STATE OF NORTH CAROLINA

COUNTY OF WAKE

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

COMMON CAUSE, et al.,

Plaintiffs,

v.

DAVID LEWIS, IN HIS OFFICIAL CAPACITY AS SENIOR CHAIRMAN OF THE HOUSE SELECT COMMITTEE ON REDISTRICTING, et al.,

Defendants.

PLAINTIFFS' PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECREE

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INTRODUCTION

Free and fair elections—in which all citizens can cast their ballots on equal terms, with substantially equal voting power—are foundational to North Carolina's representative democracy. Voting for candidates for the General Assembly is how the people participate in shaping the laws and policies that govern their lives and their communities. Through free and fair elections, every voter gets an equal say in who will represent their interests, and the people as a whole decide who controls the levers of power in the State's government.

But in a partisan gerrymander, the leaders already in power wrest control from the people and decide for themselves who will run the government, before the polls even open. Partisan actors sitting behind a computer classify voters on the basis of their political beliefs, and then sort voters whom they disfavor into some districts and out of others to minimize their electoral influence. Voters are treated like interchangeable pieces on a chess board, arranged on the map in whatever configuration will most effectively entrench the ruling party in power. This practice strikes at the foundation of representative democracy. It is unfair, discriminatory, and wrong. And it violates the North Carolina Constitution.

North Carolina's state legislative maps are extreme partisan gerrymanders. Smoking-gun evidence from the mapmaker's own files shows that the current districts were constructed with surgical precision to maximize Republican political advantage and minimize the representational rights of Democratic voters. The files conclusively prove that, at Legislative Defendants' direction, Dr. Hofeller used prior election results to identify Democratic voters, precinct by precinct, and then assign them to districts to dilute their votes as much as possible.

Plaintiffs' experts confirmed, by a host of mathematical and statistical measures, that the 2017 House and Senate plans are extreme outliers that can only be the product of overriding partisan intent. But that is not all the experts proved. Their analyses also showed that Dr.

Hofeller fine-tuned the plans specifically to entrench Republican dominance. The gerrymanders are most effective—and cost Democrats the highest number of seats—precisely in electoral environments where Democrats could otherwise win a majority in one or both chambers.

At trial, there was no real dispute about the intent and effects of these plans. Defendants presented no rebuttal to Plaintiffs' exhaustive evidence detailing the packing and cracking of Democratic voters in specific county groupings. Defendants offered no real factual defense at all. Not one of Defendants' experts opined that the 2017 plans are *not* extreme outliers. Defendants' experts admitted that these plans were drawn to benefit Republicans, and even admitted that partisan gerrymandering is wrong. "[N]o matter what the issue is," one defense expert testified, the General Assembly "should not discriminate against people." Another defense expert called partisan gerrymandering the "most noxious form of bias" in the political system—one that fundamentally "distort[s]" the political process.

Rather than defend the plans, Legislative Defendants say there is nothing this Court can do about it. But the courts of this State have a duty to protect and enforce citizens' constitutional rights. Indeed, only North Carolina courts can protect the State's voters from partisan discrimination in redistricting. The U.S. Supreme Court has closed the federal courthouse doors to federal partisan gerrymandering claims. The General Assembly has proven unwilling and unable to reform the redistricting process—regardless of which party holds a majority. North Carolina has no statewide initiative or referendum process. And the voters themselves cannot check partisan gerrymandering through their votes for House and Senate candidates, since the very purpose and effect of the gerrymandered plans is to prevent voters from translating their votes into seats. Absent intervention from the North Carolina courts, millions of North Carolinians will have no remedy for the violation of their constitutional rights.

The North Carolina Constitution prohibits extreme partisan gerrymanders and provides manageable standards for the courts to enforce. North Carolina's Equal Protection Clause, which affords broader protections than its federal counterpart, protects "the fundamental right of each North Carolinian to substantially equal voting power." *Stephenson v. Bartlett*, 355 N.C. 354, 379, 562 S.E.2d 377, 394 (N.C. 2002). There is nothing equal about North Carolinians' voting power when the General Assembly has ensured that many Democratic voters have no chance to elect a candidate of their choice, and where all Democratic voters have no realistic chance of ever obtaining a Democratic majority in either chamber. North Carolina's Constitution also commands that "all elections shall be free"—a provision specifically intended to prohibit government manipulation of legislative elections. Elections are not free when partisan actors manipulate the electoral process to predetermine the outcome of individual races and control of the General Assembly itself. And the North Carolina Constitution's free speech and assembly guarantees prohibit the General Assembly from engineering district boundaries to burden Plaintiffs' speech and associational rights based on their political views.

Legislative Defendants suggest that there should be an exception to these constitutional safeguards for redistricting because mapmakers have long sought partisan advantage in drawing districts. But a historical pedigree is no reason to perpetuate invidious discrimination. For centuries, politicians handed out government jobs based on politics, until courts prohibited it. Mapmakers devalued votes by creating districts of unequal population, until courts prohibited it. And legislatures engaged in racial gerrymandering, until courts prohibited that too. North Carolina's Constitution does not have a grandfather clause for discrimination.

The need for this Court to protect people's constitutional rights has never been more urgent. Because the Governor cannot veto redistricting legislation, the General Assembly alone

will control the next round of redistricting after the 2020 census. Unless this Court intervenes, the majorities elected under the current gerrymanders will enact even more sophisticated gerrymanders to keep control of the General Assembly, ten years at a time, in perpetuity.

Time is of the essence. State Defendants have asserted that, under the current election schedule, new maps must be in place by the end of November 2019 to be used in the March 2020 primaries. North Carolina voters should not bear risk that they will once again have to vote in unconstitutional districts because there is insufficient time to implement remedial plans. North Carolinians have already had to vote in unconstitutional state legislative and congressional districts in nearly every election this decade. Since the filing of this case, Legislative Defendants' strategy has been to run out the clock, and that strategy should not be rewarded.

For these reasons, Plaintiffs respectfully request that this Court issue its decision by September 4, 2019. Set forth below are Plaintiffs' Proposed Findings of Fact, Proposed Conclusions of Law, and Proposed Decree.

PROPOSED FINDINGS OF FACT

A. Republicans Drew the 2017 Plans To Maximize Their Political Power

1. Republican Mapmakers Drew the 2011 Plans To Entrench Republican Control of the General Assembly

1. In the 2010 elections, as part a national Republican effort to flip state legislative chambers in order to gain control of redistricting after the 2010 Census, Republicans won majorities in the North Carolina House of Representatives and the North Carolina Senate for the first time since 1870. PX587 ¶ 5; *see 2012 REDMAP Summary Report*, Redistricting Majority Project (Jan. 4, 2013), https://bit.ly/1NlDJZr (describing national Republicans' 2010 "strategy to ... win Republican control of state legislatures" with the aim of "[c]ontrolling the redistricting process in these states"); Tr. 867:1-18 (Dr. Cooper); Tr. 2179:25-2184:11 (Dr. Barber).

2. With their newfound control of both chambers of the General Assembly, Republican legislative leaders set out to redraw the boundaries of the State's legislative districts. In North Carolina, legislative redistricting is performed exclusively by the General Assembly. The Governor cannot veto redistricting bills. N.C. Const. art. II, § 22.

3. Legislative Defendant Representative David Lewis and Senator Robert Rucho oversaw the drawing of the 2011 state House and state Senate plans (the "2011 Plans"). PX587 ¶ 8 (Legislative Defs.' Responses to Requests for Admission); Tr. 95:17-21 (Sen. Blue). They hired Dr. Thomas Hofeller to draw the plans. *Id.* ¶ 7; Tr. 95:8-9. Dr. Hofeller and his team drew the plans at the North Carolina Republican Party's headquarters in Raleigh using mapmaking software licensed by the North Carolina Republican Party. PX587 ¶¶ 10-11.

4. Legislative Defendants did not make Dr. Hofeller available to Democratic members of the General Assembly during the 2011 redistricting process, nor did Dr. Hofeller communicate with any Democratic members in developing the 2011 Plans. PX587 ¶¶ 12-13.

No Democratic member of the General Assembly saw any part of any draft of the 2011 Plans before they were publicly released. *Id.* ¶ 14.

5. Legislative Defendants have admitted in court filings that the 2011 Plans were "designed to ensure Republican majorities in the House and Senate." PX575 at 55 (Defs.-Appellees' Br. on Remand, *Dickson v. Rucho*, No. 201PA12-3, 2015 WL 4456364 (N.C. July 13, 2015)); *see id.* at 16 ("Political considerations played a significant role in the enacted [2011] plans."). Legislative Defendants asserted that they were "perfectly free" to engage in partisan gerrymandering, and that they did so in constructing the 2011 Plans. PX574 at 60 (Defs.-Appellees' Br., *Dickson v. Rucho*, No. 201PA12-2, 2013 WL 6710857 (N.C. Dec. 9, 2013)).

6. To "ensure Republican majorities in the House and Senate," PX575 at 55, Legislative Defendants and Dr. Hofeller used prior election results to construct the district boundaries to advantage Republicans. PX587 ¶¶ 6, 17. "[T]he recommendation of Tom Hofeller" was to "create a master database that would contain all [statewide] NC elections from the past decade ... , each processed into a form that matches up with the 2010 VTD geography." PX769 at 3 (Jan. 14, 2011 memorandum to Senator Rucho). Legislative Defendants obtained Census block-level election results from "all statewide election contests for each general election [from] 2004-2010." PX760. Senator Rucho even hung "two large maps [on] his office wall" containing granular prior election results to guide the process. PX759; *see* PX764.

7. When reviewing the draft plans, all members of the General Assembly had access to a "Stat Pack" containing data on how the districts would perform using the results of prior statewide elections. Tr. 98:4-99:9 (Sen. Blue). Specifically, the Stat Pack showed the partisan vote share for each drafted district for each specific prior election. *Id.* Members of the General

Assembly viewed the Stat Pack as containing "pretty reliable predictors of how [draft] districts would perform in the future based on how they performed in the past." Tr. 99:6-9 (Sen. Blue).

8. In November 2011, the General Assembly enacted the 2011 Plans. No Democrat voted for either plan, and only one Republican voted against them. PX587 ¶¶ 23-24.

9. The 2011 Plans achieved exactly the effect that Republicans in the General Assembly intended. In the 2012 elections, the parties' vote shares for the House were nearly evenly split across the state, with Democrats receiving 48.4% of the two-party statewide vote. Joint Stipulation of Facts ("JSF") ¶ 41. But Democrats won only 43 of 120 seats (36%). *Id.* ¶ 42. Republicans thus won a veto-proof majority in the state House—64% of the seats (77 of 120)—despite winning just a bare majority of the statewide vote. In the Senate, Democrats won nearly half of the statewide vote (48.8%), but won only 17 of 50 seats (34%). *Id.* ¶¶ 44-45.

10. In 2014, Republican candidates for the House won 54.4% of the statewide vote, and again won a super-majority of seats (74 of 120, or 61.6%). JSF ¶ 66. In the 2014 Senate elections, Republicans won 54.3% of statewide vote and 68% of the seats (34 of 50). *Id.* ¶ 66.

11. In 2016, Republicans again won 74 of 120 House seats, or 62%, this time with 52.6% of the statewide vote. JSF ¶¶ 48-49. In the 2016 Senate elections, Republicans won 55.9% of the statewide vote and 70% of the seats (35 of 50). *Id.* ¶ 66.

2. The *Covington* Court Struck Down Certain 2011 Districts as Unconstitutional Racial Gerrymanders

12. In *Covington v. North Carolina,* No. 1:15-CV-00399 (M.D.N.C.), plaintiffs challenged 28 total House and Senate districts under the 2011 Plans as unconstitutional racial gerrymanders. In August 2016, the federal district court ruled for the plaintiffs as to all of the challenged districts. *Covington v. North Carolina*, 316 F.R.D. 117 (M.D.N.C. 2016).

13. The *Covington* court found that racial considerations rather than political considerations "played a primary role" with respect to the specific 28 "challenged districts" in *Covington*. 316 F.R.D. at 139. The *Covington* litigation did not involve any of the districts drawn in 2011 that are at issue in the present case.

14. On June 5, 2017, the U.S. Supreme Court summarily affirmed the district court's decision invalidating the 28 challenged districts as racial gerrymanders. 137 S. Ct. 2211 (mem.).

15. The district court subsequently ordered briefing on whether to order enactment of remedial maps under a timeline that would enable special elections in 2017. Ultimately, based on representations by Legislative Defendants, *infra* FOF § G.1, the court declined to order special elections in 2017 and instead allowed a longer timeline for the General Assembly to enact remedial plans. *Covington v. North Carolina*, 267 F. Supp. 3d 664 (M.D.N.C. 2017).

3. The General Assembly Enacted the 2017 Plans To Maximize Republican Advantage

16. On June 30, 2017, Senator Berger appointed 15 senators—10 Republicans and 5 Democrats—to the Senate Committee on Redistricting. PX587 ¶ 44. Senator Hise was appointed Chair. *Id.* Also on June 30, 2017, Representative Moore appointed 41 House members—28 Republicans and 13 Democrats—to the House Select Committee on Redistricting. PX629 at 4-5. Representative Lewis was appointed Senior Chair. PX587 ¶ 45.

17. At a July 26, 2017 joint meeting of the House and Senate Redistricting Committees, Representative Lewis and Senator Hise disclosed that Republican leadership would again employ Dr. Hofeller to draw the new plans. PX601 at 23:3-6; *see* PX587 ¶¶ 46-47. When Democratic Senator Van Duyn asked whether Dr. Hofeller would "be available to Democrats and maybe even the Black Caucus to consult," Representative Lewis answered "no." PX601 at 22:24-23:6. Representative Lewis explained that, "with the approval of the Speaker and the

President Pro Tem of the Senate," "Dr. Hofeller is working as a consultant to the Chairs," *i.e.*, as a consultant only to Legislative Defendants. *Id.* at 23:3-6; Tr. 101:6-18 (Sen. Blue).

18. In explaining the choice of Dr. Hofeller to draw the 2017 Plans, Representative Lewis stated that Dr. Hofeller was "very fluent in being able to help legislators translate their desires" into the district lines using "the [M]aptitude program." PX590 at 36:17-19.

19. On August 4, 2017, at another joint meeting of the Redistricting Committees, Representative Lewis and Senator Hise advised Committee members that the *Covington* decision invalidating 28 districts on federal constitutional grounds had rendered a large number of additional districts invalid under the Whole County Provision of the North Carolina Constitution, and those districts would also have to be redrawn. PX602 at 2:14-11:23.

20. At the same August 4, 2017 meeting, the Redistricting Committees allowed 31 citizens to speak for two minutes each. PX602 at 28:3-68:23. All speakers urged the members to adopt fair maps free of partisan bias. *See id.* The Committees ignored them.

21. At another joint meeting on August 10, 2017, the House and Senate Redistricting Committees voted on criteria to govern the creation of the new plans. PX603 at 4:23-5:5.

22. Representative Lewis proposed as one criterion, "election data[:] Political consideration[s] and election results data may be used in drawing up legislative districts in the 2017 House and Senate plans." PX603 at 132:10-13. Representative Lewis provided no further explanation or justification for this proposed criterion, stating only: "I believe this is pretty self-explanatory, and I would urge members to adopt the criteria." *Id.* at 132:13-15.

23. Democratic members pressed Representative Lewis for details on how Dr. Hofeller would use elections data and for what purpose. Democratic Senator Ben Clark asked: "You're going to collect the political data. What specifically would the Committee do with it?"

PX603 at 135:11-13. Representative Lewis answered that "the Committee could look at the political data as evidence to how, perhaps, votes have been cast in the past." *Id.* at 135:15-17. When Senator Clark inquired why the Committees would consider election results if not to predict future election outcomes, Representative Lewis stated only that "the consideration of political data in terms of election results is an established districting criteria, and it's one that I propose that this committee use in drawing the map." *Id.* at 141:12-16.

24. The House and Senate Redistricting Committees adopted Representative Lewis's "election data" criterion on a straight party-line vote. PX603 at 141-48.

25. Representative Lewis later stated that Dr. Hofeller used ten specific prior statewide elections in drawing the 2017 Plans: the 2010 U.S. Senate election, the 2012 elections for President, Governor, and Lieutenant Governor, the 2014 U.S. Senate election, and the 2016 elections for President, U.S. Senate, Governor, Lieutenant Governor, and Attorney General. PX603 at 137:22-138:3.

26. Senator Clark proposed an amendment that would prohibit the General Assembly from seeking to maintain or establish a partisan advantage for any party in redrawing the plans. PX603 at 166:9-167:3. Representative Lewis opposed the amendment without explanation, stating only that he "would not advocate for [its] passage." *Id.* at 167:10. The Redistricting Committees rejected Senator Clark's proposal, again on a straight party-line vote. *Id.* at 168-74.

27. As explained in extensive detail below, Dr. Hofeller's own files conclusively establish that he used prior elections results and partisanship formulas to draw district boundaries to maximize the numbers of seats that Republicans would win in the House and the Senate, and to ensure that Republicans would retain majorities in both chambers. PX123 at 48-76 (Chen Rebuttal Report); PX329 at 3-35 (Cooper Rebuttal Report); PX153, PX164; PX166; PX167;

PX168; PX170; PX171; PX172; PX241; PX244; PX246; PX248; PX330; PX332; PX333; PX334; PX335; PX336; PX337; PX340; PX342; PX344; PX345; PX346; PX347; PX350; PX352; PX353; PX354; PX724; PX730; PX731; PX732; PX733; PX734; PX735; PX736; PX738; PX739; PX742; PX744; PX746; PX748; PX753; PX754; PX755; PX756.

28. As a further criterion, Representative Lewis proposed incumbency protection—namely that "reasonable efforts and political considerations may be used to avoid pairing incumbent members of the House or Senate with another incumbent in legislative districts drawn in 2017 House and Senate plans. The Committee may make reasonable efforts to ensure voters have a reasonable opportunity to elect non-paired incumbents of either party to a district in the 2017 House and Senate plans." PX603 at 119:9-17. He clarified that the second sentence of this proposed criterion meant "simply" that "the map makers may take reasonable efforts not to pair incumbents unduly." *Id.* at 121:16-18; *see* PX606 at 9:24-10:1 (Sen. Hise: "The Committee adopted criteria pledging to make reasonable efforts not to double-bunk incumbents.").

29. The House and Senate Redistricting Committees adopted Representative Lewis's incumbency-protection criterion, once more on a straight-party line vote. PX603 at 125-32.

30. The Redistricting Committees also adopted as criteria, yet again on straight party-line votes, that they (1) would make "reasonable efforts" to "improve the compactness of the current districts," PX603 at 24:24-25:2; (2) would make "reasonable efforts" to "split fewer precincts" than under the 2011 Plans, *id.* at 79:8-12; and (3) "may consider municipal boundaries" in drawing the new districts, *id.* at 66:15-16; *see id.* at 98-104, 112-19 (adopting criteria). Representative Lewis clarified that these criteria meant "trying to keep towns, cities and precincts whole where possible." PX607 at 10:5-6; *see* PX603 at 66:22-23 (Rep. Lewis explaining that the Committees would "consider not dividing municipalities where possible").

31. As a final criterion, Representative Lewis proposed prohibiting the consideration of racial data in drawing the new plans. PX603 at 148:11-15; *infra* FOF § G.2.

32. As set forth in Plaintiffs' Exhibit 588, the full criteria adopted by the Committees for the 2017 Plans (the "Adopted Criteria") read as follows:

> Equal Population. The Committees shall use the 2010 federal decennial census data as the sole basis of population for drawing legislative districts in the 2017 House and Senate plans. The number of persons in each legislative district shall comply with the +/- 5 percent population deviation standard established by *Stephenson v. Bartlett*, 355 N.C. 354, 562 S.E. 2d 377 (2002).
>
> Contiguity. Legislative districts shall be comprised of contiguous territory. Contiguity by water is sufficient.
>
> County Groupings and Traversals. The Committees shall draw legislative districts within county groupings as required by *Stephenson v. Bartlett*, 355 N.C. 354, 562 S.E. 2d 377 (2002) (*Stephenson I*), *Stephenson v. Bartlett*, 357 N.C. 301, 582 S.E.2d 247 (2003) (*Stephenson II*), *Dickson v. Rucho*, 367 N.C. 542, 766 S.E.2d 238 (2014) (*Dickson I*) and *Dickson v. Rucho*, 368 N.C. 481, 781 S.E.2d 460 (2015) (*Dickson II*). Within county groupings, county lines shall not be traversed except as authorized by *Stephenson I*, *Stephenson II*, *Dickson I*, and *Dickson II*.
>
> Compactness. The Committees shall make reasonable efforts to draw legislative districts in the 2017 House and Senate plans that improve the compactness of the current districts. In doing so, the Committees may use as a guide the minimum Reock ("dispersion") and Polsby-Popper ("perimeter") scores identified by Richard H. Pildes and Richard G. Neimi in *Expressive Harms, "Bizarre Districts," and Voting Rights: Evaluating Election-District Appearances After Shaw v. Reno*, 92 Mich. L. Rev. 483 (1993).
>
> Fewer Split Precincts. The Committees shall make reasonable efforts to draw legislative districts in the 2017 House and Senate plans that split fewer precincts than the current legislative redistricting plans.
>
> Municipal Boundaries. The Committees may consider municipal boundaries when drawing legislative districts in the 2017 House and Senate plans.
>
> Incumbency Protection. Reasonable efforts and political considerations may be used to avoid pairing incumbent members of the House or Senate with another incumbent in legislative districts drawn in the 2017 House and Senate plans. The Committees may make reasonable efforts to ensure voters have a

> reasonable opportunity to elect non-paired incumbents of either party to a district in the 2017 House and Senate plans.
>
> Election Data. Political considerations and election results data may be used in the drawing of legislative districts in the 2017 House and Senate plans.
>
> No Consideration of Racial Data. Data identifying the race of individuals or voters shall not be used in the drawing of legislative districts in the 2017 House and Senate plans.

33. On August 11, 2017, Representative Lewis and Senator Hise emailed the criteria to Dr. Hofeller and "directed him to utilize those criteria when drawing districts in the 2017 plans." PX629 at 7.

34. Dr. Hofeller drew the 2017 Plans in secret under the direction of Legislative Defendants. PX587 ¶¶ 48-51, 55-56. Representative Lewis claimed that he "primarily ... directed how the [House] map was produced," and that he, Dr. Hofeller, and Republican Representative Nelson Dollar were the only "three people" who had even "seen it prior to its public publication." PX590 at 40:14-21. None of Legislative Defendants' meetings with Dr. Hofeller about the 2017 redistricting were public. PX587 ¶ 51. Legislative Defendants did not make Dr. Hofeller available Democratic members during the 2017 redistricting process, nor did Dr. Hofeller communicate with any Democratic members in developing the 2017 Plans. PX587 ¶¶ 48-49; Tr. 126:16-18 (Sen. Blue). No Democratic member of the General Assembly saw any part of any draft of the 2017 Plans before they were publicly released. PX587 ¶ 50.

35. Legislative Defendants released Dr. Hofeller's proposed House plan on August 19, 2017. PX629 at 7. The House Redistricting Committee made only minor adjustments to Dr. Hofeller's draft, swapping precincts between a few districts. PX605 at 16:2-17:16.

36. Representative Lewis and Senator Hise released the proposed Senate plan on August 20. PX629 at 7. At a Senate Redistricting Committee hearing on August 24, 2017,

Senator Van Duyn asked Senator Hise how prior elections data had been used in drawing the proposed maps. PX606 at 26:4-6. Senator Hise admitted that the mapmaker, Dr. Hofeller, "did make partisan considerations when drawing particular districts." *Id.* at 26:9-10.

37. The Senate Redistricting Committee adopted only two minor amendments to the district boundaries drawn by Dr. Hofeller. One change, proposed by Senator Clark, moved a small population from Senate District 19 to District 21. PX606 at 49:20-52:9. The other change, proposed by Democratic Senator Daniel Blue, swapped a few precincts between Senate Districts 14 and 15, two heavily Democratic districts in Wake County. *Id.* at 52:19-53:19.

38. As in 2011, "Stat Packs" measuring the partisan performance of the draft districts under recent elections were made available to members of the Redistricting Committees. Tr. 113:17-115:15 (Sen. Blue). The Stat Packs, released on August 21, 2017, *see* PX629 at 7, contained information for each proposed district based on the ten statewide elections that Representative Lewis had claimed would be used in drawing the 2017 Plans. PX591; PX597.

39. Following the public release of the draft House and Senate maps, Legislative Defendants held public meetings on August 22, 2017 in Raleigh and at six satellite locations across the state. PX607 at 7:22-8:11, 9:1-3. Many citizens spoke at the meetings and expressed grave concerns about the draft maps. As Senator Blue testified, "overwhelmingly they were saying that they wanted districts drawn that were not partisan in nature." Tr. 105:8-12.

40. On August 24, 2017, the Senate Redistricting Committee adopted the Senate plan drawn by Dr. Hofeller with the minor modifications discussed above. PX606 at 131:10-23. The next day, the House Redistricting Committee adopted Dr. Hofeller's proposed House plan, also with the minor modifications discussed above. PX605 at 120:2-125:25.

41. During a Floor Session Hearing on August 28, 2017, Representative Lewis proposed an amendment to modify several House districts in Wake County. PX590 at 30:13-32:2. The amendment passed on a straight party-line vote. *Id.* at 31:18-32:2.

42. On August 31, 2017, the General Assembly passed the House plan (designated HB 927) and the Senate plan (designated SB 691), with only a few minor modifications from the versions passed by the Committees. PX629 at 8-9; *see* PX627 (HB 927); PX628 (SB 691). No Democratic Senator voted in favor of either plan. PX587 ¶ 71. The lone Democratic member of the House who voted for the plans was Representative William Brisson, who switched to become a Republican several months later. *Id.*

43. The 2017 Plans altered 79 House districts and 35 Senate districts from the 2011 Plans. JSF ¶¶ 169-70.

4. The *Covington* Special Master Redrew Several Districts That Remained Racially Gerrymandered

44. The *Covington* plaintiffs objected to the new plans, arguing that they did not cure the racial gerrymanders in two House districts (21 and 57) and two Senate districts (21 and 28). *Covington*, 283 F. Supp. 3d at 429. The federal court agreed. *Id.* at 429-42. The court further held that the General Assembly's changes to five House districts (36, 37, 40, 41, and 105) violated the North Carolina Constitution's prohibition on mid-decade redistricting. *Id.* at 443-45.

45. The court appointed Dr. Nathaniel Persily as a Special Master to assist in redrawing the districts for which the court had sustained the plaintiffs' objections. To cure the racially gerrymandered districts, the Special Master made adjustments to certain neighboring districts as well. *Covington*, ECF No. 220 at 46, 64. The court adopted the Special Master's recommended changes to all of these districts. 283 F. Supp. 3d at 458.

46. The Special Master also restored the districts that the court had found were redrawn in violation of the ban on mid-decade redistricting to the 2011 versions of those districts. *Covington*, 283 F. Supp. 3d at 456-58. The court adopted these changes as well. *Id.*

47. On June 28, 2018, the U.S. Supreme Court affirmed the district court's adoption of the Special Master's remedial plans for House Districts 21 and 57 (and the adjoining districts, 22, 59, 61, and 62) and Senate Districts 21 and 28 (and the adjoining districts, 19, 24, and 27). *North Carolina v. Covington*, 138 S. Ct. 2548, 2553-54 (2018). But the U.S. Supreme Court reversed the district court's adoption of the Special Master's plans for the districts allegedly enacted in violation of the mid-decade redistricting prohibition, holding that the court's remedial authority was limited to curing the racial gerrymanders and nothing more. *Id.* at 2554-55.

48. Plaintiffs in this case do not challenge the following districts that were altered by the *Covington* Special Master: House Districts 21, 22, 57, 61, 62; Senate Districts 19, 21, 24, 28.

B. The 2017 Plans Were Designed Intentionally and Effectively To Maximize Republican Partisan Advantage on a Statewide Basis

1. Legislative Defendants Admitted That They Were Drawing the 2017 Plans for Partisan Gain

49. At trial, there was no genuine dispute that Legislative Defendants drew the 2017 Plans to advantage Republicans and reduce the effectiveness of Democratic votes.

50. The 2017 Adopted Criteria expressly provided for the use of "election data" in drawing the 2017 Plans. PX588. The Joint Select Committee on Redistricting considered results from 10 statewide elections, captured in so-called "Stat Packs" available to legislators when they considered whether to adopt Dr. Hofeller's draft House and Senate plans. Tr. 113:17-115:15. The Stat Packs demonstrated that, under those 10 statewide elections, Republicans would be expected to win between 72 and 82 seats in the House and between 31 and 35 seats in the Senate. PX591; PX597. In other words, Republicans would win a supermajority in both chambers of the

General Assembly under each and every one of the 10 statewide elections used to evaluate the 2017 Plans (72 seats provides a supermajority in the House and 30 seats does in the Senate).

51. As Senator Blue testified, the election data used by Legislative Defendants—and in particular the performance of the proposed House and Senate plans under the range of 10 prior statewide elections—revealed that the plans were "designed specifically to preserve the supermajority" that the Republican Party had gained under the 2011 Plans. Tr. 115:20-22.

52. At the Senate Redistricting Committee hearing on August 24, 2017, Senator Hise confirmed that the mapmaker, Dr. Hofeller, "did make partisan considerations when drawing particular districts" in 2017. PX606 at 26:9-10. And as discussed above, Legislative Defendants admitted in prior court filings that the districts drawn in 2011 were "designed to ensure Republican majorities in the House and Senate." PX575 at 16, 55 (*Dickson v. Rucho*, No. 201PA12-3, 2015 WL 4456364 (N.C. July 13, 2015)).

2. Dr. Hofeller's Files Establish That the Singular Goal Was To Maximize Republican Partisan Advantage

53. Files uncovered from Dr. Hofeller's storage devices provide direct, conclusive evidence of Dr. Hofeller's predominant—and indeed near-singular—focus on maximizing Republican partisan advantage in creating the 2017 Plans.

54. Dr. Hofeller maintained two folders related to the 2017 redistricting, titled "NC 2017 Redistricting" and "2017 Redistricting." Tr. 449:20-450:5. Plaintiffs' expert Dr. Chen reviewed the entire contents of these two folders and found that, other than verifying that draft districts met the equal population and county grouping requirements, the files exhibited a near-singular focus on partisan considerations. PX123 at 76 (Chen Rebuttal Report); Tr. 450:6-13. Among the hundreds of files in these two folders, there were a "few files" that report on VTD and county splits, "[b]ut beyond these few files," these hundreds of files focused overwhelmingy

on each party's expected vote share in the draft districts and on the identities and party affiliations of the incumbent members in each district. PX123 at 76 (Chen Rebuttal Report). The fact that these folders focused overwhelmingly on partisan considerations is powerful, direct evidence that partisan intent predominated in the drawing of the 2017 Plans.

a. Dr. Hofeller's partisanship formulas

55. The specific contents of the two folders confirm Dr. Hofeller's near-singular focus on Republican partisan advantage. In the folders, Dr. Hofeller had three partisanship formulas. First, as reflected in a Microsoft Word document titled "FORMULA FOR POLITICAL ANALYSIS OF LEGISLATIVE DISTRICTS," Dr. Hofeller used a formula that measured the average Republican vote share in each VTD across nine statewide elections from 2008 to 2014. Tr. 450:24-451:15; PX123 at 49-52 (Chen Rebuttal Report). These nine elections were different from the ten elections Representative Lewis claimed would be used. Tr. 451:20-452:6. Dr. Hofeller used this partisanship formula based on 2008-2014 elections to measure the partisanship of his draft districts through at least July 2017, by which point he had already substantially completed drawing most of the final districts. Tr. 452:7-10. Plaintiffs' Exhibit 153 is a screenshot of Dr. Hofeller's Microsoft Word document containing this partisanship formula:

Dr. Hofeller's "FORMULA FOR POLITICAL ANALYSIS OF LEGISLATIVE DISTRICTS.doc"

FORMULA FOR POLITICAL ANALYSIS OF LEGISLATIVE DISTRICTS
USING 2-PARTY VOTE

(G08P_RV+ G08G_RV+ G08S_RV+ G08K_RV+ G12P_RV+ G12G_RV+ G12O_RV+ G10S_RV+ G14S_RV)/(G08P_DV+ G08P_RV+ G08G_DV+ G08G_RV+ G08S_DV+ G08S_RV+ G08K_DV+ G08K_RV+ G12P_DV+ G12P_RV+ G12G_DV+ G12G_RV+ G12O_DV+ G12O_RV+ G10S_DV+ G10S_RV+ G14S_DV+ G14S_RV)

2008 President
2008 Governor
2008 U. S. Senate
2008 insurance Commissioner
2010 U. S. Senate
2012 President
2012 Governor
2012 Commissioner of Labor
2014 U. S. Senate

56. Dr. Hofeller's second partisanship formula was based on the ten statewide elections from 2010-2016 that Representative Lewis claimed would be used in 2017. Tr. 452:12-453:21; PX164. Dr. Hofeller did not employ this formula, however, in the Excel worksheets where he analyzed the partisanship of his draft districts. Tr. 453:12-17.

57. Dr. Hofeller's final partisanship formula, titled "Off Year," was based on the results of statewide elections during non-Presidential election years, namely 2010 and 2014. Tr. 453:22-454:9; PX123 at 65 (Chen Rebuttal Report). It is apparent that Dr. Hofeller used this formula to evaluate how his districts might perform in non-Presidential years. Tr. 454:10-17.

58. Dr. Hofeller's "NC 2017 Redistricting" and "2017 Redistricting" folders contain numerous Microsoft Excel spreadsheets analyzing partisan considerations, using his partisanship formulas, for the draft House and Senate plans that he was developing and modifying from November 2016 through June 2017. *See* PX123 at 53-64 (Chen Rebuttal Report).

59. First, Dr. Hofeller placed a special focus on how many of his draft House and Senate districts had an average Republican vote share of 53% or higher using his partisanship formulas. For instance, in a spreadsheet last modified on November 26, 2016 analyzing a draft Senate plan, Dr. Hofeller wrote "23 Under 53%" at the bottom to indicate the number of draft districts for which Democrats had less than a 53% vote share and Republicans had a 53% or higher vote share. Tr. 456:14-20; PX248 at 2. In other words, as shown in Plaintiffs' Exhibit 248 below, Dr. Hofeller projected that 27 of the 50 districts in this draft Senate plan would have a Republican vote share at or above 53%.

Dr. Hofeller's Draft Plan File: "Senate Minimum-Partisan-Members.xlsx" (November 26, 2016)

New 2016 Senate Plan

Group Type	Dist	Avg R	Incumbent	Pty	Note	Old Ave R
New	1	52.70%	Cook	R		
Old	2	60.16%	Sanderson	R		
New	3	35.11%	Smith-Ingram	D		
New	4	37.39%	Horner	R	##	
New	5	45.94%	Davis	D		
Old	6	59.16%	Brown	R		
New	7	50.94%	Pate	R		
Old	8	54.69%	Rabon	R		
Old	9	53.05%	Lee	R		
New	10	55.32%	Jackson	R		
New	11	54.35%	Bryant	D	##	
New	12	56.83%	Rabin	R		
Old	13	41.09%	Britt	R	##	
Wake-Franklin	14	24.66%	Blue	D		
Wake-Franklin	15	52.46%	Alexander	R		
Wake-Franklin	16	40.50%	Chaudhuri	D		
Wake-Franklin	17	54.36%	Barringer	R		
Wake-Franklin	18	52.70%	Barefoot	R		
Cumberland	19	50.64%	Meredith	R		
New	20	27.50%	McKissick	D		
Cumberland	21	29.64%	Clark	D		
New	22	33.39%	Woodard	D		
Old	23	34.84%	Foushee	D		
New	24	56.91%	Gunn	R		
New	25	51.51%	McInnis	R		
New	26	59.18%	Berger	R		
New	27	58.05%	Wade	R		
New	28	23.67%	Robinson	D		
New	29	60.90%	Tillman	R		
New	30	60.87%	Randleman,Ballard	R,R	#	
New	31	64.87%	Brock, Krawiec	R,R	#	
New	32	30.42%	Lowe	D		
Old	33	65.39%	Dunn	R		
New	34	66.29%	Vacant	R	#	
Old	35	65.63%	Tucker	R		
Old	36	61.81%	Newton	R		
Mecklenburg	37	32.84%	Vacant	D	#	
Mecklenburg	38	26.55%	Jackson	D		
Mecklenburg	39	63.97%	Bishop	R		
Mecklenburg	40	28.50%	Waddell	D		
Mecklenburg	41	49.66%	Ford, Tarte	D,R	# ##	
Old	42	65.81%	Wells	R		
New	43	62.82%	Jarromgtpm	R		
New	44	62.81%	Curtis	R		
New	45	64.46%	Vacant	R	#	
New	46	63.85%	Danniel	R		
Old	47	59.28%	Hise	R		
Old	48	58.81%	Edwards	R		
Old	49	40.90%	Van Duyn	D		
Old	50	56.29%	Davis	R		

Notes: # = Double Bunk or Vacant, ## = Partisan Mismatch
23 Under 53%

60. In subsequent June 2017 spreadsheets analyzing draft House and Senate plans, Dr. Hofeller color-coded the districts to differentiate between districts that had slightly-under and slightly-over a 53% expected Republican vote share. Dr. Hofeller shaded the "Avg R" column yellow for draft districts with an expected Republican vote share of 50-53%, and shaded cells in the column a peach color for districts with an expected Republican vote share of 53-55%. Tr. 460:6-461:8, 464:19-465:11; PX244; PX241; PX246; PX123 at 66 (Chen Rebuttal Report).

61. Dr. Hofeller stratified all of the Republican-leaning districts in his draft House and Senate plans using highly granular gradations. Tr. 461:1-8, 463:6-25, 465:16-466:20; PX241 at 3; PX244 at 2; PX246 at 3. As illustrated in Plaintiffs' Exhibits 244 below, Dr. Hofeller counted how many districts in each draft House and Senate plan had between a 50-53%, 53-55%, 55-60%, 60-65%, and 65%-100% expected Republican vote share. *Id.* In contrast, Dr. Hofeller did not analyze Democratic-leaning districts with such granularity. Whereas Dr. Hofeller analyzed the Republican-leaning districts in five different bands, he analyzed Democratic-leaning districts in just two bands of 0-45% Republican vote share and 45-50% Republican vote share. Tr. 466:1-20; PX241 at 3; PX244 at 2; PX246 at 3.

Dr. Hofeller's Draft Plan File: "NC Senate Minimum Partisan J-2" (June 13, 2017)

New 2016 Senate Plan

Group Type	Dist	Avg R	14 Sen%	Incumbent	Pty	Note	Old Ave R	11 ti 17
New	1	47.94%	52.31%	Cook	R		53.54%	-5.60%
Old	2	60.16%	63.13%	Sanderson	R		60.16%	0.00%
New	3	40.10%	43.10%	Smith-Ingram	D		34.18%	5.93%
New	4	37.39%	39.24%	Horner	R	##	31.88%	5.51%
New	5	45.94%	48.68%	Davis	D		36.80%	9.15%
Old	6	59.16%	64.83%	Brown	R		59.16%	0.00%
New	7	50.94%	53.60%	Pate	R		59.37%	-8.43%
Old	8	54.69%	56.14%	Rabon	R		54.69%	0.00%
Old	9	53.05%	51.05%	Lee	R		53.05%	0.00%
New	10	54.75%	57.91%	Jackson	R		57.13%	-2.38%
New	11	54.47%	56.42%	Bryant	D	##	57.61%	-3.13%
New	12	57.19%	58.83%	Rabin	R		57.19%	0.00%
Old	13	41.09%	47.12%	Britt	R	##	41.09%	0.00%
Wake-Franklin	14	25.37%	22.89%	Blue	D		25.54%	-0.17%
Wake-Franklin	15	53.04%	49.97%	Alexander	R		53.32%	-0.28%
Wake-Franklin	16	39.77%	35.22%	Chaudhuri	D		38.80%	0.97%
Wake-Franklin	17	54.36%	51.52%	Barringer	R		53.45%	0.91%
Wake-Franklin	18	52.57%	53.26%	Barefoot	R		52.76%	-0.19%
Cumberland	19	50.79%	53.27%	Meredith	R		49.30%	1.48%
New	20	20.93%	18.06%	McKissick	D		24.15%	-3.23%
Cumberland	21	29.52%	29.98%	Clark	D		30.53%	-1.01%
New	22	40.57%	39.77%	Woodard	D		37.71%	2.86%
Old	23	34.84%	31.50%	Foushee	D		34.84%	0.00%
New	24	56.91%	58.10%	Gunn	R		59.06%	-2.14%
New	25	51.51%	54.18%	McInnis	R		55.19%	-3.68%
New	26	59.18%	62.59%	Berger	R		57.51%	1.67%
New	27	57.95%	56.89%	Wade	R		55.06%	2.90%
New	28	22.97%	22.18%	Robinson	D		18.65%	4.32%
New	29	60.90%	64.77%	Tillman	R		67.04%	-6.14%
New	30	60.87%	63.71%	Randleman,Ballard	R,R	#	66.15%	-5.28%
New	31	64.87%	65.07%	Brock, Krawiec	R,R	#	62.71%	2.16%
New	32	30.42%	29.53%	Lowe	D		31.20%	-0.78%
Old	33	65.39%	68.87%	Dunn	R		65.39%	0.00%
New	34	66.29%	67.96%	Vacant	R	#	63.53%	2.76%
Old	35	65.63%	65.84%	Tucker	R		65.36%	0.27%
Old	36	61.81%	60.28%	Newton	R		62.18%	-0.38%
Mecklenburg	37	31.35%	29.21%	Vacant	D	#	37.87%	-6.52%
Mecklenburg	38	28.06%	23.76%	Jackson	D		23.36%	4.70%
Mecklenburg	39	63.96%	59.63%	Bishop	R		61.93%	2.03%
Mecklenburg	40	29.05%	25.80%	Waddell	D		20.96%	8.09%
Mecklenburg	41	49.59%	45.44%	Ford, Tarte	D,R	# ##	57.53%	-7.94%
Old	42	65.81%	67.05%	Wells	R		65.81%	0.00%
New	43	62.82%	63.14%	Jarromgtpm	R		62.82%	0.00%
New	44	62.81%	64.31%	Curtis	R		65.66%	-2.85%

Group Type	Dist	Avg R	14 Sen%	Incumbent	Pty	Note	Old Ave R	11 ti 17
New	45	64.46%	65.33%	Vacant	R	#	61.05%	3.41%
New	46	63.85%	65.80%	Danniel	R		58.59%	5.26%
Old	47	59.28%	61.81%	Hise	R		59.28%	0.00%
Old	48	58.81%	58.70%	Edwards	R		58.81%	0.00%
Old	49	40.90%	38.15%	Van Duyn	D		40.90%	0.00%
Old	50	56.29%	58.76%	Davis	R		56.29%	0.00%

Pressure Points for GOP Incumbents:
1. Sen. Cook in District 1 (Northeast Coast) is now in a toss-up district
2. Sentors Randleman & Ballard are double-bunked in a strong GOP District 30 (Northwest of State).
3.Senators Brock & Krawiec are double-bunked in a strong GOP District 31(Davie & Forsyth)
4. Senators Tate [R] & Ford [D] are double-bunked in a leaning-Dem. District 41 (N. Mecklenburg).
5. There are 2 strong GOP and 1 Strong Dem vacant districts (34, 37 and 45).
6. 34% (12) of Republican Incumbents do not have to run in a Special Election.
7. 12% (2) Democrats do not have to run in a Special Election.

Notes: # = Double Bunk or Vacant, ## = Partisan Mismatch

Average Republican		
65-100	4	4
60-65	10	14
55-60	8	22
53-55	6	28
50-53	4	32
45-50	3	35
0-45	15	50
	50	

2014 Republican Senate		
65-100	7	7
60-65	9	16
55-60	9	25
53-55	4	29
50-53	3	32
45-50	4	36
0-45	14	50
	50	

62. The Court finds that Dr. Hofeller's granular sorting and analysis of Republican-leaning districts—and his particular emphasis on districts with an over-53% expected Republican vote share—provide especially powerful evidence of the intent and effects of the gerrymanders. The evidence establishes that Dr. Hofeller drew the 2017 Plans very precisely to create as many "safe" Republican districts as possible, so that Republicans would maintain their supermajorities, or at least majorities even in a strong election year for Democrats. Tr. 456:21-457:25. For instance, Dr. Hofeller's June 13, 2017 spreadsheet above estimated that 28 of 50 draft Senate districts had an expected Republican vote share above 53%, PX244 at 2, and Dr. Hofeller's June 14, 2017 spreadsheet for a draft House map estimated that 74 of 120 districts in the draft House plan had an expected Republican vote share above 53%, PX246 at 3. Dr. Hofeller clearly drew the maps with an intent to preserve Republicans' control of the House and Senate.

63. As further evidence of partisan intent, using his partisanship formula, Dr. Hofeller calculated the difference in the Republican vote share between the new draft version of each district and the prior 2011 version of that district, showing precisely how his draft plans would alter the partisanship of each district. Tr. 459:8-460:9; PX241; PX244; PX246; PX248.

64. Dr. Hofeller's spreadsheets also highlighted in yellow many of North Carolina's largest and most-Democratic counties, such as Wake, Mecklenburg, Cumberland, Forsyth, and Guilford Counties. Tr. 461:9-462:2, 468:9-20; PX244; PX246. As Dr. Chen explained, despite Legislative Defendants' emphasis at trial on the geographic clustering of Democratic voters in these counties, the spreadsheets show Dr. Hofeller's specific focus on trying to "squeeze out" as many Republican-leaning districts as he could in these counties. Tr. 461:9-462:2, 468:9-20.

65. For both his draft House and Senate plans, Dr. Hofeller analyzed what he described as "Pressure Points for GOP Incumbents." Tr. 462:3-463:5, 467:7-468:8; PX244 at 2; PX246 at 2. He analyzed draft districts that could create concerns or vulnerabilities for Republican incumbents. *Id.* Dr. Chen did not find any comparable analysis by Dr. Hofeller of "pressure points" for Democratic incumbents. *Id.* Dr. Hofeller's spreadsheets contradict Legislative Defendants' contention at trial that the 2017 Plans sought to place *all* incumbents in politically favorable districts. For the reasons explained *infra*, such incumbency protection would not be a legitimate aim even if it had been carried out as Legislative Defendants claimed at trial, but it is clear from Dr. Hofeller's files that the mapmaker focused solely on benefitting and electorally protecting Republicans incumbents and not Democratic incumbents.

66. Dr. Hofeller's spreadsheets also reveal that he evaluated the partisanship of draft maps created by Campbell Law students at an exercise by Common Cause. In 2017, Common Cause invited two Campbell Law students to draw new legislative maps without using political

data. Bob Phillips, the Executive Director of Common Cause North Carolina, testified that the purpose of the exercise was to raise awareness and show how a nonpartisan redistricting process could occur. Tr. 53:17-54:14. But Legislative Defendants and Dr. Hofeller exploited the Campbell Law students' simulations in an act of partisan and litigation gamesmanship.

67. Emails introduced at trial reveal that, in late June 2017, an aide to Legislative Defendants asked the General Assembly's legislative services office for copies of the "block assignments files" for the simulated maps created by the Campbell Law students. PX757. Common Cause had the Campbell Law students create the maps using the General Assembly's public computer because it had Maptitude installed on it. Tr. 55:18-56:17. Within roughly a week, Dr. Hofeller had created Excel spreadsheets analyzing the partisanship of the Campbell Law students' simulated districts. Tr. 471:6-472:15; PX167; PX170; PX123 at 70-75 (Chen Rebuttal Report). In spreadsheets last modified on July 5 and 8, 2017, Dr. Hofeller scored every one of the Campbell Law students' House and Senate districts using his partisanship formula derived from the 2008-2014 statewide elections. *Id.* Dr. Hofeller then evaluated, for every district, whether Republicans could obtain a "Better Possible" district than the version the Campbell Law students had drawn, with Dr. Hofeller writing "No," "Yes," or "Little" for each district. Tr. 473:8-474:6; PX168; PX123 at 70-71 (Chen Rebuttal Report).

68. The final enacted 2017 House plan contains two county groupings, with four districts in total, that match the districts in those county groupings drawn by the Campbell Law students. Tr. 474:7-475:23; PX123 at 71. Those two groupings—Nash-Franklin and Granville-Person-Vance-Warren—are two small groupings for which there are a very limited number of ways to draw the groupings, and the Campbell Law students happened to draw these groupings in the way that is most favorable to Republicans. *Id.*

69. Dr. Chen thus concluded that Dr. Hofeller evaluated the partisanship of all of the Campbell Law students' districts and cherry-picked four districts for which the students happened to draw the districts in the way maximally favorable to Republicans. *Id.* The Court agrees with Dr. Chen's assessment, which went unrebutted by Legislative Defendants at trial.

70. In an apparent effort to capitalize on Dr. Hofeller's cherry-picking of the four districts drawn by the Campbell Law students that were most favorable for Republicans, Legislative Defendants questioned Common Cause's Bob Phillips about how his group could challenge these enacted districts as gerrymandering when they were identical to ones drawn at the Common Cause-organized simulation. Tr. 66:15-68:17.

71. It is apparent to the Court that Legislative Defendants' analysis of the Campbell Law students' maps and adoption of four House districts from those maps was a ploy to misuse a nonpartisan learning exercise for partisan political gain. The Court agrees with Mr. Phillips that it is deeply "disappoint[ing] that an exercise" meant to show "what an impartial process could look like" was exploited in this manner. Tr. 59:5-9.

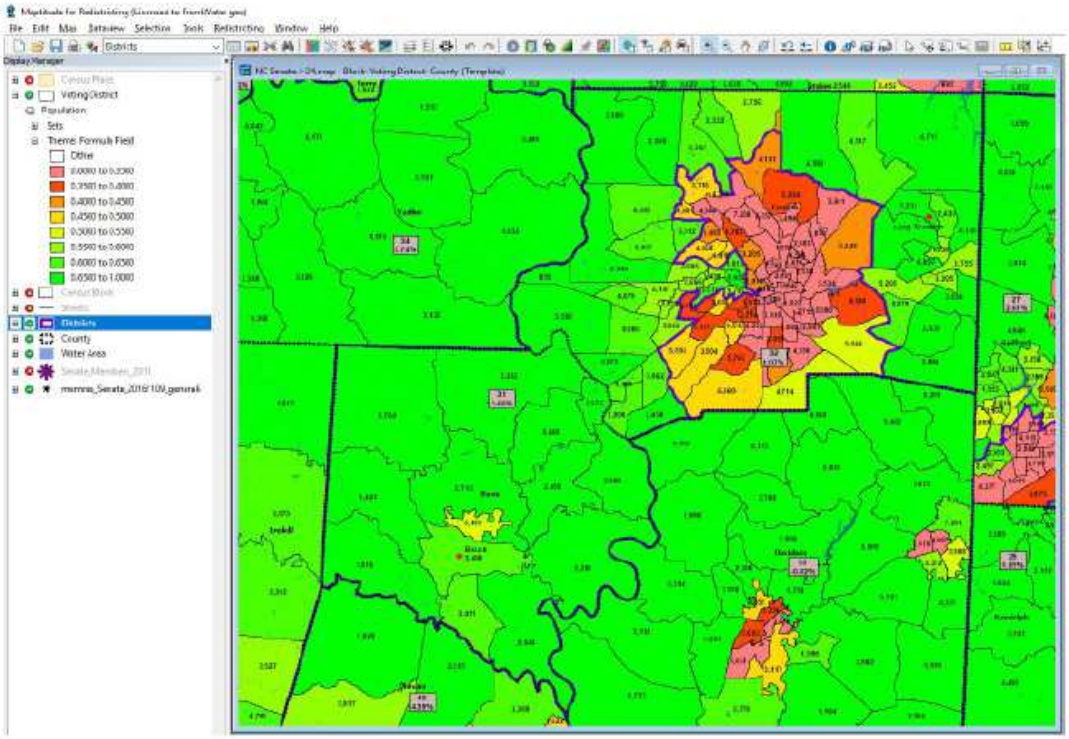
b. Dr. Hofeller's Maptitude files

72. Dr. Hofeller's Maptitude files from his storage devices further demonstrate that partisanship considerations were "front and center" in his drafting of the relevant districts in both 2011 and 2017. Tr. 944:5-15, 968:4-5 (Dr. Cooper). The Maptitude files remove any doubt that Dr. Hofeller "was clearly working with partisan data on the same maps at the same time that he [was] drawing lines for our state," all to maximize Republican partisan advantage. Tr. 945:4-11.

73. As Dr. Cooper explained, the Maptitude files indicate that Dr. Hofeller used partisanship formulas, along with multiple color-coding systems to visually depict partisanship on his draft maps, in order to deliberately pack and crack Democratic voters into particular districts with precision. Tr. 939:1-940:12, 944:9-945:8; PX329 at 3-4 (Cooper Rebuttal Report).

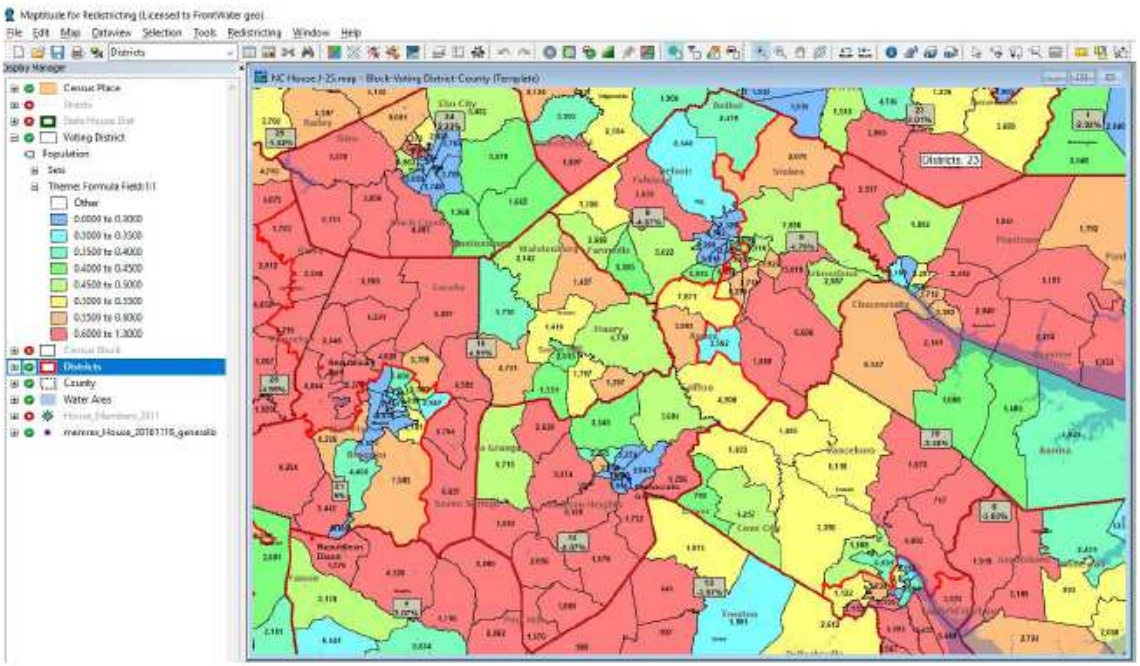
74. In the "NC Senate J-24" Maptitude file last modified in July 2017, Dr. Hofeller calculated the Republican vote share for each North Carolina VTD based on his formula using nine statewide elections from 2008-2014. PX330; Tr. 939:9-940:2, 942:22-943:2; PX565. Dr. Hofeller then color-coded the VTDs on the "Map" window based on this partisanship formula, using more granular stratifications for competitive and Republican-leaning VTDs than for Democratic-leaning VTDs, just as he had done in his Excel spreadsheets assessing district-wide partisanship. Tr. 944:16-21. Dr. Hofeller used a "traffic light" color-coding scheme, in which he shaded Democratic-leaning VTDs pink and red, Republican-leaning VTDs green, and more competitive VTDs yellow. Tr. 940:23-941:4. Plaintiffs' Exhibit 335 below is one example of Dr. Hofeller's use of this color-coding scheme. As is apparent in the example below and discussed in more detail with respect to additional county groupings *infra*, Dr. Hofeller drew district boundaries based on this color-coded partisanship data with remarkable precision.

Figure 6: Partisan Targeting in Senate Districts 31 and 32



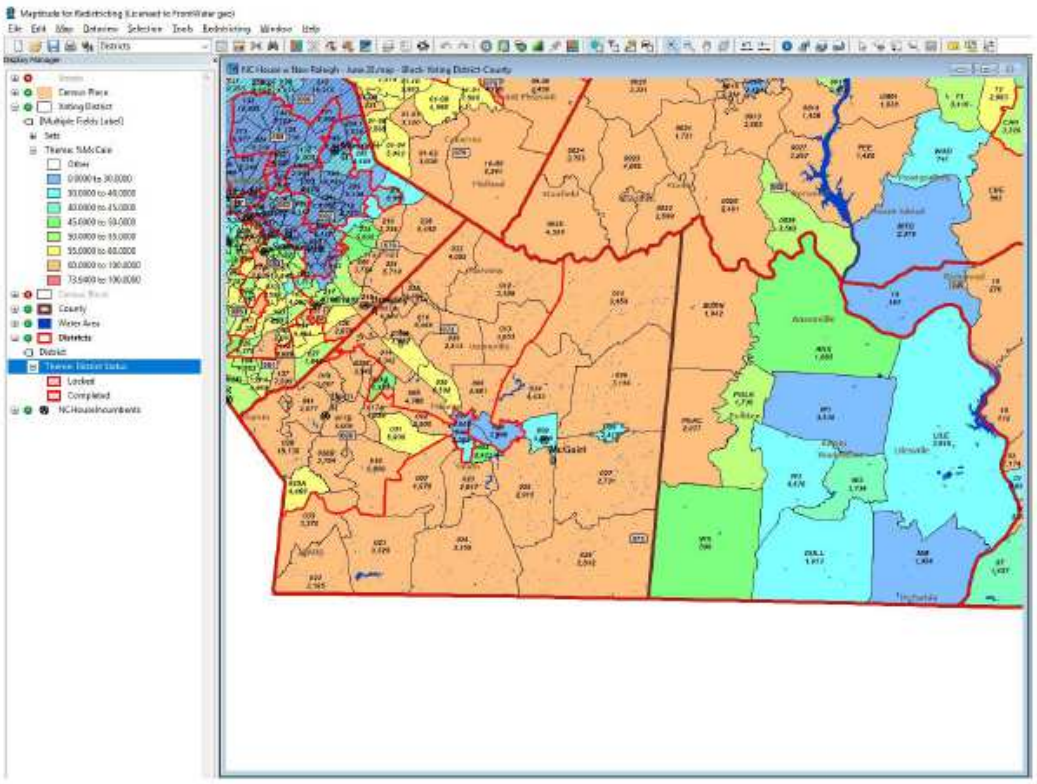
75. Dr. Hofeller used the same partisanship formula in his Maptitude files containing draft 2017 House districts. Tr. 979:6-19; PX337; PX329 at 13 (Cooper Rebuttal Report). Dr. Hofeller also employed a color-coding system to visually represent the partisanship scores for each VTD in his 2017 House plan, but with the more familiar red coloring for Republican-leaning VTDs, blue for Democratic-leaning VTDs, and yellow and green for more competitive VTDs. Tr. 979:20-980:19; PX329 at 13 (Cooper Rebuttal Report). For example, Dr. Hofeller's Maptitude file labeled "NC House J-25," which he created on June 26, 2017 and last modified on August 7, 2017, depicted boundaries (in red) of House Districts 8, 9, and 12 in the Pitt-Lenoir House county grouping. Tr. 981:2-4; PX340; PX562. Plaintiffs' Exhibit 340 below shows that Dr. Hofeller used his color-coded partisanship scheme to pack the bluest VTDs in Pitt County into House District 8. Tr. 982:1-7, 983:5-984:7; PX340; PX329 at 16 (Cooper Rebuttal Report).

Figure 11: Partisan Targeting in House Districts 8, 9, and 12



76. Dr. Hofeller similarly used a partisanship formula and color-coding scheme in drawing the districts at issue in this case enacted in 2011 and kept unchanged in 2017. Tr. 991:9-992:6, 994:4-996:11; PX347; PX350; PX352; PX329 at 23, 27, 30 (Cooper Rebuttal Report). For example, Dr. Hofeller's Maptitude file titled "NC House w New Raleigh - June 28," which was last modified on June 30, 2011, contained Dr. Hofeller's drafts of the 2011 House districts at issue in this case. Tr. 995:20-997:11; PX329 at 30-35; PX564. There, Dr. Hofeller scored the partisanship of each VTD using the results of the 2008 Presidential election and then colored each VTD based on those results, with Democratic-leaning VTDs shaded blue, Republican-leaning VTDs shaded red, and competitive VTDs shaded yellow and tan. *Id.* Plaintiffs' Exhibit 353 below is an example of Dr. Hofeller's use of this partisanship data to draw the 2011 House districts—in this example, to crack Democratic voters across House Districts 55, 68, and 69.

Figure 25: Partisan Targeting in House Districts 55, 68, and 69



77. Legislative Defendants offered no additional files from Dr. Hofeller's storage devices to rebut Dr. Chen's and Dr. Cooper's analyses. They offered no alternative explanation of Dr. Hofeller's intent as he drew the State's House and Senate districts in 2011 and 2017.

3. Plaintiffs' Experts Established that the Plans Are Extreme Partisan Gerrymanders Designed To Ensure Republican Control

78. The analysis and conclusions of Plaintiffs' experts further establishes that the 2017 Plans are extreme partisan outliers intentionally and carefully designed to maximize Republican advantage and to ensure Republican majorities in both chambers of the General Assembly. Three of Plaintiffs' experts—Drs. Chen, Mattingly, and Pegden—employed computer simulations to generate alternative House and Senate plans to serve as a baseline for comparison to each enacted plan. Even though these experts employed different methodologies, each expert found that the enacted plans are extreme outliers that could only have resulted from an intentional effort to secure Republican advantage on a statewide basis. Plaintiffs' fourth expert, Dr. Christopher Cooper, explained how this gerrymandering was carried out across the State and has led to a substantial disconnect between the ideology and policy preferences of North Carolina's citizenry and their representatives in the General Assembly. The Court credits the analysis and conclusions of each of Plaintiffs' experts individually, and the Court finds that the consistent findings of each of these experts, using different methodologies, powerfully reinforce that the 2017 Plans are extreme, intentional, and effective partisan gerrymanders.

a. Dr. Jowei Chen

79. Plaintiffs' expert Jowei Chen, Ph.D., is an Associate Professor in the Department of Political Science at the University of Michigan, Ann Arbor. Tr. 237:6-9. Dr. Chen has extensive experience in redistricting matters. Tr. 238:2-239:3 (Dr. Chen). By the admission of Intervenor Defendants' own expert, Dr. Chen is one of the "foremost political science scholars

on the question of political geography" and how it can impact the partisan composition of a legislative body. Tr. 2220:14-18 (Dr. Barber). Dr. Chen also helped pioneer the methodology of using computer simulations to evaluate the partisan bias of a redistricting plan, and he has published four peer-reviewed articles employing this approach since 2013. Tr. 240:1-241:2; PX2. The Court accepted Dr. Chen in this case as an expert in redistricting, political geography, and geographic information systems ("GIS"). Tr. 245:4-8.

80. Dr. Chen has presented expert testimony regarding his simulation methodology in numerous prior partisan gerrymandering lawsuits, and his analysis has been consistently credited and relied upon by the courts in these cases. Tr. 241:15-242:19; *see League of Women Voters v. Commonwealth*, 178 A.3d 737, 818 (Pa. 2018) (finding "Dr. Chen's expert testimony" to be "[p]erhaps the most compelling evidence" in invalidating Pennsylvania's congressional plan as an unconstitutional partisan gerrymander); *Raleigh Wake Citizens Ass'n v. Wake Cty. Bd. of Elecs.*, 827 F.3d 333, 344 (4th Cir. 2016) ("T]he district court clearly and reversibly erred in rejecting Dr. Chen's expert testimony."); *League of Women Voters of Mich. v. Benson*, 373 F. Supp. 3d 867, 907 (E.D. Mich. 2019) ("[T]he Court has determined that Dr. Chen's data and expert findings are reliable."); *Common Cause v. Rucho*, 279 F. Supp. 3d 587, 666 (M.D.N.C.), *vacated and remanded and other grounds*, 138 S. Ct. 2679 (2018) ("Dr. Mattingly's and Dr. Chen's simulation analyses not only evidence the General Assembly's discriminatory intent, but also provide evidence of the 2016 Plan's discriminatory effects"); *City of Greensboro v. Guilford Cty. Bd. of Elecs.*, 251 F. Supp. 3d 935, 943 (M.D.N.C. 2017) (relying upon the "computer simulations by Dr. Jowei Chen" to find impermissible partisan intent).

81. Using his simulation methodology, Dr. Chen analyzed whether partisan intent predominated in the drawing of the 2017 Plans and subordinated the traditional nonpartisan

districting principles of compactness and avoiding the splitting of municipalities and VTDs. Tr. 245:13-17, 248:6-18. Dr. Chen further analyzed the effects of the 2017 Plans on the number of Democratic-leaning House and Senate districts statewide. Tr. 247:6-10.

82. Based on his analysis, Dr. Chen concluded that partisan intent predominated over the traditional districting criteria in drawing the current House and Senate districts, that the Republican advantage under the 2017 Plans cannot be explained by North Carolina's political geography, and that the effect of the 2017 Plans is to produce fewer Democratic-leaning districts than would exist if the map-drawing process had followed traditional districting principles. Tr. 246:18-22, 247:12-18, 248:20-25; PX1 at 3-4 (Chen Report). With respect to the effects in particular, Dr. Chen found that the gap between the enacted 2017 Plans and the nonpartisan simulated plans in terms of Democratic-leaning districts gets wider in electoral environments more favorable to Democrats, and is widest around the point when Democrats would win majorities in the House or Senate under the simulated nonpartisan plans. Tr. 247:25-248:3, 296:7-24, 330:17-23. The Court credits Dr. Chen's findings and adopts each of his conclusions.

83. In what Dr. Chen described as his Simulation Set 1, Dr. Chen programmed his algorithm to follow the traditional districting principles embodied within the Adopted Criteria. Tr. 281:12-16. In addition to following the equal population and contiguity requirements, as well as conforming to the same county groupings and number of county traversals that exist under the 2017 Plans, Dr. Chen programmed his algorithm to prioritize the traditional districting principles set forth in the Adopted Criteria of compactness, avoiding splitting municipalities, and avoiding splitting VTDs. Tr. 251:18-259:13; PX1 at 10-18 (Chen report).

84. Dr. Chen explained that, other than the county traversals requirement, his algorithm did not attempt to "maximize or optimize" any one criterion. Tr. 262:24-263:3.

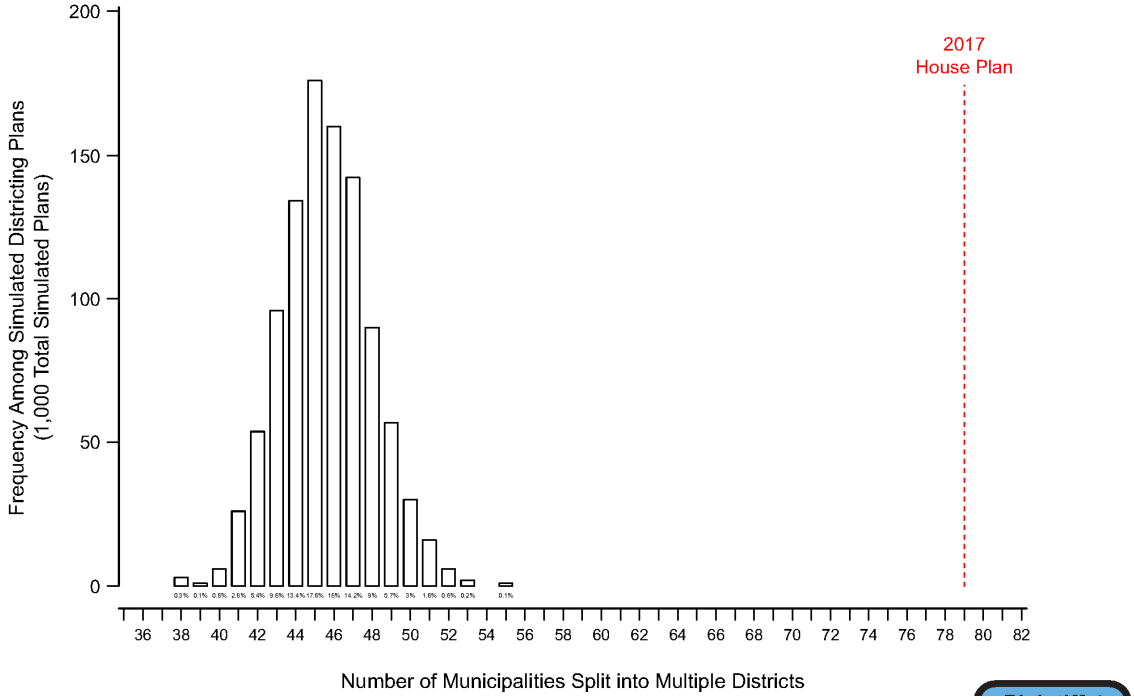
Rather, the algorithm equally weighted the criteria of compactness, avoiding splitting municipalities, and avoiding splitting VTDs. Tr. 263:4-12. In creating districts within each county grouping, the algorithm considered thousands of random iterations, measuring for each proposed iteration whether the change would make the districts in the grouping better or worse on net across these three criteria. Tr. 261:18-263:19. The algorithm accepted a change only if it would improve the districts across these three criteria on net. *Id.*

85. In his Simulation Set 1, Dr. Chen ran the algorithm 1,000 times for each House county grouping and 1,000 times for each Senate county grouping, producing 1,000 unique statewide maps for both the House and the Senate. Tr. 263:23-264:16.

86. Beginning with the House, Dr. Chen compared the 1,000 simulated plans in his House Simulation Set 1 to the enacted 2017 House plan along a number of measures. First, Dr. Chen compared the number of municipalities that the simulated and enacted plans split. The enacted House plan splits 79 municipalities. Tr. 266:22-269:15; PX1 at 38, 41 (Chen Report). The 1,000 plans in House Simulation Set 1 split a range of only 38 to 55 municipalities, with most splitting just 43 to 48 municipalities. *Id.* From this, Dr. Chen concluded with over 99.9% statistical certainty that the enacted House plan subordinates the traditional districting criterion of following municipal boundaries, and splits far more municipalities than is reasonably necessary. Tr. 269:21-270:4; PX1 at 38 (Chen Report).

87. Plaintiffs' Exhibit 15 depicts the number of municipalities split under the enacted plan and the 1,000 simulations in House Simulation Set 1:

Figure 5:
House Simulation Set 1 (Following Only Non−Partisan Redistricting Criteria):
Split Municipalities in 2017 House Plan Versus 1,000 Simulated Plans

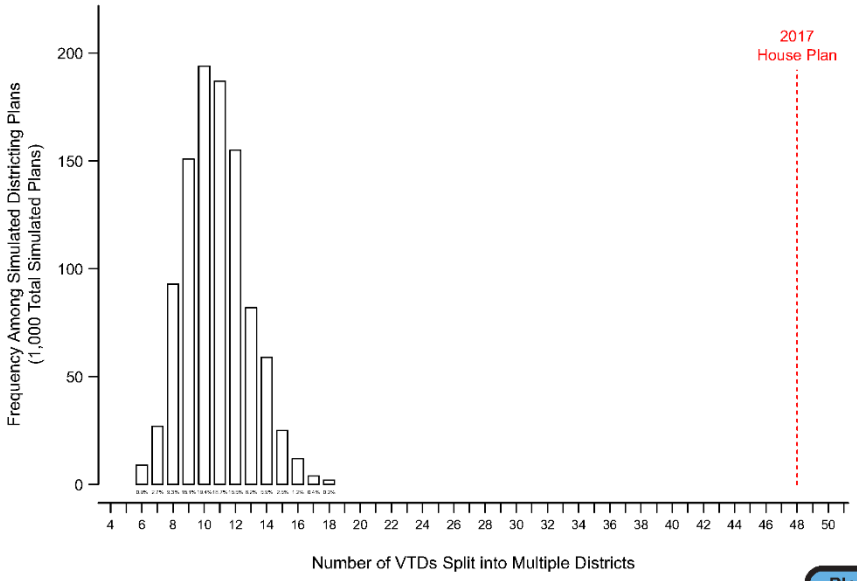


88. The Court finds that the enacted House plan fails to follow, and subordinates, the traditional districting principle of avoiding the unnecessary splitting of municipalities. The Court finds that the current House plan splits far more municipalities than is necessary.

89. Dr. Chen also compared the number of VTDs split in the enacted 2017 House plan and the 1,000 simulations in House Simulation Set 1. Dr. Chen found that, while the simulated House plans split between 6 and 18 VTDs, the enacted House plan splits 48 VTDs, more than four times as many as the vast majority of the simulations. Tr. 270:6-271:3; PX1 at 38, 42 (Chen Report). From this, Dr. Chen concluded with over 99.9% statistical certainty that the enacted House plan subordinates the traditional districting criterion of following VTD boundaries, and splits far more VTDs than is reasonably necessary. Tr. 271:5-12.

90. Plaintiffs' Exhibit 16 depicts the number of VTDs split under the enacted House plan and the 1,000 simulations in House Simulation Set 1:

Figure 6:
House Simulation Set 1 (Following Only Non-Partisan Redistricting Criteria):
Split VTDs in 2017 House Plan Versus 1,000 Simulated Plans



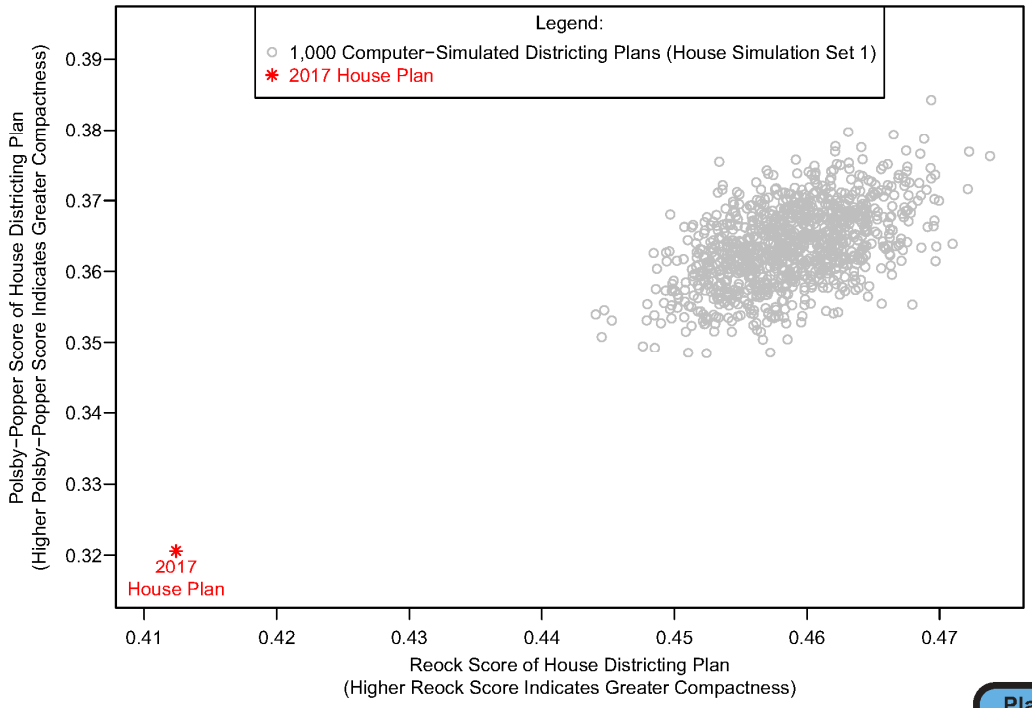
Plaintiffs' Exhibit 16

91. The Court finds that the enacted House plan fails to follow, and subordinates, the traditional districting principle of avoiding the unnecessary splitting of VTDs. The Court finds that the current House plan splits far more VTDs than is necessary.

92. Dr. Chen found that the enacted House plan is also less compact than all 1,000 of his simulations in House Simulation Set 1. Dr. Chen employed the measures of compactness set forth in the Adopt Criteria, known as Reock and Polsby-Popper scores. Tr. 271:16-273:15; PX1 at 38 (Chen Report). For both measures, a higher score indicates that a plan's districts are more compact. *Id.* Dr. Chen found that, as measured by both Reock and Polsby-Popper scores, the compactness of the enacted House plan is outside the range of scores produced by the 1,000 simulated House plans. *Id.* From this, Dr. Chen concluded with over 99% statistical certainty that the enacted House plan subordinates the traditional districting criterion of compactness, and that the current districts are less compact than they would be under a map-drawing process that prioritizes and follows the traditional districting criteria. Tr. 273:18-274:4.

93. Plaintiffs' Exhibit 14 depicts the compactness of the enacted House plan and the 1,000 simulations in House Simulation Set 1:

Figure 4:
House Simulation Set 1 (Following Only Non−Partisan Redistricting Criteria):
Comparison of 2017 House Plan Versus 1,000 Simulated Plans on Compactness



Plaintiffs' Exhibit 14

94. The Court finds that the enacted House plan fails to follow, and subordinates, the traditional districting principle of compactness. The Court finds that the current House districts are less compact than they would be under a map-drawing process that prioritized the traditional districting criteria.

95. To compare the partisanship of his simulated plans to the enacted House and Senate plans, Dr. Chen used Census Block-level election results from recent statewide elections in North Carolina. Tr. 274:5-275:20; PX1 at 19-20 (Chen Report). For most of his analysis, Dr. Chen used the following ten statewide elections: 2010 U.S. Senate, 2012 U.S. President, 2012 Governor, 2012 Lieutenant Governor, 2014 U.S. Senate, 2016 U.S. President, 2016 U.S. Senate,

2016 Governor, 2016 Lieutenant Governor, and 2016 Attorney General. *Id.* Dr. Chen provided several reasons for his choice of these ten statewide elections.

96. First, Representative Lewis indicated at an August 10, 2017 hearing that these ten statewide elections would be the elections that the Joint Redistricting Committees would use to evaluate the 2017 Plans. PX138 at 137-38; Tr. 275:8-11; PX1 at 20 (Chen Report).

97. Second, Dr. Chen testified that it is well-accepted in the academic literature and in redistricting practice that statewide elections, rather than legislative elections, provide the best basis for measuring the partisanship of a district and for comparing the partisanship of districts across alternative possible plans. Tr. 276:3-274:18; PX1 at 19-20 (Chen Report). Dr. Chen explained that legislative elections, such as state House and state Senate elections, do not provide a sound basis for measuring the partisanship of Census Blocks and districts because the results of legislative elections can be skewed by various factors. *Id.* For instance, if districts are gerrymandered or otherwise uncompetitive, the results of the legislative elections can be biased by the district boundaries in a way that they would not be under an alternative plan. *Id.* As Dr. Chen noted, the General Assembly did not have Dr. Hofeller use legislative elections to measure partisanship in drawing the 2017 Plans. Tr. 277:9-14.

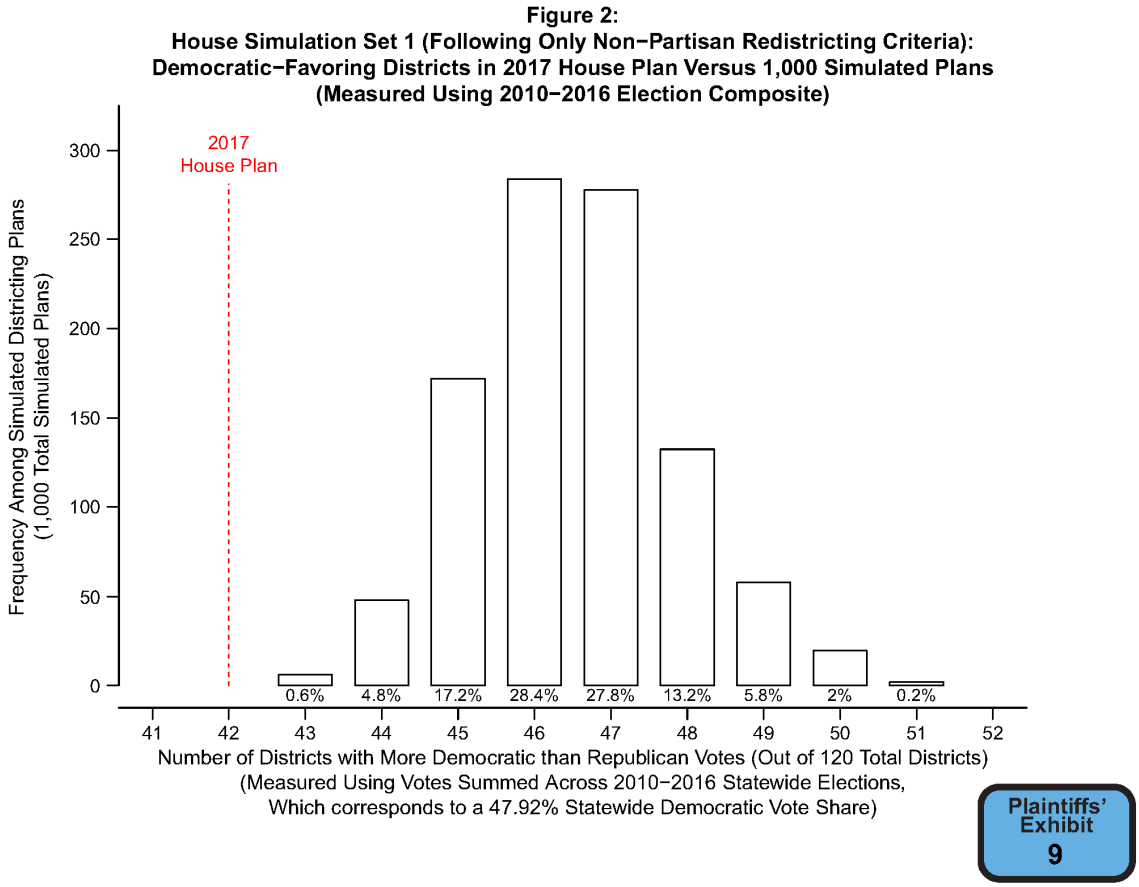
98. Third, Dr. Chen testified he did not use party registration to measure the partisanship of districts because it is well-known in the academic literature and in the redistricting community that party registration is not a reliable indicator of actual partisan voting behavior. Tr. 277:19-278:10. That is particularly true in southern states such as North Carolina, where many registered Democrats now consistently vote for Republicans. *Id.* As Dr. Chen again noted, Legislative Defendants did not have Dr. Hofeller use party registration to measure partisanship in drawing the 2017 Plans. Tr. 278:11-15.

99. The Court finds that the use of statewide elections by Plaintiffs' experts to measure the partisanship of simulated and enacted districts to be a reliable methodology.

100. To measure the partisanship of his simulated districts and the enacted districts, Dr. Chen determined the set of Census Blocks that comprise each district. Tr. 278:24-283:8; PX1 at 20-22 (Chen Report). Dr. Chen then aggregated the elections results from the ten 2010-2016 statewide elections for that set of Census Blocks. *Id.* In other words, Dr. Chen calculated the total votes cast for Democratic candidates in those ten 2010-2016 statewide elections across the relevant set of Census Blocks and the total votes cast for Republican candidates in that set of Census Blocks. *Id.* If there were more votes in aggregate for the Democratic candidates, Dr. Chen classified the district as a Democratic district, and if there were more votes for the Republican candidates, Dr. Chen classified the district as a Republican district. *Id.*

101. Using this measure of partisanship, Dr. Chen compared the number of Democratic districts under the enacted 2017 House plan and under the 1,000 simulated plans in his House Simulation Set 1. While the enacted House plan has 42 Democratic districts using the 2010-2016 statewide elections, not a single one of the 1,000 simulated plans produce so few Democratic districts. Tr. 285:15-287:8; PX1 at 29-30 (Chen Report). The vast majority of simulated plans produce 46 to 51 Democratic districts using the 2010-2016 statewide elections, with the two most common outcomes in the simulations being 46 or 47 Democratic districts—*i.e.*, four or five more Democratic districts than exist under the enacted House plan. *Id.* From these results, Dr. Chen concluded with over 99% statistical certainty that the current House plan is an extreme partisan outlier, and one that could not have occurred under a districting process that adhered to the traditional districting criteria. Tr. 287:2-8; PX1 at 29 (Chen Report).

102. Plaintiffs' Exhibit 9 depicts the distribution of Democratic seats under the enacted House plan and under the 1,000 simulations in Dr. Chen's House Simulation Set 1:



103. Dr. Chen explained that the number of Democratic districts estimated for his simulated plans is depressed by the fact that the 2010-2016 statewide elections he used were relatively favorable for Republicans. Tr. 284:1-285:12; PX1 at 29 (Chen Report). Three of the four elections cycles in this period—2010, 2014, and 2016—were favorable for Republicans nationally. *Id.* Consequently, the aggregate Democratic share of the two-party vote across the ten statewide elections in the 2010-2016 composite used by Dr. Chen was just 47.92%. *Id.*

104. Dr. Chen also measured the number of Democratic districts that would exist under his simulated plans and the enacted House plan under electoral environments that are more neutral or even favorable to Democrats. Tr. 287:15-22. First, Dr. Chen analyzed the number of

Democratic districts using only the 2016 Attorney General election, which was a near tie. Tr. 287:19-289:14; PX1 at 29 (Chen Report). Using the 2016 Attorney General results, the enacted House plan produces 44 Democratic districts, while the 1,000 simulated House plans produce 48 to 55 Democratic districts, with the most common outcome being 52 Democratic districts. Tr. 287:25-289:14; PX119; PX1 at 29, 174, A1. The gap between the enacted House plan and the simulated plans therefore grows to eight Democratic seats in the most common outcome under the neutral electoral environment that was the 2016 Attorney General election. *Id.*

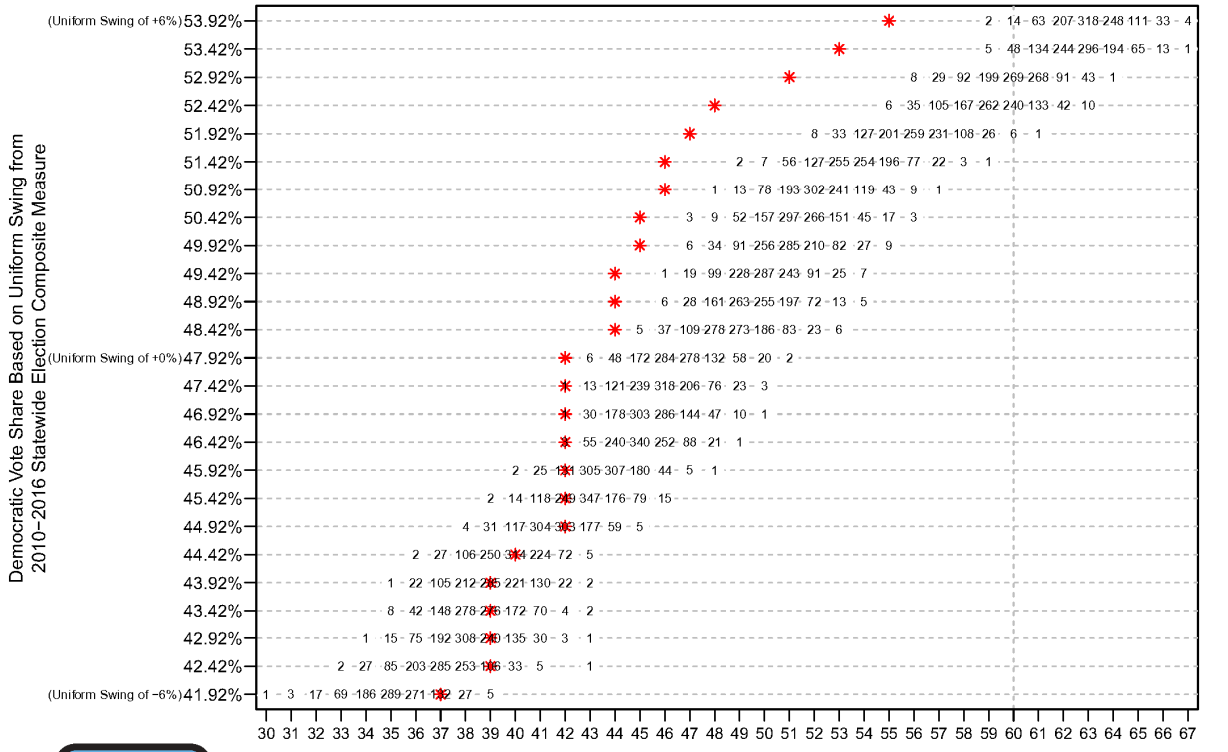
105. Dr. Chen also performed a "uniform swing" analysis to compare the enacted plan and the simulated plans under different electoral environments. Uniform swing analysis is a common technique used in the academic literature and the redistricting community to measure how districts would perform under varying electoral conditions. Tr. 289:25-290:8. For his uniform swing analysis, Dr. Chen started with the Democratic vote share in every enacted and simulated district using the 2010-2016 statewide elections, and then increased or decreased the Democratic vote share uniformly in every district in 0.5% increments. Tr. 290:4-296:3.

106. Dr. Chen's uniform swing analysis revealed a "striking trend." Tr. 296:7. As the uniform swing increases in the direction of more favorable Democratic performance, the gap between the number of Democratic districts under the enacted plan and the simulated plans grows more and more. Tr. 296:7-20. In other words, "in electoral environments that are more favorable to Democrats, the gap between the enacted plan and all of the computer-simulated plans is widened." Tr. 296:18-20.

107. Plaintiffs' Exhibit 10 below depicts Dr. Chen's uniform swing analysis for House Simulation Set 1. The starting point is the row on the vertical axis for "47.92%," which represents the statewide Democratic vote share under the ten 2010-2016 statewide elections. Tr.

290:23-296:3; PX1 at 31-33 (Chen Report). Each row above this point represents the results when increasing the Democratic vote share in every enacted and simulated district by increments of 0.5%. *Id.* The red stars in each row represent the number of Democratic districts under the enacted 2017 House plan, and the numbers to the right of each red star represent the number of simulations (out of 1,000) that produce the number of Democratic districts found on the horizontal axis below. *Id.* For instance, for the starting row of a 47.92% statewide Democratic vote share, the enacted plan (the red star) produces 42 Democratic districts, there are six simulated plans that produce 43 Democratic districts, 48 simulated plans that produce 44 Democratic districts, 172 simulated plans that produce 45 Democratic districts, and so on. *Id.*

Figure U1: Number of Democratic Districts Under Alternative Uniform Swings in House Simulation Set 1 Plans



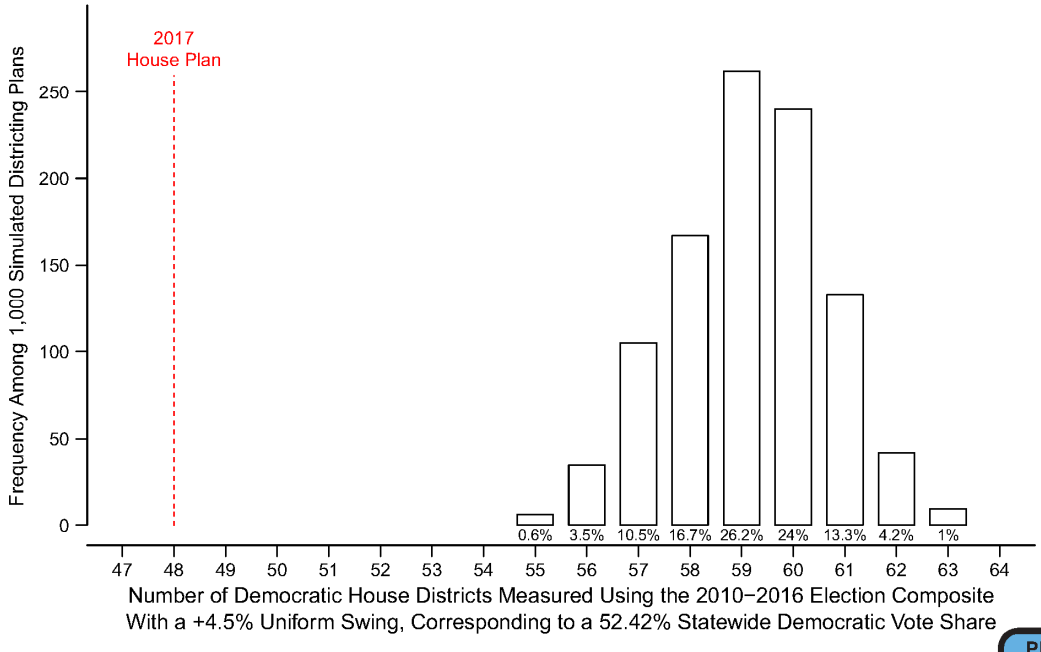
Plaintiffs' Exhibit 10

(Numbers in this figure report the number of simulated plans (out of 1,000) that would contain a particular number of Democratic districts (listed along the horizontal axis) under each uniform swing condition (listed in the left margin). Red stars denote calculations for the 2017 House Plan.)

108. Dr. Chen found that the gap between the enacted and simulated plans not only grew as the electoral environment became more favorable for Democrats, but the gap is "widest"

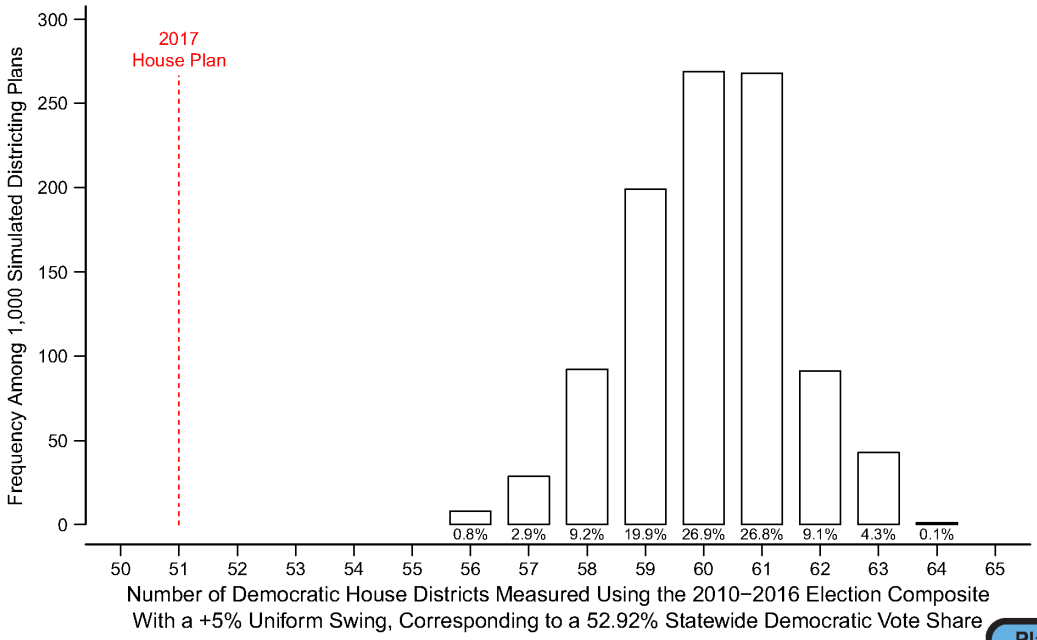
exactly at the point when Democrats would start winning a majority of House seats under the simulated plans. Tr. 296:20-297:21. Plaintiffs' Exhibit 11 (Figure U2) below depicts Dr. Chen's results for a uniform swing corresponding to a statewide Democratic vote share of 52.42%. In this scenario, the enacted House plan contains only 48 Democratic districts, but roughly one-third of the 1,000 simulations produce 60 or more Democratic districts, with a 60-60 tie being the second most common outcome. Tr. 298:2-299:7. Plaintiffs' Exhibit 12 (Figure U3) below depicts Dr. Chen's results for a uniform swing corresponding to a statewide Democratic vote share of 52.92%. In this scenario, there are 60 or more Democratic districts in nearly two-thirds of the simulations, and Democrats would win a majority (61 or more seats) in more than 40% of the simulations. Tr. 299:16-301:12. But Democrats would hold just 51 districts under the enacted House plan. *Id.*

Figure U2:
Number of Democratic House Districts Measured Using the 2010–2016 Election Composite With a +4.5% Uniform Swing, Corresponding to a 52.42% Statewide Democratic Vote Share (House Simulation Set 1)



Plaintiffs' Exhibit 11

Figure U3:
Number of Democratic House Districts Measured Using the 2010–2016 Election Composite With a +5% Uniform Swing, Corresponding to a 52.92% Statewide Democratic Vote Share (House Simulation Set 1)



Plaintiffs' Exhibit 12

109. Dr. Chen analyzed the type of electoral environment that would produce 55 Democratic districts under the enacted House plan, which is the number of House districts that Democrats won in 2018. Tr. 301:16-302:14. Dr. Chen found that, in the type of electoral environment that would produce 55 Democratic districts under the enacted plan in his uniform swing analysis, Democrats would win *60 or more* House districts in over 99% of his simulated plans, and would win a majority of districts in over 98% of the simulated plans. *Id.*; PX10. In other words, while Democrats improved their seat share in 2018, had a nonpartisan plan been in place, they may well have won a majority.

110. The Court finds Dr. Chen's uniform swing analysis to be powerful evidence of the intent and effects of Legislative Defendants' partisan gerrymander. The analysis establishes that the effects of the gerrymander are most extreme in electoral environments that are better for

Democrats, and specifically in electoral environments when Democrats could win a majority of House seats under a nonpartisan map. Dr. Chen's uniform swing analysis is persuasive evidence that the enacted House plan was designed specifically to ensure that Democrats cannot win a majority of House seats under any reasonably foreseeable electoral environment.

111. The Court further credits Dr. Chen's overall conclusions from his House Simulation Set 1. Dr. Chen concluded with over 99% statistical certainty that partisanship predominated in the drawing of the enacted House plan and subordinated the traditional districting criteria of compactness, avoiding splitting municipalities, and avoiding splitting VTDs. Tr. 307:12-24. The Court adopts these conclusions and finds that the current House districts, regardless of whether they were drawn in 2017 or 2011, subordinate the traditional districting criteria. The Court finds that Legislative Defendants split more municipalities and VTDs across the current House districts than necessary, and made the current House districts less compact than necessary, in order to accomplish their predominant partisan goals.

112. In his House Simulation Set 2, Dr. Chen programmed his algorithm to add avoiding pairing incumbents as an additional criterion. Dr. Chen performed this analysis to determine whether a hypothetical, nonpartisan effort to avoid pairing the incumbents in place at the time each of the relevant districts was drawn could account for the extreme partisan bias and subordination of traditional districting principles that Dr. Chen found in his Simulation Set 1. Tr. 308:15-21. Dr. Chen programmed his algorithm in Simulation Set 2 to avoid pairing the maximum number of incumbents possible who were in office at the time of the relevant redistrictings, and to ensure that the very same incumbents who were not paired with another incumbent under the enacted plans were not paired in the simulations. Tr. 308:3-14, 310:21-311:16; PX1 at 43 (Chen Report).

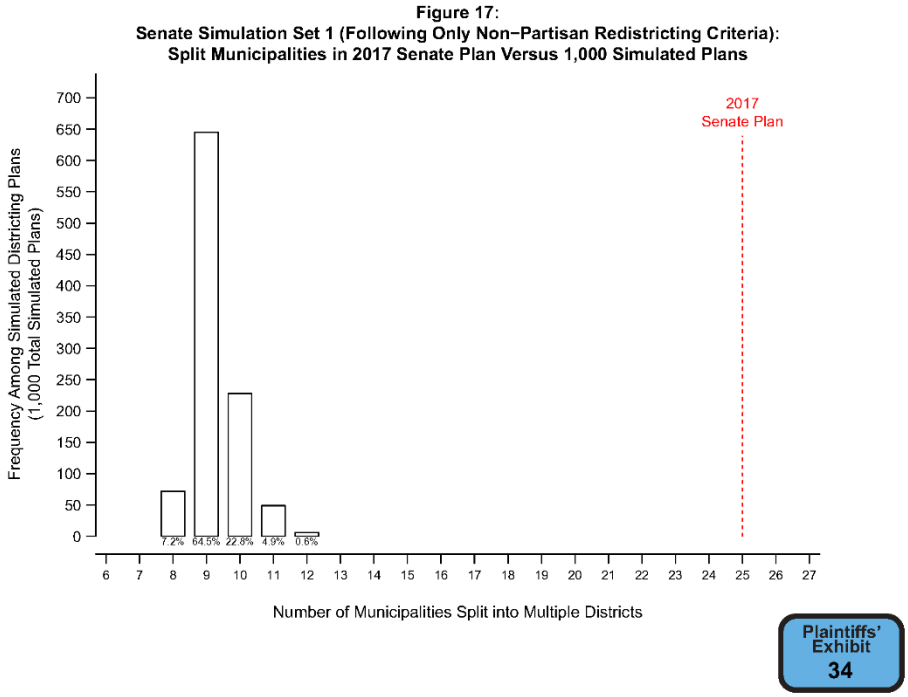
113. Based on his House Simulation Set 2 analysis, Dr. Chen found that a nonpartisan effort to avoid pairing incumbents cannot explain the extreme partisan bias of the enacted House plan or its subordination of traditional districting criteria. Dr. Chen found that the enacted House plan is an extreme outlier with respect to the number of Democratic districts it produces, the number of municipalities and VTDs that it splits, and the compactness of its districts compared to the 1,000 simulated plans in House Simulation Set 2. Tr. 313:11-317:24; PX7; PX18; PX23; PX1 at 44-56 (Chen Report). The Court credits Dr. Chen's findings in House Simulation Set 2 and finds that a nonpartisan effort to protect incumbents cannot explain the extreme partisan bias and subordination of traditional districting principles in the enacted House plan.

114. For the Senate, Dr. Chen ran two sets of 1,000 simulations just as he did for the House. Tr. 318:11-319:9. Dr. Chen's Senate Simulation Set 1 applied the same algorithm used for House Simulation Set 1, prioritizing and equally weighting the traditional districting principles within the Adopted Criteria of compactness and avoiding splitting municipalities and VTDs.[1] Dr. Chen ran his algorithm 1,000 times for each Senate county grouping, producing 1,000 unique statewide plans in Senate Simulation Set 1. Tr. 319:10-320:10.

115. With respect municipal splits, Dr. Chen found that the enacted Senate plan splits 25 municipalities, while the 1,000 simulated plans in Senate Simulation Set 1 split between just 8 and 12 municipalities. Tr. 320:12-321:9; PX1 at 69, 71 (Chen Report). From this, Dr. Chen concluded with over 99.9% statistical certainty that the enacted Senate plan subordinates the traditional districting criterion of following municipal boundaries, and splits far more municipalities than is reasonably necessary. Tr. 321:12-17.

[1] Dr. Chen used the same Senate county groupings that exist under the enacted Senate plan, minimized the number of county traversals, and applied the Adopted Criteria's equal population and contiguity requirements. Tr. 318:11-319:9.

116. Plaintiffs' Exhibit 34 depicts the number of municipalities split under the enacted Senate plan and the 1,000 simulations in Senate Simulation Set 1:

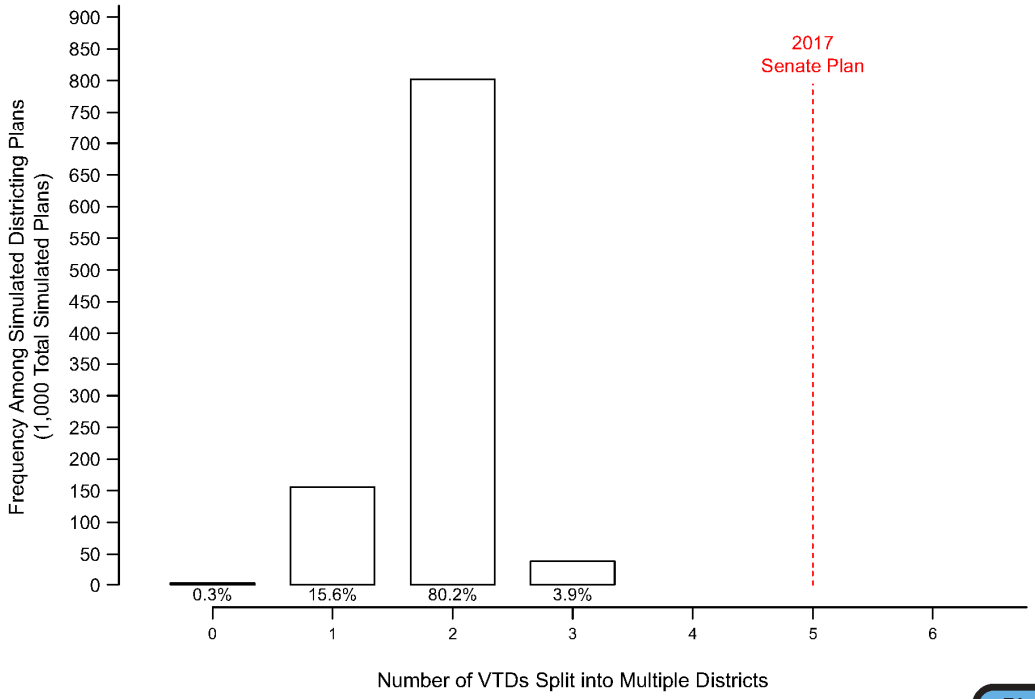


117. The Court finds that the enacted Senate plan fails to follow, and subordinates, the traditional districting principle of avoiding the unnecessary splitting of municipalities. The Court finds that the current Senate districts split far more municipalities than is necessary.

118. With respect to VTDs, Dr. Chen found that the enacted Senate plan splits 5 VTDs, while his simulations split between 0 and 3 VTDs. Tr. 322:19-322:9; PX1 at 69, 72 (Chen Report). From this, Dr. Chen concluded with over 99.9% statistical certainty that the enacted Senate plan subordinates the traditional districting criterion of following VTD boundaries, and splits more VTDs than is reasonably necessary. Tr. 322:12-15.

119. Plaintiffs' Exhibit 35 depicts the number of VTDs split under the enacted Senate plan and the 1,000 simulations in Senate Simulation Set 1:

Figure 18:
Senate Simulation Set 1 (Following Only Non−Partisan Redistricting Criteria):
Split VTDs in 2017 Senate Plan Versus 1,000 Simulated Plans

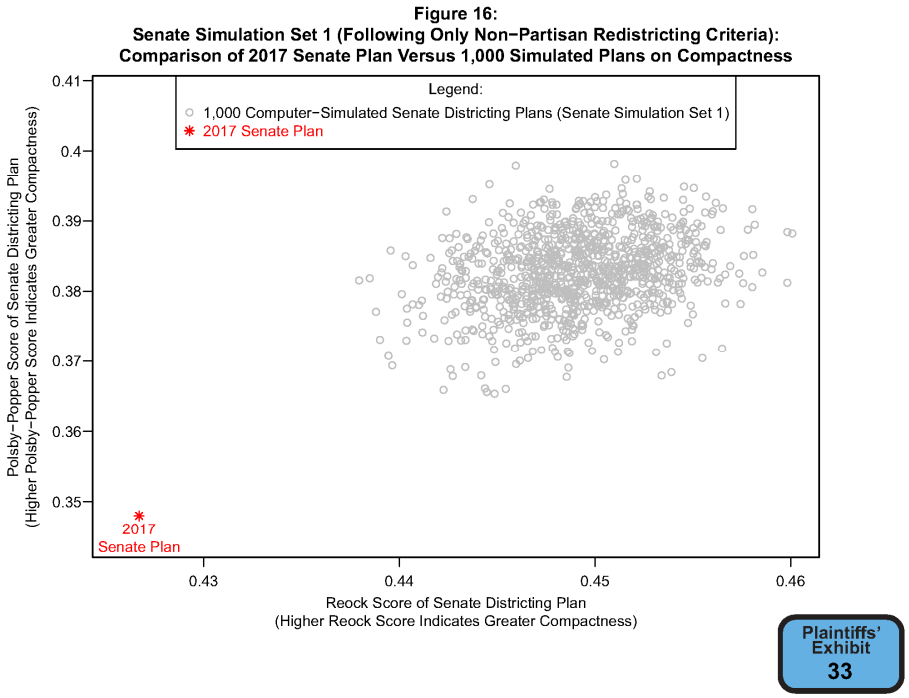


Plaintiffs' Exhibit 35

120. The Court finds that the enacted Senate plan fails to follow, and subordinates, the traditional districting principle of avoiding the unnecessary splitting of VTDs. The Court finds that the current Senate districts split more VTDs than is necessary.

121. Dr. Chen found that the enacted Senate plan is also less compact than all 1,000 of his Senate simulations. Using both the Reock and Polsby-Popper measures of compactness, all 1,000 simulated plans in Senate Simulation Set 1 are more compact than the enacted Senate plan. Tr. 322:17-324:3; PX1 at 67-69 (Chen Report). From this, Dr. Chen concluded with over 99% statistical certainty that the enacted Senate plan subordinates the traditional districting criterion of compactness, and that the current districts are less compact than they would be under a map-drawing process that prioritizes and follows the traditional districting criteria. Tr. 324:6-15.

122. Plaintiffs' Exhibit 33 depicts the compactness of the enacted Senate plan and the 1,000 simulations in Senate Simulation Set 1:



123. The Court finds that the enacted Senate plan fails to follow, and subordinates, the traditional districting principle of compactness. The Court finds that the current Senate districts are less compact than they would be under a map-drawing process that prioritized the traditional districting criteria.

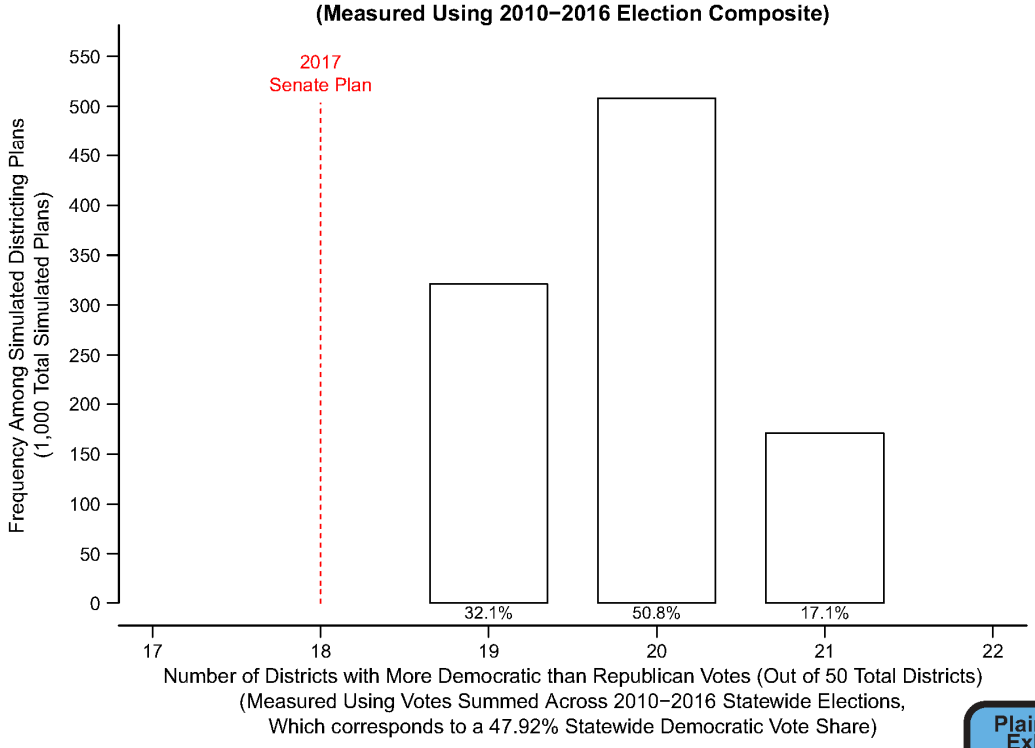
124. As with the House, Dr. Chen compared the partisanship of his simulated Senate plans to the partisanship of the enacted Senate plan using the same ten statewide elections from 2010-2016 that Representative Lewis claimed would be used. Tr. 324:16-325:4.

125. Using the 2010-2016 statewide elections, Dr. Chen found that the enacted Senate plan produces 18 Democratic districts. Tr. 325:7-326:11; PX1 at 57, 60 (Chen Report). In contrast, not a single one of the 1,000 simulated plans produce such an outcome. *Id.* The simulated Senate plans produce 19 to 21 Democratic districts using the 2010-2016 statewide

elections, with the most common outcome in the simulations being 20 Democratic districts—*i.e.*, two more Democratic districts than exist under the enacted Senate plan. *Id.* From these results, Dr. Chen concluded with over 99% statistical certainty that the current Senate plan is an extreme partisan outlier, and one that could not have occurred under a districting process that adhered to the traditional districting criteria. Tr. 326:12-21; PX1 at 59 (Chen report).

126. Plaintiffs' Exhibit 28 depicts the distribution of Democratic seats under the enacted Senate plan and under the 1,000 simulations in Senate Simulation Set 1:

Figure 14:
Senate Simulation Set 1 (Following Only Non−Partisan Redistricting Criteria):
Democratic−Favoring Districts in 2017 Senate Plan Versus 1,000 Simulated Plans
(Measured Using 2010−2016 Election Composite)



Plaintiffs' Exhibit 28

127. Like he did for the House, Dr. Chen measured the number of Democratic districts that would exist under his simulated plans and the enacted plan under electoral environment environments that are more neutral or even favorable to Democrats. Dr. Chen again analyzed the number of Democratic districts when using just the 2016 Attorney General election, which was a

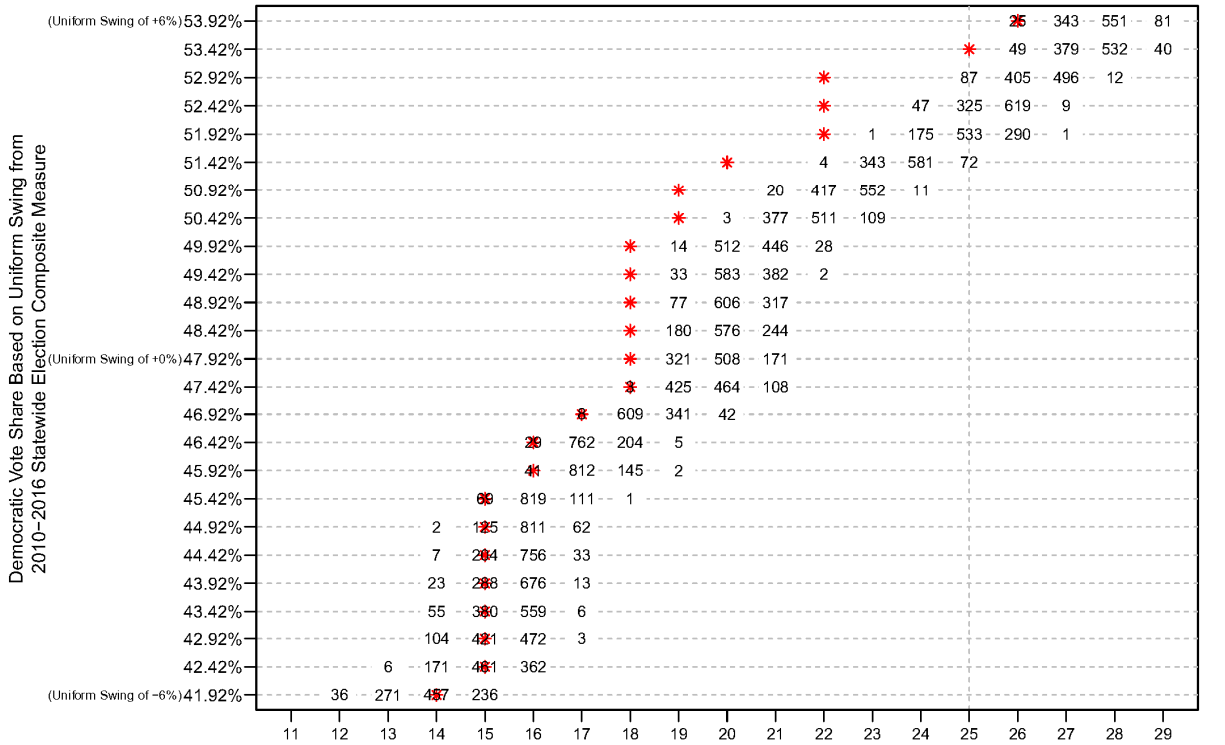
near tie. Tr. 327:8-11; PX121; PX1 at 59, 61, A3 (Chen Report). Dr. Chen found that the enacted Senate plan produces 20 Democratic districts using the 2016 Attorney General results, while the 1,000 simulated Senate plans most commonly produce 23 Democratic districts under the 2016 Attorney General results. Tr. 328:1-13. The gap between the enacted Senate plan and the simulated plans therefore grows to three Democratic seats in the most common outcome under the neutral electoral environment of the 2016 Attorney General election. *Id.*

128. Dr. Chen also performed a uniform swing analysis to compare the enacted Senate plan to the simulated Senate plans under different electoral environments. Just as he did for the House, in his uniform swing analysis for the Senate, Dr. Chen started with the Democratic vote share in every enacted and simulated district using the 2010-2016 statewide elections and then increased or decreased the Democratic vote share uniformly in every district in 0.5% increments. Tr. 328:25-329:7.

129. Dr. Chen found the same trend in his uniform swing analysis of the Senate that he found for the House. Tr: 330:7-23. He found that as he increases the uniform swing in the more Democratic direction, the gap between the number of Democratic districts under the enacted Senate plan and the simulated plans grows. *Id.* And the gap again becomes widest around the points where Democrats would come close to gaining a majority or would actually gain a majority under the nonpartisan simulated plans. *Id.*

130. Plaintiffs' Exhibit 29 below depicts Dr. Chen's uniform swing analysis for the Senate. The red stars again reflect the number of Democratic districts under the enacted Senate plan and the numbers to the right of the red stars reflect the number of simulations (out of 1,000) that produce the number of Democratic districts listed on the horizontal access.

Figure U7: Number of Democratic Districts Under Alternative Uniform Swings in Senate Simulation Set 1 Plans

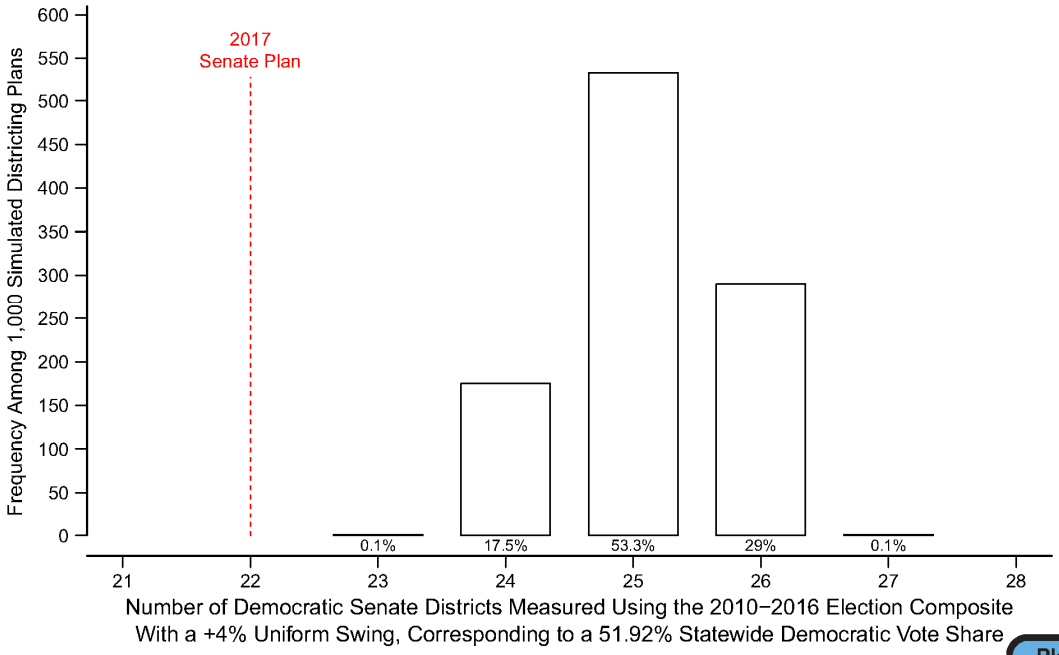


Plaintiffs' Exhibit 29

(Numbers in this figure report the number of simulated plans (out of 1,000) that would contain a particular number of Democratic districts (listed along the horizontal axis) under each uniform swing condition (listed in the left margin). Red stars denote calculations for the 2017 Senate Plan.)

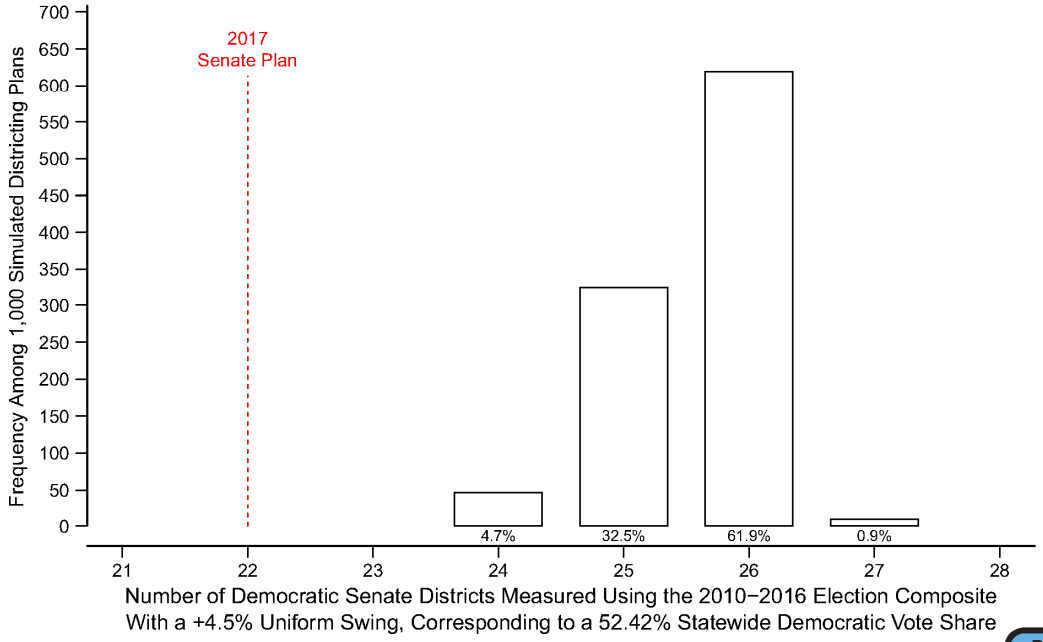
131. Plaintiffs' Exhibit 30 (Figure U8) below depicts Dr. Chen's Senate results for a uniform swing corresponding to a statewide Democratic vote share of 51.92%. The figure reveals that, in this scenario, the enacted Senate plan contains only 22 Democratic districts, but the vast majority of simulations would give Democrats a tie or an outright majority in the Senate. Tr. 331:2-332:23. Plaintiffs' Exhibit 31 (Figure U9) below depicts Dr. Chen's Senate results for a uniform swing corresponding to a statewide Democratic vote share of 52.42%. In this environment, Democrats would win half or more of the districts in over 95% of the simulations, and would win an outright majority in over 62% of the simulations. Tr. 333:7-334:2. Yet, under the enacted Senate plan, Democrats would hold just 22 Senate districts in this scenario. *Id.*

Figure U8:
Number of Democratic Senate Districts Measured Using the 2010–2016 Election Composite With a +4% Uniform Swing, Corresponding to a 51.92% Statewide Democratic Vote Share (Senate Simulation Set 1)



Plaintiffs' Exhibit 30

Figure U9:
Number of Democratic Senate Districts Measured Using the 2010–2016 Election Composite With a +4.5% Uniform Swing, Corresponding to a 52.42% Statewide Democratic Vote Share (Senate Simulation Set 1)



Plaintiffs' Exhibit 31

132. Dr. Chen also analyzed the type of electoral environment that would produce 21 Democratic districts under the enacted plan, which is the number of Senate districts that Democrats won in 2018. Tr. 334:3-335:7. Dr. Chen found that, in the type of environment that would produce 21 Democratic districts under the enacted plan in his uniform swing analysis, Democrats would win *25 or more* Senate districts in the vast majority of simulations. *Id.*; PX29. In other words, while Democrats improved their seat share in 2018, had a nonpartisan plan been in place, they may well have won a majority.

133. The Court again finds Dr. Chen's uniform swing analysis to be powerful evidence of the intent and effects of the partisan gerrymander. Dr. Chen's analysis establishes that the effects of the gerrymander are most extreme in electoral environments that are better for Democrats, and in particular in environments under which Democrats could win a majority of Senate seats under a nonpartisan map. Dr. Chen's uniform swing analysis is persuasive evidence that the enacted Senate plan was designed specifically to ensure that Democrats cannot win a majority of Senate seats under any reasonably foreseeable electoral environment.

134. The Court further credits Dr. Chen's overall conclusions from his Senate Simulation Set 1. Dr. Chen concluded with over 99% statistical certainty that partisanship predominated in the drawing of the enacted Senate plan and subordinated the traditional districting criteria of compactness, avoiding splitting municipalities, and avoiding splitting VTDs. Tr. 336:22-337:7. The Court adopts these conclusions and finds that the current Senate districts, regardless of whether they were drawn in 2017 or 2011, subordinate the traditional districting criteria. The Court finds that Legislative Defendants split more municipalities and VTDs across the current Senate districts than necessary, and made the current Senate districts less compact than necessary, in order to accomplish their predominant partisan goals.

135. Dr. Chen generated 1,000 more simulated plans in his Senate Simulation Set 2, adding the same incumbency criteria he used for the House. Dr. Chen found that a hypothetical, nonpartisan effort to avoid pairing the incumbents in place at the time each of the relevant districts was drawn could not explain the extreme partisan bias of the enacted Senate plan and its subordination of traditional districting principles. Tr. 341:18-342:8. Dr. Chen found that the enacted Senate plan is an extreme outlier with respect to the number of Democratic districts it produces, the number of municipalities and VTDs it splits, and the compactness of its districts compared to the 1,000 simulated plans in Senate Simulation Set 2. Tr. 337:8-341:22; 26, 37, 42; PX1 at 73-85 (Chen Report). The Court credits Dr. Chen's findings in Senate Simulation Set 2 and finds that a nonpartisan effort to protect incumbents cannot explain the extreme partisan bias and subordination of traditional districting principles in the enacted Senate plan.

136. The Court also credits and adopts Dr. Chen's conclusions that the partisan bias of the 2017 House and Senate Plans cannot be explained by North Carolina's political geography, meaning the geographic locations of Republican and Democratic voters. Tr. 307:3-11, 336:11-19. Political geography can create a natural advantage for Republicans in winning seats where, for example, Democratic voters are clustered in urban areas. Tr. 304:9-18; PX1 at 7-8 (Chen Report). But Dr. Chen designed his simulations with the specific purpose of accounting for North Carolina political geography and any other built-in advantages either party may have in redistricting; that is "the whole point" of Dr. Chen's computer simulation methodology. Tr. 304:19-305:19; *see* PX1 at 7-8 (Chen Report). The simulations build districts using the *same* Census geographies and population data that existed when the enacted plans were drawn; thus, the simulated plans capture any natural advantage that one party may have had based on population patterns when General Assembly passed the enacted plans. *Id.*

137. Dr. Chen found that Republicans may have a small degree of natural advantage in winning districts in both the House and Senate; Dr. Chen's analysis suggests that even under his nonpartisan plans, Democrats may win less than 50% of the seats when they win 50% of the votes. Tr. 305:21-307:2, 335:17-336:10; PX1 at 36, 66 (Chen Report). But Dr. Chen concluded, and the Court finds, that the enacted House and Senate plans are extreme partisan outliers compared to Dr. Chen's simulations that account for political geography and any other built-in advantages Republicans may have, and thus political geography and other built-in advantages cannot explain the enacted plans' extreme partisan bias. Tr. 307:3-11, 336:11-19.

138. The Court also rejects Legislative Defendants' critiques of the way in which Dr. Chen's simulation algorithm applied the traditional districting principles of compactness and avoiding splitting municipalities and precincts. Legislative Defendants criticized Dr. Chen's decision to program his algorithms such that, all else being equal along the other criteria imposed, the algorithm prefers district plans that are more compact, that split fewer municipalities, and that split fewer VTDs. Tr. 257:11-259:1. The Court finds that Legislative Defendants' objections are contrary to their own statements regarding the Adopted Criteria as well as common sense, and in any event miss the purpose of Dr. Chen's analysis.

139. Dr. Chen's interpretation and application of the traditional districting principles is fully consistent with the guidance provided by Legislative Defendants at the time of the 2017 redistricting. At the first public hearing after the draft plans were unveiled, Representative Lewis explained the Adopted Criteria meant "trying to keep towns, cities and precincts whole where possible." PX607 at 10:5-6. Representative Lewis made similar statements at the committee hearing where the Adopted Criteria were proposed and debated; he asserted, for example, that the criterion regarding municipal splits "says that the map drawer may and rightfully should

consider municipality boundaries when they can." PX603 at 67. Representative Lewis added that "municipality, precinct lines are things that are all community-of-interest-type things that we're going to seek to preserve." *Id.* at 77. Representative Lewis did not qualify in these statements that the Redistricting Committees would seek only to promote these traditional principles up to a point, or would seek to intentionally split some *minimum* number of municipalities and VTDs for some unknown reason.

140. The Court further credits Dr. Chen's testimony that his application of these criteria is consistent with generally accepted redistricting principles and practice. Dr. Chen testified, and Legislative Defendants presented no evidence to rebut, that no jurisdiction in the country prefers to split a *higher* number of municipalities or VTDs, or wants *less* compact districts. Tr. 603:2-605:21, 774:5-20. Nor does any jurisdiction seek to split some *minimum* number of municipalities or VTDs, or impose a *cap* on how compact the districts should be. *Id.*

141. As Dr. Chen testified, there is no nonpartisan reason why a jurisdiction would want to split more municipalities and VTDs than necessary, or would want to make districts less compact than necessary. Tr. 774:22-775:5. Legislative Defendants did not offer any such nonpartisan reason at trial—either in the abstract or as applied to the districts at issue in this case. Legislative Defendants did not introduce evidence of any nonpartisan reason why the enacted plans either split a particular municipality or VTD that did not need to be split, or make a particular district less compact than it could have been otherwise. Legislative Defendants' failure to offer any such evidence bolsters Dr. Chen's conclusion that partisan considerations and partisan intent are the reasons why these traditional districting principles were subordinated.

142. The Court also rejects any suggestion that Dr. Chen should not have applied these traditional districting criteria in simulating county groupings that were drawn in 2011, because

these principles were not expressly stated as official criteria during the 2011 redistricting process. *See* Tr. 629:19-636:10. The principles of compactness and avoiding split municipalities and VTDs were traditional districting criteria since well before 2011. Tr. 776:8-777:8; *see, e.g.*, *Stephenson v. Bartlett*, 355 N.C. 354, 371, 562 S.E.2d 377, 389 (2002). That the General Assembly did not list these traditional districting principles as official criteria in 2011 does not change the fact that the General Assembly subordinated these principles to partisan considerations in drawing the 2011 districts at issue in this case. *Id.* And the fact that the General Assembly reenacted these districts without change in 2017 does not mean that these districts no longer subordinate traditional districting principles to partisan considerations. *Id.*

143. Indeed, Legislative Defendants' contentions with respect to the 2011-drawn districts highlight how they overall miss the point of Dr. Chen's analysis. Irrespective of whether and how Legislative Defendants said they would apply these principles during the relevant redistricting processes, Dr. Chen's analysis demonstrates that the current districts subordinate these nonpartisan traditional principles to partisan intent. Legislative Defendants do not dispute that the current districts split more municipalities and VTDs and are less compact than necessary, and Legislative Defendants do not seriously dispute that partisan considerations are the reason the current districts perform poorly along these nonpartisan traditional criteria.

144. The method by which Dr. Chen avoided pairing incumbents in Simulation Set 2 is consistent with the Adopted Criteria's incumbency protection provision. The Court rejects Legislative Defendants' contention that the Adopted Criteria required incumbency protection beyond merely avoiding pairing incumbents; namely, that the Adopted Criteria required creating districts politically favorable to incumbents. Regardless, Dr. Chen and Plaintiffs' other simulation experts were justified in not applying the criterion in such a manner. An effort to

place all incumbents at the time of the 2017 redistricting in politically favorable districts would just be another form of partisan gerrymandering. Tr. 309:5-310:14. At the time of the 2017 redistricting, Republicans held supermajorities in both chambers of the General Assembly. *Id.* Hence, seeking to enhance the reelection chances of every incumbent, Democrat and Republican alike, would have been a means of seeking to lock-in the Republican supermajorities. *Id.* It would also have been particularly inappropriate to seek to preserve the "core" of the existing districts, as Legislative Defendants' expert Dr. Brunell suggested, since many of the existing districts had been found to constitute illegal racial gerrymanders.

145. In addition, the Court finds that Legislative Defendants actually did not seek to protect Democratic and Republican incumbents alike in a neutral manner. In Buncombe County, the enacted plan paired two Democratic incumbents who were in office at the time these House districts were drawn in 2011, but Dr. Chen's algorithm was able to avoid pairing these two Democratic incumbents in all 1,000 of his simulations. Tr. 312:14-313:9; PX1 at 45, 47 (Chen Report). Legislative Defendants thus unnecessarily paired these two Democratic incumbents in creating the Buncombe County House districts, ensuring that one of the two would not be reelected. *Id.* Dr. Hofeller's Excel files further show that, in 2017, Dr. Hofeller focused solely on concerns for Republican incumbents and not Democratic incumbents. *Supra* FOF § B.2.a. Dr. Hofeller analyzed "Pressure Points for GOP Incumbents" in both the House and the Senate, but performed no similar analysis for Democratic incumbents. *Id.*

b. Dr. Mattingly

146. Jonathan Mattingly, Ph.D., is a North Carolina native, the chairman of the Duke University Mathematics Department, and the James B. Duke Professor of Mathematics at Duke. Tr. 1080:7-20. He also is a professor in the Duke Statistics Department. Tr. 1080:7-20.

Dr. Mattingly was accepted as an expert in applied mathematics, probability, and statistical science. Tr. 1083:1-10.

147. Dr. Mattingly developed his method of evaluating partisan gerrymandering in his academic research. Tr. 1086:20-24. He has since created a project at Duke called "Quantifying Gerrymandering." Tr. 1084:9-1085:4. In the one previous case in which Dr. Mattingly testified, a federal partisan gerrymandering case relating to North Carolina's congressional districts, the federal court credited Dr. Mattingly's testimony and concluded that his analysis "provide[d] strong evidence" of partisan gerrymandering. *Rucho*, 279 F. Supp. 3d at 644. The court found that his simulations "not only evidence the General Assembly's discriminatory intent, but also provide evidence of the 2016 Plan's discriminatory effects." *Id.* at 666.

148. For this case, Dr. Mattingly generated a collection, or "ensemble," of nonpartisan, alternative redistricting maps using the Markov chain Monte Carlo computer algorithm, which is a well-established algorithm which dates back at least to the Manhattan Project. Tr. 1089:11-24; Tr. 1090:19-22. Dr. Mattingly generated approximately 1.1×10^{108} statewide maps in the House (of which 6.6×10^{86} were unique), and approximately 3.7×10^{93} statewide maps in the Senate (of which 5.3×10^{30} were unique). Tr. 1090:1-14; PX359 at 4. The number of maps that Dr. Mattingly generated is greater than the number of atoms in the known universe. Tr. 1090:12-14.

149. To generate the maps, Dr. Mattingly used all of the nonpartisan redistricting criteria identified by the General Assembly in its Adopted Criteria. The Markov chain Monte Carlo algorithm that Dr. Mattingly employed ensured that the collection of maps was a random and representative sample from the distribution of nonpartisan maps that adhere to North Carolina's political geography and nonpartisan redistricting criteria. Tr. 1094:5-1095:3. All of Dr. Mattingly's simulated maps followed North Carolina's Whole County Provision and split no

counties that were kept whole under the enacted plans; he ensured that population deviations were within the 5% threshold; he required contiguity; and he tuned his algorithm to ensure that the nonpartisan qualities of the simulated maps were similar to the nonpartisan qualities of the enacted map with respect to compactness and the number of counties, municipalities, and precincts split. Tr. 1091:3-1093:1; PX359 at 3-4. Dr. Mattingly did not try to optimize or maximize any particular criterion such as compactness; instead, he took a random, representative sample of the distribution of all maps that are comparable to the enacted maps in terms of compactness and municipal splits. Tr. 1091:3-23.

150. The Court finds that Dr. Mattingly's simulated maps provide a reliable and statistically accurate baseline against which to compare the 2017 Plans. Tr. 1089:11-24. Dr. Mattingly's collection of nonpartisan maps tracked all the nonpartisan criteria adopted by the Committees. By comparing Dr. Mattingly's simulated plans to the enacted plans, the Court can reliably assess whether the characteristics and partisan outcomes under the enacted plans could plausibly have resulted from a nonpartisan process or be explained by North Carolina's political geography. The Court can also reliably assess whether the enacted plans reflect extreme partisan gerrymanders. The partisan bias that Dr. Mattingly identified by comparing the enacted plans to his nonpartisan ensemble of plans could not be explained by political geography or natural packing. Tr. 1095:9-1096:8. Moreover, Dr. Mattingly's analysis did not rest on any assumption about proportional representation. Tr. 1132:6-1133:5; Tr. 1103:24-1104:5.

151. After creating a representative sample of hundreds of trillions of nonpartisan maps, Dr. Mattingly used votes from 17 prior North Carolina statewide elections to compare the partisan performance and characteristics of the 2017 Plans to the simulated plans. Dr. Mattingly chose all major statewide elections from 2008-2016 that were available to him, and those 17

elections demonstrated a range of Democratic support and Republican support and a range of spatial structures and vote patterns. Tr. 1097:8-1098:8; PX487 at 5.

152. The elections that Dr. Mattingly considered and their statewide Democratic vote share are listed in the table below (PX778 at 7; Tr. 1097:8-1098:8):

17 Elections	Democratic Vote Share
AG08	61.06%
USS08	54.32%
CI08	53.57%
LG08	52.64%
CI12	51.81%
GV08	51.70%
AG16	50.20%
PR08	50.11%
GV16	50.04%
LG12	49.87%
USS14	49.16%
PR12	48.91%
PR16	48.02%
USS16	46.97%
LG16	46.58%
GV12	44.13%
USS10	43.98%

153. Dr. Mattingly concluded that the 2017 Plans displayed a "systematic, persistent bias toward the Republican Party, both on the statewide level and on the county cluster level." Tr. 1087:22-25. He concluded that the enacted plans were "extreme partisan outlier[s]" when compared to maps that respect the political geography of North Carolina and are similar to the enacted plans in terms of the nonpartisan Adopted Criteria such as compactness and splitting

municipalities. Tr. 1088:1-7. He concluded that the "extreme partisan bias" was durable and persisted across a broad range of possible voting patterns and election results. Tr. 1088:1-7. He concluded that the gerrymander was particularly effective at preventing Democrats from breaking the Republican supermajority in both chambers when they would expect to do so under a nonpartisan plan, and from breaking the Republican majority in both chambers when they would expect to do so under a nonpartisan plan. Tr. 1088:8-11. And Dr. Mattingly concluded that the probability that the General Assembly would have enacted the 2017 Plans without intentionally searching for such a biased plan was "astronomically small." Tr. 1088:12-14, Tr. 1158:3-8. The Court credits those conclusions.

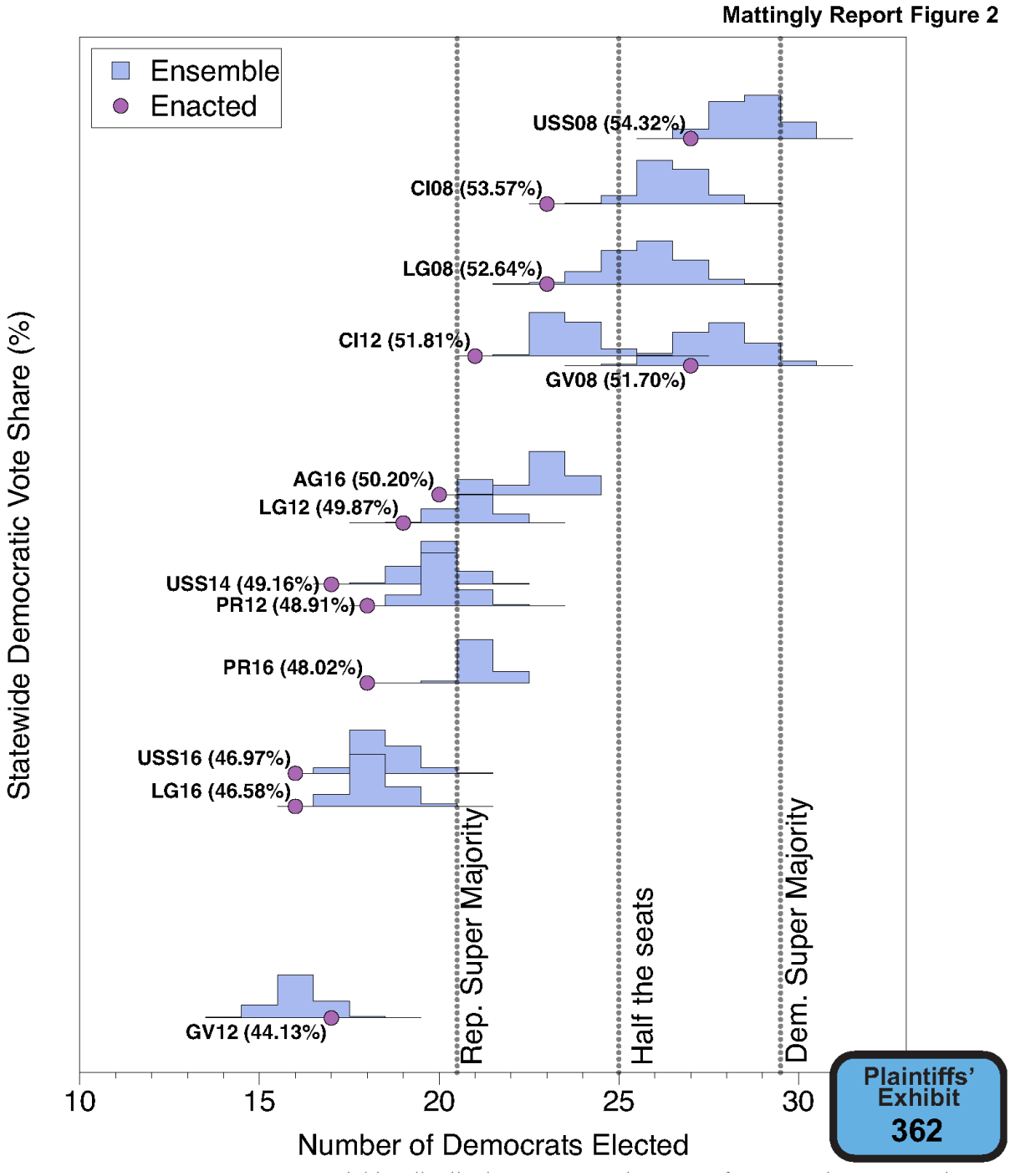
154. With respect to the Senate, Dr. Mattingly concluded that the enacted Senate plan shows a systematic bias toward the Republican Party. Tr. 1110:22-1111:3. In 15 of the 17 elections that he considered, the enacted Senate plan produces an atypical bias toward the Republican Party with respect to the number of expected Democrat and Republican seats using the results of these prior statewide elections. Tr. 1116:2-12. The probability of seeing such a consistent pro-Republican bias across so many elections was 0.005%, Tr. 1116:18-21; PX487 at 23, meaning that the chance the General Assembly would have picked such a partisan map if it were not looking for it is five in a million, Tr. 1116:22-1117:2.

155. Dr. Mattingly concluded that the enacted Senate plan is an extreme outlier not just with respect to how consistently it favors Republicans, but with respect to the *amount* by which it favors Republicans. PX363. The gerrymandered map caused Democrats to lose between 2 to 3 seats in the Senate in 13 of the 17 elections that Dr. Mattingly analyzed. PX363 (Mattingly Report Figure 3). The Court concludes that 2 to 3 seats is significant. Tr. 1106:12-15.

156. Dr. Mattingly concluded that the 2017 Senate Plan's extreme partisan bias was responsible for creating firewalls protecting the Republican supermajority and majority in the Senate. He plotted the results of the statewide elections using the enacted Senate plan and his nonpartisan simulations (PX362). Tr. 1106:17-1110:4. He ordered the elections vertically from bottom (most Republican vote share) to top (most Democratic vote share), and then plotted the number of seats that Democrats would expect to receive under the nonpartisan plans using blue histograms. Tr. 1106:17-1110:4. Using nonpartisan maps, the Democratic seat count would be expected to fall in the tallest part of the blue histogram. Tr. 1108:7-24. Dr. Mattingly used purple dots to report how many seats Democrats would win in the Senate using the results of each statewide election under the enacted Senate plan. Tr. 1009:3-10. Dr. Mattingly then used three vertical dotted lines to represent the point at which Democrats would break the Republican supermajority, the Republican majority, or win a supermajority themselves. Tr. 1111:5-24.[2] If the enacted plan is a pro-Republican outlier, the purple dot is to the left of the blue histogram (meaning the enacted plan elects fewer Democratic seats). If a purple dot is to the left of the Republican supermajority or majority line, and the bulk of the blue histogram is to the right, that is an election in which the enacted plan protects the Republican supermajority or majority where Democrats would break the firewalls in a nonpartisan plan. Tr. 1111:5-1112:24.

157. Plaintiffs' Exhibit 362 is reproduced below:

[2] Dr. Mattingly plotted only 13 of the 17 elections he considered in PX362 for visual clarity reasons, Tr. 1115:1-12, but he provided all the data for all 17 elections in Figure 3 (PX363) and Table 3 of his report (PX417).



158. Dr. Mattingly's analysis demonstrated that the enacted Senate plan creates two "firewalls," protecting Republican supermajorities and majorities which Democrats would break under a nonpartisan plan. Dr. Mattingly testified that, in elections where Democrats win enough votes that they would typically be expected to break the Republican supermajority under

nonpartisan plans, the Republicans win the supermajority in the enacted plan. Tr. 1112:8-24. This is visually demonstrated by Plaintiffs' Exhibit 362, which shows that the Democratic seat count in the enacted plan consistently stays to the left of the supermajority line even as the Democratic vote share rises and the nonpartisan plans break through the Republican supermajority line. PX362. In many cases the enacted plan is completely outside the distribution of nonpartisan plans. Tr. 1112:8-24.

159. The results of the Attorney General 2016 election illustrate Dr. Mattingly's conclusion that the enacted map is an extreme, pro-Republican partisan gerrymander. Tr. 1114:9-11. This was a relatively even election where Democrats won 50.20% of the statewide vote, and in 99.999% of the nonpartisan maps, the Democrats broke the Republican supermajority. But the enacted map preserves the Republican supermajority using the results of this election. Tr. 1112:25-1114:11.

160. Overall, in five of the seventeen elections that Dr. Mattingly considered, the Democrats would have almost certainly broken the Republican supermajority in the nonpartisan plans but failed to do so under the enacted plan (the 2012 Lieutenant Governor; 2016 President, 2008 President, 2016 Governor, and 2016 Attorney General elections). PX363; PX487 at 25 (Mattingly Rebuttal Report). In two others (the 2014 U.S. Senate and 2012 President elections), the Democrats would have had a chance of breaking the Republican supermajority in the nonpartisan plans, but never do in the enacted plan. PX362; PX417. In all seven of those elections where the Democrats would be expected to break the supermajority under nonpartisan plans, the enacted plan is an "extreme outlier." *See* PX363 (fifth column).

161. In elections where the Democrats won so many votes that the enacted Senate plan's Republican supermajority firewall breaks, Dr. Mattingly showed that the enacted Senate

plan creates a second firewall preventing the Democrats from breaking the Republican majority. Tr. 1114:14-25. Using the results of the 2008 Commissioner of Insurance and 2008 Lieutenant Governor elections—both elections in which the Democrats won over 52.5% of the statewide vote—the enacted plan protects a Republican majority even where the overwhelming majority of nonpartisan plans would break its majority. PX362; Tr. 1114:14-25.

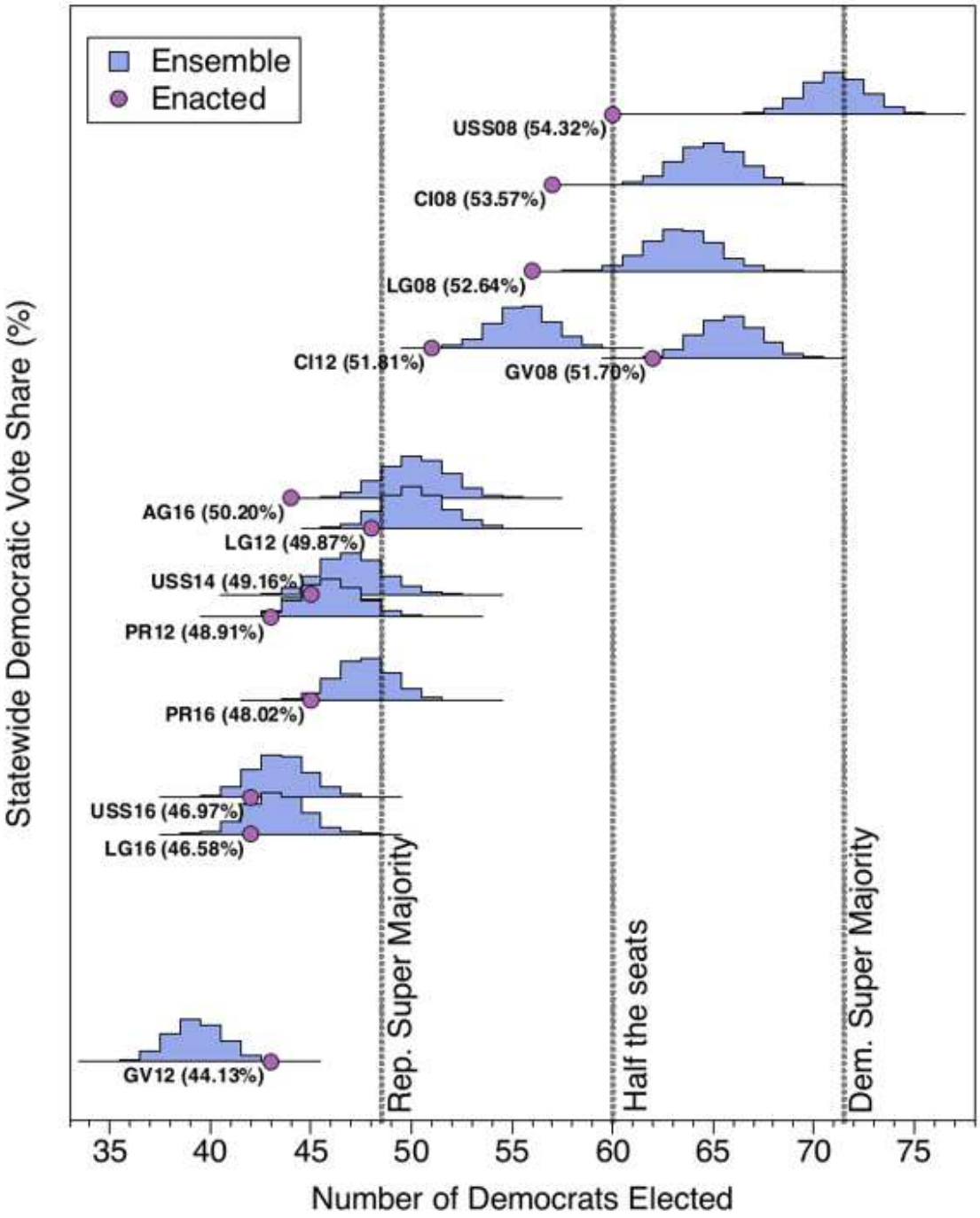
162. Dr. Mattingly found similar results for the House. Tr. 1087:22-25. Once again, in 15 of the 17 elections that he considered, the enacted House Plan produced an atypical bias toward the Republican Party with respect to the number of Democrat and Republican seats. Tr. 1121:23-1122:5. The probability of seeing such a consistent pro-Republican bias across so many elections was 1.4%, Tr. 1122:6-13; PX359 at 11 (Mattingly Report), making it extremely unlikely that the General Assembly would have picked such a partisan map if it were not looking for it, Tr. 1122:14-17.

163. Dr. Mattingly concluded that the enacted House plan is an extreme outlier not just with respect to how consistently it favors the Republicans, but with respect to the *amount* by which it favors the Republicans. PX359 at 11 ("We never see any plans that favor the Republican Party to the same extent" in terms of seats); PX366 (Mattingly Report Figure 6). The House plan becomes a greater and greater pro-Republican outlier under elections that have more Democratic votes, and becomes an "incredibly extreme outlier" in such elections. Tr. 1120:4-11; Tr. 1119:14-20. The gerrymandered map caused Democrats to lose between 2 and 11 seats in the House in 13 of the 17 elections that Dr. Mattingly analyzed. PX366. The Court concludes that this seat deviation is significant.

164. Dr. Mattingly concluded that the enacted House plan's extreme partisan bias is responsible for creating firewalls protecting the Republican supermajority and majority in the

House. Tr. 1120:15-1121:18. As with the Senate, Dr. Mattingly plotted the results of various statewide elections using the enacted House plan and his nonpartisan simulations in Figure 5 of his report (PX365). Tr. 1106:17-1110:4.

165. Plaintiffs' Exhibit 365 is reproduced below:



166. As Dr. Mattingly testified, Plaintiff's Exhibit 365 vividly illustrates how the enacted House plan becomes a greater and greater pro-Republican outlier as the Democrats win more votes statewide, and how the enacted House plan creates firewalls protecting the Republican supermajority and majority which Democrats would break under a nonpartisan plan. Tr. 1120:4-1121:18. In the elections in the lower left of the figure where the Republicans have more statewide votes and have a supermajority even in the nonpartisan plans, the enacted plan is generally within the distribution of nonpartisan plans. PX365 (see, *e.g.*, the 2016 Lieutenant Governor and 2016 U.S. Senate elections). As Dr. Mattingly explained, that makes sense from the mapmaker's perspective, because the mapmaker would not design the map for environments where Republicans are assured a "commanding supermajority" no matter what. Tr. 1123:17-24.

167. Plaintiffs' Exhibit 365 shows that the enacted House map is built in precisely that manner. In elections where the Democrats begin to break the Republican supermajority in the nonpartisan plans, the enacted plan becomes an outlier and consistently protects the Republican supermajority. Tr. 1120:15-1121:8. Dr. Mattingly testified that the enacted map "has a firewall that retards the advance of the Democratic Party particularly when they're about to break through and break the Republican supermajority." Tr. 1121:6-8.

168. Overall, in four of the seventeen elections that Dr. Mattingly considered, the Democrats would have almost certainly broken the Republican supermajority in the nonpartisan plans but failed to do so under the enacted plan (2008 President, 2012 Lieutenant Governor, 2016 Attorney General, 2016 Governor). *See* PX366 (Mattingly Report Figure 6). By contrast, the enacted map never creates a Democratic supermajority in the House when one would not be expected under the nonpartisan ensemble. PX359 at 13-14.

169. In elections where the Democrats win so many votes that the enacted House plan's Republican supermajority firewall breaks, Dr. Mattingly showed that the enacted House plan creates a second firewall preventing the Democrats from breaking the Republican majority. Tr. 1119:14-20; Tr. 1121:9-18. Using the results of the 2008 U.S. Senate, 2008 Lieutenant Governor, or 2008 Commissioner of Insurance elections, where the Democrats virtually always have a majority in the collection of hundreds of trillions of nonpartisan plans and sometimes have a supermajority, the Democrats never win a majority under the enacted plan. Tr. 1121:11-18; PX365 (Mattingly Report Figure 5); PX359 at 13.

170. In a race like the 2008 U.S. Senate election—where the Democrats won 54.32% of the statewide vote—the enacted map is a particularly extreme pro-Republican outlier. Tr. 1121:11-18. Using that election, the Republicans win 11 more seats in the enacted House plan than they would expect to win under the nonpartisan collection of plans. PX366 (Mattingly Report Figure 6). In more than 40.1% of the plans in the nonpartisan collection, Democrats actually win a supermajority, but the Democrats do not even win a majority under the enacted plan. PX359 at 14; PX418 (Mattingly Report Table 4).

171. By contrast, there were no historical elections under which the *Republicans* would have been expected to receive a majority under the nonpartisan House plans, but would not receive a majority in the enacted House plan. PX359 at 13.

172. Dr. Mattingly also performed a uniform swing analysis that confirmed the enacted plan's persistent, durable, and extreme bias toward the Republican party. Tr. 1123:25-1131:5. Using six different historical elections ranging from very pro-Republican (e.g., 2012 Governor, where the Democrats won 44.13% of the statewide vote) to very pro-Democratic (e.g., 2008 U.S. Senate, where the Democrats won 54.32% of the statewide vote), Dr. Mattingly showed that the

House plan's gerrymandered protection of the Republican supermajority and majority was highly robust over many different electoral structures and statewide vote fractions. Tr. 1127:15-18; Tr. 1129:5-1131:5; PX488 (Mattingly Rebuttal Report Figure 1). All the elections end up looking "remarkably the same" as the Democratic vote share increases; in all of the elections, the gerrymander creates a firewall protecting the Republican supermajority and majority. Tr. 1129:11-1130:2; Tr. 1130:23-1131:5. Dr. Mattingly concluded on the basis of his uniform swing analysis that the House plan was "designed" to "consistently protect" the Republican supermajority and majority across all of the "very different" elections he studied, which contain many different "spatial vote patterns" and "historical voting patterns from the state of North Carolina." Tr. 1130:23-1131:5.

173. In particular, under the nonpartisan maps, the Republicans do not win a supermajority when the Democratic statewide vote share rises above 50 percent, but in the enacted plan, the Republicans do. Tr. 1130:7-19. And the uniform swing analysis shows that the enacted plan becomes an especially extreme outlier whenever the Democrats would win a majority of seats under the ensemble of nonpartisan plans. Tr. 1128:12-1129:4; Tr. 1130:3-6. Dr. Mattingly's uniform swing analysis shows that the gerrymander prevents Democrats from winning a majority of the seats in the House unless they have around 55% of the statewide vote. Tr. 1131:6-16. That is well more than the Democrats would need in a non-gerrymandered plan to win a majority of House seats. *See* PX488 (Mattingly Rebuttal Report Figure 1).

174. Plaintiffs' Exhibit 488 (Mattingly Rebuttal Report Figure 1) shows Dr. Mattingly's uniform swing analysis of the House plans:

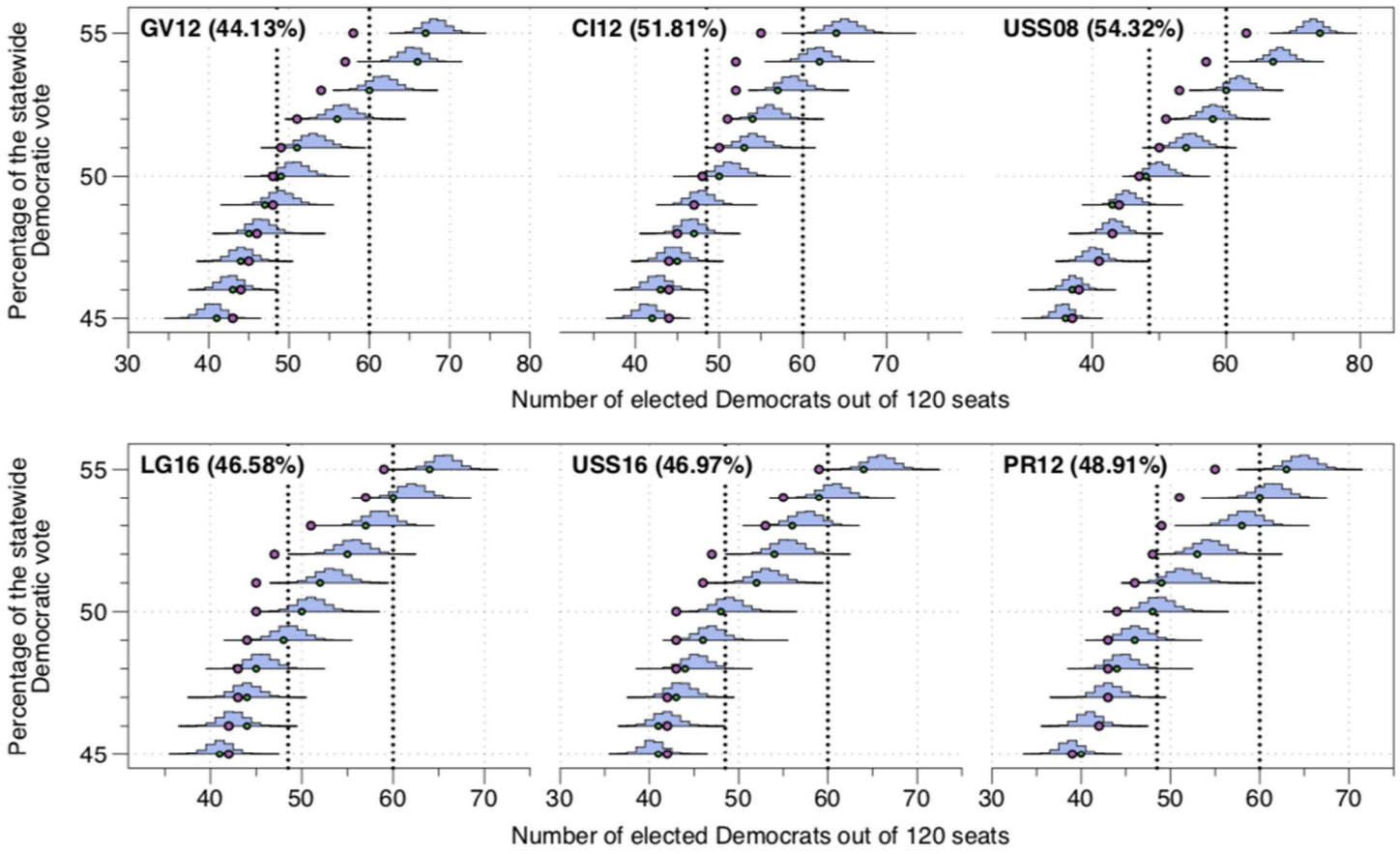


FIGURE 1. Purple dots show the enacted plan; the green dots show a plan in the ensemble. The dashed line at 60 seats shows the majority, and the dashed line at 48.5 seats shows the Republican supermajority threshold. The number of Democrats elected in the Senate which has a total of 120 seats.

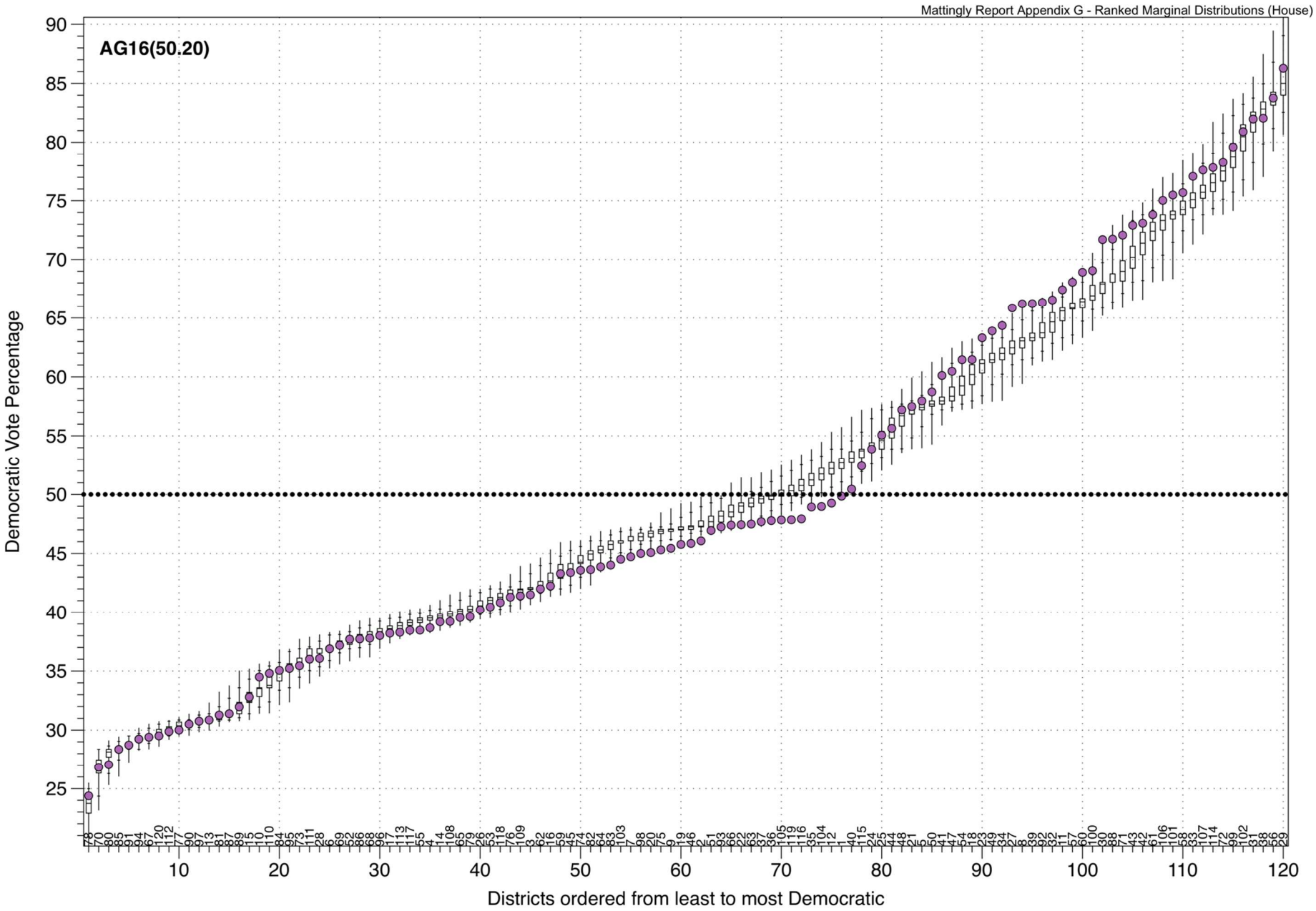
175. Dr. Mattingly preferred to compare the enacted plan to nonpartisan plans election-by-election, because taking an average seat shift across a set of elections can obscure the gerrymander's effect in close elections where control of the Senate or House is at issue. Tr. 1214:8-13, 1216:16-19, 1216:22-1217:3. Even considering the average, however, Dr. Mattingly found that the enacted plan is an extreme pro-Republican outlier. Tr. 1216:4-12. Comparing the enacted Senate plan to the median Senate plan in the ensemble for each of the 17 elections, the gerrymander causes Democrats to lose on average 1.94 seats in the Senate across all 17 elections. PX363. Not a single one of Dr. Mattingly's 3.7×10^{93} statewide maps in the Senate favors the Republican Party as much as the enacted plan under this metric. PX363 (bottom right image);

PX487 at 23 (Mattingly Rebuttal Report). Similarly, comparing the enacted House plan to the median House plan in the ensemble for each of the 17 elections, the gerrymander causes Democrats to lose on average 3.35 seats in the House across all 17 elections. Not a single one of Dr. Mattingly's 1.1×10^{108} statewide maps in the House favors the Republican Party as much as the enacted plan under this metric. PX366 (bottom right image); PX359 at 11 (Mattingly Report) (noting that the average seat difference in favor of the Republicans across all 17 elections is "greater than all plans in the ensemble").

176. Dr. Mattingly's separate analysis of the structure of the enacted House and Senate plans provided further confirmation that both plans are extreme partisan gerrymanders, even putting aside the effect on seat count in any particular election. He demonstrated that the General Assembly cracked and packed Democratic voters for partisan gain across the House and the Senate plans, with a particular focus on cracking Democratic voters out of the middle seats that determine supermajority and majority control of both Chambers.

177. Dr. Mattingly ordered the 120 districts in the House in his ensemble of nonpartisan plans from lowest to highest based on the Democratic vote fraction in each district. He did this for each of the 17 statewide elections he analyzed. Tr. 1159:4-15; PX483.

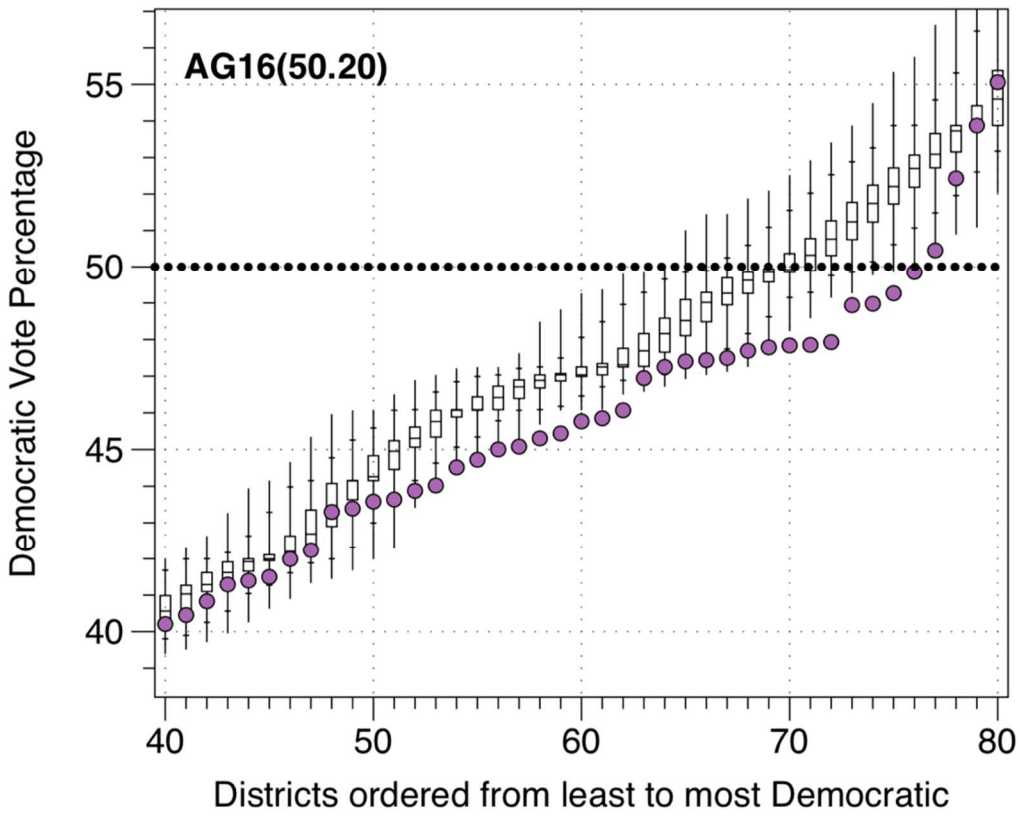
178. Below is an example of Dr. Mattingly's structural analysis of the 120 districts in the House using the votes from the 2016 Attorney General's Election. *See* PX483 at 13; PX778 at 33 (Mattingly PowerPoint presentation).


Mattingly Report Appendix G - Ranked Marginal Distributions (House)
AG16(50.20)
Democratic Vote Percentage
Districts ordered from least to most Democratic

179. The purple dots in the ranked ordered box plots from Plaintiffs' Exhibit 483 represent the Democratic vote fraction in the enacted plan for each district ordered from least to most Democratic; the boxes represent the Democratic vote fraction across Dr. Mattingly's ensemble of nonpartisan plans. Tr. 1159:4-1162:1. The key in the top lefthand corner shows the statewide election and the Democratic statewide vote fraction in that election.

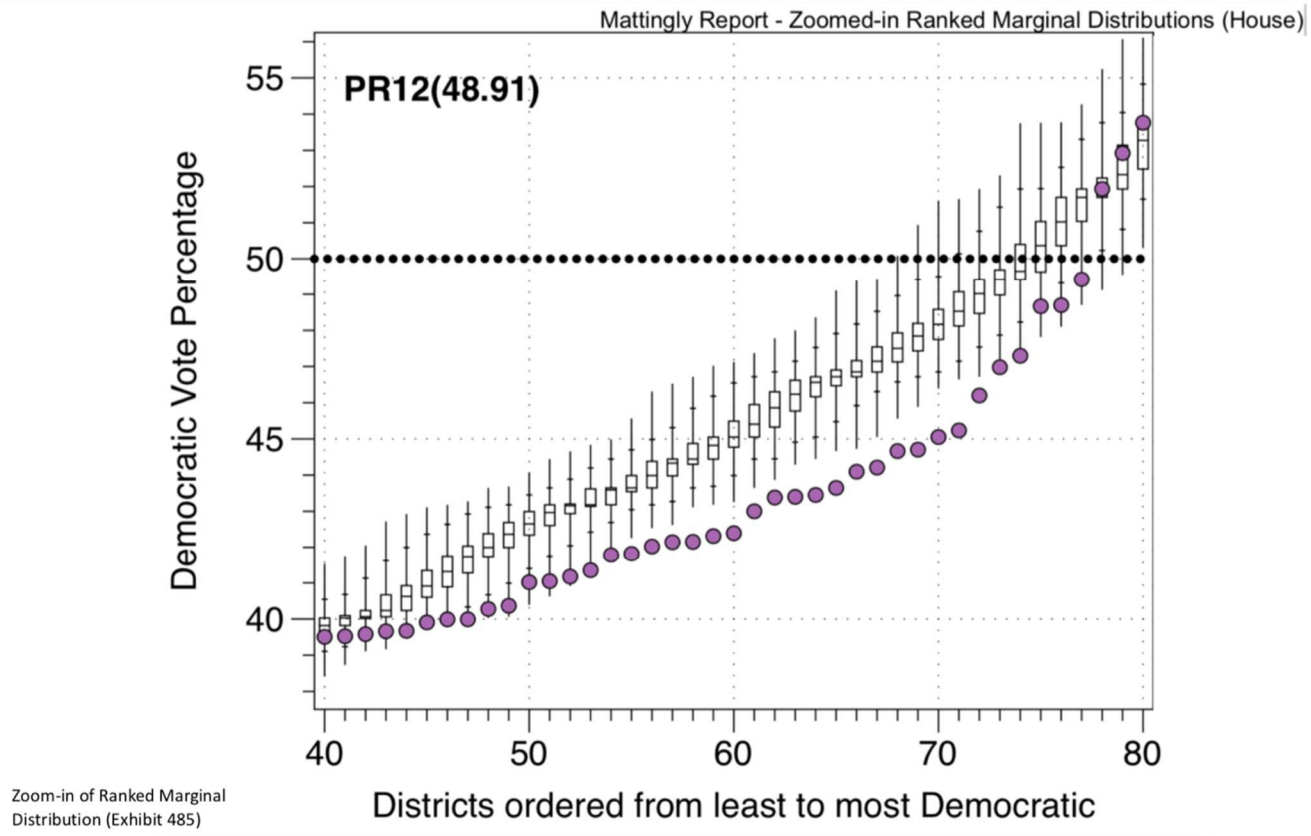
180. Dr. Mattingly explained that in the 40 seats in the middle—between the 40th most Democratic seat and the 80th most Democratic seat—the Democratic vote fraction in the enacted plan is far below the boxes representing the nonpartisan plans. Tr. 1162:7-25. Those "are the seats that determine who has a supermajority and who has the majority," and they are the "critical seats for the structure of the House." Tr. 1162:19-25. But in the most Democratic districts, beginning around the 99th least Democratic seat, the Democratic vote fraction is much higher in the enacted plan. Tr. 1162:7-12. In other words, across the map, Democrats have been cracked out of the districts that determine control of the House, and packed into districts that they would win anyway. Tr. 1162:7-25. In the 2016 Attorney General election, this structural gap between the Democratic vote share in the enacted plan and the nonpartisan plans in the critical districts means that the Republicans kept the supermajority even though they would have lost it under the ensemble of nonpartisan plans. Tr. 1163:3-25.

181. Zooming in between the 40th least Democratic district and the 80th least Democratic district in the House using the 2016 Attorney General election demonstrates the cracking of Democratic voters in the seats that matter more vividly (PX485 at 13; PX778 at 34):



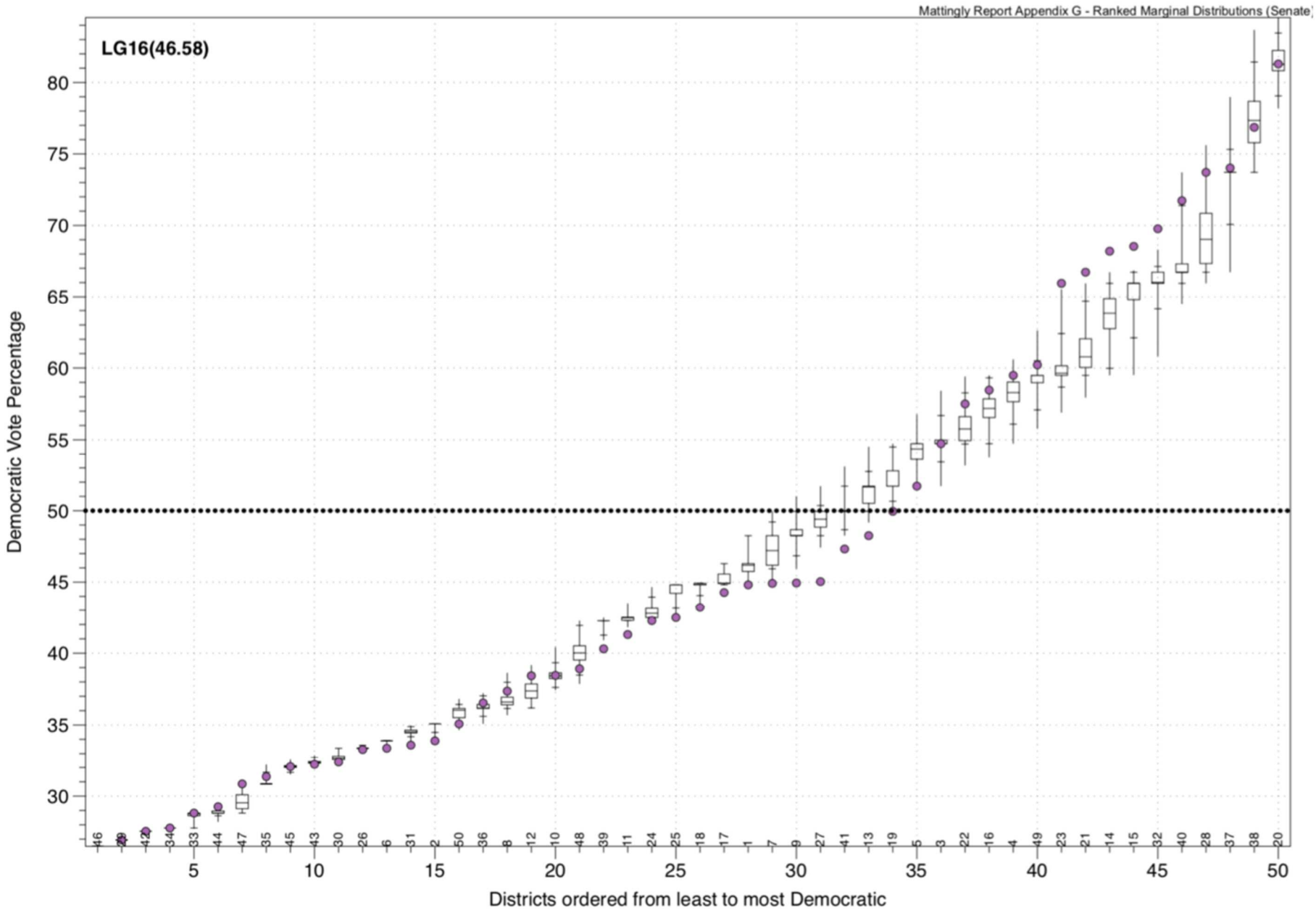
182. Dr. Mattingly testified that the large gap between the Democratic vote fraction in the enacted plan and in the ensemble at the 72-seat marker is the structural feature of the House map that is responsible for the firewall protecting the Republican supermajority. Tr. 1164:1-9.

183. Dr. Mattingly's ranked-ordered box plot using the results of the 2012 Presidential election revealed that same structural anomaly (PX485 at 11; PX778 at 35):



184. Using the results of the 2012 Presidential election, Dr. Mattingly testified that again the enacted map shows a "huge depletion of Democratic voters" in these districts that matter for supermajority and majority control. Tr. 1164:17-1165:7; PX485 at 11. Dr. Mattingly explained that, although the President 2012 election was a fairly Republican election where the Republicans would win a House majority even under the nonpartisan plans, the huge deviation in the Democratic vote fraction in the seats that matter most will have a "dramatic effect" in elections where the Democrats get more votes statewide. Tr. 1166:1-17.

185. Plaintiffs' Exhibit 484 contains Dr. Mattingly's ranked-ordered box plots for the Senate. Dr. Mattingly ordered all 50 Senate districts in his ensemble from lowest to highest based on the Democratic vote fraction in each district. He did this for each of the 17 statewide elections he analyzed. PX484. Below is an example of Dr. Mattingly's structural analysis of the 50 Senate districts using the 2016 Lieutenant Governor election. PX484 at 15; PX778 at 40.


Mattingly Report Appendix G - Ranked Marginal Distributions (Senate)
LG16(46.58)
Democratic Vote Percentage
80
75
70
65
60
55
50
45
40
35
30
46 29 42 34 33 44 47 35 45 43 30 26 6 31 2 50 36 8 12 10 48 39 11 24 25 18 17 1 7 9 27 41 13 19 5 3 22 16 4 49 23 21 14 15 32 40 28 37 38 20
5
10
15
20
25
30
35
40
45
50
Districts ordered from least to most Democratic

186. The ranked-order box plot using the 2016 Lieutenant Governor results demonstrates the same massive suppression of Democratic votes in the enacted plan in the districts that matter most—the 25th most Democratic district, which determines who wins the majority in the Senate, and the 29th least Democratic district, which the Democrats need to win to break the supermajority. Tr. 1175:12-24; PX484 at 15. Dr. Mattingly testified that the gap between the enacted plan and the ensemble around the 25th and 29th/30th district shows that the enacted plan is an "extreme outlier." Tr. 1176:5-9. In turn, in the most Democratic districts, the enacted plan has significantly more Democrats than in the nonpartisan ensemble, PX484 at 15—representing packing of Democrats into these districts. Tr. 1175:4-9.

187. As noted, Dr. Mattingly performed this same structural analysis of the House and Senate enacted plans using all 17 of his statewide elections. PX483, PX484. He testified that all 34 of his ranked-ordered box plots overwhelmingly show the same gaps between the enacted plan and the ensemble in the Democratic vote fraction in the seats that matter most in the Senate and the House, and overwhelmingly show the firewalls protecting the Republican supermajorities and majorities. Tr. 1176:10-23. Dr. Mattingly testified that it would "almost be impossible to build this structure" in the absence of intentional gerrymandering. Tr. 1176:24-1177:2. The Court credits this conclusion.

188. In his report, Dr. Mattingly conducted a statistical analysis to quantify the statewide cracking and packing of Democratic voters in the House and Senate plans that the ranked-ordered box plots from Plaintiffs' Exhibits 483 and 484 visually illustrate. That analysis confirms to a high degree of statistical significance that the structure of the enacted plans reflects extreme bias in favor of the Republicans that will persist in election after election.

189. Specifically, in the House, Dr. Mattingly analyzed the 48th to the 72nd least Democratic districts (again, the range that determines majority and supermajority control). PX359 at 13 (Mattingly Report). Dr. Mattingly found that in 15 of the 17 elections, there is less than a 0.0005% chance of finding a plan in the ensemble that had fewer Democrat votes across those districts than did the enacted plan. PX359 at 13. In the remaining 2 elections, there was less than a 0.02% and 0.3% chance of finding a plan in the ensemble with as much cracking of Democrats out of the middle districts as the enacted plan. PX359 at 13.

190. Dr. Mattingly's statewide quantification of the Senate showed the same extreme cracking of Democrats out of the districts that determine majority and supermajority control. For the Senate, Dr. Mattingly considered the 20th to 30th least Democratic districts. PX359 at 9. He found that in 14 of the 17 statewide elections, there is less than a 0.0005% chance of finding an ensemble plan with fewer Democrat votes across those districts than the enacted plan. *Id.* In two other elections, the enacted plan was still an extreme outlier, at the 0.1% level. *Id.*

191. Dr. Mattingly also created video animations of his uniform swing analysis using six different elections in both the House and Senate. PX772 (video animations). In the videos, the blue histograms represent the distribution of seats using Dr. Mattingly's nonpartisan plans; the "enacted" marker represents the enacted plan, and the three vertical lines represent the Republican supermajority, Republican majority, and Democratic supermajority lines. PX772. Dr. Mattingly played two of the videos for the Court, representing uniform swing analysis in the House using the results of the 2012 Presidential election and 2016 Lieutenant Governor election. Tr. 1168:4-8, Tr. 1169:17-1172:14; PX778 at 37, 38 (PowerPoint slides); PX772 (video animations). The 2012 President video showed that the enacted plan starting out looking fairly typical of the ensemble of nonpartisan plans; that is the video starts with a 45% Democratic vote

share where Republicans retain the supermajority under the nonpartisan plans as well. Tr. 1169:17-25. As the Democratic vote fraction increases, the blue histograms representing the nonpartisan plans shifts to the right and the number of seats that Democrats win increase. Tr. 1170:1-9. But the enacted plan begins to lag "dramatically" behind the nonpartisan plans. Tr. 1170:6-13. In particular, at the Republican supermajority and majority lines, the enacted plan "sticks" on the Republican side of the line even as the blue histogram representing the nonpartisan plans move completely past those lines. Tr. 1171:8-21. The gerrymander is sometimes so effective that it retains a Republican supermajority in the enacted plan even where the Democrats win a majority in the nonpartisan plans. Tr. 1172:6-10.

192. Dr. Mattingly's video animation of a uniform swing analysis of the 2016 Lieutenant Governor election showed the same thing. Tr. 1173:24-1174:20. The remaining videos are in evidence (PX772) and show the same.

193. The Court finds that these video animations provided powerful evidence confirming Dr. Mattingly's conclusions that the enacted House and Senate maps exhibit extreme partisan bias and create gerrymandered firewalls protecting the Republican supermajority and majority. The Court finds that Dr. Mattingly's uniform swing videos are also powerful evidence that the gerrymanders cause the enacted House and Senate maps to be largely nonresponsive to the actual votes cast in North Carolina's elections. Moreover, as Dr. Mattingly explained, the ranked-order box plots that he created using all 17 statewide elections showing the systematic suppression of Democratic vote fractions in the districts that matter most for the House and Senate demonstrate—without any need to conduct uniform swing analysis—that the enacted plan will be nonresponsive to the votes actually cast in North Carolina elections. Tr. 1174:25-1176:9.

194. Dr. Mattingly's findings regarding the firewall to protect the Republican majorities in the General Assembly are remarkably similar to Dr. Chen's findings. Dr. Chen, like Dr. Mattingly, found that the gap between the number of Democratic districts under the enacted plans and under his simulated plans gets wider in electoral environments that are better for Democrats, and are at their widest around the point where Democrats would win a majority of seats in the House or Senate in Dr. Chen's simulated plans. The independent findings of Drs. Chen and Mattingly strengthen and reinforce the conclusion that Legislative Defendants drew the enacted House and Senate plans with the specific goal of making it extremely difficult, if not impossible, for Democrats to take control of either chamber of the General Assembly.

195. Dr. Mattingly's county-grouping analysis, discussed in greater detail below, also allowed him to draw statistically significant conclusions about the intent of the mapmaker in creating the statewide Senate and House plans. Tr. 1157:24-1158. In particular, he explained that the design of each county grouping in the House and Senate plans represented an independent choice by the mapmaker, because "how you redistrict one county cluster does not affect how you redistrict the next one since you can't cross county cluster lines." Tr. 1157:17-23. Dr. Mattingly found that numerous county groupings in the House and Senate were extreme pro-Republican partisan outliers at the 100% or 99% level. PX778 at 29-30. He testified that the probability that the extreme partisan bias in the enacted maps was unintentional was "astronomically small," because the chance of making so many independent choices "with such extreme bias" in one map was "astronomically small if you are not looking for it." Tr. 1158:3-8.

196. Dr. Mattingly conducted a secondary analysis in which he only considered plans that preserved incumbents "to the same extent, or better, than they are preserved" in the enacted plan in each grouping. PX359 at 81. Dr. Mattingly found that accounting for the effects of

incumbency did not change his conclusion that the enacted plans are extreme pro-Republican gerrymanders. Tr. 1093:21-1094:4. Defendants offered no contrary evidence or rebuttal of Dr. Mattingly's conclusion that the enacted plan's extreme bias could not be explained by a nonpartisan effort to avoid pairing incumbents.

197. Dr. Mattingly performed extensive robustness checks establishing that his results were insensitive to the choices he made and criteria he used to generate the distribution of nonpartisan plans. Among other things: Dr. Mattingly went through every district in every grouping he analyzed to confirm that the compactness and municipal splits in the ensemble tracked those qualities in the enacted plan. PX359 at 57-80 (Mattingly Report). He performed a secondary analysis considering only plans that were equal to or better than the enacted plan along the dimension of compactness and municipal splits and found that it did not affect his results. PX359 at 82; PX468-70, 472-473. He created different collections of nonpartisan maps using six different sets of weights for compactness and other nonpartisan criteria and confirmed that changing the weights did not change the results. PX487 at 11 (Mattingly Rebuttal Report). And when Defendants' experts raised various speculative critiques in their reports—asking whether changing one criteria or another would make a difference—Dr. Mattingly performed a follow-up analysis in his rebuttal report confirming that it did not. PX487 at 6-11.

198. The Court finds that none of the Legislative Defendants' objections to Dr. Mattingly's analysis calls into question its persuasive force. The fact that, in a few individual elections, the enacted plan is not an extreme outlier relative to the ensemble of plans in terms of *seat count* alone does not undermine Dr. Mattingly's conclusion that the enacted plans are extreme partisan gerrymanders designed to protect Republican supermajorities and majorities. Tr. 1117:9-11 (Senate); Tr. 1122:18-1123:24 (House). First, Dr. Mattingly explained that the

underlying structure of the gerrymander in the enacted plans reflected a trade-off. To crack Democrats out of districts where it matters, the mapmakers had to pack Democrats into other districts. Tr. 1123:5-24. Under certain circumstances—*i.e.*, in Republican wave elections—the packing of Democratic voters in the enacted plan causes Republicans to lose districts that they would have won in nonpartisan plans that did not pack Democratic voters into these districts. But such an electoral environment is one in which Republicans would already win a commanding supermajority no matter what. Tr. 1123:5-24. As Dr. Mattingly explained, someone gerrymandering a map would happily hold the supermajority or the majority in elections where their control is at risk, even if the cost is a few less seats in elections where Republicans will always have a commanding supermajority anyway. Tr. 1123:5-24.

199. The 2012 Governor election—a highly Republican election where the Republicans win a supermajority in Dr. Mattingly's nonpartisan plans—provides an example. When Dr. Mattingly conducted a uniform swing analysis using the 2012 Governor election, the enacted map became an "extreme outlier in favor of the Republican Party" as the statewide vote swings to the Democrats and the Democrats approached the point where they would break the Republican supermajority and majority under his nonpartisan plans. Tr. 1126:7-1127:9; PX488. Although one might initially look at the 2012 Governor election and think it is not a gerrymander for the Republicans, Dr. Mattingly testified that in fact "it is." Tr. 1127:19-1128:11.

200. During Dr. Mattingly's cross examination, Legislative Defendants suggested that he should have included some other purportedly nonpartisan criteria in his simulated plans beyond the ones listed in the adopted criteria. The Court rejects any such suggestion. The Court rejects as speculative and unfounded Legislative Defendants' suggestions that secret and undisclosed nonpartisan agreements between "representatives of different political parties" might

explain the partisan bias that Dr. Mattingly identified. *E.g.*, Tr. 1204:11-14. The Court also rejects the suggestion that Dr. Mattingly should have accounted for "communities of interest" in some unspecified way other than by avoiding splitting counties, cities, and towns. *See, e.g.*, Tr. 1192:19-1193:4. Legislative Defendants expressly declined to include "communities of interest" as a criterion for the 2017 Plans. Tr. 1223:8-1224:1; *see* PX603 at 67 (Rep. Lewis stating that "communities of interest" is not a "criteria that we have proposed" because the Committee "couldn't find a concise definition"); *id.* at 73 (Rep. Lewis stating that he opposed listing "communities of interest" as a criteria because "municipalities are defined and understood" but the Committee couldn't "agree[]" on what a community of interest was beyond that); *id.* at 77 (Rep. Lewis again rejecting the use of "communities of interest"); *id.* at 106 (Rep. Lewis stating that "I don't believe [communities of interest] belongs in this criteria").

201. The Court also concludes that Legislative Defendants are barred based on their own assertions in this case from arguing that any criteria other than the Adopted Criteria were used to draw the 2017 Plans or could otherwise explain their partisan characteristics. When asked by interrogatory to "identify and describe all criteria that were considered or used in drawing or revising districting boundaries for the 2017 Plans," Legislative Defendants made a binding concession that the only "criteria used to draw the 2017 plans is the criteria adopted by the Redistricting Committees." PX579 at 13. Legislative Defendants cannot now critique Plaintiffs' experts for failing to include other criteria not in the Adopted Criteria and cannot claim that other considerations purportedly explain the contours of the 2017 Plans.

c. Dr. Pegden

202. Wesley Pegden, Ph.D., is Associate Professor in the Department of Mathematical Sciences at Carnegie Mellon University, and testified as an expert in probability. Tr. 1294:19-21; 1302:6-12; PX509. Dr. Pegden has published numerous papers on discrete mathematics and

probability in high-impact, peer-reviewed journals, and has been awarded multiple prestigious grants, fellowships, and awards. Tr. 1295:4-20; PX509. He has been appointed by the Governor of Pennsylvania to that state's Redistricting Reform Commission. Tr. 1301:24-1302:5.

203. Dr. Pegden's academic work on redistricting involves Markov chains. A Markov chain is "a random walk around some abstract space." Tr. 1295:23-25. For example, if a person walks around a city, and whenever she reaches an intersection, she chooses which way to turn at random, her position over time "would evolve as a Markov chain." Tr. 1296:6-7. In the context of redistricting, one can imagine taking a random walk "over the space of maps." Tr. 1294:24.

204. In 2017, before Dr. Pegden had ever served as an expert in redistricting litigation, he published a peer-reviewed article (PX510) entitled "Assessing Significance in a Markov Chain Without Mixing" in the Proceedings of the National Academy of Sciences—a top-ranked, science-wide journal. Tr. 1295:13-17, 1296:24-1297:1. This article provides a new way to demonstrate that a given object is an outlier compared to a set of possibilities. Tr. 1297:2-7.

205. Dr. Pegden explained that there are three ways to show that a given object is an outlier. The first, most basic way is simply to examine every single member of the entire set of possibilities, and then determine whether the object in question is different than all or most of those possibilities. The second form of outlier analysis is to take a random sample from the set of possibilities, and then compare the object in question to that sample. This type of analysis is the basis of most modern statistics, and is the form of outlier analysis used by Drs. Chen and Mattingly in generating nonpartisan simulated plans and comparing the enacted plans to those random nonpartisan plans. Tr. 1297:10-1298:11, 1309:10-18.

206. The third form of outlier analysis, developed by Dr. Pegden and his co-authors, is a kind of "sensitivity analysis" that begins with the object in question, uses a Markov chain to

make a series of small, random changes to the object, and then compares the objects generated by making the small changes to the original object. Tr. 1298:16-1299:4. Dr. Pegden's article illustrates this methodology using a redistricting plan. Tr. 1299:8-18. The article demonstrates that, by using an existing plan as a starting point and then making small random changes to the district boundaries, one can prove the extent to which the existing plan is an outlier compared to all possible maps meeting certain criteria. Dr. Pegden's article proves mathematical theorems showing that this approach can establish a redistricting plan's outlier status in a way that is "completely statistically rigorously grounded in mathematics." Tr. 1299:1-4.

207. In mid-2018, before this case was filed, Dr. Pegden began working on a new article entitled "Practical Tests for Significance in Markov Chains." Tr. 1300:24-1301:3; PX511. This article further develops this new, third form of outlier analysis with new, more powerful statistical tools. Tr. 1300:5-12. Though unpublished, this second article has been vetted by the mathematical community, including through detailed presentations Dr. Pegden gave at the Duke Statistical and Applied Mathematical Sciences Institute and the Harvard Center for Mathematical Sciences and Applications. Tr. 1300:13-23.

208. In this case, Dr. Pegden used this new, third form of outlier analysis to evaluate whether and to what extent the 2017 Plans were drawn with the intentional and extreme use of partisan considerations. Tr. 1302:24-1303:1. To do so, using a computer program, Dr. Pegden began with the enacted plans, made a sequence of small random changes to the maps while respecting certain nonpartisan constraints, and then evaluated the partisan characteristics of the resulting comparison maps. Tr. 1304:1-1306:21. As explained in further detail below, Dr. Pegden found that the enacted House and Senate plans are more favorable to Republicans than 99.999% of the comparison maps his algorithm generated by making small random changes to

the enacted plans. Tr. 1304:14-18, 1342:10-18, 1344:18-1345:3 PX515; PX519. And based on these results, Dr. Pegden's theorems prove that the enacted House and Senate maps are more carefully crafted to favor Republicans than at least 99.999% of *all possible maps of North Carolina* satisfying the nonpartisan constraints imposed in his algorithm. Tr. 1342:13-25, 1344:18-1345:7; PX515; PX519.

209. Dr. Pegden's analysis proceeded in several steps. He began with the enacted House or Senate map. His computer program then randomly selected a geographic unit on the boundary line between two districts and attempted to move or "swap" the unit from the district it is in into the neighboring district. Tr. 1309:19-24, 1311:1-5; PX508 at 9 (Pegden Report).

210. Dr. Pegden's method uses two different geographic units, VTDs and geounits. Tr. 1309:25-1310:2; PX508 at 9 (Pegden Report). His method uses VTDs when analyzing enacted maps that split few or no VTDs. Such maps include the enacted Senate map and the Senate county groupings Dr. Pegden analyzed. Tr. 1310:3-6; PX508 at 9 (Pegden Report). When analyzing enacted maps that split many VTDs—including the enacted House map and certain House county groupings Dr. Pegden analyzed—Dr. Pegden's method uses a sub-VTD geographic unit known as a "geounit." Tr. 1310:3-11; PX508 at 9 (Pegden Report). Created by a computer program, geounits are compact collections of census blocks that lie entirely within one VTD and one district, containing roughly 500-1000 people. There are roughly six or seven geounits per VTD. Tr. 1310:12-25; PX508 at 9 (Pegden Report).

211. When attempting to swap a randomly selected VTD or geounit from one district to another, Dr. Pegden allowed the swap to occur only if certain constraints were satisfied. Tr.1311:1-8; PX508 at 7-8 (Pegden Report). These constraints were based on the 2017 Adopted Criteria, and were designed to ensure that the comparison maps generated by Dr. Pegden's

algorithm are "good, reasonable comparisons to the enacted map." Tr. 1311:9-12, 1317:25-1318:25. The constraints that Dr. Pegden imposed included contiguity, population deviation, compact districts, county preservation, municipality preservation, precinct preservation, and incumbency protection. Tr. 1311:13-1317:10; PX508 at 7-8 (Pegden Report). Dr. Pegden also froze boundary lines redrawn by the Special Master in 2017. Tr. 1319:1-22.

212. Dr. Pegden applied these constraints in a conservative way, so as to "accept choices the mapmaker made." Tr. 1312:19-22. For example, with respect to population deviation, while the 2017 enacted criteria allows districts to vary between plus-or-minus 5% from the ideal district population, the actual enacted House map does not use all of that range, and instead varies between plus 5% to minus 4.97% from ideal. Dr. Pegden accepted that choice by the mapmaker and required all of his comparison maps to fall within that slightly narrower range. Tr. 1312:1-22; PX508 at 8 (Pegden Report). Similarly, with respect to county preservation, Dr. Pegden's algorithm not only respected North Carolina's county groupings, capped the number of county traversals, and preserved the same number of counties as in the enacted map—his algorithm also preserved whole the *very same* counties preserved whole in the enacted plan. Tr. 1314:9-1315:3. Likewise, with respect to municipality preservation, Dr. Pegden's algorithm not only preserved the same number of municipalities preserved in the enacted map, but also preserved the *very same* municipalities, and preserved them within the *very same* districts as in the enacted plan. Tr. 1315:4-19.

213. Dr. Pegden's conservative application of these constraints "ties [his] comparisons very strongly to the enacted map itself." Tr. 1315:22-24. This makes it all the more remarkable that the enacted maps are such outliers in his analysis, even against this very similar comparison set. Tr. 1315:24-1316:2, 1331:6-10.

214. Dr. Pegden also constrained the compactness of his comparison maps. In his main analysis, Dr. Pegden required that the average compactness score for each comparison map not exceed the corresponding average for the enacted plan, with an error of up to 5%. Tr. 1312:23-1313:5; PX508 at 8 (Pegden Report). Dr. Pegden also ran robustness checks using several other compactness constraints—a 10% error, a 0% error, and a completely different measure based on total district perimeter—and found that altering the compactness constraint did not affect his results. Tr. 1313:6-1314:8; PX508 at 32-34 (Pegden Report).

215. For some county groupings, because of Dr. Pegden's conservative application of his constraints, it was impossible for his algorithm to find a swap that satisfied all of the constraints. Tr. 1319:25-1320:10. When this occurred, Dr. Pegden ran a modification of his algorithm allowing multiple swaps in one step. Tr. 1320:11-25; PX508 at 9-10 (Pegden Report).

216. For some county groupings, even with multi-move swaps, Dr. Pegden's algorithm still was unable to generate any comparison maps—or only a very small number—meeting all of his constraints. Where this occurred, Dr. Pegden was unable to draw any conclusions about the county groupings in question. Tr. 1321:1-16. Dr. Pegden credibly explained that this does not mean that the maps in those groupings were *not* drawn with the intentional use of partisanship. For example, partisan considerations could have predominated in choosing which municipalities to preserve whole in which districts, a choice Dr. Pegden's comparison maps took as given. Tr. 1321:17-25, 1349:11-1350:4; PX508 at 10-11 (Pegden Report).

217. Once Dr. Pegden's algorithm made a swap satisfying his constraints, his algorithm evaluated the partisan characteristics of the comparison map that resulted from the swap. Tr. 1322:1-6. For his main analysis, Dr. Pegden used data from the 2016 Attorney General race to analyze the whole House and Senate maps, the subset of House and Senate

districts redrawn in 2017, and any House or Senate county grouping last changed in 2017. Dr. Pegden then used data from the 2008 Commissioner of Insurance race to analyze the subset of House and Senate districts last changed in 2011, as well as any House or Senate county grouping last changed in 2011. Dr. Pegden used these particular elections because they were reasonably close, statewide, down-ballot elections that were available to the General Assembly at the relevant times. Tr. 1322:7-24. Dr. Pegden explained that the "point of [his] analysis is really to get at the intent of the legislature," to "understand the decisions they made with information available to them at the time." Tr. 1322:25-1323:3.

218. Dr. Pegden also re-ran his analysis using four additional elections—the 2016 Governor election, the 2014 U.S. Senate election, the 2012 Presidential election, and the 2012 Lieutenant Governor election. Tr. 1323:4-12; PX508 at 35-36 (Pegden report). Using these different historical elections did not alter Dr. Pegden's conclusions. Tr. 1323:13-15.

219. To evaluate the partisan characteristics of each comparison map, Dr. Pegden's algorithm calculates the number of seats Republican candidates would win, on average, if a random uniform swing were repeatedly applied to the historical voting data being used. This metric captures how a given comparison map would perform over a range of electoral environments centered around the base election being used (i.e., the 2016 Attorney General's election for Dr. Pegden's primary analysis). Tr. 1324:8-1326:20.

220. Dr. Pegden also re-ran his analysis using a different partisan metric, which measures the Republican vote share in the 61st-most Republican House district, or the 26th-most Republican Senate district. This metric captures, for a given comparison map, how comfortably Republicans would win the seat that would give them the majority in the relevant chamber of the

General Assembly. Put differently, this metric captures how large of a Democratic wave election the Republican House or Senate majority could withstand. Tr. 1326:21-1327:20.

221. In his rebuttal report, in response to certain criticisms by Legislative Defendants' experts, Dr. Pegden also re-ran his analysis yet again, this time using a third partisanship metric. In this analysis, Dr. Pegden's algorithm simply measured the number of seats Republicans would have won in an election precisely mirroring the 2016 Attorney General election, without any uniform swing or rank-ordering of districts by Republican vote share. Tr. 1327:21-1328:10.

222. Dr. Pegden's analysis is remarkably robust to the partisanship metric used. Using three different partisanship metrics did not alter Dr. Pegden's conclusions. Tr. 1327:11-15.

223. Dr. Pegden's algorithm repeats the foregoing steps billions or trillions of times in sequence. The algorithm begins with the enacted map, makes a small random change complying with certain constraints, and uses historical voting data to evaluate the partisan characteristics of the resulting map. The algorithm then repeats those steps, each time using the comparison map generated by the previous change as the starting point. By repeating this process many times, Dr. Pegden's algorithm generates a large number of comparison maps in sequence, each map differing from the previous map only by one small random change. Tr. 1328:22-1329:12.

224. Each sequence of billions or trillions of small changes in Dr. Pegden's analysis is one "run." His algorithm performs multiple runs for each map being analyzed, with each run beginning with the enacted plan as the starting point. Dr. Pegden ran his algorithm with a sufficient number of steps and runs in order to generate results that are strongly statistically significant but capable of being replicated within a reasonable time. Tr. 1329:3-22.

225. The comparison maps generated by Dr. Pegden's algorithm are not intended to provide a baseline for what neutral, nonpartisan maps of the North Carolina House or Senate

should look like. Instead, Dr. Pegden's comparison maps are intended to be *similar* to the enacted map in question with respect their relevant nonpartisan characteristics, in order to assess how carefully created the enacted plan is to maximize partisan advantage. Tr. 1308:4-12, 1309:10-18, 1329:23-1330:6, 1362:23-1363:6, 1369:25-1370:4.

226. Dr. Pegden performed two levels of analysis on the comparison maps generated by his algorithm. Dr. Pegden's first-level analysis does not "apply[] any fancy ma[th] at all." Tr. 1332:4-8. Rather, Dr. Pegden just "report[s] what happened" in each run when his algorithm made random swaps to the enacted plan's district boundaries. Tr. 1332:8-16. For the enacted House and Senate maps, Dr. Pegden reports that—in every run—the enacted map was more favorable to Republicans than 99.999% of the comparison maps generated by his algorithm making small random changes to the district boundaries. PX515; PX519.

227. Even without any "fancy math," Dr. Pegden's first-level analysis provides clear, intuitive evidence that the 2017 Plans were meticulously crafted for Republican partisan advantage. As Dr. Pegden explained, "it's almost like I can hear a voice of the mapmaker telling me, ['N]o, don't change those lines. They are exactly where I want them[!'] As soon as you start making these changes, this Republican advantage starts to disappear." Tr. 1333:9-13.

228. Dr. Pegden provided a stark illustration from his first-level analysis of how precisely the enacted plans are drawn to maximize partisan advantage. Dr. Pegden explained that, in his runs for the Wake-Franklin county grouping in the Senate, after "the first fraction of a second," his algorithm "never again" encountered a "single comparison map as advantageous to the Republican Party as the enacted plan itself." Tr. 1308:15-1309:7.

229. Dr. Pegden's second-level analysis provides mathematically precise calculations of how carefully crafted the 2017 Plans are—that is, how precisely the district boundaries align

with partisan voting patterns so as to advantage Republicans—when compared not just to the comparison maps generated in each run of his algorithm, but to *all possible maps of North Carolina* that satisfy his constraints. Tr. 1333:1-1335:20. In other words, Dr. Pegden is able to determine—to a mathematical certainty—the extent to which the enacted plan is an outlier relative to every single other possible House or Senate map of North Carolina that could exist meeting the contiguity, equal population, compactness, political subdivision, and Special Master constraints that his algorithm applies. For the enacted House and Senate maps, Dr. Pegden reports that the enacted map is more carefully crafted for Republican partisan advantage than at least 99.999% of *all possible maps of North Carolina* satisfying his constraints. PX515; PX519.

230. The results of Dr. Pegden's second-level analyses follow from his theorems, which have been vetted by mathematicians and are not subject to debate or difference of opinion. Tr.1337:9-18. But the results of Dr. Pegden's second-level analyses also are intuitive. In effect, Dr. Pegden's analysis shows that the 2017 Plans not only are quite advantageous to Republicans, but also are surrounded in the space of maps by a sea of other maps that are *less* advantageous to Republicans. It is simply not possible, even in principle, for a typical map of North Carolina (or any other state) to be favorable to Republicans and be surrounded by maps that are less favorable. The only explanation is that the mapdrawer intentionally crafted the district boundaries to maximize partisan advantage. Tr. 1337:9-1340:8.

231. For both the House and the Senate, Dr. Pegden performed three different analyses. First, using voting data from the 2016 Attorney General election, Dr. Pegden analyzed the entire House and Senate maps. Second, again using voting data from the 2016 Attorney General election, Dr. Pegden analyzed only the districts that were redrawn in 2017, while freezing the districts that were last changed in 2011. Third, using voting data from the 2008

Commissioner of Insurance election, Dr. Pegden analyzed only the districts that were last changed in 2011, while freezing the districts that were redrawn in 2017. Tr. 1340:14-1341:15.

232. Dr. Pegden's statewide analyses conclusively show that the pertinent districts drawn in 2011, the districts drawn in 2017, and the maps as a whole were all drawn with the intentional and extreme use of partisan considerations. The following demonstrative chart summarizes Dr. Pegden's statewide results:

Map Analyzed	First-level Analysis (% of algorithm maps less partisan than enacted map)	Second-level Analysis (% of all maps less carefully crafted than enacted map)
	House	
Whole state	99.99984%	99.9991%
2017 districts only	99.9982%	99.99%
2011 districts only	99.9999988%	99.999993%
	Senate	
Whole state	99.99999983%	99.999999%
2017 districts only	99.99999975%	99.9999985%
2011 districts only	99.9995%	99.997%

Sources: Plaintiffs' Exhibits 515-517, 519-521

PX904; *see also* PX515-517, 519-521; Tr. 1341:18-1346:16.

233. These striking results cannot be explained by North Carolina's political geography. Dr. Pegden's algorithm compares the enacted map to other maps of North Carolina, with the very same political geography. And Dr. Pegden's theorems do not depend on any aspect of North Carolina's political geography—the theorems are absolutely true and valid for any state with any political geography. Indeed, Dr. Pegden's theorems are absolutely true and valid not just for redistricting plans, but for any abstract space on which one could imagine taking a random walk using a Markov chain. Tr. 1333:14-24, 1401:9-1402:5.

234. The results of Dr. Pegden's statewide analyses also conclusively show that it is possible for a North Carolina mapdrawer to make intentional and extreme use of partisan considerations even within the Whole County Provision and the other constraints set forth in the 2017 Adopted Criteria. All of Dr. Pegden's comparison maps respect the Whole County Provision and the other constraints set forth in the 2017 Adopted Criteria. And in his algorithm, Dr. Pegden applied those constraints in an extremely conservative way that respects the choices made by the mapdrawer with respect to compactness and the divisions and preservation of particular counties and municipalities. Even within those tight constraints, there were many different maps for a mapdrawer to choose from, and the mapdrawer here intentionally chose maps that were more carefully crafted for Republican partisan advantage than at least 99.999% of all possible alternatives. Tr. 1402:15-1403:8; PX515; PX519.

235. The Court credits Dr. Pegden's testimony, analysis, and conclusions.

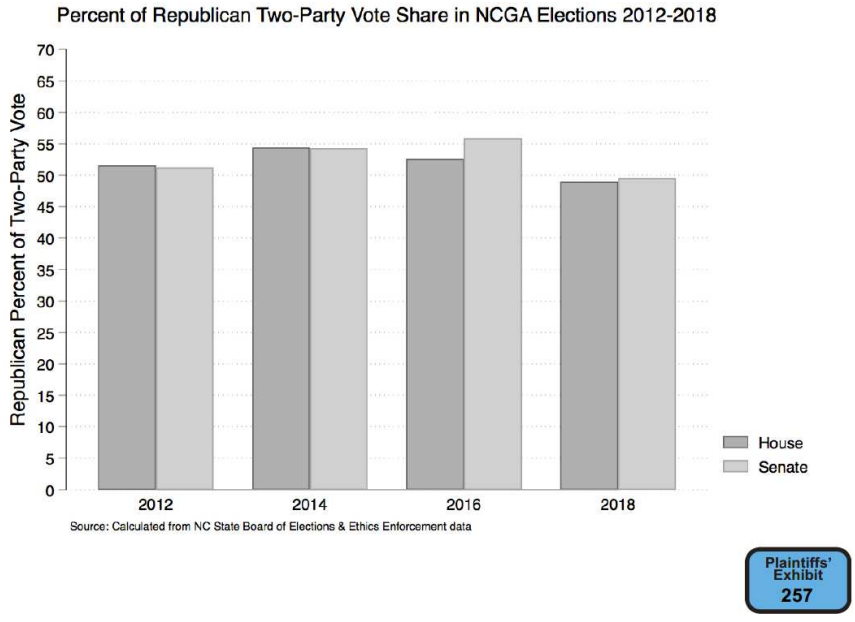
d. Dr. Cooper

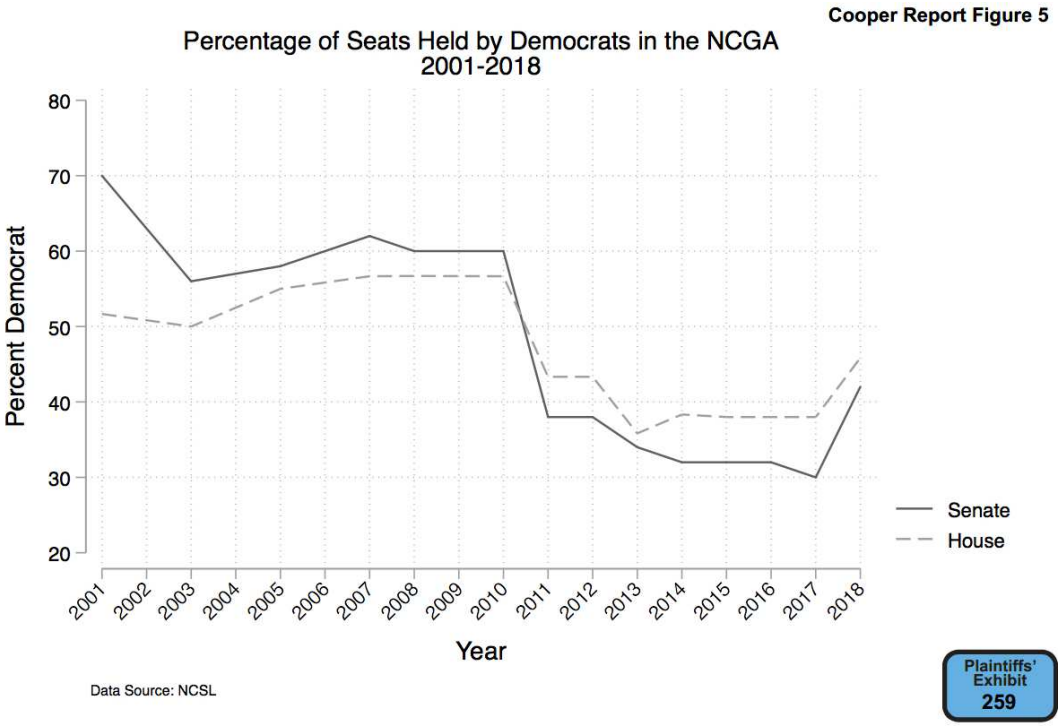
236. Christopher A. Cooper, Ph.D., has resided in North Carolina for 17 years and is the Robert Lee Madison Distinguished Professor and Department Head of Political Science and Public Affairs at Western Carolina University. Tr. 848:18-849:9. Dr. Cooper was accepted as an expert in political science with a specialty in the political geography and political history of North Carolina. Tr. 861:21-862:5.

237. Dr. Cooper testified that the North Carolina General Assembly, "in stark contrast" to other elected offices in North Carolina, has become increasingly "out of step" with the partisanship and policy preferences of the state's citizens. Tr. 862:17-24. The Court credits Dr. Cooper's analysis and finds that North Carolina's General Assembly is "out of step" with both the partisanship and policy ideology of North Carolina's citizens.

238. As Dr. Cooper explained, North Carolina is a "purple state" that, on the whole, is politically moderate. Tr. 862:21-22. In statewide elections that are not susceptible to the General Assembly's gerrymandering, Democratic candidates perform as well as Republican candidates. Tr. 859:14-18, 864:1-8, 865:5-18. Dr. Cooper's analysis demonstrated that North Carolina is a "two-party" state where Democrats can compete and succeed with respect to U.S. Presidential elections (Tr. 863:2-864:8; PX255; PX253 at 5-6 (Cooper Report)) and elections for North Carolina's Council of State (Tr. 864:21-865:18; PX256; PX253 at 6-7 (Cooper Report)).

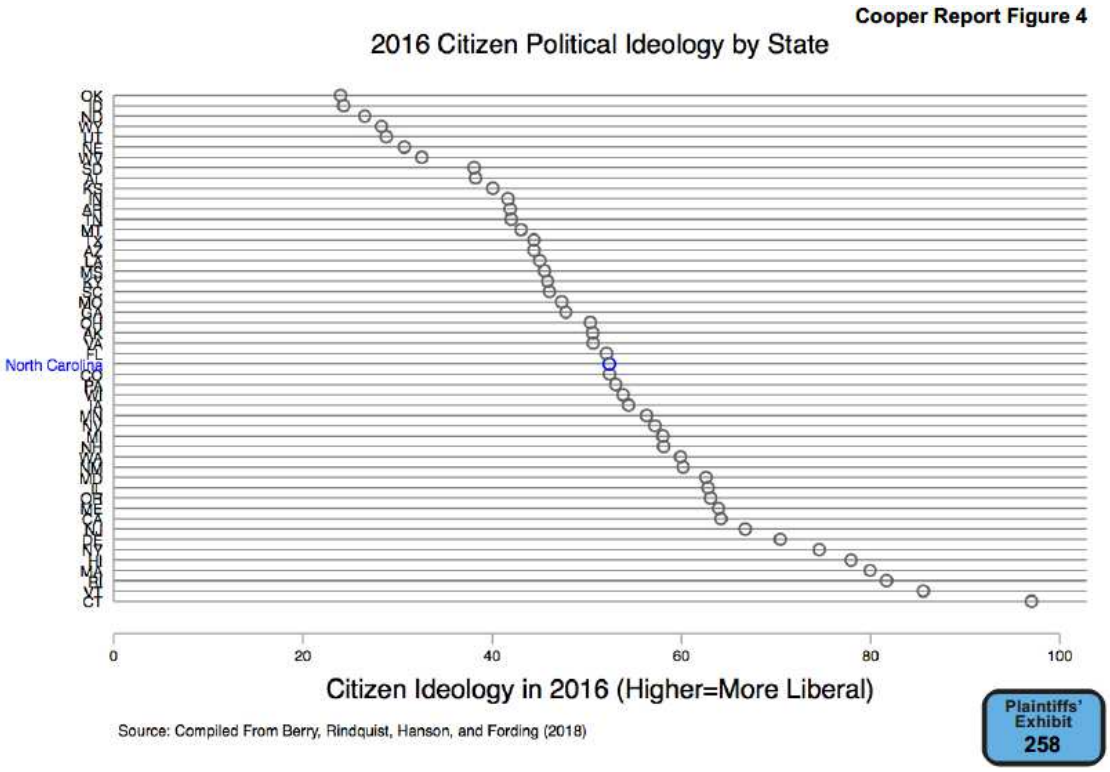
239. Dr. Cooper also analyzed the aggregate vote share of Democratic and Republican candidates in General Assembly elections since 2012, finding that Democrats received close to or over 50% of the vote in each election. Tr. 865:23-866:16; PX257. But over the same period, Republicans dominated the North Carolina General Assembly, winning supermajorities in both chambers from 2012-2016 and majorities in 2018. Tr. 866:24-867:868:12; PX259. Despite winning close to or more than 50% of the statewide vote in General Assembly elections since 2012, Democrats have "never approached" that percentage of seats, a sign of "gross disproportionality." Tr. 868:6-12; PX257; PX259; PX264; PX253 at 8, 11 (Cooper Report).





240. As Dr. Cooper testified, the partisan imbalance in the North Carolina General Assembly since 2012 is mirrored by the "large deviation" between the political ideology of General Assembly and the policy preferences of North Carolina's citizens. Tr. 876:2-4.

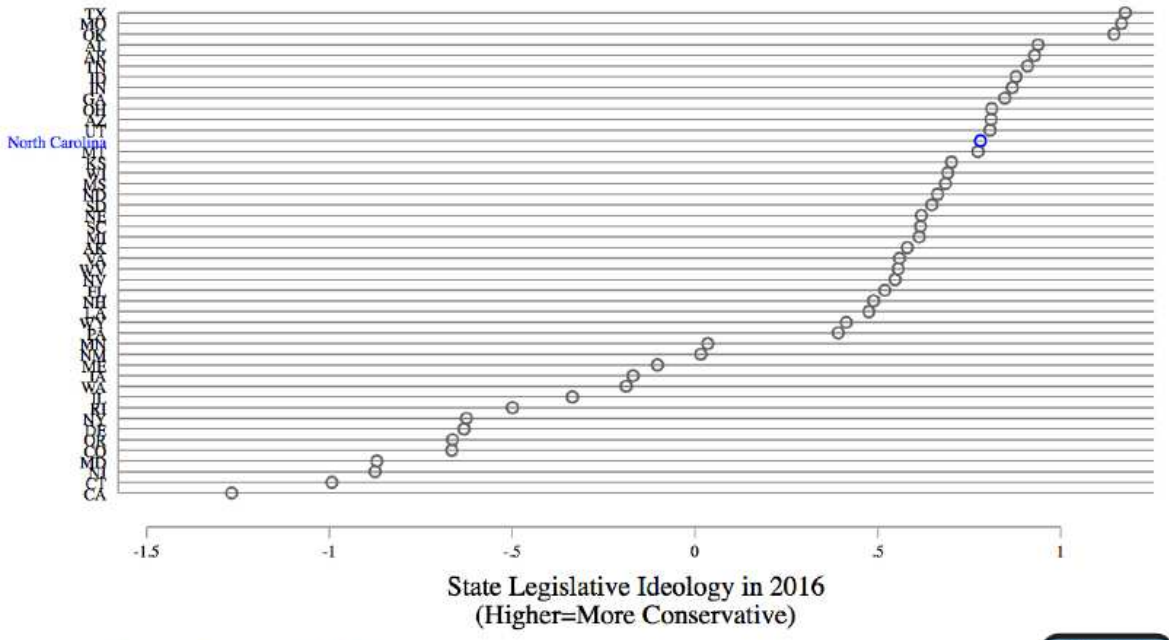
241. The political ideology of North Carolina's citizens, as measured on a liberal to conservative scale, falls squarely in the middle compared with those of other states, as assessed using a common measure of state-level public opinion developed by political scientists William Berry, Evan Ringquist, Russell Hanson, and Richard Fording. PX258; Tr. 872:23-874:6. While the citizenry of states like Oklahoma, Idaho, North Dakota, and Wyoming are the most conservative according to this measure, and the citizenry of states like Connecticut, Vermont, and Rhode Island are the most liberal, North Carolina ranks near other "swing states" and has a "fairly moderate" citizenry. Tr. 873:17-874:6.



242. Dr. Cooper observed that other measures of citizen ideology provide "almost the exact same answer" regarding the political moderation of North Carolina's citizenry. Tr. 873:7-10; PX253 at 9-10 (Cooper Report); PX329 at 43 (Cooper Rebuttal Report).

243. By contrast, the aggregate political ideology of legislators in the North Carolina General Assembly is among the most conservative in the nation. Tr. 875:17-876:4; PX261; PX253 at 13 (Cooper Report). While the "General Assembly ideologically resembles Utah and Montana," North Carolina's "citizenry, on average, resembles states like Florida and Virginia and Wisconsin." Tr. 876:9-11.

Cooper Report Figure 7

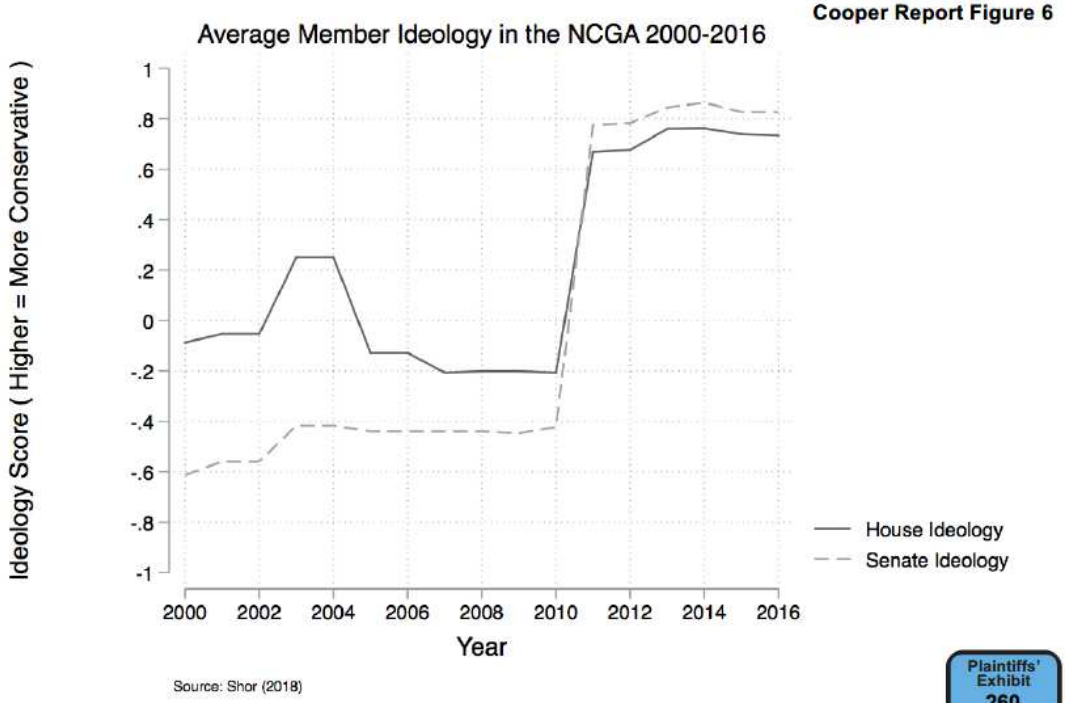


Note: Estimates are not available for HI, KY, MA, VT
Source: Compiled from Shor 2018

Plaintiffs' Exhibit 261

244. The political ideology of the General Assembly has become markedly more conservative over time, particularly since 2010. Tr. 874:24-875:7; PX260.

Cooper Report Figure 6



Source: Shor (2018)

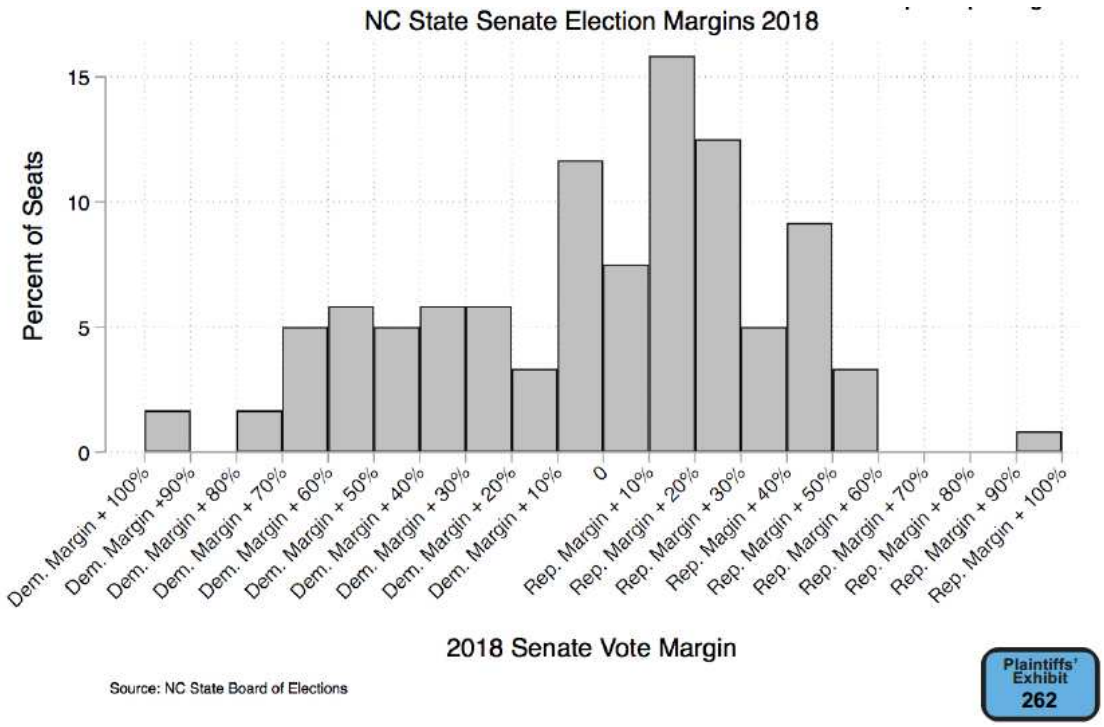
Plaintiffs' Exhibit 260

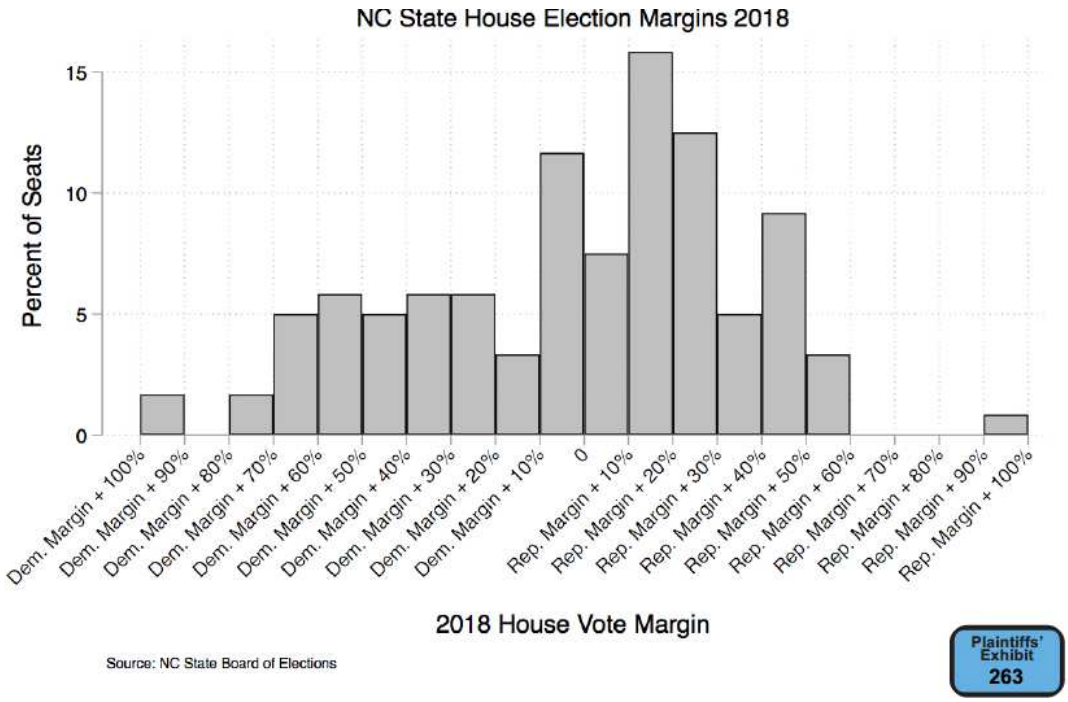
245. Dr. Cooper analyzed individual legislators' ideology as measured by the Civitas Institute, a "conservative-leaning think tank" in North Carolina. Tr. 872:4-7, 876:15-19. Dr. Cooper found that the "Civitas Action Scores" for 2018 suggested that Republican state legislators are clustered closer to the conservative extreme of the ideological spectrum, while Democratic state legislators are clustered closer to the ideological center. Tr: 876:15-22; PX269; PX270; PX253 at 23-24 (Cooper Report). This conservative shift in the General Assembly's political ideology tracks the shift in the partisan composition of the House and Senate over the same period. Tr. 874:24-875:7. As Dr. Cooper explained, "[t]he substantive ideology of our legislators shifted along with the partisanship of the General Assembly." Tr. 875:5-7.

246. The Court finds Dr. Cooper's analysis to be compelling evidence that the partisan composition of the General Assembly does not reflect the partisan and ideological composition of the State and its citizenry. While elections for statewide offices in North Carolina have been relatively balanced since 2010, Republicans have dominated elections for the General Assembly in this period. And while North Carolina's citizens are, on average, ideologically moderate, the General Assembly has become increasingly conservative in a way that does not represent the views of voters across the State. Dr. Cooper's analysis, when combined with the findings of Plaintiffs' other experts, is strong evidence that the partisan gerrymandering of the state House and state Senate plans significantly affects policy outcomes in the General Assembly. The General Assembly is less responsive to the policy views of Plaintiffs and other Democratic voters, and to the views of the North Carolina electorate as a whole.

247. Dr. Cooper also used the results of the 2018 elections to show how, under the enacted House and Senate plans, Democratic votes translate to seats far less efficiently than Republican votes. Consistent with the packing and cracking of Democratic voters, when

Democrats win seats in the House and Senate, they win by large margins, meaning that many votes tend to be "wasted." Republicans win by significantly narrower margins. Tr. 869:23-871:3; PX262; PX263; PX253 at 14-16 (Cooper Report).





248. The Court finds Dr. Cooper's analysis of the 2018 elections to be persuasive and consistent with Plaintiffs' experts findings regarding the packing and cracking of Democratic voters within individual county groupings, described below.

C. The 2017 Plans Were Designed Intentionally and Effectively To Maximize Republican Partisan Advantage Within Specific County Groupings

249. Each of Plaintiffs' four experts analyzed seven county groupings in the Senate and 16 county groupings in the House. Plaintiffs' experts concluded that partisan gerrymandering and bias in these groupings was responsible for the extreme partisan bias that they found in their statewide analysis of the House and Senate. Tr. 1134:1-5 (Dr. Mattingly).

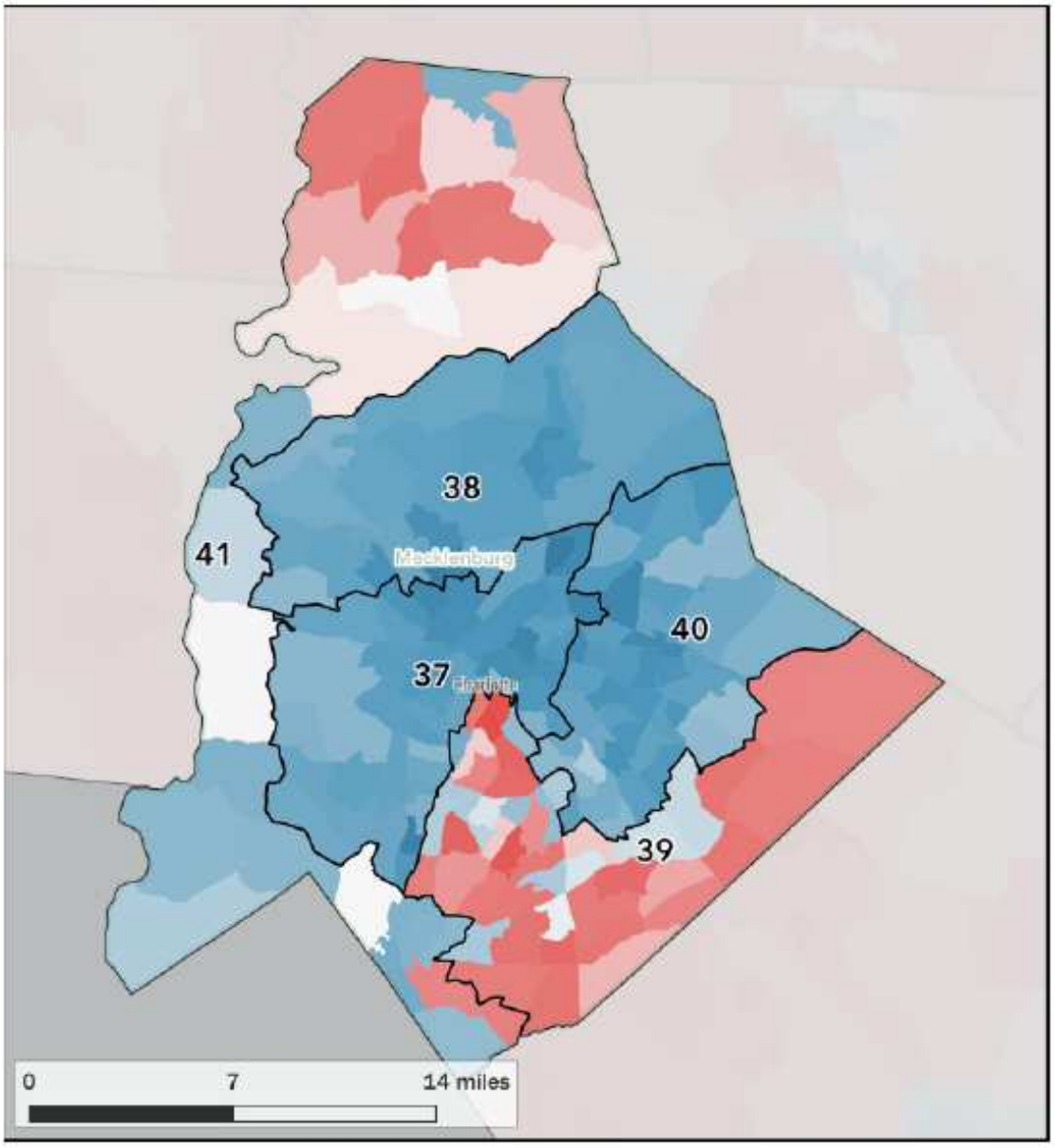
1. Senate County Groupings

a. Mecklenburg

250. The Mecklenburg Senate county grouping contains Senate Districts 37, 38, 39, 40, and 41. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

251. For each House and Senate county grouping that Plaintiffs' experts analyzed, Dr. Cooper produced a map showing the district boundaries within the grouping and the partisanship of every VTD within the grouping using the results of the 2016 Attorney General election. In each map, darker red shading indicates a larger Republican vote share in the VTD, darker blue shading indicates a larger Democratic vote share in the VTD, and lighter colors indicate VTDs that were closer to evenly split in Democratic and Republican vote shares.

252. Plaintiffs' Exhibit 285 is Dr. Cooper's map for this county grouping:



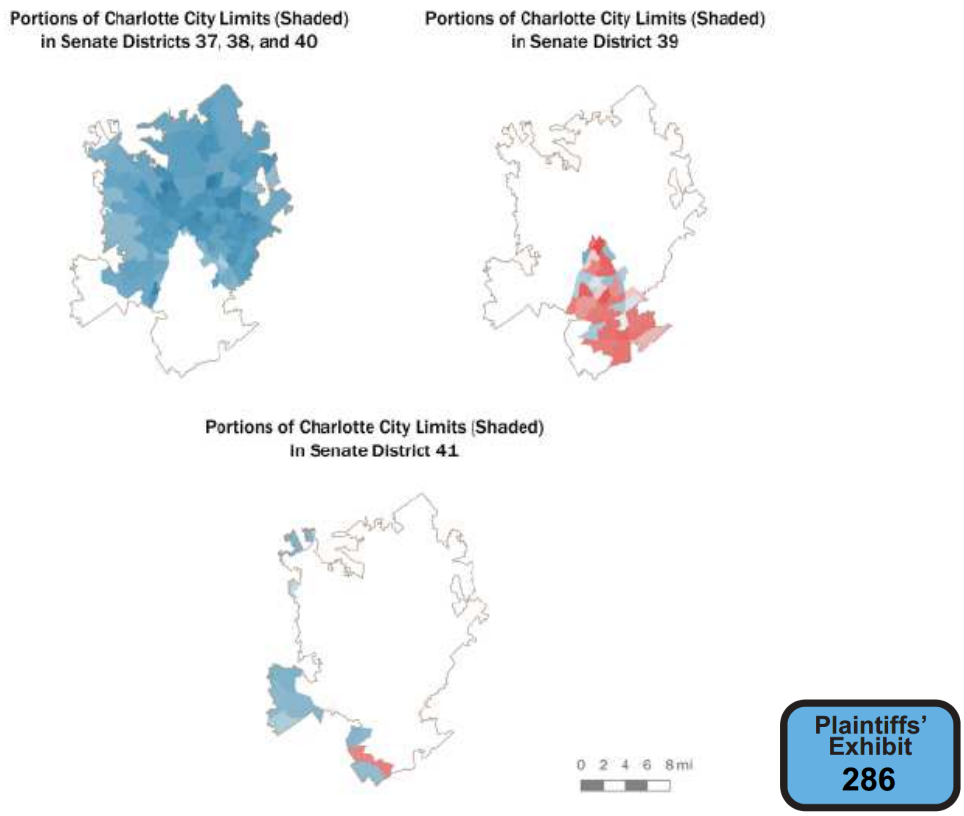
253. As Dr. Cooper explained, the mapmaker packed Democratic voters into Senate Districts 37, 38, and 40 to make Senate Districts 39 and 41 as favorable for Republicans as possible. Tr. 901:16-20; PX253 at 47 (Cooper Report).

254. Senate District 41 stretches from the farthest northern boundaries of Mecklenburg County all the way to the farthest south, traversing two narrow passageways. One passageway is

so narrow that the district's contiguity is maintained only by the Martin Marietta Arrowood Quarry, which is less than a mile wide. Tr. 902:22-903:4; PX287; PX253 at 48 (Cooper Report). The clear intent of this elongated district is to connect the Republican areas north of Charlotte with the Republican-leaning areas in the southern tip of Charlotte. Tr. 902:5-8.

255. Senate District 39 contains the Republican-leaning VTDs in the southern portion of Charlotte, which resemble a "pizza slice" in Dr. Cooper's maps. Tr. 901:11-15, 902:7-10; PX285; PX286. Those Republican VTDs in Charlotte are grouped with the Republican-leaning areas in the south of Mecklenburg County, outside of Charlotte, so that Senate District 39 is more favorable to Republicans. Tr. 901:18-20; PX253 at 47.

256. Dr. Cooper also illustrated the packing and cracking of Democratic voters in this grouping by focusing just on the division of Charlotte. As illustrated in Plaintiffs' Exhibit 285 below, the enacted plan places Charlotte's most Democratic VTDs in Senate Districts 37, 38, and 40, while placing all of Charlotte's Republican-leaning VTDs in Senate Districts 39 and 41. Tr. 902:1-9; PX253 at 47 (Cooper Report). As Dr. Cooper explained, with large municipalities such Charlotte, the mapmaker's partisan intent is not apparent from the mere fact that a municipality is split, but rather from "where do those municipal splits take place and what are the partisan effects." Tr. 900:12-21; *see* Tr. 877:24-25. In the Mecklenburg Senate county grouping, it is clear that Legislative Defendants split Charlotte strictly along partisan lines for partisan gain.



257. The sole alternative explanations that Legislative Defendants offered for the configuration of this grouping, other than partisan intent, came from Legislative Defendants' expert Dr. Johnson. Dr. Johnson admitted that he had no personal knowledge as to why Dr. Hofeller or the General Assembly drew the districts this way. Tr. 1972:18-1973:6. Dr. Johnson nonetheless speculated that Senate District 41 was "drawn to capture as much of" the Charlotte suburbs as possible into a single district, Tr. 1844:11-12, and that Senate 39 similarly reflected an effort to "unite[] the southern suburbs" of Charlotte, LDTX289 at 4.

258. The Court rejects Dr. Johnson's explanations as purely speculative, and in any event his speculation does not withstand minimal scrutiny. Rather than seeking to create a "suburban" district, Senate District 41 stretches to Mecklenburg County's southern tip in order to pick up areas of the City of Charlotte itself, and specifically Republican-leaning VTDs in Charlotte. Tr. 1972:7-1974:15. In so doing, Senate District 41 *avoids* suburban areas north of

Charlotte, with those suburbs packed into Senate District 38 instead because they are Democratic-leaning. *Id.* Similarly, Senate District 39 cuts into the heart of Charlotte, taking all of Charlotte's most Republican-leaning areas, while avoiding suburbs in southeast Mecklenburg County. Tr. 1975:5-1976:14. The Court finds Dr. Johnson's speculative alternative explanations for the configuration of the Mecklenburg Senate county grouping not credible.

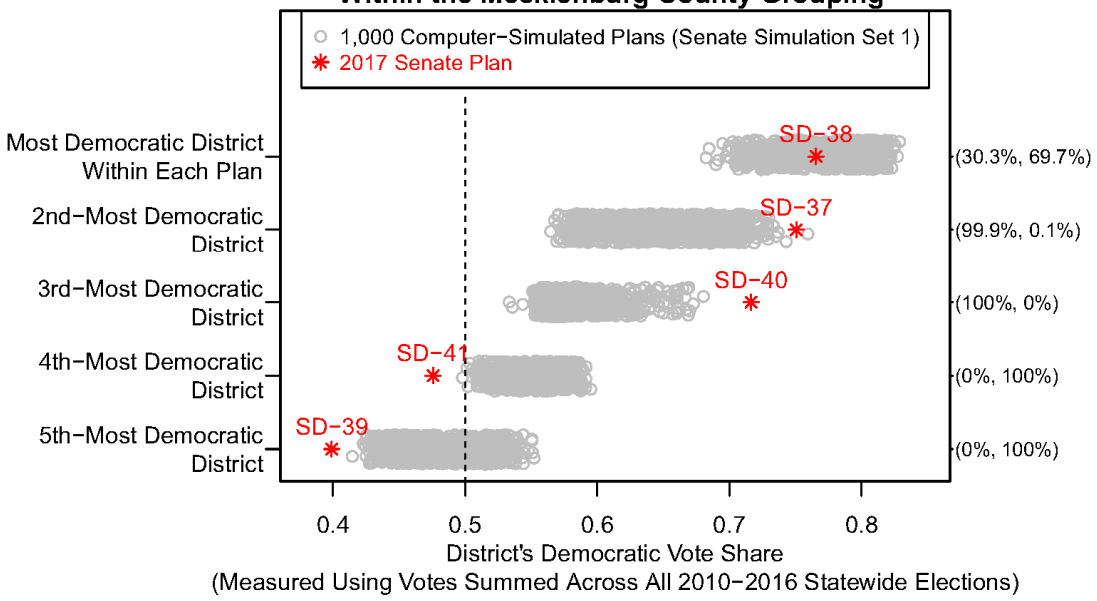
259. Dr. Johnson also opined at trial that the enacted plan version of this county grouping is not the most favorable possible configuration of this grouping for Republicans. Dr. Johnson created an alternative version of this grouping that he asserted would be even more favorable for Republicans. Tr. 1840:17-1841:19. However, Dr. Johnson's alternative map suffered from a critical error: it paired the two Republican incumbents who were in office at the time of the 2017 redistricting. Tr. 1977:2-1978:7. Clearly, the most favorable possible configuration of this grouping for Republicans would not pair the only two Republican incumbents together, and Dr. Johnson conceded that he did not analyze whether the enacted plan represents the most favorable possible configuration of this grouping possible that would not have paired those two Republican incumbents. *Id.*

260. The simulations of Plaintiffs' other experts confirm and independently establish that this county grouping is an extreme partisan gerrymander.

261. Dr. Chen analyzed individual county groupings by comparing the most Democratic district in the grouping under the enacted plan with the most Democratic district in the grouping under the simulated plans, comparing the second most Democratic district in the grouping under the enacted plan with the second most Democratic district in the grouping under the simulated plans, and so on.

262. Using this methodology, Dr. Chen found that the Mecklenburg Senate county grouping has four districts in the enacted plan that are extreme partisan outliers. Dr. Chen found that Senate Districts 39 and 41 have a lower Democratic vote share than their corresponding districts in all 1,000 of his simulated plans of this grouping, and that Senate Districts 37 and 40 have a higher Democratic vote share than 99.99% and 100% than their corresponding districts in his simulations. Dr. Chen's findings show the packing of Democratic voters into certain districts in this grouping and the cracking of Democratic voters in Senate Districts 38 and 41, in an effort to create two districts as favorable for Republicans as possible. The Court credits Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 98 below:[3]

Figure 78: Senate Simulation Set 1:
Democratic Vote Share of the Enacted and Computer-Simulated Districts Within the Mecklenburg County Grouping

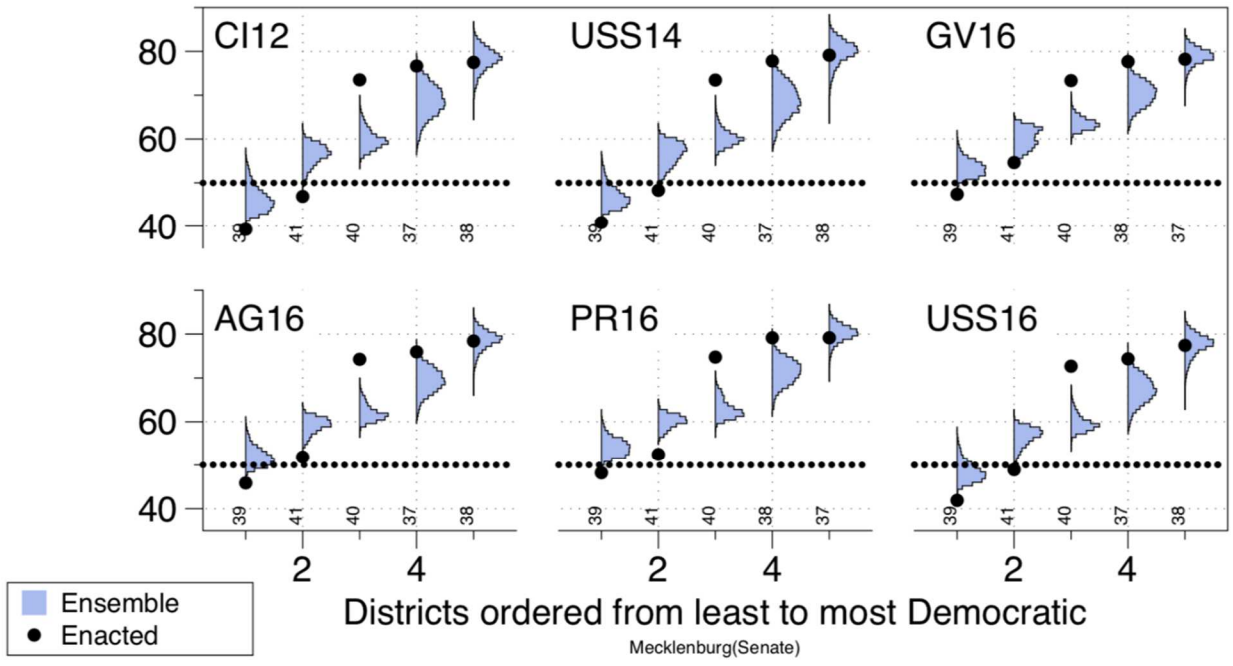


263. Dr. Mattingly analyzed individual county groupings by plotting the Democratic vote fraction in each district in the grouping, ordered from least to most Democratic. He conducted this analysis for the enacted plan (represented by a black dot in his county-grouping-

[3] Unless otherwise noted, Dr. Chen's results for individual House and Senate county groupings were materially the same for his Simulation Set 2 as for his Simulation Set 1. Tr. 349:12-18.

level figures) and for his ensemble of nonpartisan plans (represented by the blue histograms), using six prior statewide elections. Tr. 1134:14-1138:6. If the black dot representing the enacted plan is above the dotted black line at 50%, the Democrats win that district under the enacted plan. Tr. 1135:23-1136:6. If all or the bulk of the blue histogram representing the ensemble is above the dotted black line at 50%, the Democrats would expect to win that district under the ensemble. Tr. 1137:8-1138:6. Dr. Mattingly labeled the historical election whose statewide vote counts he was using in the upper left corner of the plots. Black dots that are at the bottom of the corresponding blue histogram represent districts that Democrats have been cracked out of, because the enacted plan has many fewer Democrats than would be expected in the nonpartisan plans; black dots that are at the top of the corresponding blue histogram represent districts that Democrats have been packed into. Tr. 1138:14-1139:4.

264. Plaintiffs' Exhibit 370 shows Dr. Mattingly's analysis of the Mecklenburg Senate county grouping:



265. As the figure above shows, Democrats were cracked out of the two most Republican districts in this grouping, and packed into heavily Democratic districts. In the enacted plan, there is a huge jump in Democratic vote share between: (i) the two least Democratic districts (Senate Districts 39 and 41), and (ii) the three most Democratic districts (Senate Districts 40, 37, and 38). PX370; PX 359 at 16 (Mattingly Report). Dr. Mattingly testified that the jump signifies intentional gerrymandering—he called it the "signature of gerrymandering"—and means that elections in the grouping will be nonresponsive to the votes cast. Tr. 1139:19-21, 1146:13-21; *see* PX 359 at 14-15 (Mattingly Report). As the figure above shows, the gerrymander cost Democrats one or two seats in certain electoral environments, because the black dots for Senate Districts 39 and 41 often fall below the 50% line while the blue histograms often rise above it. Tr. 1142:22-1143:1.

266. Dr. Mattingly mathematically quantified the "jump"—*i.e.*, the cracking and packing in this grouping—using all 17 statewide elections he studied. Specifically, Dr. Mattingly calculated the average Democratic vote share in the two least Democratic districts and the average Democratic vote share in the three most Democratic districts, for both the enacted plans and his ensemble plans. PX 359 at 16 (Mattingly Report). He found that the two least Democratic districts in the enacted plan had fewer Democratic voters than 100% of the comparable districts in the nonpartisan ensemble, while the three most Democratic districts in the enacted plan had more average Democratic votes than 100% of the comparable Democratic districts in the nonpartisan ensemble, meaning that *not a single plan* in his nonpartisan ensemble showed as much of a jump—*i.e.*, as much cracking and packing—as the enacted plan. Tr. 1143:2-20. Dr. Mattingly concluded that the Mecklenburg Senate grouping is an extreme pro-Republican partisan gerrymander, Tr. 1143:21-24, and the Court credits his conclusion.

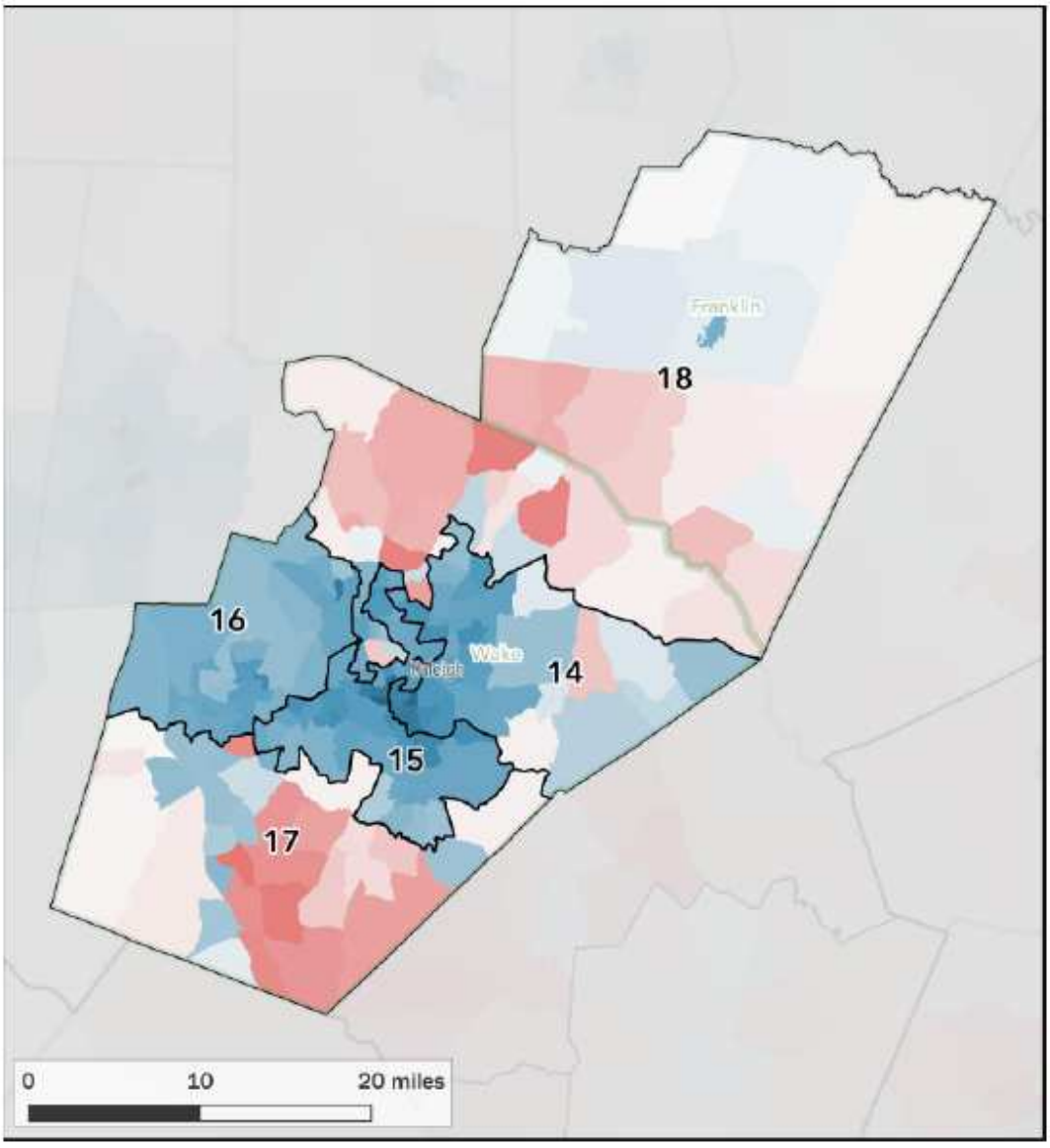
267. Dr. Pegden found that the Mecklenburg Senate county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.9985% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.995% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1356:25; PX540. The Court credits Dr. Pegden's analysis and conclusions.

268. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme and intentional partisan gerrymander.

b. Franklin-Wake

269. The Franklin and Wake Senate county grouping contains Senate Districts 14, 15, 16, 17, and 18. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

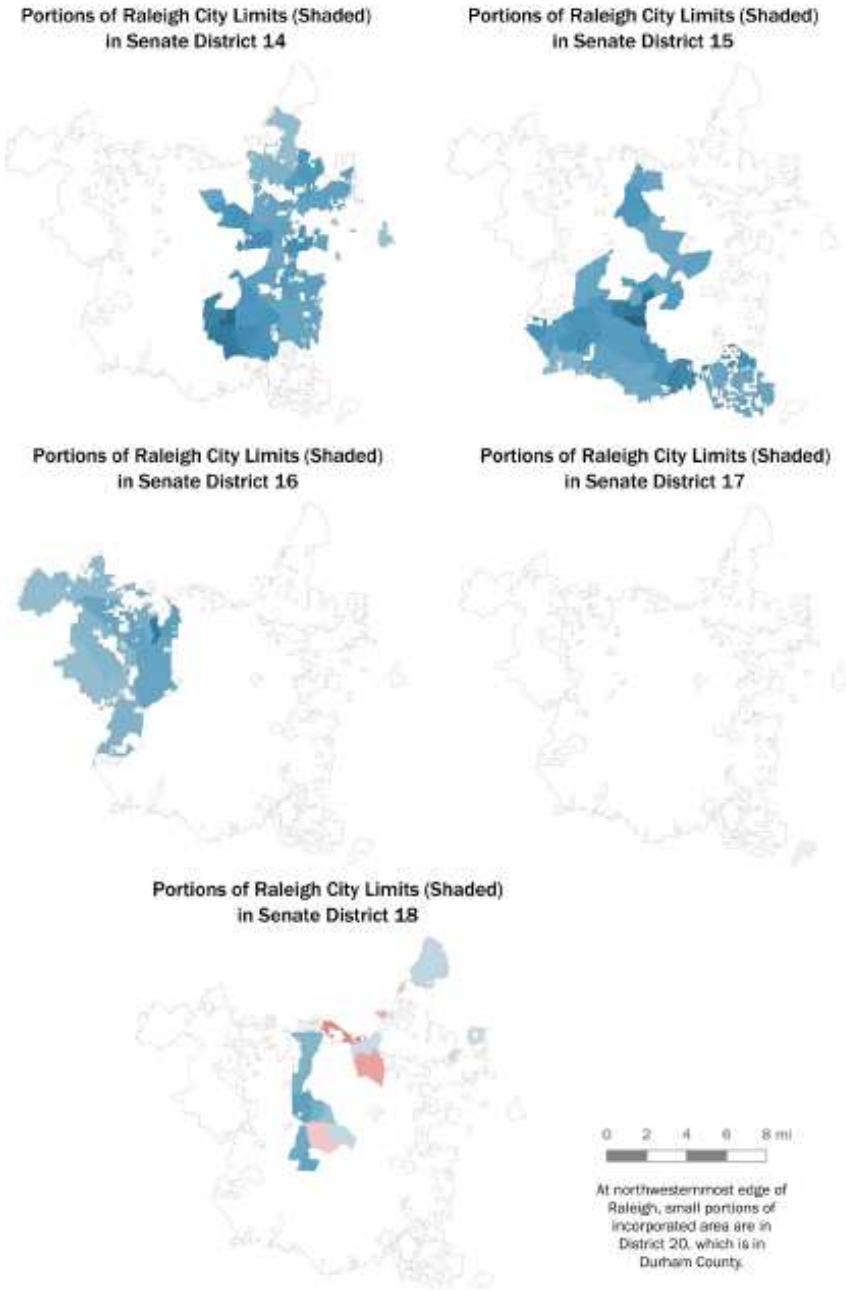
270. Plaintiffs' Exhibit 276 is Dr. Cooper's map for this county grouping:



271. As Dr. Cooper testified and is clear from a mere visual inspection, this grouping packs Democratic voters into Senate Districts 14, 15, and 16 in order to make Senate Districts 17 and 18 as favorable for Republicans as possible. Tr. 892:11-13; PX253 at 36 (Cooper Report).

272. Senate District 18 includes Franklin County and has tentacles that reach down to ensnare the only Republican-leaning VTDs within Raleigh, near the center of the city. Tr. 892:13-23; PX278; PX253 at 37-38 (Cooper Report).

273. As with Charlotte, the fact that Raleigh is split is not itself revealing, but how and "where Raleigh is split" illustrates the partisan intent behind the districts in this grouping. Tr. 893:16-894:21; PX253 at 37-38. Plaintiffs' Exhibit 278, reproduced below, shows how Legislative Defendants put the most Democratic VTDs in Raleigh in Senate Districts 14, 15, and 16, and put all of Raleigh's moderate and Republican-leaning VTDs in Senate District 18. *Id.*



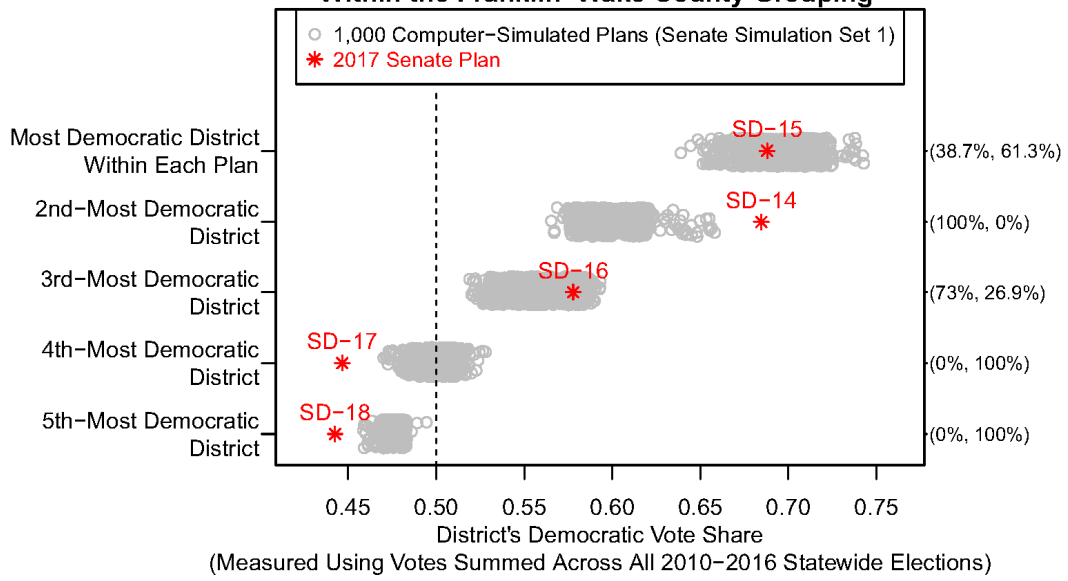
274. Senate District 17 includes all of the Republican VTDs in southern Wake County while carefully avoiding heavily Democratic areas. PX276; PX253 at 36 (Cooper Report).

275. Legislative Defendants have offered no nonpartisan explanation for the boundaries of Senate Districts 17 and 18. At trial, Legislative Defendants focused on an amendment that Democratic Senator Daniel Blue introduced that altered this grouping, but that amendment did *not* affect the contours of Senate Districts 17 and 18. Senator Blue testified that he was told by Republican leadership that he could not change the boundaries of Senate Districts 17 and 18, but instead could only shift population between the heavily Democratic districts in this grouping. Tr. 155:20-156:15. Senate Blue's amendment did just that, as it only shifted population between Senate Districts 14 and 15, both of which had been packed with Democratic voters. Tr. 150:5-8; PX619. Senator Blue's amendment did not result in, and cannot explain, the composition of Senate Districts 17 and 18 and their extreme partisan outlier status.

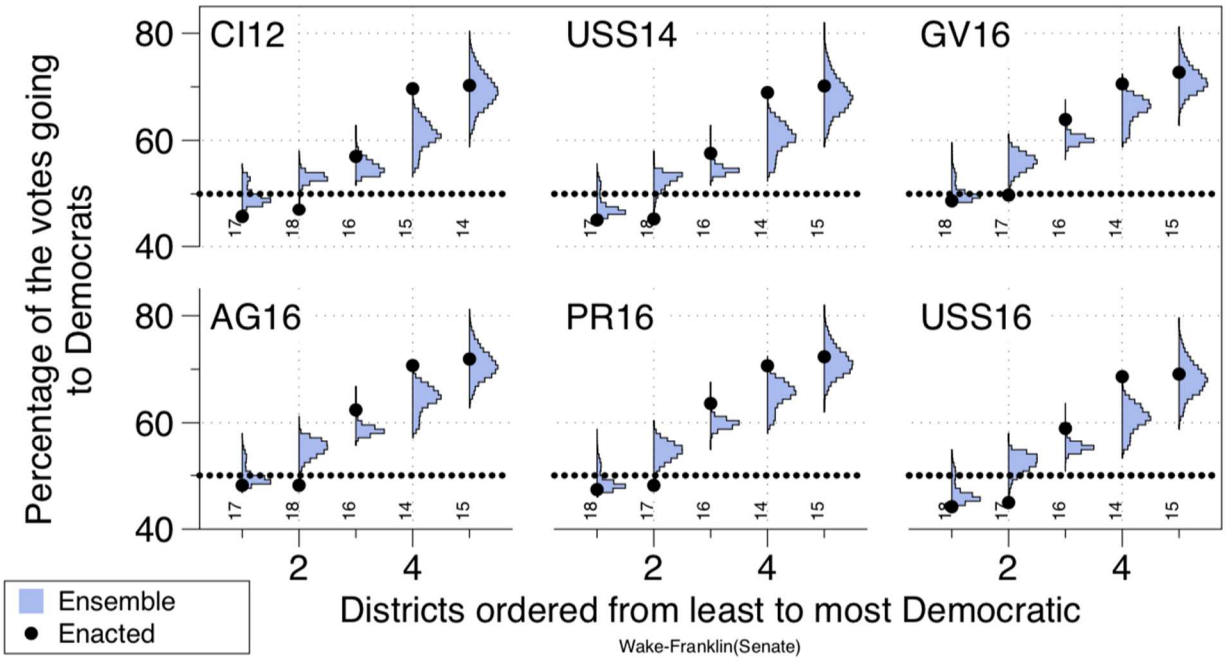
276. The simulations of Plaintiffs' other experts confirm and independently establish that this county grouping is an extreme partisan gerrymander.

277. Dr. Chen found that this county grouping contains three districts that are extreme partisan outliers. Tr. 381:2-18. Senate District 14 has a higher Democratic vote share than its corresponding district in all of the simulations, while Senate Districts 17 and 18 have lower Democratic vote shares than their corresponding districts in all of the simulations. *Id.*; PX97. Dr. Chen's findings show the packing of Democratic voters into several districts in this grouping in an effort to create two districts (Senate Districts 17 and 18) that are as favorable for Republicans as possible. The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 97 below.

Figure 77: Senate Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Franklin−Wake County Grouping



278. Plaintiffs' Exhibit 372 shows Dr. Mattingly's analysis of this grouping:



279. Dr. Mattingly's analysis shows that Democrats were cracked out of the two least Democratic districts in this grouping (Districts 17 and 18), and packed into heavily Democratic districts. PX372; Tr. 1145:2-7. In the enacted plan, there is a huge jump between the

Democratic vote share in the least two Democrats districts and the three most Democratic districts. PX372. Dr. Mattingly found that not a single plan in his ensemble showed as much of a jump between these sets of districts as the enacted plan, Tr. 1145:11-14, and concluded that this grouping showed more pro-Republican advantage than 100% of the maps in his ensemble. Tr. 1153:24-1154:4. As the figure above shows, the gerrymander causes Democrats to lose two seats in this grouping in many electoral environments, because the black dots for Senate Districts 17 and 18 fall below the 50% line while the blue histograms often rise above it. Tr. 1142:22-1143:1. Dr. Mattingly concluded that the Mecklenburg Senate grouping is an extreme pro-Republican partisan gerrymander, Tr. 1153:17-23, and the Court credits his conclusion.

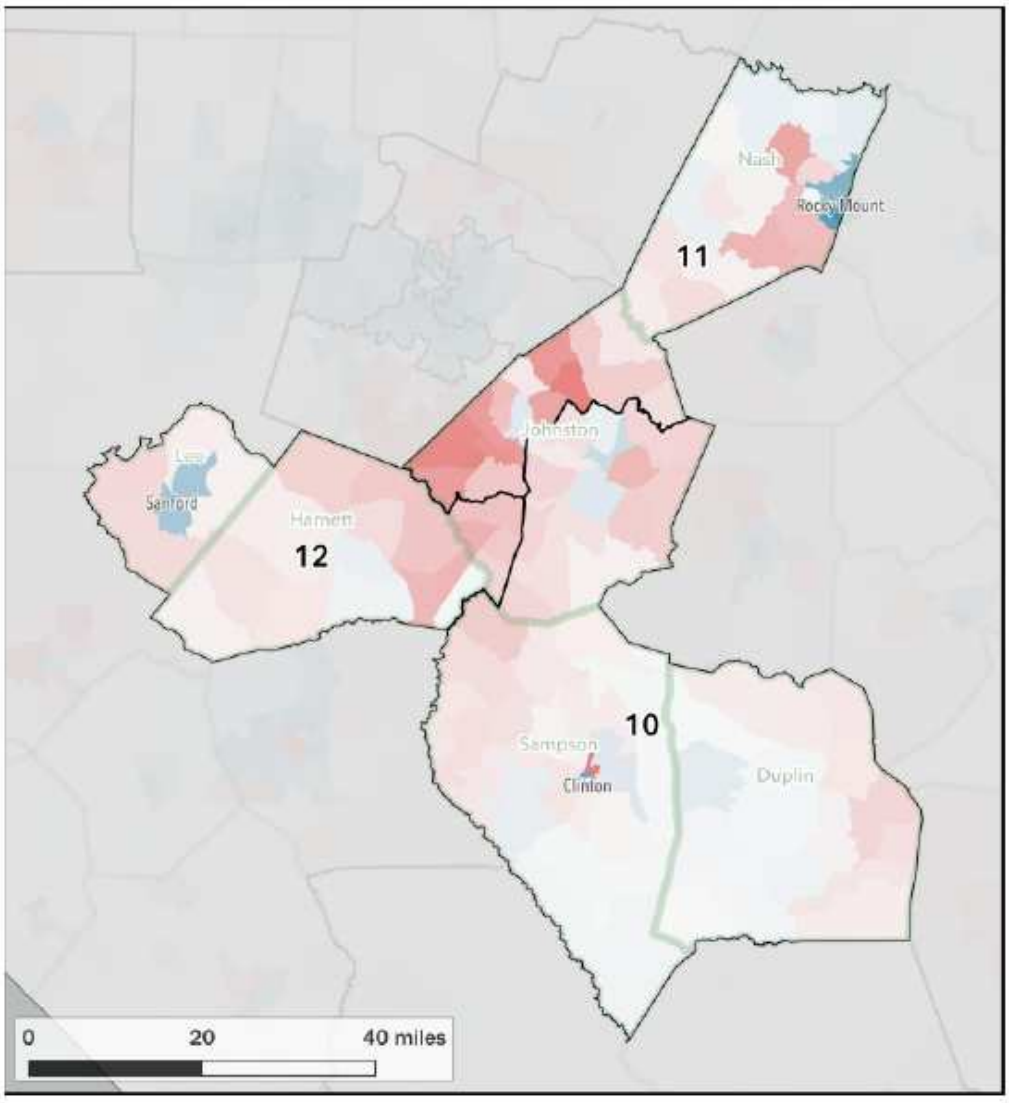
280. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.99999995% of the maps that his algorithm encountered by making small changes to the district boundaries. Tr. 1356:23-24; PX539. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.99999985% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. *Id.* Dr. Pegden also testified that the changes made by Senator Blue to the boundaries between Senate Districts 14 and 15 cannot possibly explain his results for this county grouping. *See* Tr. 1352:2-1354:22. The Court credits Dr. Pegden's analysis and conclusions.

281. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

c. Nash-Johnston-Harnett-Lee-Sampson-Duplin

282. The Nash-Johnston-Harnett-Lee-Sampson-Duplin Senate county grouping contains Senate Districts 10, 11, and 12. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

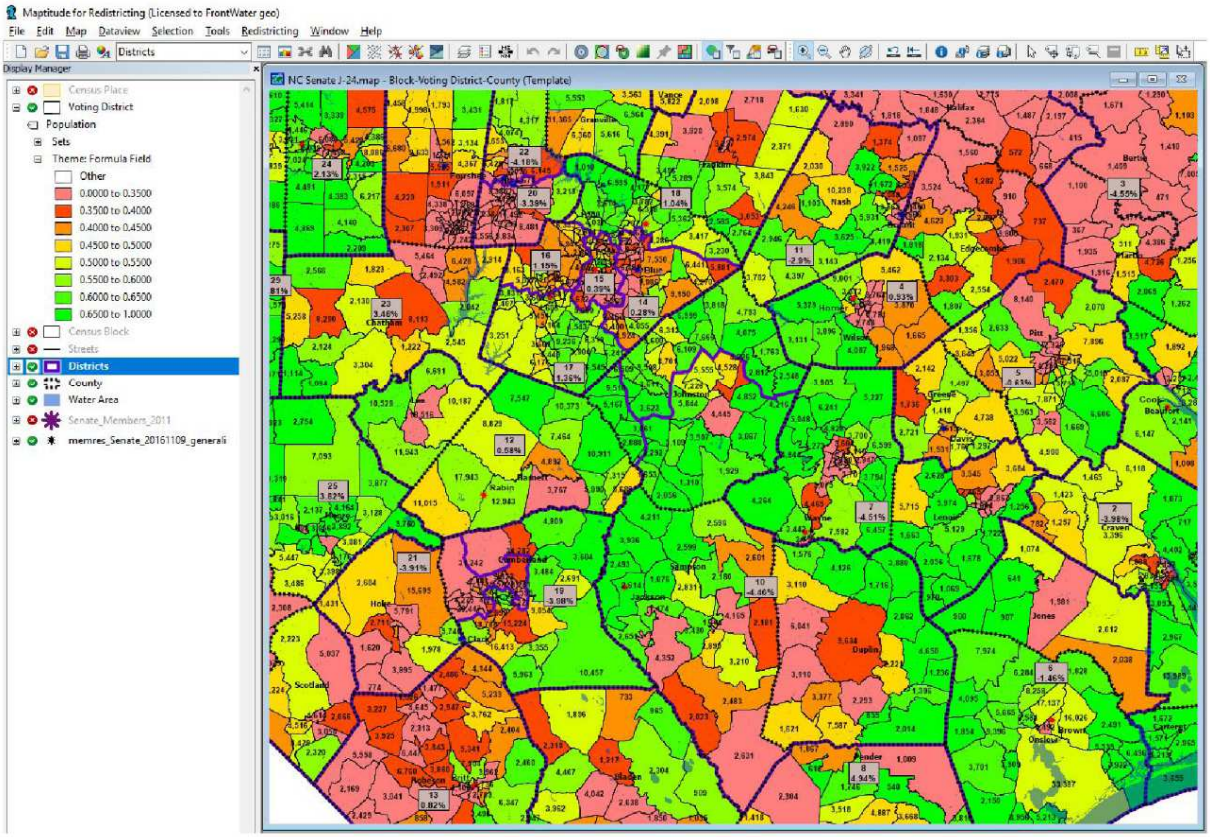
283. Plaintiffs' Exhibit 274 is Dr. Cooper's map of this county grouping:



284. Dr. Cooper explained how the district boundaries connect the most Republican VTDs in Johnston County with the Democratic stronghold of Rocky Mount in Senate District 11, ensuring that those Rocky Mount Democratic voters are separated from the moderate and Democratic-leaning VTDs in Johnston County, diluting the voting strength of these various Democratic voters. Tr. 890:4-891:17; PX253 at 33 (Cooper Report). Dr. Hofeller's Maptitude files further illustrate this intentional cracking of Democratic voters. Dr. Hofeller's file, below in Plaintiffs' Exhibit 332, reveals how he drew these districts with "remarkable precision" by

"building a fence" around the moderate and Democratic-leaning VTDs in central Johnston County—shaded yellow and red in the image below—making sure to keep these VTDs in Senate District 10 separate from Rocky Mount's voters in Senate District 11. Tr. 968:12-969:8.

Figure 3: Partisan Targeting in Senate Districts 10, 11, and 12



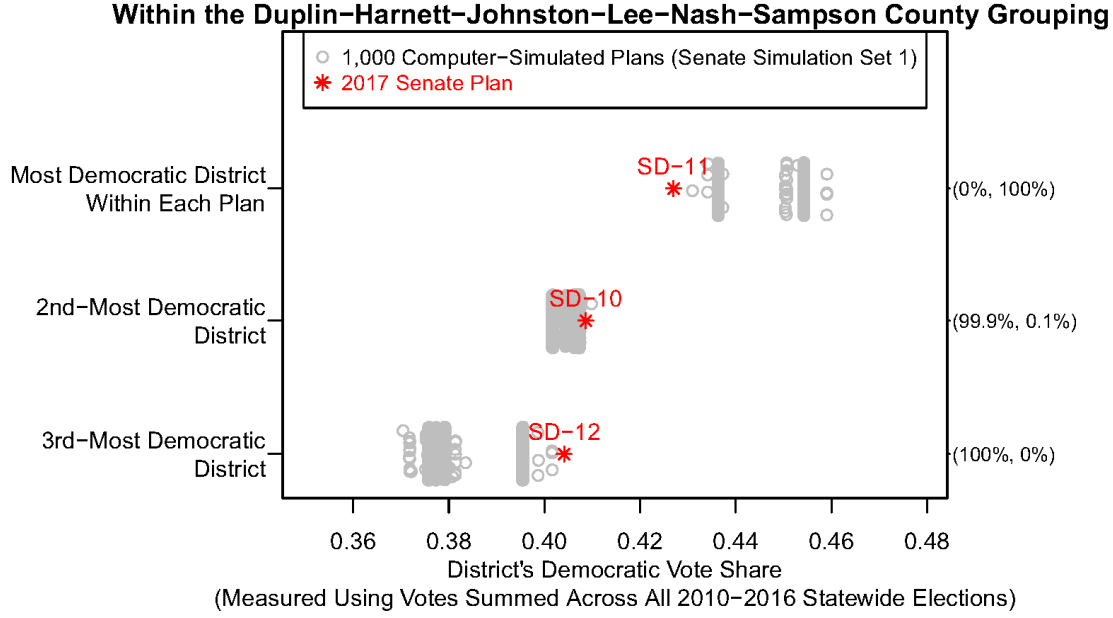
285. Dr. Hofeller's Microsoft Excel files provide evidence that Dr. Hofeller actually placed special attention on this country grouping and its partisan composition. In a file titled "Johnston Senate Switch," Dr. Hofeller compared two alternative drafts of this county grouping and the expected Republican performance of the three districts in this grouping under each of the two alternatives. Tr. 469:5-470:3; PX166; PX123 at 68-69 (Chen Rebuttal Report). The file analyzed no information other than partisanship considerations, demonstrating Dr. Hofeller's predominant partisan intent in constructing the districts in this grouping. *Id.*

286. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

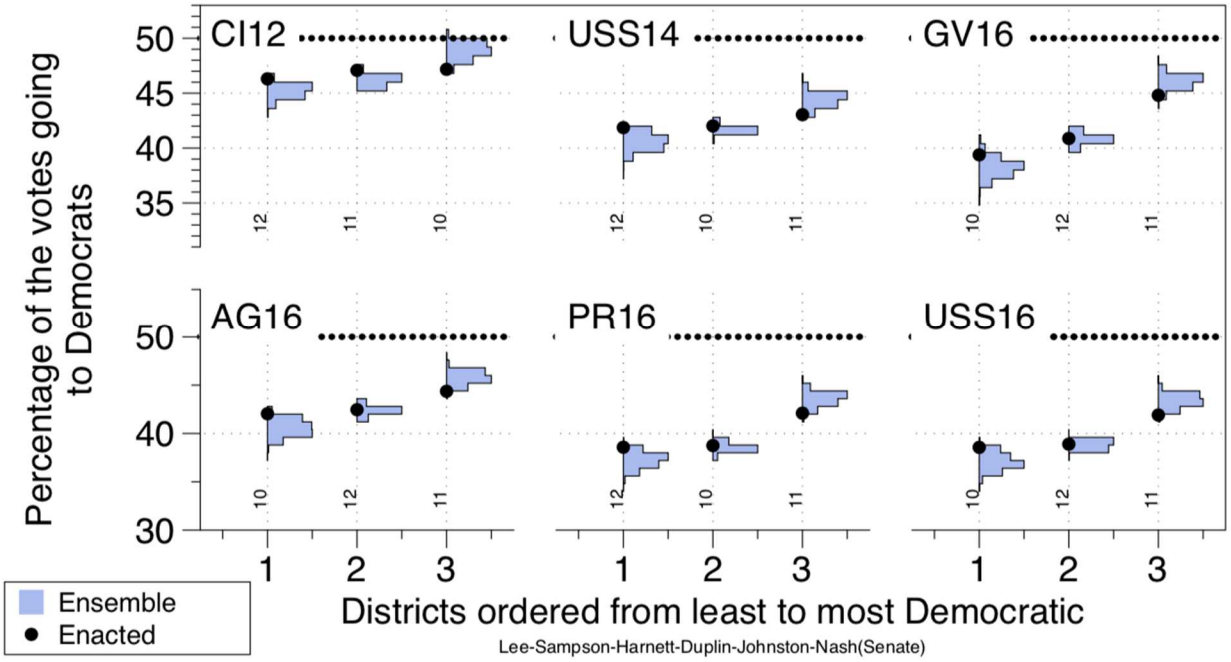
287. The simulations of Plaintiffs' other experts confirm and independently establish that this county grouping was gerrymandered to favor Republicans.

288. Dr. Chen found that all three districts in this county grouping are extreme partisan outliers. Tr. 375:14-25. Senate District 11 has a lower Democratic vote share than its corresponding district in all the simulations, while Senate Districts 10 and 12 have a higher Democratic vote share than their corresponding districts in all the simulations. PX96. Dr. Chen's findings demonstrate the cracking of Democratic voters across all three districts in this grouping to ensure that all three districts are safe Republican seats. The most Democratic district in this grouping would be far more competitive or even Democratic-leaning under a nonpartisan plan, particular in electoral environments that are more neutral or favorable for Democrats than the 2010-2016 statewide elections. Tr. 376:1-8. The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 96 below:

Figure 76: Senate Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Duplin−Harnett−Johnston−Lee−Nash−Sampson County Grouping



289. Plaintiffs' Exhibit 382 shows Dr. Mattingly's analysis of this grouping:



290. Dr. Mattingly concluded that this grouping reflects a pro-Republican partisan bias, Tr. 1154:20-1155:1, and the Court credits Dr. Mattingly's conclusion. Dr. Mattingly's analysis shows that, in this grouping, the number of Democrats in the districts was flattened or squeezed to advantage the Republicans. PX778 at 29; Tr. 11-16. Squeezing represents pure cracking, Tr. 1150:22-1151:2. Here, Democrats were cracked out of the most Democratic district and placed in the two least Democratic districts where their presence would not affect the results. When Dr. Mattingly mathematically quantified the cracking in this grouping using all 17 statewide elections, he found that the least two Democratic districts in the enacted plan had more Democratic voters than 77.21% of the comparable districts in the nonpartisan ensemble. Although Dr. Mattingly did not label this grouping an "outlier" because he used a 90% threshold, he explained that the pro-Republican bias evidence in this grouping still contributed to the extreme pro-Republican bias he found statewide. Tr. 1151:21-1153:2, 1154:23-1155:1. Because the lines in each county grouping are independent of each other, if the mapmaker time after time

makes choices that systematically bias each grouping to one party, that effect accumulates across the map. Tr. 1151:21-1153:2.

291. Moreover, while Dr. Mattingly's "jump" analysis evaluated the districts in this grouping using all 17 statewide elections, analyzing the most Democratic district in this grouping based on the more recent elections depicted in the figure above reveals the clear intent and effects of the gerrymander. Dr. Mattingly's figure shows that the most Democratic district in this grouping under the enacted plan, which is Senate District 11 in most of the elections shown, has less Democrats than the most Democratic district in almost all of his simulations under these more recent six statewide elections.

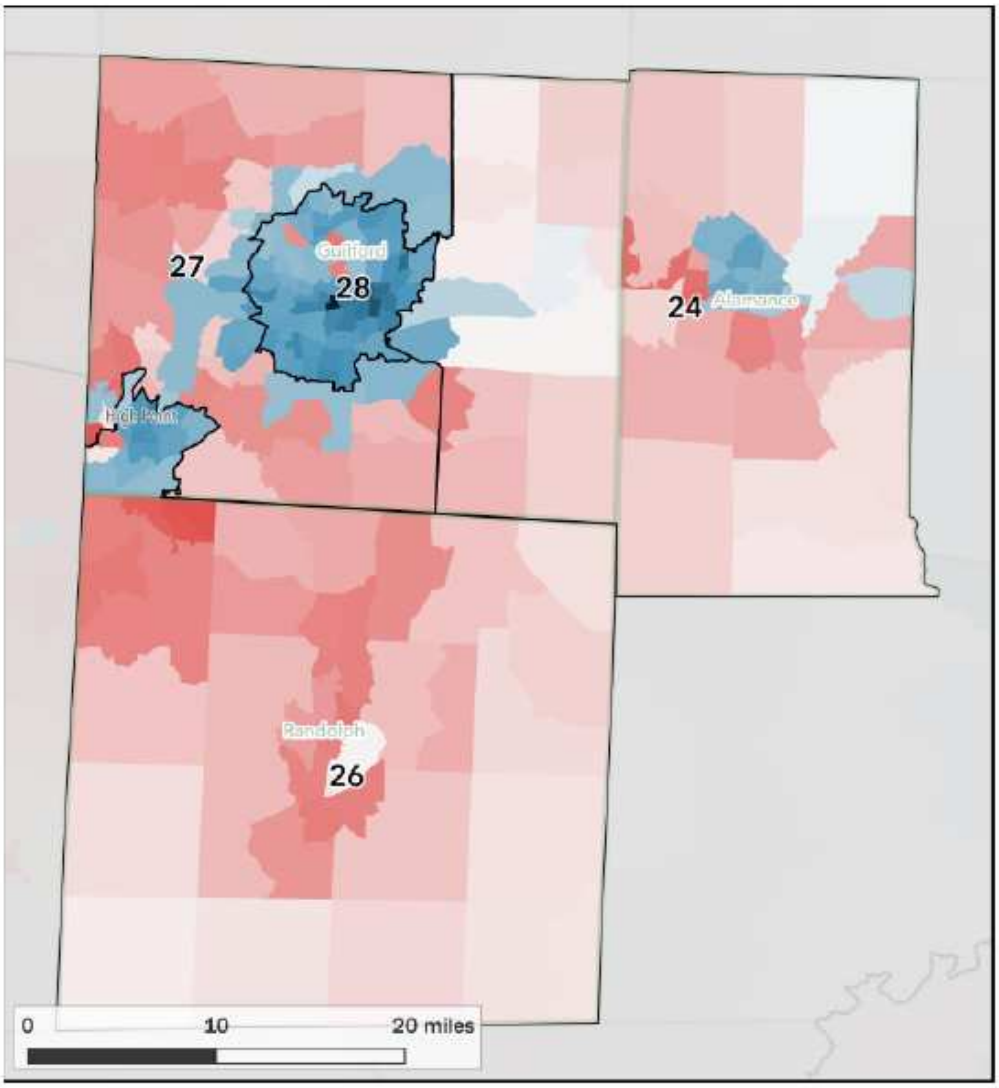
292. Dr. Pegden found evidence that this county grouping is an extreme partisan gerrymander. Due to Dr. Pegden's conservative methodology, his algorithm was only able to generate 18 comparison maps for this Senate county grouping. Tr. 1355:5-23; PX542. Of those 18 maps, Dr. Pegden found that the enacted map for this county grouping is more favorable to Republicans than every single one—in other words, "the enacted map was the absolute worst." Tr. 1356:3-8. The Court credits Dr. Pegden's analysis and conclusions.

293. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

d. Guilford-Alamance-Randolph

294. The Guilford-Alamance-Randolph Senate county grouping contains Senate Districts 24, 26, 27, and 28.

295. Plaintiffs' Exhibit 281 is Dr. Cooper's map for this county grouping:



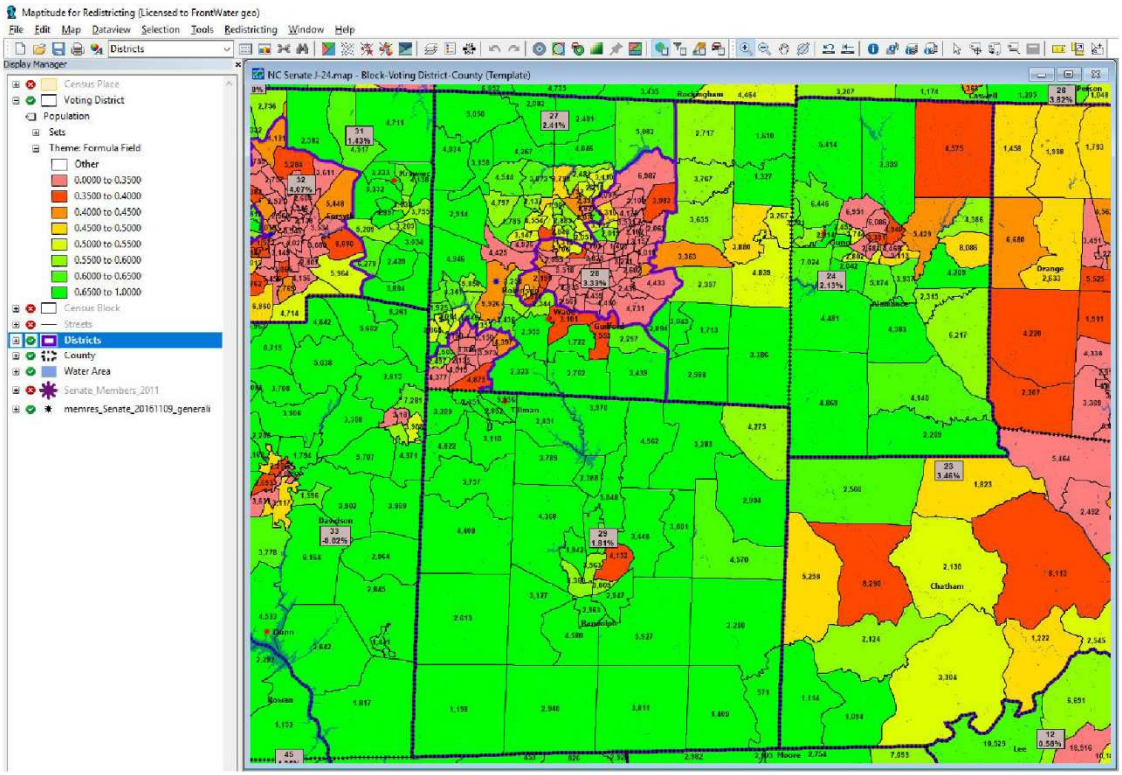
296. For this county grouping, the *Covington* court tasked the Special Master with redrawing Senate District 28 because the General Assembly's enacted version of Senate District 28 did not cure the racial gerrymander. 2017 WL 11049096, at *1-2 (M.D.N.C. Nov. 1, 2017). In redrawing Senate District 28, the Special Master also made changes to Senate District 24. *See* LDTX159 at 19; *Covington*, ECF No. 220 at 34. Plaintiffs do not challenge Senate Districts 24 and 28 in this case and do not seek relief with respect to them.

297. Unlike Senate Districts 24 and 28, the Special Master did *not* make any changes to the General Assembly's enacted version of Senate District 26. *See Covington*, ECF No. 220 at 34 ("2017 Enacted Senate District 26 remains untouched"); Tr. 378:9-16. The Special Master made certain changes to Senate District 27 in carrying out his assignment to redraw Senate District 28, but in so doing, the Special Master did not alter any part of the border between Senate Districts 27 and 26. *See* Chen Demonstrative D6 at 3; LDTX159 at 19. According to estimates presented at trial by Legislative Defendants' expert Dr. Johnson, of the current population of Senate District 27, just 23% of the current district's population was added by the Special Master, while the remaining 77% of the population was put into the district by the General Assembly under the enacted 2017 Senate plan. LDTX314.

298. In drawing Senate District 26, Legislative Defendants cracked Democratic voters in Guilford County, placing the Democratic stronghold of High Point in Senate District 26 and separating these voters from Democratic voters in the Greensboro suburbs. Tr. 895:15-896:25; PX254 at 42-43 (Cooper Report). This has the effect of "washing out" the influence of High Point's Democratic voters, who are joined with the heavily Republican Randolph County in a safe Republican district (Senate District 26), preventing them from influencing the competitive Senate District 27 and thereby making Senate District 27 more favorable for Republicans. *Id.*

299. Dr. Hofeller's Maptitude files confirm that he was using VTD-level partisanship data in constructing the districts in this and other county groupings with "surgical precision." Tr. 971:16-18. The way Dr. Hofeller draw the boundaries of Senate District 26 to ensnare only the most Democratic VTDs on the border of Randolph County was a "work of art," Tr. 975:10-13, 974:19-975:5, with partisan implications that were obvious from Dr. Hofeller's color-coding on his draft map, which is Plaintiffs' Exhibit 334:

Figure 5: Partisan Targeting in Senate Districts 24, 26, 27, and 28



300. Legislative Defendants have offered no nonpartisan explanation for the decision to place High Point's most-Democratic VTDs in Senate District 26.

301. The simulations of Plaintiffs' other experts confirm and independently establish that Senate Districts 26 and 27 are extreme partisan gerrymanders.

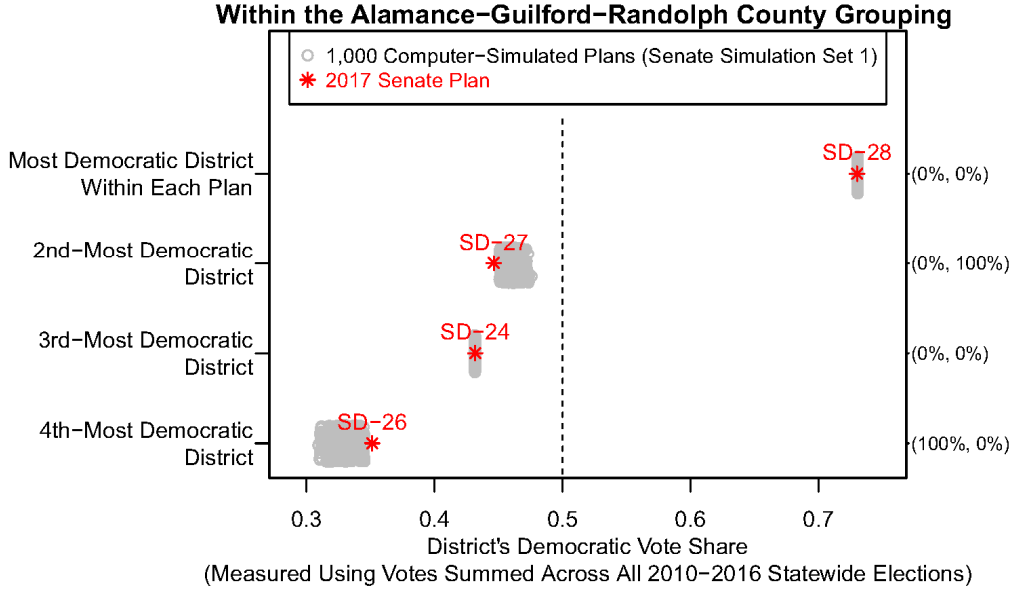
302. Drs. Chen, Mattingly, and Pegden all froze Senate Districts 24 and 28 in this grouping. Tr. 378:17-379:19; PX359 at 23 (Mattingly Report); PX508 at 30 (Pegden Report).

303. Dr. Chen explained in unrebutted testimony that his simulations of the Alamance-Guilford-Randolph House county grouping did not make any changes to the portion of Senate District 27 added by the *Covington* Special Master, and instead altered only the southwest portion of Senate District 27 that borders Senate District 26. Tr. 773:8-22; Chen Demonstrative D6 at 4, 5; PX1 at 18-19 (Chen Report). The Court finds that because Dr. Chen's simulations

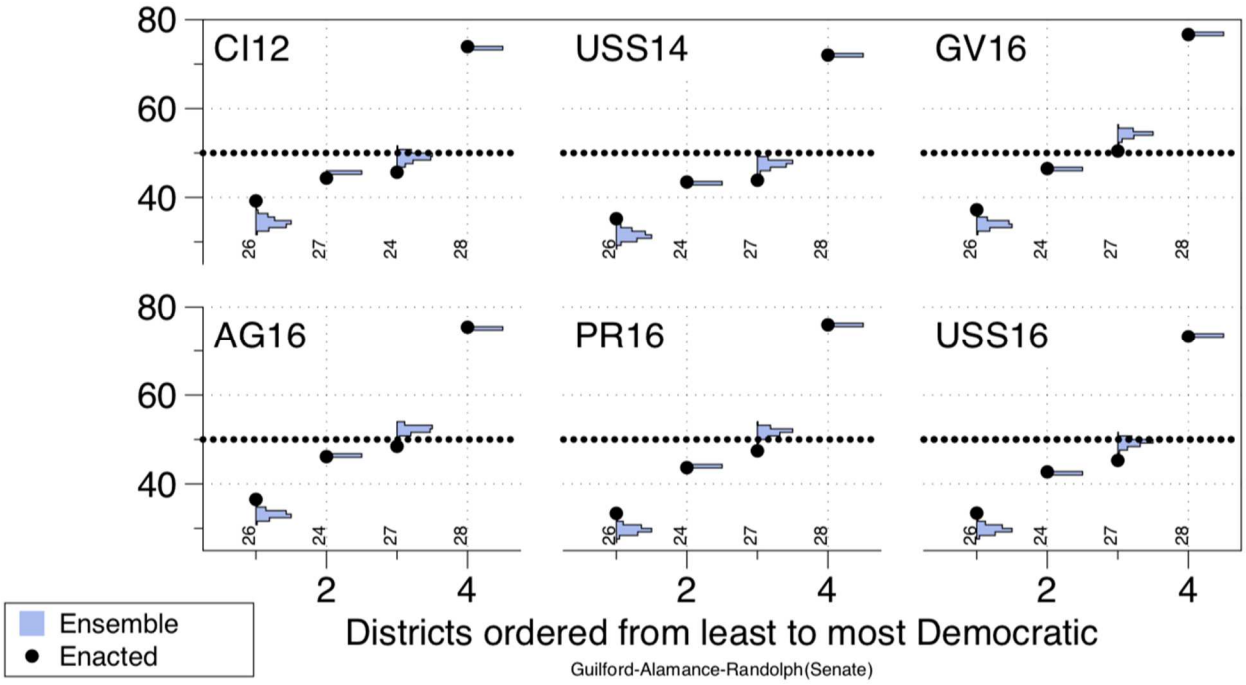
altered only portions of Senate District 27 drawn by the General Assembly, and did not touch the portions of the district added by the Special Master, the General Assembly necessarily is responsible for the extreme partisan bias that Dr. Chen finds for Senate District 27.

304. Dr. Chen found that both districts in this county grouping that he did not freeze are extreme partisan outliers. Senate District 26 has a higher Democratic vote shares than its corresponding district in all of the simulations, while Senate District 27 has a lower Democratic vote share that its corresponding district in all of the simulations. Tr. 380:1-18; PX94. Dr. Chen's findings show the General Assembly's intentional placing of High Point's Democratic voters into Senate District 26 to make Senate District 27 as favorable for Republicans as possible. The Court credits Dr. Chen's findings and analysis for this grouping, which are reflected in Plaintiffs' Exhibit 94 below:

Figure 74: Senate Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Alamance−Guilford−Randolph County Grouping



305. Plaintiffs' Exhibit 380 shows Dr. Mattingly's analysis of the Guilford-Alamance-Randolph Senate county grouping:



306. Setting aside the frozen districts, Dr. Mattingly's analysis shows that Democrats were cracked between the grouping's two remaining districts—an example of what Dr. Mattingly called flattening or squeezing. PX380; PX778 at 29; PX359 at 23. Not a single plan in Dr. Mattingly's nonpartisan ensemble showed as much cracking of Democratic voters in the grouping as was present in the enacted plan, PX359 at 23, and thus the grouping has more pro-Republican advantage than 100% of the maps in his nonpartisan ensemble. Tr. 1153:24-1154:4. Dr. Mattingly concluded that this grouping is an extreme pro-Republican partisan gerrymander, Tr. 1153:17-23; PX778 at 29; PX359 at 23, and the Court credits this conclusion.

307. Dr. Pegden found that this Senate county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.95% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least

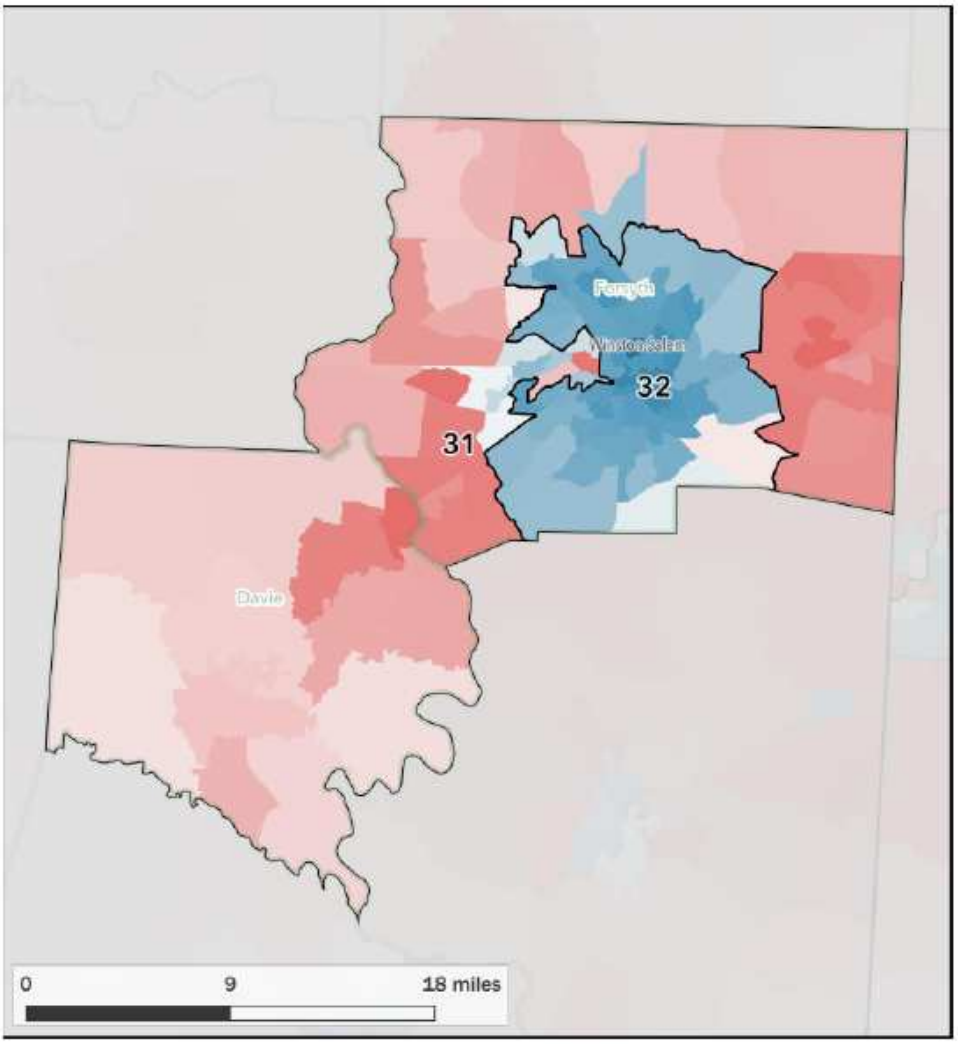
99.85% of all possible districtings of this grouping that satisfy the criteria Dr. Pegden used. Tr. 1357:1; PX543. The Court credits Dr. Pegden's analysis and conclusions.

308. The analyses of Plaintiffs' experts independently and together demonstrate that Senate Districts 26 and 27 are extreme partisan gerrymanders.

e. Davie-Forsyth

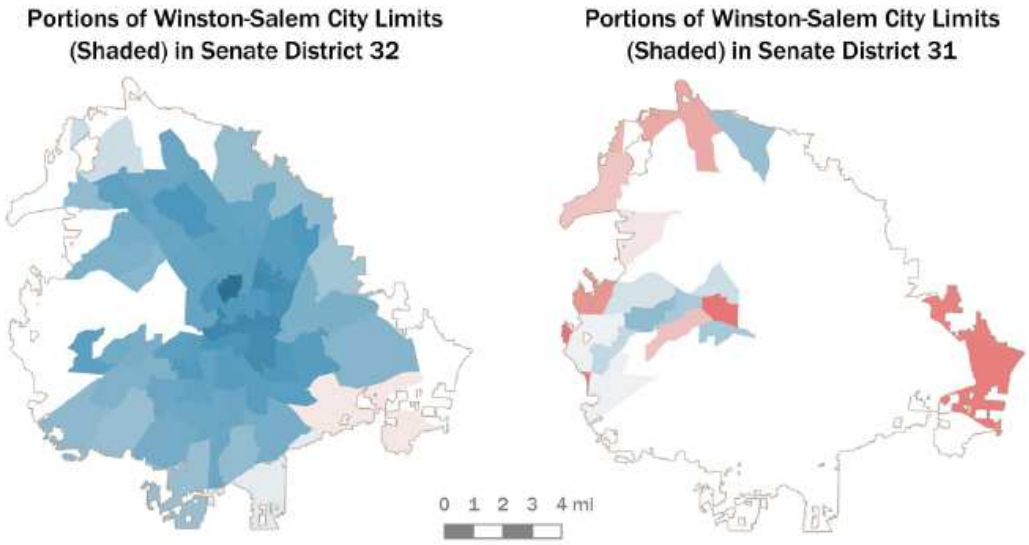
309. The Davie-Forsyth Senate county grouping contains Senate Districts 31 and 32. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

310. Plaintiffs' Exhibit 282 is Dr. Cooper's map for this county grouping:



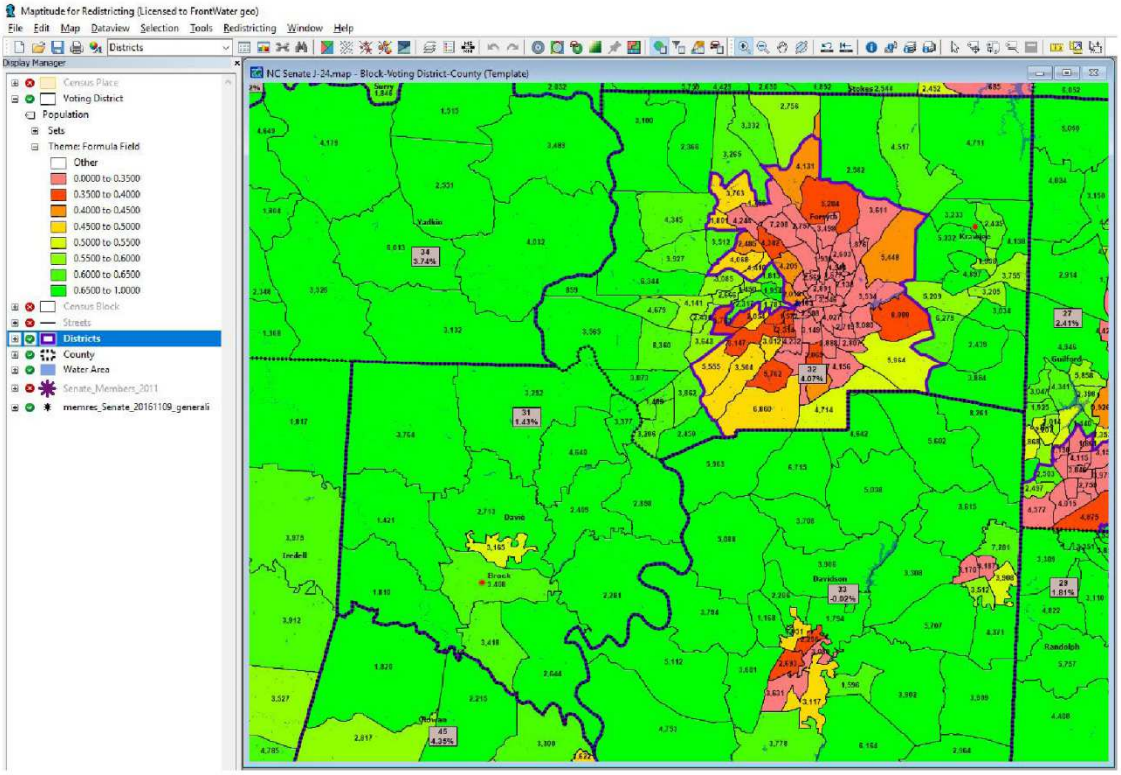
311. Dr. Cooper explained what is apparent from the above map: Legislative Defendants packed Democratic voters into Senate District 32, thereby ensuring that Senate District 31 would be a safe Republican district. Tr. 897:9-24; PX253 at 44 (Cooper Report).

312. This packing occurred not only at the grouping-level, but within Winston-Salem. The map packs all of Winston-Salem's most Democratic VTDs into Senate District 32, and puts almost all of the city's Republican-leaning VTDs in Senate District 31. Tr. 898:1-16; PX283; PX253 at 44 (Cooper Report). As shown in Plaintiffs' Exhibit 283 below, Senate District 31 wraps around Winston-Salem to avoid the Democratic-leaning VTDs in the city, while taking in the Republican-leaning VTDs on the western, northern, and eastern sides of the city:



313. Dr. Hofeller's Maptitude files confirm his predominant partisan intent in drawing this grouping. The district boundaries are drawn "almost perfectly" so that the green areas on the map, which reflect Republican VTDs, are all placed in Senate District 31. Tr. 976:24-977:4; PX335; PX329 at 11 (Cooper Rebuttal Report). The "bite mark" on the west side of Winston-Salem, where Republican-leaning VTDs were carved out of Senate District 32, is "really clearly" evident on Dr. Hofeller's draft map of these districts, which is Plaintiffs' Exhibit 335:

Figure 6: Partisan Targeting in Senate Districts 31 and 32



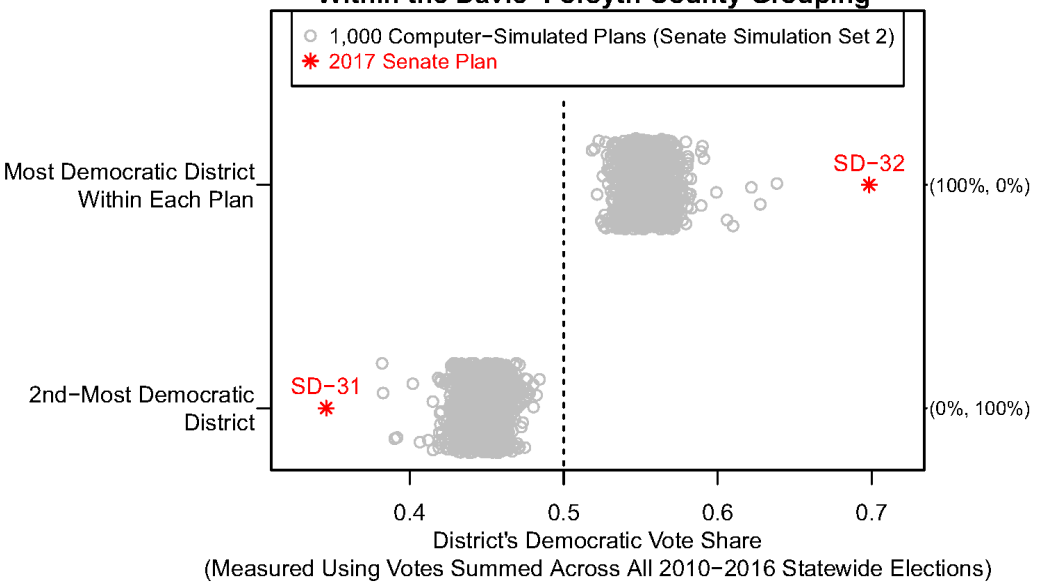
314. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

315. The simulations of Plaintiffs' other experts confirm and independently establish that the Davie-Forsyth county grouping is an extreme partisan gerrymander.

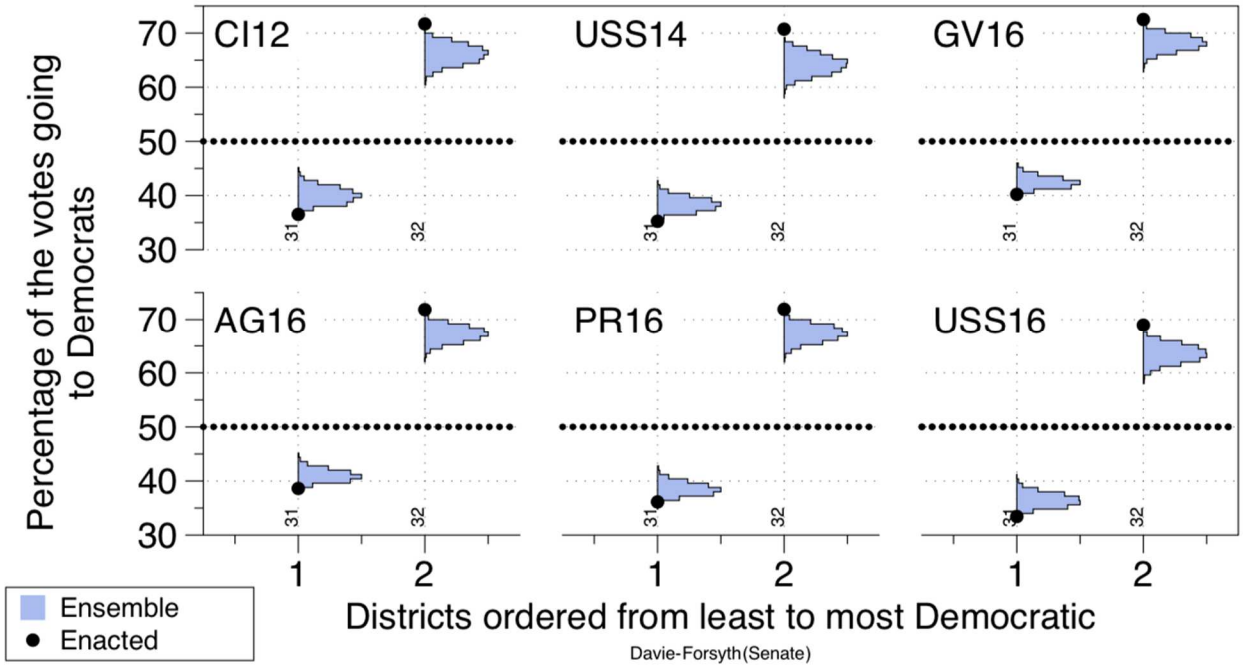
316. Dr. Chen found that both districts in this grouping are extreme partisan outliers. Tr. 373:18-374:12. Senate District 32 has a far higher Democratic vote share than its corresponding district in all of the simulations, while Senate District 31 has a far lower Democratic vote share than its corresponding district in all the simulations. PX95. Dr. Chen's findings demonstrate the packing of Democratic voters into Senate District 32 in order to make Senate District 31 a safe Republican seat. As Dr. Chen explained, the less Democratic district in this grouping would be far more competitive for Democrats under a nonpartisan plan,

particularly in electoral environment that are more neutral or favorable for Democrats than the 2010-2016 statewide elections. Tr. 374:13-23. The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 95 below:

Figure 82: Senate Simulation Set 2:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Davie−Forsyth County Grouping



317. Plaintiffs' Exhibit 374 shows Dr. Mattingly's analysis of this county grouping:



318. Dr. Mattingly's analysis shows that Democrats were cracked out of the most Republican district in this county grouping, and packed into the most Democratic district. PX374; PX778 at 29. Dr. Mattingly found that not a single plan in his nonpartisan ensemble showed as much packing of Democratic voters in the Davie-Forsyth Senate grouping as was present in the enacted plan, PX359 at 18, and thus the grouping has a more pro-Republican advantage than 100% of the maps in his nonpartisan ensemble, Tr. 1153:24-1154:4. Dr. Mattingly concluded that this grouping is an extreme pro-Republican partisan gerrymander, Tr. 1153:17-23; PX778 at 29; PX359 at 18, and the Court credits his conclusion.

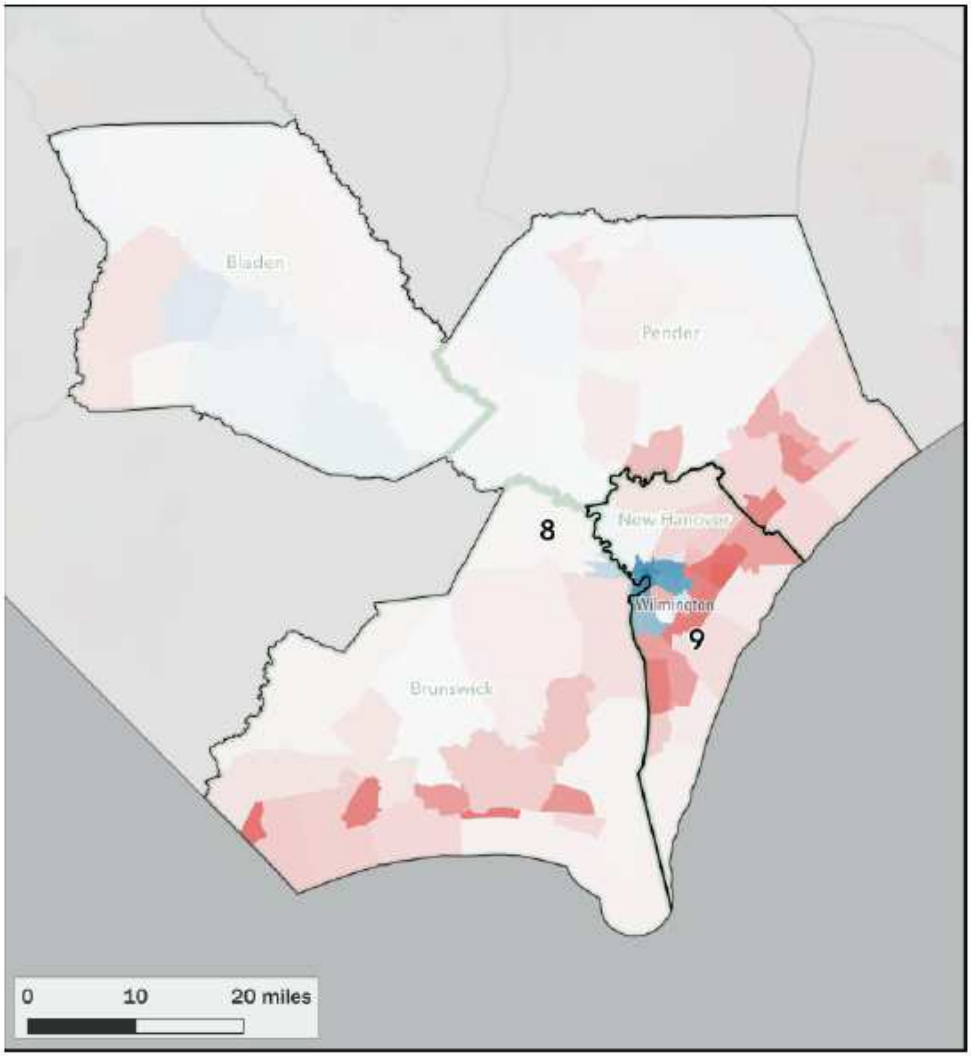
319. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of the grouping is more favorable to Republicans than 99.993% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that the grouping is more carefully crafted to favor Republicans than at least 99.98% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1356:25; PX538. The Court credits Dr. Pegden's analysis and conclusions.

320. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

f. Bladen-Pender-New Hanover-Brunswick

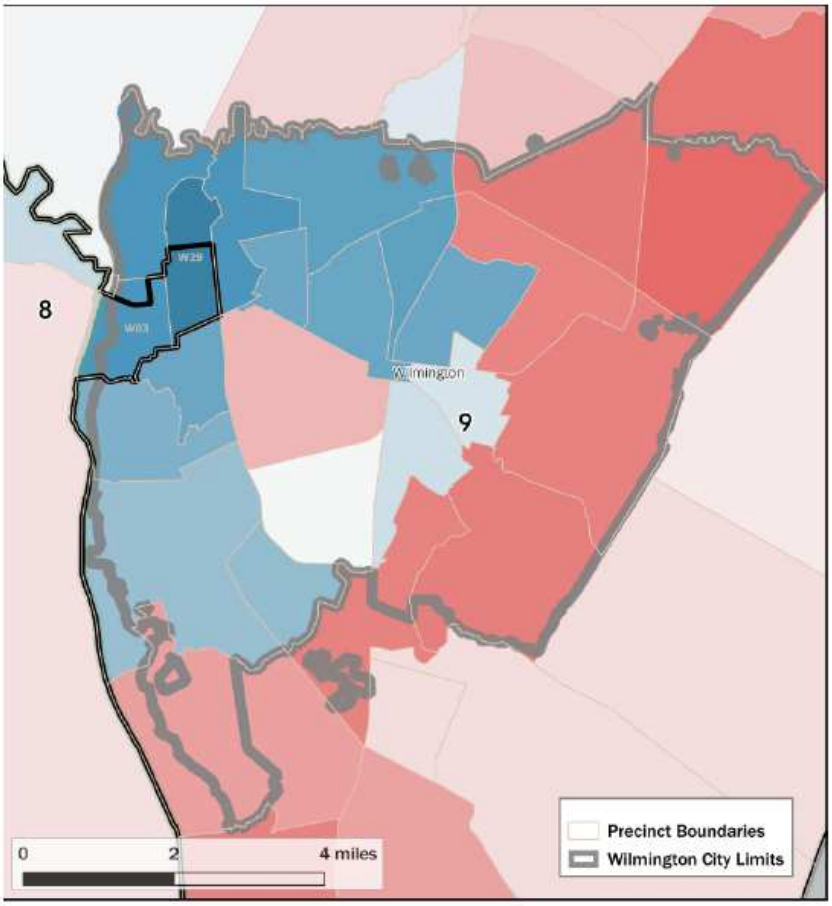
321. The Bladen-Pender-New Hanover-Brunswick Senate county grouping contains Senate Districts 8 and 9. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

322. Plaintiffs' Exhibit 272 is Dr. Cooper's map of this county grouping:



323. In this grouping, the population of New Hanover County is slightly too large to fit into one Senate district, and thus the mapmaker had to place a small portion of New Hanover in Senate District 8. Tr. 887:8-9. Legislative Defendants chose to take heavily Democratic VTDs in Wilmington, separating them from the rest of Wilmington (which is in Senate District 9) and grouping them instead with heavily Republican areas in Bladen, Pender, and Brunswick counties. Tr. 887:5-888:8; PX253 at 29-31 (Cooper Report). As Dr. Cooper explained, the clear intent and effect of this decision was to waste the votes of the Democratic voters in these Wilmington VTDs, placing them in a heavily Republican district (Senate District 8) and

removing them from a highly competitive district (Senate District 9) where their votes could make a difference. *Id.* Plaintiffs' Exhibit 273 provides a zoomed-in view of the cracking of the Democratic voters in these two VTDs, which has come to be known as the "Wilmington Notch":



324. Dr. Cooper credibly testified that the enacted plan is the most maximally favorable construction of the grouping possible for Republicans. Tr. 887:24-25. This grouping illustrates Dr. Cooper's conclusion about all of the groupings he analyzed: "whenever there's discretion to be exercised, that discretion tended to go in favor of one party, in this case the Republican Party, and against the other party, in this case the Democrat party." Tr. 889:22-25.

325. The election results in this grouping, which was drawn in 2011 and not redrawn in 2017, illustrate the effects of the gerrymander. Republican Senator William Rabon has comfortably won Senate District 8 in every election since 2011. A Republican candidate also

won Senate District 9 in the 2012, 2014, and 2016 election cycles, but by much smaller margins, and the Democratic candidate won Senate District 9 in 2018 by less than three tenths of a percentage point. JSF at Ex. 1; PX253 at 31 (Cooper Report). These results illustrate why the mapmaker sought to move the two heavily Democratic VTDs in the Wilmington Notch from Senate District 9 to 8, and the electoral significance of doing so.

326. Legislative Defendants offered no nonpartisan explanation for the boundaries of these districts. While they noted that some portion of New Hanover County must be placed in Senate District 9 for equal population purposes, Legislative Defendants failed to rebut the fact that alternative ways to draw the grouping would not split municipalities in the manner that the enacted plan does. Over 97% of Dr. Mattingly's simulations of this county grouping do not split any municipality at all in the grouping. PX429.

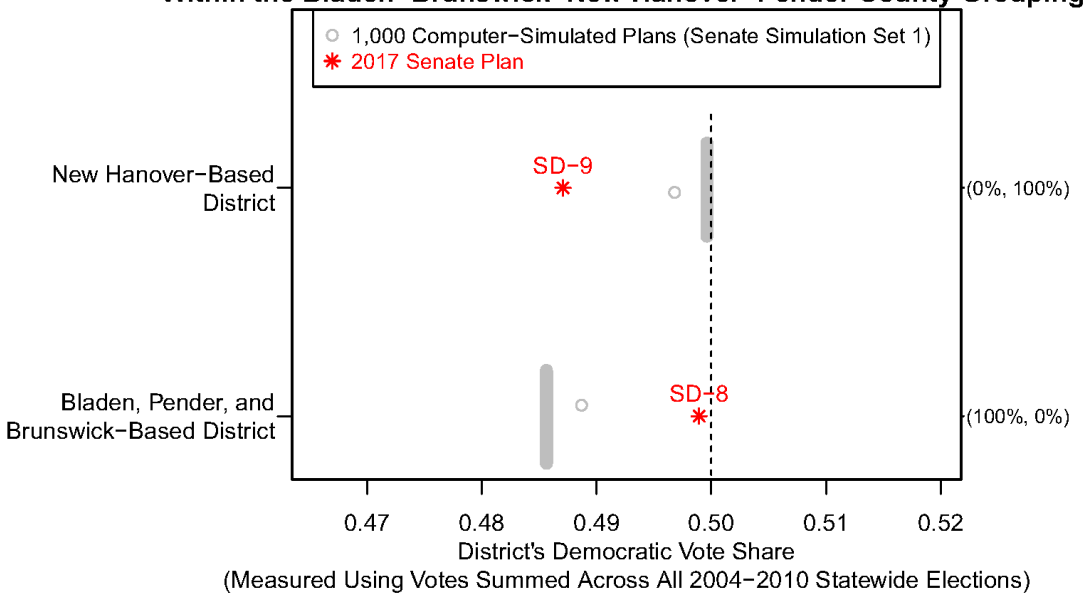
327. The simulations of Plaintiffs' other experts confirm that the Bladen-Brunswick-New Hanover-Pender Senate county grouping is an outlier.

328. Because this county grouping was drawn in 2011 and remained unchanged in 2017, in analyzing this individual county grouping, Dr. Chen used the statewide elections from 2004 to 2010 that the General Assembly used during the 2011 redistricting process, rather than the 2010-2016 statewide elections. Tr. 366:8-367:1, 382:23-383:11; PX720. Dr. Chen used these 2004-2010 statewide elections because, to assess the question of partisan intent, he wanted to use the same elections data that the General Assembly had available and was considering when it drew this grouping in 2011. Tr. 367:2-23; PX1 at 21-24 (Chen Report).

329. Dr. Chen found that both districts in this county grouping are extreme partisan outliers. Tr. 384:2-386:19. Senate District 9 has a lower Democratic vote share than all of its corresponding districts in all of the simulations, while Senate District 8 has a higher Democratic

vote share than all of its corresponding districts in all of the simulations. *Id.*; PX100. Dr. Chen's analysis demonstrates that the moving of Democratic voters in the Wilmington Notch into Senate District 8 made Senate District 9 as favorable for Republicans as possible. The Court credits Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 100 below:

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



330. Dr. Mattingly similarly concluded that the Bladen-Pender-New Hanover-Brunswick Senate grouping was "certainly an outlier." Tr. 1154:11-16. When he mathematically quantified cracking in the Bladen grouping across all 17 statewide elections, he found that the most Democratic district in the Bladen grouping had fewer Democrats than in 92.46% of plans in the nonpartisan ensemble. PX359 at 19-20 (Mattingly Report); PX778 at 29.[4]

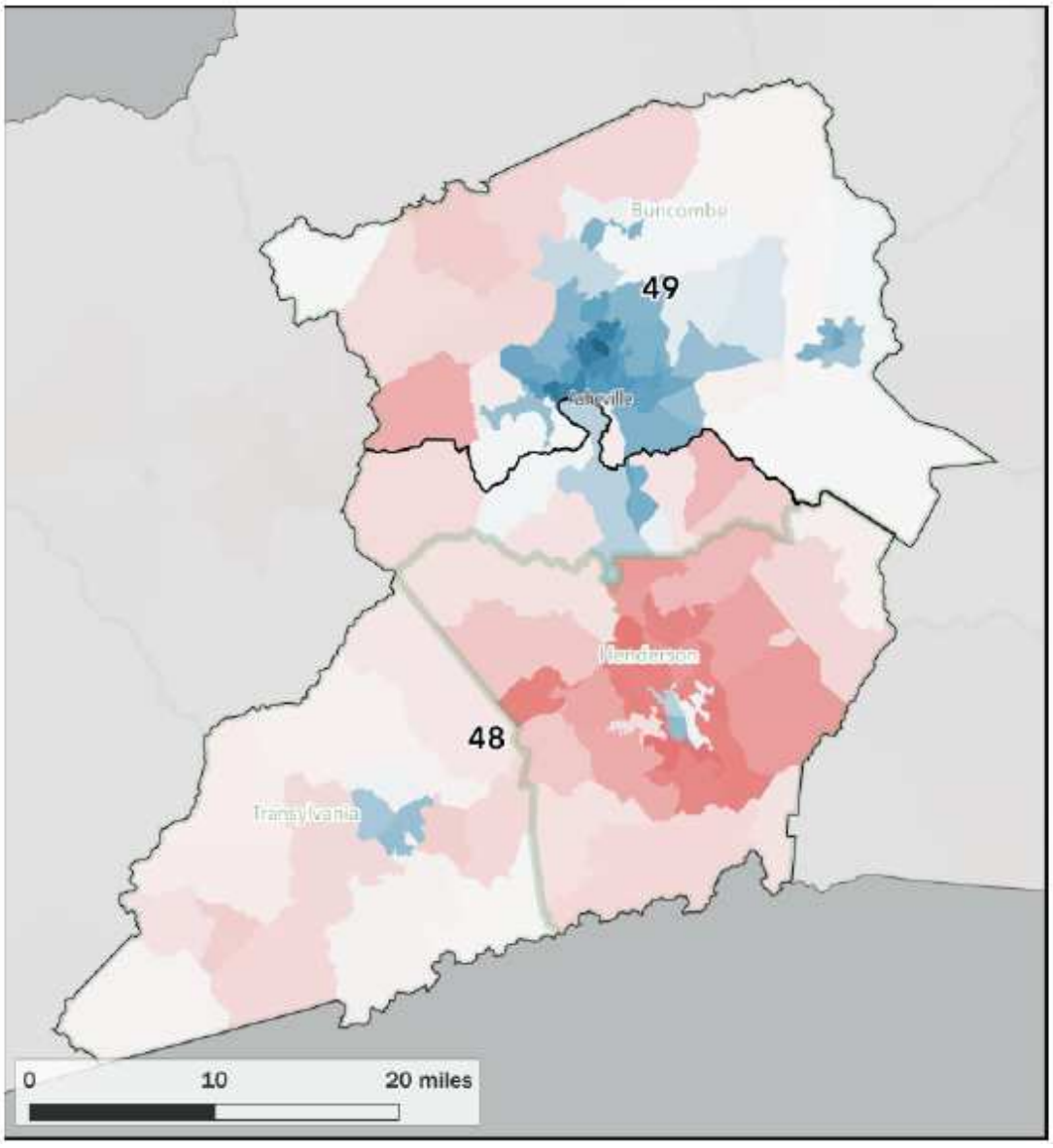
[4] Dr. Pegden was unable to generate any comparison districtings of this county grouping due to his conservative methodology. Tr. 1357:12-23; PX544. As Dr. Pegden testified, the fact that his algorithm does not generate any comparison districtings for a given county grouping does *not* mean that the mapmaker did not make extreme and intentional use of partisan considerations in that county grouping. *See* Tr. 1321:17-25, 1349:11-1350:4.

331. The Court finds that the analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme and intentional partisan gerrymander.

g. Buncombe-Henderson-Transylvania

332. The Buncombe-Henderson-Transylvania Senate county grouping contains Senate Districts 48 and 49. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

333. Plaintiffs' Exhibit 288 is Dr. Cooper's map of this county grouping:



334. Dr. Cooper explained how these district boundaries combine the heavily Democratic VTDs in Asheville with Democratic VTDs in Black Mountain, packing those Democratic voters to create a safe Democratic district in Senate District 49, allowing Senate District 48 to comfortably favor Republicans. Tr. 903:23-904:8; PX253 at 50 (Cooper Report).

335. This gerrymander has been effective. This county grouping was drawn in 2011 and unchanged in 2017, and the Democratic candidate has won all four elections in Senate District 49 since these districts have been in place, while the Republican candidate has won all four elections in Senate District 48 by large margins in all four elections. Tr. 904:16-20; JSF at Ex. 1; PX253 at 50 (Cooper Report).

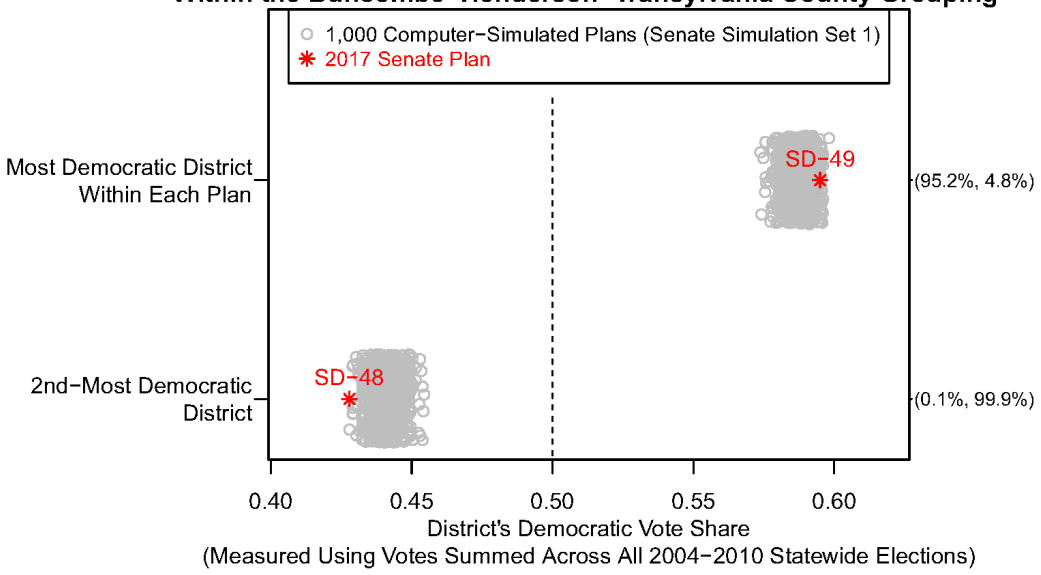
336. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

337. The simulations of Plaintiffs' other experts confirm and independently establish that this county grouping is an extreme partisan gerrymander.

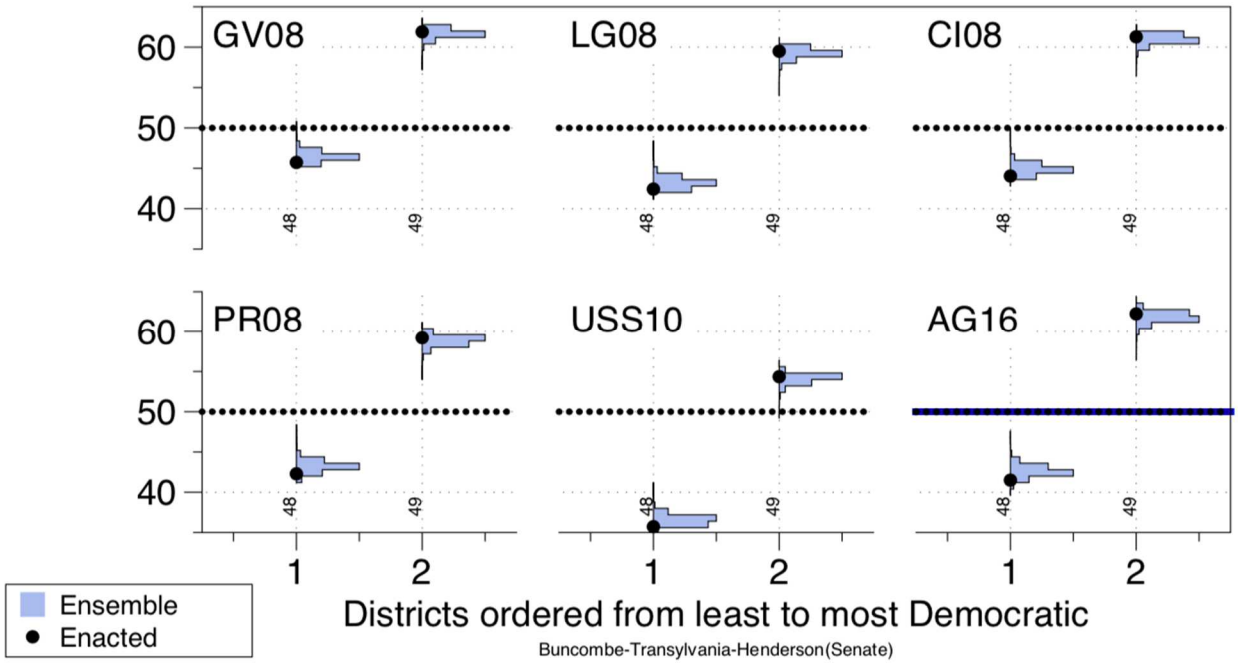
338. Dr. Chen found that both districts in this county grouping are extreme partisan outliers. Tr. 383:12-19.[5] Senate District 49 has a higher Democratic vote share than its corresponding district in nearly all of the simulations, while Senate District 48 has a lower Democratic vote share than its corresponding district in nearly all of the simulations. PX99. Dr. Chen's findings demonstrate the packing of Democratic voters into Senate District 49 to make Senate District 48 a safe Republican seat. The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 99 below:

[5] Because this county grouping was drawn in 2011, Dr. Chen used the 2004 to 2010 statewide elections to analyze this county grouping. Tr. 383:16-22; PX99.

Figure 79: Senate Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Buncombe−Henderson−Transylvania County Grouping



339. Plaintiffs' Exhibit 378 shows Dr. Mattingly's analysis of the Buncombe-Transylvania-Henderson Senate county grouping:



340. Dr. Mattingly's analysis shows that Democrats were cracked out of Senate District 48 and packed into Senate District 49. PX378; PX778 at 29; Tr. 1153:7-1154:9. Dr.

Mattingly found that the least Democratic district in the enacted plan has fewer Democratic votes than in 95.44% of the plans in his ensemble, meaning that the grouping showed more pro-Republican partisan advantage than 95.44% of the nonpartisan plans. PX778 at 29; PX359 at 21-22. Dr. Mattingly concluded that this grouping reflects a pro-Republican partisan gerrymander, Tr. 1154:6-10; PX778 at 29; PX359 at 21-22, and the Court credits his conclusion.

341. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of the grouping is more favorable to Republicans than 99.8% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that the grouping is more carefully crafted to favor Republicans than at least 99.4% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1357:2; PX541. The Court credits Dr. Pegden's analysis and conclusions.

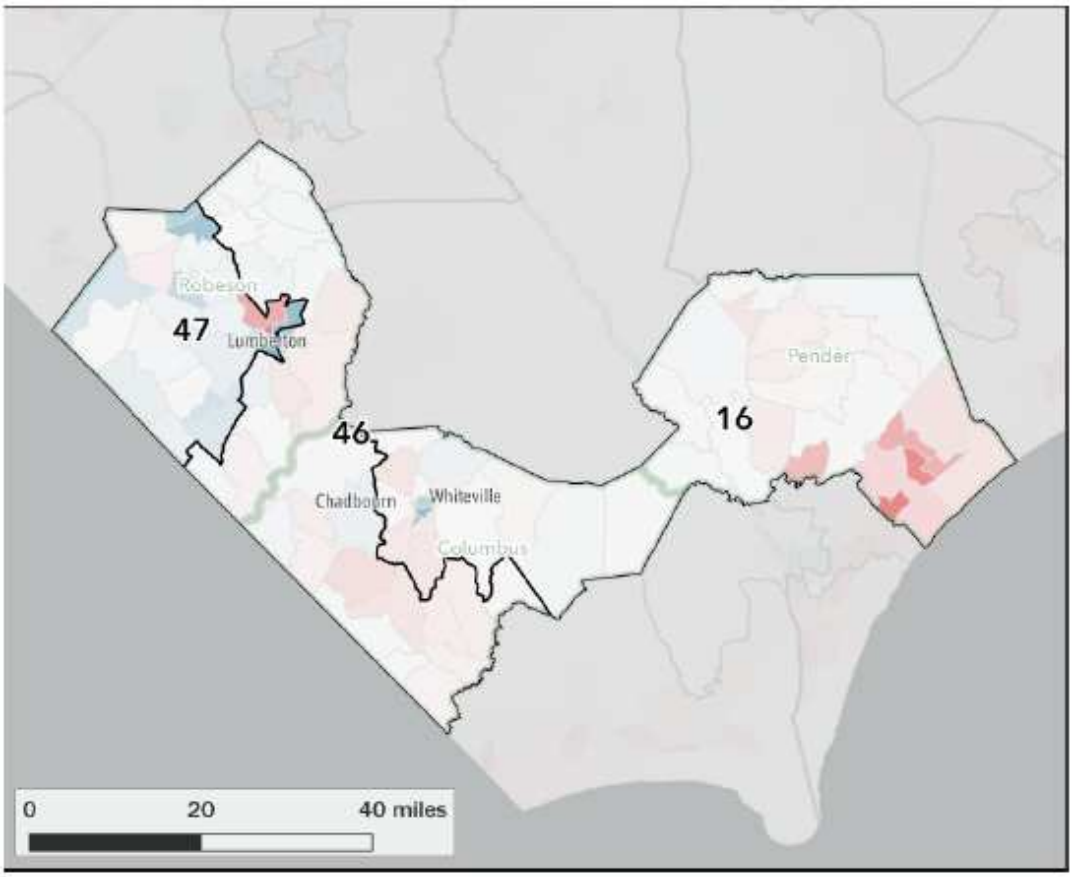
342. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

2. House County Groupings

a. Robeson-Columbus-Pender

343. The Robeson-Columbus-Pender House county grouping contains House Districts 16, 46, and 47. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

344. Plaintiffs' Exhibit 301 is Dr. Cooper's map of this county grouping:

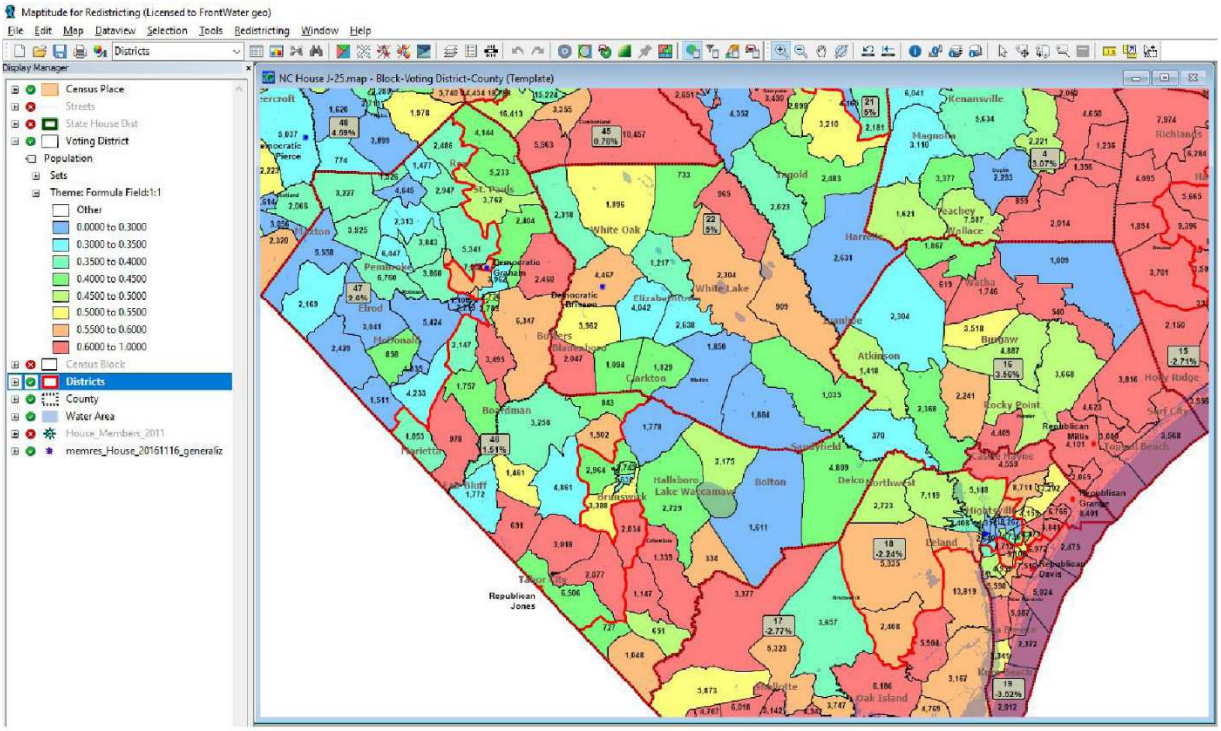


345. Dr. Cooper explained that House District 47 packs as "many... Democratic voters as possible" into that district, including in Lumberton and the area around UNC Pembroke. The packing of Democrats in House District 47 makes House Districts 16 and 46 more favorable to Republicans. Tr. 912:19-913:3; PX253 at 70 (Cooper Report).

346. Dr. Hofeller's Maptitude files confirm that he "had full knowledge of the partisan effects of drawing those lines exactly where they were drawn, essentially drawing a fence between districts 47 and 46 … between Democratic and Republican voters." Tr. 985:15-19; PX342; PX329 at 18 (Cooper Rebuttal Report). In the files for his draft House plan, Dr. Hofeller shaded more Democratic VTDs darker blue, more Republican VTDs red and orange, and moderate VTDs green and yellow. Tr. 979:20-980:19. As shown in Plaintiffs' Exhibit 342, Dr.

Hofeller made sure to place all of the Republican-leaning VTD near Lumberton (shaded orange and red) on the right side of the red line, in House District 46, rather than in House District 47:

Figure 13: Partisan Targeting in House Districts 16, 46, and 47



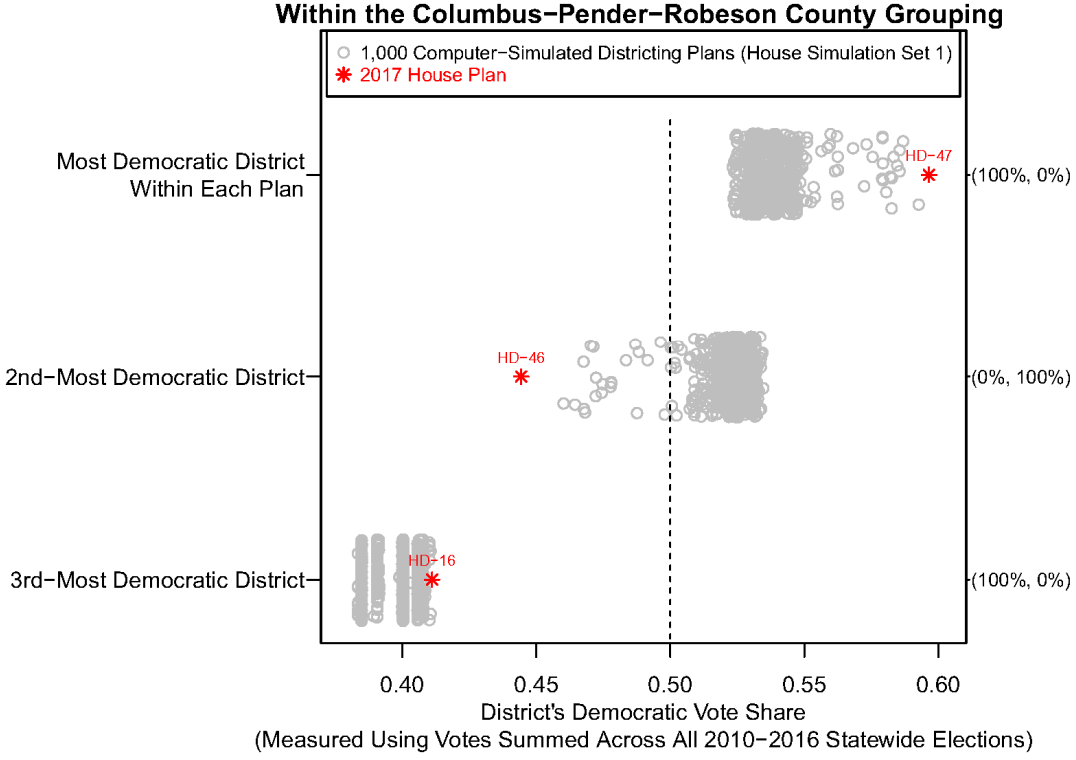
347. Legislative Defendants have offered no nonpartisan explanation for the boundaries of the districts in this county groupings.

348. The simulations of Plaintiffs' other experts independently establish that the Columbus-Pender-Robeson county grouping is an extreme partisan gerrymander.

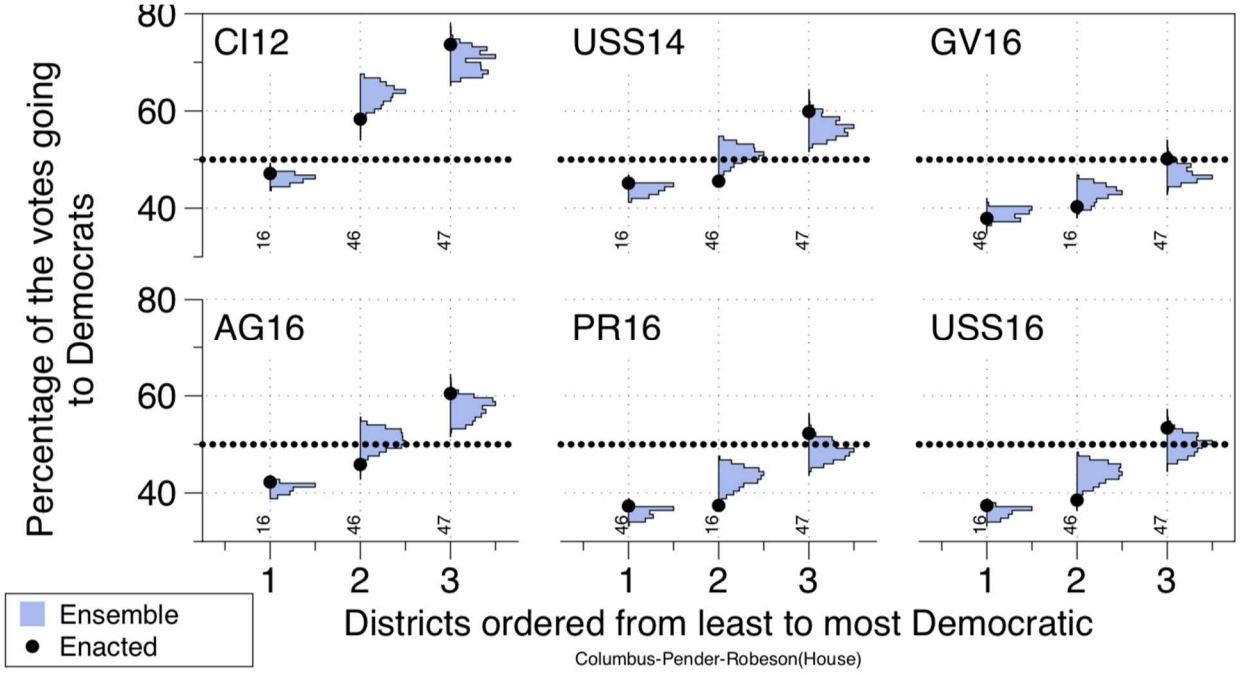
349. Dr. Chen found that all three House districts in this county are extreme partisan outliers. Dr. Chen found that House District 47 has a higher Democratic vote share than the corresponding districts in all of Dr. Chen's simulated plans. Tr. 346:4-347:14. Dr. Chen found that House District 46 has a lower Democratic vote share than the corresponding districts across all of Dr. Chen's simulations, while House District 16 has a higher Democratic vote share than

the corresponding districts in all of Dr. Chen's simulations. Tr. 347:16-348:7. Dr. Chen's findings demonstrate the packing of Democratic voters into House District 47 and the cracking of Democratic voters across House Districts 16 and 46. *Id.* Dr. Chen finds that, as a result of this packing and cracking, almost all of his simulations would produce two Democratic-leaning districts in this county grouping, while the enacted House plan produces just one such district in this grouping. Tr. 348:8-23. The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 47 below:

Figure 27: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Columbus−Pender−Robeson County Grouping



350. Plaintiffs' Exhibit 388 shows Dr. Mattingly's analysis of the Columbus-Pender-Robeson House county grouping:



351. Dr. Mattingly's analysis shows that Democrats were cracked in the two least Democratic districts in this grouping (Districts 16 and 46) and packed into the most Democratic district (District 47). PX388; PX359 at 28; PX778 at 30. There is a huge jump between the number of Democratic votes in the two least and the most Democratic districts in the enacted plan. *Id.* Dr. Mattingly found that the two least Democratic districts in the enacted plan have fewer Democratic voters than 97.98% of the comparable districts in the nonpartisan ensemble. *Id.* As the figure above shows, the gerrymander causes Democrats to lose a seat in this grouping in certain electoral environments. Dr. Mattingly concluded that this grouping reflects a clear pro-Republican partisan gerrymander, PX778 at 30; Tr. 1155:17-21; PX359 at 28, and the Court credits Dr. Mattingly's conclusion.

352. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 98.7% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr.

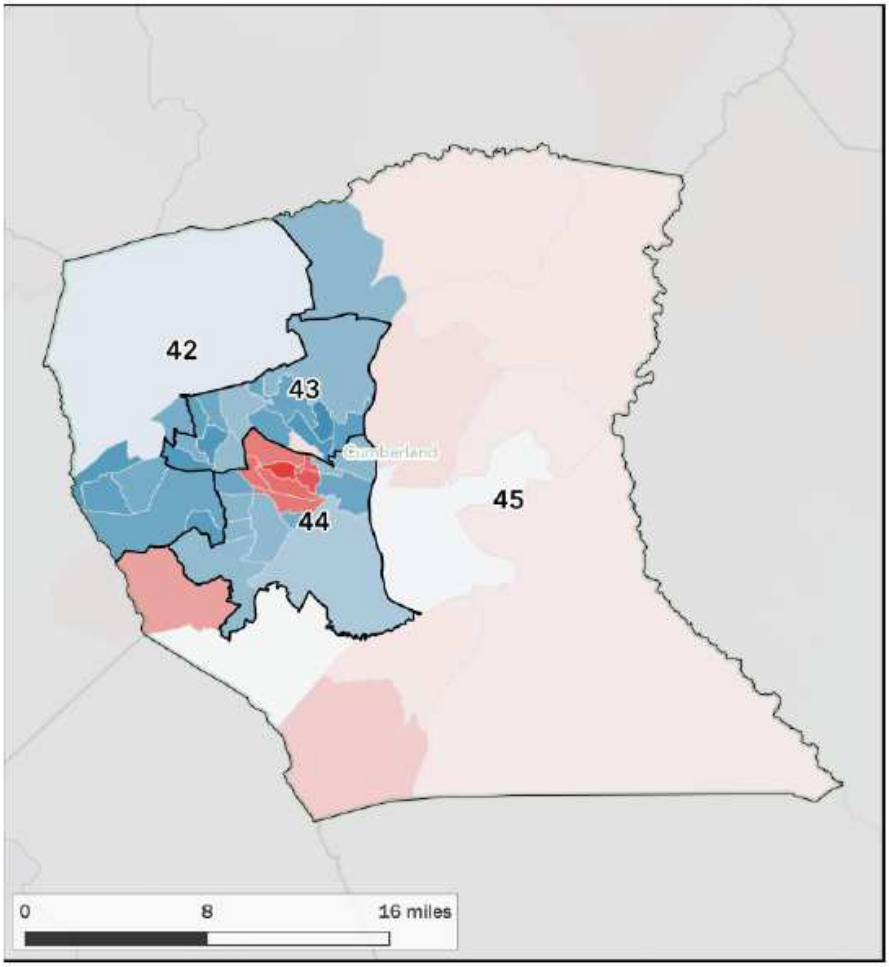
Pegden found that this grouping is more carefully crafted to favor Republicans than at least 96% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:8; PX526. The Court credits Dr. Pegden's analysis and conclusions.

353. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

b. Cumberland

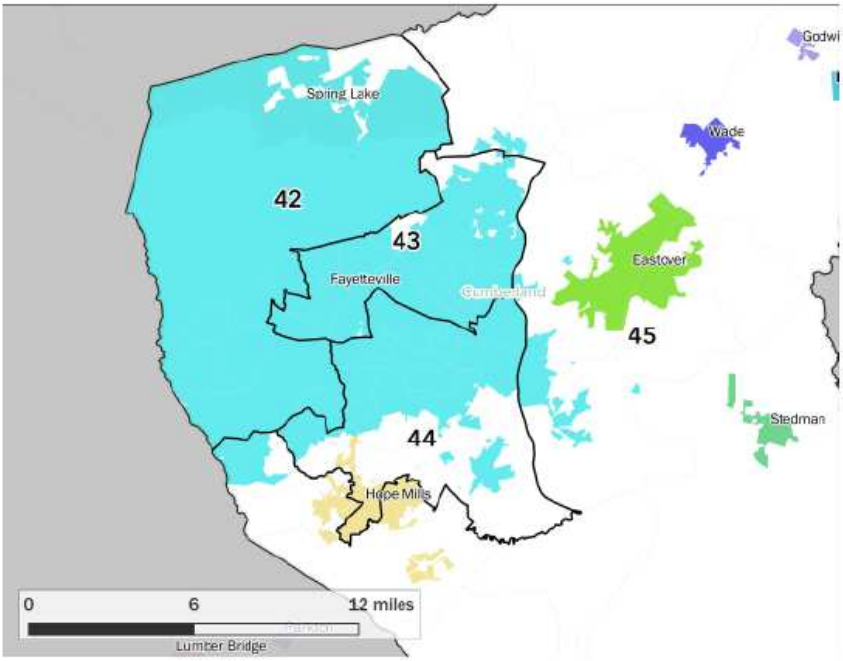
354. The Cumberland House county grouping contains House Districts 42, 43, 44, and 45. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

355. Plaintiffs' Exhibit 305 is Dr. Cooper's map of this county grouping:



356. Dr. Cooper described how House District 45 has a "backwards C-shape" that is "a very clear attempt to connect these Republican leaning [VTDs] all together and avoid... the Democratic leaning VTDs." Tr. 65:23-66:5. In such a way, the district boundaries make House District 45 more favorable for Republicans, while packing the Democratic-leaning VTDs in the Fayetteville area into House Districts 42 and 43; PX253 at 76 (Cooper Report).

357. The district boundaries in this grouping, shown below in Plaintiffs' Exhibit 306, divide Fayetteville between all four districts in a way that does not correspond to Fayetteville's boundaries of or any other municipality. Tr. 917:23-918:5; PX253 at 76 (Cooper Report).



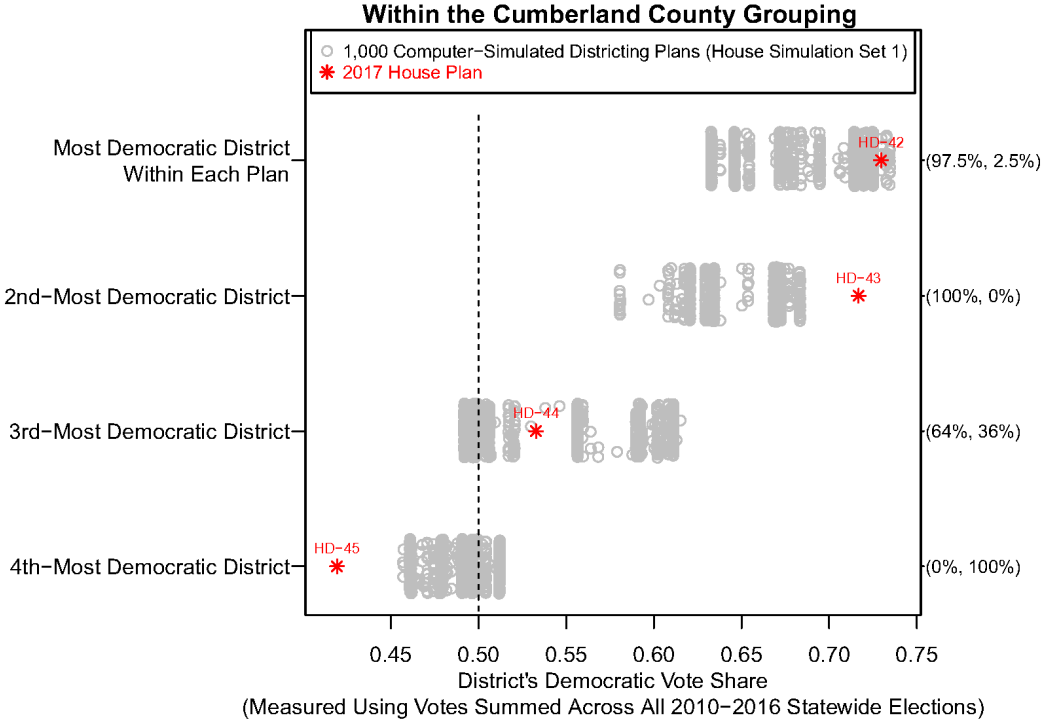
358. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

359. The simulations of Plaintiffs' other experts independently establish that the Cumberland county grouping is an extreme partisan gerrymander.

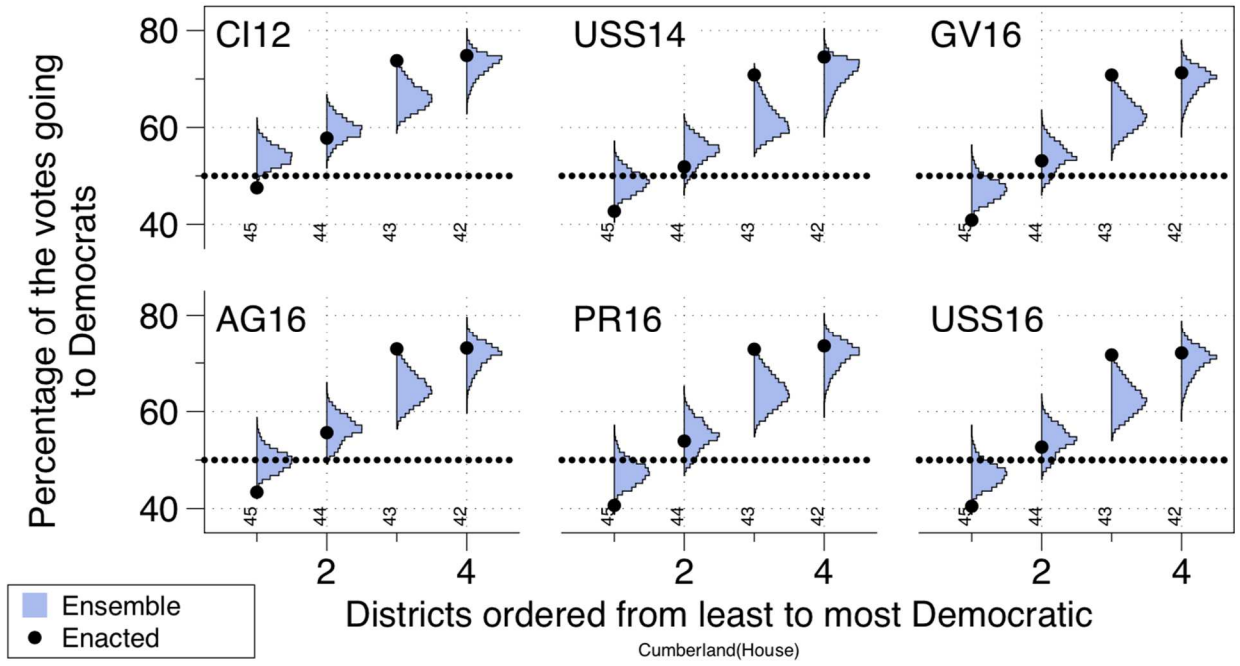
360. Dr. Chen found that this county grouping contains three districts that are extreme partisan outliers. Dr. Chen found that House Districts 42 and 43 have a higher Democratic vote

shares than their corresponding districts in all or almost all of Dr. Chen's simulated plans, while House District 45 has a much lower Democratic vote share that the corresponding district in all of the simulations. Tr. 350:2-12. Dr. Chen's findings demonstrate the packing of Democratic voters into House Districts 42 and 43 in order to make House District 45 as favorable for Republicans as possible. *Id.* Indeed, the least Democratic district in this grouping would be very competitive or even Democratic-leaning in Dr. Chen's simulations, whereas House District 45 under the enacted plan is not within reach for Democrats using the 2010-2016 statewide elections. The Court credits Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 48 below:

Figure 28: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Cumberland County Grouping



361. Plaintiffs' Exhibit 390 shows Dr. Mattingly's analysis of the Cumberland House county grouping:



362. Dr. Mattingly concluded that the two least Democratic districts (District 45 and 44) show cracking of Democrats, while the two most Democratic districts (District 43 and 42) show extreme packing of Democrats, in comparison to the nonpartisan plans. PX390; PX778 at 30; PX359 at 29. He found that the two least Democratic districts in the enacted plan have fewer Democratic voters than 99.73% of the comparable districts in the nonpartisan ensemble, while the two most Democratic districts in the enacted plan have more Democratic votes than 99.79% of the comparable Democratic districts in the nonpartisan ensemble. *Id.* As the figure above shows, the gerrymander causes Democrats to lose a seat in this grouping in certain electoral environments, because the black dot in House District 45 always falls below the 50% line while the blue histogram often rises above it. Dr. Mattingly concluded that the Cumberland House grouping is an extreme pro-Republican partisan gerrymander, Tr. 1155:5-16; PX778 at 30; PX359 at 29; PX390, and the Court credits Dr. Mattingly's conclusion.

363. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is

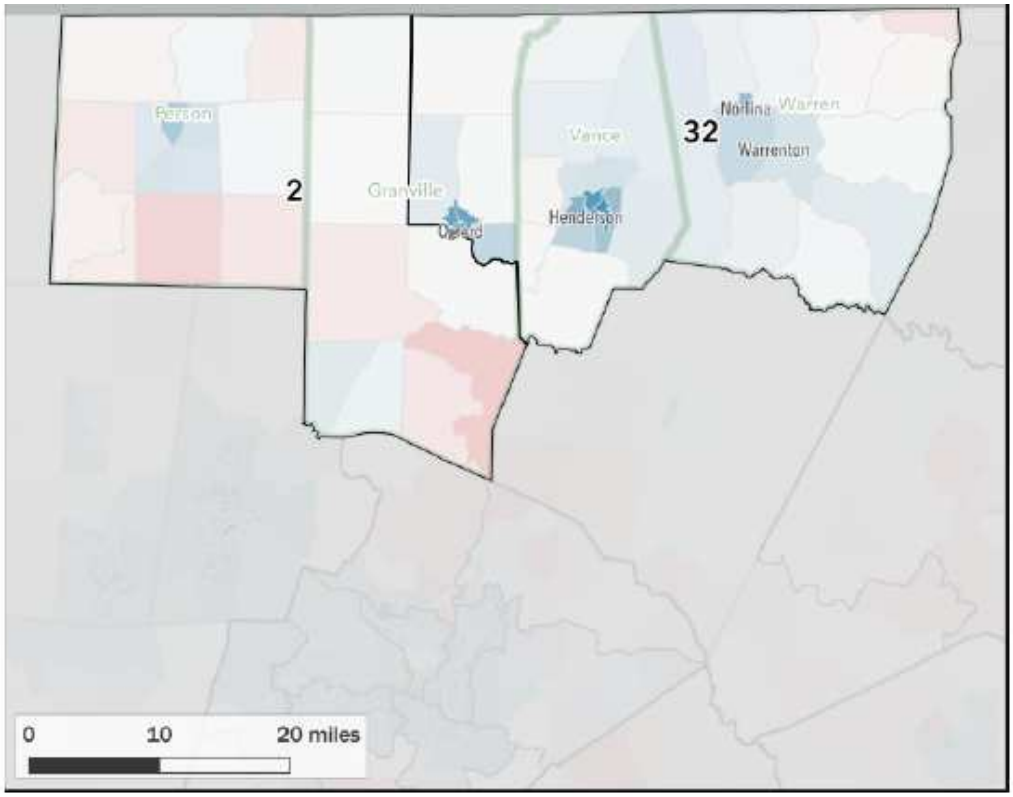
more favorable to Republicans than 98.3% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 95% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:9; PX529. The Court credits Dr. Pegden's analysis and conclusions.

364. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

c. Person-Granville-Vance-Warren

365. The Person-Granville-Vance-Warren House county grouping contains House Districts 2 and 32. The Court credits the analysis of Plaintiffs' experts and concludes that Legislative Defendants drew this county grouping to maximize partisan advantage.

366. Plaintiffs' Exhibit 289 is Dr. Cooper's map of this county grouping:

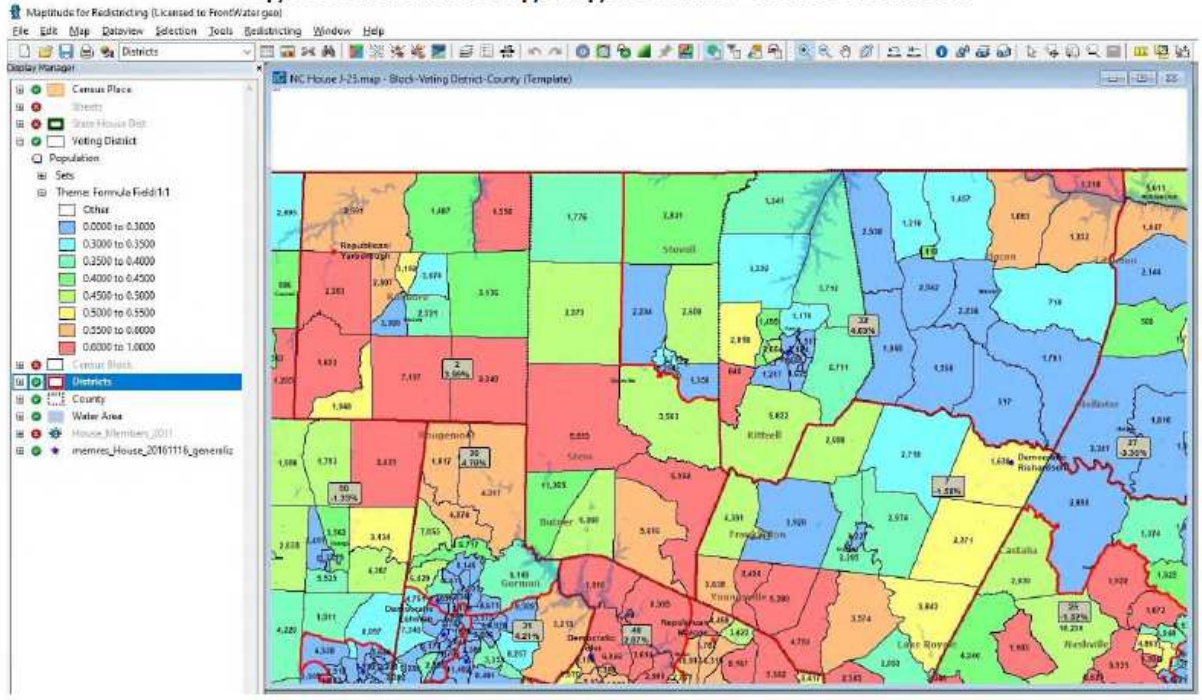


367. Several of Plaintiffs' experts testified that there are only a limited number of possible ways to draw this county grouping. Tr. 359:4-360:2 (Dr. Chen), 90:17-19 (Dr. Cooper); 1156:25-1157:16 (Dr. Mattingly). Because of the Whole County Provision, the only differences between the alternative ways to draw this grouping involve which of Granville County's few VTDs are placed in each of the two districts. *See id.*

368. Among their limited options, Legislative Defendants chose the option that is most favorable to Republicans. Legislative Defendants packed the most Democratic VTDs in and around Oxford into House District 32, in order to make House District 2 as favorable for Republicans as possible. Tr. 905:21-906:8; PX253 at 53 (Cooper Report).

369. Dr. Hofeller's Maptitude files confirm that he drew these districts boundaries with this purpose. His draft House map (PX329 at 14) shows how he carefully placed all of the bluest VTDs on the House District 32-side of the boundaries of these two districts:

Figure 9: Partisan Targeting in House Districts 2 and 32

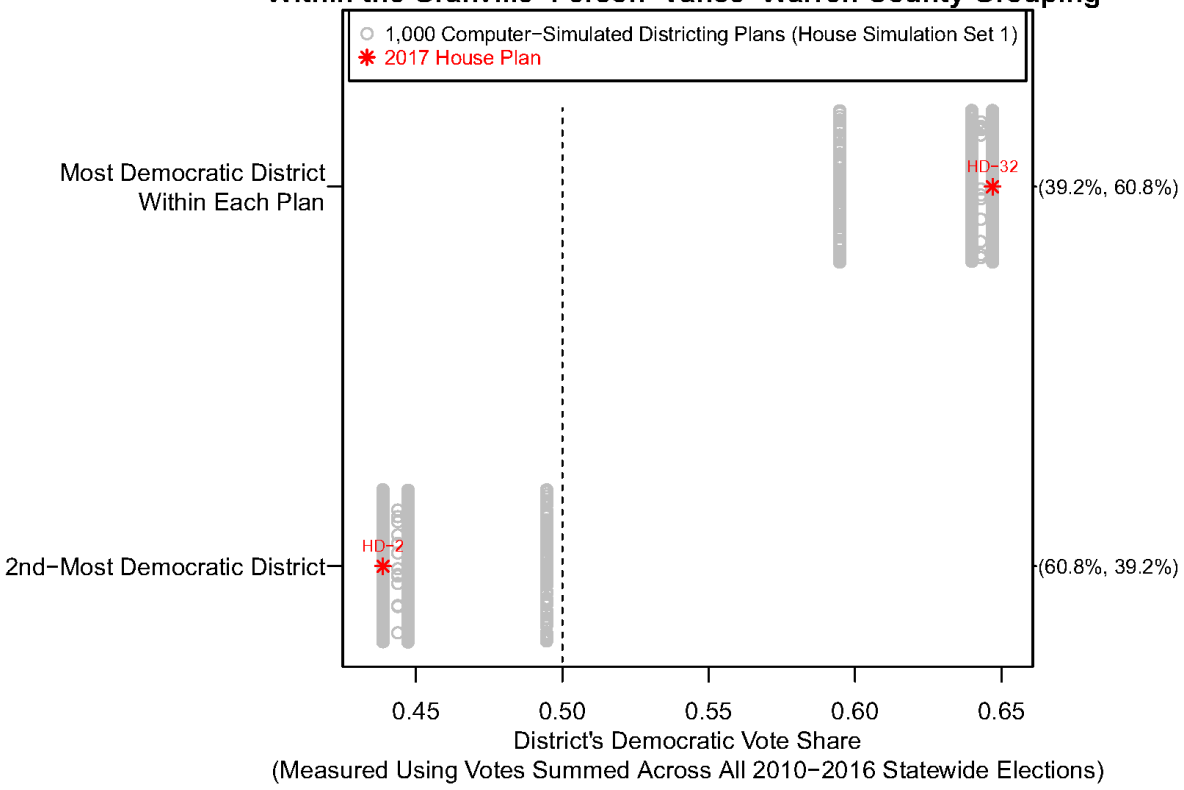


370. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

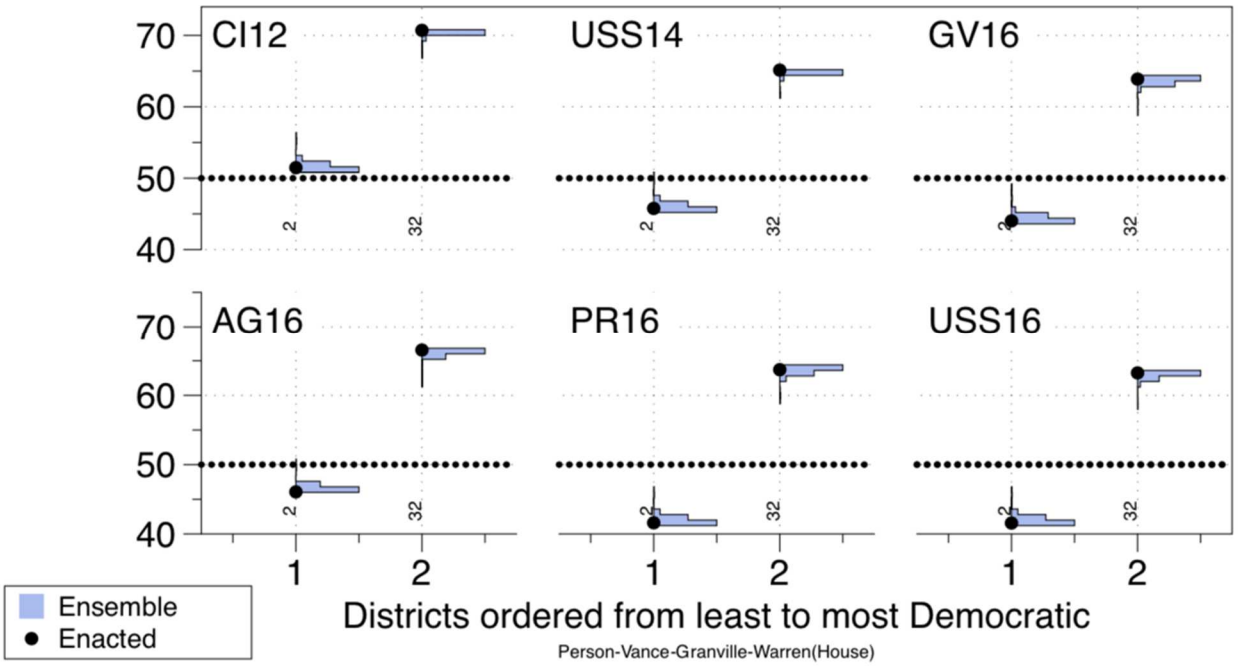
371. The simulations of Plaintiffs' other experts confirm and independently establish that Legislative Defendants drew this grouping to be as favorable for Republicans as possible.

372. Dr. Chen found that, among the limited options for drawing this county grouping, Legislative Defendants made House District 32 as heavily Democratic and House District 2 as favorable for Republicans as possible. Tr. 359:4-360:11. The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 51 below:

Figure 31: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Granville−Person−Vance−Warren County Grouping



373. Plaintiffs' Exhibit 406 shows Dr. Mattingly's analysis of the Person-Vance-Granville-Warren House county grouping:



374. Like Dr. Chen, Dr. Mattingly found very few possible unique maps for this grouping that satisfied his criteria, and that the enacted plan was the most tilted to the Republican party among the limited options. Tr. 1156:25-1157:16; PX359 at 39-40. The least Democratic district in the enacted plan has the same or fewer Democrats than in 100% of the plans in his nonpartisan ensemble, and the most Democratic district in the enacted plan has the same or more average Democrats than in 100% of the plans in the nonpartisan ensemble. PX359 at 39-40.[6]

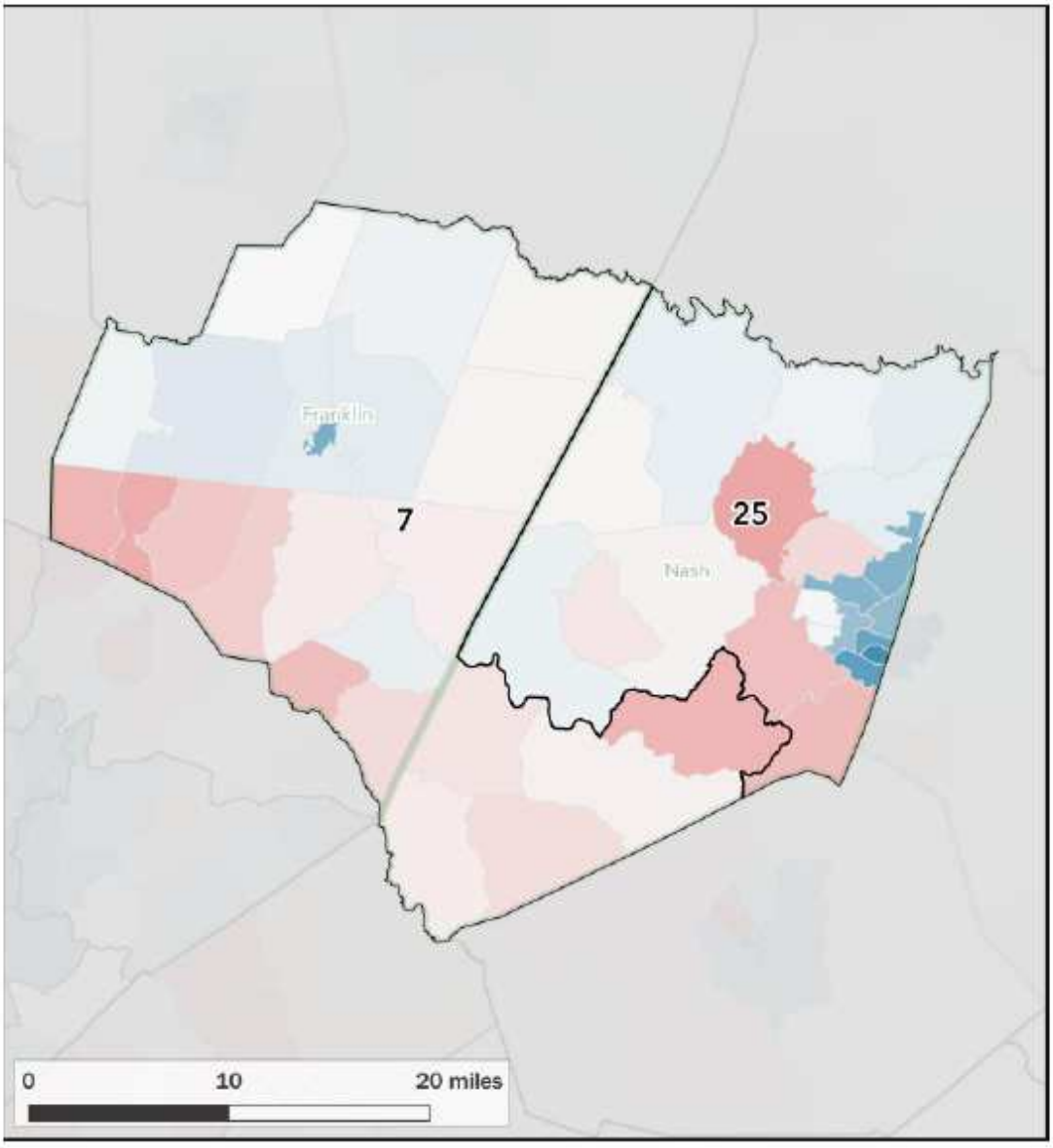
375. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

d. Franklin-Nash

376. The Franklin-Nash House county grouping contains House Districts 7 and 25. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

[6] Dr. Pegden was unable to generate any comparison districtings of this House county grouping due to his conservative methodology. Tr. 1349:11-1350:4; PX536.

377. Plaintiffs' Exhibit 293 is Dr. Cooper's map of this county grouping:



378. These district boundaries avoid grouping the more Democratic-leaning and competitive VTDs on Nash County's western border in House District 7, instead stretching House District 7 into the southeast corner of Nash County to grab the heavily Republican VTDs there. The placement of this district boundary made House District 7 more favorable to Republicans. As Dr. Cooper explained, if the mapmaker had included "any other VTD" in

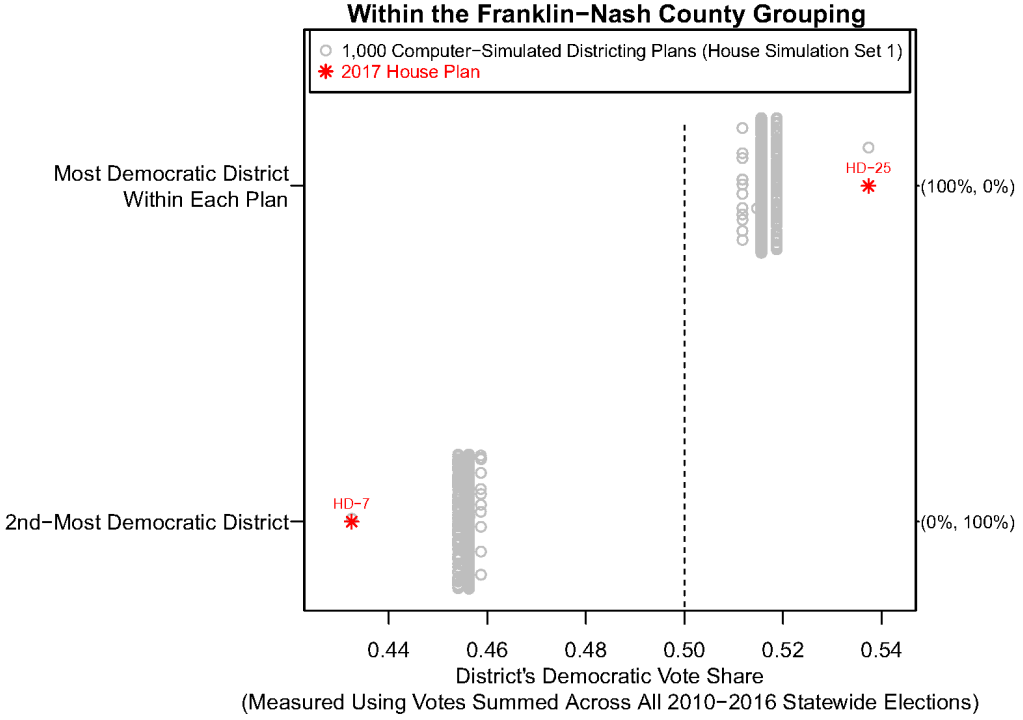
House District 7 from Nash County, House District 7 would have been less favorable to Republican candidates. Tr. 907:4-13; PX253 at 59 (Cooper Report).

379. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts. They noted that the enacted version of this county grouping matches the draft drawn by the Campbell Law students, but as the Court already found, that is because Legislative Defendants cynically cherry-picked these districts from the students' draft after evaluating all of these districts for partisanship and determining that the students happened to draw these districts in a manner maximally favorable for Republicans. *Supra* FOF § B.2.a.

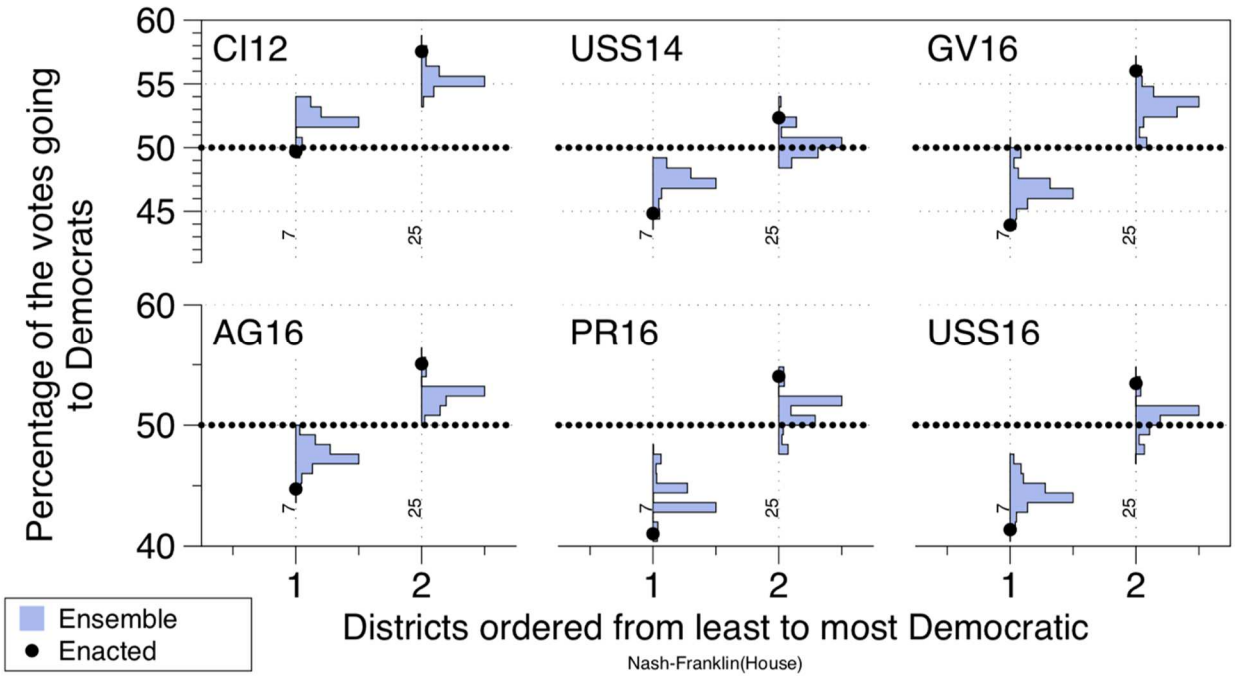
380. The simulations of Plaintiffs' other experts confirm and independently establish that the Nash-Franklin House county grouping is an extreme partisan gerrymander.

381. Dr. Chen found that both districts in county grouping are extreme partisan outliers. Dr. Chen found that House District 25 has a higher Democratic vote share than its corresponding district in all of Dr. Chen's simulated plans, while House District 7 has a lower Democratic vote share that the corresponding district in all of the simulations. Tr. 355:8-17. Dr. Chen's findings demonstrate the packing of Democratic voters into House Districts 25 in order to make House District 7 a safe Republican seat. In Dr. Chen's simulations, the less Democratic district in this grouping would be more competitive for Democrats, particularly in a more favorable electoral environment for them than the 2010-2016 statewide elections. Tr. 356:18-357:1. The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 50 below:

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



382. Plaintiffs' Exhibit 402 shows Dr. Mattingly's analysis of the Nash-Franklin House county grouping:



383. Dr. Mattingly concluded that the most Democratic district shows extreme packing of Democrats, while the most Republican district shows extreme cracking of Democrats, in comparison to the nonpartisan plans. Tr. 1149:2-9. He found that the least Democratic district in the enacted plan has fewer Democratic voters than 95.58% of the comparable districts in the nonpartisan ensemble, demonstrating packing. PX778 at 30; PX359 at 36-37. As the figure above shows, the gerrymander causes the Democrats to lose a seat in this grouping in certain electoral environments, because the black dot for House District 7 falls below the 50% line while the blue histogram sometimes rises above it or gets very close. Dr. Mattingly concluded that the Nash-Franklin House grouping is a pro-Republican partisan gerrymander, PX778 at 30; Tr. 1155:17-21; PX359 at 36-37, and the Court credits Dr. Mattingly's conclusion.[7]

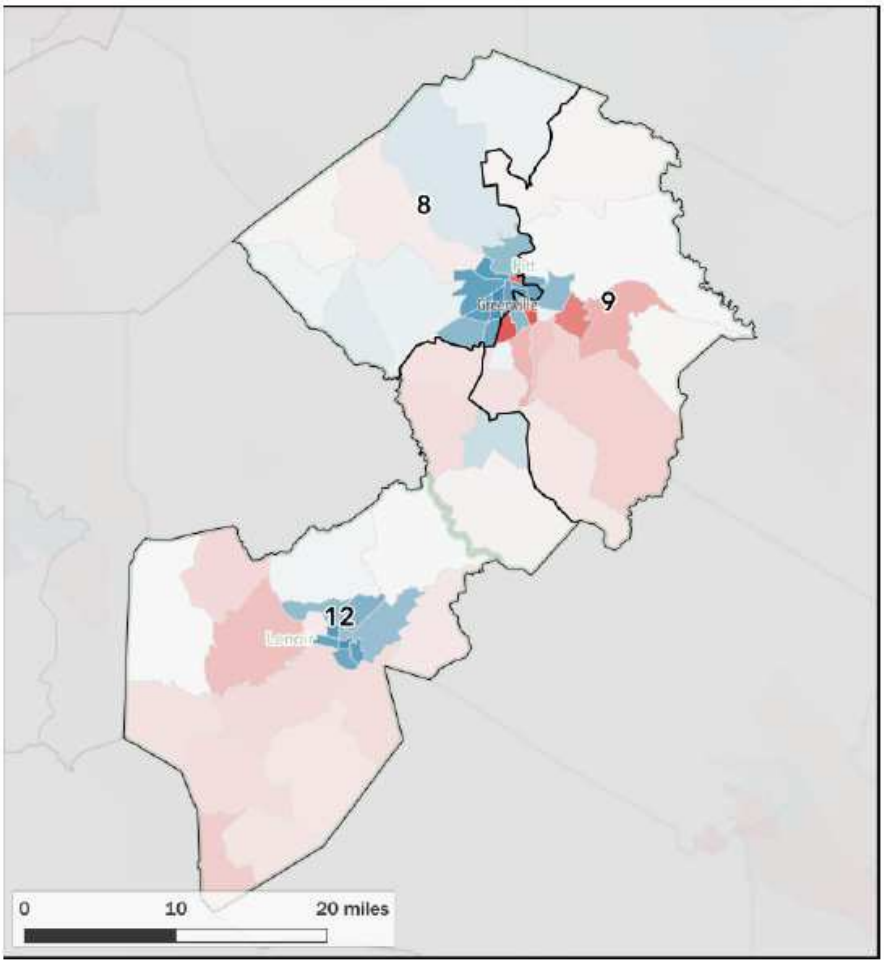
384. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

e. Pitt-Lenoir

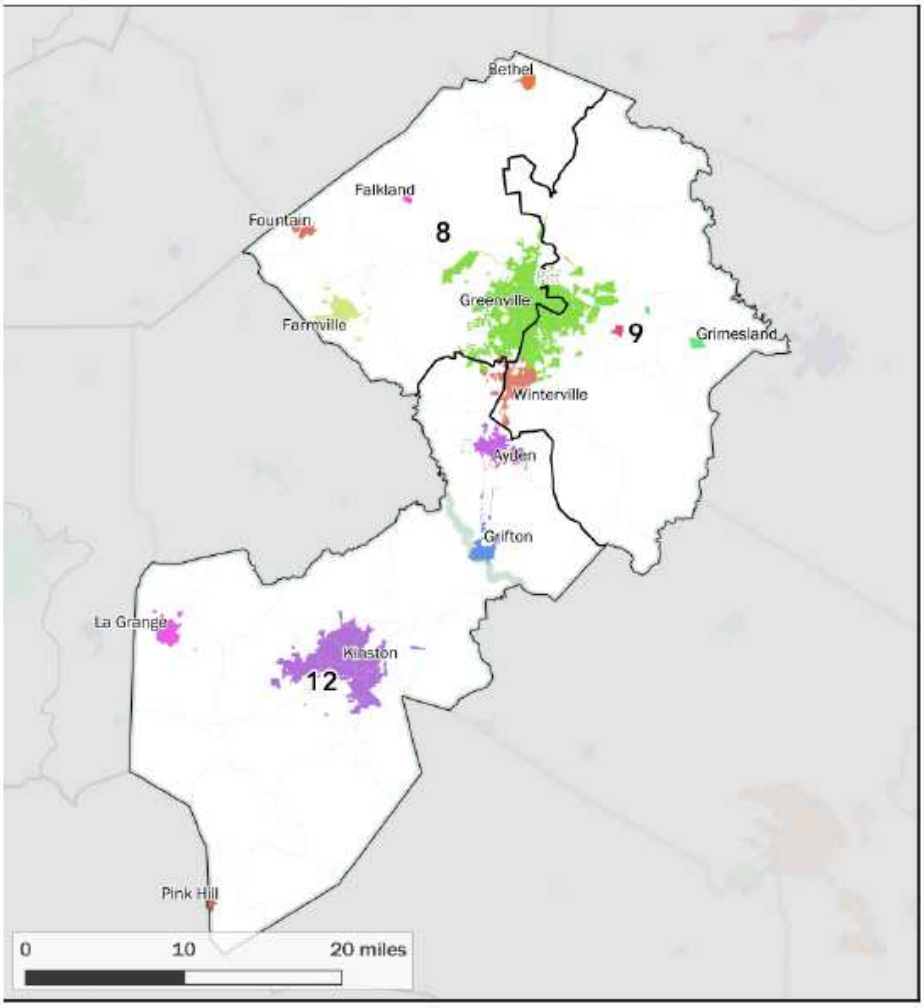
385. The Pitt-Lenoir House county grouping contains House Districts 8, 9, and 12. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

386. Plaintiffs' Exhibit 294 is Dr. Cooper's map of this county grouping:

[7] Dr. Pegden was unable to generate any comparison districtings of this House county grouping due to his conservative methodology. Tr. 1351:22-1352:10; PX537.

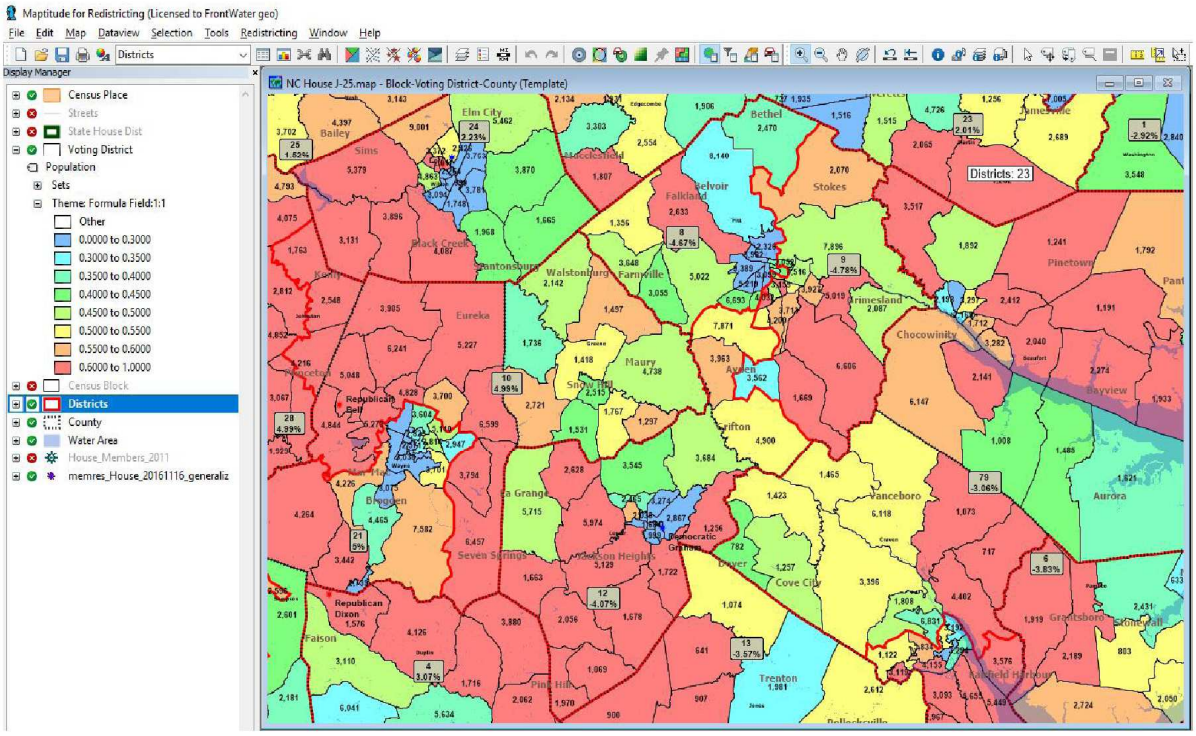


387. The districts in this county grouping split Greenville between all three House districts and even bisect East Carolina University's campus. The district lines pack the most Democratic-leaning VTDs in Greenville into House District 8, while placing all but one of the Republican-leaning VTDs into House District 9. Tr. 908:3-8, 909:23-910:8; PX253 at 61 (Cooper Report). Plaintiffs' Exhibit 295 below shows the municipalities within this county grouping and how the districts split Greenville. Tr. 908:16-23.



388. The Maptitude files from Dr. Hofeller's hard drive confirm that he used VTD-level partisanship data with "surgical precision" to construct the districts in this grouping." Tr. 983:5-984:7; PX340; PX329 at 16 (Cooper Rebuttal Report). Dr. Hofeller's Maptitude file, reproduced below in Plaintiffs' Exhibit 340, demonstrates how Dr. Hofeller meticulously packed all of Greenville's bluest VTDs into House District 8 (on the left side of the red line), in order to make House Districts 9 and 12 favorable for Republicans.

Figure 11: Partisan Targeting in House Districts 8, 9, and 12



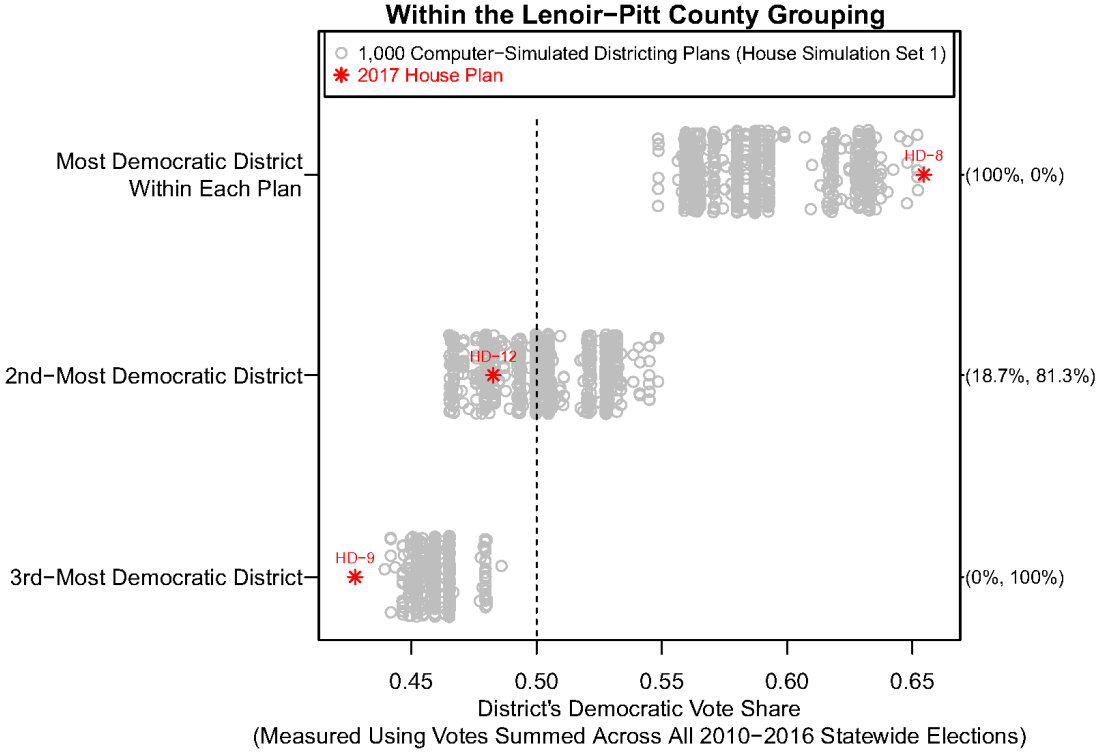
389. Legislative Defendants have offered no nonpartisan explanation for the boundaries of the districts in this county grouping.

390. The simulations of Plaintiffs' other experts independently establish that the Lenoir-Pitt county grouping is an extreme partisan gerrymander.

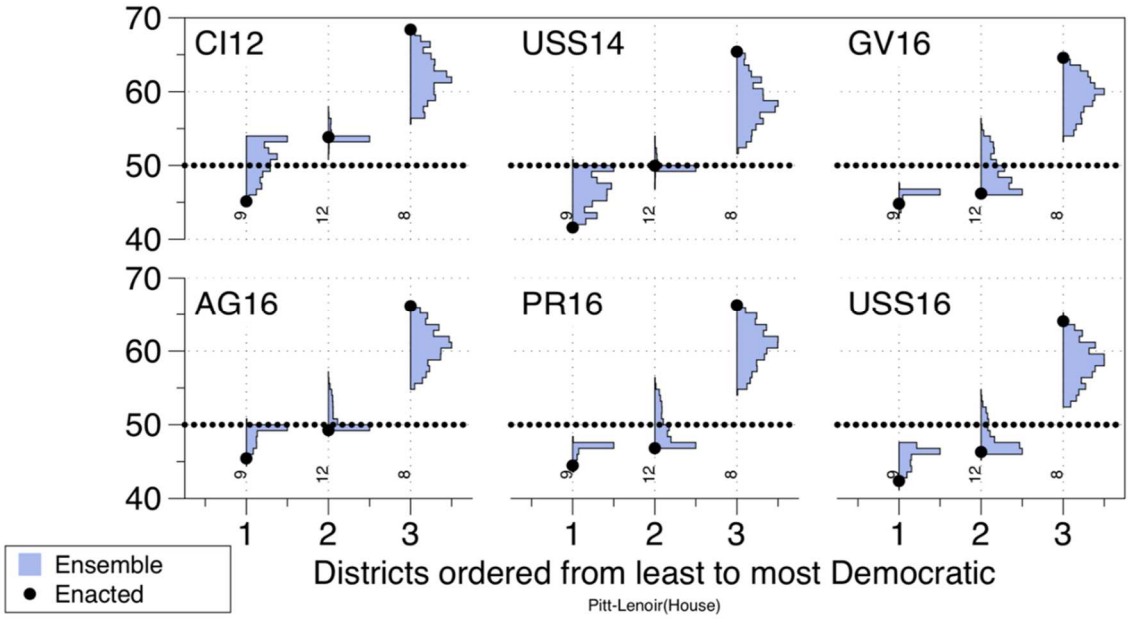
391. Dr. Chen found that House District 8 has a higher Democratic vote shares than its corresponding districts in all Dr. Chen's, while House District 9 has a lower Democratic vote share than the corresponding district in all of the simulations. PX52. Dr. Chen further found that the remaining district in this grouping, House District 12, is less Democratic than over 81% of the corresponding districts across Dr. Chen's simulations. *Id.* Dr. Chen's findings demonstrate the packing of Democratic voters into House District 8 and the cracking of Democratic voters in

House Districts 9 and 12. The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 52 below:

Figure 32: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Lenoir−Pitt County Grouping



392. Plaintiffs' Exhibit 408 shows Dr. Mattingly's analysis of this grouping:



393. Dr. Mattingly concluded that the two most Republican districts shows extreme cracking of Democrats, while the most Democratic shows extreme packing of Democrats, as evidence by the "jump" between these sets of districts. PX408; PX778 at 30; PX359 at 41. Dr. Mattingly found that the two least Democratic districts in the enacted plan have fewer Democratic voters than 99.98% of the comparable districts in the nonpartisan ensemble, while the most Democratic district in the enacted plan has more Democratic votes than 99.95% of the comparable Democratic districts in the ensemble. PX778 at 30; PX359 at 43; PX412. As the figure above shows, the gerrymander causes the Democrats to lose one or two seats in this grouping in certain electoral environment, because the black dot in House Districts 8 and 2 often falls below the 50% line while the blue histograms rise above it. Dr. Mattingly concluded that the Pitt-Lenoir House grouping is an extreme pro-Republican partisan gerrymander, Tr. 1155:5-16; PX778 at 30; PX359 at 41; PX408, and the Court credits Dr. Mattingly's conclusion.

394. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.97% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.91% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:6; PX532. The Court credits Dr. Pegden's analysis and conclusions.

395. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

f. Guilford

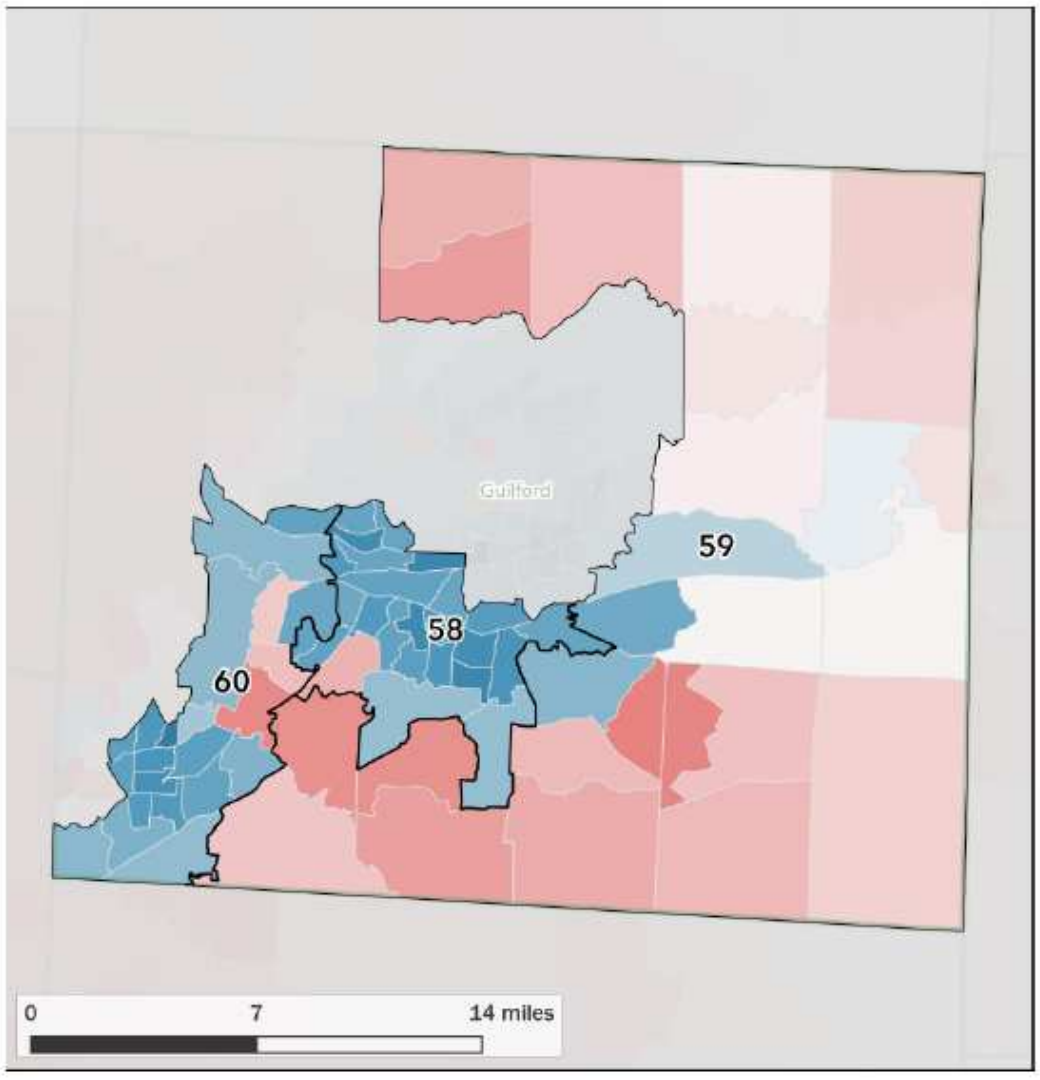
396. The Guilford House county groupings House Districts 57, 58, 59, 60, 61, and 62. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

397. This grouping contains several districts that were altered by the *Covington* Special Master. The *Covington* court tasked the Special Master with redrawing House District 57 after the court found that the enacted House plan did not cure the racial gerrymander of the district. *Covington*, 2017 WL 11049096, at *1-2. In directing the Special Master to redraw House District 57, the court further directed that "the redrawn lines shall also ensure that the unconstitutional racial gerrymanders in 2011 Enacted House Districts 58 and 60 are cured." *Id.* at *2. The *Covington* court did *not* direct the Special Master to redraw House District 59, and did not even mention House District 59 in its order.

398. Consistent with the court's guidance, the Special Master redrew House District 57, and in so doing, also made substantial changes to House District 61 and 62. Tr. 351:14-25; *see* LDTX 159 at 27-29 (Special Master's Recommend Plan). In redrawing these three districts, the Special Master also made what he described as "minor changes" to House District 59 to equalize population. *Covington*, ECF No. 220 at 46. The Special Master explained that he altered House District 59 "only a little." LDTX 159 at 28. Specifically, the Special Master moved one precinct from the enacted District 59 into the Special Master's District 57, and added "two additional precincts" to the northwest concern of House District 59 to equalize population. *Covington*, ECF No. 220 at 46; *see* Chen Demonstrative D5 at 3; Tr. 352:1-21. According to estimates presented at trial by Legislative Defendants' expert Dr. Johnson, of the current population of House District 59, just 8% of the current district's population was added by the Special Master, while the remaining 92% of the population was put into the district by the

General Assembly under the enacted House plan. LDTX314; Tr. 1978:19-22. The Special Master did not make any changes at all to House Districts 58 and 60. Plaintiffs do not bring allegations, and do not seek relief, with respect to the three House districts that the Special Master substantially redrew, House Districts 57, 61, and 62.

399. Plaintiffs' Exhibit 310 is Dr. Cooper's map for this grouping:

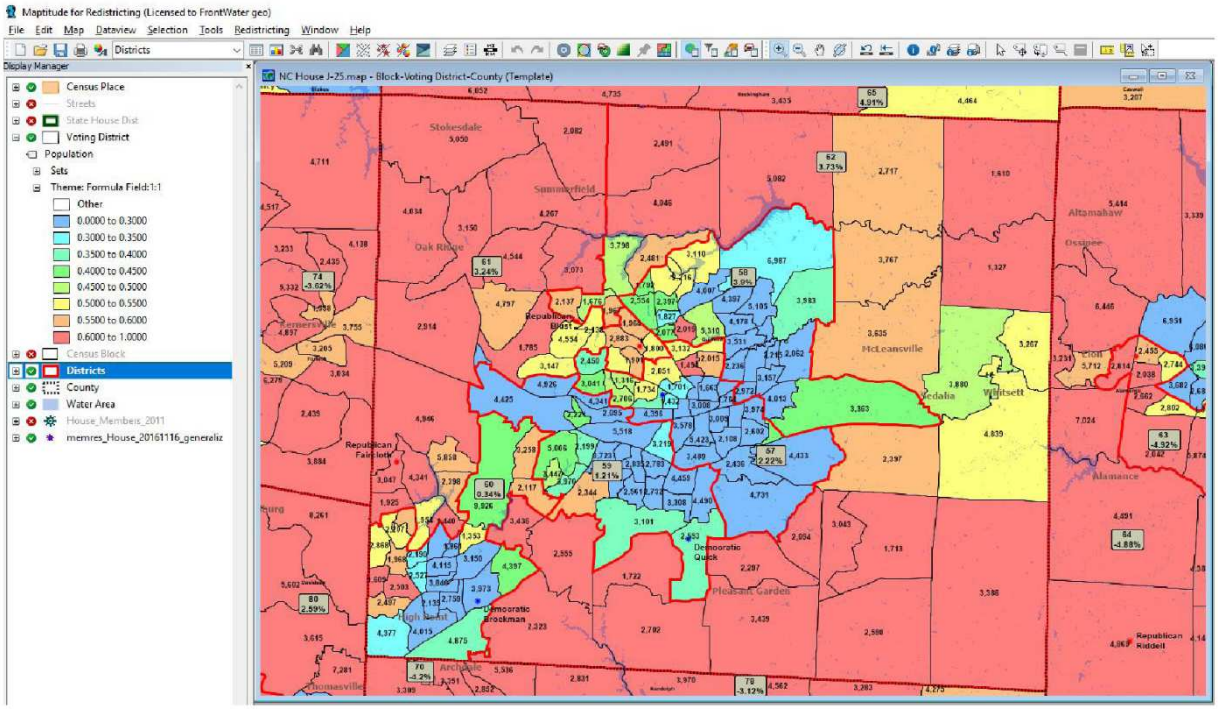


400. Legislative Defendants packed Democratic voters into House Districts 58 and 60 to make House District 59 favorable to Republicans. Tr. 923:3-23; PX253 at 82 (Cooper

Report). House District 58 has "boot-like appendages" to grab Democratic VTDs and ensure these voters could not make House District 59 competitive or Democratic-leaning. *Id.*

401. The Maptitude files from Dr. Hofeller's hard drive confirm that Dr. Hofeller drew this grouping with extreme partisan intent. Tr. 971:16-18. Specifically, Dr. Hofeller drew the boundaries of House Districts 58, 59, and 60 "like a fence" to "separate [Republican voters] from the Democratic voters" in the southern portion of Guilford County. Tr. 987:20-988:5; PX344; PX329 at 20 (Cooper Rebuttal Report). Plaintiffs' Exhibit 344 depicts the Dr. Hofeller's Maptitude file showing the Guilford grouping.

Figure 15: Partisan Targeting in House Districts 58, 59, and 60



402. Legislative Defendants have offered no nonpartisan explanation for the boundaries they drew for House Districts 58, 59, and 60.

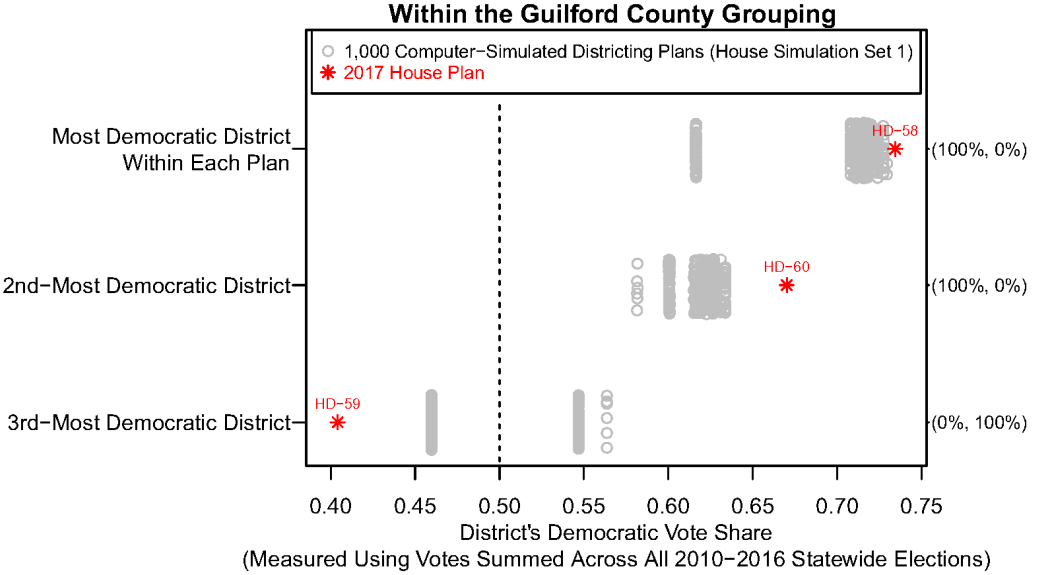
403. The simulations of Plaintiffs' other experts independently establish that the Guilford county grouping is an extreme partisan gerrymander.

404. Drs. Chen, Mattingly, and Pegden all froze three districts in this grouping that were substantially redrawn by the *Covington* Special Master: House Districts 57, 61, and 62. Tr. 352:24-353:3; PX359 at 33 (Mattingly Report); PX508 at 19 (Pegden Report).

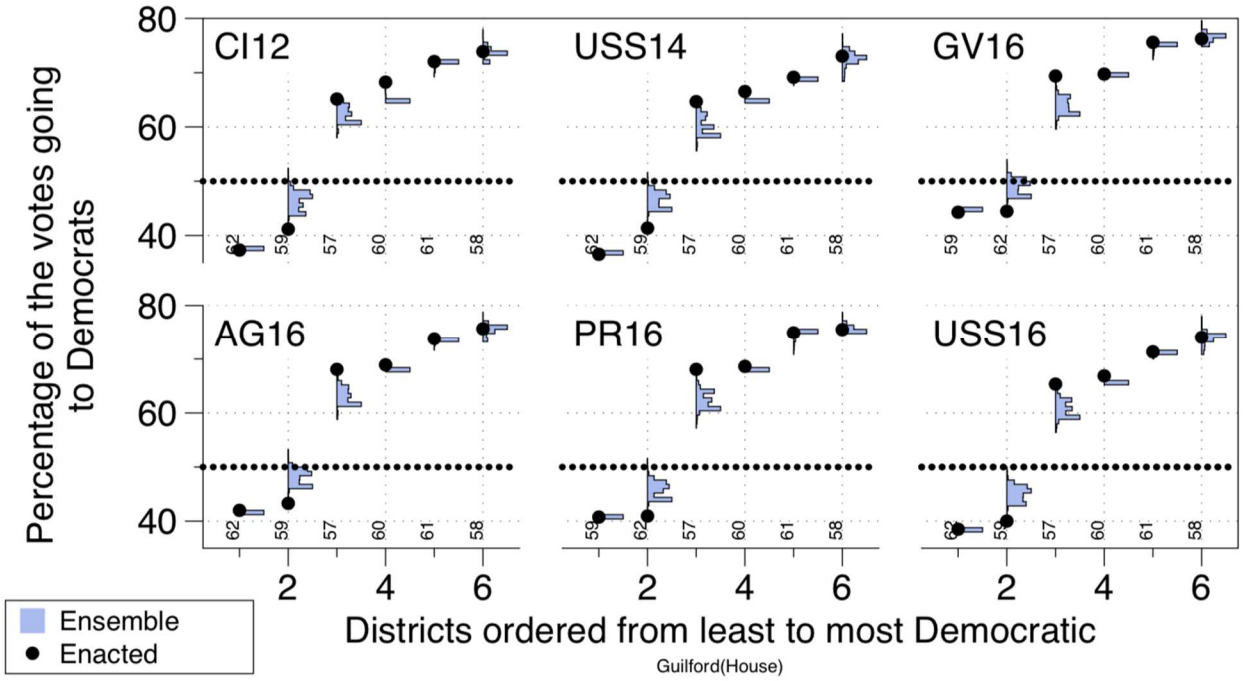
405. Dr. Chen explained in unrebutted testimony that his simulations of the Guilford House grouping did not make any changes to the portion of House District 59 added by the Special Master. Tr. 770:12-771:12; Chen Demonstrative D5 at 4. The Court finds that because Dr. Chen's simulations altered only portions of House District 59 drawn by the General Assembly, and did not touch the very small portions of the district added by the Special Master, the General Assembly necessarily is responsible for the extreme partisan bias that Dr. Chen finds for House District 59.

406. Dr. Chen found that all three districts in the Guilford grouping that he did not freeze are extreme partisan outliers. He found that House Districts 58 and 60 have higher Democratic vote shares than their corresponding districts in all of Dr. Chen's simulations, while House District 59 has a much lower Democratic vote share that the corresponding district in all of the simulations. Tr. 353:17-21; PX45. Dr. Chen's findings demonstrate the packing of Democratic voters into House Districts 58 and 60 to make House District 59 favorable for Republicans. *Id.* Indeed, the least Democratic district in this grouping would be competitive or Democratic-leaning in Dr. Chen's simulations, whereas House District 59 under the enacted plan is not within reach for Democrats using the 2010-2016 statewide elections. The Court credits Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 45 below.

Figure 25: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Guilford County Grouping



407. Plaintiffs' Exhibit 398 shows Dr. Mattingly's analysis of the Guilford grouping:



408. Setting aside the frozen districts, Dr. Mattingly concluded that the least Democratic district (House District 59) shows extreme cracking of Democrats, while the remaining two districts (House Districts 58 and 60) shows extreme packing of Democrats, in

comparison to the nonpartisan plans. PX398; PX778 at 30; PX359 at 33-34. Dr. Mattingly found that House 59 has fewer Democratic voters than 99.89% of the comparable districts in the nonpartisan ensemble, while House Districts 58 and 60 have more average Democratic votes than 99.86% of the comparable Democratic districts in the nonpartisan ensemble. PX778 at 30; PX359 at 33-34; PX398. As the figure above shows, the gerrymander causes the Democrats to lose a seat in this grouping in certain electoral environments, because the black dot for House District 59 falls below the 50% line while the blue histogram sometimes rises above it or gets very close. Dr. Mattingly concluded that the Guilford House grouping is an extreme pro-Republican partisan gerrymander, Tr. 1155:5-16; PX778 at 30; PX359 at 33-34; PX398, and the Court credits Dr. Mattingly's conclusion.

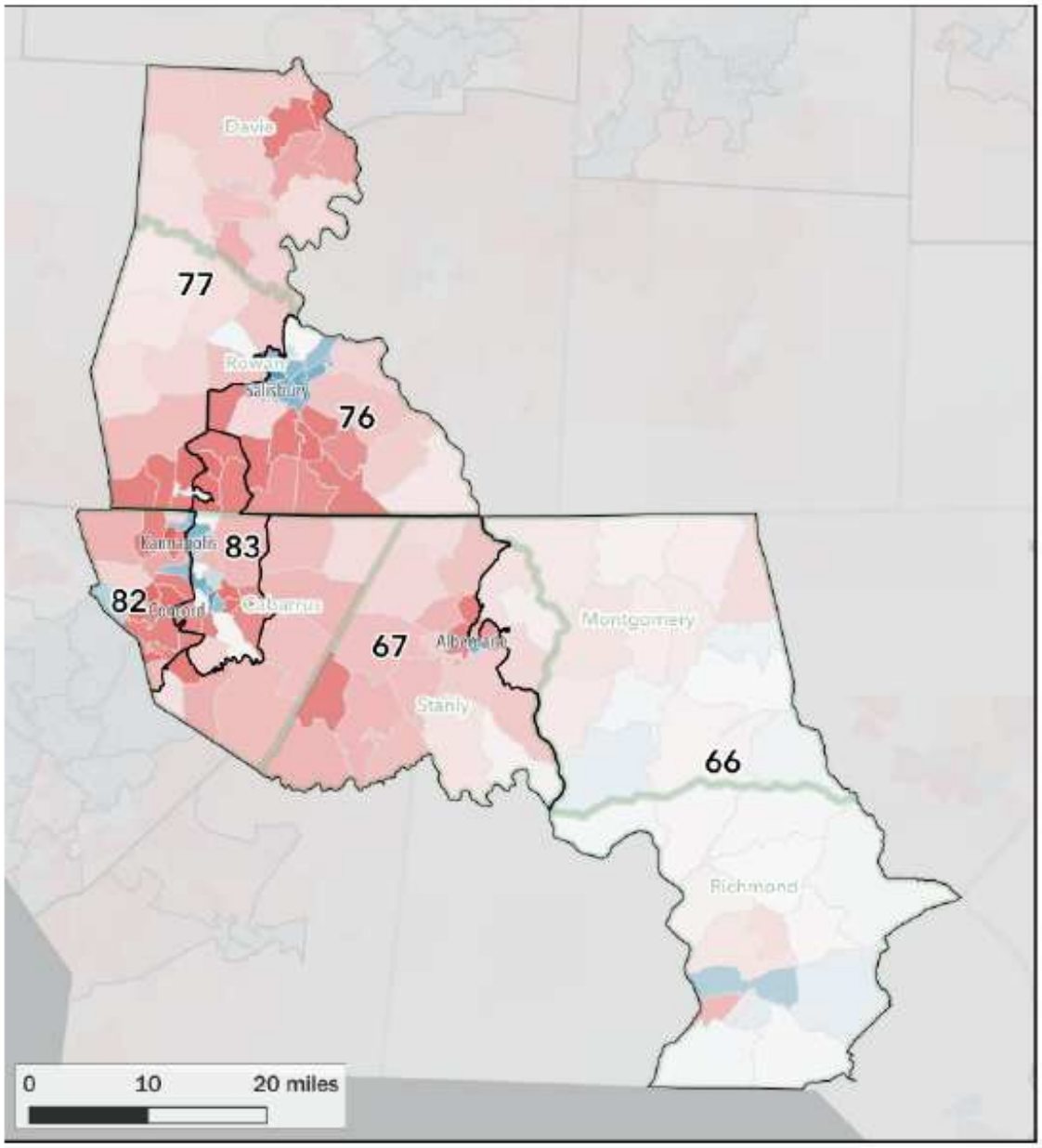
409. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 93.9% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 82% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:10; PX527. The Court credits Dr. Pegden's analysis and conclusions.

410. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

g. Davie-Rowan-Cabarrus-Stanly-Montgomery-Richmond

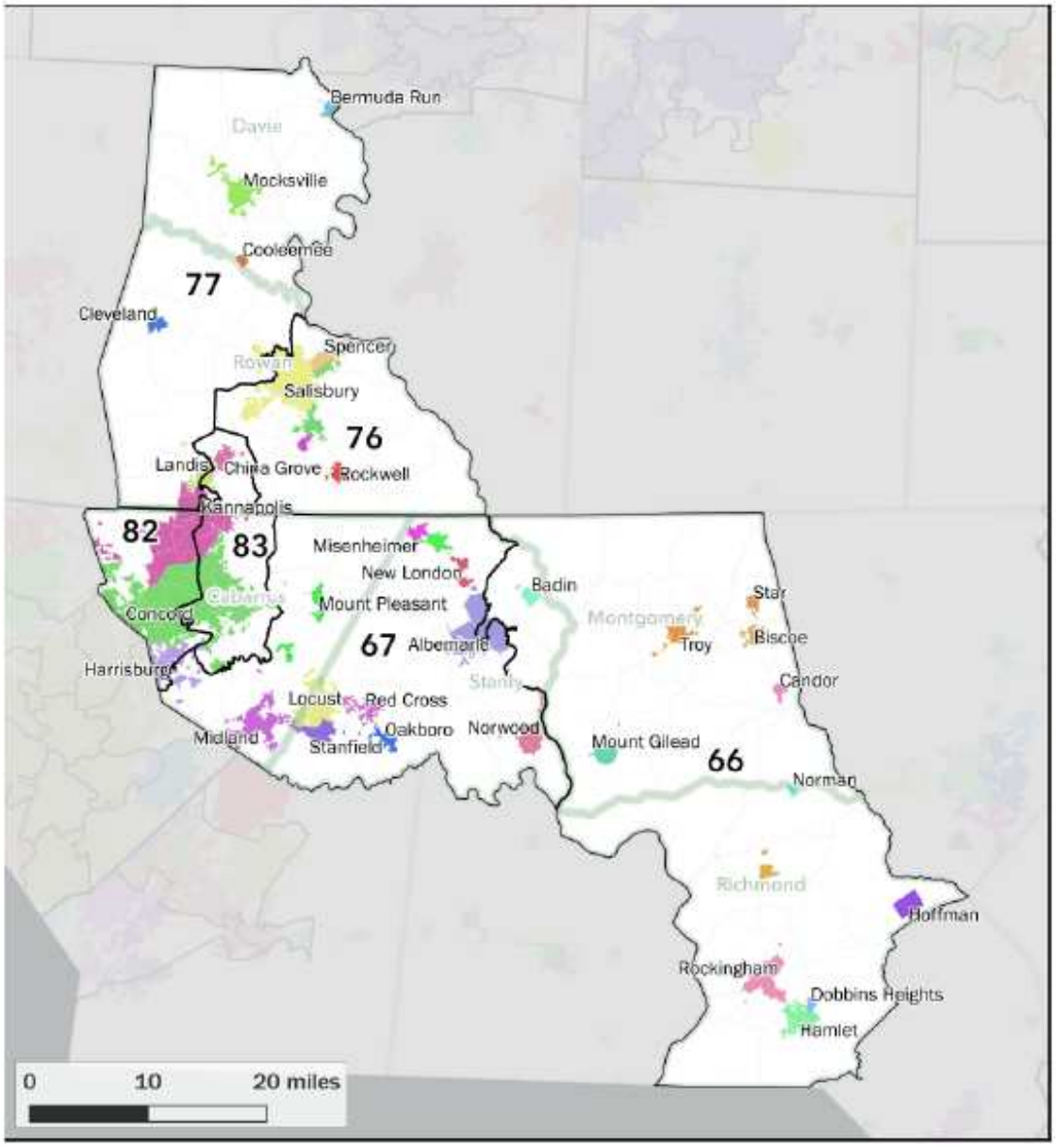
411. The Davie-Rowan-Cabarrus-Stanly-Montgomery-Richmond House county grouping contains House Districts 66, 67, 76, 77, 82, and 83. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

412. Plaintiffs' Exhibit 314 is Dr. Cooper's map for this county grouping:



413. This county grouping cracks Democratic voters across its districts. In particular, Dr. Cooper explained how the mapmakers "maximize[d] partisan advantage" by splitting municipalities in "critical ways" that crack Democratic voters. Tr. 926:18-24. The cities of Kannapolis and Concord are both split across House Districts 82 and 83, cracking the Democratic voters across these districts to dilute their voting power. Tr. 926:23-927:24; PX253

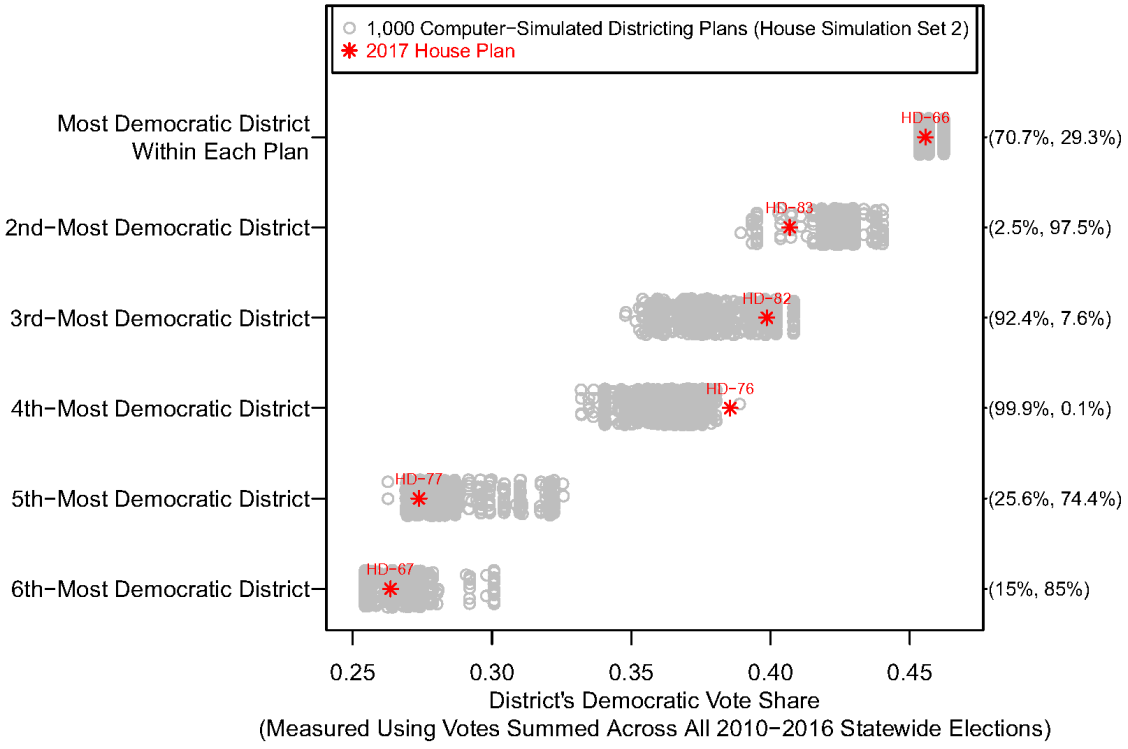
at 87-88 (Cooper Report). The Democratic voters from both of these cities are kept separate from the Democratic voters in Salisbury, which is placed in House District 76. *Id.* Plaintiffs Exhibit 315 depicts the splitting and treatment of these municipalities (Concord is shaded green, Kannapolis is pink, and Salisbury is yellow).



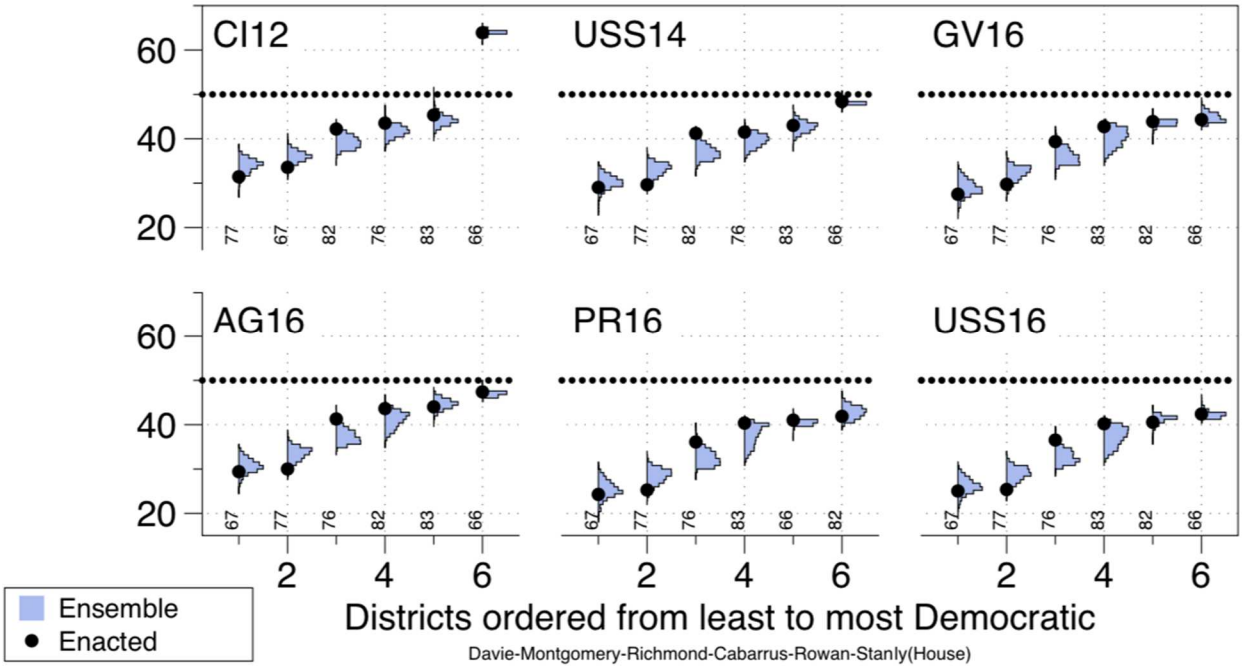
414. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

415. Dr. Chen found that, in his House Simulation Set 1, one of the districts in this grouping, House District 83, is an extreme partisan outlier, as it has a lower Democratic vote than its corresponding district in nearly all of the simulations. Tr. 363:6-12; PX46. Dr. Chen further found, however, that this grouping has three districts that are partisan outliers in his House Simulation Set 2 that avoided pairing the incumbents in office in 2017. Tr. 363:14-364:10. Dr. Chen's findings demonstrate the cracking of Democratic voters across the districts in this grouping, particularly given Legislative Defendants' representations that the General Assembly sought to avoid pairing incumbents in 2017. Tr. 364:11-22. The Court credits Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 70 below.

Figure 50: House Simulation Set 2:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Cabarrus−Davie−Montgomery−Richmond−Rowan−Stanly County Grouping



416. Plaintiffs' Exhibit 392 shows Dr. Mattingly's analysis of this grouping:



417. When Dr. Mattingly mathematically quantified cracking in this grouping across all 17 statewide elections, he found that the four most Democratic districts in the Davie grouping had more Democrats than in 97.38% of plans in the nonpartisan ensemble. PX359 at 30; PX778 at 30; PX392.[8] Dr. Mattingly concluded that the this grouping reflects an "anomalous structure," Tr. 1156:1-16, and the Court credits that conclusion.

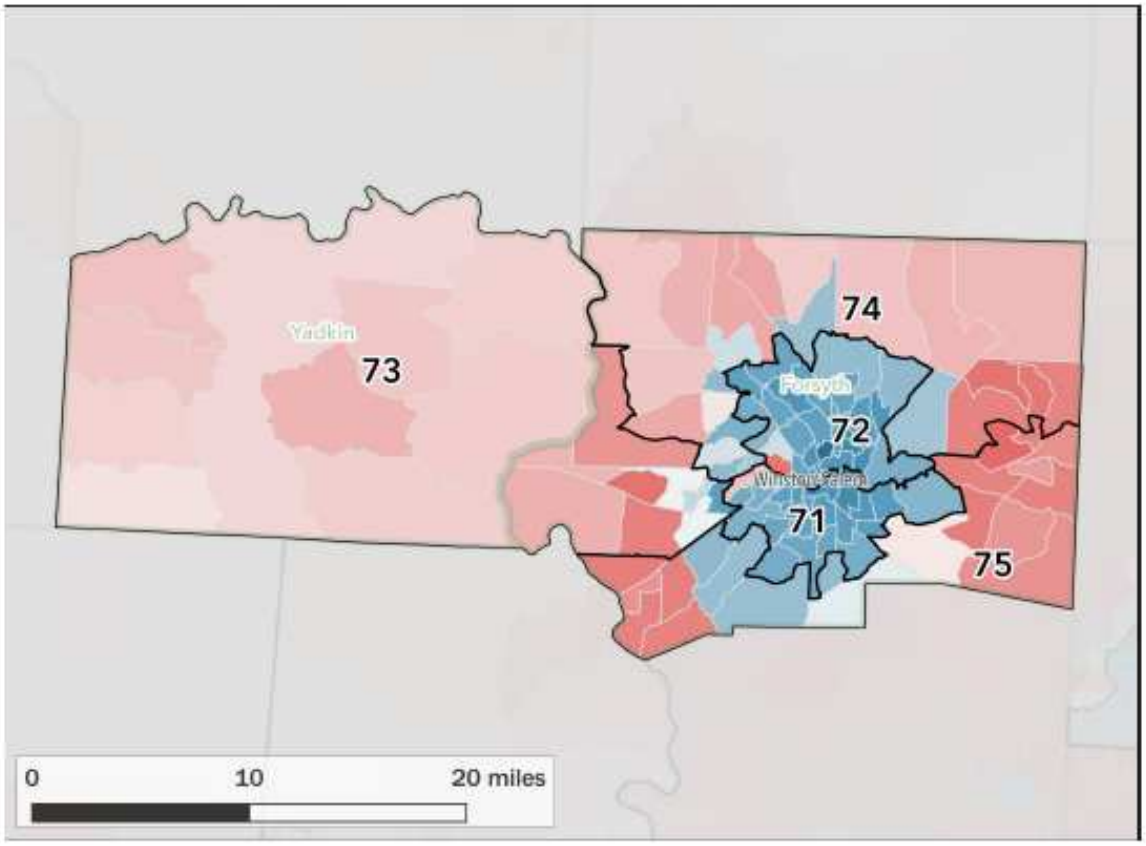
418. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander that was drawn to dilute the votes of Democratic voters and maximize the number of Republican districts in this grouping.

[8] Dr. Pegden's conservative methodology resulted in comparison maps that are very similar to the enacted plan for this grouping. Tr. 1351:17-1352:10. In particular, Dr. Pegden's conservative choice to allow his algorithm to split the same municipalities that are split under the enacted plan results in his comparison maps frequently splitting the Democratic strongholds of Kannapolis and Concord. PX535; PX508 at 24 (Pegden Report).

h. Yadkin-Forsyth

419. The Yadkin-Forsyth House County grouping contains House Districts 71, 72, 73, 74, and 75. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

420. Plaintiffs' Exhibit 316 is Dr. Cooper's map for this county grouping:

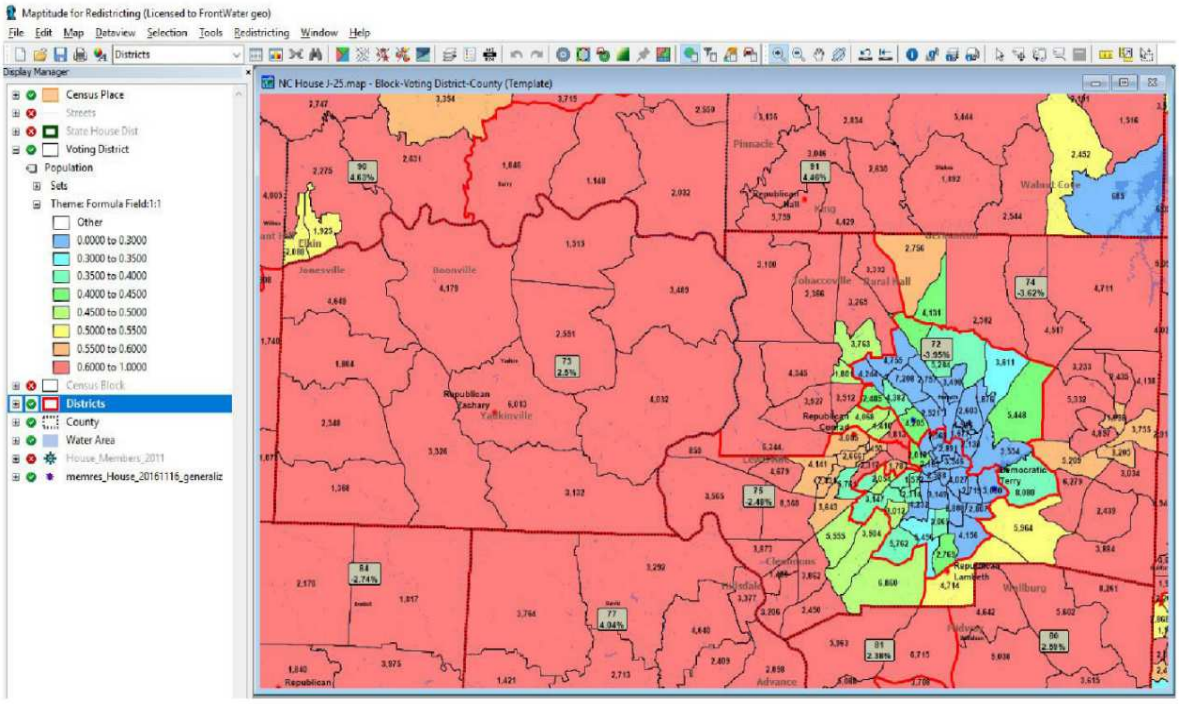


421. Legislative Defendants packed Democratic voters into House Districts 71 and 72. Tr. 928:20-21; PX253 at 90 (Cooper Report). Legislative Defendants then cracked the remaining Democratic voters in this grouping across the remaining districts, where those Democratic voters' influence is washed out by heavily Republican VTDs. House District 73 includes all of Republican-leaning Yadkin County and just two Democratic-leaning VTDs on the west side of Winston-Salem, ensuring that it will be a safe Republican district. House Districts

74 and 75 include Democratic-leaning VTDs on the northern and southern sides of Winston-Salem, respectively, but both of those districts wrap around the city to include Republican-dominated VTDs on either side of Forsyth County. Indeed, in order to join Republican VTDs, House District 75 traverses an extremely narrow passageway on the border of Forsyth County, less than a half mile wide. Tr. 928:5-21; PX253 at 90-91 (Cooper Report).

422. The Maptitude files from Dr. Hofeller's hard drive illustrate the "anatomy of this gerrymander." Tr. 988:17-989:4; PX345; PX329 at 21 (Cooper Rebuttal Report). They show Dr. Hofeller's intentional packing of all of the most Democratic VTDs in Forsyth County into House Districts 71 and 72, while putting all of the moderate and Republican-leaning VTDs (shaded tan, yellow, light green, and red) into House Districts 73, 74, and 75. *Id.* Plaintiffs' Exhibit 345 shows Dr. Hofeller's Maptitude file containing this county grouping:

Figure 16: Partisan Targeting in House Districts 71, 72, 73, 74, and 75

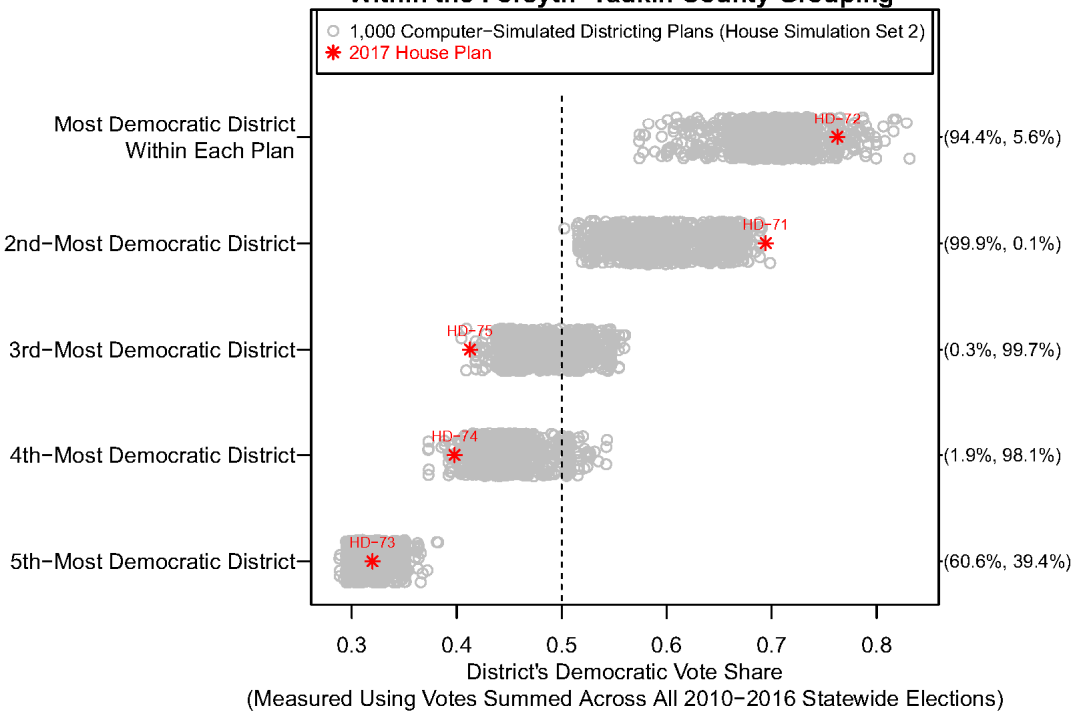


423. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

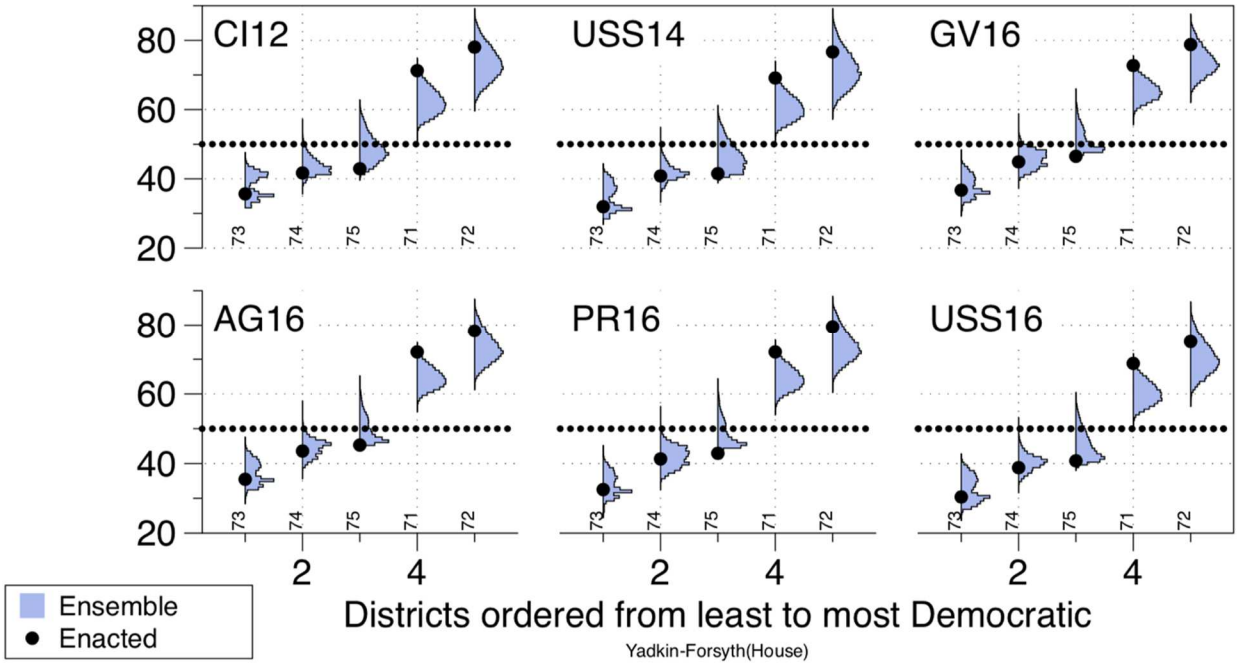
424. The simulations of Plaintiffs' other experts independently establish that the Forsyth-Yadkin county grouping is an extreme partisan gerrymander.

425. Dr. Chen found that, in his House Simulation Set 1, two of the districts in this grouping (House Districts 71 and 75) are extreme partisan outliers above the 95% level, and another two districts in the grouping (House Districts 72 and 74) have higher or lower Democratic vote shares than over 80% of their corresponding districts. Tr. 354:1-20; PX49. Dr. Chen further found, however, that all four of these districts are extreme partisan outliers in his House Simulation Set 2 that avoided pairing the incumbents in office in 2017. Tr. 355:1-18. In Simulation Set 2, House Districts 71 and 72 have higher Democratic vote shares than nearly all of their corresponding districts in the simulations, while House Districts 74 and 75 have lower Democratic vote shares than nearly all of their corresponding districts in the simulations. *Id.* Dr. Chen's findings demonstrate the packing of Democratic voters into House Districts 71 and 72 and the cracking of Democratic voters in the remaining districts in this grouping, particularly given Legislative Defendants' representations that the General Assembly sought to avoid pairing incumbents in 2017. Tr. 355:19-356:4. The Court credits Dr. Chen's findings for this county grouping, which are reflected in Plaintiffs' Exhibit 67 below.

Figure 47: House Simulation Set 2:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Forsyth−Yadkin County Grouping



426. Plaintiffs' Exhibit 414 shows Dr. Mattingly's analysis of this grouping:



427. Dr. Mattingly concluded that the three least Democratic districts show extreme cracking of Democrats while the two most Democratic districts shows extreme packing of Democrats, as evidenced by the huge jump between these sets of districts. Tr. 1144:3-9. Dr. Mattingly found that the three least Democratic districts in the enacted plan had fewer average Democratic votes than 99.46% of the comparable districts in the nonpartisan ensemble, while the two most Democratic districts in the enacted plan had more average Democratic votes than 99.84% of the comparable Democratic districts in the nonpartisan ensemble. PX778 at 30; PX359 at 44. As the figure above shows, the gerrymander causes the Democrats to lose one or two sets in this grouping in certain electoral environments, because the black dots for House District 74 and 75 always below the 50% line while the blue histograms sometimes rise above it. Tr. 1144:6-9. Dr. Mattingly concluded that the Yadkin-Forsyth grouping is an extreme pro-Republican partisan gerrymander, Tr. 1144:13-16, and the Court credits his conclusion.

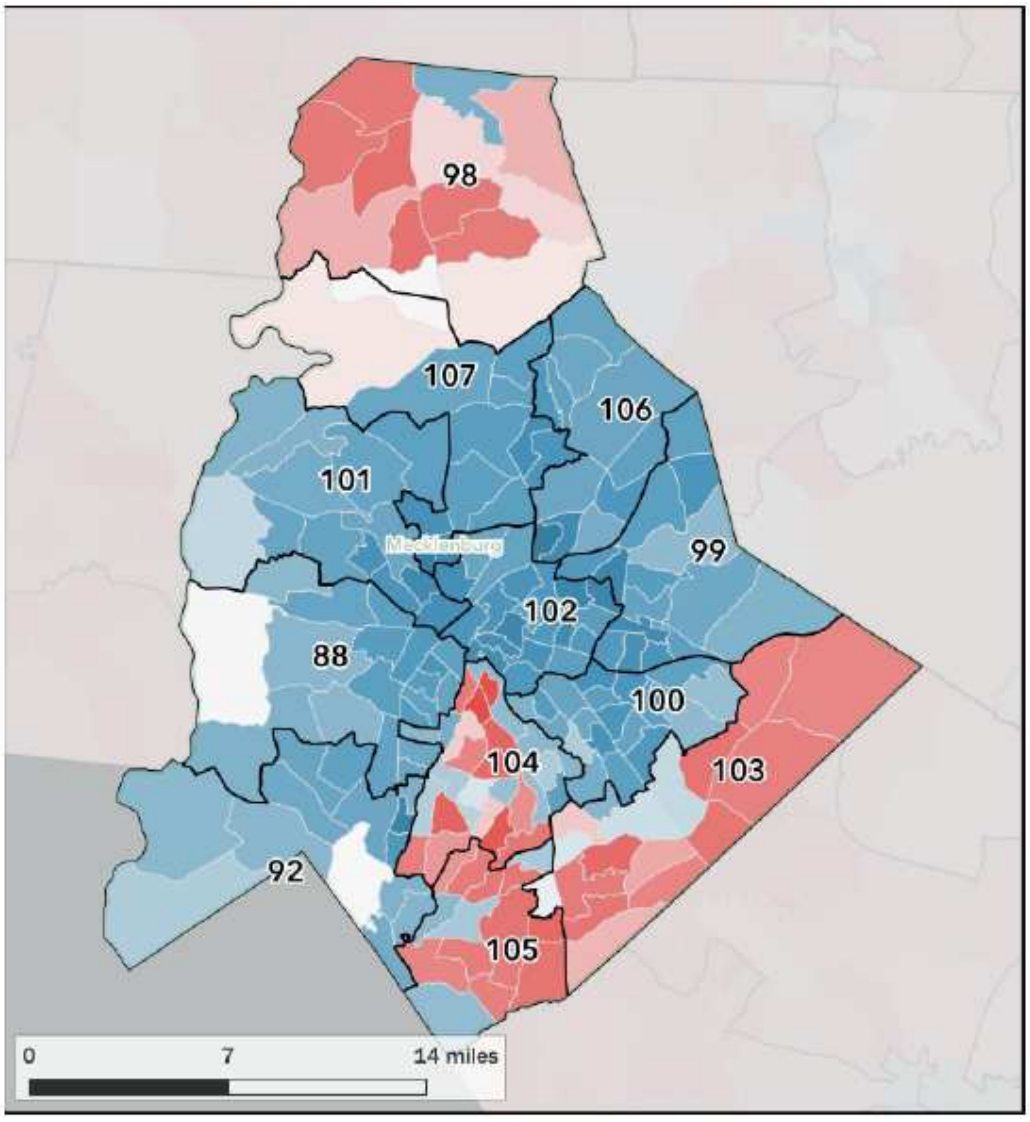
428. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.7% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.1% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:7; PX530. The Court credits Dr. Pegden's analysis and conclusions.

429. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

i. Mecklenburg

430. The Mecklenburg House County grouping contains House Districts 88, 92, 98, 99, 100, 101, 102, 103, 104, 105, 106, and 107. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

431. Plaintiffs' Exhibit 319 is Dr. Cooper's map for this county grouping:



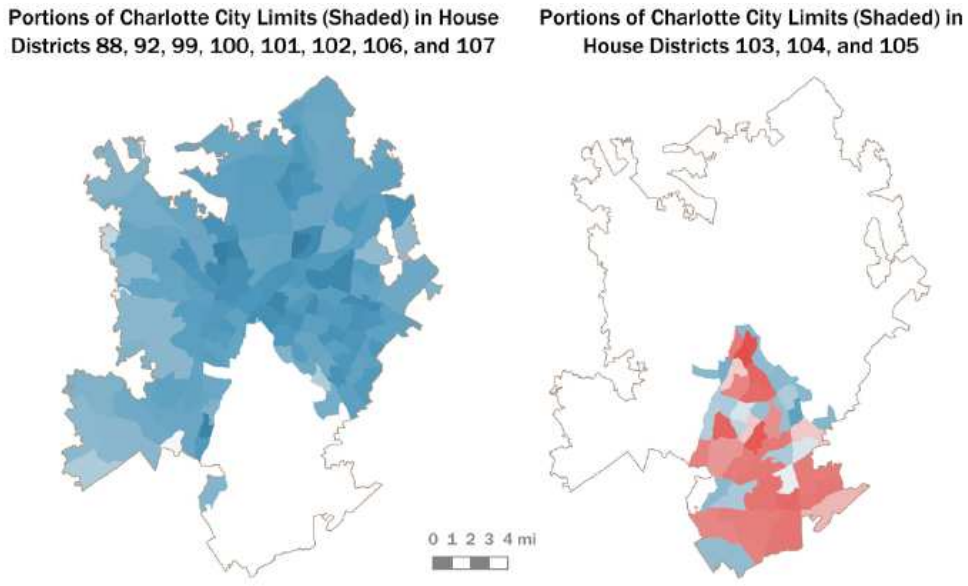
432. Dr. Cooper detailed how House Districts 88, 92, and 101 pack Democratic voters on the western side of Mecklenburg County while House Districts 99, 100, 102, and 106 pack Democratic voters on the eastern and central portions of the county. There is not a single

Republican-leaning VTD included in any of these packed House Districts. Tr. 929:15-930:5; PX253 at 93 (Cooper Report).

433. House Districts 103, 104, and 105, meanwhile, include all of the Republican-leaning VTDs on the southern side of Mecklenburg county, allowing those districts to be "as competitive as possible for Republicans." Tr. 930:25-931:7; PX253 at 93 (Cooper Report).

434. House District 98, on the northern boundary of Mecklenburg County, includes almost all Republican-leaning VTDs, avoiding the Democrat-heavy VTDs that are packed into House Districts 106 and 107. Tr. 931:17; PX253 at 93 (Cooper Report).

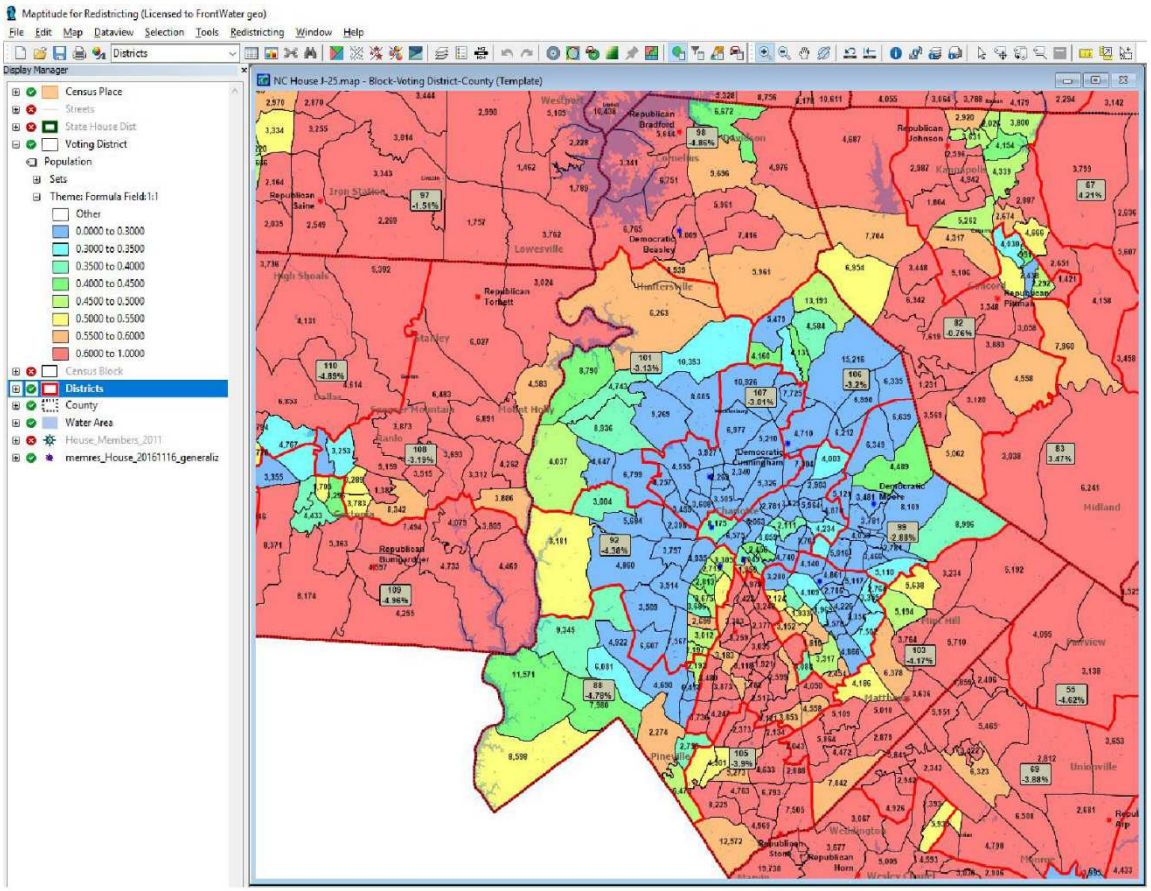
435. As depicted in Plaintiffs' Exhibit 320, these district boundaries split Charlotte between 11 House Districts but manage to place every Republican-leaning VTD within the city—the "red pizza" slice—into House Districts 103, 104, and 105. Tr. 932:1-17; PX320; PX253 at 93 (Cooper Report).



436. Dr. Hofeller's Maptitude files confirm that he drew the districts in this grouping to maximize partisan gain. The "pizza slice" that contains the Republican-leaning VTDs within Charlotte is evident in Dr. Hofeller's color-coded draft map, which groups those Republican-

leaning VTDs into three House Districts and packs almost all of the Democratic VTDs into other districts. Tr. 990:4-21; PX329 at 22 (Cooper Rebuttal Report). Plaintiffs' Exhibit 346 shows Dr. Hofeller's Maptitude files containing this county grouping:

Figure 17: Partisan Targeting in House Districts 88, 92, 98, 99, 101, 102, 103, 104, 105, 106, and 107.

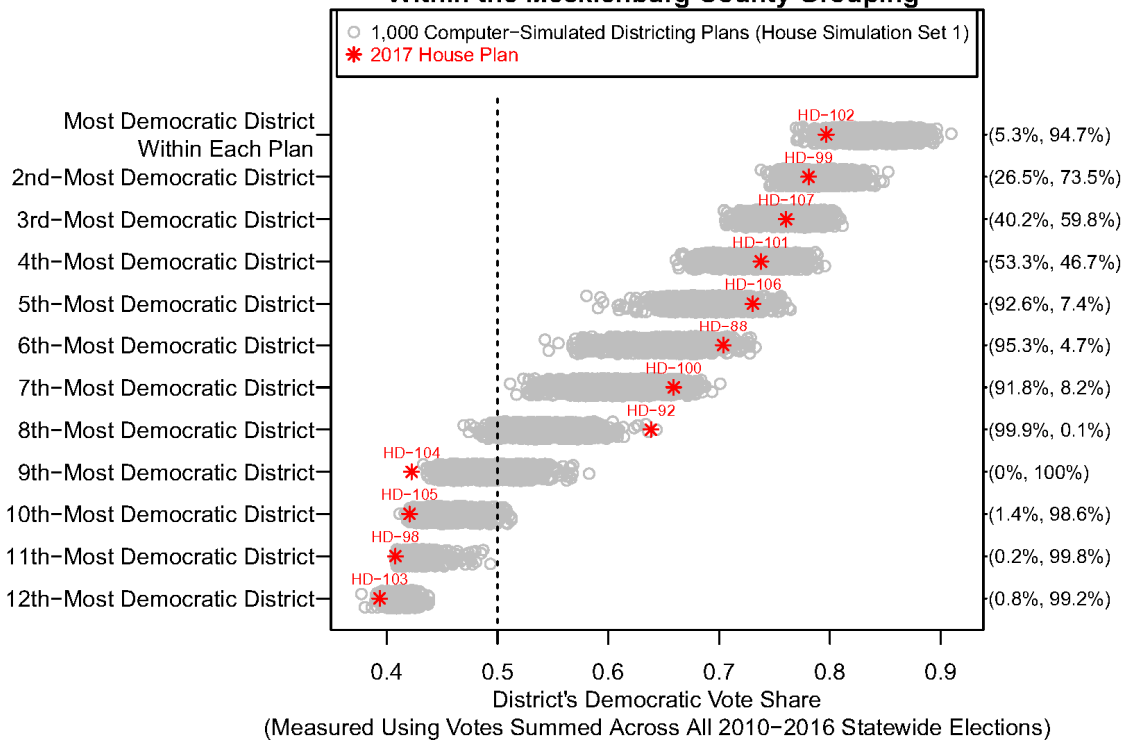


437. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

438. The simulations of Plaintiffs' other experts independently establish that the Mecklenburg county grouping is an extreme partisan gerrymander.

439. Dr. Chen found that this county grouping contains six districts that are extreme partisan outliers above the 95% outlier level, and another four districts that are outliers above the 90% level. Tr. 361:20-22; PX53. The enacted plan packs Democratic voters into a number of districts in order to create four districts—House Districts 98, 103, 104, and 105—that are less Democratic than all of nearly of their corresponding districts in Dr. Chen's simulations. PX53. Dr. Chen's findings demonstrate the packing and cracking of Democratic voters in this grouping. The Court credits Dr. Chen's analysis and findings for this county grouping, which is reflected in Plaintiffs' Exhibit 53 below.

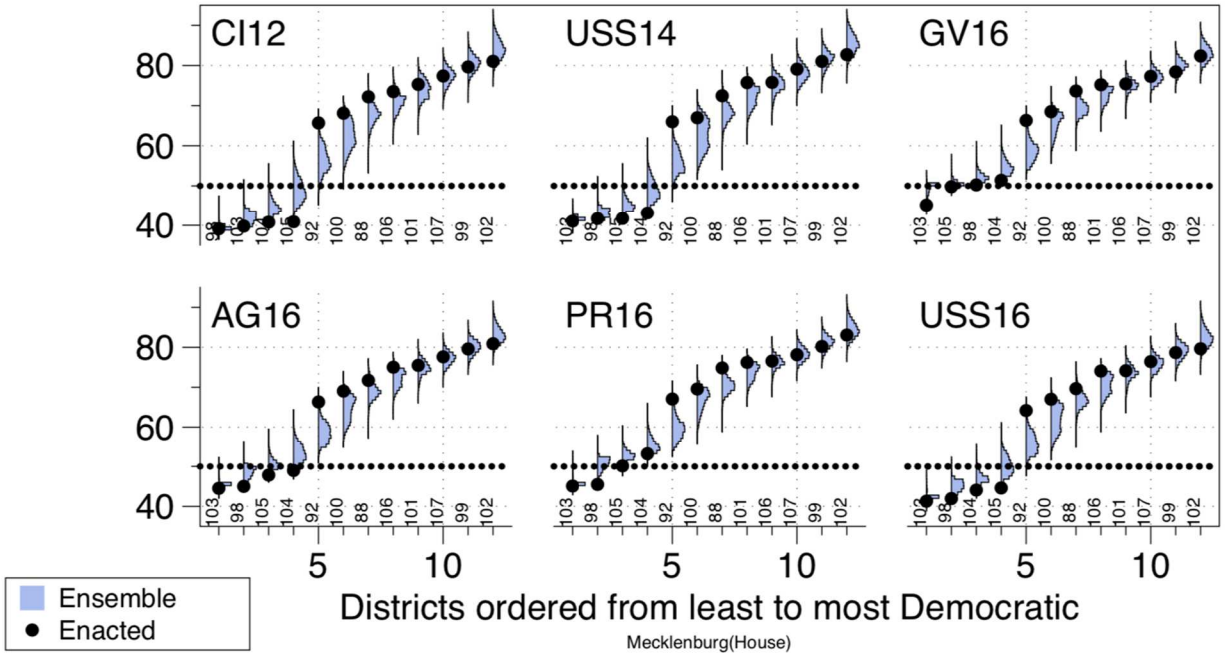
Figure 33: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Mecklenburg County Grouping



440. As Dr. Chen explained at trial, the fact that Democrats won House Districts 98, 103, 104, and 105 by small or extremely small margins in 2018 does not contradict his findings. Tr. 362:2-363:2; *see* JSF ¶¶ 125, 132-35. Rather, Dr. Chen's simulations suggest that Democrats very likely would have won each of these districts by larger margins if not for the gerrymander.

Id. Moreover, Dr. Hofeller's own assessment of these districts demonstrates that he believed these districts to be Republican-leaning, and that it took the Democratic wave of 2018 to squeak out wins in them. Dr. Hofeller estimated that House District 98 would have a 62.76% Republican vote share and he characterized it as a "strong Rep. district in Mecklenburg." PX246 at 3. Dr. Hofeller similarly estimated that House Districts 103, 104, and 105 would have 62% to 64% Republican vote shares. *Id.* Dr. Hofeller's spreadsheets evidence the partisan intent behind the creation of these districts and the strong possibility that Democratic could lose them in 2020 under the current district lines intended to produce that result.

441. Plaintiffs' Exhibit 400 shows Dr. Mattingly's analysis of this grouping:



442. Dr. Mattingly concluded that the four most Republican districts showed extreme cracking of Democrats while the next four districts showed extreme packing of Democrats, as evidenced by the huge jump between these sets of districts. Tr. 1138:7-1139:4. Dr. Mattingly found that the least four Democratic districts in the enacted plan had fewer average Democratic votes than 99.9% of the comparable districts in the nonpartisan ensemble, while the eight most

Democratic districts in the enacted plan had more average Democratic votes than 99.5% of the comparable Democratic districts in the nonpartisan ensemble. Tr. 1141:8-25; PX778 at 30; PX359 at 34-35. As the figure above shows, the gerrymander causes the Democrats to lose up to four seats in this grouping in certain electoral environments, because the black dots for House Districts 98, 103, 104, and 105 often fall below the 50% line while the blue histograms rise above it. Tr. 1140:12-1140:25. Dr. Mattingly concluded that this grouping is an extreme pro-Republican partisan gerrymander, Tr. 1142:1-4, and the Court credits his conclusion.

443. Like Dr. Chen, Dr. Mattingly explained that the fact that Democrats won all the seats in the Mecklenburg grouping in the 2018 election does not undermine his conclusion that the grouping is an extreme pro-Republican partisan gerrymander. Tr. 1142:5-14. That the Democrats did well in one election and were able to prevail over the gerrymander does not change the fact that the grouping provides an extreme and atypical structural advantage to the Republicans that could cause the Democrats to lose seats in the next election. Tr. 1142:10-17.

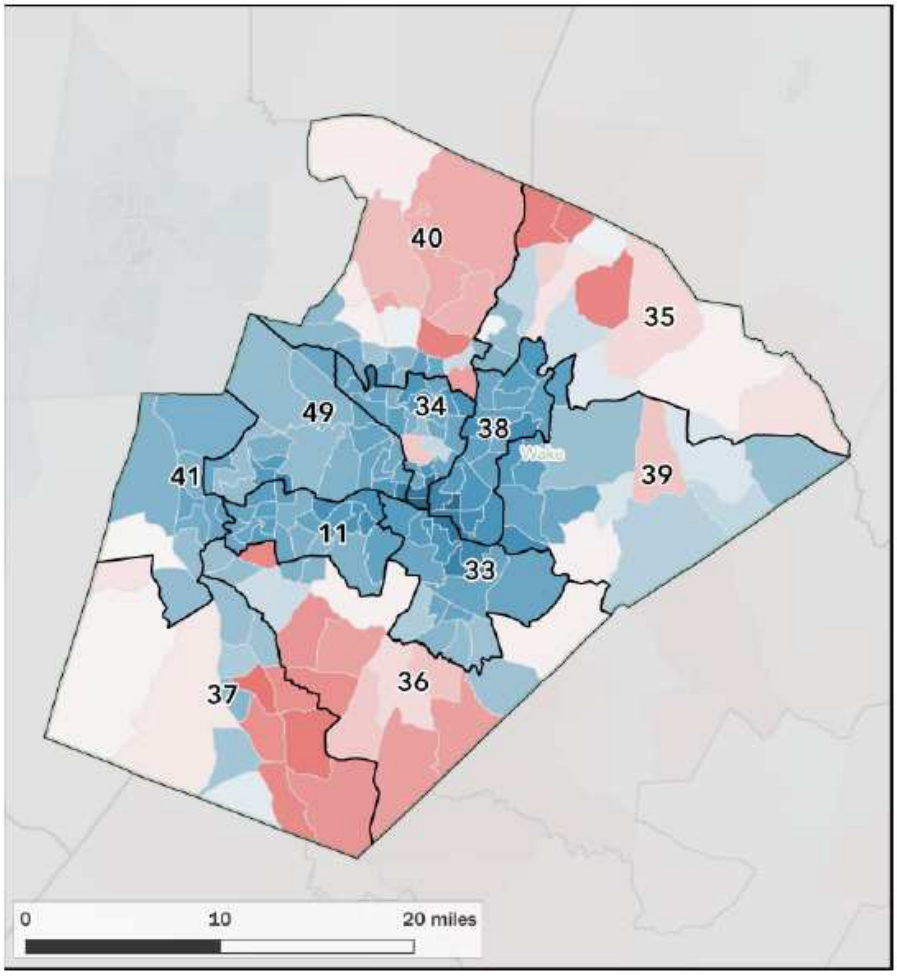
444. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.994% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.98% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:5-6; PX531. The Court credits Dr. Pegden's analysis and conclusions.

445. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

j. Wake

446. The Wake House county grouping contains House Districts 11, 33, 34, 35, 36, 37, 38, 39, 40, 41, and 49.[9]

447. Plaintiffs' Exhibit 297 is Dr. Cooper's map for this county grouping:



[9] Plaintiffs presented evidence at trial that the enacted 2017 version of the Wake House county grouping was a partisan gerrymander, but Plaintiffs presented no evidence regarding this grouping as revised pursuant to this Court's ruling in *North Carolina State Conference of NAACP Branches, et al. v. David Lewis, et al*. Plaintiffs do not seek a remedy for the current, revised version of this grouping. However, the analysis and findings of Plaintiffs' experts with respect to the 2017 version of this county grouping is evidence of Legislative Defendants' intentional and systematic gerrymandering across the State during the 2017 redistricting.

448. The 2017 versions of House Districts 11, 33, 38, and 49 packed Democratic voters to allow House Districts 35, 36, 37, and 40, on the north and south sides of Wake County. to be more favorable to Republicans. Tr. 911:15-912:16; PX253 at 65 (Cooper Report).

449. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these 2017 districts.

450. The simulations of Plaintiffs' other experts independently establish that the 2017 enacted House plan version of the Wake grouping was an extreme partisan gerrymander.

451. Dr. Chen found that the 2017 version of county grouping contained three districts that were extreme partisan outliers above the 95% outlier level, and another three districts that were outliers above the 85% level. Tr. 365:15-366:1; PX54. The Court credits Dr. Chen's analysis and findings for this county grouping.

452. Dr. Mattingly concluded that the four most Republican districts in the 2017 version of this grouping show extreme cracking of Democrats, while the next four districts show extreme packing of Democrats, in comparison to the nonpartisan plans. PX412; PX778 at 30; PX359 at 43. He found that the least Democratic districts in the enacted plan had fewer Democratic voters than 99.98% of the comparable districts in the nonpartisan ensemble, while the most Democratic districts in the enacted plan had more average Democratic votes than 99.99% of the comparable Democratic districts in the ensemble. PX778 at 30; PX359 at 43; PX412. The Court credits Dr. Mattingly's analysis and conclusions for this grouping.

453. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.9997% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr.

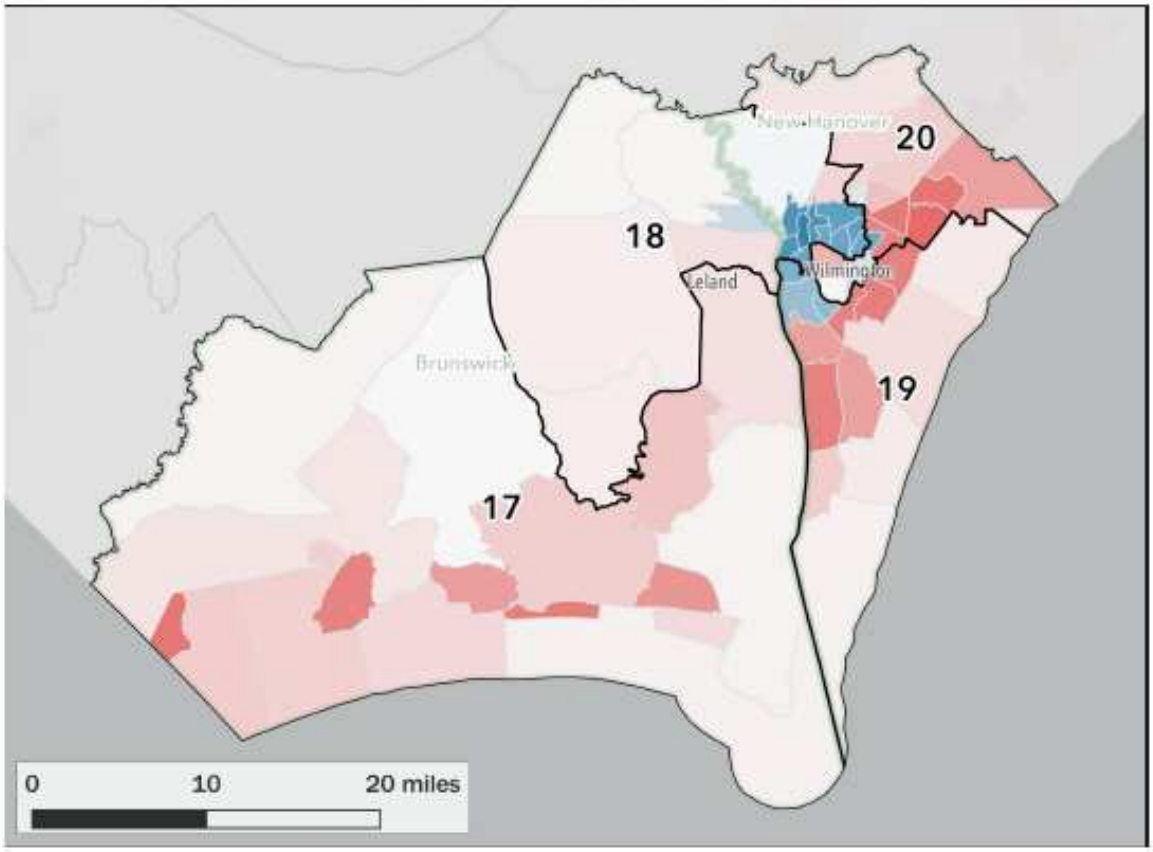
Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.9991% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:4; PX533. The Court credits Dr. Pegden's analysis and conclusions.

454. The analyses of Plaintiffs' experts independently and together demonstrate that the 2017 version of this county grouping was an extreme partisan gerrymander.

k. New Hanover-Brunswick

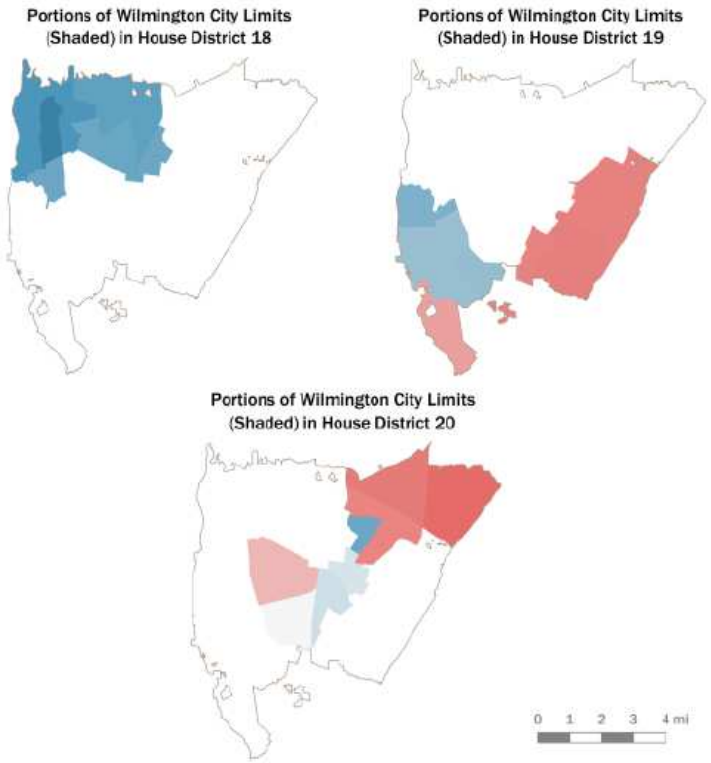
455. The New Hanover-Brunswick House county grouping contains House Districts 17, 18, 19, and 20. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

456. Plaintiffs' Exhibit 302 is Dr. Cooper's map of this county grouping:



457. As Dr. Cooper testified, House District 18 packs the most Democratic-leaning VTDs in this grouping into that district, thereby making House Districts 17, 19, and 20 more favorable to Republicans. Tr. 913:17-914:7; PX253 at 72 (Cooper Report).

458. Wilmington is split between House Districts 18, 19, and 20, with the most Democratic-leaning VTDs in that city packed into House District 18 and the Republican-leaning VTDs placed in the two adjacent districts. In order to accomplish the packing of voters in House District 18, the district boundaries split Wilmington and the UNC Wilmington campus. Tr. 914:13-20; PX253 at 73 (Cooper Report); PX303. By dividing the campus in this manner, the district boundaries enable House District 20 to connect to Republican-leaning VTDs in the Wilmington area, creating a boot-like appendage in the southwest portion of House District 20. PX253 at 75 (Cooper Report). Plaintiffs' Exhibit 303 show which portions of Wilmington are placed into each of the three districts:



459. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

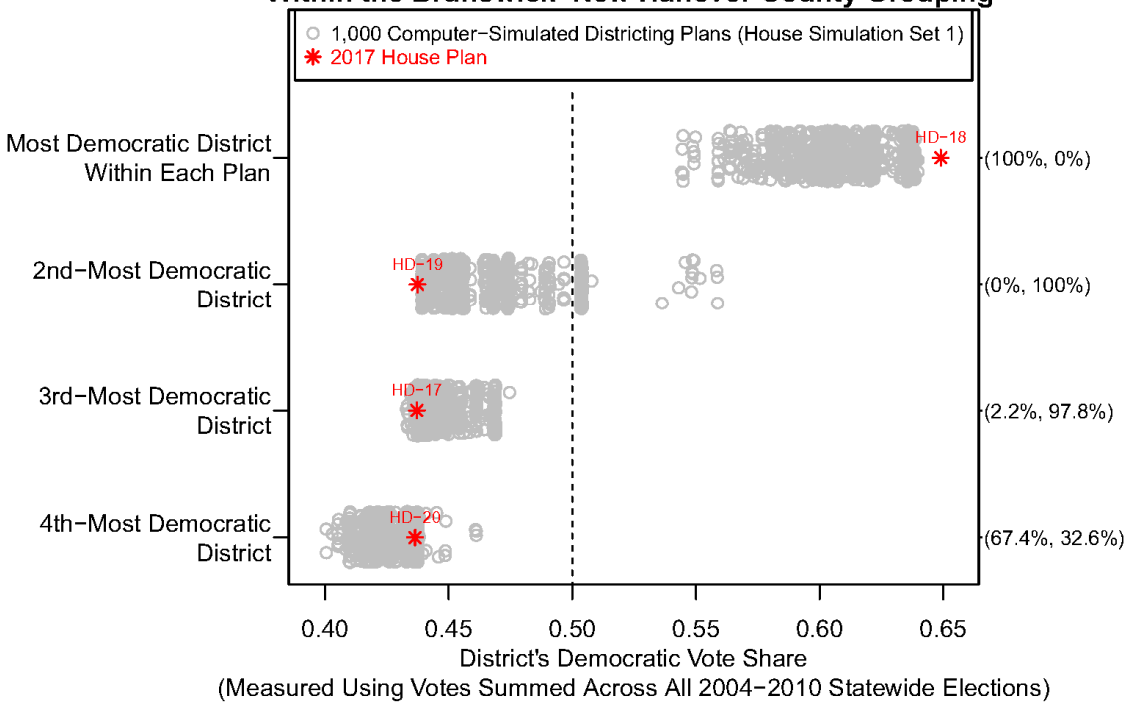
460. Elections result confirm that the gerrymander of this grouping has been effective. This county grouping was drawn in 2011 and Republican candidates have won House Districts 17, 19, and 20 in every election since 2011, while Democratic candidates have won House District 18 in every election since 2011. JSF at Ex. 2; PX253 at 73-74 (Cooper Report).

461. The simulations of Plaintiffs' other experts independently establish that the Brunswick-New Hanover county grouping is an extreme partisan gerrymander.

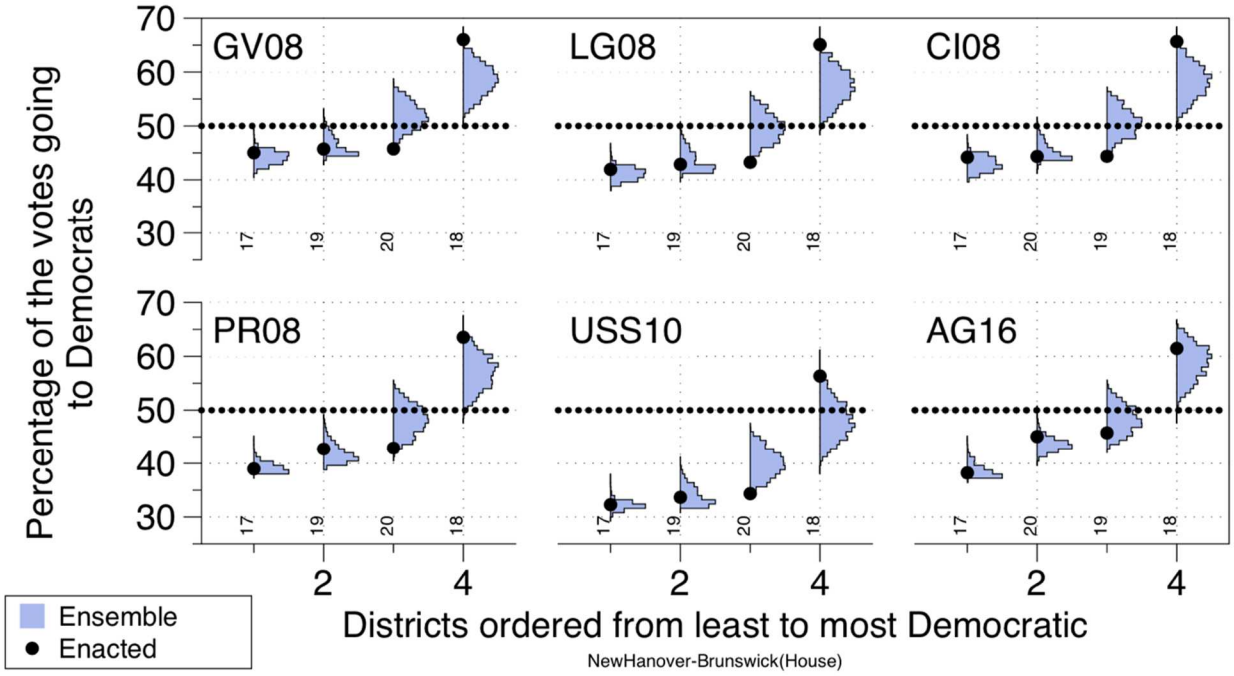
462. Dr. Chen found that this county grouping contains three districts that are extreme partisan outliers. Tr. 369:3-7.[10] House District 18 has a higher Democratic vote share than its corresponding district in all the simulations, while House Districts 17 and 19 have lower Democratic vote shares than their corresponding districts in all or nearly all of the simulations. Dr. Chen's findings demonstrate the packing of Democratic voters in House District 18 and the cracking of Democratic voters across the other districts. PX57. The vast majority of Dr. Chen's simulations would produce two additional districts in this grouping that are competitive or even Democratic-leaning, compared to the enacted plan. PX57. The Court credits Dr. Chen's analysis and findings for this grouping, which are reflected in Plaintiffs' Exhibit 57 below:

[10] For all House county groupings drawn in 2011 and unchanged in 2017, Dr. Chen used the 2004 to 2010 statewide elections to analyze these county groupings.

Figure 37: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Brunswick−New Hanover County Grouping



463. Plaintiffs' Exhibit 404 shows Dr. Mattingly's analysis of this grouping:



464. Dr. Mattingly concluded that the most Democratic district shows extreme packing of Democrats, while the three least Democratic districts show extreme cracking of Democrats, as evidenced by the huge gap between these sets of districts. Tr. 1145:17-1146:12. Dr. Mattingly found that the most Democratic district in the enacted plan had more Democratic voters than 92.01% of the comparable districts in the nonpartisan ensemble. PX778 at 30; PX359 at 38. As the figure above shows, the gerrymander causes the Democrats to lose one seats in this grouping in certain electoral environments, because the black dot in the second most Democratic district always falls below the 50% line while the blue histograms often rise above it. Tr. 1146:5-9. Dr. Mattingly concluded that the New Hanover-Brunswick House grouping reflected a pro-Republican partisan gerrymander, Tr. 1144:13-16, and the Court credits his conclusion.

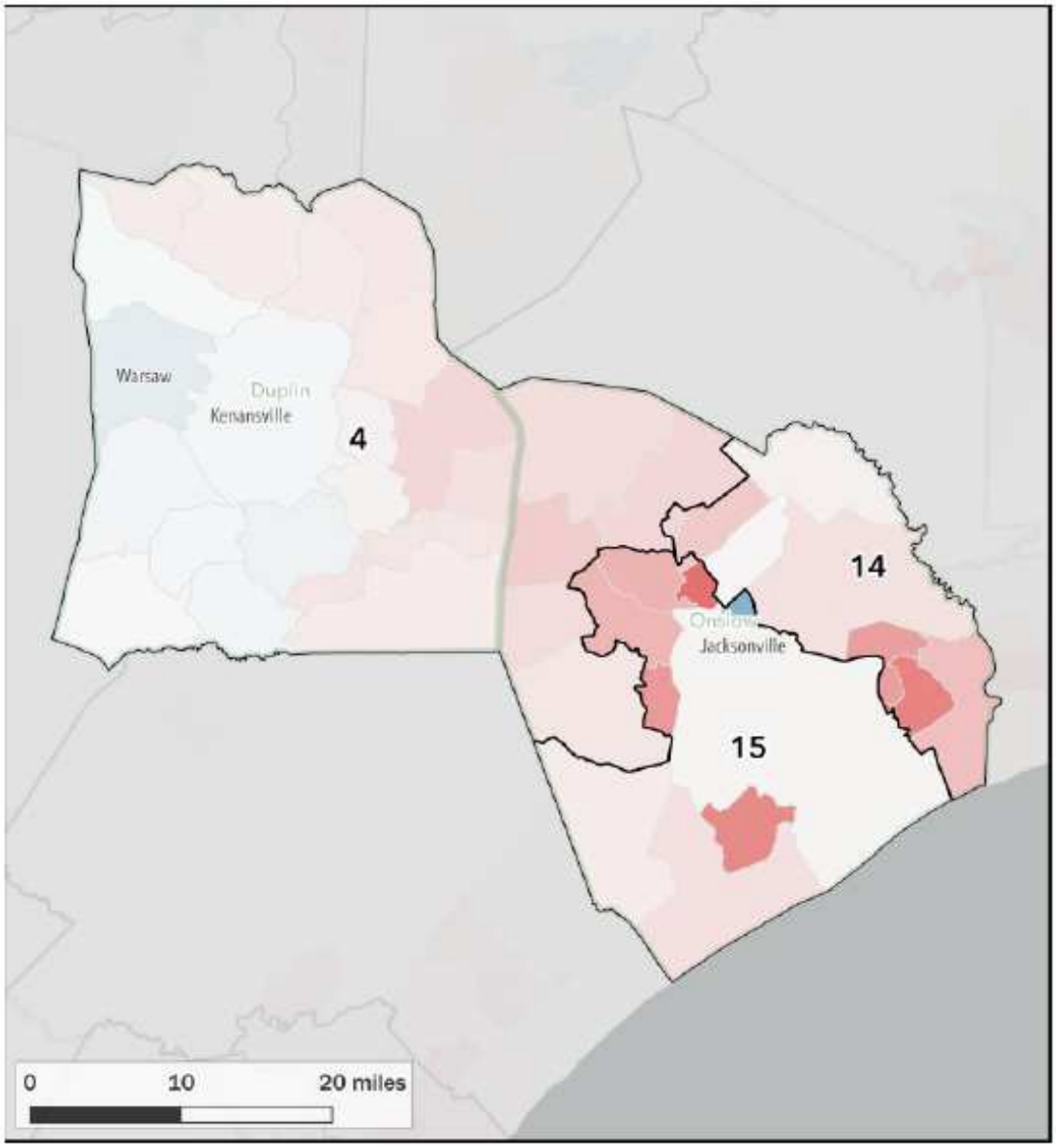
465. Dr. Pegden found that this county grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.97% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.91% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:6-7; PX524. The Court credits Dr. Pegden's analysis and conclusions.

466. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

l. Duplin-Onslow

467. The Duplin-Onslow House county grouping contains House Districts 4, 14, and 15. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

468. Plaintiffs' Exhibit 291 is Dr. Cooper's map for this county grouping:



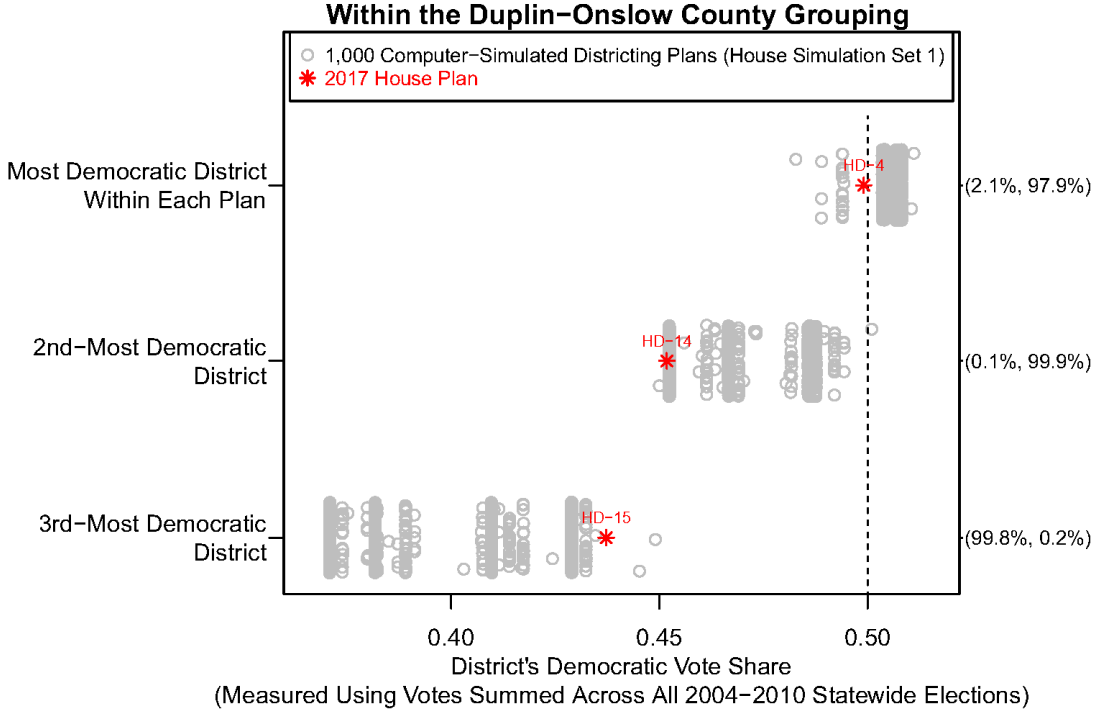
469. Legislative Defendants split Jacksonville across House Districts 14 and 15, pairing the Democratic-leaning "shark's tooth" in Jacksonville with heavily Republican-leaning VTDs in House District 15. Tr. 906:10-23; PX253 at 53-57 (Cooper Report). The map also ensures that none of Jacksonville's voters are joined with the Democratic-leaning and moderate VTDs in Duplin County, in House District 4. *Id.* The map cracks Democratic voters across all three districts in this grouping, ensuring that all three districts remain "safely Republican." *Id.*

470. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

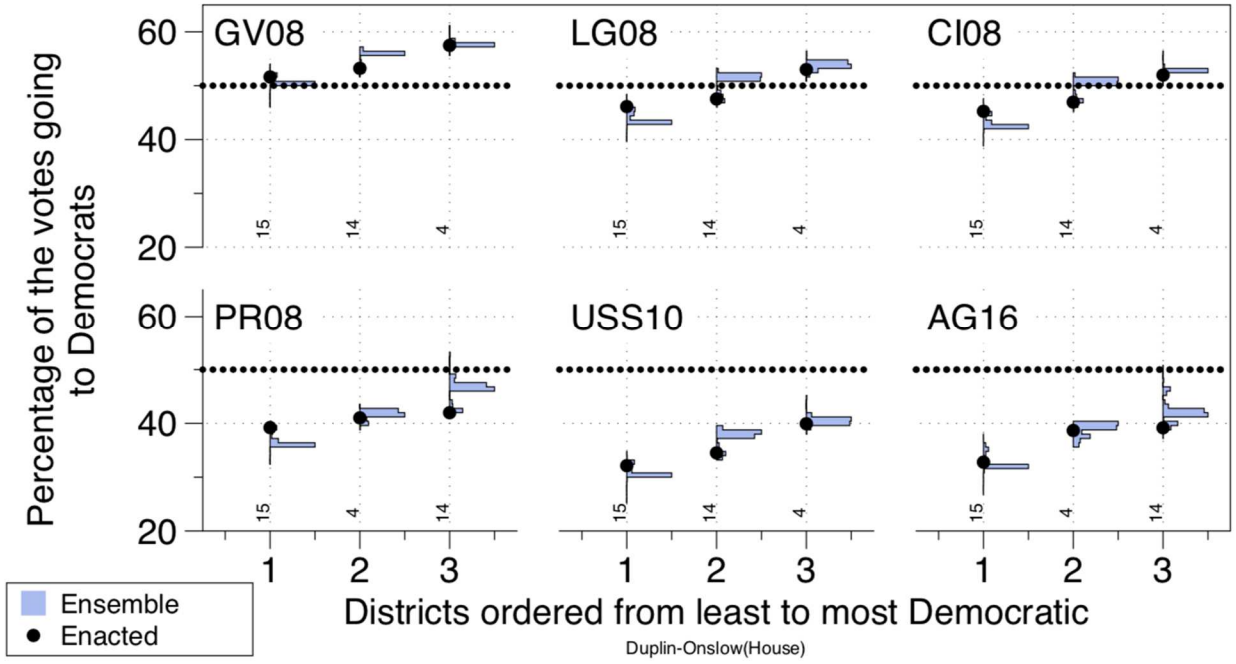
471. The simulations of Plaintiffs' other experts independently establish that the Duplin-Onslow county grouping is an extreme partisan gerrymander.

472. Dr. Chen found that all three districts in this grouping are extreme partisan outliers. Tr. 370:16-371:1. House Districts 4 and 14 have lower Democratic vote shares than their corresponding districts in nearly all the simulations, while House District 15 has a higher Democratic vote share than its corresponding district in nearly all the simulations. PX60. Dr. Chen's findings demonstrate the cracking of Democratic voters across the three districts. PX60. The vast majority of Dr. Chen's simulations would produce districts that are more competitive using the 2004-2010 statewide elections compared to the enacted plan. PX60. The Court credits Dr. Chen's analysis and findings for this county grouping, reflected in Plaintiffs' Exhibit 60:

Figure 40: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Duplin−Onslow County Grouping



473. Plaintiffs' Exhibit 394 shows Dr. Mattingly's analysis of this grouping:



474. This grouping is another example of what Dr. Mattingly called "squeezing" or "flattening," where Democrats are cracked across all of the districts in the grouping. Tr. 1149:19-1150:2; Tr. 1150:22-1151:2. Dr. Mattingly found that the two most Democratic districts in the enacted plan had fewer Democratic voters than 92.4% of the comparable districts in the nonpartisan ensemble, meaning that the Duplin-Onslow House grouping showed clear cracking of Democratic voters. PX778 at 30; PX359 at 31. As the figure above shows, the gerrymander causes the Democrats to lose at least one seat in certain electoral environments. Dr. Mattingly concluded that this grouping reflects a clear pro-Republican partisan gerrymander, Tr. 1155:17-21, PX778 at 30, and the Court credits Dr. Mattingly's conclusion.

475. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 98% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this

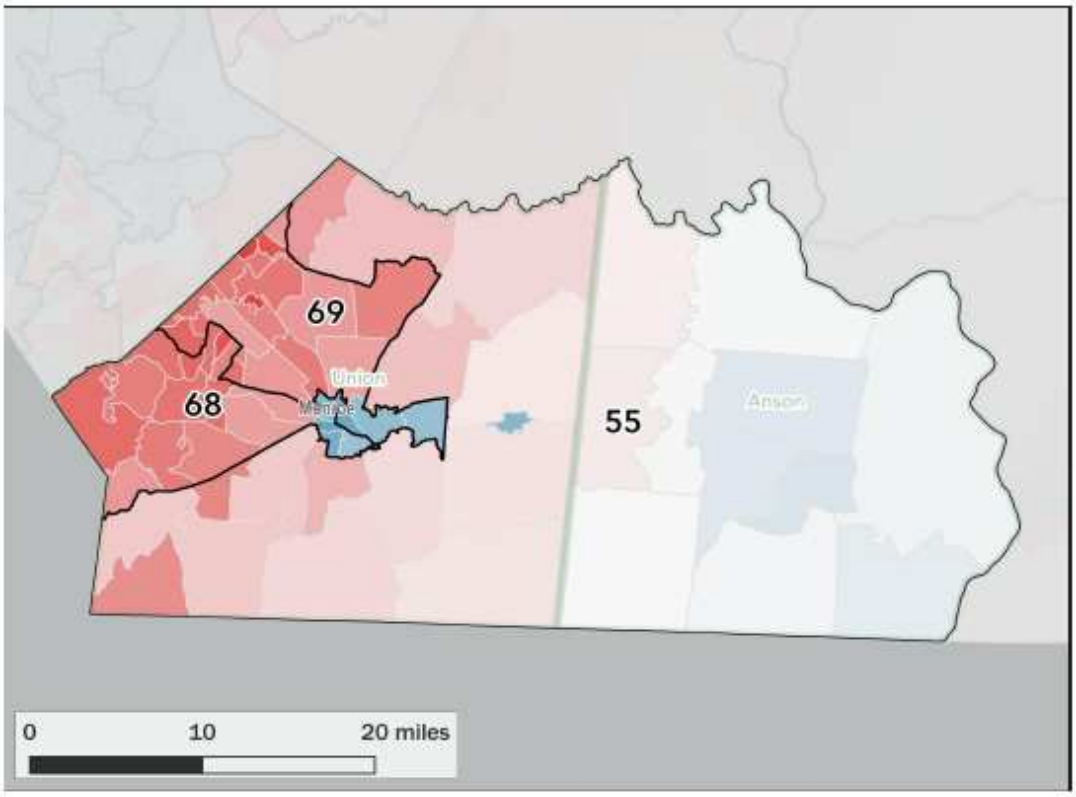
grouping is more carefully crafted to favor Republicans than at least 94% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:9; PX528. The Court credits Dr. Pegden's analysis and conclusions.

476. The analyses of all Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

m. Anson-Union

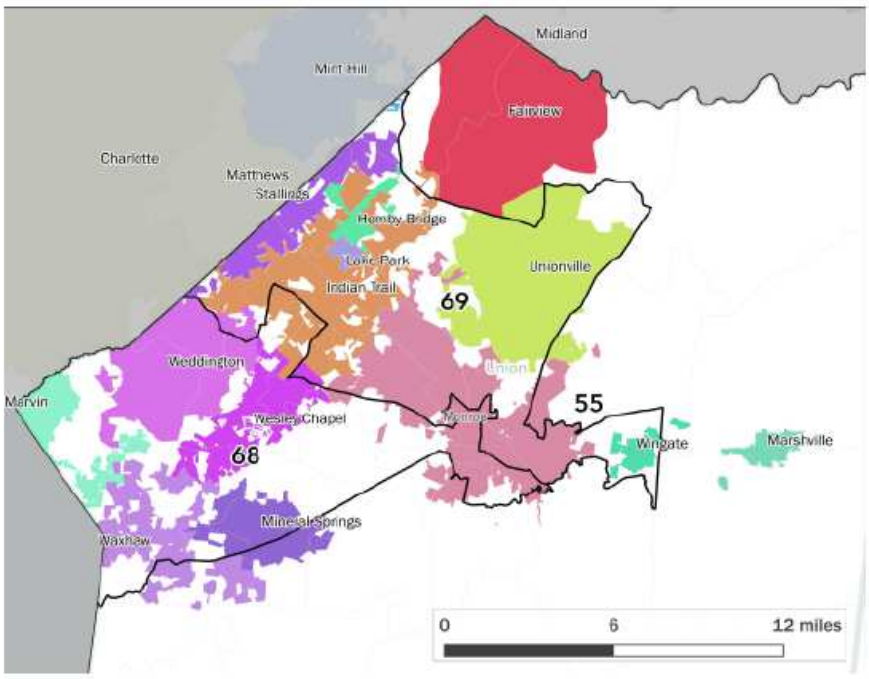
477. The Anson-Union county grouping contains House Districts 55, 68, and 69. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

478. Plaintiffs' Exhibit 307 is Dr. Cooper's map for this county grouping:



479. Dr. Cooper detailed how this county grouping cracks the Democratic voters in Monroe between two districts (House Districts 68 and 69), and then ensures that none of these

voters are joined with the Democratic voters in Anson County (in House District 55). The map thus dilutes the voting power of the Democratic voters in this grouping, ensuring that all three districts are reliable Republican districts. Tr. 919:3-16; PX253 at 79-80 (Cooper Report). Plaintiffs' Exhibit 308 illustrates the cracking of Monroe (which is colored pink).



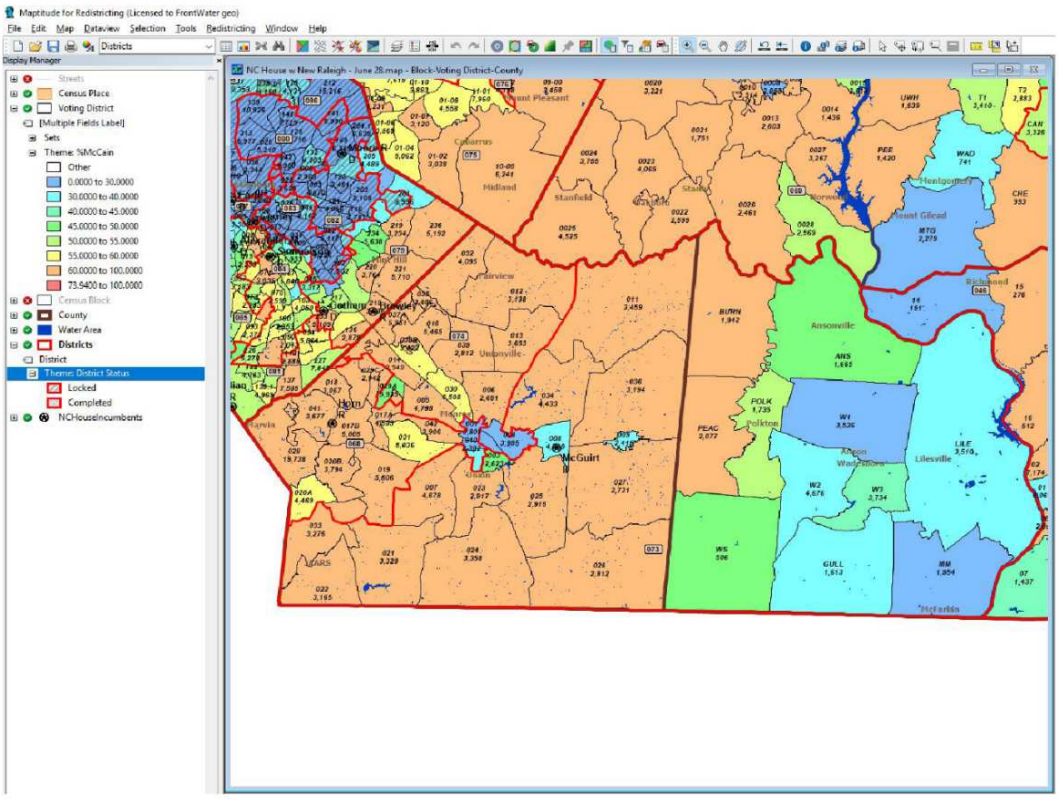
480. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

481. The Anson-Union county grouping was drawn in 2011 and unchanged in 2017, and Republican candidates have won all three districts in this grouping in every election since 2011. JSF at Ex. 2; Tr. 922:6-11.

482. Dr. Hofeller's Maptitude files confirm his intentional use of partisanship data to crack Democratic voters. The relevant Maptitude file, which was last modified in June 2011 and is depicted in Plaintiffs' Exhibit 353 below, shows Dr. Hofeller's use of the 2008 Presidential

election results to separate Democratic VTDs across the three districts in this grouping." Tr. 995:3-998:7; PX329 at 31 (Cooper Rebuttal Report).

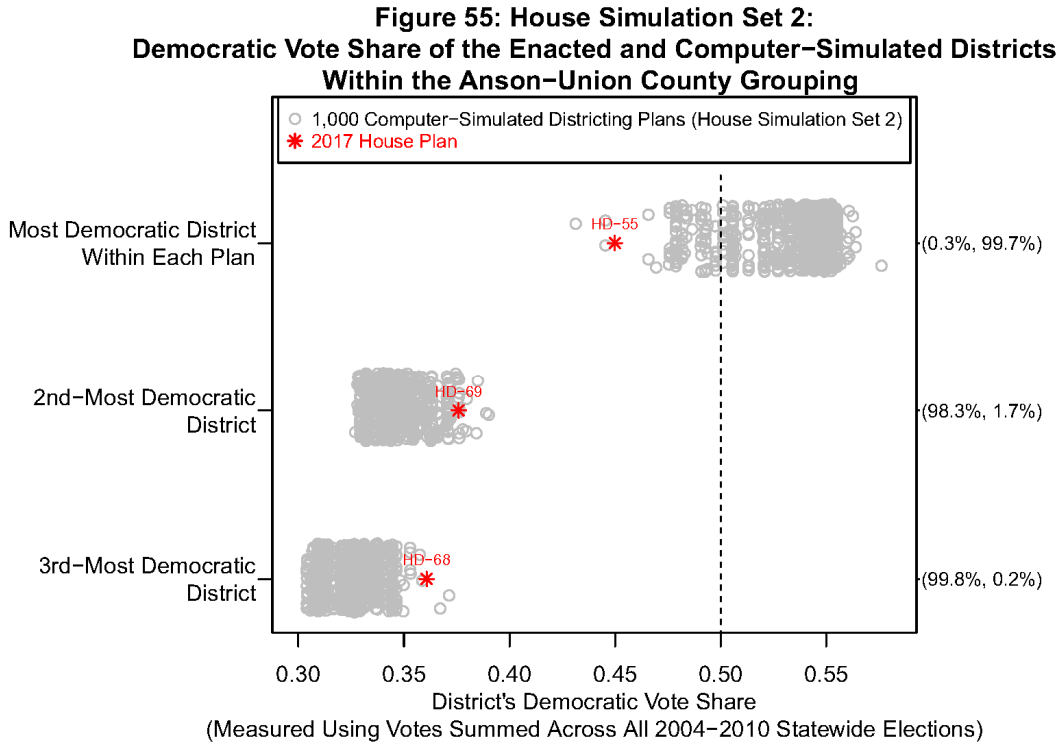
Figure 25: Partisan Targeting in House Districts 55, 68, and 69



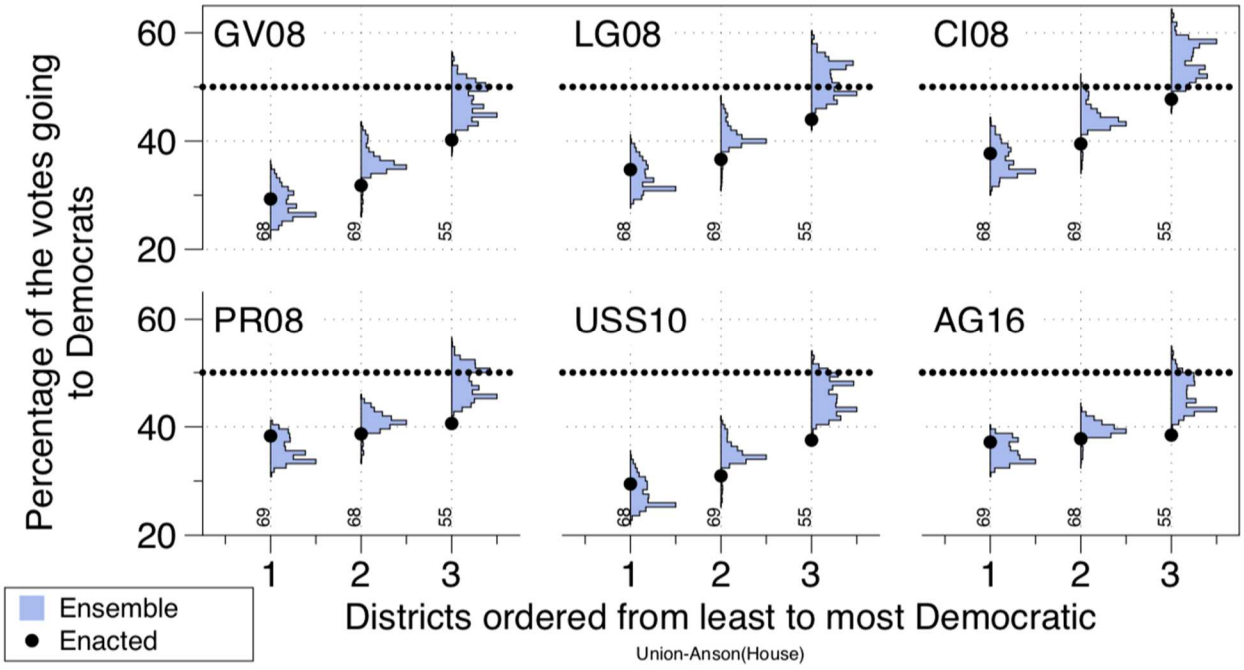
483. The simulations of Plaintiffs' other experts independently establish that this county grouping is an extreme partisan gerrymander.

484. Dr. Chen found that all three districts in this county grouping are extreme partisan outliers. Tr. 368:7-15. House District 55 has a lower Democratic vote share than its corresponding district in nearly all of the simulations, while House Districts 68 and 69 have higher Democratic vote shares than their corresponding districts in nearly all of the simulations. Dr. Chen's findings demonstrate the cracking of Democratic voters across the three districts in this grouping. PX56. In the vast majority of Dr. Chen's simulations, this county grouping would produce a district that is Democratic-leaning using the 2004-2010 statewide elections. PX56.

The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 56 below:



485. Plaintiffs' Exhibit 410 shows Dr. Mattingly's analysis of this grouping:



486. This grouping is another example of what Dr. Mattingly called "squeezing" or "flattening," where the Democrats are cracked across all of the districts in the grouping. Tr. 1149:19-1150:2; Tr. 1150:22-1151:2. Dr. Mattingly found that the two most Democratic districts in the enacted plan had fewer Democratic voters than 100% of the comparable districts in the nonpartisan ensemble, meaning that not a single plan in his nonpartisan ensemble showed as much cracking of Democratic voters in this grouping as the enacted plan. PX778 at 30; PX359 at 42. As the figure above shows, the gerrymander causes the Democrats to lose one seat in certain electoral environment, as the black dot for House District 55 is always below the dotted line but the blue histogram often rises above it. Dr. Mattingly concluded that the Anson-Union House grouping reflected an extreme pro-Republican partisan gerrymander, Tr. 1155:8-16, PX778 at 30, and the Court credits his conclusion.

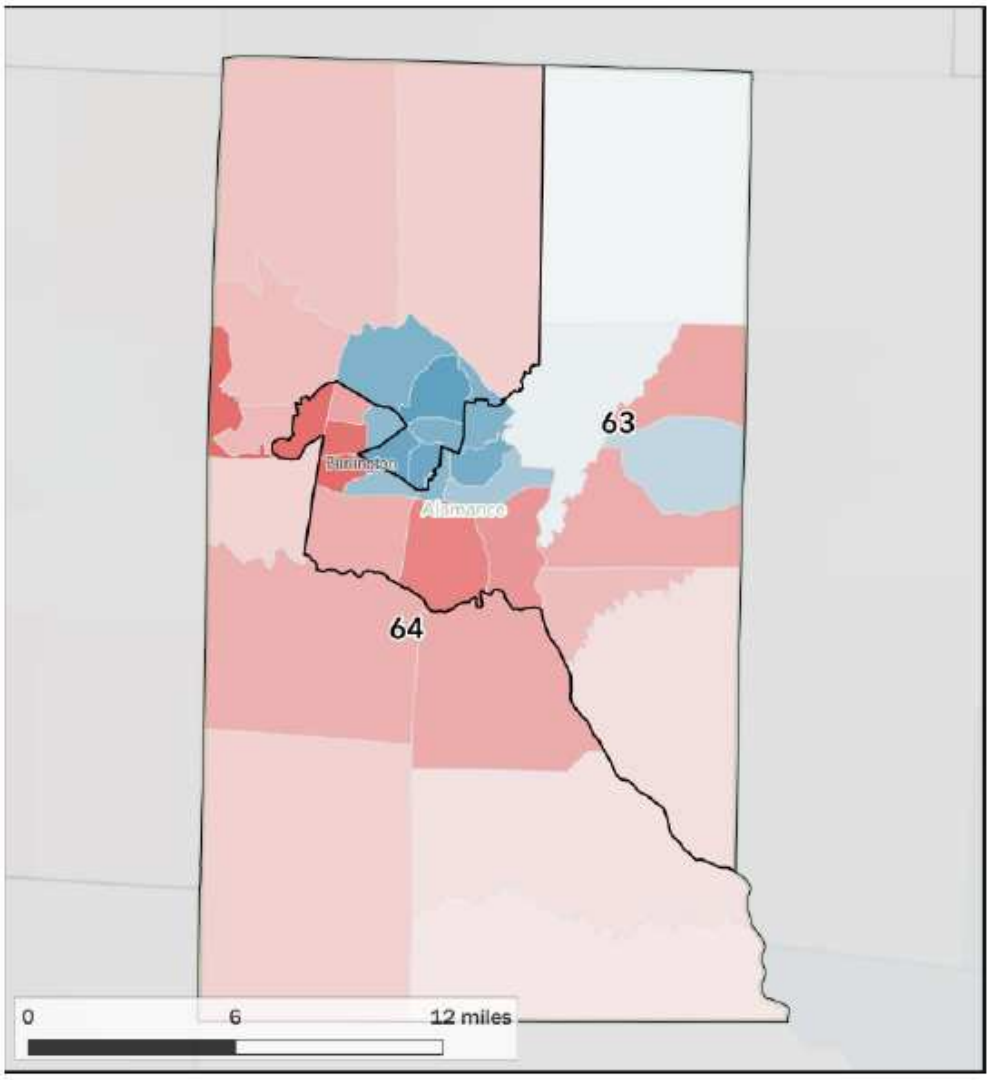
487. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 98.5% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 95.5% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:8-9; PX523. The Court credits Dr. Pegden's analysis and conclusions.

488. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

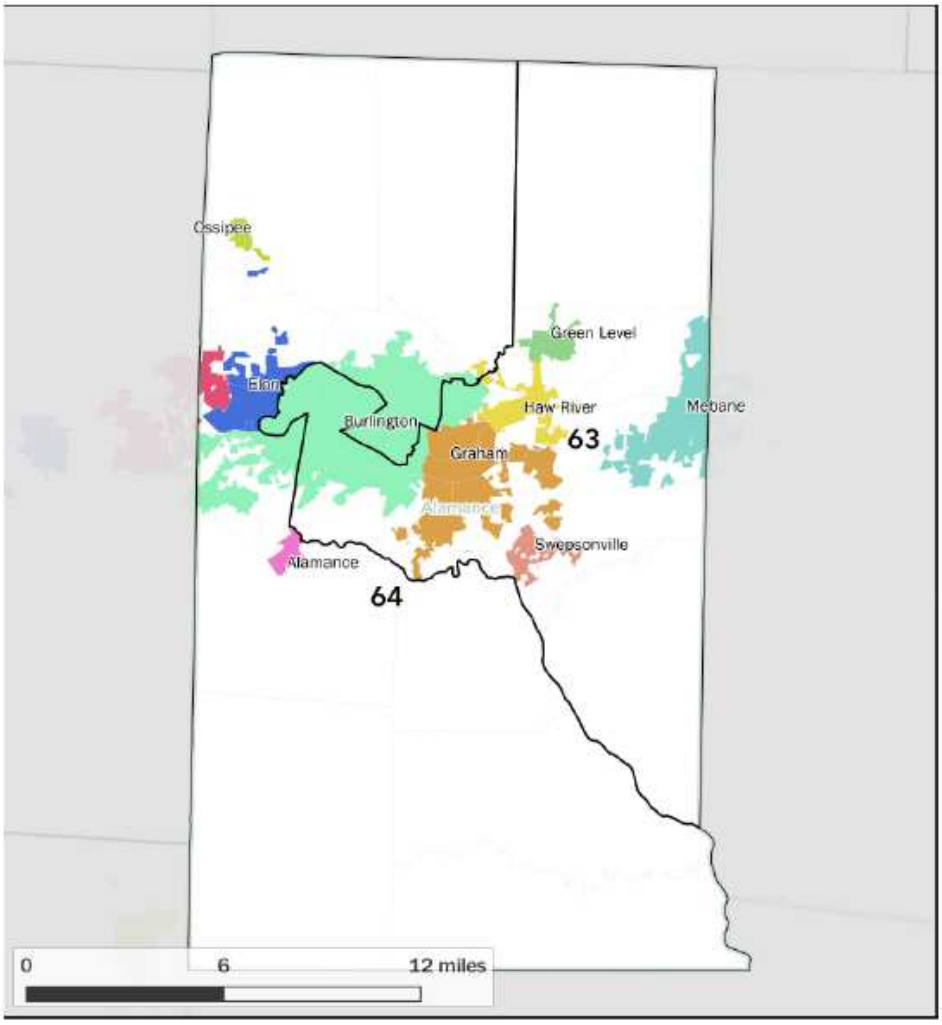
n. Alamance

489. The Alamance House county grouping contains House Districts 63 and 64. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

490. Plaintiffs' Exhibit 311 is Dr. Cooper's map for this county grouping:

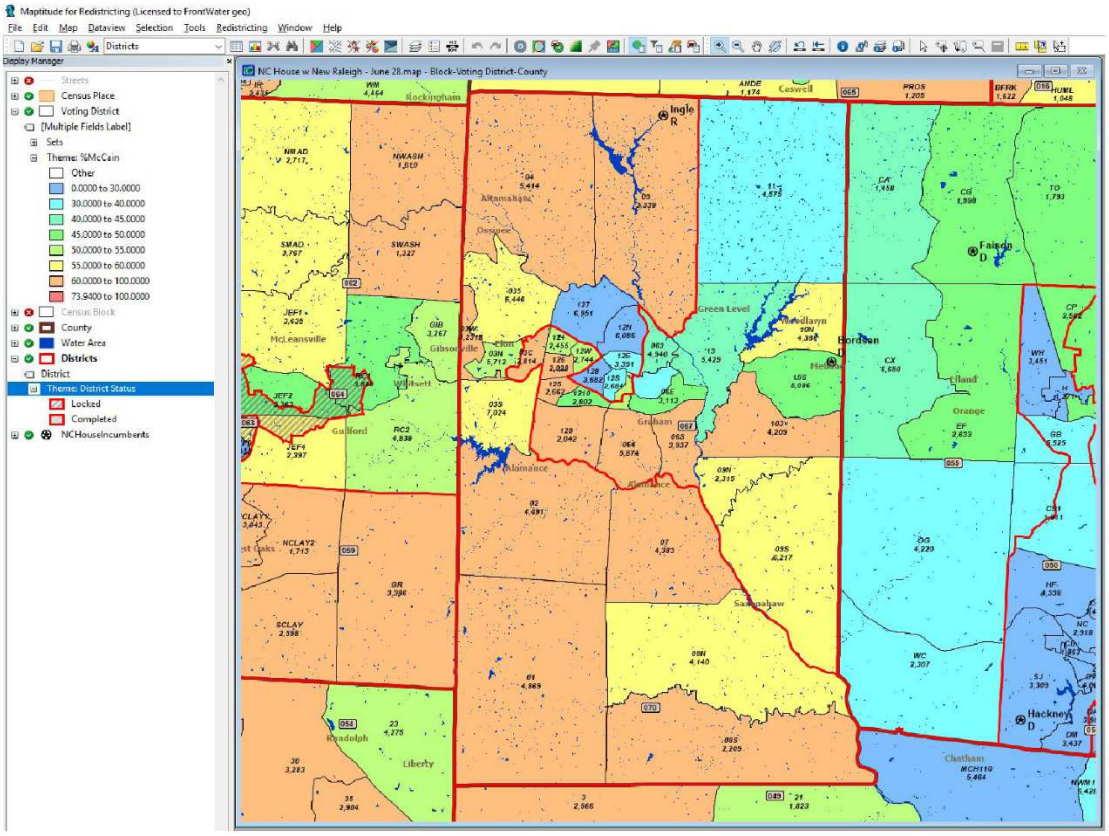


491. Dr. Cooper described how House District 63 takes the shape of a "duck's head" in the Burlington area, cracking the Democratic voters in and around Burlington between House Districts 63 and 64 to reduce those voters' influence. Tr. 924:3-25; PX253 at 84 (Cooper Report). And the map carefully places Burlington's Republican-leaning-VTDs (in the "duck's heads") in House Districts 63, helping to ensure that House District 63 will consistently elect a Republicans. Plaintiffs' Exhibit 312 depicts the division of Burlington (shaded green):



492. Dr. Hofeller's Maptitude files confirm the partisan intent and "partisan consequences" of cracking Democratic voters in this grouping. Tr. 998:18-19. In particular, Dr. Hofeller's draft map for House Districts 63 and 64 (which was last modified in June 2011 while this district was being drawn) demonstrates how the "duck's head" portion put Burlington's most moderate and Republican-leaning VTDs (shaded tan and light green) in House District 63, while Burlington's bluest VTDs were grouped with heavily Republican areas in northern and southern Alamance County. Tr. 998:9-25; PX354; PX329 at 32 (Cooper Rebuttal Report). Plaintiffs' Exhibit 354 shows Dr. Hofeller's Maptitude file containing the Alamance grouping.

Figure 26: Partisan Targeting in House Districts 63 and 64



493. Election results demonstrate that the gerrymandering of this grouping has been highly effective. Although Intervenor Defendants presented testimony claiming that "candidate quality" resulted in the Democratic loss in one of the districts in 2018 (Tr. 2245:9-2246:25), in fact, Republicans have won both districts in this grouping in all four elections since the districts were drawn in 2011, across a range of candidates. JSF at Ex. 2; Tr. 2253:15-2256:10.

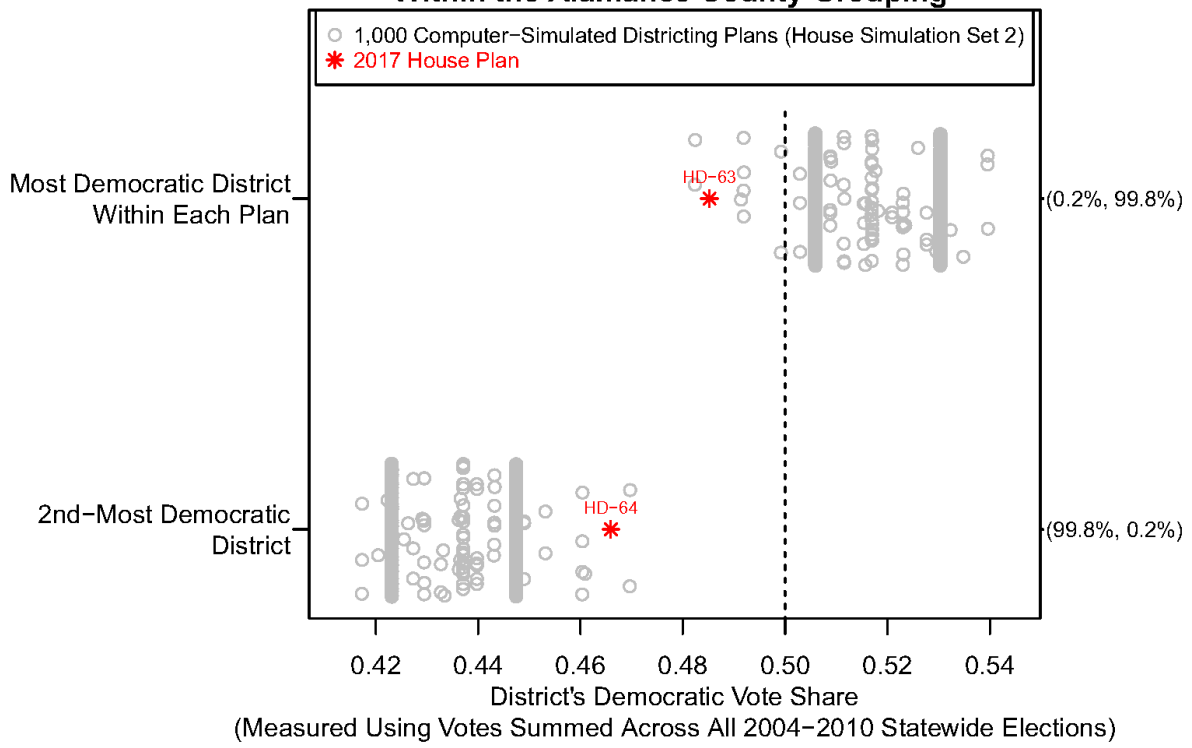
494. Legislative Defendants have offered no nonpartisan explanation for the boundaries of the districts in this county groupings.

495. The simulations of Plaintiffs' other experts independently establish that the Alamance county grouping is an extreme partisan gerrymander.

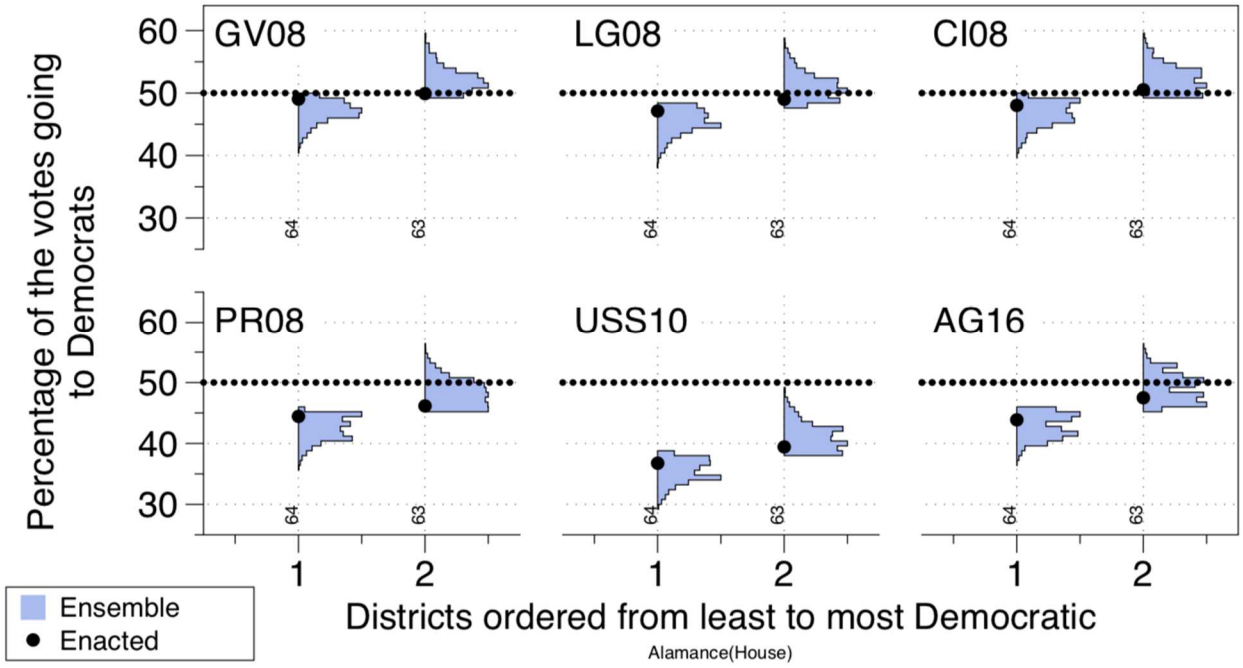
496. In his House Simulation Set 1, Dr. Chen finds that House District 63 has a lower Democratic vote than its corresponding district in over 77% of the simulations. Tr. 371:24-372:6;

PX55. More importantly, Dr. Chen found that both districts in this county grouping are extreme partisan outliers in House Simulation Set 2 that avoids pairing the incumbents in office at the time this grouping was drawn. Tr. 372:8-373:5; PX76. Dr. Chen thus concluded with over 99.9% statistical certainty that the districts in this grouping are extreme partisan outliers if the General Assembly was trying to protect incumbents in drawing the districts in the grouping. Tr. 372:23-373:5. Indeed, across the vast majority of 2,000 simulations in House Simulation Sets 1 and 2, this county grouping would produce a Democratic-leaning district in the simulations, whereas it does not in the enacted plan. PX55; PX76. The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 76 below:

Figure 56: House Simulation Set 2:
Democratic Vote Share of the Enacted and Computer−Simulated Districts Within the Alamance County Grouping



497. Plaintiffs' Exhibit 384 shows Dr. Mattingly's analysis of this grouping:



498. This grouping reflects what Dr. Mattingly called "squeezing" or "flattening," where Democratic districts are cracked across all of the districts. Tr. 1149:19-1151:2. Dr. Mattingly found that this grouping reflected more cracking of Democratic voters than 77% of the comparable districts in the nonpartisan ensemble. Tr. 1151:10-17; PX778 at 30; PX359 at 26. Although Dr. Mattingly did not label this grouping an "outlier" because he used a 90% threshold, he testified that the pro-Republican bias in the grouping still contributed to the extreme pro-Republican bias he found statewide. Tr. 1151:21-1153:2, Tr. 1154:23-1155:1. What's more, the pro-Republican tilt has a significant effect; as the figure above shows, the gerrymander causes the Democrats to lose one seat in this grouping in many electoral environments. Tr. 1151:3-9. Dr. Mattingly concluded that the Alamance House grouping reflected a clear pro-Republican partisan tilt, Tr. 1151:24-1153:2, PX778 at 30, and the Court credits his conclusion.

499. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is

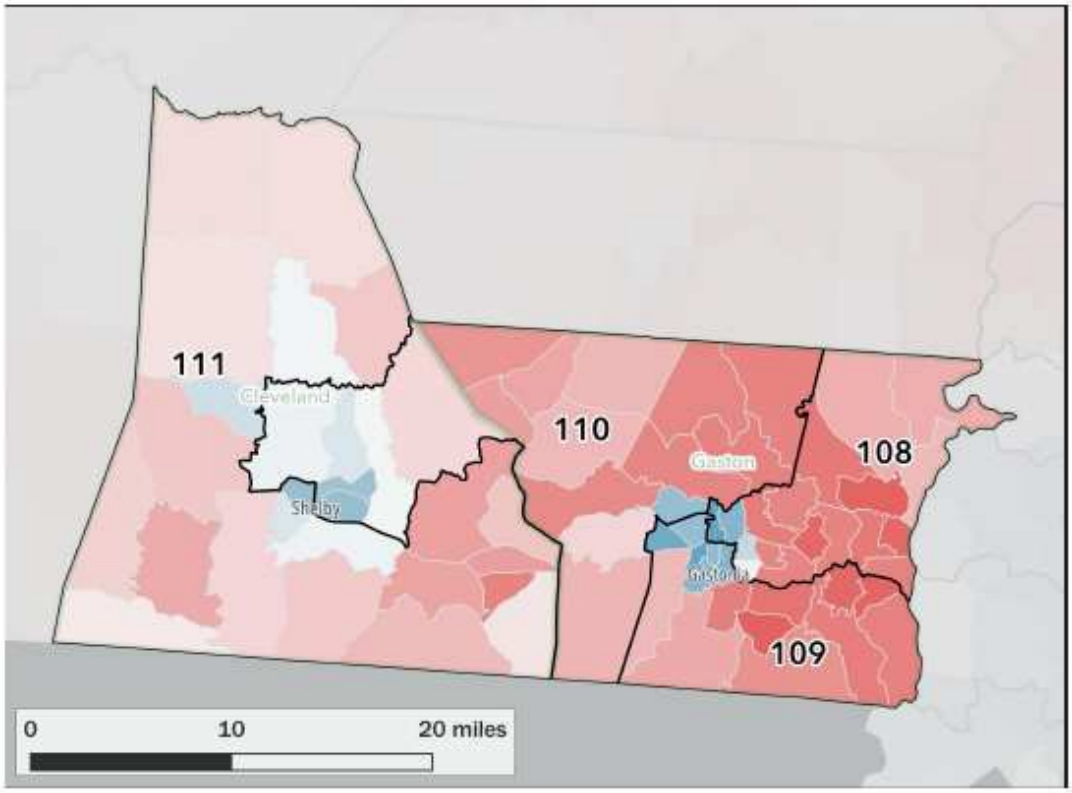
more favorable to Republicans than 99.9987% of the maps that his algorithm encountered by making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.996% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:5; PX522. The Court credits Dr. Pegden's analysis and conclusions.

500. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

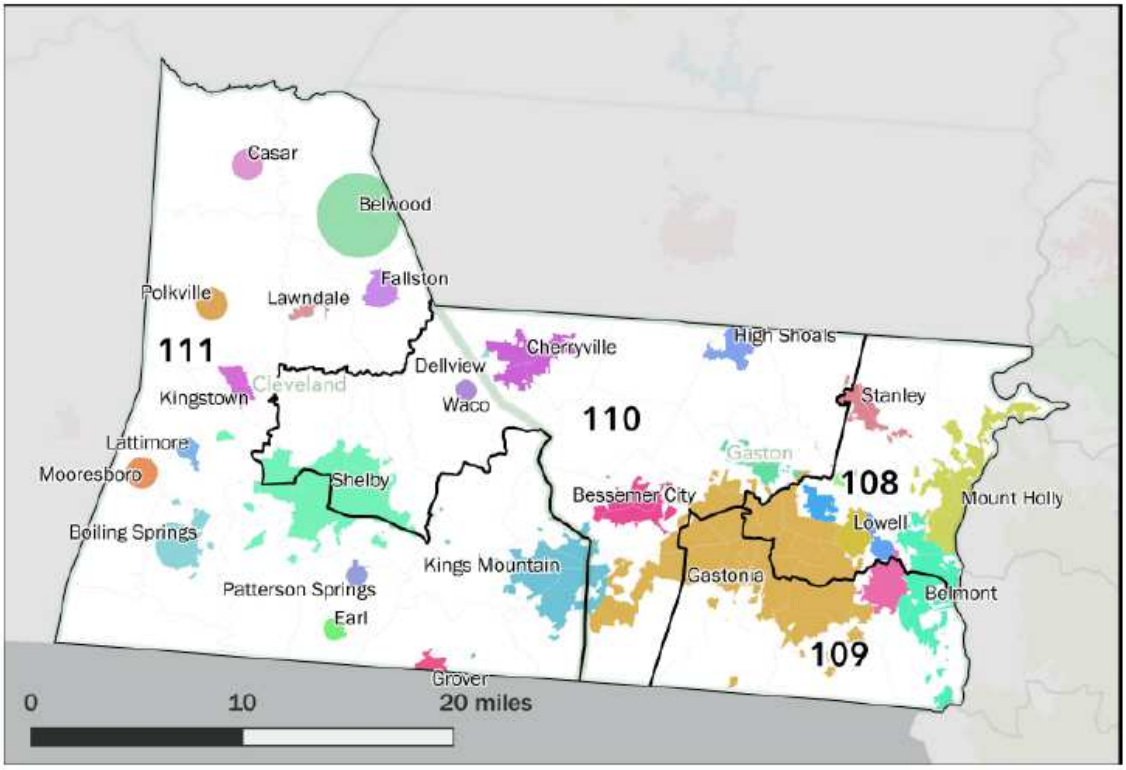
o. Cleveland-Gaston

501. The Cleveland-Gaston House county grouping contains House Districts 108, 109, 110, and 111. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

502. Plaintiffs' Exhibit 323 is Dr. Cooper's map for this county grouping:



503. As Dr. Cooper testified, this grouping is a textbook example of cracking. The Democratic voters in Gastonia are cracked across House Districts 108, 109, and 110, and the Democratic voters in Shelby across House Districts 110 and 111. Tr. 933:4-10; PX253 at 97-98 (Cooper Report). Plaintiffs' Exhibit 325 illustrates the splitting of these municipalities:



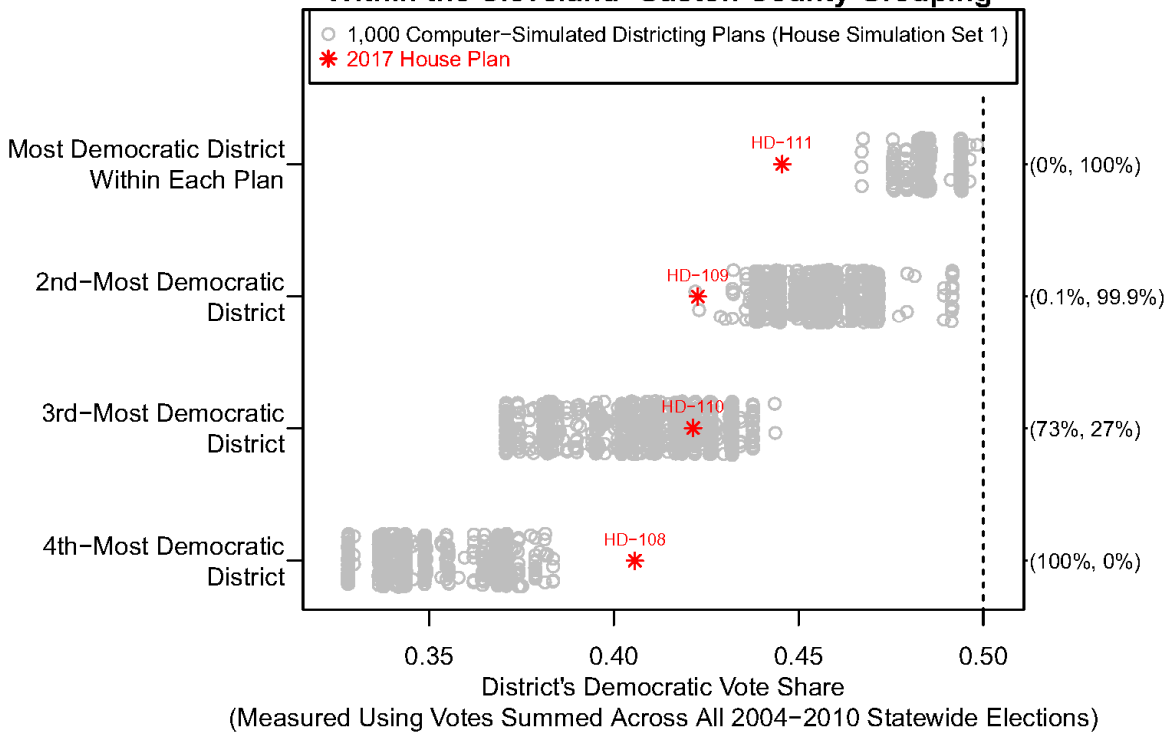
504. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

505. Elections results confirm that this gerrymander has been effective. Republican candidates have won House Districts 108, 109, 110, and 110 in every election since these districts were drawn in 2011. JSF at Ex. 2; PX253 at 98 (Cooper Report).

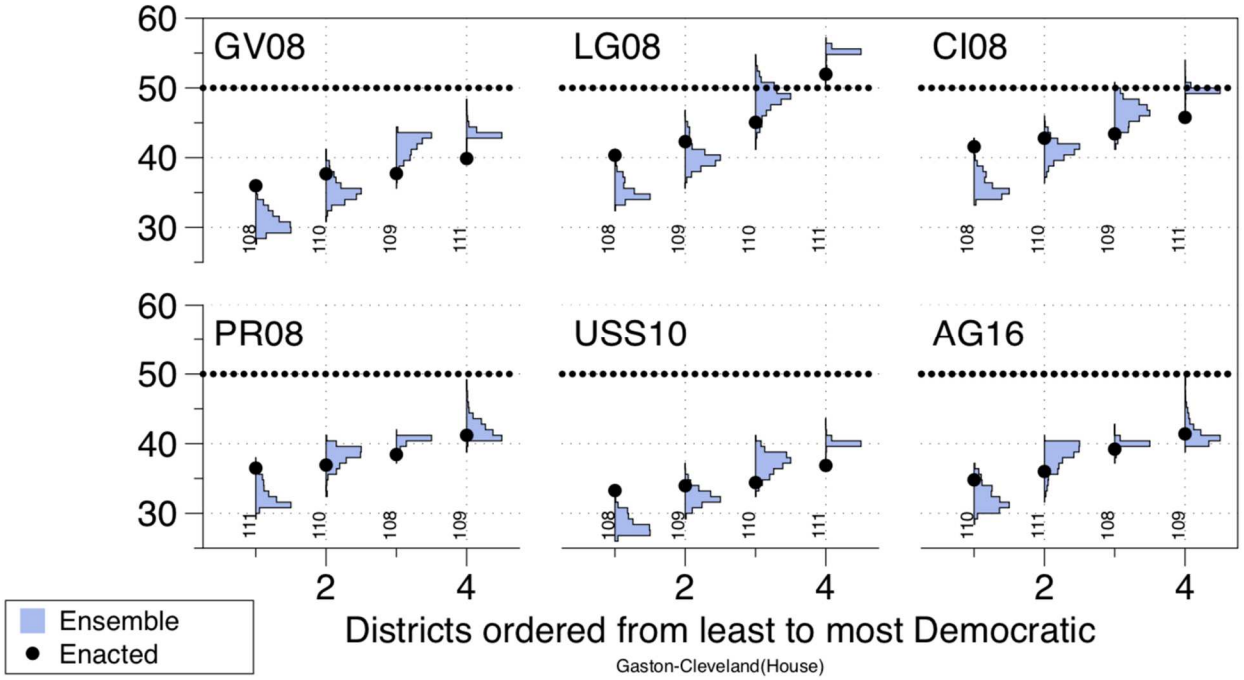
506. The simulations of Plaintiffs' other experts independently establish that the Cleveland-Gaston county grouping is an extreme partisan gerrymander.

507. Dr. Chen found that this county grouping contains three districts that are extreme partisan outliers. Tr. 370:5-13. House Districts 109 and 111 have lower Democratic vote shares than their corresponding district in all or nearly all of the simulations, while House District 108 has a higher Democratic vote shares than its corresponding district in all of the simulations. PX59. Dr. Chen's findings demonstrate the cracking of Democratic voters across the districts in this county grouping. PX59. The Court credits Dr. Chen's analysis and findings for this county grouping, which are reflected in Plaintiffs' Exhibit 59 below.

Figure 39: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts
Within the Cleveland−Gaston County Grouping



508. Plaintiffs' Exhibit 396 shows Dr. Mattingly's analysis of this grouping:



509. This grouping reflects what Dr. Mattingly called "squeezing" or "flattening," where Democratic voters are cracked across all of the districts. Tr. 1149:19-1150:2; Tr. 1150:22-1151:2. Dr. Mattingly found that this grouping reflected more cracking of Democratic voters than 82.86% of the comparable districts in the nonpartisan ensemble. PX778 at 32; PX359 at 26. Although he did not label the this grouping an "outlier" because he used a 90% threshold, he testified that the pro-Republican bias in the Gaston-Cleveland still contributed to the extreme pro-Republican bias he found statewide. Tr. 1151:21-1156:21. Moreover, as the figure above shows, the gerrymander causes Democrats to lose at least one seat in certain electoral environments. Dr. Mattingly concluded that the Gaston-Cleveland grouping reflects a clear pro-Republican partisan tilt that can contribute to the extreme pro-Republican bias statewide, Tr. 1156:17-21, PX778 at 30, and the Court credits his conclusion.

510. Dr. Pegden's conservative methodology resulted in comparison maps that are very similar to the enacted plan for this grouping. Tr. 1351:17-1352:10. Nevertheless, Dr.

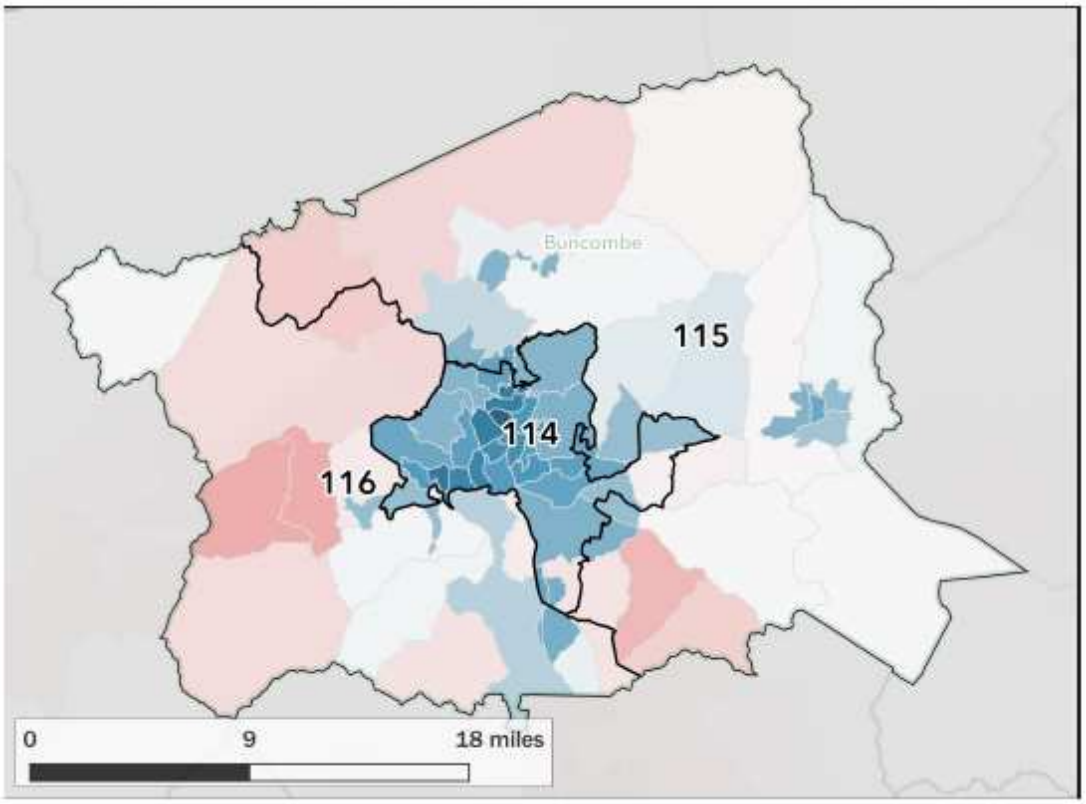
Pegden found the enacted map was more favorable to Republicans than 88.5% of the maps his algorithm encountered by making small changes to the district boundaries. PX534.

511. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

p. Buncombe

512. The Buncombe House county grouping contains House Districts 114, 115, and 116. The Court credits the analysis of Plaintiffs' experts and concludes that this county grouping is an extreme partisan gerrymander.

513. Plaintiffs' Exhibit 326 is Dr. Cooper's map for this county grouping:



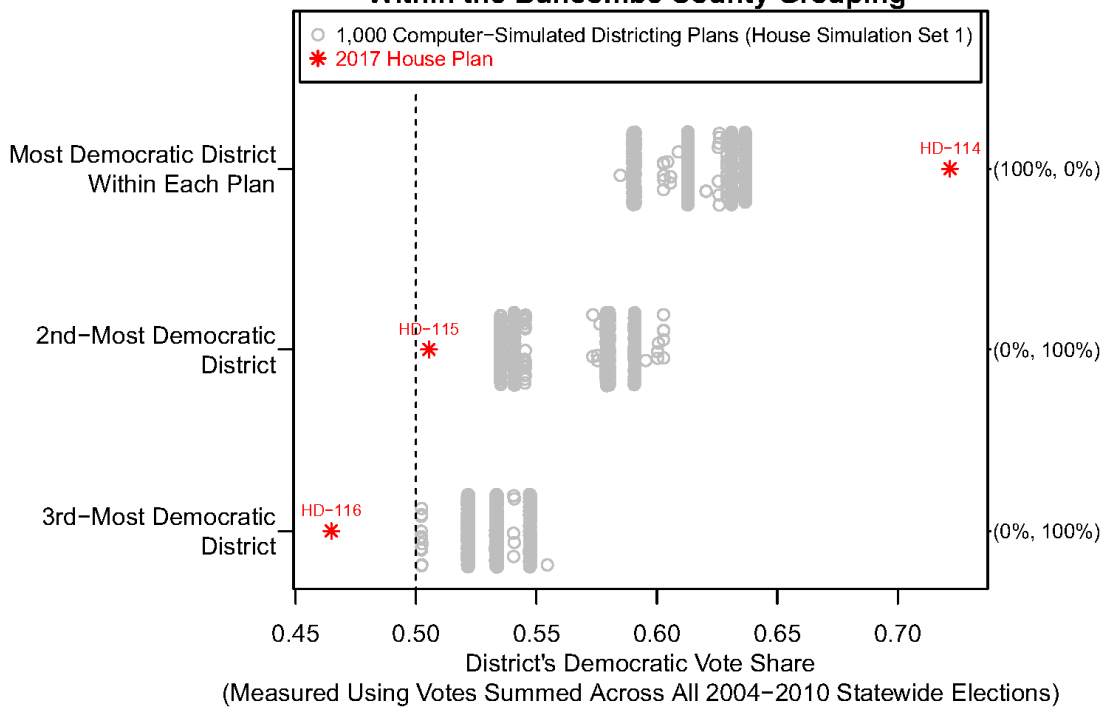
514. Legislative Defendants packed the most Democratic VTDs in and around Asheville into House District 114, in an effort to make House Districts 115 and 116 as competitive for Republicans as possible. Tr. 934:17-935:1; PX253 at 100 (Cooper Report).

515. Legislative Defendants have offered no nonpartisan explanation for the boundaries of these districts.

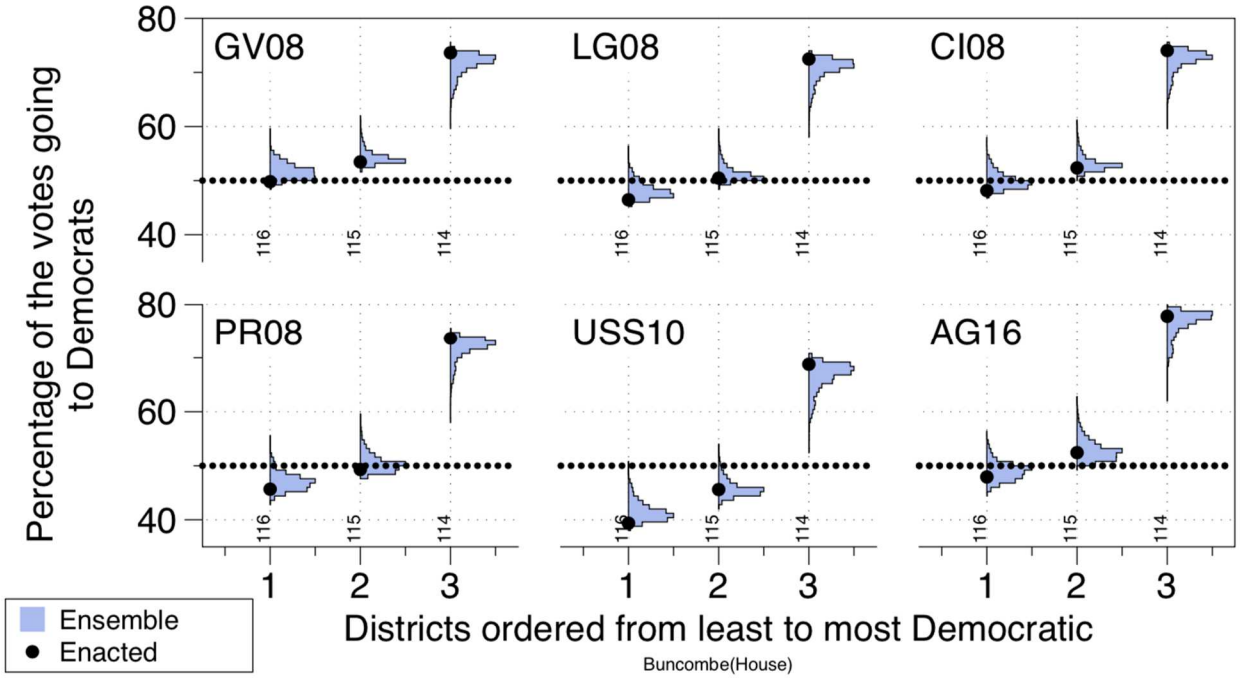
516. The simulations of Plaintiffs' other experts independently establish that the Buncombe county grouping is an extreme partisan gerrymander.

517. Dr. Chen found that all three districts county grouping are extreme partisan outliers. Tr. 369:3-7. House District 114 has a higher Democratic vote share than its corresponding district in all the simulations, while House Districts 115 and 116 have lower Democratic vote shares than their corresponding districts in all the simulations. Dr. Chen's findings demonstrate the packing of Democratic voters into House District 114 to make House Districts 115 and 116 as competitive for Republicans as possible. PX58. The Court credits Dr. Chen's analysis and findings for this grouping, which are reflected in Plaintiffs' Exhibit 58:

Figure 38: House Simulation Set 1:
Democratic Vote Share of the Enacted and Computer−Simulated Districts Within the Buncombe County Grouping



518. Plaintiffs' Exhibit 386 shows Dr. Mattingly's analysis of this grouping:



519. Dr. Mattingly's analysis shows that Democrats were cracked out of the two least Democratic districts in this grouping and packed into the most Democratic district. PX778 at 30; PX359 at 27; PX386. The two least Democratic districts in the enacted plan had fewer Democratic voters than 85.45% of the comparable districts in the nonpartisan ensemble. PX778 at 30; PX359 at 27; PX386. Although Dr. Mattingly did not label this grouping an "outlier" because he used a 90% threshold, he explained that the pro-Republican bias still contributed to the extreme pro-Republican bias he found statewide. Tr. 1151:21-1156:24. As the figure above shows, the gerrymandering causes Democrats to lose one or two districts in certain electoral environments. Dr. Mattingly concluded that the Buncombe House grouping reflected a pro-Republican partisan bias, Tr. 1156:17-21, and the Court credits his conclusion.

520. Dr. Pegden found that this grouping constitutes an extreme partisan gerrymander. In his first level analysis, Dr. Pegden found that the enacted plan's version of this grouping is more favorable to Republicans than 99.9997% of the maps that his algorithm encountered by

making small changes to the district boundaries. In his second level analysis, Dr. Pegden found that this grouping is more carefully crafted to favor Republicans than at least 99.999% of all possible districtings of this county grouping that satisfy the criteria Dr. Pegden used. Tr. 1351:4-5; PX525. The Court credits Dr. Pegden's analysis and conclusions.

521. The analyses of Plaintiffs' experts independently and together demonstrate that this county grouping is an extreme partisan gerrymander.

D. The 2017 Plans Protected the Republican Majorities in the 2018 Elections

522. In the 2018 House elections, Republican candidates won a minority—48.8%—of the two-party statewide vote, but still won 65 of 120 seats (54%). JSF ¶¶ 68-69. Democrats thus broke the Republican supermajority, but not the majority. *Id.*; Tr. 163:21-164:19 (Rep. Meyer).

523. In the 2018 Senate elections, Republican candidates won a minority—49.5%—of the two-party statewide vote, but still won 29 of 50 seats (58%). JSF ¶¶ 142-43; Tr. 117:5-19 (Sen. Blue). Democrats broke the Republican supermajority by a single seat, after narrowly prevailing in Senate Districts 9 and 27 by margins of 0.1% and 0.5%. *Id.*

524. Democrats were unable to win majorities in either chamber despite robust efforts to fuel voter enthusiasm, recruit candidates, and fundraise, and despite favorable political conditions nationally and in North Carolina. Tr. 76:5-11 (Phillips); Tr. 118:19-21, 124:9-13 (Sen. Blue); Tr. 163:21-164:5 (Rep. Meyer); Tr. 1269:4-14, 1283:15-1284:1 (Goodwin). Democrats raised and spent more money than Republicans in the 2018 cycle, running the most well-funded campaign operation in the history of North Carolina. Tr. 117:20-117:25, 124:20-24 (Sen. Blue); Tr. 163:21-164:5, 171:3-6 (Rep. Meyer); Tr. 1284:11-17 (Goodwin).

525. Consistent with the findings of Drs. Chen and Mattingly, Senator Blue testified that, under the current Senate plan, Democrats would have needed to win over 55% of the statewide vote to win a majority of seats in the Senate. Tr. 119:19-120:4.

E. The 2017 Plans Harm the Organizational and Individual Plaintiffs

1. The 2017 Plans Harm the North Carolina Democratic Party

526. Elections, voting, and redistricting are central to the mission and purposes of Plaintiff the North Carolina Democratic Party (the "NCDP"). The NCDP is "an association of like-minded individuals"—"predominantly registered Democrats"—"who support and also help develop policies that they agree on." Tr. 1264:1-6 (Goodwin). As the NCDP's chair, Wayne Goodwin, testified, the NCDP's "basic purposes" are "to help encourage like-minded folks to come together, to help recruit candidates, and to support candidates who favor those policies and favor the development of policies that Democrats support," and "to persuade voters to support the nominees [of] the Democratic Party during the general election." Tr. 1265:2-9. The Court credits Mr. Goodwin's testimony regarding the NCDP's mission and purposes.

527. The Court further credits Mr. Goodwin's testimony that district lines significantly affect the NCDP's ability to fulfill its mission and purposes. To achieve its purposes, the NCDP must "have good candidates that we recruit and that we support"; it needs "enthusiasm for the party and its candidates and its message and mission"; and it needs "the appropriate financial resources to get a message [out]" and to fund all "the things that are involved with elections." Tr. 1254:15-21. All of those things are affected by district boundaries. Tr. 1265:22-24. For that reason, to "accomplish [NCDP's] mission," it is "vital" that the NCDP have "fair, nondiscriminatory district lines for the candidates that run in districts across the State." *Id.*

528. The current district lines have harmed the NCDP and will continue to do so. The lines drawn in 2011 "had a tremendously negative impact on the ability of the North Carolina Democratic Party to achieve the purposes for which it exists." Tr. 1266:9-16. Under the 2011 districts, "it was more difficult to recruit candidates, it was more difficult to raise the funds necessar[]y, [and] enthusiasm was down tremendously because of ... unfair []districts." *Id.*

529. Upon enactment of the 2017 Plans, the NCDP "knew it was still going to be a difficult, difficult race because of ... [the] district lines." Tr. 1267:11-13. Because of the 2017 Plans, the NCDP "had to expend extraordinary amounts of time and resources and the like in a way [that], in a set of fair maps across the State, [it] wouldn't have had to do." Tr. 1270:10-14; *see* Tr. 1284:18-22. The NCDP had to spend more money than it would have under nonpartisan maps, both statewide and in individual districts. For example, in House District 103 in Mecklenburg County, "to make that election competitive," Democrats had to recruit the daughter of former Governor Jim Hunt and "her election had to be financed at a level that no previously House election had ever been financed in the history of state elections," with Democrats spending over a million dollars in support of Ms. Hunt. Tr. 189:17-190:23 (Rep. Meyer). Even then, Ms. Hunt won the election by fewer than 100 votes. *Id.* The simulations of Drs. Chen and Mattingly each establish that, under nonpartisan maps, House District 103 in Mecklenburg County would be more favorable for Democrats than it is under the current House plan, meaning that Democrats would not need to devote as many resources to this district and would be able to spend those resources in other districts across the State instead. *Supra* FOF § C.2.*i*. The Court finds that the NCDP has established that the current districts have injured the NCDP as an organization by requiring it to spend and divert financial resources.

530. The Court finds that the current districts have injured the NCDP in other ways. As Mr. Goodwin testified, "notwithstanding the tremendous[,] palpable level of enthusiasm" for Democratic candidates nationwide and in North Carolina in 2018, "notwithstanding raising the most funds ever raised for a mid-term election for the [D]emocratic [P]arty," and "notwithstanding the fact that ... there was a [D]emocratic [G]overnor and [a] unique partnership" with the Governor, the NCDP's "efforts and enthusiasm and … money did not

translate into seats." Tr. 1268:16-1269:3. "[D]espite everyone going [the NCDP's] way, the lines were drawn in such a way that [the NCDP] could not breach that seawall that protected the [R]epublican majority." Tr. 1268:13-15.

531. The NCDP finds that the current districts will also continue to injure the NCDP in the 2020 elections absent judicial relief. The NCDP will continue to need to spend and divert financial resources as a result of the gerrymanders, and it will continue to be extremely unlikely that Democratic candidates will be able to win majorities in either chamber of the General Assembly under the current districts. Moreover, although the NCDP was able to recruit a candidate in every district with the unique national environment that existed for Democrats in 2018, the NCDP may be unable to do so in 2020. At a minimum, recruitment will be more difficult than it would be under nonpartisan plans. As Mr. Goodwin explained, unfair districts make it "more difficult to recruit candidates." Tr. 1266:12-13.

532. In addition to harming the NCDP itself, the enacted plans also have harmed the NCDP's members, and continue to do so. The NCDP's members include every registered Democratic voter in North Carolina. Tr. 1269:8-17. There are "well over two million registered Democrats in North Carolina" Tr. 1269:8-9. "There are registered Democrats in every precinct in the State, every House District, [and] every Senate District." Tr. 1269:15-20. The NCDP thus has members in every House and Senate district at issue in this case, and those members are harmed by the enacted plans. The gerrymanders dilute the voting power of the NCDP's members, intentionally making it more difficult for some Democratic voters to elect candidates of their choice and making it nearly impossible for Democratic voters statewide to obtain Democratic majorities in the General Assembly. *See infra* FOF § E.3.

533. The NCDP's "support scores" do not undermine the harms that the 2017 Plans cause the NCDP and its members. As Democratic Representative Graig Meyer testified, "support scores" are purchased scores that are assigned to all registered voters based on "a combination of consumer data as well as geographic and other factors that give you a sense of the likelihood someone is going to support a Democratic candidate." Tr. 164:22-165:12. These scores are made available by the NCDP to Democratic candidates' campaigns, Tr. 1270:24-1271:19 (Goodwin), which then, in their discretion, may use them "to determine which voters we should target for paid communications, such as digital or mail, or for individual communications, such as canvassing and knocking on voters' doors," Tr. 164:23-165:2 (Rep. Meyer). Even then, Democratic campaigns "almost always use [support scores] in conjunction with other measures, such as a turnout score, which tells you how likely someone is to actually vote." Tr. 165:13-15.

534. Several of Legislative Defendants' Exhibits purportedly show—based on support scores that are aggregated on a district-by-district basis—that Democratic candidates should be competitive, and in fact could win, in a comfortable majority of House and Senate districts under the 2017 Plans. *See* LDTX 145-147, 278; *see* Tr. 2072:21-2074:22 (Dr. Hood).

535. The Court assigns no weight to Defendants' arguments related to aggregated district-level support scores. Neither the NCDP nor any Democratic campaign or candidate "ever use[s] ... aggregated support scores for any purpose," and certainly not "to determine the electability of a district." Tr. 1271:20-24 (Goodwin); Tr. 194:1-2 (Rep. Meyer). Support scores are "not reliable in the aggregate," Tr. 167:5-6 (Rep. Meyer), and "[a]ggregated support scores wouldn't be all that helpful because individual support scores can be misleading," Tr. 165:24-166:1 (Rep. Meyer). "They're imprecise measures, and then if you aggregate imprecise measures like that they tend to get less and less precise in the aggregate." Tr. 166:7-9 (Rep.

Meyer). Moreover, the aggregated support scores include all *registered* voters in a district, not likely or actual voters, which tends to overstate Democratic support. Tr. 2091:6-2092:14 (Dr. Hood). Rather than use aggregated support scores, the NCDP uses other metrics to assess a district's competitiveness, such as the "Democratic Performance Index" (DPI) or the results of specific recent statewide elections. Tr. 1272:3-11 (Goodwin); Tr. 177:3-11 (Rep. Meyer).

536. Even Legislative Defendants' expert Dr. Hood, who purported to present an analysis based on the aggregated support scores, conceded that there is no academic literature on support scores, and he is not aware of anyone who has ever "used those scores to make predictions." Tr. 2092:3-24. Nor did Dr. Hood present any analysis to substantiate any claim that aggregated support scores are accurate predictors of a district's competitiveness, and Representative Meyer credibly explained that they are not. Representative Meyer gave several examples where the district-level aggregated support scores differ wildly from actual election results, demonstrating why the NCDP and Democratic campaigns "don't use support scores to determine electability of a district." Tr. 194:1-2; *see* Tr. 193:17-196:12.

537. Defendants presented no evidence that Democrats have a realistic possibility of winning majorities in the General Assembly under the metrics that are used to assess a district's likely performance, such as the DPI and prior statewide elections results.

538. The total number of registered Democrats in particular districts likewise does not undermine the harm the enacted plans cause the NCDP and its members. Legislative Defendants' Exhibit 280 purportedly indicates that Democrats and unaffiliated voters, when combined together, hold a registration advantage over Republicans in all Senate districts and all House districts but one. *See* Tr. 1279:25-1281:15 (Goodwin). The Court does not credit Legislative Defendants' arguments based on statewide party registration numbers.

539. As Mr. Goodwin explained, Legislative Defendants' Exhibit 280 presents "an extreme hypothetical assuming that everyone who's registered for his or her respective party actually vote and voted only based on their party registration, and assuming that unaffiliateds all vote for the Democratic candidate. That is not going to happen." Tr. 1281:21:25. The notion that Democrats could win 169 of 170 total seats in the General Assembly is not credible.

540. As Dr. Chen further explained, party registration has been "studied in the academic literature[,] and it's well known that in a lot of different Southern states, including in some parts of North Carolina, party registration is not necessarily a reliable indicator of one's actual partisan voting habits." Tr. 277:22-278:1. For example, "there are conservative Democrats, or what we call blue dog democrats sometimes, who in the past used to vote Democratic and have, for the last couple of decades, switched over the voting Republican, but their party registration may still remain as Democrats." Tr. 278:3-10.

541. The Court finds that party registration does not provide a reliable indicator of the competitiveness of any individual district or of the enacted plans as a whole.

2. The 2017 Plans Harm Common Cause

542. Redistricting is central to the mission and purposes of Plaintiff Common Cause. Bob Phillips—Executive Director of Common Cause's local chapter, Common Cause North Carolina—testified that Common Cause advocates for "[s]trengthening democracy" and "for more open, honest and accountable government." Tr. 40:23-41:1, 41:10-16, 42:13-17. And "there is nothing ... that's really more significant, consequential in a legislative session than redistricting." Tr. 42:23-25. New maps "really lock in ... everything" "for the next decade," including "who gets elected and what the power share will be" and "[u]ltimately what kind of laws and policies are going to be emphasized and then will not be, what will be ignored." Tr. 42:25-43:4. The Court credits Mr. Phillips's testimony.

543. Common Cause has long advocated to end partisan gerrymandering in North Carolina. Tr. 43:10-52:20. The 2017 Plans harm Common Cause as an organization by substantially impeding this longtime goal. As Mr. Phillips testified, majorities in the General Assembly, who owe their power to gerrymandered plans, will never adopt meaningful redistricting reform. Tr. 52:1-20.

544. The enacted plans also harm Common Cause by impeding its mission and objectives in other ways. As Mr. Phillips explained, "[o]ne of the central missions to Common Cause is to help citizens understand that they do have an obligation and that they can hold their elected accountable. How do you do that when so many—90 percent of our legislative seats are preordained ... ?" Tr. 48:8-12. When "we already know [on] the filing date basically who is going to win," it is "hard to get citizens[,] voters[,] to participate, to think that their vote really matters." Tr. 48:25-49:3. In addition, representatives elected from gerrymandered districts "really don't have any incentive or an obligation to try to serve all the members, particularly those people who are in the parties that are not theirs. We see that." Tr. 48:14-18.

545. In addition to Common Cause itself, the enacted plans also harm Common Cause's members. Common Cause has 25,000 members across North Carolina, including in the districts at issue here. *See* Tr. 41:17-42:12; PX644 (listing Common Cause members by district). The enacted plans harm Common Cause's members in the same ways they harm the NCDP's members and the individual voter-plaintiffs in this case.

3. The 2017 Plans Harm the Individual Plaintiffs

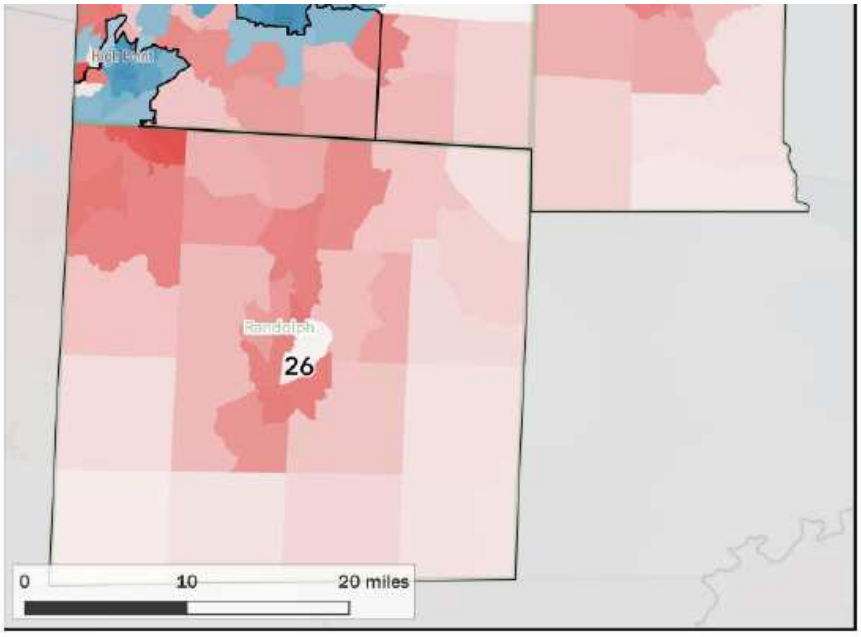
546. The Individual Plaintiffs are 37 individual North Carolina voters who prefer Democratic candidates and have consistently voted for Democratic candidates running for the North Carolina General Assembly. *See* PX678-714.

547. The evidence demonstrates that the 2017 Plans disadvantage the Individual Plaintiffs and other Democratic voters across North Carolina. Two of the Individual Plaintiffs testified live at trial, and the remaining 35 testified through affidavits. PX678-714.

548. Plaintiff Derrick Miller testified live at trial. Dr. Miller, a professor of German at the University of North Carolina Wilmington, resides in Senate District 8 in the "Wilmington Notch." Tr. 202:10-14. Dr. Miller testified that by splitting off this small portion of Wilmington where he lives, the General Assembly has "made it impossible for [him] and [his] Democratic neighbors to elect a Democrat, a candidate of our choice, in Senate District 8." Tr. 205:9-19. In 2018, the Republican candidate won Senate District 8 with nearly 60% of the vote. Tr. 204:3-4. As a fifth-generation North Carolinian, Dr. Miller cares deeply about issues such as public education and preserving North Carolina's natural resources, and he believes that "Democrats much more reliably and [a] Democratic majority much more reliably would protect those resources, the educational resources and the natural resources of our state." Tr. 205:23-206:11.

549. Dr. Miller also lives in House District 18, where the General Assembly packed Democrats in Wilmington and Leland into a single, reliably Democratic district. Tr. 204:5-7; PX302. Dr. Miller testified that while such packing does assure him a Democratic representative in House District 18, "it does so as the expense of multiple safe districts for Republicans along the ... neighboring districts," making it more likely that the Republicans would gain control of the General Assembly. Tr. 205:9-19.

550. The other Individual Plaintiff who testified at trial, Joshua Brown, is a locksmith apprentice from High Point who resides in Senate District 26. Tr. 830:7-12. As shown in Plaintiffs' Exhibit 281, the General Assembly split off the most heavily Democratic area of Guilford County where Mr. Brown lives and appended it to conservative Randolph County:



551. Mr. Brown testified that by drawing his Senate District in this manner, the General Assembly "clearly dilute[d] the ability of Democrats to even attempt to run a fair race." Tr. 833:19-21. Like Dr. Miller, Mr. Brown cares about a number of issues before the General Assembly, including a living wage, the environment, and Medicaid expansion. Tr. 834:5-6. Mr. Brown's mother was recently hospitalized, and he believes that she would not be facing certain health issues if North Carolina had approved the Medicaid expansion. Tr. 834:8-835:3. He believes that the Republican Party in the General Assembly today has "opposing" stances on these issues that he cares about. Tr. 835:4-7.

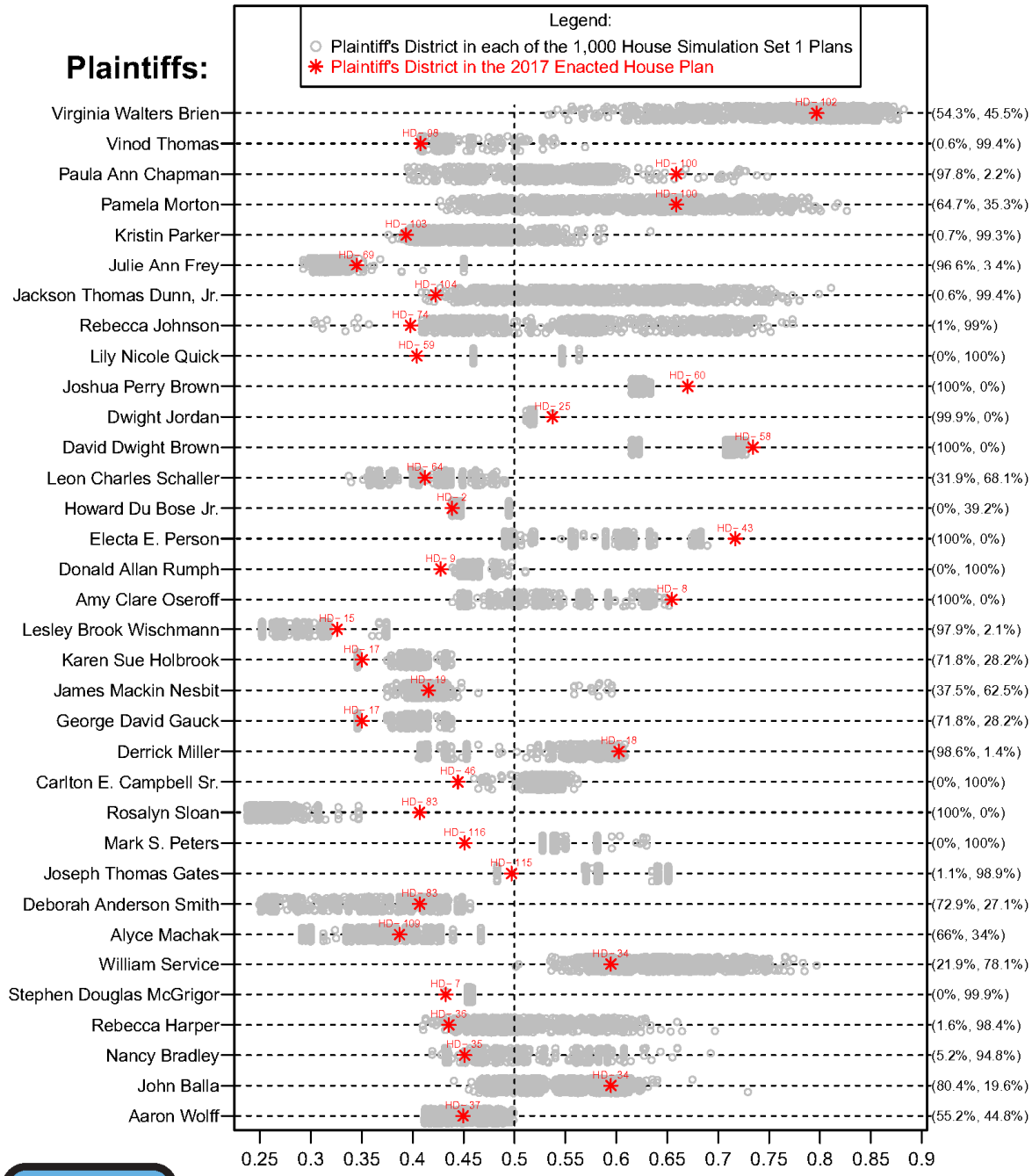
552. Mr. Brown also lives in House District 60, where Democrats such as Mr. Brown are packed to create an overwhelmingly Democratic district. Tr. 833:25-834:2; PX310. Mr. Brown testified that by packing Democrats in this manner, the General Assembly "reduced the surrounding districts electing a Democrat," making it more difficult for Democrats to gain control of the General Assembly. Tr. 833:25-834:2.

553. The affidavits submitted by the remaining thirty-five Individual Plaintiffs establish that each of these Individual Plaintiffs (i) has voted for the Democratic candidate running for the North Carolina General Assembly in each year that such an election was held since at least 2011, (ii) has a preference for electing Democratic legislators and a majority-Democratic General Assembly, and (iii) believes that if the Democratic Party made up a majority of the members in the General Assembly, the policies proposed and enacted would more closely represent the plaintiff's personal and political views. PX678-713.

554. Plaintiffs' expert Dr. Chen quantified the effects of the gerrymander on the partisan composition of the districts in which each Individual Plaintiffs resides. For each of his 4,000 simulations (2,000 in the House and 2,000 in the Senate), Dr. Chen determined the House or Senate district in which each Individual Plaintiff would live based on that Plaintiff's residential address. Tr. 387:14-388:6; PX1 at 167-68 (Chen Report). Dr. Chen then compared the Democratic vote share of the districts in which a particular Plaintiff would live under his simulations to the Democratic vote share of the Plaintiff's districts under the enacted plans. *Id.*

555. Plaintiffs' Exhibit 238 (reproduced below) shows Dr. Chen's results for his House Simulation Set 1. In each row, the red star represents the Democratic vote share in the Individual Plaintiff's House district under the enacted plan using the ten 2010-2016 statewide elections, while the gray circles represent the Democratic vote share of that Plaintiff's district under each of the 1,000 simulated plans in House Simulation Set 1. Tr. 388:14-389:12. For instance, the figure shows that Rebecca Johnson's House district in the enacted plan has a roughly 40% Democratic vote share using the 2010-2016 statewide elections, but Ms. Johnson would live in a House district with a higher Democratic vote share in 99% of the simulations, with most of the simulations putting her in a district with an over 50% Democratic vote share. Tr. 390:6-391:20.

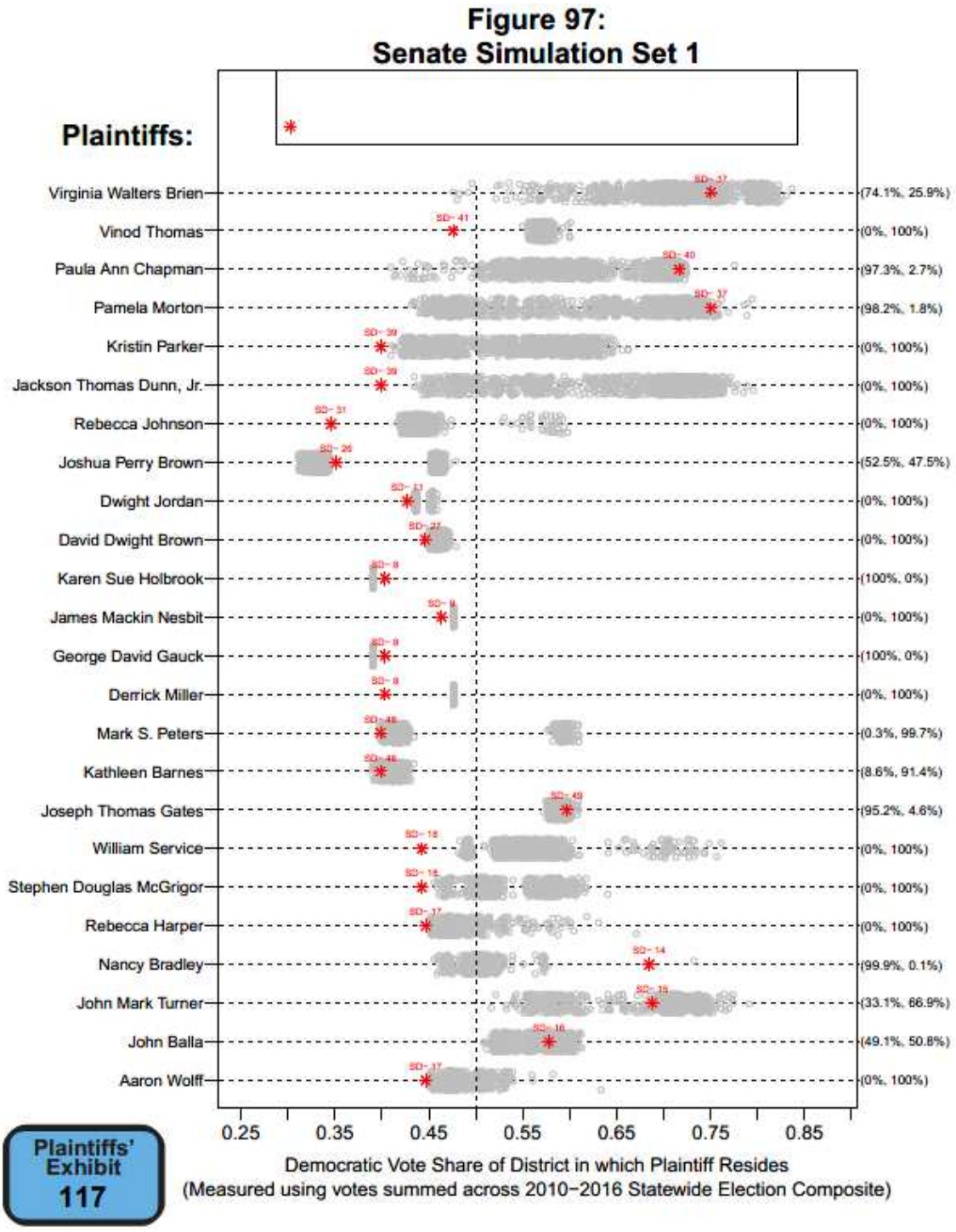
Figure 54:
House Simulation Set 1



Plaintiffs' Exhibit 238

556. Dr. Chen found that the following Plaintiffs live in House districts that are extreme outliers in partisanship compared to their districts in House Simulation Set 1: Vinod Thomas, Paula Ann Chapman, Kristin Parker, Julie Ann Frey, Jackson Thomas Dunn Jr., Rebecca Johnson, Lily Nicole Quick, Joshua Perry Brown, Dwight Jordan, David Dwight Brown, Electa E. Person, Donald Allan Rumph, Amy Claire Oseroff, Lesley Brook Wischmann, Derrick Miller, Carlton E. Campbell Sr., Rosalyn Sloan, Mark S. Peters, Joseph Thomas Gates, Stephen Douglas McGrigor, and Rebecca Harper. Tr. 393:9-17. Dr. Chen further found that Plaintiff Leon Schaller lives in a district that is a 68.1% outlier in House Simulation Set 1, but a 100% outlier in House Simulation Set 2. Tr. 394:2-10; *see* PX239.

557. Plaintiffs' Exhibit 117 shows the same analysis for the Senate, comparing the Democratic vote share in certain Individual Plaintiffs' districts under the enacted Senate plan to their districts under Dr. Chen's Senate Simulation Set 1.



558. Dr. Chen found that the following Plaintiffs live in Senate districts that are outliers or extreme outliers in partisanship compared to their districts in his Senate simulations: Vinod Thomas, Paula Anna Chapman, Pamela Morton, Kristin Parker, Jackson Tomas Dunn, Jr.,

Rebecca Johnson, Dwight Jordan, David Dwight Brown, Karen Sue Holbrook, James Mackin Nesbit, George David Gauck, Derrick Miller, Mark S. Peters, Joseph Thomas Gates, William Service, Stephen Douglas McGrigor, Rebecca Harper, Nancy Bradley, Aaron Wolff, and Kathleen Barnes. Tr. 395:7-22. Dr. Chen found that the same Plaintiffs lived in districts that are outliers under his Senate Simulation Set 2. Tr. 396:1-7; PX118.

559. Plaintiffs' expert Dr. Cooper further demonstrated how the 2017 Plans as a whole disadvantage the Individual Plaintiffs. As Dr. Cooper explained, under the 2017 Plans, Democrats cannot translate their votes into seats as efficiently as Republicans. Tr. 870:11-14. This has resulted in a General Assembly that is out of step with the North Carolina electorate. Tr. 862:17-24. Dr. Cooper's analysis further establishes that, for those Individual Plaintiffs who live in districts that elect Republicans, there is a large and growing gap between the ideologies of these Individual Plaintiffs and their representatives. *Supra* FOF § B.3.d.

560. One of Legislative Defendants' experts, Dr. Brunell, also testified about the ways in which partisan gerrymandering harms individual voters. Dr. Brunell testified that "the responsiveness of a legislator to the voters in the voter's district is critical to democratic representation." Tr. 2371:3-5. He testified that a change in the party representing a given district generates "a huge difference" in the policies for which the representative will vote. Tr. 2372:20-22. And he testified that partisan gerrymandering is a problem in modern redistricting because it "can distort how voter preferences get traction into public policy." Tr. 2373:7-8.

F. Defendants Offered No Meaningful Defense of the 2017 Plans

1. No Witness Denied That the Plans Are Intentional and Effective Partisan Gerrymanders

561. Defendants did not put up a single fact witness to testify that the 2017 Plans were not partisan gerrymanders. They made no attempt to rebut Plaintiffs' extensive direct evidence

that the lines were drawn with the predominant purpose, if not sole purpose, of maximizing Republican advantage.

562. Notably, while Defendants had access to Dr. Hofeller's files from his hard drives for several months before trial, Defendants did not identify as single file showing that Dr. Hofeller was motivated by anything other than partisanship in drawing the enacted House and Senate plans. Defendants identified no file, for example, showing that Dr. Hofeller at any point during the 2011 and 2017 redistricting processes considered "communities of interest," *cf.* Tr. 1059:3-1060:5, or sought to preserve the "cores" of existing districts, *cf.* Tr. 1212:20-24, or drew or altered any district to avoid splitting a municipality or VTD or to make the district more compact, or constructed any district as a "product of the nuance of legislation negotiation," *cf.* Tr. 1204:2-1206:4. Defendants presented no evidence to rebut that the Hofeller files show that Dr. Hofeller had a near-singular focus on maximizing partisan advantage.

563. Even Defendants' experts did not meaningfully contest that the plans sought to ensure Republican control of the legislature. Indeed, Defendants' experts offered no methodology to attempt to evaluate whether the enacted plans were (or were not) extreme partisan gerrymanders. None even offered an opinion on that question. Rather, as explained below, Defendants' experts offered only scattershot theories of why the analyses by Plaintiffs' experts was somehow incomplete or unreliable. The Court finds these criticisms not credible.

2. Defendants' Criticisms of Plaintiffs' Experts Were Not Credible

a. Dr. Thornton

564. Legislative Defendants offered expert testimony from Dr. Janet Thornton to criticize the analyses and conclusions of Plaintiffs' simulation experts, Drs. Chen, Mattingly, and Pegden. Tr. 1618:10-13; LDTX 286 at 4 (Thornton report). Dr. Thornton offered three main critiques of Plaintiffs' experts: (a) Dr. Pegden's and Dr. Mattingly's conclusions supposedly

were skewed by the particular statewide elections they used to measure the partisan lean of their simulated plans versus the enacted plans, LDTX 286 at 6-10; (b) their simulations purportedly deviated in various ways from the 2017 Adopted Criteria, *id.* at 10-19; and (c) their simulations supposedly are not statistically significantly different from the enacted plans in terms of the number of Democratic-leaning districts, *id.* at 20-29. *See* Tr. 1622:5-1623:11. But Dr. Thornton's testimony was marked by evasiveness, a lack of candor and credibility, and patently unreliable methodologies. As a result, her opinions are entitled to no weight.

565. Dr. Thornton's qualifications to review and critique the work of Plaintiffs' simulation experts are questionable at best. Each of Plaintiffs' experts is a full-time academic with years of academic experience in using computer simulations to evaluate partisan gerrymandering. Tr. 1618:14-1619:18. Dr. Thornton has no academic experience involving gerrymandering and instead specializes in expert witness testimony and other consulting-type work in the areas of employment, insurance, and credit decisions. Tr. 1619:19-1620:20, 1621:2-17; LDTX 286 at App'x A (Thornton CV). Dr. Thornton has no degree in mathematics, no degree in statistics, and only an undergraduate degree in political science. Tr. 1620:21-1621:1.

566. In her report and testimony in this case, Dr. Thornton offered no methodology for determining whether a particular redistricting plan is or is not a partisan gerrymander, or whether a particular plan is or is not the product of extreme partisan considerations. Tr. 1621:18-25. Nor did Dr. Thornton offer any opinion as to whether the enacted plans were drawn as partisan gerrymanders to benefit Republicans. When asked whether she was offering such an opinion, Dr. Thornton responded, "I have no way of knowing." Tr. 1622:1-4.

(i) Criticisms Concerning Choice of Statewide Elections

567. Dr. Thornton's criticisms of the specific statewide elections used by Drs. Pegden and Mattingly suffered from critical flaws, rendering those criticisms unreliable and incorrect.

568. Dr. Thornton wrongly stated in her report that Dr. Pegden "considered" only "two elections" in his analysis. LDTX 286 at 10; *see id.* 8-11; Tr. 1626:9-16. In reality, Dr. Pegden used six prior election results—two discussed in the body of his report, and four more summarized in an appendix. PX508 at 11, 34-37 (Pegden Report). Dr. Thornton corrected this mistake only after Dr. Pegden's rebuttal report pointed it out and she was confronted with it at deposition. Tr. 1627:22-1628:4. At trial, Dr. Thornton presented a revised version of a table from her report, in which she (without acknowledging the change during her direct testimony) had added asterisks showing that Dr. Pegden in fact used six prior elections. Tr. 1626:17-1627:3; *compare* LDTX 286 at 7 (tbl. 1) *with* LDTX 302 (Thornton Demonstrative 1). But Dr. Thornton still refused to acknowledge that she had incorrectly asserted that Dr. Pegden had run his analysis on only two elections. Tr. 1626:23-1628:4. What's more, Dr. Thornton on direct examination continued to suggest that Dr. Pegden's results were biased based on his purported use of just those two elections, claiming that "Dr. Pegden's choice of elections influence[d] his conclusions." Tr. 1604:21-1605:7; *see* Tr. 1591:20-1592:10 (presenting LDTX 91, a chart purported to show the average Democratic vote share of the elections "included by each expert," but using just the 2016 Attorney General and 2008 Commissioner of Insurance for Dr. Pegden).

569. On cross examination, Dr. Thornton did not dispute that, when Dr. Pegden tested his results using the four additional elections summarized in his appendix, he found that it did not change his results. Tr. 1628:17-1629:4. Dr. Thornton could have tested Dr. Pegden's results using any prior elections she wanted, but she chose not to do so. Tr. 1629:7-25.

570. Dr. Thornton criticized Dr. Mattingly for using a different and broader set of statewide elections than the 10 elections identified by Representative Lewis, and she specifically criticized Dr. Mattingly's use of several 2008 elections. Tr. 1686:10-22; LDTX 286 at 8. But

Dr. Hofeller likewise used 2008 elections—including many of the same ones as Dr. Mattingly—in the partisanship formula Dr. Hofeller used to draw the 2017 Plans. *Compare* PX153 (Hofeller partisanship formula) *with* PX359 at 4 (Mattingly Report). When asked whether she knew this fact, Dr. Thornton responded that she "do[es]n't know one way or the other," is "not aware of anything regarding Dr. Hofeller," and did not investigate what elections the mapmaker himself used in drawing the 2017 Plans. Tr. 1686:23-1689:5.

571. In any event, Dr. Thornton's critique of Dr. Mattingly's use of election results, and her analysis of various "averages" across the different elections he used, misses the entire point of his analysis. Dr. Mattingly analyzed, on an election-by-election basis, how the partisan bias of the enacted plan relative to the ensemble varies in different electoral environments.

(ii) Criticisms Concerning Use of the Adopted Criteria

572. Dr. Thornton's assertion that Plaintiffs' simulation experts deviated from the Adopted Criteria also suffers from critical flaws, rendering those criticisms unreliable and incorrect too. And regardless, Dr. Thornton failed to show that any of her criticisms would have made any difference to Plaintiffs' experts' conclusions.

573. Dr. Thornton wrongly stated in her report that "[a] review of Dr. Pegden's simulation code suggests that in reality, he did not actually apply a compactness criterion." LDTX 186 at 33. In reality, Dr. Pegden did apply a compactness criterion. PX508 at 8, 34 (Pegden Report); Tr. 1358:11-24 (Dr. Pegden). Indeed, as Dr. Pegden explained in his rebuttal report, if he had not applied a compactness criteria, his simulated plans would have looked completely different—dramatically less compact. PX551 at 17-19 (Pegden Rebuttal Report); Tr. 1358:25-1360:1 (Dr. Pegden). When asked about this mistake on cross examination, Dr. Thornton refused to acknowledge it, testifying instead that "in retrospect" she "should have written it in a different way." Tr. 1623:12-1624:22.

574. While Dr. Thornton criticized Dr. Pegden for not specifically applying a Reock compactness threshold, she did no work to assess whether adding such a threshold would change Dr. Pegden's simulations or results. Tr. 1624:23-1626:3. Nor did she do any work to test whether adding a Reock threshold would change Dr. Pegden's conclusion that the enacted plans are extreme outliers carefully crafted to favor Republicans. Tr. 1626:4-8. The Adopted Criteria state that the 2017 Plans should "improve the compactness" over the 2011 Plans, and when asked whether Dr. Pegden's simulated plans "are, in fact, an improvement in terms of compactness over the districting in the 2011 map," Dr. Thornton responded, "I don't know." Tr. 1625:13-18. Dr. Thornton did no work to figure it out. Tr. 1625:19-1626:3.

575. Dr. Thornton testified that Dr. Pegden did not "make any adjustment for incumbency." Tr. 1604:8-9. This is false. Dr. Pegden included as a criterion in all of his simulations avoiding pairing the incumbents who were in office at the time the districts were drawn. PX508 at 8 (listing "Incumbency protection" as criterion).

576. Dr. Thornton also suggested that Dr. Pegden could not draw valid conclusions about the 2017 Plans without reaching "equilibrium" in his Markov Chain—without comparing the 2017 Plans to the entire universe of potential House and Senate districtings. Tr. 1631:2-11. In this regard, Dr. Thornton analogized Dr. Pegden's analysis to looking for a lost key in a bedroom without considering that the key might be somewhere else in the house. But as Dr. Pegden explained, the entire purpose of his approach and the accompanying mathematical theorems he has proved is that they allow for drawing statistically significant conclusions about how the enacted plans compare to the universe of all possible plans meeting the relevant criteria without achieving "equilibrium," *i.e.*, without needing to generate a representative sample of the universe of possible maps. PX551 at 2 (Pegden Rebuttal Report); Tr. 1360:2-1361:21. Dr.

Thornton acknowledged that she has no expertise in proving mathematical theorems, nor did she offer any opinion that Dr. Pegden's theorems are wrong. Tr. 1631:12-1632:9.

577. Dr. Thornton erroneously stated in her report that Dr. Mattingly "did not consider incumbency protection as defined in the 2017 enacted map criteria." LDTX 286 at 17. Dr. Thornton repeated this assertion in her direct testimony, stating that Dr. Mattingly did not "control, in any respect, for incumbency protection." Tr. 1610:20-22. This is false. Dr. Mattingly added incumbency protection as a criterion in checking the robustness of his results, and he concluded that it did not change his results. PX359 at 81-85; Tr. 1093:15-1094:4.

578. When confronted with this fact on cross examination, Dr. Thornton backtracked from her direct testimony and said that Dr. Mattingly may not have considered incumbency protection "simultaneously" "[w]ith respect to all the other factors, as I recall." Tr. 1633:14-24. This too is incorrect. Dr. Mattingly added incumbency protection as a criterion in conjunction with the criteria used to generate his primary ensemble, and he even ran a separate analysis that "consider[ed] the joint effect of both ensuring incumbents are preserved and requiring more stringent redistricting criteria" with respect to the traditional districting criteria. PX359 at 81-82.

579. Dr. Thornton criticized Dr. Mattingly for using only Polsby-Popper compactness scores, and not Reock scores. Tr. 1633:25-1634:3. But she did no work to determine whether the Reock scores for his simulated plans were too low, or whether applying a Reock threshold would change his results. Tr. 1634:4-21. In his rebuttal report, Dr. Mattingly calculated Reock scores for all of his simulated districts, and he reported that there was not a single district in any of his simulated Senate plans with a Reock score less than or equal to 0.15—the threshold referenced in the Adopted Criteria. PX487 at 8-9. There were very few such districts in his simulated House plans—only 1 out of 550,000 simulated Wake districts, and 7 out of 486,588

Mecklenburg districts. PX487 at 8; Tr. 1634:22-161635:14. Dr. Mattingly concluded that removing those districts would not change his results, *id.*, and Dr. Thornton did no work of her own to determine whether he was wrong, Tr. 1635:15-25.

580. Dr. Thornton criticized Dr. Pegden's and Dr. Mattingly's weighting of the various criteria they applied to create their simulated plans. LDTX 286 at 17-18; Tr. 1636:13-24. But Dr. Thornton acknowledged that she did not know whether the legislature "did weighting" at all, much less how it may have done so. Tr. 1636:25-1637:13. She did not suggest any better way than Dr. Mattingly's approach to weighting the various criteria. Tr. 1637:14-25. She did not rerun Dr. Mattingly's computer code using any different weighting system to determine if using a different weighting system could have affected Dr. Mattingly's conclusions. Tr. 1638:1-6. In his rebuttal report, Dr. Mattingly tried six different ways of weighting the various criteria, and he concluded that none changed his results. PX487 at 10-11. When asked about this analysis on cross examination, Dr. Thornton merely said, "I don't recall." Tr. 1638:7-14.

581. Dr. Thornton testified that Dr. Chen's use of a "T score" meant that his simulations did not follow the Adopted Criteria regarding compactness, avoiding splitting municipalities, and avoiding splitting VTDs. Tr. 1599:18-1600:3. Dr. Thornton suggested that Dr. Chen restricted his algorithm to only accept plans below a particular T-Score, Tr. 1597:25-1598:19, and she asserted in her report that "[a] t-score evaluation was not among the actual criteria" in the Adopted Criteria, LDTX286 at 15. Dr. Thornton testified that, if Dr. Chen "changed the value of the T scores," used a "value other than 1.75" in the T score, or "added a random element," his results would have been entirely different. Tr. 1597:25-1598:19.

582. Dr. Thornton's testimony misapprehends Dr. Chen's algorithm. Dr. Chen's "T score" does not impose some numerical threshold that restricts the maps the algorithm generates.

Rather, the T score is just a way of equally weighting and jointly tracking the three traditional districting criteria of compactness, avoiding municipal splits, and avoiding VTD splits. For any given county grouping, the algorithm randomly draws an initial set of districts, and then proposes a random change to the border between a random pair of adjoining districts. Tr. 261:23-262:16. If the border change would, on net, improve the districting of the grouping across the three criteria of compactness, avoiding municipal splits, and avoiding VTD splits, the algorithm accepts the change. *Id.* But if the change would make the districting worse off, on net, with respect to these criteria, the algorithm rejects the change. *Id.* The T score is merely a way of giving the three criteria equal weight and then tracking whether a proposed random change improves the districting across these criteria. Tr. 1643:21-1647:2. The algorithm considers thousands of these random changes, one at a time in an iterative fashion, in drawing districts within a given grouping. Tr. 260:17-23.

583. Dr. Thornton is thus incorrect that Dr. Chen's algorithm lacks a "random element." Tr. 1598:7-8. She is incorrect that Dr. Chen requires that his simulated plans be "below a particular T score value." Tr. 1598:5-7. And she misapprehends the T score's function in suggesting that raising or lowering the "T score value" would be less "restrictive[]." Tr. 1598:5-10. The T score's sole purpose is to equally weight the three criteria of compactness, avoiding split municipalities, and avoiding split VTDs. And Dr. Thornton does not dispute that Dr. Chen's T score accurately gives equal weight to these three criteria.

584. Moreover, while Dr. Thornton asserted that Dr. Chen would not have found the enacted plans to be statistical outliers if he had used "different T scores," Tr. 1598:20-1599:13, Dr. Thornton offered no proof to substantiate this claim, Tr. 1645:14-1647:15. She presented no

analysis to show that Dr. Chen would have found that the enacted plans are not statistical outliers if he had somehow applied the T score variable in a different manner. *Id.*

585. Dr. Thornton also criticized Dr. Chen's approach to incumbency protection in his Simulation Set 2. Tr. 1638:15-1639:8. She acknowledged that Dr. Chen's Simulation Set 2 successfully avoided pairing incumbents, but she asserted that Dr. Chen failed to comply with the second sentence of the Adopted Criteria's incumbency protection criterion, which provided that "the committees may make reasonable efforts to ensure voters have a reasonable opportunity to elect non-paired incumbents." Tr. 1610:23-1611:3. Dr. Thornton claimed that this sentence meant the Committees should make efforts "to allow for incumbents to win" by placing them in politically favorable districts, LDTX286 at 16, and that Dr. Chen should have applied "some sort of weighting" to carry this out, Tr. 1639:12-1640:3. But Dr. Thornton's interpretation is contrary to the contemporaneous explanation of this sentence by Representative Lewis, who stated at an August 10, 2017 hearing that the sentence "is simply saying that mapmakers may take reasonable efforts to not pair incumbents unduly." PX603 at 122:4-18; Tr. 1640:16-1641:12. That direction matches Dr. Chen's approach to incumbency protection.

586. For all her criticisms of Plaintiffs' experts' supposed deviations from the Adopted Criteria, Dr. Thornton admitted that she did no work to evaluate whether any of the supposed deviations made any difference to the experts' conclusions. On cross examination, Dr. Thornton was asked whether, "for every single criticism you've leveled, there's no instance in which you took any of plaintiffs' experts' code, substituted whatever you thought was an improved criteria, ran the code with the improved criteria and showed us that it made a difference to their work; isn't it true in your report there's no place that you did that?" Tr. 1647:3-13. Dr. Thornton responded that, "given the time, [she] did not have sufficient time to do so." Tr. 1647:14-15.

(iii) Criticisms Concerning Statistical Significance

587. Dr. Thornton opined that the enacted plans are "not statistically significantly different from the simulated maps with respect to the number of Democratic districts." LDTX286 at 20 (capitalization omitted). Dr. Thornton wrote in her report that she compared "the enacted plan's number of Democratic districts and the number predicted by the simulated maps," and "determined the number of standard deviations associated with the difference between the enacted plan and simulated number of Democratic districts." LDTX286 at 24. What Dr. Thornton did not disclose, however, is that she did not use actual results of Plaintiffs' experts' "simulated plans," or the actual "standard deviation" of the simulated plans.

588. Instead, Dr. Thornton created her own fictitious distribution of the predicted number of Democratic seats won under a nonpartisan plan, using a "binomial distribution." She then calculated the "standard deviation" of her own manufactured distribution, and used that made-up standard deviation to assess statistical significance. *See* PX551 at 10 (Pegden Rebuttal Report). Dr. Thornton used this binomial-distribution methodology as the foundation for her criticisms of all three of Plaintiffs' simulation experts. LDTX286 at 22; Tr. 1685:9-22.

589. Dr. Thornton's binomial-distribution methodology is unsupported and wrong. When confronted with the obvious flaws in using a binomial distribution in the redistricting context, Dr. Thornton was evasive and nonresponsive. As a result, her testimony concerning statistical significance is entitled to no weight.

590. Contrary to Dr. Thornton's approach, the distribution of districting maps is not a binomial distribution, and thus it is wholly inappropriate to use a binomial distribution in the redistricting context. It is undisputed that a binomial distribution applies only when two conditions are met: (1) each trial (in this case, each House or Senate district) is independent of one another; (2) each trial has the exact same percentage chance of producing a particular

outcome (in this case, that a Democrat wins the district). Tr. 1669:4-8, 1676:1-5 (Dr. Thornton); Tr. 1378:24-1382:2 (Dr. Pegden); PX551 at 10 (Pegden Rebuttal Report); PX487 at 11-12 (Mattingly Rebuttal Report); PX123 at 171-72 (Chen Rebuttal Report). Thus, the classic example of the binomial distribution is a coin flip, because the likelihood of landing on heads on any flip of a coin is independent of the result of every other flip, and the percent chance of landing on heads is the same in each flip (50%). Tr. 1669:11-1670:5; LDTX 286 at 21.

591. By applying a binomial-distribution methodology, Dr. Thornton assumed that district elections, like coin flips, are independent of each other, and also that Democrats have the same chance—specifically, a roughly 40% chance—of winning each and every district House or Senate district, no matter where in North Carolina the district is located. Tr. 1670:6-1671:2 (Dr. Thornton); *see* Tr. 1381:15-1382:2 (Dr. Pegden); PX551 at 10 (Pegden Rebuttal Report); PX487 at 11-12 (Mattingly Rebuttal Report); PX123 at 171-72 (Chen Rebuttal Report).

592. Both assumptions are obviously incorrect in the redistricting context. First, unlike a coin flip, each House (or Senate) district is not independent of one another. Tr. 1379:22-1381:10 (Dr. Pegden); PX551 at 10 (Pegden Rebuttal Report). In a given county grouping, if a particular set of Democratic voters is placed in one district, then those voters cannot be put in any other district in the grouping. *Id.* The partisan makeup of the districts are thus intertwined and not independent of one another; increasing the number of Democratic voters in a particular district necessarily decreases the number of Democratic voters in neighboring districts. *Id.*

593. The second assumption underlying Dr. Thornton's binomial distribution—that Democrats have the exact same percentage chance of winning each House (or Senate) seat—is equally contrary to reality. Dr. Thornton assumes, for example, that Democrats have the same percentage chance of winning a House district in Wake County as in Caldwell County. Tr.

1381:15-1382:2 (Dr. Pegden); PX487 at 11-12 (Mattingly Rebuttal Report); PX123 at 171-72 (Chen Rebuttal Report). As any resident of North Carolina knows, that is certainly not the case.

594. A simple example illustrates these fundamental flaws in Dr. Thornton's analysis. In the Alamance County House grouping, there are two districts of roughly equal population. Assuming, as a hypothetical, that Republicans will win 60% of the total vote across the County in a particular election, it is mathematically impossible for Democrats to win *both* districts in the election. Tr. 1673:14-19. But under Dr. Thornton's binomial-distribution methodology, Democrats will win both districts 16% of the time—because she assumes that Democrats have an equal and independent 40% of winning each of the two districts. Tr. 1671:10-17; *see also* Tr. 1379:19-1380:10 (Dr. Pegden). When asked about this on cross examination, Dr. Thornton repeatedly asserted that she did not "understand" the illustration. Tr. 1671:3-1673:13.

595. Dr. Thornton's binomial-distribution methodology was recently rejected by a federal court in a partisan gerrymandering case in Ohio. There, as here, Dr. Thornton used a binomial distribution in her expert analysis on behalf of the Republican legislative defendants, and the three-judge federal district court rejected her analysis. The court stated: "Dr. Thornton also performed her own analysis using a binomial distribution, but we do not give any weight to that analysis." *Ohio A. Philip Randolph Inst. v. Householder*, 373 F. Supp. 3d 978, 1056 (S.D. Ohio 2019); *see* Tr. 1673:20-1674:20. The court explained that Dr. Thornton's binomial-distribution analysis "incorporates yet another faulty assumption that each district has a 51% chance of being won by a Republican because Republicans won 51% of the congressional vote across the State; this assumption does not comport with basic understandings of congressional elections, i.e., that although some districts may be competitive (a 51% Republican to 49%

Democrat district), other districts lean heavily in favor of one party or the other." *Ohio A. Philip Randolph Inst.*, 373 F. Supp. 3d at 1056; *see* Tr. 1677:7-1678:15.

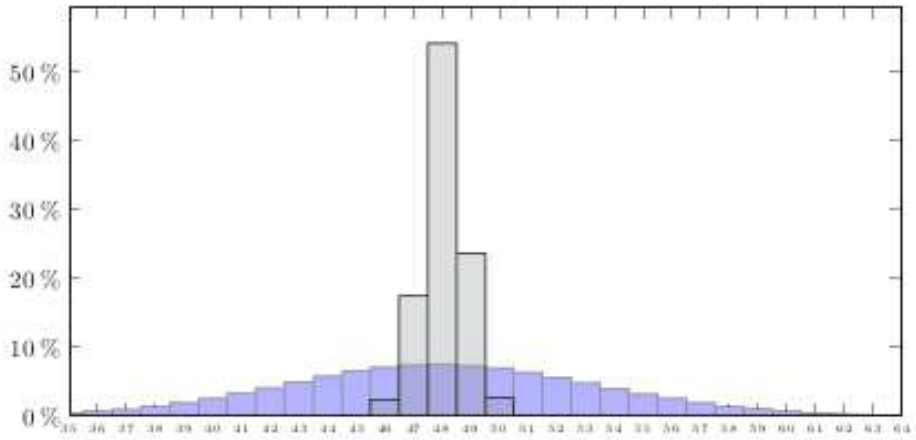
596. While Dr. Thornton claimed that her use of a binomial distribution here is "different from the Ohio case," Tr. 1675:18-19, the Court disagrees and finds that Dr. Thornton's methodology here suffers from the same flaws identified by the federal court in the Ohio case. Assuming that districts are independent, and that Democrats have a roughly 40% chance of winning every House and Senate district, does not comport with basic understandings and reality of North Carolina House and Senate elections. Dr. Thornton could not identify literature or precedent supporting the use of a binomial distribution in a redistricting context. Tr. 1680:6-14.

597. Dr. Thornton's use of a binomial distributions skewed her entire statistical significance analysis. Due to the independence and equal probability assumptions, the binomial produces a much wider distribution of the number of possible districts Democrats could win in the House or the Senate than the actual distribution produced by each expert's simulations. That wider distribution in turn results in Dr. Thornton estimating much larger standard deviations than the actual standard deviations of each expert's simulated plans, allowing Dr. Thornton to claim that the enacted plan is less than two standard deviations from each expert's average simulation and therefore purportedly not a statistically significant outlier. LDTX286 at 25-36. For instance, in Dr. Chen's House Simulation Set 1, his simulated maps produce a range of results from 43 Democratic districts to 51 Democratic districts, with 90 percent of those results between 45 and 48 Democratic districts, whereas the enacted 2017 House plan produces only 42 Democratic districts—an extreme outlier, completely off the distribution. PX234; Tr. 1647:16-1648:16. The actual standard deviation of Dr. Chen's House Simulation Set 1 is 1.36 seats, and the enacted plan is more than three standard deviations from the average simulated plan. *Id.* But Dr.

Thornton's binomial distribution suggests that Democrats could win as few as 30 districts and as many as 63, and has a fictitious standard deviation of 5.34 seats. PX123 at 170-76.

598. Similarly, Dr. Thornton's binomial distribution is completely different from the actual distribution of simulated plans she created using a modification of Dr. Pegden's computer code. For the House, while the simulations generated between 46 and 50 Democratic seats, Dr. Thornton's binomial distribution generated between 35 and 60 Democratic seats and a much larger standard deviation. Plaintiffs' Exhibit 554, a figure from Dr. Pegden's rebuttal report, depicts these dramatic differences:

Figure 1.3: The binomial distribution is not a reasonable approximation of the map distribution (House)



The gray bars again show the distribution of Dr. Thorton's simulated House plans, with respect to seat counts using the 2016 AG race. Dr. Thornton's statistical significance analysis based on the binomial test would require random House maps to be distributed instead as the blue bars, which plot the binomial distribution used by Dr. Thornton's test.

599. Dr. Thornton's binomial distribution likewise is completely different from the actual distribution of simulated plans created by Dr. Mattingly. PX495. When Dr. Mattingly used the "actual distribution" of his results to calculate statistical significance as opposed to Dr. Thornton's "grossly inaccurate seat distribution," he found that the enacted maps are "well outside two or three standard deviations" and are "extreme outliers." PX487 at 11-12.

600. Dr. Thornton made other significant methodological errors in her analysis of statistical significance. For instance, in modifying Dr. Pegden's computer code to generate simulated plans of her own, Dr. Thornton used the wrong command and froze every single district drawn in 2011 and left unchanged in 2017. Tr. 1363:7-1364:8 (Dr. Pegden); PX551 at 6 (Pegden Rebuttal Report). Dr. Thornton's suggestion that she intended to freeze the 2011 districts, Tr. 1666:16-21, is not credible, particularly given that her report nowhere mentions this decision and in fact claims that it is analyzing the entire enacted map—all 120 House districts and all 50 Senate districts. LDTX286 at 75 (tbl. 3).

601. Dr. Thornton's freezing errors ran in both directions. In her report, Dr. Thornton presented a highly misleading graph purporting to show differences in Democratic vote share between the enacted plans' districts and the districts she drew using her modified version of Dr. Pegden's code. The evident goal of these charts—titled "Comparison of the Enacted Plan and the Average Across Dr. Pegden's Simulations for Each *Non-Frozen* House [and Senate] District"—was to suggest that the vote shares in the enacted districts were not markedly different from those in the nonpartisan simulations. LDTX286 at 28-29 (emphasis added). But Dr. Thornton's charts included many districts that *were* frozen on account of the Whole County Provision, which misleadingly suggested a high degree of similarity between the enacted plan and the simulations. Tr. 1680:24-1684:9. Dr. Pegden pointed out a host of other problems with this chart—*e.g.*, using thick lines, stretching the data out over an unnecessarily long vertical axis, and needlessly connecting the datapoints using lines, all which served to obscure the significant gaps in vote share between the enacted and simulated districts. Tr. 1391:6-1395:19.

602. Setting aside all the flaws in her analysis, Dr. Thornton's results show a statistically significant difference between the enacted 2017 Plans and the simulated plans she

created using a modification of Dr. Pegden's code. As shown in Dr. Pegden's rebuttal report, only 0.001% of Dr. Thornton's simulated plans are as Republican-favorable as the enacted House plan, and only 0.182% of Dr. Thornton's simulated plans are as Republican-favorable as the enacted Senate plan. PX551 at 8-9 (Pegden Rebuttal Report); Tr. 1369:4-1371:18.

603. Thus, as flawed as Dr. Thornton's analysis was, her results were still consistent with the conclusions of Plaintiffs' experts. Tr. 1400:10-21 (Dr. Pegden).

b. Dr. Brunell

604. Legislative Defendants offered expert testimony from Dr. Thomas Brunell to criticize the simulation methods of Drs. Chen, Mattingly, and Pegden. LDTX291. But Dr. Brunell appeared to have failed to read or understand the reports of Plaintiffs' experts, and his criticisms were unpersuasive, factually inaccurate, and sometimes inconsistent with testimony he has given in prior cases. Dr. Brunell offered no opinion on whether the 2017 Plans are partisan gerrymanders. Tr. 2316:10-12. The Court assigns no weight to Dr. Brunell's testimony.

605. Dr. Brunell testified that Plaintiffs' experts have not shown "what is too much politics in this political process." Tr. 2306:24-2307:2. But this view contradicts Dr. Brunell's own expert analysis and conclusions in a prior case. In 2011, Dr. Brunell opined as an expert witness for the Nevada Republican Party that state legislative maps were excessive partisan gerrymanders—based on an analysis less robust than the analyses of Plaintiffs' experts here. Tr. 2337:5-2338:23. Using two statewide elections, Dr. Brunell conducted a uniform swing analysis and concluded that the maps at issue gave Democrats 60% of the seats when Democrats won only 50% of the votes statewide. Tr. 2340:16-2345:5. Dr. Brunell concluded exclusively on the basis of that analysis that the maps were "unfair" and showed "heavy pro-Democratic bias"—"clearly a pattern of partisan bias, i.e., gerrymandering." Tr. 2342:4-2345:11. Dr. Brunell further opined, again based solely on his uniform swing analysis and the disconnect between

Democrats winning 60% of the seats with only 50% of the statewide vote, that he could be "absolutely conclusive" that the maps were not just partisan gerrymanders, but a "leading candidate for gerrymander of the decade." Tr. 2345:12-2346:15.

606. In this case, Dr. Brunell conceded that Plaintiffs' experts' analyses—using both uniform swing analysis and actual results of prior statewide elections—demonstrated that when Republicans get 50% of the votes in either chamber of the General Assembly, they win at least 60% of the seats. Tr. 2346:16-2350:2. Under Dr. Brunell's own approach, the Court can find "absolutely conclusive[ly]" that the 2017 Plans show "heavy pro-[Republican] bias" and are not just "unfair" but a "leading candidate[s] for gerrymander of the decade." Tr. 2350:3-8.

607. The Court also rejects Dr. Brunell's testimony that simulation methods for evaluating partisan gerrymandering have not been sufficiently vetted by academics and courts. Tr. 2292:15-2293:23. Dr. Brunell testified on direct examination that he was unaware of any peer-reviewed political science papers that provide a "basis" for "using [simulations] as an evaluation for partisanship." Tr. 2293:11-17. He testified that a 2013 paper by Dr. Chen and Dr. Jonathan Rodden "uses simulations, I think," "[b]ut in terms of using it as an evaluation for partisanship, I don't think there have been any such publications yet." Tr. 2293:11-17. Then on cross examination, Dr. Brunell falsely *denied* making the statement he had made on direct. Tr. 2307:14-17 ("Q: [Y]ou said that you did not believe that there were any peer-reviewed political science publications … using simulations to measure partisanship; correct? A: I don't think that's what I said."). Dr. Brunell admitted that the 2013 Chen and Rodden paper was in fact a peer-reviewed political science paper that "uses simulation techniques to measure partisanship." Tr. 2307:19-2308:5; *see* PX1 at 179. Dr. Brunell then acknowledged that he was simply unfamiliar with three other peer-reviewed political science papers by Dr. Chen published

between 2015 and 2017 that use computer simulations to evaluate partisan gerrymandering. Tr. 2308:10-2309:9; PX1 at 180. And Dr. Brunell was unaware that Dr. Pegden's paper on using simulations to measure gerrymandering, published in the Proceedings of the National Academy of Sciences, was peer reviewed by a political scientist. Tr. 2309:12-22; *see* Tr. 1413:7-16.

608. Dr. Brunell was also unfamiliar with court decisions approving the use of simulations to measure partisanship. He testified on direct that "we've only just started to see [simulations] used in law suits," Tr. 2292:24-2293:1, that simulations therefore "may not be ready for prime time yet," Tr. 2292:22-24, and that he himself did not learn about the simulation method until 2017 or 2018, Tr. 2293:7-10. In fact, however, as he acknowledged on cross-examination, multiple courts have credited simulations by Drs. Chen, Mattingly, and Pegden as a method of establishing whether a particular map is a partisan gerrymander. Tr. 2310:8-2312:1. Dr. Brunell was "unaware" that the Fourth Circuit credited Dr. Chen's simulations in a 2016 decision, in a gerrymandering case filed in 2013. Tr. 2311:4-2312:1; *see Raleigh Wake Citizens Ass'n v. Wake Cty. Bd. of Elections*, 827 F.3d 333 (4th Cir. 2016). The court rejected precisely the criticism Dr. Brunell makes here, namely that Dr. Chen's simulations "ignor[ed] partisanship." Tr. 2311:17-20; *see Raleigh Wake*, 827 F.3d at 344.

609. Like the Fourth Circuit, this Court rejects Dr. Brunell's testimony that simulated maps are only useful if the algorithm draws "partisan districts" as opposed to "nonpartisan districts." Tr. 2278:13-20, 2280:4-16. Dr. Brunell acknowledged that the 2017 Plans were drawn for partisan gain, but argued that simulations can tell if an enacted map is an "extreme partisan outlier" only if the simulations include some level of partisanship. LDTX219 at 3; Tr. 2278:13-20; 2280:4-16. Dr. Brunell's criticisms miss the point. Dr. Mattingly's and Dr. Chen's simulations *quantify* the effects of the gerrymandering and how extreme it is. Both find that the

enacted plans are outside the entire distribution of their simulated plans—sometimes by many seats. For instance, Dr. Chen found in his uniform analysis that, in electoral environments corresponding to a 52.42% statewide Democratic vote share, Democrats win 11 to 12 fewer seats in the House and 3 to 4 fewer seats in the Senate than they would typically win under the simulated plans. PX1 at 34, 65 (Chen Report). Dr. Mattingly found similar results. PX359 at 12 (Mattingly Report); PX487 at 25 (Mattingly Rebuttal Report).

610. In any event, Dr. Pegden's analysis proves that the 2017 Plans are extreme partisan outliers even in comparison to other *partisan* maps. Although Dr. Brunell criticized "all three of" Plaintiffs' simulation experts for using "nonpartisan districts" as the point of comparison, Tr. 2277:13-20, this fundamentally misunderstands Dr. Pegden's methodology. Dr. Pegden started with the enacted plan and made a sequence of small random changes, observing how those changes affected the partisan characteristics of the plan. Tr. 1304:3-1305:7; PX515; PX519. Dr. Pegden's comparison maps thus "are not supposed to be neutral comparison maps drawn from scratch of North Carolina," and "even against a set of extremely similar maps which were generated from the enacted map and which share all sorts of qualities with the enacted map, the enacted map is still an extreme outlier." Tr. 1304:14-1305:7. Dr. Pegden's comparison maps are "tied strongly to the enacted map" and "baked" in all sorts of intentional partisan choices by the mapmaker. Tr. 1405:1-13, 1406:2-19. This makes it all the more remarkable that the enacted plans are such outliers in his analysis, even against this very similar comparison set. Tr. 1315:22-1316:2.

611. The Court declines to credit Dr. Brunell's opinion for the additional reason that, when Dr. Brunell himself was asked to assess state legislative maps to determine whether they were gerrymanders in a different case on behalf of the Nevada Republican Party, Dr. Brunell

concluded that the enacted maps at issue were extreme partisan gerrymanders without comparing those maps to other "partisan" maps. Tr. 2342:4-2346:15.

612. The Court gives no weight to Dr. Brunell's criticisms of uniform swing analysis. Dr. Brunell stated in his report that uniform swing analysis is "not reliable," LDTX291 at 4, and he testified that the assumption of uniform swing analysis was "clearly wrong," Tr. 2289:14-22. But again, when Dr. Brunell was evaluating partisan bias in the Nevada case in 2011, he testified that uniform swing analysis allowed him to be "absolutely conclusive" in finding legislative maps to be heavily biased and gerrymandered. Tr. 2351:19-2352:7.

613. Dr. Brunell's report and testimony contained numerous statements that were verifiably erroneous and reflect a failure to read or understand the work of Plaintiffs' experts. Dr. Brunell's report falsely asserts that Dr. Pegden "use[d] the results of just two elections for his simulations" and that "both of them have Democratic winners." LDTX291 at 15. In fact, Dr. Pegden used six elections, two of which—2012 Lieutenant Governor and 2014 U.S. Senate—had Republican winners. PX508 at 34-37. On the stand, Dr. Brunell attempted to justify his false assertion by asserting, again incorrectly, that Dr. Pegden "does some quick checks with other elections in his appendix, but he only uses [] two elections for his full simulation," that he "uses one particular metric ... but not all of it," and that he did not use "the four additional elections in his appendix to perform his entire statewide analysis." Tr. 2323:1-15. In fact, Dr. Pegden re-ran his entire statewide analysis using all six elections. PX508 at 34-37 (Pegden Report).

614. Dr. Brunell wrote in his report that he was "confused" by aspects of Dr. Pegden's analysis that were clearly explained in Dr. Pegden's initial report. Tr. 2318:19-2319:24. Dr. Brunell criticized Dr. Pegden for failing to explain how many changes he made to the enacted map before comparing the simulated maps to the enacted map, LDTX291 at 13, but Dr. Pegden's

report made clear that he evaluated the partisanship of the new map after *every* step, meaning every swap, PX508 at 5. Dr. Brunell also criticized Dr. Pegden for purportedly failing to explain terms like "fragility" and "carefully crafted," Tr. 2320:8-18, but Dr. Brunell had overlooked the sections of Dr. Pegden's report specifically defining those terms, Tr. 2321:15-2322:2.

615. In criticizing Dr. Chen's application of the Adopted Criteria, Dr. Brunell testified that Dr. Chen's "programmatic algorithm … maximizes geographic compactness," Tr. 2295:10-16, but in fact Dr. Brunell had not reviewed Dr. Chen's code, Tr. 2333:23-25, and he got it wrong, Tr. 262:24-263:12. When confronted with his error, Dr. Brunell shifted his criticism on the stand to say that whether Dr. Chen maximized compactness did not matter because Dr. Chen's "algorithm" was "different from the legislative criteria" in unspecified other ways relating to splitting VTDs. Tr. 2334:6-13. But Dr. Brunell "didn't know" how Dr. Chen's algorithm "worked" with respect to other issues, Tr. 2297:9-14, and he did no work to determine whether a different weighting would have affected Dr. Chen's conclusions, Tr. 2334:18-21.

616. Dr. Brunell's report inaccurately criticized Dr. Mattingly and Dr. Pegden for failing to preserve incumbents, when both ran simulations that avoided pairing incumbents. LDTX291 at 3; Tr. 2326:13-25; Tr. 2329:2-5.

617. The Court is troubled by Dr. Brunell's repeated dissembling on the stand to avoid admitting that he made mistakes in his report. *See, e.g.*, Tr. 2325:24-2326:12.

618. The Court rejects Dr. Brunell's testimony that the simulated maps are not proper comparisons to the enacted map to the extent they do not preserve the "core" of an incumbent's district. Tr. 2283:21-2284:19. But Dr. Brunell acknowledged that he had "no idea if and to what extent core preservation was used" in the enacted map, Tr. 2329:21-2330:1, and no other witness testified that the 2017 Plans preserved district cores. And neither Dr. Brunell nor any other

witness for Legislative Defendants analyzed whether a hypothetical effort to preserve district cores could explain the extreme partisan bias in the 2017 Plans. In fact, as Representative Lewis explained, the Adopted Criteria's incumbency protection provision referred only to "not pair[ing] incumbents unduly"—not core preservation. PX603 at 122. As Dr. Brunell acknowledged, core preservation also can be a partisan criterion, Tr. 2332:12-25, and is particularly inappropriate where, as here the prior plan was an unlawful racial gerrymander, Tr. 2333:1-12.

619. In any event, Plaintiffs proved that a hypothetical effort to preserve the "cores" of an incumbent's district could not explain the enacted plans' extreme partisan bias. Dr. Pegden's simulations preserved the "cores" of each incumbent's prior district. Tr. 1316:24-1317:10 (Dr. Pegden); *see* Tr. 2330:16-19; 2333:13-18.

620. The Court gives no weight to Dr. Brunell's testimony that Figure 8 and Figure 20 of Dr. Chen's report do not show that the enacted plan is an "outlier." Tr. 2302:12-2303:15. Figure 8 of Dr. Chen's report shows at least a five-seat difference between the bulk of his House simulations and the enacted plan, and shows that the enacted plan is off the distribution entirely—it elects fewer Democrats than 100% of his simulated plans. PX1 at 48 (Chen Report). The Court rejects Dr. Brunell's testimony that a five-seat difference is only a "slight[]" difference. Tr. 2302:24-2303:2. Likewise, Figure 20 of Dr. Chen's report shows a two-seat difference between the typical result of his Senate simulations and the enacted plan, and again shows that the enacted plan is off the distribution entirely—it elects fewer Democrats than 100% of his simulated plans. PX1 at 48 (Chen Report). Dr. Brunell also speculated that changing Dr. Chen's criteria "could shift this over and then this wouldn't be an outlier at all," Tr. 2303:4-9, but the Court gives no credit or weight to Dr. Brunell's untested conjecture. The Court likewise rejects Dr. Brunell's testimony about Plaintiffs' Exhibit 48, which is Figure 28 of Dr. Chen's

report and shows cracking and packing in the Cumberland House grouping. PX1 at 93. Dr. Brunell testified that this figure did not show the enacted plan to be an "outlier" because "the enacted districts are in the gray clouds," Tr. 2303:16-21, but in fact the figure demonstrates that two districts (HD-45 and HD-43) are entirely outside the "gray clouds" and show more cracking (HD-45) and packing (HD-43) of Democrats that 100% of the districts in Dr. Chen's simulations. PX1 at 93. The Court finds these plainly incorrect assertions by Dr. Brunell troubling.

c. Dr. Hood

621. Legislative Defendants offered the testimony of Dr. M.V. (Trey) Hood III to respond to Plaintiffs' experts Dr. Cooper and Dr. Chen. LDTX 284; Tr. 2037:21-2038:3. In particular, Dr. Hood testified about the supposed role of the Whole County Provision and 2017 Adopted Criteria in limiting the mapmaker's discretion in drawing the 2017 Plans, the results of the 2018 elections, and North Carolina's political geography. Dr. Hood's testimony was not credible, persuasive, or even relevant; the Court gives it no weight.

622. Dr. Hood's expert testimony has been rejected by courts in numerous prior redistricting and other voting rights cases. *See, e.g.*, Tr. 2095:6-2096:9 (in recent Ohio partisan gerrymandering case, stating that Dr. Hood drew "some inapt comparisons"); Tr. 2096:14-24 (in Texas voter ID case, stating that Dr. Hood's testimony and analysis was "unconvincing" and given "little weight"); Tr. 2096:25-2097:19 (in Arizona voting rights case, "afford[ing] little weight to Dr. Hood's opinions" "[f]or a number of reasons"); Tr. 2097:22-2098:6 (in Georgia voter ID case, finding that "Dr. Hood's absentee voting analysis is unreliable or not relevant to the questions the court must resolve"); Tr. 2098:9-16 (in Ohio case involving absentee ballots, affording Dr. Hood's opinions "little weight"); Tr. 2098:22-2099:6 (in recent Virginia racial gerrymandering case, stating: "We do not credit Dr. Hood's testimony for several reasons."); Tr. 2099:8-2100:1 (in Ohio voting rights case, finding Dr. Hood's views "of little value," and

explaining that "Dr. Hood's testimony and report are in large part irrelevant to the issues before the court and also reflected methodological errors that undermine his conclusions").

623. Dr. Hood did not offer—and does not have—any methodology for determining whether or not a map was drawn to create a partisan lean or bias. Tr. 2078:1-2079:3.

624. Dr. Hood's testimony supports the view that the enacted plans were drawn intentionally to favor Republicans. Dr. Hood generally agreed that "the party that controls the legislative process is going to make the maps in their favor," and that the enacted plans "were drawn to favor Republicans" using prior election results. Tr. 2079:4-2082:20.

(i) Dr. Hood's testimony about the redistricting process in North Carolina was unpersuasive

625. Dr. Hood testified that the 2017 redistricting was a "fairly formulaic process" because the Whole County Provision and 2017 Adopted Criteria "really limits the discretion, to a large extent, of the map drawers." Tr. 2038:4-2039:12; LDTX284 at 9-10 ("[T]he process is quite constrained, which greatly limits the ability of map drawers to create districts where partisan motives predominate."). But Dr. Hood did no work to determine whether any of those criteria actually prevented the mapmaker from gerrymandering the enacted plans to advantage Republicans. Tr. 2077:10-15.

626. Dr. Hood's assertion that the Adopted Criteria "constrained" the "map drawer" is incorrect. The Adopted Criteria were not passed by the House and Senate Redistricting Committees until August 10, 2017. As discussed below, Dr. Hofeller had completed much of the General Assembly's eventually enacted House and Senate districts by June 2017, a month and a half before the Adopted Criteria were passed. *Infra* FOF § G.1. Logically, Dr. Hofeller could not have been following the Adopted Criteria when he was drafting these districts by June 2017.

627. Dr. Hood's conclusions regarding the Adopted Criteria are further undermined by the Hofeller files showing that Dr. Hofeller violated the Adopted Criteria's prohibition against any "consideration of racial data." *Infra* FOF § G.2. When presented with Dr. Hofeller's files reflecting the percentage of black voting age population (BVAP) by district, Dr. Hood testified that he had not seen then. Tr. 2088:2-2089:13.

628. Dr. Hofeller's files further refute Dr. Hood's assertions that the 2017 redistricting process was "quite constrained" and that it is difficult to prove the partisan intent behind the 2017 Plans. PX123 at 48-49 (Chen Response Report). Those files show Dr. Hofeller's continuous efforts and exercise of his discretion to draw the district lines to maximize Republican advantage within the confines of the Whole County Provision, including various drafts that considered alternative possible districtings. *Supra* FOF § B.2.b.

(ii) Dr. Hood's testimony about the 2018 elections was unpersuasive

629. For his analysis of the 2018 election results, Dr. Hood compared the number of seats Democrats actually won in 2018 to the number districts in Dr. Chen's simulated plans that lean Democratic using the 2010-2016 composite statewide election results. Tr. 2083:14-25. But that is an apples-to-oranges comparison, because the 2018 elections were different than the 2010-2016 composite statewide election results. Tr. 2084:1-5. In the 2010-2016 composite statewide election results, the Democratic vote share is 47.9%, whereas the 2018 were obviously a far more favorable environment for Democrats. Tr. 2084:12-24.

630. Dr. Hood made no attempt to perform an apples-to-apples comparison by comparing the actual 2018 election results under the enacted 2017 Plans to the performance of alternative nonpartisan plans under the 2018 election results. Tr. 2084:25-2087:19.

(iii) Dr. Hood's testimony about North Carolina's political geography was unpersuasive

631. Dr. Hood's analysis of North Carolina's political geography is unpersuasive and unhelpful because Dr. Hood did not attempt to determine whether the Republican lean in the enacted 2017 Plans can be explained by political geography. Tr. 2094:18-21. By contrast, Dr. Hood agreed that the work of Drs. Chen, Mattingly, and Pegden does address whether political geography could explain the extreme partisan lean of the 2017 Plans. Tr. 2094:22-2095:2. For his analysis of political geography, Dr. Hood analyzed how the partisan makeup of the State of North Carolina would change if its six largest counties were removed. Tr. 2089:14-17; LDTX140. But it is not possible to remove any counties from North Carolina, much less the six largest counties. Of course, hypothetically removing North Carolina's six largest counties would make the state "[m]uch more rural" and much more Republican-leaning, just as would removing New York City from the State of New York. Tr. 2089:18-22. But that proves nothing of relevance to the legal and factual issues in this case.

d. Dr. Barber

632. Intervenor Defendants' expert, Dr. Michael Barber, offered no opinion as to whether North Carolina's state legislative district maps were gerrymandered or whether North Carolina's General Assembly was "out of step" with the North Carolina electorate in terms of its partisanship and political ideology, instead seeking only to rebut Dr. Cooper's analysis. The Court finds that Dr. Barber's criticisms of Dr. Cooper's analysis are unreliable, incomplete, or largely irrelevant to the factual determinations the Court must make.

633. At the outset, the Court notes that Dr. Barber's expertise is of limited value given that none of his academic research or published articles concern redistricting or North Carolina, nor was redistricting in North Carolina "something [he] had given a lot of thought to" before

being retained by Intervenor Defendants in this case. Tr. 2169:19-2170:19. Dr. Barber freely admitted that he was not an expert on North Carolina's political geography, nor had he spent time in North Carolina other than two vacations in the Outer Banks and one visit to Duke's campus. Tr. 2168:12-2169:13, 2216:4-8. Most importantly, Dr. Barber did not analyze the specific district boundaries or county groupings the Court is reviewing and he could not comment on any of Dr. Cooper's extended analysis of the packing and cracking of Democratic voters in those districts and county groupings. Tr. 2117:24-2118:1, 2213:25-2214:15.

634. The majority of Dr. Barber's testimony concerned the opinions Dr. Cooper offered regarding the aggregate political ideology of the North Carolina electorate and that of the General Assembly, including Dr. Cooper's comparison between the two. Dr. Barber provided no independent measure or opinion on the political ideology of North Carolina's citizens, but he criticized Dr. Cooper's characterization of North Carolina's electorate as "moderate" because "moderate can mean a few things" and because the data sets relied upon by Dr. Cooper were allegedly unsuitable for answering this question. Tr. 2140:2-4, 2140:22-23, 2190:22-25. Dr. Barber's criticisms of Dr. Cooper's data sets are largely technical and theoretical, and do not assist the Court in its determination of whether the General Assembly is out of step with the policy preferences of North Carolina's voters.

635. Ultimately, Dr. Barber did not dispute that North Carolina voters could be described as "moderate" or that North Carolina could be described as a "purple state," testifying instead that "we don't know." Tr. 2192:11. The Court does not share Dr. Barber's skepticism. Dr. Cooper, an expert with a specialty in North Carolina politics, offered his credible opinion of North Carolina's ideological and partisan composition, using authoritative data sources to measure citizen and legislature ideology and drawing useful comparisons to other states. Tr.

872:23-876:22 (Dr. Cooper); PX253 at 9-13 (Cooper Report). Unlike Dr. Cooper, Dr. Barber did not try to measure the North Carolina electorate's ideological composition, despite the fact that Dr. Barber admitted he has measured the ideological composition of other states' electorates in his academic research. Tr. 2192:23-2193:12.

636. Dr. Barber's testimony provides limited, if any, value given that he did not offer any opinion about whether the "gap" between the policy preferences of North Carolina's citizens and those of the General Assembly actually exists. Tr. 2194:4-17. Dr. Cooper's opinion regarding such a gap was based not only on the measures of political ideology described in his testimony and expert report, but also Dr. Cooper's considerable expertise in North Carolina politics. Tr. 848:12- 853:2; PX253 at 1-2, 4-5, 13 (Cooper Report); PX254. Conversely, Dr. Barber acknowledged he has never studied or analyzed North Carolina politics, elections, polling, or the policy issues that North Carolina voters "care about" or for which they may hold preferences. Tr. 2194:22-25; 2195:22-25; 2197:18-2198:7. Nor has Dr. Barber analyzed the policy issues upon which the North Carolina General Assembly may act. Tr. 2197:1-9.

637. Dr. Barber's opinions regarding the extent to which gerrymandered districts can account for a gap between the policy preferences of the General Assembly and the electorate are also unhelpful. As an initial matter, Dr. Barber acknowledged that redistricting is a factor in the partisan composition of the General Assembly and that "if you drew boundaries in a different way, you'd get different results." Tr. 2175:12-17. In fact, during his testimony, Dr. Barber referenced a *Washington Post* op-ed he authored stating, "clearly there was gerrymandering, especially by the Republican controlled legislatures in the 2011 redistricting." Tr. 2188:20-24. But unlike Dr. Cooper and Plaintiffs' other experts, Dr. Barber does not offer any analysis of

how large a factor redistricting is or whether partisan gerrymandering accounts for the current composition of the General Assembly. Tr. 2176:10-13, 2203:5-21.

638. While Dr. Barber suggested that "longer term trends" are a larger factor than redistricting in the number of seats held by the parties in the General Assembly, Tr. 2174:24-2175:3, besides tracking General Assembly election results on a chart, he performed no "election specific analysis." Tr. 2179:3-8. Dr. Barber was unaware of the context or circumstances surrounding any of North Carolina's election cycles, including key efforts such as the Republican Party's REDMAP project. Tr. 2181:1-8 (Dr. Barber), Tr. 867:8-18 (Dr. Cooper). Dr. Barber also acknowledged that his opinions were not informed by any knowledge of Dr. Hofeller's role in North Carolina's 2011 and 2017 redistrictings, nor did Dr. Barber review any of Dr. Hofeller's files. Tr. 2186:22-2187:20.

639. Dr. Barber also sought to rebut opinions Dr. Cooper offered regarding the gross disproportionality between Democratic seat share and the Democrats' statewide vote share in the General Assembly after the 2011 redistricting. Dr. Barber observed that "it's actually not as rare as you might think" that a party wins a majority of votes for the North Carolina House or Senate statewide, but only a minority of seats. Tr. 2149:21-2150:2. But since Dr. Barber did not analyze the extent to which any of these instances of gross disproportionality between votes and seats were attributable to gerrymandered district boundaries, his analysis is not useful to the Court. Indeed, Dr. Barber admitted that it was "very possible" that those instances from 2002-2006 where the Democrats won a minority of the statewide vote and yet a majority of seats in a chamber of the General Assembly "could have been because the Democrats did a good job of gerrymandering the maps that were in place during those elections." Tr. 2203:12-16.

640. In support of his opinion regarding the translation of seats from votes, Dr. Barber created a chart providing the "absolute difference" in percentage between the vote share and seat share for each party in House and Senate elections since 1994. IDTX23. But as Dr. Barber acknowledged, the greatest difference between the percentage of Republican vote share and seat share in the House occurred in the 2012 election, just after the 2011 redistricting. Tr. 2207:3-12. The difference in the Senate between the percentage of Republican votes received and seats won was also relatively large in 2012, and represented a significant increase from the 2010 election, just before redistricting. Tr. 2207:13-22. If anything, Dr. Barber's analysis suggests that the 2011 redistricting led to more disproportionality between votes cast and seats won, as Dr. Cooper observed. Tr. 2207:23-2212:16.

641. Finally, Dr. Barber noted that there is "academic research that points to political party geography as an important factor in representation and legislatures," suggesting that the geographic distribution of voters "is something that should be investigated" in this case. Tr. 2152:10-14. Specifically, Dr. Barber referenced a 2013 article co-authored by Plaintiffs' expert, Dr. Chen, focused on the political geography of Florida and Florida's congressional districts, an article in which Dr. Chen used simulations to measure whether political geography created a natural advantage for Republicans in redistricting in Florida. Tr. 2153:2-24. Despite acknowledging that Dr. Chen's co-authored 2013 article did not include any analysis of North Carolina (Tr. 2153:25-2154:2), Dr. Barber testified that the article "invites the question as to what it would look like if we looked to see if this relationship also existed in North Carolina." Tr. 2154:5-7, 2218:13-2219:15.

642. While Dr. Barber invited an analysis of North Carolina's geographic distribution of voters similar to what Dr. Chen had done for Florida in his 2013 paper, Dr. Chen *did* perform

that analysis in this case and concluded that North Carolina's political geography *does not* account for the extreme partisan bias of the enacted plans. Tr. 2219:11-2220:21. Similarly, at the time he conducted his analysis and arrived at the opinions he offered regarding the potential partisan bias of North Carolina's political geography, Dr. Barber was unaware that Dr. Chen's co-author in the same 2013 paper, Dr. Jonathan Rodden, had come to the conclusion that North Carolina's Democratic voters were relatively efficiently distributed throughout the State. Tr. 2222:9-2223:4, 2224:6-2225:8.

643. Dr. Barber did not engage in the type of analysis that Dr. Chen performed to account for and measure the extent to which "natural" partisan bias in North Carolina's political geography could account for electoral outcomes favoring Republicans, but the little analysis that Dr. Barber did conduct of the distribution of North Carolina's Democratic voters actually supports Plaintiffs' claims. Dr. Barber observed a positive correlation between the population density of North Carolina's VTDs and their support for Democratic candidates, but he acknowledged that there were "a lot of other Democratic-leaning VTDs" spread across the state, even outside the urban centers of Raleigh and Charlotte. Tr. 2216:11-16. Dr. Barber's analysis fails to offer the Court any information about how the many Democratic-leaning VTDs across North Carolina fit into specific county groupings and specific districts and therefore, his analysis is not directly relevant to the questions the Court faces. Unlike Dr. Cooper, who performed an extensive analysis of North Carolina's House and Senate Districts at the county grouping level, Dr. Barber admitted that he could not offer any opinion to rebut Plaintiffs' evidence regarding gerrymandering within those county groupings. Tr. 2217:8-2218:12.

644. In light of the above shortcoming in Dr. Barber's analysis, the Court ascribes no weight to his testimony.

e. Dr. Johnson

645. Legislative Defendants' expert Dr. Douglas Johnson offered primarily two sets of opinions in this case. First, Dr. Johnson purported to show that one could draw a Senate map even more favorable to Republicans if one ignored the North Carolina Constitution's Whole County Provision. Second, Dr. Johnson attempted to critique Dr. Chen's analysis of Dr. Hofeller's files. The Court finds Dr. Johnson's analysis to be irrelevant and/or not credible. The Court further finds that Dr. Johnson exhibited a lack of candor in his testimony that independently provides a basis to reject his entire testimony.

646. Dr. Johnson has testified as a live expert witness in four cases previously, and the courts in all four cases have rejected his analysis. Tr. 1886:21-1891:14; *see Covington*, 283 F. Supp. 3d at 450 (finding "Dr. Johnson's analysis and opinion ... unreliable and not persuasive"); *Luna v. Cty. of Kern*, 291 F. Supp. 3d 1088, 1137 (E.D. Cal. 2018) (holding that Dr. Johnson's analysis "lacks merits"); *Garrett v City of Highland*, 2016 WL 3693498, at *2 (Cal. Super. Apr. 06, 2016) (finding Dr. Johnson's methodology "inappropriate"); *Jauregui v City of Palmdale*, No. BC483039, 2013 WL 7018375, at *2 (Cal. Super. Dec. 23, 2013) (describing Dr. Johnson's work in the case was "unsuitable" and "troubling"). This Court joins these other courts in rejecting Dr. Johnson's methodologies, analyses, and conclusions.

647. Dr. Johnson created a "test map" for the North Carolina Senate that ignored the Whole County Provision entirely. Tr. 1892:21-1893:4. Based on this test map, Dr. Johnson purported to find that one could draw a Senate map even more favorable for Republicans than the enacted Senate plan if one were to ignore the county groupings and traversal rules. Tr. 1893:17-22. The Court finds Dr. Johnson's analysis using his test map to be irrelevant to the legal and factual issues in this case.

648. Dr. Johnson performed no statewide analysis of the House or the Senate to determine the extent to which, *within* the confines of the Whole County Provision, the enacted House and Senate plans constitute the most favorable maps for Republicans possible. Tr. 1894:13-1896:7. The only individual county groupings for which Dr. Johnson performed any partisanship analysis at all within the confines of the Whole County Provision were Mecklenburg County in the Senate and Wake County in the House, *id.*, and Dr. Johnson's partisanship analysis of the Mecklenburg Senate districts was erroneous and not credible for the reasons already explained. Dr. Johnson did not analyze any other individual House or Senate county grouping to determine whether the enacted plans' version of that grouping is the most favorable configuration of the grouping possible for Republicans. *Id.* Dr. Johnson thus offered no rebuttal to the testimony of Plaintiffs' experts demonstrating that the enacted plans constitute extreme partisan gerrymanders of specific county groupings.

649. Dr. Johnson instead ignored the Whole County Provision in creating his Senate test map, but as he acknowledged, the Whole County Provision is a state constitutional requirement. Tr. 1896:8-10. The General Assembly lacks authority to ignore the state constitutional county groupings and traversals requirements in creating redistricting plans. Dr. Johnson's test map analysis is thus no more relevant or illuminating than would be a test map that ignores other constitutional requirements, such as the equal population requirement for districts. One could draw a map ignoring the equal population requirement that is even more favorable for Republicans that Dr. Johnson's test map, and certainly more favorable for Republicans than the enacted plan. Tr. 1896:11-1900:21. But the fact that one could draw such a hypothetical map in no way sheds light on whether the enacted plan is an extreme partisan gerrymander. *Id.* It provides no information as to whether the General Assembly acted within

extreme partisan intent in drawing districts within the confines of the accepted constitutional requirements, and it provides no information as to the effects of the gerrymander on the number of Republican- and Democratic-leaning districts relative to a nonpartisan plan. *Id.* Dr. Johnson's test map analysis is of no relevance to the legal or factual issues in this case.

650. With respect to Dr. Johnson's testimony regarding Dr. Hofeller's files, as described above, the Court struck all of Dr. Johnson's affirmative analysis of Dr. Hofeller's 2017 draft House and Senate plans and the extent to which they overlap with other plans including the final enacted plans. Tr. 1988:11-1990:4. The Court struck this testimony and all related portions of Dr. Johnson's rebuttal report under Rule 702 and Rule 403 after it was uncovered on cross-examination that Dr. Johnson had made a series of significant errors. *Id.*

651. Although the Court did not strike Dr. Johnson's testimony regarding the existence of racial data in Dr. Hofeller's Maptitude files, the Court also finds this testimony to be erroneous and not credible. In reference to Dr. Hofeller's Maptitude files that were last modified in August 2017, that displayed the BVAP of districts in labels on the map, and that also sorted the districts from highest to lowest BVAP, Dr. Johnson testified that it was "possible" that those display settings were merely carried over from a prior version of the file, and therefore Dr. Hofeller may have not configured those settings in August 2017. Tr. 1861:21-1863:2. Dr. Johnson admitted on cross-examination, however, that he had not reviewed the prior versions and backups of these files to determine when these settings were introduced. Tr. 1968:9-18. It was then made clear on cross-examination the exact period of time when Dr. Hofeller chose to display the BVAP statistics in this manner. *Infra* FOF § G.2. The Court thus finds Dr. Johnson's testimony regarding when Dr. Hofeller introduced these settings into his draft plans not credible.

652. Finally, the Court finds that Dr. Johnson exhibited a troubling lack of candor in his testimony. Dr. Johnson testified at his deposition, and then again at trial, that it was not until after his June 17, 2017 deposition that he was asked to rebut Dr. Chen's analysis of the Hofeller files, and that he did not begin any analysis of Dr. Chen's rebuttal report until after that July 17, 2017 deposition date. Tr. 1953:13-1954:17. However, it was discovered that several of Dr. Johnson's backup files that he used for purposes of rebutting Dr. Chen's analysis of the Hofeller files—which Dr. Johnson turned over in conjunction with his rebuttal report regarding the Hofeller files—pre-dated July 17, 2017 by several days. Tr. 1954:20-1958:14. Dr. Johnson testified that he used these particular files for his analysis throughout the case, and not just for his rebuttal report, Tr. 1956:20-1957:6, but that claim does not withstand scrutiny. The relevant backup files contain information, including information regarding Dr. Hofeller's draft maps, that Dr. Johnson did not use for any of his earlier reports or analysis in the case. Tr. 1956:7-16. The Court finds that Dr. Johnson was not forthcoming in his testimony regarding when he began his analysis of the Hofeller files and Dr. Chen's rebuttal report. While Dr. Johnson's substantive testimony is lacking on the merits for the reasons already explained, his lack of candor undermines the credibility of his testimony further.

3. Dr. Karen Owen's Testimony on "Representation" and "Competitive Elections" Was Unpersuasive

653. Legislative Defendants offered expert testimony of Dr. Karen Owen on the issues of "representation" and "competitive elections" in North Carolina. Tr. 1488:6-22; LDTX 293 (Owen report). Dr. Owen's testimony on these issues was unreliable and wrong.

654. Dr. Owen has no experience or expertise with politics, elections, or representation in North Carolina specifically. An assistant professor at West Georgia University and previously at Reinhardt University also in Georgia, Dr. Owen has never lived or worked in North Carolina.

LDTX 293 at 28-29. She has never written or published about North Carolina politics, elections, or representation. Tr. 1555:19-1557:25. She has never participated in or spoken at any conference about North Carolina politics, elections, or representation. Tr. 1558:1-1559:16. She has never been interviewed by any media outlet about North Carolina politics, elections, or representation. Tr. 1559:17-25. She has never taught a class focused on North Carolina politics, elections, or representation—the closest she came was teaching a single course in "Southern Politics" three years ago. LDTX 193 at 32; Tr. 1560:11-24.

655. The methodologies Dr. Owen employed to evaluate "representation" and "competitive elections" in North Carolina were cursory, incomplete, and unreliable. In conducting her research and analysis for this case, Dr. Owen did not speak to any current or former North Carolina legislator, or any winning or losing North Carolina candidate, or any North Carolina voter. Tr. 1561:7-1564:14. Nor did she consult any North Carolina polling data or survey data. Tr. 1564:15-19. Instead, Dr. Owen's analysis of "representation" in North Carolina was based on her conversations with several staff members in the General Assembly's Legislative Services Commission. Tr. 1561:7-1562:1. And her analysis of "competitive elections" in North Carolina was based her reading newspaper articles and a website called "Real Facts North Carolina." Tr. 1566:5-13.

656. Based on her lack of relevant expertise and the inadequate methodologies she employed in this case, the Court affords no weight to Dr. Owen's opinions about "representation" and "competitive elections" in North Carolina.

657. In addition, as described below, Dr. Owen's analysis and opinions are incorrect and unhelpful in resolving the issues in this case.

a. Dr. Owen's analysis of "representation" was unpersuasive

658. In support of her opinion that Republican members of the General Assembly meaningfully "represent" their Democratic constituents, Dr. Owen emphasized that the members "are noticeably involved in more than producing and passing laws," LDTX 293 at 22, and that they provide "constituent services" to Republican and Democratic voters alike, regardless of their political beliefs, party affiliation, or past votes. Tr. 1567:15-1568:18; *see also* Tr. 1801:17-1803:2 (similar testimony by Rep. Bell); Tr. 2000:21-2001:6 (Sen. Brown).

659. The Court finds, however, that the mere provision of constituent services does not mean that voters of one particularly party are meaningfully "represented" by a member of the other party political, and it certainly does not mean the voter receives the same "representation" that voter would if he or she could elect the candidate of voter's choice. Constituent services are only one part of a legislator's responsibilities. In addition to providing constituent services, members of the North Carolina House and Senate participate in enacting the State's laws and policies. Tr. 1803:3-9 (Rep. Bell). Legislative Defendants' own expert, Dr. Brunell, testified that, among the ways in which a legislator "represents" his or her constituents, providing constituent services may be "an important part, but if you are sort of, you know, worried about the hierarchy of the things that they do, I think that how they vote on the major issues of the day is more important." Tr. 2353:11-2354:4. Dr. Brunell agreed that "policy responsiveness" is a "higher form of representation" and "more critical to the notion of representing someone." Tr. 2372:5-10; *see* Tr. 2353:3-6 (agreeing that "the responsiveness of a legislator to the voters on questions on policy in particular is critical to Democratic representation"). As "just one example of the many issues from which policy responsiveness is the more central form of representing the people in the legislature," Dr. Brunell agreed that if a legislator casts a vote for gun control, the legislator is "not giving good representation to the voters in [his or her] district who don't want

gun control." Tr. 2354:11-19. Thus, as Dr. Brunell agreed, "a change in the party that represents a given district generates a huge difference in the policies for which the representative of that district will vote." Tr. 2354:20-23. Another witness for Legislative Defendants, Senator Harry Brown, also testified that "in order to push legislation that we thought was important to this state," a political party must "be in the majority." Tr. 2023:20-22.

660. Other purported indicia of "representation" discussed by Dr. Owen likewise were exaggerated and unhelpful. For example. Dr. Owen pointed to a form "welcome letter" that members of the General Assembly can send to new voters in their districts. LDTX 293 at 22; Tr. 1514:4-1516:23. But sending a form letter does not signify meaningful representation.

b. Dr. Owen's analysis of "competitive elections" was unpersuasive

661. In her analysis of "competitive elections," Dr. Owen suggested that Democrats' failure to win certain House and Senate races in 2018 was the result of poor "candidate quality," rather than the district boundaries. Tr. 1540:13-1542:9; LDTX 293 at 6-7. But even setting aside her lack of expertise in North Carolina elections, Dr. Owen's methodology was unreliable and her conclusions were incorrect.

662. The sole criterion that Dr. Owen applied for assessing candidate quality turns whether the candidate "had held prior elected office." Tr. 1533:5-21. Under this "dichotomous measure," any person who has previously held elective office is a "quality" candidate, and any person without prior experience holding elective office is not "quality." LDTX 293 at 10. This approach unreasonably ignores other important factors and is an unreliable measure of whether a person is a quality candidate.

663. For instance, Dr. Owen classified a Democratic candidate who is a U.S. Army Colonel as a "nonquality" candidate. Tr. 1566:18-25; LDTX 293 at 12. She classified another Democratic candidate who is a "small business owner" and "community leader" as a

"nonquality" candidate. Tr. 1567:1-7; LDTX 293 at 12. And she classified a "young Air Force veteran and attorney" a non-quality candidate. LDTX 293 at 16. These examples illustrate the clear shortcomings in Dr. Owen's methodologies.

664. Legislative Defendants' witness Representative Bell also pointed to candidate quality as a purported factor in House districts he claimed might be "competitive" in 2020. Tr. 1752:13-1754:18. But Representative Bell's claim that certain House districts could be "competitive" in 2020, and only were not close in 2018 due to purported candidate quality issues, does not withstand scrutiny. Representative Bell included on his list of purportedly competitive districts numerous districts that were not only extremely lopsided in the 2018 state House elections, but that feature similarly lopsided vote shares under the results of prior statewide elections, including the 2012 Presidential election, the 2016 Presidential election, and the 2016 Governor election. Tr. 1788:5-1801:16. Representative Bell included on his list of purportedly competitive districts a handful of districts in which the Republican candidate won over 60% of the vote share in the district across all of these various elections. *Id.* Moreover, for many of the districts he identified, Representative Bell testified that the race could be competitive only if it was an "open seat"—that is, if the incumbent Republican member either retires or does not run again in 2020. Tr. 1767:3-23, 1772:16-20, 1773:24-1774:2. But there is no evidence that any of those Republicans members, much less all of them, will not run in 2020. Tr. 1786:4-10. The Court finds that Representative Bell's testimony does not provide a reliable basis for assessing the competitiveness of current House districts.

4. The Whole County Provision Did Not Prevent Systematic Gerrymandering of the Plans for Partisan Gain

665. Throughout trial, Legislative Defendants and their experts emphasized the existence of the North Carolina Constitution's Whole County Provision, which the North

Carolina Supreme Court has held requires dividing the State into discrete county groupings and restricting the traversal of county lines for districts within a county grouping. Tr. 252:17-257:10. The Court finds that Legislative Defendants overstate the constraints imposed by the Whole County Provision, and that Legislative Defendants intentionally and effectively gerrymandered the enacted plans for partisan gain within the confines of the Whole County Provision.

666. Legislative Defendants overstate the impact of the Whole County Provision. Dr. Chen explained in unrebutted testimony that the Whole County Provision dictates the contours of only 13 of 120 House districts and 17 of 50 Senate districts. Tr. 782:2-783:1. Legislative Defendants thus had discretion in drawing 107 of 120 House districts and 33 of 50 Senate districts—constituting over 82% of all districts across both enacted plans. *Id.*

667. As detailed above, the evidence establishes that Legislative Defendants engaged in systematic gerrymandering for partisan gain in the districts in which they did have discretion. All four of Plaintiffs' experts concluded that Legislative Defendants acted with extreme partisan intent within the confines of the Whole County Provision. Plaintiffs' simulations experts—Drs. Chen, Mattingly, and Pegden—simulated plans that adhered to the existing House and Senate county groupings, and all three experts found that the enacted plans are extreme outliers compared to nonpartisan plans that follow the same county groupings. And all three experts found that specific county groupings are extreme outliers compared to other, simulated versions of the same county grouping that contain the same number of traversals as the enacted plan in that grouping. Dr. Cooper independently established—in unrebutted testimony—that the enacted plans pack and crack Democratic voters within specific county groupings.

5. Plaintiffs Do Not Seek Proportional Representation

668. Contrary to Legislative Defendants' claim, Plaintiffs do not seek proportional representation. As described in more detail *infra*, Plaintiffs assert that the General Assembly

may not intentionally discriminate against voters and may not attempt to predetermine election outcomes and control of the General Assembly. Dr. Chen and Dr. Mattingly established through their simulations that nonpartisan plans that do not intentionally discriminate against Democratic voters may well *not* provide for proportional representation. Under Dr. Chen's and Dr. Mattingly's simulations, there are scenarios where Democrats would win 50% of the statewide vote but less than 50% of the seats in either chamber. Tr. 306:16-307:2 (Dr. Chen); Tr. 1103:24-1104:5, 1132:6-1133:12 (Dr. Mattingly). Dr. Pegden's simulations also did not rely on any notion of proportional representation. Tr. 1306:22-24.

669. Legislative Defendants' presentation regarding the proportionality of seats to votes in specific county groupings like Wake and Mecklenburg Counties, Tr. 2068:10-2069:13, was misleading and irrelevant. As Dr. Pegden explained, analyzing proportionality at the local level of a county grouping is "completely useless" and can be misleading in the context of a gerrymandered map. Tr. 1452:17-1454:18. In a county grouping that contains a small number of districts and for which one party wins an overwhelming share of the vote across the grouping, one would expect that party to win a disproportionate share of the seats under a nonpartisan map, and likely all of the seats. Tr. 1452:23-1453:12. Under a Republican gerrymander, however, Republican mapmakers will allow that natural outcome to occur in county groupings that strongly favor Republicans, but will gerrymander the more Democratic county groupings in a way that may result in proportional outcomes just in those Democratic county groupings—*e.g.*, by gerrymandering the grouping to squeeze out one or two Republican seats. Tr. 1452:17:22-1454:18. Thus, the fact that the enacted plans may have resulted in proportional seats-to-votes outcomes in individual county groupings that are heavily Democratic is not evidence of a lack of gerrymandering; it is evidence of the opposite.

6. Legislative Defendants Did Not Seek To Comply with the VRA and Did Not Show Nonpartisan Plans Would Violate the VRA

670. Defendants presented no evidence at trial to substantiate any federal defense under the Voting Rights Act or Fourteenth or Fifteenth Amendments. Defendants introduced no evidence at trial to establish any of the prerequisites to application of the Voting Rights Act under *Thornburg v. Gingles*, 478 U.S. 30 (1986). For example, Defendants presented no expert testimony or any other evidence to establish the existence of legally sufficient racially polarized voting in any area of North Carolina, let alone in any particular state House or state Senate district. Nor did Defendants introduce any evidence to establish the minimum African-American percentage of the voting age population ("BVAP") needed in any particular area of the State for the African American community to be able to elect the candidate of its choice.

671. Notably, Legislative Defendants retained Dr. Jeffrey Lewis, a political scientist from UCLA, and he analyzed and provided estimates of the minimum BVAP needed in certain county groupings for African-American-preferred candidates to win. *See* PX773 (Amended Table 4 from Lewis Report). But Legislative Defendants chose not to have Dr. Lewis testify at trial. At the conclusion of trial, Legislative Defendants attempted to introduce expert reports that a different political scientist (Dr. Alan Lichtman) had prepared on behalf of different parties in previous lawsuits in North Carolina years ago, but the Court sustained Plaintiffs' objections to the admission of these reports. Tr. 2376:2-3. The Court excluded these reports as inadmissible hearsay and undisclosed expert work, particularly given that Plaintiffs dispute Legislative Defendants' characterization of those reports. Tr. 2363:16-2364:25.

672. Defendants did not demonstrate that the relief Plaintiffs seek would violate the VRA or federal equal protection requirements. Plaintiffs established that it would not. Using Dr. Lewis's estimates of the minimum BVAP needed in certain county groupings for an African-

American-preferred candidate to win a state House or Senate election, Dr. Chen determined how many of his simulations of those county groupings contained districts exceeding Dr. Lewis's BVAP-threshold estimates. Tr. 512:15-517:6. Dr. Chen determined that for every county grouping that Dr. Lewis analyzed except one in the House and one in the Senate, all of Dr. Chen's simulations produce at least as many districts above Dr. Lewis's BVAP-threshold estimate as does the enacted House or Senate plan. *Id.*; *see* PX775; PX776. For the two remaining county groupings, which are Forsyth-Yadkin in the House and Davie-Forsyth in the Senate, a majority of Dr. Chen's simulations of each grouping produce at least as many districts above Dr. Lewis's BVAP-threshold estimate as the enacted plan. *Id.*; *see* PX775; PX776. The evidence at trial thus demonstrated that, based on the BVAP-threshold estimates of Legislative Defendants' own expert, adopting nonpartisan House and Senate plans would not diminish the ability of African Americans to elect the candidate of their choice.

673. While Defendants' failure to introduce any evidence at trial necessary to the legal elements of a racial vote dilution defense is dispositive of any such defense, the Court further finds that—as a factual matter—Legislative Defendants did not draw or adopt any district under the 2017 Plans in an effort to comply with the VRA.

674. One of the Adopted Criteria, titled "No Consideration of Racial Data," stated that "[d]ata identifying the race of individuals or voters shall not be used in the drawing of legislative districts in the 2017 House and Senate plans." PX58. When submitting the plans to the *Covington* court for approval, Legislative Defendants stated that "[d]ata regarding race was not used in the drawing of districts for the 2017 House and Senate redistricting plans." PX629 at 10.

675. Legislative Defendants have claimed in this case that, even though they did not use racial data in drawing the districts, they purportedly checked the racial demographics of the

districts on the "back end" to ensure that "the VRA was satisfied." *See, e.g.*, Leg. Defs.' Pre-Trial Brief at 44. Legislative Defendants presented no testimony at trial to substantiate this assertion, and the Court finds the assertion not credible for multiple reasons.

676. Throughout the 2017 redistricting process, Legislative Defendants asserted that the reason they were ignoring racial considerations entirely in drawing the new districts was because they had concluded that the "third *Gingles* factor" was not "present" anywhere in the State of North Carolina. PX593 at 52 (statement of Sen. Berger); *See also id.* ("we cannot prove the third *Gingles* factor") (statement of Sen. Berger). Legislative Defendants repeatedly told the *Covington* court that they could not "justify the use of race in drawing districts" in the 2017 Plans—and thus could not seek to hit a "racial numerical quota" for any district—because they had insufficient evidence of "legally sufficient racially polarized voting." *Covington*, No. 15-cv-399, ECF No. 184 at 10; ECF No. 192 at 12; *see also* ECF No. 184-17 at 12.

677. The existence of legally sufficient racially polarized voting is a "prerequisite[]" to VRA liability; if any *Gingles* factor is not met, "§ 2 simply does not apply." *Cooper v. Harris*, 137 S. Ct. 1455, 1472 (2017). Hence, when Legislative Defendants concluded that the third *Gingles* factor was not met, they necessarily concluded that the VRA did not impose requirements for the racial composition of any state House or state Senate district. Any assertion by Legislative Defendants now that they sought to "satisfy" the VRA in adopting the 2017 Plans does not make sense as a legal or factual matter given their assertions at the time.

678. Moreover, the mere timing of when Legislative Defendants learned of the racial composition of the new districts belies their claim that they reviewed the data to ensure VRA compliance. The Stat Packs that Legislative Defendants produced when they released the initial

drafts of the House and Senate plans did not include racial data on any of the draft districts.[11] At the August 24, 2017 hearing at which the Senate Redistricting Committee passed the Senate plan out of committee, Senator Hise insisted, "I have not seen any racial data for these districts." PX606 at 46:2-3. Representative Lewis said the same the next day at the hearing at which the House plan was passed out of the House Redistricting Committee. PX605 at 20:11-21:18. Only after this point did legislative staff produce racial data on the districts—at the request of Democratic legislators over Legislative Defendants' objections. PX600 at 11. Even then, Legislative Defendants claimed to have remained unaware of the racial composition of the districts. Representative Lewis asserted that he did not "see" any data on the racial composition of the House districts until *after* the House plan was passed by the full House chamber. *Id.* at 12. Legislative Defendants clearly did not have assure themselves that the plans satisfied the VRA by meeting particular racial thresholds when they purportedly had no knowledge of the racial composition of the districts.

679. Legislative Defendants have pointed to a single floor statement by Senator Berger near the end of the legislative process that mentioned the VRA, but that statement does not establish that Senator Berger, let alone any other Legislative Defendant, actually undertook efforts to comply with the VRA. Senator Berger made that statement immediately after declaring that the third *Gingles* factor was not met, which if true would preclude VRA application as a matter of law. PX593 at 52-54. And neither Senator Berger nor anyone else has pointed to any change that was made to any House or Senate district to ensure VRA compliance.

680. The Court finds that the General Assembly did not enact any House or Senate district under the 2017 Plans with the specific intent of complying with the VRA, and that

[11] *See* https://bit.ly/2YJnaRP (Stat Pack for Senate draft plan released on August 21, 2017); https://bit.ly/2YPch0L (Stat Pack for House draft plan released on August 20, 2017).

Defendants have not established that the VRA requires maintaining any of the districts that Plaintiffs challenge in its current form.

681. Indeed, the Court finds that Legislative Defendants' stated concern that "unpacking" heavily-Democratic districts could dilute the voting power of African-Americans to be a pretext for partisan gerrymandering. Unrebutted evidence presented at trial established that Legislative Defendants themselves created districts with artificially low BVAPs when it was politically advantageous. In particular, while Legislative Defendants now accuse Plaintiffs of seeking to "crack" African American voters, the unrebutted evidence established that Legislative Defendants cracked African American voters in rural and semi-rural parts of the state where cracking Democratic voters would maximize Republican victories.

682. Dr. Chen demonstrated that, for several rural and semi-rural House county groupings, all or nearly all of his simulated plans (which ignored racial data in drawing the districts) produced a district in the grouping with a higher or much higher BVAP than any districts in that grouping under the enacted plan. Tr. 519:6-523:9. These county groupings include the Anson-Union, Cleveland-Gaston, Columbus-Pender-Robeson, and Duplin-Onslow county groupings, all of which are county groupings in which Legislative Defendants cracked Democratic voters to dilute their political power. *Id.*; *see* PX225; PX226; PX227; PX228. Dr. Chen's findings significantly undermine Legislative Defendants' claims that they seek to create higher-BVAP districts to promote the political power of African-American communities. *Id.*

G. Legislative Defendants Repeatedly Made False Statements to the *Covington* Court and the Public About the 2017 Redistricting Process

683. Using evidence obtained in discovery from Dr. Hofeller's files, Plaintiffs established at trial that Legislative Defendants made a series of false or misleading statements to the *Covington* court and to the public during the 2017 redistricting process. Specifically, the

evidence shows that Legislative Defendants made untrue statements about when and how the 2017 Plans were drawn, and about Dr. Hofeller's possession and consideration of racial data.

684. Plaintiffs obtained this evidence through a subpoena to Dr. Hofeller's daughter. PX676; PX781 (S. Hofeller deposition). Plaintiffs issued the subpoena to Ms. Hofeller on February 13, 2019 and provided notice to all other parties the same day. PX676. After no party objected to the subpoena, on March 13, 2019, Ms. Hofeller produced 22 electronic storage devices that had belonged to her father and that her mother gave her after Dr. Hofeller's death. PX781 at 1-43. The Hofeller files admitted into evidence at trial all came from these storage devices. PX123 at 2, 39, 48 (Chen Rebuttal Report); PX329 at 3-4 (Cooper Rebuttal Report).[12]

685. This Court granted Plaintiffs' pretrial motion *in limine* to admit the relevant files from Dr. Hofeller's storage devices, finding sufficient evidence of authenticity and chain of custody. As the Court suggested in its pretrial ruling, and now holds, these files are public records pursuant to N.C. Gen. Stat. § 120-133(a) and Dr. Hofeller's contract with the General Assembly to draw the 2017 Plans. PX631. The Court denied Legislative Defendants' motion *in limine* to exclude the Hofeller files based on purported misconduct by Plaintiffs or their counsel.

1. Legislative Defendants Made False or Misleading Statements About When and How the 2017 Plans Were Drafted

686. After the U.S. Supreme Court's June 5, 2017 decision in *Covington*, the district court ordered briefing on whether to hold special elections under remedial House and Senate plans in 2017 or wait until 2018 to implement remedial plans. *Covington*, ECF No. 153.[13]

[12] The Court at trial allowed the parties to admit expert reports as "corroborative evidence"—*i.e.*, as evidence that "tends to add weight or credibility" to the experts' testimony. *State v. Garcell*, 363 N.C. 10, 40, 678 S.E.2d 618, 637 (2009); *see* Tr. 537:8-538:7.

[13] This Court may take judicial notice of statements made in filings in related cases. *See, e.g.*, *Funderburk v. JPMorgan Chase Bank, N.A.*, 241 N.C. App. 415, 420, 775 S.E.2d 1, 4 (2015).

687. In a brief submitted on July 6, 2017, Legislative Defendants repeatedly told the court that no work on new plans had yet begun, and that it was therefore infeasible to develop new plans in time for special elections in 2017. For instance, Legislative Defendants stated that they had not "start[ed] the laborious process of redistricting earlier" than July 2017, and that it had not been "necessary to begin the process" of drawing new districts "until at, the earliest, the end of the current Supreme Court term" on June 30, 2017. *Covington*, ECF No. 161 at 28-29.

688. In the same brief, Legislative Defendants told the *Covington* court that they sought a longer remedial timeline—one that would not allow for special elections in 2017—because they wanted sufficient time to draft plans, deliberate over them, and incorporate public feedback. *Covington*, ECF No. 161. Specifically, Legislative Defendants told the federal court:

- "This Court should not short-circuit that process [of redistricting] by forcing the General Assembly to draw new maps without first engaging in the legislative and public consultation that this inherently policy-driven task necessitates." *Id.* at 4.

- "Proceeding on [its proposed] timeline will allow the General Assembly to receive public input, engage in internal discussions about the design of remedial districts, prepare draft remedial plans, receive public responses to those draft remedial plans, and incorporate public feedback into the final plans." *Id.* at 2.

- "Investigating, drawing, debating, and legislatively enacting satisfactory redistricting plans in time to hold elections in November 2017 or January 2018 would not even begin to allow [for sufficient] input by the public and other members of the General Assembly." *Id.* at 13.

689. Based on Legislative Defendants' representations, the *Covington* court declined to order special elections. *Covington*, 267 F. Supp. 3d 664 (M.D.N.C. 2017). Noting their representations that work on new plans had not begun, the court admonished Legislative Defendants for their "failure ... to take any apparent action" to develop remedial plans "since the Supreme Court unanimously affirmed" on June 5, 2017. *Id.* at 667. But the court allowed a longer remedial timeline given what "Legislative Defendants represented to the Court." *Id.* at

666. The court held that an expedited schedule, as needed to hold special elections in 2017, "[did] not provide the General Assembly with adequate time to meet their commendable goal of obtaining and considering public input and engaging in robust debate and discussion." *Id.*

690. At a July 26, 2017 hearing of the Joint Redistricting Committees, Representative Lewis was asked by Democratic Representative Mickey Michaux whether there were "any other maps that have not yet been released," including "anything that has been drawn by Dr. Hofeller." PX601 at 11-12. Representative Lewis answered, "Not that I know of." *Id.*

691. Similarly, at an August 4, 2017 hearing, Representative Michaux asked Representative Lewis if he could "assure this body right now that no redistricting maps have yet been drawn." PX602 at 72-73. Representative Lewis answered: "I can assure this body that none has been drawn at my direction and that I have direct knowledge of." *Id.* When Representative Michaux stated that "people are concerned" Legislative Defendants or someone else affiliated with the Republican Party had "already drawn the maps," Representative Lewis asserted: "I have not yet drawn maps nor have I directed that maps be drawn, nor am I aware of any other entity operating in conjunction with the leadership that has drawn maps." *Id.*

692. In seeking the *Covington* court's approval of the 2017 Plans, Legislative Defendants submitted the transcripts of the July 26, 2017 and August 4, 2017 Redistricting Committee hearings to the *Covington* court, along with the transcripts of all of the other legislative hearings and floor debates. PX629 at 3 (*Covington*, ECF No. 184).

693. After the Joint Redistricting Committees passed the Adopted Criteria on August 10, 2017, Representative Lewis again asserted that there had been no drafts of the 2017 Plans before that date. Representative Lewis suggested that he had been working in earnest since August 10, 2017 to develop new plans from scratch based on the Adopted Criteria. According to

an August 18, 2017 article in the Charlotte Observer, Representative Lewis "again refuted claims that the maps were drawn weeks or months ago." Colin Campbell, *When To Expect New Political Maps from NC Legislature*, Charlotte Observer (Aug. 18, 2017), https://bit.ly/2YnYizn. Representative Lewis added: "If that were the case, I would have worked a lot less hours this week. We've only had the criteria for a week. I think getting it done in the amount of time that we've done is truly remarkable. We're working as hard as we can to draw the maps." *Id.*[14]

694. On August 19, 2017, Representative Lewis similarly told the News and Observer: "We worked long hours to abide by the criteria." Paul A. Specht & Anne Blythe, *New Map Reveals Part of NC Republicans' Redistricting Plan*, News & Observer (Aug. 19, 2017), https://bit.ly/2wrSuWu.

695. On September 7, 2017, Legislative Defendants submitted the enacted 2017 Plans to the *Covington* court for approval. In their submission, as the court had directed, Legislative Defendants provided a "Description of the 2017 Redistricting Process." PX629 at 4 (*Covington*, ECF No. 184). They said that the process began "[o]n June 27, 2017," when Dr. Hofeller signed his contract with Legislative Defendants to draw the new plans. *Id.* Under the heading "Criteria Applied in Drawing the 2017 House and Senate Districts," Legislative Defendants represented that the criteria "used to draw new districts in the 2017 House and Senate Redistricting plans" were those adopted by the Joint Redistricting Committees "[o]n August 10, 2017." *Id.* at 6, 10.

696. In a September 22, 2017 filing in *Covington*, Legislative Defendants represented that: "Shortly following this Court's order of July 31, 2017, the legislative leaders, Senator Ralph Hise and Representative David Lewis, met with the map drawing consultant, Dr. Hofeller.

[14] This Court may take judicial notice of news articles to establish that certain statements were made. *State v. McDougald*, 38 N.C. App. 244, 248, 248 S.E.2d 72, 77 (1978); *State v. Williams*, 263 N.C. 800, 803-04, 140 S.E.2d 529, 532 (1965).

Redistricting concepts were discussed with Dr. Hofeller as leaders made plans to comply with the Court's Order." *Covington*, ECF No. 192 at 6. In the same filing, Legislative Defendants also claimed that they had "received ... feedback" from the public on the criteria to be used in drawing the plans and "incorporated it to the extent possible." *Id.* at 7.

697. Legislative Defendants' representations to the *Covington* court and the public about the timeline for developing remedial plans in 2017 were untrue. Based on an analysis of draft maps from June 2017 found on Dr. Hofeller's storage devices, Plaintiffs' expert Dr. Jowei Chen demonstrated that Dr. Hofeller had not only begun drawing the 2017 Plans prior to July 2017, but that he had already substantially completed them by that point.

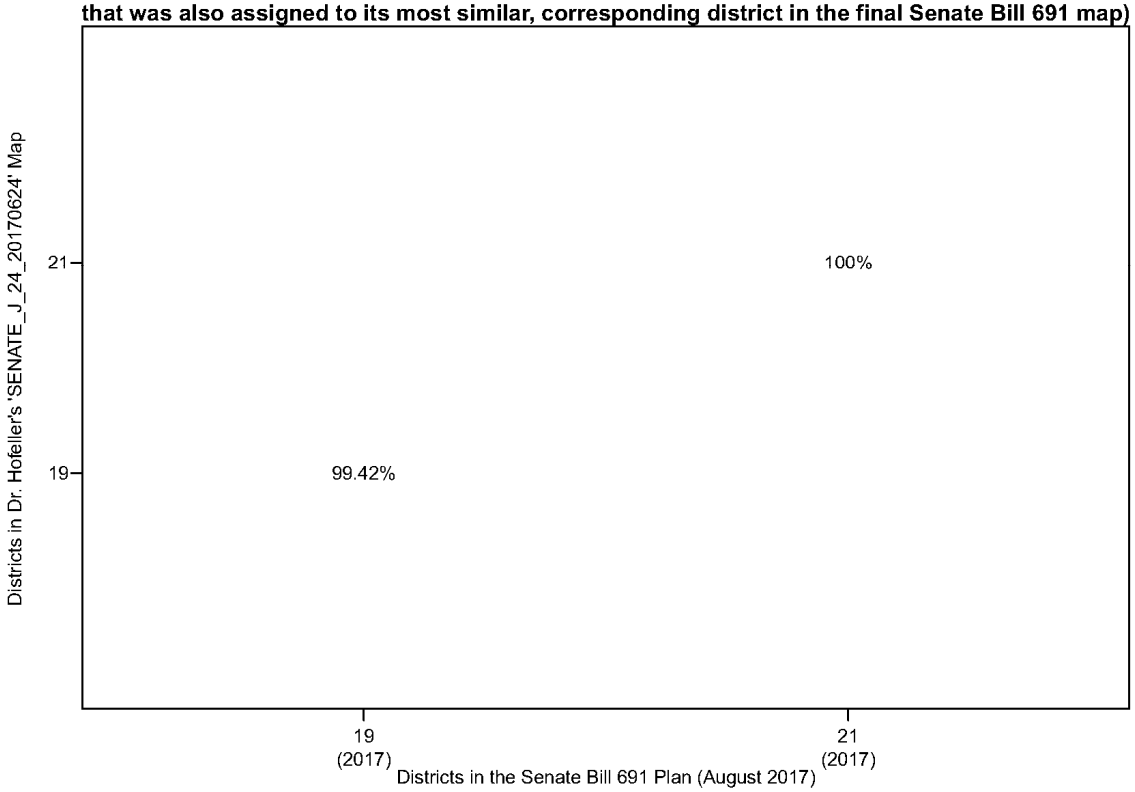
698. For the Senate, Dr. Chen analyzed a draft map that Dr. Hofeller last modified on June 24, 2017. Tr. 400:7-9, 402:5-403:8; *see also* PX572 (showing "last modified" date); PX123 at 25 (Chen Rebuttal Report). In testimony that stands unrebutted, Dr. Chen found that Dr. Hofeller had already finished assigning 97.6% of the State's census blocks and 95.6% of the State's population to their final Senate districts in this June 24, 2017 draft map. Tr. 400:6-25.

699. To show the extent to which Dr. Hofeller had already completed drawing the new Senate plan, Dr. Chen compared individual Senate county groupings in the June 24, 2017 draft map to the final version of the same grouping in the enacted Senate plan. The figures below show every Senate county grouping containing multiple districts that was redrawn in 2017. Tr. 416:15-20; PX123 at 27-38 (Chen Rebuttal Report). In each figure, the map on the bottom left is Dr. Hofeller's June 24, 2017 draft, the map on the bottom right is the final enacted plan, and the top half of the figure reports the percentage of the population in each district in Dr. Hofeller's draft (on the vertical axis) that were assigned to the corresponding district in the final enacted plan (on the horizontal axis). Tr. 405:5-407:19. For instance, the first figure shows that

99.42% of the population assigned to Senate District 19 in Dr. Hofeller's June 24, 2017 draft was also assigned to Senate District 19 in the enacted Senate plan, while 100% of the population in Dr. Hofeller's draft Senate District 21 was assigned to Senate District 21 in the enacted plan. *Id.*

Chen Rebuttal Report Figure 19

Figure 19
Cumberland–Hoke County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_24' districts that was also assigned to its most similar, corresponding district in the final Senate Bill 691 map)



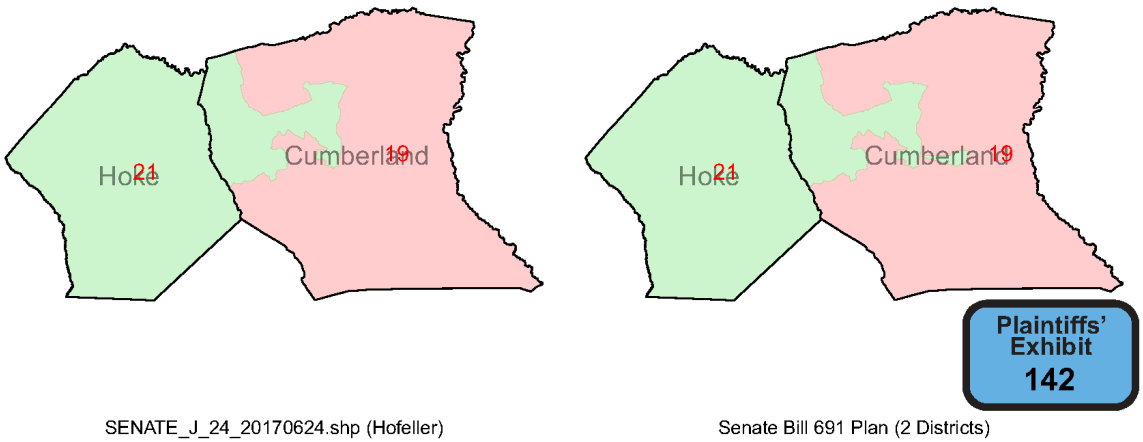
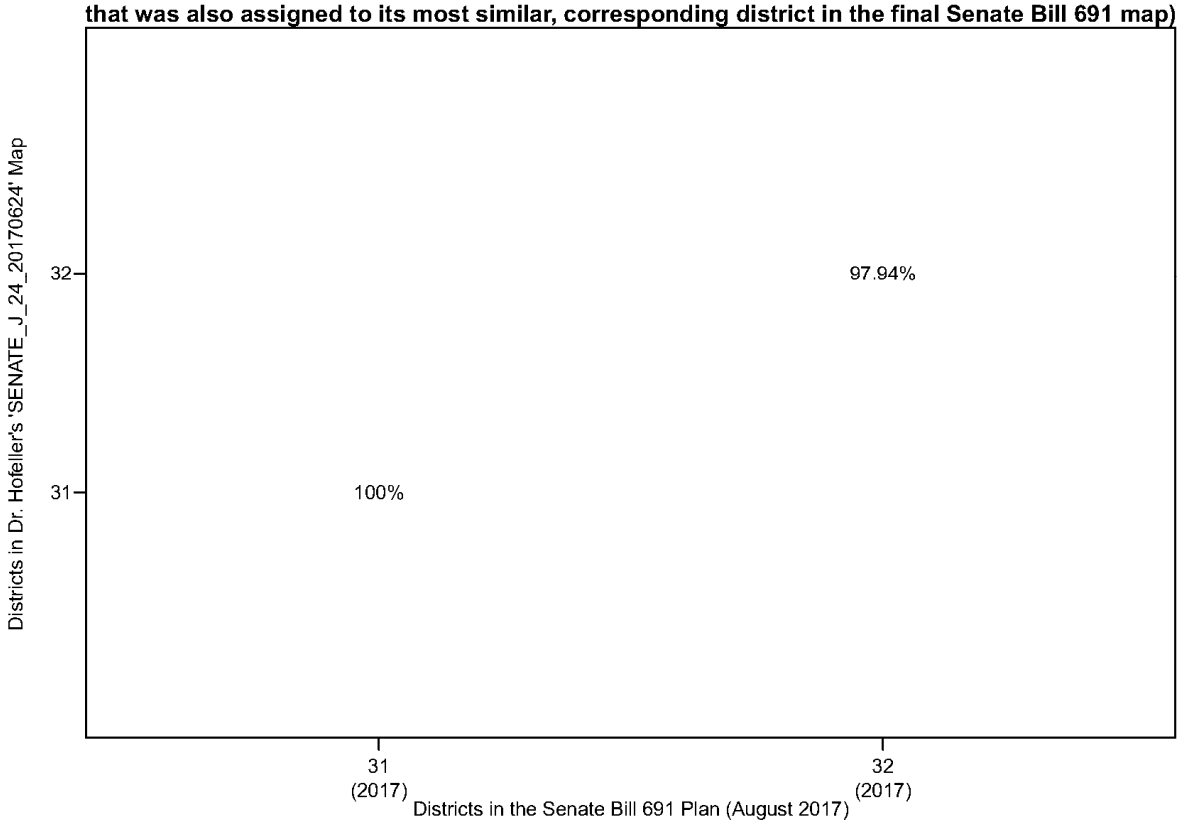
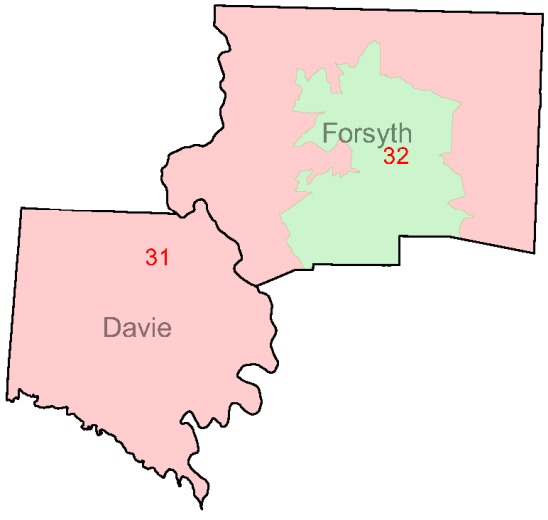
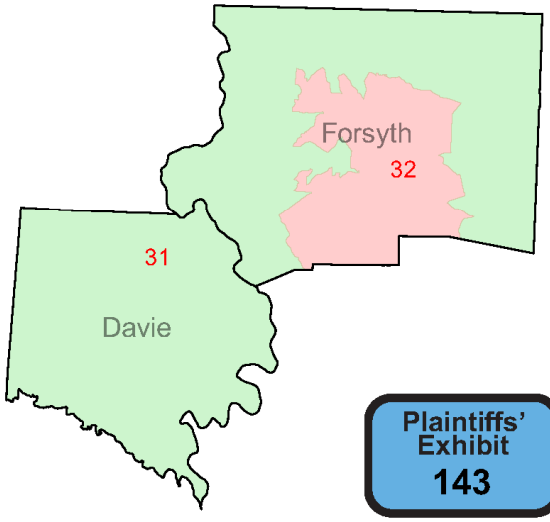


Figure 20
Davie–Forsyth County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_24' districts that was also assigned to its most similar, corresponding district in the final Senate Bill 691 map)





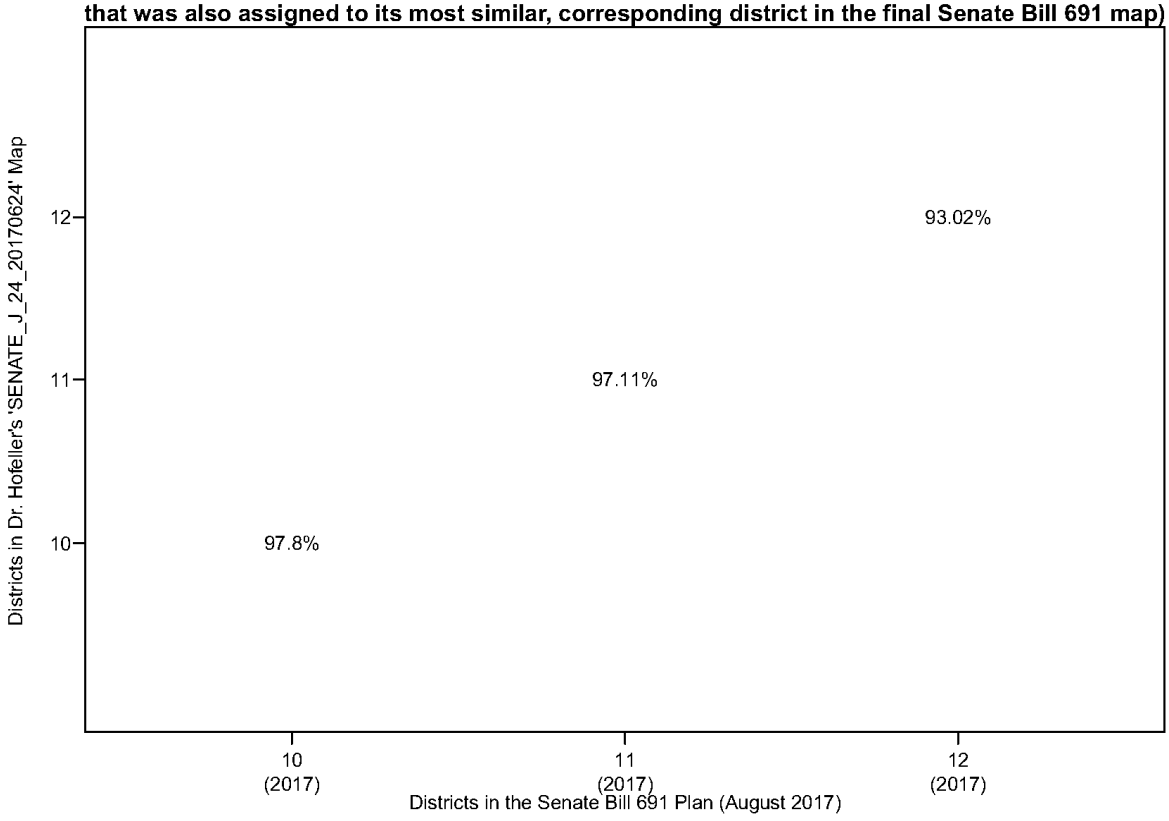
SENATE_J_24_20170624.shp (Hofeller)

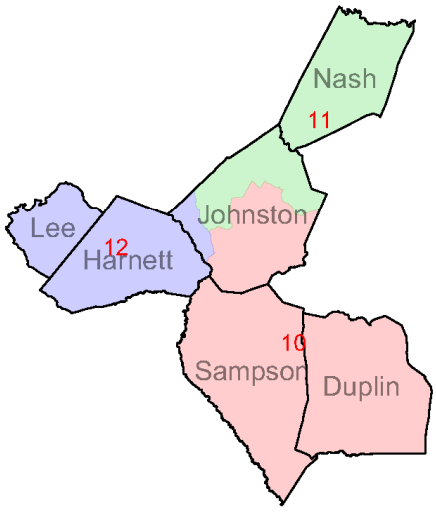


Senate Bill 691 Plan (2 Districts)

Plaintiffs' Exhibit 143

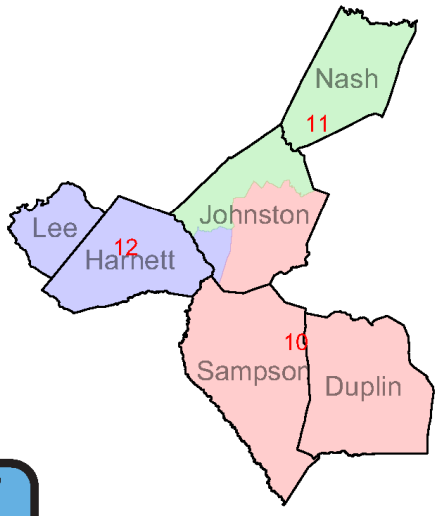
Figure 21
Duplin–Harnett–Johnston–Lee–Nash–Sampson County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_24' districts that was also assigned to its most similar, corresponding district in the final Senate Bill 691 map)





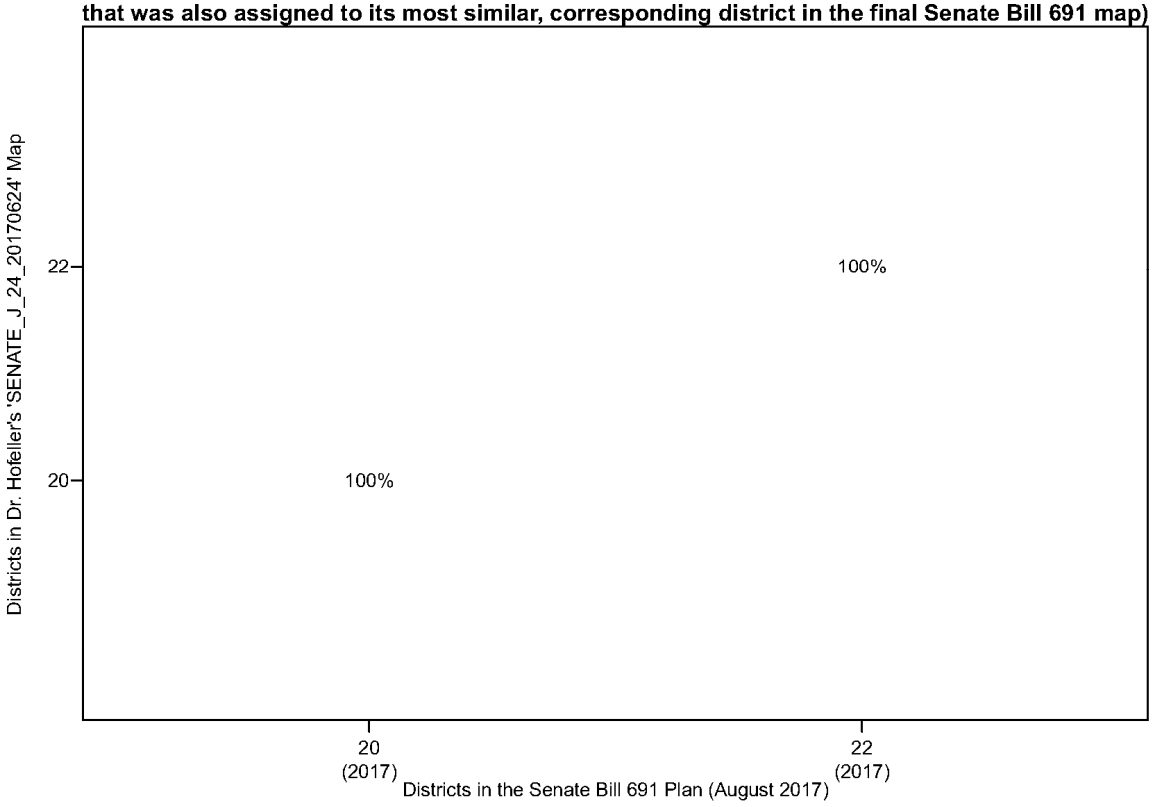
SENATE_J_24_20170624.shp (Hofeller)

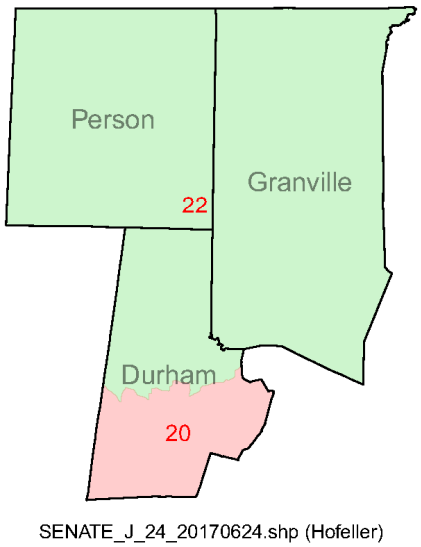
Plaintiffs' Exhibit 144



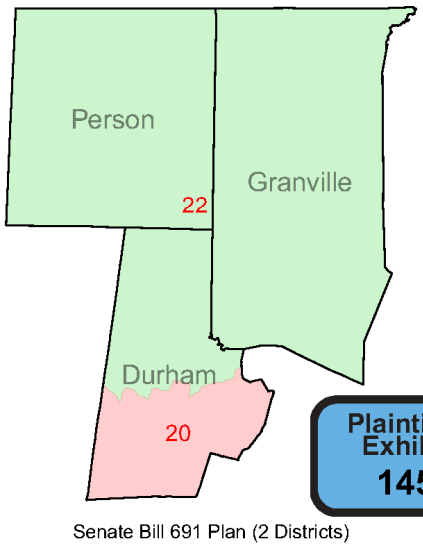
Senate Bill 691 Plan (3 Districts)

Figure 22
Durham−Granville−Person County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_24' districts that was also assigned to its most similar, corresponding district in the final Senate Bill 691 map)





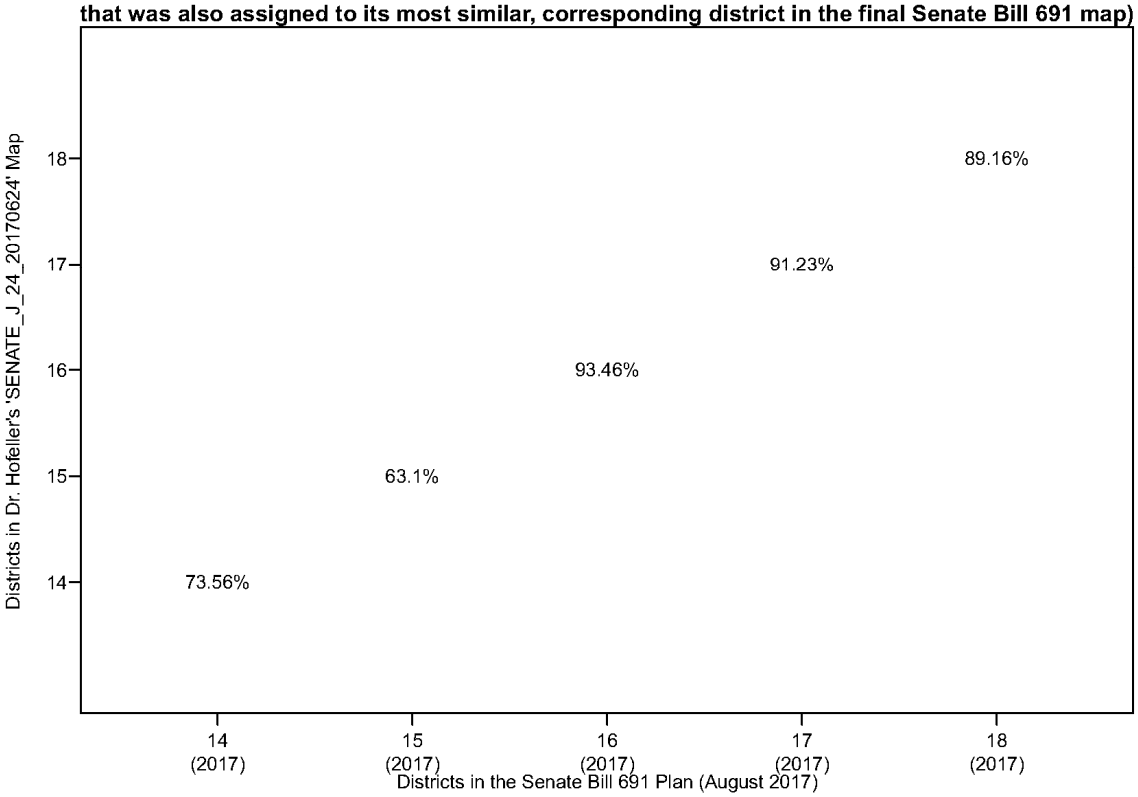
SENATE_J_24_20170624.shp (Hofeller)

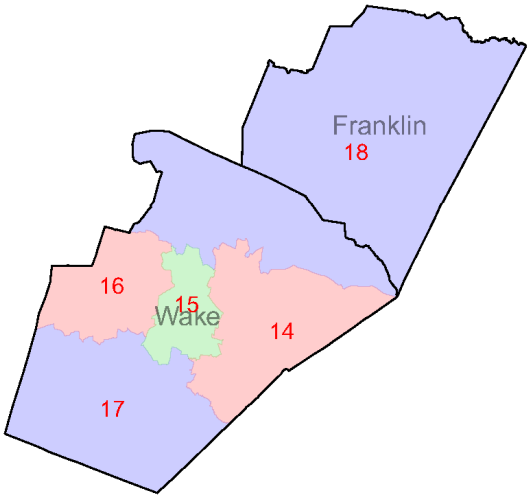


Senate Bill 691 Plan (2 Districts)

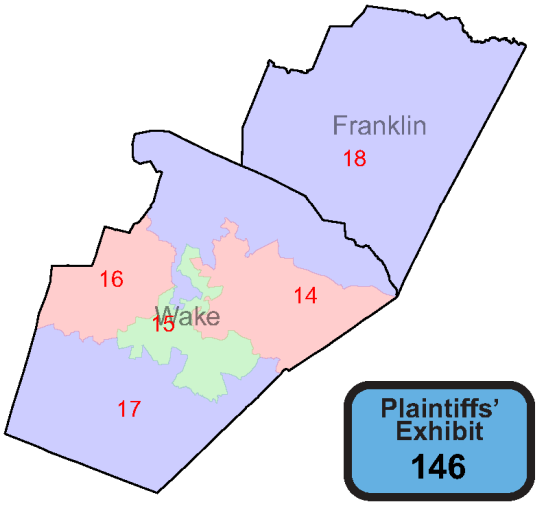
Plaintiffs' Exhibit 145

Figure 23
Franklin–Wake County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_24' districts that was also assigned to its most similar, corresponding district in the final Senate Bill 691 map)





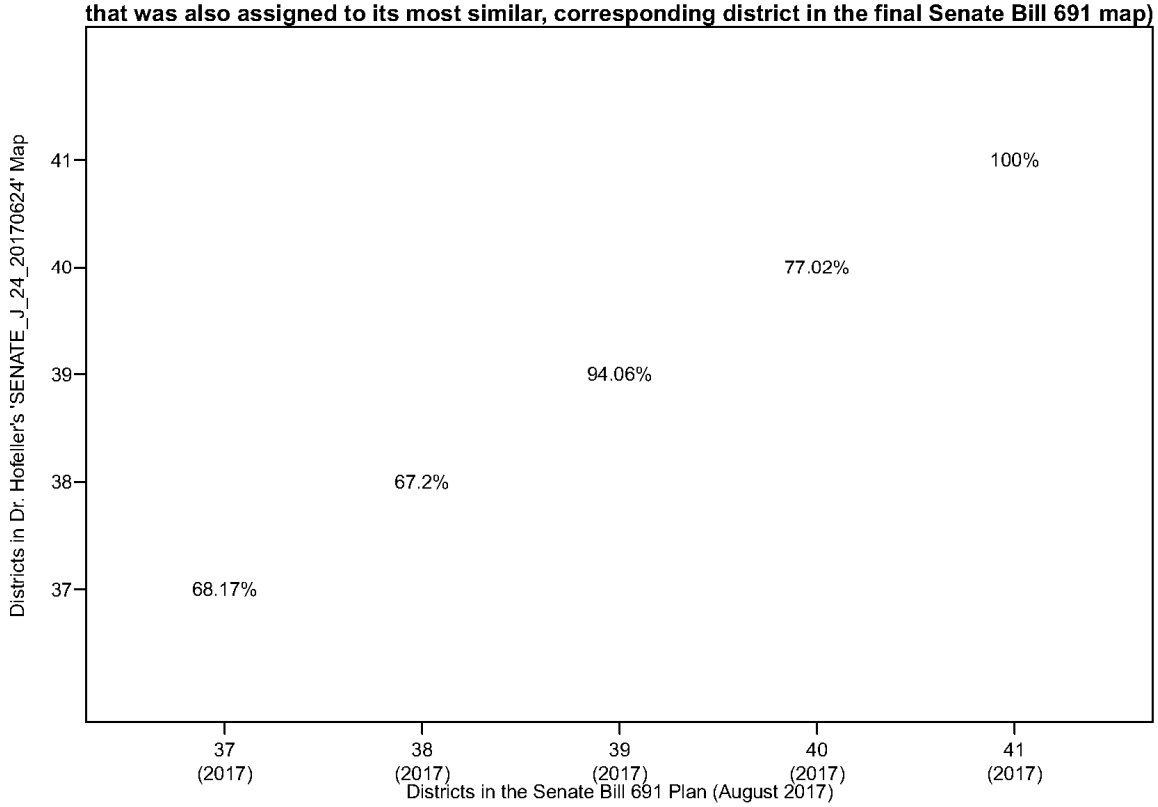
SENATE_J_24_20170624.shp (Hofeller)

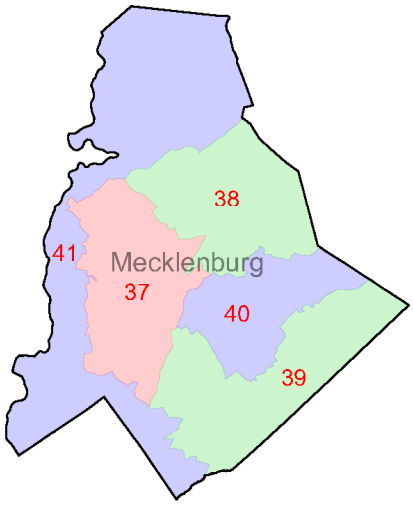


Senate Bill 691 Plan (5 Districts)

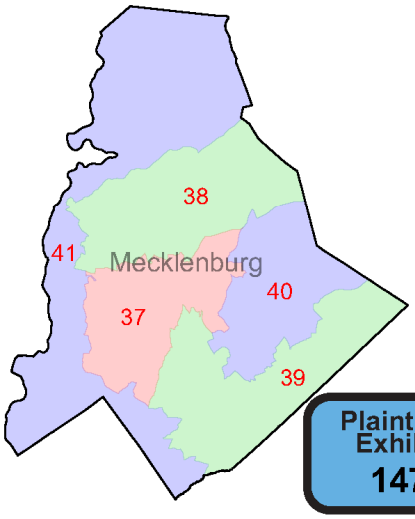
Plaintiffs' Exhibit 146

Figure 24
Mecklenburg County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_24' districts that was also assigned to its most similar, corresponding district in the final Senate Bill 691 map)





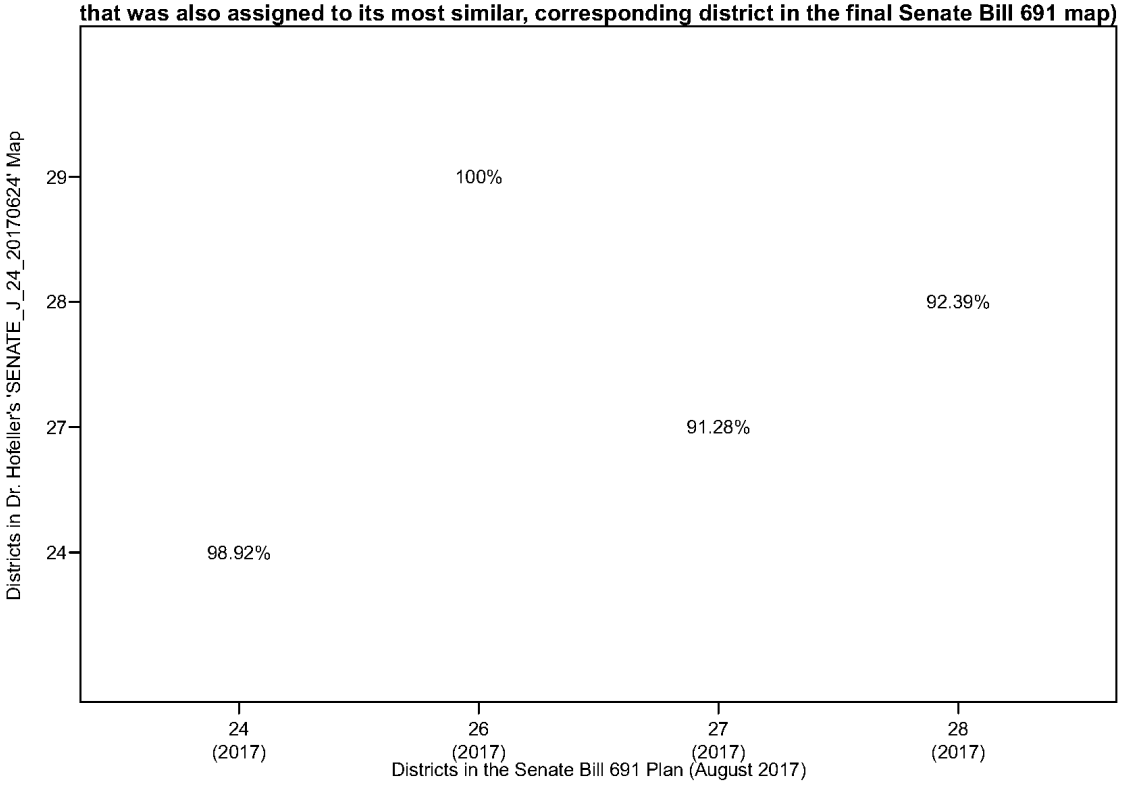
SENATE_J_24_20170624.shp (Hofeller)

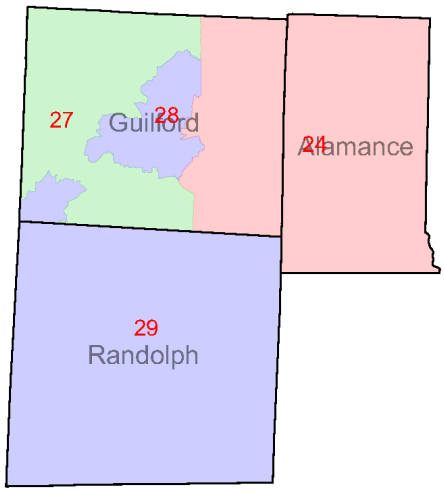


Senate Bill 691 Plan (5 Districts)

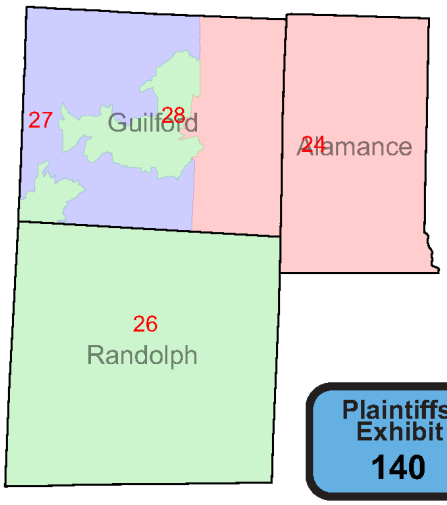
Plaintiffs' Exhibit 147

Figure 17
Alamance–Guilford–Randolph County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_24' districts that was also assigned to its most similar, corresponding district in the final Senate Bill 691 map)





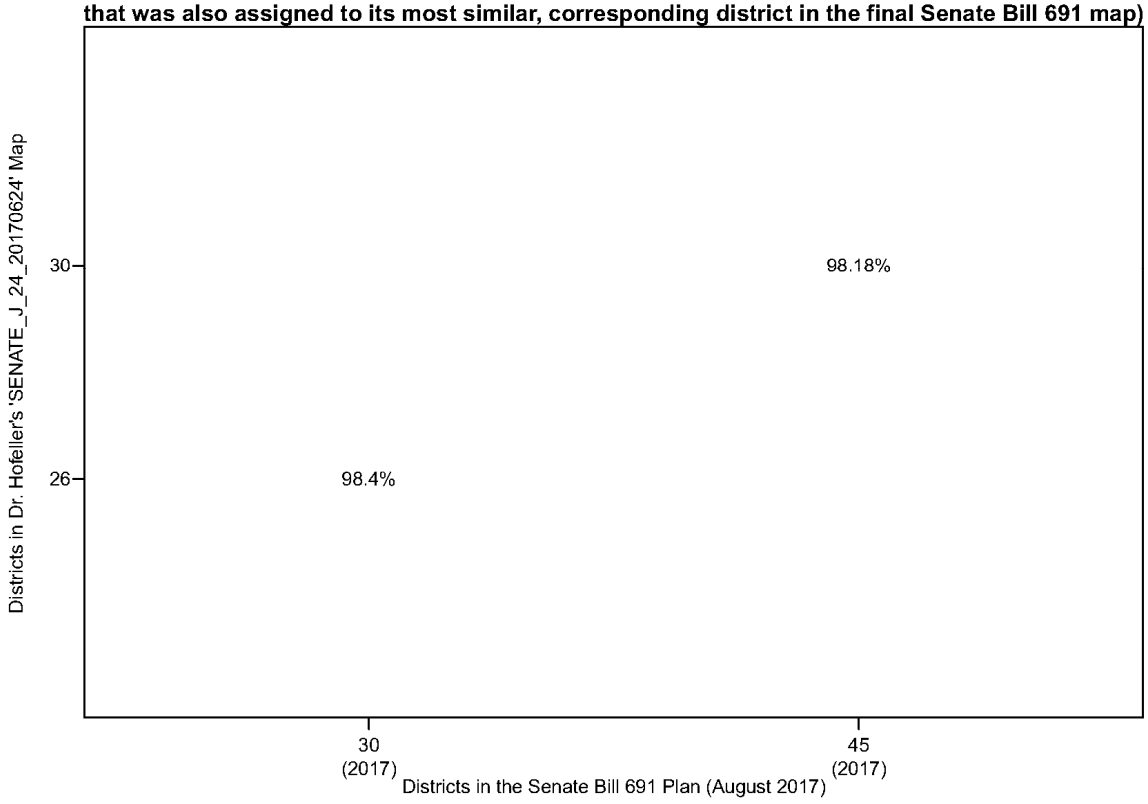
SENATE_J_24_20170624.shp (Hofeller)

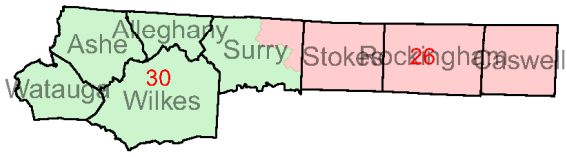


Senate Bill 691 Plan (4 Districts)

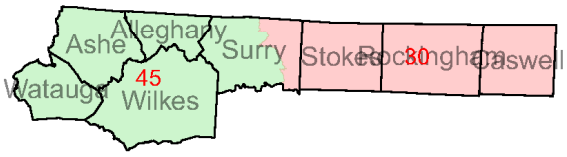
Plaintiffs' Exhibit 140

Figure 18
Alleghany–Ashe–Caswell–Rockingham–Stokes–Surry–Watauga–Wilkes County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_24' districts that was also assigned to its most similar, corresponding district in the final Senate Bill 691 map)





SENATE_J_24_20170624.shp (Hofeller)



Senate Bill 691 Plan (2 Districts)

Plaintiffs' Exhibit 141

700. Based on Dr. Chen's analysis, the Court finds that by June 24, 2017—nearly seven weeks before the Adopted Criteria were passed on August 10, 2017—Dr. Hofeller had fully or at least substantially completed drawing every Senate county grouping redrawn in 2017. Tr. 404:23-417:13. The only Senate districts that were not an over-90% match to their final corresponding districts were a few heavily Democratic districts in Wake and Mecklenburg Counties. Tr. 412:5-414:12; *see* PX146; PX147.

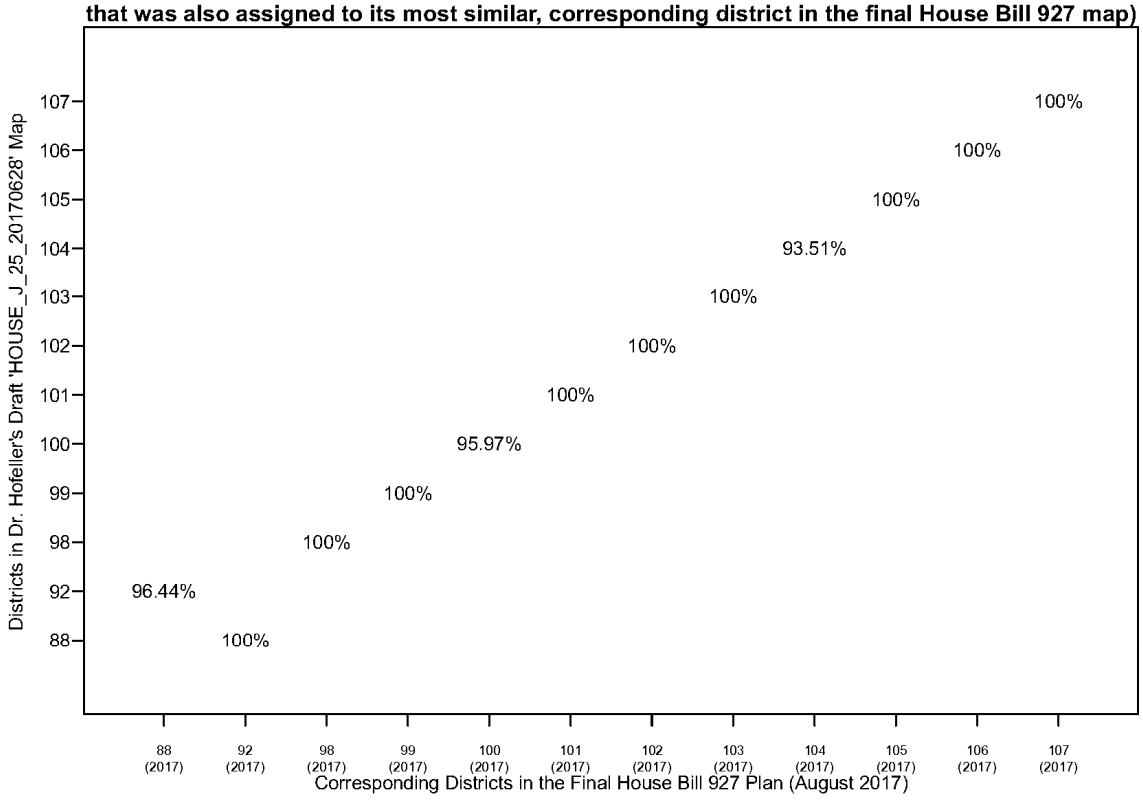
701. Contrary to Legislative Defendants' contention, the North Carolina Constitution's Whole County Provision is not responsible for the high degree of overlap between Dr. Hofeller's draft Senate plan and the final enacted plan. As Dr. Chen testified, the Whole County Provision did not dictate the contours of Senate districts in counties such as Cumberland, Forsyth, Johnston, Durham, Wake, Mecklenburg, and Guilford Counties, and Dr. Hofeller's June 24, 2017 draft districts in these counties distinctly match the final versions. Tr. 408:13-416:1.

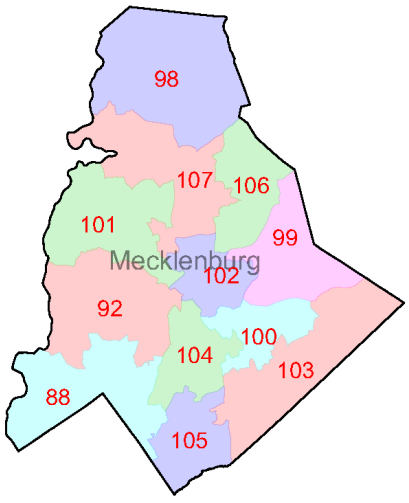
702. As with the Senate, Dr. Chen found—in testimony that stands unrebutted—that Dr. Hofeller had substantially completed drawing the new House plan by June 2017. Analyzing a draft House plan that Dr. Hofeller last modified on June 28, 2017, *see* PX569, Dr. Chen found that Dr. Hofeller had already finished assigning 90.9% of North Carolina's census blocks and 88.2% of the State's population into their final House districts in the June 28, 2017 draft plan. Tr. 401:15-23, 417:14-418:2, PX123 at 2-3 (Chen Rebuttal Report).

703. The figures below show Dr. Chen's analysis comparing Dr. Hofeller's June 28, 2017 draft House map to the final enacted House map for certain House county groupings.

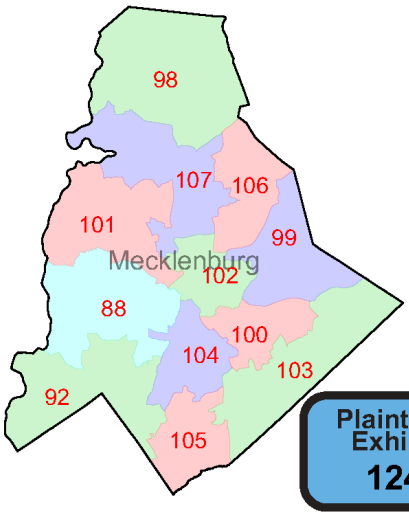
Chen Rebuttal Report Figure 1

Figure 1:
Mecklenburg County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_25' districts that was also assigned to its most similar, corresponding district in the final House Bill 927 map)





HOUSE_J_25_20170628.shp (Hofeller)

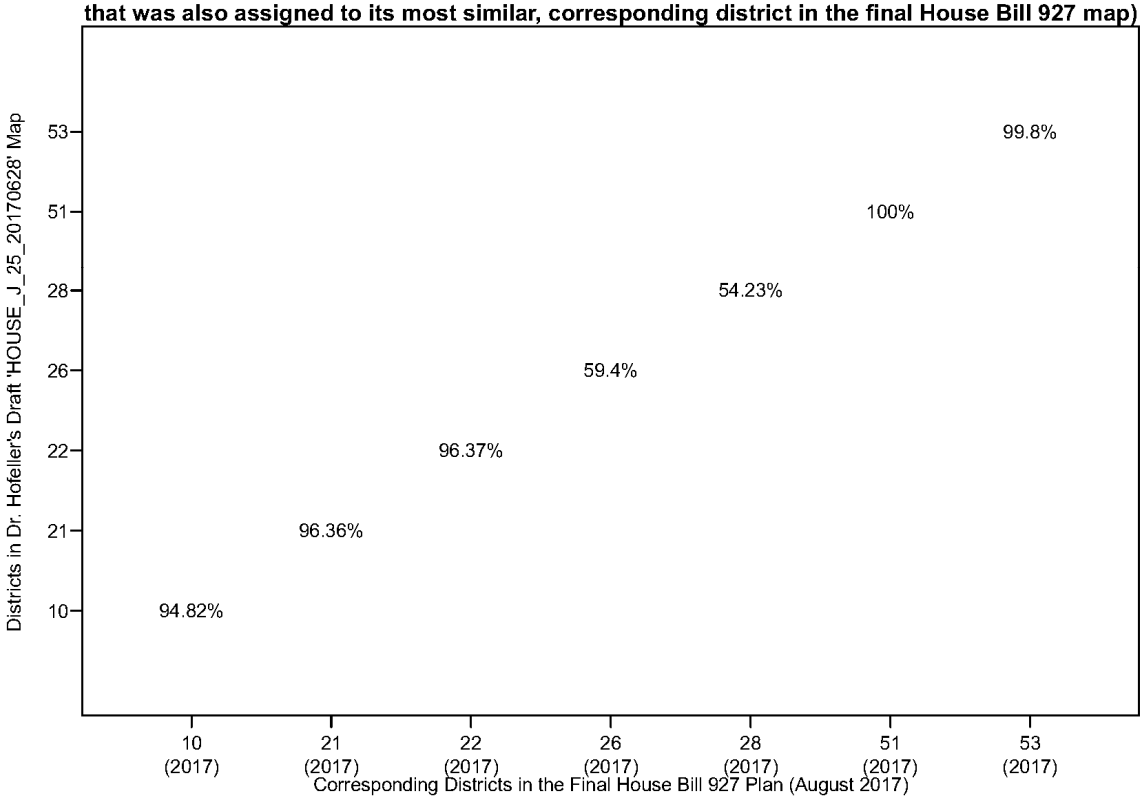


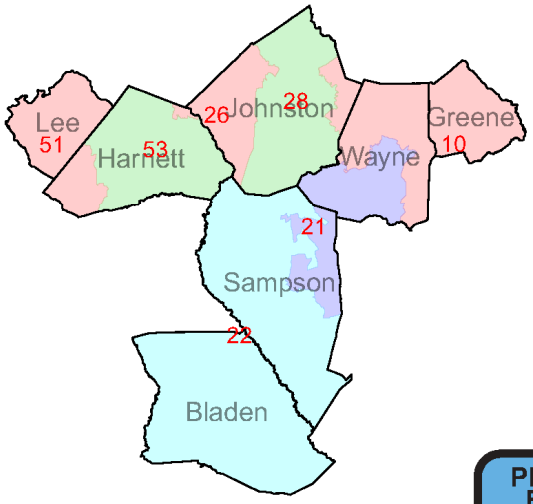
House Bill 927 Plan (12 Districts)

Plaintiffs' Exhibit 124

Chen Rebuttal Report Figure 3

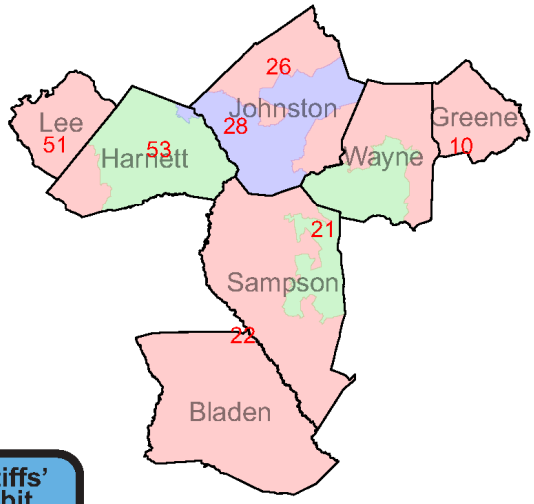
Figure 3:
Bladen−Greene−Harnett−Johnston−Lee−Sampson−Wayne County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_25' districts that was also assigned to its most similar, corresponding district in the final House Bill 927 map)





HOUSE_J_25_20170628.shp (Hofeller)

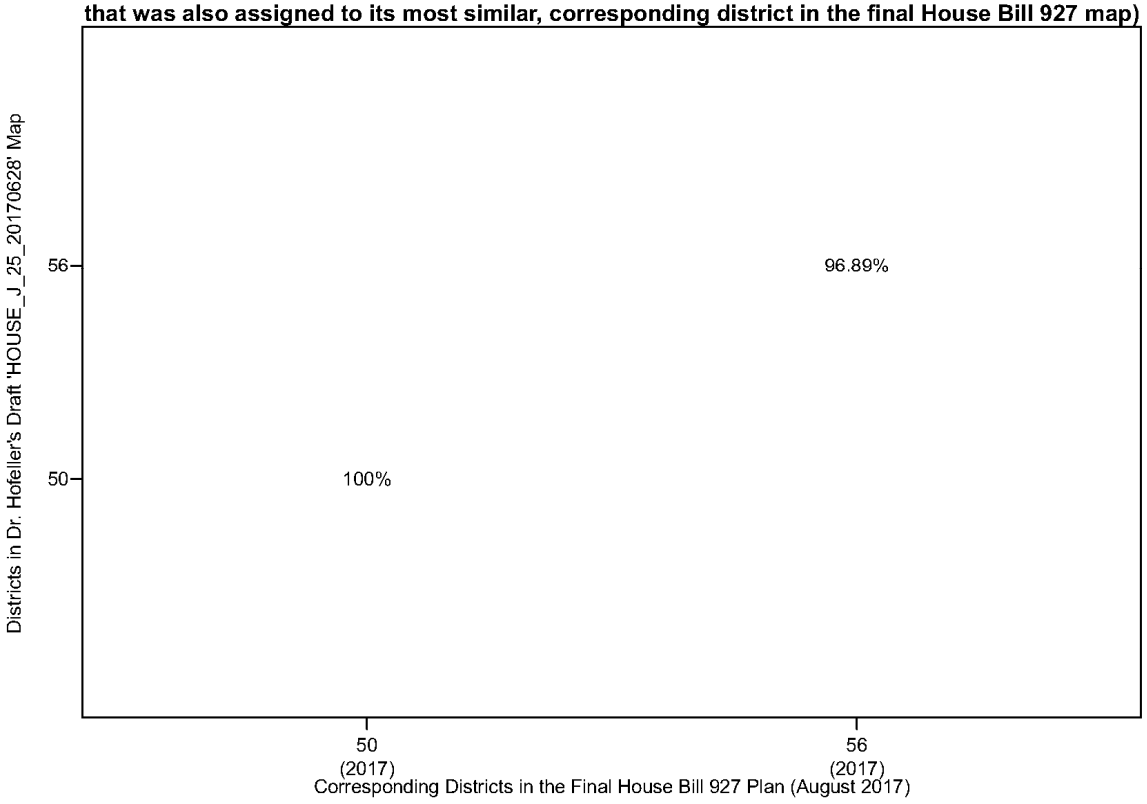
Plaintiffs' Exhibit 126

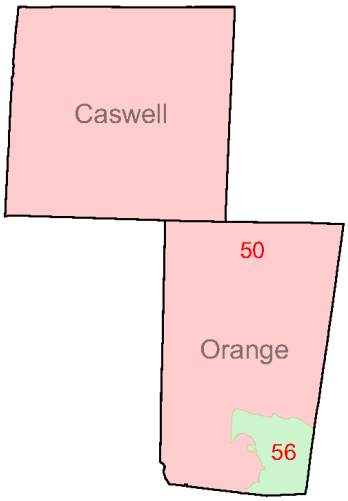


House Bill 927 Plan (7 Districts)

Chen Rebuttal Report Figure 4

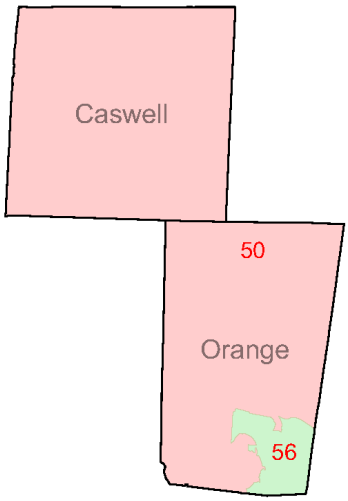
Figure 4:
Caswell−Orange County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_25' districts that was also assigned to its most similar, corresponding district in the final House Bill 927 map)





HOUSE_J_25_20170628.shp (Hofeller)

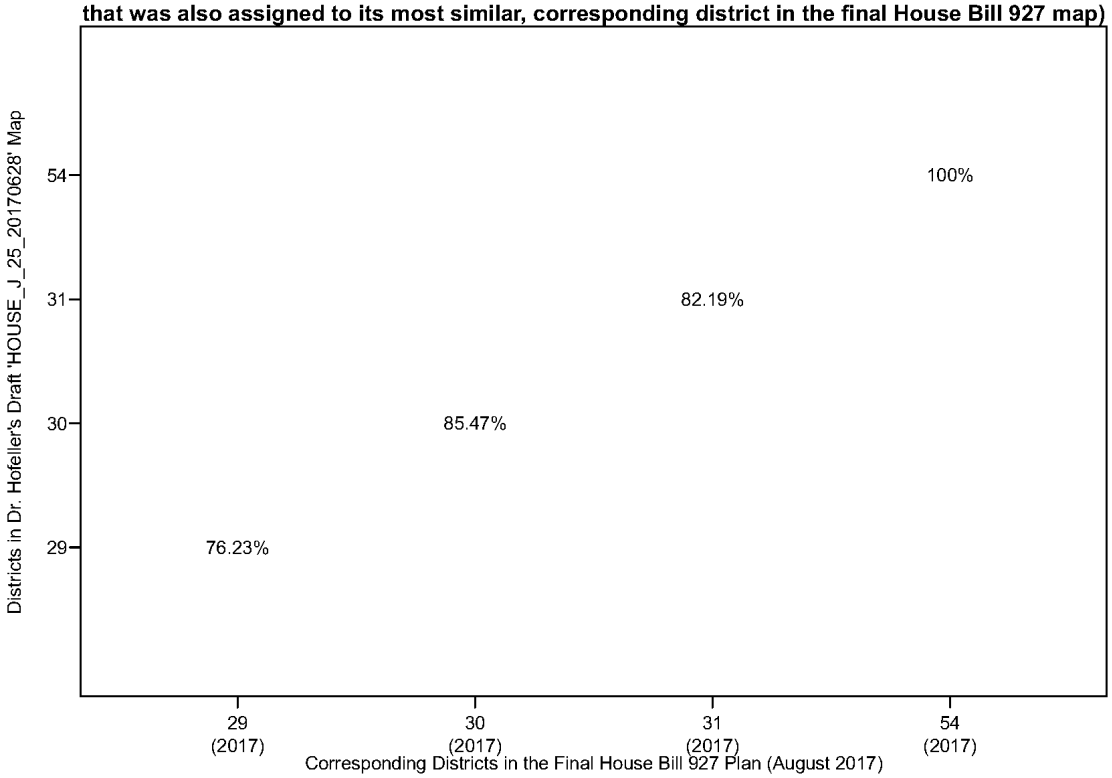
Plaintiffs' Exhibit 127



House Bill 927 Plan (2 Districts)

Chen Rebuttal Report Figure 5

Figure 5:
Chatham−Durham County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_25' districts that was also assigned to its most similar, corresponding district in the final House Bill 927 map)



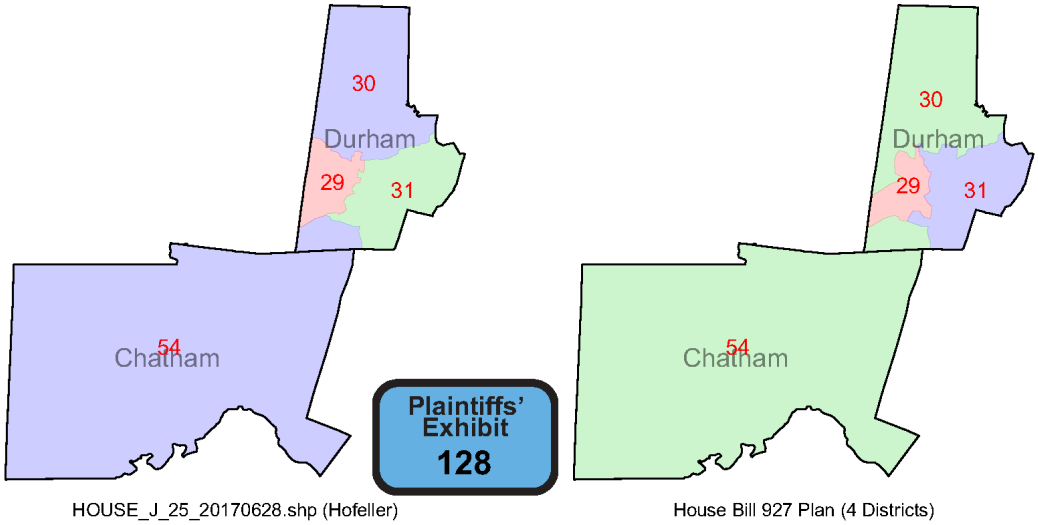
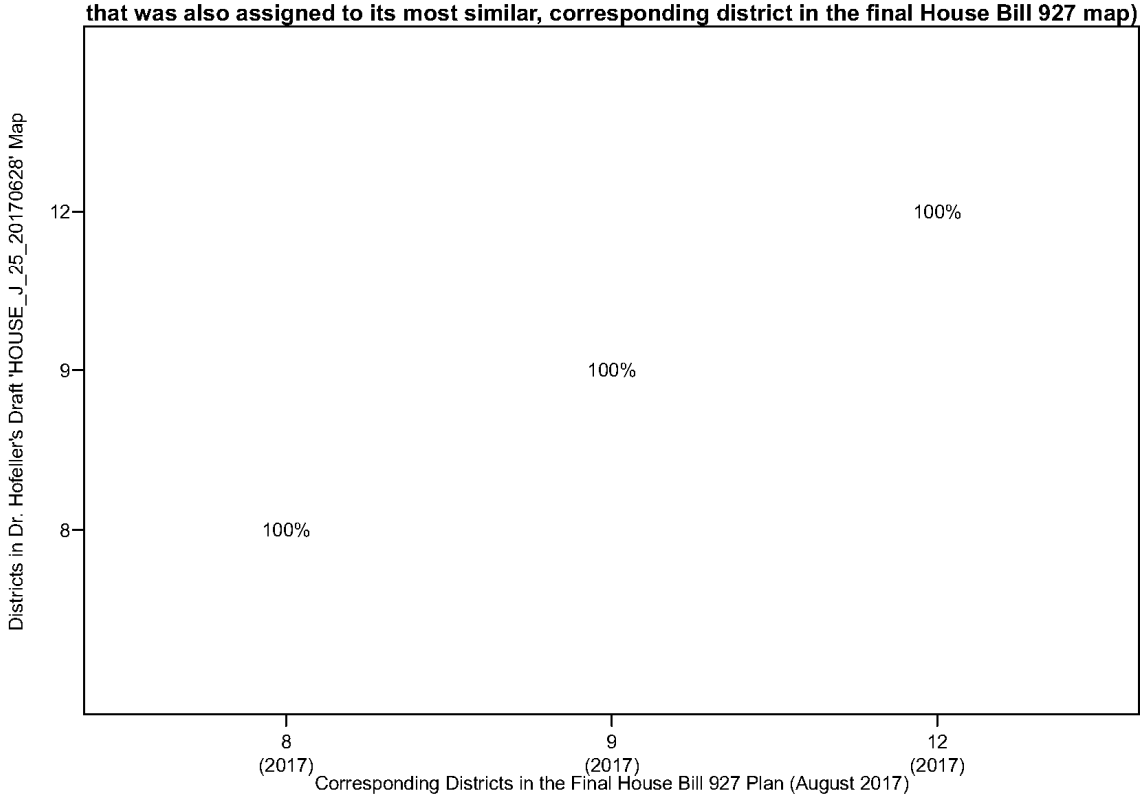
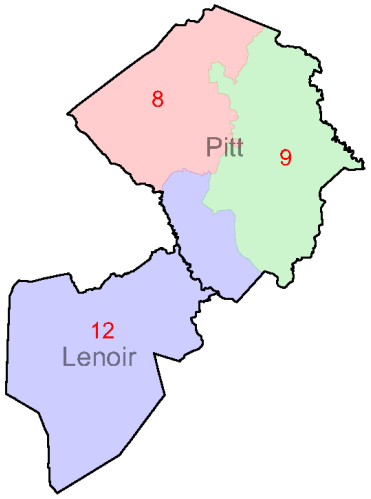
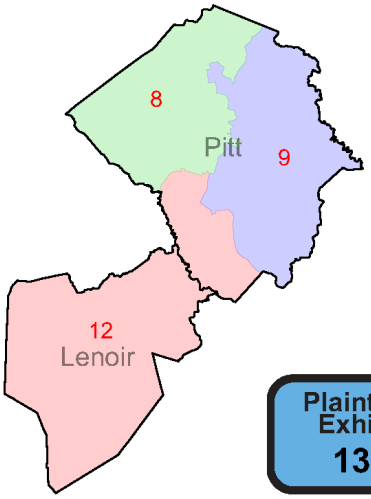


Figure 10:
Lenoir−Pitt County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_25' districts that was also assigned to its most similar, corresponding district in the final House Bill 927 map)





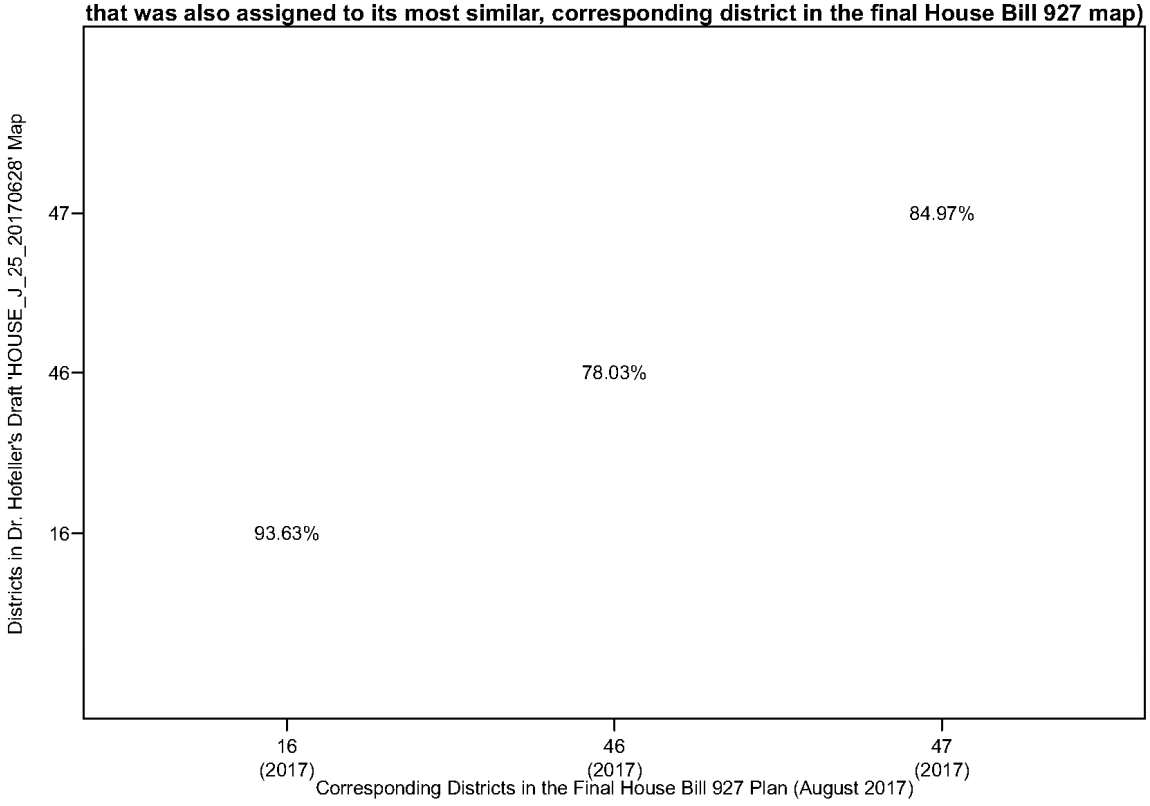
HOUSE_J_25_20170628.shp (Hofeller)

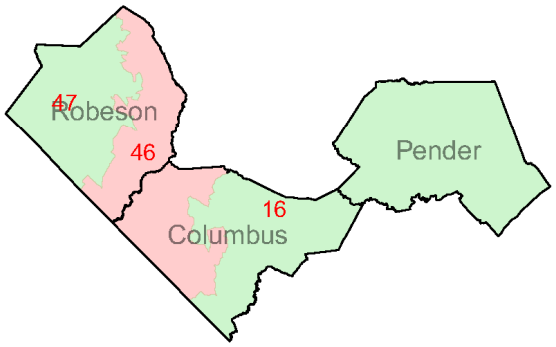


House Bill 927 Plan (3 Districts)

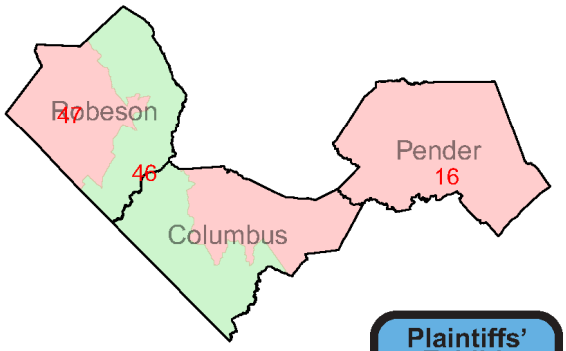
Plaintiffs' Exhibit 133

Figure 6:
Columbus−Pender−Robeson County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_25' districts that was also assigned to its most similar, corresponding district in the final House Bill 927 map)





HOUSE_J_25_20170628.shp (Hofeller)

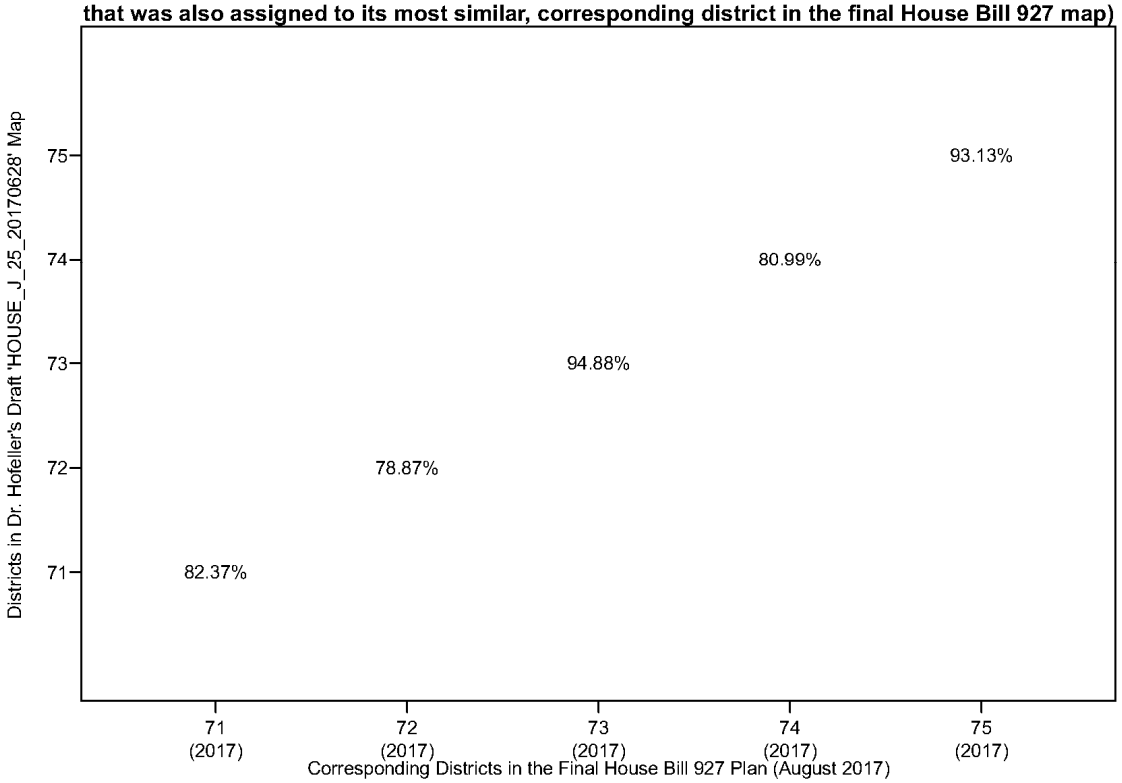


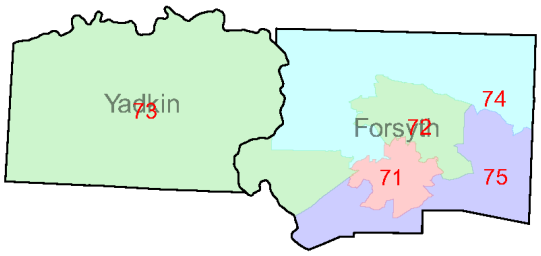
House Bill 927 Plan (3 Districts)

Plaintiffs' Exhibit 129

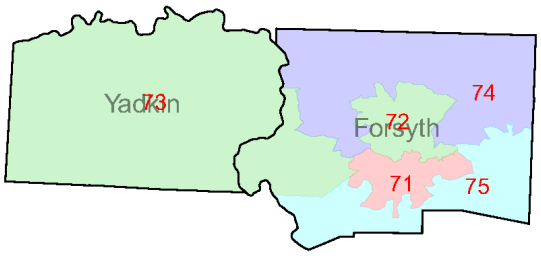
Chen Rebuttal Report Figure 8

Figure 8:
Forsyth−Yadkin County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_25' districts that was also assigned to its most similar, corresponding district in the final House Bill 927 map)





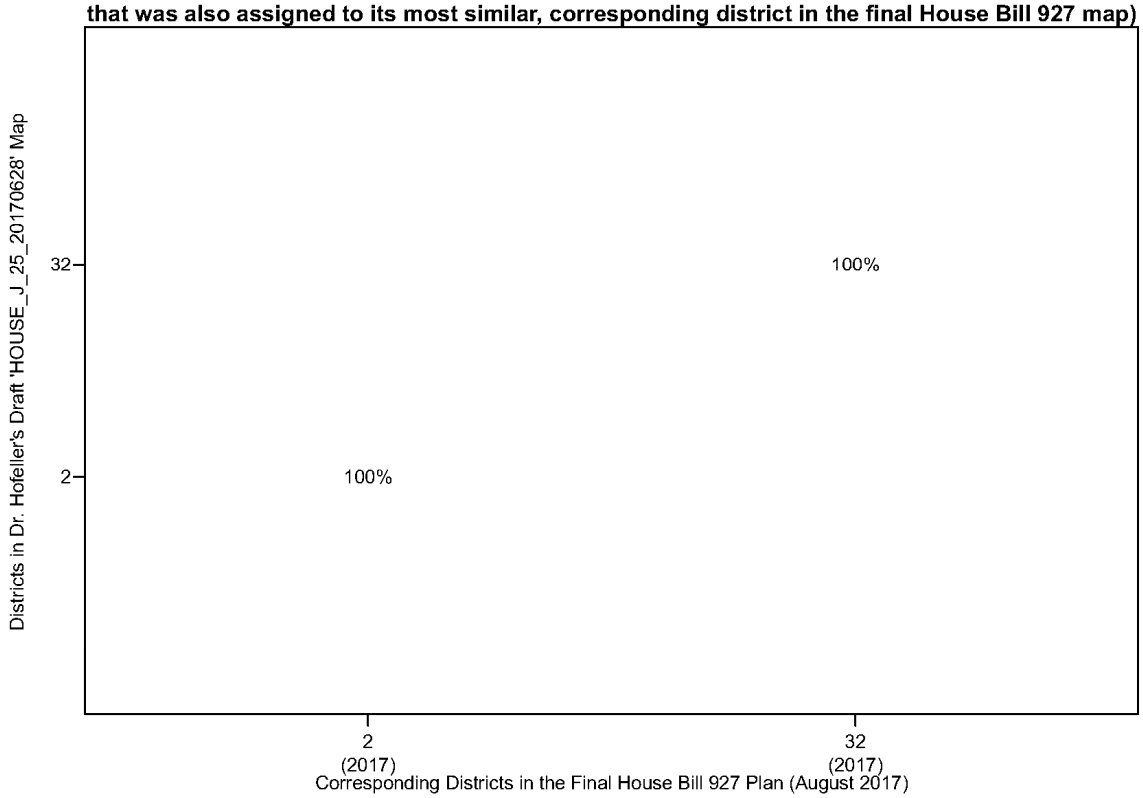
HOUSE_J_25_20170628.shp (Hofeller)

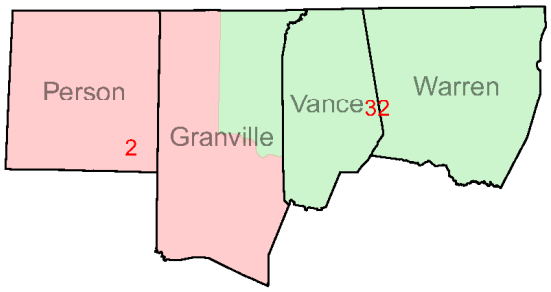


House Bill 927 Plan (5 Districts)

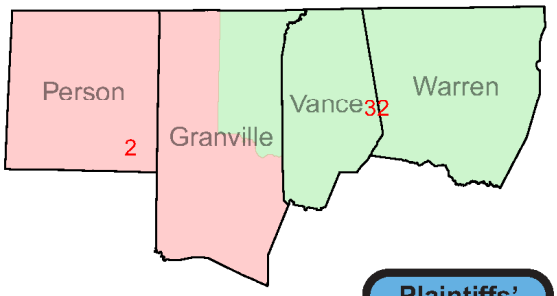
Plaintiffs' Exhibit 131

Figure 9:
Granville−Person−Vance−Warren County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_25' districts that was also assigned to its most similar, corresponding district in the final House Bill 927 map)





HOUSE_J_25_20170628.shp (Hofeller)

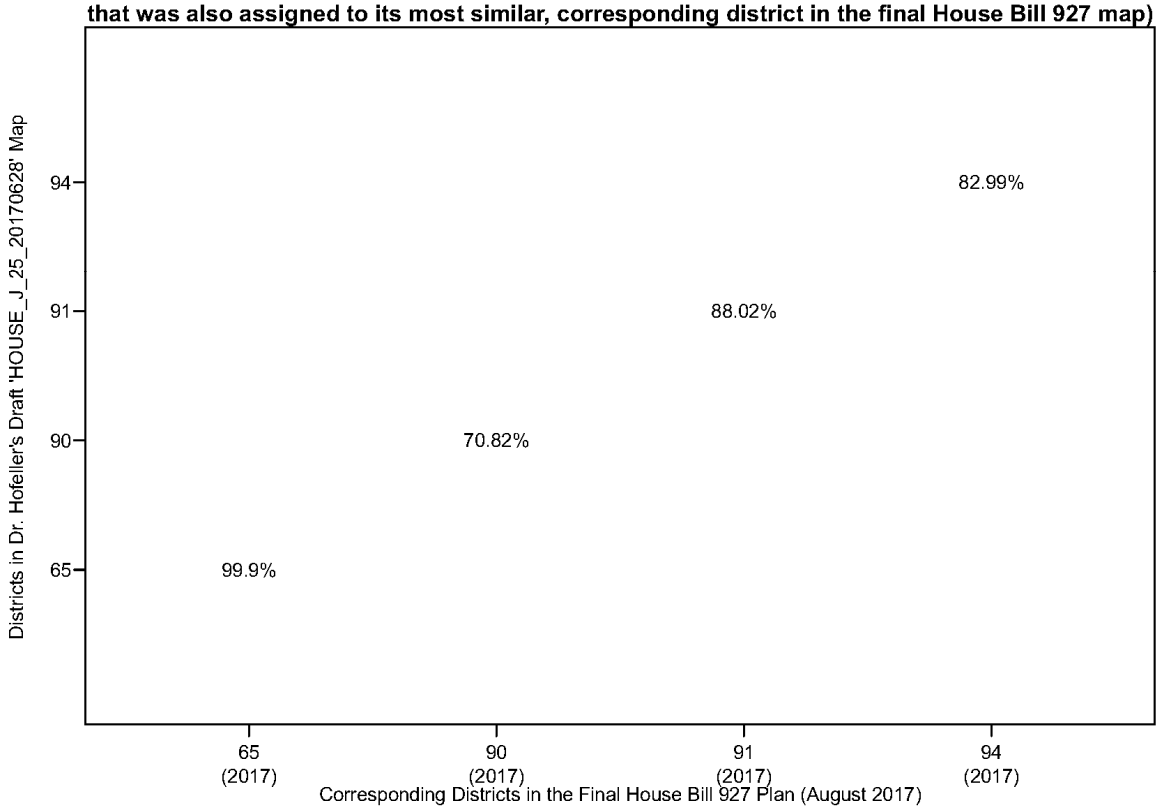


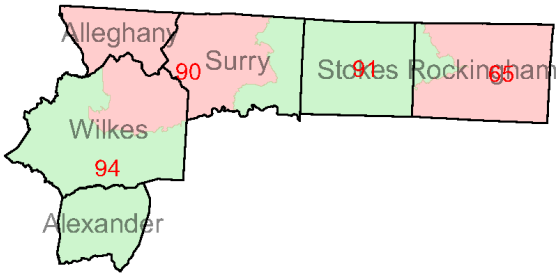
House Bill 927 Plan (2 Districts)

Plaintiffs' Exhibit 132

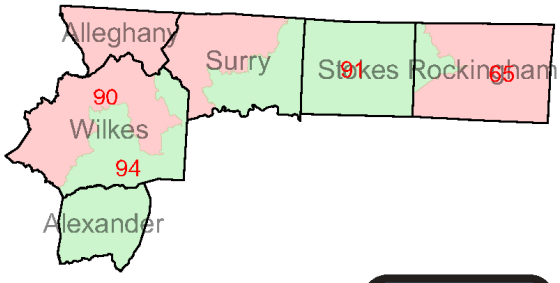
Chen Rebuttal Report Figure 2

Figure 2:
Alexander−Alleghany−Rockingham−Stokes−Surry−Wilkes County Grouping
(Numbers indicate the percentage of population in each of Dr. Hofeller's draft 'J_25' districts that was also assigned to its most similar, corresponding district in the final House Bill 927 map)





HOUSE_J_25_20170628.shp (Hofeller)



House Bill 927 Plan (4 Districts)

Plaintiffs' Exhibit 125

704. Based on Dr. Chen's analysis, the Court finds that by June 28, 2017—over six weeks before the Adopted Criteria were passed—Dr. Hofeller had fully or at least substantially completed drawing numerous House county groupings redrawn in 2017. Tr. 419:12-427:1.

705. Again, contrary to Legislative Defendants' contention, the Whole County Provision is not responsible for the high degree of overlap between Dr. Hofeller's June 28, 2017 draft House plan and the final enacted House plan. Tr. 419:12-427:1. The Whole County Provision does not dictate the contours of House districts in counties such as Mecklenburg, Harnett, Wayne, Sampson, Orange, Durham, Pitt, Robeson, Granville, Forsyth, and Rockingham Counties, and Dr. Hofeller's June 28, 2017 draft House districts in these counties were near-exact matches to the final districts. *Id.*

706. The Court finds Dr. Chen's comparisons of Dr. Hofeller's June 2017 draft plans to the enacted plans to be highly credible and persuasive. Notably, Dr. Chen's analysis stands unrebutted. Legislative Defendants presented testimony from Dr. Douglas Johnson in an attempt to rebut Dr. Chen's analysis, but the Court struck this portion of Dr. Johnson's testimony after Plaintiffs' cross-examination exposed a series of significant errors. Tr. 1988:11-1990:3. Dr. Johnson's analysis inexplicably omitted numerous districts in Dr. Hofeller's June 2017 draft plans that perfectly matched the corresponding final enacted districts. Tr. 1923:5-1933:10. Dr. Johnson admitted that he should have included these missing districts. *Id.* Dr. Johnson also employed a methodology that understated the degree of overlap between the draft and final districts by improperly double-counting people moved from one district to another. Tr. 1942:17-1948:9. Dr. Johnson further admitted that he improperly employed a straight average of district-by-district overlap percentages to calculate his statewide estimates, rather than a weighted average by the population of each district. Tr. 1941:1-1948:9. In light of these errors, the Court

struck all of Dr. Johnson's analysis comparing Dr. Hofeller's draft districts and the final enacted districts. Tr. 1988:11-1990:3.

707. As for Dr. Johnson's remaining criticisms of Dr. Chen's methodology for calculating the overlap between Dr. Hofeller's June 2017 draft plans and the final enacted plans, the Court assigns them no weight. The Court finds that Dr. Chen employed a reasonable methodology to estimate the degree of similarity between the draft and final plans, by simply calculating the percentage of census blocks and population in each draft district that was also assigned to the most closely corresponding district in the final enacted House or Senate plan. *See* Tr. 398:3-399:15. Dr. Chen's methodology and findings also accord with a visual comparison of the draft House and Senate districts to the corresponding final versions. No party has disputed that the maps presented in Plaintiffs' Exhibits 124-133 and 140-147 accurately reflect the district boundaries in Dr. Hofeller's June 2017 draft plans and the final enacted plans.

708. In light of Dr. Chen's analysis and the Court's visual inspection of Dr. Hofeller's June 2017 draft districts, the Court finds that Legislative Defendants made false or materially misleading representations to the *Covington* court and the public. Since Dr. Hofeller's files came to light, Legislative Defendants have asserted that they did not know at the time that Dr. Hofeller was developing draft maps from late 2016 through June 2017. Even if the Court were to credit that assertion (which the Court does not, for reasons stated below), there remain representations by Legislative Defendants that are irreconcilable with the known facts.

709. On August 18, 2017, Representative Lewis represented that Legislative Defendants had been working to draw the plans from scratch since the Adopted Criteria were passed eight days earlier. He reportedly "refuted" that draft plans existed before August 10, 2017, stating if such drafts had existed, he "would have worked a lot less hours this week."

Colin Campbell, *When To Expect New Political Maps from NC Legislature*, Charlotte Observer (Aug. 18, 2017), https://bit.ly/2YnYizn. He said that Legislative Defendants and Dr. Hofeller had "only had the criteria for a week," and he asserted that they were "working as hard as [they] can to draw the maps" in the "amount of time" since the Adopted Criteria were passed. *Id.* Representative Lewis's suggestions that he personally had spent significant time helping to draw new districts from scratch—after passage of the Adopted Criteria on August 10, 2017—was not true. In reality, Dr. Hofeller already had drafts of all of the new districts well before then.

710. Legislative Defendants also made misrepresentations about why they sought a longer remedial timeline to develop the 2017 Plans. Legislative Defendants told the court they wanted sufficient time to "receive public input, engage in internal discussions about the design of remedial districts, prepare draft remedial plans, receive public responses to those draft remedial plans, and incorporate public feedback into the final plans." *Covington*, ECF No. 161 at 2. With respect to the overwhelming majority of districts that were already fully or substantially drawn by June 2017, Legislative Defendants did not "prepare draft remedial plans" for those districts, did not "engage in internal discussions about the design of [the] districts" in any way that affected the districts' boundaries, and did not "incorporate public feedback." *Id.* The Senate plan was virtually finished by June 2017, and the House plan was also substantially complete.

711. The Court thus finds that the public redistricting process undertaken by Legislative Defendants in July and August 2017—including public committee hearings and town halls across the State—was largely a charade. Legislative Defendants introduced no evidence at trial to show otherwise. Legislative Defendants did not produce evidence that a single specific House or Senate district was first drawn after August 10, 2017. They did not point to any aspect of any House or Senate district that resulted from incorporating public feedback.

712. The Court does not credit Legislative Defendants' assertions that they were unaware of the existence of Dr. Hofeller's draft maps throughout the summer of 2017. Dr. Hofeller's work on the 2017 Plans, which was contained in two folders titled "2017 redistricting" and "NC 2017 Redistricting," corresponded exactly to relevant dates in *Covington*:

- Dr. Hofeller first began working on the new plans several days after the *Covington* district court issued its merits decision in August 2016 striking down the prior plans.
- Dr. Hofeller then continued working on the new plans until January 2017 when the U.S. Supreme Court stayed the portion of the district court's order calling for special elections.
- Finally, Dr. Hofeller picked up his work again in early June 2017 when the Supreme Court affirmed on the merits.

Tr. 789:8-792:11. It is not plausible that Dr. Hofeller, who served as a paid expert for Legislative Defendants throughout the *Covington* case, was developing remedial plans for nearly a year, from August 2016 through June 2017, without pay and in his free time.[15]

713. Legislative Defendants' statements about their interactions with Dr. Hofeller further undermine their claim not to have known about his work on draft remedial plans. Legislative Defendants told the *Covington* court that, "[s]hortly following ... July 31, 2017," Representative Lewis and Senator Hise "met with the map drawing consultant, Dr. Hofeller," and "discussed ... [r]edistricting concepts" with him "as leaders made plans to comply with the [*Covington*] Court's Order." *Covington*, ECF No. 192 at 6. Legislative Defendants apparently are now suggesting that Dr. Hofeller never mentioned at this meeting—to discuss "redistricting concepts" for the new plans—that he already substantially finished drawing those new plans. Legislative Defendants suggest that Dr. Hofeller, whom Legislative Defendants have described

[15] While Legislative Defendants have stressed Plaintiffs' failure to produce emails from Dr. Hofeller's files proving that Legislative Defendants were aware of his activities, the storage devices Plaintiffs received in response to their subpoena to Dr. Hofeller's daughter contained email backups only through 2016; the devices do not contain 2017 emails.

as a close friend with whom they worked for many years, withheld this highly pertinent information from Representative Lewis and Senator Hise for some unknown reason. And Legislative Defendants would have it that Dr. Hofeller allowed Legislative Defendants to inaccurately tell the *Covington* court and the public that no drafts remedial plans yet existed, despite Dr. Hofeller knowing that this was not true. None of these propositions are plausible.

714. Legislative Defendants' misrepresentations and omissions constitute serious breaches of the public trust. They also had significance consequences for the governance of this State. By avoiding special elections in 2017, Legislative Defendants were able to maintain their Republican supermajorities in both chambers of the General Assembly for an additional year.

715. The Court additionally finds that, contrary to the claims of certain of Legislative Defendants' experts, Dr. Hofeller was not constrained by the Adopted Criteria in drawing the 2017 Plans. Dr. Hofeller logically could not have been attempting to comply with the Adopted Criteria when drawing the many districts that were either complete or nearly complete by late June 2017, more than six weeks before the Adopted Criteria were passed on August 10, 2017. Tr. 416:21-422:13, 427:2-15; PX123 at 1-2 (Chen Rebuttal Report).

2. Legislative Defendants Made False or Misleading Statements About Dr. Hofeller's Possession and Use of Racial Data

716. Legislative Defendants also made false or misleading statements to the *Covington* court and the public about Dr. Hofeller's possession and consideration of racial data in 2017.

717. One of the Adopted Criteria, titled "No Consideration of Racial Data," provided that "[d]ata identifying the race of individuals or voters shall not be used in the drawing of legislative districts in the 2017 House and Senate plans." PX588.

718. Legislative Defendants clarified this criterion in a series of statements at committee hearings, repeatedly asserting that Dr. Hofeller did not possess or review racial data:

- At an August 24, 2017 hearing, Senator Hise stated: "Race was not part of the database. It could not be calculated on the system." PX606 at 102; *see* Tr. 428:18-429:6.

- Senator Hise further asserted at the August 24, 2017 hearing: "[W]e have not had and do not have racial data on any of these districts." PX606 at 66.

- Representative Lewis stated at an August 25, 2017 hearing: "There was no racial data reviewed in the preparation of this map." PX605 at 20.

719. Legislative Defendants made even more unequivocal statements about Dr. Hofeller's possession and use of racial data to the *Covington* district court:

- In a September 22, 2017 filing, Legislative Defendants wrote: "[D]ata regarding the race of voters was not used in the drawing of the districts, and, in fact, was not even loaded into the computer used by the map drawer to construct the districts." *Covington*, ECF No. 192 at 28; *see* Tr. 429:11-21.

- At an October 15, 2017 hearing, Legislative Defendants' counsel said: "There is no evidence, none whatsoever, that Dr. Hofeller used race predominantly, that he looked at any data, that any knowledge he had was used to specifically identify high BVAP precincts and put them all together." Chen Demonstrative D-1 at 84:2-4; Tr. 448:12-15.

- Legislative Defendants' counsel likewise told the court at the October 15, 2017 hearing that Dr. Hofeller "ignored the racial data." Chen Demonstrative D-1 at 85:9-14.

720. Legislative Defendants made similar representations to the U.S. Supreme Court, repeatedly stating that "the 2017 Plan was drawn without any consideration of race." Emergency App. For Stay at 1, 16, 25, *Covington*, No. 17A790 (U.S. Jan. 24, 2018).

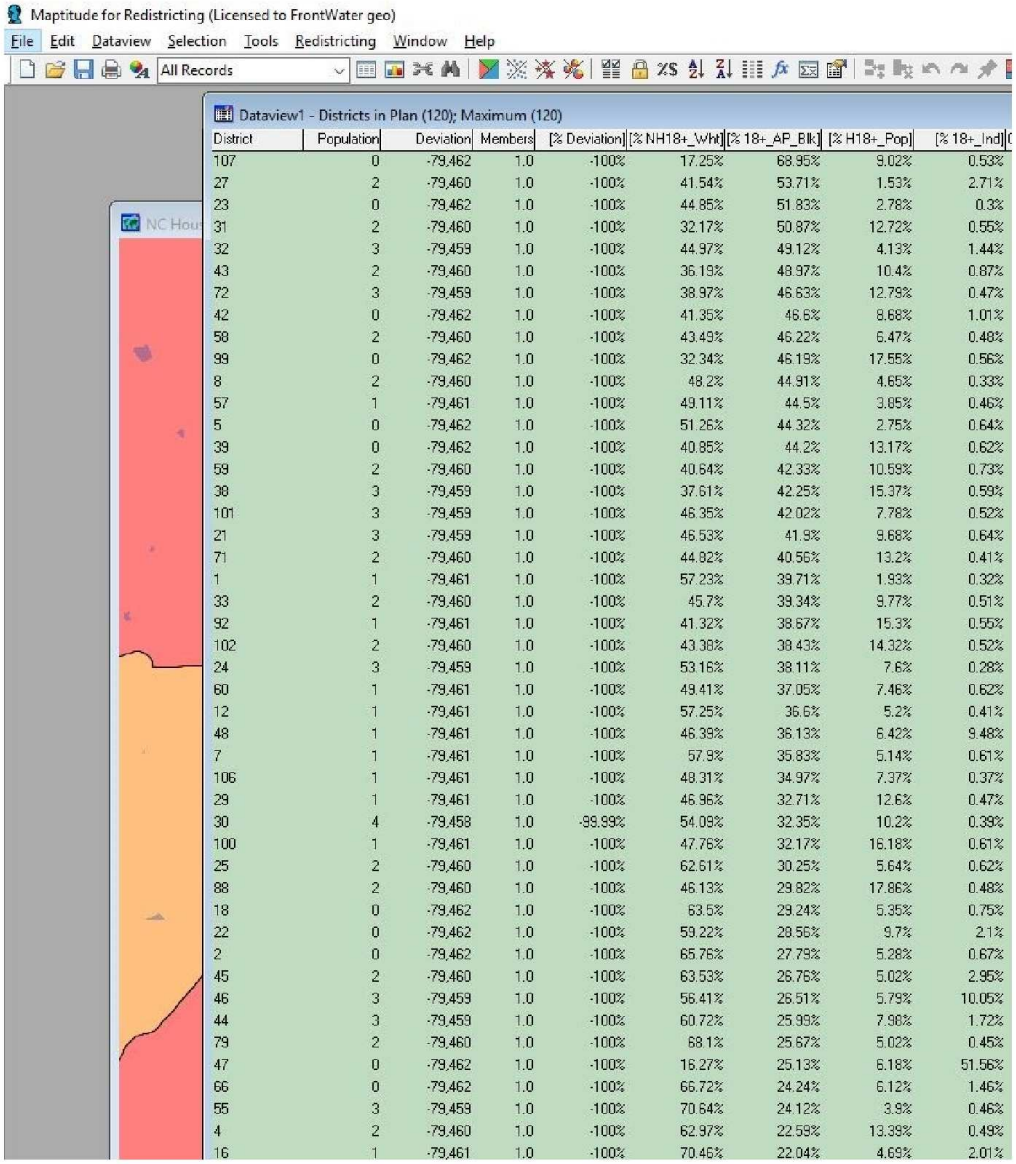
721. These representations by Legislative Defendants were untrue. Based on an analysis of Dr. Hofeller's files, Dr. Chen established that Dr. Hofeller did possess and review racial data on the new districts as he was drawing them.

722. Every one of Dr. Hofeller's Maptitude files from July to August 2017 that Dr. Chen analyzed had data on the racial composition of the draft districts. Tr. 446:6-447:6. In total, Dr. Chen analyzed six Maptitude files that Dr. Hofeller last modified between July and August 2017 that had racial data on the draft districts. *Id.*; *see* PX123 at 39, 45, 47 (Chen Rebuttal

Report). Dr. Chen also analyzed a Microsoft Excel file from August 3, 2017 in which Dr. Hofeller had data on the racial composition of draft Senate districts. Tr. 447:7-20; PX123 at 47.

723. Dr. Hofeller not only possessed racial data on the draft districts, but displayed the data on his screen. In a draft House plan that Dr. Hofeller last modified on August 14, 2017—four days after passage of the Adopted Criteria prohibiting the use of racial data—Dr. Hofeller sorted the districts from highest to lowest in terms of the African-American percentage of the voting age population ("BVAP") of each district. Tr. 435:10-437:14; PX123 at 39-45 (Chen Rebuttal Report); PX570 (showing "last modified" date). Plaintiffs' Exhibit 148 is a screenshot of the "Dataview" window that shows Dr. Hofeller's sorting of districts based on racial composition; this screenshot reflects exactly how the "Dataview" window would have appeared when Dr. Hofeller last closed this file on August 14, 2017. Tr. 435:10-437:14; PX123 at 39-45. Plaintiffs' Exhibit 149, reproduced below, is a zoom-in of the portions of this "Dataview" window that contain Dr. Hofeller's sorting of districts based on race, with the column titled "% 18+_AP_Blk" reporting the BVAP of each draft district, from highest to lowest. *Id.*

Figure 26: Screenshot of Dataview Window For Dr. Hofeller's "NC House J-25003.bak.zip" Draft Plan (August 14, 2017)



Maptitude for Redistricting (Licensed to FrontWater geo)

File Edit Dataview Selection Tools Redistricting Window Help

All Records

Dataview1 - Districts in Plan (120); Maximum (120)

District	Population	Deviation	Members	[% Deviation]	[% NH18+_Wht]	[% 18+_AP_Blk]	[% H18+_Pop]	[% 18+_Ind]
107	0	-79,462	1.0	-100%	17.25%	68.95%	9.02%	0.53%
27	2	-79,460	1.0	-100%	41.54%	53.71%	1.53%	2.71%
23	0	-79,462	1.0	-100%	44.85%	51.83%	2.78%	0.3%
31	2	-79,460	1.0	-100%	32.17%	50.87%	12.72%	0.55%
32	3	-79,459	1.0	-100%	44.97%	49.12%	4.13%	1.44%
43	2	-79,460	1.0	-100%	36.19%	48.97%	10.4%	0.87%
72	3	-79,459	1.0	-100%	38.97%	46.63%	12.79%	0.47%
42	0	-79,462	1.0	-100%	41.35%	46.6%	8.68%	1.01%
58	2	-79,460	1.0	-100%	43.49%	46.22%	6.47%	0.48%
99	0	-79,462	1.0	-100%	32.34%	46.19%	17.55%	0.56%
8	2	-79,460	1.0	-100%	48.2%	44.91%	4.65%	0.33%
57	1	-79,461	1.0	-100%	49.11%	44.5%	3.85%	0.46%
5	0	-79,462	1.0	-100%	51.26%	44.32%	2.75%	0.64%
39	0	-79,462	1.0	-100%	40.85%	44.2%	13.17%	0.62%
59	2	-79,460	1.0	-100%	40.64%	42.33%	10.59%	0.73%
38	3	-79,459	1.0	-100%	37.61%	42.25%	15.37%	0.59%
101	3	-79,459	1.0	-100%	46.35%	42.02%	7.76%	0.52%
21	3	-79,459	1.0	-100%	46.53%	41.9%	9.68%	0.64%
71	2	-79,460	1.0	-100%	44.82%	40.56%	13.2%	0.41%
1	1	-79,461	1.0	-100%	57.23%	39.71%	1.93%	0.32%
33	2	-79,460	1.0	-100%	45.7%	39.34%	9.77%	0.51%
92	1	-79,461	1.0	-100%	41.32%	38.67%	15.3%	0.55%
102	2	-79,460	1.0	-100%	43.38%	38.43%	14.32%	0.52%
24	3	-79,459	1.0	-100%	53.16%	38.11%	7.6%	0.28%
60	1	-79,461	1.0	-100%	49.41%	37.05%	7.46%	0.62%
12	1	-79,461	1.0	-100%	57.25%	36.6%	5.2%	0.41%
48	1	-79,461	1.0	-100%	46.39%	36.13%	8.42%	9.48%
7	1	-79,461	1.0	-100%	57.9%	35.83%	5.14%	0.61%
106	1	-79,461	1.0	-100%	48.31%	34.97%	7.37%	0.37%
29	1	-79,461	1.0	-100%	46.96%	32.71%	12.6%	0.47%
30	4	-79,458	1.0	-99.99%	54.09%	32.35%	10.2%	0.39%
100	1	-79,461	1.0	-100%	47.76%	32.17%	16.18%	0.61%
25	2	-79,460	1.0	-100%	62.61%	30.25%	5.64%	0.62%
88	2	-79,460	1.0	-100%	46.13%	29.82%	17.86%	0.48%
18	0	-79,462	1.0	-100%	63.5%	29.24%	5.35%	0.75%
22	0	-79,462	1.0	-100%	59.22%	28.56%	9.7%	2.1%
2	0	-79,462	1.0	-100%	65.76%	27.79%	5.28%	0.67%
45	2	-79,460	1.0	-100%	63.53%	26.76%	5.02%	2.95%
46	3	-79,459	1.0	-100%	56.41%	26.51%	5.79%	10.05%
44	3	-79,459	1.0	-100%	60.72%	25.99%	7.96%	1.72%
79	2	-79,460	1.0	-100%	68.1%	25.67%	5.02%	0.45%
47	0	-79,462	1.0	-100%	16.27%	25.13%	6.18%	51.56%
66	0	-79,462	1.0	-100%	66.72%	24.24%	6.12%	1.46%
55	3	-79,459	1.0	-100%	70.64%	24.12%	3.9%	0.46%
4	2	-79,460	1.0	-100%	62.97%	22.59%	13.39%	0.49%
16	1	-79,461	1.0	-100%	70.46%	22.04%	4.69%	2.01%

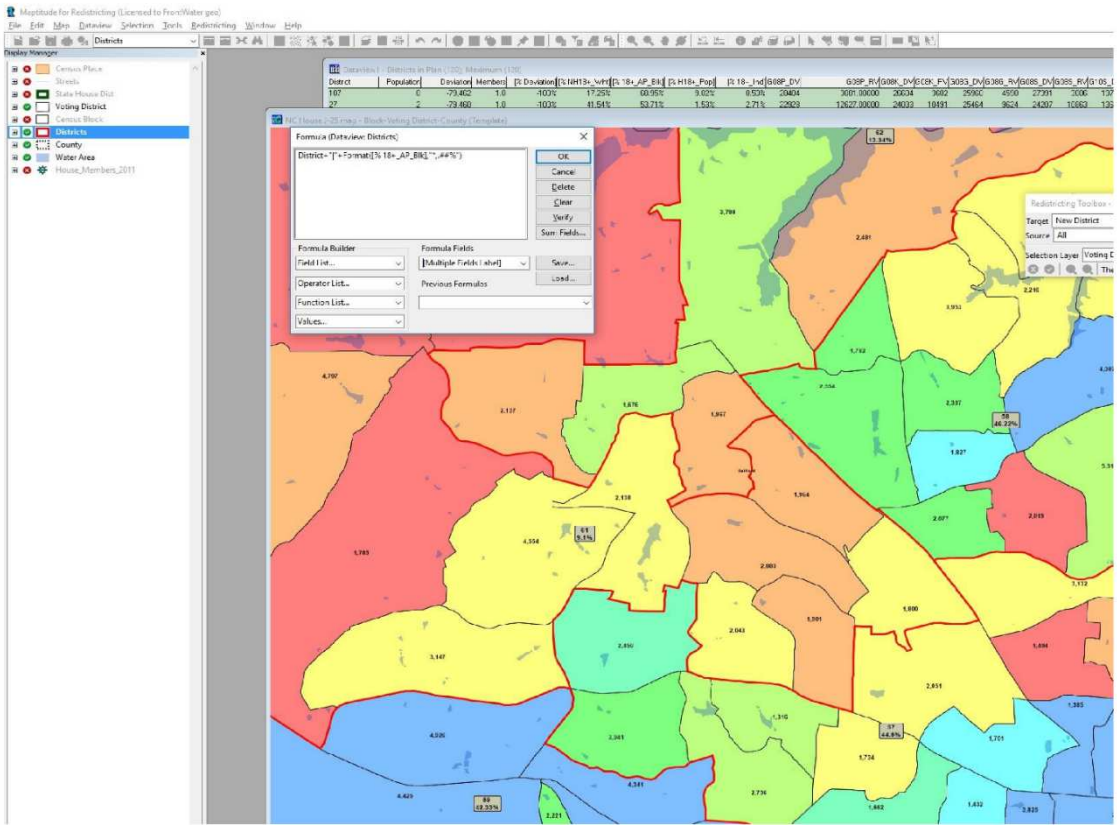
724. Dr. Chen found the same sorting of districts from highest to lowest BVAP in a draft Senate plan that Dr. Hofeller last modified on August 13, 2017, three days after passage of the Adopted Criteria. Tr. 443:11-445:20; PX123 at 45-46; PX571; PX152.

725. Dr. Chen explained in unrebutted testimony that Maptitude does not automatically sort districts based on BVAP in this manner, meaning that Dr. Hofeller manually sorted and

displayed the draft House and Senate districts from highest to lowest BVAP even after passage of the Adopted Criteria prohibiting consideration of race. Tr. 437:24-438:11, 445:21-24.

726. For the draft House plan last modified on August 14, 2017, Dr. Hofeller also manually displayed the BVAP of each district in labels on the map itself. In Plaintiffs' Exhibit 150, which depicts exactly how the draft districts and labels appeared when Dr. Hofeller last closed this file, Dr. Hofeller displayed in each gray box the district number and the BVAP of the draft district. Tr. 438:13-441:12; PX150; PX123 at 40, 43 (Chen Rebuttal Report).

Figure 27:
Screenshot of "Formula" Window and District Labels For Dr. Hofeller's "NC House J-25003.bak.zip" Draft Plan (August 14, 2017)



727. The August 14, 2017 draft House plan contained such BVAP labels for each of the 120 draft House districts. Tr. 442:2-16; PX123 at 40, 44; PX151.

728. Dr. Chen explained in unrebutted testimony that presenting the BVAP of each district in the district labels on the "Map window" is not something that Maptitude does automatically, meaning that Dr. Hofeller did this manually. Tr. 441:15-23.

729. The evidence refutes any suggestion that Dr. Hofeller's racial sorting and labels was a vestige of some prior work pre-dating the 2017 redistricting. An earlier version of the same Maptitude file depicted above—which was backed up a week earlier on August 7, 2017—does not contain map labels reporting the BVAP of the draft districts. Tr. 1963:1-1967:4; *compare* PX552 and PX344 *with* PX570 and PX150. This means that Dr. Hofeller added those BVAP labels between August 7 and 14, 2017, precisely around the time when the Adopted Criteria barring consideration of racial data was passed on August 10, 2017. *Id.*

730. The Court finds that Legislative Defendants' statements to the *Covington* court and the public about Dr. Hofeller's consideration of racial data were not accurate. It is not true that Dr. Hofeller never "looked at any [racial] data" and "ignored the racial data," as Legislative Defendants' counsel represented to the court at an October 2017 hearing. Chen Demonstrative D-1 at 84:2-85:14; Tr. 448:12-20. It is not true, as Legislative Defendants told the court in a September 2017 filing, that "data regarding the race of voters ... was not even loaded into the computer used by the map drawer to construct the districts." *Covington*, ECF No. 192 at 28. And contrary to Legislative Defendants' statements at public hearings, race was "part of the database" and "reviewed in preparation of [the 2017 Plans]." PX606 at 102; PX605 at 20.

731. The Court further finds that Legislative Defendants made inaccurate statements to the *Covington* court regarding Dr. Hofeller's reliance on the prior 2011 Plans as the starting point for drawing the 2017 Plans. At the October 2017 hearing in *Covington*, Legislative Defendants repeatedly insisted that Dr. Hofeller did not use the prior, racially gerrymandered plans as a

starting or reference point for the new remedial plans. For instance, Judge Wynn asked Legislative Defendants' counsel at the hearing: "in drawing the present maps, to what extent did the map drawers look at the maps that we found to be unconstitutional?" Chen Demonstrative D-1 at 78:15-17; Tr. 443:14-21. Legislative Defendants' counsel answered:

> [T]hey did not look at them. They weren't on the map drawer's computer. Obviously everybody knows what those districts look like in general, but they were not expressly used to actually draw the maps. I mean, basically, *the map drawer started with a clean slate*.

Chen Demonstrative D-1 at 78:18-22 (emphasis added); Tr. 444:1-6.

732. Dr. Chen explained in unrebutted testimony that this representation was not accurate. Based on the "Properties" tab in the Maptitude files containing Dr. Hofeller's draft plans, Dr. Chen opined that the starting points for the draft House and Senate plans were the final 2011 House and Senate Plans that had been struck down by the *Covington* court. Tr. 434:10-435:6; *see* PX570 (listing "Final NC House Adopted" as first file in lineage of draft House plan last modified on August 14, 2017); PX569 (same for draft House plan last modified on June 28, 2017); PX571 (listing "Final NC Senate Adopted" as the first file in the lineage of draft Senate plan last modified on August 13, 2017); PX572 (same for draft Senate plan last modified on June 24, 2017). The Court credits Dr. Chen's opinion. It was not true that, in drawing the 2017 Plans, Dr. Hofeller "started with a clean slate" unconnected to the 2011 Plans.

733. Regardless of whether Legislative Defendants knew about Dr. Hofeller's possession and consideration of racial data in 2017, they are responsible for the work of their agent, Dr. Hofeller, in drawing the 2017 Plans following a court's invalidation of the prior plans. Legislative Defendants are also responsible for ensuring the accuracy of their representations to the federal court. Yet, to this day, Legislative Defendants have not notified the *Covington* court that statements they made during the 2017 remedial process were inaccurate.

PROPOSED CONCLUSIONS OF LAW

I. ALL PLAINTIFFS HAVE STANDING

1. The North Carolina Constitution provides: "All courts shall be open; every person for an injury done him in his lands, goods, person, or reputation shall have remedy by due course of law; and right and justice shall be administered without favor denial, or delay." N.C. Const. art. I, § 18.

2. "[B]ecause North Carolina courts are not constrained by the 'case or controversy' requirement of Article III of the United States Constitution, our State's standing jurisprudence is broader than federal law." *Davis v. New Zion Baptist Church*, 811 S.E.2d 725, 727 (N.C. Ct. App. 2018) (quotation marks omitted); *accord Goldston v. State*, 361 N.C. 26, 35, 637 S.E.2d 876, 882 (2006) ("While federal standing doctrine can be instructive as to general principles ... and for comparative analysis, the nuts and bolts of North Carolina standing doctrine are not coincident with federal standing doctrine."). At a minimum, a plaintiff in North Carolina court has standing to sue when it would have standing to sue in federal court.

3. The North Carolina Supreme Court has interpreted article I, section 18 broadly to mean that "[a]s a general matter, the North Carolina Constitution confers standing on those who suffer harm." *Mangum v. Raleigh Bd. of Adjustment*, 362 N.C. 640, 642, 669 S.E.2d 279, 281 (2008). The "gist of the question of standing" under North Carolina law is whether the party seeking relief has "alleged such a personal stake in the outcome of the controversy as to assure that concrete adverseness which sharpens the presentation of issues upon which the court so largely depends for illumination of difficult constitutional questions." *Goldston*, 361 N.C. at 30-31, 637 S.E.2d at 879-80 (quoting *Stanley v. Dep't of Conservation & Dev.*, 284 N.C. 15, 28, 199 S.E.2d 641, 650 (1973)). Although the North Carolina Supreme Court "has declined to set out specific criteria necessary to show standing in every case, [it] has emphasized two factors in its

cases examining standing: (1) the presence of a legally cognizable injury; and (2) a means by which the courts can remedy that injury." *Id.* at 727-28.

4. With respect to organizational plaintiffs, "[t]o bring suit on its own behalf," an organizational plaintiff "need only meet the irreducible constitutional minimum of a sufficient stake in a justiciable case or controversy." *Creek Pointe Homeowner's Ass'n, Inc. v. Happ*, 146 N.C. App. 159, 168, 552 S.E.2d 220, 227 (N.C. Ct. App. 2001) (quotation marks omitted). In federal court, that irreducible constitutional minimum is satisfied where the plaintiff "demonstrate[s] (1) [an] injury in fact, (2) [a] causal relationship between injury and conduct complained of, and (3) [a] likelihood that [the] injury would be redressed by [a] favorable verdict." *Id.* An organizational plaintiff may satisfy these requirements by showing a challenged act either "perceptibly impaired" the organization's mission or objectives or results in a "drain on the organization's resources." *Havens Realty Corp. v. Coleman*, 455 U.S. 363, 379 (1982).

A. The North Carolina Democratic Party Has Standing

5. The Court holds that the North Carolina Democratic Party (NCDP) has standing, both to sue on its own behalf as an organization and to sue on behalf of its members.

6. With respect to organizational standing, the U.S. Supreme Court has held under federal standing principles that state political parties have standing to bring voting-rights challenges on their own behalf. *See Crawford v. Marion County Election Board*, 553 U.S. 181, 187 n.7 (2008) (lead opinion); *id.* at 204-09 (Scalia, J., concurring); *id.* at 209 n.2 (Souter, J., dissenting). In her concurrence in *Gill v. Whitford*, Justice Kagan explained how these standards can apply to political parties and similar organizations in a partisan gerrymandering case. 138 S. Ct. 1916, 1938 (2018). Multiple federal courts have held that organizations similar to the NCDP had standing to bring partisan gerrymandering challenges on their own behalves. *See Ohio A. Philip Randolph Inst.*, 373 F. Supp. 3d at 1076; *League of Women Voters of Mich. v. Johnson*,

352 F. Supp. 3d 777, 801 (E.D. Mich. 2018). The federal court in *Rucho* held that the NCDP had standing to bring a partisan gerrymandering challenge on its own behalf—based in part on the testimony of Mr. Goodwin. *See Common Cause v. Rucho*, 318 F. Supp. 3d 777, 830 (M.D.N.C. 2018), *vacated on other grounds*, 139 S. Ct. 2484 (2019).

7. As in *Rucho*, the NCDP has satisfied the irreducible constitutional minimum necessary to sue on its own behalf in this case. The NCDP has satisfied that requirement under federal law, and therefore, *a fortiori*, has satisfied it under North Carolina law as well.

8. First, the NCDP has demonstrated that it has suffered an "injury in fact." The NCDP has demonstrated that the 2017 Plans have perceptibly impaired the NCDP's mission and objectives of bringing like-minded individuals together to elect Democratic candidates to the state House and Senate. *Supra* FOF § E.1.

9. The 2017 Plans, moreover, have significantly impaired the NCDP's ultimate mission of implementing "policies that Democrats support." Tr. 1264:25-1265:9 (Goodwin). The gerrymandering of 2017 Plans prevent the NCDP from accomplishing this mission by making it virtually impossible for Democrats to control a majority of either chamber of the General Assembly. As Republican Senate Majority Leader Harry Brown admitted in his testimony, "in order to push legislation" that it believes is "important to this state," a political party must "be in the majority." Tr. 2035:19-21.

10. The NCDP also has shown that the 2017 Plans resulted in a drain and diversion of the NCDP's resources, requiring the NCDP to expend more resources than would have been required under a nonpartisan map, both in specific races and across the state. *Supra* FOF § E.1.

11. Second, the NCDP has demonstrated a causal relationship between its injuries and the 2017 Plans. The frustration of the NCDP's mission and objectives and the drain on its resources is directly traceable to the 2017 Plans.

12. Third, the NCDP has demonstrated a likelihood that its injuries will be redressed by a favorable resolution of this case. An injunction by this Court requiring the use of new, fair, nondiscriminatory House and Senate maps for the 2020 elections will enable the NCDP to pursue its mission and objectives unimpaired and without diversion of its scarce resources.

13. In addition to suing on its own behalf, an organization also may sue on behalf of its members. Under federal and state law, "an association has standing to bring suit on behalf of its members when: (a) its members would otherwise have standing to sue in their own right; (b) the interests it seeks to protect are germane to the organization's purpose; and (c) neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit." *Hunt v. Wash. State Apple Advertising Comm'n*, 432 U.S. 333, 343 (1977); *see River Birch Assocs. v. City of Raleigh*, 326 N.C. 100, 130, 388 S.E.2d 538, 555 (N.C. 1990).

14. Under both federal and state law, an associational plaintiff need not show that *all* of its members would have standing to sue in their own right. Rather, it is sufficient if any "one" member would have individual standing. *Warth v. Seldin*, 422 U.S. 490, 511 (1975); *River Birch*, 326 N.C. at 130, 388 S.E.2d at 555; *see also State Employees Ass'n of N. Carolina, Inc. v. State*, 357 N.C. 239, 240, 580 S.E.2d 693 (N.C. 2003) (reversing lower court decision that had required every member of association or organization to have standing).

15. Multiple federal courts have held that organizations similar to the NCDP have standing to bring partisan gerrymandering challenges on behalf of their members. *League of Women Voters of Mich.*, 373 F. Supp. 3d at 933, 937-38; *Ohio A. Philip Randolph Inst.*, 373 F.

Supp. 3d at 1072-73. The federal court in *Rucho* held that the NCDP had standing to bring a partisan gerrymandering claim on behalf of its members. 318 F. Supp. 3d at 827, 835-36.

16. The NCDP has standing to sue on behalf of its members in this case.

17. First, Defendants have not disputed that the NCDP has members in every state House and state Senate (i.e., registered Democratic voters), and that NCDP has at least one member in every district who supports Democratic candidates for the state House and state Senate. FOF § E.1; *see Ala. Legislative Black Caucus v. Alabama*, 135 S. Ct. 1257, 1269 (2015). And, as described in detail below, the Court holds that individual Democratic voters have standing to challenge the statewide House and Senate plans, and at a minimum have standing to challenge districts and country groupings in which they live that are partisan outliers. *See infra* COL § I.C. The NCDP thus has demonstrated that it has at least one of member with standing to challenge the 2017 Plans as a whole and each relevant district therein.

18. Second, the NCDP has demonstrated that the interests it seeks to protect in this case are germane to the NCDP's purposes. This case seeks to protect individual voters' interests in the terms on which they vote, engage in political speech, associate with one another, and participate in the political process. Those interests are central to the NCDP's purposes.

19. Third, neither the claims asserted nor the relief requested requires the participation of the NCDP's individual members. Plaintiffs are challenging the 2017 Plans; they seek declaratory relief and an injunction requiring new maps in time for the 2020 elections. Those claims and that relief do not require participation by the NCDP's individual members.

B. Common Cause Has Standing

20. The Court further holds that Common Cause has standing, both to sue on its own behalf as an organization and to sue on behalf of its members.

21. Multiple federal courts have held that organizations similar to Common Cause have standing to bring partisan gerrymandering challenges on their own behalves and on behalf of their members. *League of Women Voters of Mich.*, 373 F. Supp. 3d at 933, 937-38; *Ohio A. Philip Randolph Inst.*, 373 F. Supp. 3d at 1072-75. The court in *Rucho* held that Common Cause had standing to bring a partisan gerrymandering challenge. 318 F. Supp. 3d at 830-31.

22. Like the NCDP, Common Cause has satisfied the irreducible constitutional minimum necessary to sue on its own behalf in this case. Common Cause has satisfied that requirement under federal law and, *a fortiori*, under North Carolina law as well.

23. First, Common Cause has demonstrated that it has suffered an "injury in fact." In particular, the NCDP has demonstrated that the 2017 Plans have perceptibly impaired the NCDP's objective of ending partisan gerrymandering in North Carolina, since legislators who owe their seats to gerrymanders are unlikely to reform the redistricting process as Common Cause seeks. *Supra* FOF § E.2. The 2017 Plans further impair Commons Cause's mission and objectives of promoting open, honest, and accountable government. The 2017 Plans have also resulted in a drain on Common Cause's resources.

24. Second, Common Cause has demonstrated a causal relationship between its injuries and the 2017 Plans. The frustration of Common Cause's mission and objectives and the drain on its resources are directly traceable to the 2017 Plans.

25. Third, Common Cause has demonstrated a likelihood that its injuries will be redressed by a favorable resolution of this case. A ruling that prohibits the intentional partisan gerrymandering of North Carolina's state legislative districts, and that leads to new nonpartisan maps for the 2020 elections, will further Common Cause's mission and objectives and ease the diversion of its scarce resources.

26. Common Cause also has standing to bring this case on behalf of its members.

27. First, Common Cause has demonstrated that at least one of its individual members has standing to sue in his or her own right. To satisfy this element of associational standing, Common Cause is not required to provide a detailed membership list or to identify any particular member by name, especially where Defendants have not challenged that Common Cause has members in every relevant district who support Democratic candidates for the General Assembly. *See Alabama*, 135 S. Ct. at 1269; *Nat'l Council of La Raza v. Cegavske*, 800 F.3d 1032, 1041 (9th Cir. 2015).

28. Second, Common Cause has demonstrated that the interests it seeks to protect in this case are germane to the organization's purposes. This case seeks to protect citizens' interests in the terms on which they vote, engage in political speech, associate with one another, and participate in the political process. Those interests are central to Common Cause's purposes.

29. Third, neither the claims asserted nor the relief requested requires the participation of Common Cause's individual members. Plaintiffs are challenging the 2017 Plans; they seek declaratory relief and an injunction requiring new maps in time for the 2020 elections. Those claims and that relief do not require participation by Common Cause's members.

C. The Individual Plaintiffs Have Standing

30. Individual Plaintiffs also have standing to challenge each of their individual districts as well as their county groupings and the statewide plan as a whole. All of the Individual Plaintiffs have shown "a personal stake in the outcome of the controversy," *Goldston*, 361 N.C. at 30-31, 637 S.E.2d at 879-80, and that the 2017 Plans cause them to "suffer harm," *Mangum*, 362 N.C. at 642, 669 S.E.2d at 281.

31. The Individual Plaintiffs have standing to challenge their own districts. Each Individual Plaintiff submitted an affidavit stating that he or she has a preference for electing

Democratic legislators and a majority-Democratic General Assembly. PX678-PX713. Plaintiffs introduced extensive district-specific evidence demonstrating how, through cracking and packing, the 2017 Plans dilute the voting power of Individual Plaintiffs and other Democratic voters. Dr. Cooper, for example, provided a district-by-district analysis of how the General Assembly cracked or packed specific districts for maximum partisan gain.

32. At a minimum, those Individual Plaintiffs who live in House or Senate districts whose partisan composition is markedly different from the composition of the districts in which they would live under nonpartisan plans have standing to challenge their districts. Dr. Chen provided unrebutted evidence that twenty-two Individual Plaintiffs live in House districts that are outliers in partisan composition relative to the districts in which they live under his nonpartisan simulated plans, and twenty Individual Plaintiffs live in Senate districts that are outliers in this regard. FOF § E.3. Each of these Individual Plaintiffs thus established a specific harm directly attributable the gerrymandering of the district in which they reside. That easily establishes standing. *See, e.g.*, *Rucho*, 318 F. Supp. 3d at 817; *Ohio A. Philip Randolph Inst.*, 373 F. Supp. 3d at 1063; *League of Women Voters of Mich.*, 373 F. Supp. 3d at 916; *Benisek v. Lamone*, 348 F. Supp. 3d 493, 517 (D. Md. 2018), *vacated on other grounds*, 139 S. Ct. 2484 (2019).

33. The Individual Plaintiffs also have standing to challenge their county groupings as a whole and the statewide plans as a whole. While the U.S. Supreme Court has held that the individual voters have standing to challenge only their individual district on partisan gerrymandering grounds, *Gill*, 138 S. Ct. at 1930-31, this Court does not follow *Gill* in this regard. The Court instead follows the Pennsylvania Supreme Court, which has departed from federal precedent in this regard. *Erfer v. Commonwealth*, 794 A.2d 325, 330 (Pa. 2002) (noting that "state courts are not constrained by the dictates of Article III of the United States

Constitution" and holding that individual voters have standing under state law to bring statewide challenge), *abrogated on other grounds by League of Women Voters of Pa.*, 178 A.3d 737.

34. As the Pennsylvania Supreme Court recognized, "[a] reapportionment plan acts as an interlocking jigsaw puzzle, each piece reliant upon its neighbors to establish a picture of the whole." *Id.* "An allegation that a litigant's district was improperly gerrymandered necessarily involves a critique of the plan beyond the borders of his district." *Id.* In the instant case, the General Assembly gerrymandered the districts at the county-grouping level, where each district "interlock[s]" with the other districts in the grouping to gerrymander the grouping as a "whole." *Id.* A Democratic voter who lives in a gerrymandered grouping thus has "a personal stake" in the configuration of the entire grouping, and "suffer[s] harm" from the fact that his or her district has been drawn to effectuate a scheme to maximize the Republican advantage across the entire grouping. *Goldston*, 361 N.C. at 30-31, 637 S.E.2d at 879-80; *Mangum*, 362 N.C. at 642, 669 S.E.2d at 281. The Court holds that each of the Individual Plaintiffs has standing to challenge every district within his or her House and Senate county groupings.

35. The Court further holds that every Individual Plaintiff has standing to challenge every gerrymandered House and Senate district across the State. Individual Plaintiffs are harmed by the whole statewide plans because the entire statewide plans deprive the Individual Plaintiffs an opportunity to obtain Democratic majorities in either chamber of the General Assembly. Without a realistic possibility of obtaining majorities in the General Assembly, Individual Plaintiffs have no possibility of seeing their policy preferences enacted into law. *Supra* FOF § E.3. That is the precise injury that the North Carolina Constitution protects against, and in particular the Free Elections Clause. *See infra* COL § III.

36. Finally, this Court has the means to remedy the injuries to the Individual Plaintiffs at the district level, the grouping level, and at a statewide level.

II. THE 2017 PLANS VIOLATE THE NORTH CAROLINA CONSTITUTION'S EQUAL PROTECTION CLAUSE

37. The North Carolina Constitution guarantees to all North Carolinians the equal protection of the law. Article I, § 19 of the North Carolina Constitution provides in relevant part that "[n]o person shall be denied the equal protection of the laws."

38. The 2017 Plans violate North Carolina's Equal Protection Clause, irrespective of whether those plans violate the U.S. Constitution. *See Michigan v. Long*, 463 U.S. 1032 (1983).

A. North Carolina's Equal Protection Clause Provides Greater Protection for Voting Rights Than its Federal Counterpart

39. North Carolina's Equal Protection Clause provides greater protection for voting rights than federal equal protection provisions. *Stephenson*, 355 N.C. at 377-81 & n.6, 562 S.E.2d at 393-95 & n.6; *Blankenship v. Bartlett*, 363 N.C. 518, 522-28, 681 S.E.2d 759, 763-66 (2009). "It is beyond dispute that [North Carolina courts] ha[ve] the authority to construe [the North Carolina Constitution] differently from the construction by the United States Supreme Court of the Federal Constitution, as long as our citizens are thereby accorded no lesser rights than they are guaranteed by the parallel federal provision." *Stephenson*, 355 N.C. at 381 n.6, 562 S.E.2d at 395 n.6. North Carolina courts can and do interpret even "identical term[s]" in the State's Constitution more broadly than their federal counterparts. *Northampton Cty. Drainage Dist. No. One v. Bailey*, 326 N.C. 742, 749, 392 S.E.2d 352, 357 (1990).

40. The North Carolina Supreme Court has held that North Carolina's Equal Protection Clause protects "the fundamental right of each North Carolinian to *substantially equal voting power*." *Stephenson*, 355 N.C. at 379, 562 S.E.2d at 394 (emphasis added). "It is well settled in this State that 'the right to vote *on equal terms* is a fundamental right.'" 355 N.C. at

378, 562 S.E.2d at 393 (quoting *Northampton Cty.*, 326 N.C. at 747, 392 S.E.2d at 356) (emphasis added). These principles apply with full force in the redistricting context. *Id.*

41. The North Carolina Supreme Court has applied this broader state constitutional protection to invalidate redistricting schemes and other elections laws under Article I, § 19, irrespective of whether they violated federal equal protection guarantees. In *Stephenson*, the Court held that use of single- and multi-member districts in a redistricting plan violated Article I, § 19. 355 N.C. at 377-81 & n.6, 562 S.E.2d at 393-95 & n.6. The Court explained that, although such a redistricting scheme did not violate the U.S. Constitution, it restricted the "fundamental right under the State Constitution" to "substantially equal voting power and substantially equal legislative representation." 355 N.C. at 382, 562 S.E.2d at 396. Because the "classification of voters" between single- and multi-member districts created an "impermissible distinction among similarly situated citizens," it "necessarily implicate[d] the fundamental right to vote on equal terms," triggering "strict scrutiny." 355 N.C. at 377-78, 562 S.E.2d at 393-94.

42. In *Blankenship*, the Court held that Article I, § 19 mandates one-person, one-vote in judicial elections, even though the U.S. Constitution does not. 363 N.C. at 522-24, 681 S.E.2d at 762-64. The Court stressed that "[t]he right to vote on equal terms in representative elections ... is a fundamental right" and therefore "triggers heightened scrutiny." *Id*.

43. And in *Northampton County*, the Court applied strict scrutiny to invalidate certain rules related to voting for drainage districts, holding that the rules at issue deprived one county's residents of the "fundamental right" to "vote on equal terms" with residents of a neighboring county. 326 N.C. at 747, 392 S.E.2d at 356.

B. The 2017 Plans Were Created With the Intent To Discriminate Against Plaintiffs and Other Democratic Voters

44. The 2017 Plans were drawn intentionally to deprive Democratic voters of substantially equal voting power and the right to vote on equal terms. FOF §§ B, C.

45. Legislative Defendants openly admitted that they used prior election results to draw districts to benefit Republicans in both 2011 and 2017. FOF § B.1. Dr. Hofeller's own files provide even more direct evidence that the singular goal of the 2017 Plans was to maximize Republicans' political advantage by drawing Democratic voters into districts where their votes would be diluted, and in many cases where their votes would not matter. FOF § B.2.

46. The analysis and conclusions of Plaintiffs' experts confirm the point. Dr. Chen's analysis confirms that the General Assembly intentionally subordinated traditional districting principles to maximize Republican advantage. FOF § B.3.a. Dr. Mattingly's analysis confirms that the enacted plans' extreme partisan bias could only have been intentional. FOF § B.3.b. Dr. Pegden's sensitivity analysis shows that the enacted plans are more carefully crafted to favor Republicans than 99.999% of all possible plans of North Carolina meeting the same nonpartisan criteria laid out in the Adopted Criteria. FOF § B.3.c. And Dr. Cooper demonstrated, by analyzing the district boundaries within each relevant county grouping, that the enacted plans intentionally and systematically pack and crack Democratic voters. FOF § C.

47. The intentional "classification of voters" based on partisanship in order to pack and crack them into districts is an "impermissible distinction among similarly situated citizens" aimed at denying equal voting power. *Stephenson*, 355 N.C. at 377-78, 562 S.E.2d at 393-94.

C. The 2017 Plans Deprive Plaintiffs and Other Democratic Voters of Substantially Equal Voting Power and the Right to Vote on Equal Terms

48. The 2017 Plans work an unconstitutional discriminatory effect on Plaintiffs and other Democratic voters by depriving them of substantially equal voting power and the right to vote on equal terms, in violation of Article I, § 19.

49. The manipulation of district boundaries in the enacted plans prevents Democratic voters from obtaining a majority in the House or the Senate even in election environments where Democrats would obtain a majority under virtually any nonpartisan map. Dr. Chen and Dr. Mattingly each independently found that the effects of gerrymanders are most extreme in circumstances where Democrats could win majorities in one or both chambers under nonpartisan plans. FOF § B.3.a, b. There is nothing "equal" about the "voting power" of Democratic voters when they have no realistic chance of winning a majority in either chamber under the enacted plans. "The right to vote is the right to participate in the decision-making process of government." *Texfi Indus., Inc. v. City of Fayetteville*, 301 N.C. 1, 13, 269 S.E.2d 142, 150 (1980). Democratic voters cannot meaningfully participate in the decision-making process of government when the maps are drawn to systematically prevent Democrats from obtaining a majority in either chamber of the General Assembly.

50. Beyond the issue of majority control, Dr. Chen and Dr. Mattingly also concluded that the gerrymanders deprive Democratic voters of multiple seats in the House and the Senate across a variety of electoral environments. FOF § B.3.a, b. The 2017 Plans achieve these effects by cracking and packing Democratic voters in county grouping after county grouping. FOF § C. This packing and cracking diminishes the "voting power" of Democratic voters in these groupings; packing dilutes the votes of Democrats such that their votes do not matter, and the

entire purpose of cracking likeminded voters across multiple districts is so they do not have sufficient "voting power" to join together and elect a candidate of their choice.

51. While not necessary to establish Plaintiffs' equal protection claim, the Court holds that the 2017 Plans not only deprive Democratic voters of equal voting power in terms of electoral outcomes, but also deprive them of "substantially equal legislative representation." *Stephenson*, 355 N.C. at 382, 562 S.E.2d at 396. Just as the "political reality" is that "legislators are much more inclined to listen to and support a constituent than an outsider," 355 N.C. at 380, 562 S.E.2d at 395, the reality is that legislators are far more likely to represent the interests and policy preferences of voters of the same party. Legislative Defendants' own expert, Dr. Brunell, agreed that "a voter whose candidate of choice loses will on average be less well-represented than a voter who voted for the winning candidate." Tr. 2370:22-2371:2.

D. Plaintiffs Have Satisfied Even More Stringent Equal Protection Standards

52. Under well-established North Carolina precedent, Plaintiffs have met their burden to establish an equal protection violation by demonstrating that the 2017 Plans intentionally and effectively deny them substantially equal voting power and the right to vote on equal terms. Plaintiffs, however, have met even more stringent standards as well. The 2017 Plans certainly violate Article I, § 19 where the General Assembly's *predominant* intent in drawing district boundaries was to deny Democratic voters substantially equal violating power. And at a bare minimum, the enacted plans violate Article I, § 19 where the General Assembly's predominant intent to gain partisan advantage "subordinates the traditional redistricting criteria" of compactness and not splitting political subdivisions. *League of Women Voters of Pa.*, 178 A.3d at 817-18; *see Stephenson*, 355 N.C. at 371, 562 S.E.2d at 389 ("[T]he State Constitution's limitations upon redistricting and apportionment uphold ... the traditional districting principles,"

which include "compactness, contiguity, and respect for political subdivisions." (quotation marks omitted)). The 2017 Plans fail each of these standards as well.

E. The 2017 Plans Fail Strict Scrutiny—and Indeed Any Scrutiny

53. Because the 2017 Plans "impermissibly interfere[] with the exercise of [the] fundamental right" to vote, strict scrutiny applies. *Stephenson*, 355 N.C. at 377-78, 562 S.E.2d at 393. Legislative Defendants cannot establish that the 2017 Plans are "narrowly tailored to advance a compelling governmental interest." *Id*. Advantaging a particular political party or discriminating against voters based of how they vote is not a compelling government interest.

54. To the extent Legislative Defendants argue that some lesser scrutiny applies, that is incorrect, because the North Carolina Supreme Court has held that the right to vote is a fundamental right. Regardless, the 2017 Plans cannot satisfy any level of scrutiny. As the North Carolina Supreme Court has held, "a state may not dilute the strength of a person's vote to give weight to other interests." *Texfi Indus.*, 301 N.C. at 13, 269 S.E.2d at 150.

III. THE 2017 PLANS VIOLATE THE NORTH CAROLINA CONSTITUTION'S FREE ELECTIONS CLAUSE

55. The Free Elections Clause in Article I, Section 10 of the North Carolina Constitution provides that "[a]ll elections shall be free." This clause has no federal counterpart.

56. The 2017 Plans violate the Free Elections Clause.

A. The History and Purpose of the Free Elections Clause Is To Prevent the Government from Manipulating Legislative Elections

57. The Free Elections Clause dates back to the North Carolina Declaration of Rights of 1776. The framers of the North Carolina Declaration of Rights based the Free Elections Clause on a provision of the 1689 English Bill of Rights providing that "election of members of parliament ought to be free," Bill of Rights 1689, 1 W. & M. c. 2 (Eng.). *See* John V. Orth, *North Carolina Constitutional History*, 70 N.C. L. Rev. 1759, 1797-98 (1992).

58. This provision of the 1689 English Bill of Rights grew out of the king's efforts to manipulate parliamentary elections, including by changing the electorate in different areas to achieve "electoral advantage." J.R. Jones, *The Revolution of 1688 in England* 148 (1972). The king's attempt to maintain control of parliament by manipulating elections led to a revolution, and after dethroning the king, the revolutionaries called for a "free and fair parliament" as a critical reform. Grey S. De Krey, *Restoration and Revolution in Britain: A Political History of the Era of Charles II and the Glorious Revolution* 241, 247-48, 250 (2007).

59. Before North Carolina adopted its Declaration of Rights, several other states included versions of the free elections clause in their Declarations of Rights, all based on the same provision of the 1689 English Bill of Rights. The Framers of North Carolina's Declaration of Rights drew inspiration for North Carolina's Free Elections Clause from these other states, which included Pennsylvania, Maryland, and Virginia. *See* Orth, 70 N.C. L. Rev. at 1797-98.

60. As with the English provision, the provisions of these other states were designed specifically to prevent the manipulation of elections for legislative bodies. For instance, Pennsylvania's clause arose in response to laws that manipulated elections for representatives to Pennsylvania's colonial assembly. *See League of Women Voters of Pa.*, 178 A.3d at 804. Those colonial laws led to the "underrepresentation" of, and even "denial of representation" to, certain geographic areas; the "colonial government remained dominated" due to the laws by certain counties at the expense of "western regions of the colony and the City of Philadelphia." *Id.* at 805-06. Pennsylvania's version of the free elections clause was intended to end "the dilution of the right of the people of [the] Commonwealth to select representatives to govern their affairs," and to codify an "explicit provision[] to establish protections of the right of the people to fair and equal representation in the governance of their affairs." *Id.* at 806, 808.

61. North Carolina's Free Elections Clause was adopted to serve the same purpose. The Free Elections Clause, in conjunction with the companion provision of the State Constitution now found in Article I, § 9 concerning redress of grievances, mandates that elections in North Carolina must be "free from interference or intimidation" by the government, so that all North Carolinians are freely able, through the electoral process, to pursue a "redress of grievances and for amending and strengthening the laws." John V. Orth & Paul M. Newby, The North Carolina State Constitution 55-57 (2d ed. 2013). "[T]his pair of sections concerns the application of the principle of popular sovereignty." *Id.* at 55. As the North Carolina Supreme Court explained nearly a century ago, the Free Elections Clause reflects that "[o]ur government is founded on the consent of the governed," and the right to free elections "must be held inviolable to preserve our democracy." *Swaringen v. Poplin*, 211 N.C. 700, 191 S.E. 746, 747 (1937).

62. North Carolina has broadened and strengthened the Free Elections Clause since its adoption in 1776 to make these purposes clear. The original clause stated that "elections of members, to serve as Representatives in the General Assembly, ought to be free." N.C. Declaration of Rights, VII (1776). The next version of the State's constitution, adopted in 1868, declared that "[a]ll elections ought to be free," expanding the principle to include all elections in North Carolina. N.C. Const. art. I, § 10 (1868). In the current Constitution, adopted in 1971, the Free Elections Clause now mandates that "[a]ll elections *shall* be free." N.C. Const. art. I, § 10 (emphasis added). This change was intended to "make it clear" that the Free Elections Clause and the other "rights secured to the people by the Declaration of Rights are commands and not merely admonitions to proper conduct on the part of the government." *N.C. State Bar v. DuMont*, 304 N.C. 627, 635, 639, 286 S.E.2d 89, 94, 97 (1982) (quoting Report of the N.C. State Constitution Study Comm'n to the N.C. State Bar and the N.C. Bar Ass'n, 75 (1968)).

B. The Free Elections Clause Prohibits the Government from Manipulating the Electoral Process in an Attempt To Predetermine the Outcome of Elections

63. The Free Elections Clause prohibits the government from manipulating the electoral process in an attempt to predetermine the outcome of elections. In the context of redistricting, the Clause prohibits the General Assembly from drawing district boundaries intentionally to predetermine the outcome of individual state House and state Senate elections, and to guarantee overall control of the legislature. Where the ruling party has manipulated the electoral process to ensure that it remains in control of government, elections are not "free."

64. The text, history and purpose of the Free Elections Clause, as well as precedent in North Carolina and other states, supports this interpretation.

65. The broad text of the Free Elections Clause unequivocally mandates that "[a]ll elections" in North Carolina "shall be free." As the Pennsylvania Supreme Court explained in interpreting its clause, the "plain and expansive sweep" of the word "free" conveys an "intent that all aspects of the electoral process, to the greatest degree possible, be kept open and unrestricted to the voters …, and, also, conducted in a manner which guarantees, to the greatest degree possible, a voter's right to equal participation in the electoral process for the selection of his or her representatives in government." *League of Women Voters of Pa.,* 178 A.3d at 804.

66. The history of the Free Elections Clause confirms the intention to prohibit the government from manipulating elections—and legislative elections in particular—to entrench the current rulers in power. As explained above, the Clause's original precursor in the English Bill of Rights was designed specifically to prevent the king from manipulating parliamentary elections to maintain his control over parliament. Pennsylvania's version of the clause likewise sought to end efforts by those in power to entrench their control by interfering with the ability of

certain disfavored citizens to obtain representation in the legislative body. North Carolina's Free Elections Clause exists to serve precisely these same purposes.

67. Courts in various states have interpreted their free elections clauses to strike down laws that subvert these purposes. Just last year, the Pennsylvania Supreme Court held that extreme partisan gerrymandering of the state's congressional districting plan violated Pennsylvania's version of the clause. The court held that the clause must be "given the broadest interpretation" to provide citizens "an equally effective power to select the representative of his or her choice, and bars the dilution of the people's power to do so." *League of Women Voters of Pa.*, 178 A.3d at 814. "[T]he actual and plain language of [the clause] mandates that all voters have an equal opportunity to translate their votes into representation." *Id.* Adopting this "broad interpretation" of the free elections requirement "guards against the risk of unfairly rendering votes nugatory, artificially entrenching representative power, and discouraging voters from participating in the electoral process." *Id.* The court thus held that the challenged map violated Pennsylvania's clause because it did not provide "each and every Pennsylvania voter … the same free and equal *opportunity* to select his or her representatives." *Id.*

68. Maryland courts have afforded a similarly broad interpretation of their free elections provision, which provides that "elections ought to be free and frequent." Md. Const. Declaration of Rights, art. 7. Maryland courts have recognized that, in light of this provision, voting is "the most fundamental right granted to Maryland citizens as members of a free society." *Liddy v. Lamone*, 919 A.2d 1276, 1290 & n.19 (Md. 2007). For that reason, Maryland courts have interpreted their free elections provision to be more protective of the right of political participation than the federal Constitution, and have applied the provision to invalidate laws that

restrict the ability of citizens to cast a ballot for candidates of their choice, regardless of political party. *Md. Green Party v. Md. Bd. of Elecs.*, 832 A.2d 214, 228 (Md. 2003).

69. The North Carolina Supreme Court likewise has enforced the Free Elections Clause to invalidate laws that interfere with voters' ability to freely choose their representatives. In *Clark v. Meyland*, the North Carolina Supreme Court struck down a law that required voters seeking to change their party affiliation to take an oath supporting the party's nominees "in the next election and … thereafter." 261 N.C. 140, 141, 134 S.E.2d 168, 169 (1964). The Court held that this attempt to manipulate the outcome of future elections "violate[d] the constitutional provision that elections shall be free." 261 N.C. at 143, 134 S.E.2d at 170. A federal court also applied the Free Elections Clause to strike down a law that singled out unaffiliated candidates for differential treatment from major party candidates because it impermissibly infringed an unaffiliated candidate's ability to "advance[] his political beliefs and to cast his votes effectively." *Obie v. N.C. State Bd. of Elecs.*, 762 F. Supp. 119, 121 (E.D.N.C. 1991).

C. The 2017 Plans Violate the Free Elections Clause by Manipulating and Predetermining Election Outcomes and Control of the General Assembly

70. The partisan gerrymandering of the 2017 Plans strikes at the heart of the Free Elections Clause. Using their control of the General Assembly, Legislative Defendants manipulated district boundaries to predetermine the outcomes of individual races and to guarantee their continued control of the legislature.

71. Plaintiffs' experts demonstrated that the 2017 Plans were designed, specifically and systematically, to maintain Republican majorities in the state House and Senate. Drs. Chen and Mattingly each independently established that the 2017 Plans were gerrymandered to be most resilient in electoral environments where Democrats could win majorities in either chamber under nonpartisan plans. FOF § B.3.a, b. Their analyses establish that it is nearly impossible for

Democrats to win majorities in either chamber in any reasonably foreseeable electoral environment. *Id.* Elections under the 2017 Plans are not "free" where partisan actors have successfully ensured that they will retain power no matter how the people vote.

72. The 2017 Plans also unlawfully predetermine election outcomes in specific districts and county groupings. Drs. Chen and Mattingly each found numerous districts and county groupings that result in safe or relatively safe Republican seats under the enacted plans but would be far more competitive or even Democratic-leaning under nonpartisan plans. *See, e.g.*, FOF § C.1.a (Mecklenburg); C.1.b (Franklin-Wake); C.1.c (Nash-Johnston-Harnett-Lee-Sampson-Duplin); C.1.e (Davie-Forsyth); C.1.g (Buncombe-Henderson-Transylvania); C.2.a (Robeson-Columbus-Pender); C.2.b (Cumberland); C.2.c (Person-Granville-Vance-Warren); C.2.d (Franklin-Nash); C.2.e (Pitt-Lenoir); C.2.f (Guilford); C.2.g (Davie-Rowan-Cabarrus-Stanly-Montgomery-Richmond); C.2.h (Yadkin-Forsyth); C.2.k (New Hanover-Brunswick); C.2.*l* (Duplin-Onslow); C.2.m (Anson-Union); C.2.o (Cleveland-Gaston). In the remaining county groupings, Drs. Chen and Mattingly similarly found that Legislative Defendants placed their thumbs heavily on the scale to favor Republicans. *See* FOF § C.

73. The harm caused by this manipulation of election outcomes subverts another key purpose of the Free Elections Clause, which, in conjunction with Article I, § 9, is to facilitate the ability of North Carolina citizens to seek a "redress of grievances and for amending and strengthening the law." Orth & Newby, *supra*, at 56. Democratic voters in North Carolina cannot meaningfully seek to redress their grievances or amend the laws consistent with their policy preferences when they cannot obtain a majority of the General Assembly.

74. For the reasons described above, Plaintiffs have met their burden to establish a Free Elections Clause violation by demonstrating that Legislative Defendants manipulated the

current district boundaries to predetermine the outcome of elections. Plaintiffs, however, have met even more stringent standards as well. The 2017 Plans certainly violate the Free Elections Clause where the General Assembly's predominant intent in drawing district boundaries was to predetermine the outcome of elections. And at a bare minimum, the enacted plans violate the Free Elections Clause where the General Assembly's predominant intent to predetermine election outcomes "subordinates the traditional redistricting criteria" of compactness and not splitting political subdivisions. *League of Women Voters of Pa.*, 178 A.3d at 817-18. The 2017 Plans fail each of these standards as well.

IV. THE 2017 PLANS VIOLATE THE NORTH CAROLINA CONSTITUTION'S FREEDOM OF SPEECH AND FREEDOM OF ASSEMBLY CLAUSES

75. The Freedom of Speech Clause in Article I, § 12 of the North Carolina Constitution provides that "[f]reedom of speech and of the press are two of the great bulwarks of liberty and therefore shall never be restrained." The Freedom of Assembly Clause in Article I, § 14 provides, in relevant part, that "[t]he people have a right to assemble together to consult for their common good, to instruct their representatives, and to apply to the General Assembly for redress of grievances."

76. The 2017 Plans violate the North Carolina Constitution's guarantees of free speech and assembly, irrespective of whether the plans violate the U.S. Constitution. *See Michigan v. Long*, 463 U.S. 1032 (1983).

A. North Carolina's Constitution Protects the Rights of Free Speech and Assembly Independently From the Federal Constitution

77. "[I]n construing provisions of the Constitution of North Carolina," the North Carolina Supreme Court "is not bound by opinions of the Supreme Court of the United States construing even identical provisions in the Constitution of the United States." *State v. Hicks*, 333 N.C. 467, 483, 428 S.E.2d 167, 176 (1993). While the North Carolina Supreme Court gives

"great weight" to decisions of the U.S. Supreme Court that interpret corresponding provisions in the federal constitution, *Hicks*, 333 N.C. at 484, 428 S.E.2d at 176, only North Carolina courts can "answer[] with finality" questions of North Carolina constitutional law, *State v. Arrington*, 311 N.C. 633, 642, 319 S.E.2d 254, 260 (1984). North Carolina courts thus "have the authority to construe [the State's] own constitution differently from the construction by the United States Supreme Court of the Federal Constitution, as long as [its] citizens are thereby accorded no lesser rights than they are guaranteed by the parallel federal provision." *State v. Carter*, 322 N.C. 709, 713, 370 S.E.2d 553, 555 (1988).

78. The North Carolina Supreme Court has held that the North Carolina Constitution's Free Speech Clause provides broader rights than does federal law. In particular, the Court has held that the North Carolina Constitution affords a direct cause of action for damages against government officers in their official capacity for speech violations, even though federal law does not. *Corum v. Univ. of N.C. ex rel. Bd. of Gov'rs*, 330 N.C. 761, 783, 413 S.E.2d 276, 290 (1992). Noting that "[o]ur Constitution is more detailed and specific than the federal Constitution in the protection of the rights of its citizens," the Court explained that the North Carolina courts "give our Constitution a liberal interpretation in favor of its citizens with respect to those provisions which were designed to safeguard the liberty and security of the citizens in regard to both person and property." *Id.* Indeed, in recognizing a direct cause of action under the State Constitution, the Court expressly relied on *the lack of* a federal remedy, which left plaintiffs with "no other remedy … for alleged violations of his constitutional freedom of speech rights." *Id.*

79. Similarly, in *Evans v. Cowan*, the Court of Appeals reversed a trial court that had dismissed a claim under Article I, § 14, on the erroneous ground that it was *res judicata* based on

a prior dismissal of the plaintiff's claim under the federal First Amendment. 122 N.C. App. 181, 183-84, 468 S.E.2d 575, 577-78, *aff'd*, 477 S.E.2d 926 (N.C. 1996). While "both the North Carolina Constitution and the United States Constitution contain similar provisions proclaiming certain principles of liberty," North Carolina courts "are not *bound* by the opinions of the federal courts." *Id.* "[A]n independent determination of plaintiff's constitutional rights under the state constitution [was] required, and the state courts reserve the right to grant relief under the state constitution in circumstances under which no relief might be granted under the federal constitution." *Id.* at 184 (citation and internal quotations marks omitted); *see also McLaughlin v. Bailey*, 240 N.C. App. 159, 172, 771 S.E.2d 570, 579-80 (2015), *aff'd*, 781 S.E.2d 23 (N.C. 2016); *see also Lenzer v. Flaherty*, 106 N.C. App. 496, 418 S.E.2d 276 (1992).

80. In the context of partisan gerrymandering, it is especially important that North Carolina courts give independent force to North Carolina's constitutional protections. The U.S. Supreme Court recently held that federal courts applying the federal constitution have no power to adjudicate claims of partisan gerrymandering. *Rucho v. Common Cause*, 139 S. Ct. 2484 (2019). That ruling does not mean that partisan gerrymandering complies with the constitution; it means that federal courts have no power to decide *whether* the practice complies with the constitution. "Having no other remedy," the North Carolina Constitution "guarantees [P]laintiff[s] a direct action under the State Constitution for alleged violations of [their] constitutional freedom of speech rights." *Corum*, 330 N.C. at 783, 413 S.E.2d at 290.

B. Voting, Banding Together in a Political Party, and Spending on Elections Are Protected Expression and Association

81. Voting for the candidate of one's choice and associating with the political party of one's choice are core means of political expression protected by the North Carolina

Constitution's Freedom of Speech and Freedom of Assembly Clauses. The 2017 Plans burden that protected expression and thus are subject to scrutiny under those clauses.

82. Voting provides citizens a direct means of "express[ing] ... support for [a] candidate and his views." *Buckley v. Valeo*, 424 U.S. 1, 20-31 (1976). Indeed, if donating money to a candidate constituted a form of protected speech, then voting for that same candidate necessarily does as well. "There is no right more basic in our democracy than the right to participate in electing our political leaders"—including, of course, the right to "vote." *McCutcheon v. FEC*, 134 S. Ct. 1434, 1440-41 (2014) (plurality op.). "[P]olitical belief and association constitute the core of … those activities protected by the First Amendment."

83. Plaintiffs' expression is no less protected "merely because it involves the 'act'" of casting a ballot. *State v. Bishop*, 368 N.C. 869, 874, 787 S.E.2d 814, 818 (2016). "[M]uch speech requires an 'act' of some variety—whether putting ink to paper or paint to canvas, or hoisting a picket sign, or donning a message-bearing jacket." *Id.* Voting, like donating money to a candidate or signing a petition for a referendum, constitutes "expressive activity" that "express[es] [a] view" about the State's laws and policies. *Winborne v. Easley*, 136 N.C. App. 191, 198, 523 S.E.2d 149, 153 (1999); *Doe v. Reed*, 561 U.S. 186, 194 (2010). Voting's expressive force is not diminished by the fact that it "is a legally operative legislative act." *Id.*; *see also Nev. Comm'n on Ethics v. Carrigan*, 131 S. Ct. 2343 (2011) (Alito, J., concurring) ("[T]he act of voting is not drained of its expressive content when the vote has a legal effect."). Having "cho[sen] to tap the energy and the legitimizing power of the democratic process," the government "must accord the participants in that process the First Amendment rights that attach to their roles." *Republican Party of Minn. v. White*, 536 U.S. 765, 788 (2002). The ballots cast

by Plaintiffs and other Democratic voters to elect candidates to the North Carolina General Assembly are protected by North Carolina's Freedom of Speech Clause.

84. Expression aside, the Freedom of Assembly Clause independently protects Plaintiffs' voting and their association with the Democratic Party. The Freedom of Assembly Clause—part of North Carolina's original 1776 Declaration of Rights—protects the right of the people "to assemble together to consult for their common good, to instruct their representatives, and to apply to the General Assembly for redress of grievances." N.C. Const. art. I, § 12; *see* N.C. Const. art. I, § 18 (1776). In North Carolina, the right to assembly encompasses the right of association. *Feltman v. City of Wilson*, 238 N.C. App. 246, 253, 767 S.E.2d 615, 620 (2014).

85. Just as voting is a form of protected expression, banding together with likeminded citizens in a political party is a form of protected association. "[C]itizens form parties to express their political beliefs and to assist others in casting votes in alignment with those beliefs." *Libertarian Party of N.C. v. State*, 365 N.C. 41, 49, 707 S.E.2d 199, 204-05 (2011). "[F]or elections to express the popular will, the right to assemble and consult for the common good must be guaranteed." John V. Orth, The North Carolina State Constitution 48 (1995).

86. A final form of relevant protected expression involves the expenditure of funds in support of candidates. It is now well-settled that "political contributions and expenditures" constitute "expressive activity" that are constitutionally protected. *Winborne*, 136 N.C. App. at 198, 523 S.E.2d at 153-54.

C. The 2017 Plans Burden Protected Expression and Association

87. The 2017 Plans are subject to strict scrutiny because they burden Plaintiffs' and Democratic voters' political expression and association

1. The 2017 Plans Burden Protected Expression Based on Viewpoint by Making Democratic Votes Less Effective

88. It is "axiomatic" that the government may not infringe on protected activity based on the individual's viewpoint. *Rosenberger v. Rector & Visitors of Univ. of Va.*, 515 U.S. 819, 828 (1995). "The government must abstain from regulating speech when the specific motivating ideology or the opinion or perspective of the speaker is the rationale for the restriction." *Id.* The guarantee of free expression "stands against attempts to disfavor certain subjects or viewpoints." *Citizens United v. FEC*, 558 U.S. 310, 340 (2010).

89. Viewpoint discrimination is *most* insidious where the targeted speech is political. "[I]n the context of political speech, … [b]oth history and logic" demonstrate the perils of permitting the government to "identif[y] certain preferred speakers" while burdening the speech of "disfavored speakers." *Citizens United*, 558 U.S. at 340-41. The government may not burden the "speech of some elements of our society in order to enhance the relative voice of others" in electing officials. *McCutcheon*, 134 S. Ct. at 1450; *see also Winborne*, 136 N.C. App. at 198, 523 S.E.2d at 153 ("political speech" has "such a high status" that free speech protections have their "fullest and most urgent application" in this context (quotations marks omitted)).

90. Here, Legislative Defendants "identified[] certain preferred speakers" (Republican voters), while targeting certain "disfavored speakers" (Plaintiffs and other Democratic voters) for "disfavored treatment" because of disagreement with the views they express when they vote. *Citizens United*, 558 U.S. at 340-41; *Sorrell v. IMS Health Inc.*, 564 U.S. 552, 565 (2011). Legislative Defendants analyzed the voting histories of every VTD in North Carolina, identified VTDs that favor Democratic candidates, and then singled out the voters in those VTDs for disfavored treatment by packing and cracking them into districts with

the aim of diluting their votes and, in the case of cracked districts, ensuring that these voters cannot elect a candidate who shares their views.

91. The fact that Democratic voters can still cast ballots under gerrymandered maps changes nothing. The government unconstitutionally burdens speech where it renders disfavored speech *less effective*, even if it does not ban such speech outright. The government may not restrict a citizen's "ability to effectively exercise" their free speech rights. *Heritage Vill. Church & Missionary Fellowship, Inc. v. State*, 40 N.C. App. 429, 451, 253 S.E.2d 473, 486 (1979), *aff'd*, 299 N.C. 399, 263 S.E.2d 726 (1980). "It is thus no answer to say that petitioners can still be 'seen and heard'" if the burdens placed on their speech "have effectively stifled petitioners' message." *McCullen v. Coakley*, 134 S. Ct. 2518, 2537 (2014).

92. In *McCullen*, for instance, the U.S. Supreme Court invalidated a law that imposed a buffer zone around abortion clinics because the law "compromise[d] [the] ability" of the plaintiffs to "initiate the close, personal conversations that they view as essential" to effectively communicate their message. 134 S. Ct. at 2535. And in *Sorrell*, the U.S. Supreme Court invalidated on viewpoint discrimination grounds a state law that burdened drug manufacturers by denying them information that made their marketing more effective. 564 U.S. at 580. The Court stressed that "the distinction between laws burdening speech is but a matter of degree and the Government's content-based burdens must satisfy the same rigorous scrutiny as its content-based bans." *Id.* at 555-56 (quotation marks omitted);

93. These principles apply equally to burdens on political expression. In *Davis v. FEC*, 554 U.S. 724 (2008), the U.S. Supreme Court struck down a law that disfavored candidates who self-financed their campaigns. The law in question did *not* limit how much money self-financing candidates could spend, but it still unconstitutionally "diminishe[d] the effectiveness of

[their] speech." *Id.* at 736. The Court held the same in *Arizona Free Enterprise Club's Freedom Club PAC v. Bennett*, 564 U.S. 721, 747 (2011), where it invalidated a public-matching scheme because it rendered the money spent by privately financed candidates "less effective." *Id.* at 747; *see also Randall v. Sorrell*, 548 U.S. 230, 248-49 (2006) (invalidating limit on campaign donations that made such donations less "effective").

94. North Carolina courts have recognized "several paths" leading to the conclusion that laws burdening protected expression are impermissibly discriminatory and thus "subject to strict scrutiny." *State v. Bishop*, 368 N.C. 869, 875, 787 S.E.2d 814, 819 (2016). A finding of discrimination "can find support in the plain text of a statute, or the animating impulse behind it, or the lack of any plausible explanation besides distaste for the subject matter or message." *Id.* The 2017 Plans thus need not explicitly mention any particular viewpoint to be impermissibly discriminatory. *See, e.g.*, *Reed v. Town of Gilbert*, 135 S. Ct. 2218, 2227 (2015)

95. Here, all paths lead to the same conclusion: the 2017 Plans reflect viewpoint discrimination against Plaintiffs and other Democratic voters that render their protected political expression less effective.

96. Overwhelming, unrebutted evidence establishes that the 2017 Plans were laced with viewpoint-driven intent. Legislative Defendants directed Dr. Hofeller to assign voters to districts using "election data" reflecting the contents of their prior votes for Democratic or Republican candidates. PX588. Dr. Hofeller abided, using a color-coded shading system to track voters based on their partisan preferences and voting histories. FOF § C.2. Dr. Hofeller placed Democratic voters in this district or that one based *solely* on their political views. If this direct evidence left any doubt, the expert testimony showed that the mapmaker crafted the plans

with partisanship as the dominant (if not sole) focus. Dr. Cooper in particular illustrated the intentional packing and cracking of specific Democratic voters and communities. FOF § D.

97. This sorting of Plaintiffs and other Democratic voters based on disfavor for their political views has burdened their speech by making their votes less effective. Many Plaintiffs and other Democrats live in districts where their votes are guaranteed not to matter—either because the districts are packed such that Democratic candidates will win by astronomical margins or because the Democratic voters are cracked into seats that are safely Republican. Plaintiff Derrick Miller testified that he is one such voter: with the Wilmington Notch having been placed in Senate District 8, it is "impossible for [he] and Democratic neighbors to elect a Democrat, a candidate of our choice." Tr. 205:13-15. Plaintiff Joshua Brown similarly testified that the mapmaker's placing High Point's Democrats into Senate District 26 "clearly dilutes the ability of Democrats to even attempt to run a fair race." Tr. 833:20-21.

98. By packing and cracking Democratic voters to make it harder for them to translate votes into legislative seats, the 2017 Plans "single out a subset of messages for disfavor based on the views expressed." *Matal v. Tam*, 137 S. Ct. 1744, 1766 (2017) (Kennedy, J., concurring). "This is the essence of viewpoint discrimination." *Id.*

99. Even were Legislative Defendants permitted to *consider* voters' political beliefs when drawing district maps, the 2017 Plans would still be unlawful. In arenas where the government is allowed (or even required) to consider the content or viewpoint of expression that it regulates, it is still forbidden from intentionally elevating one viewpoint over the other. In *Board of Education v. Pico*, 457 U.S. 853 (1982), for example, the Supreme Court recognized that, while local school boards "possess significant discretion to determine the content of their school libraries," their discretion may "not be exercised in a narrowly partisan or political

manner." *Id.* at 870. As the Court observed, "[i]f a Democratic school board, motivated by party affiliation, ordered the removal of all books written by or in favor of Republicans, few would doubt that the order violated the constitutional rights of the students denied access to those books." *Id.* at 870-71. So too here. Legislative Defendants did not simply look at partisan data to satisfy their curiosity. They drew the 2017 Plans in a way that deliberately minimized the effectiveness of the votes of citizens with whom they disagree.

2. The 2017 Plans Burden Plaintiffs' Ability To Associate

100. The 2017 Plans independently violate Article 1, section 12 by burdening the ability of the NCDP, Common Cause, and Democratic voters to associate effectively.

101. The 2017 Plans severely burden—if not outright preclude—the ability of the NCDP, Common Cause, and Democratic voters "to instruct their representatives, and to apply to the General Assembly for redress of grievances." N.C. Const. art. I, § 14. Democratic voters who live in cracked districts have little to no ability to instruct their representatives or obtain redress from their representatives on issues important to those voters. *Supra* FOF § E.3. And as a result of the gerrymanders, Democratic voters across the state, as well as the NCDP, will never be able to obtain redress from "the General Assembly" on important policy issues, because they never will be able to obtain Democratic majorities in the General Assembly. *Id.* Common Cause likewise cannot instruct representatives or obtain redress on the issues central to its mission due to the gerrymanders. *Supra* FOF § E.2. The 2017 Plans "burden[] the ability of like-minded people across the State to affiliate in a political party and carry out [their] activities and objects." *Gill*, 138 S. Ct. at 1939 (Kagan J., concurring).

102. The 2017 Plans separately violate NCDP's associational rights by "debilitat[ing] [the] party" and "weaken[ing] its ability to carry out its core functions and purposes." *Id.* Due to the unfair playing field created by the 2017 Plans, the NCDP "face[s] difficulties fundraising,

registering voters, attracting volunteers, generating support from independents, and recruiting candidates to run for office." *Id.* at 1938; *see* FOF § E.1.

3. The 2017 Plans Burden the NCDP's Expression Through Financial Support for Candidates

103. The 2017 Plans independently violate the NCDP's free expression and assembly rights under Article 1, sections 12 and 14 by burdening their campaign donations and expenditures. The NCDP must spend more money than it would need to under nonpartisan plans, both statewide and in individual races, and the money that the NCDP spends is less effective than it would be under nondiscriminatory maps. FOF § E.1. The NCDP's political opponent, the North Carolina Republican Party, faces no such burdens, and in fact needs to spend less money than it would under plans that were not drawn to advantage Republicans.

104. The operation of the 2017 Plans is analogous to the laws struck down in *Davis* and *Bennett* in this regard. Those laws did not preclude or limit any campaign expenditures, but were still held unconstitutional because they "diminishe[d] the effectiveness" of the expenditures of some candidates. *Bennett*, 564 U.S. at 736 (quoting *Davis*, 554 U.S. at 736). The same is true here. The 2017 Plans create "a political hydra" that forces the NCDP to drain and divert resources across the State merely to avoid being relegated to a super-minority. *Id.* at 738.

D. The 2017 Plans Fail Strict Scrutiny—and Indeed Any Scrutiny

105. Because the 2017 Plans discriminate against Plaintiffs and other Democratic voters based on their protected expression and association, the burden shifts to the Legislative Defendants to establish that the 2017 Plans were narrowly tailored to achieve a compelling government interest. *See Petersilie*, 334 N.C. at 206, 432 S.E.2d at 853-54.

106. At trial, Defendants made no serious effort to satisfy strict scrutiny. They offered no credible justification for their partisan discrimination. Nor could they have. Discriminating against citizens based on their political beliefs does not serve any legitimate government interest.

E. The 2017 Plans Impermissibly Retaliate Against Voters Based on Their Exercise of Protected Speech

107. The 2017 Plans violate the Freedom of Speech and Assembly Clauses for an independent reason. In addition to forbidding discrimination, those clauses also bar *retaliation* based on protected speech and expression. *See McLaughlin v. Bailey*, 240 N.C. App. 159, 172, 771 S.E.2d 570, 579-80 (2015). Courts carefully guard against retaliation by the party in power. *See Elrod v. Burns*, 427 U.S. 347, 356 (1976); *Branti v. Finkel*, 445 U.S. 507 (1980); *Rutan v. Republican Party of Ill.*, 497 U.S. 62 (1990). When patronage or retaliation restrains citizens' freedoms of belief and association, it is "at war with the deeper traditions of democracy embodied in the First Amendment." *Elrod*, 427 U.S. at 357 (quotation marks omitted).

108. To establish a violation of the North Carolina Constitution under a retaliation theory, Plaintiffs must show, in addition to their engagement in protected expression or association, that (1) the 2017 Plans take adverse action against them, (2) the 2017 Plans were created with an intent to retaliate against their protected speech or conduct, and (3) the 2017 Plans would not have taken the adverse action but for that retaliatory intent. *See McLaughlin*, 240 N.C. App. at 172, 771 S.E.2d at 579-80. Plaintiffs proved all of these elements.

109. *First*, the 2017 Plans take adverse action against Plaintiffs. For the Individual Plaintiffs and the Organizational Plaintiffs' members, the plans dilute the weight of their votes. The enacted plan adversely affect the individual Plaintiffs' associational rights. In *relative* terms, Democratic voters under the 2017 Plans are far less able to succeed in electing a Democratic majority to the General Assembly than they would be under plans that were not so

carefully crafted to dilute their votes. And in *absolute* terms, Plaintiffs are virtually foreclosed from succeeding in electing a Democratic majority.

110. *Second*, the Plans were clearly crafted with an *intent* to retaliate against Plaintiffs and other Democratic voters on the basis of their voting history. Again, Dr. Hofeller's files showed that when drafting the House and Senate maps he intentionally targeted Democratic voters based on their voting histories. Legislative Defendants cannot escape a finding of retaliatory intent by recharacterizing their actions as helping Republicans rather than hurting Democrats. In two-party elections, an intent to help one party necessarily implies an intent to hurt the other party. Nor does it matter that Legislative Defendants did not target specific individual voters. Plaintiffs were targeted for disfavored treatment because of a shared marker of political belief—their status as Democratic voters. That suffices. *See Miller*, 515 U.S. at 920 (condemning State's targeting of areas with "dense majority-black populations").

111. *Third*, Legislative Defendants' impermissible partisan intent *caused* the burden on Plaintiffs' expression and association. The adverse effects described above would not have occurred if Legislative Defendants had not cracked and packed Democratic voters and thereby diluted their votes. In particular, Dr. Chen compared the districts in which the Individual Plaintiffs currently reside under the enacted plans with districts in which they would have reside under each of his simulated plans. Many of the Plaintiffs' actual districts are extreme partisan outliers when compared with their districts under the simulated plans.

V. PARTISAN GERRYMANDERING CLAIMS ARE JUSTICIABLE UNDER THE NORTH CAROLINA CONSTITUTION

112. In all but the most exceptional circumstances, North Carolina courts are duty-bound to say what the law of this State is and to adjudicate cases on the merits.

113. In cases brought under the North Carolina Constitution, "[i]t has long been understood that it is the duty of the courts to determine the meaning of the requirements of our Constitution." *Leandro v. State*, 346 N.C. 336, 345, 488 S.E.2d 249, 253 (1997). "When a government action is challenged as unconstitutional, the courts have a duty to determine whether that action exceeds constitutional limits." *Id.* "It is the duty of this Court to ascertain and declare the intent of the framers of the Constitution and to reject any act in conflict therewith." *Maready v. City of Winston-Salem*, 342 N.C. 708, 716, 467 S.E.2d 615, 620 (1996).

114. State courts' duty to decide constitutional cases applies with full force in the redistricting context. Although the North Carolina Constitution directs the General Assembly to revise and reapportion districts after each census, "[t]he people of North Carolina chose to place several explicit limitations upon the General Assembly's execution of the legislative reapportionment process," which state courts have not hesitated to enforce. *Stephenson*, 355 N.C. at 370, 562 S.E.2d at 389. North Carolina courts have adjudicated claims that redistricting plans violated the Whole County Provision, the mid-decade redistricting bar, the Equal Protection Clause, and other provisions of the North Carolina Constitution. *See Stephenson*, 355 N.C. at 376, 380-81, 562 S.E.2d at 392, 395; *State ex rel. Martin v. Preston*, 325 N.C. 438, 385 S.E.2d 473 (1989); *NAACP*, 18 CVS 2322 (N.C. Super. Ct. Nov. 2, 2018). "[W]ithin the context of ... redistricting and reapportionment disputes, it is well within the power of the judiciary of [this] State to require valid reapportionment or to formulate a valid redistricting plan." *Stephenson*, 355 N.C. at 362, 562 S.E.2d at 384 (quotation marks omitted).

115. Courts of other states have decided constitutional challenges to redistricting plans, including partisan gerrymandering claims, on the merits. In adjudicating a recent partisan gerrymandering suit, the Pennsylvania Supreme Court held that "it is the duty of the Court, as a

co-equal branch of government, to declare, when appropriate, certain acts unconstitutional." *League of Women Voters of Pa.*, 178 A.3d at 822. The Florida Supreme Court similarly held that "there can hardly be a more compelling interest than the public interest in ensuring that the Legislature does not engage in unconstitutional partisan political gerrymandering." *League of Women Voters of Fla. v. Detzner*, 172 So. 3d 363, 416 (Fla. 2015). And in another constitutional redistricting challenge, the Texas Supreme Court held that "[t]he judiciary ... is both empowered and, when properly called upon, obliged to declare whether an apportionment statute enacted by the Legislature is valid." *Terrazas v. Ramirez*, 829 S.W.2d 712, 717 (Tex. 1991). "A judicial determination that an apportionment statute violates a constitutional provision is no more an encroachment on the prerogative of the Legislature than the same determination with respect to some other statute." *Id.*; *see also, e.g.*, *Johnson v. State*, 366 S.W.3d 11, 23 (Mo. 2012) (similar).

116. Indeed, state courts are particularly well-positioned to adjudicate redistricting disputes, as the public may "more readily accept state court intervention … than … federal intervention in matters of state government." *Brooks v. Hobbie*, 631 So. 2d 883, 890 (Ala. 1993). "The power of the judiciary of a State to require valid reapportionment or to formulate a valid redistricting plan has not only been recognized by th[e U.S. Supreme] Court but … has been specifically encouraged." *Scott v. Germano*, 381 U.S. 407, 409 (1965). In *Rucho*, the U.S. Supreme Court recently made clear that partisan gerrymandering claims are not "condemn[ed] … to echo in the void," because although the federal courthouse doors may be closed, "state constitutions can provide standards and guidance for state courts to apply." 139 S. Ct. at 2507.

117. Beyond the state judiciary, no other institution is realistically capable of holding partisan gerrymandering in North Carolina in check. In *Rucho*, the U.S. Supreme Court now has held that federal courts are powerless to adjudicate partisan gerrymandering claims. 139 S. Ct.

2484. The Governor lacks authority to veto redistricting legislation. N.C. Const., art. II, § 22(5). The General Assembly has proven itself unable to reform the redistricting process—regardless of which political party holds a majority. *See* Tr. 52:12-20 (Phillips). North Carolina does not have a statewide initiative or referendum process. And the Court cannot expect the voters themselves to check partisan gerrymandering through their votes in state legislative elections, since the very purpose and effect of an egregious partisan gerrymander is to prevent voters who oppose the current legislative majority from translating their votes into legislative seats.

118. Absent intervention by the state judiciary, legislators elected under one partisan gerrymander will enact new gerrymanders after each decennial census, entrenching themselves in power anew decade after decade. When the North Carolina Supreme Court first recognized the power to declare state statutes unconstitutional, it presciently noted that absent judicial review, members of the General Assembly could "render themselves the Legislators of the State for life, without any further election of the people." *Bayard v. Singleton*, 1 N.C. 5, 7 (1787). Those legislators could even "from thence transmit the dignity and authority of legislation down to their heirs male forever." *Id.* Extreme partisan gerrymandering reflects just such an effort by a legislative majority to permanently entrench themselves in power in perpetuity.

119. In rare instances, North Carolina courts have held that certain exceptional cases are nonjusticiable because they present a "political question." "The political question doctrine controls, essentially, when a question becomes not justiciable because of the separation of powers provided by the Constitution." *Cooper v. Berger*, 370 N.C. 392, 407, 809 S.E.2d 98, 107 (2018) (quotation marks omitted; cleaned up). "The doctrine excludes from judicial review those controversies which revolve around policy choices and value determinations constitutionally committed for resolution to the legislative or executive branches of government." *Id.* at 408, 809

S.E.2d at 107 (quotation marks omitted; cleaned up). The "dominant considerations" in determining whether the political question doctrine applies are "the appropriateness under our system of government of attributing finality to the actions of the political departments and also the lack of satisfactory criteria for a judicial determination." *Id.* (quotation marks omitted).

120. The Court concludes that partisan gerrymandering claims are justiciable under the North Carolina Constitution. Such claims fall within the broad, default category of constitutional cases the North Carolina courts are empowered and obliged to decide on the merits, and not within the narrow category of exceptional cases covered by the political question doctrine.

121. The Court concludes that partisan gerrymandering does not "involve a textually demonstrable constitutional commitment of the issue to a coordinate political department." *Bacon v. Lee*, 353 N.C. 696, 717, 549 S.E.2d 840, 854 (2001) (quotation marks omitted).

122. Although Article II, §§ 3 and 5, of the North Carolina Constitution direct the General Assembly to revise and reapportion state House and Senate districts after each decennial census, North Carolina courts often decide constitutional challenges to state redistricting plans. *Supra* ¶ 115 (citing cases). These cases conclusively refute any notion that redistricting is "committed to the *sole* discretion of the General Assembly" without judicial review by the courts. *Cooper*, 370 N.C. at 409, 809 S.E.2d at 108 (emphasis added).

123. "[T]he General Assembly's authority pursuant to [Article II, §§ 3 and 5] is necessarily constrained by the limits placed upon that authority by other provisions." *Cooper*, 370 N.C. at 410, 809 S.E.2d at 109. The North Carolina Supreme Court has held that the State Constitution's Equal Protection Clause constrains the General Assembly's exercise of its redistricting authority pursuant to Article II, §§ 3 and 5. *Stephenson*, 355 N.C. at 376-82, 562 S.E.2d at 392-96. The people of North Carolina amended the Free Elections Clause to mandate

that "all elections" not only "ought to be" but "*shall* be free." N.C. Const. art. I, § 10 (emphasis added). This change "ma[d]e it clear" that the Free Elections Clause is a "command[] and not merely [an] admonition[] to proper conduct on the part of the government." *DuMont*, 304 N.C. at 635, 639, 286 S.E.2d at 94, 97 (quotation marks omitted). And the North Carolina Supreme Court has held that North Carolinians must have a judicial "remedy for the violation of plaintiff's constitutionally protected right of free speech." *Corum*, 330 N.C. at 784, 413 S.E.2d at 290.

124. In North Carolina, cases presenting "a conflict between ... competing constitutional provisions" involve proper "constitutional interpretation, ... rather than a nonjusticiable political question arising from nothing more than a policy dispute." *Cooper*, 370 N.C. at 412, 809 S.E.2d at 110. The Court held in *Cooper* that a challenge to a statute creating a new State Board of Elections and Ethics Enforcement did not present a political question, because the General Assembly's authority over the functions and powers of administrative agencies was limited by the Governor's constitutional duty to "take care that the laws be faithfully executed." 370 N.C. at 417-18, 809 S.E.2d at 113-14. Similarly, in *News & Observer Publishing Co. v. Easley*, the Court held that a suit seeking public records related to clemency applications was not a political question, because the Governor's power over clemency was limited by the General Assembly's power to enact laws "relative to the manner of applying for pardons." 182 N.C. App. 14, 15, 641 S.E.2d 698, 700 (2007). So too, partisan gerrymandering claims do not present a political question because the General Assembly's redistricting authority under Article II, §§ 3 and 5 is limited by the Equal Protection Clause, the Free Elections Clause, and the Freedom of Speech and Assembly Clauses. This Court's task is "to identify where the line should be drawn" between these provisions. 182 N.C. App. at 15-16, 641 S.E.2d at 700. "There can be no doubt that we have the power and the responsibility to do so." *Id.*

125. This case bears no resemblance to cases in which North Carolina courts have applied the political question doctrine. In *Bacon v. Lee*, for example, the North Carolina Supreme Court rejected a claim seeking a disinterested arbiter for a clemency application because the North Carolina Constitution "expressly commits the substance of the clemency power to the *sole discretion* of the Governor." 353 N.C. at 698, 717, 549 S.E.2d at 843, 854 (emphasis added). Similarly, in *Hoke County Board of Education v. State*, the Supreme Court rejected a challenge to a statute setting the proper age for children to attend public school because the Constitution placed "the determination of the proper age for school children ... squarely ... in the hands of the General Assembly." 358 N.C. 605, 639, 599 S.E.2d 365, 391 (2004). These cases centered on the appropriate exercise of authority under a single constitutional provision that was committed to the sole discretion of one of the political branches. Other cases cited by Legislative Defendants are similarly inapposite. *See* Leg. Defs.' Pre-Trial Brief at 17 (citing cases).

126. The Court also concludes that "satisfactory and manageable criteria [and] standards ... exist" for adjudicating partisan gerrymandering claims under the North Carolina Constitution. *Hoke*, 358 N.C. at 639, 599 S.E.2d at 391. Plaintiffs have articulated satisfactory, manageable standards for each of their claims for relief.

127. The standard for Plaintiffs' claim under the Equal Protection Clause is based on the fundamental right to "substantially equal voting power" and to "vote on equal terms." *Stephenson*, 355 N.C. at 378-79, 562 S.E.2d at 393-94. The North Carolina Supreme Court has previously applied this long-recognized standard, including in redistricting cases. *See Stephenson*, 355 N.C. at 378-79, 562 S.E.2d at 393-94; *Blankenship*, 363 N.C. at 522-24, 681 S.E.2d at 762-64; *Northampton Cty.*, 326 N.C. 747, 392 S.E.2d at 356. This standard is not only

"manageable"—the North Carolina Supreme Court has already "manage[d]" to apply it to resolve actual cases. The Court concludes that this standard is satisfactory and manageable.

128. The standard for Plaintiffs' claim under the Free Elections Clause is based on the venerable, undisputed history of that clause, as well as the commonsense insight that elections preordained by the mapmaker for partisan purposes are not "free." *Supra* COL § III.B. The Court concludes this standard is satisfactory and manageable.

129. The standards for Plaintiffs' claims under the Free Speech and Free Assembly Clauses are based on longstanding doctrine, which recognizes that (1) voting is an expressive and associative act, and (2) government actions that burden or discriminate against protected expression or association, are subject to strict scrutiny. *Supra* COL § IV.B-D. Plaintiffs also rely on longstanding retaliation doctrine, which prohibits the government from taking adverse actions based on protected expression or association. *Supra* COL § IV.E. North Carolina courts routinely apply these standards to numerous government actions and programs in various contexts. The Court concludes that these standards are satisfactory and manageable.

130. Plaintiffs' claims are justiciable notwithstanding that they arise under broad constitutional provisions that require interpretation. Courts routinely interpret broad constitutional text, adopt legal standards to operationalize such text, and then apply those legal standards to adjudicate the constitutionality of statutes. That is exactly what the North Carolina Supreme Court did in *Stephenson*. There, the Court interpreted a broad constitutional requirement that "[n]o county shall be divided in the formation of [district]," N.C. Const. art. II, §§ 3 and 5, to require a detailed, multi-step procedure for redistricting, 355 N.C. at 383-84, 562 S.E.2d at 396-97. In adopting this standard, the Court explained that it was "not permitted to construe the [Whole County Provision] mandate as now being in some fashion unmanageable."

355 N.C. at 382, 562 S.E.2d at 396. "Any attempt to do so," the Court explained, "would be an abrogation of the Court's duty to follow a reasonable, workable, and effective interpretation that maintains the people's express wishes." *Id.* So too here, it is the Court's responsibility to distill the Equal Protection Clause, Free Elections Clause, and Free Speech and Free Assembly Clauses into a "reasonable, workable, and effective interpretation."

131. In *Stephenson*, the North Carolina Supreme Court also noted that "[p]rogress demands that government should be further refined in order to best respond to changing conditions." 355 N.C. at 382, 562 S.E.2d at 396 (quotation marks omitted). Like the Whole County Provision, the constitutional provisions invoked by Plaintiffs in this case "provide the elasticity which ensures the responsive operation of government." *Id.* (quotation marks omitted). As the North Carolina Supreme Court asked rhetorically more than a century ago: "Is it true that we are living in a popular government, depending upon free and fair elections, and have a constitution that prohibits the legislature from authorizing a judge or a justice of the supreme court to investigate alleged irregularities of the election officers? If this were so, elections would become a farce, and free government a failure. But, fortunately for the people and the government, in our opinion, this is not true, and fair and honest elections are to prevail in this state." *McDonald v. Morrow*, 119 N.C. 666, 26 S.E. 132, 134 (1896).

132. The separation of powers—which is expressly guaranteed by the North Carolina Constitution, art. I, § 6, and which underlies the political question doctrine—underscores the Court's obligation to craft manageable judicial standards to adjudicate partisan gerrymandering claims. Each of the constitutional provisions invoked by Plaintiffs in this case appears in the Declaration of Rights in Article I of the North Carolina Constitution. And "[t]he civil rights guaranteed by the Declaration of Rights in Article I of our Constitution are individual and

personal rights entitled to protection against state action." *Corum*, 330 N.C. at 782, 413 S.E.2d at 289. "The very purpose of the Declaration of Rights is to ensure that the violation of these rights is never permitted by anyone who might be invested under the Constitution with the powers of the State." 330 N.C. at 783, 413 S.E.2d at 290. And "[i]t is the state judiciary that has the responsibility to protect the state constitutional rights of the citizens." *Id.* Indeed, "this obligation to protect the fundamental rights of individuals is as old as the State." *Id.*

133. The North Carolina Supreme Court's decision in *Dickson v. Rucho*, 367 N.C. 542, 766 S.E.2d 238 (2014)—subsequently vacated by the U.S. Supreme Court, 135 S. Ct. 1843 (2015), and never reinstated—is not to the contrary. The plaintiffs in *Dickson* presented an underdeveloped claim under the Good of the Whole Clause, which provides that "all government of right … is instituted only for the good of the whole." N.C. Const., art. I, § 2. The Court rejected that claim on the ground that "plaintiffs' argument is not based upon a justiciable standard." 367 N.C. at 575, 766 S.E.3d at 260. Notably, the Court did not conclude that challenges under the Good of the Whole Clause are *always* nonjusticiable, just that the plaintiffs had failed to articulate any proper standard. And the broad language of the Good of the Whole Clause, which no court has ever liquidated into a manageable standard in any case or context, stands in contrast to the specific guarantees of equal protection, free elections, and free speech and assembly invoked here, which North Carolina courts routinely interpret and apply.

134. This Court's decision in *Dickson v. Rucho*, 2013 WL 3376658 (N.C. Super. July 8, 2013)—also subsequently vacated by the U.S. Supreme Court and never reinstated—is similarly inapposite. While the court there stated in prefatory dicta that "those whose power or influence is stripped away by shifting political winds … must find relief from courts of public opinion in future elections" rather than from "courts of law," *id.* at *1, it did so in the context of

adjudicating claims of unconstitutional *racial* gerrymandering. While partisan gerrymandering may be a defense to claims of racial gerrymandering, *see id.* at *23, 34, partisan gerrymandering is not a defense to claims of partisan gerrymandering.

135. Nor is this Court bound by dicta from *Stephenson* that "[t]he General Assembly may consider partisan advantage and incumbency protection in the application of its discretionary redistricting decisions." 355 N.C. at 371, 562 S.E.2d at 390. To begin with, the Supreme Court in *Stephenson* stated that any such considerations "must" be "in conformity with the State Constitution." *Id.* In this case, Plaintiffs allege that partisan gerrymandering of the 2017 Plans violates provisions of the State Constitution, and there is an extensive trial record concerning those allegations. By contrast, *Stephenson* did not involve any partisan gerrymandering claim—let alone partisan gerrymandering claims under the constitutional provisions Plaintiffs invoke here—nor was there any record concerning partisan gerrymandering. The statements in *Stephenson* were "mere obiter dictum and [are] not binding on this Court or any other." *Taylor v. J.P. Stevens & Co.*, 300 N.C. 94, 100-01, 265 S.E.2d 144, 148 (1980). In a case with such important consequences for democracy in this State, the Court will decide Plaintiffs' claims on the basis of the record and arguments presented by the parties here, rather than follow stray dicta from prior cases involving different claims and evidence.

136. In order to reject Defendants' invocation of the political question doctrine, the Court need to decide to the legal standards governing Plaintiffs' claims would apply in all future cases, including a hypothetical close case. This case is not close. The extreme, intentional, and systematic gerrymandering of the 2017 Plans runs far afoul of the legal standards set forth above, or any other conceivable legal standard that could govern Plaintiffs' constitutional claims. As Dr. Pegden testified, "[t]hese maps are so gerrymandered that no matter how you do the analysis,

no matter who does the analysis, no matter which side is doing the analysis, you reach the same answer." Tr. 1398:24-1399:2.

137. The Court concludes that partisan gerrymandering claims are justiciable under, and violate, the North Carolina Constitution.

VI. ANY LACHES DEFENSE LACKS MERIT

138. To the extent Defendants contend that Plaintiffs' claims are barred by laches, that defense lacks merit. North Carolina courts have recognized that laches is inapplicable to continuing obligations. *See Malinak v. Malinak*, 242 N.C. App. 609, 612-13, 775 S.E.2d 915, 917 (N.C. Ct. App. 2015). State and federal courts alike routinely refuse to apply laches in voting-rights and other constitutional cases seeking solely prospective relief. *E.g.*, *Sprague v. Casey*, 550 A.2d 184, 188-89 (Pa. 1988); *Garza v. Cty. of Los Angeles*, 918 F.2d 763, 772 (9th Cir. 1990); *Am. Trucking Ass'ns, Inc. v. N.Y. State Thruway Auth.*, 199 F. Supp. 3d 855, 872 (S.D.N.Y. 2016), *vacated on other grounds*, 238 F. Supp. 3d 527 (S.D.N.Y. 2017); *Miller v. Bd. of Comm'rs of Miller Cty.*, 45 F. Supp. 2d 1369, 1373 (M.D. Ga. 1998). Multiple federal courts have held that laches does not apply to partisan gerrymandering claims as a matter of law. *See League of Women Voters of Mich.*, 373 F. Supp. 3d at 909; *Ohio A. Philip Randolph Inst. v. Smith*, 335 F. Supp. 3d 988, 1001-02 (S.D. Ohio 2018).

139. Moreover, "laches is an affirmative defense which the pleading party bears the burden of proving." *Malinak*, 242 N.C. App. at 611, 775 S.E.2d at 916. Defendants presented no evidence at trial supporting laches.

140. Defendants offered no evidence of any "unreasonable" delay in filing this case. *Id.* Plaintiffs commenced this case just 14 months after the 2017 Plans were enacted.

141. Even if there had been any delay, Defendants presented no evidence that it "worked to the[ir] disadvantage, injury or prejudice." *Id.* While Defendants have suggested that

the time pressures of this case prevented their experts from conducting additional or more thorough analyses, any limitation on the time for Defendants' expert reports was not the result of any delay by Plaintiffs. Rather, any such limitation resulted from Defendants' own discovery misconduct discovery in this case, which led the Court to extend the time for Plaintiffs' expert reports at the expense of the time for Defendants'. *See* Order of Mar. 25, 2019. And the Court later granted Defendants a one-week extension to file their expert reports. Order of May 1, 2019.

VII. DEFENDANTS' FEDERAL DEFENSES LACK MERIT

142. Legislative Defendants and Intervenor Defendants raise a series of defenses under federal law, but none of these defenses has merit.

A. The *Covington* Remedial Order Does Not Bar Changes to the 2017 Plans

143. Legislative Defendants contend that the *Covington* court's remedial order in January 2018 precludes *any* changes being made to the current House and Senate plans. Legislative Defendants argue that the *Covington* remedial order contained an "express command that the 2017 plans be used in future elections," so as to purportedly immunize the 2017 Plans from any state-law challenge. Leg. Defs.' Pre-Trial Br. at 39.

144. Legislative Defendants made this same argument when they removed this case to federal court in December 2017, and the federal district court rejected it. The federal court held that the *Covington* remedial order "does not mandate the specific existing apportionment to the exclusion of no others." *Common Cause v. Lewis*, 358 F. Supp. 3d 505, 512 (E.D.N.C. 2019). That holding constitutes law-of-the-case, or at minimum is entitled to controlling deference.

145. In any event, the federal court's holding was clearly correct. In the very same remedial order that Legislative Defendants now cite, the *Covington* district court made clear that the 2017 Plans *could be* challenged on state-law grounds in state court. At Legislative Defendants' urging, the *Covington* court declined to address state-law objections that the

Covington plaintiffs had raised to the 2017 Plans, because those objections involved "unsettled questions of state law." *Covington v. North Carolina*, 283 F. Supp. 3d 410, 428 (M.D.N.C. 2018). In declining to address such "unsettled question of state law," the *Covington* court expressly stated that its order was "without prejudice to Plaintiffs or other litigants asserting such arguments in separate proceedings, including in "state court." *Id.* at 447 n.9. The *Covington* court even noted that any "partisan gerrymandering objection" to the 2017 Plans "would demand development of significant new evidence and therefore [would] be more appropriately addressed in a separate proceeding." *Id.* at 427. These statements squarely refute Legislative Defendants' contention that the *Covington* remedial order precludes any changes to the 2017 Plans based on state-law violations that a state court may find.

146. The U.S. Supreme Court's holding on appeal from the *Covington* remedial order eliminates any doubt on this score. The Court held that "[t]he District Court's remedial authority was … limited to ensuring that the plaintiffs were relieved of the burden of voting in racially gerrymandered legislative districts." 138 S. Ct. 2548, 2554 (2018). The Court explained: "Once the District Court had ensured that the racial gerrymanders at issue in this case were remedied, its proper role in North Carolina's legislative districting process was at an end." *Id.* at 2555. The *Covington* district court thus had no authority to do anything other than ensure the curing of the prior racial gerrymandering. It did not and could not immunize the plans from future challenge.

147. The *Covington* remedial order does not preclude North Carolina courts from invalidating the 2017 Plans for violations of state law and ordering the creation of new plans.

B. There Is No Conflict with Federal Civil Rights Laws

148. The Court also rejects Legislative Defendants' arguments that affording Plaintiffs relief on their claims would necessarily violate federal civil rights laws.

149. As described, Legislative Defendants introduced no evidence at trial to establish that any of the three *Gingles* factors, including the existence of legally sufficient racially polarized voting, is present in any area of the State or any particular districts. Legislative Defendants' failure to present any evidence to establish that the *Gingles* factors are met is "is fatal to [any] Section 2 defense" under the VRA. *Covington v. North Carolina*, 316 F.R.D. 117, 169 (M.D.N.C. 2016), *aff'd*, 137 S. Ct. 2211 (2017).

150. Indeed, Legislative Defendants affirmatively represented throughout the 2017 redistricting process that the third *Gingles* factor was *not* met. FOF § F.6. Legislative Defendants have presented no evidentiary basis for any change in that position. The Court concludes that Legislative Defendants have not established that the VRA justifies the current House or Senate districts or precludes granting Plaintiffs relief on their claims.

151. Legislative Defendants also have not established any defense under the Fourteenth or Fifteenth Amendment. Legislative Defendants argue that affording Plaintiffs relief would require intentionally lowering the BVAP in purported "crossover" districts below the level necessary to elect candidates of choice of African Americans, but Legislative Defendants again have advanced no evidence to substantiate this claim. They provided no evidence to establish any district qualifies as a "crossover district," or that remedying the partisan gerrymander in any district or grouping would require lowering the BVAP of any crossover district below the level necessary for African Americans to elect candidates of their choice.

152. Indeed, Legislative Defendants' own expert Dr. Lewis generated estimates of the minimum BVAP needed in certain county groupings for African-American-preferred candidate to win, and Dr. Chen demonstrated that his nonpartisan simulations produce districts within each such county grouping with BVAPs above Dr. Lewis's estimates. FOF § F.6.

153. Legislative Defendants' federal equal protection defense suffers from another fatal defect—it requires a showing of an intent to discriminate against African Americans. To establish a Fourteenth or Fifteenth Amendment violation, there must be "racially discriminatory intent," *Lee v. Va. State Bd. of Elections*, 843 F.3d 592, 603 (4th Cir. 2016), which in the redistricting contents means "intentional vote dilution," *i.e.*, "invidiously minimizing or canceling out the voting potential of racial or ethnic minorities." *Abbott v. Perez*, 138 S. Ct. 2305, 2314 (2018) (quotation marks and alterations omitted).

154. The Court finds without difficulty that Plaintiffs have no intent to discriminate against racial minorities in seeking remedial plans to replace the current plans that violate state. Further, Plaintiffs alone cannot adopt remedial plans in this case; only this Court may do so, and this Court will not act with any racially discriminatory intent. The remedial plans adopted in this case will not intentionally dilute the voting power of any North Carolina citizens.

C. Granting Relief Will Not Violate the Fundamental Right to Vote

155. Finally, Legislative Defendants contend that affording Plaintiffs relief in this case will violate the "fundamental right to vote" under the Fourteenth Amendment. Legislative Defendants cite no federal precedent for this purported defense, but in any event it lacks merit.

156. Granting Plaintiffs relief will promote, not violate, the fundamental right to vote of North Carolina citizens. Legislative Defendants' defense operates from the misapprehension that voting rights must be a zero-sum game, such that curing discrimination against one set of citizens necessarily requires discriminating against another set of citizens. At bottom, the right that Plaintiffs seek to vindicate is the right to be free from intentional discrimination, and vindicating that right in no way requires or will result in discriminating against others.

VIII. THE COURT WILL ENJOIN USE OF THE 2017 PLANS IN FUTURE ELECTIONS AND APPOINT A REFEREE TO IMMEDIATELY BEGIN THE PROCESS OF REDRAWING THE RELEVANT DISTRICTS

A. The Court Will Require the Redrawing of the Specific County Groupings Analyzed by Plaintiffs' Experts

157. For the reasons stated above, and as set forth in the decree below, the Court declares that the 2017 House and Senate Plans are unconstitutional under the North Carolina Constitution and enjoins their use in the 2020 primary and general elections. In particular, the Court enjoins use of the districts in the specific House and Senate county groupings analyzed by Plaintiffs' experts and as specified in the decree below, with two exceptions.

158. First, the Court does not order any relief with respect to the current House districts in Wake County. Shortly before the trial in this matter, those districts were redrawn pursuant to a separate litigation. *See NAACP v. Lewis*, No. 18 CVS 2322 (N.C. Super.). Plaintiffs did not present evidence in this case regarding the new Wake County House districts and do not seek relief with respect to those districts.

159. Second, the Court does not enjoin or order the redrawing of House Districts 57, 61, and 62 or Senate Districts 24 or 28, all of which were redrawn by the *Covington* Special Master. With respect to House District 59 and Senate District 27, for which small portions of the current districts were added by the Special Master in *Covington*, the Court will order that the remedial versions of these districts not alter any portions of these districts that were added by the Special Master, but any other portions of these districts may be redrawn. Neither House District 59 nor Senate District 27 were found by the *Covington* court to have been racially gerrymandered (under either the 2011 Plans or the 2017 Plans enacted by the General Assembly), and the *Covington* court did *not* direct the Special Master to redraw either of these districts. The Special Master nonetheless made small changes to these districts, principally to

equalize population, in the course of constructing other districts he was tasked with redrawing. While this Court concludes that there is no legal impediment to redrawing any portion of House District 59 and Senate District 27, including the portions that the Special Master added, the Court nonetheless imposes the limitation set forth in this paragraph out of an abundance of caution.

B. The Court Will Require the Use of Traditional Districting Criteria and Prohibit the Use of Other Criteria in Redrawing the Districts

160. As set forth in the Court's decree below, the Court will require that the remedial plans comply with the federal and state constitutional requirements regarding equal population and county groupings and county traversals. The Court will further require that, unless the Court otherwise finds good cause to apply other criteria, the redrawing of the relevant districts shall be governed solely by the traditional districting criteria of contiguity, compactness, avoiding splitting municipalities, and avoiding splitting VTDs.

161. In redrawing the relevant districts, the invalidated 2017 districts may not be used as a starting point for drawing new districts, and no effort may be made to preserve the cores of invalidated 2017 districts. *See Covington*, 283 F. Supp. 3d at 431-32 (holding that remedial plan could not seek to "preserve the cores of unconstitutional districts").

162. In redrawing the relevant districts, no effort may be made to avoid pairing or otherwise to protect incumbents. While the Court need not decide whether incumbency protection could sometimes be a legitimate redistricting criterion, the Court holds that incumbency protection is not appropriate where, as here, the current incumbents were elected under an unconstitutional redistricting plan. *See Covington*, 283 F. Supp. 3d at 431-32 ("[R]emedial districts drawn to protect incumbents elected under an unlawful or unconstitutional plan may serve to perpetuate the identified violation.").

163. The Court will prohibit the use of prior election results or other political data in constructing the remedial districts, and the Court likewise will prohibit any intentional attempt to favor voters or candidates of one political party.

164. Any remedial plans must comply with the VRA and other federal requirements concerning the racial composition of districts. The Court will afford all parties an opportunity to submit briefing, which may attach expert analysis, on whether the *Gingles* factors are met in particular counties and county groupings and/or the minimum BVAP needed in particular counties and county groupings for African Americans to be able to elect candidates of their choice to the General Assembly. Any such submission by Legislative Defendants, however, is subject to two limitations set forth below.

165. First, if Legislative Defendants assert that the *Gingles* factors are met in any particular district or county grouping, they must not only provide evidentiary support for that assertion, but also must also show good cause why they did not compile such evidence during the 2017 redistricting process and must show good cause why they should not be held judicially estopped from arguing that the *Gingles* factors are met given their repeated representations to the *Covington* court in 2017 that the third *Gingles* factor was not met anywhere in the State.

166. Second, for districts in counties and county groupings for which Legislative Defendants' expert Dr. Lewis estimated the minimum BVAP needed for an African-American preferred candidate to prevail in a state legislative election, Legislative Defendants may not assert that the VRA or the U.S. Constitution requires or justifies making the BVAP of any such district higher than the minimum BVAP threshold estimated by Dr. Lewis in his Amended Table 4 (which was admitted into evidence at trial) for the relevant county or county grouping. PX773. For districts in counties and county groupings that Dr. Lewis did not analyze, Legislative

Defendants may not assert that the VRA or the U.S. Constitution requires or justifies any minimum BVAP for the districts in that county or county grouping. The Court holds that Legislative Defendants are bound by the BVAP threshold-estimates generated by the expert they retained in this case and are estopped from departing from those estimates, which were relied upon by Plaintiffs' experts, at this late stage of the litigation.

C. The Court Declines To Afford the General Assembly the Opportunity To Redraw the Districts in the First Instance

167. The Court declines to afford the General Assembly an opportunity to draw the remedial districts in the first instance and will instead appoint a Referee to draw the new plans, subject to the Court's approval, pursuant to North Carolina Rule of Civil Procedure 53. Courts frequently retain referees or special masters to assist in drawing redistricting plans. *See, e.g.*, *League of Women Voters of Pa. v. Commonwealth*, 181 A.3d 1083, 1085 (Pa. 2018); *Covington v. North Carolina*, 2017 WL 11049096, at *2 (M.D.N.C. Nov. 1, 2017).

168. Although courts typically afford state legislatures the first opportunity to remedy unlawful districts, courts have declined to do so where the legislature has repeatedly violated the law in drawing redistricting plans and otherwise shown bad faith in the redistricting process. For instance, in *Hays v. State*, 936 F. Supp. 360 (W.D. La. 1996), the federal court did not give the state legislature a chance to redraw the state's congressional map where the legislature had enacted two successive unlawful plans. *Id.* at 372. The court refused to "turn a blind eye on the record of the Legislature," and thus implemented its own remedial plan instead. *Id.* at 371-72. Similarly, in *Terrazas v. Slagle*, 789 F. Supp. 828 (W.D. Tex. 1991), the court adopted its own remedial state legislative plans in the first instance. *Id.* at 838-39, 840-41. The court did so after concluding, in light of the legislature's recent redistricting actions, that there was "no real hope

that further deference to the legislature at this time would yield any result other than continued protection of some members' self-interests." *Id.* at 838.

169. "[W]ith regret and reluctance," *Hays*, 836 F. Supp. at 372, this Court reaches the same conclusion as the courts in *Hays* and *Terrazas*. In drawing the state House and Senate districts in 2011, Legislative Defendants engaged in unlawful racial gerrymandering. *See Covington*, 316 F.R.D. 117. After those plans were struck down, rather than pass non-discriminatory remedial plans, Legislative Defendants redoubled their efforts to gerrymander the districts on unconstitutional partisan grounds. In addition to engaging in unlawful partisan gerrymandering, this Court previously held that Legislative Defendants violated the North Carolina Constitution's ban on mid-decade redistricting during the 2017 redistricting as well. *See NAACP v. Lewis*, No. 18 CVS 2322. Legislative Defendants thus have already had "multiple opportunities" to draw lawful state House and Senate districts, but have not done so. *Covington*, 2017 WL 11049096, at *2 (appointing Special Master rather than give Legislative Defendants another chance to cure racial gerrymanders). Instead, they have violated the federal and state constitutions in at least three different ways.

170. It is not only state legislative districts for which Legislative Defendants have passed unconstitutional redistricting laws. In just the law few years, Legislative Defendants have committed constitutional violations in redistricting everything from congressional districts to school boards to city councils. *See Raleigh Wake Citizens Ass'n v. Wake Cty. Bd. of Elecs.*, 827 F.3d 333 (4th Cir. 2016); *Greensboro City Council City of Greensboro v. Guilford Cty. Bd. of Elecs.*, 251 F. Supp. 3d 935 (M.D.N.C. 2017).

171. In total this decade, even before this case, Legislative Defendants have violated the state or federal constitution in redistricting:

- The state's legislative districts in 2011. *See Covington*, 316 F.R.D. 117.
- The state's legislative districts in 2017. *See NAACP*, No. 18 CVS 2322.
- The state's congressional districts in 2011. *See Cooper*, 137 S. Ct. 1455.
- The Wake County School Board in 2013. *See Raleigh*, 827 F.3d 333.
- The Wake County Board of Commissioners in 2015. *See id.*
- The Greensboro City Council in 2016. *See Greensboro*, 251 F. Supp. 3d 935.

172. And it is not just redistricting laws. Legislative Defendants have passed numerous other unconstitutional election laws this decade. As just a few examples:

- In 2013, Legislative Defendants passed an omnibus law that "target[ed] African Americans with almost surgical precision." *N.C. State Conf. of NAACP v. McCrory*, 831 F.3d 204, 214 (4th Cir. 2016). The law "restricted voting and registration in five different ways, all of which disproportionately affected African Americans." *Id.*
- In 2017, just months after a similar law was enjoined by the courts, Legislative Defendants enacted a new law that unconstitutionally sought to limit the Governor's power to appoint members of the State Board of Elections, to cement the State Board's Executive Director in this role, and to require Republican Party leadership of County Boards of Elections. *Cooper v. Berger*, 370 N.C. 392, 809 S.E.2d 98 (2018); Order, *Cooper v. Berger*, No. 18 CVS 3348 (N.C. Super. Oct. 16, 2018).
- In 2018, Legislative Defendants unconstitutionally attempted to change the party registration listed on the ballot for a candidate for the North Carolina Supreme Court. *See Anglin v. Berger*, No. 18-CVS-9748 (N.C. Super. Aug. 13, 2018).
- In 2018, Legislative Defendants enacted a law that unconstitutionally removed candidates from the Constitution Party from the ballot. *Poindexter v. Strach*, 324 F. Supp. 3d 625, 627 (E.D.N.C. 2018).

173. Against this backdrop, "the Legislature has left us no basis for believing that, given yet another chance, it would produce a constitutional plan." *Hays*, 936 F. Supp. at 372.

174. In addition to the General Assembly's record of violating the constitutional rights of voters throughout this decade, Legislative Defendants' deception of the courts and the public during the 2017 remedial process further supports not allowing the General Assembly an

opportunity to redraw the new districts. As the Court has found, Legislative Defendants made false or materially misleading representations to the *Covington* court and the public in 2017 regarding the timing of when the plans were drawn and Legislative Defendants' desire to meaningfully deliberate and engage with the public. Legislative Defendants also made false or materially misleading statements to the *Covington* court during the remedial process about Dr. Hofeller's possession and consideration of racial data. These misrepresentations—about the drawing of these very plans just two years ago—are no small matter. Nor is Legislative Defendants' cynical attempt to misuse maps drawn by Campbell Law students as a part of nonpartisan map-drawing simulation exercise hosted by Common Cause. All of these actions are serious violations of the trust that the public and the judiciary placed in Legislative Defendants.

175. Legislative Defendants also hid their work on the 2017 redistricting from the public in violation of state law. Under N.C. Gen. Stat. § 120-133(a) as well as Dr. Hofeller's contract with Legislative Defendants (PX631), all of Dr. Hofeller's files regarding his work on the 2017 redistricting—no matter when they were created—were required to be made public as soon as the plans were enacted in August 2017. Legislative Defendants bore responsibility for ensuring compliance with the statute, but did not. Under North Carolina law, all of the files from Dr. Hofeller's storage devices introduced at trial constitute public records that should have been made public years ago. And Plaintiffs have informed this Court that the hard drives likely contain thousands, if not tens of thousands, of other files related to Dr. Hofeller's redistricting work in North Carolina that should have been made public under state law. Legislative Defendants' failure to disclose these records as required by law is yet another basis to find that they should not be permitted to engage in another round of redistricting this decade.

176. The Court recognizes that a state statute purports to require that the General Assembly be given a chance to remedy a redistricting plan that is struck down. N.C. Gen. Stat. § 120-2.4(a). But the Court is not bound by the statute in this instance, for three reasons.

177. First, Legislative Defendants are judicially estopped from arguing that this Court lacks discretion to develop remedial plans in the first instance in order to ensure a timely and effective remedy for the constitutional violations the Court has found. Shortly after this case was filed, the parties submitted competing briefs on the case schedule, and in particular on Plaintiffs' requested for an expedited trial date. In arguing against an expedited case schedule and trial date, Legislative Defendants asserted that "[i]f any proceeding is going to advance at breakneck speed, it should be the *remedial* proceeding, not the liability proceeding." 1/29/19 Leg. Defs.' Br. at 4. Legislative Defendants stated: "As courts have recognized, *the remedial phase of a redistricting matter can be fashioned within a trial court's sound discretion*, even if it is less than perfect, to achieve very practical ends of balancing election integrity and the remedy of individual rights." *Id.* (emphasis added). Legislative Defendants prevailed in this argument; the Court set a trial date more than two months later than what Plaintiffs requested. *See* 1/29/19 Pls.' Proposed Case Management Order. Under judicial estoppel, Legislative Defendants cannot now insist that this Court lacks discretion in fashioning remedy, and thus cannot claim that the Court is required to apply N.C. Gen. Stat. § 120-2.4(a). *See Price v. Price*, 169 N.C. App. 187, 191, 609 S.E.2d 450, 452 (2005); *Health Mgmt. Assocs., Inc. v. Yerby*, 215 N.C. App. 124, 129, 715 S.E.2d 513, 517 (2011). The Court, in its discretion, concludes that the only way to ensure a timely remedy that cures the constitutional violations is for the Court to appoint a Referee to redraw the new plans now. *See Stephenson*, 355 N.C. at 385, 562 S.E.2d at 398 (permitting the

trial court to develop remedial plans in the first instance if it would not be "feasib[le] [to] allow[] the General Assembly the first opportunity to develop new redistricting plans").

178. Second, and relatedly, the North Carolina Constitution makes clear that "[t]he General Assembly shall have no power to deprive the judicial department of any power or jurisdiction that rightfully pertains to it as a co-ordinate department of the government." N.C. Const. art. IV, § 1. One rightful power of the North Carolina judiciary is the "inherent power the court ... to do all things that are reasonably necessary for the proper administration of justice," including in fashioning a remedy. *Beard v. N.C. State Bar*, 320 N.C. 126, 130, 357 S.E.2d 694, 696 (1987); *see also Kinlaw v. Harris*, 364 N.C. 528, 532-33, 702 S.E.2d 294, 297 (2010) ("Trial courts have broad discretion to fashion equitable remedies to protect innocent parties when injustice would otherwise result," including "the power to grant, deny, limit, or shape relief as necessary to achieve equitable results." (quotation marks omitted)). The Court has determined that affording the General Assembly another opportunity to redraw the state House and Senate plans would substantially jeopardize the administration of justice.

179. Third, where a plaintiff's constitutional rights are "severely burdened" by "an election law," the statute must be narrowly tailored to advance a compelling state interest. Order at 8, *Anglin v. Berger*, No. 18-CVS-9748 (N.C. Super. Aug. 13, 2018), https://bit.ly/2ZFiXMg. Here, N.C. Gen. Stat. § 120-2.4(a) is unconstitutional as applied in this case because it would severely burden Plaintiffs' constitutional rights and is not narrowly tailored to advance a compelling state interest, particularly given Legislative Defendants' pattern of prior misconduct.

180. While the Court has concluded that the General Assembly shall not be afforded the opportunity to draw new plans in the first instance, if an appellate court disagrees with the Court's decision in this regard, the Court would implement a remedial process as follows:

a) The Court would afford the General Assembly two weeks to enact remedial plans. While the General Assembly amended N.C. Gen. Stat. § 120-2.4(a) in December 2018 to potentially require that the General Assembly be given a longer remedial timeline, the Court concludes that this amendment cannot be applied retroactively to this case, which had already been filed at the time the amendment was passed. "[I]n North Carolina, statutes are presumed to act prospectively only, unless it is clear that the legislature intended that the law be applied retroactively." *Thompson v. Charlotte-Mecklenburg Bd. of Educ.*, 222 N.C. App. 855, 731 S.E.2d 862 (2012) (quotation marks omitted). Here, the bill amending section 120-2.4(a) contained no clear statement that the amendment would apply retroactively to a case already pending, and providing for such retroactive application would unfairly infringe upon the vested rights of Plaintiffs to obtain timely relief in their already-filed case. A recent brief by Legislative Defendants is instructive in this regard. Last year in *Dickson v. Rucho*, Legislative Defendants successfully argued that the repeal of a statute that allowed for direct appeals to the North Carolina Supreme Court could not be applied retroactively, because the *Dickson* case was pending at the time the statute was repealed. *See* Leg. Defs.' 5/21/18 Resp. to Mot. to Dismiss., *Dickson v. Rucho*, No. 201PA12-5, https://bit.ly/2GQ8plR. Legislative Defendants argued that the courts had to apply the "statute that was in effect when the case was commenced." *Id.* at 11-12. The North Carolina Supreme Court agreed and denied a motion to dismiss the appeal based on the repeal of the statute. 9/27/18 Order, https://bit.ly/2OGvtty. The same principle applies here, particularly where providing for a longer

remedial timeline could imperil the ability of Plaintiffs to obtain effective relief. It simply cannot be that the General Assembly can insulate its own unconstitutional legislation by passing statutes—while a legal challenge to the statute is pending—that make obtaining relief more difficult. Moreover, independent of the retroactivity issue, Legislative Defendants are judicially estopped from insisting on a lengthier remedial timeline pursuant to the statutory amendment given their prior successful representation to the Court that they would consent to "a remedial proceeding" that "advance[d] at breakneck speed" if necessary to ensure a timely remedy in this case. 1/29/19 Leg. Defs.' Br. at 4.

b) The Court would require Legislative Defendants and their agents to conduct the entire remedial process in full public view. At a minimum, that would require all mapdrawing to occur at public hearings, with any relevant computer screen visible to legislators and public observers. Given what transpired in 2017, the Court would prohibit Legislative Defendants and their agents from undertaking any steps to draw or revise the new districts outside of public view.

c) If Legislative Defendants were to retain one or more individuals who are not current legislative employees to assist in the map-drawing process, the Court would require Legislative Defendants to obtain approval from the Court to engage any such individuals.

d) Notwithstanding the General Assembly having the opportunity to draw remedial plans in the first instance, the Court would still immediately appoint a Referee to assist the Court in reviewing any remedial plans passed by the General Assembly

and/or in developing remedial plans for the Court should the General Assembly fail to pass lawful remedial plans.

D. The Court Will Not Stay the Remedial Process Pending Appeal

181. The Court orders that the remedial process will commence immediately upon entry of the decree, and the Court will not grant a stay of the remedial process pending appeal.

182. The central inquiry in deciding whether to grant a stay of relief pending appeal is a balancing of the prejudice and risk of irreparable to the parties. *See 130 of Chatham, LLC v. Rutherford Elec. Membership Corp.*, 2014 WL 3809066, at *3 (N.C. Super. July 31, 2014).

183. Here, the balance of the equities weighs definitively against any stay. "[C]ourts evaluating redistricting challenges have generally denied motions for a stay pending appeal." *Harris v. McCrory*, 2016 WL 6920368, at *1 n.1 (M.D.N.C. Feb. 9, 2016) (citing cases and denying stay pending appeal). In such cases, a stay pending appeal could "risk that the State would not be able to implement" the remedial plans "in time for the [next] elections in the event that the [appellate courts] affirm[] this Court's judgment." *Covington*, 2018 WL 604732, at *6 (denying stay pending appeal). "The risk of harm is particularly acute where Plaintiffs and other North Carolina voters have already cast their ballots under unconstitutional district plans" in every election this decade. *Id.* The prejudice to Plaintiffs here would be magnified because the state legislators elected in 2020 will redraw the state House and Senate districts in 2021 following the Decennial Census, substantially compounding the effects of allowing the current unconstitutional plans to be used in the 2020 elections.

184. In contrast, Legislative Defendants will suffer little if any prejudice from refusing any stay pending appeal. If Legislative Defendants ultimately prevail in an appeal, then the current districts will remain in place for the 2020 elections, and there will be no tangible harm

from having allowed the remedial process to move forward while the appeal was pending. On balance, the equities and the public interest counsel strongly against a stay.

E. The Court Retains Discretion To Move the Primary Dates

185. Finally, the Court holds that the remedial schedule and process that the Court has set forth in this Order should ensure that remedial plans will be in place sufficiently in advance of the current primary date of March 3, 2020. However, the Court retains authority and discretion to move the primary date for the General Assembly elections should doing so become necessary to provide effective relief in this case. The Court could move the primaries under one of two approaches. First, the Court could move all of the State's 2020 primaries, including for offices other than the General Assembly, to a later date in 2020. Alternatively, the Court could move the primaries for only the state House and state Senate to a later date, while keeping the primaries for other offices on the currently scheduled date of March 3, 2020. One possibility would be to move the primaries for the state House and state Senate to the "Second Primary" date that has taken place in every recent election cycle for primary run-offs. There is precedent for both of these approaches. In 2002, the North Carolina Supreme Court in *Stephenson* enjoined the primaries for the state House and state Senate from occurring on the originally scheduled date, 355 N.C. 281, 282, 561 S.E.2d 288 (2002), which resulted in all of the State's primaries being moved to a different date. *See* 357 N.C. 301, 303, 582 S.E.2d 247, 249 (2003). And in 2016, after a federal court enjoined the State's congressional plan as an unconstitutional racial gerrymander, the General Assembly moved the primary *only* for congressional elections, while leaving other primaries (including the presidential primary) on the originally scheduled date. *See* Session Law 2016-2 § 1(b).

186. While the Court concludes that moving the 2020 primaries is not needed at this date, the Court may consider doing so if necessary to grant effective relief in this case.

PROPOSED DECREE

1. The Court declares that the 2017 House and Senate Plans are unconstitutional and invalid because each plan violates the rights of Plaintiffs and other Democratic voters under the North Carolina Constitution's Equal Protection Clause, art. I, § 19; the Free Elections Clause, art. I, § 5; and the Freedom of Speech and Freedom of Assembly Clauses, art. I, §§ 12 & 14.

2. Legislative Defendants and State Defendants, and their respective agents, officers, and employees, are permanently enjoined from preparing for or administering the 2020 primary and general elections for House districts in the following House county groupings:

a) Alamance

b) Anson-Union

c) Brunswick-New Hanover

d) Buncombe

e) Cabarrus-Davie-Montgomery-Richmond-Rowan-Stanly

f) Cleveland-Gaston

g) Columbus-Pender-Robeson

h) Cumberland

i) Duplin-Onslow

j) Franklin-Nash

k) Forsyth-Yadkin

l) Granville-Person-Vance-Warren

m) Guilford (except that House Districts 57, 61, and 62 shall not be redrawn, and any portions of House District 59 added by the *Covington* Special Master shall not be altered)

n) Lenoir-Pitt

o) Mecklenburg

3. Legislative Defendants and State Defendants, and their respective agents, officers, and employees, are permanently enjoined from preparing for or administering the 2020 primary and general elections for Senate districts in the following Senate county groupings:

a) Alamance-Guilford-Randolph (except that Senate Districts 24 and 28 shall not be redrawn, and any portions of Senate District 27 added by the *Covington* Special Master shall not be altered)

b) Bladen-Brunswick-New Hanover-Pender

c) Buncombe-Henderson-Transylvania

d) Davie-Forsyth

e) Duplin-Harnett-Johnston-Lee-Nash-Sampson

f) Franklin-Wake

g) Mecklenburg

4. Districts in the House and Senate county groupings set forth above shall be redrawn and finally approved by this Court no later than October 4, 2019.

5. Except as otherwise noted in this Order, the following criteria shall exclusively govern the redrawing of districts in the House and Senate county groupings set forth above:

a) Each district shall have equal population within plus or minus 5% from the ideal population of House or Senate districts.

b) Each district shall be contiguous, with water contiguity permitted.

c) The districts shall comply with the county grouping and county traversal requirements of the North Carolina Constitution's Whole County Provision.

d) The districts shall be as compact as reasonably possible, and shall split as few municipalities, VTDs, and precincts as reasonably possible.

e) The invalidated 2017 districts shall not be used as a starting point for drawing new districts, and no effort shall be made to preserve the cores of invalidated 2017 districts.

f) No effort shall be made to avoid pairing or otherwise protect incumbents.

g) Prior election results or other political data shall not be used in constructing the remedial districts, and no effort shall be made to favor voters or candidates of one political party.

h) All remedial districts shall comply with the VRA and other federal requirements concerning the racial composition of districts.

6. With respect to the racial composition of the remedial districts:

a) Within 14 days of this Decree, all parties may submit briefing, which may attach expert analysis, on whether the *Gingles* factors are met in particular counties and county groupings and/or the minimum BVAP needed in particular counties and county groupings for African Americans to be able to elect candidates of their choice to the General Assembly. Any such submission by Legislative Defendants is subject to the limitations set forth in subparagraphs b and c immediately below.

b) If Legislative Defendants assert that the *Gingles* factors are met in any counties or county groupings, they shall not only provide evidentiary support for that assertion, but shall also show good cause why they did not compile such evidence during the 2017 redistricting process and shall show good cause why they should not be held judicially estopped from arguing that the *Gingles* factors are met given their repeated representations to the *Covington* court in 2017 that the third *Gingles* factor was not met anywhere in the State.

c) For districts in counties and county groupings for which Legislative Defendants' expert Dr. Lewis estimated the minimum BVAP needed for an African-American preferred candidate to prevail in a state legislative election, Legislative Defendants shall not assert that the VRA or the U.S. Constitution requires or justifies making the BVAP of any such district higher than the minimum BVAP threshold estimated by Dr. Lewis in his Amended Table 4 (PX773) for the relevant county or county grouping. For districts in counties and county groupings that Dr. Lewis did not analyze, Legislative Defendants shall not assert that the VRA or the U.S. Constitution requires or justifies any minimum BVAP for the districts in that county or county grouping.

d) Regardless of whether any party submits a brief and/or expert analysis, the Court-appointed Referee shall ensure that no remedial district violates the VRA or other federal requirements concerning the racial composition of districts. In making that assessment, the Referee may rely upon any expert analysis submitted by the parties—including but not limited to Dr. Lewis's estimates in his Amended Table 4 (PX773)—of the minimum BVAP needed for African-American-preferred candidates to win in particular counties and county groupings.

7. Pursuant to North Carolina Rule of Civil Procedure 53, the Court hereby appoints _____ to serve as the Referee in this case to develop remedial House and Senate plans, subject to review and approval by the Court.

8. Upon request from the Referee, the parties shall promptly make available to the Referee electronic copies of trial and hearing transcripts, trial exhibits, motions, briefs, and any other material submitted to the Court. Such a request shall be communicated by way of an email message to counsel of record for all parties.

9. The parties, including the North Carolina Legislative Analysis Division, shall promptly respond to the best of their ability to any reasonable request by the Referee for supporting data or information as necessary to carry out the Referee's assignment. All such requests and responses shall be made by email, with all counsel copied. Upon such a request, the requested party shall respond promptly to the best of its ability. The Referee may, but is not required to, request briefs on such matters as he or she would find helpful. The Referee is not authorized to take new evidence, absent approval from the Court.

10. The Referee may, but is not required to, convene the parties for a discussion about logistics, software, data, and other housekeeping or technical issues, including whether it would or might save time or other resources to use computers, software, data, or other facilities and materials controlled by Legislative Defendants or State Defendants and to have technical assistance from a support person employed by Legislative Defendants or State Defendants in the use of such materials. The Referee may convene such a discussion upon reasonable notice at a time and place and in a method convenient to him or her, though if an in-person meeting or hearing is convened it shall occur in North Carolina. The Referee shall advise the parties of the time and other details by way of an email message to counsel of record for all parties.

11. If the Referee determines that it would save time and otherwise facilitate prompt completion of his or her work to use state technical resources and so long as the parties consent to such use under terms which would not give the Legislative Defendants or State Defendants advance or ex parte knowledge of the Referee's work and which would prevent the Legislative Defendants or State Defendants from accessing such work or communicating with its support employee about such work, the Court will entertain a request to supplement this Decree.

12. If time permits and the Referee would find it helpful, he or she may publicly release preliminary maps or plans and convene a hearing, meeting, or informal conference to evaluate whether the preliminary maps meet the criteria set forth herein or raise unanticipated problems. The Referee shall advise the parties of the time and other details by way of an email message to counsel of record for all parties and shall file notice with the court. A transcript shall be prepared of any such hearing, meeting, or conference, and, if it does not occur in open court, be made available on the Court's docket.

13. The Referee is prohibited from engaging in any ex parte communication with the parties or their counsel, except as specifically authorized by this Decree.

14. Within 21 days after his or her appointment, or such other date as the Court so directs, the Referee shall file recommended House and Senate plans with the Court consistent with the terms of this Decree.

15. The remedial process set forth in this Decree shall commence immediately upon entry of this Decree, and the Court does not grant a stay of the remedial process pending appeal.

16. Legislative Defendants and their agents, officers, employees, and successors are permanently enjoined from using past election results or other political data in any future

redistricting of North Carolina's state legislative districts to intentionally dilute the voting power of citizens or groups of citizens based on their political beliefs, party affiliation, or past votes.

17. Legislative Defendants and their agents, officers, employees, and successors are permanently enjoined from otherwise intentionally diluting the voting power of citizens or groups of citizens in any future redistricting of North Carolina's state legislative districts based on their political beliefs, party affiliation, or past votes.

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of the foregoing *by email*, addressed to the following persons at the following addresses which are the last addresses known to me:

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This the 7th day of August, 2019.

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