

STATE OF NORTH CAROLINA  
COUNTY OF WAKE

IN THE GENERAL COURT OF JUSTICE  
SUPERIOR COURT DIVISION  
Case No. 18 CVS 014001

COMMON CAUSE; *et al.* )  
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 *Plaintiffs,* )  
 )  
 v. )  
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 DAVID R. LEWIS, *et al.* )  
 )  
 *Defendants.* )  
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**RESPONSE TO PLAINTIFFS' MOTION IN LIMINE TO PRECLUDE  
LEGISLATIVE DEFENDANTS AND INTERVENOR DEFENDANTS FROM  
INTRODUCING EXPERT TESTIMONY REGARDING ANALYSIS OR OPINIONS  
NOT DISCLOSED IN EXPERT REPORTS**

Plaintiffs have moved to exclude certain summaries prepared by Legislative Defendants' experts and testimony critiquing Plaintiffs' experts allegedly not disclosed in the reports filed by Legislative Defendants' experts. As to the former, the testimony is not expert opinion testimony but instead constitutes either summaries of voluminous publicly available information in the case of Dr. Hood or summaries of voluminous data produced by Dr. Chen in the case of Dr. Thornton. Summaries of this nature are admissible under N.C. R. Evid. 1006. As to the latter, it is premature for the Court to make such a ruling before it hears the actual testimony of the experts and any examination or cross-examination by counsel which would open the door to other testimony by Legislative Defendants' experts. In addition, the Court contemplated allowing Legislative Defendants' and Intervenor Defendants' experts to review and opine on the "support scores" produced by the North Carolina Democratic Party ("NCDP") for the first time on June 24.

### **Background on Expert Reports**

On March 25, 2019, the Court modified its Case Management Order (“CMO”) to allow Plaintiffs’ experts to file their reports on April 9, 2019. The evidence at trial will show that Plaintiffs’ experts had months to prepare their reports. Moreover, Dr. Chen has years of experience generating thousands of simulated maps based upon algorithms he has developed and revised. The evidence at trial will show that the computer files and computer codes produced by Plaintiffs’ experts were so voluminous that no one could come close to fully reviewing this information in the three weeks (not months or years) available to Legislative Defendants’ experts. Despite this limited time frame, Legislative Defendants’ experts filed their reports on April 30, 2019, as required by the original CMO. Several of them filed supplemental reports on May 7, 2019, pursuant to an order entered by the Court on May 1, 2019, the day after Legislative Defendants’ reports were due. Plaintiffs then had an additional four weeks (more time than Legislative Defendants’ experts had to prepare their first reports) to submit expert “rebuttal reports.” As Legislative Defendants have argued in connection with other motions, Plaintiffs’ rebuttal reports primarily include expert testimony on entirely new material not previously disclosed or discussed in Plaintiffs’ opening reports (namely the alleged Hofeller material) even though Plaintiffs had that information when they filed their opening reports.

### **Dr. Thornton’s Summary of Dr. Chen’s Data**

In Dr. Chen’s opening report, he includes a series of maps of “county groups” and districts within each group. He then charts an estimate of Democratic voting strength for the enacted districts as compared to the performance of districts found in his “1,000” simulated districts. There are 32 such maps for House groups and 14 maps for Senate groups.

Attached to this motion are two examples of the group maps in Dr. Chen's report. The first such map is Dr. Chen Figure 30 for the Franklin Nash House Group. *See* Ex. 1. At the top of Figure 30, Dr. Chen reports there are 1000 simulated computer maps. In the bottom of the chart, Dr. Chen estimates Democratic voting strength for enacted HD 7 at under 44% and enacted HD 25 at approximately 54%. Dr. Chen then shows the Democratic performance estimates for all of his simulated districts for this county group. The Democratic performance of each simulated districts is shown by a grey dot. The Court will note that Dr. Chen lists more than 5 grey dots which allegedly represent all of his simulated versions of these districts. All of Dr. Chen's simulated HD 7 districts are slightly better for Democrats than the enacted version and all of Dr. Chen's simulated HD 25 districts are slightly worse for Democrats. When Dr. Chen's multiple grey dots are combined with the representation that there are 1,000 simulated maps, any reasonable person would conclude that Dr. Chen's simulations produced 1,000 versions of HD 7 that were more competitive for Democrats than the enacted version and 1,000 versions of HD 25 that was less "packed" with Democratic voters than the enacted version. No doubt, this is the whole purpose of this figure.

But in reality, according to a summary of Dr. Chen's own data made by Dr. Thornton, Dr. Chen's simulation Set 1 only produced 5 unique maps for this county group. In other words, 995 of the simulated maps prepared by Dr. Chen are identical. (Thornton Dep.<sup>1</sup> p. 108:5-111:5; Thornton Dep. Ex. 7 (Set 1 Franklin-Nash)). Nowhere in his report does Dr. Chen disclose that his simulated Set 1 produced only 5 unique maps for the Franklin-Nash group – not the 1,000 different versions one would assume existed based upon Dr. Chen's representations of "1,000

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<sup>1</sup> Excerpts of Dr. Thornton's deposition and exhibits are attached as Exhibit 2.

simulated maps” and the number of gray dots placed by Dr. Chen in his Figure 30, purportedly representing different simulated versions of both districts.

An ever more glaring example is demonstrated by Dr. Chen’s Figure 80<sup>2</sup>, Senate Simulation Set 1, for the Bladen-Brunswick-Pender -New Hanover County Group. Figure 80 is constructed in the same manner as Figure 30 with the same representation concerning “1,000 computer simulated plans” and multiple grey dots allegedly representing all of the different version of Dr. Chen’s simulated districts. But in reality, and based upon a summary of Dr. Dr. Chen’s own data prepared by Dr. Thornton, in Senate Simulated Set 1, Dr. Chen has only 2 unique maps for Senate Districts 8 and 9. (Thornton Dep. pp. 111:9-112:24; Thornton Ex. 8, Set 1, Bladen, Pender, Brunswick, New Hanover group, Exhibit 8). In other words, contrary to the impression any reasonable person would receive from reading Figure 80, Dr. Chen’s simulated Set 1 actually produced 998 identical versions of the districts he simulated for this group.

This evidence should be admitted because it is nothing more than a summary of Dr. Chen’s own voluminous data. It is not an expert opinion. Plaintiffs suffer no prejudice whatsoever if the Dr. Court admits a summary of Dr. Chen’s own data. This information should be considered by the Court to dispel Dr. Chen’s insinuation that his simulations created 1,000 unique districts in each of the county groups, when, in fact, his allegedly neutral simulations actually create as few as two to five unique maps.

It is no wonder Plaintiffs wish to exclude this summary given its obvious impact on the impeachment of Dr. Chen’s credibility as well as the reliability of his simulated map testimony. An argument that simulated maps are evidence that the enacted districts are too partisan is much

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<sup>2</sup> A copy of this Figure is attached as Exhibit 3.

more powerfully made if there are 1,000 different simulated versions of the challenged districts, not just two. It would be a miscarriage of justice to prevent the Court and the public from seeing this informative summary of Dr. Chen's own data.

**Dr. Hood's Summaries of Publicly Available Voting Records**

In their Amended Complaint, Plaintiffs have raised the issue regarding the alleged unfairness of a redistricting plan where a political party can receive slightly above 50% of the two-party statewide vote, yet fail to win a majority of the seats. (Am. Compl., ¶¶ 3, 186-187). Throughout this case, Plaintiffs have argued that some measure of proportionality must be enforced between the statewide vote share for Democrats and their seat share in the General Assembly. Plaintiffs have also disputed that their inability to win more seats in the General Assembly is the result of Democratic voters being concentrated in large urban counties as well as in northeastern North Carolina and that Democrats' inefficient residential patterns are the real reason for Democrats' failure to win a majority of the legislative seats in 2018, not an extreme political gerrymander.

Dr. Hood produced two summaries of publicly available voluminous information to respond to these arguments by the Plaintiffs. Neither of these charts constitutes expert opinion testimony. For example, Hood Deposition Ex. 6<sup>3</sup> is a summary of election results available at the website for the North Carolina Board of Elections showing the Republican vote share versus seat share for House seats in Wake, Mecklenburg, Guilford, and Cumberland counties. This exhibit also shows the Republican vote and seat shares for Senate Districts in the Wake-Franklin group,

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<sup>3</sup> Excerpts of Dr. Hood's Deposition transcript and exhibits are attached as Exhibit 4.

Mecklenburg County, and the Guilford, Alamance, and Randolph group. (Hood Dep. p. 111:14-113:20).

Plaintiffs' proportional representation standard for redistricting fairness is completely contradicted by their arguments that districts in Wake and Mecklenburg and other counties are extreme political gerrymanders. (*See* Am. Compl. ¶¶ 138-140, 157-158, 169-173, 179-182). For example, in Wake and Mecklenburg Counties, Republican candidates received 36.7% and 32.2%, respectively, of the votes in House elections in 2018. Under Plaintiffs' proportional representation test, Republicans ought to elect 38% of the House seats in Wake and 32% in Mecklenburg. Yet, in 2018, Democrat candidates won all 23 House Districts in these two counties. One wonders how these results can be fair to Republican voters under any politically neutral proportional representation theory – or how Plaintiffs can prove that these districts were alleged illegal gerrymanders when all of them were won by Democrats. (Hood Dep. pp 111:14-113:20, Dep. Ex. 6).

Hood Dep. Ex. 7, also based upon voluminous data available at the SBE website, is even more pertinent. It shows how Democratic voters are indisputably concentrated in urban areas. For example, if the vote totals for Senate elections in Mecklenburg, Wake, Forsyth, Guilford, Durham, and Cumberland counties are removed from statewide totals, the 2018 Democratic vote share in all of the remaining 94 counties drops from 50.70% statewide to only 42.3%. Similarly, if these same counties are removed from the statewide House vote in 2018, the Democratic two party vote share drops from 51.2% statewide to only 43.1% in the remaining 94 counties. (Hood Dep. pp. 113:21 – 116:21, Ex. 7).

The information contained in these summaries is discussed in Section IV of Dr. Hood's report which discusses the 2018 election results. (Hood Dep. Ex. 2, p. 11-16). The tables in these

exhibits simply re-aggregate the 2018 election results in a different manner and are based on information publicly available information. As a result, these tables are summaries that are admissible under N.C. R. Evid. 1006 and that did not have to be disclosed to Plaintiffs under July 1, the deadline set by CMO for the disclosure of trial exhibits. Because Dr. Hood prepared them and in light of questions asked of Dr. Hood at his deposition, counsel for Legislative Defendants' questioned Dr. Hood about them at his deposition so that Dr. Hood could explain how he prepared them and about their meaning. Plaintiff's counsel was also able cross-examine Dr. Hood about them.

It is understandable why Plaintiffs want to exclude these summaries because they: (1) show how the relief sought by Plaintiffs would arbitrarily apply proportional representation only when it benefits Plaintiffs' political interests; and (2) demonstrate the problems Democrats have in electing a majority in the General Assembly due to their concentration in North Carolina's most urban counties. Plaintiffs' theory of proportional representation would force a Court-ordered Democratic gerrymander which would likely require districts in Wake and Mecklenburg to be gerrymandered so that Republican voters could never elect their candidates of choice. Further, Democrats are at a disadvantage in single-member district elections not because of gerrymandered districts but instead because Democratic voters are more geographically concentrated than Republican voters.

#### **Exclusion of Other Testimony by Legislative Defendants' Experts**

It is premature for the Court to rule on plaintiffs' motion seeking to exclude any other testimony by Legislative Defendants' experts "not disclosed in their expert reports." The Court will not know until the time of trial whether testimony purportedly not included in an expert report should nevertheless be admitted or excluded. Plaintiffs give as an example possible testimony by

Dr. Thornton concerning Dr. Pegden's report. But what they fail to explain is that Dr. Thornton's deposition testimony concerning Dr. Pegden was the result of Plaintiffs' cross examination of her concerning Dr. Pegden's rebuttal report. (See Thornton Deposition, pp. 84:22-91:4). The same is true of plaintiffs' examination of Dr. Johnson concerning Dr. Cooper and Dr. Chen's rebuttal reports concerning the newly discovered Hofeller maps. (Johnson Dep<sup>4</sup>., pp. 151-152; 166-167). In short, Legislative Defendants' experts should not be constrained at this time from responding to trial testimony by Plaintiffs' experts or questions posed to them at trial by Plaintiffs' counsel. Whether any new testimony by Plaintiffs' experts or questions by Plaintiffs' counsel to Legislative Defendants' expert opens the door for testimony by them should not be resolved by the Court until the time the evidence is admitted or the questions are actually posed.

**Legislative Defendants Experts Should be Permitted to Offer Opinions related to the Support Scores Produced by the North Carolina Democratic Party on June 24**

On June 7, 2019, the Court ordered the NCDP to produce "district-level summary reports reflecting 'support scores' to the Court for in camera review" by June 13. On June 21, 2019, the Court ordered those support scores be produced by 5 p.m. on June 24, 2019. In the same order, the Court ordered "that the produced summary reports be made available to parties' testifying experts as contemplated by Sub-paragraph 11.c. of the Consent Protective Order." It therefore appears that the Court intended to allow Legislative Defendants' and Intervenor Defendants' experts to offer opinions regarding any analysis they perform regarding the support scores and/or any impact that the support scores may have on the opinions they previously offered. Such opinions could not have been previously included in the expert reports provided by any party but Plaintiffs because the support scores were not available to them prior to June 24. Accordingly, to

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<sup>4</sup> Excerpts of Dr. Johnson's deposition attached as Exhibit 5.



the extent Plaintiffs' motion seeks to prohibit Legislative Defendants or Intervenor Defendants' experts from offering opinions related to the support scores the NCDP produced for the first time on June 24, the motion should be denied.

**Conclusion**

For the foregoing reasons, Plaintiffs' Motion should be denied.

This the 1st day of July, 2019.

Respectfully submitted,

OGLETREE, DEAKINS, NASH,

SMOAK & STEWART, P.C.

By: 

Phillip J. Strach

N.C. State Bar No. 29456

Thomas A. Farr

N.C. State Bar No. 10871

Michael McKnight

N.C. State Bar No. 36932

phil.strach@ogletreedeakins.com

tom.farr@ogletreedeakins.com

michael.mcknight@ogletreedeakins.com

4208 Six Forks Road, Suite 1100

Raleigh, North Carolina 27609

Telephone: (919) 787-9700

Facsimile: (919) 783-9412

*Counsel for the Legislative Defendants*

BAKER & HOSTETLER, LLP

E. Mark Braden\*

(DC Bar #419915)

Richard B. Raile\*

(VA Bar # 84340)

Trevor M. Stanley\*

(VA Bar # 77351)

Washington Square, Suite 1100

1050 Connecticut Avenue, N.W.

Washington, DC 20036-5403

rraile@bakerlaw.com

mbraden@bakerlaw.com

tstanley@bakerlaw.com

Telephone: (202) 861-1500

Facsimile: (202) 861-1783

*Counsel for Legislative Defendants*

*\*admitted pro hac vice*

CERTIFICATE OF SERVICE

This is to certify that the undersigned has this day served the foregoing in the above titled action upon all other parties to this cause by:

- Hand delivering a copy hereof to each said party or to the attorney thereof;
- Transmitting a copy hereof to each said party via facsimile transmittal;
- By email transmittal;
- Depositing a copy here of, first class postage pre-paid in the United States mail, properly addressed to:

Edwin M. Speas, Jr.  
Caroline P. Mackie  
P.O. Box 1801  
Raleigh, NC 27602-1801  
(919) 783-6400  
[espeas@poynerspruill.com](mailto:espeas@poynerspruill.com)

*Counsel for Common Cause, the North Carolina Democratic Party, and the Individual Plaintiffs*

John E. Branch, III  
Nate Pencook  
128 E. Hargett St, Suite 300  
Raleigh, NC 27601  
(919)856-9494  
[jbranch@shanahanlawgroup.com](mailto:jbranch@shanahanlawgroup.com)  
*Counsel for the Intervenor-Defendants*

R. Stanton Jones  
David P. Gersch  
Elisabeth S. Theodore  
Daniel F. Jacobson  
601 Massachusetts Ave. NW  
Washington, DC 20001-3761  
(202) 942-5000  
[Stanton.jones@arnoldporter.com](mailto:Stanton.jones@arnoldporter.com)

Marc E. Elias  
Aria C. Branch  
700 13<sup>th</sup> Street NW  
Washington, DC 20005-3960  
(202) 654-6200  
[melias@perkinscoie.com](mailto:melias@perkinscoie.com)

Abha Khanna  
1201 Third Avenue  
Suite 4900  
Seattle, WA 98101-3099  
(206) 359-8000

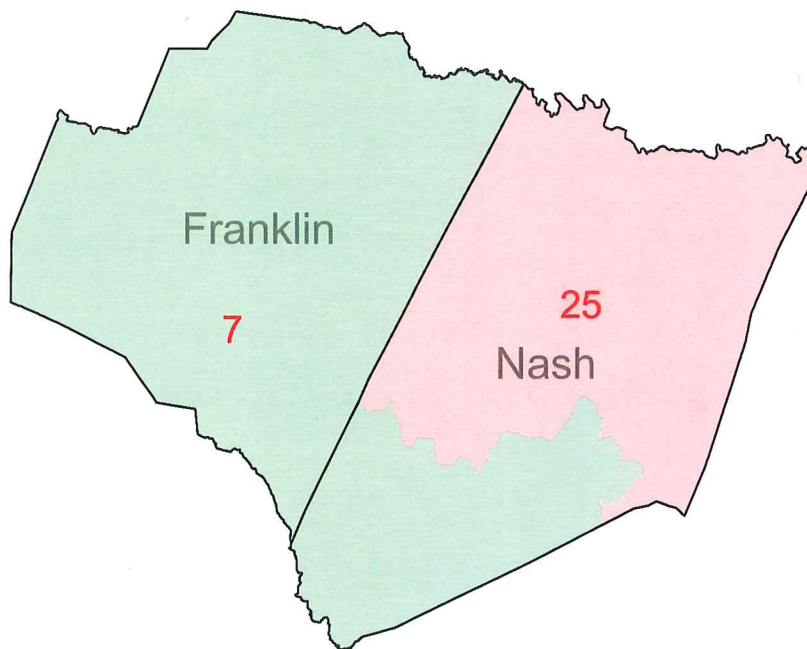
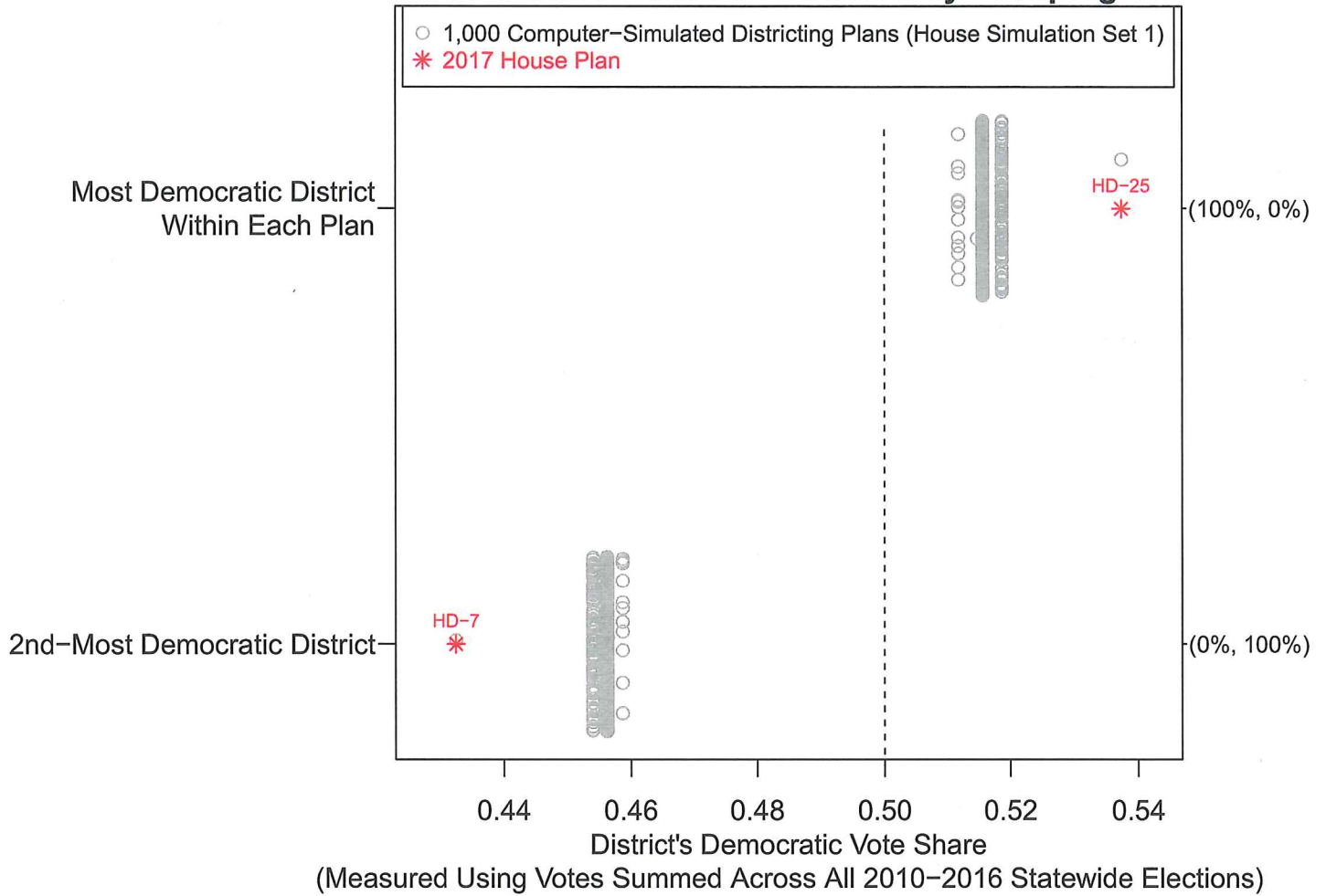
*Counsel for Common Cause and the Individual Plaintiffs*

This the 1st day of July, 2019.

By:   
Phillip Strach, NC Bar No. 29456

# Exhibit 1

**Figure 30: House Simulation Set 1:  
Democratic Vote Share of the Enacted and Computer-Simulated Districts  
Within the Franklin-Nash County Grouping**



2017 Enacted House Plan Districts (2 Districts)

# **Exhibit 2**



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A P P E A R A N C E S

Counsel for Common Cause, the NC Democratic Party,  
and the Individual Plaintiffs:

ARNOLD PORTER  
BY: DAVID P. GERSCH, ESQ.  
601 Massachusetts Avenue, NW  
Washington, DC 20001-3743  
(202) 942-5125  
David.Gersch@arnoldporter.com  
POYNER SPRUILL  
BY: STEVE EPSTEIN, ESQ.  
301 Fayetteville Street  
Suite 1900  
Raleigh, NC 27601  
(919) 783-6400  
SEpstein@poynerspruill.com

Counsel for the Legislative Defendants:

OGLETREE DEAKINS NASH SMOAK  
& STEWART  
BY: THOMAS A. FARR, ESQ.  
ALYSSA RIGGINS, ESQ.  
4208 Six Forks Road  
Suite 1100  
Raleigh, NC 27609  
(919) 787-9700  
Thomas.Farr@Ogletree.com  
Alyssa.Riggins@Ogletree.com

The Reporter: Discovery Court Reporters  
and Legal Videographers, LLC  
BY: DENISE MYERS BYRD, CSR 8340  
LUKE TROUBLEFIELD, VIDEO  
4208 Six Forks Road, Suite 1000  
Raleigh, NC 27609  
(919) 424-8242  
(919) 649-9998 Direct  
Denise@DiscoveryDepo.com

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THE VIDEOGRAPHER: On record at  
9:29 a.m. Today's date is June 13, 2019.

This is the video deposition of Janet  
Thornton.

Would counsel please introduce  
themselves.

MR. GERSCH: David Gersch for  
plaintiffs.

MR. EPSTEIN: Steve Epstein for the  
plaintiffs.

MR. FARR: I'm Tom Farr, and with me is  
my law partner Alyssa Riggins, and we're with  
the Raleigh office of Ogletree Deakins,  
representing the defendants in the case,  
legislative defendants. Thank you.

JANET THORNTON, Ph.D.,  
having been first duly sworn or affirmed by the  
Certified Shorthand Reporter and Notary Public  
to tell the truth, the whole truth and nothing  
but the truth, testified as follows:

EXAMINATION

BY MR. GERSCH:

Q. And will you state your name, please.

A. Janet R. Thornton, T-H-O-R-N-T-O-N.

Q. And what's your address?

1 Q. The 2016 Attorney General election?

2 A. That is correct.

3 Q. Okay. And you -- and when you say you ran a  
4 simulation, you ran his code with some  
5 modifications that you made, right?

6 A. Slight modifications.

7 Q. All right. And when you ran Dr. Pegden's code,  
8 you froze some districts that he did not freeze;  
9 isn't that right?

10 A. It depends on which of his command lines one  
11 uses.

12 Q. Well, did you freeze some districts that he did  
13 not freeze in his code?

14 A. I haven't gone back to assess all the command  
15 lines that he submitted, but I froze the frozen  
16 districts and the magistrate -- special master  
17 frozen districts.

18 Q. Isn't it correct that you froze all districts  
19 that were drawn in 2011 and not changed in 2017?

20 A. I haven't gone back and verified that. That may  
21 be the case.

22 Q. All right. When did you receive Dr. Pegden's  
23 report, his rebuttal report?

24 A. This week.

25 Q. Have you reviewed what Dr. Pegden had to say

1           about the districts you froze?

2           A.    I have begun to review it.

3           Q.    Okay.  In your review so far, is there anything  
4           he said about the districts that you froze that  
5           you say is wrong?

6           A.    It's --

7                         MR. FARR:  Can you point where it says  
8           that.

9                         MR. GERSCH:  I'm sorry.

10                        MR. FARR:  Can you point her to the  
11           part of the report that you're talking about.

12           BY MR. GERSCH:

13           Q.    You have in front of you his initial report; is  
14           that right?

15           A.    Yes.

16           Q.    Do you want to see his rebuttal report,  
17           Dr. Thornton?

18           A.    Yes.  I apologize.  I was wondering where it  
19           was.

20                         (WHEREUPON, Thornton Exhibit 6 was  
21           marked for identification.)

22           BY MR. GERSCH:

23           Q.    All right.  Dr. Thornton, you have in front of  
24           you Exhibit 6 which is Dr. Pegden's rebuttal  
25           report, and I was asking you about the

1 observations he makes with respect to your  
2 running of his code. And I want, if this will  
3 help, to direct your attention to page 6 of his  
4 rebuttal report. And take a look at it, and my  
5 question to you is: With respect to the  
6 districts that he says you froze when running  
7 his code, do you see anything which you say as  
8 you sit here today is wrong? And I have in mind  
9 your previous answer that you've only started  
10 reviewing.

11 A. Twofold. One is I believe that he has  
12 accurately identified the command line that we  
13 used. He, however, says it's an error, but the  
14 command line was as it was intended.

15 Q. Okay. When you say it's as intended, did you  
16 intend to freeze all districts drawn in 2011 and  
17 not changed in 2017?

18 A. I believe that was the intent because we were  
19 looking at the decisions made in the enacted map  
20 for 2017.

21 Q. So the enacted map in 2017 includes some  
22 districts which were changed in 2017 and some  
23 districts which were not changed, correct?

24 A. Yes.

25 Q. Okay. Are you saying you didn't want to look at

1 the enacted map as a whole?

2 A. A number of the districts were single-county  
3 districts and some were identified as being  
4 established for, for example, by the, I believe,  
5 special master, and so as a consequence, I  
6 wanted to look at those that were changed  
7 because Dr. Pegden includes and allows for  
8 changes to the single-county districts. And I  
9 believe he testified about that on Monday.

10 Q. All right. With respect to Dr. Pegden's  
11 rebuttal report, he lists on page 6 there is  
12 districts which he says you froze. As you sit  
13 here today, do you believe he made any mistakes  
14 in that regard?

15 A. As I sit here today, I do not believe so in  
16 terms of the command lines.

17 Q. Right. I'm asking you about the districts he  
18 identified, and if you want we can go through  
19 them one by one.

20 A. That's in the command lines.

21 Q. Okay. All right. Separate and apart from the  
22 command lines, did you freeze Districts 3, 26,  
23 28, 51, 53 and 79 in the House districts?

24 A. Could you restate that.

25 Q. Sure. And just so you can follow along, I'm

1 reading from the second to last paragraph on  
2 page 6, the one that says "Other districts are  
3 frozen by her use of single-move swaps."

4 So the question again is: Did you  
5 freeze House Districts 3, 26, 28, 51, 53 and 79?

6 A. I do not believe so.

7 Q. And did you freeze Senate Districts 20 and 22?

8 A. I do not believe so.

9 Q. All right. Let's turn to your report, page 27,  
10 Table 3. This is what you say is your analysis  
11 of the statistical difference between the  
12 enacted plan and the simulated maps prepared by  
13 Dr. Pegden, correct?

14 A. Yes. Well, it's using the average -- it's  
15 calculating the expected based on running his  
16 simulation again and comparing it to what he  
17 estimates from his simulation.

18 Q. Okay. You say comparing -- the last part of  
19 your sentence was comparing it to what. He  
20 estimates from his simulation -- what I want to  
21 get clear on the record is the data you used in  
22 connection with your work here starts from the  
23 simulations that you generated as a result of  
24 running Dr. Pegden's code with some  
25 modifications; isn't that right?



1 A. Yes, in order to calculate the histogram.

2 Q. Okay. Good. So -- and that histogram that you  
3 produced or the histogram which reflects the  
4 outcome of the simulations you generated by  
5 running Dr. Pegden's code with some  
6 modifications, that can be observed in his  
7 rebuttal report on the left side of Figure 1.1  
8 which is at page 8; is that right?

9 A. I haven't verified it, but it looks to be an  
10 accurate reflection. I'd have to go back and  
11 look.

12 Q. And the results reflected in this histogram,  
13 that's on the basis of just under 2.2 trillion  
14 districtings; is that right?

15 A. I do not recall.

16 Q. It's about right, isn't it?

17 A. Presumably. I don't remember.

18 Q. You remember it was a really big number, don't  
19 you?

20 A. It's a big number. If you're asking me for  
21 precision, I don't recall.

22 Q. Okay. And Dr. Pegden has then graphically  
23 illustrated that histogram in the box to the  
24 right on Figure 1.1, right?

25 A. That's correct.

1 Q. And the number of Democratic seats produced by  
2 the enacted map, using the 2016 Attorney  
3 General's election, would be 44 seats, right?

4 A. Could you say that again. I apologize.

5 Q. Sure. Using -- you ran this using the 2016  
6 Attorney General's race as the election to  
7 evaluate the results of the simulations.

8 A. Yes.

9 Q. And what that produces is 44 Democratic seats in  
10 the enacted map, right?

11 A. Yes.

12 Q. And 44 seats only results in .001 percent of the  
13 very large number of simulations that you  
14 generated; isn't that right?

15 A. If you're asking me among the simulations the  
16 percentage that would predict 44 based on  
17 Dr. Pegden's algorithm, it's .001 percent.

18 Q. You say Dr. Pegden's algorithm. It's -- these  
19 are the results of the simulations you ran with  
20 his code with some modifications, right?

21 A. Slight modifications so that one could actually  
22 obtain the histogram. He had the minus H  
23 described in his -- one of his files, but it  
24 chose not to use it when he ran it.

25 Q. All right. And then let's look at Figure 1.2.

1           The histogram on the left-hand side of the page,  
2           that displays the results of the simulations  
3           that you ran for the Senate plans using  
4           Dr. Pegden's code with some modifications?

5       A.    Yeah, the modification as I just described.

6       Q.    And what's on the right-hand side of the page is  
7           Dr. Pegden's translation of the histogram of  
8           your results into a bar chart?

9       A.    I believe that's the case.

10      Q.    And what -- sorry about that. My mic fell off.

11                        In the simulations that you ran, the  
12           enacted plan produces 20 Democratic seats in the  
13           Senate, correct?

14      A.    Yes.

15      Q.    And 20 seats result 0.182 percent of the time  
16           from the very large number of simulations that  
17           you ran?

18      A.    That's the number -- that's the percentage that  
19           20 occurs.

20      Q.    And the simulations that you generated, they  
21           don't ever result in a number less than 20 for  
22           the Democratic seats, right, in the Senate?

23      A.    I'd have to go back and look. I don't recall.

24      Q.    All right. But based on the histogram from your  
25           backup data, there's no result shown for any

1 Q. Okay.

2 (WHEREUPON, Thornton Exhibit 7 was  
3 marked for identification.)

4 BY MR. FARR:

5 Q. Can you tell us, Dr. Thornton, do you know what  
6 Exhibit 7 is.

7 A. Yes. This is a compilation of the information  
8 generated by Dr. Chen for each of his thousand  
9 simulations for each county clusters for his  
10 Set 1 and Set 2. It provides the number of  
11 unique maps compiled from his information.

12 Q. And who prepared this compilation?

13 A. My staff and I did.

14 Q. And from what information did you prepare this  
15 compilation?

16 A. In Dr. Chen's backup, he has generated -- for  
17 each simulation for each county grouping, he  
18 provides a thousand files that show the district  
19 to which his algorithm assigns each geographic  
20 grouping that he's moving around, and so if one  
21 takes all 1,000, one can then -- for each county  
22 grouping, one can determine, by review, how many  
23 actual unique maps are contained in a county  
24 grouping as generated by Dr. Chen.

25 Q. And what do you mean by unique maps?

1 A. So to illustrate, hypothetically, I'll make it  
2 very simple. Suppose you had three districts  
3 and make it very simple and say there are only  
4 two geographic areas within a district each, and  
5 you look and he has in these files one for  
6 District 1, two for District 2, let's say three  
7 for District 3. If you look at the various  
8 combinations of the ones and the twos and the  
9 threes, for each of the county grouping you can  
10 see, okay, in this map these two, let's say,  
11 were assigned to District 1 and these two to  
12 District 2 and these two to District 3, and when  
13 you look out of all of these 1,000, you'll see  
14 that many of them are absolutely identical, or  
15 it could be that these are always two, these are  
16 always three and these are always one; in other  
17 words, it's the same combination of geographic  
18 areas being assigned to the same district  
19 geographically.

20 And so that's what we did. We looked  
21 at all of the unique combinations of the ones,  
22 the twos and the threes and determined from --  
23 compiled from his backup the number of unique  
24 maps.

25 Q. So let's just make sure we understand what this

1 chart is. The first column on the extreme left,  
2 it says Dr. Chen's County Grouping Number. Can  
3 you tell us what that means.

4 A. Yes. In Dr. Chen's report, he identifies -- he  
5 assigns a county grouping number, and then in  
6 his backup, G1 is for Group 1, G2 is Group 2,  
7 et cetera, and then the set is whether or not it  
8 is from the 1,000 simulations without incumbency  
9 protection as he measured it and Set 2 is  
10 accounting for incumbency protection as he  
11 measured it.

12 Q. So in Dr. Chen's data in the House county  
13 grouping numeration, Group 1 is always Alamance  
14 County?

15 A. Yes.

16 Q. And to do a multiple county example, looking at  
17 Group 9, is that always New Hanover and  
18 Brunswick county?

19 A. Yes.

20 Q. And is that the same for all these other county  
21 groups that you have on Exhibit 7?

22 A. Yes.

23 Q. And you say Set 1 or Set 2. Could you explain  
24 what that column represents.

25 A. Yes. Set 1 is what he refers to as his

1 simulations that do not control for his measure  
2 of incumbency protection, and Set 2 are his  
3 simulations that control for his measure of  
4 incumbency protection.

5 Q. Okay. And so then you have -- the next column  
6 says House District county grouping name, and  
7 that just names the counties associated with  
8 each of Dr. Chen's grouping numerations?

9 A. Yes.

10 Q. And then the column that says Number of Unique  
11 Maps, can you explain what that is.

12 A. Yes. So if we take, for example, Alamance  
13 County Grouping Set 1, among his 1,000  
14 simulations there are 52 unique maps.

15 Q. Okay. All right.

16 (WHEREUPON, Thornton Exhibit 8 was  
17 marked for identification.)

18 BY MR. FARR:

19 Q. Dr. Thornton, you've been handed Exhibit 8. Can  
20 you tell us what Exhibit 8 is.

21 A. Eight is the same set of columns but for the  
22 Senate county groupings. So it provides --  
23 again, it's a compilation of Dr. Chen's Senate  
24 simulations for each of these Senate district  
25 groupings and identifies the number of actual

1 unique maps contained in his information.

2 Q. And who prepared Exhibit 8?

3 A. My staff and I did.

4 Q. And what data did you rely upon to prepare  
5 Exhibit 8?

6 A. Similar to the House county groupings within  
7 Dr. Chen's information, he generated a file for  
8 each simulation for each of the Senate district  
9 groupings that he generated simulations for, and  
10 there is a file, and similar to what I described  
11 for the House, there is an assignment of ones  
12 and twos and threes, et cetera, depending on the  
13 number of districts within a county district and  
14 the assignment of that district to each  
15 geographic area.

16 Q. So, Dr. Thornton, I noticed on the column on the  
17 extreme left it says Dr. Chen's House County  
18 Grouping Number; is that correct?

19 A. That should be Senate. I apologize.

20 Q. Okay. Are the headings in the columns for  
21 Exhibit 8, do they correspond to the same  
22 columns that we find in Exhibit 7 for the House  
23 compilation?

24 A. Yes.

25 MR. FARR: All right. No further



Number of Unique Maps By House County Grouping

Dr. Chen's House County Grouping Number	Set 1 or 2	House District Grouping (county names)	Number of Unique Maps
1	Set 1	Alamance	52
1	Set 2	Alamance	30
3	Set 1	Anson and Union	229
3	Set 2	Anson and Union	183
9	Set 1	New Hanover and Brunswick	208
9	Set 2	New Hanover and Brunswick	35
10	Set 1	Buncombe	14
10	Set 2	Buncombe	70
12	Set 1	Richmond, Montgomery, Stanly, Cabarrus, Rowan, and Davie	273
12	Set 2	Richmond, Montgomery, Stanly, Cabarrus, Rowan, and Davie	200
19	Set 1	Cleveland and Gaston	166
19	Set 2	Cleveland and Gaston	100
20	Set 1	Pender, Columbus, and Robeson	323
20	Set 2	Pender, Columbus, and Robeson	381
21	Set 1	Cumberland	43
21	Set 2	Cumberland	82
24	Set 1	Duplin and Onslow	37
24	Set 2	Duplin and Onslow	12
26	Set 1	Forsyth and Yadkin	749
26	Set 2	Forsyth and Yadkin	617
27	Set 1	Franklin and Nash	5
27	Set 2	Franklin and Nash	3
29	Set 1	Granville, Person, Vance, and Warren	4
29	Set 2	Granville, Person, Vance, and Warren	4
30	Set 1	Guilford	14
30	Set 2	Guilford	20
36	Set 1	Pitt and Lenoir	93
36	Set 2	Pitt and Lenoir	88
38	Set 1	Mecklenburg	1,000
38	Set 2	Mecklenburg	1,000
40	Set 1	Wake	1,000
40	Set 2	Wake	1,000

EXHIBIT 7  
 WIT: J. Thornton  
 DATE: 6/13/19  
 DENISE MYERS BYRD

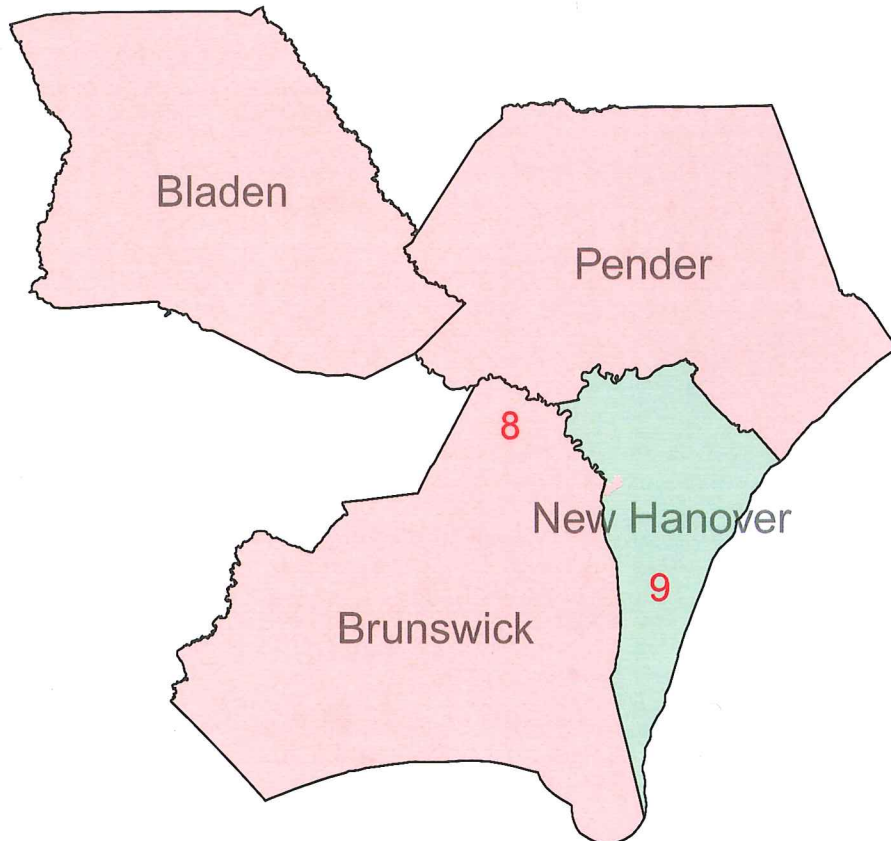
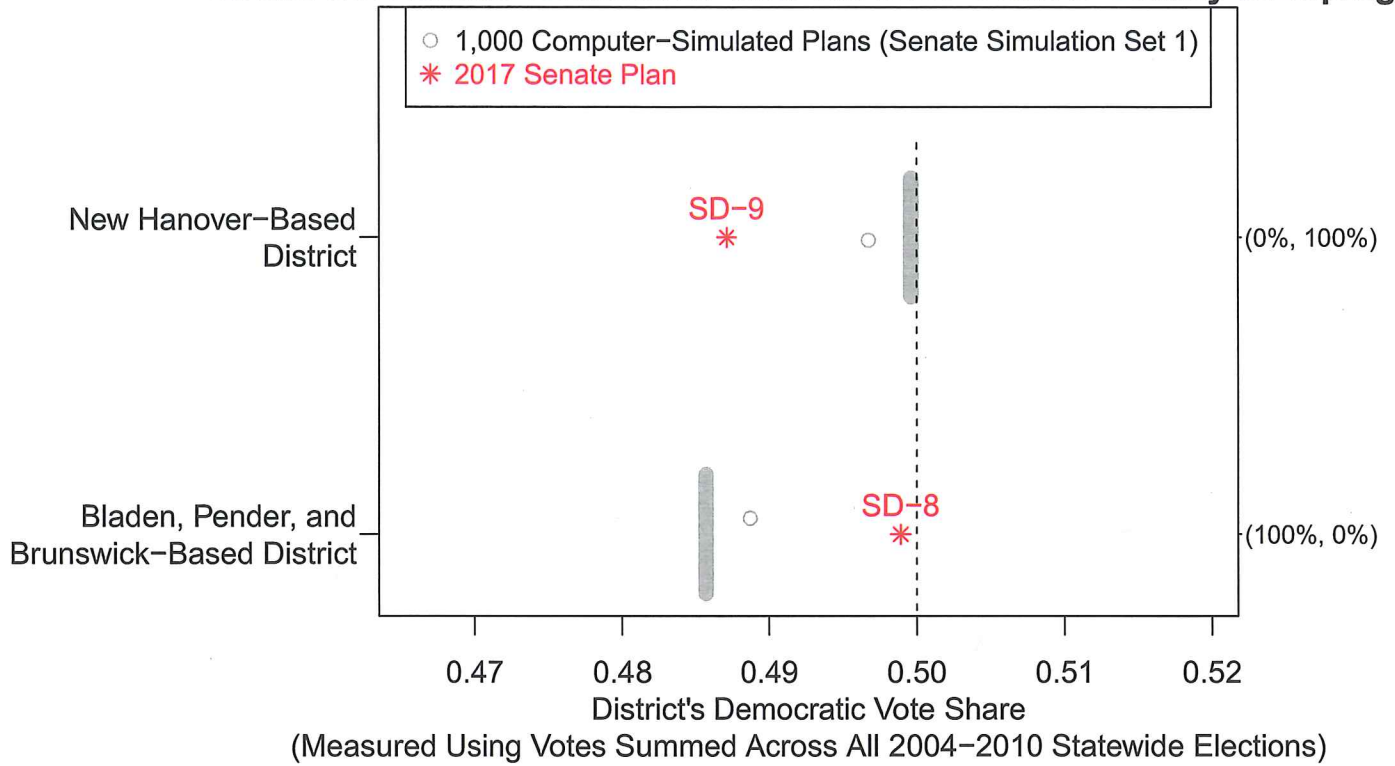
Number of Unique Maps By Senate County Grouping

Dr. Chen's House County Grouping Number	Set 1 or 2	Senate District Grouping (county names)	Number of Unique Maps
1	Set 1	Randolph, Guilford, and Alamance	207
1	Set 2	Randolph, Guilford, and Alamance	204
7	Set 1	Bladen, Pender, Brunswick, and New Hanover	2
7	Set 2	Bladen, Pender, Brunswick, and New Hanover	1
8	Set 1	Transylvania, Henderson, and Buncombe	215
8	Set 2	Transylvania, Henderson, and Buncombe	207
18	Set 1	Davie and Forsythe	986
18	Set 2	Davie and Forsythe	957
19	Set 1	Sampson, Duplin, Johnston, Nash, Lee, and Harnett	19
19	Set 2	Sampson, Duplin, Johnston, Nash, Lee, and Harnett	15
22	Set 1	Wake and Franklin	1,000
22	Set 2	Wake and Franklin	948
28	Set 1	Mecklenburg	979
28	Set 2	Mecklenburg	954

EXHIBIT 8  
WIT: J. Thorton  
DATE: 6/13/19  
DENISE MYERS BYRD

# **Exhibit 3**

**Figure 80: Senate Simulation Set 1:  
Democratic Vote Share of the Enacted and Computer-Simulated Districts  
Within the Bladen-Brunswick-New Hanover-Pender County Grouping**



2017 Enacted Senate Plan Districts (2 Districts)

# Exhibit 4

STATE OF NORTH CAROLINA  
COUNTY OF WAKE

IN THE GENERAL COURT OF JUSTICE  
SUPERIOR COURT DIVISION  
18 CVS 014001

COMMON CAUSE, et al.,                    )  
  )  
                                  Plaintiffs,                    )  
  )  
                                  vs.                                )  
  )  
DAVID LEWIS, IN HIS OFFICIAL            )  
CAPACITY AS SENIOR CHAIRMAN OF        )  
THE HOUSE SELECT COMMITTEE ON         )  
REDISTRICTING, et al.,                 )  
  )  
                                  Defendants.                    )  
  )

VIDEO DEPOSITION OF  
M.V. (TREY) HOOD III, Ph.D.

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9:25 A.M.

Wednesday, June 12, 2019

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POYNER SPRUILL  
301 FAYETTEVILLE STREET  
SUITE 1900  
RALEIGH, NORTH CAROLINA

By: Denise Myers Byrd, CSR 8340, RPR

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A P P E A R A N C E S

Counsel for Common Cause, the NC Democratic Party,  
and the Individual Plaintiffs:

ARNOLD PORTER  
BY: DAVID P. GERSCH, ESQ.  
601 Massachusetts Avenue, NW  
Washington, DC 20001-3743  
(202) 942-5125  
David.Gersch@arnoldporter.com

POYNER SPRUILL  
BY: CAROLINE MACKIE, ESQ.  
301 Fayetteville Street  
Suite 1900  
Raleigh, NC 27601  
(919) 783-6400  
CMackie@poynerspruill.com

Counsel for the Legislative Defendants:

OGLETREE DEAKINS NASH SMOAK  
& STEWART  
BY: MICHAEL McKNIGHT, ESQ.  
4208 Six Forks Road  
Suite 1100  
Raleigh, NC 27609  
(919) 787-9700  
Michael.McKnight@Ogletree.com

Counsel for the State Board of Elections and Ethics  
Enforcement and its members:

NC DEPARTMENT OF JUSTICE  
BY: STEPHANIE BRENNAN, ESQ.  
114 W. Edenton Street  
Raleigh, NC 27603  
(919) 716-6900  
SBrennan@ncdoj.gov

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Counsel for Defendant-Intervenors:

SHANAHAN McDOUGAL (telephonically)  
BY: NATE PENCOOK, ESQ.  
128 E. Hargett Street  
Suite 300  
Raleigh, NC 27601  
(919) 856-9494  
NPencook@shanahanlawgroup.com

Also Present: Jared Medrano,  
Ogletree summer intern

The Reporter: Discovery Court Reporters  
and Legal Videographers, LLC  
BY: DENISE MYERS BYRD, CSR 8340  
LUKE TROUBLEFIELD, VIDEO  
4208 Six Forks Road, Suite 1000  
Raleigh, NC 27609  
(919) 424-8242  
(919) 649-9998 Direct  
Denise@DiscoveryDepo.com

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--o0o--

1 THE VIDEOGRAPHER: On record at  
2 9:25 a.m. Today's date is June 20, 2019.

3 This is the video deposition of  
4 Dr. Trey Hood.

5 Would counsel please introduce  
6 themselves.

7 MR. GERSCH: David Gersch for  
8 plaintiffs.

9 MS. MACKIE: Caroline Mackie also for  
10 the plaintiffs.

11 MR. McKNIGHT: Michael McKnight for the  
12 legislative defendants.

13 MS. BRENNAN: Stephanie Brennan for the  
14 state defendants.

15 MR. MEDRANO: Jared Medrano for the  
16 legislative defendants.

17 TREY HOOD, Ph.D.,  
18 having been first duly sworn or affirmed by the  
19 Certified Shorthand Reporter and Notary Public  
20 to tell the truth, the whole truth and nothing  
21 but the truth, testified as follows:

22 EXAMINATION

23 BY MR. GERSCH:

24 Q. Please state your name.

25 A. MV Hood III.

1 plan?

2 A. 21.

3 Q. Okay. And based upon where that falls in  
4 Dr. Chen's chart here, what does that result say  
5 about the accuracy of Dr. Chen's chart in  
6 predicting election results?

7 MR. GERSCH: Objection to form.

8 THE WITNESS: Most of Dr. Chen's  
9 simulations, from looking at Figure 20, would  
10 have predicted a lower seat outcome for  
11 Democrats at 19 or 20 as opposed to 21 which  
12 actually happened.

13 BY MR. McKNIGHT:

14 Q. Now, you were asked some questions earlier about  
15 whether more densely populated urban areas would  
16 yield more districts, or words to that effect.  
17 Do you remember those questions?

18 A. Yes.

19 Q. Okay. I want to show you a document here that  
20 I'm going to mark as Exhibit 6.

21 (WHEREUPON, Hood Exhibit 6 was marked  
22 for identification.)

23 BY MR. McKNIGHT:

24 Q. And, Dr. Hood, have you looked at the number of  
25 seats that are available or number of districts

1           that are available in North Carolina's urban  
2           counties?

3           A.    Yes, I certainly have.

4           Q.    And this Exhibit 6, can you explain what it is.

5           A.    Well, these aren't all necessarily the urban  
6           county groupings, but these are some of the  
7           larger ones and so these would show you the  
8           county group and the vote percentage aggregated  
9           by the county group and the number of Republican  
10          seats won, the percentage of Republican seats  
11          out of the total and the total number of seats.  
12          So, for instance, in the House in Wake, there  
13          are 11 total House seats.

14          Q.    Okay. And looking at the House -- the counties  
15          listed here under the heading House, what  
16          counties are these in terms of how large they  
17          are within the state?

18          A.    These are certainly in the top six, I believe,  
19          all these counties.

20          Q.    Do you know if these are the top four counties  
21          or --

22          A.    I think Cumberland is actually six from what --  
23          and again, this is from my memory so it may be  
24          slightly off. Of course, Wake and Mecklenburg  
25          are the two biggest counties in North Carolina.

1 Q. Okay. And it appears to me, in looking at the  
2 number of seats that you listed here, there are  
3 a total of 33 House seats that are discussed  
4 here within these four counties; is that right?

5 A. That's correct.

6 Q. So that means there would be -- if there's 120  
7 House seats, there would be 97 House seats that  
8 are outside of those four counties; is that  
9 right?

10 A. Correct.

11 Q. And then for the Senate you also looked at three  
12 sets of county groupings; is that right?

13 A. Yes.

14 Q. There's a total of 14 seats in those county  
15 groupings; is that right?

16 A. Correct.

17 Q. So that means there would be 36 seats outside of  
18 those particular county groupings if there are  
19 50 Senate seats; is that right?

20 A. Correct.

21 Q. So I want to hand you another document, then,  
22 that I'm going to mark as Exhibit 7.

23 (WHEREUPON, Hood Exhibit 7 was marked  
24 for identification.)

25 BY MR. McKNIGHT:

1 Q. All right. And can you describe what Exhibit 7  
2 shows.

3 A. So this is just the vote -- the House and Senate  
4 vote from the 2018 elections aggregated in  
5 different ways geographically. So we're using  
6 counties here, not necessarily using county  
7 groups at this point. The other document were  
8 county groups.

9 So it starts out with what the  
10 statewide aggregated vote -- two-party vote  
11 would be for the Democrats and the Republicans,  
12 and then it begins to subtract out certain  
13 counties and then reaggregates the vote total  
14 minus those counties.

15 Q. Okay. And which counties are these under the  
16 State Senate heading in terms of size?

17 A. Well, I think these are -- I've got Mecklenburg,  
18 Wake, Forsyth, Guilford, Durham and Cumberland.

19 Q. That's six counties, right?

20 A. Correct.

21 Q. In terms of their size relative to other  
22 counties in the state, what is your -- do you  
23 have an opinion on that?

24 A. My understanding is that these are the six  
25 largest counties by population.

1 Q. Okay. And what does this chart show that  
2 without those six counties, what the -- what --  
3 well, let me back up for a minute.

4 What are the percentages in the  
5 right-hand side of this document?

6 A. Okay. So again, these are the State Senate and  
7 State House votes aggregated different ways  
8 geographically, two-party vote, just Republican,  
9 Democrat.

10 Q. And this is from which election cycle?

11 A. The 2018 election cycle.

12 Q. And so if I'm reading this correctly, the  
13 statewide two-party vote for Democrats in the  
14 Senate is 50.6 percent is what you calculated;  
15 is that right?

16 A. Correct.

17 Q. And the statewide two-party vote for Republican  
18 is 49.4?

19 A. Correct.

20 Q. But if you take out the top six counties, the  
21 percentage of Democratic votes statewide is  
22 42.3 percent; is that right?

23 A. Yeah, minus those counties, reaggregateing the  
24 state vote for the other 94 counties in  
25 North Carolina.

1 Q. All right. And then if you take out those six  
2 counties, then the rest of the state has a  
3 statewide vote of 57.7 percent for Republicans;  
4 is that right?

5 A. Correct.

6 Q. And then looking at the State House, the chart  
7 is set up the same way; is that right?

8 A. Correct.

9 Q. And taking out the six largest counties from the  
10 State House, that shows that the statewide vote  
11 for Democrats was 43.1 percent; is that right?

12 A. Correct.

13 Q. And the statewide vote for Republicans is  
14 56.9 percent; is that right?

15 A. Correct.

16 Q. What does that say, Dr. Hood, about the  
17 distribution of partisans in the state?

18 A. Well, it's similar to some of the geographic  
19 analysis I produced that, again, outside of  
20 urban counties especially there are more  
21 Republican votes than Democratic votes.

22 MR. McKNIGHT: Dr. Hood, I don't  
23 believe I have any further questions for you at  
24 this time.

25 MS. BRENNAN: No questions for me.



STATE OF NORTH CAROLINA  
COUNTY OF WAKE

IN THE GENERAL COURT OF JUSTICE  
SUPERIOR COURT DIVISION  
Case No. 18 CVS 014001

COMMON CAUSE, *et al.*

*Plaintiffs,*

v.

DAVID R. LEWIS, *et al.*

*Defendants.*

**Expert Report of Dr. M.V. Hood III.**

Pursuant to the North Carolina Rules of Civil Procedure and the Case Management Orders of the Court in the above-captioned matter, I, M.V. (Trey) Hood III, provide the following written report:

**I. INTRODUCTION AND BACKGROUND**

My name is M.V. (Trey) Hood III, and I am a tenured professor at the University of Georgia with an appointment in the Department of Political Science. I have been a faculty member at the University of Georgia since 1999. I also serve as the Director of the School of Public and International Affairs Survey Research Center. I am an expert in American politics, specifically in the areas of electoral politics, racial politics, election administration, and Southern politics. I teach courses on American politics, Southern politics, and research methods and have taught graduate seminars on the topics of election administration and Southern politics.

I have received research grants from the National Science Foundation and the Pew Charitable Trust. I have also published peer-reviewed journal articles specifically in the areas of redistricting and vote dilution. My academic publications are detailed in a copy of my vita that is attached to the end of this document. Currently, I serve on the editorial boards for *Social Science Quarterly* and *Election Law Journal*. The latter is a peer-reviewed academic journal focused on the area of election administration.

During the preceding four years, I have offered expert testimony (through deposition or at trial) in fourteen cases around the United States: *United States v. North Carolina*, 1:13-cv-861 (M.D. N.C.), *Bethune-Hill v. Virginia State Board of Elections*, 3:14-cv-00852 (E.D. Va.), *The Ohio Democratic Party v. Husted*, 2:15-cv-1802 (S.D. Ohio), *The Northeast Ohio Coalition v. Husted*, 2:06-cv-00896 (S.D. Ohio), *One Wisconsin Institute v. Nichol*, 3:15-cv-324 (W.D. Wis.), *Covington v. North Carolina*, 1:15-cv-00399 (M.D.N.C.), *Green Party of Tennessee v. Hargett*, 3:11-cv-00692 (M.D. Tenn.), *Vesilind v. Virginia State Board of Elections*, CL15003886-00 (Richmond Circuit Court), *Common Cause v. Rucho*, 1:16-cv-1026 (M.D.N.C.), *Greater*

EXHIBIT	<u>2</u>
WIT:	<u>Hood</u>
DATE:	<u>6/12/19</u>
DENISE MYERS BYRD	

#### IV. THE 2018 ELECTION

In 2017, the GOP held 61.7% of seats in the state House and 70.0% of seats in the state Senate (see Table 6).<sup>22</sup> Democrats held 38.3% of House seats and 30.0% of Senate seats.

Table 6. 2017 North Carolina Legislative Seat Distribution

	House		Senate	
	R	D	R	D
Statewide	61.7%	38.3%	70.0%	30.0%
	[74]	[46]	[35]	[15]
	120		50	

The 2018 elections for the House and Senate were held under the districts presently being challenged.<sup>23</sup> The election results are displayed in Table 7. In the House, Democrats picked up a net of nine seats and in the Senate a net of six seats. The Democrats now hold 45.8% of House seats, an increase of nine-points over 2017. In the Senate, Democrats now hold 42.0% of total seats, an increase of 12points compared with 2017. Table 7 also segments the 2018 election results by various categories. In the House, among the districts Plaintiffs are challenging, Democrats won more than a majority (51%) of seats. This includes all 11 seats in Wake County and all 12 seats in Mecklenburg County. Among the districts being challenged in the Senate, Democrats won 56.5% of the seats, including four out of five seats in the Wake-Franklin group and four out of five seats in Mecklenburg County. On the other hand, outside of the challenged districts, Republicans won two-thirds of the House seats and 70% of the Senate seats.

Table 7. 2018 North Carolina Legislative Results

	House		Senate	
	R	D	R	D
Statewide	54.2%	45.8%	58.0%	42.0%
	[65]	[55]	[29]	[21]
Challenged Districts	49.4%	50.6%	43.4%	56.5%
	[38]	[39]	[10]	[13]
Challenged Groups	48.8%	51.2%	----	----
	[40]	[42]		
Non-Challenged Districts	65.8%	34.2%	70.4%	29.6%
	[25]	[13]	[19]	[8]
Total Seats	120		50	

<sup>22</sup>National Conference of State Legislatures ([http://www.ncsl.org/Portals/1/Documents/Elections/Legis\\_Control\\_2017\\_March\\_1\\_9%20am.pdf](http://www.ncsl.org/Portals/1/Documents/Elections/Legis_Control_2017_March_1_9%20am.pdf)).

<sup>23</sup>Data source: North Carolina State Board of Elections (<https://www.ncsbe.gov/>).

What is perhaps even more compelling evidence of Democratic strength in the 2018 elections is demonstrated in Table 8. This table categorizes House seats in partisan terms using a composite vote index.<sup>24</sup> The elections from which the vote index is created all occurred temporally prior to the enactment of the 2017 legislative plans. I calculated the Republican share of the two-party vote from twenty-five statewide races that occurred over five election cycles, from 2008 through 2016. I reaggregated these data, which had been disaggregated to the block-level, into state House and Senate districts.<sup>25</sup> Using a vote average also helps to mitigate against election-specific effects that may be tied to a particular candidate or contest. In addition, using statewide contests ensures that, geographically, the entire state is covered by the elections utilized to draw inferences.

I categorize districts based on the GOP vote index previously discussed. Districts below 45% Republican are considered safely Democratic. Districts ranging from 45% to 50% Republican are considered Democratic-leaning, but competitive, while districts in the 50% to 55% range are categorized as Republican-leaning, but competitive. Finally, any district above 55% Republican is denoted as being safely Republican.<sup>26</sup>

Table 8 classifies 2018 House election outcomes by their partisan vote index score. On the basis of the partisan index alone, one would predict prior to the 2018 elections that Democrats would win 32 of 77 of the challenged districts, or 41.6%. Again, we now know that the Democrats captured an additional seven seats, or 51% of the total challenged districts.

In the challenged districts, the Democrats won all seats categorized as strong Democrat and three-fifths of competitive, but Democratic-leaning seats. The Democrats also made sizable gains in seats classified as Republican, winning a third of competitive Republican seats and 15%

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<sup>24</sup>Data source: North Carolina General Assembly, Redistricting Office.

<sup>25</sup>The exact formula I used is as follows: [(R) Votes for 2008 Attorney General/Total Votes for 2008 Attorney General + (R) Votes for 2008 Auditor/Total Votes for 2008 Auditor + (R) Votes for 2008 Commissioner of Agriculture/Total Votes for 2008 Commissioner of Agriculture + (R) Votes for 2008 Commissioner of Insurance/Total Votes for 2008 Commissioner of Insurance + (R) Votes for 2008 Commissioner of Labor/Total Votes for 2008 Commissioner of Labor + (R) Votes for 2008 Governor/Total Votes for 2008 Governor + (R) Votes for 2008 Lt. Governor/Total Votes for 2008 Lt. Governor + (R) Votes for 2008 Sup. of Public Instruction/Total Votes for 2008 Sup. of Public Instruction + (R) Votes for 2008 U.S. Senate/Total Votes for 2008 U.S. Senate + (R) Votes for 2010 U.S. Senate/Total Votes for 2010 U.S. Senate + (R) Votes for 2012 Governor /Total Votes for 2012 Governor + (R) Votes for 2012 Lt. Governor /Total Votes for 2012 Lt. Governor + (R) Votes for 2012 Auditor /Total Votes for 2012 Auditor + (R) Votes for 2012 Com. of Agriculture /Total Votes for 2012 Com. of Agriculture + (R) Votes for 2012 Com. of Insurance /Total Votes for 2012 Com. of Insurance + (R) Votes for 2012 Com. of Labor /Total Votes for 2012 Com. of Labor + (R) Votes for 2012 Secretary of State /Total Votes for 2012 Secretary of State + (R) Votes for 2012 Sup. of Public Instruction/Total Votes for 2012 Sup. of Public Instruction + (R) Votes for 2012 Treasurer/Total Votes for 2012 Treasurer + (R) Votes for 2014 U.S. Senate/Total Votes for 2014 U.S. Senate + (R) Votes for 2016 President/Total Votes for 2016 President + (R) Votes for 2016 U.S. Senate/Total Votes for 2016 U.S. Senate + (R) Votes for 2016 Governor /Total Votes for 2016 Governor + (R) Votes for 2016 Lt. Governor /Total Votes for 2016 Lt. Governor + (R) Votes for 2016 Attorney General/Total Votes for 2016 Attorney General] / 25.

<sup>26</sup>Classifying competitive seats in the +/-5% range is a conservative measure of competition. Some political scientists use an even more stringent definition classifying a race won by less than 60% of the total vote (+/-10%) as being a *marginal* victory and, as such, a very competitive contest. For example, see Gary Jacobson 1987. "The Marginals Never Vanished: Incumbency and Competition in Elections to the U.S. House of Representatives, 1952-82." *American Journal of Political Science* 31(1): 126-141 and Paul S. Herrnson. 2004. *Congressional Elections*. Washington, D.C.: CQ Press).

of seats in the strong Republican category. Nine of the thirty-nine seats (23%) won by the Democrats in the challenged districts were seats that a pre-2017 vote index classified as Republican (competitive and safe). This is an important fact if one wants to discuss *the opportunity-to-elect* concept.

Table 8. Challenged House Districts 2018 Election Outcomes by Partisan Vote Index

Party	Strong Democrat	Competitive Democrat	Competitive Republican	Strong Republican
Democrat	100% [27]	60% [3]	33% [4]	15% [5]
Republican	0% [0]	40% [2]	66% [8]	85% [28]
	27	5	12	31

Prior to an election, one can only prognosticate about the ability for a member of a political party to be elected using information about previous elections such as a vote index. If a district were classified as strong Republican, then we would not predict a Democratic victory and, yet, we observe this outcome five times in 2018. Likewise, if one had to make a binary choice, then predicting competitive Republican districts will elect a GOP member, all other things being equal, appears entirely reasonable. But, in 2018, this prediction would have been incorrect four out of twelve or one out of three times. The Republicans in 2018 managed to win two of five seats classified as Democratic-leaning, but competitive. Relying on the PVI produced a situation where eleven of the seventy-five races in the challenged districts, or 15%, were incorrectly classified. Classifying districts and/or making predictions using a partisan vote index does not always correctly translate into the opportunity-to-elect concept that is a critical lynchpin of racial gerrymandering cases. This fact also highlights the importance that candidates, campaigns, and the political environment play in determining election outcomes.

Table 9 undertakes a similar analysis for state Senate election outcomes in 2018 relying on the same partisan vote index previously described. In this case, relying on the PVI alone, one would predict a nine to fourteen Democrat-Republican split. In actuality, Democrats won thirteen of twenty-three (or 57%) of the challenged seats. Based on actual election outcomes, four races, or 17% of the total, were incorrectly classified using a partisan vote index.

Table 9. Challenged Senate Districts 2018 Election Outcomes by Partisan Vote Index

Party	Strong Democrat	Competitive Democrat	Competitive Republican	Strong Republican
Democrat	100% [9]	0% [0]	33% [3]	20% [1]
Republican	0% [0]	0% [0]	66% [6]	80% [4]
	9	0	9	5

In the absence of an actual election, how would one predict the number of seats a party might capture under a particular districting plan? Many in this position would rely on a partisan vote index created from previous elections as being the best approximation of how voters in a particular geographic area will behave in a future election. In fact, this is the method that Professor Chen relies on to classify seats in partisan terms once a simulated map is drawn. A critical point to remember, however, is that in using a partisan vote index of previous elections, one is relying on past behavior to make inferences about future behavior. Such a prediction about future events may or may not be borne out. In this case, we know from the 2018 election that the results in certain House and Senate districts were not correctly predicted based on a partisan vote index. Knowing this, one should certainly exercise caution when examining any proposed or simulated districting plan. The 2016 election of Donald Trump, which was not correctly predicted by most, even with a host of polling data, should give pause to the idea that we can predict future events with total certainty. One possible retort is that a PVI will correctly predict future elections more often than not. I do not necessarily disagree with such a statement. However, we also know that a certain percentage of cases may be incorrectly predicted as well. Depending on the rate of error, which is not known *a priori*, using a partisan vote index to make a determination as to whether a plan may be an outlier may lead to erroneous results.

#### *Examining Seats versus Votes in 2018*

In his report, Professor Cooper makes direct reference to the statewide share of the Democratic vote received for the North Carolina House and Senate and the percentage of Democratic seats won in each chamber. For 2018 he notes, “even in the blue wave year of 2018, Democrats won almost nine percentage points more votes in the Senate than they occupied seats. Similarly, in the House, Democrats won over five percentage points more votes than they occupied seats.”<sup>27</sup> Professor Cooper is referencing a statistic more formally known as the “seats to votes” ratio. This viewpoint is echoed as well in the complaint in this matter. The plaintiffs clearly state: “In both the state House and state Senate elections in 2018, Democratic candidates won a majority of the statewide vote, but Republicans still won a substantial majority of seats in each chamber. The maps are impervious to the will of the voters.”<sup>28</sup>

<sup>27</sup>Expert report of Christopher Cooper, *Common Cause v. Lewis*, Case No. 18 CVS 014001, (April 8, 2019), p. 16.

<sup>28</sup>Amended Complaint, ¶ 3

The seats to votes ratio (S-V) is a measure of proportionality. A value of one under this ratio means that the percentage of seats won by a party is equal to that party's vote share.<sup>29</sup> With this and other potential measures of partisan symmetry (e.g. the efficiency gap, mean-median, etc.) there is a reversion back to the idea that the overall seat distribution in a state should resemble the statewide partisan vote distribution. Stated otherwise, there is the normative idea encapsulated within such exercises that votes and seats should be proportional to one another. Given the winner-take-all single-member district system of elections used to elect members of the North Carolina General Assembly, however, such an expectation is seldom born out.

In previous court cases, I have expressed skepticism that such measures can be used systematically to detect partisan gerrymandering. Given the fact that Professor Cooper has raised this specific issue, however, I have performed my own calculations of seats-to-votes ratios in Table 10 below. Keeping in mind that the plaintiffs in this matter have only challenged certain House and Senate districts, the more germane comparison would be to calculate the S-V ratio for the challenged districts versus those not under legal challenge.

Looking at Table 10, I have calculated the S-V ratio for the House using the percentage of Republican seats and votes for given groups (Republican seat and vote shares are listed below the S-V ratio).<sup>30</sup> A value less than one in this case is an indication that the GOP seat share is less than the number of Republican votes received in the area under study. A value of one indicates the share of seats for the Republicans is equivalent to their share of votes. A value greater than one is an indication that the share of GOP seats exceeds the share of Republican votes in a given set of districts.

For the House as a whole, under the 2018 election results, the S-V ratio is 1.11—an indication that Republicans are able to capture more seats statewide than their vote share. When we separate the challenged House districts from those not under challenge a different pattern emerges altogether. The S-V ratio for the challenged districts, at 1.06, indicates the Republican seat share is much closer to its vote share for these districts. I also provide a comparison for all districts (challenged or unchallenged) contained within a county group where there are challenged districts. The S-V ratio for these groups is again 1.05. The S-V ratio for House districts not under challenge is 1.23. It is clear from these results that the S-V ratio statewide is greatly affected by the results in House districts and groups of House districts that the plaintiffs have made no allegations challenging.

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<sup>29</sup>Just to be clear, I am not endorsing this specific measure or any threshold level for this measure.

<sup>30</sup>These calculations for the House do not include HD 107 which was uncontested in the 2018 election cycle or HD 13 and HD 24 which were not contested by candidates from both the Democratic and Republican parties. Inclusion of these cases does not materially alter any of the figures in Table 10, nor certainly the conclusion I am drawing from these figures.

Table 10. Republican Seats to Votes Ratios, 2018

	House	Senate
Statewide	1.11 (54.2%, 49.0%)	1.17 (58.0%, 49.4%)
Challenged Districts	1.06 (50.0%, 47.0)	0.99 (43.5%, 44.1%)
Challenged Groups	1.05 (49.4%, 46.8%)	----
Non-Challenged Districts	1.23 (66.7%, 54.0%)	1.29 (70.4%, 54.7%)

Table 10 also calculates the S-V ratio for the Senate in 2018. The statewide figure is 1.17. But, among the Senate districts under challenge, the S-V ratio is 0.99. This is an indication that the Republican seat share for this group is less than its share of the votes in these districts. The seats-to-votes ratio for those Senate districts not under challenge is 1.29. As with the House, the larger statewide S-V ratio for the Senate is heavily skewed by the results in districts that are not being challenged by the plaintiffs.

If the plaintiffs would like to rely on some metric of proportionality as a proxy for partisan fairness, then it is in the House and Senate districts challenged by the plaintiffs where we see a much closer congruence between seats and votes. Ironically, it is in the House and Senate districts not under challenge where we see a divergence between votes won and seats accrued.

## V. NORTH CAROLINA'S POLITICAL GEOGRAPY

In this section, I discuss the political geography of North Carolina and how this factor interacts with the process of drawing districts in the state.<sup>31</sup> In order to do so, I created my own partisan index based on recent contested races. More specifically, I calculated the Republican share of the two-party vote from 11 statewide races at the VTD level.<sup>32</sup> Using GIS, I was able to categorize and plot these VTDs along with their partisan index score. Since the partisan index is based on the two-party vote share, it can be easily partitioned into four categories: Strong Democrat (0.0%-24.9%); Democrat (25.0%-49.9%); Republican (50.0%-74.9%); and strong Republican

<sup>31</sup>This section of my report is derived from work on an expert report I produced for *Common Cause v. Rucho* [1:16-CV-1026-WO-JEP].

<sup>32</sup>The exact formula I used is as follows: [(R) Votes for 2010 U.S. Senate + (R) Votes for 2012 Governor + (R) Votes for 2012 Lt. Governor + (R) Votes for 2012 Auditor + (R) Votes for 2012 Ag. Commissioner + (R) Votes 2012 Insurance Commissioner + (R) Votes 2012 Labor Commissioner + (R) Votes 2012 Secretary of State + (R) Votes 2012 School Superintendent + (R) Votes 2014 U.S. Senate] / (Total Two-Party Vote for 2010 U.S. Senate + Total Two-Party Vote for 2012 Governor + Total Two-Party Vote for 2012 Lt. Governor + Total Two-Party Vote for 2012 Auditor + Total Two-Party Vote for 2012 Ag. Commissioner + Total Two-Party Vote 2012 Insurance Commissioner + Total Two-Party Vote 2012 Labor Commissioner + Total Two-Party Vote 2012 Secretary of State + Total Two-Party Vote 2012 School Superintendent + Total Two-Party Vote 2014 U.S. Senate].

**VI. CERTIFICATION**

I certify that the statements and opinions provided in this report are true and accurate to the best of my knowledge, information, and belief.

Executed on April 30, 2019.

*M.V. Hood III*

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M.V. (Trey) Hood III

Department of Political Science  
School of Public and International Affairs  
180 Baldwin Hall  
University of Georgia  
Athens, GA 30602

Phone: (706) 583-0554

E-mail: [th@uga.edu](mailto:th@uga.edu)



House	(R) Votes	(R) Seats	(R) Seats	Seats
Wake	36.7%	0.0%	0	11
Mecklenburg	32.2%	0.0%	0	12
Guilford	39.6%	33.3%	2	6
Cumberland	40.2%	25.0%	1	4

Senate	(R) Votes	(R) Seats	(R) Seats	Seats
Wake, Franklin	37.5%	20.0%	1	5
Mecklenburg	34.2%	20.0%	1	5
Guliford, Alamance, Randolph	47.6%	50.0%	2	4

Source: North Carolina State Board of Elections  
<https://www.ncsbe.gov/Election-Results>

EXHIBIT 6  
WIT: Hood  
DATE: 6/12/19  
DENISE MYERS BYRD

State Senate	%D	%R
Statewide	50.6%	49.4%
w/o Mecklenburg, Wake	46.6%	53.4%
w/o Mecklenburg, Wake, Forsyth, Guilford, Durham	42.9%	57.1%
w/o Mecklenburg, Wake, Forsyth, Guilford, Durham, Cumberland	42.3%	57.7%

State House	%D	%R
Statewide	51.2%	48.8%
w/o Mecklenburg, Wake	47.2%	52.8%
w/o Mecklenburg, Wake, Forsyth, Guilford, Durham	43.8%	56.2%
w/o Mecklenburg, Wake, Forsyth, Guilford, Durham, Cumberland	43.1%	56.9%

Source: North Carolina State Board of Elections  
<https://www.ncsbe.gov/Election-Results>

EXHIBIT 7  
WIT: Hood  
DATE: 6/12/19  
DENISE MYERS BYRD

# **Exhibit 5**

STATE OF NORTH CAROLINA

IN THE GENERAL COURT OF JUSTICE

SUPERIOR COURT DIVISION

COUNTY OF WAKE

18 CVS 014001

COMMON CAUSE, et al., )  
 )  
 Plaintiffs, )  
 )  
 vs. )  
 )  
 DAVID LEWIS, IN HIS OFFICIAL )  
 CAPACITY AS SENIOR CHAIRMAN OF )  
 THE HOUSE SELECT COMMITTEE ON )  
 REDISTRICTING, et al., )  
 )  
 Defendants. )  
 )

VIDEO DEPOSITION OF

DOUGLAS JOHNSON, Ph.D.

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9:59 A.M.

Monday, June 17, 2019

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POYNER SPRUILL  
301 FAYETTEVILLE STREET  
SUITE 1900  
RALEIGH, NORTH CAROLINA

By: Denise Myers Byrd, CSR 8340, RPR

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A P P E A R A N C E S

Counsel for Common Cause, the NC Democratic Party,  
and the Individual Plaintiffs:

ARNOLD PORTER  
BY: R. STANTON JONES, ESQ.  
601 Massachusetts Avenue, NW  
Washington, DC 20001-3743  
(202) 942-5563  
Stanton.Jones@arnoldporter.com  
POYNER SPRUILL  
BY: CAROLINE MACKIE, ESQ.  
301 Fayetteville Street  
Suite 1900  
Raleigh, NC 27601  
(919) 783-6400  
CMackie@poynerspruill.com

Counsel for the Legislative Defendants:

OGLETREE DEAKINS NASH SMOAK  
& STEWART  
BY: THOMAS A. FARR, ESQ.  
4208 Six Forks Road  
Suite 1100  
Raleigh, NC 27609  
(919) 787-9700  
Thomas.Farr@Ogletree.com

Counsel for the State Board of Elections and Ethics  
Enforcement and its members:

NC DEPARTMENT OF JUSTICE  
BY: PAUL COX, ESQ.  
114 W. Edenton Street  
Raleigh, NC 27603  
(919) 716-6900  
PCox@ncdoj.gov

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The Reporter: Discovery Court Reporters  
and Legal Videographers, LLC  
BY: DENISE MYERS BYRD, CSR 8340  
LUKE TROUBLEFIELD, VIDEO  
4208 Six Forks Road, Suite 1000  
Raleigh, NC 27609  
(919) 424-8242  
(919) 649-9998 Direct  
Denise@DiscoveryDepo.com

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THE VIDEOGRAPHER: On record at  
9:59 a.m. Today's date is June 17, 2019.

This is the video deposition of  
Dr. Douglas Johnson.

Would counsel please introduce  
themselves.

MR. JONES: Stanton Jones from Arnold  
and Porter for the plaintiffs.

MS. MACKIE: Caroline Mackie from  
Poyner Spruill also for the plaintiffs.

MR. FARR: Tom Farr for the legislative  
defendants from Ogletree Deakins.

MR. COX: Paul Cox from the  
North Carolina Department of Justice for the  
state defendants.

DOUGLAS JOHNSON, Ph.D.,  
having been first duly sworn or affirmed by the  
Certified Shorthand Reporter and Notary Public  
to tell the truth, the whole truth and nothing  
but the truth, testified as follows:

EXAMINATION

BY MR. JONES:

Q. Good morning, Mr. Johnson. How are you?

A. Good. Thank you.

Q. We met off the record, but I'm Stanton Jones



1 showing you what has been marked as Exhibit 5.

2 (WHEREUPON, Johnson Exhibit 5 was  
3 marked for identification.)

4 BY MR. JONES:

5 Q. My first question is: Do you recognize this as  
6 a copy of Dr. Cooper's opening report for this  
7 case?

8 A. Yeah, at a quick glance it looks like it.

9 Q. And before today you have taken at least some  
10 look at this report, right?

11 A. Yes.

12 Q. Okay. Did you look specifically at Dr. Cooper's  
13 analysis of the Mecklenburg Senate cluster which  
14 you analyzed in your report?

15 A. Yes.

16 Q. Okay. If you flip to page 46.

17 A. Okay.

18 Q. Do you see there this is the beginning -- it's  
19 labeled Senate Districts 37, 38, 39, 40 and 41.  
20 You recognize those districts as well as the map  
21 there as a map of the adopted Mecklenburg Senate  
22 districts from 2017?

23 A. Yes.

24 Q. You're welcome to hold them next to your own  
25 report. Page 16 shows your version of the

1           adopted Senate Mecklenburg map. And actually,  
2           it will be useful to have it there.

3           A.    Okay.

4           Q.    And you see from your Figure 6 on page 16 of  
5           your report to Dr. Cooper's map on page 46 of  
6           his report different color coding, same  
7           districts, right?

8           A.    Yes.

9           Q.    And did you recall from reading Dr. Cooper's  
10          report that his red and blue shading in these  
11          maps is based on overlaying the results of the  
12          2016 attorney general election?

13          A.    I didn't recall the specific election reference,  
14          but I knew it was a partisan shading.

15          Q.    Okay. You can just take my word for it. That's  
16          what it says that's what he did.

17          A.    Okay.

18          Q.    Do you see how with respect to both District 41,  
19          also with respect to District 39, at many points  
20          the district boundaries specifically track the  
21          red shading which indicates pro-Republican areas  
22          based on the 2016 attorney general election?

23          A.    Yes. I mean, I don't know if it's many or some,  
24          but at some points it does follow the edge of  
25          the red and lighter red VTD.

1 as his opinions.

2 Q. Okay. You can just set that to the side.

3 I'll show you Dr. Cooper's rebuttal  
4 report. We'll mark this as Exhibit 6.

5 (WHEREUPON, Johnson Exhibit 6 was  
6 marked for identification.)

7 BY MR. JONES:

8 Q. Exhibit 6, do you recognize it as a copy of  
9 Dr. Cooper's rebuttal report in which he  
10 responds both to you and also other of the  
11 defendants' experts? Have you seen this  
12 document before?

13 A. Yes.

14 Q. You recognize it as Dr. Cooper's rebuttal report  
15 in which he addresses both your report aspects  
16 of it and also other defendant expert reports?

17 A. I don't think he actually rebuts anything about  
18 my report.

19 Q. You recognize this document and you have seen it  
20 before because you know that it is  
21 Dr. Christopher Cooper's expert rebuttal report  
22 in this case?

23 A. Yes.

24 Q. Did you look at Dr. Cooper's rebuttal  
25 specifically with respect to the Mecklenburg

1 Senate cluster?

2 A. Only as far as I scanned through all of his  
3 charts and graphics.

4 Q. Okay. And we discussed this earlier, but I  
5 believe you already agreed, but tell me if I'm  
6 wrong, being able to see the actual mapmaker's  
7 work, the actual creation of the maps in the  
8 mapmaking software in the manner in which it was  
9 done can be probative and helpful in  
10 understanding the mapmaker's intent, correct?

11 MR. FARR: Objection.

12 THE WITNESS: Not how -- well, I just  
13 see that they do it and get their motives as  
14 they're drawing it in addition to the  
15 legislators' is essentially what I was talking  
16 about.

17 BY MR. JONES:

18 Q. So the Maptitude software -- have you worked  
19 with the Maptitude software before?

20 A. Yes.

21 Q. So you know that it takes a screenshot of the  
22 map that you were working on along with all of  
23 the data fields every time you close out of it?

24 A. Sort of, yes.

25 Q. So to be able -- would it be helpful -- if you