

# EXHIBIT 10

# Expert Report of Michael Barber, PhD

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# Contents

<b>1</b>	<b>Introduction and Qualifications</b>	<b>4</b>
<b>2</b>	<b>Summary of Conclusions</b>	<b>5</b>
<b>3</b>	<b>Political Geography of North Carolina</b>	<b>7</b>
<b>4</b>	<b>Congressional Map</b>	<b>10</b>
4.1	County Envelope Analysis . . . . .	14
4.1.1	Congressional District 1 . . . . .	18
4.1.2	Congressional District 6 . . . . .	19
4.1.3	Congressional District 12 . . . . .	21
4.1.4	Congressional District 14 . . . . .	22
4.1.5	The County Envelope Method is Unreliable . . . . .	24
4.2	Core-In-Out Analysis . . . . .	29
<b>5</b>	<b>State Legislature Apportionment Analysis</b>	<b>36</b>
5.1	Wake County: House Districts . . . . .	39
5.2	Forsyth-Stokes Cluster: House Districts . . . . .	41
5.3	Brunswick-New Hanover-Columbus Cluster: Senate Districts . . . . .	42
5.4	Iredell-Mecklenburg Cluster: Senate Districts . . . . .	43
<b>6</b>	<b>State Senate Map</b>	<b>45</b>
6.1	County Groupings Are Binding on the Legislature . . . . .	45
6.2	Illustrative Senate Maps Violate the <i>Stephenson</i> Criteria . . . . .	47
6.3	Partisan and Racial Breakdown of Senate Districts . . . . .	49
6.4	Illustrative Senate Maps Additional majority BVAP Districts . . . . .	55
6.4.1	Illustrative Senate Map A . . . . .	56
6.4.2	Illustrative Senate Map B . . . . .	61

<b>7</b>	<b>State House Map</b>	<b>62</b>
7.1	County Groupings Are Binding on the Legislature . . . . .	62
7.2	Illustrative House Maps Violate the <i>Stephenson</i> Criteria . . . . .	64
7.3	Partisan and Racial Breakdown of House Districts . . . . .	68
7.4	Illustrative House Map A: Additional majority BVAP Districts . . . . .	73
7.4.1	Illustrative House Map A: District 5 . . . . .	75
7.4.2	Illustrative House Map A: District 12 . . . . .	77
7.4.3	Illustrative House Map A: District 23 . . . . .	80
7.4.4	Illustrative House Map A: District 24 . . . . .	83
7.4.5	Illustrative House Map A: District 25 . . . . .	86
7.4.6	Illustrative House Map A: District 27 . . . . .	89
7.5	Illustrative House Map B: Additional Majority BVAP Districts . . . . .	92
7.5.1	Illustrative House Map B: District 5 . . . . .	94
7.5.2	Illustrative House Map B: District 8 . . . . .	96
7.5.3	Illustrative House Map B: District 23 . . . . .	99
7.5.4	Illustrative House Map B: District 24 . . . . .	101
7.5.5	Illustrative House Map B: District 25 . . . . .	103
7.5.6	Illustrative House Map B: District 27 . . . . .	104

## 5 State Legislature Apportionment Analysis

Mr. Fairfax's report contains an analysis of population deviations between districts in certain county clusters throughout the state in both the 2023 Enacted House and Senate maps. Using the 2020 US Census data, the target House District population is 86,995 and the target Senate District population is 208,788 people.

Mr. Fairfax states that he “find[s] no redistricting criteria justification” for the population deviations in these regions of the state. There are, however, a number of problems with his conclusions. The first problem is that all of the population deviations that he notes are within the allowable deviation set out by the state of  $\pm 5\%$ .<sup>13</sup> Therefore, it is not the case that any of the districts are outside the allowable bounds in the first place. Second, simply because Mr. Fairfax cannot see any reason for the population deviations does not mean that there are not reasonable explanations for why the legislature chose to place certain precincts in certain districts or to allow for certain levels of population variation to exist across districts in these regions. Third, the level of population inequality is not unusually large when compared to previous maps from the past several years, including court-drawn plans and plans drawn by Plaintiffs in this case. Finally, Mr. Fairfax claims that he was able to “create and observe multiple options that would allow me to shift one or two VTDs that would bring the district population closer to the ideal population and the overall population deviation closer to zero.” However, he provides no documentation as to which precincts he chose to move, the population changes that would result, or the implications of those changes for other redistricting considerations the legislature may have prioritized. Furthermore, he offers no details of the degree to which he considers greater population equality acceptable. By what amount did the precinct movements he performed bring the districts closer to population equality? It is impossible to evaluate his claims on this point due to the lack of specifics, empirical evidence, or replication data.

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<sup>13</sup>See <https://webservices.ncleg.gov/ViewDocSiteFile/87692> for the legislature's guidance for drawing State House and Congressional districts

It is hard to know what standard Mr. Fairfax has used to evaluate whether or not the population deviations in the 2023 Enacted Map are too large. This is the case for two reasons. First, as noted below, the population deviations he points out in the 2023 Enacted Maps are all within the five percent range outlined by the state guidelines. Second, the differences in population between districts in the 2023 Enacted Maps are smaller than deviations present in his own illustrative maps. For example, in the Illustrative House Map A, in the sixteen districts that are altered by Mr. Fairfax from the 2023 Enacted Map, the population deviation between the smallest and largest districts is 9.87%. In the Illustrative House Map B, the population deviation between the smallest and largest districts of the 14 that are altered is 9.9%. These differences are larger than any of the population deviations Mr. Fairfax finds problematic in the 2023 Enacted House Map.

The same is true of the Illustrative Senate Maps. In the Illustrative Senate Map A, in the six districts that are altered by Mr. Fairfax from the 2023 Enacted Senate Map, the population deviation is 7.49% between the largest and smallest district. In the Illustrative Senate Map B, the population deviation between the smallest and largest districts of the five that are altered is 5.85%. These differences are larger (in the case of Map A) than the population deviations Mr. Fairfax finds problematic in the 2023 Enacted Senate Map.

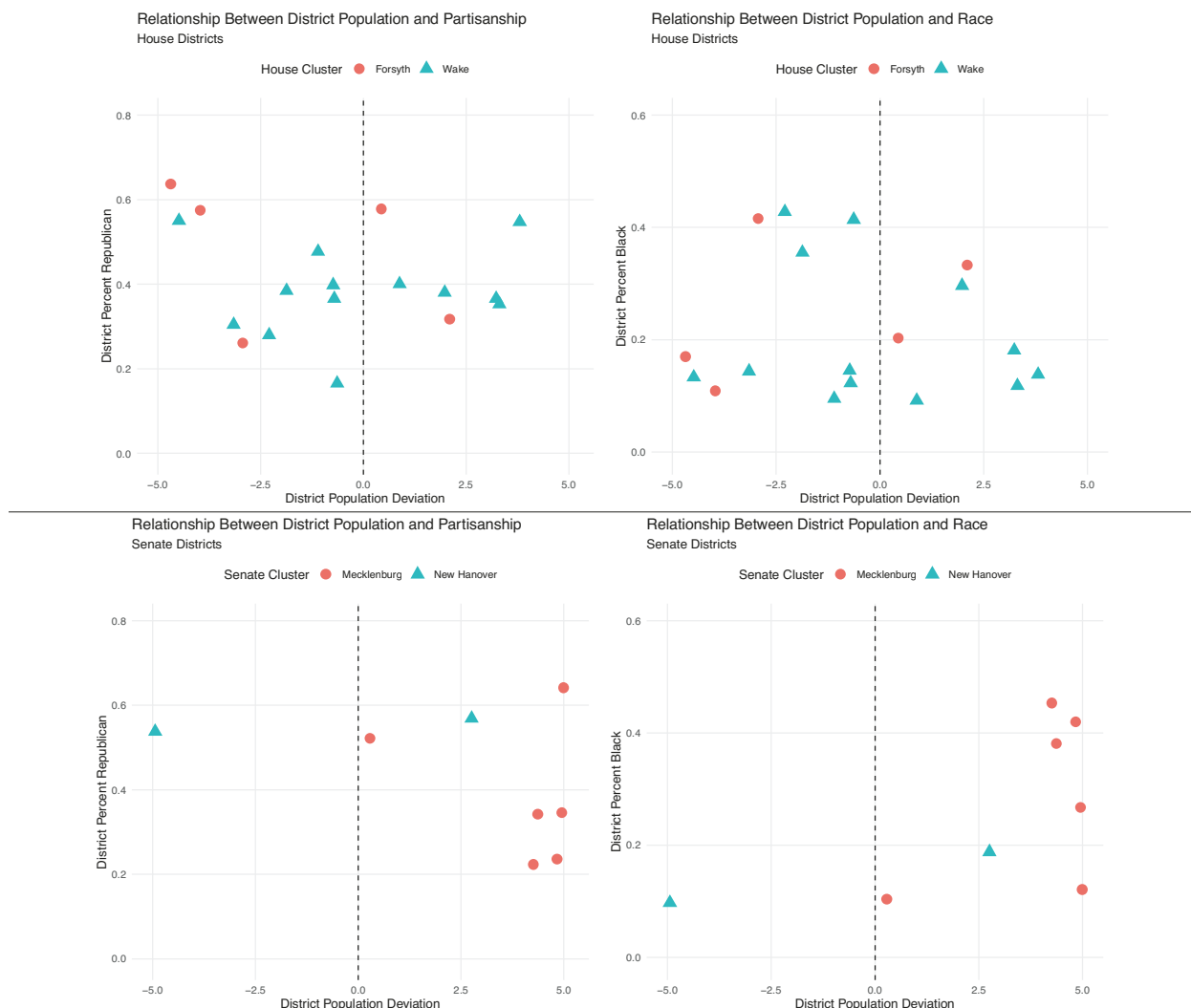
In other words, when given the ability to draw districts, Mr. Fairfax appears to not have the same concern about population deviation that he has articulated for other regions of the state. He does this without providing an explanation as to why it is wrong for the legislature to draw a map with population differences that are similar to (or in many cases smaller than) the population differences that exist in the maps that he has drawn.

It is also the case that in the districts that are mentioned by Mr. Fairfax, there is not a relationship between the population deviation of the district and demographic factors such as race or party. In other words, it is not the case that the most overpopulated districts are those that are also the most Democratic or Republican, Black or White. Figure 16 shows this for the House (top figures) and Senate (bottom figures). The horizontal axis shows the

degree to which the district is either over or under populated and the vertical axis shows the partisanship (left panels) or race (right panels) of each district. As can be seen, there is no strong relationship between these factors in both the House and Senate. While it is possible that incidental deviations resulted from partisan considerations, as I explain below, there is not evidence to suggest an effort to rig the deviations to favor Republicans, or any other demographic, by systematically under- or over-populating them. Figure 16 does not support the idea of purposeful manipulation of population-deviation in the plans in this way.

I now consider the specific county clusters that Mr. Fairfax focuses on in the “XIII. Apportionment Analysis” section of his report.

Figure 16: Population Deviation and Demographics of Districts



Note: In each figure the horizontal axis shows the district's population deviation. The vertical axis shows the partisan lean (left panels) or the racial composition of the district (right panels). The top figures show House districts and the bottom figures show Senate districts.

## 5.1 Wake County: House Districts

In Wake County there are 13 House districts with a population deviation between the largest and smallest districts of 8.29%.<sup>14</sup> The largest district is HD-37 (3.81% above the target district population) and the smallest district is HD-35 (4.48% below the target district

<sup>14</sup>See page 64 of Fairfax report.



population).<sup>15</sup> It is therefore obvious that all of the districts in Wake County are within the  $\pm 5\%$  population tolerance outlined by the state. As to why these population deviations exist, Mr. Fairfax states that he finds “no redistricting criteria justification for the Wake County cluster to include a population deviation that is as high as 8.29%” (Fairfax Report, pg. 65). It is notable that the most over-populated district (HD-37) and under-populated district (HD-35) in the county are also the only two Republican-leaning districts in the county.<sup>16</sup> The shape and population of these districts is potentially explained by a desire to gather Republican-leaning precincts in the northern and south-eastern corners of the county to create two Republican-leaning districts in a county that is overwhelmingly Democratic-leaning. Legislators also noted that partisan considerations were a permissible consideration in the formation of districts in 2023.<sup>17</sup> The remaining 11 districts in the county are strongly Democratic-leaning. While HD-35 in the northern part of Wake County is underpopulated, there are no other Republican-leaning precincts in that part of the county to add to the district that would not also have the second-order effect of under-populating adjacent districts. And while HD-37 in the southern part of the county is overpopulated, removing any of the border precincts would have the impact of reducing the district’s Republican lean.

It is also the case that the population deviation of the House districts in Wake County is not especially unusual when compared to the three previous maps used in North Carolina. In the 2022 House Remedial Map, the population deviation between the largest and smallest districts in the Wake County House Districts was 8.34%, which is slightly larger than in the current map. In the 2021 Enacted Map that was invalidated as a partisan gerrymander, the population deviation in the Wake County House Districts was 8.89%. In the 2019 House Remedial Map the population deviation in the Wake County House Districts was 8.51%.<sup>18</sup>

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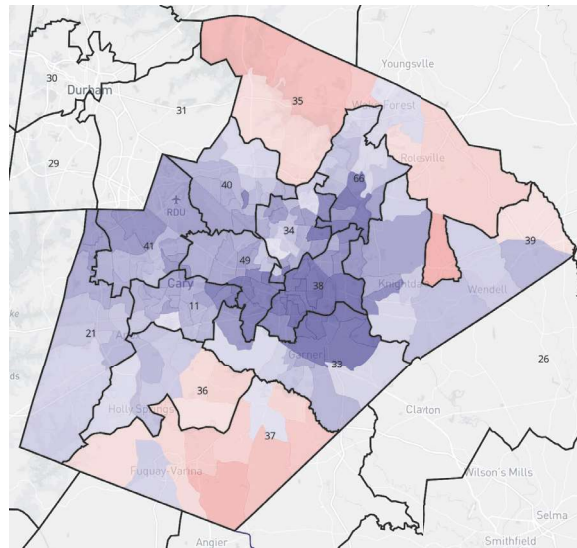
<sup>15</sup>See page 65 of Fairfax report.

<sup>16</sup>The partisan lean of the districts is computed by taking the average of 19 statewide election results in the district between 2008 and 2022 and is a common method of measuring the partisan tendencies of a district.

<sup>17</sup><https://webservices.ncleg.gov/ViewDocSiteFile/87692>

<sup>18</sup>The 2019 map population deviation is based on 2010 US Census population numbers and ideal district sizes. See <https://www.ncleg.gov/redistricting> for data on district population for each of the above-referenced maps.

Figure 17: Enacted Wake County House Districts and Precinct Partisanship



Note: Precincts are colored by their partisan lean - darker red for more Republican and darker blue for more Democratic. Map source: <https://davesredistricting.org/>

## 5.2 Forsyth-Stokes Cluster: House Districts

In Forsyth and Stokes Counties there are five House districts with a population deviation between the largest and smallest districts in the county cluster of 6.78%.<sup>19</sup> The largest district is HD-71 (2.10% above the target district population) and the smallest district is HD-91 (4.68% below the target district population).<sup>20</sup> It is plain to see that all of the districts in the Forsyth-Stokes County Cluster are within the  $\pm 5\%$  population tolerance outlined by the state.

It is also the case that the population deviation in the Forsyth-Stokes County Cluster is not especially unusual when compared to the three previous maps. In the 2022 Remedial House Map, the population deviation between the largest and smallest districts in this House cluster was 7.39%, which is larger than in the current map. In the 2021 Enacted Map that was invalidated as a partisan gerrymander, the population deviation in the Forsyth-Stokes County Cluster House Districts was 3.14%. In the 2019 Remedial House Map the population

<sup>19</sup>See page 65 of Fairfax report.

<sup>20</sup>See page 66 of Fairfax report.

deviation in the Forsyth-Yadkin County Cluster House Districts was 5.06%.<sup>21</sup>

### 5.3 Brunswick-New Hanover-Columbus Cluster: Senate Districts

In Brunswick, New Hanover, and Columbus Counties there are two Senate districts with a population deviation between the largest and smallest districts of 7.70%.<sup>22</sup> The larger district is SD-8 (2.76% above the target district population) and the smaller district is SD-7 (4.94% below the target district population).<sup>23</sup> It is therefore obvious that all of the districts in the Brunswick, New Hanover, and Columbus County Cluster are within the  $\pm 5\%$  population tolerance outlined by the state. It is notable that SD-7 comprises all of the precincts in New Hanover county except for the most Democratic precincts that are located in Wilmington. One explanation for the shape and population of SD-7 is that legislators started with New Hanover county, which is too populous for a single district, and then moved the most Democratic precincts (which also happen to be located in Wilmington and near the county border with Brunswick County) into SD-8. The district that results from this approach is slightly Republican (53.8% using the partisan index described earlier) while SD-8 (which comprises the entirety of Brunswick and Columbus Counties and the strongly Democratic precincts in Wilmington) remains solidly Republican (56.9% Republican).

The population deviation in the Brunswick, New Hanover, and Columbus County Cluster is slightly higher when compared to the three previous maps. In the 2022 Remedial Senate Map, the population deviation between the largest and smallest districts in this Senate county cluster was 2.04%, which is smaller than in the current map. In the 2021 Enacted Map that was invalidated as a partisan gerrymander, the population deviation in the Brunswick, New Hanover, and Columbus County Cluster Senate Districts was 5.82%. In the 2019 Remedial Senate Map the population deviation in the New Hanover, Pender,

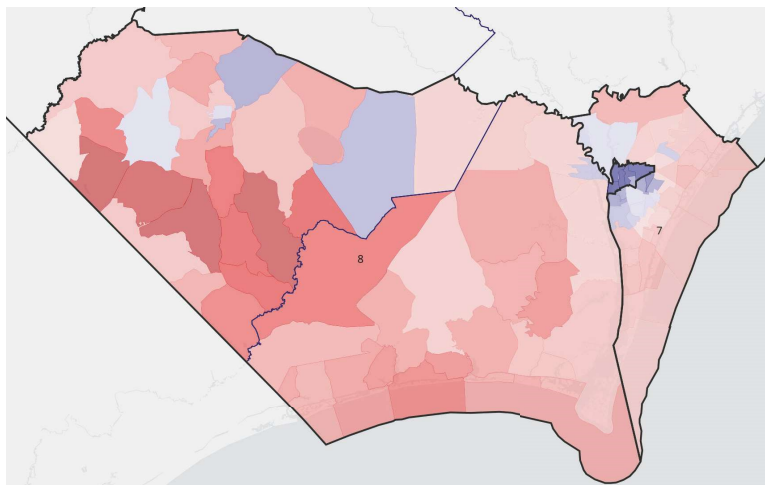
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<sup>21</sup>The 2019 map population deviation is based on 2010 US Census population numbers and ideal district sizes. The 2019 map had a different county cluster configuration that grouped Forsyth County with Yadkin County rather than Stokes County. See <https://www.ncleg.gov/redistricting> for data on district population for each of the above-referenced maps.

<sup>22</sup>See page 66 of Fairfax report.

<sup>23</sup>See page 67 of Fairfax report.

Figure 18: Enacted Senate Brunswick-New Hanover-Columbus Counties Districts and Precinct Partisanship



Note: Precincts are colored by their partisan lean - darker red for more Republican and darker blue for more Democratic. Map source: <https://davesredistricting.org/>

Bladen, and Brunswick County Cluster Senate Districts was 0.68%.<sup>24</sup>

## 5.4 Iredell-Mecklenburg Cluster: Senate Districts

In Mecklenburg and Iredell Counties there are six Senate districts with a population deviation between the largest and smallest districts of 4.71%.<sup>25</sup> The largest district is SD-37 (4.99% above the target district population) and the smallest district is SD-42 (0.28% above the target district population).<sup>26</sup> Even though SD-42 is the least populous district in this cluster, it is still overpopulated because the cluster population is large enough to support 6.24 Senate districts. It is the case that all of the districts in the Iredell and Mecklenburg Senate County Cluster are within the  $\pm 5\%$  population tolerance outlined by the state. It is notable that SD-37, the most populous district in the county cluster, and SD-42, the least

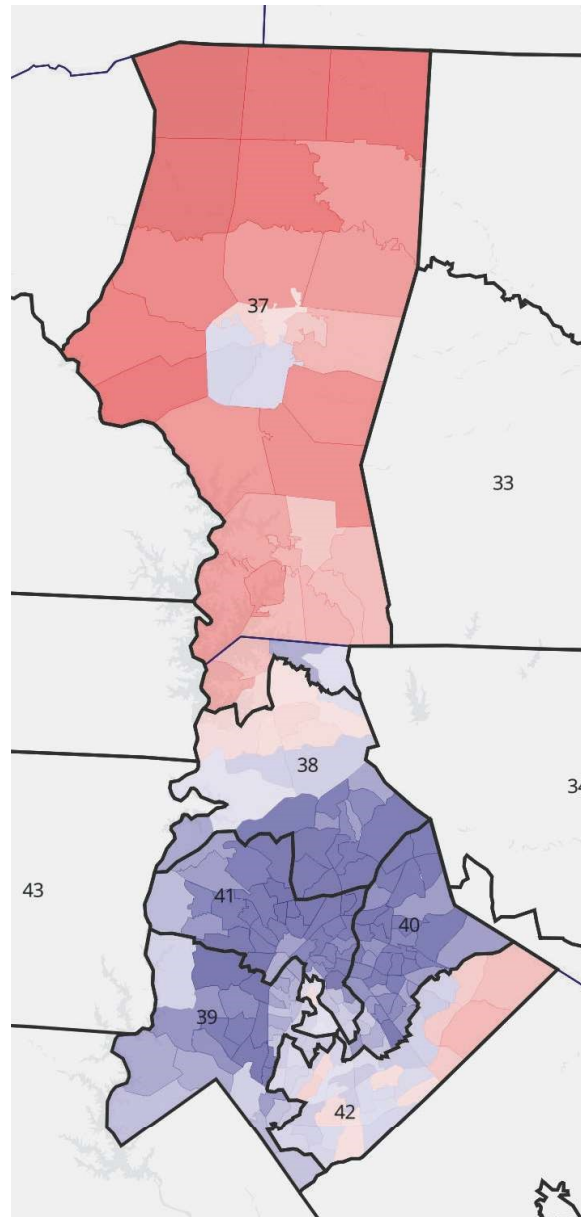
<sup>24</sup>The 2019 map population deviation is based on 2010 US Census population numbers and ideal district sizes. The 2019 map had a different county cluster configuration that grouped New Hanover and Brunswick Counties with Bladen and Pender Counties rather than with Columbus County. See <https://www.ncleg.gov/redistricting> for data on district population for each of the above-referenced maps.

<sup>25</sup>See page 67 of Fairfax report.

<sup>26</sup>See page 68 of Fairfax report.

populous district in the county cluster are the two most Republican-leaning districts in an otherwise heavily Democratic county cluster. SD-37 is 64.1% Republican and SD-42 is 52.2% Republican according to the partisan index described above.

Figure 19: Enacted Senate Iredell and Mecklenburg Counties Districts and Precinct Partisanship



Note: Precincts are colored by their partisan lean - darker red for more Republican and darker blue for more Democratic. Map source: <https://davesredistricting.org/>

Dated: September 26, 2024

Michael Barber

Signed: 