IN THE UNITED STATES DISTRICT COURT
FOR THE 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.*	Civil Action No. 3:22-cv-00178-SDD-SDJ Chief Judge Shelly D. Dick Magistrate Judge Scott D. Johnson

JOINT MOTION IN LIMINE TO EXCLUDE DR. LISA HANDLEY'S TESTIMONY AND REPORTS

Defendant R. Kyle Ardoin, in his official capacity as Secretary of State of Louisiana, and Intervenor-Defendant the State of Louisiana, through Louisiana Attorney General Jeff Landry (collectively, "Defendants"), pursuant to Rules 702 and 703 of the Federal Rules of Evidence, hereby move this Court for an order excluding Dr. Lisa Handley's testimony and reports in this matter in their entirety as unreliable and not entirely relevant.

In support of this Motion, Defendants have contemporaneously filed a Joint Memorandum in Support of their Motion and exhibits thereto, which are incorporated herein by reference.

WHEREFORE, Defendants respectfully request that their Motion be granted; the Court enter an Order excluding Dr. Handley's testimony and reports in this case in their entirety; and for any further relief this Court deems just and proper.

Respectfully submitted, this the 6th day of October, 2023.

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DR. DOROTHY NAIRNE, *et al.*, *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 Chief Judge Shelly D. Dick Magistrate Judge Scott D. Johnson

JOINT MEMORANDUM IN SUPPORT OF MOTION IN LIMINE TO EXCLUDE DR. LISA HANDLEY'S TESTIMONY AND REPORTS

Defendant R. Kyle Ardoin, in his official capacity as Secretary of State of Louisiana, and Intervenor-Defendant the State of Louisiana, through Louisiana Attorney General Jeff Landry (collectively, "Defendants"), pursuant to Rules 702 and 703 of the Federal Rules of Evidence and Local Civil Rule 7, files this Memorandum in Support of Defendant's Motion to Exclude Dr. Lisa Handley's ("Dr. Handley") testimony and reports.

INTRODUCTION AND BACKGROUND

The introduction of expert testimony is governed by Federal Rules of Evidence 702, 703 and the Supreme Court's decision in *Daubert v. Merrell Dow Pharmaceuticals, Inc.,* 509 U.S. 579 (1993) and its progeny, which require expert testimony to be qualified, reliable, and relevant. While one of Plaintiffs' experts, Dr. Lisa Handley, is qualified in racially polarized voting ("RPV") analysis, the reports she authored in this case and the methodology she used here are neither reliable nor entirely relevant. In order to conduct a RPV analysis, Dr. Handley was required to aggregate a significant amount of election precinct data to create a database on which to run her

statistical techniques. (Ex. 1 – Handley Report[1] 3; Ex. 2 - Handley Depo. Tr.[2] 13:8-19). But Dr. Handley did not assemble this data herself, relying instead upon other largely unidentified individuals, whose credentials are not known to Defendants, and who were not disclosed in Dr. Handley's reports. (Ex. 1 - Handley Report 5; Ex. 2 - Handley Depo. Tr. 13:21-15:15). The backup data also reveals a faulty allocation method, not subject to peer review, used to allocate the large percentage of Louisiana's voters who vote early or absentee back to the voter precincts within the parishes. (Ex. 2 - Handley Depo. Tr. 161:9-162:3). The misallocation of candidate vote shares to precincts spans Dr. Handley's entire underlying database upon which she then runs her statistical analyses. Despite being aware of the issue, Dr. Handley made no attempt to cure the faults of the allocation method.

Lastly, Dr. Handley did not perform a district-specific RPV analysis as is required under binding U.S. Supreme Court precedent, focusing only on seven "areas of interest" within the state. The only district-specific information reported by Dr. Handley classifies districts as either "effective" or not, without opining as to the level of Black Voting Age Population ("BVAP") needed to be effective. This analysis has limited value because it does not inform the court whether a majority-minority district is actually necessary in order for the black-preferred candidate to be elected. Moreover Dr. Handley has made no attempt to account for how her faulty allocation method would impact a district-specific RPV analysis, or even her own effectiveness scores, especially in populous parishes with more than one legislative district.

[1] Dr. Handley's June 30, 2023 "Expert Report on the Enacted Louisiana State House and Senate Plans" is attached hereto as Exhibit 1. Citations to this report will be designated as "Ex. 1 – Handley Report ___". As noted by counsel in Dr. Handley's deposition, the signed page of Dr. Handley's report contains a typo stating the year signed was 2022. The correct date of Dr. Handley's report is June 30, 2023. (Ex. 2 - Handley Depo. Tr. 8:8-:22).

[2] Attached as Exhibit 2 are pertinent excerpts from the Dr. Handley's September 26, 2023 Deposition Transcript. Citations to these transcript excerpts will be designated as "Ex. 2 – Handley Depo Tr. ___".

ARGUMENT

I. Legal standard.

Disqualification of an expert is governed by Rule 702 of the Federal Rules of Evidence which provides:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:
>
> (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or determine a fact in issue;
>
> (b) the testimony is based on sufficient facts or data;
>
> (c) the testimony is the product of reliable principles and methods; and
>
> (d) the expert has reliably applied the principles and methods to the facts of the case.

Additionally, the United States Supreme Court adopted proposed amendments to Rule 702[3], which will go into effect on December 1, 2023, so long as Congress does not modify or reject the changes, *see Al Qari v. American Steamship Co.*, No. 21-cv-10650, 20230 WL 5628583, at *3 (E.D. Mich. Aug. 31, 2023). The new Rule 702 will read as follows, with the struck-through language indicating deletions and the underlined language indicating additions:

> A witness who is qualified as an expert by knowledge, skill, experience, training or education may testify in the form of an opinion or otherwise if the proponent has demonstrated by a preponderance of the evidence that:
>
> (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
>
> (b) the testimony is based on sufficient facts or data;
>
> (c) the testimony is the product of reliable principles and methods; and

[3] April 24, 2023 Order on Rules of Evidence, Unites States Supreme Court, https://www.supremecourt.gov/orders/courtorders/frev23_5468.pdf.

(d) the ~~expert has reliably applied~~ expert's opinion reflects a reliable application of the principles and methods to the facts of the case.

Id. (quoting Fed. R. Evid. 702 (as proposed)); *see also Saradis v. Overhead Door Corp.*, 10 F.4th 268, 284 (4th Cir. 2021)).

The Advisory Committee Notes for the 2023 amendments make clear that the amended language was not intended to change Rule 702, but "to clarify and emphasize that expert testimony may not be admitted unless the proponent demonstrates to the court that it is more likely than not that the proffered testimony meets the admissibility requirements set forth in the rule." Fed. R. Evid. 702 advisory committee's note to 2023 amendment. The Advisory Committee Notes state that courts have incorrectly applied Rule 702 by finding questions regarding the sufficiency of an expert's basis and the application of the expert's methodology are questions of weight to be decided by a fact finder instead of questions of admissibility that the courts must determine. *Id.*

Therefore, under both versions of Rule 702, a court must 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." *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 593-94 (1993). This gatekeeping function is meant to ensure that "any and all scientific testimony or evidence admitted is not only relevant, but reliable." *Id.* at 589. "The reliability analysis applies to all aspects of an expert's testimony: the methodology, the facts underlying the expert's opinion, the link between the facts and the conclusion, et alia." *Knight v. Kirby Inland Marine Inc.*, 482 F.3d 347, 355 (5th Cir. 2007) (citation and internal quotation marks omitted).

"The reliability prong mandates that expert opinion be grounded in the methods and procedures of science and . . . be more than unsupported speculation or subjective belief." *Johnson v. Arkema, Inc.*, 685 F.3d 452, 459 (5th Cir. 2012) (internal quotation marks omitted). Indeed, "an

opinion based on 'insufficient, erroneous information,' fails the reliability standard." *Moore v. Int'l Paint, LLC*, 547 Fed. Appx. 513, 515, 516 (5th Cir. 2013) (quoting *Paz v. Brush Engineered Materials, Inc.*, 555 F.3d 383, 389 (5th Cir. 2009)); *see Paz*, 555 F.3d at 388-89 (affirming exclusion of expert testimony that was based on a false assumption and insufficient information). Nor may experts rely on assumptions to overcome facts not in the record which are necessary to the expert's analysis when such assumptions "differ[] frequently and substantially from the undisputed record evidence" and the expert has not identified an "underlying rationale" for the assumptions. *Moore*, 547 Fed. Appx. at 516. Furthermore, analyses that contain "factual deficiencies" that indicate "faulty methods and lack of investigation" should lead to an exclusion of an expert. *EEOC v. Freeman*, 778 F.3d 463, 470 (4th Cir. 2015) (Agee, J., concurring) (internal quotation marks and citation omitted); *see also Dart v. Kitchens Bros. Mfg. Co.*, 253 Fed. Appx. 395, 398-99 (5th Cir. 2007) (stating the "basic mathematical errors and flaws in methodology" in the underlying calculations made "any calculation of damages . . . unreliable").

In addition to assessing whether factual deficiencies resulted in unreliable expert opinions, courts also "consider the following non-exclusive list of factors when conducting the reliability inquiry: (1) whether the theory or technique has been tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) the known or potential rate of error of the method used and the existence and maintenance of standards controlling the technique's operation; and (4) whether the theory or method has been generally accepted by the scientific community." *Johnson*, 685 F.3d at 459 (internal quotation marks omitted). Plaintiffs bear the burden to establish the admissibility of Dr. Handley's testimony by a preponderance of the evidence. *See Daubert*, 509 U.S. at 592 n.10.

II. Dr. Handley's database fails the reliability prong.

Dr. Handley was retained by Plaintiffs to analyze "voting patterns by race" to lay "the foundation of two of the three elements of the 'results test' as outlined in *Thornburg v. Gingles*: a racial bloc voting analysis . . . to determine whether the minority group is politically cohesive; and . . . to determine if whites are voting sufficiently as a bloc to usually defeat the candidates preferred by minority voters." (Ex. 1 - Handley Report 3). The main statistical technique that Dr. Handley relies on to do this is ecological inference RxC, which uses voter data points at the precinct level to estimate voting patterns based upon race. (*Id.* at 4). Dr. Handley was required to aggregate a significant amount of election precinct data to create a database on which to run her statistical techniques. (*Id.* at 5; Ex. 2 - Handley Depo. Tr. 13:8-:19). As described herein, Dr. Handley's database is derived from unknown sources and relies upon a flawed allocation method that renders her entire RPV analyses unreliable.

a. Dr. Handley's database is derived from unknown data sources.

"As many courts have recognized, expert testimony based solely or primarily on the opinions of other experts is inherently unreliable." *Hunt v. McNeil Consumer Healthcare*, 297 F.R.D. 268, 275 (E.D. La. 2014) (citations omitted) (surveying and collecting cases in other jurisdictions). While the modern view of Rule 703 of the Federal Rules of Evidence has generally liberalized the ability of expert witnesses to base their testimony and reports on data and opinions generated by third parties, courts repeatedly reaffirm the fundamental requirement that even the data and opinions of third parties must be "of a type reasonably relied upon by experts in the particular field." *See Nat'l Union Fire Ins. Co. of Pittsburgh, PA v. Smith Tank & Steel, Inc*., No. 3:11-CV-00830, 2014 WL 12690177, at *5 (M.D. La. Nov. 6, 2014) (quoting Fed. R. Evid 703). Along these lines, while experts may use assistants to collect underlying data upon which an expert relies, those experts must be disclosed—especially if the persons who collected the data had to

exercise some form of judgement in the assembly process. *See Dura Automotive Sys. of Indiana, Inc. v. CTS Corp.*, 285 F.3d 609, 611–12, 616 (7th Cir. 2002) (affirming district court's sanctions against plaintiff for failing to timely disclose expert witness "assistants" who actually performed the groundwater modeling on which he relied); *see also* Fed. R. Civ. P. 26(a)(2)(B)(ii) (requiring that an expert's written report contain, among other things, "the facts or data considered by the witness in forming them").

Dr. Handley did not disclose who created the underlying database that she used for all of her RPV analyses in any of her expert reports. And though Dr. Handley did disclose that certain data points were obtained "from the Secretary of State website or from OpenElections," Dr. Handley could not articulate which data points came from which sources during her September 26, 2023 deposition. (Ex. 2 – Handley Depo. Tr. 13:21–17:1). Dr. Handley's deposition testimony also revealed two previously undisclosed sources assisted her with compiling her database: the Voting and Elections Science Team assisted with shapefiles and the "data analytics department at [the] ACLU" assisted with aggregating all of the data sources together to form the database.[4] (*Id.* at 18:8–:10). Dr. Handley could not name the specific persons in the ACLU analytics department who helped her compile the database and, even if she could have, counsel for Plaintiffs objected to the specifics of Dr. Handley's conversations with the ACLU analytics department, saying it was "all done under the direction of counsel" and thus was privileged. (*Id.* at 19:16-20:18).

Dr. Handley's reliance on undisclosed persons to compile her database is unreasonable under the circumstances of this case. As shown *infra,* a simple review of the backup data for just one precinct in one election shows that the allocation method applied by the ACLU data analytics

[4] These two vague disclosures on September 26, 2023 amount to untimely expert disclosures under Rule 26(a)(B)(2) of the Federal Rules of Civil Procedure and the scheduling order in this case, which required all experts for all parties to be disclosed by August 15, 2023 at the latest, Rec. Doc. 110.

department created impossible results.[5] Dr. Handley testified unequivocally that this allocation method formed the basis for the database that her entire RPV analysis relies upon. (*Id.* at 13:9-:19, 161:9-:21). While relying on others to assemble data is not a fatal flaw in and of itself, the reliance on undisclosed persons with unknown credentials to process data is unreliable when the results of the data compilation clearly show that the number of votes allocated to candidates in precincts is extremely overestimated and/or underestimated in comparison to the actual number of voters who turned out to vote at those precincts. (*Id.* at 13:21-15:15; Ex. 1 - Handley Report 5). *See Dura Automotive Sys. of Indiana, Inc.*, 285 F.2d at 613-14.

b. Dr. Handley's allocation of early and absentee votes was biased.

In the context of measuring racially polarized voting specifically, while "absolute perfection in the base statistical data is not to be expected, a trial court should not ignore the imperfections of the data used nor the limitations of statistical analysis." *Overton v. City of Austin*, 871 F.2d 529, 539 (5th Cir. 1989) (per curiam). In *Overton*, the United States Court of Appeals for the Fifth Circuit affirmed a trial court's determination that an expert's RPV analysis was unreliable and "seriously flawed." *Id.* Specifically, the expert (1) "used different measures to determine Black and Mexican–American voting strength[;]" (2) "failed to take into account the difference in population sizes of voting precincts[;]" (3) "[h]is analysis resulted in impossible results [in some instances]....[;]" and (4) "he completely failed to establish a confidence level for the results of his regression analysis." *Id.* at 537. Many of the same deficiencies in the expert's analysis in *Overton* are present in Dr. Handley's analysis here. Namely, Dr. Handley's allocation

[5] The metadata for Dr. Handley's backup called "caddo_precincts" spreadsheet shows that ACLU data analyst Devin McCarthy created the spreadsheet. A true and correct copy of the metadata view of Dr. Handley's caddo_precincts spreadsheet is attached hereto as Exhibit 3. Arguably the faulty allocation method could be entirely designed and implemented by Mr. McCarthy as he appears to control the precinct-level data.

method for early and absentee voters failed to accurately take into account the different population sizes of voting precincts, which led to impossible results.[6]

In Louisiana, approximately 30% of voters voted early and absentee in statewide elections since 2012. For example, in the November 2020 elections, 45.6% of the total votes cast were early or absentee. (*See* Ex. 4 – Solanky Report[7] ¶ 20). Similarly, 33.7% of the overall votes cast in the November 2019 and 26.9% of the overall votes cast in the November 2022 elections were early and absentee. (Ex. 4 – Solanky Report 13, Table 5). Because the Louisiana Secretary of State website only reports candidate-specific early and absentee votes at the parish-wide level, Dr. Handley had to disaggregate the data down to the precinct level to perform her RPV analysis. To do this, Dr. Handley used a non-peer reviewed allocation method to assign the early and absentee votes to particular precincts within a parish "proportionally based on the votes received by each of the candidates on Election Day" in each area she studied. (Ex. 1 – Handley Report 6, n. 8; Ex. 2 – Handley Depo. Tr. 161:9-162:3).

Dr. Handley's allocation method did not cap the number of early or absentee votes assigned to each precinct by the total number of voters who turned out in a particular election. As a result, her allocation method created impossible results where the total votes for certain candidates were significantly overestimated in some precincts while significantly underestimated in others. By failing to cap the votes allocated to precincts to the actual voter turnout, the underlying database Dr. Handley used to run her RPV analysis is unreliable.

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[6] Like the excluded expert in *Overton,* Dr. Handley also failed to provide confidence intervals for her ecological regression analysis or her EI 2x2 analysis. Based on the binding precedent of *Overton,* the Court at a minimum should issue an order excluding testimony or reliance on these methodologies.

[7] Attached as Exhibit 4 is Dr. Solanky's July 28, 2023 Expert Report in this case. Citations to this report will be designated as "Ex. 4 – Solanky Report ___".

Dr. Solanky summarized how Dr. Handley's allocation method introduced bias in her analysis of the 2020 presidential election in Caddo Parish in his Rebuttal Report, by providing the following table:

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

(Ex. 4 – Solanky Rebuttal Report[8] ¶ 8, Table 3). As shown above, Dr. Handley's data, which she confirmed she relied upon during her deposition, reported 191 votes for President Biden in Caddo Precinct 1 for the 2020 Presidential election, where the entire voter turnout for the November 2020 election in that precinct was only 182 voters. (Ex. 2 – Handley Depo. Tr. 164:19-165:8, 169:10-172:23, 174:8-:17, 175:8-:17). And that one example is just the beginning. Indeed, when reviewing Dr. Handley's supporting data provided in her rebuttal report regarding Caddo Parrish, Dr. Solanky concluded that Dr. Handley allocated more total candidate votes than the total voter turnout for 81 out of 145 precincts in Caddo Parish. (*See* Ex. 5 – Solanky Rebuttal Report ¶ 8, Remark 5). The remaining precincts, with the exception of Precinct 102 had votes deflated. This includes Caddo Precinct 116, which had its voter turnout deflated by 300 votes. (*Id.* at Appendix 1). Only Caddo Precinct 102, had a voter allocation within 1 vote difference of the total turnout. (*Id.*).[9]

When confronted with the stark fact that candidates should not receive more votes than voters in the election, Dr. Handley commented simply that she was aware of this issue well before

[8] Attached as Exhibit 5 is Dr. Solanky's August 8, 2023, Expert Rebuttal Report in this case. Citations to this report will be designated as "Ex. 5 – Solanky Rebuttal Report ___".
[9] In addition, Dr. Handley did not even report the votes for all candidates, omitting the 13th candidate and the 37 votes he received parish wide.

it was raised in Dr. Solanky's reports. (Ex. 2 – Handley Depo Tr. 176:1-:7). To be clear, Dr. Handley knew her allocation resulted in both severe overestimates and underestimates of support for candidates, depending on the precinct, and (1) failed to disclose it; (2) failed to correct it.[10] (*Id*.). As observed by Dr. Solanky—and to which any reasonable person can deduce—because you cannot have more votes cast in a precinct than the total number of voters who turned out and voted in that precinct, Dr. Handley's allocation of early and absentee votes was biased and resulted in an unreliable analysis. (*See* Ex. 5 – Solanky Rebuttal Report ¶ 8). Indeed, a reliable ecological inference ("EI") analysis of voting patterns by race would need the total votes of candidates and the total turnout by race to be equal. (*See id.* at ¶ 8, Remark 2, n. 12). Moreover, deflation of votes in other precincts, caused by her over allocation in others, can create as much bias as the surplus/inflation of votes. (*See id.* at ¶ 8, Remark 4).

When confronted with this evidence, Dr. Handley testified that she examined the potential bias and was confident that it did not impact her analysis, and any issues were limited solely to the November 2020 presidential election where 45% of Louisianans voted early.[11] (Ex. 2 – Handley Depo. Tr. 179:8-180:7). But, Defendants, and this Court, apparently must take Dr. Handley's word that her allocation caused no bias, since she did not include any bias analysis with her properly submitted reports.[12] Moreover, Dr. Handley's conclusion that any potential bias must be limited

[10] In her deposition, Dr. Handley attempted to explain away this flaw in her database, stating that she did not "use the number of votes" in her analysis, she used "proportions." However, this argument wholly misses the point. By overestimating and underestimating the votes candidates received in precincts, Dr. Handley created a database that relied upon an impossible presumption. The amount of total candidate votes cannot exceed the total number of voter turnout in any reliable EI analysis. (*See* Ex. 5 - Solanky Rebuttal Report ¶ 8, Remark 2, n. 12). This renders any "proportion" unreliable.

[11]The fact that Dr. Handley knew that her allocation method caused issues with the 2020 elections, and she continued to rely upon not one, but two elections from the November 2020 election day without notation is misleading at best, and unscientific at worst. In the event that the Court declines to grant this motion in its entirety, the Court in the alternative should exclude evidence based on the November 2020 elections, which Dr. Handley admitted were problematic.(Ex. 2 - Handley Depo. Tr. 34:20-:24).

[12] Several days after her deposition, and approximately 45 minutes prior to the midnight close of expert discovery on Friday, September 29, 2023, Plaintiffs served a second "supplemental" expert report of Dr.

to the 2020 presidential election is unsupported. In fact, this assertion is entirely contradicted by Dr. Handley's own backup data on the 2022 U.S. Senate election which revealed that Dr. Handley allocated a higher number of voters per precinct than the voter turnout in over 50% of precincts, deflating a corresponding number of precincts. (Ex. 5 – Solanky Rebuttal Report ¶ 11). When calculating the bias rate for both the 2020 presidential and 2022 U.S. Senate elections, Dr. Solanky found that the bias rate was approximately 80% for both elections. (*Id.* at ¶ 8, ¶ 12).

While the impossible over and under-estimates of votes per precinct alone are enough to exclude Dr. Handley's analysis, *Overton,* 871 F.2d at 539, the allocation method reinforces Dr. Handley's assumption that all precincts within a parish vote homogenously. But such an assumption is not true. For example, Dr. Solanky found that "white voters vote for a democrat candidate in significantly larger percentages for Shreveport city-limit precincts compared to non-Shreveport precincts in Caddo parish." (*See* Ex. 4 – Solanky Report ¶ 34). Dr. Solanky also found that "black voters vote for republican candidates in much larger percentages for non Shreveport precincts compared to Shreveport city-limit precincts in Caddo Parish." (*See id.* at ¶ 33).

Thus, given the differences in voting patterns based on precincts in Caddo Parish, the performance of districts *within* Caddo Parish or containing portions of Caddo Parish could be disproportionally impacted. This is especially true, when the margin of black voters in a majority district, is razor thin, as in many of Mr. Cooper's illustrative districts. But, Dr. Handley admits she did not examine this issue. (Ex. 2- Handley Depo. Tr. 84:9–14). In other words—Dr. Handley did

Handley. Defendants object to this report as untimely and improper. In any event, the second supplemental report does not remedy the issues with Dr. Handley's allocation method, or explain it, with any degree of scientific certainty. Dr. Handley does not provide any citations to suggest that her allocation method has been peer reviewed or accepted in the field, and her explanation fails to address the issues with her database as a whole.

nothing to test whether the assumptions she made about voter patterns were supported, and whether her allocation method supported her assumptions or were defensible.

It is clear that Dr. Handley's allocation is riddled with both mathematical errors, and errors of common sense which allowed votes for candidates to be drastically over or under reported per precinct. This, coupled with Dr. Handley's untested assumption that voters behave the same parish wide, render her EI analysis unreliable, because it is based on erroneous information or assumptions that have no basis in the record. *See Moore,* 547 Fed. Appx at 515-16 (excluding opinion based on erroneous evidence); *Pax,* 555 F.3d at 389 (excluding expert testimony where the expert made assumptions that had no basis in the record, even though it was not inconsistent with other evidence); *EEOC v. Freeman*, 778 F.3d at 470 (analyses that contain "faulty methods and lack of investigation" must be excluded); *Dart*, 253 Fed. Appx. at 398-99 (basic mathematical errors and methodological flaws render expert opinions unreliable). Because Dr. Handley applied these allocation methods in all areas she studied, and she relied upon this data to make her findings, she should be excluded from testifying and her reports should be stricken.

III. Dr. Handley's effectiveness scores lack relevance.

"Determining what minority population percentage will satisfy [the Voting Rights Act] is a difficult task requiring, in the view of the Department of Justice, a 'functional analysis of the electoral behavior within the particular ... election district.'" *Bethune-Hill v. Virginia State Bd. of Elections*, 580 U.S. 178, 194 (2017); *see also Alabama Legislative Black Caucus v. Alabama*, 575 U.S. 254, 275–76, 135 S. Ct. 1257, 1272–73, 191 L. Ed. 2d 314 (2015) (citing 76 Fed. Reg. 7471 (2011)) (reaffirming the need for a district-specific functional analysis in reviewing challenges to a proposed electoral map). More specifically, the correct analysis to satisfy the third *Gingles* prong as the court in *Covington v. North Carolina* observed, is a "district effectiveness analysis" which

is "used to determine the minority voting-age population level at which a district becomes effective in providing a realistic opportunity for voters of that minority group to elect candidates of their choice." 316 F.R.D. at 169, n.46 (alteration and quotation marks omitted) *affirmed North Carolina v. Covington,* 581 U.S. 1015, 137 S. Ct. 2211, 198 L. Ed. 2d 655 (2017).

Dr. Handley's RPV analysis fails to determine what minority voting age population percentage will allow the district to become effective. Instead, Dr. Handley produced only "effectiveness" scores where she simply opines whether the district *as drawn* would be effective or not. (Ex. 2 – Handley Depo Tr. 79:20-84:21). There is no corresponding analysis of the threshold level of BVAP required for when the district provides a realistic opportunity for black voters to elect their candidate of choice.[13] Moreover, Dr. Handley provided no full backup data with corresponding EI calculations of her "effectiveness score" work. (*Id.* at 84:2-:21). This is because Dr. Handley only produced EI estimates for parishes combined for the seven regions of the state that she studied in her report.[14]

But the combination of looking at voting patterns parish wide, and indeed, combining whole parishes together, regardless of what portions of parishes are combined in districts, only bakes in the assumption (and corresponding bias) that Dr. Handley makes that voters in each precinct in a parish vote similarly. As demonstrated by Dr. Solanky's analysis of 12 parishes in his report, this is an incorrect assumption, as there is significant variation from parish to parish of the percentage of white and black voters voting for a democrat or republican candidate. (*See* Ex.

[13] Dr. Handley's decision not to perform this analysis is especially curious given that she was one of the individuals who pioneered this methodology. *See, e.g.*, Bernard Grofman, Lisa Handley & David Lublin, Drawing Effective Minority Districts: A Conceptual Framework and Some Empirical Evidence, 79 N.C. L. Rev. 1384 (2001).

[14] In her deposition, Dr. Handley was unaware that Plaintiffs had challenged the entire statewide legislative plan for Louisiana, and instead thought Plaintiffs were only challenging certain regions. (*Compare* Ex. 2 – Handley Depo. Tr. 145:20-146:13 *with* Rec. Doc. 14 p 58).

4 – Solanky Report ¶¶ 23-31). This sort of natural variation between urban and rural voters, or voters separated by natural geography like the Mississippi River, is precisely the reason that the Supreme Court has cautioned Plaintiffs that a district-specific analysis is necessary. *See Thornburg v. Gingles,* 478 U.S. 30, 59, n.28 (1986). ("[w]hen considering several separate vote dilution claims in a single case, courts must not rely on data aggregated from all the challenged districts in concluding that racially polarized voting exists in each district."); *Bethune-Hill*, 580 U.S. at 194. Here, Dr. Handley simply aggregated the data from the challenged districts in various regions in spite of the Supreme Court's warnings that a district-specific analysis is necessary. This choice, while curious, was Plaintiffs' own choice, as Dr. Handley admits that she studied only the regions dictated to her by Plaintiffs' counsel. (Ex. 2 – Handley Depo. Tr. 146:10–146:13). However, as *Gingles* warns, the Court may not rely upon this aggregated method, rendering Dr. Handley's work irrelevant to the analysis at hand.

CONCLUSION

For the foregoing reasons, Dr. Handley's testimony and reports in this case should be excluded in their entirety.

Respectfully submitted, this the 6th day of October, 2023.

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Exhibit 1

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 2011state 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.

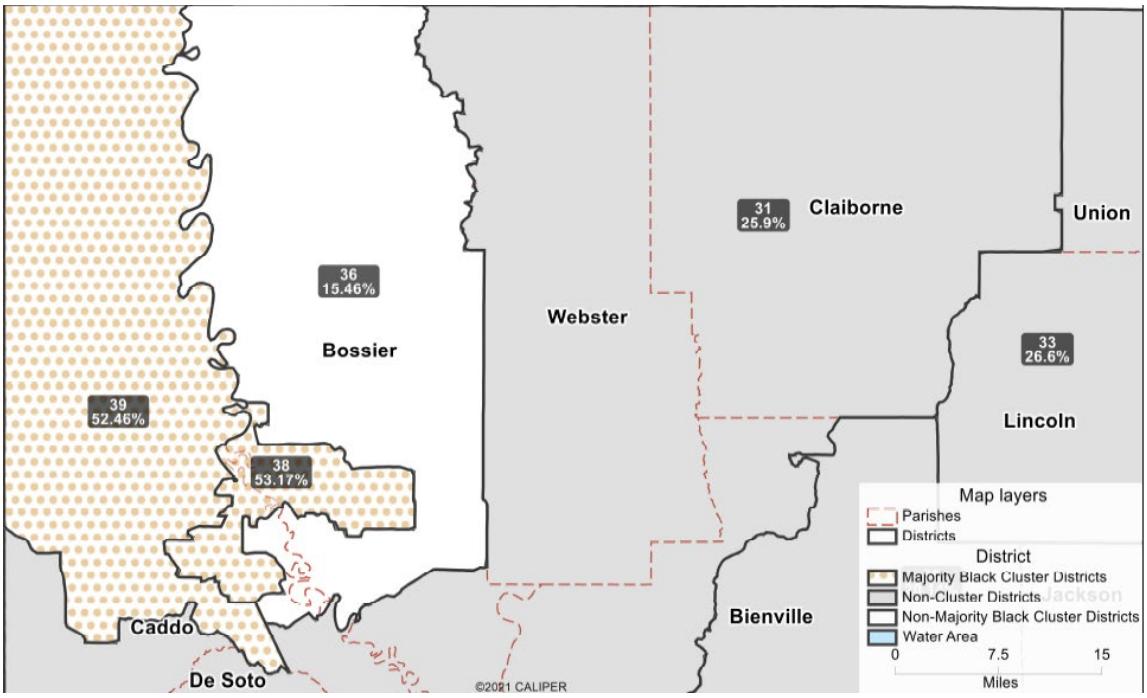
State Senate Cluster 1: Bossier and Caddo Parishes Voting is racially polarized in this cluster (area of interest 1). In all 16 of the statewide elections analyzed, Black and White voters supported different candidates. The Enacted State Senate Plan provides one effective majority BVAP district in this 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%.

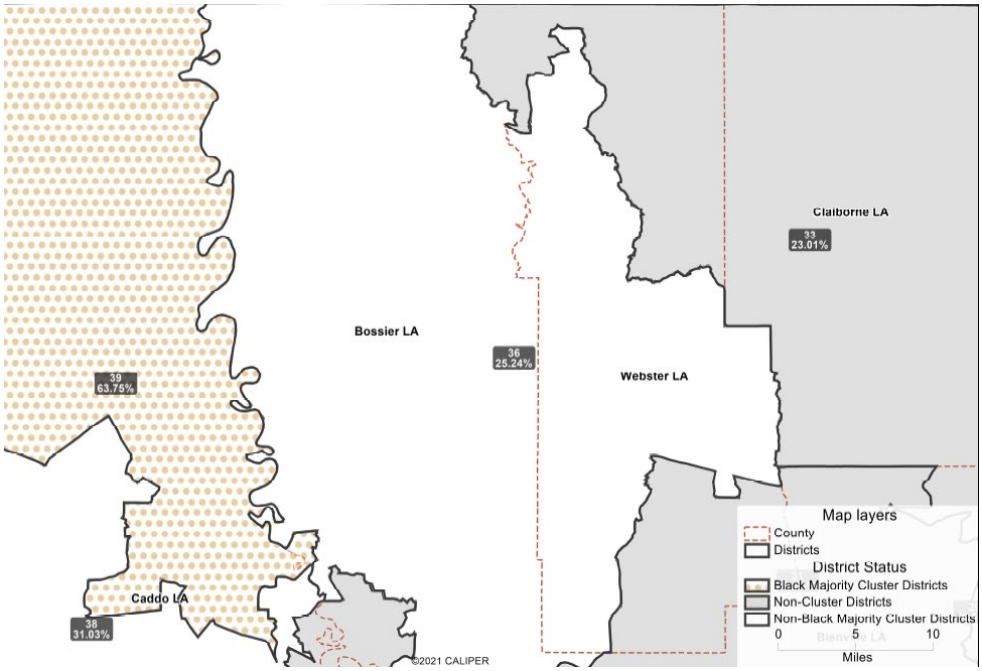
Comparison Table: State Senate Cluster 1

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



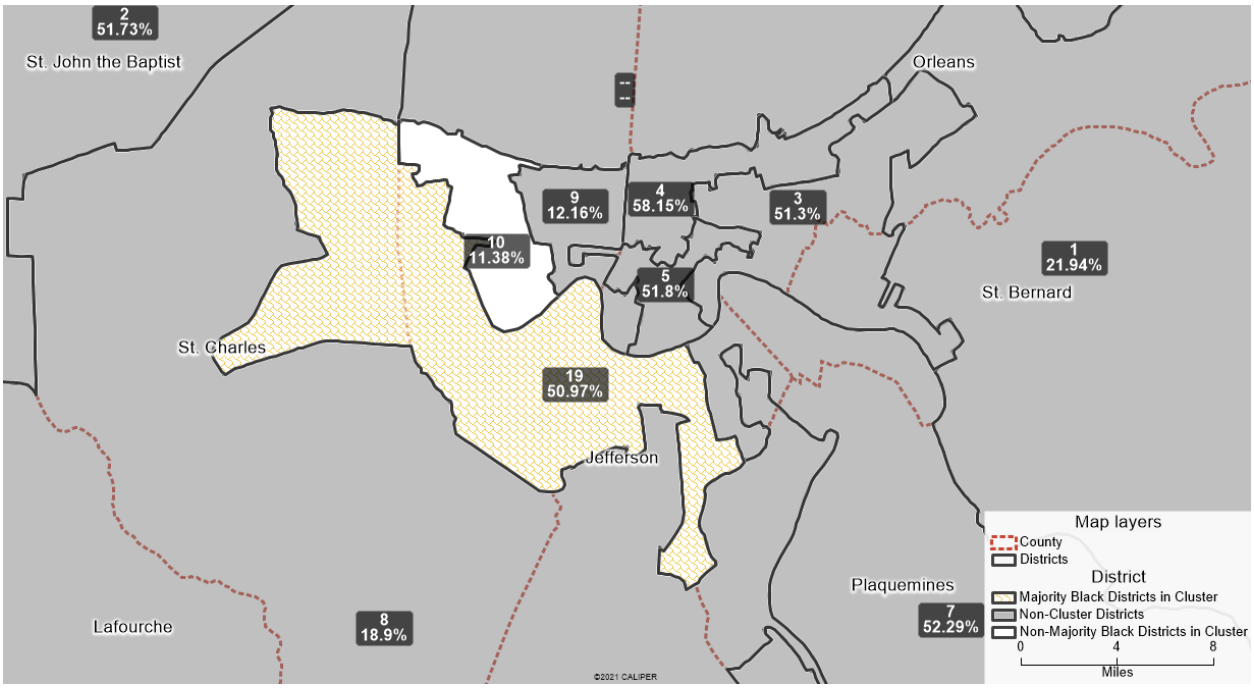
Enacted District Map

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.)

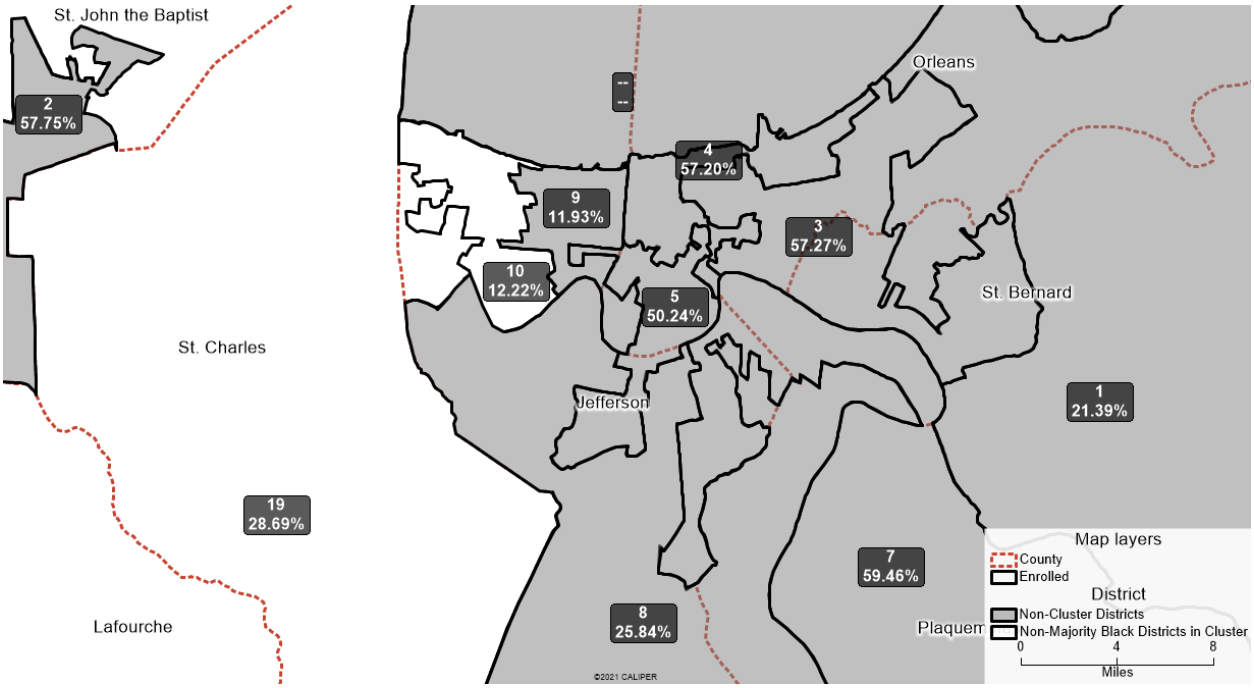
Comparison Table: State Senate Cluster 2

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



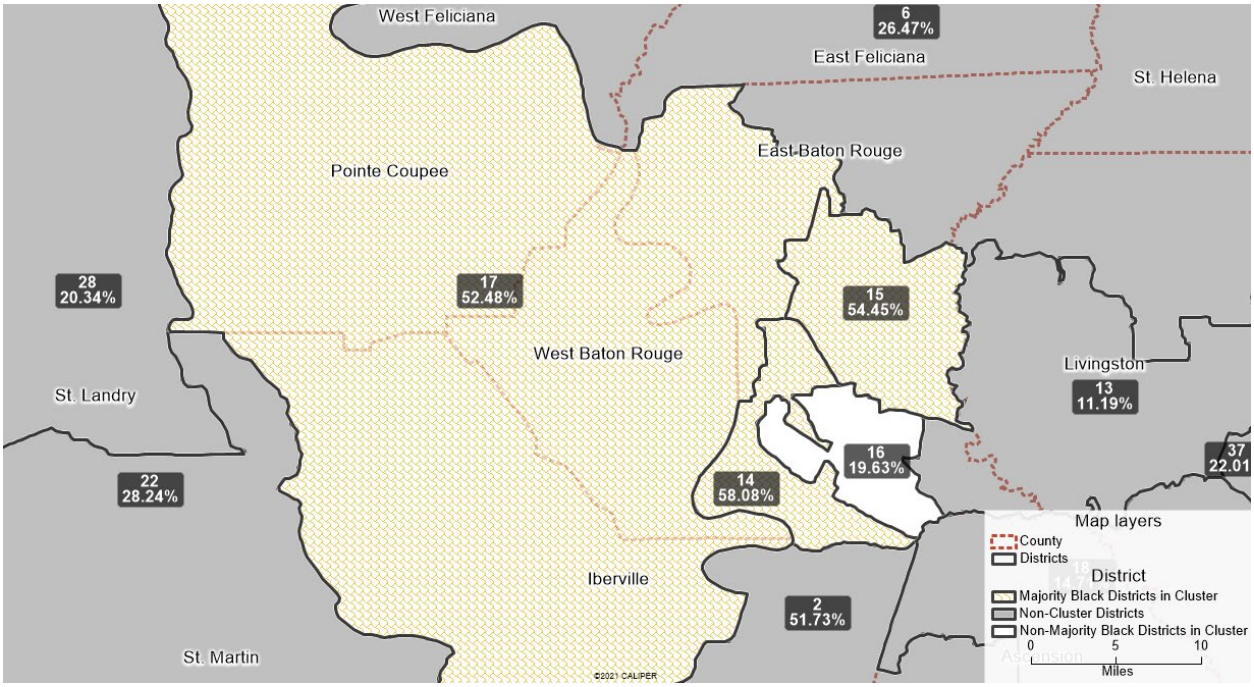
Enacted District Map

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.

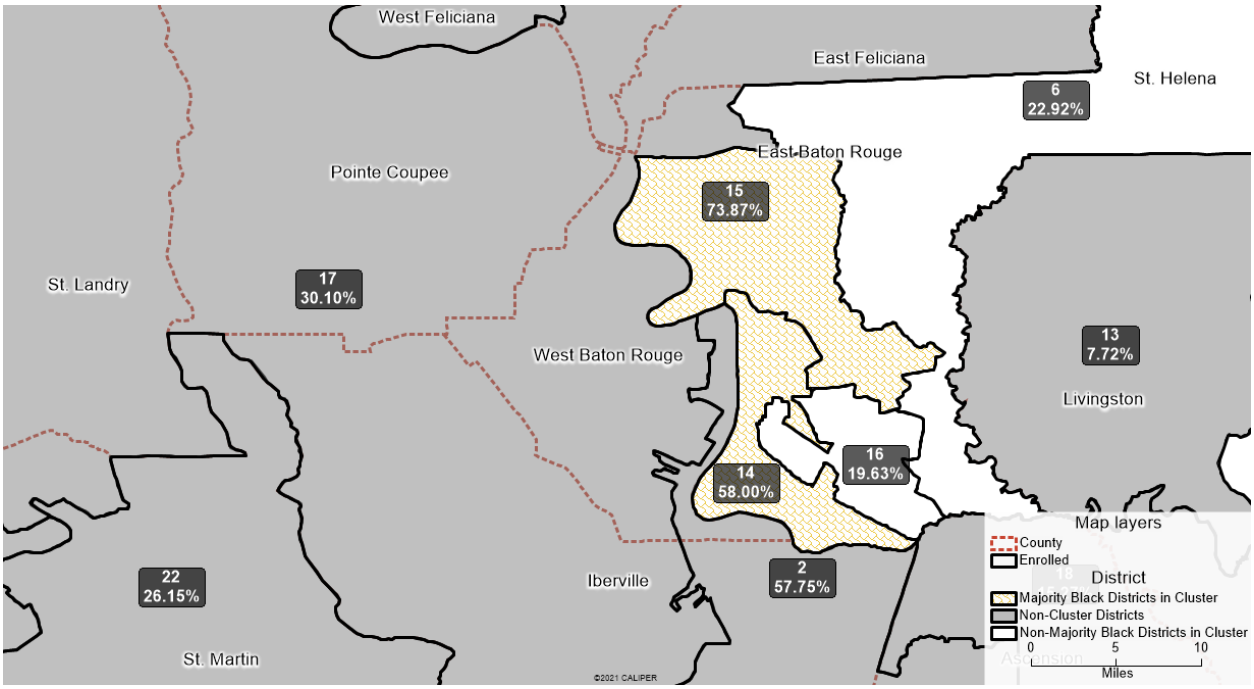
Comparison Table: State Senate Cluster 3

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

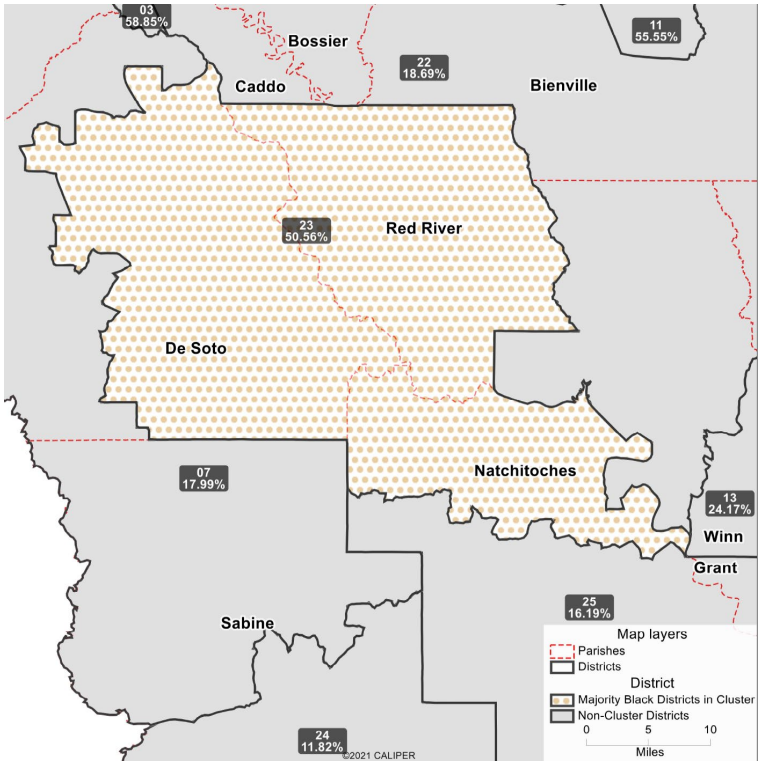
State House Cluster 1: DeSoto, Natchitoches, and Red River Parishes Voting is racially polarized in this cluster (area of interest 4). In all 16 of the statewide elections analyzed, Black and White voters supported different candidates. The Enacted State House Plan does away with the 2011 majority BVAP 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

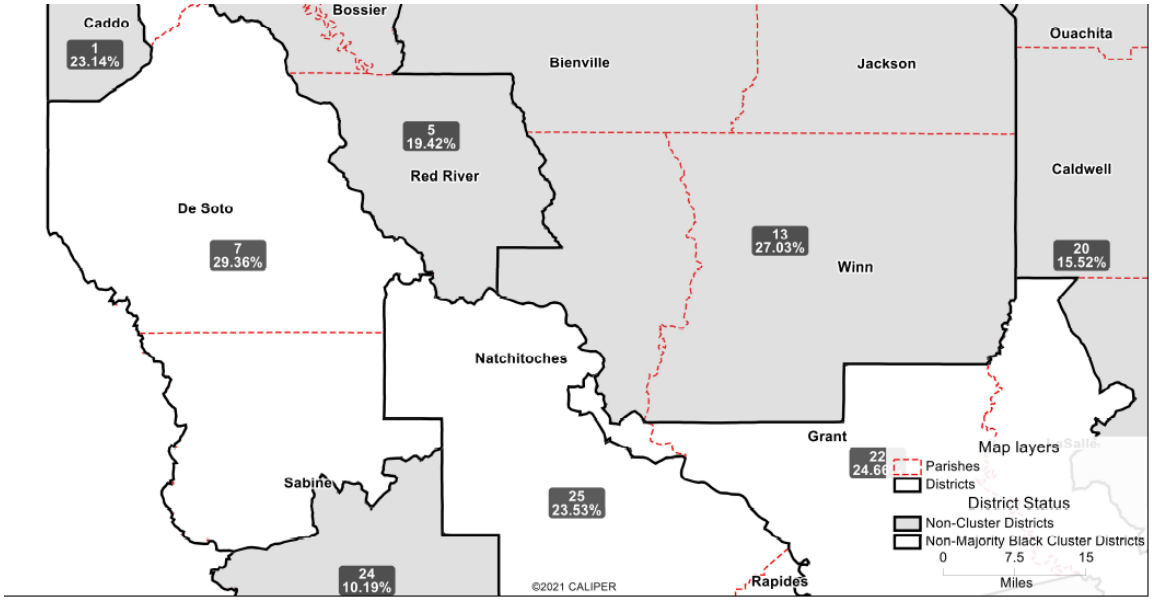
Illustrative District	Effectiveness Score #1	Effectiveness Score #2	Enacted District	Effectiveness Score #1	Effectiveness Score #2
23	87.5%	87.5%	7	18.8%	0.0%
			22	0.0%	0.0%
			25	0.0%	0.0%

[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



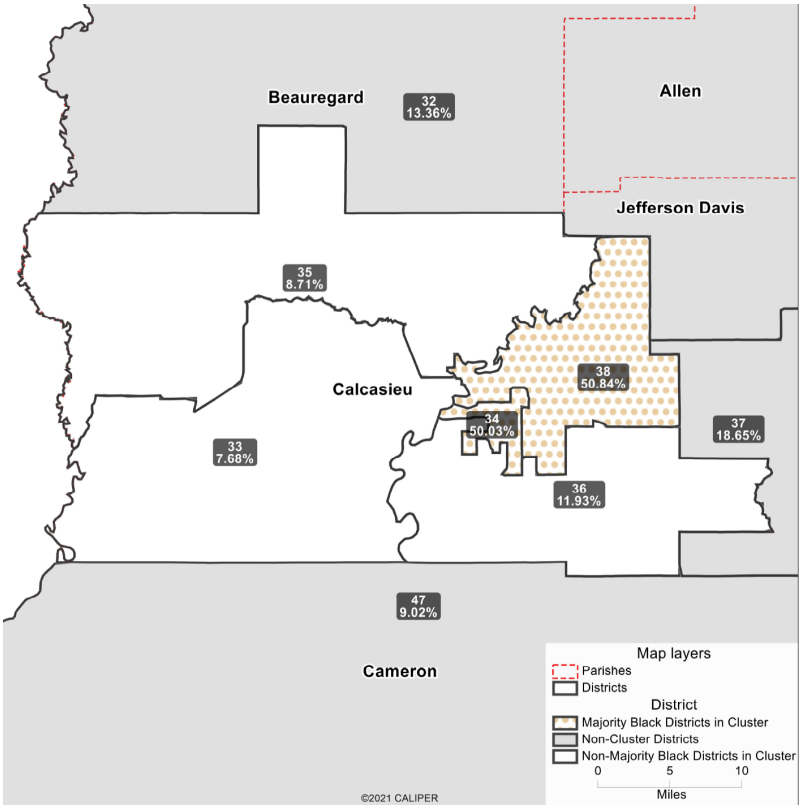
Enacted District Map

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.

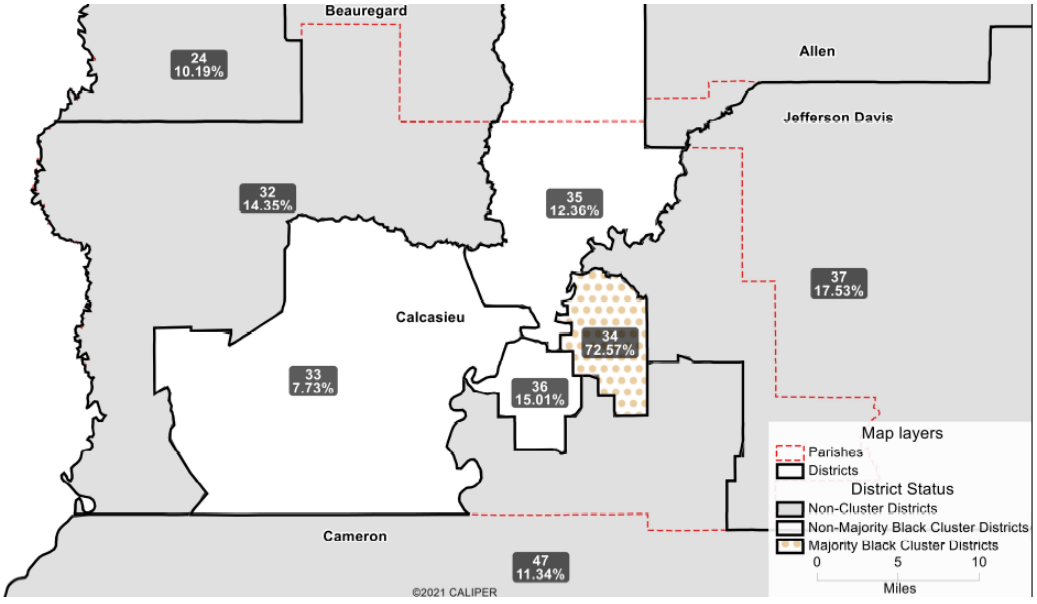
Comparison Table: State House Cluster 2

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



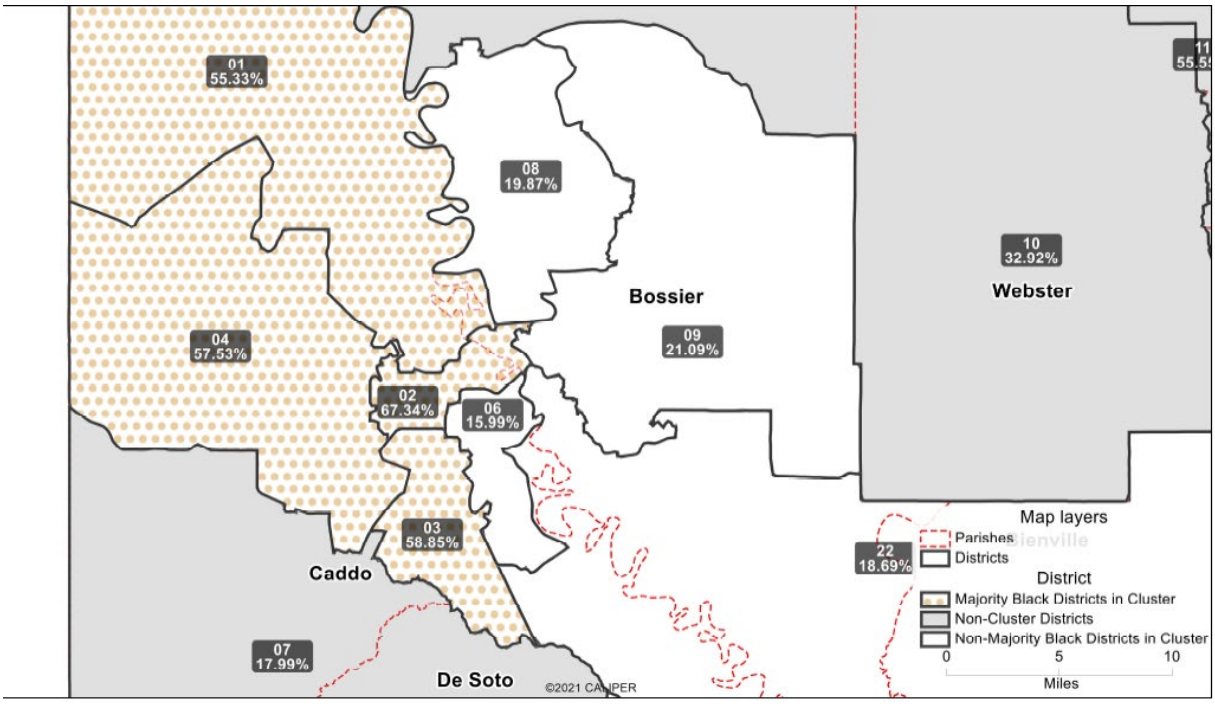
Enacted District Map

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.

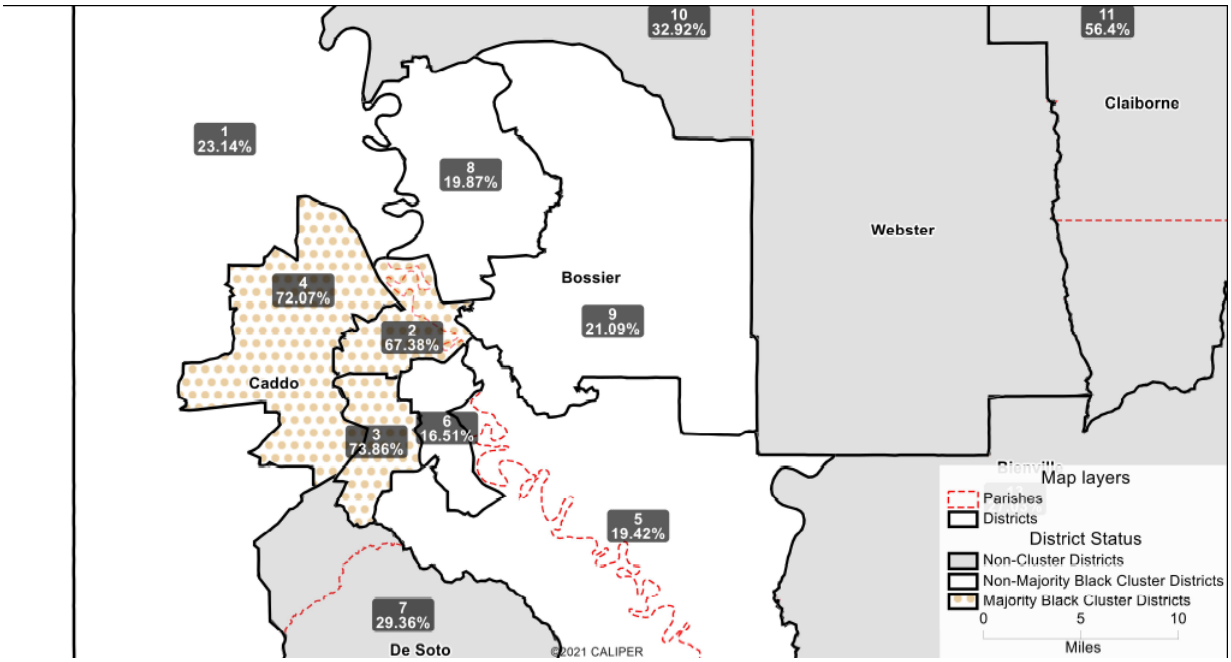
Comparison Table: State House Cluster 3

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



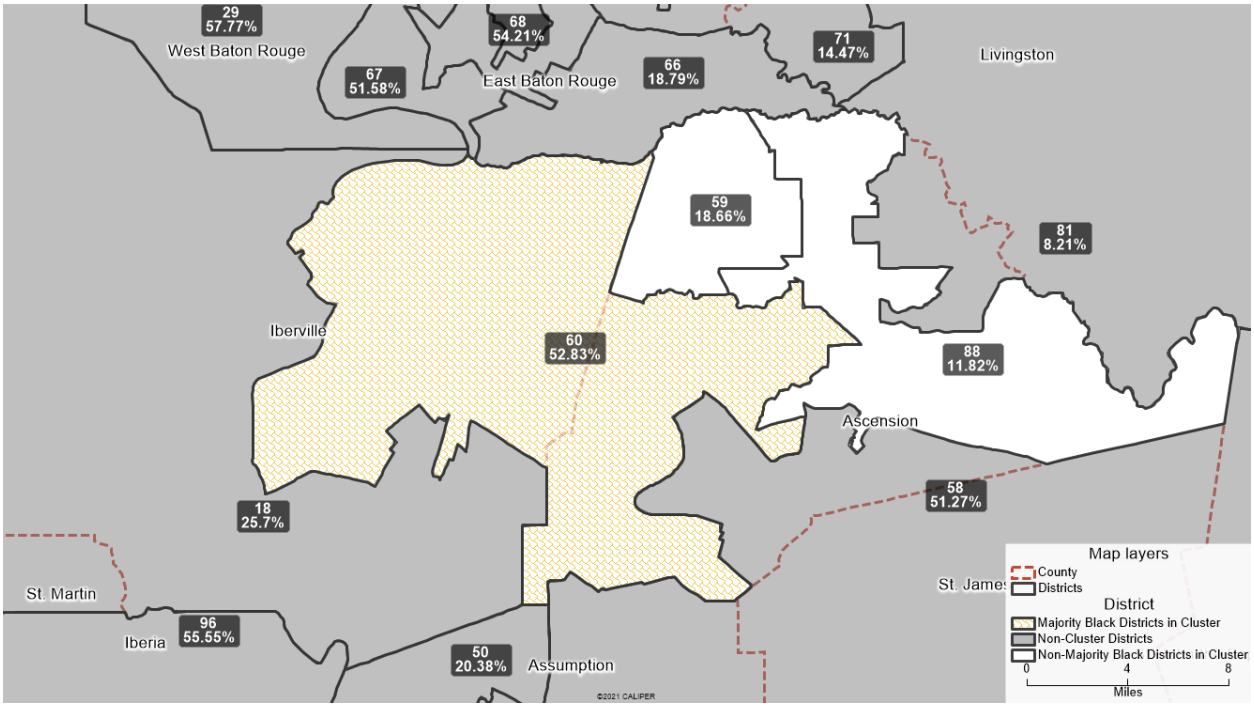
Enacted District Map

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%.

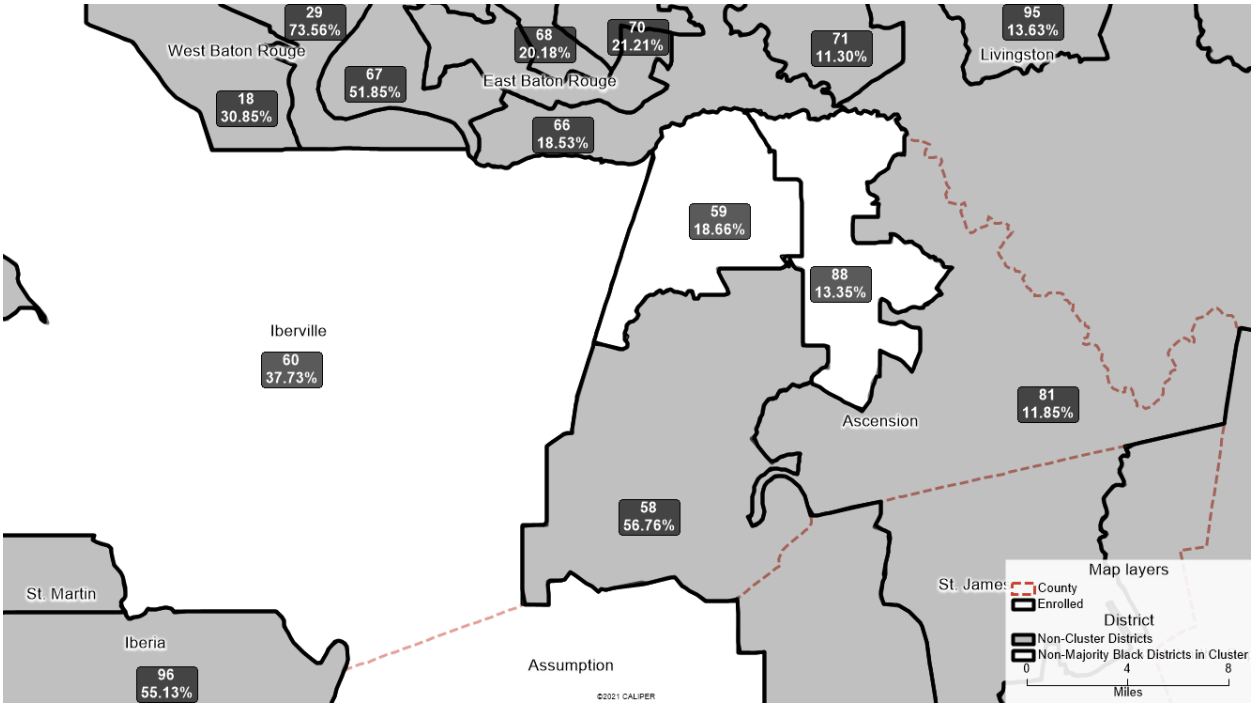
Comparison Table: State House Cluster 4

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



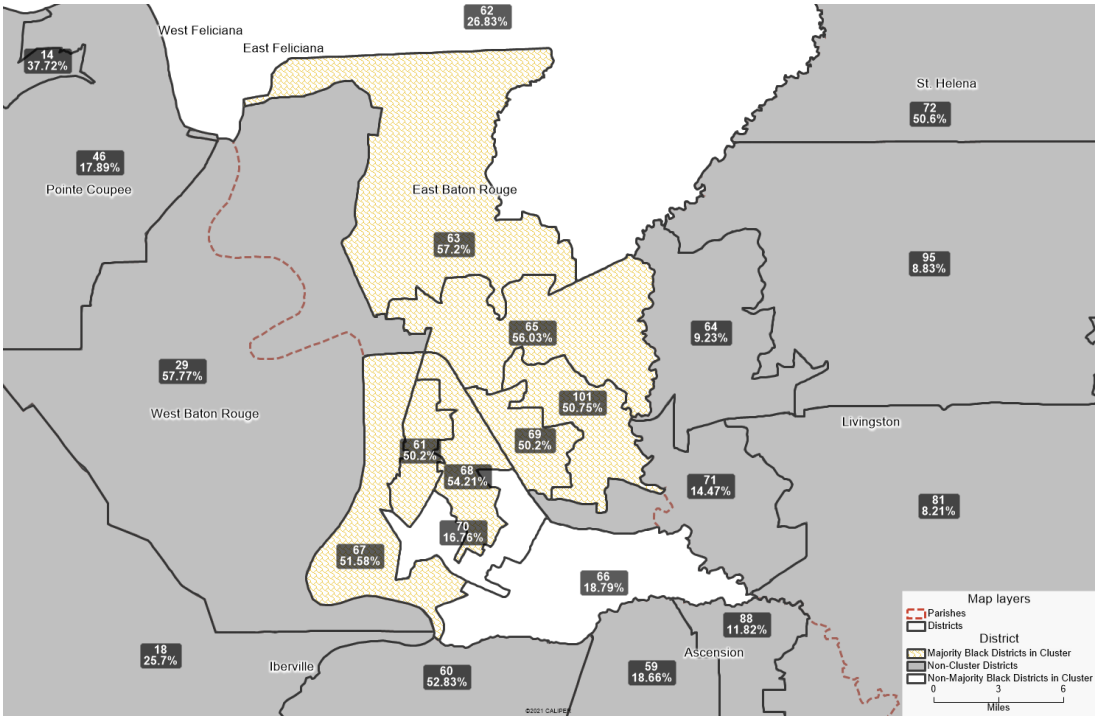
Enacted District Map

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.

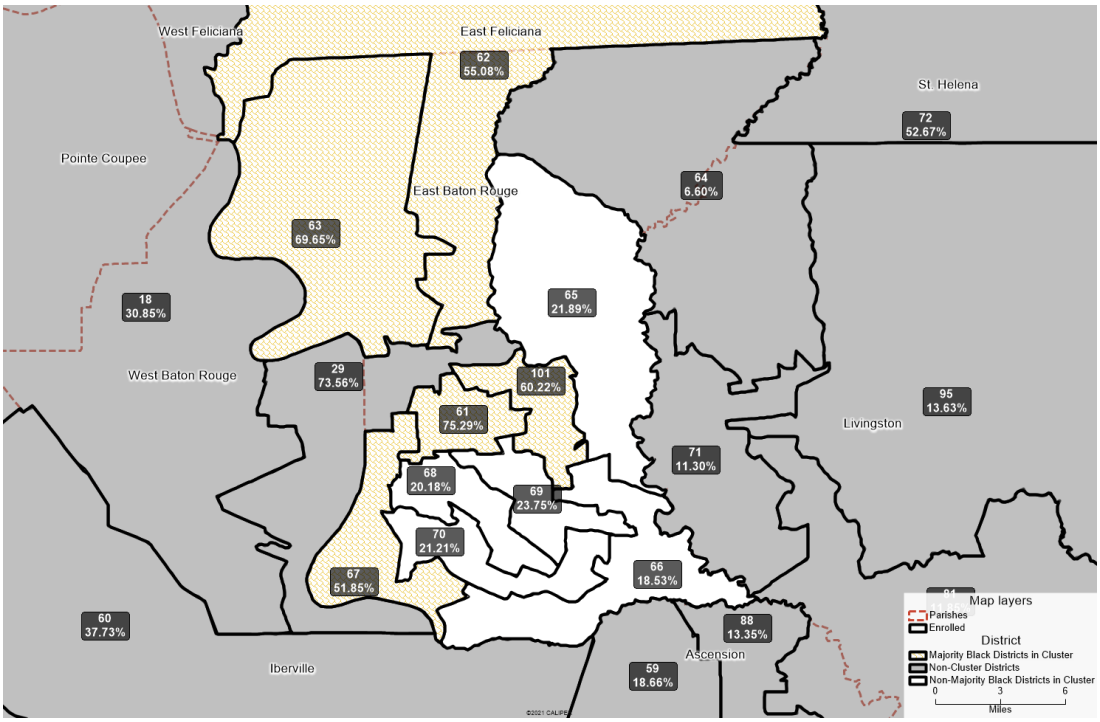
Comparison Table: State House Cluster 5

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



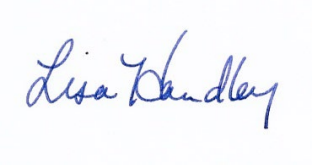
Enacted District Map

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.



Lisa Handley, Ph.D.

Appendix A1

Area of Interest 1
Bossier, Caddo

			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	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	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 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	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	96.4, 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	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	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	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 2x2	ER	HP
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

Area of Interest 3
East Baton Rouge, West Baton Rouge, Iberville, Pointe Coupee

			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	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

Area of Interest 3
East Baton Rouge, West Baton Rouge, Iberville, Pointe Coupee

			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
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

Area of Interest 3
East Baton Rouge, West Baton Rouge, Iberville, Pointe Coupee

			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	97.7	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	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	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	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 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	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	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	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 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	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	97.5	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	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 2x2	ER	HP
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

Area of Interest 7
East Baton Rouge, East Feliciana

			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	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	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 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

Area of Interest 7
East Baton Rouge, East Feliciana

			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	97.4	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	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 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**	**EI RxC**	**interval**	**EI 2x2**	**ER**	**HP**	**EI RxC**	**interval**	**EI 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 Cappiello-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

				Estimates for Black Voters					Estimates for White Voters				
	Party	Race	Vote	EI RxC	95% confidence interval	EI 2x2	ER	HP	EI RxC	95% confidence interval	EI 2x2	ER	HP
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
	Party	**Race**	**Vote**	**EI RxC**	**interval**	**EI 2x2**	**ER**	**HP**	**EI RxC**	**interval**	**EI 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.

"Evaluating national preventive mechanisms: a conceptual model," Journal of Human Rights Practice, Volume 12 (2), July 2020 (with Richard Carver).

"Minority Success in Non-Majority Minority Districts: Finding the 'Sweet Spot'," Journal of Race, Ethnicity and Politics, Volume 5 (2), July 2020, pp. 275-298 (with David Lublin, Thomas Brunell and Bernard Grofman).

"Has the Voting Rights Act Outlived its Usefulness: In a Word, "No," Legislative Studies Quarterly, Volume 34 (4), November 2009 (with David Lublin, Thomas Brunell and Bernard Grofman).

"Delimitation Consulting in the US and Elsewhere," Zeitschrift für Politikberatung, volume 1 (3/4), 2008 (with Peter Schrott).

"Drawing Effective Minority Districts: A Conceptual Framework and Some Empirical Evidence," North Carolina Law Review, volume 79 (5), June 2001 (with Bernard Grofman and David Lublin).

"A Guide to 2000 Redistricting Tools and Technology" in The Real Y2K Problem: Census 2000 Data and Redistricting Technology, edited by Nathaniel Persily, New York: Brennan Center, 2000.

"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).

"Black Representation: Making Sense of Electoral Geography at Different Levels of Government," Legislative Studies Quarterly, 14 (2), May 1989 (with Bernard Grofman).

"Minority Voting Equality: The 65 Percent Rule in Theory and Practice," Law and Policy, 10 (1), January 1988 (with Kimball Brace, Bernard Grofman and Richard Niemi).

"Does Redistricting Aimed to Help Blacks Necessarily Help Republicans?" Journal of Politics, 49 (1), February 1987 (with Kimball Brace and Bernard Grofman).

***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.

"Role of the Courts in the Electoral Boundary Delimitation Process," in International Election Remedies, John Hardin Young (ed.), Chicago: American Bar Association Press, 2017.

"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. Sivaramakrishman, 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.

"Electing Minority-Preferred Candidates to Legislative Office: The Relationship Between Minority Percentages in Districts and the Election of Minority-Preferred Candidates," in Race and Redistricting in the 1990s, edited by Bernard Grofman; New York: Agathon Press, 1998 (with Bernard Grofman and Wayne Arden).

"Estimating the Impact of Voting-Rights-Related Districting on Democratic Strength in the U.S. House of Representatives," in Race and Redistricting in the 1990s, edited by Bernard Grofman; New York: Agathon Press, 1998 (with Bernard Grofman).

"Voting Rights in the 1990s: An Overview," in Race and Redistricting in the 1990s, edited by Bernard Grofman; New York: Agathon Press, 1998 (with Bernard Grofman and Wayne Arden).

"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

Exhibit 2

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Transcript of Lisa Handley, Ph.D.

Date: September 26, 2023
Case: Nairne, et al. -v- Ardoin

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IN THE UNITED STATES DISTRICT COURT

FOR THE MIDDLE DISTRICT OF LOUISIANA

DR. DOROTHY NAIRNE et al.,

Plaintiffs

vs : Civil Action No.

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

Defendant : 3:22-cv-00178-SDD-SDJ

Oral deposition of

LISA HANDLEY, Ph.D.

WASHINGTON, DC

TUESDAY, SEPTEMBER 26, 2023

10:16 a.m. EASTERN TIME

Job No.: 506246

Pages: 1 - 192

Reported by: Lisa V. Feissner, RDR, CRR, CLR

Oral deposition of LISA HANDLEY, Ph.D., held at the offices of:

NELSON MULLINS RILEY & SCARBOROUGH LLP
101 CONSTITUTION AVENUE, NW
SUITE 900
WASHINGTON, DC 20001
202.712.2800

Pursuant to Notice, before Lisa V. Feissner, RDR, CRR, CLR, Notary Public.

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LUIS MANUEL RICO ROMAN, ESQUIRE (via Zoom)

DAYTON HARRIS-CAMPBELL, ESQUIRE (via Zoom)

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THOMAS JONES, ESQUIRE

TUMULESH K.S. SOLANKY, Ph.D.

case?

A No.

Q So you are just a Gingles 2 and 3 expert in this case.

Is that right?

A I am an expert in Gingles 1 and 2 -- 2 and 3 in this case.

Q Okay. Thank you.

And that means that you conducted a racially polarized voting analysis, right?

A Yes.

Q If I use the term "RPV," will you know what I mean?

A Yes.

Q Okay. In order to conduct this RPV analysis, you needed to build an aggregate level database.

Is that right?

A Correct.

Q Can we turn to page 5 of your report.

Do you see about midway through the page, there's a bold and italicized section that starts with the word "Database"?

A I do.

Q Does this section generally discuss how

the database used in your analysis was built?

A Yes.

Q And I think it mentions that you retrieved data for your database from the Secretary of State's website.

Is that correct?

A Some of it, yes.

Q Did you personally collect that data from the Secretary of State's website?

A It depends on what data you're referring to. Certainly, I did collect some.

Q Sure. What data did you personally collect from the Secretary of State's website?

A I can't even remember off the top of my head. Certainly general things like vote totals, early voting, total turnout. I'm not going to remember everything. Quite a number of things.

Q Sure. Do you see in that first paragraph by the Database header, the last sentence that starts, The 2015 to 2022 election results and turnout by race data?

A Yes.

Q Is that the data that you personally retrieved from the Secretary of State's website?

A It depends on what you mean. Again, I

looked at some of the information I got myself off the website, yes.

Q Let me ask it a different way.

Did anyone else assist you in pulling down data from the Secretary of State's website for you to then analyze?

A Yes.

Q Who did that?

A I don't know.

Q Did you receive the data from counsel?

A I received the data from ACLU, counsel or analytics division.

Q Anyone in particular within the analytics division?

A No.

Q And I believe that you mentioned somewhere in this report that some of the underlying data that you used was compiled for the predecessor congressional case, the Press Robinson matter.

Is that right?

A I don't know the ordering of it, but certainly some of the data was used in that case and in this case.

Q And did you personally yourself or the

ACL you get the data from the Secretary of State's website used in the database for that case, too?

A Yes, as far as I can recall.

Q And I see in footnote 5, you reference that election returns were also obtained from open elections.

Is that right?

A That's correct.

Q What is open elections?

A It is a conglomerate -- I believe it's started by some newspaper reporters -- to gather election returns and format them in a way that could be easily obtained by anyone in the public, including news reporters who wanted to use that information. I think it got, I don't know, a Knight Foundation grant to do this.

Q Okay. Do you know where open elections sources their data from?

A Secretary of State's office for the most part. It depends on the state.

Q So in Louisiana, it would be the Secretary of State because he's the chief election officer for the state.

Is that right?

A I can't speak for open elections. I

would assume so, but I don't really know.

Q And do you know if there were any conflicts in the data that you sourced from open elections versus those retrieved directly from the Secretary of State for Louisiana?

A Any conflicts...

Q So let me rephrase that.

Do you know if there were any differences in the data, say if you got data for the 2020 presidential election from the Secretary of State directly and from open elections, do you recall if there was any differences in what the source -- those two sources reported?

A There were most likely formatting differences.

Q But you don't recall any substantive differences in the data?

A I do not.

Q And I also believe that for the purposes of your analysis you required precinct level shape files.

Is that correct?

A Yes.

Q Were those downloaded from the census website?

A There are shape files on the census website. Those are for VTDs. So I guess it would depend on -- there are multiple sources for shape files. I think that also precinct shape files were received I think from the Secretary of State's office, but I'm not sure. I don't remember off the top of my head.

Q Sure. Do you recall receiving shape files used in the building of your database from any other source other than the census or the Secretary of State?

A It's possible that some shape files came from VEST. I'm not sure. I don't recall off the top of my head.

Q And you said VEST. Kind of like the article of clothing?

A An acronym, V-E-S-T. Voting and Elections Science Team.

Q Okay. Voting and Elections Science Team?

A Here we go. Voting and Election Science Team.

Q All right, great. Thank you.

Dr. Handley, once you had all of this raw data, did you need to merge it or aggregate it

together into a unified database in order to perform your analysis?

A That's correct. The turnout data had to be merged with the election returns, whether those came from the Secretary of State. In order to use population data, you needed the shape files to merge with the census. So all of these things had to go together to produce a database.

Now, you don't actually need the population data to do the racial bloc voting analysis.

Q Okay. Did you personally merge all of this data together, or did somebody assist you with that?

A Somebody assisted me with that.

Q And who would that be?

A The analytics department at ACLU.

Q Anyone in particular?

A Not that I know of, no.

Q Did you verify -- well, let me ask you -- let me back up and ask you this.

Did the ACLU analytics data team merge all of it together, merge the data together for you and send it back to you for your analysis?

MS. BRANNON: I'm just going to put an

objection on the record that Dr. Handley can answer about the steps that she took, but the interactions and the details of some of her interactions with ACLU analytics was all done under the direction of counsel, and any conversations or specifics are privileged.

So you can describe the facts of the data that you received, but you should not discuss any detailed interactions that you had with counsel and analytics.

Q Do you want me to rephrase my question?

A Remind me of the question.

Q Sure. Absolutely, Dr. Handley.

Did you receive a set of data from the ACLU analytics team that had all of the data we just discussed merged together in order for you to run your analysis?

A Yes.

Q Did you take any steps to verify the data was merged properly after you received it from the ACLU analytics team?

A Yes.

Q What did you do?

A Certainly I compared the election results to the website election results. I did

area 7, East Central Louisiana?

A Yes.

Q Why did you choose to include East Baton Rouge twice?

A Because these were different areas. What I was interested in is the specific voting patterns in very specific areas where these districts were drawn.

In one area, the additional State Senate district covered -- fell within four parishes, and in another area, they fell within two parishes.

Q Are you aware that there are other majority-minority districts that were drawn in this case that are not in the areas listed in this table?

A That's correct, I did not look at all majority Black districts. I looked at only the additional majority Black districts in terms of identifying areas of interest.

Q And these areas of interest are not a district-specific analysis.

Is that right, Dr. Handley?

A No. The district-specific analysis is the analysis that follows in the next section. This is an analysis of voting patterns in the

areas where the new districts -- I'm sorry, in the areas where the illustrative map offers additional districts.

Q So let me clarify what you just said.

So area 1 covers Bossier and Caddo parishes, correct?

A That's correct.

Q And you looked at the entirety of Bossier and Caddo parish to perform your analysis.

Is that right?

A Depends on the analysis that you're talking about.

Q Sure. So the results that are reported in Appendix 1A of your report?

A That's correct. That is based on voting patterns in Bossier and Caddo parish.

Q Right. The analysis listed in Appendix 1A is not specific to, say, State Senate district 38?

A That's correct. The effectiveness analysis later in the report is specific to that.

Q When you say the analysis later in your report, is that -- well, we'll stick with Bossier and Caddo. Is that, for example on page 17, or 16 and 17?

A Correct.

Q And so here, it looks like you've reported two different effectiveness scores for both the illustrative and the enacted versions of Senate districts 36, 38, and 39?

A Correct.

Q Can you explain to me a little bit about what this table is showing?

A Which table?

Q Comparison table State Senate cluster 1.

A Yes. So what I'm looking at is the percentage of -- in terms of effectiveness score 1, the percentage of elections within the statewide elections within district -- illustrative district 36 that the Black-preferred candidate would have won or moved on to the runoff.

And then in effectiveness score 2, I limit it to what a runoff would be, in other words, two candidate contests, and do the same thing, the percentage of elections that the Black-preferred candidate would have won.

Q And this is district-specific based on either, say, illustrative 36 or enacted 36?

A Within the boundaries of those proposed

districts, yes.

Q And that is different than what's reported in Appendix A1, which is parishwide.

Is that correct?

A Well, it isn't parishwide. It's sometimes two parishes or three parishes.

Q Right. I'm sorry. The entirety of Bossier and Caddo for Appendix 1?

A That's correct. What I'm looking at is voting patterns in those particular parishes combined. What I'm looking at very specifically here is the illustrative districts and enacted districts.

Q So what data did you use to calculate the effectiveness scores listed in the State Senate cluster 1 table?

A I looked at recompiled election results for the statewide contests.

Q What do you mean by "recompiled election results"?

A Because some of the districts drawn might have divided precincts, we disaggregated the results for each candidate down to the block level and then brought it up to the district level.

Now, if a precinct wasn't split, it's

basically using the whole precinct. But if a precinct is split, it's using those blocks that fall within the district lines and leaves out those portions that do not.

Q And when you were calculating the effectiveness scores using that data, were you using the statewide elections that we talked about earlier that were listed on table, pages 6 and 7, all of those statewide elections?

A Yes.

Q Okay. So if I wanted to --

A Excuse me. Yes for effectiveness score 1, not true for effectiveness score 2. Sorry.

Q Right. Because effectiveness score 2 is limited to two candidates?

A That's correct.

Q Okay. So, for example, your effectiveness score 1 might have excluded some of the October elections where there were more than one candidate?

A You mean the effectiveness score 2.

Q I'm sorry, yes, the effectiveness score 2 -- thank you, Dr. Handley -- would have excluded the October primary elections where there was more than two candidates?

A Correct.
Q Okay. So if I wanted to look in your backup data and see the district-specific analysis that was done, where would I find it?
A Well, you'd have to go to the bloc-level data and recompile those results using a bloc-to-district equivalency, which I believe is included in the database.
Q Because Dr. Handley, I just want to be sure that I'm right about this. You didn't produce any similar EI estimates like are presented in Appendix A1 for just district 36, did you?
A No.
Q Why not?
A I believe that the racial bloc voting analysis indicates the voting patterns for this area pretty specifically. In theory, I could have done that, but I didn't really feel it was necessary because I knew what the voting patterns were in this particular area.
Q And by this particular area, do you mean Bossier and Caddo parishes in their entirety?
A That's correct.
Q Okay. But in other reports in cases,

But you can answer to the best of your understanding.

A I was not aware of that.

Q Had you been aware that every legislative district was challenged in this case by the plaintiffs, would you have done a different analysis?

MS. BRANNON: And I'm going to object to the characterization, the form of the question.

But you can answer.

A Certainly, if I'd been asked to look at every district, I could have looked at every district.

Q So looking at this last column in Table 2, can we run through the same exercise, and I will count with you, for the number of H21, so State House enacted districts that Dr. Lewis says are needed for 50 percent or above.

A Twelve?

Q We're in agreement. All right.

And then the -- do you see on page B-10, we're still on Table 2, where H23 starts, I see it's roughly above halfway through the page?

A Yes.

Q Okay. Can we do the same thing for the

and maybe some political scientists have looked at that.

Q And is it generally accepted that urban areas tend to be more heavily Democratic?

A I believe that that has been studied, and yes, that is true.

Q So I think we can set aside Dr. Lewis's stuff.

I'd like to turn back to your report. Can we look at page 6, please.

A Page 6. Okay.

Q Do you see Footnote 8 on page 6?

A Yes.

Q Does this footnote accurately explain how you allocated early votes to precincts in your analysis?

A It does.

Q And did you follow this methodology for every area of interest and election that you analyzed?

A Yes.

Q Is this method a peer-reviewed method of allocating early votes?

A It's certainly a method other experts use. I don't know that anyone has written it up,

if that's what you mean by peer-reviewed. But other experts certainly use this. It's generally accepted as the best way to do this.

Q Okay. What other experts have generally used this process?

A Well, I know that Max Palmer, for example, uses this method.

Q Anyone else?

A I believe so, but I can't think of anyone off the top of my head.

Q Did you look at any precinct-specific election results from other sources to verify your allocation method to make sure that it was accurate?

A I certainly carried out some exercises to determine if I was likely to be introducing bias. I didn't look at precinct results for that.

Q Okay. Dr. Handley, do you recall that you did a precinct-specific analysis of Caddo parish and produced that with your rebuttal report in this case?

A I don't think you're using the correct terminology. I did an analysis of Caddo. All of these analysis are based on precincts as a unit. But to say precinct-specific would be incorrect.

pull up the spreadsheet that was labeled "Caddo precincts"?

MS. BRANNON: And can you just email me what exactly you're pulling up for her --

MS. RIGGINS: Yeah.

MS. BRANNON: -- so I can look at it today, too? And then can we --

MS. RIGGINS: Yeah. It's from her backup data. And we can -- do you want to go off the record while we pull this up and I email it to you?

MS. BRANNON: Yeah.

(A discussion was held off the record.)

MS. RIGGINS: So we're going to mark this as Exhibit 9.

(Exhibit Handley-9 marked for identification and attached to the transcript.)

BY MS. RIGGINS:

Q Dr. Handley, do you see on the laptop in front of you an Excel spreadsheet called Caddo_precincts?

A I do.

Q Do you understand that this came out of the backup data that you produced with your rebuttal report?

A Yes, I believe that's correct.
Q Okay. Did you compile or create this Excel spreadsheet, Dr. Handley?
A I directed it to be compiled.
Q You directed it to be compiled to -- to whom did you issue that direction?
A To the analytics department that created what I asked for.
Q Okay. Do you know who Devin McCarthy is?
A Yes.
Q Would it surprise you that he is the creating of this spreadsheet as shown in the metadata?
A It wouldn't surprise me, but I don't know that that's true.
Q Sure.
MS. RIGGINS: We're going to mark this as Exhibit 10.
(Exhibit Handley-10 marked for identification and attached to the transcript.)
BY MS. RIGGINS:
Q So do you see on the top middle of Exhibit 10, Dr. Handley, it says Caddo_precinctsreadonly-Excel?

Q So I would like to ask you what a few of these columns mean, and feel free to go to the columns and expand as needed. That's the only way I can do that.

I would like to go to column BQ.

A Okay.

Q All right. Does the column header for column BQ read, turnout_general_black?

A Correct.

Q Okay. What does that mean? What does this column represent?

A That is the number of Black voters who turned out for that election, not necessarily the number who voted. It isn't necessarily the numbers who voted, but it's the number who turned out.

Q So turned out for the presidential election, because that's what this spreadsheet is analyzing, right?

A No. They turned out for that 2020 November election. They may or may not have voted in the presidential. And I believe I saw some -- did I see a Senate contest over there? There's Senate data over here.

Q Sure. Which column are you looking at?

A I'm looking at C1. Let's look --
Q C1?
A Yeah. Remind me what year that is.
Q You mean CI? I see that, mm-hmm, yeah. So I'm sorry, Dr. Handley, that was a bad question.
This spreadsheet looks at the November 2020 election results which had Senate and president, correct?
A Yes.
Q And so column BQ, you testified, just to be sure, was the turnout in that election?
A The Black turnout, the Black voter turnout, yes.
Q And BR says turnout_general_other.
Is that right?
A That's correct.
Q And what does that mean?
A That means -- well, the state reports three categories. It's Black, White, and other. And that's the other.
Q Okay. And the next column over, what is -- that's general_turnout -- I'm sorry -- turnout_general_white.
Is that right?

A Correct.

Q Okay. And is that the turnout for the November election for White voters?

A Yes.

Q Okay. All right. So I apologize to make you do this. Unless you know, I was going to scroll all the way across to see that this is precinct 1 in Caddo parish, the results. Would you like to scroll all the way over and see that?

A I'm going to believe you.

Q I did look. The precincts are listed sequentially.

So for BQ, so row 2 under BQ, turnout_general_black is 180.

Is that right?

A Correct.

Q Okay. And then turnout_general_other is 1?

A Correct.

Q Turnout_general_white is 1?

A Correct.

Q Okay. So the total turnout as reported by the three racial categories for the Secretary of State is 182.

A Correct.

Q Okay. Even the attorney got that basic math right. Okay.

And so you said this is the turnout for the election day that the presidential election was held on, or the total turnout?

A Total turnout.

Q Total turnout. Okay.

But not solely for the presidential election, correct?

A It's for the entire election. It's the number of people who requested ballots. No, I'm sorry. The number of people who -- that the Secretary of State's office, a poll person, marked as turning out.

Q Because just because you request a ballot doesn't mean you return it.

A You return it.

Q I just want to -- we're good. We're getting late in the afternoon. I was following you.

A But maybe -- I think that it includes people who returned a ballot and not just requested one.

Q Okay.

A They don't have very many absentee

Q Sorry. It's the attorney in me. I picked the easiest math number. All right.

Let's scroll to column CA, if we could.

A Okay.

Q And does this say president_statewide_general_dem_josephrbidenjr?

A It does.

Q What's the number directly underneath the CA column header?

A 191.0435524.

Q And to make it easier, for the attorneys, can we call that 191? Can we round it?

A You can. I agree that's the rounded number.

Q So this is the number of votes for President Biden allocated to Precinct 1?

A Correct.

Q Okay. And let's go to column CE, please.

A Okay.

Q Is that the -- column the president_statewide_general_rep_donaldjtrump votes?

A Correct.

Q And the number underneath the column

header for CE is 3.87 with some other numbers.
Is that right?
A Yes.
Q Okay. So rounding this to 4, does that mean that Donald Trump received approximately 4 votes, based on your allocation, in Precinct 1?
A Yes.
Q And Dr. Handley, would you agree with me that the number of votes allocated to President Biden at 191 is higher than the 182 turnout reported in the spreadsheet?
A Yes.
Q Okay. Did the allocation in this instance create a surplus of votes for President Biden in the precinct?
A There are more votes cast than people who turned out, yes.
Q In this spreadsheet?
A Yes, for this -- for this precinct, Precinct 1, yes.
Q Okay. But you're not suggesting that there were actually more votes cast for President Biden in Precinct 1 than number of people who actually cast a ballot in Precinct 1?
A Correct.

Q Okay. When did you become aware, Dr. Handley, that some of the precincts here, your allocation, resulted in a surplus of votes?

A A long time ago. I have no idea when.

Q Was it before looking at Dr. Solanky's surrebuttal report?

A Yes.

Q So you were aware, Dr. Handley, prior to August of this year that your allocation method created a surplus of votes in certain precincts?

A Yes. But you do know that I don't use the number of votes. I use proportions.

Q Sure. Can you elaborate on that?

A Yes. So when you do the analysis, in doing the analysis using the proportion of Black, White, and other turnout, and the proportion of votes for Biden, Trump, and others. So the columns still add to 1.

Q The columns still add to 1. You mean 100 percent?

A Well, if you were using percentages. I use proportions. But yes, yes.

Q Sure. Okay. So using proportions, adding up for the first precinct, would you have assigned 191 votes to Joe Biden for precinct 1?

how the precincts were divided up amongst the districts?

A Again, it would depend on how many precincts were split. And if no precincts were split, it wouldn't impact it at all. And there were very few precincts split. But I don't really know how many.

Q And so sitting here today, Dr. Handley, do you have any idea, or have you done any analysis to quantify how your voter allocation method might impact your analysis overall?

A I have looked to see if this allocation process that we're discussing here on the spreadsheet was likely to be biased.

Q And did you report that anywhere in your original 2023 and rebuttal reports?

A No.

Q When did you conduct that analysis?

A Some was earlier. Some was in response to the rebuttal or surrebuttal of Dr. Solanky.

Q And what did you -- what did the results of your analysis reveal?

A That the only election that was likely to be problematic was the only election I knew would be problematic, and that is the 2020

presidential race where over 45 percent of the voters voted early, and therefore their votes were reported at the parish level.

In terms of the other election cycles, I don't believe that their -- based on my analysis, that there was bias introduced by the allocation process.

Q Sure. Do you recall in Dr. Solanky's rebuttal report that he reported the number of early and absentee votes per election? If not I'm happy to mark this.

Let me mark this as Exhibit 11, please.

Oh, wait. I'm sorry. I just told you the wrong thing. We can still keep this marked or we can remove it. It's his original report which was already marked as Exhibit 3 in this case.

(A discussion was held off the record.)

BY MS. RIGGINS:

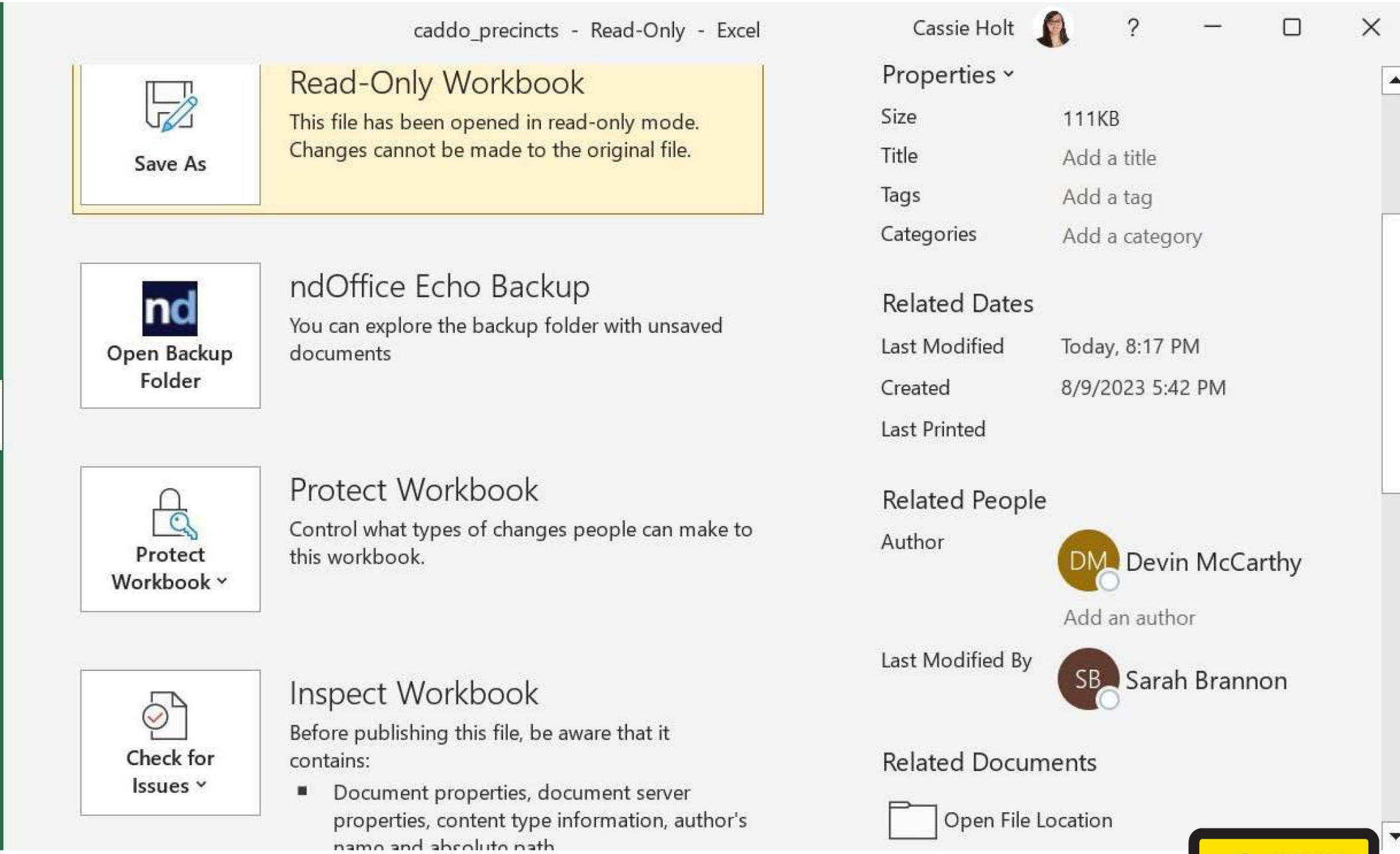
Q Table 5 on page 13. Do you see that, Dr. Handley?

A I do.

Q Okay. Do you see that column 4 lists the total of early and absentee votes?

A Column 4 is labeled Total Early and Absentee Votes.

Exhibit 3



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Handley 10

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Exhibit 4

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

Table of Contents

I: Introduction

1. I was requested by counsel for Defendant Secretary of State Ardoin 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 elections[1]. 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

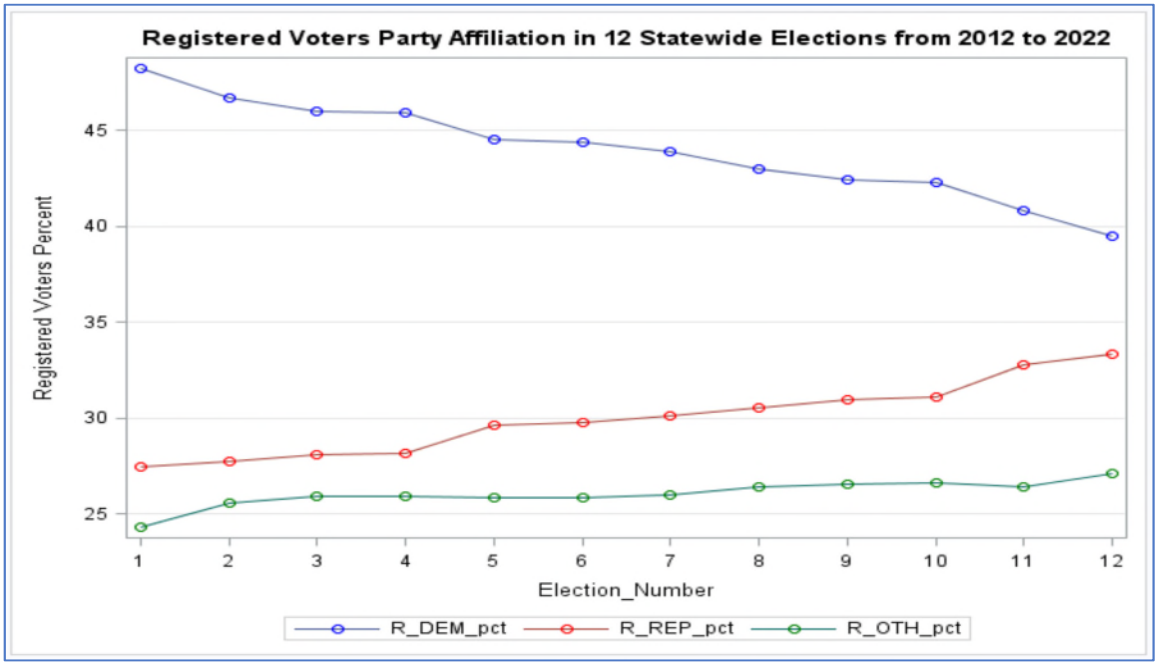
6. Note that for the 11/6/2012 elections, there were 1,430,750 registered democrats, and 814,299 registered republicans. The percentage of registered democrats was 48.2% in 2012 and the percentage of registered republicans was 27.5%. That is, there were 20.8% more registered democrats than republicans 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 steaildy 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 remined 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**.

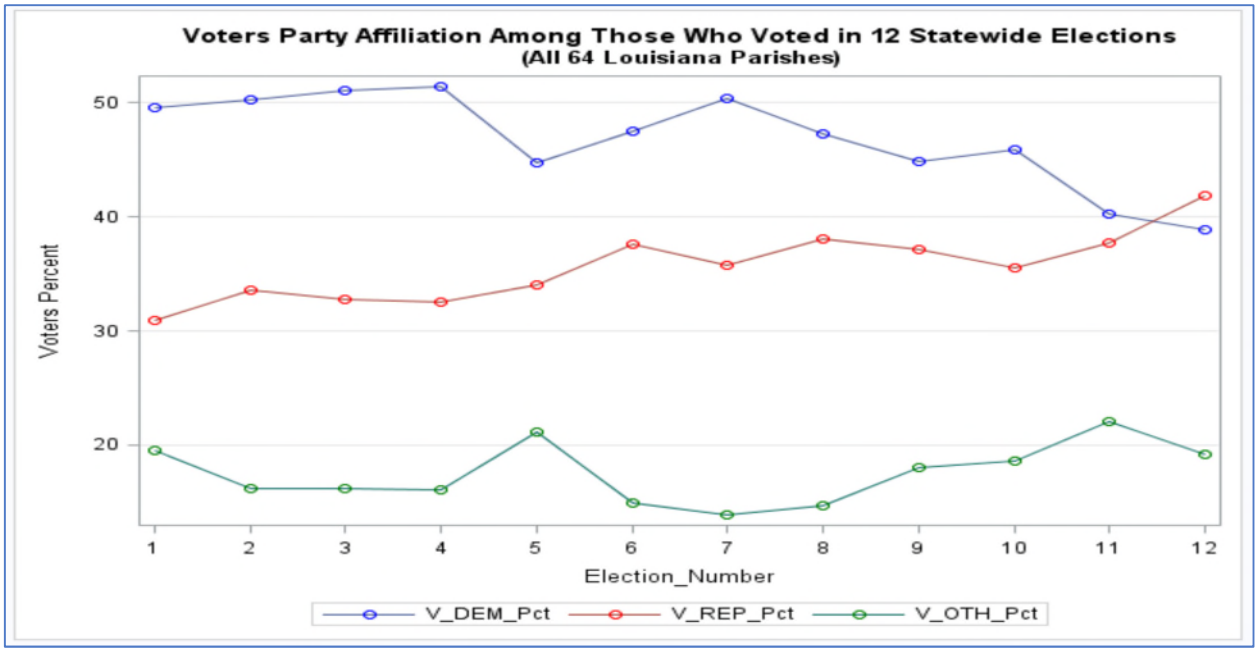
Table 2: Summary of Voters who Voted by Party Affiliation
12 Statewide Elections from 2012 to 2022

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

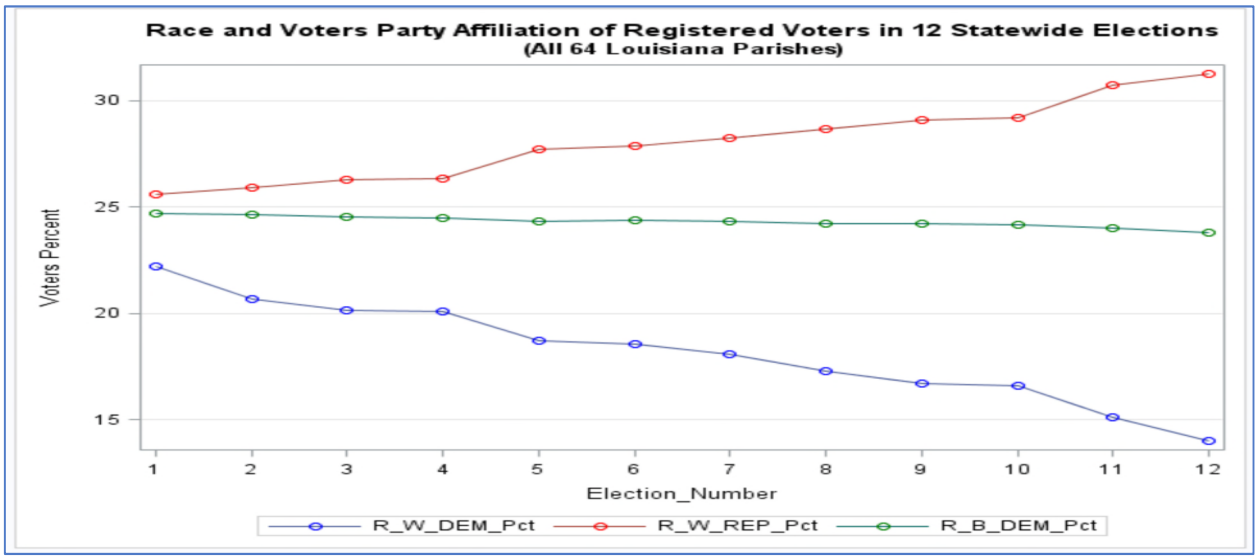
14. **Figure 3** below depicts the registered voters trend in statewide elections from 2012 to 2022 by party affiliation and race. As observed in **Table 3**, the following observations can be noted about registered voters in Louisiana:

(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.

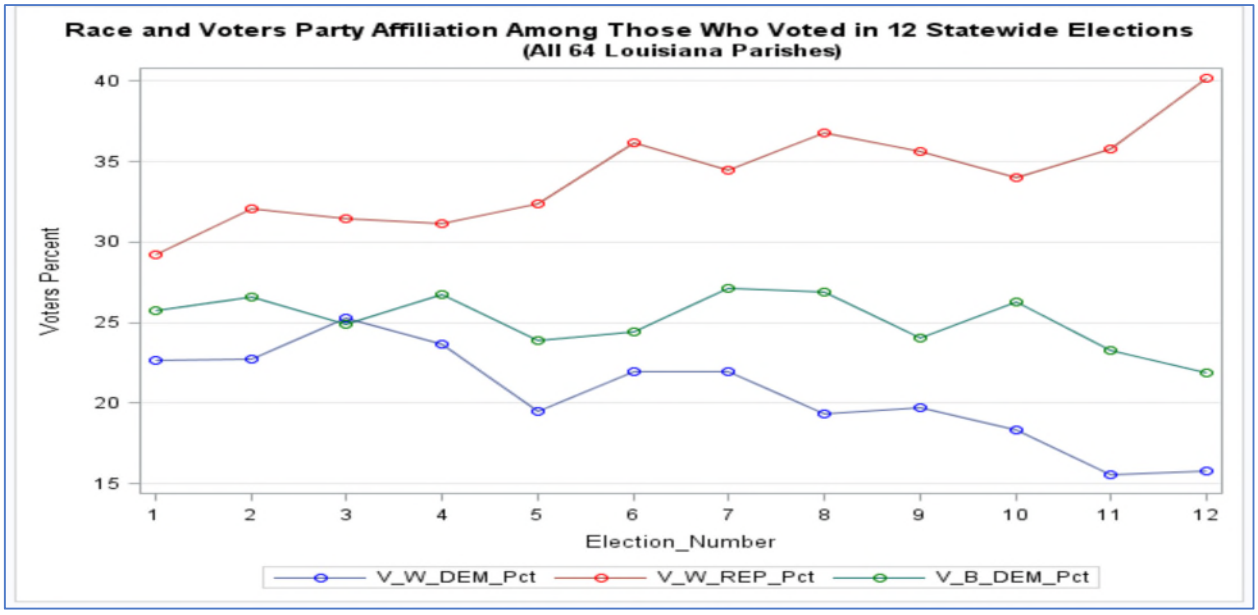
17. **Figure 4** below depicts the registered voters trend for registered voters who actually voted in statewide elections from 2012 to 2022 by party affiliation and race. As tabulated in **Table 4**, the following observations can be noted about registered voters in Louisiana:

(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 values[3].

19. In order to obtain the precinct level data, I relied on the Louisiana Secretary of State (SOS) website[4] 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 report[5].

[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** below[6]. 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 report[7]. 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

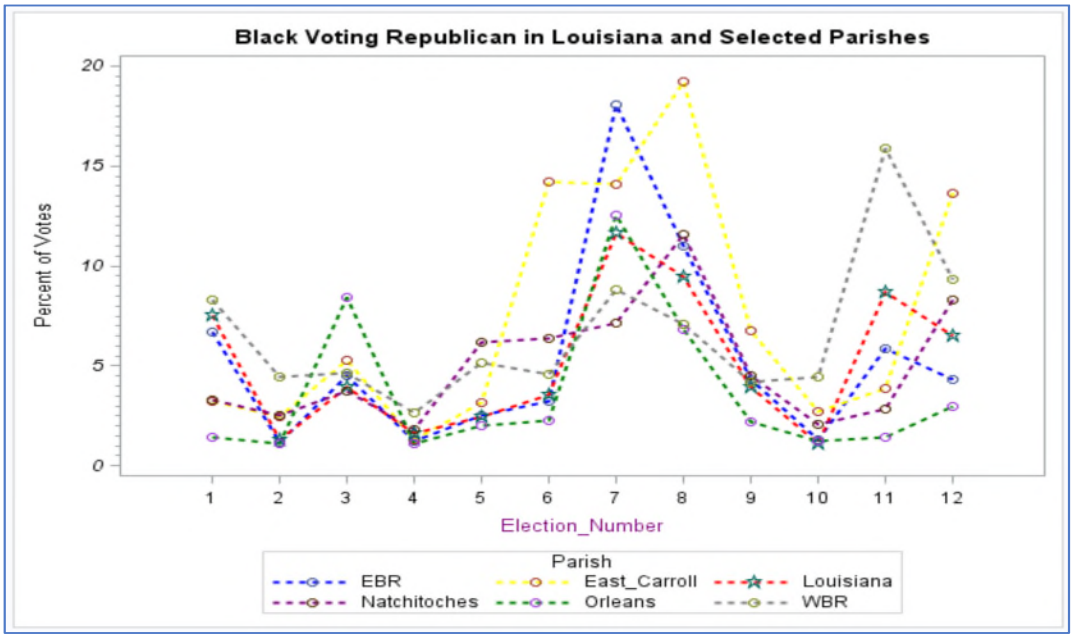
III.a. Estimates For Black Voters Voting for a Republican Candidate in Statewide Elections

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 parishes[8] 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.

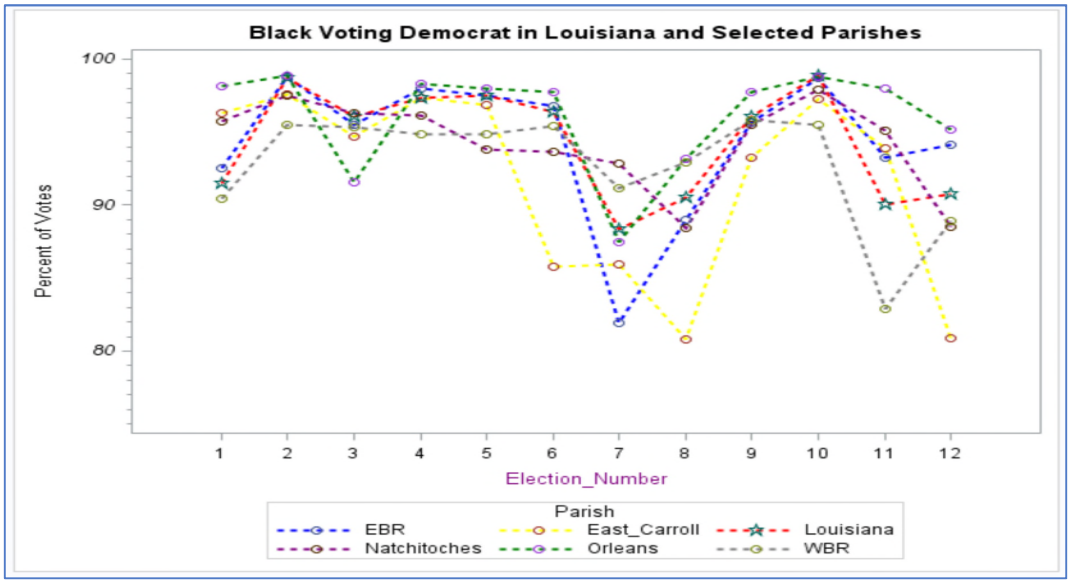
Figure 5: Black Voting Republican in Louisiana and Selected Parishes in 12 Statewide Elections



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

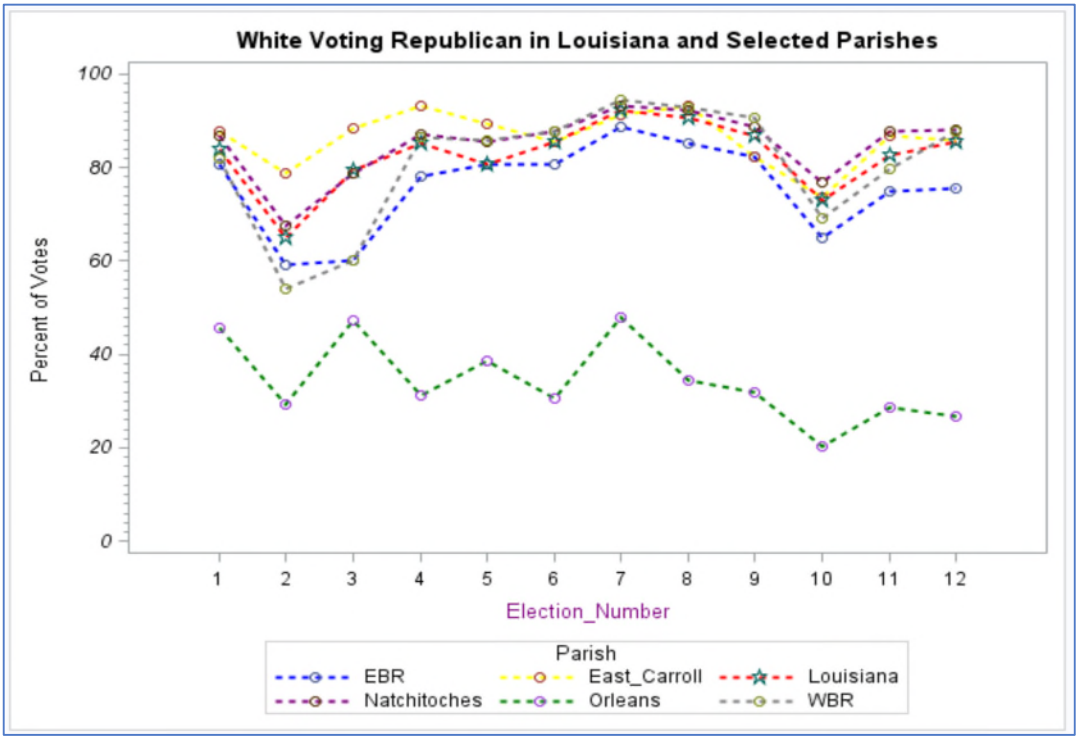


26. From **Figure 6**, it is evident that while the majority of black voters vote for a democrat candidate, there are exceptions such as election numbers 7, 8 and 11 for which there is a significant decrease in the percentage of black voters voting for a democratic candidate. These three elections had 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

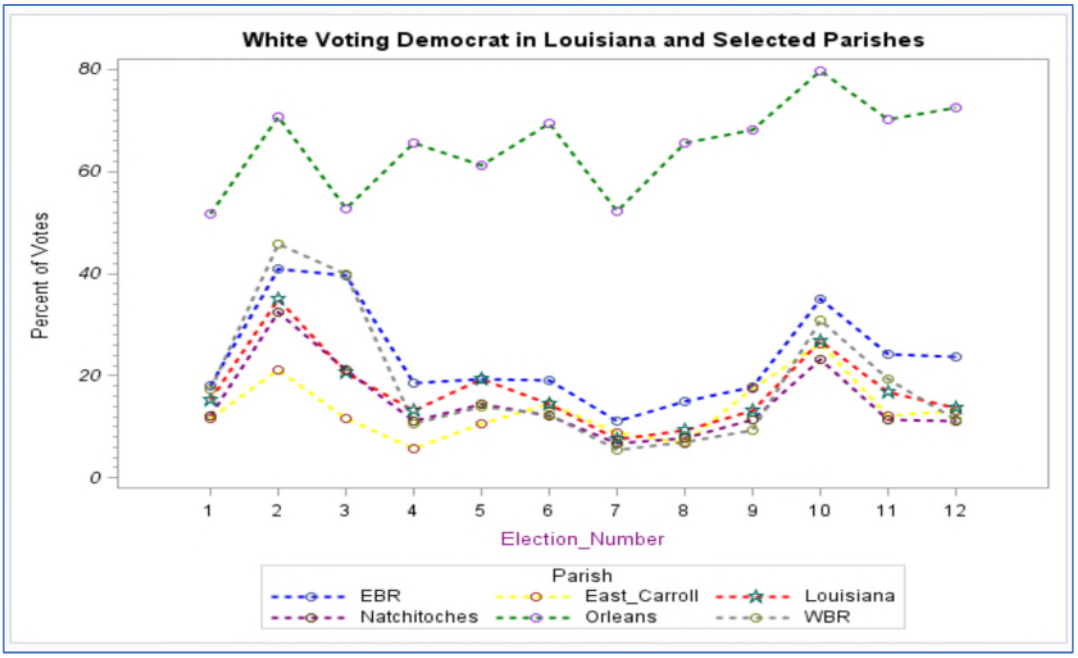


28. From **Figure 7**, it is evident that there is significant variation in the percentage of white voters voting for a republican candidate. Note that for Orleans parish, the percentage of white voters voting republican is consistently below 50% for all 12 statewide elections. For election number 10 (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.

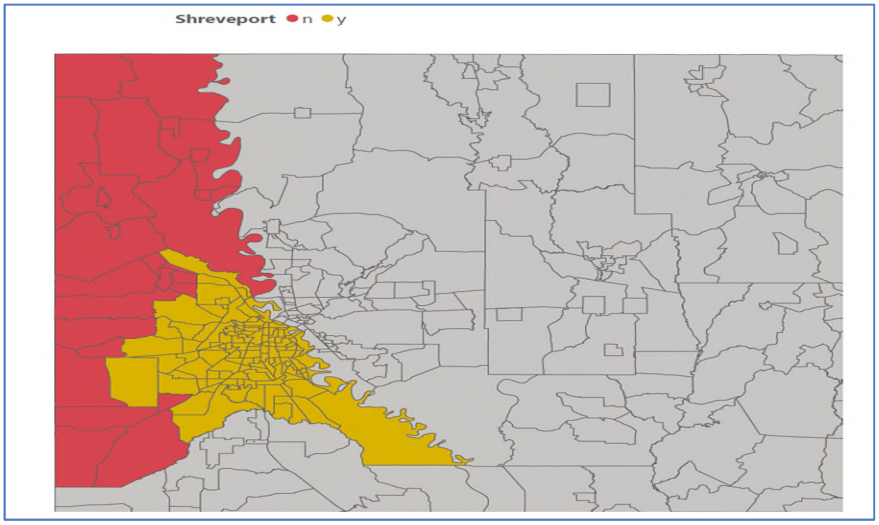
As noted above, white voters in two other parishes, East Baton Rouge and West Baton Rouge, also seem to vote significantly more for the democrat candidates. Next, in order to

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**.

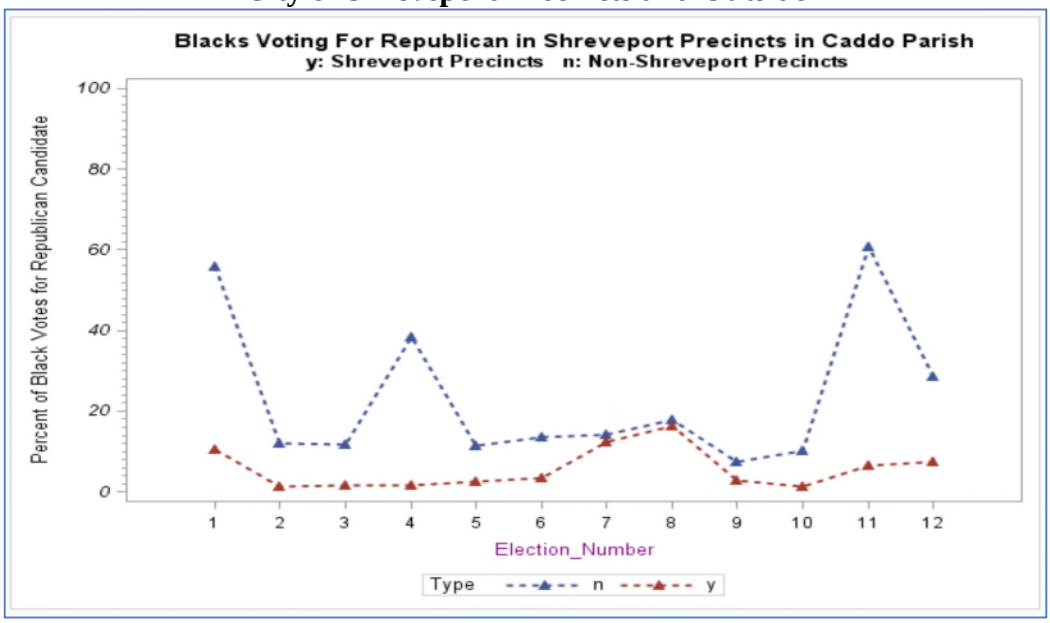
Figure 9: Precincts Map of Caddo Parish Depicting precincts in City of Shreveport



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.

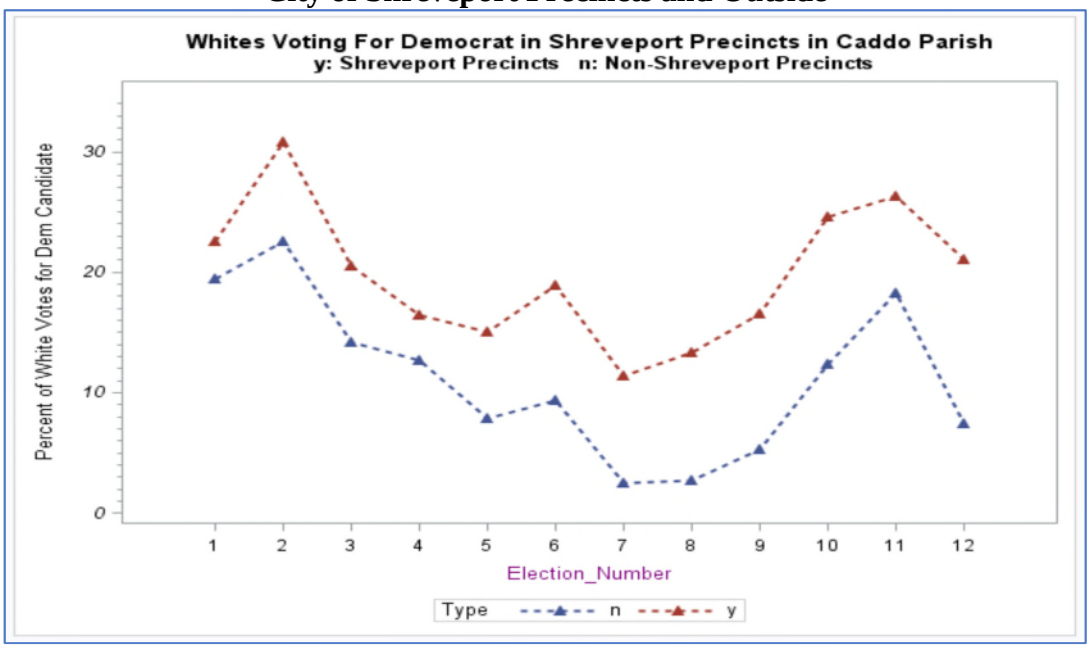
[9] The website source that lists the city of Shreveport precincts and their addresses is http://www.caddovoter.org/wp-content/uploads/2015/12/Precincts-SHV.pdf

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 districts[10].

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.

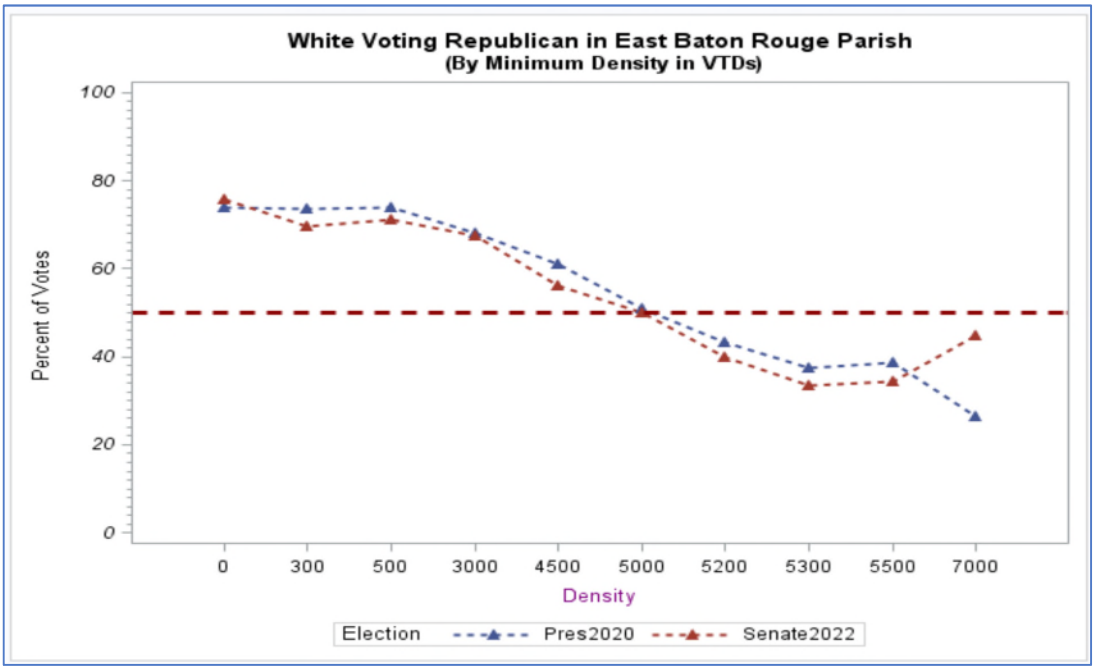
37. From **Figure 12** and Appendix 7, the following conclusions can be drawn:

(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



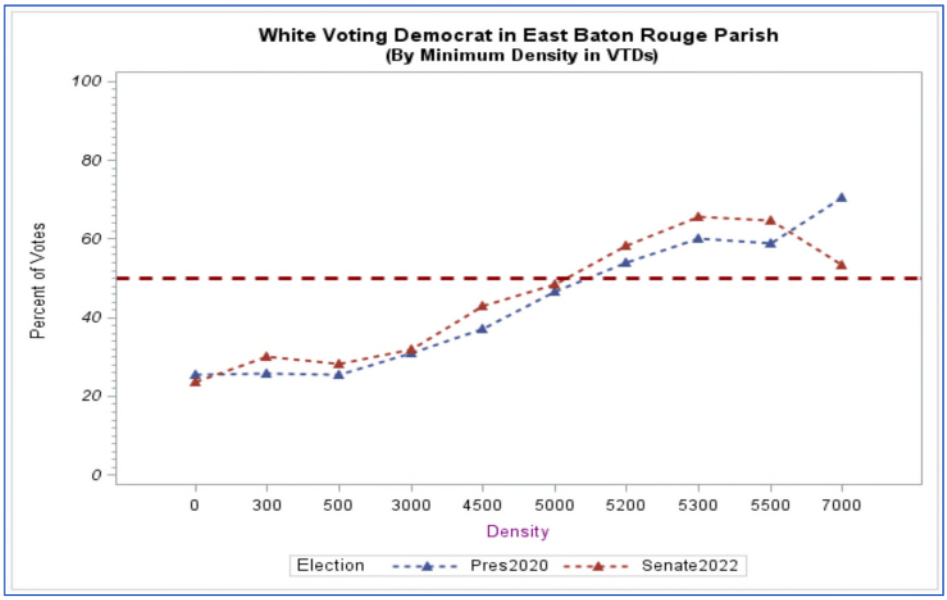
38. **Figure 13** depicts the percentage of white voters voting for democrat candidates in two recent statewide elections in 2020 and 2022. As above, the figure presents the percentage of voters by the minimum population density in the VTDs with the percentages displayed for zero density including all 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

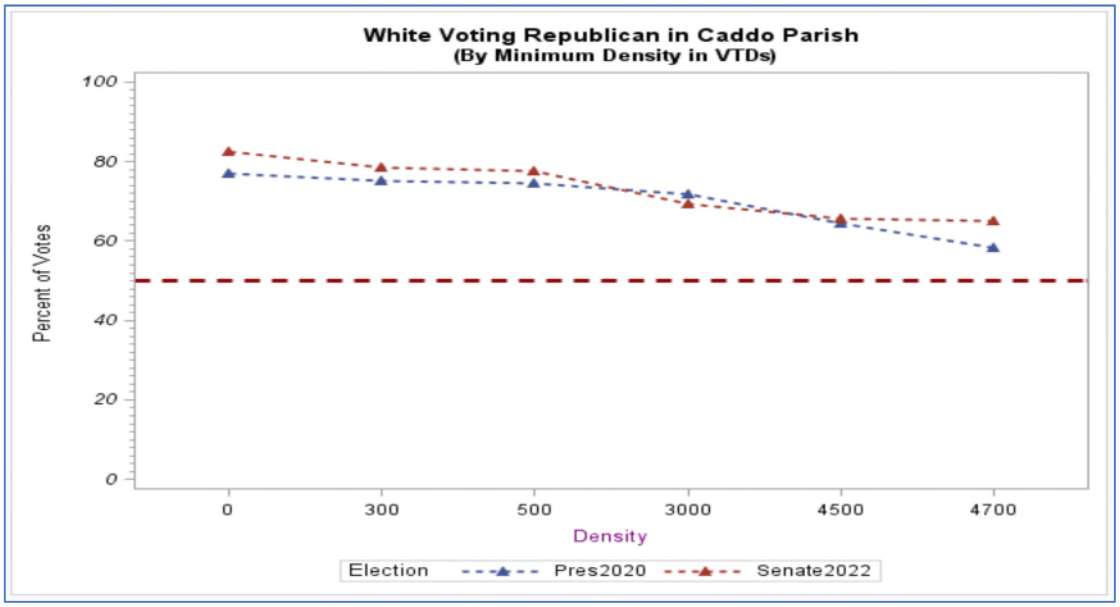
40. **Figure 14** depicts the percentage of white voters voting for a republican candidate in two recent statewide elections in 2020 and 2022 in Caddo parish. The figure presents the percentage of voters by the minimum population density in the VTDs with the percentages displayed for zero density including 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



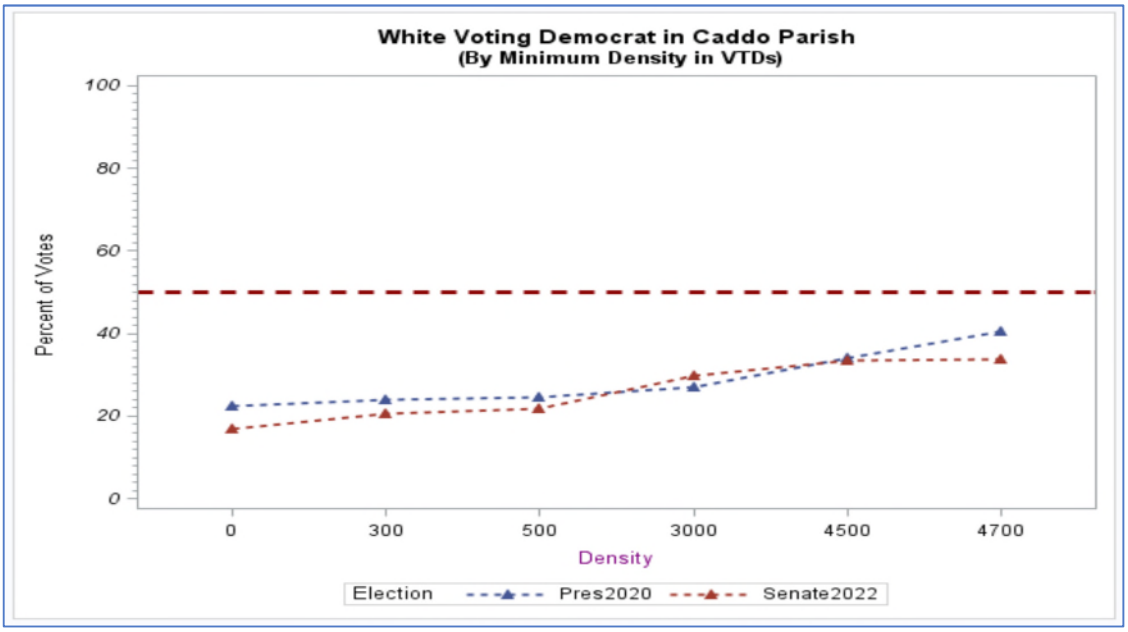
42. **Figure 15** depicts the percentage of white voters voting for a democrat candidate in two recent statewide elections in 2020 and 2022 in Caddo parish. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 8.

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

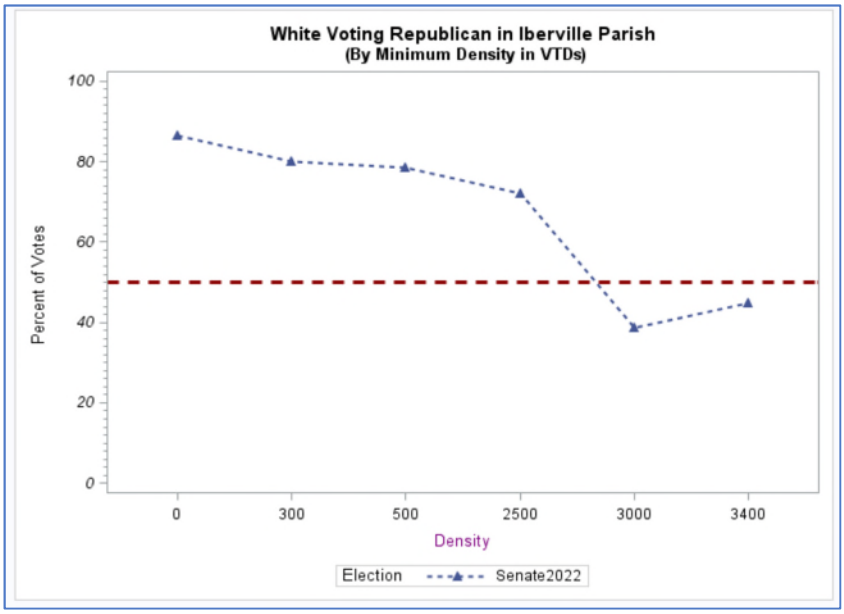
44. **Figure 16** depicts the percentage of white voters voting for a republican candidate in recent statewide elections in 2022 in Iberville parish. As before, with the percentages displayed for zero density including all of the white voters who voted for a republican candidate in all of the VTDs in 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



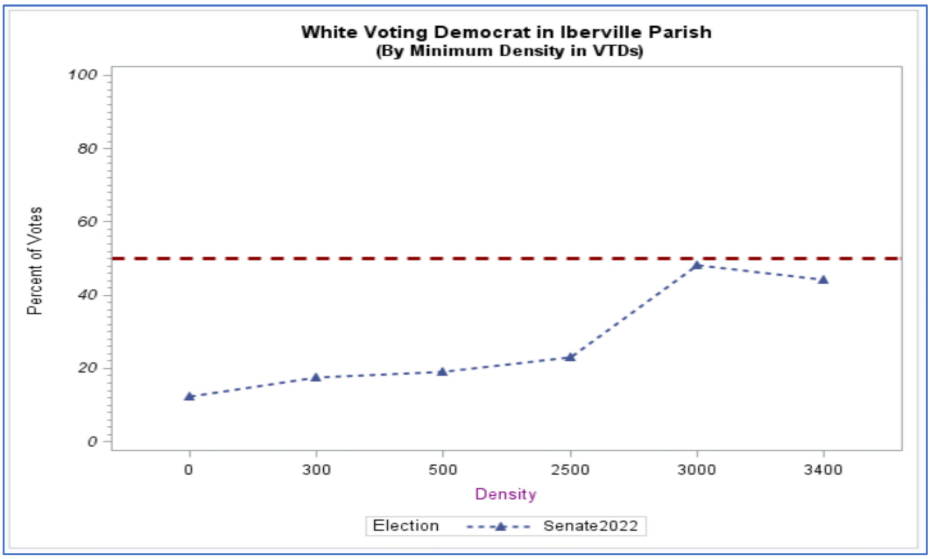
46. **Figure 17** depicts the percentage of white voters voting for a democrat candidate in a recent statewide election in 2022 in Iberville parish. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 9.

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.

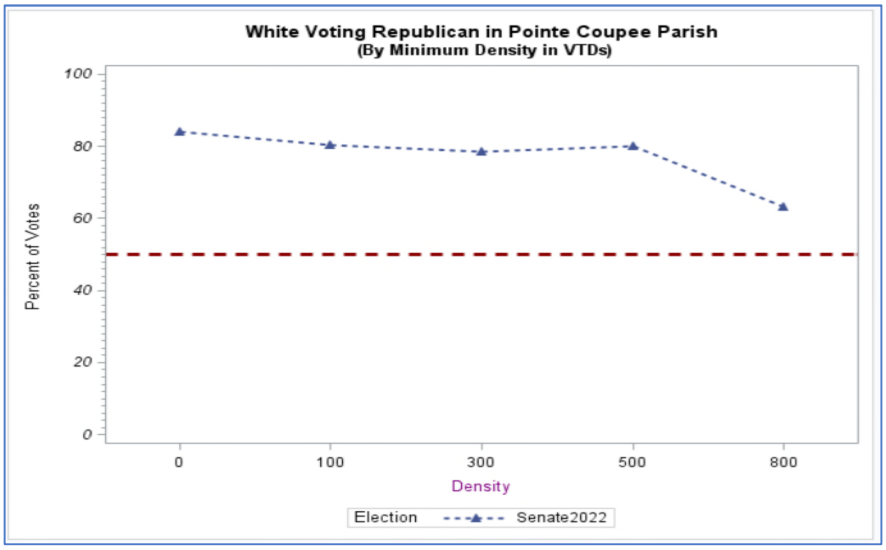
49. From **Figure 18** and Appendix 10, the following conclusions can be drawn:

(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 800[11], 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



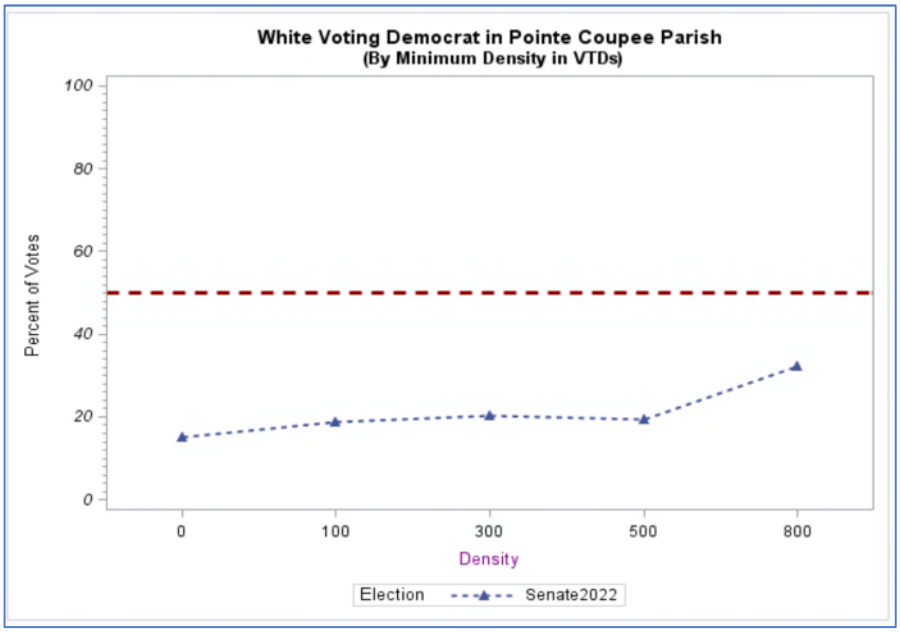
50. **Figure 19** depicts the percentage of white voters voting for a democrat candidate in recent statewide elections in 2022 in Pointe Coupee parish. The EI estimates for all reported values of minimum VTDs and associated confidence intervals are reported in Appendix 10.

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.

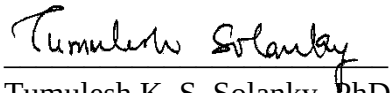
iii. Iberville Parish: While for the entire Iberville parish, 12.3% of white voters voted for a democrat candidate in the 2022 senate election, the percentage of white voters who voted for a democrat candidate steadily increases when restricted to the VTDs that are more densely populated. In particular, 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.
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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), llTH 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 model*ing, 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 Jhou).

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 Jhou).
{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 Jhou).
{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, Monteal, 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

Exhibit 5

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 Ardoin 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 elections[1] 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 parishes[2]) 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" category[3] (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 incomplete[4].

Additionally, the caddo_precincts spreadsheet has estimates of votes for 12 candidates in Senate 2022 elections[5] 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 incomplete[6].

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 website[7]. 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" Spreadsheet[8]

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" Spreadsheet[9])

BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH
president_as_	president_bc	president_co	president_(	president_(	president_f	presidentl_	president_l	president_r	president_s	president_s	president_t
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 her[10]. But you cannot actually have more votes cast in a precinct than the total voter turnout in the precinct! Note that the surplus votes[11] 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 estimates[12].

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 more[13] 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,

Total Voter Turnout – 3 x Total Voter Turnout* 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.

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[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" Spreadsheet[15]

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 Parish[16] and Columns AR to BD from Dr. Handley's "ussen2022nov (1).xlsx" Spreadsheet[17])

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 her[18]. 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 vote[19], 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 method[20] 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 Solanky

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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**	**104875**[21]	**106414**	**1539**

[21] As reported earlier this does not include 37 votes for the omitted candidate.