STATE OF NORTH CAROLINA
COUNTY OF WAKE

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

COMMON CAUSE, *et al.*

Plaintiffs,

v.

DAVID R. LEWIS, *et al.*

Defendants.

Expert Report of Douglas Johnson, Ph.D.

Pursuant to the North Carolina Rules of Civil Procedure and the Case Management Orders of the Court in the above-captioned matter, I, Douglas Johnson, provide the following written report:

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1.   I am over 18 years of age and I have personal knowledge of the facts stated herein.

I.   Expert Qualifications

2.   I graduated with a Bachelor of Arts in Government with Honors from Claremont McKenna College in 1992. I graduated with a Master's degree in Business Administration from the Anderson School at the University of California – Los Angeles in 1999, and, in 2015, I graduated with a Ph.D. in Political Science from Claremont Graduate University. Since 2001, I have served as a Fellow at the Rose Institute of State and Local Government at Claremont McKenna College. As Student Manager of the Rose Institute in 1991 and as a Fellow at the Rose Institute in 2001 and 2011, I have led political, demographic, and process research on state and local redistricting through three post-decennial census redistricting cycles. In that capacity, I have issued numerous white papers, op-ed pieces, in-depth analyses, and other reports on the Census, demographics, districting, and redistricting, including primary oversight of the Rose Institute's "Redistricting in America" report and website which remains widely quoted in state and national news coverage. These opinion pieces were printed by publications including the New York Times and the Los Angeles Times and I have been quoted in over one hundred national and local news articles and appeared on redistricting-related news pieces on CNN, Fox News, and several public and commercial television and radio news broadcasts.

3.   I am, and at all times since 2006 have been, the owner and primary consultant for National Demographics Corporation ("NDC"). Prior to that, I was a Senior Analyst and later Vice President for NDC from 2001 until 2006. In these roles, I have acted as demographic and technical consultant on matters related to analysis of demographics, polarized voting, and potential Voting Rights liability for over 300 California jurisdictions, along with numerous jurisdictions in other states. I have worked on the districting or redistricting of over 200 state and local jurisdictions, ranging in size from California's tiny Clay Elementary School District, to the city of San Diego, the counties of San Diego and Los Angeles, and Arizona's 2001 first-in-the-nation Independent Redistricting Commission.

4.   In each of those more than 300 districting, redistricting, and liability studies, I have

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personally built, or supervised the building of, one or more databases combining demographic and election data from sources including the California Statewide Database, the 2000 and/or 2010 decennial Census, the Census Bureau's American Community Survey, and the Census Bureau's Special Tabulation of Citizen Voting Age Population Data, often along with local and/or county election records.

5.   In connection with those redistricting processes, I have participated in the public process of soliciting and receiving public testimony through workshops and public hearings regarding what constitutes communities of interest within a given jurisdiction at the time district boundaries are being developed.

6.   I have been a repeat speaker at redistricting discussions and seminars organized by the National Conference of State Legislatures. Some of the presentations I delivered have included "Communities of Interest in Redistricting: A Practical Guide" (Spring 2008), "Communities of Interest in Redistricting: A key to drawing 2011 plans (and for their defense)" (Spring 2010), and "Citizen Voting Age Data from a line-drawer's viewpoint" (Winter 2011).

7.   I have testified on demographic matters as an expert witness for the City of Palmdale in *Jauregui, et al. v. City of Palmdale*, as an expert witness for the City of Highland in *Garrett v. City of Highland,* as an expert witness for Kern County (CA) in *Luna v. County of Kern*, and as the 30(b)(6) designee for the Arizona Independent Redistricting Commission in *Arizona Minority Coalition v. Arizona Independent Redistricting Commission*, which included seven days of direct testimony and cross-examination in the state court case. I also testified in the related federal court case regarding Arizona's 2001 redistricting.

8.   In addition to those cases where I testified, I wrote an expert report and was deposed an accepted by the court as an expert witness in *Soliz v. Santa Clarita Community College District* (which settled), *North Carolina State Conference of NAACP Branches v. Lewis, City of Redondo Beach v. State of California*, and *Harris v. Arizona Independent Redistricting Commission.*

9.   My expert witness declarations were also accepted by the court in *Jamarillo v City of Fullerton* and *Diego v City of Whittier.*

10.   My hourly rate is $300 per hour for analysis, research and report writing, and $350 per

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hour for depositions and testimony.

II.   Task Description

11.   For this case, I was asked to and comment on the following:

a. Review of the 2017 legislative district maps and whether they maximize Republican political power in the legislature;

b. Review how North Carolina's "county grouping" rules compare to redistricting reform efforts in other states;

c. Review whether the "county grouping" rules act as a significant restraint on efforts to maximize representation for the party in control of the mapping;

III.   Opinions and Analysis

12.   North Carolina has a strict-criteria system for mapping legislative districts, as the state has both the strict federal equal-population requirement and a strict mathematically-calculated "county groupings" requirement. Down to the County level, the "county groupings" requirement is a strict limitation on the legislature's line-drawing discretion. Later I will present maps demonstrating how significantly this "county groupings" rule impacts redistricting, but first a bit of context may be useful.

13.   As a Fellow at the Rose Institute of State and Local Government at Claremont McKenna College, I have been active for years writing, speaking and advising on redistricting reform issues. In 2010 I was the lead author on an Institute report reviewing the systems used for legislative and congressional redistricting in all 50 states, and I have prepared numerous white papers and analysis of the systems and rules for redistricting in each state – with a special focus on the systems and rules in states that have adopted redistricting reform provisions aimed at limiting or eliminating legislative discretion in the redistricting process.[1]

14.   There are two key elements to redistricting reform: who is in charge, and what are the rules. My Redistricting in America report describes the primary options for who can be in charge: a traditional legislative-and-governor bill process (sometimes with a backup system if they fail to

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[1] Many of these reports, including the 2010 "Redistricting in America" report, are available on the Institute website at www.RoseInstitute.org.

finish by a certain date); a legislature-only process; an advisory commission and the legislature/governor; a politically-appointed commission that has independent powers; or an independently-appointed commission that also acts independently. Missouri voters in 2018 joined Iowa in creating an "expert-with-rules" process, though in both Missouri and Iowa the legislature/governor have the power to redraw the expert's map.

15.   For redistricting reform by rule, there are two types of rules: process rules and outcome rules.[2] Process rules govern how the map is drawn, and if it follows the process it is legal. Outcome rules evaluate the map based on stated measurements and either confirm or reject it.

16.   Missouri's successful 2018 redistricting reform ballot measure creates the post of "State Demographer," and, like Iowa's Legislative Services Agency, that state "expert" is given the task of drawing a map that complies with extremely strict criteria, and in both states the map goes to the Legislature for review and either approval or amendment. The key reform in both Missouri and Iowa is that the work of the expert is mathematically reviewable: anyone with the right knowledge and software can confirm that the expert's map complies with the key mathematical requirements in that state's law – and any deviation or shortcoming by the expert is easily identified and rejected.

17.   Legislative redistricting in Hawaii, Idaho, Montana, Alaska, New Jersey and Washington is done by a commission that has independent power, but whose members are directly appointed by legislative or political party leaders. This is a weak process-based reform because the commissioners typically are closely tied to legislators, and none of these commissions face strict criteria limits on their discretion. The weak nature of this reform approach is highlighted by the election in 2018, when voters in both Missouri and Colorado replaced such commissions in their states with more powerful reform measures.

18.   California and Arizona have independently-appointed and independently-acting redistricting commissions. Both are process-focused reforms, where each commission faces a

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[2] Professor Richard Pildes summarizes the two approaches well in "Redistricting Reform and the 2018 Elections," Harvard Law Review Blog, October 26, 2018, https://blog.harvardlawreview.org/redistricting-reform-and-the-2018-elections/, last accessed April 26, 2019.

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wide range of criteria in law and each commission has considerable discretion in deciding how to balance those criteria in their mapping decisions. While the outcome requirements are weak in these states, the significant independence each state's commission has resulted in some of the most compact, community-oriented, and competitive districts in the country following each commission's work. Michigan and Colorado voters in November 2018 approved systems very similar to that of Arizona and California.[3]

20. In 2001 and prior redistrictings, the laws in the states of North Carolina, Florida and Michigan gave complete control of the redistricting <u>process</u> to the legislature (without a gubernatorial power to veto the bill) and with no significant restrictions on the legislature's work. As noted above, Michigan has stripped that power from the legislature and given it to an independent commission. Florida voters and the North Carolina "county groupings" rule put significant restrictions on each legislature's redistricting maps, and the result in both states has been significant improvements in compactness, fewer safe seats, and reduced county splits. North Carolina's "county groupings" provision of its constitution is a major <u>outcome</u> criterion. Where Florida's process-oriented rules required months of legal discovery and weeks of testimony in a court battle, North Carolina's "county groupings" criterion provides a mathematical test of compliance with a simple "yes/no" result – and the result is that the "county groupings" requirement is a significant limitation on the legislature's redistricting discretion.

Maximum-Republican Test Map

21. I have drawn a test map that establishes the limitations the "county groupings" rule imposes on the legislature's redistricting authority. As a measure of partisanship for this test map,

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[3] Both Michigan and Colorado include language about partisan fairness or political competition, but the language, like Arizona's "competitive districts should be favored" requirement, is subject to interpretation and thus not a strict outcome measurement "met / not met" limitation that anyone can easily confirm.

I followed Mr. Cooper's assertion:

> "These Council of State officials include the Governor, Lieutenant Governor, Secretary of State, State Auditor, State Treasurer, Superintendent of Public Instruction, Attorney General, Commissioner of Agriculture, Commissioner of Labor, and Commissioner of Insurance. With the exception of the Governor and Lieutenant Governor, these offices are not particularly well-known and thus can serve as a good proxy for voter intent." (p. 6)

22.   The state's 2016 database included 2012 election results for seven of those elections (the Attorney General election was uncontested in 2012). I created a "Republican Advantage" measure of partisanship that averaged the Republican candidate's vote advantage (or disadvantage) over the Democratic candidate in those seven elections, divided by the average total vote for those seven elections.

23.   Before drawing my test maps, I looked at the success of my partisanship measure as a predictor of the 2018 election results. I found that, like all measures of district partisanship, it is imperfect, but overall quite accurate. In the current Senate map, there are 18 districts where the "RepAdv" measure is -10% or lower (meaning a 10% or more Democratic advantage), and in 2018 the Democratic candidate won 17 of those 18 districts. In the current Senate map, there are 20 districts where the "RepAdv" is 10% or more, and in 2018 the Republican candidate won 19 of those 20 districts. The remaining 12 existing Senate districts range from -10% to +10%, with Republicans winning 9 of the 12 districts.[4] So for my test map I classified a 10% or more Republican advantage as "Safe Republican"; a -10% or more Republican disadvantage as "Safe Democratic," and districts between 10% and -10% as "Competitive". While others may nit-pick the details of this partisanship measure, the results of the test map are so clear that the conclusion is all but guaranteed regardless of which partisan measure is used.

24.   For reference, below is the 2017 Adopted Senate map. Note how many districts are 'locked

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[4] Oddly enough, Republicans won the three districts with -3.3% to -8.5% Republican disadvantages, along with the districts from 3.5% to 6.1% Republican advantage and those from 9% to 10%, while the Democratic candidates won the three with Republican Advantages of 6.4%, 6.9% and 8.3%.
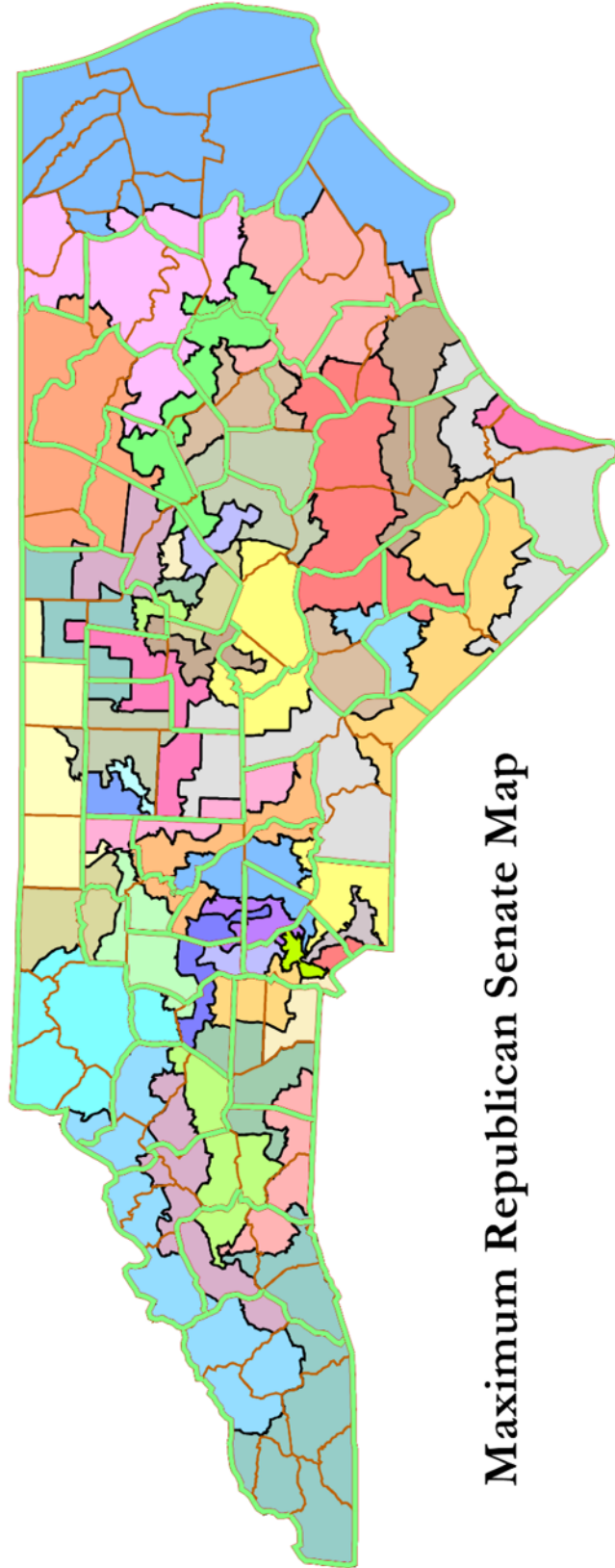
in' by the "county groupings" rule:

Figure 1: 2017 Adopted Senate Map

Senate 2017 Adopted Map
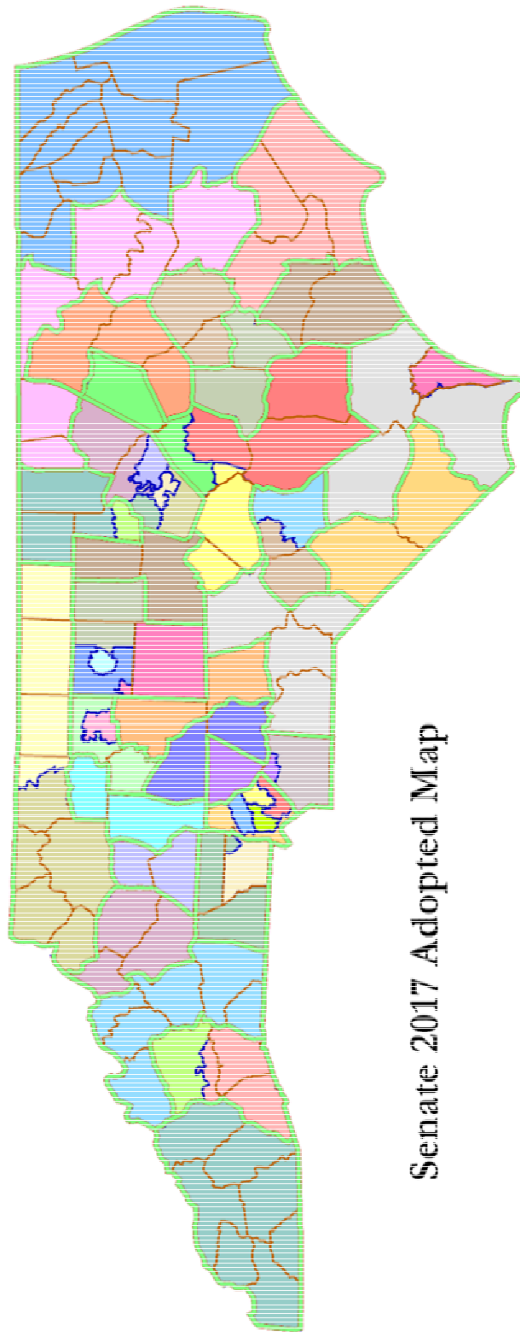
25.   And here is the Maximum Republican Test Map, drawn without consideration of the "county groupings" rule:

Figure 2: Maximum Republican Senate Test Map

Maximum Republican Senate Map

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26.   This test map shifts the Senate map from 20 to 36 "Safe Republican" seats (with a 10% or higher Republican advantage). It reduces the number of "Safe Democratic" seats from 18 to 14. And it completely eliminates "Competitive" districts, moving all 12 of them into the "Safe Republican" category.

27.   Focusing on Mecklenburg County is a good way to see at a glance the impact of the restraint on districting imposed by the "county grouping" rule and the Legislature's criteria to minimize VTD and city splits and avoid extremely non-compact districts. The Legislature's Adopted 2017 Map has five Senate districts contained entirely within Mecklenburg County, with one safe Republican district, three safe Democratic districts, and one competitive district. The county groupings rule and the criteria to minimize VTD splits and avoid extremely non-compact districts prevented the drawing of the map shown in the "Maximum Republican Test" – a map that divides Mecklenburg County among nine districts, with only one located entirely in the county; that reduces Democrats from three safe and one competitive districts to just one safe Democratic district, and a map that divides the rest of the county up among eight safe Republican districts:

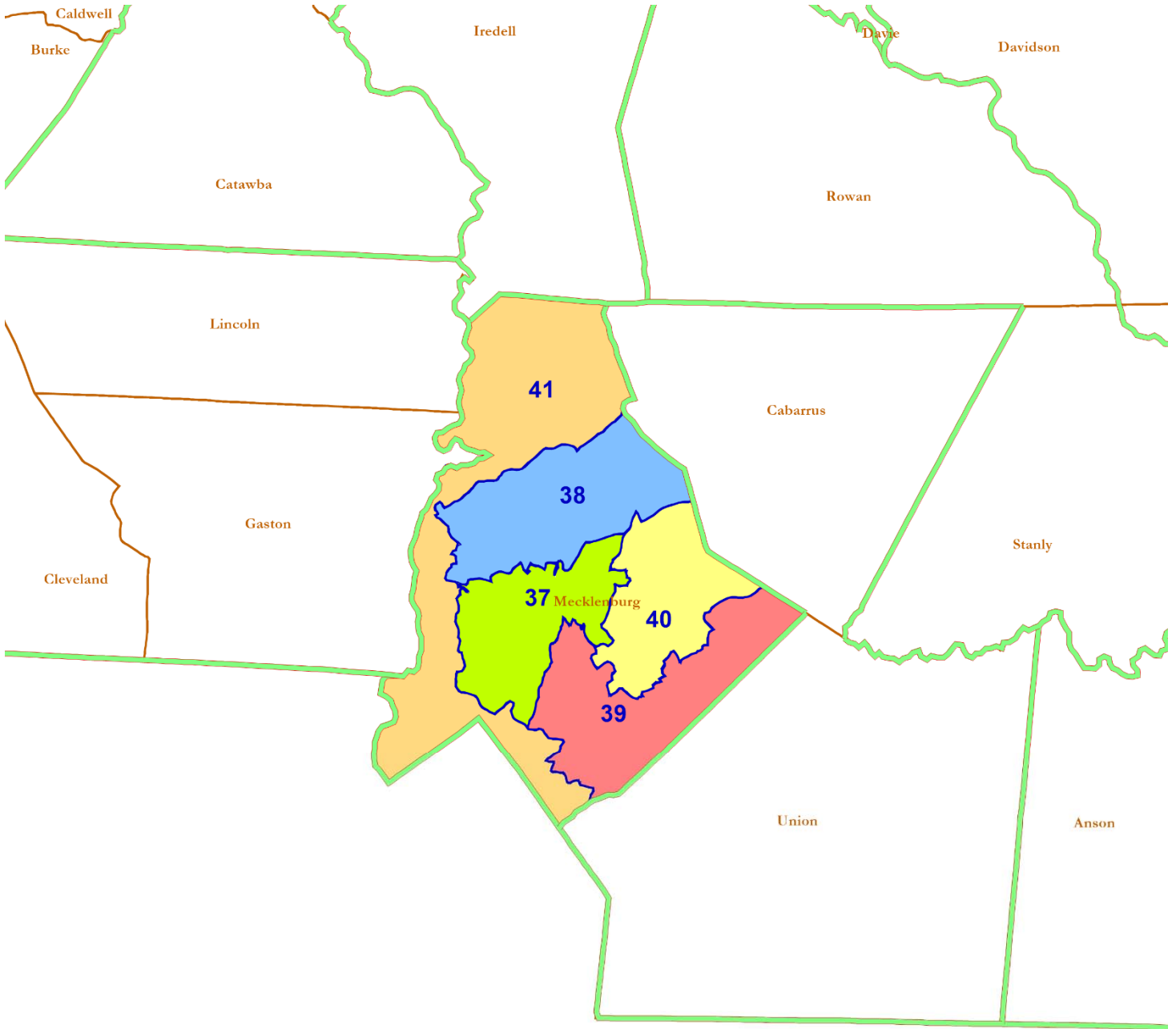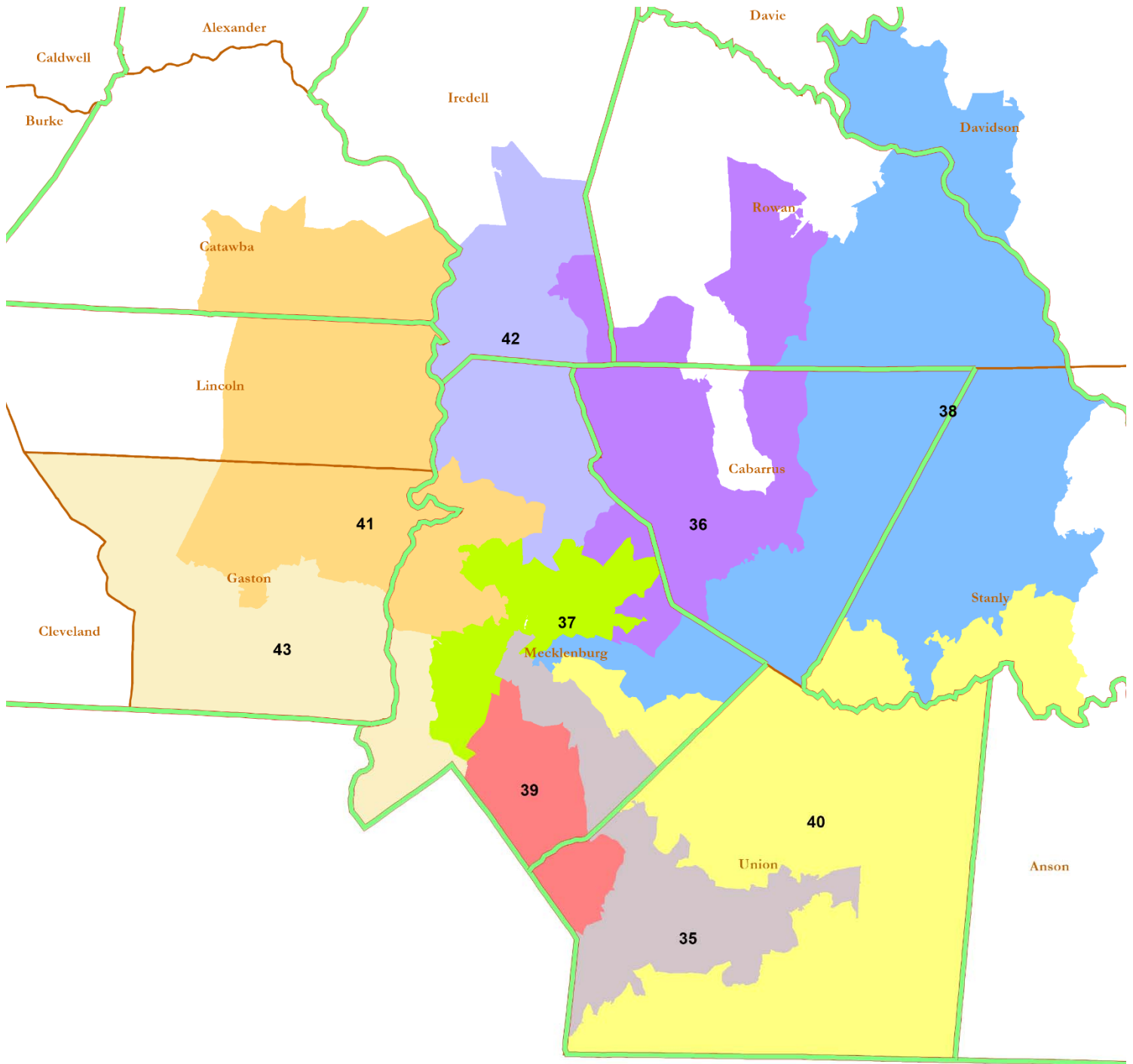## Figure 3: 2017 Adopted Senate Districts in Mecklenburg County

Figure 4: Maximum Republican Test Districts in Mecklenburg County

28.   The Maximum Republican Map makes similar changes across the state, replacing all twelve of the 2017 Adopted Map's "competitive" districts with Safe Republican Districts, and

switching from "Safe Democratic" districts to "Safe Republican" two districts in Mecklenburg County and one each in Forsyth and Buncombe counties.

29. While I have drawn the "Maximum Republican" Senate map for the illustrative purposes of this report, a "Maximum Republican" House map would similarly provide significantly more Republican districts in the State House than the 2017 Adopted Map provides.

30. This test map proves that the "county groupings" requirement significantly limits the legislature's ability to draw lines based exclusively on partisanship.

31. Reflecting the direct influence of the "county groupings" requirement, the "Maximum Republican" test map bears significantly more resemblance in the odd shapes and partisan focus of the 2001 Senate map than it does to the 2017 Adopted. The 2001 Senate map is the map that was never used in an election because of the *Stevenson* ruling on the interpretation of the "county groupings" provision of the state constitution:

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**Figure 5: 2001 Adopted Senate Map**
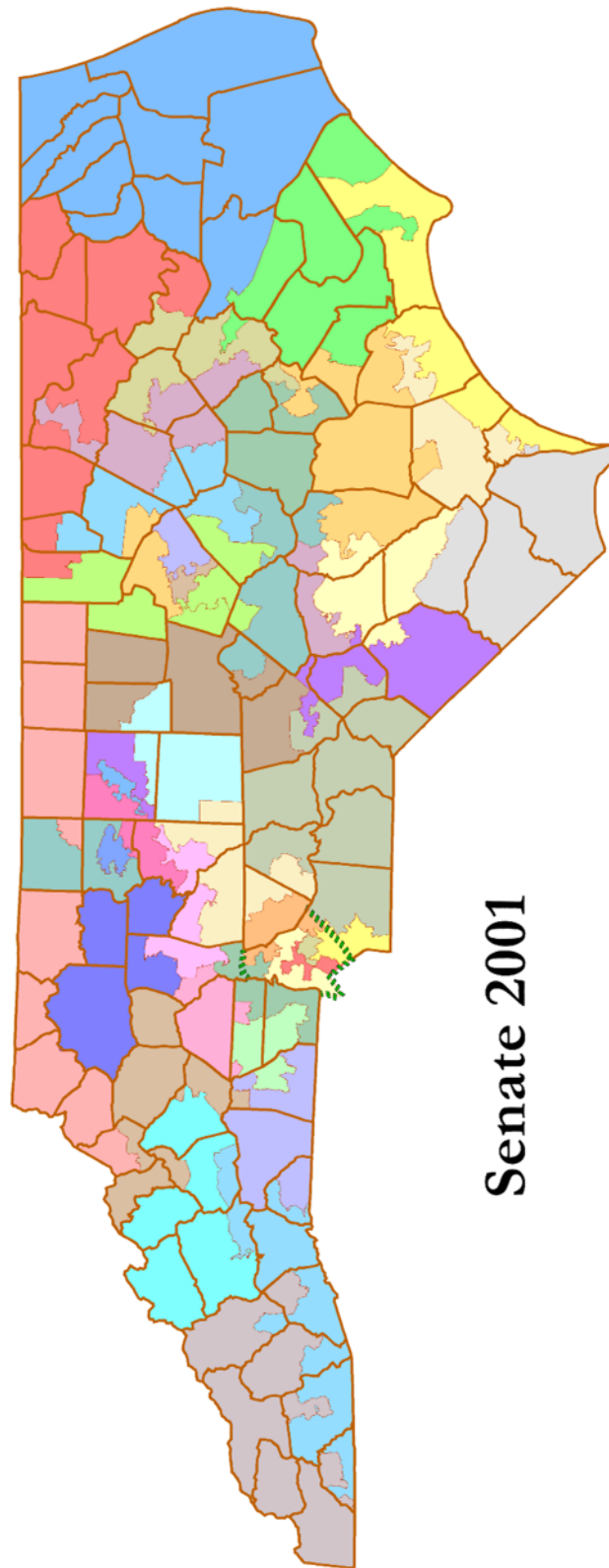
Senate 2001

32.   The 2001 Senate map divided 51 counties. The Maximum Republican Senate Test Map divides 64 counties. But the 2017 Adopted Map, because it follows the county groupings formula, ends up splitting only 12 counties. By blocking a "Maximum Republican" map in 2017 (and a "maximum Democratic" map in 2001), the state's strict "county grouping" requirement kept an additional 52 counties whole, reduced the number of "Safe Republican" seats by almost half (from 36 to 20); preserved 4 additional "Safe Democratic" seats; and created 12 arguably competitive districts (my "Competitive" category.)

33.   Even within the "county grouping" limitations, there is clear evidence that efforts to avoid dividing municipalities and VTDs also diverted the legislature from a "maximum Republican" map. In Wake County, Mecklenburg County, and other areas there are clear areas where a safer-Republican seat could have been drawn but was not included in the adopted map.

34.   As an example, compare the Senate map adopted in 2017 with a "more Republican"[5] map in Mecklenburg county (higher-resolution images are included in the exhibits to this report):

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[5] Now I am referring to "more Republican" options drawn <u>within the limitations of the county groupings rule</u>, not the the "Maximum Republican" statewide test districts drawn earlier and drawn ignoring the county groupings rule.

LEGISLATIVE DEFENDANTS TX287-15

Figure 6: 2017 Adopted Senate Mecklenburg Map   Figure 7: Pro-Republican Alternative
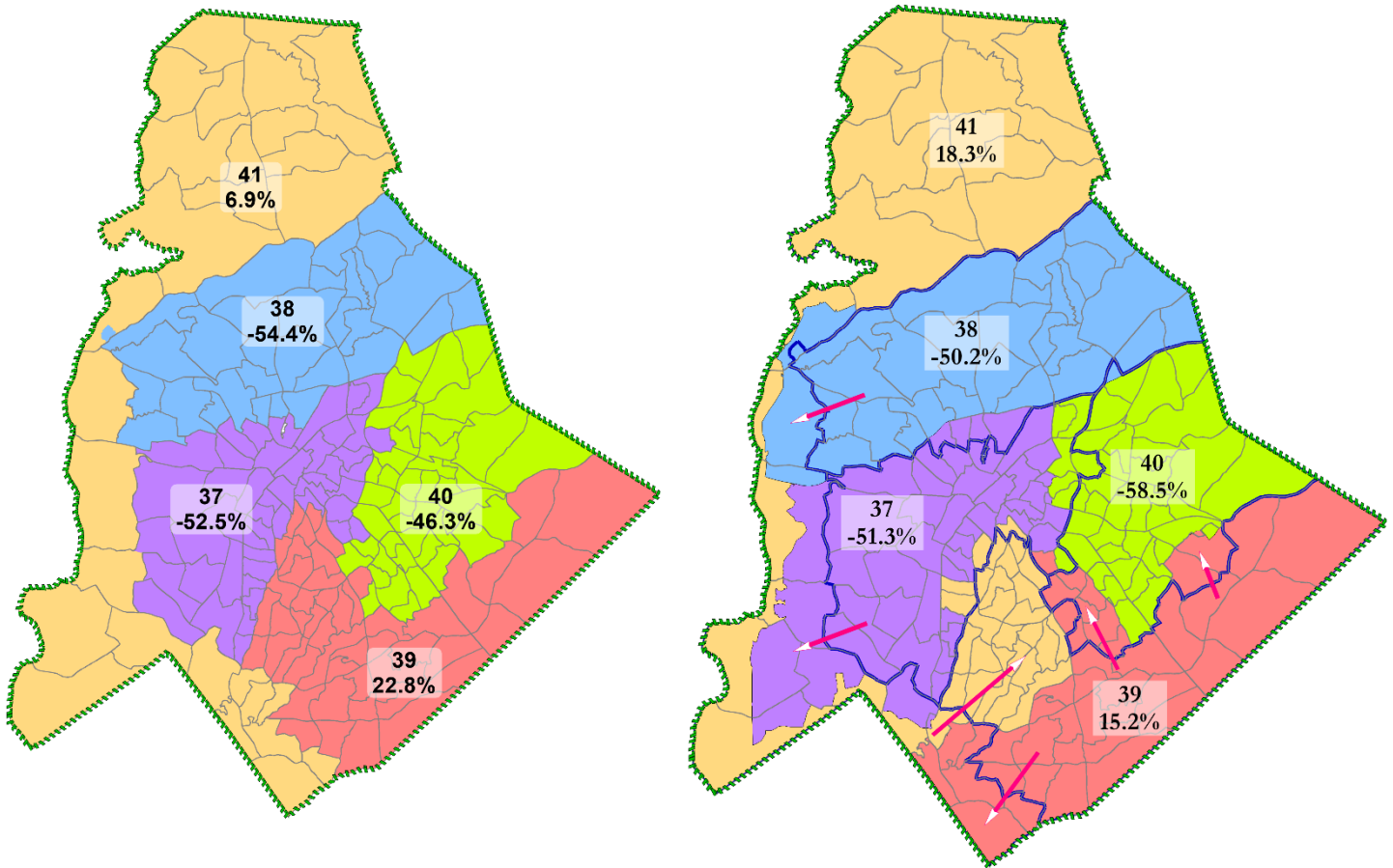
35.   Both maps show five Senate districts contained entirely within Mecklenburg County. Both maps show three "Safe Democratic" districts. Where the 2017 Adopted Map has just one divided VTD, the Pro-Republican Alternative divides 11 VTDs – and that enables a shift from one Safe Republican and one Competitive map in the 2017 Adopted Senate map to two Safe Republican districts.

36.   The Pro-Republican Alternative, shown on the right, shows the impact of the 2017 criterion to minimize VTD splits and avoid the most-non-compact districts. Without those limits, District 39 could extend southwest and north (as indicated by the bottom magenta arrows), allowing District 41 to swing into the heavily-Republican areas around the south end of District 37. This rotation would have increased District 41 from a Competitive district at 6.9% Competitive") to Safe Republican at 18.3%.

37.   In fact, a Democratic candidate defeated the Republican incumbent in the Competitive

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District 41 in 2018. The Pro-Republican Alternative's 11.4% increase in the Republican character of District 41 (and resulting 11.4% decrease in the Democratic character, for a 22.8% total swing) would have resulted in an easy Republican win in 2018.

38.   The 2017 Adopted Senate map in Mecklenburg County divided only 2 of the 195 VTDs in the county. The Pro-Republican Test map divides 15 VTDs, including one VTD divided into three pieces.

39.   The lowest Polsby-Popper score of any 2017 Adopted Senate district in Mecklenburg County was 0.13, and the median of the 2017 Adopted Senate districts in the county was 0.25. In the Pro-Republican Test map, the median score is essentially unchanged at 0.26, and the lowest score is now 0.08. Reock compactness scores show a similar change, with the median declining from 0.42 in the 2017 Adopted Senate map to 0.35 in the Pro-Republican Test map, and the lowest score declining from 0.19 in the 2017 Adopted Senate map to 0.18 in the Pro-Republican Senate map.

Table 1: Mecklenburg County Compactness Scores

Dist	Pro-Rep. Test Map		2017 Adopted	
	Reock	Polsby-Popper	Reock	Polsby-Popper
37	0.35	0.26	0.42	0.25
38	0.37	0.49	0.42	0.42
39	0.28	0.26	0.33	0.24
40	0.52	0.47	0.47	0.36
41	0.18	0.08	0.19	0.13
Ave	0.34	0.31	0.37	0.28
Median	0.35	0.26	0.42	0.25
Sum	1.70	1.56	1.83	1.40
Min	0.18	0.08	0.19	0.13

Wake County

40.   An analysis of House districts in Wake County also demonstrates the limitations on partisan gerrymandering imposed by the "county grouping" rule and by the Legislature's criteria to minimize VTD and city splits and to avoid extremely non-compact districts. The 2017 Adopted

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House map included just one Safe Republican district – and, at exactly +10% on the "Republican Advantage" scale, it was just barely Safe Republican. It also included four Competitive Districts (districts 35, 37, 40 and 41) ranging from -6% to +8%. And it included six Safe Democratic districts (11, 33, 34, 38, 39 and 49).

41.   The 2017 Adopted House map for Wake County included just one Safe Republican district: district 36. At exactly +10% on the "Republican Advantage" scale, even district 36 was just barely in the Safe Republican range. The 2017 Adopted House map for Wake County also included four Competitive Districts (districts 35, 37, 40 and 41) ranging from -6% to +8%. And it included six Safe Democratic districts (11, 33, 34, 38, 39 and 49).

42.   The 2017 Adopted House map in Wake County divided only 4 of the 191 VTDs in the county. The Pro-Republican Test map divides 36 VTDs, including one VTD divided into four pieces.

43.   The lowest Polsby-Popper score of any 2017 Adopted House district in Wake County was 0.21, and the median of the 2017 Adopted House districts was 0.34. In the Pro-Republican Test map, the median score drops to 0.21, the lowest score is now 0.07, and five of the twelve districts in the Pro-Republican Test map for Wake County have Polsby-Popper scores below the Adopted Map's 0.21 minimum. Reock compactness scores show a similar change, with four of the 11 districts in the Pro-Republican Test map coming in below the 2017 Adopted House map's lowest score of 0.31.

Table 2: Wake County Compactness Scores

Dist	Pro-Rep. Test Map		2017 Adopted	
	Reock	Polsby-Popper	Reock	Polsby-Popper
11	0.14	0.08	0.41	0.34
33	0.45	0.29	0.45	0.29
34	0.37	0.36	0.34	0.29
35	0.16	0.07	0.32	0.33
36	0.38	0.21	0.31	0.21
37	0.35	0.11	0.44	0.48
38	0.32	0.30	0.32	0.30
39	0.50	0.27	0.43	0.40
40	0.21	0.16	0.52	0.38
41	0.35	0.19	0.42	0.40
49	0.26	0.27	0.44	0.44
Ave	0.32	0.21	0.40	0.35
Median	0.35	0.21	0.42	0.34
Sum	3.49	2.31	4.40	3.86
Min	0.14	0.07	0.31	0.21

44.   In 2018, Democratic candidates won all 11 of these House districts. But four of those 2018 elections were very close: the Democratic candidate won by 2.0% in districts 36 and 37; by 5.6% in district 35; and by 6.2% in district 40. Had the Republicans in 2017 been more focused on partisan gains and less on compactness, cities, and avoiding VTD splits, the Republicans could have all but guaranteed their hold on two districts and kept three more within the Competitive range. In the "Pro-Republican" demonstration map below, districts 36 and 40 are Safe Republican, 11, 35 and 37 are Competitive:

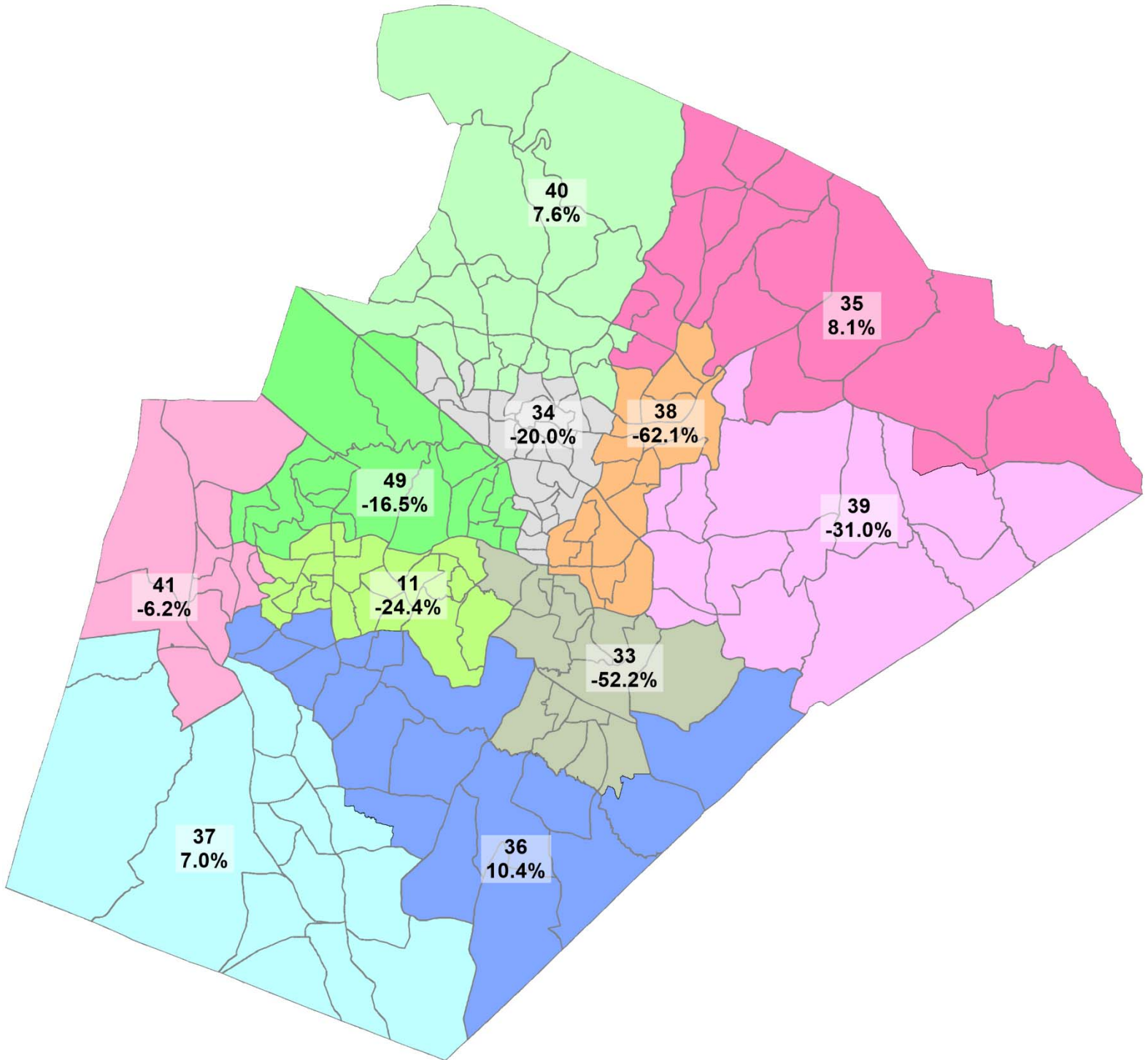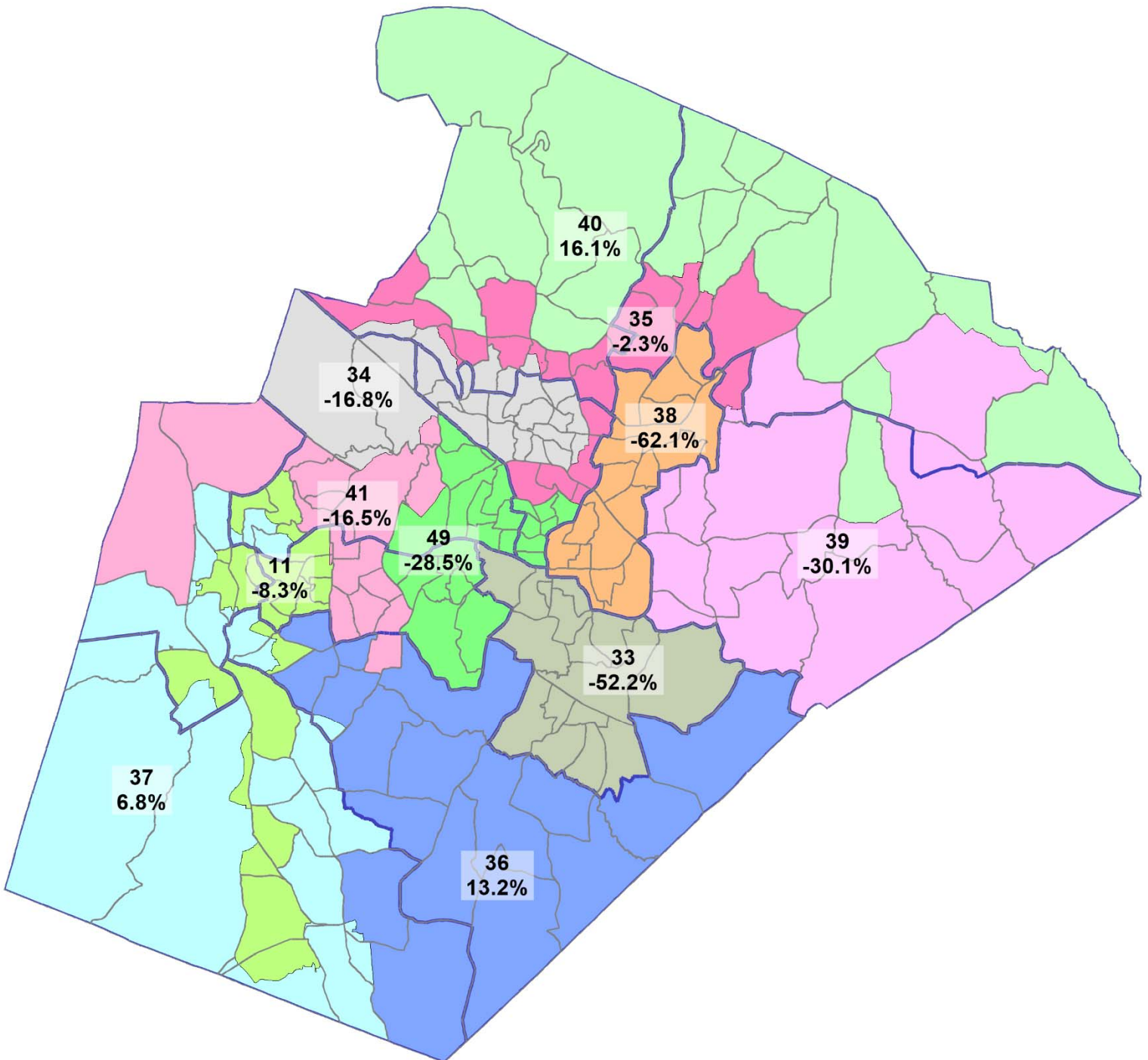**Figure 8: 2017 Adopted House Districts in Wake County**

Figure 9: 2017 Pro-Republican House Districts in Wake County

Senate Districts 8 and 9

45.   Mr. Cooper raised objections to the way the 2017 Adopted Senate Map made the required population-balancing change to Senate District 9 in New Hanover County. Mr. Cooper concedes that New Hanover County is too large to be a Senate District all by itself, so the objection is simply to which approximately 5,000 residents are moved into District 8, not to the fact that they must be moved. But it is worth noting that the 2017 Adopted Senate Map moves <u>only</u> the number of people required to balance the population of Senate District 9, even though the partisan ideal (from the Republican Party perspective) would be to make a two-way trade of population to put some of the Republican areas of District 8 (in which the Republican candidate was unopposed in 2016 and won by 10% in 2018) into the more closely-contested District 9 (which the Republican won by 15% in 2016 but lost by 231 votes out of 87,000 votes cast in 2018).

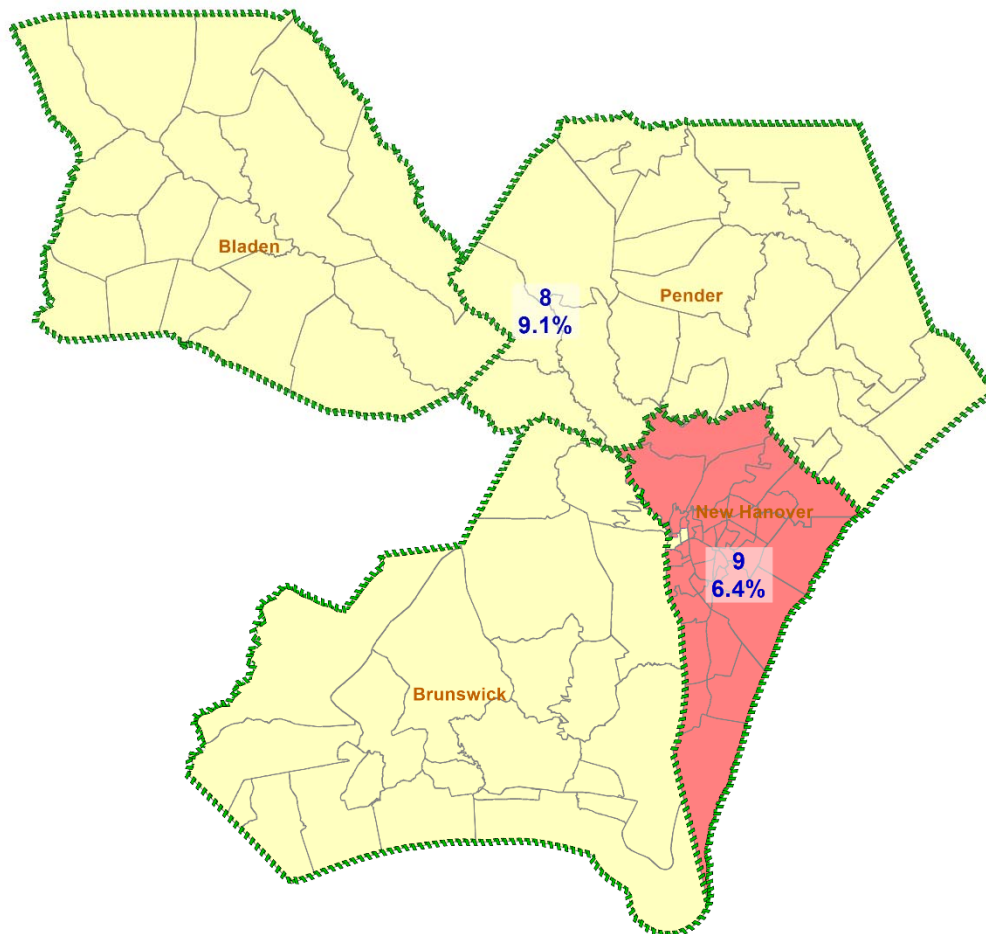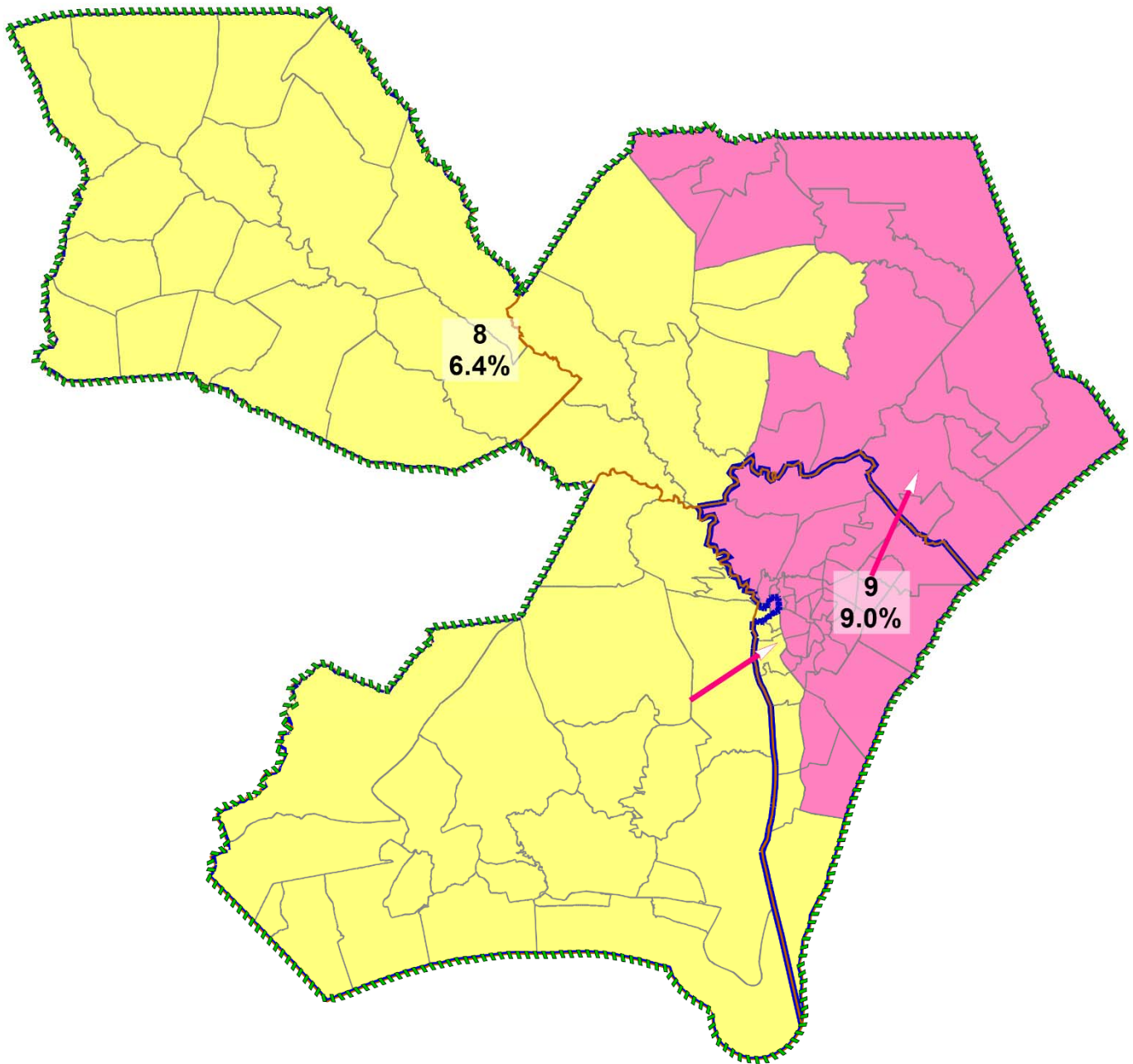**Figure 10: Adopted 2017 Senate Districts 8 and 9**

Figure 11: Pro-Republican New Hanover Shift in Senate Districts 8 and 9

46.   This small rotation of population, with Senate District 8 picking up western Wilmington and a strip of territory along the west edge of New Hanover County while District 9 picks up eastern Pender County, increases the Republican character of District 9 by about 3% -- more than enough to overcome the Democratic winner's 231 vote victory margin in 2018.

47.   Once again, the state's "county grouping" rule, and the legislature's desire to minimize city splits, acted as limit on the potential partisan motivations of legislators in North Carolina.

Conclusion

48.   These demonstration House and Senate maps drawn within individual county groupings, and the earlier demonstration "Maximum Republican" map drawn without regard to the county groupings, demonstrate that the 2017 Adopted House and Senate maps are not "maximum partisan" maps. Similar demonstration maps could be drawn for a "Maximum Republican" House map and for House and Senate districts in other multi-district county groupings.

49.   The state's county groupings rule acts as a significant restriction on the discretion, and potential excesses, of legislators when they are in charge of redistricting (regardless of party, as shown in 2001) While the 2017 map clearly includes partisanship as one consideration (as does every other legislatively-drawn redistricting map in the country), other traditional redistricting principles (preserving VTDs, avoiding city splits, keeping incumbents with their core constituencies, avoiding non-compact districts and other factors) all mitigated the partisan gain in the 2017 adopted map.

CERTIFICATION

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

Douglas Mark Johnson, Ph.D.

April 30, 2019
Date

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