Set 1, one of the districts in this grouping, House District 83, is an extreme partisan outlier, as it has a lower Democratic vote than its corresponding district in nearly all of the simulations. Tr. 363:6-12; PX46. Dr. Chen further found, however, that this grouping has three districts (House Districts 76, 82, and 83) that are partisan outliers in his House Simulation Set 2 that avoided pairing the incumbents in office in 2017. Tr. 363:14-364:10; PX70. Dr. Chen's findings demonstrate the cracking of Democratic voters across the districts in this grouping, particularly given Legislative Defendants' representations that the General Assembly sought to avoid pairing incumbents in 2017. *See* Tr. 364:11-22. The Court gives weight to Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 70 below.



400. Plaintiffs' Exhibit 392 shows Dr. Mattingly's analysis of this grouping:



401. When Dr. Mattingly mathematically quantified cracking in this grouping across all 17 statewide elections, he found that the four most Democratic districts in the Davie grouping had more Democrats than in 97.38% of plans in the nonpartisan ensemble. PX359 at 30; PX778 at 30; PX392.⁹ Dr. Mattingly concluded that this grouping reflects an “anomalous structure,” Tr. 1156:1-16, and the Court gives weight to that conclusion.

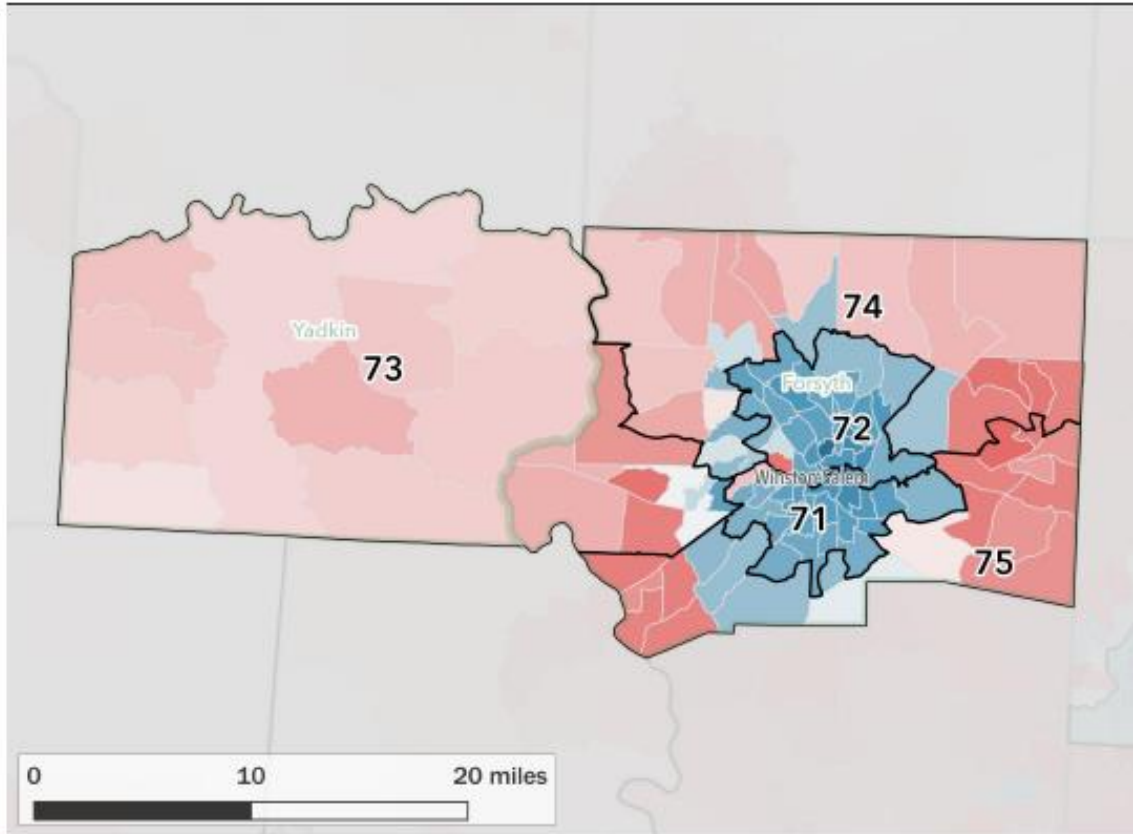
402. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that significant portions of this county grouping are an extreme partisan gerrymander that was drawn to dilute the votes of Democratic voters and maximize the number of Republican districts in this grouping.

⁹ Dr. Pegden's conservative methodology resulted in comparison maps that are very similar to the enacted plan for this grouping. Tr. 1351:17-1352:10. In particular, Dr. Pegden's conservative choice to allow his algorithm to split the same municipalities that are split under the enacted plan results in his comparison maps frequently splitting the Democratic strongholds of Kannapolis and Concord. PX535; PX508 at 24 (Pegden Report).

h. Yadkin-Forsyth

403. The Yadkin-Forsyth House County grouping contains House Districts 71, 72, 73, 74, and 75. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

404. Plaintiffs' Exhibit 316 is Dr. Cooper's map for this county grouping:

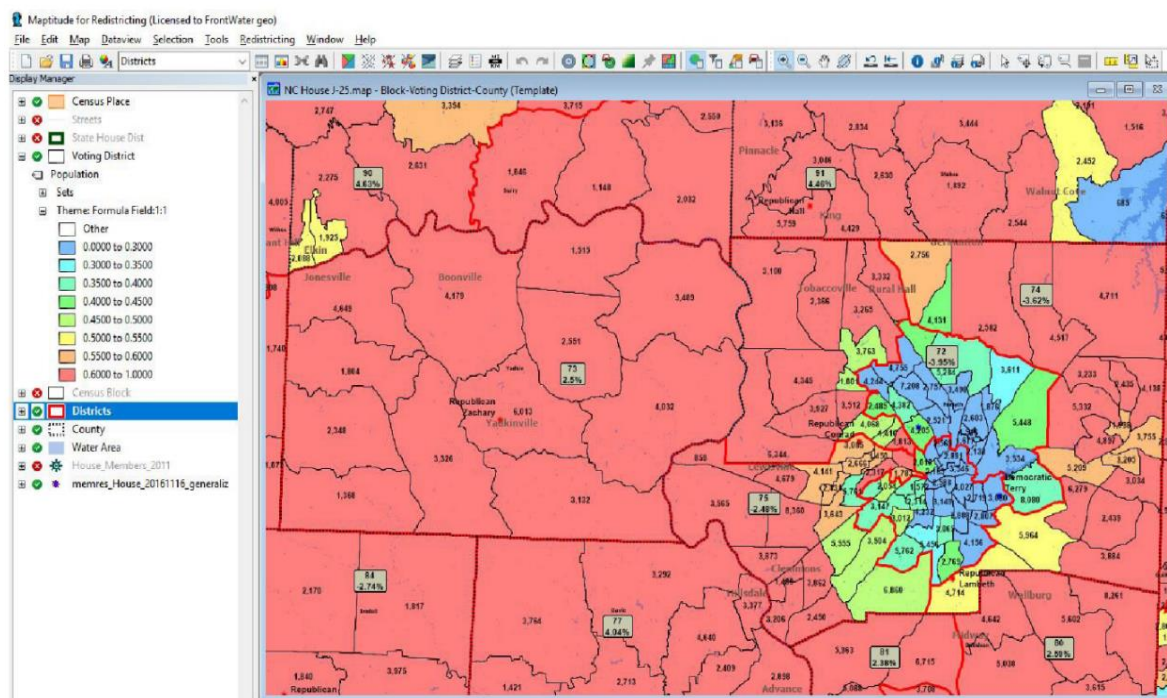


405. Legislative Defendants packed Democratic voters into House Districts 71 and 72. Tr. 928:20-21; PX253 at 90 (Cooper Report). Legislative Defendants then cracked the remaining Democratic voters in this grouping across the remaining districts, where those Democratic voters' influence is washed out by heavily Republican VTDs. House District 73 includes all of Republican-leaning Yadkin County and just two Democratic-leaning VTDs on the west side of Winston-Salem, ensuring that it will be a safe Republican district. House Districts 74 and 75 include Democratic-leaning VTDs on the northern and southern

sides of Winston-Salem, respectively, but both of those districts wrap around the city to include Republican-dominated VTDs on either side of Forsyth County. Indeed, in order to join Republican VTDs, House District 75 traverses an extremely narrow passageway on the border of Forsyth County. Tr. 928:5-21; PX253 at 90-91 (Cooper Report).

406. The Maptitude files from Dr. Hofeller's hard drive illustrate the "anatomy of this gerrymander." Tr. 988:17-989:4; PX345; PX329 at 21 (Cooper Rebuttal Report). They show Dr. Hofeller's intentional packing of all of the most Democratic VTDs in Forsyth County into House Districts 71 and 72, while putting all of the moderate and Republican-leaning VTDs (shaded tan, yellow, light green, and red) into House Districts 73, 74, and 75. *Id.* Plaintiffs' Exhibit 345 shows Dr. Hofeller's Maptitude file containing this county grouping:

Figure 16: Partisan Targeting in House Districts 71, 72, 73, 74, and 75

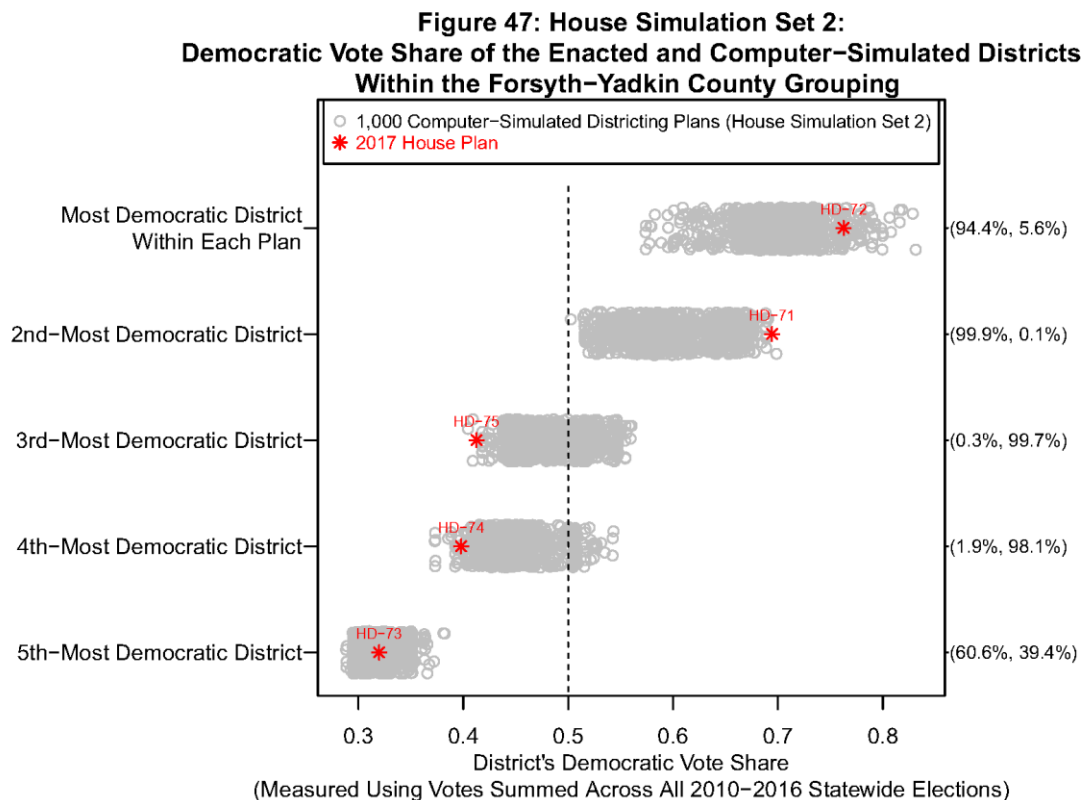


407. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

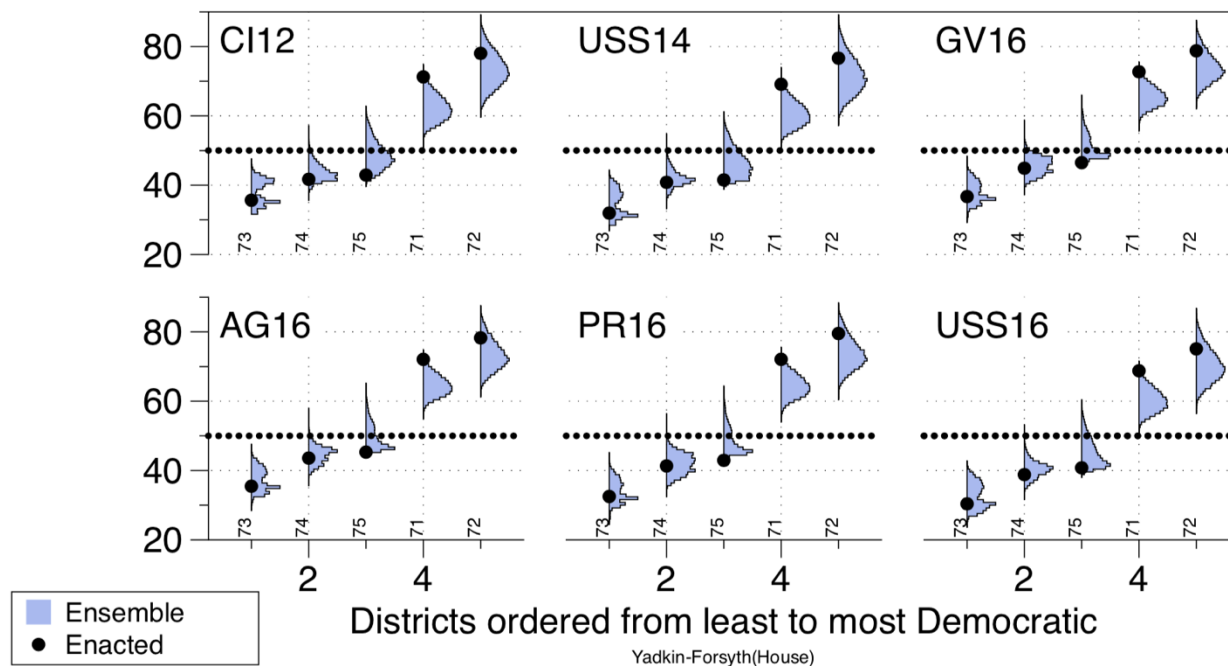
408. The simulations of Plaintiffs' other experts independently establish that the Forsyth-Yadkin county grouping is an extreme partisan gerrymander.

409. Dr. Chen found that, in his House Simulation Set 1, two of the districts in this grouping (House Districts 71 and 75) are extreme partisan outliers above the 95% level, and another two districts in the grouping (House Districts 72 and 74) have higher or lower Democratic vote shares than over 80% of their corresponding districts. Tr. 354:1-20; PX49. Dr. Chen further found, however, that all four of these districts are extreme partisan outliers in his House Simulation Set 2 that avoided pairing the incumbents in office in 2017. Tr. 355:1-18. In Simulation Set 2, House Districts 71 and 72 have higher Democratic vote shares than nearly all of their corresponding districts in the simulations, while House Districts 74 and 75 have lower Democratic vote shares than nearly all of their corresponding districts in the simulations. *Id.* Dr. Chen's findings demonstrate the packing of Democratic voters into House Districts 71 and 72 and the cracking of Democratic voters in the remaining districts in this grouping, particularly given Legislative Defendants' representations that the General Assembly sought to avoid pairing incumbents in 2017. *See* Tr. 355:19-356:4. The Court gives weight to Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 67 below.

Chen Report Figure 47



410. Plaintiffs' Exhibit 414 shows Dr. Mattingly's analysis of this grouping:



411. Dr. Mattingly concluded that the three least Democratic districts show extreme cracking of Democrats while the two most Democratic districts shows extreme packing of Democrats, as evidenced by the significant jump between these sets of districts. Tr. 1144:3-9. Dr. Mattingly's analysis showed that the three least Democratic districts in the enacted plan had fewer average Democratic votes than 99.46% of the comparable districts in the nonpartisan ensemble, while the two most Democratic districts in the enacted plan had more average Democratic votes than 99.84% of the comparable Democratic districts in the nonpartisan ensemble. PX778 at 30; PX359 at 44. As the figure above shows, the gerrymander causes the Democrats to lose one, possibly two, seats in this grouping in certain electoral environments, because the black dots for House District 74 and 75 always below the 50% line while the blue histograms sometimes rise above it. Tr. 1144:6-9. Dr. Mattingly concluded that the Yadkin-Forsyth grouping is an extreme pro-Republican partisan gerrymander, Tr. 1144:13-16, and the Court gives weight to his conclusion.

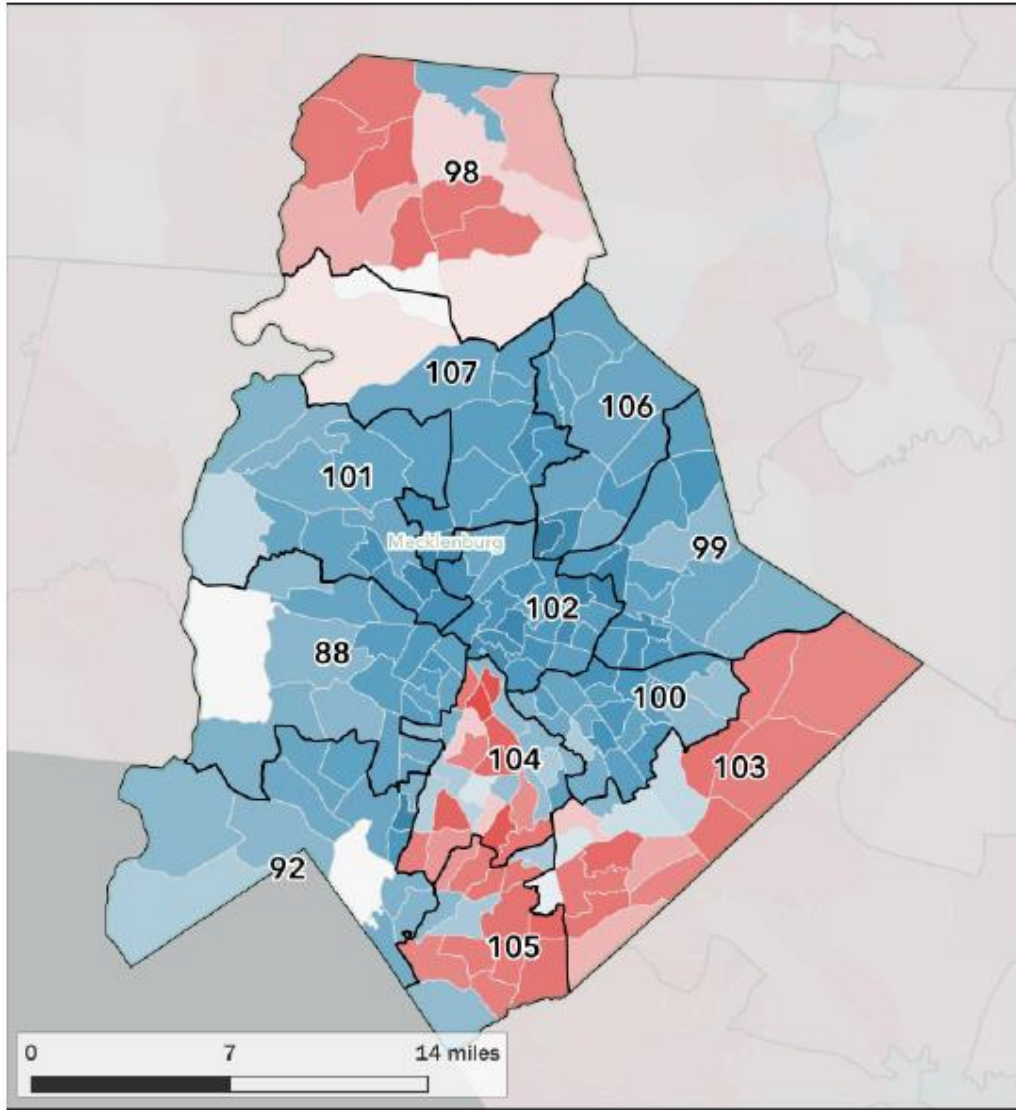
412. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.7% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.1% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:7; PX530. The Court gives weight to Dr. Pegden's analysis and conclusions.

413. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

i. Mecklenburg

414. The Mecklenburg House County grouping contains House Districts 88, 92, 98, 99, 100, 101, 102, 103, 104, 105, 106, and 107. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

415. Plaintiffs' Exhibit 319 is Dr. Cooper's map for this county grouping:



416. Dr. Cooper detailed how House Districts 88, 92, and 101 pack Democratic voters on the western side of Mecklenburg County while House Districts 99, 100, 102, and 106 pack Democratic voters on the eastern and central portions of the county. There is not

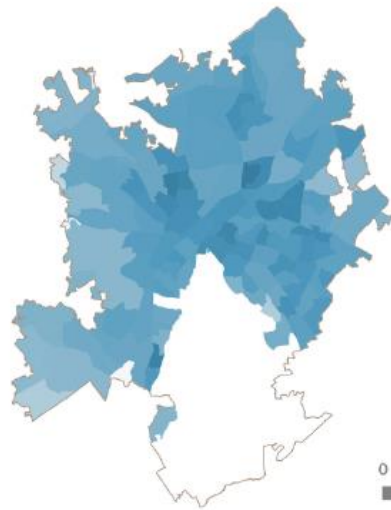
a single Republican-leaning VTD included in any of these packed House Districts. Tr. 930:13-24; PX253 at 93 (Cooper Report).

417. House Districts 103, 104, and 105, meanwhile, include all of the Republican-leaning VTDs on the southern side of Mecklenburg County, allowing those districts to be “as competitive as possible for Republicans.” Tr. 930:25-931:7; PX253 at 93 (Cooper Report).

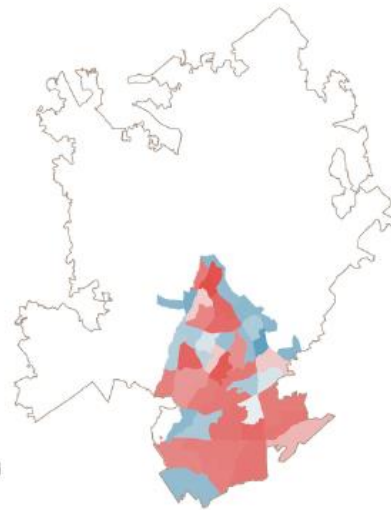
418. House District 98, on the northern boundary of Mecklenburg County, includes almost all Republican-leaning VTDs, avoiding the Democrat-heavy VTDs that are packed into House Districts 106 and 107. Tr. 931:7; PX253 at 93 (Cooper Report).

419. As depicted in Plaintiffs’ Exhibit 320, these district boundaries split Charlotte between 11 House Districts but manage to place every Republican-leaning VTD within the city—the “red pizza” slice—into House Districts 103, 104, and 105. Tr. 932:1-17; PX320; PX253 at 93 (Cooper Report).

Portions of Charlotte City Limits (Shaded) in House Districts 88, 92, 99, 100, 101, 102, 106, and 107



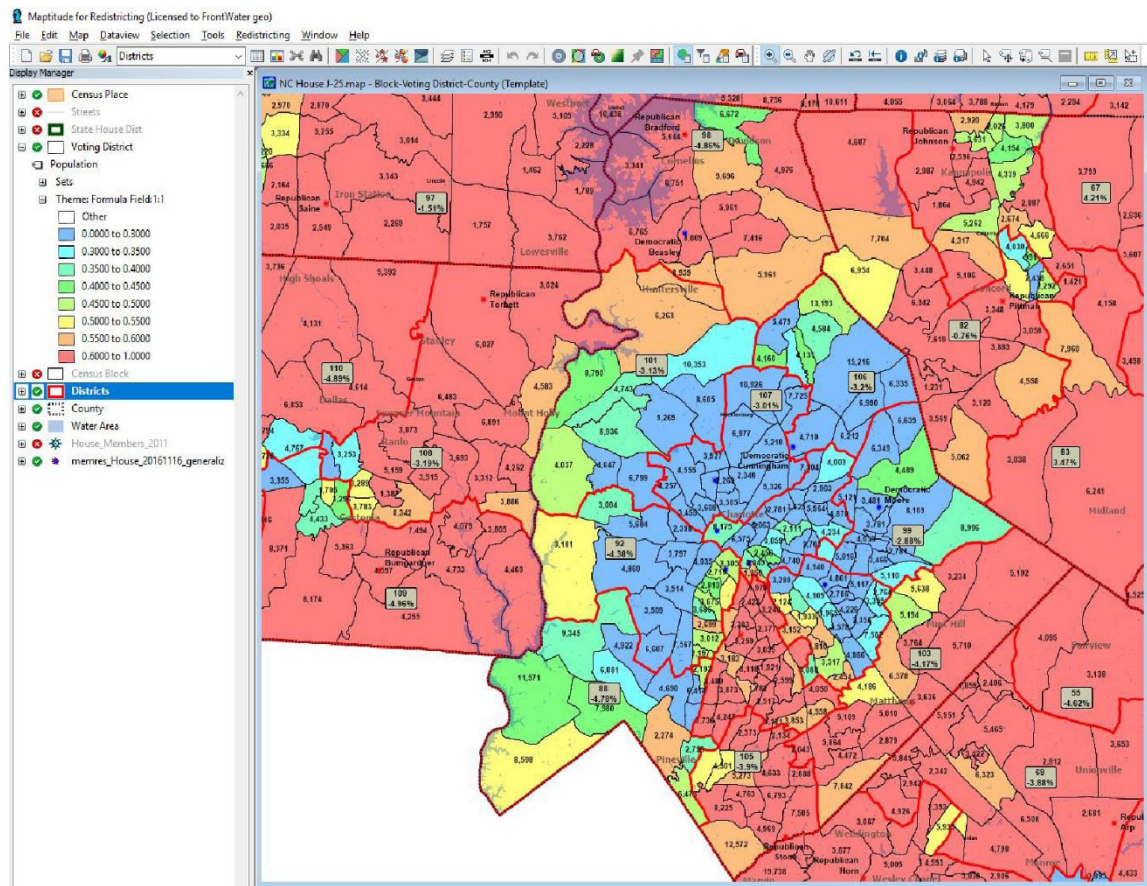
Portions of Charlotte City Limits (Shaded) in House Districts 103, 104, and 105



420. Dr. Hofeller’s Maptitude files confirm he drew the districts in this grouping to maximize partisan gain. The “pizza slice” that contains the Republican-leaning VTDs within Charlotte is evident in Dr. Hofeller’s color-coded draft map, which groups those

Republican-leaning VTDs into three House Districts and packs almost all of the Democratic VTDs into other districts. Tr. 990:4-21; PX329 at 22 (Cooper Rebuttal Report). Plaintiffs' Exhibit 346 shows Dr. Hofeller's Maptitude files containing this county grouping:

Figure 17: Partisan Targeting in House Districts 88, 92, 98, 99, 101, 102, 103, 104, 105, 106, and 107.

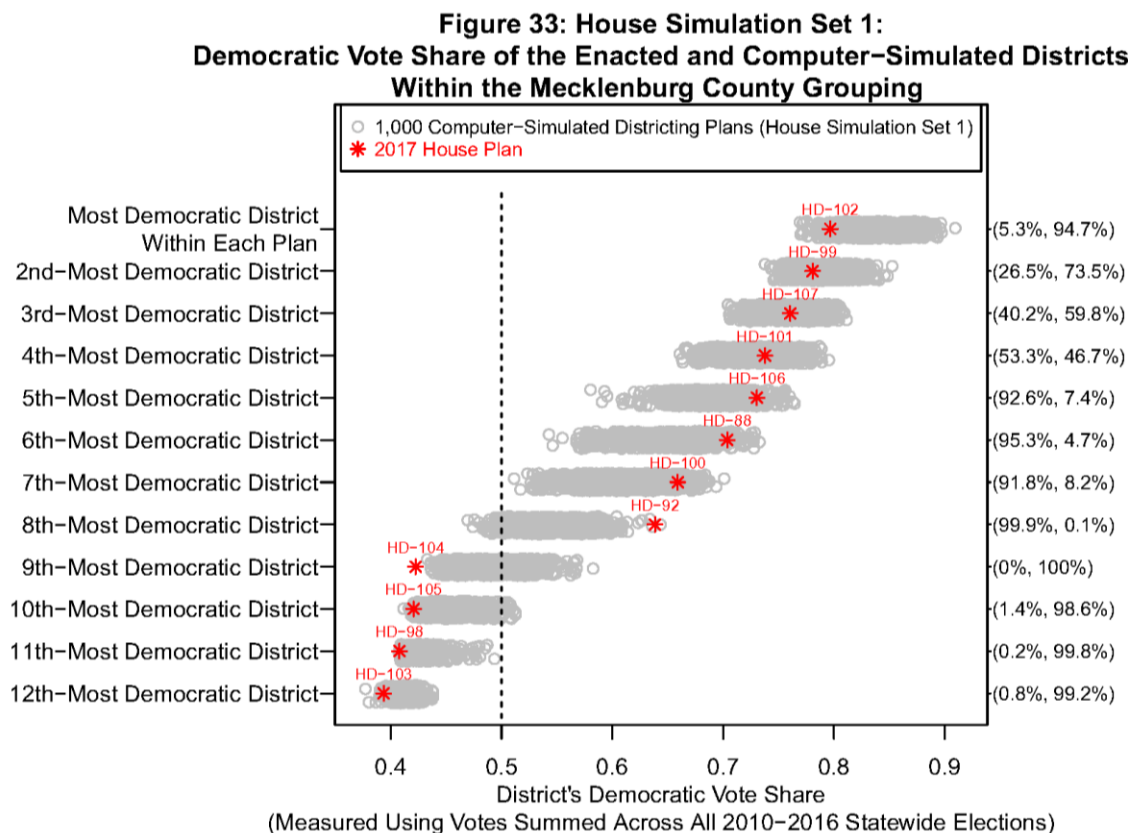


421. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

422. The simulations of Plaintiffs' other experts independently establish that the Mecklenburg county grouping is an extreme partisan gerrymander.

423. Dr. Chen found that this county grouping contains six districts that are extreme partisan outliers above the 95% outlier level, and another three districts that are

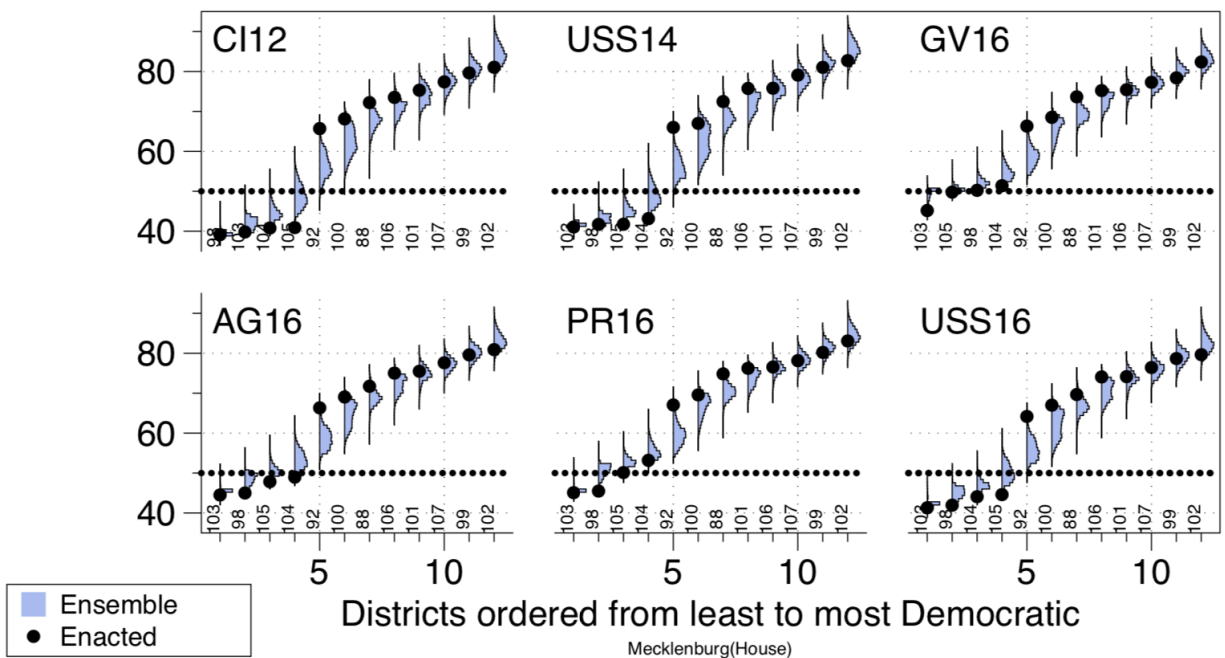
outliers above the 90% level. Tr. 361:20-22; PX53. The enacted plan packs Democratic voters into a number of districts in order to create four districts—House Districts 98, 103, 104, and 105—that are less Democratic than all of nearly of their corresponding districts in Dr. Chen’s simulations. PX53. Dr. Chen’s findings demonstrate the packing and cracking of Democratic voters in this grouping. The Court gives weight to Dr. Chen’s analysis and findings for this county grouping, which is reflected in Plaintiffs’ Exhibit 53 below.



424. As Dr. Chen explained at trial, the fact that Democrats won House Districts 98, 103, 104, and 105 by small or extremely small margins in 2018 does not contradict his findings. Tr. 362:2-363:2; see JSF ¶¶ 125, 132-35. Rather, Dr. Chen’s simulations suggest that Democrats very likely would have won each of these districts by larger margins if not for the gerrymander. *Id.* Moreover, Dr. Hofeller’s own assessment of these districts demonstrates that he believed these districts to be Republican-leaning, and that it took the

Democratic wave of 2018 to squeak out wins in them. Dr. Hofeller estimated that House District 98 would have a 62.76% Republican vote share and he characterized it as a “strong Rep. district in Mecklenburg.” PX246 at 3. Dr. Hofeller similarly estimated that House Districts 103, 104, and 105 would have 62% to 64% Republican vote shares. *Id.* Dr. Hofeller’s spreadsheets evidence the partisan intent behind the creation of these districts and the strong possibility that Democratic could lose them in the next election under the current district lines intended to produce that result.

425. Plaintiffs’ Exhibit 400 shows Dr. Mattingly’s analysis of this grouping:



426. Dr. Mattingly concluded that the four most Republican districts showed extreme cracking of Democrats while the next four districts showed extreme packing of Democrats, as evidenced by the significant jump between these sets of districts. Tr. 1138:7-1139:4. Dr. Mattingly found that the least four Democratic districts in the enacted plan had fewer average Democratic votes than 99.9% of the comparable districts in the nonpartisan ensemble, while the eight most Democratic districts in the enacted plan had

more average Democratic votes than 99.5% of the comparable Democratic districts in the nonpartisan ensemble. Tr. 1141:8-25; PX778 at 30; PX359 at 34-35. As the figure above shows, the gerrymander causes the Democrats to lose up to three, possibly four, seats in this grouping in certain electoral environments, because the black dots for House Districts 98, 103, 104, and 105 often fall below the 50% line while the blue histograms rise above it. Tr. 1140:12-1140:25. Dr. Mattingly concluded that this grouping is an extreme pro-Republican partisan gerrymander, Tr. 1142:1-4, and the Court gives weight to his conclusion.

427. Like Dr. Chen, Dr. Mattingly explained that the fact that Democrats won all the seats in the Mecklenburg grouping in the 2018 election does not undermine his conclusion that the grouping is an extreme pro-Republican partisan gerrymander. Tr. 1142:5-14. That the Democrats did well in one election and were able to prevail over the gerrymander does not change the fact that the grouping provides an extreme and atypical structural advantage to the Republicans that could cause the Democrats to lose seats in the next election. Tr. 1142:10-17.

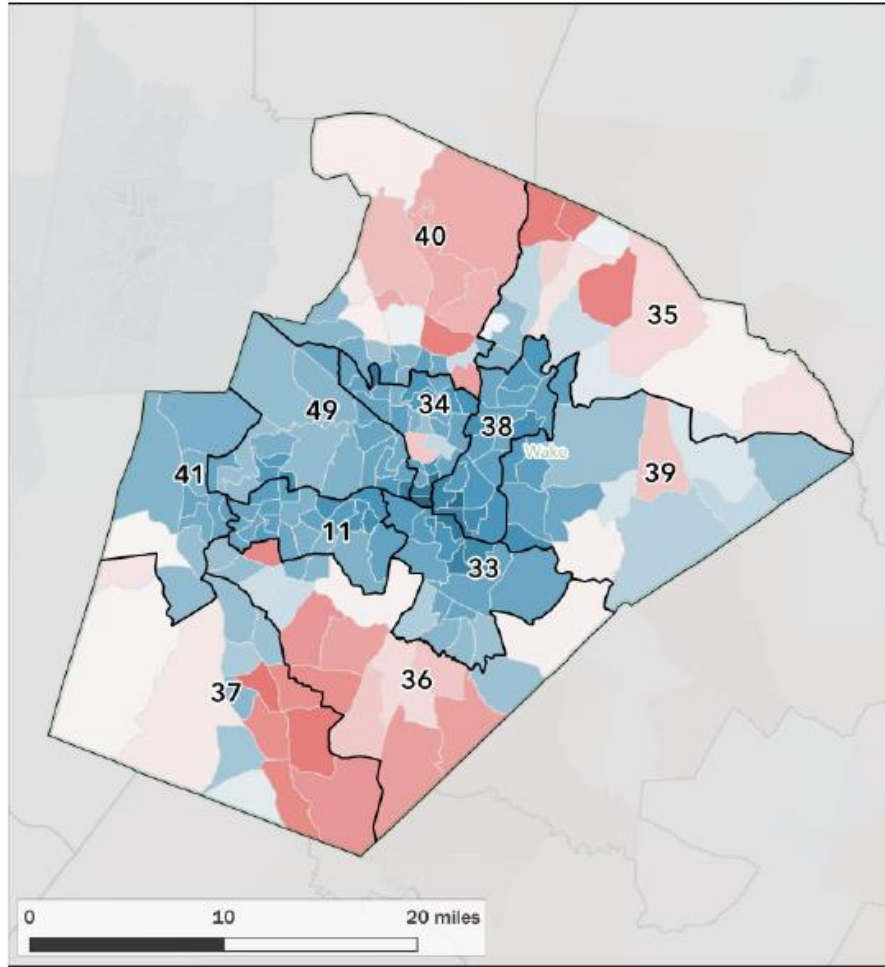
428. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.994% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.98% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:5-6; PX531. The Court gives weight to Dr. Pegden's analysis and conclusions.

429. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

j. Wake

430. The Wake House county grouping contains House Districts 11, 33, 34, 35, 36, 37, 38, 39, 40, 41, and 49.¹⁰

431. Plaintiffs' Exhibit 297 is Dr. Cooper's map for this county grouping:



432. The 2017 versions of House Districts 11, 33, 38, and 49 packed Democratic voters to allow House Districts 35, 36, 37, and 40, on the north and south sides of Wake

¹⁰ Plaintiffs presented evidence at trial that the enacted 2017 version of the Wake House county grouping was a partisan gerrymander, but Plaintiffs presented no evidence regarding this grouping as revised pursuant to this Court's ruling in *North Carolina State Conference of NAACP Branches, et al. v. David Lewis, et al.* Plaintiffs do not seek a remedy for the current, revised version of this grouping. However, the analysis and findings of Plaintiffs' experts with respect to the 2017 version of this county grouping is evidence of Legislative Defendants' intentional and systematic gerrymandering across the State during the 2017 redistricting.

County to be more favorable to Republicans. Tr. 911:15-912:16; PX253 at 65 (Cooper Report).

433. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these 2017 districts.

434. The simulations of Plaintiffs' other experts independently establish that the 2017 enacted House plan version of the Wake grouping was an extreme partisan gerrymander.

435. Dr. Chen found that the 2017 version of this county grouping contained three districts that were extreme partisan outliers above the 95% outlier level. Tr. 365:15-366:1; PX54. The Court gives weight to Dr. Chen's analysis and findings for this county grouping.

436. Dr. Mattingly's analysis showed that the four most Republican districts in the 2017 version of this grouping show extreme cracking of Democrats, while the next four districts show extreme packing of Democrats, in comparison to the nonpartisan plans. PX412; PX778 at 30; PX359 at 43. His analysis showed that the least Democratic districts in the enacted plan had fewer Democratic voters than 99.98% of the comparable districts in the nonpartisan ensemble, while the most Democratic districts in the enacted plan had more average Democratic votes than 99.99% of the comparable Democratic districts in the ensemble. PX778 at 30; PX359 at 43; PX412. The Court gives weight to Dr. Mattingly's analysis and conclusions for this grouping.

437. Dr. Pegden found that the 2017 version of this grouping constituted an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.9997% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.9991% of all possible districtings of

this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:4; PX533. The Court gives weight to Dr. Pegden's analysis and conclusions.

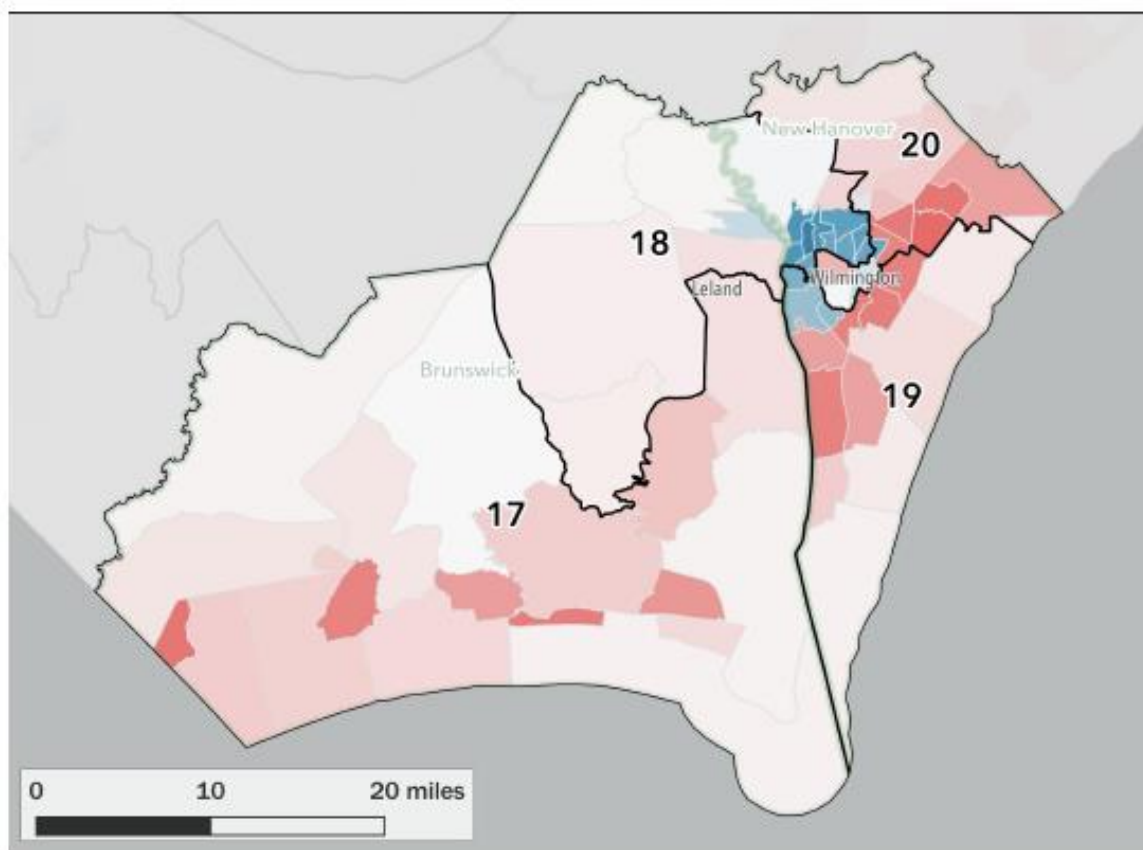
438. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that the 2017 version of this county grouping was an extreme partisan gerrymander. While Plaintiffs do not challenge any individual House districts in Wake County as currently drawn, the Court gives weight to the findings and conclusions of Plaintiffs' experts in regard to the consistency of the partisan intent throughout the statewide map.

k. New Hanover-Brunswick

439. The New Hanover-Brunswick House county grouping, drawn in 2011 and left unchanged in 2017, contains House Districts 17, 18, 19, and 20. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

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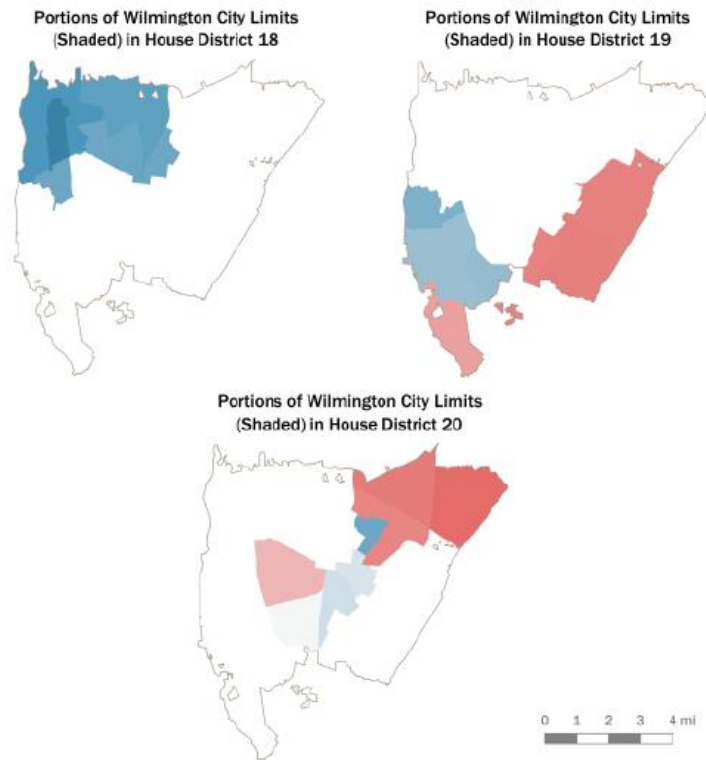
440. Plaintiffs' Exhibit 302 is Dr. Cooper's map of this county grouping:



441. As Dr. Cooper testified, House District 18 packs the most Democratic-leaning VTDs in this grouping into that district, thereby making House Districts 17, 19, and 20 more favorable to Republicans. Tr. 913:17-914:7; PX253 at 72 (Cooper Report).

442. Wilmington is split between House Districts 18, 19, and 20, with the most Democratic-leaning VTDs in that city packed into House District 18 and the Republican-leaning VTDs placed in the two adjacent districts. In order to accomplish the packing of voters in House District 18, the district boundaries split Wilmington and the UNC Wilmington campus. Tr. 914:13-20; PX253 at 73 (Cooper Report); PX303. By dividing the campus in this manner, the district boundaries enable House District 20 to connect to Republican-leaning VTDs in the Wilmington area, creating a boot-like appendage in the southwest portion of House District 20. PX253 at 75 (Cooper Report); Tr. 916:12-21.

Plaintiffs' Exhibit 303 show which portions of Wilmington are placed into each of the three districts:



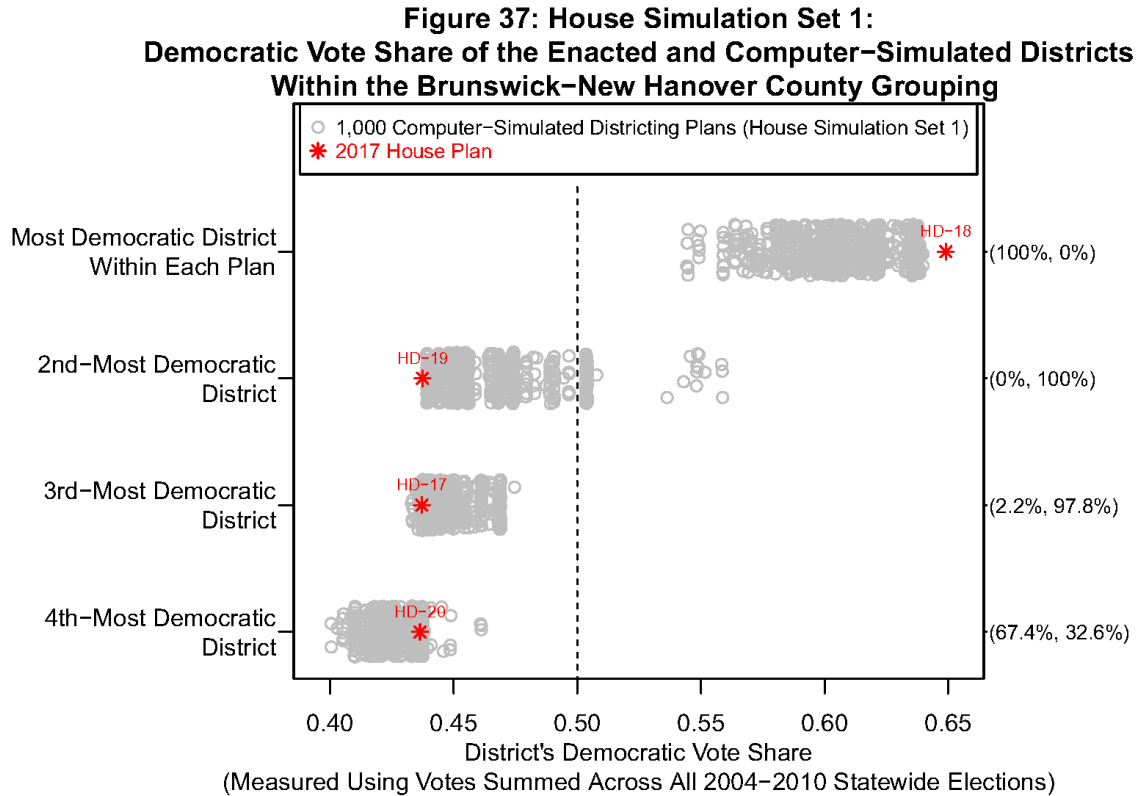
443. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

444. The simulations of Plaintiffs' other experts independently establish that the Brunswick-New Hanover county grouping is an extreme partisan gerrymander.

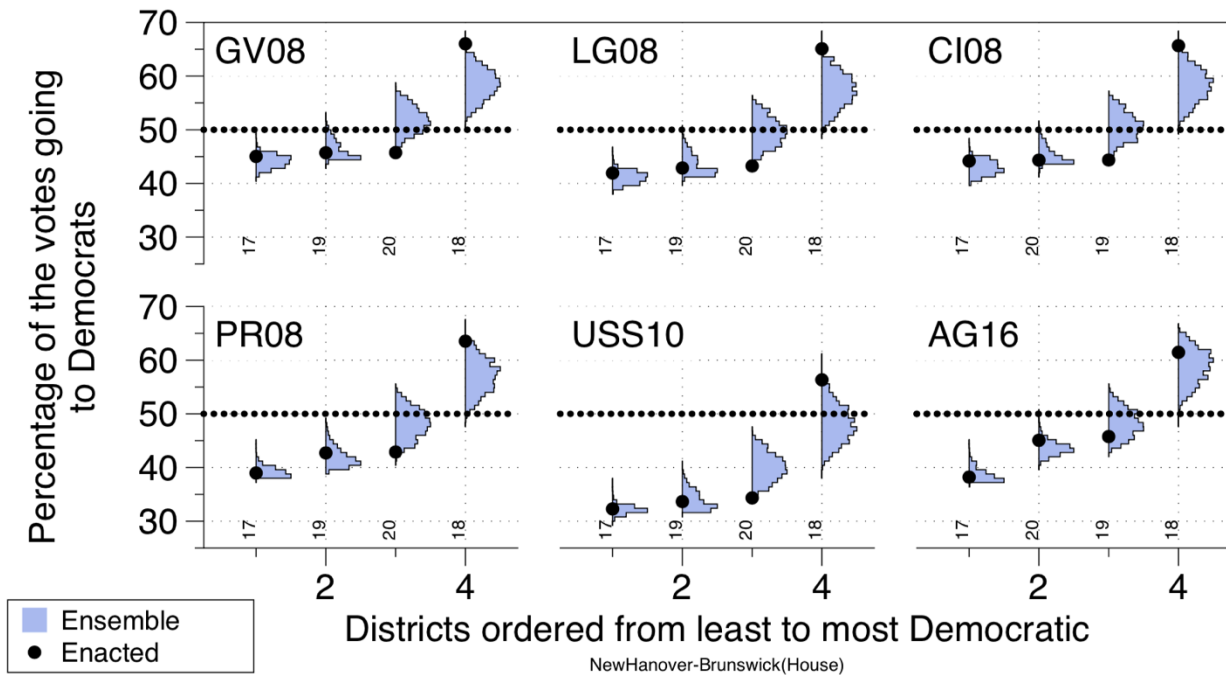
445. Dr. Chen found that this county grouping contains three districts that are extreme partisan outliers. Tr. 369:3-7.¹¹ House District 18 has a higher Democratic vote share than its corresponding district in all the simulations, while House Districts 17 and 19 have lower Democratic vote shares than their corresponding districts in all or nearly all of the simulations. Dr. Chen's findings demonstrate the packing of Democratic voters in

¹¹ For all House county groupings drawn in 2011 and unchanged in 2017, Dr. Chen used the 2004 to 2010 statewide elections to analyze these county groupings.

House District 18 and the cracking of Democratic voters across the other districts. The vast majority of Dr. Chen's simulations would produce up to two additional districts in this grouping that are competitive or even Democratic-leaning, compared to the enacted plan. PX57. The Court gives weight to Dr. Chen's analysis and findings for this grouping, which are reflected in Plaintiffs' Exhibit 57 below:



446. Plaintiffs' Exhibit 404 shows Dr. Mattingly's analysis of this grouping:



447. Dr. Mattingly concluded that the most Democratic district shows extreme packing of Democrats, while the three least Democratic districts show extreme cracking of Democrats, as evidenced by the significant jump between these sets of districts. Tr. 1145:17-1146:12. Dr. Mattingly found that the most Democratic district in the enacted plan had more Democratic voters than 92.01% of the comparable districts in the nonpartisan ensemble. PX778 at 30; PX359 at 38. As the figure above shows, the enacted map causes the Democrats to lose one seat in this grouping in certain electoral environments, because the black dot in the second most Democratic district always falls below the 50% line while the blue histograms often rise above it. Tr. 1146:5-9. Dr. Mattingly concluded that the New Hanover-Brunswick House grouping reflected a pro-Republican partisan gerrymander, Tr. 1146:22-1147:2, and the Court gives weight to his conclusion.

448. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version

of this grouping is more favorable to Republicans than 99.97% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.91% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:6-7; PX524. The Court gives weight to Dr. Pegden's analysis and conclusions.

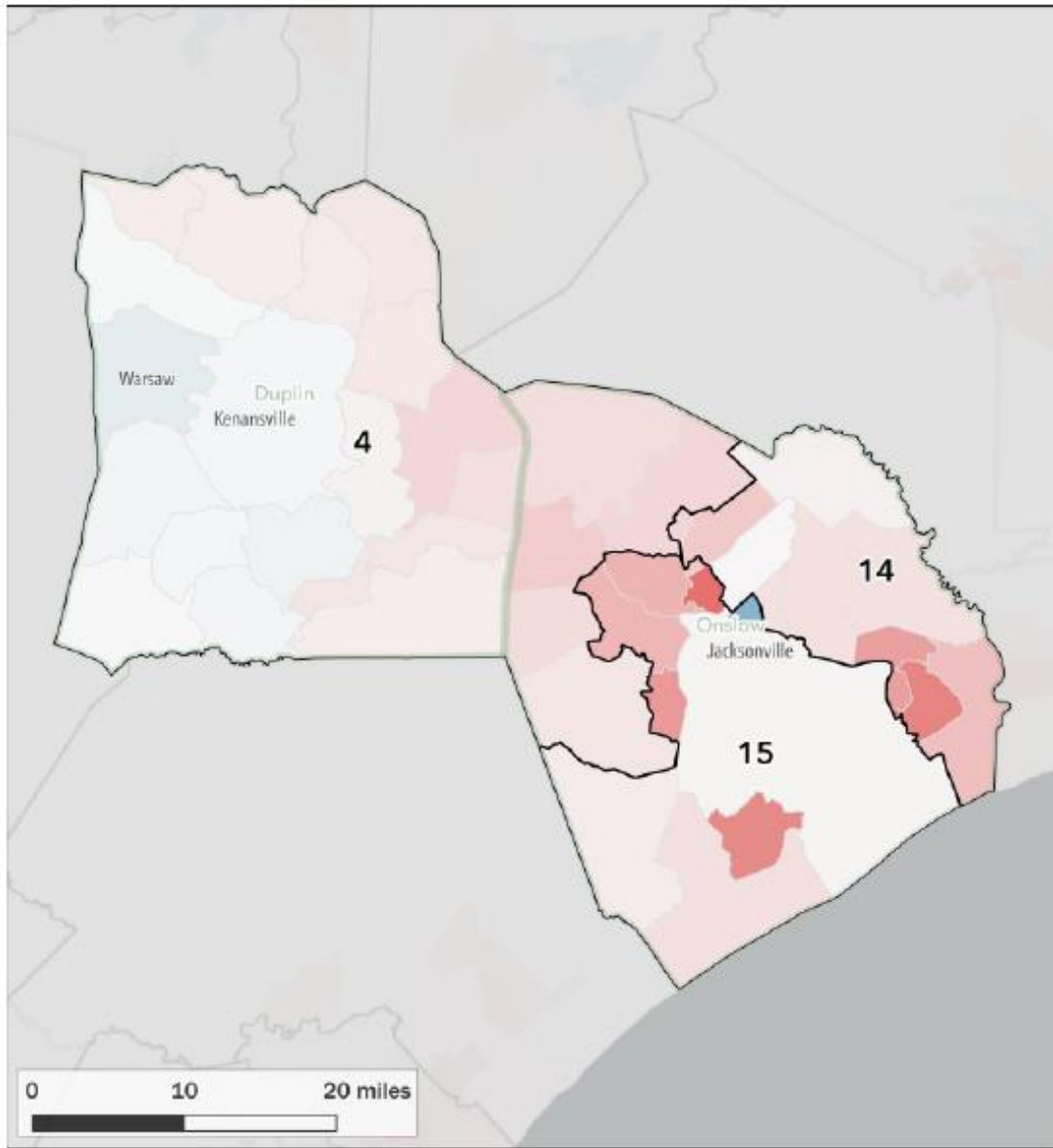
449. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

1. Duplin-Onslow

450. The Duplin-Onslow House county grouping, drawn in 2011 and left unchanged in 2017, contains House Districts 4, 14, and 15. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

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451. Plaintiffs' Exhibit 291 is Dr. Cooper's map for this county grouping:



452. Legislative Defendants split Jacksonville across House Districts 14 and 15, pairing the Democratic-leaning “shark’s tooth” in Jacksonville with heavily Republican-leaning VTDs in House District 15. Tr. 906:10-23; PX253 at 53-57 (Cooper Report). The map also ensures that none of Jacksonville’s voters are joined with the Democratic-leaning and moderate VTDs in Duplin County, in House District 4. *Id.* The map cracks Democratic

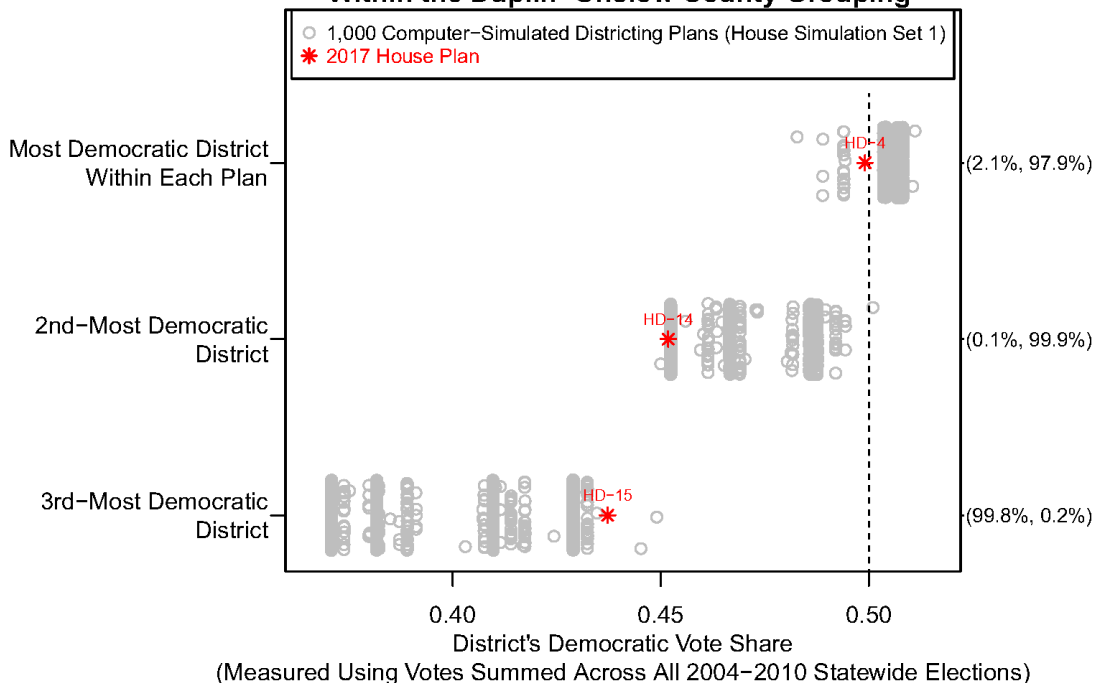
voters across all three districts in this grouping, ensuring that House District 14 “becomes Republican and [House District 4] also stays safely Republican.” *Id.*

453. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

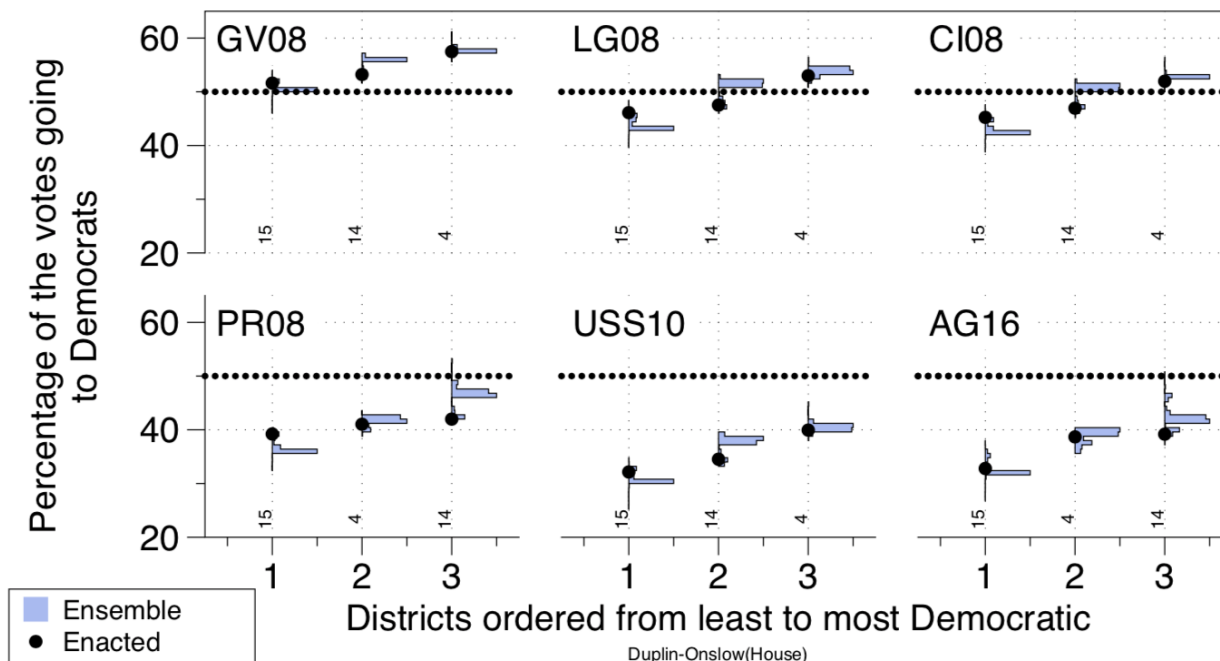
454. The simulations of Plaintiffs’ other experts independently establish that the Duplin-Onslow county grouping is an extreme partisan gerrymander.

455. Dr. Chen found that all three districts in this grouping are extreme partisan outliers. Tr. 370:16-371:1. House Districts 4 and 14 have lower Democratic vote shares than their corresponding districts in nearly all the simulations, while House District 15 has a higher Democratic vote share than its corresponding district in nearly all the simulations. PX60. Dr. Chen’s findings demonstrate the cracking of Democratic voters across the three districts. The vast majority of Dr. Chen’s simulations would produce two districts that are more competitive using the 2004-2010 statewide elections compared to the enacted plan. PX60. The Court gives weight to Dr. Chen’s analysis and findings for this county grouping, reflected in Plaintiffs’ Exhibit 60:

**Figure 40: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer-Simulated Districts
Within the Duplin-Onslow County Grouping**



456. Plaintiffs' Exhibit 394 shows Dr. Mattingly's analysis of this grouping:



457. This grouping is another example of what Dr. Mattingly called “squeezing” or “flattening,” where Democrats are cracked across all of the districts in the grouping. See

Tr. 1149:19-1150:2; Tr. 1150:22-1151:2. Dr. Mattingly's analysis showed that the two most Democratic districts in the enacted plan had fewer Democratic voters than 92.4% of the comparable districts in the nonpartisan ensemble, meaning that the Duplin-Onslow House grouping showed clear cracking of Democratic voters. PX778 at 30; PX359 at 31. As the figure above shows, the gerrymander could cause the Democrats to lose at least one seat in certain electoral environments. Dr. Mattingly concluded that this grouping reflects a clear pro-Republican partisan gerrymander, Tr. 1155:17-21, PX778 at 30, and the Court gives weight to Dr. Mattingly's conclusion.

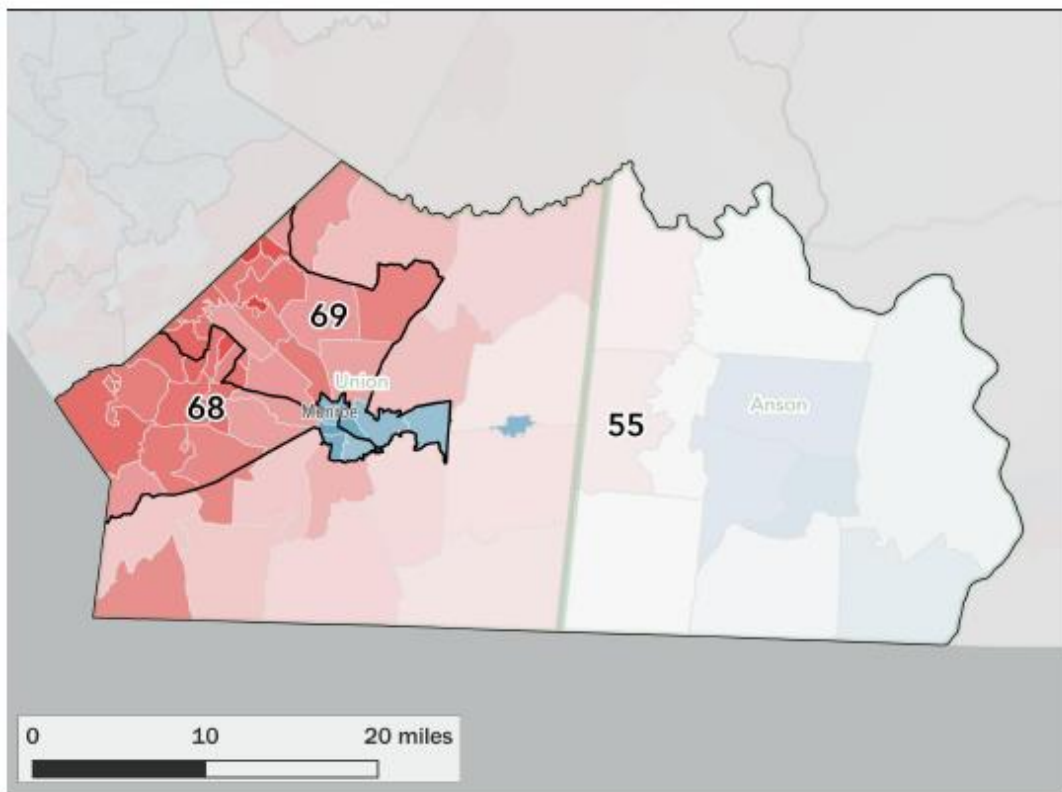
458. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 98% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 94% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:9; PX528. The Court gives weight to Dr. Pegden's analysis and conclusions.

459. The Court finds that the analyses of all Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

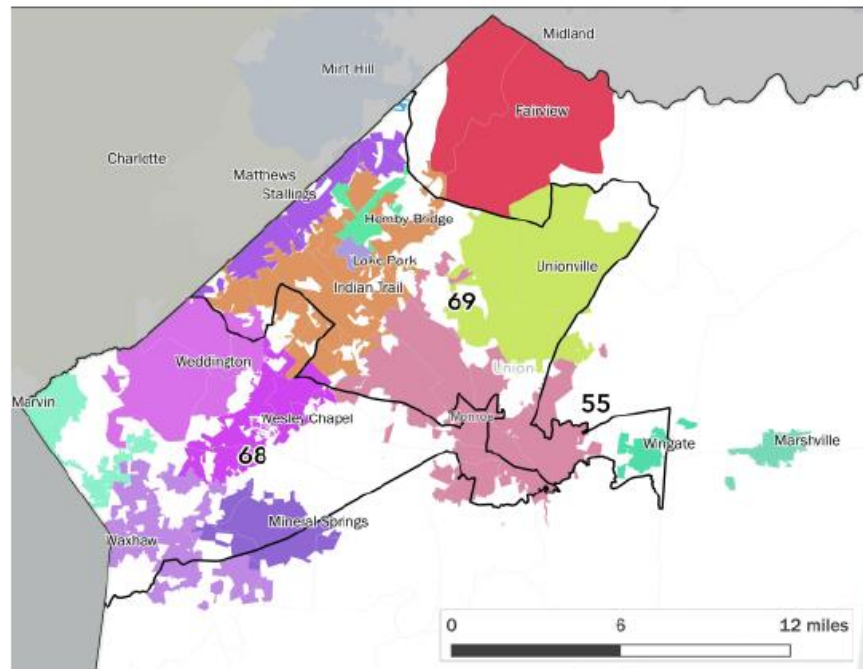
m. Anson-Union

460. The Anson-Union county grouping, drawn in 2011 and left unchanged in 2017, contains House Districts 55, 68, and 69. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

461. Plaintiffs' Exhibit 307 is Dr. Cooper's map for this county grouping:



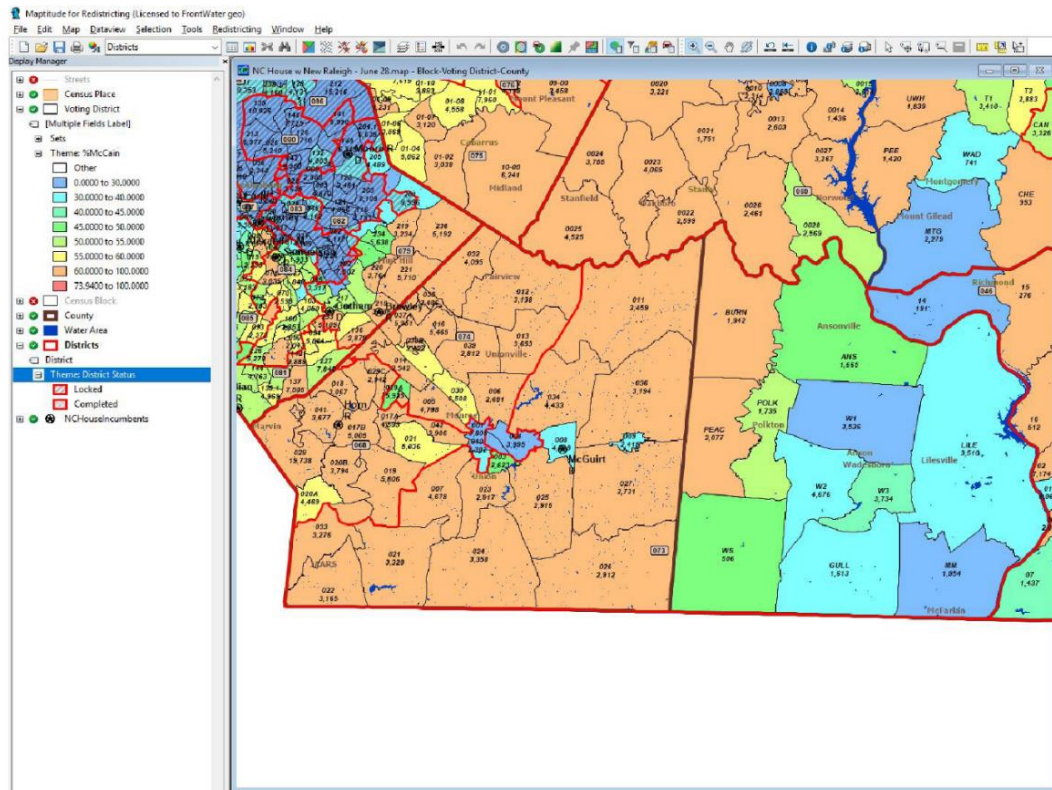
462. Dr. Cooper detailed how this county grouping cracks the Democratic voters in Monroe between two districts (House Districts 68 and 69), and then ensures that none of these voters are joined with the Democratic voters in Anson County (in House District 55). The map thus dilutes the voting power of the Democratic voters in this grouping, ensuring that House Districts 68 and 69 are reliable Republican districts. Tr. 919:3-16; PX253 at 79-80 (Cooper Report). Plaintiffs' Exhibit 308 illustrates the cracking of Monroe (which is colored pink).



463. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

464. Dr. Hofeller's Maptitude files confirm his intentional use of partisanship data to crack Democratic voters. The relevant Maptitude file, which was last modified in June 2011 and is depicted in Plaintiffs' Exhibit 353 below, shows Dr. Hofeller's use of the 2008 Presidential election results to separate Democratic VTDs across the three districts in this grouping. Tr. 995:20-998:7; PX329 at 31 (Cooper Rebuttal Report).

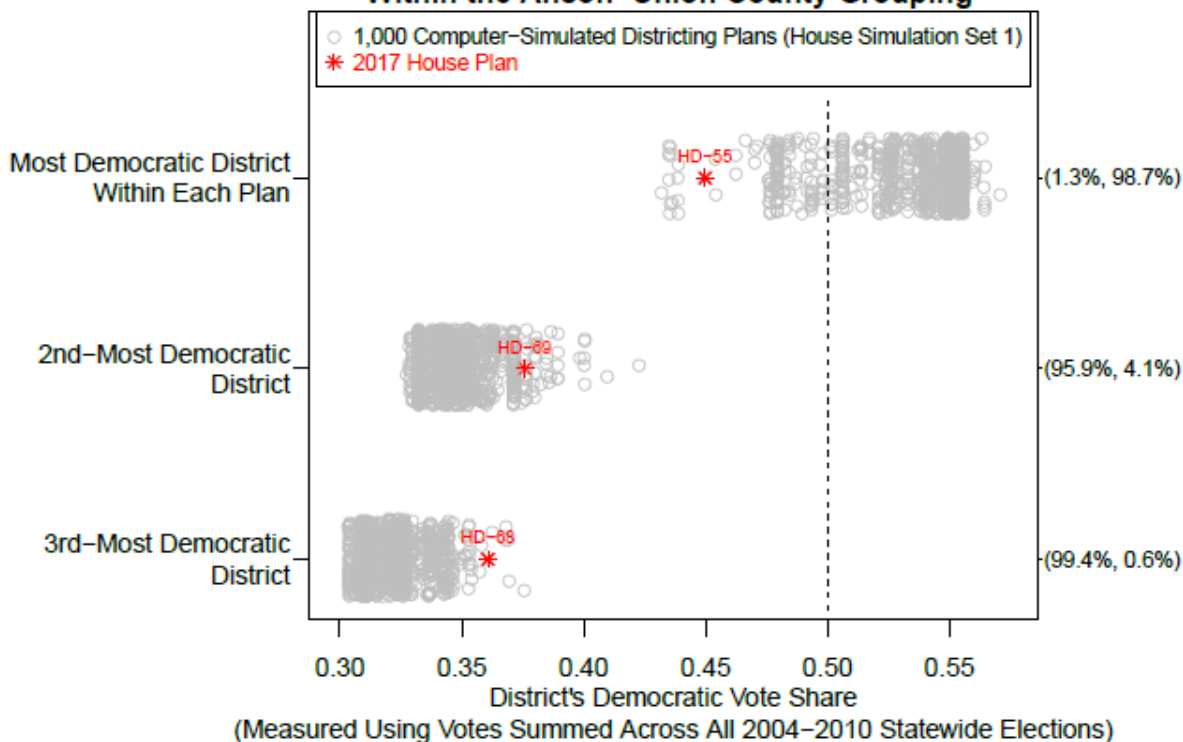
Figure 25: Partisan Targeting in House Districts 55, 68, and 69



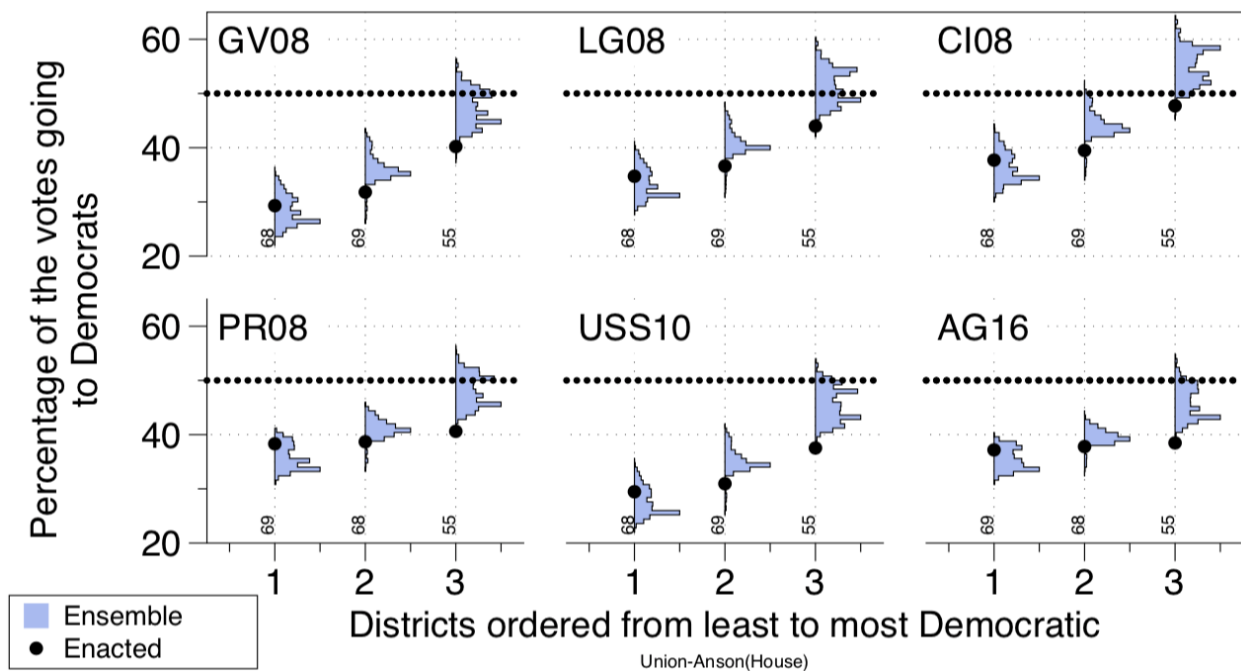
465. The simulations of Plaintiffs' other experts independently establish that this county grouping is an extreme partisan gerrymander.

466. Dr. Chen found that all three districts in this county grouping are extreme partisan outliers. Tr. 368:7-15. House District 55 has a lower Democratic vote share than its corresponding district in nearly all of the simulations, while House Districts 68 and 69 have higher Democratic vote shares than their corresponding districts in nearly all of the simulations. Dr. Chen's findings demonstrate the cracking of Democratic voters across the three districts in this grouping. In the vast majority of Dr. Chen's simulations, this county grouping would produce a district that is Democratic-leaning using the 2004-2010 statewide elections. PX56. The Court gives weight to Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 56 below:

**Figure 36: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer-Simulated Districts
Within the Anson-Union County Grouping**



467. Plaintiffs' Exhibit 410 shows Dr. Mattingly's analysis of this grouping:



468. This grouping is another example of what Dr. Mattingly called “squeezing” or “flattening,” where the Democrats are cracked across all of the districts in the grouping. *See* Tr. 1149:19-1150:2; Tr. 1150:22-1151:2. Dr. Mattingly’s analysis showed that the two most Democratic districts in the enacted plan had fewer Democratic voters than 100% of the comparable districts in the nonpartisan ensemble, meaning that not a single plan in his nonpartisan ensemble showed as much cracking of Democratic voters in this grouping as the enacted plan. PX778 at 30; PX359 at 42. As the figure above shows, the gerrymander causes the Democrats to lose one seat in certain electoral environment, as the black dot for House District 55 is always below the dotted line but the blue histogram often rises above it. Dr. Mattingly concluded that the Anson-Union House grouping reflected an extreme pro-Republican partisan gerrymander, Tr. 1155:8-16, PX778 at 30, and the Court gives weight to his conclusion.

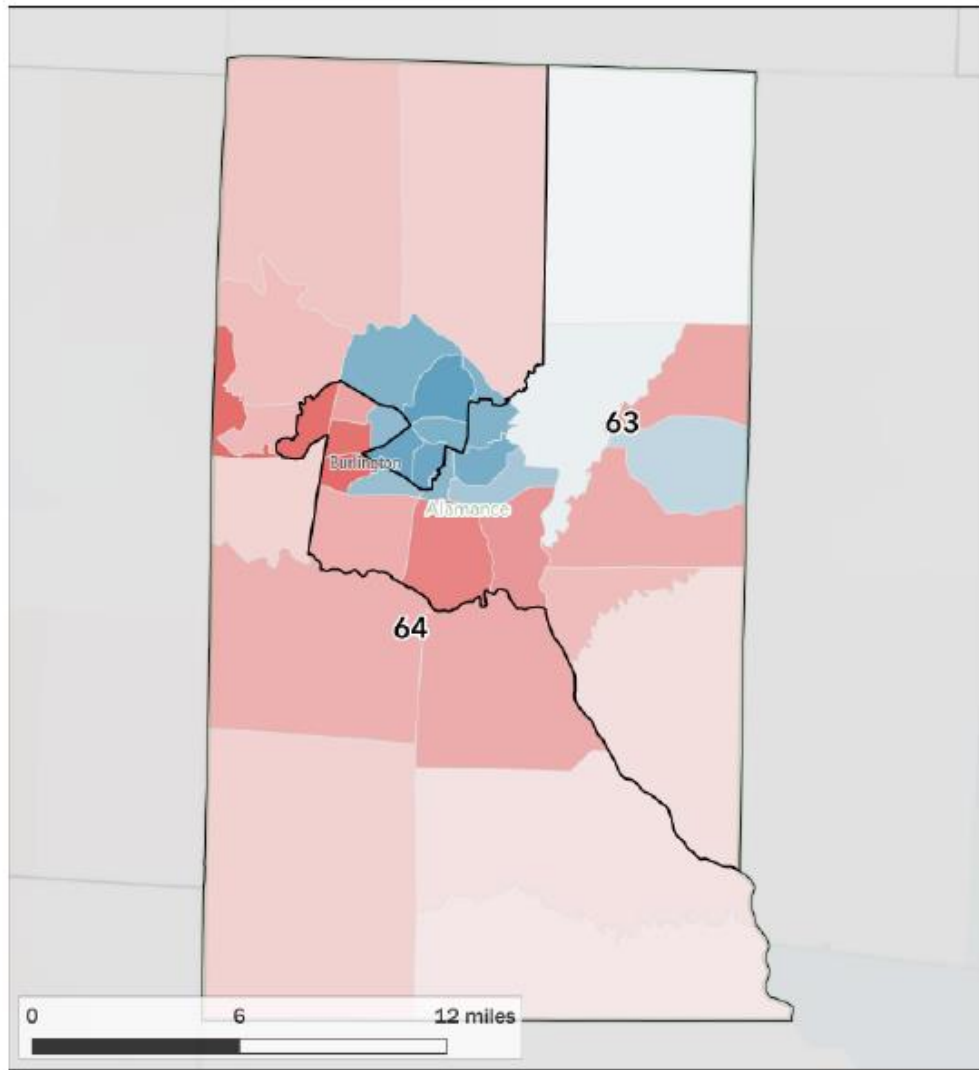
469. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan’s version of this grouping is more favorable to Republicans than 98.5% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 95.5% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:8-9; PX523. The Court gives weight to Dr. Pegden’s analysis and conclusions.

470. The Court finds that the analyses of Plaintiffs’ experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

n. Alamance

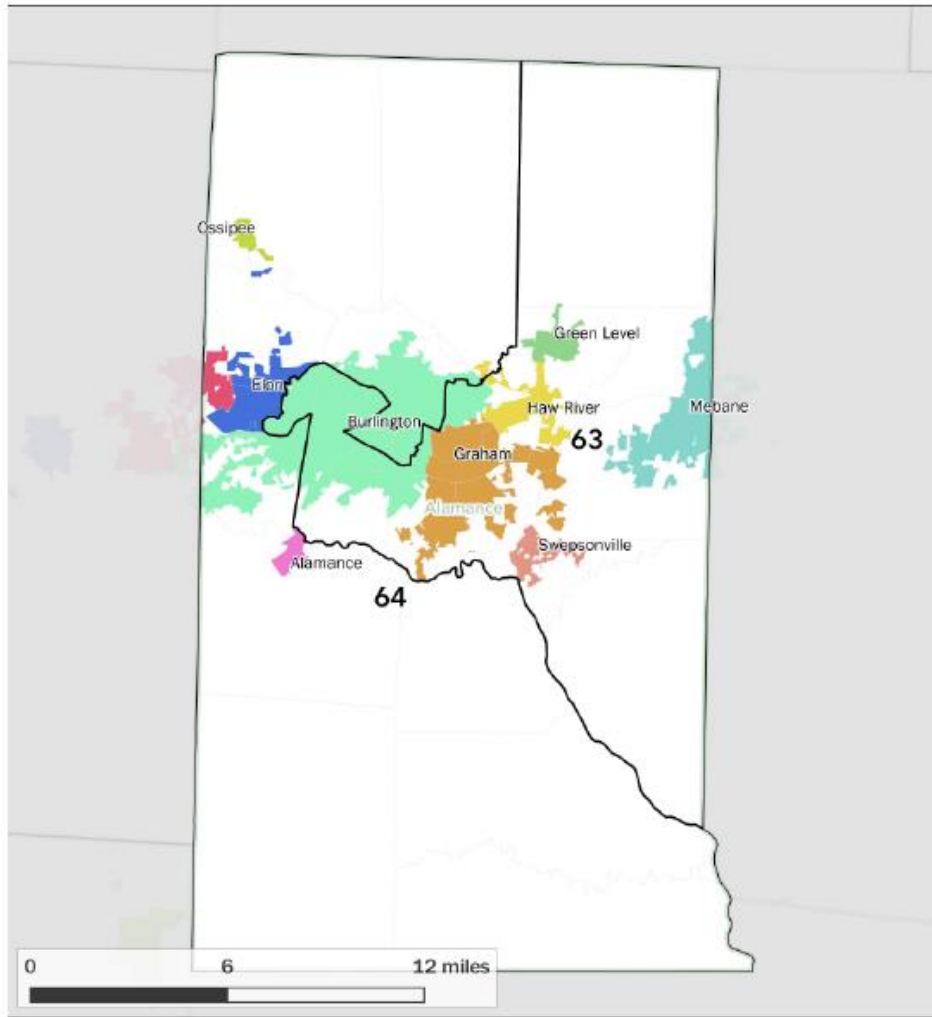
471. The Alamance House county grouping, drawn in 2011 and left unchanged in 2017, contains House Districts 63 and 64. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

472. Plaintiffs' Exhibit 311 is Dr. Cooper's map for this county grouping:



473. Dr. Cooper described how House District 63 takes the shape of a “duck’s head” in the Burlington area, cracking the Democratic voters in and around Burlington between House Districts 63 and 64 to reduce those voters’ influence. Tr. 924:3-25; PX253 at 84 (Cooper Report). And the map carefully places Burlington’s Republican-leaning-VTDs

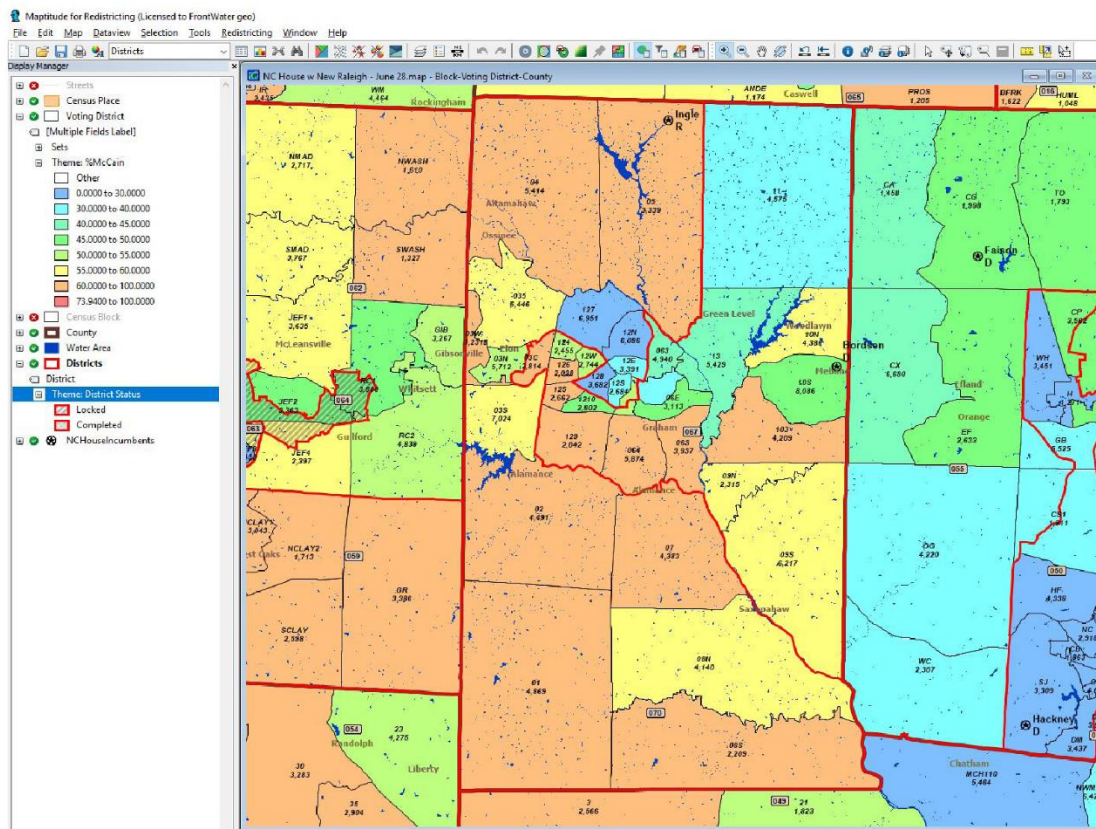
(in the “duck’s head”) in House Districts 63, helping to ensure that House District 63 will consistently elect a Republicans. Plaintiffs’ Exhibit 312 depicts the division of Burlington (shaded green):



474. Dr. Hofeller’s Maptitude files confirm the partisan intent and “partisan consequences” of cracking Democratic voters in this grouping. Tr. 998:18-19. In particular, Dr. Hofeller’s draft map for House Districts 63 and 64 (which was last modified in June 2011 while this district was being drawn) demonstrates how the “duck’s head” portion put Burlington’s most moderate and Republican-leaning VTDs (shaded tan and light green) in House District 63, while Burlington’s bluest VTDs were grouped with heavily Republican

areas in northern and southern Alamance County. Tr. 998:9-25; PX354; PX329 at 32 (Cooper Rebuttal Report). Plaintiffs' Exhibit 354 shows Dr. Hofeller's Maptitude file containing the Alamance grouping.

Figure 26: Partisan Targeting in House Districts 63 and 64



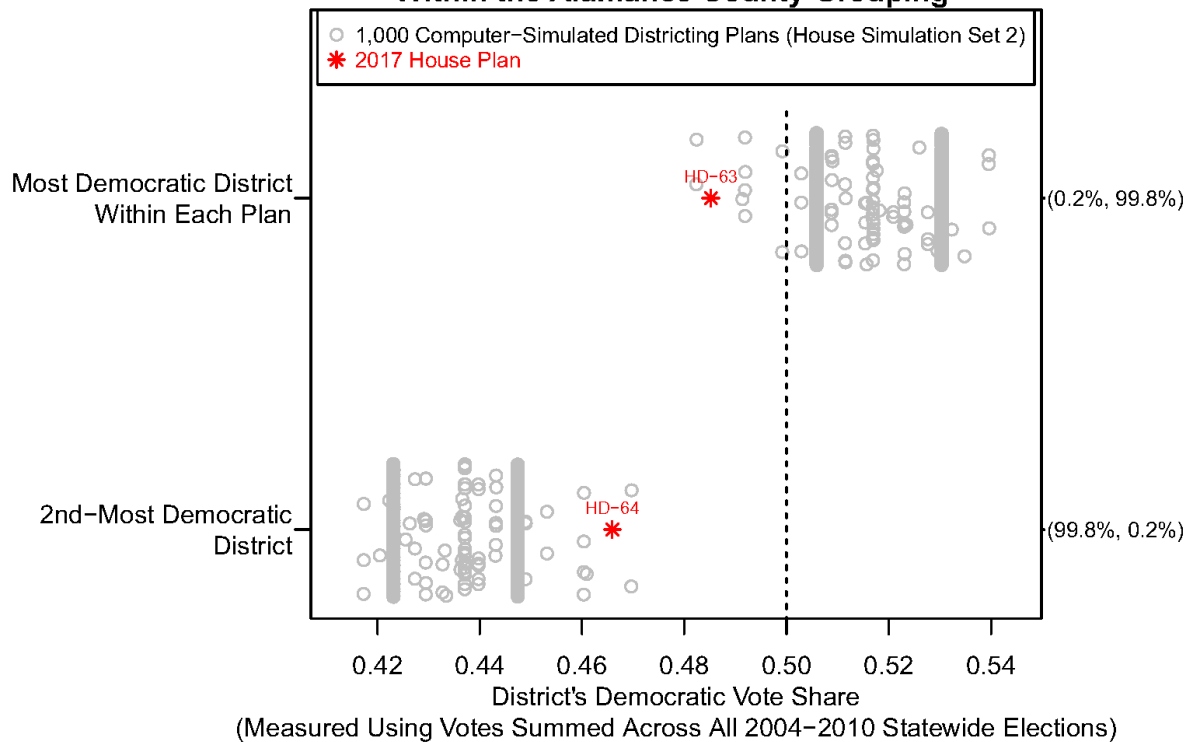
475. Election results demonstrate that the gerrymandering of this grouping has been highly effective. Although Intervenor Defendants presented testimony claiming that “candidate quality” resulted in the Democratic loss in one of the districts in 2018 (Tr. 2245:9-2246:25), in fact, Republicans have won both districts in this grouping in all four elections since the districts were drawn in 2011, across a range of candidates. JSF at Ex. 2; Tr. 2253:15-2256:10.

476. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of the districts in this county groupings.

477. The simulations of Plaintiffs' other experts independently establish that the Alamance county grouping is an extreme partisan gerrymander.

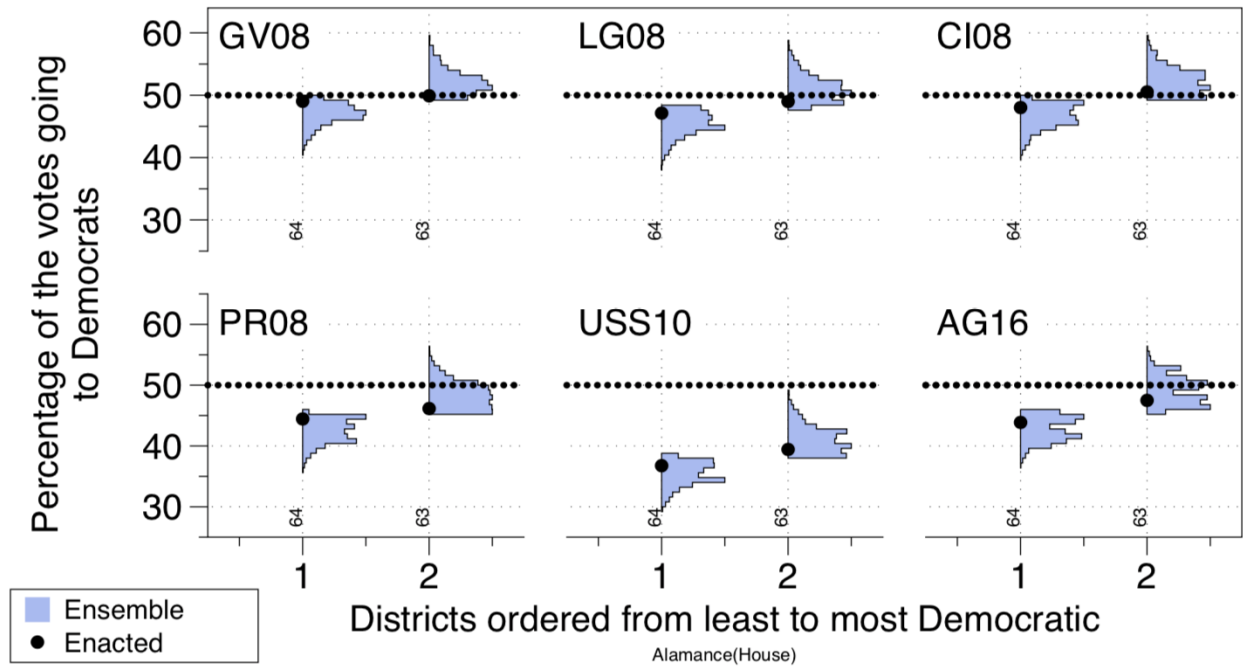
478. In his House Simulation Set 1, Dr. Chen found that House District 63 has a lower Democratic vote than its corresponding district in over 77% of the simulations while House District 64 has a higher Democratic vote share than its corresponding district in over 74.5% of the simulations. Tr. 371:10-372:6; PX55. More importantly, Dr. Chen found that both districts in this county grouping are extreme partisan outliers in House Simulation Set 2 that avoids pairing the incumbents in office at the time this grouping was drawn. Tr. 372:8-373:5; PX76. Dr. Chen thus concluded with over 99% statistical certainty that the districts in this grouping are extreme partisan outliers if the mapmaker was trying to protect incumbents in drawing the districts in the grouping. Tr. 372:23-373:5. Indeed, across the vast majority of 2,000 simulations in House Simulation Sets 1 and 2, this county grouping would produce a Democratic-leaning district in the simulations, whereas it does not in the enacted plan. PX55; PX76. The Court gives weight to Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 76 below:

**Figure 56: House Simulation Set 2:
Democratic Vote Share of the Enacted and Computer-Simulated Districts
Within the Alamance County Grouping**



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479. Plaintiffs' Exhibit 384 shows Dr. Mattingly's analysis of this grouping:



480. This grouping reflects what Dr. Mattingly called “squeezing” or “flattening,” where Democratic districts are cracked across all of the districts. Tr. 1149:19-1151:2. Dr. Mattingly found that this grouping reflected more cracking of Democratic voters than 77% of the comparable districts in the nonpartisan ensemble. Tr. 1151:10-17; PX778 at 30; PX359 at 26. Although Dr. Mattingly did not label this grouping an “outlier” because he used a 90% threshold, he testified that the pro-Republican bias in the grouping still contributed to the extreme pro-Republican bias he found statewide. Tr. 1151:21-1153:2, Tr. 1154:23-1155:1. What’s more, the pro-Republican tilt has a significant effect; as the figure above shows, the gerrymander causes the Democrats to lose one seat in this grouping in many electoral environments. Tr. 1151:3-9. Dr. Mattingly concluded that the Alamance House grouping reflected a clear pro-Republican partisan tilt, Tr. 1151:24-1153:2; PX778 at 30, and the Court gives weight to his conclusion.

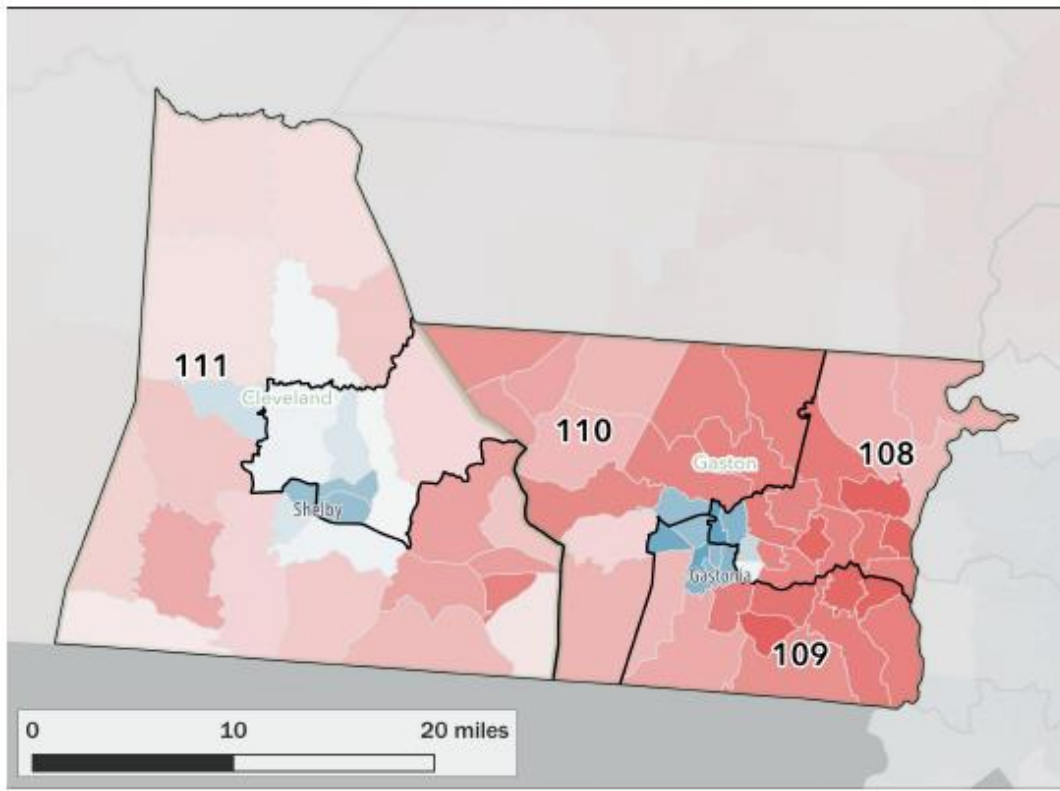
481. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.9998% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.996% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:5; PX522. The Court gives weight to Dr. Pegden's analysis and conclusions.

482. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

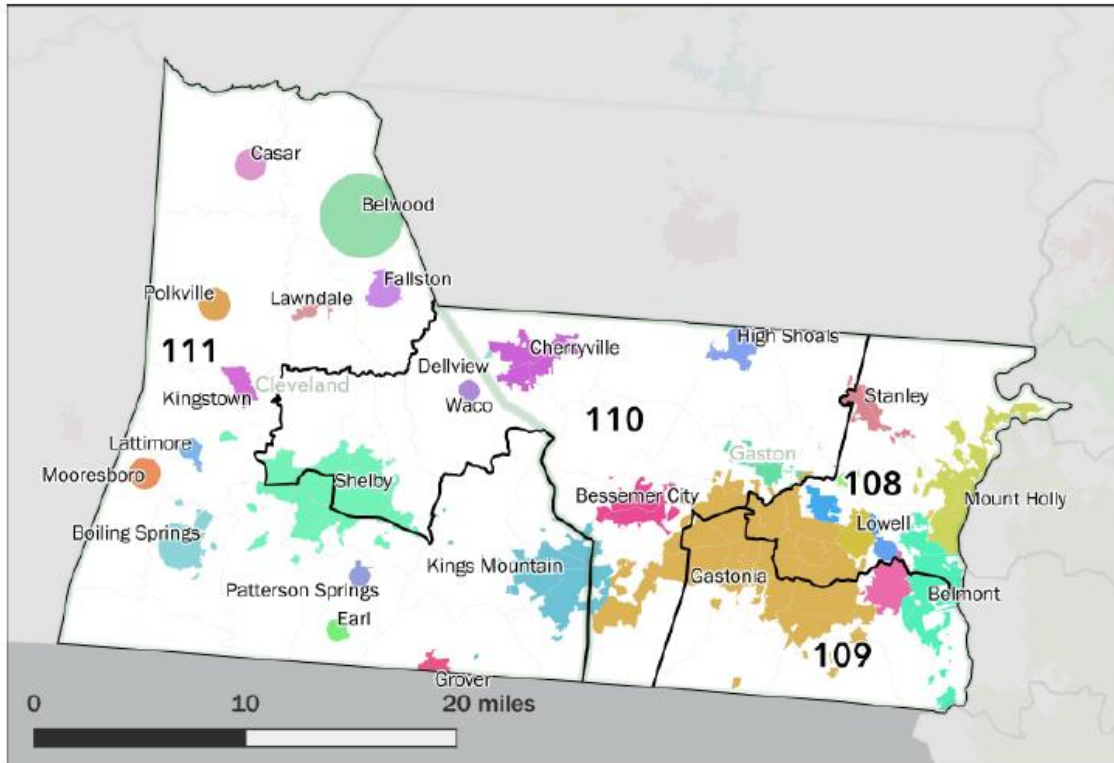
o. Cleveland-Gaston

483. The Cleveland-Gaston House county grouping, drawn in 2011 and left unchanged in 2017, contains House Districts 108, 109, 110, and 111. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

484. Plaintiffs' Exhibit 323 is Dr. Cooper's map for this county grouping:



485. As Dr. Cooper testified, this grouping is a textbook example of cracking. The Democratic voters in Gastonia are cracked across House Districts 108, 109, and 110, and the Democratic voters in Shelby across House Districts 110 and 111. Tr. 932:23-934:10; PX253 at 97-98 (Cooper Report). Plaintiffs' Exhibit 325 illustrates the splitting of these municipalities:

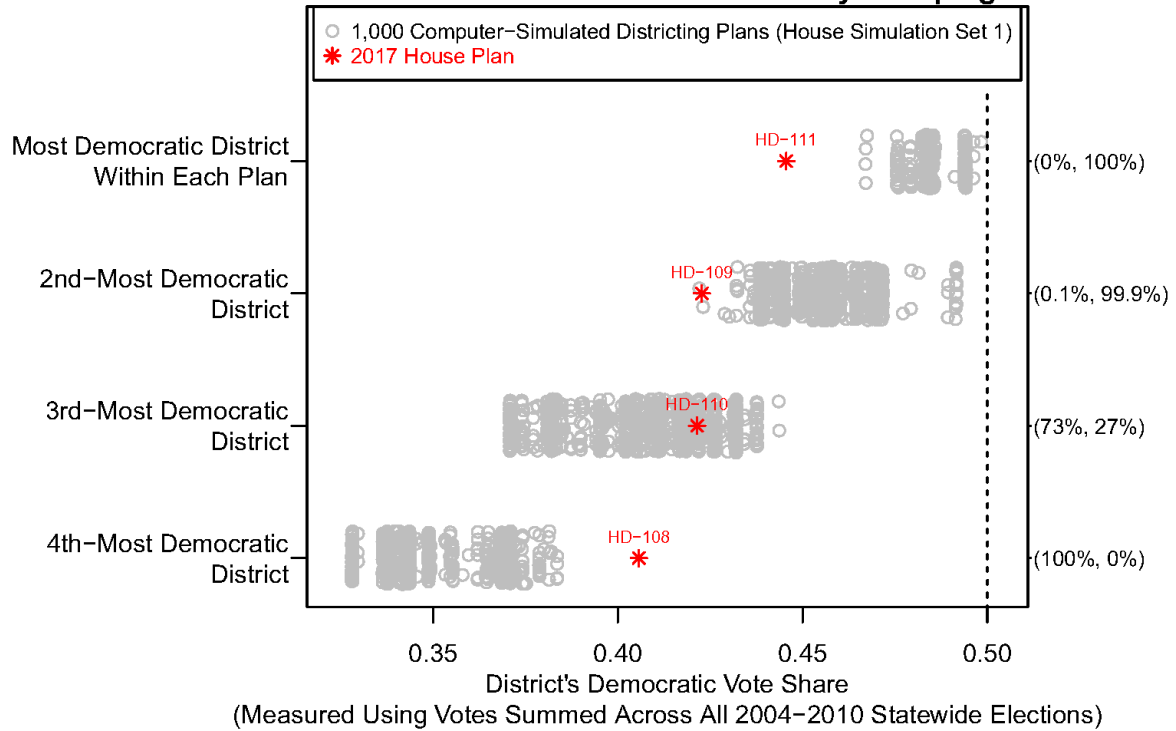


486. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

487. The simulations of Plaintiffs' other experts independently establish that the Cleveland-Gaston county grouping is an extreme partisan gerrymander.

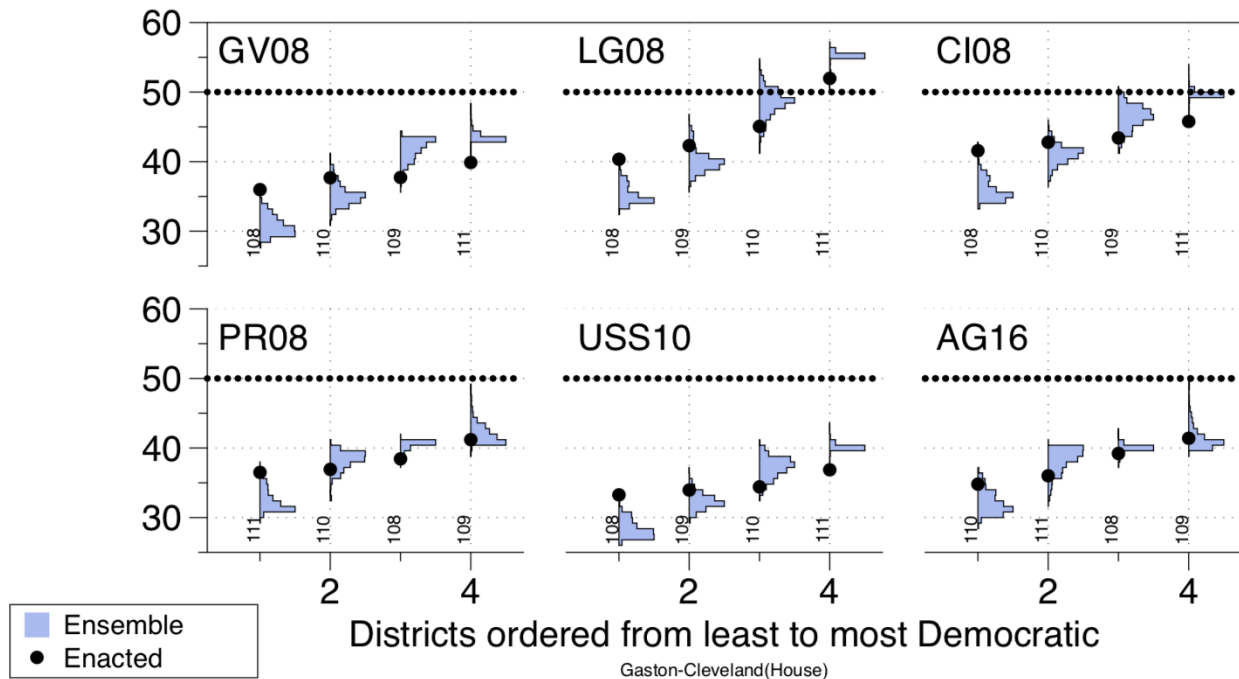
488. Dr. Chen found that this county grouping contains three districts that are extreme partisan outliers. Tr. 370:5-13. House Districts 109 and 111 have lower Democratic vote shares than their corresponding district in all or nearly all of the simulations, while House District 108 has a higher Democratic vote shares than its corresponding district in all of the simulations. PX59. Dr. Chen's findings demonstrate the cracking of Democratic voters across the districts in this county grouping. The Court gives weight to Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 59 below.

**Figure 39: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer-Simulated Districts
Within the Cleveland-Gaston County Grouping**



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489. Plaintiffs' Exhibit 396 shows Dr. Mattingly's analysis of this grouping:



490. This grouping reflects what Dr. Mattingly called “squeezing” or “flattening,” where Democratic voters are cracked across all of the districts. *See* Tr. 1149:19-1150:2; Tr. 1150:22-1151:2. Dr. Mattingly found that this grouping reflected more cracking of Democratic voters than 82.86% of the comparable districts in the nonpartisan ensemble. PX778 at 30; PX359 at 32. Although he did not label this grouping an “outlier” because he used a 90% threshold, he testified that the pro-Republican bias in the Gaston-Cleveland still contributed to the extreme pro-Republican bias he found statewide. *See* Tr. 1151:21-1156:21. Moreover, as the figure above shows, the gerrymander could cause Democrats to lose at least one seat in certain electoral environments. Dr. Mattingly concluded that the Gaston-Cleveland grouping reflects a clear pro-Republican partisan tilt that can contribute to the extreme pro-Republican bias statewide, Tr. 1156:17-24, PX778 at 30, and the Court gives weight to his conclusion.

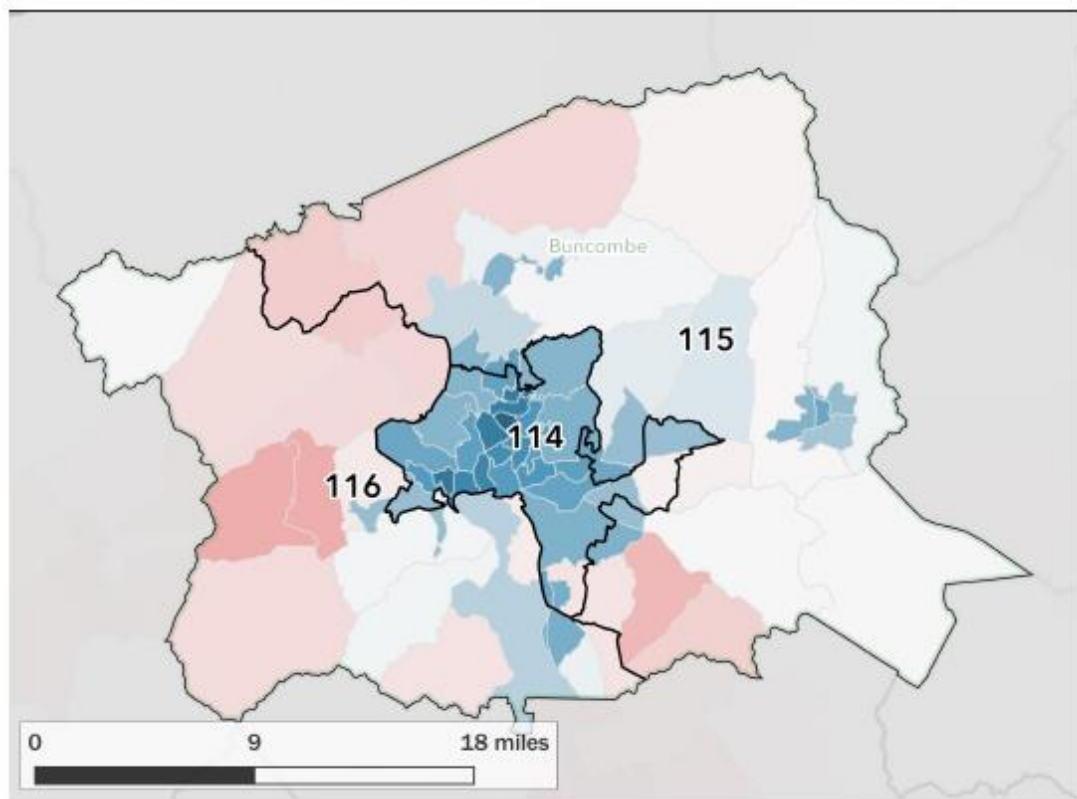
491. Dr. Pegden's conservative methodology resulted in comparison maps that are very similar to the enacted plan for this grouping. Tr. 1351:17-1352:10.

492. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

p. Buncombe

493. The Buncombe House county grouping, drawn in 2011 and left unchanged in 2017, contains House Districts 114, 115, and 116. The Court gives weight to the analysis of Plaintiffs' experts and finds that this county grouping is an extreme partisan gerrymander.

494. Plaintiffs' Exhibit 326 is Dr. Cooper's map for this county grouping:

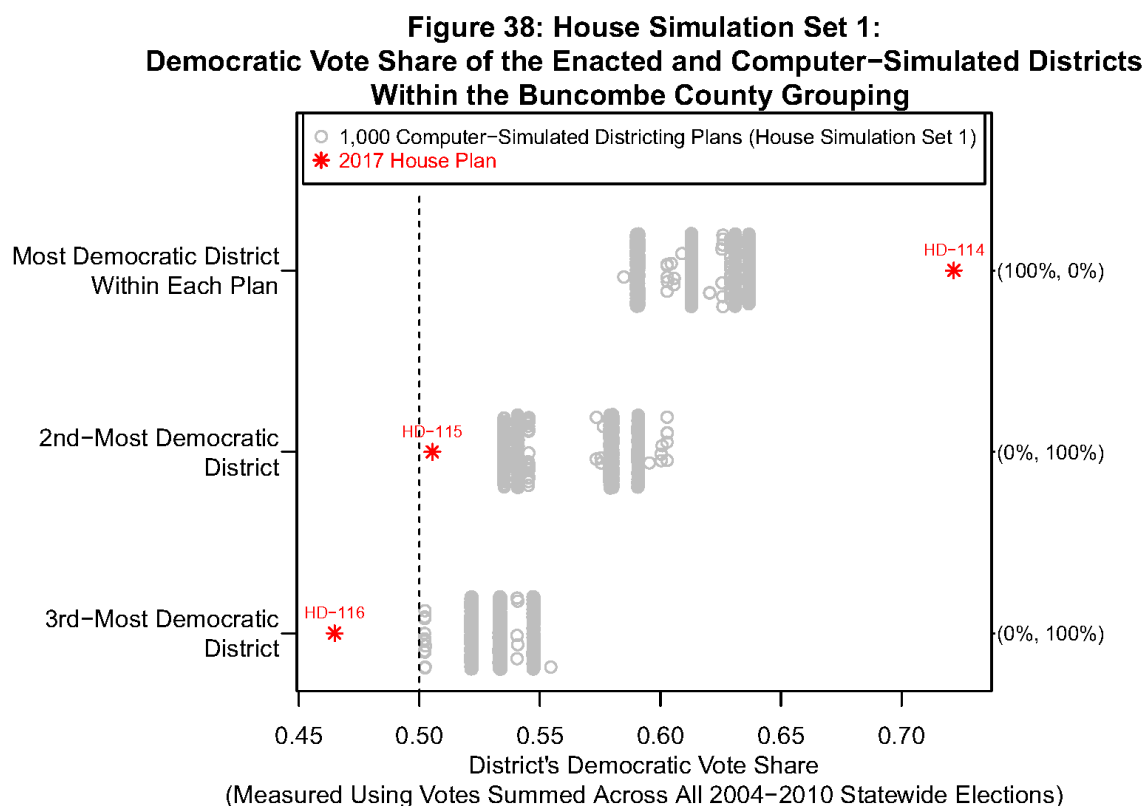


495. The mapmaker packed the most Democratic VTDs in and around Asheville into House District 114, in an effort to make House Districts 115 and 116 as competitive for Republicans as possible. Tr. 934:17-935:1; PX253 at 100 (Cooper Report).

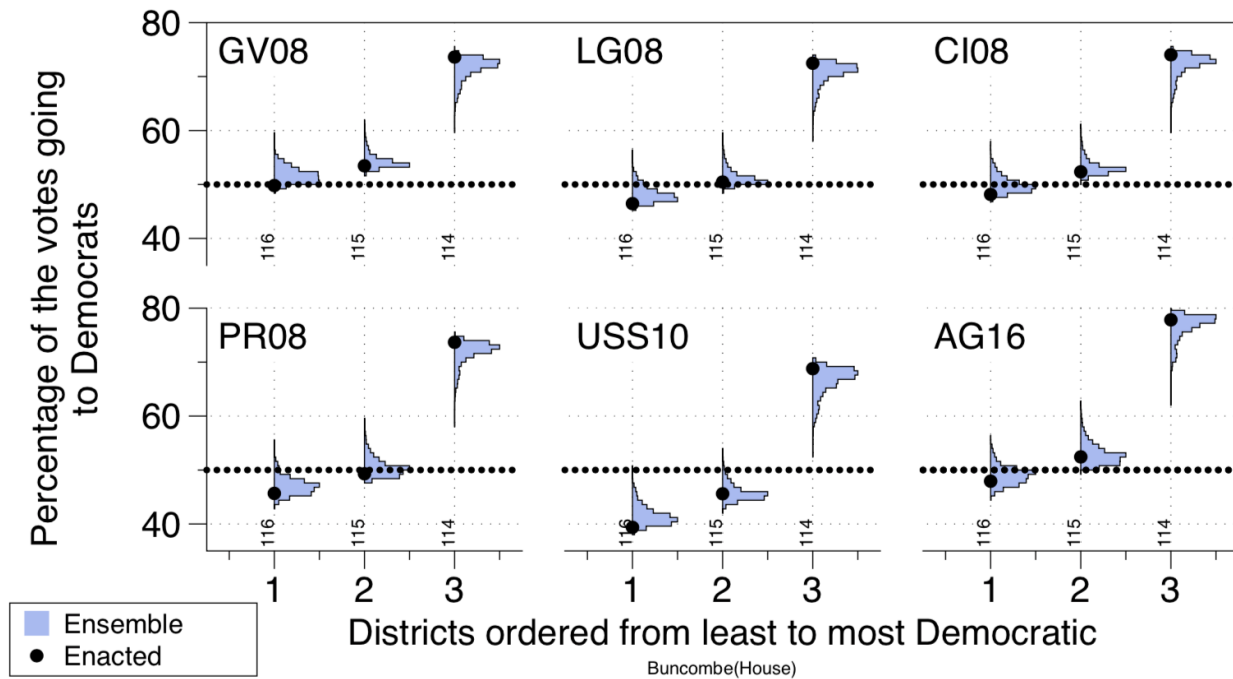
496. The Court does not give weight to any nonpartisan explanation Legislative Defendants offered with respect to the boundaries of these districts.

497. The simulations of Plaintiffs' other experts independently establish that the Buncombe county grouping is an extreme partisan gerrymander.

498. Dr. Chen found that all three districts in this county grouping are extreme partisan outliers. Tr. 369:22-370:1. House District 114 has a higher Democratic vote share than its corresponding district in all the simulations, while House Districts 115 and 116 have lower Democratic vote shares than their corresponding districts in all the simulations. Dr. Chen's findings demonstrate the packing of Democratic voters into House District 114 to make House Districts 115 and 116 as competitive for Republicans as possible. PX58. The Court gives weight to Dr. Chen's analysis and findings for this grouping, which are reflected in Plaintiffs' Exhibit 58:



499. Plaintiffs' Exhibit 386 shows Dr. Mattingly's analysis of this grouping:



500. Dr. Mattingly's analysis shows that Democrats were cracked out of the two least Democratic districts in this grouping and packed into the most Democratic district. PX778 at 30; PX359 at 27; PX386. The two least Democratic districts in the enacted plan had fewer Democratic voters than 85.45% of the comparable districts in the nonpartisan ensemble. PX778 at 30; PX359 at 27; PX386. Although Dr. Mattingly did not label this grouping an "outlier" because he used a 90% threshold, he explained that the pro-Republican bias still contributed to the extreme pro-Republican bias he found statewide. *See* Tr. 1151:21-1156:24. As the figure above shows, the gerrymandering could cause Democrats to lose one or two districts in certain electoral environments. Dr. Mattingly concluded that the Buncombe House grouping reflected a pro-Republican partisan bias, Tr. 1156:17-21, and the Court gives weight to his conclusion.

501. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version

of this grouping is more favorable to Republicans than 99.9997% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.999% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:4-5; PX525. The Court gives weight to Dr. Pegden's analysis and conclusions.

502. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

D. The 2017 Plans Protected the Republican Majorities in the 2018 Elections

503. In the 2018 House elections, Republican candidates won a minority—48.8%—of the two-party statewide vote, but still won 65 of 120 seats (54%). JSF ¶¶ 68-69. Democrats thus broke the Republican supermajority, but not the majority. *Id.*; Tr. 163:21-164:19 (Rep. Meyer).

504. In the 2018 Senate elections, Republican candidates won a minority—49.5%—of the two-party statewide vote, but still won 29 of 50 seats (58%). JSF ¶¶ 142-43; Tr. 117:5-19 (Sen. Blue). Democrats broke the Republican supermajority by a single seat, after narrowly prevailing in Senate Districts 9 and 27 by margins of 0.1% and 0.5%. *Id.*

505. Democrats were unable to win majorities in either chamber despite strong efforts to fuel voter enthusiasm, recruit candidates, and fundraise, and despite favorable political conditions nationally and in North Carolina. Tr. 76:5-11 (Phillips); Tr. 118:19-21, 124:9-13 (Sen. Blue); Tr. 163:21-164:5 (Rep. Meyer); Tr. 1269:4-14, 1283:15-1284:1 (Goodwin). Democrats raised and spent more money than Republicans in the 2018 cycle, running the most well-funded campaign operation in the history of North Carolina. Tr.

117:20-117:25, 124:20-24 (Sen. Blue); Tr. 163:21-164:5, 171:3-6 (Rep. Meyer); Tr. 1284:11-17 (Goodwin).

506. Consistent with the findings of Drs. Chen and Mattingly, Senator Blue testified that, under the current Senate plan, Democrats would have needed to win over 55% of the statewide vote to win a majority of seats in the Senate. Tr. 119:19-120:4.

E. The 2017 Plans Harm the Organizational and Individual Plaintiffs

1. The 2017 Plans Harm the North Carolina Democratic Party

507. Elections, voting, and redistricting are central to the mission and purposes of Plaintiff the North Carolina Democratic Party (the “NCDP”). The NCDP is “an association of like-minded individuals”—“predominantly registered Democrats”—“who support and also help develop policies that they agree on.” Tr. 1264:1-6 (Goodwin). As the NCDP’s chair, Mr. Goodwin testified, the “basic purpose” of the NCDP is to “encourage like-minded folks to come together, to help recruit candidates and to support candidates who favor those policies and favor the development of policies that Democrats support.” Tr. 1265:2-5. The NCDP “persuade[s] voters to support the nominees of the Democratic Party during the general election.” Tr. 1265:7-9. The Court gives weight to Mr. Goodwin’s testimony regarding the NCDP’s mission and purposes.

508. The Court gives further weight to Mr. Goodwin’s testimony that district lines significantly affect the NCDP’s ability to fulfill its mission and purposes. To achieve its purposes, the NCDP must “have good candidates that we recruit and that we support”; it needs “enthusiasm for the party and its candidates and its message and mission”; and it needs “the appropriate financial resources to get a message [out]” and to fund all “the things that are involved with elections.” Tr. 1264:15-21. All of those things are affected by district boundaries. Tr. 1265:22-24. For that reason, to “accomplish [NCDP’s] mission,” it is

“vital” that the NCDP have “fair, nondiscriminatory district lines for the candidates that run in districts across the State.” *Id.*

509. The current district lines have harmed the NCDP and will continue to do so. The lines drawn in 2011 “had a tremendously negative impact on the ability of the North Carolina Democratic Party to achieve the purposes for which it exists.” Tr. 1266:9-16. Under the 2011 districts, “it was more difficult to recruit candidates, it was more difficult to raise the funds necessar[ly, [and] enthusiasm was down tremendously because of . . . unfair []districts.” *Id.*

510. Upon enactment of the 2017 Plans, the NCDP “knew it was still going to be a difficult, difficult race because of . . . [the] district lines.” Tr. 1267:11-13. Because of the 2017 Plans, the NCDP “had to expend extraordinary amounts of time and resources and the like in a way that, in a set of fair maps across the State, [it] wouldn’t have had to do.” Tr. 1270:10-14; *see* Tr. 1284:18-22. The NCDP had to spend more money than it would have under nonpartisan maps, both statewide and in individual districts. For example, in House District 103 in Mecklenburg County, “to make that election competitive,” Democrats had to recruit the daughter of former Governor Jim Hunt and “her election had to be financed at a level that no previous House election had ever been financed in the history of state elections,” with Democrats spending over a million dollars in support of Ms. Hunt. Tr. 189:17-190:23 (Rep. Meyer). Even then, Ms. Hunt won the election by fewer than 100 votes. *Id.* The simulations of Drs. Chen and Mattingly each establish that, under nonpartisan maps, House District 103 in Mecklenburg County would be more favorable for Democrats than it is under the current House plan, FOF § C.2.*i.*, meaning that Democrats would not need to devote as many resources to this district and would be able to spend those resources in other districts across the State instead. The Court finds that the NCDP has established that the current districts have injured the NCDP as an organization by

requiring it to spend and divert more financial resources than it would have under nonpartisan maps, both statewide and in individual districts

511. The Court finds that the current districts have injured the NCDP in other ways. As Mr. Goodwin testified, “notwithstanding the tremendous[,] palpable level of enthusiasm” for Democratic candidates nationwide and in North Carolina in 2018, “notwithstanding raising the most funds ever raised for a mid-term election for the [D]emocratic [P]arty,” and “notwithstanding the fact that . . . there was a [D]emocratic [G]overnor and [a] unique partnership” with the Governor, the NCDP’s “efforts and enthusiasm and . . . money did not translate into seats.” Tr. 1268:16-1269:3. “[D]espite everyone going [the NCDP’s] way, the lines were drawn in such a way that [the NCDP] could not breach that seawall that protected the [R]epublican majority.” Tr. 1268:13-15.

512. The Court finds that the current districts will also continue to injure the NCDP in the 2020 elections absent judicial relief. The NCDP will continue to need to spend and divert financial resources as a result of the gerrymanders, and it will continue to be extremely unlikely that Democratic candidates will be able to win majorities in either chamber of the General Assembly under the current districts. Moreover, although the NCDP was able to recruit a candidate in every district the favorable national environment that existed for Democrats in 2018 recruitment is more difficult under partisan plans. As Mr. Goodwin explained, unfair districts make it “more difficult to recruit candidates.” Tr. 1266:12-13.

513. In addition to harming the NCDP itself, the enacted plans also have harmed the NCDP’s members, and continue to do so. The NCDP’s members include every registered Democratic voter in North Carolina. Tr. 1269:8-17. There are “well over two million registered Democrats in North Carolina.” Tr. 1269:10-11. “There are registered Democrats in every precinct in the State, every House District, [and] every Senate District.”

Tr. 1269:15-20. The NCDP thus has members in every House and Senate district at issue in this case, and those members are harmed by the enacted plans. The gerrymanders dilute the voting power of the NCDP's members by intentionally making it more difficult for some Democratic voters to elect candidates of their choice and making it extremely difficult for Democratic voters statewide to obtain Democratic majorities in the General Assembly. *See* FOF § E.3.

514. The NCDP's "support scores" do not undermine the harms that the 2017 Plans cause the NCDP and its members. As Democratic Representative Graig Meyer testified, "support scores" are purchased scores that are assigned to all registered voters based on "a combination of consumer data as well as geographic and other factors that give you a sense of the likelihood someone is going to support a Democratic candidate." Tr. 164:22-165:12. These scores are made available by the NCDP to Democratic candidates' campaigns, Tr. 1270:24-1271:19 (Goodwin), which then, in their discretion, may use them "to determine which voters [they] should target for paid communications, such as digital or mail, or for individual communications, such as canvassing and knocking on voters' doors," Tr. 164:23-165:2 (Rep. Meyer). Even then, Democratic campaigns "almost always use [support scores] in conjunction with other measures, such as a turnout score, which tells you how likely someone is to actually vote." Tr. 165:13-15.

515. Several of Legislative Defendants' Exhibits purportedly show—based on support scores that are aggregated on a district-by-district basis—that Democratic candidates should be competitive, and in fact could win, in a comfortable majority of House and Senate districts under the 2017 Plans. *See* LDTX 145-147, 278; *see* Tr. 2072:21-2074:22 (Dr. Hood).

516. The Court gives little weight to Defendants' arguments related to aggregated district-level support scores. Neither the NCDP nor any Democratic campaign or candidate

“ever use[s] . . . aggregated support scores for any purpose,” Tr. 1271:20-24 (Goodwin), and they do not use them “to determine the electability of a district,” Tr. 194:1-2 (Rep. Meyer). Support scores are “not reliable in the aggregate,” Tr. 167:5-6 (Rep. Meyer), and “[a]ggregated support scores wouldn’t be all that helpful because individual support scores can be misleading,” Tr. 165:24-166:1 (Rep. Meyer). “They’re imprecise measures, and then if you aggregate imprecise measures like that they tend to get less and less precise in the aggregate.” Tr. 166:7-9 (Rep. Meyer). Moreover, the aggregated support scores include all *registered* voters in a district, not likely or actual voters, which tends to overstate Democratic support. Tr. 2091:6-2092:14 (Dr. Hood). Rather than use aggregated support scores, the NCDP uses other metrics to assess a district’s competitiveness, such as the “Democratic Performance Index” (DPI) or the results of specific recent statewide elections. Tr. 1272:3-11 (Goodwin); Tr. 177:3-11 (Rep. Meyer).

517. Additionally, Legislative Defendants’ expert Dr. Hood, who presented an analysis based on the aggregated support scores, conceded that he is not aware of anyone who has ever “used those scores to make predictions” of how a district will perform in an election. Tr. 2092:3-24. Nor did Dr. Hood present any analysis to substantiate any claim that aggregated support scores are accurate predictors of a district’s competitiveness, and Representative Meyer credibly explained that they are not. Representative Meyer gave several examples where the district-level aggregated support scores differ considerably from actual election results, demonstrating why the NCDP and Democratic campaigns “don’t use support scores to determine electability of a district.” Tr. 194:1-2; *see* Tr. 193:17-196:12.

518. Defendants presented no persuasive evidence that Democrats have a realistic possibility of winning majorities in the General Assembly under the metrics that are used

to assess a district's likely performance, such as the DPI and prior statewide elections results.

519. The total number of registered Democrats in particular districts likewise does not undermine the harm the enacted plans cause the NCDP and its members. Legislative Defendants' Exhibit 280 purportedly indicates that Democrats and unaffiliated voters, when combined together, hold a registration advantage over Republicans in all Senate districts and all House districts but one. *See* Tr. 1279:25-1281:15 (Goodwin). The Court gives little weight to Legislative Defendants' arguments based on statewide party registration numbers.

520. As Mr. Goodwin explained, Legislative Defendants' Exhibit 280 presents "an extreme hypothetical assuming that everyone who's registered for his or her respective party actually vote and vote only based on their party registration, and assuming that unaffiliateds all vote for the Democratic candidate. That is not going to happen." Tr. 1281:21:25. The notion that Democrats could win 169 of 170 total seats in the General Assembly is not credible.

521. As Dr. Chen further explained, party registration has been "studied in the academic literature[,] and it's well known that in a lot of different Southern states, including in some parts of North Carolina, party registration is not necessarily a reliable indicator of one's actual partisan voting habits." Tr. 277:22-278:1. For example, "there are conservative Democrats, or what we call blue dog democrats sometimes, who in the past used to vote Democratic and have, for the last couple of decades, switched over to voting Republican, but their party registration may still remain as Democrats." Tr. 278:3-10.

522. The Court finds that party registration is not a reliable indicator of the competitiveness of any individual district or of the enacted plans as a whole.

2. The 2017 Plans Harm Common Cause

523. Redistricting is central to the mission and purposes of Plaintiff Common Cause. Bob Phillips—Executive Director of Common Cause’s local chapter, Common Cause North Carolina—testified that Common Cause advocates for “[s]trengthening democracy” and “for more open, honest and accountable government.” Tr. 40:23-41:1, 41:10-16, 42:13-17. And “there is nothing . . . that’s really more significant, consequential in a legislative session than redistricting.” Tr. 42:23-25. Redistricting “really locks in . . . everything” “for the next decade,” including “who gets elected and what the power share will be” and “[u]ltimately what kind of laws and policies are going to be emphasized and then [] will not be, what will be ignored.” Tr. 42:25-43:4. The Court gives weight to Mr. Phillips’s testimony.

524. Common Cause has long advocated to end partisan gerrymandering in North Carolina. Tr. 43:10-52:20. The 2017 Plans harm Common Cause as an organization by substantially impeding this longtime goal because, as Mr. Phillips testified, majorities in the General Assembly, as the beneficiaries of gerrymandered plans, are unlikely to adopt meaningful redistricting reform. Tr. 52:1-20.

525. The enacted plans also harm Common Cause by impeding its mission and objectives in other ways. As Mr. Phillips explained, “[o]ne of the central missions to Common Cause is to help citizens understand that they do have an obligation and that they can hold their elects accountable. How do you do that when so many—90 percent of our legislative seats are preordained . . . ?” Tr. 48:8-12. When “we already know [on] the filing date, basically, who is going to win,” it is “hard to get citizens, voters[,] to participate, to think that their vote really matters.” Tr. 48:25-49:3.

526. In addition to Common Cause itself, the enacted plans also harm Common Cause’s members. Common Cause has 25,000 members across North Carolina, including in the districts at issue here. *See* Tr. 41:17-42:12; PX644 (listing Common Cause members by

district). The enacted plans harm Common Cause's members in the same ways they harm the NCDP's members and the individual voter-plaintiffs in this case.

3. The 2017 Plans Harm the Individual Plaintiffs

527. The Individual Plaintiffs are thirty-seven individual North Carolina voters who prefer Democratic candidates and have consistently voted for Democratic candidates running for the North Carolina General Assembly. *See* PX678-714.

528. The evidence demonstrates that the 2017 Plans disadvantage the Individual Plaintiffs and other Democratic voters across North Carolina. Two of the Individual Plaintiffs testified live at trial, and the remaining 35 testified through affidavits. PX678-714.¹²

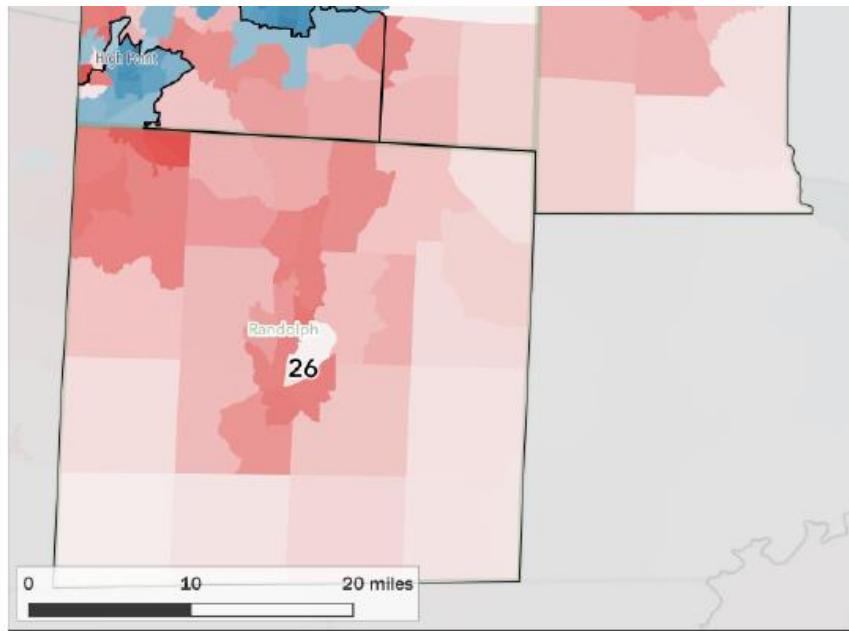
529. Plaintiff Derrick Miller testified live at trial. Dr. Miller, a professor of German at the University of North Carolina Wilmington, resides in Senate District 8 in the "Wilmington Notch." Tr. 202:11-14. Dr. Miller testified that by splitting off this small portion of Wilmington where he lives, the General Assembly has "made it impossible for [him] and [his] Democratic neighbors to elect a Democrat, a candidate of our choice, in Senate District 8." Tr. 205:9-19. In 2018, the Republican candidate won Senate District 8 with around 60% of the vote. Tr. 204:3-4. As a fifth-generation North Carolinian, Dr. Miller cares deeply about issues such as public education and preserving North Carolina's natural resources, and he believes that "Democrats much more reliably and [a] Democratic majority much more reliably would protect those resources, the educational resources and the natural resources of our state." Tr. 206:8-12.

530. Dr. Miller also lives in House District 18, Tr. 204:5-7, where the General Assembly packed Democrats in Wilmington and Leland into a single, reliably Democratic

¹² *See, however*, COL § I.C., wherein the Court concludes that nine Individual Plaintiffs lack sufficient standing.

district, PX302. Dr. Miller testified that while such packing does assure him a Democratic representative in House District 18, “it does so at the expense of multiple safe districts for Republicans along the . . . neighboring districts,” Tr. 205:9-19, making it more likely that the Republicans would gain control of the General Assembly.

531. The other Individual Plaintiff who testified at trial, Joshua Brown, is a locksmith apprentice from High Point who resides in Senate District 26. Tr. 830:7-12. As shown in Plaintiffs’ Exhibit 281, the General Assembly split off the most heavily Democratic area of Guilford County where Mr. Brown lives and appended it to conservative Randolph County:



532. Mr. Brown testified that by drawing his Senate District in this manner, the General Assembly “clearly dilute[d] the ability of Democrats to even attempt to run a fair race.” Tr. 833:19-21. Like Dr. Miller, Mr. Brown cares about a number of issues before the General Assembly, including a living wage, the environment, and Medicaid expansion. Tr. 834:5-6. Mr. Brown’s mother was recently hospitalized, and he believes that she would not be facing certain health issues if North Carolina had approved the Medicaid expansion. Tr.

834:15-835:3. He believes that the Republican Party in the General Assembly today has “opposing” stances on these issues that he cares about. Tr. 835:4-7.

533. Mr. Brown also lives in House District 60, where Democrats such as Mr. Brown are packed to create an overwhelmingly Democratic district. *See* Tr. 833:25-834:2; PX310. Mr. Brown testified that by packing Democrats in this manner, the General Assembly “reduced the odds of surrounding districts electing a Democrat,” Tr. 833:25-834:2, making it more difficult for Democrats to gain control of the General Assembly.

534. The affidavits submitted by the remaining thirty-five Individual Plaintiffs establish that each of these Individual Plaintiffs (i) has voted for the Democratic candidate running for the North Carolina General Assembly in each year that such an election was held since at least 2011, (ii) has a preference for electing Democratic legislators and a majority-Democratic General Assembly, and (iii) believes that if the Democratic Party made up a majority of the members in the General Assembly, the policies proposed and enacted would more closely represent the Plaintiff’s personal and political views. PX678-713.

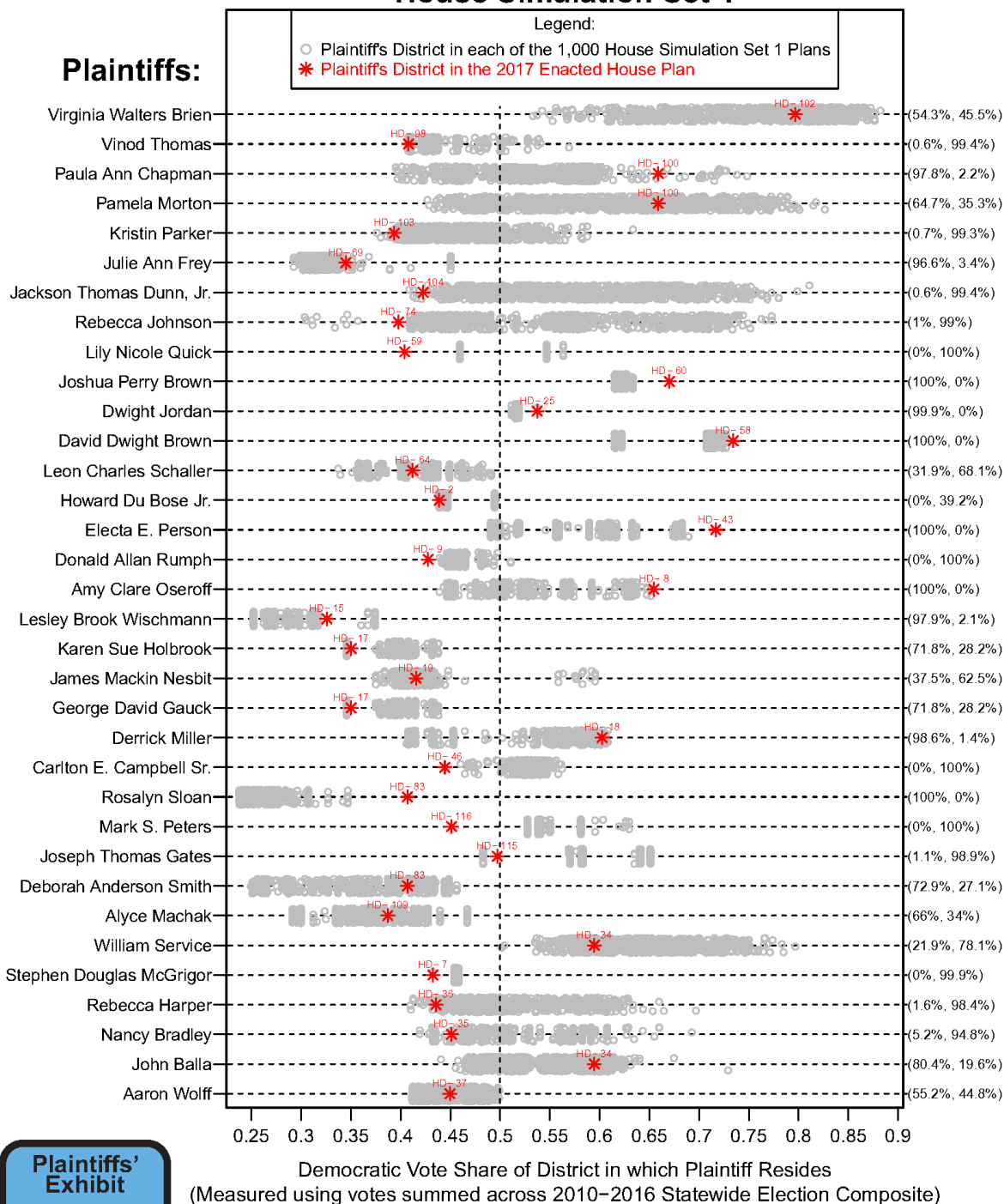
535. Plaintiffs’ expert Dr. Chen quantified the effects of the gerrymander on the partisan composition of the districts in which each Individual Plaintiffs resides. For each of his 4,000 simulations (2,000 in the House and 2,000 in the Senate), Dr. Chen determined the House or Senate district in which each Individual Plaintiff would live based on that Plaintiff’s residential address. Tr. 387:14-388:6; PX1 at 167-68 (Chen Report). Dr. Chen then compared the Democratic vote share of the districts in which a particular Plaintiff would live under his simulations to the Democratic vote share of the Plaintiff’s districts under the enacted plans. *Id.*

536. Plaintiffs’ Exhibit 238 (reproduced below) shows Dr. Chen’s results for his House Simulation Set 1. In each row, the red star represents the Democratic vote share in the Individual Plaintiff’s House district under the enacted plan using the ten 2010-2016

statewide elections, while the gray circles represent the Democratic vote share of that Plaintiff's district under each of the 1,000 simulated plans in House Simulation Set 1. Tr. 388:14-389:12. For instance, the figure shows that Rebecca Johnson's House district in the enacted plan has a roughly 40% Democratic vote share using the 2010-2016 statewide elections, but Ms. Johnson would live in a House district with a higher Democratic vote share in 99% of the simulations, with most of the simulations putting her in a district with an over 50% Democratic vote share. Tr. 390:6-391:20.

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**Figure 54:
House Simulation Set 1**



537. Dr. Chen found that the following Plaintiffs live in House districts that are extreme partisan outliers compared to their districts in House Simulation Set 1: Vinod

Thomas, Paula Ann Chapman, Kristin Parker, Julie Ann Frey, Jackson Thomas Dunn Jr., Rebecca Johnson, Lily Nicole Quick, Joshua Perry Brown, Dwight Jordan, David Dwight Brown, Electa E. Person, Donald Allan Rumph, Amy Claire Oseroff, Lesley Brook Wischmann, Derrick Miller, Carlton E. Campbell Sr., Rosalyn Sloan, Mark S. Peters, Joseph Thomas Gates, Stephen Douglas McGrigor, and Rebecca Harper. Tr. 393:9-17. Dr. Chen further found that Plaintiff Leon Schaller lives in a district that is a 68.1% outlier in House Simulation Set 1, but a 100% outlier in House Simulation Set 2. Tr. 394:2-10; *see* PX239.

538. Plaintiffs' Exhibit 117 shows the same analysis for the Senate, comparing the Democratic vote share in certain Individual Plaintiffs' districts under the enacted Senate plan to their districts under Dr. Chen's Senate Simulation Set 1.

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**Figure 97:
Senate Simulation Set 1**



539. Dr. Chen found that the following Plaintiffs live in Senate districts that are outliers or extreme partisan outliers compared to their districts in his Senate simulations: Vinod Thomas, Paula Anna Chapman, Pamela Morton, Kristin Parker, Jackson Tomas

Dunn, Jr., Rebecca Johnson, Dwight Jordan, David Dwight Brown, Karen Sue Holbrook, James Mackin Nesbit, George David Gauck, Derrick Miller, Mark S. Peters, Joseph Thomas Gates, William Service, Stephen Douglas McGrigor, Rebecca Harper, Nancy Bradley, Aaron Wolff, and Kathleen Barnes. Tr. 395:7-22. Dr. Chen found that the same Plaintiffs lived in districts that are outliers under his Senate Simulation Set 2. Tr. 396:1-7; PX118.

540. Plaintiffs' expert Dr. Cooper further demonstrated how the 2017 Plans, as a whole, disadvantage the Individual Plaintiffs. As Dr. Cooper explained, under the 2017 Plans, Democrats cannot translate their votes into seats as efficiently as Republicans. Tr. 870:11-14.

541. One of Legislative Defendants' experts, Dr. Brunell, also testified about the ways in which partisan gerrymandering harms individual voters. Dr. Brunell testified that "the responsiveness of a legislator to the voters in the voter's district is critical to democratic representation." Tr. 23531:3-6. He testified that a change in the party representing a given district generates "a huge difference" in the policies for which the representative will vote. Tr. 2354:20-23. He also testified that partisan gerrymandering is a problem in modern redistricting because it "can distort how voter preferences get translated into public policy." Tr. 2355:7-9.

F. Defendants Offered No Meaningful Defense of the 2017 Plans

1. No Witness Denied That the Plans Are Intentional and Effective Partisan Gerrymanders

542. Defendants did not persuasively rebut Plaintiffs' extensive direct evidence that the 2017 Plans were drawn with the predominant purpose of maximizing Republican advantage.

543. Defendants presented unpersuasive evidence to rebut evidence that the Hofeller files show that Dr. Hofeller primarily focused on maximizing partisan advantage. Defendants did not identify any file showing that Dr. Hofeller was motivated by anything other than partisanship in drawing the enacted House and Senate plans. Defendants identified no file, for example, showing that Dr. Hofeller at any point during the 2011 and 2017 redistricting processes considered “communities of interest,” *cf.* Tr. 1059:3-1060:5, or sought to preserve the “cores” of existing districts, *cf.* Tr. 1212:20-24, or drew or altered any district to avoid splitting a municipality or VTD or to make the district more compact, or constructed any district as a “product of the nuance of legislative negotiation,” *cf.* Tr. 1204:2-1206:4.

544. Defendants’ experts did not persuasively contest that the plans sought to ensure Republican control of the legislature. Defendants’ experts offered no methodology to attempt to evaluate whether the enacted plans were (or were not) extreme partisan gerrymanders. None offered an opinion on that question. Rather, as explained below, Defendants’ experts offered theories of why the analyses by Plaintiffs’ experts was somehow incomplete or unreliable. The Court gives little weight to these criticisms.

2. Defendants’ Criticisms of Plaintiffs’ Experts Were Not Persuasive

a. Dr. Thornton

545. Legislative Defendants offered expert testimony from Dr. Janet Thornton to criticize the analyses and conclusions of Plaintiffs’ simulation experts, Drs. Chen, Mattingly, and Pegden. Tr. 1618:10-13; LDTX 286 at 4 (Thornton report). Dr. Thornton offered three main critiques of Plaintiffs’ experts: (a) Dr. Pegden’s and Dr. Mattingly’s conclusions supposedly were skewed by the particular statewide elections they used to measure the partisan lean of their simulated plans versus the enacted plans, LDTX 286 at

6-10; (b) their simulations purportedly deviated in various ways from the 2017 Adopted Criteria, *id.* at 10-19; and (c) their simulations supposedly are not statistically significantly different from the enacted plans in terms of the number of Democratic-leaning districts, *id.* at 20-29. *See* Tr. 1622:5-1623:11. But Dr. Thornton's testimony was not persuasive, her analysis is unreliable, and her opinions are given little weight.

546. Dr. Thornton has a masters and a doctorate in economics from Florida State University. Tr. 1571:6-11. She has a bachelor's degree in economic and political science from the University of Central Florida. *Id.*

547. Dr. Thornton is currently a managing director at Berkeley Research Group and has worked as an economist and applied statistician for 35 years. Tr. 1571:15-1572:3. Dr. Thornton has prepared statistical analysis in voting cases, limited, however, to analysis of statistical differences in voter participation rates by race and minority status. Tr. 1574:3-21.

548. Dr. Thornton has taught statistics and quantitative methods for the business school at Florida State University. Tr. 1573:12-15; LDTX 286 at 39.

549. Dr. Thornton is a member of the American Economic Association and the National Association of Forensic Economists. She has published in peer-reviewed publications including the Journal of Forensic Economics and the Journal of Legal Economics. Tr. 1573:16-1574:2.

550. Dr. Thornton was accepted by the Court as an expert in the fields of economic and applied statistical analysis. Tr. 1578:7-17. She has been qualified as an expert in other cases regarding these subjects. Tr. 1576:12-1577:13. Dr. Thornton has never been excluded from testifying. *Id.*

551. Dr. Thornton has no academic experience involving gerrymandering and instead specializes in expert witness testimony and other consulting-type work in various

areas, including employment, insurance, and credit decisions. Tr. 1619:19-1620:20, 1621:2-17; LDTX 286 at App’x A (Thornton CV). Dr. Thornton has no degree in mathematics, no degree in statistics, and only an undergraduate degree in political science. Tr. 1620:21-1621:1. She purported to critique the work of Plaintiffs’ simulations experts, each of whom is a full-time academic with years of academic experience in using computer simulations to evaluate partisan gerrymandering. Tr. 1618:14-1619:18.

552. In her report and testimony in this case, Dr. Thornton offered no methodology for determining whether a particular redistricting plan is or is not a partisan gerrymander, or whether a particular plan is or is not the product of extreme partisan considerations. Tr. 1621:18-25. Nor did Dr. Thornton offer any opinion as to whether the enacted plans were drawn as partisan gerrymanders to benefit Republicans. When asked whether she was offering such an opinion, Dr. Thornton responded, “I have no way of knowing.” Tr. 1622:1-4.

(i) Criticisms Concerning Choice of Statewide Elections

553. Dr. Thornton’s criticisms of the specific statewide elections used by Drs. Pegden and Mattingly suffered from critical flaws.

554. Dr. Thornton stated in her report that Dr. Pegden “considered” only “two elections” in his analysis. LDTX 286 at 10; *see id.* 8-11; Tr. 1626:9-16. However, Dr. Pegden used six prior election results—two discussed in the body of his report, and four more summarized in an appendix. PX508 at 11, 34-37 (Pegden Report). Dr. Thornton corrected this mistake only after Dr. Pegden’s rebuttal report pointed it out and she was confronted with it at deposition. Tr. 1627:22-1628:4. At trial, Dr. Thornton presented a revised version of a table from her report, in which she (without acknowledging the change during her direct testimony) had added asterisks showing that Dr. Pegden in fact used six prior elections. Tr. 1626:17-1627:3; *compare* LDTX 286 at 7 (tbl. 1) *with* LDTX 302 (Thornton

Demonstrative 1). Dr. Thornton’s apparent oversight of the number of elections used in Dr. Pegden’s analysis led to her to conclude that “Dr. Pegden’s choice of elections influence[d] his conclusions.” Tr. 1604:21-1605:7; *see* Tr. 1591:20-1592:10 (presenting LDTX 91, a chart purported to show the average Democratic vote share of the elections “included by each expert,” but using just the 2016 Attorney General and 2008 Commissioner of Insurance for Dr. Pegden).

555. On cross examination, Dr. Thornton did not dispute that, when Dr. Pegden tested his results using the four additional elections summarized in his appendix, he found that it did not change his results. Tr. 1628:17-1629:4. Dr. Thornton did not test Dr. Pegden’s results using other prior elections. Tr. 1629:7-25.

556. Dr. Thornton criticized Dr. Mattingly for using a different and broader set of statewide elections than the 10 elections identified by Representative Lewis, and she specifically criticized Dr. Mattingly’s use of several 2008 elections. Tr. 1686:10-22; LDTX 286 at 8. However, Dr. Hofeller likewise used 2008 elections—including many of the same ones as Dr. Mattingly—in the partisanship formula Dr. Hofeller used to draw the 2017 Plans. *Compare* PX153 (Hofeller partisanship formula) *with* PX359 at 4 (Mattingly Report). When asked whether she knew this fact, Dr. Thornton responded that she “do[es]n’t know one way or the other,” is “not aware of anything regarding Dr. Hofeller,” and did not investigate what elections the mapmaker himself used in drawing the 2017 Plans. Tr. 1686:23-1689:5.

557. In any event, Dr. Thornton’s critique of Dr. Mattingly’s use of election results, and her analysis of various “averages” across the different elections he used, misses the point of his analysis. Dr. Mattingly analyzed, on an election-by-election basis, how the partisan bias of the enacted plan relative to the ensemble varies in different electoral environments.

(ii) *Criticisms Concerning Use of the Adopted Criteria*

558. Dr. Thornton's assertion that Plaintiffs' simulation experts deviated from the Adopted Criteria also suffers from critical flaws. Additionally, Dr. Thornton failed to show that any of her criticisms would have made any difference to Plaintiffs' experts' conclusions.

559. Dr. Thornton stated in her report that "[a] review of Dr. Pegden's simulation code suggests that in reality, he did not actually apply a compactness criterion." LDTX 286 at 33. However, Dr. Pegden did apply a compactness criterion. PX508 at 8, 34 (Pegden Report); Tr. 1358:11-24 (Dr. Pegden). As Dr. Pegden explained in his rebuttal report, if he had not applied a compactness criterion, his simulated plans would have looked completely different—dramatically less compact. PX551 at 17-19 (Pegden Rebuttal Report); Tr. 1358:25-1360:1 (Dr. Pegden). When asked about this mistake on cross examination, Dr. Thornton testified that "in retrospect" she "should have written it in a different way." Tr. 1623:12-25.

560. While Dr. Thornton criticized Dr. Pegden for not specifically applying a Reock compactness threshold, she did no work to assess whether adding such a threshold would change Dr. Pegden's simulations or results. Tr. 1624:23-1626:3. Nor did she do any work to test whether adding a Reock threshold would change Dr. Pegden's conclusion that the enacted plans are extreme outliers carefully crafted to favor Republicans. Tr. 1626:4-8. The Adopted Criteria state that the 2017 Plans should "improve the compactness" over the 2011 Plans, and when asked whether Dr. Pegden's simulated plans "are, in fact, an improvement in terms of compactness over the districting in the 2011 map," Dr. Thornton responded, "I don't know." Tr. 1625:13-18. Dr. Thornton did no work to figure it out. Tr. 1625:19-1626:3.

561. Dr. Thornton testified that Dr. Pegden did not "make any adjustment for incumbency." Tr. 1604:8-9. This is incorrect. Dr. Pegden included as a criterion in all of his

simulations avoiding pairing the incumbents who were in office at the time the districts were drawn. PX508 at 8 (listing “Incumbency protection” as criterion).

562. Dr. Thornton also suggested that Dr. Pegden could not draw valid conclusions about the 2017 Plans without reaching “equilibrium” in his Markov Chain—without comparing the 2017 Plans to the entire universe of potential House and Senate districtings. Tr. 1631:2-11. In this regard, Dr. Thornton analogized Dr. Pegden’s analysis to looking for a lost key in a bedroom without considering that the key might be somewhere else in the house. But as Dr. Pegden explained, the purpose of his approach and the accompanying mathematical theorems he has proved is that they allow for drawing statistically significant conclusions about how the enacted plans compare to the universe of all possible plans meeting the relevant criteria without achieving “equilibrium,” *i.e.*, without needing to generate a representative sample of the universe of possible maps. PX551 at 2 (Pegden Rebuttal Report); Tr. 1360:2-1361:21. Dr. Thornton acknowledged that she has no expertise in proving mathematical theorems, nor did she offer any opinion that Dr. Pegden’s theorems are wrong. Tr. 1631:12-1632:9.

563. Dr. Thornton stated in her report that Dr. Mattingly “did not consider incumbency protection as defined in the 2017 enacted map criteria.” LDTX 286 at 19. Dr. Thornton repeated this assertion in her direct testimony, stating that Dr. Mattingly did not “control, in any respect, for incumbency protection.” Tr. 1610:20-22. This is false. Dr. Mattingly added incumbency protection as a criterion in checking the robustness of his results, and he concluded that it did not change his results. PX359 at 81-85; Tr. 1093:15-1094:4.

564. On cross examination, Dr. Thornton said that Dr. Mattingly may not have considered incumbency protection “simultaneously” “[w]ith respect to all the other factors, as I recall.” Tr. 1633:14-24. This too is incorrect. Dr. Mattingly added incumbency

protection as a criterion in conjunction with the criteria used to generate his primary ensemble, and he ran a separate analysis that “consider[ed] the joint effect of both ensuring incumbents are preserved and requiring more stringent redistricting criteria” with respect to the traditional districting criteria. PX359 at 81-82.

565. Dr. Thornton criticized Dr. Mattingly for using only Polsby-Popper compactness scores, and not Reock scores. Tr. 1633:25-1634:3. But she did no work to determine whether the Reock scores for his simulated plans were too low, or whether applying a Reock threshold would change his results. Tr. 1634:4-21. In his rebuttal report, Dr. Mattingly calculated Reock scores for all of his simulated districts, and he reported that there was not a single district in any of his simulated Senate plans with a Reock score less than or equal to 0.15—the threshold referenced in the Adopted Criteria. PX487 at 8-9. There were very few such districts in his simulated House plans—only 1 out of 550,000 simulated Wake districts, and 7 out of 486,588 Mecklenburg districts. PX487 at 8; Tr. 1634:22-161635:14. Dr. Mattingly concluded that removing those districts would not change his results, *id.*, and Dr. Thornton did no work of her own to determine whether he was wrong, Tr. 1635:15-25.

566. Dr. Thornton criticized Dr. Pegden’s and Dr. Mattingly’s weighting of the various criteria they applied to create their simulated plans. LDTX 286 at 17-18; Tr. 1636:13-24. But Dr. Thornton acknowledged that she did not know whether the legislature “did weighting” at all, or how it may have done so. Tr. 1636:25-1637:13. She did not suggest any better way than Dr. Mattingly’s approach to weighting the various criteria. Tr. 1637:14-25. She did not rerun Dr. Mattingly’s computer code using any different weighting system to determine if using a different weighting system could have affected Dr. Mattingly’s conclusions. Tr. 1638:1-6. In his rebuttal report, Dr. Mattingly tried six different ways of weighting the various criteria, and he concluded that none changed his

results. PX487 at 10-11. When asked about this analysis on cross examination, Dr. Thornton merely said, “I don’t recall.” Tr. 1638:7-14.

567. Dr. Thornton testified that Dr. Chen’s use of a “T score” meant that his simulations did not follow the Adopted Criteria regarding compactness, avoiding splitting municipalities, and avoiding splitting VTDs. Tr. 1599:18-1600:3. Dr. Thornton suggested that Dr. Chen restricted his algorithm to only accept plans below a particular T Score, Tr. 1597:25-1598:19, and she asserted in her report that “[a] t-score evaluation was not among the actual criteria” in the Adopted Criteria, LDTX286 at 15. Dr. Thornton testified that, if Dr. Chen “changed the value of the T scores,” used a “value other than 1.75” in the T score, or “added a random element,” his results would have been entirely different. Tr. 1597:25-1598:19.

568. Dr. Thornton’s testimony misapprehends Dr. Chen’s algorithm. Dr. Chen’s “T score” does not impose a numerical threshold that restricts the maps the algorithm generates. Rather, the T score is just a way of equally weighting and jointly tracking the three traditional districting criteria of compactness, avoiding municipal splits, and avoiding VTD splits. For any given county grouping, the algorithm randomly draws an initial set of districts, and then proposes a random change to the border between a random pair of adjoining districts. Tr. 261:23-262:16. If the border change would, on net, improve the districting of the grouping across the three criteria of compactness, avoiding municipal splits, and avoiding VTD splits, the algorithm accepts the change. *Id.* But if the change would make the districting worse off, on net, with respect to these criteria, the algorithm rejects the change. *Id.* The T score is merely a way of giving the three criteria equal weight and then tracking whether a proposed random change improves the districting across these criteria. Tr. 263:4-8 The algorithm considers thousands of these random changes, one at a time in an iterative fashion, in drawing districts within a given grouping. Tr. 261:18-262:23.

569. Dr. Thornton is thus incorrect that Dr. Chen’s algorithm lacks a “random element.” Tr. 1598:7-8. She misapprehends the T score’s function in suggesting that raising or lowering the “T score value” would be less “restrictive.” Tr. 1598:5-10. The T score’s sole purpose is to equally weight the three criteria of compactness, avoiding split municipalities, and avoiding split VTDs. Dr. Thornton does not dispute that Dr. Chen’s T score accurately gives equal weight to these three criteria.

570. Moreover, while Dr. Thornton asserted that Dr. Chen may not have found the enacted plans to be statistical outliers if he had used “different T scores,” Tr. 1598:20-1599:13, Dr. Thornton offered no proof or analysis to substantiate this claim, Tr. 1645:14-1647:15.

571. Dr. Thornton also criticized Dr. Chen’s approach to incumbency protection in his Simulation Set 2. Tr. 1638:15-1639:8. She acknowledged that Dr. Chen’s Simulation Set 2 successfully avoided pairing incumbents, but she asserted that Dr. Chen failed to comply with the second sentence of the Adopted Criteria’s incumbency protection criterion, which provided that “the committees may make reasonable efforts to ensure voters have a reasonable opportunity to elect non-paired incumbents.” Tr. 1610:23-1611:3. Dr. Thornton claimed that this sentence meant the Committees should make efforts “to allow for incumbents to win” by placing them in politically favorable districts, LDTX286 at 16, and that “it would have been interesting” if Dr. Chen had applied “some sort of weighting” to carry this out, Tr. 1639:12-1640:3. Dr. Thornton’s interpretation is contrary to the contemporaneous explanation of this sentence by Representative Lewis, who stated at an August 10, 2017 hearing that the sentence “is simply saying that mapmakers may take reasonable efforts to not pair incumbents unduly.” PX603 at 122:4-18; Tr. 1640:16-1641:12. That direction matches Dr. Chen’s approach to incumbency protection.

572. Dr. Thornton did not analyze whether any of the supposed deviations made any difference to the experts' conclusions. On cross examination, Dr. Thornton was asked whether, "for every single criticism you've leveled, there's no instance in which you took any of plaintiffs' experts' code, substituted whatever you thought was an improved criteria, ran the code with the improved criteria and showed us that it made a difference to their work; isn't it true in your report there's no place that you did that?" Tr. 1647:3-13. Dr. Thornton responded that, "given the time, [she] did not have sufficient time to do so." Tr. 1647:14-15.

(iii) Criticisms Concerning Statistical Significance

573. Dr. Thornton opined that the enacted plans are "not statistically significantly different from the simulated maps with respect to the number of Democratic districts." LDTX286 at 21 (capitalization omitted). Dr. Thornton wrote in her report that she compared "the enacted plan's number of Democratic districts and the number predicted by the simulated maps," and "determined the number of standard deviations associated with the difference between the enacted plan and simulated number of Democratic districts." LDTX286 at 24. However, Dr. Thornton did not use the actual results of Plaintiffs' experts' "simulated plans," or the actual "standard deviation" of the simulated plans.

574. Instead, Dr. Thornton created her own distribution of the predicted number of Democratic seats won under a nonpartisan plan, using a "binomial distribution." She then calculated the "standard deviation" of her own distribution, and used that standard deviation to assess statistical significance. *See* PX551 at 10 (Pegden Rebuttal Report). Dr. Thornton used this binomial distribution methodology as the foundation for her criticisms of all three of Plaintiffs' simulation experts. LDTX286 at 22; Tr. 1685:9-22.

575. Contrary to Dr. Thornton's approach, the distribution of districting maps is not a binomial distribution, and thus it is inappropriate to use a binomial distribution in the redistricting context. When confronted with the flaws in using a binomial distribution

in the redistricting context, Dr. Thornton's responses were not persuasive. The Court gives her testimony concerning statistical significance little weight.

576. It is undisputed that a binomial distribution applies only when two conditions are met: (1) each trial (in this case, each House or Senate district) is independent of one another; (2) each trial has the exact same percentage chance of producing a particular outcome (in this case, that a Democrat wins the district). Tr. 1669:4-8, 1676:1-5 (Dr. Thornton); Tr. 1378:24-1382:2 (Dr. Pegden); PX551 at 10 (Pegden Rebuttal Report); PX487 at 11-12 (Mattingly Rebuttal Report); PX123 at 171-72 (Chen Rebuttal Report). Thus, the classic example of the binomial distribution is a coin flip, because the likelihood of landing on heads on any flip of a coin is independent of the result of every other flip, and the percent chance of landing on heads is the same in each flip (50%). Tr. 1669:11-1670:5.

577. By applying a binomial-distribution methodology, Dr. Thornton assumed that district elections, like coin flips, are independent of each other, and also that Democrats have the same chance—specifically, a roughly 40% chance—of winning each and every district House or Senate district, no matter where in North Carolina the district is located. Tr. 1670:6-1671:2 (Dr. Thornton); *see* Tr. 1381:15-1382:2 (Dr. Pegden); PX551 at 10 (Pegden Rebuttal Report); PX487 at 11-12 (Mattingly Rebuttal Report); PX123 at 171-72 (Chen Rebuttal Report).

578. Both assumptions are incorrect in the redistricting context. First, unlike a coin flip, each House (or Senate) district is not independent of one another. Tr. 1379:22-1381:10 (Dr. Pegden); PX551 at 10 (Pegden Rebuttal Report). In a given county grouping, if a particular set of Democratic voters is placed in one district, then those voters cannot be put in any other district in the grouping. *Id.* The partisan makeup of the districts are thus intertwined and not independent of one another; increasing the number of Democratic

voters in a particular district necessarily decreases the number of Democratic voters in neighboring districts. *Id.*

579. The second assumption underlying Dr. Thornton’s binomial distribution—that Democrats have the exact same percentage chance of winning each House (or Senate) seat—is contrary to reality. Dr. Thornton assumes, for example, that Democrats have the same percentage chance of winning a House district in Wake County as in Caldwell County. Tr. 1381:15-1382:2 (Dr. Pegden); *see* PX487 at 11-12 (Mattingly Rebuttal Report); *see* PX123 at 171-72 (Chen Rebuttal Report). This is not the case.

580. The following example illustrates these flaws in Dr. Thornton’s analysis. In the Alamance County House grouping, there are two districts of roughly equal population. Assuming, as a hypothetical, that Republicans will win 60% of the total vote across the County in a particular election, it is mathematically impossible for Democrats to win *both* districts in the election. Tr. 1673:14-19. But under Dr. Thornton’s binomial-distribution methodology, Democrats will win both districts 16% of the time—because she assumes that Democrats have an equal and independent 40% of winning each of the two districts. Tr. 1671:10-17; *see also* Tr. 1379:1-1381:10 (Dr. Pegden). When asked about this on cross examination, Dr. Thornton repeatedly asserted that she did not “understand” the illustration. Tr. 1671:3-1673:13.

581. Dr. Thornton’s binomial-distribution methodology was recently rejected by a federal court in a partisan gerrymandering case in Ohio. There, as here, Dr. Thornton used a binomial distribution in her expert analysis on behalf of the Republican legislative defendants, and the three-judge federal district court rejected her analysis. The court stated: “Dr. Thornton also performed her own analysis using a binomial distribution, but we do not give any weight to that analysis.” *Ohio A. Philip Randolph Inst. v. Householder*, 373 F. Supp. 3d 978, 1056 (S.D. Ohio 2019); *see* Tr. 1673:20-1674:20. The court explained

that Dr. Thornton's binomial-distribution analysis "incorporates yet another faulty assumption that each district has a 51% chance of being won by a Republican because Republicans won 51% of the congressional vote across the State; this assumption does not comport with basic understandings of congressional elections, i.e., that although some districts may be competitive (a 51% Republican to 49% Democrat district), other districts lean heavily in favor of one party or the other." *Ohio A. Philip Randolph Inst.*, 373 F. Supp. 3d at 1056; *see* Tr. 1677:23-1678:15.

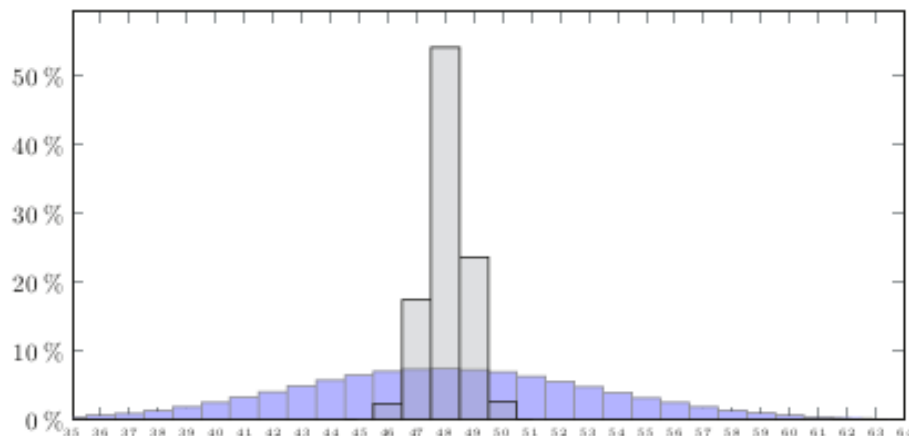
582. While Dr. Thornton claimed that her use of a binomial distribution here is different from the Ohio case, Tr. 1677:19-22, the Court disagrees and finds that Dr. Thornton's methodology here suffers from the same flaws identified by the federal court in the Ohio case. Assuming that districts are independent, and that Democrats have a roughly 40% chance of winning every House and Senate district, does not comport with basic understandings and reality of North Carolina House and Senate elections. Dr. Thornton could not identify literature or precedent supporting the use of a binomial distribution in a redistricting context. Tr. 1680:6-14.

583. Dr. Thornton's use of a binomial distribution skewed her statistical significance analysis. Due to the independence and equal probability assumptions, the binomial produces a much wider distribution of the number of possible districts Democrats could win in the House or the Senate than the actual distribution produced by each expert's simulations. That wider distribution in turn results in Dr. Thornton estimating much larger standard deviations than the actual standard deviations of each expert's simulated plans, allowing Dr. Thornton to claim that the enacted plan is less than two standard deviations from each expert's average simulation and therefore purportedly not a statistically significant outlier. LDTX286 at 9-13. For instance, in Dr. Chen's House Simulation Set 1, his simulated maps produce a range of results from 43 Democratic

districts to 51 Democratic districts, with 90 percent of those results between 45 and 48 Democratic districts, whereas the enacted 2017 House plan produces only 42 Democratic districts—an extreme outlier, completely off the distribution. PX234; Tr. 1647:16-1648:16. The actual standard deviation of Dr. Chen’s House Simulation Set 1 is 1.36 seats, and the enacted plan is more than three standard deviations from the average simulated plan. *Id.* But Dr. Thornton’s unsubstantiated binomial distribution suggests that Democrats could win as few as 30 districts and as many as 63, and has a standard deviation of 5.34 seats. PX123 at 170-76.

584. Similarly, Dr. Thornton’s binomial distribution is completely different from the actual distribution of simulated plans she created using a modification of Dr. Pegden’s computer code. For the House, while the simulations generated between 46 and 50 Democratic seats, Dr. Thornton’s binomial distribution generated between 35 and 60 Democratic seats and a much larger standard deviation. Plaintiffs’ Exhibit 554, a figure from Dr. Pegden’s rebuttal report, depicts these dramatic differences:

Figure 1.3: The binomial distribution is not a reasonable approximation of the map distribution (House)



The gray bars again show the distribution of Dr. Thornton’s simulated House plans, with respect to seat counts using the 2016 AG race. Dr. Thornton’s statistical significance analysis based on the binomial test would require random House maps to be distributed instead as the blue bars, which plot the binomial distribution used by Dr. Thornton’s test.

585. Dr. Thornton’s binomial distribution likewise is completely different from the actual distribution of simulated plans created by Dr. Mattingly. PX495. When Dr. Mattingly used the “actual distribution” of his results to calculate statistical significance as opposed to Dr. Thornton’s “grossly inaccurate seat distribution,” he found that the enacted maps are “well outside two or three standard deviations” and are “extreme outliers.” PX487 at 11-12.

586. Dr. Thornton made other significant methodological errors in her analysis of statistical significance. For instance, in modifying Dr. Pegden’s computer code to generate simulated plans of her own, Dr. Thornton used the wrong command and froze every single district drawn in 2011 and left unchanged in 2017. Tr. 1363:7-1364:8 (Dr. Pegden); PX551 at 6 (Pegden Rebuttal Report). Dr. Thornton’s suggestion that she intended to freeze the 2011 districts, Tr. 1666:16-21, is not credible, given that her report nowhere mentions this decision and in fact claims that it is analyzing the entire enacted map—all 120 House districts and all 50 Senate districts. LDTX286 at 75 (tbl. 3).

587. Dr. Thornton’s freezing errors ran in both directions. In her report, Dr. Thornton presented a graph purporting to show differences in Democratic vote share between the enacted plans’ districts and the districts she drew using her modified version of Dr. Pegden’s code. The evident goal of these charts—titled “Comparison of the Enacted Plan and the Average Across Dr. Pegden’s Simulations for Each *Non-Frozen* House [and Senate] District”—was to suggest that the vote shares in the enacted districts were not markedly different from those in the nonpartisan simulations. LDTX286 at 28-29 (emphasis added). But Dr. Thornton’s charts included many districts that *were* frozen on account of the Whole County Provision, which misleadingly suggested a high degree of similarity between the enacted plan and the simulations. Tr. 1680:24-1684:9. Dr. Pegden pointed out a number of other problems with this chart—*e.g.*, using thick lines, stretching the data out

over an unnecessarily long vertical axis, and needlessly connecting the data points using lines, all which served to obscure the significant gaps in vote share between the enacted and simulated districts. Tr. 1391:6-1395:19.

588. Setting aside the flaws in her analysis, Dr. Thornton's results show a statistically significant difference between the enacted 2017 Plans and the simulated plans she created using a modification of Dr. Pegden's code. As shown in Dr. Pegden's rebuttal report, only 0.001% of Dr. Thornton's simulated plans are as Republican-favorable as the enacted House plan, and only 0.182% of Dr. Thornton's simulated plans are as Republican-favorable as the enacted Senate plan. PX551 at 8-9 (Pegden Rebuttal Report); Tr. 1369:4-1371:18.

589. Thus, even including errors, Dr. Thornton's results were still consistent with the conclusions of Plaintiffs' experts. Tr. 1400:10-21 (Dr. Pegden).

b. Dr. Brunell

590. Legislative Defendants offered expert testimony from Dr. Thomas Brunell, who was asked to read and respond to the reports of Drs. Pegden, Cooper, Mattingly and Chen. Tr. 2276:19-20. Dr. Brunell is a tenured political science professor at the University of Texas, Dallas. For over 20 years, Dr. Brunell has taught, lectured and published on representational and redistricting issues. LDTX292. Dr. Brunell was accepted by the Court as an expert on redistricting and political science. Tr. 2275:4-12. Dr. Brunell offered no opinion on whether the 2017 Plans are partisan gerrymanders. Tr. 2316:10-12.

591. The Court finds Dr. Brunell's opinions were unpersuasive, sometimes inconsistent with prior testimony he has given, and gives them little weight.

592. Dr. Brunell testified that Plaintiffs' experts have not shown "what is too much politics in this political process." Tr. 2306:24-2307:2. However, this critique contradicts Dr. Brunell's own expert analysis and conclusions in a prior case. In 2011, Dr.

Brunell opined as an expert witness for the Nevada Republican Party that state legislative maps were excessive partisan gerrymanders—based on an analysis less robust than the analyses of Plaintiffs’ experts here. Tr. 2337:5-2338:23. Using two statewide elections, Dr. Brunell conducted a uniform swing analysis and concluded that the maps at issue gave Democrats 60% of the seats when Democrats won only 50% of the votes statewide. Tr. 2340:16-2345:5. Dr. Brunell concluded exclusively on the basis of that analysis that the maps were “unfair” and showed “heavy pro-Democratic bias”—“clearly a pattern of partisan bias, i.e., gerrymandering.” Tr. 2342:4-2345:11. Dr. Brunell further opined, based solely on his uniform swing analysis and the disconnect between Democrats winning 60% of the seats with only 50% of the statewide vote, that he could be “absolutely conclusive” that the maps were not just partisan gerrymanders, but a “leading candidate for gerrymander of the decade.” Tr. 2345:12-2346:15.

593. In this case, Dr. Brunell conceded that Plaintiffs’ experts’ analyses—using both uniform swing analysis and actual results of prior statewide elections—demonstrated that when Republicans get 50% of the votes in either chamber of the General Assembly, they win at least 60% of the seats. Tr. 2346:16-2350:2. Thus, under Dr. Brunell’s own approach, the Court could find, in his own words, a “heavy pro-[Republican] bias” and “clearly a pattern of partisan bias *i.e.*, gerrymandering.” Tr. 2350:3-8.

594. The Court also rejects Dr. Brunell’s testimony that simulation methods for evaluating partisan gerrymandering have not been sufficiently vetted by academics and courts. Tr. 2292:15-2293:23. Dr. Brunell testified on direct examination that he was unaware of any peer-reviewed political science papers that provide a “basis” for “using [simulations] as an evaluation for partisanship.” Tr. 2293:11-17. He testified that a 2013 paper by Dr. Chen and Dr. Jonathan Rodden “uses simulations, I think,” “[b]ut in terms of using it as an evaluation for partisanship, I don’t think there have been any such

publications yet.” Tr. 2293:11-17. Dr. Brunell later acknowledged that the 2013 Chen and Rodden paper was in fact a peer-reviewed political science paper that “uses simulation techniques to measure partisanship.” Tr. 2307:19-2308:5; *see* PX1 at 179. He also acknowledged that he was unfamiliar with three other peer-reviewed political science papers by Dr. Chen published between 2015 and 2017 that use computer simulations to evaluate partisan gerrymandering. Tr. 2308:10-2309:9; PX1 at 180. Dr. Brunell was also unaware that Dr. Pegden’s paper on using simulations to measure gerrymandering, published in the Proceedings of the National Academy of Sciences, was peer reviewed by a political scientist. Tr. 2309:12-22; *see* Tr. 1413:7-16.

595. Dr. Brunell was also unfamiliar with court decisions approving the use of simulations to measure partisanship. He testified on direct that “we’ve only just started to see [simulations] used in law suits,” Tr. 2292:24-2293:1, that simulations therefore “may not be ready for prime time yet,” Tr. 2292:22-24, and that he himself did not learn about the simulation method until 2017 or 2018, Tr. 2293:7-10. However, as he acknowledged, multiple courts have credited simulations by Drs. Chen, Mattingly, and Pegden as a method of establishing whether a particular map is a partisan gerrymander. Tr. 2310:8-2312:1. Dr. Brunell was “unaware” that the Fourth Circuit credited Dr. Chen’s simulations in a 2016 decision, in a gerrymandering case filed in 2013. Tr. 2311:4-2312:1; *see Raleigh Wake Citizens Ass’n v. Wake Cty. Bd. of Elections*, 827 F.3d 333 (4th Cir. 2016). The court rejected the criticism Dr. Brunell makes here, namely that Dr. Chen’s simulations “ignor[ed] partisanship.” Tr. 2311:17-20; *see Raleigh Wake*, 827 F.3d at 344.

596. The Court rejects Dr. Brunell’s testimony that simulated maps are only useful if the algorithm draws “partisan districts” as opposed to “nonpartisan districts.” Tr. 2277:13-20; 2280:4-16. Dr. Brunell acknowledged that the 2017 Plans were drawn for partisan gain, but argued that simulations can tell if an enacted map is an “extreme

partisan outlier” only if the simulations include some level of partisanship. LDTX291 at 3; Tr. 2277:13-20; 2280:4-16. Dr. Brunell’s criticisms miss the point. Dr. Mattingly’s and Dr. Chen’s simulations quantify the effects of the gerrymandering and how extreme it is. Both find that the enacted plans are outside the entire distribution of their simulated plans—sometimes by many seats. For instance, Dr. Chen found in his uniform swing analysis that, in electoral environments corresponding to a 52.42% statewide Democratic vote share, Democrats win 11 to 12 fewer seats in the House and 3 to 4 fewer seats in the Senate than they would typically win under the simulated plans. *See* PX1 at 34, 65 (Chen Report). Dr. Mattingly found similar results. *See* PX359 at 12 (Mattingly Report); PX487 at 25 (Mattingly Rebuttal Report).

597. Additionally, Dr. Pegden’s analysis demonstrates that the 2017 Plans are extreme partisan outliers even in comparison to other *partisan* maps. Although Dr. Brunell criticized “all three of” Plaintiffs’ simulation experts for using “nonpartisan districts” as the point of comparison, Tr. 2277:13-20, this misunderstands Dr. Pegden’s methodology. Dr. Pegden started with the enacted plan and made a sequence of small random changes, observing how those changes affected the partisan characteristics of the plan. Tr. 1304:3-1305:7; PX515; PX519. Dr. Pegden’s comparison maps thus “are not supposed to be neutral comparison maps drawn from scratch of North Carolina,” and “even against a set of extremely similar maps which were generated from the enacted map and which share all sorts of qualities with the enacted map, the enacted map is still an extreme outlier.” Tr. 1304:14-1305:7. Dr. Pegden’s comparison maps are “tied strongly to the enacted map” and “baked in” intentional partisan choices by the mapmaker. Tr. 1405:1-13, 1406:2-19. This makes it all the more remarkable that the enacted plans are such outliers in his analysis, even against this very similar comparison set. Tr. 1315:22-1316:2.

598. The Court gives no weight to Dr. Brunell's criticisms of uniform swing analysis. Dr. Brunell stated in his report that uniform swing analysis is "not reliable," LDTX291 at 4, and he testified that the assumption of uniform swing analysis was "clearly wrong," Tr. 2289:14-22. But again, when Dr. Brunell was evaluating partisan bias in the Nevada case in 2011, he testified that uniform swing analysis allowed him to be "absolutely conclusive" in finding legislative maps to be heavily biased and gerrymandered. Tr. 2351:19-2352:7.

599. Dr. Brunell's report and testimony contained numerous statements that were erroneous and reflect a failure to understand the work of Plaintiffs' experts. Dr. Brunell's report asserts that Dr. Pegden "use[d] the results of just two elections for his simulations" and that "both of them have Democratic winners." LDTX291 at 15. In fact, Dr. Pegden used six elections, two of which—2012 Lieutenant Governor and 2014 U.S. Senate—had Republican winners. PX508 at 34-37 (Pegden Report). On the stand, Dr. Brunell explained his assertion by stating that Dr. Pegden "does some quick checks with other elections in his appendix, but he only uses [] two elections for his full simulation," that he "uses one particular metric . . . but not all of it," and that he did not use "the four additional elections in his appendix to perform his entire statewide analysis." Tr. 2323:1-15. In fact, Dr. Pegden re-ran his entire statewide analysis using all six elections. PX508 at 34-37 (Pegden Report).

600. Dr. Brunell wrote in his report that he was "confused" by aspects of Dr. Pegden's analysis, Tr. 2318:19-22, that were clearly explained in Dr. Pegden's initial report. Tr. 2318:23-2319:24. Dr. Brunell criticized Dr. Pegden for failing to explain how many changes he made to the enacted map before comparing the simulated maps to the enacted map, LDTX291 at 13, but Dr. Pegden's report made clear that he evaluated the partisanship of the new map after every step, meaning every swap, PX508 at 5. Dr. Brunell also criticized Dr. Pegden for purportedly failing to explain terms like "fragility" and

“carefully crafted,” Tr. 2320:8-18, but Dr. Pegden’s report specifically defined those terms. Tr. 2321:15-2322:2.

601. In criticizing Dr. Chen’s application of the Adopted Criteria, Dr. Brunell testified that Dr. Chen’s “programmatically algorithm . . . maximizes geographic compactness,” Tr. 2295:10-16, but Dr. Brunell had not reviewed Dr. Chen’s code, Tr. 2333:23-25, and he got it wrong, Tr. 262:24-263:12. When confronted with his error at trial, Dr. Brunell testified that whether Dr. Chen maximized compactness did not matter because Dr. Chen’s “algorithm” was “different from the legislative criteria” in unspecified other ways relating to splitting VTDs. Tr. 2334:6-13. However, Dr. Brunell “didn’t know” how Dr. Chen’s algorithm “worked” with respect to other issues, Tr. 2297:9-14, and he did no work to determine whether a different weighting would have affected Dr. Chen’s conclusions, Tr. 2334:18-21.

602. Dr. Brunell’s report inaccurately criticized Dr. Mattingly and Dr. Pegden for failing to preserve incumbents, when both ran simulations that avoided pairing incumbents. LDTX291 at 3; Tr. 2326:13-25; Tr. 2329:2-5.

603. The Court rejects Dr. Brunell’s testimony that the simulated maps are not proper comparisons to the enacted map to the extent they do not preserve the “core” of an incumbent’s district. Tr. 2283:21-2284:19. Dr. Brunell acknowledged that he had “no idea if and to what extent core preservation was used” in the enacted map, Tr. 2329:21-2330:1, and no other witness testified that the 2017 Plans preserved district cores. Neither Dr. Brunell nor any other witness for Legislative Defendants analyzed whether a hypothetical effort to preserve district cores could explain the extreme partisan bias in the 2017 Plans. As Representative Lewis explained, the Adopted Criteria’s incumbency protection provision referred only to “not pair[ing] incumbents unduly”—not core preservation. PX603 at 122. As Dr. Brunell acknowledged, core preservation also can be a partisan criterion, Tr.

2332:12-25, and that, when, as here, the prior plan was an unlawful racial gerrymander, preserving cores might also preserve racial gerrymanders, Tr. 2333:1-12.

604. Additionally, Plaintiffs proved that a hypothetical effort to preserve the “cores” of an incumbent’s district could not explain the enacted plans’ extreme partisan bias. Dr. Pegden’s simulations preserved the “cores” of each incumbent’s prior district. Tr. 1316:24-1317:10 (Dr. Pegden); *see* Tr. 2330:16-19.

605. The Court gives little weight to Dr. Brunell’s testimony that Figure 8 and Figure 20 of Dr. Chen’s report do not show that the enacted plan is an “outlier.” Tr. 2302:12-2303:15. Figure 8 of Dr. Chen’s report shows at least a five-seat difference between the bulk of his House simulations and the enacted plan, and shows that the enacted plan is off the distribution entirely—it elects fewer Democrats than 100% of his simulated plans. PX1 at 48 (Chen Report). The Court rejects Dr. Brunell’s testimony that a five-seat difference is only a “slight[]” difference. Tr. 2302:24-2303:2. Likewise, Figure 20 of Dr. Chen’s report shows a two-seat difference between the typical result of his Senate simulations and the enacted plan, and again shows that the enacted plan is off the distribution entirely—it elects fewer Democrats than 100% of his simulated plans. PX1 at 48 (Chen Report). Dr. Brunell also speculated that changing Dr. Chen’s criteria “could shift this over and then this wouldn’t be an outlier at all,” Tr. 2303:4-9, but the Court gives no weight to Dr. Brunell’s untested conjecture. The Court likewise rejects Dr. Brunell’s testimony about Plaintiffs’ Exhibit 48, which is Figure 28 of Dr. Chen’s report and shows cracking and packing in the Cumberland House grouping. PX1 at 93. Dr. Brunell testified that this figure did not show the enacted plan to be an “outlier” because “the enacted districts are in the gray clouds,” Tr. 2303:16-21, but in fact the figure demonstrates that two districts (HD-45 and HD-43) are entirely outside the “gray clouds” and show more

cracking (HD-45) and packing (HD-43) of Democrats that 100% of the districts in Dr. Chen's simulations. PX1 at 93.

c. Dr. Hood

606. Legislative Defendants offered the testimony of Dr. M.V. (Trey) Hood III to respond to Plaintiffs' experts Dr. Cooper and Dr. Chen. LDTX 284; Tr. 2037:21-2038:3.

607. Dr. Hood is a tenured professor of political science at the University of Georgia, a position he has held for 20 years. Tr. 2032:19-2033:5. He holds three degrees in political science: a Ph.D. from Texas Tech University; a Master of Arts degree from Baylor University, and a Bachelor of Science degree from Texas A&M University. Tr. 2032:14-18.

608. Dr. Hood is also the director of the School of Public and International Affairs' Survey Research Center which performs public opinion research and polling for entities including the Atlanta Journal-Constitution. Tr. 2033:6-19.

609. Dr. Hood teaches courses in American politics and policy, Southern politics, research methods and election administration, including redistricting. Tr. 2033:20-2034:9.

610. Dr. Hood also conducts research on redistricting and has published articles in peer-reviewed journals on topics that include redistricting. Tr. 2034:10-18. Dr. Hood's work has appeared in peer-reviewed journals approximately 50 times. Tr. 2034:13-21. He currently serves on the editorial boards of Social Science Quarterly and Election Law Journal, with the latter journal dealing with issues of election administration, including redistricting. Tr. 2034:22-2035:2.

611. Dr. Hood was accepted by the Court as an expert in American politics and policy, Southern politics, quantitative political analysis, and election administration, including redistricting. Tr. 2037:13-20.

612. Dr. Hood testified about the role of the Whole County Provision and 2017 Adopted Criteria in limiting the mapmaker’s discretion in drawing the 2017 Plans, the results of the 2018 elections, and North Carolina’s political geography.

613. Dr. Hood’s testimony was not persuasive, and the Court gives it little weight.

614. Dr. Hood’s expert testimony has been rejected by courts in numerous prior redistricting and other voting rights cases. *See, e.g.*, Tr. 2095:6-2096:9 (in recent Ohio partisan gerrymandering case, stating that Dr. Hood drew “some inapt comparisons”); Tr. 2096:14-24 (in Texas voter ID case, stating that Dr. Hood’s testimony and analysis was “unconvincing” and given “little weight”); Tr. 2096:25-2097:19 (in Arizona voting rights case, “afford[ing] little weight to Dr. Hood’s opinions” “[f]or a number of reasons”); Tr. 2097:22-2098:6 (in Georgia voter ID case, finding that “Dr. Hood’s absentee voting analysis is unreliable or not relevant to the questions the court must resolve”); Tr. 2098:9-16 (in Ohio case involving absentee ballots, affording Dr. Hood’s opinions “little weight”); Tr. 2098:22-2099:6 (in recent Virginia racial gerrymandering case, stating: “We do not credit Dr. Hood’s testimony for several reasons.”); Tr. 2099:9-2100:1 (in Ohio voting rights case, finding Dr. Hood’s views “of little value,” and explaining that “Dr. Hood’s testimony and report are in large part irrelevant to the issues before the court and also reflected methodological errors that undermine his conclusions”).

615. Dr. Hood did not offer—and does not have—any methodology for determining whether or not a map was drawn to create a partisan lean or bias. Tr. 2078:1-2079:3.

616. Dr. Hood’s testimony supports the view that the enacted plans were drawn intentionally to favor Republicans. Dr. Hood generally agreed that “the party that controls the legislative process is going to make the maps in their favor,” and that the enacted plans “were drawn to favor Republicans” using prior election results. Tr. 2079:4-2081:2.

(i) *Dr. Hood’s testimony about the redistricting process in North Carolina was unpersuasive*

617. Dr. Hood testified that the 2017 redistricting was a “fairly formulaic process” because the Whole County Provision and 2017 Adopted Criteria “really limits the discretion, to a large extent, of the map drawers.” Tr. 2038:4-2039:12; LDTX284 at 9-10 (“[T]he process is quite constrained, which greatly limits the ability of map drawers to create districts where partisan motives predominate.”). However, Dr. Hood did no work to determine whether any of those criteria actually prevented the mapmaker from gerrymandering the enacted plans to advantage Republicans. Tr. 2077:10-15.

618. Dr. Hood’s assertion that the Adopted Criteria “constrained” the “map drawer” is incorrect. The Adopted Criteria were not passed by the House and Senate Redistricting Committees until August 10, 2017. As discussed below, Dr. Hofeller had completed much of the General Assembly’s eventually enacted House and Senate districts by June 2017, a month and a half before the Adopted Criteria were passed. FOF § F.7. Logically, Dr. Hofeller could not have been following the Adopted Criteria when he was drafting these districts by June 2017.

619. Dr. Hofeller’s files further refute Dr. Hood’s assertions that the 2017 redistricting process was “quite constrained” and that it is difficult to prove the partisan intent behind the 2017 Plans. PX123 at 48-49 (Chen Response Report). Those files show Dr. Hofeller’s continuous efforts and exercise of his discretion to draw the district lines to maximize Republican advantage within the confines of the Whole County Provision, including various drafts that considered alternative possible districtings. FOF § B.2.b.

(ii) *Dr. Hood’s testimony about the 2018 elections was unpersuasive*

620. For his analysis of the 2018 election results, Dr. Hood compared the number of seats Democrats actually won in 2018 to the number districts in Dr. Chen’s simulated

plans that lean Democratic using the 2010-2016 composite statewide election results. Tr. 2083:14-25. But that is an apples-to-oranges comparison, because the 2018 elections were different than the 2010-2016 composite statewide election results. Tr. 2084:1-5. In the 2010-2016 composite statewide election results, the Democratic vote share is 47.9%, whereas 2018 was a far more favorable environment for Democrats. Tr. 2084:12-24.

621. Dr. Hood made no attempt to perform an apples-to-apples comparison by comparing the actual 2018 election results under the enacted 2017 Plans to the performance of alternative nonpartisan plans under the 2018 election results. Tr. 2084:25-2087:19.

(iii) Dr. Hood's testimony about North Carolina's political geography was unpersuasive

622. Dr. Hood's analysis of North Carolina's political geography is unpersuasive because Dr. Hood did not attempt to determine whether the Republican lean in the enacted 2017 Plans can be explained by political geography. Tr. 2094:18-21. By contrast, Dr. Hood agreed that the work of Drs. Chen, Mattingly, and Pegden does address whether political geography could explain the extreme partisan lean of the 2017 Plans. Tr. 2094:22-2095:2.

623. For his analysis of political geography, Dr. Hood analyzed how the partisan makeup of the State of North Carolina would change if its six largest counties were removed. Tr. 2089:14-17; LDTX140. But it is not possible to remove any counties from North Carolina, much less the six largest counties. Of course, hypothetically removing North Carolina's six largest counties would make the state "[m]uch more rural," Tr. 2089:18-22, and much more Republican-leaning, just as would removing New York City from the State of New York.

d. Dr. Barber

624. Intervenor Defendants' expert, Dr. Michael Barber, received his Bachelor of Arts degree in International Relations with an emphasis in Political Economy from Brigham Young University in 2008, his Masters in Political Science from Princeton University in 2011, and his Ph.D. in 2014. Tr. 2106:7–22, 2107:4–13, ID Ex. 98 p. 1.

625. Dr. Barber is currently an Assistant Professor at Brigham Young University and an affiliated faculty member with the Center for the Study of Elections and Democracy. Tr. 2109:9–18.

626. Dr. Barber teaches classes on Congress and the legislative process (which includes state-level legislative research), statistical analysis, and a seminar course on contemporary research in American politics. Tr. 2110:14–2111:13.

627. Dr. Barber recently testified as an expert witness in an election law case involving a dispute over ballot order in Federal Court in Florida. Tr. 2113:10–2114:6.

628. Dr. Barber has published 11 peer-reviewed articles involving American Politics, and an additional 5 articles that have been accepted for upcoming publication. Tr. 2111:22–2112:4, 2113:6–9; ID Ex. 98 pp.1–2. Many of these articles involve political ideology, issues of campaign finance, electoral politics, survey research methodologies, [and] political polarization. Tr. 2111:24–2112:4.

629. Dr. Barber was admitted by the Court as an expert in American politics, specifically on the topics of ideology and partisanship, geography of voters, and the analysis of elections results. Tr. 2118:2–13.

630. Dr. Barber offered no opinion as to whether North Carolina's state legislative district maps were gerrymandered.

631. The Court finds that Dr. Barber's criticisms of Dr. Cooper's analysis unpersuasive and gives them little weight.

632. At the outset, the Court notes that none of Dr. Barber's academic research or published articles concern redistricting or North Carolina, nor was redistricting in North Carolina "something [he] had given a lot of thought to" before being retained by Intervenor Defendants in this case. Tr. 2169:19-2170:19. Dr. Barber admitted that he was not an expert on North Carolina's political geography, nor had he spent time in North Carolina other than two vacations in the Outer Banks and one visit to Duke's campus. Tr. 2168:12-2169:13, 2216:4-8. Most importantly, Dr. Barber did not analyze the specific district boundaries or county groupings the Court is reviewing and he could not comment on any of Dr. Cooper's extended analysis of the packing and cracking of Democratic voters in those districts and county groupings. Tr. 2117:24-2118:12, 2213:25-2214:15

633. The majority of Dr. Barber's testimony concerned the opinions Dr. Cooper offered regarding the aggregate political ideology of the North Carolina electorate and that of the General Assembly, including Dr. Cooper's comparison between the two. The Court finds it unnecessary to determine whether the General Assembly is "out of step" with the electorate and therefore, makes no findings regarding Dr. Cooper's testimony, or Dr. Barber's criticism of that testimony, relating thereto.

634. Dr. Barber also sought to rebut opinions Dr. Cooper offered regarding the disproportionality between Democratic seat share and the Democrats' statewide vote share in the General Assembly after the 2011 redistricting. Dr. Barber observed that "it's actually not as rare as you might think" that a party wins a majority of votes for the North Carolina House or Senate statewide, but only a minority of seats. Tr. 2149:21-2150:2. But since Dr. Barber did not analyze the extent to which any of these instances of disproportionality between votes and seats were attributable to gerrymandered district boundaries, his analysis is less useful to the Court. Dr. Barber admitted that it was "very possible" that those instances from 2002-2006 where the Democrats won a minority of the

statewide vote and yet a majority of seats in a chamber of the General Assembly “could have been because the Democrats did a good job of gerrymandering the maps that were in place during those elections.” Tr. 2203:12-16.

635. In support of his opinion regarding the translation of seats from votes, Dr. Barber created a chart providing the “absolute difference” in percentage between the vote share and seat share for each party in House and Senate elections since 1994. IDTX23. But as Dr. Barber acknowledged, the greatest difference between the percentage of Republican vote share and seat share in the House occurred in the 2012 election, just after the 2011 redistricting. Tr. 2207:3-12. The difference in the Senate between the percentage of Republican votes received and seats won was also relatively large in 2012, and represented a significant increase from the 2010 election, just before redistricting. Tr. 2207:13-22. If anything, Dr. Barber’s analysis suggests that the 2011 redistricting led to more disproportionality between votes cast and seats won, as Dr. Cooper observed. *See* Tr. 2207:23-2212:16.

636. Finally, Dr. Barber noted that there is “academic research that points to political party geography as an important factor in representation and legislatures,” suggesting that the geographic distribution of voters “is something that should be investigated” in this case. Tr. 2152:10-14. Specifically, Dr. Barber referenced a 2013 article co-authored by Plaintiffs’ expert, Dr. Chen, focused on the political geography of Florida and Florida’s congressional districts, an article in which Dr. Chen used simulations to measure whether political geography created a natural advantage for Republicans in redistricting in Florida. Tr. 2153:2-24. Despite acknowledging that Dr. Chen’s co-authored 2013 article did not include any analysis of North Carolina, Tr. 2153:25-2154:2, Dr. Barber testified that the article “invites the question as to what it would look like if we looked to see if this relationship also existed in North Carolina,” Tr. 2154:5-7.

637. Dr. Chen performed that analysis in this case and concluded that North Carolina's political geography does not account for the extreme partisan bias of the enacted plans. Tr. 2216:11-2220:21. Similarly, at the time he conducted his analysis and arrived at the opinions he offered regarding the potential partisan bias of North Carolina's political geography, Dr. Barber was unaware that Dr. Chen's co-author in the same 2013 paper, Dr. Jonathan Rodden, had come to the conclusion that North Carolina's Democratic voters were relatively efficiently distributed throughout the State. Tr. 2222:9-2223:4, 2224:6-2225:8.

638. Dr. Barber did not engage in the type of analysis that Dr. Chen performed to account for and measure the extent to which "natural" partisan bias in North Carolina's political geography could account for electoral outcomes favoring Republicans, but the analysis that Dr. Barber did conduct of the distribution of North Carolina's Democratic voters actually supports Plaintiffs' claims. Dr. Barber observed a positive correlation between the population density of North Carolina's VTDs and their support for Democratic candidates, but he acknowledged that there were "a lot of other Democratic-leaning VTDs" spread across the state, even outside the urban centers of Raleigh and Charlotte. Tr. 2216:11-16. Dr. Barber's analysis fails to offer the Court any information about how the many Democratic-leaning VTDs across North Carolina fit into specific county groupings and specific districts and therefore, his analysis is not directly relevant to the questions the Court faces. Unlike Dr. Cooper, who performed an extensive analysis of North Carolina's House and Senate Districts at the county grouping level, Dr. Barber admitted that he could not offer any opinion to rebut Plaintiffs' evidence regarding gerrymandering within those county groupings. Tr. 2217:8-2218:12.

639. In light of the above shortcomings in Dr. Barber's analysis, the Court gives little weight to his testimony.

e. Dr. Johnson

640. Legislative Defendants' expert Dr. Douglas Johnson has a Bachelor of Arts in Government from Claremont McKenna College, a Master of Business Administration from the Anderson School at UCLA, and a Ph.D. in Political Science from Claremont Graduate University. Tr. 1812:15-21; LDTX288. The focus of Dr. Johnson's graduate studies in Political Science was American politics, and he wrote his dissertation on redistricting. Tr. 1812:22-25.

641. Dr. Johnson is a fellow at the Rose Institute of State and Local Government at Claremont McKenna College. Tr. 1813:1-6. In that role, he leads the Institute's research into census and redistricting issues. Tr. 1813:1-6.

642. Dr. Johnson is also the President of National Demographics Corporation ("NDC"), where he has been employed full-time since 2001. Tr. 1814:7-19. NDC is engaged in redistricting work, including liability analyses, polarized voting studies, and other related redistricting issues. Tr. 1814:20-25.

643. Dr. Johnson has used Maptitude for Redistricting software ("Maptitude") for his work for 20 to 30 hours a week since 2001. Tr. 1816:16-23.

644. Dr. Johnson has served as an expert witness in redistricting litigation numerous times; specifically, he has been involved in hundreds of challenges to at-large elections for city councils, school boards, counties, etc. Tr. 1817:5-7; 1817:14-21. Dr. Johnson has also served as an expert witness in challenges to state redistricting plans. Tr. 1817:22-24. Dr. Johnson has never been excluded as an expert witness by any court. Tr. 1817:8-10.

645. Dr. Johnson was accepted by the Court as an expert in the fields of political science, political geography, redistricting, and Maptitude for Redistricting software. Tr. 1818:11-20.

646. Dr. Johnson offered primarily two sets of opinions in this case. First, Dr. Johnson purported to show that one could draw a Senate map even more favorable to

Republicans if one ignored the North Carolina Constitution's Whole County Provision. Second, Dr. Johnson attempted to critique Dr. Chen's analysis of Dr. Hofeller's files.

647. The Court finds Dr. Johnson's analysis unpersuasive and gives his opinions little weight.

648. Dr. Johnson has testified as a live expert witness in four cases previously, and the courts in all four cases have rejected his analysis. Tr. 1886:21-1891:14; *see Covington*, 283 F. Supp. 3d at 450 (finding "Dr. Johnson's analysis and opinion . . . unreliable and not persuasive"); *Luna v. Cnty. of Kern*, 291 F. Supp. 3d 1088, 1137 (E.D. Cal. 2018) (holding that defendants' argument based on Dr. Johnson's analysis "lacks merits"); *Garrett v City of Highland*, 2016 WL 3693498, at *2 (Cal. Super. Apr. 06, 2016) (finding Dr. Johnson's methodology "inappropriate"); *Jauregui v City of Palmdale*, No. BC483039, 2013 WL 7018375, at *2 (Cal. Super. Dec. 23, 2013) (describing Dr. Johnson's work in the case was "unsuitable" and "troubling"). This Court joins these other courts in rejecting Dr. Johnson's methodologies, analyses, and conclusions.

649. Dr. Johnson created a "test map" for the North Carolina Senate that ignored the Whole County Provision entirely. Tr. 1892:21-1893:4. Based on this test map, Dr. Johnson purported to find that one could draw a Senate map even more favorable for Republicans than the enacted Senate plan if one were to ignore the county groupings and traversal rules. Tr. 1893:17-22. The Court finds Dr. Johnson's analysis using his test map to be of little probative value to the legal and factual issues in this case.

650. Dr. Johnson performed no statewide analysis of the House or the Senate to determine the extent to which, *within* the confines of the Whole County Provision, the enacted House and Senate plans constitute the most favorable maps for Republicans possible. Tr. 1894:13-1896:7. The only individual county groupings for which Dr. Johnson performed partisanship analysis within the confines of the Whole County Provision were

Mecklenburg County in the Senate, *id.*, and Wake County in the House, and Dr. Johnson's partisanship analysis of the Mecklenburg Senate districts was erroneous and not credible for the reasons already explained. *See supra*, para 251. Dr. Johnson did not analyze any other individual House or Senate county grouping to determine whether the enacted plans' version of that grouping is the most favorable configuration of the grouping possible for Republicans. *Id.* Dr. Johnson thus offered no rebuttal to the testimony of Plaintiffs' experts demonstrating that the enacted plans constitute extreme partisan gerrymanders of specific county groupings.

651. Dr. Johnson instead ignored the Whole County Provision in creating his Senate test map, but as he acknowledged, the Whole County Provision is a state constitutional requirement. Tr. 1896:8-10. The General Assembly lacks authority to ignore the state constitutional county groupings and traversals requirements in creating redistricting plans. Dr. Johnson's test map analysis is thus no more relevant or helpful than would be a test map that ignores other constitutional requirements, such as the equal population requirement for districts. One could draw a map ignoring the equal population requirement that is even more favorable for Republicans than Dr. Johnson's test map, and certainly more favorable for Republicans than the enacted plan. Tr. 1896:11-1900:21. But the fact that one could draw such a hypothetical map in no way sheds light on whether the enacted plan is an extreme partisan gerrymander. *See id.* It provides no information as to whether the General Assembly acted within extreme partisan intent in drawing districts within the confines of the accepted constitutional requirements, and it provides no information as to the effects of the gerrymander on the number of Republican and Democratic-leaning districts relative to a nonpartisan plan. *See id.* Dr. Johnson's test map analysis is of little probative value to the legal or factual issues in this case.

652. With respect to Dr. Johnson’s testimony regarding Dr. Hofeller’s files, as described above, the Court struck all of Dr. Johnson’s affirmative analysis of Dr. Hofeller’s 2017 draft House and Senate plans and the extent to which they overlap with other plans including the final enacted plans. Tr. 1988:11-1990:4. The Court struck this testimony and all related portions of Dr. Johnson’s rebuttal report under Rule 702 and Rule 403 after it was uncovered on cross-examination that Dr. Johnson had made a series of significant errors. *Id.*

**3. Dr. Karen Owen’s Testimony on “Representation” and
“Competitive Elections” and Representative John Bell’s
Testimony on Competitive Districts Was Unpersuasive**

a. Dr. Karen Owen

653. Legislative Defendants offered expert testimony of Dr. Karen Owen on the issues of “representation” and “competitive elections” in North Carolina. Tr. 1488:6-22; LDTX 293 (Owen report).

654. Dr. Owen is an assistant professor of political science at West Georgia University, and focuses on southern politics, political representation, legislative politics, campaigns and elections and research methodology, and developed her expertise through both academic and professional work. Tr. 1481:18-22, 1483:16-24, 1484:2-1485:24, 1486:4-11; LDTX293 at 1-2, 28-34.

655. Dr. Owen has particular expertise in the area of southern politics; she has presented papers and been a lead discussant at the Citadel’s Symposium on Southern Politics for over 10 years, she has taught and studied courses in southern politics. Tr. 1480:15-1481:4.

656. Dr. Owen’s work in southern politics has included writing and presenting a paper in 2016 titled “Growth and Geography in the South: Representation in the North Carolina and Texas State Legislatures.” Tr. 1481:5-11; LDTX293 at 31.

657. The Court admitted Dr. Owen as an expert. Tr. 1487:24-1488:1.

658. Dr. Owen has very little experience or expertise with politics, elections, or representation in North Carolina specifically. Dr. Owen has never lived or worked in North Carolina. LDTX 293 at 28-29. With the exception of the aforementioned paper, she has never written or published about North Carolina politics, elections, or representation. Tr. 1555:19-1557:25. She has never participated in or spoken at any conference about North Carolina politics, elections, or representation. Tr. 1558:1-1559:16. She has never been interviewed by any media outlet about North Carolina politics, elections, or representation. Tr. 1559:17-25. She has never taught a class focused on North Carolina politics, elections, or representation—the closest she came was teaching a single course in “Southern Politics” three years ago. LDTX 293 at 32; Tr. 1560:11-24.

659. The methodologies Dr. Owen employed to evaluate “representation” and “competitive elections” in North Carolina were unpersuasive. In conducting her research and analysis for this case, Dr. Owen did not speak to any current or former North Carolina legislator, or any winning or losing North Carolina candidate, or any North Carolina voter. Tr. 1561:7-1564:14. Nor did she consult any North Carolina polling data or survey data. Tr. 1564:15-19. Instead, Dr. Owen’s analysis of representation in North Carolina was based on her conversations with several staff members in the General Assembly’s Legislative Services Commission. Tr. 1561:7-1562:1. Her analysis of competitive elections in North Carolina was based on her reading of newspaper articles and a website called “Real Facts North Carolina.” Tr. 1566:5-13.

660. Based on her lack of relevant expertise and the inadequate methodologies she employed in this case, the Court gives little weight to Dr. Owen’s opinions about “representation” and “competitive elections” in North Carolina.

661. In addition, as described below, Dr. Owen’s analysis and opinions are unhelpful in resolving the issues in this case.

i. Dr. Owen’s analysis of “representation” was unpersuasive

662. In support of her opinion that Republican members of the General Assembly meaningfully “represent” their Democratic constituents, Dr. Owen emphasized that the members “are noticeably involved in more than producing and passing laws,” LDTX 293 at 22, and that they provide “constituent services” to Republican and Democratic voters alike, regardless of their political beliefs, party affiliation, or past votes. Tr. 1567:15-1568:18; *see also* Tr. 1801:17-1803:2 (similar testimony by Rep. Bell); Tr. 2000:21-2001:6 (Sen. Brown).

663. The Court finds, however, that the mere provision of constituent services does not mean that voters of one particularly party are meaningfully “represented” by a member of the other party political and does not mean the voter receives the same “representation” that the voter would if he or she could elect the candidate of that voter’s choice. Constituent services are only one part of a legislator’s responsibilities. In addition to providing constituent services, members of the North Carolina House and Senate participate in enacting the State’s laws and policies. Tr. 1803:3-9 (Rep. Bell). Legislative Defendants’ own expert, Dr. Brunell, testified that, among the ways in which a legislator “represents” his or her constituents, providing constituent services may be “an important part, but if you are sort of, you know, worried about the hierarchy of the things that they do, I think that how they vote on the major issues of the day is more important.” Tr. 2353:11-2354:4. Dr. Brunell agreed that “policy responsiveness” is a “higher form of representation” and “more critical to the notion of representing someone.” Tr. 2354:5-10; *see* Tr. 2353:3-6 (agreeing that “the responsiveness of a legislator to the voters on questions on policy in particular is critical to Democratic representation”). As “just one example of the many issues from which policy responsiveness is the more central form of representing

the people in the legislature,” Dr. Brunell agreed that if a legislator casts a vote for gun control, the legislator is “not giving good representation to the voters in [his or her] district who don’t want gun control.” Tr. 2354:11-19. Thus, as Dr. Brunell agreed, “a change in the party that represents a given district generates a huge difference in the policies for which the representative of that district will vote.” Tr. 2354:20-23. Another witness for Legislative Defendants, Senator Harry Brown, also testified that “in order to push legislation that we thought was important to this state,” a political party must “be in the majority.” Tr. 2023:20-22.

664. Other purported indicia of “representation” discussed by Dr. Owen likewise were unhelpful. For example, Dr. Owen pointed to a form “welcome letter” that members of the General Assembly can send to new voters in their districts. LDTX 293 at 22; Tr. 1514:4-1516:23. But sending a form letter does not signify meaningful representation.

ii. Dr. Owen’s analysis of “competitive elections” was unpersuasive

665. In her analysis of “competitive elections,” Dr. Owen suggested that Democrats’ failure to win certain House and Senate races in 2018 was the result of poor “candidate quality,” rather than the district boundaries. Tr. 1540:13-1542:9; LDTX 293 at 6-7. Dr. Owen’s methodology was unreliable, and her conclusions were unpersuasive.

666. The sole criterion that Dr. Owen applied for assessing candidate quality turns on whether the candidate “had held prior elected office.” Tr. 1533:5-21. Under this “dichotomous measure,” any person who has previously held elective office is a “quality” candidate, and any person without prior experience holding elective office is not “quality.” LDTX 293 at 10. This approach ignores other important factors and is an unreliable measure of whether a person is a quality candidate.

667. For instance, Dr. Owen classified a Democratic candidate who is a U.S. Army Colonel as a “nonquality” candidate. Tr. 1566:18-25; LDTX 293 at 12. She classified

another Democratic candidate who is a “small business owner” and “community leader” as a “nonquality” candidate. Tr. 1567:1-7; LDTX 293 at 12. And she classified a “young Air Force veteran and attorney” as a non-quality candidate. LDTX 293 at 16. These examples illustrate the shortcomings in Dr. Owen’s methodologies.

b. Representative John Bell

668. Legislative Defendants also offered the testimony of Representative John Bell, IV, who testified about the competitiveness of various House districts.

669. Representative Bell is the majority leader for the North Carolina House of Representatives and represents House District 10. Tr. 1739:16-22.

670. As Majority Leader, Representative Bell assists the Conference chair to achieve two goals: 1) recruit candidates and 2) win elections. Tr. 1740:5-6.

671. Representative Bell also pointed to candidate quality as a purported factor in House districts he claimed might be “competitive” in 2020. Tr. 1752:13-1754:18. But Representative Bell’s claim that certain House districts could be “competitive” in 2020, and only were not close in 2018 due to purported candidate quality issues is not persuasive. Representative Bell included on his list of purportedly competitive districts numerous districts that were not only extremely lopsided in the 2018 state House elections, but that feature similarly lopsided vote shares under the results of prior statewide elections, including the 2012 Presidential election, the 2016 Presidential election, and the 2016 Governor election. Tr. 1788:5-1801:16. Representative Bell included on his list of purportedly competitive districts a handful of districts in which the Republican candidate won over 60% of the vote share in the district across all of these various elections. *Id.* Moreover, for many of the districts he identified, Representative Bell testified that the race could be competitive only if it was an “open seat”—that is, if the incumbent Republican member either retires or does not run again in 2020. Tr. 1767:3-23, 1772:16-20, 1773:24-

1774:2. However, there is no evidence that any of those Republicans members will not run in 2020. Tr. 1786:4-10. The Court finds that Representative Bell's testimony does not provide a reliable basis for assessing the competitiveness of current House districts.

**4. The Whole County Provision Did Not Prevent Systematic
Gerrymandering of the Plans for Partisan Gain**

672. Throughout trial, Legislative Defendants and their experts emphasized the existence of the North Carolina Constitution's Whole County Provision, which the North Carolina Supreme Court has held requires dividing the State into discrete county groupings and restricting the traversal of county lines for districts within a county grouping. Tr. 252:17-257:10. The Court finds that Legislative Defendants overstate the constraints imposed by the Whole County Provision, and that Legislative Defendants intentionally and effectively gerrymandered the enacted plans for partisan gain within the confines of the Whole County Provision.

673. Legislative Defendants overstate the impact of the Whole County Provision. Dr. Chen explained in un rebutted testimony that the Whole County Provision dictates the contours of only 13 of 120 House districts and 17 of 50 Senate districts. Tr. 782:2-783:1. Legislative Defendants thus had discretion in drawing 107 of 120 House districts and 33 of 50 Senate districts—constituting over 82% of all districts across both enacted plans. *Id.*

674. As detailed above, the evidence establishes that Legislative Defendants engaged in systematic gerrymandering for partisan gain in the districts in which they did have discretion. All four of Plaintiffs' experts concluded that Legislative Defendants acted with extreme partisan intent within the confines of the Whole County Provision. Plaintiffs' simulations experts—Drs. Chen, Mattingly, and Pegden—simulated plans that adhered to the existing House and Senate county groupings, and all three experts found that the enacted plans are extreme outliers compared to nonpartisan plans that follow the same

county groupings. And all three experts found that specific county groupings are extreme outliers compared to other, simulated versions of the same county grouping that contain the same number of traversals as the enacted plan in that grouping. Dr. Cooper independently established—in un rebutted testimony—that the enacted plans pack and crack Democratic voters within specific county groupings.

5. Plaintiffs Do Not Seek Proportional Representation

675. Contrary to Legislative Defendants’ claim, Plaintiffs do not seek proportional representation. As described in more detail below, Plaintiffs assert that the General Assembly may not intentionally discriminate against voters and may not attempt to predetermine election outcomes and control of the General Assembly. Dr. Chen and Dr. Mattingly established through their simulations that nonpartisan plans that do not intentionally discriminate against Democratic voters may well *not* provide for proportional representation. Under Dr. Chen’s and Dr. Mattingly’s simulations, there are scenarios where Democrats would win 50% of the statewide vote but less than 50% of the seats in either chamber. Tr. 306:16-307:2 (Dr. Chen); Tr. 1103:24-1104:5, 1132:6-1133:13 (Dr. Mattingly). Dr. Pegden’s simulations also did not rely on any notion of proportional representation. Tr. 1306:22-24.

676. Legislative Defendants’ presentation regarding the proportionality of seats to votes in specific county groupings like Wake and Mecklenburg Counties, Tr. 2068:10-2069:13, was not persuasive. As Dr. Pegden explained, analyzing proportionality at the local level of a county grouping is “completely useless” and can be misleading in the context of a gerrymandered map. Tr. 1452:17-1454:18. In a county grouping that contains a small number of districts and in which one party wins an overwhelming share of the vote across the grouping, one would expect that party to win a disproportionate share of the seats under a nonpartisan map, and likely all of the seats. Tr. 1452:23-1453:12. Under a

Republican gerrymander, however, Republican mapmakers will allow that natural outcome to occur in county groupings that strongly favor Republicans but will gerrymander the more Democratic county groupings in a way that may result in proportional outcomes just in those Democratic county groupings—*e.g.*, by gerrymandering the grouping to elect one or two Republican seats. Tr. 1452:17:22-1454:18. Thus, the fact that the enacted plans may have resulted in proportional seats-to-votes outcomes in individual county groupings that are heavily Democratic is not evidence of a lack of gerrymandering.

6. Legislative Defendants Did Not Seek to Comply with the VRA and Did Not Show Nonpartisan Plans Would Violate the VRA

677. Defendants did not present persuasive evidence at trial to substantiate any federal defense under the Voting Rights Act or Fourteenth or Fifteenth Amendments. Defendants did not introduce persuasive evidence at trial to establish any of the prerequisites to application of the Voting Rights Act under *Thornburg v. Gingles*, 478 U.S. 30 (1986). For example, Defendants presented no expert testimony or any other evidence to establish the existence of legally sufficient racially polarized voting in any area of North Carolina, or any particular state House or state Senate district. Nor did Defendants introduce any evidence to establish the minimum African-American percentage of the voting age population (“BVAP”) needed in any particular area of the State for the African American community to be able to elect the candidate of its choice.

678. Notably, Legislative Defendants retained Dr. Jeffrey Lewis, a political scientist from UCLA, who analyzed and provided estimates of the minimum BVAP needed in certain county groupings for African-American-preferred candidates to win. *See* PX773 (Amended Table 4 from Lewis Report). But Legislative Defendants chose not to have Dr. Lewis testify at trial. At the conclusion of trial, Legislative Defendants attempted to introduce expert reports that a different political scientist (Dr. Alan Lichtman) had

prepared on behalf of different parties in previous lawsuits in North Carolina years ago, but the Court sustained Plaintiffs' objections to the admission of these reports. Tr. 2376:2-3. The Court excluded these reports as inadmissible hearsay and undisclosed expert work, particularly given that Plaintiffs dispute Legislative Defendants' characterization of those reports. Tr. 2363:16-2364:25.

679. Defendants did not demonstrate that the relief Plaintiffs seek would violate the VRA or federal equal protection requirements. Plaintiffs established that it would not. Using Dr. Lewis's estimates of the minimum BVAP needed in certain county groupings for an African-American-preferred candidate to win a state House or Senate election, Dr. Chen determined how many of his simulations of those county groupings contained districts exceeding Dr. Lewis's BVAP-threshold estimates. Tr. 512:15-517:6. Dr. Chen determined that for every county grouping that Dr. Lewis analyzed except one in the House and one in the Senate, all of Dr. Chen's simulations produce at least as many districts above Dr. Lewis's BVAP-threshold estimate as does the enacted House or Senate plan. *Id.*; see PX775; PX776. For the two remaining county groupings, which are Forsyth-Yadkin in the House and Davie-Forsyth in the Senate, a majority of Dr. Chen's simulations of each grouping produce at least as many districts above Dr. Lewis's BVAP-threshold estimate as the enacted plan. *Id.*; see PX775; PX776. The evidence at trial thus demonstrated that, based on the BVAP-threshold estimates of Legislative Defendants' own expert, adopting nonpartisan House and Senate plans would not diminish the ability of African Americans to elect the candidate of their choice.

680. While Defendants' failure to introduce any evidence at trial necessary to the legal elements of a racial vote dilution defense is dispositive of any such defense, the Court further finds that—as a factual matter—Legislative Defendants did not draw or adopt any district under the 2017 Plans in an effort to comply with the VRA.

681. One of the Adopted Criteria, titled “No Consideration of Racial Data,” stated that “[d]ata identifying the race of individuals or voters shall not be used in the drawing of legislative districts in the 2017 House and Senate plans.” LDTX155. When submitting the plans to the *Covington* court for approval, Legislative Defendants stated that “[d]ata regarding race was not used in the drawing of districts for the 2017 House and Senate redistricting plans.” PX629 at 10.

682. Legislative Defendants have claimed in this case that, even though they did not use racial data in drawing the districts, they purportedly checked the racial demographics of the districts on the “back end” to ensure that “the VRA was satisfied.” *See, e.g.,* Leg. Defs.’ Pre-Trial Brief at 44. Legislative Defendants presented no testimony at trial to substantiate this assertion, and the Court finds the assertion not credible for multiple reasons.

683. Throughout the 2017 redistricting process, Legislative Defendants asserted that the reason they were ignoring racial considerations entirely in drawing the new districts was because they had concluded that the “third *Gingles* factor” was not “present” anywhere in the State of North Carolina. PX593 at 52 (statement of Sen. Berger); *see also id.* (“we cannot prove the third *Gingles* factor”) (statement of Sen. Berger). Legislative Defendants repeatedly told the *Covington* court that they could not “justify the use of race in drawing districts” in the 2017 Plans—and thus could not seek to hit a “racial numerical quota” for any district—because they had insufficient evidence of “legally sufficient racially polarized voting.” *Covington*, No. 15-cv-399, ECF No. 184 at 10; ECF No. 192 at 12; *see also* ECF No. 184-17 at 12.

684. The existence of legally sufficient racially polarized voting is a “prerequisite[]” to VRA liability; if any *Gingles* factor is not met, “§ 2 simply does not

apply.” *Cooper v. Harris*, 137 S. Ct. 1455, 1472 (2017). Hence, when Legislative Defendants concluded that the third *Gingles* factor was not met, they necessarily concluded that the VRA did not impose requirements for the racial composition of any state House or state Senate district. Any assertion by Legislative Defendants now that they sought to “satisfy” the VRA in adopting the 2017 Plans does not make sense as a legal or factual matter given their assertions at the time.

685. Moreover, the mere timing of when Legislative Defendants learned of the racial composition of the new districts belies their claim that they reviewed the data to ensure VRA compliance. The Stat Packs that Legislative Defendants produced when they released the initial drafts of the House and Senate plans did not include racial data on any of the draft districts.¹³ At the August 24, 2017 hearing at which the Senate Redistricting Committee passed the Senate plan out of committee, Senator Hise insisted, “I have not seen any racial data for these districts.” PX606 at 46:2-3. Representative Lewis said the same the next day at the hearing at which the House plan was passed out of the House Redistricting Committee. PX605 at 20:11-21:18. Only after this point did legislative staff produce racial data on the districts—at the request of Democratic legislators over Legislative Defendants’ objections. PX600 at 11. Even then, Legislative Defendants claimed to have remained unaware of the racial composition of the districts. Representative Lewis asserted that he did not “see” any data on the racial composition of the House districts until *after* the House plan was passed by the full House chamber. *Id.* at 12. Legislative Defendants clearly did not have assure themselves that the plans satisfied

¹³ See <https://bit.ly/2YJnaRP> (Stat Pack for Senate draft plan released on August 21, 2017); <https://bit.ly/2YPch0L> (Stat Pack for House draft plan released on August 20, 2017).

the VRA by meeting particular racial thresholds when they purportedly had no knowledge of the racial composition of the districts.

686. Legislative Defendants have pointed to a single floor statement by Senator Berger near the end of the legislative process that mentioned the VRA, but that statement does not establish that Senator Berger, let alone any other Legislative Defendant, actually undertook efforts to comply with the VRA. Senator Berger made that statement immediately after declaring that the third *Gingles* factor was not met, which if true would preclude VRA application as a matter of law. PX593 at 52-54. And neither Senator Berger nor anyone else has pointed to any change that was made to any House or Senate district to ensure VRA compliance.

687. The Court finds that the General Assembly did not enact any House or Senate district under the 2017 Plans with the specific intent of complying with the VRA, and that Defendants have not established that the VRA requires maintaining any of the districts that Plaintiffs challenge in its current form.

688. Indeed, the Court finds that Legislative Defendants' stated concern that "unpacking" heavily-Democratic districts could dilute the voting power of African-Americans to be a pretext for partisan gerrymandering. Unrebutted evidence presented at trial established that Legislative Defendants themselves created districts with artificially low BVAPs when it was politically advantageous. In particular, while Legislative Defendants now accuse Plaintiffs of seeking to "crack" African American voters, the unrebutted evidence established that Legislative Defendants cracked African American voters in rural and semi-rural parts of the state where cracking Democratic voters would maximize Republican victories.

689. Dr. Chen demonstrated that, for several rural and semi-rural House county groupings, all or nearly all of his simulated plans (which ignored racial data in drawing the

districts) produced a district in the grouping with a higher or much higher BVAP than any districts in that grouping under the enacted plan. Tr. 519:6-523:9. These county groupings include the Anson-Union, Cleveland-Gaston, Columbus-Pender-Robeson, and Duplin-Onslow county groupings, all of which are county groupings in which Legislative Defendants cracked Democratic voters to dilute their political power. *Id.*; see PX225; PX226; PX227; PX228. Dr. Chen's findings significantly undermine Legislative Defendants' claims that they seek to create higher-BVAP districts to promote the political power of African-American communities. *Id.*

7. Legislative Defendants, through Dr. Hofeller, substantially completed drafting the Enacted Maps in June 2017

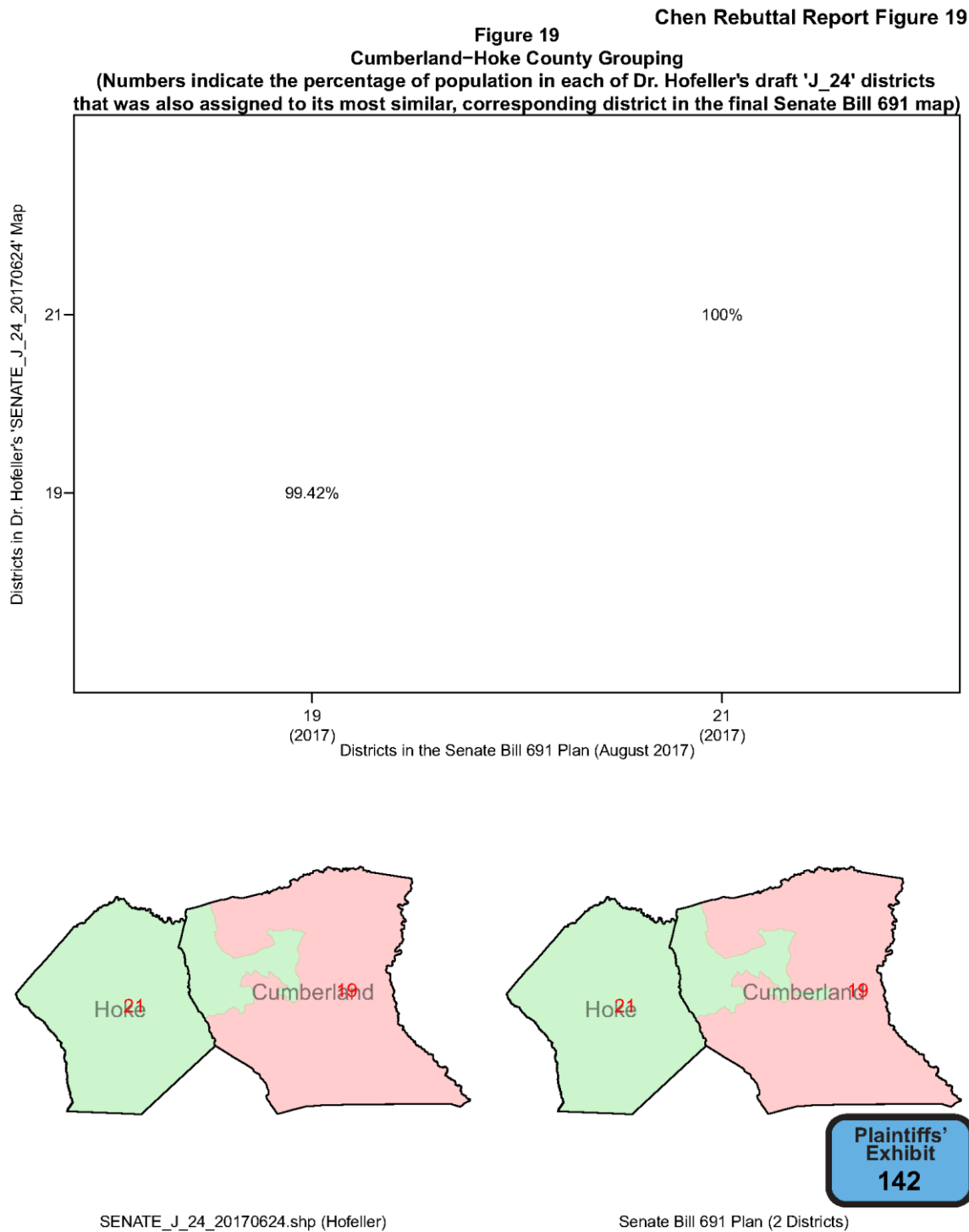
690. Based on an analysis of draft maps from June 2017 found on Dr. Hofeller's storage devices, see FOF § B.2., Plaintiffs' expert Dr. Jowei Chen demonstrated that Dr. Hofeller had begun drawing the 2017 Plans prior to July 2017, and that he had already substantially completed them by that point. Dr. Chen's analysis compared the draft maps found on Dr. Hofeller's hard drive, each of which is dated by the metadata, with the Enacted 2017 House and Senate maps to determine the degree of similarity between the drafts and the Enacted Plans.

691. For the Senate, Dr. Chen analyzed a draft map that Dr. Hofeller last modified on June 24, 2017. Tr. 400:7-10, 402:5-403:8; *see also* PX572 (showing "last modified" date); PX123 at 25 (Chen Rebuttal Report). Dr. Chen found that Dr. Hofeller had already finished assigning 97.6% of the State's census blocks and 95.6% of the State's population to their final Senate districts in this June 24, 2017, draft map. Tr. 400:6-25.

692. To show the extent to which Dr. Hofeller had already completed drawing the new Senate plan, Dr. Chen compared individual Senate county groupings in the June 24, 2017, draft map to the final version of the same grouping in the enacted Senate plan. The

figure below, PX142 [Chen rebuttal report, Figure 19], shows one such comparison for a Senate county grouping containing multiple districts that was redrawn in 2017. Tr. 416:15-20; PX123 at 27-38 (Chen Rebuttal Report). Dr. Chen repeated this analysis for every Senate county grouping containing multiple districts that was redrawn in 2017, and the Court adopts, by reference to Dr. Chen's trial testimony and as illustrated in his Rebuttal Report, each of those illustrations as if fully set forth herein. Tr. 404:19-417:13; PX140; PX141; PX142; PX143; PX144; PX145; PX146; PX147 [Chen rebuttal report, Figures 17-24].

693. In Dr. Chen's illustrations, as shown by the example below, the map on the bottom left is Dr. Hofeller's June 24, 2017, draft, the map on the bottom right is the final enacted plan, and the top half of the figure reports the percentage of the population in each district in Dr. Hofeller's draft (on the vertical axis) that were assigned to the corresponding district in the final enacted plan (on the horizontal axis). Tr. 405:5-407:18. For instance, the figure included below shows that 99.42% of the population assigned to Senate District 19 in Dr. Hofeller's June 24, 2017 draft was also assigned to Senate District 19 in the enacted Senate plan, while 100% of the population in Dr. Hofeller's draft Senate District 21 was assigned to Senate District 21 in the enacted plan. *Id.*



694. Based on Dr. Chen's analysis of each Senate county grouping containing multiple districts that was redrawn in 2017, the Court finds that by June 24, 2017—nearly seven weeks before the Adopted Criteria were passed on August 10, 2017—Dr. Hofeller had

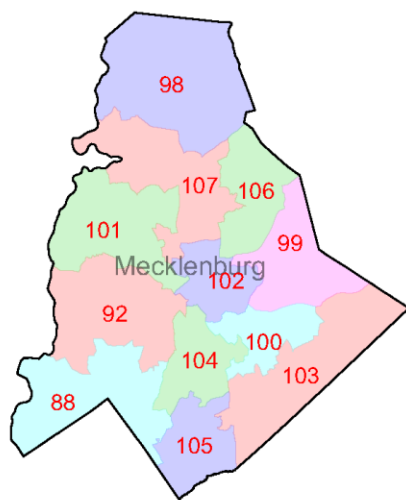
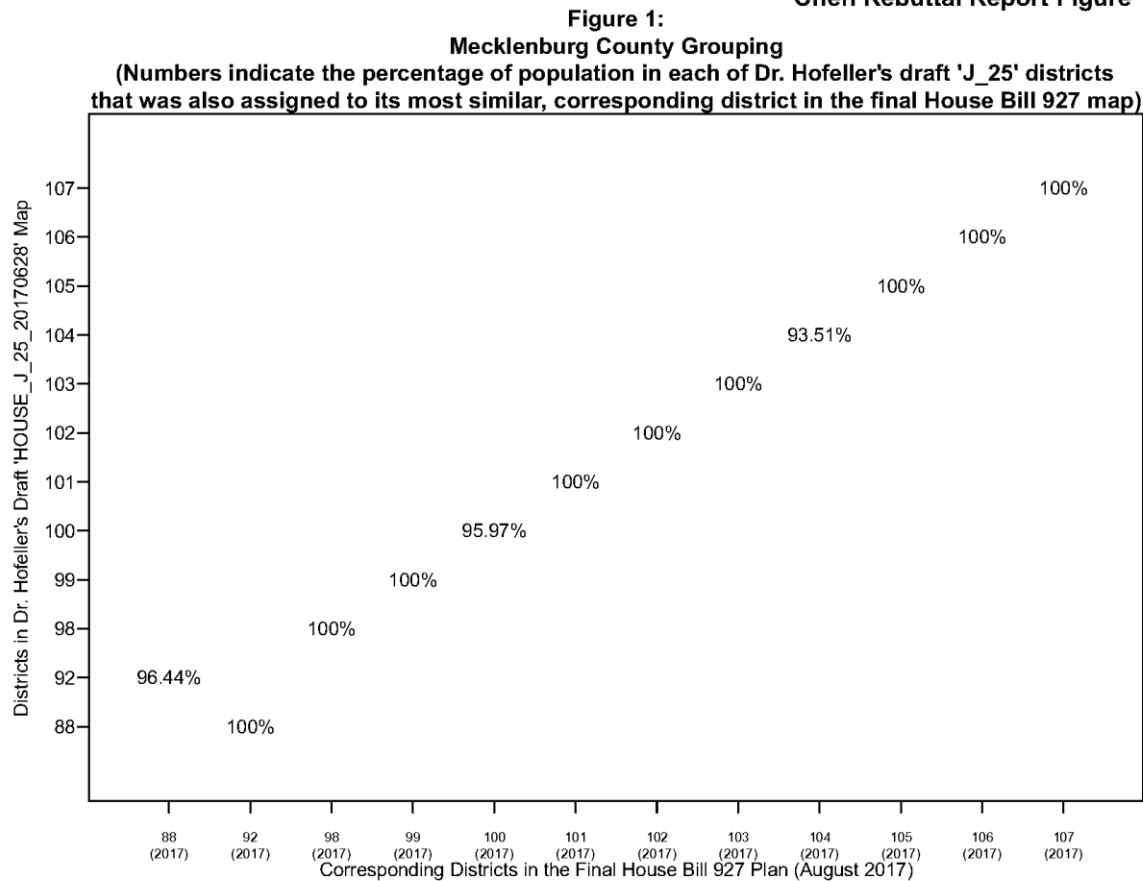
fully or at least substantially completed drawing every Senate county grouping redrawn in 2017. Tr. 404:23-417:13. The only Senate districts that were not an over-90% match to their final corresponding districts were a few heavily Democratic districts in Wake and Mecklenburg Counties. Tr. 412:5-414:12; *see* PX146; PX147.

695. Contrary to Legislative Defendants' contention, the North Carolina Constitution's Whole County Provision is not responsible for the high degree of overlap between Dr. Hofeller's draft Senate plan and the final enacted plan. As Dr. Chen testified, the Whole County Provision did not dictate the contours of Senate districts in counties such as Cumberland, Forsyth, Johnston, Durham, Wake, Mecklenburg, and Guilford Counties, and Dr. Hofeller's June 24, 2017 draft districts in these counties distinctly match the final versions. Tr. 408:13-416:1.

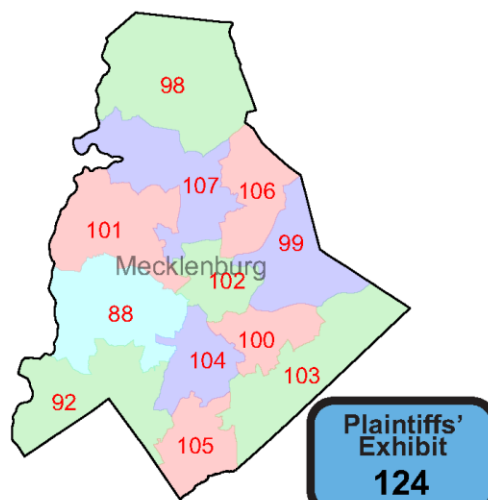
696. As with the Senate, Dr. Chen found that Dr. Hofeller had substantially completed drawing the new House plan by June 2017. Analyzing a draft House plan that Dr. Hofeller last modified on June 28, 2017, *see* PX569, Dr. Chen found that Dr. Hofeller had already finished assigning 90.9% of North Carolina's census blocks and 88.2% of the State's population into their final House districts in the June 28, 2017 draft plan. Tr. 401:15-23, 417:14-418:2, PX123 at 2-3 (Chen Rebuttal Report).

697. The figure below, PX124 [Chen rebuttal report, Figure 1], shows Dr. Chen's analysis comparing Dr. Hofeller's June 28, 2017, draft House map to the final enacted House map for a single House county grouping, in this instance, Mecklenburg County. Dr. Chen repeated this analysis for every House county grouping containing multiple districts that was redrawn in 2017, and the Court adopts, by reference to Dr. Chen's trial testimony and as illustrated in his Rebuttal Report, each of those illustrations as if fully set forth herein. Tr. 417:14-427:15; PX124; PX125; PX126; PX127; PX128; PX129; PX131; PX132; PX133 [Chen rebuttal report, Figures 1 – 6, 8-10]

Chen Rebuttal Report Figure 1



HOUSE_J_25_20170628.shp (Hofeller)



House Bill 927 Plan (12 Districts)

698. Based on Dr. Chen's analysis, the Court finds that by June 28, 2017—over six weeks before the Adopted Criteria were passed—Dr. Hofeller had fully or at least

substantially completed drawing numerous House county groupings redrawn in 2017. Tr. 419:12-427:1.

699. Contrary to Legislative Defendants' contention, the Whole County Provision is not responsible for the high degree of overlap between Dr. Hofeller's June 28, 2017 draft House plan and the final enacted House plan. Tr. 419:12-427:1. The Whole County Provision does not dictate the contours of House districts in counties such as Mecklenburg, Harnett, Wayne, Sampson, Orange, Durham, Pitt, Robeson, Granville, Forsyth, and Rockingham Counties, and Dr. Hofeller's June 28, 2017, draft House districts in these counties were near-exact matches to the final districts. *Id.*

700. The Court finds Dr. Chen's comparisons of Dr. Hofeller's June 2017 draft plans to the enacted plans to be highly credible and persuasive. Notably, Dr. Chen's analysis stands un rebutted. Legislative Defendants presented testimony from Dr. Douglas Johnson in an attempt to rebut Dr. Chen's analysis. However, the Court struck all of Dr. Johnson's analysis comparing Dr. Hofeller's draft districts and the final enacted districts after Plaintiffs' cross-examination exposed a series of significant errors and unreliable methodology. Tr. 1988:11-1990:4.

701. As for Dr. Johnson's remaining criticisms of Dr. Chen's methodology for calculating the overlap between Dr. Hofeller's June 2017 draft plans and the final enacted plans, the Court assigns them no weight. The Court finds that Dr. Chen employed a reasonable methodology to estimate the degree of similarity between the draft and final plans, by simply calculating the percentage of census blocks and population in each draft district that was also assigned to the most closely corresponding district in the final enacted House or Senate plan. *See* Tr. 398:3-399:15. Dr. Chen's methodology and findings also accord with a visual comparison of the draft House and Senate districts to the corresponding final versions. No party has disputed that the maps presented in Plaintiffs'

Exhibits 124-129, 131-133, and 140-147 accurately reflect the district boundaries in Dr. Hofeller's June 2017 draft plans and the final enacted plans.

702. The Court concludes from this showing, and therefore finds, that Dr. Hofeller, and consequently the Legislative Defendants who retained him, by having largely completed the drafting of House and Senate maps by June, 2017, did so with little regard for the Adopted Criteria, or the neutral, non-partisan criteria contained therein, which were not adopted by the Senate Redistricting Committee and House Select Committee on Redistricting until August 10, 2017, and provided to Dr. Hofeller on August 11, 2017. PX 603 at 4:23-5:5; PX629. The Court finds that this is further compelling evidence of the intent of Legislative Defendants to create legislative districts by subordinating Democratic voters for partisan gain and to entrench the power of the Republican majority.

703. Since Dr. Hofeller's files came to light, Legislative Defendants have asserted that they did not know at the time that Dr. Hofeller was developing draft maps prior to August 2017 or that Plaintiffs cannot "connect" Dr. Hofeller's draft maps to the General Assembly. *See, e.g.*, Leg. Defs'. Pre-trial Brief, p. 36. The Court finds this argument unpersuasive. Dr. Hofeller was retained by the General Assembly on June 27, 2017, for the purposes of drawing the 2017 House and Senate maps. PX641. The Court finds it highly improbable that in the days leading up to his engagement, or in the nearly six weeks following, Dr. Hofeller never mentioned his draft maps to anyone connected with Legislative Defendants until after he received the Adopted Criteria on August 11, 2017—especially since, merely eight or nine days later, Legislative Defendants were able to reveal final drafts of his House and Senate maps. PX605 at 16:2-17:16; PX629 at 7.

704. The Court is troubled by representations made by Legislative Defendants, or attorneys working on their behalf, in briefs and arguments to the *Covington* Court and to General Assembly colleagues at committee meetings that affirmatively stated that no draft

maps had been prepared even as late as August 4, 2017. *See, e.g., Covington*, ECF No. 161 at 2, 4, 13, and 28-29; PX601 at 11-12; PX602 at 72-73; and PX629 at 3, 4, 6 and 10 (*Covington*, ECF No. 184). For the purposes of determining liability for the claims asserted in this litigation,¹⁴ the Court finds it unnecessary to delve further into these concerns, other than to note that the Court, as previously stated, is persuaded, and specifically finds, that Dr. Hofeller's intent and actions, as evidenced throughout his map-drawing process from at least early June 2017, are attributable in full to Legislative Defendants.

¹⁴ In considering the appropriate remedy, the Court does take this finding into account, among others, when mandating that the remedial process be more transparent to the Court, the public, and the entire General Assembly.

CONCLUSIONS OF LAW

I. THE STANDING OF PLAINTIFFS

1. The North Carolina Constitution provides: “All courts shall be open; every person for an injury done him in his lands, goods, person, or reputation shall have remedy by due course of law; and right and justice shall be administered without favor, denial, or delay.” N.C. Const. art. I, § 18.

2. “[B]ecause North Carolina courts are not constrained by the ‘case or controversy’ requirement of Article III of the United States Constitution, our State’s standing jurisprudence is broader than federal law.” *Davis v. New Zion Baptist Church*, 811 S.E.2d 725, 727 (N.C. Ct. App. 2018) (quotation marks omitted); *accord Goldston v. State*, 361 N.C. 26, 35, 637 S.E.2d 876, 882 (2006) (“While federal standing doctrine can be instructive as to general principles . . . and for comparative analysis, the nuts and bolts of North Carolina standing doctrine are not coincident with federal standing doctrine.”). At a minimum, a plaintiff in a North Carolina court has standing to sue when it would have standing to sue in federal court.

3. The North Carolina Supreme Court has broadly interpreted Article I, § 18 to mean that “[a]s a general matter, the North Carolina Constitution confers standing on those who suffer harm.” *Mangum v. Raleigh Bd. of Adjustment*, 362 N.C. 640, 642, 669 S.E.2d 279, 281 (2008). The “gist of the question of standing” under North Carolina law is whether the party seeking relief has “alleged such a personal stake in the outcome of the controversy as to assure that concrete adverseness which sharpens the presentation of issues upon which the court so largely depends for illumination of difficult constitutional questions.” *Goldston*, 361 N.C. at 30, 637 S.E.2d at 879 (quoting *Stanley v. Dep’t of Conservation & Dev.*, 284 N.C. 15, 28, 199 S.E.2d 641, 650 (1973)). Although the North Carolina Supreme Court “has declined to set out specific criteria necessary to show

standing in every case, [it] has emphasized two factors in its cases examining standing: (1) the presence of a legally cognizable injury; and (2) a means by which the courts can remedy that injury.” *Davis*, 811 S.E.2d at 727-28.

A. The North Carolina Democratic Party Has Standing

4. The Court determines that the North Carolina Democratic Party (NCDP) has standing, both to sue on its own behalf as an organization and to sue on behalf of its members.

5. “An association may have standing in its own right to seek judicial relief from injury to itself and to vindicate whatever rights and immunities the association itself may enjoy.” *River Birch Assoc. v. Raleigh*, 326 N.C. 100, 129, 388 S.E.2d 538, 555 (1990) (quoting *Warth v. Seldin*, 422 U.S. 490, 511, 95 S. Ct. 2197, 2211 (1975)). The Court finds instructive the United States Supreme Court holdings under federal standing principles that state political parties and organizations similar to the NCDP have standing to bring voting-rights challenges on their own behalf. *See, e.g., Crawford v. Marion County Election Bd.*, 553 U.S. 181, 189 n.7 (2008); *id.* at 204-09 (Scalia, J., concurring); *id.* at 209 n.2 (Souter, J., dissenting); *Gill v. Whitford*, 138 S. Ct. 1916, 1938 (2018) (Kagan, J., concurring) (explaining how these standards can apply to political parties and similar organizations in a partisan gerrymandering case); *Ohio A. Philip Randolph Inst. v. Householder*, 373 F. Supp. 3d 978, 1076 (S.D. Ohio 2019); *League of Women Voters of Mich. v. Johnson*, 352 F. Supp. 3d 777, 801 (E.D. Mich. 2018). Indeed, the federal court in *Common Cause v. Rucho* held that the NCDP had standing to bring a partisan gerrymandering challenge on its own behalf—based in part on the testimony of Mr. Goodwin. *See, Common Cause v. Rucho*, 318 F. Supp. 3d 777, 830 (M.D.N.C. 2018), *vacated on other grounds*, 139 S. Ct. 2484 (2019).

6. The NCDP has standing in its own right to seek judicial relief in this case because the NCDP has sufficiently demonstrated the presence of a legally cognizable injury to NCDP and a means by which the courts of our State can remedy that injury.¹⁵

7. An association also “has standing to bring suit on behalf of its members when: (a) its members would otherwise have standing to sue in their own right; (b) the interests it seeks to protect are germane to the organization’s purpose; and (c) neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit.” *River Birch Assoc.*, 326 N.C. at 130, 388 S.E.2d at 555 (quoting *Hunt v. Wash. State Apple Adver. Comm’n*, 432 U.S. 333, 343, 97 S. Ct. 2434, 2441 (1977)). An associational plaintiff need not show that *all* of its members would have standing to sue in their own right when seeking declaratory or injunctive relief; rather, it is sufficient if any “one” member would have individual standing. *Id.*; see also *State Employees Ass’n of N.C., Inc. v. State*, 357 N.C. 239, 580 S.E.2d 693 (2003) (reversing lower court decision that had required every member of association or organization to have standing). The Court finds instructive federal court holdings that organizations similar to the NCDP have standing to bring partisan gerrymandering challenges on behalf of their members. See, e.g., *League of Women Voters of Mich.*, 373 F. Supp. 3d at 933, 937-38; *Ohio A. Philip Randolph Inst.*, 373 F. Supp. 3d at 1072-73; *Rucho*, 318 F. Supp. 3d at 827, 835-36 (holding that the NCDP had standing to bring a partisan gerrymandering claim on behalf of its members).

8. The NCDP has standing to sue on behalf of its members in this case because its members—registered Democratic voters located in every state House and state Senate District across our State—otherwise have standing to sue in their own right, the interests

¹⁵ Furthermore, even under the federal standing requirements of (1) injury, (2) causation, and (3) redressability, see *Gill v. Whitford*, 138 S. Ct. 1916, 1929 (2018), the NCDP has such a personal stake in the outcome of the controversy that it has standing under this more stringent standard.

that the NCDP seeks to protect are germane to the NCDP's purpose, and neither the claims asserted nor the declaratory and injunctive relief requested requires the participation of individual NCDP members in this lawsuit.

B. Common Cause Has Standing

9. The Court further holds that Common Cause has standing, both to sue on its own behalf as an organization and to sue on behalf of its members.

10. The Court finds instructive federal court holdings that organizations similar to Common Cause have standing to bring partisan gerrymandering challenges on their own behalves and on behalf of their members. *See, e.g., League of Women Voters of Mich.*, 373 F. Supp. 3d at 933, 937-38; *Ohio A. Philip Randolph Inst.*, 373 F. Supp. 3d at 1072-75; *Rucho* 318 F. Supp. 3d at 830-31 (holding that Common Cause had standing to bring a partisan gerrymandering challenge).

11. Like the NCDP, Common Cause has standing in its own right to seek judicial relief in this case because Common Cause has sufficiently demonstrated the presence of a legally cognizable injury to Common Cause and a means by which the courts of our State can remedy that injury.¹⁶

12. Common Cause also has standing to sue on behalf of its members in this case because at least one of its individual members has standing to sue in his or her own right, the interests Common Cause seeks to protect in this case are germane to Common Cause's purposes, and neither the claims asserted nor the declaratory and injunctive relief requested requires the participation of individual Common Cause members in this lawsuit.

¹⁶ Furthermore, even under the federal standing requirements of (1) injury, (2) causation, and (3) redressability, *see Gill*, 138 S. Ct. at 1929, Common Cause has such a personal stake in the outcome of the controversy that it has standing under this more stringent standard.

C. The Standing of Individual Plaintiffs

13. Individual Plaintiffs also have standing to challenge each of their individual districts as well as their county groupings. All of the Individual Plaintiffs detailed below have shown “a personal stake in the outcome of the controversy,” *Goldston*, 361 N.C. at 30, 637 S.E.2d at 879, and that the 2017 Plans cause them to “suffer harm,” *Mangum*, 362 N.C. at 642, 669 S.E.2d at 281.

14. Certain Individual Plaintiffs have standing to challenge their own districts. Plaintiffs introduced extensive district-specific evidence demonstrating how, through cracking and packing, the 2017 Plans dilute the voting power of Individual Plaintiffs and other Democratic voters. Plaintiffs also introduced un rebutted, district-specific evidence demonstrating that twenty-two Individual Plaintiffs live in House districts that are outliers in partisan composition relative to the districts in which they live under Dr. Chen’s nonpartisan simulated plans and that twenty Individual Plaintiffs live in Senate districts that are outliers in the same manner. FOF § E.3. Each of these Individual Plaintiffs thus established a personal stake in the outcome of the controversy and a specific harm directly attributable to the partisan gerrymandering of the district in which they reside. *Goldston*, 361 N.C. at 30, 637 S.E.2d at 879; *Mangum*, 362 N.C. at 642, 669 S.E.2d at 281; *see, e.g., Rucho*, 318 F. Supp. 3d at 817; *Ohio A. Philip Randolph Inst.*, 373 F. Supp. 3d at 1063; *League of Women Voters of Mich.*, 373 F. Supp. 3d at 916; *Benisek*, 348 F. Supp. 3d 493, 517 (D. Md. 2018), *vacated on other grounds*, 139 S. Ct. 2484 (2019). Moreover, these Individual Plaintiffs have demonstrated, through extensive district-specific evidence, the presence of a legally cognizable injury and, as discussed in great detail below, a means by which the courts of our State can remedy that injury.

15. These Individual Plaintiffs challenge not only the individual districts in which they reside, but also the county groupings as a whole in which they reside. The

United States Supreme Court has held that individual voters have standing under the federal Constitution to challenge only their own districts on partisan gerrymandering grounds, *Gill*, 138 S. Ct. at 1930-31; however, in light of the less stringent standing requirements in our State, and because the manner in which one district is drawn in a county grouping necessarily is tied to the drawing of some, and possibly all, of the other districts within that same grouping, a challenge to the entire county grouping by these Individual Plaintiffs constitutes the necessary “personal stake in the outcome of the controversy” for a plaintiff to have standing in this case. *Goldston*, 361 N.C. at 30, 637 S.E.2d at 879; see *Erfer v. Commonwealth*, 794 A.2d 325, 330 (Pa. 2002) (recognizing that a “reapportionment plan acts as an interlocking jigsaw puzzle, each piece reliant upon its neighbors to establish a picture of the whole” and that an “allegation that a litigant’s district was improperly gerrymandered necessarily involves a critique of the plan beyond the borders of his district”), *abrogated on other grounds by League of Women Voters of Pa. v. Commonwealth*, 178 A.3d 737 (Pa. 2018).

16. On the other hand, several named Individual Plaintiffs do not have standing to challenge either the individual House or Senate District in which they reside because, under Dr. Chen’s analysis, the district in which they would reside is not an outlier—based upon the location of that Individual Plaintiff’s residence—when compared to all of Dr. Chen’s nonpartisan simulated House or Senate maps.¹⁷ Therefore, these Individual Plaintiffs have not demonstrated a cognizable injury and a means by which the Court could remedy that injury; however, with respect to the challenged districts in which these

¹⁷ These Individual Plaintiffs without standing to challenge either their individual House or Senate district are: Virginia Walters Brien, Leon Charles Schaller, Howard Du Bose, Jr., Deborah Anderson Smith, Alyce Machak, John Balla, John Mark Turner, Ann McCracken, and Mary Ann Peden-Coviello. FOF § E.3.; PX238; PX117. The Court notes that although some Individual Plaintiffs may not have standing to challenge *both* of their House and Senate districts, they do have standing to challenge at least *a* district in which they reside.

Individual Plaintiffs reside, because the NCDP has standing to bring partisan gerrymandering claims on behalf of its members, the Court concludes that Plaintiffs' challenges to these districts do not fail for lack of standing.

II. THE 2017 PLANS VIOLATE THE NORTH CAROLINA CONSTITUTION'S FREE ELECTIONS CLAUSE

17. Two months ago, in *Rucho v. Common Cause*, 139 S. Ct. 2484 (2019), the United States Supreme Court considered constitutional challenges to political gerrymandering of Congressional districts in North Carolina and Maryland.

18. The North Carolina Congressional map under consideration by the Supreme Court, adopted by the General Assembly on February 19, 2016, arose in remarkably similar circumstances as the maps under consideration by this trial court, which were adopted August 31, 2017: both the 2016 Congressional map and the 2017 legislative maps were required after a federal court declared existing maps unconstitutional; both were drawn under the direction of many of the same actors working on behalf of the Republican-controlled General Assembly; both were drawn by Dr. Thomas Hofeller; both were drawn in large part before the General Assembly's redistricting committee met and approved redistricting criteria; and both, as has been found above with respect to the 2017 legislative maps, were drawn with the intent to maximize partisan advantage and, in fact, achieved their intended partisan effects.

19. In the majority opinion of the *Rucho* Court, the Justices found the Congressional maps before them to be "highly partisan, by any measure," *id.* at 2491, and "blatant examples of partisanship driving districting decisions," *id.* at 2505. The majority further reaffirmed that "partisan gerrymanders are incompatible with democratic principles." *Id.* at 2506 (citing *Ariz. State Legislature v. Ariz. Indep. Redistricting Comm'n*, 135 S. Ct. 2652, 2658 (U.S. 2016)).

20. Nonetheless, the Supreme Court concluded, in the majority opinion, that “partisan gerrymandering claims present political questions beyond the reach of the *federal* courts.” *Rucho*, 139 S. Ct. at 2506-07 (emphasis added). The Court held that the *federal* courts “have no commission to allocate political power and influence in the absence of a constitutional directive or legal standards to guide us in the exercise of such authority,” *id.* at 2508, and that the United States Constitution “confines the *federal* courts to a properly judicial role,” because there is no “no plausible grant of authority in the [United States] Constitution, and no legal standards to limit and direct their decisions,” *id.* at 2507 (emphasis added).

21. The Supreme Court hastened to add, however, that “our conclusion does not condone excessive partisan gerrymandering” and nor does its conclusion “condemn complaints about districting to echo into a void.” *Id.*

22. Rather, the Supreme Court held, “[t]he States . . . are actively addressing the issue on a number of fronts,” and “[p]rovisions in state statutes and *state constitutions* can provide standards and guidance for state courts to apply.” *Id.* (emphasis added).

23. The North Carolina Constitution, in the Declaration of Rights, Article I, § 10, declares that “[a]ll elections shall be free.”

24. The Free Elections Clause, Article I, § 10, is one of the clauses that makes the North Carolina Constitution more detailed and specific than the federal Constitution in the protection of the rights of its citizens. *Corum v. Univ. of N.C. ex rel. Bd. of Gov’rs*, 330 N.C. 761, 783, 413 S.E.2d 276, 290 (1992). The federal Constitution contains no similar counterpart to this declaration, although several other states’ constitutions do.

25. The broad language of the Free Elections Clause has not heretofore been extensively interpreted by our appellate courts. However, “it is emphatically the province

and duty of the judicial department to say what the law is.” *Marbury v. Madison*, 5 U.S. (1 Cranch) 137, 177 (1803).

26. The North Carolina Supreme Court has long recognized the fundamental role of the will of the people in our democratic government. “Our government is founded on the will of the people. Their will is expressed by the ballot.” *People ex rel. Van Bokkelen v. Canaday*, 73 N.C. 198, 220 (1875).

27. In particular, the North Carolina Supreme Court has directed that in construing provisions of the Constitution, “we should keep in mind that this is a government of the people, in which the will of the people--the majority--legally expressed, must govern.” *State ex rel. Quinn v. Lattimore*, 120 N.C. 426, 428, 26 S.E. 638, 638 (1897) (citing N.C. Const. art. I, § 2).

28. Therefore, our Supreme Court continued, because elections should express the will of the people, it follows that “all acts providing for elections, should be liberally construed, that tend to promote a fair election or expression of this popular will.” *Id.* “[F]air and honest elections are to prevail in this state.” *McDonald v. Morrow*, 119 N.C. 666, 673, 26 S.E. 132, 134 (1896).

29. Our Supreme Court has elevated this principle to the highest legal standard, noting that it is a “compelling interest” of the State “in having fair, honest elections.” *State v. Petersilie*, 334 N.C. 169, 184, 432 S.E.2d 832, 840 (1993). As to this there is little room for debate; the Court has recognized that “there is also agreement as to the compelling government interest in ensuring honest and fair elections.” *Id.* (citing *Burson v. Freeman*, 504 U.S. 191, 198-99, 112 S. Ct. 1846, 1851-52 (1992)).

30. In giving meaning to the Free Elections Clause, this Court’s construction of the words contained therein must therefore be broad to comport with the following

Supreme Court mandate: “We think the object of all elections is to ascertain, fairly and truthfully, the will of the people--the qualified voters.” *Hill v. Skinner*, 169 N.C. 405, 415, 86 S.E. 351, 356 (1915) (quoting *R. R. v. Comrs.*, 116 N.C. 563, 568, 21 S.E. 205, 207 (1895)).

31. As such, the Court concludes that the meaning of the Free Elections Clause is that elections must be conducted freely and honestly to ascertain, fairly and truthfully, the will of the people. This, the Court concludes, is a fundamental right of the citizens enshrined in our Constitution’s Declaration of Rights, a compelling governmental interest, and a cornerstone of our democratic form of government.

32. The Court now turns to the issue of whether extreme partisan gerrymandering of legislative districts run afoul of the mandate of the Free Elections Clause by depriving citizens of elections that are conducted freely and honestly to ascertain, fairly and truthfully, the will of the people.

33. At its most basic level, partisan gerrymandering is defined as: “the drawing of legislative district lines to subordinate adherents of one political party and entrench a rival party in power.” *Ariz. State Legislature*, 135 S. Ct. at 2658.

34. The danger of partisan gerrymandering is that it has the potential to violate “the core principle of republican government . . . that the voters should choose their representatives, not the other way around.” *Id.* at 2677; *see also Powell v. McCormack*, 395 U.S. 486, 540-41, 89 S. Ct. 1944, 1974 (1969) (“[T]he true principle of a republic is, that the people should choose whom they please to govern them.” (quoting Alexander Hamilton in 2 Debates of the Federal Constitution 257 (J. Elliott ed. 1876))). Moreover, it can represent “an abuse of power that, at its core, evinces a fundamental distrust of voters, serving the self-interest of the political parties at the expense of the public good.” *LULAC v. Perry*, 548

U.S. 399, 456, 126 S. Ct. 2594, 2631 (2006) (Steven, J., concurring in part and dissenting in part) (quotation and citation omitted).

35. Partisan gerrymandering operates through vote dilution—the devaluation of one citizen’s vote as compared to others. A mapmaker draws district lines to “pack” and “crack” voters likely to support the disfavored party. *See generally Gill*, 138 S. Ct. 1916. The mapmaker packs supermajorities of those voters into a relatively few districts, in numbers far greater than needed for their preferred candidates to prevail. Then the mapmaker cracks the rest across many more districts, spreading them so thin that their candidates will not be able to win. Whether the person is packed or cracked, his vote carries less weight—has less consequence—than it would under a neutrally drawn (non-partisan) map. *See id.*, 138 S. Ct. at 1935-36 (Kagan, J., concurring). In short, the mapmaker has made some votes count for less, because they are likely to go for the other party. *Rucho*, 2513-14 (Kagan, J., dissenting).

36. Seen in this light, it is clear to the Court that extreme partisan gerrymandering—namely redistricting plans that entrench politicians in power, that evince a fundamental distrust of voters by serving the self-interest of political parties over the public good, and that dilute and devalue votes of some citizens compared to others—is contrary to the fundamental right of North Carolina citizens to have elections conducted freely and honestly to ascertain, fairly and truthfully, the will of the people.

37. Extreme partisan gerrymandering does not fairly and truthfully ascertain the will of the people. Voters are not freely choosing their representatives. Rather, representatives are choosing their voters. It is not the will of the people that is fairly ascertained through extreme partisan gerrymandering. Rather, it is the will of the map drawers that prevails.

38. The Court is further persuaded that the history of the Free Elections Clause comports with the interpretation applied in this case.

39. The Free Elections Clause dates back to the North Carolina Declaration of Rights of 1776. The framers of the North Carolina Declaration of Rights based the Free Elections Clause on a provision of the 1689 English Bill of Rights providing that “election of members of parliament ought to be free.” Bill of Rights 1689, 1 W. & M. c. 2 (Eng.); see John V. Orth, *North Carolina Constitutional History*, 70 N.C. L. Rev. 1759, 1797-98 (1992).

40. This provision of the 1689 English Bill of Rights grew out of the king’s efforts to manipulate parliamentary elections, including by changing the electorate in different areas to achieve “electoral advantage.” J.R. Jones, *The Revolution of 1688 in England* 148 (1972). The king’s attempt to maintain control of parliament by manipulating elections led to a revolution, and after dethroning the king, the revolutionaries called for a “free and lawful parliament” as a critical reform. Grey S. De Krey, *Restoration and Revolution in Britain: A Political History of the Era of Charles II and the Glorious Revolution* 241, 247-48, 250 (2007).

41. A number of states included versions of a free election clause in their early Declarations of Rights, all drawing inspiration from the 1689 English Bill of Rights. The Framers of North Carolina’s Declaration of Rights in turn drew inspiration for North Carolina’s Free Elections Clause from these other states, which included Pennsylvania, Maryland, and Virginia. See Orth, 70 N.C. L. Rev. at 1797-98.

42. Like the 1689 English Bill of Rights, North Carolina’s Free Elections Clause, in conjunction with the companion provision of the State Constitution now found in Article I, § 9 concerning redress of grievances, mandates that elections in North Carolina must be “free from interference or intimidation” by the government, so that all North Carolinians are freely able, through the electoral process, to pursue a “redress of grievances and for

amending and strengthening the laws.” John V. Orth & Paul M. Newby, *The North Carolina State Constitution* 55-57 (2d ed. 2013) (hereinafter “Orth & Newby”). “[T]his pair of sections concerns the application of the principle of popular sovereignty.” *Id.* at 55. As the North Carolina Supreme Court explained nearly a century ago, the Free Elections Clause reflects that “[o]ur government is founded on the consent of the governed,” and the right to free elections “must be held inviolable to preserve our democracy.” *Swaringen v. Poplin*, 211 N.C. 700, 191 S.E. 746, 747 (1937).

43. North Carolina has broadened and strengthened the Free Elections Clause since its adoption in 1776 to make these purposes clear. The original clause stated that “elections of members, to serve as Representatives in the General Assembly, ought to be free.” N.C. Declaration of Rights, VI (1776). The next version of the State’s Constitution, adopted in 1868, declared that “[a]ll elections ought to be free,” expanding the principle to include all elections in North Carolina. N.C. Const. art. I, § 10 (1868). In the current State Constitution, adopted in 1971, the Free Elections Clause now mandates that “[a]ll elections *shall* be free.” N.C. Const. art. I, § 10 (emphasis added). This change was intended to “make [it] clear” that the Free Elections Clause and the other rights secured to the people by the Declaration of Rights “are commands and not mere admonitions” to proper conduct on the part of the government. *N.C. State Bar v. DuMont*, 304 N.C. 627, 635, 639, 286 S.E.2d 89, 94, 97 (1982) (quoting Report of the N.C. State Constitution Study Comm’n to the N.C. State Bar and the N.C. Bar Ass’n, 75 (1968)).

44. The North Carolina Supreme Court has enforced the Free Elections Clause to invalidate laws that interfere with voters’ ability to freely choose their representatives. In *Clark v. Meyland*, the North Carolina Supreme Court struck down a law that required voters seeking to change their party affiliation to take an oath supporting the party’s

nominees “in the next election and . . . thereafter.” 261 N.C. 140, 141, 134 S.E.2d 168, 169 (1964). The Court held that this attempt to manipulate the outcome of future elections “violate[d] the constitutional provision that elections shall be free.” *Id.* at 143, 134 S.E.2d at 170.

45. The partisan gerrymandering of the 2017 Plans strikes at the heart of the Free Elections Clause. Using their control of the General Assembly, Legislative Defendants manipulated district boundaries, to the greatest extent possible, to control the outcomes of individual races so as to best ensure their continued control of the legislature.

46. Plaintiffs’ experts demonstrated that the 2017 Plans were designed, specifically and systematically, to maintain Republican majorities in the state House and Senate. Drs. Chen and Mattingly each independently established that the 2017 Plans were gerrymandered to be most resilient in electoral environments where Democrats could win majorities in either chamber under nonpartisan plans. FOF § B.3.a, b. Their analyses establish that it is nearly impossible for Democrats to win majorities in either chamber in any reasonably foreseeable electoral environment. *Id.* Elections are not free when partisan actors have tainted future elections by specifically and systematically designing the contours of the election districts for partisan purposes and a desire to preserve power. In doing so, partisan actors ensure from the outset that it is nearly impossible for the will of the people—should that will be contrary to the will of the partisan actors drawing the maps—to be expressed through their votes for State legislators.

47. The 2017 Plans also unlawfully seek to predetermine election outcomes in specific districts and county groupings. Drs. Chen and Mattingly each found numerous districts and county groupings that result in safe or relatively safe Republican seats under the enacted plans but would be far more competitive or even Democratic-leaning under nonpartisan plans. In the remaining county groupings, Drs. Chen and Mattingly similarly

found that Legislative Defendants placed their thumbs heavily on the scale to favor Republicans. *See* FOF § C.

48. The harm caused by this manipulation of election outcomes subverts another key purpose of the Free Elections Clause, which, in conjunction with Article I, § 9, is to facilitate the ability of North Carolina citizens to seek a “redress of grievances and for amending and strengthening the law.” Orth & Newby, at 56. Democratic voters in North Carolina cannot meaningfully seek to redress their grievances or amend the laws consistent with their policy preferences when they cannot obtain a majority of the General Assembly.

49. For the foregoing reasons, the Court concludes that Plaintiffs have met their burden of showing, plainly and clearly without any reasonable doubt, that the enacted plans violate the North Carolina Constitution’s guarantee of free elections in Article I, Section 10 of the North Carolina Constitution by demonstrating that Legislative Defendants, with the predominant intent to control and predetermine the outcome of legislative elections for the purpose of retaining partisan power in the General Assembly, manipulated the current district boundaries. And Plaintiffs have met their burden to establish that the manipulation of district boundaries by Legislative Defendants resulted in extreme partisan gerrymandering, subordinating traditional redistricting criteria, so that the resulting maps cracked and packed voters to achieve these partisan objectives. The 2017 Plans, individually and collectively, deprive North Carolina citizens of the right to vote for General Assembly members in elections that are conducted freely and honestly to ascertain, fairly and truthfully, the will of the people.

III. THE 2017 PLANS VIOLATE THE NORTH CAROLINA CONSTITUTION'S EQUAL PROTECTION CLAUSE

50. The Equal Protection Clause of the North Carolina Constitution guarantees to all North Carolinians that “[n]o person shall be denied the equal protection of the laws.” N.C. Const., art. I, § 19.

51. Generally, partisan gerrymandering runs afoul of the State’s obligation to provide all persons with equal protection of law because, by seeking to diminish the electoral power of supporters of a disfavored party, a partisan gerrymander treats individuals who support candidates of one political party less favorably than individuals who support candidates of another party. *Cf. Lehr v. Robertson*, 463 U.S. 248, 265, 103 S. Ct. 2985 (1983) (“The concept of equal justice under law requires the State to govern impartially.”)

A. North Carolina’s Equal Protection Clause Provides Greater Protection for Voting Rights Than its Federal Counterpart

52. North Carolina’s Equal Protection Clause provides greater protection for voting rights than federal equal protection provisions. *Stephenson v. Bartlett*, 355 N.C. 354, 377-81 & n.6, 562 S.E.2d 377, 393-96 & n.6 (2002); *Blankenship v. Bartlett*, 363 N.C. 518, 522-28, 681 S.E.2d 759, 763-66 (2009). “It is beyond dispute that [North Carolina courts] ha[ve] the authority to construe [the North Carolina Constitution] differently from the construction by the United States Supreme Court of the Federal Constitution, as long as our citizens are thereby accorded no lesser rights than they are guaranteed by the parallel federal provision.” *Stephenson*, 355 N.C. at 381 n.6, 562 S.E.2d at 395 n.6. North Carolina courts can and do interpret even “identical term[s]” in the State’s Constitution more broadly than their federal counterparts. *Northampton Cnty. Drainage Dist. No. One v. Bailey*, 326 N.C. 742, 749, 392 S.E.2d 352, 357 (1990).

53. The North Carolina Supreme Court has held that North Carolina’s Equal Protection Clause protects “the fundamental right of each North Carolinian to *substantially equal voting power*.” *Stephenson*, 355 N.C. at 379, 562 S.E.2d at 394 (emphasis added). “It is well settled in this State that ‘the right to vote *on equal terms* is a fundamental right.’” *Id.* at 378, 562 S.E.2d at 393 (quoting *Northampton Cnty.*, 326 N.C. at 747, 392 S.E.2d at 356) (emphasis added). These principles apply with full force in the redistricting context, and because a fundamental right is implicated, strict scrutiny applies. *See id.* at 377-78, 562 S.E.2d at 393-94.

54. The North Carolina Supreme Court has applied this broader state constitutional protection to invalidate redistricting schemes and other elections laws under Article I, § 19, irrespective of whether they violated federal equal protection guarantees. In *Stephenson*, the Court held that use of single-member and multi-member districts in a redistricting plan violated Article I, § 19. *Id.* at 377-81 & n.6, 562 S.E.2d at 393-95 & n.6. The Court explained that, although such a redistricting scheme did not violate the United States Constitution, it restricted the “fundamental right under the State Constitution” to “substantially equal voting power and substantially equal legislative representation.” *Id.* at 382, 562 S.E.2d at 396. Because the “classification of voters” between single-member and multi-member districts created an “impermissible distinction among similarly situated citizens,” it “necessarily implicate[d] the fundamental right to vote on equal terms,” triggering “strict scrutiny.” *Id.* at 377-78, 562 S.E.2d at 393-94.

55. In *Blankenship*, the Court held that Article I, § 19 mandates one-person, one-vote in judicial elections, even though the United States Constitution does not. 363 N.C. at 522-24, 681 S.E.2d at 762-64. The Court stressed that “[t]he right to vote on equal terms in

representative elections . . . is a fundamental right” and therefore “triggers heightened scrutiny.” *Id.*

56. And in *Northampton County*, the Court applied strict scrutiny to invalidate certain rules related to voting for drainage districts, holding that the rules at issue deprived one county’s residents of the “fundamental right” to “vote on equal terms” with residents of a neighboring county. 326 N.C. at 747, 392 S.E.2d at 356.

57. Although the North Carolina Constitution provides greater protection for voting rights than the federal Equal Protection Clause, our courts use the same test as federal courts in evaluating the constitutionality of challenged classifications under an equal protection analysis. *Duggins v. N.C. State Bd. of Certified Pub. Accountant Exam’rs*, 294 N.C. 120, 131, 240 S.E.2d 406, 413 (1978); *Richardson v. N.C. Dep’t of Corr.*, 345 N.C. 128, 134, 478 S.E.2d 501, 505 (1996).

58. Generally, this test has three parts: (1) intent, (2) effects, and (3) causation. First, the plaintiffs challenging a districting plan must prove that state officials’ “predominant purpose” in drawing district lines was to “entrench [their party] in power” by diluting the votes of citizens favoring their rival. *Ariz. State Legis.*, 135 S. Ct. at 2658. Second, the plaintiffs must establish that the lines drawn in fact have the intended effect by “substantially” diluting their votes. *Rucho*, 318 F. Supp. 3d at 861. Finally, if the plaintiffs make those showings, the State must provide a legitimate, non-partisan justification (*i.e.*, that the impermissible intent did not cause the effect) to preserve its map. *Rucho*, 139 S. Ct. at 2516 (Kagan, J., dissenting).

B. The 2017 Plans Were Created with the Intent to Discriminate Against Plaintiffs and Other Democratic Voters

59. To establish a discriminatory purpose or intent, a plaintiff need not show that the discriminatory purpose is “express or appear[s] on the face of the statute.”

Washington v. Davis, 426 U.S. 229, 241, 96 S. Ct. 2040, 2048 (1976). Rather, “an invidious discriminatory purpose may often be inferred from the totality of the relevant facts.” *Id.* at 242, 96 S. Ct. at 2048.

60. The United States Supreme Court has recognized that there are certain purposes for which a state redistricting body may take into account political data or partisan considerations in drawing district lines. For example, a legislature may, under appropriate circumstances, draw district lines to avoid the pairing of incumbents. *Karcher v. Daggett*, 462 U.S. 725, 740, 103 S. Ct. 2653, 2663 (1983). Likewise, a state redistricting body does not violate the United States Constitution by seeking “to create a districting plan that would achieve a rough approximation of the statewide political strengths of the Democratic and Republican Parties.” *Gaffney v. Cummings*, 412 U.S. 735, 752, 93 S. Ct. 2321, 2331 (1973). And a redistricting body may draw district lines to respect municipal boundaries or maintain communities of interest. *Abrams v. Johnson*, 521 U.S. 74, 100, 117 S. Ct. 1925, 1940 (1997). Accordingly, a plaintiff in a partisan gerrymandering case cannot satisfy the discriminatory intent requirement simply by proving that the redistricting body intended to rely on political data or to take into account political or partisan considerations. Rather, the plaintiff must show that the redistricting body intended to apply partisan classifications or deprive citizens of the right to vote on equal terms “in an invidious manner or in a way unrelated to any legitimate legislative objective.” *Vieth*, 541 U.S. at 307, 124 S. Ct. at 1793 (Kennedy, J., concurring in the judgment).

61. “Blatant examples of partisanship driving districting decisions,” *Rucho*, 139 S. Ct. at 2505, are unrelated to any legitimate legislative objective. Indeed, partisan gerrymanders are incompatible with democratic principles. *Vieth*, 541 U.S. at 292, 124 S.

Ct. at 1785 (plurality opinion); *id.*, at 316, 124 S. Ct. at 1798 (Kennedy, J., concurring in judgment); *Ariz. State Legislature*, 135 S. Ct. at 2658.

62. Partisan gerrymanders are also contrary to the compelling governmental interests established by the North Carolina Constitution “in having fair, honest elections,” *see Petersilie*, 334 N.C. at 182, 432 S.E.2d at 840, where the “will of the people” is ascertained “fairly and truthfully,” *Skinner*, 169 N.C. at 415, 86 S.E. at 356. Partisan gerrymandering contravenes the legitimate purposes of redistricting because it is intended to hamper, rather than to “achiev[e.] . . . fair and effective representation for all citizens.” *Reynolds v. Sims*, 377 U.S. 533, 565-66, 84 S. Ct. 1362, 1383 (1964).

63. Moreover, the intentional “classification of voters” based on partisanship in order to pack and crack them into districts is an “impermissible distinction among similarly situated citizens” aimed at denying equal voting power. *See Stephenson*, 355 N.C. at 377-78, 562 S.E.2d at 393-94 (“The classification of voters into both single-member and multi-member districts within plaintiffs’ proposed remedial plans necessarily implicates the fundamental right to vote on equal terms . . . These classifications, as used within plaintiffs’ proposed remedial plans, create an impermissible distinction among similarly situated citizens based upon the population density of the area in which they reside.”). “A state may not dilute the strength of a person’s vote to give weight to other interests.” *Texfi Indus., Inc. v. Fayetteville*, 301 N.C. 1, 13, 269 S.E.2d 142, 150 (1980) (citing *Evans v. Cornman*, 398 U.S. 419, 90 S. Ct. 1752 (1970)).

64. Legislative Defendants openly admitted that they used prior election results to draw districts to benefit Republicans in both 2011 and 2017. FOF § B.1. Dr. Hofeller’s own files provide even more direct evidence that the predominant goal of the 2017 Plans was to maximize Republicans’ political advantage by drawing Democratic voters into

districts where their votes would be diluted, and in many cases where their votes would not matter. FOF § B.2.

65. The analysis and conclusions of Plaintiffs’ experts confirm the point. Dr. Chen’s analysis confirms that the General Assembly intentionally subordinated traditional districting principles to maximize Republican advantage. FOF § B.3.a. Dr. Mattingly’s analysis confirms that the enacted plans’ extreme partisan bias could only have been intentional. FOF § B.3.b. Dr. Pegden’s sensitivity analysis shows that the enacted plans are more carefully crafted to favor Republicans than 99.999% of all possible plans of North Carolina meeting the same nonpartisan criteria laid out in the Adopted Criteria. FOF § B.3.c. And Dr. Cooper demonstrated, by analyzing the district boundaries within each relevant county grouping, that the enacted plans intentionally and systematically pack and crack Democratic voters. FOF § C.

66. As such, the Court concludes that, in drawing the 2017 House and Senate Maps, Legislative Defendants acted with the intent, unrelated to any legitimate legislative objective, to classify voters and deprive citizens of the right to vote on equal terms. Legislative Defendants did so by subordinating Democratic voters to Legislative Defendants’ partisan goals—in other words, by devaluing their vote as compared to the votes of Republican voters with the aim of entrenching the Republican Party in power—and the Court concludes that this intent was the predominant purpose of drawing the district lines in individual districts and statewide.

C. The 2017 Plans Deprive Plaintiffs and Other Democratic Voters of Substantially Equal Voting Power and the Right to Vote on Equal Terms

67. The United States Supreme Court has recognized that the injury associated with partisan gerrymandering “arises from the particular composition of the voter’s own district, which causes his vote – having been packed or cracked – to carry less weight than

it would carry in another hypothetical district.” *Gill*, 138 S. Ct. at 1931. It is the “voter’s placement in a ‘cracked’ or ‘packed’ district” that causes injury. *Id.*

68. Therefore, to prevail, Plaintiffs must also establish that the enacted legislative districts actually had the effect of discriminating against—or subordinating—voters who support candidates of the Democratic Party by virtue of district lines that crack or pack those voters, thereby depriving them of substantially equal voting power in an effort to entrench the Republican Party in power, in violation of Article I, § 19.

69. The manipulation of district boundaries in the enacted plans prevents Democratic voters from obtaining a majority in the House or the Senate even in election environments where Democrats would obtain a majority under virtually any nonpartisan map. Dr. Chen and Dr. Mattingly each independently found that the effects of the gerrymanders are most extreme in circumstances where Democrats could win majorities in one or both chambers under nonpartisan plans. FOF § B.3.a, b. There is nothing “equal” about the “voting power” of Democratic voters when they have a vastly less realistic chance of winning a majority in either chamber under the enacted plans. “The right to vote is the right to participate in the decision-making process of government.” *Texfi Indus.*, 301 N.C. at 13, 269 S.E.2d at 150. Democratic voters are significantly hindered from meaningfully participating in the decision-making process of government when the maps are drawn to systematically prevent Democrats from obtaining a majority in either chamber of the General Assembly.

70. Beyond the issue of majority control, Dr. Chen and Dr. Mattingly also concluded that the gerrymanders deprive Democratic voters of multiple seats in the House and the Senate across a variety of electoral environments. FOF § B.3.a, b. The 2017 Plans achieve these effects by cracking and packing Democratic voters in districts contained within county grouping after county grouping. FOF § C. This packing and cracking

diminishes the “voting power” of Democratic voters in these districts and groupings; packing dilutes the votes of Democratic voters such that their votes, when compared to the votes of Republican voters, are substantially less likely to ultimately matter in deciding the election results, and the entire purpose of cracking likeminded voters across multiple districts is so they do not have sufficient “voting power” to join together and elect a candidate of their choice.

71. Moreover, although not necessary to establish Plaintiffs’ equal protection claim, the Court similarly concludes that the 2017 Plans not only deprive Democratic voters of equal voting power in terms of electoral outcomes, but also deprive them of substantially equal legislative representation. *See Stephenson*, 355 N.C. at 379, 562 S.E.2d at 394. Partisan gerrymandering insulates legislators from popular will and renders them unresponsive to portions of their constituencies. *See Reynolds*, 377 U.S. at 565 (“Since legislatures are responsible for enacting laws by which all citizens are to be governed, they should be bodies which are collectively responsible to the popular will.”). When a district is created solely to effectuate the interests of one group, the elected official from that district is “more likely to believe that their primary obligation is to represent only the members of that group, rather than their constituency as a whole.” *See Shaw I*, 509 U.S. at 648 (in the context of racial gerrymandering).

72. Just as the “political reality” is that “legislators are much more inclined to listen to and support a constituent than an outsider,” *Stephenson*, 355 N.C. at 380, 562 S.E.2d at 395, the reality is that legislators are far more likely to represent the interests and policy preferences of voters of the same party. Legislative Defendants’ own expert, Dr. Brunell, agreed that “a voter whose candidate of choice loses will on average be less well-represented than a voter who voted for the winning candidate.” Tr. 2370:22-2371:2.

D. The 2017 Plans Cannot be Justified by any Legitimate Governmental Interest

73. Once a plaintiff establishes a *prima facie* case that boundaries of legislative districts violate the Equal Protection Clause of the North Carolina Constitution, which Plaintiffs have done in this case by establishing a discriminatory intent and a discriminatory effect, the burden shifts to Legislative Defendants to prove that a legitimate state interest or other neutral factor justified such discrimination.

74. Legislative Defendants offer limited neutral justifications for the enacted maps. They contend that the plans “satisfy the equal-population rule and the strict county-grouping and transversal rules of Article II of the State Constitution” and that “[t]he districts were far more compact than in 2011 or prior years; they split fewer VTDs than in 2011 or prior years; they . . . minimized incumbency pairings; and they preserved core constituency-incumbent relations.” Leg. Defs.’ Post-Trial Brief at p. 28.

75. While all of this may be true, these neutral justifications do not provide a sufficient justification for the substantial evidence, proffered by Plaintiffs and given substantial weight by this Court, showing that Legislative Defendants’ predominant intent was to classify voters and deprive citizens of the right to vote on equal terms and substantially equally voting power. Legislative Defendants did so by subordinating Democratic voters to Legislative Defendants’ partisan goals—in other words, by devaluing their vote as compared to the votes of Republican voters with the aim of entrenching the Republican Party in power—and the Court concludes that this intent was the predominant purpose of drawing the district lines in individual districts and statewide.

76. Nor do these justifications address the substantial evidence that the neutral criteria offered by Legislative Defendants, and indeed all other neutral objectives of the Adopted Criteria, were subordinated by Legislative Defendants in the map drawing process

in order to attain the discriminatory effects of the resulting extreme partisan gerrymandering.

77. Because the 2017 Plans impermissibly interfere with the exercise of the fundamental right to vote, strict scrutiny applies. *See Stephenson*, 355 N.C. at 377-78, 562 S.E.2d at 393. Legislative Defendants have not established that the 2017 Plans are narrowly tailored to advance a compelling governmental interest. *See Id.* Advantaging a particular political party or discriminating against voters based on how they vote for the purposes of entrenching a political party's power is not a compelling government interest.

78. For the foregoing reasons, the Court concludes that Plaintiffs have met their burden of showing, plainly and clearly without any reasonable doubt, that the enacted plans violate the North Carolina Constitution's guarantee of equal protection in Article I, Section 19 of the North Carolina Constitution by demonstrating that (1) Legislative Defendants acted with the intent, unrelated to any legitimate legislative objective, to classify voters and deprive citizens of the right to vote on equal terms by subordinating Democratic voters to Legislative Defendants' partisan goals—in other words, by devaluing their vote as compared to the votes of Republican voters with the aim of entrenching the Republican Party in power—and this intent was the predominant purpose of drawing the district lines in individual districts and statewide; (2) that the legislative maps drawn by Legislative Defendants with this intent had the effect of depriving disfavored voters in North Carolina of substantially equal voting power and the right to vote on equal terms, as well as substantially equal legislative representation; and (3) Legislative Defendants have not provided a neutral justification or a compelling governmental rationale for their actions.

79. Specifically, voters in specific districts in the following county groupings are unlawfully deprived of equal protection under the law in violation of the North Carolina Constitution. In these districts, Plaintiffs have demonstrated through Dr. Chen, Dr.

Mattingly, and Dr. Cooper, whose expert testimony has been given substantial weight by the Court, that Democratic voters were packed or cracked into extreme gerrymandered districts so that the effect upon these voters was to deprive them of substantially equal voting power and the right to vote on equal terms, as well as substantially equal legislative representation. County groupings including these districts are as follows:

Senate Districts: FOF § C.1.a (Mecklenburg); C.1.b (Franklin-Wake); C.1.c (Nash-Johnston-Harnett-Lee-Sampson-Duplin); C.1.d. (Guilford-Alamance-Randolph); C.1.e (Davie-Forsyth); C.1.g (Buncombe-Henderson-Transylvania);

House Districts: FOF § C.2.a (Robeson-Columbus-Pender); C.2.b (Cumberland); C.2.d (Franklin-Nash); C.2.e (Pitt-Lenoir); C.2.f (Guilford); C.2.g (Davie-Rowan-Cabarrus-Stanly-Montgomery-Richmond); C.2.h (Yadkin-Forsyth); C.2.i (Mecklenburg); C.2.k (New Hanover-Brunswick); C.2.l (Duplin-Onslow); C.2.m (Anson-Union); C.2.n. (Alamance); C.2.o (Cleveland-Gaston); C.2.p (Buncombe).

In the remaining county groupings challenged by Plaintiffs, Drs. Chen and Mattingly similarly found that Legislative Defendants placed their thumbs heavily on the scale to favor Republicans. *See* FOF § C.

IV. THE 2017 PLANS VIOLATE THE NORTH CAROLINA CONSTITUTION'S FREEDOM OF SPEECH AND FREEDOM OF ASSEMBLY CLAUSES

80. The Freedom of Speech Clause in Article I, § 14 of the North Carolina Constitution provides that “[f]reedom of speech and of the press are two of the great bulwarks of liberty and therefore shall never be restrained.” The Freedom of Assembly Clause in Article I, § 12 provides, in relevant part, that “[t]he people have a right to

assemble together to consult for their common good, to instruct their representatives, and to apply to the General Assembly for redress of grievances.”

81. The 2017 Plans violate the North Carolina Constitution’s guarantees of free speech and assembly, irrespective of whether the plans violate the U.S. Constitution. *See Michigan v. Long*, 463 U.S. 1032, 103 S. Ct. 3469 (1983).

A. North Carolina’s Constitution Protects the Rights of Free Speech and Assembly Independently from the Federal Constitution

82. “[I]n construing provisions of the Constitution of North Carolina,” the North Carolina Supreme Court “is not bound by opinions of the Supreme Court of the United States construing even identical provisions in the Constitution of the United States.” *State v. Hicks*, 333 N.C. 467, 483, 428 S.E.2d 167, 176 (1993). While the North Carolina Supreme Court gives “great weight” to decisions of the United States Supreme Court that interpret corresponding provisions in the federal constitution, *Hicks*, 333 N.C. at 484, 428 S.E.2d at 176, only North Carolina courts can “answer[] with finality” questions of North Carolina constitutional law, *State v. Arrington*, 311 N.C. 633, 643, 319 S.E.2d 254, 260 (1984). North Carolina courts thus “have the authority to construe [the State’s] own constitution differently from the construction by the United States Supreme Court of the Federal Constitution, as long as [its] citizens are thereby accorded no lesser rights than they are guaranteed by the parallel federal provision.” *State v. Carter*, 322 N.C. 709, 713, 370 S.E.2d 553, 555 (1988).

83. The North Carolina Supreme Court has held that the North Carolina Constitution’s Free Speech Clause provides broader rights than does federal law. In particular, the Court has held that the North Carolina Constitution affords a direct cause of action for damages against government officers in their official capacity for speech violations, even though federal law does not. *Corum*, 330 N.C. at 783, 413 S.E.2d at 290.

Noting that “[o]ur Constitution is more detailed and specific than the federal Constitution in the protection of the rights of its citizens,” the Court explained that the North Carolina courts “give our Constitution a liberal interpretation in favor of its citizens with respect to those provisions which were designed to safeguard the liberty and security of the citizens in regard to both person and property.” *Id.* Indeed, in recognizing a direct cause of action under the State Constitution, the Court expressly relied on *the lack of* a federal remedy, which left plaintiffs with “no other remedy . . . for alleged violations of his constitutional freedom of speech rights.” *Id.*

84. Similarly, in *Evans v. Cowan*, the Court of Appeals reversed a trial court that had dismissed a claim under Article I, § 14, on the erroneous ground that it was *res judicata* based on a prior dismissal of the plaintiff’s claim under the federal First Amendment. 122 N.C. App. 181, 183-84, 468 S.E.2d 575, 577-78, *aff’d*, 477 S.E.2d 926 (N.C. 1996). While “both the North Carolina Constitution and the United States Constitution contain similar provisions proclaiming certain principles of liberty,” North Carolina courts “are *not* bound by the opinions of the federal courts.” *Id.* at 183-84, 468 S.E.2d at 577. “[A]n independent determination of plaintiff’s constitutional rights under the state constitution [was] required, and the state courts reserve the right to grant relief under the state constitution in circumstances under which no relief might be granted under the federal constitution.” *Id.* at 184, 468 S.E.2d at 577 (citation and internal quotations marks omitted); *see also McLaughlin v. Bailey*, 240 N.C. App. 159, 172, 771 S.E.2d 570, 579-80 (2015), *aff’d*, 781 S.E.2d 23 (N.C. 2016); *see also Lenzer v. Flaherty*, 106 N.C. App. 496, 418 S.E.2d 276 (1992).

85. In the context of partisan gerrymandering, it is especially important that North Carolina courts give independent force to North Carolina’s constitutional protections.

The United States Supreme Court recently held that federal courts applying the federal constitution have no power to adjudicate claims of partisan gerrymandering. *Rucho*, 139 S. Ct. 2484. That ruling does not mean that partisan gerrymandering complies with the constitution; it means that federal courts have no power to decide *whether* the practice complies with the constitution. “Having no other remedy,” the North Carolina Constitution “guarantees [P]laintiff[s] a direct action under the State Constitution for alleged violations of [their] constitutional freedom of speech rights.” *Corum*, 330 N.C. at 783, 413 S.E.2d at 290.

B. Voting, Banding Together in a Political Party, and Spending on Elections Are Protected Expression and Association

86. Voting for the candidate of one’s choice and associating with the political party of one’s choice are core means of political expression protected by the North Carolina Constitution’s Freedom of Speech and Freedom of Assembly Clauses. The 2017 Plans burden that protected expression and thus are subject to scrutiny under those clauses.

87. Voting provides citizens a direct means of expressing support for a candidate and his views. *See Buckley v. Valeo*, 424 U.S. 1, 21, 96 S. Ct. 612, 635 (1976). Indeed, if donating money to a candidate constitutes a form of protected speech, then voting for that same candidate necessarily does as well. “There is no right more basic in our democracy than the right to participate in electing our political leaders”—including, of course, the right to “vote.” *McCutcheon v. FEC*, 572 U.S. 185, 191, 134 S. Ct. 1434, 1440 (2014) (plurality op.). “[P]olitical belief and association constitute the core of those activities protected by the First Amendment.” *Elrod v. Burns*, 427 U.S. 347, 356, 96 S. Ct. 2673, 2681 (1976).

88. Plaintiffs’ expression is no less protected “merely because it involves the ‘act’” of casting a ballot. *State v. Bishop*, 368 N.C. 869, 874, 787 S.E.2d 814, 818 (2016). “[M]uch

speech requires an ‘act’ of some variety—whether putting ink to paper or paint to canvas, or hoisting a picket sign, or donning a message-bearing jacket.” *Id.* Voting, like donating money to a candidate or signing a petition for a referendum, constitutes “expressive activity” that “express[es] [a] view” about the State’s laws and policies. *Winborne v. Easley*, 136 N.C. App. 191, 198, 523 S.E.2d 149, 153 (1999); *Doe v. Reed*, 561 U.S. 186, 195, 130 S. Ct. 2811, 2817 (2010). Voting’s expressive force is not diminished by the fact that it “is a legally operative legislative act.” *Id.* at 195; *see also Nev. Comm’n on Ethics v. Carrigan*, 564 U.S. 117, 134, 131 S. Ct. 2343, 2355 (2011) (Alito, J., concurring) (“[T]he act of voting is not drained of its expressive content when the vote has a legal effect.”). Having “cho[sen] to tap the energy and the legitimizing power of the democratic process,” the government “must accord the participants in that process the First Amendment rights that attach to their roles.” *Republican Party of Minn. v. White*, 536 U.S. 765, 788, 122 S. Ct. 2528, 2541 (2002) (quotation omitted). The ballots cast by Plaintiffs and other Democratic voters to elect candidates to the North Carolina General Assembly are protected by North Carolina’s Freedom of Speech Clause.

89. Expression aside, the Freedom of Assembly Clause independently protects Plaintiffs’ voting and their association with the Democratic Party. The Freedom of Assembly Clause—part of North Carolina’s original 1776 Declaration of Rights—protects the right of the people “to assemble together to consult for their common good, to instruct their representatives, and to apply to the General Assembly for redress of grievances.” N.C. Const. art. I, § 12; *see* N.C. Const. art. I, § 18 (1776). In North Carolina, the right to assembly encompasses the right of association. *Feltman v. City of Wilson*, 238 N.C. App. 246, 253, 767 S.E.2d 615, 620 (2014).

90. Just as voting is a form of protected expression, banding together with likeminded citizens in a political party is a form of protected association. “[C]itizens form

parties to express their political beliefs and to assist others in casting votes in alignment with those beliefs.” *Libertarian Party of N.C. v. State*, 365 N.C. 41, 49, 707 S.E.2d 199, 204-05 (2011). “[F]or elections to express the popular will, the right to assemble and consult for the common good must be guaranteed.” John V. Orth, *The North Carolina State Constitution* 48 (1995).

91. A final form of relevant protected expression involves the expenditure of funds in support of candidates. It is now well-settled that “political contributions and expenditures” constitute “expressive activity” that are constitutionally protected. *Winborne*, 136 N.C. App. at 198, 523 S.E.2d at 153-54.

C. The 2017 Plans Burden Protected Expression and Association

92. The 2017 Plans are subject to strict scrutiny because they burden Plaintiffs’ and Democratic voters’ political expression and association.

1. The 2017 Plans Burden Protected Expression Based on Viewpoint by Making Democratic Votes Less Effective

93. It is “axiomatic” that the government may not infringe on protected activity based on the individual’s viewpoint. *Rosenberger v. Rector & Visitors of Univ. of Va.*, 515 U.S. 819, 828, 115 S. Ct. 2510, 2516 (1995). “The government must abstain from regulating speech when the specific motivating ideology or the opinion or perspective of the speaker is the rationale for the restriction.” *Id.* at 829, 115 S. Ct. at 2516. The guarantee of free expression “stands against attempts to disfavor certain subjects or viewpoints.” *Citizens United v. FEC*, 558 U.S. 310, 340, 130 S. Ct. 876, 898 (2010).

94. Viewpoint discrimination is *most* insidious where the targeted speech is political. “[I]n the context of political speech, . . . [b]oth history and logic” demonstrate the perils of permitting the government to “identif[y] certain preferred speakers” while burdening the speech of “disfavored speakers.” *Id.* at 340-41, 130 S. Ct. at 899. The

government may not burden the “speech of some elements of our society in order to enhance the relative voice of others” in electing officials. *McCutcheon*, 572 U.S. at 207, 134 S. Ct. at 1450; *see also Winborne*, 136 N.C. App. at 198, 523 S.E.2d at 154 (“political speech” has “such a high status” that free speech protections have their “fullest and most urgent application” in this context (quotations marks omitted)).

95. Here, Legislative Defendants “identified[] certain preferred speakers” (Republican voters), while targeting certain “disfavored speakers” (Plaintiffs and other Democratic voters) for “disfavored treatment” because of disagreement with the views they express when they vote. *Citizens United*, 558 U.S. at 340-41, 130 S. Ct. at 899; *see Sorrell v. IMS Health Inc.*, 564 U.S. 552, 565, 131 S. Ct. 2653, 2663 (2011). Legislative Defendants analyzed the voting histories of every VTD in North Carolina, identified VTDs that favor Democratic candidates, and then singled out the voters in those VTDs for disfavored treatment by packing and cracking them into districts with the aim of diluting their votes and, in the case of cracked districts, ensuring that these voters are significantly less likely, in comparison to Republican voters, to be able to elect a candidate who shares their views.

96. The fact that Democratic voters can still cast ballots under gerrymandered maps changes nothing. The government unconstitutionally burdens speech where it renders disfavored speech *less effective*, even if it does not ban such speech outright. The government may not restrict a citizen’s “ability to effectively exercise” their free speech rights. *Heritage Vill. Church & Missionary Fellowship, Inc. v. State*, 40 N.C. App. 429, 451, 253 S.E.2d 473, 486 (1979), *aff’d*, 299 N.C. 399, 263 S.E.2d 726 (1980). “It is thus no answer to say that petitioners can still be ‘seen and heard’” if the burdens placed on their speech “have effectively stifled petitioners’ message.” *McCullen v. Coakley*, 573 U.S. 464, 489-90, 134 S. Ct. 2518, 2537 (2014).

97. In *McCullen*, for instance, the United States Supreme Court invalidated a law that imposed a buffer zone around abortion clinics because the law “compromise[d] [the] ability” of the plaintiffs to “initiate the close, personal conversations that they view as essential” to effectively communicate their message. 573 U.S. at 487, 134 S. Ct. at 2535. And in *Sorrell*, the United States Supreme Court invalidated on viewpoint discrimination grounds a state law that burdened drug manufacturers by denying them information that made their marketing more effective. 564 U.S. at 580, 131 S. Ct. at 2672. The Court stressed that “the distinction between laws burdening speech is but a matter of degree and the Government’s content-based burdens must satisfy the same rigorous scrutiny as its content-based bans.” *Id.* at 555-56, 131 S. Ct. at 2664 (quotation marks omitted).

98. These principles apply equally to burdens on political expression. In *Davis v. FEC*, the United States Supreme Court struck down a law that disfavored candidates who self-financed their campaigns. 554 U.S. 724, 128 S. Ct. 2759 (2008). The law in question did *not* limit how much money self-financing candidates could spend, but it still unconstitutionally “diminishe[d] the effectiveness of [their] speech.” *Id.* at 736, 128 S. Ct. at 2770. The Court held the same in *Ariz. Free Enterprise Club’s Freedom Club PAC v. Bennett*, where it invalidated a public-matching scheme because it rendered the money spent by privately financed candidates “less effective.” 564 U.S. 721, 747, 131 S. Ct. 2806, 2824 (2011); *see also Randall v. Sorrell*, 548 U.S. 230, 248-49, 126 S. Ct. 2479, 2492 (2006) (invalidating limit on campaign donations that made such donations less “effective”).

99. North Carolina courts have recognized “several paths” leading to the conclusion that laws burdening protected expression are impermissibly discriminatory and thus “subject to strict scrutiny.” *State v. Bishop*, 368 N.C. 869, 875, 787 S.E.2d 814, 819 (2016). A finding of discrimination “can find support in the plain text of a statute, or the

animating impulse behind it, or the lack of any plausible explanation besides distaste for the subject matter or message.” *Id.* The 2017 Plans thus need not explicitly mention any particular viewpoint to be impermissibly discriminatory. *See, e.g., Reed v. Town of Gilbert*, 135 S. Ct. 2218, 2227 (2015).

100. Here, all paths lead to the same conclusion: the 2017 Plans reflect viewpoint discrimination against Plaintiffs and other Democratic voters that render their protected political expression less effective.

101. Overwhelming, un rebutted evidence establishes that the 2017 Plans were laced with viewpoint-driven intent. Legislative Defendants directed Dr. Hofeller to assign voters to districts using “election data” reflecting the contents of their prior votes for Democratic or Republican candidates, and Dr. Hofeller abided, using a color-coded shading system to track voters based on their partisan preferences and voting histories. FOF § C. Within county groups, Dr. Hofeller placed Democratic voters in this district or that one based *solely* on their political views. If this direct evidence left any doubt, the expert testimony showed that the mapmaker crafted the plans with partisanship as the predominant (if not sole) focus. Dr. Cooper in particular illustrated the intentional packing and cracking of specific Democratic voters and communities. FOF § C.

102. This sorting of Plaintiffs and other Democratic voters based on disfavor for their political views has burdened their speech by making their votes less effective. Many Plaintiffs and other Democratic voters live in districts where their votes are guaranteed to be less effective—either because the districts are packed such that Democratic candidates will win by astronomical margins or because the Democratic voters are cracked into seats that are safely Republican. Plaintiff Derrick Miller testified that he is one such voter: with the Wilmington Notch having been placed in Senate District 8, it is “impossible for [he] and Democratic neighbors to elect a Democrat, a candidate of our choice.” Tr. 205:13-15.

Plaintiff Joshua Brown similarly testified that the mapmaker's placing High Point's Democrats into Senate District 26 "clearly dilutes the ability of Democrats to even attempt to run a fair race." Tr. 833:20-21.

103. By packing and cracking Democratic voters to make it harder for them to translate votes into legislative seats, the 2017 Plans "single[] out a subset of messages for disfavor based on the views expressed." *Matal v. Tam*, 137 S. Ct. 1744, 1766 (2017) (Kennedy, J., concurring). "This is the essence of viewpoint discrimination." *Id.*

104. Even were Legislative Defendants permitted to *consider* voters' political beliefs when drawing district maps, the 2017 Plans would still be unlawful. In arenas where the government is allowed (or even required) to consider the content or viewpoint of expression that it regulates, it is still forbidden from intentionally elevating one viewpoint over the other. In *Board of Education v. Pico*, for example, the Supreme Court recognized that, while local school boards "possess significant discretion to determine the content of their school libraries," their discretion may "not be exercised in a narrowly partisan or political manner." 457 U.S. 853, 870, 102 S. Ct. 2799, 2810 (1982). As the Court observed, "[i]f a Democratic school board, motivated by party affiliation, ordered the removal of all books written by or in favor of Republicans, few would doubt that the order violated the constitutional rights of the students denied access to those books." *Id.* at 870-71, 102 S. Ct. at 2810. So too here. Legislative Defendants did not simply look at partisan data to satisfy their curiosity. They drew the 2017 Plans in a way that deliberately minimized the effectiveness of the votes of citizens with whom they disagree.

2. The 2017 Plans Burden Plaintiffs' Ability to Associate

105. The 2017 Plans independently violate Article I, § 12 by burdening the ability of the NCDP, Common Cause, and Democratic voters to associate effectively.

106. The 2017 Plans severely burden—if not outright preclude—the ability of the NCDP, Common Cause, and Democratic voters “to instruct their representatives, and to apply to the General Assembly for redress of grievances.” N.C. Const. art. I, § 12. Democratic voters who live in cracked districts have little to no ability to instruct their representatives or obtain redress from their representatives on issues important to those voters. FOF § E.3. And as a result of the gerrymanders, Democratic voters across the state, as well as the NCDP, will be unlikely to obtain redress from “the General Assembly” on important policy issues, because they will unlikely be able to obtain Democratic majorities in the General Assembly. *Id.* Common Cause likewise cannot instruct representatives or obtain redress on the issues central to its mission due to the gerrymanders. FOF § E.2. The 2017 Plans “burden[] the ability of like-minded people across the State to affiliate in a political party and carry out [their] activities and objects.” *Gill*, 138 S. Ct. at 1939 (Kagan J., concurring).

107. The 2017 Plans separately violate NCDP’s associational rights by “debilitat[ing] [the] party” and “weaken[ing] its ability to carry out its core functions and purposes.” *Id.* Due to the unfair playing field created by the 2017 Plans, the NCDP “face[s] difficulties fundraising, registering voters, attracting volunteers, generating support from independents, and recruiting candidates to run for office.” *Id.* at 1938; *see* FOF § E.1. And, even when overcoming these difficulties through extraordinary efforts, fundraising and enthusiasm, as was evidenced in the 2018 election cycle, the 2017 Plans nonetheless debilitate the NCDP and weaken its ability to translate its effort, funds and enthusiasm into a meaningful opportunity to gain majority control of the General Assembly. FOF § E.1.

3. The 2017 Plans Burden the NCDP's Expression Through Financial Support for Candidates

108. The 2017 Plans independently violate the NCDP's free expression and assembly rights under Article I, §§ 12 and 14 by burdening their campaign donations and expenditures. The NCDP must spend more money than it would need to under nonpartisan plans, both statewide and in individual races, and the money that the NCDP spends is less effective than it would be under nondiscriminatory maps. FOF § E.1. The NCDP's political opponent, the North Carolina Republican Party, faces no such burdens.

109. The operation of the 2017 Plans is analogous to the laws struck down in *Davis* and *Bennett* in this regard. Those laws did not preclude or limit any campaign expenditures, but were still held unconstitutional because they “diminishe[d] the effectiveness” of the expenditures of some candidates. *See Bennett*, 564 U.S. at 736, 131 S. Ct. at 2818 (quoting *Davis*, 554 U.S. at 736, 128 S. Ct. at 2770). The same is true here. The 2017 Plans create “a political hydra” that forces the NCDP to drain and divert resources across the State merely to avoid being relegated to a super-minority. *Id.* at 738.

D. The 2017 Plans Fail Strict Scrutiny—and Indeed Any Scrutiny

110. Because the 2017 Plans discriminate against Plaintiffs and other Democratic voters based on their protected expression and association, the burden shifts to the Legislative Defendants to establish that the 2017 Plans were narrowly tailored to achieve a compelling government interest. *See Petersilie*, 334 N.C. at 206, 432 S.E.2d at 853-54 (Mitchell, J., dissenting).

111. As noted above, COL § III.D., Legislative Defendants have offered no credible justification for their partisan discrimination. Nor could they have. Discriminating against citizens based on their political beliefs does not serve any legitimate government interest.

E. The 2017 Plans Impermissibly Retaliate Against Voters Based on Their Exercise of Protected Speech

112. The 2017 Plans violate the Freedom of Speech and Assembly Clauses for an independent reason. In addition to forbidding discrimination, those clauses also bar *retaliation* based on protected speech and expression. *See McLaughlin*, 240 N.C. App. at 172, 771 S.E.2d at 579-80. Courts carefully guard against retaliation by the party in power. *See Elrod*, 427 U.S. at 356, 96 S. Ct. at 2681; *Branti v. Finkel*, 445 U.S. 507, 100 S. Ct. 1287 (1980); *Rutan v. Republican Party of Ill.*, 497 U.S. 62, 110 S. Ct. 2729 (1990). When patronage or retaliation restrains citizens' freedoms of belief and association, it is "at war with the deeper traditions of democracy embodied in the First Amendment." *Elrod*, 427 U.S. at 357, 96 S. Ct. at 2682 (quotation marks omitted).

113. To establish a violation of the North Carolina Constitution under a retaliation theory, Plaintiffs must show, in addition to their engagement in protected expression or association, that (1) the 2017 Plans take adverse action against them, (2) the 2017 Plans were created with an intent to retaliate against their protected speech or conduct, and (3) the 2017 Plans would not have taken the adverse action but for that retaliatory intent. *See McLaughlin*, 240 N.C. App. at 172, 771 S.E.2d at 579-80. Plaintiffs proved all of these elements.

114. *First*, the 2017 Plans take adverse action against Plaintiffs. For the Individual Plaintiffs and the Organizational Plaintiffs' members, the plans dilute the weight of their votes. The enacted plans adversely affect the individual Plaintiffs' associational rights. In *relative* terms, Democratic voters under the 2017 Plans are far less able to succeed in electing candidates of their choice than they would be under plans that were not so carefully crafted to dilute their votes. And in *absolute* terms, Plaintiffs are

significantly foreclosed from succeeding in electing preferred candidates or a Democratic majority.

115. *Second*, the Plans were clearly crafted with an *intent* to retaliate against Plaintiffs and other Democratic voters on the basis of their voting history. Again, Dr. Hofeller’s files showed that when drafting the House and Senate maps he intentionally targeted Democratic voters based on their voting histories. Legislative Defendants cannot escape a finding of retaliatory intent by re-characterizing their actions as helping Republicans rather than hurting Democrats. In two-party elections, an intent to help one party necessarily implies an intent to hurt the other party. Nor does it matter that Legislative Defendants did not target specific individual voters. Plaintiffs were targeted for disfavored treatment because of a shared marker of political belief—their status as Democratic voters. That suffices. *See Miller v. Johnson*, 515 U.S. 900, 920, 115 S. Ct. 2475, 2490 (1995) (condemning State’s targeting of areas with “dense majority-black populations”).

116. *Third*, Legislative Defendants’ impermissible partisan intent *caused* the burden on Plaintiffs’ expression and association. The adverse effects described above would not have occurred if Legislative Defendants had not cracked and packed Democratic voters and thereby diluted their votes. In particular, Dr. Chen compared the districts in which the Individual Plaintiffs currently reside under the enacted plans with districts in which they would have resided under each of his simulated plans. Many of the Individual Plaintiffs’ actual districts are extreme partisan outliers when compared with their districts under the simulated plans.

117. For the foregoing reasons, the Court concludes that Plaintiffs have met their burden of showing, plainly and clearly without any reasonable doubt, that the enacted

plans violate the North Carolina Constitution’s guarantees of free speech and assembly under Article I, Sections 12 and 14 of the North Carolina Constitution.

V. PARTISAN GERRYMANDERING CLAIMS ARE JUSTICIABLE UNDER THE NORTH CAROLINA CONSTITUTION

118. In all but the most exceptional circumstances, North Carolina courts are duty-bound to say what the law of this State is and to adjudicate cases on the merits.

119. In cases brought under the North Carolina Constitution, “[i]t has long been understood that it is the duty of the courts to determine the meaning of the requirements of our Constitution.” *Leandro v. State*, 346 N.C. 336, 345, 488 S.E.2d 249, 253 (1997). “When a government action is challenged as unconstitutional, the courts have a duty to determine whether that action exceeds constitutional limits.” *Id.* “It is the duty of this Court to ascertain and declare the intent of the framers of the Constitution and to reject any act in conflict therewith.” *Maready v. City of Winston-Salem*, 342 N.C. 708, 716, 467 S.E.2d 615, 620 (1996).

120. State courts’ duty to decide constitutional cases applies with full force in the redistricting context. Although the North Carolina Constitution directs the General Assembly to revise and reapportion districts after each census, “[t]he people of North Carolina chose to place several explicit limitations upon the General Assembly’s execution of the legislative reapportionment process,” which state courts have not hesitated to enforce. *Stephenson*, 355 N.C. at 370, 562 S.E.2d at 389. North Carolina courts have adjudicated claims that redistricting plans violated the Whole County Provision, the mid-decade redistricting bar, the Equal Protection Clause, and other provisions of the North Carolina Constitution. *See Stephenson*, 355 N.C. at 376, 380-81, 562 S.E.2d at 392, 395; *State ex rel. Martin v. Preston*, 325 N.C. 438, 385 S.E.2d 473 (1989); *NAACP v. Lewis*, 18 CVS 2322 (N.C. Super. Ct. Nov. 2, 2018). “[W]ithin the context of . . . redistricting and

reapportionment disputes, it is well within the power of the judiciary of [this] State to require valid reapportionment or to formulate a valid redistricting plan.” *Stephenson*, 355 N.C. at 362, 562 S.E.2d at 384 (quotation marks omitted).

121. Courts of other states have decided constitutional challenges to redistricting plans, including partisan gerrymandering claims, on the merits. In adjudicating a recent partisan gerrymandering suit, the Pennsylvania Supreme Court held that “it is the duty of the Court, as a co-equal branch of government, to declare, when appropriate, certain acts unconstitutional.” *League of Women Voters of Pa.*, 178 A.3d at 822. The Florida Supreme Court similarly held that “there can hardly be a more compelling interest than the public interest in ensuring that the Legislature does not engage in unconstitutional partisan political gerrymandering.” *League of Women Voters of Fla. v. Detzner*, 172 So. 3d 363, 416 (Fla. 2015). And in another constitutional redistricting challenge, the Texas Supreme Court held that “[t]he judiciary . . . is both empowered and, when properly called upon, obliged to declare whether an apportionment statute enacted by the Legislature is valid.” *Terrazas v. Ramirez*, 829 S.W.2d 712, 717 (Tex. 1991). “A judicial determination that an apportionment statute violates a constitutional provision is no more an encroachment on the prerogative of the Legislature than the same determination with respect to some other statute.” *Id.*; see also, e.g., *Johnson v. State*, 366 S.W.3d 11, 23 (Mo. 2012) (similar).

122. Indeed, state courts are particularly well-positioned to adjudicate redistricting disputes, as the public may “more readily accept state court intervention . . . than . . . federal intervention in matters of state government.” *Brooks v. Hobbie*, 631 So. 2d 883, 890 (Ala. 1993). “The power of the judiciary of a State to require valid reapportionment or to formulate a valid redistricting plan has not only been recognized by th[e United States Supreme] Court but . . . has been specifically encouraged.” *Scott v.*

Germano, 381 U.S. 407, 409 (1965). In *Rucho*, the United States Supreme Court recently made clear that partisan gerrymandering claims are not “condemn[ed] . . . to echo in the void,” because although the federal courthouse doors may be closed, “state constitutions can provide standards and guidance for state courts to apply.” 139 S. Ct. at 2507.

123. If unconstitutional partisan gerrymandering is not checked and balanced by judicial oversight, legislators elected under one partisan gerrymander will enact new gerrymanders after each decennial census, entrenching themselves in power anew decade after decade. When the North Carolina Supreme Court first recognized the power to declare state statutes unconstitutional, it presciently noted that absent judicial review, members of the General Assembly could “render themselves the Legislators of the State for life, without any further election of the people.” *Bayard v. Singleton*, 1 N.C. 5, 7 (1787). Those legislators could even “from thence transmit the dignity and authority of legislation down to their heirs male forever.” *Id.* Extreme partisan gerrymandering reflects just such an effort by a legislative majority to permanently entrench themselves in power in perpetuity.

124. The fact that the process employed by the Legislative Defendant in crafting the 2017 Maps is a process that has been used in North Carolina for decades—albeit in less precise and granular detail—by Democrats and Republicans alike does render political gerrymandering nonjusticiable. Long standing, and even widespread historical practices do not immunize governmental action from constitutional scrutiny. *See e.g., Citizens United v. FEC*, 558 U.S. 310, 365 (2010); *Reynolds v. Sims*, 377 U.S. 533, 582 (1964) (holding that malapportionment of state legislative districts violates Equal Protection Clause, notwithstanding that malapportionment was widespread in the Nineteenth and early Twentieth Centuries.)

125. In rare instances, North Carolina courts have held that certain exceptional cases are non-justiciable because they present a “political question.” “The political question doctrine controls, essentially, when a question becomes not justiciable because of the separation of powers provided by the Constitution.” *Cooper v. Berger*, 370 N.C. 392, 407, 809 S.E.2d 98, 107 (2018) (quotation marks omitted; cleaned up). “The doctrine excludes from judicial review those controversies which revolve around policy choices and value determinations constitutionally committed for resolution to the legislative or executive branches of government.” *Id.* at 408, 809 S.E.2d at 107 (quotation marks omitted; cleaned up). The “dominant considerations” in determining whether the political question doctrine applies are “the appropriateness under our system of government of attributing finality to the action of the political departments and also the lack of satisfactory criteria for a judicial determination.” *Id.* (quotation marks omitted).

126. The Court concludes that partisan gerrymandering claims are justiciable under the North Carolina Constitution. Such claims fall within the broad, default category of constitutional cases the North Carolina courts are empowered and obliged to decide on the merits, and not within the narrow category of exceptional cases covered by the political question doctrine.

127. The Court concludes that partisan gerrymandering does not “involve a textually demonstrable constitutional commitment of the issue to a coordinate political department.” *Bacon v. Lee*, 353 N.C. 696, 717, 549 S.E.2d 840, 854 (2001) (quotation marks omitted).

128. Although Article II, §§ 3 and 5, of the North Carolina Constitution direct the General Assembly to revise and reapportion state House and Senate districts after each decennial census, North Carolina courts often decide constitutional challenges to state redistricting plans. COL ¶ 125 (citing cases). These cases conclusively refute any notion

that redistricting is “committed to the *sole* discretion of the General Assembly” without judicial review by the courts. *Cooper*, 370 N.C. at 409, 809 S.E.2d at 108 (emphasis added).

129. “[T]he General Assembly’s authority pursuant to [Article II, §§ 3 and 5] is necessarily constrained by the limits placed upon that authority by other provisions.” *Cooper*, 370 N.C. at 410, 809 S.E.2d at 109. The North Carolina Supreme Court has held that the State Constitution’s Equal Protection Clause constrains the General Assembly’s exercise of its redistricting authority pursuant to Article II, §§ 3 and 5. *Stephenson*, 355 N.C. at 376-82, 562 S.E.2d at 392-96. The people of North Carolina amended the Free Elections Clause to mandate that “all elections” not only “ought to be” but “*shall* be free.” N.C. Const. art. I, § 10 (emphasis added). This change “ma[d]e [it] clear” that the Free Elections Clause is a “command[] and not mere[ly] [an] admonition” to proper conduct on the part of the government. *DuMont*, 304 N.C. at 639, 286 S.E.2d at 97 (quotation marks omitted). And the North Carolina Supreme Court has held that North Carolinians must have a judicial “remedy for the violation of plaintiff’s constitutionally protected right of free speech.” *Corum*, 330 N.C. at 784, 413 S.E.2d at 290.

130. In North Carolina, cases presenting “a conflict between . . . competing constitutional provisions” involve proper “constitutional interpretation, . . . rather than a nonjusticiable political question arising from nothing more than a policy dispute.” *Cooper*, 370 N.C. at 412, 809 S.E.2d at 110. The Court held in *Cooper* that a challenge to a statute creating a new State Board of Elections and Ethics Enforcement did not present a political question, because the General Assembly’s authority over the functions and powers of administrative agencies was limited by the Governor’s constitutional duty to “take care that the laws be faithfully executed.” *Id.* at 417-18, 809 S.E.2d at 113-14. Similarly, in *News & Observer Publ’g Co. v. Easley*, the Court held that a suit seeking public records related to

clemency applications was not a political question, because the Governor’s power over clemency was limited by the General Assembly’s power to enact laws “relative to the manner of applying for pardons.” 182 N.C. App. 14, 16, 641 S.E.2d 698, 700 (2007). So too, partisan gerrymandering claims do not present a political question because the General Assembly’s redistricting authority under Article II, §§ 3 and 5 is limited by the Equal Protection Clause, the Free Elections Clause, and the Freedom of Speech and Assembly Clauses. This Court’s task is “to identify where the line should be drawn” between these provisions. *Id.* at 15-16, 641 S.E.2d at 700. “There can be no doubt that [the Court has] the power and the responsibility to do so.” *Id.*

131. This case bears no resemblance to cases in which North Carolina courts have applied the political question doctrine. In *Bacon v. Lee*, for example, the North Carolina Supreme Court rejected a claim seeking a disinterested arbiter for a clemency application because the North Carolina Constitution “expressly commits the substance of the clemency power to the *sole discretion* of the Governor.” 353 N.C. at 698, 717, 549 S.E.2d at 843, 854 (emphasis added). Similarly, in *Hoke Cnty. Bd. of Educ. v. State*, the Supreme Court rejected a challenge to a statute setting the proper age for children to attend public school because the Constitution placed “the determination of the proper age for school children . . . squarely . . . in the hands of the General Assembly.” 358 N.C. 605, 639, 599 S.E.2d 365, 391 (2004). These cases centered on the appropriate exercise of authority under a single constitutional provision that was committed to the sole discretion of one of the political branches. Other cases cited by Legislative Defendants are similarly inapposite. *See* Leg. Defs.’ Pre-Trial Brief at 17 (citing cases).

132. The Court also concludes that “satisfactory and manageable criteria [and] standards . . . exist” for adjudicating partisan gerrymandering claims under the North

Carolina Constitution. *Hoke*, 358 N.C. at 639, 599 S.E.2d at 391. Plaintiffs have articulated satisfactory, manageable standards for each of their claims for relief.

133. The standard for Plaintiffs’ claim under the Free Elections Clause is based on the venerable history of that clause, as well as the commonsense insight that elections are not “free” where the partisan will of the mapmaker predominates over the ascertainment of the fair and truthful will of the voters. COL § II. The Court concludes this standard is satisfactory and manageable.

134. The standard for Plaintiffs’ claim under the Equal Protection Clause is based on the fundamental right to “substantially equal voting power” and to “vote on equal terms.” *Stephenson*, 355 N.C. at 378-79, 562 S.E.2d at 393-94. The North Carolina Supreme Court has previously applied this long-recognized standard, including in redistricting cases. *See id.*; *Blankenship*, 363 N.C. at 522-24, 681 S.E.2d at 762-64; *Northampton Cnty.*, 326 N.C. at 747, 392 S.E.2d at 356. This standard is not only “manageable”—the North Carolina Supreme Court has already managed to apply it to resolve actual cases. The Court concludes that this standard is satisfactory and manageable.

135. The standards for Plaintiffs’ claims under the Free Speech and Free Assembly Clauses are based on longstanding doctrine, which recognizes that (1) voting is an expressive and associative act, and (2) government actions that burden or discriminate against protected expression or association, are subject to strict scrutiny. COL § IV.B-D. Plaintiffs also rely on longstanding retaliation doctrine, which prohibits the government from taking adverse actions based on protected expression or association. COL § IV.E. North Carolina courts routinely apply these standards to numerous government actions and programs in various contexts. The Court concludes that these standards are satisfactory and manageable.

136. Plaintiffs' claims are justiciable notwithstanding that they arise under broad constitutional provisions that require interpretation. Courts routinely interpret broad constitutional text, adopt legal standards to operationalize such text, and then apply those legal standards to adjudicate the constitutionality of statutes. That is exactly what the North Carolina Supreme Court did in *Stephenson*. There, the Court interpreted a broad constitutional requirement that "[n]o county shall be divided in the formation of a [district]," N.C. Const. art. II, §§ 3 and 5, to require a detailed, multi-step procedure for redistricting, 355 N.C. at 383-84, 562 S.E.2d at 396-97. In adopting this standard, the Court explained that it was "not permitted to construe the [Whole County Provision] mandate as now being in some fashion unmanageable." *Id.* at 382, 562 S.E.2d at 396. "Any attempt to do so," the Court explained, "would be an abrogation of the Court's duty to follow a reasonable, workable, and effective interpretation that maintains the people's express wishes." *Id.* So too here, it is the Court's responsibility to distill the Free Elections Clause, the Equal Protection Clause, and Free Speech and Free Assembly Clauses into a "reasonable, workable, and effective interpretation."

137. In *Stephenson*, the North Carolina Supreme Court also noted that "[p]rogress demands that government should be further refined in order to best respond to changing conditions." *Id.* (quotation marks omitted). Like the Whole County Provision, the constitutional provisions invoked by Plaintiffs in this case "provide the elasticity which ensures the responsive operation of government." *Id.* (quotation marks omitted). As the North Carolina Supreme Court asked rhetorically more than a century ago: "Is it true that we are living in a popular government, depending upon free and fair elections, and have a constitution that prohibits the legislature from authorizing a judge or a justice of the supreme court to investigate alleged irregularities of the election officers? If this were so, elections would become a farce, and free government a failure. But, fortunately for the

people and the government, in our opinion, this is not true, and fair and honest elections are to prevail in this state.” *McDonald*, 119 N.C. at 666, 26 S.E. at 134.

138. Legislative Defendants, joined by the Intervening Defendants, assert that this matter is not justiciable because when a claim, like they contend Plaintiffs’ to be, is that a districting plan is “somehow harmful to democracy,” there is “no way for the Court to address these concerns under a neutral, manageable standard.” Leg. Defs.’ and Int. Defs.’ Proposed Findings of Fact and Conclusions of Law at para. 800. They further suggest that judicial review of political redistricting claims will amount to “freewheeling policymaking,” *id.* at 803, and that “this court is not capable of controlling the exercise of power on the part of the General Assembly,” *id.* at 806 (citing *Howell v. Howell*, 66 S.E. 571, 573 (N.C. 1911)).

139. However, this is not a case where this Court is called upon to answer whether partisan gerrymandering is harmful to democracy (although the United States Supreme Court has certainly suggested that partisan gerrymandering is indeed harmful to democracy. *See, Veith v. Jubelirer*, 541 U.S. 267, 292, 124 S. Ct. 1769, 1785 (plurality opinion); *id.* at 316, 124 S. Ct. at 1798 (Kennedy, J., concurring); *Ariz. State Legislature*, 135 S. Ct. at 2658.). Nor is it a case where this Court is called upon to engage in policy-making by comparing the enacted maps with others that might be “ideally fair” under some judicially-envisioned criteria. It is not a case that threatens the General Assembly’s broad discretionary powers to create legislative districts, or threatens the General Assembly’s consideration of political data for legitimate purposes when crafting such districts. Rather this is a case where the Court is called upon to take the Adopted Criteria that the General Assembly itself, in its sole discretion, established, and compare the resulting maps with those criteria to see “how far the State had gone off that track because of its politicians’ effort to entrench themselves in office.” *Rucho*, 139 S. Ct. at 2521 (Kagan, J., dissenting).

140. Allowing the General Assembly discretion to establish its own redistricting criteria and craft maps accordingly is what the North Carolina Constitution requires; systematically packing and cracking voters to the extent that their votes are subordinated and devalued for no legitimate governmental purpose, but rather the purposes of entrenching a political party in power, is what the North Carolina Constitution forbids. When the Court is presented with evidence of the scope and quality proffered by Plaintiffs that shows widespread and extreme partisan gerrymandering—multiple districts showing a greater partisan skew than any of 3,000 randomly generated maps (all with the State’s political geography and districting criteria built in)—the standard is indeed clear and manageable. Such extreme partisan gerrymanders violate the fundamental constitutional rights of free elections, equal protection, speech, assembly and association. It is the Court’s duty to say so.

141. The separation of powers—which is expressly guaranteed by the North Carolina Constitution, art. I, § 6, and which underlies the political question doctrine—underscores the Court’s obligation to craft manageable judicial standards to adjudicate partisan gerrymandering claims. Each of the constitutional provisions invoked by Plaintiffs in this case appears in the Declaration of Rights in Article I of the North Carolina Constitution. And “[t]he civil rights guaranteed by the Declaration of Rights in Article I of our Constitution are individual and personal rights entitled to protection against state action.” *Corum*, 330 N.C. at 782, 413 S.E.2d at 289. “The very purpose of the Declaration of Rights is to ensure that the violation of these rights is never permitted by anyone who might be invested under the Constitution with the powers of the State.” *Id.* at 783, 413 S.E.2d at 290. And “[i]t is the state judiciary that has the responsibility to protect the state constitutional rights of the citizens.” *Id.* Indeed, “this obligation to protect the fundamental rights of individuals is as old as the State.” *Id.*

142. This Court is not bound by dicta from *Stephenson* that “[t]he General Assembly may consider partisan advantage and incumbency protection in the application of its discretionary redistricting decisions.” 355 N.C. at 371, 562 S.E.2d at 390. To begin with, the Supreme Court in *Stephenson* stated that any such considerations “must” be “in conformity with the State Constitution.” *Id.* In this case, Plaintiffs allege that partisan gerrymandering of the 2017 Plans violates provisions of the State Constitution, and there is an extensive trial record concerning those allegations. By contrast, *Stephenson* did not involve any partisan gerrymandering claim—let alone partisan gerrymandering claims under the constitutional provisions Plaintiffs invoke here—nor was there any record concerning partisan gerrymandering. The statements in *Stephenson* were “mere obiter dictum and [are] not binding on this Court or any other.” *Taylor v. J.P. Stevens & Co.*, 300 N.C. 94, 100-01, 265 S.E.2d 144, 148 (1980). In a case with such important consequences, the Court will decide Plaintiffs’ claims on the basis of the record and arguments presented by the parties here, rather than follow dicta from prior cases involving different claims and evidence.

143. In order to reject Defendants’ invocation of the political question doctrine, this Court need not decide that the legal standards governing Plaintiffs’ claims would apply in all future cases, including a hypothetical close case. This case is not close. The extreme, intentional, and systematic gerrymandering of the 2017 Plans runs far afoul of the legal standards set forth above, or any other conceivable legal standard that could govern Plaintiffs’ constitutional claims. As Dr. Pegden testified, “[t]hese maps are so gerrymandered that no matter how you do the analysis, no matter who does the analysis, no matter which side is doing the analysis, you reach the same answer.” Tr. 1400:18-21.

144. The Court concludes that partisan gerrymandering claims are justiciable under the North Carolina Constitution.

VI. ANY LACHES DEFENSE LACKS MERIT

145. To the extent Defendants contend that Plaintiffs' claims are barred by laches, that defense lacks merit. North Carolina courts have recognized that laches is inapplicable to continuing obligations. *See Malinak v. Malinak*, 242 N.C. App. 609, 612-13, 775 S.E.2d 915, 917 (2015). State and federal courts alike routinely refuse to apply laches in voting-rights and other constitutional cases seeking solely prospective relief. *E.g., Sprague v. Casey*, 550 A.2d 184, 188-89 (Pa. 1988); *Garza v. Cnty. of Los Angeles*, 918 F.2d 763, 772 (9th Cir. 1990); *Am. Trucking Ass'ns, Inc. v. N.Y. State Thruway Auth.*, 199 F. Supp. 3d 855, 872 (S.D.N.Y. 2016), *vacated on other grounds*, 238 F. Supp. 3d 527 (S.D.N.Y. 2017); *Miller v. Bd. of Comm'rs of Miller Cnty.*, 45 F. Supp. 2d 1369, 1373 (M.D. Ga. 1998). Multiple federal courts have held that laches does not apply to partisan gerrymandering claims as a matter of law. *See League of Women Voters of Mich.*, 373 F. Supp. 3d at 909; *Ohio A. Philip Randolph Inst. v. Smith*, 335 F. Supp. 3d 988, 1001-02 (S.D. Ohio 2018).

146. Moreover, "laches is an affirmative defense which the pleading party bears the burden of proving." *Malinak*, 242 N.C. App. at 611, 775 S.E.2d at 916. Defendants presented no evidence at trial supporting laches.

147. Defendants offered no evidence of any "unreasonable" delay in filing this case. *Id.* at 612, 775 S.E.2d at 916. Plaintiffs commenced this case just fourteen months after the 2017 Plans were enacted.

148. Even if there had been any delay, Defendants presented no evidence that it "worked to the[ir] disadvantage, injury or prejudice." *Id.* While Defendants have suggested that the time pressures of this case prevented their experts from conducting additional or more thorough analyses, any limitation on the time for Defendants' expert reports was not the result of any delay by Plaintiffs. Rather, any such limitation resulted from Defendants' own discovery misconduct in this case, which led the Court to extend the time for Plaintiffs'

expert reports at the expense of the time for Defendants. *See* Order of Mar. 25, 2019. And the Court later granted Defendants a one-week extension to file their expert reports. Order of May 1, 2019.

VII. DEFENDANTS' FEDERAL DEFENSES LACK MERIT

149. Legislative Defendants and Intervenor Defendants raise a series of defenses under federal law, but none of these defenses has merit.

A. The *Covington* Remedial Order Does Not Bar Changes to the 2017 Plans

150. Legislative Defendants contend that the *Covington* court's remedial order in January 2018 precludes *any* changes being made to the current House and Senate plans. Legislative Defendants argue that the *Covington* remedial order contained an "express command that the 2017 plans be used in future elections," so as to purportedly immunize the 2017 Plans from any state-law challenge. Leg. Defs.' Pre-Trial Br. at 39.

151. Legislative Defendants made this same argument when they removed this case to federal court in December 2017, and the federal district court rejected it. The federal court held that the *Covington* remedial order "does not mandate the specific existing apportionment to the exclusion of no others." *Common Cause v. Lewis*, 358 F. Supp. 3d 505, 512 (E.D.N.C. 2019). That holding constitutes law-of-the-case, or at minimum is entitled to controlling deference.

152. In any event, the federal court's holding was clearly correct. In the very same remedial order that Legislative Defendants now cite, the *Covington* district court made clear that the 2017 Plans *could be* challenged on state-law grounds in state court. At Legislative Defendants' urging, the *Covington* court declined to address state-law objections that the *Covington* plaintiffs had raised to the 2017 Plans, because those objections involved "unsettled questions of state law." *Covington v. North Carolina*, 283 F. Supp. 3d

410, 428 (M.D.N.C. 2018). In declining to address such “unsettled question of state law,” the *Covington* court expressly stated that its order was “without prejudice to Plaintiffs or other litigants asserting such arguments in separate proceedings, including in “state court.” *Id.* at 447 n.9. The *Covington* court even noted that any “partisan gerrymandering objection” to the 2017 Plans “would demand development of significant new evidence and therefore [would] be more appropriately addressed in a separate proceeding.” *Id.* at 427. These statements squarely refute Legislative Defendants’ contention that the *Covington* remedial order precludes any changes to the 2017 Plans based on state-law violations that a state court may find.

153. The United States Supreme Court’s holding on appeal from the *Covington* remedial order eliminates any doubt on this score. The Court held that “[t]he District Court’s remedial authority was . . . limited to ensuring that the plaintiffs were relieved of the burden of voting in racially gerrymandered legislative districts.” 138 S. Ct. 2548, 2554 (2018). The Court explained: “Once the District Court had ensured that the racial gerrymanders at issue in this case were remedied, its proper role in North Carolina’s legislative districting process was at an end.” *Id.* at 2555. The *Covington* district court thus had no authority to do anything other than ensure the curing of the prior racial gerrymandering. It did not and could not immunize the plans from future challenge.

154. The *Covington* remedial order does not preclude North Carolina courts from invalidating the 2017 Plans for violations of state law and ordering the creation of new plans.

B. There Is No Conflict with Federal Civil Rights Laws

155. The Court also rejects Legislative Defendants’ arguments that affording Plaintiffs relief on their claims would necessarily violate federal civil rights laws.

156. As described, Legislative Defendants introduced no evidence at trial to establish that any of the three *Gingles* factors, including the existence of legally sufficient racially polarized voting, is present in any area of the State or any particular districts. Legislative Defendants' failure to present any evidence to establish that the *Gingles* factors are met is "is fatal to [any] Section 2 defense" under the VRA. *Covington v. North Carolina*, 316 F.R.D. 117, 169 (M.D.N.C. 2016), *aff'd*, 137 S. Ct. 2211 (2017).

157. Indeed, Legislative Defendants affirmatively represented throughout the 2017 redistricting process that the third *Gingles* factor was *not* met. FOF § F.6. Legislative Defendants have presented no evidentiary basis for any change in that position. The Court concludes that Legislative Defendants have not established that the VRA justifies the current House or Senate districts or precludes granting Plaintiffs relief on their claims.

158. Legislative Defendants also have not established any defense under the Fourteenth or Fifteenth Amendment. Legislative Defendants argue that affording Plaintiffs relief would require intentionally lowering the BVAP in purported "crossover" districts below the level necessary to elect candidates of choice of African Americans, but Legislative Defendants again have advanced no evidence to substantiate this claim. They provided no evidence to establish any district qualifies as a "crossover district," or that remedying the partisan gerrymander in any district or grouping would require lowering the BVAP of any crossover district below the level necessary for African Americans to elect candidates of their choice.

159. Indeed, Legislative Defendants' own expert Dr. Lewis generated estimates of the minimum BVAP needed in certain county groupings for African-American-preferred candidate to win, and Dr. Chen demonstrated that his nonpartisan simulations produce districts within each such county grouping with BVAPs above Dr. Lewis's estimates. FOF § F.6.

160. Legislative Defendants’ federal equal protection defense suffers from another fatal defect—it requires a showing of an intent to discriminate against African Americans. To establish a Fourteenth or Fifteenth Amendment violation, there must be “racially discriminatory intent,” *Lee v. Va. State Bd. of Elections*, 843 F.3d 592, 603 (4th Cir. 2016), which in the redistricting context means “intentional vote dilution,” *i.e.*, “invidiously minimizing or canceling out the voting potential of racial or ethnic minorities,” *Abbott v. Perez*, 138 S. Ct. 2305, 2314 (2018) (quotation marks and alterations omitted).

161. The Court finds without difficulty that Plaintiffs have no intent to discriminate against racial minorities in seeking remedial plans to replace the current plans that violate state constitutional provisions. Further, Plaintiffs alone cannot adopt or approve remedial plans in this case. The remedial plans approved or adopted in this case, as ordered below, will not intentionally dilute the voting power of any North Carolina citizens.

C. Granting Relief Will Not Violate the Fundamental Right to Vote

162. Finally, Legislative Defendants contend that affording Plaintiffs relief in this case will violate the “fundamental right to vote” under the Fourteenth Amendment. Legislative Defendants cite no federal precedent for this purported defense, but in any event it lacks merit.

163. Granting Plaintiffs relief will promote, not violate, the fundamental right to vote of North Carolina citizens. Legislative Defendants’ defense operates from the misapprehension that voting rights must be a zero-sum game, such that curing discrimination against one set of citizens necessarily requires discriminating against another set of citizens. The right that Plaintiffs seek to vindicate is the right to be free from intentional discrimination, and vindicating that right in no way requires or will result in discriminating against others.

VIII. THE COURT WILL ENJOIN USE OF THE 2017 PLANS IN FUTURE ELECTIONS AND THE GENERAL ASSEMBLY IS TO IMMEDIATELY BEGIN THE PROCESS OF REDRAWING THE RELEVANT DISTRICTS

A. The Court Will Require the Redrawing of Specific County Groupings

164. For the reasons stated above, and as set forth in the decree below, the Court declares that there is no reasonable doubt the 2017 House and Senate Plans are unconstitutional under the North Carolina Constitution, and the Court enjoins their use in the 2020 primary and general elections. In particular, the Court enjoins use of the districts in the specific House and Senate county groupings as specified in the decree below.

165. The Court does not enjoin or order any relief with respect to the current House districts in Wake County. Shortly before the trial in this matter, those districts were redrawn pursuant to a separate litigation. *See NAACP v. Lewis*, No. 18 CVS 2322 (N.C. Super. Ct. Nov. 2, 2018); N.C. Sess. Laws 2019-46. Plaintiffs did not present evidence in this case regarding the new Wake County House districts and do not seek relief with respect to those districts.

166. The Court does not enjoin or order the redrawing of House Districts 57, 61, and 62 or Senate Districts 24 or 28, all of which were redrawn by the *Covington* Special Master. With respect to House District 59 and Senate District 27, for which small portions of the current districts were added by the Special Master in *Covington*, the Court will order that the remedial versions of these districts not alter any portions of these districts that were added by the Special Master, but any other portions of these districts may be redrawn. Neither House District 59 nor Senate District 27 were found by the *Covington* court to have been racially gerrymandered (under either the 2011 Plans or the 2017 Plans enacted by the General Assembly), and the *Covington* court did *not* direct the Special Master to redraw either of these districts. The Special Master nonetheless made small changes to these districts, principally to equalize population, in the course of constructing other districts he

was tasked with redrawing. While this Court concludes that there is no legal impediment to redrawing any portion of House District 59 and Senate District 27, including the portions that the Special Master added, the Court nonetheless imposes the limitation set forth in this paragraph out of an abundance of caution.

B. The Court Will Require the Use of the Adopted Criteria, with certain exceptions, and Prohibit the Use of Other Criteria in Redrawing the Districts

167. As set forth in the Court’s decree below, the Court will require that Remedial Maps for the House and Senate legislative district maps for the 2020 election (hereinafter “Remedial Maps”) be drawn, and that the Remedial Maps comply with the criteria adopted by the General Assembly’s House and Senate Redistricting Committees on August 10, 2017, with several exceptions.

168. First, with respect to “Incumbency Protection,” the drafters of the Remedial Maps may take reasonable efforts to not pair incumbents unduly in the same election district. Because Representative David Lewis, Chair of the House Redistricting Committee, explained at the time of the adoption of the Adopted Criteria that the “Incumbency Protection” criteria was “simply saying that mapmakers may take reasonable efforts to not pair incumbents unduly,” PX603 at 122:4-18; Tr. 1640:16-1641:12, and the criteria was understood as such, *see* PX606 at 9:24-10:1 (Sen. Hise: “The Committee adopted criteria pledging to make reasonable efforts not to double-bunk incumbents”), the Remedial Maps shall comply with this explanation and understanding.

169. Second, the “Election Data” criteria shall not be permitted in the drafting of the Remedial Maps. In other words, partisan considerations and election results data shall not be used in the drawing of legislative districts in the Remedial Maps. The Court likewise will prohibit any intentional attempt to favor voters or candidates of one political party.

170. In redrawing the relevant districts in the Remedial Maps, the invalidated 2017 districts may not be used as a starting point for drawing new districts, and no effort may be made to preserve the cores of invalidated 2017 districts. *See Covington*, 283 F. Supp. 3d at 431-32 (holding that remedial plan could not seek to “preserve the ‘cores’ of unconstitutional districts”).

171. Any Remedial Maps must comply with the VRA and other federal requirements concerning the racial composition of districts. The Court will afford all parties an opportunity to submit briefing, which may attach expert analysis, on whether the *Gingles* factors are met in particular counties and county groupings and/or the minimum BVAP needed in particular counties and county groupings for African-Americans to be able to elect candidates of their choice to the General Assembly. Any such submission by Legislative Defendants, however, is subject to two limitations set forth below.

- a) First, if Legislative Defendants assert that the *Gingles* factors are met in any particular district or county grouping, they must not only provide evidentiary support for that assertion, but also must also show good cause why they did not compile such evidence during the 2017 redistricting process and must show good cause why they should not be held judicially estopped from arguing that the *Gingles* factors are met given their repeated representations to the *Covington* court in 2017 that the third *Gingles* factor was not met anywhere in the State.
- b) Second, for districts in counties and county groupings for which Legislative Defendants’ expert Dr. Lewis estimated the minimum BVAP needed for an African-American preferred candidate to prevail in a state legislative election, Legislative Defendants may not assert that the VRA or the United States Constitution requires or justifies making the BVAP of any such district higher than the minimum BVAP threshold estimated by Dr. Lewis in his Amended

Table 4 (which was admitted into evidence at trial) for the relevant county or county grouping. PX773. For districts in counties and county groupings that Dr. Lewis did not analyze, Legislative Defendants may not assert that the VRA or the United States Constitution requires or justifies any minimum BVAP for the districts in that county or county grouping. The Court holds that Legislative Defendants are bound by the BVAP threshold-estimates generated by the expert they retained in this case and are estopped from departing from those estimates, which were relied upon by Plaintiffs' experts, at this late stage of the litigation.

172. The Court will afford the General Assembly two weeks from the date of this Order, namely through September 18, 2019, to enact Remedial Maps in conformity with this Order. *See* N.C.G.S. § 120-2.4.

173. The Court concludes that this two week period is consistent with N.C.G.S. § 120-2.4, which states that “in no event may a court impose its own substitute plan unless the court first gives the General Assembly a period of time to remedy any defects identified by the court in its findings of fact and conclusions of law. That period of time shall not be less than two weeks.” Although § 120-2.4 goes on to state that a longer period of time might be required in some instances, that longer period, the Court concludes, is applicable only if the General Assembly is not currently in session. *See* N.C. Sess. Laws 2018-146, § 4.7. The Court notes that the General Assembly, as of the date of this Order, is in session.

174. The Court will require Legislative Defendants and their agents to conduct the entire remedial process in full public view. At a minimum, that would require all map drawing to occur at public hearings, with any relevant computer screen visible to legislators and public observers. Given what transpired in 2017, the Court will prohibit Legislative Defendants and their agents from undertaking any steps to draw or revise the new districts outside of public view.

175. If Legislative Defendants wish to retain one or more individuals who are not current legislative employees to assist in the map-drawing process, the Court will require Legislative Defendants to obtain approval from the Court to engage any such individuals.

176. Notwithstanding the General Assembly having the opportunity to draw Remedial Maps in the first instance, the Court will still immediately appoint a Referee to (1) assist the Court in reviewing any Remedial Maps enacted by the General Assembly; and (2) to develop remedial maps for the Court should the General Assembly fail to enact lawful Remedial Maps within the time allowed.

C. The Court Will Not Stay the Remedial Process Pending Appeal

177. The Court orders that the remedial process commence immediately upon entry of this Order, and the Court will not grant a stay of the remedial process pending appeal.

178. The central inquiry in deciding whether to grant a stay of relief pending appeal is a balancing of the prejudice and risk of irreparable harm to the parties. *See 130 of Chatham, LLC v. Rutherford Elec. Mbrshp. Corp.*, 2014 WL 3809066, at *9 (N.C. Super. Ct. July 31, 2014).

179. Here, the balance of the equities weighs definitively against any stay. “[C]ourts evaluating redistricting challenges have generally denied motions for a stay pending appeal.” *Harris v. McCrory*, 2016 WL 6920368, at *1 n.1 (M.D.N.C. Feb. 9, 2016) (citing cases and denying stay pending appeal). In such cases, a stay pending appeal could “risk that the State would not be able to implement” the remedial plans “in time for the [next] elections in the event that the [appellate courts] affirm[] this Court’s judgment.” *Covington*, 2018 WL 604732, at *6 (denying stay pending appeal). “The risk of harm is particularly acute where Plaintiffs and other North Carolina voters have already cast their ballots under unconstitutional district plans” in every election this decade. *Id.* The

prejudice to Plaintiffs here would be magnified because the state legislators elected in 2020 will redraw the state House and Senate districts in 2021 following the Decennial Census, substantially compounding the effects of allowing the current unconstitutional plans to be used in the 2020 elections.

180. In contrast, Legislative Defendants will suffer little if any prejudice from refusing any stay pending appeal. If Legislative Defendants ultimately prevail in an appeal, then the current districts will remain in place for the 2020 elections, and there will be no tangible harm from having allowed the remedial process to move forward while the appeal was pending. On balance, the equities and the public interest counsel strongly against a stay.

D. The Court Retains Discretion to Move the Primary Dates

181. Finally, the Court holds that the remedial schedule and process that the Court has set forth in this Order should ensure that remedial plans will be in place sufficiently in advance of the current primary date of March 3, 2020. However, the Court retains authority and discretion to move the primary date for the General Assembly elections, or all of the State's 2020 primaries, including for offices other than the General Assembly, should doing so become necessary to provide effective relief in this case.

182. While the Court concludes that moving the 2020 primaries is not needed at this date, the Court may consider doing so if necessary to grant effective relief in this case.

DECREE

Having considered all of the evidence, the memoranda and arguments of counsel, and the record proper, the Court ORDERS the following:

1. The Court declares that the 2017 House and Senate Plans are unconstitutional and invalid because there is no reasonable doubt each plan violates the rights of Plaintiffs and other Democratic voters under the North Carolina Constitution's

Equal Protection Clause, art. I, § 19; the Free Elections Clause, art. I, § 10; and the Freedom of Speech and Freedom of Assembly Clauses, art. I, §§ 12 & 14.

2. Legislative Defendants and State Defendants, and their respective agents, officers, and employees, are permanently enjoined from preparing for or administering the 2020 primary and general elections for House districts in the following House county groupings:

- a. Alamance
- b. Anson-Union
- c. Brunswick-New Hanover
- d. Buncombe
- e. Cabarrus-Davie-Montgomery-Richmond-Rowan-Stanly (except that House District 66 shall not be redrawn)
- f. Cleveland-Gaston
- g. Columbus-Pender-Robeson
- h. Cumberland
- i. Duplin-Onslow
- j. Franklin-Nash
- k. Forsyth-Yadkin
- l. Guilford (except that House Districts 57, 61, and 62 shall not be redrawn, and any portions of House District 59 added by the *Covington* Special Master shall not be altered)
- m. Lenoir-Pitt
- n. Mecklenburg

3. Legislative Defendants and State Defendants, and their respective agents, officers, and employees, are permanently enjoined from preparing for or administering the 2020 primary and general elections for Senate districts in the following Senate county groupings:

- a) Alamance-Guilford-Randolph (except that Senate Districts 24 and 28 shall not be redrawn, and any portions of Senate District 27 added by the *Covington* Special Master shall not be altered)
 - b) Bladen-Brunswick-New Hanover-Pender
 - c) Buncombe-Henderson-Transylvania
 - d) Davie-Forsyth
 - e) Duplin-Harnett-Johnston-Lee-Nash-Sampson
 - f) Franklin-Wake
 - g) Mecklenburg
4. The Court will afford the General Assembly two weeks from the date of this Order, namely through September 18, 2019, to enact Remedial Maps for the House and Senate legislative districts for the 2020 election (hereinafter “Remedial Maps”) in conformity with this Order.
5. Except as otherwise noted in this Order, the following criteria shall exclusively govern the redrawing of districts in the House and Senate county groupings set forth above:
- a. Equal Population. The mapmakers shall use the 2010 federal decennial census data as the sole basis of population for drawing legislative districts in the Remedial Maps. The number of persons in each legislative district shall comply with the +/- 5 percent population deviation standard established by *Stephenson v. Bartlett*, 355 N.C. 354, 562 S.E. 2d 377 (2002).
 - b. Contiguity. Legislative districts shall be comprised of contiguous territory. Contiguity by water is sufficient.
 - c. County Groupings and Traversals. The mapmakers shall draw legislative districts in the Remedial Maps within county groupings as required by *Stephenson v. Bartlett*, 355 N.C. 354, 562 S.E. 2d 377 (2002) (*Stephenson I*), *Stephenson v. Bartlett*, 357 N.C. 301, 582 S.E.2d 247 (2003) (*Stephenson II*), *Dickson v. Rucho*, 367 N.C. 542, 766 S.E.2d 238 (2014) (*Dickson I*) and *Dickson v. Rucho*, 368 N.C. 481, 781 S.E.2d 460 (2015) (*Dickson II*). Within county groupings, county lines shall not be traversed except as authorized by *Stephenson I*, *Stephenson II*, *Dickson I*, and *Dickson II*. The county groupings utilized in the 2017 House and Senate Maps shall be utilized in the Remedial Maps.

- d. Compactness. The mapmakers shall make reasonable efforts to draw legislative districts in the Remedial Maps that improve the compactness of the districts when compared to districts in place prior to the 2017 Enacted Legislative Maps. In doing so, the mapmaker may use as a guide the minimum Reock (“dispersion”) and Polsby-Popper (“perimeter”) scores identified by Richard H. Pildes and Richard G. Neimi in *Expressive Harms, “Bizarre Districts,” and Voting Rights: Evaluating Election-District Appearances After Shaw v. Reno*, 92 Mich. L. Rev. 483 (1993).
 - e. Fewer Split Precincts. The mapmakers shall make reasonable efforts to draw legislative districts in the Remedial Maps that split fewer precincts when compared to districts in place prior to the 2017 Enacted Legislative Maps.
 - f. Municipal Boundaries. The mapmakers may consider municipal boundaries when drawing legislative districts in the Remedial Maps.
 - g. Incumbency Protection. The mapmakers may take reasonable efforts to not pair incumbents unduly in the same election district.
 - h. Election Data. Partisan considerations and election results data shall not be used in the drawing of legislative districts in the Remedial Maps.
6. In redrawing the relevant districts in the Remedial Maps, the invalidated 2017 districts may not be used as a starting point for drawing new districts, and no effort may be made to preserve the cores of invalidated 2017 districts.
7. Any Remedial Maps must comply with the VRA and other federal requirements concerning the racial composition of districts. Within 14 days of this Order, all parties may submit briefing, which may attach expert analysis, on whether the *Gingles* factors are met in particular counties and county groupings and/or the minimum BVAP needed in particular counties and county groupings for African Americans to be able to elect candidates of their choice to the General Assembly. Any such submission by Legislative Defendants is subject to the limitations set forth in subparagraphs (a) and (b) immediately below.
- a) If Legislative Defendants assert that the *Gingles* factors are met in any counties or county groupings, they shall not only provide evidentiary support for that assertion, but shall also show good cause why they did not compile such evidence during the 2017 redistricting process and shall show good cause why they should not be held judicially estopped from

arguing that the *Gingles* factors are met given their repeated representations to the *Covington* court in 2017 that the third *Gingles* factor was not met anywhere in the State.

- b) For districts in counties and county groupings for which Legislative Defendants' expert Dr. Lewis estimated the minimum BVAP needed for an African-American preferred candidate to prevail in a state legislative election, Legislative Defendants shall not assert that the VRA or the United States Constitution requires or justifies making the BVAP of any such district higher than the minimum BVAP threshold estimated by Dr. Lewis in his Amended Table 4 (PX773) for the relevant county or county grouping. For districts in counties and county groupings that Dr. Lewis did not analyze, Legislative Defendants shall not assert that the VRA or the United States Constitution requires or justifies any minimum BVAP for the districts in that county or county grouping.
8. Legislative Defendants and their agents shall conduct the entire remedial process in full public view. At a minimum, this requires all map drawing to occur at public hearings, with any relevant computer screen visible to legislators and public observers. Legislative Defendants and their agents shall not undertake any steps to draw or revise the new districts outside of public view.
 9. To the extent that Legislative Defendants wish to retain one or more individuals who are not current legislative employees to assist in the map-drawing process, Legislative Defendants must seek and obtain prior approval from the Court to engage any such individuals.
 10. Notwithstanding the General Assembly having the opportunity to draw Remedial Plans in the first instance, the Court, by subsequent Court Order, shall promptly appoint a Referee to (1) assist the Court in reviewing any Remedial Maps enacted by the General Assembly; and (2) to develop remedial maps for the Court should the General Assembly fail to enact lawful Remedial Maps within the time allowed.
 14. No later than September 6, 2019, the parties may submit to the Court names and qualifications of suggested referees. The Court will thereafter appoint a referee by subsequent Court Order.

15. The Court orders that the remedial process will commence immediately upon entry of this Order.

17. The Court, on its own motion, denies a stay of the remedial process pending appeal.

18. The Court retains jurisdiction to move the primary date for the General Assembly elections, or all of the State's 2020 primaries, including for offices other than the General Assembly, should doing so become necessary to provide effective relief in this case.

SO ORDERED, this the 3rd day of September, 2019.

/s/ Paul C. Ridgeway

Paul C. Ridgeway, Superior Court Judge

/s/ Joseph N. Crosswhite

Joseph N. Crosswhite, Superior Court Judge

/s/ Alma L. Hinton

Alma L. Hinton, Superior Court Judge

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA

SANDRA LITTLE COVINGTON, et al.,)	
)	
Plaintiffs,)	
v.)	1:15CV399
)	
THE STATE OF NORTH CAROLINA, et al.,)	
)	
Defendants.)	

Before WYNN, Circuit Judge, and SCHROEDER, Chief District Judge, and EAGLES, District Judge.

MEMORANDUM OPINION AND ORDER (Amended)

PER CURIAM:

On August 11, 2016, this Court held that the North Carolina General Assembly unjustifiably relied on race to draw dozens of state Senate and House of Representatives district lines, in violation of the Equal Protection Clause of the Fourteenth Amendment. *Covington v. North Carolina (Covington I)*, 316 F.R.D. 117 (M.D.N.C. 2016). The Supreme Court summarily affirmed, without dissent, that determination. *North Carolina v. Covington*, 137 S. Ct. 2211 (2017) (mem.).

On August 31, 2017, the North Carolina General Assembly enacted Senate and House redistricting plans (the “2017 Plans”) intended to remedy the constitutional violations. Plaintiffs, thirty-one North Carolina voters, lodged objections to 12 of the 116 proposed remedial districts, arguing that those districts failed to remedy the identified racial gerrymanders or were otherwise legally unacceptable. Finding 9 of Plaintiffs’ 12

objections potentially had merit, this Court identified its concerns and appointed Dr. Nathaniel Persily of Stanford University as Special Master (the “Special Master”) to assist the Court in evaluating and, if necessary, redrawing those 9 district configurations (the “Subject Districts”) in light of the fast-approaching filing period for the 2018 elections. Thereafter, the Special Master filed draft reconfigurations of the 9 districts for the parties’ consideration, invited and considered comments and objections from the parties, and revised his draft plan in light of those comments and objections.

On December 1, 2017, the Special Master submitted to the Court recommended remedial plans (the “Recommended Plans”) for the Subject Districts, as well as a report explaining his process for drawing the Recommended Plans and why the Recommended Plans remedy the identified legal problems with the Subject Districts. As further explained below, after careful consideration of the 2017 Plans, the Special Master’s report, and the parties’ evidence, briefing, and oral arguments, we sustain Plaintiffs’ objections to the Subject Districts, approve the Special Master’s Recommended Plans for reconfiguring those districts, reject Plaintiffs’ challenge to one Senate district, and decline to consider Plaintiffs’ remaining objections.¹

I.

In early 2011, the North Carolina General Assembly set out to redraw state Senate and House districts to account for changes in population and demographic data revealed in

¹ Plaintiffs do not lodge any objections to the remaining 104 districts redrawn in the 2017 Plans, and therefore, we have nothing before us that indicates the districts do not comply with our order.

the most recent decennial census. *See* N.C. Const. art. II, §§ 3, 5. As the appointed chairs of the redistricting committees in their respective chambers, Senator Robert Rucho and Representative David Lewis (collectively, the “Chairs”), both Republicans, led efforts to draw and enact legislative districting maps for use in state elections in North Carolina (the “2011 Plans”). *Covington I*, 316 F.R.D. at 126. To that end, Representative Lewis and Senator Rucho engaged the assistance of an outside expert, Dr. Thomas Hofeller, to draw the new Senate and House district maps. *Id.*

Senator Rucho and Representative Lewis instructed Dr. Hofeller to follow three “primary” criteria in drawing the new districting plans, all of which “centered around the creation of what the Chairs called ‘VRA districts’”—geographically compact minority population centers for which there was some evidence of a history of racially polarized voting. *Id.* at 130. The first criterion required that Dr. Hofeller “draw all purported VRA districts to reach a 50%-plus-one [Black Voting Age Population (“BVAP”)] threshold.” *Id.* This instruction stemmed from Senator Rucho’s and Representative Lewis’s belief that the Supreme Court’s plurality opinion in *Bartlett v. Strickland*, 556 U.S. 1 (2009), required that any district drawn to comply with the Voting Rights Act be majority-minority. *Id.*

Second, Senator Rucho and Representative Lewis directed Dr. Hofeller to draw the so-called “VRA districts” first. *Id.* at 131. This instruction derived from the North Carolina Supreme Court’s opinions in *Stephenson v. Bartlett* (*Stephenson I*), 562 S.E.2d 377 (N.C. 2002) and *Stephenson v. Bartlett* (*Stephenson II*), 582 S.E.2d 247 (N.C. 2003), both of which sought to harmonize federal election law with the North Carolina

Constitution’s so-called “Whole County Provision,” N.C. Const. art. II, §§ 3(3), 5(3), which requires that, where possible, legislative district lines adhere to county lines, *Covington*, 316 F.R.D. at 131–32. According to the Chairs, the *Stephenson* decisions required Dr. Hofeller to identify and draw any VRA districts first. *Id.*

Third, Senator Rucho and Representative Lewis instructed Dr. Hofeller to draw VRA districts “everywhere there was a minority population large enough to do so and, if possible, in rough proportion to their population in the state.” *Id.* at 130. This instruction again derived from the Chairs’ incorrect understanding of governing law. In particular, Senator Rucho and Representative Lewis errantly believed that the Supreme Court’s decision in *Johnson v. De Grandy*, 512 U.S. 999 (1994), held that in order to comply with Section 2 of the Voting Rights Act, the number of majority-minority districts in a state must be proportional to minority voters’ share of the state’s overall voting population. *Covington*, 316 F.R.D. at 133. Although the Chairs did not expressly instruct Dr. Hofeller to maximize the number of VRA districts, “the proportionality target functionally operated as a goal to maximize the number of majority-black districts.” *Id.* at 134.

Senator Rucho and Representative Lewis further instructed Dr. Hofeller that *any* districting proposal had to comply with these three “primary” criteria, two of which—the 50%-plus-one target and the proportionality goal—amounted to “‘mechanical racial targets.’” *Id.* at 135 (quoting *Ala. Legislative Black Caucus v. Alabama*, 135 S. Ct. 1257, 1267 (2015)). In accordance with Senator Rucho’s and Representative Lewis’s instructions, Dr. Hofeller first “drew VRA ‘exemplar districts,’ which were ‘racially

defined’ in that they embodied nothing more than ‘concentrations of minority voters’ capable of constituting a district that could satisfy the 50%-plus-one BVAP threshold.” *Id.* at 135 (quoting Trial Tr. vol. IV, 228:5–12 (Hofeller); Trial Tr. vol. V, 104:4–105:1 (Hofeller)). By drawing, where feasible, district lines around the black population centers identified in the “exemplar districts,” Dr. Hofeller then constructed as many majority-black districts as possible. *Id.* at 136–37.

Because the Chairs had instructed Dr. Hofeller that the three “primary” criteria could not be compromised, in drawing the districting plans Dr. Hofeller subordinated other race-neutral districting principles such as preserving political subdivisions and communities of interest, compactness, and complying with state districting laws such as the Whole County Provision. *Id.* at 137–39. As a result of the decision to adhere to the Chairs’ mechanical racial targets over traditional race-neutral districting principles, the number of majority-black districts in Dr. Hofeller’s proposed state House map increased from nine to thirty-two. *Id.* at 126, 134, 137. Similarly, the number of majority-black districts in the proposed state Senate map increased from zero to nine. *Id.* at 126. The state Senate and House considered and adopted, with minor modifications, the 2011 Plans on July 27 and 28, 2011, respectively. *Id.*

Soon after the General Assembly approved the 2011 Plans, North Carolina voters filed actions in state court alleging that the lines of numerous legislative districts enacted by the General Assembly amounted to unconstitutional racial gerrymanders, in violation of the North Carolina and United States Constitutions. *See Dickson v. Rucho*, 766 S.E.2d 238 (N.C. 2014), *vacated*, 135 S. Ct. 1843 (2015) (mem.). A divided Supreme Court of

North Carolina held that both the Senate and House districting plans satisfied all “state and federal constitutional and statutory requirements.” *Dickson*, 766 S.E.2d at 260. In April 2015, the Supreme Court of the United States unanimously vacated the state court’s ruling without opinion and remanded the case for reconsideration of the federal constitutional and statutory questions presented in light of the Supreme Court’s recent decision in *Alabama Legislative Black Caucus*. *Dickson*, 135 S. Ct. 1843. On remand, the Supreme Court of North Carolina again concluded that the 2011 Plans complied with federal law. *Dickson v. Rucho*, 781 S.E.2d 404 (N.C. 2015), *vacated*, 137 S. Ct. 2186 (2017).

While litigation in state court continued, Plaintiffs initiated this action in May 2015. *Covington I*, 316 F.R.D. at 128. As in the ongoing state court action, Plaintiffs alleged that districts in the 2011 Plans constituted racial gerrymanders and thus violated the Fourteenth Amendment of the U.S. Constitution. First Am. Compl. at 2, July 24, 2015, ECF No. 11. To remedy the alleged constitutional violation, Plaintiffs sought an injunction barring further use of the challenged districts in the 2011 Plans and requiring the General Assembly to adopt constitutionally compliant plans for use in any future elections. *Id.* at 92–93. Plaintiffs named as Defendants: (1) the State of North Carolina; (2) Senator Rucho, Representative Lewis, President Pro Tempore of the North Carolina Senate Philip E. Berger, and Speaker of the North Carolina House of Representatives Timothy K. Moore (collectively, the “Legislative Defendants”); and (3) the North Carolina State Board of Elections, as well as each of the five members of that body (collectively, the “Board Defendants”).

On August 11, 2016, this Court unanimously concluded that Defendants unjustifiably, and therefore unconstitutionally, predominantly relied on race in drawing the lines of twenty-eight majority-minority districts in the 2011 Plans. *Covington I*, 316 F.R.D. at 176. In particular, this Court concluded that Defendants lacked a “strong basis in evidence” for their belief that race-based districting was necessary to comply with Section 2 of the Voting Rights Act because Defendants never analyzed whether, for each challenged district, the presence of “racial bloc voting . . . would enable the majority usually to defeat the minority group’s candidate of choice.” *Id.* at 167 (citing *Thornburg v. Gingles*, 478 U.S. 30, 51 (1986)). On June 5, 2017, the Supreme Court summarily affirmed, without dissent, this Court’s judgment that the Senate and House districting plans violated Plaintiffs’ rights under the Fourteenth Amendment. *Covington*, 137 S. Ct. 2211. Notwithstanding that this Court had found the district lines violated the Constitution in August 2016 and that the Supreme Court affirmed that conclusion in early June 2017, the General Assembly made no effort to begin drawing remedial districting plans until late July 2017.

After obtaining jurisdiction from the Supreme Court, this Court received evidence, briefing, and argument regarding the appropriate remedy for the constitutional violations. In an order entered on July 31, 2017, this Court gave the General Assembly until September 1, 2017, “to enact new House and Senate districting plans remedying the constitutional deficiencies” with the districts found unconstitutional in this Court’s August 2016 opinion and order. *Covington v. North Carolina (Covington III)*, --- F. Supp. 3d. ---, 2017 WL 3254098, at *3 (M.D.N.C. 2017). This Court advised that it

would extend this deadline until September 15, 2017, if the General Assembly made certain showings regarding the public nature of its redistricting process. *Id.* The order further explained that the Court selected the September deadlines to ensure that it would have adequate time “(1) to review the General Assembly’s enacted remedial district plans, and (2) if the enacted plans prove constitutionally deficient, to draw and impose its own remedial plan.” *Id.* In the same order, and as further explained in a subsequent opinion, this Court denied Plaintiffs’ request for a special election. *Id.* at *2; *see also Covington v. North Carolina (Covington IV)*, --- F. Supp. 3d. ---, 2017 WL 4162335 (M.D.N.C. 2017).

Electing not to make the public showings necessary to obtain an extension of the deadline, the General Assembly’s Senate Redistricting Committee and House Select Committee on Redistricting (collectively, the “Joint Committee”) put in place a streamlined process designed to ensure enactment of remedial plans in advance of the September 1, 2017 deadline. Representative Lewis and Senator Ralph Hise, who had replaced Senator Rucho as chair of the Senate Redistricting Committee, again engaged Dr. Hofeller to assist the Joint Committee’s Republican supermajority in drawing the remedial maps.

The Joint Committee met on August 10, 2017, during which Representative Lewis and Senator Hise proposed the following criteria to govern the drawing of the remedial district plans:

Equal Population. The Committees shall use the 2010 federal decennial data as the sole basis of population for drawing legislative districts in the 2017 House and Senate plans. The number of persons in each legislative

district shall comply with the +/- 5 percent population deviation standard established [*Stephenson I*].

Contiguity. Legislative districts shall be comprised of contiguous territory. Contiguity by water is sufficient.

County Groupings and Traversals. The Committees shall draw legislative districts within county groupings as required by [*Stephenson I*, *Stephenson II*, *Dickson I*, and *Dickson II*]. With county groupings, county lines shall not be traversed except as authorized by *Stephenson I*, *Stephenson II*, *Dickson I*, and *Dickson II*.

Compactness. The Committees shall make reasonable efforts to draw legislative districts in the 2017 House and Senate plans that improve the compactness of the current districts. In doing so, the Committees may use as a guide the minimum Reock (“dispersion”) and Polsby-Popper (“perimeter”) scores identified by Richard H. Pildes and Richard G. Neimi in *Expressive Harms*, “*Bizarre Districts*,” and *Voting Rights: Evaluating Election-District Appearances After Shaw v. Reno*, 92 Mich. L. Rev. 483 (1993).

Fewer Split Precincts. The Committees shall make reasonable efforts to draw legislative districts in the 2017 House and Senate plans that split fewer precincts than the current legislative redistricting plans.

Municipal Boundaries. The Committees may consider municipal boundaries when drawing legislative districts in the 2017 House and Senate plans.

Incumbency Protection. Reasonable efforts and political considerations may be used to avoid pairing incumbent members of the House or Senate with another incumbent in legislative districts drawn in the 2017 House and Senate plans. The Committees may make reasonable efforts to ensure voters have a reasonable opportunity to elect non-paired incumbents of either party to a district in the 2017 House and Senate plans.

Election Data. Political considerations and election results data may be used in the drawing of legislative districts in the 2017 House and Senate plans.

No Consideration of Racial Data. Data identifying the race of individuals or voters shall not be used in the drawing of legislative districts in the 2017 House and Senate plans.

Adopted Criteria for House and Senate Plans, Sept. 7, 2017, ECF No. 184-37.

During the hearing, Democratic members of the Joint Committee objected to the Incumbency Protection criterion as likely to perpetuate the effects of the racial gerrymander by protecting incumbents elected under the racially gerrymandered plans. *See, e.g.*, Joint Select Comm. On Redistricting Meeting Tr. 120:9–121:9, Aug. 10, 2017, ECF No. 184-9 (“[I]t seems just ridiculous to me that [the Republican majority] would get to now say we get to protect the members that we were able to elect using unconstitutional maps.”). Likewise, Democratic Joint Committee members expressed concern with the “Election Data” criterion on grounds that the purpose of using such data was unclear and that such data would be used to preserve the partisan makeup of the two chambers achieved under the unconstitutional districting plans. *See, e.g., id.* at 134:13–139:2. In the course of the discussion on the use of Election Data, Representative Lewis represented that the Joint Committee’s Republican leadership did not “have a goal of maintaining the current partisan advantage in the House and the Senate.” *Id.* at 138:15–21. And Democratic Joint Committee members objected to the criterion barring consideration of “racial data” on grounds that it was necessary to consider such data to determine whether remedial plans remedied the racial gerrymander. *See, e.g., id.* at 151:6–11 (“[I]f the districts were declared unconstitutional because of race, if you don’t use race to correct it, how are you going to show the Court that they still are not unconstitutional?”).

The Joint Committee unanimously adopted the Equal Population and County Groupings and Traversal criteria. Leg. Defs.’ Resp. to Pls.’ Objs. (“Leg. Defs.’ Objs. Resp.”) 8–10, Sept. 22, 2017, ECF No. 192. The remaining seven criteria were adopted

by party-line votes. *Id.* Representative Lewis and Senator Hise directed Dr. Hofeller to follow the adopted criteria in drawing the remedial maps, but the Committee provided Dr. Hofeller with no formal guidance as to the relative precedence of the various criteria. House Select Comm. On Redistricting Meeting Tr. 62:4–6, Aug. 25, 2017, ECF No. 184-18. Legislative Defendants did not introduce any evidence regarding what additional instructions, if any, Representative Lewis or Senator Hise provided to Dr. Hofeller about the proper use and weighting of the various criteria. Nor did they offer any evidence as to how Dr. Hofeller weighted or ordered the criteria in drawing the proposed remedial maps, either in general or as to any particular district.

The General Assembly released Dr. Hofeller’s proposed Senate and House Plans on August 19 and 20, 2017, respectively. The General Assembly provided block assignment files and statistical information regarding the 2017 Plans on August 21, 2017. The 2017 Plans altered a total of 116 of the 170 state House and Senate districts. On August 22, 2017, the Joint Committee held a public hearing on the proposed plans in Raleigh, allowing attendees at six satellite locations to participate via teleconference. The Committees also received thousands of public comments through the General Assembly’s website.

On August 23, 2017, Plaintiffs sent a letter to the House Select and Senate Committees on Redistricting and Defendants’ counsel raising the following objections to the 2017 Plans: (1) several of the proposed districts failed to remedy the racial gerrymander; (2) the plans, when analyzed as a whole, amounted to “grossly unconstitutional partisan gerrymanders” in violation of the Equal Protection Clause; (3)

the House plan's reconfiguration of certain districts in Mecklenburg and Wake County untainted by the racial gerrymander violated the North Carolina Constitution's prohibition on mid-decade redistricting; and (4) proposed district configurations in Cabarrus and Greene Counties violated the North Carolina Constitution's requirement that, where possible, state legislative districts respect county lines. Letter to Counsel, Sept. 15, 2017, ECF No. 187-1. Plaintiffs also provided the Committees with alternative maps that addressed Plaintiffs' objections, and Democratic representatives offered those maps as amendments during the legislative process.

The Committees did not revise the proposed remedial plans to address Plaintiffs' objections and rejected Plaintiffs' alternative redistricting plans. By party-line vote, the Senate Redistricting Committee approved Dr. Hofeller's proposed Senate plan on August 24, 2017. The House Redistricting Committee approved Dr. Hofeller's proposed House plan on August 25, 2017, also by a party-line vote. The General Assembly adopted, with minor modifications, both 2017 Plans on August 31, 2017.

One week later, Legislative Defendants filed with this Court the 2017 Plans and supporting data and materials required by the Court's July 31 order, including the complete legislative record. On September 15, 2017, Plaintiffs filed objections to 12 of the 116 redrawn districts, alleging essentially the same violations that they had identified in their August 23, 2017 letter to Defendants and the Committees. Objs. ("Pls.' Objs."), Sept. 15, 2017, ECF No. 187. Along with their objections, Plaintiffs filed several supporting records, affidavits, and expert analyses. One week later, Legislative Defendants responded to Plaintiffs' objections, asserting that this Court was without

jurisdiction to consider the objections and that the objections otherwise were without merit. *See generally* Leg. Defs.’ Objs. Resp. The State of North Carolina and Board Defendants (collectively, the “State Defendants”) took no position on Plaintiffs’ objections.

On October 12, 2017, this Court held a hearing on Plaintiffs’ objections. This Court gave Legislative Defendants the opportunity to introduce evidence—in addition to the legislative record, data, and other materials submitted in accordance with the Court’s July 31, 2017 order—and present witnesses to establish that the General Assembly’s proposed remedial plans cured the identified constitutional violations and were not otherwise legally unacceptable. Legislative Defendants elected not to offer any such evidence, either in written submissions or at the hearing.

That same day, the Court issued an order directing the parties to confer and, if possible, jointly submit a list of three persons qualified to serve as a special master under Federal Rule of Civil Procedure 53 to assist the Court in its remedial efforts. Order, Oct. 12, 2017, ECF No. 200. The order further stated that if the parties failed to reach an agreement as to a list of candidates, the Court would select a special master. *Id.* The parties subsequently informed the Court that they had conferred but failed to reach an agreement as to the requested list of special master candidates. Notice, Oct. 18, 2017, ECF No. 201.

On October 26, 2017, the Court informed the parties that, after carefully considering Plaintiffs’ objections, it was concerned that nine district configurations in the 2017 Plans either failed to remedy the identified constitutional violations or were

otherwise legally unacceptable. Order, Oct. 26, 2017, ECF No. 202. The Court further informed the parties that in light of its concerns, it intended to appoint Dr. Nathaniel Persily of Stanford University as Special Master to assist the Court by drawing alternative remedial districting plans. *Id.* The Court gave the parties an opportunity to object to the appointment of Dr. Persily. *Id.* Pursuant to the Court's invitation, Legislative Defendants objected to the appointment of a special master and Dr. Persily, in particular, but they did not identify any alternative candidate to serve as special master. Obj., Oct. 30, 2017, ECF No. 204.

In a November 1, 2017 order, the Court overruled Legislative Defendants' objections and appointed Dr. Persily as Special Master. Order ("Appointment Order"), Nov. 1, 2017, ECF No. 206. The Appointment Order described the Court's concerns with the Subject Districts and set forth the scope of the Special Master's responsibilities. *Id.* The Appointment Order also directed the Special Master to adhere to the following guidelines in redrawing Subject Districts:

- a. Redraw district lines for [2011 Enacted Senate Districts 21 and 28 and House Districts 21, 33, 38, 57, 99, 102, and 107] and any other districts within the applicable 2017 county grouping necessary to cure the unconstitutional racial gerrymanders. As to House District 57, the redrawn lines shall also ensure that the unconstitutional racial gerrymanders in 2011 Enacted House Districts 58 and 60 are cured. As to 2011 Enacted House Districts 33, 38, 99, 102, and 107, no 2011 Enacted House Districts which do not adjoin those districts shall be redrawn unless it is necessary to do so to meet the mandatory requirements set forth in Paragraphs 2(b) through 2(e) of this Order, and if the Special Master concludes that it is necessary to adjust the lines of a non-adjoining district, the Special Master shall include in his report an explanation as to why such adjustment is necessary.

- b. Use the 2010 Federal Decennial Census Data.
- c. Draw contiguous districts with a population as close as possible to 79,462 persons for the House Districts and 190,710 persons for the Senate Districts, though a variance up to +/- 5% is permitted and authorized if it would not conflict with the primary obligations to ensure that remedial districts remedy the constitutional violations and otherwise comply with state and federal law, would enhance compliance with state policy as set forth in subsection (f) below, and would not require redrawing lines for an additional district.
- d. Adhere to the county groupings used by the General Assembly in the 2017 Enacted Senate and House Plans.
- e. Subject to any requirements imposed by the United States Constitution or federal law, comply with North Carolina constitutional requirements including, without limitation, the Whole County Provision as interpreted by the North Carolina Supreme Court.
- f. Make reasonable efforts to adhere to the following state policy objectives, so long as adherence to those policy objectives does not conflict with the primary obligations of ensuring that remedial districts remedy the constitutional violations and otherwise comply with state and federal law:
 - i. Split fewer precincts than the 2011 Enacted Districts;
 - ii. Draw districts that are more compact than the 2011 Enacted Districts, using as a guide the minimum Reock (“dispersion”) and Polsby-Popper (“perimeter”) scores identified by Richard Pildes & Richard Neimi, *Expressive Harms, “Bizarre Districts,” and Voting Rights: Evaluating Election-District Appearances After Shaw v. Reno*, 92 Mich. L. Rev. 483 (1993); and
 - iii. Consider municipal boundaries and precinct lines.
- g. After redrawing the districts, in view of the policy decision by the General Assembly that efforts to avoid pairing incumbents are in the interest of North Carolina voters, the Special Master may adjust district lines to avoid pairing any incumbents who have not publicly announced their intention not to run in 2018, but only to the extent

that such adjustment of district lines does not interfere with remedying the constitutional violations and otherwise complying with federal and state law. Additionally, the Special Master shall treat preventing the pairing of incumbents as “a distinctly subordinate consideration” to the other traditional redistricting policy objectives followed by the State. *Ga. State Conf. of NAACP v. Fayette Cty. Bd. of Comm’rs*, 996 F. Supp. 2d 1353, 1363 (N.D. Ga. 2014) (collecting cases).

- h. Except as authorized in Paragraph 2(g), the Special Master shall not consider incumbency or election results in drawing the districts. *See, e.g., Wise v. Lipscomb*, 437 U.S. 535, 541 (1978) (noting that courts lack “political authoritativeness” and must act “in a manner free from any taint of arbitrariness or discrimination” in drawing remedial districts) (quoting *Connor v. Finch*, 431 U.S. 408, 417 (1977)); *Wyche v. Madison Par. Police Jury*, 769 F.2d 265, 268 (5th Cir. 1985) (“Many factors, such as the protection of incumbents, that are appropriate in the legislative development of an apportionment plan have no place in a plan formulated by the courts.”); *Wyche v. Madison Par. Police Jury*, 635 F.2d 1151, 1160 (5th Cir. 1981) (noting that “a court is forbidden to take into account the purely political considerations that might be appropriate for legislative bodies”); *Favors v. Cuomo*, Docket No. 11-cv-5632, 2012 WL 928216, at *18 (E.D.N.Y. Mar. 12, 2012), *report and recommendation adopted as modified*, No. 11-cv-5632, 2012 WL 928223, at *6 (E.D.N.Y. Mar. 19, 2012); *Molina v. Cty. of Orange*, No. 13CV3018, 2013 WL 3039589, at *8 (S.D.N.Y. June 3, 2013), *supplemented*, No. 13CV3018, 2013 WL 3039741 (S.D.N.Y. June 13, 2013), *report and recommendation adopted*, No. 13 CIV. 3018 ER, 2013 WL 3009716 (S.D.N.Y. June 14, 2013); *Larios v. Cox*, 306 F. Supp. 2d 1214, 1218 (N.D. Ga. 2004); *Balderas v. Texas*, No. 6:01CV158, 2001 WL 36403750, at *4 (E.D. Tex. Nov. 14, 2001).
- i. The Special Master may consider data identifying the race of individuals or voters to the extent necessary to ensure that his plan cures the unconstitutional racial gerrymanders and otherwise complies with federal law.

Id. The Appointment Order further directed the Special Master to submit to the Court by December 1, 2017, a report that included reconfigured districting plans for each of the

Subject Districts, an explanation of those plans, and a comparison of those plans with the related districts in the 2017 Plans and districts submitted by Plaintiffs. *Id.*

Pursuant to the Court's Appointment Order, the Special Master immediately set out to draw new configurations for the Subject Districts. On November 14, 2017, the Special Master disclosed to the parties and filed with the Court draft reconfigurations of the Subject Districts as well as an explanation of his rationale behind those reconfigurations. Special Master's Corrected Draft Plan and Order, Nov. 14, 2017, ECF No. 213. In accordance with the Court's Appointment Order, the Special Master's draft plan made no effort to avoid pairing incumbents. *Id.* at 4. Rather, the Special Master ordered the parties to submit objections and proposed revisions to the draft plan, including suggestions "as to how incumbents shall be unpaired without degrading the underlying features of the [draft] plan." *Id.* at 19.

Pursuant to the Special Master's order, Plaintiffs submitted comments on the Special Master's draft plan on November 17, 2017, stating, *inter alia*, that they believed the draft plan remedied the constitutional flaws with the subject districts. Pls.' Resp. & Proposed Modifications to the Special Master's Draft Plan, Nov. 17, 2017, ECF No. 216. Plaintiffs further suggested several approaches the Special Master could take in revising his draft plans to avoid pairing incumbents in some, but not all, of the reconfigured districts. *Id.*

By contrast, Legislative Defendants elected not to raise *any* objection to specific aspects of the Special Master's draft plan or offer suggestions as to how the Special Master could improve his draft plan or avoid pairing incumbents, representing that they

lacked authority under State law to advise the Special Master on the drawing of remedial districts. Leg. Defs.’ Response to Special Master’s Draft Rep. (“Leg. Defs.’ Draft Rep. Resp.”) 5, Nov. 17, 2017, ECF No. 215 (explaining that “the legislative defendants do not themselves speak for the entire General Assembly” and therefore that “[a] few members of the legislature, even if they are leaders, are not authorized to state how the entire legislature would vote on, or amend, draft districts proposed by a law professor”). Rather than offering any substantive comments or suggestions regarding the Special Master’s draft plan, Legislative Defendants elected to renew their objections to this Court’s jurisdiction and the Special Master’s authority to draw remedial districts. *See generally id.*

In response, Plaintiffs asserted that Legislative Defendants’ jurisdictional arguments were without merit. Pls.’ Resp. to Leg. Defs.’ Nov. 17, 2017 Filing, Nov. 21, 2017, ECF No. 217. The Legislative Defendants then objected to Plaintiffs’ suggestions for unpairing incumbents on grounds that the suggestions served to benefit Democratic candidates, offered some criticisms, and recommended that the Special Master advise the Court to adopt the General Assembly’s 2017 Plans in full, rather than his proposed remedial plans. Leg. Defs.’ Resp. to Pls.’ Proposed Modifications to Special Master’s Draft Plan, Nov. 21, 2017, ECF No. 218.

On December 1, 2017, after receiving comments and suggestions from the parties, the Special Master filed with this Court his Recommended Plan and Report and numerous supporting materials. Special Master’s Rec. Plan & Rep. (“Rec. Plan & Rep.”), Dec. 1, 2017, ECF No. 220. In his 69-page report, the Special Master presented

his Recommended Plans for the Subject Districts and thoroughly explained how those configurations conformed to the Court’s guidelines and advanced traditional redistricting criteria; described how the Recommended Plans addressed the Court’s concerns with the Subject Districts and cured the constitutional violations with the related districts in the 2011 Plans; explained why his remedial configurations were superior to those proposed by Plaintiffs; and offered alternative configurations to address several potential concerns with his Recommended Plans. *See generally id.* Notwithstanding that Legislative Defendants elected not to suggest how incumbents should be unpaired—and categorically objected to Plaintiffs’ suggestions for unpairing certain incumbents—the Special Master’s Recommended Plans avoids pairing all but two of the incumbents—one Republican and one Democrat—in his reconfigured districts and did not pair *any* incumbents of the same party. *Id.* at 30, 37.

On December 8, 2017, Plaintiffs notified the Court that they had no objections to the Special Master’s Recommend Plan. Pls.’ Pos. on the Special Master’s Recommended Plan, Nov. 8, 2017, ECF No. 223. That same day, Legislative Defendants filed with the Court numerous objections to the Special Master’s Recommended Plan and Report, Leg. Defs.’ Resp. to Special Master’s Recommended Plan & Report (“Leg. Defs.’ Rec. Plan Resp.”), Nov. 8, 2017, ECF No. 224, notwithstanding that Legislative Defendants had previously represented that they lacked authority under state law to comment on or provide suggestions regarding the Special Master’s reconfigurations, Leg. Defs.’ Draft Rep. Resp. 5. Legislative Defendants maintained that the Recommended Plans “reveal[] the [S]pecial Master’s single-minded focus on race” and that the recommended districts,

if adopted by the Court, would “impose on the State a racial gerrymander that favors one political party.” Leg. Defs.’ Rec. Plan Resp. at 2–3. Although Legislative Defendants had offered no substantive suggestions to the Special Master regarding his earlier draft plan, Legislative Defendants raised several district-specific objections to the Recommended Plans and argued that the 2017 Plans were superior to the Recommended Plans. *Id.* at 8–17. Finally, Legislative Defendants objected to the Special Master’s unpairing of Democratic incumbents, but appeared to acquiesce in the Special Master’s unpairing of Republican incumbents. *Id.* at 20 (“The special master agreed to allow plaintiffs’ requests and submitted a final plan that un-pairs numerous Democratic incumbents, even where doing so required him to make changes to his draft districts in a way that did not improve the scoring of the districts under traditional redistricting principles.”).

On January 5, 2017, the Court held a hearing during which the Special Master presented his Recommended Plans and addressed numerous questions raised by the parties. At the hearing, Legislative Defendants also introduced expert and testimonial evidence pertaining to alleged infirmities with the Recommended Plans. Having carefully reviewed the 2017 Plans; the Special Master’s Recommended Plan and Report, and the materials appended thereto; and the parties’ evidence, briefing, and oral arguments, we sustain Plaintiffs’ objections to the Subject Districts and approve and adopt the Special Master’s Recommended Plans for reconfiguring those districts.

II.

Before addressing the merits of Plaintiffs’ objections to certain districts in the 2017 Plans, including the Subject Districts, we first must address several threshold arguments made by Legislative Defendants, which seek to circumscribe the scope of this Court’s review of the General Assembly’s proposed 2017 Plans. In particular, Legislative Defendants argue that: (1) the enactment of the 2017 Plans rendered this action moot; (2) this Court’s review of the 2017 Plans extends, at most, to determining whether the plans corrected the racial gerrymander; (3) this Court lacks jurisdiction under the three-judge panel statute to consider *any* of Plaintiffs’ objections other than the racial gerrymandering allegations that initially served as the basis of this panel’s jurisdiction; and (4) this Court may not, as a matter of federalism, consider Plaintiffs’ state law objections. We address each of these arguments in turn.

A.

Legislative Defendants first contend that the General Assembly’s enactment of the new districting plans rendered this case moot. Leg. Defs.’ Objs. Resp. 19–21. In particular, Legislative Defendants argue that because the districting plans that served as the basis of Plaintiffs’ challenge have been replaced, “[P]laintiffs no longer have a concrete stake in the outcome of the case.” *Id.* at 20. This argument is without merit.

The Supreme Court long has held that when a federal court concludes that a state districting plan violates the Constitution, the appropriate state redistricting body should have the first opportunity to enact a plan remedying the constitutional violation. *Reynolds v. Sims*, 377 U.S. 585, 586 (1964). But after finding unconstitutional race-based discrimination—as this Court did here—a district court also has a “duty” to ensure

that any remedy “so far as possible eliminate[s] the discriminatory effects of the past as well as bar[s] like discrimination in the future.” *Louisiana v. United States*, 380 U.S. 145, 154 (1965); *see also, e.g., Lane v. Wilson*, 307 U.S. 268, 275 (1939) (holding invalid State’s proposed remedy for state constitutional provision that violated the Fifteenth Amendment because it “part[ook] too much of the infirmity” of the original unconstitutional provision). To that end, if the state fails to enact “a constitutionally acceptable” remedial districting plan, then “the responsibility falls on the District Court.” *Chapman v. Meier*, 420 U.S. 1, 27 (1975); *see also Reynolds*, 377 U.S. at 586 (holding that a district court “acted in a most proper and commendable manner” by imposing its own remedial districting plan, after the district court concluded that remedial plan adopted by state legislature failed to remedy constitutional violation).

In accordance with *Chapman* and *Reynolds*, the U.S. Court of Appeals for the Fourth Circuit has held that when, as here, a state enacts a redistricting plan in an effort to remedy a constitutional violation, a district court must “consider whether the proffered remedial plan is legally unacceptable because it violates anew constitutional or statutory voting rights—that is, whether it fails to meet the same standards applicable to an original challenge of a legislative plan in place.” *McGhee v. Granville Cty., N.C.*, 860 F.2d 110, 115 (4th Cir. 1988). Numerous other courts have reached the same conclusion—federal courts *must* review a state’s proposed remedial districting plan to ensure it completely remedies the identified constitutional violation and is not otherwise legally unacceptable. *See, e.g., Large v. Fremont Cty., Wyo.*, 670 F.3d 1133, 1138, 1148–49 (10th Cir. 2012) (rejecting governmental entity’s proposed districting plan to remedy Voting Rights Act

violation because it failed to comply with state law); *Ketchum v. Byrne*, 740 F.2d 1398, 1411–12 (7th Cir. 1984) (rejecting governmental entity’s proposed remedial districting plan because it failed to completely remedy Voting Rights Act violation); *Williams v. City of Texarkana, Ark.*, 32 F.3d 1265, 1268 (8th Cir. 1994) (“If an appropriate legislative body offers a remedial plan, the court must defer to the proposed plan *unless the plan does not completely remedy the violation or the proposed plan itself constitutes a . . . violation* [of the Voting Rights Act].” (emphasis added)); *Harris v. McCrory*, No. 1:13-cv-949, 2016 WL 3129213, at *2 (M.D.N.C. June 2, 2016) (holding, in racial gerrymandering case, that a district court “must determine whether the legislative remedy enacted at its behest is in fact a lawful substitute for the original unconstitutional plan”); *United States v. Osceola Cty., Fla.*, 474 F. Supp. 2d 1254, 1258 (M.D. Fla. 2006) (rejecting governmental body’s remedial districting plan because it was “not a full and adequate remedy” of the identified Voting Rights Act violation).

Additionally, we emphasize that the General Assembly redrew the Subject Districts pursuant to the opportunity provided by this Court’s order to “enact new House and Senate districting plans remedying the constitutional deficiencies.” *Covington III*, 2017 WL 3254098, at *3. It is axiomatic that this Court has the inherent authority to enforce its own orders. *See, e.g., Carlisle v. United States*, 517 U.S. 416, 438 (1996) (noting that “[e]xamples of the exercise of the federal courts’ inherent powers are abundant in both our civil and our criminal jurisprudence” and collecting cases); *see also Degen v. United States*, 517 U.S. 820, 827 (1996); *Spagnuolo v. Whirlpool Corp.*, 717 F.2d 114, 122 (4th Cir. 1983). This is especially so here, given that the state constitution

prohibited the General Assembly from engaging in mid-decade redistricting absent this Court's order. Thus, this Court has a strong interest in ensuring that the legislature complied with, but did not exceed, the authority conferred by this Court's order.

Legislative Defendants do not cite any persuasive authority supporting their position that the enactment of the proposed remedial plans rendered this action moot. Nor do Legislative Defendants acknowledge, much less try to distinguish, the voluminous authority contrary to their unsupported position. Accordingly, the General Assembly's enactment of its remedial plans did not moot this action.

B.

Second, Legislative Defendants argue that even if the case is not moot, our review of the proposed remedial districts is limited to determining, at most, whether the General Assembly corrected the racial gerrymanders previously identified by this Court. According to Legislative Defendants, this Court, therefore, may not consider whether the remedial plans otherwise violate federal or state constitutional or statutory law. Leg. Defs.' Objs. Resp. 22–28, 51–52.

In support of their argument that this Court may consider only those challenges to a remedial districting plan that rely on the same legal theory as the original violation, Legislative Defendants principally rely on the Supreme Court's statement in *Upham v. Seamon*, 456 U.S. 37 (1982), that a court-drawn interim remedial plan may not “‘reject[] state policy choices more than . . . necessary to meet the *specific constitutional violations*.’” Leg. Defs.' Obj. Resp. 23 (quoting *Upham*, 456 U.S. at 42 (emphasis retained)). According to Legislative Defendants, the Supreme Court's use of the phrase

“specific constitutional violations” limits this Court’s review to determining whether the remedial plans corrected the racial gerrymanders identified by this Court.

But in *Upham*, the Supreme Court struck down a court-drawn *interim* remedial plan because the district court redrew an *entire* state districting plan, notwithstanding that only two of twenty-seven districts were the subject of an *ongoing* challenge by the Attorney General. 456 U.S. at 43 (“We have never said that the entry of an objection by the Attorney General to any part of a state plan grants a district court the authority to disregard aspects of the legislative plan not objected to by the Attorney General.”). Unlike in *Upham*, this Court and the Supreme Court have rendered final decisions that the General Assembly’s 2011 districting plans violated the Constitution. Also unlike in *Upham*, this Court has given the legislature the first opportunity to draw new districts. And most significantly, unlike the district court in *Upham*, which redrew districts unaffected by the alleged violation, this Court did not—indeed, could not—direct the General Assembly to redraw districts unaffected by the constitutional violation. *Upham*, therefore, does not constrain this Court’s authority to ensure that the General Assembly’s proposed remedial plan complies with federal and state law.

Legislative Defendants similarly misplace reliance on the Fourth Circuit’s decision in *McGhee*. There, a district court found that a municipal districting plan that elected all five county commissioners in county-wide, at-large districts violated Section 2 of the Voting Rights Act by freezing a sizable minority of African-American citizens (approximately 40 percent of the voting age population) out of any representation on the commission. *McGhee*, 860 F.2d at 112–13. To remedy the violation, the county adopted

a new plan composed of seven single-member districts. *Id.* at 113. Only two of the seven remedial districts were majority-minority, meaning that, according to the plaintiffs, the preferred candidates of African-Americans would make up, at most, 28 percent of the commission, less than their proportional representation in the county. *Id.* at 113–14. In order to provide African-American representation on the commission in proportion to the population of African-Americans in the county, the district court rejected the proposed plan and adopted an alternative plan akin to cumulative voting. *Id.* at 114.

The Fourth Circuit concluded the district court erred in rejecting the county’s proposed plan and adopting the cumulative voting plan. *Id.* The Court emphasized that the plain language of the Voting Rights Act stated that minority groups have no right to “proportional representation.” *Id.* at 119. Because (1) the county’s plan provided a “complete remedy” for the Section 2 violation and (2) the proportional representation plan adopted by the court exceeded the relief to which the plaintiffs were entitled under the Voting Rights Act, the district court erred. *Id.* at 115, 120–21 (internal quotation marks omitted). Unlike the *McGhee* plaintiffs’ request for proportional representation, Plaintiffs do not ask this Court to provide relief exceeding that to which they are entitled under the Constitution or law, nor is this Court ordering any such relief. Rather, Plaintiffs simply ask this Court not to approve a proposed remedy for the racial gerrymandering that “violates anew constitutional or statutory voting rights”—a proposition *McGhee* expressly supports. *Id.* at 115.

Contrary to Legislative Defendants’ argument that *Upham* and *McGhee* foreclose review of violations other than those originally alleged, numerous courts, including three-

judge panels in this circuit bound by *Upham*, have held that their review of a remedial redistricting plan extends beyond the particular legal theory that was the basis for invalidating the original plan. *Large*, 670 F.3d at 1148 (rejecting municipal redistricting plan imposed to remedy Voting Rights Act violation due to noncompliance with state constitutional provision); *Harris*, 2016 WL 3129213, at *2 (rejecting Legislative Defendants’ argument that the court’s review of remedial maps was “limited to whether the new Congressional Districts 1 and 12 pass constitutional muster,” and stating that “precedent suggests that we have a responsibility to review the plan as a whole” (citing *McGhee*, 860 F.2d at 115)); *Personhuballah v. Alcorn*, 155 F. Supp. 3d 552, 564 (E.D. Va. 2016) (“[T]hough the [legislator intervenors] urge us not to consider the requirements of Section 2, as no Section 2 claim was raised in *Page II*, we think it appropriate to implement a plan that complies with federal policy disfavoring discrimination against minority voters.” (footnote omitted)); *Jeffers v. Clinton*, 756 F. Supp. 1195, 1199 (E.D. Ark. 1990) (rejecting districts created by remedial plan that failed to comply with Voting Rights Act, notwithstanding that such districts were not subject to original challenge); *Sullivan v. Crowell*, 444 F. Supp. 606, 611–12 (W.D. Tenn. 1978) (finding that legislative remedial plan enacted to cure one-person, one-vote violations violated state constitution); *cf. Burns v. Richardson*, 384 U.S. 73, 83 (1966) (holding that court considering remedial apportionment plan “must consider the scheme as a whole”). Again, Legislative Defendants fail to acknowledge, much less distinguish, this contrary authority.

Additionally, were this Court to accept Legislative Defendants' argument, the General Assembly could draw a map to remedy their racial gerrymander that plainly violated, for example, the Equal Protection Clause's one-person, one-vote requirement. According to Legislative Defendants, this Court nonetheless would be required to approve the map, and wait for Plaintiffs to bring a separate one-person, one-vote claim. Plaintiffs then would be forced to incur the costs of litigating a new action, and the majority party in the legislature would reap the benefits of using an unconstitutional districting plan for another election cycle. Indeed, a legislature could adopt seriatim unconstitutional or unlawful districting plans as remedial plans so long as each new plan violated a different constitutional or statutory provision. To be sure, some challenges to a remedial districting plan—like Plaintiffs' partisan gerrymandering objection—would demand development of significant new evidence and therefore be more appropriately addressed in a separate proceeding. But in the absence of a demonstration that objections to a remedial districting plan require such factual development, this Court declines to create the perverse incentive Legislative Defendants propose.

C.

Third, Legislative Defendants assert that, as a general matter, this Court lacks jurisdiction under the three-judge panel statute, 28 U.S.C. § 2284, to consider *any* objections other than racial gerrymandering, including objections premised on violations of state law. Leg. Defs.' Objs. Resp. 26. Legislative Defendants are correct that Section 2284 establishes the jurisdiction for a three-judge panel to hear federal constitutional challenges relating to the apportionment of any statewide legislative body. *See Kalson v.*

Paterson, 542 F.3d 281, 287 (2d Cir. 2008) (holding the three-judge requirement under Section 2284 is jurisdictional). But “once convened, ‘the jurisdiction of the [three-judge] District Court so constituted . . . extends to every question involved, whether of state or federal law, and enables the court to rest its judgment on the decisions of such of the questions as in its opinion effectively dispose of the case.’” *Armour v. Ohio*, 775 F. Supp. 1044, 1048 (N.D. Ohio 1991) (quoting *Sterling v. Constantin*, 287 U.S. 378, 393–94 (1932)); *see also Page v. Bartels*, 248 F.3d 175, 190 (3d Cir. 2001), *as amended* (June 25, 2001) (holding that the pendent jurisdiction of a three-judge panel extends to all claims that are “inextricably intertwined” with the claim that served as the basis of the panel’s jurisdiction). To that end, a number of three-judge panels have exercised their pendent jurisdiction over state law claims in redistricting cases, particularly when state law claims are “inextricably intertwined” with their federal constitutional claims. *See, e.g., Page*, 248 F.3d at 190; *Armour*, 775 F. Supp. at 1048; *Sullivan*, 444 F. Supp. at 613 (noting that “pendent jurisdiction of a properly convened three-judge court is measured by the same standards applicable to a one-judge district court” and therefore exercising pendent jurisdiction over claim that multimember remedial districts violated state constitution).

Legislative Defendants identify two decisions in which three-judge district courts have declined to exercise their pendent jurisdiction over state law claims or non-redistricting federal claims. But in those cases the courts did not dispute their authority to exercise pendent jurisdiction over related state or federal claims; rather, they declined to exercise such jurisdiction because the state law claims or non-redistricting federal claims

were unrelated to the claim giving rise to the panel’s jurisdiction. *See, e.g., Robertson v. Bartels*, 148 F. Supp. 2d 443, 461–62 (D.N.J. 2001) (declining to exercise pendent jurisdiction in racial gerrymandering case over claim that durational residency requirement violated state constitution); *Adams v. Clinton*, 90 F. Supp. 2d 35, 39 (D.D.C. 2000) (declining to exercise pendent jurisdiction in case challenging denial of apportionment of representative to District of Columbia to various other claims premised on denial of home rule). Accordingly, this Court has authority under Section 2284 to consider Plaintiffs’ federal and state law objections to the General Assembly’s remedial plan, at least to the extent such objections are “inextricably intertwined” with the claim that serves as the basis of this Court’s jurisdiction.

There are no doubt cases when it is appropriate for a three-judge panel to decline to exercise jurisdiction over an allegedly pendent claim, such as when the claim implicates an unsettled question of state law. *See Robertson*, 148 F. Supp. 2d at 461–62; *Hagans v. Lavine*, 415 U.S. 528, 545 (1974) (noting that “[n]eedless decisions of state law should be avoided both as a matter of comity and to promote justice between the parties” (quoting *United Mine Workers of Am. v. Gibbs*, 383 U.S. 715, 726 (1966))). Indeed, we reach that conclusion with regard to Plaintiffs’ arguments that two configurations in the 2017 Plan fail to comply with the North Carolina Constitution’s Whole County Provision. *See infra* Part III.B.2.

But having considered the factors of judicial economy, convenience, fairness to the litigants, and comity, the Court finds that the exercise of pendent jurisdiction over Plaintiffs’ objections premised on Legislative Defendants’ alleged failure to comply with

the North Carolina Constitution’s prohibition on mid-decade redistricting is particularly appropriate here. *See Sullivan*, 444 F. Supp. at 613. Indeed, declining to exercise such jurisdiction would cause significant problems. As further explained below, this Court’s order invalidating the lines surrounding the twenty-eight districts provided the sole authority for the General Assembly to ignore the North Carolina Constitution’s prohibition on mid-decade redistricting. *See infra* Part III.B.1. Because this Court’s order governed the scope of the General Assembly’s redistricting authority, this Court is in the best position to determine whether the General Assembly exceeded its authority under that order by redrawing districts allegedly untainted by the identified constitutional violation.

D.

Finally, Legislative Defendants assert that, as a matter of federalism, this Court is barred from considering whether the proposed remedial plans comply with state law. But Legislative Defendants cite no cases holding that, having found that a districting plan violates the Constitution or federal law, a federal court may not consider whether a remedial plan violates state law. On the contrary, several courts have rejected remedial plans as violative of a state constitution or statute. *Large*, 670 F.3d at 1146 (“When a political subdivision of a State substantively contravenes the laws of that State—at least insofar as that contravention is not sanctioned by higher federal law—it no longer acts as an agent of that sovereign, and therefore is due no federal-court deference.”); *Sullivan*, 444 F. Supp. at 611–12 (finding that legislative remedial plan enacted to cure one-person,

one-vote violations violated state constitution). Legislative Defendants make no effort to address, much less distinguish, these cases.

More significantly, as Legislative Defendants concede, in apportionment cases, federal courts tasked with drawing or reviewing remedial maps should not “displac[e] legitimate state policy judgments with the court’s own preferences.” *Perry v. Perez*, 565 U.S. 388, 394 (2012). Here, North Carolina citizens have enshrined in their constitution a “policy judgment[]” that the General Assembly should not engage in mid-decade redistricting or disregard county lines unless compelled to do so by federal law. It would be paradoxical to hold, as Legislative Defendants argue, that this Court must defer to the legislature’s policy decisions regarding redistricting, but not to the people of North Carolina’s sovereign decisions in their constitution regarding the policies the legislature must follow in engaging in such redistricting.

* * * * *

In sum, we reject Legislative Defendants’ efforts to circumscribe this Court’s review of the remedial plans. Accordingly, in determining whether each of the General Assembly’s remedial plans completely remedies the constitutional violation, we must also assess whether the “proffered remedial plan is legally unacceptable because [they] violate[] anew constitutional or statutory voting rights” under federal or state law. *McGhee*, 860 F.2d at 115.

III.

Having disposed of Legislative Defendants’ arguments pertaining to the scope of our review, we now turn to Plaintiffs’ specific objections to aspects of the 2017 Plans. In

particular, Plaintiffs assert (1) that four of the districts—proposed remedial Senate Districts 21 and 28 and House Districts 21 and 57—fail to remedy the racial gerrymander that served as the basis for invalidating the 2011 version of those districts and (2) that several of the districts and district configurations violate provisions in the North Carolina Constitution.² We address each objection in turn.

A.

As detailed more fully in this Court’s earlier opinion, a state legislature engages in impermissible racial gerrymandering, if, in drawing the district lines, consideration of “race predominated over traditional race-neutral redistricting principles,” absent a showing by the State that the “‘districting legislation [wa]s narrowly tailored to achieve . . . [a] compelling state interest.’” *Covington I*, 316 F.R.D. at 129 (quoting *Shaw v. Hunt*, 517 U.S. 899, 908 (1996)). Predominance may be shown “either through circumstantial evidence of a district’s shape and demographics or more direct evidence going to legislative purpose, that race was the predominant factor motivating the legislature’s decision to place a significant number of voters within or without a particular district.” *Id.* (quoting *Alabama*, 135 S.Ct. at 1267). “In general, that requires

² Plaintiffs’ also assert that the 2017 Plans, when analyzed as a whole, amounted to “grossly unconstitutional partisan gerrymanders” in violation of the Equal Protection Clause. Pls.’ Objs. 42–43. Plaintiffs, however, acknowledge that in the absence of discovery, this Court does not have an adequate record to rule on their partisan gerrymandering objection. *Id.* Accordingly, Plaintiffs do not presently raise any partisan gerrymandering objection, and therefore we do not address whether the 2017 Plans are unconstitutional partisan gerrymanders.

proof that “the legislature subordinated traditional race-neutral districting principles, including . . . compactness, contiguity, and respect for political subdivisions . . . to racial considerations.” *Id.* (quoting *Miller v. Johnson*, 515 U.S. 900, 907 (1995)). Relevant circumstantial evidence that the Supreme Court has considered in determining whether racial considerations predominated includes, but is not limited to: “bizarre or non-compact district shape” and “district lines that cut through traditional geographic boundaries or local election precincts.” *Id.*

In finding that race predominated in the drawing of dozens of district lines in the 2011 districting plans—including the previous versions of the four districts subject to Plaintiffs’ racial gerrymandering objections—this Court relied on both direct and circumstantial evidence. In particular, Representative Lewis’s and Senator Rucho’s instructions that Dr. Hofeller draw, where possible, majority-African American “VRA districts”—which Dr. Hofeller implemented by searching for minority population centers and, where feasible, drawing district lines around those population centers—provided direct evidence that the General Assembly predominantly relied on race in drawing the challenged districts. *Id.* at 130–37. We also relied on circumstantial evidence of the General Assembly’s subordination of traditional race-neutral principles, such as the challenged districts’ bizarre shapes, lack of compactness, and division of counties, municipalities, precincts, and communities of interest along racial lines. *See, e.g., id.* at 137–38, 143–51. With this evidence as a backdrop, we now must consider whether each

of the four districts “so far as possible eliminate[s] the discriminatory effects” of the racial gerrymander in each of the four districts.³ *Louisiana*, 380 U.S. at 154.

In doing so, we also must keep in mind that we are not confronted with an original racial gerrymandering challenge to the four proposed remedial districts. Rather, we consider these districts after already having found that their preceding versions violated the Constitution. This remedial posture impacts the nature of our review. Generally, state legislative enactments—including districting plans—are presumed valid and entitled to substantial judicial deference. *See Upham*, 456 U.S. at 43 (“[I]n the absence of a finding that the . . . reapportionment plan offended either the Constitution or the Voting

³ Plaintiffs and Legislative Defendants disagree as to the governing burden of proof. According to Plaintiffs, Defendants bear the burden of establishing the 2017 districts completely remedy the constitutional violation. By contrast, Legislative Defendants assert that Plaintiffs bear the burden of proving that the 2017 districts fail to remedy the constitutional violation. Plaintiffs are correct that, outside the context of redistricting, the Supreme Court has held that once a governmental action is found to violate the Equal Protection Clause, the governmental defendant bears the burden of demonstrating that its proposed remedial plan remedies the constitutional violation. *See, e.g., United States v. Virginia*, 518 U.S. 515, 547–48 (1996) (holding, in sex discrimination case, that “[h]aving violated the Constitution’s equal protection requirement, Virginia was obliged to show that its remedial proposal ‘directly address[ed] and relate[d] to’ the violation” (quoting *Milliken v. Bradley*, 433 U.S. 267, 280 (1977))); *Greene v. Cty. School Bd. of New Kent Cty., Va.*, 391 U.S. 430, 439 (1968) (“The burden on a school board today is to come forward with a plan that promises realistically to work, and promises realistically to work now.”). But the Supreme Court never has addressed where the burden lies in the context of a challenge to a state redistricting plan adopted to remedy a racial gerrymander. We need not decide that unsettled question, however, because we conclude that regardless of whether the burden lies with Defendants or Plaintiffs, Senate Districts 21 and 28 and House Districts 28 and 57 fail to remedy the constitutional violation.

Rights Act, the District Court was not free . . . to disregard the political program of the . . . State Legislature.”); *Wise v. Lipscomb*, 437 U.S. 535, 540 (1978) (“The new legislative plan, if forthcoming, will then be the governing law unless it, too, is challenged and found to violate the Constitution.”). “The district court need not defer to a state-proposed *remedial plan*, however, if the plan does not *completely remedy* the violation” *Harvell v. Blythe Sch. Dist. No. 5*, 126 F.3d 1038, 1040 (8th Cir. 1997) (emphases added); *cf. Abrams v. Johnson*, 521 U.S. 74, 85 (1997) (holding that legislative “plan is not owed *Upham* deference to the extent the plan subordinated traditional districting principles to racial considerations”). Accordingly, when, as here, “the districting plan is offered as a replacement for one invalidated by the court[,] . . . the court has an independent duty to assess its constitutionality, and cannot ignore substantial evidence of improper racial motivation.” *Wilson v. Jones*, 130 F. Supp. 2d 1315, 1322 (S.D. Ala. 2000), *aff’d sub nom.*, *Wilson v. Minor*, 220 F.3d 1297 (11th Cir. 2000).

In the remedial posture, courts must ensure that a proposed remedial districting plan completely corrects—rather than perpetuates—the defects that rendered the original districts unconstitutional or unlawful. *See Abrams*, 521 U.S. at 86. To that end, a remedial districting plan cannot be based on considerations that “would validate the very maneuvers that were a major cause of the unconstitutional districting.” *Id.*

Of particular relevance here, *see infra* Parts III.A.1–4, efforts to protect incumbents by seeking to preserve the “cores” of unconstitutional districts or through reliance on political data closely correlated with race—particularly attempts to ensure an incumbent will prevail in his or her new district—have the potential to embed, rather than

remedy, the effects of an unconstitutional racial gerrymander in a proposed remedial districting plan. Although the Supreme Court has not squarely addressed whether, and by what means, a state redistricting body tasked with drawing remedial districts may protect incumbents elected in racially gerrymandered districts, four Justices have stated that whether “the goal of protecting incumbents is legitimate, even where, as here, individuals are incumbents by virtue of their election in an unconstitutional racially gerrymandered district is a questionable proposition.” *Easley v. Cromartie*, 532 U.S. 234, 262 n.3 (2001) (Thomas, J., dissenting) (noting that that question was not presented to the Supreme Court or district court and, therefore, that the Court had not addressed it). Lower courts likewise have expressed concern that remedial districts drawn to protect incumbents elected under an unlawful or unconstitutional plan may serve to perpetuate the identified violation. *See, e.g., Ketchum*, 740 F.2d at 1408 (expressing skepticism about efforts to protect incumbents in maps drawn to remedy impermissible race-based districting because “many devices employed to preserve incumbencies are necessarily racially discriminatory”); *Jeffers*, 756 F. Supp. at 1199–1200 (rejecting remedial districts that violated the Voting Rights Act, notwithstanding that governmental defendant asserted the districts were drawn to protect incumbents, because “[t]he desire to protect incumbents, either from running against each other or from a difficult race against a black challenger, cannot prevail if the result is to perpetuate the violations of the equal-opportunity principle contained in the Voting Rights Act”).

The potential for efforts to protect incumbents to perpetuate a constitutional violation is greater with some forms of incumbency protection than others. Outside of

the remedial context, the Supreme Court has recognized that in drawing district lines a legislature may seek to “avoid[]” pairing incumbents in the same district. *See Karcher v. Daggett*, 462 U.S. 725, 740–41 (1983). But the Supreme Court has emphasized that, even when a legislature is not seeking to remedy an unconstitutional districting plan, other forms of incumbency protection—most notably, efforts to ensure an incumbent will prevail in his new district—pose greater concerns, particularly when efforts to protect incumbents rely on considerations closely correlated with race.

In *League of United Latin American Citizens v. Perry* (LULAC), 548 U.S. 399 (2006), the Supreme Court considered a mid-decade redistricting plan that removed Latinos from a district in order to protect an incumbent “from a constituency that was increasingly voting against him.” *Id.* at 440–41. Notwithstanding that the district court concluded that the legislature removed the Latino voters from the district “for political, not racial, reasons,” the Supreme Court found the districting plan violated Section 2 of the Voting Rights Act. *Id.* In reaching this conclusion, the Court stated that “incumbency protection can be a legitimate factor in districting, but experience teaches that incumbency protection can take various forms, not all of them in the interests of the constituents.” *Id.* at 440–41 (citation omitted).

If the justification for incumbency protection is to keep the constituency intact so the officeholder is accountable for promises made or broken, then the protection seems to accord with the concern for the voters. If, on the other hand, incumbency protection means excluding some voters from the district simply because they are likely to vote against the officeholder, the change is to benefit the officeholder, not the voters. By purposely redrawing lines around those who opposed [the incumbent], the state

legislature took the latter course. This policy, whatever its validity in the realm of politics, cannot justify the effect on Latino voters.

Id. Lower courts have reached the same conclusion—drawing districts “on a block-by-block or neighborhood- or town-splitting level to corral voters perceived as sympathetic to incumbents or to exclude opponents of the incumbents” is a “form of incumbent protection [that] is much different” than the form of incumbent protection that the Supreme Court has sanctioned: avoiding the pairing of incumbents. *Vera v. Richards*, 861 F. Supp. 1304, 1336 (S.D. Tex. 1994), *aff’d sub nom.*, *Bush v. Vera*, 517 U.S. 952 (1996) (finding unconstitutional decennial redistricting plan that shifted voters among districts based on race in order to protect incumbents). Therefore, “[i]ncumbent protection is a valid state interest only to the extent that it is not a pretext for unconstitutional racial gerrymandering.” *Id.*

Accordingly, regardless of whether it is ever legitimate for a state redistricting body to draw a remedial districting plan to protect incumbents elected to racially gerrymandered districts—a question the Supreme Court has yet to squarely address—a redistricting body’s desire to protect such incumbents must give way to its duty to completely remedy the constitutional violation. That is particularly true where, as here, a state redistricting body relies on redistricting criteria closely correlated with race in its pursuit of the far more suspect goal of seeking to ensure that incumbents elected in a racially gerrymandered district prevail in their remedial district.

For example, although state redistricting bodies may use political data for certain purposes when initially drawing district lines, *see Gaffney v. Cummings*, 412 U.S. 735,

752–53 (1973) (holding that state legislature did not violate Equal Protection Clause by relying on political data “to create a districting plan that would achieve a rough approximation of the statewide political strengths of the Democratic and Republican Parties”), the consideration of political data to ensure incumbents will prevail in their remedial district may serve to carry forward the discriminatory effect of the original violation, *see Jeffers*, 756 F. Supp. at 1199–1200; *c.f. Personhuballah*, 155 F. Supp. 3d at 564 (“[A]t some point political concerns must give way when there is a constitutional violation that needs to be remedied.”). And whereas a state redistricting body may have a “legitimate” interest in “preserving the cores of prior districts” so as to ensure an incumbent prevails in his new district when initially drawing a redistricting plan, *Karcher*, 462 U.S. at 740, Legislative Defendants concede that a remedial plan drawn to preserve the “core of [a] racially gerrymandered district” “would perpetuate [the] racial gerrymander,” Leg. Defs.’ Objs. Resp. 52; *Easley*, 532 U.S. at 265 n.7 (Thomas, J., dissenting) (“Of course, considering that District 12 has never been constitutionally drawn, Dr. Weber’s criticism—that the problem with the district lies not just at its edges, but at its core—is not without force.”); *cf. Personhuballah*, 155 F. Supp. 3d at 561 n.8 (“[M]aintaining district cores is the type of political consideration that must give way to the need to remedy a [racial gerrymandering] violation.”).⁴

⁴ The Court emphasizes that its holding regarding the propriety of the use of political data and core preservation to protect incumbents is limited to the remedial phase and should not be construed to address the legislature’s ability to consider such factors outside the remedial context.

In light of the remedial context—and in view of the compelling evidence presented by Plaintiffs that the General Assembly’s efforts to protect incumbents by preserving district cores and through use of political data perpetuated the unconstitutional effects of the four districts that are the subject of Plaintiffs’ racial gerrymandering objections, *see infra* Part III.A.1–4—we reject Legislative Defendants’ two principal arguments in response to Plaintiffs’ racial gerrymandering objections: (1) that the adopted criterion barring the use of racial data in drawing the 2017 Plan categorically precludes a finding that any of the districts in the plans continues to be a racial gerrymander and (2) that sustaining Plaintiffs’ racial gerrymandering objections would be tantamount to holding that a state redistricting body must consider race in drawing a redistricting plan to remedy a racial gerrymander. Leg. Defs.’ Objs. Resp. 30 (citing Adopted Criteria for House and Senate Plans, Sept. 7, 2017, ECF No. 184-37); Leg. Defs.’ Rec. Plan Resp. 16.

As to the first argument—that the race-blind criterion immunizes the proposed remedial districts from any claim of racial gerrymandering—the Supreme Court long has recognized that a statute enacted by a state legislature to remedy an unconstitutional race-based election law can perpetuate the effects of the constitutional violation, and thereby fail to constitute a legally acceptable remedy, even when the remedial law is facially race-neutral. For example, in *Lane v. Wilson*, the Court considered a statute enacted by the Oklahoma legislature to remedy a racially discriminatory voter qualification provision in the Oklahoma Constitution that the Court previously had held violated the Fifteenth Amendment. 307 U.S. at 269–71; *see also Guinn v. United States*, 238 U.S. 347, 367

(1915) (striking down Oklahoma constitutional provision excluding lineal descendants of persons entitled to vote prior to January 1, 1866, from being subject to literacy test as a precondition to voting on grounds that provision “by necessary result re-creates and perpetuates the very conditions which the [Fifteenth] Amendment was intended to destroy”). Notwithstanding that the remedial statute was facially race-neutral, the Court nonetheless struck down the remedial statute as perpetuating the constitutional violation because it “part[ook] too much of the infirmity [of the violative state constitutional provision] to be able to survive.” *Lane*, 307 U.S. at 275; *see also Kirksey v. Bd. of Sup’rs of Hinds Cty., Miss.*, 554 F.2d 139, 146–47 (5th Cir. 1977) (“Where a [redistricting] plan, though itself racially neutral, carries forward intentional and purposeful discriminatory denial of access that is already in effect, it is not constitutional. Its benign nature cannot insulate the redistricting government entity from the existent taint.”), *superseded by statute on other grounds as recognized in League of United Latin Am. Citizens, Council No. 4434 v. Clements*, 999 F.2d 831, 866 (5th Cir. 1993).

Like the remedial election law at issue in *Lane*, even though the General Assembly here forbid the mapdrawers from considering race, the district configurations that are the subject of Plaintiffs’ racial gerrymandering objections “partake too much of the infirmity” of their racially gerrymandered versions and therefore continue to constitute racial gerrymanders. *Id.* In particular, as explained more fully below, even though the Adopted Criteria barred Representative Lewis, Senator Hise, and Dr. Hofeller from considering race in drawing the remedial plans, several of the challenged districting configurations in the remedial plan preserve the “core of the racially gerrymandered

district” configurations—which derived from Dr. Hofeller’s 2011 VRA exemplars—thereby “perpetuat[ing] [the] racial gerrymander.” Leg. Defs.’ Objs. Resp. 52; *see also infra* Part III.A.1–4. Likewise, even though the mapdrawers could not consider race in drawing the 2017 Plan, the mapdrawers’ use of partisan election results—which, Legislative Defendants concede, are correlated with race, Hr’g Tr. 115:8–15—to try to ensure incumbents would prevail in their remedial districts carried forward the effects of the identified racial gerrymanders, *see infra* Part III.A.1–4.

The fallacy of Legislative Defendants’ argument that the race-blind criterion precludes any finding of racial gerrymandering is most evident when one follows the argument to its logical conclusion. Under Legislative Defendants’ argument, a state redistricting body tasked with redrawing districts to remedy a racial gerrymander could adopt the *exact same districts* as those held unconstitutional so long as the redistricting body relied on only the prior district lines, not race, in drawing the purportedly remedial districts. Such a result plainly would not “so far as possible eliminate the discriminatory effects” of the racial gerrymander, as the Constitution demands. *Louisiana*, 380 U.S. at 154; *see also Perez v. Abbott*, --- F. Supp. 3d ---, 2017 WL 3495922, at *43 (W.D. Tex. Aug. 15, 2017) (rejecting State’s argument that “a Legislature could . . . insulate itself from a *Shaw*-type challenge simply by re-enacting its plan and claiming that it made no decisions about who to include in the district at the time of re-enactment”). Nor would this result comply with this Court’s order that the General Assembly “enact new House and Senate districting plans remedying the constitutional deficiencies.” *Covington III*, 2017 WL 3254098, at *3.

As to Legislative Defendants’ contention that sustaining Plaintiffs’ racial gerrymandering objections is tantamount to requiring that a state redistricting body consider race in redrawing districts to remedy a racial gerrymander, again we disagree. We do not hold that a legislative body tasked with redrawing districts to remedy a racial gerrymander must consider race. Rather, we hold that when, as here, a legislative body faced with such a task *chooses* to rely on redistricting considerations that have the potential to carry forward the effects of the constitutional violation—like preserving district cores and relying on political data to draw districts that ensure incumbents will prevail in their new districts—then the legislative body must ensure that its reliance on those considerations did not serve to perpetuate the effects of the racial gerrymander. Accordingly, the General Assembly’s obligation to be conscious of the prior racially drawn districts to ensure that the proposed 2017 Plans remedy the racially gerrymander derives *not* from judicial mandate, but instead from the General Assembly’s *choice* to adopt redistricting criteria that posed a risk of carrying forward the effects of the racial gerrymanders in the 2011 Plans.

* * * * *

In sum, we conclude that this Court has an independent duty to assess whether the remedial plans “completely remedy” the constitutional violation. And we further conclude that in the remedial context, a state redistricting body may not rely on an otherwise legitimate redistricting consideration—such as seeking to ensure incumbents will prevail in their remedial districts—if doing so would prevent it from completely remedying the identified constitutional violation. With these principles in mind, we now

analyze the four proposed remedial districts subject to Plaintiffs’ racial gerrymandering objections.

1. Senate District 21

The General Assembly’s proposed remedial version of Senate District 21 encompasses all of Hoke County and a portion of Cumberland County. Under the plan in effect in 2010 (the “benchmark plan”), Senate District 21 “was a ‘squarely shaped’ district located in the northwestern quadrant of Cumberland County.” *Covington I*, 316 F.R.D. at 146. The version of Senate District 21 adopted in the 2011 plan was drawn, using Dr. Hofeller’s VRA “exemplar,” as a 50%-plus-one BVAP district and contained “multiple appendages, which [we]re so thin and oddly shaped that it [wa]s hard to see where the district beg[a]n and end[ed].” *Id.* This Court concluded that the district constituted a racial gerrymander because Dr. Hofeller drew the district’s lines to comply with the Chairs’ unconstitutional 50%-plus-one criterion and because the district was noncompact, “divide[d] traditional political boundaries on the basis of race,” and divided 33 of the 41 precincts in Cumberland County. *Id.* at 147. We further concluded that compliance with the Voting Rights Act did not provide the General Assembly with the compelling interest necessary to justify its reliance on race, as the State presented no evidence that “racial bloc voting . . . would enable the majority usually to defeat the minority group’s candidate of choice.” *Id.* at 167.

The proposed remedial version of Senate District 21 reduced the district’s BVAP from 51.53 percent to 47.51 percent. Add. Stats. on 2017 Sen. Redistricting Plan, Sept. 7, 2017, ECF No. 184-6. However, the remedial version’s BVAP still exceeds the BVAP of

the benchmark version (44.93%). *Covington I*, 316 F.R.D. at 146. Although the remedial version of the district no longer includes some of the former version's Cumberland County appendages and splits fewer precincts, the remedial version retains the core shape of the unconstitutional version of the district. In particular, the district still encompasses all of Hoke County and reaches into Cumberland County to include a horseshoe-shaped section of the city of Fayetteville. A comparison between Dr. Hofeller's Cumberland County exemplar and proposed remedial Senate District 21 supports the conclusion that the General Assembly's use of political data—which Legislative Defendants concede is closely correlated with race, Hr'g Tr. 115:8–15—to ensure the incumbents in Senate Districts 19 and 21 would prevail in their remedial districts served to perpetuate the unconstitutional design of the invalidated 2011 map. Most notably, the exemplar district for Senate District 21 contained a similar horseshoe-shaped section of the city of Fayetteville that includes Fayetteville's predominantly black VTDs and blocks and excludes Fayetteville's predominantly white VTDs and blocks. Tr. Ex. 3019-76. Although more compact than the previous version, the remedial district still performs poorly on statistical measures of compactness relative to other Senate districts. Senate District Compactness, Sept. 15, 2017, ECF No. 187-9.

Racial density maps prepared by Plaintiffs' expert Anthony Fairfax, which indicate the percentage of population in each census block that identified as any part black, reveal that, like the unconstitutional version of the district, the General Assembly's remedial version of the district “cuts through downtown Fayetteville and only includes the majority black VTDs as well as practically all of the majority black blocks.” Decl. of

Anthony E. Fairfax (“Fairfax Decl.”) 4, apps. 2–5, Sept. 15, 2017, ECF No. 187-6; *see also Covington I*, 316 F.R.D. at 141. Large swaths of the majority-white sections of Fayetteville are drawn out of the district. Fairfax Decl. 4, apps. 2–5, Sept. 15, 2017, ECF No. 187-6. Legislative Defendants maintain that remedial Senate District 21’s division of Fayetteville on racial lines reflects a legitimate effort to “preserve[] the heart of Fayetteville.” Leg. Defs.’ Objs. Resp. 37. But when confronted with the racial density maps, Legislative Defendants fail to provide any explanation or evidence as to why “preserv[ing] the heart of Fayetteville” required the exclusion of numerous majority-white precincts in downtown Fayetteville from the remedial district.

In addition to highlighting the similarities between the shape of the remedial district and the unconstitutional version, the lack of compactness, and the racial make-up of the district, Plaintiffs also submitted an analysis by an applied mathematics expert, Dr. Gregory Herschlag of Duke University, who used a computer to generate 78,485 hypothetical district maps for the Hoke/Cumberland County grouping. The computer drew the hypothetical district maps to conform to equal population requirements, maintain contiguity, preserve precincts, and, once those criteria are satisfied, maximize compactness according to the Polsby-Popper metric relied on by the General Assembly. Decl. of Dr. Gregory Herschlag ¶ 10, Sept. 14, 2017, ECF No. 187-10. Dr. Herschlag’s analysis found that Senate District 21 “contain[ed] a significantly higher percentage in population that is African-American (46.5%) than *any* district in the 78,485 simulated districting plans.” *Id.* at ¶ 8 (emphasis added). Legislative Defendants correctly note that the analysis has certain limitations—it relied on only one of the two principal measures of

compactness embraced by the Joint Committee and did not account for one traditional districting criterion adopted by the Joint Committee, keeping municipalities whole.⁵ Nonetheless, Dr. Herschlag's analysis does provide additional evidence that the remedial version of the district perpetuates the race-based districting that rendered the earlier version unconstitutional, particularly in light of Legislative Defendants' failure to introduce any evidence explaining or justifying the remedial district's racial make-up.

In conclusion, the district (1) preserves the core shape of the unconstitutional version of the district and Dr. Hofeller's VRA exemplar, (2) has a higher BVAP than its benchmark version, (3) divides the city of Fayetteville along racial lines, (4) has a low compactness score and is significantly less compact than the benchmark version, and (5) has a far greater percentage of African Americans than thousands of other districting plans that satisfy most traditional districting principles adopted by the Joint Committee. Based on this evidence, we conclude that the remedial version of Senate District 21 failed to eliminate the discriminatory aspects of the unconstitutional version, and therefore continues to constitute a racial gerrymander.

2. Senate District 28

⁵ Legislative Defendants' criticism of Dr. Herschlag's analysis for failing to keep municipalities whole is undermined by the fact that one indicium that the remedial district continues to constitute a racial gerrymander is that it divides the city of Fayetteville along racial lines. The proposed 2017 Senate Plan also divides the town of Spring Lake between Senate District 21 and Senate District 19, Fairfax Decl. at 17, further demonstrating that the General Assembly did not place significant weight on preserving municipal lines.

The proposed remedial version of Senate District 28, which is shaped like a reverse “L,” sits at the center of Guilford County. Dr. Hofeller drew the version of the district adopted in the 2011 redistricting as a 50%-plus-one BVAP district, and “[a]lthough the portion of the district in Greensboro [wa]s not particularly strange in its shape, an arm of the district protrude[d] west, then hook[ed] south, to capture part of the city of High Point.” *Covington I*, 316 F.R.D. at 147. The northeast arm reached into predominantly black sections of Greensboro. This Court concluded that the district constituted a racial gerrymander because it was drawn, using Dr. Hofeller’s VRA “exemplar,” to be a 50%-plus-one district, was less compact than its benchmark district, added substantially more black voters and subtracted white voters from its benchmark, and split municipalities along racial lines. *Id.* at 147–48. The Court further concluded that compliance with the Voting Rights Act did not provide the General Assembly with the compelling interest necessary to justify its reliance on race, as the State lacked any evidence that “racial bloc voting” would allow the majority to usually to defeat black voters’ candidate of choice. *Id.* at 167.

The proposed remedial version of Senate District 28 eliminates the “arm” into High Point included in the previous version, but otherwise tracks the shape of the version of the district held unconstitutional. Indeed, the proposed remedial version’s contours more closely follow Dr. Hofeller’s VRA “exemplar” than the unconstitutional version, taking on the exemplar’s reverse “L” shape and capturing most of the precincts included in the exemplar. *See* Tr. Ex. 3019-71; Hr’g Pls.’ Ex. PD-1. The General Assembly’s remedial version reduced the district’s BVAP from 56.49 percent to 50.52 percent. Add.

Stats. on 2017 Sen. Redistricting Plan, Sept. 7, 2017, ECF No. 184-6. But the BVAP of the remedial version still exceeds that of the benchmark version (47.20%), *Covington I*, 316 F.R.D. at 147, and the 50%-plus-one threshold, establishing that the General Assembly's retention of the unconstitutional version's core and previous use of the majority-black target continues to shape the remedial district's racial make-up.

Whereas the benchmark version of the district had approximately 2,000 more black voters than white voters, the remedial version of the district has approximately 14,000 more black voters than white voters. Add. Stats. on 2017 Sen. Redistricting Plan, Sept. 7, 2017, ECF No. 184-6. Although the district encompasses only a portion of Greensboro, racial density maps reveal that the district encompasses *all* of the majority black VTDs within Greensboro. Fairfax Decl. 5. Notwithstanding that the district excludes predominantly white sections of Greensboro, it reaches out of Greensboro's city limits to capture predominantly African-American areas in eastern Guilford County. And the uncontradicted affidavit of Democratic Senator Gladys Robinson, who represents Senate District 28, avers that under the revisions to the district "the more heavily African-American precincts were included in the district while the predominantly white precinct was removed." Decl. of Sen. Gladys A. Robinson ("Robinson Decl.") 5–6, Sept. 14, 2017, ECF No. 187-5. Although more compact than the unconstitutional version, the remedial district is among the least compact senate districts in the state and is substantially less compact than its benchmark version. Sen. District Compactness, Sept. 15, 2017, ECF No. 187-9.

Legislative Defendants maintain that “the BVAP level in District 28 is naturally occurring as it is the result of the population residing in those whole precincts that were included in the district.” Leg. Defs.’ Objs. Resp. 32. But this argument begs—rather than answers—the relevant question: what was the General Assembly’s predominant reason for including those particular whole precincts in the district? And the Special Master’s Recommended Senate District 28, which significantly improves on the district’s compactness and more closely tracks Greensboro’s municipal lines, indicates that the district’s lines, and therefore its BVAP, were not, in fact, “naturally occurring,” but rather a consequence of the district’s tracking of the core shape of Dr. Hofeller’s VRA exemplar. *See infra* Part IV.B.2.

Legislative Defendants further argue that the district remedies the constitutional violation because a “district anchored in eastern Greensboro that tracks the city boundaries” could not be drawn with a lower BVAP without considering race. Leg. Defs.’ Objs. Resp. 32. But Legislative Defendants failed to introduce any evidence, much less race-neutral evidence, establishing that the General Assembly had to “anchor[]” the remedial district in eastern Greensboro—the predominantly black portion of the city that served as the “anchor” of the unconstitutional version of the district. Indeed, by deciding to “anchor” the district in the same predominantly black area as the unconstitutional version of the district and Dr. Hofeller’s exemplar, Dr. Hofeller ensured that the district would retain a high BVAP, thereby perpetuating the effects of the racial gerrymander.

When viewed in totality, the district (1) preserves much of the core shape of the unconstitutional version of the district and Dr. Hofeller’s VRA exemplar, (2) continues to have a BVAP that exceeds fifty percent, (3) divides Greensboro’s VTDs and precincts along racial lines, and (4) has a low compactness score and is significantly less compact than the benchmark version in the plan in effect in 2010. Based on this evidence, we conclude that the General Assembly carried forward constitutional deficiencies of the previous version of the district and therefore failed to remedy the racial gerrymander.

3. House District 21

Proposed remedial House District 21 runs along the northeast edge of Sampson County into southeast Wayne County. The version of the district that the General Assembly adopted in 2011 included portions of Sampson, Duplin, and Wayne Counties and was drawn to achieve the 50%-plus-one threshold. *Covington I*, 316 F.R.D. at 155. This Court concluded that the district constituted a racial gerrymander because it was “visually less compact” than its benchmark and performed poorly on statistical measures of compactness, it split municipalities and counties along racial lines, and its “racial density map . . . indicate[d] that areas with a high proportion of African-American voting-age population [we]re enveloped by the protrusion and contours of House District 21.” *Id.* at 155–56. As with the unconstitutional versions of Senate Districts 21 and 28, we further concluded that compliance with the Voting Rights Act did not provide the General Assembly with the compelling interest necessary to justify its reliance on race, as the State lacked any evidence that “racial bloc voting . . . would enable the majority usually to defeat the minority group’s candidate of choice.” *Id.* at 167.

The proposed remedial version of House District 21 reduced the BVAP from 51.90 percent to 42.34 percent, whereas the benchmark version had a BVAP of 46.25 percent. Add. Stats. on 2017 House Redistricting Plan, Sept. 7, 2017, ECF No. 184-3; *Covington I*, 316 F.R.D. at 158. The district no longer includes any part of Duplin County, which had to be moved to a different county grouping in order to comply with the Whole County Provision, and the revised Wayne County section of the district is more compact. But the Sampson County section of the district conforms to the bizarre shape of the version of the district previously held unconstitutional. To be sure, the unusual borders in Sampson County are attributable in large part to the unusual borders of the selected precincts. But although the Sampson County section generally runs along the eastern edge of the county, the proposed remedial version of the district continues to include a protrusion stretching into the center of the county to capture the disproportionately black sections of the city of Clinton. Fairfax Decl. 6–7, apps. 10–11. The district separates the predominantly black areas of Clinton from the predominantly white areas by splitting a precinct on racial lines. *Id.* When viewed as a whole, the remedial district continues to contain all but one “of the majority black VTDs within Sampson and Wayne Counties.” *Id.* at 6. Although the proposed remedial version of the district is more compact than the previous version, it is the lowest among all 120 House districts on one statistical measure of compactness. House District Compactness, Sept. 15, 2017, ECF No. 187-11.

Considering this evidence as a whole, the district (1) preserves the core shape of the Sampson County section of the previously unconstitutional district, (2) includes all

but one of the majority-black VTDs in the two counties through which it runs, (3) divides a municipality and precinct along racial lines, (4) has an irregular shape that corresponds to the racial make-up of the geographic area, and (5) has an extremely low compactness score and is significantly less compact than the benchmark version in the plan in effect in 2010. We find this to be strong evidence that the proposed remedial district fails to remedy the racial gerrymander.

To defend the remedial district’s constitutionality, Legislative Defendants assert the district’s shape and racial make-up are attributable to the need to “connect” the more compact Wayne County portion of the district to the Sampson County precinct where incumbent Democratic Representative Larry Bell resides and to ensure Representative Bell and Democratic Representative William Brisson,⁶ who represents House District 19, which abuts House District 21, would likely prevail in an election in their new districts. Leg. Defs.’ Objs. Resp. 42–44. Put differently, according to Legislative Defendants, the district’s contours and racial make-up reflect an allegedly legitimate effort by the General Assembly to engage in two forms of incumbency protection: (1) avoiding the “double-

⁶ Although Representative Brisson was a member of the Democratic party at the time the House and Senate redistricting plans were enacted, he was the only Democratic House member to vote for both the adopted Senate and House plans on the second and third readings. Leg. Defs.’ Objs. Resp. 44 n.9. Following the enactment of the remedial redistricting plans, he announced his intention to change his party registration and run for a seventh term as a Republican. Lynn Bonner, *An NC House Democrat switches to the GOP*, News & Observer (Oct. 26, 2017, 6:22 PM), <http://www.newsobserver.com/news/politics-government/politics-columns-blogs/under-the-dome/article180794221.html>.

bunking” of incumbents and (2) using electoral data to ensure an incumbent is likely to prevail in his new district. We conclude that any interest the General Assembly had in engaging in these two forms of incumbency protection should have given way to the requirement that the remedial plan completely remedy the racial gerrymander. *See supra* Part III.A.

In particular, in order to draw Representative Bell’s residence into House District 21, the General Assembly retained much of the bizarre shape of the Sampson County portion of the district and divided a precinct and municipality along racial lines—the very problems that rendered the prior version of the district unconstitutional. Because the General Assembly’s incumbency protection efforts served to “validate the very maneuvers that were a major cause of the unconstitutional districting,” *Abrams*, 521 U.S. at 86, we find that House District 21 continues to be a racial gerrymander.⁷ That the

⁷ We further note that, as a factual matter, the General Assembly did not need to draw the district to protect Representative Bell. In particular, several months before Dr. Hofeller drew the remedial districts and the General Assembly enacted Dr. Hofeller’s proposed maps, Representative Bell announced that he would not be seeking re-election. See Colin Campbell, *NC Rep. Larry Bell to Step Down Next Year*, News & Observer (Apr. 17, 2017, 5:28 PM), <http://www.newsobserver.com/news/politics-government/state-politics/article145086079.html>. During legislative debate regarding the proposed districting plans, at least one legislator expressed concern that the remedial plans were protecting incumbents who already had decided to retire. Statement of Senator Jackson, H. Redist. Comm. Tr. Aug. 25, 2017, at 62:21–24, ECF 184-18 (noting that mapdrawers “should not consider people who have announced their retirements” within the context of incumbency protection). Representative Bell has since confirmed under oath that he publicly announced his intention not to run for re-election in April 2017 and that he will not, in fact, run for re-election in 2018. Decl. of Rep. Larry Bell, Nov. 10, 2017, ECF No. 211-1.

General Assembly sought not only to avoid pairing incumbents, but also to engage in the more suspect practice of using political data to “exclud[e] . . . voters from the district simply because they are likely to vote against the officeholder,” *LULAC*, 548 U.S. at 441, reinforces this conclusion, particularly since Legislative Defendants concede that race and political affiliation are highly correlated, Hr’g Tr. 115:8–15. Accordingly, we conclude that proposed House District 21 fails to remedy the racial gerrymander.

4. House District 57

The General Assembly’s proposed remedial House District 57 stands in the center of Guilford County. The version of the district adopted in 2011 was drawn to add a third majority black district in Guilford County. *Covington I*, 316 F.R.D. at 163. In order to create the third majority black district, the General Assembly “moved and reshaped significantly” the Guilford County house districts included in the benchmark plan. *Id.* Analyzing the 2011 version of House District 57 alongside the other two majority-black districts in Guilford County, we concluded that the district constituted a racial gerrymander because the three districts were unnecessarily drawn to create a third majority African-American district; were “visually less compact” than the Guilford County districts in the benchmark plan; required shifting thousands of African Americans into House District 57 and moving thousands of non-African-Americans out in order to turn it into a majority-black district; created a significant difference between the racial makeup of majority-black districts and the remaining districts in Guilford County; included numerous split precincts; were less compact than the Guilford County districts in the benchmark plan; and, as revealed by racial density maps, were drawn to

“encompass areas with a high proportion of voting-age African Americans.” *Id.* at 163–64. We further concluded that compliance with the Voting Rights Act did not provide the General Assembly with the compelling interest necessary to justify its reliance on race, as the State presented no evidence that “racial bloc voting” would consistently prevent black voters from electing the candidate of their choice. *Id.* at 167.

The proposed remedial version of House District 57 *increased* the district’s BVAP from 50.69 percent to 60.75 percent, whereas the benchmark version had a BVAP of 29.93 percent. Add. Stats. on 2017 House Redistricting Plan, Sept. 7, 2017, ECF No. 184-3; *Covington I*, 316 F.R.D. at 163. Members of the General Assembly were informed of the significant increase in House District 57’s BVAP during the legislative process, but did not alter the district in response to that information. Statement of Rep. Harrison, H. Comm. Redistricting Tr. 119:2-120:1, Aug. 25, 2017, ECF No. 184-18 (“The current African-American composition [of House District 57] is 47 percent and [t]he proposed district is now . . . 60 percent African American, which doesn’t seem to cure the constitutional issue of racial gerrymandering.”).

The shape of House District 57 does not follow the shape of the unconstitutional version or the shape of any Guilford County district in the benchmark plan. House District 57’s reverse “L” shape does, however, encompass the core of the unconstitutional version of Senate District 28, and closely tracks Dr. Hofeller’s VRA exemplar for Guilford County. *See* Tr. Ex. 3019-71; *supra* Part III.B.2. In particular, remedial House District 57 captures the same high BVAP blocks and VTDs in Greensboro included in unconstitutional remedial Senate District 28 and Dr. Hofeller’s Guilford County

exemplar. Fairfax Decl. 8, apps. 12–14. The vast majority of the VTDs in remedial House District 57 have BVAPs of at least 25 percent, with more than half of the VTDs having BVAPs exceeding 50 percent. *Id.* at 8, app. 12. And the district includes only five VTDs from the predominantly white sections of Greensboro.

The uncontradicted affidavit of State Senator Robinson, who represents Greensboro, averred that in redrawing the district the General Assembly removed a wealthy white neighborhood, Irving Park, and added a “densely populated, heavily African-American community” in Southeast Greensboro. Robinson Decl. 10–11. The district scores below the statewide mean on measures of compactness.

Similar to their arguments regarding proposed remedial Senate District 28, Legislative Defendants maintain that “the BVAP level in District 57 is naturally occurring as it is a result of the population residing in those whole precincts that were included in the district” and that a district “anchored” in eastern Greensboro and tracking city boundaries could not be drawn with a lower BVAP without considering race. Leg. Defs.’ Objs. Resp. 39–40. But, as noted above, the General Assembly has provided no evidence as to why it needed to “anchor” the district in eastern Greensboro, the part of the city with a disproportionately large African-American population. And by tracking the shape of the Greensboro section of unconstitutional Senate District 28 and Dr. Hofeller’s VRA exemplar, which included nearly all of the city’s high BVAP VTDs, Dr. Hofeller ensured that the district would have a high BVAP, thereby carrying forward the effects of the racial gerrymander. Additionally, the Special Master’s recommended reconfiguration of the Guilford County House districts reveals that the General Assembly

could have drawn House districts in Guilford County that were more compact and more closely followed Greensboro’s municipal lines without drawing House District 57 to mirror the shape of unconstitutional Senate District 28 and Dr. Hofeller’s VRA exemplar. *See infra* Part IV.B.4.

Legislative Defendants further assert that we should reject Plaintiffs’ objection because their alternative map would have “double-bunked” incumbents. Leg. Defs.’ Objs. Resp. 41–42. But the General Assembly had an obligation to completely remedy the constitutional violation, regardless of whether Plaintiffs—or any other member of the public—provided it with a satisfactory map. And, more significantly, the Special Master’s Recommended Plan demonstrates that the General Assembly could have drawn a remedial configuration of the Guilford County House Districts without double-bunking incumbents. *See infra* Part IV.B.4. Accordingly, we find proposed remedial House District 57 fails to completely remedy the racial gerrymander because it (1) encompasses the core of unconstitutional Senate District 28 and Dr. Hofeller’s Guilford County VRA exemplar; (2) has an extremely high BVAP level—nearly 40 percent higher than its benchmark version and 10 percent higher than the unconstitutional version; (3) is almost entirely made up of high-BVAP VTDs and excludes predominantly non-black VTDs; and (4) divides the city of Greensboro along racial lines.

* * * * *

In sum, we find that proposed remedial Senate Districts 21 and 28 and House Districts 21 and 57 fail to completely remedy the constitutional violation. Because the General Assembly failed to enact “a constitutionally acceptable” remedial plan, “then the

responsibility falls on th[is] Court” to reconfigure those infirm districts. *Chapman*, 420 U.S. at 27.

B.

Next, Plaintiffs assert that certain aspects of the remedial plan violate the North Carolina Constitution. In particular, Plaintiffs assert (1) that 2017 Enacted House Districts 36, 37, 40, 41, and 105 violate the constitutional prohibition on mid-decade redistricting, N.C. Const. art. II, §§ 3(4), 5(4); (2) that two groups of districts violate the North Carolina Constitution’s so-called “Whole County Provision,” *id.* art. II, §§ 3(3), 5(3); and (3) that one district is unconstitutionally noncompact. We address each of these objections in turn.

1.

The North Carolina Constitution provides that “[w]hen established, the [House and] [S]enate districts and the apportionment of [Representatives and] Senators shall remain unaltered until the return of another decennial census of population taken by order of Congress.” *Id.* art. II, §§ 3(4), 5(4). Accordingly, the plain and unambiguous language of Sections 3(4) and 5(4) prohibits the General Assembly from engaging in mid-decade redistricting. *Granville Cty. Comm’rs v. Ballard*, 69 N.C. 18, 20–21 (1873) (holding that a state law altering a county boundary was invalid insofar as it would alter the House and Senate districts in violation of the state constitutional prohibition against mid-decade redistricting). Plaintiffs assert that five districts established by the plans (House Districts 36, 37, 40, 41, and 105 in Wake and Mecklenburg Counties) violate the constitutional prohibition on mid-decade redistricting because those districts did not

violate the Constitution, did not abut a district violating the Constitution, and did not need to be altered in order to ensure compliance with the Whole County Provision. Pls.’ Objs. 37.

The Supreme Court of North Carolina has not addressed the scope of the General Assembly’s authority to engage in mid-decade redistricting when a decennial districting plan is found to violate the Constitution or federal law. However, when addressing an analogous question regarding the North Carolina Constitution’s Whole County Provision, which immediately follows the constitutional prohibitions on mid-decade redistricting, the Supreme Court of North Carolina held that “[f]ederal law . . . preempts the State Constitution only to the extent that the [provision] actually conflicts with the VRA and other federal requirements relating to state legislative redistricting and apportionment.” *Stephenson I*, 562 S.E.2d at 396. The North Carolina Supreme Court further held that because it has an obligation to follow the policies established by the people of North Carolina in their Constitution “whenever possible,” the redistricting provisions in the North Carolina Constitution “must be enforced to the *maximum extent possible*.” *Id.* at 396–97 (emphasis added). In light of this reasoning, we read *Stephenson I* as likewise requiring that the North Carolina Constitution’s prohibition on mid-decade redistricting “be enforced to the maximum extent possible.” *Id.* Therefore, unless required by federal law or a judicial order, Sections 3(4) and 5(4) preclude the General Assembly from engaging in mid-decade redistricting.

As explained above, the Supreme Court of the United States’ decision in *Upham* requires that a federal district court’s remedial order not unnecessarily interfere with state

redistricting choices. 456 U.S. at 40–41; *see also Johnson v. Miller*, 922 F. Supp. 1556, 1559 (S.D. Ga. 1995) (“In fashioning a remedy in redistricting cases, courts are generally limited to correcting only those unconstitutional aspects of a state’s plan.”). When a court must draw remedial districts itself, this means that a court may redraw only those districts necessary to remedy the constitutional violation. *Upham*, 456 U.S. at 40–41; *Personhuballah*, 155 F. Supp. 3d at 563 (concluding that in order to comply with state policy “our chosen remedial plan should not alter any districts outside of the [racially gerrymandered district] and those abutting it”). Accordingly, our order did not—and could not—require the General Assembly to redraw districts that did not need to be redrawn to cure the constitutional violation.

Legislative Defendants did not put forward any evidence showing that revising *any* of the five Wake and Mecklenburg County House districts challenged by Plaintiffs was necessary to remedy the racially gerrymandered districts in those two counties. And both the Special Master’s proposed map and Plaintiffs’ alternative map establish that the racially gerrymandered House districts in Wake and Mecklenburg County could be remedied without redrawing those five districts. Accordingly, there is no “actual[] conflict” between this Court’s order and the mid-decade redistricting prohibition. *Stephenson I*, 562 S.E.2d at 396. Therefore, we conclude the General Assembly exceeded its authority under our order by disregarding the mid-decade redistricting prohibition. *See id.* at 388 (“Because Congress has not preempted the entire field of state legislative redistricting and reapportionment, state provisions in this area of law not otherwise superseded by federal law must be accorded full force and effect.” (citations

omitted)); *Cleveland Cty. Ass’n for Gov’t by People v. Cleveland Cty. Bd. of Comm’rs*, 142 F.3d 468, 477 (D.C. Cir. 1998) (holding that contravention of North Carolina state law governing the at-large election of county commissioners was not warranted as it was not necessary to remedy any violation of federal law or otherwise permitted by a special enactment by the state legislature).

Legislative Defendants nevertheless argue that adopting a standard that permits changes only to those districts not directly impacted by the racial gerrymander—districts that violate the Constitution, about a district violating the Constitution, or otherwise need to be altered in order to ensure compliance with federal law or state constitutional provisions—would perpetuate a racial gerrymander by “forcing a legislature to use the core of [a] racially gerrymandered district to draw the new district and those immediately surrounding it.” Leg. Defs.’ Objs. Resp. 52. In particular, for those districts not directly impacted by the racial gerrymander such a standard would “reduce or eliminate the legislature’s ability to eliminate the hallmarks of gerrymanders by, for instance, eliminating split precincts, or changing surrounding districts to more closely follow municipal boundaries.” *Id.*

But our opinion does not endorse a legislature’s preservation of an unconstitutional district’s “core” in drawing a remedial district. On the contrary, we find that several of the General Assembly’s proposed districts failed to remedy the constitutional violation precisely because they preserved the “core” of the unconstitutional version of the districts. *See supra* Part III.A. And we do not hold that a state redistricting body tasked with drawing a remedial plan can never redraw districts

that were not found to violate the Constitution or abut such a district. Indeed, if Legislative Defendants had put forward evidence establishing that redrawing additional districts was necessary to completely remedy the racial gerrymander, then our Order would have authorized the redrawing of such districts. *Covington III*, 2017 WL 3254098, at *3 (providing the General Assembly with the opportunity to “enact new House and Senate districting plans remedying the constitutional deficiencies”). Legislative Defendants, however, put forward no such evidence. And the Special Master’s Recommended Plans for the Wake and Mecklenburg County House districts demonstrate that one can remedy the racial gerrymander—and not preserve the “cores” of the unconstitutional districts—without redrawing districts untainted by the constitutional violations. *See infra* Part IV.B.5–6.

Additionally, the Supreme Court has recognized that “racial gerrymandering claim[s] . . . appl[y] to the *boundaries of individual districts*.” *Alabama*, 135 S. Ct. at 1265 (emphasis added). Accordingly, remedying a racial gerrymandering violation generally entails redrawing the “boundaries of [those] individual districts,” *id.*, not redrawing a districting plan as a whole, as Legislative Defendants’ argument suggests. And regardless of whether splitting precincts or failing to follow municipal precinct lines is good from a policy perspective, the failure to follow such policies does not render a state redistricting plan unconstitutional. *Bush v. Vera*, 517 U.S. 952, 962 (1996) (opinion of O’Connor, J.) (explaining that “the neglect of traditional districting criteria is . . . not sufficient” to establish a racial gerrymandering claim); *cf. Bethune-Hill v. Va. State Bd. of Elections*, 137 S. Ct. 788, 798 (2017) (“Race may predominate even when a

reapportionment plan respects traditional principles.”). Rather, a district amounts to a racial gerrymander only if, in drawing the district, “race predominated over traditional race-neutral redistricting principles.” *Covington I*, 316 F.R.D. at 129 (quoting *Shaw v. Hunt*, 517 U.S. 899, 908 (1996)).

2.

The North Carolina Constitution’s Whole County Provision states that “[n]o county shall be divided in the formation of a [representative or] senate district.” N.C. Const. art. II, §§ 3(3), 5(3). In *Stephenson I*, the Supreme Court of North Carolina recognized that the Whole County Provision must give way to federal law, including the Equal Protection Clause and VRA. 562 S.E.2d at 396 (“Although we discern no congressional intent, either express or implied, to preempt the WCP through the operation of the VRA, we also recognize that the WCP may not be interpreted literally because of the VRA and the ‘one-person, one-vote’ principles.”). The North Carolina Supreme Court further held, however, that the Whole County Provision “should be adhered to by the General Assembly to the maximum extent possible.” *Id.* at 391. To that end, the court identified a complex set of nine criteria governing the General Assembly’s application of the Whole County Provision in redistricting.

Of particular relevance, one criterion provides that “[w]hen two or more non-VRA legislative districts may be created within a single county, which districts shall fall at or within plus or minus five percent deviation from the ideal population consistent with ‘one-person, one-vote’ requirements, single-member non-VRA districts shall be formed within said county.” *Id.* at 397. And another criterion provides detailed guidance

regarding the drawing of districts encompassing “counties having a non-VRA population pool which cannot support at least one legislative district at or within plus or minus five percent of the ideal population for a legislative district or, alternatively, counties having a non-VRA population pool which, if divided into districts, would not comply with the at or within plus or minus five percent ‘one-person, one-vote’ standard.” *Id.* In such counties, the General Assembly must “combin[e] or group[] the minimum number of whole, contiguous counties necessary” to comply with one-person, one-vote. *Id.* In the county groupings, district lines must not traverse the “exterior” line of the county group. *Id.* “[I]nterior county lines created by any such groupings may be crossed or traversed in the creation of districts within said multi-county grouping *but only to the extent necessary*” to comply with one-person, one-vote. *Id.* (emphasis added). Moreover, because “the intent underlying the WCP must be enforced to the maximum extent possible[,] . . . only the smallest number of counties necessary to comply with the at or within plus or minus five percent ‘one-person, one-vote’ standard shall be combined.” *Id.*

Plaintiffs argue that districts drawn in two county groupings violate these criteria. First, notwithstanding that “Cabarrus County has the population to justify more than two house districts,” the remedial House plan includes only one district, House District 82, wholly within Cabarrus County. Pls.’ Objs. 39–40. According to Plaintiffs, the plan’s failure to draw two districts within Cabarrus County violates the requirement that the Whole County Provision be maximally enforced and “interior” county lines be traversed “only to the extent necessary.” *Id.*

By contrast, Legislative Defendants argue that the Cabarrus County group complies with the Whole County Provision as construed in *Stephenson I* because although it does not maximize the number of districts wholly contained within a single county, it minimizes the number of county-line traversals. Leg. Defs.’ Objs. Resp. 54 (“[E]ach grouping must contain the fewest number of traversals possible in creating districts which comply with equal population requirements.”). Put differently, according to Legislative Defendants, the Whole County Provision requires minimizing the number of traversals, not the number of multi-county districts in a grouping. To that end, Legislative Defendants also point out that within the relevant county cluster, the Plaintiffs’ alternative plan has more traversals of county lines compared with the 2017 Enacted House Plan. *Id.* at 55. In addition, the Plaintiffs’ proposed plan alters HD 67 to spread it across three separate counties.

Notwithstanding its extended discussion of the Whole County Provision in *Stephenson I*, the North Carolina Supreme Court has not expounded on the proper application of that provision *within* a multi-county cluster, the issue here, much less whether the Whole County Provision requires maximizing the number of districts wholly contained within a single county or minimizing the number of county-line traversals in the grouping. Given that this is an unsettled question of state law and support exists for each party’s position, we exercise our discretion not to exercise pendent jurisdiction over Plaintiffs’ objection related to the Cabarrus County grouping. *See supra* Part II.C; *Robertson*, 148 F. Supp. 2d at 461–62.

Second, Plaintiffs argue that the county grouping including Greene County fails to comply with the Whole County Provision because House District 10 adds population from two counties (Johnston and Wayne) to a county with insufficient population to make a district (Greene), when it is only necessary to add population from one county (Wayne). In support of their position, Plaintiffs rely on *Stephenson I*'s statement that in creating county groupings, the General Assembly must combine the "smallest number of counties necessary to comply with the . . . 'one-person, one-vote requirement.'" 562 S.E.2d at 396. That requirement, however, dealt with the creation of county *groupings*, not with the drawing of *interior district lines* within a county grouping, the relevant question. *Id.*

Legislative Defendants again argue that the Greene County configuration complies with the Whole County Provision because it minimizes the number of traversals in the multi-county group. Legislative Defendants further note that Plaintiffs' proposed plan fails to demonstrate that it would be feasible to implement an alternative plan that would minimize such traversals.⁸ The Supreme Court of North Carolina has not addressed whether, in the context of a multi-county grouping, the Whole County Provision requires minimizing the number of counties a particular district spans or minimizing the number of county-line traversals in the grouping as a whole. In light of the absence of such guidance from North Carolina courts, we again exercise our discretion not to exercise

⁸ By adopting Plaintiffs' alternative plan, House District 28 would span 3 counties, whereas the version in the 2017 Plan spans only 2 counties, presumably in violation of the Plaintiffs' own purported constitutional rule.

pendent jurisdiction over Plaintiffs’ objection related to the Greene County grouping. *See supra* Part II.C; *Robertson*, 148 F. Supp. 2d at 461–62.⁹

3.

Finally, Plaintiffs argue that Senate District 41 violates the Whole County Provision because it is “grossly non-compact.” Pls.’ Objs. 41. As noted above, the Whole County Provision provides that “[n]o county shall be divided in the formation of a [representative or] senate district.” N.C. Const. art. II, §§ 3(3), 5(3). Accordingly, the plain language of that provision does not address compactness. And in its most recent discussion of the Whole County Provision, the Supreme Court of North Carolina stated that lack of compactness does not “constitut[e] an independent basis for finding a violation, and we are unaware of any justiciable standard by which to measure [lack of compactness].” *Dickson II*, 781 S.E.2d at 440. Given that the Whole County Provision does not mention compactness and the Supreme Court of North Carolina has stated that lack of compactness is not an “independent” basis for striking down an otherwise legal district, we reject Plaintiffs’ objection to Senate District 41.

⁹ Our decision not to exercise pendent jurisdiction over Plaintiffs’ objections related to the Cabarrus and Greene County groupings is made without prejudice to Plaintiffs or other litigants asserting such arguments in separate proceedings. We note that there are ongoing proceedings in state court regarding North Carolina’s legislative districting plans. *See Dickson v. Rucho*, 804 S.E.2d 184, 185 (N.C. 2017) (remanding case to trial court to determine whether (1) in light of *Cooper v. Harris* and *North Carolina v. Covington*, a controversy exists or if this matter is moot in whole or in part; (2) there are other remaining collateral state and or federal issues that require resolution; and (3) other relief may be proper”).

* * * * *

In conclusion, we sustain Plaintiffs' state-law objections as to remedial House Districts 36, 37, 40, 41, and 105, decline to consider Plaintiffs' state-law objections related to the Cabarrus and Greene County groupings, and reject Plaintiffs' state law objection related to proposed remedial Senate District 41.

IV.

Having sustained Plaintiffs' objections to the Subject Districts, this Court now must assume the "unwelcome obligation" of drawing remedial districting configurations for the Subject Districts. *Perry*, 565 U.S. at 392 (quoting *Connor v. Finch*, 431 U.S. 407, 415 (1977)).¹⁰ To that end, we now consider whether the Special Master's Recommended Plans remedy both the 2011 Plans' constitutional violations and the aspects of the 2017 Plans that render the Subject Districts legally unacceptable; comply

¹⁰ Legislative Defendants reassert their argument that the General Assembly is entitled to a second opportunity to redraw the the Subject Districts. As this Court previously explained in rejecting that argument, "[t]he State is not entitled to multiple opportunities to remedy its unconstitutional districts." Appointment Order 4 (citing *Reynolds*, 377 U.S. at 585-87). To that end, numerous courts have imposed their own remedial redistricting plan after a proposed governmental plan failed to remedy the identified violation or was otherwise legally unacceptable. *See, e.g., Large*, 670 F.3d at 1148-49 ("[W]e AFFIRM the district court's order that rejected the County's proffered Section 2 remedial plan and implemented a plan of its own design."); *Jeffers*, 756 F. Supp. at 1200; *Osceola Cty.*, 474 F. Supp. 2d at 1256. Legislative Defendants identify no authority to the contrary. That providing the General Assembly with a second bite at the apple would further draw out these proceedings and potentially interfere with the 2018 election cycle further militates against providing the General Assembly with such an opportunity.

with governing law; and adhere, to the extent possible, with the General Assembly’s legitimate redistricting objectives. *See Personhuballah*, 155 F. Supp. 3d at 561–65 (examining whether remedial plan prepared by Special Master (1) complied with one-person, one-vote requirement; (2) remedied the identified racial gerrymander; (3) conformed, to the extent possible, with legislative policies embraced in the existing plan; and (4) otherwise complied with governing law); *Johnson*, 922 F. Supp. at 1561–69 (same).

A.

We first examine the Recommended Plans as a whole and find no deficiencies in—and instead, many marked improvements over—the related districts in the 2017 Plan. The Special Master’s Recommended Plans comply with one-person one-vote requirements, *i.e.*, all population deviations are within the restrictions imposed by the Equal Protection Clause. *See Alabama*, 135 S. Ct. at 1263 (“[A] 5% deviation from ideal[—(i.e., perfectly equipopulous districts)—is] generally permissible.” (citing *Brown v. Thomson*, 462 U.S. 835, 842 (1983))).¹¹ The recommended districts are consistently

¹¹ Generally, courts must strive to draw remedial plans that are as close to equipopulous as possible. *See Abrams*, 521 U.S. at 98 (“Court-ordered districts are held to higher standards of population equality than legislative ones.”). Some of the districts in the Recommended Plans hew closely to the 5 percent maximum population deviation selected by the General Assembly and authorized in the Court’s Appointment Order. Rec. Plan & Rep. 18. These larger deviations results from the fact that “the Whole County Provision of the State Constitution requires working within a county grouping to achieve equipopulous districts.” *Id.* No party takes issue with the population deviations in the Special Master’s Recommended Plans. Nor do we discern, in the absence of any (Continued)

more compact under the compactness measures preferred by the General Assembly, with an average increase—as compared to the 2017 Plan—of 13.5 percent in the Reock metric and 11.5 percent in the Polsby-Popper metric. *See* Rec. Plan & Rep. 26. Further, the revised districts in the Recommended Plan split 5 fewer precincts and 2 fewer municipalities than their counterparts in the 2017 Plan. *Id.* at 22, 24, 29. The Recommended Plans also cure the constitutional violation by not tracking the contours of their racially gerrymandered versions, and not dividing municipalities and counties along racial lines. *See id.* at 21–22, 31, 34, 40–41, 45–47. And the recommended reconfigurations of the Wake and Mecklenburg County House districts remedy the racial gerrymanders in the 2011 Plan, while preserving those districts from the 2011 Plan untainted by the unconstitutional districts and retaining the features of the 2017 Plan as much as possible. *Id.* at 56–68.

Before examining the Recommended Plans’ performance on a district-by-district basis, we first address three objections by Legislative Defendants to the Recommended Plans as a whole: (1) that, in drawing the Recommended Plans, the Special Master impermissibly sought to achieve a specific BVAP quota by “systematically reduc[ing] the [BVAP] in each district”; (2) that the Recommended Plans fail to advance several of the General Assembly’s stated or revealed political objectives; and (3) that the Special Master impermissibly drew the plan to favor the Democratic party.

challenge having been raised, any violation of the Voting Rights Act or applicable State law.

1.

First, Legislative Defendants contend the Special Master “single-minded[ly] focus[ed] on race” and that “the special master’s fixation on a racial ‘residuum’ was used to lower the BVAP of each district to an undisclosed target level.” Leg. Defs.’ Rec. Plan Resp. 4, 6. This argument wholly disregards the instructions this Court provided to the Special Master—and the Special Master’s careful adherence to those instructions—and amounts to a baseless attack on the Special Master’s integrity and credibility.

This Court’s Appointment Order governing the drawing of the remedial districts did not direct the Special Master to pursue any BVAP target in drawing the remedial districts. Appointment Order ¶ 2. Rather, it stated that the Special Master could “consider data identifying the race of individuals or voters to the extent necessary to ensure that his plan cures the unconstitutional racial gerrymanders and otherwise complies with federal law.” *Id.* at ¶ 2(i).

The Special Master credibly and unambiguously stated that, in drawing the Recommended Plans, “no racial targets were sought or achieved.” Special Master’s Rec. Plan for the N.C. Sen. & House of Rep. (“Special Master Hr’g Pres.”) 37, Jan. 5, 2018, ECF No. 239; Hr’g Tr. 26:8–9. Likewise, the Special Master averred that in accordance with the Court’s instructions, “the remedial districts were drawn not with any racial target in mind, but in order to maximize compactness, preserve precinct boundaries, and respect political subdivision lines.” Rec. Plan & Rep. 21. To that end, the “Special Master’s Plan removes the racial predominance of the [racially gerrymandered districts in the 2017 Plan] by replacing the constitutionally tainted districts with others that adhere to

explicitly race-neutral criteria.” *Id.* at 21. In particular, the Recommended Plans “do[] not preserve the core shape of the unconstitutional version of the district[s], avoid[] dividing counties and municipalities, and attempt[] to enhance compactness,” the Special Master explained. *Id.* at 22. The Recommended Plans achieved those goals, more effectively respecting precinct and municipal lines than the 2017 Plan’s versions and improving on the measures of compactness embraced by the General Assembly. *See supra* Part IV.A; *infra* Part IV.B. Accordingly, Legislative Defendants’ BVAP targeting argument amounts to a claim that the Special Master made false representations to the Court regarding the approach he followed in drawing the Recommended Plans.

In support of their attack on the Special Master’s plans, Legislative Defendants rely on a report and opinion by their proffered expert in census data and geography in redistricting, Dr. Douglas Johnson, who Legislative Defendants retained *after* they had already filed their Response asserting that the Special Master impermissibly pursued racial targets. Hr’g Tr. 78:19–21, 90:7–8, 104:19–22. Dr. Johnson opined as to the Special Master’s “[a]pparent [p]redominant [u]se of [r]ace [d]ata” and that “certain racial quotas were targeted by the Special Master when drawing the districts” or “dictated the configuration” of the districts. Expert Rep. of Douglas Johnson, Ph.D. (“Johnson Rep.”) 13, 15, 20, Dec. 27, 2017, ECF No. 234-1; *see also* Hr’g Tr. 78:17–19 (opining as to the Special Master’s “apparent quota of the African-American percentage of the voting-age population”).

In support of his opinion, Dr. Johnson (a) points to “the remarkable similarity in the African-American percentages of the Voting Age Population in the districts drawn by

the Special Master”; (b) highlights that the Recommended Plans reduce the BVAP in all of the racially gerrymandered districts in the 2017 Plan; and (c) notes that, for several of the racially gerrymandered districts, Dr. Johnson was able to draw a remedial configuration that, he maintained, more effectively advanced the General Assembly’s objectives without bringing the district’s BVAP “into the Special Master’s remarkably consistent [BVAP] range for his adjusted districts.” *Id.* at 13–25. For several reasons, we find Dr. Johnson’s analysis and opinion as to the alleged racial targeting in the Recommended Plans unreliable and not persuasive.

To begin, we fail to see how the alleged “remarkable similar[ity]” in the BVAP for districts redrawn in the Special Master’s Recommended Plan proves that the Special Master drew his Recommended Plans to achieve a specific target BVAP. Dr. Johnson notes that Recommended Senate Districts 21 and 28 and House Districts 21 and 57 have BVAPs ranging from 38 percent to 44 percent, Johnson Rep. 14—a range Legislative Defendants characterize as “narrow,” Leg. Defs.’ Rec. Plan Resp. 7. But Dr. Johnson conceded that the fact that several districts’ BVAPs fall in a particular range does not prove that “a racial quota was being employed.” Hr’g Tr. 98:24–99:6.

Additionally, “correlation [is] not evidence of causation.” *Brown v. Entm’t Merchants Ass’n*, 564 U.S. 786, 800 (2011). To the extent the BVAPs of those four districts are “remarkabl[y] similar[.]”—and Dr. Johnson provides no basis for determining whether the BVAPs of the districts are “similar” from a statistical perspective—any such similarity may be attributable to the underlying demographic make-up of the geographic areas in which the districts are drawn or other non-discriminatory districting

considerations, not racial targeting. *See Tagatz v. Marquette Univ.*, 861 F.2d 1040, 1044 (7th Cir. 1988) (Posner, J.); *Ste. Marie v. E. R.R. Ass’n*, 650 F.2d 395, 400 (2d Cir. 1981) (Friendly, J.). And neither Legislative Defendants nor Dr. Johnson offer any controlled statistical analysis ruling out non-discriminatory explanations for the four districts’ BVAPs. Absent such evidence, we find that the BVAPs themselves do not prove that the Special Master, contrary to his unambiguous statements to the Court, engaged in racial targeting.

The Special Master credibly explained why BVAPs decreased in Senate Districts 21 and 28 and House Districts 21 and 57. As he stated in his report, “[t]he fact that the districts happen to reduce the [BVAP] in the redrawn districts, while increasing it in adjoining districts, is to be expected whenever a plan replaces racial predominance with other redistricting principles.” Rec. Plan & Rep. 19. Additionally, the Special Master noted that House District 33, which was a racial gerrymander in the 2011 Plan, had a slightly higher BVAP in the Recommended Plan, meaning that, contrary to Dr. Johnson’s analysis, the Recommended Plan did not universally decrease the BVAP in redrawn districts that were previously racially gerrymandered. Accordingly, we find that the reduced BVAP in the four districts fails to demonstrate that the Special Master engaged in racial targeting.

Finally, Dr. Johnson provided one alternative configuration for several of the districts in the Recommended Plan, which, according Dr. Johnson, have lower BVAPs and somewhat more effectively adhere to several traditional redistricting criteria, like

compactness and population equality.¹² Even assuming Dr. Johnson is correct that his configurations more effectively advance these criteria—and reasonable minds could differ as to that conclusion¹³—Legislative Defendants cite no legal authority for the proposition that being able to produce a single alternative districting configuration that somewhat improves on certain districting considerations, while reducing a district’s BVAP, establishes that that a mapdrawer intentionally engaged in racial targeting. On the contrary, the Supreme Court has recognized that “a State could construct a plethora of potential maps that look consistent with traditional, race-neutral principles,” some of which may involve impermissible racial targeting, and others of which may not. *See Bethune-Hill v. Va. State Bd. of Elections*, 137 S. Ct. 788, 799 (2017); *Vera*, 517 U.S. at 967 (“If, as may commonly happen, traditional districting principles are substantially followed without much conscious thought, they cannot be said to have been ‘subordinated to race.’”). Likewise, Dr. Johnson conceded that minor differences between two proposed maps do not signal that one version is legally unacceptable or better achieves traditional redistricting goals. Hr’g Tr. 92:23–93:3.

¹² Legislative Defendants did not offer these alternative configurations as a potential replacement for either the related Subject District or for the Recommended Plans. Rather, Legislative Defendants solely offered these alternative configurations to criticize the Recommended Plans. *See* Hr’g Tr. 87:1-88:12

¹³ For example, Dr. Johnson’s rendering of Senate District 28 in Guilford County less closely tracks Greensboro’s municipal boundaries than the Recommended Plan’s version. *Compare* Johnson Rep. 23, *with* Rec. Plan & Rep. 39.

Beyond the alleged similarities in the districts' BVAPs and Dr. Johnson's alternative maps, Legislative Defendants offer no other direct or circumstantial evidence indicating that the Special Master used racial targets in drawing the districts' lines. Legislative Defendants' failure to put forward such evidence is particularly notable when compared with the extensive direct, circumstantial, and expert evidence that this Court relied upon both to find that the 2011 Plans relied on unjustified race-based districting, *Covington I*, 316 F.R.D. at 130-65, and to find that the 2017 Plans failed to remedy the identified racial gerrymanders in Senate Districts 21 and 28 and House Districts 21 and 57, *see supra* Part III.A.1-4.

In sum, Dr. Johnson's report and testimony do not in any way call into question the Special Master's repeated, credible, and unambiguous statements—made in his capacity as an officer of the Court—that he did not engage in racial targeting, and that any changes to the BVAP of districts in his Recommended Plan are attributable to his efforts to achieve the non-discriminatory redistricting objectives set forth in this Court's Appointment Order.

2.

Legislative Defendants next contend that the Recommended Plans fail to achieve several of the General Assembly's statewide or district-specific political objectives. In particular, Legislative Defendants assert that certain districts in the Recommended Plan fail to accomplish the legislature's goals of ensuring that a Republican candidate had an opportunity to prevail in a particular district or that a particular incumbent would win in his new district. Leg. Defs.' Rec. Plan Resp. 9, 15.

But the Supreme Court long has held that courts lack “political authoritativeness” and, therefore, must act “in a manner free from any taint of arbitrariness or discrimination” in drawing remedial districts. *Wise v. Lipscomb*, 437 U.S. 535, 541 (1978) (quoting *Connor v. Finch*, 431 U.S. 408, 417 (1977)). To that end, in drawing a remedial plan, a court may not draw district lines solely to advance partisan or political objectives, even when the state redistricting body expressly adopted such objectives. *See, e.g., Wyche v. Madison Par. Police Jury*, 769 F.2d 265, 268 (5th Cir. 1985) (“Many factors, such as the protection of incumbents, that are appropriate in the legislative development of an apportionment plan have no place in a plan formulated by the courts.”); *Wyche v. Madison Par. Police Jury*, 635 F.2d 1151, 1160 (5th Cir. 1981) (noting that “a court is forbidden to take into account the purely political considerations that might be appropriate for legislative bodies”); *Essex v. Kobach*, 874 F. Supp. 2d 1069, 1093 (D. Kan. 2012) (declining to unpair certain incumbents in remedial district plan because “any efforts to protect [such] incumbents would require our choosing among incumbents, an inherently political exercise we are neither able nor inclined to undertake”); *Colleton Cty. Council v. McConnell*, 201 F. Supp. 2d 618, 668 (D.S.C. 2002) (“[E]ven were we to agree that [a proposed change to a district configuration] had some political benefit, such an important change to the core of an existing district in a [court-drawn] redistricting plan, based on nothing more than our determination that one elected official will do a better job than another, is clearly beyond the scope of our remedial authority.”). Accordingly, the Special Master’s alleged failure to achieve the

General Assembly’s partisan objectives in no way calls into question the legal adequacy of the Recommended Plans.

3.

Finally, Legislative Defendants maintain that the Special Master drew the Recommended Plans to favor Democrats. Leg. Defs.’ Rec. Plan Resp. 2. The *only* support Legislative Defendants provide for this assertion is an article in the *Raleigh News & Observer*, which opined that Democratic candidates had a better chance of prevailing in several of the districts in the Recommended Plans than in such districts’ counterparts in the 2017 Plans. *See id.* (citing Colin Campbell & Bruce Henderson, *Redrawn Election Maps Would Help Democrats*, News and Observer, Nov. 28, 2017, at 2A). Even assuming that the reporters are correct that the Recommended Plans are more favorable to Democratic candidates than the 2017 Plans—and Legislative Defendants introduced no analysis of their own showing that that is in fact the case—that does not establish that the Special Master drew the districts to favor Democrats. *See Brown*, 564 U.S. at 800 (“[C]orrelation [is] not evidence of causation.”). Rather, any adverse consequences on the electoral prospects of Republican candidates may simply derive from the Special Master’s duty to draw plans that completely eliminate the vestiges of the racial gerrymanders, rather than an intentional effort to benefit any candidate of either political party. And Legislative Defendants present no evidence, much less a rigorous empirical analysis, demonstrating that the Special Master could have drawn districts that completely remedied the racial gerrymander that were more favorable to Republican candidates.

More significantly, this Court’s Appointment Order barred the Special Master from taking into account political considerations in drawing his remedial plans, except for the purpose of preventing the pairing of incumbents. Appointment Order 7. Legislative Defendants offer no evidence that the Special Master disregarded this instruction. On the contrary, the Special Master repeatedly averred that he complied with all of the Court’s instructions set forth in the Appointment Order, including the instruction that he take a nonpartisan approach in drawing his Recommended Plans. Hr’g Tr. 8:23–9:16; Rec. Plan & Rep. 11 (stating that the Special Master’s “nonpartisan approach . . . is absolutely critical to bolstering the legitimacy of the Special Master’s Plan”). And the Special Master took a number of steps “[t]o avoid even the appearance of partisanship,” including rejecting Plaintiffs’ proposed plans as unduly favorable to Democratic candidates and unpairing incumbents of both parties, notwithstanding that Legislative Defendants never requested that the Special Master unpair Republican incumbents. Rec. Plan & Rep. 12–14, 30. Accordingly, Legislative Defendants’ assertion that the Recommended Plans were drawn to favor Democratic candidates finds no record support.¹⁴

¹⁴ Legislative Defendants also take issue with what Dr. Johnson describes as the Special Master’s “bewildering[]” labeling of municipality splits as “Municipalities (CDPs),” Johnson Report 6—a critique they failed to raise in commenting on the Special Master’s draft plan. “Municipalities” and “CDPs” differ insofar as municipalities are officially recognized local governments within a particular state, whereas CDPs are “settled concentrations of population that are identifiable by name but are not legally incorporated under the laws of the state in which they are located.” *Id.* at 5. Dr. Johnson asserts that the Special Master’s data labeling indicates that he potentially conflated the (Continued)

B.

Having rejected Legislative Defendants’ objections to the Recommended Plans as a whole, we now examine the Recommended Plans on a district-by-district basis.

1. Senate District 21

Like the version of Senate District 21 in the 2011 and 2017 Plans, the Special Master’s Recommended Senate District 21 encompasses all of Hoke County and a portion of Cumberland County. Rec. Plan & Rep. 31. But unlike the General Assembly’s proposed remedial version in the 2017 Plan, the Special Master’s recommended version no longer retains the core shape of the Cumberland County portion of the unconstitutional 2011 version of the district. *Id.* at 32. Most notably, Recommended Senate District 21 no longer includes proposed remedial Senate District 21’s “long extension into Fayetteville that seems surgically designed to capture heavily

two terms and therefore may have failed to correctly ascertain the number of municipal splits.

Dr. Johnson conceded, however, that he “d[id] not have sufficient time . . . to re-run the [Special Master’s ‘Municipalities (CDPs)’] tables using only municipalities.” *Id.* at 6. Therefore, his opinion that “the tables would show different results if only the 533 municipalities are analyzed instead of [what] . . . the Special Master appears to have used in his analysis” lacks any empirical basis. *Id.* at 6. The Special Master responded directly to Dr. Johnson’s criticism at the hearing, credibly explaining that although there are differences between CDP- and municipality-based boundaries, the few minor differences in the relevant North Carolina districts in no way materially affected the boundaries and municipality-split calculations in the Recommended Plan. Hr’g Tr. 10:7-11:8; *see also* Special Master Hr’g Pres. 5–8. Accordingly, we find this alleged deficiency in the Special Master’s Recommended Plan to be without merit.

African American precincts, while evading heavily white precincts.” *Id.* at 31; *see supra* Part III.A.1.

Recommended Senate District 21 and its partner in the Hoke-Cumberland grouping, Recommended Senate District 19, satisfy the Constitution’s one-person, one-vote requirement. *Id.* at 33. Both recommended districts improve on the compactness of their counterparts in the 2017 Plan under the measures of compactness adopted by the General Assembly. *Id.* And the Recommended Plan’s configuration reduces the number of split precincts and municipalities in both districts, in accordance with the Adopted Criteria. *Id.*

Legislative Defendants object to Recommended Senate District 21 on two grounds. First, they claim that its lines are the product of intentional racial targeting, Leg. Defs.’ Rec. Plan Resp. 8–10—a contention we already have rejected, *see supra* Part IV.A.1. Second, Legislative Defendants assert that the Recommended Plan violates the General Assembly’s political decision to “place the Fort Bragg precinct in [Senate District] 19 . . . in order to provide the Republican incumbent . . . with an opportunity to win that district.” Leg. Defs.’ Rec. Plan Resp. 9. However, as noted previously, a court—or a special master acting on a court’s behalf—is barred from considering partisan or political objectives in drawing a remedial districting plan. *See supra* Part IV.A.2. And even if a court tasked with drawing a remedial districting plan was entitled to give effect to partisan objectives—like ensuring the Republican incumbent would prevail in his new district—any legislative interest in protecting an incumbent must yield to remedying the unconstitutional racial gerrymander if necessary. *See supra* Section III.A. Therefore, we

reject Legislative Defendants' objections and approve the Recommended Plan's reconfiguration of Senate District 21.

2. Senate District 28

Like the General Assembly's proposed remedial version, Recommended Senate District 28 lies in the center of Guilford County. Unlike the General Assembly's proposed remedial version of the district, Recommended Senate District 28—which takes on a highly compact circular shape almost wholly within the municipal boundaries of Greensboro—no longer divides Greensboro along racial lines, nor does it track the contours of Dr. Hofeller's VRA exemplar. Rec. Plan & Rep. 34–36; *see supra* Part III.A.2.

Recommended Senate District 28 abuts Senate Districts 24 and 27; however, the Special Master's Recommended Plan leaves the version of Senate District 24 in the 2017 Plan largely unchanged. *See* Rec. Plan & Rep. 35. The recommended configuration decreases Senate Districts 27's population deviation by 2.0 percentage points, and increases Senate District 28's population deviation by 0.5 percent. *Id.* at 36. Both Recommended Senate District 27 and 28 improve on their counterparts in the 2017 Plan in terms of the compactness measures included in the Adopted Criteria. *Id.* And in accordance with the Adopted Criteria, the recommended districts split fewer municipalities and precincts than their counterparts in the 2017 Plans—Senate District 27 would split one fewer precinct and Senate District 28 would split two fewer precincts and one fewer municipality. *Id.*

In addition to reasserting their unsupported contention that Recommended Senate District 28 was the product of racial targeting, Legislative Defendants also object to the recommended configuration because two incumbents are paired in Recommended Senate District 27. Leg. Defs.’ Rec. Plan Resp. 11–12. But neither Legislative Defendants nor Plaintiffs asked the Special Master to unpair the incumbents—one of whom is a Democrat and one of whom is a Republican—notwithstanding that the Special Master expressly provided them an opportunity to suggest approaches for unpairing the incumbents. Rec. Plan & Rep. 37. And we find that the Special Master reasonably recommended against unpairing the incumbents because doing so “would require significant restructuring of the district” and that potential alternative plans for the districts would either take both incumbents “out of the territory that comprises most of their present districts” or significantly reduce the district’s compactness. *Id.* at 37–38. Finding that the Recommended Senate District 28 cures the racial gerrymander and that Legislative Defendants’ objections are without merit, we approve the Recommended Plan’s reconfiguration of Senate District 28.

3. House District 21

Like its predecessor in the 2017 Plan, Recommended House District 21 spans a portion of Wayne County and the eastern edge of Sampson County. Rec. Plan & Rep. 42. Unlike the unconstitutional version of the district and version of the district in the 2017 Plan, Recommended House District 21 no longer includes a protrusion into central Sampson County to take in the majority-black sections of the City of Clinton, while excluding the city’s majority-white sections. *Id.* at 40.

The recommended configuration of House District 21 and its neighbor, House District 22, satisfies the one-person, one-vote requirement. *Id.* at 43. And the recommended configuration also, on average, improves on the two districts' compactness, as measured by the General Assembly's two preferred metrics. *Id.* Recommended House District 21 has the same number of municipality or precinct splits as the version in the 2017 Plan, whereas Recommended House District 22 splits one fewer municipality than its counterpart in the 2017 Plan. *Id.*

Legislative Defendants again argue that Recommended House District 21's reduced BVAP relative to the version in the 2017 Plan is a product of BVAP targeting—a contention which finds no support in the record. *See supra* Part IV.A.1. Legislative Defendants further argue that Recommended House District 21 does not protect its incumbent as effectively as the version of the district in the 2017 Plan. But the Special Master was not authorized to draw a district to ensure an incumbent will prevail. *See supra* Part IV.B.2.¹⁵ Accordingly, we reject Legislative Defendants objections and approve the Special Master's remedial configuration of House District 21.

4. House District 57

As with the version in the 2017 Plan, Recommended House District 57 lies wholly within Guilford County. However, unlike the 2017 Plan version, the Special Master's

¹⁵ Even if the Special Master had been so authorized, the incumbent in House District 21 has stated under oath that he will not run for re-election in 2018, Decl. of Rep. Larry Bell, Nov. 10, 2017, ECF No. 211-1, meaning that there was no need for the Special Master to consider incumbent protection in redrawing the district.

recommended version of the district no longer includes virtually all of the heavily black precincts in eastern Greensboro, which were included in Dr. Hofeller's Guilford County VRA exemplar. Rec. Plan & Rep. 45. And whereas the version of House District 57 in the 2017 Plan had a BVAP exceeding 60 percent—a substantially *higher* BVAP than its unconstitutional version—by no longer dividing Greensboro's precincts along racial lines, Recommended House District 57 has a BVAP of 38.4 percent. *Id.* at 50.

In order to reconfigure House District 57 to remedy the racial gerrymander, the Special Master had to reconfigure several other House districts in Guilford County (House Districts 59, 61, and 62). The Special Master's reconfiguration of those districts more effectively respects municipal boundaries than the 2017 Plan, containing three districts that lie almost entirely within Greensboro's city limits. *Id.* at 46–48. Additionally, pursuant to his obligation to respect the General Assembly's redistricting decisions to the extent possible, the Special Master maintained the shape of House Districts 58 and 60, as they were drawn in the 2017 Plan. *Id.* at 45 (“The Special Master's Recommended Plan redraws House District 57, but keeps intact the other “Subject Districts” (House Districts 58 and 60) as redrawn in the 2017 Plan.”). Each of the reconfigured districts satisfies the one-person, one-vote requirement. *Id.* at 49. The Recommended Plan's configuration is as compact as the 2017 Plan, and more compact than the 2011 Plan, in accordance with the Adopted Criteria. *Id.* Further, the recommended configuration does not pair any incumbents, and each incumbent retains a majority of his or her constituency from the 2017 Plan. *Id.* at 51.

Legislative Defendants again argue that “the most significant difference in these two versions of [district] 57 is the BVAP,” and that the “shape difference” between the two versions is “explained by policy decisions which had nothing to do with race.” Leg. Defs.’ Rec. Plan Resp. 16–17. However, Legislative Defendants nowhere identify the nature of these alleged “policy decisions” (stating only, “The 2017 district is based upon whole precincts located primarily in eastern Greensboro.”), *id.*, making it impossible for this Court to determine both whether the Special Master’s recommended configuration in fact failed to advance those objectives and whether the Special Masters should have—or legally could have—advanced those objectives. Legislative Defendants also characterize Recommended District 61’s increase in BVAP “from 11.5% to . . . 40.3%” as “astonishing,” maintaining that the district “would have been labeled a racial gerrymander” if the General Assembly had recommended such a configuration. *Id.* at 17. But the Special Master did not target any BVAP percentage in drawing the Recommended Plans. *See supra* Part IV.A.1; Rec. Plan & Rep. 53. The increase in Recommended District 61’s BVAP is attributable to shift of voters from the General Assembly’s proposed House District 57, which had a BVAP exceeding 60 percent, into Recommended House District 61, and was therefore a consequence of the Special Master’s obligation to remedy the racial gerrymander. *Id.* at 50. Thus, we reject Legislative Defendants’ objections and approve the Special Master reconfiguration of the Guilford County House districts.

5. Wake County House Districts

As the Special Master correctly recognized, the problem with the Wake County House district configuration in the 2017 Plan—that the General Assembly violated the North Carolina Constitution by redrawing districts untainted by the constitutional violation—is “characteristically different” than the four districts in the 2017 Plan that failed to remedy the racial gerrymander. *Id.* at 56. The Special Master, therefore, took a different approach to reconfiguring the Wake County districts. *Id.* at 56–57. In particular, the Special Master first “reinstate[d]” the four untainted Wake County districts from the 2011 Plan that the General Assembly altered in the 2017 Plan. *Id.* at 57. Then, he reconfigured some of the remaining Wake County districts so as to cure the racial gerrymander, satisfy the one-person, one-vote requirement, and improve on the districts’ compactness and adherence to precinct and municipal lines, as required by the Adopted Criteria. *Id.* at 57–58. The Special Master left intact two 2017 Plan districts, which he did not need to change to remedy the violation and made only minor changes to a third. *Id.* at 57.

The Recommended Wake County House plan satisfies the one-person, one-vote requirement. *Id.* at 60. The districts in the Special Master’s recommended Wake County configuration are uniformly more compact and split fewer municipalities and precincts than those in the 2011 Plan configuration, in accordance with the Adopted Criteria. *Id.* at 60–61. The Special Master’s configuration is slightly less compact, on average, than the 2017 Plan, and splits more municipalities and precincts. *Id.* These differences are attributable to the Special Master’s obligation to reinstate the untainted districts in the 2011 Plan, which were less compact and split more municipalities and precincts than

their counterparts in the 2017 Plan. *Id.* The Special Master’s Recommended Plan does not pair any incumbents in Wake County. *Id.*

Legislative Defendants object to the Special Master’s reconfiguration of the Wake County districts in his Recommended Plan on grounds that it unpaired two Democratic incumbents that were paired in his draft plan. Leg. Defs.’ Rec. Plan Resp. 19–20. But the General Assembly’s incumbency criterion expressed a preference for not pairing incumbents of “either party” in a district. Adopted Criteria for House and Senate Plans, Sept. 7, 2017, ECF No. 184-37. And in accordance with that legislative policy preference, this Court directed the Special Master to unpair incumbents if doing so would “not interfere with remedying the constitutional violations and otherwise complying with federal and state law.” Appointment Order 7. The Special Master reasonably concluded that unpairing the Democratic incumbents—which required moving six precincts between the two districts and did not materially impact the Recommended Plan’s compactness or respect for municipal and precinct boundaries—did not undermine the integrity of his plan. Rec. Plan & Rep. 62. Therefore, we again reject Legislative Defendants’ objections and approve the Special Master’s recommended reconfiguration of the Wake County House districts.

6. Mecklenburg County House Districts

Like the Wake County House district configuration, the Mecklenburg County House district configuration in the 2017 Plan unnecessarily, and therefore unconstitutionally, altered the version of House District 105 in the 2011 Plan, which was not impacted by the identified constitutional violation. *Id.* at 64. In redrawing the

Mecklenburg County configuration, the Special Master restored the lines of House District 105 to those in the 2011 Plan and, as a result, had to somewhat alter only three adjoining districts (House Districts 92, 103, and 104). *Id.* at 64. In doing so, the Special Master sought “to keep precincts whole (outside of those already split by [the] 2011 [Plan’s] District 105), to keep the districts in the area relatively compact and contiguous, and to make only the changes necessary to remedy the constitutional violation.” *Id.* The Special Master’s configuration is slightly less compact, on average, than that of the 2017 Plan, and splits more precincts. *Id.* These differences are attributable to the Special Master’s obligation to reinstate the version of House District 105 in the 2011 Plan, which was noncompact and split a number of municipalities and precincts. *Id.* at 65–67. No party asserts any specific objection to the Special Master’s reconfiguration. Therefore, we approve the Special Master’s Recommended Plan for the Mecklenburg County House districts.

V.

Finally, we consider the remaining districts of the 2017 Plans unaffected by our decision today. We earlier found the following additional districts unconstitutional gerrymanders: Senate Districts 4, 5, 14, 20, 32, 38, and 40; and House Districts 5, 7, 12, 24, 29, 31, 32, 38, 42, 43, 48, 58, 60, 99, 102, 107. The General Assembly enacted the 2017 Plans to remedy the constitutional violations related to each of these districts. The Supreme Court has provided that “[t]he new legislative plan, if forthcoming, will then be the governing law unless it, too, is challenged and found to violate the Constitution.” *Wise*, 437 U.S. at 540.

No party has raised a substantive challenge to any of these districts, and therefore no party has provided this Court with evidence that the 2017 Plans fail to remedy the constitutional violations we identified. In the absence of any finding that the remedial districts offend the Constitution or Voting Rights Act, these districts are entitled to the presumption of constitutionality afforded an enactment of a duly elected legislature. *Upham*, 456 U.S. at 43; *Wise*, 437 U.S. at 540. Under these circumstances, our district-by-district review cannot discern any apparent failure to adequately remedy the specific constitutional violation this Court identified. Therefore, the Court will approve and adopt the remaining remedial districts in the 2017 Plans for use in future elections in the State. *See Shaw v. Hunt*, No. 92–202–CIV–5–BR, slip op. at 8 (E.D.N.C. Sept. 12, 1997) (three-judge court approving remedial legislative plan enacted to remedy racial gerrymander in the absence of challenge by any party).

VI.

In conclusion, for the reasons stated above, we sustain Plaintiffs’ objections to the Subject Districts and approve and adopt the State’s 2017 Plans, as modified by the Special Master’s Recommended Plans, for use in future North Carolina legislative elections. Accordingly, this Court’s previous injunction against the State from conducting any elections for State House and State Senate offices, Order and Judgment, Aug. 15, 2016, ECF No. 125, is dissolved. We direct Defendants to implement the Special Master’s Recommended Plans.

SO ORDERED

**IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF LOUISIANA**

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE, DR.
ALICE WASHINGTON, STEVEN HARRIS,
ALEXIS CALHOUN, BLACK VOTERS
MATTER CAPACITY BUILDING
INSTITUTE, and THE LOUISIANA STATE
CONFERENCE OF THE NAACP,

Plaintiffs,

v.

R. KYLE ARDOIN, in his official capacity as
Secretary of State of Louisiana,

Defendant.

Civil Action No. 3:22-cv-00178
SDD-SDJ

REBUTTAL EXPERT REPORT OF CRAIG E. COLTEN, PH.D.

Rebuttal Expert Report

INTRODUCTION

I have reviewed the Illustrative House and Senate maps (2022 and 2023) offered by the Plaintiffs in terms of Communities of Interest with a particular focus on long-term cultural geographies in the state of Louisiana that are the foundations of social, economic, and demographic patterns today. Consistent with the conclusions in my previous reports in this case, when I compared these illustrative maps and their incorporation of historical communities of interest, I concluded that they both recognized communities of interest better than the state's enacted maps.

I have also reviewed the report prepared by Douglas Johnson. I provide my response to his conclusions that the only explanation for certain lines in the illustrative maps are race, based on my working knowledge of Louisiana's historical communities of interest. His method neglects the underlying cultural patterns that are not easily quantified, and in doing so, discounts the long-recognized and deeply rooted cultural patterns that infuse political behavior in the state of Louisiana.

Scholarship on the cultural geography and ethnography of Louisiana have long recognized the diverse cultures that are celebrated as one of the distinctive traits of the state. The patterns of cultural diversity underlie and shape the communities of interest. Citizens are aware of these patterns and take pride in their residence within their culture regions. Many of the critiques contained in Johnson's report ignore these fundamental geographical, historical, and cultural patterns which are at least as consistent with the changes in the maps as alignments based solely on race.

COMMENTS ON JOHNSON'S CRITIQUE

SD 38 & 39. The boundary between SD 38 and 39 reflects an important historical division in the city of Shreveport. SD 39 includes much of the old African American residential core in Shreveport, the heart of the "counterpublic space" where African American businesses concentrated and strong community life existed. SD 38 contains neighborhoods that underwent "white flight" and demographic change since the 1960s. While simple racial patterns may be similar on both sides of the boundary, these two areas represent two distinct communities of interest at the local level.

SD 17. The area "carved out" of SD 17 is a largely rural area inhabited by Acadians and African Americans. It is an area with long-standing local economic and cultural ties to the communities in SD 2 (where it now resides) based on sugar cane cultivation and processing and natural resource harvesting in the backswamps.

SD 19. SD 19 encompasses one of the most historically traumatized regions in the state and one that has an exceptionally strong sense of community. It includes both sides of the river upstream from New Orleans, the location of the 1811 Slave Insurrection and brutal response. This historical incident provides a powerful sense of community in the communities along the river. The district's extension into the West Bank urban area includes working class neighborhoods that

have shared experiences in industrial labor. The extension southward at the eastern end of the district includes neighborhoods within post-1965 levees that have endured rainfall induced flooding. Experiences with high water have mobilized community activism and engendered a sense of community there.

HD 1. HD 1 divides the historical African American urban core from more recent African American neighborhoods (HD 2) that resulted from white flight and post 1960s neighborhood demographic change. These neighborhoods with similar racial demographics have different settlement histories and have developed distinct communities of interest.

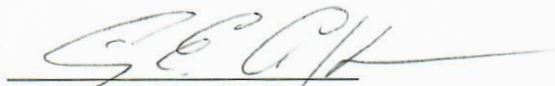
HD 23. HD 23 includes historically affiliated African American neighborhoods in Natchitoches and its near suburbs. The boundary largely follows the Red River below the city and ends before the community of Creoles of Color in HD 25. It shows sensitivity to the urban communities of interest as well as keeping the Creoles of Color community separate.

HD 62, 63 and 65. The house districts in suburban Baton Rouge reflect the sequential expansion of the city since the 1950s. Districts 61, 68, 69, 65, and 101 capture the extension of additions to the city during the 1960s and 1970s. As the city population grew and sprawled outward, a series of suburban additions appeared as arcs, each a bit farther from the city center. Each addition had residential areas, schools, and commercial districts. Internally they were of a comparable age and residents developed shared concerns based on schools, commerce, and political representation. These multiple suburban additions represent another geographic manifestation of communities of interest.

CONCLUSIONS

Louisiana has a troubled history of slavery and racial violence and segregation. This turbulent past has shaped and continues to influence the geography of communities of interest. Legislative district boundaries that attempt to respect communities of interest will commonly suggest to the uninformed that they strictly follow racial lines. In fact, in order to recognize communities of interest, historical practices must inform the drawing of cartographic lines that may parallel demographic boundaries.

I declare under penalty of perjury that the foregoing is true and correct.


 Craig E. Colten, Ph.D.

Dated: August 11, 2023

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF LOUISIANA

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE,
DR. ALICE WASHINGTON, STEVEN
HARRIS, ALEXIS CALHOUN, BLACK
VOTERS MATTER CAPACITY BUILDING
INSTITUTE, and THE LOUISIANA STATE
CONFERENCE OF THE NAACP,

Plaintiffs,

v.

R. YLE ARDOIN, in his official capacity as
Secretary of State of Louisiana

Defendant.

CIVIL NO. 3:22-cv-00178

DECLARATION OF WILLIAM S. COOPER

WILLIAM S. COOPER, acting in accordance with 28 U.S.C. § 1746, Federal Rule of Civil Procedure 26(a)(2)(B), and Federal Rules of Evidence 702 and 703, does hereby declare and say:

I. INTRODUCTION

1. My name is William S. Cooper. I have a B.A. in Economics from Davidson College. As a private consultant, I serve as a demographic and redistricting expert for the Plaintiffs for the above-captioned case.

A. Redistricting Experience

2. I have testified at trial as an expert witness on redistricting and demographics in federal courts in about 55 voting rights cases since the late 1980s. Five of these lawsuits resulted in changes to statewide legislative boundaries: *Rural West Tennessee African-American Affairs Council, Inc. v. McWherter*, No. 92-cv-2407 (W.D. Tenn.); *Old Person v. Brown*, No. 96-cv-0004 (D. Mont.); *Bone Shirt v. Hazeltine*, No. 01-cv-3032 (D.S.D.); *Alabama Legislative Black Caucus v. Alabama*, No. 12-cv-691 (M.D. Ala.), and *Thomas v. Reeves*, No. 18-cv-441 (S.D. Miss.). In *Bone Shirt v. Hazeltine*, the court adopted the remedial plan I developed.¹ Approximately 25 of those cases led to changes in local election district plans.

3. In 2022 and 2023, I have testified at trial as an expert witness in redistricting and demographics in seven cases challenging district boundaries under Section 2 of the Voting Rights Act: *Caster v. Merrill*, No. 21-1356-AMM (N.D. Ala.), *Pendergrass v. Raffensperger*, No. 21-05337-SCJ (N.D. Ga.), *Alpha Phi Alpha Fraternity v. Raffensperger*, No. 21-05339-SCJ (N.D. Ga.), *NAACP v Baltimore County*, No.21-cv-03232-LKG (Md.), *Christian Ministerial Alliance v. Hutchinson* No. 4:19-cv-402-JM (E.D. Ar.), *Robinson v Ardoin*, No. 3:22-cv-00211-SDD-SDJ

¹ I have also served as an expert witness on demographics in trials relating to issues other than voting and redistricting. For example, in an April 2017 opinion in *Stout v. Jefferson County Board of Education* (No.2:65-cv-00396-MHH), a school desegregation case involving the City of Gardendale, Alabama, the court made extensive reference to my testimony.

In 2023, I testified on two occasions at trial in a school desegregation case involving the St. Martin Parish School Board – *Thomas v. St. Martin Parish School Board* (No. 6:65-cv-11314 (W.D. La.)).

(M.D. La.), and *Caroline County Branch of the NAACP v Town of Federalsburg* , No. 23-00484-SAG (Md.). During that same timeframe, I also testified at trial as an expert in demographics in *NAACP v. Lee*, No. 4:21cv187-MW/MAF (N.D. Fla.).

4. I have served as a redistricting and demographics consultant or expert in several local-level voting cases in Louisiana. I have over thirty years of experience in local-level voting cases in Louisiana. In 1993, I developed illustrative police jury plans for the parishes of East Carroll, Madison, West Feliciana, and Point Coupee.² In 1994 and 1995, I developed illustrative school board plans for the parishes of Bossier, East Carroll, West Carroll, and Iberville.³ In 1996, I served as a *Gingles I* expert for the plaintiffs and developed an illustrative plan for the town council in St. Francisville.⁴ In 1998, I developed an illustrative plan for the 23rd Judicial District.⁵

5. In 2005, I served as an expert for the plaintiffs and developed an illustrative plan for the school board in St. Landry Parish.⁶ In the 2010 redistricting cycle, I served as the *Gingles I* expert for the plaintiffs in a Section 2 lawsuit involving the 32nd Judicial District in Terrebonne Parish.⁷

6. As noted above, I serve as the *Gingles I* expert for the *Galmon* plaintiffs in *Robinson v. Ardoin*.

² *Rodney v. McKeithen*, No. 3:1992-CV-735 (M.D. La.).

³ *Knight v. McKeithen*, No. 3:1994-cv-00848 (M.D. La.) and *Reno v. Bossier Parish School Board*, 528 U.S. 320 (2000).

⁴ *Wilson v. St. Francisville*, No. 92-765 (M.D. La.).

⁵ *Prejean v. Foster*, No. 02-31065 (5th Cir. 2003).

⁶ *NAACP v. St. Landry Parish Police Jury, et al.*, VR-LA-0097, No. 6:03-CV-00610 (W.D. La.).

⁷ *Terrebonne Parish NAACP v. Jindal*, No. 3:14-cv-00069 (M.D. La.).

7. For additional historical information on my testimony as an expert witness and experience preparing and assessing proposed redistricting maps for Section 2 litigation, a summary of my redistricting work is attached as **Exhibit A**.

B. Purpose of Report

8. The attorneys for the Plaintiffs in this case have asked me to determine whether the African-American⁸ population in Louisiana is “sufficiently large and geographically compact”⁹ to allow for the creation of additional majority-Black State House and State Senate districts beyond those enacted on March 9, 2022 without Governor Edward’s signature.¹⁰

9. For purposes of the *Gingles 1* analysis in this declaration, I define majority-Black districts as those that are majority-Black voting age (“BVAP”). Unless indicated otherwise, I use the Any Part Black census definition when discussing Louisiana’s Black population.¹¹

⁸ In this declaration, “African-American” refers to persons who are single-race Black or Any Part Black (*i.e.*, persons of two or more races and some part Black), including Hispanic Black. In some instances (*e.g.*, for historical comparisons) numerical or percentage references identify single-race Black as “SR Black” and Any Part Black as “AP Black.” Unless noted otherwise, “Black” means AP Black. It is my understanding that following the U.S. Supreme Court decision in *Georgia v. Ashcroft*, 539 U.S. 461 (2003), the “Any Part” definition is an appropriate Census classification to use in most Section 2 cases.

⁹ *Thornburg v. Gingles*, 478 U.S. 30, 50 (1986).

¹⁰ Throughout this report, I refer to the Legislative Plan enacted on March 9, 2022 as the “2022 Legislative Plan” or by chamber -- the “2022 Senate” and the “2022 House.”

¹¹ For example, when reporting the demographics of specific districts in the exhibits, I also report Black citizen voting age (“BCVAP”) and Black registered voters by district.

For district-level BCVAP estimates, I count only persons who are non-Hispanic single-race (“SR”) Black or non-Hispanic SR Black or two races -- some part Black and some part White, often referenced as NH DOJ Black. The estimates are disaggregated from the block group level as published by the U.S. Census Bureau.

The most current statewide block group-level data available is from the 2017-2021 Special Tabulation, with a survey midpoint of July, 1 2019.

<https://www.census.gov/programs-surveys/decennial-census/about/voting-rights/cvap.html>

10. In addition, as part of the analysis in this declaration, I review historical and current demographics reported in the decennial census published by the U.S. Census Bureau, as well as socioeconomic characteristics (reflecting communities of interest) reported in the American Community Survey (“ACS”) for African Americans and non-Hispanic Whites.¹²

11. **Exhibit B** describes the sources and methodology I have employed in the preparation of this report. Briefly, I used the Maptitude software program as well as data and shapefiles from the U.S. Census Bureau and the Louisiana Legislature website, among other sources. The illustrative plans presented in this declaration update the illustrative plans described in my July 22, 2022 declaration to better reflect communities of interest and include other technical changes. The majority of the illustrative legislative districts remain unchanged from those in my July 22, 2022 report. The changed districts are identified in **Exhibit B-1** and **Exhibit B-2**.

12. The 2022 Legislative Plan has 29 majority-Black House districts and 11 majority-Black Senate districts – up one Senate district and three House districts since the 1990 Legislative Plan (based on the 2000 Census). As demonstrated *infra*, this modest increase in the number of majority-Black legislative districts since the 2000 Census has failed to keep pace with the combined impact of a growing statewide Black population, a shrinking statewide White population, and the concentration of Black voters in metropolitan areas of the state.

C. **Gingles I Analysis – Focus Areas**

13. To determine whether additional majority-Black legislative districts could be drawn based on the 2020 Census, I focused on: (1) metropolitan areas with substantial Black

For counts of Black registered voters, I relied on the Louisiana Legislature’s July 2021 public dataset. See Louisiana Voter Registration File at the VTD Level, Redistricting Data Hub, <https://redistrictingdatahub.org/dataset/louisiana-voter-registration-file-at-the-vtd-level/>.

¹² In this report, “Latino” and “Hispanic” are synonymous. References to “non-Hispanic White” are abbreviated as “NH White” or “White”.

populations that have experienced Black population growth since 2000 (e.g. Baton Rouge) or, conversely, (2) metropolitan areas with substantial Black population where there has been a decline in the White population since 2000 (e.g. New Orleans and Shreveport).

14. I define metropolitan areas in Louisiana using the Census Bureau's boundaries for Metropolitan Statistical Areas.

15. One exception to the metro area focus involved a House district in the Natchitoches area. Under the 2022 House, majority-Black House District ("HD") 23 (in the 2011 House Plan) was eliminated. I examined 2020 Census demographics around Natchitoches to determine whether a majority-Black district could be retained in that area.

D. Expert Summary Conclusions

16. The Illustrative Legislative Plan that I have prepared (one for the State Senate and one for the State House) demonstrates that Louisiana's Black population is sufficiently numerous and geographically compact to allow for the creation of at least three additional majority-Black Senate districts and at least six additional majority-Black House districts.

17. Based on my *Gingles I* analysis, I conclude the following:

State Senate

- The 2022 Senate Plan contains 11 majority-Black districts.
- African Americans in Louisiana are sufficiently numerous and geographically compact to allow for at least 14 majority-Black State Senate districts, including **three additional majority-Black districts** in the following Metropolitan Statistical Areas ("MSAs") and parishes:
 - Shreveport MSA (Caddo and Bossier) -- **Illustrative Senate District ("SD") 38**

- Baton Rouge MSA (East Baton Rouge, Iberville, Pointe Coupee, and West Baton Rouge) – **Illustrative SD 17**
- New Orleans MSA (Jefferson and St. Charles) – **Illustrative SD 19**

State House

- The 2022 House Plan contains 29 majority-Black districts.
- African Americans in Louisiana are sufficiently numerous and geographically compact to allow for at least 35 majority-Black State House districts, including **six additional majority-Black districts** in the following Metropolitan Statistical Areas (“MSAs”) and parishes.
 - Shreveport MSA (Caddo, Bossier) – **Illustrative HD 1**
 - Natchitoches MSA (Desoto, Natchitoches, Red River) – **Illustrative HD 23**
 - Lake Charles MSA (Calcasieu) – **Illustrative HD 38**
 - Baton Rouge MSA (Ascension and Iberville) – **Illustrative HD 60**
 - Baton Rouge MSA (East Baton Rouge) **Illustrative HD 65 and HD 68**

18. I drew the Illustrative Legislative Plan based on traditional redistricting principles, including population equality, compactness, contiguity, respect for communities of interest¹³, and

¹³In my opinion, the Brennan Center provides a reasonable definition of “community of interest”, which I have endeavored to follow in the development of the plaintiffs’ illustrative plans:

“Several redistricting criteria — like following county or municipal lines, or drawing districts that are compact — are in some ways proxies for finding communities of common interest. These are groups of individuals who are likely to have similar legislative concerns, and who might therefore benefit from cohesive representation in the legislature.”

According to the Brennan Center, 24 states define “community of interest” – Louisiana does not.

<https://www.brennancenter.org/sites/default/files/analysis/6%20Communities%20of%20Interest.pdf>

the non-dilution of minority voting strength. I followed the guidelines spelled out by the Legislature in Joint Rule 21, the legislative guidelines for the 2022 map (**Section V**, *infra*).¹⁴

19. The Illustrative Legislative Plan is not a proposed remedial plan. As I explain *infra*, the Illustrative Legislative Plan is superior to the 2022 Legislative Plan on virtually every metric that one could apply to legislative redistricting plans. Other district configurations with similar metrics that would create three additional Senate districts and six additional House districts are possible.¹⁵

E. Organization of Report

20. The remainder of this declaration is organized as follows: **Section II** reviews state, regional, and parish demographics from 2000 to 2020; **Section III** presents charts and data summaries that I produced (from the American Community Survey published by the U.S. Census Bureau) – documenting state, regional, and local socioeconomic disparities by race. **Section IV** reviews enacted legislative plans in Louisiana from the 1990s to the 2020s. **Section V** summarizes the redistricting guidelines I followed in drawing the Illustrative Legislative Plan. **Section VI** presents a *Gingles I* Illustrative Senate Plan based on the 2020 Census, containing 14 majority-Black districts. **Section VII** presents a *Gingles I* Illustrative House Plan based on the 2020 Census, containing 35 majority-Black districts.

¹⁴ “Community of interest” is not defined in the Legislature’s Joint Rule 21. Nor am I aware of an official state definition of the term. I relied on incumbent addresses of legislators as geocoded in a 2022 database prepared by the analytics staff of the National ACLU. I am not aware of an official state database containing the residential addresses of incumbent legislators.

¹⁵ For example, the Illustrative House and Senate plans described herein update and modify an illustrative legislative plan submitted to the Defendants in my July 22, 2022 Declaration. For reference, Exhibit B-1 and B-2 identify districts that were modified in the 2023 Illustrative Plans.

II. DEMOGRAPHIC PROFILE OF LOUISIANA

A. Decennial Census – Statewide Population – 2000 to 2020

21. The table in **Figure 1** presents the population of Louisiana by race and ethnicity for the decennial censuses between 2000 and 2020.

**Figure 1: Louisiana – 2000 to 2020 Census
Population by Race and Ethnicity**

All Ages	2000	Percent of Total Population	2010	Percent of Total Population	2020	Percent of Total Populatio
Total Population	4,468,976	100%	4,533,372	100%	4,657,757	100.00%
NH White*	2,794,391	62.53%	2,734,884	60.33%	2,596,702	55.75%
Total Minority Pop.	1,674,585	37.47%	1,798,488	39.67%	2,061,055	44.25%
Latino	107,738	2.41%	192,560	4.25%	322,549	6.92%
NH Black*	1,443,390	32.30%	1,442,420	31.82%	1,452,420	31.18%
NH Asian*	54,256	1.21%	69,327	1.53%	85,336	1.83%
NH Hawaiian and Pacific Islander*	24,129	0.54%	28,092	0.62%	1,706	0.04%
NH Indigenous*	1,076	0.02%	1,544	0.03%	25,994	0.56%
NH Other*	4,736	0.11%	6,779	0.15%	16,954	0.36%
NH Two or More Races	39,260	0.88%	57,766	1.27%	156,096	3.35%
SR Black (Single-race Black)	1,451,944	32.49%	1,452,396	32.04%	1,464,023	31.43%
AP Black (Any Part Black)	1,468,317	32.86%	1,486,885	32.80%	1,543,119	33.13%

* Single-race, non-Hispanic.

22. According to the 2020 Census, non-Hispanic Whites comprise 55.75% of the population in Louisiana. African Americans are the next largest racial/ethnic category, representing 33.13% of the population in 2020—the second highest proportion of any state in the nation.

23. As shown in **Figure 1**, the statewide Any Part Black (“AP Black”) percentage increased from 32.86% in 2000 to 33.13% in 2020.¹⁶ The minority population climbed from 37.47% in 2000 to 44.25% in 2020, with a corresponding drop in NH White population from 62.53% to 55.75%.

B. 2020 Census – African American Regional Population Distribution

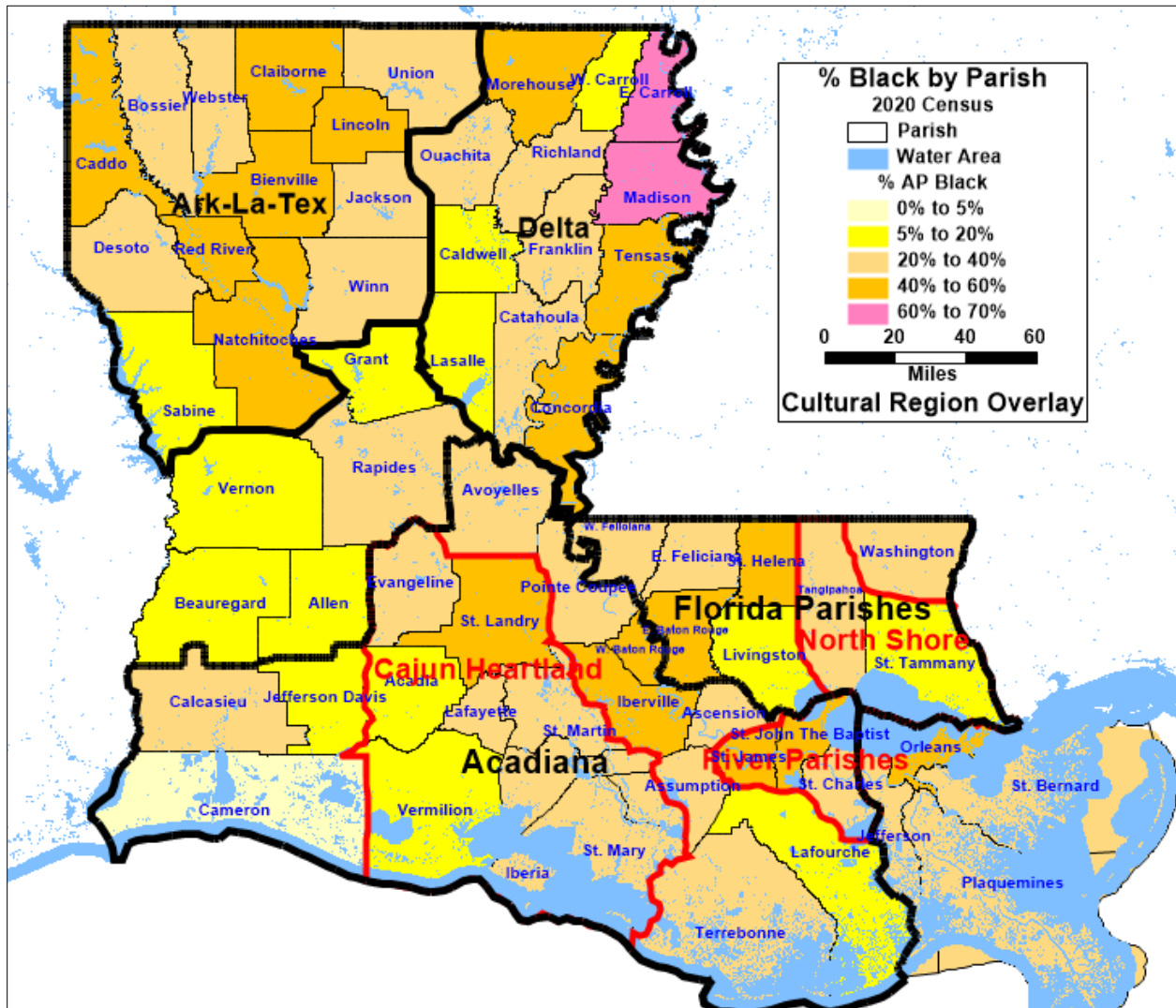
24. The map in **Figure 2** depicts the 2020 Black population percentage by parish, with a transparent overlay depicting cultural regions in the state.

25. **Exhibit C-1** reports 2020 population by race and ethnicity for the 64 parishes. **Exhibits C-2** (2010) and **C-3** (2000) follow the same format.

26. There are many ways to define regions in Louisiana – the dividing lines often crisscross or overlap one another. And Black Louisianans are present in substantial numbers in every region and sub-region shown below in the **Figure 2** and **Figure 3** maps.

¹⁶ In this declaration, “African American” or “Black” refers to persons who are Any Part Black (*i.e.*, persons of one or more races that are some part Black), including Hispanic Black, unless otherwise specified. It is my understanding that following the U.S. Supreme Court decision in *Georgia v. Ashcroft*, 539 U.S. 461 (2003), the “Any Part” definition is the appropriate Census classification to use in Section 2 cases.

Figure 2: 2020 Percent Black by Parish (Cultural Region Overlay)



27. Black lines in the **Figure 2** map demarcate key multi-parish cultural regions: the 22 parishes of Acadiana (as designated by the state of Louisiana in 1971),¹⁷ the 8 parishes that

¹⁷ The 22 Parishes of Acadiana are Acadia, Ascension, Assumption, Avoyelles, Calcasieu, Cameron, Evangeline, Iberia, Iberville, Jefferson Davis, Lafayette, Lafourche, Pointe Coupee, St. Charles, St. James, St. John the Baptist, St. Landry, St. Martin, St. Mary, Terrebonne, Vermilion, and West Baton Rouge. See Acadiana Legislative Delegation, <https://house.louisiana.gov/acadiana/>.

comprise the Florida Parishes,¹⁸ the 14 parishes that define the Delta,¹⁹ and the 13 parishes in the region considered the Louisiana part of the Ark-La-Tex.²⁰

28. Red lines identify other cultural sub-regions: the 8-parish subset of Acadiana identified as the Cajun Heartland,²¹ the 2-parish eastern part of the Florida Parishes known as the North Shore,²² and the three parishes that are known as the River Parishes.²³

29. **Figure 3** outlines the eight planning and development districts in Louisiana (established by the State Legislature in 1956) – smoothing out the 2020 Black population percentage from the parish to the regional level. Populations in the planning districts range between 24% Black and 40% Black. Blue labels show the 2020 Black population by planning district.

¹⁸ The eight Florida Parishes are East Baton Rouge, East Feliciana, Livingston, St. Helena, St. Tammany, Tangipahoa, Washington, and West Feliciana. *See* Florida Parishes, SE La. Univ., http://www.southeastern.edu/acad_research/programs/cslls/parishes/index.html.

¹⁹ The 12 parishes of the Louisiana Delta have been defined as: Morehouse, Ouachita, and West Carroll, East Carroll, Caldwell, Desoto, Tensas, Catahoula, Richland, Madison, Franklin, LaSalle, and Concordia. https://www.louisianavoices.org/deltapieces/DPEducatorsGuide_Ch2.pdf

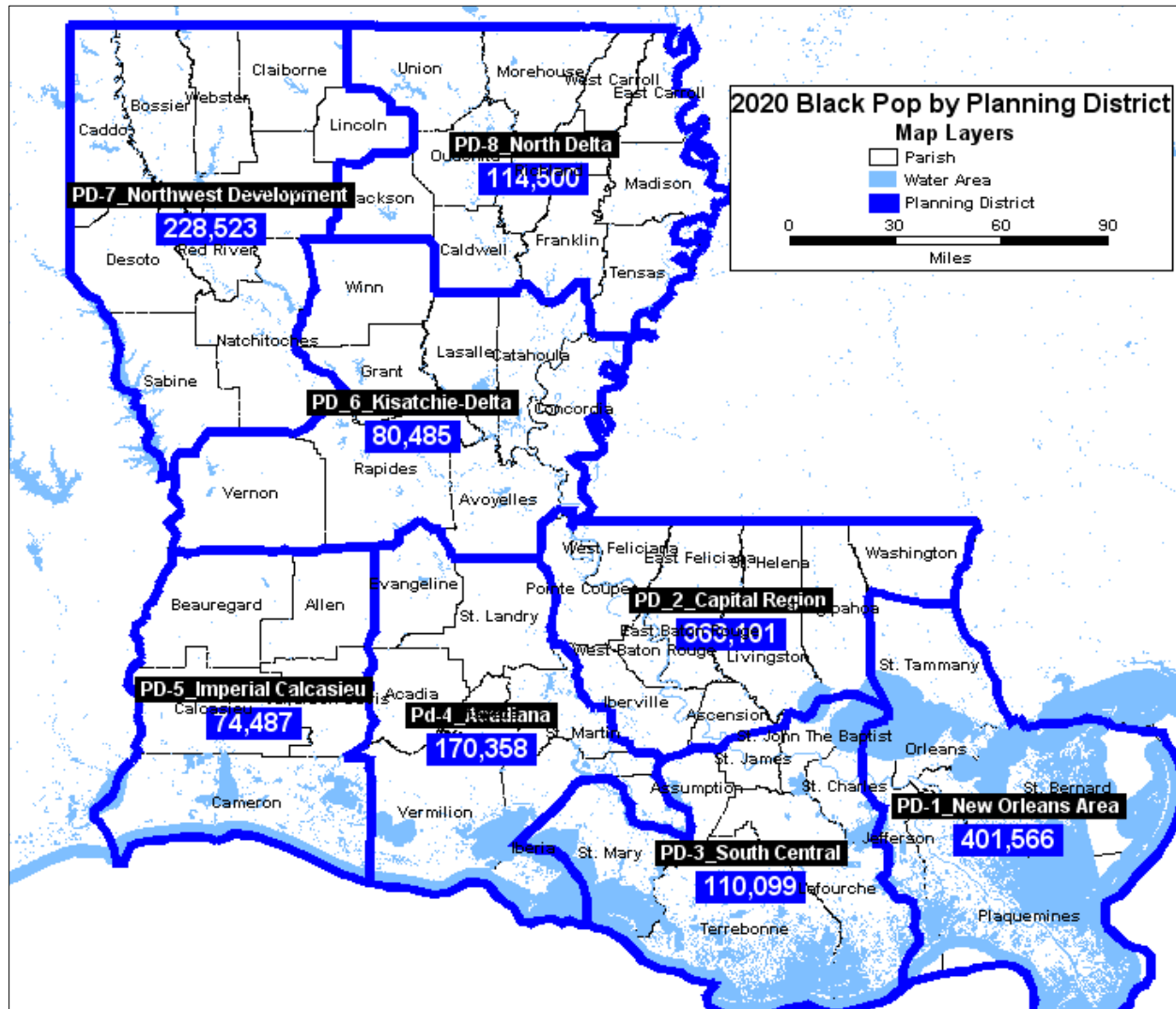
²⁰ The Parishes of Bienville, Bossier, Caddo, Claiborne, Desoto, Jackson, Lincoln, Natchitoches, Red River, Sabine, Union, Webster and Winn are considered part of the 3-state Ark-La-Tex region. <https://en.wikipedia.org/wiki/Ark-La-Tex>.

²¹ Lafayette, Acadia, Iberia, St. Landry, St. Martin, Vermilion, Evangeline and St. Mary are the “Cajun Heartland,” which makes up about a third of the entire Acadiana region. *See n. 14, supra*.

²² The North Shore parishes are Tangipahoa and St. Tammany.

²³ The three River Parishes are St. Charles, St. James, and St. John the Baptist. https://en.wikipedia.org/wiki/River_Parishes

Figure 3: 2020 Black Population by Planning District



30. A comparison of the **Figure 2** and **Figure 3** maps reveals that the regional planning district boundaries are often not congruent with cultural regional boundaries or with MSA boundaries (depicted *infra* in **Figure 9**).

31. **Figure 4** presents the 2020 population by race and ethnicity for the eight planning and development districts.

**Figure 4: Planning and Development Districts – 2020 Census
Population by Race and Ethnicity**

	Planning District	Population	Latino	NH White	AP Black	% AP Black	% Minority	% NH White
PD-1	New Orleans Area	1,156,627	139,164	558,843	401,566	34.7%	51.68%	48.32%
PD-2	Capital Region	1,028,150	62,922	562,770	363,101	35.3%	45.26%	54.74%
PD-3	South Central	392,800	26,243	235,411	110,099	28.0%	40.07%	59.93%
PD-4	Acadiana	593,274	29,010	374,488	170,358	28.7%	36.88%	63.12%
PD-5	Imperial Calcasieu	313,951	15,479	211,324	74,487	23.7%	32.69%	67.31%
PD-6	Kisatchie-Delta	296,774	15,581	187,492	80,485	27.1%	36.82%	63.18%
PD-7	NW Development Corp.	573,210	24,900	295,920	228,523	39.9%	48.37%	51.63%
PD-8	North Delta	302,971	9,250	170,454	114,500	37.8%	43.74%	56.26%

C. Decennial Census – Statewide Voting Age Population – 2000 to 2020

32. Figure 5 reports the statewide voting age population (“VAP”) by race and ethnicity for 2000 to 2020.

33. Reflecting a younger and growing population, the statewide 2020 BVAP is 31.25% (1.88 points lower than the overall Black population percentage). By contrast, the NH White VAP is 58.31% (2.56 points higher than the corresponding percentage for the overall NH White population).

34. As shown in Figure 5, the statewide BVAP increased from 29.95% in 2000 to 31.25% in 2020. During that same time period, the NH White VAP dropped about seven percentage points, from 65.51% in 2000 to 58.31% in 2020.

**Figure 5: Louisiana – 2000 to 2020 Census
Voting Age Population by Race and Ethnicity**

Voting Age	2000	Percent of Voting Age	2010	Percent of Voting Age	2020	Percent of Voting Age
Voting Age Population	3,249,177	100.00%	3,415,357	100.00%	3,570,548	100.00%
NH White*	2,128,485	65.51%	2,147,661	62.88%	2,082,110	58.31%
Total Minority Pop.	1,120,692	34.49%	1,267,696	37.12%	1,488,438	41.69%
Latino	77,083	2.37%	138,091	4.04%	223,662	6.26%
NH Black*	959,622	29.53%	1,019,582	29.85%	1,066,511	29.87%
NH Asian*	39,702	1.22%	53,638	1.57%	67,983	1.90%
NH Hawaiian and Pacific Islander*	800	0.02%	1,152	0.03%	1,322	0.04%
NH Indigenous*	16,315	0.50%	19,952	0.58%	19,531	0.55%
NH Other*	2,803	0.09%	4,526	0.13%	11,524	0.32%
NH Two or More Races	24,367	0.75%	30,755	0.90%	97,905	2.74%
Black (Single-race Black)	965,052	29.70%	1,026,233	30.05%	1,073,754	30.07%
AP Black (Any Part Black)	973,149	29.95%	1,040,701	30.47%	1,115,769	31.25%

* Single-race, non-Hispanic.

D. Citizen Voting Age Population –2021 American Community Survey

35. According to the 1-year 2021 ACS, Any Part Black Louisianans comprise 31.5% of the CVAP, Latinos 3.3%, and NH Whites 60.7%.²⁴ Black CVAP is poised to climb this decade. Of citizens of all ages, 33.2% are AP Black.

²⁴ **Table S2901 -- CITIZEN, VOTING-AGE POPULATION BY SELECTED CHARACTERISTICS** (1-year 2021 ACS)
<https://data.census.gov/table?q=S2901&g=040XX00US22&tid=ACSS1Y2021.S2901>

Public Use Microdata Sample of the 1-Year 2021 ACS

AP Black CVAP:

[https://data.census.gov/mdat/#/search?ds=ACSPUMS1Y2021&vv=AGEP\(18:99\)&cv=RACBLK\(1\),CIT&rv=ucgid&wt=PWGTP&g=0400000US22](https://data.census.gov/mdat/#/search?ds=ACSPUMS1Y2021&vv=AGEP(18:99)&cv=RACBLK(1),CIT&rv=ucgid&wt=PWGTP&g=0400000US22)

AP Black Citizens – all ages:

<https://data.census.gov/mdat/#/search?ds=ACSPUMS1Y2021&vv=AGEP&cv=RACBLK%281>

E. Statewide Population Change by Decade – 2000 to 2020

36. As shown in **Figure 6**, Louisiana’s population grew between 2000 and 2020 (blue shaded rows) —up 4.22% from 4.47 million to 4.66 million.

**Figure 6: Louisiana – 2000 to 2020 Census
Population Change by Race**

	Total Pop.	NH White	Total Minority	AP Black
2000 Census	4,468,976	2,794,391	1,674,585	1,468,317
2010 Census	4,533,372	2,734,884	1,798,488	1,486,885
2020 Census	4,657,757	2,596,702	2,061,055	1,543,119
2000 - 2010 Gain/Loss	64,396	-59,507	123,903	18,568
% 2000 - 2010 Gain/Loss	1.44%	-2.13%	7.40%	1.26%
% of Statewide 2000 - 2010 Gain	100.0%	Net loss	192.4%	28.8%
2010 to 2020 Gain/Loss	124,385	-138,182	262,567	56,234
% 2010 to 2020 Gain/Loss	2.74%	-5.05%	14.60%	3.78%
% of Statewide 2010 - 2020 Gain	100%	Net loss	211.09%	45.21%
2000 to 2020 Gain/Loss	188,781	-197,689	386,470	74,802
% 2000 to 2020 Gain/Loss	4.42%	-7.07%	23.08%	5.09%
% of Statewide 2000 - 2020 Gain	100%	Net loss	204.7%	39.6%

37. The statewide population growth between 2000 and 2020 can be attributed entirely to a 23.08% gain in the minority population. Over the two decades, the Black population increased by 5.09%, while the NH White population fell by 7.07%.

F. The Rural to Urban Shift – MSA Population Change – 2000 to 2020

38. The table in **Figure 7** shows population change between 2000 and 2020 by MSA and the statewide non-metro remainder.²⁵ For reference, **Exhibit D** is a Census Bureau-produced map depicting the nine MSAs in Louisiana.

39. All told, in this century, the MSAs have grown by 233,382 persons (equivalent to about two Senate districts and five House districts), while non-metro/rural areas of the state lost 44,601 persons (equivalent to about one House district).

Figure 7: Louisiana by MSA Region – 2000 to 2020 Population Change

MSA/Region (# of parishes)	2000 Pop.	2010 Pop.	2020 Pop.	Pop. Change (2000- 2020)	% Pop. Change (2000- 2020)
Alexandria (2)	145,035	153,922	152,192	7,157	4.93%
Baton Rouge (10)	729,361	825,905	870,569	141,208	19.36%
Hammond (1)	100,588	121,097	133,157	32,569	32.38%
Houma-Thibodaux (2)	194,477	208,178	207,137	12,660	6.51%
Lafayette (4)	425,020	466,750	478,384	53,364	12.56%
Lake Charles (2)	193,568	199,607	222,402	28,834	14.90%
Monroe (3)	201,074	204,420	207,104	6,030	3.00%
New Orleans-Metairie (8)	1,337,726	1,189,866	1,271,845	-65,881	-4.92%
Shreveport-Bossier City (3)	375,965	398,604	393,406	17,441	4.64%
Subtotal MSA	3,702,814	3,768,349	3,936,196	233,382	6.30%
Non-MSA Remainder	766,162	765,023	721,561	-44,601	-5.82%
Statewide	4,468,976	4,533,372	4,657,757	188,781	9.45%

²⁵ Metropolitan Statistical Areas are defined by the U.S. Office of Management and Budget and reported in historical and current census data produced by the Census Bureau. MSAs “consist of the county or counties (or equivalent entities) associated with at least one urbanized area of at least 50,000 population, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties.” Source: https://www.census.gov/geo/reference/gtc/gtc_cbsa.html.

The population figures in **Figure 5** are adjusted to reflect boundaries conforming to the current 2020 MSA boundaries. In 2015, St. James Parish was added to the New Orleans MSA and Hammond (Tangipahoa Parish) became a newly defined MSA.

40. Baton Rouge (+141,208) accounts for more than half of the total 2000-2020 population gain in the MSAs. The New Orleans MSA has yet to recover to pre-Katrina population levels and is the only MSA that lost population (-65,881) over the two decades.

41. As shown in **Figure 8**, between 2000 and 2020, Black population at the MSA-level grew in eight of the nine MSAs. The exception is the New Orleans MSA. But the 2000-2010 New Orleans losses are reversing, The 2020 Census reported that the New Orleans MSA has gained 32,272 Black persons and 81,979 persons overall since the 2010 Census.

Figure 8: Louisiana by MSA Region – 2000 to 2020 Black Population Change

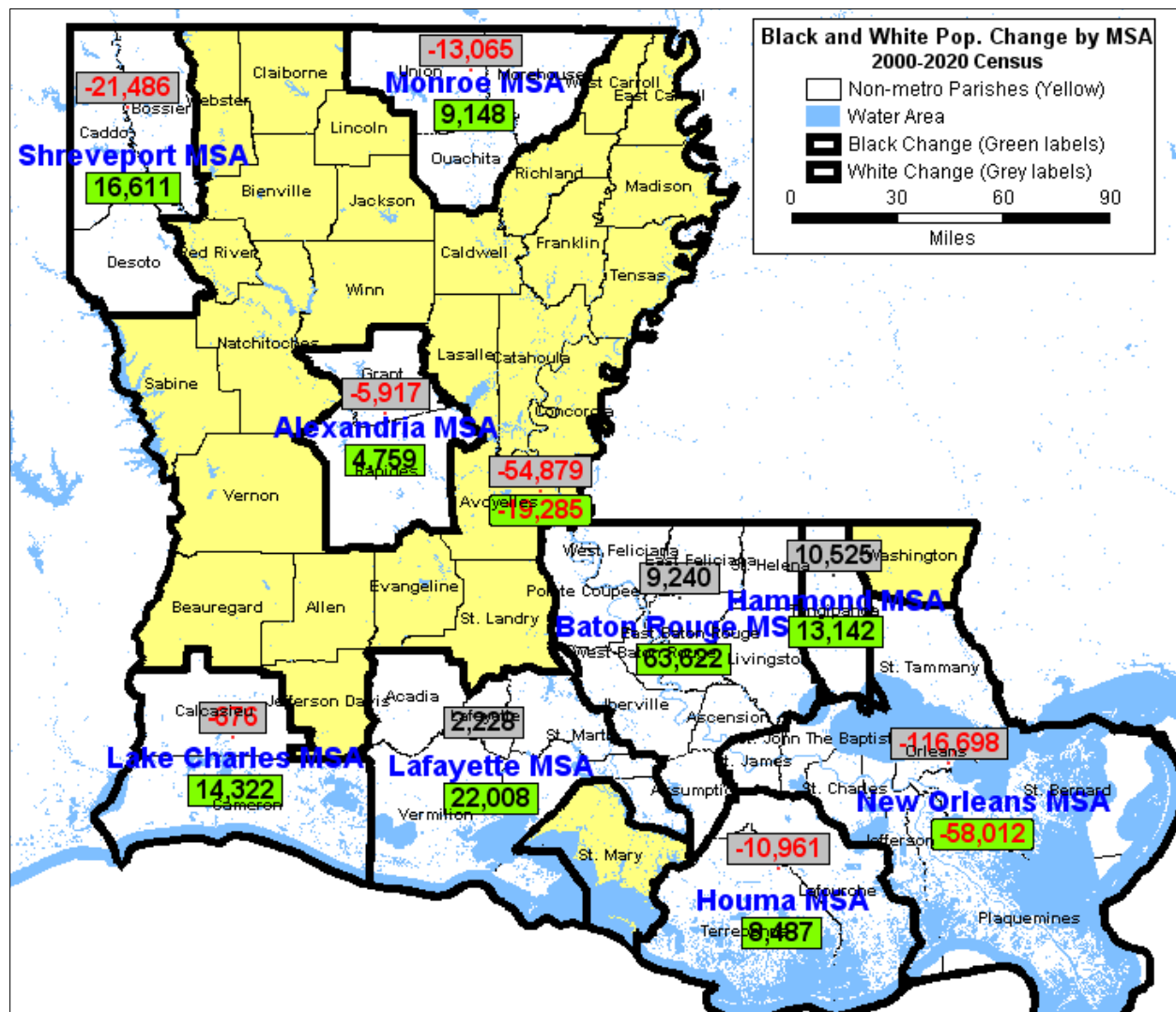
MSA/Region (# of Parishes)	2000 Black	2010 Black	2020 Black	Black Change (2000- 2020)	% Black Change (2000- 2020)
Alexandria (2)	41,168	46,752	45,927	4,759	11.56%
Baton Rouge (10)	250,386	297,951	314,008	63,622	25.41%
Hammond (1)	28,737	37,381	41,879	13,142	45.73%
Houma-Thibodaux (2)	30,515	35,435	39,002	8,487	27.81%
Lafayette (4)	103,279	119,699	125,287	22,008	21.31%
Lake Charles (2)	45,189	49,960	59,511	14,322	31.69%
Monroe (3)	69,777	76,717	78,925	9,148	13.11%
New Orleans-Metairie (8)	508,464	418,180	450,452	-58,012	11.41%
Shreveport-Bossier City (3)	145,217	158,435	161,828	16,611	11.44%
Subtotal MSA	1,222,732	1,240,510	1,316,819	94,087	7.69%
Non-MSA Remainder	245,585	246,375	226,300	-19,285	-7.85%
Statewide	1,468,317	1,486,885	1,543,119	74,802	5.09%

42. Rural non-metro parishes lost Black population (-19,285) between 2000 and 2020, reflecting a rural-to-urban shift as the Black population grew by 94,087 persons at the MSA-level.

43. In contrast to 2000-2020 Black population growth at the MSA level, the map in **Figure 9** and table in **Figure 10** paint a different regional pattern for the White population over the two decades.

44. Black lines on the **Figure 9** map delineate the boundaries of the nine MSAs. Green labels show Black population change by MSA between 2000 and 2020. Grey labels show White population change between 2000 and 2020. Red fonts indicate population loss. Non-MSA parishes are shaded yellow.

Figure 9: MSA-level Black vs. White Population Change 2000-2020



45. As detailed in the **Figure 10** table, between 2000 and 2020, the White population fell in six of the nine MSAs for a net loss of 201,689 persons (equivalent to almost two Senate districts and five House districts). Over the two decades, the White population fell (-116,698) in

the New Orleans MSA, with an incremental loss between 2010 and 2020 (-24,540), even as the New Orleans MSA Black population grew in the past decade.²⁶

Figure 10: Louisiana by MSA – 2000 to 2020 NH White Population Change

MSA/Region (# of Parishes)	2000 NH White	2010 NH White	2020 NH White	NH White Change (2000- 2020)	% NH White Change (2000- 2020)
Alexandria (2)	98,918	98,984	93,001	-5,917	-5.98%
Baton Rouge (10)	453,697	480,750	466,937	13,240	2.92%
Hammond (1)	69,300	77,807	79,825	10,525	15.19%
Houma-Thibodaux (2)	150,485	151,869	139,524	-10,961	-7.28%
Lafayette (4)	307,873	322,165	310,101	2,228	0.72%
Lake Charles (2)	142,960	140,168	142,284	-676	-0.47%
Monroe (3)	127,000	121,222	113,935	-13,065	10.29%
New Orleans-Metairie (8)	731,514	639,356	614,816	-116,698	-5.95%
Shreveport-Bossier City (3)	217,317	218,052	195,831	-21,486	-9.89%
Subtotal MSA	2,299,064	2,250,373	2,156,254	-142,810	-6.21%
Non-MSA Remainder	495,327	484,511	440,448	-54,879	11.08%
Statewide	2,794,391	2,734,884	2,596,702	-197,689	-7.07%
Baton Rouge (adjusting for 2020 Census Angola prison count error) - 4,000 NH white estimate			462,937	9,240	2.04%
Statewide (adjusted)			2,592,702	-201,689	-7.22%

46. White population gains between 2000 and 2020 were recorded in the MSAs of Baton Rouge, Lafayette, and Hammond, but the Black population increased at a much faster pace in the Baton Rouge and Lafayette areas.

²⁶ As shown in yellow highlights in **Figure 10**, after adjusting for a clear 2020 Census error involving Angola prison in West Feliciana Parish – not yet corrected by the Census Bureau – White population grew by an estimated 9,240 persons in the Baton Rouge MSA. Under the 2020 Census, there are 5,429 persons (4,095 NH White) assigned to the three prison census blocks, of whom 5,265 are incarcerated. In all likelihood, the Census Bureau has mismatched the NH White and Black prison population in the prison blocks.

47. After accounting for the Angola prison error, the statewide MSA-level White population was down by -7.22% between 2000 and 2020, while the MSA-level Black population grew at a 7.69% clip. Both groups experienced substantial losses in non-metro population over the 20-year time frame – but the non-metro -11.08% White loss was steeper than the -7.85% loss for the Black population.²⁷

48. The combined impact of the 2000 to 2020 rural-to-urban Black population shift (**Figure 8** and **Figure 9**) and Black population gains vis-à-vis White population losses (**Figure 9** and **Figure 10**) in the MSAs makes it possible to draw additional majority-Black legislative districts that were not drawn in the 2022 Plan (see Illustrative Legislative Plan in **Section VI** and **VII** *infra*).

III. SOCIOECONOMIC PROFILE OF LOUISIANA

49. Non-Hispanic Whites significantly outpace African Americans in Louisiana across a broad range of socioeconomic measures, as reported in the 1-year 2019 ACS.²⁸ This disparity is summarized below and depicted with further detail in charts in **Exhibit E-1** and the

²⁷ For simplicity and consistency with the current uncorrected 2020 Census data, other than references to the **Figure 9** map and **Figure 10** table, I have made no adjustments to the 2020 Census elsewhere in this declaration – including election plan district statistics.

²⁸ See Selected Population Profile in the United States, U.S. Census Bureau, <https://data.census.gov/cedsci/table?text=s0201&t=-0A%20-%20All%20available%20non-Hispanic%20Origin%3A005%20-%20Black%20or%20African%20American%20alone%20or%20in%20combination%20with%20one%20or%20more%20other%20races&g=0400000US01%245000000,22&y=2019>

The 1-year 2019 ACS is the last year before the 2020-2021 period impacted by the COVID-19 pandemic. The 2020 ACS was canceled due to the pandemic.

table in **Exhibit E-2**.²⁹

A. Income

- 29.4% of African Americans in Louisiana live in poverty, compared to 12.7% of Whites. (**Exhibit E-1 at p. 22 and Exhibit E-2 at p. 8**)
- 42.7% of African-American children live in poverty, compared to 15.0% of White children. (**Exhibit E-1 at p. 22 and Exhibit E-2 at p. 8**)
- African-American median household income is \$32,782, compared to the \$61,967 median income for White households. (**Exhibit E-1 at p. 14 and Exhibit E-2 at p. 7**)
- Per capita income disparities in Louisiana track the disparities seen in median household income. African-American per capita income is \$19,381, compared to White per capita income of \$34,690. (**Exhibit E-1 at p. 17 and Exhibit E-2 at p. 8**)
- 27.0% of African-American households rely on food stamps (SNAP), triple the 8.6% SNAP participation rate of White households. (**Exhibit E-1 at p. 15 and Exhibit E-2 at p. 7**)

B. Education

- Of persons 25 years of age and over, 17.8% of African Americans have not finished high school, compared to 11.1% of their White counterparts. (**Exhibit E-1 at p. 5 and Exhibit E-2 at p. 3**)
- At the other end of the educational scale, for ages 25 and over, 17.2% of African Americans have a bachelor's degree or higher, compared to 28.9% of Whites. (**Exhibit E-1 at p. 5 and Exhibit E-2 at p. 3**)

C. Employment

- The Black unemployment rate (for the population over 16, expressed as a percent of the civilian labor force) is 8.0%, compared to a 4.2% White unemployment rate. (**Exhibit E-1 at p. 11 and Exhibit E-2 at p. 5**)
- Of employed African Americans, 26.5% are in management or professional occupations, compared to 40.4% rate of Whites. (**Exhibit E-1 at p. 13 and Exhibit E-2 at p. 6**)

²⁹ For statistics from the 1-year ACS, as elsewhere in this declaration, “White” refers to NH White. “Black” or “African American” refers to Any Part Black.

D. Housing

- In Louisiana, about half of African-American householders (49.0%) are homeowners, while three-fourths of White households (76.6%) are owner-occupied. (**Exhibit E-1 at p. 21 and Exhibit E-2 at p. 9**)
- Median home value for African-American homeowners is \$133,000, compared to the \$186,700 median home value for Whites. (**Exhibit E-1 at p. 25 and Exhibit E-2 at p. 10**)

E. Transportation/Communication

- About one in six African-American households (16.4%) lacks access to a vehicle, while 4.7% of White households are without a vehicle. (**Exhibit E-1 at p. 23 and Exhibit E-2 at p. 9**)
- There is a 7-point Black-White gap in households with a computer – 84.3% versus 91.6%. (**Exhibit E-1 at p. 27 and Exhibit E-2 at p. 10**)
- With respect to broadband internet connections, African-American households trail White households – 72.6% versus 84.3%. (**Exhibit E-1 at p. 27 and Exhibit E-2 at p. 10**)

50. Also attached as exhibits are charts depicting socioeconomic disparities in the Baton Rouge MSA (**Exhibit F**) and New Orleans MSA (**Exhibit G**), which contain two of the three additional illustrative majority-Black Senate districts and three of six additional illustrative majority-Black House districts. Both exhibits are based on the 1-year 2019 ACS.

51. In addition, I have prepared socioeconomic contrast charts by race and ethnicity for all parishes, municipalities, and unincorporated places with populations greater than 2,500 (and 10% or more SR Black), available via the link below.³⁰

http://www.fairdata2000.com/ACS_2015_19/Louisiana/

52. The 5-year 2015-2019 charts make clear that the statewide and MSA-level disparities by race are also present at the parish and municipal level in all of the majority-Black

³⁰ These charts are from the 5-year 2015-2019 ACS. The 5-year ACS reports estimates only for single-race Black (including Hispanic Black). The charts and data tables I have prepared also report corresponding estimates for the Latino and NH White population.

Illustrative Senate and House districts. Louisiana’s Black population is a community of interest with a shared culture and history that transcends even the clear contemporary socioeconomic disparities that exist across the state vis-à-vis the White population.

IV. LEGISLATIVE PLANS – 1990s BENCHMARK TO 2022

A. Majority-Black Districts – 1990s Benchmark to 2022

53. As shown in **Figure 11**, at the start of the 21st century, there were 26 majority-Black House districts and 10 majority-Black Senate districts in Louisiana, based on the 1990s Legislative Plan and according to the 2000 Census.

54. After the Census 2000 legislative redistricting, there were 27 majority-Black House districts and 9 majority-Black Senate districts. On balance, this was a backward step because a majority-Black Senate seat was removed (from 10 to 9) and replaced with a majority Black House district (from 26 to 27).

**Figure 11: Number of Majority-Black Legislative Districts
By Plan – 1990s to 2020s**

Decennial Census	Legislative Plan	Statewide Majority-Black Senate Districts	Statewide Majority-Black House Districts
2000	1990	10	26
2000	2001	9	27
2010	2001	9	23
2010	2011	11	28
2020	2011	10	28
2020	2022	11	29

55. By 2010, the number of majority-Black House districts under the 2000 Plan had dropped to 23 – due in large part to residential dislocations in the New Orleans area caused by Katrina. The 2011 Legislative Plan brought the number of majority-Black Senate districts back to 11, with 28 majority-Black House districts.

56. There were 11 majority-Black districts under the 2011 Senate Plan (2010 Census) and there are 11 under the 2022 Senate Plan. The 2022 Senate Plan restores SD 5 to the majority-Black status it held based on the 2010 Census. Between 2010 and 2020, SD 5 dropped from 50.1% BVAP to 43% BVAP.

57. On the other hand, the 2022 House Plan adds one majority Black House district – up to 29 from 28 under the 2011 House Plan. The new 2022 House district is HD 62 in the Baton Rouge MSA, encompassing part of East Baton Rouge Parish, as well as all of East Feliciana Parish.

58. All told, since 2000, one majority-Black Senate district (compared to the 1990 Senate Plan) and two majority-Black House districts (compared to the 2000 House Plan) have been added. Still, this is a paltry increase given the more than 7% statewide decline in the NH White population and the 5.09% climb in the Black population over the same 20-year period.

B. Demographics of Majority-Black and Majority-White Districts

59. As **Figure 12** reveals, despite the major changes in the composition of the State’s population over the past two decades, the percentage of Black Louisianans of voting age residing in majority-Black legislative districts has hovered around 50% – except for the 2000s when the Black VAP dropped to the 40% range in both chambers under the 2001 Legislative Plan.

**Figure 12: Same Race VAP in Majority-Black and Majority-White Districts
1990s to 2022 Legislative Plans**

Decennial Census	Legislative Plan	Black VAP in Majority Black Senate Districts	NH White VAP in Majority White Senate Districts	Black VAP in Majority Black House Districts	NH White VAP in Majority White House Districts
2000	1990s	47.8%	88.4%	50.6%	90.3%
2000	2001	39.8%	86.7%	47.9%	87.8%
2010	2001	39.0%	88.7%	42.6%	86.9%
2010	2011	53.2%	84.3%	55.1%	85.2%
2020	2011	47.0%	82.3%	53.8%	85.3%
2020	2022	53.6%	84.4%	55.6%	83.4%

60. By contrast, the percentage of the White VAP in majority-White districts has remained in the mid- 80s over the same timeframe. This huge-30 point White-to-Black majority-district residency gap indicates that Black populations have been disproportionately “cracked”³¹ into majority-White districts, “packed”³² into overwhelmingly majority-Black districts, or both.

C. 2022 Senate Plan

61. **Exhibit H-1** contains detailed 2020 population statistics by district for the 2022 Senate. The map in **Exhibit H-2** is a statewide map of the 2022 Senate (best viewed or printed at 200%). **Exhibit H-3** identifies parish-level population by district. **Exhibit H-4** identifies district splits by parish and VTD. **Exhibit H-5** identifies municipal splits by district.

62. To facilitate comparison with the Illustrative Senate Plan, I have prepared several sets of more detailed maps. For ease of reference and complete visual coverage, regional maps

³¹ “Cracking” describes election districts that fragment or divide the minority population, resulting in an overall dilution of minority voting strength in the voting plan.

³² “Packing” describes election districts where a minority population is unnecessarily concentrated, resulting in an overall dilution of minority voting strength in the voting plan

accompanying the 2022 Senate (**Exhibit H-6**) are organized by planning district (“PD”) number (from PD 1 to PD 8 – see **Figure 2** *supra*).

63. Exhibit H-7 contains maps in sequential order that zoom in on each of the 11 majority-Black 2022 Senate districts.

64. MSAs are identified in all of the maps with bold black lines. Parish lines are shown with dotted grey lines. Blue labels identify majority-Black districts.

D. 2022 House Plan

65. Maps and statistics for the 2022 House are organized in the same fashion as the 2022 Senate.

66. Exhibit I-1 contains detailed 2020 population statistics by district for the 2022 House. The map in **Exhibit I-2** is a statewide map of the 2022 House (best viewed or printed at 200%). **Exhibit I-3** identifies parish-level population by district. **Exhibit I-4** identifies district splits by parish and VTD. **Exhibit I-5** identifies municipal splits by district.

67. Exhibit I-6 contains maps zooming on the eight regional planning districts (from PD 1 to PD 8). **Exhibit I-7** contains maps in sequential order that zoom in on each of the 29 majority-Black House districts.

68. MSAs are identified in all of the maps with bold black lines. Parish lines are shown with dotted grey lines. Blue labels identify majority-Black districts.

V. REDISTRICTING GUIDELINES

A. Traditional Redistricting Principles

69. I applied traditional redistricting principles – one-person one-vote, compactness, contiguity, the non-dilution of minority voting strength, and preservation of communities of interest – when drafting the Illustrative Legislative Plan (one for the Senate and one for the House). I also

took into account incumbent addresses which may factor into the overall framework of community of interest. I relied on incumbent addresses of legislators as geocoded in a 2022 database prepared by the analytics staff of the National ACLU. Based on the ACLU's 2022 database, no term-eligible incumbents are paired under the Illustrative Plans.

70. The illustrative plans are drawn to follow, to the extent possible, parish and municipal boundaries. Where parishes and municipalities are split, I have generally used whole 2020 VTDs as sub-parish components.³³ Where VTDs are split, I have followed municipal boundaries, census block group boundaries, or census block boundaries.

B. Joint Rule No. 21 Redistricting Criteria

71. I have reviewed the Legislature's Census 2020 redistricting criteria as embodied in the Legislature's Joint Rule No. 21 "Redistricting criteria" ("JR 21").³⁴ In my opinion, the illustrative plans comply with JR 21, specifically with respect to the following:

- *Sec. G(1) – To the extent practicable, each district within a redistricting plan submitted for consideration shall contain whole election precincts as those are represented as Voting Districts (VTDs).*
- *Sec. H – All redistricting plans shall respect the established boundaries of parishes, municipalities, and other political subdivisions and natural geography of this state to the extent practicable. However, this criterion is subordinate to and shall not be used to undermine the maintenance of communities of interest within the same district to the extent practicable.*

72. JR 21 does not stipulate a range for deviations from the ideal district size in the Legislative Plan. Accordingly, I followed the Legislature's lead and drew all illustrative districts

³³ VTDs are 2020 precincts or precinct proxies defined by the Census Bureau in the PL94-171 redistricting file, with corresponding geographic shapefiles.

³⁴ See Joint Rule No. 21, <https://www.legis.la.gov/Legis/Law.aspx?d=1238755>.

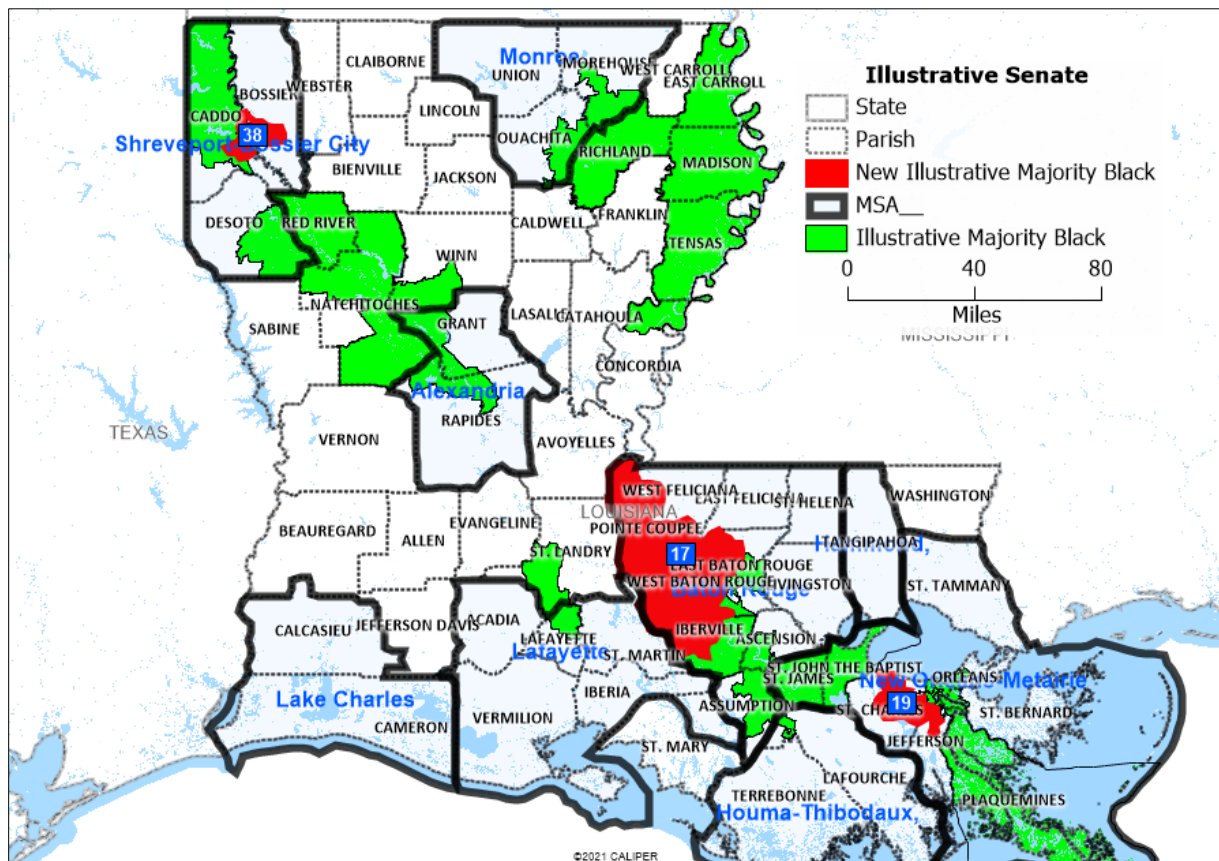
so that they fall within a +/- 5% deviation from the ideal district population size (119,430 for the Senate and 44,360 for the House).

VI. ILLUSTRATIVE SENATE PLAN

A. Illustrative Senate Plan – Overview

73. The map in **Figure 13** displays three additional majority Black districts (outlined in red with small blue labels) in the Illustrative Senate – **Illustrative SD 38**-Shreveport-Bossier City MSA, **Illustrative SD 17** --Baton Rouge MSA, and **Illustrative SD 19** -New Orleans MSA. All three of the additional majority-Black districts are urban-centric and more compact than their 2022 Senate counterparts.

Figure 13: Location of 3 Additional Majority-Black Districts in Illustrative Senate Plan



74. Green areas on the **Figure 13** map represent other majority-Black districts in the Illustrative Senate that generally encompass areas within majority-Black districts under the 2022 Senate. All told, the Illustrative Plan modifies in some fashion 35 of the 39 Senate districts in the 2022 Plan. SD 11, 12, 16, and 37 are not changed. Put differently, a core population³⁵ representing 74.2% of the state's population is kept together in the redraw from the 2022 Senate Plan to the Illustrative Senate Plan. (See **Exhibit L-2** *infra*.) By comparison, 80.2% of the state's population was kept together in the redraw from the Benchmark 2011 Plan to the 2022 Senate Plan. (See **Exhibit L-4** *infra*.)

75. As documented in charts and datasets from the American Community Survey (see **Section III**), Black persons in Illustrative SD 38, SD 17, and SD 19 are a community of interest based on socio-economic characteristics and racial disparities at the parish and municipal levels.

76. Illustrative SD 17 and Illustrative SD 19 also encompass a 4-district community of interest in the Illustrative Senate Plan. These two districts anchor the north and south ends of Louisiana's Chemical Corridor (aka "Cancer Alley"), with majority-Black Illustrative SD 2 and Illustrative SD 14 sandwiched in-between.

77. Maps and statistics for the Illustrative Senate are organized in the same fashion as the 2022 Senate (*supra*).

78. **Exhibit J-1** contains detailed 2020 population statistics by district for the Illustrative Senate. The map in **Exhibit J-2** is a statewide map of the Illustrative Senate (best

³⁵ I define "core population" as the largest district-level subset of a population that is kept together in the shift from one plan to another (without taking into account changes in district numbers or changes in incumbent representation). The core population is identified with shading in the referenced tabular exhibits.

viewed or printed at 200%). **Exhibit J-3** identifies parish-level population by district. **Exhibit J-4** identifies district splits by parish and VTD. **Exhibit J-5** identifies municipal splits by district.

79. To facilitate comparison with the 2022 Senate, I have prepared several sets of more detailed maps. For ease of reference and complete visual coverage, regional maps accompanying the 2022 Senate (**Exhibit J-6**) are organized by planning district (PD 1 to PD 8 – see **Figure 2**, *supra*)).

80. **Exhibit J-7** contains maps in sequential order that zoom in on each of the 14 majority-Black Senate districts. MSAs are identified in all of the Exhibit J series maps with bold black lines and blue labels. Parish lines are shown with dotted grey lines.

81. The link below is a statewide interactive map depicting the Illustrative Senate Plan color-coded in the same fashion as the **Exhibit J** series. The map is address-searchable. A thin purple- line overlay depicting the 2022 Plan Senate boundaries can be clicked on and off via the legend in the top left corner of the map.³⁶

<https://online.caliper.com/mas-874-drp-290-ujr/maps/lixf8aj00js4k78e8z6>

Alternatively, the Illustrative Senate Plan can also be viewed and analyzed on the Dave's Redistricting website at the following link:

<https://davesredistricting.org/join/fdcf5b8e-7661-4390-9060-264b6e44ce37>

For comparison, the 2022 Senate Plan can be viewed and analyzed on the Dave's Redistricting website at the following link:

<https://davesredistricting.org/maps#viewmap::12eedba5-68de-4ab4-a3bb-7f59d9268041>

³⁶ For additional population stats (county and place), click anywhere on the map. Click on the column headings in the sidebar legend to view available population data at the clicked point.

B. Senate Plan Metrics – Illustrative vs. 2022

i. Compactness Measures

82. The districts in the Illustrative Senate Plan are reasonably shaped and compact. **Exhibit K-1** reports district-by-district compactness scores generated by Maptitude for the 2022 Senate. Compactness scores for the Illustrative Senate are in **Exhibit K-2**.

83. Each exhibit reports three compactness scores: Reock, Polsby-Popper, and Convex Area/Hull.³⁷ Higher scores indicate higher compactness.

84. The table in **Figure 14** summarizes the Reock and Polsby-Popper scores (the two most commonly referenced measures) for the 2022 Senate, alongside scores for the Illustrative Plan.

85. The higher scores are in boldface. The Illustrative Senate Plan scores higher on all of the 12 categories (mean, lowest, and highest).

³⁷ “The Reock test is an area-based measure that compares each district to a circle, which is considered to be the most compact shape possible. For each district, the Reock test computes the ratio of the area of the district to the area of the minimum enclosing circle for the district. The measure is always between 0 and 1, with 1 being the most compact. The Reock test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan.” *Maptitude For Redistricting* software documentation (authored by the Caliper Corporation).

The Polsby-Popper test computes the ratio of the district area to the area of a circle with the same perimeter: $4\pi \text{Area} / (\text{Perimeter}^2)$. The measure is always between 0 and 1, with 1 being the most compact. The Polsby-Popper test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan. *Id.*

The Area/Convex Hull test computes the ratio the district area to the area of the convex hull of the district (minimum convex polygon which completely contains the district). The measure is always between 0 and 1, with 1 being the most compact. The Minimum Convex Polygon test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan. *Id.*

Figure 14: Compactness Scores – 2022 Senate vs. Illustrative Senate Plan

	Reock				Polsby-Popper		
	Mean	Low	High		Mean	Low	High
2022 Senate							
All Districts	.36	.11	.59		.18	.05	.35
11 Majority-Black Districts	.28	.11	.37		.14	.05	.29
Illustrative Senate Plan							
All Districts	.37	.19	.59		.22	.07	.36
14 Majority-Black Districts	.32	.19	.43		.20	.07	.36

ii. Political Subdivision Splits

86. The table in **Figure 15** compares district splits by parish and 2020 VTD for the 2022 Senate (*see Exhibit H-4*) and the Illustrative Senate Plan (*see Exhibit J-4*). Municipal split counts are in **Exhibit H-5** for the 2022 Plan and **Exhibit J-5** for the Illustrative Plan.

Figure 15: Political Subdivision Splits (excluding unpopulated areas)

	Parishes not Split	Total Parish Splits (lower is better)	2020 VTD Splits (lower is better)	Municipalities Not Split	Total Municipal Splits (lower is better)
2022 Senate	24	81	1	266	107
Illustrative Senate	32	65	9	270	87

87. As **Figure 15** reveals, the Illustrative Senate is superior to the 2022 Senate in terms of parish splits and municipal splits. The Illustrative Senate keeps 32 parishes whole, with 65 unique parish-district combinations. The 2022 Senate keeps just 24 parishes whole, with 81 unique parish-district combinations – 16 more parish splits than the Illustrative Senate. The Illustrative

Senate splits populated areas³⁸ in nine of the 3,540 VTDs, compared to two in the 2022 Senate.³⁹ Six of the VTD splits in the Illustrative Senate are in the Parishes of Natchitoches and Winn, smoothing out very odd-shaped precinct lines found in SD 29 under the 2022 Senate. The Illustrative Senate Plan keeps 270 municipalities whole, with 87 municipal splits (unique municipal-district combinations), which is better than the comparable municipal split count of 107 under the 2022 Senate.

iii. Senate Districts -- Majority-Black and Majority-White Comparison

88. As shown in **Figure 16** (see **Figure 12**, *supra*, for historical comparisons), with three additional majority-Black Senate districts, the percentage of the Black VAP residing in majority Black Senate districts moves closer to parity with the White VAP, but there is still a 17 percentage point gap.

³⁸ A populated split divides population in a VTD or municipality into two or more districts. Generally, unpopulated splits involve splits due to bodies of waters or municipal boundaries.

³⁹ Precinct boundaries are in a constant state of flux in Louisiana. It is common for precinct boundaries to be changed in Louisiana and most other states.

In the 2020 PL-94-171 file there are 3,540 VTDs, compared to 3,671 VTDs in the 2010 PL-94-171 file. In 2017, there were 3,710 VTDs. Source: https://redist.legis.la.gov/default_ShapeFiles2020.

**Figure 16: Same Race VAP in Majority-Black and Majority-White Districts
Statewide 2022 Senate and Illustrative Senate**

Legislative Plan	2020 Black VAP in Majority Black Senate Districts	2020 NH White VAP in Majority White Senate Districts	Statewide Difference
2022 Senate	53.6%	84.4%	-30.8%
Illustrative Senate	60.6%	77.9%	-17.3%

89. As revealed in **Figure 17**, in the three MSAs where additional districts are created under the Illustrative Senate, the percentage of the Black VAP residing in majority Black Senate districts does not exceed the statewide 84.4% White benchmark ceiling under the 2022 Senate Plan – Baton Rouge (73.5%), New Orleans (79.5%), and Shreveport (83.7%).

90. And in those same three MSAs, the NH White VAP residing in majority White districts is above the statewide 53.6% Black benchmark floor under the 2022 Senate Plan – Baton Rouge (70.5%), New Orleans (66.5%) and Shreveport (54.9%).

**Figure 17: Same Race VAP in Majority-Black and Majority-White Districts
Regional MSA-level – 2022 Senate and Illustrative Senate**

MSA/Region (# of parishes)	2020 Black VAP in Majority Black 2022	2020 White VAP in Majority White 2022	2020 Black VAP in Majority Black Illustrative	2020 White VAP in Majority White Illustrative
Alexandria (2)	79.0%	74.4%	75.6%	75.0%
Baton Rouge (10)	63.9%	83.3%	73.5%	70.5%
Hammond (1)	0.0%	100.0%	0.0%	100.0%
Houma-Thibodaux (2)	17.4%	94.3%	17.8%	93.7%
Lafayette (4)	34.9%	90.0%	32.6%	90.4%
Lake Charles (2)	0.0%	100.0%	0.0%	100.0%
Monroe (3)	64.8%	87.5%	64.8%	87.5%
New Orleans-Metairie (8)	69.6%	74.9%	79.5%	66.5%
Shreveport-Bossier City (3)	51.8%	81.8%	83.7%	54.9%

C. Details on the Additional Majority-Black Districts in the Illustrative Senate

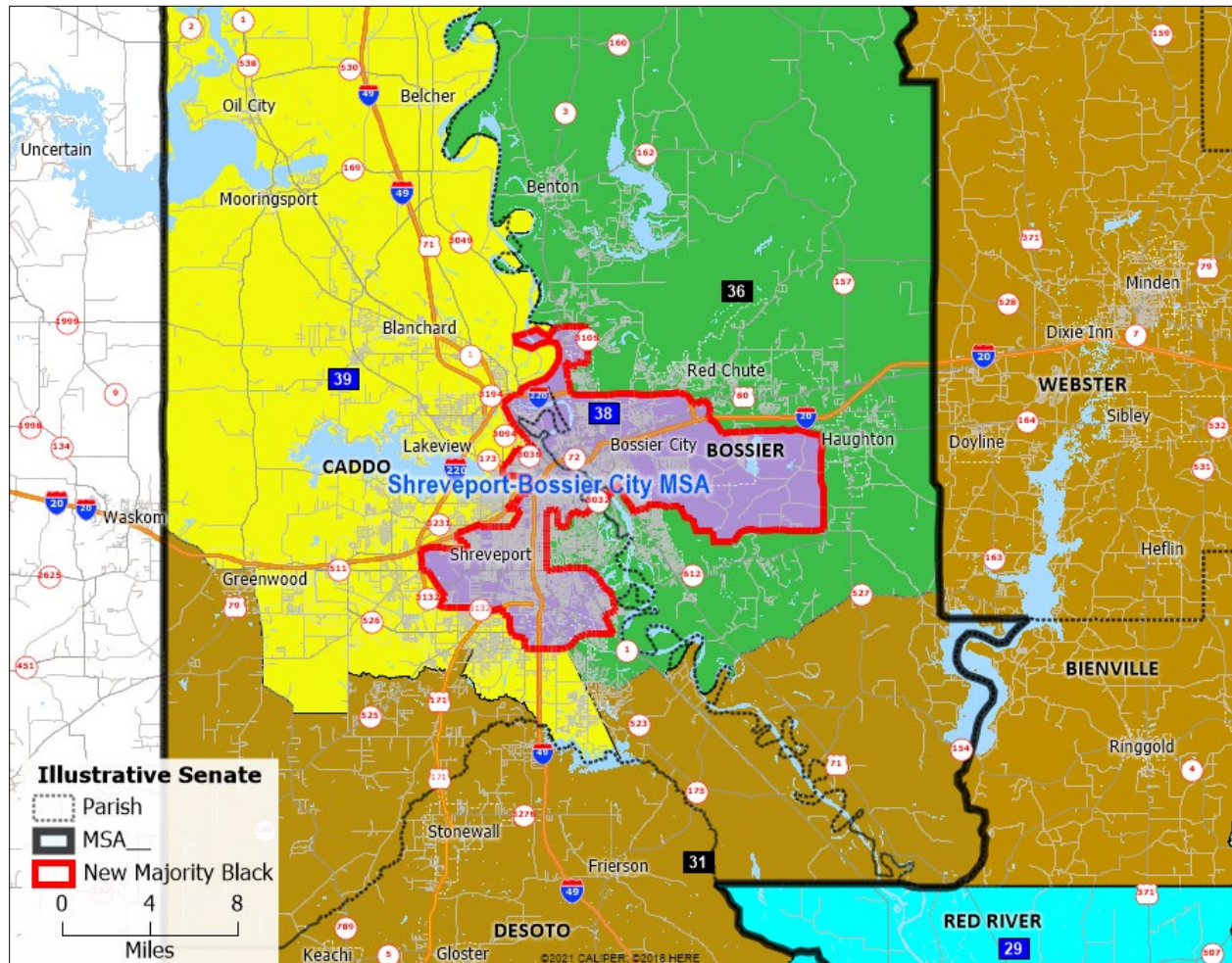
91. The text descriptions of the additional majority-Black Senate districts in the Illustrative Senate Plan set forth below are illustrated with side-by-side comparison map exhibits, depicting the Illustrative Senate and 2022 Senate at the same scale. For higher resolution maps, these side-by-side pairings are also included in exhibits identified in the map titles.

92. To view all municipalities assigned by district in the Illustrative Senate Plan refer to **Exhibit L-1**. To view the Illustrative Senate district core components built from districts in the 2022 Senate refer to **Exhibit L-2** – “Core Constituencies”. To view all municipalities assigned by district in the 2022 Senate Plan refer to **Exhibit L-3**. To view all municipalities assigned by district in the 2022 Senate Plan refer to **Exhibit L-4**.

i. Illustrative Senate District 38

93. Illustrative majority-Black SD 38 (outlined in red in **Figure 18** and **Figure 19**) is an additional majority-Black district that could be drawn in Bossier and Caddo Parishes.

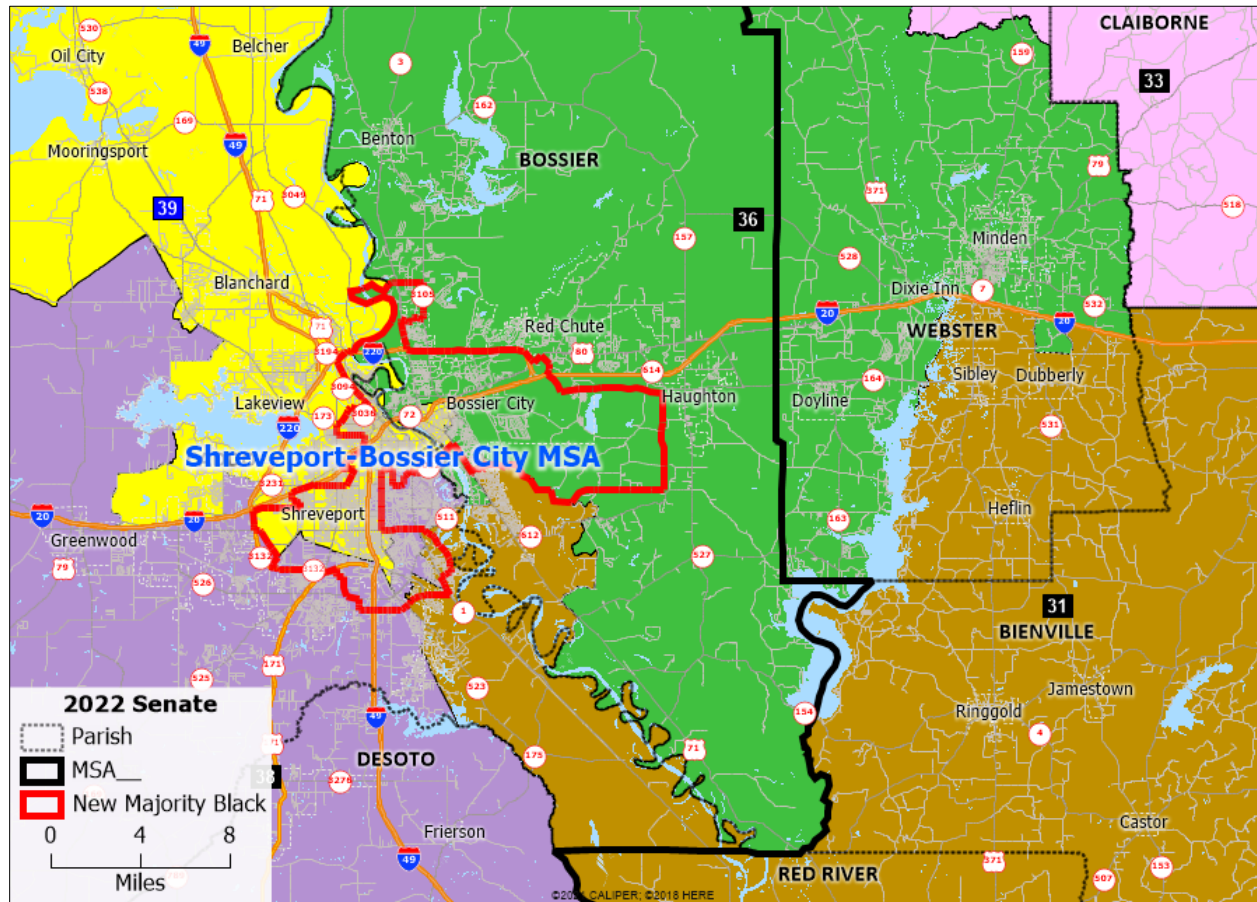
Figure 18: Shreveport MSA
Illustrative Senate – Illustrative SD 38 (red lines) (Exhibit M-1)



94. As detailed in **Exhibit L-1**, Shreveport and Bossier City are the only municipalities in Illustrative SD 38. Both cities are partly contained within the boundaries of Illustrative SD 38.

95. **Figure 19** overlays Illustrative SD 38 onto the 2022 Senate. Illustrative SD 38 is drawn by unpacking 2022 SD 39 (63.7% BVAP) and adding neighboring areas with substantial Black populations in 2022 SD 31 and SD 36.

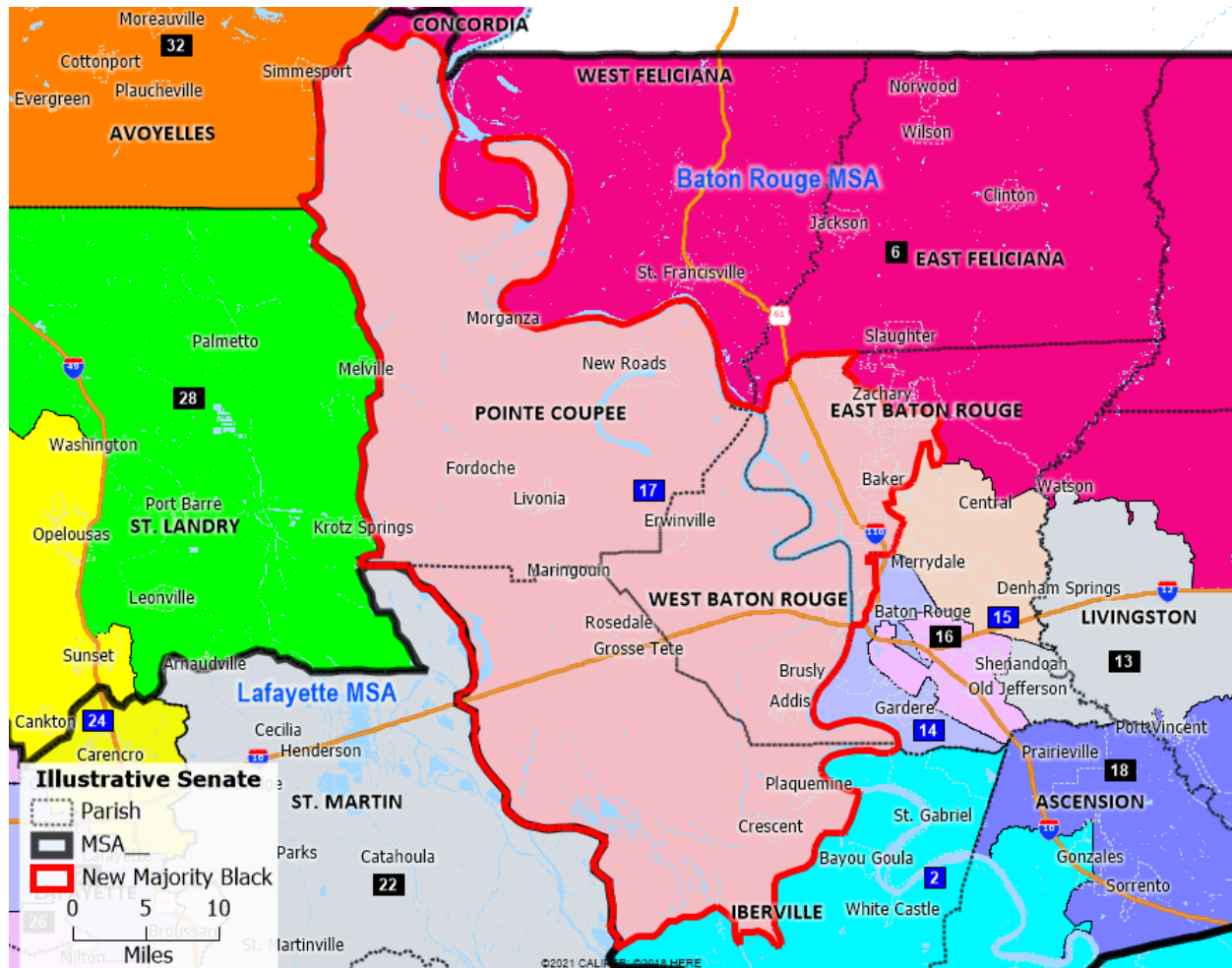
Figure 19: Shreveport Area
2022 Senate and Illustrative SD 38 (red lines) (Exhibit M-2)



ii. Illustrative Senate District 17

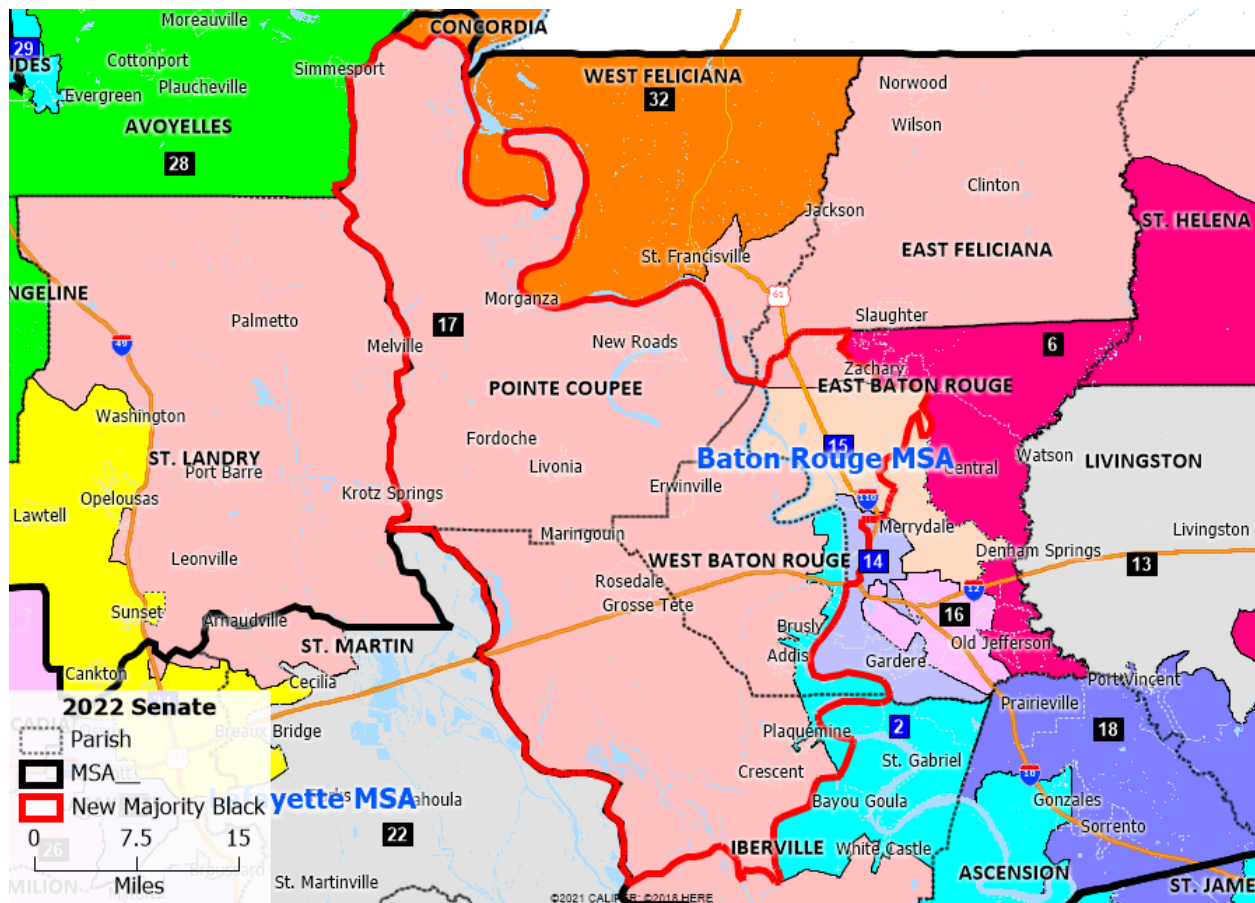
96. Illustrative SD 17 (outlined in red in **Figures 20 and 21**) is an additional majority-Black district that could be drawn in the metropolitan Baton Rouge area.

Figure 20: Baton Rouge MSA
Illustrative Senate – Illustrative SD 17 (red lines) (Exhibit M-3)



97. Illustrative SD 17 (52.48% BVAP) encompasses all of the Parishes of Pointe Coupee, Iberville, and West Baton Rouge, and part of East Baton Rouge. Unlike sprawling 2022 SD 17, Illustrative SD 17 does not extend west into predominantly White communities in St. Landry and St. Martin. Instead, Illustrative Senate SD 17 is anchored in East Baton Rouge, drawing Black population in from packed 2022 SD 15 (73.9% BVAP), as well as majority Black 2022 SD 14 (58% BVAP).

Figure 21: Baton Rouge MSA
2022 Senate and Illustrative SD 17 (red lines) (Exhibit M-4)



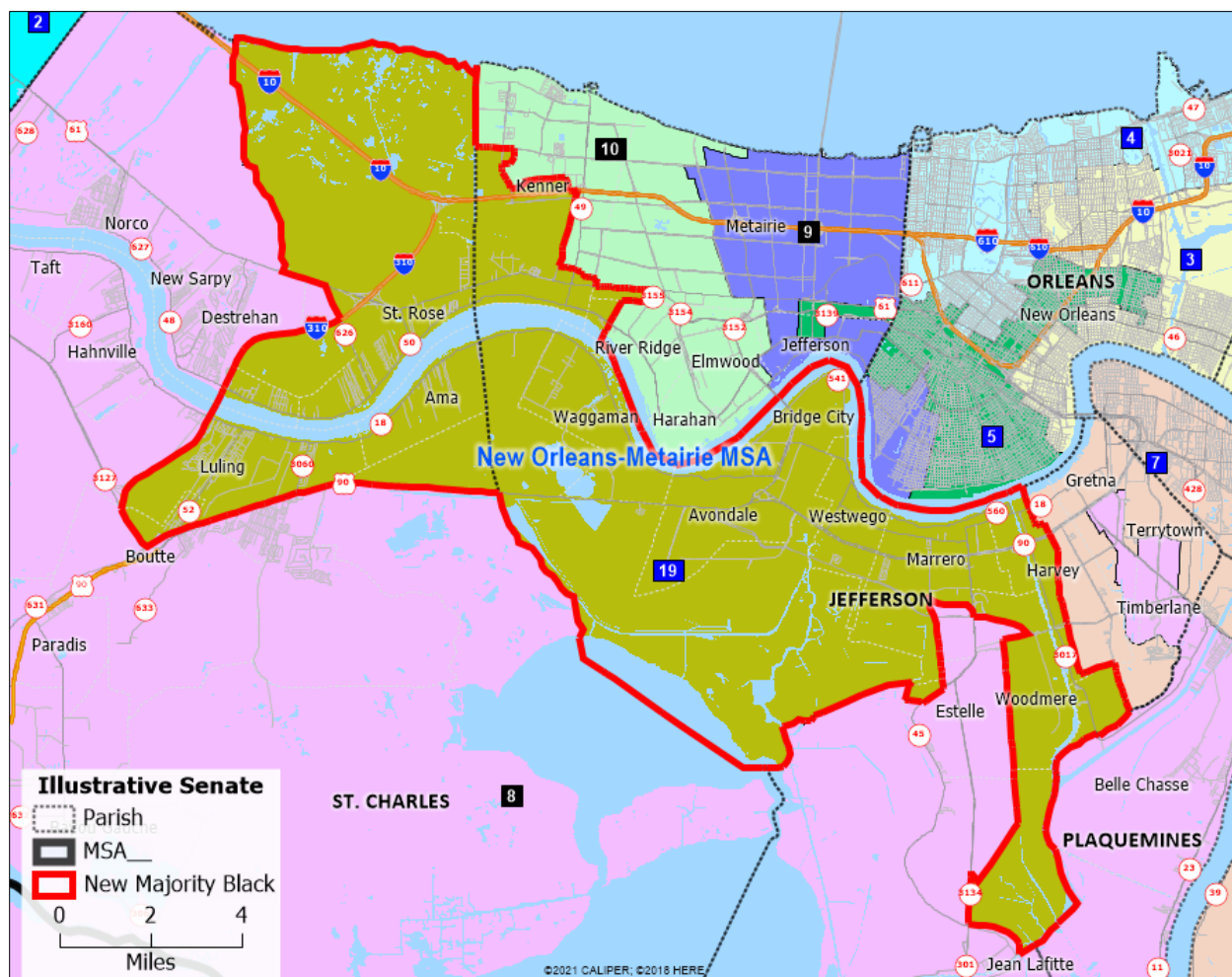
98. As revealed by comparing Figure 20 and Figure 21, majority-Black Illustrative SD 17 is compact and reasonably shaped—unlike 2022 SD 17 which extends west-to east from the Cajun Heartland deep into the Florida Parishes.

99. As detailed in **Exhibit L-1**, Illustrative SD 17 encompasses part of the Cities of Baton Rouge, Baker, and Zachary in East Baton Rouge Parish. The remaining 11 municipalities are not split.

iii. Illustrative Senate District 19

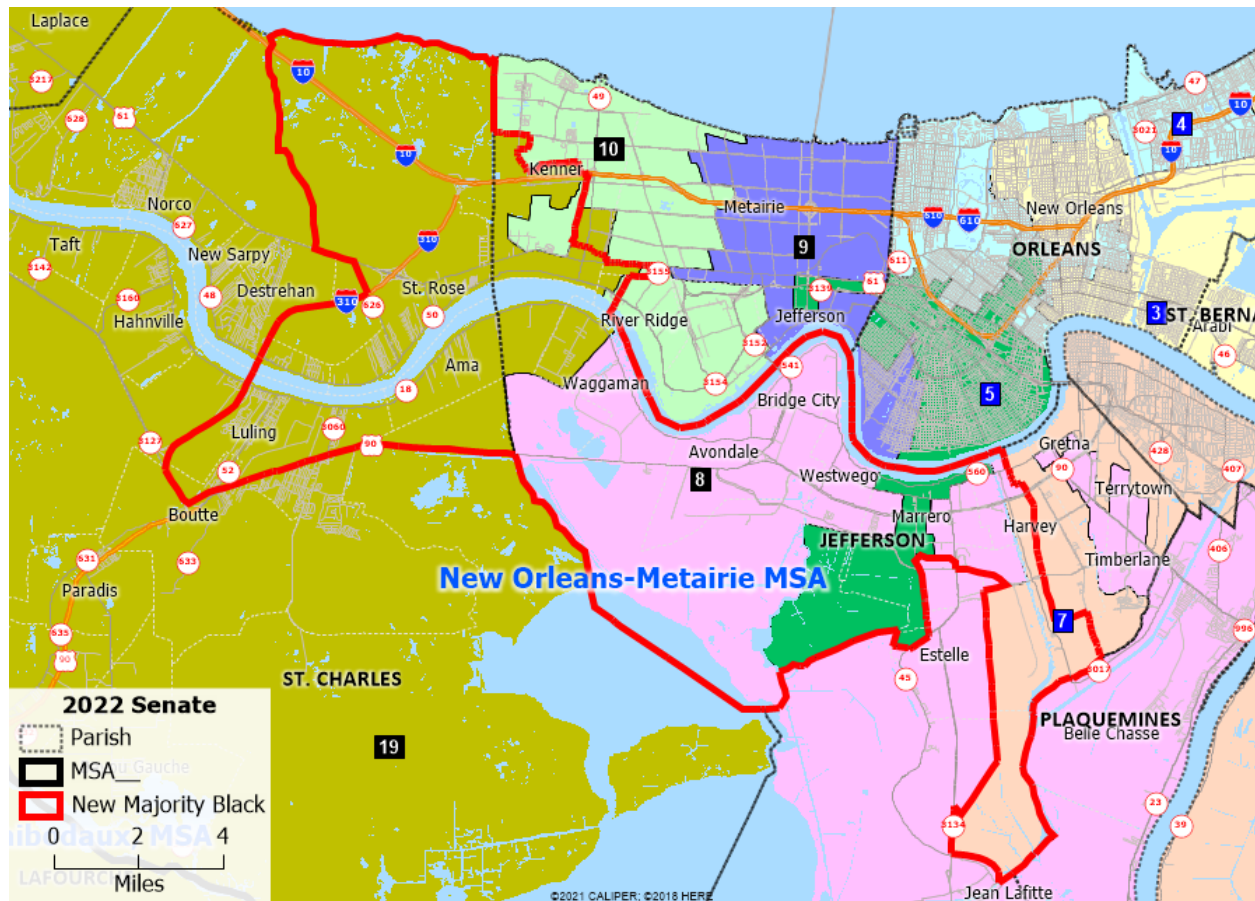
100. Illustrative SD 19 (outlined in red in **Figures 22 and 23**) is an additional majority-Black district that could be drawn in metropolitan New Orleans – specifically, in the parishes of Jefferson and St. Charles.

Figure 22: New Orleans-Metairie MSA
Illustrative Senate – Illustrative SD 19 (red lines) (Exhibit M-5)



101. By “uncracking” 2022 SD 19 and neighboring 2022 SDs 5, 7, 8, and 10, an additional majority-Black Senate District can be created in the Parishes of Jefferson and St. Charles.

Figure 23: New Orleans-Metairie MSA
 2022 Senate and Illustrative SD 19 (red lines) (*Exhibit M-6*)



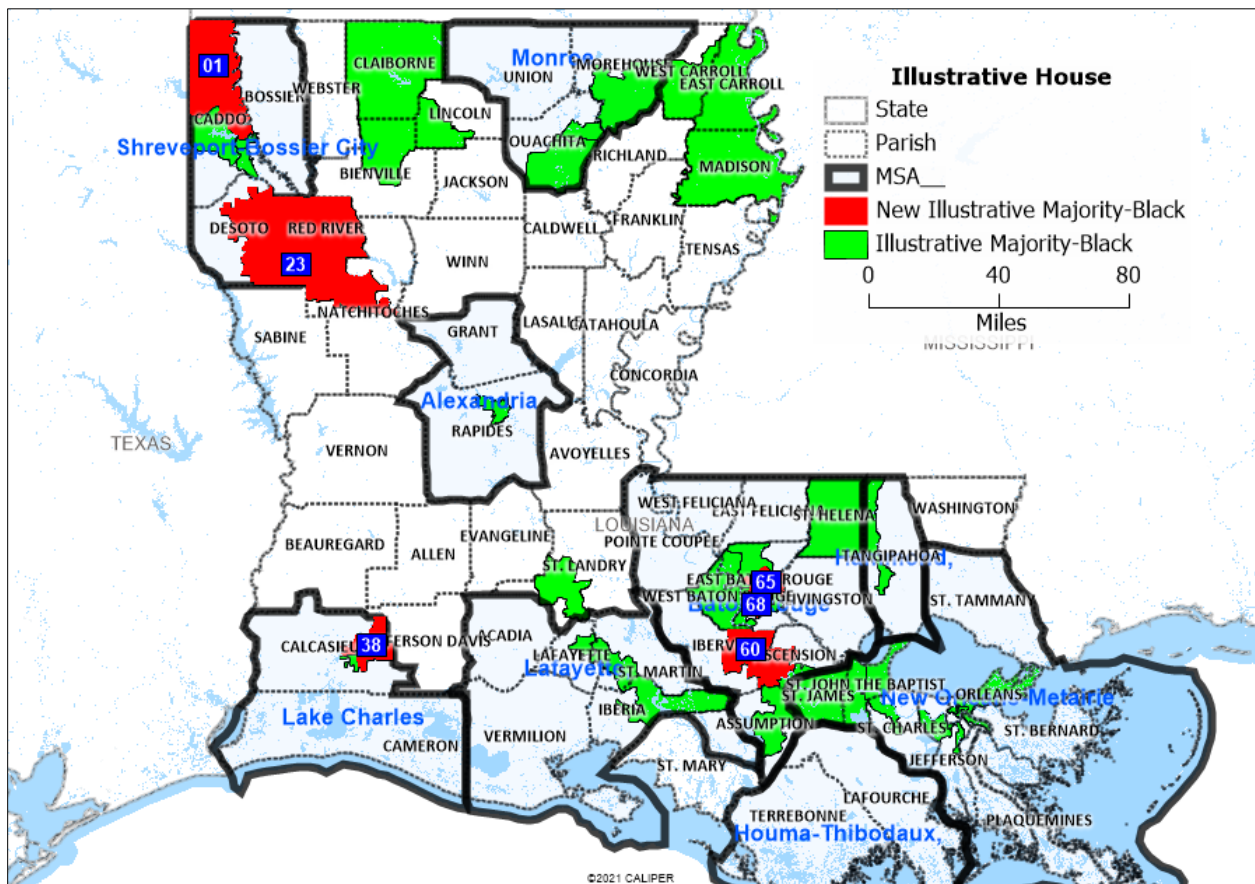
102. A comparison of Figure 22 and Figure 23 reveals that Illustrative SD 19 (51% BVAP) converts a meandering 4-parish majority-White 2022 SD 19 (28.69%) into a much more compact 2-parish majority Black district. 2022 SD 19 cuts across parts of the parishes of Lafourche, St John the Baptist, St. Charles, and Jefferson -- in the process submerging a large Black population in a majority-White district. As detailed in Exhibit L-1, Illustrative SD 19 contains two municipalities – part of Kenner and all of Westwego.

VII. ILLUSTRATIVE HOUSE PLAN

A. Illustrative House – Overview

103. The map in **Figure 24** displays six additional majority-Black districts (in red with small blue labels) in the Illustrative House: **Illustrative HD 1** -- Shreveport-Bossier City MSA, **Illustrative HD 23** -- Natchitoches area and Shreveport-Bossier City MSA, **Illustrative HD 38** -- Lake Charles MSA, and **Illustrative HDs 60, 65, and 68** -- Baton Rouge MSA.

Figure 24: Location of 6 Additional Majority-Black Districts in Illustrative House



104. Green areas on the **Figure 23** map represent other majority-Black districts in the Illustrative House that generally encompass areas within majority-Black districts under the 2022 House. All told, the Illustrative Plan modifies in some fashion 65 of the 105 House districts in the

2022 Plan. Put differently, a core population⁴⁰ representing 78.5% of the state’s population is kept together in the redraw from the 2022 House Plan to the Illustrative House Plan. (See **Exhibit P-2** *infra*.) By comparison, 83.2% of the state’s population was kept together in the redraw from the Benchmark 2011 Plan to the 2022 House Plan. (See **Exhibit P-4** *infra*.)

105. As documented in **Section III** (*supra*), Black persons in Illustrative HD 1, HD 23, HD 38, HD 60, HD 65, and HD 68 are a community of interest based on socio-economic characteristics and racial disparities at the parish and municipal levels.

106. The population residing in Baton Rouge MSA Illustrative House Districts 60, 65 and 68 also share a community of interest that goes beyond history, culture, and socioeconomic characteristics.⁴¹ These three additional illustrative majority-Black districts would form a united community of interest with other Illustrative Plan majority-Black districts (displayed in green on the **Figure 23** map) whose residents must contend with negative environmental externalities along the Mississippi River.

107. **Exhibit N-1** contains detailed 2020 population statistics by district for the Illustrative House Plan. The map in **Exhibit N-2** is a statewide map of the Illustrative House (best viewed or printed at 200%). **Exhibit N-3** identifies parish-level population by district. **Exhibit N-4** identifies district splits by parish and VTD. **Exhibit N-5** identifies municipal splits by district.

⁴⁰ As noted with respect to the Senate plans, I define “core population” as the largest district-level subset of a population that is kept together in the shift from one plan to another (without taking into account changes in district numbers or changes in incumbent representation). The core population is identified with shading in the referenced tabular exhibits.

⁴¹ See for example: James, W., Jia, C., and Kedia, S. (2012). Uneven Magnitude of Disparities in Cancer Risks from Air Toxics. *Int. J. Environ. Res. Public Health*, 9(12), 4365-4385. <https://doi.org/10.3390/ijerph9124365>.

108. To facilitate comparison with the 2022 House, I have prepared several sets of more detailed maps. For ease of reference and complete visual coverage, regional maps accompanying the Illustrative House (**Exhibit N-6**) are organized by planning district (from PD-1 to PD-8). **Exhibit N-7** contains maps in sequential order that zoom in on each of the 35 majority-Black House districts. MSAs are identified in all of the Exhibit N series maps with bold black lines. Parish lines are shown with dotted grey lines. Blue labels identify majority-Black districts.

109. The link below is a statewide interactive map depicting the Illustrative House Plan color-coded in the same fashion as the **Exhibit N** series. The map is address-searchable. A thin purple-line overlay depicting the 2022 House boundaries can be clicked on and off via the legend in the top left corner of the map.⁴²

<https://online.caliper.com/mas-874-drp-290-ujr/maps/lixjoeng00nsfh3ehqum>

Alternatively, the Illustrative House Plan can also be viewed and analyzed on the Dave's Redistricting website at the following link:

<https://davesredistricting.org/join/fa47d389-42de-49ac-9c57-cc2434249cc2>

For comparison, the 2022 House Plan can be viewed and analyzed on the Dave's Redistricting website at the following link:

<https://davesredistricting.org/maps#viewmap::d63b737c-a8b3-46e9-8855-aa20a728c2b5>

B. House Plan Metrics – Illustrative vs. 2022

i. Compactness measures

110. The districts in the Illustrative House are reasonably shaped and compact. **Exhibit O-1** reports district-by-district compactness scores generated by Maptitude for the 2022 House.

⁴² For additional population stats (county and place), click anywhere on the map. Click on the column headings in the sidebar legend to view available population data at the clicked point.

Compactness scores for the Illustrative House are in **Exhibit O-2**. Each exhibit reports three compactness scores: Reock, Polsby-Popper, and Convex Area/Hull.⁴³ Higher scores indicate higher compactness.

111. The table in **Figure 25** summarizes the Reock and Polsby-Popper scores (the two most commonly referenced measures) for the 2022 House, alongside scores for the Illustrative House.

112. The higher scores are in bold-face. The Illustrative House scores the same as the 2022 House on both the Reock (.40) and Polsby-Popper (.29) measures. However, the Illustrative House has higher lows and higher highs for both.

Figure 25: Compactness Scores – 2022 House vs. Illustrative House

	Reock				Polsby-Popper		
	Mean	Low	High		Mean	Low	High
2022 House							
All Districts (mean avg.)	.40	.13	.63		.29	.05	.63
29 Majority-Black Districts	.38	.13	.51		.27	.15	.46
Illustrative House							
All Districts (mean avg.)	.40	.16	.65		.29	.12	.71
35 Majority-Black Districts	.38	.21	.51		.28	.12	.50

113. When the majority-Black House districts are examined independent of other districts (as shown in **Figure 25**), the Illustrative House has the same mean average Reock score (.38) as the 2022 House majority-Black districts – and the Illustrative House scores higher on Polsby-Popper (.28 vs .27).

⁴³ See n.32, *supra*, for formulas and explanatory text relating to these three compactness measures.

ii. Political Subdivision Splits

114. The table in **Figure 26** compares district splits by parish and 2020 VTDs for the 2022 House (see **Exhibit I-4**) and the Illustrative House (see **Exhibit N-4**). Municipal split counts are in **Exhibit I-5** for the 2022 House and **Exhibit N-5** for the Illustrative Plan.

115. As shown in **Figure 26**, the 2022 House and Illustrative House score about the same in terms of parish and VTD splits. The 2022 House has zero populated VTD splits, versus two populated VTD splits under the Illustrative House. The 2022 House scores higher on municipal splits because I endeavored to keep 2022 House districts intact where there was no ripple effect from the changes necessary to create the six additional majority-Black House districts. With adjustments to some of the 40 2022 districts that I did not modify, municipal splits could in all likelihood be reduced to the same level as in the 2022 House.

Figure 26: Political Subdivision Splits (excluding unpopulated areas)

	Parishes not Split	Total Parish Splits (lower is better)	2020 VTD Splits (lower is better)	Municipalities Not Split	Total Municipal Splits (lower is better)
2022 House	25	113	0	253	152
Illustrative House	25	113	2	246	170

iii. House Districts -- Majority-Black and Majority-White Comparison

116. As shown in **Figure 27** (see **Figure 12** *supra* for historical comparisons), with six additional majority-Black House districts, the percentage of the Black VAP residing in the Illustrative majority Black House districts increases to 61.1%, but White voters still hold a 16 percentage point advantage.

**Figure 27: Same Race VAP in Majority-Black and Majority-White Districts
Statewide – 2022 House and Illustrative House**

Legislative Plan	2020 Black VAP in Majority Black House Districts	2020 NH White VAP in Majority White House Districts	Statewide Difference
2022 House	55.6%	83.4%	-27.8%
Illustrative House	61.1%	77.4%	-16.3%

117. As revealed in **Figure 28**, in the three MSAs where additional districts are created under the Illustrative House, the percentage of the Black VAP residing in majority Black House districts does not exceed the statewide 83.4% White benchmark ceiling under the 2022 House—Baton Rouge (69.4%), Lake Charles (77.6%), and Shreveport (74.3%).

118. And in those same three MSAs, the NH White VAP residing in majority White districts is above the statewide 55.6% Black benchmark floor under the 2022 House Plan – Baton Rouge (66.9%), Lake Charles (75.9%) and Shreveport (68.4%).

**Figure 28: Same Race VAP in Majority-Black and Majority-White Districts
Regional MSA-level – 2022 House and Illustrative House**

MSA/Region (# of parishes)	Black VAP in Majority Black Districts 2022	White VAP in Majority White Districts 2022	Black VAP in Majority Black Districts Illustrative	White VAP in Majority White Districts Illustrative
Alexandria (2)	65.7%	86.3%	67.4%	85.3%
Baton Rouge (10)	63.4%	82.3%	69.4%	66.9%
Hammond (1)	43.5%	84.3%	45.2%	82.3%
Houma-Thibodaux (2)	0.0%	100.0%	0.0%	100.0%
Lafayette (4)	44.0%	89.9%	41.4%	90.9%
Lake Charles (2)	59.7%	93.3%	77.6%	75.9%
Monroe (3)	72.1%	78.3%	80.9%	68.9%
New Orleans-Metairie (8)	62.3%	72.1%	62.7%	71.1%
Shreveport-Bossier City (3)	63.4%	84.5%	74.3%	68.4%

C. Details on the Additional Majority-Black Districts in the Illustrative House

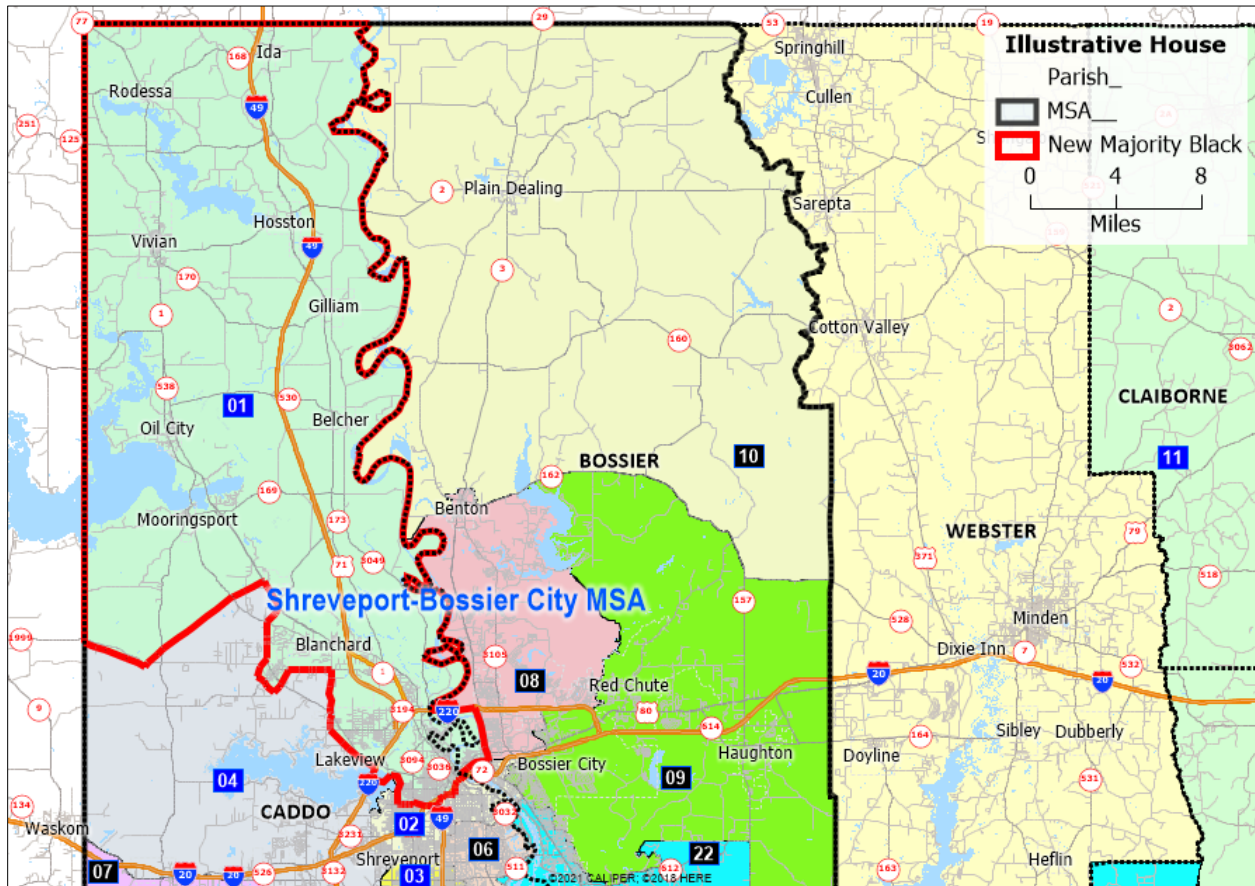
119. The text descriptions of the additional majority-Black districts in the Illustrative House Plan set forth below are illustrated with side-by-side comparison map exhibits, depicting the Illustrative House and 2022 House at the same scale. For higher resolution maps, these side-by-side pairings are also included in exhibits identified in the map titles.

120. To view all municipalities assigned by district in the Illustrative House Plan refer to **Exhibit P-1**. To review population details for the Illustrative House district core components built from districts in the 2022 House, refer to **Exhibit P-2** – “Core Constituencies”. To view all municipalities assigned by district in the 2022 House Plan refer to **Exhibit P-3**. To review population details for the 2022 House district core components built from districts in the 2012 Benchmark House, refer to **Exhibit P-4** – “Core Constituencies”.

i. Illustrative House District 1

121. Illustrative HD 1 (outlined in red in **Figures 29** and **30**) is an additional majority-Black district that could be drawn in the parishes of Caddo and Bossier.

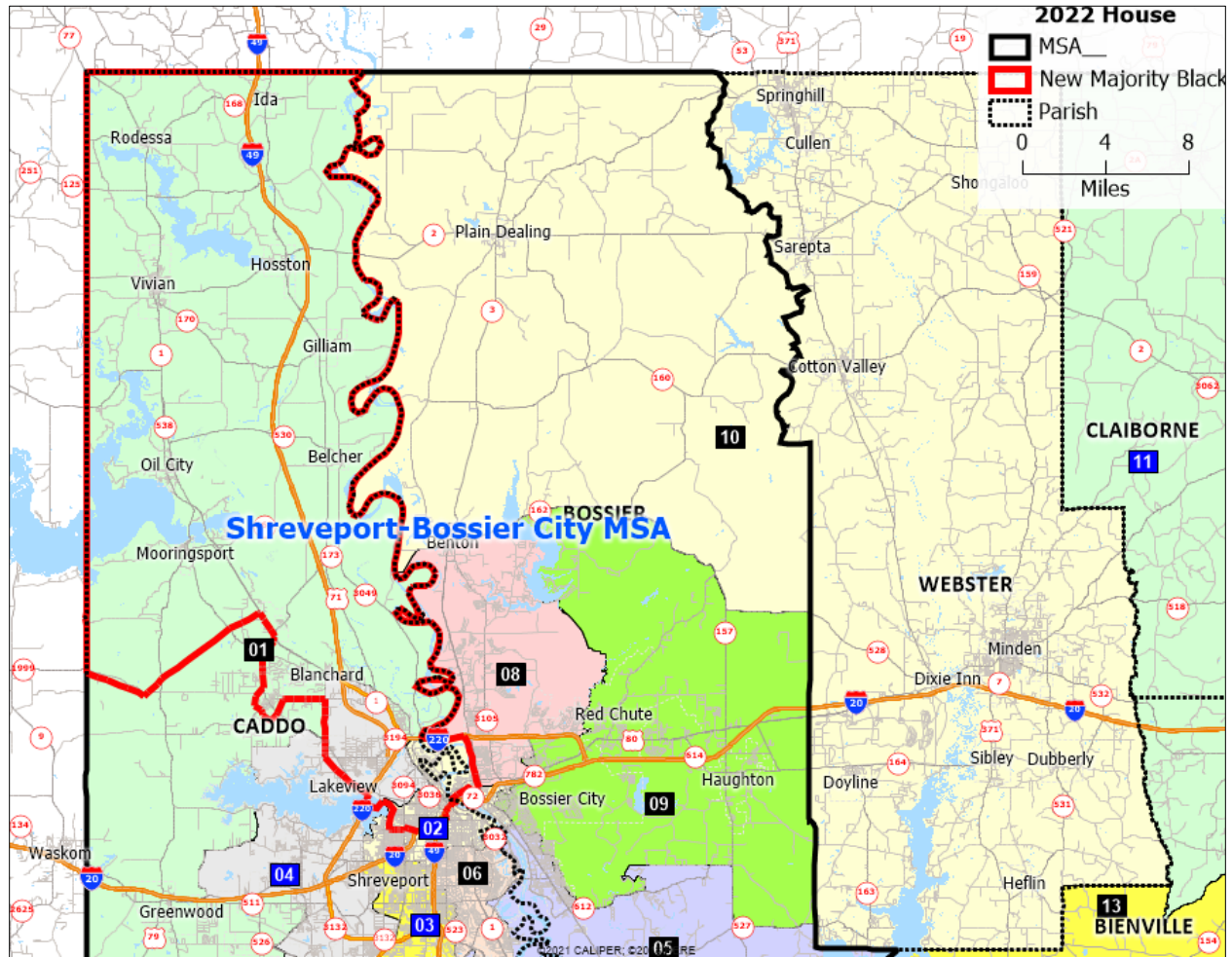
Figure 29: Shreveport MSA
Illustrative House – Illustrative HD 1 (red lines) (Exhibit Q-1)



122. As detailed in **Exhibit P-1**, Illustrative HD 1 encompasses all of seven municipalities in Caddo Parish, plus part of Shreveport, Blanchard, and Bossier City.

123. **Figure 30** overlays Illustrative HD 1 onto the 2022 Plan. Illustrative HD 1 is drawn by “unpacking” 2022 HD 2 (67.4%) and HD 4 (72.1% BVAP) and reducing the geographic extent of 2022 HD 1, while retaining about 40% of the population from 2022 HD 1.

Figure 30: Shreveport MSA
 2022 House – Illustrative HD 1 (red outline) (Exhibit Q-2)



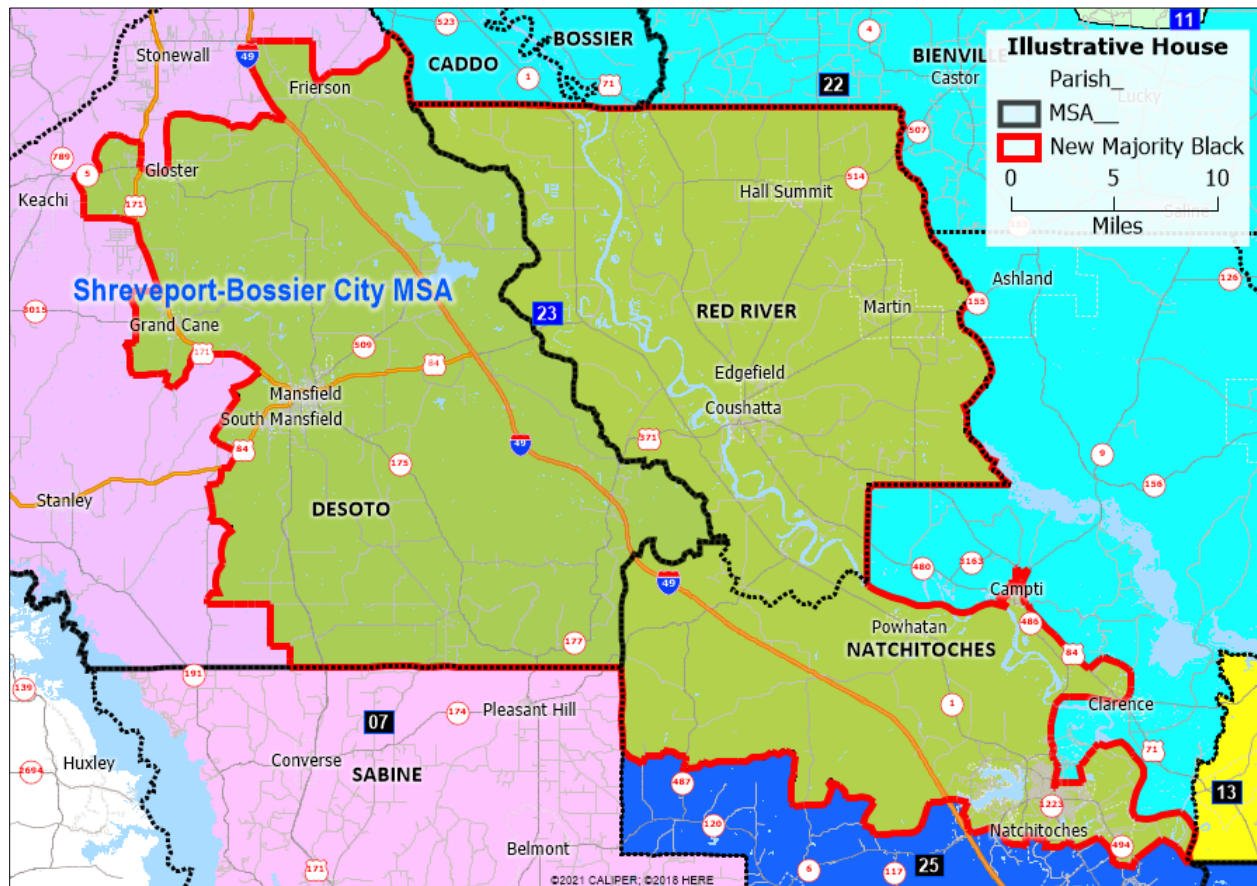
ii. Illustrative House District 23

124. Illustrative HD 23 (outlined in red in **Figure 31** and **Figure 32**) is an additional majority-Black district that could be drawn in the parishes of Natchitoches, Red River, and Desoto.

125. Illustrative HD 23 is in the same general area as majority-Black HD 23 under the 2011 House Plan (a district that was not renewed under the 2022 House). Illustrative HD 23 follows the Red River north from Natchitoches to include all of Red River Parish. Further west the district tracks I-10 into Desoto Parish.

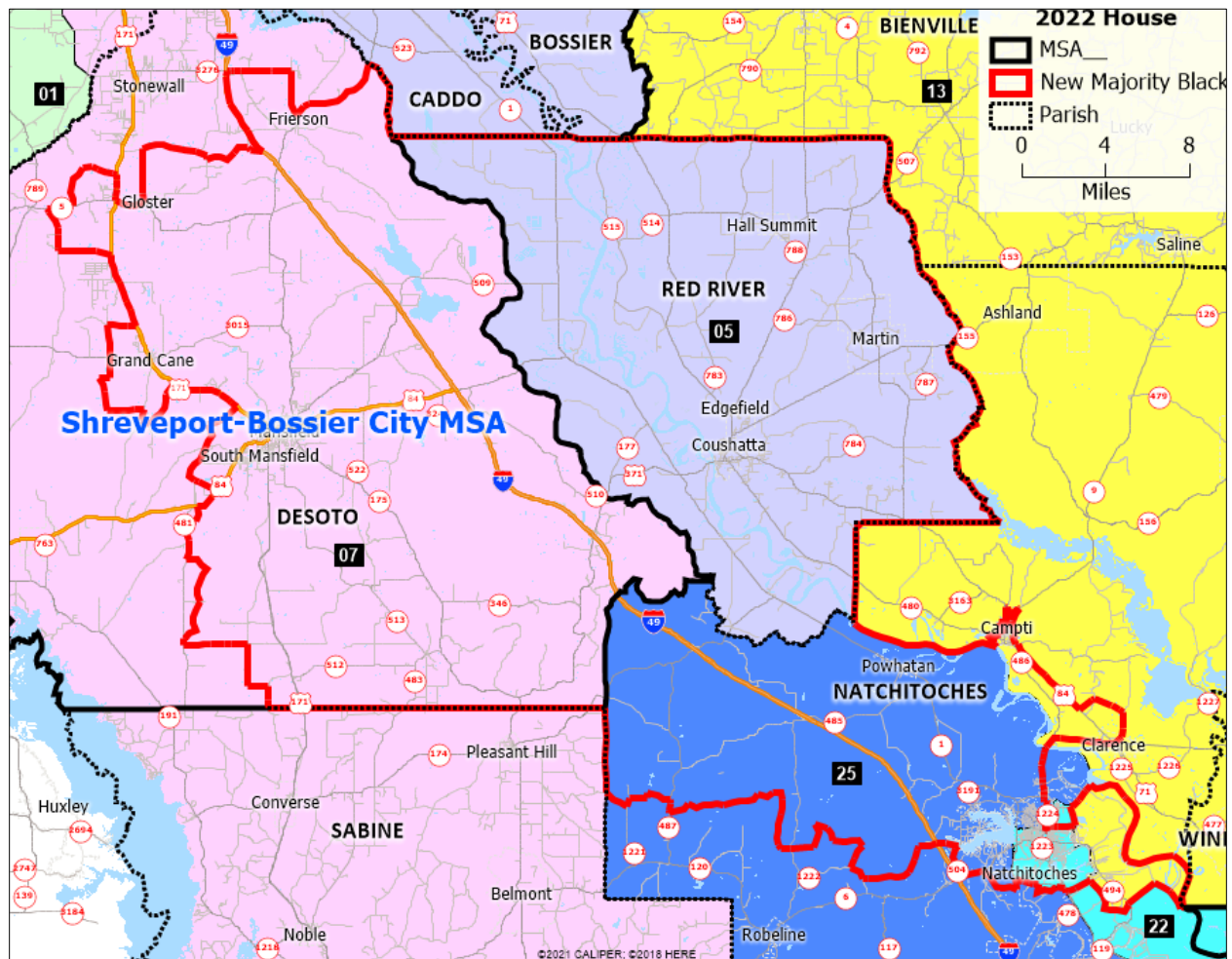
126. As detailed in **Exhibit P-1**, Illustrative HD 23 encompasses all or part of 11 small municipalities. Of those places, the City of Natchitoches is the largest, with over 90% of its population assigned to Illustrative HD 23.

Figure 31: Natchitoches Area
Illustrative House – Illustrative HD 23 (red lines) (Exhibit Q-3)



127. Figure 32 shows how the Black population in majority-Black Illustrative HD 23 is cracked between 2022 House Districts 5,7, 13, 22 and 25, resulting in three House districts with Black VAPs in the 20% to 30% range.

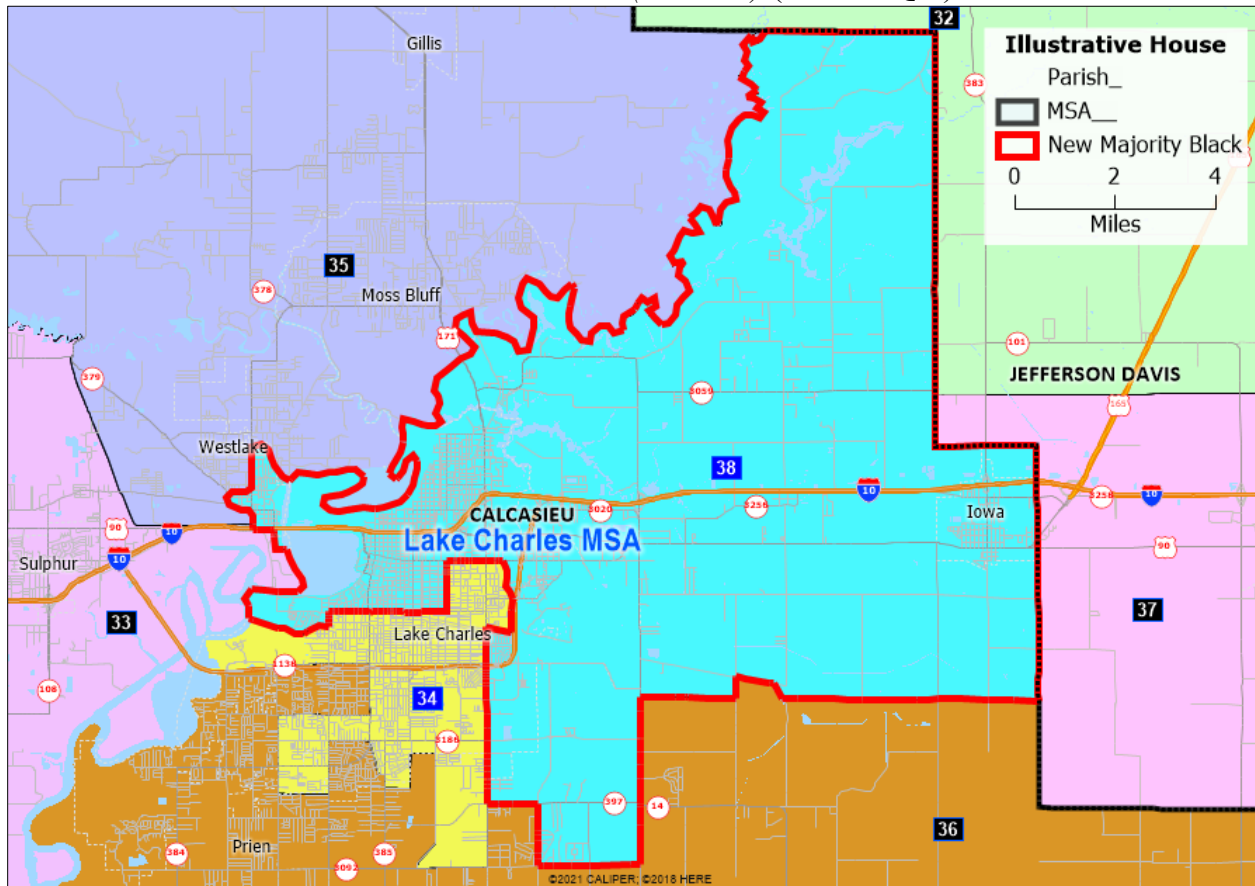
Figure 32: Natchitoches Area
 2022 House and Illustrative HD 23 (red lines) (Exhibit Q-4)



iii. Illustrative House District 38

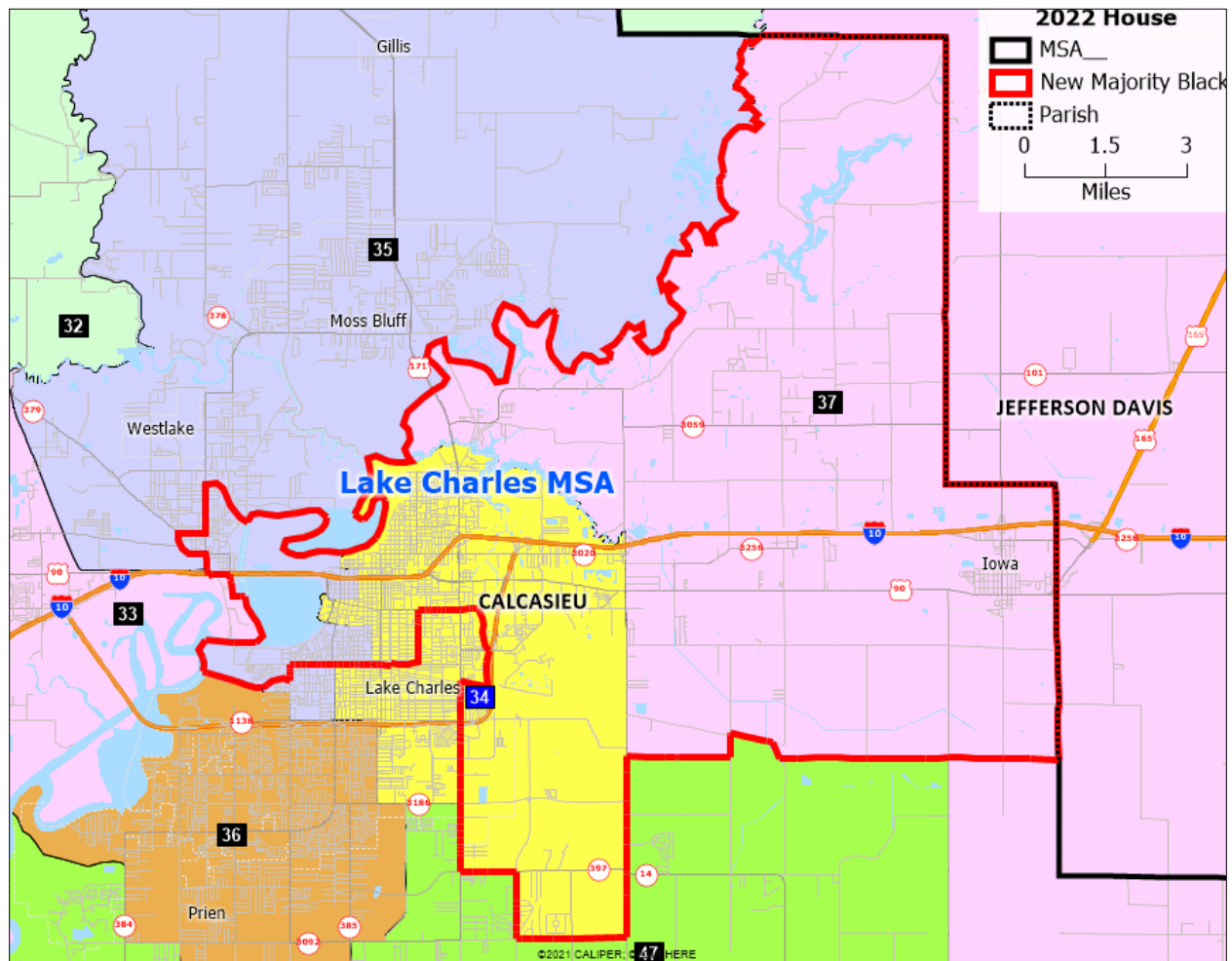
128. Figure 33 depicts Illustrative HD 38 in the city of Lake Charles and Calcasieu Parish. A growing Black population since 2000 in the Lake Charles MSA (+14,322), coupled with no growth in the White population (-676), means that it is now possible to create a second majority-Black district in the area.

129. As detailed in Exhibit P-1, Illustrative HD 38 shares Lake Charles with majority-Black Illustrative HD 34 and Illustrative HD 36. The municipalities of Iowa and Westlake are also in Illustrative HD 38.

Figure 33: Lake Charles MSA*Illustrative Plan – Illustrative HD 38 (red lines) (Exhibit Q-5)*

130. Figure 34 overlays Illustrative HD 38 (red lines) onto the 2022 House. New Illustrative HD 38 is drawn by unpacking 2022 HD 34 (72.6% BVAP) and uncracking Black population distributed across 2022 House Districts 35 (12.5% BVAP) and 37 (17.6% BVAP).

Figure 34: Lake Charles MSA
2022 House and Illustrative HD 38 (red lines) (Exhibit Q-6)

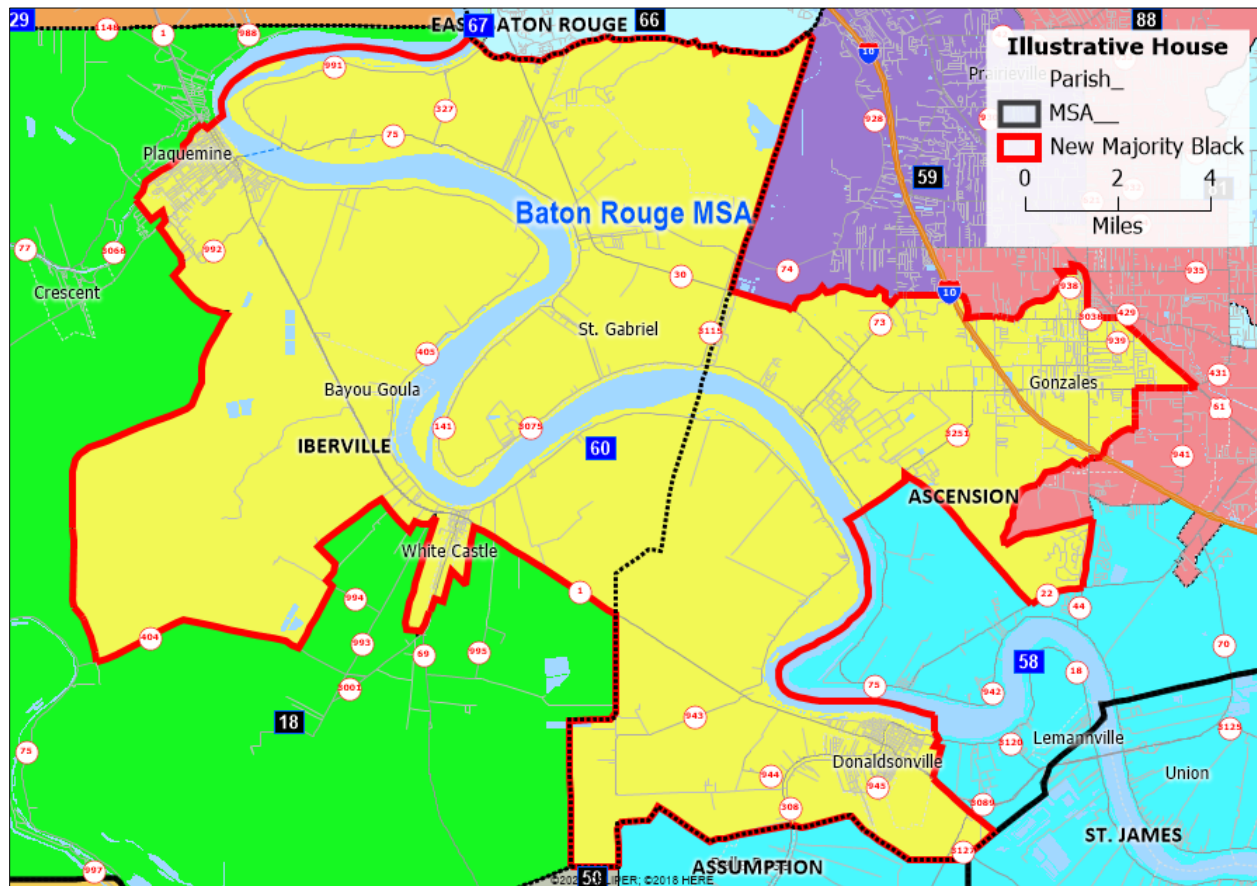


iv. Illustrative House District 60

131. Figure 35 depicts Illustrative HD 60 in the southern part of the Baton Rouge MSA – specifically in Iberville and Ascension Parishes. Since 2000, the population of Ascension Parish has grown by about 50,000 persons to 126,500 and the Black population has doubled from 15,684 to 32,216 (see Exhibits C-1 and C-3). As a result of this population growth, it is now possible to draw an additional majority-Black House district on the East Bank and the West Bank of Iberville and Ascension Parishes, without crossing over into the New Orleans MSA.

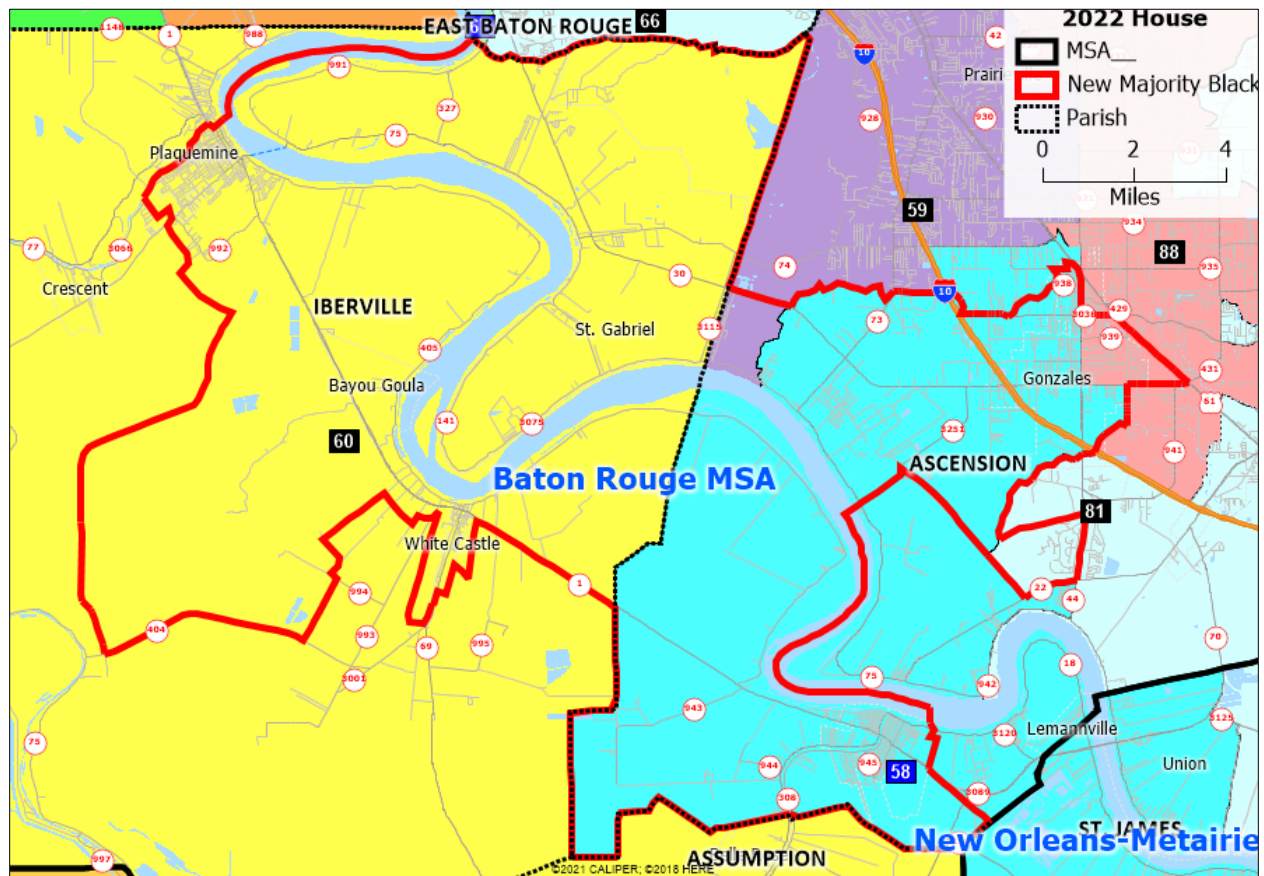
132. As detailed in **Exhibit P-1**, the municipalities of Donaldsonville, White Castle, Plaquemine (West Bank) are joined with St. Gabriel and part of Gonzales (East Bank) to create a new majority-Black Illustrative HD 60.

Figure 35: Baton Rouge MSA (Iberville and Ascension Parishes)
Illustrative House and Illustrative HD 60 (red lines) (Exhibit Q-7)



133. **Figure 36** overlays Illustrative HD 60 (red lines) onto the 2022 House district. Black population is “uncracked” from 2022 HD 60 (37.7% BVAP) and joined with Black population in Gonzales that has been placed in majority-Black HD 58 under the 2022 Senate district.

Figure 36: Baton Rouge MSA (Iberville and Ascension Parishes)
2022 House and Illustrative HD 60 (red lines) (Exhibit Q-8)

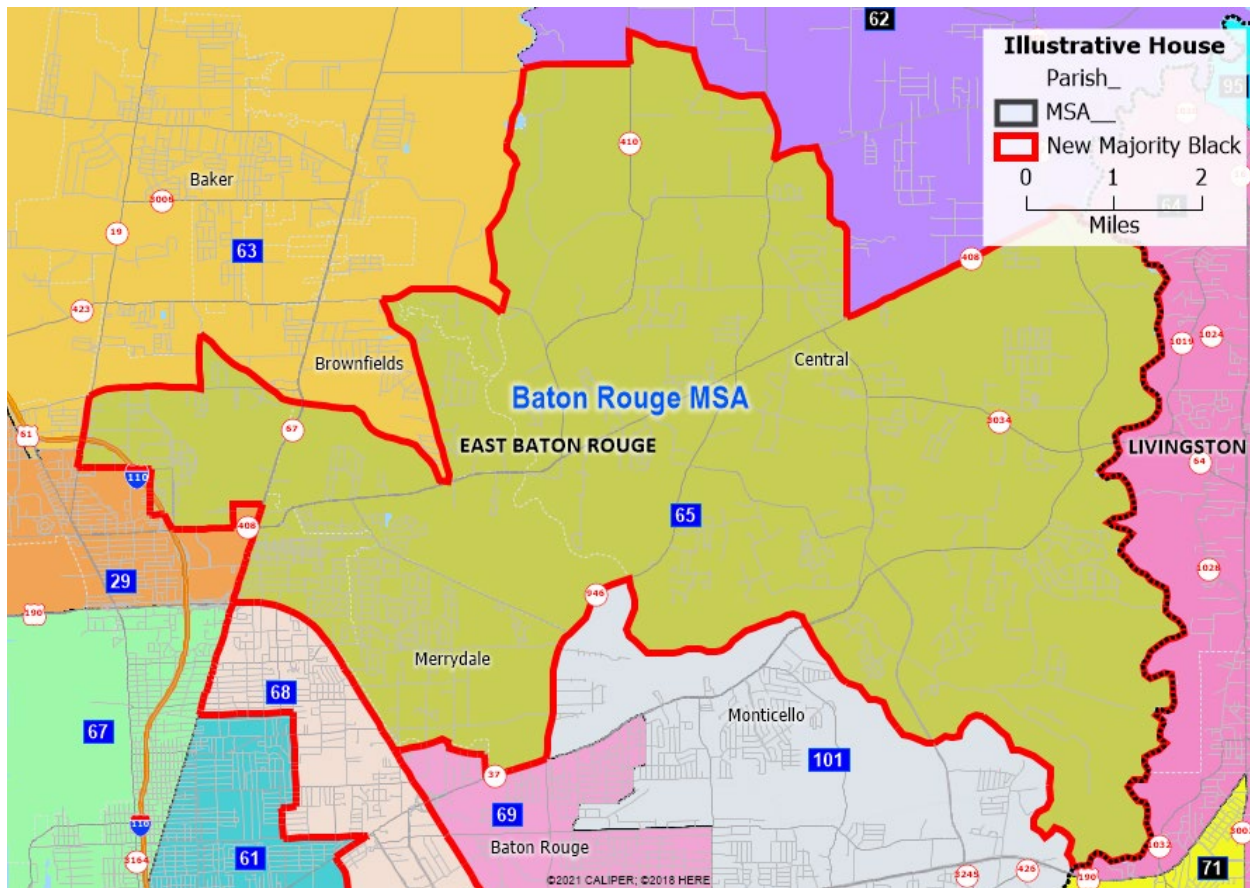


v. Illustrative House District 65

134. Figure 37 depicts new majority-Black Illustrative HD 65 (red lines) in East Baton Rouge Parish, including neighborhoods north of Airline Highway and east of I-10.

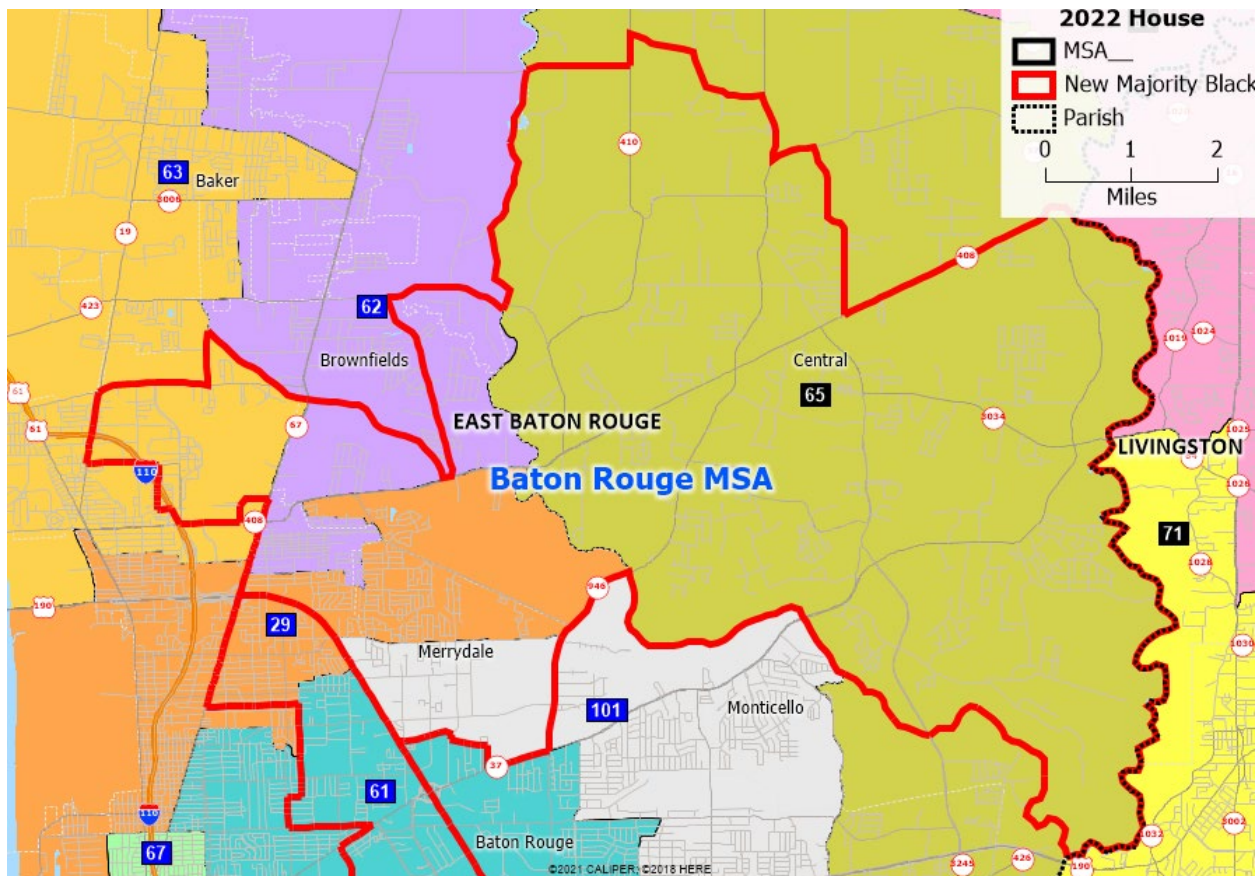
135. As detailed in **Exhibit P-1**, Illustrative HD 65 includes part of the cities of Baton Rouge and Central, with the remaining population in unincorporated areas of East Baton Rouge Parish.

Figure 37: Baton Rouge MSA
Illustrative House – Illustrative HD 65 (red lines) (Exhibit Q-9)



136. As shown in **Figure 38**, Illustrative HD 65 (red lines) unpacks part of majority-Black 2022 HD 29 (73.6% BVAP) and 2022 HD 63 (69.7% BVAP) and uncracks 2022 House districts 62 and 65.

Figure 38: Baton Rouge MSA
2022 House and Illustrative HD 65 (red lines) (Exhibit Q-10)

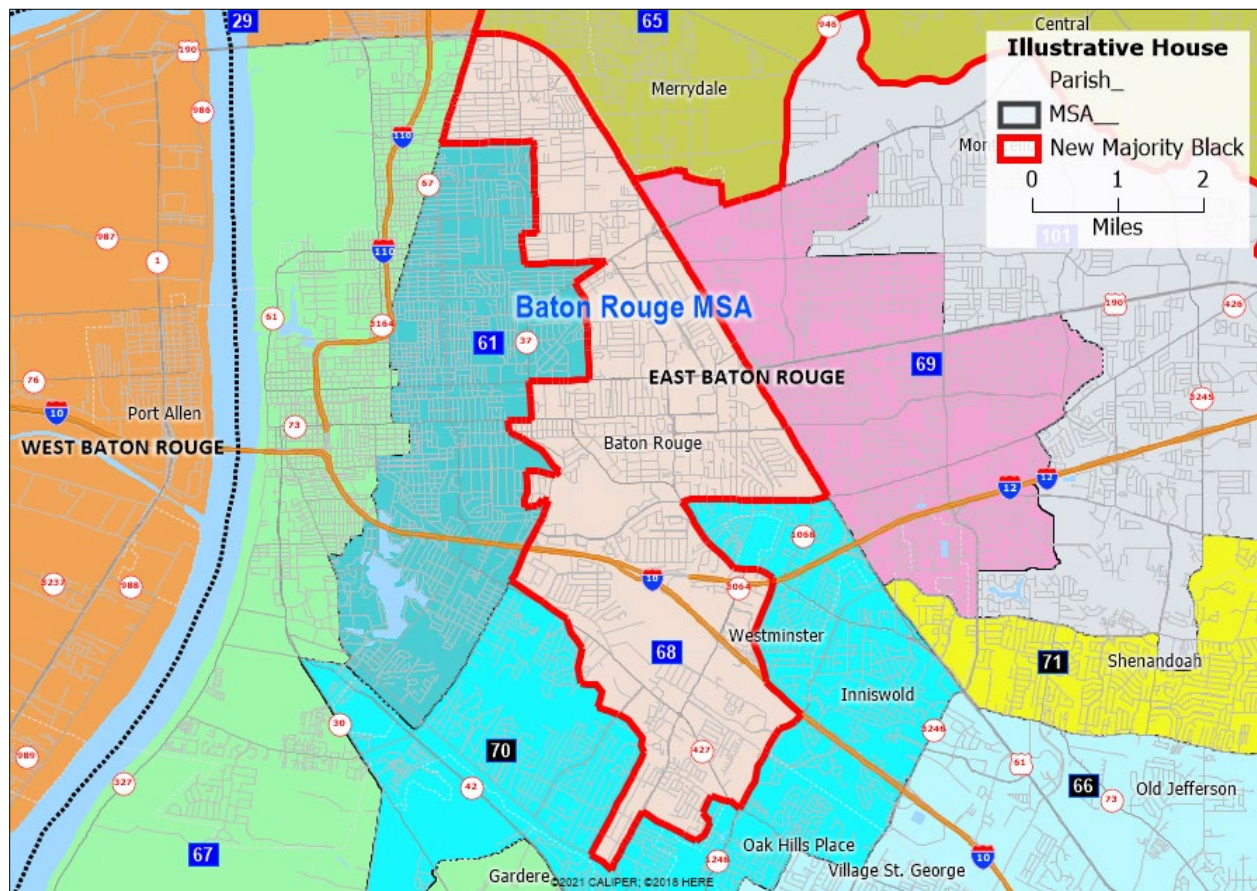


vi. Illustrative House District 68

137. As shown in **Figure 39**, Illustrative HD 68 (red lines/beige district) is the second additional majority-Black district in East Baton Rouge Parish. The district includes neighborhoods in the central part of the City of Baton Rouge, with Airline Highway serving as an eastern boundary.

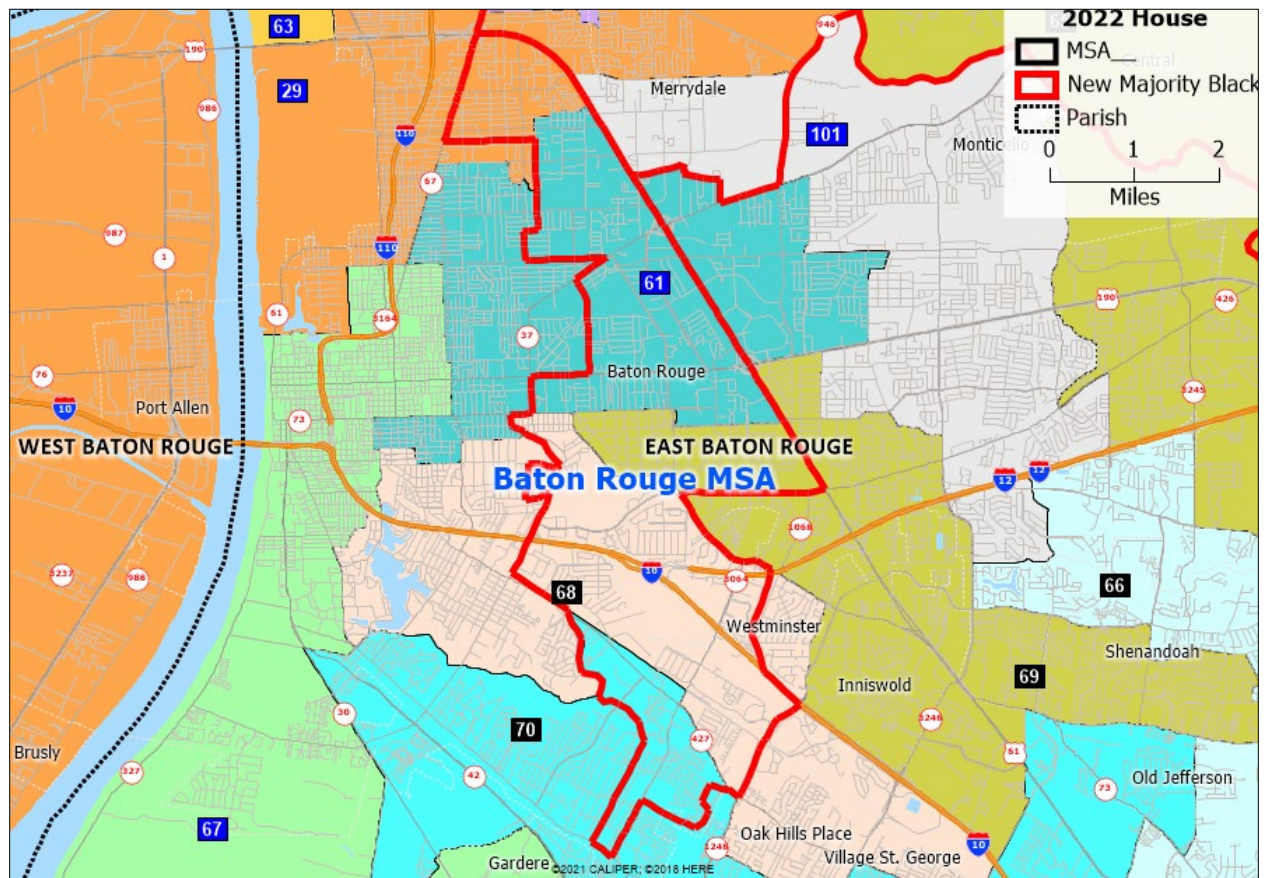
138. As detailed in **Exhibit P-1**, Baton Rouge is the only municipality in Illustrative HD 68, with the remainder in unincorporated areas of the parish.

Figure 39: Baton Rouge MSA
Illustrative House – Illustrative HD 68 (red lines) (Exhibit Q-11)



139. **Figure 40** shows how Illustrative HD 68 unpacks 2022 HD 61 and uncracks Black population in majority White 2022 HD 68, 69, and 70.

Figure 40: Baton Rouge MSA
 2022 House with Illustrative HD 68 overlay (red lines) (Exhibit Q-12)



#

I reserve the right to continue to supplement my reports in light of additional facts, testimony, and/or materials that may come to light during the pendency of the above-captioned case.

Executed on: August 11, 2023

William S Cooper

WILLIAM S COOPER



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Transcript of Dr. Tumulesh Solanky

Date: September 22, 2023
Case: Nairne, et al. -v- Ardoin

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Transcript of Dr. Tumulesh Solanky
Conducted on September 22, 2023

1 (1 to 4)

1	3
1 IN THE UNITED STATES DISTRICT COURT	1 A P P E A R A N C E S
2 FOR THE MIDDLE DISTRICT OF LOUISIANA	2
3 -----x	3 ON BEHALF OF THE PLAINTIFF:
4 DR. DOROTHY NAIRNE, et al., :	4 AMANDA GIGLIO, ESQUIRE
5 Plaintiffs, : Case No.	5 DAKOTA KNEHANS, ESQUIRE
6 vs. : 3:22-cv-00178-SDD-SDJ	6 ALIZA ESTRELLA, ESQUIRE
7 R. KYLE ARDOIN, in :	7 COZEN O'CONNOR
8 his official capacity :	8 3 WTC
9 as Secretary of Louisiana, :	9 175 Greenwich Street, 55th Floor
10 Defendants. :	10 New York, NY 10007
11 -----x	11 212.509.9400
12	12
13	13 ON BEHALF OF PLAINTIFFS:
14	14 SARAH BRANNON, ESQUIRE
15 Deposition of DR. TUMULESH SOLANKY	15 AMERICAN CIVIL LIBERTIES UNION FOUNDATION
16 New York, New York	16 915 15th Street, NW
17 Friday, September 22, 2023	17 Washington, DC 20005
18 9:57 p.m.	18 202.675.2337
19	19
20	20 ON BEHALF OF THE DEFENDANT:
21	21 ALYSSA RIGGINS, ESQUIRE
22	22 NELSON MULLINS RILEY & SCARBOROUGH, LLP
23 Job No.: 507954	23 301 Hillsborough Street, Suite 1400
24 Pages: 1 - 262	24 Raleigh, North Carolina 27603
25 Recorded By: Harold Rodriguez	25 919.329.3800
2	4
1 Deposition of DR. TUMULESH SOLANKY,	1 C O N T E N T S
2 held at the offices of:	2
3	3 EXAMINATION OF DR. TUMULESH SOLANKY PAGE
4	4 By Ms. Giglio 5
5	5 By Ms. Riggins 254
6 COZEN O'CONNOR	6
7 3 WTC	7 E X H I B I T S
8 175 Greenwich Street, 55th Floor	8 (Attached to transcript.)
9 New York, New York 10007	9 DEPOSITION EXHIBIT PAGE
10	10 Exhibit 1 Report 20
11	11 Exhibit 2 Rebuttal 23
12	12 Exhibit 3 Report 24
13 Pursuant to agreement, before Harold	13 Exhibit 4 Report 24
14 Rodriguez, Notary Public in and for the	14 Exhibit 5 Election results 92
15 State of New York.	15 Exhibit 6 Map 119
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17	17 Exhibit 8 Example drawn out 224
18	18 Exhibit 9 Report 257
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Transcript of Dr. Tumulesh Solanky
Conducted on September 22, 2023

2 (5 to 8)

<p style="text-align: right;">5</p> <p>1 PROCEEDINGS</p> <p>2 Whereupon,</p> <p>3 DR. TUMULESH SOLANKY,</p> <p>4 being first duly sworn or affirmed to testify to</p> <p>5 the truth, the whole truth, and nothing but the</p> <p>6 truth, was examined and testified as follows:</p> <p>7 EXAMINATION BY COUNSEL FOR THE PLAINTIFF</p> <p>8 BY MS. GIGLIO:</p> <p>9 Q Good morning, Dr. Solanky. My name is</p> <p>10 Amanda Giglio, and I, along with my colleagues at</p> <p>11 Cozen O'Connor, the Legal Defense and Educational</p> <p>12 Fund, and the ACLU represent the plaintiffs in</p> <p>13 this case. Let me first ask you before we start:</p> <p>14 have you ever been deposed before?</p> <p>15 A Yes, I have been.</p> <p>16 Q How many times?</p> <p>17 A A large number of times, I cannot.</p> <p>18 Q More than 10?</p> <p>19 A More than 10.</p> <p>20 Q Okay, Great. So I just want to go over</p> <p>21 a couple of logistics and ground rules before we</p> <p>22 really get started on the substance. So we've</p> <p>23 established you've testified a lot, so I'm sure</p> <p>24 that you've heard these before, but do you</p> <p>25 understand that you're under oath to testify</p>	<p style="text-align: right;">7</p> <p>1 breaks, short breaks every hour just for the sake</p> <p>2 of everyone's sanity. But if I'm in the middle of</p> <p>3 a question or a short series of questions, I will</p> <p>4 ask that we finish that out before we take a break.</p> <p>5 Great. Okay. So let's get started.</p> <p>6 Dr. Solanky, can you please state and spell your</p> <p>7 name for the record?</p> <p>8 A Sure. My full name is Tumulesh Kumar</p> <p>9 Singh Solanky, and I'll spell it; T-U-M-U-L-E-S-H,</p> <p>10 K-U-M-A-R, S-I-N-G-H, and the last name,</p> <p>11 S-O-L-A-N-K-Y.</p> <p>12 Q What did you do to prepare for today's</p> <p>13 deposition?</p> <p>14 A I looked over some of the reports that</p> <p>15 have been submitted.</p> <p>16 Q Did you meet with Counsel to prepare</p> <p>17 for this deposition?</p> <p>18 A Not really. We met yesterday and we --</p> <p>19 we talked about some of things.</p> <p>20 Q You don't need to tell me what you</p> <p>21 talked about, just for the sake of protecting your</p> <p>22 --</p> <p>23 A Okay.</p> <p>24 Q -- privilege with your counsel, but you</p> <p>25 can just tell me that you met. I'll ask how long</p>
<p style="text-align: right;">6</p> <p>1 truthfully under perjury today?</p> <p>2 A Yes, I do.</p> <p>3 Q And is there any reason why you would</p> <p>4 be unable to testify truthfully today?</p> <p>5 A There -- there is no reason.</p> <p>6 Q So please be sure to answer my</p> <p>7 questions audibly for the sake of the court</p> <p>8 reporter. This deposition is being transcribed.</p> <p>9 It's important that our court reporter can</p> <p>10 transcribe your answers. He won't be able to hear</p> <p>11 uh-huhs or head nods, things like that. And</p> <p>12 especially -- it's -- it's especially because this</p> <p>13 is being transcribed, it's important that we don't</p> <p>14 talk over each other. So I'll answer -- I'll ask</p> <p>15 my question, I'll finish and then I will let you</p> <p>16 finish completely before moving on to additional</p> <p>17 questions.</p> <p>18 That's true also if your counsel</p> <p>19 objects to a question; let her finish her</p> <p>20 objection and then start your answer. Please let</p> <p>21 me know if you don't understand one of my</p> <p>22 questions and I'll do my best to rephrase it.</p> <p>23 Otherwise, I'll assume that you understand it and</p> <p>24 I'll expect you to answer it. If you feel like</p> <p>25 you need a break, let me know. I will try to take</p>	<p style="text-align: right;">8</p> <p>1 was -- were those meetings?</p> <p>2 A Okay.</p> <p>3 Q How long were those meetings?</p> <p>4 A A few hours.</p> <p>5 Q So you were retained as an expert in</p> <p>6 this case; is that right?</p> <p>7 A That is correct.</p> <p>8 Q Who retained you?</p> <p>9 A I believe Mr. Tom Farr.</p> <p>10 Q And --</p> <p>11 A So he's the one I first spoke with.</p> <p>12 Q And who does Mr. Tom Farr represent in</p> <p>13 this case?</p> <p>14 A The defendants.</p> <p>15 Q Do you know if -- if he represents one</p> <p>16 of the particular defendants?</p> <p>17 A I don't feel comfortable answering</p> <p>18 that, I -- I think.</p> <p>19 Q Okay. What were you asked to do as</p> <p>20 part of your retention?</p> <p>21 A In general, I was asked to look at the</p> <p>22 voting data, and -- and -- and -- and -- and</p> <p>23 review some of the plaintiff's expert reports, and</p> <p>24 -- and -- and -- and tender an opinion based on</p> <p>25 what is being done, that sort of thing.</p>

Transcript of Dr. Tumulesh Solanky
Conducted on September 22, 2023

3 (9 to 12)

<p>9</p> <p>1 Q Okay. And when you say looked at 2 voting data, were you looking for anything in 3 particular? 4 A Not in particular, but based on the -- 5 what is -- what was being written in the report, 6 so relevant to that. 7 Q And when you say in the report, what 8 report are you referencing? 9 A There were a number of reports which 10 were there in my -- you asked me for the first 11 time, and I'm going back one year, the reports, 12 which I looked at during the summer of 20 -- or 13 even sometime around that 2022. 14 Q Uh-huh. 15 A Now, I -- I -- I don't remember what 16 all reports -- 17 Q Uh-huh. 18 A -- if you produce my -- that last 19 report, last report meaning from 2022; I have 20 outlined the reports there. 21 Q Okay. So did you prepare a report in 22 2022? 23 A I did. 24 Q And what was that report? What did 25 that report center on?</p>	<p>11</p> <p>1 since 2022; right? 2 Q Yes. When -- well, let me ask you 3 this. When were you first retained in this case? 4 A Sometime in 2022. 5 Q Do you remember the season or the month? 6 A Let's see. It was -- oh, yeah, I can 7 recall. It was sometime in spring. So I would 8 say around February, March, April, sometime that. 9 Q Okay. So since spring of 2022, how 10 much have you been paid to -- for your work in 11 this case? 12 A I have worked I would say a couple of 13 hundred hours. 14 Q Okay. And it's \$200 an hour you said? 15 A 250. 16 Q \$250 an hour, okay. And how does your 17 rate in this case compare to your standard rate or 18 your rate in other cases; is this a standard rate? 19 A That -- that -- that is my standard 20 rate for such matters. 21 Q What do you mean by for such matters? 22 A Like, for example, if somebody is 23 calling me and they need some small work done, I 24 might do it pro bono -- 25 Q Uh-huh.</p>
<p>10</p> <p>1 A What I described. So -- so look at the 2 other export reports, look at the data, which is 3 there available publicly. And -- and I was also 4 provided a data from the Secretary of State, which 5 was a voter-level data. So -- so you utilize 6 those. 7 Q Okay. And who drafted the expert 8 report that you submitted in this case? 9 A I did myself. 10 Q Did you meet with Counsel about that 11 report? 12 A Me, no. 13 Q Did you send Counsel a draft of your 14 report? 15 A I don't recall. 16 Q Did Counsel suggest any changes to be 17 made to your report? 18 A Doubt it. 19 Q Are you being paid for your time? 20 A Yes, I am. 21 Q How much are you being paid? 22 A I am paid \$250 an hour. 23 Q And how much have you been paid so far 24 in connection with this case? 25 A So -- so you are asking me going back</p>	<p>12</p> <p>1 A Or I might reduce the rate. 2 Q So do you mean for cases that are going 3 to take upwards of how many hours? 4 A If the -- if the matter is a legal 5 matter as opposed to somebody just asking me to do 6 a small statistical analysis -- 7 Q Uh-huh. 8 A The rate is 250. 9 Q Okay. Dr. Solanky, can you tell me 10 about your educational history following high 11 school? 12 A Sure. Now, I have a bachelor's degree 13 in mathematics honors, from University of Delhi in 14 India. 15 Q Uh-huh. 16 A And then I have a master's degree in 17 mathematics again from India -- Indian Institute 18 of Technology. And after that, I have a doctorate 19 degree in statistics from University of 20 Connecticut. 21 Q And can you describe your work history? 22 A Sure. Now, when I was a student at 23 UConn, University of Connecticut, I served as a 24 lecturer and -- and taught some classes there in 25 that capacity. And after that, I've been teaching</p>

Transcript of Dr. Tumulesh Solanky
Conducted on September 22, 2023

4 (13 to 16)

<p>13</p> <p>1 at University of New Orleans, first as assistant 2 professor, and then got promoted to associate 3 professor, and after that, got promoted to full 4 professor. 5 And -- and since 2008, I've been 6 serving as professor and the chair of the 7 mathematics department. In-between, I -- I was on 8 sabbatical, so -- so I was a visiting professor at 9 University of Toronto. And so that is my work 10 history. 11 Q Okay. What subjects do you teach? 12 A Most of the time, I have taught 13 subjects in the field of mathematics and 14 statistics. This last summer, I -- I -- I started 15 teaching something in business as well. 16 Q Do you have particular topics in math 17 and statistics that you focus on in your teaching? 18 A All of statistics. 19 Q All of statistics. 20 A So I -- so I have taught, like, 10, 15 21 different classes in the field of statistics, 22 graduate and undergraduate. And I have taught 23 some mathematics classes as well. 24 Q And I assume that you've published 25 articles as part of your work?</p>	<p>15</p> <p>1 considered an expert in? 2 A Now anything which deals with data; 3 modeling of data, making predictions based on 4 data, sampling of data, so that -- that sort of 5 summarizes the broad area. And fitting 6 statistical models. 7 Q Have you ever served as an expert in 8 political science? 9 A I have not. 10 Q Have you ever served as an expert in 11 voting patterns? 12 A No. 13 Q And have you ever served as an expert 14 in a case involving the Voting Rights Act before? 15 A The answer is no. But last year when 16 this matter came up, I did serve in the -- in this 17 case, wrote reports as an expert in those areas, 18 and even testified. So -- so I really don't know 19 what answer to give to you, but -- but I'm giving 20 you the complete picture. 21 Q Sure. So when you say that you 22 testified, do you mean that you testified in the 23 -- in the case dealing with congressional 24 redistricting? 25 A That is right.</p>
<p>14</p> <p>1 A That is right. 2 Q Have you ever published any articles 3 dealing with the Voting Rights Act? 4 A No, I have not. 5 Q Have you ever published any articles 6 dealing with election data? 7 A No. 8 Q Have you published any articles dealing 9 with statistical analyses involved in assessing 10 voting patterns? 11 A I have not. 12 Q And have you published any articles on 13 ecological inference modeling? 14 A I have not. 15 Q And you said that you've been deposed 16 many times before. Have you ever served in a -- 17 as an expert before? 18 A I have. 19 Q And how many times have you served as 20 an expert Dr. Solanky? 21 A It's in my CV. 22 Q Uh-huh. 23 A I would say number of times. I mean, 24 if you want, I can take the CV out and count it. 25 Q And what topics generally have you been</p>	<p>16</p> <p>1 Q Understood. And you -- were you 2 retained as an expert in this case dealing with 3 the state legislative maps in the spring of 2022 4 as well? 5 A Yes -- yes, in a very general term. 6 Q Have you ever been precluded from 7 testifying as an expert by a court? 8 A No. 9 Q Have you ever been accepted as an 10 expert by a court in a case involving political 11 science? 12 MS. RIGGINS: Objection. 13 A That's a very broad term. Now, I have 14 looked at very similar data, meaning the data 15 based on race, based on who -- who votes, who 16 serves, a number of times, but my focus has been 17 statistical modeling. 18 Q Understood. And when you say 19 statistical modeling, what do you mean by 20 statistical modeling? 21 A Taking a data and fitting a statistical 22 model to it, to explain what is going on and make 23 predictions. 24 Q And do you have particular models that 25 you've used in the past?</p>

Transcript of Dr. Tumulesh Solanky
Conducted on September 22, 2023

5 (17 to 20)

<p>17</p> <p>1 A Yes. There -- I -- I mean, it would 2 take me a long time to specify all the models. 3 The answer is yes. 4 Q Had -- prior to this report, have you 5 ever used ecological inference modeling before? 6 A No. EI modeling is very standard 7 modeling. It's taught in classes which I teach. 8 Anytime whenever you are trying to estimate some 9 -- some data based on the aggregate data -- 10 Q Uh-huh. 11 A -- EI modeling or EI regression are 12 very standard tricks. When I say tricks, meaning 13 models. 14 Q Uh-huh. Have you ever given testimony 15 on ecological inference modeling before? 16 A Cannot recall. Probably the answer is 17 -- I -- the answer is probably no. But having 18 said that, this is such a commonly used tool. I 19 could have used it to gain insight into the data. 20 Whether I testify to -- based on that or not, 21 that's why I'm hesitating. 22 Q Have you ever used it, to your 23 recollection, in an expert report before? 24 A I have used it to gain insights into 25 the data. So I may -- may or may not write it in</p>	<p>19</p> <p>1 sure, I'm so sorry. 2 A Now EI is -- is a tool, but it's a tool 3 which was derived from regression modeling. So -- 4 so if you go back into the history of AI modeling, 5 some of the models which were first appeared in 6 this area were regression models. And -- and 7 that's another way to look at ecological data. 8 And if you look at my report from last year, I did 9 extensive regression types models for such 10 aggregate-level data. 11 Q Can you give me some examples of other 12 types of aggregate level data that you've worked 13 with? 14 A Now -- now, I cannot think of any, but 15 if you give me some time, I can think of. But 16 like what I've told you earlier, it's a very 17 standard statistical model, and -- and -- and -- 18 and I love to bring it up in my classes which I 19 teach. 20 Q Great. So let's start to focus on your 21 report in this case, Dr. Solanky. So you 22 submitted an expert report in this case; correct? 23 A Yes. 24 Q And you submitted a rebuttal report 25 also?</p>
<p>18</p> <p>1 a report, but as I said, it's a very commonly used 2 tool. 3 Q Does most of your academic and expert 4 work deal with individual-level data or 5 aggregate-level data? 6 A Again, I have been teaching and 7 practicing the field of statistics for over 30 8 years, so -- so very difficult to quantify what 9 you're asking me. But my answer would be, I have 10 dealt with data sets coming from all different 11 fields; science, engineering, political science, 12 and -- and that's the answer. 13 Q So you have -- do you have extensive 14 experience using aggregate-level data? 15 A Yes. 16 Q In what context, aside from the report 17 that we're reviewing today? 18 A Now, first of all, looking at aggregate 19 data, it -- it comes across quite routinely in 20 this matter, what we are here for. 21 Q Uh-huh. 22 A But even otherwise, whenever you have 23 aggregate data and you want to see 24 individual-level focus, EI is -- is a common tool. 25 Q And can you give me some example -- oh,</p>	<p>20</p> <p>1 A Correct. 2 MS. GIGLIO: So I'm going to mark your 3 report as Solanky 1. 4 (Exhibit 1 was marked.) 5 MS. GIGLIO: A copy. Okay. 6 MS. RIGGINS: Can you put an exhibit 7 sticker on this one? 8 Amanda, do you need a copy? 9 MS. GIGLIO: Oh, sure. You know what, 10 I'll give that to in a second. Here you go. 11 Great. 12 Q So I'd just like to -- to turn to 13 Paragraph 3 of the report. So here on Page 3, Dr. 14 Solanky, you list the materials that you reviewed 15 when putting together your report; is that right? 16 A That is right. 17 Q And according to this list, those 18 materials include Dr. Lisa Handley's report 19 submitted in July 2022? 20 A Yes. 21 Q And Mr. Cooper's report submitted in 22 July of 2022, or -- yes, in July of 2022? 23 A Correct. 24 Q And Dr. Handley's report submitted in 25 June of 2023; correct?</p>

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Transcript of Dr. Tumulesh Solanky
Conducted on September 22, 2023

6 (21 to 24)

<p style="text-align: right;">21</p> <p>1 A Correct.</p> <p>2 Q And Mr. Cooper's report submitted in</p> <p>3 June of 2023; is that correct?</p> <p>4 A That's correct. Now you are going</p> <p>5 alphabetically down; right?</p> <p>6 Q Well, I'm looking at -- I'm more going</p> <p>7 chronologically.</p> <p>8 A Okay.</p> <p>9 Q So in looking at the Cooper reports</p> <p>10 that you reviewed, you reviewed both the July 2022</p> <p>11 report and the June 2023 report; right?</p> <p>12 A Correct.</p> <p>13 Q And in looking at Dr. Handley's</p> <p>14 reports, you reviewed the July '22 -- '22 and June</p> <p>15 2023 reports; is that right?</p> <p>16 A Correct.</p> <p>17 Q Do you render any opinions about Mr.</p> <p>18 Cooper's reports in your expert report, Dr.</p> <p>19 Solanky?</p> <p>20 A No, I was crunched for time, so I could</p> <p>21 not include some of the things which I looked into</p> <p>22 it. Am I answer -- what was your question?</p> <p>23 Q My question was, do you render any</p> <p>24 reports about Mr. Cooper's reports in your report?</p> <p>25 A I -- now, I looked at some of his</p>	<p style="text-align: right;">23</p> <p>1 files, data sets, programs listed above, because</p> <p>2 materially different reports were provided less</p> <p>3 than 30 days before this report was due; is that</p> <p>4 right?</p> <p>5 A That is correct.</p> <p>6 Q You said earlier that you reviewed Dr.</p> <p>7 Handley's report from 2022 in 2022; is that right?</p> <p>8 A That is right.</p> <p>9 Q And you reviewed Mr. Cooper's report</p> <p>10 submitted in 2022 during 2022.</p> <p>11 A Correct.</p> <p>12 Q -- is that right? And, again, you have</p> <p>13 represented that your conclusions primarily</p> <p>14 focused on Dr. Handley's report; correct?</p> <p>15 A Correct.</p> <p>16 Q As she analyzes Mr. Cooper's report.</p> <p>17 MS. GIGLIO: So I'm going to introduce</p> <p>18 as -- well, to keep things consistent. I'll</p> <p>19 introduce his rebuttal as Solanky 2, simply so</p> <p>20 that we have the report and the rebuttal in tandem.</p> <p>21 (Exhibit 2 was marked.)</p> <p>22 Q Here you go. Oh, here. And then here</p> <p>23 you go. So we're just going to pass around, it's</p> <p>24 fine. I just want to make sure you have a copy of</p> <p>25 everything, Doctor. Here you go.</p>
<p style="text-align: right;">22</p> <p>1 proposed districts, and -- I don't know what all I</p> <p>2 have included in here. But if -- if I refer to</p> <p>3 his work, analyze the work, it was marginal at the</p> <p>4 best.</p> <p>5 Q Do you render any opinions about the</p> <p>6 illustrative districts that Mr. Cooper proposes in</p> <p>7 his report?</p> <p>8 A Now, his illustrative districts have</p> <p>9 been analyzed by Dr. Handley, and I have extensive</p> <p>10 work based on those voting district --</p> <p>11 illustrative districts.</p> <p>12 Q So your opinions focus on Dr. Handley's</p> <p>13 report?</p> <p>14 A You can say that.</p> <p>15 Q And the conclusions that Dr. Handley</p> <p>16 rendered in her reports?</p> <p>17 A You can say that, too.</p> <p>18 Q Would you say that?</p> <p>19 A Sure. So -- so -- so these works are</p> <p>20 interrelated, and so I'm looking at Mr. Cooper's</p> <p>21 work more through how it has impacted Dr.</p> <p>22 Handley's work.</p> <p>23 Q Understood. So you said earlier, and</p> <p>24 turning to Paragraph 4 of your report, that you</p> <p>25 did not have adequate time to review in detail the</p>	<p style="text-align: right;">24</p> <p>1 A I'm going to get that one.</p> <p>2 Q Oh, sure?</p> <p>3 MS. GIGLIO: And then here, Alyssa, you</p> <p>4 -- great.</p> <p>5 And then I'm also going to introduce</p> <p>6 the two reports submitted by Dr. Handley. So the</p> <p>7 report from 2022 will be Solanky 3.</p> <p>8 (Exhibit 3 was marked.)</p> <p>9 MS. GIGLIO: Okay. So here you go,</p> <p>10 pass it along. And one to Alyssa. And here's</p> <p>11 another copy. Uh-huh. Sorry for all the paper</p> <p>12 everybody.</p> <p>13 And 2023 will be Solanky 4.</p> <p>14 (Exhibit 4 was marked.)</p> <p>15 MS. GIGLIO: Here you go, sorry. Here</p> <p>16 you go again. Thank you so much everyone. There</p> <p>17 you go.</p> <p>18 Q So once we're settled, just let me know</p> <p>19 when you're ready.</p> <p>20 A I'm ready.</p> <p>21 Q Okay, great. So I'd like to turn to</p> <p>22 Pages 6 to 7 in Dr. Handley's July 2022 report.</p> <p>23 So that's Solanky 3. Okay. Oh, I'm so sorry,</p> <p>24 Doctor.</p> <p>25 A It's okay. And which page is that?</p>

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7 (25 to 28)

25	<p>1 Q 6 to 7.</p> <p>2 A Okay.</p> <p>3 Q And then next to that, I'd like to open</p> <p>4 up Dr. Handley's 2023 report, just so that you can</p> <p>5 see them side by side, on the same pages, 6 to 7.</p> <p>6 Do you see the elections listed on Pages 6 to 7 in</p> <p>7 both of these reports?</p> <p>8 A Yes, I do.</p> <p>9 Q Can you tell me if there are any</p> <p>10 differences in these two lists of elections?</p> <p>11 A I -- I -- I don't see any difference.</p> <p>12 Q Is the November 2022 US senate election</p> <p>13 listed in -- in Dr. Handley's 2022 report?</p> <p>14 A Which one is that, 3 or 4?</p> <p>15 Q So if you look at 3 --</p> <p>16 A Is it 3? yes.</p> <p>17 Q -- which is right above, the -- the</p> <p>18 November 2022 election for senate is not listed</p> <p>19 there; is that right?</p> <p>20 A That is right.</p> <p>21 Q But all other elections listed in Dr.</p> <p>22 Handley's June 2022 report are reflected in her</p> <p>23 June 2023 report; is that right?</p> <p>24 A Correct -- correct, yeah. So yeah,</p> <p>25 right. So I did not notice that November 2022 as</p>	27	<p>1 Charles are in both reports?</p> <p>2 A That is correct.</p> <p>3 Q Area 3, East Baton Rouge, West Baton</p> <p>4 Rouge, Iberville, and Pointe Coupee are in both</p> <p>5 reports?</p> <p>6 A Correct.</p> <p>7 Q Area 4, DeSoto, Natchitoches and Red</p> <p>8 River are on both reports?</p> <p>9 A Correct.</p> <p>10 Q Area 5, Calcasieu is in both reports.</p> <p>11 A Yes.</p> <p>12 Q And if I'm pronouncing any of these</p> <p>13 incorrectly Dr. Solanky, you're a Louisiana</p> <p>14 native, please feel free to correct me. Area 6,</p> <p>15 South Central Louisiana, Ascension, and Iberville</p> <p>16 in both reports?</p> <p>17 A Correct.</p> <p>18 Q And in Area 7, East Baton Rouge and</p> <p>19 East Feliciana are in both reports?</p> <p>20 A That is correct.</p> <p>21 Q So turning to Paragraph 1 of your</p> <p>22 report -- you can put those away for now.</p> <p>23 A Okay.</p> <p>24 Q Thank you very much.</p> <p>25 A Put -- put away 3 and 4?</p>
26	<p>1 the only being different in this table.</p> <p>2 Q And then turning to Page 9 of the</p> <p>3 report -- of both of the reports, one may be Page</p> <p>4 8, but you'll see a table. The table is Table 2</p> <p>5 in each report. Should be called Areas of</p> <p>6 Interest and the Additional Illustrative Majority</p> <p>7 -- majority By Districts.</p> <p>8 A Yes, I'm looking at that.</p> <p>9 Q Okay. Are there any differences</p> <p>10 between Table 2 in her June 2020 -- or her July</p> <p>11 2022 report and Table 2 in her June of 2023 report?</p> <p>12 A In terms of these numbers mentioned</p> <p>13 here, don't see any.</p> <p>14 Q And in terms of the areas themselves,</p> <p>15 Northwest -- or Southeast, East Central, West</p> <p>16 Louisiana, Southwest, South Central, East Central</p> <p>17 Louisiana, do you see any differences?</p> <p>18 A They -- they look similar.</p> <p>19 Q And if you look at the parishes, can I</p> <p>20 just compare them each with you? Is Bossier --</p> <p>21 bossier Parish in both her 2022 and 2023 reports?</p> <p>22 A Correct.</p> <p>23 Q And Caddo Parish is in both reports?</p> <p>24 A That is correct.</p> <p>25 Q And in Area 2, Jefferson and St.</p>	28	<p>1 Q 3 and 4, yes.</p> <p>2 A Okay.</p> <p>3 Q So turning to Solanky 1, your original</p> <p>4 report in this case.</p> <p>5 A Okay.</p> <p>6 Q Just going through the requests made</p> <p>7 for the content of your report. You say that you</p> <p>8 were asked to statistically study the voting</p> <p>9 patterns and the composition of the enacted State</p> <p>10 House, HB 14, and Senate, SB1, plans in Louisiana;</p> <p>11 is that right?</p> <p>12 A That is right.</p> <p>13 Q How did you statistically study the</p> <p>14 voting patterns and composition of the enacted</p> <p>15 maps?</p> <p>16 A Like, which paragraph you're on?</p> <p>17 Q I'm on Paragraph 1, the very First</p> <p>18 Sentence.</p> <p>19 A Okay, I'm sorry.</p> <p>20 Q I was -- that's okay.</p> <p>21 A (Crosstalk).</p> <p>22 Q You don't need to apologize, Dr.</p> <p>23 Solanky.</p> <p>24 A Thank you.</p> <p>25 Q I was requested by Counsel --</p>

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8 (29 to 32)

<p>29</p> <p>1 A Paragraph 1 on which page?</p> <p>2 Q Paragraph 1 In the introduction right</p> <p>3 there.</p> <p>4 A Okay.</p> <p>5 Q First Sentence.</p> <p>6 A All right.</p> <p>7 Q It says that you were requested to</p> <p>8 statistically study the voting patterns and the</p> <p>9 composition of the enacted State House, HB 14, and</p> <p>10 Senate, SB1, plans in Louisiana. My question is,</p> <p>11 how did you statistically study the voting</p> <p>12 patterns and the composition of the enacted maps?</p> <p>13 A No, as I said earlier, what I studied</p> <p>14 was looking at what Dr. Handley had submitted.</p> <p>15 And -- and -- and I -- I described you briefly, I</p> <p>16 looked at some of the illustrative maps by Mr.</p> <p>17 Cooper, what precincts are involved and how</p> <p>18 several states get divided into different House</p> <p>19 and Senate blocks.</p> <p>20 Q Uh-huh.</p> <p>21 A But to answer your question --</p> <p>22 Q Uh-huh.</p> <p>23 A -- most of the work I have done, given</p> <p>24 the time constraint, is related to Dr. Handley's</p> <p>25 work.</p>	<p>31</p> <p>1 Q Why did you have to recreate the data</p> <p>2 yourself?</p> <p>3 A Because her data was incomplete.</p> <p>4 Q And what do you mean by her data was</p> <p>5 incomplete?</p> <p>6 A Meaning, first of all, she did not</p> <p>7 provided all of the data. I think in my rebuttal</p> <p>8 report, I have provided some instances. But more</p> <p>9 than that, she did not provide, for example, how</p> <p>10 many votes each candidate got on the election day.</p> <p>11 What she has provided is an aggregate based on her</p> <p>12 estimate. So -- so for me, if -- if I need to</p> <p>13 verify the data, I had to start from the</p> <p>14 beginning, meaning retrieve the data on my own,</p> <p>15 and then see what data she has, and then go from</p> <p>16 there.</p> <p>17 Q And the number of votes that each</p> <p>18 candidate got on election day, that data is</p> <p>19 publicly available; is that right?</p> <p>20 A That is correct.</p> <p>21 Q Through the Secretary of State?</p> <p>22 A That is correct.</p> <p>23 Q And when you say that data was missing,</p> <p>24 do you mean the number of votes that each</p> <p>25 candidate got? Was there other data that was</p>
<p>30</p> <p>1 Q And when you say related to Dr.</p> <p>2 Handley's work, how would you summarize Dr.</p> <p>3 Handley's work?</p> <p>4 A How would I summarize? So you are</p> <p>5 asking me to summarize, not critique; right?</p> <p>6 Q Correct.</p> <p>7 A Her work is based on looking at some</p> <p>8 specific regions, and -- and -- and reporting the</p> <p>9 percentage of votes by blacks, whites, for</p> <p>10 Democrat candidates, for Republican candidates in</p> <p>11 general. So that is the primary focus of our work.</p> <p>12 Q And in critiquing that work, what kind</p> <p>13 of methodologies did you employ?</p> <p>14 A In critiquing her work, the first thing</p> <p>15 for me was to look at her data, and -- and see</p> <p>16 what data she has used, and to understand if the</p> <p>17 data is correct, verifying the data, and -- and --</p> <p>18 and -- and -- and -- and -- and -- and then based</p> <p>19 on that, recreating her work. And then -- and</p> <p>20 then verifying some of the assumptions which she</p> <p>21 has made, if those are true or not.</p> <p>22 Q And in reviewing Dr. Handley's data,</p> <p>23 did you use her data to recreate her work?</p> <p>24 A I looked at her data, but in order to</p> <p>25 do the work, I had to recreate the data myself.</p>	<p>32</p> <p>1 missing in your view?</p> <p>2 A In -- in my rebuttal report, I have</p> <p>3 provided some specific instances where some</p> <p>4 particular columns were missing. But in general,</p> <p>5 what was missing broadly was how many words each</p> <p>6 candidate got on the election day.</p> <p>7 Q Understood. Great. Dr. Solanky, are</p> <p>8 you familiar with the concept of racially</p> <p>9 polarized voting?</p> <p>10 A I am.</p> <p>11 Q And how would you define it?</p> <p>12 A Now, racially polarized voting is, when</p> <p>13 based on race, the votes tend to be biased towards</p> <p>14 a particular candidate.</p> <p>15 Q What do you mean by biased towards a</p> <p>16 particular candidate?</p> <p>17 A Meaning -- let me give you an</p> <p>18 illustration. For example, more whites voting for</p> <p>19 a Republican; that could be polarization.</p> <p>20 Q And could -- understood. And why would</p> <p>21 that be an example of polarization?</p> <p>22 A No, that is the -- that is my</p> <p>23 understanding of polarization.</p> <p>24 Q How did you come to that understanding?</p> <p>25 A Reading the reports in general.</p>

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9 (33 to 36)

<p>33</p> <p>1 Q Did you do any independent research on</p> <p>2 racially polarized voting?</p> <p>3 A No, I read, like, quite a bit of what's</p> <p>4 out there on internet to familiarize with myself</p> <p>5 -- myself with the terms being used in -- in this</p> <p>6 case.</p> <p>7 Q And to your knowledge, how do you</p> <p>8 analyze racially polarized voting?</p> <p>9 A Now, one way is to look at the data,</p> <p>10 and -- and see the voting patterns, and -- and --</p> <p>11 and -- and that has been the subject of, I think</p> <p>12 even Dr. Handley's report and my report as well.</p> <p>13 So -- so looking at the voting data for elections</p> <p>14 and then estimating the voting patterns by race.</p> <p>15 Q And when you say voting patterns by</p> <p>16 race, what do you mean by that?</p> <p>17 A Meaning who are white voters voting for</p> <p>18 in general, who are black voters voting for, who</p> <p>19 are other voters voting for. So -- so that is the</p> <p>20 broad meaning of voting pattern by race.</p> <p>21 Q And when you say who are black voters</p> <p>22 voting for, do you analyze black voters against</p> <p>23 other black voters to get -- get a gauge on who</p> <p>24 black voters in general are voting for?</p> <p>25 A I don't understand. You are -- I -- I</p>	<p>35</p> <p>1 what is your -- what is the relevance of analyzing</p> <p>2 racially polarized voting in assessing a case</p> <p>3 brought under the Voting Rights Act?</p> <p>4 MS. RIGGINS: Objection. You can</p> <p>5 answer.</p> <p>6 A Now, what you said is right. I'm not a</p> <p>7 lawyer, and so -- so it's -- the way I look at it</p> <p>8 is to understand how people are voting.</p> <p>9 Q So prior to this report, have you ever</p> <p>10 used EI to analyze voting patterns?</p> <p>11 A Like what I told you earlier, the --</p> <p>12 the work I had done in 2012 for this -- for which</p> <p>13 I used a regression modeling to understand -- to</p> <p>14 formulate EI, now, I did quite a bit of even EI</p> <p>15 modeling there, but then what was standing out was</p> <p>16 reporting it be -- using the regression model.</p> <p>17 And in particular, in that work which I had</p> <p>18 submitted, I had not looked at percent-level data.</p> <p>19 And -- please, let me finish.</p> <p>20 Q Oh, no, I'm so sorry, Doctor.</p> <p>21 A And so -- so -- so I had looked at -- I</p> <p>22 had not looked at percent-level data then, so it</p> <p>23 was more appropriate to do regression modeling.</p> <p>24 But even -- even with those state-level data, I --</p> <p>25 I did some EI modeling.</p>
<p>34</p> <p>1 think you said black voters against other black</p> <p>2 voters?</p> <p>3 Q Meaning if you want to get a sense of</p> <p>4 who white voters are voting for, how do you get to</p> <p>5 that number?</p> <p>6 A So -- so -- so if you look at the work</p> <p>7 I -- I did last year, I did quite a bit of</p> <p>8 regression modeling. And in this work which I</p> <p>9 have submitted now, I have looked at some EI</p> <p>10 modeling, which, again, they are same ideas,</p> <p>11 different methodologies.</p> <p>12 Q And why would you choose EI modeling</p> <p>13 over regression modeling in analyzing voting data?</p> <p>14 A Now, in some sense, EI modeling is more</p> <p>15 precise. It can get to the answer in a more</p> <p>16 concrete way, but if you want to look at the</p> <p>17 trends, regression models can -- if you look at my</p> <p>18 reports from last year, the trends were very</p> <p>19 clear, even looking at the regression models.</p> <p>20 So -- but -- but overall, EI models are</p> <p>21 more precise, meaning they -- they give you a</p> <p>22 precise number, as opposed to a regression model,</p> <p>23 which describes, in general, what is happening.</p> <p>24 Q To your knowledge, and I understand</p> <p>25 that you're not a lawyer, but to your knowledge,</p>	<p>36</p> <p>1 And like I -- what I told you earlier,</p> <p>2 EI modeling is a very commonly used tool. So even</p> <p>3 though I may not be reporting on it, but it's a</p> <p>4 tool out there which you can use to gather some</p> <p>5 information, and then you -- what approach you</p> <p>6 adopt could be different, so --</p> <p>7 Q And just to be clear, what you're</p> <p>8 describing, the regression analysis work that</p> <p>9 you've done, that was in 2022; correct?</p> <p>10 A That is right.</p> <p>11 Q In connection with the congressional</p> <p>12 case?</p> <p>13 A That is right.</p> <p>14 Q And that's the Robinson case --</p> <p>15 A Right.</p> <p>16 Q -- I believe?</p> <p>17 So let me rephrase the question.</p> <p>18 Prior to this report, have you ever</p> <p>19 based an expert report centered on voting data on</p> <p>20 the use of EEI -- on the use of EI?</p> <p>21 A Now, let me start with the -- what I</p> <p>22 said before. Now, EI is a very commonly-used</p> <p>23 tool, and -- and there was a case which was like</p> <p>24 10, 15 years ago, where I was looking at some of</p> <p>25 the, not voting patterns, but looking at the --</p>

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10 (37 to 40)

<p>37</p> <p>1 the people who could be -- who are on the voter 2 registration list. 3 I might -- I think I did some EI work 4 just to familiarize myself with -- based on the 5 aggregate data, to get some inner idea about the 6 individual-level data, but I -- just to 7 familiarize myself. So -- so I think your answer 8 -- question was, have I used? Yes. Have I 9 explicitly written it in a report? Probably no. 10 Q Yes, because here, you explicitly cover 11 EI analysis as the basis of your report; right? 12 A Correct. 13 Q So before this report, you have not 14 used EI analysis as the center of a report where 15 you're submitting -- a -- a report dealing with 16 voting data and the analysis of voting data? 17 A I'll agree with that statement. 18 Q Dr. Solanky, are you familiar with the 19 term, crossover voting? 20 A Can you explain that to me? 21 Q I cannot, but I'm asking you if you're 22 familiar with the term. 23 A I've heard that term, crossover voting, 24 meaning people are crossing over to vote. 25 Q What does that -- what is -- what do</p>	<p>39</p> <p>1 Q -- to your report? 2 A -- was to understand who black voters 3 are voting for, who white voters are voting for, 4 and I have given you a complete picture, given you 5 -- I'm sorry, in my reports, I have provided the 6 complete picture of those voting patterns. 7 Q And -- and when you say, a complete 8 picture of the voting patterns, I just want to get 9 an understanding of what that means. 10 A A complete picture, meaning black 11 voters voting for Democrat, black voters voting 12 for Republican, white voters voting for Democrat, 13 white voters voting for Republican, and -- and I 14 might have done that. 15 I know I did that for even others, but 16 I don't know whether that's -- I'll have to review 17 if I included those columns in my appendices or 18 not. 19 Q Understood. And prior to this report, 20 have you ever done a statistical analysis of 21 crossover voting, as you understand it? 22 A Probably not. Probably not in a legal 23 setting, but what I told you earlier, EI is a very 24 commonly used statistical model. In my classes, I 25 routinely bring up EI modeling, teach EI modeling,</p>
<p>38</p> <p>1 you mean by crossing over to vote? 2 A You know, to -- first of all, as a 3 phrase, I explained what that phrase means to me, 4 but if you're looking for some illustration, for 5 example here, you could have black voters voting 6 for a Democrat, and you can think of black voters 7 voting for a Republican as a crossover. 8 Q So white voters voting for a democrat 9 would be crossover voting, in your view? 10 A It depends. 11 Q What does it depend on? 12 A It depends on what the norm is. 13 Q And when you say, what the norm is, 14 what do you mean by that? 15 A When you are using the phrase, 16 crossover, you'll have to be specific, crossing 17 over from what to what? And -- and that would 18 define the word, crossover. 19 Q Understood. Do you analyze the concept 20 of crossover voting in your report? 21 A I have -- based on the definition I 22 illustrated, I have quite a bit. 23 Q And what's the relevance of -- of 24 crossover voting, as you understand it -- 25 A The purpose --</p>	<p>40</p> <p>1 and -- and I -- and I used quite a bit of election 2 data to illustrate. 3 Q But this is the first time that you're 4 citing EI modeling in connection with an election 5 -- in -- in connection with election data in -- in 6 an expert report? 7 A That is correct. 8 Q And, again, Dr. Solanky, I know that 9 you're not a lawyer. Are you familiar with the 10 preconditions in the Gingle Supreme Court case? 11 A I have read them. 12 Q Do you have any recollection of what 13 they are? 14 A I would rather not recollect. 15 Q And do you have any familiarity with 16 the term, cohesive voting? 17 A Now, I have read that term, and -- and 18 what's your question? 19 Q Do you -- do -- do you have a sense -- 20 A Now -- 21 Q -- of what that means? 22 A -- I have a sense of what it means. 23 Cohesive mean -- voting means people voting 24 cohesively. 25 Q And what does that mean to you?</p>

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11 (41 to 44)

<p>41</p> <p>1 A Meaning black voters voting for a black 2 candidate as a group. 3 Q And how do you analyze whether voters 4 are voting cohesively? 5 A Now, I'll -- I'll stay away from the 6 word, whether voters are voting cohesively or not. 7 I would rather look at the entire picture and -- 8 and produce the percentages scientifically that 9 this is happening. 10 What you consider as cohesive or not, 11 that could change from -- how somebody looks at 12 it, so -- so I -- I would rather not characterize 13 a number, saying that this is cohesive, this is 14 not. 15 The -- the better idea would be to 16 present all of the picture out there, and -- and 17 then somebody can draw his or her own conclusions 18 based on that. 19 Q Understood. Did you analyze whether 20 voting patterns in Louisiana of black voters are 21 cohesive in your report? 22 A Again, I have presented the entire 23 picture, and I'm not making any opinion on what is 24 cohesive, what is not. 25 Q Did you analyze whether black voters</p>	<p>43</p> <p>1 Q No, please. Okay. And, Dr. Solanky, 2 do you have any sense of what it means to say that 3 a group of votes -- a group of voters vote to 4 defeat a candidate of choice as a block? 5 A And -- and -- and -- and -- and that is 6 -- again, I have opined upon in my report. So if 7 you look at, say, white voters, and they are all 8 voting as a block in favor of a candidate, so that 9 could be an instance when they're voting as a 10 block, and the -- if they're voting as a block, 11 the outcome is understood that some candidate is 12 going to win based on their vote -- block voting, 13 some candidate is going to lose. 14 Q So you would say that block voting 15 indicates that a certain candidate is going to win 16 an election? 17 A It depends on the size of that block 18 voting, yes. 19 Q And in general, how big of a block -- 20 to your understanding, how big of a block does it 21 take to win an election? 22 A That that's a very good question. It 23 depends. 24 Q What does it depend on? 25 A It depends on how people are voting.</p>
<p>42</p> <p>1 are -- tend to vote together in your report? 2 A Now, I have provided in my report every 3 -- what the data says. 4 Q And in -- in general, what does the 5 data say? 6 A In general -- 7 Q We'll go through it specifically later. 8 A Okay. Please ask me your question 9 again. 10 Q Oh, sure. In general, what does the 11 data say about the trends of black voters? 12 A So, in general, black voters tend to 13 vote for a Democratic candidate. In general. 14 Q Do they tend to vote together? 15 A Let me complete that first answer. 16 Q Oh, I'm so sorry, Doctor. 17 A I'm sorry. That's okay. 18 Q That's okay. 19 A I mean -- yeah, please don't apologize. 20 So -- so in general, black voters vote for 21 Democrat candidates, in general, but there could 22 be instances when they don't. And the next 23 question you asked me was? 24 Q That was the question I asked. 25 A Okay, okay. Sorry.</p>	<p>44</p> <p>1 Q Okay. 2 A So -- so in some precincts, for -- in 3 some parishes, for example, depending on how many 4 -- say you have a candidate X. Depends on how 5 many candidate X votes the candidate is getting 6 from Democrats, from whites, from blacks. It 7 depends on all that. So -- so -- so that's a very 8 good question in the sense, it depends. 9 Q Generally, how many -- how -- how -- 10 what percentage of votes is required to win an 11 election? 12 A Fifty percent, if that is what you're 13 asking me. So in a two-candidate, it's obvious, 14 but in a primary, it's 50 percent. 15 Q Are you familiar with the term, 16 conjoined polarization, Doctor? 17 A No, I'm not. 18 Q And in your report, did you analyze 19 whether a voter's race can be an explanation for 20 their party affiliation? 21 A Yes, I have. 22 Q You explain -- you analyze whether it 23 can explain their party affiliation? 24 A No, that's -- is that what your first 25 question was --</p>

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12 (45 to 48)

<p style="text-align: right;">45</p> <p>1 Q Yes.</p> <p>2 A -- explain? I missed that word,</p> <p>3 explain.</p> <p>4 Q That's okay. So in your report, just</p> <p>5 to be clear for the record --</p> <p>6 A Yeah.</p> <p>7 Q -- do you analyze whether a voter's</p> <p>8 race can be an explanation for their party</p> <p>9 affiliation?</p> <p>10 A I'm not providing any explanations as</p> <p>11 to why somebody's a Democrat or somebody's a</p> <p>12 Republican, but I have provided extensive data to</p> <p>13 show what percentage of blacks are Democrats, are</p> <p>14 Republican, and so on.</p> <p>15 Q And in your report, this -- you may</p> <p>16 answer it the same way, but I just have to ask</p> <p>17 both questions for my own sync.</p> <p>18 In your report, do you analyze whether</p> <p>19 race and party affiliation are complementary,</p> <p>20 non-competing explanations for voting patterns?</p> <p>21 A I don't understand the question.</p> <p>22 You'll have to explain the question to me.</p> <p>23 Q Sure. So do you assess whether race</p> <p>24 and party can explain whether -- let me see this.</p> <p>25 I'm just trying to think of a different way to --</p>	<p style="text-align: right;">47</p> <p>1 now, if you look at the -- my report, I have</p> <p>2 extensively quantified that -- that most of the</p> <p>3 blacks tend to be registered as Democrat, and why,</p> <p>4 I would not get into that. Am I answering your</p> <p>5 question?</p> <p>6 Q I think that that's fine.</p> <p>7 A Okay.</p> <p>8 MS. GIGLIO: This is actually a great</p> <p>9 place to take a little break, if everybody is okay</p> <p>10 with that. So we can take, like, five minutes,</p> <p>11 just to water and --</p> <p>12 Alyssa, just, like, Wednesday, this</p> <p>13 room is yours.</p> <p>14 (Whereupon, a recess was taken.)</p> <p>15 THE REPORTER: Back on.</p> <p>16 MS. GIGLIO: Great.</p> <p>17 BY MS. GIGLIO:</p> <p>18 Q So, Dr. Solanky, I'd like to turn to</p> <p>19 Page 4 of your report, which is Section 2.</p> <p>20 A Yes, I'm there.</p> <p>21 Q I'm looking specifically at Table 1,</p> <p>22 where you list a number of elections that you've</p> <p>23 assessed for purposes of Section 2.</p> <p>24 Is that -- are these the 12 statewide</p> <p>25 elections that you analyzed?</p>
<p style="text-align: right;">46</p> <p>1 to assess that question.</p> <p>2 Do you analyze whether race and party</p> <p>3 affiliation can be complementary explanations for</p> <p>4 voting patterns?</p> <p>5 A You'll have to explain more. What does</p> <p>6 complementary explanation means?</p> <p>7 Q Well --</p> <p>8 MS. RIGGINS: (Indiscernible.)</p> <p>9 MS. GIGLIO: Okay.</p> <p>10 Q Well, so I think if -- if we don't</p> <p>11 understand the question, we can just move on.</p> <p>12 It's -- it's fine.</p> <p>13 A If you can give me an illustration and</p> <p>14 simplify --</p> <p>15 Q Sure.</p> <p>16 A -- what you mean, then I would love to</p> <p>17 --</p> <p>18 Q Sure.</p> <p>19 A -- answer that.</p> <p>20 Q So it's -- the question is whether the</p> <p>21 fact that someone is black, and a Democrat may</p> <p>22 complement the understanding of why they vote a</p> <p>23 certain way, as opposed to compete with one</p> <p>24 another.</p> <p>25 A Let me answer the first part. Black --</p>	<p style="text-align: right;">48</p> <p>1 A These are not the elections; these are</p> <p>2 the election dates.</p> <p>3 Q Sure, election dates. So why did you</p> <p>4 select these 12 dates out of the -- the dates that</p> <p>5 were available?</p> <p>6 A It's -- it's my understanding that I</p> <p>7 was provided data only on these 12 election dates.</p> <p>8 They -- they --</p> <p>9 Q So you only received data for these 12</p> <p>10 dates?</p> <p>11 A Let me explain. So these are the 12</p> <p>12 election dates, and there could have been more</p> <p>13 elections on these dates than 12, but this is the</p> <p>14 universe of all the election dates for -- for</p> <p>15 which I was provided the data from the Secretary</p> <p>16 of State.</p> <p>17 Q Understood. So you selected these</p> <p>18 election dates because that was -- those were the</p> <p>19 elections -- those were the only elections that</p> <p>20 you received data for?</p> <p>21 A Those were the only election dates for</p> <p>22 which --</p> <p>23 Q Correct.</p> <p>24 A Yeah, correct.</p> <p>25 Q My apologies.</p>

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13 (49 to 52)

<p style="text-align: right;">49</p> <p>1 A Okay. That --</p> <p>2 Q Those were the only election dates that</p> <p>3 you received data for; is that right?</p> <p>4 A Correct.</p> <p>5 Q So can you tell me a little bit about</p> <p>6 the analysis that you conduct in Section 2A of</p> <p>7 your report?</p> <p>8 A Sure. So if you look at the Table 1,</p> <p>9 I'm looking at the election date starting in 2012,</p> <p>10 which I believe was the presidential election</p> <p>11 date, and then -- and I looked at all the election</p> <p>12 dates which I had access to. And -- and -- and</p> <p>13 this is based on voter-level data, meaning I could</p> <p>14 count how many registered voters were registered</p> <p>15 as Democrat, how many were registered as</p> <p>16 Republican, how many were registered as other.</p> <p>17 And -- and if you look at these</p> <p>18 numbers, if you look at the -- say, the third</p> <p>19 column, which is registered Democrat voters, there</p> <p>20 are 1.43 registered Democrats in 2012. And if you</p> <p>21 eyeball the third column, what you see is a steady</p> <p>22 decrease, so from 1.43 million, it came down to</p> <p>23 1.192 million, so the registered voters have</p> <p>24 steadily decreased over the time in Louisiana.</p> <p>25 And if you look at the fourth column, registered</p>	<p style="text-align: right;">51</p> <p>1 A Now, any voting pattern we are</p> <p>2 studying, we have to take into account who is</p> <p>3 voting, and -- and this gives you some idea about</p> <p>4 who the registered voters are. Very high</p> <p>5 probability, a person registered as a Democrat</p> <p>6 would vote as -- for a Democratic candidate, just</p> <p>7 based on common sense.</p> <p>8 It's not an absolute rule, but</p> <p>9 Democrats generally vote Democrat candidates,</p> <p>10 Republicans generally vote Republican candidates.</p> <p>11 This gives you an underlying picture of who the</p> <p>12 registered voters are and how that has changed</p> <p>13 over the number of years.</p> <p>14 Q And how does this trend -- this is a</p> <p>15 statewide assessment; is that right?</p> <p>16 A That is right.</p> <p>17 Q So there are no precincts or parishes</p> <p>18 mentioned in this section?</p> <p>19 A This is a statewide trend for the</p> <p>20 entire Louisiana.</p> <p>21 Q So how is statewide data useful in</p> <p>22 assessing voting patterns in particular areas of</p> <p>23 Louisiana?</p> <p>24 A As a -- as a scientist, before we look</p> <p>25 into anything in particular, you cannot ignore the</p>
<p style="text-align: right;">50</p> <p>1 Republicans have steadily increased over time.</p> <p>2 And -- and -- and if you look at the other -- the</p> <p>3 other columns, that sort of stays stable, and --</p> <p>4 and then I have provided the percentages.</p> <p>5 If you look at the very last column, so</p> <p>6 I'm providing a -- a summary, meaning, how many</p> <p>7 more Democrats registered are -- were there on</p> <p>8 those election dates compared to registered</p> <p>9 Republicans? So for example, in 2012, when we had</p> <p>10 presidential elections, there were 20.8 more</p> <p>11 registered Democrats than Republicans. And -- and</p> <p>12 if you look at this number, that steadily</p> <p>13 decreases from 20.8, it came down to 19, da-da-da.</p> <p>14 Eventually, it came down to 6.2 percent.</p> <p>15 So that shows you an overall picture of</p> <p>16 registered voters by party affiliation, that</p> <p>17 Democrats are decreasing in count, Republicans are</p> <p>18 decreasing -- increasing in count, and the</p> <p>19 disparity which existed at 20 percent, literally</p> <p>20 21 percent in 2012, has come down to 6.2 percent.</p> <p>21 So -- so that's the summary, and I have also</p> <p>22 picturized it here in Figure 1 one on the next</p> <p>23 page to see the trend.</p> <p>24 Q And how is this trend relevant to</p> <p>25 studying voting patterns?</p>	<p style="text-align: right;">52</p> <p>1 overall picture, and this gives you an overall</p> <p>2 picture.</p> <p>3 Q Why is the overall picture relevant</p> <p>4 here?</p> <p>5 A The overall picture is always relevant,</p> <p>6 because all the parishes' precincts, you're</p> <p>7 looking at it are subset of this data.</p> <p>8 Q And how -- so how is statewide data</p> <p>9 relevant in assessing whether there's racially</p> <p>10 polarized voting in Louisiana?</p> <p>11 A Now, you're asking me a question about</p> <p>12 conclusion, and I'm telling you that any study you</p> <p>13 carry out has to look at who you're looking at.</p> <p>14 So what we are looking at here is the state of</p> <p>15 Louisiana, where the number of Democrats are</p> <p>16 decreasing, number of Republicans are increasing.</p> <p>17 And -- and if -- if someone is</p> <p>18 interested, you could look at -- even at -- at a</p> <p>19 parish level, or even a precinct level. So -- so</p> <p>20 it depends on if somebody wants to do a correct</p> <p>21 job, a thorough job. This is something where I</p> <p>22 would start.</p> <p>23 Q So what conclusions can you draw from</p> <p>24 the increase in Republican registrations?</p> <p>25 A And -- and I said a few seconds ago</p>

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14 (53 to 56)

<p style="text-align: right;">53</p> <p>1 that over the years, the number of Democrats who 2 are registered, the number of voters who are 3 registered as Democrats, has decreased. Number of 4 voters who are registered as Republicans have 5 increased. 6 And in 2012, for example, there were 7 20.8 more registered Democrats than Republicans, 8 and that number is steadily coming down, 9 decreasing to 6.2 percent in 2022. 10 Q And what factors do you think 11 contributed to the decrease? 12 A Now, in this part of the report, I'm 13 not producing any factors. I'm just summarizing 14 what is happening, so -- 15 Q So you just presented the numbers? 16 A I just presented what is happening in 17 -- in the State of Louisiana, the overall picture. 18 Q Okay. So let's turn to Section 2B of 19 the report. Can you tell me a little bit about 20 the data, the analysis that you've conducted here 21 in Section 2B? 22 A Yes. Give me one second. So -- so 23 before I summarize this Table 2, let me just come 24 back to Table 1, and then I'll come to -- so in 25 Table 1, I looked at registered voters, but using</p>	<p style="text-align: right;">55</p> <p>1 the very clear trend, very clear trend in terms of 2 people who are are actually coming out to vote, 3 there were more Democrats voting in 2012; that has 4 been steadily decreasing. And then in 2022 Senate 5 elections -- but then in -- in '22 -- in 2022 6 election date, when we had Senate elections, there 7 were more Republicans who actually voted in that 8 election. 9 Q And, again, how is this statewide 10 analysis and these statewide trends relevant to 11 your analysis of Dr. Handley's Report and the 12 enacted maps? 13 A Very relevant. If you're looking at a 14 parish, or groups of parishes, or precincts, this 15 is the overall trend. So -- so if I was doing the 16 analysis for a particular parish -- parish or 17 regions, this is what I would look at, that what 18 is happening in this region, what is happening in 19 that parish. So this is the overall for the 20 state, but if you want to focus on a small area, 21 this is where I would start. 22 Q So you would start with the state? 23 A I would start with the state, and then 24 if you want to understand what is happening in 25 subarea, which will be a subset of this data, you</p>
<p style="text-align: right;">54</p> <p>1 the Secretary of State data, I even also know that 2 who voted, who did not. 3 So now, I'm looking at only the people 4 who voted in a particular -- on a particular 5 election day. For example, if you look at the 6 first row of the data, which is for 2012, 997,987 7 Democrats voted on that particular election day, 8 and if you come down to the last row, which is on 9 the next page, the Democrats who voted in 2022 was 10 548,747. And -- and so -- so -- so this is who 11 actually voted on those election dates, and I have 12 column three, Democrats, column four, Republicans, 13 column five is the others, and then to get a 14 proper handle on what is happening. 15 In the very last column, I'm looking -- 16 presenting the disparity, that how many more 17 Democrats are voting compared to Republicans. So 18 for example, in 2012, that's the first row of the 19 data, there were 18.6 more Democrats who voted on 20 that particular election day, so there were 18.6 21 more Democrats who voted than Republicans, whereas 22 in 2022, which is the last column, it has flipped. 23 Now, there are more Republicans. There are 3.0 24 more percent Republicans who are voting. 25 So -- so -- so if you look at the --</p>	<p style="text-align: right;">56</p> <p>1 can look at -- by the parish or region, and that 2 gives you a complete picture. 3 So if you just look at the data and say 4 that this is -- this voting is happening, that 5 voting is happening, that gives you an incomplete 6 picture. First, you have to see who all are 7 voting. If more Republicans are voting, then of 8 course, there would be more votes for a Republican 9 candidate, just as a common sense. 10 Q In a statewide election? 11 A Let -- let me add to that. So I am 12 looking at statewide elections, but the method 13 which I am proposing is true in general. It -- 14 you could look at even for a non-statewide 15 election. 16 Q Okay. So -- so when you were putting 17 these charts together, did you look at data that 18 was specific to each parish? 19 A So this data is aggregate of all the 20 parishes. 21 Q Understood. 22 A Okay. 23 Q And the -- so you observed that the 24 trend -- the trend that you've described in this 25 chart is related to the number of Democrats,</p>

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15 (57 to 60)

<p>57</p> <p>1 Republicans, other, but really, the comparison of 2 Democrats and Republicans, who actually voted in 3 these statewide elections; correct? 4 A In Table 2. 5 Q Yes, in Table 2. And your -- as you 6 described it, your observation was that the number 7 of voters -- the number of Democrats who voted in 8 statewide elections trended down from 2012 to 9 2022; is that right? 10 A That is right for these 12 election 11 dates. And -- and these are not estimates, these 12 are hard numbers. So -- so every number that I 13 have here, there's a human being who actually 14 voted that particular day, or not voted, and that 15 data was provided by the Secretary of State to us. 16 Q And so -- and -- but in -- like in 17 Table 1 in Section 2A of the report, you don't 18 render any conclusions or observations about why 19 this trend is happening; correct? 20 A Correct. I'm not providing any reason 21 why it is happening; I'm just making it very clear 22 that it is happening. 23 Q Okay. So moving to Table 3 in Section 24 2C of your report, can you describe the analysis 25 that you conducted here?</p>	<p>59</p> <p>1 trend. A very clear trend. You can see that a -- 2 a red line is registered white Republican, the -- 3 and the percentage of them, that is steadily going 4 up. The registered white Democrat, which is the 5 blue line, steadily going down. And -- and if you 6 look at the third one, which is registered black 7 Democrat, that -- that stays sort of horizontal. 8 So -- so this helps you see an overall trend of 9 registered voters by their party affiliation. 10 Q Understood. And in analyzing this 11 data, again, did you review you -- parish-level 12 data when you put together this chart? 13 A Now, this chart is for the entire 14 Louisiana, but the -- as I said earlier, if 15 somebody is interested in a small region, they 16 could subset and look at part of this data. But 17 generally, we start with the overall picture. 18 Q Understood. And I just want to look at 19 some of these percentages very quickly. So when 20 you calculated the percentage of white Democratic 21 voters, is this compared to all voters in 22 Louisiana? 23 A This is compared -- so this is -- 24 right. I'm not understanding your question. 25 Q So let -- I'll use an example if that</p>
<p>58</p> <p>1 A So in Table 3, I'm looking at a -- a 2 combination of the party affiliation and the race, 3 and -- and that is what I have summarized. And -- 4 and -- and so -- so if you look at the third 5 column, here, I'm reporting, based on those 12 6 election dates, how many voters were registered, 7 and they -- they were white and Democrat, for 8 example, in third column. 9 And -- and if you look at the trend, in 10 2012, there were 658,172 who were registered white 11 and Democrat, and this number has steadily 12 decreased. And in 2012 -- 2022, that number came 13 down to 422,337. So registered white Democrats 14 have decreased steadily. In the next column, I 15 have registered black Democrats, and that number 16 hardly shows any trend. 17 So -- so in Louisiana, over all these 18 10 years, registered white Democrats have 19 decreased, registered black Democrats have stayed 20 somewhat similar, but looking at the next column, 21 which is the fifth column, registered white 22 Republicans has steadily increased, and registered 23 black Republicans, that has stayed about the same. 24 And -- and then in the next step, if 25 you look at the Page number 9, a -- a very clear</p>	<p>60</p> <p>1 helps. 2 A Okay. 3 Q So you say in 2012, 22.2 percent of all 4 voters are registered white Democrats; is that 5 right? 6 A Right. 7 Q Okay. And 24.7 percent of all voters 8 are registered black Democrats. 9 A Right. 10 Q 25.6 percent of all voters are 11 registered white Republicans. 12 A Right. 13 Q And 0.8 percent of all registered black 14 voters -- 15 A Right. 16 Q -- are -- or excuse me, of all 17 registered voters are black Republicans. That's 18 right? 19 A Correct. 20 Q Okay. So the baseline used here is all 21 voters? 22 A All voters, right. 23 Q Got it. 24 A And you can verify these percentages 25 don't add up to hundred percent.</p>

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16 (61 to 64)

<p>61</p> <p>1 Q Uh-huh. And why is that?</p> <p>2 A Because the -- I -- I'm not tabulating</p> <p>3 others. So there could be others. Democrat</p> <p>4 others, blacks others, white, and --</p> <p>5 Q There could be -- well, not -- oh,</p> <p>6 other black, other white. Yep. And there -- and</p> <p>7 there could also be unregistered voters; is that</p> <p>8 right?</p> <p>9 A And there could be unregistered voters.</p> <p>10 Q And you've --</p> <p>11 A There could be unregistered as a</p> <p>12 Democrat or Republican. Those would be others.</p> <p>13 Q Uh-huh.</p> <p>14 A I still don't -- under -- what do you</p> <p>15 mean unregistered voters?</p> <p>16 Q Oh, I -- I mean, the voters who don't</p> <p>17 affiliate with a political party.</p> <p>18 A That would be others.</p> <p>19 Q Yeah. Understood. So -- thank you for</p> <p>20 the clarification. I appreciate that.</p> <p>21 A I'm sorry.</p> <p>22 Q Don't apologize, please.</p> <p>23 A I'm just -- I'm just following the same</p> <p>24 language.</p> <p>25 Q It helps me.</p>	<p>63</p> <p>1 And if you look at, for example, the third column,</p> <p>2 which is how many people who voted and are white</p> <p>3 Democrats, they're white and registered as</p> <p>4 Democrat, that number was 456,162 in 2012. And</p> <p>5 that number comes down to 223,075 in 2022. A big</p> <p>6 drop, literally half.</p> <p>7 So the white Democrats who were voting</p> <p>8 in earlier years, those are no longer there voting</p> <p>9 in late -- latter elections. Let's look at the</p> <p>10 next column, which is black Democrat voters. And</p> <p>11 -- and -- and that fluctuates a bit, but overall</p> <p>12 trend shows that even that number is going down.</p> <p>13 All right? And -- and -- and in a way, when I say</p> <p>14 that I have one eye on figure four, and I'm</p> <p>15 looking at this green line.</p> <p>16 Q Sure.</p> <p>17 A Sort of if you look at figure four,</p> <p>18 look at the green line sort of fluctuates around,</p> <p>19 but it seems that it sort of has decreased after a</p> <p>20 point. And there are some points, which it goes</p> <p>21 up and down. But what is very clear is the other</p> <p>22 two lines. First is white Republican. That has</p> <p>23 steadily increased. So -- so if you look at the</p> <p>24 state of Louisiana, white Republicans who are</p> <p>25 voting, their percentage is increasing over the</p>
<p>62</p> <p>1 A Yeah.</p> <p>2 Q So -- so you've observed trends down,</p> <p>3 as you said, in registered white Democrats and</p> <p>4 trends up in registered white Republicans; is that</p> <p>5 right?</p> <p>6 A Correct.</p> <p>7 Q But, again, you don't make any</p> <p>8 conclusions about why these trends are occurring;</p> <p>9 is that right?</p> <p>10 A Correct.</p> <p>11 Q Okay. Great. So now let's move to</p> <p>12 Section 2D of your report. Can you describe this</p> <p>13 analysis for me?</p> <p>14 A So in Table 3, which we just looked at,</p> <p>15 we were looking at only registered voters by race</p> <p>16 and party affiliation. In Table 4, I'm looking at</p> <p>17 race and party affiliation of people who actually</p> <p>18 went out to vote. So these are the actual voters</p> <p>19 who -- who -- who turned up on that particular</p> <p>20 date to vote. And -- and that has been summarized</p> <p>21 in this table.</p> <p>22 Q Understood. And what observations do</p> <p>23 you make about the trends, the statewide trends,</p> <p>24 in voters who actually voted here?</p> <p>25 A The trends are very similar to Table 3.</p>	<p>64</p> <p>1 years.</p> <p>2 If you look at white Democrats who are</p> <p>3 voting, and that's the blue line in figure four,</p> <p>4 that percentage shows a steady decline. So -- so</p> <p>5 people -- so -- so if you look at a particular</p> <p>6 race, election on -- on these particular dates,</p> <p>7 the trend is very clear that the white Republicans</p> <p>8 are more in number during those election dates,</p> <p>9 steadily increasing over the number of years.</p> <p>10 White Democrats are steadily decreasing. So -- so</p> <p>11 if you're counting the number of votes a Democrat</p> <p>12 is getting, that has to be related to who are</p> <p>13 showing up to vote.</p> <p>14 Q Understood.</p> <p>15 A So -- so -- so that is the overall</p> <p>16 trend over the years.</p> <p>17 Q And to be -- just -- just for my sake,</p> <p>18 Dr. Solanky, again, how is this statewide data</p> <p>19 relevant to the analysis of the districts and the</p> <p>20 areas of the map that are in discussion today that</p> <p>21 are the subject of this lawsuit?</p> <p>22 A Now, if you're looking at a region or a</p> <p>23 district and -- and -- and you're interested in</p> <p>24 knowing the votes candidates will get, that is a</p> <p>25 function of what is happening in Louisiana. So I</p>

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17 (65 to 68)

<p>65</p> <p>1 presented the overall picture. Any proper study</p> <p>2 has to -- if you want to study a region, you would</p> <p>3 look at this chart and maybe just focus on</p> <p>4 whatever region to see what is happening.</p> <p>5 So -- so assuming that same number of</p> <p>6 voters have been there over these years, and I</p> <p>7 could pull in results from ten different election</p> <p>8 dates, that would be misleading because a lot has</p> <p>9 changed over those ten election dates.</p> <p>10 Q And to -- to be clear, and we'll go</p> <p>11 through this in the latter half of your report,</p> <p>12 there is regional data available.</p> <p>13 A That is right. And I'm answering your</p> <p>14 question, which you asked me. That if you want to</p> <p>15 look at a region, you cannot deny the fact that</p> <p>16 over the years there is a trend, and that trend</p> <p>17 also dictates whether you can pull in results from</p> <p>18 different election dates or not. Why? Because</p> <p>19 there are different voters voting on those 12 --</p> <p>20 10, 12, whatever election dates.</p> <p>21 Q Understood. Okay. And again, just to</p> <p>22 go through these percentages, when you look at</p> <p>23 22.6 percent of white Democratic voters, that's</p> <p>24 out of all voters in Louisiana?</p> <p>25 A That is correct.</p>	<p>67</p> <p>1 A Please continue.</p> <p>2 Q Sure. So if you -- could you describe</p> <p>3 what you assess when you assess racially polarized</p> <p>4 voting again for me?</p> <p>5 A Now, in general, not true for all the</p> <p>6 precincts, not true for all the parishes. In</p> <p>7 general, white voters vote Democrat. In general,</p> <p>8 black voters -- republican vote -- so white voters</p> <p>9 in general vote Republican, but not true for every</p> <p>10 precinct, not true for every parish. If you look</p> <p>11 -- if you aggregate everything, that is the trend.</p> <p>12 But the trend changes in certain parishes, in</p> <p>13 certain precincts within those parishes.</p> <p>14 Q So again, when you're assessing</p> <p>15 racially polarized voting, do you assess -- what</p> <p>16 do you assess in general?</p> <p>17 A In general, what I just now said. In</p> <p>18 general --</p> <p>19 Q Well, Dr. Solanky, just to be clear,</p> <p>20 what you just said was a conclusion, which is that</p> <p>21 white people tend to vote for Republicans; is that</p> <p>22 right?</p> <p>23 A And -- and that is what I'm concluding.</p> <p>24 Q Correct. So when you -- when you got</p> <p>25 to that conclusion, what did you assess?</p>
<p>66</p> <p>1 Q And black Democratic voters is 25.8</p> <p>2 percent. That's out of all voters in Louisiana?</p> <p>3 A Correct.</p> <p>4 Q White Republican voters, for example,</p> <p>5 in 2012, is 29.3 percent of all voters in</p> <p>6 Louisiana?</p> <p>7 A Correct.</p> <p>8 Q And black Republican voters, that's 0.6</p> <p>9 percent out of all voters in Louisiana; correct?</p> <p>10 A Correct.</p> <p>11 Q Now we said earlier in talking about</p> <p>12 assessing racially polarized voting, you assess</p> <p>13 who white people are voting for and who black</p> <p>14 people are voting for; is that right?</p> <p>15 A Okay.</p> <p>16 Q Is that right? I'm asking.</p> <p>17 A Right. Are you paraphrasing what I</p> <p>18 said? Or --</p> <p>19 Q If you'd like to correct it or say</p> <p>20 something --</p> <p>21 A No. But --</p> <p>22 Q Yes, I'm paraphrasing what you said</p> <p>23 earlier.</p> <p>24 A You have a question coming up --</p> <p>25 Q Well --</p>	<p>68</p> <p>1 A I really don't know what you're asking</p> <p>2 me now.</p> <p>3 Q When you approached analyzing racially</p> <p>4 polarized voting, IE, who white people vote for</p> <p>5 versus who black people vote for, what did you</p> <p>6 assess?</p> <p>7 A And -- and that is what I was telling</p> <p>8 you. That in general, white people vote</p> <p>9 Republican, but there are parishes where they</p> <p>10 don't. There are precincts where they don't. In</p> <p>11 general, black people -- voters vote Democrat, in</p> <p>12 general. But there are some instances where they</p> <p>13 don't.</p> <p>14 Q So let me rephrase the question Just to</p> <p>15 be clear. When you're conducting -- when you</p> <p>16 conducted this analysis, you assessed who white</p> <p>17 people vote for; is that right?</p> <p>18 A This analysis means these four tables</p> <p>19 we have gone through or just overall my --</p> <p>20 Q Well, in this table that we are looking</p> <p>21 at right now, you analyzed who white people voted</p> <p>22 for; is that right? In part?</p> <p>23 A No, no, no. No. I did not say who</p> <p>24 they voted for. I'm just --</p> <p>25 Q Well, which party they voted for.</p>

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18 (69 to 72)

<p>69</p> <p>1 A I'm not even saying that. I'm just --</p> <p>2 in this table, I'm summarizing who showed up to</p> <p>3 vote. I have made no statement who they voted for.</p> <p>4 Q Okay. So what you are saying is white</p> <p>5 Democratic vote -- people who were registered to</p> <p>6 vote who are white and registered as Democrats</p> <p>7 voted on that election day?</p> <p>8 A That is correct.</p> <p>9 Q You are not saying that they voted for</p> <p>10 a particular candidate.</p> <p>11 A Absolutely correct. And let me also</p> <p>12 say it in my words.</p> <p>13 Q Sure.</p> <p>14 A So in these tables, I'm just looking at</p> <p>15 the voter data, who showed up to vote, who was</p> <p>16 registered to vote, what their party affiliation</p> <p>17 was, what their race was. And -- and here, I'm</p> <p>18 not talking at all about who they voted for, a</p> <p>19 Democrat or a Republican. I'm just summarizing</p> <p>20 that in general, the white Democrats -- so -- so</p> <p>21 in general, the white Democrats have decreased.</p> <p>22 The black -- white Republicans have increased who</p> <p>23 they are voting for. I'm not talking about that</p> <p>24 at all here in this table.</p> <p>25 Q Okay. So how are the trends in who</p>	<p>71</p> <p>1 comparing the trends of white voters, would you</p> <p>2 generally compare the number of white -- the</p> <p>3 number of white Democrats against the number of</p> <p>4 white voters?</p> <p>5 A You know, you can compare any two</p> <p>6 things. It depends on what you're trying to look</p> <p>7 at.</p> <p>8 Q Sure. So if you're trying to look at</p> <p>9 how white voters are tending to vote.</p> <p>10 A So let me clarify again. In these</p> <p>11 tables, I'm not talking about how they're voting.</p> <p>12 Q Oh, sure.</p> <p>13 A So you're looking at these tables, but</p> <p>14 you're asking me to answer a different questions,</p> <p>15 how would they vote. That's -- please ask the</p> <p>16 question.</p> <p>17 Q Again. Sure. So if you're trying to</p> <p>18 gauge how many white voters are voting in</p> <p>19 elections, how many registered white voters are</p> <p>20 voting in elections, what would you compare?</p> <p>21 A This data which I have here.</p> <p>22 Q Would you compare white voters against</p> <p>23 all voters, or would you compare white voters</p> <p>24 against white voters?</p> <p>25 A You know, the -- you -- you can compare</p>
<p>70</p> <p>1 shows up to vote relevant to assessing racially</p> <p>2 polarized voting?</p> <p>3 A Now, you know, we have talked about</p> <p>4 this. That in general, you're asking me to look</p> <p>5 at what I have here and you're asking me how could</p> <p>6 I project it onto racially polarized voting. And</p> <p>7 that's what I'm doing. So, in general, black</p> <p>8 voters would vote for Democrat. In general, white</p> <p>9 voters would vote Republican. In general, the</p> <p>10 white voters who are registered as Republican</p> <p>11 would vote Republican. In general, the white</p> <p>12 voters who are registered as Democrat would vote</p> <p>13 Democrat.</p> <p>14 Q Okay.</p> <p>15 A And those two numbers have shown a big</p> <p>16 change. So the -- the white voters who are</p> <p>17 registered as Democrats, who are likely to vote</p> <p>18 for Democrat has decreased steadily. And black --</p> <p>19 white voters who are registered as Republican and</p> <p>20 are more likely to vote as Republican, that number</p> <p>21 has increased.</p> <p>22 Q Understood.</p> <p>23 A So I'm just giving you a context of how</p> <p>24 they are related.</p> <p>25 Q Sure. So as a statistician, in</p>	<p>72</p> <p>1 any percentage you want to compute.</p> <p>2 Q Okay.</p> <p>3 A In these tables, I -- I looked at the</p> <p>4 total voters who voted and what percentage of them</p> <p>5 happened to be black and happened to be</p> <p>6 Republican. If you want to cross tabulate</p> <p>7 differently, you're welcome to.</p> <p>8 Q Sure.</p> <p>9 A There are so many ways you can cross</p> <p>10 evaluate that data.</p> <p>11 Q Understood. So let me just take a</p> <p>12 quick look at appendix -- let's see. We'll look</p> <p>13 at Appendix 4 of your report. That's Page 48.</p> <p>14 A Okay.</p> <p>15 Q Sure. So just to clarify, this</p> <p>16 appendix is title -- I think this is a typo. So I</p> <p>17 just want you to clarify this on the record. This</p> <p>18 is appendix for Estimates for White Voters Voting</p> <p>19 for a Republican Candidate in 12 Statewide</p> <p>20 Elections. I'm looking at column five, which</p> <p>21 says, Black voting Republican WV rep percent; is</p> <p>22 that right?</p> <p>23 A Right --</p> <p>24 Q Is that meant to say white voting</p> <p>25 Republican?</p>

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19 (73 to 76)

<p>73</p> <p>1 A Right. So --</p> <p>2 Q Cool.</p> <p>3 A -- that's a typo.</p> <p>4 Q Totally understood. So these</p> <p>5 percentages, you know, 83.9 percent, 80.9 percent,</p> <p>6 81.9 percent, 45.6 percent, is that -- are you</p> <p>7 measuring the number of whites voting Republican</p> <p>8 against the total of white voters?</p> <p>9 A A number of comments.</p> <p>10 Q Okay.</p> <p>11 A Now this is not coming out of those</p> <p>12 four tables we looked at?</p> <p>13 Q No, no, no.</p> <p>14 A First of all --</p> <p>15 Q No, no. I'm just asking for another --</p> <p>16 A Just -- just clarifying.</p> <p>17 Q -- another way of that you have</p> <p>18 approached this analysis and other portions of</p> <p>19 your report.</p> <p>20 A So -- so just to clarify, these numbers</p> <p>21 are not coming out of those four tables. These</p> <p>22 numbers are coming out based on specific elections</p> <p>23 and based on EI modeling. And -- and -- and --</p> <p>24 and -- and -- and -- and -- and relying on the</p> <p>25 data, which was the data which Dr. Handley relied</p>	<p>75</p> <p>1 A So just to be complete. So 83.9</p> <p>2 percent of white voters voted for -- for</p> <p>3 Republican and the remaining either voted Democrat</p> <p>4 or other candidate. Okay. I just wanted to</p> <p>5 clarify that.</p> <p>6 Q No. Thank you so much. So if we</p> <p>7 wanted to -- again, this is approximate, but if we</p> <p>8 wanted to compare white voters who showed up,</p> <p>9 registered white voters who showed up to vote as</p> <p>10 laid out in Table 4 with other white voters,</p> <p>11 correct, not total Louisiana voters, you would</p> <p>12 combine the percentages in column seven and column</p> <p>13 nine, correct, to get your denominator?</p> <p>14 A Let's make sure you're right.</p> <p>15 Q Sure.</p> <p>16 A So -- so now we are not looking at</p> <p>17 Appendix 4. You're looking at Table 4?</p> <p>18 Q I'm looking at Table 4.</p> <p>19 A Okay. I'm sorry. I was still looking</p> <p>20 at Appendix 4.</p> <p>21 Q That's okay.</p> <p>22 A So let's go back to Table 4.</p> <p>23 Q Yeah, that's Page 10.</p> <p>24 A And -- and I will look -- and please</p> <p>25 repeat your question.</p>
<p>74</p> <p>1 upon --</p> <p>2 Q Yes.</p> <p>3 A -- and -- and -- and I -- I have</p> <p>4 extensively talked about that data, its accuracy,</p> <p>5 its correctness, what it represents and how much</p> <p>6 bias there is. But nonetheless, just to -- to be</p> <p>7 on the same page, I have relied on the data, and</p> <p>8 this is based on that ecological inference</p> <p>9 modeling.</p> <p>10 Q Yes. Understood.</p> <p>11 A And if you're asking me, what is that?</p> <p>12 Yes. So -- so this is white Republicans vote --</p> <p>13 voted for -- so this is black -- I'm sorry. White</p> <p>14 voting Republican in that particular election in</p> <p>15 entire Louisiana is 83.9 percent.</p> <p>16 Q Right. And is compared to out of all</p> <p>17 white voters. I understand that it's a -- it's a</p> <p>18 different methodology, but you're -- it's 83.9</p> <p>19 percent of white voters; is that right?</p> <p>20 A That is right.</p> <p>21 Q Okay. So if we wanted to do a similar</p> <p>22 comparison using the table in this chart, now I</p> <p>23 understand it's --</p> <p>24 A Let me make a few more comments.</p> <p>25 Q Okay.</p>	<p>76</p> <p>1 Q Sure. So if we wanted to look at the</p> <p>2 total number of -- if we wanted to compare the</p> <p>3 total number of white Democrats who showed up to</p> <p>4 vote, correct.</p> <p>5 A Okay.</p> <p>6 Q With the total number of white voters</p> <p>7 who showed up to vote as reflected on this table</p> <p>8 with the understanding that others are not</p> <p>9 represented here.</p> <p>10 A Okay.</p> <p>11 Q You would combine the numbers in white</p> <p>12 Dem voters and white Rep voters; is that right?</p> <p>13 A No.</p> <p>14 Q Okay. Why not?</p> <p>15 A Now in Table 4, I have white Democratic</p> <p>16 who are registered as Democrat in the table.</p> <p>17 Appendix 4, I'm looking at all white voters.</p> <p>18 Q Right. Understood. I'm not -- I'm</p> <p>19 focused on the numbers here just to -- to make a</p> <p>20 different comparison than the one that you render</p> <p>21 here.</p> <p>22 A But there's a big difference. So -- so</p> <p>23 in Appendix 4, I'm looking at all white voters.</p> <p>24 In Table 4, I'm -- I'm -- you're looking at only</p> <p>25 the white voters who are voted as -- registered as</p>

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20 (77 to 80)

<p>77</p> <p>1 Democrat, the white voters who are registered as 2 Republican. And then there are categories of 3 white voters who are registered as other. So -- 4 so all three of them put together would give you a 5 universe of all white voters and -- and that would 6 be part of this Table 4. 7 Q Okay. 8 A Number 83.9. 9 Q Okay. Okay. So what you're saying is 10 if we wanted to compare the number of white 11 Democrats or right -- white registered Democrats, 12 who showed up to vote, looking at Table 4, not 13 Appendix 4, if we wanted to -- to get that figure 14 -- if we wanted to compare white voters with other 15 white voters as opposed to all voters, we wouldn't 16 be able to do that. 17 A Let -- let me understand your question. 18 Give me one second. So if you wanted to look at 19 how white voters have voted and what's your -- 20 Q I'm just looking at criteria trends. 21 A -- sub criteria? 22 Q You are -- you are describing trends in 23 the -- the number of white and black voters 24 compared to -- or white and black registered 25 voters who showed up to vote.</p>	<p>79</p> <p>1 A Okay. 2 Q And just to get a sense, why did you 3 compare -- why did you assess these trends using 4 all voters as your comparison? 5 A Which trend? I'm lost. 6 Q On Table 4. 7 A On Table 4. 8 Q Table 4. You can move away from 9 Appendix 4. 10 A Okay. 11 Q We're only focused on Table 4 right now. 12 A Okay. Okay. And please ask me. I'm 13 looking at Table 4 -- 14 Q Of course. So when you -- you -- as 15 you described the percentage of voters reflected 16 in this chart for each category -- 17 A Okay. 18 Q -- that's based on all voters. 19 A All voters. 20 Q Yes. Why did you use all voters as 21 your denominator? 22 A You know, all voters are going out to 23 vote and then what percentage of them happen to be 24 white Democrat is what I listed. So that is the 25 denominator. But you're welcome to pick any</p>
<p>78</p> <p>1 A Okay. 2 Q Compared to all voters. 3 A Okay. 4 Q Yes? 5 A And -- and what are you trying to do? 6 Q Well, I'm trying to get a sense of the 7 number of white voters who showed up to vote 8 compared to the total number of white voters who 9 showed up to vote as opposed to all voters. 10 A And this -- this -- 11 Q But -- but we can move on from this 12 point. It's fine. 13 A These numbers are readily available in 14 the dataset. 15 Q Yep. 16 A In the dataset, if you -- it will few 17 minutes and -- and you can find out how many total 18 white voters voted that day, how many black voters 19 voted that day and -- and get that. Are you 20 trying to get that -- the total white count in 21 Table 4 using that Appendix, Table 4? 22 Q Well, no, I was just trying to look at 23 Table 4 and compare white with white and black 24 with black, but that's -- we can move on from this 25 point, Doctor. It's no -- it's no problem.</p>	<p>80</p> <p>1 denominator. 2 Q Sure. 3 A But for me, it made more sense that 4 these are the people who are showing up to vote 5 and what percentage of them white Democrats, what 6 percentage of them are black Republicans and so on. 7 Q So why not compare the number of white 8 Democrats -- white Democrats, who are registered 9 to vote who showed up against the total number of 10 white people who showed up to vote? 11 A You could. I mean, there is -- 12 Q Why didn't you? 13 A Because this is more informative to me. 14 Q Why? 15 A And I just explained, if you want to 16 see who is showing up to vote on that particular 17 day, on that particular day who showed up to vote, 18 for example, in 2012, 22.6 percent of who showed 19 up to vote were white Democrats. 20 Q Okay. 21 A And -- and that's a very informative 22 statement in itself. And -- and probably more 23 informative than if you use some other denominator. 24 Q Okay. 25 A So on that particular day, who showed</p>

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21 (81 to 84)

<p style="text-align: right;">81</p> <p>1 up to vote 22.64 percent were -- 22.6 percent were 2 white Democrats. 25.8 percent were black 3 Democrats, 29.3 percent were white Republicans and 4 0.6 percent were black Republicans of who showed 5 up to vote. 6 Q Okay. So let's turn to Section 3 of 7 the report. That section is titled Analyzing 8 Voting Patterns by Race Using Ecological 9 Inference, EI, Modeling for Selected Parishes. 10 Can you describe generally what analysis you're 11 conducting in Section 3 of your report? 12 A So in -- in Section 3, I'm using some 13 EI modeling. What it is based upon is that you 14 are given the aggregate data and you want to 15 quantify what is happening at voter level. 16 Q Okay. And when you say what is 17 happening at the voter level, what do you mean by 18 that? 19 A So just to be clear, just to make it 20 easier, for example, we could look at the 21 candidates. And just as an illustration, let me 22 pick 2020 presidential election. So you could be 23 interested in knowing who voted for President 24 Trump, who voted for President Biden and who voted 25 for other candidates among, say, the race groups</p>	<p style="text-align: right;">83</p> <p>1 might be easier for me to go back -- 2 Q We'll go back to it. Don't worry. 3 A Okay. But I can explain it better if 4 we rely on Table 4, which we have already used. 5 Q Sure. 6 A Appendix 4, I'm sorry. So for example, 7 in -- in Appendix 4, I'm summarizing how the white 8 voters -- the estimates of white voters voting for 9 the Republican Candidate. And I have done that 10 for white voters voting for Democrat, black voters 11 voting for Republican, black voters voting for 12 Democrats and so on. 13 Q So what -- but what was the goal of the 14 analysis? 15 A The goal was to see how people vote 16 based on their race, which party. 17 Q Understood. So turning to Page 14 of 18 your report, can you describe what's in Table 6 19 titled Summary of 12 Statewide Elections for EI 20 Analysis? 21 A So here I'm looking at 12 specific 22 elections in -- in which I have shortlisted for -- 23 for the EI analysis. And I have provided the 24 election date, which election I looked at. I have 25 provided who the Democratic candidate was. I have</p>
<p style="text-align: right;">82</p> <p>1 among -- the race could be among black voters, 2 among white voters, among other voters. 3 Q Would you call this an RPV analysis? 4 A What is RPV? 5 Q An analysis of racially polarized 6 voting. 7 A It gives you some idea of who is voting 8 how. And -- and sure, you can use it to do RPV, 9 racialized -- racialized voting -- 10 Q Racially polarized voting. 11 A Racially polarized voting. Sure. 12 Q Would -- would you say that you did 13 that here? 14 MS. RIGGINS: Objection. 15 A You know what I did was give you -- 16 give -- wrote an overall picture. And can it be 17 used to analyze some data? Sure. 18 Q Did you analyze the data to assess 19 racially polarized voting? 20 A Yes. In -- in certain precincts I did. 21 In certain parishes, certain precincts. 22 Q Okay. And so what was the goal of your 23 analysis, Dr. Solanky? 24 A The goal was to see what parts -- like 25 we were looking at Table 4. And if -- if -- it</p>	<p style="text-align: right;">84</p> <p>1 provided who the Republican candidate was, and 2 some idea about other candidates. 3 Q And turning to -- this is Solanky 3, I 4 believe -- or you can turn to Solanky 3. That's 5 Dr. Handley's 2022 report. Let's take a look at 6 Page 6. 7 A Page 26, you said? 8 Q Six. 9 A Page 6. 10 Q Page 6. 11 A Yes. 12 Q And this is a list of the statewide 13 elections that Dr. Handley analyzed; is that right? 14 A That is right. 15 Q And in looking at -- in comparing the 16 two lists, there are certain elections that Dr. 17 Handley analyzed that you did not analyze; is that 18 right? 19 A That is right. 20 Q And can I ask why you didn't analyze 21 the October 2015 election for Attorney General? 22 A We talked about that earlier. So -- so 23 now I -- I picked 13 elections, which -- which had 24 more voters turn out. And -- and -- and that was 25 my criteria, that look at where more voters are</p>

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22 (85 to 88)

<p>85</p> <p>1 turning out, picks those elections, pick some 2 elections so that I have some overlap with Dr. 3 Handley's elections, and then pick some elections 4 where I don't. She focused exclusively when there 5 was a -- a black candidate, and I wanted to get a 6 -- a more wider picture, more clearer picture. 7 What happens when there is no black candidate, 8 does anything change? 9 So this was a good mixture of what she 10 had -- elections which are more voters turn out 11 and elections where there is no black candidate. 12 So in a way, all that put together was a criteria. 13 And -- and -- and -- and -- and for each election, 14 I had to look at the data, which is readily 15 available. We talked about that. Clean it up, 16 see what is there in the -- in the data, see how 17 the early and absentee votes have skewed -- skewed 18 up -- skewed up the elections and the results. So 19 I could not have done all possible elections. I 20 picked up the ones which -- where more people vote 21 and -- and -- and a good representative. 22 Q So is that the reason that you didn't 23 analyze the 2015 election for Lieutenant Governor? 24 A And -- and sometimes there were several 25 black candidates. You know, if you are looking at</p>	<p>87</p> <p>1 Q No, it's okay. 2 A I didn't mean to I mean, Dr. Handley is 3 writing preferred candidate, whatever term she's 4 using. So if there are several black candidates 5 and you ignore the votes of those other candidates 6 or you clump them with other category, that's a 7 misleading analysis. Why? Because those black -- 8 total black votes are getting split. If there are 9 several Democratic candidates, then total 10 Democrats votes are getting split. So your 11 analysis have to pull in all of those. And -- and 12 that's what I did for the 2022 Senate election. 13 Q So your analysis has to pull in all of 14 those. When -- when you say it has to pull in all 15 of those, what do you mean by pull in all of those? 16 A Pull in -- pull in -- I mean, combine. 17 So -- so if you're looking at Democratic 18 candidate, then look at the votes for all the 19 Democratic candidates in the election. If you're 20 looking at the impact of how blacks are voting, 21 then pull in all the votes for black candidates in 22 that election. 23 Q Okay. 24 A So -- so -- so that was another 25 criteria. I looked at the elections which were</p>
<p>86</p> <p>1 who black voters are voting for and you hand pick 2 a candidate, that's incomplete analysis in my 3 report, in my opinion. 4 Q What do you mean by hand pick a black 5 candidate? 6 A Hand pick a black candidate who you are 7 identifying as a -- a candidate of choice. If -- 8 if -- so nothing wrong with that. But in your 9 analysis, you have to see how the black candidate 10 supported. If there are three candidates, for 11 example, then you have to see how those votes got 12 split among three candidates. And the same thing 13 about the party affiliation. 14 If there are several black Democratic 15 candidates, then it's obvious the Democratic votes 16 are getting split. So you -- so you have to pull 17 in all those votes. So -- so all these criteria 18 played a role. The time I had available to me, 19 the amount of work I had to do for each election, 20 and which -- which elections would be a better 21 representativeness of what is happening in 22 Louisiana. 23 Q Understood. Now, when it comes to -- 24 what do you mean by the term handpicked? 25 A I'm sorry if I use that word.</p>	<p>88</p> <p>1 more popular. You know, if you look at the 2 election where fewer people show up to vote, then 3 the -- then the conclusions you reach would be 4 based upon those fewer people who showed up to 5 vote. You can get a better picture, more clearer 6 picture, if you look at the elections where lots 7 of people have voted. So -- so -- so -- so if you 8 wish, we can -- oops. 9 Q That's okay. 10 A So if you look at, for example -- for 11 example, let's -- let's look at Table 5. 12 Q Sure. What page is that, Dr. Solanky? 13 A It's on Page 13. 14 Q Thank you. 15 A So -- so if you look at Table 5, look 16 at how many total votes were there for some of the 17 elections. For example, 2026 election, how many 18 votes were there? I am looking at these numbers. 19 Q Uh-huh. 20 A I'll have to look at these numbers 21 again. 22 Q Sure. 23 A But -- but in general, the -- the 24 president elections in 2012, 2016, and then the 25 president election in 2020, those are the most</p>

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23 (89 to 92)

<p>89</p> <p>1 election dates with large number of voters who 2 vote up -- turned up to vote. 3 Q Sure. 4 A And similarly was 20 -- the governor 5 election, I believe it was in 2016. 6 Q Sure. But on your list, Dr. Solanky, 7 you include the -- the October 2019 election for 8 attorney general; correct? 9 A Right. 10 Q And the October 2019 lieutenant 11 governor election? 12 A Correct. 13 Q And the 2015 lieutenant governor 14 election? 15 A Correct. 16 Q And the 2017 treasurer election? 17 A Correct. 18 Q Okay. And -- but in -- at least in Dr. 19 Handley's report, she analyzes the October 2015 20 election for lieutenant governor that you don't 21 analyze here. Isn't that right? 22 A Correct. 23 Q But you analyze other elections for 24 lieutenant governor on this as part of your 25 selection; correct?</p>	<p>91</p> <p>1 A Correct. 2 Q But not this one? 3 A Not this one. And -- and -- and I gave 4 you a broad criteria. So -- so in hours, number 5 of hours of work goes in into cleaning the data, 6 pulling -- pulling in all the information, 7 comparing it with what is out there, if it happens 8 to be same as in Dr. Handley's report, cross 9 matching the numbers, so -- so -- so there is -- 10 so there is -- as such, there is nothing 11 particular that I -- I went through to pick these 12 elections. I gave you the very broad criteria. 13 I wanted to see the elections which 14 have candidates who I can easily define. If there 15 are several Democratic candidates and you throw in 16 some Democratic candidates in the Others category 17 and look at only some candidate, that -- that's 18 incomplete analysis. 19 Q Understood. 20 A So -- so I wanted to stay away from 21 some of that. 22 Q So I want to talk about the 2022 Senate 23 election -- 24 A Okay. 25 Q -- briefly. I know you mentioned that</p>
<p>90</p> <p>1 A Correct. 2 Q And she analyzes the October 2015 3 analysis or the 2015 election for attorney 4 general; correct? 5 A Okay. 6 Q In October of 2015, do you see that? 7 Just want to make sure you're seeing it. I don't 8 want you to just take my word for it. 9 A No, I lost you, but -- 10 Q Sure. So if you look at the -- 11 A What's the last one? 12 Q Sure. If you look at the October 2015 13 election for attorney general on her list. 14 A October 2015, yeah, looking at it. 15 Q She analyzes that. 16 A She has lieutenant governor and 17 attorney general, yes. 18 Q Yep. And if you look at your 19 elections, you selected an attorney general 20 election, correct, as one of your 12? 21 A In 2015? 22 Q No, no, no. In 2019. 23 A Okay. 24 Q You selected an -- an attorney general 25 election?</p>	<p>92</p> <p>1 before. So if you look at page -- well, I have -- 2 one second. Okay. I want to look at -- let me 3 see. Where's the -- got it. So same page, Page 4 13, Footnote 6, you note that elections -- 5 election numbers 1 to 11 had only one Democrat and 6 one Republican candidate in the election. 7 Election number 12, 2022 Senate 8 election had several Democrat and Republican 9 candidates in the election. In the analysis 10 below, the votes of all Democrat and Republican 11 candidates have been totaled for election number 12 12 to obtain the votes cast for Democrat or 13 Republican candidates. 14 Is that right? 15 A That is right. 16 Q So do you recall how many Democrat 17 candidates were in the 2022 Senate election? 18 A I don't recall it, but it's on the 19 Secretary of State's website. 20 Q So I'm actually going to provide you 21 those results. 22 A Okay. 23 MS. GIGLIO: So here is a printout. 24 This will be Solanky 5. 25 (Exhibit 5 was marked.)</p>

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24 (93 to 96)

<p>93</p> <p>1 THE REPORTER: Great.</p> <p>2 MS. GIGLIO: And now we need another</p> <p>3 one over here. Or actually -- yeah. Do you need</p> <p>4 one?</p> <p>5 MS. RIGGINS: Yes. Sarah, can we</p> <p>6 share? We should have printed five of this one.</p> <p>7 MS. GIGLIO: I -- I don't need to see</p> <p>8 it. It's the only one that I don't have in this</p> <p>9 lovely little binder.</p> <p>10 BY MS. GIGLIO:</p> <p>11 Q So just to take a look, these are the</p> <p>12 official election results sourced from the</p> <p>13 Louisiana Secretary of State's website. You can</p> <p>14 see the URL at the bottom of this page. So here</p> <p>15 you can see the number of Democratic candidates</p> <p>16 and Republican candidates and other candidates who</p> <p>17 were running in this election.</p> <p>18 A Right.</p> <p>19 Q How many of these candidates received</p> <p>20 more than three percent of the vote?</p> <p>21 A So you want me to look at how many are</p> <p>22 -- which ones are Democrats --</p> <p>23 Q Uh-huh.</p> <p>24 A -- and which ones got more than three</p> <p>25 percent?</p>	<p>95</p> <p>1 Republican and notes that he is white.</p> <p>2 A Correct.</p> <p>3 Q Gary Chambers is a Democrat and he is</p> <p>4 black. And Luke Nixon is a Democrat, and he is</p> <p>5 white.</p> <p>6 A Okay.</p> <p>7 Q So for purposes of your analysis, you</p> <p>8 combined the votes that were cast for Gary</p> <p>9 Chambers, Jr., a black Democrat, and Luke Nixon, a</p> <p>10 white Democrat; is that right?</p> <p>11 A And other Democrats who are out there.</p> <p>12 Q And other Democrats who are out there.</p> <p>13 So if we want to take a look, we can take a look</p> <p>14 at the other Democrats who are out there and see.</p> <p>15 So on this list, how many other Democrats were</p> <p>16 running in this election aside from Mr. Chambers,</p> <p>17 Jr., and Mr. Nixon?</p> <p>18 A So -- so let's -- let me count.</p> <p>19 Q Uh-huh.</p> <p>20 A So there is Mendoza, and there is</p> <p>21 Rodriguez and Steve. So there are three more.</p> <p>22 Q There are three more. So I'm going to</p> <p>23 share my screen on the Zoom really briefly, just</p> <p>24 because I'd like to get a calculator up if I can.</p> <p>25 I don't know if it will let me. There we go.</p>
<p>94</p> <p>1 Q Yeah. Which three -- which candidates</p> <p>2 received more than three percent of the vote?</p> <p>3 A The number two, Gary Chambers, John</p> <p>4 Kennedy, and Luke Nixon.</p> <p>5 Q And how many of those candidates were</p> <p>6 Democrats?</p> <p>7 A How many of those three?</p> <p>8 Q Those three, uh-huh.</p> <p>9 A Let's see. Two of them.</p> <p>10 Q Yeah. And that's Gary Chambers, Jr.,</p> <p>11 and Luke Nixon; is that right?</p> <p>12 A Yep.</p> <p>13 Q And do you remember the racial makeup</p> <p>14 of those three candidates?</p> <p>15 A I don't have it -- that memorized.</p> <p>16 Q So -- not expecting you to. So we can</p> <p>17 turn to Appendix 1A of -- A1 of Dr. Handley's</p> <p>18 report. You can use her -- her 2023 report. So</p> <p>19 that would be -- oh, we have to. That would be</p> <p>20 Solanky 4, I believe.</p> <p>21 A Okay. Okay. Which appendix?</p> <p>22 Q That appendix is A1.</p> <p>23 A A1. Okay. I'm there.</p> <p>24 Q Okay, great. So in looking at this</p> <p>25 list, Dr. Handley lists John Kennedy as of the</p>	<p>96</p> <p>1 Let's see. You want to see the screen for a</p> <p>2 second. There we go. Okay. So we can see that</p> <p>3 0.86 percent of the vote was cast for Mr. Mendoza.</p> <p>4 Is that right?</p> <p>5 A That is right.</p> <p>6 Q So I'm add -- and then adding that to</p> <p>7 0.56 percent, which was cast for Mr. Rodriguez; is</p> <p>8 that right?</p> <p>9 A That is right.</p> <p>10 Q And then you have 2.28 percent of the</p> <p>11 vote cast for Syrita Steib.</p> <p>12 A Okay.</p> <p>13 Q Is that right?</p> <p>14 A That is right.</p> <p>15 Q Okay. So that's a total, if you look</p> <p>16 at the screen, of 3.7 percent; correct?</p> <p>17 A Correct.</p> <p>18 Q So total, the other three Democrat</p> <p>19 candidates in this race received 3.7 percent of</p> <p>20 the vote; right?</p> <p>21 A Correct.</p> <p>22 Q Okay. So for purposes of your</p> <p>23 analysis, you combined the, let's see, 17.8</p> <p>24 percent of -- 0.85 percent of the vote received by</p> <p>25 Mr. Chambers and the 13.22 percent of the vote</p>

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25 (97 to 100)

<p>97</p> <p>1 received by Mr. Nixon; correct?</p> <p>2 A Correct.</p> <p>3 Q And then you combine those with the 3.7</p> <p>4 percent of the vote received by other Democrat</p> <p>5 candidates; is that right?</p> <p>6 A That is right.</p> <p>7 Q Okay. So why did you combine the votes</p> <p>8 of a black Democrat and a white Democrat along</p> <p>9 with these other Democrats in conducting your</p> <p>10 analysis?</p> <p>11 A Now, excluding those or throwing some</p> <p>12 of those in the Others category would be</p> <p>13 misleading. That's why. I feel the right way to</p> <p>14 look at this: how many people voted for Democrat</p> <p>15 candidate, how many people voted for Republican</p> <p>16 candidate, and -- and adding up by the race.</p> <p>17 Q And why would -- why would including</p> <p>18 people who received less than five percent of the</p> <p>19 vote in an Others category be misleading?</p> <p>20 A Less than five percent? Let's count</p> <p>21 how many votes we are talking about.</p> <p>22 Q Sure.</p> <p>23 A So let's go back to the chart which you</p> <p>24 had on the screen.</p> <p>25 Q Oh, sure.</p>	<p>99</p> <p>1 Q So that's 51,245 votes.</p> <p>2 A And that's a significant number of</p> <p>3 votes. And if these votes tend to be from certain</p> <p>4 precincts, in certain parishes, that could skew up</p> <p>5 the ecological influence results by a lot. This</p> <p>6 is a large number of votes.</p> <p>7 Q As compared to the 246,933 votes</p> <p>8 received by Mr. Chambers and the 182,887 votes</p> <p>9 received by Mister -- Mr. Nixon?</p> <p>10 A I'm not counting the total votes here.</p> <p>11 What I'm saying is 51,245 votes is a lot of votes.</p> <p>12 And these votes, if they tend to be from certain</p> <p>13 specific parishes and precincts, that could</p> <p>14 influence the EI results by a lot.</p> <p>15 Q Okay. But when you compare it with the</p> <p>16 -- and I'll total these up on the screen. 246,933</p> <p>17 votes and the 182,887 votes received by the two</p> <p>18 other Democratic candidates in that election, you</p> <p>19 have 429,286 votes.</p> <p>20 A You know --</p> <p>21 Q Received by two candidates; is that</p> <p>22 right?</p> <p>23 A Okay. That is right.</p> <p>24 Q And -- but those two candidates were</p> <p>25 combined with the three other candidates who</p>
<p>98</p> <p>1 A And -- and -- and instead of</p> <p>2 percentages, let's count the votes.</p> <p>3 Q Sure.</p> <p>4 A So you added up the percentages.</p> <p>5 Q Sure.</p> <p>6 A In the same chart, if you look at the</p> <p>7 last column, it has number of votes. Let's add up</p> <p>8 the votes --</p> <p>9 Q Sure.</p> <p>10 A -- and see how many votes we are</p> <p>11 talking about.</p> <p>12 Q Uh-huh. Okay. Which -- which</p> <p>13 candidates would you like me to add up?</p> <p>14 A The -- the -- the three which you just</p> <p>15 added up the percentages.</p> <p>16 Q So Mr. Mendoza, Ms. Rodriguez -- Mr.</p> <p>17 Rodriguez and Syrita Steib?</p> <p>18 A Yes, please. Let's add up their votes.</p> <p>19 Q Okay. Sure. So 11,910 votes for Mr.</p> <p>20 Mendoza; is that right?</p> <p>21 A That is right.</p> <p>22 Q You have 7,767 votes for Mr. Rodriguez,</p> <p>23 and then you have 31,568 votes for Ms. Steib; is</p> <p>24 that right?</p> <p>25 A Correct.</p>	<p>100</p> <p>1 received 51,000 votes approximately in your</p> <p>2 analysis.</p> <p>3 A And that -- and that is the right way</p> <p>4 to do it.</p> <p>5 Q Okay.</p> <p>6 A 51,000 is a lots of votes in Louisiana,</p> <p>7 and the -- the -- the -- some of the candidates</p> <p>8 tend to be -- they receive votes regionally. If a</p> <p>9 particular candidate -- and it's a very</p> <p>10 common-sense thing. If a particular candidate is</p> <p>11 from, say, X parish, then he or she would -- would</p> <p>12 pull in more votes in that precinct or in that</p> <p>13 parish. So -- so -- so ignoring 51,000 votes</p> <p>14 could influence the EI influences by a big margin.</p> <p>15 Q And when you looked at -- you're --</p> <p>16 you're talking a lot about how that could</p> <p>17 influence the vote in different parishes. Did you</p> <p>18 look at how these candidates performed in specific</p> <p>19 parishes in conducting your analysis?</p> <p>20 A I did not because I looked -- I did the</p> <p>21 thing which is more logical. The more logical is,</p> <p>22 if you want to see how black voters are voting for</p> <p>23 Democrat, then you compare all black voters with</p> <p>24 all Democrat candidates.</p> <p>25 Q Sure.</p>

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26 (101 to 104)

<p>101</p> <p>1 A If you want to see how vote -- white</p> <p>2 voters are voting, then you look at all white</p> <p>3 voters and contrast it with the votes for all</p> <p>4 white candidates.</p> <p>5 Q But you don't think that it's relevant</p> <p>6 to your analysis, and just to be clear, to analyze</p> <p>7 how black Democrats vote for a black candidate</p> <p>8 versus a white candidate when -- when two major</p> <p>9 candidates are Democrats and they're of different</p> <p>10 races?</p> <p>11 A It is relevant. But then what is</p> <p>12 irrelevant is that you -- you have thrown in the</p> <p>13 Democrats, and you have thrown in some black</p> <p>14 candidates in this Others category. So this</p> <p>15 Others category is misleading. So if you're</p> <p>16 counting how blacks are voting, then count how</p> <p>17 blacks are voting for all the candidates. Having</p> <p>18 some black votes in this Others category, that's</p> <p>19 misleading. That's --</p> <p>20 Q But encountering her -- in encountering</p> <p>21 Dr. Handley's handling of this data where she</p> <p>22 analyzes the three major candidates and the trends</p> <p>23 in votes for those three major candidates, did you</p> <p>24 analyze all of the candidates separately?</p> <p>25 A No, I -- I -- I don't think so. That</p>	<p>103</p> <p>1 had; that how many votes went for a Democrat</p> <p>2 candidate? How many votes went for the</p> <p>3 Republican? And how many votes for Democrat from</p> <p>4 blacks? How many votes for Democrats from white?</p> <p>5 And so on. So -- so what you're telling me is I</p> <p>6 could just split it out, have like 10, 15, 11</p> <p>7 rows, and then pull in, add up those numbers.</p> <p>8 Q Sure.</p> <p>9 A And -- and -- and what happens is the</p> <p>10 sample size would decrease then. And -- and in</p> <p>11 journal, in the field of statistics, we don't add</p> <p>12 up confidence intervals. The right way to do is,</p> <p>13 if you want to see how many blacks are voting</p> <p>14 Democrat, then convert the data into how many</p> <p>15 blacks are there, how many Democrats are there,</p> <p>16 and then run the analysis.</p> <p>17 Q How did combining these help you assess</p> <p>18 voting patterns by race?</p> <p>19 A So I could report how many, what</p> <p>20 percentage of blacks are voting Democrat.</p> <p>21 Q But it would -- but wouldn't it be</p> <p>22 interesting to see how many black people are</p> <p>23 voting for a black Democrat over a white Democrat?</p> <p>24 A It would be.</p> <p>25 Q And wouldn't it be similarly</p>
<p>102</p> <p>1 sounded meaningless to me.</p> <p>2 Q Well, even though it is relevant to see</p> <p>3 whether black voters tended to vote for a black</p> <p>4 Democrat over a white Democrat?</p> <p>5 A So if you want to see by Democrats and</p> <p>6 by race, then look at all Democrats by race and</p> <p>7 then pull in -- so -- so do all that analysis and</p> <p>8 then add them up.</p> <p>9 Q Why wasn't that analysis relevant to</p> <p>10 your analysis?</p> <p>11 A Because this Others category has</p> <p>12 Democrats in it, has blacks in it. That's why.</p> <p>13 So -- so those votes have not been properly</p> <p>14 accounted for.</p> <p>15 Q Sure. But you've -- you've indicated</p> <p>16 that you had this data available with all</p> <p>17 candidates that were running in the race; is that</p> <p>18 right?</p> <p>19 A That is right.</p> <p>20 Q So you could have, if you wanted to</p> <p>21 counter this analysis and analyze all of the</p> <p>22 candidates and their performance across races,</p> <p>23 isn't that right?</p> <p>24 A I could do that and then I could add</p> <p>25 them up, and I would lead to the answer which I</p>	<p>104</p> <p>1 interesting to see --</p> <p>2 A And -- and -- and I provided that.</p> <p>3 Q I'm so sorry.</p> <p>4 A That how many blacks -- you said black</p> <p>5 Democrats?</p> <p>6 Q Yes.</p> <p>7 A The voters?</p> <p>8 Q Yes. Well, what I'm saying is,</p> <p>9 wouldn't it be interesting -- you --</p> <p>10 A No.</p> <p>11 Q In approaching the -- I'm so sorry.</p> <p>12 A I'm sorry.</p> <p>13 Q Go ahead. No, go ahead.</p> <p>14 A I -- I -- I lost you.</p> <p>15 Q That's okay.</p> <p>16 A For voters, we don't know whether they</p> <p>17 are -- all we know is whether they are -- who they</p> <p>18 voted for. I think you -- you lost me when you</p> <p>19 said black Democrats and white Democrats. If you</p> <p>20 start again, I'll -- I'll --</p> <p>21 Q Sure. Well, in this election, you have</p> <p>22 a black Democrat running against a white Democrat.</p> <p>23 A You're still looking at 22 Senate?</p> <p>24 Q Yes.</p> <p>25 A So we have lots of candidates. Some</p>

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27 (105 to 108)

<p>105</p> <p>1 are white. Some are black. Some are Democrat. 2 Some are Republican. 3 Q Sure. Let's talk just about the -- the 4 three candidates who received more than three 5 percent of the vote -- 6 A Okay. 7 Q -- for purposes of this questioning. 8 And I -- I recognize that you take issue with that 9 as a -- as a baseline matter. 10 A So if you look at only three 11 candidates, you are ignoring, you're deleting a 12 large number of votes, and those large number of 13 votes could come from specific parishes, could 14 come from specific precincts. And when you are 15 doing precinct level analysis, it could skew up 16 your results by a large amount. And -- and that's 17 the reason. Some of the numbers would be 18 misleading. 19 Q And let me ask you, how does it skew up 20 the results? 21 A You know, say, let me just create a 22 hypothetical situation. Say some percent X in 23 Parish Y had like 300 votes of, say, Steib and you 24 ignore those; then you are undercounting how 25 blacks -- how many votes were received by a black</p>	<p>107</p> <p>1 election, when there are two candidates, it's 2 interchangeable to say voting for a Democrat or 3 voting for a black. But for Senate election, when 4 there are more candidates, you can come up with 5 the same analysis by totaling the votes for 6 Democrats, totaling the votes casted by blacks, 7 totaling the votes casted by whites. So -- so -- 8 so -- so this is being done anyway when there are 9 two party, there are two candidates. So for me to 10 logically expand that line of thought was to pull 11 in all black, all Democrats votes, all Republican 12 votes. If you don't do that, then you are 13 undercounting certain votes. 14 Q In rendering this analysis, was it 15 relevant to you whether black individuals tended 16 to vote for a black person? 17 A Tended to vote? I'm sorry. 18 Q Or whether black -- whether black 19 voters voted for a black candidate? 20 A I'm -- I'm -- can you please repeat 21 your question? I -- I lost it. 22 Q Sure. In conducting this analysis, was 23 it relevant to you whether black voters were 24 voting for a black candidate? 25 A No. I'm not looking at that relevance</p>
<p>106</p> <p>1 candidate. So she happens to be a black 2 candidate, which is in her Others category. 3 Q Okay. 4 A And -- and when I'm trying to explain, 5 regional candidates who are getting less votes, 6 they tend to get votes in specific precincts, from 7 specific parishes. So -- so that could influence 8 EI results a lot. 9 Q And just to be a hundred percent clear, 10 Dr. Solanky, so in combining all of the votes for 11 each, that were cast for each respective party, 12 all votes cast for Democrats and all votes cast 13 for Republicans, how did doing that allow you to 14 assess racial voting patterns better? 15 A You know, in general, so -- so -- so 16 that help -- you know, I'm -- I'm looking at what 17 percentage of blacks would vote Democrat. And if 18 you look at the -- and this is clear-cut in the 19 elections where there were just two candidates. 20 For example, in Dr. Handley's work, the Democrats 21 she looked at were all Democrats and black. So -- 22 so it helps you understand the pattern better. So 23 -- so -- so outside of the Senate election, this 24 is what is being done anyway. 25 Am I clear? So outside of the Senate</p>	<p>108</p> <p>1 part, what was relevant. I'm just reporting what 2 happened. 3 Q Okay. And in just looking at this from 4 a -- from a global perspective, isn't the relevant 5 inquiry for assessing racially polarized voting 6 how race impacts voting? 7 MS. RIGGINS: Objection. You can 8 answer. 9 A Can you please ask your question? 10 Q Sure. 11 A Okay. 12 Q Isn't the relevant analysis in 13 assessing racialized voting how race impacts 14 voting? 15 A And -- and that's an -- that's the part 16 both Dr. Handley and I have looked at; that what 17 percentage of black votes are casted for a 18 Democratic candidate, for a Republican candidate. 19 In -- in -- in the -- in the elections where there 20 was just two this was very clear cut. And in -- 21 in 2022 Senate election, I created it to be the 22 same. 23 Q And did the race of the candidate 24 matter to you? 25 A Now, what question is that, please?</p>

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28 (109 to 112)

<p>109</p> <p>1 Does the race of the candidate matter to me?</p> <p>2 Q In your analysis.</p> <p>3 A In what form?</p> <p>4 Q Was it relevant to your analysis?</p> <p>5 A The -- the entire analysis looks into</p> <p>6 the race of the -- for several of the elections.</p> <p>7 I'm -- let me answer this question, I think.</p> <p>8 Q Sure.</p> <p>9 A That's a good question.</p> <p>10 Q Thanks.</p> <p>11 A Yeah. Now -- now, Dr. Handley looked</p> <p>12 at only blacks, Democrats; and -- and -- and --</p> <p>13 and I wanted to have a even better picture, bigger</p> <p>14 picture. So I included not only the elections</p> <p>15 where the Democrat was a black. I included races</p> <p>16 where the Democrat happens to be white. So -- so</p> <p>17 it was not relevant to me, but I wanted to have a</p> <p>18 even bigger picture. I think Dr. Handley just</p> <p>19 focused on when the Democrat candidate happens to</p> <p>20 be black; whereas I included some elections when</p> <p>21 the Democrat candidate does not happen to be black.</p> <p>22 MS. RIGGINS: We've been going in for</p> <p>23 about an hour and a half.</p> <p>24 MS. GIGLIO: Yeah, I was going to say I</p> <p>25 think that this is a good -- a good spot actually</p>	<p>111</p> <p>1 black, that's straightforward. So -- so what I</p> <p>2 have presented here is the voting by race for a</p> <p>3 specific party. And what you're asking me is,</p> <p>4 could you do something similar voting by race for</p> <p>5 a race of the candidate? Sure, that analysis can</p> <p>6 be done.</p> <p>7 Q Would it be relevant to your analysis?</p> <p>8 A It would not be relevant. Why? And</p> <p>9 the reason is it would be very relevant. Why?</p> <p>10 Because there -- there are white Democrats and</p> <p>11 there are white Republicans. So if you look at</p> <p>12 only white, then you would be adding up some</p> <p>13 Democratic votes, some Republican votes. But</p> <p>14 sure, it can be done mathematically, but it would</p> <p>15 be meaningless.</p> <p>16 Q Great. So -- yeah?</p> <p>17 A Let me add one more thing.</p> <p>18 Q Sure.</p> <p>19 A You know, in journal, the EI estimates</p> <p>20 tend to be non-linear. So -- so -- so when we do</p> <p>21 analysis and our estimates are like simple mean,</p> <p>22 we can add up estimates. And in some sense, that</p> <p>23 simplifies the life. So for example, here I'm</p> <p>24 looking at what we discussed last. So if you look</p> <p>25 at the percentage of votes for, say --</p>
<p>110</p> <p>1 for lunch. I would say we --</p> <p>2 MS. RIGGINS: Well, do we want to -- I</p> <p>3 know --</p> <p>4 MS. GIGLIO: It's a question for you.</p> <p>5 MS. RIGGINS: What day is it?</p> <p>6 Wednesday.</p> <p>7 (Whereupon, a recess was taken.)</p> <p>8 THE REPORTER: Back on.</p> <p>9 BY MS. GIGLIO:</p> <p>10 Q So Dr. Solanky, just to close out our</p> <p>11 -- the discussion that we were just having about</p> <p>12 the 2022 Senate election, setting aside party,</p> <p>13 would it be relevant to you to understand whether</p> <p>14 race impacted the voters' tendencies of who they</p> <p>15 wanted to vote for? Or let me rephrase that.</p> <p>16 That was a really bad question.</p> <p>17 Setting aside party, would the race of</p> <p>18 the -- would it be interesting to you to know</p> <p>19 whether the race of the candidate impacted voting</p> <p>20 trends?</p> <p>21 A In -- in -- now, in the case of 2022</p> <p>22 Senate election, sure, you can look at that. For</p> <p>23 the elections when the -- there is only one</p> <p>24 candidate and from each party and -- and -- and --</p> <p>25 and that one candidate for Democrat happens to be</p>	<p>112</p> <p>1 Q And this is in Dr. Handley's report?</p> <p>2 A Right. This is what we last discussed.</p> <p>3 Solanky 4, Appendix A1.</p> <p>4 Q Yep. The 2020 Senate election.</p> <p>5 A So -- so if you wanted to know how many</p> <p>6 votes were there for Democrats, you could not add</p> <p>7 up Chambers and Mixon. So -- so in general for EI</p> <p>8 analysis, we don't add up estimates and come up</p> <p>9 with another estimate. And it's a very simple</p> <p>10 exercise. You can run those because EI estimates</p> <p>11 depend on so many inequalities, and those</p> <p>12 inequalities could produce totally different</p> <p>13 results. So -- so the right way would be, if you</p> <p>14 want to see Democratic votes, then add up all the</p> <p>15 Democratic votes. If you want to see all the</p> <p>16 blacks, then add up all the black voters and then</p> <p>17 run the analysis. And -- and that was what I have</p> <p>18 done.</p> <p>19 Q Okay. So turning to -- I just want to</p> <p>20 go back to your report, Dr. Solanky, and I want to</p> <p>21 turn to Section 3, sort of march through it the</p> <p>22 same way that we marched through Section 2. Okay.</p> <p>23 So in looking at Section 3A of the report, which</p> <p>24 starts on Page 14, can you --</p> <p>25 A Okay.</p>

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29 (113 to 116)

<p>113</p> <p>1 Q Sure. Can you please describe the</p> <p>2 analysis that you conducted here?</p> <p>3 A So in 3A, I'm providing estimates for</p> <p>4 black voters voting for a Republican candidate.</p> <p>5 Q Okay.</p> <p>6 A And in -- in -- in -- in -- in Appendix</p> <p>7 2, I have the detailed data and -- and I have</p> <p>8 picturized those, the findings in Figure 5.</p> <p>9 Q Okay. And in conducting this analysis,</p> <p>10 did you -- you -- you indicate here that you used</p> <p>11 selected parishes. What does that mean?</p> <p>12 A Meaning there are 64 parishes in</p> <p>13 Louisiana. I did not plot all 64 of them here.</p> <p>14 Q And which ones did you plot here?</p> <p>15 A So -- so if you look at, for example,</p> <p>16 easiest would be to look at Figure 5. So -- so I</p> <p>17 have East Baton Rouge, Natchitoches, East Carroll,</p> <p>18 Orleans, and West Baton Rouge. And I also have</p> <p>19 plotted the entire Louisiana.</p> <p>20 Q And what's the relevance of East Baton</p> <p>21 Rouge to your analysis?</p> <p>22 A Now, all these parishes were there in</p> <p>23 -- in the -- in the expert reports I saw. So --</p> <p>24 so they were -- they seemed to -- to be part of</p> <p>25 the analysis which was presented in the other</p>	<p>115</p> <p>1 and Orleans Parish happens to be one such</p> <p>2 illustration. So -- so -- so it would be a faulty</p> <p>3 assumption to assume that all of all 64 parishes</p> <p>4 in Louisiana vote same way. Second faulty</p> <p>5 assumption would be to assume that all the</p> <p>6 precincts within a parish vote the same way. So</p> <p>7 -- so those are very serious assumptions, which I</p> <p>8 wanted to showcase.</p> <p>9 Q Understood. And in looking at Tables</p> <p>10 4A and 4B in Dr. Handley's report, this is Pages</p> <p>11 14 and 15 again.</p> <p>12 A Yes.</p> <p>13 Q Why didn't you analyze Bossier --</p> <p>14 Bossier?</p> <p>15 A I --</p> <p>16 Q I always go for French versus not</p> <p>17 French in looking at how you're going to --</p> <p>18 A It's Bossier.</p> <p>19 Q Bossier. So it is full of French.</p> <p>20 A So I could have looked at Bossier,</p> <p>21 analyze parish, but that is not the idea. The</p> <p>22 idea is to demonstrate that not all parishes vote</p> <p>23 the same way, and even within the parish, the</p> <p>24 voting changes. So -- so if you want, the</p> <p>25 complete analysis would be somebody looks at all</p>
<p>114</p> <p>1 expert reports.</p> <p>2 Q You analyze Orleans Parish; is that</p> <p>3 right?</p> <p>4 A That is right.</p> <p>5 Q And just turning to Dr. Handley's</p> <p>6 reports or Solanky 4, just want to turn to Pages</p> <p>7 14 and 15 of that report.</p> <p>8 A So no, I'm sorry, which?</p> <p>9 Q Sure.</p> <p>10 A Which one?</p> <p>11 Q That's Dr. Handley's report. That's</p> <p>12 Solanky 4.</p> <p>13 A Which exhibit? Okay.</p> <p>14 Q Four. So that one.</p> <p>15 A Yeah. Okay.</p> <p>16 Q And it's Pages 14 and 15.</p> <p>17 A Pages -- I'm there.</p> <p>18 Q Great. Is Orleans Parish referenced in</p> <p>19 any of these clusters?</p> <p>20 A No. I don't see it here on Page 14 and</p> <p>21 15.</p> <p>22 Q So why did you choose Orleans? Why did</p> <p>23 you choose to analyze Orleans Parish?</p> <p>24 A You know, one of the basic idea was to</p> <p>25 show that all of Louisiana doesn't vote similarly,</p>	<p>116</p> <p>1 64 and carries out that analysis. But the point</p> <p>2 being, once you realize that all parishes don't</p> <p>3 vote the same way, all precincts within a parish</p> <p>4 don't vote same way, then that establishes a</p> <p>5 baseline of what is the right way to look at the</p> <p>6 voting pattern within a parish?</p> <p>7 Q Uh-huh.</p> <p>8 A What is the voting -- right way to look</p> <p>9 at the voting pattern within a district, and so on?</p> <p>10 Q So earlier you said that part of how</p> <p>11 you selected these parishes was looking at the</p> <p>12 parishes that were analyzed in the other reports.</p> <p>13 So I just want to go through the parishes that</p> <p>14 were analyzed in Dr. Handley's report, that it</p> <p>15 does not appear that you analyzed in this section.</p> <p>16 So Bossier, you did not analyze Bossier; correct?</p> <p>17 A Now, I looked at lots of parishes, but</p> <p>18 --</p> <p>19 Q Bossier is not cited in your report?</p> <p>20 A Right. But let me say?</p> <p>21 Q Oh, I'm sorry, doctor.</p> <p>22 A So I looked at lots of parishes. The</p> <p>23 idea was not to look at every parish, which is on</p> <p>24 this Page 14 and 15 and give it a plot.</p> <p>25 Q Uh-huh.</p>

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30 (117 to 120)

<p>117</p> <p>1 A The idea was to demonstrate that 2 different parishes vote differently and different 3 parish -- precincts, within precinct -- different 4 precincts within parishes vote differently. That 5 was the overall idea to establish that, and -- and 6 establish that as a baseline for step one for any 7 proper statistical analysis. 8 Q You understand that this case centers 9 around certain areas of Louisiana; is that right? 10 MS. RIGGINS: Objection. 11 Q Or let me rephrase. 12 Do you understand that part of the -- 13 part -- that the part of this that -- 14 A Well -- 15 Q Do you -- do you understand the part of 16 this -- that this case centers on certain areas of 17 Louisiana? 18 MS. RIGGINS: Objection. That 19 misstates what is in the complaint. 20 A And -- and -- and that is not what I'm 21 responding to here in my report. What I'm 22 establishing is that there is a difference in 23 parishes, how parishes vote. And there is a 24 difference within those parishes, how they vote. 25 And if somebody wants to do a proper</p>	<p>119</p> <p>1 What does this analysis signify? What does it 2 mean? 3 A So -- 4 Q Why is it relevant? 5 A -- so why it is relevant is you can see 6 that some parishes vote very differently. Not all 7 parishes -- 64 parishes in Louisiana vote the same 8 way. Some are very different from others, in 9 terms of how blacks vote, in terms of how white 10 votes and so on. 11 Q And just to underscore the selection of 12 these parishes. So you reviewed Mr. Cooper's 13 report as part of your analysis; is that right? 14 A I have reviewed it, but I could not do 15 the analysis, which -- I would -- 16 Q Of the maps? 17 A Of -- of everything, which is out there. 18 Q Okay. I just want to show you the two 19 primary illustrative maps that Mr. Cooper has put 20 together as part of his report. 21 MS. GIGLIO: So this is Solanky 7; is 22 that right, Alyssa? 23 MS. RIGGINS: 6. 24 (Exhibit 6 was marked.) 25 MS. GIGLIO: And then here is 8.</p>
<p>118</p> <p>1 statistical analysis, that is the first step for 2 somebody to document that all the parishes, all 3 the precincts are voting the same way. If you 4 just assume that and then come up with an EI 5 estimate, that estimate would be misleading. 6 Okay. But -- and -- and to answer your question, 7 if -- if I did not, I picked up some sample 8 parishes and I presented those. 9 Q So in looking at these parishes and 10 analyzing the data that you've analyzed, what's 11 the next step in assessing what this data means? 12 A So what is the next step in terms of 13 proper analysis? That's the question; right? 14 Q Well, in -- in -- in assessing the -- 15 what you've assessed in section 3A, for example, 16 is how many black voters voted for a Republican 17 candidate -- 18 A Right. 19 Q -- in certain elections, in certain 20 parishes; is that right? 21 A In all of Louisiana. 22 Q Well, and in these five particular 23 parishes -- 24 A Correct. 25 Q -- correct? So what's the next step?</p>	<p>120</p> <p>1 So this was 7. 2 (Exhibit 7 was marked.) 3 MS. RIGGINS: 7. 4 MS. GIGLIO: Oh, 7? Why do I want to 5 insist on this -- 6 THE REPORTER: Okay -- 7 MS. RIGGINS: This is 6. 8 THE REPORTER: This is -- 9 MS. GIGLIO: So the -- the Illustrative 10 House is 7. The Illustrative Senate is 6. 11 Just let me know who needs the house. 12 I have one of each right now. 13 THE REPORTER: I can find -- 14 MS. GIGLIO: There you go. Thank you. 15 MS. RIGGINS: Are you going to provide 16 him with his report for 8, so then he can 17 understand the keys and what the different numbers 18 and colors are? 19 MS. GIGLIO: Oh, sure. I wasn't going 20 to ask him about any of -- I was just going to -- 21 MS. RIGGINS: Wait, what was he going 22 to -- 23 MS. GIGLIO: -- just going to ask about 24 the -- and certain of the parishes. So -- but if 25 -- if there's any concern, we have his report and</p>

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31 (121 to 124)

<p>121</p> <p>1 we can introduce it.</p> <p>2 MS. RIGGINS: That's -- that's --</p> <p>3 MS. GIGLIO: Absolutely.</p> <p>4 BY MS. GIGLIO:</p> <p>5 Q So in looking at the Illustrative</p> <p>6 Senate first.</p> <p>7 A Illustrative -- okay. Yes.</p> <p>8 Q So one of the parishes that --</p> <p>9 Do you understand the significance of</p> <p>10 the red outlining, Dr. Solanky?</p> <p>11 A Can please tell it to me?</p> <p>12 Q Well, I can represent, for the record,</p> <p>13 that these red outlines are the illustrative</p> <p>14 districts that --</p> <p>15 A Which red outline?</p> <p>16 Q So the red outlines around 38, 17, and</p> <p>17 right over here.</p> <p>18 A Okay. Okay.</p> <p>19 Q If you see red outlining surrounding</p> <p>20 the districts, that is one of the illustrative</p> <p>21 districts that Mr. Cooper has proposed --</p> <p>22 A Okay.</p> <p>23 Q -- in his report. If you look at the</p> <p>24 top of the map -- one of the parishes that you</p> <p>25 analyze in Section 3 of your report is East</p>	<p>123</p> <p>1 parishes that you've analyzed in Section 3 of your</p> <p>2 report is Orleans Parish; is that right?</p> <p>3 A Right.</p> <p>4 Q And can you locate Orleans Parish on</p> <p>5 this report? I can help you if you --</p> <p>6 A I have -- I live -- I teach in.</p> <p>7 Q Do you live in New Orleans? Yeah?</p> <p>8 A I teach in Orleans Parish. I know --</p> <p>9 Q So in looking at the Illustrative</p> <p>10 Senate map --</p> <p>11 A Yeah.</p> <p>12 Q -- which is down here, is Orleans</p> <p>13 surrounded by red?</p> <p>14 A No.</p> <p>15 Q Is it immediately adjacent to any red?</p> <p>16 A No.</p> <p>17 Q And is the same true in the</p> <p>18 Illustrative House in looking at Orleans Parish?</p> <p>19 A That is right.</p> <p>20 Q It's not surrounded by red?</p> <p>21 A Right.</p> <p>22 Q And it's not adjacent to red?</p> <p>23 A That is correct.</p> <p>24 Q So in looking at the areas surrounded</p> <p>25 by red on the Illustrative Senate and the</p>
<p>122</p> <p>1 Carroll; correct?</p> <p>2 A Right.</p> <p>3 Q And could you locate East Carroll on</p> <p>4 this report?</p> <p>5 A On this map?</p> <p>6 Q Yes. Oh, excuse me. On this map.</p> <p>7 Yes. I can help you out if you want.</p> <p>8 A Yeah, please help me out. It's --</p> <p>9 Q So it's in the top -- yep. It's in the</p> <p>10 top, right-hand corner of the map. Is -- is East</p> <p>11 Carroll surrounded by red?</p> <p>12 A East Carroll is not surrounded by red.</p> <p>13 Q Is East Carroll adjacent to any red.</p> <p>14 A It's not.</p> <p>15 Q And another of the parishes that you --</p> <p>16 and we'll just turn to the Illustrative House</p> <p>17 briefly since we're focused on East Carroll, and</p> <p>18 we know where it is.</p> <p>19 Is East Carroll on the Illustrative</p> <p>20 House map surrounded by red?</p> <p>21 A It is not.</p> <p>22 Q And is it adjacent to red?</p> <p>23 A It is not.</p> <p>24 Q And then in looking at the Illustrative</p> <p>25 Senate map again, the other -- one of the other</p>	<p>124</p> <p>1 Illustrative House maps -- I'll move on. We can</p> <p>2 move away from the maps for now.</p> <p>3 A Put them away?</p> <p>4 Q Yeah. We can put them away for now.</p> <p>5 And just to -- to revisit, so on Pages 14 and 15</p> <p>6 of Dr. Handley's report?</p> <p>7 A Okay. Give me one second.</p> <p>8 Q No problem. That's Solanky 4.</p> <p>9 A Okay.</p> <p>10 Q There was a lot of documents.</p> <p>11 A Right.</p> <p>12 Q Pages 14 and 15 --</p> <p>13 A Okay.</p> <p>14 Q -- Orleans' Parish is not listed in any</p> <p>15 of the parishes as -- as one of the parishes on</p> <p>16 these tables; is that right?</p> <p>17 A That is right.</p> <p>18 Q And East Carroll is also not listed on</p> <p>19 any of these parishes?</p> <p>20 A That is right.</p> <p>21 Q Okay. So -- great. Let's turn to</p> <p>22 Section 3B of your report.</p> <p>23 A Okay.</p> <p>24 Q So we'll -- we'll put away Dr.</p> <p>25 Handley's report.</p>

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32 (125 to 128)

<p>125</p> <p>1 A Okay.</p> <p>2 Q For now.</p> <p>3 A So 3B --</p> <p>4 Q Uh-huh.</p> <p>5 A -- okay. Yes.</p> <p>6 Q That's on Page 15.</p> <p>7 A Yes. I'm there.</p> <p>8 Q Great. Can you just describe the</p> <p>9 analysis that you conducted here in Section 3B?</p> <p>10 A So -- so in 3A, I looked at how the</p> <p>11 black voters -- the estimates of black voters</p> <p>12 voting for a Republican. In 3B, I'm looking at</p> <p>13 how black voters vote for a Democrat.</p> <p>14 Q And why was that analysis relevant to</p> <p>15 your conclusions?</p> <p>16 A Just to understand how the -- the --</p> <p>17 the voters vote.</p> <p>18 Q And what did the analysis show?</p> <p>19 A The analysis shows that there's a</p> <p>20 significant difference, how black voters vote for</p> <p>21 a Democrat across parishes.</p> <p>22 Q And what does it -- what do you mean by</p> <p>23 a significant difference in how they --</p> <p>24 A Meaning large difference.</p> <p>25 Q Well, what -- what is that large</p>	<p>127</p> <p>1 Q And what -- what -- why is this</p> <p>2 analysis relevant to your conclusions?</p> <p>3 A To show that white voters voting for</p> <p>4 Republican is not uniform across Louisiana. It</p> <p>5 changes from parish to parish.</p> <p>6 Q Okay. And what is the analysis -- what</p> <p>7 did your analysis bear out? What did it show?</p> <p>8 A It -- it showed what I said, that --</p> <p>9 Q That it changes from parish to parish?</p> <p>10 A Right. That there is a difference how</p> <p>11 white voters vote from -- in one parish compared</p> <p>12 to other.</p> <p>13 Q And why is the difference in how white</p> <p>14 voters vote in one parish compared to another</p> <p>15 relevant to racially polarized voting?</p> <p>16 A Now you need to understand before you</p> <p>17 assume something. That different parishes vote</p> <p>18 differently. So -- so if you combine parishes and</p> <p>19 look at regions, you could be mixing up apples and</p> <p>20 oranges, just to make it easier to understand.</p> <p>21 Q Okay.</p> <p>22 A So -- so if you are producing a common</p> <p>23 estimate for several parishes, then you need to do</p> <p>24 due diligence and first verify that what you are</p> <p>25 pooling in -- in your analysis are actually voting</p>
<p>126</p> <p>1 difference? Can you spell it out for me?</p> <p>2 A Let's look at the -- yeah, sure. Let's</p> <p>3 say the figures is -- if you want the numbers, we</p> <p>4 can go to appendix.</p> <p>5 Q Sure.</p> <p>6 A But let's start with Figure 6 on Page</p> <p>7 15.</p> <p>8 Q Uh-huh.</p> <p>9 A And you could -- let's -- for example,</p> <p>10 let's look at East Carroll. See how East Carroll</p> <p>11 starts with somewhere around -- somewhere around</p> <p>12 80 percent or so. Dips down around elections</p> <p>13 eight and nine. Seven and eight goes up and comes</p> <p>14 down.</p> <p>15 Q Uh-huh.</p> <p>16 A So -- so -- so -- so how different</p> <p>17 parishes vote, how the blacks in different</p> <p>18 parishes vote changes --</p> <p>19 Q Uh-huh.</p> <p>20 A -- significantly from Parish to Parish.</p> <p>21 Q Okay. So let's move to Section 3C of</p> <p>22 the report?</p> <p>23 A So in 3C, I'm looking at same analogy</p> <p>24 in terms of analysis. I'm looking at white</p> <p>25 voters, voting Republican.</p>	<p>128</p> <p>1 the same way.</p> <p>2 Q Understood. Okay. Let's move to</p> <p>3 Section 3D. Can you just describe the analysis</p> <p>4 that you undertook here?</p> <p>5 A Now, in 3D, I'm looking at how white</p> <p>6 voters -- what percentage of white voters vote</p> <p>7 Democrat across 12 elections. And -- and -- and</p> <p>8 some of those elections had a -- a black Democrat</p> <p>9 running. Some of them don't.</p> <p>10 Q Uh-huh.</p> <p>11 A So -- so it gives you a wider picture.</p> <p>12 And, again, the conclusion is very same as before.</p> <p>13 The different parishes vote differently.</p> <p>14 Q And, again, that's relevant to -- why</p> <p>15 is that relevant to an assessment of racially</p> <p>16 polarized voters?</p> <p>17 A Because we are looking at how black and</p> <p>18 white voters vote.</p> <p>19 Q And so -- but parish by parish, what is</p> <p>20 that demonstrating about the polarization?</p> <p>21 A It's, again, the same argument. If you</p> <p>22 are pooling in different parishes and -- and</p> <p>23 producing one estimate for different parishes,</p> <p>24 that estimate could be meaningless if the two</p> <p>25 parishes vote differently.</p>

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33 (129 to 132)

<p>129</p> <p>1 Q Okay. So let's take a look at some of 2 the appendices that relate to this analysis. 3 A Okay. 4 MS. GIGLIO: We can break here if we 5 want to. 6 MS. RIGGINS: Is your lunch ready? I 7 think -- 8 MS. GIGLIO: I'm not sure. 9 MS. RIGGINS: -- to break. 10 MS. GIGLIO: Is -- is yours? 11 MS. RIGGINS: Ours is, but in order to 12 -- 13 MS. GIGLIO: Yeah. No, I understand. 14 MS. RIGGINS: -- be efficient, if yours 15 isn't, we can wait a few minutes. 16 MS. GIGLIO: The pickup time is at 17 12:55, so it should be. But we can -- we can do a 18 few more and then -- and then break at 1:05 -- 19 MS. RIGGINS: Sure. 20 MS. GIGLIO: -- with the assumption 21 that it will be all -- all ready to go. 22 Q So let's take a look at Appendix 2? 23 Or, actually, Appendix -- appendix 3, Dr. Solanky. 24 A Okay. 25 Q So Appendix 3, that deals with your</p>	<p>131</p> <p>1 entire Louisiana I'm looking at. 2 Q Uh-huh. 3 A And then I have columns, Black voting 4 Democrat. 5 Q Uh-huh. 6 A So what percentage of blacks voted for 7 a Democrat candidate? And then I have a 95 8 percent confidence interval for that estimate. 9 Q Uh-huh. Great. So can we -- let's 10 look at one of the elections that you analyze. So 11 let's look at 2015, the election for lieutenant 12 governor. That's election number three. 13 A Okay. 14 Q And let's focus on Natchitoches? How 15 do you pronounce it? 16 A Natchitoches. 17 Q Natchitoches. Thank you. So what does 18 the -- the data that you've uncovered here, what 19 -- that you state here, indicate about the number 20 of black voters who voted for a Democrat in 21 Natchitoches in the 2015 lieutenant governor 22 election? 23 A Now, the data, which I used -- 24 Q Uh-huh. 25 A -- is what doctor -- is based on Dr.</p>
<p>130</p> <p>1 estimates for black voters voting for a Democratic 2 candidate; is that right? 3 A That is right. 4 Q Can you describe the data in each of 5 the columns in Appendix 3? 6 A Sure. 7 Q Thank you. 8 A So in the first column, I'm looking at 9 the year, the year of election. And then in 10 second column, I have election number. And in a 11 previous table, I have defined what election 12 number means. 13 Q Uh-huh. 14 A Let me be -- 15 Q In relation to the table that you've 16 presented? 17 A So -- so in Table 6, I have provided 18 that. So which particular election? 19 Q Uh-huh. 20 A So as not to increase the number of 21 columns, I provided that in Table 6, and I'm 22 referring back to that. 23 Q Sure. 24 A And then I'm describing what election 25 it was. I'm describing which parish, or -- or the</p>	<p>132</p> <p>1 Handley's proportional allocation. 2 Q Uh-huh. 3 A So based on that, the data, I have 4 provided an estimate, 96.3 percent of blacks voted 5 Democrat in this election. 6 Q Great. And then looking at Appendix 5 7 of your report? And this is the appendix dealing 8 with white voters voting for a Democratic 9 candidate -- 10 A Okay. 11 Q -- in those elections; is that right? 12 A That is right. 13 Q So let's look at the same column 14 related to the 2015 election for lieutenant 15 governor in Natchitoches. What is the -- what 16 does that signify about the number of white voters 17 who voted for a Democrat in that election? 18 A So -- so reading off from Appendix 5 -- 19 Q Uh-huh. 20 A -- 2015 election lieutenant governor 21 Natchitoches parish, 21.2 percent of whites voted 22 Democrat. 23 Q And in turning to Appendix 4, let's 24 look at the same election. Now, Appendix 4 is the 25 appendix dealing with white voters who voted for a</p>

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<p>133</p> <p>1 Republican candidate in the elections --</p> <p>2 A That is right.</p> <p>3 Q -- right?</p> <p>4 A Yes.</p> <p>5 Q So in looking at the lieutenant</p> <p>6 governor election in 2015 in Natchitoches, what</p> <p>7 does your data indicate about the number of white</p> <p>8 people who voted for a -- a Republican in that</p> <p>9 election?</p> <p>10 A So I'm looking at Appendix 4, 2015,</p> <p>11 lieutenant governor, Natchitoches, 78.8 percent.</p> <p>12 Q So 78.8 percent of white voters voted</p> <p>13 for a Republican in this contest?</p> <p>14 A Right.</p> <p>15 Q And 96.3 percent of black voters voted</p> <p>16 for a Democrat in that contest --</p> <p>17 A Right.</p> <p>18 Q -- correct? So let's take a look at</p> <p>19 each of the appendices. I'd just like to go</p> <p>20 through some of the data listed here. So in</p> <p>21 focusing on Natchitoches, itself, is there any</p> <p>22 election reflected on Appendix 3 where the</p> <p>23 majority of black voters voted for a non-Democrat?</p> <p>24 A Please ask your question one more time?</p> <p>25 Q Sure. Of course.</p>	<p>135</p> <p>1 Q -- is there any election that you</p> <p>2 studied where the majority of white voters did not</p> <p>3 vote for the Republican?</p> <p>4 A Let's look at it just a bit.</p> <p>5 Q Sure.</p> <p>6 A Look at 2015 Governor Election.</p> <p>7 Q Uh-huh.</p> <p>8 A Look at the difference. It dropped</p> <p>9 down to 67.6.</p> <p>10 Q Sure.</p> <p>11 A So that is quite a bit of variation.</p> <p>12 Q But that's not my question.</p> <p>13 A I'm coming to your question.</p> <p>14 Q Great.</p> <p>15 A So while they are all over 50 percent,</p> <p>16 there's a big variation among those numbers.</p> <p>17 Q And in Natchitoches, if you look at</p> <p>18 2012, it's 86.7 percent of white voters voting for</p> <p>19 Republican; is that right?</p> <p>20 A That is right.</p> <p>21 Q And then in the -- in the gubernatorial</p> <p>22 election, it's 67.6 percent voting for a</p> <p>23 Republican; correct?</p> <p>24 A That is right.</p> <p>25 Q And then in the lieutenant governor</p>
<p>134</p> <p>1 A So Appendix 3 --</p> <p>2 Q Yep. Looking at the elections focusing</p> <p>3 on Natchitoches --</p> <p>4 A Okay.</p> <p>5 Q -- okay, is there any election in which</p> <p>6 the black voters in Natchitoches did not -- in</p> <p>7 which the majority of voters in Natchitoches did</p> <p>8 not vote for the Democratic candidate?</p> <p>9 A A -- a very high percentage vote</p> <p>10 Democrat.</p> <p>11 Q In -- in all of the elections; is that</p> <p>12 right?</p> <p>13 A In all the elections, based on this</p> <p>14 data, which I'm relying upon.</p> <p>15 Q Right. But based on this appendix?</p> <p>16 A Based on this appendix, which is based</p> <p>17 on the data which I'm relying upon.</p> <p>18 Q Uh-huh. Correct. In all of the</p> <p>19 elections that you studied, the black voters in</p> <p>20 Natchitoches -- the majority of black voters in</p> <p>21 Natchitoches voted for the Democrat; is that right?</p> <p>22 A Right.</p> <p>23 Q And looking at Appendix 4 of the data?</p> <p>24 And, again, focusing on Natchitoches --</p> <p>25 A Okay.</p>	<p>136</p> <p>1 election, it's 78.8 percent; is that right?</p> <p>2 A That is right.</p> <p>3 Q And in the presidential election in</p> <p>4 2016, it's 87 percent --</p> <p>5 A Correct.</p> <p>6 Q -- voting for a Republican?</p> <p>7 A Yes.</p> <p>8 Q In the 2017 treasurer election, it's</p> <p>9 85.4 percent voting for a Republican?</p> <p>10 A Correct.</p> <p>11 Q And in the 2018 secretary of state</p> <p>12 election, it's 87.9 percent voting for a</p> <p>13 Republican; correct?</p> <p>14 A Correct.</p> <p>15 Q And then looking at the lieutenant</p> <p>16 governor, it's 93.3 percent, correct, voting for a</p> <p>17 Republican?</p> <p>18 A Right.</p> <p>19 Q Attorney general 92.2 percent voting</p> <p>20 for a Republican?</p> <p>21 A Right.</p> <p>22 Q And secretary of state 80.7; is that</p> <p>23 right?</p> <p>24 A That is correct.</p> <p>25 Q 76.8 percent voting for a -- a</p>

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<p>137</p> <p>1 Republican candidate in the gubernatorial election</p> <p>2 in 2019? I'm just looking at each of these</p> <p>3 numbers. 87.7 in the 2020 presidential and 88.2</p> <p>4 in the 2022 senator election; is that right?</p> <p>5 A Right.</p> <p>6 Q So none of those figures are below 67</p> <p>7 percent; is that right?</p> <p>8 A That is right.</p> <p>9 Q And so then looking at -- looking at</p> <p>10 this, would you say that the voting patterns of</p> <p>11 white voters reflected in Appendix 4, reflect that</p> <p>12 white voters are voting in a block for the</p> <p>13 Republican candidate?</p> <p>14 A Now, based on -- this is all based on</p> <p>15 Dr. Handley's proportional allocation --</p> <p>16 Q Uh-huh.</p> <p>17 A -- and based on that data, yes.</p> <p>18 Q And based -- but based on the results</p> <p>19 that are reflected in this appendix, would you</p> <p>20 describe the white voters as voting for a block?</p> <p>21 A And I just --</p> <p>22 Q For a Republican candidate?</p> <p>23 A -- answered that question.</p> <p>24 Q And the answer is --</p> <p>25 A The answer is -- so this table here is</p>	<p>139</p> <p>1 number I could find --</p> <p>2 Q Uh-huh.</p> <p>3 A -- was 80 something.</p> <p>4 Q 80 point -- let me look -- it's</p> <p>5 somewhere here.</p> <p>6 A It is somewhere here. If I lost it --</p> <p>7 Q I see 89.</p> <p>8 A There is one smaller. I see 82.</p> <p>9 Q 82? And where is that?</p> <p>10 A 2019.</p> <p>11 Q Uh-huh.</p> <p>12 A So that's the smallest number. But</p> <p>13 like what I said earlier, for Natchitoches, this</p> <p>14 is based on the data, which has --</p> <p>15 Q I'm sorry, Dr. Solanky, I don't mean to</p> <p>16 -- to interrupt you, but I just want to be clear --</p> <p>17 A Uh-huh.</p> <p>18 Q -- 82? I'm only seeing 82 for West</p> <p>19 Baton Rouge in 2020 for the presidential election.</p> <p>20 A How about --</p> <p>21 Q Can you just point --</p> <p>22 A -- 2019? We are on Appendix 3, right.</p> <p>23 Q We're on Appendix 3.</p> <p>24 A How about 2019 --</p> <p>25 Q Uh-huh.</p>
<p>138</p> <p>1 based upon Dr. Handley's proportional allocation.</p> <p>2 So based on those allocations, those are the</p> <p>3 numbers.</p> <p>4 MS. GIGLIO: Understood. Let's look at</p> <p>5 -- well, let's -- it's 1:10. So why don't we</p> <p>6 break for now? I imagine this is ready at this</p> <p>7 point.</p> <p>8 THE REPORTER: Off the record?</p> <p>9 MS. GIGLIO: Yes. We're off the record.</p> <p>10 (Whereupon, a recess was taken.)</p> <p>11 THE REPORTER: Back on the record.</p> <p>12 BY MS. GIGLIO:</p> <p>13 Q So, Dr. Solanky, I want to take another</p> <p>14 look at Appendix 3 of your report. And I -- I</p> <p>15 just want to go through a similar analysis as we</p> <p>16 did with -- I keep wanting to say Natchitoches.</p> <p>17 It's not. What was it?</p> <p>18 A Natchitoches.</p> <p>19 Q Natchitoches. Thank you. I want to do</p> <p>20 a similar analysis with East Baton Rouge. So in</p> <p>21 looking at the elections that you analyzed out of</p> <p>22 East Baton Rouge, is there any election in which</p> <p>23 the majority of black voters did not vote for a</p> <p>24 Democrat?</p> <p>25 A The answer is no. I think the smallest</p>	<p>140</p> <p>1 A -- lieutenant governor?</p> <p>2 Q Oh, attorney general?</p> <p>3 A It's on other page.</p> <p>4 Q Oh, I see. Okay. 89. I see. I see</p> <p>5 2018 for attorney general, 89. 2019 for secretary</p> <p>6 of state, I see 95.7. And then Governor, I see</p> <p>7 98.7.</p> <p>8 A Right. So the smallest number I see is</p> <p>9 East Baton Rouge, 2019, lieutenant governor 82</p> <p>10 percent.</p> <p>11 Q Oh, lieutenant governor. Okay. Sorry.</p> <p>12 I'm just -- I'm just trying to find it. Oh, I</p> <p>13 see. My apologies. Thank you so much.</p> <p>14 A Okay.</p> <p>15 Q What were you going to say?</p> <p>16 A So what I was going to say was that --</p> <p>17 as we had discussed earlier, this is based on the</p> <p>18 data which Dr. Handley had created with her</p> <p>19 proportional allocation. That's remark number one.</p> <p>20 And remark number two is just because</p> <p>21 for the entire parish, the number is 80 percent or</p> <p>22 90 percent, that does not mean that within the</p> <p>23 parish, there are not precincts where this number</p> <p>24 could totally flip, could become largely different.</p> <p>25 Q Do you have any evidence of parish or</p>

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<p>141</p> <p>1 precincts where that -- that has flipped?</p> <p>2 A Yes, I do. I -- I think I have that</p> <p>3 for East Baton Rouge in my report.</p> <p>4 Q Can you point me to that in your report?</p> <p>5 A That's based on the last part from --</p> <p>6 based on the density work.</p> <p>7 Q The density work, in -- in Section 4 of</p> <p>8 your report?</p> <p>9 A So if you look at Page 21 and 22?</p> <p>10 Q Okay. Okay. So what you're saying --</p> <p>11 and when you say there are precincts where this</p> <p>12 totally flips, can you give me an example of where</p> <p>13 this totally flips in East Baton Rouge?</p> <p>14 A So -- so let's look at Figure 12.</p> <p>15 Q Uh-huh.</p> <p>16 A So -- so here I have plotted white</p> <p>17 voting Republican.</p> <p>18 Q Uh-huh.</p> <p>19 A And -- and if you look at the number in</p> <p>20 front of -- on top of zero, that is the entire</p> <p>21 parish; okay?</p> <p>22 Q Uh-huh.</p> <p>23 A And -- and now when you move across</p> <p>24 this graded scale, you're looking into a subset of</p> <p>25 parishes as the parishes become more denser. And</p>	<p>143</p> <p>1 don't point to specific precincts, you -- you</p> <p>2 assess things on a parish-wide level, you</p> <p>3 discussed 12 elections.</p> <p>4 A That is --</p> <p>5 Q Is that right?</p> <p>6 A -- correct.</p> <p>7 Q So there are 10 elections in appendix</p> <p>8 -- represented in Appendix 3 that are not</p> <p>9 represented in Figure 12?</p> <p>10 A That is right.</p> <p>11 Q Okay. So in the elections parish-wide,</p> <p>12 when you're assessing these parish-wide elections,</p> <p>13 would you say that black voters in the parish of</p> <p>14 East Baton Rouge are voting cohesively?</p> <p>15 A I would not say that because having</p> <p>16 seen that there are precincts in East Baton Rouge</p> <p>17 which vote differently, I would not feel</p> <p>18 comfortable making that statement.</p> <p>19 Q But your numbers -- oh, so sorry. Go</p> <p>20 -- please?</p> <p>21 A So -- so -- so you have to look at it</p> <p>22 -- the entire analysis as a whole. So in the</p> <p>23 middle part, which we are looking at right now, I</p> <p>24 look at the parishes and then I look at within the</p> <p>25 parishes. So if I ignore the work which I have</p>
<p>142</p> <p>1 the horizontal line there is at 50 percent. And</p> <p>2 after some time you would see that white voting</p> <p>3 Republican becomes less than 50 percent for East</p> <p>4 Baton Rouge.</p> <p>5 Q Understood.</p> <p>6 A So --</p> <p>7 Q And -- and you assert that this</p> <p>8 represents that in certain precincts that these</p> <p>9 trends are -- are --</p> <p>10 A Are reversing.</p> <p>11 Q -- reversing?</p> <p>12 A Yes.</p> <p>13 Q Okay. Now, in -- in those -- in -- in</p> <p>14 that figure, you only discuss two elections;</p> <p>15 correct?</p> <p>16 A Now, which figure?</p> <p>17 Q The figure that you were just pointing</p> <p>18 to.</p> <p>19 A That is right.</p> <p>20 Q Yes. Let me see. Figure 12. So</p> <p>21 you're only assessing the presidential election in</p> <p>22 2020 and the senate election in 2022 in that</p> <p>23 figure; is that right?</p> <p>24 A Okay.</p> <p>25 Q And -- but in Appendix 3 for which you</p>	<p>144</p> <p>1 done within the parish, that would be incorrect.</p> <p>2 So -- so -- so I would not feel comfortable making</p> <p>3 that statement.</p> <p>4 Q Understood. Just as a general matter,</p> <p>5 Dr. Solanky, you analyze different parishes in</p> <p>6 Section 4 of your report than you do in Section 3</p> <p>7 of your report; isn't that right?</p> <p>8 For example, turning to -- I'm going to</p> <p>9 see an area where you summarize the parishes that</p> <p>10 you selected. So you summarize -- you -- you</p> <p>11 discuss Caddo Parish; isn't that right, in Section</p> <p>12 4?</p> <p>13 A That is right.</p> <p>14 Q And you don't discuss Caddo Parish in</p> <p>15 Section 3?</p> <p>16 A And -- and -- and that was -- you know,</p> <p>17 that was not the point that I plot all 64 parishes.</p> <p>18 Q Right.</p> <p>19 A The point was to show that different</p> <p>20 parishes vote differently. So that was the</p> <p>21 broadest picture.</p> <p>22 Q Well, in parts, Dr. Solanky, the reason</p> <p>23 I ask the question is because part of what you're</p> <p>24 telling me, which I understand, is that your</p> <p>25 analysis builds on itself. So you look at a</p>

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<p>145</p> <p>1 statewide subset and then you look at parishes and</p> <p>2 then you break that down into precincts?</p> <p>3 A Correct.</p> <p>4 Q That makes sense to me.</p> <p>5 A Exactly.</p> <p>6 Q But what I'm saying is under that</p> <p>7 rubric wouldn't -- wouldn't it make sense to look</p> <p>8 at the same parishes in Sections 3 where you're</p> <p>9 looking at the parish as a whole, and then Section</p> <p>10 4, where you're looking at precincts, to build on</p> <p>11 the analysis, the way that you're describing?</p> <p>12 A That would be one way. Another way</p> <p>13 would be that I have some precincts, parishes,</p> <p>14 which are different and some parishes common, so</p> <p>15 that we can look at more of the data.</p> <p>16 Q Okay.</p> <p>17 A So -- but that is not a big deal. It's</p> <p>18 the -- the plot for -- say, for example, Figure 8</p> <p>19 could easily be included -- I could include one</p> <p>20 more parish or two more.</p> <p>21 Q But you don't?</p> <p>22 A I did not. And for the reason was I</p> <p>23 wanted to spread it out.</p> <p>24 Q Understood. So in looking at just the</p> <p>25 -- I understand that your -- that we'll talk about</p>	<p>147</p> <p>1 very differently.</p> <p>2 Q Uh-huh.</p> <p>3 A So I found that consistently. Having</p> <p>4 said that, I have not looked at West Baton Rouge,</p> <p>5 and -- and -- and the reason being, I wanted to</p> <p>6 include some parishes new, some old, but I could</p> <p>7 have easily done the same parishes everywhere.</p> <p>8 Q Okay. But in looking at West Baton</p> <p>9 Rouge as a whole, and just at looking at West</p> <p>10 Baton Rouge as a whole, which is what you did in</p> <p>11 Section 3 of your report, there is no election in</p> <p>12 which the majority of black voters did not vote</p> <p>13 for the Republican candidate; is that right?</p> <p>14 A That is correct. And -- and I</p> <p>15 qualified that with two remarks.</p> <p>16 Q Yes. Noted. And then in Appendix 4</p> <p>17 where you're assessing white voters voting for a</p> <p>18 Republican candidate, in West Baton Rouge, I just</p> <p>19 want to ask the same question. Are there any</p> <p>20 elections in which the majority of white voters do</p> <p>21 not vote for a Republican candidate?</p> <p>22 A In which parish?</p> <p>23 Q In -- in West Baton Rouge.</p> <p>24 A In West parish?</p> <p>25 Q Same parish, uh-huh.</p>
<p>146</p> <p>1 Section 4, but we can focus on an area in which we</p> <p>2 didn't look at precinct-specific data.</p> <p>3 A Okay.</p> <p>4 Q So let's look at West Baton Rouge. Are</p> <p>5 there any elections reflected on Appendix 3 for</p> <p>6 West Baton Rouge where the majority of black</p> <p>7 voters did not vote for the -- the Democrat?</p> <p>8 A So the smallest number I have is 82.9.</p> <p>9 Q Okay.</p> <p>10 A And that is for 2011.</p> <p>11 Q Or '20?</p> <p>12 A I mean, 2020 --</p> <p>13 Q Yeah.</p> <p>14 A -- presidential election.</p> <p>15 Q Yeah. Election number 11.</p> <p>16 A And -- and -- and -- and -- and the</p> <p>17 same answer, which I gave before. This is based</p> <p>18 on how Dr. Handley has implemented her</p> <p>19 proportional allocation based on her data.</p> <p>20 And -- and just because this is the</p> <p>21 number for the entire parish, that does not mean</p> <p>22 that there are precincts in there who vote</p> <p>23 differently. In fact, all the parishes, I looked</p> <p>24 at -- all the parishes I looked at, after some</p> <p>25 time, in terms of voter density, the parishes vote</p>	<p>148</p> <p>1 A For governor selection, it became 54.1.</p> <p>2 Right, so the smallest number I see is 54.1, and</p> <p>3 that is for the governor's election in 2015.</p> <p>4 Q So there are no elections reflected on</p> <p>5 Appendix 4 where the majority of white voters do</p> <p>6 not vote for the Republican candidate?</p> <p>7 A That is right. And -- and again, those</p> <p>8 two remarks that this is based on the data which I</p> <p>9 feel is unreliable. And -- and just because the</p> <p>10 entire parish, the numbers are over 50 percent</p> <p>11 based on all the parishes in which I did in-depth</p> <p>12 analysis, that contradicts the parish wide</p> <p>13 results. Meaning on the entire parish, you could</p> <p>14 have one number, but then as you look at more</p> <p>15 denser parishes, that could change.</p> <p>16 Q But you didn't conduct that kind of</p> <p>17 analysis for West Baton Rouge?</p> <p>18 A For West, right.</p> <p>19 Q Understood. And when you -- I</p> <p>20 understand that you've stated that you feel that</p> <p>21 Dr. Handley's data was unreliable, and we'll talk</p> <p>22 about that in a little bit more detail, but I just</p> <p>23 want to be clear: Do you present an alternative an</p> <p>24 -- an alternative method to Dr. Handley's method</p> <p>25 in -- in analyzing your data?</p>

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<p>149</p> <p>1 A No -- no. First of all, in order for 2 my numbers to be comparable, I had to look at her 3 -- her proportional allocation in terms of, are 4 there better methods out there? Yes, there are. 5 Q And -- but you didn't employ them here? 6 A I did not employ them because I wanted 7 to verify her numbers. 8 Q And what are those better methods, in 9 your view? 10 A There are better methods which look at 11 all of the data. And -- and if you wish, I could 12 verbalize it or I can give you an example, 13 whichever way you prefer. 14 Q I would prefer both. 15 A Okay. 16 Q So if you could verbalize what methods 17 could have been used? 18 A So -- so what Dr. Handley does not do 19 is she looks at only partial data and she ignores 20 the key part of the data, which is total turnout 21 -- total turnout. If you look at the total 22 turnout and see how many early votes were there, 23 you could precisely estimate or obtain how many 24 early votes were there from that precinct. And 25 she completely ignores that.</p>	<p>151</p> <p>1 implemented those. 2 Q But you did not? 3 A I did not. But from a mathematics 4 point of view, it's a very simple solution. And 5 -- and Dr. Handley just did not see it. 6 Q And you didn't have time to conduct the 7 very simple solution that you proposed? 8 A The number one objective was to verify 9 her numbers and -- and present something which I 10 can contrast based on her numbers. If I do my own 11 work and -- and come up with my own numbers, then 12 I would not have been able to verify her numbers. 13 Q Well, as we went over at the beginning, 14 the task that you've laid out in your expert 15 report is to both statistically study voting 16 patterns and to critique Dr. Handley and Mr. 17 Cooper. So -- so as part of your -- your own 18 statistical study of the data, you did not conduct 19 an analysis that -- that implemented this very 20 simple solution that you proposed; is that right? 21 A That is right. So I did not implement 22 that, but instead I focused on showing what she 23 implemented, how biased it is and what errors it 24 has created. 25 Q Okay. Okay. And just for purposes, I</p>
<p>150</p> <p>1 So -- so if you adopt a mathematical 2 model, which first finds out how many early votes 3 are there in a precinct and then allocate them 4 proportionally, yeah, you would do much better. 5 So -- so -- so in my rebuttal report, I have 6 extensive tables. If you want, we can go over 7 those. 8 Q We'll go over those later, but yes. 9 A So I have extensively tabulated how her 10 methodology is either creating extra voters or 11 ignoring the voters who actually voted. And -- 12 and the reason is she looks at data incomplete. 13 If she had looked at all of the data, which is 14 there, all of the data which is there in her own 15 spreadsheet, she would have obtained a much better 16 estimate to allocate the early votes. 17 Q So, Dr. Solanky, why didn't you conduct 18 that analysis in addition to the analysis that 19 you've conducted? 20 A Now, first of all, I -- even carrying 21 out the analysis here was time-consuming. Why? 22 Because I had to pull up my own data, understand 23 what the -- the data is, contrast it with some of 24 the results from Dr. Handley's report. Otherwise, 25 if -- if I had available time, I could have easily</p>	<p>152</p> <p>1 think we skipped over Appendix 4 in assessing East 2 Baton Rouge, so I just want to return to that very 3 briefly and get that on the record. 4 So in looking at election -- the 5 elections that you lay out for East Baton Rouge, 6 with the caveats that you've already laid out with 7 respect to the quality of the data and your 8 analysis in Section 4, which we certainly will 9 discuss, based on this table alone, are there any 10 elections in which the majority of white voters in 11 East Baton Rouge did not vote for the Republican 12 candidate? 13 A No. We looked at those numbers. I 14 think the smallest was 60.3; right? But there was 15 even 59 -- 16 Q No, we did West Baton Rouge and then we 17 did the black voting population in East Baton 18 Rouge. So I just wanted to return to East Baton 19 Rouge. 20 A So you're on Appendix 4 now; right? 21 Q Yep. Yep. 22 A Okay. Give me one second there. 23 Q Of course. 24 A So East Baton Rouge, I see 59. I see 25 59.0, 60.0. There is 64.9. Yeah, so none of the</p>

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<p>153</p> <p>1 numbers -- the smallest number is I think 59.</p> <p>2 Q And just to be clear, for the elections</p> <p>3 that you've laid out in East Baton Rouge, do you</p> <p>4 know whether the Democratic candidate won in any</p> <p>5 of these elections?</p> <p>6 A I'll have to check.</p> <p>7 Q And again, from a parish-wide level,</p> <p>8 looking at East Baton Rouge, West Baton Rouge and</p> <p>9 my favorite place, Natchitoches, I just want to be</p> <p>10 clear, based on the data in Appendix 3 and</p> <p>11 Appendix 4, black and white voters are voting for</p> <p>12 different candidates.</p> <p>13 A That is right.</p> <p>14 Q So based on that, would you agree that</p> <p>15 voting in Natchitoches is polarized?</p> <p>16 A I would not.</p> <p>17 Q Why not?</p> <p>18 A For two reasons. First of all, the --</p> <p>19 the confidence level I have in this data, it's not</p> <p>20 high. This data is borderline misleading. There</p> <p>21 are precincts where there are extra voters which</p> <p>22 don't exist, and there are precincts where there</p> <p>23 are voters who have been just ignored. So -- so</p> <p>24 -- so -- so -- so -- so the -- the estimates are a</p> <p>25 function of the data which was there.</p>	<p>155</p> <p>1 Q -- in depth; correct? So in looking at</p> <p>2 Orleans, I -- I wanted to return to the figures</p> <p>3 that you include. Let me see. I noted them here.</p> <p>4 Yeah. Figure 7 and Figure 8. These are on pages</p> <p>5 60 -- excuse me, 16 and 17 of your report.</p> <p>6 So you noted just now that Orleans is</p> <p>7 voting differently as a matter of course.</p> <p>8 A Right.</p> <p>9 Q In looking at Figure 7, Orleans is the</p> <p>10 green line; correct?</p> <p>11 A Right.</p> <p>12 Q And Orleans is notably separate from</p> <p>13 the other lines on this graph. Would you agree?</p> <p>14 A That is right.</p> <p>15 Q And in Figure 8, Orleans is the graph</p> <p>16 -- the green line as well; correct?</p> <p>17 A That is right.</p> <p>18 Q And it is in a notably different place</p> <p>19 than the other lines on this graph; correct?</p> <p>20 A That is right.</p> <p>21 Q Would you call New Orleans an outlier</p> <p>22 district or an outlier parish, I should say?</p> <p>23 A No.</p> <p>24 Q Why not?</p> <p>25 A The same -- let's connect this with the</p>
<p>154</p> <p>1 And -- and the second remark, which we</p> <p>2 have gone over, so even if I assume everything is</p> <p>3 right, just saying something for the entire</p> <p>4 Natchitoches Parish would be misleading for me as</p> <p>5 -- as a scientist. And the reason being, all the</p> <p>6 parishes I looked at in depth, I found that the</p> <p>7 voting changes as the residents get denser. So as</p> <p>8 a scientist, as a researcher, I'll feel</p> <p>9 uncomfortable making that statement, having seen</p> <p>10 that wherever I looked in depth, I found something</p> <p>11 to the contrary.</p> <p>12 Q And to be clear, you didn't look at</p> <p>13 Natchitoches in depth?</p> <p>14 A Right.</p> <p>15 Q You didn't look at West Baton Rouge in</p> <p>16 depth?</p> <p>17 A That is right.</p> <p>18 Q You didn't look at Orleans in depth?</p> <p>19 A No, no, Orleans is voting differently</p> <p>20 even overall.</p> <p>21 Q Yes. Well, and -- and I'll return to</p> <p>22 that in just a second, but I just want to be</p> <p>23 clear, east Carroll was not analyzed specifically</p> <p>24 --</p> <p>25 A Correct.</p>	<p>156</p> <p>1 part four. Even the -- the parishes I looked at,</p> <p>2 when they get denser, a similar pattern which you</p> <p>3 see for Orleans is observed. So Orleans is not an</p> <p>4 outlier, it just happens to be a denser parish.</p> <p>5 And -- and the voting pattern in denser parishes</p> <p>6 is consistently observed to be different.</p> <p>7 Q Okay. All right, well, we'll go</p> <p>8 through the questions of density and -- and the</p> <p>9 specifics of Section 4 really briefly, I just want</p> <p>10 to cover a couple of -- actually, no, we can move</p> <p>11 on to it now. So let's talk about Section 4 of</p> <p>12 the report.</p> <p>13 So can you -- can you describe briefly</p> <p>14 what the analysis you were conducting in Section 4</p> <p>15 of the report is?</p> <p>16 A Sure. So in -- in Section 4, like what</p> <p>17 we talked about earlier, the report is first</p> <p>18 looking at the entire state of Louisiana, and then</p> <p>19 I move into parishes, and then I move into within</p> <p>20 parishes. So -- so in part four of my report, I'm</p> <p>21 looking inside a parish and then seeing if there</p> <p>22 are different precincts within the parish which</p> <p>23 vote differently. So -- so that's like the</p> <p>24 summary of part four.</p> <p>25 Q Okay. And what methodology did you use</p>

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<p>157</p> <p>1 to conduct this analysis?</p> <p>2 A I believe I did EI analysis.</p> <p>3 Q So it's the same methodology as Section</p> <p>4 3 in general?</p> <p>5 A That is right, yeah.</p> <p>6 Q And how is this analysis relevant to</p> <p>7 your -- relevant to assessing racially polarized</p> <p>8 voting in Louisiana?</p> <p>9 A Now, what it is showing is that within</p> <p>10 parishes, there are precincts which vote</p> <p>11 differently. So obtaining -- obtaining a</p> <p>12 parish-wide estimate or clubbing in several</p> <p>13 parishes and obtaining one estimate for several</p> <p>14 parishes would be misleading. So -- so -- so one</p> <p>15 estimate would not work. These parishes are</p> <p>16 voting differently even within the parish. So --</p> <p>17 so -- so that is the reason.</p> <p>18 Q And how is that relevant to assessing</p> <p>19 the areas -- the -- the areas that are relevant to</p> <p>20 this case? Why is it important that people in</p> <p>21 certain precincts may vote differently than the</p> <p>22 parish as a whole?</p> <p>23 A A part of Dr. Handley's report ignores</p> <p>24 this feature. So it comes up with the estimates</p> <p>25 for the entire region, which is a mixture of --</p>	<p>159</p> <p>1 Shreveport.</p> <p>2 Q And so why did you select Caddo and</p> <p>3 Shreveport and outside of Shreveport for this part</p> <p>4 of your urinalysis?</p> <p>5 A The Caddo Parish I saw was being</p> <p>6 mentioned in several of the reports. And -- and</p> <p>7 -- and -- and this was, you know, before I looked</p> <p>8 into the -- the density analysis, I was able to --</p> <p>9 I was just looking for -- to see if I can find</p> <p>10 some rural or urban areas within the -- within the</p> <p>11 parish and -- and this one happened to be there.</p> <p>12 I looked for some similar things for</p> <p>13 other -- publicly available for other parishes, I</p> <p>14 could not find.</p> <p>15 Q Okay.</p> <p>16 A But this was the one which was readily</p> <p>17 available, giving me a city area, a non-city area.</p> <p>18 And that's the reason.</p> <p>19 Q And the way that you distinguish the</p> <p>20 city versus the non-city is the website that you</p> <p>21 cite in Footnote 9?</p> <p>22 A Right.</p> <p>23 Q So how -- do you recall how many</p> <p>24 precincts in Caddo Parish fell into the city of</p> <p>25 Shreveport?</p>
<p>158</p> <p>1 which is a addition of several parishes. And --</p> <p>2 and -- so the -- the purpose was to show that</p> <p>3 those estimates are misleading. If you look</p> <p>4 within the parish, you'll get different answers</p> <p>5 based on how dense the parish is.</p> <p>6 Q Okay. So let's approach Section 4A of</p> <p>7 the report. So can you describe generally what an</p> <p>8 analysis you're conducting in Section 4A?</p> <p>9 A So in 4A, I'm looking at the Caddo</p> <p>10 Parish and -- and -- and there is a website which</p> <p>11 was telling me which of the precincts are in</p> <p>12 Shreveport area, which are not. And I relied on</p> <p>13 that -- that report.</p> <p>14 And if you look at Figure 9, I have</p> <p>15 drawn a picture of which parishes are the ones in</p> <p>16 Shreveport Parish, which parishes are in the</p> <p>17 Shreveport area inside the Caddo Parish, and which</p> <p>18 are not. So the yellow ones are Shreveport, red</p> <p>19 ones are not in Figure 0.</p> <p>20 And -- and then I have done ecological</p> <p>21 inference analysis for these two groups</p> <p>22 separately. In Figure 10, I'm reporting the black</p> <p>23 voting for Republican in Shreveport, outside</p> <p>24 Shreveport. So in Figure 11, I'm reporting white</p> <p>25 voting Democrat in Shreveport and outside</p>	<p>160</p> <p>1 A No, I don't have that memorized, but if</p> <p>2 you wish, we could -- this is a precinct level</p> <p>3 map, Figure 9, we could just tediously sit down</p> <p>4 and count every single one of them.</p> <p>5 Q I think that we may be able to suss it</p> <p>6 out by looking at Appendix 6, but.</p> <p>7 A Okay.</p> <p>8 Q So we can take a look at that. So it</p> <p>9 actually, it looks like the two regions are just</p> <p>10 discussed as a general matter. So -- so you don't</p> <p>11 recall how many precincts were in Caddo Parish?</p> <p>12 A I don't think --</p> <p>13 Q Or in, excuse me, how many precincts in</p> <p>14 Caddo Parish fell inside the city of Shreveport?</p> <p>15 A No, but this is a precinct level map.</p> <p>16 So -- so if needed, we could just sit down and</p> <p>17 count the best we can.</p> <p>18 Q And how -- so how is the analysis of</p> <p>19 how voters were voting in the city versus how</p> <p>20 voters were voting outside of the city relevant to</p> <p>21 the issue of racially polarized voting?</p> <p>22 A Now, in -- in racial polarization, we</p> <p>23 are looking at how blacks vote, how whites vote</p> <p>24 and -- and this is very interesting to see. So if</p> <p>25 I -- I created two parts of the Caddo Parish and</p>

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<p>161</p> <p>1 one is Shreveport, one is non-Shreveport. And</p> <p>2 even within those two parts, there's a big</p> <p>3 difference how whites and blacks are voting.</p> <p>4 Q And what is the difference in how</p> <p>5 whites and blacks are voting?</p> <p>6 A So -- so -- so if you look at the</p> <p>7 figure number eight -- figure number 10.</p> <p>8 Q Sure.</p> <p>9 A So the blue line is blacks voting in</p> <p>10 non-Shreveport area. The red line is blacks</p> <p>11 voting in Shreveport area. And -- and look at</p> <p>12 this picture, look at this figure. Red line is</p> <p>13 always below the blue line, meaning that there's a</p> <p>14 big difference how black voters are voting in</p> <p>15 Shreveport, outside Shreveport consistently for</p> <p>16 these 12 elections.</p> <p>17 And then in Figure 11, I have the same</p> <p>18 thing for white voters. And -- and this time you</p> <p>19 would see the red line is above the white line</p> <p>20 consistently for all the 12 elections. And -- and</p> <p>21 -- and in the appendix, I have the actual numbers,</p> <p>22 so you can subtract those --</p> <p>23 Q Yeah, so let's -- I'd love to look at</p> <p>24 that.</p> <p>25 A So you can subtract those numbers to</p>	<p>163</p> <p>1 A No.</p> <p>2 Q And so that's -- let's return to the</p> <p>3 presidential election. So the two out of -- the</p> <p>4 two numbers that exceed 50 percent on Appendix 6</p> <p>5 in the column labeled Black Voting Rep -- Black</p> <p>6 Voting Republican, are the 2012 and 2020</p> <p>7 presidential elections. That's right?</p> <p>8 A That is right.</p> <p>9 Q And that's the election where we</p> <p>10 elected President Barack Obama in 2012; correct?</p> <p>11 A Right.</p> <p>12 Q And the election where the country</p> <p>13 elected President Joe Biden in 2020; is that right?</p> <p>14 A That is right.</p> <p>15 Q And then the lowest number outside of</p> <p>16 these or the -- the -- the next highest number in</p> <p>17 this column is the 2016 presidential election</p> <p>18 where 38.5 percent of black voters voted for a</p> <p>19 Republican candidate in President Donald Trump; is</p> <p>20 that right?</p> <p>21 A That is right.</p> <p>22 Q So there's a pretty big gap in 38.5 to</p> <p>23 55.9 and in 38.5 to 60.6. Did this surprise you</p> <p>24 when you saw these numbers?</p> <p>25 A Yeah, it did surprise me.</p>
<p>162</p> <p>1 see the difference between the white voters in</p> <p>2 Shreveport area and non-Shreveport area, that how</p> <p>3 much higher is the percentage of white voters</p> <p>4 voting for a Democrat in Shreveport or</p> <p>5 non-Shreveport.</p> <p>6 Q So in looking at the numbers for -- on</p> <p>7 -- on Appendix 6, are you there?</p> <p>8 A I'm almost there. Yes, I'm there.</p> <p>9 Q So setting aside the presidential</p> <p>10 election in 2012 and the presidential --</p> <p>11 presidential election in 2020, in looking at these</p> <p>12 percentages, are there any other elections aside</p> <p>13 from again, the presidential election in 2020 and</p> <p>14 the presidential election in 2012, where the</p> <p>15 majority of black voters in and -- in and outside</p> <p>16 the city of Shreveport are voting for a Republican?</p> <p>17 A No.</p> <p>18 Q And in looking at the white column,</p> <p>19 that's the number of whites voting for Democrats;</p> <p>20 is that right?</p> <p>21 A That is right.</p> <p>22 Q And in looking at all of these</p> <p>23 elections, is there any election in which the</p> <p>24 majority of white people vote for a Democrat,</p> <p>25 either in or outside the city of Shreveport?</p>	<p>164</p> <p>1 Q So why did it surprise you?</p> <p>2 A These are large numbers. But having</p> <p>3 said that, these are the three elections where</p> <p>4 more blacks turned out to -- to vote. So -- but</p> <p>5 those numbers did surprise me. They stand out as</p> <p>6 -- as being much larger than others.</p> <p>7 Could it be due to more blacks voting</p> <p>8 that day? Maybe. Could it be due to Dr. Handley</p> <p>9 proportionally allocating votes, which has messed</p> <p>10 up data integrity? Maybe.</p> <p>11 Q Did you check your own database to see</p> <p>12 if there were any issues with the data?</p> <p>13 A No, I have not carried out that</p> <p>14 analysis, no.</p> <p>15 Q Okay. So let's turn to Section 4B of</p> <p>16 the report. Can you generally, once you're there,</p> <p>17 describe to me what this analysis consisted of?</p> <p>18 A So in 4A, I looked at Caddo Parish and</p> <p>19 I could just roughly divide it into two. And I</p> <p>20 could see that divide it into two and there is</p> <p>21 something which is happening in terms of change.</p> <p>22 So -- so the next step, which I wanted</p> <p>23 to do was do even more in-depth analysis. And --</p> <p>24 and that is what I have done in part 4B. As the</p> <p>25 precinct gets denser, I wanted to see if there is</p>

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<p>165</p> <p>1 a change in terms of how blacks vote, how whites 2 vote. So -- so this is all gradual. 3 So in 4A, I just had two parts and then 4 I wanted to take another step and see if I can see 5 any gradual change in terms of within parish 6 disparities. And that's in 4B. 7 Q Understood. And so can we just back up 8 a little bit because I'm -- I'm not as well-versed 9 in this as you are by a long shot. Can you 10 describe to me generally what population density 11 is? 12 A Now, population density, the way I 13 understand is, it looks at the total area, how 14 many people are in there and then computes the 15 number based on that. 16 Q Okay. And so why did you introduce the 17 -- the concept of population density to this 18 section of your analysis? 19 A Now, I had looked up certain parishes, 20 13 precincts in Orleans Parish. And even within 21 the Orleans Parish, I was looking at precincts 22 which fall closer to the universities areas, and 23 they were voting very differently. So I was 24 looking for some way to see if within a parish, 25 there are different regions, there are different</p>	<p>167</p> <p>1 and ruralness, the distinction that you're making 2 with the population density analysis; is that 3 right? 4 A Right. 5 Q How does that relate to racially 6 polarized voting, assessing election results based 7 on race? 8 A Now, these are all steps leading to 9 that. So -- so -- so this is the metric I used, 10 voting -- the population density for urban-rural, 11 and maybe there are other metrics out there. 12 Maybe there are pockets within the 13 parish, some rural or urban mixture where people 14 vote differently. But at least I wanted to show 15 that you cannot assume that all the precincts 16 within a parish vote the same way. And -- and -- 17 and -- and I was amazed when -- when I carried out 18 this analysis. Literally for both the elections I 19 was able to see as the parish gets denser, you 20 could see big change. 21 Q And how did you assess the population 22 density for each district in each of the parishes 23 that you analyzed here? 24 A That was available in some census 25 website.</p>
<p>166</p> <p>1 precincts. 2 And -- and -- and one way I could 3 quantify the urbanness or the ruralness of a -- a 4 parish was to look at the density. It's -- it's 5 not the best estimator. Maybe there is a better 6 metric out there which can quantify urbanness or 7 ruralness. But looking at the density was one way. 8 Q And why does urbanness and ruralness 9 matter? 10 A Because based on my preliminary work, I 11 could see that the voting changes within the 12 parish. 13 Q Based on? 14 A Based -- I -- I -- I mentioned that 15 Orleans Parish is where I did some analysis just 16 to get some preliminary idea. It's already voting 17 very differently. But even within that, you go -- 18 go to more denser areas, there was changes. 19 So -- so -- so that was the hypothesis 20 I had, that maybe rural precincts vote differently 21 than urban. And -- and I tested that the 22 hypothesis using the density. In every parish I 23 looked at, I could see the trend as very clear, 24 the -- the voting density does matter. 25 Q And how does the concept of urbanness</p>	<p>168</p> <p>1 Q Okay. So you -- 2 A I think in my report I have quoted that. 3 Q Okay. I may have missed it, but that's 4 -- that's fine. Did you evaluate -- 5 A It's on census website. If I did not 6 provide it -- it's on the census website. And I 7 think Dr. Handley was able to get hold of it 8 because in her rebuttal report, she's quoting some 9 numbers about the voting density. So if you wish, 10 I can pass on that link. 11 Q Thank you. 12 A Not a good deal. 13 Q And when -- when you were conducting 14 the -- this analysis of urban precincts versus 15 rural precincts based on population density, did 16 you assess what percentage of rural precincts were 17 within the state legislative districts that are at 18 issue in this case? 19 A No, I did not. 20 Q Okay. So I want to talk a little bit 21 about Footnote 10 on Page 20. So there you -- you 22 say that since voter level data for the elections 23 on the SOS website is available for precincts, the 24 EI estimates reported below required matching 25 voting districts to precincts and totaling of the</p>

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<p>169</p> <p>1 candidates -- the candidate votes by voting 2 district in order -- 3 MS. RIGGINS: Objection. VTD does not 4 stand for voter districts. 5 MS. GIGLIO: Voting -- it says it right 6 up on 4 -- 7 MS. RIGGINS: Voter tabulation district. 8 MS. GIGLIO: It -- it -- on -- my 9 apologies. But in Section 4B above, on the title 10 of the section, it says Voting Districts and then 11 paren VTDs. 12 MS. RIGGINS: Okay. 13 MS. GIGLIO: That's where I got that. 14 MS. RIGGINS: Yeah, sorry. I just 15 didn't want us to confuse the -- 16 MS. GIGLIO: No problem. 17 MS. RIGGINS: -- districts with -- 18 MS. GIGLIO: When I -- when -- I'll 19 reread it and I will save VTDs instead. I -- I do 20 that for my own understanding. 21 BY MS. GIGLIO: 22 Q But so, Footnote 10, I'll reread it, 23 reads, Since the voter level data for the 24 elections on the SOS website is available for 25 precincts, the EI estimates reported below</p>	<p>171</p> <p>1 find even more precincts, which would -- which I 2 had difficulty matching with the VTDs. So -- so 3 -- so for these two elections and these two 4 parishes, I was easily able to match them and get 5 how many voters voted, how many blacks were there, 6 how many whites were there, how many others were 7 there in these voting districts in the candidate 8 votes. 9 Q And why was it easier to assess 2020 10 and 2022? 11 A Now, these are based on newer data and 12 -- and the precincts are not that off compared to 13 voting districts. 14 Q And how -- what was the process that 15 you used in matching the precincts to the VTDs? 16 A So -- so -- so I looked at, first of 17 all, how they're coded. And then I looked at how 18 many people are there in those to double-check my 19 numbers. So -- so those were -- so I wanted to 20 make sure I'm comparing them with the right things. 21 The easiest was East Baton Rouge. 22 Everything was one-to-one. Others were little 23 more -- were -- there were some precincts which I 24 had to do some work to match. 25 Q And in -- in saying how they were</p>
<p>170</p> <p>1 required matching VTDs to precincts and totaling 2 of the candidate votes by VTDs in order to match 3 the population density data. For Caddo Parish's 4 2022 Senate elections, Precinct 159 was absorbed 5 by Precincts 122, 163 and 165. 6 In -- in order to match the VTDs for 7 the 2020 and 2022 elections in Caddo Parish, the 8 precinct level votes for the 2020 election have 9 been equally divided into these three precincts. 10 There was a total -- there were a total of 900 11 votes cast on election day in precinct 159 in 2020 12 presidential elections. 13 So can you just tell me a little bit, 14 can you explain to me what that means? 15 A Sure. Now the -- the voting density, 16 the density is based on VTDs on the census 17 website. And the election votes on the Secretary 18 of State's websites are by precinct. So the first 19 task was converting those precincts to match with 20 the VTDs. And -- and -- and some of the parishes, 21 which I included here, I was able to do that with 22 less effort. It's a very tedious effort to -- to 23 match them. And -- and that is probably the 24 reason I did not look at even more elections. 25 If you go back in time, then you would</p>	<p>172</p> <p>1 coded; what do you mean by how they were coded? 2 A How they -- the -- the precincts and 3 the voting distance, how they are coded is means 4 how they are numbered. So if they -- they are 151 5 and 1 -- so the number is precinct number 151 and 6 in voting district, it's also 151, then I know 7 they are same. And I could also see how many 8 voters were there through the election data. So. 9 Q And why are there differences between 10 the census and the -- the Secretary of State data? 11 A I don't know that I -- I -- I cannot 12 opine on that. I'm just telling you what I 13 observed. So -- so the Secretary of State data is 14 based by precinct. And when you look at voting 15 VTDs, sometimes they -- they don't match. They 16 mesh perfectly for East Baton Rouge. And -- and I 17 have one instance where I found one parish, one 18 precinct in Caddo Parish, which was there in 2020, 19 but not there in 2022. So -- so I had to do some 20 -- some mathematics work to adjust for that. 21 Q And in -- in Footnote 10, you indicate 22 that, in noticing that there was a precinct that 23 was absorbed, you took the votes cast and -- and 24 in -- and you split them equally in-between the 25 three adjoining precincts; is that right?</p>

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44 (173 to 176)

<p>173</p> <p>1 A That is right.</p> <p>2 Q Why did you split them equally?</p> <p>3 A First of all, now I looked at it many</p> <p>4 different ways. So I did some analysis just</p> <p>5 excluding this and I found the same thing. Now,</p> <p>6 these precincts, all of them tend to be very low</p> <p>7 in VTD, in the density. So I knew even if I go --</p> <p>8 let -- let's look at the Caddo Parish graph in</p> <p>9 there.</p> <p>10 Q The -- the Figure 10 or Figure 11, one</p> <p>11 of these?</p> <p>12 A So -- so let's look at Figure 14 and I</p> <p>13 think 15. So those are the Caddo Parish precinct.</p> <p>14 So -- so -- so -- so these precincts, which I</p> <p>15 merged, don't play a role. The -- the voting --</p> <p>16 the density there was 300 something or less,</p> <p>17 meaning I'm pointing something on the graph. So</p> <p>18 -- so if you look at my graph, I'm sorry --</p> <p>19 Q Why are you sorry? I see it.</p> <p>20 A If you look at my graph, which I'm</p> <p>21 pointing here.</p> <p>22 Q Yep.</p> <p>23 A So -- so this part of the graph,</p> <p>24 anything on the right of, say, 400 does not depend</p> <p>25 on that -- those allocation.</p>	<p>175</p> <p>1 A The -- so let me explain that. So the</p> <p>2 idea was to see, now, think of, like, a knob,</p> <p>3 like, when we take showers, there's a knob which</p> <p>4 goes from hot to cold water. And -- and as you</p> <p>5 turn it from cold to hot, you see something</p> <p>6 happens. More hot water comes. The same idea was</p> <p>7 here. That I started with all of them, and I made</p> <p>8 it denser, denser, denser, and I saw what is</p> <p>9 happening in terms of black and white voters'</p> <p>10 percentages.</p> <p>11 So I did not pick any numbers as such.</p> <p>12 I -- I was just twisting it from left to right,</p> <p>13 given the range which is permissible for that</p> <p>14 parish. And -- and I could see for some, I had to</p> <p>15 twist a lot. For -- think of that you are going</p> <p>16 to three different showers. For one, you have to</p> <p>17 turn 180. For other, you just do 90 degrees.</p> <p>18 Same way.</p> <p>19 Q Sure.</p> <p>20 A As you twist, make it go faster.</p> <p>21 Q Sure. And then there's a surprise</p> <p>22 shower with 45, and it's a scalding hot shower. I</p> <p>23 totally understand what you mean. But it looks</p> <p>24 like on these graphs, and I'll look at Figure 12,</p> <p>25 Figure 13, Figure 14, the ranges are consistent.</p>
<p>174</p> <p>1 Q Okay.</p> <p>2 A Why? Because here I have excluded</p> <p>3 those precincts, anyway. So these precincts tend</p> <p>4 to be very lastly dense. So I -- so I knew that</p> <p>5 part of the analysis, which I'm doing doubt would</p> <p>6 be free of this precinct, anyway.</p> <p>7 Q Okay.</p> <p>8 A So -- so to answer by your question, I</p> <p>9 could have done this many different ways, but I</p> <p>10 knew it would make no difference in the bigger</p> <p>11 picture.</p> <p>12 Q Okay.</p> <p>13 A And plus, I'm talking about 1 percent</p> <p>14 out of, like, 150. So it would -- even in the</p> <p>15 part of the graph where it did belong, it made no</p> <p>16 difference. Marginal difference.</p> <p>17 Q Understood.</p> <p>18 A So.</p> <p>19 Q So, Dr. Solanky, what does it mean to</p> <p>20 have a population density of at least 300?</p> <p>21 A So that's the number, how many people</p> <p>22 live, divided by the total area. And it's a</p> <p>23 measure of how dense the -- the -- the VTD is.</p> <p>24 Q How did you develop the ranges that you</p> <p>25 used in, let's say, Figure 12?</p>	<p>176</p> <p>1 Zero to 300, 300 to 500. And then in certain</p> <p>2 areas, it starts to drop off earlier than others.</p> <p>3 But then you jump from 500 to 3,000, 3,000 to</p> <p>4 4,500.</p> <p>5 How did you come up with those ranges?</p> <p>6 A You know, the idea was that as I</p> <p>7 twisted shower knob from cold to hot, I observe a</p> <p>8 pattern. And at what points I stop, it did not</p> <p>9 matter, as long as I'm turning from left to right.</p> <p>10 And -- and -- and I wanted to -- if that shower</p> <p>11 knob goes from zero to 180 degrees, I wanted to</p> <p>12 include all of that. And -- and I wanted to have</p> <p>13 enough points where I stop to check the water</p> <p>14 level.</p> <p>15 Q Okay.</p> <p>16 A So if some parish had only up to -- let</p> <p>17 me --</p> <p>18 Q Sure.</p> <p>19 A Say, for example, Figure 18, the</p> <p>20 highest is 18. So think of that some shower,</p> <p>21 which goes from just horizontal to a little bit.</p> <p>22 So I wanted to bring enough points in between</p> <p>23 those.</p> <p>24 Q Okay.</p> <p>25 A And -- and that is what I have done.</p>

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45 (177 to 180)

<p>177</p> <p>1 Q Okay. So the numbers themselves don't 2 mean much to you?</p> <p>3 A So numbers themselves don't mean much. 4 What they mean is, as the parish is getting 5 denser, there is a change. And the definition of 6 denser could vary from parish to parish, so.</p> <p>7 Q Understood. Okay. And so in 8 conducting the analysis that you -- that the -- 9 the specific analysis in Section 4B, you include 10 the high-density precincts at every stage of the 11 analysis; correct?</p> <p>12 A That is right.</p> <p>13 Q And why do you do that? Why do you do 14 that?</p> <p>15 A The -- the same idea. So -- so -- so I 16 wanted to see, as the precincts are getting 17 denser, what do you see? So -- so -- so I looked 18 at cumulatively. Another way would be if I just 19 chop it. And -- and that would be incorrect, 20 because then my sample size is decreasing. So I 21 would not be able to get a -- a good estimator if 22 I look at only 2, 2, 5, 5.</p> <p>23 The idea was as much as possible, I 24 should have a large sample size. So you can do it 25 two ways, either chop it down into different</p>	<p>179</p> <p>1 Q And what -- what -- how does that 2 impact your analysis? What does it mean to have a 3 large confidence interval?</p> <p>4 A Meaning a large -- a wide number.</p> <p>5 Q What does that mean, then?</p> <p>6 A Let me just give you an example. Say 7 -- say you wanted to ask my age. And the 8 confidence interval is, say, between zero years 9 and a hundred years, that's very non-informative. 10 So that confidence interval did not serve a 11 purpose. Whereas if the confidence interval was 12 between 55 and 60, then you have some idea what's 13 going on. So -- so, in general, we want the 14 confidence interval to be narrowed whenever 15 possible.</p> <p>16 Q Understood. That's a very helpful 17 example. Thank you. Okay. So I just want to 18 look across the remainder of your analysis. 19 So you analyze four parishes in this 20 section; is that right?</p> <p>21 A That is right.</p> <p>22 Q You analyze Caddo Parish. Well, I 23 guess I should go in order of the report. You go 24 East Baton Rouge; correct?</p> <p>25 A That is correct.</p>
<p>178</p> <p>1 ranges, or you do a graded change. And -- and I 2 felt the graded change was a better way to see.</p> <p>3 Q Okay. So when you say chop it, do you 4 mean compare low-density and high-density areas 5 and analyze them separately?</p> <p>6 A Creating intervals.</p> <p>7 Q Okay.</p> <p>8 A Like, somebody could do that, look at 9 only the precincts which fall between 3,000 and 10 4,000, analyze that. But then you are reducing 11 your sample size. Sometimes you may not have any 12 precincts which fall in there, or too few. So -- 13 so in statistics, we try to have a large sample 14 size whenever we can.</p> <p>15 Sometimes we don't have a choice, but 16 here it was -- this analysis is very standard, 17 like, greater change that you start with the all, 18 and you make it denser and see the -- the 19 precincts which are at least that much denser.</p> <p>20 Q And when you say that you don't want to 21 have too small a sample size in statistics, why is 22 that?</p> <p>23 A Now in general, too small of a sample 24 size, your confidence interval would become large, 25 with wider.</p>	<p>180</p> <p>1 Q And then Caddo and then Iberville; 2 correct?</p> <p>3 A That is correct. I'm sorry.</p> <p>4 Q Oh, that's okay. And then Pointe 5 Coupee; is that right?</p> <p>6 A Correct.</p> <p>7 Q Okay. And why did you select these 8 four parishes?</p> <p>9 A Now -- now these parishes, again, were 10 mentioned in -- in -- in -- in the reports, which 11 I read. And -- and -- and in some sense, the 12 parishes which were in my active memory by reading 13 the reports, I started there, and the ones which I 14 could clean up the data fast.</p> <p>15 So -- so I cannot recall now, but there 16 were one or two parishes where there was such a 17 large discrepancy between the precincts and the 18 VDTs, it would take enormous amount of time to sit 19 down and clean up that data.</p> <p>20 Q Understood. Okay. So let's talk about 21 population density for each of these -- each of 22 the parishes that you assessed. So we'll start 23 with East Baton Rouge, and that's on Page 21.</p> <p>24 So do you recall or is it obvious from 25 your graph how many precincts had a population</p>

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<p>181</p> <p>1 density of zero?</p> <p>2 A That's all of them.</p> <p>3 Q Right. And do you know how many</p> <p>4 population -- how many precincts were in East</p> <p>5 Baton Rouge?</p> <p>6 A No, I -- I don't. I -- 300-something.</p> <p>7 Q Okay.</p> <p>8 A I could -- yeah. Something like that.</p> <p>9 Q And do you recall how many precincts</p> <p>10 had a population density of at least 300?</p> <p>11 A No, I don't recall, but the -- but like</p> <p>12 what I said earlier, how many precincts, VTDs</p> <p>13 qualified for that, that is a function of the</p> <p>14 confidence interval. So -- so that number gets</p> <p>15 absorbed in the analysis when I report the</p> <p>16 confidence interval.</p> <p>17 Q Understood. And is it more appropriate</p> <p>18 for me to use the term VT -- the number of VTDs,</p> <p>19 given the data that you were using or --</p> <p>20 A Yes, please.</p> <p>21 Q Yes. Okay. No, no, no, that's why I'm</p> <p>22 asking. So -- okay. So let me -- I'll jump to</p> <p>23 the higher end of the chart. Do you recall how</p> <p>24 many or a general -- have a general sense of how</p> <p>25 many VTDs had a population density of at least</p>	<p>183</p> <p>1 you assess whether those VTDs were contiguous,</p> <p>2 meaning whether they were -- where they were</p> <p>3 geographically located?</p> <p>4 A No, I did not look at that.</p> <p>5 Q So let's look at Caddo, which is the</p> <p>6 next set of figures. That's on Page 23. And I</p> <p>7 will ask, do you recall generally how many</p> <p>8 precincts had a population density of at least 300?</p> <p>9 A I cannot recall.</p> <p>10 Q And do you recall generally how many</p> <p>11 precincts had a voting -- oh, gosh, I'm using</p> <p>12 precincts again. I'm going to stop. It's VTDs.</p> <p>13 How many VTDs had a population density of at least</p> <p>14 4,700, the highest number on the figure?</p> <p>15 A I don't, but the answer is same. I'm</p> <p>16 going from zero hot water to hundred percent hot</p> <p>17 water, so I'm giving the entire range. So.</p> <p>18 Q And is the same true for Caddo Parish,</p> <p>19 that you did not assess whether the high-density</p> <p>20 VTDs were contiguous with with one another?</p> <p>21 A That is right.</p> <p>22 Q Okay. And I'll ask the same few</p> <p>23 questions for Iberville. So that's 20 -- Page 25.</p> <p>24 Do you recall how -- how many VTDs had a voting</p> <p>25 density or had a population density, excuse me, of</p>
<p>182</p> <p>1 5,500?</p> <p>2 A No. Less than 5,300. That's all I</p> <p>3 could say.</p> <p>4 Q Less than 5,300?</p> <p>5 A So remember --</p> <p>6 Q Okay.</p> <p>7 A -- so the goal was -- if let me come</p> <p>8 back to that shower example.</p> <p>9 Q Sure.</p> <p>10 A So I'm knobbing -- moving that knob</p> <p>11 from zero to all the maximum. And when you're at</p> <p>12 the maximum, then, of course, very little of cold</p> <p>13 water is coming.</p> <p>14 Q Understood. Yes. And -- and I -- I --</p> <p>15 I have to ask this. Do you recall at all how many</p> <p>16 precincts had a voting -- had a population -- oh,</p> <p>17 VTDs had a population density of at least 7,000,</p> <p>18 the highest number on the chart?</p> <p>19 A I -- I could not tell you that, but</p> <p>20 that's a easily available number, which if needed,</p> <p>21 can be easily computed.</p> <p>22 Q Okay.</p> <p>23 A And reported.</p> <p>24 Q And when you were assessing that the</p> <p>25 VTDs that were high-density to your analysis, did</p>	<p>184</p> <p>1 at least 300?</p> <p>2 A No, I don't.</p> <p>3 Q Do you recall how many VTDs had a</p> <p>4 population density of at least 3,400, the highest</p> <p>5 number on this figure?</p> <p>6 A Less than 30 -- 3,000. And -- and this</p> <p>7 is a very easily --</p> <p>8 Q Yeah.</p> <p>9 A -- obtainable number. And -- and --</p> <p>10 and -- and if you wish, I can compile those</p> <p>11 numbers and -- and send it, or --</p> <p>12 Q Understood.</p> <p>13 A -- I'm sure your Dr. Handley has done</p> <p>14 that, too, so.</p> <p>15 Q Okay. And to be -- and, again, this is</p> <p>16 a clarification question. You did not assess</p> <p>17 whether the high-density VTDs were contiguous with</p> <p>18 one -- the high-density VTDs in Iberville were</p> <p>19 contiguous with one another; correct?</p> <p>20 A No, I did not.</p> <p>21 Q And then the same few questions for</p> <p>22 Pointe Coupee. So do you recall how many VTDs in</p> <p>23 Pointe Coupee had a voting -- had a population</p> <p>24 density of at least a hundred?</p> <p>25 A I don't.</p>

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<p>185</p> <p>1 Q And do you recall how many VTDs in</p> <p>2 Pointe Coupee had a voting -- had a population</p> <p>3 density of at least 800?</p> <p>4 A Again, the same answer. I'm going from</p> <p>5 zero to all. And as we reach all, it's</p> <p>6 decreasing. And I probably want -- I probably</p> <p>7 reached all the way to the end of that knob.</p> <p>8 Q Understood.</p> <p>9 A For my hypothetical example.</p> <p>10 Q Well, I'm -- I'm looking at Footnote</p> <p>11 11, which indicates that in Pointe Coupee Parish,</p> <p>12 there are only two VTDs with a density of over 800.</p> <p>13 A Correct.</p> <p>14 Q Did you assess whether these two</p> <p>15 parishes were contiguous?</p> <p>16 A I did not.</p> <p>17 Q And is -- are there any issues, given</p> <p>18 the -- the note, the -- given the comments that</p> <p>19 you've made earlier about having too small of a</p> <p>20 sample size, were there any concerns that the</p> <p>21 sample size of the high-density VTDs was too small</p> <p>22 for Pointe Coupee parish?</p> <p>23 A Not too small for the mathematical</p> <p>24 analysis. The smaller the sample size, it will</p> <p>25 get reflected in the confidence interval. So the</p>	<p>187</p> <p>1 Q It's less. Understood. Okay. And are</p> <p>2 you generally aware of issues with conducting EI</p> <p>3 analysis using a small subset of precincts?</p> <p>4 A Now I am not a --</p> <p>5 Q Or VTDs. Excuse me.</p> <p>6 A No, I'm not aware of it. It's a --</p> <p>7 it's a matter of personal preference. So</p> <p>8 mathematically, there is no such number which will</p> <p>9 quantify that you should have so many precincts.</p> <p>10 And I'm assuming if there was such a number, then</p> <p>11 my R package would have given me an error code, so.</p> <p>12 Q Understood. Okay. So I'd like to take</p> <p>13 a look at the appendices that are associated with</p> <p>14 Section 4 briefly. We'll start with Section 7.</p> <p>15 And so to be clear, Dr. Solanky, you</p> <p>16 only looked at two or one -- you only looked at</p> <p>17 two elections for -- in assessing the trends in</p> <p>18 East Baton Rouge, based on population density; is</p> <p>19 that right?</p> <p>20 A That is right.</p> <p>21 Q And that's the presidential in 2020 and</p> <p>22 the Senate in 2022?</p> <p>23 A That is right.</p> <p>24 Q So looking at the confidence intervals</p> <p>25 for the presidential election in 2020, I'd like to</p>
<p>186</p> <p>1 confidence interval would tend to be generally</p> <p>2 wider. So this confidence interval, it -- it --</p> <p>3 it looks at all of the information. It looks at</p> <p>4 the trend. If every single precinct had same</p> <p>5 exact proportion, then confidence interval would</p> <p>6 be very narrow, even for small sample sizes.</p> <p>7 Q Understood.</p> <p>8 A So -- so if -- if there's a disparity</p> <p>9 -- if there's a big variation among those</p> <p>10 precincts, then even a large VTD base confidence</p> <p>11 interval could be still wide. But the confidence</p> <p>12 interval is a function of how much variation there</p> <p>13 is and the sample size vote.</p> <p>14 Q And having two wide of a confidence</p> <p>15 interval indicates that the data could be deemed</p> <p>16 unreliable?</p> <p>17 A No.</p> <p>18 Q Okay.</p> <p>19 A The same example I gave you earlier.</p> <p>20 If you guess my age, if my confidence interval for</p> <p>21 my age is zero to a hundred years --</p> <p>22 Q Right.</p> <p>23 A -- it's less informative. So it's not</p> <p>24 unreliable. Rather, it's non -- not much</p> <p>25 informative.</p>	<p>188</p> <p>1 take a look at the highest density, which is 7,000.</p> <p>2 A Okay.</p> <p>3 Q So you -- the -- the figure that you</p> <p>4 give here is 26.5. And that's percent of whites</p> <p>5 voting Republicans; correct?</p> <p>6 A Right.</p> <p>7 Q And the confidence interval, the lower</p> <p>8 limit of the confidence interval is 12.4; correct?</p> <p>9 A Correct.</p> <p>10 Q And the high end of the confidence</p> <p>11 interval is 42.4; is that right?</p> <p>12 A That is correct.</p> <p>13 Q So it -- does that mean that this</p> <p>14 figure could be anywhere between 12.4 and 42.4?</p> <p>15 A So it could be anywhere between, but</p> <p>16 then chances it's more closer to 42.4 are much</p> <p>17 smaller. So -- so -- so this is a graded interval</p> <p>18 based on the probability. This is a 95 percent</p> <p>19 confidence interval. If you derive a 90 percent</p> <p>20 confidence interval, it would be much more</p> <p>21 narrower. So -- so the statement that it could</p> <p>22 have been anywhere in that interval, yes, but that</p> <p>23 would have a much smaller probability.</p> <p>24 Q Okay. And in looking at the Senate</p> <p>25 2020 highest population density figure, the last</p>

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<p>189</p> <p>1 -- the last row on this chart, so for population 2 or for VTDs with a population density of 7,000, 3 you indicate that whites voted -- 44.8 percent of 4 white voters voted for Republicans; is that right? 5 A That is right. 6 Q And the confidence interval there, the 7 lower limit was 18.4 percent; is that right? 8 A Correct. 9 Q And the highest was 60.7 percent; is 10 that right? 11 A Correct. Correct. And -- and that is 12 probably a function of the small number of 13 precincts VTDs, which qualified for that. If you 14 look up the three, four rows above that, say, for 15 example, for say, 5,200, you'll see that 16 confidence interval is much more narrower. 17 Q Understood. 18 A So that's 33.8 to 45.2. So -- so this 19 probably, I could relate to the sample size being 20 too small. 21 Q And so in -- in looking at these 22 confidence intervals, why would you call this data 23 reliable given the confidence intervals noted here? 24 A Say your -- say it again, please? 25 Q Why do you think that the data that you</p>	<p>191</p> <p>1 A And -- and you can even just go three 2 rows up -- 3 Q Yep. 4 A -- and see that confidence interval is 5 quite narrow there. 6 Q Sure. So let's look at that briefly. 7 So you're looking at the 5,200 figure; is that 8 right? 9 A Okay. Yeah. 10 Q So that indicates that 40 percent of 11 white voters voted Republican -- 12 A Right. 13 Q -- in -- in that district; is that 14 right? 15 A Right, among -- among the VTDs with at 16 least 5,200 density. 17 Q Okay. And the confidence interval 18 there is 33.8 to 45.2? 19 A Correct. And -- and both the numbers 20 are less than 50 percent, so. 21 Q Understood. Okay. So let's move ahead 22 to Appendix 8. I want to look at -- this is the 23 -- the voting estimates for Caddo Parish; is that 24 right? 25 A That is right.</p>
<p>190</p> <p>1 lay out, the -- the figures for the number -- the 2 percentage of white voters voting Republican in 3 the highest-density VTDs -- 4 A Right. 5 Q -- is reliable, given the confidence 6 intervals? 7 A First of all, not all confidence 8 intervals are white. And second of all, this was 9 expected. As I'm turning the knob to the coldest 10 to the hottest, the -- the VTD count would 11 decrease, and confidence intervals become wider. 12 That does not mean that the results are not seen. 13 So like, when we turn a shower knob and the water 14 gets hotter and hotter, same way, it is being 15 observed, that as you become more denser, there's 16 a change in the voting pattern. 17 And -- and confidence interval being 18 more wide, that's just a function of the number of 19 VTDs. But that does not mean that the trend is 20 not there. As a -- as a scientist who has looked 21 at this data, the trend is there, very clear, and 22 very powerful trend. And -- and I'm not concerned 23 at all by the birth of confidence interval. In 24 fact, I expected that to happen. 25 Q Okay.</p>	<p>192</p> <p>1 Q And here, we look at two elections -- 2 Senate of 2022 again, and the president of '22 3 again; is that right? 4 A That is right. 5 Q Okay. So in looking at the 6 presidential election, which is the last row in 7 this table, the presidential election of 2022, you 8 have this -- you are -- you write here that the 9 number of -- or the percentage of whites voting 10 Republican is 58.4 percent; right? 11 A That's right. 12 Q And the lower limit of the confidence 13 interval is 48.6? 14 A That is right. 15 Q And the higher limit of the confidence 16 interval is 67.1; is that right? 17 A That is right. 18 Q And then in looking at the Senate in 19 2022, you have 64.9 percent of whites voting 20 Republican in that election; is that right? 21 A I -- I'm not seeing that number. Yeah. 22 Q Oh, I'm so sorry. Am I looking at the 23 wrong column? 64.9 percent. 24 A Okay. 25 Q For Senate of 2022, 4,700 VT density --</p>

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49 (193 to 196)

<p>193</p> <p>1 A Right. Right, right.</p> <p>2 Q -- VTD. And then the lower limit of</p> <p>3 that confidence interval is 54.9.</p> <p>4 A Right.</p> <p>5 Q And the higher limit is 73.3?</p> <p>6 A That is correct.</p> <p>7 Q But this didn't concern you?</p> <p>8 A What exactly?</p> <p>9 Q The confidence intervals, the -- the --</p> <p>10 the range of confidence intervals in this data did</p> <p>11 not concern you; is that right?</p> <p>12 A Yeah. And -- and we went over this few</p> <p>13 seconds ago, so let's look at the last row.</p> <p>14 Q Sure.</p> <p>15 A Where one number is less than 51, is</p> <p>16 higher than 50, meaning for 48.6 being less than</p> <p>17 50 percent, 67.1 being higher than 50 percent.</p> <p>18 But look at the one above. Both the numbers there</p> <p>19 are more than 50 percent. So -- so the idea was</p> <p>20 not to report selectively. The idea was that I</p> <p>21 wanted to show the entire picture. And as a</p> <p>22 consequence, some confidence intervals became too</p> <p>23 wide.</p> <p>24 But, nonetheless, the trend is very</p> <p>25 clear. If -- if you combine the last two rows,</p>	<p>195</p> <p>1 point in either election, does it trend below 50</p> <p>2 percent?</p> <p>3 A It did not. And -- and I ran out. So</p> <p>4 -- so the -- so in Caddo Parish, that -- that was</p> <p>5 the maximum I could turn the knob.</p> <p>6 Q And even the maximum didn't trend --</p> <p>7 didn't -- didn't turn it below 50 percent?</p> <p>8 A It did not. But the trend was very</p> <p>9 clear, that there are precincts where 80-something</p> <p>10 percent are voting, white voting Republican, and</p> <p>11 then it comes down to 60-something for the</p> <p>12 presidential. So -- so that was the -- the main</p> <p>13 point. The main point was not to see if these</p> <p>14 numbers come below 50. The main point was to show</p> <p>15 that within the parish, there are precincts which</p> <p>16 vote differently. And -- and that's a big</p> <p>17 difference, from 80-something percent to</p> <p>18 60-something percent.</p> <p>19 Q Yep. Okay. And so in looking at</p> <p>20 Appendix 9, there's only one election analyzed</p> <p>21 here; is that right?</p> <p>22 A That is right.</p> <p>23 Q And why is that?</p> <p>24 A Same reason. I could not look at 2020</p> <p>25 election and -- and clean it up in time to make</p>
<p>194</p> <p>1 and -- and look at that information, what the</p> <p>2 information is being given out, you could see that</p> <p>3 when the sample -- when the VTD size was larger,</p> <p>4 both the numbers were above 50 percent. So the</p> <p>5 trend is very clear, but all in all, this is a</p> <p>6 given fact when sample sizes become small. Then</p> <p>7 those two things I mentioned earlier, the</p> <p>8 variation within and the sample size, both play a</p> <p>9 role. And --</p> <p>10 Q And in looking at this in Caddo Parish,</p> <p>11 I note that in -- you know, that your numbers</p> <p>12 trend down, but at no -- do -- do they at any</p> <p>13 point trend down below 50 percent?</p> <p>14 A Say it again, please?</p> <p>15 Q Do at any point your percentages trend</p> <p>16 below 50 percent?</p> <p>17 A Which election?</p> <p>18 Q In -- in both of the Senate and</p> <p>19 Presidential 2020 elections for Caddo Parish</p> <p>20 analyzed in Appendix 8.</p> <p>21 A So we can look at what they are. You</p> <p>22 are looking at white voting Republican column?</p> <p>23 Q Yeah.</p> <p>24 A Yeah.</p> <p>25 Q And so it trends down, but do -- at any</p>	<p>196</p> <p>1 the precincts match the -- the VTDs. There --</p> <p>2 there were just too many precincts which have been</p> <p>3 created, and -- and -- and I would need -- yeah,</p> <p>4 that's the answer.</p> <p>5 Q Okay. And in looking again at the</p> <p>6 confidence interval for the highest -- the</p> <p>7 highest-density VTDs, possibly, 3,000 in the</p> <p>8 Senate of 2022 election?</p> <p>9 A Right.</p> <p>10 Q So the percentage indicated for white</p> <p>11 voting Republican is 38.8 percent, that's right?</p> <p>12 A Right.</p> <p>13 Q And the low limit confidence interval's</p> <p>14 4.7?</p> <p>15 A Right.</p> <p>16 Q And the high limit confidence interval</p> <p>17 is 72.8?</p> <p>18 A Right. And that is very wide.</p> <p>19 Q It's a very wide range.</p> <p>20 A And that's very wide range, sort of was</p> <p>21 expected you -- the precincts I looked at here,</p> <p>22 the VTDs must have a large variation with them --</p> <p>23 within them. But nonetheless, the trend is very</p> <p>24 clear.</p> <p>25 Q And no --</p>

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<p>197</p> <p>1 A Even if you ignore the last line, the</p> <p>2 trend is clear.</p> <p>3 Q Sure.</p> <p>4 A That we are steadily going down.</p> <p>5 Q And in looking at 2,500, the percentage</p> <p>6 is 72.1; correct?</p> <p>7 A Right.</p> <p>8 Q So it's an almost 40 percent dial</p> <p>9 points --</p> <p>10 A Correct.</p> <p>11 Q -- different than the 3,000; is that</p> <p>12 right?</p> <p>13 A That is right.</p> <p>14 Q And then the lower limit confidence</p> <p>15 interval there is 55.2. And the higher limit is</p> <p>16 85.1.</p> <p>17 A That is right.</p> <p>18 Q And that's also a fairly wide range?</p> <p>19 A That is. And -- and the one above that</p> <p>20 is not, as we've been talking.</p> <p>21 Q Yes. But that's 500 versus 2,500; is</p> <p>22 that right?</p> <p>23 A Yeah. And -- and -- and -- and that is</p> <p>24 the nature of the analysis and statistics. When</p> <p>25 you sample size decreases, your confidence get --</p>	<p>199</p> <p>1 right?</p> <p>2 A That is. And the one line above it is</p> <p>3 not.</p> <p>4 Q And in no election or in no V --</p> <p>5 regardless of the population density of the VTDs,</p> <p>6 white folks vote for Republicans in a majority; is</p> <p>7 that right?</p> <p>8 A That is right. So -- so the majority</p> <p>9 being 50 percent, so that is never crossed. But</p> <p>10 when you look at the numbers, you can see a big</p> <p>11 difference as the -- between the percents, which</p> <p>12 -- which are denser.</p> <p>13 Q And in these appendices, I note that</p> <p>14 you only analyze the trends in white voting</p> <p>15 Republican. Why is that?</p> <p>16 A So I -- so I have white voting</p> <p>17 Republican and white voting Democrat. And -- and</p> <p>18 no, I don't recall -- so -- so this is what I was</p> <p>19 observing, which was standing out. And -- and --</p> <p>20 and -- and no particular reason. So I wanted to</p> <p>21 see, whites are the majority of the voters in</p> <p>22 these precincts and -- and how they behave, in</p> <p>23 terms of voting.</p> <p>24 Q And I just want to turn back to</p> <p>25 Appendix 7, in speaking about the white voting</p>
<p>198</p> <p>1 intervals get wider. So -- so those numbers as</p> <p>2 such was not the key point for me. The key point</p> <p>3 was to study scientifically that as the precincts</p> <p>4 get denser, do the voting patterns change? Would</p> <p>5 it be fair -- would it be scientific enough for</p> <p>6 somebody to assume that they don't? And I found</p> <p>7 overwhelming evidence that such an assumption</p> <p>8 would be incorrect.</p> <p>9 Q Understood. And in looking at Appendix</p> <p>10 10, I'm just going to point to the same data</p> <p>11 points.</p> <p>12 So the highest versus -- the</p> <p>13 highest-density VTDs, the percentage that you give</p> <p>14 for whites voting Republican is 63.2 percent in</p> <p>15 Pointe Coupee parish; is that right?</p> <p>16 A Correct. Correct.</p> <p>17 Q And the lower limit confidence is 47</p> <p>18 percent?</p> <p>19 A Correct.</p> <p>20 Q And the higher interval confidence</p> <p>21 interval, or the higher -- yeah. The upper limit</p> <p>22 of the confidence interval is 80.4 percent;</p> <p>23 correct?</p> <p>24 A That is right.</p> <p>25 Q And that's a fairly wide range; is that</p>	<p>200</p> <p>1 Democrat figures on the right side of the -- the</p> <p>2 chart. In looking at the Senate 2022 election,</p> <p>3 you note that 53.4 percent of whites voted for</p> <p>4 Democrats in East Baton Rouge Parish; is that</p> <p>5 right?</p> <p>6 A That is right.</p> <p>7 Q And the lower level of the confidence</p> <p>8 interval there is 37.5 percent; is that right?</p> <p>9 A That is right.</p> <p>10 Q And the higher level is 80 percent; is</p> <p>11 that right?</p> <p>12 A Okay.</p> <p>13 Q It's a fairly wide range?</p> <p>14 A It's very -- very right.</p> <p>15 Q And the lower level of that confidence</p> <p>16 interval, it's possible that only 37.5 percent of</p> <p>17 whites voted for a Democrat in that election;</p> <p>18 correct?</p> <p>19 A That is right. So again, we have seen</p> <p>20 this consistently, the sample size is too small.</p> <p>21 But if you look at the line above with 5,500 and</p> <p>22 above, both those numbers are above 50 percent.</p> <p>23 So -- so -- so -- so when you look at the results,</p> <p>24 you cannot just look at one line and conclude. So</p> <p>25 -- so you have to look at the entire body of work</p>

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<p>201</p> <p>1 and see a trend. And -- and that is what I had 2 included in the graphs as well, so that you can 3 see the entire book. 4 Q Understood. So, Dr. Solanky, in 5 thinking about your report as a whole, you don't 6 make any specific -- you don't specifically state 7 in your report that the voting in Louisiana is not 8 racially polarized? 9 A No, I'm not stating that. What I'm 10 stating is that Louisiana is a state where there 11 are some parishes which vote very differently from 12 others. And then all the parishes I was able to 13 look at in depth, I could see that even within 14 parishes, there are precincts which works very 15 differently. 16 Q And you don't conduct any analysis in 17 your report of Plaintiff's illustrative maps; is 18 that right? 19 A That is right. 20 Q And you didn't analyze any communities 21 of interest in coming up with -- or in -- in 22 conducting your analysis? 23 A What is communities of interest means? 24 Q I -- I -- if -- if that's -- if -- if 25 you don't know what it is, I can move on. And you</p>	<p>203</p> <p>1 right? 2 A That is right. 3 Q What experience do you have matching 4 voting -- VTDs, excuse me, and precincts? 5 A What experience? All I looked at was 6 the name, how they are coded, and then I use the 7 voting data to -- to get some idea of whether I'm 8 all for matching the right ones. 9 Q Have you ever matched VTDs in precincts 10 before this report? 11 A No. Not a very difficult exercise. 12 Just look at the numbers, and -- and then double 13 check that they are the same. 14 Q But it was difficult enough not to look 15 at elections from earlier on? 16 A So -- so some precinct -- some parishes 17 have numbers which are too different, and -- and 18 it would be laborious to find out which voting 19 districts have been split into precincts based on 20 the numbers alone. 21 But for some others, it's very easy. 22 The voting district could be 138, and precincts 23 could be 138A, 138B, and when you combine and look 24 at the total voters, you could see that 138 has 25 been split into two precincts.</p>
<p>202</p> <p>1 don't conclude anywhere in your report that black 2 voters are not voting together? 3 A Within precincts, I could see that in 4 some precincts, black voters work very 5 differently. That data stood out, and we 6 discussed it earlier. So. 7 Q But in no election did you see a 8 majority of black voters voting for a Republican 9 candidate outside of the presidential elections; 10 is that right? 11 A That is right. 12 Q So I'd like to move on to -- we've been 13 going for about another hour or so, if you need a 14 -- do you need a body break? 15 A Let's take two (crosstalk). 16 MS. GIGLIO: Let's take five minutes. 17 That's fine. 18 (Whereupon, a recess was taken.) 19 THE REPORTER: Back on record. 20 MS. GIGLIO: Great. Okay. 21 BY MS. GIGLIO: 22 Q So, Dr. Solanky, earlier in our 23 conversation, you talked about having to match 24 VTDs with precincts in order to conduct the 25 analysis that you conducted in Section 4; is that</p>	<p>204</p> <p>1 Q Understood. And I just briefly want to 2 return, before we move on, to your Appendix 6. 3 And again, this is the Review of -- the Analysis 4 of Caddo Parish and the Precincts that are In and 5 Outside of the City of Shreveport; is that right? 6 A Right. 7 Q What steps did you take, aside from 8 distributing the -- the precincts in and out of 9 the cities, to conduct the statistical analysis 10 that's found in this -- in this table, or in this 11 appendix? 12 A So I ran ecological inference when the 13 -- the -- whenever the precinct is in Shreveport 14 area, all collected same together, and then ran 15 one for non-Shreveport area. 16 Q And what data did you use as a basis 17 for -- 18 A For all the work which I have 19 presented, I have relied upon Dr. Handley's data. 20 Q Dr. Handley did not analyze Caddo 21 Parish in this way, so what -- what -- what -- 22 A But -- 23 Q -- how did you come up with these 24 numbers? 25 A But she had precincts.</p>

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52 (205 to 208)

<p>205</p> <p>1 Q She had precincts.</p> <p>2 A So I could look at whether that</p> <p>3 precinct falls in the Shreveport area, yes or no.</p> <p>4 Q And then build upon the analysis in</p> <p>5 that way?</p> <p>6 A Right. So -- so -- so -- so for</p> <p>7 simplicity's sake, she has entire data for Caddo</p> <p>8 Parish, and you look at the precincts which fall</p> <p>9 in Shreveport area, throw them out. Whatever is</p> <p>10 left, those are non-Shreveport parishes, and you</p> <p>11 do your ecological inference. And then reverse</p> <p>12 that throughout non-Shreveport parishes to look at</p> <p>13 Shreveport Parish.</p> <p>14 Q Okay. So you conducted this analysis</p> <p>15 using the precinct-level data provided by Dr.</p> <p>16 Handley?</p> <p>17 A That is right.</p> <p>18 Q Okay, so I --</p> <p>19 A Let -- let --</p> <p>20 Q Yeah.</p> <p>21 A -- let me add to it.</p> <p>22 Q Sure.</p> <p>23 A So I verified her numbers, but all the</p> <p>24 datasets, I recreated on my own. So one of the</p> <p>25 first thing was to crosscheck the numbers which</p>	<p>207</p> <p>1 Q Sure. Of course. I believe her</p> <p>2 explanation is on Page 6.</p> <p>3 MS. RIGGINS: Exhibit 4.</p> <p>4 Q It's Exhibit 4.</p> <p>5 A Okay.</p> <p>6 Q It's Solanky 4.</p> <p>7 A Okay. And the footnote -- so this is</p> <p>8 what she has explained in Footnote 8, and this is</p> <p>9 an example of the allocation process.</p> <p>10 An example of the allocation process is</p> <p>11 as follows: Candidate X receives 80 percent of her</p> <p>12 election day parish white vote, and two percent</p> <p>13 Parish Z from Precinct A, and 20 percent from</p> <p>14 Precinct B. Therefore, 80 percent of early and</p> <p>15 absentee votes are allocated to Precinct A, and 20</p> <p>16 percent to Precinct B.</p> <p>17 Q Okay.</p> <p>18 A And -- and -- and this is exactly what</p> <p>19 I crosschecked.</p> <p>20 Q Understood. And so when you say that</p> <p>21 on Page 13 of your report, Page 13, I think it's</p> <p>22 Paragraph 22 --</p> <p>23 A Which? The --</p> <p>24 Q It's in your report. It's Solanky 1.</p> <p>25 A Okay. Yeah.</p>
<p>206</p> <p>1 she has provided, if I was getting the same</p> <p>2 numbers or not.</p> <p>3 Q Okay.</p> <p>4 A So -- but I relied on the numbers which</p> <p>5 I had generated, but I crosscheck with hers.</p> <p>6 Q And when you crosschecked with hers,</p> <p>7 how did you do that?</p> <p>8 A I looked at how many, for example,</p> <p>9 Trump votes she had in Precinct 1, how many had in</p> <p>10 2, and I could look at those two in a -- the --</p> <p>11 the -- so I don't have to eyeball it. I can just</p> <p>12 merge the two and create a category looking at the</p> <p>13 difference, and then run a query, is there any</p> <p>14 precinct where those numbers don't match? So --</p> <p>15 so that is --</p> <p>16 Q Okay. So I wanted to talk a little bit</p> <p>17 about early and absentee votes.</p> <p>18 A Okay.</p> <p>19 Q So what is your understanding of what</p> <p>20 -- you indicate -- yeah, what is your</p> <p>21 understanding of what Dr. Handley did to -- to</p> <p>22 accommodate, or to include, early and absentee</p> <p>23 votes in the analysis?</p> <p>24 A So -- so if you look at her report, and</p> <p>25 -- and -- and can we, please?</p>	<p>208</p> <p>1 Q Paragraph 22 on Page 13.</p> <p>2 A Right. Okay.</p> <p>3 Q You say in Paragraph 22, this is the</p> <p>4 second line starting after the comma -- well, we</p> <p>5 can start from the beginning. Even though I</p> <p>6 disagree with her methodology, in order to verify</p> <p>7 the EI results presented in Dr. Handley's Report,</p> <p>8 I have followed Dr. Handley's proportional</p> <p>9 allocation of early and absentee votes with</p> <p>10 missing precincts.</p> <p>11 A Okay.</p> <p>12 Q How did you -- can you -- I -- I --</p> <p>13 this is a little -- this is a little difficult for</p> <p>14 me to understand. So how -- can you walk me step</p> <p>15 by step on how you followed Dr. Handley's</p> <p>16 allocation in conducting your own analysis?</p> <p>17 A So -- so first of all, it's -- it's</p> <p>18 very elementary.</p> <p>19 Q Well, thank you. Thank God, because I</p> <p>20 need it to be.</p> <p>21 A It's very elementary, and it's -- and</p> <p>22 -- and I checked the numbers which I was getting</p> <p>23 were matching with her numbers or not. And -- and</p> <p>24 -- and what she does is, essentially, she looks at</p> <p>25 whatever percentage of votes are there for the</p>

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53 (209 to 212)

<p style="text-align: right;">209</p> <p>1 election day. The same percentage of early votes 2 are allocated to that precinct. 3 And -- and from mathematics point of 4 view, it's very trivial, it's very elementary, but 5 it's counterintuitive. In fact, it's -- it's the 6 opposite of what should be done. If you -- if you 7 wish an example, I can create one example. So -- 8 so pretend that there are only two precincts, and 9 the candidate -- and -- and -- and say there are 10 two candidates, so -- okay. If you wish, I can 11 write it. 12 Q Sure. 13 MS. GIGLIO: Thank you, Alyssa. 14 MS. RIGGINS: No problem. 15 A So -- so let's pretend that there are 16 two -- there is Precinct A and there is Precinct 17 B, and there is Candidate X and there is Candidate 18 Y. And -- and let's -- let me assume that both 19 the candidates got hundred votes. 20 Q Okay. 21 A So assume a hundred votes. And -- and 22 this one, the first candidate got zero votes on 23 the election day, and all a hundred on the B -- so 24 Candidate X got zero here and a hundred here, and 25 Candidate Y is the other way around; okay?</p>	<p style="text-align: right;">211</p> <p>1 Q So if we have -- let's say that there 2 are -- in this example, right, there are 200 votes 3 cast on election day; is that right? 4 A Total, right, for -- 5 Q Total. 6 A -- candidate X and Y put together. 7 Q Yes, and let's say there are a hundred 8 early votes. Is that -- 9 A Total. 10 Q A hundred early votes total. 11 A Right. 12 Q So that would make the total number of 13 votes in the election 300 votes? 14 A So -- so -- so there are total -- let 15 me explain. 16 Q Yeah. 17 A So hundred here and hundred here, and 18 so there are total -- so there are total 400 votes. 19 Q Where's the other hundred coming from? 20 A So -- so -- so imagine this, that if 21 this was all election day, there was no early, 22 then there would be hundred, hundred, hundred, 23 hundred. 24 Q Okay. 25 A Okay? So if there was no early votes,</p>
<p style="text-align: right;">210</p> <p>1 So -- so -- so again, so -- so if you 2 look at the early votes, the early votes for X are 3 hundred, the early votes for Y are also hundred; 4 okay? 5 Q Okay. 6 A So -- so -- so I'm assuming both the 7 candidates got hundred votes, but Candidate A got 8 all a hundred in early for Precinct A, and zero of 9 his are early in Precinct B. 10 Q Okay. 11 A And so -- and -- and the reverse is 12 there. So -- but -- so her methodology would look 13 at these hundred votes and say that he got zero in 14 Precinct A, so zero out of this hundred is 15 allocated here, and he got hundred out of hundred 16 percent, so all these hundred votes will get 17 transferred here. So this is what she would do, 18 and -- and that's the basic flaw in her 19 methodology. 20 Q Okay. I -- I think I just need to 21 clarify -- 22 A Okay. 23 Q -- how many total votes we're dealing 24 with in the example, just so that I understand. 25 A Okay, so -- so -- so --</p>	<p style="text-align: right;">212</p> <p>1 then 1 hundred, hundred, hundred, hundred for all 2 four. 3 Q Why would you assume that Candidate X 4 would get a hundred additional votes in Precinct A? 5 A Let -- let me go through the steps. 6 Q Okay. 7 A I think you're missing something. 8 Q Sure. I would love to understand. 9 Thank you. 10 A So -- so -- so pretend that there are 11 -- there are no early. In that case, there would 12 be hundred, hundred, hundred, hundred; in total, 13 400 votes. And just to illustrate the flaw in her 14 argument, I'm assuming that these hundred, all 15 hundred of them here, are early, and zero of those 16 are early for B. 17 Q Okay. 18 A And for the -- the Candidate Y, zero 19 early votes in Precinct A, and all hundred were 20 early. I'm just illustrating -- 21 Q Sure. 22 A -- the basic flaw. So this is what Dr. 23 Handley would do. 24 Q Why would you assume that all of the -- 25 in this example that you're laying out, that all</p>

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54 (213 to 216)

<p>213</p> <p>1 of the early votes attributable to Precinct, let's</p> <p>2 say -- because we're dealing with Candidate --</p> <p>3 A X.</p> <p>4 Q -- x with Precinct A, Precinct B, why</p> <p>5 would you assume, if Candidate A got no votes on</p> <p>6 election day, that Candidate A received a hundred</p> <p>7 votes -- all 100 early votes?</p> <p>8 A Now -- now, let's take a step back.</p> <p>9 I'm illustrating a basic flaw in her methodology.</p> <p>10 Q Okay.</p> <p>11 A And through -- I'm illustrating via an</p> <p>12 example.</p> <p>13 Q Well, can you explain why in -- in</p> <p>14 words?</p> <p>15 A So I'm explaining via an example, and</p> <p>16 if -- if -- if it is not hundred, it could be</p> <p>17 some other number, but the basic flaw would still</p> <p>18 be there. So it would be easier for me to</p> <p>19 understand -- explain the flaw, but nice round</p> <p>20 numbers.</p> <p>21 Q Sure.</p> <p>22 A Pretend zero in all hundred, and let's</p> <p>23 see what happens then. So let me complete this</p> <p>24 example.</p> <p>25 Q Oh, sure.</p>	<p>215</p> <p>1 That's clearly wrong. Should have been hundred,</p> <p>2 hundred, and this should have been hundred,</p> <p>3 hundred also, but it's 200, zero.</p> <p>4 Q I don't know where the assumption that</p> <p>5 it should be 100 in Precinct A --</p> <p>6 A The numbers --</p> <p>7 Q -- for Candidate X.</p> <p>8 A -- the numbers don't matter. I can --</p> <p>9 instead of hundred, I can assume X, one.</p> <p>10 Q Well, what I -- what I'm wondering, Dr.</p> <p>11 Solanky, is, if -- what -- what gives you a source</p> <p>12 of concern that a candidate's performance on</p> <p>13 election day would not be similar to their</p> <p>14 performance in early voting?</p> <p>15 A Now, that -- that -- you know,</p> <p>16 different precincts vote differently, but this is</p> <p>17 to showcase the flaw in her methodology. If</p> <p>18 everything is 50 percent, then it will work fine,</p> <p>19 equal-equal.</p> <p>20 But if, in some precincts, people are</p> <p>21 voting differently early, and there are lots of</p> <p>22 results out there which said people of what race,</p> <p>23 people of what party, vote early as -- and late,</p> <p>24 so -- so that could create differences between</p> <p>25 different precincts. But this is just an</p>
<p>214</p> <p>1 A -- and if we wish, then we can look at</p> <p>2 other numbers as well.</p> <p>3 Q Okay.</p> <p>4 A So -- so this is what Dr. Handley would</p> <p>5 do. So -- so the numbers are zero, hundred,</p> <p>6 hundred, zero, and early are hundred, hundred, and</p> <p>7 she would look at these hundred early votes and</p> <p>8 say that this candidate got zero in precinct, so</p> <p>9 gets to allocated zero out of these hundred. And</p> <p>10 he got hundred out of hundred here, so all hundred</p> <p>11 go up here.</p> <p>12 And same way for Candidate Y, since</p> <p>13 election day votes are zero, he gets zero</p> <p>14 allocated out of early votes. So -- so -- so this</p> <p>15 is what she would come up with: zero, 200, 200,</p> <p>16 zero. A, B, Candidate X, Candidate Y. So this is</p> <p>17 just an illustration, and you can see how faulty</p> <p>18 this methodology is.</p> <p>19 Q I still don't understand why it's</p> <p>20 faulty --</p> <p>21 A Now --</p> <p>22 Q -- doctor. I'm so sorry.</p> <p>23 A -- now, remember, they got hundred,</p> <p>24 hundred, hundred, hundred, but based on the -- Dr.</p> <p>25 Handley's methodology, this is zero to a hundred.</p>	<p>216</p> <p>1 illustrative example --</p> <p>2 Q Sure.</p> <p>3 A -- to show how wrong her numbers could</p> <p>4 be, and -- and the basic flaw in her methodology</p> <p>5 is that she is not using the key information which</p> <p>6 -- all of the information which is available.</p> <p>7 Q And what key information is she not</p> <p>8 using?</p> <p>9 A And -- and that is the total voter</p> <p>10 turnout, and how many voted on the election day,</p> <p>11 and that gives you a very good idea about how many</p> <p>12 early votes were there for that precinct. So her</p> <p>13 methodology does not -- ignores that very key fact.</p> <p>14 Q So can you break down how the total --</p> <p>15 the total voter -- like, the -- the -- the total</p> <p>16 voter count -- how you would break the total voter</p> <p>17 count down in order to better assess --</p> <p>18 A So -- so --</p> <p>19 Q -- this data?</p> <p>20 A Absolutely. So -- so -- so first of</p> <p>21 all, you have to use the entire information. This</p> <p>22 information is there in all her spreadsheets, the</p> <p>23 total turnout, and on the Secretary of State</p> <p>24 website, we have how many early votes were there.</p> <p>25 So what you do first is find out how</p>

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55 (217 to 220)

<p>217</p> <p>1 many early votes were there in each precinct, and 2 -- and remember, not everybody who showed up 3 actually voted. So -- like, for example, for 4 Caddo Parish, 1.4 percent, meaning one or two out 5 of hundred did not vote. 6 But let me explain this, assuming that, 7 first, you take care of that, and after that, you 8 find out how many early votes are there in each 9 precinct, and then you know how many -- how those 10 early votes are spread among the candidates. So 11 allocate the total early votes in each precinct 12 using how many -- what percentage of votes each 13 candidate got early. 14 Q How do you know what percentage of 15 votes each candidate got early? 16 A So the -- so you allocate it based on 17 how many -- what -- how many votes each candidate 18 had early. So you're allocating candidates' early 19 votes to the precincts, conditioned upon how many 20 early votes were there in the precinct. 21 Q Okay, I'm a little confused as to -- as 22 to what that means in practical terms. So to be 23 clear, early, and absentee votes are reported on a 24 parish level; correct? 25 A On a parish level.</p>	<p>219</p> <p>1 many election day votes are there, and -- and you 2 know how many people showed up to vote. That's 3 also in Dr. Handley's spreadsheets, the voter 4 turnout. So voter turnout, minus the election day 5 votes, gives you some idea about early votes -- 6 early and absentee votes. 7 Q Okay. 8 A So -- so you precisely know how many 9 early and absentee votes are there for each 10 precinct. 11 Q Okay. 12 A And -- and now, what you do is see for 13 each candidate, say Trump had 2,000 votes early, 14 so -- so allocate early votes proportional to how 15 many early votes each candidate had, restricted to 16 how many votes early are there for each precinct. 17 Q Okay. 18 A So you're allocating early day votes, 19 early -- early day absentee votes, in the same 20 proportion, using how many votes are there for -- 21 early votes are there for each precinct. Somebody 22 with a mathematics background would understand 23 that so easily. 24 Q Well, that's a little shade, and I 25 don't appreciate it.</p>
<p>218</p> <p>1 Q Not a precinct level? 2 A That is right. 3 Q And that's what makes these votes 4 difficult -- 5 A Right. 6 Q -- and why there's some sort of 7 allocation methodology in the first place. 8 A Right. 9 Q So when you're suggesting -- can you 10 break down even further how you're suggesting 11 taking parish-level votes and assigning them to 12 precincts in your proposed methodology for early 13 and absentee votes? 14 A Absolutely. That's what I did. Let me 15 go slow this time. 16 Q Thank you. 17 A So first thing you do is find out how 18 many early votes are there in each precinct, and 19 which is a very -- 20 Q In each parish? 21 A In each precinct. 22 Q Okay. 23 A So -- so you know how many election day 24 votes are there in each precinct by counting -- 25 that's on the Secretary of State's website, how</p>	<p>220</p> <p>1 A And -- and I'm -- 2 Q I'm kidding. 3 A -- sorry. I'm so sorry. 4 Q Oh, that's a joke. I'm totally joking. 5 So I'm just going to -- 6 A I -- let -- let me qualify -- 7 Q No, I'm going to break it down into -- 8 A Let -- let me qualify that. 9 Q Sure. 10 A I didn't mean it that way. 11 Q Oh, no, it's fine. 12 A I -- what I meant was, you know, 13 mathematics, you get by doing problems, so -- so 14 -- so if you go through an exercise, then you 15 would see exactly what -- 16 Q Sure. 17 A Like what I did over here. 18 Q Sure. 19 A If I had explained this verbally, you 20 may not have seen this (indiscernible) also. 21 Q No, totally understood. So I'll -- 22 I'll try to come up with an example, probably less 23 artfully than you, and we'll see if we can break 24 this down. So -- 25 A Now, if you wish, I have some numbers</p>

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56 (221 to 224)

<p style="text-align: right;">221</p> <p>1 already calculated. I can --</p> <p>2 Q In your Rebuttal Report?</p> <p>3 A Not in my Rebuttal Report. Sitting</p> <p>4 last time -- last night, I created some numbers.</p> <p>5 Q Oh.</p> <p>6 A I can take those out of my bag, and we</p> <p>7 can create an example.</p> <p>8 Q Well, we can create -- I -- I -- I</p> <p>9 don't know if we can do that.</p> <p>10 A The --</p> <p>11 Q I -- I --</p> <p>12 A -- you know, the --</p> <p>13 Q -- I feel a little strange, asking for</p> <p>14 documents that you prepared on your own in prep.</p> <p>15 A And -- and we can do that even the long</p> <p>16 way. Let's look at the first three precincts --</p> <p>17 Q Sure.</p> <p>18 A -- in Caddo Parish, and we can go</p> <p>19 through Dr. Handley's and pick those numbers, and</p> <p>20 I can illustrate.</p> <p>21 Q Sure, let's do that. Okay, so if we</p> <p>22 look, is -- is -- are you looking for figures in</p> <p>23 her report?</p> <p>24 A I'm looking for her spreadsheet.</p> <p>25 Q Yeah, I don't have her spreadsheet</p>	<p style="text-align: right;">223</p> <p>1 that this has created bias, I have constantly</p> <p>2 mentioned that these numbers are biased.</p> <p>3 Q Sure, and when you say that they're</p> <p>4 biased, which -- how do you define bias?</p> <p>5 A Now, in my report, if you look at my</p> <p>6 Rebuttal Report, I have some measures of bias, but</p> <p>7 even in this example which we looked at, this is a</p> <p>8 bias. This candidate should have hundred here.</p> <p>9 As per Dr. Handley's allocation, Candidate X in</p> <p>10 Precinct A is getting zero instead of hundred.</p> <p>11 This is creating bias. This is creating bias,</p> <p>12 this 200.</p> <p>13 Now, this is an extreme case because I</p> <p>14 assume zero and hundred, but nonetheless, we know</p> <p>15 that looking at the data, more Democrats vote</p> <p>16 early compared to Republicans, so -- so that is</p> <p>17 creating a bias. And in my Rebuttal Report, I had</p> <p>18 some measures to show that -- how far off we are,</p> <p>19 in terms of going over and going under, so -- so I</p> <p>20 had those in the Rebuttal Report.</p> <p>21 Q And can we turn to those measures of</p> <p>22 bias that you point to?</p> <p>23 A Sure. I'm assuming you would need this</p> <p>24 piece of paper; right?</p> <p>25 Q Oh, sure.</p>
<p style="text-align: right;">222</p> <p>1 available. So --</p> <p>2 MS. RIGGINS: Did you recreate the --</p> <p>3 some of it in here, like -- do you have a copy of</p> <p>4 it?</p> <p>5 THE WITNESS: Some of that is here.</p> <p>6 BY MS. GIGLIO:</p> <p>7 Q Yeah, agree. So no, no, no, let's move</p> <p>8 on. It's -- it's fine. You know --</p> <p>9 A But it's a very simple exercise. If</p> <p>10 you want, I can verbalize it again.</p> <p>11 Q No, it's -- it's fine.</p> <p>12 A It's -- now, this is one of the</p> <p>13 fundamental flaws in her argument. She ignores</p> <p>14 this key piece of information, that we precisely</p> <p>15 know how many early votes are there, and her</p> <p>16 allocation just ignores that, and that's the</p> <p>17 reason why she's coming up with the, like, bizarre</p> <p>18 numbers. And I had outlined those in my appendix</p> <p>19 in my Rebuttal Report, precinct by precinct.</p> <p>20 Q Understood. But you didn't conduct any</p> <p>21 alternative analysis with respect to the early and</p> <p>22 absentee data in your report, or in your Rebuttal</p> <p>23 Report; is that right?</p> <p>24 A That is right. So in my report, I</p> <p>25 followed what she had, but in order to understand</p>	<p style="text-align: right;">224</p> <p>1 So we can -- we can mark this. What's</p> <p>2 -- Solanky 8? Are we --</p> <p>3 THE REPORTER: Yeah, we're at 8.</p> <p>4 MS. GIGLIO: Okay.</p> <p>5 (Exhibit 8 was marked.)</p> <p>6 BY MS. GIGLIO:</p> <p>7 Q So, Dr. Solanky, you said earlier that</p> <p>8 -- that the data shows that more Democrats tend to</p> <p>9 vote early; is that right?</p> <p>10 A That is right.</p> <p>11 Q What data are you citing?</p> <p>12 A Now, I have read read numerous places,</p> <p>13 I have seen even election results. If you look</p> <p>14 at, for example, Caddo Parish, and in terms of how</p> <p>15 many early votes were there for President Trump,</p> <p>16 how many early votes were there for President</p> <p>17 Biden, big difference.</p> <p>18 Q And do you cite that in your Rebuttal</p> <p>19 Report, or in your report at all?</p> <p>20 A That there is a difference? No, this</p> <p>21 is just available easily on the Secretary of State</p> <p>22 website.</p> <p>23 Q So it's not referenced in your reports?</p> <p>24 A It's not, but -- but then anybody can</p> <p>25 look it up.</p>

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57 (225 to 228)

<p>225</p> <p>1 Q Okay. And so I just want to talk about 2 the --</p> <p>3 A Like, I'm -- it will take me 30 seconds 4 if you give me internet, I'll go to Secretary of 5 State website and show --</p> <p>6 Q Understood.</p> <p>7 A -- you the exact numbers.</p> <p>8 Q Understood. So in thinking about the 9 specific bias, I just want to see if you can walk 10 me through --</p> <p>11 A Okay.</p> <p>12 Q -- the examples of bias that you've 13 laid out in Dr. Handley's report --</p> <p>14 A Okay.</p> <p>15 Q -- and if you could speak a little bit 16 more to what that alleged bias is.</p> <p>17 A Now, let -- let me start with Table 3, 18 and -- and -- and -- let me start with Table 1, 19 I'm sorry.</p> <p>20 Q Sure.</p> <p>21 A In Table 1, I have verbatim produced 22 the numbers from her report, from her spreadsheet 23 for Caddo Parish one, two, three, four, five 24 precincts, how many black turnout, how many other 25 turnout, how many white turnout, and total</p>	<p>227</p> <p>1 creating a bias. That's creating an error in her 2 data. For Precinct number 2, her candidate votes 3 add up to 800, whereas there were 948 people who 4 showed up to vote. So who are these 147 people, 5 what do we know about their race, who she has in 6 her EI analysis, and -- and -- and -- and so on?</p> <p>7 I have -- so I have five rows here, but 8 in her appendix, I have the entire Caddo Parish, 9 and I did the same for even Senate election, and 10 which I had attached as a spreadsheet. Adding 11 Senate election was adding, like, a hundred pages 12 to my report, so I attached that. I think in -- 13 in -- in here, I have a -- look at the Table 6. 14 That's the summary for the Senate Election. In 15 First Parish, the First Parish of Arcadia, so this 16 precinct number is wrong, and -- and that's very 17 understandable.</p> <p>18 So -- so in an Excel spreadsheet, if 19 something is coded as one-dash-one, then it takes 20 it as a date. And -- and now, when I look at it, 21 it's this number. It's not 001. So ignore this 22 column. It doesn't bother me at all that those 23 dates got converted. But look at the last column. 24 In Precinct 1, had 75 surplus votes. In Precinct 25 2, we had, like, nearly zero votes fewer. In</p>
<p>226</p> <p>1 turnout. This total turnout is the column which I 2 created, and I think I specified that somewhere in 3 my report, but she had these three numbers, and 4 this 182, I crosschecked with the Secretary of 5 State's voter level data. This number is right. 6 In Precinct 1, exactly 182 people showed up to 7 vote, and -- and she has their racial breakdown.</p> <p>8 And then she also had how many votes 9 she allocated, which is in Table 2, based on her 10 proportional allocation; okay? This is coming 11 from her spreadsheet. She excluded -- omitted one 12 candidate, so -- so I'm -- I'm just going by what 13 she -- and so there -- there is a discrepancy of 14 about 37 votes. So this one candidate, she 15 omitted got 37 votes, but just going with -- by 16 with her numbers and adding up all the votes, I 17 have those in Table 3 here. So if you look at 18 Table 3, if you add up total candidate votes, it's 19 199. If you look at total turnout, it's 182.</p> <p>20 So who are these 17 extra people? What 21 do we know about their race? These are just 22 extra. They never voted. 182 who voted, we know 23 which 182 are. I can go to the Secretary of State 24 data, and I can highlight those 182 rows, who 25 voted yes, but she has 199. So -- so that is</p>	<p>228</p> <p>1 Precinct 3, we had 61 votes fewer. In Precinct 4, 2 we had 29, and so on.</p> <p>3 So -- so what is happening is, because 4 of her proportional allocation, some precincts are 5 getting more votes, some precincts are getting 6 less, but what matters is, if you -- let's look at 7 this Exhibit 8. What matters is, if you look at 8 the Candidate X's votes, they are 200, so it 9 match, because he -- this candidate had 200 votes. 10 So that number matches.</p> <p>11 What does not match is any of the 12 numbers allocations for the precincts. It matches 13 even for Candidate Y, 200 --</p> <p>14 Q Yeah, the totals are the same.</p> <p>15 A The totals are same. So she's 16 allocating the totals, ignoring how many early 17 votes are there. If she had incorporated how many 18 early votes are there, and then proportionately 19 allocate the votes, she would do. Her numbers 20 would be fine. Her numbers would be, then, 21 reasonable. And -- and this is the basis of all 22 the datasets she has looked at.</p> <p>23 Q So Dr. Solanky, do you have any 24 opinions on what impact this -- this method that 25 Dr. Handley used would have on the outcomes of EI</p>

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<p style="text-align: right;">229</p> <p>1 analysis, as opposed to in, like, literal numbers. 2 A Now, first of all, a -- a -- a -- a 3 huge impact. Let's look at it. The basic flaw, 4 allocating to the precincts who had more election 5 day votes. And so the precincts who already had 6 too many votes, say that the precincts had lots of 7 blacks, and they all voted for this candidate 8 here, then she would took -- 9 Q Well, instead of this candidate here, 10 Dr. Solanky, just to be clear, let's ascribe them 11 with -- 12 A Okay, okay. Sorry. Yeah. 13 Q -- with -- no, that's okay. 14 A Yeah. 15 Q Let's ascribe them with political 16 parties just to keep -- 17 A Okay. 18 Q -- things relevant, because -- 19 A Okay. 20 Q -- this, I think, is a little -- it'll 21 be a little confusing long term. 22 A Okay, so -- so as an illustration, say 23 the -- the -- the Precinct B has a very high 24 percentage of blacks, and -- and they all voted 25 for President Biden, say 98 percent voted for him,</p>	<p style="text-align: right;">231</p> <p>1 there in each precinct, and then on top, she is 2 allocating votes, whosoever had more votes 3 proportionally in a precinct. 4 So like, for example here, so -- so 5 this Candidate X got hundred percent of the -- of 6 the votes on election day, because this -- the 7 first candidate got zero on election day. So if 8 you look at the -- 9 Q No, I understand. 10 A -- if you look at the allocation day 11 percentage, B gets hundred percent of election 12 day, and hence, B gets a hundred percent of the 13 early votes. So -- so that's a very flawed 14 argument. Instead the argument should have been 15 that you look at early -- total early votes. 16 Q Go ahead, I -- I'm listening. 17 A Yeah. 18 Q No, honestly I appreciate it. 19 A You were looking over -- so I stopped. 20 Q Thank you. 21 A No big deal. So -- so the correct 22 argument would be -- correct methodology would be 23 that you look at how many early votes are by 24 candidate and allocate them proportionally, 25 restricted to how many early votes are there.</p>
<p style="text-align: right;">230</p> <p>1 and they voted on election day, what her 2 methodology would do would be allocate even 3 additional votes, surplus votes which don't exist, 4 and then the EI analysis will say that 99 percent 5 of blacks voted for him, for President Trump -- 6 or, President Biden. 7 So -- so that is the basic flaw. It 8 magnifies the number of votes in precincts which 9 have already too many votes proportionally, and -- 10 and she is doing that because she's disregarding 11 that key piece of information, which is, how many 12 early votes are there? 13 Mathematically, this is a very simple 14 algorithm. She just ignored the key piece of 15 information in her proportional allocation. So 16 it's the two flaws. She ignored this key piece of 17 information, and even the logic that whosoever had 18 early should get more, not taking into account how 19 many early votes are there for that person, that's 20 a flaw. 21 Q When you say, whoever -- I'm sorry, can 22 you repeat what you just said? Whoever gets early 23 has more? 24 A So -- so -- so there are two flaws. 25 First is, she is ignoring how many early votes are</p>	<p style="text-align: right;">232</p> <p>1 Q Okay. I think that what I am trying to 2 suss out, Dr. Solanky -- I understand that what 3 you're saying is the total votes -- the total 4 voter turnout for each precinct is available. And 5 then if we subtract the number of election day 6 votes from that total voter turnout, which is a 7 number that -- that you've compiled using Dr. 8 Handley's data; is that right? 9 A The -- those are there in Dr. Handley's 10 data. 11 Q Right. But the total -- you -- you 12 indicated earlier that the total voter turnout 13 column was you adding those figures up; right? 14 A Correct. 15 Q Okay. 16 A So she has, for example, how many -- 17 Q Turnout black, turnout other, turnout 18 white? 19 A And you just add those, and you have -- 20 Q Yep. 21 A -- total turnout. 22 Q Okay. But -- but that was a number 23 that you created in your -- 24 A Right. So this last column -- 25 Q -- you're just being clear.</p>

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<p>233</p> <p>1 A -- yeah. This last column was not 2 there. 3 Q Understood. So you would subtract the 4 total number of votes that were cast on election 5 day, and you would get a -- a total number of 6 early votes for -- you would -- you would, 7 essentially, back in -- allegedly, back into a 8 number of early votes per precinct -- 9 A Correct. 10 Q -- is that right? 11 A That is right. 12 Q Okay. And then -- 13 A And this is a very simple math. 14 Q -- you have -- I'm so -- I'm so sorry. 15 A Those are the -- those are the two 16 choices. Either a vote is early, or vote is 17 election day. 18 Q Uh-huh. 19 A So if it is not election day, it's 20 early. 21 Q Uh-huh. 22 A Right. It's early or absentee. 23 Q Uh-huh. And then when ascribing those 24 total votes to a particular candidate, how would 25 you suggest doing that?</p>	<p>235</p> <p>1 A So if you look at Caddo Parish and -- 2 and, say, President Trump and President Biden. 3 Q Just give me, one moment, Dr. Solanky. 4 So Dr. Solanky, in looking at the overview that 5 you provide in Table 1 and Table 4 -- 6 A Okay. 7 Q -- where you have the turnout, general 8 black turnout, general, other, and turnout general 9 white numbers -- 10 A Right. 11 Q -- from Dr. Handley's report -- 12 A Correct. 13 Q -- the same is true in Table 4; correct? 14 A That is right. 15 Q Do you know how Dr. Handley calculated 16 those turnout numbers? 17 A They are there in the secretary of 18 state data. That's how I verified them. So -- so 19 we -- so I exactly know, using the secretary of 20 state data, which 82, 182. In the data they 21 provided, they had removed the registration number 22 -- 23 Q Uh-huh. 24 A -- otherwise I can go even find them. 25 But you, exactly know, which 182 rows voted in</p>
<p>234</p> <p>1 A So that you do proportionately. 2 Q Okay. 3 A So -- so restricted to how many early 4 votes are there. 5 Q And how would you come up with the 6 proportions for the candidates? 7 A You used to -- for each candidate, you 8 have total percentage of total early votes. So 9 you are allocating early votes for each candidate 10 -- 11 Q By parish; correct? 12 A For the parish. 13 Q Uh-huh. 14 A Conditioned upon early votes for the 15 precinct, proportionately. 16 Q Okay. 17 A Okay? 18 Q Okay. 19 A So -- so that is a much, much better 20 allocation method. 21 Q Okay. Okay. I'm just thinking about 22 where to go next. Just give me a minute. 23 A Let me -- you -- you asked me some bias 24 question. Let me add to that. 25 Q Sure.</p>	<p>236</p> <p>1 that election from Caddo Parish and -- and are 2 white, black, or other. 3 Q Okay. 4 A So -- and I'm assuming she got her 5 numbers from there, too. But I crosscheck those 6 numbers on that voter level data and -- and these 7 are right. And these are coming from what she has 8 provided. 9 Q Uh-huh. Okay. So I'd like to move on 10 to the other critique that you have rendered about 11 Dr. Handley's report. So I'm looking at your 12 initial report in your Summary of Conclusions on 13 Page 29. 14 So in Point 3 of your summary, you say 15 that The estimate, the EI estimates in Dr. 16 Handley's report, providing voter polarization 17 estimates in parishes and regions, combining 18 several parishes, provide an incomplete and 19 misleading conclusion of voter polarizations. Is 20 that right? 21 A Right. 22 Q Can you explain what you mean by she's 23 providing incomplete analyses? 24 A So -- so in a -- so -- and I explained 25 that in the remaining part of the paragraph.</p>

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60 (237 to 240)

<p>237</p> <p>1 Q Uh-huh.</p> <p>2 A But -- but let me explain. Based on my</p> <p>3 analysis of the data, there are precincts within</p> <p>4 parishes, which work differently. So if I come up</p> <p>5 with one estimate that, say, in the entire Caddo</p> <p>6 Parish, 90 percent of whites vote Republican, that</p> <p>7 would be misleading.</p> <p>8 Q Uh-huh.</p> <p>9 A Why? Because if you look at -- for</p> <p>10 example, look at, based on the density, you could</p> <p>11 see that it's not true. So she -- so she's</p> <p>12 providing one estimate, not for parish, but for</p> <p>13 the entire region, without going inside those two</p> <p>14 regions and seeing that there are some parts of</p> <p>15 the region, some precincts which are voting</p> <p>16 differently from the others. So -- so that is</p> <p>17 what I meant here.</p> <p>18 Q Okay. And, Dr. Solanky, do you have an</p> <p>19 understanding of the term endogenous elections?</p> <p>20 A No.</p> <p>21 Q Did you review any -- so did you review</p> <p>22 any endogenous elections as part of the analysis</p> <p>23 in your report?</p> <p>24 MS. RIGGINS: Objection.</p> <p>25 A No. Explain what that word means?</p>	<p>239</p> <p>1 Q 11.</p> <p>2 A Yeah. Okay, no worries.</p> <p>3 Q I'm looking at the top where it says</p> <p>4 that, In addition to examining recent statewide</p> <p>5 elections in the area of -- areas of interest, I</p> <p>6 also analyzed recent 2015 to 2022 state</p> <p>7 legislative elections, including special state</p> <p>8 legislative elections in the -- in these areas.</p> <p>9 These election contests are endogenous in that</p> <p>10 they are for the office at issue, seats in the</p> <p>11 state legislature, but they do not necessarily</p> <p>12 cover the same geographic areas of the proposed</p> <p>13 districts. The state legislative contexts</p> <p>14 analyzed were held in the districts as they were</p> <p>15 drawn in 2011.</p> <p>16 Did you review the endogenous elections</p> <p>17 that Dr. Handley evaluated?</p> <p>18 A No, I could not verify them, but -- but</p> <p>19 -- but I'm assuming they are -- they are based</p> <p>20 upon the same proportional allocation, so they</p> <p>21 would suffer from the same bias in errors, which</p> <p>22 the other data does. So --</p> <p>23 Q So I'd -- I'd like you to turn to</p> <p>24 Appendices B1 and P2. Just take a look at them?</p> <p>25 A Okay.</p>
<p>238</p> <p>1 Q Well, I'll direct you to Dr. Handley's</p> <p>2 report, Page 11. And -- yeah.</p> <p>3 A Which report?</p> <p>4 Q So in her --</p> <p>5 A My report --</p> <p>6 Q -- 2023 report --</p> <p>7 A Page 11?</p> <p>8 Q -- Page 11, it says --</p> <p>9 A I'm not seeing the same thing you're --</p> <p>10 Q -- on the top. Oh, on the --</p> <p>11 A Just this?</p> <p>12 Q So I think that you're in the wrong --</p> <p>13 you're in Solanky 3. That should be Solanky 4.</p> <p>14 That's why.</p> <p>15 A Okay.</p> <p>16 Q Solanky 4.</p> <p>17 A So it's her --</p> <p>18 Q Determine --</p> <p>19 A -- my report?</p> <p>20 Q -- no, no, it's her --</p> <p>21 A Her report; right?</p> <p>22 Q -- more recent report of 2023.</p> <p>23 A Okay. Okay.</p> <p>24 Q That's okay. No worries.</p> <p>25 A So Page 11.</p>	<p>240</p> <p>1 Q In your review of these elections, do</p> <p>2 they reflect analysis of past, actual elections in</p> <p>3 house and senate districts?</p> <p>4 A Okay.</p> <p>5 Q Do they, based in -- based on your</p> <p>6 review?</p> <p>7 A I'm just assuming what they say is what</p> <p>8 they are.</p> <p>9 Q Yes.</p> <p>10 A But not -- they are still based on her</p> <p>11 proportional allocation, which, in my opinion, is</p> <p>12 misleading and wrong.</p> <p>13 Q That's --</p> <p>14 A Can I assume that?</p> <p>15 Q -- that's your perspective, Dr.</p> <p>16 Solanky, but I --</p> <p>17 A So --</p> <p>18 Q -- well, I can't verify whether your</p> <p>19 criticism of her analysis holds true for the state</p> <p>20 legislative elections, if you did not conduct that</p> <p>21 verification yourself.</p> <p>22 A And she has not stated that she used</p> <p>23 any other proportional allocation, other than what</p> <p>24 -- what is on Footnote 8. So based on that, I'm</p> <p>25 assuming that the same proportional allocation was</p>

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61 (241 to 244)

<p>241</p> <p>1 carried out even in these elections.</p> <p>2 Q But you -- did you independently review</p> <p>3 --</p> <p>4 A No, I --</p> <p>5 Q -- these appendices?</p> <p>6 A -- no, I did not verify them.</p> <p>7 Q Okay. So in looking at the elections</p> <p>8 studied, setting aside the results. In looking at</p> <p>9 the election studied, Dr. Handley analyzed past,</p> <p>10 actual elections in the house and the senate of</p> <p>11 Louisiana --</p> <p>12 A Okay.</p> <p>13 Q -- is that right? Is that -- is that</p> <p>14 what this indicates?</p> <p>15 A That's what it indicates, yes.</p> <p>16 Q And would you agree that the voting</p> <p>17 districts at issue in this litigation are</p> <p>18 districts in Louisiana House and Louisiana Senate?</p> <p>19 A Okay.</p> <p>20 Q Would you agree?</p> <p>21 A Sure. You're asking me to verify</p> <p>22 something, which I have not verified.</p> <p>23 Q I'm asking you the -- the -- the</p> <p>24 districts at issue in this litigation that you</p> <p>25 have offered an expert report in, deal with</p>	<p>243</p> <p>1 -- so -- so that was one reason.</p> <p>2 And second reason was based on the time</p> <p>3 I had available to me, I had choices to -- to see</p> <p>4 and do the things, which I thought was</p> <p>5 contributing more. And -- and -- and -- and</p> <p>6 that's what I did.</p> <p>7 Q And you didn't conduct any independent</p> <p>8 analysis to correct the alleged bias; correct?</p> <p>9 A Correct.</p> <p>10 Q In your opinion, would evaluating</p> <p>11 elections in the same kinds of districts be</p> <p>12 probative of whether voting is polarized in -- in</p> <p>13 actual areas, and types of districts at issue?</p> <p>14 A Now, this is the same kind of analysis</p> <p>15 which we have looked at before, and I have similar</p> <p>16 remarks. So -- so assuming -- you know, looking</p> <p>17 at the entire district, there could be precincts</p> <p>18 within --</p> <p>19 Q Uh-huh.</p> <p>20 A -- which could be voting differently.</p> <p>21 So -- so unless that has been done, it would be</p> <p>22 difficult for me to say that the estimates which</p> <p>23 are there for district-wise are meaningful.</p> <p>24 Q Well, I'm speaking more generally, Dr.</p> <p>25 Solanky, than -- than these specific analyses. In</p>
<p>242</p> <p>1 districts in the Louisiana House of</p> <p>2 Representatives; isn't that right?</p> <p>3 A No, I have not looked at specific</p> <p>4 districts and -- and analyzed those.</p> <p>5 Q Correct.</p> <p>6 A So --</p> <p>7 Q But the -- the issue in this litigation</p> <p>8 is over the Louisiana House --</p> <p>9 A Okay.</p> <p>10 Q -- is that right?</p> <p>11 A That is right.</p> <p>12 Q And -- and the Louisiana State Senate?</p> <p>13 A Right.</p> <p>14 Q And your analysis is parish wide; isn't</p> <p>15 that right?</p> <p>16 A Parish-wise, precinct-wise, within</p> <p>17 parish-wise. Yes.</p> <p>18 Q Did you evaluate -- and you -- and you</p> <p>19 said earlier you didn't evaluate voting patterns</p> <p>20 in any of the legislative districts; is that right?</p> <p>21 A That is right.</p> <p>22 Q And why didn't you do that?</p> <p>23 A For -- for one reason I knew how</p> <p>24 incorrect these numbers would be. So -- so the</p> <p>25 proportional allocation really creates a bias. So</p>	<p>244</p> <p>1 evaluating voting patterns within -- within the</p> <p>2 context of a litigation dealing with house and</p> <p>3 senate districts, in your expert opinion, would it</p> <p>4 be probative to evaluate elections in similarly</p> <p>5 situated districts to aid in that analysis?</p> <p>6 A Sure. So you should look at similarly</p> <p>7 districts and look at within the districts to see</p> <p>8 if there is any disparity between how black and</p> <p>9 white voters are voting.</p> <p>10 Q And you don't do that in your report;</p> <p>11 is that right?</p> <p>12 A No, I have not done that.</p> <p>13 Q And what's your understanding of a</p> <p>14 functional analysis?</p> <p>15 A Can you point me to where you are on</p> <p>16 the report?</p> <p>17 Q Well, if you turn to doctor -- pages 17</p> <p>18 and 18 of Dr. Handley's report, which is Exhibit</p> <p>19 4, to be clear. I know there are two of them</p> <p>20 floating around. So pages 17 and 18 --</p> <p>21 A Correct.</p> <p>22 Q -- and 17 onward, really.</p> <p>23 A Uh-huh.</p> <p>24 Q So if you take a look at these pages --</p> <p>25 and I can give you a minute, if you'd like to take</p>

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62 (245 to 248)

<p>245</p> <p>1 a closer look, what's your understanding of the</p> <p>2 analysis that Dr. Handley was conducting in this</p> <p>3 section of her report?</p> <p>4 A Now, I have not verified this section.</p> <p>5 And I'm looking at, for example, Page 19 --</p> <p>6 Q Uh-huh.</p> <p>7 A Jefferson and St. Charles. These are</p> <p>8 very different parishes. If you look at the -- by</p> <p>9 voting -- by -- by the density --</p> <p>10 Q Uh-huh.</p> <p>11 A -- you'll come across some precincts,</p> <p>12 which work very differently.</p> <p>13 Q And you -- but you didn't analyze</p> <p>14 Jefferson Parish in your report; correct?</p> <p>15 A No, I did not. But --</p> <p>16 Q And you didn't analyze St. Charles</p> <p>17 Parish in your report?</p> <p>18 A No, I live in Jefferson Parish and --</p> <p>19 and I -- if there's -- but that -- that was not</p> <p>20 the point. The point was to show that when you</p> <p>21 look within a parish, you see big differences.</p> <p>22 But I have not done that work.</p> <p>23 Q Given these additional analyses of</p> <p>24 elections in state house and state legislative</p> <p>25 districts -- excuse me, and given Dr. Handley's</p>	<p>247</p> <p>1 (Whereupon, a recess was taken.)</p> <p>2 THE REPORTER: Back on the record.</p> <p>3 BY MS. GIGLIO:</p> <p>4 Q So, Dr. Solanky, I just want to go</p> <p>5 over, one more time, the process that you propose</p> <p>6 for -- the alternative that you suggest for</p> <p>7 allocating -- yeah, early, and absentee votes. So</p> <p>8 the way that you propose you would take the total</p> <p>9 vote -- voter -- I'm going to say, words out loud</p> <p>10 in English. Total voter turnout in each precinct,</p> <p>11 subtract the election day votes, and then you have</p> <p>12 the total early and absentee votes that were cast</p> <p>13 in that precinct. So then you would allocate</p> <p>14 those early and absentee votes to candidates.</p> <p>15 How would you allocate those votes to</p> <p>16 candidates?</p> <p>17 A So suppose -- let me make -- make it</p> <p>18 clear. Let me make it simple. See there in the</p> <p>19 parish, there are total, whatever, number of</p> <p>20 votes. So among the early votes -- total early</p> <p>21 votes, say, Biden got -- let me just -- so that we</p> <p>22 can follow --</p> <p>23 Q Sure. Sure.</p> <p>24 A -- say President Biden got 50 percent</p> <p>25 of them, of those early votes. President Trump</p>
<p>246</p> <p>1 analysis of the maps involved in this case, why</p> <p>2 would you still say that? Would you still say</p> <p>3 that her -- her analysis is incomplete?</p> <p>4 A Absolutely. If all of her analysis is</p> <p>5 based on that misleading allocation, I would -- I</p> <p>6 would say all her numbers are misleading. And I</p> <p>7 give you a very simple example, how she's coming</p> <p>8 up with voters which don't exist and how she's</p> <p>9 ignoring the voters who actually voted.</p> <p>10 Q Are you familiar -- in -- in conducting</p> <p>11 functional analysis, which is what's happening in</p> <p>12 Pages 17 onward, of Dr. Handley's report, of the</p> <p>13 illustrative districts -- districts and the</p> <p>14 enacted districts, do you know whether there's any</p> <p>15 allocation done as part of a functional analysis?</p> <p>16 A Absolutely. How else she got the</p> <p>17 number of votes for the precinct? If she's -- if</p> <p>18 she's doing precinct-level analysis, then it has</p> <p>19 to be based on her proportional allocation. Why</p> <p>20 -- how do I know that? That's -- that's the only</p> <p>21 allocation she has mentioned. So --</p> <p>22 Q Okay. I'm just thinking about whether</p> <p>23 we've covered everything.</p> <p>24 MS. GIGLIO: Can we take five?</p> <p>25 MS. RIGGINS: Sure.</p>	<p>248</p> <p>1 got those 40 percent of those early votes in the</p> <p>2 entire parish and others got 10 percent of early</p> <p>3 votes.</p> <p>4 Q Okay.</p> <p>5 A So use this allocation to allocate the</p> <p>6 president level early votes. So -- so whatever</p> <p>7 you are observing for the entire parish, assume it</p> <p>8 also happened for each precinct.</p> <p>9 Q Okay. Understood.</p> <p>10 A And it's a very simple algorithm. And</p> <p>11 this is the only assumption it follows, that</p> <p>12 whatever happened in parish happened in each</p> <p>13 precinct also.</p> <p>14 The beauty of this allocation is, if</p> <p>15 you have additional information, then we can</p> <p>16 allocate them differently.</p> <p>17 Q Uh-huh.</p> <p>18 A But knowing the gap, how many votes</p> <p>19 need to be allocated in that each precinct, I</p> <p>20 think that's the fundamental flaw in Dr. Handley's</p> <p>21 methodology.</p> <p>22 Q Okay.</p> <p>23 A So --</p> <p>24 Q So the allocation that you would</p> <p>25 propose is analyzing the performance of --</p>

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<p>249</p> <p>1 A The proportion of.</p> <p>2 Q -- the proportion of -- so you would</p> <p>3 allocate them proportionally?</p> <p>4 A Right. So whatever happened in the</p> <p>5 entire parish, you assume it happened in each</p> <p>6 precinct. That's one way.</p> <p>7 Q Okay.</p> <p>8 A And -- and -- and -- and you do that,</p> <p>9 you would never go over or under. Like, what I</p> <p>10 have outlined in my appendix in my rebuttal</p> <p>11 report. Literally, every precinct is either going</p> <p>12 over -- how can you have more voters than how many</p> <p>13 people who showed up to vote? That's such a</p> <p>14 fundamental flaw.</p> <p>15 Q Uh-huh.</p> <p>16 A Or how could you just have so many less</p> <p>17 than who actually voted?</p> <p>18 Q Uh-huh.</p> <p>19 A So none of that would be there if you</p> <p>20 take into account how many early voters are there</p> <p>21 in each precinct.</p> <p>22 Q You didn't just -- and I know we've</p> <p>23 covered this a couple of times, but you didn't</p> <p>24 conduct that analysis on these districts to see</p> <p>25 what difference, if any, the -- the -- the</p>	<p>251</p> <p>1 report, briefly?</p> <p>2 A Look, can I look at my CV so that I --</p> <p>3 Q Sure. Of course you can.</p> <p>4 A -- give the exact, same thing. And if</p> <p>5 you could specify which line you're looking at, I</p> <p>6 don't --</p> <p>7 Q I'm looking at Line 37.</p> <p>8 A -- so Line 37. So -- so I looked at --</p> <p>9 you know, one of the key things I looked at was</p> <p>10 how much women, in general, are driving, based on</p> <p>11 the -- the locations of abortion clinics.</p> <p>12 The Mississippi is surrounded by New</p> <p>13 Orleans -- Orleans Parish. It has Memphis on top,</p> <p>14 and I think there are other abortion clinics</p> <p>15 around. So -- so I looked at how many women of</p> <p>16 reproductive age live in each county, and then I</p> <p>17 estimated how much on the average they would</p> <p>18 drive. So that -- that was first thing. And</p> <p>19 there were a number of other such things, which I</p> <p>20 mathematically calculated.</p> <p>21 Q And who retained you in that case?</p> <p>22 A I think the attorney general of -- of</p> <p>23 Mississippi, his office.</p> <p>24 Q And in that case, the attorney general</p> <p>25 of Mississippi was defending a law that limited</p>
<p>250</p> <p>1 different methods had on the EI analysis?</p> <p>2 A No, I did not. The -- all I did was to</p> <p>3 estimate, to tell, that what bias it is creating.</p> <p>4 Q Uh-huh.</p> <p>5 A So in my original report, I talked</p> <p>6 about the bias and how it is misleading. In my</p> <p>7 rebuttal report, I went a step further to show how</p> <p>8 many excess votes. If there are 182 voters, how</p> <p>9 could she have 199 total votes by candidates --</p> <p>10 Q Uh-huh.</p> <p>11 A -- and so on? So -- so that's a very</p> <p>12 big, fundamental flaw. And it's all because she</p> <p>13 ignored the key piece of information in the data.</p> <p>14 Q Understood.</p> <p>15 A Which she had produced even in her</p> <p>16 spreadsheets.</p> <p>17 Q Understood. So, Dr. Solanky, you</p> <p>18 testified earlier that you served as an expert in</p> <p>19 a number of other cases; is that right?</p> <p>20 A That is right.</p> <p>21 Q And you submitted an expert report in</p> <p>22 Jackson Women's Health Organization v. Dobbs</p> <p>23 before the District of Mississippi; is that right?</p> <p>24 A That is right.</p> <p>25 Q Can you just describe that expert</p>	<p>252</p> <p>1 access to abortion care; is that right?</p> <p>2 A Something like that.</p> <p>3 Q And you also submitted a report in</p> <p>4 Planned Parenthood Arizona, Incorporated v. Mark</p> <p>5 Brnovich before the District of Arizona; is that</p> <p>6 right? That's number 36.</p> <p>7 A Right.</p> <p>8 Q Can you briefly describe that case?</p> <p>9 A Very similar calculation, computing the</p> <p>10 mathematics. In -- in some of these cases, I do</p> <p>11 not recall exactly which ones, I had access, to</p> <p>12 me, the actual data.</p> <p>13 So -- so take out identifying</p> <p>14 information, but I exactly knew where a person</p> <p>15 lived and where she went for an abortion and I</p> <p>16 could quantify mathematically, on the average</p> <p>17 women living in, say, Mississippi, how many miles</p> <p>18 they are driving. So a number of mathematical</p> <p>19 calculations like that.</p> <p>20 Q Okay. And do you recall who -- who</p> <p>21 retained you in that case?</p> <p>22 A The State of Arizona.</p> <p>23 Q So this is not the only case in which a</p> <p>24 -- a Republican administration has hired you to be</p> <p>25 an expert when facing civil rights challenges?</p>

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64 (253 to 256)

<p>253</p> <p>1 MS. RIGGINS: Objection.</p> <p>2 A You know, the -- the work I'm doing is</p> <p>3 mathematics. The numbers I'm projecting are based</p> <p>4 on hard science. And how much a person travels</p> <p>5 would not matter based on who hires me. Those --</p> <p>6 numbers are numbers.</p> <p>7 Q Dr. Solanky, do you -- in assessing the</p> <p>8 electoral processes in Louisiana, do you -- do you</p> <p>9 believe that these processes are fair?</p> <p>10 MS. RIGGINS: Objection.</p> <p>11 A I really don't understand your</p> <p>12 question. Which processes?</p> <p>13 Q The electoral process. The -- the</p> <p>14 process for electing members of the state house</p> <p>15 and the state legislature.</p> <p>16 A I have no opinion on that. I mean,</p> <p>17 this is -- this is not a -- a question for a</p> <p>18 mathematics and statistics expert.</p> <p>19 Q And based on the numbers that you've</p> <p>20 reviewed in -- in the elections that you've</p> <p>21 reviewed, do you believe that black Louisianans</p> <p>22 are adequately represented in the state</p> <p>23 legislature?</p> <p>24 MS. RIGGINS: Objection.</p> <p>25 A Again, that -- that's not what I was</p>	<p>255</p> <p>1 A So -- so -- so the data, which</p> <p>2 secretary of state provided was same</p> <p>3 individual-level data based on race, based on,</p> <p>4 even, gender here.</p> <p>5 Q Okay. And I'd like to go back to your</p> <p>6 rebuttal report, if we could, Dr. Solanky, I think</p> <p>7 it was Solanky 2.</p> <p>8 Can you look at Table 6?</p> <p>9 A Yes.</p> <p>10 Q Okay. Is there a typo in this table?</p> <p>11 A Yes. This is a very clear typo. This</p> <p>12 entire Table 6 is for Arcadia Parish, and I don't</p> <p>13 know how I missed out. And this one, Caddo Parish</p> <p>14 there. So this Caddo Parish should be Arcadia</p> <p>15 Parish.</p> <p>16 Q Sorry. I just wanted to make sure and</p> <p>17 clarify that.</p> <p>18 A Oh, understood. Understood.</p> <p>19 Q And then can we look at Table 1 real</p> <p>20 quick? The total voter turnout --</p> <p>21 A Uh-huh.</p> <p>22 Q -- you used a phrase when you were</p> <p>23 asking -- or when you were answering Amanda's</p> <p>24 question a few minutes ago that I'd never heard</p> <p>25 you use. You said the -- you said something like</p>
<p>254</p> <p>1 asked to do. I was asked to do mathematics and</p> <p>2 present reliable numbers based on mathematical</p> <p>3 science. I have no opinion on such subjective</p> <p>4 things.</p> <p>5 MS. GIGLIO: Okay. Sir, I think we're</p> <p>6 good.</p> <p>7 MS. RIGGINS: I've got a couple</p> <p>8 questions just to clarify the record.</p> <p>9 MS. GIGLIO: Sure.</p> <p>10 EXAMINATION BY COUNSEL FOR THE DEFENDANT</p> <p>11 BY MS. RIGGINS:</p> <p>12 Q Dr. Solanky, you were just asked about</p> <p>13 cases 37 and 36 on your CV; is that right?</p> <p>14 A That is right.</p> <p>15 Q And did those cases involve individual</p> <p>16 level data?</p> <p>17 A So -- so -- so I had quite a bit of</p> <p>18 aggregate data and -- and individual-level data,</p> <p>19 so I could project one from the another. Whatever</p> <p>20 was missing, I could estimate.</p> <p>21 Q And is that individual, demographic</p> <p>22 data similar to the demographic data that you</p> <p>23 looked at in this case?</p> <p>24 A That is right.</p> <p>25 Q Okay.</p>	<p>256</p> <p>1 the cap.</p> <p>2 A Correct.</p> <p>3 Q What is -- is -- is the cap represented</p> <p>4 somewhere on this table?</p> <p>5 A The cap is 182. That's the total voter</p> <p>6 turnout.</p> <p>7 Q Okay. So in your opinion, the sum of</p> <p>8 early and absentee voters plus election day voters</p> <p>9 should not exceed the cap, to use your term?</p> <p>10 A Absolutely. If there are total 182</p> <p>11 people who showed up to vote, the candidate votes</p> <p>12 cannot go over 182. That would be -- that would</p> <p>13 have no meaning. How could you have more</p> <p>14 candidate votes than total number of voters who</p> <p>15 showed up to vote.</p> <p>16 MS. RIGGINS: Okay. Do you happen to</p> <p>17 have a copy of Bill Cooper's report? I saw some --</p> <p>18 MS. GIGLIO: I do.</p> <p>19 MS. RIGGINS: -- on the ledge, but I</p> <p>20 just want to clarify one of these maps you showed</p> <p>21 --</p> <p>22 MS. GIGLIO: Sure. Which one, 2023?</p> <p>23 MS. RIGGINS: 2023, if you don't mind.</p> <p>24 MS. GIGLIO: Sure.</p> <p>25 MS. RIGGINS: Is this corrected or</p>

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<p>257</p> <p>1 original?</p> <p>2 MS. GIGLIO: This is the -- ooh, that's</p> <p>3 a great question. I think this is the original</p> <p>4 report. I could pull up the -- the -- a different</p> <p>5 version.</p> <p>6 MS. RIGGINS: The -- the thing I'm</p> <p>7 looking at is the same, either way.</p> <p>8 MS. GIGLIO: Okay.</p> <p>9 MS. RIGGINS: I just wanted it</p> <p>10 reflected.</p> <p>11 MS. GIGLIO: Sure.</p> <p>12 MS. RIGGINS: Can we mark this as 9?</p> <p>13 MS. GIGLIO: Sure. 9 is fine.</p> <p>14 MS. RIGGINS: Yeah, 9.</p> <p>15 (Exhibit 9 was marked.)</p> <p>16 BY MS. RIGGINS:</p> <p>17 Q Dr. Solanky, can you turn to Page 29 of</p> <p>18 this report? And you can take the clip off if you</p> <p>19 need to. It might be difficult.</p> <p>20 A I'll move it to the side.</p> <p>21 MS. GIGLIO: Our big stakeholders were</p> <p>22 giving us trouble this morning.</p> <p>23 A Page 29?</p> <p>24 Q Yes.</p> <p>25 A Yes.</p>	<p>259</p> <p>1 Parish on this map?</p> <p>2 A I do.</p> <p>3 Q Is it shaded in green?</p> <p>4 A It is shaded in green.</p> <p>5 Q And can you locate Orleans Parish on</p> <p>6 this map?</p> <p>7 A Yes, I do.</p> <p>8 Q Is it shaded in green also?</p> <p>9 A It is.</p> <p>10 Q And what does the key say beside the</p> <p>11 green shading?</p> <p>12 A It says, Illustrative Majority Black.</p> <p>13 MS. RIGGINS: Okay. Thank you, Dr.</p> <p>14 Solanky. I don't have any further questions.</p> <p>15 MS. GIGLIO: Okay.</p> <p>16 MS. RIGGINS: You will read and sign,</p> <p>17 please?</p> <p>18 THE REPORTER: Off the record?</p> <p>19 MS. GIGLIO: Now, yeah. Thank you very</p> <p>20 much.</p> <p>21 (Off the record at 4:45 p.m.)</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>
<p>258</p> <p>1 Q Okay. Is there a map there that shows</p> <p>2 shaded green and red areas of the state?</p> <p>3 A It does.</p> <p>4 Q Okay. And do you recall earlier that</p> <p>5 you were asked where East Carroll Parish is?</p> <p>6 A Right.</p> <p>7 Q And is East Carroll Parish on this map,</p> <p>8 shaded in green?</p> <p>9 A It is.</p> <p>10 Q Okay. And can you see Orleans's Parish</p> <p>11 on this map?</p> <p>12 A Yeah, I do.</p> <p>13 Q Is it shaded in green?</p> <p>14 A That is green.</p> <p>15 Q What does the key say the green shading</p> <p>16 indicates?</p> <p>17 A For green, it says, Illustrative</p> <p>18 Majority Black.</p> <p>19 Q Okay. Can you turn to Page 43, please?</p> <p>20 A Yes.</p> <p>21 Q And does this illustrate -- does this</p> <p>22 -- what is the figure title here beside Figure 24?</p> <p>23 A So it's, The Location of Six Additional</p> <p>24 Majority Black Districts in Illustrative House.</p> <p>25 Q Okay. And can you find East Carroll</p>	<p>260</p> <p>1 ACKNOWLEDGMENT OF DEPONENT</p> <p>2</p> <p>3</p> <p>4 I, DR. TUMULESH SOLANKY, do hereby</p> <p>5 acknowledge that I have read and examined the</p> <p>6 foregoing testimony, and the same is a true, correct</p> <p>7 and complete transcription of the testimony given by</p> <p>8 me and any corrections appear on the attached Errata</p> <p>9 sheet signed by me.</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15 (DATE) (SIGNATURE)</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>

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Conducted on September 22, 2023

66 (261 to 264)

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1 CERTIFICATE OF COURT REPORTER - NOTARY PUBLIC

2 I, Harold Rodriguez, the officer
3 before whom the foregoing proceedings were
4 taken, do hereby certify that any witness(es) in
5 the foregoing proceedings were fully sworn;
6 that the proceedings were recorded by me and
7 thereafter reduced to typewriting by a
8 qualified transcriptionist; that said digital
9 audio recording of said proceedings are a
10 true and accurate record to the best of my
11 knowledge, skills, and ability; and that I am
12 neither counsel for, related to, nor employed
13 by any of the parties to this case and have
14 no interest, financial or otherwise, in its
15 outcome.

16 

17 _____
18
19 HAROLD RODRIGUEZ, NOTARY PUBLIC,
20 FOR THE STATE OF NEW YORK

262

1 CERTIFICATION OF TRANSCRIPT

2 I, Andrew Hatzianis, do hereby certify
3 that this transcript was prepared from the digital
4 audio recording of the foregoing proceeding; that
5 said proceedings were reduced to typewriting under
6 my supervision; that said transcript is a true and
7 accurate record of the proceedings to the best of
8 my knowledge, skills, and ability; and that I am
9 neither counsel for, related to, nor employed by any
10 of the parties to the case and have no interest,
11 financial or otherwise, in its outcome.

12
13 

14 _____
15
16
17 Andrew Hatzianis
18 Planet Depos, LLC
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IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF LOUISIANA

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE,
DR. ALICE WASHINGTON, STEVEN
HARRIS, ALEXIS CALHOUN, BLACK
VOTERS MATTER CAPACITY
BUILDING INSTITUTE, and THE
LOUISIANA STATE CONFERENCE OF
THE NAACP,

Plaintiffs,

v.

KYLE ARDOIN, in his official capacity as
Secretary of State for Louisiana,

Defendant.

CIVIL ACTION NO. 3:22-cv-00178 SDD-
SDJ

Expert Report of Tumulesh K.S. Solanky, Ph.D

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V: Summary of Conclusions

Appendix 1-10

I: Introduction

1. I was requested by counsel for Defendant Secretary of State Ardoyn to statistically study the voting patterns and the composition of the enacted state house (H.B. 14) and senate (S.B. 1) plans in Louisiana. I was also asked to opine on the statistical results presented in the plaintiffs' expert reports of Dr. Lisa Handley and Mr. Bill Cooper. My credentials are set forth in my *curriculum vitae* (CV), which includes a recitation of prior legal assignments in both federal and state courts. My CV is attached as Appendix 1 to this Expert Report/Declaration.

2. I am over 18 years of age and am competent to make this declaration. I have personal knowledge of the statements contained in this declaration. I am a professor and chair of the mathematics department at the University of New Orleans (UNO). I have a Ph.D. in statistics from the University of Connecticut. I have been teaching statistics and mathematics at UNO since August 1990. I have taught a number of graduate classes on statistics, such as Sampling Theory, Applied Statistics, Regression Analysis, Linear Models, Design of Experiments, Biostatistics, Statistical Consulting, Nonparametric Statistics, Data Analytics, Multivariate Analysis, and Time Series Analysis. At present, I serve as an associate editor of four scholarly journals, including *Sequential Analysis: Design Methods and Applications*, the flagship journal in my research area. My research focuses primarily on data collection/sampling strategies, especially the development of new sampling designs to collect and analyze data. I have authored/co-authored a research level book, two book chapters, and over 25 research articles in scholarly peer-reviewed journals, all in the field of statistics. I have also served as the guest editor of a special issue of the *American Journal of Mathematical and Management Sciences* in my research area. I have presented my research at over 50 national and international conferences/meetings of peers. I have provided my statistical expertise to the National Aeronautics and Space Administration (NASA), the United States Department of Agriculture (USDA), banks, hospitals, school boards, polling firms, Attorneys General Offices, District Attorney's Offices, and others, designing surveys and authoring over 150 internal/expert reports. Details of the above-mentioned items and others are available in my CV attached in Appendix 1.

3. List the documents reviewed:

- i. Individual voter-level data for all registered voters in Louisiana identifying the registered voters' parish, precinct, congressional district, party affiliation, gender, and whether or not the individual voted in statewide elections¹. This data is provided with the report.
- ii. Cooper Reports (July 22, 2022 and June 29, 2023)
- iii. Handley Reports (July 22, 2022 and June 30, 2023)
- iv. Handley Backups (July 22, 2022 and June 30, 2023)

¹ The election dates included in the data are 2012-11-06, 2014-12-06, 2015-10-24, 2015-11-21, 2016-11-08, 2016-12-10, 2017-11-18, 2018-12-08, 2019-10-12, 2019-11-16, 2020-11-03, and 2022-11-08.

v. Cooper Backups (July 22, 2022 and June 29, 2023)

vi. Census Data

4. The statistical analysis reported below is based on my preliminary review of the documents and data listed above and other publicly available data sets described below in the report. I did not have adequate time to review in detail the files/datasets/programs listed above because materially different reports were provided less than 30 days before this report was due.

II: Recent Trends in Voters Party Affiliation

II.a. Registered Voters Party Affiliation in Statewide Elections:

5. I reviewed the party affiliation of registered voters in Louisiana for the dates on which 12 statewide elections were held from 2012 to 2022. The election dates and the number of registered democrats, republicans and others as of the date of each election are summarized in Table 1.

**Table 1: Summary of Registered Voters in Louisiana by Party Affiliation
12 Statewide Elections from 2012 to 2022**

Election Number	Election Date	Reg DEM Voters (Total)	Reg REP Voters (Total)	Reg OTHER Voters (Total)	Reg DEM Minus REP Voters (Total)	Reg DEM Voters (Pct)	Reg REP Voters (Pct)	Reg OTHER Voters (Pct)	Reg DEM Minus REP Voters (Pct)
1	11/6/2012	1430750	814299	720699	616451	48.2	27.5	24.3	20.8
2	12/6/2014	1375027	816593	754109	558434	46.7	27.7	25.6	19.0
3	10/24/2015	1331433	813253	749781	518180	46.0	28.1	25.9	17.9
4	11/21/2015	1331874	816059	752562	515815	45.9	28.1	25.9	17.8
5	11/08/2016	1346979	895295	780963	451684	44.6	29.6	25.8	14.9
6	12/10/2016	1346132	903032	782922	443100	44.4	29.8	25.8	14.6
7	11/18/2017	1306157	896889	772610	409268	43.9	30.1	26.0	13.8
8	12/8/2018	1289852	916998	792879	372854	43.0	30.6	26.4	12.4
9	10/12/2019	1257774	917492	787746	340282	42.4	31.0	26.6	11.5
10	11/16/2019	1258772	924493	791941	334279	42.3	31.1	26.6	11.2
11	11/3/2020	1262597	1013581	816826	249016	40.8	32.8	26.4	8.1
12	11/08/2022	1192802	1006704	819309	186098	39.5	33.3	27.1	6.2

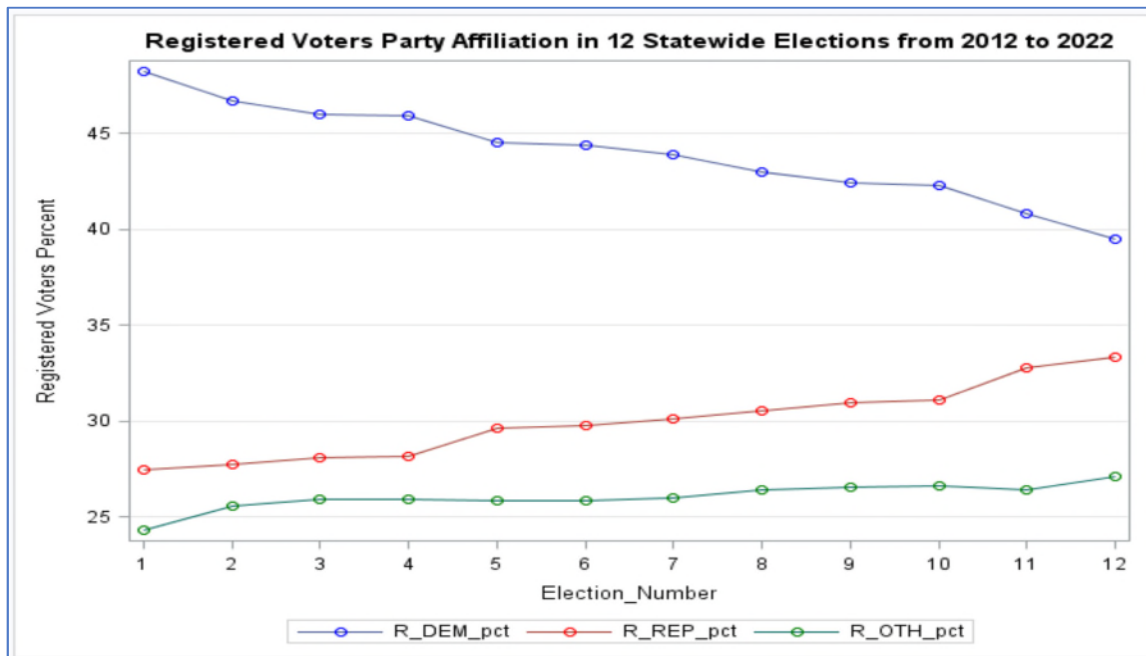
6. Note that for the 11/6/2012 elections, there were 1,430,750 registered democrats, and 814,299 registered republicans. The percentage of registered democrats was 48.2% in 2012 and the percentage of registered republicans was 27.5%. That is, there were 20.8% more registered democrats than republicans for 2012 elections. Whereas, in 2022, there were 1,192,802 registered democrats, 1,006,704 registered republicans. The percentage of registered democrats was 39.5% in 2022 and the percentage of registered republicans was 35.5%. That is, there were 6.2% more registered democrats than registered republicans in 2022. From the **Table 1**, the following trends are evident:

(a). There were 20.8% more registered democrats than registered republicans in 2012, and this excess has steadily reduced from 2012 to 2022 to 6.2% more registered democrats than registered republicans.

(b). The number of registered democrats has steadily decreased from 2012 to 2022. Whereas, the number of registered republicans has steadily increased from 2012 to 2022. The number of “Others” as party affiliation has remained somewhat constant over the years from 2012 to 2022.

7. **Figure 1** below depicts the observed trends in the percentage of voters who are registered as democrats (“R_DEM_pct”), republicans (“R_REP_pct”), others (“R_OTH_pct”) from 2012 to 2022 in the 12 statewide elections in Louisiana. Election number 1 was on 11/6/2012 and election number 12 was on 11/08/2022. The complete details are reported in **Table 1** above.

**Figure 1: Louisiana Registered Voters Trend
12 Statewide Elections from 2012 to 2022**



II.b. Trends in Party Affiliation of Voters Who Voted in Statewide Elections:

8. In the 2012 statewide elections, 997,987 registered democrats, 622,392 registered republicans, and 394,135 registered others voted during the statewide elections on November 6, 2012. That is, among the registered voters who actually voted, the percentage of voters registered as democrats was 49.5%. And, the percentage of voters registered as republicans was 30.9%. A difference of 18.6%.

9. In the 2022 statewide elections, 548,747 registered democrats and 590,865 registered republicans voted during the statewide elections on November 8, 2022. That is, among the registered voters who voted on November 8, 2022, the percentage of voters registered as democrats was 38.9%. And, the percentage of voters registered as republicans was 41.9%. A difference of -3.0%.

10. To express the trend differently, in 2012 there were 375,595 more registered democrats than registered republicans who voted during the elections. However, in 2022 there were 42,118 fewer democrats than republicans who voted during the elections. This is a drop of 111.2 % in excess democrats from 2012 to 2022. The details are provided in **Table 2**.

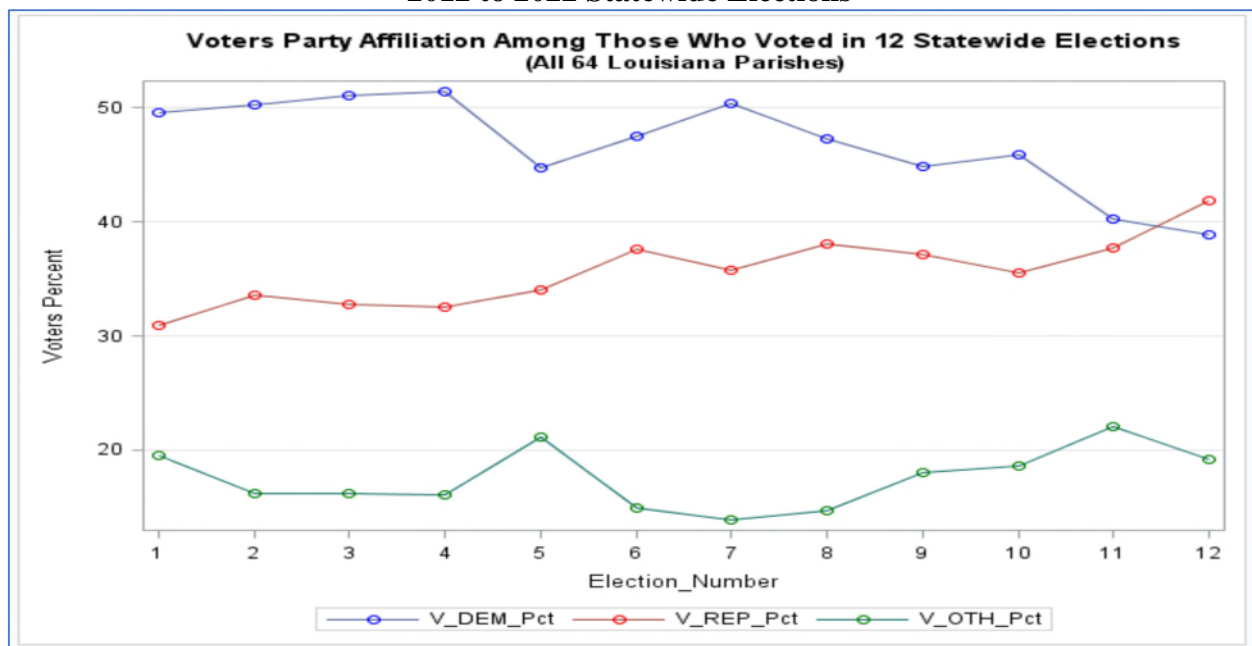
**Table 2: Summary of Voters who Voted by Party Affiliation
12 Statewide Elections from 2012 to 2022**

Election Number	Election Date	DEM Who Voted (Total)	REP Who Voted (Total)	OTHER Who Voted (Total)	DEM Minus REP Who Voted (Total)	DEM Who Voted (Pct)	REP Who Voted (Pct)	OTHER Who Voted (Pct)	DEM Minus REP Who Voted (Pct)
1	11/6/2012	997987	622392	394135	375595	49.5	30.9	19.6	18.6
2	12/6/2014	646168	431195	208317	214973	50.3	33.5	16.2	16.7
3	10/24/2015	579328	371734	183725	207594	51.1	32.8	16.2	18.3
4	11/21/2015	599381	378857	187634	220524	51.4	32.5	16.1	18.9
5	11/08/2016	916703	698447	434459	218256	44.7	34.1	21.2	10.6
6	12/10/2016	424168	335632	133509	88536	47.5	37.6	14.9	9.9
7	11/18/2017	194466	138137	53580	56329	50.4	35.8	13.9	14.6
8	12/8/2018	250591	202009	77866	48582	47.2	38.1	14.7	9.2
9	10/12/2019	610415	504993	244574	105422	44.9	37.1	18.0	7.8
10	11/16/2019	696021	539909	282836	156112	45.8	35.5	18.6	10.3
11	11/3/2020	874163	817431	477820	56732	40.3	37.7	22.0	2.6

Election Number	Election Date	DEM Who Voted (Total)	REP Who Voted (Total)	OTHER Who Voted (Total)	DEM Minus REP Who Voted (Total)	DEM Who Voted (Pct)	REP Who Voted (Pct)	OTHER Who Voted (Pct)	DEM Minus REP Who Voted (Pct)
12	11/08/2022	548747	590865	270984	-42118	38.9	41.9	19.2	-3.0

11. **Figure 2** below summarizes the registered voters who voted in statewide elections from 2012 to 2022 by their party affiliation. The trend over time shows a steady decrease in democrats who voted and steady increase in republicans who voted.

**Figure 2: Registered Voters Who Voted Trend
2012 to 2022 Statewide Elections**



II.c. Race and Party Affiliation Among Registered Voters in Louisiana:

12. As noted above, the percentage of registered democrats voting in statewide elections in Louisiana has decreased over the years while the percentage of registered republicans voting has increased. In order to further understand this trend, next I have broken this down by the race and party affiliation of the registered voters. In **Table 3**, the total number and percentage of white and black voters that were registered as democrats or republicans is summarized for the 12 statewide elections.

13. From **Table 3**, the following observations can be noted about registered voters statewide in Louisiana:

(i). The white voters registered as democrats have steadily decreased from year 2012 to 2022. In 2012, there were 22.2% of voters who were white democrats, whereas in 2022, this decreased to 14.0%. This equals a drop of 36.9 percentage points in white voters registered as democrats from 2012 to 2022.

(ii). The white voters registered as republicans have steadily increased from year 2012 to 2022. In 2012, there were 25.6% of voters who were white republicans, whereas in 2022, this increased to 31.3%. This equals an increase of 22.3 percentage points in white voters registered as republicans from 2012 to 2022.

(iii). The black voters registered as democrats have remained constant around 24% from 2012 to 2022. The black voters registered as republicans have steadily remained constant around less than 1% from 2012 to 2022.

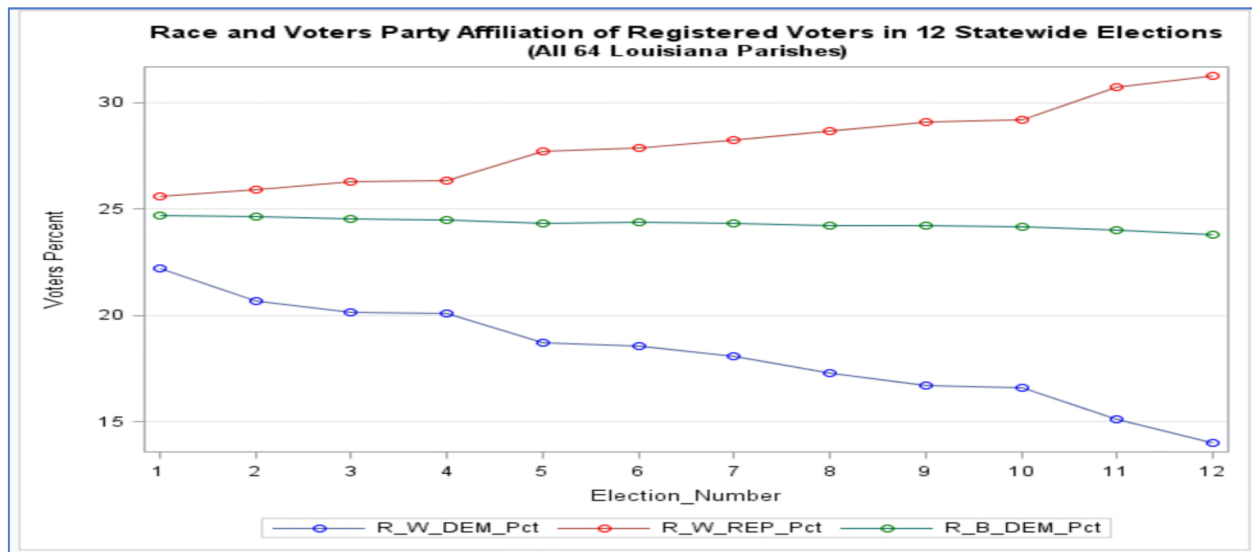
**Table 3: Summary of Registered Voters by Party Affiliation and Race
2012 to 2022 Statewide Elections**

Election Number	Election Date	Reg White DEM Voters (Total)	Reg Black DEM Voters (Total)	Reg White REP Voters (Total)	Reg Black REP Voters (Total)	Reg White DEM Voters (Pct)	Reg Black DEM Voters (Pct)	Reg White REP Voters (Pct)	Reg Black REP Voters (Pct)
1	11/6/2012	658172	731743	759269	23867	22.2	24.7	25.6	0.8
2	12/6/2014	609004	725948	762579	22662	20.7	24.6	25.9	0.8
3	10/24/2015	582945	709710	760555	22166	20.1	24.5	26.3	0.8
4	11/21/2015	582354	710571	763191	22243	20.1	24.5	26.3	0.8
5	11/08/2016	566397	735852	838190	22855	18.7	24.3	27.7	0.8
6	12/10/2016	562478	738410	845556	22809	18.6	24.4	27.9	0.8
7	11/18/2017	537990	723949	840511	22478	18.1	24.3	28.2	0.8
8	12/8/2018	517643	726383	859758	22532	17.3	24.2	28.7	0.8
9	10/12/2019	495303	716780	861025	22022	16.7	24.2	29.1	0.7
10	11/16/2019	493466	719091	867618	22073	16.6	24.2	29.2	0.7
11	11/3/2020	467831	742391	950549	22496	15.1	24.0	30.7	0.7
12	11/08/2022	422337	718965	943600	21895	14.0	23.8	31.3	0.7

14. **Figure 3** below depicts the registered voters trend in statewide elections from 2012 to 2022 by party affiliation and race. As observed in **Table 3**, the following observations can be noted about registered voters in Louisiana:

- (i). The percentage of registered white democrats (R_W_DEM_Pct) has somewhat steadily decreased from 2012 to 2022.
- (ii). The percentage of registered white republicans (R_W_REP_Pct) has steadily increased from 2012 to 2022.
- (iii). The percentage of registered black democrats (R_B_DEM_Pct) has somewhat remained constant from 2012 to 2022.

**Figure 3: Summary of Registered Voters by Party Affiliation and Race
2012 to 2022 Statewide Elections**



II.d. Race and Party Affiliation of Those Who Voted in Louisiana

15. As remarked earlier, the percentage of registered white democrats (R_W_DEM_Pct) has somewhat steadily decreased from 2012 to 2022. Whereas, the percentage of registered white republicans (R_W_REP_Pct) has steadily increased from 2012 to 2022. **Table 4** summarizes the results by race and party affiliations for registered voters who actually voted in the 12 statewide elections.

**Table 4: Summary of Voters who Voted by Race And Party Affiliation
12 Statewide Elections from 2012 to 2022**

Election Number	Election Date	White DEM Voters (Total)	Black DEM Voters (Total)	White REP Voters (Total)	Black REP Voters (Total)	White DEM Voters (Pct)	Black DEM Voters (Pct)	White REP Voters (Pct)	Black REP Voters (Pct)
1	11/6/2012	456162	519075	589420	12951	22.6	25.8	29.3	0.6
2	12/6/2014	292400	341589	412259	6868	22.7	26.6	32.1	0.5
3	10/24/2015	286731	282473	357056	5544	25.3	24.9	31.5	0.5
4	11/21/2015	276286	311856	362846	6061	23.7	26.7	31.1	0.5
5	11/08/2016	399916	490291	663847	11657	19.5	23.9	32.4	0.6
6	12/10/2016	196059	218417	323173	3646	21.9	24.5	36.2	0.4
7	11/18/2017	84839	104745	133071	1507	22.0	27.1	34.5	0.4
8	12/8/2018	102466	142590	194973	2384	19.3	26.9	36.8	0.4
9	10/12/2019	268649	326964	484753	6506	19.8	24.0	35.6	0.5
10	11/16/2019	277941	399600	516173	8290	18.3	26.3	34.0	0.5
11	11/3/2020	337044	504354	776754	11535	15.5	23.2	35.8	0.5
12	11/08/2022	223075	308864	566952	6099	15.8	21.9	40.2	0.4

16. From **Table 4**, the following observations can be noted about registered voters who voted in Louisiana in 12 statewide elections from 2012 to 2022:

(i). The number of white voters registered as democrats who voted has steadily decreased from year 2012 to 2022. In 2012, there were 22.6% of voters who voted were white democrats, whereas in 2022, this decreased to 15.8%. This equals a drop of 30.1 percentage points from 2012 to 2022.

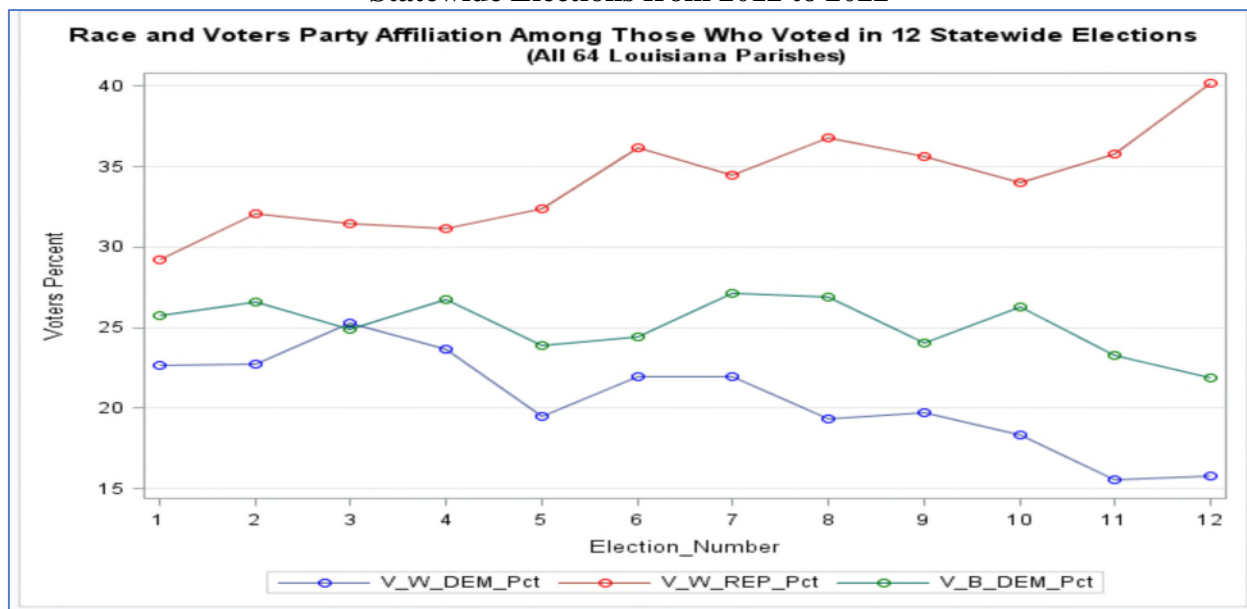
(ii). The number of white voters registered as republicans who voted has steadily increased from year 2012 to 2022. In 2012, there were 29.3% of voters who voted were white republicans, whereas in 2022, this increased to 40.2%. This equals an increase of 37.2 percentage points from 2012 to 2022.

(iii). The number of black voters registered as democrats has steadily remained constant around mid-twenties percent from year 2012 to 2022. The number of black voters registered as republicans have steadily remained constant around less than 1% from year 2012 to 2022.

17. **Figure 4** below depicts the registered voters trend for registered voters who actually voted in statewide elections from 2012 to 2022 by party affiliation and race. As tabulated in **Table 4**, the following observations can be noted about registered voters in Louisiana:

- (i). The percentage of registered white democrats who voted (V_W_DEM_Pct) has somewhat steadily decreased from 2012 to 2022.
- (ii). The percentage of registered white republicans who voted (V_W_REP_Pct) has steadily increased from 2012 to 2022.
- (iii). The percentage of registered black democrats who voted (V_B_DEM_Pct) has somewhat remained constant from 2012 to 2022.

**Figure 4: Summary of Voters who Voted by Party Affiliation and Race
Statewide Elections from 2012 to 2022**



III: Analyzing Voting Patterns by Race Using Ecological Inference (EI) Modeling For Selected Parishes

18. Next, I have carried out statistical analysis to analyze the voting patterns by race using the ecological inference (EI) package “ei.MD.bayes” which implements a hierarchical Multinomial-Dirichlet model for ecological inference in RxC tables suggested by Rosen et al. (2001)². In a recent study, Plescia and De Sio (2018) compared the performance and suitability

² Ori Rosen, Wenxin Jiang, Gary King, and Martin A. Tanner. 2001. “Bayesian and Frequentist Inference for Ecological Inference: The RxC Case.” *Statistica Neerlandica* 55: 134-156.

of several R×C methods for ecological inference and reported that when using root mean square error (RMSE) metric, the EI-MD model performs relatively better when comparing estimates of the quantities of interest with the true values³.

19. In order to obtain the precinct level data, I relied on the Louisiana Secretary of State (SOS) website⁴ which reports the precinct level total votes received by each candidate excluding the early and absentee votes. The race of the voters who voted in each precinct was obtained using the voters level data provided by the SOS office.

20. It is important to note that the SOS website reports the early and absentee votes only at the parish-wide level. For example, in 2020 presidential elections, 979,742 out of 2,148,062, or 45.6% of the total votes cast were by early or absentee voting and, therefore, the votes by precincts is not available. Additionally, 41.5% of the votes President Trump received in Louisiana were early and absentee votes, whereas, President Biden received 52.2% of his votes as early and absentee votes.

21. Dr. Handley's expert report has bypassed the issue of not knowing the precincts of a large percentage of votes by allocating the early and absentee votes not coded to a precinct to the parish precincts proportionally based on the votes received by each of the candidates on Election Day. Dr. Handley has not addressed what bias her proposed equitable distribution solution creates in the EI results she has presented due to the fact that a large proportion of the data is missing the precincts. Put another way, Dr. Handley does not address that she is missing precinct-level data for 30.6% of voters. This is especially problematic given that Dr. Handley analyzes Cooper's Illustrative house and senate plans which, as shown in Mr. Cooper's report, have numerous parish splits, with some parishes split more than once, but assumes that all portions of the parishes vote the same way regardless of the way it is split. Table 5 reports the percentages of the early and absentee votes with missing precincts for the 12 statewide elections studied further in this report⁵.

³ Plescia C, De Sio L. An evaluation of the performance and suitability of R×C methods for ecological inference with known true values. Qual Quant. 2018;52(2):669-683.

⁴ The website address is <https://voterportal.sos.la.gov/static/>

⁵ Note that in **Section II** of this report (Recent Trends in Voters Party Affiliation) I presented voters race and party affiliations for 12 election dates as reported in **Table 1**. In the **Section III** (Analyzing Voting Patterns by Race Using Ecological Inference (EI) Modeling) we will focus on 12 selected election contests for certain offices in Louisiana. The details of those 12 specific election contests are provided in **Table 6**.

**Table 5: Summary of Early And Absentee Votes With Missing Precincts
For 12 Statewide Elections**

Election Number	Election Date	Election For	Total Early And Absentee Votes	Total Votes	Percentage with Missing Precincts
1	11/6/2012	US President	359779	1994065	18.0
2	11/21/2015	Governor of LA	266948	1152864	23.2
3	11/21/2015	Lt Governor of LA	264881	1135516	23.3
4	11/8/2016	US President	527180	2029032	26.0
5	11/18/2017	Treasurer of LA	91845	373415	24.6
6	12/8/2018	LA Secretary of State	126928	516653	24.6
7	10/12/2019	Lt Governor of LA	377138	1297865	29.1
8	10/12/2019	Attorney General of LA	375862	1291868	29.1
9	11/16/2019	LA Secretary of State	494713	1468733	33.7
10	11/16/2019	Governor of LA	500296	1508784	33.2
11	11/3/2020	US President	979742	2148062	45.6
12	11/08/2022	US Senator	371967	1383290	26.9
		TOTAL	4737279	14306082	30.6

22. Even though I disagree with her methodology, in order to verify the EI results presented in Dr. Handley's report, I have followed Dr. Handley's proportional allocation of early and absentee votes with missing precincts. In this report, I have analyzed 12 statewide election contests as reported in **Table 6** below⁶. Of these 12 elections, nine statewide election contests included a black candidate and eight of these have been included by Dr. Handley in her expert report⁷. Dr. Handley only analyzes statewide election contests with one or more black candidates in her report. Including a mixture of statewide elections with and without a black candidate in the contest will allow a much deeper statistical analysis to see if voting trends by black and white voters change if there is a black candidate in the contest.

⁶ Election numbers 1-11 had only one democrat and one republican candidate in the election. Election number 12 (2022 Senate election) had several democrat and republican candidates in the election. In the analysis below, the votes of all democrat and republican candidates have been totaled for Election number 12 to obtain the votes cast for a democrat or republican candidates.

⁷ The statewide election with a black candidate included in my expert report and not included in Dr. Handley's report is the 2012 presidential election. The eight elections with a black candidate included in my expert report and also in Dr. Handley's report are Election Numbers 3, 5-9, 11-12 as identified in **Table 6**.

Table 6: Summary of 12 Statewide Elections For EI Analysis

Election Number	Election Date	Election For	Democrat Candidates	Republican Candidates	Other Candidates
1	11/6/2012	US President	Barack Obama	Mitt Romney	Several Candidates
2	11/21/2015	Governor of LA	John Bel Edwards	David Vitter	--
3	11/21/2015	Lt Governor of LA	Melvin Holden	William "Billy" Nungesser	--
4	11/8/2016	US President	Hillary Clinton	Donald Trump	Several Candidates
5	11/18/2017	Treasurer of LA	Derrick Edwards	John Schroder	--
6	12/8/2018	LA Secretary of State	"Gwen" Collins-Greenup	Kyle Ardoin	--
7	10/12/2019	Lt Governor of LA	Willie Jones	William "Billy" Nungesser	--
8	10/12/2019	Attorney General of LA	"Ike" Jackson, Jr.	"Jeff" Landry	--
9	11/16/2019	LA Secretary of State	"Gwen" Collins-Greenup	Kyle Ardoin	--
10	11/16/2019	Governor of LA	John Bel Edwards	"Eddie" Rispone	--
11	11/3/2020	US President	Joseph Biden	Donald Trump	Several Candidates
12	11/08/2022	US Senator	Gary Chambers, Jr. MV "Vinny" Mendoza "Luke" Mixon Salvador P. Rodriguez Syrita Steib	John Kennedy Devin Lance Graham	Several Candidates

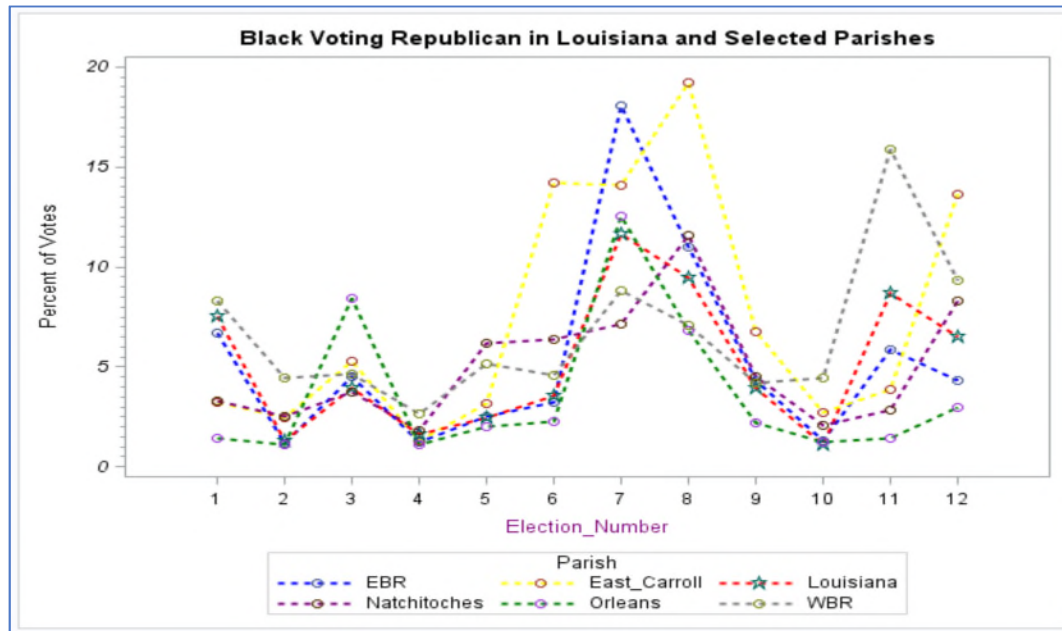
III.a. Estimates For Black Voters Voting for a Republican Candidate in Statewide Elections

23. In **Figure 5**, I have reported the EI estimates for black voters who voted for a republican candidate in the selected 12 statewide elections for selected parishes⁸ and also for the entire state of Louisiana.

24. From **Figure 5**, it is evident that while the majority of black voters do not vote for a republican candidate, there are a few exceptions. In three of the twelve election contests, election numbers 7, 8 and 11, there was a significant increase in the percentage of black voters voting for a republican candidate. These three elections had a black democrat candidate in the contest. Also, three parishes which have significantly larger percent of black voters voting for a republican candidate are East Baton Rouge, West Baton Rouge, and East Carroll parish. The complete EI estimates along with a confidence interval for the estimates is provided in Appendix 2.

⁸ The Parish "WBR" refers to West Baton Rouge parish and "EBR" refers to East Baton Rouge parish.

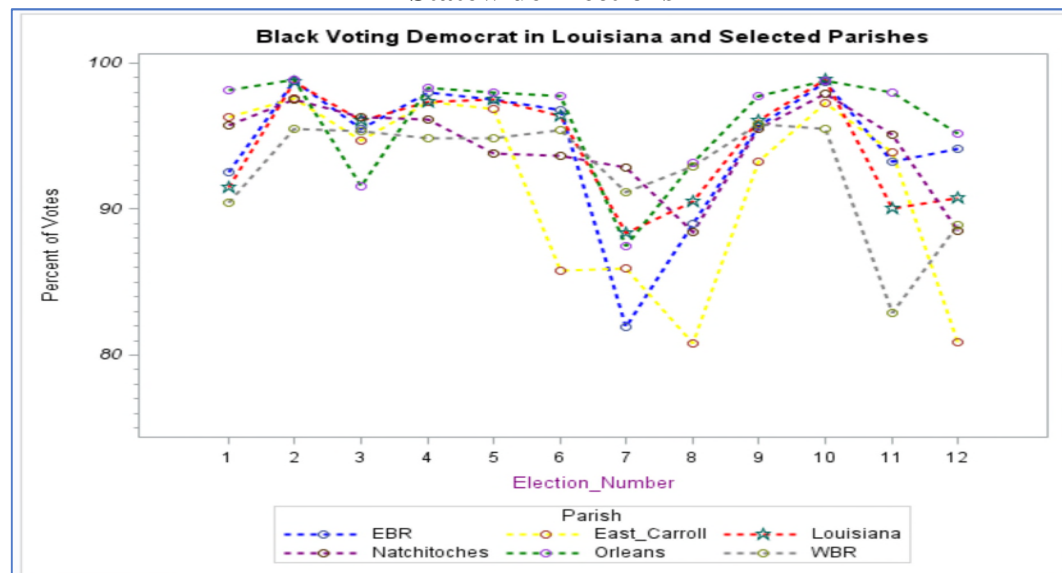
Figure 5: Black Voting Republican in Louisiana and Selected Parishes in 12 Statewide Elections



III.b. Estimates For Black Voters Voting for a Democrat Candidate in Statewide Elections

25. In **Figure 6**, I have reported the EI estimates for black voters who voted for a democrat candidate in the selected 12 statewide election contests for selected parishes and also for the entire state of Louisiana.

Figure 6: Black Voters Voting Democrat in Louisiana and Selected Parishes in 12 Statewide Elections

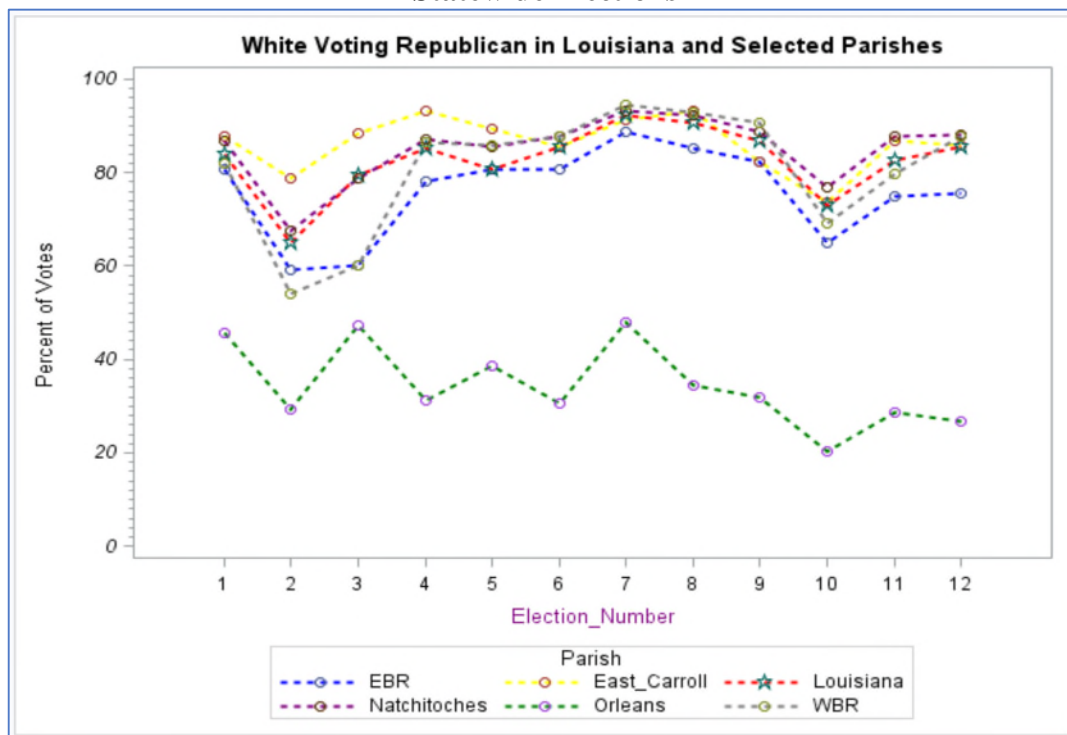


26. From **Figure 6**, it is evident that while the majority of black voters vote for a democrat candidate, there are exceptions such as election numbers 7, 8 and 11 for which there is a significant decrease in the percentage of black voters voting for a democratic candidate. These three elections had a black democrat candidate in the contest. Also, three parishes which have significantly lower percent of black voters voting for a democratic candidate are East Baton Rouge, West Baton Rouge, and East Carroll parish. The complete EI estimates along with a confidence interval for the estimates is provided in Appendix 3.

III.c. Estimates For White Voters Voting for a Republican Candidate in Statewide Elections

27. In **Figure 7**, I have reported the EI estimates for white voters who voted for a republican candidate in the selected 12 statewide elections for selected parishes and also for all of Louisiana.

Figure 7: White Voters Voting Republican in Louisiana and Selected Parishes in 12 Statewide Elections

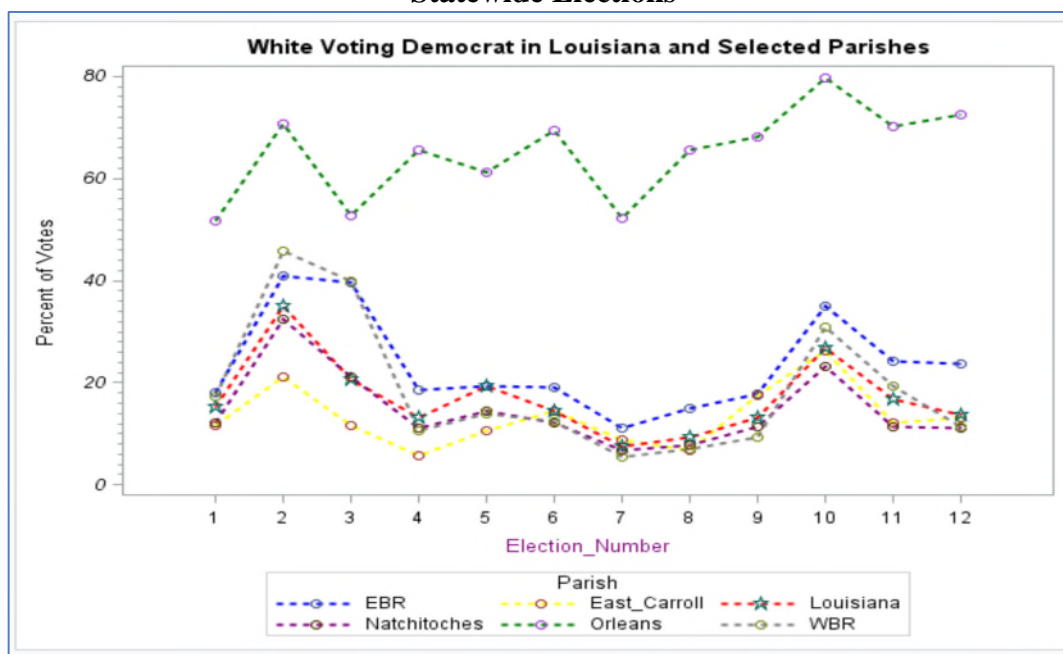


28. From **Figure 7**, it is evident that there is significant variation in the percentage of white voters voting for a republican candidate. Note that for Orleans parish, the percentage of white voters voting republican is consistently below 50% for all 12 statewide elections. For election number 10 (2019 Governors election) the percentage of white voters voting for the republican candidate was 20.2%. White voters in two other parishes, East Baton Rouge and West Baton Rouge, also seem to vote less for the republican candidates. The complete EI estimates along with a confidence interval for the estimates is provided in Appendix 4.

III.d. Estimates For White Voters Voting for a Democrat Candidate in Statewide Elections

29. In **Figure 8**, I have reported the EI estimates for white voters who voted for a democrat candidate in the selected 12 statewide elections for selected parishes and also for all of Louisiana.

Figure 8: White Voters Voting Democrat in Louisiana and Selected Parishes in 12 Statewide Elections



30. From **Figure 8**, it is evident that there is significant variation in the percentage of white voters voting for a democrat candidate. Note that for Orleans parish, the percentage of white voters voting democrat is consistently above 50% for all 12 statewide elections. White voters in two other parishes, East Baton Rouge and West Baton Rouge, also seem to vote significantly more for the democrat candidates. The complete EI estimates along with a confidence interval for the estimates is provided in Appendix 5.

IV: Analyzing Voting Patterns by Race Using Ecological Inference (EI) Modeling Within Selected Parishes

31. From **Figures 5-8**, one can note that there is significant variation from parish to parish in the percentage of white and black voters voting for a democrat or republican candidate. In fact, there is statistically significant negative voting polarization in Orleans parish under which the white voters have voted in favor of the democratic candidate regardless of whether or not there is a black candidate in the contest among the 12 statewide elections.

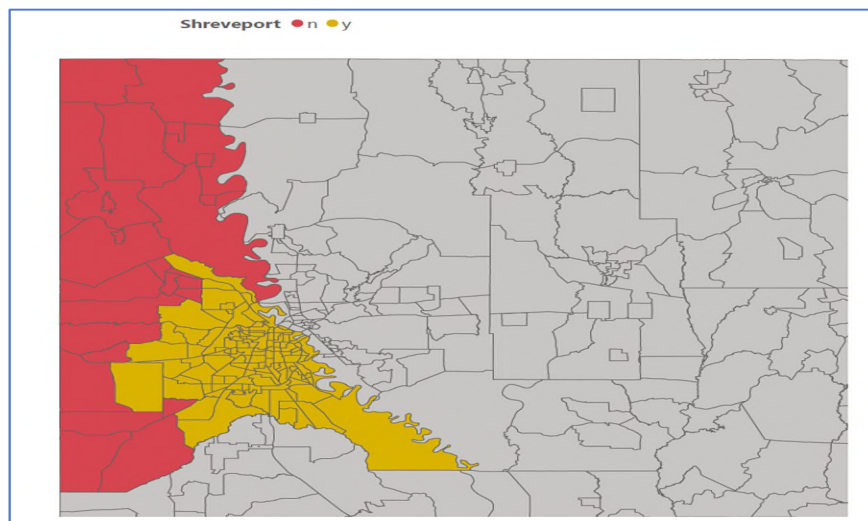
As noted above, white voters in two other parishes, East Baton Rouge and West Baton Rouge, also seem to vote significantly more for the democrat candidates. Next, in order to

understand the difference in voting patterns within the parishes and the potential impact of urbanization on how white and black voters vote, I have studied Caddo parish and several other parishes in this section.

IV.a.: Analyzing Voting Patterns by Race Using Ecological Inference (EI) Modeling in Caddo Parish

32. The precincts that are fully or partially identified as part of the city of Shreveport in the Caddo parish are marked as “y” below (and colored yellow)⁹. Next, I have used EI estimation techniques to study if the precincts that are part of the city of Shreveport vote differently in the 12 statewide elections outlined in **Table 6**.

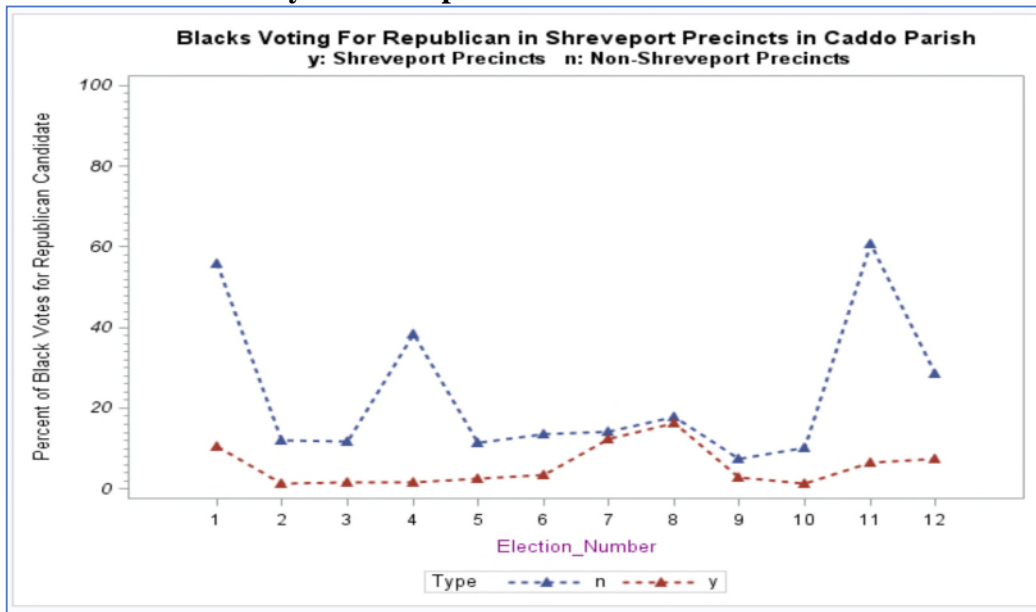
Figure 9: Precincts Map of Caddo Parish Depicting precincts in City of Shreveport



33. As seen below in **Figure 10**, black voters vote for republican candidates in much larger percentages for non-Shreveport precincts compared to Shreveport city-limit precincts in Caddo parish. Note that the majority of black voters in non-Shreveport precincts voted for a republican candidate in the presidential elections in 2012 and 2020, even though there was a black candidate in the contest. The EI estimates and associated confidence intervals are reported in Appendix 6.

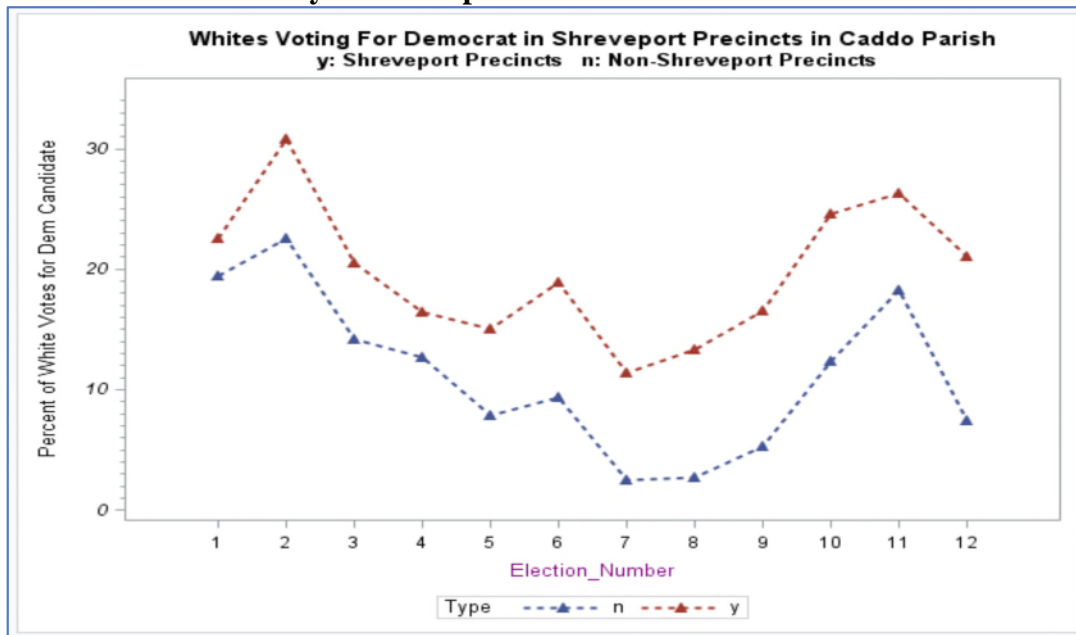
⁹ The website source that lists the city of Shreveport precincts and their addresses is <http://www.caddovoter.org/wp-content/uploads/2015/12/Precincts-SHV.pdf>

Figure 10: Estimates of blacks voting Republican in 12 statewide Elections in City of Shreveport Precincts and Outside



34. As depicted in **Figure 11**, white voters vote for a democrat candidate in significantly larger percentages for Shreveport city-limit precincts compared to non-Shreveport precincts in Caddo parish. The EI estimates and associated confidence intervals are reported in Appendix 6.

Figure 11: Estimates of White Voters Voting Democrat in 12 statewide Elections in City of Shreveport Precincts and Outside



This depicts the flaw in Dr. Handley's parish-wide equitable distribution analysis where she assumes all absentee and early voters are homogenous. In reality the voting patterns vary

significantly based on precinct location, which due to the number of districts Caddo is split into, in turn can impact the performance of the districts.

IV.b.: Analyzing Voting Patterns by Race Using Ecological Inference (EI) Modeling in Selected Parishes based on Population Density in Voting Districts (VTDs)

35. In this section, I have further investigated the issue of potential voter polarization in selected parishes based on the population density. This investigation was preliminarily supported by the parish wide EI estimates that have been reported earlier. Next, the EI estimates for white and black voters voting trends are reported based on the population density in the voting districts¹⁰.

IV.b.1: Potential Voter Polarization in EBR Parish

36. **Figure 12** depicts the percentage of white voters voting for a Republican candidate in two recent statewide elections in 2020 and 2022. The figure presents the percentage of voters by the minimum population density in the VTDs. For example, the percentages displayed for zero density includes all the VTDs in the parish regardless of population, and the percentages displayed for VTD of 300 includes all of the VTDs in the parish with a population density of 300 or more, and so on. In other words, the entry for minimum VTD zero is the baseline estimate for white voters voting for republican candidates in the two reported elections. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 7.

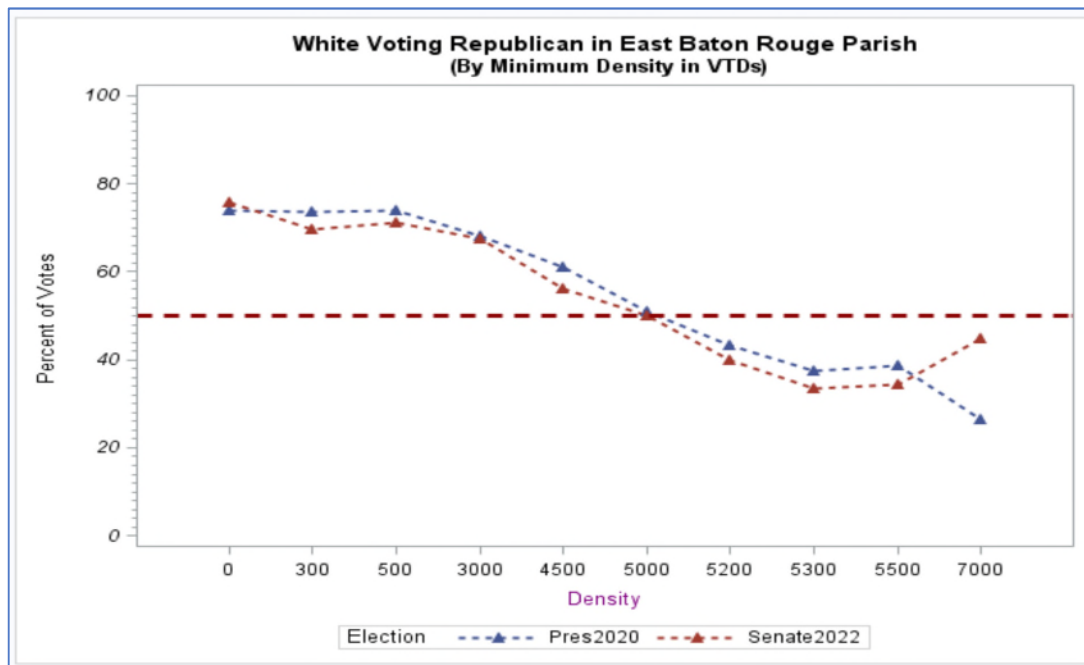
37. From **Figure 12** and Appendix 7, the following conclusions can be drawn:

(i). For the entire parish of East Baton Rouge, 73.9% of white voters voted for a republican candidate in the 2020 presidential election and 75.7% of white voters voted for a republican candidate in the 2022 senate elections.

(ii). The percentage of white voters who voted for a republican candidate in the 2020 presidential election and in 2022 senate elections steadily decreases when restricted to the VTDs that are more densely populated. For both the 2020 and 2022 statewide elections, when restricted to VTDs with a minimum density of 5000, the white voters voted for a republican candidate less than 50 percent. In other words, as the VTDs density crosses 5000, the estimates reflect a negative polarization by the white voters to defeat the republican candidates.

¹⁰ Since the voter level data for the elections on the SOS website is available for precincts, the EI estimates reported below required matching VTDs to precincts and totaling of the candidate votes by VTDs in order to match the population density data. For Caddo parish's 2022 senate elections, precinct 159 was absorbed by precincts 122, 163, and 165. In order, to match the VTDs for the 2020 and 2022 elections in Caddo parish, the precinct-level votes for the 2020 election have been equally divided into these three precincts. There were a total of 900 votes cast on election day in precinct 159 in 2020 presidential elections.

Figure 12: Estimates for White Voters Voting for a Republican Candidates in Statewide Elections in East Baton Rouge Parish in 2020 and 2022



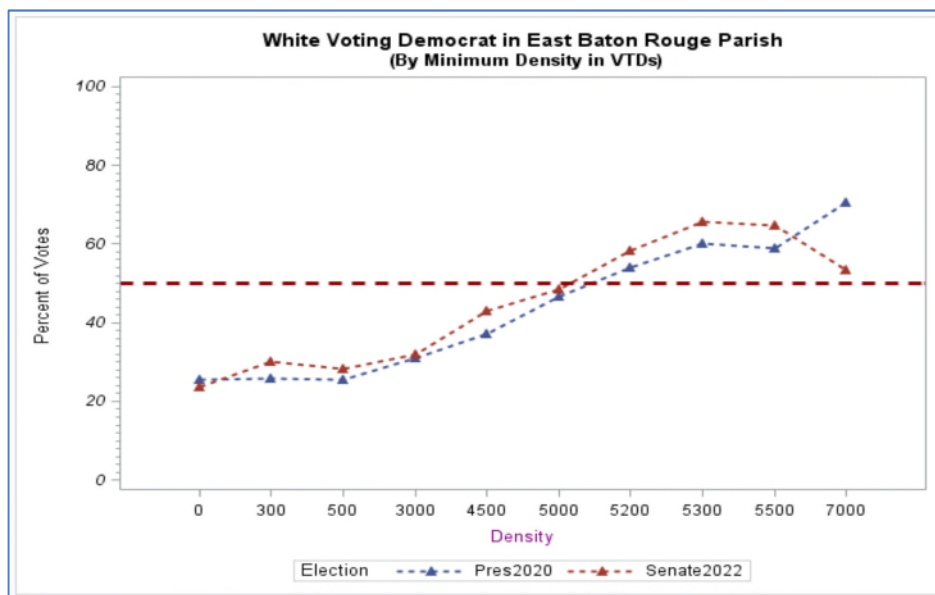
38. **Figure 13** depicts the percentage of white voters voting for democrat candidates in two recent statewide elections in 2020 and 2022. As above, the figure presents the percentage of voters by the minimum population density in the VTDs with the percentages displayed for zero density including all of the VTDs in the parish, regardless of density, and the percentages displayed for VTDs of 300 includes all the VTDs in the parish with a density of 300 or more, and so on. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 7.

39. From **Figure 13** and Appendix 7, the following conclusions can be drawn:

(i). For the entire parish of East Baton Rouge, 25.4% of white voters voted for a democrat candidate in the 2020 presidential election and 23.7% of white voters voted for a democrat candidate in the 2022 senate elections.

(ii). The percentage of whites who voted for a democrat candidate in the 2020 presidential election and in the 2022 senate elections steadily increases when restricted to the VTDs that are more densely populated. For both the statewide elections, when restricted to VTDs with a minimum density of 5000, the white voters vote for a democrat candidate more than 50 percent. In other words, as the VTDs' densities cross 5000, the EI estimates reflect a negative polarization by white voters to defeat the republican candidates and instead support the democrat candidates.

Figure 13: Estimates for White Voters Voting for a Democrat Candidates in Statewide Elections in East Baton Rouge Parish in 2020 and 2022



IV.b.2: Potential Voter Polarization in Caddo Parish

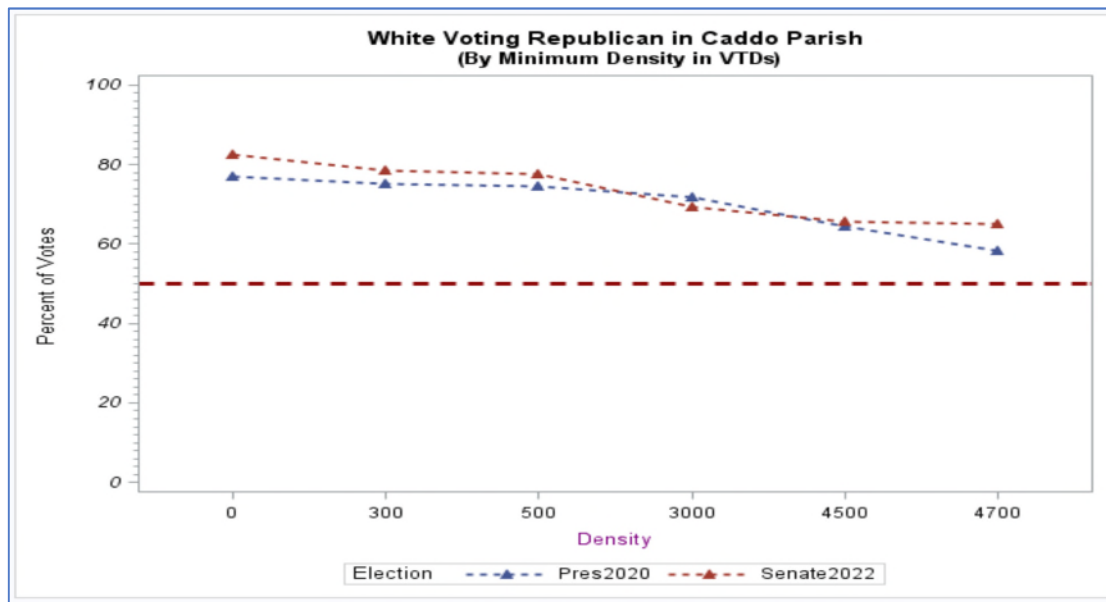
40. **Figure 14** depicts the percentage of white voters voting for a republican candidate in two recent statewide elections in 2020 and 2022 in Caddo parish. The figure presents the percentage of voters by the minimum population density in the VTDs with the percentages displayed for zero density including all of the white voters who voted for a republican candidate in the two reported elections in all of the VTDs in the parish, regardless of density, and the percentages displayed for VTDs of 300 includes all the VTDs in the parish with a density of 300 or more, and so on. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 8.

41. From **Figure 14** and Appendix 8, the following conclusions can be drawn:

(i). For the entire Caddo parish, 76.9% of white voters voted for a republican candidate in the 2020 presidential election and 82.5% of white voters voted for a Republican in the 2022 senate elections.

(ii). The percentage of whites voted for a republican candidate in the 2020 presidential election and in the 2022 senate elections steadily decreases when restricted to the VTDs that are more densely populated. For both the 2020 and 2022 statewide elections, when restricted to VTDs with a minimum density of 4700, the white voters voted for a republication candidate just more than 50 percent, that is, 58.4% in 2020 and 64.9% in the 2022 elections.

Figure 14: Estimates for White Voters Voting for a Republican Candidates in Statewide Elections in Caddo Parish in 2020 and 2022



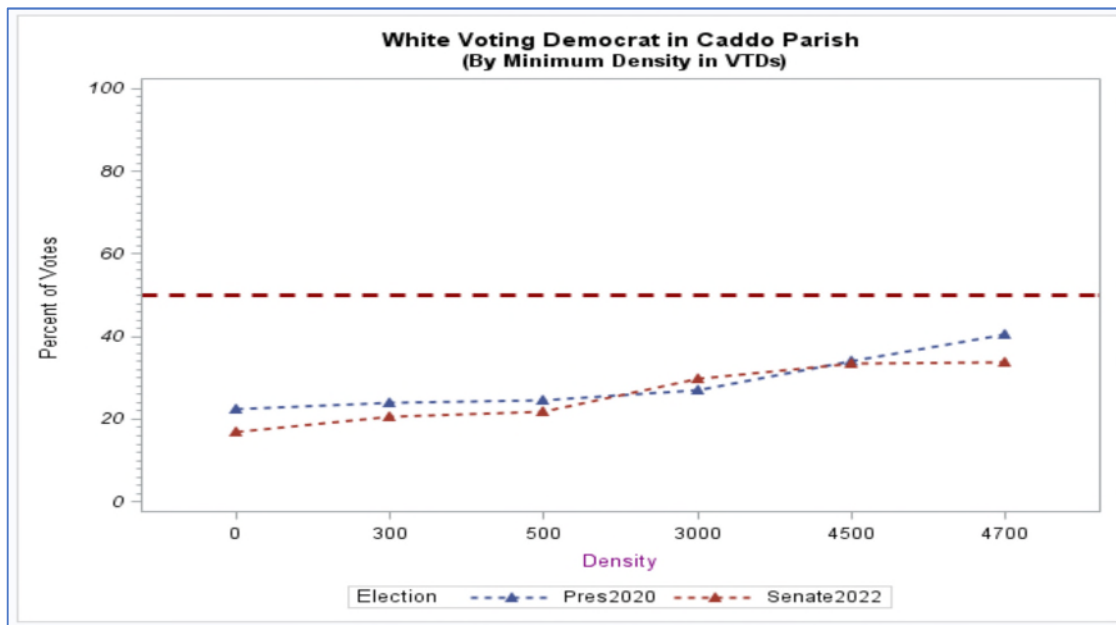
42. **Figure 15** depicts the percentage of white voters voting for a democrat candidate in two recent statewide elections in 2020 and 2022 in Caddo parish. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 8.

43. From **Figure 15** and Appendix 8, the following conclusions can be drawn:

(i). For the entire Caddo parish, 22.5% of white voters voted for a democrat candidate in the 2020 presidential elections and 16.9% of white voters voted for a democrat candidate in the 2022 senate elections.

(ii). The percentage of white voters who voted for a democrat candidate in the 2020 presidential election and in the 2022 senate elections steadily increases when restricted to the VTDs that are more densely populated. For both the 2020 and 2022 statewide elections, when restricted to VTDs with a minimum density of 4700, the white voters voted for a democrat candidate just below the 50%, that is, 40.6% in 2020 and 33.9% in 2022 elections.

Figure 15: Estimates for White Voters Voting for a Democrat Candidates in Statewide Elections in Caddo Parish in 2020 and 2022



IV.b.3: Potential Voter Polarization in Iberville Parish

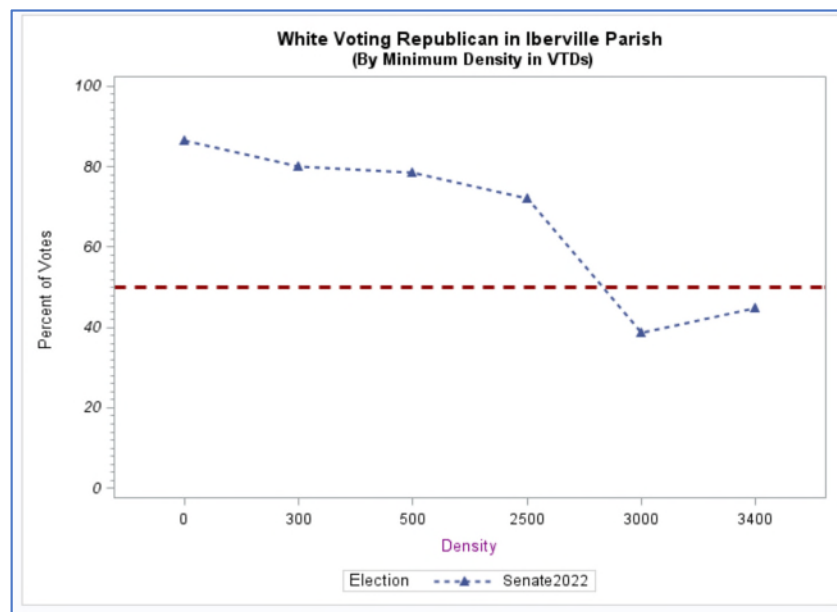
44. **Figure 16** depicts the percentage of white voters voting for a republican candidate in recent statewide elections in 2022 in Iberville parish. As before, with the percentages displayed for zero density including all of the white voters who voted for a republican candidate in all of the VTDs in Iberville parish, regardless of density, and the percentages displayed for VTDs of 300 includes all the VTDs in the parish with a density of 300 or more, and so on. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 9.

45. From **Figure 16** and Appendix 9, the following conclusions can be drawn:

(i). For the entire Iberville parish, 86.6% of white voters voted for a republican candidate in the 2022 senate election.

(ii). The percentage of white voters who voted for a republican candidate in the 2022 senate election steadily decreases when restricted to the VTDs that are more densely populated. In particular, when restricted to VTDs with a minimum density of 3300, the white voters voted for a republican candidate less than 50%, that is, 38.8% in 2022.

Figure 16: Estimates for White Voters Voting for a Republican Candidates in Statewide Elections in Iberville Parish in 2022



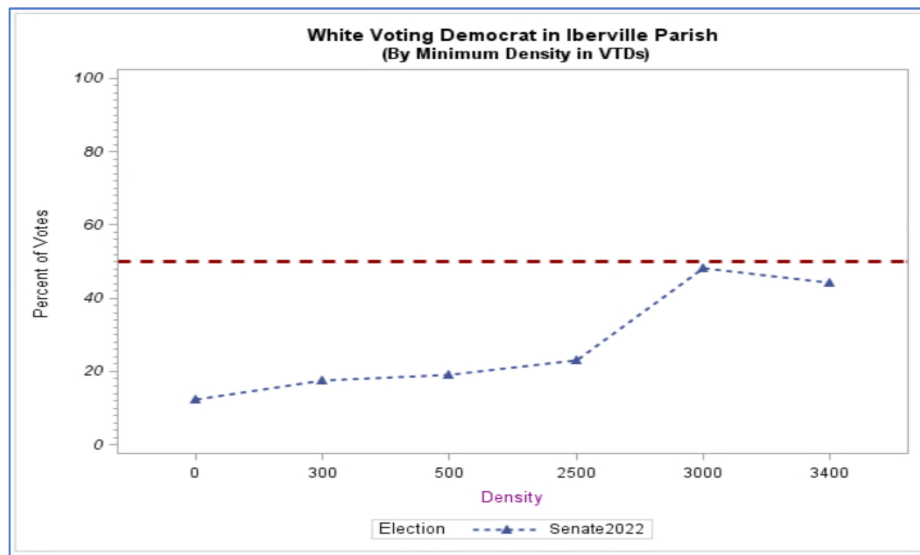
46. **Figure 17** depicts the percentage of white voters voting for a democrat candidate in a recent statewide election in 2022 in Iberville parish. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 9.

47. From **Figure 17** and Appendix 9, the following conclusions can be drawn:

(i). For the entire Iberville parish, 12.3% of white voters voted for a democrat candidate in 2022 senate election.

(ii). The percentage of white voters who voted for a democrat candidate in the 2022 senate election steadily increases when restricted to the VTDs that are more densely populated. In particular, when restricted to VTDs with a minimum density of 3300, the white voters voted for a democrat candidate just under 50 percent, that is, 48.1% in 2022.

Figure 17: Estimates for White Voters Voting for a Democrat Candidates in Statewide Elections in Iberville Parish in 2022



IV.b.4: Potential Voter Polarization in Pointe Coupee Parish

48. **Figure 18** depicts the percentage of white voters voting for a republican candidate in a recent statewide election in 2022 in Pointe Coupee parish. As before, with the percentages displayed for zero density including all of the white voters who voted for a republican candidate in all of the VTDs in Pointe Coupee parish, regardless of density, and the percentages displayed for VTDs of 300 includes all the VTDs in the parish with a density of 300 or more, and so on. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 10.

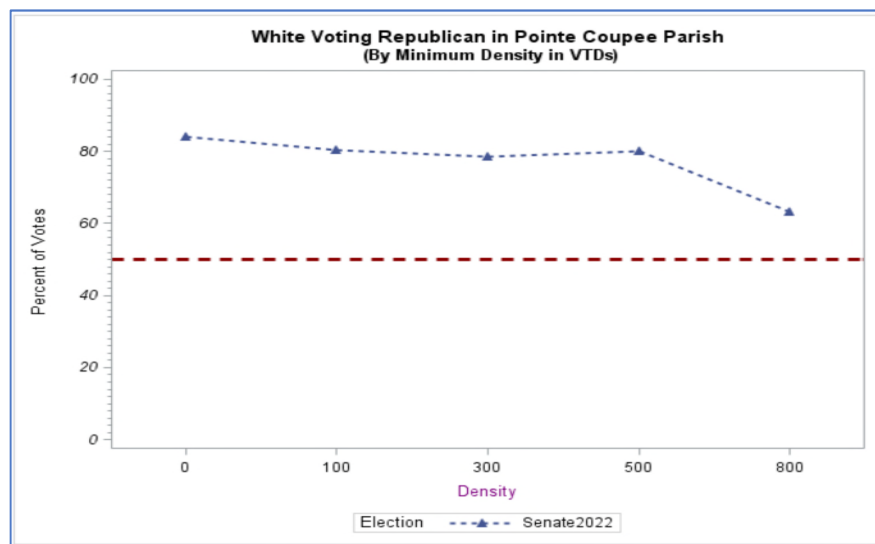
49. From **Figure 18** and Appendix 10, the following conclusions can be drawn:

(i). For the entire Pointe Coupee parish, 84.1% of white voters voted for a republican candidate in the 2022 senate election.

(ii). The percentage of white voters who voted for a republican candidate in the 2022 senate election steadily decreases when restricted to the VTDs that are more densely populated. In particular, when restricted to VTDs with a minimum density of 800¹¹, white voters vote for a republican candidate 63.2% in 2022.

¹¹ In Pointe Coupee parish there are only two VTDs with a density of over 800.

Figure 18: Estimates for White Voters Voting for a Republican Candidate in Statewide Elections in Pointe Coupee Parish in 2022

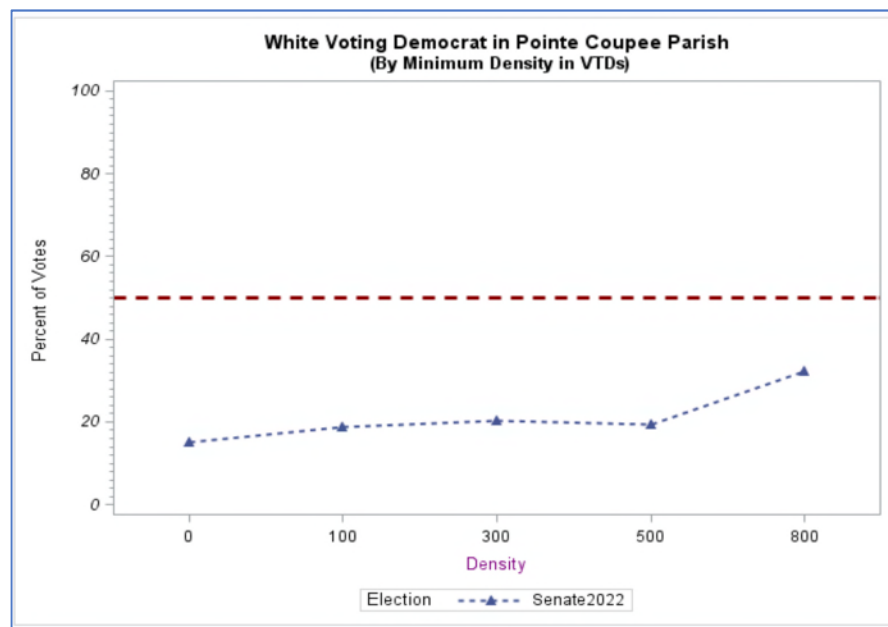


50. **Figure 19** depicts the percentage of white voters voting for a democrat candidate in recent statewide elections in 2022 in Pointe Coupee parish. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 10.

51. From **Figure 19** and Appendix 10, the following conclusions can be drawn:

- (i). For the entire Pointe Coupee parish, 15.1% of white voters voted for a democrat candidate in the 2022 senate election.
- (ii). The percentage of white voters who voted for a democrat candidate in 2022 senate election steadily increases when restricted to the VTDs that are more densely populated. In particular, when restricted to VTDs with a minimum density of 800, white voters vote for a democrat candidate 32.1% in 2022.

Figure 19: Estimates for White Voters Voting for Democrat Candidates in Statewide Elections in Pointe Coupee Parish in 2022



V: Summary of Conclusions

52. After reviewing the voting data for Louisiana, in my opinion, the following conclusions can be drawn:

1. After reviewing the registered voters for the 12 statewide election dates from 2012 to 2022, the following trends are noted:

i. There were 20.8% more registered democrats than registered republicans in 2012, and this excess has steadily reduced from 2012 to 2022. In 2022, there were only 6.2% more registered democrats than registered republicans.

ii. In 2012 there were 375,595 more registered democrats than registered republicans who voted during the elections. However, in 2022 there were 42,118 fewer democrats than republicans who voted during the elections. A drop of 111.2 % in excess democrats from 2012 to 2022.

iii. The number of white voters registered as democrats has steadily decreased from 2012 to 2022. In 2012, 22.2% of all registered voters were white democrats, whereas in 2022, the number of white voters registered as democrats decreased to 14.0%. This equals a drop of 36.9 percentage points in white voters registered as democrats from 2012 to 2022.

iv. The number of white voters registered as republicans has steadily increased from 2012 to 2022. In 2012, 25.6% of all registered voters were white republicans, whereas in 2022, this increased to 31.3%. This equals an increase of 22.3 percentage points in white voters registered as republicans from 2012 to 2022.

v. The number of white voters registered as democrats who actually voted has steadily decreased from 2012 to 2022. In 2012, 22.6% of voters who voted were white democrats, whereas in 2022, this decreased to 15.8%. This equals a drop of 30.1 percentage points from 2012 to 2022.

vi. The number of white voters registered as republicans who actually voted has steadily increased from 2012 to 2022. In 2012, 29.3% of voters who voted were white registered republicans, whereas in 2022, this increased to 40.2%. This equals an increase of 37.2 percentage points from 2012 to 2022.

2. Based on the EI analysis of voting patterns, it is evident that there is significant variation in the percentage of white voters voting for a democrat candidate from parish to parish. In particular, for the Orleans parish, the percentage of white voters voting democrat is consistently above 50% for all the 12 statewide elections. White voters in two other parishes, East Baton Rouge and West Baton Rouge, also seem to vote significantly more for the democratic candidates.

3. The EI estimates in Dr. Handley's report providing voter polarization estimates in parishes and regions (combining several parishes) provide an incomplete and misleading conclusion of voter polarizations. This is so because assuming white or black voters across an entire parish or a region vote as a block to defeat democrat candidates is an incorrect assumption. Dr. Handley has made no attempt in her report to investigate this assumption. For example, Dr. Handley's EI estimates for voter polarization considers the parishes of East Baton Rouge, West Baton Rouge, Iberville, and Pointe Coupee together (referred to as the Area of Interest 3). As we have seen, these Parishes, have different voting patterns, and sometimes different areas within the same parish vote differently.

As explained in this report, the EI estimates for the entire parish are presented by minimum density in VTD of zero in this report and different areas within the same parish are studied as well by pooling VTDs with certain minimum population density values.

4. The EI estimates reported for the two recent statewide elections, the presidential election in 2020 and the senate election in 2022, show a rather drastic difference in voting patterns of white voters in voting for a republican or a democrat candidate as the population density in the VTD increases. In particular the following comments summarize the key findings:

- i. East Baton Rouge Parish: While for the entire parish of East Baton Rouge 73.9% percent of white voters voted for a republican candidate in the 2020 presidential election and 75.7% of white voters voted for a republican candidate in the 2022 senate elections, the percentage of white voters voting for a republican candidate in the 2020 presidential

election and in the 2022 senate elections steadily decreases when restricted to the VTDs that are more densely populated. For both the statewide elections, when restricted to VTDs with a minimum density of 5000, the white voters voted for a republican candidate less than 50%. In other words, as the VTDs' population densities cross 5000, the estimates reflect a negative polarization by the white voters to defeat the republican candidates and instead vote for democrat candidates.

ii. Caddo Parish: While for the entire Caddo parish, 22.5% of white voters voted for a democrat candidate in the 2020 presidential elections and 16.9% of white voters voted for a democrat candidate in the 2022 senate elections, the percentage of white voters who voted for a democrat candidate in the 2020 presidential election and in the 2022 senate elections steadily increases when restricted to the VTDs that are more densely populated. For both the statewide elections, when restricted to VTDs with a minimum density of 4700, the white voters voted for a democrat candidate just below 50%, that is, 40.6% in 2020 and 33.9% in the 2022 elections.

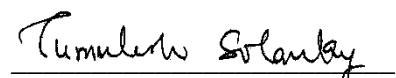
iii. Iberville Parish: While for the entire Iberville parish, 12.3% of white voters voted for a democrat candidate in the 2022 senate election, the percentage of white voters who voted for a democrat candidate steadily increases when restricted to the VTDs that are more densely populated. In particular, when restricted to VTDs with a minimum density of 3300, the white voters voted for a democrat candidate just under 50%, that is, 48.1%. This represents an increase of 291 percentage points.

iv. Pointe Coupee Parish: While for the entire Pointe Coupee parish, 15.1% of white voters voted for a democrat candidate in the 2022 senate election, the percentage of whites who voted for a democrat candidate in 2022 senate election steadily increases when restricted to the VTDs that are more densely populated. In particular, when restricted to VTDs with a minimum density of 800, the white voters voted for a democrat candidate 32.1 percent. This represents an increase of 113 percentage points.

5. The trend of increase in white voters voting for a democratic candidate as the population density increases is also evident in Caddo parish as the precincts that are part of the city of Shreveport exhibit significant increases in white voters voting for a democrat candidate compared to non city of Shreveport precincts. This trend was observed for all the 12 statewide elections. Additionally, black voters exhibit a trend of voting for republican candidates in non city of Shreveport parishes.

6. Due to the time constraints, I did not have adequate time to complete a detailed review of Plaintiffs' files/datasets/programs. With more time, I would have completed the review and would have included statistical analysis for more statewide elections in Louisiana and associated voter polarization studies in additional parishes based on population density composition of the parishes.

53. Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct. Executed on this 28th day of July 2023, in Innsbruck, Austria.


Tumulesh K. S. Solanky, PhD

APPENDIX 1

(CV OF TUMULESH K. S. SOLANKY)

ADDRESS:

Home: 4717 Rue Laurent, Metairie, LA 70002.

Cell Phone: (504) 427-0188

Email: tsolanky@gmail.com

Citizenship: USA

EDUCATION:

Ph.D. in Statistics University of Connecticut, 1990

M.Sc. in Mathematics Indian Institute Of Technology, New Delhi, India, 1987

B.Sc. in Mathematics (Honors) University of Delhi, India, 1985

EMPLOYMENT AND POSITIONS:

August 2008-present	Professor and Chair of the Mathematics Department
2021- present	The University of Louisiana System Foundation and Michael and Judith Russell Professor in Data/Computational Sciences
2001- 2008	Professor of Mathematics, University of New Orleans
1995-2001	Associate Professor of Mathematics, University of New Orleans
1996-1997	Visiting Associate Professor, University of Toronto (On Sabbatical Leave)
1990-1995	Assistant Professor of Mathematics, University of New Orleans
1989-1990	Lecturer of Statistics, University of Connecticut

MAJOR AWARDS

(i). Seraphia D. Leyda University Teaching Fellow, Awarded in year 2009.

(ii). Cooper R. Macklin Medallion, Awarded in year 2018. Cooper R. Macklin Medallion is awarded to a faculty or staff member who has made outstanding contributions in support of the University's mission. The recipient is an individual who has demonstrated excellent, sustained, and selfless service to the university.

MAJOR STATISTICAL CONSULTING EXPERIENCE:

41. Louisiana Organ Procurement Agency (LOPA) and Mid-America Transplant Services (MOMA), St Louis, MO; Assisted LOPA and MOMA with statistical analysis related to organ procurement data in Louisiana and Missouri.

Duration: August 2021— present.

Extent of Involvement: Submitted several internal reports.

40. PRESS ROBINSON, et al., v. KYLE ARDOIN, in his official capacity as Secretary of State for Louisiana, consolidated with EDWARD GALMON, SR., et al.; CIVIL ACTION NO. 3:22-CV-00211-SDD-SDJ consolidated with NO. 3:22-CV-00214-SDD-SDJ;

Duration: May 2022— June 2022.

Extent of Involvement: Submitted two expert reports; Testified in Court.

39. Robert Mark Turner v. Go Auto Insurance Company, Suit Number: 678,933; Division: "25"; Assisted Go Auto Insurance Company with statistical analysis of claims data.

Duration: May 2021— October 2021.

Extent of Involvement: Submitted expert report; Deposed.

38. UNITED STATES OF AMERICA v. LOUIS AGE, JR., et al., NO. 2:16-CR-00032; Assisted the Clerk of Court for the Eastern District of Louisiana (EDLA) by reviewing and analyzing the jury selection process from the 13 parishes in EDLA.

Duration: April 2020—June 2021.

Extent of Involvement: Submitted expert report.

37. Jackson Women's Health Organization v. Dobbs, No. 3:18-cv-00171 (S.D. Mississippi);

Duration: April 2020--.

Extent of Involvement: Submitted expert report; Deposed.

36. Planned Parenthood Arizona Incorporated, et al., v. Mark Brnovich, et al., Case No. CV-19-00207-TUC-JGZ (U.S. District Court for the District of Arizona);

Duration: May 2020- August 2020.

Extent of Involvement: Submitted expert report.

35. STATE OF LOUISIANA v. MELVIN CARTEZ MAXIE (NUMBER: 13-CR-072522), IITH JUDICIAL DISTRICT COURT, SABINE PARISH, LOUISIANA;

Duration: June 2019- November 2019.

Extent of Involvement: Statistical Work; Submitted Trial Exhibits.

34. LITTLE ROCK FAMILY PLANNING SERVICES, et al., v. LESLIE RUTLEDGE, et al.;

Duration: June 2019- August 2019.

Extent of Involvement: Submitted two expert reports; Testified in Court.

33. 19th Judicial District Court, Parish of East Baton Rouge, State of Louisiana; City of Walker, et al. versus State of Louisiana through the Department of Transportation and Development, et al.;

Duration: March 2018- March 2019.

Extent of Involvement: Submitted one expert report; Testified in Court.

32. PLANNED PARENTHOOD OF ARKANSAS & EASTERN OKLAHOMA, d/b/a PLANNED PARENTHOOD GREAT PLAINS and STEPHANIE HO, M.D., on behalf of themselves and their patients, v LARRY JEGLEY, Prosecuting Attorney for Pulaski County, in his official capacity, his agents and successors; MATT DURRETT, Prosecuting Attorney for Washington County, in his official capacity, his agents and successors;

Duration: June 2018- December 2018.

Extent of Involvement: Submitted one expert report; Testified in Court.

31. UNITED STATES DISTRICT COURT, WESTERN DISTRICT OF MISSOURI, CENTRAL DIVISION, COMPREHENSIVE HEALTH OF PLANNED PARENTHOOD GREAT PLAINS, et al. v. RANDALL W.

WILLIAMS, MD, in his official capacity as Director of the Missouri Department of Health and Senior Services, et al.;

Duration: January 2018- November 2019.

Extent of Involvement: Submitted two expert reports; Deposed.

30. UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF TEXAS, HOUSTON DIVISION, REBA CARTER, et. al., v. HOUSTON INDEPENDENT SCHOOL DISTRICT;

Duration: June 2017- April 2018.

Extent of Involvement: Submitted expert report.

29. CIVIL DISTRICT COURT FOR THE PARISH OF ORLEANS, STATE OF LOUISIANA, HG NEW ORLEANS RETAILERS JOINT VENTURE vs. THE CITY OF NEW ORLEANS by and through THE NEW ORLEANS AVIATION BOARD;

Duration: July 2017- August 2017.

Extent of Involvement: Submitted expert report.

28. UNITED STATES DISTRICT COURT, EASTERN DISTRICT OF LOUISIANA, UNITED STATES of AMERICA v. HENRY EVANS, M.D., MICHAEL JONES, M.D., SHELTON BARNES, M.D., GREGORY MOLDEN, M.D., PAULA JONES, JONATHON NORA;

Duration: September 2016- May 2017.

Extent of Involvement: Testified in Court.

27. UNITED STATES DISTRICT COURT, WESTERN DISTRICT OF MISSOURI, CENTRAL DIVISION, COMPREHENSIVE HEALTH OF PLANNED PARENTHOOD GREAT PLAINS, et al. v. PETER LYSKOWSKI, in his official capacity as Director of the Missouri Department of Health and Senior Services, et al.;
Duration: January 2017- August 2017.
Extent of Involvement: Submitted two expert reports.

26. UNITED STATES of AMERICA v. RODNEY HESSON, ET AL, DISTRICT COURT, EASTERN DISTRICT OF LOUISIANA;
Duration: August 2016- January 2017.
Extent of Involvement: Submitted reports/Trail Exhibits.

25. UNITED STATES DISTRICT COURT, EASTERN DISTRICT OF ARKANSAS WESTERN DIVISION PLANNED PARENTHOOD ARKANSAS & EASTERN OKLAHOMA, d/b/a PLANNED PARENTHOOD OF THE HEARTLAND; and STEPHANIE HO, M.D. v. LARRY JEGLEY, Prosecuting Attorney for Pulaski County, in his official capacity and MATT DURRETT, Prosecuting Attorney for Washington County;
Duration: December 2015- February 2016.
Extent of Involvement: Submitted expert report.

24. UNITED STATES DISTRICT COURT, MIDDLE DISTRICT OF LOUISIANA, JUNE MEDICAL SERVICES, LLC, ET AL., KATHY KLIEBERT, ET AL;
Duration: October 2014- August 2016.
Extent of Involvement: Submitted expert report; Deposed; Testified in Court.

23. United States District Court, Middle District of Louisiana, Albert Woodfox v. BURL CAIN, *Warden of the Louisiana State Penitentiary*, ET AL., Civil Action; Assisted the Office of the Attorney General of Louisiana related to a jury selection matter.
Duration: September 2011- August 2013.
Extent of Involvement: Submitted two expert reports; Deposed; Testified in Court.

22. United States District Court EDLA, U.S. v. Khlgatian, et al, Criminal Docket Number 11-105 "I"; Assisted a federal agency and the Office of the AUSA; sampling of the patient charts; statistical comparisons with peers.
Duration: February 2012- December 2012.
Extent of Involvement: Submitted two expert reports.

21. United States District Court, Eastern District of Louisiana, Diamond Young, et al. v. United States of America, C.A. No. 11-2438, Section "H" (5); Civil Action;
Duration: April 2012- December 2012.
Extent of Involvement: Submitted an expert report.

20. Statistical Consultant: Textron Marine & Land Systems; Provided statistical expertise related to product reliability/testing/sampling and quality control;
Duration: September 2010- January 2011.
Extent of Involvement: Submitted an expert report.

19. United States District Court, St. Tammany Parish Hospital. vs. Ace American Ins. Co. and Trinity Marine Products, Inc. (and several other related cases); Civil Action;
Duration: March 2010- March 2012.
Extent of Involvement: Submitted over ten expert reports; Deposed.

18. United States District Court, Eastern District of Louisiana, Malcolm Louis LeBlanc, et al. vs. Chevron USA Inc., et al.; Civil Action;
Duration: October 2008- July 2010.
Extent of Involvement: Submitted an expert report; Deposed.

17. United States District Court, 27th Judicial District, Opelousas, Charles C. Foti, Jr., et al. vs. Janssen Pharmaceutica, et al.; Civil Action; Served as the *court appointed Statistical Expert* to assist the court in a complex litigation matter.

Duration: August 2008- July 2010.

16. GCR, New Orleans and Barrios, Kingsdorf & Casteix, L.L.P.; *Statistical Consultant*; Provided statistical expertise to GCR in statistical analysis of CDW related matter;

Duration: January 2010- March 2010.

Extent of Involvement: Submitted expert report.

15. United States District Court, 24th Judicial District, Parish of Jefferson, Warren Lester, et al. vs. Exxon Mobil Corporation, et al.; Civil Action;

Duration: March 2008- May 2010;

Extent of Involvement: Assisted the attorneys and other experts; Submitted expert reports; Deposed twice.

14. Medicare Matter. Contact persons: Charles Taylor and Jacqueline Griffith (Chehardy, Sherman, Ellis, Murray, Recile, Griffith, Stakelum & Hayes, L.L.P.

Duration: October 2009- December 2009.

Extent of Involvement: Submitted an expert report; Testified in Court (via Video Conference).

13. United States District Court, St. Bernard Parish, Mumphrey v. Chalmette Medical Center; Civil Action;

Duration: October 2008- November 2008.

Extent of Involvement: Submitted an expert report; Deposed; Testified in Court.

12. GCR, New Orleans; *Statistical Consultant*; Provided statistical expertise to GCR in designing polls & analyzing the poll results for the state elections in 2007;

Duration: May 2007- October 2007.

11. United States District Court, 19th Judicial District, Parish of East Baton Rouge, Patrick J. Cunningham, et al. vs. IBM Corp.; Civil Action;

Duration: December 2006- August 2007;

Extent of Involvement: Assisted the attorneys and other experts; wrote over 25 internal reports related to statistical computations and interpretation of results.

10. UNITED STATES DISTRICT COURT, EASTERN DISTRICT OF LOUISIANA; Provided statistical expertise in a jury selection matter; Wrote an expert report/Affidavit; Attorney, Eastern District of Louisiana.

Duration: May 2006- August 2006;

9. United States District Court, Eastern District of Texas, June Pryor Avance, et al. vs. Kerr-McGee Chemical LLC; Civil Action; *Statistical Expert*; Wrote three expert reports/Affidavits on statistical projections;

Duration: January 2005- July 2007;

Extent of Involvement: Deposed.

8. United States District Court, Down South Entertainment versus SMG; Civil Action; *Statistical estimation of crowd for Easter Jam*; Wrote three expert reports on statistical projections and the reliability of projections;

Duration: December 2003- May 2005;

Extent of Involvement: Deposed twice and testified in court.

7. Naval Oceanographic Center (US Navy), Mississippi; *statistical guidance to update their methods of data collection and data storage, statistical algorithms to discard the noise and save only the relevant data*. Duration: May 1998- March 2002.

6. United States District Court, Bank of Louisiana versus Kenwin Shops Inc.; Civil Action; *Wrote two expert reports on statistical analysis related to Bankruptcy of a BOL's client*;

Duration: May 1999- December 1999; Extent of Involvement: Deposed.

5. Jefferson Parish Public Schools; *As the statistician for the court appointed expert witness*: designed a survey of schools under Jefferson Parish Public Schools, assisted in statistical projections reported to the court.

Duration: August 1998- January 1999.

4. Lifemark Hospitals of Louisiana (Kenner Regional Medical Center); *Statistical sampling of patient charts*; Wrote three expert reports on statistical analysis/ sampling of the patient charts;
Duration: August 1996 – August 1997; Extent of Involvement: Deposed.

3. KPMG New Orleans; *Sample size determination, Designed and Analyzed samples of patient charts/drug usage to estimate total drug cost for the Tenet group of Hospitals/Lifemark Hospitals*; Wrote two expert reports on statistical analysis;
Duration: August 1994 – December 1995.

2. USDA, Department of Forestry, Louisiana: *Statistical assistance to USDA in data collection, designing and modeling*, Models used: Time-Series Models (for forecasting; Both Time Domain--ARIMA MODELS-- and Frequency Domain models).
Duration: August 1991- December 1994.

1. NASA Stennis Space Center, Mississippi: *Statistical Design and Analysis of the Rocket Seal Configuration Tester*, assisted NASA with the statistical issues related to the design of experiments and performance evaluation of the rocket seals.
Duration: August 1994-December 1995.

CURRENT EDITORIAL SERVICE:

- Associate Editor: AJMMS (American Journal of Mathematical and Management Sciences), 2012-present.
- Associate Editor: Sequential Analysis, 2003-present.
- Associate Editor: Journal of Combinatorics, Information and System Sciences, 2003-present.
- Associate Editor: Journal of the Indian Society of Agricultural Statistics, 2009-present.

SCHOLARLY/PROFESSIONAL ACTIVITIES:

- President, Louisiana Chapter of American Statistical Association: 1994-1995.
- Vice-President, Louisiana Chapter of American Statistical Association: 1993-1994.
- Secretary, Louisiana Chapter of American Statistical Association: 1995-1996.
- Reviewer: Journal of Statistical Planning and Inference, Sequential Analysis, Metrika, Communications in statistics, Statistics and Decisions, and others.
- Member: American Statistical Association (ASA), Life member of the Forum for Interdisciplinary Mathematics.
- Selection Committee Chair: Abraham Wald Prize in Sequential Analysis for Best Paper: Sequential Analysis Journal. The first prize was awarded at JSM, 2005. Chaired the international selection committee from 2006-2023.
- Guest Editor: Special Volume of AJMMS (American Journal of Mathematical and Management Sciences). Co- edited a special volume of AJMMS related to my research area of Selection and Ranking/MCP.
- Symposium Organizer: Co-organized “Symposium on **Ranking and Selection Methodologies – Multiple Comparison Procedures**”. The symposium was held during the *Pre-ICM International Convention on Mathematical Sciences*, University of Delhi, December, 2008.
- Symposium Organizer: Co-organized a symposium at the Auburn University (December 2005) in my research area of Selection and Ranking/MCP. I also chaired the symposium. The symposium was held during the SCMA 2005/FIM XII Conference.
- Editor (Statistical Science): AJMMS (American Journal of Mathematical and Management Sciences), 2009-2012.
- Associate Editor: Statistical Methodology, 2010-2015.

RESEARCH PUBLICATIONS

Scholarly books:

(i.) *Multistage Selection and Ranking Procedures: Second-Order Asymptotics*, Marcel Dekker, Inc., ISBN No.: 0-8247-9078-2, (with N. Mukhopadhyay), 1994.

Refereed Scholarly book chapters:

(i.) On an improved accelerated sequential methodology with applications in selection and ranking, *Frontiers in Probability and Statistics*, Editors: S.P. Mukherjee, et al., 250-259, 1998, (with N. Mukhopadhyay).

(ii.) Applications of Sequential Tests to Target Tracking by Multiple Models, *Applied Sequential Methodologies*, Marcel Dekker, edited by N. Mukhopadhyay, et al., 219-247, 2004, (with X. Rong Li).

As Guest Editor of a Journal's Special Issue:

Co-edited a Special Volume of *AJMMS* (American Journal of Mathematical and Management Sciences) in my research area: RANKING AND SELECTION AND MULTIPLE COMPARISON PROCEDURES. American Journal of Mathematical and Management Sciences, Volume 29 (2009), Nos. 1 & 2, 294 pages.

As Associate Editor of Conference Proceedings:

SOME RECENT ADVANCES IN MATHEMATICS AND STATISTICS, Proceedings of Statistics 2011 Canada/IMST 2011-FIM XX, Editor: Yogendra P Chaubey, World Scientific Publishing Co. Pte. Ltd., 2013.

REFEREED JOURNAL PUBLICATIONS

26. Second Order Asymptotics of a Fine-Tuned Purely Sequential Procedure for the Generalized Partition Procedure, *Statistics and Applications*, Volume 19, No. 1, 401-415, 2021.

25. A Generalization of the Partition Problem, *Sequential Analysis*, **34**(04), pp. 483 – 503, 2015 (with Jie Zhou).

24. Discussion on “Sequential Estimation for Time Series Models” by T. N. Sriram and Ross Iaci, *Sequential Analysis*, **33**(02), pp. 186 – 189, 2014.

23. On Two-stage comparisons with a control under heteroscedastic normal distributions, *Methodology and Computing in Applied Probability*, Volume 14, Number 3, Pages 501-522, 2012 (with N. Mukhopadhyay).

22. Second-Order Asymptotics of a Fine-Tuned Unbalanced Purely Sequential Procedure For The Partition Problem, *Journal of Combinatorics, Information and System Sciences*, vol. 36, 233-248, 2011.

21. Discussion on “Two-Stage Procedures for High-Dimensional Data” by Makoto Aoshima and Kazuyoshi Yata, *Sequential Analysis*, **30**(04), pp. 429 – 431, 2011.

20. On Approximate Optimality of the Sample Size for the Partition Problem, *Communications in Statistics - Theory and Methods*, 38:16, 3148 — 3157, 2009 (with Y. Wu).

19. Discussion on “A Hybrid Selection and Testing Procedure with Curtailment” by Elena M. Buzaianu and Pinyuen Chen, *Sequential Analysis*, 28:1, 38-40, 2009.

18. A two-stage procedure with elimination for partitioning a set of normal populations with respect to a control, *Sequential Analysis*, 25, 297-310, 2006.

17. On unbalanced multistage methodologies for the partition problem, *Proceedings of the International Sri Lankan Statistical Conference: Visions of Futuristic Methodologies*, 447-466, 2004 (with Y. Wu).

16. *Predicting multivariate response in linear regression model*, Commun. in Statistics, Simulation & Computation, Vol. 32, No. 2, 389-409, 2003 (with M. Srivastava).
15. *Multistage methodologies for comparing several treatments with a control*, Journal of Statistical Planning and Inference, 100, No. 2, 209-220, (with N. Mukhopadhyay), 2002.
14. *A sequential procedure with elimination for partitioning a set of normal populations having a common unknown variance*, Sequential Analysis, Vol. 20 (4), 279-292, 2001.
13. *Estimation of coating time in the magnetically assisted impaction coating process*, Journal of Powder Technology I, 121, 159-167, 2001(P. Singh, T.K.S. Solanky, R. Mudryy, R. Pfeffer, and R. Dave).
12. *Power comparison of some tests for detecting a change in the multivariate mean*, Commun. in Statistics, Simulation & Computation, Volume 30, Issue 1, 19--36 (2001) (with M. Srivastava and A.K. Sen).
11. *Convection and local acceleration dominated regimes in Lennard-Jones liquids*, Physics Letters A, 266, 11-18 (2000) (with P. Singh).
10. *A Robust Methodology for selecting the smaller variance*, Journal of Nonparametric Statistics, Vol. 11, 361-376 (1999) (with N. Mukhopadhyay and A. Padmanabhan).
9. *Multistage methodologies for fixed-width simultaneous confidence intervals for all pairwise comparisons*, Journal of Statistical planning and Inference, 73, 163-176 (1998) (with N. Mukhopadhyay).
8. *On estimating the reliability after sequentially estimating the mean: the exponential case*, Metrika, 45(3), 235-252 (1997) (with N. Mukhopadhyay and A. Padmanabhan).
7. *Accuracy of formula-derived Creatinine clearance in paraplegics subjects*, Clin. Nephrol., 47(4), 237-242 (1997) (with V. Thaakur, E. Reisin, M. Solomonow, R. Baratta, E. Anguilar, R. Best, R. D'Ambrosia).
6. *Estimation After Sequential Selection and Ranking*, Metrika, 45(2), 95-106 (1997) (with N. Mukhopadhyay).
5. *A nonparametric accelerated sequential procedure for selecting the largest center of symmetry*, Journal of Nonparametric Statistics, 3, 155-166 (1993) (with N. Mukhopadhyay).
4. *Accelerated sequential procedure for selecting the best exponential population*, Journal of Statistical planning and Inference, 32, (1992), 347-361 (with N. Mukhopadhyay).
3. *Accelerated sequential procedure for selecting the largest mean*, Sequential Analysis, vol. 11, (1992), 137-148 (with N. Mukhopadhyay).
2. *Improved sequential and accelerated sequential procedures for estimating the scale parameter in a uniform distribution*, Sequential Analysis, vol. 10, (1991), 235-245 (with L. Kuo and N. Mukhopadhyay).
1. *Second order properties of accelerated stopping times with applications in sequential estimation*, Sequential Analysis, vol. 10, (1991), 99-123 (with N. Mukhopadhyay).

OTHER PUBLICATIONS

- (i.) Proceedings of The second International Workshop in Sequential Methodologies (IWSM 2009): Multistage Methodologies for Partitioning a Set of Exponential Populations, 4 pages, 2009.
- (ii.) Proceedings of The 56th Session of the International Statistical Institute (ISI 2007): On Optimality of the Sample Size for the Partition Problem (jointly with Yuefeng Wu), pages 2033-2037, 2007.

- (iii). *Selecting the Best Component in a Multivariate Normal Population*, (with N. Mukhopadhyay).
 - Presented at the Joint Statistical Meetings, San Francisco, August 1993.
 - Abstract in IMS Bulletin, Vol. 22, No. 3, page 333, 1993.
 - Article appears in Chapter 6, *Multistage Selection and Ranking Procedures: Second-Order Asymptotics*, Marcel Dekker, Inc., 1994, page 266-280.
- (iv.) *On Asymptotic Second-Order Properties of Selecting the t-best Exponential Populations*, (with N. Mukhopadhyay).
 - Presented at the Joint Statistical Meetings, Boston, August 1992.
 - Abstract in IMS Bulletin, Vol. 23, No. 3, page 339, 1992.
 - Article appears as a separate section in *Multistage Selection and Ranking Procedures: Second-Order Asymptotics*, Marcel Dekker, Inc., 1994, Section 4.9, page 198-208.
- (v.) *On Asymptotic Second-Order Properties of Selecting the t-best Normal Populations*, (with N. Mukhopadhyay).
 - Presented at the Joint Statistical Meetings, Atlanta, August 1991.
 - Abstract in IMS Bulletin, Vol. 20, No. 3, page 335, 1991.
 - Article appears as a separate section in *Multistage Selection and Ranking Procedures: Second-Order Asymptotics*, Marcel Dekker, Inc., 1994, Section 3.9, page 117-141.

GRANTS AND CONTRACTS FUNDED AS PI/Co-PI

- {21.} L.E.Q.S.F. Enhancement Grant, \$54,112.00, 2017-2018, *Redesigning Freshman Mathematics Instruction at UNO Using Technology Based Interactive Teaching Format* [The proposal was ranked first among all the proposals in the category. With Lisa Crespo and Lori Hodges].
- {20.} Howard Hughes Medical Institute (HHMI), \$1,500,000.00, 2014-2019, *Increasing recruitment and retention of STEM students at UNO, an urban university* [as Co-PI, Dr. Wendy Schluchter is the PI].
- {19.} L.E.Q.S.F. Enhancement Grant, \$15,000.00, 2011-2013, *Continuation of Statistical Consulting Education at UNO* [Linxiong Li].
- {18.} UNO SCoRE award, \$15,000, 2011.
- {17.} L.E.Q.S.F. Enhancement Grant, \$20,000.00, 2008-2010, *Enhancement of Industry Oriented Statistical Education at UNO: Post Katrina Years* [Linxiong Li].
- {16.} L.E.Q.S.F. Enhancement Grant, \$27,500.00, 2005-2007, Continuation of: *Enhancement of Industry Oriented Statistical Education at UNO* [with Terry Watkins and Linxiong Li].
- {15.} L.E.Q.S.F. Enhancement Grant, \$35,874.00, 2002-2004, *Enhancement of Industry Oriented Statistical Education at UNO*. [The proposal was ranked first among all the proposals in the category. With Terry Watkins, Linxiong Li, and Zhide Fang].
- {14.} AFCEA Silicon Bayou Chapter Award, \$300, 2002-2003, for purchasing classroom supplies for the mathematics department.
- {13.} National Science Foundation (NSF), \$219,900, 2000-2002, *UNOMACSS: A Scholarship Program in the Mathematical and Computer Sciences* [with A. DePano of Computer Science Department]. It provided scholarship to 20 mathematics and 20 computer science students for two years.
- {12.} L.E.Q.S.F. Enhancement Grant, \$172,512, 1996-1998, *Statistics and Applied Mathematics Laboratory* [with Lew Lefton and Adam Harrison].
- {11.} {L.E.Q.S.F. Research Grant}, \$75,325, 1995-1998, *Robustness and Implementability of Various Multistage Selection and Ranking Procedures*.
- {10.} NASA, Graduate Student Research Program, \$64,000, 1994-1996, *Statistical Analysis of Rocket Seal Tester*.
- {9.} U.S.D.A. Research Grant, \$20,000, 1994-1998, Statistical Assistance to USDA in EPA Projects (with Terry A. Watkins).
- {8.} Institute of Mathematical Statistics, \$400, 1994, *Travel Award to present a paper at the annual meeting in Chapel Hill, North Carolina*.
- {7.} UNO Research Support Award, \$2,000, 1994-1995.
- {6.} U.S.D.A. Research Grant, \$10,000, 1993-1994, Statistical Assistance to USDA (with Terry A. Watkins).
- {5.} L.E.Q.S.F. Research Grant, \$14,583, 1992-1993, *Permutationally Invariant Change point Estimation*, (with Terry A. Watkins).

- {4.} Institute of Mathematical Statistics, \$800, 1990, Travel Award to present a paper at the annual meeting in Uppsala, Sweden.
- {3.} UNO faculty summer scholar award, \$3667, summer 1991.
- {2.} UNO Research Council Grant}, \$1330, 7/91--6/92.
- {1.} UNO Faculty Development Award, \$1,600, June-December 1993.

Professional Service as Referee:

I have refereed several hundred papers as a referee for scholarly journals and over 20 books in the field of statistics/Data Science. The books reviewed in the academic year 2020-21 are:

- 1. Foundations of Statistics for Data Scientists: With R and Python, Alan Agresti, Maria Kateri; ISBN 9780367748456, October 2021, Chapman and Hall/CRC.
- 2. Gini Inequality Index Methods and Applications, Nitis Mukhopadhyay, Partha Pratim Sengupta, ISBN 9781003143642, April 2021, Chapman and Hall/CRC.

PROFESSIONAL PRESENTATIONS

- {57.} Some issues related to implementation of the partition problem formulations for normal population, **invited talk**, 34th NESS (New England Statistics Symposium), University of Rhode Island, September 30- October 2, 2021.
- {56.} A generalization of the statistical Partition Problem for Normal Populations, **contributed talk**, International Conference on Mathematical Modelling, Applied Analysis and Computation (ICMMAAC-2019), JECRC University, Jaipur, India, August 8-10, 2019.
- {55.} A Generalized Two-stage Procedure for the Partition Problem, **invited talk**, 7th IWSM 2019, Binghamton University, June 17-21, 2019 (With Jie Zhou).
- {54.} Enhancing Student Engagement by Using Technology Based Interactive Teaching, contributed talk, Joint Mathematics Meetings (JMM 2018), San Diego, January, 2018.
- {53.} Designing Experiments for Multiple Comparisons, **plenary talk**, The Sixth International Workshop in Sequential Methodologies (IWSM 2017), University of Rouen Normandy, France, June, 2017.
- {52.} A Two-Stage Procedure for the Generalized Partition Problem, **invited talk**, 8th INTERNATIONAL WORKSHOP ON APPLIED PROBABILITY (IWAP2016) June 20-23, 2016, Toronto, Canada.
- {51.} Statistical Partition Problem: Past, Present and Future, **invited talk**, IWSM 2015, Columbia University, New York, June, 2015.
- {50.} A Generalization of the Partition Problem, Poster Session, FRONTIERS OF HIERARCHICAL MODELING IN OBSERVATIONAL STUDIES, COMPLEX SURVEYS AND BIG DATA, University of Maryland, July, 2014 (With Jie Zhou).
- {49.} A Note on Partitioning Exponential Populations, **invited talk**, IWSM 2013, University Of Georgia, Athens, Georgia, July, 2013.
- {48.} Nonparametric sequential procedure for partitioning a set of populations with respect to a standard or control **invited talk**, International Conference On Statistics and Informatics in Agricultural Research, New Delhi, India, December, 2012.
- {47.} On a generalization of the Partition Problem, **invited talk**, IMSCT 2012 -- FIM XXI, Punjab University, India, December, 2012.
- {46.} Robustness of the fine-tuned Purely Sequential procedure for the unbalanced partition problem, **invited talk**, STATISTICS 2011 CANADA and IMST 2011-FIM XX, Montreal, July, 2011.
- {45.} On a generalization of the Partition Problem, **invited talk**, International Workshop on Sequential Methods, Stanford University, June, 2011 (with Jie Zhou).
- {44.} Use and Misuse of the ANOVA methodology, *Mathematical Association of America*, Florida Chapter Meeting, University of West Florida, Pensacola, Florida, November, 2010.
- {43.} Some Issues Related to the Partition Problem, **invited talk**, *50+ Years of Research: Mini-Conference in Honor of Professor Zacks*, Binghamton, New York, December, 2009.
- {42.} Multistage Methodologies for Partitioning a Set of Exponential Populations, **invited talk**, IWSM 2009, Troyes, France, June, 2009.
- {41.} SQA Editor's Round Table, **Plenary Session**, IWSM 2009, Troyes, France, June, 2009 (with Marie Hušková, N. Mukhopadhyay, Alexander Tartakovsky, and S. Zacks).
- {40.} Multistage Methodologies for Partitioning a Set of Several Populations With Respect to a Standard or a Control, **SQA Editors Special Invited Talk**, Joint Statistical Meeting, Denver, Colorado, August, 2008.
- {39.} A Nonparametric Purely Sequential Procedure For the Partition Problem, **invited talk**, **Dudewicz Honor Conference**, Syracuse, New York, July, 2008.

- {38.} On Approximate Optimality of the Unbalanced Sequential Procedure for the Partition Problem, **invited talk**, IISA Conference, Connecticut, May, 2008 (with Y. Wu).
- {37.} The role of Statistics in Clinical Trials, Invited talk for the students in the *Honors Program*, *University of New Orleans*, **invited talk**, April, 2008.
- {36.} On Optimality of the Sample Size for the Partition Problem, ISI 2007 Conference, Lisbon, Portugal, August, 2007 (with Y. Wu).
- {35.} A Nonparametric Methodology for the Partition Problem, **invited talk**, IWSM 2007, Auburn, Alabama, July, 2007.
- {34.} SQA Editor's Round Table, **invited participant**, IWSM 2007, Auburn, Alabama, July, 2007 (with M. Aoshima, M. Carpenter, N. Mukhopadhyay, and S. Zacks).
- {33.} Multiple Comparison Procedures in Statistics: A Distribution Free Approach, Department of Electrical Engineering, University of New Orleans, April, 2007.
- {32.} The problem of selection and Ranking: An introduction and some current research, **invited talk**, Department of mathematics, IIT Delhi, January, 2007.
- {31.} An Efficient Design For Partitioning a set of Populations With Respect to a Control, *International Conference on Statistics and Informatics*, **invited talk**, Delhi, India, December, 2006.
- {30.} Efficient Designs for the Partition Problem, Department of Mathematics, Department of Mathematics, *University of Louisiana, Lafayette*, **invited talk**, September, 2005.
- {29.} A note on the Efficiency of Some Designs for the Partition Problem, *International conference on recent advances in statistics*, **invited talk**, IIT Kanpur, India, January, 2005.
- {28.} On an improved accelerated sequential methodology with applications in selection and ranking, *International Sri Lankan Statistical Conference: Visions of Futuristic Methodologies*, **invited talk**, Kandy, Sri Lanka, December, 2004.
- {27.} Implementation and other issues related to the partition problem, *Punjab University, Chandigarh*, **invited talk**, India, December, 2004.
- {26.} Robustness of methodologies for the partition problem, *University of Connecticut, Storrs*, Connecticut, **invited talk**, October, 2004.
- {25.} A two stage procedure for the partition problem, *IISA 2004 Conference*, **invited talk**, Athens, Georgia, May, 2004.
- {24.} A two stage procedure with elimination, *Department of Electrical Engineering, UNO*, September, 2003.
- {23.} On combining subset selection and indifference zone approaches, *International conference on Bayesian Statistics*, LaManga, Spain, May, 2003.
- {22.} Robustness of multistage procedures, **invited talk**, *Ninth International conference on Statistics, Combinatorics and related areas*, Allahabad, India, December, 2002.
- {21.} A sequential procedure with elimination, *International conference on statistical inference and reliability*, **invited talk**, Chandigarh, India, December, 2001.
- {20.} On generalizing the partition problem for the normal population, **invited talk**, *Joint Statistical Meeting of IISA*, etc., New Delhi, India, December, 2000.
- {19.} On Robustness of the partition problem for the normal population, *Sixth Conference of the Forum for Interdisciplinary Mathematics: International Conference on Combinatorics, Information Theory and Statistics*, University of South Alabama, Mobile, December, 1999. Maryland, August, 1999.
- {18.} On partitioning a set of normal populations with respect to a control, **Invited Talk**, *Fifth Conference of the Forum for Interdisciplinary Mathematics: International Conference on Combinatorics, Information Theory and Statistics*, University of Mysore, India, December, 1998.
- {17.} Three-Stage and accelerated sequential methodologies for comparing several treatments with a control, **Invited Talk**, *Third Conference of the Forum for Interdisciplinary Mathematics: International Conference on Combinatorics, Information Theory and Statistics*, University of Southern Maine, Portland, Maine, July, 1997 (with N. Mukhopadhyay).
- {16.} Research in Statistics, Invited talk for the students in the *Honors Program*, *University of New Orleans*, **invited talk**, March, 1997.
- {15.} Few generalizations to the selection and Ranking Problem, *Department of Statistics, University of Toronto*, November, 1996 (with N. Mukhopadhyay).
- {14.} Multistage methodologies for fixed-width simultaneous confidence intervals for all pairwise comparisons, *Indian Science Congress Meeting*, Patiala, India, January, 1996 (with N. Mukhopadhyay).
- {13.} On estimating the reliability after sequentially estimating the mean: the exponential case, *Annual Joint Statistical Meetings of ASA, IMS etc.*, Orlando, August, 1995 (with N. Mukhopadhyay and A. Padmanabhan).
- {12.} Multistage methodologies for fixed-width simultaneous confidence intervals for all pairwise comparisons, *Bose Memorial Conference*, *Colorado State University*, Colorado, June, 1995 (with N. Mukhopadhyay).
- {11.} On an Improved Accelerated Sequential Methodology With Applications in Selection and Ranking, *Annual Joint Statistical Meetings of ASA, IMS etc.*, Toronto, August, 1994 (with N. Mukhopadhyay).

- {10.} Accelerated Sequential Estimation of the Largest Location Parameter in the Normal and Negative Exponential Cases, *Annual Meeting of Institute of Mathematical Statistics*, North Carolina, June, 1994 (with N. Mukhopadhyay).
- {9.} Selecting the Best Component in a Multivariate Normal Population, *Annual Joint Statistical Meetings of ASA, IMS etc.*, San Francisco, August, 1993 (with N. Mukhopadhyay).
- {8.} A Note on Sequential Selection and Ranking, *Department of Mathematics, I.I.T. Delhi*, India, June, 1993.
- {7.} On Asymptotic Second-Order Properties of Selecting the t-best Exponential Populations, *Annual Joint Statistical Meetings of ASA, IMS etc.*, Boston, August, 1992 (with N. Mukhopadhyay).
- {6.} On Asymptotic Second-Order Properties of Selecting the t-best Normal Populations, *Annual Joint Statistical Meetings of ASA, IMS etc.*, Atlanta, August, 1991 (with N. Mukhopadhyay).
- {5.} Accelerated Sequential Procedure for Selecting the Largest Mean, *Department of Statistics, University of Southwestern Louisiana*, April, 1991 (with N. Mukhopadhyay).
- {4.} Nonparametric Accelerated Sequential Procedure for Selecting the Best Population, *2nd World Congress of The Bernoulli Society for Mathematical Statistics and Probability and Annual meeting of IMS, Uppsala, Sweden*, August, 1990 (with N. Mukhopadhyay).
- {3.} A Computational Based Approach to Selection and Ranking Problem, *22nd Symposium on the Interface: Computing Science and Statistics*, Michigan State University, May, 1990 (with N. Mukhopadhyay).
- {2.} A note on Sequential Selection and Ranking Procedures, *Department of Statistics, University of Connecticut*, April, 1990 (with N. Mukhopadhyay).
- {1.} Computationally Intensive Accelerated Sequential Procedure for Selecting the Best Exponential Population, *Fourth Annual New England Statistics Symposium*, Lowell University, March, 1990 (with N. Mukhopadhyay).

UNIVERSITY SERVICE (University of New Orleans)

Selected University Service:

President's Executive Committee: Member, 2008-09.
 Policy Committee: Chair, 2008-09.
 Strategic Planning Committee (The Strategic Plan 2009-2012): Committee Member.
 Policy Committee: Represented the College of Sciences, 2006-2009.
 University Senate: 2006-2009.
 Provost Search Committee: Member, 2008-2009.
 Dean Search Committee: Member, 2009-2010.
 First Year Initiatives (FYI): Committee member, 2009-2013.
 University Committee: Committee on University Admissions, member 2003-2006, Committee Chair 2005-2006, member 2006-2009.
 Strategic Planning Committee (2013-2014): Committee Member.
 Provost Search Committee: Member, 2014-2015.
 Faculty Governance Committee: Member, 2013-2016.
 Strategic Enrollment Management Committee (SEMC): Faculty Co-Chair, 2015-present.
 Retention Steering Committee, Chair, 2015- Fall 2019.
 Provost Search Committee: Member, 2016.
 Strategic Plan 2015 – 2020: Member, 2016- 2017.
 Charges Committee: Fall 2020—present.

College Service:

Chair, College of Sciences Retention Committee, 2013-14.
 College of Sciences, Dean Search Committee, 2009-10.
 Member, College of Sciences Teaching Award Committee, 2002-2008.

Department Service:

Department Chair: Fall 2008—present.
 Member of Several Departmental Committees such as Computer Committee; Graduate Advisory;
 Courses and Curricula, etc: 1990-present.

Mathematical Service:

Math Bootcamp for 9th and 10th Graders [Funded by *College Track*], Summer 2013.
 Math Bootcamp for 11th and 12th Graders [Funded by *College Track*], Summer 2013.
 ACING THE ACT: Organized ACT preparation workshop [Funded by *College Track*], Summer & Fall 2013
 Dual Enrollment ACT Preparation: Tutoring program for about 25 Lake Area High School students to improve their ACT Math score to make them eligible for DE class at UNO
 [Funded by *Urban League*]

DOCTORAL THESIS SUPERVISION AS MAJOR PROFESSOR

- i. Jie Zhou, A Generalization of The Partition Problem in Statistics; 2013.
- ii. Jin Gu, Statistical Partition Problem for Exponential Populations and Statistical Surveillance of Cancers in Louisiana; 2014.
- iii. Rui Wang, Generalizing Multistage Partition Procedures for Two-parameter Exponential Populations; 2018.

Other Activities Related to Teaching and MS/PhD Committee Memberships

- (i). Master's thesis supervision for 2 students.
- (ii). Major Professor for over 40 Masters Students with non-thesis Master's Degree program.
- (iii). PhD Thesis committee member for 30 plus students.

Major Areas of Research Interest

Statistical Consulting, Statistical Sampling, Statistical Modeling, Sequential Analysis, Selection and Ranking, Change point Problem, Statistical Computing, Biostatistics, and Biomedical applications.

APPENDIX 2**Estimates for Black Voters Voting For a Republican Candidate in 12 Statewide Elections**

Year	Election Number	Election	Parish Name/Entire Louisiana	Black Voting Republican (B_v_Rep) Percent	95% Confidence Interval B_v_Rep Lower Limit	95% Confidence Interval B_v_Rep Upper Limit
2012	1	President	Louisiana	7.6	4.4	12.3
2012	1	President	Orleans	1.5	0.9	2.0
2012	1	President	EBR	6.7	4.5	10.3
2012	1	President	WBR	8.3	0.6	18.8
2012	1	President	Natchitoches	3.3	1.1	9.3
2012	1	President	East_Carroll	3.2	0.4	8.9
2015	2	Governor	Louisiana	1.3	1.1	1.4
2015	2	Governor	Orleans	1.1	0.8	1.4
2015	2	Governor	EBR	1.2	0.9	1.6
2015	2	Governor	WBR	4.5	1.2	10.0
2015	2	Governor	Natchitoches	2.5	1.0	5.1
2015	2	Governor	East_Carroll	2.4	0.6	5.9
2015	3	Lt. Gov.	Louisiana	3.9	3.6	4.2
2015	3	Lt. Gov.	Orleans	8.4	7.7	9.2
2015	3	Lt. Gov.	EBR	4.5	3.8	5.3
2015	3	Lt. Gov.	WBR	4.7	1.3	10.2
2015	3	Lt. Gov.	Natchitoches	3.7	1.8	6.5
2015	3	Lt. Gov.	East_Carroll	5.3	2.7	9.3
2016	4	President	Louisiana	1.6	1.0	3.4
2016	4	President	Orleans	1.1	0.9	1.5
2016	4	President	EBR	1.2	0.9	1.8
2016	4	President	WBR	2.6	0.9	5.7
2016	4	President	Natchitoches	1.8	0.8	4.1
2016	4	President	East_Carroll	1.3	0.4	2.7
2017	5	Treasurer	Louisiana	2.5	2.2	2.7
2017	5	Treasurer	Orleans	2.0	1.6	2.4
2017	5	Treasurer	EBR	2.5	1.9	3.2
2017	5	Treasurer	WBR	5.1	1.2	11.7
2017	5	Treasurer	Natchitoches	6.2	2.7	11.0
2017	5	Treasurer	East_Carroll	3.1	0.8	7.7
2018	6	Sec. State	Louisiana	3.6	3.3	3.8
2018	6	Sec. State	Orleans	2.2	1.7	2.9
2018	6	Sec. State	EBR	3.2	2.6	3.9
2018	6	Sec. State	WBR	4.6	1.5	9.9
2018	6	Sec. State	Natchitoches	6.4	3.6	10.2
2018	6	Sec. State	East_Carroll	14.2	11.2	17.9
2019	7	Lt. Gov.	Louisiana	11.6	11.3	12.0
2019	7	Lt. Gov.	Orleans	12.6	11.7	13.4
2019	7	Lt. Gov.	EBR	18.0	17.3	18.8
2019	7	Lt. Gov.	WBR	8.8	5.1	14.2
2019	7	Lt. Gov.	Natchitoches	7.1	4.4	10.6
2019	7	Lt. Gov.	East_Carroll	14.1	10.6	18.6
2018	8	At. Gen.	Louisiana	9.5	9.2	9.8
2018	8	At. Gen.	Orleans	6.8	6.0	7.9
2018	8	At. Gen.	EBR	11.0	10.3	11.7
2018	8	At. Gen.	WBR	7.1	3.8	12.1

Year	Election Number	Election	Parish Name/Entire Louisiana	Black Voting Republican (B_v_Rep) Percent	95% Confidence Interval B_v_Rep Lower Limit	95% Confidence Interval B_v_Rep Upper Limit
2018	8	At. Gen.	Natchitoches	11.6	8.4	15.4
2018	8	At. Gen.	East_Carroll	19.2	15.9	23.4
2019	9	Sec. State	Louisiana	4.0	3.7	4.2
2019	9	Sec. State	Orleans	2.2	1.8	2.7
2019	9	Sec. State	EBR	4.3	3.8	4.9
2019	9	Sec. State	WBR	4.2	1.9	8.0
2019	9	Sec. State	Natchitoches	4.5	2.4	7.6
2019	9	Sec. State	East_Carroll	6.7	3.7	11.3
2019	10	Governor	Louisiana	1.1	1.0	1.3
2019	10	Governor	Orleans	1.2	0.9	1.6
2019	10	Governor	EBR	1.3	0.9	1.7
2019	10	Governor	WBR	4.5	1.4	9.4
2019	10	Governor	Natchitoches	2.1	0.7	4.5
2019	10	Governor	East_Carroll	2.7	0.7	6.4
2020	11	President	Louisiana	8.7	5.7	13.2
2020	11	President	Orleans	1.4	1.2	1.7
2020	11	President	EBR	5.9	4.1	8.1
2020	11	President	WBR	15.9	4.1	26.2
2020	11	President	Natchitoches	2.8	1.3	5.1
2020	11	President	East_Carroll	3.9	2.1	6.1
2022	12	Senator	Louisiana	6.5	5.3	9.5
2022	12	Senator	Orleans	3.0	2.5	3.5
2022	12	Senator	EBR	4.3	3.3	6.4
2022	12	Senator	WBR	9.4	3.7	14.3
2022	12	Senator	Natchitoches	8.3	4.9	13.4
2022	12	Senator	East_Carroll	13.6	10.7	17.0

APPENDIX 3**Estimates for Black Voters Voting For a Democratic Candidate in 12 Statewide Elections**

Year	Election Number	Election	Parish Name/Entire Louisiana	Black Voting Democrat (B_v_Dem) Percent	95% Confidence Interval B_v_Dem Lower Limit	95% Confidence Interval B_v_Dem Upper Limit
2012	1	President	Louisiana	91.5	86.7	94.8
2012	1	President	Orleans	98.1	97.5	98.7
2012	1	President	EBR	92.5	88.9	94.9
2012	1	President	WBR	90.4	79.7	98.3
2012	1	President	Natchitoches	95.7	89.6	98.1
2012	1	President	East_Carroll	96.3	90.5	99.2
2015	2	Governor	Louisiana	98.7	98.6	98.9
2015	2	Governor	Orleans	98.9	98.6	99.2
2015	2	Governor	EBR	98.8	98.4	99.1
2015	2	Governor	WBR	95.5	90.0	98.8
2015	2	Governor	Natchitoches	97.5	94.9	99.0
2015	2	Governor	East_Carroll	97.6	94.1	99.4
2015	3	Lt. Gov.	Louisiana	96.1	95.8	96.4
2015	3	Lt. Gov.	Orleans	91.6	90.8	92.3
2015	3	Lt. Gov.	EBR	95.5	94.7	96.2
2015	3	Lt. Gov.	WBR	95.3	89.8	98.7
2015	3	Lt. Gov.	Natchitoches	96.3	93.5	98.2
2015	3	Lt. Gov.	East_Carroll	94.7	90.7	97.3
2016	4	President	Louisiana	97.3	95.3	98.1
2016	4	President	Orleans	98.3	97.9	98.6
2016	4	President	EBR	98.0	97.2	98.4
2016	4	President	WBR	94.9	90.9	97.5
2016	4	President	Natchitoches	96.1	93.5	97.7
2016	4	President	East_Carroll	97.3	95.7	98.6
2017	5	Treasurer	Louisiana	97.5	97.3	97.8
2017	5	Treasurer	Orleans	98.0	97.6	98.4
2017	5	Treasurer	EBR	97.5	96.8	98.1
2017	5	Treasurer	WBR	94.9	88.3	98.8
2017	5	Treasurer	Natchitoches	93.8	89.0	97.3
2017	5	Treasurer	East_Carroll	96.9	92.3	99.2
2018	6	Sec. State	Louisiana	96.4	96.2	96.7
2018	6	Sec. State	Orleans	97.8	97.1	98.3
2018	6	Sec. State	EBR	96.8	96.1	97.4
2018	6	Sec. State	WBR	95.4	90.1	98.5
2018	6	Sec. State	Natchitoches	93.6	89.8	96.4
2018	6	Sec. State	East_Carroll	85.8	82.1	88.8
2019	7	Lt. Gov.	Louisiana	88.4	88.0	88.7
2019	7	Lt. Gov.	Orleans	87.4	86.6	88.3
2019	7	Lt. Gov.	EBR	82.0	81.2	82.7
2019	7	Lt. Gov.	WBR	91.2	85.8	94.9
2019	7	Lt. Gov.	Natchitoches	92.9	89.4	95.6
2019	7	Lt. Gov.	East_Carroll	85.9	81.4	89.4
2018	8	At. Gen.	Louisiana	90.5	90.2	90.8
2018	8	At. Gen.	Orleans	93.2	92.1	94.0
2018	8	At. Gen.	EBR	89.0	88.3	89.7
2018	8	At. Gen.	WBR	92.9	87.9	96.2
2018	8	At. Gen.	Natchitoches	88.4	84.6	91.6

Year	Election Number	Election	Parish Name/Entire Louisiana	Black Voting Democrat (B_v_Dem) Percent	95% Confidence Interval B_v_Dem Lower Limit	95% Confidence Interval B_v_Dem Upper Limit
2018	8	At. Gen.	East_Carroll	80.8	76.6	84.1
2019	9	Sec. State	Louisiana	96.0	95.8	96.3
2019	9	Sec. State	Orleans	97.8	97.3	98.2
2019	9	Sec. State	EBR	95.7	95.1	96.2
2019	9	Sec. State	WBR	95.8	92.0	98.1
2019	9	Sec. State	Natchitoches	95.5	92.4	97.6
2019	9	Sec. State	East_Carroll	93.3	88.7	96.3
2019	10	Governor	Louisiana	98.9	98.7	99.0
2019	10	Governor	Orleans	98.8	98.4	99.1
2019	10	Governor	EBR	98.7	98.3	99.1
2019	10	Governor	WBR	95.5	90.6	98.6
2019	10	Governor	Natchitoches	97.9	95.5	99.3
2019	10	Governor	East_Carroll	97.3	93.6	99.3
2020	11	President	Louisiana	90.0	85.4	93.0
2020	11	President	Orleans	98.0	97.6	98.3
2020	11	President	EBR	93.3	91.0	95.0
2020	11	President	WBR	82.9	72.5	94.6
2020	11	President	Natchitoches	95.1	92.6	96.9
2020	11	President	East_Carroll	93.9	91.5	95.8
2022	12	Senator	Louisiana	90.7	88.0	91.8
2022	12	Senator	Orleans	95.2	94.6	95.7
2022	12	Senator	EBR	94.1	92.1	95.0
2022	12	Senator	WBR	88.9	83.9	94.7
2022	12	Senator	Natchitoches	88.5	83.2	92.0
2022	12	Senator	East_Carroll	80.8	77.3	84.1

APPENDIX 4**Estimates for White Voters Voting For a Republican Candidate in 12 Statewide Elections**

Year	Election Number	Election	Parish Name/Entire Louisiana	Black Voting Republican (W_v_Rep) Percent	95% Confidence Interval W_v_Rep Lower Limit	95% Confidence Interval W_v_Rep Upper Limit
2012	1	President	Louisiana	83.9	81.7	85.4
2012	1	President	Orleans	45.6	44.8	46.4
2012	1	President	EBR	80.9	78.0	82.7
2012	1	President	WBR	81.9	75.4	87.2
2012	1	President	Natchitoches	86.7	82.9	88.8
2012	1	President	East_Carroll	87.8	77.5	94.2
2015	2	Governor	Louisiana	64.9	64.7	65.0
2015	2	Governor	Orleans	29.4	28.3	30.3
2015	2	Governor	EBR	59.0	58.3	59.7
2015	2	Governor	WBR	54.1	49.9	57.1
2015	2	Governor	Natchitoches	67.6	65.2	69.7
2015	2	Governor	East_Carroll	78.9	72.9	83.5
2015	3	Lt. Gov.	Louisiana	79.5	79.2	79.7
2015	3	Lt. Gov.	Orleans	47.4	45.8	49.0
2015	3	Lt. Gov.	EBR	60.3	59.2	61.5
2015	3	Lt. Gov.	WBR	60.1	56.0	63.1
2015	3	Lt. Gov.	Natchitoches	78.8	75.8	81.1
2015	3	Lt. Gov.	East_Carroll	88.3	82.4	92.9
2016	4	President	Louisiana	85.1	84.3	85.5
2016	4	President	Orleans	31.2	30.4	32.4
2016	4	President	EBR	78.0	77.3	78.6
2016	4	President	WBR	86.5	84.3	88.2
2016	4	President	Natchitoches	87.0	85.3	88.2
2016	4	President	East_Carroll	93.2	90.4	95.6
2017	5	Treasurer	Louisiana	80.8	80.5	81.0
2017	5	Treasurer	Orleans	38.7	37.2	40.2
2017	5	Treasurer	EBR	80.6	79.8	81.4
2017	5	Treasurer	WBR	86.0	80.7	90.3
2017	5	Treasurer	Natchitoches	85.4	82.5	88.2
2017	5	Treasurer	East_Carroll	89.4	80.4	96.7
2018	6	Sec. State	Louisiana	85.5	85.3	85.7
2018	6	Sec. State	Orleans	30.5	29.0	31.8
2018	6	Sec. State	EBR	80.8	79.9	81.6
2018	6	Sec. State	WBR	87.7	83.4	91.0
2018	6	Sec. State	Natchitoches	87.9	85.4	90.1
2018	6	Sec. State	East_Carroll	85.6	78.8	91.0
2019	7	Lt. Gov.	Louisiana	92.4	92.2	92.5
2019	7	Lt. Gov.	Orleans	47.8	46.0	49.5
2019	7	Lt. Gov.	EBR	88.8	88.2	89.5

Year	Election Number	Election	Parish Name/Entire Louisiana	Black Voting Republican (W_v_Rep) Percent	95% Confidence Interval W_v_Rep Lower Limit	95% Confidence Interval W_v_Rep Upper Limit
2019	7	Lt. Gov.	WBR	94.6	91.5	96.7
2019	7	Lt. Gov.	Natchitoches	93.3	91.3	94.9
2019	7	Lt. Gov.	East_Carroll	91.3	84.9	95.7
2018	8	At. Gen.	Louisiana	90.6	90.4	90.7
2018	8	At. Gen.	Orleans	34.5	32.5	37.5
2018	8	At. Gen.	EBR	85.1	84.3	85.8
2018	8	At. Gen.	WBR	92.9	89.8	95.3
2018	8	At. Gen.	Natchitoches	92.2	90.1	94.0
2018	8	At. Gen.	East_Carroll	93.4	87.3	98.0
2019	9	Sec. State	Louisiana	86.9	86.7	87.0
2019	9	Sec. State	Orleans	31.9	30.6	33.2
2019	9	Sec. State	EBR	82.2	81.4	82.9
2019	9	Sec. State	WBR	90.8	88.0	93.0
2019	9	Sec. State	Natchitoches	88.7	86.2	90.7
2019	9	Sec. State	East_Carroll	82.4	75.5	87.8
2019	10	Governor	Louisiana	73.1	73.0	73.3
2019	10	Governor	Orleans	20.2	19.3	21.1
2019	10	Governor	EBR	64.9	64.2	65.5
2019	10	Governor	WBR	69.2	65.5	71.9
2019	10	Governor	Natchitoches	76.8	74.7	78.8
2019	10	Governor	East_Carroll	73.6	67.0	78.6
2020	11	President	Louisiana	82.5	80.0	84.3
2020	11	President	Orleans	28.6	27.9	29.5
2020	11	President	EBR	75.0	72.5	76.9
2020	11	President	WBR	79.7	73.4	87.7
2020	11	President	Natchitoches	87.7	86.3	89.0
2020	11	President	East_Carroll	86.9	83.3	89.9
2022	12	Senator	Louisiana	85.5	83.8	86.4
2022	12	Senator	Orleans	26.7	25.8	27.4
2022	12	Senator	EBR	75.7	73.3	76.8
2022	12	Senator	WBR	87.7	84.8	90.6
2022	12	Senator	Natchitoches	88.2	85.7	90.0
2022	12	Senator	East_Carroll	85.9	81.8	89.3

APPENDIX 5**Estimates for White Voters Voting for a Democrat Candidate in 12 Statewide Elections**

Year	Election Number	Election	Parish Name/Entire Louisiana	Black Voting Republican (W_v_Dem) Percent	95% Confidence Interval W_v_Dem Lower Limit	95% Confidence Interval W_v_Dem Upper Limit
2012	1	President	Louisiana	15.2	13.6	17.4
2012	1	President	Orleans	51.7	50.8	52.6
2012	1	President	EBR	18.0	16.0	21.0
2012	1	President	WBR	17.2	11.9	23.9
2012	1	President	Natchitoches	12.0	9.8	15.9
2012	1	President	East_Carroll	11.7	5.2	22.0
2015	2	Governor	Louisiana	35.1	35.0	35.3
2015	2	Governor	Orleans	70.6	69.7	71.7
2015	2	Governor	EBR	41.0	40.3	41.7
2015	2	Governor	WBR	45.9	42.9	50.1
2015	2	Governor	Natchitoches	32.4	30.3	34.8
2015	2	Governor	East_Carroll	21.1	16.5	27.1
2015	3	Lt. Gov.	Louisiana	20.5	20.3	20.8
2015	3	Lt. Gov.	Orleans	52.6	51.0	54.2
2015	3	Lt. Gov.	EBR	39.7	38.5	40.8
2015	3	Lt. Gov.	WBR	39.9	36.9	44.0
2015	3	Lt. Gov.	Natchitoches	21.2	18.9	24.2
2015	3	Lt. Gov.	East_Carroll	11.7	7.1	17.6
2016	4	President	Louisiana	13.1	12.7	14.0
2016	4	President	Orleans	65.7	64.5	66.7
2016	4	President	EBR	18.5	17.7	19.3
2016	4	President	WBR	10.6	8.5	13.2
2016	4	President	Natchitoches	11.1	9.6	13.1
2016	4	President	East_Carroll	5.6	3.5	8.5
2017	5	Treasurer	Louisiana	19.2	19.0	19.5
2017	5	Treasurer	Orleans	61.3	59.8	62.8
2017	5	Treasurer	EBR	19.4	18.6	20.2
2017	5	Treasurer	WBR	14.0	9.7	19.3
2017	5	Treasurer	Natchitoches	14.6	11.8	17.5
2017	5	Treasurer	East_Carroll	10.6	3.3	19.6
2018	6	Sec. State	Louisiana	14.5	14.3	14.7
2018	6	Sec. State	Orleans	69.5	68.2	71.0
2018	6	Sec. State	EBR	19.2	18.4	20.1
2018	6	Sec. State	WBR	12.3	9.0	16.6
2018	6	Sec. State	Natchitoches	12.1	9.9	14.6
2018	6	Sec. State	East_Carroll	14.4	9.0	21.2
2019	7	Lt. Gov.	Louisiana	7.6	7.5	7.8
2019	7	Lt. Gov.	Orleans	52.2	50.5	54.0
2019	7	Lt. Gov.	EBR	11.2	10.5	11.8
2019	7	Lt. Gov.	WBR	5.4	3.3	8.5
2019	7	Lt. Gov.	Natchitoches	6.7	5.1	8.7
2019	7	Lt. Gov.	East_Carroll	8.7	4.3	15.1
2018	8	At. Gen.	Louisiana	9.4	9.3	9.6

Year	Election Number	Election	Parish Name/Entire Louisiana	Black Voting Republican (W_v_Dem) Percent	95% Confidence Interval W_v_Dem Lower Limit	95% Confidence Interval W_v_Dem Upper Limit
2018	8	At. Gen.	Orleans	65.5	62.5	67.5
2018	8	At. Gen.	EBR	14.9	14.2	15.7
2018	8	At. Gen.	WBR	7.1	4.7	10.2
2018	8	At. Gen.	Natchitoches	7.8	6.0	9.9
2018	8	At. Gen.	East_Carroll	6.6	2.0	12.7
2019	9	Sec. State	Louisiana	13.1	13.0	13.3
2019	9	Sec. State	Orleans	68.1	66.8	69.4
2019	9	Sec. State	EBR	17.8	17.1	18.6
2019	9	Sec. State	WBR	9.2	7.0	12.0
2019	9	Sec. State	Natchitoches	11.3	9.3	13.8
2019	9	Sec. State	East_Carroll	17.6	12.2	24.5
2019	10	Governor	Louisiana	26.9	26.7	27.0
2019	10	Governor	Orleans	79.8	78.9	80.7
2019	10	Governor	EBR	35.1	34.5	35.8
2019	10	Governor	WBR	30.8	28.1	34.5
2019	10	Governor	Natchitoches	23.2	21.2	25.3
2019	10	Governor	East_Carroll	26.4	21.4	33.0
2020	11	President	Louisiana	16.8	15.0	19.3
2020	11	President	Orleans	70.3	69.5	71.0
2020	11	President	EBR	24.2	22.4	26.7
2020	11	President	WBR	19.4	11.3	25.9
2020	11	President	Natchitoches	11.5	10.2	12.9
2020	11	President	East_Carroll	12.1	9.2	15.5
2022	12	Senator	Louisiana	13.8	12.9	15.5
2022	12	Senator	Orleans	72.5	71.8	73.4
2022	12	Senator	EBR	23.7	22.6	26.1
2022	12	Senator	WBR	11.5	8.6	14.5
2022	12	Senator	Natchitoches	11.1	9.4	13.5
2022	12	Senator	East_Carroll	13.3	9.9	17.5

APPENDIX 6**Estimates of Blacks Voting Republican and Whites Voting Democrat in 12 Statewide Elections****City of Shreveport Precincts v. Non City of Shreveport Precincts**

Year	Election Number	Election	Parish	City of Shreveport Precinct (y or n)	Black Voting Rep (B_v_Rep)	Conf. Interval (B_v_Rep) Lower Limit	Conf. Interval (B_v_Rep) Upper Limit	White Voting Dem (W_v_Dem)	Conf. Interval (W_v_Dem) Lower Limit	Conf. Interval (W_v_Dem) Upper Limit
2012	1	President	Caddo	y	10.6	7.2	14.0	22.5	18.6	26.2
2012	1	President	Caddo	n	55.9	44.7	64.7	19.4	17.1	21.7
2015	2	Governor	Caddo	n	12.1	2.6	28.4	22.5	19.3	27.0
2015	2	Governor	Caddo	y	1.2	0.7	1.9	30.8	29.8	31.9
2015	3	Lt. Gov.	Caddo	n	11.7	3.5	26.0	14.2	11.5	18.1
2015	3	Lt. Gov.	Caddo	y	1.7	1.2	2.5	20.5	19.0	21.7
2016	4	President	Caddo	y	1.7	1.1	2.8	16.5	15.2	19.0
2016	4	President	Caddo	n	38.5	25.0	51.7	12.7	9.8	15.5
2017	5	Treasurer	Caddo	y	2.4	1.5	3.4	15.0	13.6	16.5
2017	5	Treasurer	Caddo	n	11.5	3.4	26.4	7.8	5.0	11.5
2018	6	Sec. State	Caddo	y	3.4	2.6	4.3	18.9	17.5	20.2
2018	6	Sec. State	Caddo	n	13.5	4.2	29.3	9.4	6.1	13.3
2019	7	Lt. Gov.	Caddo	y	12.2	10.9	13.6	11.4	9.8	13.0
2019	7	Lt. Gov.	Caddo	n	14.1	6.7	24.6	2.5	1.1	4.5
2018	8	At. Gen.	Caddo	y	16.4	15.0	17.8	13.3	11.6	15.0
2018	8	At. Gen.	Caddo	n	17.8	9.4	30.4	2.7	1.3	5.0
2019	9	Sec. State	Caddo	y	2.8	2.0	3.7	16.5	15.0	18.1
2019	9	Sec. State	Caddo	n	7.3	2.3	16.8	5.3	3.3	8.3
2019	10	Governor	Caddo	y	1.2	0.7	1.9	24.6	23.5	25.7
2019	10	Governor	Caddo	n	10.2	2.9	25.0	12.4	10.0	15.9
2020	11	President	Caddo	y	6.4	4.2	8.5	26.4	23.8	28.2
2020	11	President	Caddo	n	60.6	51.6	71.0	18.2	16.9	19.6
2022	12	Senator	Caddo	y	7.6	6.5	8.6	21.0	19.9	22.1
2022	12	Senator	Caddo	n	28.4	12.2	52.5	7.4	4.5	11.5

APPENDIX 7
Estimates For Voting Percentages in East Baton Rouge Parish
(By Minimum Density)

Election	Minimum Density in VTD	White Voting Rep (W_v Rep)	Conf. Interval (W_v Rep) Lower Limit	Conf. Interval (W_v Rep) Upper Limit	White Voting Dem (W_v Dem)	Conf. Interval (W_v Dem) Lower Limit	Conf. Interval (W_v Dem) Upper Limit
Pres 2020	0	73.9	70.9	76.3	25.4	22.9	28.4
Pres 2020	300	73.6	69.1	77.5	25.7	21.8	30.2
Pres 2020	500	73.8	71.4	76.1	25.5	23.2	27.9
Pres 2020	3000	68.0	63.7	70.6	31.0	28.2	35.4
Pres 2020	4500	61.1	56.6	64.6	37.1	34.0	41.6
Pres 2020	5000	50.9	45.0	57.3	46.8	40.1	52.5
Pres 2020	5200	43.2	34.9	49.5	54.1	47.4	62.4
Pres 2020	5300	37.4	28.1	48.0	60.2	49.5	69.4
Pres 2020	5500	38.7	28.8	49.3	58.8	48.2	69.1
Pres 2020	7000	26.5	12.4	42.4	70.5	54.3	85.0
Senate 2022	0	75.7	73.3	76.8	23.7	22.6	26.1
Senate 2022	300	69.5	66.7	71.9	30.0	27.6	32.8
Senate 2022	500	71.2	69.5	72.9	28.4	26.7	30.0
Senate 2022	3000	67.6	65.8	69.0	31.9	30.5	33.7
Senate 2022	4500	56.2	51.9	58.8	43.0	40.3	47.3
Senate 2022	5000	50.0	44.5	55.8	48.6	43.1	53.9
Senate 2022	5200	40.0	33.8	45.2	58.4	53.4	64.6
Senate 2022	5300	33.3	26.1	41.6	65.5	57.3	72.8
Senate 2022	5500	34.3	26.5	41.7	64.6	57.3	72.7
Senate 2022	7000	44.8	18.4	60.7	53.4	37.5	80.0

APPENDIX 8
Estimates For Voting Percentages in Caddo Parish
(By Minimum Density)

Election	Minimum Density in VTD	White Voting Rep (W_v Rep)	Conf. Interval (W_v Rep) Lower Limit	Conf. Interval (W_v Rep) Upper Limit	White Voting Dem (W_v Dem)	Conf. Interval (W_v Dem) Lower Limit	Conf. Interval (W_v Dem) Upper Limit
Senate 2022	0	82.5	80.0	83.8	16.9	15.5	19.4
Senate 2022	300	78.6	77.6	79.6	20.7	19.8	21.7
Senate 2022	500	77.6	76.1	78.7	21.8	20.8	23.3
Senate 2022	3000	69.4	67.7	71.4	29.9	27.9	31.6
Senate 2022	4500	65.7	57.6	72.4	33.4	26.8	41.5
Senate 2022	4700	64.9	54.9	73.3	33.9	25.3	43.8
Pres 2020	0	76.9	73.9	78.7	22.5	20.7	25.5
Pres 2020	300	75.3	71.5	77.8	24.1	21.6	27.8
Pres 2020	500	74.7	69.8	78.3	24.6	20.8	29.5
Pres 2020	3000	71.9	69.3	73.7	27.0	25.0	29.5
Pres 2020	4500	64.5	56.6	70.5	34.2	28.1	42.1
Pres 2020	4700	58.4	48.6	67.1	40.6	32.5	50.0

APPENDIX 9
Estimates For Voting Percentages in Iberville Parish
(By Minimum Density)

Election	Minimum Density in VTD	White Voting Rep (W_v Rep)	Conf. Interval (W_v Rep) Lower Limit	Conf. Interval (W_v Rep) Upper Limit	White Voting Dem (W_v Dem)	Conf. Interval (W_v Dem) Lower Limit	Conf. Interval (W_v Dem) Upper Limit
Senate2022	0	86.6	84.3	88.6	12.3	10.4	14.5
Senate2022	300	80.1	73.8	84.4	17.5	13.2	23.3
Senate2022	500	78.5	73.1	83.3	19.0	14.3	24.3
Senate2022	2500	72.1	55.2	85.1	23.1	10.1	40.3
Senate2022	3000	38.8	4.7	72.8	48.1	11.6	83.9

APPENDIX 10
Estimates For Voting Percentages in Pointe Coupee Parish
(By Minimum Density)

Election	Minimum Density in VTD	White Voting Rep (W_v Rep)	Conf. Interval (W_v Rep) Lower Limit	Conf. Interval (W_v Rep) Upper Limit	White Voting Dem (W_v Dem)	Conf. Interval (W_v Dem) Lower Limit	Conf. Interval (W_v Dem) Upper Limit
Senate2022	0	84.1	81.0	86.9	15.1	12.2	18.4
Senate2022	100	80.3	72.3	85.9	18.7	13.0	26.7
Senate2022	300	78.5	71.9	85.4	20.4	13.5	27.1
Senate2022	500	79.9	74.8	86.5	19.4	12.1	23.6
Senate2022	800	63.2	47.0	80.4	32.1	16.0	49.3

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE, DR.
ALICE WASHINGTON, STEVEN HARRIS,
ALEXIS CALHOUN, BLACK VOTERS
MATTER CAPACITY BUILDING
INSTITUTE, and THE LOUISIANA STATE
CONFERENCE OF THE NAACP,

Plaintiffs,

v.

R. KYLE ARDOIN, in his official capacity as
Secretary of State of Louisiana

Defendant.

CIVIL ACTION NO. 3:22-cv-00178
SDD-SDJ

Dr. Handley Rebuttal Report

Rebuttal Expert Report of Dr. Lisa Handley

I have been asked by plaintiffs in this case to review the reports of defendant experts Dr. Lewis, Dr. Solanky, and Dr. Alford. The following are my comments on these reports.

Section I. Comments on the Expert Report of Dr. Lewis

While Dr. Lewis has carried out an impressive amount of statistical analyses, much of what he relays in his report is irrelevant or misleading in the context of this case. For example, many of the state legislative districts he examines are not located in the areas relevant to this legal challenge. More importantly, the Black voting age population (BVAP) needed to win calculations – the focus of much of his report – are misleading for a number of reasons.

A. Dr. Lewis’s BVAP needed to win calculations in contests with three or more candidates are misleading (Tables 1 and 3)

In contests with three or more candidates (which are addressed in Tables 1 and 3), rather than calculate the percent needed to actually win the contest (50% of the vote is required to win the contest outright), Dr. Lewis redefines winning as “candidates who gained over 50 percent of the vote or *were among the top two vote-getters who moved on to a general election runoff* [emphasis added] under Louisiana’s top-two primary system.” This redefinition has the effect of dramatically reducing the BVAP needed to win. For example, compare H21-004 in Table 1 (election contests with three or more candidates) and Table 2 (contests with just two candidates). In both instances the Black share of the vote is approximately 70% (70% in Table 1, 71% in Table 2). However, in Table 2, the cohesion among Black voters is higher (95%) than in Table 1 (82%), and the percentage of White voters crossing over to vote for the Black-preferred candidate is also higher (17% compared to 12%). Higher White crossover voting and higher Black cohesion should produce a lower BVAP needed to win but the percent BVAP needed to win calculated by Dr. Lewis for H21-004 is considerably higher – 39% – in Table 2 than in Table 1 – 24%. Including candidates who make it into the runoff in the calculation as Dr. Lewis has done it in Tables 1 and 3 makes his calculations in those tables misleading.¹ Had Dr. Lewis calculated the percent BVAP needed to win 50% of the vote (and not just advance out of the primary) for H21-004 in Table 1, he would have arrived at a much higher BVAP needed to win (over 54% BVAP).

Here is another example of the difference between the calculations in Table 1 and 2. According to Table 1, the BVAP needed to win in H21-060 is 19%. This enacted district has a BVAP of 37.7%. Dr. Lewis reports that the win rate for Black-preferred candidates in contests with three

¹ The reason I have calculated two effectiveness scores (effectiveness score #1 and #2) in my report is a recognition that making it into a runoff is by no means a guarantee that the Black-preferred candidate will ultimately win the seat. A comparison of effectiveness scores #1 and #2 in my report makes this quite clear (Dr. Lisa Handley, “Expert Report on the Enacted Louisiana State House and Senate Plans,” June 30, 2023, comparison tables, pages 17-31).

or more candidates in this district is 77%.² But this percentage must reflect simply making it to the runoff because when only two-candidate contests are considered (Table 2), the percent needed to win climbs to 35%. And, although the BVAP in this district exceeds 35% (let alone 19%), the win rate for Black-preferred candidates shown in Table 2 for when there are only two candidates in this district is only 36%.

For this reason, I believe the BVAP needed to win percentages in Tables 1 and 3 are misleading.

B. Including contests in which White candidates are the candidates of choice of Black voters when calculating the BVAP needed to win is misleading (Tables 1 and 2)

The reason the courts have specified that contests that include Black candidates are more probative than contests that do not is that Black voters must be able to elect their candidates of choice even if those candidates are Black candidates – they should not be consigned to being able to elect only the White candidates they prefer. My review of Dr. Alford’s report, which includes the results of all election contests – not simply those contests that include Black candidates – makes it quite clear that White voters support Black-preferred White candidates at higher percentages than Black-preferred Black candidates. By including contests with higher White crossover than would be expected for Black-preferred Black candidates, Dr. Lewis produces lower BVAP needed to win percentages than would be the case if contests with only Black-preferred Black candidates are considered.

Going back to our example of the difference between the calculations, compare the results for HD21-060 in Tables 2 and 4. The percent BVAP needed presented by Dr. Lewis is 35% in all two-candidate contests (Table 2) and, although the BVAP in this district exceeds 35%, the win rate for this district is only 36%. But far more striking, in Table 4, which considers two-candidate contests that include a Black candidate, the percent BVAP needed to win again climbs, this time to 41%. The win rate for Black-preferred Black candidates in this district is only 14%.

Therefore, the resulting percentages of the BVAP needed to win in Table 2 (as well as Table 1) are also misleading.

C. Dr. Lewis’s practice of averaging the BVAP needed to win across multiple contests is misleading (Tables 1-4)

Dr. Lewis averages the BVAP percent needed across all of the contests analyzed to produce a single BVAP percentage needed to win for a given district. But an average is only meaningful if

² The win rate is the percentage of the Black-preferred candidates in the elections examined who would have *won* if the contest had been held only in the given district (Lewis Report, page 5) (emphasis added). However, in contests with three or more candidates, the Black-preferred candidate merely has to be “among the top two vote-getters who moved on to a general election run-off” to be considered a winner and be included in the win rate (Lewis Report, page 6). The “Black-preferred win rate” is listed in column 7 in Lewis Tables 1-4.

each of the individual contest percentages are distributed symmetrically about the median BVAP needed to win percentage. If the distribution is skewed and the mean and the median are not the same, producing an average obscures the likelihood of winning individual contests. The following is a hypothetical example of nine two-candidate contests that included a Black candidate analyzed within the bounds of a single hypothetical state house district:

Column #1	Column #2	Column #3	Column #4	Column #5	Column #6	Column #7	Column #8	Column #10
	Percent Black turnout of BVAP	Percent Black Vote for Black-preferred Candidate (Cohesion)	Percent White turnout of WVAP	Percent White Vote for Black-preferred Candidate (Crossover)	Percent Black VAP Needed for Black-preferred Candidate to Receive 50% of the Vote	Percent of Vote Black-preferred Candidate would Receive in 55% BVAP district	Percent of Vote Black-preferred Candidate would Receive in 50% BVAP district	Percent of Vote Black-preferred Candidate would Receive in 45% BVAP district
contest 1	58.8	92.6	64.9	8.0	52.1	52.5	48.2	44.0
contest 2	38.9	98.8	45.2	10.0	48.8	55.5	51.1	46.7
contest 3	38.9	90.9	45.2	9.7	53.4	51.3	47.3	43.3
contest 4	38.9	94.4	45.2	11.0	50.5	53.8	49.6	45.5
contest 5	48.3	96.8	51.3	12.5	46.0	57.6	53.4	49.2
contest 6	17.4	96.9	24.2	9.1	54.8	50.2	45.8	41.6
contest 7	7.7	98.5	10.1	6.8	53.9	51.0	46.5	42.0
contest 8	34.3	94.4	39.4	9.1	51.4	53.1	48.8	44.6
contest 9	46.4	97.5	42.8	16.5	39.4	62.7	58.6	54.6
Average	36.6	95.6	40.9	10.3	50.0			

Columns 2 and 4 report the participation rates of the age-eligible Black and White population, respectively. Column 3 indicates the percentage of the Black vote that the candidate preferred by Black voters received (that is, the degree of Black cohesion) and Column 5 reports the percentage of White crossover vote for the Black-preferred candidate. Column 6 reports the BVAP needed for the Black-preferred candidate to obtain 50% of the vote given the participation rates and voting patterns reported in columns 2-5.³ The last row in the table provides the averages for each of these columns. When the percent BVAP needed for the Black-preferred candidate to win is averaged across all nine contests, the result for this hypothetical district is 50%.

³ The average percent BVAP needed was calculated by averaging the nine separate percent BVAP needed to win calculations. If the average participation rates, average Black cohesion percentage and average White crossover percentage is used to calculate a single percent BVAP needed to win, the result is a slightly lower 49.3% BVAP.

The last three columns in the table indicate the percentage of the vote the Black-preferred candidate would receive in each of the nine contests individually in the district if the BVAP in the district was 55%, 50% and 45%, given the participation rates and voting patterns for each given contest.

When the nine contests are considered separately, the Black-preferred candidate only wins three of the contests (33%) when the district has a BVAP of 50%. The Black-preferred candidate does not win a majority (five) of the nine contests until the BVAP exceeds 51.4%. And the Black-preferred candidate does not win all nine contests until the district has a BVAP of 55%. Although averaging the percent needed to win for these nine contests suggests that a BVAP of 50% would be sufficient for the Black-preferred candidates to win half of the election contests, this is not an accurate reflection of voting in this hypothetical because the Black-preferred candidate would only win a third of the contests in the district if it had a BVAP of 50%.

Returning once again to our example of the difference between the calculations, the percent BVAP needed to win for HD21-060 in Table 2 is 35% for all two-candidate contests. Although the BVAP in this district actually exceeds 35% (the district has BVAP of 37.7%), the actual win rate for Black-preferred candidates is only 36%. In other words, the Black-preferred candidate does not actually win half of the contests considered despite exceeding the BVAP needed to win calculation for this district.

Therefore, the resulting percentages of the BVAP needed to win in all four of these tables is potentially misleading because the use of averages can obscure the actual BVAP needed to win.

Conclusion: In my expert opinion, only Table 4 in Dr. Lewis's report could be potentially meaningful in the context of this case (and many of the districts included in the table are not, in fact, in areas relevant to this case). I have reservations about averaging the BVAP percentages needed to win across the election contests considered – when I conduct this analysis, I list each contest, and the resulting BVAP needed to win, separately in order to (1) account for the possibility of a skewed distribution in the percentages and (2) more importantly, to be able to shift the percent needed to win to a point where the Black-preferred candidate wins more than only half of the contests being examined. However, I do think the Black-preferred win rate reported by Dr. Lewis in column 7 of Table 4 is both relevant and useful. For example, I note that the Black-preferred win rate in Table 4 does not reach 50% for any non-majority Black districts included in the table except for H21-091, a district that does not fall in an area of interest in this case and was referenced as an exception to the rule that only majority Black districts were effective in my report (Handley Report, page 15).⁴

⁴ In my report I state that “Proposed State House District 91 in both the Illustrative and Enacted State House Plans (the district boundaries are identical in the two plans) is not majority BVAP in composition but has a sizeable BVAP (40.7%) and is an effective Black opportunity district according to the effectiveness scores. While not a majority Black district, this district is a majority minority district, with a

Section II. Comments on the Expert Report of Dr. Solanky

I have reviewed Dr. Solanky's expert report filed in this case and have several criticisms of it, which I outline in this section.

A. Dr. Solanky's arbitrary choice of parishes and elections to study

Parishes In Sections I and II, Dr. Solanky provides data related to registered voters and turnout by party affiliation. Leaving aside the relevance of this data, he presents the information only at the statewide level – he does not examine it at a level relevant to the specific areas of interest in this case. In Section III (Figures 6, 7, and 8), Dr. Solanky provides the results of his analysis of Black and White voting patterns in 12 elections statewide and for five parishes: East and West Baton Rouge, East Carroll, Natchitoches, and Orleans. He does not tell us why he has selected these five parishes. There are no challenged state legislative districts in Orleans or East Carroll Parishes so the voting patterns in these two parishes are irrelevant. In Section IV, Dr. Solanky selects a different set of parishes in which to analyze voting patterns – again with no explanation as to why: Caddo, East Baton Rouge, Iberville, and Point Coupee Parishes.

Elections In Table 5, Dr. Solanky lists the 12 election contests held between 2012 and 2022 that he analyzed for the purposes of Sections I, II, and III. Dr. Solanky has chosen a subset of the 32 statewide election contests during that period,⁵ but if Dr. Solanky had a criterion for selecting these 12 contests, he does not reveal it.⁶ More importantly, his selection of contests ignores a number of probative contests that included Black candidates: the October 2015 contests for Lieutenant Governor, Attorney General and Secretary of State; the October 2017 contest for Treasurer; the November 2018 contest for Secretary of State; the October 2019 election contests for Secretary of State and Treasurer; and the 2020 contest for US Senate. In addition, while he analyzes the 2022 U.S. Senate contest, Dr. Solanky actually combines the vote totals of the Black Democrat (Gary Chambers, Jr.) with that of the White Democrat (Luke Mixon) to produce a single “Democrat” candidate.

The number of election contests analyzed drops precipitously in Section IV. Only two election contests are analyzed when examining voting patterns in East Baton Rouge and Caddo Parishes in this section: the 2020 presidential election contest and the 2022 U.S. Senate contest. Considering Dr. Solanky's concern over the allocation of early and absentee ballots, the presidential contest is an especially odd choice given the abnormally high number of early and

Hispanic VAP of 8.1% and an Asian VAP of 3.0%. The non-Hispanic White VAP is 47.5%” (Handley Report, page 15).

⁵ In addition to analyzing only an unexplained subset of election contests, he reports voter data by race and party for only a subset of the elections in his specified time period. Tables 1-4 report registration and turnout data associated with “the 12 statewide elections held from 2012 to 2022.” In fact, there were 15 statewide election dates during that period. The missing statewide elections are November 2014, October 2017 and November 2018.

⁶ For example, I reported that I analyzed the 16 statewide election contests that included Black candidates between 2015 and 2022.

absentee ballots cast in this election – as Dr. Solanky notes in his report, 45.6% of the ballots cast in this election were not cast on election day and thus were reported only at the parish level (Solanky Report, page 12). The number of contests analyzed drops even more to only one (the 2022 U.S. Senate contest in which he combines the votes cast for the Black Democrat and the White Democrat) when analyzing voting patterns in Iberville and Point Coupee Parishes. Again, there is no explanation as to why the number of election contests analyzed decreases over the course of the report.⁷

B. Dr. Solanky’s introduction of “population density” as a variable to include in the analysis of voting patterns by race

In Section IV of his report, Dr. Solanky introduces the variable “population density” into his analysis of voting patterns of four parishes: East Baton Rouge, Caddo, Iberville, and Point Coupee. It is not clear what relevance there is in looking at population density when evaluating whether voting is racially polarized.

Dr. Solanky takes population density into account by estimating White voting behavior in an ever-narrowing set of precincts falling within each set of his minimum population density categories, beginning with “0” – which includes all precincts in the parish – and gradually winnowing out precincts until he hits what he defines as the most densely populated precincts. The highest density precincts vary – in fact, the density ranges in general, vary – depending on the parish he is examining.⁸ According to Dr. Solanky, high density precincts in East Baton Rouge are those with a minimum population of 5000 (Solanky Report, page 20); in Caddo, they are precincts with a minimum density of 4700 (page 22); in Iberville, high density precincts are those with a minimum density of 3300 (page 24); and in Point Coupee Parish, a high density precinct has a minimum population of 800.

Regardless of what Dr. Solanky considered dense, with each increase in minimum density, the number of precincts remaining in the parish analyses declines. However, Dr. Solanky fails to report how many precincts fall into each of his density ranges. This is important because experts in the area of redistricting and voting rights typically do not conduct a racial bloc voting analysis when there are less than ten or so precincts.⁹ Dr. Solanky does admit that there were only two VTDs with a density of over 800 in Point Coupee (Solanky Report, footnote 11, page 26), but despite this, he conducted a statistical analysis and reports estimates for the two minimum 800

⁷ Dr. Solanky offers time constraints as a reason for not analyzing more election contests (Solanky Report, page 30), but he has had the database I used for my analyses for over a year.

⁸ Not only do his population categories change depending on the parish (Figures 12-19), but the graphs reporting his results are visually misleading. The horizontal axis scales on the figures are not proportionate across figures nor even within a single figure. For example, in Figure 12, he allots the same spacing between 0-300 as between 500-3000 and 5500 to 7000.

⁹ For example, Dr. Lewis indicates that he does not produce estimates for “contest-district combinations that include fewer than 10 voting precincts” (Lewis Report, footnote 2, page 4).

density precincts.¹⁰ A review of his density database suggests that this is not the only instance of conducting a statistical analysis with an extremely limited number of precincts.¹¹

On the basis of his analysis of voting patterns, Dr. Solanky concludes that there is “a rather drastic difference in voting patterns of white voters in voting for a republican or a democrat candidate as the population density in the VTD increases” (Solanky Report, page 29). He does not explain why he believes this is relevant. Moreover, he draws this conclusion on (1) at best, two elections (both of which are problematic, as explained above), and (2) EI estimates that are suspect, at least at higher density levels because of the very limited number of precincts included in the statistical analysis. And, finally, he fails to acknowledge that, regardless of the density range, the one or two contests he examined were polarized in Caddo, Iberville and Point Coupee Parishes and the majority of the density ranges he analyzed were polarized in East Baton Rouge Parish.¹²

¹⁰ While the confidence intervals associated with the estimates increase as the minimum density ranges increase (and the number of precincts included in the analysis decrease) to the point of covering the entire range of possibilities from virtually no White voters supporting Republicans or Democrats to virtually all White voters supporting Republicans or Democrats (for example, see the confidence intervals for the highest density precinct analyses in Iberville and Point Coupee Parishes in Appendices 9 and 10), without having his backup data (a merged database that combine precinct population density, turnout by race, and votes cast for each of the candidates in the contests examined), I cannot recreate his analyses to determine the reliability of his estimates. This criticism also holds true for his estimates of (1) Black voters voting Republican in Section III – the lack of information about the variation in the Black percentages across the parish precincts leaves me skeptical about the reliability of his estimates in a couple of parishes, particularly East Carroll and West Baton Rouge and (2) Black voters voting Republican in precincts he has deemed as outside of the city of Shreveport in Caddo Parish. My attempt at replicating his analysis of Black voters in precincts falling outside of Shreveport – albeit with my data and not his – did not produce anywhere near such a high percentage of Black voters supporting the Republican candidate in the 2020 presidential contest. (My EI estimate for the percent of Black voters supporting Trump in 2020 is 19.6%, Dr. Solanky estimates that 60.6% of Black voters supported Trump.)

¹¹ Using the density database supplied by Dr. Solanky, I ascertained that Dr. Solanky also had only two precincts over 3400 in Iberville Parish, and only three over 3300. In Caddo Parish there are only six precincts with densities over 4500 and only five with densities over 4700 – in other words, he conducted the analysis with six precincts, then removed one precinct and repeated the analysis with only five precincts. Finally, with respect to East Baton Rouge, it appears he had 10 precincts with a density over 5200, then removed two precincts and produced estimates for the eight precincts with densities over 5300, removed another precinct and produced estimates for the seven precincts with densities greater than 5500, and then finally removed an additional three precincts and conducted a statistical analysis of the remaining three precincts with densities of 7000 or more. The same high density precincts are included in every analysis he undertakes – he does not divide precincts into high density and low density (as he divides precincts in Caddo into those in Shreveport and those outside of Shreveport) and conduct an analysis on the two groups separately.

¹² One or two contests is simply not sufficient to draw any conclusions regarding voting patterns or the degree of polarization in a parish (or among a small group of precincts within a parish). I am simply extending Dr. Solanky’s analyses to what would presumably have to be his logical conclusion if he agrees that voting is racially polarized if Black and White voters would have elected different candidates.

C. Dr. Solanky's criticism relating to my allocation of early and absentee votes

Dr. Solanky indicates that he disagrees with the methodology I adopted to allocate early and absentee votes reported only at the parish level to the precincts within the parish (Solanky Report, page 13).¹³ Faced with the question of whether to ignore early and absentee votes or allocate the parish level results to the precinct level using some algorithm, I chose to allocate the parish level early and absentee voters based on each candidate's precinct votes on Election Day. In my expert opinion, this is the best available allocation method for these votes.

Dr. Solanky mistakenly believes that "the flaw" in my parish-wide distribution of absentee and early votes is there is an underlying assumption that "all absentee and early voters are homogenous" (Solanky Report, page 19). In fact, the allocation methodology does not assume this – it recognizes the heterogeneity of precinct-level voters by allocating votes differently depending on how voters in the precincts voted on election day.

Dr. Solanky offers no alternative approach when expressing his disagreement with my allocation methodology. However, he does adopt an allocation method when faced with a similar situation, that is, how to allocate votes reported at a higher than precinct level to individual component precincts. Footnote 10 in his report (Solanky Report, page 20) describes the situation and his solution:

For Caddo parish's 2022 senate elections, precinct 159 was absorbed by precincts 122, 163, and 165. In order, to match the VTDs for the 2020 and 2022 elections in Caddo parish, the precinct-level votes for the 2020 election have been equally divided into these three precincts.

In other words, Dr. Solanky simply divided the votes for each of the candidates across the three precincts equally – paying no attention to the populations of the three component pieces of the precinct as divided. If a larger portion of precinct 159 was allocated to, say, precinct 122 as opposed to precinct 163 or 165 in 2022, then a larger portion of the votes for each of the candidates should also have been allocated to precinct 122. But this is not what he did.

D. Dr. Solanky's contention that I made no attempt to investigate Black and White voting behavior except on a parish or regional basis

Dr. Solanky's contention that I did not investigate Black and White voting behavior other than at the parish or regional level is not correct. My report reflects extensive district-level analyses of

¹³ Despite disagreeing with my methodology, Dr. Solanky indicates that he followed my allocation methodology "in order to verify the EI results presented in Dr. Handley's report" (Solanky Report, page 13). He does not, in fact, conduct the same analysis and therefore does nothing to verify my EI results. However, Dr. Alford does conduct the same analyses and does verify my EI results.

the voting patterns of Black and White voters residing in the specific state legislative districts at issue in this case.

The effectiveness analysis that I conducted takes into account the participation rates and voting patterns of only those Black and White voters who reside in a given enacted or illustrative district. If a district is deemed ineffective, this means that Black and White district residents' voting patterns are sufficiently racially polarized to result in the consistent defeat of the candidates of choice of Black voters in that district. If the district is deemed effective it usually means that, despite the existence of racially polarized voting, there are a sufficient number of Black voters in the district to ensure the success of Black-preferred candidates.¹⁴

While Dr. Solanky contends that he has shown that Black and White voters have different voting patterns across parishes, and "sometimes different areas within the same parish" (Solanky Report, page 29), he fails to relate this to any way to specific enacted or illustrative state legislative districts at issue in this litigation. Moreover, his notion that he has captured different "areas" of the parish is likely to be inaccurate as he provides no reason to believe that his grouping of "dense" precincts produces contiguous precincts that form a specifically defined area in the parish.

III. Comments on the Expert Report of Dr. Alford

Dr. Alford contends that party, not race, accounts for the very different vote choices of Black and White voters in recent Louisiana elections. He supports this argument with the contention that because White voters support White and Black Democrats at comparable rates, the vote choices of Black and White voters can best be explained by party rather than race. This claim is flawed for at least two reasons. First, it is not the race of the candidates, but rather the race of the voters that matters in a vote dilution claim. And, in any case, it is not true that White voters support Black and White Democrats equally. Second, and more importantly, this argument suggests that the two variables – race and party – are competing options when, in fact, they are highly correlated explanations for the voting patterns found in recent Louisiana elections.¹⁵

A. Dr. Alford incorrectly focuses on the race of the candidates rather than race of the voters

Dr. Alford argues that because Black and White voters support Black and White Democratic candidates at comparable rates, the polarization is partisan rather than racial.

Dr. Alford's contention regarding partisanship rests on the race of the **candidates** rather than on the vote choices based on the race of the **voters** and is incorrect. First, in the context of a vote

¹⁴ While it could mean that voting is not polarized in that particular district, the fact that voting is starkly polarized in the general area of interest makes this proposition unlikely.

¹⁵ Racially polarized voting patterns that rest on the alignment of race, party and ideology has been referred to as *conjoined polarization*. Bruce Cain and Emily Zhang, "Blurred Lines: Conjoined Polarization and Voting Rights," *Ohio State Law Journal*, vol. 77 (4): 2016.

dilution claim, the relevant inquiry is whether Black and White voters consistently support different candidates – with Black voters cohesive in their support of their candidates of choice – and whether the candidates supported by Black voters are usually defeated by the candidates supported by White voters.

Second, White voters do not, in fact, support Black and White Democratic candidates at comparable rates in any of the seven areas of interest. It is no surprise that the only Democrat to win statewide office recently was a White Democrat. Dr. Alford acknowledges that “John Bel Edwards was able to draw a somewhat larger than typical share of the White vote in his two 2015 and two 2019 gubernatorial contests” (Alford Report, page 12). While this is true, what is also true is that White voters consistently provide more support for White Democrats than Black Democrats in general.

Using the EI estimates provided by Dr. Alford in the Appendix to his report, I calculated the average percentage of Black and White votes for Black and White Democrats in the election contests he analyzed.¹⁶ The results can be found in Table 1 at the end of this report. What is apparent looking at the averages in this table is that, while White voters do not provide much support to either White or Black Democratic candidates, White voters consistently provide more support to White Democrats than they do to Black Democrats. This is true for all seven areas of interest and it is true whether there are only two candidates or more than two candidates in the contest.

Another approach to testing the claim that White voters support Democratic candidates similarly regardless of whether the candidates are Black or White Democrats is to examine contests that included both a White Democrat and a Black Democrat. Two contests that satisfied these criteria are the November 2022 U.S. Senate contest and the November 2018 Secretary of State contest.¹⁷ In both contests, White support for the White Democrat was higher than support for the Black Democrat in the same contest. These percentages, which are also drawn from Dr. Alford’s Appendix, are included in Table 2 at the end of this report.

Because Louisiana does not conduct separate Democratic and Republican primaries, the voting patterns of Black and White voters that choose to vote in discrete Democratic primaries cannot be ascertained. The reason that this would be of interest is that it removes party from the

¹⁶ I did not include in this calculation three candidates who were not supported by either Black or White voters and received only a tiny portion of the total votes cast: Oscar Dantzler, a Black Democrat who received only .82% of the statewide vote in the October 2019 gubernatorial contest; and Cary Deaton (White Democrat) and S.L. Simpson (Black Democrat) who received 1.06% and .67% of the statewide votes cast in the October 2015 gubernatorial race. I have also not included the 2020 presidential election in the list of contests I averaged as I was uncertain which category to place the contest – Dr. Alford has included this contest in a middle ground between the 2012 and 2016 election because it included a Black candidate, but this candidates was only as a running mate.

¹⁷ There were three other contests that included both Black and White Democrats that I have not compared here. Two contests included very minor candidates and are listed in footnote 2, above. The third contest, an October 2019 election for Commissioner of Agriculture, included two White Democrats and a Black Democrat. In this contest Black and White voters both supported one of the White Democrats over the other White Democrat and the Black Democrat. However, the pattern of more Black voter support than White voter support for the sole Black Democrat is also present in this election contest.

equation – all of the voters in the primary are presumably Democrats. One proxy to this is to compare the voting patterns of White voters who have registered as Democrats and Black voters who have registered as Democrats. There are two runoff elections that featured contests that included a White Democrat and a Black Democrat on the ballot. In November 2015, John Bel Edwards, a White Democrat, ran in the gubernatorial race against a White Republican (David Vitter) and Kip Holden, a Black Democrat, ran for lieutenant governor against a White Republican (Billy Nungesser). In November 2019, John Bel Edwards ran for re-election in the gubernatorial race against Eddie Rispone, a White Republican, and Gwen Collins-Greenup, a Black Democrat, ran for Secretary of State against Kyle Ardoin, a White Republican. In both instances, the White Democrat won but the Black Democrat was defeated.

My analysis of voting patterns in these contests, found in Table 3 at the end of this report, indicate that, while Black Democrats supported both the White and the Black Democrats candidates approximately equally in both the 2015 and 2019 runoff elections, White Democrats strongly and consistently favored the White Democratic candidate over the Black Democratic candidate in both the 2015 and 2019 runoff elections.¹⁸

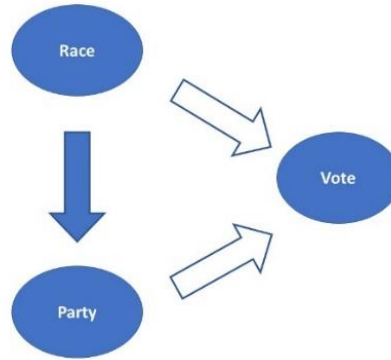
B. Dr. Alford erroneously assumes that race and party are competing explanations for the voting patterns of Black and White voters

By positing race or party as an either-or proposition to explain the voting patterns of Black and White voters, Dr. Alford suggests that the two variables – race and party – are competing options when, in fact, they are highly correlated explanations for the voting patterns found.¹⁹

Arguing that the roles of race and party in vote choice can be evaluated separately by simply showing that Black and White voters support candidates from different parties ignores the role that race plays in explaining a voter's support for one party's candidates over the other party's candidates. The outlined arrows in the diagram below illustrate the argument being made; the solid arrow indicates the relationship being ignored in the contention that party, not race, explains vote choices.

¹⁸ While the confidence intervals for some of the estimates of the percentage of White Democrats supporting the candidates are wide, I am not presenting this information to support the contention that voting is polarized. I merely intend this as some rebuttal evidence to Dr. Alford's argument that Black and White voters support Black and White Democratic candidates at a comparable rate.

¹⁹ Racially polarized voting patterns that rest on the alignment of race, party and ideology has been referred to *conjoined polarization*. Bruce Cain and Emily Zhang, "Blurred Lines: Conjoined Polarization and Voting Rights," *Ohio State Law Journal*, vol. 77(4): 2016.



Social science research reveals the significant role that race, racial attitudes and racial policy preferences play in dictating individuals' partisan preferences.²⁰ The relationship between racial attitudes and partisan affiliation is especially strong in the South, where the partisan affiliations of White voters and Black voters have fluctuated directly with the racial policies embraced by the Democratic and Republican parties. Researchers have traced Southern realignment – the shift of White voters from overwhelming support for the Democratic party to nearly equally strong support for the Republican party – to the Democratic party's support for civil rights legislation beginning in the 1960s.²¹ The differences in attitudes on racial issues between Republican and Democrats persist today.²²

²⁰ See, for example, Edward Carmines and James Stimson, *Issue Evolution: Race and the Transformation of American Politics*. Princeton, NJ: Princeton University Press, 1989; Maruice Mangum, "The Racial Underpinnings of Party Identification and Political Ideology," *Social Science Quarterly* 94 (5): 2013; Carlos Algara and Isaac Hale, "Racial Attitudes and Political Cross-Pressures in Nationalized Elections: The Case of the Republican Coalition in the Trump Era," *Electoral Studies*, 68: December 2020.

²¹ See, for example, Edward Carmines and James Stimson, *Issue Evolution: Race and the Transformation of American Politics*. Princeton, NJ: Princeton University Press, 1989; Morgan Kousser, "The Immutability of Categories and the Reshaping of Southern Politics," *Annual Review of Political Science* vol. 13, 2010; Ilyana Kuziemko and Ebonya Washington, "Why did the Democrats Lose the South? Bringing New Data to an Old Debate," *American Economic Review*, vol.108(10): 2018. According to Kuziemko and Washington, "[D]efection among racially conservative whites just after Democrats introduced sweeping Civil Rights legislation explains virtually all of the party's losses in the region" (page 2865).

²² The gap is actually increasing, but primarily due to the more liberal attitudes of Democrats related to race. Robert Griffin, Mayesha Quasem, John Sides, and Michael Tesler, "Racing Apart: Partisan Shifts on Racial Attitudes Over the Last Decade," A Research Report from the Democracy Fund Voter Study Group, October 2021. A recently published study of racial attitudes by the Pew Research Center reports several examples of differences in racial attitudes between Democrats and Republicans, including: (1) the need for increased attention to history of slavery and racism (Republicans are far more likely than Democrats to say increased attention to the issues is bad for the country); (2) the need to ensure equal rights for all Americans (Republicans overwhelmingly think only a little (47%) or nothing (30%) needs to be done to ensure equal rights for all Americans; Democrats (74%) agree that a lot more needs to be done

Dr. Alford does not conduct any analyses to attempt to assess the relative roles of race and party in explaining vote choice in Louisiana. By treating the variables as competing explanations for vote choice, he ignores the interrelationship between these factors: race has both a direct effect and an indirect effect on vote choice, with party playing a mediating role between race and vote choice. Social scientists have long been aware that failing to account for the possibility of mediation can produce biased conclusions about causation, and they have begun to develop statistical techniques to reduce or eliminate this bias under certain conditions.²³ Dr. Alford does no statistical analysis at all to determine the relative roles of the two variables and their interaction, let alone attempt any of these corrective techniques.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed August 11, 2023.



Lisa Handley, Ph. D

to achieve racial equality; and (3) the progress made thus far towards racial equality (Republicans (71%) are much more likely than Democrats (29%) to say the nation has made a lot of progress toward racial equality over the past half-century). *See* “Deep Divisions in Americans’ Views of Nation’s Racial History – and How to Address It,” Report of the Pew Research Center, August 12, 2021. Similarly, a Harvard political economist and his colleagues recently reported finding “a stark partisan gap among white respondents, particularly in the perceived causes of racial inequities and what should be done about them. White Democrats and Black respondents are much more likely to attribute racial inequities to adverse past and present circumstances and want to act on them with race-targeted and general redistribution policies. White Republicans are more likely to attribute racial gaps to individual actions.” Iberto Alesina, Matteo Ferroni, and Stephanie Stantcheva, “Perceptions of racial gaps, their causes, and ways to reduce them,” National Bureau of Economic Research Working Papers Series, October 2021.

²³ See, for example, Avidit Acharya, Matthew Blackwell, and Maya Sen, “Explaining causal findings without bias: Detecting and assessing direct effects,” *American Political Science Review* 110 (3): 2016.

TABLE 1

Average Percentage of Votes From Black and White Voters for Black and White Democrats	Area 1		Area 2		Area 3		Area 4		Area 5		Area 6		Area 7	
	Average Percent Support from Black Voters		Average Percent Support from White Voters		Average Percent Support from Black Voters		Average Percent Support from White Voters		Average Percent Support from Black Voters		Average Percent Support from White Voters		Average Percent Support from Black Voters	
	73.3	7.6	74.3	9.8	74.5	12.7	73.6	7.9	74.6	9.8	73.8	10.0	74.6	13.1
Black Democrats in all contests in which they ran	73.3	7.6	74.3	9.8	74.5	12.7	73.6	7.9	74.6	9.8	73.8	10.0	74.6	13.1
White Democrats in all contests in which they ran	65.6	11.3	64.1	16.1	64.3	17.3	65.0	12.8	66.7	15.9	63.3	15.4	64.5	17.3
Black Democrats who ran in contests with only 2 candidates	93.0	10.6	94.1	14.2	93.1	18.5	95.1	11.3	95.2	15.0	93.6	14.0	93.0	18.8
White Democrats who ran in contests with only 2 candidates	98.7	21.5	98.0	35.0	98.8	38.0	97.9	25.3	98.3	35.3	97.6	34.2	98.8	37.8
Black Democrats who ran in contests with 3 or more candidates	61.9	5.8	62.8	7.3	63.6	9.3	61.1	5.9	62.5	6.7	62.3	7.6	63.8	9.7
White Democrats who ran in contests with 3 or more candidates	59.0	9.3	57.4	12.3	57.4	13.1	58.4	10.4	60.4	12.0	56.4	11.6	57.7	13.3

TABLE 2

Percentage of Votes From
Black and White Voters for the
Black and White Democrats in
the Election Contest

**November 2022
US Senate**

Black Democrat	51.5	4.9	51.5	5.2	65.0	5.4	45.4	2.7	56.8	3.0	62.8	3.2	65.1	5.9
White Democrat	26.3	6.9	22.2	12.8	22.5	12.9	30.4	3.3	22.3	6.4	19.7	6.7	23.5	14.0

**November 2018
Secretary of State**

Black Democrat	53.5	4.5	61.1	7.0	58.6	4.8	51.2	6.0	54.3	4.9	54.4	4.9	60.8	5.6
White Democrat	35.1	8.7	24.4	8.8	29.7	13.1	33.6	6.9	34.6	9.9	31.8	8.0	28.4	12.8

Table 3

Estimates of Black and White Registered Democrats Support for Candidates Competing in the 2015 and 2019 Statewide Runoff Elections

EI RxC Estimates of the Percentage of Black and White Registered Democrats Voting for Each of the Candidates				EI RxC Estimates of the Percentage of Black and White Registered Democrats Voting for Each of the Candidates			
Nov 2015 Runoff Elections		Nov 2019 Runoff Elections		Nov 2015 Runoff Elections		Nov 2019 Runoff Elections	
Black Voters Registered as Democrats	Confidence Intervals	White Voters Registered as Democrats	Confidence Intervals	Black Voters Registered as Democrats	Confidence Intervals	White Voters Registered as Democrats	Confidence Intervals
Area 1				Area 1			
Governor				Governor			
Edwards	98.7	98.0, 99.2	59.2	46.5, 71.3	Edwards	98.3	97.5, 98.9
Vitter	1.3	.8, 2.0	40.8	28.7, 53.4	Response	1.7	1.1, 2.5
Lt Governor				Secretary of State			
Holden	98.5	97.9, 99.0	41.6	27.9, 52.7	Collins-Greenup	97.5	96.6, 98.2
Nungesser	1.5	1.0, 2.1	58.4	47.3, 72.1	Ardoin	2.5	1.8, 3.4
Area 2				Area 2			
Governor				Governor			
Edwards	97.9	96.9, 98.7	48.6	41.9, 57.6	Edwards	97.3	96.0, 98.3
Vitter	2.1	1.3, 3.1	51.4	42.4, 58.1	Response	2.7	1.7, 4.0
Lt Governor				Secretary of State			
Holden	95.9	94.0, 97.3	5.0	3.1, 8.0	Collins-Greenup	96.4	94.9, 97.7
Nungesser	4.1	2.7, 6.0	95.0	92.0, 96.9	Ardoin	3.6	2.3, 5.1
Area 3				Area 3			
Governor				Governor			
Edwards	98.7	98.2, 99.1	62.0	56.3, 67.2	Edwards	98.5	97.9, 99.0
Vitter	1.3	.9, 1.8	38.0	32.8, 43.7	Response	1.5	1.0, 2.1
Lt Governor				Secretary of State			
Holden	98.3	97.6, 98.8	45.0	38.5, 51.6	Collins-Greenup	97.3	96.4, 98.0
Nungesser	1.7	1.2, 2.4	55.0	48.4, 61.5	Ardoin	2.7	2.0, 3.6
							19.9, 32.8
							67.2, 80.1

EI RxC Estimates of the Percentage of Black and White Registered Democrats Voting for Each of the Candidates				EI RxC Estimates of the Percentage of Black and White Registered Democrats Voting for Each of the Candidates				
Nov 2015 Runoff Elections		Nov 2019 Runoff Elections		Black Voters Registered as Democrats		White Voters Registered as Democrats		
Black Voters Registered as Democrats	Confidence Intervals	White Voters Registered as Democrats	Confidence Intervals	Black Voters Registered as Democrats	Confidence Intervals	White Voters Registered as Democrats	Confidence Intervals	
Area 4								
Governor								
Edwards	98.0	96.6, 99.0	52.7	38.6, 65.0	98.2	96.9, 99.2	39.8	26.1, 52.0
Vitter	2.0	1.0, 3.4	47.3	35.0, 61.4	1.8	.8, 3.1	60.2	48.0, 73.9
Secretary of State								
Holden	97.6	96.1, 98.7	35.0	24.3, 44.3	97.3	95.7, 98.5	20.7	11.2, 30.2
Nungesser	2.4	1.3, 3.9	65.0	55.7, 75.7	2.7	1.5, 4.3	79.3	69.8, 88.8
Area 5								
Governor								
Edwards	98.3	97.2, 99.0	77.1	66.0, 87.3	98.3	97.1, 99.1	53.7	37.5, 68.8
Vitter	1.7	1.0, 2.8	22.9	12.7, 34.0	1.7	.9, 2.9	46.3	31.2, 62.5
Secretary of State								
Holden	97.7	96.4, 98.7	44.0	31.7, 51.7	97.0	95.4, 98.2	25.3	14.2, 33.8
Nungesser	2.3	1.3, 3.6	56.0	48.3, 68.3	3.0	1.8, 4.6	74.7	66.2, 85.8
Area 6								
Governor								
Edwards	97.9	96.6, 98.9	63.2	53.9, 72.0	97.9	96.3, 99.0	41.5	29.8, 53.7
Vitter	2.1	1.1, 3.4	36.8	28.0, 46.1	2.1	1.0, 3.7	58.5	46.3, 70.2
Secretary of State								
Holden	98.0	96.7, 99.0	46.5	38.4, 56.0	96.4	94.4, 98.0	18.3	8.5, 28.6
Nungesser	2.0	1.0, 3.3	53.5	44.0, 61.6	3.6	2.0, 5.6	81.7	71.4, 91.5
Area 7								
Governor								
Edwards	98.5	97.8, 99.0	73.9	66.7, 81.2	98.2	97.4, 98.9	67.5	60.1, 76.4
Vitter	1.5	1.0, 2.2	26.1	18.8, 33.3	1.8	1.1, 2.6	32.5	23.6, 39.9

EI RxC Estimates of the Percentage of Black and White Registered Democrats Voting for Each of the Candidates				EI RxC Estimates of the Percentage of Black and White Registered Democrats Voting for Each of the Candidates			
Nov 2015 Runoff Elections		Black Voters		White Voters		Nov 2019 Runoff Elections	
		Registered as Democrats	Confidence Intervals	Registered as Democrats	Confidence Intervals	Registered as Democrats	Confidence Intervals
Lt Governor	Holden	98.2	97.4, 98.8	60.4	51.0, 69.1	97.3	96.3, 98.2
	Nungesser	1.8	1.2, 2.6	39.6	30.9, 49.0	2.7	1.8, 3.7
						Secretary of State	
						Collins-Greenup	
						Ardoin	
						39.8	
						60.2	
						29.0, 50.6	
						49.4, 71.0	

**UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA**

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE,
DR. ALICE WASHINGTON, STEVEN
HARRIS, ALEXIS CALHOUN, BLACK
VOTERS MATTER CAPACITY BUILDING
INSTITUTE, and THE LOUISIANA STATE
CONFERENCE OF THE NAACP,

Plaintiffs,

v.

R. KYLE ARDOIN, in his official capacity as
Secretary of State of Louisiana, *et al.*

Defendants.

Case No. 3:22-cv-00178-SDD-SDJ

Chief Judge Shelly D. Dick

Magistrate Judge Scott D. Johnson

EXPERT REPORT OF JOHN R. ALFORD, Ph.D.

July 28, 2023

SCOPE OF INQUIRY

I have been retained by counsel for Intervenor-Defendants, Clay Schexnayder, in his official capacity as Speaker of the Louisiana House of Representatives, and Patrick Page Cortez, in his official capacity as President of the Louisiana Senate, as an expert to provide analysis for defendants related to the evidence of racially polarized voting in the above-entitled action, which is a challenge to the most recently adopted State House and Senate maps for Louisiana. I have been asked by counsel to examine and respond to the two reports provided by plaintiffs' expert, Dr. Lisa Handley, and the associated data and materials provided in disclosure. My rate of compensation in this matter is \$500 per hour and my compensation does not depend on the outcome of this lawsuit.

QUALIFICATIONS

I am a tenured full professor of political science at Rice University. In my over thirty-five years at Rice I have taught courses on redistricting, elections, political representation, voting behavior and statistical methods at both the undergraduate and graduate level. I am the author of numerous scholarly works on political behavior. These works have appeared in academic journals such as the *American Journal of Political Science*, *Journal of Politics*, *Science*, *Annual Review of Political Science*, *Legislative Studies Quarterly*, *Annals of the American Academy of Political and Social Science*, *Political Psychology*, and *Political Research Quarterly*.

Over the last thirty-five years, I have worked with numerous local governments on districting plans and on Voting Rights Act issues. I have previously provided expert reports and/or testified as an expert witness in voting rights and statistical issues in a variety of court cases in Alabama, Arkansas, Florida, Georgia, Kansas, Louisiana, Michigan, Mississippi, New Mexico, New York, Pennsylvania, Washington, and Wisconsin. The details of my academic background, including all publications in the last ten years, and work as an expert, including all cases in which I have testified by deposition or at trial in the last four years, are covered in the attached CV (Appendix A).

DATA AND SOURCES

In preparing my report, I have reviewed the reports filed by the plaintiffs' experts Dr. Lisa Handley. I have also relied for my report on the analysis, the associated documentation, and the data provided to date by Dr. Handley. Additional publicly available Louisiana election data was obtained from the election website of the Louisiana Secretary of State, including election returns and voter turnout broken down by race at the parish precinct level for each of the contests analyzed in this report.

METHODS

Dr. Handley and I both utilize the statistical technique of Ecological Inference (EI), developed originally by Professor Gary King.¹ EI is a more efficient technique intended specifically to improve on ecological regression (ER), the analysis technique previously used in VRA lawsuits to assess voter cohesion and polarization. In a nutshell, traditional ecological regression is a mathematical technique for estimating the single best fitting straight line that could be drawn to describe the relationship between two variables in a scatter plot. Applied to voting rights cases, the logic of ecological regression analysis is to determine to what degree, if any, the vote for a candidate increases in a linear fashion as the concentration of voters of a given ethnicity in the precincts increases. In contrast, King's EI procedure utilizes a method of bounds analysis, combined with a more traditional statistical method, to improve on standard ecological regression. While the details are mathematically complex, the differences mostly center on utilizing deterministic bounds information contained in individual precinct results that would not be exploited in ecological regression. In addition, EI relaxes the linear constraint that a traditional ecological regression analysis would impose on the pattern across precincts. This combination in EI of relaxing some assumptions and utilizing more information typically yields a more efficient estimation of cohesion and polarization when compared to standard ecological regression,

¹ King, Gary. (1997). *A Solution to the Ecological Inference Problem*. Princeton Univ. Press.

although in many cases the results from EI are not substantively different than ER results for the same election data.

In its original form, King's EI could only be used to estimate voter support when there were two racial groups (e.g., White and Black) and two candidates, hence the label "2 x 2 EI" often applied to the original form. Often there are more than two racial groups (e.g., White, Black, and Latino), or more than two possible vote choices. To accommodate these situations, one would have to run an independent 2 x 2 EI analysis for each race of interest and for each candidate of interest (and for the no voting category), an approach suggested by King and labeled the 'iterative' approach to "R x C" (Rows by Columns) estimation.

Shortly after suggesting the iterative method, King published a more advanced theoretical approach to R x C estimation using a Multinomial-Dirichlet Bayesian technique. A fully Bayesian implementation of this approach was viewed by King and his coauthors as computationally impractical, given that it could take as long as a week or more to run a single model on the computers available at that time, and they provided instead an implementation that relied on nonlinear least-squares.² Finally, in 2007 Lau and colleagues, taking advantage of advancements in computing technology, implemented the fully Bayesian estimation procedure outline by King, et al and provided a software module called "eiPack" that included the module 'ei.MD.bayes' that allowed for the estimation of the true Bayesian approach.³ This is the implementation of EI R x C that I have relied on here, and is also one of the techniques relied on by Dr. Handley for her analysis in this case.⁴

ELECTION ANALYSIS

I began my analysis with an attempt to replicate selected results of the RxC Ecological

² See Rosen, Jiang, King, and Tanner., *Bayesian and Frequentist Inference for Ecological Inference: The R x C Case*, 55 STATISTICA NEERLANDICA 134 (2001).

³ See Lau, Olivia, Ryan T. Moore, and Michael Kellermann. "eiPack: Ecological Inference and Higher-Dimension Data Management," R News, vol.7, no. 2 (October 2007).

⁴ The data programing required for the EI RxC analysis for this report was performed by my Rice colleague Dr. Randy Stevenson under my direction and control.

Inference (EI) analysis provided by Dr. Handley in this case. My replication results matched very closely with the EI RxC estimates in Dr. Handley's report. To illustrate this I provide below the estimates for two representative election contests, the early 2015 Lt. Governor's November election, and the later 2019 Secretary of State's November election that were also analyzed in Dr. Handley's report. My replication results for selected elections along with the estimates reported by Dr. Handley in Appendix 1 through Appendix 7 to her first report in this case are reported below in Table 1.

Table 1: Replication of Handley EI RxC Analysis for 2015 and 2019

Contest	Year	Month	Handley's Region		% Black		% White	
			Code	Candidate Name	Support	Handley Estimate	Support	Handley Estimate
Lt Governor	2015	Nov	1	Holden	98.3	98.1	16.0	15.6
Lt Governor	2015	Nov	1	Nungesser	1.7	1.9	84.0	84.4
Lt Governor	2015	Nov	2	Holden	94.0	94	14.8	14.7
Lt Governor	2015	Nov	2	Nungesser	6.0	6.0	85.2	85.3
Lt Governor	2015	Nov	3	Holden	96.1	96.3	39.7	40.5
Lt Governor	2015	Nov	3	Nungesser	3.9	3.7	60.3	59.5
Lt Governor	2015	Nov	4	Holden	97.5	97.2	18.8	19.7
Lt Governor	2015	Nov	4	Nungesser	2.5	2.8	81.2	80.3
Lt Governor	2015	Nov	5	Holden	96.8	97	23.8	23.5
Lt Governor	2015	Nov	5	Nungesser	3.2	3.0	76.2	76.5
Lt Governor	2015	Nov	6	Holden	97.5	97.5	33.6	33.7
Lt Governor	2015	Nov	6	Nungesser	2.5	2.5	66.4	66.3
Lt Governor	2015	Nov	7	Holden	95.4	95.6	39.1	40.5
Lt Governor	2015	Nov	7	Nungesser	4.6	4.4	60.9	59.5
Sec. of State	2019	Nov	1	Ardoyn	3.0	3.1	90.5	89.9
Sec. of State	2019	Nov	1	Collins-Greenup	97.0	96.9	9.5	10.1
Sec. of State	2019	Nov	2	Ardoyn	4.4	4.1	82.1	81.8
Sec. of State	2019	Nov	2	Collins-Greenup	95.6	95.9	17.9	18.2
Sec. of State	2019	Nov	3	Ardoyn	4.5	4.5	83.7	83.7
Sec. of State	2019	Nov	3	Collins-Greenup	95.5	95.5	16.3	16.3
Sec. of State	2019	Nov	4	Ardoyn	3.4	3.3	89.2	88.3
Sec. of State	2019	Nov	4	Collins-Greenup	96.6	96.7	10.8	11.7
Sec. of State	2019	Nov	5	Ardoyn	4.7	4.6	87.2	87.4
Sec. of State	2019	Nov	5	Collins-Greenup	95.3	95.4	12.8	12.6
Sec. of State	2019	Nov	6	Ardoyn	5.2	4.7	88.3	88.4
Sec. of State	2019	Nov	6	Collins-Greenup	94.8	95.4	11.7	11.6
Sec. of State	2019	Nov	7	Ardoyn	4.2	4.3	82.5	82.3
Sec. of State	2019	Nov	7	Collins-Greenup	95.8	95.7	17.5	17.7

My replication results match the RxC estimates reported by Dr. Handley very closely, with only the slight variation, typically less than one-half of one percentage point, that one would expect given the inherent variation associated with EI estimation. Because I am able to replicate her results with my EI technique, it gives me confidence that I am following her methodology and generating results consistent with hers.

A. A Comparison of Three Presidential Elections

In Table 2 below, I report the results for the three most recent presidential elections. For an overview of voter polarization, November presidential elections are a good place to start. These elections are typically competitive, the same two candidates compete in every precinct, and the analysis is not affected by local voting effects where votes for one candidate might be boosted by ‘friends and neighbors voting’. The EI RxC estimates in Table 2 are averages of the estimates across Dr. Handley’s seven areas of interest. The individual estimates for each of the seven areas are included in Appendix B.

**Table 2: Presidential Election Results Report –
Averages of EI RxC Estimates across Handley’s Seven Areas of Interest**

Date	Contest	Candidate Name	Party	Race	% Black Support	% low CI	% high CI	% White Support	% low CI	% high CI
Nov. 2012	President	Obama/Biden	D	B/W	98.5	96.6	99.4	12.2	11.4	13.4
		Romney/Ryan	R	W/W	2.8	2.1	3.6	87.8	86.6	88.6
Nov. 2016	President	Clinton/Kaine	D	W/W	98.7	97.8	99.3	13.4	12.6	14.2
		Trump/Pence	R	W/W	1.3	0.8	2.0	86.6	85.8	87.4
Nov. 2020	President	Biden/Harris	D	W/B	96.3	94.8	97.2	13.8	12.9	15.2
		Trump/Pence	R	W/W	2.6	1.7	4.0	85.5	84.1	86.4

The 2012 contest features a Black Democrat running against a White Republican. The 2020 contest represents an intermediate type, which Dr. Handley includes in her analysis of racially contested elections because, while the presidential candidates were both White, the Democratic vice-presidential candidate, Kamala Harris, was Black. The 2016 contest completes the pattern, with a White Democrat running against a White Republican at both the presidential and vice-presidential level. If the race of candidates is a focus for Black voters, then we would expect a clear ordering with Black voter support highest for the 2012 Obama/Biden ticket, lowest for the 2016 Clinton/Kaine ticket, and somewhere in between for the 2020 Biden/Harris ticket. Similarly, if the race of candidates is a focus for White voters, then we would expect White voter support to follow the reverse ordering, with White support for the all-White 2016 Clinton/Kaine ticket the highest and White support for Black led 2012 Obama/Biden ticket the lowest.

Looking first at the estimates for Black voters we can see that in all three elections the Democratic ticket gets a similarly high level of support, with only very modest variation. The highest estimates for Black support at over 98 percent are for the all-White ticket of Clinton/Kaine (98.7%), with Black support for Obama/Biden at 98.5 and for Biden/Harris at 96.3%. Turning to White voters, we can see that in all three elections the Democratic ticket gets a similarly low level of support, with only very modest variation. the lowest estimated support, at 12.3%, is for the 2012 Obama/Biden ticket, and the highest estimate of White support for the Democratic ticket is 13.8% for the 2020 Biden/Harris ticket. Given the associated credible intervals (CI), differences this small would not be treated as reliable evidence of any actual difference. In short, Black and White voters do appear to offer very different levels of support to Democratic and Republican candidates, but there is virtually no difference in the levels of support when we turn the focus to the mix of Black and White candidates in these two-party contested presidential elections.

B. Other Statewide Elections

Dr. Handley, in Appendix 1 through Appendix 7 to her supplemental report date June 30th report in this case, provides results from an EI analysis for 15 statewide contests analyzed within each of her seven geographically defined areas of interest. According to her report, she selected only racially contested elections in each year based on the additional probative value typically accorded racially contested elections. My replication of the RxC EI analysis for those elections in each of the seven areas separately is provided below in Appendix B. For ease of comparison, I have provided the average estimates for Black and White voters for each of the 15 elections in Table 3 below. In addition, where there were multiple Democratic candidates in an election contest, I have provided the sum of the vote percentages for the Democratic candidates.

Table 3: Racially Contested Statewide Elections Included in the Handley Report – Averages of EI RxC Estimates across Handley’s Seven Areas of Interest

Date	Contest	Candidate Name	Party	Race	% Black Support	% low CI	% high CI	% White Support	% low CI	% high CI
Oct. 2015	Att. Gen.	Geri Broussard Baloney	D	B	43.5	42.1	44.9	5.6	4.9	6.4
		Ike Jackson	D	B	34.8	33.7	36.0	1.9	1.4	2.5
		Buddy Caldwell	R	W	16.6	15.4	17.9	48.2	47.3	49.1
		Jeff Landry	R	W	2.6	1.9	3.5	38.9	38.1	39.6
		Marty Maley	R	W	2.4	1.8	3.0	5.4	4.9	5.9
		Dem. Sum			78.3			7.5		
Oct. 2015	Lt Gov.	Kip Holden	D	B	88.3	87.0	89.5	17.9	17.1	18.7
		Elbert Guillory	R	B	2.5	1.9	3.3	8.1	7.4	8.7
		Billy Nungesser	R	W	3.0	2.3	3.9	35.3	34.5	36.0
		John Young	R	W	6.1	5.2	7.1	38.8	37.9	39.6
Oct. 2015	Sec. of State	Chris Tyson	D	B	93.3	91.9	94.6	14.3	13.2	15.4
		Tom Schedler	R	W	6.7	5.4	8.1	85.7	84.6	86.8
Nov. 2015	Lt Gov.	Kip Holden	D	B	96.5	95.3	97.5	26.5	25.3	27.8
		Billy Nungesser	R	W	3.5	2.5	4.7	73.5	72.2	74.7
Oct. 2017	Treasurer	Derrick Edwards	D	B	88.3	86.5	90.0	10.0	9.1	10.9
		Angele Davis	R	W	5.0	3.8	6.4	35.1	34.1	36.1
		Neil Riser	R	W	2.5	1.7	3.4	18.0	17.2	18.8
		John Schroder	R	W	2.2	1.4	3.2	31.5	30.6	32.4
		Others	R/L		1.9	1.3	2.7	5.4	4.7	6.0
Nov. 2017	Treasurer	Derrick Edwards	D	B	97.4	96.1	98.4	15.3	14.2	16.4
		John Schroder	R	W	2.6	1.6	3.9	84.7	83.6	85.8
Nov. 2018	Sec. of State	Gwen Collins-Greenup	D	B	56.3	54.9	57.5	5.4	4.7	6.1
		Renee Fontenot Free	D	W	31.1	29.9	32.3	9.7	9.0	10.4
		Kyle Ardoin	R	W	3.2	2.5	3.9	27.8	27.2	28.3
		Rick Edmonds	R	W	1.6	1.2	2.2	21.6	21.1	22.1
		Thomas Kennedy III	R	W	2.1	1.5	2.7	10.6	10.1	11.0
		Julie Stokes	R	W	2.3	1.8	2.9	14.6	14.1	15.1
		Others			3.5	2.8	4.2	10.3	9.8	10.9
		Dem. Sum			87.4			15.1		

Table 3: Racially Contested Statewide Elections Included in the Handley Report – Averages of EI RxC Estimates across Handley’s Seven Areas of Interest (cont.)

Date	Contest	Candidate Name	Party	Race	% Black Support	% low CI	% high CI	% White Support	% low CI	% high CI
Dec. 2018	Sec. of State	Gwen Collins-Greenup	D	B	96.2	95.0	97.2	14.5	13.5	15.7
		Kyle Ardoin	R	W	3.8	2.8	5.0	85.5	84.3	86.5
Oct. 2019	Lt Governor	Willie Jones	D	B	87.9	86.4	89.2	8.0	7.2	9.0
		Billy Nungesser	R	W	12.1	10.8	13.6	92.0	91.0	92.8
Oct. 2019	Att. Gen.	Ike Jackson	D	B	89.9	88.4	91.3	9.9	9.1	10.9
		Jeff Landry	R	W	10.1	8.7	11.6	90.1	89.1	90.9
Oct. 2019	Sec. of State	Gwen Collins-Greenup	D	B	91.5	90.3	92.5	10.9	10.1	11.7
		Kyle Ardoin	R	W	3.1	2.4	3.9	60.1	59.3	60.8
		Thomas Kennedy III	R	W	3.6	2.8	4.5	23.3	22.5	24.0
		Amanda Smith	R	W	1.8	1.3	2.4	5.8	5.2	6.4
Oct. 2019	Treasurer	Derrick Edwards	D	B	94.0	92.9	95.0	11.3	10.5	12.1
		John Schroder	R	W	2.8	2.1	3.6	85.1	84.4	85.8
		Teresa Kenny	NP	W	3.2	2.5	4.0	3.6	3.0	4.2
Nov. 2019	Sec. of State	Gwen Collins-Greenup	D	B	95.8	94.6	96.8	13.8	12.8	15.0
		Kyle Ardoin	R	W	4.2	3.2	5.4	86.2	85.0	87.2
Nov. 2020	President	Biden/Harris	D	W/B	96.3	94.8	97.2	13.8	12.9	15.2
		Trump/Pence	R	W/W	2.6	1.7	4.0	85.5	84.1	86.4
		Others			1.2	0.9	1.5	0.7	0.5	0.9
Nov. 2020	Senator	Adrian Perkins	D	B	50.3	48.9	51.6	6.5	5.6	7.3
		Derrick Edwards	D	B	29.1	28.0	30.3	2.0	1.4	2.6
		Bill Cassidy	R	W	4.3	3.5	5.3	86.0	85.2	86.7
		Others			16.3	15.1	17.5	5.6	4.8	6.4
		Dem. Sum			79.4			8.5		
Nov. 2022	Senator	Gary Chambers	D	B	56.8	55.5	58.2	4.3	3.7	5.0
		Luke Mixon	D	W	23.9	22.6	25.1	9.0	8.4	9.6
		Syrita Steib	D	B	7.2	6.7	7.8	0.5	0.4	0.7
		M.V. Mendoza	D	H	2.0	1.7	2.3	0.3	0.2	0.4
		John Kennedy	R	W	4.5	3.6	5.6	83.7	83.1	84.4
		Devin Graham	R	W	1.0	0.7	1.4	1.3	1.0	1.6
		Others			4.5	3.9	5.1	0.8	0.6	1.1
		Dem. Sum			89.9			14.1		

Table 3 shows that Black voters tend to provide cohesive support to Democratic candidates, often in the 80 to 90 percent range, and that White voters in turn support Republican candidates, with White votes for the Republican candidates typical in the 80 to 90 percent range. Note however that when there are multiple Black Democratic candidates, as there were in the October 2015 Attorney General contest and the November 2020 U.S. Senate contest, the Black vote is typically

divided. Also note that Gwen Collins-Greenup, a Black Democrat that received over 90 percent of the Black vote in the three contests where she was the sole Democrat, only received 56 percent of the Black vote in the November 2018 Secretary of State contest where there was another Democrat running that was White. Similarly, in the 2022 U.S. Senate contest, the preferred candidate of Black voters received 57 percent of the vote, and the remaining Black vote went to other, mostly Democratic, candidates. In neither of these contests was the Black vote cohesive (even at the minimal 60 percent level) for the Black candidate, but the Black vote was cohesive, at nearly 90 percent, for the combined Democratic candidates.

In order to provide additional perspective on the relative degree of partisan versus racial polarization, I have added additional statewide contests in those election years where there were contested elections beyond the contests included in Dr. Handley's report. Most of the available statewide contests are already included in the Handley analysis, and there are no additional contests in 2022, 2020, 2018 or 2017. There are four additional statewide contests in 2019: the October contests for Governor, Insurance Commissioner, and Agriculture Commissioner, as well as the November Governor's runoff. In 2015, there are six additional statewide contests: the October contests for Governor, Treasurer, Insurance Commissioner, and Agriculture Commissioner, as well as the November runoff for Governor and Attorney General.

Table 4 below provides these results. As was the case for Table 3, the estimates reported in Table 4 are the averages of the estimates across Dr. Handley's seven areas of interest. The results for each individual area of interest are reported below in Appendix B. These contests provide a highly useful comparison to the racially contested elections from Dr. Handley's report included above in Table 3, as these elections in Table 4 retain the characteristic of being two-party contested but are not racially contested. If partisan cues account for the polarization in the elections in Table 3, then the party contested elections in Table 4 will show a similar level of polarization despite not being racially contested. Put the other way, if the polarization evident in Table 3 is evidence of Black voters cohesively preferring Black candidates, and White voters

cohesively opposing Black candidates, then the polarization clear in the contests in Table 3 will be absent, or much attenuated in the non-racially contested elections in Table 4.

The overall pattern in the election contests in Table 4 are remarkable similar to the pattern in the election contests in Table 3. Black voters provide highly cohesive support to their preferred Democratic candidate in these contests and at levels as high as the support they provided to Black Democratic candidates in the contests in Table 3. Note that is true even in the three contests where there is a Black Democratic candidate. In all three such contests the Black Democratic candidate is the least supported Democrat in the contest, but Black voter support for the White Democratic candidates in those contests remains cohesive. White voters continue to give their support to the Republican candidates, despite the fact that they could be supporting White candidates even if they voted Democratic. There is evidence that John Bel Edwards was able to draw a somewhat larger than typical share of the White vote in his two 2015 and two 2019 gubernatorial contests, however in the remaining three contests the White Democrats drew approximately the same level of White voter support (10 to 20%) as Black Democrats in Table 3.⁵ Taken together Tables 3 and 4 illustrate that the differences in the candidates supported by Black and White voters highlighted in Dr. Handley's report closely tracks the partisan affiliations of the candidates.

⁵ John Bel Edwards, a West Point graduate and former 82nd Airborne Army Ranger has some notable conservative positions on high-profile issues including abortion and gun control.

**Table 4: Party Contested Statewide Elections Not Included in the Handley Report –
Averages across Handley’s Seven Areas of Interest**

Date	Contest	Candidates	Party	Race	% Black Support	% low CI	% high CI	% White Support	% low CI	% high CI
Oct. 2015	Governor	Cary Deaton	D	W	2.7	2.4	3.1	0.3	0.2	0.4
		Bel Edwards	D	W	89.4	88.4	90.3	18.0	17.2	18.8
		S L Simpson	D	B	1.9	1.6	2.1	0.2	0.2	0.3
		Scott Angelle	R	W	2.3	1.7	2.9	23.0	22.4	23.6
		David Vitter	R	W	1.3	0.8	1.9	30.8	30.1	31.4
		Jay Dardenne	R	W	1.1	0.8	1.6	26.9	26.3	27.5
		Beryl Billiot	I	AI	0.5	0.4	0.7	0.3	0.3	0.4
		Jeremy Odom	I	B	0.5	0.4	0.7	0.3	0.2	0.4
		Eric Orgeron	I	W	0.3	0.2	0.4	0.2	0.1	0.2
		Dem. Sum			94.0			18.6		
Oct. 2015	Comm. of Ins.	Donald Hodge	D	W	35.4	34.0	36.8	4.6	3.9	5.3
		Charlotte McGehee	D	W	47.4	45.9	48.9	5.8	5.1	6.6
		James Donelon	R	W	14.0	12.7	15.4	71.2	70.3	72.1
		Matt Parker	R	W	3.1	2.4	3.9	18.4	17.6	19.0
		Dem. Sum			82.9			10.4		
Oct. 2015	Comm. of Agr.	Charles Greer	D	W	85.8	84.5	87.1	14.5	13.6	15.4
		Mike Strain	R	W	9.1	8.1	10.3	73.0	72.1	73.8
		Jamie LaBranche	R	W	2.3	1.7	3.0	9.7	9.0	10.3
		Adrian Juttner	G	W	2.8	2.2	3.5	2.9	2.3	3.4
Nov. 2015	Governor	Bel Edwards	D	W	98.3	97.4	99.0	36.3	35.4	37.3
		David Vitter	R	W	1.7	1.0	2.6	63.7	62.7	64.6
Oct. 2019	Governor	Bel Edwards	D	W	95.7	95.0	96.2	27.3	26.6	28.1
		Oscar Dantzler	D	B	1.8	1.5	2.1	0.3	0.2	0.4
		Ralph Abraham	R	W	0.8	0.5	1.1	25.1	24.4	25.7
		Patrick Landry	R	W	0.4	0.3	0.6	0.7	0.6	0.9
		Eddie Rispone	R	W	0.6	0.4	1.0	46.1	45.5	46.7
		Gary Landrieu	I	W	0.7	0.5	0.9	0.5	0.3	0.6
		Dem. Sum			97.4			27.6		
Oct. 2019	Comm of Agr.	Marguerite Green	D	W	51.5	50.1	52.9	10.2	9.4	11.1
		Charlie Greer	D	W	23.2	22.0	24.4	4.8	4.0	5.6
		Peter Williams	D	B	19.8	18.8	20.9	2.0	1.4	2.6
		Bradley Zaunbrecher	R	W	1.0	0.6	1.4	13.5	12.9	14.0
		Michael Strain	R	W	4.5	3.8	5.3	69.5	68.7	70.3
		Dem. Sum			94.5			17.0		
Nov. 2019	Governor	Bel Edwards	D	W	98.3	97.3	98.9	28.5	27.7	29.4
		Eddie Rispone	R	W	1.7	1.1	2.7	71.5	70.6	72.3

C. Republican versus Republican Contests

An additional set of elections that provides some insight into the roles of race and party in

Louisiana elections are contests that are neither racially nor party contested. There are three such contests, two in 2015 and one in 2019, in which both candidates are Republicans. The average EI RxC estimates across Dr. Handley's seven areas of interest are reported for these three contests in Table 5 below. The results for each individual area of interest are reported below in Appendix B.

**Table 5: Republican versus Republican Statewide Elections –
Average across Handley's Seven Areas of Interest**

Date	Contest	Candidates	Party	Race	% Black Support	% low CI	% high CI	% White Support	% low CI	% high CI
Oct. 2015	Treasurer	John Neely Kennedy	R	W	75.2	73.2	77.1	85.4	84.3	86.5
		Jennifer Treadway	R	W	24.8	22.9	26.8	14.6	13.5	15.7
Nov. 2015	Attorney General	Buddy Caldwell	R	W	59.2	57.0	61.4	39.4	37.9	41.0
		Jeff Landry	R	W	40.8	38.6	43.0	60.6	59.0	62.1
Oct. 2019	Comm of Insurance	James Donelon	R	W	50.6	48.1	53.1	49.7	48.2	51.3
		Tim Temple	R	W	49.4	46.9	51.9	50.3	48.7	51.8

As the estimates in Table 5 clearly show, the pattern of 80 to 90% plus Black support for one candidate, contrasted with 20% or less White support for the same candidate is not evident in these elections at all. Once there is not a Democratic candidate, the pattern of racial differences in voting largely disappears. In the 2019 Commissioner of Insurance contest, both Black and White voters are almost evenly divided, with a slight majority of Black voters (an average of 50.6) favoring the winning candidate Donelon while an equally slight majority of White voters (an average of 50.3%) favored Temple. In the 2015 Treasurer's contest, the result is more lopsided in favor of the winning candidate Kennedy, but again the average levels of support for Kennedy among Black and White voters are very similar (75.2% versus 85.4%). In the remaining Republican versus Republican contest for Attorney General in 2015, the voting patterns are again very different from the typical pattern, but here the modest preference of Black voters is Caldwell at 59.2% while the preference of White voters is Landry at 60.6%. Even this modest difference is likely related to Landry and Caldwell's partisan past. Caldwell was first elected to the office as a Democrat. He switched to the Republican Party in 2011 and was elected that same year as a Republican in an unopposed contest. In 2015, with a Republican opponent that had been a

Republican throughout his political career, Caldwell was defeated in the runoff despite being the incumbent.

D. Partisan versus Racial Polarization

The findings discussed above are not surprising given the widely acknowledged increase in party polarization in the U.S., both among elites and among voters. This is in contrast to the decline over time in many measures of racial polarization. Figure 1 below is a copy of a figure from a recent article that relates directly to the issue of White voters' willingness to vote for a Black candidate for President.⁶ There were clearly high levels of unwillingness among Whites in the late 1950s to vote for a Black candidate in the South (over 90%), compared to the non-South (40%), and notably, in the late 1950s, even in the non-South, 60% of Whites were unwilling to vote for a Black candidate for president. But that was 65 years ago, and by 2000 the North/South difference has disappeared, as has the general unwillingness to vote for a Black candidate. By the 2000's over 90% of both Southern and non-Southern Whites indicate they are willing to vote for a Black candidate for president.

⁶ Kuziemko, Ilyana, and Ebonya Washington. "Why did the Democrats lose the South? Bringing new data to an old debate." *American Economic Review* 108, no. 10 (2018): 2830-67.

Figure 1: Reproduced Figure 2 from Kuziemko and Washington

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KUZIEMKO AND WASHINGTON: WHY DEMOCRATS LOST THE SOUTH

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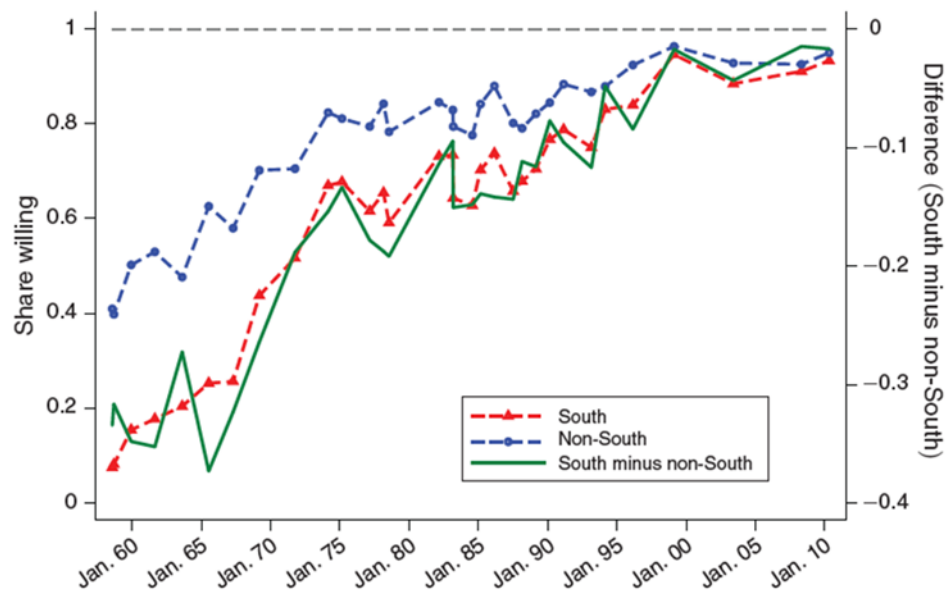


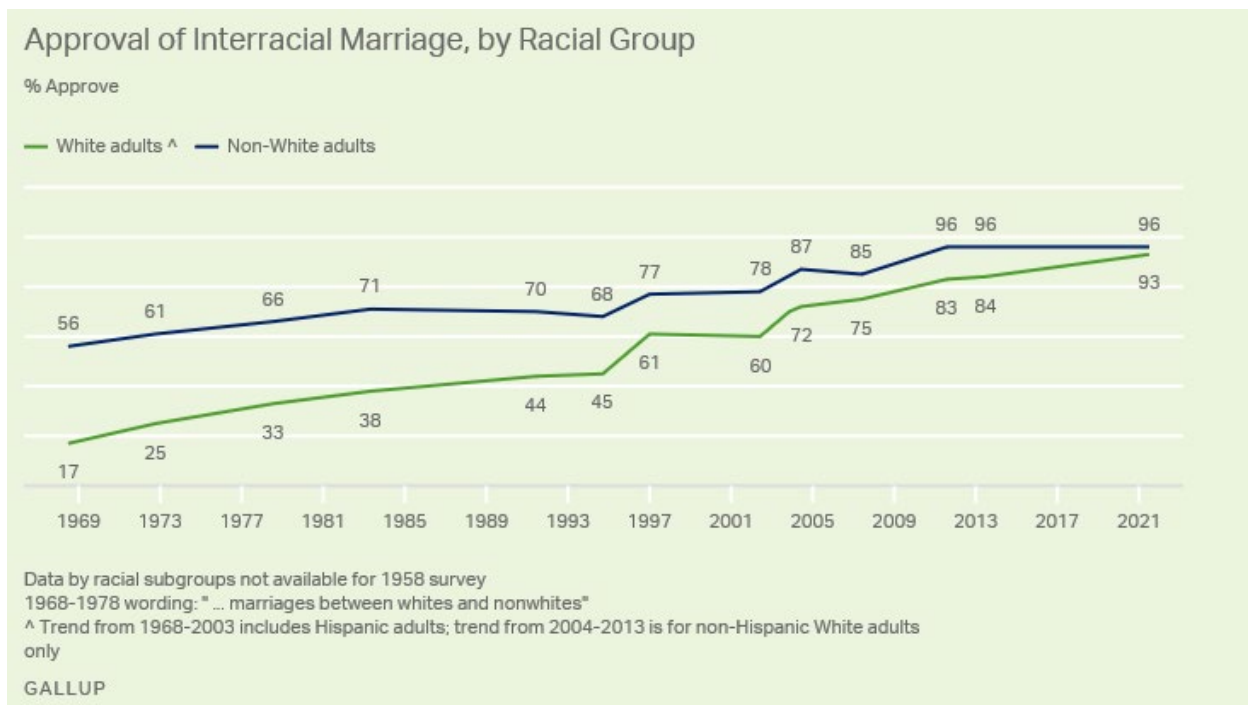
FIGURE 2. SHARE OF WHITES WILLING TO VOTE FOR A BLACK PRESIDENT, BY REGION

Notes: Here and throughout the paper, we code “yes” as 1 and “no” and (rare) “don’t know” as 0. Here and throughout the paper we use provided survey weights for the GSS data.

Source: Data come from Gallup (1958–2003) and GSS (1974–2010).

A similar trend over time is apparent in attitudes toward interracial marriage. Figure 1 below reproduces two Gallop charts that detail the trend since 1969.⁷ At the beginning of this series only 17 percent of Whites, and 56 percent of non-Whites, reported approving of interracial marriage. By 2021 White approval of interracial had risen to 93 percent, and was no longer statistically different from Black approval, at 96 percent.

⁷ “U.S. Approval of Interracial Marriage at New High of 94%” by Justin McCarthy, Social & Policy Issues, Gallup, September 10, 2021, <https://news.gallup.com/poll/354638/approval-interracial-marriage-new-high.aspx>

Figure 2: Reproduced Charts from a 2021 Gallop Report

Approval of Interracial Marriage, by Region

	1991	2002	2011	2021
	% Approve	% Approve	% Approve	% Approve
East	54	67	90	94
Midwest	50	60	86	93
South	33	59	79	93
West	60	79	91	97

GALLUP

SUMMARY CONCLUSIONS

Dr. Handley's report provided analysis that showed that Black Democratic candidates draw cohesive support from Black voters, but as the broader look at elections provided here clearly demonstrates, so do White Democratic candidates. Likewise, Black Democratic candidates draw little support from White voters, but as the broader look at elections provided here clearly demonstrates, neither do White Democratic candidates. The high cohesion demonstrated by Black voters in these elections is not a function of Black voters coalescing around Black candidates, but rather is a function of cohesive Black voter preferences for Democratic party candidates.

Similarly, the tendency of White voters vote cohesively is not reserved for opposition to Black candidates, but is instead cohesive support for Republican candidates even if the Democratic candidate is White.

This report is duly signed this 28th day of July, 2023.

A handwritten signature in black ink, appearing to read 'J. Alford', is written over a horizontal line.

John R. Alford, Ph.D

Appendix A

John R. Alford
Curriculum Vitae
July 2023

Dept. of Political Science
Rice University - MS-24
P.O. Box 1892
Houston, Texas 77251-1892
713-348-3364
jra@rice.edu

Employment:

Professor, Rice University, 2015 to present.
Associate Professor, Rice University, 1985-2015.
Assistant Professor, University of Georgia, 1981-1985.
Instructor, Oakland University, 1980-1981.
Teaching-Research Fellow, University of Iowa, 1977-1980.
Research Associate, Institute for Urban Studies, Houston, Texas, 1976-1977.

Education:

Ph.D., University of Iowa, Political Science, 1981.
M.A., University of Iowa, Political Science, 1980.
M.P.A., University of Houston, Public Administration, 1977.
B.S., University of Houston, Political Science, 1975.

Books:

Predisposed: Liberals, Conservatives, and the Biology of Political Differences. New York: Routledge, 2013. Co-authors, John R. Hibbing and Kevin B. Smith.

Articles:

“Political Orientations Vary with Detection of Androstenone,” with Amanda Friesen, Michael Gruszczynski, and Kevin B. Smith. **Politics and the Life Sciences.** (Spring, 2020).

“Intuitive ethics and political orientations: Testing moral foundations as a theory of political ideology.” with Kevin Smith, John Hibbing, Nicholas Martin, and Peter Hatemi. **American Journal of Political Science.** (April, 2017).

“The Genetic and Environmental Foundations of Political, Psychological, Social, and Economic Behaviors: A Panel Study of Twins and Families.” with Peter Hatemi, Kevin Smith, and John Hibbing. **Twin Research and Human Genetics.** (May, 2015.)

“Liberals and conservatives: Non-convertible currencies.” with John R. Hibbing and Kevin B. Smith. **Behavioral and Brain Sciences** (January, 2015).

“Non-Political Images Evoke Neural Predictors Of Political Ideology.” with Woo-Young Ahn, Kenneth T. Kishida, Xiaosi Gu, Terry Lohrenz, Ann Harvey, Kevin Smith, Gideon Yaffe, John Hibbing, Peter Dayan, P. Read Montague. **Current Biology.** (November, 2014).

“Cortisol and Politics: Variance in Voting Behavior is Predicted by Baseline Cortisol Levels.” with Jeffrey French, Kevin Smith, Adam Guck, Andrew Birnie, and John Hibbing. **Physiology & Behavior**. (June, 2014).

“Differences in Negativity Bias Underlie Variations in Political Ideology.” with Kevin B. Smith and John R. Hibbing. **Behavioral and Brain Sciences**. (June, 2014).

“Negativity bias and political preferences: A response to commentators Response.” with Kevin B. Smith and John R. Hibbing. **Behavioral and Brain Sciences**. (June, 2014).

“Genetic and Environmental Transmission of Political Orientations.” with Carolyn L. Funk, Matthew Hibbing, Kevin B. Smith, Nicholas R. Eaton, Robert F. Krueger, Lindon J. Eaves, John R. Hibbing. **Political Psychology**, (December, 2013).

“Biology, Ideology, and Epistemology: How Do We Know Political Attitudes Are Inherited and Why Should We Care?” with Kevin Smith, Peter K. Hatemi, Lindon J. Eaves, Carolyn Funk, and John R. Hibbing. **American Journal of Political Science**. (January, 2012)

“Disgust Sensitivity and the Neurophysiology of Left-Right Political Orientations.” with Kevin Smith, John Hibbing, Douglas Oxley, and Matthew Hibbing, **PlosONE**, (October, 2011).

“Linking Genetics and Political Attitudes: Re-Conceptualizing Political Ideology.” with Kevin Smith, John Hibbing, Douglas Oxley, and Matthew Hibbing, **Political Psychology**, (June, 2011).

“The Politics of Mate Choice.” with Peter Hatemi, John R. Hibbing, Nicholas Martin and Lindon Eaves, **Journal of Politics**, (March, 2011).

“Not by Twins Alone: Using the Extended Twin Family Design to Investigate the Genetic Basis of Political Beliefs” with Peter Hatemi, John Hibbing, Sarah Medland, Matthew Keller, Kevin Smith, Nicholas Martin, and Lindon Eaves, **American Journal of Political Science**, (July, 2010).

“The Ultimate Source of Political Opinions: Genes and the Environment” with John R. Hibbing in **Understanding Public Opinion**, 3rd Edition eds. Barbara Norrander and Clyde Wilcox, Washington D.C.: CQ Press, (2010).

“Is There a ‘Party’ in your Genes” with Peter Hatemi, John R. Hibbing, Nicholas Martin and Lindon Eaves, **Political Research Quarterly**, (September, 2009).

“Twin Studies, Molecular Genetics, Politics, and Tolerance: A Response to Beckwith and Morris” with John R. Hibbing and Cary Funk, **Perspectives on Politics**, (December, 2008). This is a solicited response to a critique of our 2005 APSR article “Are Political Orientations Genetically Transmitted?”

“Political Attitudes Vary with Physiological Traits” with Douglas R. Oxley, Kevin B. Smith, Matthew V. Hibbing, Jennifer L. Miller, Mario Scalora, Peter K. Hatemi, and John R. Hibbing, **Science**, (September 19, 2008).

“The New Empirical Biopolitics” with John R. Hibbing, **Annual Review of Political Science**, (June, 2008).

“Beyond Liberals and Conservatives to Political Genotypes and Phenotypes” with John R. Hibbing and Cary Funk, **Perspectives on Politics**, (June, 2008). This is a solicited response to a critique of our 2005 APSR article “Are Political Orientations Genetically Transmitted?”

"Personal, Interpersonal, and Political Temperaments" with John R. Hibbing, **Annals of the American Academy of Political and Social Science**, (November, 2007).

"Is Politics in our Genes?" with John R. Hibbing, **Tidsskriftet Politik**, (February, 2007).

"Biology and Rational Choice" with John R. Hibbing, **The Political Economist**, (Fall, 2005)

"Are Political Orientations Genetically Transmitted?" with John R. Hibbing and Carolyn Funk, **American Political Science Review**, (May, 2005). (The main findings table from this article has been reprinted in two college level text books - Psychology, 9th ed. and Invitation to Psychology 4th ed. both by Wade and Tavis, Prentice Hall, 2007).

"The Origin of Politics: An Evolutionary Theory of Political Behavior" with John R. Hibbing, **Perspectives on Politics**, (December, 2004).

"Accepting Authoritative Decisions: Humans as Wary Cooperators" with John R. Hibbing, **American Journal of Political Science**, (January, 2004).

"Electoral Convergence of the Two Houses of Congress" with John R. Hibbing, in **The Exceptional Senate**, ed. Bruce Oppenheimer, Columbus: Ohio State University Press, (2002).

"We're All in this Together: The Decline of Trust in Government, 1958-1996." in **What is it About Government that Americans Dislike?**, eds. John Hibbing and Beth Theiss-Morse, Cambridge: Cambridge University Press, (2001).

"The 2000 Census and the New Redistricting," **Texas State Bar Association School Law Section Newsletter**, (July, 2000).

"Overdraft: The Political Cost of Congressional Malfeasance" with Holly Teeters, Dan Ward, and Rick Wilson, **Journal of Politics** (August, 1994).

"Personal and Partisan Advantage in U.S. Congressional Elections, 1846-1990" with David W. Brady, in **Congress Reconsidered** 5th edition, eds. Larry Dodd and Bruce Oppenheimer, CQ Press, (1993).

"The 1990 Congressional Election Results and the Fallacy that They Embodied an Anti-Incumbent Mood" with John R. Hibbing, **PS** 25 (June, 1992).

"Constituency Population and Representation in the United States Senate" with John R. Hibbing. **Legislative Studies Quarterly**, (November, 1990).

"Editors' Introduction: Electing the U.S. Senate" with Bruce I. Oppenheimer. **Legislative Studies Quarterly**, (November, 1990).

"Personal and Partisan Advantage in U.S. Congressional Elections, 1846-1990" with David W. Brady, in **Congress Reconsidered** 4th edition, eds. Larry Dodd and Bruce Oppenheimer, CQ Press, (1988). Reprinted in *The Congress of the United States, 1789-1989*, ed. Joel Silby, Carlson Publishing Inc., (1991), and in *The Quest for Office*, eds. Wayne and Wilcox, St. Martins Press, (1991).

"Can Government Regulate Fertility? An Assessment of Pro-natalist Policy in Eastern Europe" with Jerome Legge. **The Western Political Quarterly** (December, 1986).

"Partisanship and Voting" with James Campbell, Mary Munro, and Bruce Campbell, in **Research in Micropolitics. Volume 1 - Voting Behavior**. Samuel Long, ed. JAI Press, (1986).

"Economic Conditions and Individual Vote in the Federal Republic of Germany" with Jerome S. Legge. **Journal of Politics** (November, 1984).

"Television Markets and Congressional Elections" with James Campbell and Keith Henry. **Legislative Studies Quarterly** (November, 1984).

"Economic Conditions and the Forgotten Side of Congress: A Foray into U.S. Senate Elections" with John R. Hibbing, **British Journal of Political Science** (October, 1982).

"Increased Incumbency Advantage in the House" with John R. Hibbing, **Journal of Politics** (November, 1981). Reprinted in *The Congress of the United States, 1789-1989*, Carlson Publishing Inc., (1991).

"The Electoral Impact of Economic Conditions: Who is Held Responsible?" with John R. Hibbing, **American Journal of Political Science** (August, 1981).

"Comment on Increased Incumbency Advantage" with John R. Hibbing, Refereed communication: **American Political Science Review** (March, 1981).

"Can Government Regulate Safety? The Coal Mine Example" with Michael Lewis-Beck, **American Political Science Review** (September, 1980).

Awards and Honors:

CQ Press Award - 1988, honoring the outstanding paper in legislative politics presented at the 1987 Annual Meeting of the American Political Science Association. Awarded for "The Demise of the Upper House and the Rise of the Senate: Electoral Responsiveness in the United States Senate" with John Hibbing.

Research Grants:

National Science Foundation, 2009-2011, "Identifying the Biological Influences on Political Temperaments", with John Hibbing, Kevin Smith, Kim Espy, Nicolas Martin and Read Montague. This is a collaborative project involving Rice, University of Nebraska, Baylor College of Medicine, and Queensland Institute for Medical Research.

National Science Foundation, 2007-2010, "Genes and Politics: Providing the Necessary Data", with John Hibbing, Kevin Smith, and Lindon Eaves. This is a collaborative project involving Rice, University of Nebraska, Virginia Commonwealth University, and the University of Minnesota.

National Science Foundation, 2007-2010, "Investigating the Genetic Basis of Economic Behavior", with John Hibbing and Kevin Smith. This is a collaborative project involving Rice, University of Nebraska, Virginia Commonwealth University, and the Queensland Institute of Medical Research.

Rice University Faculty Initiatives Fund, 2007-2009, "The Biological Substrates of Political Behavior". This is in assistance of a collaborative project involving Rice, Baylor College of Medicine, Queensland Institute of Medical Research, University of Nebraska, Virginia Commonwealth University, and the University of Minnesota.

National Science Foundation, 2004-2006, "Decision-Making on Behalf of Others", with John Hibbing. This is a collaborative project involving Rice and the University of Nebraska.

National Science Foundation, 2001-2002, dissertation grant for Kevin Arceneaux, "Doctoral Dissertation Research in Political Science: Voting Behavior in the Context of U.S. Federalism."

National Science Foundation, 2000-2001, dissertation grant for Stacy Ulbig, "Doctoral Dissertation Research in Political Science: Sub-national Contextual Influences on Political Trust."

National Science Foundation, 1999-2000, dissertation grant for Richard Engstrom, "Doctoral Dissertation Research in Political Science: Electoral District Structure and Political Behavior."

Rice University Research Grant, 1985, Recent Trends in British Parliamentary Elections.

Faculty Research Grants Program, University of Georgia, Summer, 1982. Impact of Media Structure on Congressional Elections, with James Campbell.

Papers Presented:

"The Physiological Basis of Political Temperaments" 6th European Consortium for Political Research General Conference, Reykjavik, Iceland (2011), with Kevin Smith, and John Hibbing.

"Identifying the Biological Influences on Political Temperaments" National Science Foundation Annual Human Social Dynamics Meeting (2010), with John Hibbing, Kimberly Espy, Nicholas Martin, Read Montague, and Kevin B. Smith.

"Political Orientations May Be Related to Detection of the Odor of Androstenone" Annual meeting of the Midwest Political Science Association, Chicago, IL (2010), with Kevin Smith, Amanda Balzer, Michael Gruszczynski, Carly M. Jacobs, and John Hibbing.

"Toward a Modern View of Political Man: Genetic and Environmental Transmission of Political Orientations from Attitude Intensity to Political Participation" Annual meeting of the American Political Science Association, Washington, DC (2010), with Carolyn Funk, Kevin Smith, and John Hibbing.

"Genetic and Environmental Transmission of Political Involvement from Attitude Intensity to Political Participation" Annual meeting of the International Society for Political Psychology, San Francisco, CA (2010), with Carolyn Funk, Kevin Smith, and John Hibbing.

"Are Violations of the EEA Relevant to Political Attitudes and Behaviors?" Annual meeting of the Midwest Political Science Association, Chicago, IL (2010), with Kevin Smith, and John Hibbing.

"The Neural Basis of Representation" Annual meeting of the American Political Science Association, Toronto, Canada (2009), with John Hibbing.

“Genetic and Environmental Transmission of Value Orientations” Annual meeting of the American Political Science Association, Toronto, Canada (2009), with Carolyn Funk, Kevin Smith, Matthew Hibbing, Pete Hatemi, Robert Krueger, Lindon Eaves, and John Hibbing.

“The Genetic Heritability of Political Orientations: A New Twin Study of Political Attitudes” Annual Meeting of the International Society for Political Psychology, Dublin, Ireland (2009), with John Hibbing, Cary Funk, Kevin Smith, and Peter K Hatemi.

“The Heritability of Value Orientations” Annual meeting of the Behavior Genetics Association, Minneapolis, MN (2009), with Kevin Smith, John Hibbing, Carolyn Funk, Robert Krueger, Peter Hatemi, and Lindon Eaves.

“The Ick Factor: Disgust Sensitivity as a Predictor of Political Attitudes” Annual meeting of the Midwest Political Science Association, Chicago, IL (2009), with Kevin Smith, Douglas Oxley Matthew Hibbing, and John Hibbing.

“The Ideological Animal: The Origins and Implications of Ideology” Annual meeting of the American Political Science Association, Boston, MA (2008), with Kevin Smith, Matthew Hibbing, Douglas Oxley, and John Hibbing.

“The Physiological Differences of Liberals and Conservatives” Annual meeting of the Midwest Political Science Association, Chicago, IL (2008), with Kevin Smith, Douglas Oxley, and John Hibbing.

“Looking for Political Genes: The Influence of Serotonin on Political and Social Values” Annual meeting of the Midwest Political Science Association, Chicago, IL (2008), with Peter Hatemi, Sarah Medland, John Hibbing, and Nicholas Martin.

“Not by Twins Alone: Using the Extended Twin Family Design to Investigate the Genetic Basis of Political Beliefs” Annual meeting of the American Political Science Association, Chicago, IL (2007), with Peter Hatemi, John Hibbing, Matthew Keller, Nicholas Martin, Sarah Medland, and Lindon Eaves.

“Factorial Association: A generalization of the Fulker between-within model to the multivariate case” Annual meeting of the Behavior Genetics Association, Amsterdam, The Netherlands (2007), with Sarah Medland, Peter Hatemi, John Hibbing, William Coventry, Nicholas Martin, and Michael Neale.

“Not by Twins Alone: Using the Extended Twin Family Design to Investigate the Genetic Basis of Political Beliefs” Annual meeting of the Midwest Political Science Association, Chicago, IL (2007), with Peter Hatemi, John Hibbing, Nicholas Martin, and Lindon Eaves.

“Getting from Genes to Politics: The Connecting Role of Emotion-Reading Capability” Annual Meeting of the International Society for Political Psychology, Portland, OR, (2007.), with John Hibbing.

“The Neurological Basis of Representative Democracy.” Hendricks Conference on Political Behavior, Lincoln, NE (2006), with John Hibbing.

“The Neural Basis of Representative Democracy” Annual meeting of the American Political Science Association, Philadelphia, PA (2006), with John Hibbing.

“How are Political Orientations Genetically Transmitted? A Research Agenda” Annual meeting of the Midwest Political Science Association, Chicago Illinois (2006), with John Hibbing.

"The Politics of Mate Choice" Annual meeting of the Southern Political Science Association, Atlanta, GA (2006), with John Hibbing.

"The Challenge Evolutionary Biology Poses for Rational Choice" Annual meeting of the American Political Science Association, Washington, DC (2005), with John Hibbing and Kevin Smith.

"Decision Making on Behalf of Others" Annual meeting of the American Political Science Association, Washington, DC (2005), with John Hibbing.

"The Source of Political Attitudes and Behavior: Assessing Genetic and Environmental Contributions" Annual meeting of the Midwest Political Science Association, Chicago Illinois (2005), with John Hibbing and Carolyn Funk.

"The Source of Political Attitudes and Behavior: Assessing Genetic and Environmental Contributions" Annual meeting of the American Political Science Association, Chicago Illinois (2004), with John Hibbing and Carolyn Funk.

"Accepting Authoritative Decisions: Humans as Wary Cooperators" Annual Meeting of the Midwest Political Science Association, Chicago, Illinois (2002), with John Hibbing

"Can We Trust the NES Trust Measure?" Annual Meeting of the Midwest Political Science Association, Chicago, Illinois (2001), with Stacy Ulbig.

"The Impact of Organizational Structure on the Production of Social Capital Among Group Members" Annual Meeting of the Southern Political Science Association, Atlanta, Georgia (2000), with Allison Rinden.

"Isolating the Origins of Incumbency Advantage: An Analysis of House Primaries, 1956-1998" Annual Meeting of the Southern Political Science Association, Atlanta, Georgia (2000), with Kevin Arceneaux.

"The Electorally Indistinct Senate," Norman Thomas Conference on Senate Exceptionalism, Vanderbilt University; Nashville, Tennessee; October (1999), with John R. Hibbing.

"Interest Group Participation and Social Capital" Annual Meeting of the Midwest Political Science Association, Chicago, Illinois (1999), with Allison Rinden.

"We're All in this Together: The Decline of Trust in Government, 1958-1996." The Hendricks Symposium, University of Nebraska, Lincoln. (1998)

"Constituency Population and Representation in the United States Senate," Electing the Senate; Houston, Texas; December (1989), with John R. Hibbing.

"The Disparate Electoral Security of House and Senate Incumbents," American Political Science Association Annual Meetings; Atlanta, Georgia; September (1989), with John R. Hibbing.

"Partisan and Incumbent Advantage in House Elections," Annual Meeting of the Southern Political Science Association (1987), with David W. Brady.

"Personal and Party Advantage in U.S. House Elections, 1846-1986" with David W. Brady, 1987 Social Science History Association Meetings.

"The Demise of the Upper House and the Rise of the Senate: Electoral Responsiveness in the United States Senate" with John Hibbing, 1987 Annual Meeting of the American Political Science Association.

"A Comparative Analysis of Economic Voting" with Jerome Legge, 1985 Annual Meeting of the American Political Science Association.

"An Analysis of Economic Conditions and the Individual Vote in Great Britain, 1964-1979" with Jerome Legge, 1985 Annual Meeting of the Western Political Science Association.

"Can Government Regulate Fertility? An Assessment of Pro-natalist Policy in Eastern Europe" with Jerome Legge, 1985 Annual Meeting of the Southwestern Social Science Association.

"Economic Conditions and the Individual Vote in the Federal Republic of Germany" with Jerome S. Legge, 1984 Annual Meeting of the Southern Political Science Association.

"The Conditions Required for Economic Issue Voting" with John R. Hibbing, 1984 Annual Meeting of the Midwest Political Science Association.

"Incumbency Advantage in Senate Elections," 1983 Annual Meeting of the Midwest Political Science Association.

"Television Markets and Congressional Elections: The Impact of Market/District Congruence" with James Campbell and Keith Henry, 1982 Annual Meeting of the Southern Political Science Association.

"Economic Conditions and Senate Elections" with John R. Hibbing, 1982 Annual Meeting of the Midwest Political Science Association. "Pocketbook Voting: Economic Conditions and Individual Level Voting," 1982 Annual Meeting of the American Political Science Association.

"Increased Incumbency Advantage in the House," with John R. Hibbing, 1981 Annual Meeting of the Midwest Political Science Association.

Other Conference Participation:

Roundtable Participant – Closing Round-table on Biopolitics; 2016 UC Merced Conference on Bio-Politics and Political Psychology, Merced, CA.

Roundtable Participant "Genes, Brains, and Core Political Orientations" 2008 Annual Meeting of the Southwestern Political Science Association, Las Vegas.

Roundtable Participant "Politics in the Laboratory" 2007 Annual Meeting of the Southern Political Science Association, New Orleans.

Short Course Lecturer, "What Neuroscience has to Offer Political Science" 2006 Annual Meeting of the American Political Science Association.

Panel chair and discussant, "Neuro-scientific Advances in the Study of Political Science" 2006 Annual Meeting of the American Political Science Association.

Presentation, "The Twin Study Approach to Assessing Genetic Influences on Political Behavior" Rice Conference on New Methods for Understanding Political Behavior, 2005.

Panel discussant, "The Political Consequences of Redistricting," 2002 Annual Meeting of the American Political Science Association.

Panel discussant, "Race and Redistricting," 1999 Annual Meeting of the Midwest Political Science Association.

Invited participant, "Roundtable on Public Dissatisfaction with American Political Institutions", 1998 Annual Meeting of the Southwestern Social Science Association.

Presentation, "Redistricting in the '90s," Texas Economic and Demographic Association, 1997.

Panel chair, "Congressional Elections," 1992 Annual Meeting of the Southern Political Science Association.

Panel discussant, "Incumbency and Congressional Elections," 1992 Annual Meeting of the American Political Science Association.

Panel chair, "Issues in Legislative Elections," 1991 Annual Meeting of the Midwest Political Science Association.

Panel chair, "Economic Attitudes and Public Policy in Europe," 1990 Annual Meeting of the Southern Political Science Association

Panel discussant, "Retrospective Voting in U.S. Elections," 1990 Annual Meeting of the Midwest Political Science Association.

Co-convener, with Bruce Oppenheimer, of Electing the Senate, a national conference on the NES 1988 Senate Election Study. Funded by the Rice Institute for Policy Analysis, the University of Houston Center for Public Policy, and the National Science Foundation, Houston, Texas, December, 1989.

Invited participant, Understanding Congress: A Bicentennial Research Conference, Washington, D.C., February, 1989.

Invited participant--Hendricks Symposium on the United States Senate, University of Nebraska, Lincoln, Nebraska, October, 1988

Invited participant--Conference on the History of Congress, Stanford University, Stanford, California, June, 1988.

Invited participant, "Roundtable on Partisan Realignment in the 1980's", 1987 Annual Meeting of the Southern Political Science Association.

Professional Activities:

Other Universities:

Invited Speaker, Annual Lecture, Psi Kappa -the Psychology Club at Houston Community College, 2018.

Invited Speaker, Annual Allman Family Lecture, Dedman College Interdisciplinary Institute, Southern Methodist University, 2016.

Invited Speaker, Annual Lecture, Psi Sigma Alpha – Political Science Dept., Oklahoma State University, 2015.

Invited Lecturer, Department of Political Science, Vanderbilt University, 2014.

Invited Speaker, Annual Lecture, Psi Kappa -the Psychology Club at Houston Community College, 2014.

Invited Speaker, Graduate Student Colloquium, Department of Political Science, University of New Mexico, 2013.

Invited Keynote Speaker, Political Science Alumni Evening, University of Houston, 2013.

Invited Lecturer, Biology and Politics Masters Seminar (John Geer and David Bader), Department of Political Science and Biology Department, Vanderbilt University, 2010.

Invited Lecturer, Biology and Politics Senior Seminar (John Geer and David Bader), Department of Political Science and Biology Department, Vanderbilt University, 2008.

Visiting Fellow, the Hoover Institution, Stanford University, 2007.

Invited Speaker, Joint Political Psychology Graduate Seminar, University of Minnesota, 2007.

Invited Speaker, Department of Political Science, Vanderbilt University, 2006.

Member:

Editorial Board, Journal of Politics, 2007-2008.

Planning Committee for the National Election Studies' Senate Election Study, 1990-92.

Nominations Committee, Social Science History Association, 1988

Reviewer for:

American Journal of Political Science

American Political Science Review

American Politics Research

American Politics Quarterly

American Psychologist

American Sociological Review

Canadian Journal of Political Science

Comparative Politics

Electoral Studies

Evolution and Human Behavior

International Studies Quarterly

Journal of Politics
Journal of Urban Affairs
Legislative Studies Quarterly
National Science Foundation
PLoS ONE
Policy Studies Review
Political Behavior
Political Communication
Political Psychology
Political Research Quarterly
Public Opinion Quarterly
Science
Security Studies
Social Forces
Social Science Quarterly
Western Political Quarterly

University Service:

Member, University Senate, 2021-2023.

Member, University Parking Committee, 2016-2022.

Member, University Benefits Committee, 2013-2016.

Internship Director for the Department of Political Science, 2004-2018.

Member, University Council, 2012-2013.

Invited Speaker, Rice Classroom Connect, 2016.

Invited Speaker, Glasscock School, 2016.

Invited Speaker, Rice Alumni Association, Austin, 2016.

Invited Speaker, Rice Alumni Association, New York City, 2016.

Invited Speaker, Rice TEDxRiceU , 2013.

Invited Speaker, Rice Alumni Association, Atlanta, 2011.

Lecturer, Advanced Topics in AP Psychology, Rice University AP Summer Institute, 2009.

Scientia Lecture Series: “Politics in Our Genes: The Biology of Ideology” 2008

Invited Speaker, Rice Alumni Association, Seattle, San Francisco and Los Angeles, 2008.

Invited Speaker, Rice Alumni Association, Austin, Chicago and Washington, DC, 2006.

Invited Speaker, Rice Alumni Association, Dallas and New York, 2005.

Director: Rice University Behavioral Research Lab and Social Science Computing Lab, 2005-2006.

University Official Representative to the Inter-university Consortium for Political and Social Research, 1989-2012.

Director: Rice University Social Science Computing Lab, 1989-2004.

Member, Rice University Information Technology Access and Security Committee, 2001-2002

Rice University Committee on Computers, Member, 1988-1992, 1995-1996; Chair, 1996-1998, Co-chair, 1999.

Acting Chairman, Rice Institute for Policy Analysis, 1991-1992.

Divisional Member of the John W. Gardner Dissertation Award Selection Committee, 1998

Social Science Representative to the Educational Sub-committee of the Computer Planning Committee, 1989-1990.

Director of Graduate Admissions, Department of Political Science, Rice University, 1986-1988.

Co-director, Mellon Workshop: Southern Politics, May, 1988.

Guest Lecturer, Mellon Workshop: The U.S. Congress in Historical Perspective, May, 1987 and 1988.

Faculty Associate, Hanszen College, Rice University, 1987-1990.

Director, Political Data Analysis Center, University of Georgia, 1982-1985.

External Consulting:

Expert Witness, Dixon v. Lewisville ISD, racially polarized voting analysis, 2022.

Expert Witness, Soto Palmer v. Hobbs, (Washington State), racially polarized voting analysis, 2022.

Expert Witness, Pendergrass v. Raffensperger, (Georgia State House and Senate), racially polarized voting analysis, 2022.

Expert Witness, LULAC, et al. v. Abbott, et al., Voto Latino, et al. v. Scott, et al., Mexican American Legislative Caucus, et al. v. Texas, et al., Texas NAACP v. Abbott, et al., Fair Maps Texas, et al. v. Abbott, et al., US v. Texas, et al. (consolidated cases) challenges to Texas Congressional, State Senate, State House, and State Board of Education districting, 2022.

Expert Witness, Robinson/Galmon v. Ardoyn, (Louisiana), racially polarized voting analysis, 2022.

Expert Witness, Christian Ministerial Alliance et al v. Arkansas, racially polarized voting analysis, 2022.

Expert Witness, Johnson v. Wisconsin Elections Commission, 2022.

Expert Witness, Rivera, et al. v. Schwab, Alonzo, et al. v. Schwab, Frick, et al. v. Schwab, (consolidated cases) challenge to Kansas congressional map, 2022.

Expert Witness, Grant v. Raffensperger, challenge to Georgia congressional map, 2022

Expert Witness, Brooks et al. v. Abbot, challenge to State Senate District 10, 2022.

Expert Witness, Elizondo v. Spring Branch ISD, 2022.

Expert Witness, Portugal v. Franklin County, et al., challenge to Franklin County, Washington at large County Commissioner's election system, 2022.

Consulting Expert, Gressman Math/Science Petitioners, Pennsylvania Congressional redistricting, 2022.

Consultant, Houston Community College – evaluation of election impact for redrawing of college board election districts, 2022.

Consultant, Lone Star College – evaluation of election impact for redrawing of college board election districts, 2022.

Consultant, Killeen ISD – evaluation of election impact for redrawing of school board election districts, 2022.

Consultant, Houston ISD – evaluation of election impact for redrawing of school board election districts, 2022.

Consultant, Brazosport ISD – evaluation of election impact for redrawing of school board election districts, 2022.

Consultant, Dallas ISD – evaluation of election impact for redrawing of school board election districts, 2022.

Consultant, Lancaster ISD – redrawing of all school board member election districts including demographic analysis and redrawing of election districts, 2021.

Consultant, City of Baytown – redrawing of all city council member election districts including demographic analysis and redrawing of election districts, 2021.

Consultant, Goose Creek ISD – redrawing of all board member election districts including demographic analysis and redrawing of election districts, 2021.

Expert Witness, Bruni et al. v. State of Texas, straight ticket voting analysis, 2020.

Consulting Expert, Sarasota County, VRA challenge to district map, 2020.

Expert Witness, Kumar v. Frisco ISD, TX, racially polarized voting analysis, 2019.

Expert Witness, Vaughan v. Lewisville ISD, TX, racially polarized voting analysis, 2019.

Expert Witness, Johnson v. Ardoin, (Louisiana), racially polarized voting analysis, 2019.

Expert Witness, Flores et al. v. Town of Islip, NY, racially polarized voting analysis, 2018.

Expert Witness, Tyson v. Richardson ISD, racially polarized voting analysis, 2018.

Expert Witness, Dwight v. State of Georgia, racially polarized voting analysis, 2018.

Expert Witness, NAACP v. East Ramapo Central School District, racially polarized voting analysis, 2018.

Expert Witness, Georgia NAACP v. State of Georgia, racially polarized voting analysis, 2018.

Appendix B

EI RxC Estimates for Each Contest in Each of Dr. Handley's Seven Areas of Interest

Contest	Handley's Region		Black			White			Other		
	Code	Candidate Name	Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
US Senator Nov 2022 GE	1	Chambers	51.5%	50.4%	52.5%	4.9%	4.3%	5.4%	14.5%	6.1%	25.3%
US Senator Nov 2022 GE	1	Graham	0.7%	0.5%	0.9%	0.6%	0.4%	0.7%	27.5%	23.7%	30.9%
US Senator Nov 2022 GE	1	Kennedy	6.3%	5.6%	7.1%	86.1%	85.5%	86.7%	11.9%	4.0%	23.1%
US Senator Nov 2022 GE	1	Mendoza	2.9%	2.6%	3.2%	0.3%	0.2%	0.4%	5.4%	2.9%	8.1%
US Senator Nov 2022 GE	1	Mixon	26.3%	25.3%	27.2%	6.9%	6.3%	7.5%	19.5%	8.8%	32.0%
US Senator Nov 2022 GE	1	Others	6.7%	6.2%	7.3%	0.7%	0.6%	0.9%	16.9%	11.4%	22.3%
US Senator Nov 2022 GE	1	Steib	5.7%	5.3%	6.1%	0.5%	0.4%	0.6%	4.3%	2.0%	7.4%
US Senator Nov 2022 GE	2	Chambers	51.5%	50.2%	52.7%	5.2%	4.6%	5.8%	26.6%	19.8%	34.1%
US Senator Nov 2022 GE	2	Graham	1.0%	0.7%	1.4%	1.1%	0.9%	1.4%	11.6%	8.9%	14.0%
US Senator Nov 2022 GE	2	Kennedy	4.0%	3.1%	5.1%	78.9%	78.2%	79.7%	24.2%	16.0%	31.7%
US Senator Nov 2022 GE	2	Mendoza	1.3%	1.1%	1.6%	0.3%	0.2%	0.4%	5.8%	4.7%	6.9%
US Senator Nov 2022 GE	2	Mixon	22.2%	21.1%	23.4%	12.8%	12.2%	13.5%	15.3%	8.4%	22.9%
US Senator Nov 2022 GE	2	Others	3.9%	3.5%	4.4%	0.9%	0.7%	1.2%	11.1%	8.1%	13.8%
US Senator Nov 2022 GE	2	Steib	16.0%	15.3%	16.6%	0.7%	0.5%	0.9%	5.3%	3.2%	7.4%
US Senator Nov 2022 GE	3	Chambers	65.0%	64.3%	65.7%	5.4%	4.8%	6.1%	35.3%	22.9%	44.7%
US Senator Nov 2022 GE	3	Graham	0.8%	0.6%	0.9%	0.9%	0.8%	1.1%	19.3%	16.4%	22.1%
US Senator Nov 2022 GE	3	Kennedy	4.1%	3.7%	4.5%	79.2%	78.7%	79.6%	4.2%	1.4%	9.6%
US Senator Nov 2022 GE	3	Mendoza	1.3%	1.1%	1.4%	0.3%	0.2%	0.4%	2.4%	1.5%	3.7%
US Senator Nov 2022 GE	3	Mixon	22.5%	21.9%	23.1%	12.9%	12.4%	13.4%	16.0%	7.0%	26.7%
US Senator Nov 2022 GE	3	Others	3.0%	2.8%	3.2%	0.7%	0.6%	0.9%	15.7%	12.7%	18.7%
US Senator Nov 2022 GE	3	Steib	3.4%	3.1%	3.6%	0.5%	0.4%	0.6%	7.1%	4.6%	9.5%
US Senator Nov 2022 GE	4	Chambers	45.4%	43.0%	47.7%	2.7%	1.9%	3.6%	16.9%	5.3%	29.6%
US Senator Nov 2022 GE	4	Graham	1.5%	1.0%	2.1%	0.9%	0.7%	1.2%	15.0%	8.0%	21.8%
US Senator Nov 2022 GE	4	Kennedy	4.2%	2.6%	6.2%	91.4%	90.4%	92.4%	22.8%	8.5%	38.6%
US Senator Nov 2022 GE	4	Mendoza	2.1%	1.6%	2.6%	0.3%	0.2%	0.5%	4.0%	1.8%	7.1%
US Senator Nov 2022 GE	4	Mixon	30.4%	28.0%	32.7%	3.3%	2.5%	4.2%	26.5%	12.7%	44.2%
US Senator Nov 2022 GE	4	Others	5.6%	4.7%	6.6%	0.7%	0.4%	0.9%	11.3%	5.0%	18.6%
US Senator Nov 2022 GE	4	Steib	10.7%	9.7%	11.8%	0.6%	0.4%	0.9%	3.4%	1.3%	7.3%
US Senator Nov 2022 GE	5	Chambers	56.8%	55.2%	58.4%	3.0%	2.5%	3.5%	17.8%	7.0%	29.9%
US Senator Nov 2022 GE	5	Graham	1.0%	0.6%	1.6%	2.5%	2.1%	2.8%	20.3%	10.3%	30.7%
US Senator Nov 2022 GE	5	Kennedy	4.5%	3.5%	5.7%	86.5%	86.0%	87.0%	9.3%	3.4%	18.2%
US Senator Nov 2022 GE	5	Mendoza	3.6%	3.1%	4.1%	0.2%	0.1%	0.3%	2.9%	1.2%	5.6%
US Senator Nov 2022 GE	5	Mixon	22.3%	20.9%	23.8%	6.4%	5.9%	6.9%	13.6%	4.6%	26.6%
US Senator Nov 2022 GE	5	Others	5.9%	5.0%	6.8%	1.1%	0.8%	1.5%	29.1%	16.8%	40.1%
US Senator Nov 2022 GE	5	Steib	5.8%	5.1%	6.5%	0.3%	0.2%	0.4%	6.9%	3.4%	11.2%
US Senator Nov 2022 GE	6	Chambers	62.8%	60.9%	64.6%	3.2%	2.4%	4.0%	19.0%	6.4%	34.1%
US Senator Nov 2022 GE	6	Graham	1.2%	0.7%	1.9%	2.4%	1.9%	2.9%	18.1%	7.2%	28.5%
US Senator Nov 2022 GE	6	Kennedy	4.9%	3.6%	6.3%	86.1%	85.3%	86.8%	9.6%	3.1%	21.5%
US Senator Nov 2022 GE	6	Mendoza	1.8%	1.4%	2.2%	0.2%	0.2%	0.3%	3.7%	1.7%	6.3%
US Senator Nov 2022 GE	6	Mixon	19.7%	18.0%	21.5%	6.7%	5.9%	7.6%	25.2%	10.4%	41.5%
US Senator Nov 2022 GE	6	Others	3.8%	3.1%	4.5%	0.9%	0.6%	1.3%	17.6%	8.7%	25.9%
US Senator Nov 2022 GE	6	Steib	5.8%	5.1%	6.5%	0.4%	0.3%	0.6%	6.9%	3.2%	11.7%
US Senator Nov 2022 GE	7	Chambers	65.1%	64.3%	65.9%	5.9%	5.3%	6.6%	35.2%	23.6%	45.4%
US Senator Nov 2022 GE	7	Graham	0.6%	0.4%	0.8%	0.7%	0.6%	0.9%	20.4%	17.7%	22.9%
US Senator Nov 2022 GE	7	Kennedy	3.8%	3.4%	4.2%	78.0%	77.5%	78.4%	5.9%	2.0%	11.4%
US Senator Nov 2022 GE	7	Mendoza	1.1%	1.0%	1.2%	0.3%	0.2%	0.4%	2.4%	1.4%	3.7%
US Senator Nov 2022 GE	7	Mixon	23.5%	22.8%	24.2%	14.0%	13.4%	14.5%	11.4%	3.4%	20.9%
US Senator Nov 2022 GE	7	Others	2.6%	2.4%	2.9%	0.6%	0.5%	0.8%	17.2%	14.2%	20.1%
US Senator Nov 2022 GE	7	Steib	3.3%	3.0%	3.5%	0.5%	0.4%	0.6%	7.5%	5.1%	10.1%

Contest	Handley's Region Code	Candidate Name	Black			White			Other		
			Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
President Nov 2020 GE	1	Biden	97.4%	95.1%	98.2%	11.9%	10.6%	15.5%	53.2%	22.3%	67.5%
President Nov 2020 GE	1	Others	0.9%	0.7%	1.1%	0.5%	0.4%	0.7%	26.4%	23.5%	29.0%
President Nov 2020 GE	1	Trump	1.8%	1.0%	4.0%	87.6%	83.9%	88.9%	20.5%	6.9%	51.0%
President Nov 2020 GE	2	Biden	95.6%	94.1%	96.7%	18.5%	17.6%	19.4%	67.7%	61.2%	74.7%
President Nov 2020 GE	2	Others	0.9%	0.7%	1.1%	0.8%	0.6%	1.0%	9.7%	7.9%	11.2%
President Nov 2020 GE	2	Trump	3.5%	2.4%	4.9%	80.7%	79.9%	81.6%	22.5%	15.6%	29.2%
President Nov 2020 GE	3	Biden	96.0%	95.5%	96.4%	16.6%	16.1%	17.3%	66.5%	58.9%	72.3%
President Nov 2020 GE	3	Others	1.0%	0.9%	1.2%	0.8%	0.6%	0.9%	25.3%	22.8%	27.7%
President Nov 2020 GE	3	Trump	3.0%	2.6%	3.4%	82.6%	81.9%	83.1%	8.1%	3.3%	16.1%
President Nov 2020 GE	4	Biden	96.2%	93.0%	97.7%	9.3%	8.1%	11.3%	40.8%	18.8%	59.1%
President Nov 2020 GE	4	Others	1.6%	1.1%	2.2%	0.6%	0.4%	0.9%	22.5%	14.8%	29.6%
President Nov 2020 GE	4	Trump	2.2%	0.9%	5.3%	90.0%	88.0%	91.3%	36.7%	18.7%	58.1%
President Nov 2020 GE	5	Biden	96.7%	95.6%	97.6%	11.6%	11.0%	12.1%	44.0%	30.8%	54.4%
President Nov 2020 GE	5	Others	1.0%	0.7%	1.5%	0.5%	0.4%	0.7%	42.0%	36.6%	47.2%
President Nov 2020 GE	5	Trump	2.2%	1.5%	3.2%	87.9%	87.3%	88.5%	13.9%	5.5%	26.1%
President Nov 2020 GE	6	Biden	96.2%	95.0%	97.1%	10.6%	9.8%	11.7%	51.4%	33.4%	65.3%
President Nov 2020 GE	6	Others	1.8%	1.3%	2.4%	0.6%	0.4%	0.9%	28.0%	21.7%	33.3%
President Nov 2020 GE	6	Trump	2.0%	1.2%	3.2%	88.8%	87.7%	89.6%	20.6%	7.9%	37.8%
President Nov 2020 GE	7	Biden	96.0%	95.3%	96.5%	18.2%	17.4%	19.3%	63.4%	53.7%	70.9%
President Nov 2020 GE	7	Others	0.8%	0.7%	1.0%	0.8%	0.6%	0.9%	25.6%	23.3%	27.9%
President Nov 2020 GE	7	Trump	3.2%	2.7%	3.8%	81.0%	79.9%	81.9%	11.0%	4.0%	20.6%
US Senator Nov 2020 GE	1	Cassidy	2.2%	1.7%	2.7%	88.5%	87.9%	89.1%	10.6%	3.8%	20.6%
US Senator Nov 2020 GE	1	Edwards	15.9%	15.2%	16.7%	1.1%	0.8%	1.4%	20.9%	13.4%	27.6%
US Senator Nov 2020 GE	1	Others	11.1%	10.3%	11.9%	3.8%	3.1%	4.5%	52.7%	40.4%	63.7%
US Senator Nov 2020 GE	1	Perkins	70.8%	69.9%	71.8%	6.6%	5.9%	7.3%	15.9%	6.5%	26.6%
US Senator Nov 2020 GE	2	Cassidy	3.0%	2.1%	4.1%	82.0%	81.2%	82.8%	24.3%	18.0%	30.3%
US Senator Nov 2020 GE	2	Edwards	32.2%	31.0%	33.5%	2.6%	2.0%	3.3%	32.4%	26.5%	38.0%
US Senator Nov 2020 GE	2	Others	15.3%	14.1%	16.6%	5.8%	5.1%	6.5%	29.3%	23.3%	35.3%
US Senator Nov 2020 GE	2	Perkins	49.5%	48.0%	50.9%	9.6%	8.8%	10.3%	14.1%	7.9%	20.7%
US Senator Nov 2020 GE	3	Cassidy	5.6%	5.2%	6.0%	85.0%	84.4%	85.4%	7.8%	3.9%	14.1%
US Senator Nov 2020 GE	3	Edwards	29.3%	28.8%	29.8%	1.8%	1.4%	2.2%	19.5%	12.7%	25.5%
US Senator Nov 2020 GE	3	Others	16.5%	16.0%	17.1%	4.0%	3.5%	4.7%	36.4%	27.6%	44.8%
US Senator Nov 2020 GE	3	Perkins	48.6%	47.9%	49.2%	9.2%	8.5%	9.9%	36.3%	26.2%	45.9%
US Senator Nov 2020 GE	4	Cassidy	3.1%	2.0%	4.4%	89.5%	88.4%	90.4%	18.4%	6.2%	35.0%
US Senator Nov 2020 GE	4	Edwards	15.7%	14.1%	17.2%	1.5%	0.9%	2.2%	25.0%	12.0%	38.5%
US Senator Nov 2020 GE	4	Others	15.4%	13.5%	17.4%	5.1%	4.0%	6.3%	34.9%	15.9%	54.6%
US Senator Nov 2020 GE	4	Perkins	65.9%	63.6%	68.0%	3.9%	2.8%	5.1%	21.6%	7.9%	38.8%
US Senator Nov 2020 GE	5	Cassidy	5.4%	4.2%	6.7%	84.6%	84.0%	85.1%	12.6%	4.5%	25.3%
US Senator Nov 2020 GE	5	Edwards	49.7%	47.9%	51.5%	3.2%	2.5%	3.9%	32.5%	13.8%	51.9%
US Senator Nov 2020 GE	5	Others	21.8%	20.2%	23.5%	10.2%	9.5%	10.9%	20.8%	6.6%	40.3%
US Senator Nov 2020 GE	5	Perkins	23.1%	21.6%	24.5%	2.0%	1.4%	2.6%	34.1%	17.1%	51.4%
US Senator Nov 2020 GE	6	Cassidy	5.9%	4.6%	7.2%	88.3%	87.3%	89.3%	15.5%	2.8%	33.5%
US Senator Nov 2020 GE	6	Edwards	32.1%	30.4%	33.8%	2.2%	1.5%	3.0%	21.9%	6.7%	37.8%
US Senator Nov 2020 GE	6	Others	17.6%	15.9%	19.3%	6.3%	5.2%	7.3%	29.0%	12.0%	47.4%
US Senator Nov 2020 GE	6	Perkins	44.5%	42.5%	46.3%	3.2%	2.2%	4.2%	33.6%	15.8%	52.6%
US Senator Nov 2020 GE	7	Cassidy	5.4%	4.9%	5.8%	83.9%	83.2%	84.6%	10.8%	5.1%	19.8%
US Senator Nov 2020 GE	7	Edwards	29.0%	28.5%	29.6%	1.5%	1.1%	1.9%	22.9%	16.8%	28.5%
US Senator Nov 2020 GE	7	Others	16.0%	15.5%	16.6%	3.9%	3.2%	4.6%	39.2%	29.8%	48.0%
US Senator Nov 2020 GE	7	Perkins	49.6%	48.9%	50.3%	10.7%	9.9%	11.6%	27.0%	15.2%	37.5%

Contest	Handley's Region Code	Candidate Name	Black			White			Other		
			Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Lt Governor Oct 2019 GE	1	Jones	88.5%	87.4%	89.5%	5.6%	5.0%	6.4%	85.6%	70.5%	94.1%
Lt Governor Oct 2019 GE	1	Nungesser	11.5%	10.5%	12.6%	94.4%	93.6%	95.0%	14.4%	5.9%	29.5%
Lt Governor Oct 2019 GE	2	Jones	86.6%	84.9%	88.3%	8.3%	7.4%	9.3%	70.2%	56.0%	82.9%
Lt Governor Oct 2019 GE	2	Nungesser	13.4%	11.7%	15.1%	91.7%	90.7%	92.6%	29.8%	17.1%	44.0%
Lt Governor Oct 2019 GE	3	Jones	82.9%	82.2%	83.6%	10.3%	9.7%	10.9%	86.8%	76.4%	93.1%
Lt Governor Oct 2019 GE	3	Nungesser	17.1%	16.4%	17.8%	89.7%	89.1%	90.3%	13.2%	6.9%	23.6%
Lt Governor Oct 2019 GE	4	Jones	95.7%	93.9%	97.1%	6.9%	5.7%	8.3%	63.7%	34.8%	85.1%
Lt Governor Oct 2019 GE	4	Nungesser	4.3%	2.9%	6.1%	93.1%	91.7%	94.3%	36.3%	14.9%	65.2%
Lt Governor Oct 2019 GE	5	Jones	91.8%	90.0%	93.5%	8.6%	7.6%	9.7%	55.9%	21.0%	83.9%
Lt Governor Oct 2019 GE	5	Nungesser	8.2%	6.5%	10.0%	91.4%	90.3%	92.4%	44.1%	16.1%	79.0%
Lt Governor Oct 2019 GE	6	Jones	87.6%	85.5%	89.5%	5.6%	4.5%	6.9%	73.6%	47.7%	90.6%
Lt Governor Oct 2019 GE	6	Nungesser	12.4%	10.5%	14.5%	94.4%	93.1%	95.5%	26.4%	9.4%	52.3%
Lt Governor Oct 2019 GE	7	Jones	82.2%	81.4%	82.9%	10.8%	10.1%	11.5%	88.6%	78.4%	94.5%
Lt Governor Oct 2019 GE	7	Nungesser	17.8%	17.1%	18.6%	89.2%	88.5%	89.9%	11.4%	5.5%	21.6%
Att. Gen. Oct GE	1	Jackson	84.5%	83.3%	85.7%	6.9%	6.1%	7.8%	81.6%	64.4%	91.8%
Att. Gen. Oct GE	1	Landry	15.5%	14.3%	16.7%	93.1%	92.2%	93.9%	18.4%	8.2%	35.6%
Att. Gen. Oct GE	2	Jackson	91.3%	89.7%	92.8%	11.9%	11.1%	12.9%	78.5%	65.6%	89.3%
Att. Gen. Oct GE	2	Landry	8.7%	7.2%	10.3%	88.1%	87.1%	88.9%	21.5%	10.7%	34.4%
Att. Gen. Oct GE	3	Jackson	89.2%	88.5%	89.8%	13.2%	12.6%	13.8%	89.7%	82.5%	94.4%
Att. Gen. Oct GE	3	Landry	10.8%	10.2%	11.5%	86.8%	86.2%	87.4%	10.3%	5.6%	17.5%
Att. Gen. Oct GE	4	Jackson	91.0%	88.5%	93.1%	6.6%	5.3%	8.0%	68.1%	41.7%	88.5%
Att. Gen. Oct GE	4	Landry	9.0%	6.9%	11.5%	93.4%	92.0%	94.7%	31.9%	11.5%	58.3%
Att. Gen. Oct GE	5	Jackson	92.6%	90.9%	94.2%	9.7%	8.8%	10.8%	59.6%	28.4%	85.5%
Att. Gen. Oct GE	5	Landry	7.4%	5.8%	9.1%	90.3%	89.2%	91.2%	40.4%	14.5%	71.6%
Att. Gen. Oct GE	6	Jackson	91.7%	89.9%	93.4%	6.9%	5.8%	8.2%	75.8%	49.5%	91.5%
Att. Gen. Oct GE	6	Landry	8.3%	6.6%	10.1%	93.1%	91.8%	94.2%	24.2%	8.5%	50.5%
Att. Gen. Oct GE	7	Jackson	89.0%	88.3%	89.8%	14.3%	13.6%	15.1%	86.1%	72.3%	93.4%
Att. Gen. Oct GE	7	Landry	11.0%	10.2%	11.7%	85.7%	84.9%	86.4%	13.9%	6.6%	27.7%
Comm. of Agr. Oct 2019 GE	1	Zaunbrecher	0.6%	0.4%	0.8%	11.7%	11.2%	12.2%	13.7%	5.0%	23.6%
Comm. of Agr. Oct 2019 GE	1	Green	52.0%	51.0%	53.0%	8.9%	8.1%	9.6%	15.8%	5.4%	29.6%
Comm. of Agr. Oct 2019 GE	1	Greer	24.4%	23.5%	25.3%	3.4%	2.7%	4.1%	29.6%	13.8%	45.2%
Comm. of Agr. Oct 2019 GE	1	Strain	6.1%	5.4%	6.8%	74.5%	73.8%	75.2%	10.1%	4.1%	19.3%
Comm. of Agr. Oct 2019 GE	1	Williams	16.9%	16.2%	17.7%	1.5%	1.0%	2.1%	30.9%	16.2%	43.9%
Comm. of Agr. Oct 2019 GE	2	Zaunbrecher	0.8%	0.5%	1.1%	9.5%	9.1%	10.0%	8.3%	3.8%	13.1%
Comm. of Agr. Oct 2019 GE	2	Green	57.4%	56.1%	58.7%	11.8%	11.0%	12.7%	50.2%	39.5%	59.9%
Comm. of Agr. Oct 2019 GE	2	Greer	19.6%	18.6%	20.6%	3.0%	2.6%	3.6%	17.4%	10.8%	23.9%
Comm. of Agr. Oct 2019 GE	2	Strain	3.3%	2.5%	4.1%	73.9%	73.1%	74.6%	9.7%	3.4%	19.6%
Comm. of Agr. Oct 2019 GE	2	Williams	19.0%	18.1%	19.8%	1.7%	1.3%	2.1%	14.4%	9.4%	20.1%
Comm. of Agr. Oct 2019 GE	3	Zaunbrecher	0.9%	0.7%	1.1%	11.1%	10.7%	11.4%	8.3%	3.7%	14.7%
Comm. of Agr. Oct 2019 GE	3	Green	50.8%	50.2%	51.5%	13.2%	12.5%	13.9%	43.8%	30.6%	56.9%
Comm. of Agr. Oct 2019 GE	3	Greer	19.0%	18.4%	19.5%	3.8%	3.2%	4.4%	32.2%	20.6%	45.1%
Comm. of Agr. Oct 2019 GE	3	Strain	5.8%	5.3%	6.2%	70.6%	70.1%	71.1%	5.8%	2.7%	10.7%
Comm. of Agr. Oct 2019 GE	3	Williams	23.6%	23.1%	24.1%	1.3%	1.0%	1.6%	9.9%	4.2%	15.6%
Comm. of Agr. Oct 2019 GE	4	Zaunbrecher	1.8%	1.1%	2.7%	16.3%	15.4%	17.2%	15.6%	4.9%	30.1%
Comm. of Agr. Oct 2019 GE	4	Green	37.2%	34.6%	39.4%	4.3%	3.1%	5.5%	21.3%	7.0%	38.8%
Comm. of Agr. Oct 2019 GE	4	Greer	36.2%	33.7%	38.7%	10.5%	9.1%	12.0%	31.2%	13.0%	51.3%
Comm. of Agr. Oct 2019 GE	4	Strain	2.2%	1.3%	3.3%	64.7%	63.5%	65.8%	15.9%	4.8%	32.1%
Comm. of Agr. Oct 2019 GE	4	Williams	22.6%	20.4%	24.6%	4.2%	3.2%	5.3%	16.0%	5.5%	30.2%
Comm. of Agr. Oct 2019 GE	5	Zaunbrecher	0.7%	0.4%	1.1%	24.1%	23.5%	24.6%	9.9%	3.6%	19.3%
Comm. of Agr. Oct 2019 GE	5	Green	61.7%	60.1%	63.3%	7.9%	7.1%	8.5%	17.2%	5.2%	41.6%
Comm. of Agr. Oct 2019 GE	5	Greer	21.0%	19.7%	22.3%	5.7%	5.0%	6.3%	18.8%	7.2%	34.2%
Comm. of Agr. Oct 2019 GE	5	Strain	2.4%	1.7%	3.1%	60.6%	59.9%	61.3%	14.3%	4.9%	30.1%
Comm. of Agr. Oct 2019 GE	5	Williams	14.2%	13.1%	15.4%	1.8%	1.3%	2.5%	39.8%	17.9%	56.4%
Comm. of Agr. Oct 2019 GE	6	Zaunbrecher	1.4%	0.8%	2.1%	11.1%	10.4%	11.8%	13.4%	4.2%	26.9%
Comm. of Agr. Oct 2019 GE	6	Green	49.6%	47.6%	51.8%	10.4%	9.3%	11.5%	29.4%	9.3%	54.5%
Comm. of Agr. Oct 2019 GE	6	Greer	23.0%	21.3%	24.7%	4.4%	3.5%	5.3%	20.0%	6.4%	36.9%
Comm. of Agr. Oct 2019 GE	6	Strain	6.0%	4.8%	7.4%	71.6%	70.5%	72.6%	18.9%	6.1%	38.7%
Comm. of Agr. Oct 2019 GE	6	Williams	20.0%	18.5%	21.4%	2.4%	1.7%	3.2%	18.3%	6.4%	33.4%
Comm. of Agr. Oct 2019 GE	7	Zaunbrecher	0.8%	0.6%	1.0%	10.3%	9.8%	10.8%	11.2%	4.7%	19.0%
Comm. of Agr. Oct 2019 GE	7	Green	51.9%	51.1%	52.6%	15.3%	14.5%	16.1%	20.9%	9.1%	34.6%
Comm. of Agr. Oct 2019 GE	7	Greer	19.3%	18.7%	19.9%	2.8%	2.2%	3.4%	44.7%	32.6%	56.5%
Comm. of Agr. Oct 2019 GE	7	Strain	5.7%	5.2%	6.1%	70.7%	70.1%	71.3%	7.1%	3.6%	13.0%
Comm. of Agr. Oct 2019 GE	7	Williams	22.4%	21.9%	23.0%	0.9%	0.7%	1.1%	16.0%	9.9%	21.7%

Contest	Handley's Region		Black			White			Other		
	Code	Candidate Name	Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Comm. of Ins. Oct 2019 GE	1	Donelon	49.2%	47.2%	51.1%	52.8%	51.3%	54.1%	47.0%	18.2%	79.1%
Comm. of Ins. Oct 2019 GE	1	Temple	50.8%	48.9%	52.8%	47.2%	45.9%	48.7%	53.0%	20.9%	81.8%
Comm. of Ins. Oct 2019 GE	2	Donelon	45.9%	43.7%	48.3%	54.4%	53.3%	55.9%	72.8%	53.2%	87.5%
Comm. of Ins. Oct 2019 GE	2	Temple	54.1%	51.7%	56.3%	45.6%	44.1%	46.7%	27.2%	12.5%	46.8%
Comm. of Ins. Oct 2019 GE	3	Donelon	48.5%	47.4%	49.5%	45.1%	43.8%	46.5%	51.1%	22.0%	79.7%
Comm. of Ins. Oct 2019 GE	3	Temple	51.5%	50.5%	52.6%	54.9%	53.5%	56.2%	48.9%	20.3%	78.0%
Comm. of Ins. Oct 2019 GE	4	Donelon	47.9%	43.5%	52.2%	50.9%	48.8%	53.0%	48.2%	19.4%	79.1%
Comm. of Ins. Oct 2019 GE	4	Temple	52.1%	47.8%	56.5%	49.1%	47.0%	51.2%	51.8%	20.9%	80.6%
Comm. of Ins. Oct 2019 GE	5	Donelon	64.3%	61.5%	67.1%	57.3%	56.1%	58.6%	48.2%	17.9%	79.7%
Comm. of Ins. Oct 2019 GE	5	Temple	35.7%	32.9%	38.5%	42.7%	41.4%	43.9%	51.8%	20.3%	82.1%
Comm. of Ins. Oct 2019 GE	6	Donelon	51.0%	47.3%	54.6%	41.6%	39.7%	43.5%	51.4%	21.0%	83.6%
Comm. of Ins. Oct 2019 GE	6	Temple	49.0%	45.4%	52.7%	58.4%	56.5%	60.3%	48.6%	16.4%	79.0%
Comm. of Ins. Oct 2019 GE	7	Donelon	47.4%	46.3%	48.7%	46.0%	44.4%	47.5%	47.7%	19.3%	77.0%
Comm. of Ins. Oct 2019 GE	7	Temple	52.6%	51.3%	53.7%	54.0%	52.5%	55.6%	52.3%	23.0%	80.7%
Governor Oct 2019 GE	1	Abraham	0.5%	0.3%	0.7%	36.4%	35.9%	36.9%	7.9%	3.0%	15.7%
Governor Oct 2019 GE	1	Dantzler	1.8%	1.6%	2.0%	0.3%	0.2%	0.4%	3.1%	1.7%	5.1%
Governor Oct 2019 GE	1	Edwards	96.4%	96.0%	96.8%	17.0%	16.4%	17.6%	59.6%	48.8%	68.6%
Governor Oct 2019 GE	1	Landrieu	0.4%	0.3%	0.6%	0.3%	0.3%	0.4%	10.3%	8.0%	12.7%
Governor Oct 2019 GE	1	Landry	0.3%	0.2%	0.5%	0.7%	0.5%	0.9%	11.4%	7.7%	14.8%
Governor Oct 2019 GE	1	Rispon	0.5%	0.3%	0.7%	45.3%	44.8%	45.8%	7.7%	2.8%	15.0%
Governor Oct 2019 GE	2	Abraham	1.0%	0.6%	1.4%	21.4%	20.8%	22.0%	9.7%	2.3%	15.9%
Governor Oct 2019 GE	2	Dantzler	2.2%	1.9%	2.5%	0.2%	0.2%	0.3%	3.1%	2.0%	4.2%
Governor Oct 2019 GE	2	Edwards	94.4%	93.7%	95.1%	36.6%	35.9%	37.3%	73.3%	65.4%	80.5%
Governor Oct 2019 GE	2	Landrieu	1.2%	0.9%	1.5%	0.6%	0.4%	0.7%	5.6%	3.6%	7.3%
Governor Oct 2019 GE	2	Landry	0.5%	0.4%	0.7%	0.9%	0.8%	1.1%	3.4%	1.9%	5.1%
Governor Oct 2019 GE	2	Rispon	0.7%	0.4%	1.0%	40.3%	39.8%	40.7%	4.9%	2.1%	9.1%
Governor Oct 2019 GE	3	Abraham	0.5%	0.4%	0.6%	17.5%	17.1%	17.9%	8.4%	3.4%	14.4%
Governor Oct 2019 GE	3	Dantzler	1.4%	1.3%	1.6%	0.3%	0.2%	0.4%	2.6%	1.8%	3.8%
Governor Oct 2019 GE	3	Edwards	96.8%	96.5%	97.0%	32.4%	31.9%	32.9%	77.7%	70.6%	84.7%
Governor Oct 2019 GE	3	Landrieu	0.5%	0.4%	0.6%	0.4%	0.3%	0.5%	4.2%	3.0%	5.6%
Governor Oct 2019 GE	3	Landry	0.3%	0.2%	0.4%	0.5%	0.4%	0.5%	2.4%	1.6%	3.4%
Governor Oct 2019 GE	3	Rispon	0.5%	0.4%	0.6%	48.9%	48.5%	49.3%	4.7%	2.2%	8.6%
Governor Oct 2019 GE	4	Abraham	1.2%	0.7%	1.9%	33.0%	32.0%	33.9%	15.1%	4.5%	30.2%
Governor Oct 2019 GE	4	Dantzler	1.9%	1.3%	2.4%	0.4%	0.3%	0.6%	7.5%	3.2%	12.9%
Governor Oct 2019 GE	4	Edwards	94.8%	93.6%	95.7%	17.8%	16.8%	19.0%	48.7%	29.7%	63.7%
Governor Oct 2019 GE	4	Landrieu	0.9%	0.5%	1.3%	0.8%	0.5%	1.0%	8.5%	3.7%	13.8%
Governor Oct 2019 GE	4	Landry	0.5%	0.3%	0.8%	1.4%	1.1%	1.7%	8.5%	3.8%	14.1%
Governor Oct 2019 GE	4	Rispon	0.8%	0.4%	1.4%	46.6%	45.6%	47.5%	11.8%	3.8%	24.2%
Governor Oct 2019 GE	5	Abraham	0.7%	0.4%	1.2%	34.3%	33.7%	34.9%	13.7%	4.4%	26.2%
Governor Oct 2019 GE	5	Dantzler	1.7%	1.3%	2.0%	0.2%	0.1%	0.3%	6.2%	3.4%	9.4%
Governor Oct 2019 GE	5	Edwards	96.0%	95.2%	96.7%	25.9%	25.2%	26.6%	52.0%	36.1%	64.8%
Governor Oct 2019 GE	5	Landrieu	0.6%	0.4%	0.8%	0.4%	0.3%	0.5%	10.8%	7.0%	14.1%
Governor Oct 2019 GE	5	Landry	0.4%	0.2%	0.7%	0.8%	0.6%	1.0%	9.6%	5.2%	14.0%
Governor Oct 2019 GE	5	Rispon	0.6%	0.3%	1.0%	38.4%	37.9%	39.0%	7.8%	2.7%	16.4%
Governor Oct 2019 GE	6	Abraham	0.9%	0.5%	1.4%	15.1%	14.2%	16.0%	35.3%	16.6%	56.6%
Governor Oct 2019 GE	6	Dantzler	2.2%	1.8%	2.5%	0.2%	0.2%	0.3%	3.7%	1.7%	6.5%
Governor Oct 2019 GE	6	Edwards	94.2%	93.4%	94.9%	29.3%	28.3%	30.3%	27.8%	10.3%	48.0%
Governor Oct 2019 GE	6	Landrieu	1.1%	0.9%	1.4%	0.4%	0.3%	0.6%	4.5%	2.1%	7.5%
Governor Oct 2019 GE	6	Landry	0.7%	0.5%	1.0%	0.6%	0.4%	0.7%	7.9%	4.0%	12.0%
Governor Oct 2019 GE	6	Rispon	0.9%	0.5%	1.4%	54.3%	53.3%	55.1%	20.9%	7.1%	39.6%
Governor Oct 2019 GE	7	Abraham	0.5%	0.4%	0.7%	17.9%	17.4%	18.3%	7.3%	2.9%	13.2%
Governor Oct 2019 GE	7	Dantzler	1.2%	1.1%	1.3%	0.3%	0.2%	0.4%	2.5%	1.6%	3.8%
Governor Oct 2019 GE	7	Edwards	97.1%	96.8%	97.4%	32.1%	31.6%	32.7%	78.5%	70.9%	84.7%
Governor Oct 2019 GE	7	Landrieu	0.4%	0.3%	0.5%	0.3%	0.2%	0.4%	4.4%	3.0%	5.8%
Governor Oct 2019 GE	7	Landry	0.2%	0.2%	0.3%	0.3%	0.3%	0.4%	2.8%	1.9%	3.7%
Governor Oct 2019 GE	7	Rispon	0.5%	0.4%	0.7%	49.1%	48.6%	49.5%	4.4%	2.1%	8.5%

Contest	Handley's Region		Black			White			Other		
	Code	Candidate Name	Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Sec. of State Oct 2019 GE	1	Ardoyn	1.4%	1.0%	2.0%	55.6%	54.9%	56.3%	16.2%	5.2%	30.0%
Sec. of State Oct 2019 GE	1	Collins-Greenup	93.7%	92.9%	94.5%	9.4%	8.6%	10.1%	20.9%	7.3%	36.9%
Sec. of State Oct 2019 GE	1	Kennedy	3.6%	2.9%	4.4%	28.6%	27.8%	29.3%	19.3%	6.5%	36.9%
Sec. of State Oct 2019 GE	1	Smith	1.3%	0.9%	1.8%	6.4%	5.8%	7.1%	43.6%	28.2%	57.2%
Sec. of State Oct 2019 GE	2	Ardoyn	2.3%	1.6%	3.1%	51.4%	50.7%	51.9%	8.6%	4.2%	15.6%
Sec. of State Oct 2019 GE	2	Collins-Greenup	92.2%	91.0%	93.5%	12.4%	11.6%	13.2%	57.7%	47.3%	68.0%
Sec. of State Oct 2019 GE	2	Kennedy	3.1%	2.2%	4.0%	28.9%	28.1%	29.7%	21.0%	11.1%	30.2%
Sec. of State Oct 2019 GE	2	Smith	2.4%	1.6%	3.1%	7.3%	6.8%	7.8%	12.7%	6.5%	19.4%
Sec. of State Oct 2019 GE	3	Ardoyn	4.6%	4.2%	5.1%	69.2%	68.7%	69.7%	6.2%	3.0%	11.8%
Sec. of State Oct 2019 GE	3	Collins-Greenup	90.3%	89.7%	90.8%	12.7%	12.1%	13.3%	56.5%	46.6%	66.8%
Sec. of State Oct 2019 GE	3	Kennedy	3.4%	3.0%	3.8%	14.1%	13.7%	14.5%	6.4%	3.0%	12.5%
Sec. of State Oct 2019 GE	3	Smith	1.7%	1.4%	2.0%	4.0%	3.5%	4.4%	30.8%	21.5%	39.8%
Sec. of State Oct 2019 GE	4	Ardoyn	2.0%	1.2%	3.1%	52.2%	51.1%	53.3%	20.7%	7.9%	37.0%
Sec. of State Oct 2019 GE	4	Collins-Greenup	91.3%	89.5%	93.0%	7.3%	6.2%	8.5%	36.4%	17.3%	57.8%
Sec. of State Oct 2019 GE	4	Kennedy	4.2%	2.8%	5.7%	32.3%	31.1%	33.4%	22.2%	7.5%	41.6%
Sec. of State Oct 2019 GE	4	Smith	2.5%	1.7%	3.5%	8.2%	7.4%	8.9%	20.7%	7.1%	36.2%
Sec. of State Oct 2019 GE	5	Ardoyn	2.7%	1.9%	3.7%	57.7%	57.1%	58.4%	14.2%	4.8%	27.8%
Sec. of State Oct 2019 GE	5	Collins-Greenup	93.4%	92.2%	94.6%	10.2%	9.5%	10.9%	21.7%	8.1%	39.0%
Sec. of State Oct 2019 GE	5	Kennedy	2.7%	1.9%	3.7%	26.6%	25.9%	27.3%	24.6%	8.8%	43.0%
Sec. of State Oct 2019 GE	5	Smith	1.1%	0.6%	1.7%	5.5%	4.9%	6.1%	39.6%	21.6%	56.5%
Sec. of State Oct 2019 GE	6	Ardoyn	4.0%	2.9%	5.3%	65.7%	64.7%	66.6%	17.4%	6.4%	34.1%
Sec. of State Oct 2019 GE	6	Collins-Greenup	88.2%	86.5%	89.7%	9.5%	8.4%	10.5%	24.8%	9.0%	45.5%
Sec. of State Oct 2019 GE	6	Kennedy	5.6%	4.3%	6.9%	19.1%	18.2%	19.9%	17.1%	6.0%	34.8%
Sec. of State Oct 2019 GE	6	Smith	2.2%	1.5%	3.1%	5.8%	4.9%	6.7%	40.8%	18.6%	61.1%
Sec. of State Oct 2019 GE	7	Ardoyn	4.6%	4.1%	5.1%	68.7%	68.1%	69.3%	7.8%	3.4%	15.8%
Sec. of State Oct 2019 GE	7	Collins-Greenup	91.2%	90.6%	91.7%	14.7%	14.0%	15.5%	41.3%	29.5%	52.2%
Sec. of State Oct 2019 GE	7	Kennedy	2.9%	2.5%	3.3%	13.2%	12.7%	13.7%	11.7%	5.2%	21.4%
Sec. of State Oct 2019 GE	7	Smith	1.3%	1.0%	1.6%	3.3%	2.9%	3.8%	39.2%	30.7%	47.0%
Treasurer Oct 2019 GE	1	Edwards	95.2%	94.4%	95.9%	8.9%	8.3%	9.5%	14.2%	6.8%	25.0%
Treasurer Oct 2019 GE	1	Kenny	2.7%	2.2%	3.3%	1.9%	1.5%	2.4%	74.0%	63.6%	82.9%
Treasurer Oct 2019 GE	1	Schroder	2.1%	1.5%	2.7%	89.2%	88.6%	89.7%	11.7%	5.3%	20.6%
Treasurer Oct 2019 GE	2	Edwards	94.6%	93.6%	95.5%	12.4%	11.6%	13.2%	65.9%	55.6%	75.1%
Treasurer Oct 2019 GE	2	Kenny	3.6%	2.9%	4.3%	5.1%	4.5%	5.7%	18.6%	11.7%	25.9%
Treasurer Oct 2019 GE	2	Schroder	1.8%	1.2%	2.6%	82.5%	81.7%	83.2%	15.4%	7.4%	24.3%
Treasurer Oct 2019 GE	3	Edwards	93.8%	93.2%	94.3%	13.5%	12.9%	14.0%	22.5%	13.8%	30.8%
Treasurer Oct 2019 GE	3	Kenny	2.9%	2.5%	3.2%	3.1%	2.7%	3.5%	68.5%	60.9%	74.9%
Treasurer Oct 2019 GE	3	Schroder	3.4%	2.9%	3.8%	83.4%	83.0%	83.9%	9.0%	4.6%	16.2%
Treasurer Oct 2019 GE	4	Edwards	93.4%	91.5%	95.0%	9.0%	7.8%	10.3%	33.6%	14.7%	55.8%
Treasurer Oct 2019 GE	4	Kenny	4.4%	3.1%	5.8%	3.2%	2.4%	4.2%	44.1%	25.3%	61.7%
Treasurer Oct 2019 GE	4	Schroder	2.3%	1.3%	3.5%	87.7%	86.6%	88.8%	22.3%	8.5%	40.5%
Treasurer Oct 2019 GE	5	Edwards	94.9%	93.6%	96.0%	11.3%	10.6%	12.0%	21.6%	8.0%	40.6%
Treasurer Oct 2019 GE	5	Kenny	2.8%	2.0%	3.9%	4.7%	4.0%	5.4%	62.5%	40.9%	79.7%
Treasurer Oct 2019 GE	5	Schroder	2.3%	1.5%	3.2%	84.1%	83.4%	84.7%	15.9%	5.8%	30.5%
Treasurer Oct 2019 GE	6	Edwards	92.1%	90.4%	93.5%	10.0%	9.1%	10.9%	20.3%	7.1%	40.5%
Treasurer Oct 2019 GE	6	Kenny	3.3%	2.4%	4.5%	4.4%	3.6%	5.3%	60.7%	38.1%	78.5%
Treasurer Oct 2019 GE	6	Schroder	4.6%	3.3%	6.1%	85.6%	84.6%	86.5%	19.0%	6.4%	37.8%
Treasurer Oct 2019 GE	7	Edwards	94.4%	93.8%	94.9%	14.1%	13.6%	14.7%	17.5%	9.3%	25.2%
Treasurer Oct 2019 GE	7	Kenny	2.5%	2.2%	2.9%	2.5%	2.1%	2.9%	73.0%	66.4%	79.1%
Treasurer Oct 2019 GE	7	Schroder	3.1%	2.6%	3.6%	83.4%	82.8%	83.9%	9.5%	4.8%	16.6%

Contest	Handley's Region		Black			White			Other		
	Code	Candidate Name	Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Governor Nov 2019 GE	1	Edwards	98.6%	98.0%	99.0%	17.8%	17.2%	18.5%	88.8%	81.0%	94.6%
Governor Nov 2019 GE	1	Rispon	1.4%	1.0%	2.0%	82.2%	81.5%	82.8%	11.2%	5.4%	19.0%
Governor Nov 2019 GE	2	Edwards	97.6%	96.6%	98.4%	37.1%	36.5%	37.9%	88.5%	81.5%	93.2%
Governor Nov 2019 GE	2	Rispon	2.4%	1.6%	3.4%	62.9%	62.1%	63.5%	11.5%	6.8%	18.5%
Governor Nov 2019 GE	3	Edwards	98.8%	98.4%	99.1%	34.1%	33.6%	34.7%	88.7%	82.5%	93.5%
Governor Nov 2019 GE	3	Rispon	1.2%	0.9%	1.6%	65.9%	65.3%	66.4%	11.3%	6.5%	17.5%
Governor Nov 2019 GE	4	Edwards	98.0%	96.5%	99.0%	20.0%	18.7%	21.4%	76.9%	53.2%	92.3%
Governor Nov 2019 GE	4	Rispon	2.0%	1.0%	3.5%	80.0%	78.6%	81.3%	23.1%	7.7%	46.8%
Governor Nov 2019 GE	5	Edwards	98.3%	97.2%	99.1%	27.6%	26.9%	28.4%	83.9%	69.6%	93.0%
Governor Nov 2019 GE	5	Rispon	1.7%	0.9%	2.8%	72.4%	71.6%	73.1%	16.1%	7.0%	30.4%
Governor Nov 2019 GE	6	Edwards	97.7%	96.1%	98.9%	28.4%	27.2%	29.8%	70.1%	44.4%	88.6%
Governor Nov 2019 GE	6	Rispon	2.3%	1.1%	3.9%	71.6%	70.2%	72.8%	29.9%	11.4%	55.6%
Governor Nov 2019 GE	7	Edwards	98.7%	98.3%	99.1%	34.6%	34.0%	35.3%	88.0%	80.6%	93.3%
Governor Nov 2019 GE	7	Rispon	1.3%	0.9%	1.7%	65.4%	64.7%	66.0%	12.0%	6.7%	19.4%
Sec. of State Nov 2019 GE	1	Ardo	3.0%	2.3%	3.9%	90.5%	89.2%	91.4%	24.3%	8.0%	49.5%
Sec. of State Nov 2019 GE	1	Collins-Greenup	97.0%	96.1%	97.7%	9.5%	8.6%	10.8%	75.7%	50.5%	92.0%
Sec. of State Nov 2019 GE	2	Ardo	4.4%	3.2%	5.8%	82.1%	80.9%	83.1%	19.1%	7.7%	32.2%
Sec. of State Nov 2019 GE	2	Collins-Greenup	95.6%	94.2%	96.8%	17.9%	16.9%	19.1%	80.9%	67.8%	92.3%
Sec. of State Nov 2019 GE	3	Ardo	4.5%	3.9%	5.0%	83.7%	82.9%	84.3%	14.6%	6.9%	27.7%
Sec. of State Nov 2019 GE	3	Collins-Greenup	95.5%	95.0%	96.1%	16.3%	15.7%	17.1%	85.4%	72.3%	93.1%
Sec. of State Nov 2019 GE	4	Ardo	3.4%	2.2%	5.1%	89.2%	87.6%	90.5%	37.7%	15.3%	66.0%
Sec. of State Nov 2019 GE	4	Collins-Greenup	96.6%	94.9%	97.8%	10.8%	9.5%	12.4%	62.3%	34.0%	84.7%
Sec. of State Nov 2019 GE	5	Ardo	4.7%	3.5%	6.1%	87.2%	86.1%	88.1%	30.9%	9.8%	58.3%
Sec. of State Nov 2019 GE	5	Collins-Greenup	95.3%	93.9%	96.5%	12.8%	11.9%	13.9%	69.1%	41.7%	90.2%
Sec. of State Nov 2019 GE	6	Ardo	5.2%	3.6%	7.1%	88.3%	86.5%	89.7%	35.7%	11.3%	70.2%
Sec. of State Nov 2019 GE	6	Collins-Greenup	94.8%	92.9%	96.4%	11.7%	10.3%	13.5%	64.3%	29.8%	88.7%
Sec. of State Nov 2019 GE	7	Ardo	4.2%	3.5%	4.8%	82.5%	81.4%	83.3%	21.5%	9.5%	39.0%
Sec. of State Nov 2019 GE	7	Collins-Greenup	95.8%	95.2%	96.5%	17.5%	16.7%	18.6%	78.5%	61.0%	90.5%

Contest	Handley's Region Code	Candidate Name	Black			White			Other		
			Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Sec. of State Nov 2018 GE	1	Ardoyn	2.1%	1.6%	2.6%	24.8%	24.2%	25.2%	14.1%	5.7%	26.0%
Sec. of State Nov 2018 GE	1	Collins-Greenup	53.5%	52.6%	54.3%	4.5%	4.0%	5.0%	14.5%	5.9%	26.0%
Sec. of State Nov 2018 GE	1	Edmonds	1.8%	1.4%	2.3%	31.1%	30.6%	31.6%	9.8%	3.8%	17.8%
Sec. of State Nov 2018 GE	1	Free	35.1%	34.2%	36.0%	8.7%	8.2%	9.3%	17.3%	6.6%	31.6%
Sec. of State Nov 2018 GE	1	Kennedy	2.5%	2.0%	3.1%	13.7%	13.2%	14.2%	14.7%	4.8%	26.6%
Sec. of State Nov 2018 GE	1	Others	4.1%	3.5%	4.6%	10.5%	10.0%	11.0%	17.9%	6.6%	31.5%
Sec. of State Nov 2018 GE	1	Stokes	1.0%	0.7%	1.3%	6.6%	6.2%	6.9%	11.8%	5.1%	19.9%
Sec. of State Nov 2018 GE	2	Ardoyn	3.1%	2.5%	3.8%	16.3%	15.9%	16.7%	5.8%	2.6%	10.9%
Sec. of State Nov 2018 GE	2	Collins-Greenup	61.1%	60.0%	62.1%	7.0%	6.4%	7.7%	31.1%	20.4%	40.3%
Sec. of State Nov 2018 GE	2	Edmonds	1.4%	1.0%	1.8%	8.5%	8.2%	8.8%	5.4%	2.4%	9.8%
Sec. of State Nov 2018 GE	2	Free	24.4%	23.5%	25.5%	8.8%	8.1%	9.5%	36.4%	25.0%	48.2%
Sec. of State Nov 2018 GE	2	Kennedy	2.1%	1.5%	2.6%	11.1%	10.7%	11.5%	8.7%	2.8%	15.5%
Sec. of State Nov 2018 GE	2	Others	3.6%	3.0%	4.2%	13.5%	13.0%	13.9%	7.2%	2.9%	13.6%
Sec. of State Nov 2018 GE	2	Stokes	4.3%	3.7%	4.9%	34.7%	34.3%	35.2%	5.3%	2.3%	10.8%
Sec. of State Nov 2018 GE	3	Ardoyn	3.8%	3.5%	4.2%	31.2%	30.8%	31.6%	3.2%	1.7%	7.1%
Sec. of State Nov 2018 GE	3	Collins-Greenup	58.6%	58.0%	59.2%	4.8%	4.3%	5.4%	44.5%	30.0%	57.2%
Sec. of State Nov 2018 GE	3	Edmonds	1.6%	1.4%	1.9%	23.1%	22.7%	23.4%	6.0%	3.1%	10.9%
Sec. of State Nov 2018 GE	3	Free	29.7%	29.1%	30.3%	13.1%	12.5%	13.6%	12.4%	4.3%	25.2%
Sec. of State Nov 2018 GE	3	Kennedy	1.6%	1.3%	1.8%	6.0%	5.7%	6.2%	5.9%	2.5%	11.0%
Sec. of State Nov 2018 GE	3	Others	3.2%	2.9%	3.5%	7.5%	7.0%	7.9%	16.8%	7.1%	27.5%
Sec. of State Nov 2018 GE	3	Stokes	1.4%	1.2%	1.7%	14.3%	13.9%	14.7%	11.2%	4.5%	19.7%
Sec. of State Nov 2018 GE	4	Ardoyn	3.2%	2.0%	4.5%	27.9%	26.9%	28.8%	19.5%	6.9%	35.1%
Sec. of State Nov 2018 GE	4	Collins-Greenup	51.2%	48.5%	53.7%	6.0%	5.0%	7.2%	12.2%	4.0%	23.8%
Sec. of State Nov 2018 GE	4	Edmonds	1.4%	0.8%	2.3%	23.6%	22.9%	24.4%	8.2%	2.7%	16.6%
Sec. of State Nov 2018 GE	4	Free	33.6%	31.2%	35.9%	6.9%	5.9%	7.9%	16.2%	5.5%	30.3%
Sec. of State Nov 2018 GE	4	Kennedy	2.8%	1.8%	4.0%	16.8%	16.0%	17.6%	13.4%	4.8%	26.3%
Sec. of State Nov 2018 GE	4	Others	3.0%	1.9%	4.2%	11.8%	11.0%	12.6%	18.7%	6.3%	33.0%
Sec. of State Nov 2018 GE	4	Stokes	4.9%	3.9%	6.1%	7.0%	6.3%	7.6%	11.8%	4.0%	22.7%
Sec. of State Nov 2018 GE	5	Ardoyn	2.3%	1.6%	3.0%	28.8%	28.2%	29.3%	10.8%	3.9%	21.4%
Sec. of State Nov 2018 GE	5	Collins-Greenup	54.3%	53.0%	55.7%	4.9%	4.4%	5.4%	13.2%	4.4%	27.8%
Sec. of State Nov 2018 GE	5	Edmonds	1.8%	1.1%	2.5%	18.8%	18.3%	19.3%	15.0%	5.2%	29.7%
Sec. of State Nov 2018 GE	5	Free	34.6%	33.3%	35.9%	9.9%	9.3%	10.4%	17.0%	4.2%	32.9%
Sec. of State Nov 2018 GE	5	Kennedy	1.8%	1.2%	2.5%	12.2%	11.8%	12.7%	14.0%	4.6%	26.3%
Sec. of State Nov 2018 GE	5	Others	3.9%	3.2%	4.7%	12.3%	11.8%	12.8%	12.9%	4.0%	25.4%
Sec. of State Nov 2018 GE	5	Stokes	1.2%	0.7%	1.8%	13.1%	12.6%	13.6%	17.1%	6.0%	29.3%
Sec. of State Nov 2018 GE	6	Ardoyn	4.0%	2.9%	5.2%	36.0%	35.2%	36.8%	11.1%	3.5%	22.5%
Sec. of State Nov 2018 GE	6	Collins-Greenup	54.4%	52.5%	56.1%	4.9%	4.1%	5.7%	15.3%	4.6%	30.6%
Sec. of State Nov 2018 GE	6	Edmonds	1.8%	1.1%	2.6%	21.5%	20.7%	22.2%	16.1%	5.7%	30.9%
Sec. of State Nov 2018 GE	6	Free	31.8%	30.1%	33.6%	8.0%	7.2%	8.8%	10.9%	3.1%	22.8%
Sec. of State Nov 2018 GE	6	Kennedy	2.6%	1.8%	3.4%	8.9%	8.2%	9.5%	12.7%	3.9%	26.7%
Sec. of State Nov 2018 GE	6	Others	3.6%	2.7%	4.6%	9.0%	8.3%	9.7%	16.0%	5.0%	30.9%
Sec. of State Nov 2018 GE	6	Stokes	1.9%	1.2%	2.7%	11.7%	10.9%	12.3%	18.0%	5.6%	34.5%
Sec. of State Nov 2018 GE	7	Ardoyn	3.8%	3.3%	4.2%	29.5%	29.0%	29.9%	7.3%	2.6%	15.5%
Sec. of State Nov 2018 GE	7	Collins-Greenup	60.8%	60.1%	61.5%	5.6%	4.9%	6.2%	32.6%	19.8%	45.6%
Sec. of State Nov 2018 GE	7	Edmonds	1.5%	1.2%	1.8%	24.5%	24.1%	24.8%	5.2%	2.7%	9.7%
Sec. of State Nov 2018 GE	7	Free	28.4%	27.7%	29.0%	12.8%	12.2%	13.4%	12.4%	3.9%	24.2%
Sec. of State Nov 2018 GE	7	Kennedy	1.4%	1.1%	1.7%	5.3%	5.0%	5.7%	10.7%	4.6%	17.9%
Sec. of State Nov 2018 GE	7	Others	2.9%	2.5%	3.2%	7.6%	7.1%	8.2%	19.9%	8.8%	31.4%
Sec. of State Nov 2018 GE	7	Stokes	1.3%	1.1%	1.6%	14.7%	14.3%	15.1%	11.8%	4.9%	20.1%

Contest	Handley's Region		Black			White			Other		
	Code	Candidate Name	Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Sec. of State Dec 2018 GE	1	Ardoyn	3.5%	2.7%	4.4%	86.2%	84.9%	87.2%	35.0%	13.9%	63.8%
Sec. of State Dec 2018 GE	1	Collins-Greenup	96.5%	95.6%	97.3%	13.8%	12.8%	15.1%	65.0%	36.2%	86.1%
Sec. of State Dec 2018 GE	2	Ardoyn	2.7%	2.0%	3.5%	84.1%	83.3%	84.9%	14.9%	7.4%	26.2%
Sec. of State Dec 2018 GE	2	Collins-Greenup	97.3%	96.5%	98.0%	15.9%	15.1%	16.7%	85.1%	73.8%	92.6%
Sec. of State Dec 2018 GE	3	Ardoyn	3.7%	3.2%	4.3%	81.9%	81.2%	82.6%	18.9%	9.5%	32.7%
Sec. of State Dec 2018 GE	3	Collins-Greenup	96.3%	95.7%	96.8%	18.1%	17.4%	18.8%	81.1%	67.3%	90.5%
Sec. of State Dec 2018 GE	4	Ardoyn	4.0%	2.4%	6.1%	90.0%	88.4%	91.5%	37.1%	14.9%	65.0%
Sec. of State Dec 2018 GE	4	Collins-Greenup	96.0%	93.9%	97.6%	10.0%	8.5%	11.6%	62.9%	35.0%	85.1%
Sec. of State Dec 2018 GE	5	Ardoyn	3.5%	2.4%	4.9%	86.8%	85.6%	87.9%	47.5%	19.0%	78.6%
Sec. of State Dec 2018 GE	5	Collins-Greenup	96.5%	95.1%	97.6%	13.2%	12.1%	14.4%	52.5%	21.4%	81.0%
Sec. of State Dec 2018 GE	6	Ardoyn	5.8%	4.2%	7.7%	87.5%	85.9%	88.9%	32.8%	11.9%	63.9%
Sec. of State Dec 2018 GE	6	Collins-Greenup	94.2%	92.3%	95.8%	12.5%	11.1%	14.1%	67.2%	36.1%	88.1%
Sec. of State Dec 2018 GE	7	Ardoyn	3.4%	2.7%	4.1%	81.7%	80.8%	82.4%	12.4%	5.3%	29.2%
Sec. of State Dec 2018 GE	7	Collins-Greenup	96.6%	95.9%	97.3%	18.3%	17.6%	19.2%	87.6%	70.8%	94.7%
Treasurer Oct 2017 GE	1	Davis	4.1%	3.1%	5.2%	28.2%	27.3%	29.0%	22.1%	6.9%	44.3%
Treasurer Oct 2017 GE	1	Edwards	89.1%	87.5%	90.6%	7.6%	6.9%	8.4%	23.7%	7.2%	44.5%
Treasurer Oct 2017 GE	1	Others	1.9%	1.3%	2.6%	5.7%	5.1%	6.3%	26.3%	9.0%	43.1%
Treasurer Oct 2017 GE	1	Riser	3.3%	2.3%	4.4%	26.5%	25.6%	27.3%	16.2%	4.9%	34.8%
Treasurer Oct 2017 GE	1	Schroder	1.6%	1.1%	2.2%	32.0%	31.2%	32.9%	11.6%	3.0%	26.1%
Treasurer Oct 2017 GE	2	Davis	4.5%	3.3%	5.9%	19.8%	19.0%	20.6%	16.6%	5.2%	28.2%
Treasurer Oct 2017 GE	2	Edwards	89.7%	87.9%	91.3%	10.9%	10.1%	11.7%	35.1%	22.3%	49.7%
Treasurer Oct 2017 GE	2	Others	1.9%	1.3%	2.7%	5.1%	4.5%	5.7%	25.0%	15.0%	34.7%
Treasurer Oct 2017 GE	2	Riser	1.4%	0.9%	1.9%	13.6%	13.1%	14.1%	8.0%	3.8%	14.8%
Treasurer Oct 2017 GE	2	Schroder	2.5%	1.7%	3.4%	50.6%	49.7%	51.4%	15.3%	6.1%	27.8%
Treasurer Oct 2017 GE	3	Davis	5.6%	4.7%	6.5%	44.7%	44.1%	45.4%	10.4%	4.7%	20.8%
Treasurer Oct 2017 GE	3	Edwards	86.8%	85.7%	88.0%	10.7%	10.0%	11.3%	40.6%	24.2%	57.4%
Treasurer Oct 2017 GE	3	Others	2.3%	1.8%	2.8%	4.9%	4.5%	5.3%	21.6%	10.1%	33.9%
Treasurer Oct 2017 GE	3	Riser	3.0%	2.4%	3.6%	14.8%	14.2%	15.3%	19.5%	9.5%	31.8%
Treasurer Oct 2017 GE	3	Schroder	2.3%	1.7%	2.9%	24.9%	24.4%	25.5%	7.8%	3.8%	15.2%
Treasurer Oct 2017 GE	4	Davis	2.5%	1.5%	3.8%	29.3%	27.8%	30.9%	23.7%	7.7%	43.9%
Treasurer Oct 2017 GE	4	Edwards	90.7%	88.4%	92.6%	8.4%	7.0%	9.8%	23.1%	8.0%	43.3%
Treasurer Oct 2017 GE	4	Others	1.8%	1.0%	2.9%	5.6%	4.7%	6.4%	17.8%	5.0%	33.1%
Treasurer Oct 2017 GE	4	Riser	2.7%	1.5%	4.4%	23.6%	22.2%	25.1%	19.1%	5.1%	37.9%
Treasurer Oct 2017 GE	4	Schroder	2.3%	1.1%	3.8%	33.0%	31.5%	34.6%	16.3%	5.3%	33.4%
Treasurer Oct 2017 GE	5	Davis	4.9%	3.3%	6.9%	39.6%	38.5%	40.7%	19.4%	6.9%	37.5%
Treasurer Oct 2017 GE	5	Edwards	89.8%	87.3%	92.0%	11.4%	10.5%	12.3%	26.9%	9.1%	47.9%
Treasurer Oct 2017 GE	5	Others	1.4%	0.9%	2.2%	6.9%	6.2%	7.5%	20.9%	7.3%	38.5%
Treasurer Oct 2017 GE	5	Riser	2.0%	1.2%	3.0%	23.7%	22.7%	24.6%	15.9%	4.8%	32.9%
Treasurer Oct 2017 GE	5	Schroder	1.8%	1.0%	2.9%	18.4%	17.6%	19.3%	17.0%	5.3%	33.8%
Treasurer Oct 2017 GE	6	Davis	8.0%	6.1%	10.2%	37.1%	35.6%	38.5%	20.3%	7.3%	37.6%
Treasurer Oct 2017 GE	6	Edwards	84.6%	82.3%	86.8%	10.2%	8.9%	11.4%	18.2%	6.0%	36.2%
Treasurer Oct 2017 GE	6	Others	2.4%	1.5%	3.5%	5.4%	4.5%	6.2%	28.6%	12.4%	46.0%
Treasurer Oct 2017 GE	6	Riser	1.8%	1.1%	2.6%	8.1%	7.2%	8.9%	17.8%	6.2%	33.7%
Treasurer Oct 2017 GE	6	Schroder	3.2%	2.0%	4.8%	39.3%	37.9%	40.7%	15.0%	3.6%	31.8%
Treasurer Oct 2017 GE	7	Davis	5.4%	4.5%	6.3%	47.0%	46.3%	47.7%	11.8%	5.2%	21.5%
Treasurer Oct 2017 GE	7	Edwards	87.5%	86.3%	88.7%	10.8%	10.1%	11.5%	39.0%	22.8%	54.4%
Treasurer Oct 2017 GE	7	Others	1.9%	1.4%	2.3%	4.1%	3.6%	4.7%	28.0%	15.0%	41.1%
Treasurer Oct 2017 GE	7	Riser	3.4%	2.7%	4.2%	15.9%	15.3%	16.4%	13.5%	6.0%	25.7%
Treasurer Oct 2017 GE	7	Schroder	1.8%	1.4%	2.4%	22.2%	21.7%	22.8%	7.8%	3.4%	15.5%

Contest	Handley's Region		Black			White			Other		
	Code	Candidate Name	Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Treasurer Nov 2017 GE	1	Edwards	97.5%	96.5%	98.4%	10.5%	9.6%	11.5%	69.9%	49.8%	85.9%
Treasurer Nov 2017 GE	1	Schroder	2.5%	1.6%	3.5%	89.5%	88.5%	90.4%	30.1%	14.1%	50.2%
Treasurer Nov 2017 GE	2	Edwards	97.2%	96.0%	98.1%	17.1%	16.1%	18.1%	77.5%	62.9%	89.4%
Treasurer Nov 2017 GE	2	Schroder	2.8%	1.9%	4.0%	82.9%	81.9%	83.9%	22.5%	10.6%	37.1%
Treasurer Nov 2017 GE	3	Edwards	97.9%	97.3%	98.4%	18.0%	17.3%	18.7%	82.1%	67.9%	91.9%
Treasurer Nov 2017 GE	3	Schroder	2.1%	1.6%	2.7%	82.0%	81.3%	82.7%	17.9%	8.1%	32.1%
Treasurer Nov 2017 GE	4	Edwards	96.7%	94.4%	98.4%	12.4%	10.5%	14.4%	59.6%	29.8%	84.9%
Treasurer Nov 2017 GE	4	Schroder	3.3%	1.6%	5.6%	87.6%	85.6%	89.5%	40.4%	15.1%	70.2%
Treasurer Nov 2017 GE	5	Edwards	97.6%	96.3%	98.7%	17.1%	16.0%	18.2%	57.2%	29.3%	83.1%
Treasurer Nov 2017 GE	5	Schroder	2.4%	1.3%	3.7%	82.9%	81.8%	84.0%	42.8%	16.9%	70.7%
Treasurer Nov 2017 GE	6	Edwards	97.3%	95.5%	98.6%	12.8%	11.2%	14.4%	65.5%	36.3%	87.1%
Treasurer Nov 2017 GE	6	Schroder	2.7%	1.4%	4.5%	87.2%	85.6%	88.8%	34.5%	12.9%	63.7%
Treasurer Nov 2017 GE	7	Edwards	97.6%	96.8%	98.2%	19.0%	18.2%	19.8%	79.7%	63.1%	91.7%
Treasurer Nov 2017 GE	7	Schroder	2.4%	1.8%	3.2%	81.0%	80.2%	81.8%	20.3%	8.3%	36.9%
President Nov 2016 GE	1	Clinton	98.1%	96.9%	98.7%	10.5%	9.8%	11.6%	36.3%	27.9%	44.7%
President Nov 2016 GE	1	Others	0.7%	0.4%	1.0%	1.6%	1.3%	2.1%	54.8%	48.2%	60.8%
President Nov 2016 GE	1	Trump	1.2%	0.7%	2.2%	87.8%	86.9%	88.4%	8.9%	4.6%	15.1%
President Nov 2016 GE	2	Clinton	96.9%	95.9%	97.7%	14.8%	14.1%	15.5%	74.6%	68.1%	80.7%
President Nov 2016 GE	2	Others	1.2%	0.9%	1.6%	4.2%	3.8%	4.7%	12.1%	7.9%	16.1%
President Nov 2016 GE	2	Trump	1.9%	1.3%	2.7%	81.0%	80.3%	81.6%	13.3%	7.8%	19.1%
President Nov 2016 GE	3	Clinton	98.3%	97.9%	98.5%	16.6%	16.0%	17.2%	29.9%	21.9%	38.0%
President Nov 2016 GE	3	Others	0.8%	0.6%	0.9%	3.2%	2.8%	3.7%	60.3%	53.1%	66.9%
President Nov 2016 GE	3	Trump	1.0%	0.8%	1.2%	80.2%	79.7%	80.6%	9.8%	5.7%	15.6%
President Nov 2016 GE	4	Clinton	97.5%	96.4%	98.3%	10.1%	9.1%	11.1%	46.4%	30.1%	62.6%
President Nov 2016 GE	4	Others	1.3%	0.7%	2.0%	1.5%	1.0%	2.1%	40.9%	27.7%	52.2%
President Nov 2016 GE	4	Trump	1.2%	0.7%	2.0%	88.5%	87.5%	89.3%	12.7%	4.7%	26.1%
President Nov 2016 GE	5	Clinton	97.3%	96.4%	98.1%	10.3%	9.6%	11.0%	26.9%	14.2%	42.5%
President Nov 2016 GE	5	Others	1.2%	0.8%	1.8%	2.5%	2.0%	3.1%	61.8%	46.8%	73.5%
President Nov 2016 GE	5	Trump	1.5%	0.8%	2.3%	87.2%	86.6%	87.7%	11.3%	4.9%	21.5%
President Nov 2016 GE	6	Clinton	97.4%	96.4%	98.2%	11.3%	10.5%	12.2%	26.4%	12.9%	40.9%
President Nov 2016 GE	6	Others	1.2%	0.8%	1.7%	1.6%	1.1%	2.2%	59.9%	47.3%	70.2%
President Nov 2016 GE	6	Trump	1.4%	0.8%	2.2%	87.1%	86.3%	87.8%	13.7%	5.7%	25.8%
President Nov 2016 GE	7	Clinton	98.2%	97.9%	98.6%	17.7%	17.0%	18.4%	30.4%	21.4%	39.2%
President Nov 2016 GE	7	Others	0.7%	0.6%	0.9%	3.4%	2.9%	4.0%	58.2%	50.7%	65.2%
President Nov 2016 GE	7	Trump	1.0%	0.8%	1.3%	78.9%	78.3%	79.5%	11.4%	6.0%	18.8%

Contest	Handley's Region		Black			White			Other		
	Code	Candidate Name	Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Att. Gen. Oct 2015 GE	1	Baloney	45.6%	44.6%	46.7%	4.8%	4.2%	5.5%	25.4%	9.5%	42.9%
Att. Gen. Oct 2015 GE	1	Caldwell	20.8%	19.9%	21.7%	45.7%	45.0%	46.4%	15.3%	5.5%	29.9%
Att. Gen. Oct 2015 GE	1	Jackson	31.4%	30.4%	32.5%	1.6%	1.2%	2.1%	19.0%	7.3%	32.5%
Att. Gen. Oct 2015 GE	1	Landry	1.7%	1.3%	2.2%	45.6%	44.9%	46.2%	18.8%	6.3%	34.4%
Att. Gen. Oct 2015 GE	1	Maley	0.5%	0.3%	0.7%	2.3%	1.9%	2.6%	21.6%	12.7%	30.4%
Att. Gen. Oct 2015 GE	2	Baloney	62.0%	60.9%	63.2%	5.8%	5.2%	6.4%	17.0%	7.8%	28.3%
Att. Gen. Oct 2015 GE	2	Caldwell	7.2%	6.1%	8.3%	45.5%	44.7%	46.3%	36.2%	23.1%	49.4%
Att. Gen. Oct 2015 GE	2	Jackson	27.3%	26.3%	28.3%	1.4%	1.0%	1.8%	22.4%	13.6%	29.3%
Att. Gen. Oct 2015 GE	2	Landry	2.8%	2.1%	3.6%	43.8%	43.2%	44.4%	11.7%	4.6%	20.7%
Att. Gen. Oct 2015 GE	2	Maley	0.7%	0.5%	0.9%	3.4%	3.1%	3.8%	12.7%	7.7%	17.9%
Att. Gen. Oct 2015 GE	3	Baloney	35.3%	34.6%	36.0%	5.8%	5.2%	6.4%	42.4%	26.8%	59.4%
Att. Gen. Oct 2015 GE	3	Caldwell	20.1%	19.5%	20.8%	54.7%	54.1%	55.2%	10.1%	4.3%	19.4%
Att. Gen. Oct 2015 GE	3	Jackson	39.4%	38.8%	40.0%	2.4%	2.0%	2.8%	14.6%	6.2%	25.5%
Att. Gen. Oct 2015 GE	3	Landry	2.4%	2.0%	2.8%	30.8%	30.2%	31.4%	18.6%	6.2%	34.4%
Att. Gen. Oct 2015 GE	3	Maley	2.7%	2.4%	3.1%	6.4%	6.0%	6.8%	14.3%	5.9%	23.9%
Att. Gen. Oct 2015 GE	4	Baloney	37.1%	34.6%	39.5%	4.8%	3.7%	6.0%	26.4%	10.2%	47.6%
Att. Gen. Oct 2015 GE	4	Caldwell	25.9%	23.3%	28.4%	46.1%	44.6%	47.6%	21.0%	7.1%	39.4%
Att. Gen. Oct 2015 GE	4	Jackson	31.7%	29.8%	33.6%	1.9%	1.2%	2.7%	14.4%	4.6%	28.9%
Att. Gen. Oct 2015 GE	4	Landry	2.3%	1.3%	3.7%	35.6%	34.5%	36.7%	18.8%	6.2%	34.5%
Att. Gen. Oct 2015 GE	4	Maley	3.1%	1.9%	4.4%	11.5%	10.7%	12.4%	19.4%	6.2%	35.2%
Att. Gen. Oct 2015 GE	5	Baloney	61.9%	60.4%	63.5%	5.9%	5.4%	6.5%	18.4%	6.8%	35.0%
Att. Gen. Oct 2015 GE	5	Caldwell	6.8%	5.7%	8.0%	39.0%	38.3%	39.8%	18.4%	6.6%	34.6%
Att. Gen. Oct 2015 GE	5	Jackson	26.6%	25.2%	27.9%	2.7%	2.2%	3.2%	23.7%	9.5%	40.1%
Att. Gen. Oct 2015 GE	5	Landry	3.8%	2.8%	4.8%	50.2%	49.5%	50.9%	15.0%	4.8%	30.1%
Att. Gen. Oct 2015 GE	5	Maley	0.9%	0.6%	1.3%	2.2%	1.8%	2.5%	24.4%	11.3%	38.1%
Att. Gen. Oct 2015 GE	6	Baloney	25.9%	24.0%	27.8%	5.8%	4.9%	6.7%	25.3%	8.2%	45.2%
Att. Gen. Oct 2015 GE	6	Caldwell	13.7%	11.8%	15.8%	51.4%	50.3%	52.5%	18.3%	5.8%	35.0%
Att. Gen. Oct 2015 GE	6	Jackson	50.8%	49.1%	52.3%	1.4%	0.9%	2.0%	13.2%	4.9%	25.3%
Att. Gen. Oct 2015 GE	6	Landry	3.0%	1.9%	4.4%	34.7%	33.6%	35.6%	23.0%	8.0%	45.6%
Att. Gen. Oct 2015 GE	6	Maley	6.6%	5.2%	8.0%	6.7%	5.8%	7.4%	20.3%	6.8%	38.3%
Att. Gen. Oct 2015 GE	7	Baloney	36.8%	35.9%	37.6%	6.4%	5.6%	7.1%	28.8%	11.6%	49.5%
Att. Gen. Oct 2015 GE	7	Caldwell	21.9%	21.2%	22.6%	54.9%	54.3%	55.5%	8.4%	3.0%	19.1%
Att. Gen. Oct 2015 GE	7	Jackson	36.7%	36.0%	37.5%	2.0%	1.4%	2.6%	26.4%	8.9%	42.6%
Att. Gen. Oct 2015 GE	7	Landry	2.4%	2.0%	2.8%	31.5%	30.8%	32.1%	14.5%	4.6%	29.5%
Att. Gen. Oct 2015 GE	7	Maley	2.2%	1.9%	2.6%	5.2%	4.7%	5.7%	22.0%	10.4%	34.7%
Comm. of Agr. Oct 2015 GE	1	Greer	84.0%	82.9%	85.0%	12.4%	11.6%	13.1%	17.1%	5.3%	33.7%
Comm. of Agr. Oct 2015 GE	1	Juttner	1.6%	1.2%	2.1%	2.6%	2.2%	3.1%	48.4%	33.6%	61.8%
Comm. of Agr. Oct 2015 GE	1	LaBranche	2.0%	1.5%	2.6%	12.2%	11.6%	12.8%	23.2%	9.5%	37.5%
Comm. of Agr. Oct 2015 GE	1	Strain	12.4%	11.4%	13.4%	72.8%	72.1%	73.5%	11.3%	4.5%	22.8%
Comm. of Agr. Oct 2015 GE	2	Greer	91.6%	90.5%	92.6%	10.3%	9.6%	11.1%	25.3%	12.5%	38.5%
Comm. of Agr. Oct 2015 GE	2	Juttner	3.0%	2.4%	3.6%	3.9%	3.5%	4.4%	21.4%	13.1%	29.4%
Comm. of Agr. Oct 2015 GE	2	LaBranche	1.9%	1.4%	2.6%	10.9%	10.2%	11.6%	19.0%	8.7%	28.9%
Comm. of Agr. Oct 2015 GE	2	Strain	3.5%	2.6%	4.5%	74.8%	73.8%	75.8%	34.3%	19.2%	50.2%
Comm. of Agr. Oct 2015 GE	3	Greer	81.2%	80.5%	81.8%	12.8%	12.1%	13.4%	20.8%	10.0%	36.4%
Comm. of Agr. Oct 2015 GE	3	Juttner	2.4%	2.1%	2.7%	2.9%	2.5%	3.4%	44.0%	32.7%	53.5%
Comm. of Agr. Oct 2015 GE	3	LaBranche	2.1%	1.8%	2.4%	6.0%	5.6%	6.5%	25.5%	14.9%	36.0%
Comm. of Agr. Oct 2015 GE	3	Strain	14.4%	13.8%	15.0%	78.3%	77.6%	78.9%	9.6%	3.7%	20.0%
Comm. of Agr. Oct 2015 GE	4	Greer	89.7%	87.4%	91.7%	21.9%	20.5%	23.4%	45.5%	25.3%	66.1%
Comm. of Agr. Oct 2015 GE	4	Juttner	3.0%	2.0%	4.1%	2.4%	1.8%	3.0%	18.8%	7.6%	31.5%
Comm. of Agr. Oct 2015 GE	4	LaBranche	3.2%	2.1%	4.5%	12.4%	11.5%	13.3%	14.8%	5.6%	27.5%
Comm. of Agr. Oct 2015 GE	4	Strain	4.2%	2.7%	6.0%	63.3%	61.8%	64.6%	20.9%	7.3%	38.8%
Comm. of Agr. Oct 2015 GE	5	Greer	91.6%	90.2%	92.9%	17.3%	16.6%	18.1%	20.5%	6.2%	40.2%
Comm. of Agr. Oct 2015 GE	5	Juttner	3.2%	2.3%	4.1%	2.9%	2.3%	3.4%	38.6%	15.6%	59.2%
Comm. of Agr. Oct 2015 GE	5	LaBranche	1.7%	1.1%	2.5%	12.2%	11.6%	12.8%	23.7%	8.7%	43.8%
Comm. of Agr. Oct 2015 GE	5	Strain	3.5%	2.6%	4.6%	67.6%	66.8%	68.4%	17.3%	3.7%	35.4%
Comm. of Agr. Oct 2015 GE	6	Greer	81.4%	79.3%	83.5%	14.4%	13.3%	15.4%	14.5%	4.8%	29.1%
Comm. of Agr. Oct 2015 GE	6	Juttner	4.1%	3.2%	5.1%	1.7%	1.1%	2.4%	37.5%	20.8%	52.7%
Comm. of Agr. Oct 2015 GE	6	LaBranche	3.6%	2.6%	4.8%	8.6%	7.7%	9.4%	28.9%	11.6%	47.8%
Comm. of Agr. Oct 2015 GE	6	Strain	10.8%	9.0%	12.8%	75.3%	74.2%	76.4%	19.0%	6.4%	37.4%
Comm. of Agr. Oct 2015 GE	7	Greer	81.1%	80.3%	81.9%	12.4%	11.6%	13.1%	23.4%	11.8%	38.1%
Comm. of Agr. Oct 2015 GE	7	Juttner	2.2%	1.9%	2.6%	3.5%	3.0%	4.0%	32.6%	20.7%	43.3%
Comm. of Agr. Oct 2015 GE	7	LaBranche	1.7%	1.4%	2.0%	5.5%	4.9%	6.0%	35.4%	24.6%	46.8%
Comm. of Agr. Oct 2015 GE	7	Strain	15.0%	14.3%	15.7%	78.7%	78.0%	79.3%	8.6%	3.9%	16.5%

Contest	Handley's Region		Black			White			Other		
	Code	Candidate Name	Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Comm. of Ins. Oct 2015 GE	1	Donelon	5.8%	5.0%	6.6%	67.4%	66.6%	68.1%	17.4%	6.0%	35.6%
Comm. of Ins. Oct 2015 GE	1	Hodge	36.0%	35.0%	37.1%	3.2%	2.5%	3.9%	39.2%	19.4%	57.5%
Comm. of Ins. Oct 2015 GE	1	McGehee	48.9%	47.7%	50.0%	5.8%	5.0%	6.5%	26.7%	9.3%	46.1%
Comm. of Ins. Oct 2015 GE	1	Parker	9.3%	8.5%	10.2%	23.6%	22.9%	24.3%	16.7%	6.0%	33.4%
Comm. of Ins. Oct 2015 GE	2	Donelon	19.1%	17.6%	20.5%	81.4%	80.5%	82.4%	34.7%	17.3%	51.4%
Comm. of Ins. Oct 2015 GE	2	Hodge	41.7%	40.5%	42.9%	2.8%	2.2%	3.3%	22.7%	11.9%	33.1%
Comm. of Ins. Oct 2015 GE	2	McGehee	38.0%	36.7%	39.4%	4.5%	3.9%	5.2%	28.9%	16.0%	40.4%
Comm. of Ins. Oct 2015 GE	2	Parker	1.2%	0.7%	1.7%	11.3%	10.7%	11.8%	13.7%	6.4%	21.7%
Comm. of Ins. Oct 2015 GE	3	Donelon	14.9%	14.3%	15.6%	74.2%	73.6%	74.8%	10.2%	3.4%	23.1%
Comm. of Ins. Oct 2015 GE	3	Hodge	29.7%	29.1%	30.4%	4.6%	4.1%	5.0%	13.3%	4.8%	26.6%
Comm. of Ins. Oct 2015 GE	3	McGehee	53.7%	53.0%	54.4%	5.2%	4.7%	5.8%	60.4%	46.0%	73.1%
Comm. of Ins. Oct 2015 GE	3	Parker	1.6%	1.3%	2.0%	16.0%	15.5%	16.4%	16.2%	7.6%	26.3%
Comm. of Ins. Oct 2015 GE	4	Donelon	18.9%	16.5%	21.5%	63.9%	62.4%	65.4%	30.8%	12.6%	51.8%
Comm. of Ins. Oct 2015 GE	4	Hodge	37.3%	34.8%	39.9%	6.6%	5.5%	7.9%	21.9%	7.1%	41.3%
Comm. of Ins. Oct 2015 GE	4	McGehee	40.3%	37.9%	42.8%	5.1%	3.9%	6.3%	28.5%	10.8%	49.3%
Comm. of Ins. Oct 2015 GE	4	Parker	3.4%	2.1%	4.9%	24.4%	23.3%	25.4%	18.9%	6.2%	36.3%
Comm. of Ins. Oct 2015 GE	5	Donelon	8.3%	6.9%	9.7%	65.5%	64.7%	66.3%	24.7%	8.9%	45.1%
Comm. of Ins. Oct 2015 GE	5	Hodge	37.3%	35.5%	39.0%	6.6%	5.9%	7.3%	30.9%	12.2%	53.3%
Comm. of Ins. Oct 2015 GE	5	McGehee	52.8%	51.0%	54.6%	7.3%	6.6%	8.0%	24.0%	8.8%	44.3%
Comm. of Ins. Oct 2015 GE	5	Parker	1.6%	1.1%	2.3%	20.6%	19.9%	21.2%	20.4%	6.9%	39.0%
Comm. of Ins. Oct 2015 GE	6	Donelon	16.5%	14.5%	18.6%	71.1%	69.9%	72.2%	27.0%	9.1%	48.8%
Comm. of Ins. Oct 2015 GE	6	Hodge	37.8%	35.9%	39.7%	4.8%	4.0%	5.5%	16.5%	6.3%	32.0%
Comm. of Ins. Oct 2015 GE	6	McGehee	42.2%	40.1%	44.2%	6.9%	6.0%	7.9%	23.7%	8.5%	45.1%
Comm. of Ins. Oct 2015 GE	6	Parker	3.5%	2.3%	4.8%	17.2%	16.2%	18.1%	32.7%	12.8%	55.6%
Comm. of Ins. Oct 2015 GE	7	Donelon	14.5%	13.9%	15.2%	75.2%	74.5%	75.8%	11.1%	4.3%	22.4%
Comm. of Ins. Oct 2015 GE	7	Hodge	28.2%	27.5%	28.9%	3.4%	2.8%	4.0%	40.4%	25.2%	54.1%
Comm. of Ins. Oct 2015 GE	7	McGehee	56.0%	55.2%	56.7%	5.9%	5.3%	6.5%	25.1%	10.1%	41.1%
Comm. of Ins. Oct 2015 GE	7	Parker	1.3%	0.9%	1.7%	15.5%	14.9%	16.0%	23.5%	11.7%	35.2%

Contest	Handley's Region	Candidate Name	Black			White			Other		
	Code		Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Governor Oct 2015 GE	1	Angelle	1.3%	0.9%	1.8%	23.9%	23.3%	24.5%	24.8%	10.6%	40.9%
Governor Oct 2015 GE	1	Billiot	0.4%	0.3%	0.5%	0.2%	0.2%	0.3%	3.8%	1.8%	6.0%
Governor Oct 2015 GE	1	Dardenne	0.5%	0.3%	0.7%	15.5%	15.1%	15.9%	7.6%	2.9%	14.2%
Governor Oct 2015 GE	1	Deaton	2.6%	2.3%	2.9%	0.2%	0.2%	0.3%	5.9%	2.8%	9.4%
Governor Oct 2015 GE	1	Edwards	88.9%	88.2%	89.6%	16.2%	15.5%	16.9%	31.1%	14.2%	47.6%
Governor Oct 2015 GE	1	Odom	0.4%	0.3%	0.5%	0.2%	0.2%	0.3%	3.8%	1.9%	5.8%
Governor Oct 2015 GE	1	Orgeron	0.2%	0.2%	0.3%	0.2%	0.1%	0.2%	1.1%	0.7%	1.7%
Governor Oct 2015 GE	1	Simpson	4.7%	4.4%	5.0%	0.2%	0.1%	0.3%	2.1%	1.2%	3.8%
Governor Oct 2015 GE	1	Vitter	1.1%	0.7%	1.5%	43.4%	42.7%	44.0%	19.7%	7.9%	32.6%
Governor Oct 2015 GE	2	Angelle	4.0%	3.3%	4.8%	16.6%	16.1%	17.1%	8.9%	3.4%	16.3%
Governor Oct 2015 GE	2	Billiot	1.0%	0.7%	1.2%	0.6%	0.5%	0.6%	2.1%	1.2%	3.1%
Governor Oct 2015 GE	2	Dardenne	0.6%	0.4%	0.8%	16.0%	15.5%	16.5%	11.8%	5.6%	18.2%
Governor Oct 2015 GE	2	Deaton	3.2%	2.9%	3.6%	0.3%	0.2%	0.3%	3.9%	2.6%	5.4%
Governor Oct 2015 GE	2	Edwards	87.4%	86.4%	88.6%	17.5%	16.7%	18.4%	42.7%	28.6%	56.2%
Governor Oct 2015 GE	2	Odom	0.5%	0.3%	0.6%	0.2%	0.2%	0.3%	2.6%	1.8%	3.5%
Governor Oct 2015 GE	2	Orgeron	0.3%	0.2%	0.4%	0.2%	0.2%	0.2%	1.4%	0.9%	1.9%
Governor Oct 2015 GE	2	Simpson	1.6%	1.4%	1.9%	0.2%	0.1%	0.2%	1.4%	0.9%	2.0%
Governor Oct 2015 GE	2	Vitter	1.3%	0.7%	1.9%	48.4%	47.5%	49.1%	25.2%	13.7%	38.5%
Governor Oct 2015 GE	3	Angelle	1.7%	1.5%	2.0%	22.4%	22.0%	22.7%	5.1%	1.6%	10.6%
Governor Oct 2015 GE	3	Billiot	0.3%	0.2%	0.3%	0.2%	0.2%	0.3%	1.6%	1.0%	2.3%
Governor Oct 2015 GE	3	Dardenne	1.3%	1.1%	1.6%	40.8%	40.2%	41.3%	26.8%	15.6%	40.8%
Governor Oct 2015 GE	3	Deaton	1.9%	1.8%	2.0%	0.3%	0.2%	0.3%	1.8%	1.1%	2.8%
Governor Oct 2015 GE	3	Edwards	92.5%	92.0%	92.9%	16.7%	16.1%	17.4%	49.2%	32.0%	61.7%
Governor Oct 2015 GE	3	Odom	0.3%	0.3%	0.4%	0.2%	0.2%	0.3%	1.3%	0.9%	1.9%
Governor Oct 2015 GE	3	Orgeron	0.2%	0.1%	0.2%	0.2%	0.1%	0.2%	1.0%	0.7%	1.3%
Governor Oct 2015 GE	3	Simpson	0.9%	0.8%	1.0%	0.2%	0.1%	0.2%	1.3%	0.9%	1.9%
Governor Oct 2015 GE	3	Vitter	0.9%	0.7%	1.2%	19.1%	18.7%	19.5%	11.9%	4.4%	20.7%
Governor Oct 2015 GE	4	Angelle	1.7%	1.0%	2.7%	27.7%	26.7%	28.6%	15.5%	5.0%	31.3%
Governor Oct 2015 GE	4	Billiot	0.6%	0.4%	0.9%	0.5%	0.4%	0.7%	3.3%	1.3%	6.0%
Governor Oct 2015 GE	4	Dardenne	1.3%	0.8%	2.0%	14.4%	13.6%	15.1%	13.8%	4.2%	26.1%
Governor Oct 2015 GE	4	Deaton	3.7%	3.1%	4.2%	0.5%	0.3%	0.7%	5.0%	2.1%	9.4%
Governor Oct 2015 GE	4	Edwards	86.7%	85.0%	88.2%	17.0%	15.9%	18.2%	38.7%	19.3%	56.4%
Governor Oct 2015 GE	4	Odom	1.2%	0.9%	1.6%	0.6%	0.4%	0.8%	4.7%	1.3%	9.7%
Governor Oct 2015 GE	4	Orgeron	0.4%	0.3%	0.6%	0.2%	0.1%	0.3%	2.6%	1.3%	4.4%
Governor Oct 2015 GE	4	Simpson	2.3%	1.8%	2.8%	0.6%	0.4%	0.8%	1.8%	0.7%	4.8%
Governor Oct 2015 GE	4	Vitter	2.1%	1.2%	3.2%	38.5%	37.5%	39.5%	14.6%	4.5%	27.8%
Governor Oct 2015 GE	5	Angelle	2.6%	1.9%	3.3%	23.3%	22.7%	23.9%	16.0%	5.9%	29.7%
Governor Oct 2015 GE	5	Billiot	0.7%	0.5%	0.9%	0.3%	0.2%	0.4%	4.1%	1.8%	6.9%
Governor Oct 2015 GE	5	Dardenne	1.0%	0.6%	1.5%	31.3%	30.6%	32.0%	21.3%	7.7%	38.5%
Governor Oct 2015 GE	5	Deaton	2.9%	2.4%	3.3%	0.3%	0.2%	0.4%	6.0%	2.7%	10.3%
Governor Oct 2015 GE	5	Edwards	89.7%	88.6%	90.7%	22.7%	22.0%	23.4%	21.4%	5.3%	38.8%
Governor Oct 2015 GE	5	Odom	0.3%	0.2%	0.5%	0.2%	0.1%	0.3%	5.1%	2.6%	7.9%
Governor Oct 2015 GE	5	Orgeron	0.2%	0.1%	0.3%	0.1%	0.1%	0.2%	2.2%	1.2%	3.6%
Governor Oct 2015 GE	5	Simpson	1.2%	1.0%	1.5%	0.1%	0.1%	0.2%	3.1%	1.5%	5.6%
Governor Oct 2015 GE	5	Vitter	1.4%	0.9%	2.1%	21.7%	21.1%	22.3%	20.7%	6.4%	37.9%
Governor Oct 2015 GE	6	Angelle	3.3%	2.4%	4.3%	27.8%	27.0%	28.5%	16.4%	4.5%	32.3%
Governor Oct 2015 GE	6	Billiot	0.7%	0.5%	0.9%	0.3%	0.2%	0.4%	3.2%	1.5%	5.5%
Governor Oct 2015 GE	6	Dardenne	1.7%	1.1%	2.5%	26.1%	25.3%	27.0%	25.8%	9.1%	46.4%
Governor Oct 2015 GE	6	Deaton	3.1%	2.7%	3.5%	0.3%	0.2%	0.5%	4.8%	2.2%	8.2%
Governor Oct 2015 GE	6	Edwards	87.2%	85.9%	88.5%	19.8%	18.9%	20.7%	18.8%	6.2%	34.6%
Governor Oct 2015 GE	6	Odom	0.7%	0.5%	0.9%	0.2%	0.2%	0.3%	4.6%	2.3%	7.3%
Governor Oct 2015 GE	6	Orgeron	0.3%	0.2%	0.4%	0.2%	0.1%	0.2%	2.1%	1.1%	3.6%
Governor Oct 2015 GE	6	Simpson	1.8%	1.5%	2.1%	0.2%	0.1%	0.3%	2.0%	1.0%	3.5%
Governor Oct 2015 GE	6	Vitter	1.3%	0.7%	2.0%	25.0%	24.2%	25.8%	22.2%	6.5%	40.7%
Governor Oct 2015 GE	7	Angelle	1.4%	1.1%	1.6%	19.4%	18.8%	19.9%	13.4%	5.1%	24.6%
Governor Oct 2015 GE	7	Billiot	0.2%	0.2%	0.3%	0.2%	0.2%	0.2%	1.6%	1.0%	2.2%
Governor Oct 2015 GE	7	Dardenne	1.4%	1.2%	1.7%	44.1%	43.5%	44.6%	10.3%	3.5%	18.2%
Governor Oct 2015 GE	7	Deaton	1.7%	1.6%	1.8%	0.2%	0.2%	0.3%	1.7%	1.0%	2.7%
Governor Oct 2015 GE	7	Edwards	93.2%	92.8%	93.7%	16.1%	15.5%	16.8%	58.3%	45.8%	71.7%
Governor Oct 2015 GE	7	Odom	0.3%	0.2%	0.4%	0.2%	0.2%	0.3%	1.3%	0.9%	1.9%
Governor Oct 2015 GE	7	Orgeron	0.2%	0.1%	0.2%	0.2%	0.1%	0.2%	1.2%	0.9%	1.7%
Governor Oct 2015 GE	7	Simpson	0.7%	0.6%	0.8%	0.2%	0.1%	0.2%	1.3%	0.8%	2.1%
Governor Oct 2015 GE	7	Vitter	0.9%	0.6%	1.1%	19.4%	19.0%	19.9%	10.8%	4.0%	19.7%

Contest	Handley's Region Code	Candidate Name	Black			White			Other		
			Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Lt Governor Oct 2015 GE	1	Guillory	2.0%	1.4%	2.7%	10.3%	9.6%	10.9%	35.7%	15.9%	58.1%
Lt Governor Oct 2015 GE	1	Holden	80.9%	79.8%	82.0%	9.8%	9.0%	10.6%	26.5%	9.3%	49.2%
Lt Governor Oct 2015 GE	1	Nungesser	2.5%	1.8%	3.2%	36.9%	36.1%	37.6%	22.9%	7.8%	44.0%
Lt Governor Oct 2015 GE	1	Young	14.5%	13.5%	15.5%	43.0%	42.2%	43.7%	14.9%	5.8%	29.7%
Lt Governor Oct 2015 GE	2	Guillory	1.2%	0.9%	1.8%	2.7%	2.3%	3.1%	22.4%	16.0%	28.1%
Lt Governor Oct 2015 GE	2	Holden	77.2%	75.7%	78.6%	5.4%	4.7%	6.1%	27.4%	15.7%	39.6%
Lt Governor Oct 2015 GE	2	Nungesser	7.5%	6.2%	8.9%	38.8%	37.9%	39.6%	21.6%	10.0%	36.0%
Lt Governor Oct 2015 GE	2	Young	14.1%	12.6%	15.5%	53.1%	52.2%	54.0%	28.6%	14.1%	44.0%
Lt Governor Oct 2015 GE	3	Guillory	2.1%	1.8%	2.5%	7.2%	6.8%	7.7%	29.0%	15.4%	41.3%
Lt Governor Oct 2015 GE	3	Holden	93.9%	93.3%	94.5%	30.8%	30.2%	31.6%	46.0%	26.6%	61.9%
Lt Governor Oct 2015 GE	3	Nungesser	2.1%	1.8%	2.4%	31.3%	30.8%	31.7%	9.5%	4.6%	17.1%
Lt Governor Oct 2015 GE	3	Young	1.9%	1.5%	2.3%	30.6%	30.1%	31.2%	15.4%	6.1%	30.0%
Lt Governor Oct 2015 GE	4	Guillory	2.6%	1.7%	3.8%	13.0%	12.1%	13.9%	15.8%	4.1%	30.9%
Lt Governor Oct 2015 GE	4	Holden	90.8%	88.8%	92.7%	9.9%	8.7%	11.2%	40.3%	19.0%	62.4%
Lt Governor Oct 2015 GE	4	Nungesser	2.5%	1.5%	3.8%	33.5%	32.4%	34.6%	20.0%	6.0%	37.4%
Lt Governor Oct 2015 GE	4	Young	4.1%	2.7%	5.7%	43.5%	42.2%	44.7%	23.9%	8.1%	45.5%
Lt Governor Oct 2015 GE	5	Guillory	6.1%	5.0%	7.2%	9.4%	8.6%	10.0%	21.8%	3.7%	47.2%
Lt Governor Oct 2015 GE	5	Holden	87.4%	85.8%	88.8%	12.1%	11.4%	12.8%	25.8%	9.3%	49.6%
Lt Governor Oct 2015 GE	5	Nungesser	2.3%	1.4%	3.3%	36.8%	36.0%	37.6%	29.6%	10.6%	52.4%
Lt Governor Oct 2015 GE	5	Young	4.3%	3.2%	5.5%	41.7%	40.9%	42.5%	22.8%	7.8%	44.4%
Lt Governor Oct 2015 GE	6	Guillory	1.6%	1.0%	2.5%	6.8%	6.0%	7.6%	31.8%	12.9%	54.0%
Lt Governor Oct 2015 GE	6	Holden	94.3%	92.7%	95.6%	26.2%	25.2%	27.1%	21.0%	6.9%	39.6%
Lt Governor Oct 2015 GE	6	Nungesser	2.2%	1.4%	3.2%	39.0%	38.1%	39.9%	21.6%	7.6%	43.3%
Lt Governor Oct 2015 GE	6	Young	1.9%	1.2%	2.9%	28.0%	27.0%	28.8%	25.6%	9.1%	46.7%
Lt Governor Oct 2015 GE	7	Guillory	2.1%	1.7%	2.5%	7.1%	6.5%	7.6%	33.6%	20.0%	44.9%
Lt Governor Oct 2015 GE	7	Holden	93.8%	93.1%	94.4%	31.0%	30.3%	31.8%	43.5%	27.2%	59.7%
Lt Governor Oct 2015 GE	7	Nungesser	2.2%	1.8%	2.6%	30.4%	29.9%	30.9%	10.6%	4.7%	19.9%
Lt Governor Oct 2015 GE	7	Young	2.0%	1.6%	2.3%	31.5%	30.8%	32.0%	12.4%	4.2%	25.2%
Sec. of State Oct 2015 GE	1	Schedler	11.3%	10.1%	12.6%	88.2%	87.2%	89.1%	26.5%	9.8%	56.8%
Sec. of State Oct 2015 GE	1	Tyson	88.7%	87.4%	89.9%	11.8%	10.9%	12.8%	73.5%	43.2%	90.2%
Sec. of State Oct 2015 GE	2	Schedler	3.2%	2.3%	4.3%	86.8%	85.7%	87.9%	37.3%	20.0%	55.4%
Sec. of State Oct 2015 GE	2	Tyson	96.8%	95.7%	97.7%	13.2%	12.1%	14.3%	62.7%	44.6%	80.0%
Sec. of State Oct 2015 GE	3	Schedler	6.5%	5.9%	7.2%	86.4%	85.7%	87.1%	20.7%	9.0%	40.6%
Sec. of State Oct 2015 GE	3	Tyson	93.5%	92.8%	94.1%	13.6%	12.9%	14.3%	79.3%	59.4%	91.0%
Sec. of State Oct 2015 GE	4	Schedler	8.0%	5.6%	10.6%	86.1%	84.4%	87.6%	37.1%	13.1%	67.6%
Sec. of State Oct 2015 GE	4	Tyson	92.0%	89.4%	94.4%	13.9%	12.4%	15.6%	62.9%	32.4%	86.9%
Sec. of State Oct 2015 GE	5	Schedler	4.0%	2.8%	5.5%	80.3%	79.4%	81.3%	50.2%	18.1%	79.1%
Sec. of State Oct 2015 GE	5	Tyson	96.0%	94.5%	97.2%	19.7%	18.7%	20.6%	49.8%	20.9%	81.9%
Sec. of State Oct 2015 GE	6	Schedler	8.0%	5.9%	10.4%	85.0%	83.6%	86.4%	52.2%	22.5%	80.1%
Sec. of State Oct 2015 GE	6	Tyson	92.0%	89.6%	94.1%	15.0%	13.6%	16.4%	47.8%	19.9%	77.5%
Sec. of State Oct 2015 GE	7	Schedler	5.8%	5.1%	6.5%	87.2%	86.4%	87.9%	21.3%	9.4%	39.1%
Sec. of State Oct 2015 GE	7	Tyson	94.2%	93.5%	94.9%	12.8%	12.1%	13.6%	78.7%	60.9%	90.6%
Treasurer Oct 2015 GE	1	Kennedy	77.2%	75.6%	78.7%	82.5%	81.5%	83.4%	23.8%	8.7%	49.9%
Treasurer Oct 2015 GE	1	Treadway	22.8%	21.3%	24.4%	17.5%	16.6%	18.5%	76.2%	50.1%	91.3%
Treasurer Oct 2015 GE	2	Kennedy	67.5%	65.3%	69.5%	86.1%	84.7%	87.3%	35.3%	15.1%	61.4%
Treasurer Oct 2015 GE	2	Treadway	32.5%	30.5%	34.7%	13.9%	12.7%	15.3%	64.7%	38.6%	84.9%
Treasurer Oct 2015 GE	3	Kennedy	74.2%	73.4%	75.0%	89.4%	88.8%	90.0%	13.0%	6.3%	24.8%
Treasurer Oct 2015 GE	3	Treadway	25.8%	25.0%	26.6%	10.6%	10.0%	11.2%	87.0%	75.2%	93.7%
Treasurer Oct 2015 GE	4	Kennedy	80.8%	77.5%	83.9%	82.0%	80.3%	83.7%	62.4%	33.1%	90.1%
Treasurer Oct 2015 GE	4	Treadway	19.2%	16.1%	22.5%	18.0%	16.3%	19.7%	37.6%	9.9%	66.9%
Treasurer Oct 2015 GE	5	Kennedy	73.4%	71.0%	75.9%	82.3%	81.3%	83.3%	47.1%	16.7%	79.0%
Treasurer Oct 2015 GE	5	Treadway	26.6%	24.1%	29.0%	17.7%	16.7%	18.7%	52.9%	21.0%	83.3%
Treasurer Oct 2015 GE	6	Kennedy	79.5%	76.7%	82.2%	85.8%	84.4%	87.1%	33.0%	11.3%	63.3%
Treasurer Oct 2015 GE	6	Treadway	20.5%	17.8%	23.3%	14.2%	12.9%	15.6%	67.0%	36.7%	88.7%
Treasurer Oct 2015 GE	7	Kennedy	73.7%	72.7%	74.6%	89.9%	89.1%	90.6%	15.6%	6.2%	33.0%
Treasurer Oct 2015 GE	7	Treadway	26.3%	25.4%	27.3%	10.1%	9.4%	10.9%	84.4%	67.0%	93.8%

Contest	Handley's Region		Black			White			Other		
	Code	Candidate Name	Support	low CI	high CI	Support	low CI	high CI	Support	low CI	high CI
Att. Gen. Nov 2015 GE	1	Caldwell	62.1%	60.5%	63.7%	32.3%	30.9%	33.6%	49.8%	16.0%	80.8%
Att. Gen. Nov 2015 GE	1	Landry	37.9%	36.3%	39.5%	67.7%	66.4%	69.1%	50.2%	19.2%	84.0%
Att. Gen. Nov 2015 GE	2	Caldwell	46.9%	44.5%	49.2%	36.7%	35.0%	38.4%	60.1%	29.9%	87.8%
Att. Gen. Nov 2015 GE	2	Landry	53.1%	50.8%	55.5%	63.3%	61.6%	65.0%	39.9%	12.2%	70.1%
Att. Gen. Nov 2015 GE	3	Caldwell	63.4%	62.4%	64.4%	46.0%	44.9%	47.2%	56.7%	29.0%	81.4%
Att. Gen. Nov 2015 GE	3	Landry	36.6%	35.6%	37.6%	54.0%	52.8%	55.1%	43.3%	18.6%	71.0%
Att. Gen. Nov 2015 GE	4	Caldwell	68.3%	64.6%	71.9%	38.2%	36.0%	40.4%	55.0%	25.0%	81.6%
Att. Gen. Nov 2015 GE	4	Landry	31.7%	28.1%	35.4%	61.8%	59.6%	64.0%	45.0%	18.4%	75.0%
Att. Gen. Nov 2015 GE	5	Caldwell	45.9%	43.4%	48.4%	33.6%	32.4%	34.8%	54.9%	23.2%	82.5%
Att. Gen. Nov 2015 GE	5	Landry	54.1%	51.6%	56.6%	66.4%	65.2%	67.6%	45.1%	17.5%	76.8%
Att. Gen. Nov 2015 GE	6	Caldwell	63.3%	59.7%	66.8%	42.4%	40.6%	44.3%	49.9%	18.4%	79.1%
Att. Gen. Nov 2015 GE	6	Landry	36.7%	33.2%	40.3%	57.6%	55.7%	59.4%	50.1%	20.9%	81.6%
Att. Gen. Nov 2015 GE	7	Caldwell	64.7%	63.6%	65.7%	47.0%	45.7%	48.1%	27.9%	8.6%	58.1%
Att. Gen. Nov 2015 GE	7	Landry	35.3%	34.3%	36.4%	53.0%	51.9%	54.3%	72.1%	41.9%	91.4%
Governor Nov 2015 GE	1	Edwards	98.8%	98.2%	99.2%	25.2%	24.5%	26.0%	78.3%	64.4%	89.1%
Governor Nov 2015 GE	1	Vitter	1.2%	0.8%	1.8%	74.8%	74.0%	75.5%	21.7%	10.9%	35.6%
Governor Nov 2015 GE	2	Edwards	98.3%	97.5%	98.9%	32.8%	32.1%	33.7%	80.6%	69.3%	89.8%
Governor Nov 2015 GE	2	Vitter	1.7%	1.1%	2.5%	67.2%	66.3%	67.9%	19.4%	10.2%	30.7%
Governor Nov 2015 GE	3	Edwards	98.8%	98.4%	99.1%	41.9%	41.4%	42.6%	86.5%	74.7%	93.9%
Governor Nov 2015 GE	3	Vitter	1.2%	0.9%	1.6%	58.1%	57.4%	58.6%	13.5%	6.1%	25.3%
Governor Nov 2015 GE	4	Edwards	97.7%	96.3%	98.8%	30.6%	29.2%	32.1%	77.0%	55.9%	90.9%
Governor Nov 2015 GE	4	Vitter	2.3%	1.2%	3.7%	69.4%	67.9%	70.8%	23.0%	9.1%	44.1%
Governor Nov 2015 GE	5	Edwards	98.2%	97.1%	99.0%	42.9%	42.0%	43.8%	69.7%	45.9%	88.5%
Governor Nov 2015 GE	5	Vitter	1.8%	1.0%	2.9%	57.1%	56.2%	58.0%	30.3%	11.5%	54.1%
Governor Nov 2015 GE	6	Edwards	97.5%	96.0%	98.6%	39.9%	38.5%	41.3%	54.0%	23.2%	83.0%
Governor Nov 2015 GE	6	Vitter	2.5%	1.4%	4.0%	60.1%	58.7%	61.5%	46.0%	17.0%	76.8%
Governor Nov 2015 GE	7	Edwards	98.8%	98.4%	99.2%	40.9%	40.2%	41.5%	85.3%	75.8%	92.0%
Governor Nov 2015 GE	7	Vitter	1.2%	0.8%	1.6%	59.1%	58.5%	59.8%	14.7%	8.0%	24.2%
Lt Governor Nov 2015 GE	1	Holden	98.3%	97.6%	98.8%	16.0%	14.7%	17.1%	37.9%	11.2%	71.9%
Lt Governor Nov 2015 GE	1	Nungesser	1.7%	1.2%	2.4%	84.0%	82.9%	85.3%	62.1%	28.1%	88.8%
Lt Governor Nov 2015 GE	2	Holden	94.0%	92.3%	95.6%	14.8%	13.5%	16.0%	43.5%	21.7%	65.0%
Lt Governor Nov 2015 GE	2	Nungesser	6.0%	4.4%	7.7%	85.2%	84.0%	86.5%	56.5%	35.0%	78.3%
Lt Governor Nov 2015 GE	3	Holden	96.1%	95.4%	96.7%	39.7%	38.7%	40.8%	59.4%	32.5%	81.6%
Lt Governor Nov 2015 GE	3	Nungesser	3.9%	3.3%	4.6%	60.3%	59.2%	61.3%	40.6%	18.4%	67.5%
Lt Governor Nov 2015 GE	4	Holden	97.5%	96.0%	98.6%	18.8%	17.4%	20.4%	67.5%	39.6%	88.6%
Lt Governor Nov 2015 GE	4	Nungesser	2.5%	1.4%	4.0%	81.2%	79.6%	82.6%	32.5%	11.4%	60.4%
Lt Governor Nov 2015 GE	5	Holden	96.8%	95.4%	97.9%	23.8%	22.8%	24.8%	50.1%	21.0%	79.6%
Lt Governor Nov 2015 GE	5	Nungesser	3.2%	2.1%	4.6%	76.2%	75.2%	77.2%	49.9%	20.4%	79.0%
Lt Governor Nov 2015 GE	6	Holden	97.5%	96.0%	98.7%	33.6%	32.2%	34.9%	47.1%	18.5%	78.3%
Lt Governor Nov 2015 GE	6	Nungesser	2.5%	1.3%	4.0%	66.4%	65.1%	67.8%	52.9%	21.7%	81.5%
Lt Governor Nov 2015 GE	7	Holden	95.4%	94.7%	96.1%	39.1%	38.1%	40.3%	69.5%	44.7%	87.5%
Lt Governor Nov 2015 GE	7	Nungesser	4.6%	3.9%	5.3%	60.9%	59.7%	61.9%	30.5%	12.5%	55.3%
President Nov 2012 GE	1	Obama	98.0%	93.7%	99.1%	9.4%	8.5%	12.1%	73.8%	68.6%	78.1%
President Nov 2012 GE	1	Others	0.5%	0.3%	0.7%	0.6%	0.4%	0.7%	21.5%	18.1%	24.8%
President Nov 2012 GE	1	Romney	1.5%	0.5%	5.6%	90.1%	87.4%	90.9%	4.7%	2.3%	9.6%
President Nov 2012 GE	2	Obama	97.4%	96.6%	98.1%	13.2%	12.6%	13.8%	82.2%	76.3%	88.0%
President Nov 2012 GE	2	Others	0.7%	0.5%	0.9%	1.9%	1.6%	2.2%	7.4%	4.7%	10.3%
President Nov 2012 GE	2	Romney	2.0%	1.3%	2.7%	84.9%	84.3%	85.5%	10.5%	4.6%	16.5%
President Nov 2012 GE	3	Obama	98.8%	98.4%	99.1%	13.0%	12.6%	13.5%	74.3%	69.5%	79.4%
President Nov 2012 GE	3	Others	0.4%	0.3%	0.6%	1.4%	1.2%	1.7%	20.6%	16.4%	24.4%
President Nov 2012 GE	3	Romney	0.7%	0.5%	1.1%	85.6%	85.2%	85.9%	5.1%	3.0%	8.0%
President Nov 2012 GE	4	Obama	97.0%	94.2%	98.7%	11.0%	9.3%	13.2%	72.8%	58.5%	84.2%
President Nov 2012 GE	4	Others	0.8%	0.5%	1.2%	1.1%	0.8%	1.5%	14.2%	8.0%	20.5%
President Nov 2012 GE	4	Romney	2.2%	0.7%	4.9%	87.9%	85.8%	89.5%	13.0%	4.4%	26.8%
President Nov 2012 GE	5	Obama	98.3%	97.6%	98.8%	12.2%	11.7%	12.8%	52.7%	40.7%	63.8%
President Nov 2012 GE	5	Others	0.6%	0.4%	1.0%	1.1%	0.8%	1.4%	36.3%	26.6%	44.6%
President Nov 2012 GE	5	Romney	1.1%	0.6%	1.7%	86.7%	86.2%	87.1%	10.9%	4.7%	20.6%
President Nov 2012 GE	6	Obama	97.3%	94.1%	98.7%	12.4%	11.5%	13.9%	47.8%	31.0%	62.7%
President Nov 2012 GE	6	Others	0.8%	0.5%	1.1%	0.8%	0.6%	1.1%	28.5%	22.0%	34.2%
President Nov 2012 GE	6	Romney	1.9%	0.7%	5.1%	86.8%	85.3%	87.8%	23.7%	9.5%	40.8%
President Nov 2012 GE	7	Obama	98.6%	97.6%	99.0%	13.2%	12.6%	14.0%	72.0%	67.1%	76.9%
President Nov 2012 GE	7	Others	0.4%	0.3%	0.6%	1.2%	1.0%	1.5%	22.7%	18.5%	26.2%
President Nov 2012 GE	7	Romney	0.9%	0.6%	1.8%	85.6%	84.8%	86.1%	5.3%	3.1%	8.5%

**UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA**

DR. DOROTHY NAIRNE, *et al.*,

Plaintiffs,

v.

R. KYLE ARDOIN, in his official capacity as
Secretary of State of Louisiana,

Defendant.

Case No. 3:22-cv-00178-SDD-SDJ

Chief Judge Shelly D. Dick

Magistrate Judge Scott D. Johnson

EXPERT REPORT OF JEFFREY B. LEWIS

I, Jeffrey B. Lewis, provide the following written report:

1. I am a Professor of Political Science at the University of California Los Angeles (UCLA). I am also the past department chair of UCLA's political science department and past president of the Society for Political Methodology. I have been a member of the UCLA faculty since 2001. Prior to that, I was an Assistant Professor of Politics and Public Affairs at Princeton University from 1998 to 2001. I earned my B.A. in Political Science and Economics from Wesleyan University in 1990 and my Ph.D. in Political Science from the Massachusetts Institute of Technology (MIT) in 1998. My main area of specialization is quantitative political methodology with a focus on making inferences about preferences and behavior from the analysis of voting patterns in the mass public and in legislatures. I have published on the topic of ecological inference – the challenge that arises when one wants to know how individuals of different types voted in an election but one can only observe electoral data aggregated to the precinct, county or other summary level. A true, accurate, and complete copy of my curriculum vitae is attached as Exhibit A.

2. I have previously been retained as an expert in relation to ten court cases: one involving allegations of voting machine failure in Florida (Jennings v. Elections Canvassing Commission of State of Florida), four involving claims of minority vote dilution in California (Avitia v. Tulare Local Healthcare District; Satorre et al. v. San Mateo County Board of Supervisors et al.; Ladonna Yumori-Kaku v. City of Santa Clara; and Pico Neighborhood Association and Maria Loya v. City of Santa Monica), one involving claims of minority vote dilution in Texas (Perez, et al. v. Abbott, et al.), two involving claims of minority vote dilution in North Carolina (Common Cause, et al. v. Lewis, NCLCV v. Hall), one involving claims of minority vote dilution in Washington (Aguilar v. Yakima County), one involving claim of minority vote dilution in Louisiana (Robinson, et al. v. Ardoin), and one involving the compactness of legislative districts in Illinois (Radogno et al v. Illinois State Board of Elections, et al.). I testified as an expert in the cases of Ladonna Yumori-Kaku v. City of Santa Clara, Pico Neighborhood Association and Maria Loya v. City of Santa Monica, NCLCV v. Hall, and Robinson, et al. v. Ardoin.

3. I am being compensated at a rate of \$550/hour.

4. In the attached Exhibit B, I present in Tables 1 to 4 summaries of the results of my analysis of selected Louisiana election contests held between 2015 and 2021. In particular, I consider how each contest would have turned out if only the votes of those residing in each enacted and illustrative State House and State Senate had participated. I also estimate the rate of support each candidate in each contest among Black, white, and other voters.

5. Each row in each table provides metrics for one state House or Senate district as enacted or as drawn in the 2022 or 2023 illustrative plans offered by Mr. Cooper. District names in the table start with an “H” or an “S” indicating whether the district is a House or Senate district followed by “21” for the enacted districts, “22” for Cooper’s 2022 illustrative districts, or “23” for

Cooper’s 2023 illustrative districts. The number following the dash in each district name is the number of the district in the given plan.

6. The districts selected for analysis from the enacted districts and Cooper’s 2023 illustrative-plan districts are those included in Dr. Handley’s district “clusters” and selected other districts with substantial Black population. The included districts from Cooper’s 2022 plan are those that differ substantially from their corresponding district in the 2023 illustrative plan (among those districts in the 2023 illustrative plan that I analyze).

7. Contests analyzed include those for U.S. Senate (2016 primary and general, 2020 primary), Attorney General (2015 primary and general, 2019 primary), Governor (2015 primary and general, 2019 primary and general), Lt. Governor (2015 primary and general, 2019 primary), Secretary of State (2015 primary, 2018 primary and general, 2019 primary and general), Treasurer (2015 primary, 2017 primary and general, 2019 general); Commissioner of Agriculture and Forestry (2015 primary), various U.S. House, State House, and State Senate contests, and a handful of State Board of Elementary and Secondary Education and Judicial elections.¹ In some tabulations, I include only those contests that had a Black candidate.

8. For each of these “reconstituted” election contests in each district, I used Ecological Inference (EI) to estimate the degree of Black voter cohesion and white voter crossover. The estimates are generated using the Bayesian Multinomial Dirichlet model of Rosen, Jiang, King,

¹Included in my analysis are contest-district combinations for which I was provided data and which met the criteria for inclusion described below. In addition, I excluded U.S. Presidential contests because they employ partisan primaries (a form of not used in elections for House and Senate in the Louisiana) and because they do not have two-candidate general elections (unlike other Louisiana elections). I also exclude elections that did not include a Democratic candidate because in nearly every instance that did include a Democratic candidate, the Black-preferred candidate was a Democrat. Thus, elections that did not include a Democrat (such as run-offs in which both candidates are Republicans) may not demonstrate the potential (or lack of potential) for the Black community to elect a candidate of choice and are excluded.

and Tanner.² The model provides estimates of the rate of support for each candidate in the contest (and the rate of abstention) in the contest among Black, white, and (collectively) voters of “other” races and ethnicities.³

9. In addition to objective data, EI uses very strong modeling assumptions to infer the rate of support for each candidate among voters of each group. These rates of support must be estimated. They cannot be directly observed because each ballot cast is not encoded with the race/ethnicity of the voter casting it. Instead, observable variation in ethnic composition and candidate support across precincts is combined with strong assumptions in a statistical model to arrive at approximations of the unobservable rates of support for candidates among voters of each ethnic/racial group. It must be remembered that these estimates are approximations.

10. I further narrow the set of contests to partisan races for executive and legislative offices. Also, I only “reconstitute” a given contest within a given district if the data indicate that at least 75 percent of the voters in the given election who resided in the district could vote in the given contest.

11. I identify the “Black-preferred” candidate in each contest as the candidate estimated by EI to have received the largest share of Black votes in the given contest.

12. My tabulations and estimates are based on a database of precinct-level election returns, voter participation, and census demographics that was created by Dr. Lisa Handley. The datasets

² See Ori Rosen, Wenxin Jiang, Gary King, and Martin A. Tanner. 2001. “Bayesian and Frequentist Inference for Ecological Inference: The R×C Case.” *Statistica Neerlandica* 55: 134-156. Estimation is conducted using Markov Chain Monte Carlo sampling from the posterior distribution taking 100,000 “burn-in” draws before taking 100,000 samples (thinned by 100) used to calculate the expected a posteriori (EAP) estimates. I do not estimate EI for contest-district combinations that include fewer than 10 voting precincts and exclude those contest-district combinations from the analysis.

³ The estimated support for each candidate among voters of each racial/ethnic group is calculated as the shares of support among those votes of each group who are estimated not to have abstained in the contest.

that I used were derived from that database and were provided to me with the illustrative district numbers appended by Mr. Clark Bensen of POLIDATA.

13. I also note whether each candidate is Black and whether each contest includes at least one Black candidate. Information about which candidates are Black is contained in the database constructed by Dr. Handley.

14. The demographic composition of the voters from each precinct needed to perform EI is drawn from official state data on the number of voters of each race/ethnicity participating in each election (which in turn is based on the race or ethnicity that each voter selects when they register to vote). These data are included in Dr. Handley's database.

15. The attached tables summarize the reconstituted elections analysis. For each district, the tables show averages of many of the quantities described above as well as: the percent of Black-preferred candidates who were Democrats ("Percent of Black-preferred candidates Democratic"); the average number of candidates in the reconstituted contests ("Avg. number of candidates"); the Black-preferred candidate "win rate" (the fraction of Black-preferred candidates who would have won if the contest had only been held in the given district) ("Black-preferred win rate"); the average fraction of voters who were Black ("Avg. Pct. Voters Black"); the fraction of contests in which the Black and white voters were "polarized" (were estimated to have different most-preferred candidates) ("Pct. Polarized") and, an estimate of the average minimum fraction of Voting Age Population in the district that would have had to be Black in order for the Black-preferred candidate to expect to get at least 50 percent of the vote (based on the EI estimates and only applied in contests involving two major-party candidates) ("Avg. pct. Black VAP needed for

win”). The estimates in this last column follow the estimation logic set forth by Grofman, Handley and Lublin.⁴

16. Tables 1 to 4 present separate results for primary elections and general (run off) elections. Separate tallies are also presented that include only those contests that included at least one Black candidate. I have excluded contests that did not include a Democrat. “Winners” in the primary elections are candidates who gained over 50 percent of the vote or were among the top two vote-getters who moved on to a general election run-off under Louisiana’s top-two primary system.

17. Tables 1 to 4 present two measures of Black voting age population. One is the fraction of the voting age population that reports to the US Census that they are any part Black. The other counts those who report their race as Black alone. In addition to the difference in the definition, the two measures also differ in their construction. The any-part Black measure is calculated directly from the Census block data and taken where possible from Cooper’s database. The Black-alone measure is constructed by adding the populations as allocated to voting precincts. Due to split precincts and other anomalies involved in that allocation process, it is sometimes the case that the Black-alone percentage exceeds the any-part Black percentage for a particular district. The estimates of the minimum Black population required to elect a Black-preferred candidate are based on the Black-alone measure.

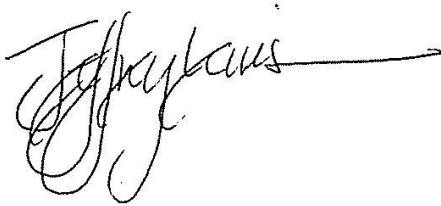
18. Table 1 presents results based on all primary elections analyzed that include more than two candidates. Table 2 presents results for all general (run off) elections and primary elections that include only two candidates. Table 3 presents results for primary elections with more than three candidates that include a Black candidate. Table 4 presents results for general elections and two-candidate primary elections that include a Black candidate.

⁴ Bernard Grofman, Lisa Handley, and David Lublin 2001, “Drawing Effective Minority Districts: A Conceptual Framework and Some Empirical Evidence.” *North Carolina Law Review*. 79:1383-1430.

19. Figures 1 and 2 (in Exhibit B) are based on Table 4 and show that white crossover voting in high Black voting-age population districts (BVAP greater than 40 percent) is estimated to be higher in more urban districts than in less urban districts. Correspondingly, the estimated BVAP required to elect Black-preferred candidates is estimated to be lower in more urban districts. The data suggest average white-cross over voting of 40 percent in fully urban districts and less than 20 percent in districts that are entirely outside of urban areas.

CERTIFICATION

I certify that the statements and opinions provided in this report are true and accurate to the best of my knowledge, information, and belief.

A handwritten signature in black ink, appearing to read "Jeffrey Lewis", with a long horizontal stroke extending to the right.

Jeffrey B. Lewis, Ph.D.

July 28, 2023

Date

EXHIBIT A

JEFFREY B. LEWIS

Political Science Department
Bunche Hall, UCLA
Los Angeles CA 90095
310.206.1307

2330 Pelham Ave.
Los Angeles CA 90064
310.467.7685
email:jblewis@ucla.edu

Education Massachusetts Institute of Technology Cambridge, MA
Ph.D., Department of Political Science, February 1998.

Wesleyan University Middletown, CT
B.A., Political Science and Economics with Honors in General Scholarship.
June 1990.

Academic Experience

University of California Los Angeles Los Angeles, CA
Professor of Political Science. July 2012–present.

University of California Los Angeles Los Angeles, CA
Director, Center for American Politics and Public Policy. July 2017–July 2018.

University of California Los Angeles Los Angeles, CA
Chair, Department of Political Science. July 2011–June 2017.

University of California Los Angeles Los Angeles, CA
Associate Professor of Political Science. July 2007–June 2012.

University of California Los Angeles Los Angeles, CA
Assistant Professor of Political Science. July 2001–June 2007.

Dartmouth College,
Rockefeller Center for the Social Sciences Hanover, NH
Research Fellow. July 2000–June 2001.

Princeton University Princeton, NJ
Assistant Professor of Politics and Public Affairs. July 1997–July 2001.

Teaching Interests

Quantitative methods
Elections & Direct democracy
California politics

Grants & Awards

Fellow, Society for Political Methodology, Elected 2019.

Research grant, “For Modernizing the VoteView Website And Software.”
Madison Initiative. William and Flora Hewlett Foundation (Grant #2016-3870). January 2016. \$200k.

Conference/training grant, “Support for Conferences and Mentoring of Women and Underrepresented Groups in Political Methodology,” National Science Foundation (NSF-SBE-1628102 with Kosuke Imai), \$308k.

Research grant. “Collaborative Research on Dynamic Models of Roll Call Voting.” National Science Foundation (NSF-SBS-0611974, with Keith Poole and Howard Rosenthal). July 2006. \$394k total (\$182k UCLA).

Brian P. Copenhaver Award for Innovation in Teaching with Technology, College of Letters and Sciences, University of California Los Angeles. 2007.

Warren Miller Prize for best article in volume 11 of *Political Analysis*. 2003 (article co-authored with Ken Schultz).

Research grant. “Empirical Testing of Crisis Bargaining Models.” National Science Foundation (NSF-SBS-0241647, with Ken Schultz). February 2003. \$200k.

Research grant, “Term limits in California.” John Randolph and Dora Haynes Foundation, May 2000. \$27k.

Research grant, Princeton University Committee on Research in the Humanities and Social Sciences, May 1998.

Harvard/MIT Research Training Group for Positive Political Economy Dissertation Fellowship, 1995-1996.

Sigma Xi Honorary Society, Wesleyan University, 1990.

White Prize for excellence in economics, Wesleyan University, 1990.

Ford Foundation Summer Research Fellowship, Wesleyan University, 1988.

Publications “Moderates.” *American Political Science Review*. 2023. 117 (2):643 – 660 (with Anthony Fowler, Seth J. Hill, Chris Tausanovitch, Lynn Vavreck, and Christopher Warshaw.)

“The new Voteview.com: preserving and continuing Keith Poole’s infrastructure for scholars, students and observers of Congress,” *Public Choice*. 2018, 176:17–32 (with Adam Boche, Aaron Rudkin, and Luke Sonnet).

“Recovering a Basic Space from Issue Scales in R.” *Journal of Statistical Software*. 2016, 69(7) (Keith T. Poole, Howard Rosenthal, James Lo, Royce Carroll).

“The Structure of Utility in Spatial Models of Voting,” *American Journal of Political Science*. 2013, 56(4):1008–1028 (with Royce Carroll, James Lo, Keith T. Poole, and Howard Rosenthal).

“Economic Crisis, Iraq, and Race: A Study of the 2008 Presidential Election.” (*Election Law Journal*. 2010, 9(1): 41–62 (with Michael Herron and Seth Hill).

“Comparing NOMINATE and IDEAL: Points of difference and Monte Carlo tests.” *Legislative Studies Quarterly*. 2009, 34:555–592 (with Royce Carroll, James Lo, Keith T. Poole, and Howard Rosenthal).

“Measuring Bias and Uncertainty in DW-NOMINATE Ideal Point Estimates via the Parametric Bootstrap”, *Political Analysis*. 2009, 17(3):261–275 (with Royce Carroll, James Lo, Keith T. Poole, and Howard Rosenthal).

“poLCA: An R Package for Polytomous Variable Latent Class Analysis.” *Journal of Statistical Software*. 2011, 42(10) (with Drew A. Linzer).

“Scaling Roll Call Votes with Wnominate in R.” *Journal of Statistical Software*. 2011, 42(14) (with Keith Poole, James Lo, and Royce Carroll).

“Ballot Formats, Touchscreens, and Undervotes: A Study of the 2006 Midterm Elections in Florida.” *Election Law Journal*. 2008. 7(1):25–47 (with Laurin Frisana, Michael C. Herron, and James Honaker).

“An Estimate of Risk Aversion in the U.S. Electorate.” *Quarterly Journal of Political Science*. 2007, 2(2):139–154. (with Adam J. Berinsky).

“Ideological Adaptation? The Survival Instinct of Threatened Legislators.” *Journal of Politics*. 2007, 69(3):823–843 (with Thad Kousser and Seth Maskett).

“Did Ralph Nader Spoil a Gore Presidency? A Ballot-Level Study of Green and Reform Party Voters in the 2000 Presidential Election.” *Quarterly Journal of Political Science*. 2007, 2(3):205–226 (with Michael Herron).

“A Return to Normalcy? Revisiting the Effects of Term Limits on Competitiveness and Spending in California Assembly Elections” *State Politics and Policy Quarterly*. 2007, 7(1):20–38 (with Seth Maskett).

“Learning about Learning: A Response to Wand.” *Political Analysis*. 2006, 14: 121–129 (with Kenneth Schultz).

“Estimating Regression Models in Which the Dependent Variable Is Based on Estimates” *Political Analysis*. 2005, 13(4) (with Drew A. Linzer)

“Beyond the Median: Voter Preferences, District Heterogeneity, and Representation.” *Journal of Political Economy*. 2004, 106(6):1364–1383 (with Liz Gerber).

“Measuring Bias and Uncertainty in Ideal Point Estimates via the Parametric Bootstrap.” *Political Analysis*. Spring 2004. 12:105–127 (with Keith Poole)

“Extending King’s Ecological Inference Model to Multiple Elections using Markov Chain Monte Carlo,” Chapter in Gary King, Ori Rosen, and Martin Tanner, Eds. *Ecological Inference: New Methodological Strategies*. Cambridge: Cambridge University Press. 2004.

Jeffrey B. Lewis (C.V.)

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“Revealing Preferences: Empirical Estimation of a Crisis Bargaining Game with Incomplete Information.” *Political Analysis*. 2003, 11(4):345–365 (with Kenneth A. Schultz).

“Understanding King’s Ecological Inference Model: A Method-of-moments Approach,” *Historical Methods*. 2001, 34(4):170–188.

“Estimating Voter Preference Distributions from Individual-Level Voting Data,” *Political Analysis*. 2001, 9(3):275–297.

“No Evidence on Directional vs. Proximity Voting,” *Political Analysis*. 1999, 8(1):21–33 (with Gary King).

“Reevaluating the Effect of N-Ach (Need for Achievement) on Economic Growth,” *World Development*. 1991, 19(9):1269–1274.

Other Publications

Comment on “McCue, K. F. (2001), ‘The Statistical Foundations of the EI method,’ *The American Statistician*. 2002, 55(3):250.

“Veteran’s Adjustment.” Chapter in *After the Cold War: Living with Lower Defense Spending*, Congress of the United States, Office of Technology Assessment, OTA-ITE-524. 1992.

Working Papers

Has Joint Scaling Solved the Achen Objection to Miller and Stokes? (with Christopher Tausanovitch, under revision).

Residual Votes in the 2008 Minnesota Senate Race (with Jonathan W. Chipman and Michael C. Herron)

From Punchcards to Touchscreens: Some Evidence from Pasco County, Florida on the Effects of Changing Voting Technology (with Michael C. Herron)

Voting in Low Information Elections: Bundling and Non-Independence of Voter Choice (with Liz Gerber, April 2002)

Dangers of Measurement Error in Non-linear Models: The Case of Directional versus Proximity Voting (April 2002)

A Reply to McCue’s Reply to My Comment on “The Statistical Foundations of the EI method”

PhD Students

Committees Chaired or Co-chaired: Ryan Enos (Harvard), Seth Hill (UCSD), James Lo (USC), stonegarden grindlife.

Currently chairing or co-chairing five committees.

Committee member on over 35 PhD students (including as an outsider member in Economics and Statistics).

Conference Presentations

American Political Science Association, Philadelphia, September 2016.
 Annual Meetings of the Midwest Political Science Association, Chicago, April 2014.
 Annual Meetings of the Midwest Political Science Association, Chicago, April 2011.
 Summer Meetings of the Political Methodology Society, New Haven, 2009
 Annual Meetings of the Midwest Political Science Association, Chicago, April 2006.
 American Political Science Association, Chicago, September 2004.
 American Political Science Association, Philadelphia, September 2003.
 Annual Meetings of the Midwest Political Science Association, Chicago, April 2003.
 Summer Meeting of the Political Methodology Society, Seattle, 2002
 Annual Meetings of the Public Choice Society, Houston, San Diego, 2002.
 Annual Meetings of the Midwest Political Science Association, Chicago, April 2002.
 Annual Meetings of the Midwest Political Science Association, Chicago, April 2001.
 Annual Meetings of the Midwest Political Science Association, Chicago, April 2000.
 Summer Meeting of the Political Methodology Society, College Station Texas, 1999.
 Annual Meetings of the Social Science History Association, Chicago, November 1998.
 American Political Science Association, Boston, September 1998.
 Annual Meetings of the Midwest Political Science Association, Chicago, April 1997.
 Annual Meetings of the American Political Science Association, San Francisco, August 1996.
 Annual Meetings of the Public Choice Society, Houston, April 1996.
 American Political Science Association, Atlanta, August 1989.

Software

Voteview: US Roll call votes and legislator ideologies, 1789–2021: Provides interactive search and visualization of every roll call vote ever taken in the United States Congress. See <https://voteview.com>.

WNominate (v1.2): R package implementing Poole and Rosenthal's W-Nominate estimator co-authored with Keith Poole and James Lo. (<http://cran.r-project.org/web/packages/wnominate/index.html>)

PoLCA (v1.4.1): R package for Polytomous Variable Latent Class Analysis. Co-authored with Drew Linzer. (<http://dlinzer.github.io/poLCA/>)

Data collections

US Congressional roll call voting and related data, 1789–2021: Provides data on every roll call vote ever taken in the United States Congress. See <https://voteview.com>.

US Congressional District Boundaries, 1789–2017. Detailed GIS descrip-

tions of every district in US history (with Brandon DeVine (UCLA), Lincoln Pritcher (UCLA), and Ken Martis (UWV)). See <http://cdmaps.polisci.ucla.edu/>.

109th – 114th Congress Data Project. UCLA. Webpage allows download of up to the hour roll call voting matrices for the current US Congress [Now included in the Voteview project].

California Roll Call Project. UCLA. Collection of roll call voting data from the California Assembly from 1850 to the present. Ongoing (with Seth Masket).

Crisis Bargaining Data Base. UCLA. Codings of post-World War I international crises outcomes in terms of a simple game theoretic model of coercive diplomacy (supported by NSF-SBS-0241647) (with Ken Schultz).

Record of American Democracy Project Harvard University. One of several project leaders. Summer 1995.

University Service

Special Assistant to the Executive Vice Chancellor and Provost for Academic Planning and Budget, UCLA (September 2022–Present)

Chair: Executive Committee, Faculty of Letters and Science, UCLA (September 2019–October 2022)

Vice Chair: Executive Committee, Faculty of Letters and Science, UCLA (2018–2019)

Member: CFO search committee, UCLA, 2023; VCA review committee, UCLA. 2022; Bureaucracy Busting Working Group, UCLA (2021–2022); Executive Committee, Faculty of Letters and Science, UCLA (2017–2018); Council on Academic Planning and Budget, UCLA (2019–2021); Classroom Advisory Committee, UCLA (2018–2020); Pathways to Commencement Task Force, UCLA (2013–2014).

Professional Experience

President: Society for Political Methodology (2015–2017).

Vice President/President elect: Society for Political Methodology (2013–2015).

Co-editor: *The American Political Science Review* July 2008–July 2011; *The Political Methodologist*, the APSA Methodology section newsletter. 2004–2007 (with Adam Berinsky and Michael Herron).

Editorial Board Member: *Journal of Politics*, 2005–2008; *Political Analysis* 2005–present.

Panelist: National Science Foundation ad hoc peer review panels (June 2004, February 2008, October 2010); National Science Foundation Political Science Panel (2009–2010).

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Departmental review visiting committee member: University of Colorado, 2013; London School of Economics, 2015; University of Michigan, 2015.

Nominations committee member: American Political Science Association, 2011–12, 2012–13.

Program committee member: American Political Science Association Annual Meetings 2003, Political Methodology division head.

Anonymous Referee: *American Political Science Review*, *American Journal of Political Science*, *Journal of Law and Economics*, *World Politics*, *Political Analysis*, *Legislative Studies Quarterly*, *Sociological Methods Review*, *Journal of Politics*, *Journal of Theoretical Politics*, and *Political Behavior*, *Perspectives on Politics*, *Public Opinion Quarterly*, *Journal of Political Economy*.

Discussant/Panel Chair Political Methodology Conference (1997, 2004, 2005, 2015), Midwest Political Science Association meetings (1998, 2005, 2006). American Political Science Association meetings (1998, 2002, 2003, 2006, 2010, 2016). Public Choice Society (1996, 2002)

Work Experience

Polimetrix Palo Alto, CA
Director of Statistics, 2003–2007.

Office of Technology Assessment, U.S. Congress Washington, DC
Research Analyst, Industry Technology and Employment program. October 1990 – August 1992.

Selected Invited Lectures

American Politics Seminar, Political Science Department, Columbia University, 1998

Political Economy Seminar, Political Science Department, Michigan University, 1999

Political Economy Seminar, Graduate School of Business, Stanford University, 1999

Political Economy Seminar, Politics & Economics Departments, Princeton University, 1998

Southern California Methods Program, UC Riverside, November 2001.

Ideal-Point Estimation Conference, Washington University St. Louis, September 2002.

American Politics Seminar, Political Science Department, Yale University, 2003.

Political Economy Seminar, Politics & Economics Departments, Princeton University, Spring 2004.

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Political Economy Seminar, Politics Department, Massachusetts Institute of Technology, Spring 2004.

Empirical Implications of Theoretical Models Program, Washington University, St. Louis, June 2004.

Multilevel Methods Conference, Center for the Study of Democratic Politics, Woodrow Wilson School of Public and International Affairs, Princeton University, October 2004.

Empirical Implications of Theoretical Models Program, University of California Berkeley (one week module co-taught with Kenneth A. Schultz). June 2005.

Roll Call Voting Conference, Department of Political Science, University of California, San Diego. May 2006.

Measures of Legislators' Policy Preferences and the Dimensionality of Policy Spaces Conference Department of Political Science, Washington University, St. Louis. November 2007.

Causal Inference. Business School. University of Southern California. June 2010.

How to Scrape Web Pages. Summer Methods Program. Department of Sociology. Stanford University, July 2010, 2011, 2012, 2013, 2014, 2015.

Lectures on Ecological Inference. Summer Methods Training Program, Academia Senica, Taipei, Taiwan. July 2010.

Applied Statistics Workshop. Department of Government. Harvard University, April 2011.

Methods Workshop. Department of Political Science, Stanford University. June 2011.

Conference on "Political Representation: Fifty Years After Miller & Stokes." Vanderbilt University, March 2013

Center for the Study of Democratic Politics (CSDP) Workshop, Princeton University, April 2015.

Ideal Point Models in Political Science Workshop, MIT, April 2015.

Interdisciplinary Seminar in Quantitative Methods (ISQM) Workshop, University of Michigan, September 2015.

Political Economy Seminar, Graduate School of Business, Stanford University, April 2019,

July 28, 2023

EXHIBIT B

Tables and Figures

July 28, 2023

Table 1: Analysis of primary elections with three or more candidates

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates Democratic	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
State House												
H21-001	22.3/23.1	14	34	100	7.2	21	22	22	71	8	100	35
H21-002	66.5/67.4	14	36	100	7.2	100	63	73	80	21	100	9
H21-003	72.4/73.9	14	25	100	7.2	100	59	69	82	10	100	29
H21-004	70.2/72.1	14	23	100	7.2	100	60	70	82	12	100	24
H21-005	18.7/19.4	14	41	100	7.2	7	21	19	75	8	100	32
H21-006	15.6/16.5	14	27	100	7.2	21	20	9	41	18	93	51
H21-007	28.6/29.4	14	59	100	7.2	50	26	27	81	7	100	32
H21-008	19.0/19.9	14	21	100	7.2	0	16	13	63	8	100	48
H21-009	19.4/21.1	14	22	100	7.2	14	20	17	65	10	100	37
H21-011	56.9/56.4	12	57	100	8.2	100	46	54	79	10	100	29
H21-016	61.3/62.5	15	38	100	7.7	100	47	59	73	10	93	32
H21-017	62.0/63.3	15	27	100	7.6	100	54	68	76	8	100	25
H21-021	54.5/55.4	15	75	100	7.7	80	37	51	72	5	100	40
H21-022	21.4/24.7	14	52	100	7.9	14	17	15	72	8	100	42
H21-023	49.6/50.9	16	40	100	7.3	100	64	51	75	56	25	2
H21-025	21.9/23.5	12	50	92	8.2	25	24	19	73	11	92	31
H21-026	62.9/64.3	15	35	100	7.6	100	56	64	78	16	100	21
H21-029	71.4/73.6	13	37	100	8.1	92	53	69	70	15	92	28
H21-033	6.9/7.7	15	24	93	7.5	13	18	5	50	16	93	36
H21-034	70.4/72.6	16	30	100	7.2	100	59	78	71	18	88	14
H21-035	11.4/12.4	11	25	100	7.8	9	16	8	57	12	100	35
H21-036	13.7/15.0	14	22	100	7.8	14	15	8	39	13	93	51
H21-040	53.4/54.6	13	47	100	7.8	100	43	52	74	13	92	29
H21-044	58.0/59.5	14	33	100	7.8	100	47	58	69	17	100	20
H21-057	57.1/57.9	13	36	100	8.0	100	50	58	74	16	92	18

Table 1: Analysis of primary elections with three or more candidates (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H21-058	56.1/56.8	16	49	100	7.3	100	53	61	74	20	88	14
H21-059	17.8/18.7	15	14	87	6.9	20	19	17	35	15	100	52
H21-060	37.7/37.7	13	54	100	8.1	77	37	42	72	14	92	19
H21-061	75.2/75.3	12	22	100	8.4	100	61	73	72	33	75	9
H21-062	53.1/55.1	13	34	100	7.8	100	46	52	72	17	85	22
H21-063	71.3/69.7	14	21	100	7.8	100	50	71	68	11	100	24
H21-065	20.8/21.9	14	17	100	7.1	14	18	16	64	8	100	44
H21-066	19.4/18.5	16	16	100	6.8	19	19	13	43	14	94	49
H21-067	51.4/51.9	14	18	93	7.8	100	56	66	69	33	71	5
H21-068	18.7/20.2	17	19	100	6.6	35	27	16	62	20	88	29
H21-069	22.8/23.7	17	18	100	6.6	29	24	15	57	17	94	38
H21-070	22.1/21.2	14	16	100	7.1	29	28	18	63	19	86	33
H21-072	51.6/52.7	13	39	100	7.9	92	44	51	73	17	77	24
H21-083	53.1/54.6	15	23	100	7.6	100	53	57	81	17	87	13
H21-085	33.3/35.5	15	23	100	7.6	67	37	30	71	23	80	18
H21-087	57.4/59.1	16	21	100	7.3	100	60	66	79	21	75	9
H21-088	12.8/13.4	15	20	100	6.9	20	17	10	44	13	93	42
H21-091	38.8/40.7	16	47	100	7.3	94	60	41	73	53	31	4
H21-092	30.7/30.2	12	29	100	8.4	75	34	34	73	12	100	16
H21-093	54.1/56.6	16	41	100	7.3	100	64	58	75	53	31	0
H21-096	52.8/55.1	14	58	100	7.8	100	37	52	67	7	100	34
H21-097	69.6/72.3	17	41	100	7.1	100	66	77	73	48	29	0
H21-099	75.4/78.1	18	38	100	6.8	100	67	76	73	60	22	5
H21-100	78.9/80.8	17	31	100	7.1	100	67	89	76	21	82	3
H21-101	59.1/60.2	15	16	100	6.9	100	50	59	72	18	87	22
H21-102	63.4/65.6	18	38	100	7.1	100	61	65	75	37	56	8

Table 1: Analysis of primary elections with three or more candidates (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H21-105	35.6/35.9	12	24	100	7.4	58	34	34	73	8	100	31
H22-057	56.5/57.3	13	37	100	8.0	100	49	58	74	16	92	18
H22-058	50.5/50.5	16	53	100	7.3	100	48	53	76	18	94	17
H22-060	49.7/50.5	16	41	100	7.4	100	47	56	70	19	94	17
H22-063	58.2/57.4	11	21	100	7.8	100	47	58	75	10	100	26
H22-065	51.0/52.3	11	21	100	7.8	91	41	49	77	7	100	33
H22-069	50.5/51.8	14	17	100	7.1	93	43	46	69	20	86	25
H22-072	50.9/51.7	12	40	100	8.2	92	45	49	75	17	83	24
H22-096	49.5/51.7	14	58	100	7.8	100	35	49	66	6	100	35
H22-101	49.7/51.6	14	15	100	7.1	100	44	48	73	15	93	27
H23-001	54.6/55.3	14	36	100	7.2	100	43	53	81	6	100	33
H23-002	65.5/67.3	14	31	100	7.2	100	62	71	80	22	93	9
H23-003	57.6/58.8	14	24	100	7.2	100	46	51	81	9	100	35
H23-004	56.4/57.5	14	24	100	7.2	100	49	57	83	9	100	28
H23-005	49.6/50.9	16	40	100	7.3	100	64	51	75	56	25	2
H23-006	15.1/16.0	14	28	100	7.2	21	20	8	42	17	100	51
H23-008	19.0/19.9	14	21	100	7.2	0	16	13	63	8	100	48
H23-009	19.4/21.1	14	22	100	7.2	14	20	17	66	10	100	37
H23-011	55.9/55.5	12	62	100	8.2	100	45	52	79	10	100	30
H23-016	58.5/59.8	14	24	100	7.9	100	45	54	75	11	100	33
H23-017	52.4/54.5	14	27	100	7.9	100	42	55	76	5	100	32
H23-021	53.1/54.3	14	85	100	7.9	64	36	49	71	5	100	39
H23-022	17.9/18.7	14	48	100	7.2	7	20	17	70	9	100	35
H23-023	49.2/50.6	14	63	100	7.2	100	44	48	80	12	100	27
H23-026	62.0/63.4	15	36	100	7.6	100	55	62	78	16	100	21
H23-029	57.9/57.8	13	35	100	8.1	92	43	53	69	15	92	32

Table 1: Analysis of primary elections with three or more candidates (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H23-033	6.9/7.7	15	25	93	7.5	13	18	5	49	16	93	36
H23-034	47.9/50.0	14	25	100	7.8	100	44	50	71	17	93	16
H23-035	7.9/8.7	14	26	100	7.8	7	13	7	47	10	100	41
H23-036	10.8/11.9	14	20	100	7.8	14	14	8	35	12	100	52
H23-038	49.0/50.8	14	27	100	7.8	100	44	52	72	13	100	21
H23-040	54.2/54.9	14	45	100	7.9	100	43	53	71	15	93	26
H23-044	59.4/60.9	14	36	100	7.8	100	48	60	70	16	100	20
H23-057	52.7/53.4	13	35	100	8.0	100	47	54	74	16	92	18
H23-058	51.1/51.3	17	54	100	7.1	100	50	54	76	21	88	16
H23-059	17.8/18.7	15	14	93	6.9	20	19	17	36	14	100	51
H23-060	52.7/52.8	16	41	100	7.4	100	48	59	70	18	88	16
H23-061	52.5/50.2	12	23	100	8.4	92	51	53	72	27	83	17
H23-062	26.8/26.8	13	62	100	7.8	54	29	30	73	10	100	26
H23-063	56.2/57.2	11	23	100	7.8	100	45	56	75	10	100	27
H23-065	55.2/56.0	11	19	100	7.8	100	44	54	77	7	100	33
H23-066	19.1/18.8	15	16	100	6.9	27	22	15	55	14	93	40
H23-067	51.5/51.6	13	22	100	8.1	100	55	63	70	32	77	10
H23-068	52.5/54.2	11	21	100	7.8	82	45	44	76	20	82	27
H23-069	49.0/50.2	14	16	100	7.1	86	41	43	68	20	86	29
H23-070	17.7/16.8	14	17	100	7.1	21	23	12	51	19	86	42
H23-072	49.9/50.6	12	38	100	8.2	92	44	48	74	17	83	24
H23-083	53.1/54.6	15	23	100	7.6	100	53	57	81	17	87	13
H23-087	57.4/59.1	16	21	100	7.3	100	60	66	79	21	75	9
H23-088	11.0/11.8	15	21	93	6.9	20	20	8	33	19	87	47
H23-093	54.1/56.6	16	41	100	7.3	100	64	58	75	53	31	0
H23-096	54.0/55.5	14	55	100	7.8	100	40	55	68	7	100	31

Table 1: Analysis of primary elections with three or more candidates (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H23-097	69.6/72.3	17	41	100	7.1	100	66	77	73	48	29	0
H23-099	75.4/78.1	18	38	100	6.8	100	67	76	73	60	22	5
H23-100	78.9/80.8	17	31	100	7.1	100	67	89	76	21	82	3
H23-101	49.4/50.8	14	16	100	7.1	100	45	49	73	15	93	25
H23-102	63.4/65.6	18	38	100	7.1	100	61	65	75	37	56	8
State Senate												
S21-002	56.0/57.7	12	122	100	8.4	100	49	61	72	13	100	19
S21-003	56.1/57.3	12	100	100	8.4	100	56	61	72	33	67	5
S21-004	56.0/57.2	13	96	100	8.0	100	54	55	75	33	69	6
S21-005	48.4/50.2	16	120	100	7.3	100	63	51	76	52	31	0
S21-006	22.1/22.9	14	56	100	7.1	21	22	20	68	9	100	36
S21-007	57.6/59.5	16	75	100	7.3	100	59	63	76	30	69	9
S21-008	25.0/25.8	12	67	100	8.4	50	27	24	72	12	100	25
S21-009	9.6/11.9	14	98	100	7.3	29	20	5	60	16	93	38
S21-010	11.0/12.2	14	75	100	7.3	14	16	6	60	10	100	41
S21-014	59.9/58.0	13	55	100	8.1	100	57	68	71	29	77	11
S21-015	74.1/73.9	14	50	100	7.7	100	57	77	71	16	93	17
S21-016	18.6/19.6	16	49	100	6.8	31	23	12	62	18	88	36
S21-019	28.7/28.7	12	84	100	8.4	58	29	28	73	11	100	24
S21-024	53.7/53.1	12	95	100	8.2	100	44	53	74	11	100	27
S21-029	55.1/56.6	14	135	100	7.9	100	47	53	78	10	100	28
S21-034	62.4/63.7	14	146	100	7.9	100	44	58	73	5	100	40
S21-036	24.2/25.2	14	76	100	7.2	14	22	20	79	7	100	38
S21-038	29.9/31.0	14	77	100	7.2	43	27	24	79	10	100	35
S21-039	62.3/63.7	14	90	100	7.2	100	54	64	81	10	100	25
S22-014	56.8/55.9	12	54	100	8.4	100	56	65	72	27	83	12

Table 1: Analysis of primary elections with three or more candidates (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Black Voters	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
S22-015	56.6/54.8	12	40	100	8.4	100	44	55	74	10	100	25
S22-017	55.4/54.5	13	108	100	8.1	100	43	53	69	16	92	25
S22-019	49.0/50.1	15	74	100	7.6	100	50	53	80	16	93	14
S23-002	51.1/51.7	12	125	100	8.4	100	45	54	73	12	100	20
S23-003	49.9/51.3	12	96	100	8.4	100	54	55	72	35	58	3
S23-004	57.3/58.1	13	89	100	8.0	100	55	57	75	32	77	7
S23-005	49.8/51.8	16	119	100	7.3	100	63	52	74	54	31	0
S23-007	51.0/52.3	15	74	100	7.6	100	53	54	76	25	73	13
S23-008	18.7/18.9	12	66	100	8.4	42	22	18	70	11	100	25
S23-009	9.8/12.2	14	98	100	7.3	29	20	5	60	17	93	38
S23-010	10.4/11.4	14	77	100	7.3	14	16	6	55	11	100	43
S23-014	58.8/58.1	12	54	100	8.4	100	57	67	72	26	83	12
S23-015	52.0/54.5	14	43	100	7.1	86	43	51	75	9	100	31
S23-016	18.6/19.6	16	49	100	6.8	31	24	12	61	18	88	35
S23-017	53.6/52.5	13	106	100	8.1	100	42	51	69	16	92	24
S23-019	50.0/51.0	15	73	100	7.6	100	51	55	80	16	93	13
S23-024	52.2/52.0	12	87	100	8.2	100	42	50	74	11	100	30
S23-029	49.6/50.9	12	141	100	8.2	100	42	46	79	11	100	29
S23-034	61.7/63.0	14	147	100	7.9	100	43	57	73	5	100	40
S23-036	14.5/15.5	14	60	100	7.2	7	17	11	56	11	100	45
S23-038	52.3/53.2	14	76	100	7.2	100	48	50	80	14	100	25
S23-039	50.7/52.5	14	72	100	7.2	93	42	49	81	7	100	33

Table 2: Analysis of run-off and two-candidate primary elections

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates Democratic	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
State House												
H21-001	22.3/23.1	11	34	91	2	0	30	24	85	11	100	49
H21-002	66.3/67.4	12	35	92	2	100	77	75	92	35	92	18
H21-003	72.4/73.9	11	25	91	2	100	72	70	96	16	100	44
H21-004	70.2/72.1	11	23	91	2	100	73	71	95	17	100	39
H21-005	18.7/19.4	11	41	91	2	0	27	18	92	11	100	48
H21-006	15.6/16.5	11	27	91	2	0	29	9	62	25	100	80
H21-007	28.6/29.4	11	60	91	2	0	34	28	95	11	100	46
H21-008	19.0/19.9	11	21	91	2	0	21	13	86	9	100	64
H21-009	19.4/21.1	11	22	91	2	0	27	18	82	13	100	56
H21-011	56.3/56.4	10	60	90	2	80	58	54	96	14	100	45
H21-016	61.2/62.5	10	38	90	2	100	62	60	95	12	100	46
H21-017	61.8/63.3	10	27	90	2	100	73	71	96	14	100	33
H21-021	54.5/55.4	10	76	90	2	70	55	54	95	10	100	47
H21-022	23.8/24.7	10	54	90	2	0	29	17	95	15	100	53
H21-023	49.1/50.9	12	40	92	2	92	82	50	90	75	8	8
H21-025	22.4/23.5	10	53	90	2	0	31	20	94	12	100	48
H21-026	63.1/64.3	12	34	92	2	100	72	64	95	28	92	29
H21-029	71.3/73.6	12	37	92	2	100	72	72	90	22	92	36
H21-033	6.9/7.7	10	24	90	2	0	25	5	81	20	100	53
H21-034	70.6/72.6	13	30	92	2	100	78	80	90	32	92	24
H21-035	11.4/12.4	10	25	90	2	0	25	9	84	18	100	54
H21-036	13.7/15.0	10	22	90	2	0	26	8	69	22	100	70
H21-040	53.6/54.6	12	48	92	2	83	58	55	92	19	100	41
H21-044	58.8/59.5	13	32	92	2	100	71	58	94	38	77	25
H21-057	57.1/57.9	12	36	92	2	100	64	59	90	27	83	32
H21-058	55.8/56.8	12	50	92	2	92	64	61	89	25	92	33

Table 2: Analysis of run-off and two-candidate primary elections
(continued)

District	Percent Black Voting Age Popu- lation (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of Black- preferred candi- dates	Avg. number of candi- dates	Black- preferred win rate	Average Black- preferred candi- date vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. po- larized	Avg. pct. Black VAP needed for win
H21-059	17.8/18.7	10	14	90	2	20	37	17	62	31	80	54
H21-060	38.2/37.7	11	53	91	2	36	52	45	92	19	100	35
H21-061	75.0/75.3	12	22	92	2	100	79	74	90	51	50	9
H21-062	54.1/55.1	11	36	91	2	91	60	56	90	22	100	36
H21-063	72.0/69.7	13	21	92	2	100	67	73	86	24	85	33
H21-065	20.5/21.9	10	17	90	2	0	27	17	81	15	100	58
H21-066	19.6/18.5	10	16	90	2	0	30	14	69	21	100	67
H21-067	51.6/51.9	14	18	93	2	86	72	68	85	46	79	19
H21-068	18.9/20.2	11	19	91	2	27	44	17	82	36	73	32
H21-069	22.9/23.7	11	18	91	2	9	35	15	78	25	100	54
H21-070	21.9/21.2	10	17	90	2	30	43	18	86	32	100	34
H21-072	52.1/52.7	12	40	92	2	83	62	54	93	27	83	30
H21-083	53.1/54.6	13	23	92	2	92	64	61	89	27	85	26
H21-085	33.3/35.5	11	23	91	2	36	48	30	89	28	91	36
H21-087	57.7/59.1	14	21	93	2	100	72	68	89	35	71	16
H21-088	12.8/13.4	10	20	90	2	0	27	11	71	20	100	60
H21-091	38.7/40.7	13	47	92	2	100	78	41	91	70	8	2
H21-092	30.8/30.2	11	29	91	2	36	48	38	91	18	100	37
H21-093	54.1/56.6	12	41	92	2	100	82	59	91	71	0	2
H21-096	52.8/55.1	10	58	90	2	60	54	50	95	13	100	47
H21-097	69.5/72.3	14	41	93	2	93	82	78	88	67	21	7
H21-099	75.3/78.1	14	38	93	2	100	82	75	86	79	7	5
H21-100	79.4/80.8	14	30	93	2	100	81	90	88	35	79	11
H21-101	59.6/60.2	11	16	91	2	100	68	60	92	33	82	26
H21-102	63.4/65.6	13	38	92	2	100	75	65	90	46	54	12
H21-105	35.3/35.9	12	23	92	2	33	47	35	92	14	100	42

Table 2: Analysis of run-off and two-candidate primary elections
(continued)

District	Percent Black Voting Age Popu- lation (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of Black- preferred candi- dates	Avg. number of candi- dates	Black- preferred win rate	Average Black- preferred candi- date vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. po- larized	Avg. pct. Black VAP needed for win
H22-057	56.6/57.3	12	37	92	2	100	63	59	90	27	83	32
H22-058	50.5/50.5	12	54	92	2	75	55	54	89	17	100	45
H22-060	48.9/50.5	12	42	92	2	100	60	55	89	24	92	30
H22-063	58.1/57.4	10	22	90	2	90	62	60	92	15	100	41
H22-065	51.0/52.3	10	21	90	2	70	54	51	95	12	100	46
H22-069	50.7/51.8	10	17	90	2	90	59	46	88	33	80	31
H22-072	50.6/51.7	10	42	90	2	90	61	52	95	24	90	34
H22-096	49.5/51.7	10	58	90	2	50	50	46	94	12	100	49
H22-101	50.2/51.6	10	15	90	2	90	59	49	91	27	100	33
H23-001	54.5/55.3	12	36	92	2	75	56	55	95	11	100	44
H23-002	65.5/67.3	11	31	91	2	100	78	73	95	33	100	19
H23-003	57.6/58.8	11	24	91	2	82	57	52	96	12	100	49
H23-004	56.4/57.5	11	24	91	2	100	62	59	96	13	100	41
H23-005	49.1/50.9	12	40	92	2	100	83	50	90	77	0	0
H23-006	15.1/16.0	11	28	91	2	0	28	8	64	23	100	78
H23-008	19.0/19.9	11	21	91	2	0	21	13	86	9	100	64
H23-009	19.4/21.1	11	22	91	2	0	27	18	81	13	100	57
H23-011	55.4/55.5	10	65	90	2	80	56	53	96	14	100	46
H23-016	58.5/59.8	10	24	90	2	100	61	56	95	17	100	44
H23-017	52.3/54.5	10	27	90	2	80	59	58	96	9	100	40
H23-021	53.2/54.3	10	84	90	2	60	52	51	94	10	100	49
H23-022	17.8/18.7	11	48	91	2	0	27	17	88	12	100	50
H23-023	49.3/50.6	11	63	91	2	91	55	47	96	17	100	42
H23-026	62.1/63.4	12	36	92	2	100	70	62	95	28	92	29
H23-029	58.0/57.8	12	34	92	2	92	59	56	89	22	92	39
H23-033	6.9/7.7	10	25	90	2	0	25	5	80	20	100	54

Table 2: Analysis of run-off and two-candidate primary elections
(continued)

District	Percent Black Voting Age Popu- lation (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of Black- preferred candi- dates	Avg. number of candi- dates	Black- preferred win rate	Average Black- preferred candi- date vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. po- larized	Avg. pct. Black VAP needed for win
H23-034	48.4/50.0	11	25	91	2	100	63	52	93	28	91	30
H23-035	7.9/8.7	10	26	90	2	0	22	7	77	17	100	56
H23-036	10.8/11.9	10	20	90	2	20	36	8	63	34	80	58
H23-038	49.0/50.8	10	27	90	2	100	64	55	96	25	90	29
H23-040	54.2/54.9	13	46	92	2	77	58	56	88	23	92	37
H23-044	60.1/60.9	13	35	92	2	100	71	59	95	37	77	26
H23-057	52.7/53.4	12	35	92	2	100	61	56	89	26	83	32
H23-058	51.1/51.3	13	54	92	2	77	57	55	87	22	92	41
H23-059	17.8/18.7	10	14	80	2	30	42	17	62	38	70	44
H23-060	51.8/52.8	12	42	92	2	100	62	58	90	23	92	30
H23-061	52.9/50.2	11	23	91	2	100	71	54	93	46	73	15
H23-062	27.0/26.8	12	63	92	2	33	41	31	89	18	100	38
H23-063	56.2/57.2	10	23	90	2	90	59	58	93	14	100	42
H23-065	55.2/56.0	10	19	90	2	90	58	55	95	12	100	45
H23-066	19.3/18.8	10	16	90	2	0	33	16	76	22	100	54
H23-067	51.8/51.6	13	22	92	2	85	72	65	86	47	77	19
H23-068	52.6/54.2	10	21	90	2	90	62	44	95	33	80	31
H23-069	49.2/50.2	10	16	90	2	70	56	42	87	32	90	35
H23-070	17.6/16.8	10	17	90	2	30	37	11	76	31	80	46
H23-072	49.5/50.6	10	40	90	2	70	60	51	95	23	90	35
H23-083	53.1/54.6	13	23	92	2	92	64	61	90	26	85	26
H23-087	57.7/59.1	14	21	93	2	100	72	68	89	35	71	16
H23-088	11.0/11.8	10	21	70	2	20	29	8	66	24	80	58
H23-093	54.1/56.6	12	41	92	2	100	82	59	91	71	8	1
H23-096	54.0/55.5	10	56	90	2	80	56	53	95	12	100	45
H23-097	69.5/72.3	14	41	93	2	93	82	78	88	67	14	6

Table 2: Analysis of run-off and two-candidate primary elections
(continued)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H23-099	75.3/78.1	14	38	93	2	93	82	75	86	78	14	12
H23-100	79.4/80.8	14	30	93	2	100	81	90	88	35	79	12
H23-101	49.4/50.8	10	15	90	2	100	60	50	91	28	100	31
H23-102	63.4/65.6	13	38	92	2	100	75	65	90	46	62	12
State Senate												
S21-002	56.0/57.7	11	121	100	2	91	65	62	93	19	100	37
S21-003	56.2/57.3	11	100	100	2	100	76	62	93	52	36	11
S21-004	56.4/57.2	11	97	100	2	100	74	56	93	52	36	10
S21-005	48.1/50.2	13	119	100	2	100	79	51	91	70	8	3
S21-006	22.0/22.9	10	56	100	2	0	32	21	86	17	100	48
S21-007	57.7/59.5	12	75	100	2	100	73	63	91	38	75	16
S21-008	25.0/25.8	11	67	100	2	27	41	26	90	22	91	38
S21-009	9.6/11.9	10	99	100	2	10	34	4	84	29	90	55
S21-010	11.3/12.2	10	76	100	2	0	26	6	86	18	100	59
S21-014	60.2/58.0	13	55	100	2	100	74	69	87	44	69	15
S21-015	74.3/73.9	13	50	100	2	100	75	78	88	30	85	24
S21-016	18.6/19.6	11	49	100	2	27	38	12	80	31	100	43
S21-019	28.8/28.7	11	84	100	2	27	42	31	91	22	91	37
S21-024	51.5/53.1	10	102	100	2	90	57	51	95	17	100	41
S21-029	55.5/56.6	10	138	100	2	100	63	55	97	18	100	40
S21-034	62.4/63.7	10	146	100	2	100	62	61	95	10	100	48
S21-036	24.2/25.2	11	76	100	2	0	28	21	94	10	100	53
S21-038	29.9/31.0	11	77	100	2	0	36	25	92	15	100	51
S21-039	62.3/63.7	11	90	100	2	100	68	66	95	16	100	37
S22-014	57.4/55.9	13	54	100	2	100	73	67	87	43	69	16
S22-015	56.9/54.8	11	40	100	2	100	60	56	91	21	100	37

Table 2: Analysis of run-off and two-candidate primary elections
(continued)

District	Percent Black Voting Age Popu- lation (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of Black- preferred candi- dates	Avg. number of candi- dates	Black- preferred win rate	Average Black- preferred candi- date vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. po- larized	Avg. pct. Black VAP needed for win
S22-017	55.6/54.5	12	107	100	2	83	59	56	89	22	92	37
S22-019	48.7/50.1	11	75	100	2	100	63	57	93	24	91	28
S23-002	51.1/51.7	11	124	100	2	91	58	55	92	17	100	41
S23-003	50.0/51.3	11	96	100	2	100	74	56	92	54	36	10
S23-004	57.7/58.1	11	90	100	2	100	74	58	93	51	45	10
S23-005	49.5/51.8	13	117	100	2	100	80	51	91	70	8	0
S23-007	50.6/52.3	11	76	100	2	100	65	54	92	28	91	25
S23-008	18.7/18.9	11	66	100	2	9	35	19	89	22	91	40
S23-009	9.8/12.2	10	99	100	2	10	34	4	84	29	90	53
S23-010	10.5/11.4	10	78	100	2	0	26	6	81	18	100	62
S23-014	59.3/58.1	13	54	100	2	100	73	69	87	43	69	16
S23-015	53.4/54.5	10	45	100	2	100	60	54	94	19	100	39
S23-016	18.6/19.6	11	49	100	2	27	38	12	81	31	100	43
S23-017	53.7/52.5	12	105	100	2	83	58	54	89	23	92	37
S23-019	49.6/51.0	11	74	100	2	100	64	58	93	25	91	26
S23-024	50.6/52.0	10	93	100	2	80	56	50	95	17	100	42
S23-029	49.4/50.9	10	147	100	2	70	55	46	97	17	100	42
S23-034	61.7/63.0	10	146	100	2	100	61	60	95	10	100	49
S23-036	14.5/15.5	11	60	91	2	9	29	11	76	22	91	56
S23-038	52.3/53.2	11	75	100	2	100	60	51	95	21	100	39
S23-039	50.7/52.5	11	72	100	2	73	54	51	95	11	100	45

Table 3: Analysis of primary elections with three or more candidates that included a Black candidate

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
State House												
H21-001	22.3/23.1	12	34	100	7.8	25	21	22	69	8	100	33
H21-002	66.5/67.4	12	36	100	7.8	100	62	73	79	20	100	9
H21-003	72.4/73.9	12	25	100	7.8	100	58	69	80	10	100	27
H21-004	70.2/72.1	12	23	100	7.8	100	60	70	81	12	100	21
H21-005	18.7/19.4	12	40	100	7.8	8	20	19	74	8	100	30
H21-006	15.6/16.5	12	27	100	7.8	25	20	9	39	18	92	47
H21-007	28.6/29.4	12	59	100	7.8	58	26	27	80	7	100	31
H21-008	19.0/19.9	12	21	100	7.8	0	16	13	61	8	100	46
H21-009	19.4/21.1	12	22	100	7.8	17	20	17	63	9	100	35
H21-011	56.9/56.4	11	57	100	8.5	100	46	54	78	10	100	28
H21-016	61.3/62.5	13	38	100	8.2	100	45	59	70	10	92	29
H21-017	62.0/63.3	13	27	100	8.2	100	53	68	74	8	100	24
H21-021	54.5/55.4	13	75	100	8.2	85	36	50	70	5	100	38
H21-022	21.9/24.7	12	52	100	8.6	17	17	15	70	8	100	40
H21-023	49.6/50.9	15	40	100	7.5	100	64	50	75	57	20	2
H21-025	21.9/23.5	11	50	91	8.5	27	24	19	72	11	91	30
H21-026	62.9/64.3	13	35	100	8.2	100	55	64	76	16	100	19
H21-029	71.6/73.6	12	37	100	8.4	92	53	69	70	16	92	26
H21-033	6.9/7.7	13	24	100	8.1	8	13	5	47	10	100	38
H21-034	70.4/72.6	15	30	100	7.5	100	58	78	69	17	87	14
H21-035	11.4/12.4	10	25	100	8.2	10	16	8	56	12	100	35
H21-036	13.7/15.0	13	22	100	8.1	15	15	8	39	12	92	50
H21-040	53.5/54.6	12	47	100	8.2	100	43	52	74	14	92	28
H21-044	58.0/59.5	13	33	100	8.1	100	46	58	68	17	100	19
H21-057	57.1/57.9	12	36	100	8.3	100	49	58	73	16	92	17

Table 3: Analysis of primary elections with three or more candidates that included a Black candidate (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black preferred win rate	Average Black preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H21-058	56.2/56.8	15	49	100	7.5	100	53	61	74	20	87	12
H21-059	17.8/18.7	13	14	85	7.4	23	20	17	33	16	100	51
H21-060	38.2/37.7	11	54	100	8.8	82	36	43	71	12	100	19
H21-061	75.3/75.3	11	22	100	8.8	100	61	73	72	34	73	8
H21-062	53.0/55.1	12	34	100	8.2	100	45	52	71	17	83	20
H21-063	71.5/69.7	13	21	100	8.1	100	49	71	67	11	100	23
H21-065	20.7/21.9	12	17	100	7.7	17	19	16	64	9	100	41
H21-066	19.3/18.5	14	16	100	7.2	21	19	13	42	14	93	46
H21-067	51.6/51.9	13	18	92	8.1	100	57	66	69	34	69	3
H21-068	18.8/20.2	15	19	100	6.9	40	28	16	62	21	87	27
H21-069	22.7/23.7	13	18	100	7.4	31	24	15	55	17	92	36
H21-070	21.8/21.2	12	17	100	7.7	33	28	18	62	20	83	29
H21-072	51.6/52.7	12	39	100	8.2	92	44	50	73	18	75	22
H21-083	53.1/54.6	14	23	100	7.9	100	52	57	80	17	86	12
H21-085	33.3/35.5	14	23	100	7.9	71	38	30	70	24	79	16
H21-087	57.4/59.1	15	21	100	7.5	100	60	66	78	22	73	8
H21-088	12.8/13.4	13	20	100	7.4	23	17	10	43	14	92	39
H21-091	38.8/40.7	15	47	100	7.5	93	61	41	73	55	27	4
H21-092	30.8/30.2	11	29	100	8.8	82	34	35	72	12	100	14
H21-093	54.1/56.6	15	41	100	7.5	100	65	58	74	54	27	0
H21-096	52.8/55.1	13	57	100	8.1	100	37	52	66	6	100	33
H21-097	69.6/72.3	16	41	100	7.3	100	66	77	73	49	25	0
H21-099	75.4/78.1	17	38	100	7.0	100	67	76	72	61	24	5
H21-100	79.0/80.8	16	31	100	7.3	100	67	89	75	21	81	3
H21-101	59.3/60.2	13	16	100	7.3	100	51	59	73	18	85	19
H21-102	63.4/65.6	17	38	100	7.2	100	61	65	74	38	53	7

Table 3: Analysis of primary elections with three or more candidates that included a Black candidate (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black preferred win rate	Average Black preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H21-105	35.7/35.9	10	24	100	8.2	60	34	35	70	9	100	29
H22-057	56.6/57.3	12	37	100	8.3	100	49	58	73	16	92	17
H22-058	50.6/50.5	15	53	100	7.5	100	48	53	75	19	93	16
H22-060	49.8/50.5	15	40	100	7.6	100	47	56	69	19	93	15
H22-063	58.1/57.4	10	22	100	8.2	100	47	58	74	11	100	24
H22-065	51.0/52.3	10	21	100	8.2	100	41	49	76	7	100	32
H22-069	50.5/51.8	12	17	100	7.7	100	44	46	69	21	83	21
H22-072	50.9/51.7	11	40	100	8.5	91	45	49	75	17	82	22
H22-096	49.5/51.7	13	57	100	8.1	100	34	49	65	6	100	35
H22-101	49.8/51.6	12	15	100	7.7	100	44	48	73	16	92	23
H23-001	54.6/55.3	12	36	100	7.8	100	42	52	80	6	100	30
H23-002	65.5/67.3	12	31	100	7.8	100	61	71	79	21	92	8
H23-003	57.6/58.8	12	24	100	7.8	100	45	51	80	9	100	32
H23-004	56.4/57.5	12	24	100	7.8	100	49	57	82	9	100	25
H23-005	49.6/50.9	15	40	100	7.5	100	64	50	75	57	20	2
H23-006	15.1/16.0	12	28	100	7.8	25	19	8	40	17	100	48
H23-008	19.0/19.9	12	21	100	7.8	0	16	13	61	8	100	46
H23-009	19.4/21.1	12	22	100	7.8	17	20	17	63	10	100	35
H23-011	56.0/55.5	11	61	100	8.5	100	45	52	79	10	100	29
H23-016	58.5/59.8	12	24	100	8.6	100	44	54	73	11	100	31
H23-017	52.5/54.5	12	27	100	8.6	100	41	54	74	5	100	31
H23-021	53.1/54.3	12	84	100	8.6	67	35	49	69	5	100	37
H23-022	17.8/18.7	12	48	100	7.8	8	20	16	68	9	100	33
H23-023	49.2/50.6	12	63	100	7.8	100	43	48	79	11	100	25
H23-026	62.0/63.4	13	36	100	8.2	100	54	62	76	16	100	19
H23-029	58.0/57.8	12	35	100	8.4	92	43	53	69	15	92	30

Table 3: Analysis of primary elections with three or more candidates that included a Black candidate (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H23-033	6.9/7.7	13	25	100	8.1	8	13	5	47	10	100	38
H23-034	47.9/50.0	13	25	100	8.1	100	44	50	70	17	92	15
H23-035	7.9/8.7	13	26	100	8.1	8	12	7	47	9	100	41
H23-036	10.8/11.9	13	20	100	8.1	15	14	8	34	11	100	52
H23-038	49.0/50.8	13	27	100	8.1	100	43	52	71	13	100	21
H23-040	54.3/54.9	13	45	100	8.2	100	43	53	70	15	92	25
H23-044	59.4/60.9	13	36	100	8.1	100	47	60	69	16	100	19
H23-057	52.7/53.4	12	35	100	8.3	100	47	55	73	16	92	17
H23-058	51.1/51.3	16	53	100	7.2	100	50	54	75	21	88	15
H23-059	17.8/18.7	13	14	92	7.4	23	19	17	34	15	100	50
H23-060	52.9/52.8	15	41	100	7.6	100	48	60	69	19	87	15
H23-061	52.9/50.2	11	23	100	8.8	91	51	53	72	28	82	14
H23-062	26.9/26.8	12	62	100	8.2	58	29	30	73	10	100	25
H23-063	56.2/57.2	10	23	100	8.2	100	45	56	75	10	100	25
H23-065	55.2/56.0	10	19	100	8.2	100	44	53	76	7	100	31
H23-066	19.0/18.8	13	16	100	7.4	31	22	15	54	15	92	37
H23-067	51.8/51.6	12	22	100	8.4	100	56	63	70	33	75	8
H23-068	52.6/54.2	10	21	100	8.2	90	46	44	76	21	80	24
H23-069	49.0/50.2	12	16	100	7.7	92	41	43	68	21	83	25
H23-070	17.5/16.8	12	17	100	7.7	25	24	12	50	19	83	39
H23-072	49.9/50.6	11	38	100	8.5	91	44	48	74	18	82	22
H23-083	53.1/54.6	14	23	100	7.9	100	52	57	80	17	86	12
H23-087	57.4/59.1	15	21	100	7.5	100	60	66	78	22	73	8
H23-088	11.0/11.8	13	21	92	7.4	23	21	8	32	20	85	44
H23-093	54.1/56.6	15	41	100	7.5	100	65	58	74	54	27	0
H23-096	54.1/55.5	13	55	100	8.1	100	39	55	67	6	100	30

Table 3: Analysis of primary elections with three or more candidates that included a Black candidate (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates Democratic	Avg. number of candidates	Black preferred win rate	Average Black preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H23-097	69.6/72.3	16	41	100	7.3	100	66	77	73	49	25	0
H23-099	75.4/78.1	17	38	100	7.0	100	67	76	72	61	24	5
H23-100	79.0/80.8	16	31	100	7.3	100	67	89	75	21	81	3
H23-101	49.4/50.8	12	16	100	7.7	100	45	49	73	16	92	22
H23-102	63.4/65.6	17	38	100	7.2	100	61	65	74	38	53	7
State Senate												
S21-002	56.1/57.7	11	122	100	8.8	100	48	61	71	13	100	18
S21-003	56.2/57.3	11	100	100	8.8	100	56	61	71	34	64	4
S21-004	56.1/57.2	12	96	100	8.3	100	55	55	74	34	67	5
S21-005	48.4/50.2	15	119	100	7.5	100	63	51	75	54	27	0
S21-006	22.1/22.9	12	56	100	7.7	25	22	20	69	10	100	33
S21-007	57.6/59.5	15	74	100	7.5	100	59	63	76	32	67	8
S21-008	25.0/25.8	11	67	100	8.8	55	27	24	70	12	100	24
S21-009	9.6/11.9	10	99	100	8.2	40	21	4	61	18	90	30
S21-010	11.3/12.2	10	76	100	8.2	20	17	6	62	12	100	34
S21-014	60.2/58.0	12	55	100	8.4	100	57	68	71	30	75	10
S21-015	74.3/73.9	13	50	100	8.0	100	57	77	70	17	92	15
S21-016	18.6/19.6	13	49	100	7.4	31	23	12	60	18	85	35
S21-019	28.8/28.7	11	84	100	8.8	64	28	29	72	11	100	22
S21-024	54.0/53.1	11	95	100	8.5	100	44	53	74	11	100	26
S21-029	55.1/56.6	12	136	100	8.6	100	46	53	77	10	100	26
S21-034	62.4/63.7	12	146	100	8.6	100	42	58	71	5	100	38
S21-036	24.2/25.2	12	76	100	7.8	17	21	20	77	7	100	36
S21-038	29.9/31.0	12	76	100	7.8	50	27	24	77	10	100	33
S21-039	62.3/63.7	12	90	100	7.8	100	53	63	80	10	100	23
S22-014	57.1/55.9	11	54	100	8.8	100	56	65	72	27	82	10

Table 3: Analysis of primary elections with three or more candidates that included a Black candidate (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black preferred win rate	Average Black preferred candidate vote share	Avg. Pct. Black Voters	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
S22-015	56.9/54.8	11	40	100	8.8	100	44	55	73	11	100	23
S22-017	55.6/54.5	12	107	100	8.4	100	42	53	69	16	92	23
S22-019	49.1/50.1	14	74	100	7.9	100	50	54	79	16	93	13
S23-002	51.2/51.7	11	124	100	8.8	100	44	55	72	12	100	19
S23-003	50.0/51.3	11	96	100	8.8	100	54	55	71	36	55	3
S23-004	57.4/58.1	12	89	100	8.3	100	55	57	74	33	75	6
S23-005	49.8/51.8	15	119	100	7.5	100	63	52	74	55	27	0
S23-007	51.0/52.3	14	74	100	7.9	100	53	54	76	26	71	11
S23-008	18.7/18.9	11	66	100	8.8	45	22	18	68	11	100	23
S23-009	9.8/12.2	10	99	100	8.2	40	21	5	63	18	90	29
S23-010	10.5/11.4	10	78	100	8.2	20	17	6	56	12	100	34
S23-014	59.0/58.1	11	54	100	8.8	100	57	67	72	26	82	11
S23-015	52.3/54.5	12	44	100	7.7	92	44	51	75	10	100	28
S23-016	18.6/19.6	13	49	100	7.4	31	24	12	60	18	85	34
S23-017	53.7/52.5	12	105	100	8.4	100	42	51	69	16	92	22
S23-019	50.1/51.0	14	73	100	7.9	100	51	55	79	17	93	13
S23-024	52.3/52.0	11	87	100	8.5	100	42	50	74	10	100	29
S23-029	49.6/50.9	11	140	100	8.5	100	42	46	79	10	100	28
S23-034	61.7/63.0	12	147	100	8.6	100	42	57	71	5	100	38
S23-036	14.5/15.5	12	60	100	7.8	8	16	11	55	11	100	43
S23-038	52.3/53.2	12	76	100	7.8	100	47	50	79	14	100	23
S23-039	50.7/52.5	12	72	100	7.8	100	42	49	80	6	100	30

Table 4: Analysis of run-off and two-candidate primary elections that included a Black candidate

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates Democratic	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
State House												
H21-001	22.3/23.1	6	34	83	2	0	27	23	85	8	100	52
H21-002	66.2/67.4	7	35	86	2	100	73	74	87	33	86	22
H21-003	72.4/73.9	6	25	83	2	100	69	69	94	13	100	48
H21-004	70.2/72.1	6	23	83	2	100	70	70	93	14	100	43
H21-005	18.7/19.4	6	40	83	2	0	25	19	91	9	100	49
H21-006	15.6/16.5	6	26	83	2	0	25	8	63	20	100	81
H21-007	28.6/29.4	6	60	83	2	0	33	28	94	10	100	47
H21-008	18.9/19.9	6	21	83	2	0	19	12	85	7	100	66
H21-009	19.4/21.1	6	22	83	2	0	26	18	82	11	100	57
H21-011	56.4/56.4	6	59	83	2	67	55	54	95	10	100	49
H21-016	61.2/62.5	6	38	83	2	100	60	60	94	9	100	49
H21-017	61.8/63.3	6	27	83	2	100	71	71	94	11	100	36
H21-021	54.6/55.4	6	76	83	2	50	52	54	93	8	100	50
H21-022	23.8/24.7	6	54	83	2	0	26	17	93	12	100	55
H21-023	49.4/50.9	8	40	88	2	88	76	51	86	68	12	11
H21-025	22.4/23.5	6	52	83	2	0	29	21	93	9	100	51
H21-026	63.1/64.3	7	35	86	2	100	69	64	93	25	86	32
H21-029	72.0/73.6	8	36	88	2	100	68	72	86	21	88	39
H21-033	6.9/7.7	6	24	83	2	0	22	5	80	16	100	58
H21-034	70.5/72.6	8	30	88	2	100	75	79	87	27	100	30
H21-035	11.4/12.4	6	25	83	2	0	22	9	84	14	100	59
H21-036	13.7/15.0	6	22	83	2	0	22	8	69	17	100	78
H21-040	54.1/54.6	8	47	88	2	75	55	54	89	19	100	44
H21-044	59.2/59.5	9	31	89	2	100	71	59	93	40	67	25
H21-057	57.5/57.9	8	35	88	2	100	62	60	86	29	75	32

Table 4: Analysis of run-off and two-candidate primary elections that included a Black candidate (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H21-058	56.1/56.8	8	49	88	2	88	61	62	85	23	88	38
H21-059	17.8/18.7	6	14	100	2	17	36	17	63	29	83	58
H21-060	38.9/37.7	7	52	86	2	14	48	45	89	16	100	41
H21-061	75.5/75.3	8	22	88	2	100	75	74	86	46	75	14
H21-062	54.1/55.1	7	36	86	2	86	57	55	86	20	100	41
H21-063	73.4/69.7	9	21	89	2	100	64	75	80	26	78	32
H21-065	20.4/21.9	6	18	83	2	0	25	17	84	11	100	58
H21-066	19.8/18.5	6	16	83	2	0	27	13	70	17	100	70
H21-067	52.6/51.9	10	18	90	2	80	67	69	79	42	90	25
H21-068	19.0/20.2	7	19	86	2	14	40	17	80	32	86	38
H21-069	22.7/23.7	6	18	83	2	0	31	14	79	20	100	60
H21-070	21.5/21.2	6	17	83	2	17	39	18	84	27	100	42
H21-072	51.5/52.7	6	41	83	2	67	55	52	94	13	100	45
H21-083	53.1/54.6	9	23	89	2	89	61	60	86	26	78	29
H21-085	33.3/35.5	7	23	86	2	29	46	30	87	25	86	41
H21-087	57.9/59.1	10	21	90	2	100	70	68	86	38	60	17
H21-088	12.8/13.4	6	20	83	2	0	24	10	70	17	100	67
H21-091	38.8/40.7	9	47	89	2	100	74	42	87	66	11	3
H21-092	32.1/30.2	7	28	86	2	14	43	39	88	14	100	45
H21-093	54.1/56.6	8	41	88	2	100	78	59	87	65	0	2
H21-096	52.8/55.1	6	58	83	2	50	52	50	93	10	100	51
H21-097	69.4/72.3	10	41	90	2	90	78	78	84	62	30	10
H21-099	75.0/78.1	10	38	90	2	100	77	76	80	73	10	7
H21-100	79.8/80.8	10	30	90	2	100	77	90	84	37	70	13
H21-101	59.9/60.2	7	16	86	2	100	66	60	90	30	86	30
H21-102	63.4/65.6	9	38	89	2	100	72	66	87	42	67	16

Table 4: Analysis of run-off and two-candidate primary elections that included a Black candidate (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates Democratic	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H21-105	35.7/35.9	7	23	86	2	14	44	36	92	9	100	46
H22-057	56.9/57.3	8	36	88	2	100	62	59	86	29	75	32
H22-058	50.7/50.5	8	53	88	2	62	51	54	84	13	100	54
H22-060	49.3/50.5	8	42	88	2	100	57	55	86	21	88	34
H22-063	57.8/57.4	6	22	83	2	83	59	60	90	12	100	45
H22-065	51.1/52.3	6	21	83	2	67	52	51	92	9	100	49
H22-069	50.7/51.8	6	17	83	2	83	56	46	85	29	83	37
H22-072	50.6/51.7	6	42	83	2	83	55	50	94	16	100	43
H22-096	49.5/51.7	6	58	83	2	50	48	47	93	9	100	52
H22-101	50.3/51.6	6	16	83	2	83	56	49	88	24	100	39
H23-001	54.4/55.3	7	35	86	2	57	52	53	93	10	100	49
H23-002	65.5/67.3	6	30	83	2	100	74	73	92	28	100	26
H23-003	57.6/58.8	6	24	83	2	67	54	51	94	10	100	54
H23-004	56.4/57.5	6	24	83	2	100	58	58	94	10	100	44
H23-005	49.4/50.9	8	40	88	2	100	78	51	86	72	0	0
H23-006	15.1/16.0	6	28	83	2	0	24	8	66	19	100	80
H23-008	18.9/19.9	6	21	83	2	0	19	12	86	7	100	66
H23-009	19.4/21.1	6	22	83	2	0	26	18	80	11	100	59
H23-011	55.5/55.5	6	64	83	2	67	54	53	94	10	100	50
H23-016	58.5/59.8	6	24	83	2	100	59	56	93	13	100	48
H23-017	52.3/54.5	6	27	83	2	67	57	58	95	8	100	42
H23-021	53.1/54.3	6	84	83	2	50	49	51	93	8	100	52
H23-022	17.8/18.7	6	48	83	2	0	25	17	88	10	100	52
H23-023	49.4/50.6	6	63	83	2	83	53	48	95	14	100	45
H23-026	62.1/63.4	7	36	86	2	100	68	62	93	25	86	33
H23-029	58.7/57.8	8	34	88	2	88	56	57	84	20	88	42

Table 4: Analysis of run-off and two-candidate primary elections that included a Black candidate (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H23-033	6.9/7.7	6	25	83	2	0	22	5	80	16	100	59
H23-034	47.9/50.0	6	25	83	2	100	60	51	94	23	100	35
H23-035	7.9/8.7	6	26	83	2	0	19	7	76	13	100	61
H23-036	10.8/11.9	6	20	100	2	17	31	8	63	27	83	65
H23-038	49.0/50.8	6	27	83	2	100	60	54	95	20	100	35
H23-040	54.8/54.9	9	46	89	2	67	56	55	85	24	89	39
H23-044	60.4/60.9	9	34	89	2	100	71	60	93	39	67	25
H23-057	53.0/53.4	8	34	88	2	100	60	56	86	28	75	32
H23-058	51.3/51.3	9	53	89	2	67	54	55	83	20	89	48
H23-059	17.8/18.7	6	14	83	2	33	44	17	63	40	67	43
H23-060	52.3/52.8	8	42	88	2	100	59	59	86	20	88	34
H23-061	55.2/50.2	7	22	86	2	100	67	55	90	42	86	20
H23-062	26.8/26.8	7	64	86	2	29	39	31	89	16	100	39
H23-063	56.2/57.2	6	24	83	2	83	57	58	91	11	100	46
H23-065	55.2/56.0	6	20	83	2	83	56	55	93	9	100	48
H23-066	19.5/18.8	6	16	83	2	0	30	16	77	18	100	58
H23-067	53.1/51.6	9	22	89	2	78	68	66	81	42	89	26
H23-068	52.6/54.2	6	22	83	2	83	58	44	93	29	83	38
H23-069	49.2/50.2	6	16	83	2	50	53	42	84	29	100	42
H23-070	17.1/16.8	6	17	83	2	17	33	11	75	26	83	55
H23-072	49.5/50.6	6	40	83	2	50	54	49	93	16	100	44
H23-083	53.1/54.6	9	23	89	2	89	61	60	86	26	78	29
H23-087	57.9/59.1	10	21	90	2	100	70	68	86	38	60	17
H23-088	11.0/11.8	6	21	67	2	17	26	8	67	21	83	62
H23-093	54.1/56.6	8	41	88	2	100	78	59	87	65	12	2
H23-096	54.0/55.5	6	56	83	2	83	55	54	94	9	100	48

Table 4: Analysis of run-off and two-candidate primary elections that included a Black candidate (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
H23-097	69.4/72.3	10	41	90	2	90	78	78	84	63	20	9
H23-099	75.0/78.1	10	38	90	2	90	76	76	80	71	20	17
H23-100	79.8/80.8	10	30	90	2	100	77	90	84	37	70	12
H23-101	49.4/50.8	6	16	83	2	100	57	49	88	25	100	37
H23-102	63.4/65.6	9	38	89	2	100	72	66	87	42	78	16
State Senate												
S21-002	56.4/57.7	7	119	100	2	86	61	62	90	13	100	43
S21-003	56.7/57.3	7	99	100	2	100	71	63	89	45	57	17
S21-004	57.2/57.2	7	95	100	2	100	69	57	90	45	57	15
S21-005	48.0/50.2	9	118	100	2	100	75	52	87	65	11	4
S21-006	21.9/22.9	6	56	100	2	0	29	21	84	13	100	52
S21-007	57.8/59.5	8	74	100	2	100	70	64	88	38	75	20
S21-008	25.3/25.8	7	66	100	2	14	40	27	87	22	86	40
S21-009	9.6/11.9	6	99	100	2	0	29	4	84	23	100	64
S21-010	11.3/12.2	6	76	100	2	0	22	6	84	13	100	66
S21-014	61.8/58.0	9	55	100	2	100	70	71	82	41	78	19
S21-015	74.9/73.9	9	49	100	2	100	72	79	84	31	78	24
S21-016	18.6/19.6	6	50	100	2	17	33	12	80	26	100	51
S21-019	29.3/28.7	7	82	100	2	14	41	32	88	22	86	39
S21-024	51.5/53.1	6	102	100	2	83	55	51	94	13	100	45
S21-029	55.5/56.6	6	138	100	2	100	60	55	96	14	100	43
S21-034	62.4/63.7	6	146	100	2	100	59	60	93	7	100	52
S21-036	24.2/25.2	6	76	100	2	0	26	21	93	7	100	54
S21-038	29.9/31.0	6	76	100	2	0	33	24	90	12	100	55
S21-039	62.3/63.7	6	89	100	2	100	64	65	93	13	100	43
S22-014	58.9/55.9	9	53	100	2	100	68	69	82	40	78	20

Table 4: Analysis of run-off and two-candidate primary elections that included a Black candidate (*continued*)

District	Percent Black Voting Age Population (Black only/Any part Black)	Number of contests	Avg. number of precincts	Percent of preferred candidates	Avg. number of candidates	Black-preferred win rate	Average Black-preferred candidate vote share	Avg. Pct. Voters Black	Avg. EI Black cohesion (pct.)	Avg. EI White crossover support (pct.)	Pct. polarized	Avg. pct. Black VAP needed for win
S22-015	58.7/54.8	7	39	100	2	100	58	58	88	20	100	39
S22-017	56.5/54.5	8	103	100	2	75	55	56	85	20	88	41
S22-019	48.8/50.1	7	74	100	2	100	60	56	90	24	86	31
S23-002	51.4/51.7	7	122	100	2	86	55	56	89	12	100	48
S23-003	50.4/51.3	7	95	100	2	100	70	57	89	48	57	15
S23-004	58.6/58.1	7	88	100	2	100	69	59	90	43	71	16
S23-005	49.5/51.8	9	117	100	2	100	76	52	87	66	11	1
S23-007	50.7/52.3	7	75	100	2	100	63	55	90	26	86	28
S23-008	19.0/18.9	7	64	100	2	14	34	20	86	22	86	41
S23-009	9.8/12.2	6	99	100	2	0	29	4	86	24	100	62
S23-010	10.5/11.4	6	78	100	2	0	22	6	79	14	100	69
S23-014	60.6/58.1	9	53	100	2	100	69	70	82	40	78	20
S23-015	53.4/54.5	6	46	100	2	100	57	53	92	16	100	43
S23-016	18.6/19.6	6	50	100	2	17	33	12	80	26	100	50
S23-017	54.7/52.5	8	102	100	2	75	55	55	85	21	88	41
S23-019	49.7/51.0	7	73	100	2	100	61	58	90	24	86	30
S23-024	50.6/52.0	6	94	100	2	67	53	49	94	13	100	46
S23-029	49.4/50.9	6	146	100	2	67	53	47	96	14	100	46
S23-034	61.7/63.0	6	147	100	2	100	58	59	93	7	100	52
S23-036	14.5/15.5	6	60	83	2	17	31	11	74	25	83	53
S23-038	52.3/53.2	6	75	100	2	100	57	51	93	17	100	44
S23-039	50.7/52.5	6	72	100	2	50	50	50	93	8	100	49

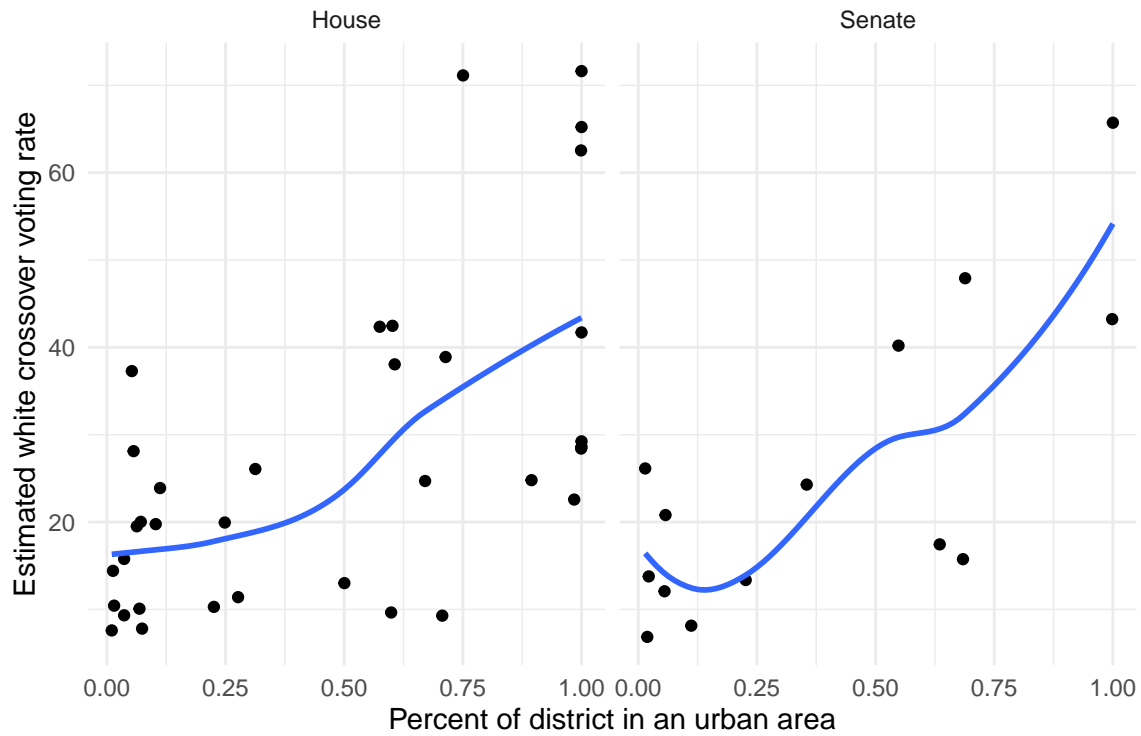


Figure 1: Estimated white crossover voting as a function of the percentage of each high-BVAP district that is in an urban area. *Shows analyzed Cooper 2023 illustrative districts with Black-alone VAP greater than 40 percent. Urban areas are as defined in the 2020 US Decennial Census.*

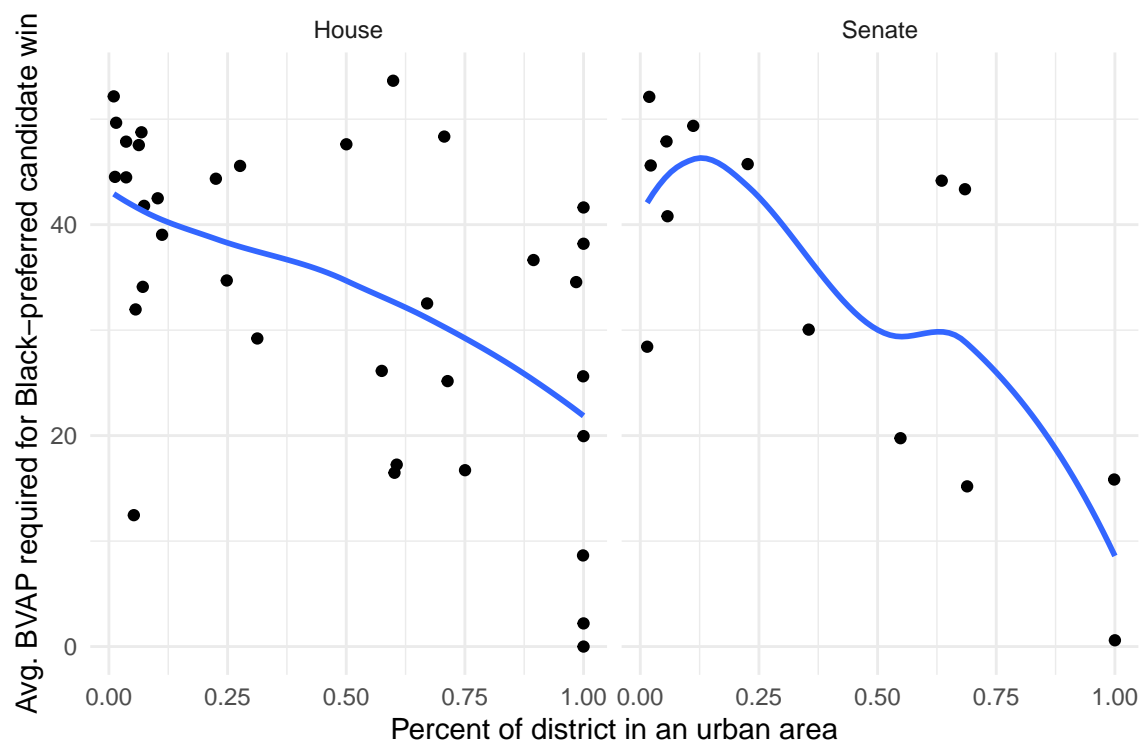


Figure 2: Estimated average minimum BVAP required for Black-preferred candidate victory as a function of the percentage of each high-BVAP district that is in an urban area. *Shows analyzed Cooper 2023 illustrative districts with Black-alone VAP greater than 40 percent. Urban areas are as defined in the 2020 US Decennial Census.*

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF LOUISIANA

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE,
DR. ALICE WASHINGTON, STEVEN
HARRIS, ALEXIS CALHOUN, BLACK
VOTERS MATTER CAPACITY
BUILDING INSTITUTE, and THE
LOUISIANA STATE CONFERENCE OF
THE NAACP,

Plaintiffs,

v.

KYLE ARDOIN, in his official capacity as
Secretary of State for Louisiana,

Defendant.

CIVIL ACTION NO. 3:22-cv-00178 SDD-
SDJ

Rebuttal Expert Report of Tumulesh K.S. Solanky, Ph.D.

I. Introduction

1. I was requested by counsel for Defendant Secretary of State Ardoyn to review the Rebuttal Expert Report of Dr. Hadley dated August 11, 2023. I have previously submitted an expert report in this matter dated July 28, 2023 (referred to as “original report” in this report).

2. Dr. Handley in her rebuttal report has characterized the elections I included in my original report as arbitrary. She does not acknowledge that in paragraph 21 of my report, I reported that of these 12 elections I studied, nine statewide election contests included a black candidate and eight of those were included by Dr. Handley in her own expert report. Further, as explained in the original report, Dr. Handley only analyzes statewide election contests with one or more black candidates in her report. But, including a mixture of statewide elections with and without a black candidate in the contest allows a much deeper statistical analysis to see if voting trends by black and white voters change if there is a black candidate in the contest. Dr. Handley does not address this criticism.

3. As stated in my original report, due to the time constraints, I did not have adequate time to review Dr. Handley’s estimates for all 16 of the statewide elections¹ she had included in her Table 1. In any case, the nine statewide election contests I studied which included a black candidate and the other three which did not, present compelling evidence that Dr. Handley’s assumption that white voters across an entire parish or a region vote as a block to defeat democrat candidates is an incorrect assumption. Dr. Handley’s voter polarization estimates in parishes and regions (combining several parishes²) provide an incomplete and misleading conclusion of voter polarizations. In her rebuttal report Dr. Handley makes no attempt to investigate this assumption despite the fact that her statistical analysis and EI estimates are based upon this assumption.

4. To address Dr. Handley’s comment about relevance, in my original expert report, I reviewed the party affiliation of registered voters, who actually have voted, and also by race and party affiliation in details for all the dates on which 12 statewide elections were held from 2012 to 2022. The election data was provided by the SOS to me and was previously produced with my original report. The trends depicted in Figures 1-4 and Tables 1-4 of the original report, present clearly how the number of white voters registered as democrats who are registered or who actually voted has steadily decreased from 2012 to 2022. In contrast, the number of white voters registered as republicans or who actually voted has steadily increased from 2012 to 2022.

5. The analysis I provided in the original report had only one democrat and one republican candidate in the election for Elections 1-11 (Table 6 of my original report). Election

¹ Dr. Handley in her original report did not provide supporting data to allow the review of her statistical estimates. Out of the 16 statewide elections in her Table 1, she provided partial supporting data for the Senate 2022 elections and with the rebuttal report she has included again partial data for the Caddo parish for Presidential 2020 and Senate 2022 elections. This is explained further in this report.

² For example, Dr. Handley’s EI estimates for voter polarization considers the parishes of East Baton Rouge, West Baton Rouge, Iberville, and Pointe Coupee together (referred to as the Area of Interest 3 in her original report). As presented in Figures 5-8 of my original report, these Parishes, have different voting patterns, and sometimes different areas within the same parish vote differently.

number 12 (2022 Senate election) had several democrat and republican candidates in the election. The analysis for that election was provided for the votes casted for a democrat or republican candidates. Interestingly, Dr. Handley has herself done this by totaling the votes by three democrats, one republican and others to create her “Others” category³ (see Appendix A1 to A7 of Handley’s original report). She has not explained what impact having several democrat candidates in an election have on the votes of the black democrat candidate. Additionally, another candidate who is black (Syrita Steib) is in Dr. Handley’s “Others” category. It is unclear why Dr. Handley made these choices for this election.

6. As I stated in my original report, in Dr. Handley’s expert report and now her rebuttal report, she bypasses the issue of not knowing the precincts of a large percentage of votes by allocating the early and absentee votes not coded to a precinct to the parish precincts proportionally based on the votes received by each of the candidates on Election Day. Overall, as presented in Table 5 of my original report, Dr. Handley does not address that she is missing precinct-level data for 30.6% of voters. Dr. Handley has offered two explanations to support her methodology.

First Explanation: The first explanation [page 8 of Dr. Handley’s rebuttal report] is:

“Faced with the question of whether to ignore early and absentee votes or allocate the parish level results to the precinct level using some algorithm, I chose to allocate the parish level early and absentee voters based on each candidate’s precinct votes on Election Day. In my expert opinion, this is the best available allocation method for these votes.”

The above explanation does not address, as I had pointed out in my original report (paragraph 21), what bias her proposed equitable distribution solution creates in the EI results she has presented due to the fact that a large proportion of the data is missing the precincts. In fact, Dr. Handley failed to address the key point in the above argument—what bias does this methodology of hers create?

Second Explanation: The second explanation [page 8 of Dr. Handley’s rebuttal report] is:

Dr. Solanky offers no alternative approach when expressing his disagreement with my allocation methodology. However, he does adopt an allocation method when faced with a similar situation, that is, how to allocate votes reported at a higher than precinct level to individual component precincts.

As shown below, the materials Dr. Handley provided in support of her adopted methodology reveal that her methods are deeply flawed.

7. Data used for Bias Estimation due to Dr. Handley’s Methodology: Along with her rebuttal report, Dr. Handley has provided her baseline data related to Caddo parish (the spreadsheet

³ Dr. Handley’s “Others” category includes the following: Beryl A. Billiot (NOPTY), Devin Lance Graham (REP), “Xan” John (OTHER), W. Thomas La Fontaine Olson (NOPTY), Bradley McMorris (IND), MV “Vinny” Mendoza (DEM), Salvador P. Rodriguez (DEM), Aaron C. Sigler (LBT), Syrita Steib (DEM), and Thomas Wenn (OTHER).

is named “caddo_precincts”). The spreadsheet includes election results for two statewide elections: 2020 Presidential elections and 2022 Senate elections.

The columns BW to CH in caddo_precincts spreadsheet (12 columns) has data on Dr. Handley’s estimates of votes for 12 presidential candidates after implementing her proportional allocation methodology of early and absentee votes in Caddo parish. However, there were 13 presidential candidates, not 12, in 2020 Presidential elections making this spreadsheet data incomplete⁴.

Additionally, the caddo_precincts spreadsheet has estimates of votes for 12 candidates in Senate 2022 elections⁵ after implementing her proportional allocation methodology of early and absentee votes in Caddo parish. Again, there were 13 candidates, and the spreadsheet does not have voter turnout data for the senate elections as well making this data provided incomplete⁶.

Since the Presidential data is less incomplete, I have used that data in the caddo_precincts spreadsheet for further analysis of bias due to Handley’s methodology. A quick review of the total votes by the 12 candidates caddo_precincts spreadsheet based on Dr. Handley’s methodology in Caddo parish is 104,875 votes. Which is 37 votes less than 104,912 total votes in Caddo parish for all candidates as available on the Louisiana Secretary of State website⁷. This was expected as the 13th candidate omitted from the data had 37 votes.

Next, in order to verify the voter turnout numbers included in the Dr. Handley’s caddo_precincts spreadsheet, below I have reported the turnout data for first 5 precincts from it:

**Table 1: Selected Voter Turnout data for 2020 Presidential Election
Reproduced from Dr. Handley’s “caddo_precincts” Spreadsheet⁸**

county	precinct	turnout_general_black	turnout_general_other	turnout_general_white	Total_Voter_Turnout
Caddo Parish	1	180	1	1	182
Caddo Parish	2	434	53	461	948
Caddo Parish	3	459	11	1	471
Caddo Parish	4	743	26	99	868
Caddo Parish	5	1281	37	109	1427

The voter turnout in Table 1 above matches with the voter level data provided by SOS office. After verifying the data provided by Dr. Handley along with her rebuttal report, I reviewed her methods for potential bias. As shown below, her methodology is significantly flawed by bias.

⁴ The candidate omitted in the spreadsheet is Bill Hammons and Eric Bodenstab (Unity Party America) who received 37 votes Caddo parish.

⁵ In columns CI to CT of the caddo_precincts spreadsheet.

⁶ However, the spreadsheet has voter turnout data for the Presidential elections, just not for the Senate election.

⁷ The website is <https://voterportal.sos.la.gov/static/2020-11-03/resultsRegion/59568>.

⁸ The last column (Total Vote) is obtained by adding the voter turnout from three previous columns.

8. Bias Estimation due to Dr. Handley's Methodology: Next, I have simply reproduced first 5 rows of data related to the 2020 Presidential elections from Dr. Handley's caddo_precincts spreadsheet.

Table 2: Dr. Handley's Votes for Candidates in 2020 Presidential Election (Reproduced first five rows (precincts) and Columns BW to CH from Dr. Handley's "caddo_precincts" Spreadsheet⁹)

BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH
president_as	president_bc	president_co	president_cp	president_c	president_f	presidentl	president_l	president_r	president_s	president_s	president_to
0.00	1.15	1.15	0.00	191.04	1.32	1.19	0.00	3.88	0.00	0.00	0.00
2.42	0.00	0.00	0.00	423.03	0.00	4.75	0.00	369.52	0.00	0.00	1.15
1.21	0.00	0.00	1.39	489.74	0.00	5.94	0.00	9.04	0.00	0.00	0.00
2.42	1.15	0.00	1.39	808.14	0.00	3.57	0.00	104.65	0.00	0.00	1.15
4.83	5.76	1.15	4.17	1437.38	0.00	5.94	1.23	111.11	0.00	1.22	11.46

Remark 1: Note that in Tables 1 and 2, I have simply reproduced voter turnout data for the first five precincts and the votes for 12 candidates as reported by Dr. Handley based on her proportional allocation.

Next, I have added the total candidate votes from Table 2 and presented it next to the total voter turnout from the Table 1.

Table 3: Estimated Bias for First 5 Precincts in Caddo Parish due to Dr. Handley's Methodology: 2020 Presidential Elections

Parish	Precinct	Total Candidate Votes	Total Voter Turnout	More Votes than Voters?
Caddo Parish	1	199.73	182	Yes, 17.73 Votes Surplus
Caddo Parish	2	800.86	948	No, 147.14 Votes Fewer
Caddo Parish	3	507.32	471	Yes, 36.32 Votes Surplus
Caddo Parish	4	922.47	868	Yes, 54.47 Votes Surplus
Caddo Parish	5	1584.25	1427	Yes, 157.26 Votes Surplus

Remark 2: Table 3 illustrates the first 5 precincts showing the total candidate votes based on Dr. Handley's allocation methodology and the voter turnout reported by her¹⁰. But you cannot actually have more votes cast in a precinct than the total voter turnout in the precinct! Note that the surplus votes¹¹ in above reported precincts are not small/negligible numbers. For example, in Caddo Parish

⁹ The numbers have been rounded to two decimal places for ease of review.

¹⁰ The voter turnout matches with the SOS voter level data showing which of the registered voters voted.

¹¹ The surplus votes count is a conservative estimate as spreadsheet has omitted the candidate Bill Hammons and Eric Bodenstab (Unity Party America) who received 37 votes Caddo parish. Inclusion of votes by this candidate would increase the total votes by candidates. Additionally, it is conservative estimate for surplus votes as some voters vote on a specific election day but do not vote for every election being held that day.

Precinct 2, Dr. Handley's analysis fails to account for 16% of the votes cast in that precinct. In Caddo Parish Precinct 5, Dr. Handley over reports the precinct votes by close to 10%. Nowhere in Dr. Handley's original report, or in her rebuttal report has she reported what potential bias this surplus or deficit of votes in precincts creates or any impact on the reliability of her EI estimates based on this data. This error/bias due to her adopted methodology will likely cast serious doubts onto the reliability of her EI estimates¹².

Remark 3: The votes for some candidates in certain precincts are more than the total voter turnout in the precinct. For example, in precinct 1, Dr. Handley's projection is President Biden got 191.04 votes whereas there were only 182 votes casted in the precinct. Complete parish wide bias analysis is provided in Appendix 1 and shows significant variation across nearly all precincts.

Remark 4: It is also important to note that in order to have total number of votes for each candidate to match what is reported on the SOS website, and to balance out the surplus votes in certain precincts, the votes in other precincts are deflated. Deflation of votes for a candidate creates as much bias as the surplus/inflation of votes. Dr. Handley utterly fails to account for this bias in her data set too.

Remark 5: In order to understand if this bias/error of more candidate votes than total votes cast in the precinct is a rarity or not, in Appendix 1, I have reported on all 145 precincts from Dr. Handley's spreadsheet by comparing total votes by candidates and total votes cast in the precinct. Overall, 81 out of 145, or 55.9 percent of the precincts had more total votes by candidates and total votes cast in the precinct. This is not a rare occurrence.

Remark 6: While the disparities in all 145 precincts from Dr. Handley's spreadsheet between the total votes by candidates and total votes cast in the precinct are provided in Appendix 1, below I have summarized how many precincts have a large disparity between total candidate votes according to Dr. Handley's methodology and the total voter turnout in the Caddo parish. The boundary for total candidate votes to be considered a large disparity or biased are as below:

- (i) two or more¹³ than the total number of voter turnout, or
- (ii) 3 times or less than what is the expected voter turnout after accounting for who turned out but did not vote for Presidential election on November 3, 2020. That is,

$$\text{Total Voter Turnout} - 3 \times \text{Total Voter Turnout} \times 0.014^{14}.$$

Using the above metric, the bias in Dr. Handley's methodology is seen in 128 out of 145 or, 88.3 percent of the precincts in the Caddo parish.

¹² Dr. Handley has not reported how in her EI analysis she was able to overcome the discrepancies in total votes of candidates and the total voter turnout by race. These need to be equal for each precinct for the EI analysis.

¹³ To account for rounding approximations.

¹⁴ For 2020 Presidential election in Caddo parish, 1.4% of the voters who turned out did not vote for the Presidential election. So, the cut-off boundary is set as 3 times the 1.4% of the voter turnout in parish below the voter turnout in the precinct. For example, in precinct 1 in Caddo parish, voter turnout was 182 voters, 1.4 percent of 182 is 2.548 voters, And three times 2.548 is 7.644. So, if the total candidate votes are over 184 (182 +2) or below 174.356 (182-7.644) then the estimate of Dr. Handley's early vote allocation is biased. The number 1.4% can be computed using Dr. Handley's caddo_precincts spreadsheet.

Remark 7: In the above Remark 6, using 5 times or below what is the expected voter turnout after accounting for who turned out but did not vote, the bias in Dr. Handley’s methodology is 116 out of 145 or, 80.0 percent of the precincts in the Caddo parish.

9. A similar review of Dr. Handley’s proportional allocation (spreadsheet titled “ussen2022nov (1).xlsx” provided by Dr. Handley) shows that even for 2022 Senate elections, there were instances when the total candidate votes based on Dr. Handley’s allocation methodology were more than the voter turnout in that precinct. In Table 4, I have reproduced the first 5 rows of the data from the provided spreadsheet. The reported voter turnout matches the voter level data provided by SOS office.

**Table 4: Selected Voter Turnout data for 2022 Senate Election
Reproduced from Dr. Handley’s “ussen2022nov (1).xlsx” Spreadsheet¹⁵**

county	precinct	turnout_white	turnout_black	turnout_other	Total_Voter_Turnout
ACADIA	44927	581	14	15	610
ACADIA	44928	501	89	9	599
ACADIA	44929	553	80	8	641
ACADIA	44930	683	61	9	753
ACADIA	44931	122	119	0	241

10. Bias Estimation due to Dr. Handley’s Methodology for Senate 2022 Election Estimates: Next, in Table 5, I have simply reproduced the first 5 rows of data of the 2022 Senate elections in Dr. Handley’s spreadsheet.

**Table 5: Dr. Handley’s Votes for Candidates in 2022 Senate Election
(Reproduced first five rows (precincts) for Acadia Parish¹⁶ and Columns AR to BD
from Dr. Handley’s “ussen2022nov (1).xlsx” Spreadsheet¹⁷)**

AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD
ussenate_statew	ussenate_state	ussenate_stat	ussenate_state	ussenate_statew	ussenate_stat	ussenate_stat	ussenate_s	ussenate_s	ussenate_s	ussenate_s	ussenate_s	ussenate_s
5.69	29.11	15.50	2.60	590.53	0.00	0.00	3.89	36.55	0.00	1.18	0.00	0.00
3.42	60.86	8.34	1.30	475.27	0.00	8.00	2.59	25.89	3.97	2.35	5.63	1.28
3.42	50.28	7.15	1.30	484.34	1.36	1.33	3.89	19.80	0.00	2.35	4.22	0.00
3.42	55.57	11.92	2.60	594.41	0.00	6.67	3.89	28.94	2.65	1.18	11.26	1.28
9.11	63.51	7.15	1.30	101.01	1.36	1.33	5.18	22.85	1.32	1.18	5.63	1.28

¹⁵ The last column (Total Vote) is obtained by adding the voter turnout from three previous columns. The precinct numbers in Dr. Handley’s spreadsheet are incorrect for some parishes.

¹⁶ For the same five precincts as in Table 4.

¹⁷ The numbers have been rounded to two decimal places for better presentation.

Note that in Tables 4 and 5, I have simply reproduced voter turnout data for the first five precincts and the votes for 13 candidates as reported by Dr. Handley based on her proportional allocation in her “ussen2022nov (1).xlsx” spreadsheet.

Next, in Table 6 I have added the total candidate votes from Table 4 and presented it next to the total voter turnout from the Table 5.

Table 6: Estimated Bias for First 5 Precincts due to Dr. Handley’s Methodology: 2022 Senate Elections

Parish	Precinct	Total Candidate Votes	Total Voter Turnout	More Votes than Voters?
Acadia	44927	685.04	610	Yes, 75.04 Votes Surplus
Acadia	44928	598.91	599	No, 0.09 Votes Fewer
Acadia	44929	579.44	641	No, 61.56 Votes Fewer
Caddo Parish	44930	723.77	753	No, 29.23 Votes Fewer
Acadia	44931	222.21	241	No, 18.79 Votes Fewer

11. Table 5 illustrates the first 5 precincts showing the total candidate votes based on Dr. Handley’s allocation methodology and the voter turnout reported by her¹⁸. Again, as remarked earlier, you cannot actually have more votes cast in a precinct than the total voter turnout in the precinct! A complete review of Dr. Handley’s proportional allocation (spreadsheet titled “ussen2022nov (1).xlsx” provided by Dr. Handley) shows that for 2022 Senate elections, Dr. Handley’s allocation method allocates votes per precinct higher than the actual precinct voter turnout in 1906 out of 3760 precincts (50.7 percent). Again, that is a not a rare occurrence of bias or error in methodology. The detailed results are included with backup data with this report.

12. Using the above metric defined in Remark 6 above with 3 times or below what is the expected voter turnout after accounting for who turned out but did not vote¹⁹, the bias in Dr. Handley’s methodology for the Senate 2022 election is 3018 out of 3760 or, 80.26 percent of the precincts in Louisiana. And, using 5 times or below what is the expected voter turnout after accounting for who turned out but did not vote, the bias in Dr. Handley’s methodology is 2673 out of 3760 or, 71.09 percent of the precincts.

13. The second explanation Dr. Handley stated to defend her methodology was simply to state that I had also adopted an allocation method. This is misleading. While it is true that I adopted an allocation method²⁰ to equally divide the 2020 Presidential election votes in precinct

¹⁸ The voter turnout matches with the SOS voter level data showing which of the registered voters voted on November 8, 2022.

¹⁹ On the 2022 Senate election date, voters who turned out to vote but did not vote for the Senate election was 1.927%.

²⁰ As explained in my original report, for Caddo parish’s 2022 senate elections, precinct 159 was absorbed by precincts 122, 163, and 165. In order, to match the VTDs for the 2020 and 2022 elections in Caddo parish, the precinct-level votes for the 2020 election have been equally divided into these three precincts. There were a total of 900 votes cast on election day in precinct 159 in 2020 presidential elections.

159 to the precincts 122, 163, and 165 which had absorbed the precinct 159, however, the difference in what I did and what Dr. Handley did is not even comparable. My allocation did not create precincts which had more votes for candidates than the total votes that were cast in the precinct. Moreover, this was a single allocation resulting from the fact that Parish 159 did not exist in that election, and the voters were absorbed into the other three precincts. This is hardly comparable to Dr. Handley's flawed methodology used parish wide and without regard for the bias it causes. Additionally, it is unlikely my single allocation caused any measurable bias. Looking at the 2022 Senate election where this allocation was not needed and comparing the results to the 2020 elections yields nearly identical results.

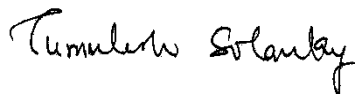
14. Dr. Handley's comments (Handley rebuttal on page 9) stating that

"While Dr. Solanky contends that he has shown that Black and White voters have different voting patterns across parishes, and "sometimes different areas within the same parish" (Solanky Report, page 29), he fails to relate this to any way to specific enacted or illustrative state legislative districts at issue in this litigation."

But this criticism entirely misses the point that there is clear evidence that Black and White voters have different voting patterns across parishes and even different areas within parishes. Dr. Handley fails to account for this assumption which she has made in her expert report. Her EI estimates simply assume that there is uniformity within the regions she has studied and that is demonstratively false, as shown on page 29 of my original report.

15. Based on the extensive analysis reported in my original report, it is evident that there is significant variation in the percentage of white voters voting for a democrat candidate from parish to parish. The parishes I studied have different voting patterns, and sometimes different areas within the same parish vote differently. My report includes EI estimates for the entire parish under the minimum density in VTD of zero and different areas within the same parish are studied as well by pooling VTDs with certain minimum population density values. The purpose of the analysis was to show that denser areas consistently vote differently, and this was observed in all parishes that I studied. The purpose of the study was not to conclude what I consider as dense, but rather to show how the voting pattern changes as the VTDs get denser. I only had limited time available to study two elections, the 2020 Presidential election and 2022 Senate election; however, even from these two elections the trend is quite clear.

16. Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct. Executed on this 21 day of August 2023, in Metairie, Louisiana.



Tumulesh K. S. Solanky, PhD

APPENDIX 1

Estimated Bias All Precincts in Caddo Parish due to Dr. Handley's Methodology 2020 Presidential Elections

Row Number	County	Precinct	Biden Votes	Trump Votes	Total Candidate Votes	Total Voter Turnout	Surplus Votes in Precinct
1	Caddo Parish	1	191.04	3.88	199.73	182.00	17.73
2	Caddo Parish	2	423.03	369.52	800.86	948.00	-147.14
3	Caddo Parish	3	489.74	9.04	507.32	471.00	36.32
4	Caddo Parish	4	808.14	104.65	922.47	868.00	54.47
5	Caddo Parish	5	1437.38	111.11	1584.25	1427.00	157.25
6	Caddo Parish	6	122.81	20.67	144.67	151.00	-6.33
7	Caddo Parish	7	327.50	124.04	463.35	489.00	-25.65
8	Caddo Parish	8	485.19	350.14	853.35	777.00	76.35
9	Caddo Parish	9	150.11	333.34	497.75	482.00	15.75
10	Caddo Parish	10	195.59	457.38	671.95	621.00	50.95
11	Caddo Parish	11	227.43	687.36	943.59	988.00	-44.41
12	Caddo Parish	12	215.30	496.14	730.27	759.00	-28.73
13	Caddo Parish	13	359.34	857.91	1252.90	1313.00	-60.10
14	Caddo Parish	14	288.08	281.66	601.63	648.00	-46.37
15	Caddo Parish	15	456.38	258.41	740.73	769.00	-28.27
16	Caddo Parish	16	269.89	586.58	877.92	903.00	-25.08
17	Caddo Parish	17	354.80	220.94	595.81	678.00	-82.19
18	Caddo Parish	20	253.21	366.94	647.50	728.00	-80.50
19	Caddo Parish	21	183.46	428.96	628.96	719.00	-90.04
20	Caddo Parish	22	241.08	596.92	862.88	1159.00	-296.12
21	Caddo Parish	23	471.54	32.30	513.20	432.00	81.20
22	Caddo Parish	24	282.02	361.77	664.02	716.00	-51.98
23	Caddo Parish	25	882.44	56.85	961.03	802.00	159.03
24	Caddo Parish	26	216.82	264.87	492.57	561.00	-68.43
25	Caddo Parish	27	272.92	295.88	591.47	618.00	-26.53
26	Caddo Parish	28	37.91	15.50	53.41	63.00	-9.59
27	Caddo Parish	29	406.35	14.21	430.09	438.00	-7.91
28	Caddo Parish	30	867.28	77.52	959.47	1019.00	-59.53
29	Caddo Parish	31	482.16	36.18	538.94	521.00	17.94
30	Caddo Parish	32	397.25	45.22	447.18	416.00	31.18
31	Caddo Parish	34	820.27	50.39	879.22	773.00	106.22
32	Caddo Parish	35	497.32	37.47	541.99	463.00	78.99
33	Caddo Parish	36	752.04	68.48	835.69	708.00	127.69
34	Caddo Parish	37	503.38	19.38	527.66	444.00	83.66
35	Caddo Parish	38	645.91	18.09	672.39	559.00	113.39
36	Caddo Parish	39	310.82	1.29	318.05	301.00	17.05
37	Caddo Parish	40	309.31	6.46	319.39	298.00	21.39
38	Caddo Parish	41	274.44	10.34	288.33	273.00	15.33
39	Caddo Parish	43	374.51	16.80	394.86	321.00	73.86
40	Caddo Parish	44	427.57	19.38	457.57	422.00	35.57
41	Caddo Parish	45	692.91	60.73	760.54	920.00	-159.46
42	Caddo Parish	46	562.52	36.18	599.88	517.00	82.88

43	Caddo Parish	47	501.87	330.76	844.53	938.00	-93.47
44	Caddo Parish	48	160.72	481.93	662.96	640.00	22.96
45	Caddo Parish	49	413.93	771.34	1211.43	1486.00	-274.57
46	Caddo Parish	50	629.23	15.50	650.99	630.00	20.99
47	Caddo Parish	51	827.86	25.84	867.91	797.00	70.91
48	Caddo Parish	52	736.88	29.72	781.97	617.00	164.97
49	Caddo Parish	53	561.00	40.05	609.50	514.00	95.50
50	Caddo Parish	54	641.36	21.96	682.40	674.00	8.40
51	Caddo Parish	55	312.34	120.16	440.74	427.00	13.74
52	Caddo Parish	56	336.60	704.16	1054.94	1223.00	-168.06
53	Caddo Parish	57	545.84	11.63	563.63	473.00	90.63
54	Caddo Parish	58	606.49	33.59	653.18	552.00	101.18
55	Caddo Parish	59	691.40	21.96	726.47	680.00	46.47
56	Caddo Parish	60	524.61	14.21	544.85	490.00	54.85
57	Caddo Parish	61	542.81	15.50	565.32	546.00	19.32
58	Caddo Parish	62	779.34	139.54	934.21	990.00	-55.79
59	Caddo Parish	63	324.47	156.34	487.78	478.00	9.78
60	Caddo Parish	64	424.54	65.89	502.26	501.00	1.26
61	Caddo Parish	65	348.73	196.39	549.83	586.00	-36.17
62	Caddo Parish	66	304.76	997.45	1317.78	1220.00	97.78
63	Caddo Parish	67	298.70	5.17	309.65	300.00	9.65
64	Caddo Parish	68	322.95	414.74	748.54	842.00	-93.46
65	Caddo Parish	69	541.29	254.53	810.13	867.00	-56.87
66	Caddo Parish	70	958.25	93.03	1054.80	987.00	67.80
67	Caddo Parish	71	400.28	19.38	423.20	461.00	-37.80
68	Caddo Parish	72	301.73	378.57	696.17	697.00	-0.83
69	Caddo Parish	73	1006.77	5.17	1029.96	980.00	49.96
70	Caddo Parish	74	181.95	7.75	194.46	198.00	-3.54
71	Caddo Parish	75	269.89	687.36	977.72	1205.00	-227.28
72	Caddo Parish	76	257.76	412.16	684.13	758.00	-73.87
73	Caddo Parish	77	262.31	689.95	968.85	1265.00	-296.15
74	Caddo Parish	78	330.54	55.56	393.50	356.00	37.50
75	Caddo Parish	79	403.31	152.46	563.98	556.00	7.98
76	Caddo Parish	80	467.00	18.09	493.55	456.00	37.55
77	Caddo Parish	81	896.09	99.49	1003.71	957.00	46.71
78	Caddo Parish	82	392.70	383.73	787.09	772.00	15.09
79	Caddo Parish	83	492.77	288.12	790.28	944.00	-153.72
80	Caddo Parish	84	808.14	179.59	998.23	1100.00	-101.77
81	Caddo Parish	85	439.70	326.88	778.23	1023.00	-244.77
82	Caddo Parish	86	647.43	12.92	670.22	652.00	18.22
83	Caddo Parish	87	758.11	224.81	996.04	1150.00	-153.96
84	Caddo Parish	88	363.89	593.04	967.61	1041.00	-73.39
85	Caddo Parish	89	353.28	466.42	835.10	814.00	21.10
86	Caddo Parish	90	809.66	480.64	1309.30	1212.00	97.30
87	Caddo Parish	91	756.59	618.88	1400.40	1326.00	74.40
88	Caddo Parish	92	400.28	472.88	888.62	809.00	79.62
89	Caddo Parish	93	419.99	423.79	853.45	819.00	34.45
90	Caddo Parish	94	532.19	375.98	926.00	974.00	-48.00
91	Caddo Parish	95	421.51	612.42	1043.63	1228.00	-184.37
92	Caddo Parish	97	141.01	286.83	430.40	425.00	5.40
93	Caddo Parish	98	157.69	166.67	339.96	368.00	-28.04
94	Caddo Parish	99	285.05	28.42	324.18	303.00	21.18
95	Caddo Parish	100	730.82	126.62	869.08	937.00	-67.92
96	Caddo Parish	101	380.57	458.67	855.76	853.00	2.76

97	Caddo Parish	102	197.11	440.58	645.01	718.00	-72.99
98	Caddo Parish	103	421.51	487.10	921.81	1153.00	-231.19
99	Caddo Parish	104	200.14	1014.25	1236.90	1510.00	-273.10
100	Caddo Parish	105	148.59	521.98	677.93	653.00	24.93
101	Caddo Parish	106	609.52	342.39	964.81	1028.00	-63.19
102	Caddo Parish	107	248.66	334.64	589.12	589.00	0.12
103	Caddo Parish	108	65.20	364.35	445.20	604.00	-158.80
104	Caddo Parish	109	321.44	1093.06	1434.67	1534.00	-99.33
105	Caddo Parish	110	166.78	894.09	1083.54	1140.00	-56.46
106	Caddo Parish	111	338.12	14.21	353.72	367.00	-13.28
107	Caddo Parish	112	251.69	363.06	622.04	737.00	-114.96
108	Caddo Parish	113	278.98	440.58	731.42	811.00	-79.58
109	Caddo Parish	114	419.99	74.94	497.27	610.00	-112.73
110	Caddo Parish	115	201.66	1084.02	1305.93	1325.00	-19.07
111	Caddo Parish	122	1037.09	202.85	1251.72	1530.00	-278.28
112	Caddo Parish	123	204.69	701.57	916.93	941.00	-24.07
113	Caddo Parish	125	404.83	627.93	1047.34	1041.00	6.34
114	Caddo Parish	126	107.65	450.92	569.18	516.00	53.18
115	Caddo Parish	127	59.13	301.04	363.78	333.00	30.78
116	Caddo Parish	128	248.66	1186.09	1450.18	1750.00	-299.82
117	Caddo Parish	129	544.32	538.78	1112.78	1235.00	-122.22
118	Caddo Parish	132	212.27	1019.41	1255.36	1205.00	50.36
119	Caddo Parish	133	180.43	470.30	651.92	672.00	-20.08
120	Caddo Parish	134	83.39	205.43	293.71	302.00	-8.29
121	Caddo Parish	135	288.08	705.45	1011.46	992.00	19.46
122	Caddo Parish	136	263.82	1697.73	1992.41	1847.00	145.41
123	Caddo Parish	137	312.34	684.78	1017.52	1035.00	-17.48
124	Caddo Parish	138	33.36	208.02	247.34	222.00	25.34
125	Caddo Parish	139	115.23	944.48	1064.46	937.00	127.46
126	Caddo Parish	140	113.72	248.07	366.91	327.00	39.91
127	Caddo Parish	142	43.97	505.19	550.34	456.00	94.34
128	Caddo Parish	143	254.72	983.24	1241.49	1059.00	182.49
129	Caddo Parish	144	447.28	494.85	952.83	759.00	193.83
130	Caddo Parish	145	19.71	37.47	57.18	44.00	13.18
131	Caddo Parish	146	68.23	293.29	368.54	316.00	52.54
132	Caddo Parish	149	112.20	251.95	365.29	289.00	76.29
133	Caddo Parish	151	45.49	175.72	222.39	183.00	39.39
134	Caddo Parish	154	40.94	67.19	108.12	85.00	23.12
135	Caddo Parish	155	39.42	129.20	171.20	144.00	27.20
136	Caddo Parish	156	191.04	189.93	384.54	294.00	90.54
137	Caddo Parish	157	77.33	280.37	367.09	307.00	60.09
138	Caddo Parish	158	247.14	1239.06	1513.39	1463.00	50.39
139	Caddo Parish	159	409.38	801.06	1222.47	1235.00	-12.53
140	Caddo Parish	160	57.62	403.11	465.50	460.00	5.50
141	Caddo Parish	161	33.36	416.03	458.86	420.00	38.86
142	Caddo Parish	162	104.62	742.92	855.84	816.00	39.84
143	Caddo Parish	163	212.27	387.61	601.27	661.00	-59.73
144	Caddo Parish	165	136.46	280.37	422.69	433.00	-10.31
145	Caddo Parish	166	118.27	454.80	580.16	564.00	16.16
TOTAL			55110	48021	104875²¹	106414	1539

²¹ As reported earlier this does not include 37 votes for the omitted candidate.

**IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF LOUISIANA**

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE, DR.
ALICE WASHINGTON, STEVEN HARRIS,
ALEXIS CALHOUN, BLACK VOTERS
MATTER CAPACITY BUILDING
INSTITUTE, and THE LOUISIANA STATE
CONFERENCE OF THE NAACP,

Plaintiffs,

v.

R. KYLE ARDOIN, in his official capacity as
Secretary of State of Louisiana

Defendant.

CIVIL ACTION NO. 3:22-cv-00178
SDD-SDJ

Dr. Handley Expert Report

Expert Report on the Enacted Louisiana State House and Senate Plans

Dr. Lisa Handley

I. Introduction

Summary Conclusion. Voting in the seven areas of Louisiana that I studied for this project is racially polarized. This polarization impedes the ability of Black voters to elect candidates of their choice unless districts are drawn that provide Black voters with an opportunity to elect their preferred candidates to the state legislature. As demonstrated by illustrative state house and state senate plans (Illustrative State House Plan and Illustrative State Senate Plan; collectively, Illustrative Plans), the enacted state legislative plans (Enacted State House Plan and Enacted State Senate Plan; collectively, Enacted Plans) fail to offer Black voters an opportunity to elect their preferred candidates in areas of the state where voting is racially polarized and where a majority Black district or additional majority Black districts could have been created. The failure of the Enacted Plans to provide more Black opportunity districts dilutes the opportunity of Black voters to participate in the electoral process and to elect candidates of their choice to the Louisiana State House of Representatives and State Senate.

Scope of Project. I was retained by plaintiffs in this case as an expert to conduct an analysis of voting patterns by race in several areas in the State of Louisiana to determine whether voting in these areas is racially polarized.¹ In addition, I was asked to assess the ability of Black voters to elect their candidates of choice in legislative districts in those same areas in the Enacted Plans compared to the Illustrative Plans drawn by plaintiffs' expert demographer, Bill Cooper, in this litigation. Much of this report is the same content as provided in the initial report I filed in this case last year before the stay in the proceeding. (*Preliminary Report on the Newly Enacted Louisiana State House and Senate Plans*, July 2022).²

II. Professional Background and Experience

I have over thirty-five years of experience as a voting rights and redistricting expert. I have advised scores of jurisdictions and other clients on minority voting rights and redistricting-related issues. I have served as an expert in dozens of voting rights cases. My clients have included state and local jurisdictions, independent redistricting commissions (Arizona, Colorado,

¹ I am being compensated at a rate of \$300 an hour for work on this project.

² A large portion of the data for this project was compiled for *Press Robinson v. Kyle Ardoin*, and the description of the data and methodology in this report (and my earlier report, *Preliminary Report on the Newly Enacted Louisiana State House and Senate Plans*) derives from the expert report I filed in that case.

Michigan), the U.S. Department of Justice, national civil rights organizations, and such international organizations as the United Nations.

I have been actively involved in researching, writing, and teaching on subjects relating to voting rights, including minority representation, electoral system design, and redistricting. I co-authored a book, *Minority Representation and the Quest for Voting Equality* (Cambridge University Press, 1992), and co-edited a volume, *Redistricting in Comparative Perspective* (Oxford University Press, 2008), on these subjects. In addition, my research on these topics has appeared in peer-reviewed journals such as *Journal of Politics*, *Legislative Studies Quarterly*, *American Politics Quarterly*, *Journal of Law and Politics*, and *Law and Policy*, as well as law reviews (e.g., *North Carolina Law Review*) and a number of edited books. I hold a Ph.D. in political science from The George Washington University.

I have been a principal of Frontier International Electoral Consulting since co-founding the company in 1998. Frontier IEC specializes in providing electoral assistance in transitional democracies and post-conflict countries. In addition, I am a Visiting Research Academic at Oxford Brookes University in Oxford, United Kingdom. Attached to the end of this report is a copy of my curriculum vitae.

III. Analyzing Voting Patterns by Race

An analysis of voting patterns by race serves as the foundation of two of the three elements of the “results test” as outlined in *Thornburg v. Gingles*: a racial bloc voting analysis is needed to determine whether the minority group is politically cohesive; and the analysis is required to determine if whites are voting sufficiently as a bloc to usually defeat the candidates preferred by minority voters. The voting patterns of white and minority voters must be estimated using statistical techniques because direct information about the race of the voters is not, of course, available on the ballots cast.

To carry out an analysis of voting patterns by race, an aggregate level database must be constructed because individual level data is not available. The aggregate data relied on is usually election precinct data. Information relating to the demographic composition and election results in the precincts is collected, merged, and statistically analyzed to determine if there is a relationship between the racial composition of the precincts and support for specific candidates across the precincts.

Standard Statistical Techniques. Three standard statistical techniques have been developed over time to estimate vote choices by race: homogeneous precinct analysis, ecological regression, and ecological inference.³ Two of these analytic procedures—homogeneous precinct analysis and ecological regression—were employed by the plaintiffs’ expert in *Thornburg v. Gingles*, have the benefit of the Supreme Court’s approval in that case, and have been used in most subsequent voting rights cases. The third technique, ecological inference, was developed after the *Gingles* decision and was designed, in part, to address some of the disadvantages associated with ecological regression analysis. Ecological inference analysis has been introduced and accepted in numerous district court proceedings.

Homogeneous precinct (HP) analysis is the simplest technique. It involves comparing the percentage of votes received by each of the candidates in precincts that are racially or ethnically homogeneous. The general practice is to label a precinct as homogeneous if at least 90 percent of the voters or voting age population is composed of a single race. (In Louisiana, where turnout data by race is available, a homogenous precinct is defined as a precinct in which 90 percent or more of the voters were Black or White.) In fact, the homogeneous results reported are not estimates—they are the actual precinct results. However, most voters in Louisiana do not reside in homogeneous precincts, and voters who reside in homogeneous precincts may not be representative of voters who live in more racially diverse precincts. For this reason, I refer to these percentages as estimates.

The second statistical technique employed, *ecological regression* (ER), uses information from all precincts, not simply the homogeneous ones, to derive estimates of the voting behavior of minorities and whites. If there is a strong linear relationship across precincts between the percentage of minorities and the percentage of votes cast for a given candidate, this relationship can be used to estimate the percent of minority and white voters supporting the candidate.

The third technique, *ecological inference* (EI), was developed by Professor Gary King. This approach also uses information from all precincts but, unlike ecological regression, it does not rely on an assumption of linearity. Instead, it incorporates maximum likelihood statistics to

³ For a detailed explanation of homogeneous precinct analysis and ecological regression, see Bernard Grofman, Lisa Handley, and Richard Niemi, *Minority Representation and the Quest for Voting Equality* (Cambridge University Press, 1992). See Gary King, *A Solution to the Ecological Inference Problem* (Princeton University Press, 1997) for a more detailed explanation of ecological inference.

produce estimates of voting patterns by race. In addition, it utilizes the method of bounds, which uses more of the available information from the precinct returns than ecological regression.⁴ Unlike ecological regression, which can produce percentage estimates of less than 0 or more than 100 percent, ecological inference was designed to produce only estimates that fall within the possible limits. However, EI does not guarantee that the estimates for all of the candidates add to 100 percent for each of the racial groups examined.

In conducting my analysis of voting patterns by race in recent elections in Louisiana, I also used a more recently developed version of ecological inference, which I have labeled “EI RxC” in the summary tables. One advantage of EI RxC is that it produces generally accepted confidence intervals for the estimates of minority and white voters supporting each of the candidates. I have included these confidence intervals in the summary tables in the *Appendices*.

Database To analyze voting patterns by race using aggregate level information, a database that combines election results with demographic information is required. This database is almost always constructed using election precincts as the unit of analysis. The demographic composition of the precincts is based on voter registration or turnout by race if this information is available. Where this is not available, voting age population or citizen voting age population is used. Louisiana collects voter registration data by race (registering voters self-identify their race), and tallies and provides precinct turnout by race data. The 2015–2022 election results and turnout by race data, for all precincts and election cycles, are publicly available on the Louisiana Secretary of State’s website.

To build the Louisiana dataset for the purpose of the racial bloc voting analysis, precinct-level election returns and turnout counts by race from the Louisiana Secretary of State’s office were collected.⁵ In addition, in order to associate this data with census population data, precinct-

⁴ The following is an example of how the method of bounds works: if a given precinct has 100 voters, of whom 75 are Black and 25 are White, and the Black candidate received 80 votes, then at least 55 of the Black voters voted for the Black candidate and at most all 75 did. (The method of bounds is less useful for calculating estimates for White voters, as anywhere between none of the Whites and all of the Whites could have voted for the candidate.)

⁵ Election returns were obtained either directly from the Secretary of State website or from OpenElections, an organization that collects election returns and formats them in a consistent manner across all states.

level shapefiles for the relevant years were acquired.⁶ The 2020 census-block shapefiles, and total and voting age populations by race and ethnicity, were obtained from the Census FTP portal.⁷

Early and absentee votes are reported only at the parish level in Louisiana—they are not allocated back to the precinct where the voter resides. Rather than simply ignore these votes, they have been allocated to the parish precincts proportionally based on the votes received by each of the candidates on Election Day.⁸

Elections analyzed All recent statewide election contests that included Black candidates were analyzed.⁹ These elections are listed in Table 1, below.¹⁰

Table 1: Louisiana Statewide Elections Analyzed

Election Cycle	Office	Black Candidate(s)
November 2022	U.S. Senator	Gary Chambers, Jr.
November 2020	U.S. President/Vice President	Kamala Harris
	U.S. Senator	Adrian Perkins
		Derrick Edwards
November 2019	Secretary of State	Gwen Collins-Greenup
October 2019	Lieutenant Governor	Willie Jones

⁶ The precinct shapefiles were obtained either directly from the Secretary of State website or from the Voting and Election Science Team (VEST) website.

⁷ To conduct the effectiveness analysis, the election returns for the 2015–2022 election cycles were disaggregated down to the level of the 2020 census block on the basis of the proportion of the voting age population that each block comprised of the precinct. This necessitated associating block-level census data with the precincts. This was accomplished using the precinct shapefiles.

⁸ An example of the allocation process is as follows: Candidate X received 80% of her Election Day parish-wide vote in two-precinct Parish Z from Precinct A and 20% from Precinct B. Therefore, 80% of her early and absentee votes are allocated to Precinct A and 20% to Precinct B.

⁹ Courts consider election contests that include minority candidates more probative than contests that include only white candidates for determining if voting is racially polarized. This is because it is not sufficient for minority voters to be able to elect their candidates of choice only if these candidates are white. On the other hand, it is important to recognize that not all minority candidates are the preferred candidates of minority voters.

¹⁰ In one of the elections analyzed—the November 2020 election for U.S. President—it was the running mate, Kamala Harris, who is Black.

Election Cycle	Office	Black Candidate(s)
	Attorney General	Ike Jackson
	Treasurer	Derrick Edwards
	Secretary of State	Gwen Collins-Greenup
December 2018	Secretary of State	Gwen Collins-Greenup
November 2018	Secretary of State	Gwen Collins-Greenup
November 2017	Treasurer	Derrick Edwards
October 2017	Treasurer	Derrick Edwards
November 2015	Lieutenant Governor	Kip Holden
October 2015	Lieutenant Governor	Kip Holden
	Attorney General	Ike Jackson
		Geri Broussard Baloney
	Secretary of State	Chris Tyson

In addition to these 16 statewide contests, recent (2015-2022) bi-racial state legislative election contests in state house and senate districts that fell within the areas of interest were also analyzed.

Geographic areas analyzed I examined voting patterns and the opportunities for Black voters to elect their candidates of choice in seven geographic areas (“areas of interest”) in the State of Louisiana. These areas of interest are the seven areas of the State where the Illustrative Plans create more majority Black voting age population (BVAP) districts than the Enacted Plans. As my analysis demonstrates, these additional majority BVAP districts offer Black voters opportunities to elect their candidates of choice that the Enacted Plans fail to provide.¹¹

¹¹ I have used the approach of creating specific geographic areas of interest to evaluate voting patterns and the opportunities for Black voters to elect their candidates of choice in another recent redistricting case, and my analysis was relied upon and accepted by the Court. *See Alpha Phi Alpha Fraternity, Inc. v. Raffensperger*, No. 1:21-cv-05337-SCJ, 587 F. Supp. 3d 1222 (N.D. Ga. Feb. 28, 2022).

The areas of interest are defined as the parishes in which the additional majority BVAP districts drawn in the Illustrative Plan are located.¹² For example, the Illustrative State Senate Plan creates a majority BVAP district, District 19, in Southeast Louisiana, and the Enacted State Senate Plan does not include a majority BVAP district in this area. Illustrative State Senate District 19 falls in Jefferson Parish and St. Charles Parish, and therefore I have designated these two parishes as Area of Interest 2. Table 2 lists the areas of interest, the parishes within each area of interest, and the additional majority BVAP illustrative state house and senate districts that are located within the area. In addition, because one area of interest includes both additional state senate and state house districts, I have provided state senate and house cluster names for these areas to facilitate the consideration of the state house and state senate plans separately.

¹² The Enacted State House Plan included a majority BVAP state house district that is not a majority BVAP district in the Illustrative State House Plan: District 62. Enacted District 62 is located in East Baton Rouge and East Feliciana. Therefore, although there are no new Illustrative Districts that fall in East Feliciana, I have included East Feliciana in Area of Interest 7.

Table 2: Areas of Interest and the Additional Illustrative Majority BVAP Districts

Area of Interest	Parishes	Additional Illustrative State Senate District	Additional Illustrative State House District
Area 1: Northwest Louisiana	Bossier Caddo	38 (State Senate Cluster 1)	1 (State House Cluster 3)
Area 2: Southeast Louisiana	Jefferson St. Charles	19 (State Senate Cluster 2)	
Area 3: East Central Louisiana	East Baton Rouge West Baton Rouge Iberville Point Coupee	17 (State Senate Cluster 3)	
Area 4: Western Louisiana	De Soto Natchitoches Red River		23 (State House Cluster 1)
Area 5: Southwest Louisiana	Calcasieu		38 (State House Cluster 2)
Area 6: South Central Louisiana	Ascension Iberville		60 (State House Cluster 4)
Area 7: East Central Louisiana	East Baton Rouge East Feliciana		68 69 (State House Cluster 5)

IV. Voting Is Racially Polarized in the Areas of Interest

Voting Patterns in the Areas of Interest Voting is consistently racially polarized in the seven areas of interest that I examined. Summary tables reporting estimates of Black and White voters supporting each of the candidates in the 16 statewide elections examined can be found in *Appendix A (A1–A7)*. In the seven areas, Black and White voters supported different candidates in nearly every election contest analyzed, with Black voters cohesive in support of their preferred candidates and the White voters bloc voting against these candidates. Table 3 provides summary averages of the percentage of Black and White support for the Black-preferred candidates in all 16 elections and in the eight elections with only two major candidates. This average is reported for each geographic area and for all seven of the areas together.

Table 3: Average Black and White Support for Candidates Preferred by Black Voters

Area	All statewide election contests (16)		Two-candidate contests (8)	
	Black vote for Black-preferred candidate	White vote for Black-preferred candidate	Black vote for Black-preferred candidate	White vote for Black-preferred candidate
1	82.3	9.6	91.9	12.2
2	83.0	11.8	93.6	15.2
3	82.3	15.4	92.5	19.6
4	82.3	9.7	94.0	12.6
5	84.2	11.3	94.7	15.0
6	82.3	11.4	92.8	14.3
7	82.5	16.2	92.5	20.1
Average	82.7	12.2	93.2	15.6

The average percentage of Black voter support for their preferred candidates (“Black-preferred candidates”) was 82.7% across all 16 contests in the seven areas combined.¹³ When contests with only two candidates are considered, the level of cohesion was even higher, with Black voters’ support averaging 93.2% for the Black-preferred candidates across these eight two-candidate contests. The average percentage of White voter support for the Black-preferred candidate, on the other hand, was 12.2% across the 16 contests and rose to only 15.6% when contests with only two candidates are considered.

¹³ In all 16 of the contests analyzed, the Black candidate or, if there was more than one Black candidate, one of the Black candidates, was the candidate of choice of Black voters. This means that in the two-candidate contests the candidate of choice of Black voters received more than 50% of the vote. However, in the eight (out of the 16 elections) where more than two candidates competed, the candidate of choice of Black voters may have received only a plurality of the Black vote. I averaged the percentage of the vote received by the candidate of choice of Black voters in all 16 contests and in the eight contests with only two candidates. Although the Black-preferred candidate was always a Black candidate in the statewide elections, not all Black candidates who ran statewide were the candidates of choice and hence have not been included in the averages.

Voting Patterns in State Legislative Elections in the Areas of Interest In addition to examining recent statewide elections in the areas of interest, I also analyzed recent (2015-2022) state legislative elections, including special state legislative elections, in these areas. These election contests are “endogenous” in that they are for the office at issue (seats in the state legislature), but they do not necessarily cover the same geographic area as the proposed districts—the state legislative contests analyzed were held in the districts as they were drawn in 2011. I analyzed all bi-racial state house and senate contests in which the 2011 districts were wholly or partially contained in the areas of interest.¹⁴

My examination of voting patterns in recent bi-racial state legislative elections yielded similar results to the area of interest analyses. The estimates of Black and White voting patterns for these state legislative contests can be found in *Appendix B*. Ten of the 11 state senate elections (90.9%) analyzed were racially polarized (*Appendix B1*).¹⁵ The candidate preferred by Black voters won in all of the election contests in the majority BVAP district contests examined (either in the primary or a subsequent runoff election) but lost two of the three contests in non-majority BVAP districts analyzed. The only Black-preferred candidate that was successful in a non-majority BVAP district in the contests examined was a White candidate, John Milkovich, in State Senate District 38 in 2015. (In the 2019 election contest in this district, the Black candidate supported by Black voters was defeated.)

The ten bi-racial state house contests analyzed were all racially polarized (*Appendix B2*). Black candidates were successful in the three contests in the majority BVAP districts examined. The candidates preferred by Black voters lost, either in the primary or the runoff, in all of non-majority BVAP districts except one. The exception was the October 2019 contest in District 62, in which the winner of the runoff, Roy Daryl Adams, was the candidate of choice of Black voters.

¹⁴ More specifically, any recent bi-racial contest in a 2011 state legislative district in which at least 60% of the district fell within the area of interest was analyzed. In addition, recent bi-racial contests in any 2011 state legislative district that overlaps with one of the additional illustrative BVAP districts (listed in Table 2) were analyzed. This approach provided me with a sufficient number of elections to enable me to draw reliable conclusions, and is sufficiently limited to the geographic areas where the Illustrative plan creates new opportunity districts.

¹⁵ The election contest that was not polarized was the October 2015 election in State Senate District 2 (a majority BVAP district), in which then-incumbent Troy Brown, was supported by a majority of Black and White voters.

V. The Enacted Plans Provide Fewer Opportunity Districts than the Illustrative Plans

Because voting is consistently and markedly racially polarized in the Louisiana areas of interest I examined, Black voters should be offered opportunities to elect their candidates of choice in these areas. The Illustrative Plans provide more opportunities for Black voters to participate in the electoral process and elect their preferred candidates than the Enacted Plans in these areas. I have concluded this on the basis of a district-specific, functional analysis of the two sets of plans in the seven areas of interest. To make this determination, I relied not only upon the demographic composition of the proposed districts but on the voting patterns in the area and whether the candidates preferred by Black voters are likely to usually win in the proposed districts—this is what is meant by “functional.”

Because no state legislative elections have occurred since the new districts were adopted, an alternative method must be used to assess the opportunity of Black voters to elect their preferred candidates in these areas. Election results recompiled to conform to the boundaries of the proposed districts can be used to ascertain whether the candidates preferred by Black voters (as determined by the racial bloc voting analysis) would win in these districts. The best election contests to use for a functional analysis are recent elections that included a Black candidate supported by Black voters, but not by White voters. In this case, all 16 of the statewide election contests I analyzed met these criteria.¹⁶

The election results for all 16 recent statewide elections that included Black candidates were recompiled to conform to the state legislative district boundaries in the Enacted and Illustrative Plans. These recompiled results were then used to construct two indices, or “effectiveness scores.” The first score (Effectiveness Score #1) indicates the percentage of election contests (out of the total 16 statewide contests) that the Black-preferred candidate would have won or advanced to a runoff in the district. The second score (Effectiveness Score #2) reports the percentage of two-candidate elections (out of the eight two-candidate contests) that the Black-preferred candidate would have won in the district.¹⁷ The difference between the two

¹⁶ State legislative contests cannot be used for the purpose of recompiling election results because these elections occurred in districts that do not encompass an area large enough to cover the newly enacted or proposed districts in their entirety.

¹⁷ The eight contests included in Effectiveness Score #2 are: the November 2020 presidential race, the October 2019 elections for Lieutenant Governor and Attorney General, the November 2018 and 2019

scores makes it clear that, while the Black-preferred candidate may advance to the runoff in some instances, winning the runoff is much more challenging.

Comparing Districts in the Illustrative and Enacted Plans There are 11 majority BVAP state senate districts in the Enacted State Senate Plan and 14 in the Illustrative State Senate Plan. In the State House Plan, there are 29 BVAP districts in the Enacted Plan and 35 in the Illustrative Plan. Each of the areas of interest includes at least one additional majority BVAP illustrative district when compared to the number of majority BVAP enacted districts. I created eight different clusters within the areas of interest to evaluate the relevant differences between the Enacted State Senate and State House Plans and the Illustrative State Senate and State House Plans. Each of the three state senate clusters contain an additional state senate BVAP district in the Illustrative Plan. The five state house clusters also include one additional majority BVAP district, except State House Cluster 5, which has two additional majority BVAP districts in the Illustrative Plan than in the Enacted Plan. (See Table 2 for a list of the additional districts in the Illustrative Plans.)

In order to analyze the opportunities of Black voters to elect their candidates of choice in these clusters, I identified all of the proposed illustrative and enacted districts that were wholly or partially contained within the clusters. More specifically, for an enacted or illustrative district to be included in a state house or senate parish cluster, at least 60% of the district had to overlap with the parishes in the cluster. The 60% threshold was arrived at simply to ensure approximately the same number of enacted and illustrative districts in the areas of interest. The only exception to the 60% requirement is State House Cluster 1. In this cluster, a majority Black district centered in the city of Natchitoches in the 2011 State House Plan was cracked across several districts (primarily Districts 7, 22, and 25) in the Enacted Plan—with none of the succeeding districts falling more than 60% within the parish cluster—and no majority Black district was drawn to replace it in this area. The Illustrative State House Plan, however, maintains this majority Black district (Illustrative State House District 23). The eight state senate and house clusters, the parishes in which these districts are encompassed, and illustrative and enacted state legislative districts included in each cluster, are

runoffs for Secretary of State, the November 2017 runoff for State Treasurer, the October 2015 election for Secretary of State, and the November 2015 election for Lieutenant Governor. Although the 2020 presidential election included a number of minor candidates, one of the two major party candidates received at least 50% of the vote in all of the illustrative and enacted districts examined.

listed in Tables 4a (State Senate Clusters) and 4b (State House Clusters). The majority BVAP districts in each cluster are bolded.

Table 4a: State Senate Clusters

Area of Interest	Parishes	Illustrative Districts	Enacted Districts
State Senate Cluster 1	Bossier Caddo	36 38 39	36 38 39
State Senate Cluster 2	Jefferson St. Charles	8 9 10 19	8 9 10 19
State Senate Cluster 3	East Baton Rouge West Baton Rouge Iberville Point Coupee	14 15 16 17	6 14 15 16

Table 4b: State House Clusters

Area of Interest	Parishes	Illustrative Districts	Enacted Districts
State House Cluster 1	De Soto Natchitoches Red River	23	7 22 25
State House Cluster 2	Calcasieu	33 34 35 36 38	33 34 35 36
State House Cluster 3	Bossier Caddo	1 2 3 4 6 8 9 22	1 2 3 4 5 6 8 9
State House Cluster 4	Ascension Iberville	59 60 88	59 60 88
State House Cluster 5	East Baton Rouge East Feliciana	61 62 63 65 66 67 68 69 70 101	61 62 63 65 66 67 68 69 70 101

I produced effectiveness scores for all of the districts listed in Tables 4a and 4b. All of the majority BVAP districts in these clusters—in both the Illustrative and Enacted Plans—produced effectiveness scores indicating that the proposed districts would offer Black voters an opportunity to elect their candidates of choice to the state legislature. None of the districts with less than 50% BVAP, on the other hand, had scores sufficiently high to merit being classified as effective districts.¹⁸

Analysis of Individual Clusters In all eight clusters (encompassing the seven areas of interest), voting is racially polarized, and the Enacted Plans offered fewer effective Black opportunity districts than the Illustrative Plans. The following provides a brief summary of the voting patterns in each specific area, the effectiveness scores of the illustrative and enacted districts in the cluster(s) in the area (see Tables 4a and 4b for a list of the districts analyzed in each cluster), and maps of the illustrative and enacted districts in the area.

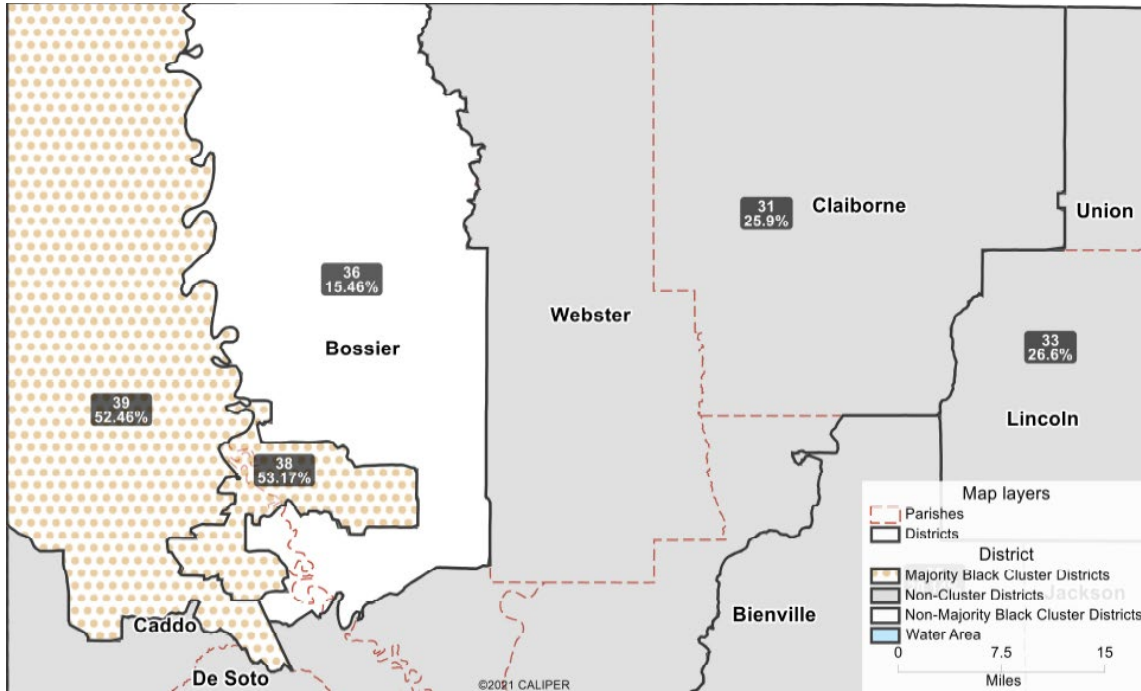
State Senate Cluster 1: Bossier and Caddo Parishes Voting is racially polarized in this cluster (area of interest 1). In all 16 of the statewide elections analyzed, Black and White voters supported different candidates. The Enacted State Senate Plan provides one effective majority BVAP district in this area (District 39). The Illustrative Plan offers two majority Black BVAP districts: District 38, which has effectiveness scores equal to those of Enacted District 39, and a second majority BVAP district, District 39, which also offers Black voters an opportunity to elect their candidates of choice as the Black-preferred Black candidate wins more than 50% of the contests examined and is therefore what I define as an effective district.

¹⁸ There are an equal number of majority BVAP districts in the Enacted and Illustrative State House Plans (20) and the State Senate Plans (8) that have not been included in these clusters and therefore were not analyzed. However, I did examine all state house and senate districts with BVAPs between 35% and 49.9% in the Enacted and Illustrative Plans and found only one effective Black opportunity district in this range in the two plans. Proposed State House District 91 in both the Illustrative and Enacted State House Plans (the district boundaries are identical in the two plans) is not majority BVAP in composition but has a sizeable BVAP (40.7%) and is an effective Black opportunity district according to the effectiveness scores. While not a majority Black district, this district is a majority minority district, with a Hispanic VAP of 8.1% and an Asian VAP of 3.0%. The non-Hispanic White VAP is 47.5%.

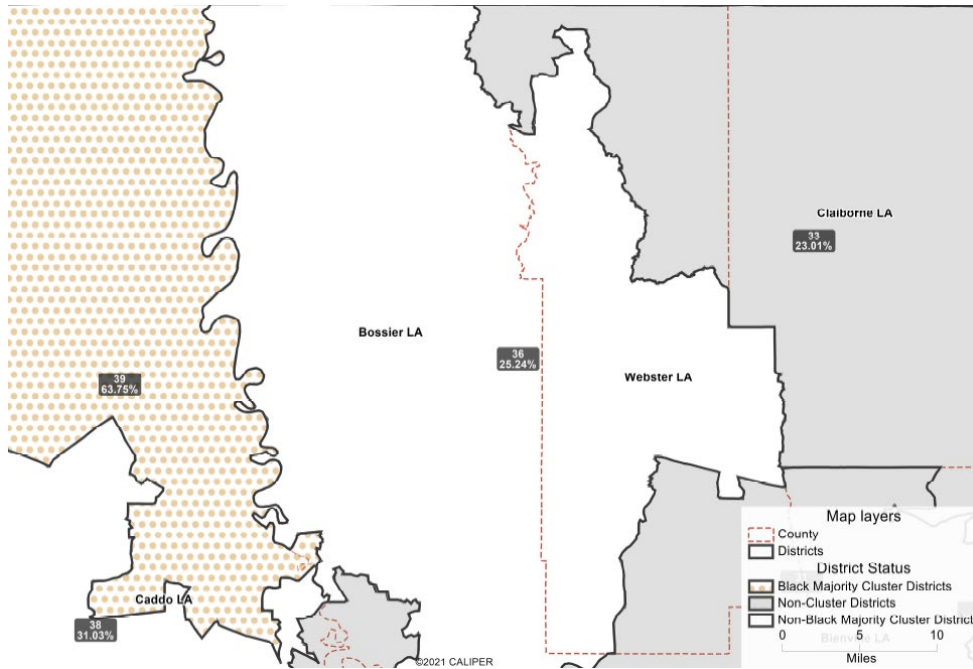
Comparison Table: State Senate Cluster 1

Illustrative District	Effectiveness Score #1	Effectiveness Score #2	Enacted District	Effectiveness Score #1	Effectiveness Score #2
36	0.0%	0.0%	36	0.0%	0.0%
38	100.0%	100.0%	38	18.8%	0.0%
39	81.3%	62.5%	39	100.0%	100.0%

State Senate Cluster 1



Illustrative District Map



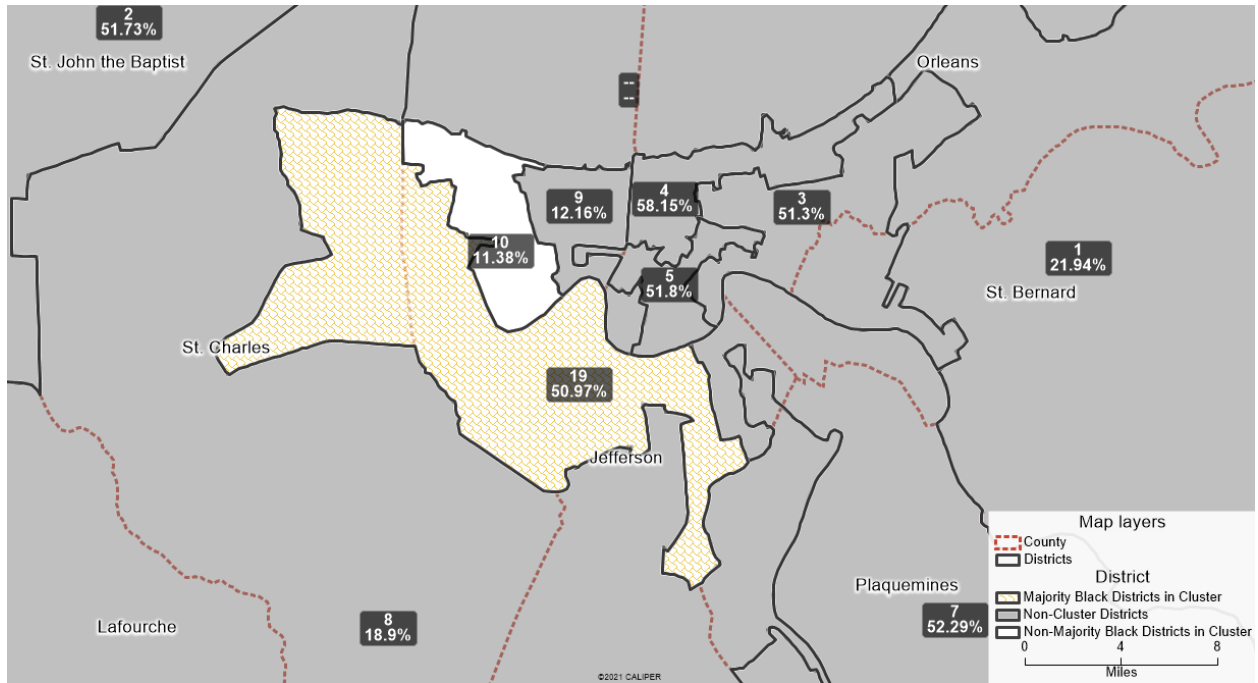
Enacted District Map

State Senate Cluster 2: Jefferson and St. Charles Parishes Voting is racially polarized in this cluster (area of interest 2)—in all 16 of the statewide elections analyzed, Black and White voters supported different candidates. The Enacted State Senate Plan offers no majority BVAP districts in this area. The Illustrative Plan offers one majority BVAP district: District 19, which has effectiveness scores of 100%—the Black-preferred candidate carried the district in all of the elections examined. (If the Black-preferred candidate did not win outright, the Black-preferred candidate ultimately prevailed in the runoff.)

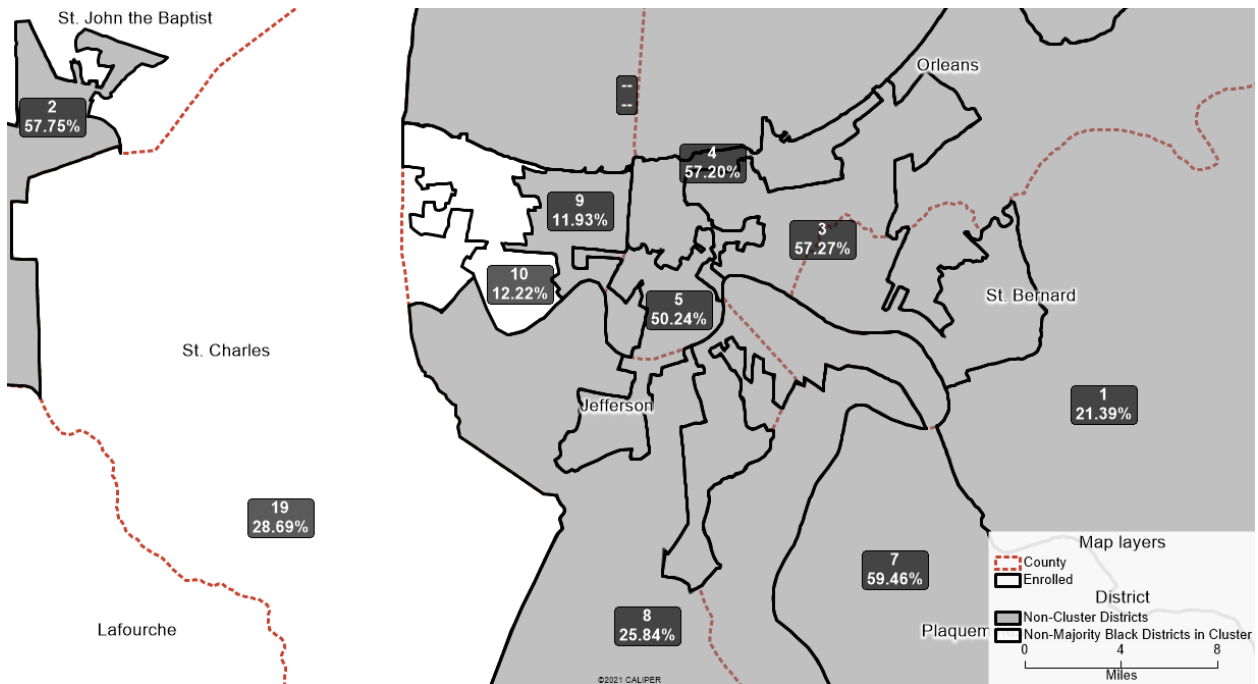
Comparison Table: State Senate Cluster 2

Illustrative District	Effectiveness Score #1	Effectiveness Score #2	Enacted District	Effectiveness Score #1	Effectiveness Score #2
8	6.3%	0.0%	8	18.8%	0.0%
9	12.5%	0.0%	9	12.5%	0.0%
10	0.0%	0.0%	10	0.0%	0.0%
19	100.0%	100.0%	19	18.8%	0.0%

State Senate Cluster 2



Illustrative District Map



Enacted District Map

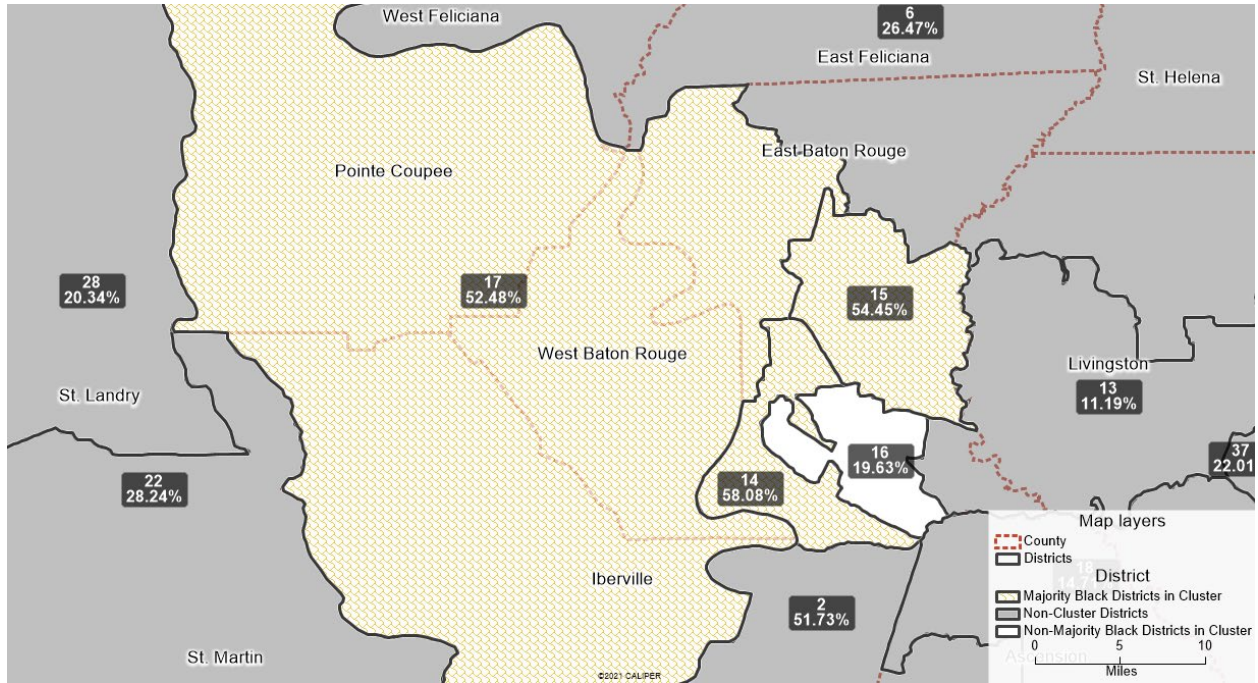
State Senate Cluster 3: East and West Baton Rouge, Iberville, and Point Coupee

Parishes Voting is racially polarized in this cluster (area of interest 3)—in 15 of the 16 of the statewide elections analyzed, Black and White voters clearly supported different candidates. Only in the October 2015 primary election for Lieutenant Governor did a plurality, or close to a plurality of White voters, support Kip Holder, the Black-preferred candidate. However, in the runoff, a majority of the White voters supported the single White candidate running, while Black voter support for Holden remained extremely high. The Enacted State Senate Plan provides two effective majority BVAP district in this area (Districts 14 and 15). The Illustrative Plan offers three majority BVAP districts: Districts 14, 15, and 17. The effectiveness scores of District 14 in both plans are equivalent – the Black-preferred candidate won all the examined elections. Districts 15 and 17 in the Illustrative Plan have lower effectiveness scores but still are effective.

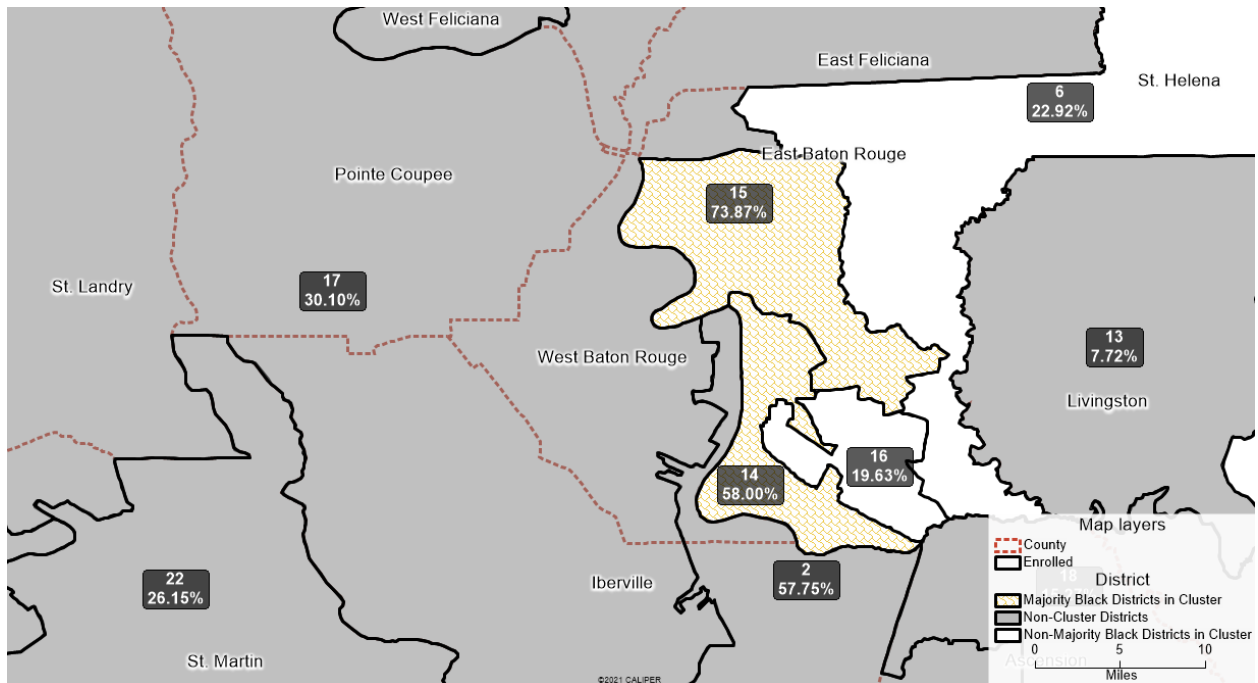
Comparison Table: State Senate Cluster 3

Illustrative District	Effectiveness Score #1	Effectiveness Score #2	Enacted District	Effectiveness Score #1	Effectiveness Score #2
14	100.0%	100.0%	6	6.3%	0.0%
15	93.8%	87.5%	14	100.0%	100.0%
16	12.5%	12.5%	15	100.0%	100.0%
17	81.3%	75.0%	16	12.5%	12.5%

State Senate Cluster 3



Illustrative District Map



Enacted District Map

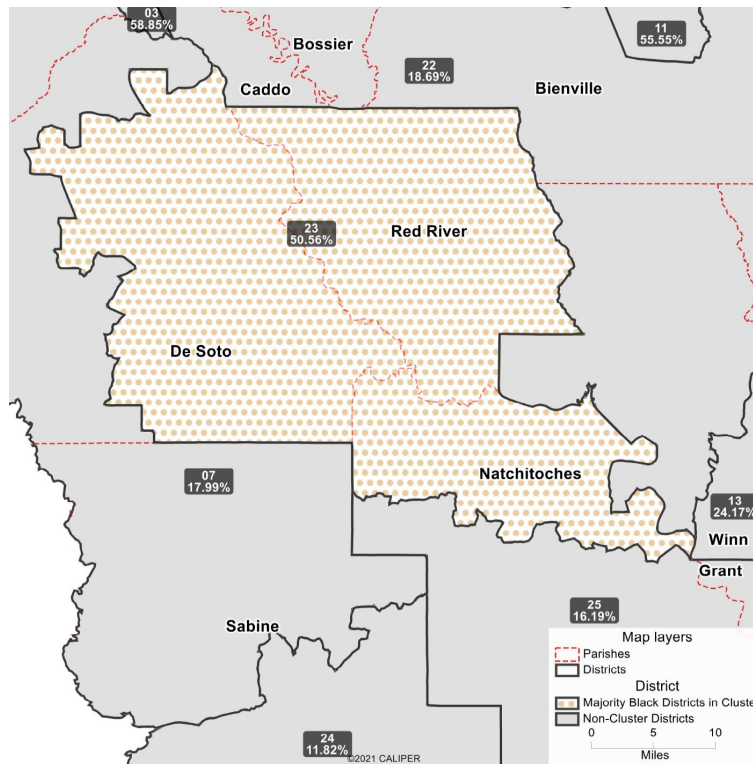
State House Cluster 1: DeSoto, Natchitoches, and Red River Parishes Voting is racially polarized in this cluster (area of interest 4). In all 16 of the statewide elections analyzed, Black and White voters supported different candidates. The Enacted State House Plan does away with the 2011 majority BVAP district in this area (District 23) and does not replace it with another majority BVAP district in this area.¹⁹ The Illustrative Plan maintains the majority BVAP district, District 23, in this area. This district provides Black voters with an opportunity to elect their candidates of choice, with effectiveness scores of 87.5% for both Score #1 and Score #2.

Comparison Table: State House Cluster 1

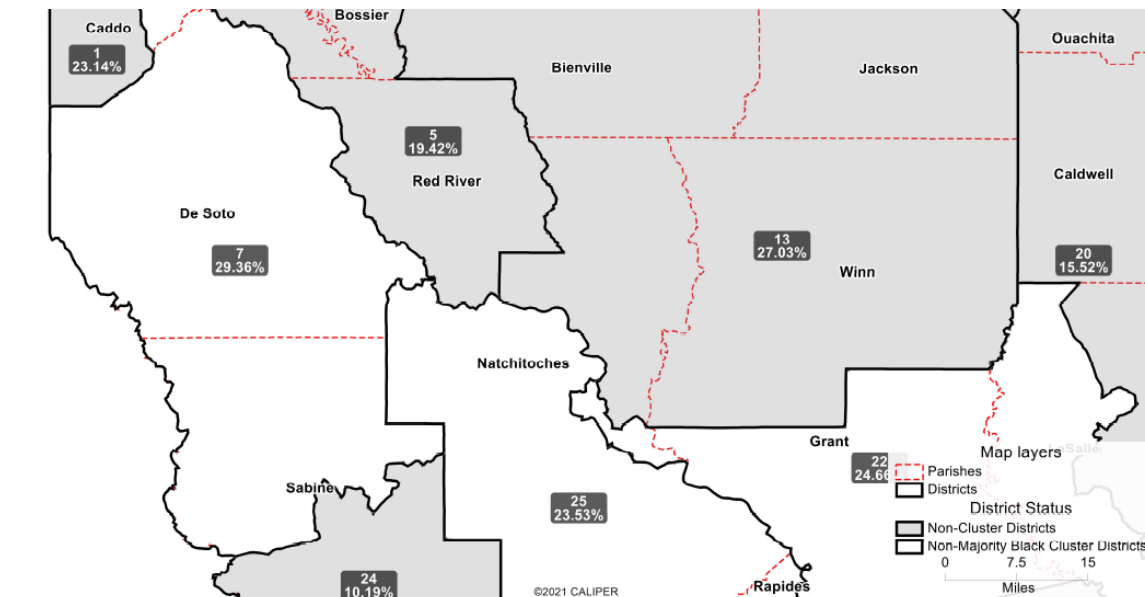
Illustrative District	Effectiveness Score #1	Effectiveness Score #2	Enacted District	Effectiveness Score #1	Effectiveness Score #2
23	87.5%	87.5%	7	18.8%	0.0%
			22	0.0%	0.0%
			25	0.0%	0.0%

¹⁹ House District 23 in the Enacted Plan has been relocated in Orleans Parish and is a majority BVAP district. (The Illustrative Plan offers a comparable majority BVAP district in Orleans but labels it with a different district number.)

State House Cluster 1



Illustrative District Map



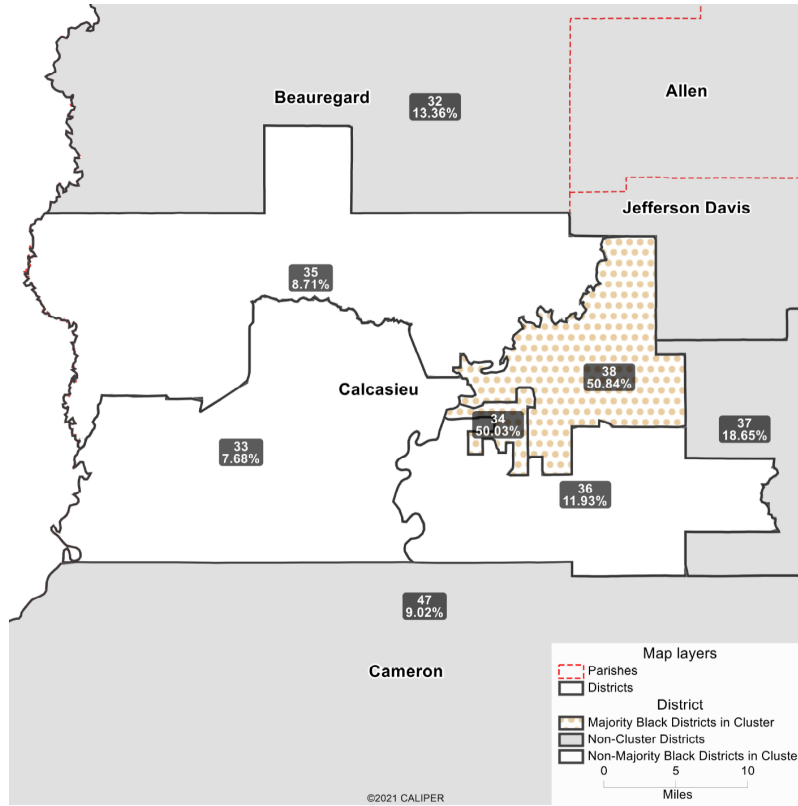
Enacted District Map

State House Cluster 2: Calcasieu Parish Voting is racially polarized in this cluster (area of interest 5)—in all 16 of the statewide elections analyzed, Black and White voters supported different candidates. The Enacted State Senate Plan provides one effective majority BVAP district in this area (District 34) and the Illustrative Plan offers two majority BVAP districts: Districts 34 and 38. Effectiveness Score #2 in the majority BVAP district in the Enacted Plan and the two majority BVAP districts in the Illustrative Plan are 100% in all instances.

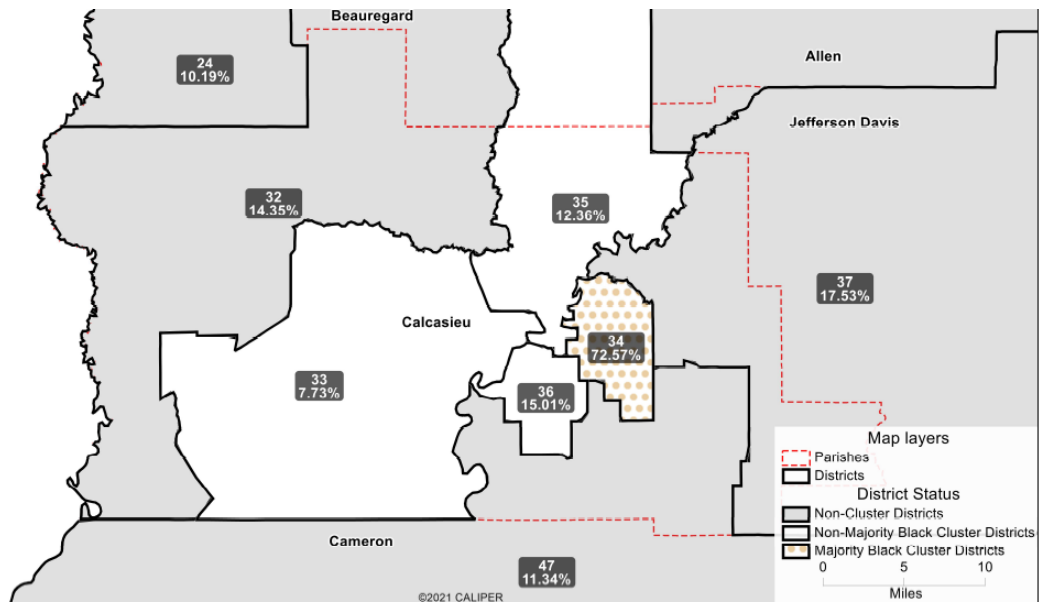
Comparison Table: State House Cluster 2

Illustrative District	Effectiveness Score #1	Effectiveness Score #2	Enacted District	Effectiveness Score #1	Effectiveness Score #2
33	0.0%	0.0%	33	0.0%	0.0%
34	93.8%	100.0%	34	100.0%	100.0%
35	0.0%	0.0%	35	0.0%	0.0%
36	0.0%	0.0%	36	0.0%	0.0%
38	93.8%	100.0%			

State House Cluster 2



Illustrative District Map



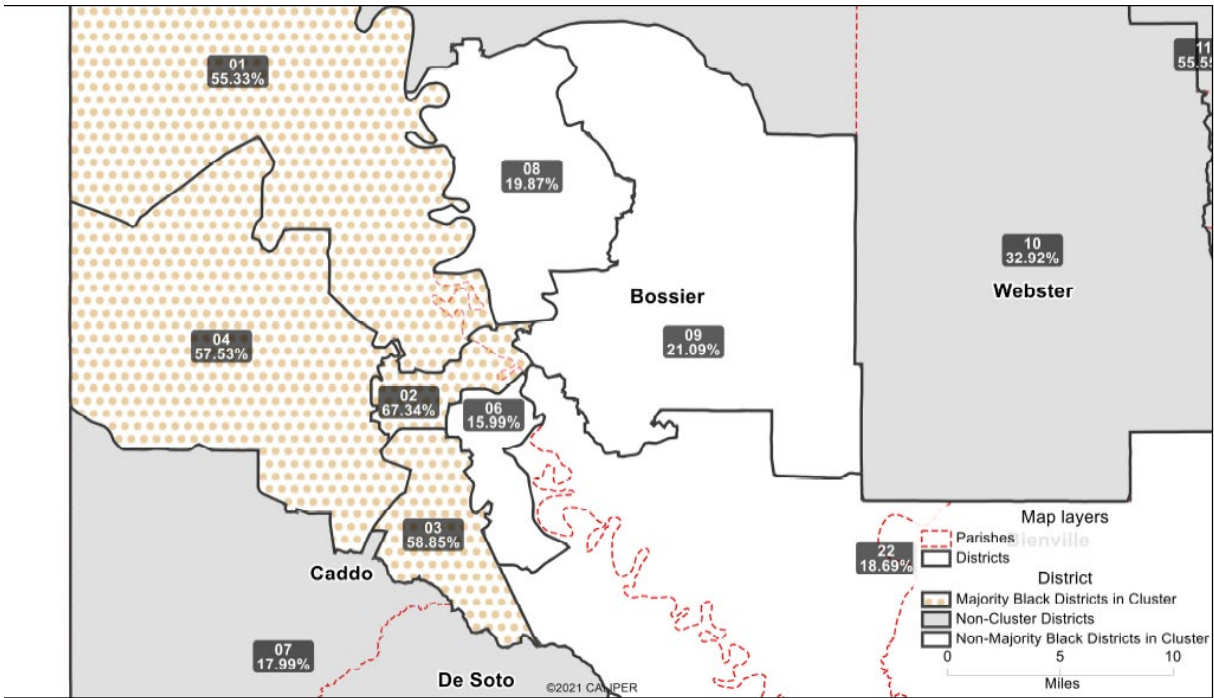
Enacted District Map

State House Cluster 3: Bossier and Caddo Parishes Voting is racially polarized in this cluster (area of interest 1). In all 16 of the statewide elections analyzed, Black and White voters supported different candidates. The Enacted State House Plan provides three effective majority BVAP district in this area (Districts 2, 3, and 4). The Illustrative Plan offers one additional majority BVAP district for a total of four BVAP districts (Districts 1, 2, 3, and 4). Illustrative Districts 2 and 4, like Enacted Districts 2, 3, and 4, score 100% on Scores #1 and #2. Illustrative District 1 and 3 score less than 100% but still offer Black voters an opportunity to elect their candidates of choice.

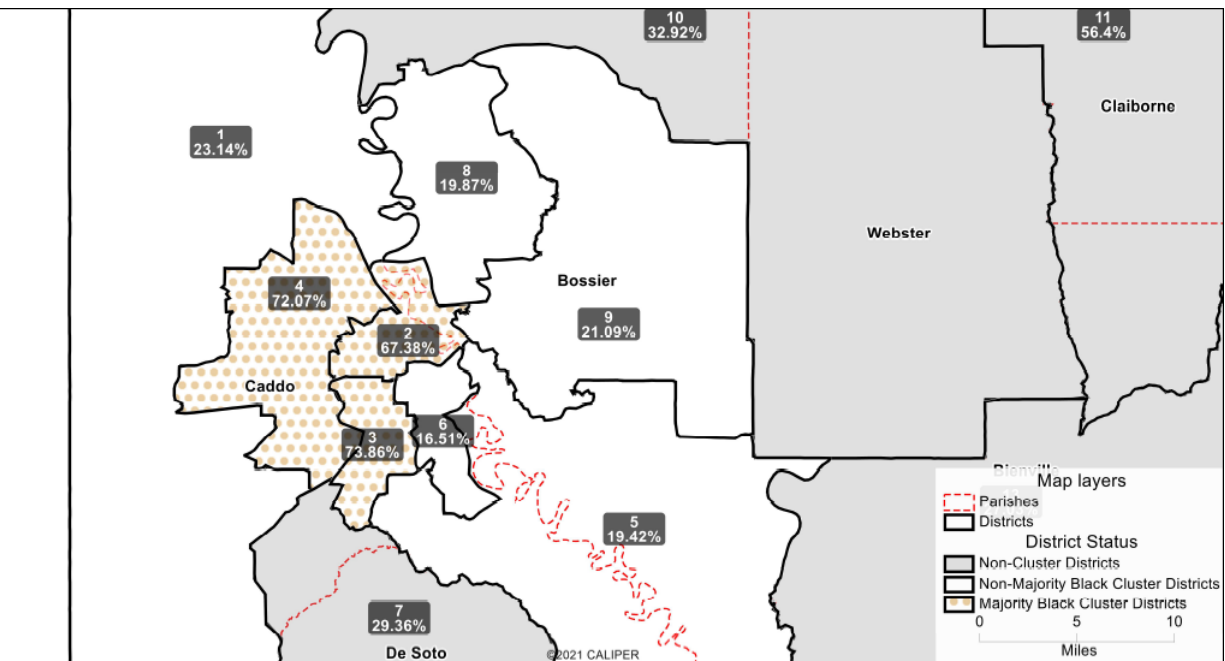
Comparison Table: State House Cluster 3

Illustrative District	Effectiveness Score #1	Effectiveness Score #2	Enacted District	Effectiveness Score #1	Effectiveness Score #2
1	81.3%	62.5%	1	6.3%	0.0%
2	100.0%	100.0%	2	100.0%	100.0%
3	87.5%	75.0%	3	100.0%	100.0%
4	100.0%	100.0%	4	100.0%	100.0%
6	6.3%	0.0%	5	0.0%	0.0%
8	0.0%	0.0%	6	6.3%	0.0%
9	0.0%	0.0%	8	0.0%	0.0%
22	0.0%	0.0%	9	0.0%	0.0%

State House Cluster 3



Illustrative District Map



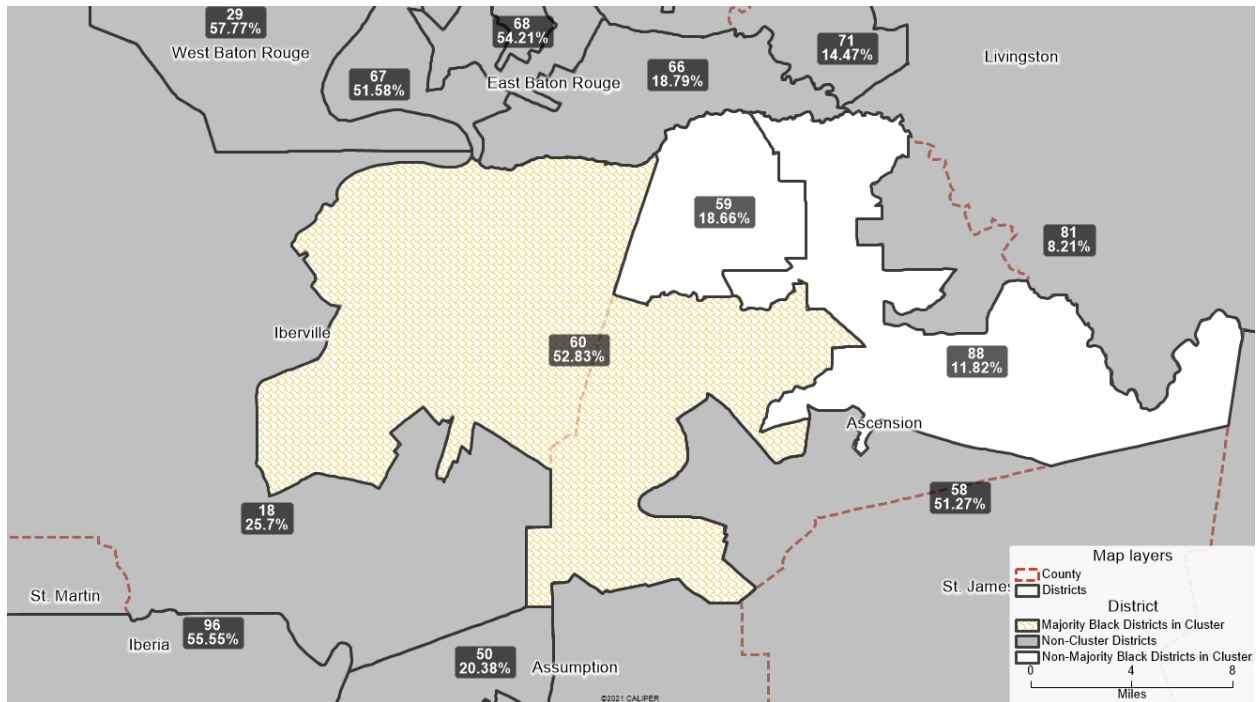
Enacted District Map

State House Cluster 4: Ascension and Iberville Parishes Voting is racially polarized in this cluster (area of interest 6). In all 16 statewide elections analyzed, Black and White voters supported different candidates. The Enacted State House Plan offers no majority BVAP districts in this area. The Illustrative Plan offers one majority BVAP district, District 60, which has effectiveness scores of 100%.

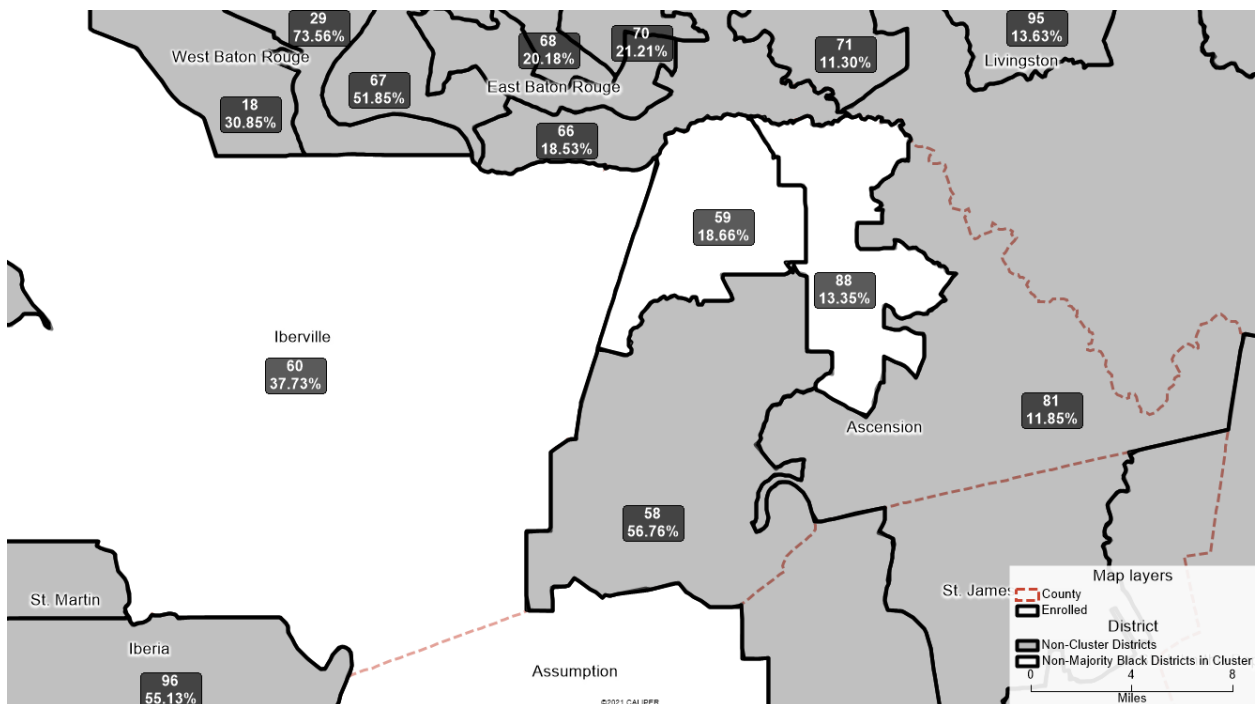
Comparison Table: State House Cluster 4

Illustrative District	Effectiveness Score #1	Effectiveness Score #2	Enacted District	Effectiveness Score #1	Effectiveness Score #2
59	0.0%	0.0%	59	6.3%	0.0%
60	100.0%	100.0%	60	43.8%	25.0%
88	6.3%	0.0%	88	6.3%	0.0%

State House Cluster 4



Illustrative District Map



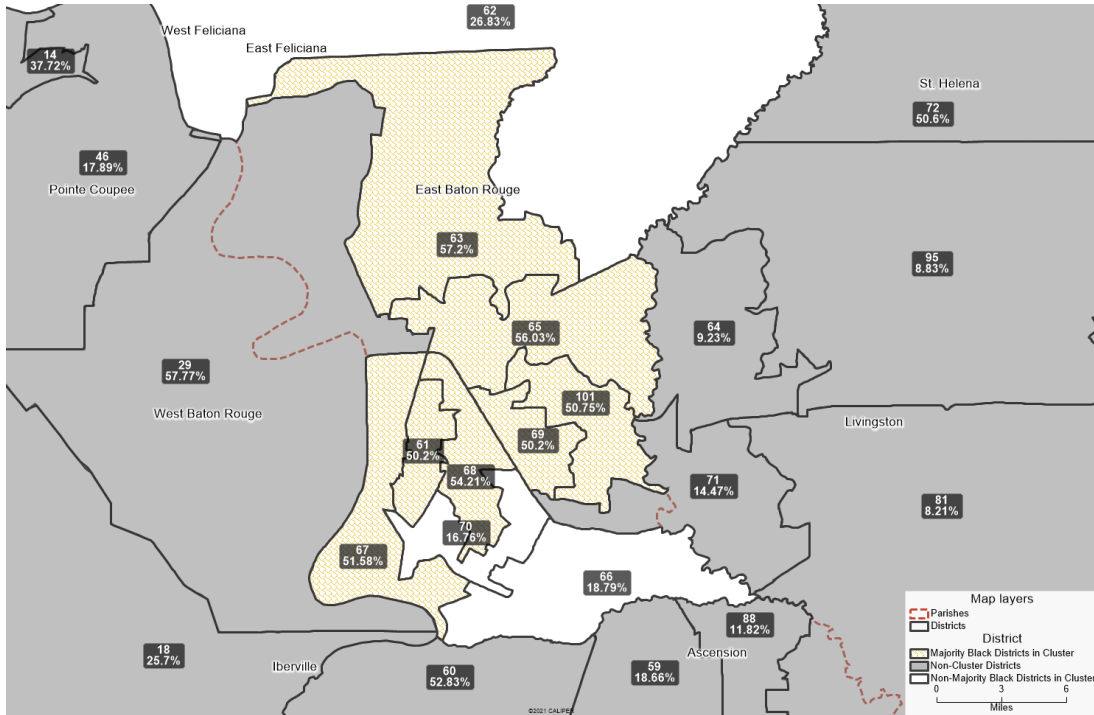
Enacted District Map

State House Cluster 5: East Baton Rouge and East Feliciana Parishes Voting is racially polarized in this cluster (area of interest 7). In 15 of the 16 statewide elections analyzed, Black and White voters supported different candidates. Only in the October 2015 primary election for Lieutenant Governor did a plurality, or close to a plurality of White voters, support Kip Holder, the Black-preferred candidate. However, in the runoff, White voters coalesced around the single White candidate running, while Black voter support for Holden remained extremely high. The Enacted State House Plan offers five majority BVAP districts in this area; the Illustrative Plan offers seven majority BVAP districts. All of the majority BVAP districts in both plans provide Black voters with an opportunity to elect their candidates of choice.

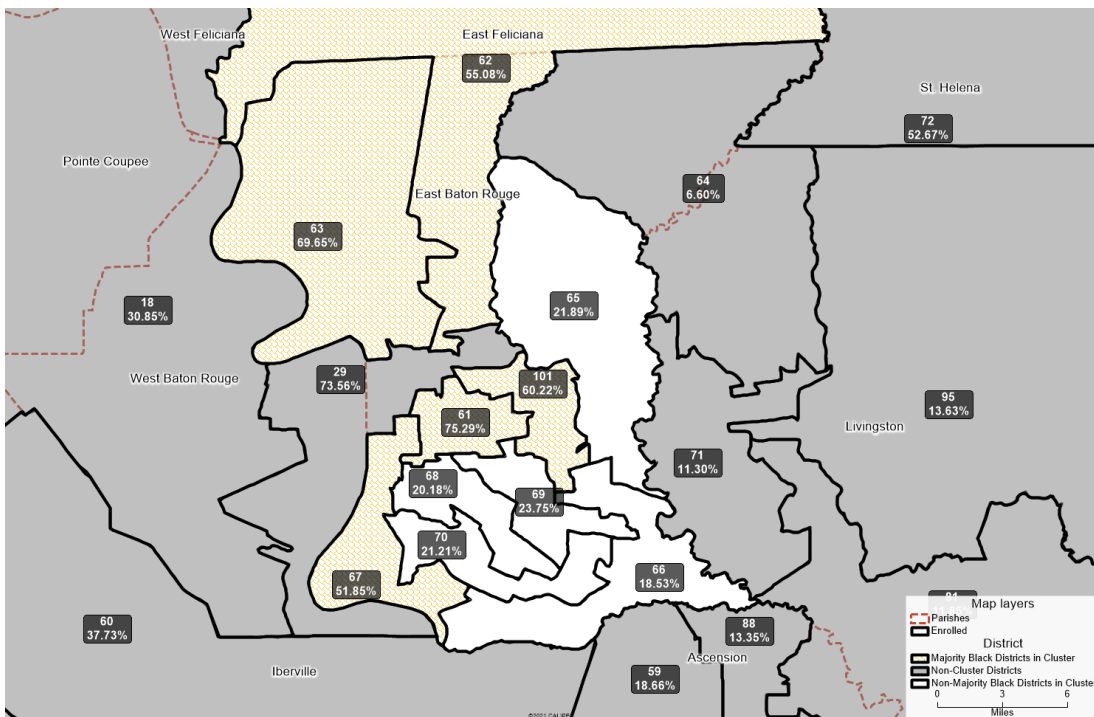
Comparison Table: State House Cluster 5

Illustrative District	Effectiveness Score #1	Effectiveness Score #2	Enacted District	Effectiveness Score #1	Effectiveness Score #2
61	100.0%	100.0%	61	100.0%	100.0%
62	31.3%	12.5%	62	93.8%	87.5%
63	93.8%	87.5%	63	100.0%	100.0%
65	93.8%	87.5%	65	6.3%	0.0%
66	6.3%	0.0%	66	6.3%	0.0%
67	100.0%	100.0%	67	100.0%	100.0%
68	93.8%	87.5%	68	18.8%	12.5%
69	75.0%	62.5%	69	6.3%	0.0%
70	12.5%	12.5%	70	18.8%	12.5%
101	100.0%	100.0%	101	100.0%	100.0%

State House Cluster 5



Illustrative District Map



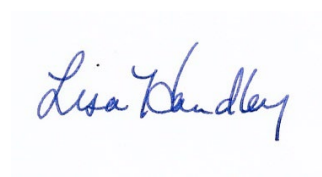
Enacted District Map

VII. Conclusion

My analysis of voting patterns by race found that the Black community in the seven areas of Louisiana that I examined is cohesive in supporting their preferred candidates and that White voters consistently bloc vote to defeat these candidates. Racially polarized voting substantially impedes the ability of Black voters to elect candidates of their choice to the Louisiana state legislature in these areas unless districts are drawn to provide Black voters with this opportunity. The Enacted State Senate and House Plans dilute the voting strength of Black voters in Louisiana by failing to create additional districts in these areas that offer Black voters an opportunity to elect their candidates of choice to the state legislature.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed June 30, 2022.

A handwritten signature in blue ink that reads "Lisa Handley". The signature is written in a cursive, flowing style.

Lisa Handley, Ph.D.

Appendix A1Area of Interest 1
Bossier, Caddo**Estimates for Black Voters****Estimates for White Voters**

Area of Interest 1 Bossier, Caddo			95% confidence interval					95% confidence interval						
	Party	Race	El Rx	C	interval	El 2x2	ER	HP	El Rx	C	interval	El 2x2	ER	HP
2022 November														
U.S. Senator														
John Kennedy	R	W	6.3		5.5, 7.1	4.5	4.0	8.9	86.4		85.8, 87.0	86.8	86.6	77.6
Gary Chambers, Jr	D	B	51.1		50.0, 52.3	52.0	51.8	47.6	5.0		4.3, 5.7	3.5	3.9	7.7
Luke Mixon	D	W	26.3		25.3, 27.3	26.7	26.6	27.2	7.0		6.4, 7.7	6.5	6.0	10.2
Others			16.3		15.4, 17.3	17.7	17.7	16.4	1.5		1.1, 2.0	3.1	3.5	4.5
2020 November														
U.S. President														
Biden/Harris	D	W/B	82.5		69.3, 91.4	97.5	100.4	94.8	22.6		17.2, 30.5	9.8	9.3	19.2
Trump/Pence	R	W/W	16.6		7.6, 29.6	2.2	-2.0	3.7	76.9		69.0, 82.4	88.2	88.9	78.9
Others			0.9		0.7, 11.9	1.5	1.5	1.5	0.5		0.4, 0.7	1.6	1.8	1.9
U.S. Senator														
Adrian Perkins	D	B	71.6		70.6, 72.5	73.0	72.6	68.8	6.7		5.9, 7.3	4.2	3.9	11.1
Derrick Edwards	D	B	16.1		15.3, 16.8	17.3	17.1	16.0	1.2		0.8, 1.6	1.2	1.3	2.8
Bill Cassidy	R	W	2.2		1.7, 2.7	2.5	-1.2	4.7	89.7		89.0, 90.3	89.6	90.1	80.6
Others			10.2		9.4, 11.0	11.3	11.5	10.5	2.4		1.9, 3.1	4.6	4.6	5.5
2019 October														
Lieutenant Governor														
Willie Jones	D	B	88.3		87.1, 89.4	90.1	89.7	85.5	5.9		5.2, 6.9	5.7	6.3	13.0
Billy Nungesser	R	W	11.7		10.6, 12.9	10.1	10.2	14.5	94.1		93.1, 94.8	94.3	93.8	87.0
Attorney General														
Ike Jackson	D	B	84.4		83.1, 85.6	86.3	85.6	81.8	7.1		6.2, 8.3	7.0	7.5	14.4
Jeff Landry	R	W	15.6		14.4, 16.9	13.7	14.4	18.2	92.9		91.7, 93.8	93.0	92.4	85.6
Secretary of State														
Gwen Collins-Greenup	D	B	93.6		92.6, 94.4	94.3	94.8	91.2	9.6		8.8, 10.4	6.8	6.8	14.4
Kyle Ardoin	R	W	1.5		1.1, 2.0	2.3	-0.8	2.8	55.8		55.1, 56.4	55.6	56.1	53.5
Thomas Kennedy III	R	W	3.7		2.9, 4.5	3.1	3.9	4.0	28.4		27.6, 29.1	29.3	29.1	25.3
Amanda Smith	R	W	1.2		0.9, 1.7	1.6	2.0	2.0	6.2		5.6, 6.8	8.1	8.1	6.9

Appendix A1**Area of Interest 1****Bossier, Caddo****Estimates for Black Voters****Estimates for White Voters**

	Party	Race	El Rx	95% confidence interval	El 2x2	ER	HP	El Rx	95% confidence interval	El 2x2	ER	HP
Treasurer												
Derrick Edwards	D	B	94.7	86.2, 95.9	94.9	95.6	92.5	9.2	8.3, 14.4	6.2	6.0	13.9
John Schroder	R	W	2.6	1.6, 11.1	1.6	0.8	4.1	88.9	84.0, 89.6	89.2	89.1	81.5
Teresa Kenny		W	2.7	2.2, 3.3	3.7	4.2	3.4	1.9	1.5, 2.5	4.7	5.0	4.6
2019 November												
Secretary of State												
Gwen Collins-Greenup	D	B	96.9	96.0, 97.8	97.4	98.8	94.5	10.1	8.8, 11.9	9.3	9.4	17.1
Kyle Ardoin	R	W	3.1	2.2, 4.0	2.6	1.2	5.5	89.9	88.1, 91.2	90.7	90.6	82.9
2018 November												
Secretary of State												
Gwen Collins-Greenup	D	B	55.8	54.9, 56.8	57.4	57.2	54.5	3.0	2.3, 3.8	1.7	2.0	5.9
Renee Fontenot Free	D	W	35.6	34.7, 36.5	36.6	36.3	34.3	8.6	7.9, 9.3	7.4	7.6	11.0
Julie Stokes	R	W	0.8	0.6, 1.0	0.7	0.6	1.0	6.7	6.2, 7.0	7.1	7.1	7.0
Kyle Ardoin	R	W	1.4	1.0, 1.8	1.1	0.5	2.2	25.3	24.7, 25.7	25.8	26.1	23.8
Rick Edmonds	R	W	0.9	0.6, 1.3	0.5	0.0	1.7	31.8	31.2, 32.3	32.2	31.1	28.4
Thomas Kennedy III	R	W	1.9	1.5, 2.3	1.8	1.6	2.3	14.0	13.4, 14.5	14.5	14.5	13.6
Others			3.6	3.0, 2.1	3.5	3.8	4.0	10.7	10.0, 11.3	11.2	11.5	10.3
2018 December												
Secretary of State												
Gwen Collins-Greenup	D	B	96.3	95.5, 97.1	96.4	98.5	93.3	13.9	12.8, 15.1	13.4	11.4	19.4
Kyle Ardoin	R	W	3.7	2.9, 4.5	3.6	1.5	6.7	86.1	84.9, 87.2	86.6	88.6	80.6
2017 October												
Treasurer												
Derrick Edwards	D	B	89.0	87.2, 90.5	89.2	90.1	86.2	7.8	7.0, 8.6	7.2	7.0	10.6
Angele Davis	R	W	4.2	3.1, 5.4	4.1	3.2	5.2	28.2	27.2, 29.0	28.4	28.5	27.2
Neil Riser	R	W	3.3	2.4, 4.4	3.8	3.5	4.6	26.6	25.8, 27.4	26.6	25.6	26.5
John Schroder	R	W	1.6	1.1, 2.3	1.4	1.0	2.3	31.8	31.0, 32.6	32.3	33.0	29.9
Others			1.9	1.3, 2.6	1.8	2.1	1.6	5.7	5.1, 6.2	6.2	5.9	5.7

Appendix A1**Area of Interest 1****Bossier, Caddo****Estimates for Black Voters****Estimates for White Voters**

	Party	Race	El Rx	95% confidence interval	El 2x2	ER	HP	El Rx	95% confidence interval	El 2x2	ER	HP
2017 November												
Treasurer												
Derrick Edwards	D	B	97.4	96.4, 98.3	95.5	101.4	97.1	10.8	9.8, 11.8	11.6	9.9	14.3
John Schroder	R	W	2.6	1.7, 3.6	4.5	-1.4	2.9	89.2	88.2, 90.2	88.5	90.1	85.7
2015 October												
Lieutenant Governor												
Kip Holden	D	B	80.9	79.8, 81.9	81.6	81.5	77.5	10.0	9.3, 10.8	8.0	8.8	13.5
Billy Nungesser	R	W	2.5	1.9, 3.2	2.2	1.7	3.5	36.9	36.2, 37.6	37.5	37.1	36.2
John Young	R	W	14.7	13.7, 15.6	14.5	14.4	16.3	42.9	42.2, 43.6	42.7	42.7	40.3
Elbert Guillory	R	B	1.9	1.4, 2.5	2.1	2.4	2.7	10.1	0.9, 10.8	11.3	11.5	9.9
Attorney General												
Ike Jackson	D	B	31.4	30.4, 32.3	31.7	32.1	30.1	1.5	1.0, 2.2	1.5	1.7	3.3
Geri Broussard Baloney	D	B	44.8	39.9, 46.2	46.7	45.7	44.0	5.1	4.4, 6.9	4.1	4.3	7.3
Buddy Caldwell	R	W	21.2	20.1, 23.6	20.5	20.6	22.1	45.7	44.5, 46.5	45.5	45.7	44.2
Jeff Landry	R	W	1.9	1.4, 4.5	1.4	1.1	3.1	45.6	44.7, 46.3	46.1	45.4	42.6
Marty Maley	R	W	0.6	0.4, 0.8	0.5	0.5	0.7	2.1	1.7, 2.9	2.8	2.9	2.6
Secretary of State												
Chris Tyson	D	B	88.6	87.4, 89.8	89.6	89.5	85.3	11.9	11.1, 12.8	11.4	12.1	16.4
Tom Schedler	R	W	11.4	10.2, 12.7	10.3	10.4	14.7	88.1	87.3, 88.9	88.6	87.8	83.6
2015 November												
Lieutenant Governor												
Kip Holden	D	B	98.1	97.4, 98.6	98.6	99.7	95.4	15.6	14.6, 16.7	14.0	14.8	21.7
Billy Nungesser	R	W	1.9	1.4, 2.6	1.2	0.4	4.6	84.4	83.3, 85.4	86.0	85.2	78.3

Appendix A2 Area of Interest 2 Jefferson, St Charles			Estimates for Black Voters					Estimates for White Voters				
			Party	Race	El RxC	95% confidence interval	El 2x2	ER	HP	El RxC	95% confidence interval	El 2x2
2022 November												
U.S. Senator												
John Kennedy	R	W	4.0	2.8, 5.2	1.4	0.3	3.9	78.9	77.9, 79.7	80.8	79.6	74.4
Gary Chambers, Jr	D	B	50.6	49.2, 52.1	52.8	51.9	48.0	4.9	4.2, 5.7	3.8	3.8	6.6
Luke Mixon	D	W	22.1	20.7, 23.4	21.5	21.4	21.0	12.9	12.1, 13.6	12.6	13.1	13.8
Others			23.3	22.1, 24.6	25.4	26.4	27.2	3.4	2.8, 4.0	3.7	3.5	5.1
2020 November												
U.S. President												
Biden/Harris	D	W/B	89.5	70.6, 95.6	98.7	101.1	96.1	22.0	19.1, 31.9	15.4	16.3	21.5
Trump/Pence	R	W/W	9.4	3.5, 27.4	1.1	-2.1	2.7	77.2	67.1, 80.0	82.7	81.7	76.6
Others			1.1	0.8, 1.9	1.1	1.1	1.2	0.8	0.7, 1.1	2.0	2.0	1.9
U.S. Senator												
Adrian Perkins	D	B	50.4	49.0, 51.8	50.3	51.8	57.4	9.8	9.0, 10.5	7.4	6.1	10.9
Derrick Edwards	D	B	32.6	31.2, 34.0	37.0	34.9	27.8	2.7	2.1, 3.6	2.7	3.3	4.2
Bill Cassidy	R	W	3.1	2.0, 4.3	1.2	-2.5	3.4	83.4	82.5, 84.2	85.5	84.7	80.1
Others			13.9	12.8, 15.1	16.2	15.8	11.3	4.1	3.4, 4.7	5.3	6.0	4.9
2019 October												
Lieutenant Governor												
Willie Jones	D	B	87.0	85.3, 88.6	90.3	90.7	86.9	8.5	7.5, 9.6	7.4	7.4	13.0
Billy Nungesser	R	W	13.0	11.4, 14.7	9.6	9.2	13.1	91.5	90.4, 92.5	92.6	92.7	87.0
Attorney General												
Ike Jackson	D	B	91.3	89.8, 92.7	94.6	94.9	91.6	12.0	11.2, 13.0	11.0	11.7	17.0
Jeff Landry	R	W	8.7	7.3, 10.2	5.4	5.1	8.4	88.0	87.0, 88.8	89.0	88.3	83.0
Secretary of State												
Gwen Collins-Greenup	D	B	92.2	91.0, 93.2	95.2	95.7	91.5	12.4	11.6, 13.2	9.8	10.3	15.4
Kyle Ardoin	R	W	2.5	1.8, 3.2	1.3	-1.4	3.2	51.4	50.7, 52.0	51.9	51.6	50.0
Thomas Kennedy III	R	W	3.0	2.2, 4.0	2.5	2.9	3.1	28.9	28.1, 29.7	30.3	30.1	27.3
Amanda Smith	R	W	2.4	1.7, 3.1	2.7	2.7	2.2	7.3	6.8, 7.8	7.9	8.0	7.2

Appendix A2 Area of Interest 2 Jefferson, St Charles			Estimates for Black Voters					Estimates for White Voters				
			Party	Race	El RxC	95% confidence interval	El 2x2	ER	HP	El RxC	95% confidence interval	El 2x2
Treasurer												
Derrick Edwards	D	B	94.7	93.6, 95.7	97.0	98.2	93.7	12.6	11.7, 13.8	10.3	10.8	15.8
John Schroder	R	W	1.8	1.1, 2.5	1.3	-2.7	2.7	82.2	81.2, 83.1	83.6	82.8	78.7
Teresa Kenny		W	3.6	2.7, 4.5	4.1	4.5	3.7	5.1	4.4, 5.8	6.2	6.4	5.5
2019 November												
Secretary of State												
Gwen Collins-Greenup	D	B	95.9	94.5, 97.1	98.3	99.6	95.3	18.2	17.0, 19.5	16.6	17.4	21.7
Kyle Ardoin	R	W	4.1	2.9, 5.5	1.8	0.4	4.7	81.8	80.5, 83.0	83.4	82.6	78.3
2018 November												
Secretary of State												
Gwen Collins-Greenup	D	B	62.3	61.3, 63.4	65.8	65.3	61.4	4.9	4.4, 5.5	3.1	2.9	6.5
Renee Fontenot Free	D	W	25.0	23.9, 26.1	27.1	26.8	22.0	8.2	7.6, 8.9	8.3	8.5	8.9
Julie Stokes	R	W	3.7	3.2, 4.3	3.2	-0.6	8.5	35.9	35.3, 36.5	36.4	36.8	37.3
Kyle Ardoin	R	W	2.7	2.1, 3.3	1.7	2.8	2.2	17.0	16.5, 17.4	17.5	16.9	15.0
Rick Edmonds	R	W	1.3	1.0, 1.7	1.0	0.6	1.5	8.7	8.3, 9.1	9.2	9.0	9.0
Thomas Kennedy III	R	W	1.5	1.0, 2.1	1.3	2.0	1.5	11.3	10.8, 11.7	12.1	11.9	10.4
Others			3.4	2.8, 4.1	2.7	3.2	3.0	14.0	13.5, 14.4	14.3	14.2	12.8
2018 December												
Secretary of State												
Gwen Collins-Greenup	D	B	97.3	96.5, 98.0	98.4	102.7	95.2	16.0	15.2, 16.9	15.7	15.7	18.7
Kyle Ardoin	R	W	2.7	2.0, 3.5	1.6	-2.8	4.8	84.0	83.2, 84.8	84.3	84.3	81.3
2017 October												
Treasurer												
Derrick Edwards	D	B	90.0	87.2, 91.9	92.7	92.2	85.0	11.1	10.4, 11.9	8.3	9.3	12.8
Angele Davis	R	W	4.2	3.0, 5.6	5.3	4.8	7.6	19.7	18.8, 20.4	20.1	20.1	19.3
Neil Riser	R	W	1.5	1.0, 2.2	0.8	-0.4	1.2	13.6	13.0, 14.1	14.0	14.3	14.4
John Schroder	R	W	2.7	1.8, 3.8	3.6	1.0	4.5	50.7	49.9, 51.5	50.9	50.0	48.0
Others			1.7	1.1, 2.5	1.7	2.4	1.6	4.9	4.3, 5.5	6.3	6.2	5.5

Appendix A2 Area of Interest 2 Jefferson, St Charles		Estimates for Black Voters							Estimates for White Voters				
		Party	Race	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 2x2	ER	HP
2017 November													
Treasurer													
Derrick Edwards	D	B	97.2	96.1, 98.1	98.3	102.8	96.5	17.3	16.3, 18.3	15.9	16.1	20.0	
John Schroder	R	W	2.8	1.9, 3.9	1.7	-2.9	3.5	82.8	81.7, 83.7	84.1	83.9	80.0	
2015 October													
Lieutenant Governor													
Kip Holden	D	B	77.0	75.4, 78.3	78.5	78.9	76.2	5.4	4.7, 6.3	3.6	3.0	7.6	
Billy Nungesser	R	W	7.4	6.0, 8.9	4.8	8.7	5.0	39.0	38.0, 39.8	40.3	38.7	33.9	
John Young	R	W	14.1	12.7, 15.4	11.8	10.4	17.4	53.0	52.1, 54.0	54.3	54.6	54.9	
Elbert Guillory	R	B	1.6	1.2, 2.1	2.1	2.1	1.5	2.6	2.3, 3.0	3.7	3.6	3.6	
Attorney General													
Ike Jackson	D	B	27.3	26.3, 28.5	28.6	27.3	22.0	1.4	0.9, 1.8	1.3	1.5	2.7	
Geri Broussard Baloney	D	B	61.3	56.0, 62.9	63.1	64.0	66.2	5.8	5.0, 6.4	3.9	3.6	7.1	
Buddy Caldwell	R	W	7.5	6.2, 10.4	6.8	7.0	7.0	45.6	44.8, 46.3	46.9	46.9	44.2	
Jeff Landry	R	W	3.0	2.2, 4.2	1.6	0.8	3.5	43.8	43.1, 44.4	44.7	44.0	42.1	
Marty Maley	R	W	0.8	0.6, 1.1	0.9	0.9	1.0	3.4	3.0, 3.8	4.1	4.0	3.9	
Secretary of State													
Chris Tyson	D	B	96.9	95.9, 97.8	98.0	100.5	94.6	13.2	12.2, 14.2	11.5	11.9	16.0	
Tom Schedler	R	W	3.1	2.2, 4.1	2.4	-0.4	5.4	86.8	85.8, 87.8	88.6	88.1	84.0	
2015 November													
Lieutenant Governor													
Kip Holden	D	B	94.0	92.3, 95.8	95.6	95.5	93.6	14.7	13.6, 16.0	12.3	12.4	17.9	
Billy Nungesser	R	W	6.0	4.2, 7.8	4.5	4.5	6.4	85.3	84.0, 86.4	87.8	87.6	82.1	

Appendix A3			Estimates for Black Voters						Estimates for White Voters				
Area of Interest 3													
East Baton Rouge, West Baton Rouge, Iberville, Pointe Coupee													
Party	Race	El RxC	95% confidence interval	El 2x2	ER	HP	El RxC	95% confidence interval	El 2x2	ER	HP		
2022 November													
U.S. Senator													
John Kennedy	R	W	4.2	3.6, 4.7	2.6	2.4	5.2	79.4	78.9, 79.9	79.6	79.2	74.3	
Gary Chambers, Jr	D	B	65.0	64.1, 65.9	66.1	66.5	61.7	5.6	4.9, 6.4	3.9	4.4	6.8	
Luke Mixon	D	W	22.2	21.4, 23.0	22.4	21.6	24.5	13.1	12.4, 13.7	12.7	12.2	15.0	
Others			8.6	8.1, 9.2	9.3	9.5	8.6	1.9	1.5, 2.4	3.9	4.3	3.9	
2020 November													
U.S. President													
Biden/Harris	D	W/B	88.8	76.9, 94.1	97.3	98.6	94.2	24.8	19.7, 33.6	14.5	13.8	18.7	
Trump/Pence	R	W/W	10.2	5.0, 22.0	1.4	-0.2	4.3	74.5	65.6, 79.6	83.1	84.2	79.5	
Others			1.0	0.8, 1.2	1.3	1.6	1.5	0.6	0.5, 0.8	2.3	2.0	1.8	
U.S. Senator													
Adrian Perkins	D	B	49.1	48.3, 49.9	50.4	49.8	48.7	9.3	8.6, 10.8	8.2	7.5	10.9	
Derrick Edwards	D	B	29.7	29.1, 30.4	30.5	30.8	28.3	2.0	1.6, 2.5	1.4	1.5	2.9	
Bill Cassidy	R	W	5.8	5.4, 6.4	3.9	2.9	7.0	86.2	85.1, 86.7	86.6	86.9	81.7	
Others			15.3	14.7, 15.9	16.2	16.5	16.0	2.5	2.0, 3.1	3.7	4.0	4.5	
2019 October													
Lieutenant Governor													
Willie Jones	D	B	83.2	82.3, 84.0	84.9	85.6	81.3	10.5	9.7, 11.3	10.2	10.8	16.2	
Billy Nungesser	R	W	16.8	16.0, 17.7	15.1	14.5	18.7	89.6	88.7, 90.3	89.8	89.3	83.8	
Attorney General													
Ike Jackson	D	B	89.4	88.6, 90.2	91.0	91.7	87.7	13.4	12.8, 14.3	12.9	13.1	19.2	
Jeff Landry	R	W	10.6	9.8, 11.4	8.9	8.3	12.3	86.6	85.7, 87.2	87.0	86.9	80.8	
Secretary of State													
Gwen Collins-Greenup	D	B	90.1	88.4, 90.9	91.5	91.8	88.3	13.1	12.3, 14.9	11.2	11.2	16.9	
Kyle Ardoin	R	W	4.7	4.1, 6.1	3.4	2.6	6.2	69.0	68.1, 69.6	69.4	69.4	65.5	
Thomas Kennedy III	R	W	3.5	3.0, 4.0	3.0	3.4	3.3	14.1	13.5, 14.5	14.4	14.4	12.9	
Amanda Smith	R	W	1.7	1.4, 2.1	2.1	2.2	2.2	3.8	3.2, 4.4	5.3	5.0	4.7	

Appendix A3			Estimates for Black Voters					Estimates for White Voters						
Area of Interest 3														
East Baton Rouge, West Baton Rouge, Iberville, Pointe Coupee														
Party	Race	El Rx	C	95% confidence interval	El 2x2	ER	HP	El Rx	C	95% confidence interval	El 2x2	ER	HP	
Treasurer														
Derrick Edwards	D	B		93.7	90.7, 94.5	94.1	94.8	91.7		14.2	13.4, 16.4	10.4	11.0	17.3
John Schroder	R	W		3.6	2.8, 6.7	2.0	0.9	4.4		83.1	81.1, 83.8	84.0	83.2	77.3
Teresa Kenny		W		2.7	2.3, 3.1	3.9	4.2	3.8		2.7	2.3, 3.1	5.8	5.8	5.4
2019 November														
Secretary of State														
Gwen Collins-Greenup	D	B		95.5	94.8, 96.1	96.6	97.8	94.5		16.3	15.6, 17.1	15.8	15.0	23.2
Kyle Ardoin	R	W		4.5	3.9, 5.2	3.4	2.2	5.5		83.7	82.9, 84.4	84.3	85.1	76.8
2018 November														
Secretary of State														
Gwen Collins-Greenup	D	B		59.1	58.3, 59.9	61.2	60.2	56.9		3.5	2.7, 4.3	2.6	2.9	5.7
Renee Fontenot Free	D	W		29.7	29.0, 30.4	30.2	30.6	30.7		13.4	12.6, 13.9	11.9	13.5	13.2
Julie Stokes	R	W		1.4	1.1, 1.7	1.2	1.1	1.6		14.6	14.0, 15.0	14.9	14.1	13.6
Kyle Ardoin	R	W		3.5	3.1, 3.9	2.9	2.9	4.1		31.7	31.3, 32.2	32.1	33.6	31.3
Rick Edmonds	R	W		1.7	1.4, 2.0	1.4	0.4	2.1		23.3	22.8, 23.7	23.8	21.8	22.3
Thomas Kennedy III	R	W		1.5	1.2, 1.8	1.2	1.5	1.3		6.1	5.8, 6.4	6.5	6.8	6.4
Others				3.1	2.7, 3.5	3.2	3.5	3.2		7.4	6.8, 8.0	7.8	7.3	7.6
2018 December														
Secretary of State														
Gwen Collins-Greenup	D	B		96.2	95.4, 96.8	96.7	98.1	94.3		18.5	17.7, 19.3	17.7	17.3	23.3
Kyle Ardoin	R	W		3.8	3.2, 4.6	3.3	1.9	5.7		81.5	80.7, 82.3	82.3	82.8	76.7
2017 October														
Treasurer														
Derrick Edwards	D	B		86.1	84.7, 87.4	87.4	89.7	85.6		11.0	10.4, 11.9	9.6	9.7	14.7
Angele Davis	R	W		5.8	4.6, 6.8	4.9	4.2	6.6		44.5	43.7, 45.2	44.9	42.4	43.5
Neil Riser	R	W		3.1	2.3, 3.9	2.1	2.5	3.4		14.7	14.1, 15.2	15.5	13.8	14.4
John Schroder	R	W		2.7	2.0, 3.5	2.5	1.3	2.2		24.9	24.3, 25.4	25.0	28.5	22.6
Others				2.4	1.9, 3.0	1.5	2.4	2.2		4.8	4.3, 5.3	5.1	5.5	4.8

Appendix A3			Estimates for Black Voters					Estimates for White Voters						
Area of Interest 3														
East Baton Rouge, West Baton Rouge, Iberville, Pointe Coupee														
Party	Race	El Rx	C	95% confidence interval	El 2x2	ER	HP	El Rx	C	95% confidence interval	El 2x2	ER	HP	
2017 November														
Treasurer														
Derrick Edwards	D	B		97.7	96.9, 98.4	97.7	100.5	96.2		18.4	17.6, 19.2	18.1	16.4	22.9
John Schroder	R	W		2.3	1.7, 3.1	2.2	-0.5	3.8		81.6	80.8, 82.4	81.9	83.7	77.1
2015 October														
Lieutenant Governor														
Kip Holden	D	B		93.9	93.2, 94.4	94.5	95.0	92.3		31.4	30.8, 32.2	29.3	29.9	35.1
Billy Nungesser	R	W		2.0	1.6, 2.4	1.6	1.6	2.6		31.0	30.5, 31.5	31.7	31.8	28.1
John Young	R	W		2.0	1.6, 2.4	1.6	1.0	2.5		30.5	29.9, 31.0	31.1	30.4	29.0
Elbert Guillory	R	B		2.1	1.8, 2.5	2.3	2.4	2.5		7.1	6.6, 7.6	8.1	7.8	7.8
Attorney General														
Ike Jackson	D	B		39.5	38.8, 40.2	40.5	41.0	36.8		2.4	1.9, 2.9	1.5	2.3	4.0
Geri Broussard Baloney	D	B		35.2	34.5, 36.0	35.8	34.7	34.5		6.1	5.3, 7.0	6.0	6.5	8.1
Buddy Caldwell	R	W		20.0	19.3, 20.9	19.4	19.3	22.8		54.4	53.7, 55.1	54.6	53.7	53.2
Jeff Landry	R	W		2.5	2.1, 3.0	2.2	2.3	3.0		30.7	30.0, 31.3	31.3	30.3	28.3
Marty Maley	R	W		2.7	2.3, 3.1	2.8	2.8	2.9		6.3	5.9, 6.8	6.7	7.2	6.5
Secretary of State														
Chris Tyson	D	B		93.2	92.3, 93.9	94.4	94.3	92.2		14.0	13.2, 14.9	13.1	15.9	20.0
Tom Schedler	R	W		6.9	6.1, 7.6	5.6	5.7	7.8		86.0	85.1, 86.8	86.9	84.1	80.0
2015 November														
Lieutenant Governor														
Kip Holden	D	B		96.3	95.5, 97.1	96.5	97.1	94.6		40.5	39.4, 41.8	38.3	40.3	45.6
Billy Nungesser	R	W		3.7	2.9, 4.5	3.5	2.9	5.4		59.5	58.2, 60.6	61.7	59.7	54.4

Appendix A4 Area of Interest 4 De Soto, Natchitoches, Red River			Estimates for Black Voters						Estimates for White Voters					
			Party	Race	95% confidence interval		EI 2x2	ER	HP	95% confidence interval		EI 2x2	ER	HP
					EI	RxC				EI	RxC			
2022 November														
U.S. Senator														
John Kennedy	R	W	4.1	2.8, 5.9	6.1	0.2	8.1	91.4	90.4, 92.3	90.8	94.2	89.1		
Gary Chambers, Jr	D	B	43.8	41.2, 46.2	43.2	46.8	40.5	3.2	2.2, 4.2	3.7	1.4	3.7		
Luke Mixon	D	W	29.1	26.7, 31.5	32.4	27.6	33.9	3.4	2.5, 4.5	3.0	3.0	3.8		
Others			23.0	21.1, 24.8	22.6	25.5	17.5	2.0	1.3, 2.7	1.9	1.5	3.4		
2020 November														
U.S. President														
Biden/Harris	D	W/B	87.7	73.4, 93.0	95.0	102.4	92.2	15.4	11.2, 24.9	8.9	5.6	9.1		
Trump/Pence	R	W/W	10.6	5.4, 24.9	1.8	-4.9	5.5	83.7	74.3, 88.0	90.1	93.5	90.0		
Others			1.7	1.2, 2.4	2.2	2.4	2.3	0.8	0.1, 1.2	1.0	1.0	0.9		
U.S. Senator														
Adrian Perkins	D	B	66.3	64.0, 68.4	68.9	69.9	60.1	4.0	2.7, 5.3	3.2	2.9	4.5		
Derrick Edwards	D	B	15.5	13.7, 17.2	18.6	16.1	15.8	1.9	1.1, 2.8	0.7	1.6	1.9		
Bill Cassidy	R	W	3.3	2.1, 4.6	3.2	-2.7	7.5	90.1	89.1, 91.1	90.2	91.7	88.9		
Others			15.0	13.2, 16.9	17.1	16.8	16.6	4.0	2.9, 5.2	3.6	3.7	4.7		
2019 October														
Lieutenant Governor														
Willie Jones	D	B	95.9	94.1, 97.2	95.0	100.4	90.6	7.6	6.3, 9.0	7.7	7.0	9.6		
Billy Nungesser	R	W	4.1	2.8, 5.9	5.0	-0.5	9.4	92.4	91.0, 93.7	92.3	93.1	90.4		
Attorney General														
Ike Jackson	D	B	91.0	88.7, 93.1	90.8	93.4	85.3	7.4	6.0, 9.0	7.4	7.2	8.8		
Jeff Landry	R	W	9.0	6.9, 11.3	9.1	6.6	14.7	92.6	91.0, 94.0	92.6	92.8	91.2		
Secretary of State														
Gwen Collins-Greenup	D	B	91.5	89.6, 93.1	91.7	94.9	85.8	8.1	6.8, 9.6	7.3	7.0	8.8		
Kyle Ardoin	R	W	1.9	1.0, 3.0	1.4	-0.6	3.9	52.0	50.7, 53.1	52.8	50.3	50.9		
Thomas Kennedy III	R	W	4.3	3.1, 6.2	4.4	3.5	6.4	31.9	30.6, 33.2	32.6	33.7	31.5		
Amanda Smith	R	W	2.3	1.6, 3.3	2.3	2.0	3.9	8.0	7.1, 8.8	8.6	8.9	8.8		

Appendix A4 Area of Interest 4 De Soto, Natchitoches, Red River			Estimates for Black Voters					Estimates for White Voters				
Party	Race	El Rx	95% confidence interval	El 2x2	ER	HP	El Rx	95% confidence interval	El 2x2	ER	HP	
Treasurer												
Derrick Edwards	D	B	93.6	91.5, 95.3	94.1	98.3	89.8	9.9	8.5, 11.6	7.8	7.6	10.0
John Schroder	R	W	2.1	1.1, 3.4	2.0	-3.7	5.7	87.0	85.6, 88.2	87.7	87.9	85.9
Teresa Kenny		W	4.3	3.1, 5.8	5.1	5.5	4.5	3.1	2.2, 4.1	4.2	4.4	4.1
2019 November												
Secretary of State												
Gwen Collins-Greenup	D	B	96.7	95.2, 97.8	95.5	103.8	92.6	11.7	10.3, 13.2	11.3	7.8	12.0
Kyle Ardoin	R	W	3.3	2.2, 4.8	4.6	-3.9	7.4	88.3	86.8, 89.7	88.6	92.1	88.0
2018 November												
Secretary of State												
Gwen Collins-Greenup	D	B	52.2	50.0, 54.4	55.3	52.3	43.7	4.6	3.4, 5.8	2.3	3.8	4.3
Renee Fontenot Free	D	W	34.0	31.8, 36.1	37.7	37.3	32.6	5.4	4.1, 6.6	3.7	4.6	5.4
Julie Stokes	R	W	4.2	3.2, 5.4	5.6	5.0	8.6	7.3	6.5, 8.1	6.8	6.4	6.8
Kyle Ardoin	R	W	3.0	2.1, 4.1	3.1	1.5	5.0	29.1	28.1, 30.1	29.1	30.7	28.9
Rick Edmonds	R	W	1.4	0.9, 2.0	0.8	-1.5	2.6	23.8	23.1, 24.6	24.8	23.8	26.6
Thomas Kennedy III	R	W	2.3	1.5, 3.2	2.4	2.2	3.7	17.7	16.8, 18.4	17.7	18.0	16.3
Others			2.9	1.9, 3.9	3.2	3.7	3.7	12.1	11.3, 13.0	12.4	12.8	11.9
2018 December												
Secretary of State												
Gwen Collins-Greenup	D	B	96.0	93.8, 97.6	93.8	102.9	91.8	11.0	9.4, 12.7	12.4	9.2	10.4
Kyle Ardoin	R	W	4.1	2.4, 6.2	6.1	-2.9	8.2	89.0	87.3, 90.6	87.7	90.8	89.6
2017 October												
Treasurer												
Derrick Edwards	D	B	89.6	86.4, 92.1	89.7	98.0	88.7	9.0	7.4, 10.7	9.8	5.4	8.8
Angele Davis	R	W	3.1	1.8, 4.9	1.7	-0.3	3.7	29.2	27.7, 30.7	30.0	30.7	28.1
Neil Riser	R	W	2.9	1.7, 4.6	1.2	0.8	3.3	23.6	22.1, 25.0	24.5	24.8	22.2
John Schroder	R	W	2.3	1.3, 3.7	1.6	1.4	2.0	32.7	31.1, 34.2	33.4	32.8	34.1
Others			2.1	1.2, 3.1	0.5	0.2	2.2	5.6	4.7, 6.4	6.3	6.4	6.8

Appendix A4 Area of Interest 4 De Soto, Natchitoches, Red River			Estimates for Black Voters					Estimates for White Voters				
Party	Race	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 2x2	ER	HP	
2017 November												
Treasurer												
Derrick Edwards	D	B	96.2	93.8, 98.0	91.1	105.9	95.9	13.7	11.7, 15.7	16.5	10.4	12.7
John Schroder	R	W	3.8	2.0, 6.2	8.7	-6.1	4.1	86.3	84.3, 88.3	83.4	89.6	87.3
2015 October												
Lieutenant Governor												
Kip Holden	D	B	90.7	88.9, 92.4	92.7	93.1	89.1	10.6	9.3, 11.9	8.2	10.6	13.9
Billy Nungesser	R	W	2.6	1.7, 3.9	2.4	1.9	3.9	33.2	32.0, 34.3	34.1	33.6	32.0
John Young	R	W	4.2	2.9, 5.7	3.1	3.2	4.4	43.3	42.0, 44.5	44.5	42.4	42.1
Elbert Guillory	R	B	2.5	1.6, 3.5	3.7	2.0	2.5	12.9	12.0, 13.8	13.6	13.3	12.0
Attorney General												
Ike Jackson	D	B	32.3	30.6, 34.0	33.1	32.3	28.0	1.9	1.2, 2.9	1.0	1.9	3.2
Geri Broussard Baloney	D	B	36.7	33.5, 39.0	37.8	36.7	31.0	5.0	3.8, 6.7	4.8	6.1	6.5
Buddy Caldwell	R	W	25.6	23.0, 28.2	26.7	27.8	33.5	45.7	44.1, 47.2	45.2	44.1	44.9
Jeff Landry	R	W	2.5	1.4, 4.2	1.7	1.2	3.5	35.1	33.7, 36.2	36.3	35.5	32.8
Marty Maley	R	W	3.0	2.0, 4.1	2.4	2.0	3.9	12.3	11.4, 13.2	12.8	12.4	12.6
Secretary of State												
Chris Tyson	D	B	91.5	89.0, 93.6	92.5	92.5	91.0	14.1	12.5, 15.9	13.1	16.0	18.9
Tom Schedler	R	W	8.5	6.4, 11.0	7.6	7.6	9.0	85.9	84.1, 87.5	87.0	84.1	81.1
2015 November												
Lieutenant Governor												
Kip Holden	D	B	97.2	95.5, 98.4	98.1	98.1	94.7	19.7	18.1, 21.4	17.8	17.7	21.1
Billy Nungesser	R	W	2.8	1.6, 4.5	2.0	2.0	5.3	80.3	78.6, 81.9	82.2	82.3	78.9

Appendix A5 Area of Interest 5 Calcasieu			Estimates for Black Voters					Estimates for White Voters				
			Party	Race	El Rx	95% confidence interval	El 2x2	ER	HP	El Rx	95% confidence interval	El 2x2
2022 November												
U.S. Senator												
John Kennedy	R	W	4.4	3.2, 5.7	2.5	-0.3	7.8	86.4	85.8, 86.9	86.8	86.2	82.4
Gary Chambers, Jr	D	B	56.4	54.5, 58.2	59.3	59.3	54.4	2.5	1.8, 3.3	1.7	2.0	5.2
Luke Mixon	D	W	22.2	20.5, 23.9	22.6	22.7	20.8	6.3	5.6, 6.9	6.1	6.3	6.7
Others			17.0	15.4, 18.7	17.9	18.3	17.0	4.8	4.0, 5.5	5.1	5.5	5.7
2020 November												
U.S. President												
Biden/Harris	D	W/B	90.9	73.0, 96.5	98.4	102.7	93.8	15.5	13.4, 21.7	9.6	9.8	13.0
Trump/Pence	R	W/W	7.7	2.4, 24.9	0.8	-5.0	4.5	84.0	77.8, 86.0	88.4	88.3	85.3
Others			1.5	0.9, 2.2	2.3	2.3	1.7	0.5	0.4, 0.7	1.8	1.9	1.7
U.S. Senator												
Adrian Perkins	D	B	23.1	21.6, 24.6	25.4	24.5	23.3	2.5	1.7, 3.3	2.1	2.7	3.4
Derrick Edwards	D	B	50.7	49.0, 52.4	52.4	53.0	47.5	3.7	2.8, 4.4	2.7	2.8	5.3
Bill Cassidy	R	W	5.4	4.2, 6.6	3.3	0.6	8.0	86.3	85.6, 86.8	87.1	86.4	83.1
Others			20.8	19.2, 22.4	22.3	22.1	21.2	7.6	6.8, 8.3	7.4	8.0	8.2
2019 October												
Lieutenant Governor												
Willie Jones	D	B	91.9	90.1, 93.5	93.1	95.4	88.2	8.7	7.8, 9.8	7.5	7.7	12.1
Billy Nungesser	R	W	8.1	6.5, 9.9	6.8	4.6	11.8	91.3	90.2, 92.2	92.5	92.3	87.9
Attorney General												
Ike Jackson	D	B	92.6	90.9, 94.1	94.0	96.5	88.7	9.8	9.0, 10.8	8.7	8.7	13.1
Jeff Landry	R	W	7.4	5.9, 9.1	5.9	3.5	11.3	90.2	89.2, 91.0	91.3	91.3	86.9
Secretary of State												
Gwen Collins-Greenup	D	B	93.2	91.8, 94.4	94.7	97.1	89.3	10.3	9.6, 11.0	8.1	8.0	12.5
Kyle Ardoin	R	W	2.7	2.0, 3.7	1.7	-1.0	4.7	57.7	57.0, 58.4	58.3	57.6	55.2
Thomas Kennedy III	R	W	2.8	2.0, 3.8	2.6	2.1	4.1	26.5	25.7, 27.1	27.1	27.5	25.9
Amanda Smith	R	W	1.3	0.8, 1.9	1.7	1.8	1.9	5.5	4.9, 6.0	6.5	6.9	6.4

Appendix A5**Area of Interest 5
Calcasieu****Estimates for Black Voters****Estimates for White Voters**

	Party	Race	El Rx	95% confidence interval	El 2x2	ER	HP	El Rx	95% confidence interval	El 2x2	ER	HP
Treasurer												
Derrick Edwards	D	B	94.3	92.7, 95.6	95.4	98.7	90.6	11.3	10.5, 12.1	9.1	9.3	13.5
John Schroder	R	W	2.4	1.6, 3.8	1.0	-3.3	4.9	84.0	83.3, 84.6	84.3	84.5	80.7
Teresa Kenny		W	3.2	2.3, 4.3	4.7	4.5	4.6	4.6	4.0, 5.3	6.1	6.3	5.8
2019 November												
Secretary of State												
Gwen Collins-Greenup	D	B	95.4	94.0, 96.6	96.9	100.2	92.1	12.6	11.8, 13.7	11.8	11.6	16.1
Kyle Ardoin	R	W	4.6	3.4, 6.0	3.0	-0.3	7.9	87.4	86.3, 88.2	88.2	88.5	83.9
2018 November												
Secretary of State												
Gwen Collins-Greenup	D	B	56.8	55.5, 58.4	59.4	59.3	55.2	4.2	3.6, 4.7	2.7	3.1	5.9
Renee Fontenot Free	D	W	35.3	33.8, 36.6	37.4	36.9	33.0	9.6	9.0, 10.2	8.6	8.4	9.4
Julie Stokes	R	W	0.9	0.6, 1.4	1.2	0.5	1.3	13.3	12.8, 13.7	13.5	13.2	13.0
Kyle Ardoin	R	W	1.3	0.8, 1.9	1.1	-0.6	2.5	29.0	28.4, 29.5	29.3	29.9	28.4
Rick Edmonds	R	W	1.1	0.6, 1.6	1.2	-0.2	1.8	19.1	18.5, 19.6	19.4	18.9	18.4
Thomas Kennedy III	R	W	1.4	0.9, 1.9	1.3	0.8	2.0	12.4	11.9, 12.9	12.7	13.4	12.6
Others			3.2	2.5, 4.0	3.2	3.3	4.2	12.5	11.9, 13.0	12.7	13.1	12.3
2018 December												
Secretary of State												
Gwen Collins-Greenup	D	B	96.5	95.1, 97.7	96.8	100.2	94.1	13.1	12.0, 14.4	12.6	11.9	15.4
Kyle Ardoin	R	W	3.5	2.3, 4.9	3.2	-0.2	5.9	86.9	85.6, 88.0	87.4	88.1	84.6
2017 October												
Treasurer												
Derrick Edwards	D	B	89.4	87.2, 91.4	92.3	94.3	89.9	11.2	10.3, 12.1	10.6	10.7	12.5
Angele Davis	R	W	5.2	3.5, 7.1	5.1	4.5	5.5	39.8	38.7, 40.8	39.9	37.4	38.6
Neil Riser	R	W	1.8	1.0, 2.8	1.1	0.1	1.5	23.5	22.6, 24.4	23.7	24.2	23.4
John Schroder	R	W	1.7	1.0, 2.6	0.9	0.0	1.3	18.7	17.8, 19.6	19.0	19.4	18.4
Others			2.0	1.2, 2.9	0.6	1.1	1.9	6.9	6.3, 7.5	7.2	8.2	7.1

Appendix A5**Area of Interest 5
Calcasieu****Estimates for Black Voters****Estimates for White Voters**

	Party	Race	El Rx	95% confidence interval	El 2x2	ER	HP	El Rx	95% confidence interval	El 2x2	ER	HP
2017 November												
Treasurer												
Derrick Edwards	D	B	97.5	96.1, 98.6	98.9	103.0	97.0	17.0	16.0, 18.1	15.9	17.5	19.0
John Schroder	R	W	2.5	1.4, 3.9	0.9	-3.0	3.0	83.0	81.9, 84.0	84.1	82.5	81.0
2015 October												
Lieutenant Governor												
Kip Holden	D	B	87.2	85.7, 88.6	88.6	89.9	84.8	12.1	11.4, 12.8	10.6	11.3	14.2
Billy Nungesser	R	W	2.7	1.9, 3.6	2.2	1.5	3.5	36.8	36.1, 37.5	37.4	37.1	35.4
John Young	R	W	4.3	3.2, 5.4	4.0	2.9	5.4	41.9	41.1, 42.6	42.1	41.5	40.9
Elbert Guillory	R	B	5.9	4.9, 6.9	5.9	5.8	6.2	9.2	8.6, 9.8	9.7	10.1	9.4
Attorney General												
Ike Jackson	D	B	26.7	25.2, 28.2	27.4	27.4	23.5	2.8	2.3, 3.3	2.5	3.3	3.7
Geri Broussard Baloney	D	B	61.2	55.8, 63.3	63.4	63.2	62.7	6.0	5.3, 7.3	4.8	5.0	7.8
Buddy Caldwell	R	W	7.1	5.9, 9.2	7.1	7.4	7.3	38.9	38.1, 39.7	39.0	38.5	37.4
Jeff Landry	R	W	4.1	2.9, 6.0	2.9	1.0	5.0	50.2	49.1, 51.0	50.6	50.6	48.4
Marty Maley	R	W	1.0	0.6, 1.4	1.1	0.9	1.4	2.1	1.7, 2.5	2.6	2.6	2.6
Secretary of State												
Chris Tyson	D	B	95.9	94.5, 97.0	96.8	98.8	92.9	19.8	18.8, 20.7	18.6	19.6	21.4
Tom Schedler	R	W	4.1	3.0, 5.5	3.2	1.2	7.1	80.2	79.3, 81.2	81.4	80.3	78.6
2015 November												
Lieutenant Governor												
Kip Holden	D	B	97.0	95.7, 98.0	98.0	100.2	94.3	23.5	22.4, 24.5	22.5	23.7	25.8
Billy Nungesser	R	W	3.0	2.0, 4.3	2.1	-0.3	5.7	76.5	75.5, 77.6	77.7	76.4	74.2

Appendix A6 Area of Interest 6 Ascension, Iberville			Estimates for Black Voters					Estimates for White Voters						
			Party	Race	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 2x2	ER	HP
2022 November														
U.S. Senator														
John Kennedy	R	W	5.0	3.6, 6.6	4.8	2.3	9.8	85.8	85.0, 86.6	86.3	87.3	84.8		
Gary Chambers, Jr	D	B	63.2	60.9, 65.4	65.7	65.1	60.7	2.9	1.9, 3.9	1.4	1.3	4.1		
Luke Mixon	D	W	19.3	17.2, 21.4	23.0	19.0	16.6	6.5	5.3, 7.6	5.9	6.4	5.9		
Others			12.6	10.9, 14.3	13.9	13.7	12.9	4.7	3.8, 5.7	4.9	5.0	5.2		
2020 November														
U.S. President														
Biden/Harris	D	W/B	86.6	64.4, 94.7	97.1	100.0	90.9	15.5	12.0, 26.4	8.3	7.4	11.6		
Trump/Pence	R	W/W	11.6	3.6, 33.3	1.1	-2.8	6.1	83.9	72.8, 87.4	89.5	91.2	86.9		
Others			1.8	1.3, 2.4	3.4	2.7	2.9	0.6	0.4, 0.9	1.1	1.3	1.5		
U.S. Senator														
Adrian Perkins	D	B	44.9	42.9, 46.9	46.7	44.3	36.5	3.3	2.3, 4.4	2.7	3.2	5.0		
Derrick Edwards	D	B	32.8	30.8, 34.5	34.8	34.6	32.2	2.3	1.6, 3.1	1.4	1.5	3.2		
Bill Cassidy	R	W	5.8	4.4, 7.3	4.8	2.7	12.4	89.7	88.6, 90.6	90.4	90.6	85.5		
Others			16.6	14.9, 18.3	17.9	18.3	18.9	4.7	3.8, 5.7	4.9	4.7	6.3		
2019 October														
Lieutenant Governor														
Willie Jones	D	B	88.2	85.9, 90.11	88.5	89.0	84.5	5.5	4.4, 6.9	5.0	5.3	9.3		
Billy Nungesser	R	W	11.8	9.9, 14.1	11.4	11.0	15.5	94.5	93.1, 95.6	95.1	94.7	90.7		
Attorney General														
Ike Jackson	D	B	92.1	90.0, 93.7	91.5	94.4	88.5	7.2	6.0, 8.8	6.5	5.9	9.6		
Jeff Landry	R	W	7.9	6.3, 10.0	8.5	5.7	11.5	92.8	91.2, 94.0	93.5	94.1	90.4		
Secretary of State														
Gwen Collins-Greenup	D	B	88.1	86.3, 89.8	89.9	89.9	85.0	9.5	8.4, 10.6	6.7	6.8	10.6		
Kyle Ardoin	R	W	3.9	2.7, 5.2	2.7	1.6	5.7	65.8	64.9, 66.6	66.6	68.2	61.7		
Thomas Kennedy III	R	W	5.7	4.4, 7.2	5.3	6.3	6.2	19.0	18.1, 19.8	19.5	18.5	20.7		
Amanda Smith	R	W	2.4	1.6, 3.3	2.5	2.2	3.1	5.7	4.9, 6.7	7.1	6.6	7.1		

Appendix A6 Area of Interest 6 Ascension, Iberville			Estimates for Black Voters					Estimates for White Voters				
			Party	Race	El RxC	95% confidence interval	El 2x2	ER	HP	El RxC	95% confidence interval	El 2x2
Treasurer												
Derrick Edwards	D	B	91.8	89.0, 93.6	92.2	94.7	88.9	10.3	9.2, 11.8	7.2	7.3	12.6
John Schroder	R	W	4.8	3.3, 7.4	3.4	1.3	6.7	85.3	83.7, 86.4	86.4	86.5	80.9
Teresa Kenny		W	3.3	2.4, 4.5	3.9	3.9	4.4	4.3	3.4, 5.4	6.3	6.2	6.5
2019 November												
Secretary of State												
Gwen Collins-Greenup	D	B	95.4	93.4, 96.7	95.6	97.4	91.0	11.6	10.2, 13.2	10.4	10.4	15.6
Kyle Ardoin	R	W	4.7	3.3, 6.6	4.3	2.6	9.0	88.4	86.8, 89.8	89.7	89.6	84.4
2018 November												
Secretary of State												
Gwen Collins-Greenup	D	B	56.7	57.7, 58.5	59.7	56.6	51.7	3.8	2.8, 4.7	2.1	2.6	4.4
Renee Fontenot Free	D	W	31.6	29.8, 33.5	35.2	33.6	30.9	8.0	7.1, 8.8	5.8	7.0	8.6
Julie Stokes	R	W	1.4	0.8, 2.1	1.2	1.4	1.6	11.9	11.2, 12.6	12.6	12.3	10.2
Kyle Ardoin	R	W	3.2	2.3, 4.3	2.7	3.4	5.6	36.5	35.7, 37.2	37.0	37.4	37.1
Rick Edmonds	R	W	1.6	1.0, 2.2	1.0	-0.9	3.2	21.8	21.0, 22.5	22.4	23.3	20.9
Thomas Kennedy III	R	W	2.3	1.6, 3.1	2.3	2.4	2.9	9.1	8.5, 9.6	9.4	9.0	9.7
Others			3.3	2.5, 4.2	3.6	3.7	4.1	8.9	8.1, 9.6	9.5	8.4	9.1
2018 December												
Secretary of State												
Gwen Collins-Greenup	D	B	94.0	92.1, 95.5	94.8	97.7	87.9	12.7	11.2, 14.6	11.9	10.4	14.0
Kyle Ardoin	R	W	6.0	4.5, 7.9	5.2	2.2	12.1	87.3	85.4, 88.8	88.2	89.5	86.0
2017 October												
Treasurer												
Derrick Edwards	D	B	83.9	81.3, 86.4	85.8	90.3	81.7	10.4	9.0, 11.9	8.5	8.0	11.2
Angele Davis	R	W	8.4	6.3, 10.5	7.5	6.7	11.0	37.0	35.5, 38.5	37.5	36.3	36.4
Neil Riser	R	W	2.0	1.2, 3.0	0.0	0.1	0.8	7.9	6.9, 8.8	9.3	8.6	8.2
John Schroder	R	W	3.2	2.1, 4.7	2.4	1.5	3.4	39.4	38.0, 40.8	40.3	41.5	38.7
Others			2.5	1.6, 3.6	0.7	1.4	3.1	5.3	4.4, 6.2	7.0	5.7	5.4

Appendix A6 Area of Interest 6 Ascension, Iberville		Estimates for Black Voters							Estimates for White Voters				
		Party	Race	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 2x2	ER	HP
2017 November													
Treasurer													
Derrick Edwards	D	B	97.0	95.0, 98.5	98.5	102.8	97.6	12.9	11.2, 14.6	11.7	11.4	14.2	
John Schroder	R	W	3.0	1.5, 5.0	1.5	-2.9	2.4	87.1	85.4, 88.8	88.3	88.6	85.8	
2015 October													
Lieutenant Governor													
Kip Holden	D	B	93.7	91.0, 95.3	95.8	96.1	93.0	26.6	25.5, 27.9	23.4	23.5	27.8	
Billy Nungesser	R	W	2.2	1.2, 3.4	1.6	1.4	2.7	38.9	37.9, 39.8	39.9	39.5	38.1	
John Young	R	W	2.2	1.2, 4.0	1.2	0.4	2.4	27.9	26.8, 28.8	29.1	29.7	26.7	
Elbert Guillory	R	B	2.0	1.3, 2.9	1.9	2.1	1.9	6.6	5.8, 7.4	7.6	7.2	7.4	
Attorney General													
Ike Jackson	D	B	51.5	49.9, 53.0	52.1	55.5	60.3	1.6	1.0, 2.2	1.1	-0.5	2.9	
Geri Broussard Baloney	D	B	25.7	23.6, 27.5	25.6	24.4	19.5	5.8	4.9, 6.7	5.8	6.3	7.1	
Buddy Caldwell	R	W	13.4	11.5, 15.4	12.2	11.8	10.1	51.3	50.1, 52.4	52.0	52.5	49.5	
Jeff Landry	R	W	3.0	1.9, 4.3	2.1	2.4	3.5	34.6	33.5, 35.6	35.7	35.1	34.5	
Marty Maley	R	W	6.5	5.1, 7.9	6.8	6.0	6.6	6.7	5.9, 7.5	7.2	6.7	6.0	
Secretary of State													
Chris Tyson	D	B	91.9	89.5, 94.0	92.4	91.9	90.1	15.2	13.7, 16.7	13.4	16.2	20.0	
Tom Schedler	R	W	8.1	6.0, 10.5	7.7	8.1	9.9	84.8	83.3, 86.3	86.5	83.8	80.0	
2015 November													
Lieutenant Governor													
Kip Holden	D	B	97.5	95.9, 98.6	99.0	100.7	97.6	33.7	32.4, 35.3	31.2	33.1	35.4	
Billy Nungesser	R	W	2.5	1.4, 4.1	0.8	-0.7	2.4	66.3	64.7, 67.6	68.8	66.9	64.6	

Appendix A7			Estimates for Black Voters					Estimates for White Voters				
Area of Interest 7												
East Baton Rouge, East Feliciana												
	Party	Race	El Rx	95% confidence interval	El 2x2	ER	HP	El Rx	95% confidence interval	El 2x2	ER	HP
2022 November												
U.S. Senator												
John Kennedy	R	W	3.8	3.2, 4.4	2.0	1.7	4.8	78.2	77.6, 78.8	78.5	77.2	72.4
Gary Chambers, Jr	D	B	65.2	64.2, 66.1	66.2	66.3	61.6	6.6	5.8, 7.4	4.4	4.8	7.2
Luke Mixon	D	W	23.5	22.6, 24.3	23.6	23.1	25.4	13.8	13.1, 14.5	13.3	13.4	16.7
Others			7.6	7.0, 8.2	8.8	9.0	8.2	1.3	1.0, 1.7	4.0	4.5	3.7
2020 November												
U.S. President												
Biden/Harris	D	W/B	89.5	75.8, 95.7	97.4	98.6	94.4	25.4	20.3, 36.2	15.9	15.8	20.6
Trump/Pence	R	W/W	9.6	3.5, 23.2	1.4	0.0	4.1	74.0	63.1, 79.1	81.6	81.9	77.3
Others			0.9	.7, 1.1	1.4	1.4	1.4	0.7	.5, .8	2.5	2.4	2.1
U.S. Senator												
Adrian Perkins	D	B	50.3	49.5, 51.2	51.2	51.3	49.7	10.9	10.0, 12.3	9.2	9.0	12.4
Derrick Edwards	D	B	29.4	28.6, 30.1	30.5	30.5	27.8	1.7	1.3, 2.3	0.7	1.3	2.6
Bill Cassidy	R	W	5.6	5.0, 6.2	3.5	2.4	6.6	85.1	83.8, 85.9	85.7	85.2	80.4
Others			14.7	14.0, 15.3	15.8	15.8	15.9	2.3	1.7, 2.8	3.8	4.6	4.5
2019 October												
Lieutenant Governor												
Willie Jones	D	B	82.2	81.2, 83.2	83.8	84.6	80.5	11.0	10.2, 12.0	11.2	13.2	17.0
Billy Nungesser	R	W	17.8	16.8, 18.8	16.1	15.4	19.5	89.0	88.0, 89.8	88.8	86.7	83.0
Attorney General												
Ike Jackson	D	B	89.0	88.1, 90.2	90.6	91.1	87.5	14.6	13.6, 16.7	14.2	16.2	20.8
Jeff Landry	R	W	11.0	9.8, 11.9	9.4	8.9	12.5	85.4	83.3, 86.4	85.8	83.8	79.2
Secretary of State												
Gwen Collins-Greenup	D	B	90.9	84.3, 92.1	92.1	92.6	88.6	15.8	14.6, 21.2	12.2	14.2	18.0
Kyle Ardoin	R	W	5.1	4.1, 10.8	3.3	2.4	6.3	68.3	63.9, 69.2	69.0	66.8	65.8
Thomas Kennedy III	R	W	2.9	2.3, 3.9	2.5	2.8	3.0	12.9	12.0, 13.5	13.9	14.0	11.6
Amanda Smith	R	W	1.2	.9, 1.6	1.5	2.0	2.1	3.0	2.3, 3.6	5.2	5.1	4.6

Appendix A7 Area of Interest 7 East Baton Rouge, East Feliciana			Estimates for Black Voters					Estimates for White Voters					
Party	Race	El	RxC	95% confidence interval	El 2x2	ER	HP	El	RxC	95% confidence interval	El 2x2	ER	HP
Treasurer													
Derrick Edwards	D	B	94.0	88.3, 95.0	94.9	95.2	91.9	14.9	14.0, 19.0	10.3	12.2	17.7	
John Schroder	R	W	3.6	2.6, 9.5	1.6	0.8	4.3	83.0	78.8, 83.8	84.0	81.7	77.1	
Teresa Kenny		W	2.4	2.0, 2.9	3.7	4.0	3.8	2.2	1.8, 2.6	6.0	6.1	5.3	
2019 November													
Secretary of State													
Gwen Collins-Greenup	D	B	95.8	94.9, 96.5	97.7	98.3	94.7	17.6	16.5, 19.0	16.9	17.3	23.9	
Kyle Ardoin	R	W	4.2	3.5, 5.1	3.0	1.7	5.3	82.4	81.0, 83.5	83.2	82.7	76.1	
2018 November													
Secretary of State													
Gwen Collins-Greenup	D	B	61.3	60.5, 62.2	62.2	62.5	57.5	4.7	4.0, 5.6	2.7	4.3	5.9	
Renee Fontenot Free	D	W	28.6	27.8, 29.4	29.5	29.6	30.7	12.5	11.8, 13.2	11.0	11.1	12.1	
Julie Stokes	R	W	1.3	1.0, 1.7	1.2	0.8	1.7	15.0	14.3, 15.6	15.5	15.0	14.4	
Kyle Ardoin	R	W	3.6	3.1, 4.0	3.0	3.2	4.0	30.1	29.5, 30.6	30.5	29.7	29.9	
Rick Edmonds	R	W	1.5	1.2, 1.8	1.2	0.2	2.0	24.8	24.3, 25.2	25.2	23.3	24.2	
Thomas Kennedy III	R	W	1.0	.6, 1.4	1.0	0.7	1.1	5.2	4.7, 5.7	6.2	8.0	5.5	
Others			2.7	2.2, 3.2	2.8	3.0	3.0	7.7	6.9, 8.4	8.5	8.5	8.0	
2018 December													
Secretary of State													
Gwen Collins-Greenup	D	B	96.8	95.9, 97.6	97.4	98.6	95.0	19.5	18.4, 20.7	18.0	19.9	23.8	
Kyle Ardoin	R	W	3.2	2.4, 4.1	2.6	1.4	5.0	80.5	79.3, 81.6	82.0	80.1	76.2	
2017 October													
Treasurer													
Derrick Edwards	D	B	87.4	85.7, 88.9	89.2	90.0	85.7	11.4	10.6, 12.2	9.3	9.6	14.7	
Angele Davis	R	W	5.4	4.3, 6.7	4.6	3.6	6.5	46.9	46.0, 47.7	47.3	48.9	44.9	
Neil Riser	R	W	3.4	2.7, 4.3	3.1	3.2	3.9	15.8	15.1, 16.3	16.3	15.3	15.5	
John Schroder	R	W	1.9	1.3, 2.7	1.6	0.8	2.1	22.0	21.4, 22.6	22.4	21.1	20.7	
Others			1.9	1.3, 2.5	2.2	2.4	1.8	3.9	3.4, 4.5	5.2	5.0	4.2	

Appendix A7			Estimates for Black Voters					Estimates for White Voters				
Area of Interest 7												
East Baton Rouge, East Feliciana												
	Party	Race	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 2x2	ER	HP
2017 November												
Treasurer												
Derrick Edwards	D	B	97.4	96.5, 98.2	98.2	100.0	96.0	19.6	18.6, 20.6	18.7	18.9	23.6
John Schroder	R	W	2.6	1.8, 3.5	1.9	0.0	4.0	80.4	79.4, 81.4	81.3	81.1	76.4
2015 October												
Lieutenant Governor												
Kip Holden	D	B	93.7	92.9, 94.5	94.4	94.7	92.0	32.0	30.9, 32.9	28.9	30.6	35.6
Billy Nungesser	R	W	2.2	1.7, 2.7	1.7	1.6	2.8	30.0	29.3, 30.6	30.9	30.6	27.1
John Young	R	W	1.9	1.5, 2.4	1.6	1.2	2.6	31.1	30.3, 31.7	31.9	30.6	29.5
Elbert Guillory	R	B	2.2	1.7, 2.8	2.4	2.5	2.6	6.9	6.2, 7.8	8.2	8.2	7.8
Attorney General												
Ike Jackson	D	B	36.8	36.0, 37.6	37.5	37.6	34.7	2.1	1.6, 2.7	1.6	2.1	3.9
Geri Broussard Baloney	D	B	36.5	35.7, 37.3	37.1	36.0	35.1	6.7	5.9, 7.5	6.2	7.4	8.3
Buddy Caldwell	R	W	22.1	21.2, 22.9	21.2	21.8	24.5	54.5	53.7, 55.2	54.6	53.7	53.7
Jeff Landry	R	W	2.4	2.0, 3.0	2.1	2.3	3.1	31.4	30.8, 32.1	31.9	31.1	28.1
Marty Maley	R	W	2.2	1.8, 2.6	2.3	2.4	2.7	5.2	4.6, 5.7	6.0	5.8	6.0
Secretary of State												
Chris Tyson	D	B	94.1	93.2, 95.0	95.4	96.0	92.7	13.3	12.4, 14.3	12.1	14.4	19.6
Tom Schedler	R	W	5.9	5.0, 6.8	4.5	3.9	7.3	86.7	85.7, 87.6	87.9	85.6	80.4
2015 November												
Lieutenant Governor												
Kip Holden	D	B	95.3	94.3, 96.2	96.0	96.4	94.1	39.9	38.6, 41.2	37.9	39.1	46.1
Billy Nungesser	R	W	4.7	3.8, 5.7	4.0	3.5	5.9	60.1	58.8, 61.4	62.1	61.0	53.9

Appendix B1
Louisiana State Senate
Elections

Estimates for Black Voters

Estimates for White Voters

	Party	Race	Vote	El RxC	95% confidence interval	El 2x2	ER	HP	El RxC	95% confidence interval	El 2x2	ER	HP
2015 October													
St Senate District 2													
Troy Brown	D	B	72.0	87.6	85.9, 89.1	88.6	88.3	86.7	53.2	51.2, 55.4	51.2	50.7	56.2
Eric Weil	no	W	15.7	2.0	1.3, 3.0	1.0	1.2	2.2	33.0	31.6, 34.3	34.6	34.3	27.6
Chris Delpit	D	B	12.3	10.4	9.0, 11.9	10.6	10.6	11.0	13.8	11.9, 15.5	14.1	15.1	16.2
St Senate District 7													
Troy Carter	D	B	37.4	59.1	56.8, 61.2	60.2	59.7	55.1	13.7	11.6, 15.9	11.2	11.5	13.8
Jeffrey Arnold	D	W	33.3	9.4	7.7, 11.2	7.1	6.7	11.4	62.8	60.5, 64.8	66.0	63.4	61.8
Leslie Ellison	D	B	15.0	20.5	18.6, 22.3	21.1	22.2	22.6	8.1	6.4, 9.8	8.3	7.2	9.5
Roy Glapion	D	B	14.3	11.1	9.2, 13.0	11.5	11.4	10.9	15.5	13.3, 17.7	16.4	17.9	14.9
St Senate District 38													
Richard Burford	R	W	35.2	6.0	3.9, 8.9	4.8	2.3	na	49.3	47.9, 50.9	51.0	53.6	48.1
John Milkovich	D	W	33.3	63.5	60.5, 66.4	68.2	63.7		17.8	15.9, 19.7	15.8	15.1	14.2
Cloyce Clark	R	W	21.6	3.1	1.7, 4.9	0.5	0.8		31.7	30.2, 32.8	32.5	32.1	35.7
Jemayel Warren	D	B	9.9	27.4	25.6, 29.1	29.1	33.4		1.2	.7, 1.9	0.4	0.0	2.0
2015 November													
St Senate District 7													
Troy Carter	D	B	56.8	87.1	84.5, 89.4	88.5	87.8	82.8	17.6	14.1, 21.6	14.9	15.6	17.1
Jeffrey Arnold	D	W	43.2	12.9	10.6, 15.5	11.4	12.1	17.2	82.4	78.4, 85.9	85.0	84.2	82.9
2017 April													
St Senate District 2													
Warren Harang	D	W	26.5	3.0	1.8, 4.7	1.6	3.2	3.9	56.3	53.9, 58.2	58.0	54.0	52.8
Edward Price	D	B	22.1	34.3	32.0, 36.5	34.0	34.1	28.9	6.6	4.0, 9.2	8.4	7.0	5.3
Elton Aubert	D	B	15.1	23.2	21.3, 25.0	24.4	24.3	27.5	5.8	3.8, 7.9	3.3	3.5	2.7
Wayne Brigalia	R	W	7.0	2.1	1.3, 3.2	0.4	0.0	1.4	13.0	11.4, 14.3	15.5	15.3	15.1
Albert Burl	D	B	6.4	9.6	8.6, 10.5	10.8	12.5	17.4	1.9	1.0, 3.0	0.5	0.0	1.3
Others			22.9	27.9	25.6, 30.0	22.7	28.9	21.2	16.5	13.8, 19.2	16.9	20.7	22.9

Appendix B1**Louisiana State Senate
Elections****Estimates for Black Voters****Estimates for White Voters****95%
confidence****95%
confidence****2017 May
St Senate District 2**

	Party	Race	Vote	El RxC	interval	El 2x2	ER	HP	El RxC	interval	El 2x2	ER	HP
Edward Price	D	B	62.6	96.0	94.7, 97.1	94.3	96.7	92.1	9.9	7.8, 12.1	12.3	11.3	10.7
Warren Harang	D	W	37.4	4.0	2.9, .4	5.8	3.4	7.9	90.1	87.9, 92.2	87.7	88.7	89.3

**2019 October
St Senate District 3**

Joseph Bouie	D	B	44.3	56.8	55.4, 58.2	57.0	58.9	54.1	24.1	21.6, 26.6	21.3	19.0	13.4
John Bagneris	D	B	29.1	36.0	34.5, 37.3	36.4	35.7	36.1	18.8	16.4, 21.3	17.4	17.7	14.5
Kathleen Doody	R	W	18.6	1.6	1.1, .3	1.5	-1.1	3.1	48.8	47.1, 50.5	48.3	52.7	63.1
Brandon Gregoire	D	W	8.0	5.6	4.7, .5	6.4	6.4	6.7	8.3	6.1, 10.3	10.6	10.9	9.0

St Senate District 36

Robert Mills	R	W	47.7	3.2	1.7, .3	na	-2.5	3.3	59.5	58.5, 60.4	60.4	61.6	55.5
Ryan Gatti	R	W	37.7	41.4	37.3, 45.8		52.6	49.9	37.3	35.9, 38.6	34.2	33.9	37.9
Mattie Preston	D	B	14.6	55.3	51.0, 59.3		49.9	46.8	3.3	2.0, .6	3.2	4.5	6.6

St Senate District 38

Barry Milligan	R	W	50.7	2.0	1.1, .2	0.8	-5.8	na	78.7	77.3, 79.8	80.0	79.2	76.6
John Milkovich	D	W	26.3	42.1	39.5, 45.1	48.7	50.0		18.1	16.1, 19.8	13.8	17.4	17.0
Katrina Early	D	B	23.0	55.9	53.0, 58.5	58.1	55.8		3.2	1.7, .3	2.7	3.3	6.4

St Senate District 39

Gregory Tarver	D	B	69.0	96.7	95.7, 97.6	97.0	97.0	93.8	21.8	19.9, 23.8	19.4	21.7	21.3
James Slagle	R	W	31.0	3.3	2.5, .3	3.0	3.0	6.2	78.3	76.2, 80.1	80.6	78.3	78.7

**2021 June, Special
St Senate District 7**

Gary Carter	D	B	60.2	94.6	93.2, 96.4	95.6	100.9	94.1	21.1	18.1, 24.2	18.8	18.5	10.4
Patricka McCarty	R	W	17.2	1.4	.7, .4	0.6	-1.3	1.2	35.4	32.6, 37.9	38.1	40.8	32.6
Joanna Capiello-Leopold	D	W	13.8	1.9	1.1, .0	1.7	-0.3	2.3	27.2	24.8, 29.4	28.7	24.8	38.1
Mack Cormier	D	W	8.8	1.8	.9, .9	1.6	0.9	2.4	16.4	14.3, 18.5	17.7	16.0	18.8

Appendix B2
Louisiana State House
Elections

2015 October
St House District 34

Wilford Carter	D	B	38.4	48.6	46.7, 50.3	49.1	50.0	48.3	6.2	2.6, 10.9	4.2	3.4	na
A.B. Franklin	D	B	35.2	40.8	38.8, 42.8	41.6	41.4	41.0	17.5	12.8, 22.7	15.5	16.8	
Thomas Quirk	R	W	18.3	2.8	1.4, 4.4	1.2	0.7	3.7	68.4	63.1, 72.9	74.0	71.0	
Alvin Joseph	D	B	8.1	7.8	6.5, 9.1	8.1	7.9	6.9	7.9	4.4, 11.9	8.4	9.0	
St House District 63													
Ulysses Addison	D	B	32.8	36.9	33.9, 39.8	38.2	37.2	37.4	15.9	4.9, 27.4	11.4	11.0	na
Barbara West Carpenter	D	B	29.7	30.9	27.9, 33.9	28.9	30.3	29.0	25.1	13.2, 36.7	32.0	33.8	
Joyce Plummer	D	B	22.2	23.5	20.9, 26.0	24.1	24.5	24.2	16.7	7.0, 26.8	13.8	11.9	
Dean Vicknair	D	W	7.8	2.6	1.4, 4.3	2.0	1.3	2.5	29.7	23.1, 35.0	32.8	30.8	
James Slaughter	D	B	7.6	6.2	4.6, 7.8	6.2	6.5	5.9	12.7	6.2, 18.9	13.0	12.9	
St House District 66													
Darrell Ourso	R	W	37.7	6.5	1.5, 16.9	0.5	na	na	43.2	40.9, 44.8	44.9	51.2	43.3
Rick Edmonds	R	W	23.2	6.3	1.2, 15.3	1.4			25.7	23.5, 27.2	27.3	29.5	24.9
Rick Bond	R	W	15.6	9.0	2.2, 25.1	39.8			16.0	12.8, 17.8	11.8	17.1	16.8
Antoine Pierce	D	B	15.3	71.3	48.1, 84.9	85.8			7.7	4.6, 12.5	4.8	-8.7	5.4
Rusty Secrist	R	W	8.2	7.0	1.9, 14.5	0.1			7.4	5.7, 8.8	9.9	11.2	9.5
St House District 68													
Steve Carter	R	W	54.7	20.2	7.3, 34.2	9.7	10.9	na	62.6	59.4, 65.6	na	62.6	59.8
Patty Merrick	D	B	26.5	72.5	58.5, 85.4	88.9	87.6		17.0	13.9, 20.1		14.4	18.0
Robert Cipriano	R	W	18.8	7.3	1.3, 16.4	1.6	1.1		20.4	18.2, 22.3		22.9	22.2
St House District 70													
Franklin Foil	R	W	74.4	22.1	13.0, 34.6	16.2	14.4	na	88.6	84.5, 91.4	90.6	90.3	85.9
Shamaka Schumake	D	B	25.6	77.9	65.4, 87.0	84.0	85.6		11.4	8.6, 15.1	9.2	9.7	14.1

Appendix B2**Louisiana State House
Elections****Estimates for Black Voters****Estimates for White Voters****95%
confidence****95%
confidence****2019 February****St House District 62**

Dennis Aucoin	R	W	45.5	9.7	4.3, 17.0	11.9	1.8	na	60.4	57.0, 63.0	61.0	62.6	57.8
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	Party	Race	Vote	El RxC	interval	El 2x2	ER	HP	El RxC	interval	El 2x2	ER	HP
Roy Daryl Adams	Ind	W	30.8	33.3	26.7, 39.4	28.4	31.1		29.1	26.5, 32.0	31.0	32.4	31.4
Tarries Greenup	D	B	11.9	36.9	30.9, 41.6	40.7	43.9		2.4	1.0, 4.6	0.6	0.3	2.2
Jonathan Loveall	D	W	7.3	12.5	7.8, 17.0	18.9	11.5		4.8	3.0, 6.7	2.7	2.7	4.3
Jerel Giarrusso	D	W	4.6	7.7	4.8, 10.8	9.5	11.3		3.2	2.1, 4.5	2.3	1.9	4.2

2019 October**St House District 62**

Roy Daryl Adams	Ind	W	38.0	59.1	53.0, 64.5	65.5	67.4	70.9	25.5	22.1, 29.2	21.3	27.3	23.5
Johnny Arceneaux	R	W	30.6	14.4	9.9, 19.5	14.3	11.5	17.1	40.6	37.6, 43.4	41.0	44.3	50.8
Bradley Behrnes	R	W	21.2	5.1	2.2, 9.3	6.2	4.8	3.3	30.7	28.0, 32.8	29.9	25.9	24.0
Derald Spears	no	B	10.2	21.4	17.4, 24.8	26.8	16.2	8.8	3.2	1.4, 5.6	0.6	2.4	1.7

St House District 68

Scott McKnight	R	W	33.3	6.8	1.6, 14.7	0.0	1.1	na	40.1	38.0, 41.8	41.7	40.9	40.7
Taryn Branson	D	B	23.7	60.2	49.3, 69.9	64.6	75.8		15.7	13.3, 18.2	10.2	11.2	15.8
Laura White Adams	R	W	19.8	6.8	2.2, 12.9	3.0	0.7		22.9	21.2, 24.4	24.5	24.0	20.7
Tommy Dewey	R	W	12.4	7.8	2.6, 14.1	1.8	3.4		13.0	11.3, 14.6	14.9	14.1	13.4
Joshua Hajiakbarifini	D		10.8	18.4	11.3, 25.6	21.4	18.9		8.4	6.6, 10.2	9.1	9.6	9.4

2019 November**St House District 68**

Scott McKnight	R	W	57.7	15.2	4.1, 31.4	0.7	2.8	na	69.6	35.2, 73.1	71.5	72.6	66.3
Taryn Branson	D	B	42.3	84.8	68.6, 95.9	99.4	96.8		30.4	26.9, 34.9	28.5	27.3	33.7

March 2022, Special**St House District 101**

Dawn Chanet Collins	D	B	28.9	31.8	29.0, 34.4	34.5	36.7	34.6	11.4	3.6, 22.0	3.1	-2.4	na
Terry Hebert	I	W	9.7	2.6	1.2, 4.5	2.1	0.6	3.0	45.0	34.1, 54.2	53.3	61.9	
Vanessa Caston LeFluer	D	B	61.5	65.6	62.6, 68.6	63.7	62.5	62.4	43.6	30.9, 56.3	43.5	41.0	

Lisa R. Handley
CURRICULUM VITAE

Professional Experience

Dr. Handley has over thirty years of experience in the areas of redistricting and voting rights, both as a practitioner and an academician, and is recognized nationally and internationally as an expert on these subjects. She has advised numerous clients on redistricting and has served as an expert in dozens of redistricting and voting rights court cases. Her clients have included the U.S. Department of Justice, civil rights organizations, independent redistricting commissions (Arizona, Colorado, Michigan) and scores of state and local jurisdictions. Internationally, Dr. Handley has provided electoral assistance in more than a dozen countries, serving as a consultant on electoral system design and redistricting for the United Nations, UNDP, IFES, and International IDEA. In addition, Dr. Handley served as Chairman of the Electoral Boundaries Commission in the Cayman Islands.

Dr. Handley has been actively involved in research, writing and teaching on the subjects of redistricting and voting rights. She has co-written a book, Minority Representation and the Quest for Voting Equality (Cambridge University Press, 1992) and co-edited a volume (Redistricting in Comparative Perspective, Oxford University Press, 2008) on these subjects. Her research has also appeared in peer-reviewed journals such as *Journal of Politics*, *Legislative Studies Quarterly*, *American Politics Quarterly*, *Journal of Law and Politics*, and *Law and Policy*, as well as law reviews and edited books. She has taught political science undergraduate and graduate courses related to these subjects at several universities including the University of Virginia and George Washington University. Dr. Handley is a Visiting Research Academic at Oxford Brookes University in the United Kingdom.

Dr. Handley is the President of Frontier International Consulting, a consulting firm that specializes in providing electoral assistance in transitional and post-conflict democracies. She also works as an independent election consultant both in the United States and internationally.

Education

Ph.D. The George Washington University, Political Science, 1991

Present Employment

President, Frontier International Electoral Consulting LLC (since co-founding company in 1998).

Senior International Electoral Consultant, Technical assistance for clients such as the UN, UNDP and IFES on electoral system design and boundary delimitation

Visiting Research Academic, Centre for Development and Emergency Practice (CENDEP), Oxford Brookes University

U.S. Clients since 2010

American Civil Liberties Union – expert testimony in Voting Right Act challenges in Arkansas, Georgia and Louisiana, expert testimony in Ohio partisan gerrymander challenge and expert testimony in challenge to Commerce Department inclusion of citizenship question on 2020 census form

Lawyers Committee for Civil Rights Under Law – expert testimony in challenges to statewide judicial elections in Texas and Alabama

US Department of Justice – expert witness testimony in several Section 2 and Section 5 cases (City of Euclid, Euclid School Board, City of Port Chester, City of Eastpoint, two Texas challenges)

Alaska: Redistricting Board (2001 and 2011) – redistricting consultation, expert witness testimony

Albany County, NY (2021) – redistricting consultation

Arizona: Independent Redistricting Board (2001 and 2021) – redistricting consultation

Boston (2022) – redistricting consultation

Colorado: Redistricting Commission (2021), Redistricting Board (2001 and 2011) – redistricting consultation

Connecticut: State Senate and State House of Representatives (2001 and 2011) – redistricting consultation

Kansas: State Legislative Research Department (2001, 2011, 2021) – redistricting consultation

Massachusetts: State Senate (2001 and 2011) – redistricting consultation

Michigan: Michigan Independent Citizens Redistricting Commission (2021) – redistricting consultation

Miami-Dade County, Florida: County Attorney (2001 and 2011) – redistricting consultation

Monroe County, NY (2022) – redistricting consultation

New Mexico: State House (2001) – redistricting consultation, expert witness testimony

New York: State Assembly (2001), State Senate (2021) – redistricting consultation

New York City: Redistricting Commission and Charter Commission (2001, 2011, 2021 and 2022) – redistricting consultation

Pima County, AZ (2022) – redistricting consultation

Rhode Island: State Senate and State House (2001 and 2021) – redistricting consultation

Virginia (2015-2017) – redistricting consultant for Governor during redistricting litigation

International Clients

United Nations

- Afghanistan – electoral system design and district delimitation expert
- Bangladesh (UNDP) – redistricting expert
- Sierra Leone (UNDP) – redistricting expert
- Liberia (UNMIL, UN peacekeeping mission) – redistricting expert
- Democratic Republic of the Congo (MONUC, UN peacekeeping mission) – election feasibility mission, electoral system design and redistricting expert
- Kenya (UN) – electoral system design and redistricting expert
- Haiti (UN) – election feasibility mission, electoral system design and redistricting expert
- Zimbabwe (UNDP) – redistricting expert
- Lead Writer on the topic of boundary delimitation (redistricting) for ACE (Joint UN, IFES and IDEA project on the Administration and Cost of Elections Project)

International Foundation for Election Systems (IFES)

- Afghanistan – district delimitation expert
- Sudan – redistricting expert
- Kosovo – electoral system design and redistricting expert
- Nigeria – redistricting expert
- Nepal – redistricting expert
- Georgia – electoral system design and district delimitation expert
- Yemen – redistricting expert
- Lebanon – electoral system design and redistricting expert
- Malaysia – electoral system design and redistricting expert
- Myanmar – electoral system design and redistricting expert
- Ukraine – electoral system design and redistricting expert
- Pakistan – consultant for developing redistricting software
- Principal consultant for the Delimitation Equity Project – conducted research, wrote reference manual and developed training curriculum
- Writer on electoral boundary delimitation (redistricting), Elections Standards Project
- Training – developed training curriculum and conducted training workshops on electoral boundary delimitation (redistricting) in Azerbaijan and Jamaica

International Institute for Democracy and Electoral Assistance (International IDEA):

- Consultant on electoral dispute resolution systems
- Technology consultant on use of GIS for electoral district delimitation
- Training – developed training material and conducted training workshop on electoral boundary delimitation (redistricting) for African election officials (Mauritius)
- Curriculum development – boundary delimitation curriculum for the BRIDGE Project

Other international clients have included The Cayman Islands; the Australian Election Commission; the Boundary Commission of British Columbia, Canada; and the Global Justice Project for Iraq.

Publications

Books:

Does Torture Prevention Work? Liverpool University Press, 2016 (served as editor and author, with Richard Carver)

Comparative Redistricting in Perspective, Oxford University Press, 2008 (first editor, with Bernard Grofman).

Delimitation Equity Project: Resource Guide, Center for Transitional and Post-Conflict Governance at IFES and USAID publication, 2006 (lead author).

Minority Representation and the Quest for Voting Equality, Cambridge University Press, 1992 (with Bernard Grofman and Richard Niemi).

Academic Journal Articles:

"Drawing Electoral Districts to Promote Minority Representation, Representation, Volume 58 (3), 2022, pp. 373-389.

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"1990s Issues in Voting Rights," Mississippi Law Journal, 65 (2), Winter 1995 (with Bernard Grofman).

"Minority Turnout and the Creation of Majority-Minority Districts," American Politics Quarterly, 23 (2), April 1995 (with Kimball Brace, Richard Niemi and Harold Stanley).

"Identifying and Remedying Racial Gerrymandering," Journal of Law and Politics, 8 (2), Winter 1992 (with Bernard Grofman).

"The Impact of the Voting Rights Act on Minority Representation in Southern State Legislatures," Legislative Studies Quarterly, 16 (1), February 1991 (with Bernard Grofman).

"Minority Population Proportion and Black and Hispanic Congressional Success in the 1970s and 1980s," American Politics Quarterly, 17 (4), October 1989 (with Bernard Grofman).

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Chapters in Edited Volumes:

"Political representation of small minorities and the international normative framework in districted electoral systems," Addis Ababa University Law School series, 2021 (with Richard Carver and Sam Ponniah).

"Effective torture prevention," Research Handbook on Torture, Sir Malcolm Evans and Jens Modvig (eds), Cheltenham: Edward Elgar, 2020 (with Richard Carver).

"Redistricting" in Oxford Handbook of Electoral Systems, Erik Herron Robert Pekkanen and Matthew Shugart (eds), Oxford: Oxford University Press, 2018.

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"One Person, One Vote, Different Values: Comparing Delimitation Practices in India, Canada, the United Kingdom, and the United States," in Fixing Electoral Boundaries in India, edited by Mohd. Sanjeer Alam and K.C. Sivaramakrishnan, New Delhi: Oxford University Press, 2015.

"Delimiting Electoral Boundaries in Post-Conflict Settings," in Comparative Redistricting in Perspective, edited by Lisa Handley and Bernard Grofman, Oxford: Oxford University Press, 2008.

"A Comparative Survey of Structures and Criteria for Boundary Delimitation," in Comparative Redistricting in Perspective, edited by Lisa Handley and Bernard Grofman, Oxford: Oxford University Press, 2008.

“Drawing Effective Minority Districts: A Conceptual Model,” in Voting Rights and Minority Representation, edited by David Bositis, published by the Joint Center for Political and Economic Studies, Washington DC, and University Press of America, New York, 2006.

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"Racial Context, the 1968 Wallace Vote and Southern Presidential Dealignment: Evidence from North Carolina and Elsewhere," in Spatial and Contextual Models in Political Research, edited by Munroe Eagles; Taylor and Francis Publishing Co., 1995 (with Bernard Grofman).

"The Impact of the Voting Rights Act on Minority Representation: Black Officeholding in Southern State Legislatures and Congressional Delegations," in The Quiet Revolution: The Impact of the Voting Rights Act in the South, 1965-1990, eds. Chandler Davidson and Bernard Grofman, Princeton University Press, 1994 (with Bernard Grofman).

"Preconditions for Black and Hispanic Congressional Success," in United States Electoral Systems: Their Impact on Women and Minorities, eds. Wilma Rule and Joseph Zimmerman, Greenwood Press, 1992 (with Bernard Grofman).

Additional Writings of Note:

“Boundary Delimitation” Topic Area for the Administration and Cost of Elections (ACE) Project, 1998. Published by the ACE Project on the ACE website (electronic publication at www.aceproject.org).

Amicus brief presented to the US Supreme Court in Gill v. Whitford, Brief of Political Science Professors as Amici Curiae, 2017 (one of many social scientists to sign brief)

Amicus brief presented to the US Supreme Court in Shelby County v. Holder, Brief of Historians and Social Scientists as Amici Curiae, 2013 (one of several dozen historians and social scientists to sign brief)

Amicus brief presented to the US Supreme Court in Bartlett v. Strickland, 2008 (with Nathaniel Persily, Bernard Grofman, Bruce Cain, and Theodore Arrington).

Recent Court Cases

Pending cases:

- Michigan: *Agee v. Benson* (Case No. 1:22-CV-00272-PLM-RMK-JTN) (U.S. District Court, Western District of Michigan, Southern Division)
- Louisiana: *Robinson v. Ardoin* (Civil Action No. 3:22-cv-00211-SDD-RLB) (U.S. District Court, Middle District of Louisiana)
- Georgia: *Alpha Phi Alpha Fraternity et al. v. Raffensperger et al.* (Docket Number: 121-CV-05337-SCJ) (Northern District of Georgia)
- Arkansas: *Arkansas State Conference NAACP et al. v. Arkansas Board of Apportionment et al.* (Case Number: 4:21-cv-01239-LPR) (Eastern District of Arkansas)
- Ohio: *League of Women Voters of Ohio et al. v. Ohio Redistricting Commission et al.* (Case Number: 2021-1193) (Supreme Court of Ohio); *League of Women Voters of Ohio et al. v. Governor DeWine* (Case Number: 2021-1449) (Supreme Court of Ohio)

Ohio Philip Randolph Institute v. Larry Householder (2019) – partisan gerrymander challenge to Ohio congressional districts; testifying expert for ACLU on minority voting patterns

State of New York v. U.S. Department of Commerce (2018-2019) – challenge to inclusion of citizenship question on 2020 census form; testifying expert on behalf of ACLU

U.S. v. City of Eastpointe (settled 2019) – minority vote dilution challenge to City of Eastpointe, Michigan, at-large city council election system; testifying expert on behalf of U.S. Department of Justice

Alabama NAACP v. State of Alabama (decided 2020) – minority vote dilution challenge to Alabama statewide judicial election system; testifying expert on behalf of Lawyers Committee for Civil Rights Under Law

Lopez v. Abbott (2017-2018) – minority vote dilution challenge to Texas statewide judicial election system; testifying expert on behalf of Lawyers Committee for Civil Rights Under Law

Personhuballuah v. Alcorn (2015-2017) – racial gerrymandering challenge to Virginia congressional districts; expert for the Attorney General and Governor of the State of Virginia

**IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF LOUISIANA**

DR. DOROTHY NAIRNE, JARRETT
LOFTON, REV. CLEE EARNEST LOWE, DR.
ALICE WASHINGTON, STEVEN HARRIS,
ALEXIS CALHOUN, BLACK VOTERS
MATTER CAPACITY BUILDING
INSTITUTE, and THE LOUISIANA STATE
CONFERENCE OF THE NAACP,

Plaintiffs,

v.

R. KYLE ARDOIN, in his official capacity as
Secretary of State of Louisiana,

Defendant.

CIVIL ACTION NO. 3:22-cv-00178
SDD-SDJ

PROPOSED ORDER

Upon consideration of Plaintiffs' consent motion for leave to exceed the page limitation established in Local Rule 7(g), it is ORDERED that the motion is GRANTED.

The Court accepts Plaintiffs' submission of their motion to exclude proposed expert testimony and the accompanying memorandum and papers, and shall take that motion under consideration.

Hon. Shelly D. Dick
United States District Judge
Middle District of Louisiana