

EXHIBIT A

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION**

ANNIE LOIS GRANT, *et al.*,

Plaintiffs,

v.

BRAD RAFFENSPERGER, *et al.*,

Defendants.

CIVIL ACTION

FILE NO. 1:22-CV-00122-SCJ

EXPERT REPORT OF JOHN B. MORGAN

Pursuant to 28 U.S.C. § 1746, Fed. R. Civ. P. 26, and F.R.E. 702 and 703, I, JOHN B. MORGAN, make the following declaration:

1. My name is John B. Morgan. I am over the age of 21 years, and I am under no legal disability which would prevent me from giving this declaration. If called to testify, I would testify under oath to these facts.

2. I hold a B.A. in History from the University of Chicago. As detailed in my CV, attached as Exhibit 1, I have extensive experience over many years in the field of redistricting. I have worked on redistricting plans in the redistricting efforts following the 1990 Census, the 2000 Census, the 2010 Census and the 2020 Census. I have testified as an expert witness in demographics and redistricting.

3. I am being compensated at a rate of \$325 per hour for my services in this case.

4. The redistricting geographic information system (GIS) software package used for this analysis is Maptitude for Redistricting 2021 from Caliper Corporation. The redistricting software was loaded with the census PL94-171 data from the Census Bureau and the census geography for Georgia. I was also provided with election data files used by the Georgia General Assembly during the redistricting process. The full suite of census geography was available, including counties, places, voting districts, water bodies, and roads, as well as census blocks, which are the lowest level of geography for which the Census Bureau reports population counts. Census blocks are generally bounded by visible features, such as roads, streams, and railroads and they can range in size from a city block in urban and suburban areas to many square miles in rural areas.

5. I have been asked to review the House of Representatives and State Senate plans considered and adopted by the Georgia General Assembly and compare them to the proposed House and Senate plans drawn by Mr. Esselstyn and offer opinions regarding my analysis.

6. As a result of this analysis my opinion is that the Esselstyn 1205 Senate and House plans are focused on race, prioritizing race to the detriment of traditional redistricting factors.

Data utilized for analysis

7. A House and Senate plan was submitted for a preliminary injunction hearing, earlier in this case (I am designating these as PI plans). A House and Senate plan were submitted in Mr. Esselstyn's expert report in this case on December 5, 2022 (I am designating these as 1205 plans).

8. In preparing this analysis, I was given the block-equivalency files of the Esselstyn plans as well as the block-equivalency files of the 2021 adopted plans and incumbent databases used by the Georgia General Assembly during the redistricting process. The incumbent databases list the address locations and districts of the Representatives and Senators serving under the existing House (2015-enacted) and Senate (2014-enacted) plans prior to the election of 2022. I was also given information on incumbents who were not intending to run for re-election to their current offices in 2022.

9. I loaded the 2021 House and 2021 Senate plans enacted by the Georgia General Assembly into the Maptitude for Redistricting software using the block-equivalency files provided. I loaded the Esselstyn House plans and the Esselstyn

Senate plans into the Maptitude for Redistricting software using the block-equivalency files provided. I loaded the prior House (2015-enacted) and Senate (2014-enacted) plans into the Maptitude for Redistricting software using files provided with software. I loaded the associated incumbent databases provided.

10. Using the Maptitude for Redistricting software, I ran seven reports for each 1205 Esselstyn plan:

- 1- Measures of compactness report,
- 2- Districts & incumbents report,
- 3- Population summary report,
- 4- Political subdivision splits report,
- 5- Plan component report,
- 6- Core constituency report compared to PI plan,
- 7- Core constituency report compared to Enacted 2021 plan.

11. Each report is included in the appendices to this report as exhibits 2-15. I previously created these reports for the enacted plans that are included in my December 5, 2022 expert report. I also created population summary reports for the PI plans.

12. I also created a series of maps comparing the 1205 plans and the enacted plans. These maps show a theme of AP-Black % on the voting districts and overlays

of selected districts in the enacted plans and the 1205 plans for comparison. Each of these maps for the Senate is included as Exhibits 16-35 and each of these maps for the House is included as Exhibits 36-46.

State Senate Plan Analysis

13. Using the Population summary reports, I tallied the number of majority-Black districts using any-part Black voting age population (18+ AP-Black) for each Senate plan. The chart below shows the total number of majority-Black districts in the 2021 adopted Senate plan, the Esselstyn 1205 Senate plan and the Esselstyn PI Senate plan, as well as the number of districts in the percentage ranges using the any-part Black voting age population.

Chart 1: Number of Majority-Black Senate Districts.

Majority-Black Senate Districts			
% AP Black VAP	2021 Adopted Plan	Esselstyn Plan 1205	Esselstyn Plan PI
Over 75%	0	0	0
70% to 75%	3	1	1
65% to 70%	3	2	2
60% to 65%	3	3	4
55% to 60%	3	5	4
52% to 55%	1	3	3
50% to 52%	1	3	3
Total # Districts	14	17	17

14. The 2021 adopted Senate plan includes 14 majority-Black districts, the Esselstyn 1205 Senate plan includes 17 majority-Black districts, and the Esselstyn PI Senate plan has 17 majority-Black districts.

15. The plan drafted by Mr. Esselstyn (1205) differs slightly from the plan submitted previously for the preliminary injunction hearing in this case. There are changes affecting four districts: Districts 17 and 23 exchange population, and 16 and 34 exchange population.

16. Below is a chart which summarizes the changes between the two plans.

Chart 2: Changes from Esselstyn Sen PI to Esselstyn Sen 1205

District	Esselstyn Sen 1205 Population	Esselstyn Sen 1205 dev	Esselstyn Sen PI Population	Esselstyn Sen PI dev	Pop. Diff	Pop. % Diff	Esselstyn Sen 1205 % AP Black VAP	Esselstyn Sen PI % AP Black VAP
16	190077	-0.63%	193863	1.35%	-3786	-2.0%	19.7%	19.3%
34	192023	0.39%	188237	-1.59%	3786	2.0%	59.0%	60.2%
17	193838	1.34%	189212	-1.08%	4626	2.4%	21.8%	21.7%
23	188095	-1.67%	192721	0.75%	-4626	-2.5%	51.1%	50.4%

17. Senate District 16 exchanges population with Senate District 34, resulting in a deviation that moves from +1.35% to -0.63% and an 18+ AP Black % that moves from 60.2% to 59.0%.

18. District 34 exchanges population with District 16, resulting in a deviation that moves from +1.59% to +0.39% and an 18+ AP Black % that moves from 19.3% to 19.7%.

19. In another part of the state, Senate District 17 exchanges population with Senate District 23, resulting in a deviation that moves from +1.08% to +1.34% and an 18+ AP Black % that moves from 21.7% to 21.8%.

20. District 23 exchanges population with District 17, resulting in a deviation that moves from +0.75% to -1.67% and an 18+ AP Black % that moves from 50.4% to 51.1%. In this exchange, both districts 17 and 23 show an increase in 18+ AP Black %. While that might not seem possible from a logical point of view, is possible because the deviation of Senate District 23 is lowered to the make it the lowest deviation in the entire plan at -1.67%. Having a lower total population, but approximately the same AP Black population results in a higher AP Black %.

21. Looking more closely at the Esselstyn Senate 1205 plan, here is a chart that summarizes top-line statistics about the plan and compares them to the enacted plan.

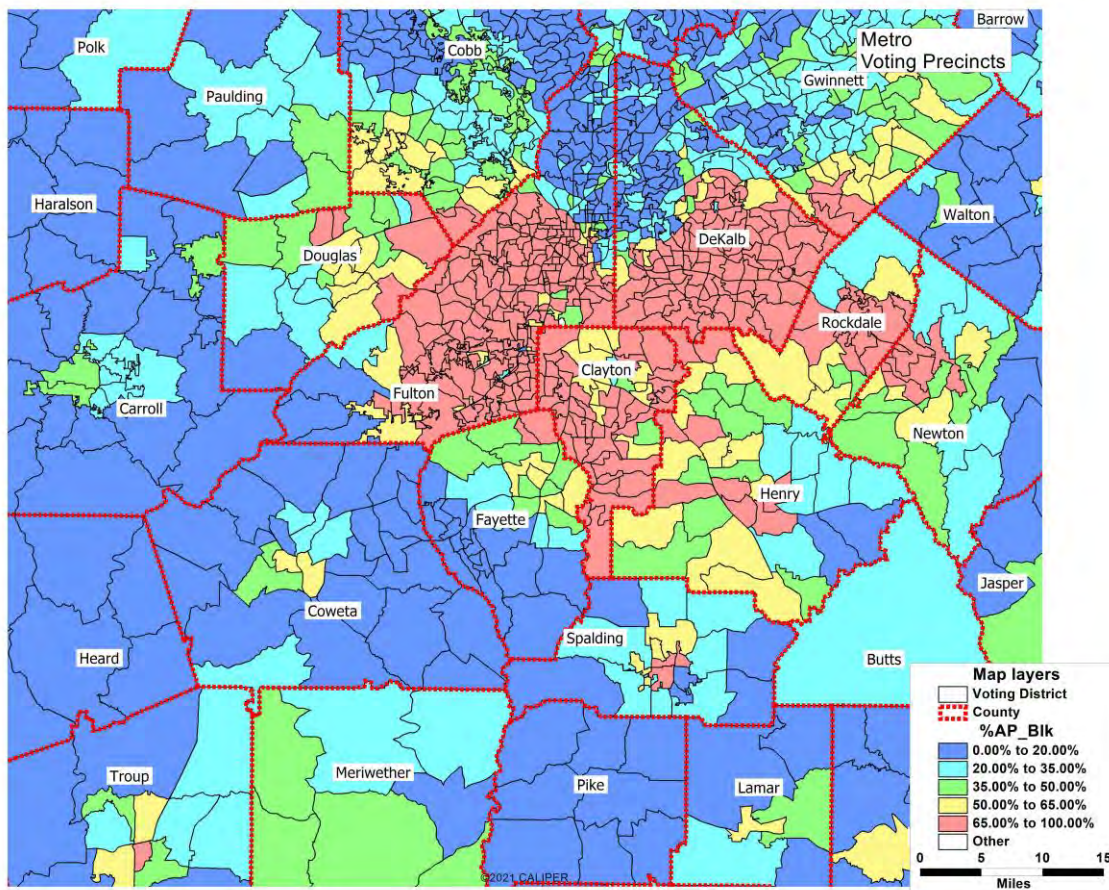
Chart 3: Esselstyn 1205 Senate and Enacted Senate Plan comparisons

Plan metrics	Esselstyn Senate 1205	Enacted Senate
County splits	34	29
Voting precinct splits	49	47
Mean compactness - Reock	0.41	0.42
Mean compactness - Polsby Popper	0.28	0.29
# Paired incumbents	6	4
# Seats majority 18+_AP_Blk%	17	14
Deviation relative range	-1.67% to +1.90%	-1.03% to +0.98%
Deviation overall range	3.57%	2.01%

22. In addition to the overall plan metrics in the chart above, the Core constituency report (Ex. 8) shows that the Esselstyn 1205 Senate plan has 34 districts that are exactly the same as the enacted Senate plan. With 34 of 56 districts exactly the same, it is not surprising that the Esselstyn 1205 Senate plan has mean compactness scores close to, but still lower than the enacted Senate plan.

23. The Esselstyn 1205 Senate plan changes 22 districts to create three new Black-majority Senate districts.

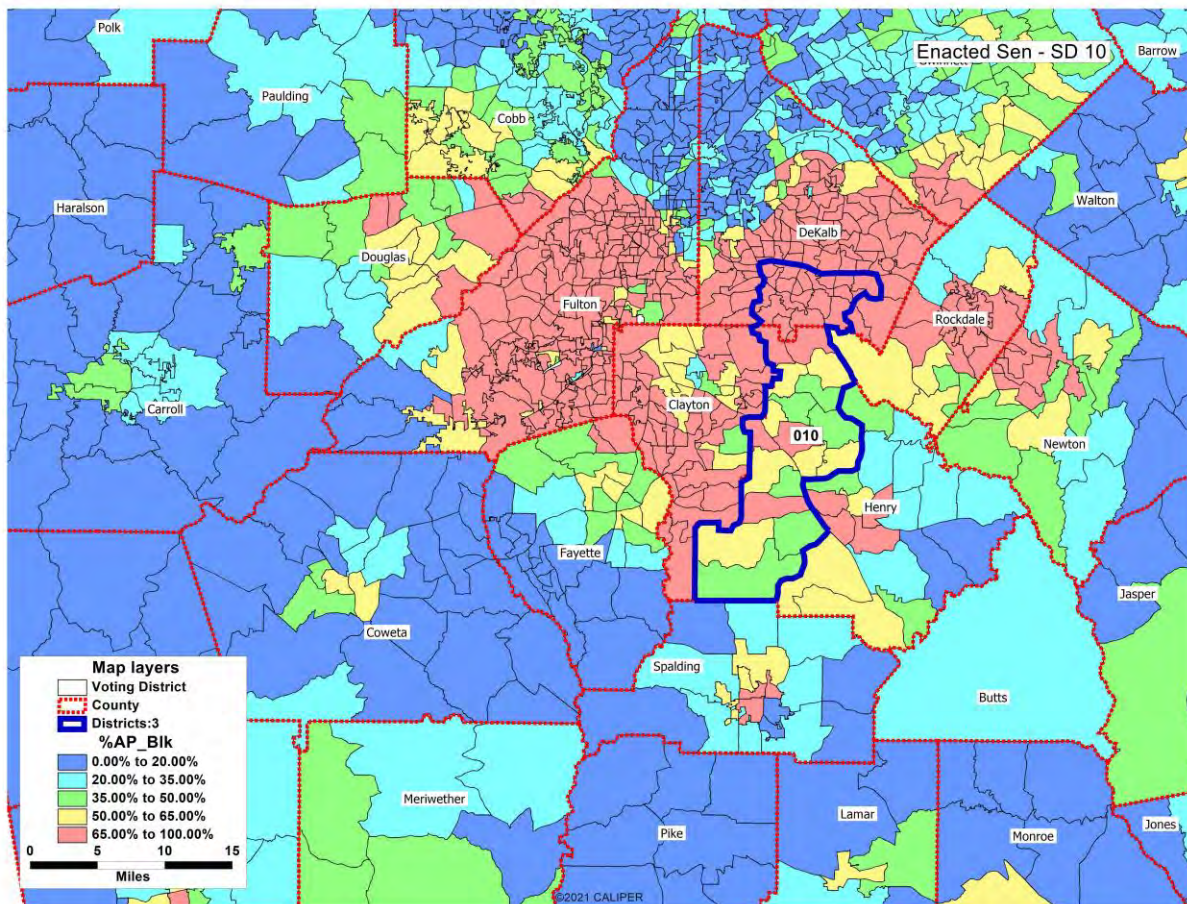
24. Below is a map showing the Metro region with a theme of AP-Black % on the voting districts, as well as maps of Senate District 10 in the Enacted Senate plan and the Esselstyn 1205 Senate plan.



25. Voting districts themed in red have an AP-Black % of greater than 65% and voting districts themed in yellow have an AP-Black % of 50% to 65%. Voting districts themed in green have an AP-Black % of 35% to 50%; light blue have an AP-Black % of 20% to 35%; and darker blue have an AP-Black % of less than 20%.

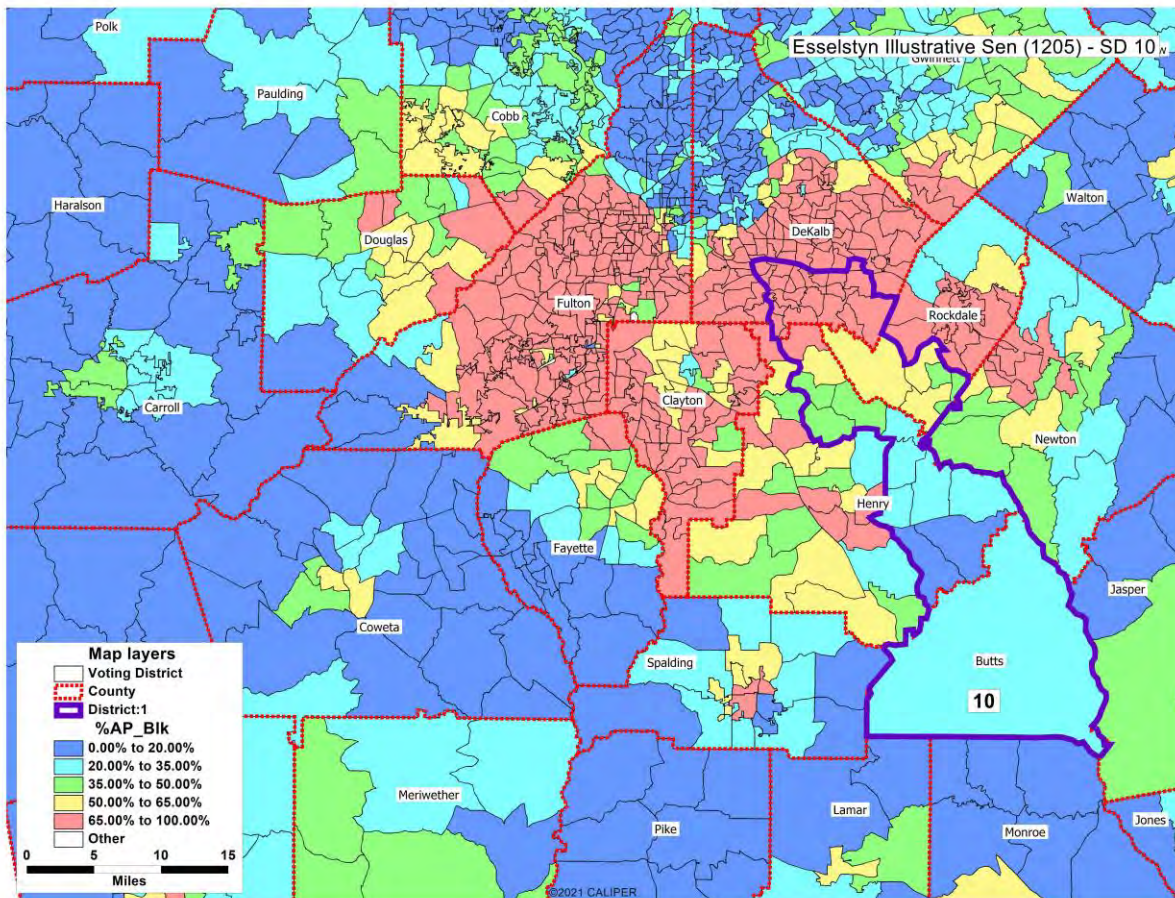
26. Senate District 10 in the enacted plan is anchored in heavily Black southern DeKalb County (Stonecrest area) and follows the western boundary of Henry County down to its southern border with Spalding County. This district has

a Reock compactness score of 0.28 and a Polsby-Popper compactness score of 0.23 and the district is 71.46% 18+AP Black. It is comprised of parts of two counties and measures 25 miles from north to south.



27. In comparison, Senate District 10 in the Esselstyn 1205 Senate plan is anchored in heavily Black southern DeKalb County (Stonecrest area) and stretches through Rockdale County and Henry County to pick up predominantly white Butts County. The construction of Senate District 10 splits a portion of Rockdale County

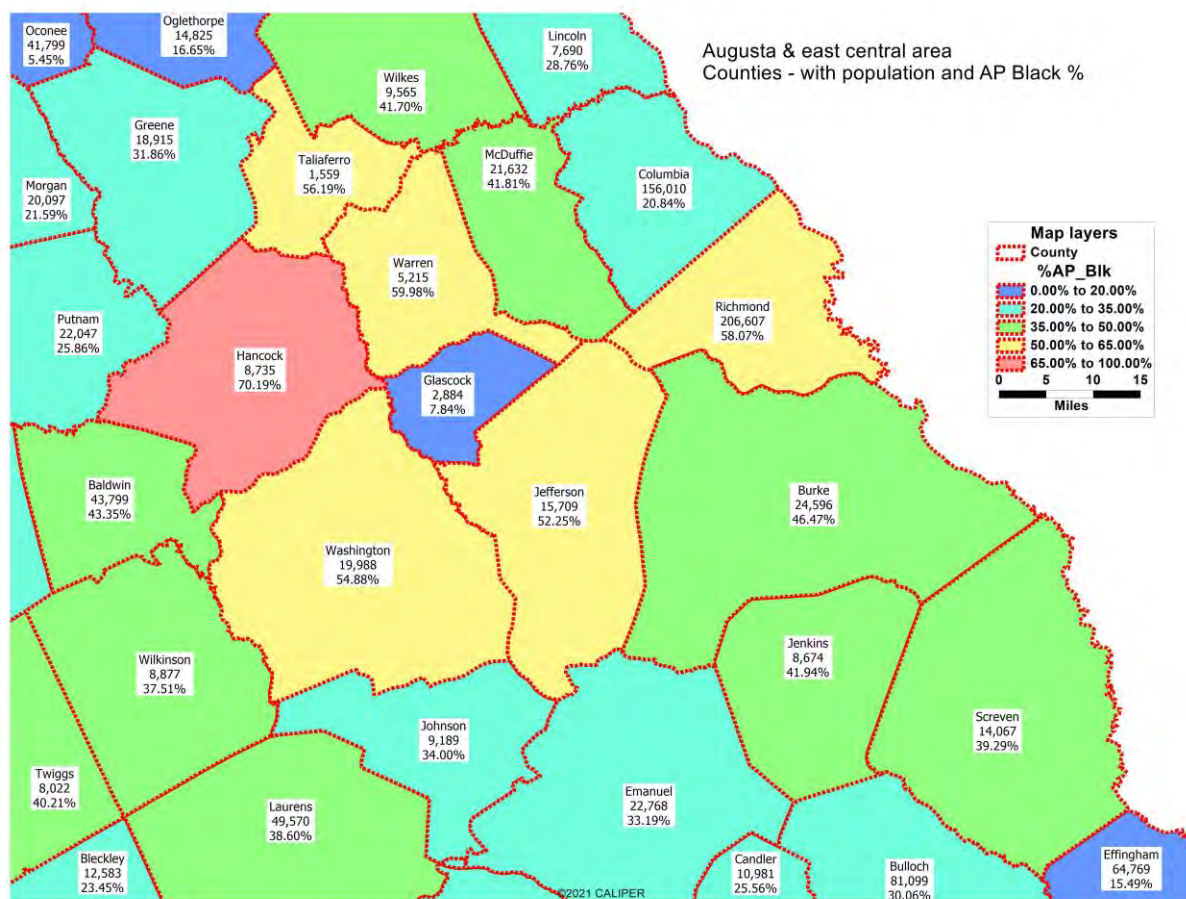
and strategically avoids much of the Black population in Henry County (the portion of Henry County in SD 10 is only 35.1% 18+ AP Black %). This district has a Reock compactness score of 0.25 and a Polsby-Popper compactness score of 0.19 and the district is 61.1% 18+AP Black. It is comprised of parts of four counties and measures 43 miles from north to south.



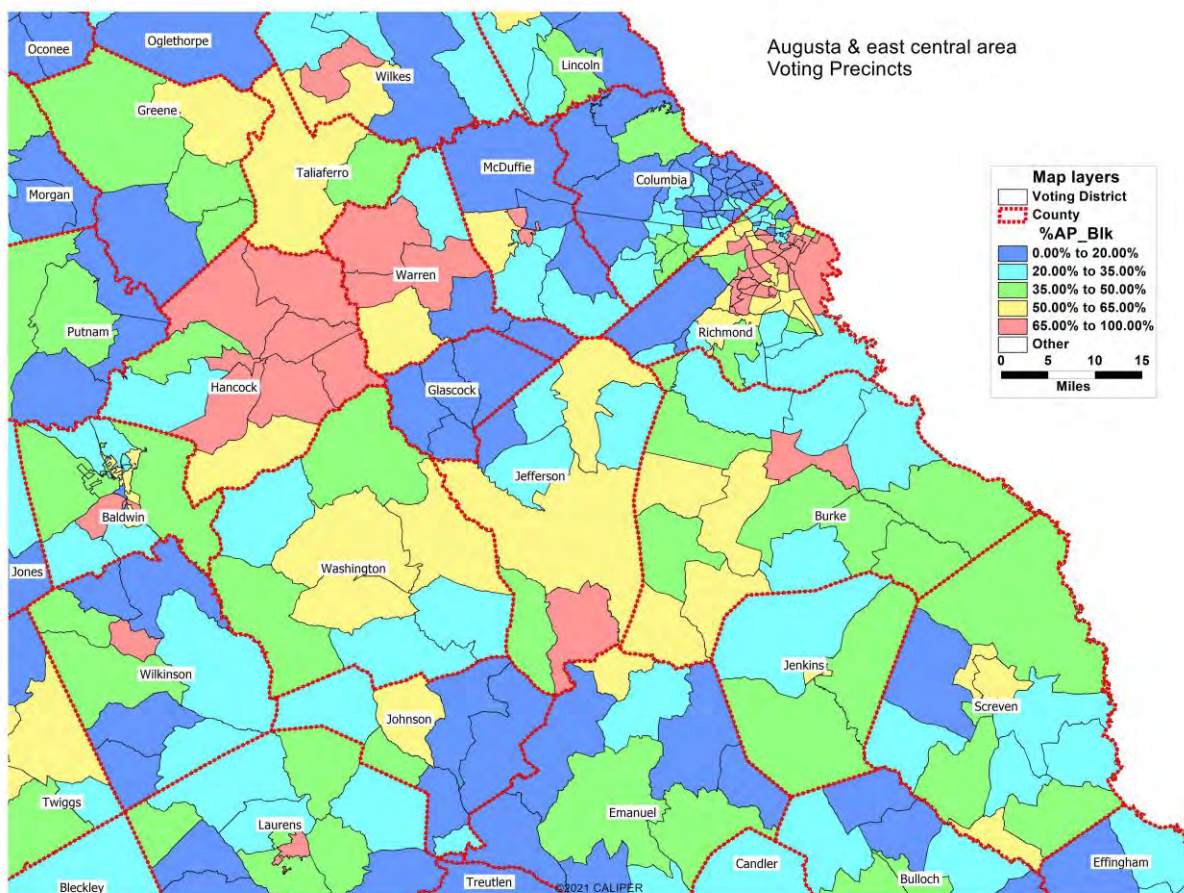
28. Looking at specific districts (as above) shows that the compactness of the districts is impacted by the efforts to create more majority Black districts. The

Black percentage is lowered only by elongating the district to include lower concentrations of Black population. This allows the Black population to be redistributed and to create other majority Black districts.

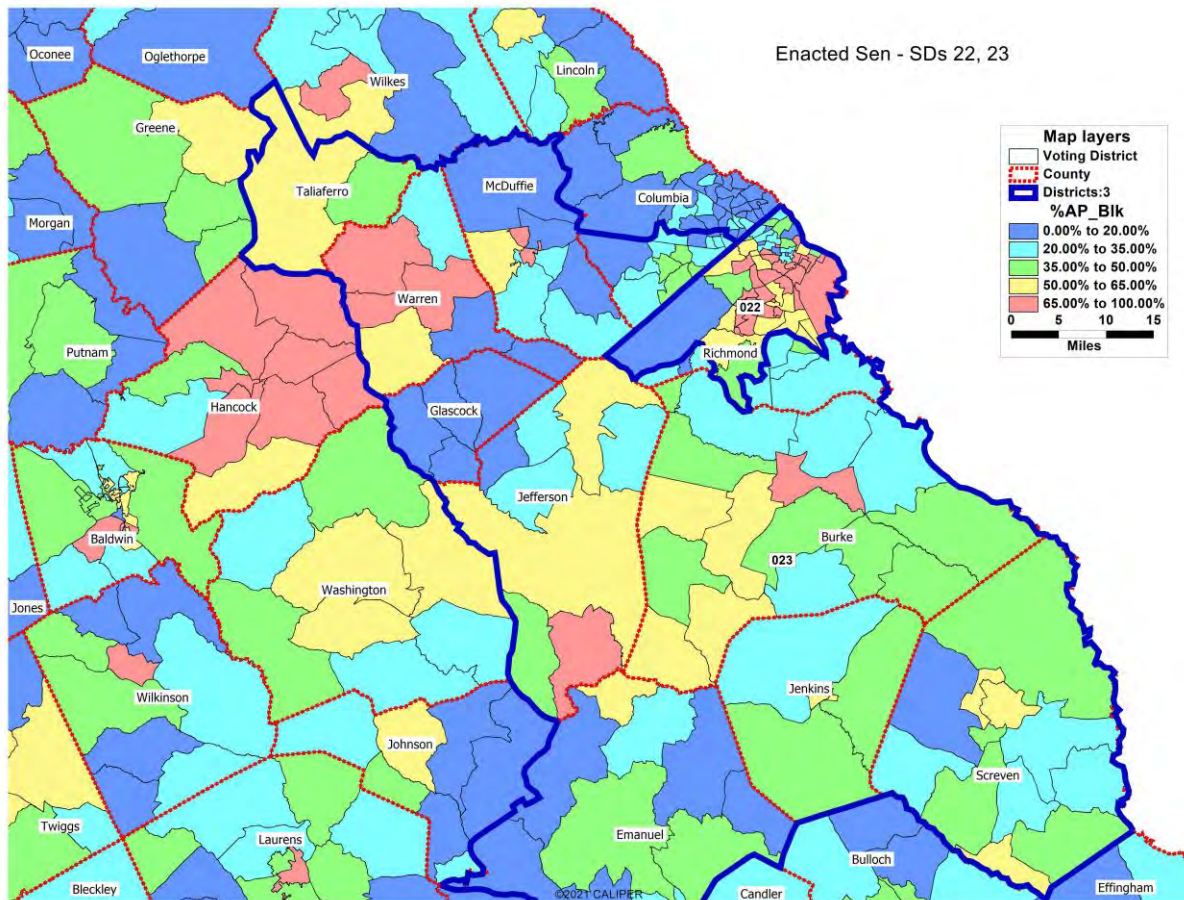
29. Below is a map showing Augusta and the East Central region with a theme of AP-Black % on the counties. The map shows that Richmond County (Augusta) has a majority of AP-Black population. At over 200,000 in population, Richmond County has more than enough population for a Senate district. The map also shows some majority AP-Black population counties, which are not very populous, to the west of Augusta – Washington, Jefferson, Hancock, Warren and Taliaferro.



30. A similarly themed map on the voting districts shows concentrations of Black population in the region.

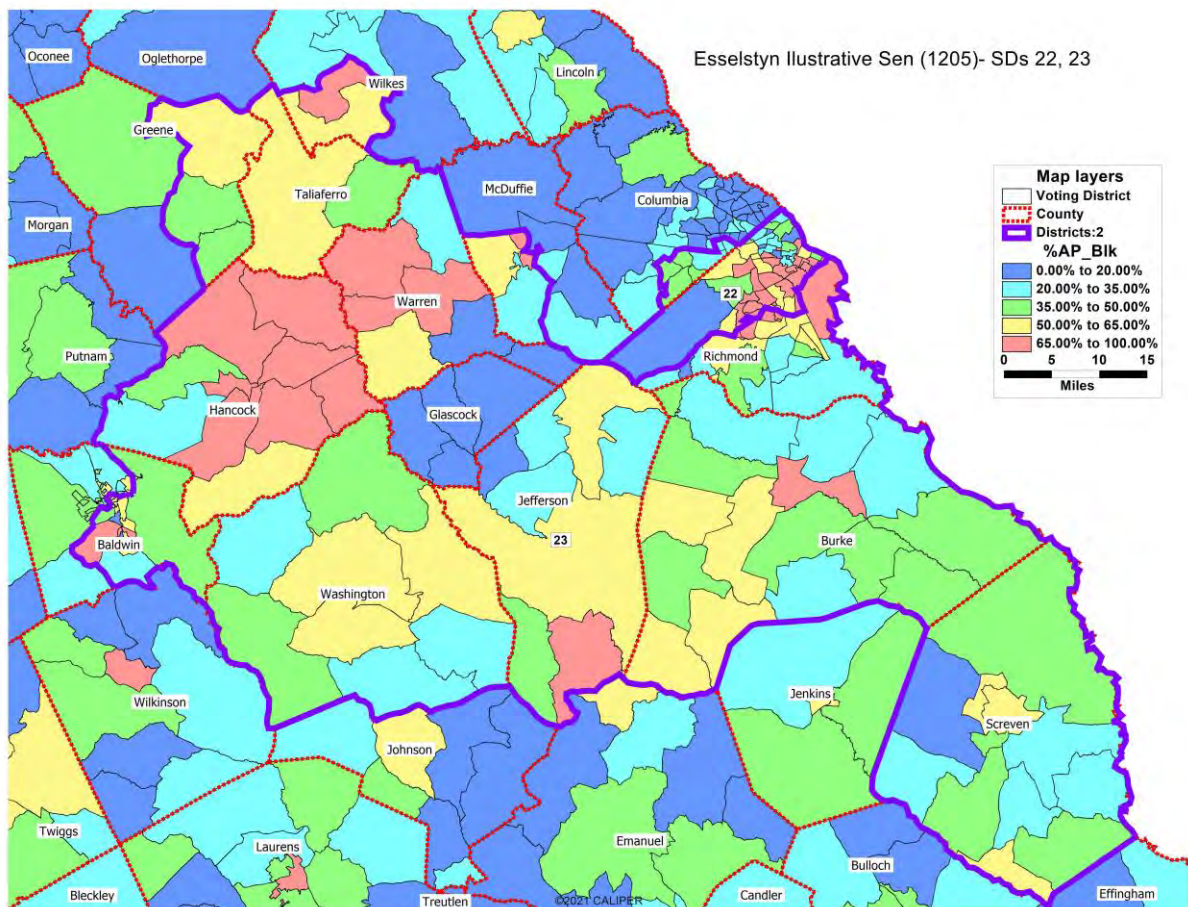


31. Senate District 22 in the enacted plan is drawn entirely within Richmond County. Enacted Senate District 22 has a Reock compactness score of 0.41 and a Polsby-Popper compactness score of 0.29 and the district is 56.5% 18+AP Black. In the enacted plan, the balance of Richmond County is placed in Senate District 23 along with a portion of Columbia County and nine whole counties. Enacted Senate District 23 has a Reock compactness score of 0.37 and a Polsby-Popper compactness score of 0.16 and the district is 35.48% 18+AP Black.



32. In order to change the racial makeup of Senate Districts 22 and 23, the Esselstyn 1205 Senate plan pushes part of SD 22 out of Richmond County into Columbia County. The Esselstyn 1205 Senate plan strategically utilizes the Black population in Columbia County, selecting the highest-concentration AP-Black population voting districts close to the county border in order to keep SD 22 above 50% 18+AP Black population. By moving SD 22 into Columbia County, stronger

concentrations of Black population in Richmond County can be transferred into Senate District 23.



33. The construction of Senate District 23 in the Cooper 1205 Senate plan splits Wilkes, Greene, McDuffie and Baldwin Counties, taking the lion's share of Black population in each of those counties into the district. The map shows that the boundary of Senate District 23 follows the contours of the underlying high concentrations of Black population within voting precincts. Senate District 23

connects many separate enclaves of Black population from these split counties, including Milledgeville in Baldwin County, which measures more than 80 miles away from the eastern part of the district in Augusta. The chart below shows that the counties are split such that the portion with higher concentrations of Black population is in SD 23 and the portion with lower concentrations of Black population is outside the district.

Chart 4: Counties split in Esselstyn Senate 1205 SD 23

Split County	Pop.	AP Black Pop.	VAP	AP Black VAP	% AP Black VAP
Baldwin (in 23)	26833	13267	22274	10300	46%
Baldwin (outside 23)	16966	5718	13458	4215	31%
Greene (in 23)	4747	2373	3666	1772	48%
Greene (outside 23)	14168	3654	11692	2698	23%
McDuffie (in 23)	12164	7350	9042	5130	57%
McDuffie (outside 23)	9468	1695	7573	1295	17%
Richmond (in 23)	47851	28212	36201	20443	56%
Richmond (outside 23)	158756	91758	124698	67487	54%
Wilkes (in 23)	3747	2465	2873	1840	64%
Wilkes (outside 23)	5818	1524	4778	1231	26%

34. As discussed earlier in this report, Esselstyn 1205 Senate district 23 has the lowest population deviation at -1.67% and this deviation has an effect on the 18+AP Black population in the district. Senate District 23 also has the most split counties of any district in the plan at five split counties.

35. The chart below compares the split counties in both the Enacted and Esselstyn 1205 Senate plans as well as some demographic data for those counties. The enacted Senate plan splits 29 counties and the Esselstyn 1205 Senate plan splits 34 counties. Both plans split the same 27 counties.

Chart 5: County splits Enacted SD vs Esselstyn 1205

County	Population	AP Blk	AP Blk %	18+ Pop	18+ AP Blk	18+ AP Blk %	Split in Enacted Senate	Split in Esselstyn Sen 1205
Barrow	83,505	11,907	14.3%	62,195	8,222	13.2%	X	X
Bartow	108,901	13,395	12.3%	83,570	9,377	11.2%	X	X
Chatham	295,291	115,458	39.1%	234,715	85,178	36.3%	X	X
Cherokee	266,620	21,687	8.1%	202,928	14,976	7.4%	X	X
Clarke	128,671	33,672	26.2%	106,830	24,776	23.2%	X	X
Clayton	297,595	216,351	72.7%	220,578	158,854	72.0%	X	X
Cobb	766,149	223,116	29.1%	591,848	166,141	28.1%	X	X
Coffee	43,092	12,575	29.2%	32,419	9,191	28.4%	X	X
Columbia	156,010	32,516	20.8%	114,823	22,273	19.4%	X	X
DeKalb	764,382	407,451	53.3%	595,276	314,230	52.8%	X	X
Fayette	119,194	32,076	26.9%	91,798	23,728	25.8%	X	X
Floyd	98,584	15,606	15.8%	76,295	11,064	14.5%	X	X
Forsyth	251,283	13,222	5.3%	181,193	8,751	4.8%	X	X
Fulton	1,066,710	477,624	44.8%	847,182	368,635	43.5%	X	X
Gordon	57,544	2,919	5.1%	43,500	1,939	4.5%	X	X
Gwinnett	957,062	287,687	30.1%	709,484	202,762	28.6%	X	X
Hall	203,136	17,006	8.4%	153,844	12,094	7.9%	X	X
Henry	240,712	125,211	52.0%	179,973	89,657	49.8%	X	X
Houston	163,633	56,520	34.5%	122,118	39,605	32.4%	X	X
Jackson	75,907	6,148	8.1%	56,451	4,268	7.6%	X	X
Muscogee	206,922	102,212	49.4%	157,052	74,301	47.3%	X	X
Newton	112,483	55,901	49.7%	84,748	40,433	47.7%	X	X
Paulding	168,661	41,296	24.5%	123,998	28,164	22.7%	X	X
Richmond	206,607	119,970	58.1%	160,899	87,930	54.6%	X	X
Walton	96,673	18,804	19.5%	73,098	13,165	18.0%	X	X
Ware	36,251	11,421	31.5%	27,788	8,226	29.6%	X	X
White	28,003	721	2.6%	22,482	484	2.2%	X	X
Bibb	157,346	88,865	56.5%	120,902	64,270	53.2%	X	
Douglas	144,237	74,260	51.5%	108,428	53,377	49.2%	X	

County	Population	AP Blk	AP Blk %	18+ Pop	18+ AP Blk	18+ AP Blk %	Split in Enacted Senate	Split in Esselstyn Sen 1205
Baldwin	43,799	18,985	43.3%	35,732	14,515	40.6%		X
Coweta	146,158	28,289	19.4%	111,155	20,196	18.2%		X
Greene	18,915	6,027	31.9%	15,358	4,470	29.1%		X
McDuffie	21,632	9,045	41.8%	16,615	6,425	38.7%		X
Rockdale	93,570	57,204	61.1%	71,503	41,935	58.6%		X
Wilcox	8,766	3,161	36.1%	7,218	2,693	37.3%		X
Wilkes	9,565	3,989	41.7%	7,651	3,071	40.1%		X
TOTAL							29	34

36. In comparison to the enacted senate plan, the Esselstyn 1205 Senate plan makes two counties whole (Bibb and Douglas counties) but introduces seven new county splits (Baldwin, Coweta, Greene, McDuffie, Rockdale, Wilcox and Wilkes counties). Four of the seven additional county splits are directly due to Senate District 23. All seven additional split counties are attributable to the effort to create new majority Black districts.

37. Based on my analysis of the Esselstyn 1205 Senate plan, the impact of engineering more majority Black districts can be seen in the overall plan metrics and the differences from the enacted plan. Further, my analysis of the traditional redistricting factors – maintaining communities and traditional boundaries, compactness, and deviation - along with the manipulation of the boundaries of the new AP-Black districts, supports my opinion that the Esselstyn 1205 Senate plan is focused on race, prioritizing race to the detriment of traditional redistricting factors.

State House Plan Analysis

38. Using the Population summary reports, I tallied the number of majority-Black districts using any-part Black voting age population for each House plan. The chart below shows the total number of majority-Black districts in the 2021 adopted House plan, the Esselstyn 1205 House plan and the Esselstyn PI House plan, as well as the number of districts in the percentage ranges using the any-part Black voting age population.

Chart 6: Number of Majority-Black House Districts

Majority-Black House Districts			
% AP Black VAP	2021 Adopted Plan	Esselstyn Plan 1205	Esselstyn Plan PI
Over 75%	2	2	2
70% to 75%	9	5	5
65% to 70%	7	8	8
60% to 65%	8	8	8
55% to 60%	11	9	10
52% to 55%	10	12	10
50% to 52%	2	10	11
Total # Districts	49	54	54

39. The 2021 adopted House plan includes 49 majority-Black districts, the Esselstyn 1205 House plan includes 54 majority-Black districts, and the Esselstyn PI House plan has 54 majority-Black districts.

40. The House plan drafted by Mr. Esselstyn (1205) differs slightly from the House plan submitted previously for the preliminary injunction hearing in this case. There are changes affecting eight districts: Districts 61, 65 and 66 exchange population; Districts 128, 133 and 149 exchange population; and Districts 144, and 147 exchange population.

Chart 7: Changes Esselstyn House 1205 from Esselstyn House PI

District	Esselstyn Hse 1205 Pop	Esselstyn Hse 1205 Dev	Esselstyn Hse PI Pop	Esselstyn Hse PI Dev	Pop. Diff	Pop. % Diff	Esselstyn Hse 1205 % AP Black VAP	Esselstyn Hse PI % AP Black VAP
61	58950	-0.94%	58928	-0.98%	22	0.0%	53.5%	64.9%
65	59240	-0.46%	59076	-0.73%	164	0.3%	63.3%	55.3%
66	58961	-0.92%	59147	-0.61%	-186	-0.3%	53.9%	50.6%
128	58864	-1.09%	58869	-1.08%	-5	0.0%	50.4%	50.4%
133	59768	0.43%	59695	0.31%	73	0.1%	26.1%	27.6%
149	59392	-0.20%	59460	-0.09%	-68	-0.1%	51.5%	50.0%
144	58533	-1.64%	58642	-1.46%	-109	-0.2%	24.9%	25.0%
147	58567	-1.59%	58458	-1.77%	109	0.2%	30.5%	30.5%

41. In the Metro Atlanta area, House District 61 exchanges population with House Districts 65 and 66, resulting in a deviation that moves from -0.98% to -0.94% and an 18+ AP Black % that moves from 64.9% to 53.5%.

42. House District 65 exchanges population with House District 61, resulting in a deviation that moves from -0.73% to -0.46% and an 18+ AP Black % that moves from 55.3% to 63.3%.

43. House District 66 exchanges population with House District 61, resulting in a deviation that moves from -0.61% to -0.92% and an 18+ AP Black % that moves from 50.6% to 53.9%.

44. In Houston County, House District 144 exchanges population with House District 147, resulting in a deviation that moves from -1.46% to -1.64% and an 18+ AP Black % that moves from 25.0% to 24.9%.

45. House District 147 exchanges population with House District 144, resulting in a deviation that moves from -1.77% to -1.59% and an 18+ AP Black % that moves from 30.5% to 30.5%.

46. In Baldwin County, House District 128 exchanges population with House District 149, resulting in a deviation that moves from -1.08% to -1.09% and an 18+ AP Black % that moves from 50.4% to 50.4%. The effect of these changes makes the Esselstyn 1205 House District 128 the same as the enacted House District 128.

47. In Baldwin County, House District 133 exchanges population with House District 149, resulting in a deviation that moves from +0.31% to +0.43% and an 18+ AP Black % that moves from 27.6% to 26.1%.

48. In Baldwin County, House District 149 exchanges population with House Districts 128 and 133, resulting in a new deviation that moves from -0.09% to -0.20% and an 18+ AP Black % that moves from 50.0% to 51.5%.

49. Looking more closely at the Esselstyn House 1205 plan, here is a chart that summarizes top-line statistics about the plan and compares them to the enacted plan.

Chart 8: Esselstyn 1205 House and Enacted House Plan comparisons

Plan metrics	Esselstyn House 1205	Enacted House
County splits	70	69
Voting precinct splits	185	184
Mean compactness - Reock	0.39	0.39
Mean compactness - Polsby Popper	0.28	0.28
# Paired incumbents	28	20
# Seats majority 18+_AP_Bl% %	54	49
Deviation relative range	-1.94% to 1.91%	-1.40% to 1.34%
Deviation overall range	3.85%	2.74%

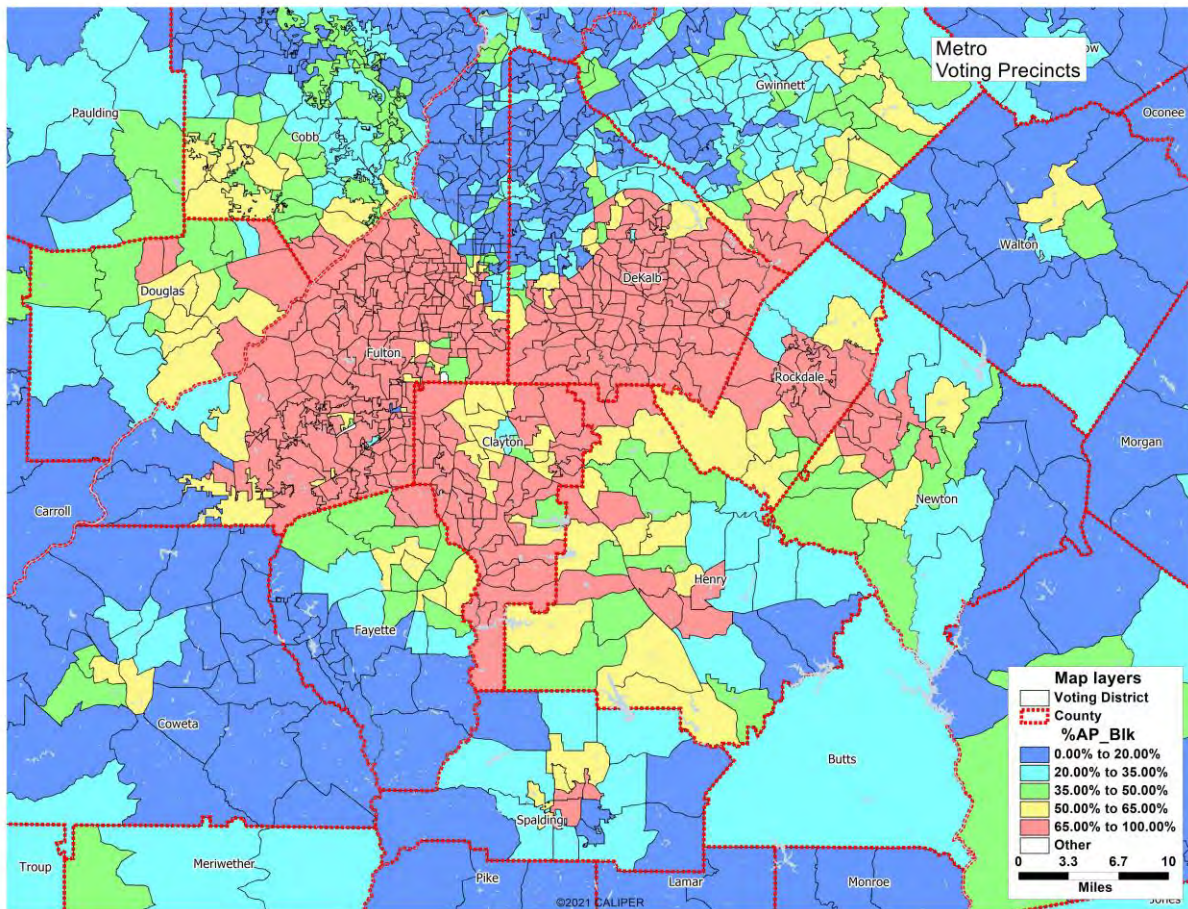
50. The Esselstyn 1205 plan uses a deviation range that is a full percentage point larger in range than the 2021 Enacted House plan. The overall compactness scores on the Esselstyn 1205 House plan and the 2021 enacted House plan are similar; however, of the 25 districts changed in the Esselstyn 1205 House plan, 15

districts are less compact on the Reock measurement, and 14 districts are less compact on the Polsby-Popper measurement. The chart below shows the compactness scores of the newly created majority-Black districts which Mr. Esselstyn identified in his report and the compactness scores of the corresponding district number in the 2021 adopted plans.

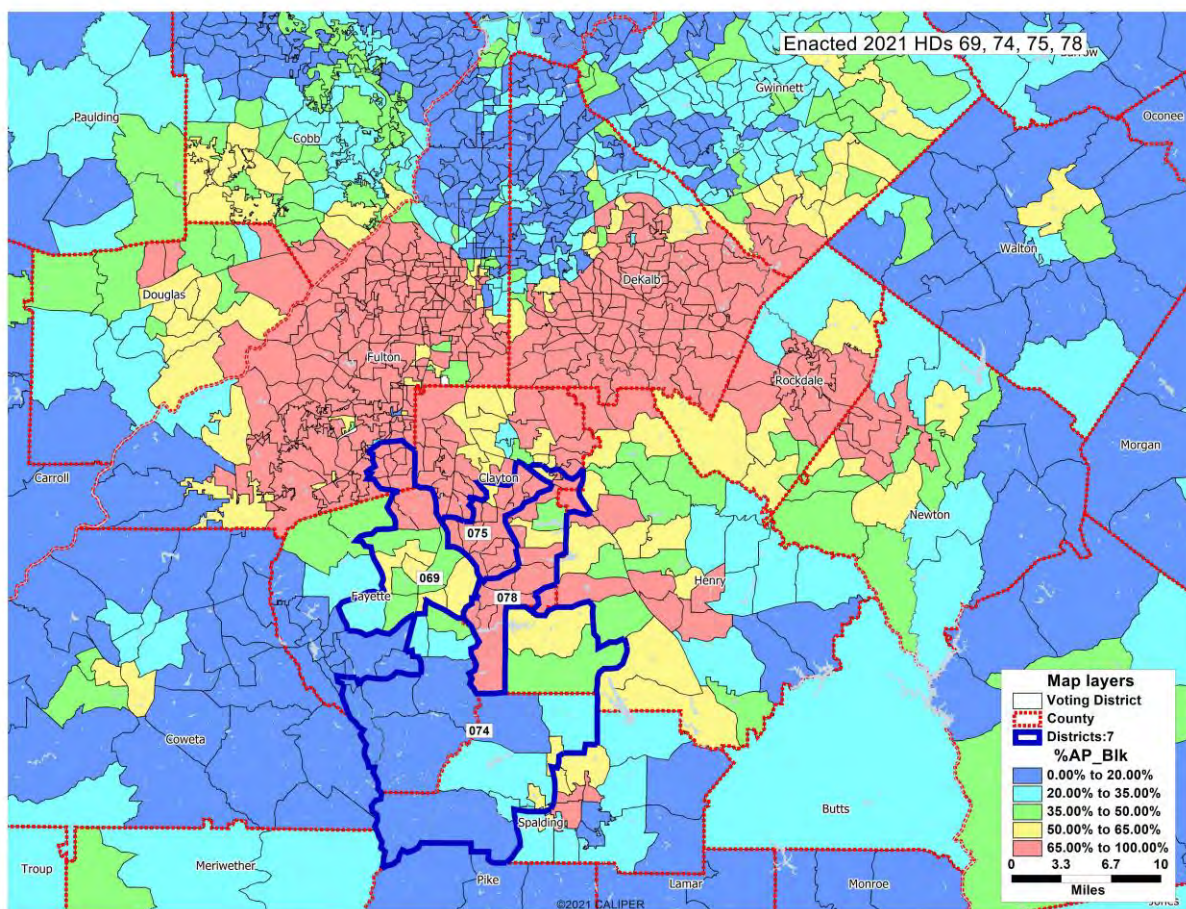
Chart 9: Compactness score summary

New Black-Majority District	Enacted Plan Reock	Esselstyn 1205 Plan Reock	Enacted Plan Polsby-Popper	Esselstyn 1205 Plan Polsby-Popper
House 64	0.37	0.22	0.36	0.22
House 74	0.50	0.30	0.25	0.19
House 117	0.41	0.40	0.28	0.33
House 145	0.38	0.34	0.19	0.21
House 149	0.32	0.46	0.22	0.28

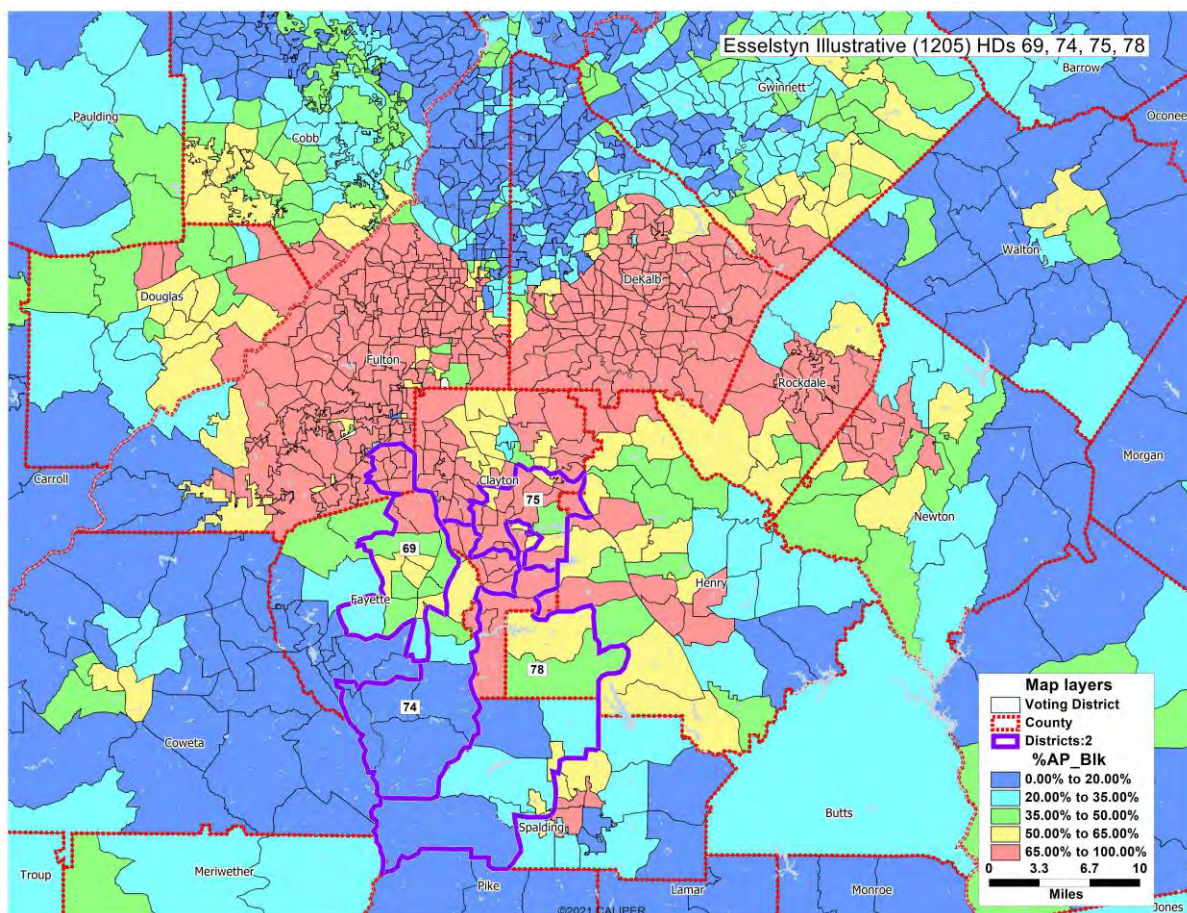
51. Below is a map showing the Metro region with a theme of AP-Black % on the voting districts, as well as maps of a group of four house districts (69, 74, 75, and 78) in the Enacted House and the Esselstyn 1205 House plan.



52. As shown in the Senate plan analysis, the voting districts themed in red have an AP-Black % of greater than 65% and voting districts themed in yellow have an AP-Black % of 50% to 65%. Voting districts themed in green have an AP-Black % of 35% to 50%; light blue have an AP-Black % of 20% to 35%; and darker blue have an AP-Black % of less than 20%.



53. In the enacted House plan, Districts 75 and 78 are primarily within Clayton County, District 69 is anchored in heavily Black southern Fulton County combined with central Fayette County, and District 74 is comprised of southern Fayette County, western Spalding County and two voting precincts of Henry County.



54. In the Esselstyn 1205 House plan, the engineering of a new majority Black district is accomplished by elongating the districts to connect to Clayton County to predominantly white areas of Fayette and Spalding Counties. District 74 takes the “tail” of southern Clayton County and goes south through Henry to western Spalding County. District 74 takes part of Jonesboro in Clayton County, punches through the blocking District 69, to go south to southern Fayette County. The data in the chart below shows that the configuration of these four districts in the Esselstyn

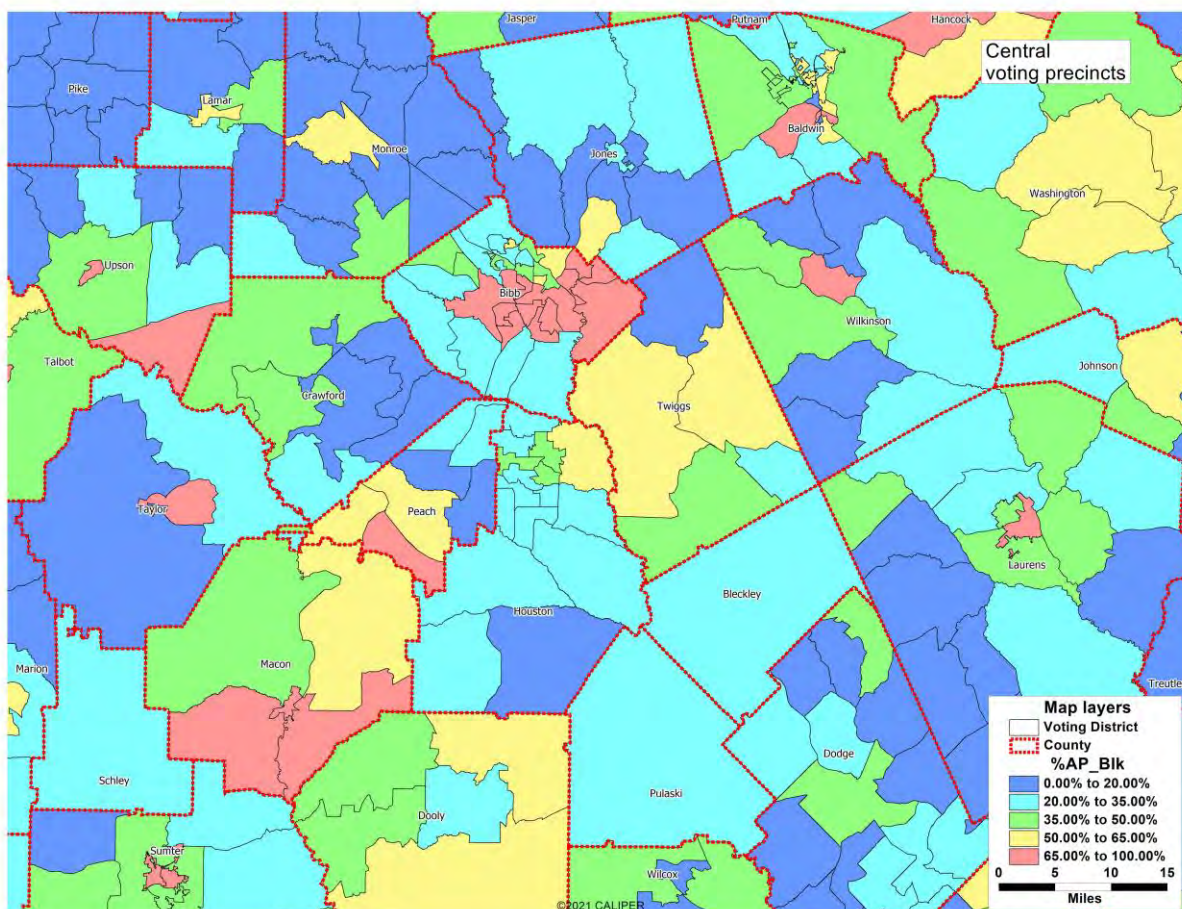
1205 House plan lowers the mean compactness score compared to the configuration of the districts in the Enacted House plan.

Chart 10: Compactness scores in four House districts

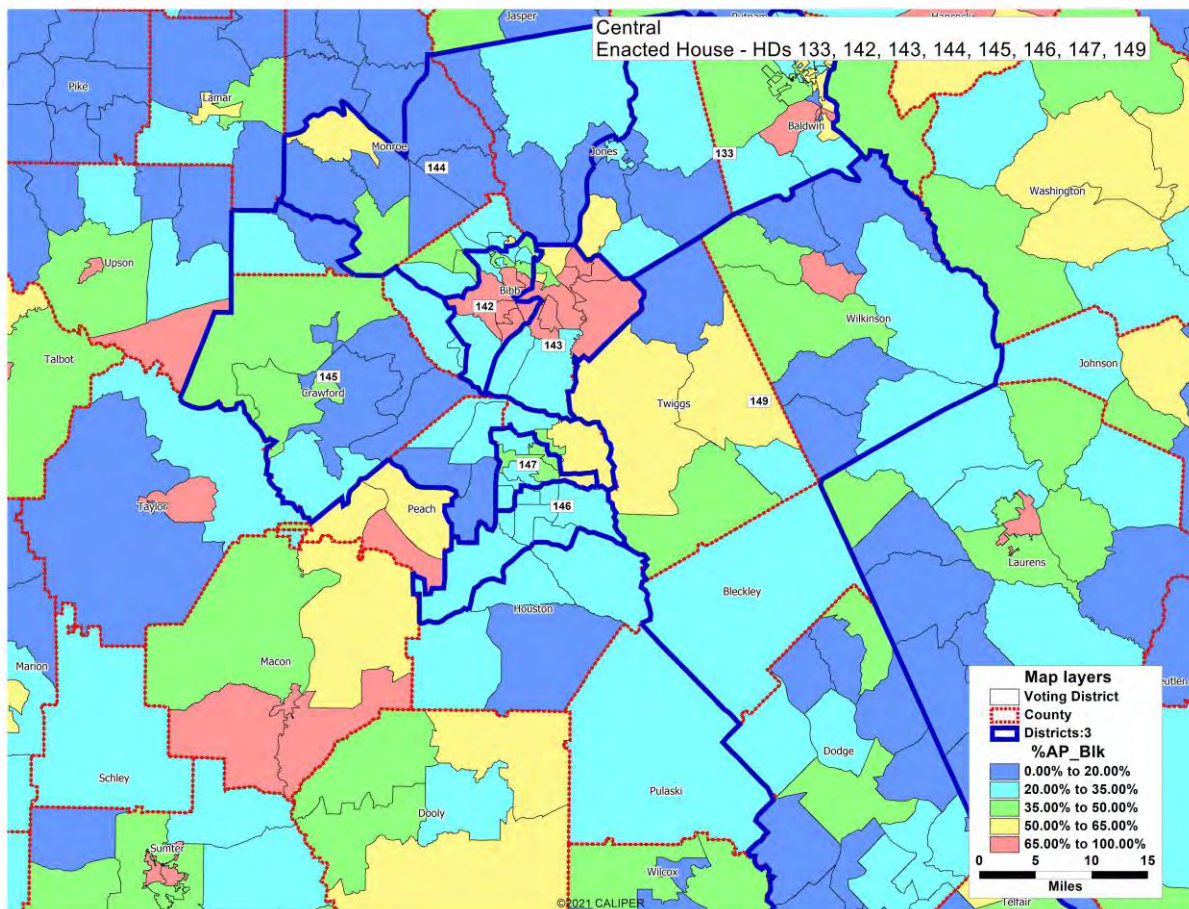
District	Enacted House				Esselstyn House 1205			
	% Devn.	Reock	Polsby-Popper	% 18+ AP Blk	% Devn.	Reock	Polsby-Popper	% 18+ AP Blk
069	-1.39	0.4	0.25	63.56%	-1.94	0.33	0.22	62.7%
074	-0.93	0.5	0.25	25.52%	-1.84	0.3	0.19	53.9%
075	0.39	0.42	0.28	74.40%	0.42	0.46	0.18	66.9%
078	-0.78	0.21	0.19	71.58%	0.64	0.31	0.18	51.0%
Mean Compactness	0.38 0.24				0.35 0.19			

55. Looking at specific districts (as above) shows that the compactness of the districts is impacted by the efforts to create more majority Black districts. The Black percentage is lowered only by elongating the district to include lower concentrations of Black population. This allows the Black population to be redistributed and to create other majority Black districts.

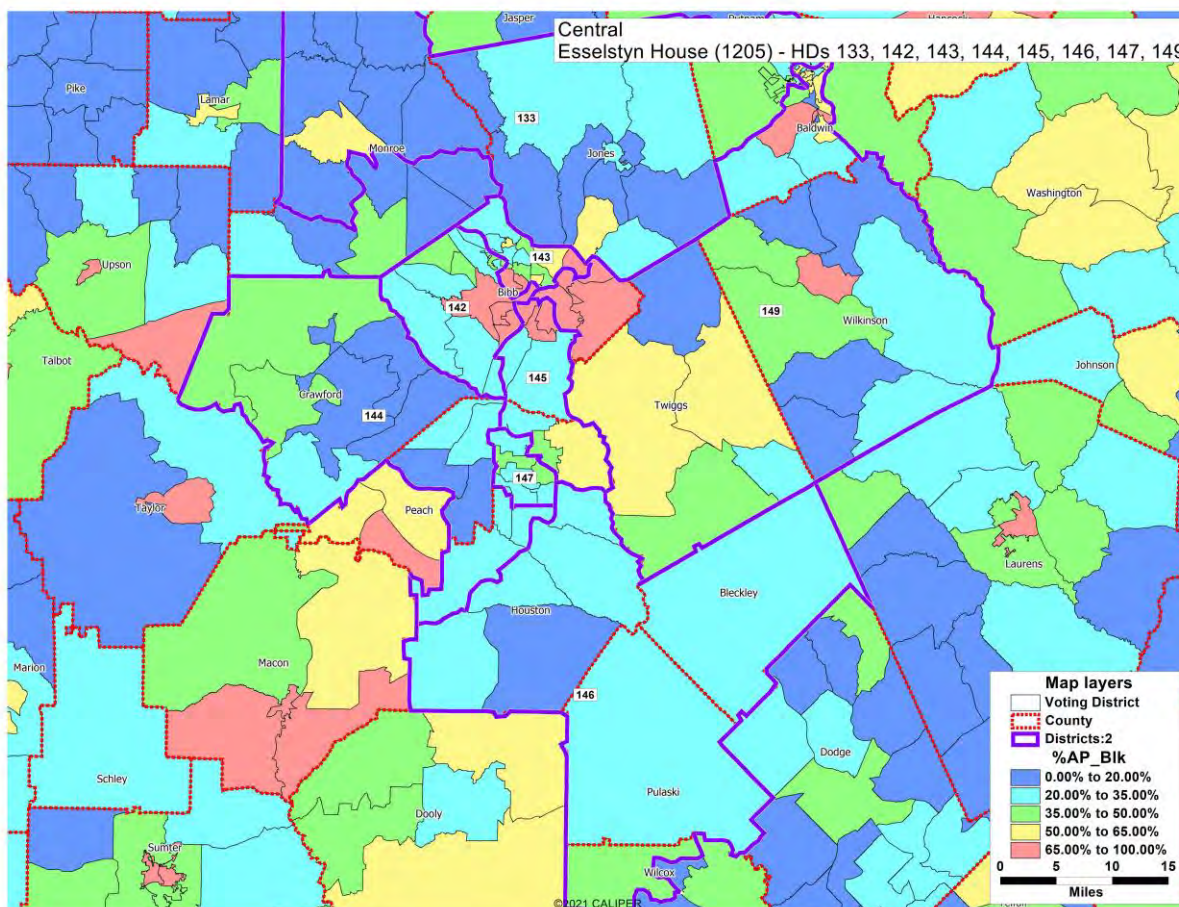
56. Below is a map showing Central Georgia around Macon with a theme of AP-Black % on the voting districts. The map shows a concentration of Black population in Bibb County (Macon) as well as enclaves of majority AP-Black population voting precincts within the center of the surrounding rural counties.



57. The enacted plan has two majority 18+AP Black districts drawn entirely within Bibb County. Enacted House District 143 is in the eastern portion of Bibb County, enacted House District 142 is in the central portion of Bibb County, leaving the western portion of Bibb County in districts to the north and west.



58. In order to create additional majority 18+AP-Black districts in the Macon area, the Esselstyn 1205 House plan moves House Districts 142 and 143 to the west and lowers their 18+AP-Black % to barely 50%. The plan strategically utilizes the remaining Black population in Bibb County, to spin one district to the south to pick-up Black population from the Robins Air Force base in Houston County and spin one district to the east to connect through two counties to Milledgeville in Baldwin County.



59. The chart below compares the split counties in both the Enacted and Esselstyn 1205 House plans as well as some demographic data for those counties. The enacted House plan splits 69 counties and the Esselstyn 1205 House plan splits 70 counties. Both plans split the same 68 counties.

Chart 11: County splits Enacted HD vs Esselstyn 1205

Name	Population	AP Blk	AP Blk %	18+ Pop	18+ AP Blk	18+ AP Blk %	Split in Enacted House	Split in Esselstyn 1205 House
Appling	18,444	3,647	19.8%	13,958	2,540	18.2%	x	x
Baldwin	43,799	18,985	43.3%	35,732	14,515	40.6%	x	x
Barrow	83,505	11,907	14.3%	62,195	8,222	13.2%	x	x
Bartow	108,901	13,395	12.3%	83,570	9,377	11.2%	x	x
Ben Hill	17,194	6,537	38.0%	13,165	4,745	36.0%	x	x
Bibb	157,346	88,865	56.5%	120,902	64,270	53.2%	x	x
Bryan	44,738	7,463	16.7%	31,828	5,025	15.8%	x	x
Bulloch	81,099	24,375	30.1%	64,494	18,220	28.3%	x	x
Carroll	119,148	24,618	20.7%	90,996	17,827	19.6%	x	x
Catoosa	67,872	2,642	3.9%	52,448	1,684	3.2%	x	x
Chatham	295,291	115,458	39.1%	234,715	85,178	36.3%	x	x
Cherokee	266,620	21,687	8.1%	202,928	14,976	7.4%	x	x
Clarke	128,671	33,672	26.2%	106,830	24,776	23.2%	x	x
Clayton	297,595	216,351	72.7%	220,578	158,854	72.0%	x	x
Cobb	766,149	223,116	29.1%	591,848	166,141	28.1%	x	x
Coffee	43,092	12,575	29.2%	32,419	9,191	28.4%	x	x
Columbia	156,010	32,516	20.8%	114,823	22,273	19.4%	x	x
Cook	17,229	5,014	29.1%	12,938	3,595	27.8%	x	x
Coweta	146,158	28,289	19.4%	111,155	20,196	18.2%	x	x
Dawson	26,798	392	1.5%	21,441	249	1.2%	x	x
DeKalb	764,382	407,451	53.3%	595,276	314,230	52.8%	x	x
Dougherty	85,790	61,457	71.6%	66,266	45,631	68.9%	x	x
Douglas	144,237	74,260	51.5%	108,428	53,377	49.2%	x	x
Effingham	64,769	10,035	15.5%	47,295	6,831	14.4%	x	x
Fayette	119,194	32,076	26.9%	91,798	23,728	25.8%	x	x
Floyd	98,584	15,606	15.8%	76,295	11,064	14.5%	x	x
Forsyth	251,283	13,222	5.3%	181,193	8,751	4.8%	x	x
Fulton	1,066,710	477,624	44.8%	847,182	368,635	43.5%	x	x
Glynn	84,499	22,098	26.2%	66,468	15,620	23.5%	x	x
Gordon	57,544	2,919	5.1%	43,500	1,939	4.5%	x	x
Grady	26,236	7,693	29.3%	19,962	5,678	28.4%	x	x
Gwinnett	957,062	287,687	30.1%	709,484	202,762	28.6%	x	x
Habersham	46,031	2,165	4.7%	35,878	1,675	4.7%	x	x
Hall	203,136	17,006	8.4%	153,844	12,094	7.9%	x	x
Harris	34,668	5,742	16.6%	26,799	4,431	16.5%	x	x
Henry	240,712	125,211	52.0%	179,973	89,657	49.8%	x	x

Name	Population	AP Blk	AP Blk %	18+ Pop	18+ AP Blk	18+ AP Blk %	Split in Enacted House	Split in Esselstyn 1205 House
Houston	163,633	56,520	34.5%	122,118	39,605	32.4%	x	x
Jackson	75,907	6,148	8.1%	56,451	4,268	7.6%	x	x
Jasper	14,588	2,676	18.3%	11,118	1,966	17.7%	x	x
Lamar	18,500	5,220	28.2%	14,541	4,017	27.6%	x	x
Liberty	65,256	31,146	47.7%	48,014	21,700	45.2%	x	x
Lowndes	118,251	46,758	39.5%	89,031	33,302	37.4%	x	x
Lumpkin	33,488	685	2.0%	27,689	507	1.8%	x	x
Madison	30,120	3,196	10.6%	23,112	2,225	9.6%	x	x
McDuffie	21,632	9,045	41.8%	16,615	6,425	38.7%	x	x
Meriwether	20,613	7,547	36.6%	16,526	5,845	35.4%	x	x
Monroe	27,957	6,444	23.0%	21,913	5,068	23.1%	x	x
Muscogee	206,922	102,212	49.4%	157,052	74,301	47.3%	x	x
Newton	112,483	55,901	49.7%	84,748	40,433	47.7%	x	x
Oconee	41,799	2,280	5.5%	30,221	1,660	5.5%	x	x
Paulding	168,661	41,296	24.5%	123,998	28,164	22.7%	x	x
Peach	27,981	12,645	45.2%	22,111	9,720	44.0%	x	x
Putnam	22,047	5,701	25.9%	17,847	4,229	23.7%	x	x
Richmond	206,607	119,970	58.1%	160,899	87,930	54.6%	x	x
Rockdale	93,570	57,204	61.1%	71,503	41,935	58.6%	x	x
Spalding	67,306	24,522	36.4%	52,123	17,511	33.6%	x	x
Sumter	29,616	15,546	52.5%	23,036	11,479	49.8%	x	x
Tattnall	22,842	6,331	27.7%	17,654	4,886	27.7%	x	x
Telfair	12,477	4,754	38.1%	10,190	3,806	37.4%	x	x
Thomas	45,798	16,975	37.1%	35,037	12,332	35.2%	x	x
Tift	41,344	12,734	30.8%	31,224	8,963	28.7%	x	x
Troup	69,426	25,473	36.7%	52,581	18,202	34.6%	x	x
Walker	67,654	3,664	5.4%	52,794	2,454	4.6%	x	x
Walton	96,673	18,804	19.5%	73,098	13,165	18.0%	x	x
Ware	36,251	11,421	31.5%	27,788	8,226	29.6%	x	x
Wayne	30,144	6,390	21.2%	23,105	4,662	20.2%	x	x
White	28,003	721	2.6%	22,482	484	2.2%	x	x
Whitfield	102,864	4,919	4.8%	76,262	3,349	4.4%	x	x
Jones	28,347	7,114	25.1%	21,575	5,341	24.8%	x	
Dodge	19,925	6,148	30.9%	15,709	4,725	30.1%		x
Wilcox	8,766	3,161	36.1%	7,218	2,693	37.3%		x
TOTAL							69	70

60. In comparison to the enacted House plan, the Esselstyn 1205 House plan makes one county whole (Jones) but introduces two new county splits (Dodge and Wilcox). Both additional split counties are attributable to the effort to create new majority Black districts.

61. Based on my analysis of the Esselstyn 1205 House plan, the impact of engineering more majority Black districts can be seen in the overall plan metrics and the differences from the enacted plan. Further, my analysis of the traditional redistricting factors – maintaining communities and traditional boundaries, compactness, and deviation – along with the manipulation of the boundaries of the new AP-Black districts, supports my opinion that the Esselstyn 1205 House plan is focused on race, prioritizing race to the detriment of traditional redistricting factors.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 23rd day of January, 2023.



JOHN B. MORGAN

EXHIBIT B

Expert Report of Blakeman B. Esselstyn

I. INTRODUCTION

A. Qualifications

1. My name is Blakeman B. Esselstyn. I am the founder and principal of a consultancy called Mapfigure Consulting, which provides expert services in the areas of redistricting, demographics, and geographic information systems (GIS). For more specific information about the qualifications and credentials in the paragraphs below, please see my Curriculum Vitae, provided as **Attachment A**.

2. On February 8th and 9th of 2022, in the preliminary injunction proceedings related to this matter, I served as a testifying expert. I was accepted by the Court as an expert in redistricting, demographics, and census data, and my expert testimony was credited by the Court.

3. I have previously served as a consulting expert in four other redistricting cases, and as a testifying expert in three cases related to other topics.

4. I have developed 16 redistricting plans that have been enacted for use in elections by jurisdictions at various levels of government.

5. I earned a bachelor's degree in Geology & Geophysics and International Studies from Yale University and a master's degree in Computer and Information Technology from the University of Pennsylvania. I have professional certifications both as a Geographic Information Systems Professional (GISP) and as a member of the American Institute of Certified Planners (AICP).

6. I have taught graduate-level semester courses in Geographic Information Systems (GIS) and have presented on redistricting at conferences at Harvard University, Duke University, the University of North Carolina at Chapel Hill, the University of Texas, and several other universities. I have also presented at national events organized by the National Conference of State Legislatures (NCSL), the Urban and Regional Information Systems Association (URISA), and the American Planning Association (APA).

7. In addition to speaking engagements, my work and opinions related to redistricting have often been cited in media outlets, and some of my related writings have been published or cited in national publications. Again, for details, please see **Attachment A**.

8. I am being compensated at a rate of \$325 per hour. No part of my compensation is dependent upon the conclusions that I reach or the opinions that I offer.

B. About this report

9. Plaintiffs' counsel has asked me to determine whether there are areas in the State of Georgia where the Black population is "sufficiently large and geographically compact"¹ to enable the creation of additional majority-Black legislative districts relative to the number of such districts provided in the enacted State Senate and State House of Representatives redistricting plans from 2021.

¹ *Thornburg v. Gingles*, 478 U.S. 30, 50 (1986).

10. The Georgia General Assembly has two chambers, each with distinct redistricting plans that I will consider individually. Following a demographic overview of the state that will be relevant for both chambers, the report will provide separate sections addressing each chamber's districts: first the State Senate, then the House of Representatives. For each chamber, I will briefly review the enacted plan, present an alternative illustrative plan, and supply some analysis of selected characteristics of the plans.

11. Unless otherwise specified, all map images in the report are ones that I created (though they may be maps showing redistricting plans I did not create).²

12. More detailed information about the sources of data, the software, and my methodology can be found in **Attachment B**.

C. Summary of conclusions

13. It is possible to create three additional majority-Black districts in the State Senate plan and five additional majority-Black districts in the State House plan in accordance with traditional redistricting principles.

² Some maps deliberately do not show the State of Georgia in its entirety, as districts in large areas of the northern and southern parts of the state are unchanged in the illustrative plans. Focusing in on affected portions of the State's geography allows for more clarity and higher level of detail in the map figures.

II. Statewide Demographic Overview

A. Georgia and the 2020 Census

14. Georgia’s population increased by more than one million people between the 2010 and 2020 censuses, from 9,687,653 to 10,711,908—an increase of approximately 10.6%.³

15. According to the 2020 census, 33.0% of Georgia’s population (essentially one-third) identified as “Black or African American alone or in combination.”⁴ The 2010–2020 population increase in this group outpaced the growth in the state as a whole, increasing by approximately 15.8%.

16. By contrast, the state’s population identifying as White and neither Hispanic nor multi-racial *decreased* by 1.0% between 2010 and 2020. This non-Hispanic White population still constitutes a majority of the state population, but only barely, at 50.1%. In 2010, this group constituted 55.9% of Georgia’s population.

17. The *voting age* population identifying as Black increased 21.8% from 2010 to 2020. In 2020 this group (sometimes abbreviated as BVAP for the Black voting age population) made up 31.7% of the voting age population, an increase from 29.7% in

³ All demographic analysis is based on statistics obtained from the U.S. Census Bureau website, <https://www.census.gov>. For URLs of specific census resources used, please consult Attachment B.

⁴ The Census Bureau classification “Black or African American alone or in combination,” sometimes stated as “any part Black,” will be the measure of the Black population that I use most frequently in this report. Unless otherwise stated, in the text that follows, “Black” can be taken to indicate “alone or in combination.” This measure includes Black residents who also identify as Hispanic. It is my understanding that the “alone or in combination” designation is the appropriate measure for most Voting Rights Act Section 2 considerations.

2010. The non-Hispanic single-race White proportion of the voting age population, however, decreased from 59.0% in 2010 to 52.8% in 2020.

B. Geographic distribution of the Black population

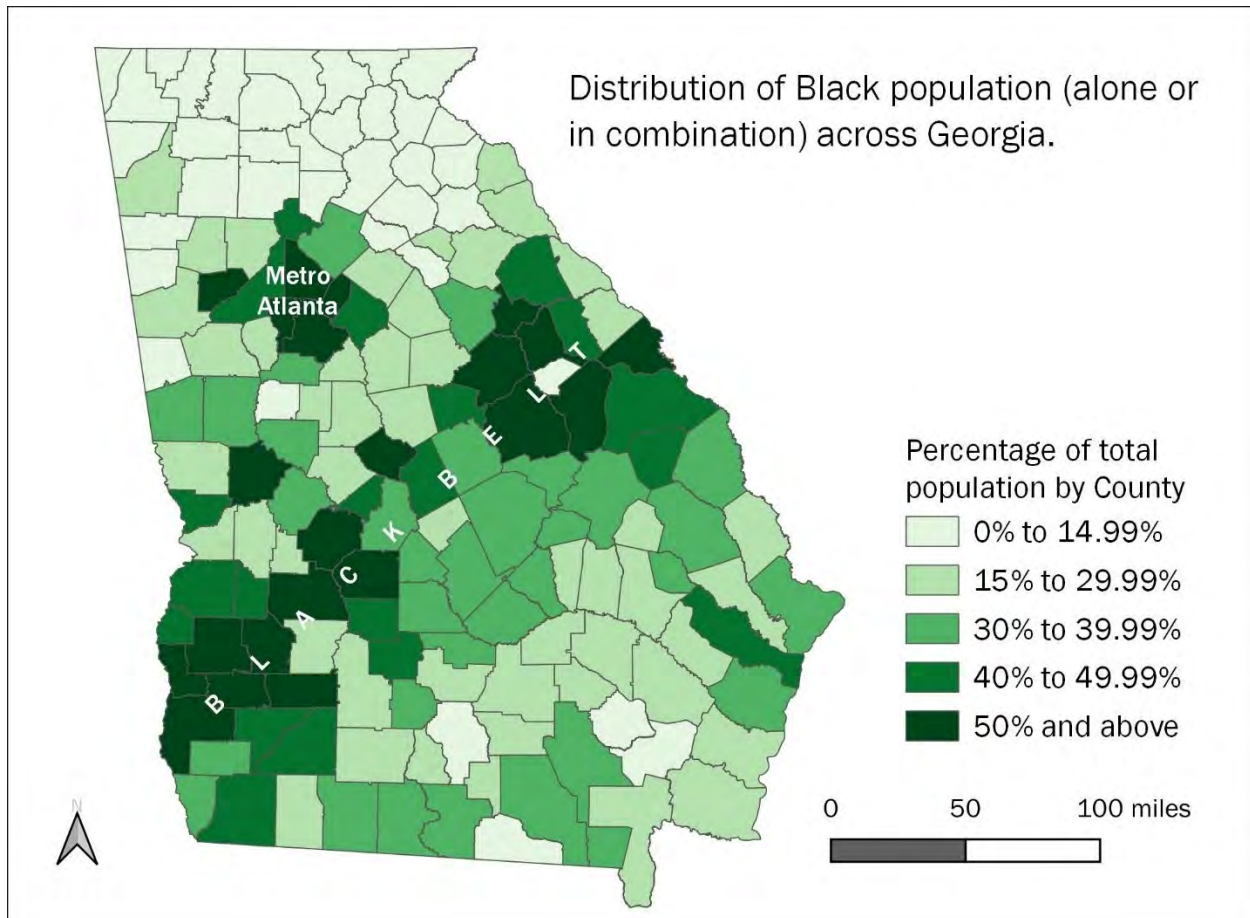
18. Just about half of Georgia's Black population lives in six of the state's 159 counties, all of which are in the Metro Atlanta region. These six counties are, in order of decreasing Black population, Fulton, DeKalb, Gwinnett, Cobb, Clayton, and Henry.

19. The counties in Georgia where the percentage of Black residents generally tends to be highest can be grouped into two main categories: the aforementioned Metro Atlanta region and the so-called "Black Belt" of Georgia. Though some accounts say the origin of the term "Black Belt" in the American South stems from descriptions of the soil, modern classifications of which counties are in this region can hinge on the percentage of the population that is Black.⁵ In Georgia, this belt of counties, most of which are rural, constitutes a wide band from the southwest corner of the state to the central part of the South Carolina border near Augusta-Richmond County. See Figure 1.

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⁵ See, e.g., *Southeastern Geographer* article at <https://www.jstor.org/stable/26225503>.

Figure 1: Statewide map showing percentages of Black population across counties.



20. For a table showing demographic statistics from the 2020 census for Georgia's counties, please see **Attachment C**.

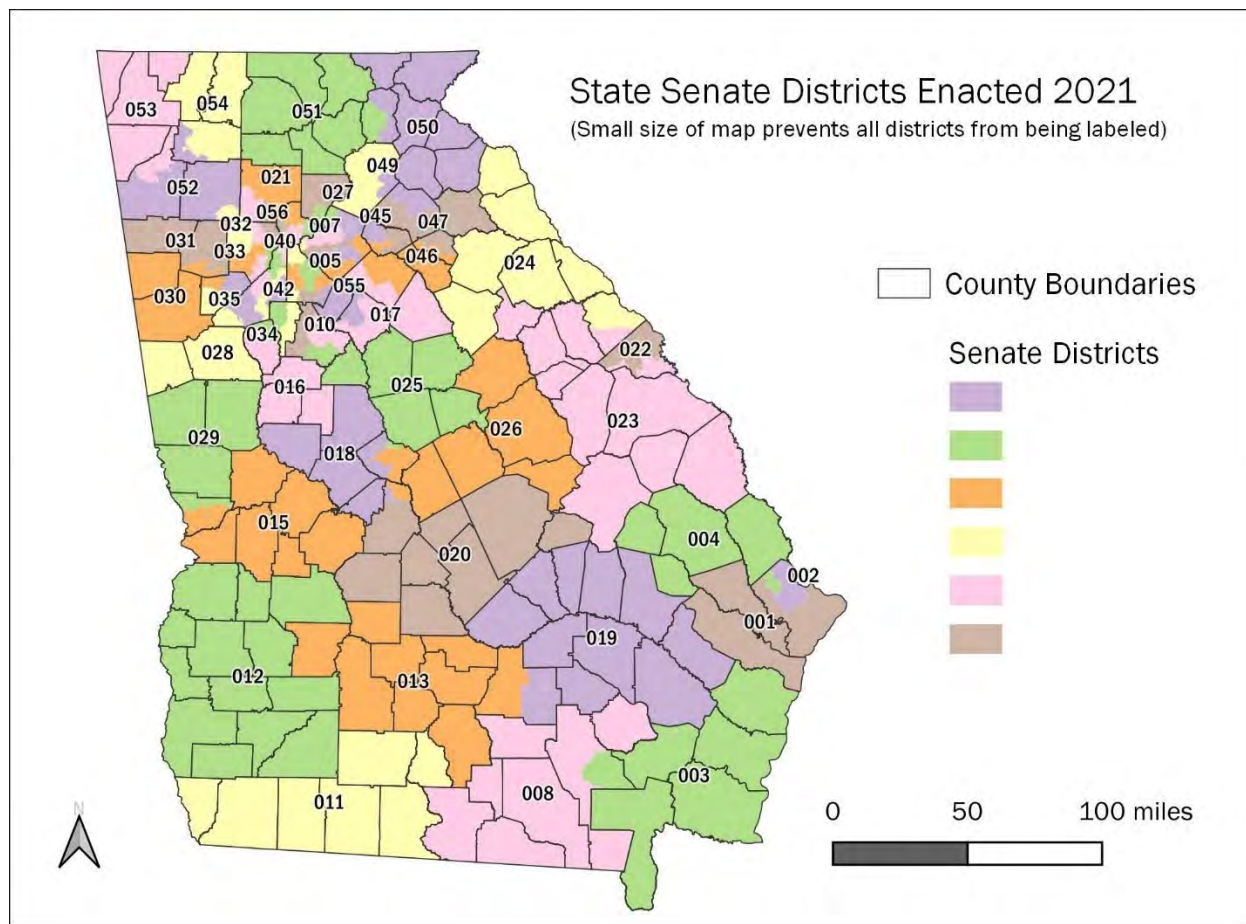
III. Georgia State Senate redistricting plan

A. Review of enacted State Senate plan

21. On December 30th, 2021, Georgia Governor Brian Kemp signed new State Senate districts into law. With districts for 56 senators in this enacted plan, each district

is designed to have a population near 191,284, or one-fifty-sixth of Georgia's total population. See Figure 2.

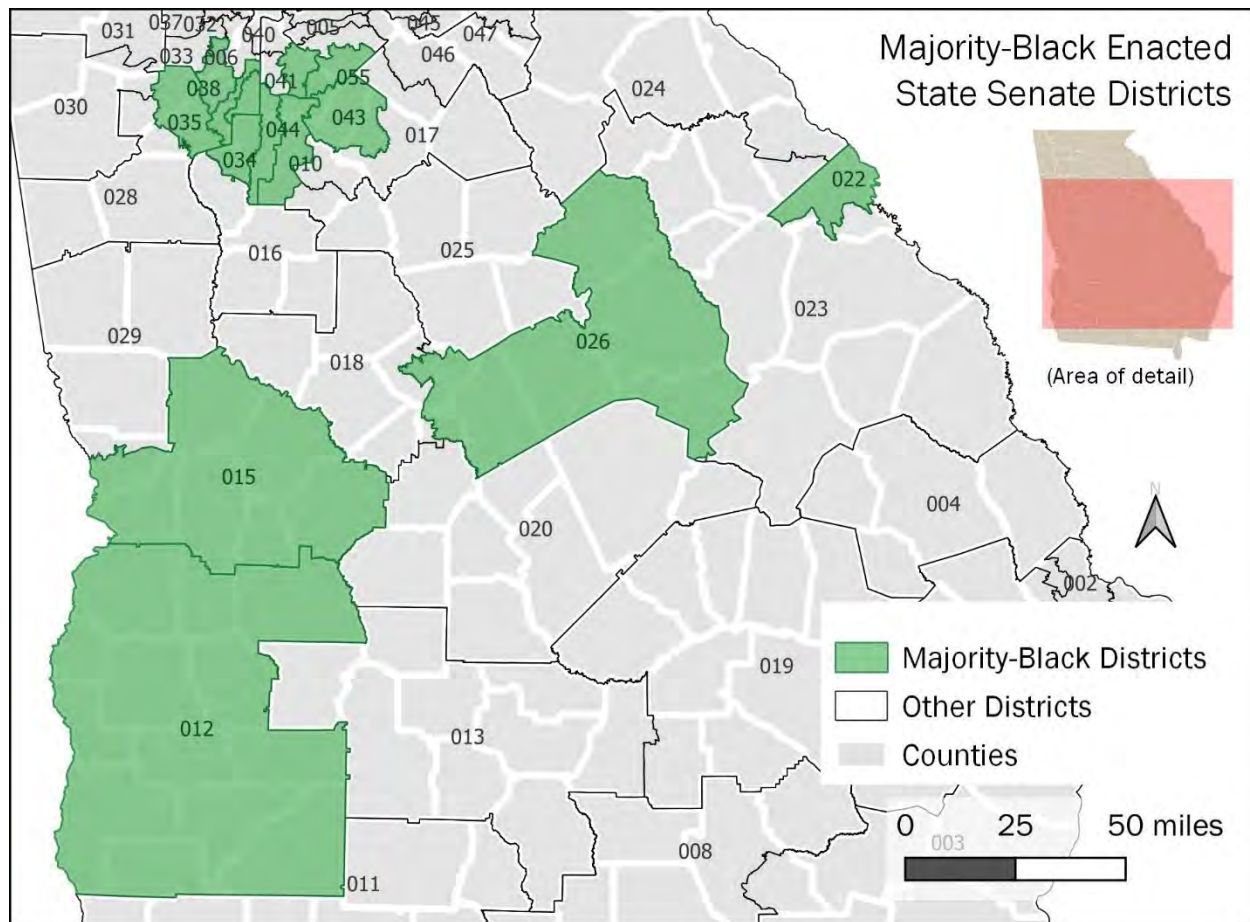
Figure 2: Map of all districts in enacted State Senate plan.



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22. Of the 56 districts in the enacted plan, 14 are majority-Black.⁶ Ten of those are in the Metro Atlanta area and four are in the Black Belt. These districts are highlighted in Figure 3 below.

Figure 3: Map indicating majority-Black districts in enacted State Senate plan.



23. For more maps and statistics related to the enacted State Senate districts, please see **Attachment D**.

⁶ Per convention in Section 2 cases, “majority-Black” is taken to indicate that the district’s *voting age* population that identifies as Black (alone or in combination) constitutes more than 50% of the district’s voting age population.

B. Illustrative State Senate plan

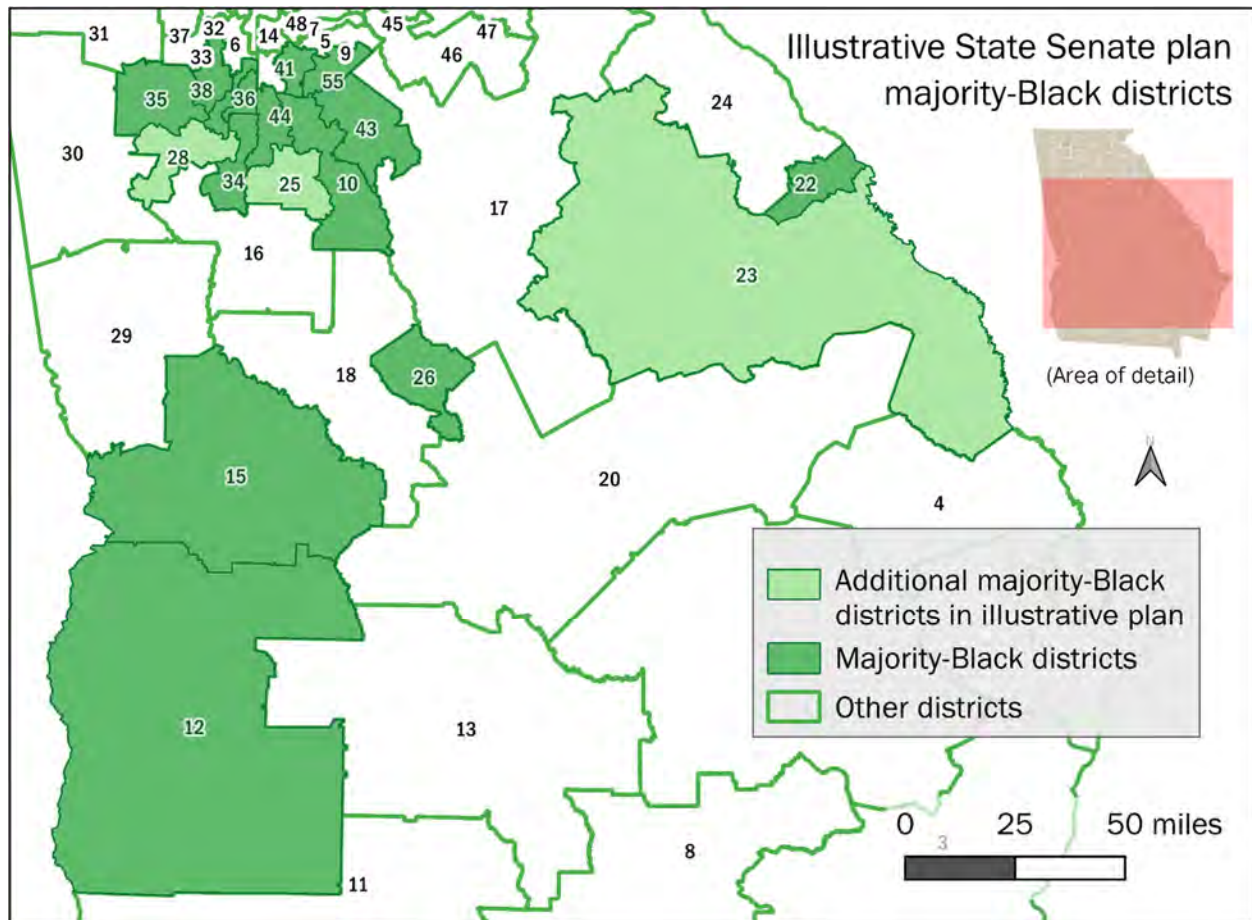
24. The illustrative State Senate plan, like the enacted plan, has 56 districts, all designed to have populations near 191,284.

25. The illustrative plans for the State Senate and House discussed in this report have both been modified slightly from the versions provided as part of the PI proceedings. With the availability of additional data (e.g., incumbent addresses) and information gleaned during the PI proceedings, I sought to improve the plans' performance on multiple criteria. During both the earlier process of creating the PI illustrative plans and the process of revising those plans to create the plans described in this report, I was constantly balancing a number of considerations, and there was no one dominant factor or metric. More details about differences between the newer versions of the illustrative plans and the PI versions are provided in the "Comparative characteristics" sections below.

26. One of the guiding principles in the creation of both the State Senate and House illustrative plans was to minimize changes to the enacted plan while adhering to other neutral criteria. Modifying one district necessarily requires changes to districts adjacent to the original modification, and harmonizing those changes with traditional redistricting criteria (such as population equality and intactness of counties) often inescapably results in cascading changes to other surrounding districts. Notably, most of the enacted plans' districts remain intact in my illustrative plans. In the illustrative State Senate plan, just 22 of the districts were modified, leaving the other 34 unchanged.

27. The illustrative plan includes three additional majority-Black State Senate districts compared to the enacted plan, for a total of 17. Specifically, Senate Districts 23, 25, and 28 are not majority-Black in the enacted plan but are majority-Black in the illustrative plan. See Figure 4 and Table 1.

Figure 4: Map of majority-Black districts in the illustrative State Senate plan.



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Table 1: Illustrative Senate plan majority-Black districts with BVAP percentages.

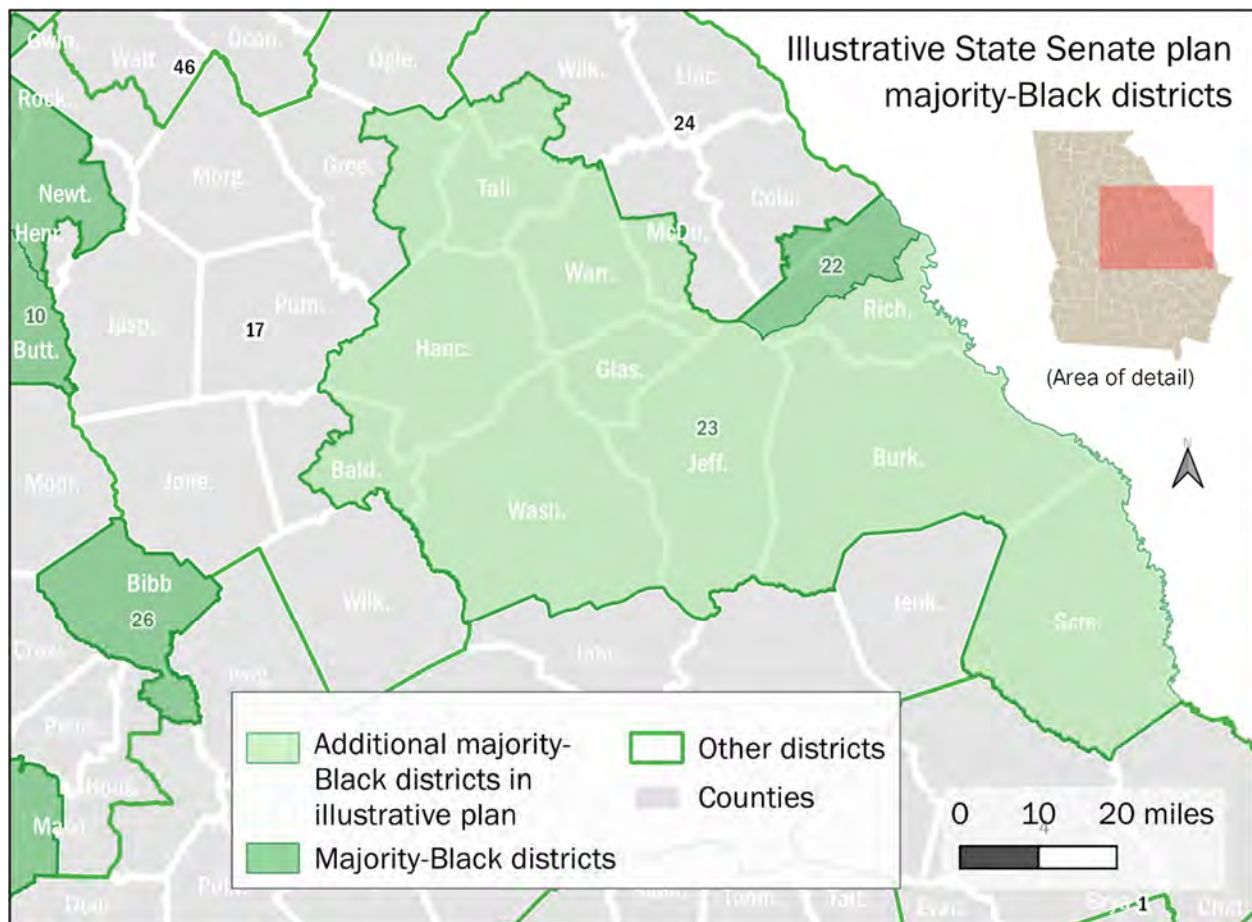
District	BVAP%	District	BVAP%	District	BVAP%
10	61.10%	26	52.84%	39	60.21%
12	57.97%	28	57.28%	41	62.61%
15	54.00%	34	58.97%	43	58.52%
22	50.84%	35	54.05%	44	71.52%
23	51.06%	36	51.34%	55	65.97%
25	58.93%	38	66.36%		

28. The enacted plans have fewer majority-Black districts than the illustrative plans because, in part, more Black voters were heavily concentrated into certain Metro Atlanta districts in the enacted plans.

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29. The additional majority-Black State Senate district in the eastern Black Belt area (District 23) includes all of Burke, Glascock, Hancock, Jefferson, Screven, Taliaferro, Warren, and Washington Counties and parts of Baldwin, Greene, McDuffie, Augusta-Richmond, and Wilkes Counties. See Figure 5.⁷

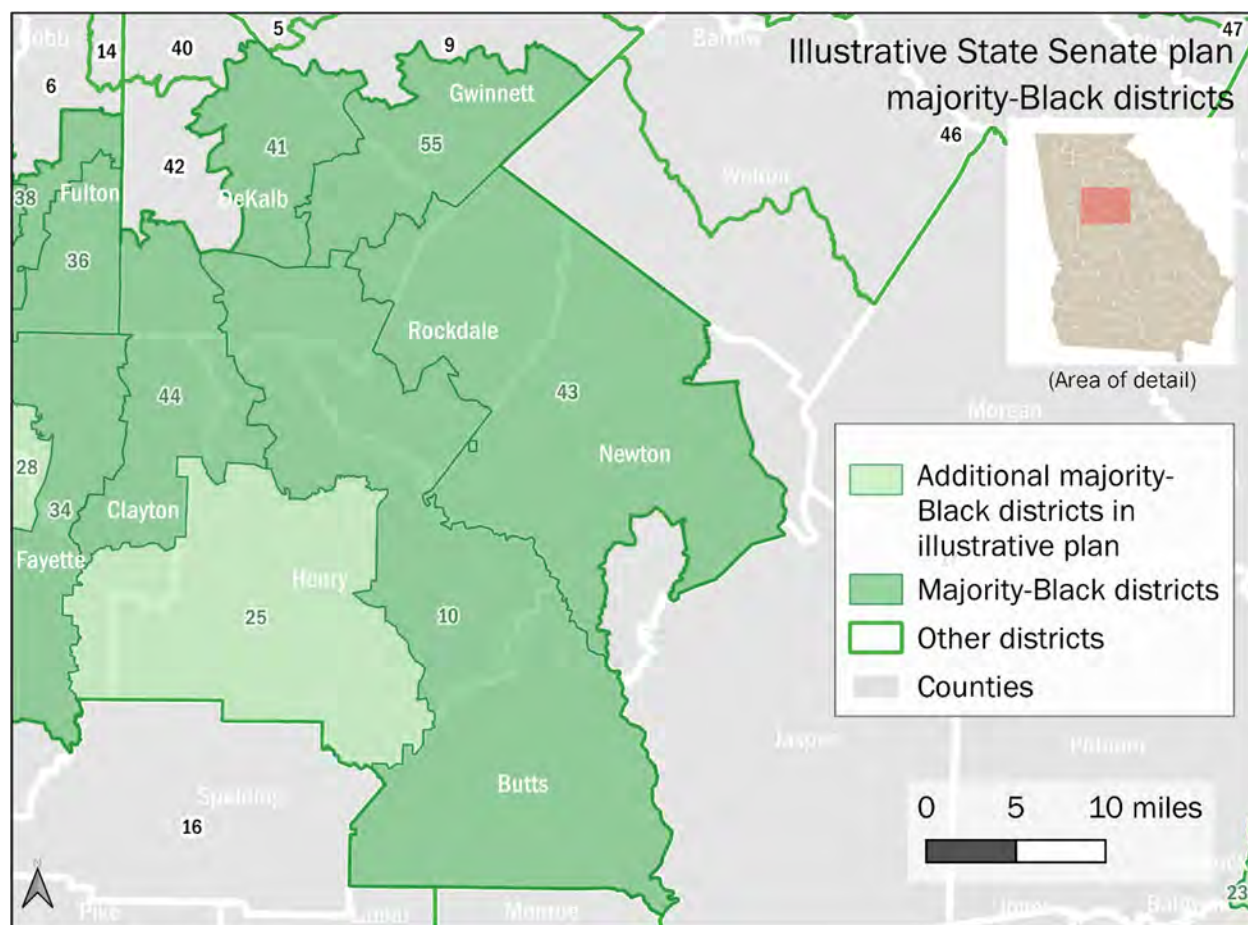
Figure 5: Map of eastern Black Belt region of illustrative plan with majority-Black State Senate districts indicated.



⁷ Additionally, in the illustrative plan, Macon-Bibb County is no longer divided; the majority-Black District 26 includes all of Macon-Bibb County in a single district (as well as a part of Houston County). The intactness of Macon-Bibb County is in keeping with recommendations made during public comment at the hearing held in Macon, Georgia on July 29th, 2021. Two witnesses at the hearing—including Cathy Cox, the former Georgia Secretary of State and then Dean of Mercer University School of Law—spoke about Macon-Bibb County as a community that should be considered as a unit and kept whole. See <https://www.youtube.com/watch?v=lykQpSFVerY> (video at 1:36:52 and 1:37:46). Written statements submitted online also supported keeping Macon-Bibb County intact. See, e.g., comments of S. Doonan (July 26th, 2021), C. Hargrove (July 30th, 2021), and A. Bailey (December 1st, 2021) at <https://www.legis.ga.gov/joint-office/reapportionment/public-comments>.

30. The additional majority-Black State Senate district in the southeastern Metro Atlanta area (District 25) is composed of portions of Clayton and Henry Counties. See Figure 6.

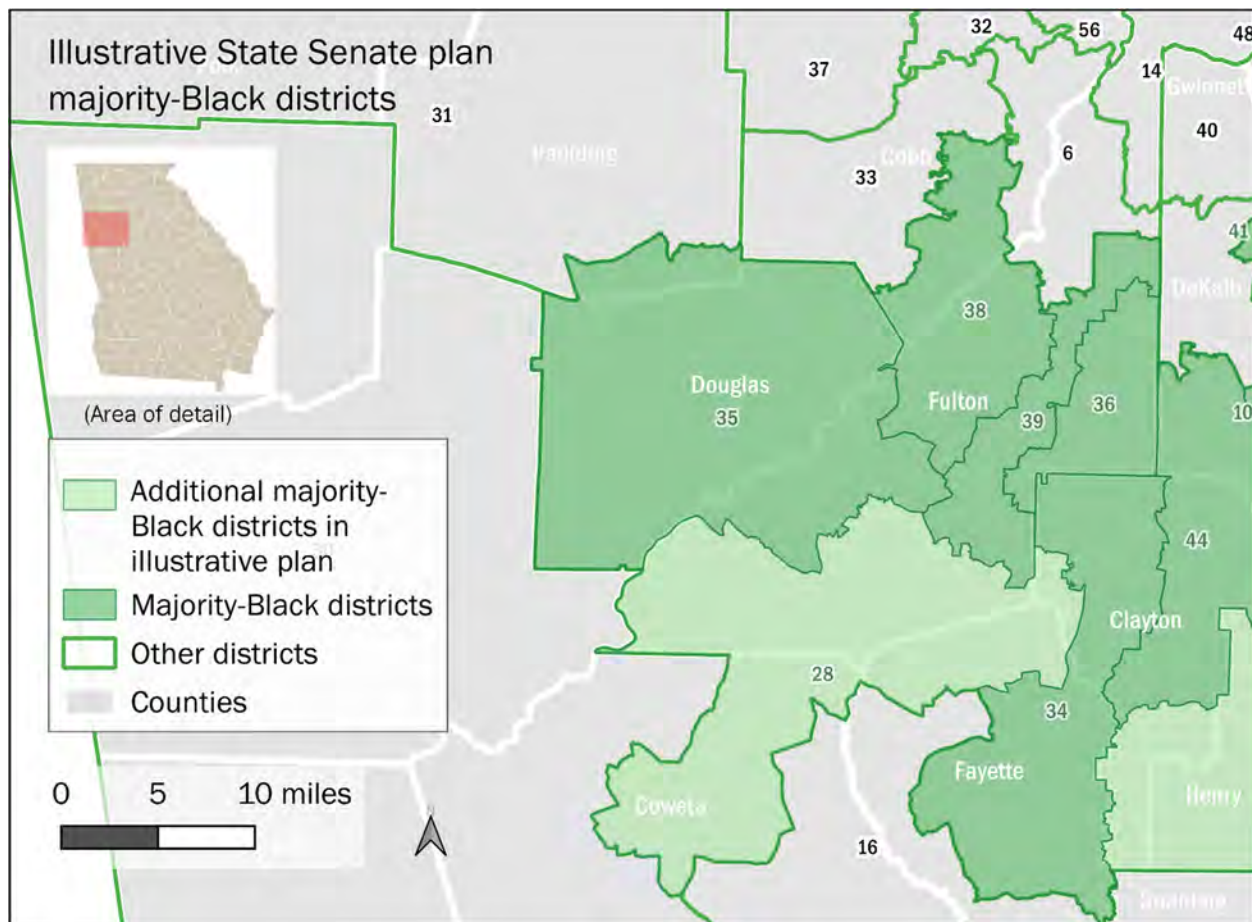
Figure 6: Map of eastern Metro Atlanta area of illustrative plan with majority-Black State Senate districts indicated.



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31. The additional majority-Black State Senate district in the southwestern Metro Atlanta area (District 28) is composed of portions of Clayton, Coweta, Fayette, and Fulton Counties. See Figure 7.⁸

Figure 7: Map of western Metro Atlanta area of illustrative plan with majority-Black State Senate districts indicated.



32. For more demographic statistics related to the illustrative State Senate districts, please see **Attachment E**.

⁸ Incidentally, the illustrative map also includes all of Douglas County in one majority-Black State Senate district, rather than dividing it between two districts as it is in the enacted plan.

C. Comparative characteristics

33. In undertaking the creation of a new redistricting plan for the State Senate, the Senate Reapportionment Committee adopted the “2021-2022 Senate Reapportionment Committee Guidelines,” a full copy of which is appended to this report as **Attachment F**. Within this document is a section called “GENERAL PRINCIPLES FOR DRAFTING PLANS,” which contains a list of principles. The illustrative plan was drawn to comply with and balance these principles.

34. The guidelines provide that “[e]ach legislative district of the General Assembly should be drawn to achieve a total population that is substantially equal as practicable, considering the principles listed below.” Noting that adherence to other principles can be in tension with population equality, both the enacted plan and the illustrative plan get substantially closer to population equality than the permissible threshold of $\pm 5\%$. In both plans, most district populations are within $\pm 1\%$ of the ideal, and a small minority are within between ± 1 and 2% . None has a deviation of more than 2% . For the enacted plan, the relative average deviation is 0.53% , and for the illustrative plan the relative average deviation is 0.67% .

35. The guidelines additionally provide that “[d]istricts shall be composed of contiguous geography.” The illustrative plan districts meet this contiguity requirement in the same manner as the enacted plan.

36. The guidelines further provide that “[c]ompactness” “should [be] consider[ed].” Numerous measures exist for quantifying compactness of districts, and a selection of some of the most commonly used measures in redistricting are shown in

Table 2 below—both for the enacted plan and the illustrative plan. One can see that the average compactness measures for the plans are almost identical. An explanation of the five compactness metrics is provided as **Attachment G**.⁹

Table 2: Compactness measures for enacted and illustrative State Senate plans.

	Reock (average)	Schwartzberg (average)	Polsby- Popper (average)	Area/Convex Hull (average)	Number of Cut Edges
Enacted	0.42	1.75	0.29	0.76	11,005
Illustrative	0.41	1.76	0.28	0.75	11,003

37. Figure 8 below shows how the three additional majority-Black districts in the illustrative State Senate plan all fall within the range of compactness scores of districts in the enacted plan. The gray lines represent the compactness scores of each of the enacted districts, in sorted order. The purple, orange, and green lines represent the scores of illustrative Districts 23, 25, and 28, respectively. The heights of the lines represent the score (marked on the axis on the left), and the location of the line indicates the position within the sorted order between maximum compactness (left side) and minimum compactness (right side). For all four measures, the scores of the three additional majority-Black districts in the illustrative plan are comparable to those of enacted districts and indicate greater compactness than the least compact districts in the enacted plan. See Table 3 for the specific related numeric scores.

⁹ A simplified summary of how to interpret the measures follows: the Reock, Polsby-Popper, and Area/Convex Hull measures all provide scores between zero and one, with scores closer to one (i.e., *higher* values) indicating more compactness; the Schwartzberg measure provides scores greater than or equal to one, and scores closer to one (i.e., *lower* values) indicate more compactness; and for the Number of Cut Edges, which is only meaningful for comparing entire plans—not individual districts—a lower score indicates more compactness.

Figure 8: Sorted compactness measures for all enacted plan districts and additional majority-Black districts in the illustrative State Senate plan.

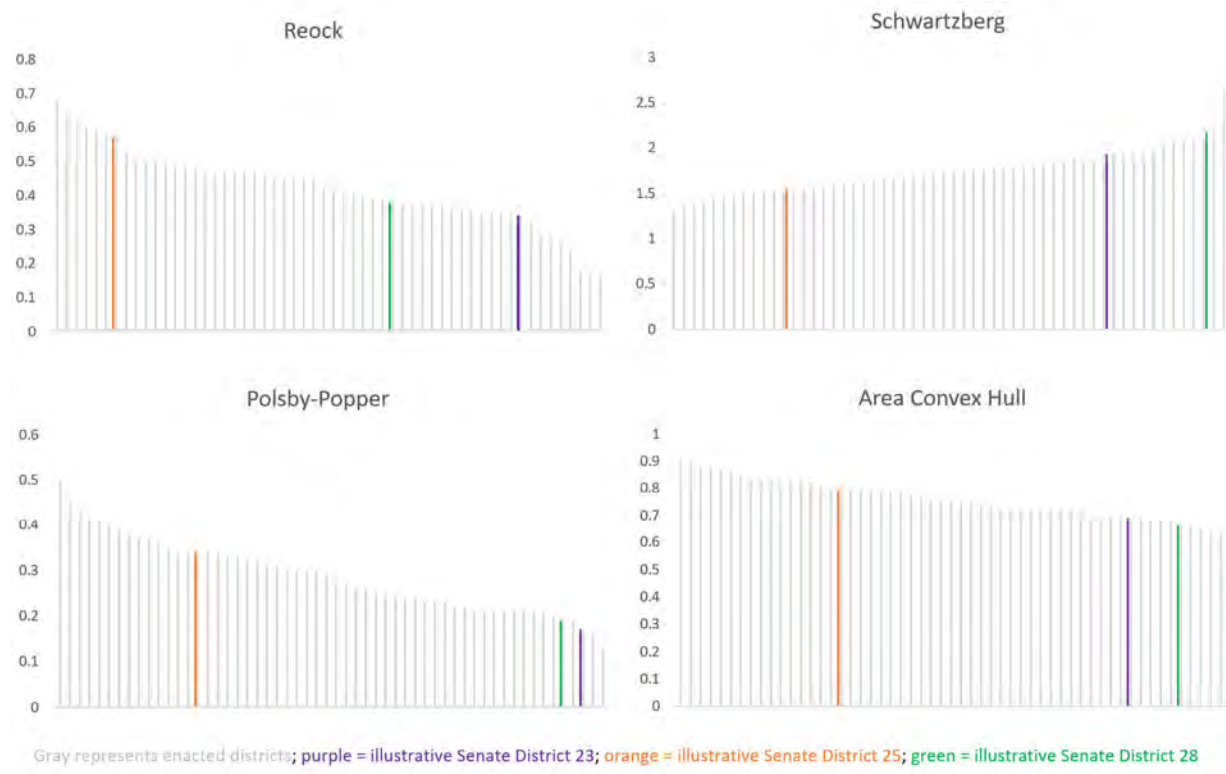


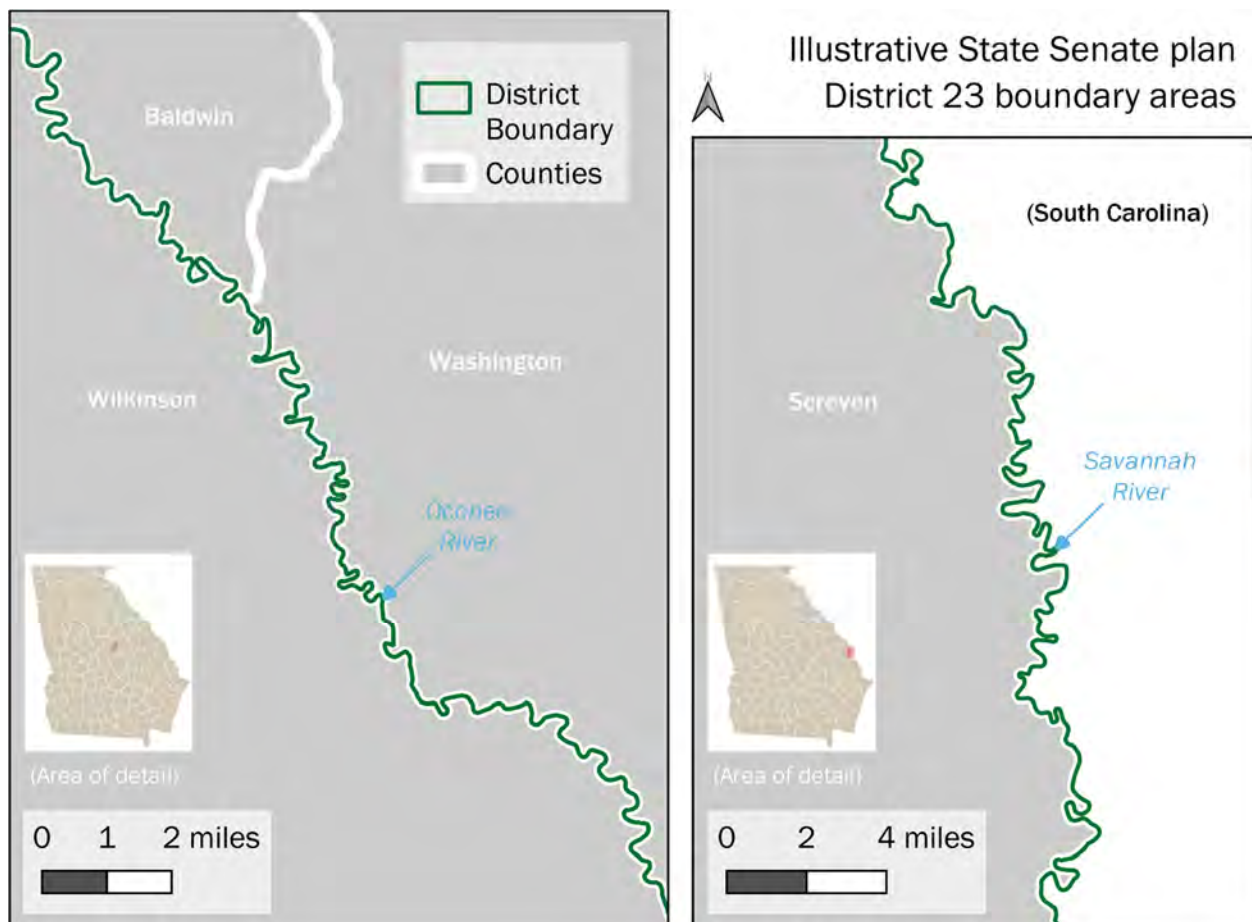
Table 3: Summary compactness scores for enacted State Senate districts and compactness scores for illustrative State Senate districts.

	Measures of Compactness			
	Reock	Schwartzberg	Polsby-Popper	Area/ Convex Hull
Enacted plan least compact score	0.17	2.67	0.13	0.50
Enacted plan median score	0.415	1.725	0.28	0.755
Illustrative District 23 score	0.34	1.93	0.17	0.69
Illustrative District 25 score	0.57	1.55	0.34	0.80
Illustrative District 28 score	0.38	2.17	0.19	0.66

38. Illustrative State Senate District 23 offers an interesting example of how different compactness measures weight boundary features in different ways. In Figure 8 above, one can see that illustrative State Senate District 23 scores very close to the

“bottom” (i.e., least compact) value in the range for the Polsby-Popper measure, but not for the other three measures. The Polsby-Popper measure, which considers a district’s perimeter in its formula, heavily penalizes a district if it has a wiggly border, even if the district’s overall shape isn’t stringy or convoluted. Figure 9 below shows two sections of illustrative District 23’s outline where it is simply following county boundaries, and those county boundaries happen to be serpentine in shape. As is often the case, the county boundaries follow significant rivers (the Oconee and Savannah), which are widely considered to be intuitive features to use as the division between districts or other administrative areas.

Figure 9: Detail of selected Illustrative State Senate District 23 boundaries.



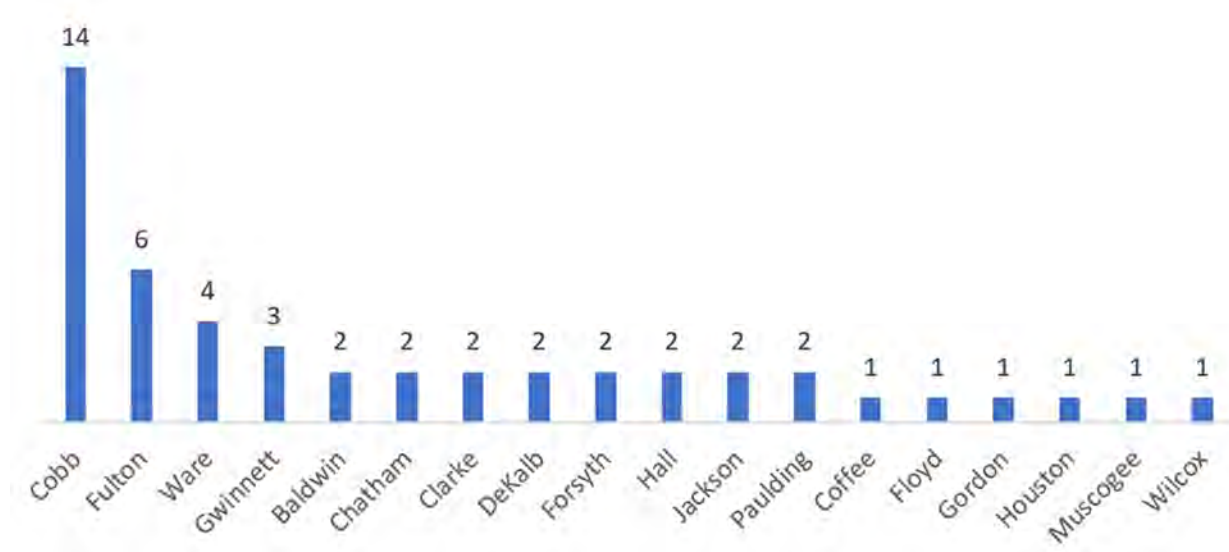
39. The guidelines also provide that “[t]he boundaries of counties and precincts” “should [be] consider[ed].” In redistricting in the United States, consideration of such boundaries is generally taken to mean that counties and precincts should be kept intact to the extent possible (i.e., not split among multiple districts). While the Reapportionment Committee’s language regarding this guideline is not explicit, Table 4: below provides numbers of counties and VTDs (the Census “Voting District” used by redistricting software as a proxy for precincts) split in both the enacted and illustrative State Senate plans.

Table 4: Political subdivision splits for enacted and illustrative State Senate plans.

	Intact Counties	Split Counties	Split VTDs
Enacted	130	29	47
Illustrative	125	34	49

40. While the creation of three additional majority-Black State Senate districts involved the division of additional counties and VTDs, the differences are marginal.¹⁰ Figure 10 below shows which counties those VTD splits are in in the illustrative State Senate plan. All of the VTDs split in the illustrative State Senate plan are confined to just 18 of the State’s 159 counties.

¹⁰ The number of county splits in the State Senate illustrative plan (34) is lower than the number of such splits in the State Senate plan adopted in 2014 (38), which was used in elections from 2014 through 2020. See https://www.legis.ga.gov/api/document/docs/default-source/reapportionment-document-library/senate14-county.pdf?sfvrsn=e8061e5c_2 and https://www.legis.ga.gov/api/document/docs/default-source/reapportionment-document-library/counties-by-house-districts.pdf?sfvrsn=b7c39a42_2.

Figure 10: VTD splits in illustrative State Senate plan by county.

41. The guidelines further call for consideration of “[c]ommunities of interest.” Communities of interest can be larger than a county or smaller than a college campus, and individuals may have different opinions about their exact geographic extents. In identifying such communities, I generally referred to recognizable entities visible in the *Maptitude for Redistricting* software interface, such as municipalities and landmark areas, as well as areas and communities I’ve heard described by Georgians, either in personal conversations or in statements made in public hearings. When making changes to districts for my PI illustrative plan, I did strive to keep communities of interest intact as much as possible while also honoring the other guidelines. In that plan, however, I inadvertently divided the two campuses of Georgia College (they are both in Milledgeville, but about a mile apart). The revised district lines for the illustrative plan submitted with this report not only keep both campuses in the same State Senate district, but they also do a better job of keeping central Milledgeville in a single district.

42. The final specified guideline is that “[e]fforts should be made to avoid the unnecessary pairing of incumbents.” Based on my analysis of the residential addresses of the recently elected State Senators (provided by counsel), the illustrative plan would not pair any incumbent Senators in the same district. The avoidance of any incumbent pairing represents an improvement over the PI illustrative plan, which paired two incumbents according to a declaration from John Morgan provided as part of the PI proceedings.¹¹

43. For more detailed statistics and reports on the above characteristics, please see **Attachment H**.

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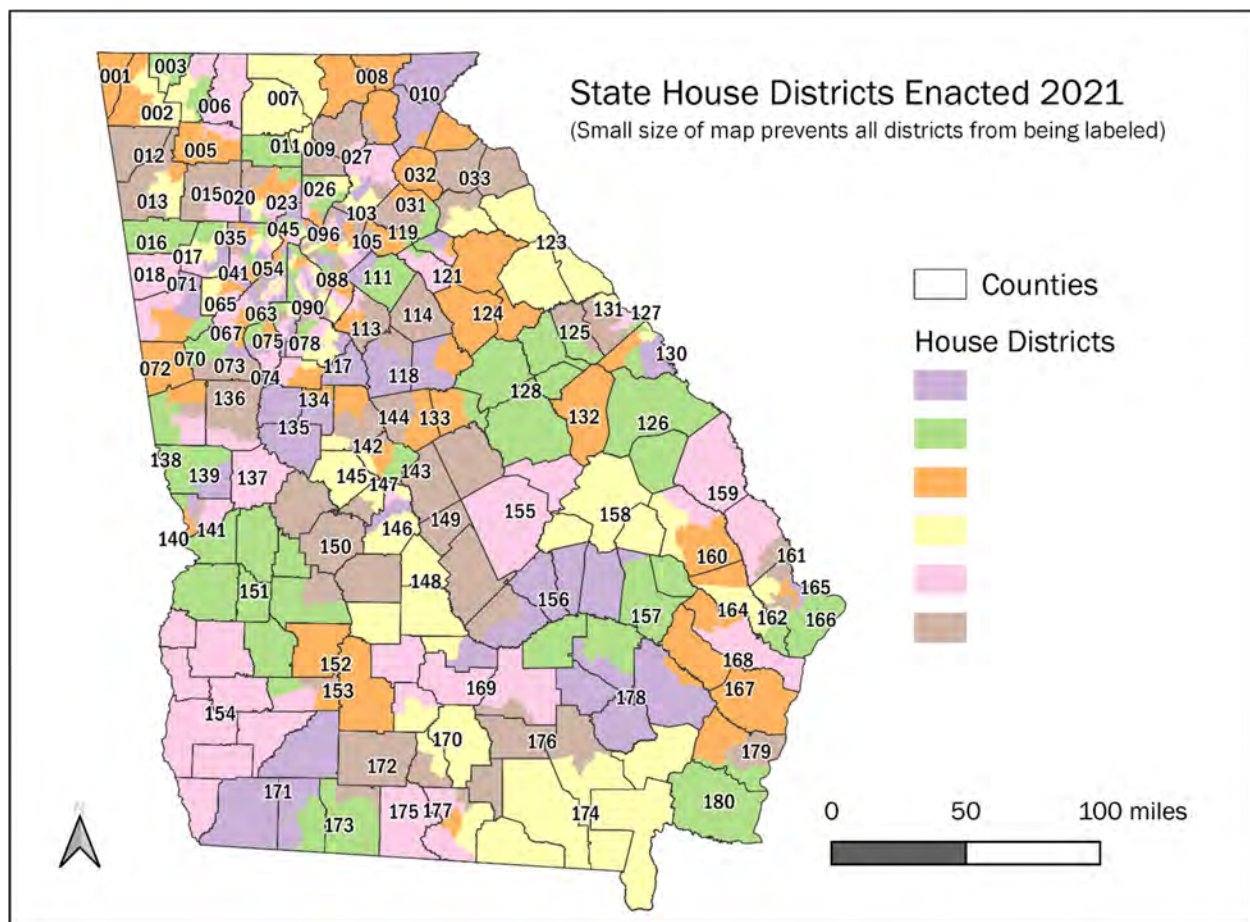
¹¹ See Declaration of John B. Morgan, January 18, 2022, p. 8.

IV. Georgia House redistricting plan

A. Review of enacted House plan

44. On December 30th, 2021, Governor Kemp signed new House of Representatives districts into law. With districts for 180 Representatives in this enacted plan, each district is designed to have a population near 59,511, or one-one-hundred-eightieth of Georgia's total population. See Figure 11.

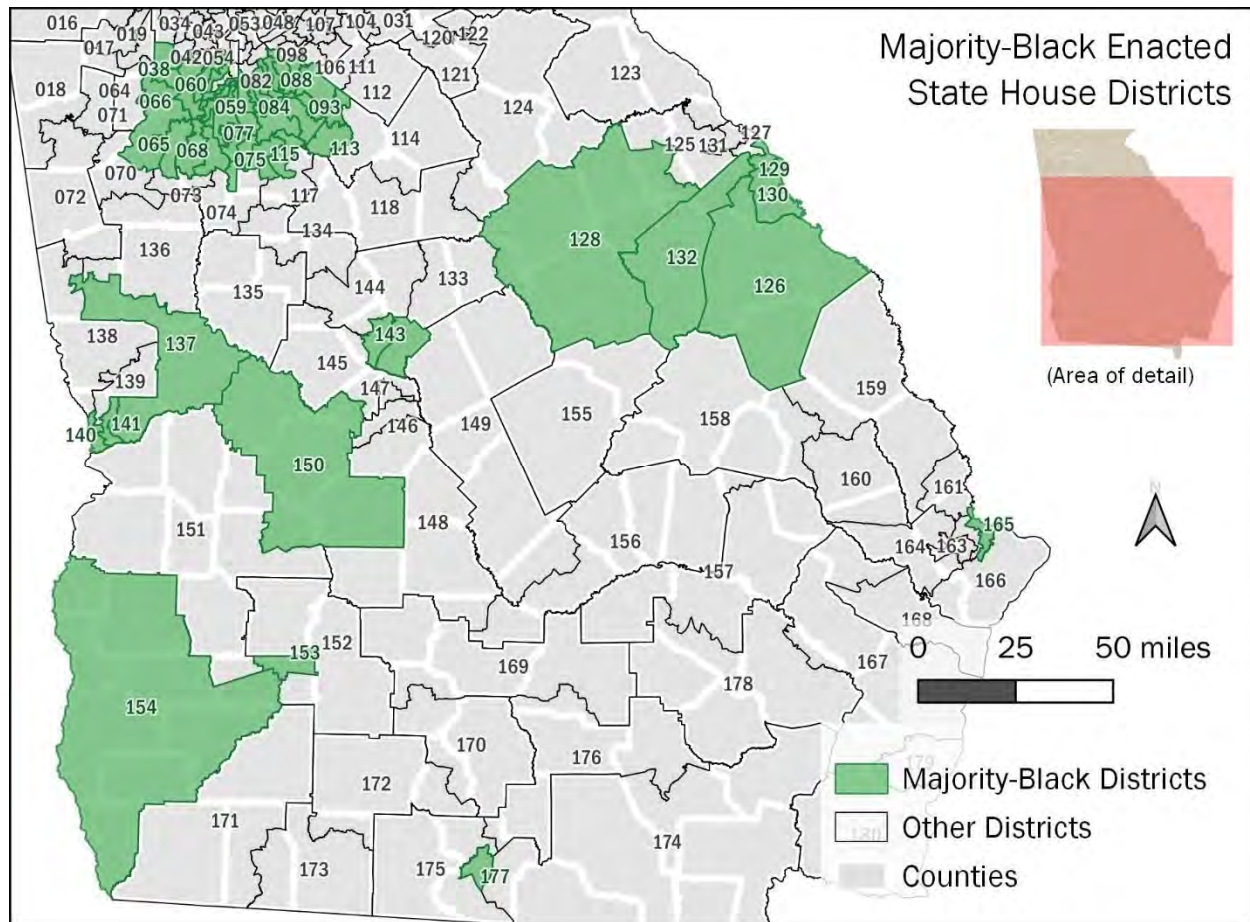
Figure 11: Map of all districts in enacted House plan.



45. Of the 180 districts in the enacted plan, 49 are majority-Black. Thirty-four of those are in the Metro Atlanta area, 13 are in the Black Belt, and two small districts are

within Chatham (anchored in Savannah) and Lowndes Counties (anchored in Valdosta) in the southeastern part of the state. These districts are highlighted in Figure 12 below.

Figure 12: Map indicating majority-Black districts in enacted House plan.



46. For more maps and statistics related to the enacted House districts, please see **Attachment I**.

B. Illustrative House plan

47. The illustrative House plan, like the enacted plan, has 180 districts, all with populations near 59,511. As with the illustrative State Senate plan, one of the guiding principles was to minimize changes to the enacted plan while adhering to the range of

other neutral criteria. In fact, just 25 of the districts were modified, leaving the other 155 unchanged. The PI version of the illustrative plan, by contrast, modified 26 districts.

48. The illustrative plan includes five additional majority-Black House districts compared to the enacted plan, for a total of 54. Specifically, House Districts 64, 74, 117, 145, and 149 are not majority-Black in the enacted plan but are majority-Black in the illustrative plan. See Figure 13 and Table 5.

Figure 13: Map of majority-Black districts in the illustrative House plan.

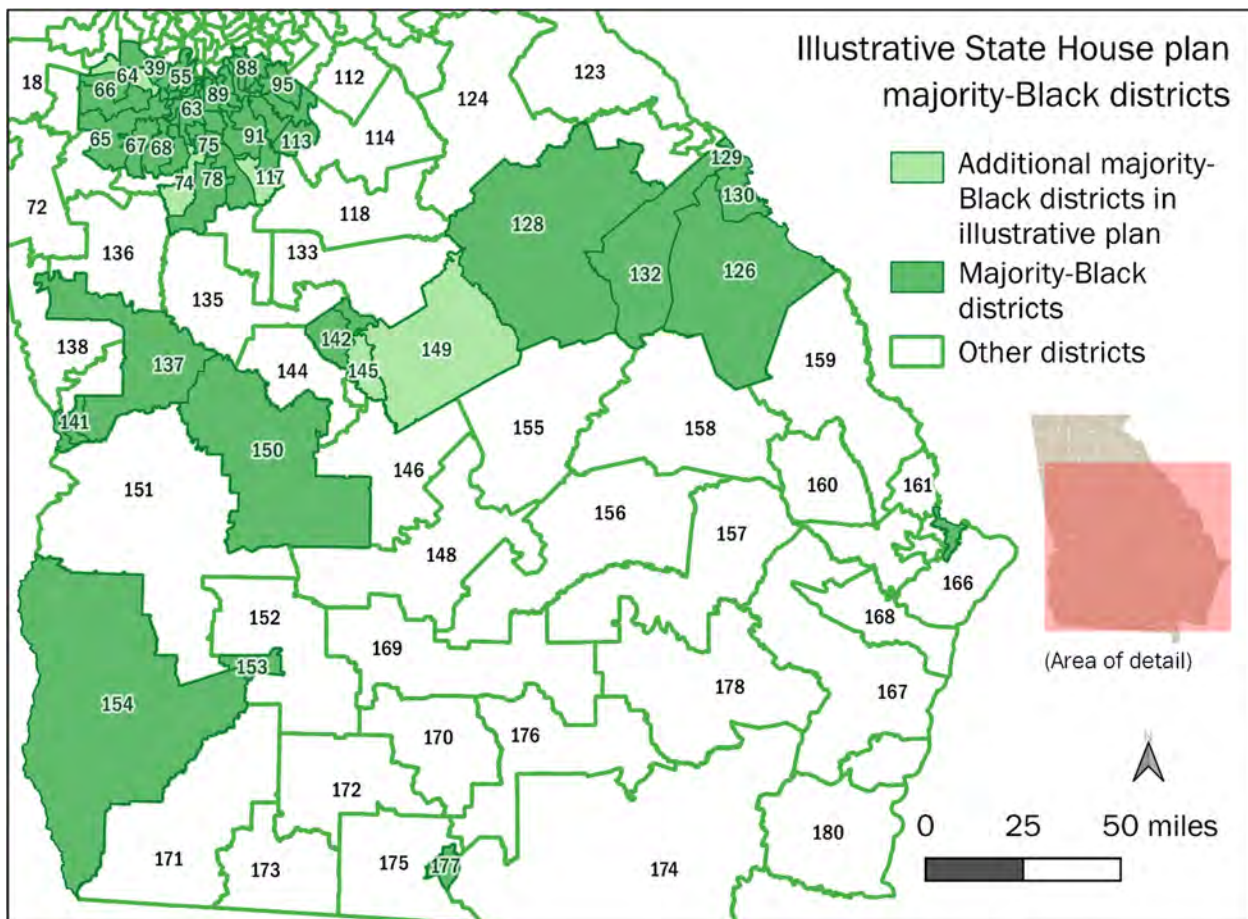


Table 5: Illustrative House plan majority-Black districts with BVAP percentages.

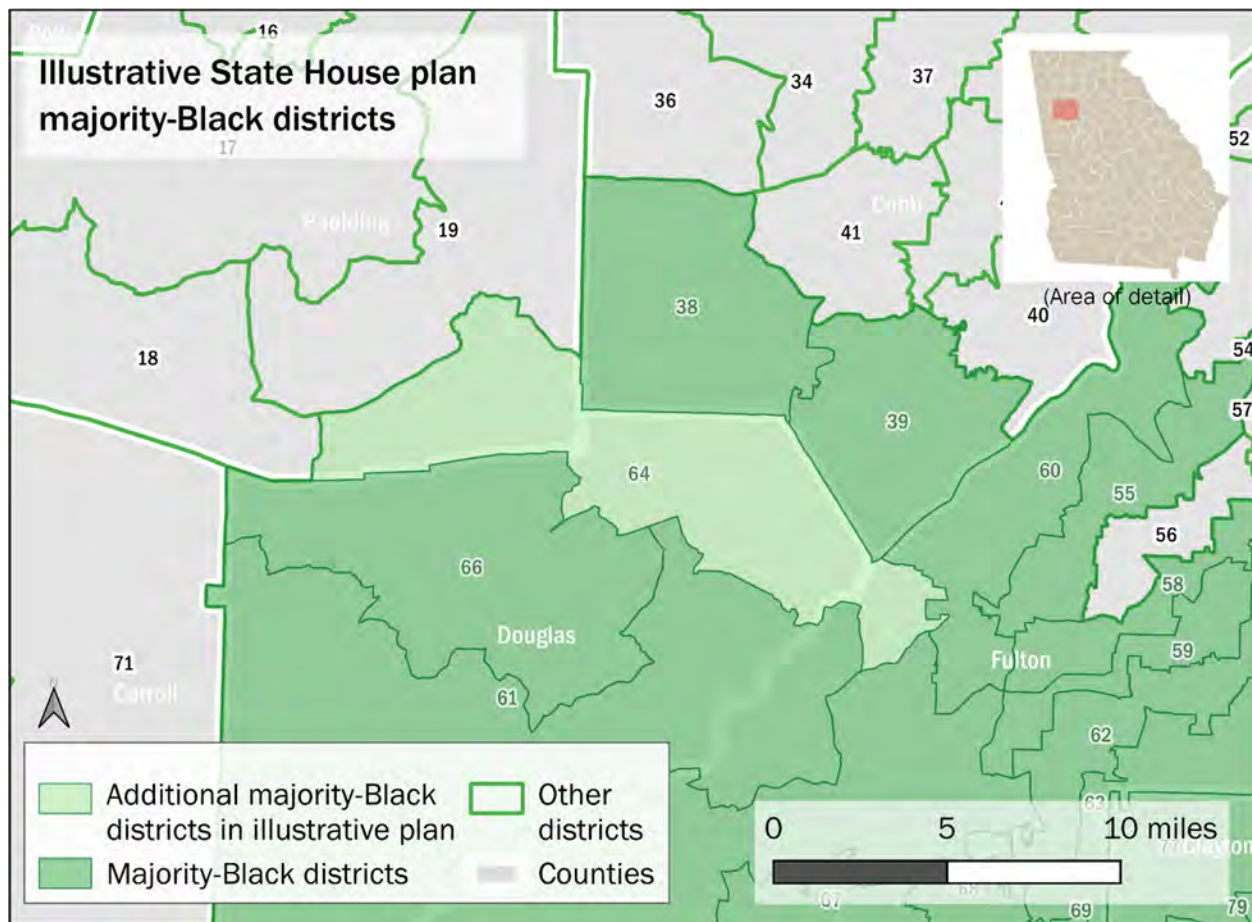
District	BVAP%	District	BVAP%	District	BVAP%	District	BVAP%
38	54.23%	69	62.73%	91	60.01%	137	52.13%
39	55.29%	74	53.94%	92	68.79%	140	57.63%
55	55.38%	75	66.89%	93	65.36%	141	57.46%
58	63.04%	76	67.23%	94	69.04%	142	50.14%
59	70.09%	77	76.13%	95	67.15%	143	50.64%
60	63.88%	78	51.03%	113	59.53%	145	50.38%
61	53.49%	79	71.59%	115	53.77%	149	51.53%
62	72.26%	84	73.66%	116	51.95%	150	53.56%
63	69.33%	85	62.71%	117	51.56%	153	67.95%
64	50.24%	86	75.05%	126	54.47%	154	54.82%
65	63.34%	87	73.08%	128	50.41%	165	50.33%
66	53.88%	88	63.35%	129	54.87%	177	53.88%
67	58.92%	89	62.54%	130	59.91%		
68	55.75%	90	58.49%	132	52.34%		

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49. The additional majority-Black House district in the western Metro Atlanta area (District 64) is composed of portions of Douglas, Fulton, and Paulding Counties.

See Figure 14.

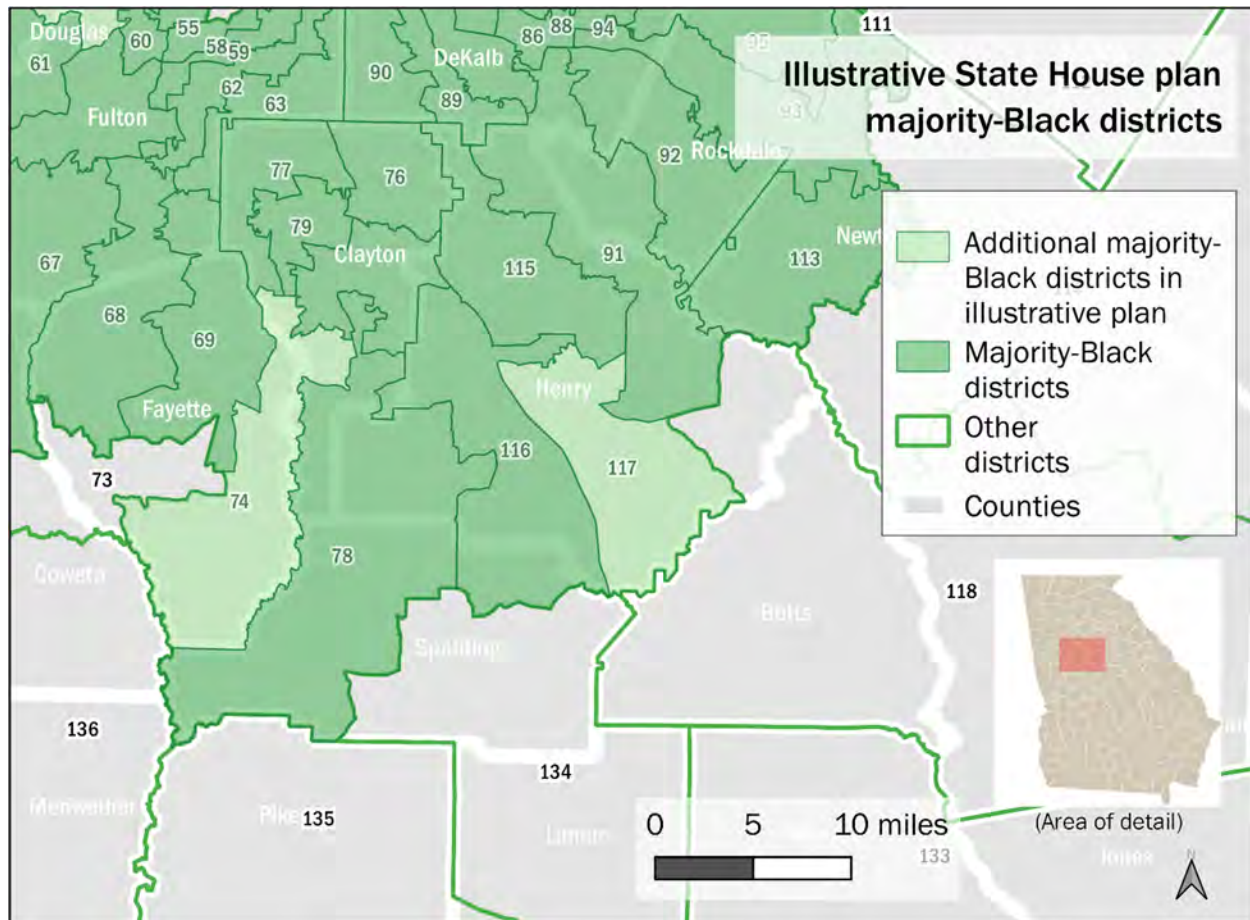
Figure 14: Map of western Metro Atlanta area of illustrative plan with majority-Black House districts indicated.



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50. The additional majority-Black House districts in the southern Metro Atlanta area (Districts 74 and 117) are built from portions of Clayton, Fayette, and Henry Counties. See Figure 15.

Figure 15: Map of southern Metro Atlanta area of illustrative plan with majority-Black House districts indicated.



51. The two additional majority-Black House districts in the central Black Belt area (Districts 145 and 149) are built from portions of Baldwin, Macon-Bibb, and Houston Counties, as well as all of Twiggs and Wilkinson Counties. The adjacent Twiggs and Wilkinson Counties, included in their entirety in District 149, have been identified

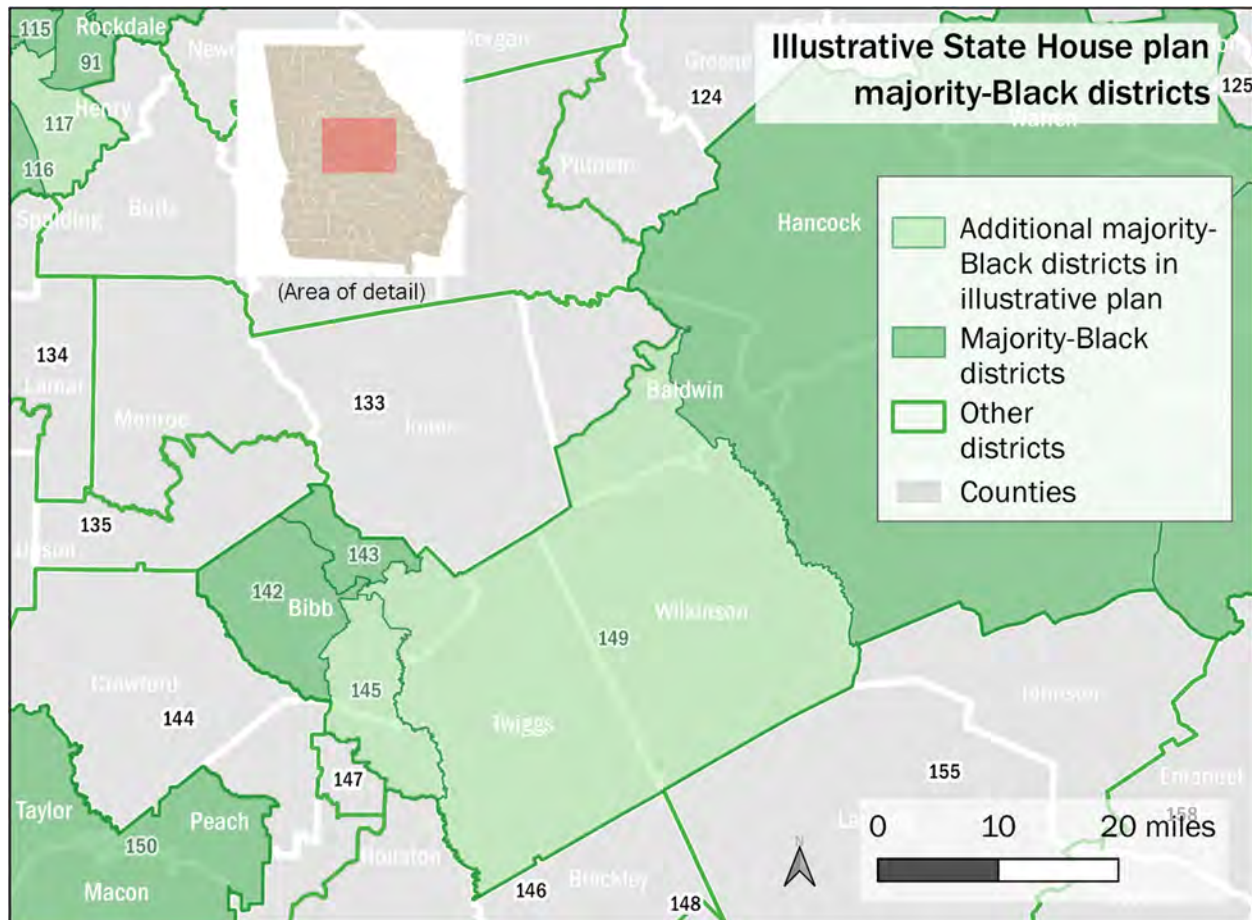
by General Assembly staff as “constitut[ing] a single community of interest.”¹² The illustrative plan, like the enacted plan, divides Macon-Bibb County into four districts, two of which (Districts 142 and 143) are wholly contained in Macon-Bibb County, and two of which (Districts 145 and 149 in the illustrative plan) extend outside the county as well. The orientation of Districts 142 and 143 also ensures that the northern portions of Macon-Bibb County stay in a Macon-Bibb County district with portions of Macon, rather than being put in a district with a more rural neighboring county like Monroe; this type of arrangement was specifically recommended during public comment at a Joint Reapportionment Committee hearing.¹³ See Figure 16.

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¹² Specifically, Gina Wright, Executive Director of the General Assembly's Legislative and Congressional Reapportionment Office, included this statement in her declaration filed before the Court's PI hearing. See Declaration of Gina Wright, February 4th, 2022, p. 9.

¹³ See, e.g., comment at Georgia General Assembly Joint Reapportionment Committee hearing held in Macon, Georgia on July 29th, 2021, <https://www.youtube.com/watch?v=IYkQpSFVerY> (video at 33:42).

Figure 16: Map of central Black Belt region of illustrative plan with majority-Black House districts indicated.



52. District 149 generally follows the orientation of the Georgia Fall Line geological feature, which brings with it shared economic, historic, and ecological similarities.¹⁴ Macon and Milledgeville, parts of which are in illustrative House District 149, are both characterized as “Fall Line Cities,”¹⁵ and were identified in public comment

¹⁴ See, e.g., <https://www.georgiaencyclopedia.org/articles/geography-environment/fall-line/> and <http://southres.com/uptowncolumbusdams/thefallline.php>.

¹⁵ See “Fall Line Cities” map at <https://www.gpb.org/blogs/education-matters/2017/02/06/new-virtual-field-trip-physical-features-of-georgia> and the southres.com article in the preceding footnote.

before the General Assembly's Joint Reapportionment Committee as two cities that should be kept in the same district.¹⁶

53. For more demographic statistics related to the illustrative House districts, please see **Attachment J**.

C. Comparative characteristics

54. In undertaking the creation of a new redistricting plan for the House, the House Reapportionment Committee adopted the "2021-2022 House Reapportionment Committee Guidelines," a full copy of which is appended to this report as **Attachment K**. Within this document is a section called "GENERAL PRINCIPLES FOR DRAFTING PLANS," which contains a list of principles. The illustrative plan was drawn to comply with and balance these principles. As with the Senate Committee's principles discussed above, five of the principles can be quantitatively analyzed to help illustrate adherence.

55. The guidelines provide that "[e]ach legislative district of the General Assembly should be drawn to achieve a total population that is substantially equal as practicable, considering the principles listed below." As with the Senate plan, both the enacted plan and the illustrative plan get substantially closer to population equality than the permissible threshold of $\pm 5\%$. In both plans, most district populations are within $\pm 1\%$ of the ideal, and a small minority are within between ± 1 and 2% . None has a deviation of more than 2% . For the enacted plan, the relative average deviation is 0.61% , and for the illustrative plan the relative average deviation is 0.64% .

¹⁶ See, e.g., comment from Georgia General Assembly Joint Reapportionment Committee hearing on June 15th, 2021 at <https://www.youtube.com/watch?v=sewqUNTIUxA> (video at 49:15).

56. The guidelines additionally provide that “[d]istricts shall be composed of contiguous geography.” The illustrative plan districts meet this contiguity requirement in the same manner as the enacted plan.

57. The guidelines further provide that “[c]ompactness” “should [be] consider[ed].” A selection of some of the most commonly used measures of compactness are shown in Table 6 below—both for the enacted plan and the illustrative plan. One can see that the average compactness measures for the plans are almost identical, if not identical.

Table 6: Compactness measures for enacted and illustrative House plans.

	Reock (average)	Schwartzberg (average)	Polsby- Popper (average)	Area/Convex Hull (average)	Number of Cut Edges
Enacted	0.39	1.80	0.28	0.72	22,020
Illustrative	0.39	1.81	0.28	0.72	22,359

58. Figure 17 below shows how the five additional majority-Black districts in the illustrative House plan all fall within the range of compactness scores of districts in the enacted plan. The gray lines represent the compactness scores of each of the enacted districts, in sorted order. The purple, orange, green, pink, and blue lines represent the scores of illustrative House Districts 64, 74, 117, 145, and 149, respectively. The heights of the lines represent the score (marked on the axis on the left), and the location of the line indicates the position within the sorted order between maximum compactness (left side) and minimum compactness (right side). For all four measures, the scores of the five additional majority-Black districts in the illustrative plan are comparable to those of

enacted districts and indicate greater compactness than the least compact district in the enacted plan. See Table 7 for the specific related numeric scores.

Figure 17: Sorted compactness measures for all enacted plan districts and additional majority-Black districts in the illustrative House plan.

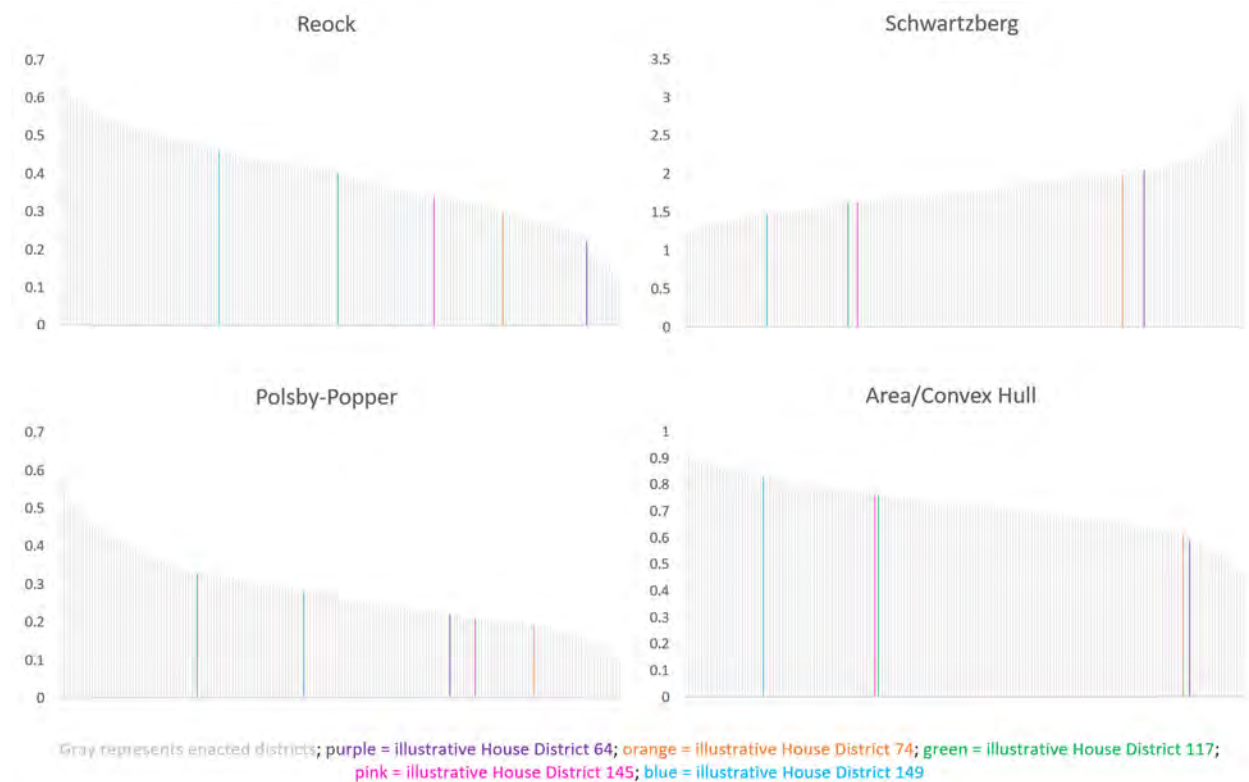


Table 7: Summary compactness scores for enacted House districts and compactness scores for illustrative House districts.

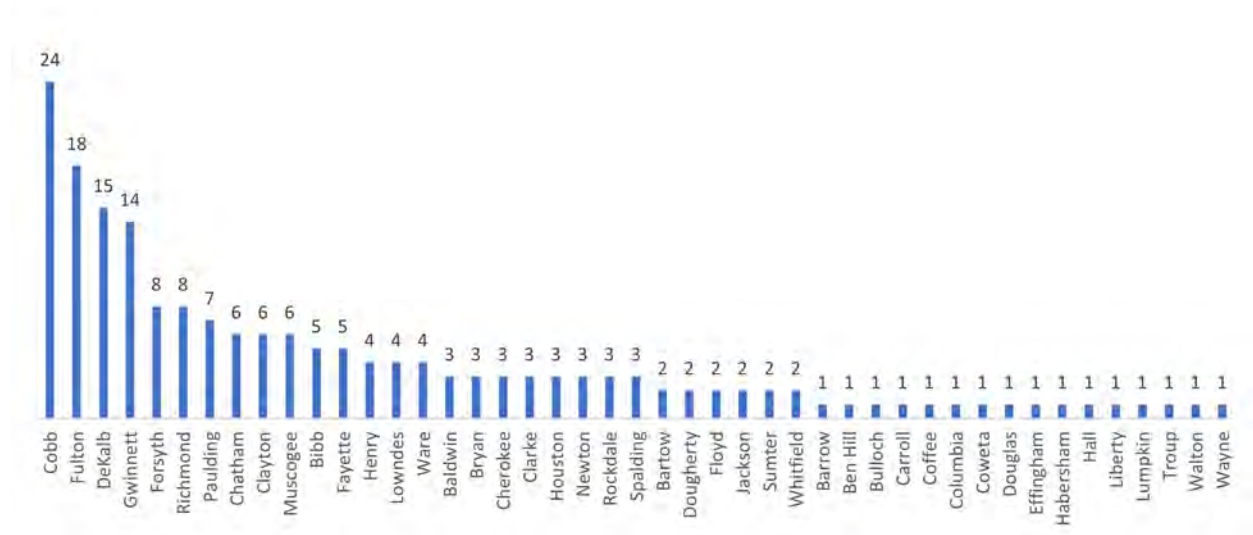
	Measures of Compactness			
	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Enacted plan least compact score	0.12	2.98	0.10	0.46
Enacted plan median score	0.40	1.765	0.26	0.72
Illustrative District 64 score	0.22	2.05	0.22	0.59
Illustrative District 74 score	0.30	1.98	0.19	0.61
Illustrative District 117 score	0.40	1.62	0.33	0.76
Illustrative District 145 score	0.34	1.63	0.21	0.76
Illustrative District 149 score	0.46	1.48	0.28	0.83

59. The guidelines further provide that “[t]he boundaries of counties and precincts” “should [be] consider[ed].” Table 8 below shows that the numbers of counties and VTDs (akin to precincts) split in the enacted and illustrative House plans are nearly equal. This version of the illustrative House plan splits six fewer VTDs than the PI version. Figure 18 below shows which counties those VTD splits are in. Just 45 of the State’s 159 counties account for all of the splits.

Table 8: Political subdivision splits for enacted and illustrative House plans.

	Intact Counties	Split Counties	Split VTDs
Enacted	90	69	185
Illustrative	89	70	186

Figure 18: VTD splits in illustrative State House plan by county.



60. The guidelines next call for consideration of “[c]ommunities of interest.” My approach to preserving the intactness of communities of interest in the illustrative House map was similar to the one described in the State Senate “Comparative characteristics” section above. As with the comparable State Senate illustrative map, I

had inadvertently divided the two campuses of Georgia College in the initial illustrative House plan provided during the PI proceeding. The newer House illustrative plan rectifies that community split, and also keeps the central community of Milledgeville more intact. Additionally, as mentioned in the previous section, the district boundaries keep together communities in the Macon-Bibb County area as well as in the central Black Belt region.

61. The final specified guideline is that “[e]fforts should be made to avoid the unnecessary pairing of incumbents.” Based on analysis of the residential addresses of the recently elected State Representatives (provided by counsel), the illustrative plan would evidently pair a total of eight incumbents in the same districts.¹⁷ This is the same number of incumbent pairings reported for the enacted plan in the declaration from John Morgan, provided as part of the PI proceedings.¹⁸ Further it represents a significant improvement over the PI illustrative plan (created without knowledge of incumbent addresses), which paired 16 incumbents, according to the same declaration.¹⁹

62. For more detailed statistics and reports on the above characteristics, please see **Attachment L**.

V. Conclusion

63. This report has demonstrated that it is possible to create three additional majority-Black districts in the Georgia State Senate plan and five additional majority-

¹⁷ Namely Mike Glanton and Kimberly R. New in District 61, El-Mahdi Holly and Regina Lewis-Ward in District 115, Miriam Paris and Dale Washburn in District 142, and Shaw Blackmon and Robert Dickey in District 144.

¹⁸ See Declaration of John B. Morgan, January 18th, 2022, p. 9.

¹⁹ Id.

Black districts in the Georgia House of Representatives plan in accordance with traditional redistricting principles.

64. I reserve the right to supplement this report in consideration of additional facts, testimony, or materials that may come to light.

Executed on December 5th, 2022.

A handwritten signature in black ink, appearing to read "Blakeman B. Esselstyn", written over a horizontal line.

Blakeman B. Esselstyn

Esselstyn Report: Attachment A

December 2022

Blakeman (“Blake”) B. Esselstyn

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The Netherlands: Schovenlaan 110 · 6225JS Maastricht

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EDUCATION

- University of Pennsylvania, School of Engineering and Applied Science, Master of Computer and Information Technology, 2003; GPA 4.0
- Yale University, Geology & Geophysics and International Studies, Bachelor of Arts, 1996

PROFESSIONAL CERTIFICATIONS

- Geographic Information Systems Professional (GISP), #6946, 2009
- American Institute of Certified Planners (AICP), #026364, 2013

EMPLOYMENT (Teaching positions listed separately)

- Redistricting Consultant, dba Mapfigure Consulting (and as Blake Esselstyn), Asheville, NC, 2016-present (and in the Netherlands starting late 2022)
- Principal Consultant, FrontWater, LLC, Asheville, NC, 2015-present
- Urban Planner III – GIS Specialist, City of Asheville Department of Planning and Urban Design, Asheville, NC, 2008-2015
- Urban Planner II, City of Asheville Planning Department, Asheville, NC, 2004-2008
- Independent GIS Consultant, Freelance, Asheville, NC, 2003-2004
- GIS Programmer, Azavea, Inc., Philadelphia, PA, 2002
- Web Support Fellow, University of Pennsylvania, Philadelphia, PA, 2002
- GIS Analyst, Applied Geographics, Inc., Boston, MA, 2001
- GIS Intern, Community and Environmental Spatial Analysis Center, Seattle, WA, 2000
- GIS Analyst, Applied Geographics, Inc., Boston, MA, 2000
- Mapping Technician, Schlosser Geographic Systems, Seattle, WA, 1997
- Digital Mapping Resources Consultant, Social Science Statistical Laboratory at Yale University, New Haven, CT, 1997
- Special Assistant to the CityRoom Coordinator, Neighborhood Partnerships Network, New Haven, CT, 1996-1997

- Lab Monitor, Center for Earth Observation at Yale University, New Haven, CT, 1995

TEACHING EMPLOYMENT

- Adjunct Faculty, Lenoir-Rhyne University, Asheville, NC, 2019
Taught full-semester graduate-level Geographic Information Systems (GIS) course
- Adjunct Faculty, Western Carolina University, Asheville, NC, 2017
Taught full-semester graduate-level GIS course
- GIS Course Assistant, University of Pennsylvania, Philadelphia, PA, 2002-2003
Served as teaching assistant for two undergraduate GIS semester courses
- Teacher, Equity American School, Guatemala City, Guatemala, 1998-1999
Led mathematics department for grades 7-12; taught one technology course
- Teacher, International School of Panama, Panama City, Republic of Panama, 1997-1998
Taught computer programming and mathematics to secondary school students

LITIGATION EXPERIENCE (As GIS and/or redistricting expert)

- Testifying expert for plaintiffs, in *Grant v. Raffensperger*, U.S District Court for the Northern District of Georgia, 2022
- Consulting expert for plaintiffs, in *League of United Latin American Citizens v. Abbott*, U.S District Court for the Western District of Texas, 2022
- Consulting expert for plaintiffs, in *Rivera v. Schwab*, Wyandotte County (KS) District Court, 2022
- Consulting expert for plaintiffs, in *Harper v. Lewis*, Wake County (NC) Superior Court, 2019
- Consulting expert for plaintiffs, in *Common Cause v. Lewis*, Wake County (NC) Superior Court, 2019
- Preparation of redistricting map exhibits used in *Vesilind v. Virginia State Board of Elections*, Richmond (VA) Circuit Court, 2017
- Expert witness analysis, deposition, and testimony for City of Asheville, in *Jensen v. City of Asheville*, Buncombe County (NC) Superior Court, 2009-2010
- Expert witness analysis and testimony for City of Asheville, in *Hall v. City of Asheville*, Buncombe County (NC) Superior Court, 2007
- Expert witness analysis and testimony for City of Asheville, in *Arnold v. City of Asheville*, Buncombe County (NC) Superior Court, 2005

PUBLIC REDISTRICTING PROJECT EXPERIENCE

- Design and completion of adopted electoral redistricting plans for Wake County (NC) Board of Education, 2021-2022
- Design and completion of adopted electoral redistricting plans for Mecklenburg County (NC) Board of Commissioners, 2021
- Design and completion of adopted electoral redistricting plans for Craven County (NC) Board of Commissioners, 2021
- Design and completion of adopted electoral redistricting plans for City of Fayetteville (NC) City Council, 2021
- Design and completion of adopted electoral redistricting plans for City of Greenville (NC) City Council, 2021
- Design and completion of adopted electoral redistricting plans for Town of Cary (NC) Town Council, 2021
- Design and completion of adopted electoral redistricting plans for City of Hickory (NC) City Council, 2021
- Design and completion of adopted electoral redistricting plans for Town of Mooresville (NC) Board of Commissioners, 2021
- Design and completion of adopted electoral redistricting plans for City of Clinton (NC) City Council, 2021
- Design and completion of adopted electoral redistricting plans for Siler City (NC) Board of Commissioners, 2021
- Design and completion of adopted electoral redistricting plans for Town of Tarboro (NC) Town Council, 2021
- Design and completion of adopted electoral redistricting plans for Durham Public Schools (NC) Board of Education, 2021
- Design and completion of adopted electoral redistricting plans for Pitt County (NC) Board of Education, 2021
- Design and completion of adopted electoral redistricting plans for Union County (NC) Board of Education, 2021
- Design and completion of adopted electoral redistricting plans for Edgecombe County (NC) Board of Education, 2021
- Design and completion of adopted electoral redistricting plans (in advance of Census data delivery) for Town of Cary (NC) Town Council, 2021
- Lead presenter, Lenoir-Rhyne University Hands-on Redistricting Workshop, Virtual, 2021
- Software operator and presenter, National Conference of State Legislatures Redistricting Seminar: Redistricting Simulation, Columbus, OH, 2019

- Software operator and presenter, National Conference of State Legislatures Redistricting Seminar: Redistricting Simulation, Providence, RI, 2019
- Hands-on GIS software workshop session leader, Metric Geometry of Gerrymandering Group (MGGG) Conference at the University of Texas, Austin, TX, 2018
- Co-leader of redistricting hackathon, Metric Geometry of Gerrymandering Group (MGGG) Conference at Duke University, Durham, NC, 2017
- Preparation of simulated redistricting plans for Democracy North Carolina's Districting Voter Education Forum, Asheville, NC, 2017
- Hands-on GIS software workshop session assistant, Metric Geometry of Gerrymandering Group (MGGG) Conference at Tufts University, Medford, MA, 2017
- Redistricting software operator (converting retired jurists' instructions into maps), Duke University and Common Cause NC independent redistricting commission simulation, Raleigh, NC *and* Winston-Salem, NC, 2016

SPEAKER OR PANELIST

- "Political Reapportionment: Drawing Boundaries with QGIS," FOSS4G (Free and Open Source Software for Geospatial) Conference, Florence, Italy, 2022
- "Just Maps: How Gerrymandering Imperils the Right to Vote," Osher Lifelong Learning Institute at the University of North Carolina Asheville, virtual, 2022
- "How to Be a Redistricting Watchdog," Duke University's Redistricting and American Democracy Conference, Durham, NC, 2021
- "North Carolina Redistricting with Geographers: Local Knowledge & Community Considerations," American Association of Geographers (AAG) Redistricting Panel Series, Virtual, 2021
- "The Basics of Redistricting for Local Governments," NC Council of School Attorneys Summer Law Conference, Virtual, 2021
- "Census Timing and Redistricting," UNC School of Government: Municipal Attorneys' Winter Conference, Virtual, 2021
- "Census Delays and Redistricting," North Carolina League of Municipalities Online Meeting, Virtual, 2021
- "Redistricting: Ten Big Changes that GIS People Should Know About for 2021," North Carolina GIS Conference, Virtual, 2021
- "Demographics, the Census, and a Bit about Redistricting," UNC School of Government: County Attorneys Conference, Virtual, 2021
- "NC Redistricting Updates for the GIS Community," Mountain Region GIS Alliance, Virtual, 2021

- “The Census and Demographics,” UNC School of Government: Redistricting for Local Governments Conference, Virtual, 2021
- “The Mechanics of Redistricting,” UNC School of Government: Redistricting for Local Governments Conference, Virtual, 2021
- “Ask the Experts Panel,” National Conference of State Legislatures (NCSL) Redistricting Seminar, Virtual, 2021
- “GIS and the Data Handoff,” National Conference of State Legislatures (NCSL) Redistricting Seminar, Virtual, 2021
- “Electoral Redistricting for School Boards after the 2020 Census,” North Carolina School Boards Association 2020 Annual Conference, Virtual, 2020
- “Redistricting Software 2021: The Next Generation of Tools Could Open New Doors,” Urban and Regional Information Systems Association (URISA) GIS-Pro Conference, Virtual, 2020
- “Changing Demographics, Drawing Districts, and County Impacts,” North Carolina Association of County Commissioners 113th Annual Conference, Virtual, 2020
- “QGIS and democracy: Redistricting and reapportionment with QGIS,” QGIS North America Conference, Virtual, 2020
- “Does Your Vote Count?: The Impact of Gerrymandering,” virtual panel hosted by League of Women Voters Asheville Buncombe, NC, 2020
- [Scheduled, but cancelled due to COVID-19] “Redistricting with QGIS,” Free and Open Source Software for Geospatial Conference, Calgary, Alberta, Canada, 2020
- [Scheduled, but cancelled due to COVID-19] Teaching Faculty (session title to be determined), National Conference of State Legislatures Redistricting Seminar, Las Vegas, NV, 2020
- [Scheduled, but cancelled due to COVID-19] “Census Geography, Precision, & Privacy,” Census Symposium, University of North Carolina Asheville, NC, 2020
- “The State of Redistricting Software and Data Resources for 2020,” Quantitative Investigations of Gerrymandering and Redistricting Conference, Duke University, Durham, NC, 2020
- “School Board Elections,” 53rd School Attorneys’ Conference, UNC School of Government, Chapel Hill, NC, 2020
- “Methods and Techniques in Redistricting,” Harvard Geography of Redistricting Conference, Cambridge, MA, 2019
- “Redistricting Software: A new generation of geospatial tools,” North Carolina GIS Conference, Winston-Salem, NC, 2019
- “The Latest Mapping Technology,” Reason, Reform & Redistricting Conference, Duke University, Durham, NC, 2019

- “Redistricting—What Happens Now?” Voter Education Panel hosted by League of Women Voters (and others), Hendersonville, NC, 2019
- “What are all These Districts? How did We Get Here, and Redistricting Reform,” Grassroots Democracy: A Nonpartisan Voter Education Series, Leicester, NC, 2019
- “Re-GIS-tracting? A new generation of redistricting geo-tools,” Mountain Region GIS Alliance, Asheville, NC, 2019
- “Representing (mis)representation,” Tapestry Data Storytelling Conference, University of Miami, Miami, FL, 2018
- “A Redistricting Tour,” Democracy in our Hands Conference, Asheville, NC, 2018
- “Dis-tricks: GIS and Public Understanding of Redistricting,” NC ArcGIS Users Group, Asheville, NC, 2018
- “Visual Explanations of Gerrymandering,” Highlands Indivisible, Highlands, NC, 2018
- “Dave’s Redistricting App,” Metric Geometry of Gerrymandering Workshop, University of Texas, Austin, TX, 2018
- “Districting Voter Education Forum,” Democracy North Carolina, Asheville, NC, 2017
- “When GIS leads planners astray,” American Planning Association National Conference, New York, NY, 2017
- “Conveying Uncertainty with GIS,” Azavea, Philadelphia, PA, 2017
- “GISkepticism,” Appalachian State University, Boone, NC, 2017
- “When GIS leads planners astray,” North Carolina Planning Conference, American Planning Association North Carolina Chapter, Asheville, NC, 2016
- “What if the ‘S’ in GIS stood for Skepticism?” Mountain Region GIS Alliance, Asheville, NC, 2015
- “Open Data? Show Me the Money!” North Carolina GIS Conference, Raleigh, NC, 2015

TEACHING AS SINGLE-CLASS GUEST SPEAKER (On redistricting and/or GIS)

- Lenoir-Rhyne University, Public Policy Course (speaking on redistricting and representation), 2021
- Lenoir-Rhyne University, Geographic Information Systems Course (speaking on GIS), 2021
- University of North Carolina Asheville, Mathematics: Voting Theory Course (speaking on redistricting), 2020
- Metric Geometry and Gerrymandering Group Redistricting Lab (Tufts University + MIT), Geodata Bootcamp Mapmaking Session (speaking on redistricting software), 2020

- [Scheduled, but cancelled due to COVID-19] Duke University, Law School: Election Law Course (leading hands-on redistricting simulation exercise), April 2020
- Duke University, Data Science Capstone Seminar (speaking on data science professional/career advice), 2020
- University of North Carolina Asheville, Political Science: Census Course (speaking on redistricting), 2020
- Lenoir-Rhyne University, Public Policy Course (speaking on redistricting), 2019
- Western Carolina University, Geographic Information Systems Course (speaking on GIS), 2019
- Duke University, Democracy Lab Seminar (speaking on redistricting software tools), 2018
- University of North Carolina Asheville, Political Science: US Elections Course (speaking on redistricting), 2018
- University of North Carolina Asheville, Mathematics: Voting Theory Course (speaking on redistricting), 2018
- Lenoir-Rhyne University, Sustainability Management & Decision-Making Course (speaking on GIS/location intelligence), 2018
- Yale University, School of Organization and Management: Business Information Course (speaking on Maptitude—one class + multiple labs), 1997

MEDIA APPEARANCES, OP-EDS, AND CITATIONS

- “Gerrymandered or no? How will courts judge new North Carolina political maps?” *Raleigh News & Observer*, February 8, 2022
- “Monster: Math, maps and power in North Carolina,” special podcast series from *Raleigh News & Observer*, September 24, 2021
- “Census data has arrived. What comes next?” *Chatham News + Record*, September 1, 2021
- “An Explainer for Redistricting Criteria, Part 1: Political Boundaries,” *John Locke Foundation*, August 23, 2021
- “Special report: Demystifying the redistricting process,” *NC Policy Watch*, August 20, 2021
- “Raleigh, Cary and other NC cities may have to push back their 2021 elections,” *Raleigh News & Observer*, February 24, 2021
- “Triad Cities Awaiting Census Data May Delay Elections,” WFDD Radio, February 17, 2021
- Live interview, WPTF Radio Afternoon News, February 15, 2021
- “Census Delays Could Delay Charlotte City Council, CMS Fall Elections,” WFAE Radio, January 28, 2021

- “What do Buncombe's new district lines mean for 2020 commissioner elections?” (map citation), *Asheville Citizen-Times*, November 21, 2019
- “Confused about new legislative districts? This ‘map geek’ can help,” *NC Policy Watch*, November 21, 2019
- “Which district are you in? After gerrymandering fight, Asheville, Buncombe get final state districts,” *Asheville Citizen-Times*, November 4, 2019
- “Suggestions for a fair redistricting process,” *Princeton Election Consortium*, September 16, 2019
- “How will Asheville, Buncombe County be affected by gerrymandering decision?” *Asheville Citizen-Times*, September 6, 2019
- “2019 Districting,” JMPRO TV's *The Weekly Update*, September 1, 2019
- “As redistricting battle continues in NC, League of Women Voters holds panel,” *WLOS-TV*, August 11, 2019
- “With No Supreme Court End to Gerrymandering, Will States Make It More Extreme?” (citation/link of blog article), *New York Times*, June 28, 2019
- “The Supreme Court takes on gerrymandering. A cottage industry wants to prove it's gone too far,” *USA Today*, March 26, 2019
- “Gerrymandering: 'Packing' and 'Cracking,' the meat and potatoes of partisan redistricting,” *USA Today*, March 25, 2019
- “NC gerrymandering: Turner, McGrady lead reform effort on redistricting,” *Asheville Citizen-Times*, February 14, 2019
- “Looking for a Way Forward on Redistricting Reform,” *Duke Today*, January 28, 2019
- “Will Asheville try to stop the state from splitting it into districts?” (map citation), *Asheville Citizen-Times*, January 23, 2019
- “Some takeaways from NC's elections,” *WRAL.com*, Nov 7, 2018
- “New Asheville districts are racial gerrymandering, black council members say” *Asheville Citizen-Times*, July 2, 2018
- “Legislature sets up districts for Asheville council, eliminates primaries” (map citation), *Asheville Citizen-Times*, June 27, 2018
- “Van Duyn to back Asheville council districts bill if Senate shifts election dates” (map citation), *Asheville Citizen-Times*, June 21, 2018
- “I Ran the Worst 5K of My Life So I Could Explain Gerrymandering to You,” *POLITICO Magazine*, November 15, 2017
- “Event to cover Nov. vote on City Council districts,” *Asheville Citizen-Times*, October 17, 2017

- “Republicans silent in wake of court order to draw new maps in one month,” *NC Policy Watch*, August 2, 2017
- “Who makes the grade? This week’s editorial report card,” *Asheville Citizen-Times*, June 2, 2017
- “Asheville grows; Charlotte, Raleigh and their suburbs grow faster,” *Asheville Citizen-Times*, May 29, 2017
- “Boundary issues: Where does Asheville end?” (op-ed), *Mountain Xpress*, April 29, 2016
- “For better or worse, Asheville growth inevitable,” *Asheville Citizen-Times*, November 21, 2015
- “St. Lawrence Green no litmus test for voters” (op-ed), *Mountain Xpress*, October 29, 2015

PUBLISHED WORK

- “Redistricting Software Applications, Data, and Related Tools,” supplement to *Redistricting: A Guide for the GIS Community*, Urban and Regional Information Systems Association, 2021
- (Co-authored with Mark Salling, PhD, GISP) “GIS Software Functionality for Redistricting,” *The GIS Professional*, Issue 301, Urban and Regional Information Systems Association, May/June 2021
- (Co-authored with Joan Gardner, Suzanne Rotwein, and Tong Zhang) “Integrating GIS and Social Marketing at HCFA,” *ESRI Map Book*, Volume 16, ESRI Press, 2001

SELF-PUBLISHED PUBLIC-FACING EXPLANATORY WRITING & MAPS

- (Co-authored with Christopher Cooper, Gregory Herschlag, Jonathan Mattingly, Rebecca Tippet) “NC General Assembly County Clusterings from the 2020 Census,” *Quantifying Gerrymandering* Blog, August 17, 2021
- (Co-authored with Christopher Cooper, Gregory Herschlag, Jonathan Mattingly, Rebecca Tippet) “Legislative County Clustering in North Carolina—Looking towards the 2020 Census,” *Quantifying Gerrymandering* Blog, July 16, 2021
- Created the blogs at districks.com (2017) and mapfigure.com (2020) — the story maps “A ‘Stephenson’ explainer” and “Could COVID repercussions delay NC elections in 2021 & 2022?” have each been viewed more than 2,000 times.

REDISTRICTING AND GIS SOFTWARE EXPERIENCE

- MapInfo (first used 1996)
- Maptitude (first used 1997)
- Esri ArcGIS/ArcInfo/ArcView (first used 2000)

- QGIS (first used 2015)
- Maptitude for Redistricting (first used 2016)
- Dave's Redistricting App (first used 2016)
- DistrictBuilder (first used 2017)
- Esri Redistricting (first used 2018)
- Districtr (first used 2019)
- Statto Software Redistricter (first used 2019)
- ArcBridge DISTRICTSolv (first used 2020)

SELECTED AWARDS (As team member)

- G. Herbert Stout Award for Visionary use of GIS by Local Government, 2009
- International Economic Development Council, Excellence in New Media Initiatives, 2008
- Marvin Collins Outstanding Planning Award for Innovations in Planning Services, Education, and Public Involvement, 2007

SERVICE AS ELECTION OFFICIAL

- Poll worker for multiple elections in Buncombe County, North Carolina (2012, 2020, 2022) and King County, Washington (2000), including as Chief Precinct Judge in 2020 general election and 2022 primary election

SERVICE ON BOARDS AND COMMISSIONS

- Asheville City Council Appointee to Comprehensive Plan Advisory Committee, 2016-2018

ADDITIONAL TRAINING

- Introduction to GIS for Equity and Social Justice, Urban and Regional Information Systems Association Certified Workshop, Virtual, 2020
- Public Data, Public Access, Privacy, and Security: U.S. Law and Policy, Urban and Regional Information Systems Association Certified Workshop, Raleigh, NC, 2015
- An Overview of Open Source GIS Software, Urban and Regional Information Systems Association Certified Workshop, Portland, OR, 2012

- An Introduction to Public Participation GIS: Using GIS to Support Community Decision Making, Urban and Regional Information Systems Association Certified Workshop, Orlando, FL, 2010
- 3-D Geospatial Best Practices and Project Implementation Methods, Urban and Regional Information Systems Association Certified Workshop, Vancouver, BC (Canada), 2006

MEMBERSHIPS

- Urban and Regional Information Systems Association (URISA)
- Mountain Region GIS Alliance (MRGAC)
- American Planning Association (APA)

Esselstyn Report: Attachment B

Data sources, software, and methodology

1. I arrived at the findings in the expert report using data from the United States Census Bureau's website (<https://www.census.gov>). This federal agency produces a) geographic files—e.g., county boundaries and block boundaries, b) tables of the block-level demographic information yielded specifically for redistricting (sometimes referred to as the PL 94-171 data) from the decennial census counts, c) “block assignment files,” which are important for linking geography data to other data, and d) other interactive web-based resources. Representative links for these four categories of data are provided below:

- a) <https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-line-file.2020.html>
- b) <https://data.census.gov/cedsci/all?q=&y=2020&d=DEC%20Redistricting%20Data%20%28PL%2094-171%29>
- c) <https://www.census.gov/geographies/reference-files/time-series/geo/block-assignment-files.html>
- d) <https://www.census.gov/library/stories/state-by-state/georgia-population-change-between-census-decade.html>

2. Another key source of information for the analysis was the Georgia General Assembly's Legislative and Congressional Reapportionment Office webpage, available at <https://www.legis.ga.gov/joint-office/reapportionment>. This webpage provided links to representations of the enacted State Senate and State House plans, as well as statistical summaries for the plans and copies of the Reapportionment Committee Guidelines for each chamber.

3. The list of residential addresses of elected Georgia General Assembly legislators was provided to me by counsel. To associate those addresses with coordinates on a map, I used the *Google Maps Platform's Geocoding API*.

4. The primary software application I used in the analysis of maps and the creation of the illustrative plans is *Maptitude for Redistricting*, produced by the Caliper Corporation. This specialized geographic information system (GIS) software allows for the importing, interconnecting, and synthesis of the multiple Census Bureau data files listed above. It allows for an existing plan to be imported (like the enacted plans from the Georgia General Assembly), then modified, or plans can be created starting from a blank template. The application generates not only the aggregated statistics for each of the created districts, but also can supply reports on overall characteristics of the plan like average district compactness and population deviation. *Maptitude for Redistricting* is widely used by state and local governments for redistricting and is in fact used by the Georgia General Assembly.

5. For the production of the visual figures in the report, I used two other pieces of software. For the maps, I used a separate open-source GIS software tool called *QGIS*. *QGIS* enabled me to take geographic files exported from *Maptitude for Redistricting* and create high-resolution graphics for insertion into the document with myriad options for customization of visual elements. For the graphs and charts, I used *Microsoft Excel*.

Esselstyn Report: Attachment C

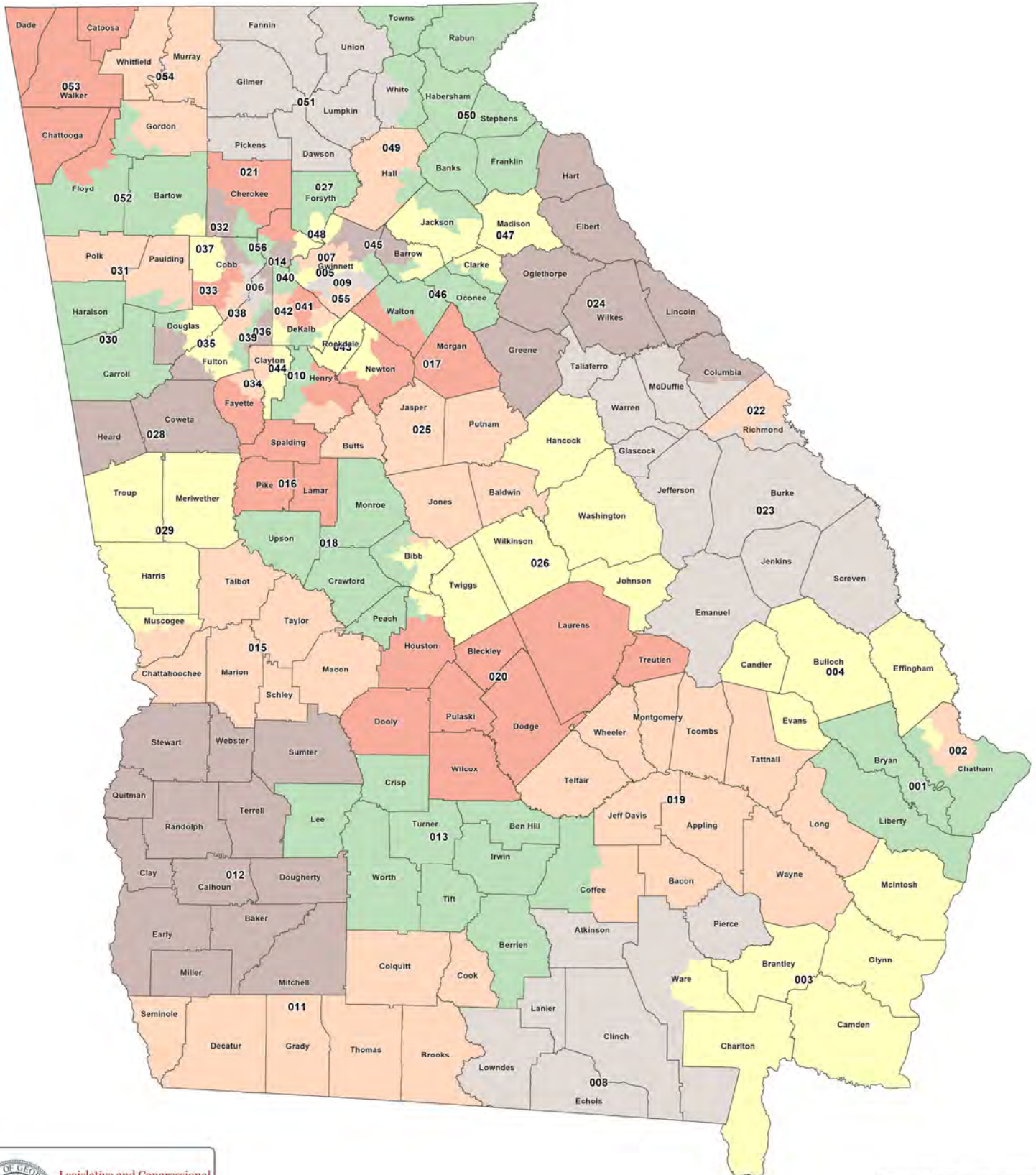
County	Total population	% single race			% single race			% Black alone		
		% single race White	% single race Black	American Indian and Alaska Native	% single race Asian	% single race Pacific Islander	% other single race	% two or more races	or in combination	% Hispanic or Latino
Appling	18,444	70.9%	18.4%	0.5%	0.7%	0.0%	5.7%	3.8%	19.8%	9.9%
Atkinson	8,286	63.7%	14.6%	0.8%	0.2%	0.0%	12.5%	8.1%	15.5%	24.7%
Bacon	11,140	74.1%	15.8%	0.1%	0.4%	0.0%	5.1%	4.5%	17.7%	7.9%
Baker	2,876	53.4%	39.3%	0.0%	0.6%	0.0%	2.5%	4.1%	41.0%	5.0%
Baldwin	43,799	51.7%	42.0%	0.2%	1.4%	0.1%	1.5%	3.1%	43.3%	2.6%
Banks	18,035	87.8%	2.2%	0.6%	1.1%	0.1%	2.8%	5.4%	3.3%	6.5%
Barrow	83,505	69.0%	12.4%	0.5%	3.9%	0.0%	6.0%	8.1%	14.3%	12.6%
Bartow	108,901	75.7%	10.6%	0.4%	1.1%	0.0%	4.9%	7.3%	12.3%	9.9%
Ben Hill	17,194	54.9%	36.4%	0.4%	0.7%	0.0%	3.2%	4.4%	38.0%	6.1%
Berrien	18,160	80.6%	10.8%	0.2%	0.4%	0.1%	2.6%	5.3%	12.1%	5.8%
Bibb	157,346	36.7%	54.6%	0.2%	2.1%	0.0%	2.4%	4.0%	56.5%	4.3%
Bleckley	12,583	71.7%	22.4%	0.2%	1.2%	0.1%	1.6%	2.9%	23.5%	3.7%
Brantley	18,021	91.2%	3.2%	0.3%	0.2%	0.0%	0.7%	4.4%	4.1%	1.8%
Brooks	16,301	57.1%	35.1%	0.3%	0.4%	0.0%	2.8%	4.3%	36.5%	5.9%
Bryan	44,738	72.0%	14.5%	0.3%	2.4%	0.1%	2.2%	8.5%	16.7%	7.3%
Bulloch	81,099	62.5%	28.4%	0.3%	1.6%	0.1%	2.3%	4.8%	30.1%	5.2%
Burke	24,596	49.5%	44.8%	0.2%	0.4%	0.1%	1.3%	3.7%	46.5%	3.2%
Butts	25,434	66.1%	26.9%	0.2%	0.4%	0.0%	1.7%	4.7%	28.4%	3.2%
Calhoun	5,573	32.0%	64.3%	0.1%	0.3%	0.0%	1.8%	1.4%	65.1%	2.7%
Camden	54,768	70.1%	17.7%	0.5%	1.6%	0.1%	2.1%	7.9%	20.2%	6.7%
Candler	10,981	61.6%	24.5%	0.3%	0.6%	0.0%	7.4%	5.5%	25.6%	12.5%
Carroll	119,148	69.3%	18.6%	0.4%	0.9%	0.0%	4.2%	6.6%	20.7%	8.0%
Catoosa	67,872	88.3%	2.7%	0.4%	1.5%	0.1%	1.3%	5.7%	3.9%	3.4%
Charlton	12,518	69.9%	21.0%	0.4%	0.9%	0.0%	4.3%	3.6%	22.4%	16.3%
Chatham	295,291	48.7%	37.0%	0.4%	3.6%	0.2%	3.9%	6.2%	39.1%	8.1%
Chattahoochee	9,565	62.4%	15.8%	0.5%	3.2%	1.2%	6.1%	10.9%	19.1%	16.8%
Chattooga	24,965	81.3%	9.6%	0.4%	0.4%	0.0%	3.4%	4.8%	11.5%	5.2%
Cherokee	266,620	76.8%	6.7%	0.5%	2.1%	0.0%	4.7%	9.2%	8.1%	12.0%
Clarke	128,671	58.2%	24.6%	0.5%	3.9%	0.1%	6.1%	6.7%	26.2%	11.1%
Clay	2,848	40.4%	56.1%	0.0%	0.2%	0.0%	0.3%	3.0%	57.4%	1.4%
Clayton	297,595	10.3%	69.9%	0.7%	4.6%	0.1%	8.8%	5.7%	72.7%	14.3%
Clinch	6,749	63.8%	29.1%	0.4%	0.3%	0.2%	2.1%	3.9%	31.1%	3.7%
Cobb	766,149	50.6%	26.6%	0.6%	5.6%	0.1%	7.1%	9.5%	29.1%	14.5%
Coffee	43,092	59.0%	27.8%	0.5%	0.7%	0.1%	6.9%	5.0%	29.2%	12.6%
Colquitt	45,898	59.4%	21.9%	0.9%	0.8%	0.0%	10.5%	6.5%	23.2%	19.0%
Columbia	156,010	65.4%	18.1%	0.3%	4.6%	0.2%	2.5%	8.8%	20.8%	7.6%
Cook	17,229	63.7%	27.7%	0.4%	0.6%	0.1%	3.1%	4.4%	29.1%	6.6%
Coweta	146,158	69.6%	17.7%	0.4%	2.3%	0.0%	3.2%	6.8%	19.4%	7.6%
Crawford	12,130	74.3%	18.7%	0.5%	0.3%	0.0%	1.3%	5.0%	20.2%	3.4%
Crisp	20,128	49.7%	44.1%	0.2%	0.9%	0.0%	1.9%	3.2%	45.7%	3.1%
Dade	16,251	91.7%	0.9%	0.5%	0.8%	0.0%	0.8%	5.3%	1.4%	2.2%
Dawson	26,798	89.0%	0.8%	0.3%	0.9%	0.1%	2.5%	6.4%	1.5%	6.0%
Decatur	29,367	49.6%	41.7%	0.4%	0.6%	0.1%	4.1%	3.6%	42.8%	6.5%
DeKalb	764,382	29.5%	50.9%	0.6%	6.6%	0.0%	5.9%	6.5%	53.3%	10.7%
Dodge	19,925	65.3%	29.5%	0.1%	0.5%	0.1%	1.4%	3.1%	30.9%	3.1%
Dooley	11,208	41.9%	49.6%	0.2%	0.5%	0.0%	5.0%	2.8%	50.4%	7.1%
Dougherty	85,790	24.5%	69.9%	0.2%	0.8%	0.0%	1.6%	3.0%	71.6%	2.8%
Douglas	144,237	36.2%	48.4%	0.5%	1.6%	0.1%	5.8%	7.3%	51.5%	11.1%
Early	10,854	44.8%	51.2%	0.3%	0.4%	0.0%	0.6%	2.6%	52.4%	1.7%
Echols	3,697	68.5%	4.2%	1.8%	0.3%	0.0%	14.7%	10.4%	5.2%	29.5%
Effingham	64,769	75.9%	13.7%	0.4%	1.1%	0.1%	2.1%	6.9%	15.5%	5.4%
Elbert	19,637	65.3%	26.9%	0.3%	0.9%	0.0%	2.6%	3.9%	28.1%	5.1%
Emanuel	22,768	61.6%	31.9%	0.3%	0.6%	0.0%	2.5%	3.1%	33.2%	4.4%
Evans	10,774	57.9%	28.9%	0.3%	0.8%	0.1%	6.4%	5.6%	30.4%	11.5%
Fannin	25,319	93.0%	0.3%	0.4%	0.4%	0.0%	1.3%	4.5%	0.8%	3.0%
Fayette	119,194	58.5%	24.8%	0.3%	5.4%	0.0%	3.3%	7.6%	26.9%	8.0%
Floyd	98,584	70.5%	14.3%	0.7%	1.3%	0.0%	5.9%	7.3%	15.8%	11.6%
Forsyth	251,283	65.1%	4.3%	0.4%	18.0%	0.0%	4.1%	8.1%	5.3%	10.0%
Franklin	23,424	83.0%	8.1%	0.2%	1.1%	0.0%	2.8%	4.7%	9.4%	4.8%
Fulton	1,066,710	39.3%	42.5%	0.3%	7.6%	0.0%	3.6%	6.6%	44.8%	8.1%
Gilmer	31,353	86.0%	0.5%	0.8%	0.5%	0.0%	6.5%	5.7%	0.9%	11.5%
Glascocock	2,884	89.8%	6.8%	0.0%	0.2%	0.1%	0.1%	2.9%	7.8%	1.8%
Glynn	84,499	64.2%	24.5%	0.4%	1.4%	0.1%	3.7%	5.7%	26.2%	7.5%

County	Total population	% single race				% single race		% Black alone			% Hispanic or Latino
		% single race White	% single race Black	American Indian and	% single race Asian	Hawaiian or	% other single race	% two or more races	or in combination		
				Alaska Native		Pacific Islander					
Gordon	57,544	78.4%	3.7%	0.6%	1.3%	0.0%	8.0%	8.0%	5.1%	15.6%	
Grady	26,236	57.4%	28.0%	1.0%	0.5%	0.0%	8.0%	5.1%	29.3%	12.5%	
Greene	18,915	59.7%	30.7%	0.2%	0.9%	0.0%	3.7%	4.7%	31.9%	6.8%	
Gwinnett	957,062	35.5%	27.4%	0.8%	13.3%	0.1%	12.1%	10.7%	30.1%	23.0%	
Habersham	46,031	78.7%	3.8%	0.5%	2.2%	0.1%	6.6%	8.1%	4.7%	14.9%	
Hall	203,136	64.4%	7.2%	0.9%	2.1%	0.1%	14.4%	11.0%	8.4%	28.1%	
Hancock	8,735	27.7%	69.0%	0.3%	0.4%	0.0%	0.3%	2.3%	70.2%	0.7%	
Haralson	29,919	90.3%	4.2%	0.2%	0.6%	0.0%	0.7%	3.9%	5.2%	1.7%	
Harris	34,668	76.0%	15.1%	0.4%	1.1%	0.1%	1.4%	5.9%	16.6%	4.1%	
Hart	25,828	75.3%	16.8%	0.2%	1.3%	0.0%	1.8%	4.6%	18.3%	3.6%	
Heard	11,412	84.8%	8.3%	0.3%	0.5%	0.1%	0.9%	5.3%	10.0%	2.2%	
Henry	240,712	37.1%	49.1%	0.3%	3.4%	0.1%	3.6%	6.5%	52.0%	7.7%	
Houston	163,633	54.1%	32.2%	0.4%	3.0%	0.1%	3.0%	7.3%	34.5%	7.2%	
Irwin	9,666	67.1%	23.1%	0.2%	1.2%	0.0%	5.2%	3.2%	24.1%	6.9%	
Jackson	75,907	79.7%	6.9%	0.3%	2.3%	0.1%	4.1%	6.6%	8.1%	8.8%	
Jasper	14,588	74.8%	16.9%	0.3%	0.2%	0.1%	2.5%	5.3%	18.3%	4.7%	
Jeff Davis	14,779	70.1%	15.6%	0.6%	0.4%	0.0%	8.5%	4.9%	16.9%	13.9%	
Jefferson	15,709	44.2%	50.8%	0.3%	0.4%	0.0%	1.7%	2.6%	52.3%	2.9%	
Jenkins	8,674	53.9%	40.9%	0.4%	0.1%	0.1%	2.1%	2.4%	41.9%	3.5%	
Johnson	9,189	63.4%	33.0%	0.3%	0.3%	0.2%	0.5%	2.4%	34.0%	1.3%	
Jones	28,347	71.3%	23.9%	0.2%	0.5%	0.0%	0.7%	3.5%	25.1%	1.7%	
Lamar	18,500	67.4%	26.6%	0.1%	0.6%	0.0%	1.1%	4.2%	28.2%	2.6%	
Lanier	9,877	68.8%	22.0%	0.4%	0.8%	0.2%	1.9%	5.8%	24.0%	5.8%	
Laurens	49,570	56.8%	37.0%	0.2%	1.0%	0.0%	1.6%	3.4%	38.6%	2.9%	
Lee	33,163	69.3%	22.2%	0.2%	2.6%	0.0%	1.1%	4.5%	23.4%	2.9%	
Liberty	65,256	39.8%	43.1%	0.5%	2.1%	0.7%	4.1%	9.7%	47.7%	11.9%	
Lincoln	7,690	68.1%	27.6%	0.2%	0.3%	0.0%	0.3%	3.4%	28.8%	1.2%	
Long	16,168	56.9%	25.5%	0.8%	1.1%	0.6%	5.6%	9.5%	29.3%	12.2%	
Lowndes	118,251	51.7%	37.6%	0.4%	1.7%	0.1%	2.7%	5.8%	39.5%	6.7%	
Lumpkin	33,488	88.8%	1.3%	0.6%	0.8%	0.1%	2.1%	6.4%	2.0%	5.3%	
Macon	12,082	34.4%	59.3%	0.3%	1.3%	0.1%	2.7%	2.0%	60.4%	3.9%	
Madison	30,120	79.6%	9.2%	0.3%	1.8%	0.0%	3.4%	5.8%	10.6%	6.5%	
Marion	7,498	60.7%	28.7%	0.3%	0.7%	0.2%	4.6%	4.7%	29.6%	7.5%	
McDuffie	21,632	53.5%	40.1%	0.2%	0.4%	0.1%	1.6%	4.0%	41.8%	3.7%	
McIntosh	10,975	65.1%	29.1%	0.3%	0.4%	0.0%	0.6%	4.4%	31.0%	2.1%	
Meriwether	20,613	59.3%	35.3%	0.3%	0.4%	0.0%	1.0%	3.6%	36.6%	2.3%	
Miller	6,000	66.4%	29.2%	0.2%	0.5%	0.1%	0.9%	2.7%	30.5%	2.3%	
Mitchell	21,755	47.2%	46.5%	0.2%	0.5%	0.0%	2.8%	2.7%	47.8%	4.4%	
Monroe	27,957	72.0%	21.9%	0.2%	0.9%	0.0%	1.1%	4.0%	23.0%	2.6%	
Montgomery	8,610	67.2%	24.8%	0.3%	0.5%	0.0%	3.8%	3.5%	25.8%	6.6%	
Morgan	20,097	72.7%	20.5%	0.2%	0.6%	0.0%	1.9%	4.0%	21.6%	3.5%	
Murray	39,973	83.4%	0.7%	1.5%	0.3%	0.0%	7.0%	7.0%	1.4%	14.8%	
Muscogee	206,922	39.9%	46.5%	0.4%	2.7%	0.3%	3.2%	7.1%	49.4%	8.0%	
Newton	112,483	42.7%	46.9%	0.3%	0.9%	0.1%	3.3%	5.7%	49.7%	6.4%	
Oconee	41,799	82.4%	4.6%	0.2%	5.0%	0.0%	2.1%	5.7%	5.5%	5.6%	
Oglethorpe	14,825	74.7%	15.2%	0.4%	0.9%	0.0%	2.8%	6.0%	16.6%	5.9%	
Paulding	168,661	65.9%	22.1%	0.4%	1.2%	0.1%	3.0%	7.3%	24.5%	7.4%	
Peach	27,981	44.7%	43.7%	0.4%	0.7%	0.0%	5.3%	5.2%	45.2%	9.1%	
Pickens	33,216	91.5%	0.9%	0.4%	0.6%	0.0%	1.4%	5.1%	1.5%	3.6%	
Pierce	19,716	84.5%	8.1%	0.4%	0.4%	0.0%	2.8%	3.7%	9.1%	5.1%	
Pike	18,889	87.0%	7.7%	0.2%	0.4%	0.0%	0.7%	4.0%	8.5%	1.8%	
Polk	42,853	72.9%	12.2%	0.8%	0.6%	0.1%	7.8%	5.7%	13.6%	13.0%	
Pulaski	9,855	61.9%	32.2%	0.1%	0.9%	0.0%	2.0%	2.8%	33.0%	3.3%	
Putnam	22,047	66.5%	24.6%	0.4%	0.5%	0.0%	2.8%	5.2%	25.9%	7.1%	
Quitman	2,235	53.2%	41.1%	0.6%	0.5%	0.0%	0.4%	4.1%	43.2%	1.4%	
Rabun	16,883	89.0%	0.7%	0.4%	0.4%	0.0%	3.1%	6.4%	1.2%	8.6%	
Randolph	6,425	35.1%	60.3%	0.2%	0.3%	0.0%	1.4%	2.6%	61.4%	2.2%	
Richmond	206,607	34.4%	55.3%	0.3%	1.9%	0.2%	2.3%	5.6%	58.1%	5.5%	
Rockdale	93,570	27.4%	58.1%	0.3%	1.6%	0.1%	5.7%	6.6%	61.1%	10.2%	
Schley	4,547	75.3%	19.3%	0.1%	0.4%	0.0%	1.1%	3.7%	20.5%	3.8%	
Screven	14,067	57.5%	37.7%	0.4%	0.4%	0.1%	0.8%	3.2%	39.3%	2.0%	
Seminole	9,147	61.9%	32.7%	0.1%	0.7%	0.0%	1.4%	3.2%	33.8%	2.5%	
Spalding	67,306	56.2%	34.6%	0.4%	1.0%	0.0%	2.5%	5.3%	36.4%	5.4%	

County	Total population	% single race			% single race		% other single race	% two or more races	% Black alone or in combination	% Hispanic or Latino
		% single race White	% single race Black	American Indian and Alaska Native	% single race Asian	Pacific Islander				
Stephens	26,784	80.6%	11.1%	0.4%	0.9%	0.0%	1.1%	5.9%	13.2%	3.2%
Stewart	5,314	25.4%	46.4%	0.2%	3.2%	0.1%	22.1%	2.5%	47.8%	22.9%
Sumter	29,616	39.8%	51.1%	0.3%	1.7%	0.0%	4.1%	3.1%	52.5%	6.0%
Talbot	5,733	42.9%	53.7%	0.1%	0.3%	0.0%	0.2%	2.8%	54.9%	2.0%
Taliaferro	1,559	38.9%	53.4%	0.3%	0.4%	0.0%	1.8%	5.3%	56.2%	4.4%
Tattnall	22,842	62.5%	26.3%	0.4%	0.6%	0.0%	5.6%	4.6%	27.7%	10.1%
Taylor	7,816	59.4%	36.2%	0.3%	0.5%	0.1%	0.8%	2.8%	37.7%	2.1%
Telfair	12,477	58.3%	37.1%	0.3%	0.3%	0.0%	1.7%	2.4%	38.1%	15.5%
Terrell	9,185	35.2%	60.6%	0.1%	0.7%	0.0%	0.6%	2.6%	62.1%	1.9%
Thomas	45,798	57.6%	35.7%	0.4%	0.9%	0.0%	1.6%	3.8%	37.1%	3.4%
Tift	41,344	56.2%	29.3%	0.3%	1.6%	0.0%	6.7%	5.8%	30.8%	12.6%
Toombs	27,030	61.3%	26.0%	0.4%	0.8%	0.0%	6.5%	5.1%	27.4%	11.3%
Towns	12,493	92.8%	1.0%	0.2%	0.6%	0.0%	1.5%	3.8%	1.3%	3.3%
Treutlen	6,406	64.1%	31.6%	0.3%	0.1%	0.0%	1.0%	2.8%	33.0%	2.7%
Troup	69,426	55.7%	35.0%	0.3%	2.3%	0.1%	2.5%	4.2%	36.7%	4.3%
Turner	9,006	53.4%	40.7%	0.1%	0.6%	0.0%	1.9%	3.3%	42.3%	4.1%
Twiggs	8,022	56.4%	38.9%	0.3%	0.5%	0.0%	0.5%	3.5%	40.2%	1.5%
Union	24,632	92.7%	0.5%	0.4%	0.4%	0.0%	1.1%	4.9%	0.9%	3.3%
Upson	27,700	65.5%	28.5%	0.3%	0.5%	0.0%	1.3%	3.8%	30.1%	2.3%
Walker	67,654	88.9%	4.2%	0.3%	0.4%	0.1%	1.1%	5.0%	5.4%	2.5%
Walton	96,673	72.0%	17.9%	0.3%	1.5%	0.1%	2.6%	5.6%	19.5%	5.4%
Ware	36,251	62.4%	29.7%	0.3%	0.9%	0.0%	2.4%	4.3%	31.5%	4.4%
Warren	5,215	38.2%	58.5%	0.3%	0.3%	0.1%	0.3%	2.3%	60.0%	1.0%
Washington	19,988	42.4%	53.7%	0.2%	0.4%	0.0%	0.8%	2.5%	54.9%	1.7%
Wayne	30,144	72.5%	19.8%	0.3%	0.6%	0.0%	2.5%	4.2%	21.2%	5.7%
Webster	2,348	48.8%	45.3%	0.1%	0.5%	0.3%	0.9%	4.2%	47.1%	2.5%
Wheeler	7,471	56.6%	38.6%	0.4%	0.2%	0.0%	2.0%	2.2%	39.5%	3.6%
White	28,003	90.2%	1.7%	0.5%	0.6%	0.0%	1.2%	5.8%	2.6%	3.3%
Whitfield	102,864	63.3%	3.7%	2.0%	1.4%	0.0%	17.7%	11.9%	4.8%	35.9%
Wilcox	8,766	59.9%	35.4%	0.0%	0.6%	0.0%	1.5%	2.6%	36.1%	3.1%
Wilkes	9,565	52.8%	40.2%	0.4%	0.6%	0.0%	1.9%	4.1%	41.7%	4.2%
Wilkinson	8,877	58.2%	35.8%	0.3%	0.3%	0.1%	1.3%	4.0%	37.5%	2.7%
Worth	20,784	69.9%	25.4%	0.3%	0.4%	0.0%	0.8%	3.1%	26.5%	1.8%

Esselstyn Report: Attachment D

Proposed Georgia Senate Districts



Metro Atlanta Area

Map layers

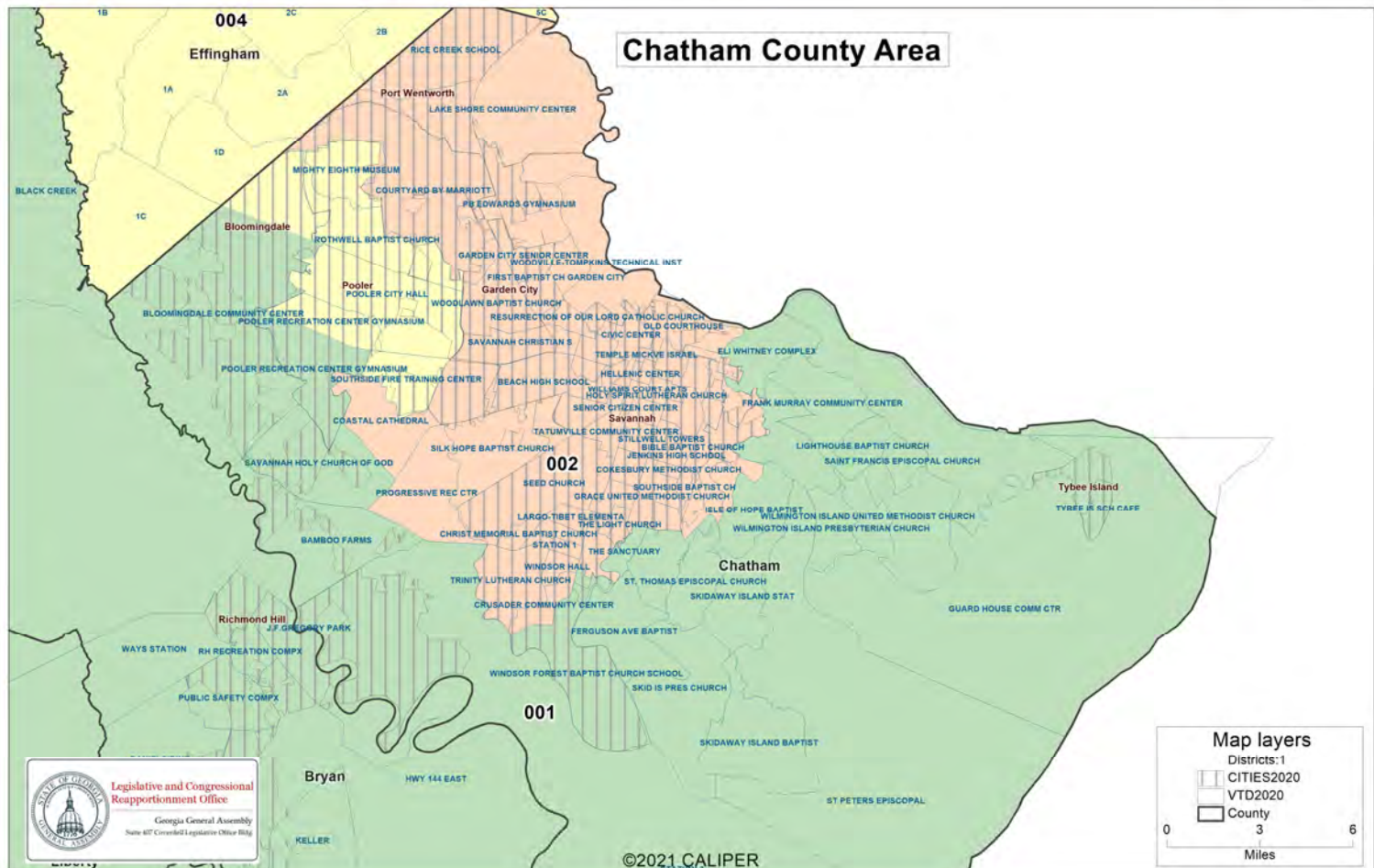
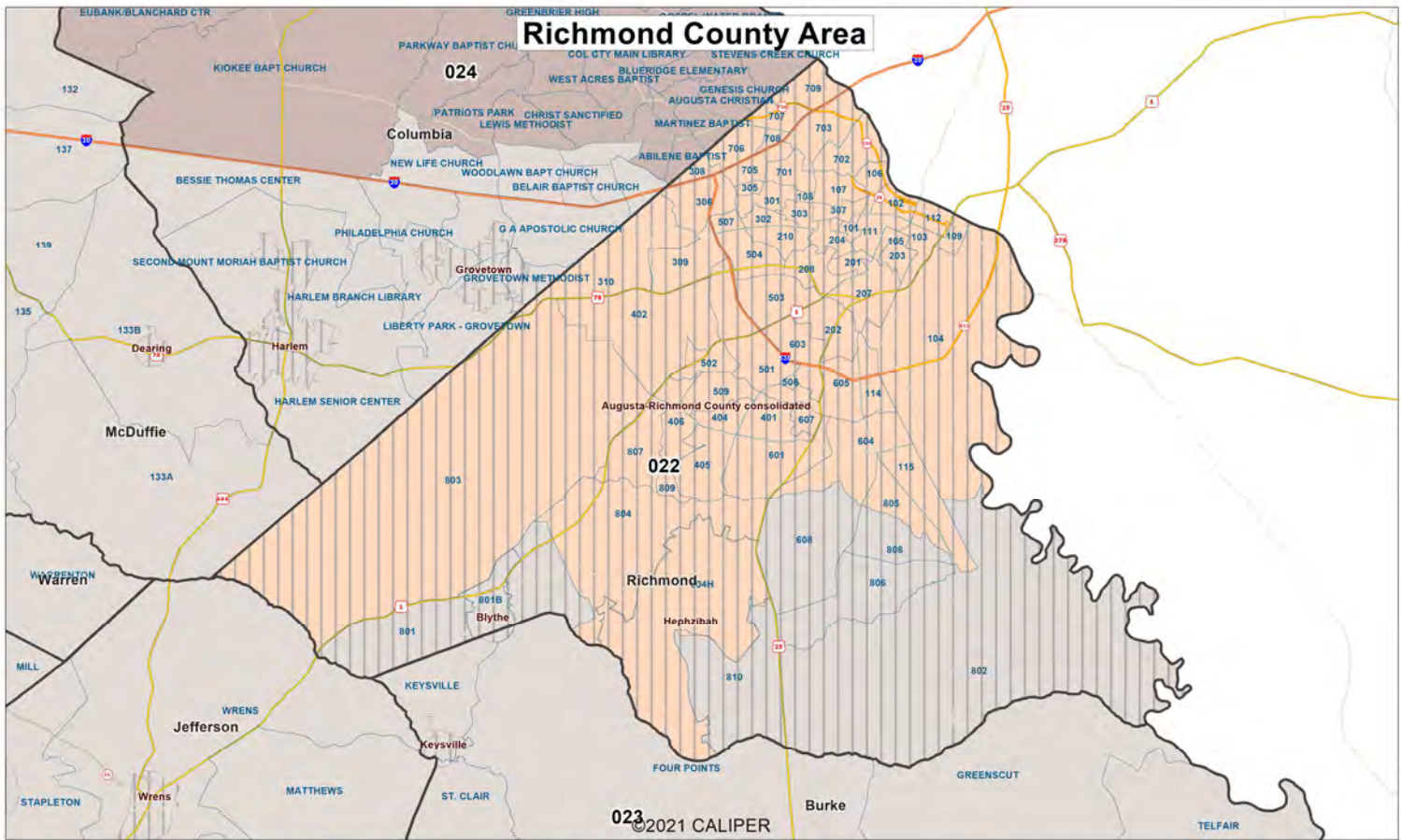
- Districts
- CITIES2020
- VTD2020
- County

0 5 10
Miles

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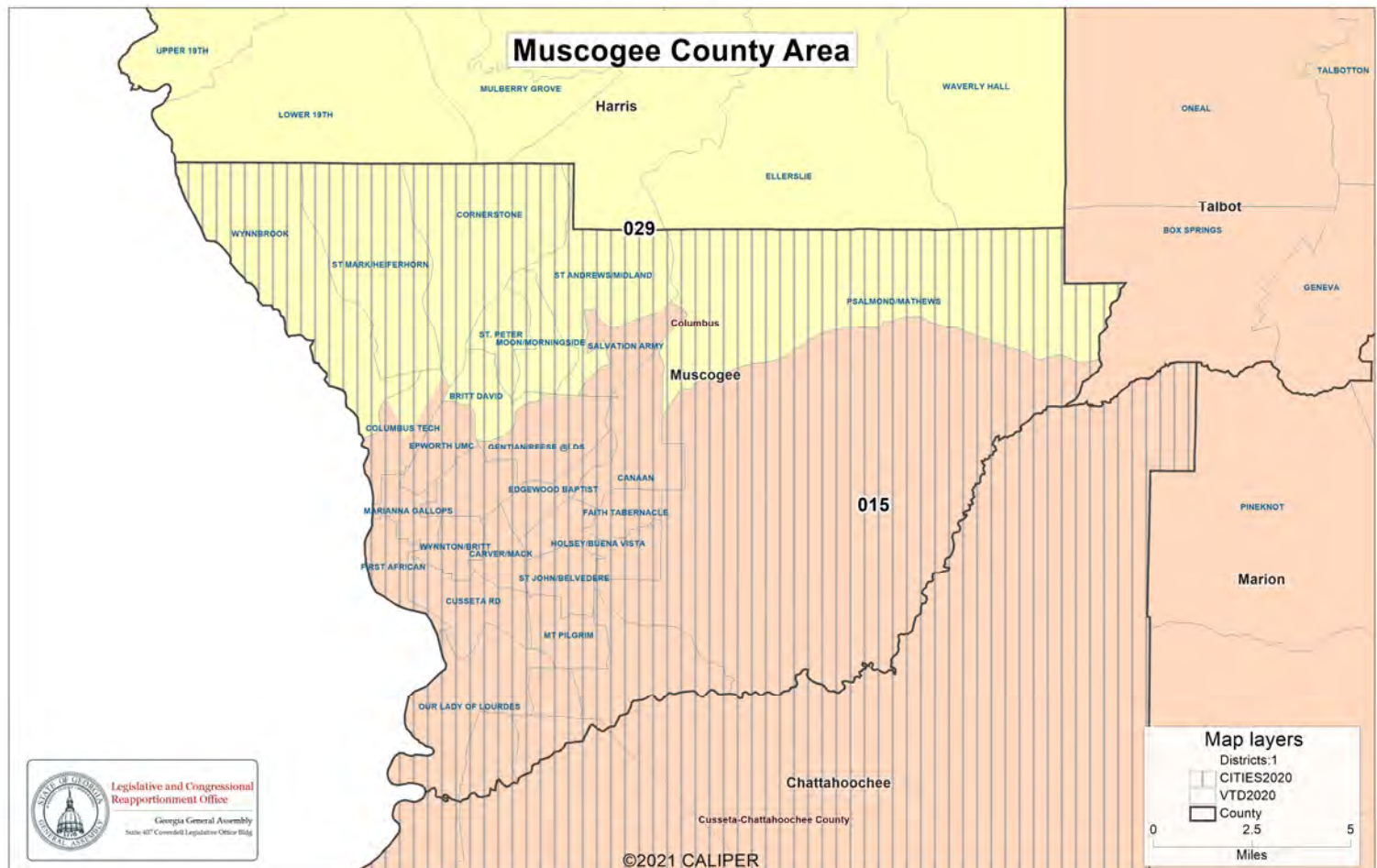
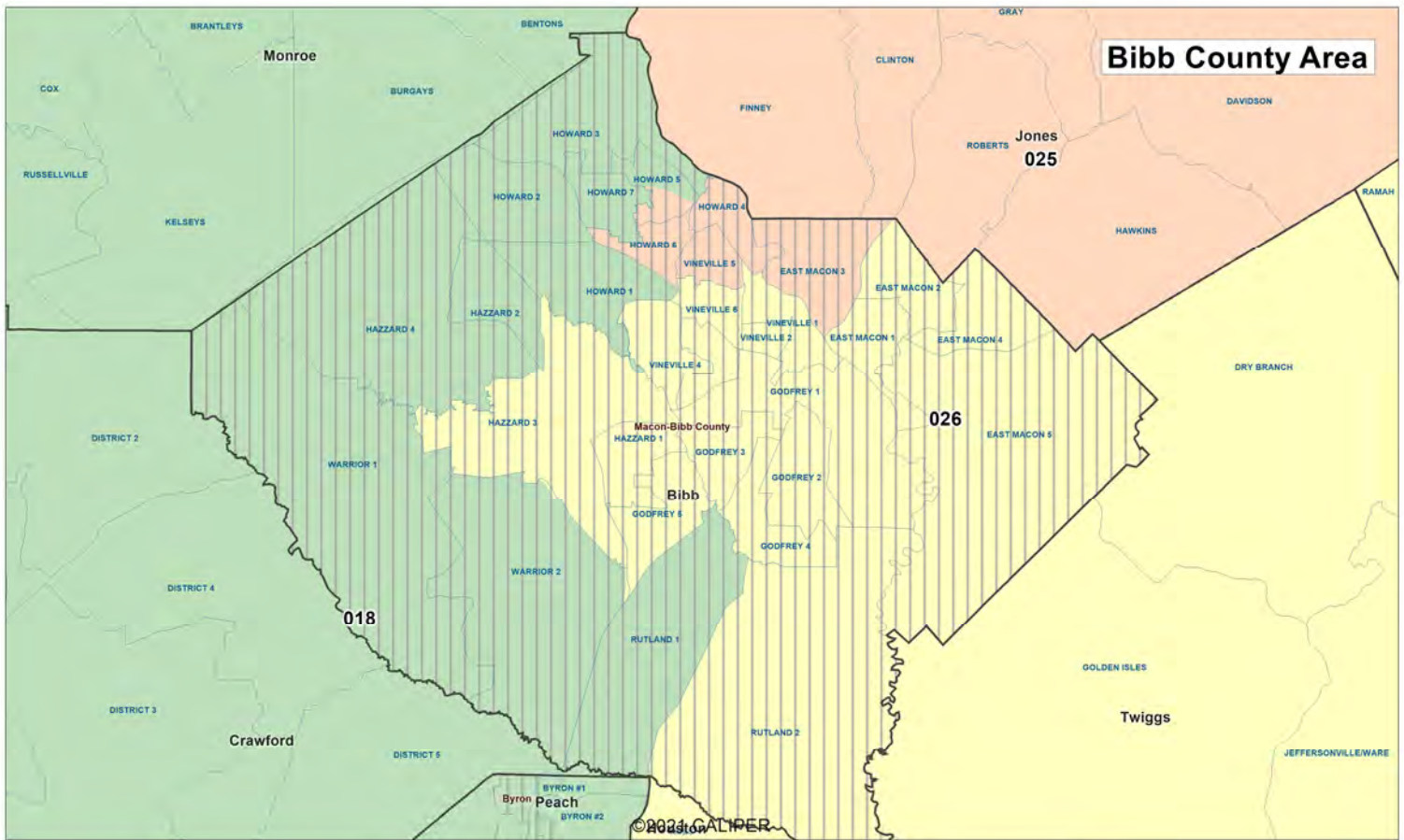
Proposed Georgia Senate Districts

Client: S018
Plan: Senate-prop1-2021
Type: Senate



Proposed Georgia Senate Districts

Client: S018
Plan: Senate-prop1-2021
Type: Senate



Legislative and Congressional
Reapportionment Office

Georgia General Assembly
Suite 607, Corbett Legislative Office Bldg

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Map layers

Districts:1
CITIES2020
VTD2020

County

2.5

Miles

User: S018

Plan Name: Senate-prop1-2021

Plan Type: Senate

Population Summary

Summary Statistics:

Population Range:	189,320 to 193,163
Ratio Range:	0.02
Absolute Range:	-1,964 to 1,879
Absolute Overall Range:	3,843
Relative Range:	-1.03% to 0.98%
Relative Overall Range:	2.01%
Absolute Mean Deviation:	1,012.61
Relative Mean Deviation:	0.53%
Standard Deviation:	1,154.96

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH_Wht]	[% NH_Blkl]	[% Hispanic Origin]	[% NH_Asn]	[% NH_Ind]	[% NH_Hwn]	[% NH_Oth]	[% NH_2+ Races]
001	191,402	118	0.06%	145,428	75.98%	58.9%	23.66%	8.78%	2.64%	0.25%	0.3%	0.48%	4.99%
002	190,408	-876	-0.46%	150,843	79.22%	36.4%	47.51%	8.36%	3.4%	0.21%	0.15%	0.46%	3.49%
003	191,212	-72	-0.04%	148,915	77.88%	66.23%	20.92%	6.82%	1.22%	0.26%	0.09%	0.42%	4.04%
004	191,098	-186	-0.10%	146,443	76.63%	64.48%	22.6%	6.49%	1.86%	0.23%	0.07%	0.38%	3.9%
005	191,921	637	0.33%	139,394	72.63%	13.35%	26.84%	45.47%	10.98%	0.15%	0.04%	0.64%	2.52%
006	191,401	117	0.06%	155,781	81.39%	56.41%	21.47%	9.18%	7.21%	0.16%	0.03%	1.11%	4.42%
007	189,709	-1,575	-0.82%	147,425	77.71%	35.09%	20.08%	18.57%	21.67%	0.16%	0.04%	0.66%	3.72%
008	192,396	1,112	0.58%	145,144	75.44%	57.39%	30.03%	7.28%	1.21%	0.28%	0.07%	0.35%	3.4%
009	192,915	1,631	0.85%	142,054	73.64%	32.04%	28.46%	21.09%	13.98%	0.18%	0.03%	0.72%	3.48%
010	192,898	1,614	0.84%	147,884	76.66%	17.71%	68.95%	6.03%	3.1%	0.18%	0.03%	0.66%	3.34%
011	189,976	-1,308	-0.68%	144,597	76.11%	55.75%	31.13%	9.36%	0.69%	0.23%	0.03%	0.26%	2.54%
012	190,819	-465	-0.24%	149,154	78.17%	33.83%	58.82%	3.89%	0.86%	0.16%	0.02%	0.21%	2.2%
013	189,326	-1,958	-1.02%	144,141	76.13%	61.25%	27.08%	7.2%	1.2%	0.17%	0.02%	0.26%	2.81%
014	192,533	1,249	0.65%	155,340	80.68%	54.63%	16.79%	13.97%	9.46%	0.13%	0.04%	0.79%	4.19%
015	189,446	-1,838	-0.96%	144,506	76.28%	34.07%	52.31%	7.57%	1.31%	0.23%	0.27%	0.44%	3.79%
016	191,829	545	0.28%	147,133	76.7%	64.19%	22.31%	5.95%	3.04%	0.17%	0.03%	0.51%	3.79%
017	192,510	1,226	0.64%	144,472	75.05%	56.69%	31.21%	6.08%	1.41%	0.16%	0.05%	0.59%	3.81%
018	191,825	541	0.28%	150,196	78.3%	58.41%	30.01%	5.18%	2.42%	0.22%	0.03%	0.4%	3.33%
019	192,316	1,032	0.54%	146,131	75.98%	61.67%	24.76%	9.72%	0.58%	0.17%	0.06%	0.27%	2.77%
020	192,588	1,304	0.68%	147,033	76.35%	59.74%	30.65%	4.21%	1.73%	0.15%	0.05%	0.31%	3.16%
021	192,572	1,288	0.67%	145,120	75.36%	71.13%	6.52%	10.13%	7.38%	0.19%	0.04%	0.53%	4.08%
022	193,163	1,879	0.98%	150,450	77.89%	31.1%	56.58%	5.63%	1.97%	0.24%	0.18%	0.44%	3.86%
023	190,344	-940	-0.49%	144,113	75.71%	54.27%	34.66%	5.46%	1.16%	0.24%	0.1%	0.34%	3.78%
024	192,674	1,390	0.73%	148,602	77.13%	67.45%	18.98%	5.4%	3.31%	0.18%	0.09%	0.43%	4.15%
025	191,161	-123	-0.06%	148,917	77.9%	57.45%	33.4%	4.27%	1.08%	0.16%	0.05%	0.43%	3.16%
026	189,945	-1,339	-0.70%	145,744	76.73%	33.26%	57.37%	4.85%	0.83%	0.21%	0.04%	0.31%	3.14%
027	190,676	-608	-0.32%	139,196	73%	68%	4.31%	11.61%	11.41%	0.18%	0.04%	0.52%	3.94%
028	190,422	-862	-0.45%	144,973	76.13%	67.06%	18.79%	7.4%	1.96%	0.22%	0.04%	0.48%	4.06%
029	189,424	-1,860	-0.97%	145,674	76.9%	60.71%	26.22%	5.34%	3.02%	0.23%	0.1%	0.42%	3.97%

Population Summary

Senate-prop1-2021

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH_Wht]	[% NH_Blkl]	[% Hispanic Origin]	[% NH_Asn]	[% NH_Ind]	[% NH_Hwn]	[% NH_Oth]	[% NH_2+ Races]
030	191,475	191	0.10%	145,077	75.77%	66.97%	19.83%	7.27%	0.95%	0.23%	0.03%	0.49%	4.24%
031	192,560	1,276	0.67%	142,251	73.87%	65.2%	19.83%	8.85%	1.07%	0.23%	0.06%	0.58%	4.19%
032	192,448	1,164	0.61%	149,879	77.88%	63.13%	13.22%	12.09%	5.49%	0.2%	0.04%	0.91%	4.91%
033	192,694	1,410	0.74%	146,415	75.98%	26%	40.48%	26.72%	2.13%	0.19%	0.05%	0.86%	3.56%
034	190,668	-616	-0.32%	141,840	74.39%	11.11%	66.6%	14.82%	3.9%	0.23%	0.04%	0.6%	2.7%
035	192,839	1,555	0.81%	144,675	75.02%	16.46%	69.77%	8.68%	1.13%	0.17%	0.06%	0.64%	3.08%
036	192,282	998	0.52%	161,385	83.93%	33.1%	51.35%	7.56%	3.58%	0.17%	0.04%	0.53%	3.68%
037	192,671	1,387	0.73%	147,779	76.7%	62.38%	18.04%	9.99%	3.85%	0.16%	0.03%	0.78%	4.76%
038	193,155	1,871	0.98%	148,367	76.81%	20.03%	62.74%	9.72%	3.42%	0.18%	0.04%	0.58%	3.29%
039	191,500	216	0.11%	156,022	81.47%	25.32%	60.33%	6.1%	4.25%	0.16%	0.04%	0.57%	3.22%
040	190,544	-740	-0.39%	147,000	77.15%	43.69%	16.42%	24.81%	10.84%	0.12%	0.04%	0.65%	3.43%
041	191,023	-261	-0.14%	145,278	76.05%	18.86%	60.28%	7.32%	9.19%	0.22%	0.02%	0.64%	3.48%
042	190,940	-344	-0.18%	153,952	80.63%	49.91%	28.14%	10.13%	6.81%	0.13%	0.03%	0.61%	4.24%
043	192,729	1,445	0.76%	145,741	75.62%	23.45%	62.77%	8.13%	1.24%	0.17%	0.09%	0.67%	3.49%
044	190,036	-1,248	-0.65%	145,224	76.42%	13.02%	69.13%	9.96%	4.15%	0.16%	0.04%	0.62%	2.91%
045	190,692	-592	-0.31%	140,706	73.79%	52.74%	17.12%	14.66%	10.69%	0.13%	0.03%	0.62%	4.01%
046	190,312	-972	-0.51%	146,713	77.09%	67.24%	16.64%	7.99%	3.77%	0.2%	0.03%	0.58%	3.56%
047	190,607	-677	-0.35%	146,599	76.91%	64.67%	16.96%	11.22%	2.66%	0.16%	0.04%	0.58%	3.71%
048	190,123	-1,161	-0.61%	136,995	72.06%	49.01%	8.35%	7.58%	30.59%	0.13%	0.04%	0.55%	3.75%
049	189,355	-1,929	-1.01%	144,123	76.11%	60.85%	7.13%	26.24%	2.15%	0.15%	0.04%	0.35%	3.08%
050	189,320	-1,964	-1.03%	148,799	78.6%	78.61%	5.05%	11.08%	1.22%	0.22%	0.04%	0.26%	3.52%
051	190,167	-1,117	-0.58%	155,571	81.81%	88.75%	0.84%	5.43%	0.59%	0.31%	0.02%	0.3%	3.77%
052	190,799	-485	-0.25%	146,620	76.85%	71.8%	12.39%	10.11%	1.08%	0.21%	0.03%	0.35%	4.02%
053	190,236	-1,048	-0.55%	148,201	77.9%	85.78%	4.46%	3.98%	1%	0.24%	0.06%	0.3%	4.18%
054	192,443	1,159	0.61%	143,843	74.75%	65.71%	2.97%	26.66%	1.14%	0.19%	0.02%	0.25%	3.07%
055	190,155	-1,129	-0.59%	141,968	74.66%	18.09%	62.96%	10.14%	4.19%	0.17%	0.04%	0.73%	3.67%
056	191,226	-58	-0.03%	144,448	75.54%	73.9%	6.36%	8.63%	5.67%	0.11%	0.03%	0.75%	4.56%

Total: 10,711,908**Ideal District: 191,284**

User: S018

Plan Name: Senate-prop1-2021

Plan Type: Senate

Population Summary

Summary Statistics:

Population Range:	189,320 to 193,163
Ratio Range:	0.02
Absolute Range:	-1,964 to 1,879
Absolute Overall Range:	3,843
Relative Range:	-1.03% to 0.98%
Relative Overall Range:	2.01%
Absolute Mean Deviation:	1,012.61
Relative Mean Deviation:	0.53%
Standard Deviation:	1,154.96

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH18+_Wht]	[% NH18+_Blk]	[% H18+_Pop]	[% NH18+_Asn]	[% NH18+_Ind]	[% NH18+_Hwn]	[% NH18+_Oth]	[% NH18+_2+ Races]
001	191,402	118	0.06%	145,428	75.98%	61.99%	22.8%	7.55%	2.81%	0.28%	0.27%	0.4%	3.9%
002	190,408	-876	-0.46%	150,843	79.22%	40.21%	44.81%	7.48%	3.77%	0.22%	0.15%	0.42%	2.95%
003	191,212	-72	-0.04%	148,915	77.88%	68.88%	19.81%	6.17%	1.27%	0.27%	0.08%	0.34%	3.19%
004	191,098	-186	-0.10%	146,443	76.63%	66.78%	21.98%	5.52%	1.9%	0.24%	0.07%	0.33%	3.17%
005	191,921	637	0.33%	139,394	72.63%	15.69%	27.21%	41.67%	12.41%	0.14%	0.04%	0.55%	2.28%
006	191,401	117	0.06%	155,781	81.39%	57.79%	21.79%	8.24%	7.14%	0.16%	0.03%	1.05%	3.8%
007	189,709	-1,575	-0.82%	147,425	77.71%	37.84%	19.33%	16.56%	22.58%	0.16%	0.05%	0.55%	2.93%
008	192,396	1,112	0.58%	145,144	75.44%	60.1%	29.02%	6.21%	1.27%	0.29%	0.08%	0.27%	2.75%
009	192,915	1,631	0.85%	142,054	73.64%	35.81%	27.23%	18.77%	14.59%	0.18%	0.04%	0.59%	2.8%
010	192,898	1,614	0.84%	147,884	76.66%	19.64%	68.31%	5.18%	3.15%	0.18%	0.04%	0.61%	2.89%
011	189,976	-1,308	-0.68%	144,597	76.11%	58.97%	30.08%	7.6%	0.72%	0.26%	0.02%	0.22%	2.13%
012	190,819	-465	-0.24%	149,154	78.17%	36.71%	56.63%	3.48%	0.92%	0.18%	0.02%	0.18%	1.88%
013	189,326	-1,958	-1.02%	144,141	76.13%	64.1%	26.01%	6.01%	1.21%	0.17%	0.02%	0.21%	2.26%
014	192,533	1,249	0.65%	155,340	80.68%	57.1%	16.83%	12.13%	9.43%	0.12%	0.05%	0.74%	3.61%
015	189,446	-1,838	-0.96%	144,506	76.28%	36.52%	51.56%	6.59%	1.45%	0.23%	0.25%	0.36%	3.04%
016	191,829	545	0.28%	147,133	76.7%	66.91%	21.49%	5.03%	2.92%	0.18%	0.03%	0.42%	3.01%
017	192,510	1,226	0.64%	144,472	75.05%	59.42%	30.21%	5.13%	1.41%	0.17%	0.03%	0.49%	3.14%
018	191,825	541	0.28%	150,196	78.3%	60.69%	29.2%	4.51%	2.46%	0.22%	0.03%	0.29%	2.6%
019	192,316	1,032	0.54%	146,131	75.98%	63.99%	24.52%	8.38%	0.62%	0.18%	0.06%	0.2%	2.06%
020	192,588	1,304	0.68%	147,033	76.35%	61.71%	30.17%	3.49%	1.76%	0.16%	0.05%	0.25%	2.41%
021	192,572	1,288	0.67%	145,120	75.36%	73.87%	6.37%	8.77%	6.98%	0.18%	0.04%	0.48%	3.32%
022	193,163	1,879	0.98%	150,450	77.89%	34.38%	53.94%	5.35%	2.3%	0.24%	0.18%	0.38%	3.24%
023	190,344	-940	-0.49%	144,113	75.71%	56.89%	33.91%	4.52%	1.24%	0.25%	0.09%	0.27%	2.84%
024	192,674	1,390	0.73%	148,602	77.13%	69.81%	18.69%	4.4%	3.27%	0.2%	0.07%	0.35%	3.2%
025	191,161	-123	-0.06%	148,917	77.9%	59.94%	32.23%	3.66%	1.09%	0.18%	0.04%	0.39%	2.48%
026	189,945	-1,339	-0.70%	145,744	76.73%	36.6%	55.18%	4.24%	0.92%	0.22%	0.03%	0.24%	2.56%
027	190,676	-608	-0.32%	139,196	73%	71.5%	4.16%	10.2%	10.27%	0.15%	0.04%	0.45%	3.22%
028	190,422	-862	-0.45%	144,973	76.13%	69.44%	18.18%	6.44%	1.99%	0.23%	0.04%	0.38%	3.29%

Population Summary

Senate-prop1-2021

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH18+_Wht]	[% NH18+_Blk]	[% H18+_Pop]	[% NH18+_Asn]	[% NH18+_Ind]	[% NH18+_Hwn]	[% NH18+_Oth]	[% NH18+_2+ Races]
029	189,424	-1,860	-0.97%	145,674	76.9%	63.22%	25.52%	4.45%	3%	0.23%	0.11%	0.33%	3.13%
030	191,475	191	0.10%	145,077	75.77%	69.41%	19.44%	6.1%	0.97%	0.24%	0.03%	0.41%	3.4%
031	192,560	1,276	0.67%	142,251	73.87%	68.26%	19.13%	7.42%	1.12%	0.22%	0.06%	0.46%	3.33%
032	192,448	1,164	0.61%	149,879	77.88%	65.78%	13.13%	10.55%	5.42%	0.2%	0.04%	0.83%	4.05%
033	192,694	1,410	0.74%	146,415	75.98%	30.25%	40.26%	22.93%	2.35%	0.22%	0.05%	0.81%	3.14%
034	190,668	-616	-0.32%	141,840	74.39%	13.36%	66.5%	12.75%	4.26%	0.22%	0.04%	0.56%	2.31%
035	192,839	1,555	0.81%	144,675	75.02%	18.82%	68.87%	7.51%	1.26%	0.18%	0.06%	0.59%	2.7%
036	192,282	998	0.52%	161,385	83.93%	36.18%	48.68%	7.06%	4.01%	0.17%	0.04%	0.51%	3.34%
037	192,671	1,387	0.73%	147,779	76.7%	65.37%	17.41%	8.69%	3.94%	0.17%	0.04%	0.67%	3.73%
038	193,155	1,871	0.98%	148,367	76.81%	21.87%	62.45%	8.44%	3.55%	0.18%	0.04%	0.56%	2.92%
039	191,500	216	0.11%	156,022	81.47%	27.87%	57.97%	5.65%	4.83%	0.15%	0.04%	0.5%	2.98%
040	190,544	-740	-0.39%	147,000	77.15%	46.34%	17.32%	21.62%	11.15%	0.11%	0.04%	0.59%	2.84%
041	191,023	-261	-0.14%	145,278	76.05%	21.39%	59.67%	6.68%	8.42%	0.22%	0.02%	0.6%	3.01%
042	190,940	-344	-0.18%	153,952	80.63%	51.39%	28.73%	8.64%	7.16%	0.12%	0.03%	0.53%	3.4%
043	192,729	1,445	0.76%	145,741	75.62%	26.53%	61.35%	6.89%	1.34%	0.17%	0.08%	0.6%	3.05%
044	190,036	-1,248	-0.65%	145,224	76.42%	15.29%	68.39%	8.6%	4.37%	0.17%	0.04%	0.56%	2.58%
045	190,692	-592	-0.31%	140,706	73.79%	55.47%	16.86%	13.05%	10.89%	0.13%	0.03%	0.5%	3.07%
046	190,312	-972	-0.51%	146,713	77.09%	69.9%	15.64%	6.99%	3.85%	0.22%	0.02%	0.5%	2.89%
047	190,607	-677	-0.35%	146,599	76.91%	67.46%	16.34%	9.57%	2.79%	0.17%	0.04%	0.5%	3.13%
048	190,123	-1,161	-0.61%	136,995	72.06%	52.25%	8.26%	7%	29.05%	0.11%	0.04%	0.47%	2.83%
049	189,355	-1,929	-1.01%	144,123	76.11%	65.64%	7.12%	21.9%	2.22%	0.16%	0.04%	0.29%	2.63%
050	189,320	-1,964	-1.03%	148,799	78.6%	81.54%	5.03%	8.78%	1.24%	0.24%	0.03%	0.24%	2.91%
051	190,167	-1,117	-0.58%	155,571	81.81%	90.24%	0.84%	4.34%	0.61%	0.33%	0.02%	0.27%	3.34%
052	190,799	-485	-0.25%	146,620	76.85%	74.74%	12.08%	8.24%	1.13%	0.22%	0.02%	0.29%	3.27%
053	190,236	-1,048	-0.55%	148,201	77.9%	87.31%	4.49%	3.23%	0.99%	0.26%	0.06%	0.22%	3.44%
054	192,443	1,159	0.61%	143,843	74.75%	69.98%	3.07%	22.64%	1.15%	0.22%	0.02%	0.21%	2.71%
055	190,155	-1,129	-0.59%	141,968	74.66%	20.56%	62.42%	8.71%	4.24%	0.18%	0.04%	0.67%	3.18%
056	191,226	-58	-0.03%	144,448	75.54%	76.17%	6.37%	7.66%	5.51%	0.12%	0.03%	0.63%	3.51%

Total: 10,711,908**Ideal District: 191,284**

The preceding report, published by the Georgia General Assembly, does not include statistics for the percentage of the voting age population that is “Black or African American alone or in combination,” also known as the “any part Black voting age population” percentage or “APBVAP%.” As these percentages are relevant for determining which State Senate districts can be considered majority-Black under the conventions used in the expert report, I have provided them below after having exported a listing from the *Maptitude for Redistricting* software.

District	APBVAP%	District	APBVAP%	District	APBVAP%	District	APBVAP%
1	25.08%	15	54.00%	29	26.88%	43	64.33%
2	46.86%	16	22.70%	30	20.92%	44	71.34%
3	21.18%	17	32.01%	31	20.70%	45	18.58%
4	23.37%	18	30.40%	32	14.86%	46	16.90%
5	29.94%	19	25.72%	33	42.96%	47	17.42%
6	23.90%	20	31.28%	34	69.54%	48	9.47%
7	21.44%	21	7.46%	35	71.90%	49	7.96%
8	30.38%	22	56.50%	36	51.34%	50	5.61%
9	29.53%	23	35.48%	37	19.27%	51	1.21%
10	71.46%	24	19.85%	38	65.30%	52	13.04%
11	31.04%	25	33.48%	39	60.70%	53	5.10%
12	57.97%	26	56.99%	40	19.24%	54	3.79%
13	26.97%	27	5.00%	41	62.61%	55	65.97%
14	18.97%	28	19.51%	42	30.78%	56	7.57%

Esselstyn Report: Attachment E

District	Population	Deviation	% Deviation	% single-race			% single-race			% multi-racial (total pop)	% Hispanic or Latino (total pop)	% Black alone or in combination (total pop)	% Black alone or in combination (voting age pop)	
				American Indian	Alaska Native	% single-race White (total pop)	% single-race Black (total pop)	Pacific Islander	% single-race Asian (total pop)					% single-race Other (total pop)
1	191,402	118	0.06%	61.01%	24.27%	0.38%	2.69%	0.33%	3.22%	8.11%	8.78%	27.05%	25.08%	
2	190,408	-876	-0.46%	37.90%	48.03%	0.36%	3.44%	0.17%	4.31%	5.79%	8.36%	50.27%	46.86%	
3	191,212	-72	-0.04%	68.28%	21.28%	0.42%	1.25%	0.11%	2.73%	5.93%	6.82%	23.14%	21.18%	
4	191,098	-186	-0.10%	65.93%	22.86%	0.34%	1.88%	0.08%	2.94%	5.97%	6.49%	24.63%	23.37%	
5	191,921	637	0.33%	18.45%	27.57%	1.64%	11.06%	0.07%	27.36%	13.84%	45.48%	30.07%	29.94%	
6	191,834	550	0.29%	57.94%	21.00%	0.37%	7.36%	0.04%	4.82%	8.47%	9.84%	23.20%	22.95%	
7	189,709	-1,575	-0.82%	37.68%	20.56%	0.59%	21.74%	0.07%	9.04%	10.32%	18.57%	22.96%	21.44%	
8	192,396	1,112	0.58%	59.12%	30.35%	0.43%	1.24%	0.08%	3.29%	5.49%	7.28%	32.11%	30.38%	
9	192,915	1,631	0.85%	34.88%	29.00%	0.84%	14.04%	0.05%	10.88%	10.31%	21.09%	31.62%	29.53%	
10	192,601	1,317	0.69%	32.32%	59.43%	0.23%	1.03%	0.02%	2.00%	4.96%	4.20%	62.00%	61.10%	
11	189,976	-1,308	-0.68%	57.47%	31.30%	0.57%	0.71%	0.03%	5.24%	4.67%	9.36%	32.62%	31.04%	
12	190,819	-465	-0.24%	34.34%	59.08%	0.21%	0.88%	0.03%	2.56%	2.90%	3.89%	60.59%	57.97%	
13	194,905	3,621	1.89%	62.81%	27.41%	0.29%	1.19%	0.03%	3.72%	4.55%	7.10%	28.75%	27.24%	
14	192,533	1,249	0.65%	56.63%	17.15%	0.39%	9.49%	0.05%	6.50%	9.81%	13.97%	19.43%	18.97%	
15	189,446	-1,838	-0.96%	35.64%	52.99%	0.37%	1.35%	0.29%	3.34%	6.01%	7.57%	55.72%	54.00%	
16	190,077	-1,207	-0.63%	69.67%	19.46%	0.29%	2.53%	0.03%	2.09%	5.93%	5.29%	20.93%	19.72%	
17	193,838	2,554	1.34%	70.00%	21.64%	0.26%	0.94%	0.04%	2.25%	4.88%	4.73%	22.98%	21.77%	
18	192,680	1,396	0.73%	59.61%	29.57%	0.30%	2.27%	0.06%	2.50%	5.69%	5.47%	31.37%	30.04%	
19	192,316	1,032	0.54%	64.20%	25.16%	0.41%	0.60%	0.07%	4.94%	4.62%	9.72%	26.72%	25.72%	
20	194,919	3,635	1.90%	60.69%	32.35%	0.23%	1.01%	0.06%	1.82%	3.84%	3.81%	33.78%	32.45%	
21	192,572	1,288	0.67%	73.26%	6.66%	0.50%	7.41%	0.04%	3.93%	8.19%	10.13%	8.04%	7.46%	
22	188,930	-2,354	-1.23%	36.87%	50.98%	0.35%	2.31%	0.19%	2.78%	6.52%	6.88%	54.05%	50.84%	
23	188,095	-3,189	-1.67%	42.46%	51.48%	0.29%	0.61%	0.10%	1.42%	3.64%	3.04%	53.25%	51.06%	
24	194,277	2,993	1.56%	69.67%	17.49%	0.29%	3.58%	0.13%	1.95%	6.88%	5.61%	19.48%	18.38%	
25	192,708	1,424	0.74%	27.57%	58.22%	0.34%	3.61%	0.06%	3.89%	6.30%	8.14%	61.38%	58.93%	
26	190,535	-749	-0.39%	36.13%	54.05%	0.30%	1.92%	0.04%	2.93%	4.64%	5.41%	56.18%	52.84%	
27	190,676	-608	-0.32%	69.94%	4.43%	0.45%	11.44%	0.04%	4.92%	8.78%	11.61%	5.51%	5.00%	
28	189,696	-1,588	-0.83%	30.66%	56.20%	0.36%	2.24%	0.04%	4.70%	5.79%	8.95%	58.59%	57.28%	
29	189,424	-1,860	-0.97%	61.96%	26.49%	0.34%	3.05%	0.11%	2.15%	5.90%	5.34%	28.39%	26.88%	
30	191,939	655	0.34%	74.89%	14.88%	0.37%	0.83%	0.03%	3.07%	5.92%	6.15%	16.66%	15.77%	
31	192,755	1,471	0.77%	68.30%	19.22%	0.44%	1.07%	0.07%	4.02%	6.88%	8.60%	21.30%	19.61%	
32	192,448	1,164	0.61%	65.58%	13.56%	0.45%	5.53%	0.05%	5.09%	9.73%	12.09%	15.61%	14.86%	
33	192,694	1,410	0.74%	30.10%	41.18%	1.03%	2.16%	0.07%	14.18%	11.27%	26.72%	44.04%	42.96%	
34	192,023	739	0.39%	22.60%	57.52%	0.67%	4.16%	0.06%	8.70%	6.30%	14.36%	60.15%	58.97%	
35	193,194	1,910	1.00%	33.51%	52.94%	0.43%	1.33%	0.07%	4.93%	6.79%	9.56%	55.95%	54.05%	

District	Population	Deviation	% Deviation	% single-race		% single-race American Indian	% single-race Native Hawaiian		% single-race Other (total pop)	% multi-racial (total pop)	% Hispanic or Latino (total pop)	% Black alone or in combination	% Black alone or in combination (voting age pop)
				% single-race White (total pop)	% single-race Black (total pop)	Alaska Native (total pop)	% single-race Asian (total pop)	Pacific Islander (total pop)				% Black alone or in combination (total pop)	
36	192,282	998	0.52%	34.70%	51.92%	0.35%	3.62%	0.05%	3.23%	6.14%	7.56%	54.36%	51.34%
37	192,671	1,387	0.73%	64.32%	18.38%	0.38%	3.89%	0.04%	3.92%	9.08%	9.99%	20.86%	19.27%
38	190,605	-679	-0.36%	20.91%	64.48%	0.43%	3.34%	0.05%	4.86%	5.94%	9.12%	67.17%	66.36%
39	190,184	-1,100	-0.58%	26.93%	60.38%	0.30%	4.33%	0.05%	2.86%	5.16%	6.09%	62.78%	60.21%
40	190,544	-740	-0.39%	46.44%	16.84%	1.29%	10.90%	0.06%	14.32%	10.16%	24.81%	18.75%	19.24%
41	191,023	-261	-0.14%	19.86%	60.99%	0.44%	9.23%	0.02%	3.93%	5.54%	7.32%	63.74%	62.61%
42	190,153	-1,131	-0.59%	52.87%	26.90%	0.45%	6.95%	0.03%	4.97%	7.83%	10.21%	28.96%	29.09%
43	191,784	500	0.26%	30.42%	57.48%	0.33%	1.16%	0.11%	4.56%	5.95%	8.28%	60.40%	58.52%
44	188,256	-3,028	-1.58%	14.26%	69.94%	0.50%	4.23%	0.05%	5.60%	5.40%	9.71%	72.72%	71.52%
45	190,692	-592	-0.31%	55.41%	17.52%	0.47%	10.75%	0.04%	6.32%	9.49%	14.66%	19.69%	18.58%
46	190,312	-972	-0.51%	68.86%	16.88%	0.35%	3.81%	0.04%	3.65%	6.40%	7.99%	18.49%	16.90%
47	190,607	-677	-0.35%	66.86%	17.14%	0.41%	2.70%	0.05%	5.81%	7.04%	11.22%	18.64%	17.42%
48	190,123	-1,161	-0.61%	50.35%	8.51%	0.26%	30.63%	0.04%	2.69%	7.52%	7.58%	9.93%	9.47%
49	189,355	-1,929	-1.01%	65.60%	7.32%	0.80%	2.17%	0.05%	13.52%	10.54%	26.24%	8.50%	7.96%
50	189,320	-1,964	-1.03%	80.96%	5.13%	0.49%	1.23%	0.05%	5.21%	6.93%	11.08%	6.19%	5.61%
51	190,167	-1,117	-0.58%	89.94%	0.88%	0.51%	0.60%	0.03%	2.50%	5.55%	5.43%	1.49%	1.21%
52	190,799	-485	-0.25%	73.61%	12.56%	0.54%	1.09%	0.03%	5.02%	7.14%	10.11%	14.20%	13.04%
53	190,236	-1,048	-0.55%	86.66%	4.52%	0.38%	1.01%	0.07%	1.96%	5.40%	3.98%	5.74%	5.10%
54	192,443	1,159	0.61%	71.00%	3.13%	1.54%	1.16%	0.03%	13.21%	9.94%	26.66%	4.22%	3.79%
55	190,155	-1,129	-0.59%	19.41%	63.85%	0.45%	4.23%	0.06%	4.93%	7.08%	10.14%	67.34%	65.97%
56	191,226	-58	-0.03%	75.62%	6.50%	0.26%	5.69%	0.04%	2.88%	9.02%	8.63%	8.08%	7.57%

Esselstyn Report: Attachment F

2021 Committee Guidelines

I. HEARINGS AND MEETINGS

A. PUBLIC HEARINGS

1. A series of public hearings were held to actively seek public participation and input concerning the General Assembly's redrawing of congressional and legislative districts.
2. Video recordings of all hearings are and shall remain available on the legislative website, www.legis.ga.gov

B. COMMITTEE MEETINGS

1. All formal meetings of the full committee will be open to the public.
2. When the General Assembly is not in session, notices of all such meetings will be posted at the Offices of the Clerk of the House or Secretary of the Senate and other appropriate places at least 24 hours in advance of any meeting. Individual notices may be transmitted by email to any citizen or organization requesting the same without charge. Persons or organizations needing this information should contact the Senate Press Office or House Communications Office or the Secretary of the Senate or Clerk of the House to be placed on the notification list.
3. Minutes of all such meetings shall be kept and maintained in accordance with the rules of the House and Senate. Copies of the minutes should be made available in a timely manner at a reasonable cost in accordance with these same rules.

II. PUBLIC ACCESS TO REDISTRICTING DATA AND MATERIALS

- A. Census information databases on any medium created at public expense and held by the Committee or by the Legislative and Congressional Reapportionment Office for use in the redistricting process are included as public records and copies can be made available to the public in accordance with the rules of the General Assembly and subject to reasonable charges for search, retrieval, reproduction and other reasonable, related costs.
- B. Copies of the public records described above may be obtained at the cost of reproduction by members of the public on electronic media if the material exists on an appropriate electronic medium. Cost of reproduction may include not only the medium on which the copies made, but also the labor cost for the search, retrieval, and reproduction of the records and other reasonable, related costs.

- C. These guidelines regarding public access to redistricting data and materials do not apply to plans or other related materials prepared by or on behalf of an individual Member of the General Assembly using the Legislative and Congressional Reapportionment Office, where those plans and materials have not been made public through presentation to the Committee.

III. REDISTRICTING PLANS

A. GENERAL PRINCIPLES FOR DRAFTING PLANS

1. Each congressional district should be drawn with a total population of plus or minus one person from the ideal district size.
2. Each legislative district of the General Assembly should be drawn to achieve a total population that is substantially equal as practicable, considering the principles listed below.
3. All plans adopted by the Committee will comply with Section 2 of the Voting Rights Act of 1965, as amended.
4. All plans adopted by the Committee will comply with the United States and Georgia Constitutions.
5. Districts shall be composed of contiguous geography. Districts that connect on a single point are not contiguous.
6. No multi-member districts shall be drawn on any legislative redistricting plan.
7. The Committee should consider:
 - a. The boundaries of counties and precincts;
 - b. Compactness; and
 - c. Communities of interest.
8. Efforts should be made to avoid the unnecessary pairing of incumbents.
9. The identifying of these criteria is not intended to limit the consideration of any other principles or factors that the Committee deems appropriate.

B. PLANS PRODUCED THROUGH THE LEGISLATIVE AND CONGRESSIONAL REAPPORTIONMENT OFFICE

1. Staff of the Legislative and Congressional Reapportionment Office will be available to all members of the General Assembly requesting assistance in accordance with the policy of that office.
2. Census data and redistricting work maps will be available to all members of the General Assembly upon request, provided that (a) the map was created by the requesting member, (b) the map is publicly available, or (c) the Legislative and Congressional Reapportionment Office has been granted permission by the author of the map to share a copy with the requesting member.
3. As noted above, redistricting plans and other records related to the provision of staff services to individual members of the General Assembly will not be subject to public disclosure. Only the author of a particular map may waive the confidentiality of his or her own work product. This confidentiality provision will not apply with respect to records related to the provision of staff services to any committee or subcommittee as a whole or to any records which are or have been previously disclosed by or pursuant to the direction of an individual member of the General Assembly.

C. PLANS PRODUCED OUTSIDE OF THE LEGISLATIVE AND CONGRESSIONAL REAPPORTIONMENT OFFICE

1. All plans submitted to the Committee will be made part of the public record and made available in the same manner as other committee public records.
2. All plans prepared outside the Legislative and Congressional Reapportionment Office must be submitted to that office prior to presentation to the Committee by a Member of the General Assembly for technical verification and presentation and bill preparation. All pieces of census geography must be accounted for in some district.
3. The electronic submission of material for technical verification must be made in accordance with the following requirements or in a manner specifically approved and accepted by the Legislative and Congressional Reapportionment Office.
 - a. The submission shall be in electronic format with accompanying documentation that shows the submitting sponsor of the proposed plan and contact person for the proposed plan, including email address and telephone number.

- b. An electronic map image that clearly depicts defined boundaries, utilizing the 2020 United States Census geographic boundaries, and a block equivalency file containing two columns. The first column shall list the 15-digit census block identification numbers, and the second column shall list the three-digit district identification number. Both block and district numbers shall be zero-filled text files. Such files shall be submitted in .xis, .xlsx, .dbf, .txt, or .csv file formats. The following is a sample:

```
BlockID, DISTRICT
"13001950100101","008"
"13001950100102","008"
"13001950100103","008"
"13001950100104","008"
"13001950100105","008"
"13001950100106","008"
```

- 4. If submission of the plan cannot be done electronically, the following requirements must be followed:
 - a. All drafts, amendments, or revisions should be on clearly-depicted maps that follow the 2020 Census geographic boundaries and should be accompanied by a statistical sheet listing the Census geography including the total population for each district.
 - b. All plans submitted should either be a complete statewide plan or fit back into the plan that they modified, so that the proposal can be evaluated in the context of a statewide plan. All pieces of Census geography must be accounted for in some district.

D. GENERAL GUIDELINES FOR PRESENTATION OF ALL PLANS

- 1. A redistricting plan may be presented for consideration by the Committee only through the sponsorship of one or more Member(s) of the General Assembly. All such drafts of and amendments or revisions to plans presented at any committee meeting must be on clearly-depicted maps which follow the 2020 Census geographic boundaries and accompanied by a statistical sheet listing the Census geography, including the total population and minority populations for each proposed district.
- 2. No plan may be presented to the Committee unless that plan makes accommodations for and fits back into a specific, identified statewide map for the particular legislative body involved.

3. All plans presented at committee meetings will be made available for inspection by the public either electronically or by hard copy available at the Office of Legislative and Congressional Reapportionment.
- E. These guidelines may be reconsidered or amended by the Committee.

Esselstyn Report: Attachment G

Explanation of compactness measures

The following explanations of the five measures of compactness considered in the report are taken from the documentation that accompanies *Maptitude for Redistricting*, the software that was used to generate the compactness scores.

The **Reock** test is an area-based measure that compares each district to a circle, which is considered to be the most compact shape possible. For each district, the Reock test computes the ratio of the area of the district to the area of the minimum enclosing circle for the district. The measure is always between 0 and 1, with 1 being the most compact.

The **Schwartzberg** test is a perimeter-based measure that compares a simplified version of each district to a circle, which is considered to be the most compact shape possible. [...] For each district, the Schwartzberg test computes the ratio of the perimeter of the simplified version of the district to the perimeter of a circle with the same area as the original district. [...] This measure is usually greater than or equal to 1, with 1 being the most compact.

The **Polsby-Popper** test computes the ratio of the district area to the area of a circle with the same perimeter: $4\pi\text{Area}/(\text{Perimeter}^2)$. The measure is always between 0 and 1, with 1 being the most compact.

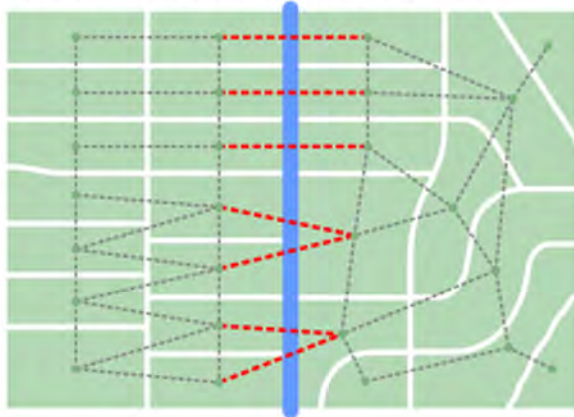
The **Area/Convex Hull** test computes the ratio the district area to the area of the convex hull of the district (minimum convex polygon which completely contains the district). The measure is always between 0 and 1, with 1 being the most compact.

The **Cut Edges** test counts the number of edges removed (“cut”) from the adjacency (dual) graph of the base layer to define the districting plan. The adjacency

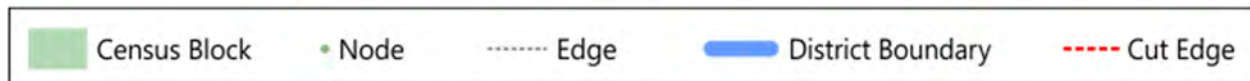
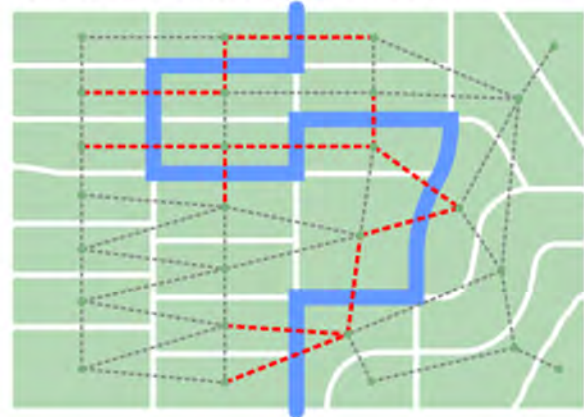
graph is defined by creating a node for each base layer area. An edge is added between two nodes if the two corresponding base layer areas are adjacent: i.e., share a common linear boundary. If such a boundary forms part of the district boundary then its corresponding edge is cut by the plan. The measure is a single number for the plan. A smaller number implies a more compact plan.

Explanatory graphic for the Cut Edges test (from same source):

This district boundary cuts 7 edges:



This district boundary cuts 12 edges:



Esselstyn Report: Attachment H

More detailed tables for comparative characteristics of State Senate plans

Population Deviation:

The deviation statistics for each individual district in the respective plans can be found in **Attachment D** and **Attachment E**. Below are the summary statistics generated by the *Maptitude for Redistricting* software.

Enacted plan:

Population Range:	189,320 to 193,163
Ratio Range:	0.02
Absolute Range:	
Absolute Overall Range:	
Relative Range:	-1,964 to 1,879
Relative Overall Range:	3,843
Absolute Mean Deviation:	-1.03% to 0.98%
Relative Mean Deviation:	2.01%
Standard Deviation:	1,012.61
	0.53%

Illustrative plan:

Population Range:	
Ratio Range:	
Absolute Range:	188,095 to 194,919
Absolute Overall Range:	0.04
Relative Range:	-3,189 to 3,635
Relative Overall Range:	6,824
Absolute Mean Deviation:	-1.67% to 1.90%
Relative Mean Deviation:	3.57%
Standard Deviation:	1,283.86
	0.67%
	1,529.53

Compactness:

Below is the compactness report for the Senate enacted plan.

User:

Plan Name: GA Sen 000

Plan Type: Reference

Measures of Compactness Report

Thursday, January 13, 2022

1:11 PM

Number of cut edges: 11,005

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.17	1.31	0.13	0.50
Max	0.68	2.67	0.50	0.92
Mean	0.42	1.75	0.29	0.76
Std. Dev.	0.11	0.25	0.08	0.08

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
1	0.49	1.60	0.31	0.79
2	0.47	1.80	0.22	0.73
3	0.39	1.70	0.21	0.70
4	0.47	1.64	0.27	0.75
5	0.17	2.10	0.21	0.65
6	0.41	1.94	0.24	0.70
7	0.35	1.66	0.34	0.79
8	0.45	1.77	0.23	0.73
9	0.24	2.06	0.21	0.69
10	0.28	1.98	0.23	0.69
11	0.36	1.57	0.33	0.79

Measures of Compactness Report

GA Sen 000

Number of cut edges: 11,005

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.17	1.31	0.13	0.50
Max	0.68	2.67	0.50	0.92
Mean	0.42	1.75	0.29	0.76
Std. Dev.	0.11	0.25	0.08	0.08
District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
12	0.62	1.46	0.39	0.86
13	0.45	1.72	0.26	0.73
14	0.27	1.90	0.24	0.66
15	0.57	1.52	0.32	0.83
16	0.37	1.55	0.31	0.77
17	0.35	2.22	0.17	0.63
18	0.47	1.85	0.21	0.76
19	0.53	1.47	0.37	0.84
20	0.41	1.50	0.36	0.80
21	0.42	1.56	0.33	0.83
22	0.41	1.68	0.29	0.75
23	0.37	1.93	0.16	0.70
24	0.37	1.89	0.21	0.68
25	0.39	1.81	0.24	0.73

Measures of Compactness Report

GA Sen 000

Number of cut edges: 11,005

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.17	1.31	0.13	0.50
Max	0.68	2.67	0.50	0.92
Mean	0.42	1.75	0.29	0.76
Std. Dev.	0.11	0.25	0.08	0.08

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
26	0.47	1.90	0.20	0.68
27	0.50	1.37	0.46	0.88
28	0.45	1.79	0.25	0.69
29	0.58	1.37	0.42	0.88
30	0.60	1.51	0.41	0.87
31	0.37	1.58	0.38	0.84
32	0.29	1.98	0.21	0.64
33	0.40	1.96	0.22	0.72
34	0.45	1.60	0.34	0.74
35	0.47	1.78	0.26	0.83
36	0.32	1.76	0.30	0.76
37	0.49	1.51	0.37	0.80
38	0.36	2.01	0.21	0.76
39	0.17	2.67	0.13	0.50

Measures of Compactness Report

GA Sen 000

Number of cut edges: 11,005

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.17	1.31	0.13	0.50
Max	0.68	2.67	0.50	0.92
Mean	0.42	1.75	0.29	0.76
Std. Dev.	0.11	0.25	0.08	0.08

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
40	0.51	1.65	0.34	0.78
41	0.51	1.78	0.30	0.74
42	0.48	1.73	0.32	0.82
43	0.64	1.56	0.35	0.85
44	0.18	2.12	0.19	0.68
45	0.35	1.72	0.30	0.73
46	0.37	1.99	0.21	0.72
47	0.36	2.06	0.19	0.66
48	0.35	1.61	0.34	0.79
49	0.46	1.55	0.34	0.79
50	0.45	1.79	0.23	0.72
51	0.68	1.31	0.50	0.92
52	0.47	1.80	0.25	0.72
53	0.49	1.48	0.40	0.90

Measures of Compactness Report

GA Sen 000

Number of cut edges: 11,005

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.17	1.31	0.13	0.50
Max	0.68	2.67	0.50	0.92
Mean	0.42	1.75	0.29	0.76
Std. Dev.	0.11	0.25	0.08	0.08
District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
54	0.60	1.38	0.44	0.83
55	0.34	1.84	0.27	0.81
56	0.38	1.70	0.30	0.80

Measures of Compactness Report

GA Sen 000

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Cut Edges	A smaller number implies a more compact plan. The measure should only be used to compare plans defined on the same base layer.

Below is the compactness report for the Senate illustrative plan.

User:

Plan Name: GA Senate Illustrative

Plan Type: Reference

Measures of Compactness Report

Saturday, December 3, 2022

2:09 PM

Number of cut edges: 11,003

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.17	1.31	0.13	0.52
Max	0.68	2.67	0.50	0.92
Mean	0.41	1.76	0.28	0.75
Std. Dev.	0.11	0.26	0.09	0.08

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
1	0.49	1.60	0.31	0.79
2	0.47	1.80	0.22	0.73
3	0.39	1.70	0.21	0.70
4	0.47	1.64	0.27	0.75
5	0.17	2.10	0.21	0.65
6	0.42	1.95	0.23	0.71
7	0.35	1.66	0.34	0.79
8	0.45	1.77	0.23	0.73
9	0.24	2.06	0.21	0.69
10	0.25	2.08	0.19	0.68
11	0.36	1.57	0.33	0.79

Measures of Compactness Report

GA Senate Illustrative

Number of cut edges: 11,003

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.17	1.31	0.13	0.52
Max	0.68	2.67	0.50	0.92
Mean	0.41	1.76	0.28	0.75
Std. Dev.	0.11	0.26	0.09	0.08
District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
12	0.62	1.46	0.39	0.86
13	0.48	1.70	0.25	0.76
14	0.27	1.90	0.24	0.66
15	0.57	1.52	0.32	0.83
16	0.39	1.76	0.27	0.71
17	0.35	2.21	0.16	0.60
18	0.38	1.91	0.20	0.66
19	0.53	1.47	0.37	0.84
20	0.28	1.83	0.24	0.71
21	0.42	1.56	0.33	0.83
22	0.33	1.70	0.32	0.74
23	0.34	1.93	0.17	0.69
24	0.27	1.87	0.23	0.72
25	0.57	1.55	0.34	0.80

Measures of Compactness Report

GA Senate Illustrative

Number of cut edges: 11,003

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.17	1.31	0.13	0.52
Max	0.68	2.67	0.50	0.92
Mean	0.41	1.76	0.28	0.75
Std. Dev.	0.11	0.26	0.09	0.08

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
26	0.44	1.56	0.25	0.77
27	0.50	1.37	0.46	0.88
28	0.38	2.17	0.19	0.66
29	0.58	1.37	0.42	0.88
30	0.41	1.55	0.38	0.84
31	0.40	1.43	0.46	0.86
32	0.29	1.98	0.21	0.64
33	0.40	1.96	0.22	0.72
34	0.31	1.98	0.21	0.66
35	0.59	1.48	0.42	0.86
36	0.32	1.76	0.30	0.76
37	0.49	1.51	0.37	0.80
38	0.37	2.05	0.20	0.75
39	0.18	2.67	0.13	0.52

Measures of Compactness Report

GA Senate Illustrative

Number of cut edges: 11,003

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.17	1.31	0.13	0.52
Max	0.68	2.67	0.50	0.92
Mean	0.41	1.76	0.28	0.75
Std. Dev.	0.11	0.26	0.09	0.08

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
40	0.51	1.65	0.34	0.78
41	0.51	1.78	0.30	0.74
42	0.47	1.96	0.25	0.78
43	0.49	1.82	0.25	0.79
44	0.33	1.95	0.24	0.72
45	0.35	1.72	0.30	0.73
46	0.37	1.99	0.21	0.72
47	0.36	2.06	0.19	0.66
48	0.35	1.61	0.34	0.79
49	0.46	1.55	0.34	0.79
50	0.45	1.79	0.23	0.72
51	0.68	1.31	0.50	0.92
52	0.47	1.80	0.25	0.72
53	0.49	1.48	0.40	0.90

Measures of Compactness Report

GA Senate Illustrative

Number of cut edges: 11,003

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.17	1.31	0.13	0.52
Max	0.68	2.67	0.50	0.92
Mean	0.41	1.76	0.28	0.75
Std. Dev.	0.11	0.26	0.09	0.08
District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
54	0.60	1.38	0.44	0.83
55	0.34	1.84	0.27	0.81
56	0.38	1.70	0.30	0.80

Measures of Compactness Report

GA Senate Illustrative

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Cut Edges	A smaller number implies a more compact plan. The measure should only be used to compare plans defined on the same base layer.

Divisions of counties and precincts (VTDs):

Below is the political subdivisions splits report for the Senate enacted plan.

User:

Plan Name: **GA Senate Enacted**Plan Type: **Reference**

Political Subdivision Splits Between Districts

Saturday, December 3, 2022

3:21 PM

Number of subdivisions not split:

County	130
Voting District	2,651

Number of subdivisions split into more than one district:

County	29
Voting District	47

Number of splits involving no population:

County	0
Voting District	8

Split Counts

County

Cases where an area is split among 2 Districts: 18
 Cases where an area is split among 3 Districts: 7
 Cases where an area is split among 6 Districts: 1
 Cases where an area is split among 7 Districts: 1
 Cases where an area is split among 9 Districts: 1
 Cases where an area is split among 10 Districts: 1

Voting District

Cases where an area is split among 2 Districts: 46
 Cases where an area is split among 3 Districts: 1

County	Voting District	District	Population
<i>Split Counties:</i>			
Barrow GA		45	39,217
Barrow GA		46	17,116
Barrow GA		47	27,172
Bartow GA		37	11,130
Bartow GA		52	97,771
Bibb GA		18	53,182
Bibb GA		25	15,513
Bibb GA		26	88,651
Chatham GA		1	81,408
Chatham GA		2	190,408
Chatham GA		4	23,475
Cherokee GA		21	109,034
Cherokee GA		32	90,981
Cherokee GA		56	66,605
Clarke GA		46	52,016
Clarke GA		47	76,655
Clayton GA		34	158,608
Clayton GA		44	138,987
Cobb GA		6	92,249

Political Subdivision Splits Between Districts

GA Senate Enacted

County	Voting District	District	Population
Cobb GA		32	101,467
Cobb GA		33	192,694
Cobb GA		37	181,541
Cobb GA		38	108,305
Cobb GA		56	89,893
Coffee GA		13	19,881
Coffee GA		19	23,211
Columbia GA		23	59,796
Columbia GA		24	96,214
DeKalb GA		10	75,906
DeKalb GA		40	164,997
DeKalb GA		41	183,560
DeKalb GA		42	190,940
DeKalb GA		43	32,212
DeKalb GA		44	51,049
DeKalb GA		55	65,718
Douglas GA		28	25,889
Douglas GA		30	23,454
Douglas GA		35	94,894
Fayette GA		16	87,134
Fayette GA		34	32,060
Floyd GA		52	85,090
Floyd GA		53	13,494
Forsyth GA		27	190,676
Forsyth GA		48	60,607
Fulton GA		6	99,152
Fulton GA		14	192,533
Fulton GA		21	83,538
Fulton GA		28	6,963
Fulton GA		35	97,945
Fulton GA		36	192,282
Fulton GA		38	84,850
Fulton GA		39	191,500
Fulton GA		48	83,219
Fulton GA		56	34,728
Gordon GA		52	7,938
Gordon GA		54	49,606
Gwinnett GA		5	191,921
Gwinnett GA		7	189,709
Gwinnett GA		9	192,915
Gwinnett GA		40	25,547
Gwinnett GA		41	7,463
Gwinnett GA		45	151,475
Gwinnett GA		46	27,298
Gwinnett GA		48	46,297
Gwinnett GA		55	124,437
Hall GA		49	189,355

Political Subdivision Splits Between Districts

GA Senate Enacted

County	Voting District	District	Population
Hall GA		50	13,781
Henry GA		10	116,992
Henry GA		17	82,287
Henry GA		25	41,433
Houston GA		18	42,875
Houston GA		20	74,275
Houston GA		26	46,483
Jackson GA		47	56,660
Jackson GA		50	19,247
Muscogee GA		15	142,205
Muscogee GA		29	64,717
Newton GA		17	45,536
Newton GA		43	66,947
Paulding GA		30	18,954
Paulding GA		31	149,707
Richmond GA		22	193,163
Richmond GA		23	13,444
Walton GA		17	44,590
Walton GA		46	52,083
Ware GA		3	10,431
Ware GA		8	25,820
White GA		50	12,642
White GA		51	15,361
<i>Split VTDs:</i>			
Bibb GA	HOWARD 1	18	5,912
Bibb GA	HOWARD 1	25	31
Bibb GA	HOWARD 2	18	5,445
Bibb GA	HOWARD 2	25	0
Bibb GA	HOWARD 3	18	12,640
Bibb GA	HOWARD 3	25	14
Bibb GA	HOWARD 5	18	267
Bibb GA	HOWARD 5	25	2,103
Chatham GA	BLOOMINGDALE COMMUNITY CENTER	1	4,099
Chatham GA	BLOOMINGDALE COMMUNITY CENTER	4	755
Chatham GA	POOLER CHRURCH	1	5,330
Chatham GA	POOLER CHRURCH	4	4,407
Clarke GA	3B	46	5,752
Clarke GA	3B	47	4,194
Clarke GA	6C	46	2,971
Clarke GA	6C	47	2,036
Cobb GA	Dobbins 01	6	6,586
Cobb GA	Dobbins 01	33	6,310
Cobb GA	Dobbins 01	38	505
Cobb GA	Elizabeth 01	32	3,771
Cobb GA	Elizabeth 01	37	2,099

Political Subdivision Splits Between Districts

GA Senate Enacted

County	Voting District	District	Population
Cobb GA	Kennesaw 1A	32	1,471
Cobb GA	Kennesaw 1A	37	2,972
Cobb GA	Marietta 3A	32	3,439
Cobb GA	Marietta 3A	33	5,460
Cobb GA	Marietta 5A	6	0
Cobb GA	Marietta 5A	33	4,334
Cobb GA	Marietta 6A	6	3,022
Cobb GA	Marietta 6A	32	1,532
Cobb GA	Marietta 7A	6	993
Cobb GA	Marietta 7A	33	5,918
Cobb GA	Nickajack 01	6	2,398
Cobb GA	Nickajack 01	38	3,728
Cobb GA	Norton Park 01	33	7,049
Cobb GA	Norton Park 01	38	752
Cobb GA	Oregon 03	33	12,988
Cobb GA	Oregon 03	37	0
Cobb GA	Powers Ferry 01	6	4,963
Cobb GA	Powers Ferry 01	33	464
Cobb GA	Sewell Mill 03	6	5,051
Cobb GA	Sewell Mill 03	33	1,886
Cobb GA	Vinings 02	6	4,624
Cobb GA	Vinings 02	38	5,019
Coffee GA	DOUGLAS	13	12,595
Coffee GA	DOUGLAS	19	15,976
Floyd GA	GARDEN LAKES	52	1,024
Floyd GA	GARDEN LAKES	53	7,817
Forsyth GA	BIG CREEK	27	15,216
Forsyth GA	BIG CREEK	48	10,302
Forsyth GA	POLO	27	24,894
Forsyth GA	POLO	48	964
Fulton GA	RW09	21	2,971
Fulton GA	RW09	56	4,750
Fulton GA	RW12	21	4,274
Fulton GA	RW12	56	3,958
Fulton GA	SC08B	35	223
Fulton GA	SC08B	39	5,124
Fulton GA	SC18C	35	1,852
Fulton GA	SC18C	39	521
Gordon GA	LILY POND	52	1,641
Gordon GA	LILY POND	54	996
Gwinnett GA	DACULA	45	2,699
Gwinnett GA	DACULA	46	4,613
Gwinnett GA	LAWRENCEVILLE E	5	2,075
Gwinnett GA	LAWRENCEVILLE E	9	1,386
Gwinnett GA	PINCKNEYVILLE W	5	5,605
Gwinnett GA	PINCKNEYVILLE W	7	2,701
Hall GA	GLADE	49	5,135

Political Subdivision Splits Between Districts

GA Senate Enacted

County	Voting District	District	Population
Hall GA	GLADE	50	1,735
Hall GA	TADMORE	49	4,129
Hall GA	TADMORE	50	10,220
Houston GA	FMMS	18	5,178
Houston GA	FMMS	20	8,151
Houston GA	MCMS	18	3,625
Houston GA	MCMS	20	9,869
Houston GA	RECR	20	0
Houston GA	RECR	26	17,798
Jackson GA	Central Jackson	47	24,383
Jackson GA	Central Jackson	50	0
Jackson GA	North Jackson	47	0
Jackson GA	North Jackson	50	19,247
Muscogee GA	COLUMBUS TECH	15	6,919
Muscogee GA	COLUMBUS TECH	29	2,228
Paulding GA	CARL SCOGGINS MID SC	30	7,586
Paulding GA	CARL SCOGGINS MID SC	31	2,162
Paulding GA	TAYLOR FARM PARK	30	475
Paulding GA	TAYLOR FARM PARK	31	12,958
Ware GA	100	3	2,672
Ware GA	100	8	3,692
Ware GA	200A	3	0
Ware GA	200A	8	4,133
Ware GA	304	3	0
Ware GA	304	8	2,107
Ware GA	400	3	4,626
Ware GA	400	8	406

Below is the political subdivisions splits report for the Senate illustrative plan.

User:

Plan Name: **GA Senate Illustrative**Plan Type: **Reference**

Political Subdivision Splits Between Districts

Saturday, December 3, 2022

3:10 PM

Number of subdivisions not split:

County	125
Voting District	2,649

Number of subdivisions split into more than one district:

County	34
Voting District	49

Number of splits involving no population:

County	0
Voting District	7

Split Counts

County

Cases where an area is split among 2 Districts: 22

Cases where an area is split among 3 Districts: 7

Cases where an area is split among 4 Districts: 1

Cases where an area is split among 6 Districts: 1

Cases where an area is split among 7 Districts: 1

Cases where an area is split among 9 Districts: 1

Cases where an area is split among 10 Districts: 1

Voting District

Cases where an area is split among 2 Districts: 48

Cases where an area is split among 3 Districts: 1

County	Voting District	District	Population
<i>Split Counties:</i>			
Baldwin GA		17	16,966
Baldwin GA		23	26,833
Barrow GA		45	39,217
Barrow GA		46	17,116
Barrow GA		47	27,172
Bartow GA		37	11,130
Bartow GA		52	97,771
Chatham GA		1	81,408
Chatham GA		2	190,408
Chatham GA		4	23,475
Cherokee GA		21	109,034
Cherokee GA		32	90,981
Cherokee GA		56	66,605
Clarke GA		46	52,016
Clarke GA		47	76,655
Clayton GA		25	37,295
Clayton GA		28	19,071
Clayton GA		34	135,995

Political Subdivision Splits Between Districts

GA Senate Illustrative

County	Voting District	District	Population
Clayton GA		44	105,234
Cobb GA		6	97,590
Cobb GA		32	101,467
Cobb GA		33	192,694
Cobb GA		37	181,541
Cobb GA		38	102,964
Cobb GA		56	89,893
Coffee GA		13	19,881
Coffee GA		19	23,211
Columbia GA		22	30,174
Columbia GA		24	125,836
Coweta GA		16	39,894
Coweta GA		28	74,804
Coweta GA		30	31,460
DeKalb GA		10	82,066
DeKalb GA		40	164,997
DeKalb GA		41	183,560
DeKalb GA		42	190,153
DeKalb GA		43	17,660
DeKalb GA		44	60,228
DeKalb GA		55	65,718
Fayette GA		16	45,488
Fayette GA		28	17,678
Fayette GA		34	56,028
Floyd GA		52	85,090
Floyd GA		53	13,494
Forsyth GA		27	190,676
Forsyth GA		48	60,607
Fulton GA		6	94,244
Fulton GA		14	192,533
Fulton GA		21	83,538
Fulton GA		28	78,143
Fulton GA		35	30,198
Fulton GA		36	192,282
Fulton GA		38	87,641
Fulton GA		39	190,184
Fulton GA		48	83,219
Fulton GA		56	34,728
Gordon GA		52	7,938
Gordon GA		54	49,606
Greene GA		17	14,168
Greene GA		23	4,747
Gwinnett GA		5	191,921
Gwinnett GA		7	189,709
Gwinnett GA		9	192,915
Gwinnett GA		40	25,547
Gwinnett GA		41	7,463

Political Subdivision Splits Between Districts

GA Senate Illustrative

County	Voting District	District	Population
Gwinnett GA		45	151,475
Gwinnett GA		46	27,298
Gwinnett GA		48	46,297
Gwinnett GA		55	124,437
Hall GA		49	189,355
Hall GA		50	13,781
Henry GA		10	62,505
Henry GA		25	155,413
Henry GA		44	22,794
Houston GA		18	96,912
Houston GA		20	33,532
Houston GA		26	33,189
Jackson GA		47	56,660
Jackson GA		50	19,247
McDuffie GA		23	12,164
McDuffie GA		24	9,468
Muscogee GA		15	142,205
Muscogee GA		29	64,717
Newton GA		17	9,333
Newton GA		43	103,150
Paulding GA		31	149,902
Paulding GA		35	18,759
Richmond GA		22	158,756
Richmond GA		23	47,851
Rockdale GA		10	22,596
Rockdale GA		43	70,974
Walton GA		17	44,590
Walton GA		46	52,083
Ware GA		3	10,431
Ware GA		8	25,820
White GA		50	12,642
White GA		51	15,361
Wilcox GA		13	5,579
Wilcox GA		20	3,187
Wilkes GA		23	3,747
Wilkes GA		24	5,818
<i>Split VTDs:</i>			
Baldwin GA	NORTH MILLEDGEVILLE	17	2,373
Baldwin GA	NORTH MILLEDGEVILLE	23	991
Baldwin GA	SOUTH MILLEDGEVILLE	17	1,215
Baldwin GA	SOUTH MILLEDGEVILLE	23	2,491
Chatham GA	BLOOMINGDALE	1	4,099
	COMMUNITY CENTER		
Chatham GA	BLOOMINGDALE	4	755
	COMMUNITY CENTER		
Chatham GA	POOLER CHRURCH	1	5,330
Chatham GA	POOLER CHRURCH	4	4,407

Political Subdivision Splits Between Districts

GA Senate Illustrative

County	Voting District	District	Population
Clarke GA	3B	46	5,752
Clarke GA	3B	47	4,194
Clarke GA	6C	46	2,971
Clarke GA	6C	47	2,036
Cobb GA	Dobbins 01	6	6,586
Cobb GA	Dobbins 01	33	6,310
Cobb GA	Dobbins 01	38	505
Cobb GA	Elizabeth 01	32	3,771
Cobb GA	Elizabeth 01	37	2,099
Cobb GA	Kennesaw 1A	32	1,471
Cobb GA	Kennesaw 1A	37	2,972
Cobb GA	Marietta 3A	32	3,439
Cobb GA	Marietta 3A	33	5,460
Cobb GA	Marietta 5A	6	0
Cobb GA	Marietta 5A	33	4,334
Cobb GA	Marietta 6A	6	3,022
Cobb GA	Marietta 6A	32	1,532
Cobb GA	Marietta 7A	6	993
Cobb GA	Marietta 7A	33	5,918
Cobb GA	Nickajack 01	6	2,398
Cobb GA	Nickajack 01	38	3,728
Cobb GA	Norton Park 01	33	7,049
Cobb GA	Norton Park 01	38	752
Cobb GA	Oregon 03	33	12,988
Cobb GA	Oregon 03	37	0
Cobb GA	Powers Ferry 01	6	4,963
Cobb GA	Powers Ferry 01	33	464
Cobb GA	Sewell Mill 03	6	5,051
Cobb GA	Sewell Mill 03	33	1,886
Cobb GA	Smyrna 1A	6	5,341
Cobb GA	Smyrna 1A	38	1,292
Cobb GA	Vinings 02	6	4,624
Cobb GA	Vinings 02	38	5,019
Coffee GA	DOUGLAS	13	12,595
Coffee GA	DOUGLAS	19	15,976
DeKalb GA	Flakes Mill Fire Station	10	2,263
DeKalb GA	Flakes Mill Fire Station	44	396
DeKalb GA	Harris - Narvie J. Harris Elem	10	3,339
DeKalb GA	Harris - Narvie J. Harris Elem	44	1,682
Floyd GA	GARDEN LAKES	52	1,024
Floyd GA	GARDEN LAKES	53	7,817
Forsyth GA	BIG CREEK	27	15,216
Forsyth GA	BIG CREEK	48	10,302
Forsyth GA	POLO	27	24,894
Forsyth GA	POLO	48	964

Political Subdivision Splits Between Districts

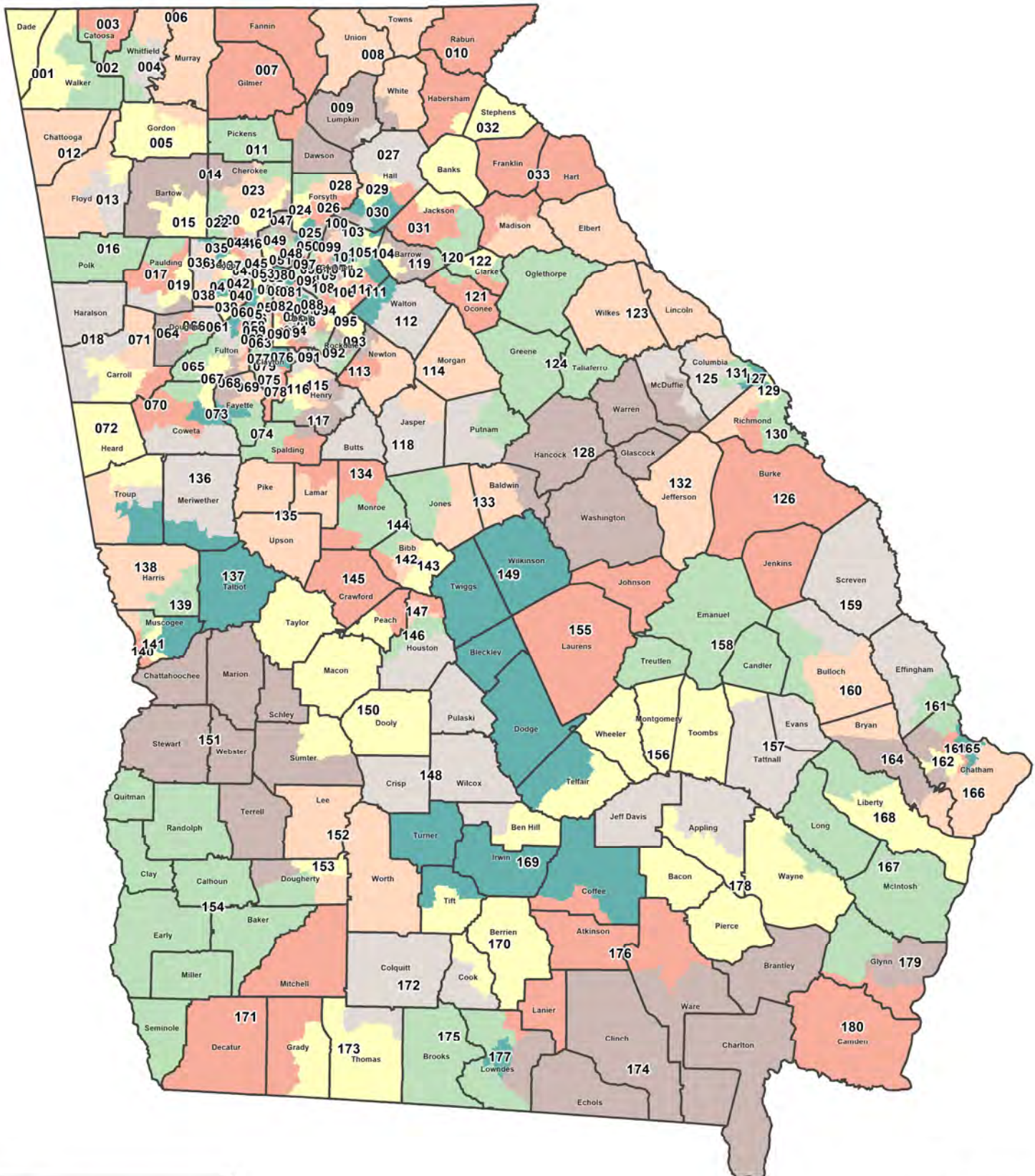
GA Senate Illustrative

County	Voting District	District	Population
Fulton GA	RW09	21	2,971
Fulton GA	RW09	56	4,750
Fulton GA	RW12	21	4,274
Fulton GA	RW12	56	3,958
Fulton GA	SC05A	28	681
Fulton GA	SC05A	35	317
Fulton GA	SC08B	28	223
Fulton GA	SC08B	39	5,124
Fulton GA	SC13	28	15
Fulton GA	SC13	35	4,019
Fulton GA	SC18C	35	1,852
Fulton GA	SC18C	39	521
Gordon GA	LILY POND	52	1,641
Gordon GA	LILY POND	54	996
Gwinnett GA	DACULA	45	2,699
Gwinnett GA	DACULA	46	4,613
Gwinnett GA	LAWRENCEVILLE E	5	2,075
Gwinnett GA	LAWRENCEVILLE E	9	1,386
Gwinnett GA	PINCKNEYVILLE W	5	5,605
Gwinnett GA	PINCKNEYVILLE W	7	2,701
Hall GA	GLADE	49	5,135
Hall GA	GLADE	50	1,735
Hall GA	TADMORE	49	4,129
Hall GA	TADMORE	50	10,220
Houston GA	RECR	20	0
Houston GA	RECR	26	17,798
Jackson GA	Central Jackson	47	24,383
Jackson GA	Central Jackson	50	0
Jackson GA	North Jackson	47	0
Jackson GA	North Jackson	50	19,247
Muscogee GA	COLUMBUS TECH	15	6,919
Muscogee GA	COLUMBUS TECH	29	2,228
Paulding GA	AUSTIN MIDDLE SCHOOL	31	971
Paulding GA	AUSTIN MIDDLE SCHOOL	35	9,922
Paulding GA	TAYLOR FARM PARK	31	4,596
Paulding GA	TAYLOR FARM PARK	35	8,837
Ware GA	100	3	2,672
Ware GA	100	8	3,692
Ware GA	200A	3	0
Ware GA	200A	8	4,133
Ware GA	304	3	0
Ware GA	304	8	2,107
Ware GA	400	3	4,626
Ware GA	400	8	406
Wilcox GA	ROCHELLE SOUTH	13	786
Wilcox GA	ROCHELLE SOUTH	20	794

Esselstyn Report: Attachment I

Proposed Georgia House Districts

Client: H097
Plan: House-prop1-2021
Type: House

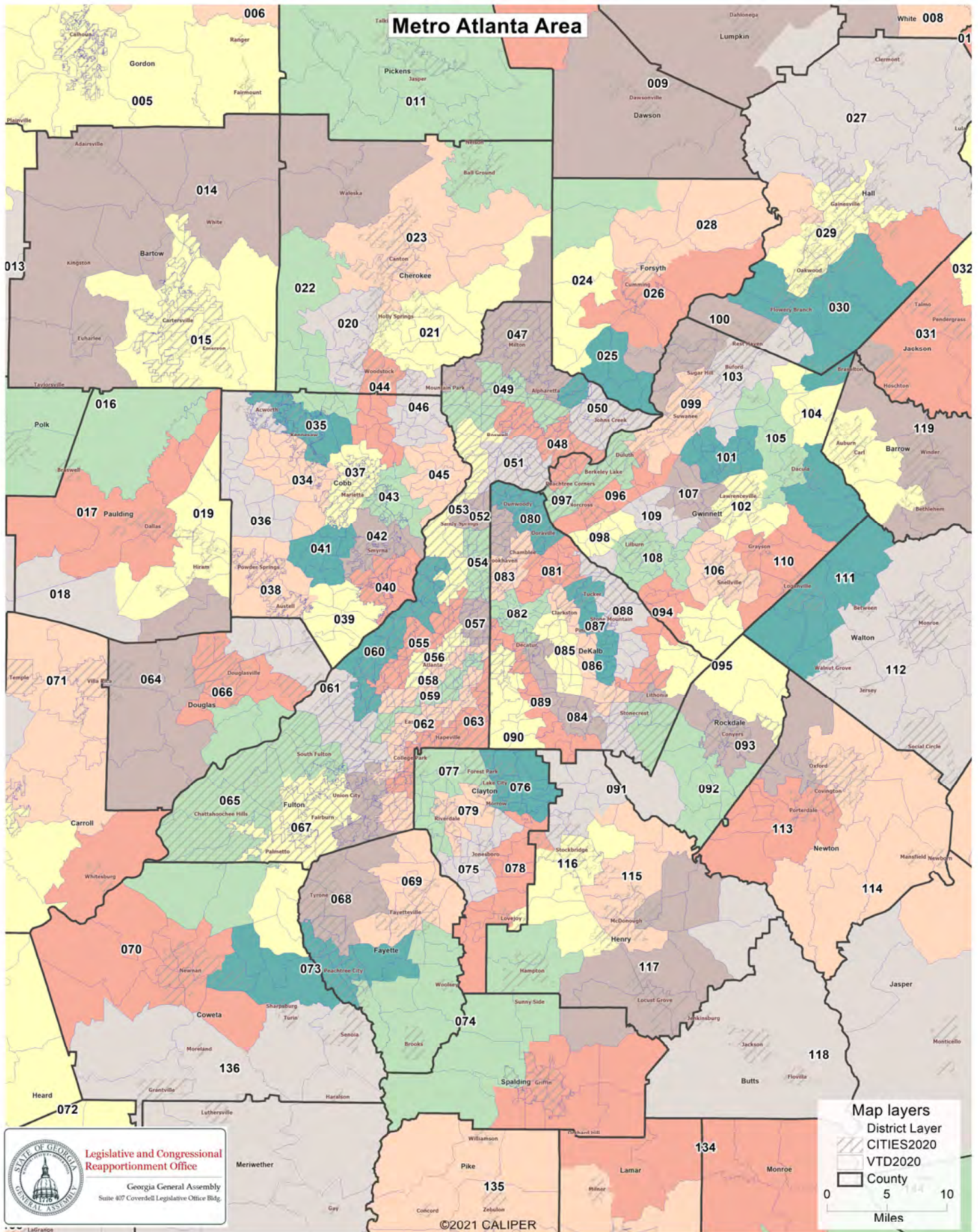


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Map layers
District Layer
County
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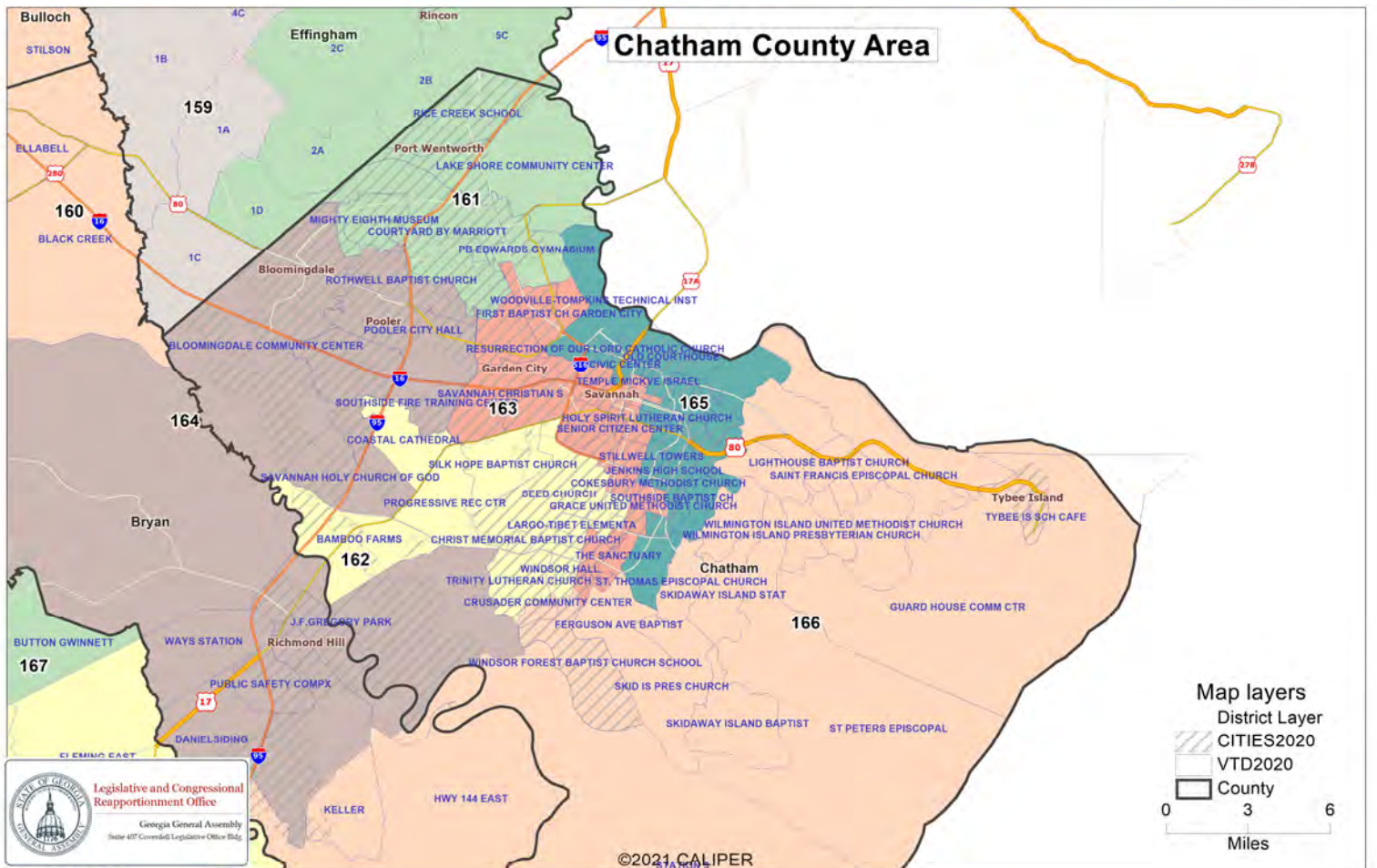
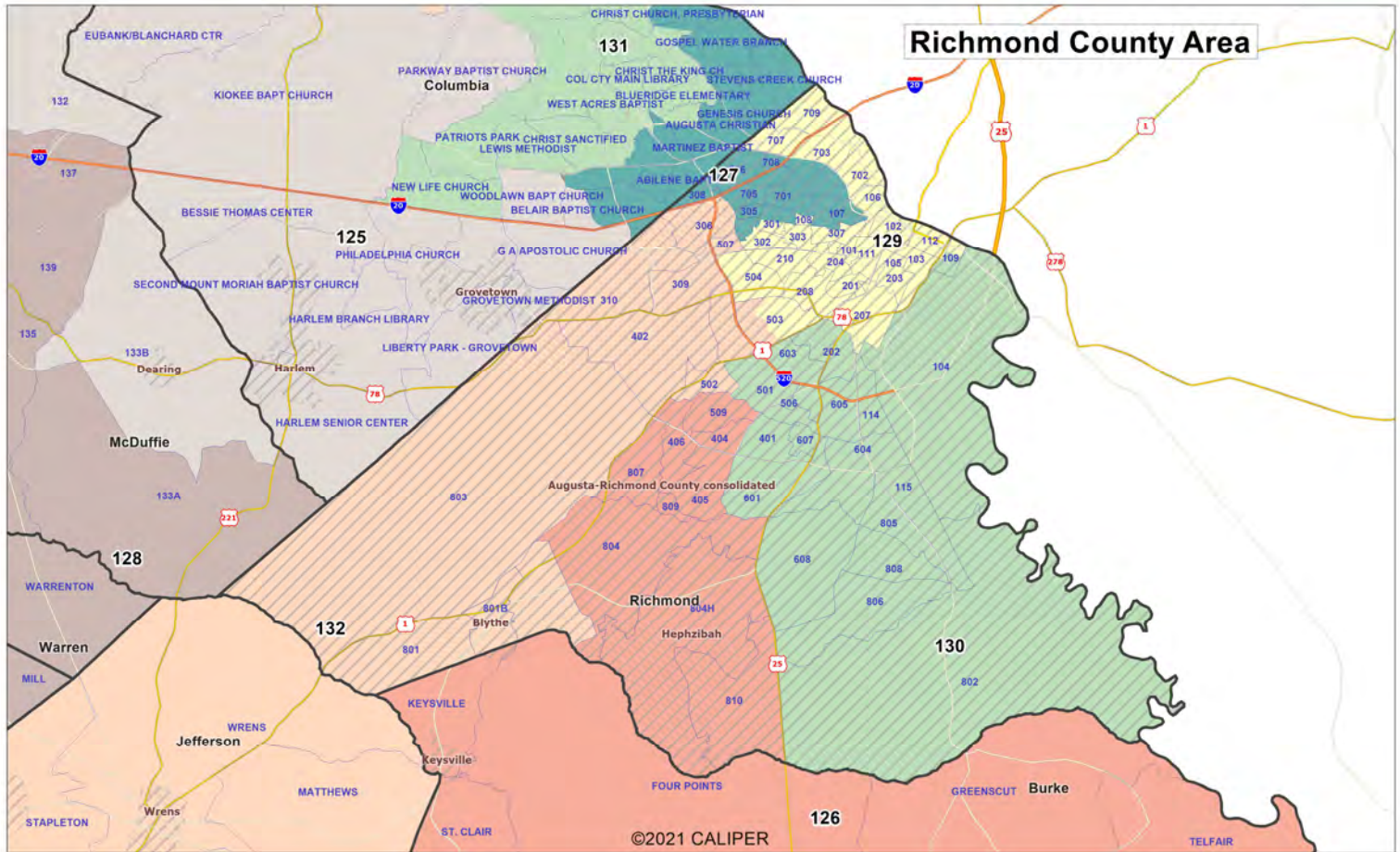
Proposed Georgia House Districts

Client: H097
Plan: House-prop1-2021
Type: House

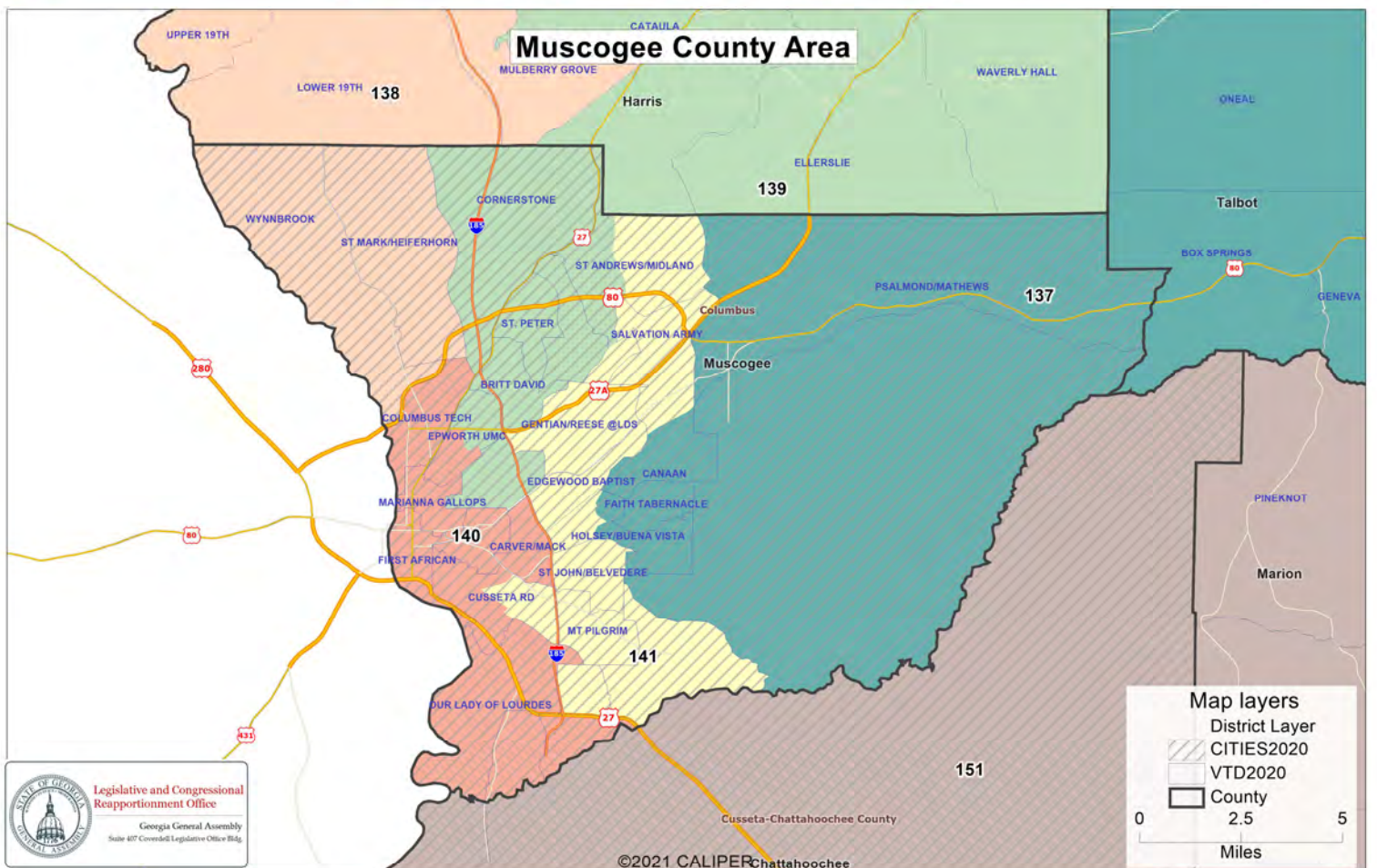


Proposed Georgia House Districts

Client: H097
Plan: House-prop1-2021
Type: House



This map displays the Bibb County Area, which is shaded in yellow with diagonal lines. The area is divided into several districts, including HAZZARD 1 through 4, WARRIOR 1 and 2, GODFREY 1 through 5, EAST MACON 1 through 5, VINEVILLE 1 through 6, and HOWARD 1 through 7. Surrounding areas are shown in different colors: green for areas like Monroe, BENTONS, and FINNEY; orange for areas like JONES, DAVIDSON, and HAWKINS; red for areas like COX, RUSSELLVILLE, and KELSEYS; and blue for areas like DISTRICT 2, 3, 4, 5, and 1B, as well as CRAWFORD and PEACH. Major roads are indicated by orange lines with route numbers (e.g., 11, 75, 23, 80, 142, 143, 144, 145, 147, 149, 201, 329, 41, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900



User: H097

Plan Name: House-prop1-2021

Plan Type: House

Population Summary

Summary Statistics:

Population Range: 58,678 to 60,308
 Ratio Range: 0.03
 Absolute Range: -833 to 797
 Absolute Overall Range: 1,630
 Relative Range: -1.40% to 1.34%
 Relative Overall Range: 2.74%
 Absolute Mean Deviation: 363.71
 Relative Mean Deviation: 0.61%
 Standard Deviation: 417.67

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH_Wht]	[% NH_Blkl]	[% Hispanic Origin]	[% NH_Asn]	[% NH_Ind]	[% NH_Hwn]	[% NH_Oth]	[% NH_2+ Races]
001	59,666	155	0.26%	46,801	78.44%	87.88%	3.9%	2.59%	0.53%	0.31%	0.04%	0.3%	4.45%
002	59,773	262	0.44%	46,159	77.22%	83.24%	2.56%	9.09%	1.1%	0.18%	0.02%	0.26%	3.55%
003	60,199	688	1.16%	46,716	77.6%	86.9%	2.82%	3.6%	1.63%	0.27%	0.14%	0.18%	4.46%
004	59,070	-441	-0.74%	42,798	72.45%	42.01%	4.17%	50.07%	1.23%	0.17%	0.02%	0.28%	2.05%
005	58,837	-674	-1.13%	44,623	75.84%	75.46%	3.76%	15.29%	1.24%	0.2%	0.02%	0.22%	3.81%
006	59,712	201	0.34%	45,152	75.62%	80.15%	1.01%	14.51%	0.51%	0.2%	0.01%	0.2%	3.4%
007	59,081	-430	-0.72%	48,771	82.55%	87.97%	0.37%	7.43%	0.45%	0.26%	0.01%	0.24%	3.27%
008	59,244	-267	-0.45%	49,612	83.74%	90.8%	1.13%	3.21%	0.54%	0.3%	0.01%	0.34%	3.67%
009	59,474	-37	-0.06%	48,273	81.17%	87.78%	1.01%	5.49%	0.79%	0.37%	0.06%	0.36%	4.15%
010	59,519	8	0.01%	47,164	79.24%	78.61%	2.97%	13.11%	1.51%	0.17%	0.06%	0.24%	3.33%
011	58,792	-719	-1.21%	45,396	77.21%	87.43%	1.55%	5.33%	1.15%	0.22%	0.02%	0.3%	4%
012	59,300	-211	-0.35%	46,487	78.39%	78.45%	8.61%	7.68%	1.01%	0.16%	0.01%	0.42%	3.68%
013	59,150	-361	-0.61%	45,176	76.38%	62.24%	18.71%	13.52%	1.29%	0.22%	0.03%	0.33%	3.65%
014	59,135	-376	-0.63%	45,511	76.96%	81.38%	5.86%	7.04%	0.77%	0.21%	0.03%	0.34%	4.36%
015	59,213	-298	-0.50%	45,791	77.33%	68.38%	13.61%	11.74%	1.3%	0.25%	0.04%	0.49%	4.19%
016	59,402	-109	-0.18%	44,009	74.09%	72.9%	11.15%	10.95%	0.76%	0.22%	0.05%	0.43%	3.54%
017	59,120	-391	-0.66%	42,761	72.33%	63.28%	22.06%	7.9%	1.33%	0.23%	0.07%	0.64%	4.49%
018	59,335	-176	-0.30%	45,159	76.11%	84.78%	7.11%	2.93%	0.59%	0.23%	0.04%	0.35%	3.97%
019	58,955	-556	-0.93%	44,299	75.14%	62.06%	23.47%	7.87%	1.14%	0.25%	0.08%	0.64%	4.49%
020	60,107	596	1.00%	45,725	76.07%	73.93%	8.13%	10.6%	1.97%	0.16%	0.04%	0.63%	4.54%
021	59,529	18	0.03%	44,931	75.48%	80.04%	4.29%	8.54%	1.84%	0.19%	0.04%	0.66%	4.4%
022	59,460	-51	-0.09%	45,815	77.05%	62.53%	13.94%	13.26%	3.86%	0.2%	0.03%	0.81%	5.37%
023	59,048	-463	-0.78%	44,254	74.95%	71.47%	5.64%	17.19%	1.06%	0.22%	0.04%	0.36%	4.01%
024	59,011	-500	-0.84%	41,814	70.86%	60.13%	6%	11.36%	17.65%	0.21%	0.04%	0.62%	3.98%
025	59,414	-97	-0.16%	42,520	71.57%	51.99%	5%	5.42%	33.55%	0.15%	0.03%	0.51%	3.36%
026	59,248	-263	-0.44%	44,081	74.4%	63.48%	3.29%	12.07%	16.8%	0.18%	0.04%	0.5%	3.64%
027	58,795	-716	-1.20%	46,004	78.24%	79.69%	3.22%	11.82%	0.82%	0.19%	0.04%	0.3%	3.91%
028	58,972	-539	-0.91%	44,444	75.36%	76.5%	3.39%	13.59%	2.06%	0.16%	0.03%	0.4%	3.86%
029	59,200	-311	-0.52%	43,131	72.86%	36.05%	12.13%	46.28%	2.72%	0.12%	0.06%	0.41%	2.23%

Population Summary

House-prop1-2021

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH_Wht]	[% NH_Blkl]	[% Hispanic Origin]	[% NH_Asn]	[% NH_Ind]	[% NH_Hwn]	[% NH_Oth]	[% NH_2+ Races]
030	59,266	-245	-0.41%	45,414	76.63%	67.03%	7.37%	18.78%	3.04%	0.15%	0.03%	0.34%	3.26%
031	59,901	390	0.66%	43,120	71.99%	65.57%	6.64%	21.63%	2.27%	0.19%	0.02%	0.37%	3.31%
032	59,145	-366	-0.62%	45,942	77.68%	80.8%	7.24%	6.03%	1.26%	0.29%	0.05%	0.25%	4.09%
033	59,187	-324	-0.54%	46,498	78.56%	79.94%	10.97%	4.08%	1.2%	0.15%	0.01%	0.36%	3.29%
034	59,875	364	0.61%	45,758	76.42%	66.59%	14.46%	9.06%	4.41%	0.11%	0.04%	0.68%	4.65%
035	59,889	378	0.64%	48,312	80.67%	50.12%	26.55%	12.7%	4.43%	0.21%	0.04%	0.9%	5.04%
036	59,994	483	0.81%	44,911	74.86%	68.01%	16.01%	7.46%	3.07%	0.14%	0.03%	0.73%	4.55%
037	59,176	-335	-0.56%	46,223	78.11%	42.2%	26%	21.96%	4.5%	0.21%	0.03%	1%	4.11%
038	59,317	-194	-0.33%	44,839	75.59%	25.93%	52.72%	14.72%	1.77%	0.22%	0.07%	0.7%	3.88%
039	59,381	-130	-0.22%	44,436	74.83%	20.6%	52.08%	21.79%	1.5%	0.14%	0.03%	0.65%	3.2%
040	59,044	-467	-0.78%	47,976	81.25%	48.94%	30.78%	6.43%	8.54%	0.17%	0.02%	0.7%	4.43%
041	60,122	611	1.03%	45,271	75.3%	23.42%	36.44%	33.22%	2.81%	0.18%	0.05%	0.86%	3.02%
042	59,620	109	0.18%	48,525	81.39%	35.47%	31.18%	20.49%	7.11%	0.19%	0.03%	1.15%	4.37%
043	59,464	-47	-0.08%	47,033	79.09%	43.32%	24.35%	15.85%	7.83%	0.21%	0.09%	2.4%	5.96%
044	60,002	491	0.83%	46,773	77.95%	64.71%	10.98%	11.99%	5.71%	0.18%	0.02%	1.17%	5.24%
045	59,738	227	0.38%	44,023	73.69%	72.29%	4.14%	5.5%	12.94%	0.07%	0.02%	0.67%	4.38%
046	59,108	-403	-0.68%	44,132	74.66%	72.43%	6.76%	8.24%	6.93%	0.12%	0.04%	0.82%	4.66%
047	59,126	-385	-0.65%	43,932	74.3%	61.71%	9.44%	7.83%	15.91%	0.2%	0.03%	0.7%	4.17%
048	59,003	-508	-0.85%	44,779	75.89%	59.05%	10.16%	14.1%	11.77%	0.08%	0.05%	0.64%	4.16%
049	59,153	-358	-0.60%	45,263	76.52%	68.94%	7.2%	7.56%	11.41%	0.1%	0.02%	0.68%	4.09%
050	59,523	12	0.02%	43,940	73.82%	41.55%	11.04%	7.06%	35.46%	0.09%	0.04%	0.66%	4.1%
051	58,952	-559	-0.94%	47,262	80.17%	51.02%	21.93%	15.47%	5.83%	0.17%	0.04%	1.03%	4.51%
052	59,811	300	0.50%	48,525	81.13%	53.81%	13.71%	7.98%	19.72%	0.14%	0.06%	0.72%	3.86%
053	59,953	442	0.74%	46,944	78.3%	70.3%	12.31%	8.2%	4.46%	0.1%	0.02%	0.63%	3.98%
054	60,083	572	0.96%	50,338	83.78%	61.03%	12.98%	15.17%	6.51%	0.14%	0.03%	0.57%	3.56%
055	59,971	460	0.77%	49,255	82.13%	33.78%	54.54%	5.14%	2.85%	0.18%	0.03%	0.4%	3.09%
056	58,929	-582	-0.98%	52,757	89.53%	34.03%	46.33%	5.81%	9.32%	0.18%	0.07%	0.45%	3.8%
057	59,969	458	0.77%	52,097	86.87%	62.89%	15.57%	8.83%	7.58%	0.11%	0.02%	0.65%	4.36%
058	59,057	-454	-0.76%	50,514	85.53%	24.98%	63.09%	5.03%	2.76%	0.14%	0.03%	0.51%	3.45%
059	59,434	-77	-0.13%	49,179	82.75%	19.37%	69.55%	4.45%	2.52%	0.16%	0.02%	0.56%	3.36%
060	59,709	198	0.33%	45,490	76.19%	26.72%	61.76%	5.87%	2.04%	0.17%	0.05%	0.44%	2.96%
061	59,302	-209	-0.35%	45,447	76.64%	14.79%	71.51%	9.1%	0.87%	0.15%	0.06%	0.54%	2.98%
062	59,450	-61	-0.10%	46,426	78.09%	17.17%	70.09%	7.61%	1.13%	0.21%	0.04%	0.53%	3.22%
063	59,381	-130	-0.22%	45,043	75.85%	16.74%	68%	10.42%	1.32%	0.21%	0.03%	0.51%	2.78%
064	58,986	-525	-0.88%	44,189	74.91%	54.76%	29.35%	8.84%	1.37%	0.27%	0.03%	0.78%	4.6%
065	59,464	-47	-0.08%	44,386	74.64%	29.55%	60.08%	5.23%	1.08%	0.18%	0.06%	0.57%	3.27%
066	59,047	-464	-0.78%	44,278	74.99%	29.98%	52.03%	11.05%	1.72%	0.24%	0.07%	0.79%	4.11%
067	59,135	-376	-0.63%	44,299	74.91%	29.09%	57.14%	8.71%	1.29%	0.18%	0.03%	0.5%	3.06%
068	59,477	-34	-0.06%	44,835	75.38%	31.15%	54.67%	7.3%	2.79%	0.16%	0.04%	0.7%	3.19%
069	58,682	-829	-1.39%	45,548	77.62%	24.1%	61.87%	6.47%	3.04%	0.17%	0.04%	0.89%	3.41%
070	59,121	-390	-0.66%	45,249	76.54%	56.51%	27.61%	9.08%	2.17%	0.2%	0.05%	0.47%	3.9%
071	59,538	27	0.05%	44,582	74.88%	67.15%	18.89%	7.44%	0.96%	0.25%	0.02%	0.51%	4.78%
072	59,660	149	0.25%	46,229	77.49%	67.26%	19.34%	8.16%	0.96%	0.2%	0.02%	0.3%	3.75%
073	60,036	525	0.88%	45,736	76.18%	69.92%	11.27%	7.96%	5.88%	0.15%	0.03%	0.52%	4.26%

Population Summary

House-prop1-2021

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH_Wht]	[% NH_Blkl]	[% Hispanic Origin]	[% NH_Asn]	[% NH_Ind]	[% NH_Hwn]	[% NH_Oth]	[% NH_2+ Races]
074	58,956	-555	-0.93%	44,696	75.81%	61.32%	25.24%	6.67%	2.05%	0.2%	0.02%	0.52%	3.98%
075	59,743	232	0.39%	43,850	73.4%	9.24%	71.27%	12.97%	2.66%	0.19%	0.06%	0.71%	2.9%
076	59,759	248	0.42%	44,371	74.25%	8.61%	64.24%	15.61%	8.11%	0.19%	0.04%	0.57%	2.63%
077	59,242	-269	-0.45%	44,207	74.62%	6.22%	72.49%	14.22%	4.03%	0.22%	0.06%	0.5%	2.27%
078	59,044	-467	-0.78%	44,572	75.49%	12.69%	69.39%	9.94%	4.03%	0.19%	0.03%	0.65%	3.08%
079	59,500	-11	-0.02%	43,223	72.64%	5.69%	68.19%	18.11%	4.87%	0.21%	0.01%	0.57%	2.34%
080	59,461	-50	-0.08%	44,784	75.32%	45.02%	11.65%	26.17%	13.02%	0.08%	0.04%	0.63%	3.39%
081	59,007	-504	-0.85%	46,259	78.4%	44.28%	18.64%	24.58%	8.14%	0.14%	0.02%	0.55%	3.65%
082	59,724	213	0.36%	50,238	84.12%	61.86%	14.34%	7.52%	11.03%	0.11%	0.03%	0.65%	4.46%
083	59,416	-95	-0.16%	46,581	78.4%	44.13%	12.06%	33.75%	6.29%	0.1%	0.02%	0.61%	3.03%
084	59,862	351	0.59%	47,350	79.1%	21.11%	69.74%	3.4%	1.4%	0.16%	0.03%	0.59%	3.58%
085	59,373	-138	-0.23%	46,308	78%	17.08%	60.18%	5.99%	12.29%	0.25%	0.02%	0.68%	3.5%
086	59,205	-306	-0.51%	44,614	75.36%	10.6%	71.76%	4.64%	9.02%	0.15%	0.02%	0.67%	3.14%
087	59,709	198	0.33%	45,615	76.4%	11.48%	70.08%	7.73%	6.46%	0.21%	0.02%	0.7%	3.33%
088	59,689	178	0.30%	46,073	77.19%	15.98%	60.71%	11.46%	7.49%	0.23%	0.06%	0.68%	3.39%
089	59,866	355	0.60%	46,198	77.17%	30.38%	59.77%	3.8%	1.78%	0.15%	0.03%	0.48%	3.6%
090	59,812	301	0.51%	48,015	80.28%	32.08%	57.15%	4.65%	1.58%	0.12%	0.03%	0.62%	3.76%
091	60,050	539	0.91%	46,173	76.89%	19.7%	67.92%	7%	1.39%	0.17%	0.04%	0.54%	3.25%
092	60,273	762	1.28%	46,551	77.23%	20.98%	67.63%	5.49%	1.58%	0.16%	0.04%	0.74%	3.39%
093	60,118	607	1.02%	44,734	74.41%	19.94%	63.27%	11.24%	1.34%	0.16%	0.1%	0.69%	3.26%
094	59,211	-300	-0.50%	44,809	75.68%	16.38%	65.88%	8.72%	4.85%	0.19%	0.02%	0.58%	3.37%
095	60,030	519	0.87%	44,948	74.88%	18.79%	64.99%	9.32%	2.29%	0.19%	0.05%	0.73%	3.63%
096	59,515	4	0.01%	44,671	75.06%	17.47%	20.71%	40.49%	17.64%	0.15%	0.06%	0.72%	2.76%
097	59,072	-439	-0.74%	46,339	78.44%	33.19%	25.12%	21.86%	15%	0.19%	0.05%	0.68%	3.92%
098	59,998	487	0.82%	42,734	71.23%	9.69%	19.56%	57.42%	10.69%	0.13%	0.05%	0.6%	1.86%
099	59,850	339	0.57%	45,004	75.19%	39.77%	13.49%	9.52%	32.49%	0.15%	0.04%	0.56%	3.98%
100	60,030	519	0.87%	42,669	71.08%	55.88%	9.01%	10.85%	19.49%	0.18%	0.05%	0.53%	4.01%
101	59,938	427	0.72%	46,584	77.72%	37.36%	22.37%	20.17%	15.23%	0.16%	0.05%	0.7%	3.96%
102	58,959	-552	-0.93%	42,968	72.88%	26.79%	36.41%	23.45%	8.97%	0.22%	0.03%	0.69%	3.44%
103	60,197	686	1.15%	44,399	73.76%	49.51%	15.16%	19.06%	11.68%	0.13%	0.04%	0.61%	3.81%
104	59,362	-149	-0.25%	43,306	72.95%	60.44%	15.61%	12.64%	6.32%	0.16%	0.04%	0.6%	4.2%
105	59,344	-167	-0.28%	43,474	73.26%	38.89%	27.8%	18.1%	10.56%	0.1%	0.03%	0.65%	3.88%
106	59,112	-399	-0.67%	43,890	74.25%	36.66%	35.66%	12.66%	9.78%	0.17%	0.03%	0.81%	4.23%
107	59,702	191	0.32%	44,509	74.55%	19.03%	27.46%	34.49%	15.45%	0.16%	0.03%	0.64%	2.73%
108	59,577	66	0.11%	44,308	74.37%	38.96%	17.34%	20.98%	18.06%	0.17%	0.03%	0.67%	3.78%
109	59,630	119	0.20%	44,140	74.02%	13.5%	29.44%	39.32%	14.39%	0.14%	0.05%	0.63%	2.54%
110	59,951	440	0.74%	43,226	72.1%	32.7%	45.9%	11.87%	4.49%	0.18%	0.04%	0.84%	3.97%
111	60,009	498	0.84%	44,096	73.48%	60.53%	21.74%	10.37%	2.5%	0.18%	0.04%	0.73%	3.91%
112	59,349	-162	-0.27%	45,120	76.02%	71.55%	18.88%	4%	1.27%	0.2%	0.04%	0.47%	3.59%
113	60,053	542	0.91%	44,538	74.16%	28.82%	57.75%	7.78%	0.79%	0.14%	0.12%	0.62%	3.98%
114	59,867	356	0.60%	45,872	76.62%	66.9%	23.89%	4.53%	0.7%	0.18%	0.03%	0.45%	3.33%
115	60,174	663	1.11%	44,807	74.46%	33.12%	51.3%	7.88%	2.67%	0.17%	0.04%	0.81%	4%
116	59,913	402	0.68%	45,791	76.43%	23.87%	56.71%	8.14%	6.39%	0.18%	0.08%	0.83%	3.81%
117	60,130	619	1.04%	44,973	74.79%	51.61%	35.88%	6.28%	1.53%	0.17%	0.04%	0.59%	3.9%

Population Summary

House-prop1-2021

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH_Wht]	[% NH_Blkl]	[% Hispanic Origin]	[% NH_Asn]	[% NH_Ind]	[% NH_Hwn]	[% NH_Oth]	[% NH_2+ Races]
118	59,987	476	0.80%	46,342	77.25%	68.26%	22.55%	4.5%	0.43%	0.18%	0.02%	0.47%	3.59%
119	58,947	-564	-0.95%	44,005	74.65%	66.88%	12.47%	12.17%	3.83%	0.16%	0.02%	0.58%	3.89%
120	58,982	-529	-0.89%	46,767	79.29%	69.85%	13.48%	8.42%	4.05%	0.15%	0.05%	0.5%	3.49%
121	59,127	-384	-0.65%	46,598	78.81%	75.06%	8.66%	6.27%	5.64%	0.11%	0%	0.53%	3.73%
122	59,632	121	0.20%	48,840	81.9%	49.13%	30.63%	13.78%	2.13%	0.28%	0.06%	0.86%	3.13%
123	59,282	-229	-0.38%	46,572	78.56%	65.88%	23.82%	5.33%	1.14%	0.17%	0.02%	0.26%	3.39%
124	59,221	-290	-0.49%	47,638	80.44%	61.53%	26.06%	7.57%	1.14%	0.19%	0.02%	0.37%	3.12%
125	60,137	626	1.05%	43,812	72.85%	60%	21.67%	8.93%	2.4%	0.29%	0.19%	0.52%	5.99%
126	59,260	-251	-0.42%	45,497	76.78%	37.81%	53.88%	3.63%	0.76%	0.27%	0.15%	0.37%	3.13%
127	58,678	-833	-1.40%	45,889	78.2%	65.92%	17.12%	5.58%	5.63%	0.18%	0.18%	0.51%	4.88%
128	58,864	-647	-1.09%	46,488	78.98%	44.14%	51%	1.91%	0.36%	0.19%	0.03%	0.17%	2.22%
129	58,829	-682	-1.15%	46,873	79.68%	33.83%	54.95%	4.74%	2.1%	0.21%	0.14%	0.43%	3.6%
130	59,203	-308	-0.52%	44,019	74.35%	30.19%	60.27%	4.33%	0.79%	0.24%	0.16%	0.42%	3.6%
131	58,890	-621	-1.04%	42,968	72.96%	65.57%	15.99%	7.07%	4.92%	0.19%	0.14%	0.61%	5.51%
132	59,142	-369	-0.62%	46,752	79.05%	33.1%	51.88%	7.91%	2.38%	0.26%	0.19%	0.37%	3.91%
133	59,202	-309	-0.52%	47,222	79.76%	56.35%	37.05%	2.42%	1.12%	0.15%	0.04%	0.38%	2.48%
134	59,396	-115	-0.19%	45,110	75.95%	56.72%	34.18%	4.39%	0.74%	0.22%	0.02%	0.35%	3.37%
135	60,063	552	0.93%	46,725	77.79%	70.69%	22.83%	2.21%	0.51%	0.16%	0.01%	0.33%	3.25%
136	59,298	-213	-0.36%	45,367	76.51%	62.16%	28%	4.4%	1.54%	0.24%	0.03%	0.42%	3.21%
137	59,551	40	0.07%	45,358	76.17%	38.1%	51.27%	5.17%	1.66%	0.12%	0.14%	0.37%	3.17%
138	58,912	-599	-1.01%	45,684	77.55%	70.29%	18.77%	4.1%	2.39%	0.25%	0.06%	0.36%	3.77%
139	59,010	-501	-0.84%	45,522	77.14%	63.55%	19.18%	7.24%	4.03%	0.25%	0.21%	0.59%	4.96%
140	59,294	-217	-0.36%	44,411	74.9%	28.76%	55.8%	9.04%	1.02%	0.27%	0.24%	0.53%	4.34%
141	59,019	-492	-0.83%	44,677	75.7%	29.41%	54.88%	7.93%	2.53%	0.24%	0.3%	0.45%	4.25%
142	59,608	97	0.16%	44,584	74.8%	30.78%	60.48%	4.23%	1.29%	0.16%	0.01%	0.36%	2.68%
143	59,469	-42	-0.07%	46,390	78.01%	29.08%	61.66%	4.87%	0.97%	0.19%	0.05%	0.36%	2.82%
144	59,232	-279	-0.47%	46,370	78.29%	60.82%	29.32%	2.91%	3.46%	0.14%	0.02%	0.36%	2.97%
145	59,863	352	0.59%	45,844	76.58%	51.64%	35.66%	7.02%	0.9%	0.28%	0.04%	0.41%	4.05%
146	60,203	692	1.16%	44,589	74.06%	59.32%	26.73%	5.66%	2.67%	0.17%	0.09%	0.45%	4.91%
147	59,178	-333	-0.56%	44,902	75.88%	51.94%	29.55%	8.3%	4.76%	0.23%	0.07%	0.51%	4.64%
148	59,984	473	0.79%	46,614	77.71%	58.49%	33.89%	3.66%	0.9%	0.12%	0.04%	0.28%	2.63%
149	58,893	-618	-1.04%	46,821	79.5%	60.01%	31.14%	5.61%	0.57%	0.17%	0.03%	0.2%	2.28%
150	59,276	-235	-0.39%	47,050	79.37%	36.16%	53.23%	7.23%	1.17%	0.17%	0.03%	0.17%	1.85%
151	60,059	548	0.92%	46,973	78.21%	45.21%	42.21%	7.51%	1.29%	0.18%	0.23%	0.25%	3.12%
152	60,134	623	1.05%	46,026	76.54%	66.12%	25.86%	2.84%	1.6%	0.21%	0.03%	0.3%	3.03%
153	59,299	-212	-0.36%	45,692	77.05%	24.38%	69.08%	2.93%	0.89%	0.13%	0.02%	0.24%	2.33%
154	59,994	483	0.81%	47,273	78.8%	39.54%	55.53%	2.1%	0.38%	0.16%	0.01%	0.2%	2.09%
155	58,759	-752	-1.26%	45,208	76.94%	57.32%	36.14%	2.62%	0.91%	0.18%	0.05%	0.26%	2.52%
156	59,444	-67	-0.11%	45,867	77.16%	58.49%	29.79%	8.27%	0.6%	0.17%	0.01%	0.25%	2.42%
157	59,957	446	0.75%	45,311	75.57%	61.81%	23.59%	11.19%	0.54%	0.16%	0.04%	0.21%	2.47%
158	59,440	-71	-0.12%	45,549	76.63%	59.27%	31.5%	5.6%	0.75%	0.18%	0.03%	0.25%	2.42%
159	59,895	384	0.65%	44,871	74.92%	67.46%	23.88%	3.65%	0.54%	0.28%	0.03%	0.34%	3.82%
160	59,935	424	0.71%	48,057	80.18%	66.84%	21.68%	5.5%	1.62%	0.24%	0.1%	0.28%	3.76%
161	60,097	586	0.98%	44,371	73.83%	57.53%	25.83%	7.89%	3.03%	0.24%	0.09%	0.5%	4.9%

Population Summary

House-prop1-2021

District	Population	Deviation	% Devn.	[18+ _Pop]	[% 18+ _Pop]	[% NH_Wht]	[% NH_Blkl]	[% Hispanic Origin]	[% NH_Asn]	[% NH_Ind]	[% NH_Hwn]	[% NH_Oth]	[% NH_2+ Races]
162	60,308	797	1.34%	46,733	77.49%	36.7%	43.34%	10.78%	4%	0.2%	0.24%	0.54%	4.19%
163	60,123	612	1.03%	48,461	80.6%	38.48%	46.14%	8.45%	3.12%	0.19%	0.13%	0.39%	3.1%
164	60,101	590	0.99%	45,851	76.29%	57.7%	22.03%	9.95%	4.21%	0.24%	0.12%	0.68%	5.08%
165	59,978	467	0.78%	48,247	80.44%	35.1%	52.41%	5.53%	3.19%	0.22%	0.14%	0.38%	3.02%
166	60,242	731	1.23%	47,580	78.98%	82.79%	4.94%	5.19%	2.65%	0.16%	0.05%	0.4%	3.82%
167	59,493	-18	-0.03%	44,140	74.19%	62.89%	20.99%	8.81%	1.42%	0.35%	0.23%	0.5%	4.79%
168	60,147	636	1.07%	44,867	74.6%	36.24%	43.3%	11.22%	1.98%	0.31%	0.67%	0.48%	5.79%
169	59,138	-373	-0.63%	45,267	76.54%	58.36%	28.84%	9.03%	0.79%	0.15%	0.02%	0.2%	2.6%
170	60,116	605	1.02%	45,316	75.38%	60.65%	24.39%	10.43%	1.19%	0.13%	0.02%	0.28%	2.91%
171	59,237	-274	-0.46%	45,969	77.6%	51.23%	39.79%	5.73%	0.54%	0.21%	0.03%	0.21%	2.26%
172	59,961	450	0.76%	44,756	74.64%	57.24%	23.26%	16%	0.77%	0.21%	0.03%	0.23%	2.27%
173	59,743	232	0.39%	45,292	75.81%	52.67%	36.22%	6.95%	0.79%	0.33%	0.02%	0.3%	2.72%
174	59,852	341	0.57%	45,760	76.46%	70.83%	16.91%	7.88%	0.47%	0.35%	0.04%	0.22%	3.3%
175	59,993	482	0.81%	44,704	74.52%	64.08%	23.75%	6.1%	1.78%	0.26%	0.07%	0.34%	3.64%
176	59,470	-41	-0.07%	44,991	75.65%	63.56%	21.74%	9.95%	0.91%	0.24%	0.08%	0.29%	3.23%
177	59,992	481	0.81%	46,014	76.7%	33.22%	54.7%	6.69%	1.26%	0.21%	0.07%	0.42%	3.42%
178	59,877	366	0.62%	45,638	76.22%	75.62%	14.4%	6.22%	0.52%	0.18%	0.01%	0.29%	2.76%
179	59,356	-155	-0.26%	47,156	79.45%	59.03%	28.39%	7.73%	1.06%	0.17%	0.13%	0.39%	3.11%
180	59,412	-99	-0.17%	45,362	76.35%	68.71%	16.96%	6.47%	1.56%	0.32%	0.11%	0.57%	5.3%

Total: 10,711,908**Ideal District: 59,511**

User: H097

Plan Name: House-prop1-2021

Plan Type: House

Population Summary

Summary Statistics:

Population Range:	58,678 to 60,308
Ratio Range:	0.03
Absolute Range:	-833 to 797
Absolute Overall Range:	1,630
Relative Range:	-1.40% to 1.34%
Relative Overall Range:	2.74%
Absolute Mean Deviation:	363.71
Relative Mean Deviation:	0.61%
Standard Deviation:	417.67

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH18+_Wht]	[% NH18+_Blk]	[% H18+_Pop]	[% NH18+_Asn]	[% NH18+_Ind]	[% NH18+_Hwn]	[% NH18+_Oth]	[% NH18+_2+ Races]
001	59,666	155	0.26%	46,801	78.44%	89.43%	3.65%	2.11%	0.57%	0.32%	0.05%	0.21%	3.65%
002	59,773	262	0.44%	46,159	77.22%	85.33%	2.64%	7.57%	1.07%	0.2%	0.02%	0.2%	2.97%
003	60,199	688	1.16%	46,716	77.6%	88.46%	2.71%	2.96%	1.56%	0.28%	0.14%	0.14%	3.77%
004	59,070	-441	-0.74%	42,798	72.45%	47.78%	4.53%	44.13%	1.28%	0.19%	0.02%	0.21%	1.86%
005	58,837	-674	-1.13%	44,623	75.84%	78.55%	3.81%	12.62%	1.26%	0.22%	0.03%	0.19%	3.31%
006	59,712	201	0.34%	45,152	75.62%	83%	1%	11.96%	0.51%	0.25%	0.02%	0.17%	3.09%
007	59,081	-430	-0.72%	48,771	82.55%	90.15%	0.34%	5.53%	0.46%	0.27%	0.01%	0.21%	3.02%
008	59,244	-267	-0.45%	49,612	83.74%	91.87%	1.12%	2.74%	0.54%	0.3%	0%	0.29%	3.13%
009	59,474	-37	-0.06%	48,273	81.17%	88.93%	1.06%	4.74%	0.83%	0.41%	0.06%	0.33%	3.64%
010	59,519	8	0.01%	47,164	79.24%	81.82%	3.19%	10.04%	1.58%	0.18%	0.03%	0.21%	2.95%
011	58,792	-719	-1.21%	45,396	77.21%	89.31%	1.43%	4.23%	1.06%	0.23%	0.03%	0.27%	3.44%
012	59,300	-211	-0.35%	46,487	78.39%	80.42%	8.94%	6.15%	1.01%	0.18%	0%	0.33%	2.97%
013	59,150	-361	-0.61%	45,176	76.38%	66.3%	18.03%	10.84%	1.36%	0.22%	0.02%	0.26%	2.97%
014	59,135	-376	-0.63%	45,511	76.96%	83.02%	6.06%	5.88%	0.8%	0.25%	0.02%	0.31%	3.65%
015	59,213	-298	-0.50%	45,791	77.33%	71.9%	13.11%	9.67%	1.36%	0.27%	0.03%	0.36%	3.3%
016	59,402	-109	-0.18%	44,009	74.09%	76.42%	10.83%	8.61%	0.79%	0.21%	0.05%	0.32%	2.76%
017	59,120	-391	-0.66%	42,761	72.33%	66.02%	21.24%	6.94%	1.41%	0.25%	0.06%	0.54%	3.55%
018	59,335	-176	-0.30%	45,159	76.11%	86.01%	7.17%	2.39%	0.62%	0.26%	0.04%	0.26%	3.24%
019	58,955	-556	-0.93%	44,299	75.14%	65.37%	22.26%	6.8%	1.21%	0.21%	0.07%	0.48%	3.59%
020	60,107	596	1.00%	45,725	76.07%	76.4%	7.96%	9.18%	2.03%	0.14%	0.04%	0.55%	3.7%
021	59,529	18	0.03%	44,931	75.48%	82.07%	4.23%	7.44%	1.87%	0.22%	0.05%	0.61%	3.51%
022	59,460	-51	-0.09%	45,815	77.05%	65.61%	13.32%	11.57%	4.04%	0.21%	0.03%	0.76%	4.47%
023	59,048	-463	-0.78%	44,254	74.95%	75.29%	5.48%	14.23%	1.12%	0.21%	0.05%	0.32%	3.3%
024	59,011	-500	-0.84%	41,814	70.86%	63.42%	6.04%	10.32%	16.41%	0.17%	0.05%	0.56%	3.03%
025	59,414	-97	-0.16%	42,520	71.57%	56.12%	5.08%	5.09%	30.56%	0.1%	0.03%	0.45%	2.56%
026	59,248	-263	-0.44%	44,081	74.4%	68.21%	3.18%	10.76%	14.26%	0.12%	0.04%	0.44%	2.99%
027	58,795	-716	-1.20%	46,004	78.24%	82.61%	3.07%	9.6%	0.83%	0.2%	0.04%	0.24%	3.4%
028	58,972	-539	-0.91%	44,444	75.36%	79.36%	3.15%	11.44%	2.16%	0.17%	0.03%	0.36%	3.33%

Population Summary

House-prop1-2021

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH18+_Wht]	[% NH18+_Blk]	[% H18+_Pop]	[% NH18+_Asn]	[% NH18+_Ind]	[% NH18+_Hwn]	[% NH18+_Oth]	[% NH18+_2+ Races]
029	59,200	-311	-0.52%	43,131	72.86%	42.29%	12.55%	39.71%	3.02%	0.14%	0.06%	0.33%	1.91%
030	59,266	-245	-0.41%	45,414	76.63%	70.5%	7.19%	16.13%	2.96%	0.15%	0.02%	0.28%	2.77%
031	59,901	390	0.66%	43,120	71.99%	68.65%	6.79%	18.95%	2.35%	0.21%	0.03%	0.32%	2.69%
032	59,145	-366	-0.62%	45,942	77.68%	82.98%	7.21%	4.87%	1.25%	0.32%	0.05%	0.2%	3.12%
033	59,187	-324	-0.54%	46,498	78.56%	82.25%	10.57%	3.13%	1.16%	0.15%	0.01%	0.29%	2.43%
034	59,875	364	0.61%	45,758	76.42%	69.23%	14.11%	7.85%	4.43%	0.12%	0.03%	0.65%	3.58%
035	59,889	378	0.64%	48,312	80.67%	53.63%	25.59%	11.15%	4.58%	0.19%	0.05%	0.77%	4.04%
036	59,994	483	0.81%	44,911	74.86%	70.77%	15.48%	6.51%	3.02%	0.15%	0.04%	0.6%	3.44%
037	59,176	-335	-0.56%	46,223	78.11%	46.26%	25.84%	18.64%	4.61%	0.21%	0.02%	0.91%	3.52%
038	59,317	-194	-0.33%	44,839	75.59%	30.1%	51.13%	12.62%	1.87%	0.24%	0.05%	0.63%	3.36%
039	59,381	-130	-0.22%	44,436	74.83%	23.47%	52.5%	18.66%	1.77%	0.17%	0.03%	0.6%	2.79%
040	59,044	-467	-0.78%	47,976	81.25%	51.14%	30.35%	5.92%	8.24%	0.15%	0.01%	0.63%	3.55%
041	60,122	611	1.03%	45,271	75.3%	27.62%	36.96%	28.55%	3.13%	0.22%	0.05%	0.84%	2.62%
042	59,620	109	0.18%	48,525	81.39%	39%	30.85%	17.38%	7.45%	0.2%	0.04%	1.14%	3.94%
043	59,464	-47	-0.08%	47,033	79.09%	46.31%	24.03%	14.15%	7.62%	0.21%	0.09%	2.27%	5.32%
044	60,002	491	0.83%	46,773	77.95%	67.69%	10.5%	10.53%	5.78%	0.2%	0.02%	1.06%	4.23%
045	59,738	227	0.38%	44,023	73.69%	74.94%	4.27%	4.85%	12.05%	0.05%	0.02%	0.59%	3.23%
046	59,108	-403	-0.68%	44,132	74.66%	74.81%	6.79%	7.38%	6.72%	0.13%	0.04%	0.61%	3.53%
047	59,126	-385	-0.65%	43,932	74.3%	63.89%	9.3%	7.37%	15.16%	0.17%	0.03%	0.62%	3.46%
048	59,003	-508	-0.85%	44,779	75.89%	61.77%	10.14%	12.41%	11.59%	0.08%	0.04%	0.56%	3.42%
049	59,153	-358	-0.60%	45,263	76.52%	71.48%	7.22%	6.7%	10.74%	0.1%	0.03%	0.63%	3.12%
050	59,523	12	0.02%	43,940	73.82%	44.37%	10.8%	6.36%	34.63%	0.07%	0.05%	0.58%	3.13%
051	58,952	-559	-0.94%	47,262	80.17%	54.33%	21.3%	13.31%	5.93%	0.18%	0.05%	1.01%	3.89%
052	59,811	300	0.50%	48,525	81.13%	55.14%	14.19%	7.41%	19.12%	0.14%	0.07%	0.68%	3.24%
053	59,953	442	0.74%	46,944	78.3%	71.2%	12.71%	7.44%	4.58%	0.09%	0.02%	0.54%	3.41%
054	60,083	572	0.96%	50,338	83.78%	62.98%	13.67%	12.79%	6.86%	0.13%	0.03%	0.53%	3.02%
055	59,971	460	0.77%	49,255	82.13%	35.51%	52.85%	4.97%	3.19%	0.18%	0.04%	0.37%	2.88%
056	58,929	-582	-0.98%	52,757	89.53%	36.98%	42.9%	5.84%	9.92%	0.2%	0.08%	0.41%	3.67%
057	59,969	458	0.77%	52,097	86.87%	63.64%	16.18%	7.95%	7.99%	0.1%	0.02%	0.6%	3.52%
058	59,057	-454	-0.76%	50,514	85.53%	27.56%	60.36%	5.07%	3.04%	0.12%	0.04%	0.51%	3.3%
059	59,434	-77	-0.13%	49,179	82.75%	22.04%	66.72%	4.43%	2.9%	0.17%	0.02%	0.54%	3.18%
060	59,709	198	0.33%	45,490	76.19%	28.09%	61.3%	5.11%	2.17%	0.18%	0.05%	0.43%	2.67%
061	59,302	-209	-0.35%	45,447	76.64%	16.75%	71.33%	7.61%	0.97%	0.17%	0.05%	0.51%	2.6%
062	59,450	-61	-0.10%	46,426	78.09%	19.07%	69.19%	6.83%	1.3%	0.21%	0.05%	0.47%	2.88%
063	59,381	-130	-0.22%	45,043	75.85%	19.22%	66.7%	9.26%	1.54%	0.21%	0.04%	0.47%	2.56%
064	58,986	-525	-0.88%	44,189	74.91%	57.83%	28.63%	7.44%	1.41%	0.3%	0.04%	0.7%	3.67%
065	59,464	-47	-0.08%	44,386	74.64%	31.46%	59.19%	4.53%	1.15%	0.19%	0.05%	0.51%	2.92%
066	59,047	-464	-0.78%	44,278	74.99%	33.93%	50.39%	9.49%	1.86%	0.26%	0.08%	0.63%	3.36%
067	59,135	-376	-0.63%	44,299	74.91%	30.86%	56.59%	7.75%	1.39%	0.19%	0.03%	0.49%	2.7%
068	59,477	-34	-0.06%	44,835	75.38%	33.94%	53.42%	6.33%	2.77%	0.14%	0.05%	0.63%	2.72%
069	58,682	-829	-1.39%	45,548	77.62%	26.89%	60.9%	5.42%	3.12%	0.18%	0.04%	0.78%	2.68%
070	59,121	-390	-0.66%	45,249	76.54%	59.69%	26.23%	7.96%	2.23%	0.22%	0.06%	0.4%	3.22%
071	59,538	27	0.05%	44,582	74.88%	69.8%	18.45%	6.18%	1.01%	0.24%	0.02%	0.42%	3.88%

Population Summary

House-prop1-2021

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH18+_Wht]	[% NH18+_Blk]	[% H18+_Pop]	[% NH18+_Asn]	[% NH18+_Ind]	[% NH18+_Hwn]	[% NH18+_Oth]	[% NH18+_ 2+ Races]
072	59,660	149	0.25%	46,229	77.49%	69.24%	19.51%	6.94%	0.93%	0.19%	0.02%	0.23%	2.94%
073	60,036	525	0.88%	45,736	76.18%	72.58%	10.84%	7.05%	5.58%	0.14%	0.03%	0.4%	3.38%
074	58,956	-555	-0.93%	44,696	75.81%	64.44%	24%	5.55%	2.04%	0.21%	0.02%	0.47%	3.26%
075	59,743	232	0.39%	43,850	73.4%	11.27%	71.04%	11.28%	2.93%	0.18%	0.07%	0.66%	2.57%
076	59,759	248	0.42%	44,371	74.25%	10.51%	64.4%	13.23%	8.69%	0.21%	0.05%	0.51%	2.41%
077	59,242	-269	-0.45%	44,207	74.62%	7.58%	73.27%	12.2%	4.36%	0.23%	0.06%	0.41%	1.9%
078	59,044	-467	-0.78%	44,572	75.49%	15.05%	68.35%	8.89%	4.21%	0.2%	0.03%	0.63%	2.63%
079	59,500	-11	-0.02%	43,223	72.64%	7.15%	68.44%	16.03%	5.51%	0.2%	0.01%	0.56%	2.09%
080	59,461	-50	-0.08%	44,784	75.32%	47.63%	12.45%	23.12%	13.33%	0.07%	0.04%	0.56%	2.79%
081	59,007	-504	-0.85%	46,259	78.4%	47.01%	19.77%	20.92%	8.71%	0.14%	0.01%	0.46%	2.98%
082	59,724	213	0.36%	50,238	84.12%	62.46%	15.19%	6.79%	11.35%	0.11%	0.04%	0.56%	3.51%
083	59,416	-95	-0.16%	46,581	78.4%	47.9%	13.51%	28.47%	6.91%	0.1%	0.02%	0.55%	2.55%
084	59,862	351	0.59%	47,350	79.1%	21.29%	70.47%	2.96%	1.48%	0.16%	0.02%	0.55%	3.07%
085	59,373	-138	-0.23%	46,308	78%	19.48%	59.85%	5.92%	10.8%	0.21%	0.02%	0.57%	3.14%
086	59,205	-306	-0.51%	44,614	75.36%	12.08%	72.02%	4.29%	7.95%	0.15%	0.01%	0.65%	2.84%
087	59,709	198	0.33%	45,615	76.4%	13.5%	69.72%	6.69%	6.22%	0.24%	0.02%	0.64%	2.97%
088	59,689	178	0.30%	46,073	77.19%	18.3%	60.15%	9.97%	7.64%	0.22%	0.07%	0.64%	3.01%
089	59,866	355	0.60%	46,198	77.17%	31.07%	60.06%	3.42%	1.92%	0.15%	0.03%	0.41%	2.93%
090	59,812	301	0.51%	48,015	80.28%	33.98%	56.05%	4.26%	1.82%	0.12%	0.03%	0.53%	3.2%
091	60,050	539	0.91%	46,173	76.89%	22%	67.15%	5.86%	1.44%	0.15%	0.05%	0.49%	2.86%
092	60,273	762	1.28%	46,551	77.23%	24.05%	65.71%	4.68%	1.67%	0.17%	0.03%	0.61%	3.08%
093	60,118	607	1.02%	44,734	74.41%	22.91%	62.36%	9.58%	1.48%	0.17%	0.09%	0.61%	2.81%
094	59,211	-300	-0.50%	44,809	75.68%	18.42%	65.61%	7.29%	4.85%	0.19%	0.02%	0.54%	3.07%
095	60,030	519	0.87%	44,948	74.88%	21.83%	63.61%	7.94%	2.43%	0.22%	0.04%	0.67%	3.27%
096	59,515	4	0.01%	44,671	75.06%	20.32%	20.75%	36.03%	19.7%	0.11%	0.04%	0.6%	2.44%
097	59,072	-439	-0.74%	46,339	78.44%	36.44%	24.16%	19.23%	16.07%	0.19%	0.05%	0.6%	3.25%
098	59,998	487	0.82%	42,734	71.23%	11.66%	20.91%	52.77%	12.28%	0.12%	0.05%	0.51%	1.71%
099	59,850	339	0.57%	45,004	75.19%	42.1%	13.07%	8.67%	32.63%	0.13%	0.04%	0.48%	2.89%
100	60,030	519	0.87%	42,669	71.08%	59.05%	8.86%	9.98%	18.41%	0.19%	0.06%	0.43%	3.02%
101	59,938	427	0.72%	46,584	77.72%	40.14%	21.87%	18.24%	15.98%	0.16%	0.05%	0.54%	3.02%
102	58,959	-552	-0.93%	42,968	72.88%	30.65%	34.79%	21.34%	9.57%	0.2%	0.03%	0.52%	2.89%
103	60,197	686	1.15%	44,399	73.76%	52.42%	15.01%	16.89%	12.19%	0.12%	0.03%	0.5%	2.83%
104	59,362	-149	-0.25%	43,306	72.95%	62.96%	15.44%	11.14%	6.38%	0.18%	0.05%	0.51%	3.34%
105	59,344	-167	-0.28%	43,474	73.26%	41.74%	26.67%	16.76%	11.05%	0.1%	0.03%	0.54%	3.12%
106	59,112	-399	-0.67%	43,890	74.25%	41.22%	33.7%	11.14%	9.73%	0.16%	0.03%	0.74%	3.28%
107	59,702	191	0.32%	44,509	74.55%	21.96%	27.02%	31.09%	16.75%	0.18%	0.04%	0.56%	2.4%
108	59,577	66	0.11%	44,308	74.37%	43.36%	16.55%	18.16%	18.34%	0.18%	0.04%	0.53%	2.84%
109	59,630	119	0.20%	44,140	74.02%	15.44%	29.65%	36.12%	15.82%	0.12%	0.06%	0.55%	2.25%
110	59,951	440	0.74%	43,226	72.1%	36.58%	44.02%	10.49%	4.72%	0.18%	0.04%	0.72%	3.25%
111	60,009	498	0.84%	44,096	73.48%	64%	20.56%	8.84%	2.56%	0.2%	0.04%	0.64%	3.17%
112	59,349	-162	-0.27%	45,120	76.02%	73.73%	18.26%	3.28%	1.26%	0.22%	0.02%	0.41%	2.81%
113	60,053	542	0.91%	44,538	74.16%	31.8%	56.48%	6.65%	0.83%	0.15%	0.11%	0.59%	3.39%
114	59,867	356	0.60%	45,872	76.62%	68.84%	23.42%	3.73%	0.71%	0.18%	0.01%	0.35%	2.76%

Population Summary

House-prop1-2021

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH18+_Wht]	[% NH18+_Blk]	[% H18+_Pop]	[% NH18+_Asn]	[% NH18+_Ind]	[% NH18+_Hwn]	[% NH18+_Oth]	[% NH18+_ 2+ Races]
115	60,174	663	1.11%	44,807	74.46%	36.95%	49.2%	6.97%	2.68%	0.2%	0.05%	0.69%	3.26%
116	59,913	402	0.68%	45,791	76.43%	27.22%	54.93%	7.29%	6.48%	0.19%	0.09%	0.74%	3.05%
117	60,130	619	1.04%	44,973	74.79%	54.5%	34.54%	5.44%	1.54%	0.19%	0.04%	0.52%	3.22%
118	59,987	476	0.80%	46,342	77.25%	69.73%	22.7%	3.68%	0.42%	0.2%	0.02%	0.39%	2.85%
119	58,947	-564	-0.95%	44,005	74.65%	69.8%	12.31%	10.44%	3.75%	0.17%	0.02%	0.43%	3.08%
120	58,982	-529	-0.89%	46,767	79.29%	71.94%	13.21%	7.09%	4.18%	0.16%	0.05%	0.44%	2.91%
121	59,127	-384	-0.65%	46,598	78.81%	76.13%	8.6%	5.57%	5.84%	0.1%	0%	0.46%	3.3%
122	59,632	121	0.20%	48,840	81.9%	54.8%	27.13%	11.7%	2.41%	0.32%	0.06%	0.79%	2.79%
123	59,282	-229	-0.38%	46,572	78.56%	68.06%	23.42%	4.31%	1.06%	0.19%	0.02%	0.2%	2.75%
124	59,221	-290	-0.49%	47,638	80.44%	65.01%	24.61%	6.17%	1.08%	0.19%	0.02%	0.31%	2.61%
125	60,137	626	1.05%	43,812	72.85%	63.03%	21.43%	7.66%	2.6%	0.31%	0.16%	0.39%	4.41%
126	59,260	-251	-0.42%	45,497	76.78%	39.97%	52.63%	3.17%	0.89%	0.29%	0.16%	0.29%	2.62%
127	58,678	-833	-1.40%	45,889	78.2%	68.13%	16.88%	4.77%	5.68%	0.19%	0.16%	0.43%	3.77%
128	58,864	-647	-1.09%	46,488	78.98%	46.49%	49.38%	1.7%	0.35%	0.19%	0.01%	0.17%	1.71%
129	58,829	-682	-1.15%	46,873	79.68%	37.16%	52.33%	4.26%	2.4%	0.19%	0.15%	0.41%	3.1%
130	59,203	-308	-0.52%	44,019	74.35%	33.74%	57.69%	3.86%	0.97%	0.26%	0.19%	0.34%	2.95%
131	58,890	-621	-1.04%	42,968	72.96%	68.16%	15.87%	5.87%	5.21%	0.21%	0.1%	0.55%	4.03%
132	59,142	-369	-0.62%	46,752	79.05%	35.63%	49.82%	7.8%	2.74%	0.27%	0.16%	0.3%	3.28%
133	59,202	-309	-0.52%	47,222	79.76%	58.39%	35.87%	2.15%	1.15%	0.15%	0.04%	0.36%	1.89%
134	59,396	-115	-0.19%	45,110	75.95%	59.9%	32.37%	3.74%	0.81%	0.23%	0.02%	0.25%	2.69%
135	60,063	552	0.93%	46,725	77.79%	71.78%	22.84%	1.82%	0.55%	0.16%	0.01%	0.25%	2.57%
136	59,298	-213	-0.36%	45,367	76.51%	63.9%	27.76%	3.64%	1.55%	0.26%	0.04%	0.29%	2.55%
137	59,551	40	0.07%	45,358	76.17%	40.82%	50.02%	4.48%	1.73%	0.12%	0.12%	0.26%	2.44%
138	58,912	-599	-1.01%	45,684	77.55%	72.34%	18.26%	3.31%	2.43%	0.26%	0.07%	0.35%	2.97%
139	59,010	-501	-0.84%	45,522	77.14%	66.19%	18.56%	6.36%	3.89%	0.25%	0.24%	0.46%	4.04%
140	59,294	-217	-0.36%	44,411	74.9%	31.7%	54.74%	8.02%	1.17%	0.24%	0.2%	0.49%	3.43%
141	59,019	-492	-0.83%	44,677	75.7%	31.77%	54.65%	6.55%	2.69%	0.27%	0.3%	0.38%	3.38%
142	59,608	97	0.16%	44,584	74.8%	34.8%	57.42%	3.7%	1.4%	0.17%	0.02%	0.28%	2.2%
143	59,469	-42	-0.07%	46,390	78.01%	32.28%	58.98%	4.67%	1.07%	0.21%	0.05%	0.3%	2.44%
144	59,232	-279	-0.47%	46,370	78.29%	62.95%	28.34%	2.55%	3.45%	0.14%	0.02%	0.26%	2.29%
145	59,863	352	0.59%	45,844	76.58%	55.12%	33.97%	5.94%	0.99%	0.33%	0.03%	0.3%	3.32%
146	60,203	692	1.16%	44,589	74.06%	61.84%	26.08%	4.73%	2.98%	0.18%	0.09%	0.39%	3.71%
147	59,178	-333	-0.56%	44,902	75.88%	55.32%	28.41%	7.17%	4.85%	0.25%	0.07%	0.41%	3.52%
148	59,984	473	0.79%	46,614	77.71%	60.45%	33.11%	3.08%	0.87%	0.14%	0.04%	0.21%	2.1%
149	58,893	-618	-1.04%	46,821	79.5%	60.99%	30.75%	5.69%	0.57%	0.19%	0.04%	0.14%	1.63%
150	59,276	-235	-0.39%	47,050	79.37%	38.31%	52.5%	6.13%	1.18%	0.16%	0.03%	0.15%	1.54%
151	60,059	548	0.92%	46,973	78.21%	47.2%	40.96%	7.28%	1.43%	0.18%	0.18%	0.19%	2.58%
152	60,134	623	1.05%	46,026	76.54%	67.94%	25.26%	2.34%	1.52%	0.24%	0.04%	0.19%	2.46%
153	59,299	-212	-0.36%	45,692	77.05%	27.66%	66.38%	2.55%	1%	0.16%	0.03%	0.23%	2.01%
154	59,994	483	0.81%	47,273	78.8%	42.24%	53.68%	1.67%	0.36%	0.19%	0%	0.16%	1.7%
155	58,759	-752	-1.26%	45,208	76.94%	59.77%	34.6%	2.22%	0.95%	0.16%	0.04%	0.21%	2.05%
156	59,444	-67	-0.11%	45,867	77.16%	60.92%	29.32%	6.88%	0.62%	0.16%	0.01%	0.15%	1.93%
157	59,957	446	0.75%	45,311	75.57%	64.48%	23.7%	8.96%	0.57%	0.17%	0.04%	0.16%	1.93%

Population Summary

House-prop1-2021

District	Population	Deviation	% Devn.	[18+_Pop]	[% 18+_Pop]	[% NH18+_Wht]	[% NH18+_Blk]	[% H18+_Pop]	[% NH18+_Asn]	[% NH18+_Ind]	[% NH18+_Hwn]	[% NH18+_Oth]	[% NH18+_2+ Races]
158	59,440	-71	-0.12%	45,549	76.63%	62.21%	30.2%	4.52%	0.71%	0.21%	0.03%	0.18%	1.93%
159	59,895	384	0.65%	44,871	74.92%	69.39%	23.44%	2.87%	0.57%	0.31%	0.04%	0.26%	3.12%
160	59,935	424	0.71%	48,057	80.18%	68.48%	21.07%	5.04%	1.64%	0.24%	0.09%	0.27%	3.17%
161	60,097	586	0.98%	44,371	73.83%	60.16%	25.26%	6.82%	3.16%	0.25%	0.09%	0.48%	3.77%
162	60,308	797	1.34%	46,733	77.49%	40.62%	41.13%	9.58%	4.16%	0.22%	0.24%	0.44%	3.61%
163	60,123	612	1.03%	48,461	80.6%	41.92%	43.78%	7.38%	3.6%	0.2%	0.1%	0.33%	2.68%
164	60,101	590	0.99%	45,851	76.29%	60.61%	21.43%	8.49%	4.37%	0.26%	0.12%	0.6%	4.12%
165	59,978	467	0.78%	48,247	80.44%	39.18%	48.49%	5.33%	3.68%	0.25%	0.14%	0.35%	2.57%
166	60,242	731	1.23%	47,580	78.98%	84.71%	4.96%	4.07%	2.69%	0.18%	0.05%	0.36%	2.97%
167	59,493	-18	-0.03%	44,140	74.19%	65.96%	20.55%	7.41%	1.48%	0.39%	0.18%	0.39%	3.66%
168	60,147	636	1.07%	44,867	74.6%	39.29%	42.28%	10.3%	2.32%	0.33%	0.65%	0.38%	4.46%
169	59,138	-373	-0.63%	45,267	76.54%	60.95%	28.12%	7.66%	0.88%	0.14%	0.03%	0.16%	2.06%
170	60,116	605	1.02%	45,316	75.38%	64.17%	23.21%	8.65%	1.19%	0.12%	0.02%	0.25%	2.38%
171	59,237	-274	-0.46%	45,969	77.6%	53.85%	38.58%	4.63%	0.56%	0.24%	0.02%	0.17%	1.95%
172	59,961	450	0.76%	44,756	74.64%	61.03%	22.46%	13.42%	0.78%	0.23%	0.03%	0.19%	1.87%
173	59,743	232	0.39%	45,292	75.81%	55.68%	35.18%	5.35%	0.84%	0.37%	0.02%	0.26%	2.31%
174	59,852	341	0.57%	45,760	76.46%	72.25%	16.08%	7.96%	0.52%	0.38%	0.03%	0.15%	2.64%
175	59,993	482	0.81%	44,704	74.52%	66.49%	23.13%	5.03%	1.85%	0.28%	0.06%	0.3%	2.86%
176	59,470	-41	-0.07%	44,991	75.65%	66.15%	21.61%	8.24%	0.96%	0.25%	0.1%	0.19%	2.49%
177	59,992	481	0.81%	46,014	76.7%	37.12%	51.68%	6.12%	1.36%	0.24%	0.08%	0.36%	3.04%
178	59,877	366	0.62%	45,638	76.22%	77.79%	13.99%	5.14%	0.54%	0.2%	0.01%	0.23%	2.09%
179	59,356	-155	-0.26%	47,156	79.45%	63.69%	25.74%	6.38%	1.07%	0.15%	0.11%	0.34%	2.51%
180	59,412	-99	-0.17%	45,362	76.35%	71.17%	16.63%	5.62%	1.67%	0.31%	0.11%	0.47%	4.02%

Total: 10,711,908**Ideal District: 59,511**

The preceding report, published by the Georgia General Assembly, does not include statistics for the percentage of the voting age population that is “Black or African American alone or in combination,” also known as the “any part Black voting age population” percentage or “APBVAP%.” As these percentages are relevant for determining which House districts can be considered majority-Black under the conventions used in the expert report, I have provided them below after having exported a listing from the *Maptitude for Redistricting* software.

District	APBVAP%	District	APBVAP%	District	APBVAP%	District	APBVAP%	District	APBVAP%
1	4.20%	25	5.90%	49	8.42%	73	12.11%	97	26.77%
2	3.15%	26	4.01%	50	12.40%	74	25.52%	98	23.25%
3	3.35%	27	3.69%	51	23.68%	75	74.40%	99	14.71%
4	5.38%	28	3.93%	52	15.99%	76	67.23%	100	10.01%
5	4.60%	29	13.59%	53	14.53%	77	76.13%	101	24.19%
6	1.51%	30	8.10%	54	15.47%	78	71.58%	102	37.62%
7	0.62%	31	7.57%	55	55.38%	79	71.59%	103	16.79%
8	1.43%	32	7.96%	56	45.48%	80	14.18%	104	17.03%
9	1.57%	33	11.20%	57	18.06%	81	21.83%	105	29.05%
10	3.73%	34	15.67%	58	63.04%	82	16.83%	106	36.27%
11	1.85%	35	28.40%	59	70.09%	83	15.12%	107	29.63%
12	9.68%	36	16.98%	60	63.88%	84	73.66%	108	18.35%
13	19.18%	37	28.18%	61	74.29%	85	62.71%	109	32.51%
14	6.85%	38	54.23%	62	72.26%	86	75.05%	110	47.19%
15	14.19%	39	55.29%	63	69.33%	87	73.08%	111	22.29%
16	11.69%	40	32.98%	64	30.72%	88	63.35%	112	19.21%
17	23.02%	41	39.35%	65	61.98%	89	62.54%	113	59.53%
18	7.98%	42	33.70%	66	53.41%	90	58.49%	114	24.74%
19	24.15%	43	26.53%	67	58.92%	91	70.04%	115	52.13%
20	9.25%	44	12.05%	68	55.75%	92	68.79%	116	58.13%
21	5.06%	45	5.28%	69	63.56%	93	65.36%	117	36.61%
22	15.10%	46	8.07%	70	27.83%	94	69.04%	118	23.60%
23	6.50%	47	10.72%	71	19.92%	95	67.15%	119	13.49%
24	7.00%	48	11.79%	72	20.86%	96	23.00%	120	14.28%

(Table continues on following page.)

(Cont.)

District	APBVAP%	District	APBVAP%	District	APBVAP%	District	APBVAP%	District	APBVAP%
121	9.56%	133	36.76%	145	35.67%	157	24.67%	169	29.04%
122	28.42%	134	33.57%	146	27.61%	158	31.20%	170	24.22%
123	24.28%	135	23.75%	147	30.12%	159	24.50%	171	39.60%
124	25.58%	136	28.67%	148	34.02%	160	22.60%	172	23.32%
125	23.68%	137	52.13%	149	32.15%	161	27.14%	173	36.27%
126	54.47%	138	19.32%	150	53.56%	162	43.73%	174	17.37%
127	18.52%	139	20.27%	151	42.41%	163	45.49%	175	24.17%
128	50.41%	140	57.63%	152	26.06%	164	23.47%	176	22.68%
129	54.87%	141	57.46%	153	67.95%	165	50.33%	177	53.88%
130	59.91%	142	59.52%	154	54.82%	166	5.67%	178	14.79%
131	17.62%	143	60.79%	155	35.85%	167	22.28%	179	27.03%
132	52.34%	144	29.33%	156	30.25%	168	46.26%	180	18.21%

Esselstyn Report: Attachment J

District	Population	Deviation	% Deviation	% single-race		% single-race		% single-race		% multi-racial (total pop)	% Hispanic or Latino (total pop)	% Black alone or in combination (total pop)	% Black alone or in combination (voting age pop)
				% single-race White (total pop)	% single-race Black (total pop)	% single-race American Indian Alaska Native (total pop)	% single-race Asian (total pop)	% single-race Pacific Islander (total pop)	% single-race Other (total pop)				
1	59,666	155	0.26%	88.62%	3.94%	0.41%	0.54%	0.06%	1.12%	5.32%	2.59%	5.09%	4.20%
2	59,773	262	0.44%	85.43%	2.68%	0.43%	1.12%	0.02%	3.69%	6.63%	9.09%	3.64%	3.15%
3	60,199	688	1.16%	87.87%	2.90%	0.36%	1.64%	0.14%	1.40%	5.69%	3.60%	4.09%	3.35%
4	59,070	-441	-0.74%	51.31%	4.41%	2.94%	1.27%	0.04%	25.56%	14.47%	50.07%	5.53%	5.38%
5	58,837	-674	-1.13%	78.57%	3.88%	0.60%	1.24%	0.03%	7.79%	7.90%	15.29%	5.24%	4.60%
6	59,712	201	0.34%	83.29%	1.07%	1.22%	0.53%	0.02%	6.80%	7.06%	14.51%	1.88%	1.51%
7	59,081	-430	-0.72%	89.34%	0.40%	0.61%	0.47%	0.02%	4.07%	5.09%	7.43%	0.87%	0.62%
8	59,244	-267	-0.45%	91.67%	1.16%	0.38%	0.55%	0.01%	1.22%	5.01%	3.21%	1.73%	1.43%
9	59,474	-37	-0.06%	89.17%	1.05%	0.49%	0.79%	0.06%	2.17%	6.27%	5.49%	1.79%	1.57%
10	59,519	8	0.01%	81.72%	3.03%	0.47%	1.53%	0.06%	5.51%	7.68%	13.11%	3.84%	3.73%
11	58,792	-719	-1.21%	88.57%	1.61%	0.37%	1.16%	0.03%	1.98%	6.28%	5.33%	2.35%	1.85%
12	59,300	-211	-0.35%	79.74%	8.68%	0.52%	1.01%	0.01%	4.44%	5.61%	7.68%	10.20%	9.68%
13	59,150	-361	-0.61%	64.15%	18.92%	0.81%	1.29%	0.03%	6.65%	8.15%	13.52%	20.65%	19.18%
14	59,135	-376	-0.63%	83.05%	5.98%	0.34%	0.79%	0.03%	3.25%	6.56%	7.04%	7.34%	6.85%
15	59,213	-298	-0.50%	70.65%	13.85%	0.55%	1.31%	0.05%	6.05%	7.56%	11.74%	15.79%	14.19%
16	59,402	-109	-0.18%	75.06%	11.36%	0.61%	0.77%	0.06%	6.25%	5.89%	10.95%	12.76%	11.69%
17	59,120	-391	-0.66%	65.08%	22.54%	0.36%	1.34%	0.08%	2.97%	7.63%	7.90%	25.01%	23.02%
18	59,335	-176	-0.30%	85.62%	7.19%	0.28%	0.61%	0.04%	1.30%	4.96%	2.93%	8.63%	7.98%
19	58,955	-556	-0.93%	63.74%	23.95%	0.39%	1.17%	0.09%	3.33%	7.34%	7.87%	26.38%	24.15%
20	60,107	596	1.00%	76.19%	8.34%	0.31%	2.01%	0.04%	3.95%	9.16%	10.60%	9.94%	9.25%
21	59,529	18	0.03%	81.93%	4.37%	0.38%	1.86%	0.05%	2.97%	8.44%	8.54%	5.63%	5.06%
22	59,460	-51	-0.09%	65.22%	14.31%	0.44%	3.90%	0.04%	5.20%	10.90%	13.26%	16.63%	15.10%
23	59,048	-463	-0.78%	75.17%	5.81%	1.01%	1.08%	0.05%	7.59%	9.29%	17.19%	7.20%	6.50%
24	59,011	-500	-0.84%	61.94%	6.14%	0.45%	17.71%	0.04%	4.82%	8.90%	11.36%	7.31%	7.00%
25	59,414	-97	-0.16%	53.10%	5.06%	0.19%	33.57%	0.03%	1.50%	6.55%	5.42%	6.07%	5.90%
26	59,248	-263	-0.44%	65.34%	3.41%	0.50%	16.82%	0.05%	5.34%	8.54%	12.07%	4.47%	4.01%
27	58,795	-716	-1.20%	82.10%	3.31%	0.44%	0.84%	0.04%	5.55%	7.72%	11.82%	4.40%	3.69%
28	58,972	-539	-0.91%	79.07%	3.49%	0.53%	2.09%	0.03%	5.99%	8.79%	13.59%	4.55%	3.93%
29	59,200	-311	-0.52%	43.92%	12.45%	1.40%	2.77%	0.07%	25.34%	14.04%	46.28%	13.74%	13.59%
30	59,266	-245	-0.41%	70.51%	7.56%	0.49%	3.06%	0.04%	8.72%	9.63%	18.78%	8.75%	8.10%
31	59,901	390	0.66%	69.79%	6.83%	0.61%	2.33%	0.04%	10.78%	9.61%	21.63%	7.96%	7.57%
32	59,145	-366	-0.62%	82.12%	7.33%	0.48%	1.28%	0.07%	2.88%	5.84%	6.03%	8.88%	7.96%
33	59,187	-324	-0.54%	80.79%	11.02%	0.21%	1.20%	0.02%	2.22%	4.54%	4.08%	12.37%	11.20%
34	59,875	364	0.61%	68.37%	14.73%	0.32%	4.45%	0.04%	3.38%	8.70%	9.06%	16.87%	15.67%
35	59,889	378	0.64%	52.51%	27.13%	0.48%	4.49%	0.05%	5.14%	10.20%	12.70%	30.41%	28.40%
36	59,994	483	0.81%	69.47%	16.26%	0.25%	3.10%	0.05%	2.80%	8.08%	7.46%	18.43%	16.98%

District	Population	Deviation	% Deviation	% single-race		% single-race		% single-race		% multi-racial (total pop)	% Hispanic or Latino (total pop)	% Black alone or in combination (total pop)	% Black alone or in combination (voting age pop)
				White (total pop)	Black (total pop)	American Indian Alaska Native (total pop)	Asian (total pop)	Native Hawaiian Pacific Islander (total pop)	Other (total pop)				
37	59,176	-335	-0.56%	45.62%	26.57%	0.99%	4.53%	0.06%	11.93%	10.30%	21.96%	29.02%	28.18%
38	59,317	-194	-0.33%	27.97%	53.68%	0.59%	1.80%	0.09%	7.72%	8.15%	14.72%	56.91%	54.23%
39	59,381	-130	-0.22%	22.83%	52.84%	0.79%	1.53%	0.04%	12.96%	9.01%	21.79%	55.60%	55.29%
40	59,044	-467	-0.78%	50.09%	31.39%	0.25%	8.59%	0.03%	2.33%	7.32%	6.43%	34.18%	32.98%
41	60,122	611	1.03%	29.51%	37.00%	1.11%	2.85%	0.06%	16.74%	12.72%	33.22%	39.66%	39.35%
42	59,620	109	0.18%	38.93%	31.87%	0.61%	7.17%	0.05%	10.28%	11.09%	20.49%	34.76%	33.70%
43	59,464	-47	-0.08%	45.84%	24.83%	0.92%	7.85%	0.10%	9.01%	11.45%	15.85%	27.49%	26.53%
44	60,002	491	0.83%	66.91%	11.23%	0.41%	5.74%	0.04%	5.13%	10.53%	11.99%	13.32%	12.05%
45	59,738	227	0.38%	73.40%	4.24%	0.15%	12.96%	0.02%	1.48%	7.75%	5.50%	5.53%	5.28%
46	59,108	-403	-0.68%	74.02%	6.93%	0.26%	6.95%	0.04%	2.77%	9.03%	8.24%	8.59%	8.07%
47	59,126	-385	-0.65%	63.20%	9.59%	0.31%	15.95%	0.03%	2.72%	8.19%	7.83%	11.15%	10.72%
48	59,003	-508	-0.85%	60.96%	10.38%	0.43%	11.79%	0.06%	6.20%	10.18%	14.10%	12.23%	11.79%
49	59,153	-358	-0.60%	70.45%	7.33%	0.17%	11.43%	0.03%	2.42%	8.17%	7.56%	8.85%	8.42%
50	59,523	12	0.02%	42.70%	11.30%	0.14%	35.51%	0.04%	2.70%	7.60%	7.06%	13.04%	12.40%
51	58,952	-559	-0.94%	53.22%	22.42%	0.44%	5.86%	0.05%	7.50%	10.50%	15.47%	25.05%	23.68%
52	59,811	300	0.50%	55.20%	13.94%	0.30%	19.75%	0.06%	3.11%	7.64%	7.98%	15.82%	15.99%
53	59,953	442	0.74%	71.67%	12.59%	0.20%	4.49%	0.03%	3.08%	7.94%	8.20%	14.49%	14.53%
54	60,083	572	0.96%	62.88%	13.25%	0.42%	6.56%	0.05%	7.69%	9.16%	15.17%	15.06%	15.47%
55	59,971	460	0.77%	34.75%	55.03%	0.28%	2.88%	0.05%	2.12%	4.90%	5.14%	57.32%	55.38%
56	58,929	-582	-0.98%	35.60%	46.85%	0.24%	9.36%	0.08%	1.88%	5.99%	5.81%	49.24%	45.48%
57	59,969	458	0.77%	64.40%	15.89%	0.36%	7.63%	0.03%	3.92%	7.76%	8.83%	17.83%	18.06%
58	59,057	-454	-0.76%	26.52%	63.71%	0.23%	2.79%	0.04%	1.78%	4.93%	5.03%	66.10%	63.04%
59	59,434	-77	-0.13%	20.24%	70.27%	0.26%	2.54%	0.03%	1.60%	5.07%	4.45%	73.14%	70.09%
60	59,709	198	0.33%	27.39%	62.26%	0.35%	2.05%	0.05%	2.94%	4.95%	5.87%	64.58%	63.88%
61	58,950	-561	-0.94%	34.98%	52.47%	0.42%	1.40%	0.05%	4.25%	6.44%	8.36%	55.51%	53.49%
62	59,450	-61	-0.10%	18.14%	70.86%	0.38%	1.16%	0.06%	4.11%	5.29%	7.61%	73.56%	72.26%
63	59,381	-130	-0.22%	18.46%	68.64%	0.56%	1.36%	0.05%	5.60%	5.33%	10.42%	70.98%	69.33%
64	59,648	137	0.23%	36.92%	48.40%	0.45%	1.04%	0.09%	5.96%	7.14%	11.25%	51.05%	50.24%
65	59,240	-271	-0.46%	30.99%	61.67%	0.27%	0.81%	0.04%	1.62%	4.59%	3.70%	64.10%	63.34%
66	58,961	-550	-0.92%	31.21%	53.46%	0.47%	1.86%	0.10%	5.44%	7.46%	10.88%	56.82%	53.88%
67	59,135	-376	-0.63%	30.47%	57.71%	0.33%	1.31%	0.03%	4.63%	5.52%	8.71%	59.93%	58.92%
68	59,477	-34	-0.06%	32.13%	55.20%	0.33%	2.82%	0.05%	3.68%	5.78%	7.30%	57.48%	55.75%
69	58,358	-1,153	-1.94%	26.08%	61.75%	0.28%	2.95%	0.04%	3.29%	5.61%	6.42%	64.56%	62.73%
70	59,121	-390	-0.66%	58.14%	27.99%	0.40%	2.19%	0.05%	4.48%	6.75%	9.08%	30.02%	27.83%
71	59,538	27	0.05%	68.61%	19.16%	0.45%	0.98%	0.02%	3.53%	7.25%	7.44%	21.49%	19.92%
72	59,660	149	0.25%	68.83%	19.64%	0.38%	0.96%	0.03%	4.59%	5.58%	8.16%	21.43%	20.86%

District	Population	Deviation	% Deviation	% single-race		% single-race		% single-race		% multi-racial (total pop)	% Hispanic or Latino (total pop)	% Black alone or in combination (total pop)	% Black alone or in combination (voting age pop)
				White (total pop)	Black (total pop)	American Indian Alaska Native (total pop)	Asian (total pop)	Pacific Islander (total pop)	Other (total pop)				
73	60,036	525	0.88%	71.55%	11.47%	0.30%	5.94%	0.04%	2.53%	8.17%	7.96%	13.10%	12.11%
74	58,418	-1,093	-1.84%	34.64%	52.32%	0.33%	2.41%	0.06%	4.25%	5.99%	8.22%	54.91%	53.94%
75	59,759	248	0.42%	14.87%	65.44%	0.59%	4.89%	0.07%	8.12%	6.03%	13.11%	68.43%	66.89%
76	59,759	248	0.42%	10.18%	64.99%	0.82%	8.16%	0.06%	9.45%	6.35%	15.61%	67.71%	67.23%
77	59,242	-269	-0.45%	7.77%	73.39%	0.59%	4.06%	0.08%	9.22%	4.89%	14.22%	75.90%	76.13%
78	59,890	379	0.64%	36.56%	51.33%	0.44%	1.69%	0.04%	3.94%	6.01%	8.29%	54.01%	51.03%
79	59,500	-11	-0.02%	7.56%	69.08%	0.94%	4.92%	0.03%	11.61%	5.87%	18.11%	71.79%	71.59%
80	59,461	-50	-0.08%	47.83%	12.00%	1.52%	13.08%	0.07%	15.40%	10.10%	26.17%	13.67%	14.18%
81	59,007	-504	-0.85%	47.01%	19.09%	1.27%	8.24%	0.03%	13.87%	10.49%	24.58%	21.16%	21.83%
82	59,724	213	0.36%	63.25%	14.66%	0.28%	11.08%	0.03%	2.93%	7.77%	7.52%	16.35%	16.83%
83	59,416	-95	-0.16%	47.55%	12.45%	1.70%	6.34%	0.03%	21.02%	10.92%	33.75%	14.01%	15.12%
84	59,862	351	0.59%	21.61%	70.46%	0.19%	1.44%	0.03%	1.26%	5.01%	3.40%	73.35%	73.66%
85	59,373	-138	-0.23%	18.61%	60.90%	0.38%	12.33%	0.03%	2.65%	5.11%	5.99%	63.41%	62.71%
86	59,205	-306	-0.51%	11.04%	72.44%	0.30%	9.07%	0.02%	2.71%	4.42%	4.64%	75.09%	75.05%
87	59,709	198	0.33%	12.16%	70.92%	0.41%	6.49%	0.02%	4.81%	5.20%	7.73%	74.02%	73.08%
88	59,689	178	0.30%	17.17%	61.41%	0.65%	7.51%	0.07%	6.54%	6.65%	11.46%	64.53%	63.35%
89	59,866	355	0.60%	31.03%	60.27%	0.22%	1.80%	0.03%	1.37%	5.29%	3.80%	62.63%	62.54%
90	59,812	301	0.51%	32.92%	57.69%	0.24%	1.62%	0.04%	1.83%	5.67%	4.65%	60.13%	58.49%
91	59,956	445	0.75%	32.76%	58.67%	0.24%	1.19%	0.03%	2.03%	5.07%	4.42%	61.23%	60.01%
92	60,273	762	1.28%	21.57%	68.31%	0.24%	1.59%	0.04%	2.99%	5.27%	5.49%	71.31%	68.79%
93	60,118	607	1.02%	21.33%	64.04%	0.36%	1.34%	0.11%	6.56%	6.26%	11.24%	66.95%	65.36%
94	59,211	-300	-0.50%	17.43%	66.81%	0.45%	4.88%	0.03%	4.41%	5.99%	8.72%	69.91%	69.04%
95	60,030	519	0.87%	19.99%	65.91%	0.39%	2.30%	0.08%	4.61%	6.72%	9.32%	69.44%	67.15%
96	59,515	4	0.01%	21.85%	21.31%	1.48%	17.72%	0.08%	25.19%	12.37%	40.49%	23.47%	23.00%
97	59,072	-439	-0.74%	35.90%	25.79%	0.68%	15.07%	0.09%	11.43%	11.04%	21.86%	28.56%	26.77%
98	59,998	487	0.82%	15.89%	20.23%	2.15%	10.77%	0.10%	36.38%	14.49%	57.42%	22.14%	23.25%
99	59,850	339	0.57%	41.47%	13.80%	0.36%	32.56%	0.05%	3.65%	8.11%	9.52%	15.90%	14.71%
100	60,030	519	0.87%	57.78%	9.19%	0.42%	19.53%	0.06%	4.06%	8.96%	10.85%	10.66%	10.01%
101	59,938	427	0.72%	40.65%	22.90%	0.69%	15.32%	0.06%	8.64%	11.74%	20.17%	25.66%	24.19%
102	58,959	-552	-0.93%	29.76%	37.16%	0.98%	9.04%	0.04%	12.08%	10.94%	23.45%	40.20%	37.62%
103	60,197	686	1.15%	52.61%	15.52%	0.60%	11.76%	0.06%	8.69%	10.76%	19.06%	17.66%	16.79%
104	59,362	-149	-0.25%	62.99%	15.96%	0.40%	6.37%	0.05%	5.27%	8.95%	12.64%	18.10%	17.03%
105	59,344	-167	-0.28%	41.69%	28.45%	0.51%	10.63%	0.04%	7.83%	10.85%	18.10%	31.08%	29.05%
106	59,112	-399	-0.67%	38.57%	36.27%	0.61%	9.86%	0.06%	5.99%	8.65%	12.66%	39.28%	36.27%
107	59,702	191	0.32%	23.31%	28.16%	1.39%	15.52%	0.05%	18.46%	13.13%	34.49%	30.77%	29.63%
108	59,577	66	0.11%	41.71%	17.71%	0.93%	18.12%	0.04%	11.15%	10.35%	20.98%	20.05%	18.35%

District	Population	Deviation	% Deviation	% single-race		% single-race		% single-race		% multi-racial (total pop)	% Hispanic or Latino (total pop)	% Black alone or in combination (total pop)	% Black alone or in combination (voting age pop)
				White (total pop)	Black (total pop)	American Indian Alaska Native (total pop)	Asian (total pop)	Native Hawaiian Islander (total pop)	Other (total pop)				
109	59,630	119	0.20%	18.29%	30.16%	1.16%	14.48%	0.07%	22.25%	13.59%	39.32%	32.86%	32.51%
110	59,951	440	0.74%	34.57%	46.58%	0.33%	4.53%	0.06%	5.00%	8.94%	11.87%	50.11%	47.19%
111	60,009	498	0.84%	62.34%	22.08%	0.40%	2.53%	0.07%	4.84%	7.75%	10.37%	24.28%	22.29%
112	59,349	-162	-0.27%	72.57%	19.06%	0.28%	1.28%	0.06%	1.89%	4.87%	4.00%	20.49%	19.21%
113	60,053	542	0.91%	30.11%	58.29%	0.30%	0.81%	0.14%	4.15%	6.21%	7.78%	61.62%	59.53%
114	59,867	356	0.60%	67.78%	24.16%	0.28%	0.71%	0.04%	2.21%	4.83%	4.53%	25.79%	24.74%
115	59,789	278	0.47%	30.02%	53.14%	0.46%	4.80%	0.06%	4.84%	6.70%	9.30%	56.23%	53.77%
116	60,380	869	1.46%	33.11%	52.02%	0.29%	4.57%	0.08%	3.53%	6.39%	7.80%	55.04%	51.95%
117	60,142	631	1.06%	36.94%	50.92%	0.30%	1.57%	0.06%	3.70%	6.51%	7.78%	53.97%	51.56%
118	59,987	476	0.80%	69.35%	22.72%	0.26%	0.45%	0.03%	1.99%	5.21%	4.50%	24.16%	23.60%
119	58,947	-564	-0.95%	69.24%	12.73%	0.46%	3.87%	0.03%	5.81%	7.87%	12.17%	14.47%	13.49%
120	58,982	-529	-0.89%	71.79%	13.65%	0.34%	4.08%	0.06%	3.79%	6.29%	8.42%	15.04%	14.28%
121	59,127	-384	-0.65%	76.66%	8.80%	0.18%	5.66%	0.01%	2.50%	6.19%	6.27%	9.96%	9.56%
122	59,632	121	0.20%	51.35%	30.85%	0.60%	2.17%	0.08%	8.43%	6.54%	13.78%	32.33%	28.42%
123	59,282	-229	-0.38%	67.02%	23.91%	0.30%	1.16%	0.03%	2.63%	4.94%	5.33%	25.32%	24.28%
124	59,221	-290	-0.49%	62.85%	26.19%	0.32%	1.15%	0.03%	3.77%	5.71%	7.57%	27.61%	25.58%
125	60,137	626	1.05%	62.06%	22.24%	0.45%	2.48%	0.22%	3.27%	9.29%	8.93%	25.37%	23.68%
126	59,260	-251	-0.42%	38.66%	54.30%	0.34%	0.76%	0.16%	1.55%	4.22%	3.63%	56.45%	54.47%
127	58,678	-833	-1.40%	67.34%	17.46%	0.27%	5.68%	0.18%	1.94%	7.13%	5.58%	19.67%	18.52%
128	58,864	-647	-1.09%	44.54%	51.11%	0.21%	0.36%	0.04%	0.81%	2.92%	1.91%	52.50%	50.41%
129	58,829	-682	-1.15%	34.71%	55.50%	0.31%	2.12%	0.15%	2.15%	5.05%	4.74%	58.21%	54.87%
130	59,203	-308	-0.52%	30.99%	60.84%	0.33%	0.82%	0.19%	1.93%	4.90%	4.33%	63.45%	59.91%
131	58,890	-621	-1.04%	67.43%	16.38%	0.29%	4.98%	0.17%	1.99%	8.77%	7.07%	18.92%	17.62%
132	59,142	-369	-0.62%	35.30%	52.48%	0.35%	2.42%	0.19%	3.20%	6.05%	7.91%	55.26%	52.34%
133	59,768	257	0.43%	68.72%	25.32%	0.16%	1.00%	0.03%	1.00%	3.77%	2.36%	26.58%	26.11%
134	59,046	-465	-0.78%	53.95%	38.20%	0.30%	0.75%	0.03%	1.98%	4.79%	4.33%	40.04%	37.41%
135	60,013	502	0.84%	74.82%	19.45%	0.24%	0.62%	0.01%	1.02%	3.84%	2.12%	20.68%	20.35%
136	59,298	-213	-0.36%	63.16%	28.15%	0.34%	1.55%	0.03%	2.06%	4.71%	4.40%	29.56%	28.67%
137	59,551	40	0.07%	39.25%	51.92%	0.19%	1.69%	0.14%	2.07%	4.75%	5.17%	54.16%	52.13%
138	58,912	-599	-1.01%	71.33%	18.92%	0.36%	2.41%	0.06%	1.57%	5.36%	4.10%	20.49%	19.32%
139	59,010	-501	-0.84%	65.30%	19.63%	0.39%	4.09%	0.22%	2.55%	7.82%	7.24%	21.77%	20.27%
140	59,294	-217	-0.36%	30.34%	56.56%	0.53%	1.06%	0.26%	4.45%	6.81%	9.04%	59.80%	57.63%
141	59,019	-492	-0.83%	30.98%	55.60%	0.36%	2.59%	0.33%	3.04%	7.10%	7.93%	58.90%	57.46%
142	59,320	-191	-0.32%	39.78%	51.89%	0.25%	2.27%	0.02%	2.32%	3.48%	4.22%	53.52%	50.14%
143	59,122	-389	-0.65%	38.76%	52.08%	0.21%	2.55%	0.04%	1.91%	4.44%	3.76%	54.15%	50.64%
144	58,533	-978	-1.64%	64.43%	24.36%	0.33%	2.88%	0.06%	1.91%	6.03%	5.04%	26.09%	24.94%

District	Population	Deviation	% Deviation	% single-race		% single-race American Indian	% single-race Native Hawaiian		% single-race Other	% multi-racial (total pop)	% Hispanic or Latino (total pop)	% Black alone or in combination (total pop)	% Black alone or in combination (voting age pop)
				% single-race White (total pop)	% single-race Black (total pop)	Alaska Native (total pop)	% single-race Asian (total pop)	Pacific Islander (total pop)					
145	59,668	157	0.26%	36.17%	51.16%	0.47%	1.19%	0.07%	4.44%	6.50%	8.64%	53.76%	50.38%
146	59,197	-314	-0.53%	67.39%	23.72%	0.21%	1.65%	0.08%	1.64%	5.31%	4.55%	25.26%	24.38%
147	58,567	-944	-1.59%	54.11%	30.64%	0.32%	3.95%	0.10%	3.34%	7.54%	7.61%	33.12%	30.55%
148	59,887	376	0.63%	56.80%	37.60%	0.18%	0.61%	0.03%	1.74%	3.04%	5.86%	38.90%	37.30%
149	59,392	-119	-0.20%	41.24%	52.64%	0.22%	0.77%	0.06%	1.87%	3.21%	2.88%	54.31%	51.53%
150	59,276	-235	-0.39%	37.15%	53.50%	0.30%	1.19%	0.05%	4.73%	3.08%	7.23%	54.77%	53.56%
151	60,059	548	0.92%	46.66%	42.45%	0.27%	1.32%	0.25%	4.52%	4.53%	7.51%	44.17%	42.41%
152	60,134	623	1.05%	66.75%	25.98%	0.27%	1.61%	0.05%	1.33%	4.01%	2.84%	27.20%	26.06%
153	59,299	-212	-0.36%	24.79%	69.44%	0.17%	0.92%	0.03%	1.68%	2.97%	2.93%	71.14%	67.95%
154	59,994	483	0.81%	39.90%	55.77%	0.19%	0.39%	0.02%	1.00%	2.72%	2.10%	57.13%	54.82%
155	60,134	623	1.05%	58.50%	35.73%	0.21%	0.90%	0.05%	1.41%	3.19%	2.65%	37.24%	35.23%
156	60,647	1,136	1.91%	60.55%	29.57%	0.37%	0.61%	0.01%	4.56%	4.33%	8.19%	30.89%	29.87%
157	59,957	446	0.75%	63.89%	23.82%	0.39%	0.56%	0.04%	6.64%	4.65%	11.19%	25.21%	24.67%
158	59,440	-71	-0.12%	60.33%	31.67%	0.27%	0.77%	0.03%	3.07%	3.86%	5.60%	33.07%	31.20%
159	59,895	384	0.65%	68.50%	24.02%	0.35%	0.54%	0.05%	1.54%	5.00%	3.65%	25.56%	24.50%
160	59,935	424	0.71%	68.19%	22.04%	0.32%	1.64%	0.10%	2.38%	5.33%	5.50%	23.64%	22.60%
161	60,097	586	0.98%	59.24%	26.27%	0.34%	3.05%	0.11%	3.15%	7.84%	7.89%	28.87%	27.14%
162	60,308	797	1.34%	38.55%	43.95%	0.43%	4.04%	0.26%	5.71%	7.06%	10.78%	46.66%	43.73%
163	60,123	612	1.03%	39.74%	46.54%	0.40%	3.15%	0.16%	4.62%	5.39%	8.45%	48.40%	45.49%
164	60,101	590	0.99%	60.02%	22.55%	0.45%	4.26%	0.13%	4.01%	8.58%	9.95%	25.07%	23.47%
165	59,978	467	0.78%	36.28%	52.86%	0.30%	3.23%	0.16%	2.74%	4.44%	5.53%	54.85%	50.33%
166	60,242	731	1.23%	84.02%	5.04%	0.23%	2.67%	0.05%	1.68%	6.30%	5.19%	6.05%	5.67%
167	59,493	-18	-0.03%	64.99%	21.40%	0.62%	1.47%	0.26%	3.75%	7.52%	8.81%	23.93%	22.28%
168	60,147	636	1.07%	39.01%	44.49%	0.44%	2.06%	0.73%	3.84%	9.43%	11.22%	49.11%	46.26%
169	59,138	-373	-0.63%	60.27%	29.04%	0.33%	0.79%	0.03%	5.16%	4.37%	9.03%	30.38%	29.04%
170	60,116	605	1.02%	62.84%	24.56%	0.31%	1.19%	0.03%	5.44%	5.62%	10.43%	26.05%	24.22%
171	59,237	-274	-0.46%	52.16%	40.00%	0.33%	0.54%	0.03%	3.52%	3.41%	5.73%	41.21%	39.60%
172	59,961	450	0.76%	60.41%	23.41%	0.80%	0.77%	0.03%	8.71%	5.87%	16.00%	24.67%	23.32%
173	59,743	232	0.39%	53.63%	36.40%	0.63%	0.83%	0.02%	4.16%	4.33%	6.95%	37.84%	36.27%
174	59,852	341	0.57%	73.85%	17.42%	0.47%	0.49%	0.05%	3.09%	4.63%	7.88%	18.81%	17.37%
175	59,993	482	0.81%	65.60%	23.98%	0.37%	1.79%	0.08%	2.45%	5.73%	6.10%	25.56%	24.17%
176	59,470	-41	-0.07%	66.19%	21.96%	0.45%	0.93%	0.11%	4.65%	5.71%	9.95%	23.59%	22.68%
177	59,992	481	0.81%	34.69%	55.26%	0.37%	1.30%	0.09%	3.02%	5.27%	6.69%	57.52%	53.88%
178	59,877	366	0.62%	77.36%	14.59%	0.35%	0.52%	0.01%	3.20%	3.97%	6.22%	15.91%	14.79%
179	59,356	-155	-0.26%	60.43%	28.66%	0.39%	1.07%	0.17%	4.00%	5.27%	7.73%	30.40%	27.03%
180	59,412	-99	-0.17%	70.77%	17.31%	0.47%	1.62%	0.13%	2.05%	7.65%	6.47%	19.73%	18.21%

Esselstyn Report: Attachment K

2021-2022 GUIDELINES FOR THE HOUSE LEGISLATIVE AND CONGRESSIONAL REAPPORTIONMENT COMMITTEE

I. HEARINGS AND MEETINGS

A. PUBLIC HEARINGS

1. A series of public hearings were held to actively seek public participation and input concerning the General Assembly's redrawing of congressional and legislative districts.
2. Video recordings of all hearings are and shall remain available on the legislative website, www.legis.ga.gov

B. COMMITTEE MEETINGS

1. All formal meetings of the full committee will be open to the public.
2. When the General Assembly is not in session, notices of all such meetings will be posted at the Offices of the Clerk of the House or Secretary of the Senate and other appropriate places at least 24 hours in advance of any meeting. Individual notices may be transmitted by email to any citizen or organization requesting the same without charge. Persons or organizations needing this information should contact the Senate Press Office or House Communications Office or the Secretary of the Senate or Clerk of the House to be placed on the notification list.
3. Minutes of all such meetings shall be kept and maintained in accordance with the rules of the House and Senate. Copies of the minutes should be made available in a timely manner at a reasonable cost in accordance with these same rules.

II. PUBLIC ACCESS TO REDISTRICTING DATA AND MATERIALS

- A. Census information databases on any medium created at public expense and held by the Committee or by the Legislative and Congressional Reapportionment Office for use in the redistricting process are included as public records and copies can be made available to the public in accordance with the rules of the General Assembly and subject to reasonable charges for search, retrieval, reproduction and other reasonable, related costs.
- B. Copies of the public records described above may be obtained at the cost of reproduction by members of the public on electronic media if the material exists on an appropriate electronic medium. Cost of reproduction may include not only the medium on which the copies made, but also the labor cost for the search, retrieval, and reproduction of the records and other reasonable, related costs.

- C. These guidelines regarding public access to redistricting data and materials do not apply to plans or other related materials prepared by or on behalf of an individual Member of the General Assembly using the Legislative and Congressional Reapportionment Office, where those plans and materials have not been made public through presentation to the Committee.

III. REDISTRICTING PLANS

A. GENERAL PRINCIPLES FOR DRAFTING PLANS

1. Each congressional district should be drawn with a total population of plus or minus one person from the ideal district size.
2. Each legislative district of the General Assembly should be drawn to achieve a total population that is substantially equal as practicable, considering the principles listed below.
3. All plans adopted by the Committee will comply with Section 2 of the Voting Rights Act of 1965, as amended.
4. All plans adopted by the Committee will comply with the United States and Georgia Constitutions.
5. Districts shall be composed of contiguous geography. Districts that connect on a single point are not contiguous.
6. No multi-member districts shall be drawn on any legislative redistricting plan.
7. The Committee should consider:
 - a. The boundaries of counties and precincts;
 - b. Compactness; and
 - c. Communities of interest.
8. Efforts should be made to avoid the unnecessary pairing of incumbents.
9. The identifying of these criteria is not intended to limit the consideration of any other principles or factors that the Committee deems appropriate.

B. PLANS PRODUCED THROUGH THE LEGISLATIVE AND CONGRESSIONAL REAPPORTIONMENT OFFICE

1. Staff of the Legislative and Congressional Reapportionment Office will be available to all members of the General Assembly requesting assistance in accordance with the policy of that office.
2. Census data and redistricting work maps will be available to all members of the General Assembly upon request, provided that (a) the map was created by the requesting member, (b) the map is publicly available, or (c) the Legislative and Congressional Reapportionment Office has been granted permission by the author of the map to share a copy with the requesting member.
3. As noted above, redistricting plans and other records related to the provision of staff services to individual members of the General Assembly will not be subject to public disclosure. Only the author of a particular map may waive the confidentiality of his or her own work product. This confidentiality provision will not apply with respect to records related to the provision of staff services to any committee or subcommittee as a whole or to any records which are or have been previously disclosed by or pursuant to the direction of an individual member of the General Assembly.

C. PLANS PRODUCED OUTSIDE OF THE LEGISLATIVE AND CONGRESSIONAL REAPPORTIONMENT OFFICE

1. All plans submitted to the Committee will be made part of the public record and made available in the same manner as other committee public records.
2. All plans prepared outside the Legislative and Congressional Reapportionment Office must be submitted to that office prior to presentation to the Committee by a Member of the General Assembly for technical verification and presentation and bill preparation. All pieces of census geography must be accounted for in some district.
3. The electronic submission of material for technical verification must be made in accordance with the following requirements or in a manner specifically approved and accepted by the Legislative and Congressional Reapportionment Office.
 - a. The submission shall be in electronic format with accompanying documentation that shows the submitting sponsor of the proposed plan and contact person for the proposed plan, including email address and telephone number.
 - b. An electronic map image that clearly depicts defined boundaries, utilizing the 2020 United States Census geographic boundaries,

and a block equivalency file containing two columns. The first column shall list the 15-digit census block identification numbers, and the second column shall list the three-digit district identification number. Both block and district numbers shall be zero-filled text files. Such files shall be submitted in .xis, .xlsx, .dbf, .txt, or .csv file formats. The following is a sample:

```
BlockID, DISTRICT
"13001950100101","008"
"13001950100102","008"
"13001950100103","008"
"13001950100104","008"
"13001950100105","008"
"13001950100106","008"
```

4. If submission of the plan cannot be done electronically, the following requirements must be followed:
 - a. All drafts, amendments, or revisions should be on clearly-depicted maps that follow the 2020 Census geographic boundaries and should be accompanied by a statistical sheet listing the Census geography including the total population for each district.
 - b. All plans submitted should either be a complete statewide plan or fit back into the plan that they modified, so that the proposal can be evaluated in the context of a statewide plan. All pieces of Census geography must be accounted for in some district.

D. GENERAL GUIDELINES FOR PRESENTATION OF ALL PLANS

1. A redistricting plan may be presented for consideration by the Committee only through the sponsorship of one or more Member(s) of the General Assembly. All such drafts of and amendments or revisions to plans presented at any committee meeting must be on clearly-depicted maps which follow the 2020 Census geographic boundaries and accompanied by a statistical sheet listing the Census geography, including the total population and minority populations for each proposed district.
2. No plan may be presented to the Committee unless that plan makes accommodations for and fits back into a specific, identified statewide map for the particular legislative body involved.

3. All plans presented at committee meetings will be made available for inspection by the public either electronically or by hard copy available at the Office of Legislative and Congressional Reapportionment.
- E. These guidelines may be reconsidered or amended by the Committee.

Esselstyn Report: Attachment L

More detailed tables for comparative characteristics of House plans

Population Deviation:

The deviation statistics for each individual district in the respective plans can be found in **Attachment I** and **Attachment J**. Below are the summary statistics generated by the *Maptitude for Redistricting* software.

Enacted plan:

Population Range:	58,678 to 60,308
Ratio Range:	0.03
Absolute Range:	-833 to 797
Absolute Overall Range:	1,630
Relative Range:	-1.40% to 1.34%
Relative Overall Range:	2.74%
Absolute Mean Deviation:	363.71
Relative Mean Deviation:	0.61%
Standard Deviation:	417.67

Illustrative plan:

Population Range:	58,358 to 60,647
Ratio Range:	0.04
Absolute Range:	-1,153 to 1,136
Absolute Overall Range:	2,289
Relative Range:	-1.94% to 1.91%
Relative Overall Range:	3.85%
Absolute Mean Deviation:	379.46
Relative Mean Deviation:	0.64%
Standard Deviation:	442.99

Compactness:

Below is the compactness report for the House enacted plan.

User:

Plan Name: EnachSEfromGA

Plan Type:

Measures of Compactness Report

Tuesday, January 11, 2022

9:53 PM

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
001	0.53	1.45	0.45	0.85
002	0.53	1.95	0.24	0.71
003	0.50	1.49	0.41	0.83
004	0.37	1.93	0.21	0.72
005	0.43	1.67	0.25	0.73
006	0.45	1.72	0.26	0.77
007	0.62	1.31	0.50	0.89
008	0.46	1.71	0.27	0.71
009	0.47	1.63	0.30	0.78
010	0.34	1.48	0.30	0.81
011	0.31	1.72	0.26	0.71

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
012	0.47	1.66	0.31	0.85
013	0.47	2.06	0.19	0.74
014	0.32	1.95	0.23	0.73
015	0.55	1.63	0.33	0.79
016	0.31	1.57	0.35	0.88
017	0.28	1.97	0.21	0.64
018	0.41	1.88	0.25	0.76
019	0.26	1.90	0.26	0.68
020	0.46	1.40	0.45	0.81
021	0.26	1.81	0.27	0.73
022	0.28	1.80	0.22	0.69
023	0.40	1.84	0.19	0.69
024	0.35	1.77	0.30	0.79
025	0.39	1.69	0.31	0.68

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
026	0.27	1.82	0.26	0.70
027	0.60	1.54	0.34	0.82
028	0.38	1.58	0.35	0.80
029	0.34	1.97	0.21	0.62
030	0.43	1.71	0.30	0.66
031	0.44	1.67	0.25	0.70
032	0.39	1.64	0.33	0.73
033	0.49	1.53	0.37	0.80
034	0.45	1.61	0.33	0.75
035	0.32	1.76	0.24	0.73
036	0.32	1.90	0.23	0.68
037	0.45	1.66	0.28	0.82
038	0.59	1.28	0.58	0.91
039	0.59	1.45	0.40	0.87

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
040	0.49	1.69	0.29	0.76
041	0.60	1.47	0.40	0.85
042	0.40	2.01	0.21	0.64
043	0.42	1.94	0.22	0.69
044	0.31	1.76	0.29	0.73
045	0.41	1.64	0.32	0.77
046	0.55	1.42	0.47	0.84
047	0.29	2.02	0.21	0.61
048	0.34	2.12	0.19	0.62
049	0.30	2.23	0.15	0.59
050	0.42	1.40	0.46	0.77
051	0.54	1.60	0.36	0.73
052	0.48	1.65	0.35	0.72
053	0.16	2.52	0.14	0.50

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
054	0.37	1.49	0.45	0.87
055	0.18	2.42	0.16	0.59
056	0.26	2.04	0.23	0.69
057	0.57	1.30	0.59	0.91
058	0.13	2.76	0.13	0.54
059	0.12	2.98	0.11	0.46
060	0.19	2.39	0.15	0.58
061	0.25	2.12	0.20	0.64
062	0.16	2.92	0.10	0.48
063	0.16	2.61	0.14	0.49
064	0.37	1.60	0.36	0.78
065	0.46	2.06	0.17	0.72
066	0.36	1.94	0.25	0.67
067	0.36	2.39	0.12	0.61

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10
District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
068	0.32	2.19	0.17	0.71
069	0.40	1.88	0.25	0.69
070	0.45	1.94	0.23	0.65
071	0.44	1.56	0.35	0.79
072	0.42	1.86	0.23	0.73
073	0.28	2.12	0.20	0.66
074	0.50	1.79	0.25	0.76
075	0.42	1.82	0.28	0.64
076	0.53	1.33	0.51	0.86
077	0.40	2.11	0.21	0.64
078	0.21	2.08	0.19	0.62
079	0.50	2.06	0.21	0.73
080	0.38	1.49	0.42	0.79
081	0.47	1.54	0.40	0.81

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
082	0.49	1.74	0.30	0.72
083	0.34	1.62	0.36	0.80
084	0.25	1.97	0.20	0.67
085	0.36	1.65	0.32	0.77
086	0.17	2.34	0.17	0.55
087	0.26	1.97	0.24	0.70
088	0.26	2.14	0.20	0.67
089	0.14	2.90	0.10	0.47
090	0.36	1.78	0.29	0.83
091	0.45	2.08	0.20	0.62
092	0.36	1.98	0.20	0.71
093	0.26	2.66	0.11	0.54
094	0.31	2.42	0.15	0.56
095	0.44	1.72	0.25	0.75

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
096	0.18	2.18	0.21	0.66
097	0.28	1.96	0.24	0.67
098	0.42	1.35	0.52	0.88
099	0.36	1.80	0.29	0.72
100	0.34	1.78	0.29	0.66
101	0.53	1.44	0.46	0.82
102	0.56	1.58	0.35	0.77
103	0.33	1.96	0.24	0.62
104	0.28	1.90	0.25	0.74
105	0.34	1.78	0.28	0.69
106	0.66	1.36	0.50	0.85
107	0.51	1.68	0.32	0.75
108	0.43	1.64	0.32	0.71
109	0.39	1.70	0.28	0.70

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
110	0.36	1.68	0.33	0.74
111	0.33	1.76	0.29	0.68
112	0.62	1.26	0.52	0.91
113	0.50	1.57	0.32	0.85
114	0.51	1.70	0.28	0.71
115	0.44	1.92	0.23	0.63
116	0.41	1.81	0.28	0.63
117	0.41	1.74	0.28	0.75
118	0.35	1.92	0.22	0.68
119	0.39	1.89	0.21	0.64
120	0.44	1.83	0.25	0.72
121	0.43	1.61	0.30	0.76
122	0.48	1.48	0.43	0.85
123	0.30	1.89	0.18	0.69

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
124	0.44	1.78	0.23	0.69
125	0.41	1.89	0.17	0.72
126	0.52	1.39	0.41	0.80
127	0.35	2.17	0.20	0.58
128	0.60	1.51	0.32	0.79
129	0.48	1.94	0.25	0.66
130	0.51	1.48	0.25	0.75
131	0.38	1.74	0.28	0.70
132	0.27	1.69	0.30	0.75
133	0.55	1.36	0.42	0.83
134	0.33	1.96	0.23	0.67
135	0.57	1.32	0.42	0.88
136	0.54	1.74	0.26	0.77
137	0.33	2.22	0.16	0.57

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
138	0.33	2.00	0.20	0.70
139	0.28	1.93	0.23	0.66
140	0.29	2.06	0.19	0.65
141	0.26	2.16	0.20	0.52
142	0.35	1.82	0.23	0.70
143	0.50	1.53	0.30	0.79
144	0.51	1.56	0.32	0.84
145	0.38	1.85	0.19	0.72
146	0.26	2.00	0.19	0.62
147	0.33	1.84	0.26	0.64
148	0.44	1.81	0.24	0.69
149	0.32	1.68	0.22	0.72
150	0.44	1.67	0.28	0.78
151	0.53	1.82	0.22	0.71

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
152	0.40	1.68	0.30	0.81
153	0.30	1.73	0.30	0.70
154	0.41	1.48	0.33	0.79
155	0.49	1.33	0.48	0.89
156	0.23	1.92	0.20	0.67
157	0.32	1.95	0.19	0.72
158	0.48	1.52	0.33	0.80
159	0.34	1.62	0.22	0.73
160	0.49	1.32	0.37	0.88
161	0.51	1.51	0.31	0.81
162	0.37	1.99	0.21	0.61
163	0.27	2.34	0.18	0.54
164	0.30	2.10	0.17	0.66
165	0.23	2.23	0.16	0.52

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10
District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
166	0.43	1.43	0.36	0.82
167	0.42	1.97	0.19	0.65
168	0.24	1.67	0.26	0.69
169	0.28	1.97	0.23	0.64
170	0.53	1.49	0.34	0.82
171	0.35	1.46	0.37	0.83
172	0.44	1.59	0.32	0.77
173	0.57	1.46	0.38	0.85
174	0.41	1.70	0.24	0.75
175	0.47	1.54	0.37	0.83
176	0.34	2.23	0.16	0.54
177	0.43	1.57	0.34	0.76
178	0.48	1.83	0.22	0.75
179	0.45	1.39	0.42	0.87

Measures of Compactness Report

EnacHSEfromGA

Number of cut edges: 22,020

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.80	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10
District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
180	0.61	1.23	0.40	0.85

Measures of Compactness Report

EnacHSEfromGA

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Cut Edges	A smaller number implies a more compact plan. The measure should only be used to compare plans defined on the same base layer.

Below is the compactness report for the House illustrative plan.

User:

Plan Name: GA House Illustrative

Plan Type:

Measures of Compactness Report

Saturday, December 3, 2022

10:02 PM

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
1	0.53	1.45	0.45	0.85
2	0.53	1.95	0.24	0.71
3	0.50	1.49	0.41	0.83
4	0.37	1.93	0.21	0.72
5	0.43	1.67	0.25	0.73
6	0.45	1.72	0.26	0.77
7	0.62	1.31	0.50	0.89
8	0.46	1.71	0.27	0.71
9	0.47	1.63	0.30	0.78
10	0.34	1.48	0.30	0.81
11	0.31	1.72	0.26	0.71

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
12	0.47	1.66	0.31	0.85
13	0.47	2.06	0.19	0.74
14	0.32	1.95	0.23	0.73
15	0.55	1.63	0.33	0.79
16	0.31	1.57	0.35	0.88
17	0.28	1.97	0.21	0.64
18	0.41	1.88	0.25	0.76
19	0.26	1.90	0.26	0.68
20	0.46	1.40	0.45	0.81
21	0.26	1.81	0.27	0.73
22	0.28	1.80	0.22	0.69
23	0.40	1.84	0.19	0.69
24	0.35	1.77	0.30	0.79
25	0.39	1.69	0.31	0.68

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
26	0.27	1.82	0.26	0.70
27	0.60	1.54	0.34	0.82
28	0.38	1.58	0.35	0.80
29	0.34	1.97	0.21	0.62
30	0.43	1.71	0.30	0.66
31	0.44	1.67	0.25	0.70
32	0.39	1.64	0.33	0.73
33	0.49	1.53	0.37	0.80
34	0.45	1.61	0.33	0.75
35	0.32	1.76	0.24	0.73
36	0.32	1.90	0.23	0.68
37	0.45	1.66	0.28	0.82
38	0.59	1.28	0.58	0.91
39	0.59	1.45	0.40	0.87

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
40	0.49	1.69	0.29	0.76
41	0.60	1.47	0.40	0.85
42	0.40	2.01	0.21	0.64
43	0.42	1.94	0.22	0.69
44	0.31	1.76	0.29	0.73
45	0.41	1.64	0.32	0.77
46	0.55	1.42	0.47	0.84
47	0.29	2.02	0.21	0.61
48	0.34	2.12	0.19	0.62
49	0.30	2.23	0.15	0.59
50	0.42	1.40	0.46	0.77
51	0.54	1.60	0.36	0.73
52	0.48	1.65	0.35	0.72
53	0.16	2.52	0.14	0.50

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
54	0.37	1.49	0.45	0.87
55	0.18	2.42	0.16	0.59
56	0.26	2.04	0.23	0.69
57	0.57	1.30	0.59	0.91
58	0.13	2.76	0.13	0.54
59	0.12	2.98	0.11	0.46
60	0.19	2.39	0.15	0.58
61	0.33	2.05	0.21	0.60
62	0.16	2.92	0.10	0.48
63	0.16	2.61	0.14	0.49
64	0.22	2.05	0.22	0.59
65	0.36	2.59	0.11	0.59
66	0.39	1.63	0.35	0.79
67	0.36	2.39	0.12	0.61

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
68	0.32	2.19	0.17	0.71
69	0.33	2.06	0.22	0.68
70	0.45	1.94	0.23	0.65
71	0.44	1.56	0.35	0.79
72	0.42	1.86	0.23	0.73
73	0.28	2.12	0.20	0.66
74	0.30	1.98	0.19	0.61
75	0.46	2.23	0.18	0.68
76	0.53	1.33	0.51	0.86
77	0.40	2.11	0.21	0.64
78	0.31	2.05	0.18	0.65
79	0.50	2.06	0.21	0.73
80	0.38	1.49	0.42	0.79
81	0.47	1.54	0.40	0.81

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
82	0.49	1.74	0.30	0.72
83	0.34	1.62	0.36	0.80
84	0.25	1.97	0.20	0.67
85	0.36	1.65	0.32	0.77
86	0.17	2.34	0.17	0.55
87	0.26	1.97	0.24	0.70
88	0.26	2.14	0.20	0.67
89	0.14	2.90	0.10	0.47
90	0.36	1.78	0.29	0.83
91	0.27	2.15	0.17	0.63
92	0.36	1.98	0.20	0.71
93	0.26	2.66	0.11	0.54
94	0.31	2.42	0.15	0.56
95	0.44	1.72	0.25	0.75

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
96	0.18	2.18	0.21	0.66
97	0.28	1.96	0.24	0.67
98	0.42	1.35	0.52	0.88
99	0.36	1.80	0.29	0.72
100	0.34	1.78	0.29	0.66
101	0.53	1.44	0.46	0.82
102	0.56	1.58	0.35	0.77
103	0.33	1.96	0.24	0.62
104	0.28	1.90	0.25	0.74
105	0.34	1.78	0.28	0.69
106	0.66	1.36	0.50	0.85
107	0.51	1.68	0.32	0.75
108	0.43	1.64	0.32	0.71
109	0.39	1.70	0.28	0.70

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
110	0.36	1.68	0.33	0.74
111	0.33	1.76	0.29	0.68
112	0.62	1.26	0.52	0.91
113	0.50	1.57	0.32	0.85
114	0.51	1.70	0.28	0.71
115	0.29	1.77	0.28	0.71
116	0.33	1.98	0.23	0.62
117	0.40	1.62	0.33	0.76
118	0.35	1.92	0.22	0.68
119	0.39	1.89	0.21	0.64
120	0.44	1.83	0.25	0.72
121	0.43	1.61	0.30	0.76
122	0.48	1.48	0.43	0.85
123	0.30	1.89	0.18	0.69

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
124	0.44	1.78	0.23	0.69
125	0.41	1.89	0.17	0.72
126	0.52	1.39	0.41	0.80
127	0.35	2.17	0.20	0.58
128	0.60	1.51	0.32	0.79
129	0.48	1.94	0.25	0.66
130	0.51	1.48	0.25	0.75
131	0.38	1.74	0.28	0.70
132	0.27	1.69	0.30	0.75
133	0.36	1.69	0.29	0.76
134	0.37	1.73	0.31	0.74
135	0.39	1.79	0.23	0.69
136	0.54	1.74	0.26	0.77
137	0.33	2.22	0.16	0.57

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
138	0.33	2.00	0.20	0.70
139	0.28	1.93	0.23	0.66
140	0.29	2.06	0.19	0.65
141	0.26	2.16	0.20	0.52
142	0.56	1.42	0.36	0.84
143	0.31	1.85	0.26	0.65
144	0.43	1.83	0.22	0.71
145	0.34	1.63	0.21	0.76
146	0.50	1.79	0.26	0.68
147	0.44	1.57	0.37	0.80
148	0.35	2.23	0.18	0.59
149	0.46	1.48	0.28	0.83
150	0.44	1.67	0.28	0.78
151	0.53	1.82	0.22	0.71

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
152	0.40	1.68	0.30	0.81
153	0.30	1.73	0.30	0.70
154	0.41	1.48	0.33	0.79
155	0.47	1.40	0.44	0.86
156	0.25	1.94	0.20	0.71
157	0.32	1.95	0.19	0.72
158	0.48	1.52	0.33	0.80
159	0.34	1.62	0.22	0.73
160	0.49	1.32	0.37	0.88
161	0.51	1.51	0.31	0.81
162	0.37	1.99	0.21	0.61
163	0.27	2.34	0.18	0.54
164	0.30	2.10	0.17	0.66
165	0.23	2.23	0.16	0.52

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10

District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
166	0.43	1.43	0.36	0.82
167	0.42	1.97	0.19	0.65
168	0.24	1.67	0.26	0.69
169	0.28	1.97	0.23	0.64
170	0.53	1.49	0.34	0.82
171	0.35	1.46	0.37	0.83
172	0.44	1.59	0.32	0.77
173	0.57	1.46	0.38	0.85
174	0.41	1.70	0.24	0.75
175	0.47	1.54	0.37	0.83
176	0.34	2.23	0.16	0.54
177	0.43	1.57	0.34	0.76
178	0.48	1.83	0.22	0.75
179	0.45	1.39	0.42	0.87

Measures of Compactness Report

GA House Illustrative

Number of cut edges: 22,359

	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
Sum	N/A	N/A	N/A	N/A
Min	0.12	1.23	0.10	0.46
Max	0.66	2.98	0.59	0.91
Mean	0.39	1.81	0.28	0.72
Std. Dev.	0.11	0.33	0.10	0.10
District	Reock	Schwartzberg	Polsby-Popper	Area/Convex Hull
180	0.61	1.23	0.40	0.85

Measures of Compactness Report

GA House Illustrative

Measures of Compactness Summary

Reock	The measure is always between 0 and 1, with 1 being the most compact.
Schwartzberg	The measure is usually greater than or equal to 1, with 1 being the most compact.
Polsby-Popper	The measure is always between 0 and 1, with 1 being the most compact.
Area / Convex Hull	The measure is always between 0 and 1, with 1 being the most compact.
Cut Edges	A smaller number implies a more compact plan. The measure should only be used to compare plans defined on the same base layer.

Divisions of counties and precincts (VTDs):

Below is the political subdivisions splits report for the House enacted plan.

Related note: The first page of the following report generated by *Maptitude for Redistricting* software reports a total number of Voting District (VTD) “subdivisions split in to more than one district,” namely 184. However, the “Split Counts” “Voting District” section of the report indicates that “[c]ases where an area is split among 2 Districts” total 175, and “[c]ases where an area is split among 3 Districts” total 10—and the total of 175 and 10 equals 185, not 184. In correspondence with Caliper Corporation (the company that produces *Maptitude for Redistricting*), I have verified that 185 is the correct total, hence that is the number provided in the summary table in section IV.C. of the expert report, not 184.

User:

Plan Name: **GA House Enacted**

Plan Type:

Political Subdivision Splits Between Districts

Saturday, December 3, 2022

10:53 PM

Number of subdivisions not split:

County	90
Voting District	2,514

Number of subdivisions split into more than one district:

County	69
Voting District	184

Number of splits involving no population:

County	0
Voting District	16

Split Counts

County

Cases where an area is split among 2 Districts: 34
 Cases where an area is split among 3 Districts: 9
 Cases where an area is split among 4 Districts: 12
 Cases where an area is split among 5 Districts: 4
 Cases where an area is split among 6 Districts: 3
 Cases where an area is split among 7 Districts: 2
 Cases where an area is split among 9 Districts: 1
 Cases where an area is split among 14 Districts: 1
 Cases where an area is split among 17 Districts: 1
 Cases where an area is split among 21 Districts: 1
 Cases where an area is split among 22 Districts: 1

Voting District

Cases where an area is split among 2 Districts: 175
 Cases where an area is split among 3 Districts: 10

County	Voting District	District	Population
<i>Split Counties:</i>			
Appling GA		157	12,825
Appling GA		178	5,619
Baldwin GA		128	5,158
Baldwin GA		133	38,641
Barrow GA		104	24,245
Barrow GA		119	54,736
Barrow GA		120	4,524
Bartow GA		14	49,688
Bartow GA		15	59,213
Ben Hill GA		148	5,115
Ben Hill GA		156	12,079
Bibb GA		142	59,608
Bibb GA		143	59,469
Bibb GA		144	33,948

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Bibb GA		145	4,321
Bryan GA		160	11,008
Bryan GA		164	21,420
Bryan GA		166	12,310
Bulloch GA		158	19,285
Bulloch GA		159	12,887
Bulloch GA		160	48,927
Carroll GA		18	18,789
Carroll GA		70	2,854
Carroll GA		71	59,538
Carroll GA		72	37,967
Catoosa GA		2	7,673
Catoosa GA		3	60,199
Chatham GA		161	28,269
Chatham GA		162	60,308
Chatham GA		163	60,123
Chatham GA		164	38,681
Chatham GA		165	59,978
Chatham GA		166	47,932
Cherokee GA		11	6,557
Cherokee GA		14	9,447
Cherokee GA		20	60,107
Cherokee GA		21	59,529
Cherokee GA		22	30,874
Cherokee GA		23	59,048
Cherokee GA		44	21,989
Cherokee GA		46	15,178
Cherokee GA		47	3,891
Clarke GA		120	30,095
Clarke GA		121	26,478
Clarke GA		122	59,632
Clarke GA		124	12,466
Clayton GA		75	59,743
Clayton GA		76	59,759
Clayton GA		77	59,242
Clayton GA		78	55,197
Clayton GA		79	59,500
Clayton GA		116	4,154
Cobb GA		22	28,586
Cobb GA		34	59,875
Cobb GA		35	59,889
Cobb GA		36	59,994
Cobb GA		37	59,176
Cobb GA		38	59,317
Cobb GA		39	59,381
Cobb GA		40	59,044
Cobb GA		41	60,122

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Cobb GA		42	59,620
Cobb GA		43	59,464
Cobb GA		44	38,013
Cobb GA		45	59,738
Cobb GA		46	43,930
Coffee GA		169	33,736
Coffee GA		176	9,356
Columbia GA		123	2,205
Columbia GA		125	55,389
Columbia GA		127	39,526
Columbia GA		131	58,890
Cook GA		170	7,342
Cook GA		172	9,887
Coweta GA		65	13,008
Coweta GA		67	17,272
Coweta GA		70	56,267
Coweta GA		73	31,608
Coweta GA		136	28,003
Dawson GA		7	2,409
Dawson GA		9	24,389
DeKalb GA		52	28,300
DeKalb GA		80	59,461
DeKalb GA		81	59,007
DeKalb GA		82	59,724
DeKalb GA		83	59,416
DeKalb GA		84	59,862
DeKalb GA		85	59,373
DeKalb GA		86	59,205
DeKalb GA		87	59,709
DeKalb GA		88	47,844
DeKalb GA		89	59,866
DeKalb GA		90	59,812
DeKalb GA		91	19,700
DeKalb GA		92	15,607
DeKalb GA		93	11,690
DeKalb GA		94	31,207
DeKalb GA		95	14,599
Dougherty GA		151	6,268
Dougherty GA		152	6,187
Dougherty GA		153	59,299
Dougherty GA		154	14,036
Douglas GA		61	30,206
Douglas GA		64	35,576
Douglas GA		65	19,408
Douglas GA		66	59,047
Effingham GA		159	32,941
Effingham GA		161	31,828

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Fayette GA		68	29,719
Fayette GA		69	37,303
Fayette GA		73	28,428
Fayette GA		74	23,744
Floyd GA		5	5,099
Floyd GA		12	34,335
Floyd GA		13	59,150
Forsyth GA		11	19,019
Forsyth GA		24	59,011
Forsyth GA		25	46,134
Forsyth GA		26	59,248
Forsyth GA		28	50,864
Forsyth GA		100	17,007
Fulton GA		25	13,280
Fulton GA		47	55,235
Fulton GA		48	43,976
Fulton GA		49	59,153
Fulton GA		50	59,523
Fulton GA		51	58,952
Fulton GA		52	31,511
Fulton GA		53	59,953
Fulton GA		54	60,083
Fulton GA		55	59,971
Fulton GA		56	58,929
Fulton GA		57	59,969
Fulton GA		58	59,057
Fulton GA		59	59,434
Fulton GA		60	59,709
Fulton GA		61	29,096
Fulton GA		62	59,450
Fulton GA		63	59,381
Fulton GA		65	27,048
Fulton GA		67	41,863
Fulton GA		68	29,758
Fulton GA		69	21,379
Glynn GA		167	20,499
Glynn GA		179	59,356
Glynn GA		180	4,644
Gordon GA		5	53,738
Gordon GA		6	3,806
Grady GA		171	8,115
Grady GA		173	18,121
Gwinnett GA		30	8,620
Gwinnett GA		48	15,027
Gwinnett GA		88	11,845
Gwinnett GA		94	28,004
Gwinnett GA		95	34,221

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Gwinnett GA		96	59,515
Gwinnett GA		97	59,072
Gwinnett GA		98	59,998
Gwinnett GA		99	59,850
Gwinnett GA		100	35,204
Gwinnett GA		101	59,938
Gwinnett GA		102	58,959
Gwinnett GA		103	51,691
Gwinnett GA		104	35,117
Gwinnett GA		105	59,344
Gwinnett GA		106	59,112
Gwinnett GA		107	59,702
Gwinnett GA		108	59,577
Gwinnett GA		109	59,630
Gwinnett GA		110	59,951
Gwinnett GA		111	22,685
Habersham GA		10	42,636
Habersham GA		32	3,395
Hall GA		27	54,508
Hall GA		28	8,108
Hall GA		29	59,200
Hall GA		30	50,646
Hall GA		31	14,349
Hall GA		100	7,819
Hall GA		103	8,506
Harris GA		138	21,634
Harris GA		139	13,034
Henry GA		74	18,397
Henry GA		78	3,847
Henry GA		91	35,569
Henry GA		115	60,174
Henry GA		116	55,759
Henry GA		117	54,737
Henry GA		118	12,229
Houston GA		145	28,132
Houston GA		146	60,203
Houston GA		147	59,178
Houston GA		148	16,120
Jackson GA		31	45,552
Jackson GA		32	10,931
Jackson GA		119	4,211
Jackson GA		120	15,213
Jasper GA		114	2,855
Jasper GA		118	11,733
Jones GA		133	20,561
Jones GA		144	7,786
Lamar GA		134	5,026

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Lamar GA		135	13,474
Liberty GA		167	5,109
Liberty GA		168	60,147
Lowndes GA		174	9,770
Lowndes GA		175	43,692
Lowndes GA		176	4,797
Lowndes GA		177	59,992
Lumpkin GA		9	29,201
Lumpkin GA		27	4,287
Madison GA		33	9,935
Madison GA		123	20,185
McDuffie GA		125	4,748
McDuffie GA		128	16,884
Meriwether GA		136	13,382
Meriwether GA		137	7,231
Monroe GA		134	9,272
Monroe GA		144	17,498
Monroe GA		145	1,187
Muscogee GA		137	30,443
Muscogee GA		138	12,190
Muscogee GA		139	45,976
Muscogee GA		140	59,294
Muscogee GA		141	59,019
Newton GA		93	15,515
Newton GA		113	60,053
Newton GA		114	36,915
Oconee GA		120	9,150
Oconee GA		121	32,649
Paulding GA		16	16,549
Paulding GA		17	59,120
Paulding GA		18	10,627
Paulding GA		19	58,955
Paulding GA		64	23,410
Peach GA		145	14,093
Peach GA		150	13,888
Putnam GA		118	10,591
Putnam GA		124	11,456
Richmond GA		126	25,990
Richmond GA		127	19,152
Richmond GA		129	58,829
Richmond GA		130	59,203
Richmond GA		132	43,433
Rockdale GA		91	4,781
Rockdale GA		92	44,666
Rockdale GA		93	32,913
Rockdale GA		95	11,210
Spalding GA		74	16,815

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Spalding GA		117	5,393
Spalding GA		134	45,098
Sumter GA		150	14,282
Sumter GA		151	15,334
Tattnall GA		156	1,263
Tattnall GA		157	21,579
Telfair GA		149	9,486
Telfair GA		156	2,991
Thomas GA		172	4,176
Thomas GA		173	41,622
Tift GA		169	6,730
Tift GA		170	34,614
Troup GA		72	10,281
Troup GA		136	17,913
Troup GA		137	16,144
Troup GA		138	25,088
Walker GA		1	43,415
Walker GA		2	24,239
Walton GA		111	37,324
Walton GA		112	59,349
Ware GA		174	9,097
Ware GA		176	27,154
Wayne GA		167	6,742
Wayne GA		178	23,402
White GA		8	22,119
White GA		9	5,884
Whitfield GA		2	27,861
Whitfield GA		4	59,070
Whitfield GA		6	15,933
<i>Split VTDs:</i>			
Barrow GA	16	104	1,708
Barrow GA	16	119	8,060
Bartow GA	CASSVILLE	14	15,558
Bartow GA	CASSVILLE	15	1,047
Bartow GA	WHITE	14	3,335
Bartow GA	WHITE	15	211
Ben Hill GA	WEST	148	5,115
Ben Hill GA	WEST	156	5,229
Bibb GA	HOWARD 1	142	2,326
Bibb GA	HOWARD 1	144	3,617
Bibb GA	HOWARD 2	142	2,369
Bibb GA	HOWARD 2	144	3,076
Bibb GA	HOWARD 3	142	0
Bibb GA	HOWARD 3	144	12,654
Bibb GA	WARRIOR 2	142	4,426
Bibb GA	WARRIOR 2	145	852
Bryan GA	DANIELSIDING	164	1,268

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Bryan GA	DANIELSIDING	166	1,741
Bryan GA	HWY 144 EAST	164	4,552
Bryan GA	HWY 144 EAST	166	4,707
Bryan GA	J.F.GREGORY PARK	164	3,489
Bryan GA	J.F.GREGORY PARK	166	144
Bulloch GA	CHURCH	158	3,764
Bulloch GA	CHURCH	159	5,869
Carroll GA	BONNER	71	410
Carroll GA	BONNER	72	5,554
Chatham GA	CRUSADER COMMUNITY CENTER	162	2,134
Chatham GA	CRUSADER COMMUNITY CENTER	166	1,493
Chatham GA	GEORGETOWN ELEMENTAR	164	5,562
Chatham GA	GEORGETOWN ELEMENTAR	166	0
Chatham GA	GRACE UNITED METHODIST CHURCH	163	2,064
Chatham GA	GRACE UNITED METHODIST CHURCH	165	397
Chatham GA	ROTHWELL BAPTIST CHURCH	161	5,335
Chatham GA	ROTHWELL BAPTIST CHURCH	164	4,987
Chatham GA	THE LIGHT CHURCH	162	1,177
Chatham GA	THE LIGHT CHURCH	163	1,109
Chatham GA	WINDSOR FOREST BAPTIST CHURCH SCHOOL	163	785
Chatham GA	WINDSOR FOREST BAPTIST CHURCH SCHOOL	166	1,890
Cherokee GA	CARMEL	20	5,626
Cherokee GA	CARMEL	22	1,222
Cherokee GA	CARMEL	44	0
Cherokee GA	FREEHOME	21	3,200
Cherokee GA	FREEHOME	47	3,891
Cherokee GA	HOLLY SPRINGS	21	2,250
Cherokee GA	HOLLY SPRINGS	23	2,578
Clarke GA	1A	122	2,758
Clarke GA	1A	124	2,286
Clarke GA	4B	121	7,082
Clarke GA	4B	122	5,589
Clarke GA	7C	120	1,922
Clarke GA	7C	121	3,184
Clayton GA	LOVEJOY 1	75	5,018
Clayton GA	LOVEJOY 1	78	601

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Clayton GA	LOVEJOY 3	78	9,099
Clayton GA	LOVEJOY 3	116	4,154
Clayton GA	MORROW 4	76	1,911
Clayton GA	MORROW 4	78	1,316
Cobb GA	Acworth 1B	35	7,322
Cobb GA	Acworth 1B	36	142
Cobb GA	Baker 01	22	5,226
Cobb GA	Baker 01	35	1,996
Cobb GA	Bells Ferry 03	22	4,918
Cobb GA	Bells Ferry 03	44	3,763
Cobb GA	Dobbins 01	42	11,055
Cobb GA	Dobbins 01	43	2,346
Cobb GA	Elizabeth 01	34	700
Cobb GA	Elizabeth 01	37	5,170
Cobb GA	Elizabeth 04	37	2,031
Cobb GA	Elizabeth 04	43	2,387
Cobb GA	Kennesaw 1A	22	599
Cobb GA	Kennesaw 1A	35	3,844
Cobb GA	Kennesaw 3A	22	0
Cobb GA	Kennesaw 3A	34	871
Cobb GA	Kennesaw 3A	35	8,631
Cobb GA	Lassiter 01	44	2,121
Cobb GA	Lassiter 01	46	2,600
Cobb GA	Lindley 01	39	5,678
Cobb GA	Lindley 01	40	582
Cobb GA	Mableton 01	38	1,589
Cobb GA	Mableton 01	39	5,513
Cobb GA	Mableton 02	38	256
Cobb GA	Mableton 02	39	5,427
Cobb GA	Marietta 1A	37	3,349
Cobb GA	Marietta 1A	43	6,645
Cobb GA	Marietta 2A	34	1,664
Cobb GA	Marietta 2A	37	811
Cobb GA	Marietta 5A	37	2,877
Cobb GA	Marietta 5A	43	1,457
Cobb GA	Marietta 6A	37	1,532
Cobb GA	Marietta 6A	43	3,022
Cobb GA	Marietta 7A	42	1,494
Cobb GA	Marietta 7A	43	5,417
Cobb GA	North Cobb 01	35	2,611
Cobb GA	North Cobb 01	36	559
Cobb GA	Norton Park 01	41	1,955
Cobb GA	Norton Park 01	42	5,846
Cobb GA	Oregon 03	37	6,683
Cobb GA	Oregon 03	41	6,305
Cobb GA	Pine Mountain 02	34	3,976
Cobb GA	Pine Mountain 02	35	0

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Cobb GA	Smyrna 1A	40	1,292
Cobb GA	Smyrna 1A	42	5,341
Cobb GA	Smyrna 4A	40	6,599
Cobb GA	Smyrna 4A	42	1,609
Cobb GA	Smyrna 7A	39	905
Cobb GA	Smyrna 7A	40	7,690
Coffee GA	DOUGLAS	169	19,642
Coffee GA	DOUGLAS	176	8,929
Columbia GA	PATRIOTS PARK	125	326
Columbia GA	PATRIOTS PARK	131	5,958
Coweta GA	JEFFERSON PARKWAY	70	12,590
Coweta GA	JEFFERSON PARKWAY	73	1,521
DeKalb GA	Cedar Grove Middle	89	2,204
DeKalb GA	Cedar Grove Middle	90	316
DeKalb GA	Clarkston	85	5,454
DeKalb GA	Clarkston	86	9,300
DeKalb GA	Dresden Elem (CHA)	81	5,398
DeKalb GA	Dresden Elem (CHA)	83	7,691
DeKalb GA	Freedom Middle	86	1,002
DeKalb GA	Freedom Middle	87	3,088
DeKalb GA	Glennwood (DEC)	82	2,059
DeKalb GA	Glennwood (DEC)	84	1,221
DeKalb GA	Glenwood Road	85	1,698
DeKalb GA	Glenwood Road	86	1,064
DeKalb GA	Memorial South	86	2,226
DeKalb GA	Memorial South	87	2,547
DeKalb GA	Panola Road	86	3,296
DeKalb GA	Panola Road	94	460
DeKalb GA	Redan Middle	87	1,419
DeKalb GA	Redan Middle	88	1,633
DeKalb GA	Rockbridge Road	94	3,736
DeKalb GA	Rockbridge Road	95	1,104
DeKalb GA	Snapfinger Road South	84	920
DeKalb GA	Snapfinger Road South	91	1,271
DeKalb GA	Stone Mill Elem	87	1,863
DeKalb GA	Stone Mill Elem	88	4,069
DeKalb GA	Stone Mountain Champion (STO)	87	1,338
DeKalb GA	Stone Mountain Champion (STO)	88	2,865
DeKalb GA	Stone Mountain Middle (TUC)	87	656
DeKalb GA	Stone Mountain Middle (TUC)	88	3,960
DeKalb GA	Tucker Library (TUC)	81	2,394
DeKalb GA	Tucker Library (TUC)	88	1,635
Dougherty GA	DARTON COLLEGE	151	4,018
Dougherty GA	DARTON COLLEGE	153	2,465

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Dougherty GA	MT ZION CENTER	153	1,245
Dougherty GA	MT ZION CENTER	154	3,972
Effingham GA	4B	159	1,960
Effingham GA	4B	161	959
Fayette GA	ABERDEEN	68	983
Fayette GA	ABERDEEN	73	1,392
Fayette GA	BRAELINN	73	605
Fayette GA	BRAELINN	74	1,646
Fayette GA	STARRSMILL	73	1,932
Fayette GA	STARRSMILL	74	2,452
Floyd GA	ALTO PARK	12	1,576
Floyd GA	ALTO PARK	13	3,847
Floyd GA	MT ALTO NORTH	12	1,080
Floyd GA	MT ALTO NORTH	13	4,509
Forsyth GA	BROWNS BRIDGE	26	10,116
Forsyth GA	BROWNS BRIDGE	28	2,801
Forsyth GA	CONCORD	11	7,687
Forsyth GA	CONCORD	28	7,982
Forsyth GA	CUMMING	26	4,666
Forsyth GA	CUMMING	28	2,410
Forsyth GA	HEARDSVILLE	11	11,332
Forsyth GA	HEARDSVILLE	24	1,335
Forsyth GA	HEARDSVILLE	28	333
Forsyth GA	OTWELL	24	3,988
Forsyth GA	OTWELL	26	6,597
Forsyth GA	OTWELL	28	7,875
Forsyth GA	POLO	24	9,868
Forsyth GA	POLO	25	0
Forsyth GA	POLO	26	15,990
Forsyth GA	SOUTH FORSYTH	25	10,064
Forsyth GA	SOUTH FORSYTH	100	11,887
Forsyth GA	WINDERMERE	26	11,718
Forsyth GA	WINDERMERE	100	5,120
Fulton GA	08C	53	1,524
Fulton GA	08C	60	335
Fulton GA	09K	55	3,033
Fulton GA	09K	60	4,105
Fulton GA	10D	55	1,756
Fulton GA	10D	60	4,311
Fulton GA	11C	55	340
Fulton GA	11C	60	3,418
Fulton GA	AP022	48	862
Fulton GA	AP022	49	2,505
Fulton GA	AP07B	47	1,250
Fulton GA	AP07B	49	1,304
Fulton GA	AP14	48	4,109
Fulton GA	AP14	49	281

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Fulton GA	EP01B	59	2,393
Fulton GA	EP01B	62	2,049
Fulton GA	JC19	48	3,608
Fulton GA	JC19	51	1,792
Fulton GA	ML012	47	501
Fulton GA	ML012	49	123
Fulton GA	ML01B	47	284
Fulton GA	ML01B	49	61
Fulton GA	RW03	51	1,292
Fulton GA	RW03	53	6,066
Fulton GA	RW09	47	2,971
Fulton GA	RW09	49	4,750
Fulton GA	SC02	60	220
Fulton GA	SC02	61	773
Fulton GA	SC05B	61	1,575
Fulton GA	SC05B	65	2,978
Fulton GA	SC07A	65	1,028
Fulton GA	SC07A	67	7,728
Fulton GA	SC08B	62	92
Fulton GA	SC08B	68	5,255
Fulton GA	SC13	65	2,858
Fulton GA	SC13	67	1,176
Fulton GA	UC02A	65	1,070
Fulton GA	UC02A	67	13,013
Gwinnett GA	BAYCREEK A	106	934
Gwinnett GA	BAYCREEK A	110	2,651
Gwinnett GA	BAYCREEK D	102	3,729
Gwinnett GA	BAYCREEK D	110	2,597
Gwinnett GA	BERKSHIRE H	98	2,475
Gwinnett GA	BERKSHIRE H	108	1,991
Gwinnett GA	CATES J	94	955
Gwinnett GA	CATES J	108	4,255
Gwinnett GA	DULUTH F	96	7,245
Gwinnett GA	DULUTH F	107	5,149
Gwinnett GA	DULUTH G	96	1,426
Gwinnett GA	DULUTH G	99	3,389
Gwinnett GA	DUNCANS D	30	8,620
Gwinnett GA	DUNCANS D	104	1,575
Gwinnett GA	LAWRENCEVILLE F	102	2,073
Gwinnett GA	LAWRENCEVILLE F	105	3,924
Gwinnett GA	LAWRENCEVILLE M	102	4,231
Gwinnett GA	LAWRENCEVILLE M	105	7,770
Gwinnett GA	MARTINS H	107	8,164
Gwinnett GA	MARTINS H	109	892
Gwinnett GA	PINCKNEYVILLE W	96	5,745
Gwinnett GA	PINCKNEYVILLE W	97	2,561
Gwinnett GA	PUCKETTS E	103	1,506

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Gwinnett GA	PUCKETTS E	105	7,421
Gwinnett GA	SUGAR HILL D	100	2,158
Gwinnett GA	SUGAR HILL D	103	6,421
Gwinnett GA	SUWANEE F	99	3,224
Gwinnett GA	SUWANEE F	103	2,836
Habersham GA	HABERSHAM SOUTH	10	8,687
Habersham GA	HABERSHAM SOUTH	32	1,972
Hall GA	WILSON	28	3,803
Hall GA	WILSON	29	4,979
Henry GA	FLIPPEN	115	0
Henry GA	FLIPPEN	116	5,686
Henry GA	HICKORY FLAT	115	7,135
Henry GA	HICKORY FLAT	116	17
Henry GA	LOWES	116	5,233
Henry GA	LOWES	117	8,688
Henry GA	RED OAK	78	3,847
Henry GA	RED OAK	116	3,999
Henry GA	STOCKBRIDGE CENTRAL	78	0
Henry GA	STOCKBRIDGE CENTRAL	91	7,453
Henry GA	SWAN LAKE	91	3,240
Henry GA	SWAN LAKE	115	1,518
Houston GA	CENT	145	69
Houston GA	CENT	147	11,815
Houston GA	FMMS	146	9,734
Houston GA	FMMS	147	3,595
Houston GA	HHPC	145	8,748
Houston GA	HHPC	147	6,643
Houston GA	MCMS	146	3,947
Houston GA	MCMS	147	9,547
Houston GA	RECR	145	15,867
Houston GA	RECR	146	0
Houston GA	RECR	147	1,931
Houston GA	ROZR	146	13,202
Houston GA	ROZR	148	7,640
Houston GA	VHS	146	5,586
Houston GA	VHS	148	4,039
Jackson GA	North Jackson	31	4,513
Jackson GA	North Jackson	32	10,931
Jackson GA	North Jackson	120	3,803
Jackson GA	West Jackson	31	16,656
Jackson GA	West Jackson	119	4,211
Jones GA	CLINTON	133	384
Jones GA	CLINTON	144	2,481
Lamar GA	MILNER	134	3,043
Lamar GA	MILNER	135	2,725
Liberty GA	BUTTON GWINNETT	167	5,109
Liberty GA	BUTTON GWINNETT	168	4,344

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Lowndes GA	NORTHSIDE	175	8,373
Lowndes GA	NORTHSIDE	177	37,217
Lowndes GA	RAINWATER	175	6,400
Lowndes GA	RAINWATER	177	8,754
Lowndes GA	S LOWNDES	174	1,951
Lowndes GA	S LOWNDES	175	3,755
Lowndes GA	TRINITY	175	9,620
Lowndes GA	TRINITY	176	4,797
Lowndes GA	TRINITY	177	6,930
Lumpkin GA	DAHLONEGA	9	29,201
Lumpkin GA	DAHLONEGA	27	4,287
Muscogee GA	CUSSETA RD	140	5,391
Muscogee GA	CUSSETA RD	141	5,010
Muscogee GA	EPWORTH UMC	139	3,363
Muscogee GA	EPWORTH UMC	140	4,560
Muscogee GA	FORT/WADDELL	137	5,599
Muscogee GA	FORT/WADDELL	141	6,645
Muscogee GA	OUR LADY OF LOURDES	140	13,744
Muscogee GA	OUR LADY OF LOURDES	141	32
Muscogee GA	ROTHSCHILD	137	8,327
Muscogee GA	ROTHSCHILD	141	3,143
Muscogee GA	ST ANDREWS/MIDLAND	139	5,899
Muscogee GA	ST ANDREWS/MIDLAND	141	5,582
Newton GA	CEDAR SHOALS	93	1,206
Newton GA	CEDAR SHOALS	113	3,687
Newton GA	FAIRVIEW	93	856
Newton GA	FAIRVIEW	113	3,443
Newton GA	TOWN	93	1,668
Newton GA	TOWN	113	5,075
Paulding GA	AUSTIN MIDDLE SCHOOL	18	916
Paulding GA	AUSTIN MIDDLE SCHOOL	64	9,977
Paulding GA	BURNT HICKORY PARK	16	8,392
Paulding GA	BURNT HICKORY PARK	17	16
Paulding GA	CARL SCOGGINS MID SC	17	517
Paulding GA	CARL SCOGGINS MID SC	18	7,991
Paulding GA	CARL SCOGGINS MID SC	19	1,240
Paulding GA	HIRAM HIGH SCHOOL	17	0
Paulding GA	HIRAM HIGH SCHOOL	19	16,110
Paulding GA	SARA RAGSDALE ELM SC	17	5,972
Paulding GA	SARA RAGSDALE ELM SC	18	1,720
Paulding GA	SHELTON ELEMENTARY SCHOOL	16	8,152
Paulding GA	SHELTON ELEMENTARY SCHOOL	17	12,810
Paulding GA	SHELTON ELEMENTARY SCHOOL	19	5,455
Paulding GA	WATSON GOVERNMENT COMPLEX	16	5

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Paulding GA	WATSON GOVERNMENT COMPLEX	17	17,525
Richmond GA	109	129	954
Richmond GA	109	130	886
Richmond GA	301	127	2,362
Richmond GA	301	129	894
Richmond GA	402	126	0
Richmond GA	402	132	9,711
Richmond GA	503	129	3,260
Richmond GA	503	132	2,535
Richmond GA	702	127	586
Richmond GA	702	129	2,007
Richmond GA	703	127	1,164
Richmond GA	703	129	6,148
Richmond GA	803	126	0
Richmond GA	803	132	2,432
Richmond GA	807	126	2,403
Richmond GA	807	132	0
Rockdale GA	MILSTEAD	93	6,444
Rockdale GA	MILSTEAD	95	0
Rockdale GA	OLD TOWNE	93	10,095
Rockdale GA	OLD TOWNE	95	872
Rockdale GA	ROCKDALE	92	6,218
Rockdale GA	ROCKDALE	93	79
Spalding GA	CARVER FIRE STATION	74	235
Spalding GA	CARVER FIRE STATION	134	2,835
Spalding GA	GARY REID FIRE STATION	74	2,075
Spalding GA	GARY REID FIRE STATION	134	4,817
Spalding GA	UGA CAMPUS	74	787
Spalding GA	UGA CAMPUS	134	5,290
Sumter GA	GSW CONF CENTER	150	4,568
Sumter GA	GSW CONF CENTER	151	1,549
Sumter GA	REES PARK	150	5,179
Sumter GA	REES PARK	151	447
Troup GA	MOUNTVILLE	136	2,068
Troup GA	MOUNTVILLE	137	497
Walton GA	BROKEN ARROW	111	2,993
Walton GA	BROKEN ARROW	112	3,003
Ware GA	100	174	2,672
Ware GA	100	176	3,692
Ware GA	200A	174	0
Ware GA	200A	176	4,133
Ware GA	304	174	0
Ware GA	304	176	2,107
Ware GA	400	174	2,506
Ware GA	400	176	2,526
Wayne GA	OGLETHORPE	167	1,928

Political Subdivision Splits Between Districts

GA House Enacted

County	Voting District	District	Population
Wayne GA	OGLETHORPE	178	637
Whitfield GA	2A	2	3,864
Whitfield GA	2A	4	1,000
Whitfield GA	PLEASANT GROVE	2	6,210
Whitfield GA	PLEASANT GROVE	6	2,122

Below is the political subdivisions splits report for the House illustrative plan.

Related note: The first page of the following report generated by *Maptitude for Redistricting* software reports a total number of Voting District (VTD) “subdivisions split in to more than one district,” namely 185. However, the “Split Counts” “Voting District” section of the report indicates that “[c]ases where an area is split among 2 Districts” total 175, and “[c]ases where an area is split among 3 Districts” total 11—and the total of 175 and 11 equals 186, not 185. Based on my correspondence with Caliper Corporation described above, I have reported 186 as the correct total in the summary table in section IV.C. of the report, not 185.

User:

Plan Name: **GA House Illustrative**

Plan Type:

Political Subdivision Splits Between Districts

Saturday, December 3, 2022

10:06 PM

Number of subdivisions not split:

County	89
Voting District	2,513

Number of subdivisions split into more than one district:

County	70
Voting District	185

Number of splits involving no population:

County	0
Voting District	13

Split Counts

County

Cases where an area is split among 2 Districts: 35
 Cases where an area is split among 3 Districts: 9
 Cases where an area is split among 4 Districts: 12
 Cases where an area is split among 5 Districts: 4
 Cases where an area is split among 6 Districts: 2
 Cases where an area is split among 7 Districts: 3
 Cases where an area is split among 9 Districts: 1
 Cases where an area is split among 14 Districts: 1
 Cases where an area is split among 17 Districts: 1
 Cases where an area is split among 21 Districts: 1
 Cases where an area is split among 23 Districts: 1

Voting District

Cases where an area is split among 2 Districts: 175
 Cases where an area is split among 3 Districts: 11

County	Voting District	District	Population
<i>Split Counties:</i>			
Appling GA		157	12,825
Appling GA		178	5,619
Baldwin GA		128	5,158
Baldwin GA		133	12,336
Baldwin GA		149	26,305
Barrow GA		104	24,245
Barrow GA		119	54,736
Barrow GA		120	4,524
Bartow GA		14	49,688
Bartow GA		15	59,213
Ben Hill GA		148	5,115
Ben Hill GA		156	12,079
Bibb GA		142	59,320
Bibb GA		143	59,122

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Bibb GA		145	22,716
Bibb GA		149	16,188
Bryan GA		160	11,008
Bryan GA		164	21,420
Bryan GA		166	12,310
Bulloch GA		158	19,285
Bulloch GA		159	12,887
Bulloch GA		160	48,927
Carroll GA		18	18,789
Carroll GA		70	2,854
Carroll GA		71	59,538
Carroll GA		72	37,967
Catoosa GA		2	7,673
Catoosa GA		3	60,199
Chatham GA		161	28,269
Chatham GA		162	60,308
Chatham GA		163	60,123
Chatham GA		164	38,681
Chatham GA		165	59,978
Chatham GA		166	47,932
Cherokee GA		11	6,557
Cherokee GA		14	9,447
Cherokee GA		20	60,107
Cherokee GA		21	59,529
Cherokee GA		22	30,874
Cherokee GA		23	59,048
Cherokee GA		44	21,989
Cherokee GA		46	15,178
Cherokee GA		47	3,891
Clarke GA		120	30,095
Clarke GA		121	26,478
Clarke GA		122	59,632
Clarke GA		124	12,466
Clayton GA		74	34,350
Clayton GA		75	55,912
Clayton GA		76	59,759
Clayton GA		77	59,242
Clayton GA		78	24,678
Clayton GA		79	59,500
Clayton GA		116	4,154
Cobb GA		22	28,586
Cobb GA		34	59,875
Cobb GA		35	59,889
Cobb GA		36	59,994
Cobb GA		37	59,176
Cobb GA		38	59,317
Cobb GA		39	59,381

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Cobb GA		40	59,044
Cobb GA		41	60,122
Cobb GA		42	59,620
Cobb GA		43	59,464
Cobb GA		44	38,013
Cobb GA		45	59,738
Cobb GA		46	43,930
Coffee GA		169	33,736
Coffee GA		176	9,356
Columbia GA		123	2,205
Columbia GA		125	55,389
Columbia GA		127	39,526
Columbia GA		131	58,890
Cook GA		170	7,342
Cook GA		172	9,887
Coweta GA		65	13,008
Coweta GA		67	17,272
Coweta GA		70	56,267
Coweta GA		73	31,608
Coweta GA		136	28,003
Dawson GA		7	2,409
Dawson GA		9	24,389
DeKalb GA		52	28,300
DeKalb GA		80	59,461
DeKalb GA		81	59,007
DeKalb GA		82	59,724
DeKalb GA		83	59,416
DeKalb GA		84	59,862
DeKalb GA		85	59,373
DeKalb GA		86	59,205
DeKalb GA		87	59,709
DeKalb GA		88	47,844
DeKalb GA		89	59,866
DeKalb GA		90	59,812
DeKalb GA		91	19,700
DeKalb GA		92	15,607
DeKalb GA		93	11,690
DeKalb GA		94	31,207
DeKalb GA		95	14,599
Dodge GA		148	18,550
Dodge GA		155	1,375
Dougherty GA		151	6,268
Dougherty GA		152	6,187
Dougherty GA		153	59,299
Dougherty GA		154	14,036
Douglas GA		61	48,764
Douglas GA		64	30,206

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Douglas GA		65	6,306
Douglas GA		66	58,961
Effingham GA		159	32,941
Effingham GA		161	31,828
Fayette GA		68	29,719
Fayette GA		69	36,979
Fayette GA		73	28,428
Fayette GA		74	24,068
Floyd GA		5	5,099
Floyd GA		12	34,335
Floyd GA		13	59,150
Forsyth GA		11	19,019
Forsyth GA		24	59,011
Forsyth GA		25	46,134
Forsyth GA		26	59,248
Forsyth GA		28	50,864
Forsyth GA		100	17,007
Fulton GA		25	13,280
Fulton GA		47	55,235
Fulton GA		48	43,976
Fulton GA		49	59,153
Fulton GA		50	59,523
Fulton GA		51	58,952
Fulton GA		52	31,511
Fulton GA		53	59,953
Fulton GA		54	60,083
Fulton GA		55	59,971
Fulton GA		56	58,929
Fulton GA		57	59,969
Fulton GA		58	59,057
Fulton GA		59	59,434
Fulton GA		60	59,709
Fulton GA		61	10,186
Fulton GA		62	59,450
Fulton GA		63	59,381
Fulton GA		64	6,032
Fulton GA		65	39,926
Fulton GA		67	41,863
Fulton GA		68	29,758
Fulton GA		69	21,379
Glynn GA		167	20,499
Glynn GA		179	59,356
Glynn GA		180	4,644
Gordon GA		5	53,738
Gordon GA		6	3,806
Grady GA		171	8,115
Grady GA		173	18,121

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Gwinnett GA		30	8,620
Gwinnett GA		48	15,027
Gwinnett GA		88	11,845
Gwinnett GA		94	28,004
Gwinnett GA		95	34,221
Gwinnett GA		96	59,515
Gwinnett GA		97	59,072
Gwinnett GA		98	59,998
Gwinnett GA		99	59,850
Gwinnett GA		100	35,204
Gwinnett GA		101	59,938
Gwinnett GA		102	58,959
Gwinnett GA		103	51,691
Gwinnett GA		104	35,117
Gwinnett GA		105	59,344
Gwinnett GA		106	59,112
Gwinnett GA		107	59,702
Gwinnett GA		108	59,577
Gwinnett GA		109	59,630
Gwinnett GA		110	59,951
Gwinnett GA		111	22,685
Habersham GA		10	42,636
Habersham GA		32	3,395
Hall GA		27	54,508
Hall GA		28	8,108
Hall GA		29	59,200
Hall GA		30	50,646
Hall GA		31	14,349
Hall GA		100	7,819
Hall GA		103	8,506
Harris GA		138	21,634
Harris GA		139	13,034
Henry GA		75	3,847
Henry GA		78	18,397
Henry GA		91	35,475
Henry GA		115	59,789
Henry GA		116	50,833
Henry GA		117	60,142
Henry GA		118	12,229
Houston GA		144	32,310
Houston GA		145	36,952
Houston GA		146	35,804
Houston GA		147	58,567
Jackson GA		31	45,552
Jackson GA		32	10,931
Jackson GA		119	4,211
Jackson GA		120	15,213

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Jasper GA		114	2,855
Jasper GA		118	11,733
Lamar GA		134	13,948
Lamar GA		135	4,552
Liberty GA		167	5,109
Liberty GA		168	60,147
Lowndes GA		174	9,770
Lowndes GA		175	43,692
Lowndes GA		176	4,797
Lowndes GA		177	59,992
Lumpkin GA		9	29,201
Lumpkin GA		27	4,287
Madison GA		33	9,935
Madison GA		123	20,185
McDuffie GA		125	4,748
McDuffie GA		128	16,884
Meriwether GA		136	13,382
Meriwether GA		137	7,231
Monroe GA		133	19,085
Monroe GA		135	8,872
Muscogee GA		137	30,443
Muscogee GA		138	12,190
Muscogee GA		139	45,976
Muscogee GA		140	59,294
Muscogee GA		141	59,019
Newton GA		93	15,515
Newton GA		113	60,053
Newton GA		114	36,915
Oconee GA		120	9,150
Oconee GA		121	32,649
Paulding GA		16	16,549
Paulding GA		17	59,120
Paulding GA		18	10,627
Paulding GA		19	58,955
Paulding GA		64	23,410
Peach GA		144	14,093
Peach GA		150	13,888
Putnam GA		118	10,591
Putnam GA		124	11,456
Richmond GA		126	25,990
Richmond GA		127	19,152
Richmond GA		129	58,829
Richmond GA		130	59,203
Richmond GA		132	43,433
Rockdale GA		91	4,781
Rockdale GA		92	44,666
Rockdale GA		93	32,913

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Rockdale GA		95	11,210
Spalding GA		78	16,815
Spalding GA		116	5,393
Spalding GA		134	45,098
Sumter GA		150	14,282
Sumter GA		151	15,334
Tattnall GA		156	1,263
Tattnall GA		157	21,579
Telfair GA		148	8,283
Telfair GA		156	4,194
Thomas GA		172	4,176
Thomas GA		173	41,622
Tift GA		169	6,730
Tift GA		170	34,614
Troup GA		72	10,281
Troup GA		136	17,913
Troup GA		137	16,144
Troup GA		138	25,088
Walker GA		1	43,415
Walker GA		2	24,239
Walton GA		111	37,324
Walton GA		112	59,349
Ware GA		174	9,097
Ware GA		176	27,154
Wayne GA		167	6,742
Wayne GA		178	23,402
White GA		8	22,119
White GA		9	5,884
Whitfield GA		2	27,861
Whitfield GA		4	59,070
Whitfield GA		6	15,933
Wilcox GA		146	955
Wilcox GA		148	7,811
<i>Split VTDs:</i>			
Baldwin GA	NORTH BALDWIN	133	4,245
Baldwin GA	NORTH BALDWIN	149	647
Baldwin GA	NORTH MILLEDGEVILLE	133	864
Baldwin GA	NORTH MILLEDGEVILLE	149	2,500
Baldwin GA	SOUTH MILLEDGEVILLE	133	932
Baldwin GA	SOUTH MILLEDGEVILLE	149	2,774
Barrow GA	16	104	1,708
Barrow GA	16	119	8,060
Bartow GA	CASSVILLE	14	15,558
Bartow GA	CASSVILLE	15	1,047
Bartow GA	WHITE	14	3,335
Bartow GA	WHITE	15	211
Ben Hill GA	WEST	148	5,115

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Ben Hill GA	WEST	156	5,229
Bibb GA	GODFREY 1	142	4,656
Bibb GA	GODFREY 1	149	6,278
Bibb GA	HOWARD 1	142	5,180
Bibb GA	HOWARD 1	143	763
Bibb GA	HOWARD 3	142	1,789
Bibb GA	HOWARD 3	143	10,865
Bibb GA	RUTLAND 1	142	1,475
Bibb GA	RUTLAND 1	145	6,465
Bibb GA	VINEVILLE 3	142	232
Bibb GA	VINEVILLE 3	143	4,182
Bryan GA	DANIELSIDING	164	1,268
Bryan GA	DANIELSIDING	166	1,741
Bryan GA	HWY 144 EAST	164	4,552
Bryan GA	HWY 144 EAST	166	4,707
Bryan GA	J.F.GREGORY PARK	164	3,489
Bryan GA	J.F.GREGORY PARK	166	144
Bulloch GA	CHURCH	158	3,764
Bulloch GA	CHURCH	159	5,869
Carroll GA	BONNER	71	410
Carroll GA	BONNER	72	5,554
Chatham GA	CRUSADER COMMUNITY CENTER	162	2,134
Chatham GA	CRUSADER COMMUNITY CENTER	166	1,493
Chatham GA	GEORGETOWN ELEMENTAR	164	5,562
Chatham GA	GEORGETOWN ELEMENTAR	166	0
Chatham GA	GRACE UNITED METHODIST CHURCH	163	2,064
Chatham GA	GRACE UNITED METHODIST CHURCH	165	397
Chatham GA	ROTHWELL BAPTIST CHURCH	161	5,335
Chatham GA	ROTHWELL BAPTIST CHURCH	164	4,987
Chatham GA	THE LIGHT CHURCH	162	1,177
Chatham GA	THE LIGHT CHURCH	163	1,109
Chatham GA	WINDSOR FOREST BAPTIST CHURCH SCHOOL	163	785
Chatham GA	WINDSOR FOREST BAPTIST CHURCH SCHOOL	166	1,890
Cherokee GA	CARMEL	20	5,626
Cherokee GA	CARMEL	22	1,222
Cherokee GA	CARMEL	44	0

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Cherokee GA	FREEHOME	21	3,200
Cherokee GA	FREEHOME	47	3,891
Cherokee GA	HOLLY SPRINGS	21	2,250
Cherokee GA	HOLLY SPRINGS	23	2,578
Clarke GA	1A	122	2,758
Clarke GA	1A	124	2,286
Clarke GA	4B	121	7,082
Clarke GA	4B	122	5,589
Clarke GA	7C	120	1,922
Clarke GA	7C	121	3,184
Clayton GA	JONESBORO 13	74	2,066
Clayton GA	JONESBORO 13	75	752
Clayton GA	JONESBORO 14	75	2,726
Clayton GA	JONESBORO 14	78	2,387
Clayton GA	JONESBORO 3	74	0
Clayton GA	JONESBORO 3	75	5,962
Clayton GA	LOVEJOY 1	74	4,484
Clayton GA	LOVEJOY 1	75	948
Clayton GA	LOVEJOY 1	78	187
Clayton GA	LOVEJOY 3	78	9,099
Clayton GA	LOVEJOY 3	116	4,154
Clayton GA	MORROW 4	75	1,316
Clayton GA	MORROW 4	76	1,911
Cobb GA	Acworth 1B	35	7,322
Cobb GA	Acworth 1B	36	142
Cobb GA	Baker 01	22	5,226
Cobb GA	Baker 01	35	1,996
Cobb GA	Bells Ferry 03	22	4,918
Cobb GA	Bells Ferry 03	44	3,763
Cobb GA	Dobbins 01	42	11,055
Cobb GA	Dobbins 01	43	2,346
Cobb GA	Elizabeth 01	34	700
Cobb GA	Elizabeth 01	37	5,170
Cobb GA	Elizabeth 04	37	2,031
Cobb GA	Elizabeth 04	43	2,387
Cobb GA	Kennesaw 1A	22	599
Cobb GA	Kennesaw 1A	35	3,844
Cobb GA	Kennesaw 3A	22	0
Cobb GA	Kennesaw 3A	34	871
Cobb GA	Kennesaw 3A	35	8,631
Cobb GA	Lassiter 01	44	2,121
Cobb GA	Lassiter 01	46	2,600
Cobb GA	Lindley 01	39	5,678
Cobb GA	Lindley 01	40	582
Cobb GA	Mableton 01	38	1,589
Cobb GA	Mableton 01	39	5,513
Cobb GA	Mableton 02	38	256

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Cobb GA	Mableton 02	39	5,427
Cobb GA	Marietta 1A	37	3,349
Cobb GA	Marietta 1A	43	6,645
Cobb GA	Marietta 2A	34	1,664
Cobb GA	Marietta 2A	37	811
Cobb GA	Marietta 5A	37	2,877
Cobb GA	Marietta 5A	43	1,457
Cobb GA	Marietta 6A	37	1,532
Cobb GA	Marietta 6A	43	3,022
Cobb GA	Marietta 7A	42	1,494
Cobb GA	Marietta 7A	43	5,417
Cobb GA	North Cobb 01	35	2,611
Cobb GA	North Cobb 01	36	559
Cobb GA	Norton Park 01	41	1,955
Cobb GA	Norton Park 01	42	5,846
Cobb GA	Oregon 03	37	6,683
Cobb GA	Oregon 03	41	6,305
Cobb GA	Pine Mountain 02	34	3,976
Cobb GA	Pine Mountain 02	35	0
Cobb GA	Smyrna 1A	40	1,292
Cobb GA	Smyrna 1A	42	5,341
Cobb GA	Smyrna 4A	40	6,599
Cobb GA	Smyrna 4A	42	1,609
Cobb GA	Smyrna 7A	39	905
Cobb GA	Smyrna 7A	40	7,690
Coffee GA	DOUGLAS	169	19,642
Coffee GA	DOUGLAS	176	8,929
Columbia GA	PATRIOTS PARK	125	326
Columbia GA	PATRIOTS PARK	131	5,958
Coweta GA	JEFFERSON PARKWAY	70	12,590
Coweta GA	JEFFERSON PARKWAY	73	1,521
DeKalb GA	Cedar Grove Middle	89	2,204
DeKalb GA	Cedar Grove Middle	90	316
DeKalb GA	Clarkston	85	5,454
DeKalb GA	Clarkston	86	9,300
DeKalb GA	Dresden Elem (CHA)	81	5,398
DeKalb GA	Dresden Elem (CHA)	83	7,691
DeKalb GA	Freedom Middle	86	1,002
DeKalb GA	Freedom Middle	87	3,088
DeKalb GA	Glennwood (DEC)	82	2,059
DeKalb GA	Glennwood (DEC)	84	1,221
DeKalb GA	Glenwood Road	85	1,698
DeKalb GA	Glenwood Road	86	1,064
DeKalb GA	Memorial South	86	2,226
DeKalb GA	Memorial South	87	2,547
DeKalb GA	Panola Road	86	3,296
DeKalb GA	Panola Road	94	460

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
DeKalb GA	Redan Middle	87	1,419
DeKalb GA	Redan Middle	88	1,633
DeKalb GA	Rockbridge Road	94	3,736
DeKalb GA	Rockbridge Road	95	1,104
DeKalb GA	Snapfinger Road South	84	920
DeKalb GA	Snapfinger Road South	91	1,271
DeKalb GA	Stone Mill Elem	87	1,863
DeKalb GA	Stone Mill Elem	88	4,069
DeKalb GA	Stone Mountain Champion (STO)	87	1,338
DeKalb GA	Stone Mountain Champion (STO)	88	2,865
DeKalb GA	Stone Mountain Middle (TUC)	87	656
DeKalb GA	Stone Mountain Middle (TUC)	88	3,960
DeKalb GA	Tucker Library (TUC)	81	2,394
DeKalb GA	Tucker Library (TUC)	88	1,635
Dougherty GA	DARTON COLLEGE	151	4,018
Dougherty GA	DARTON COLLEGE	153	2,465
Dougherty GA	MT ZION CENTER	153	1,245
Dougherty GA	MT ZION CENTER	154	3,972
Douglas GA	MIRROR LAKE ELEMENTA	61	5,093
Douglas GA	MIRROR LAKE ELEMENTA	66	3,661
Effingham GA	4B	159	1,960
Effingham GA	4B	161	959
Fayette GA	ABERDEEN	68	983
Fayette GA	ABERDEEN	73	1,392
Fayette GA	BANKS	69	1,812
Fayette GA	BANKS	74	247
Fayette GA	BRAELINN	73	605
Fayette GA	BRAELINN	74	1,646
Fayette GA	MURPHY	69	146
Fayette GA	MURPHY	74	3,848
Fayette GA	STARRSMILL	73	1,932
Fayette GA	STARRSMILL	74	2,452
Floyd GA	ALTO PARK	12	1,576
Floyd GA	ALTO PARK	13	3,847
Floyd GA	MT ALTO NORTH	12	1,080
Floyd GA	MT ALTO NORTH	13	4,509
Forsyth GA	BROWNS BRIDGE	26	10,116
Forsyth GA	BROWNS BRIDGE	28	2,801
Forsyth GA	CONCORD	11	7,687
Forsyth GA	CONCORD	28	7,982
Forsyth GA	CUMMING	26	4,666
Forsyth GA	CUMMING	28	2,410
Forsyth GA	HEARDSVILLE	11	11,332
Forsyth GA	HEARDSVILLE	24	1,335

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Forsyth GA	HEARDSVILLE	28	333
Forsyth GA	OTWELL	24	3,988
Forsyth GA	OTWELL	26	6,597
Forsyth GA	OTWELL	28	7,875
Forsyth GA	POLO	24	9,868
Forsyth GA	POLO	25	0
Forsyth GA	POLO	26	15,990
Forsyth GA	SOUTH FORSYTH	25	10,064
Forsyth GA	SOUTH FORSYTH	100	11,887
Forsyth GA	WINDERMERE	26	11,718
Forsyth GA	WINDERMERE	100	5,120
Fulton GA	08C	53	1,524
Fulton GA	08C	60	335
Fulton GA	09K	55	3,033
Fulton GA	09K	60	4,105
Fulton GA	10D	55	1,756
Fulton GA	10D	60	4,311
Fulton GA	11C	55	340
Fulton GA	11C	60	3,418
Fulton GA	AP022	48	862
Fulton GA	AP022	49	2,505
Fulton GA	AP07B	47	1,250
Fulton GA	AP07B	49	1,304
Fulton GA	AP14	48	4,109
Fulton GA	AP14	49	281
Fulton GA	EP01B	59	2,393
Fulton GA	EP01B	62	2,049
Fulton GA	JC19	48	3,608
Fulton GA	JC19	51	1,792
Fulton GA	ML012	47	501
Fulton GA	ML012	49	123
Fulton GA	ML01B	47	284
Fulton GA	ML01B	49	61
Fulton GA	RW03	51	1,292
Fulton GA	RW03	53	6,066
Fulton GA	RW09	47	2,971
Fulton GA	RW09	49	4,750
Fulton GA	SC02	60	220
Fulton GA	SC02	65	773
Fulton GA	SC07A	65	1,028
Fulton GA	SC07A	67	7,728
Fulton GA	SC08B	62	92
Fulton GA	SC08B	68	5,255
Fulton GA	SC13	61	589
Fulton GA	SC13	65	2,269
Fulton GA	SC13	67	1,176
Fulton GA	UC02A	65	1,070

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Fulton GA	UC02A	67	13,013
Gwinnett GA	BAYCREEK A	106	934
Gwinnett GA	BAYCREEK A	110	2,651
Gwinnett GA	BAYCREEK D	102	3,729
Gwinnett GA	BAYCREEK D	110	2,597
Gwinnett GA	BERKSHIRE H	98	2,475
Gwinnett GA	BERKSHIRE H	108	1,991
Gwinnett GA	CATES J	94	955
Gwinnett GA	CATES J	108	4,255
Gwinnett GA	DULUTH F	96	7,245
Gwinnett GA	DULUTH F	107	5,149
Gwinnett GA	DULUTH G	96	1,426
Gwinnett GA	DULUTH G	99	3,389
Gwinnett GA	DUNCANS D	30	8,620
Gwinnett GA	DUNCANS D	104	1,575
Gwinnett GA	LAWRENCEVILLE F	102	2,073
Gwinnett GA	LAWRENCEVILLE F	105	3,924
Gwinnett GA	LAWRENCEVILLE M	102	4,231
Gwinnett GA	LAWRENCEVILLE M	105	7,770
Gwinnett GA	MARTINS H	107	8,164
Gwinnett GA	MARTINS H	109	892
Gwinnett GA	PINCKNEYVILLE W	96	5,745
Gwinnett GA	PINCKNEYVILLE W	97	2,561
Gwinnett GA	PUCKETTS E	103	1,506
Gwinnett GA	PUCKETTS E	105	7,421
Gwinnett GA	SUGAR HILL D	100	2,158
Gwinnett GA	SUGAR HILL D	103	6,421
Gwinnett GA	SUWANEE F	99	3,224
Gwinnett GA	SUWANEE F	103	2,836
Habersham GA	HABERSHAM SOUTH	10	8,687
Habersham GA	HABERSHAM SOUTH	32	1,972
Hall GA	WILSON	28	3,803
Hall GA	WILSON	29	4,979
Henry GA	LAKE HAVEN	116	4,546
Henry GA	LAKE HAVEN	117	1,242
Henry GA	LOCUST GROVE	116	4,436
Henry GA	LOCUST GROVE	117	5,352
Henry GA	RED OAK	75	3,847
Henry GA	RED OAK	116	3,999
Henry GA	SWAN LAKE	91	1,951
Henry GA	SWAN LAKE	115	2,807
Houston GA	CENT	145	315
Houston GA	CENT	147	11,569
Houston GA	MCMS	144	11,859
Houston GA	MCMS	147	1,635
Houston GA	ROZR	144	13,202
Houston GA	ROZR	146	7,640

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Jackson GA	North Jackson	31	4,513
Jackson GA	North Jackson	32	10,931
Jackson GA	North Jackson	120	3,803
Jackson GA	West Jackson	31	16,656
Jackson GA	West Jackson	119	4,211
Liberty GA	BUTTON GWINNETT	167	5,109
Liberty GA	BUTTON GWINNETT	168	4,344
Lowndes GA	NORTHSIDE	175	8,373
Lowndes GA	NORTHSIDE	177	37,217
Lowndes GA	RAINWATER	175	6,400
Lowndes GA	RAINWATER	177	8,754
Lowndes GA	S LOWNDES	174	1,951
Lowndes GA	S LOWNDES	175	3,755
Lowndes GA	TRINITY	175	9,620
Lowndes GA	TRINITY	176	4,797
Lowndes GA	TRINITY	177	6,930
Lumpkin GA	DAHLONEGA	9	29,201
Lumpkin GA	DAHLONEGA	27	4,287
Muscogee GA	CUSSETA RD	140	5,391
Muscogee GA	CUSSETA RD	141	5,010
Muscogee GA	EPWORTH UMC	139	3,363
Muscogee GA	EPWORTH UMC	140	4,560
Muscogee GA	FORT/WADDELL	137	5,599
Muscogee GA	FORT/WADDELL	141	6,645
Muscogee GA	OUR LADY OF LOURDES	140	13,744
Muscogee GA	OUR LADY OF LOURDES	141	32
Muscogee GA	ROTHSCHILD	137	8,327
Muscogee GA	ROTHSCHILD	141	3,143
Muscogee GA	ST ANDREWS/MIDLAND	139	5,899
Muscogee GA	ST ANDREWS/MIDLAND	141	5,582
Newton GA	CEDAR SHOALS	93	1,206
Newton GA	CEDAR SHOALS	113	3,687
Newton GA	FAIRVIEW	93	856
Newton GA	FAIRVIEW	113	3,443
Newton GA	TOWN	93	1,668
Newton GA	TOWN	113	5,075
Paulding GA	AUSTIN MIDDLE SCHOOL	18	916
Paulding GA	AUSTIN MIDDLE SCHOOL	64	9,977
Paulding GA	BURNT HICKORY PARK	16	8,392
Paulding GA	BURNT HICKORY PARK	17	16
Paulding GA	CARL SCOGGINS MID SC	17	517
Paulding GA	CARL SCOGGINS MID SC	18	7,991
Paulding GA	CARL SCOGGINS MID SC	19	1,240
Paulding GA	HIRAM HIGH SCHOOL	17	0
Paulding GA	HIRAM HIGH SCHOOL	19	16,110
Paulding GA	SARA RAGSDALE ELM SC	17	5,972
Paulding GA	SARA RAGSDALE ELM SC	18	1,720

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Paulding GA	SHELTON ELEMENTARY SCHOOL	16	8,152
Paulding GA	SHELTON ELEMENTARY SCHOOL	17	12,810
Paulding GA	SHELTON ELEMENTARY SCHOOL	19	5,455
Paulding GA	WATSON GOVERNMENT COMPLEX	16	5
Paulding GA	WATSON GOVERNMENT COMPLEX	17	17,525
Richmond GA	109	129	954
Richmond GA	109	130	886
Richmond GA	301	127	2,362
Richmond GA	301	129	894
Richmond GA	402	126	0
Richmond GA	402	132	9,711
Richmond GA	503	129	3,260
Richmond GA	503	132	2,535
Richmond GA	702	127	586
Richmond GA	702	129	2,007
Richmond GA	703	127	1,164
Richmond GA	703	129	6,148
Richmond GA	803	126	0
Richmond GA	803	132	2,432
Richmond GA	807	126	2,403
Richmond GA	807	132	0
Rockdale GA	MILSTEAD	93	6,444
Rockdale GA	MILSTEAD	95	0
Rockdale GA	OLD TOWNE	93	10,095
Rockdale GA	OLD TOWNE	95	872
Rockdale GA	ROCKDALE	92	6,218
Rockdale GA	ROCKDALE	93	79
Spalding GA	CARVER FIRE STATION	78	235
Spalding GA	CARVER FIRE STATION	134	2,835
Spalding GA	GARY REID FIRE STATION	78	2,075
Spalding GA	GARY REID FIRE STATION	134	4,817
Spalding GA	UGA CAMPUS	78	787
Spalding GA	UGA CAMPUS	134	5,290
Sumter GA	GSW CONF CENTER	150	4,568
Sumter GA	GSW CONF CENTER	151	1,549
Sumter GA	REES PARK	150	5,179
Sumter GA	REES PARK	151	447
Troup GA	MOUNTVILLE	136	2,068
Troup GA	MOUNTVILLE	137	497
Walton GA	BROKEN ARROW	111	2,993
Walton GA	BROKEN ARROW	112	3,003
Ware GA	100	174	2,672
Ware GA	100	176	3,692

Political Subdivision Splits Between Districts

GA House Illustrative

County	Voting District	District	Population
Ware GA	200A	174	0
Ware GA	200A	176	4,133
Ware GA	304	174	0
Ware GA	304	176	2,107
Ware GA	400	174	2,506
Ware GA	400	176	2,526
Wayne GA	OGLETHORPE	167	1,928
Wayne GA	OGLETHORPE	178	637
Whitfield GA	2A	2	3,864
Whitfield GA	2A	4	1,000
Whitfield GA	PLEASANT GROVE	2	6,210
Whitfield GA	PLEASANT GROVE	6	2,122

Expert Report of Dr. Loren Collingwood

Grant v. Raffensperger, No. 1:22-CV-00122-SCJ (N.D. Ga.)

December 12, 2022

Loren Collingwood

Background and Qualifications

I am an associate professor of political science at the University of New Mexico. Previously, I was an associate professor of political science and co-director of civic engagement at the Center for Social Innovation at the University of California, Riverside. I have published two books with *Oxford University Press*, 39 peer-reviewed journal articles, and nearly a dozen book chapters focusing on sanctuary cities, race/ethnic politics, election administration, and racially polarized voting. I received a Ph.D. in political science with a concentration in political methodology and applied statistics from the University of Washington in 2012 and a B.A. in psychology from the California State University, Chico, in 2002. I have attached my curriculum vitae, which includes an up-to-date list of publications.

In between my B.A. and Ph.D., I spent 3-4 years working in private consulting for the survey research firm Greenberg Quinlan Rosner Research in Washington, D.C. I also founded the research firm Collingwood Research, which focuses primarily on the statistical and demographic analysis of political data for a wide array of clients, and lead redistricting and map-drawing and demographic analysis for the Inland Empire Funding Alliance in Southern California. I am the redistricting consultant for the West Contra Costa Unified School District, California, independent redistricting commission, in which I am charged with drawing court-ordered single-member districts.

I have served as an expert witness in a number of cases related to redistricting. I testified for the plaintiff in the Voting Rights Act (VRA) Section 2 case *NAACP v. East Ramapo Central School District*, No. 17 Civ. 8943 (S.D.N.Y.), on which I worked from 2018 to 2020. In that case, I used the statistical software eiCompare and WRU to implement Bayesian Improved Surname Geocoding (BISG) to identify the racial/ethnic demographics of voters and estimate candidate preference by race using ecological data. I was also the racially polarized voting (RPV) expert in several cases during this redistricting cycle: *East St. Louis Branch NAACP v. Illinois State Board of Elections*, No. 1:21-cv-05512 (N.D. Ill.), having filed two reports and sat for a deposition; *Johnson v. Wisconsin Elections Commission*, No. 2021AP1450-OA (Wis.), having filed three reports; *Rivera v. Schwab*, No. 2022-CV-000089 (Kan. Dist. Ct.), having filed a report, sat for a deposition, and testified at trial; *LULAC v. Abbott*, No. 3:21-CV-00259-DCG-JES-JVB (W.D. Tex.), having filed three reports and sat for a deposition; *Walen v. Burgum*, No. 1:22-cv-00031-PDW-CRH (D.N.D.), having filed a report and testified at trial; and *Soto Palmer v. Hobbs*, No. 3:22-cv-05035-RSL (W.D. Wash.), having filed a report.

I have also served as an expert witness in other cases related to voting rights more generally. I am the quantitative expert in *LULAC of Iowa v. Pate*, No. CVCV061476 (Iowa Dist. Ct.), and have filed an expert report in that case. I am the BISG expert in *LULAC Texas v. Scott*, No. 1:21-cv-00786-XR (W.D. Tex.), and have filed two reports and been deposed in that case. I am also the RPV expert in *Lower Brule Sioux Tribe v. Lyman County*, No. 3:22-CV-03008-RAL (D.S.D.), where I filed a report and testified at trial.

I am being compensated at a rate of \$400/hour. No part of my compensation is dependent upon the conclusions that I reach or the opinions that I offer.

Executive Summary

- On every metric, Black Georgians are disadvantaged socioeconomically relative to non-Hispanic white Georgians. Blacks are worse off than whites on the following measures: income, unemployment, poverty, health, and educational attainment.
- These socioeconomic disparities have an adverse effect on the ability of Black Georgians to participate in the political process, as measured by voter turnout and other forms of political participation.
- This means that the political system does not respond to Black Georgians in the same way it responds to white Georgians. If the system did respond, we would expect to see fewer gaps in both health and economic indicators and a reduction in voter turnout gaps.
- Instead, Black Georgians vote at significantly lower rates than white Georgians. That is true at the statewide, county, and precinct levels—including in the Atlanta-Sandy Springs-Alpharetta Metropolitan area. This is also true in the Black Belt region of Georgia.
- The data show a significant relationship between turnout and disparities in health, employment, and education: as health, education, and employment outcomes increase, so does voter turnout in a material way.
- Black Georgians also lag behind white Georgians in other forms of political participation, like making campaign contributions, engaging local officials, and running for office.
- The academic literature overwhelmingly shows that these low levels of political participation are attributable to the socioeconomic disparities discussed above.

My opinions are based on the following data sources: the American Community Survey (ACS) across time; 2020 and 2022 statewide-, county-, and precinct-level voter registration and aggregate turnout data from the Georgia Secretary of State; 2010-2022 statewide voter turnout from the Georgia Secretary of State; 2014-2022 county-level voter turnout data from the Georgia Secretary of State; and the 2020 Cooperative Election Study.

Analysis

A. Senate Factor 5

I have been asked to examine item 5 of what has come to be known as the Senate Factors. During the 1982 Voting Rights Act extension, the Senate Judiciary Committee listed out factors that could be considered in evaluating a Section 2 VRA claim. These factors allow experts to inform the court as to the extent that minorities “are denied equal access to the political process.”

Senate Factor 5 examines the extent that minority group members (here, Black individuals) in a political jurisdiction (in this case the state of Georgia) bear the effects of discrimination in education, employment, and health that hinder said group’s political participation. Without a doubt, my analysis demonstrates that Black Georgians face clear and significant disadvantages in the above areas that reduce their ability to participate in the political process.

This analysis also speaks to Senator Factor 8: whether elected officials are less responsive to the particularized needs of the members of the minority group. My findings show that clear disparities across health and socioeconomic indicators impede Black Georgians' political participation. It follows that the political system is relatively unresponsive to Black Georgians; otherwise, we would not observe such clear disadvantages in healthcare, economics, and education.

B. Socioeconomic Disparities

Starting with the 2015-2019 ACS, I constructed the following metrics for both the Black and white populations in Georgia: household median income; total households reporting income above \$100,000; total households reporting income above \$125,000; households receiving Supplemental Nutrition Assistance Program (SNAP, or food stamps) benefits in the past 12 months; percent of the population living below the poverty line in the last 12 months; percent of children living below the poverty line; percent of adults living below the poverty line; percent of the population over the age of 25 with a high school diploma; percent of the population over the age of 25 with a college degree; unemployment rate; percent of the population reporting a disability; and percent of the population reporting health insurance. These metrics reflect broad racial disparities in education, employment, and health.

As shown in Table 1, there are clear racial disparities in employment. The unemployment rate among Black Georgians (8.7%) is nearly double that of white Georgians (4.4%). And disparities persist among those *with* employment: white households are twice as likely as Black households to report an annual income above \$100,000. Black Georgians, meanwhile, were more than twice as likely—and Black children in particular more than three times as likely—to live below the poverty line over the past year. Black Georgians were nearly three times more likely than white Georgians to receive SNAP benefits.

On education, Black adults over the age of 25 are more likely than their white peers to lack a high school diploma (13.3% compared to 9.4%). These disparities fare no better in higher education: 35% of white adults over the age of 25 have obtained a bachelor's degree or higher compared to 24% of their Black counterparts.

Finally, on health, the Black population in Georgia is more likely to report a disability (11.8% compared to 10.9% for whites) and is more likely to lack health insurance (18.9% compared to 14.2% among 19-64 year-olds). All told, the numbers convey consistent racial disparities across economics, health, employment, and education.

I also reproduced the same analyses using the 2016-2020 ACS. As shown in Table 2, the racial disparities reported above hold across the different economic, health, employment, and education metrics.

	Black	White	White - Black
Median Household Income	\$44670	\$67955	\$23285
Pct. HH Income > \$100K	0.165	0.322	0.157
Pct. HH Income > \$125K	0.096	0.224	0.128
Pct. HH receiving SNAP	0.227	0.077	-0.15
Pct. below poverty line	0.215	0.101	-0.114
Pct. below poverty line, children	0.313	0.115	-0.198
Pct. below poverty line, VAP	0.18	0.098	-0.082
Pct. w/ Less than HS Diploma	0.133	0.094	-0.039
Pct. w/ Bachelor's Degree or higher	0.24	0.351	0.111
Pct. Unemployed	0.087	0.044	-0.043
Pct Disabled, ages 19-64	0.118	0.109	-0.009
Pct. Uninsured, ages 19-64	0.189	0.142	-0.047

Table 1. Socioeconomic indicators across Black and white Georgians, 2015-2019 ACS.

	Black	White	White - Black
Median Household Income	\$46964	\$70784	\$23820
Pct. HH Income > \$100K	0.18	0.34	0.16
Pct. HH Income > \$125K	0.108	0.24	0.132
Pct. HH receiving SNAP	0.222	0.071	-0.151
Pct. below poverty line	0.201	0.098	-0.103
Pct. below poverty line, children	0.293	0.108	-0.185
Pct. below poverty line, VAP	0.169	0.095	-0.074
Pct. w/ Less than HS Diploma	0.124	0.088	-0.036
Pct. w/ Bachelor's Degree or higher	0.251	0.358	0.107
Pct. Unemployed	0.085	0.043	-0.042
Pct Disabled, ages 19-64	0.121	0.109	-0.012
Pct. Uninsured, ages 19-64	0.187	0.141	-0.046

Table 2. Socioeconomic indicators across Black and white Georgians, 2016-2020 ACS.

These patterns hold across nearly every county in the state. Using the 2015-2019 ACS, I gathered the same metrics at the county level and considered only counties with at least 1,000 white and 1,000 Black residents. Georgia has 159 counties; of these, 141 meet this threshold. Whites have a higher median household income than Blacks in 136 of 141 of these counties.¹ Just two counties—Habersham and Paulding—feature a higher Black median household income (Habersham: \$64,286 vs. \$50,418; Paulding: \$50,418 vs. \$68,843). Among households making more than \$100,000, whites have an advantage over Blacks in 140 of the 141 counties.

Turning to SNAP, a higher percentage of Blacks have relied on SNAP in the past 12 months than whites in 140 of the 141 counties. In 136 of the 141 counties, Blacks are more likely to live below the poverty line than are whites. And in 130 of the 141 counties, whites are more likely than Blacks to have a 4-year college degree or higher.

¹ The ACS does not provide median income for Black households in three counties so these counties are treated as missing for this median household income comparison.

While the county distribution is not as pronounced with respect to unemployment and uninsured status, these disparities are still heavily weighted towards Black disadvantage. Blacks have a higher unemployment rate than whites in 118 of the 141 counties (84%), and the share of the population that is uninsured is higher for Blacks than for whites in 92 of the 141 counties (65%).²

C. Effect on Political Participation

1. Academic Literature

Socioeconomic disparities like these unquestionably affect political participation. There is a vast literature in political science that demonstrates a strong and consistent link between socioeconomic status (SES) and voter turnout. In general, voters with higher income and education are disproportionately likely to vote and participate in American politics (Wolfinger and Rosenstone 1980; Leighley and Nagler 2013; Nie et al. 1996; Mayer 2011). Brady, Verba, and Schlozman (1995) argue that resources—conceptualized as time, money, and civic skills (all related to education and income)—drive donation behavior, campaign volunteering, and voting. These broad SES findings hold using a variety of research designs. For example, Henderson (2018) uses a hookworm eradication program haphazardly (i.e., at random) applied to counties in the early 20th century South (the program exogenously covaries with educational attainment) to show a causal relationship between education and political participation.

Other research is in accord. Avery (2015) indicates that states with higher income inequality have greater income bias in turnout. Shah and Wichowsky (2019) show a link between home foreclosures and participation: Neighborhoods with a higher share of home foreclosures during the 2008 financial crisis subsequently experienced a drop in voter turnout, and affected individuals were less likely to vote in future elections. And findings in Pacheco and Fletcher (2015) indicate an association between self-reported health and voter turnout.

This overwhelming academic literature shows that the socioeconomic disadvantages suffered by Black Georgians affect their ability to participate in the political process.

This means that the political system does not respond to Black Georgians in the same way it responds to white Georgians. If the system did respond, we would expect to see fewer gaps in both health and economic indicators and a reduction in voter turnout gaps. A clear and consistent finding in political science research demonstrates that elected officials do not respond to constituent inquiry from minorities as readily as they do to white constituents (Barreto et al. 2004; Costa, 2017; White et al., 2015).

2. Voter Turnout

When Georgians register to vote, they indicate their race. The Georgia Secretary of State maintains yearly statewide-, county-, and precinct-level voter registration and turnout by race. I gathered

² My conclusions about the reported racial disparities do not change when relying on the 2016-2020 ACS.

these data for the 2020 and 2022 general elections.³ To calculate voter turnout, for both Black and white Georgians, I divided the total number of Black and white people who voted by the total number of the respective registered voter counts.

a. Statewide Analysis

For the years 2010-2022, I gathered statewide turnout data by race. The 2010-2012 turnout data is only available on the Secretary of State's website at the statewide level. Table 3 displays even-year statewide general election voter turnout by race across the 2010-2022 time period. This is a comprehensive list of elections as it covers both midterm and presidential election cycles.

For each election cycle, registered white voters turned out at higher rates than did registered Black voters. For instance, during the 2022 midterm election, whites turned out at 58.3%, whereas Blacks turned out at 45.0%, which translates into a gap of 13.3 percentage points in turnout. A similar gap (12.6%) is visible in the 2020 presidential election cycle. This Black-white gap is most narrow during President Obama's 2012 re-election – at 3.1% -- but in every single case whites vote at a noticeably higher rate than do Blacks.

Year	Black TO	White TO	Gap	Total Turnout
2022	45	58.3	-13.3	50.5
2020	60	72.6	-12.6	65.7
2018	53.9	62.2	-8.3	56.4
2016	56.2	67.9	-11.6	62
2014	40.6	47.5	-6.9	42.9
2012	72.6	75.7	-3.1	72.9
2010	50.4	55.9	-5.5	52.1

Table 3. Statewide voter turnout by race, 2010-2022.

b. Countywide Analysis

Next, I compared the share of a county's white registrants who voted in 2022 against the share of a county's Black registrants who voted in 2022. Figure 1 visually compares turnout (denominator is registration) between whites and Blacks across the state's counties. In almost every single county, white registrants voted at higher rates than did Black registrants. This is visually demonstrated by the fact that almost all of the dots (counties) fall below the blue identity line, as opposed to above. Only in Chattahoochee and Liberty Counties did Black registrants cast ballots

³ This data was previously available at: https://sos.ga.gov/index.php/elections/general_election_turnout_by_demographics_november_2020.

at (slightly) higher rates than did white registrants. Using 2020 data, I find nearly identical results, as illustrated in Figure 2.

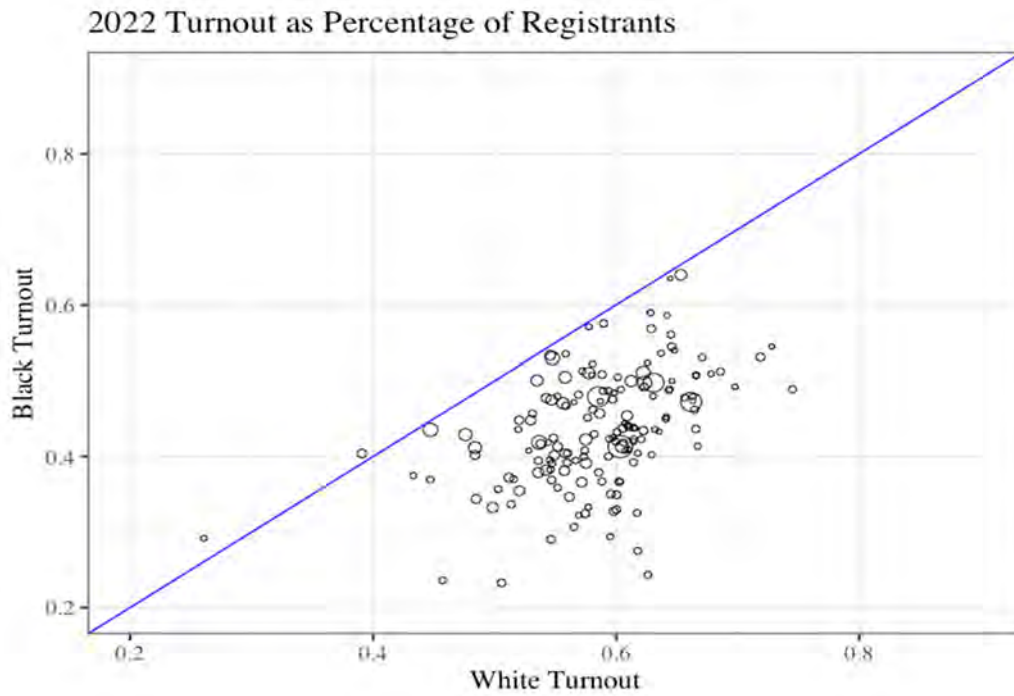


Figure 1. 2022 turnout by county; white-Black differential based on voter registration.

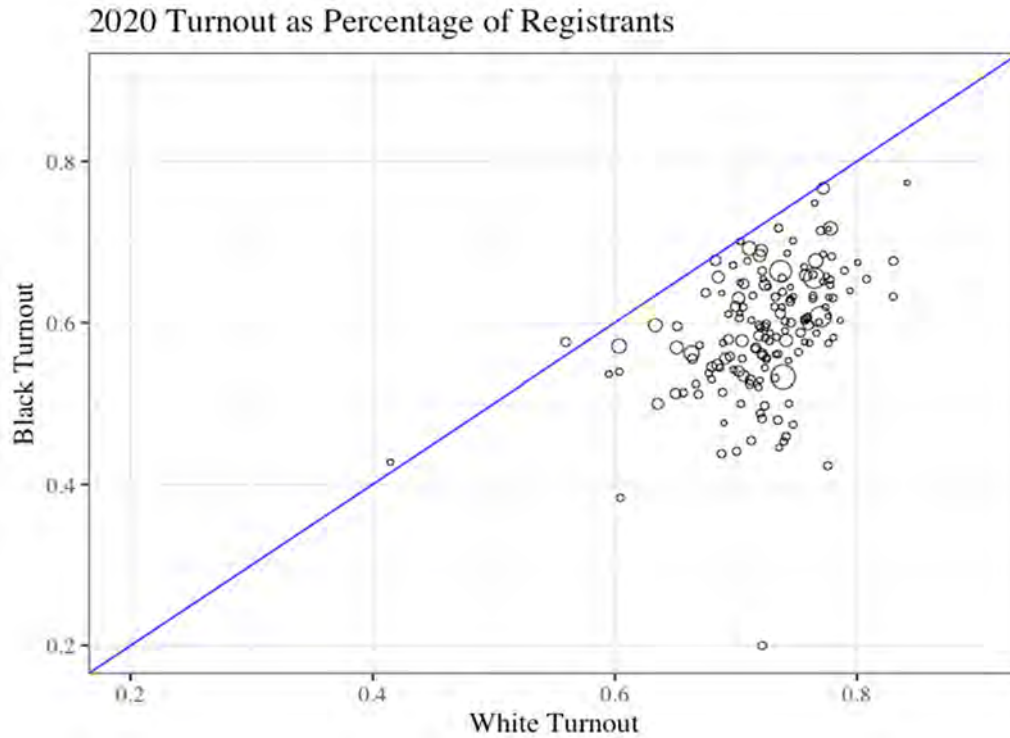


Figure 2. 2020 turnout by county; white-Black differential based on voter registration.

Below, Figures 3 and 4 plot out the same relationship but swap out registration for voting age population (VAP) as the denominator. The relationship is very similar using both 2022 and 2020 turnout data. Stated differently, the substantive findings do not change regarding which denominator is selected: white Georgians clearly vote at higher rates than Black Georgians.

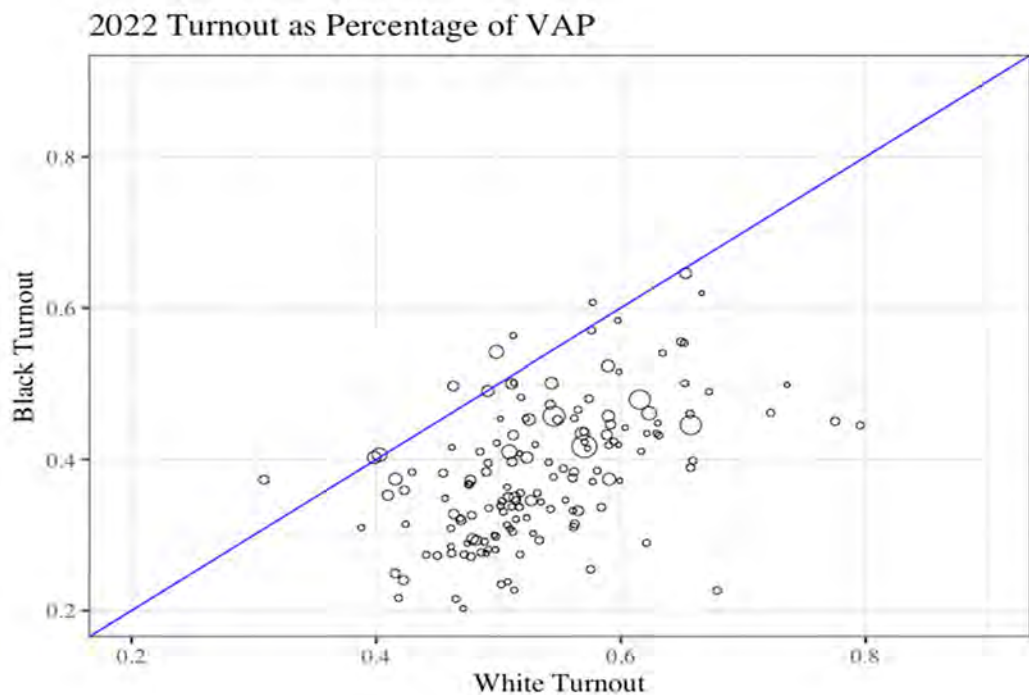


Figure 3. 2020 turnout by county; white-Black differential based on VAP.

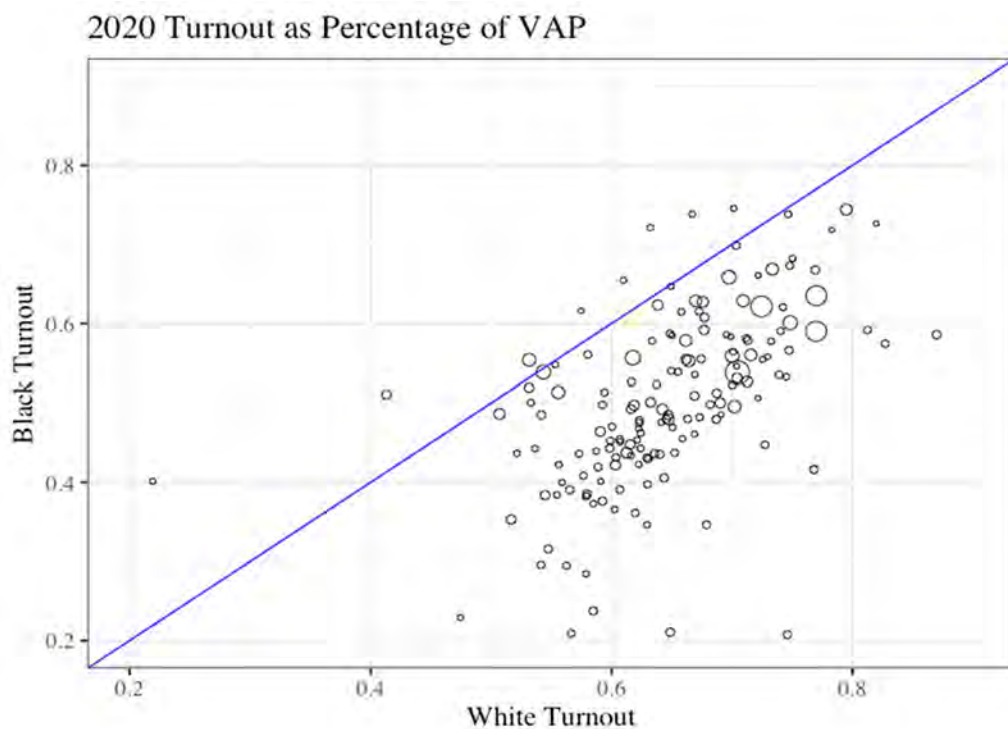


Figure 4. 2020 turnout by county; white-Black differential based on VAP.

I also replicated the white-Black turnout differential analysis for the 2014-2018 elections because such data are readily available from the Georgia Secretary of State. Figure 5 plots out the 2018 white vs. Black turnout gap and demonstrates substantively the same trends discussed above. Figures 6 and 7 present the same analyses for the 2016 and 2014 elections, respectively.

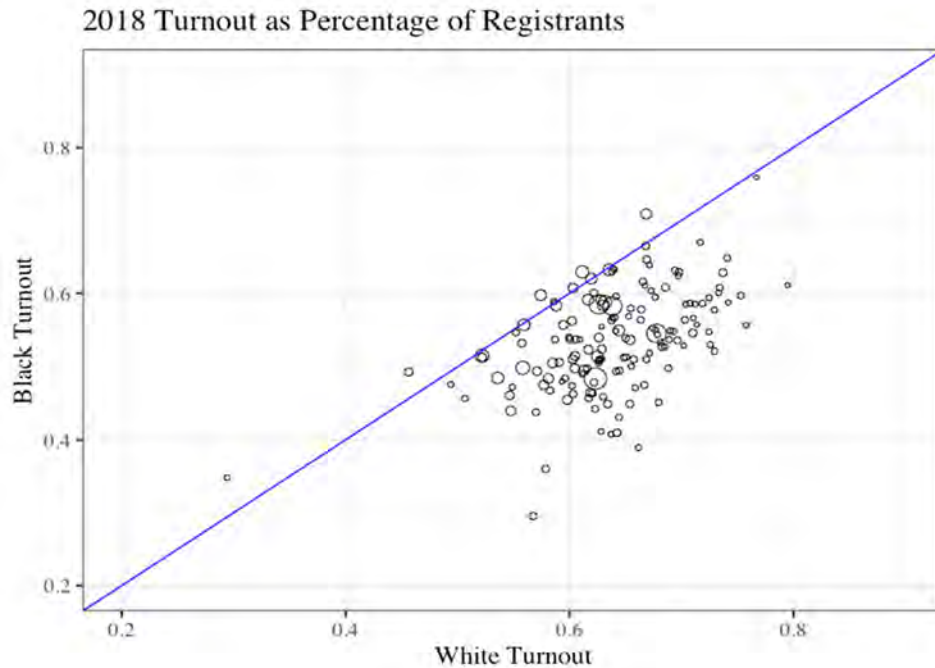


Figure 5. 2018 turnout by county; white-Black differential based on voter registration.

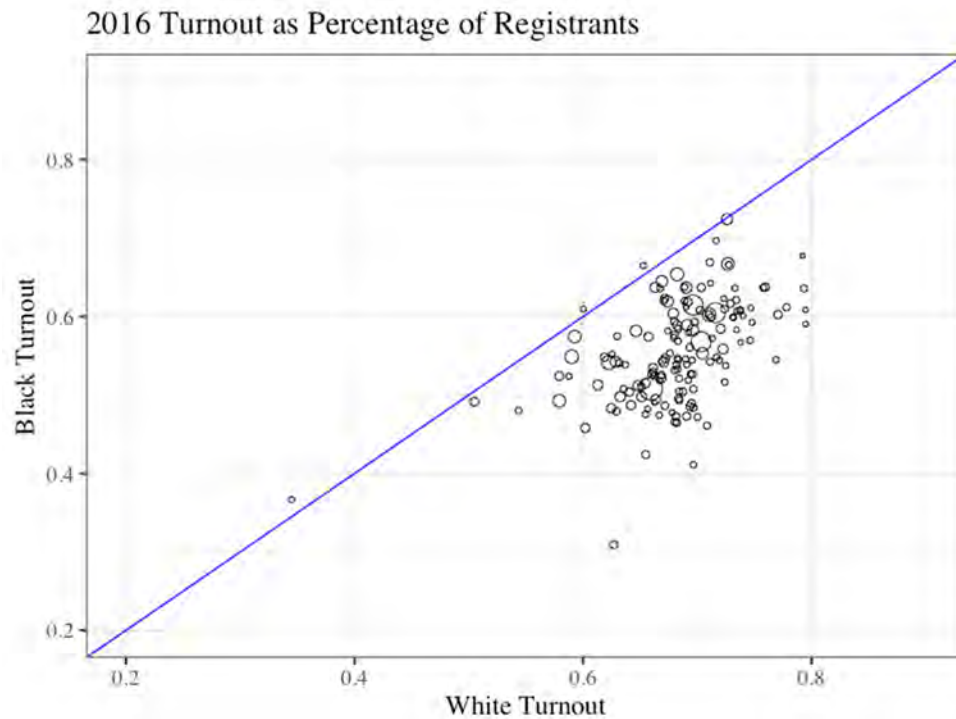


Figure 6. 2016 turnout by county; white-Black differential based on voter registration.

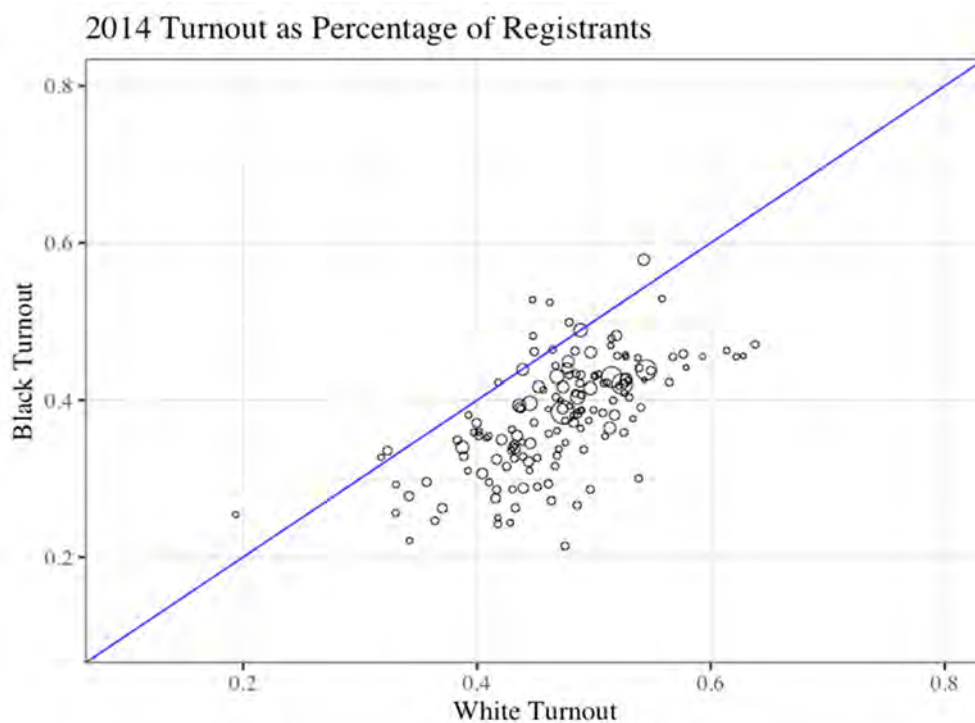


Figure 7. 2014 turnout by county; white-Black differential based on voter registration.

c. Precinct-Level Analysis

I replicated the 2020 and 2022 county analysis with Georgia precincts gathered from the Secretary of State's website.⁴ The 2020 precinct file contains 2,784 precincts across the state and the 2022 precinct file contains 2,852 precincts. Both files include both registration and votes cast for whites and Blacks. I then subset the datasets to precincts with more than 100 Blacks and 100 whites to reduce the influence of outliers—namely, extremely small precincts. This resulted in a total of 1,957 precincts in the 2020 data and 2,010 precincts in the 2022 data.

The analysis of precinct-level turnout does not change the core substance of the reported findings. Of the 1,957 precincts in 2020, whites have a higher turnout in 1,549 (79.2%) precincts and Blacks in only 408 (20.8%) precincts. In 2022, whites have a higher turnout in 1,629 (81.0%) of the precincts, while Blacks have a turnout advantage in only 381 (19.0%) of the precincts. Figures 8 and 9 visually display the results, which are consistent with both the statewide and county analyses. The clear majority of precinct dots fall below the blue identity line.

⁴ This data was previously available at: https://sos.ga.gov/index.php/elections/general_election_turnout_by_demographics_november_2020.

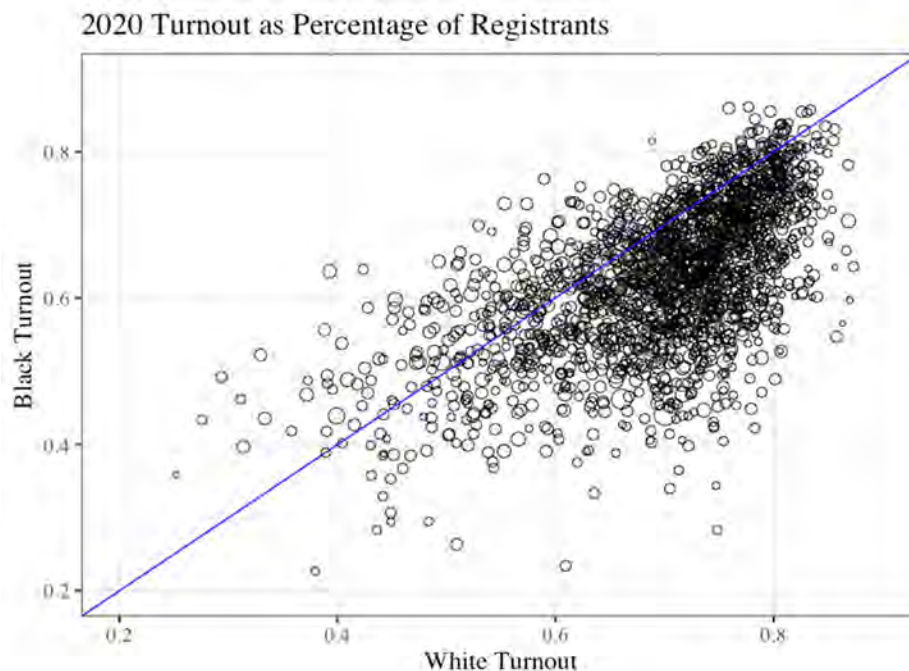


Figure 8. 2020 turnout by precinct; white-Black differential based on voter registration.

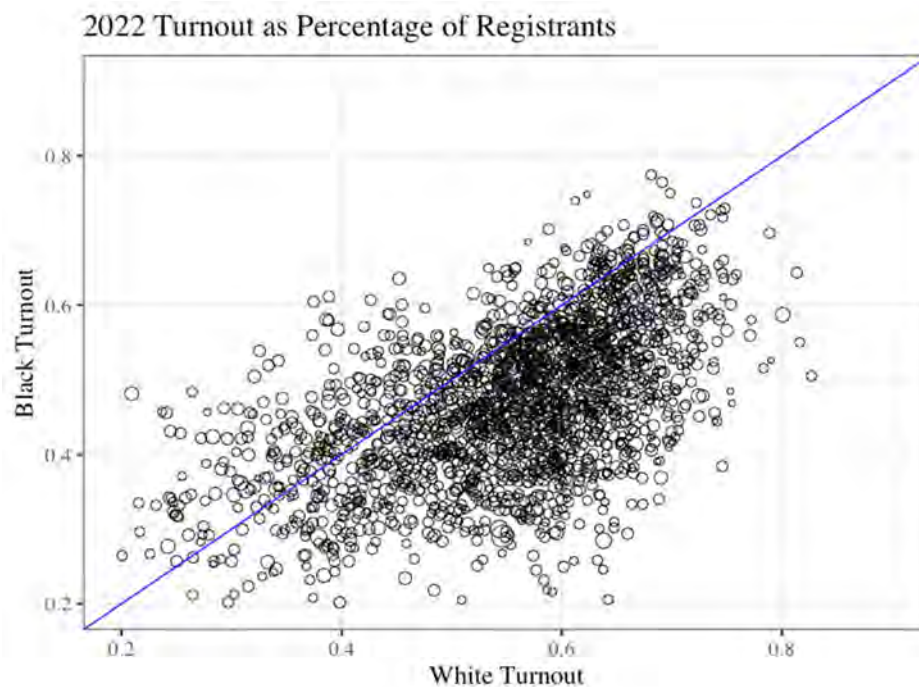


Figure 9. 2020 turnout by precinct; white-Black differential based on voter registration.

d. Analysis of Atlanta-Sandy Springs-Alpharetta Metropolitan Area

I also examined Black vs. white voter turnout rates in the Atlanta metropolitan area and Black Belt. For the former, I analyzed a subset Georgia counties: those in the Atlanta-Sandy Springs-Alpharetta Metropolitan Statistical Area.⁵ Figures 10 through 13 plot out the white vs. Black turnout gap in the 2020 and 2022 general elections based on both registration and voting age population as the denominators. The trend is very similar to the overall statewide trend. In the 2020 election, Black turnout was not higher than white turnout in any of the counties. This result is consistent with the 2022 election, except that Black turnout very slightly exceeded white turnout in only three counties (Clayton, Henry, and Rockdale) when using voting age population, rather than registration, as the denominator.

⁵ The counties include: Barrow, Bartow, Butts, Carroll, Cherokee, Clayton, Cobb, Coweta, Dawson, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Haralson, Heard, Henry, Jasper, Lamar, Meriwether, Morgan, Newton, Paulding, Pickens, Pike, Rockdale, Spalding, and Walton.

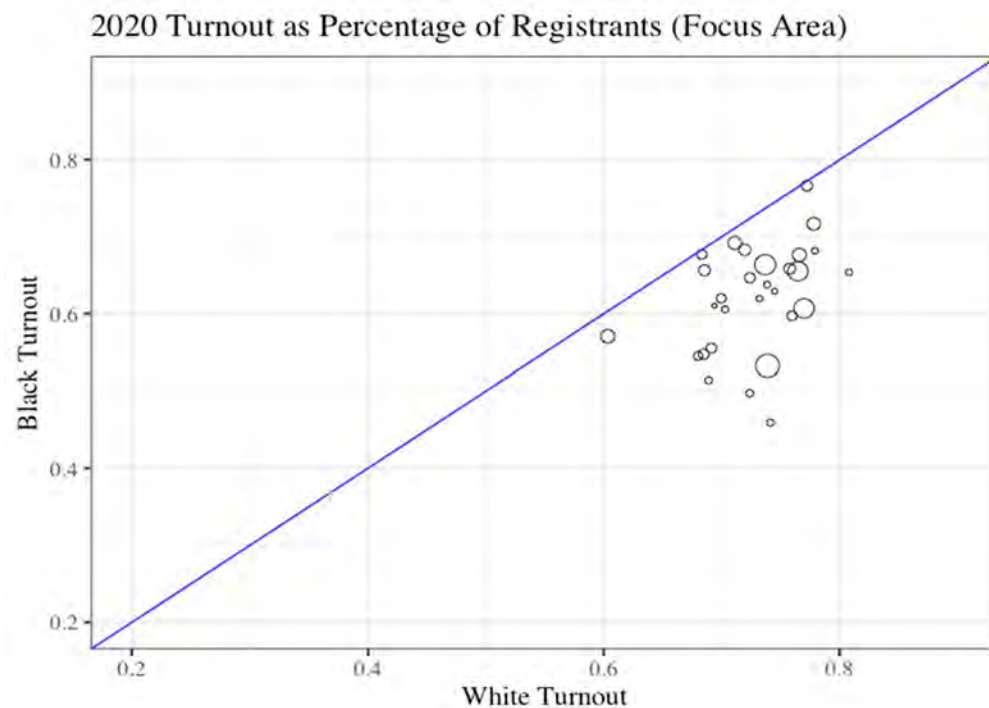


Figure 10. 2020 turnout by county in Atlanta metropolitan area; white-Black differential based on voter registration.

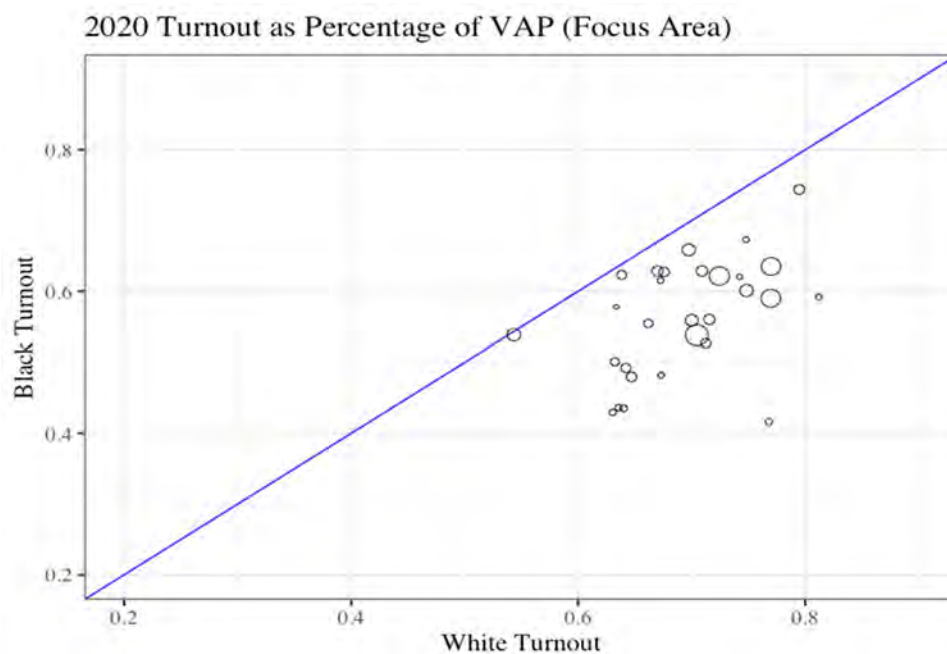


Figure 11. 2020 turnout by county in Atlanta metropolitan area; white-Black differential based on VAP.

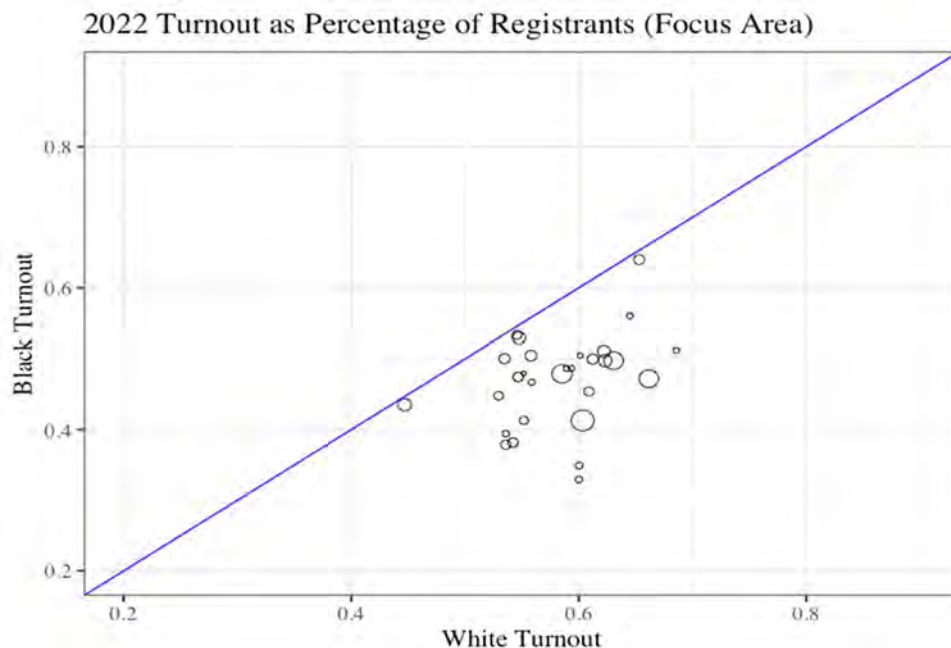


Figure 12. 2022 turnout by county in Atlanta metropolitan area; white-Black differential based on voter registration.

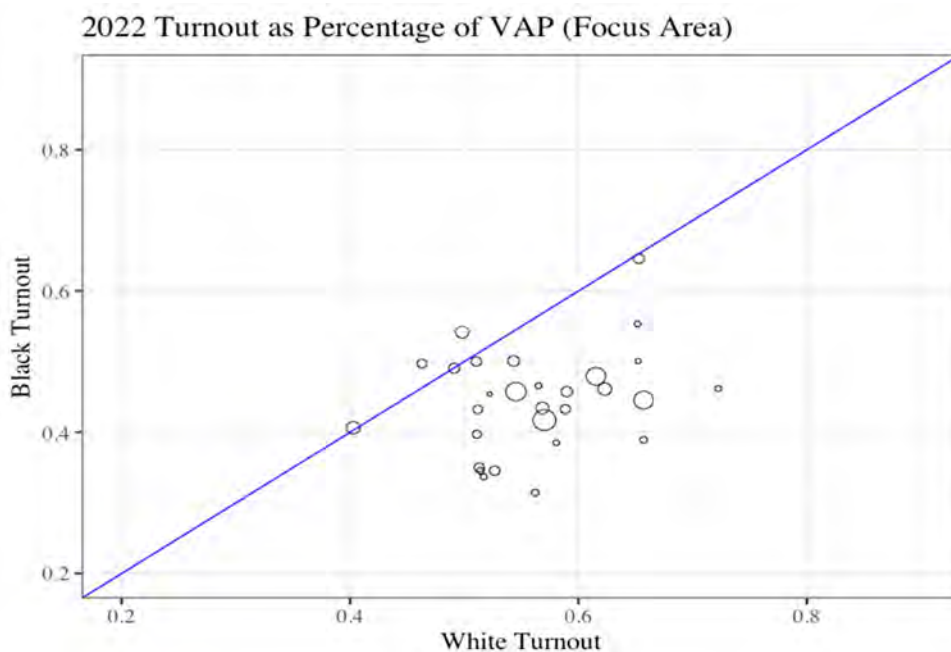


Figure 13. 2020 turnout by county in Atlanta metropolitan area; white-Black differential based on VAP.

Finally, I conducted the same analysis among precincts falling in the same set of counties. Again, as shown in Figures 14 and 15, whites vote at higher rates than do Blacks in the overwhelming majority of precincts.

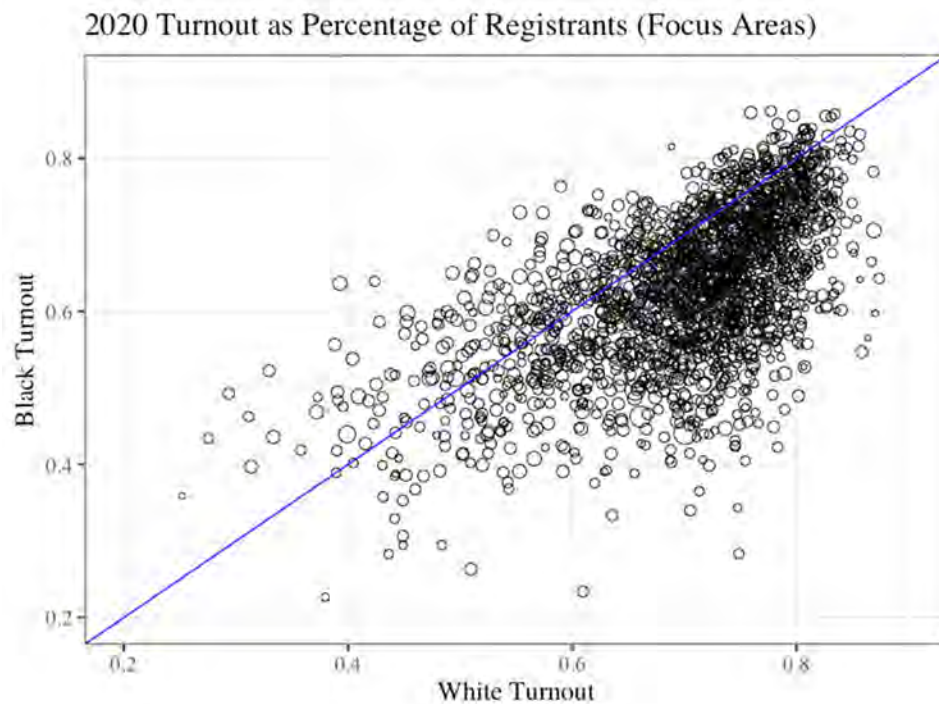


Figure 14. 2020 turnout by precinct in Atlanta metropolitan area; white-Black differential based on voter registration.

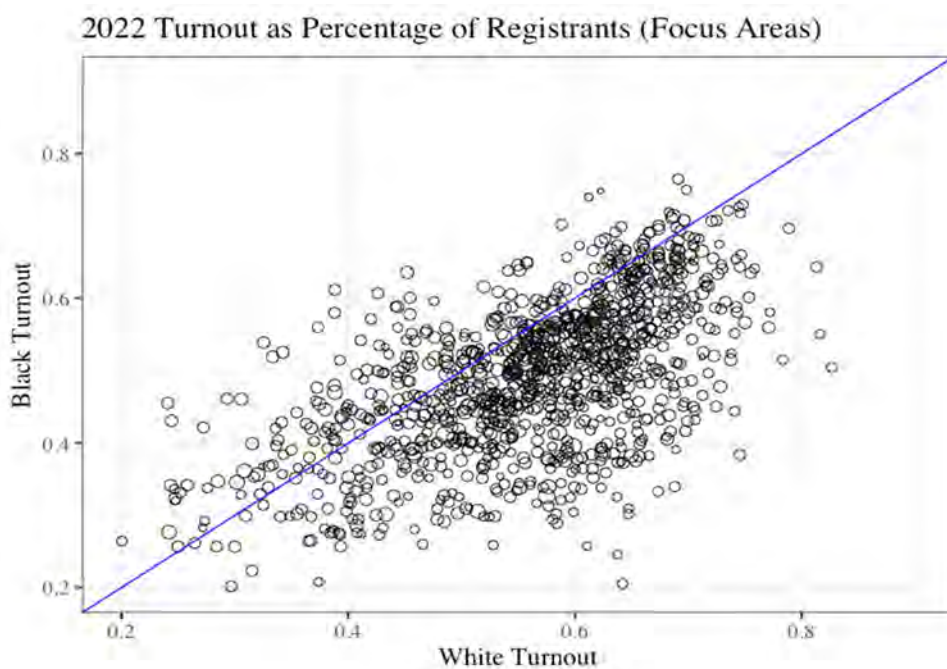


Figure 15. 2022 turnout by precinct in Atlanta metropolitan area; white-Black differential based on voter registration.

e. Analysis of the Black Belt Area

As an additional set of analyses, I examined 2020 and 2022 Black vs. white voter turnout rates in the traditional “Black Belt” area of the state. The geographic area includes the following counties, which I subset the data to: Baker, Bibb, Burke, Calhoun, Chattahoochee, Clay, Dooly, Dougherty, Early, Glascock, Hancock, Houston, Jefferson, Lee, Macon, Marion, McDuffie, Miller, Mitchell, Muscogee, Peach, Quitman, Randolph, Richmond, Schley, Stewart, Sumter, Talbot, Taliaferro, Taylor, Terrell, Twiggs, Warren, Washington, Webster, and Wilkinson.

Figures 16 through 19 plot out the Black vs. white turnout gap based on both registration and VAP in this area. The trend is very similar to the overall statewide trend for both the 2020 and 2022 general elections.

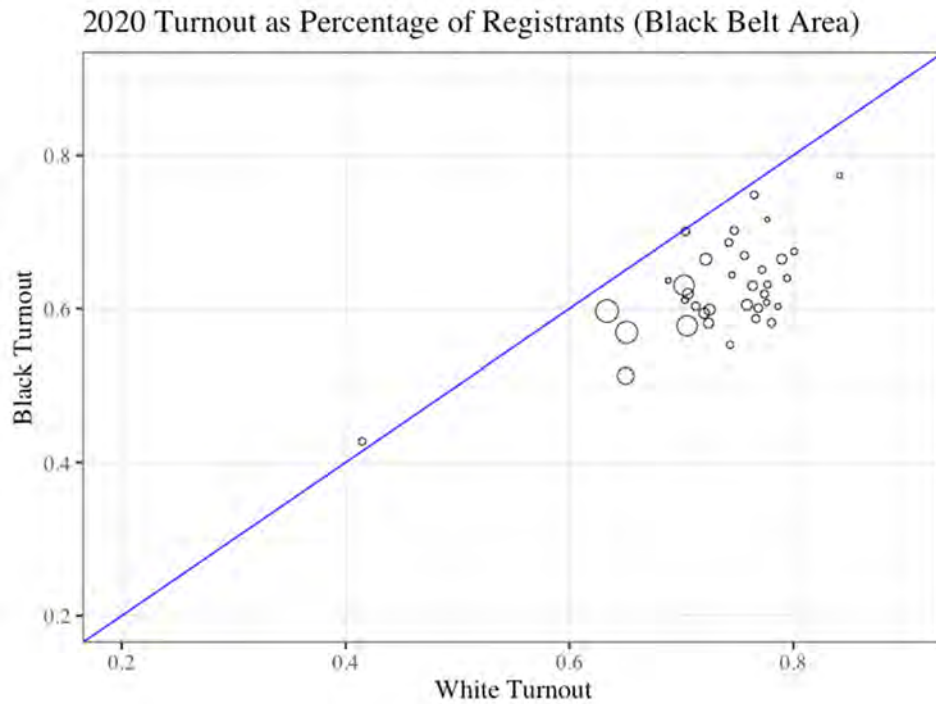


Figure 16. 2020 turnout by county in Black Belt; white-Black differential based on voter registration.

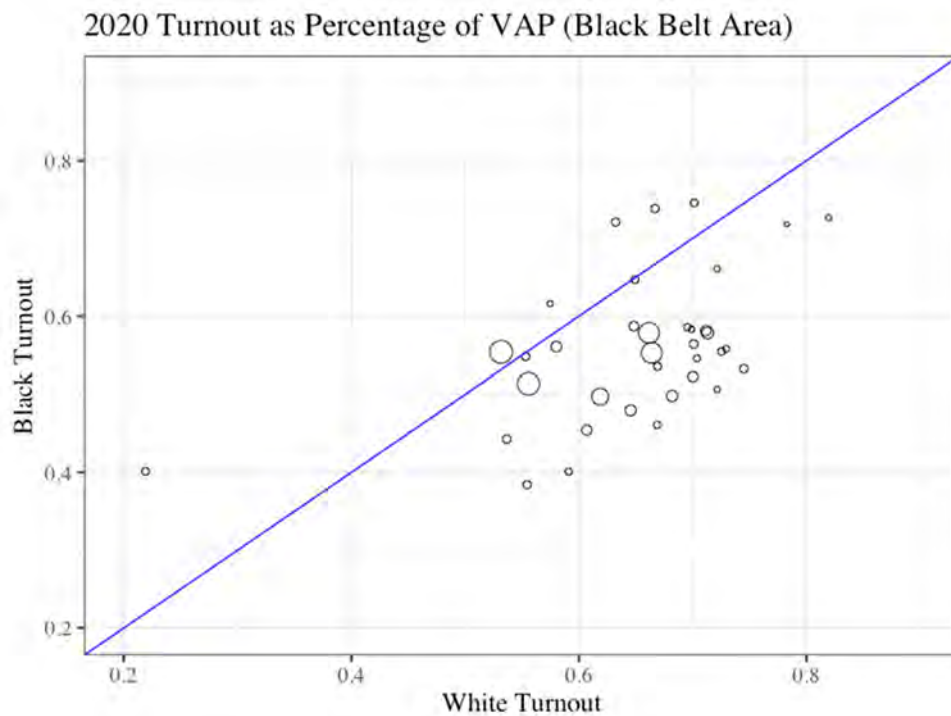


Figure 17. 2020 turnout by county in Black Belt; white-Black differential based on VAP.

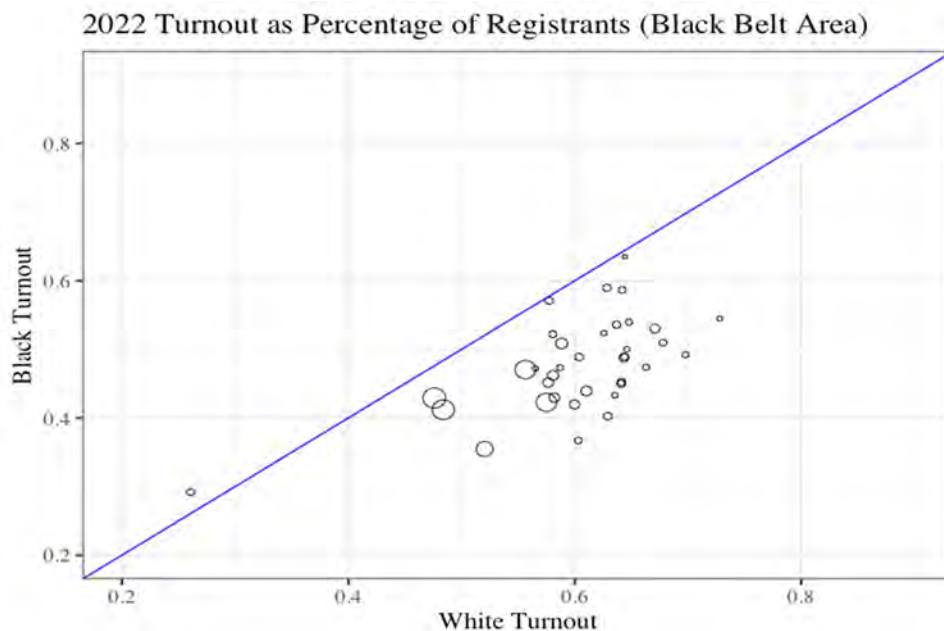


Figure 18. 2022 turnout by county in Black Belt; white-Black differential based on voter registration.

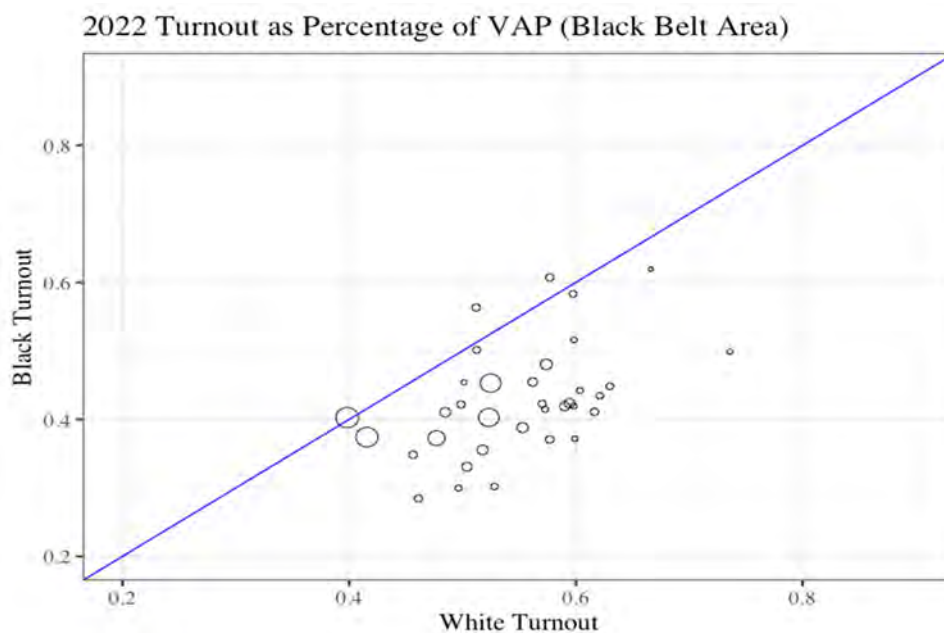


Figure 19. 2020 turnout by county in Black Belt; white-Black differential based on VAP.

Similar to the analysis in the Atlanta metropolitan area, I examined the white-Black turnout differential among precincts falling into the set of Black Belt counties. As depicted in Figures 20 and 21, once again, I find that whites vote at higher rates than do Blacks in the clear majority of the precincts.

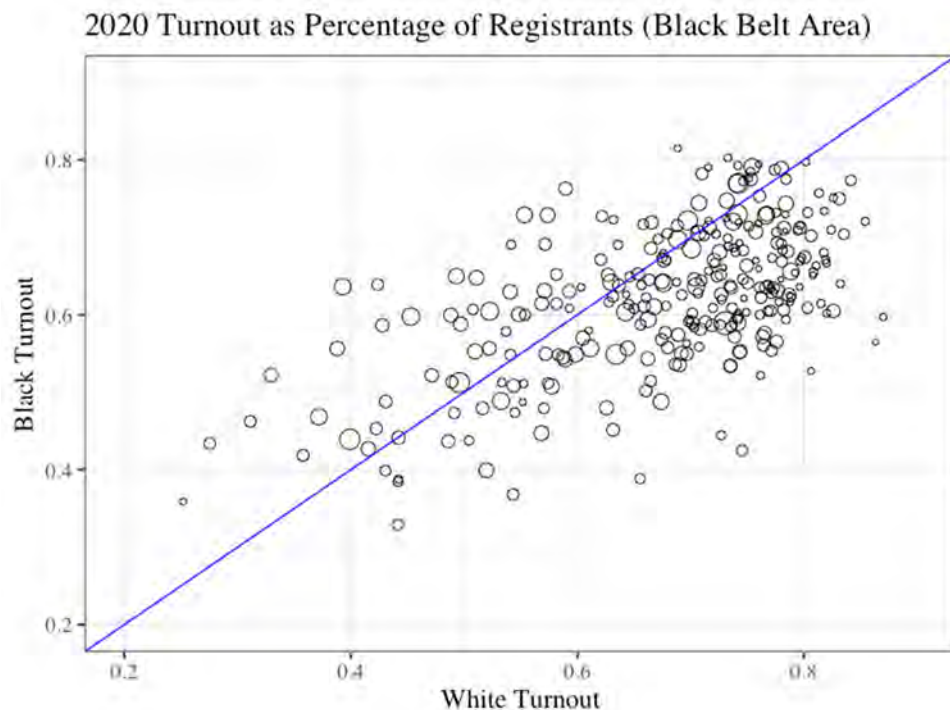


Figure 20. 2020 turnout by precinct in Black Belt; white-Black differential based on voter registration.

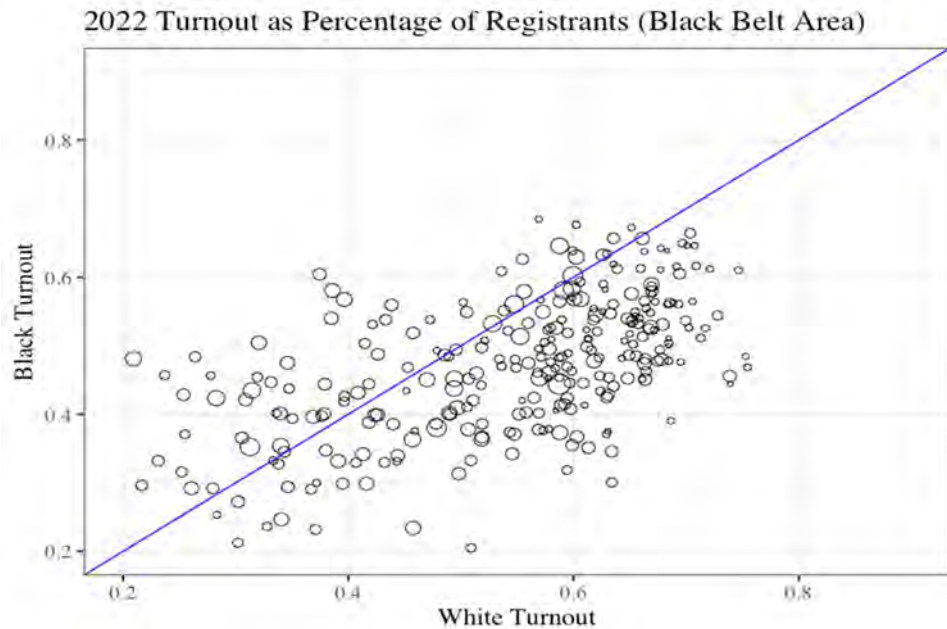


Figure 21. 2022 turnout by precinct in Black Belt; white-Black differential based on voter registration.

f. Relationship Between Turnout in 2020 and Socioeconomic Disparities

This section examines how the documented turnout differences are related to the socioeconomic disparities discussed at the outset of this report, like education and income, using both the 2015-2019 and 2016-2020 ACS datasets. Specifically, I examined the county-level relationship between different measures of Black educational attainment and Black voter turnout using the 2020 general election data.⁶ Figure 22 plots out the relationship between percent Black with less than a high school education and Black voter turnout using the 2015-2019 ACS.⁷ The blue line is the bivariate regression line ($\beta = -0.35$, $p < 0.001$), which shows that each 10-percentage-point increase in the size of the Black population without a high school degree decreases Black turnout by 3.5 percentage points. The difference between counties with the highest percentage of Black population with less than a high school education compared to counties with the lowest percentage of Black population with less than a high school degree (referred to as “min-max effects”)⁸ surmounts to a decline of 11.8 [7.0, 16.5] percentage points in the Black turnout.

Figure 23 shows that these relationships hold when relying on the 2016-2020 ACS estimates for educational attainment. Specifically, a 10-percentage-point increase in the size of the Black population without a high school degree corresponds to a statistically significant 3.8 percentage point ($p < 0.001$) decline in the Black turnout. The corresponding min-max decline in turnout is 12.4 [7.5, 17.3] percentage points.

⁶ I replicated this analysis using 2022 turnout data, as shown in subsection (g).

⁷ For each analysis I subset the data to counties with more than 1,000 registered Black voters. I do this to avoid outlier issues that can emerge with smaller counties. However, this subset does not change in any substantive way the results compared to a full data analysis. All regression analyses are weighted by total Black registration in the county.

⁸ Min-max effect is the discrete change of moving from minimum to maximum value of the independent variable (for example, percent black population without high school education). Ninety-five percent (95%) confidence intervals for each estimate are reported in brackets.

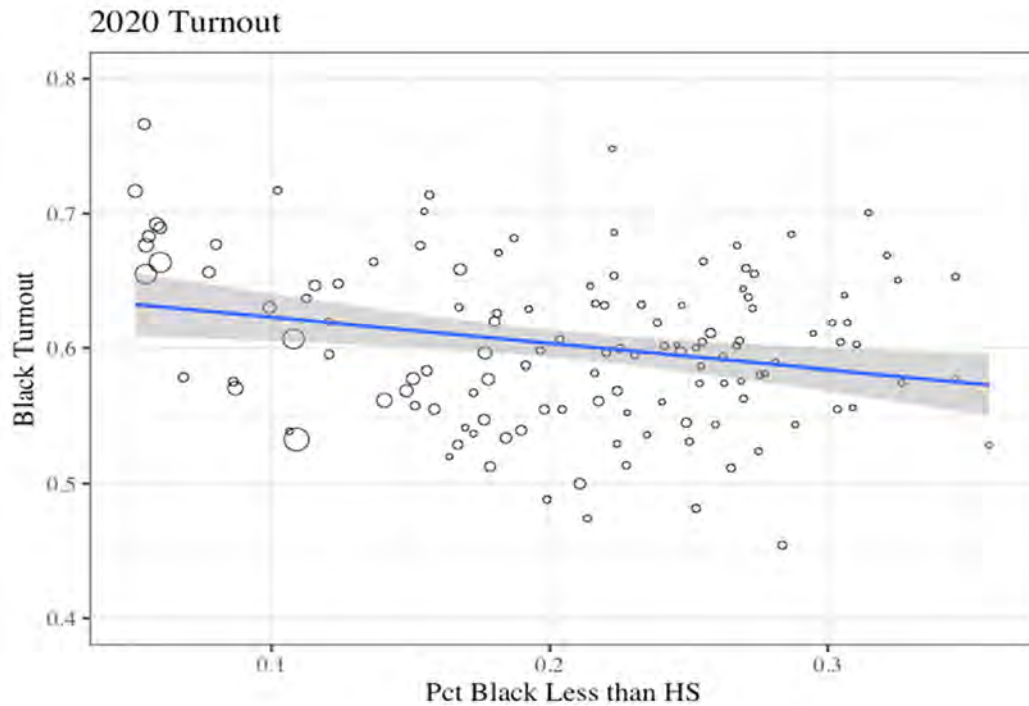


Figure 22. Association between Black less than high school education and 2020 Black turnout (2015-2019 ACS).

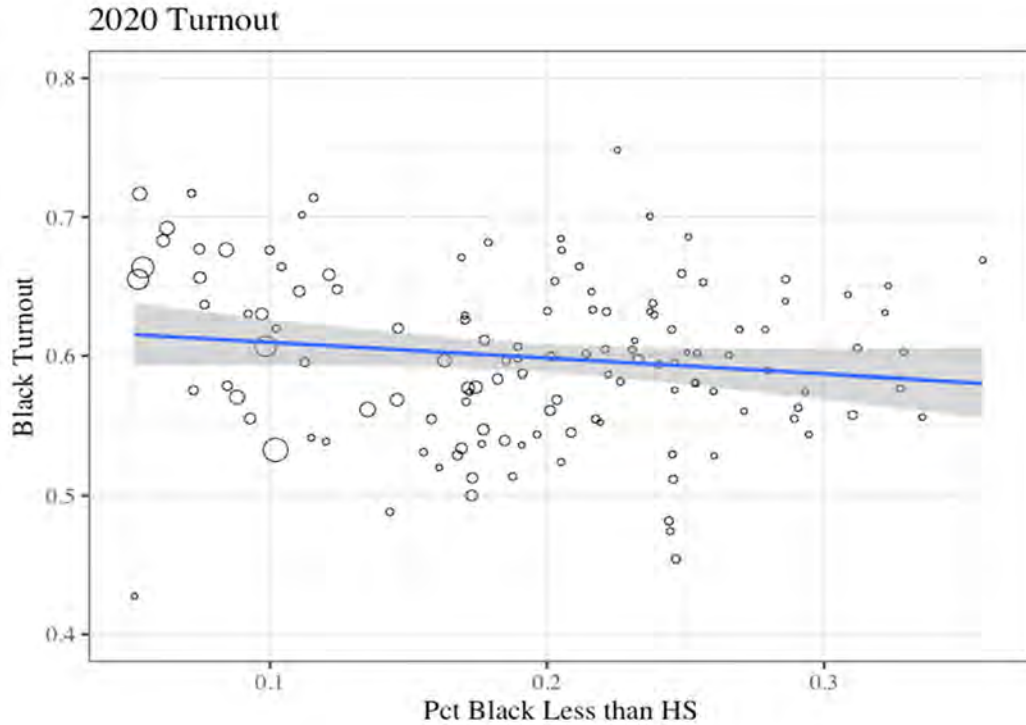


Figure 23. Association between Black less than high school education and 2020 Black turnout (2016-2020 ACS).

Figure 24 plots the relationship between the share of Blacks with a 4-year college degree and the share of Black registrants who voted by county. The relationship paints an inverse picture to the previous plot. As a county's Black education rises, so does the turnout rate. A bivariate regression reveals a statistically significant relationship ($\beta = 0.23$, $p < 0.001$), indicating that Black turnout rises 2.3 percentage points for each 10-percentage-point increase in percent Black 4-year degree, with a min-max effect size of 11.2 [6.9, 15.5] percentage points.

Figure 25 represents the same analysis using the 2016-2020 ACS. As shown, Black turnout increases by 2.1 percentage points for each 10-percentage-point increase in percent Black 4-year degree, with a min-max effect size of 11.8 [7.1, 16.6] percentage points. In both cases, I find statistically and substantively significant relationships between educational attainment and turnout, indicating that counties with lower levels of Black education are less likely than counties with higher levels of education to turnout.

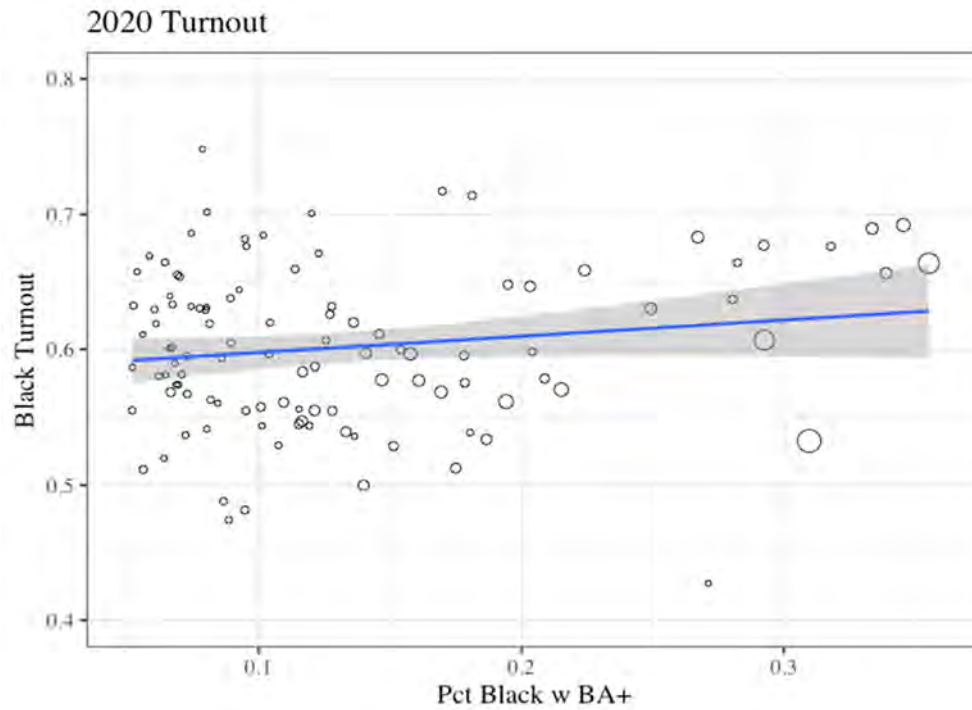


Figure 24. Association between Black 4-year degree and 2020 Black turnout (2015-2019 ACS).

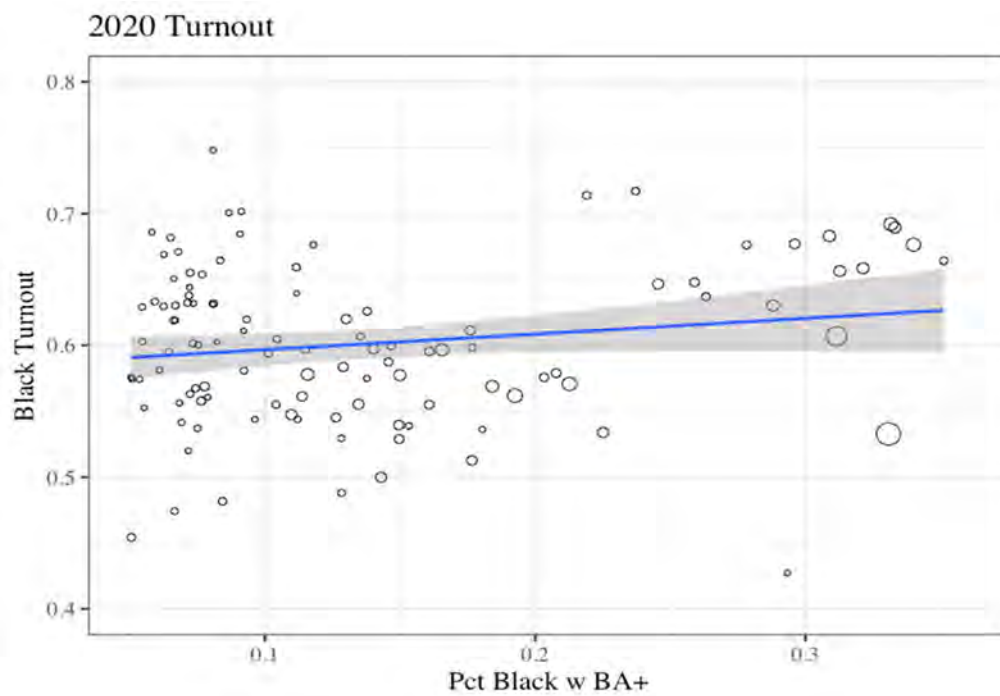


Figure 25. Association between Black 4-year degree and 2020 Black turnout (2016-2020 ACS).

Turning to income-related measures, Figure 26 plots out the relationship between the share of Blacks below the poverty line and the share of Black registrants who voted by county. As a county's Black poverty rises, the turnout rate declines. A bivariate regression reveals a statistically significant relationship ($\beta = -0.49$, $p < 0.001$), indicating that Black turnout falls 4.9 percentage points for each 10-percentage-point increase in percent Black below the poverty line. The min-max effect size is a decline of 25.7 [20.4, 31.1] percentage points in turnout, which is a substantively large gap between counties with the lowest Black poverty levels and those with the highest Black poverty levels.

Figure 27 visually depicts the same associations using the 2016-2020 ACS data. A 10-percentage-point increase in percent Black below the poverty line corresponds to a statistically significant 5.0 percentage point ($p < 0.001$) decline in turnout. The difference in turnout levels between counties with the highest and lowest poverty levels amounts to a 21.1 [16.6, 25.6] percentage point gap.

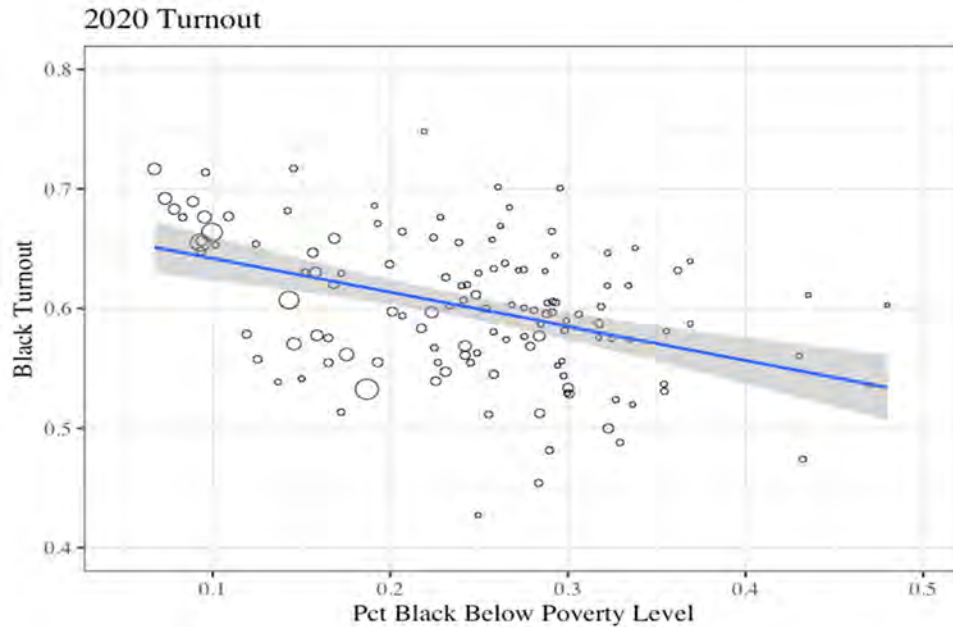


Figure 26. Association between Black poverty rates and 2020 Black turnout (2015-2019 ACS).

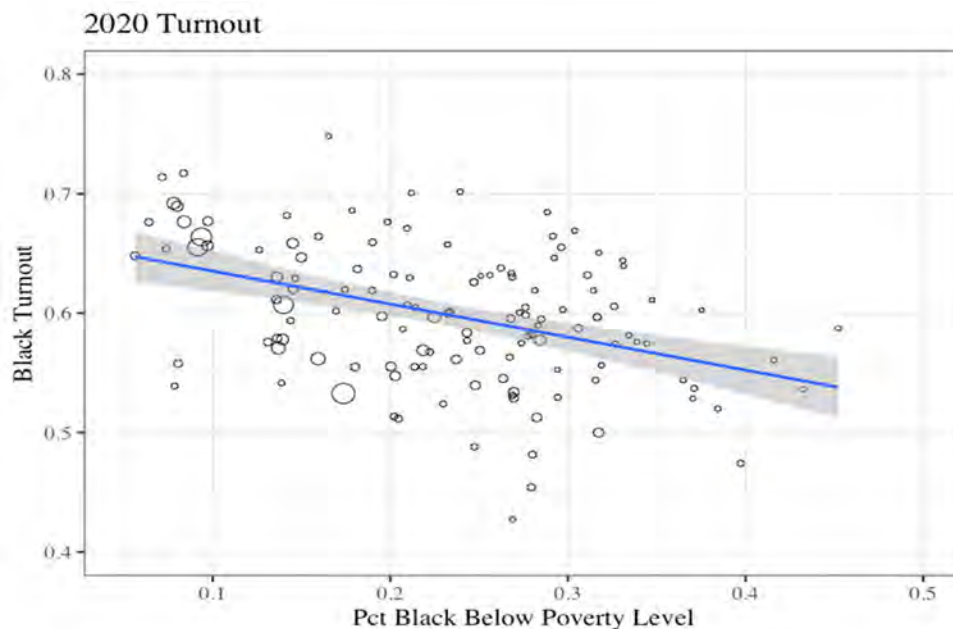


Figure 27. Association between Black poverty rates and 2020 Black turnout (2016-2020 ACS).

Lastly, Figures 28 and 29 plot the relationship between Black median household income and the share of Black registrants who voted by county. As a county's Black household income rises, the turnout rate rises. A bivariate regression with the 2015-2019 ACS data reveals a statistically significant relationship ($\beta = 0.117$, $p < 0.001$), and a min-max effect of 22.1 [17.5, 26.7] percentage points. The results are statistically and substantively similar using the 2016-2020 ACS: Counties with higher levels of Black median household income have a higher black turnout ($\beta = 0.120$,

$p < 0.001$). The discrete difference between such counties amounts to a min-max effect size of 20.5 [16.4, 24.7] percentage points in turnout.

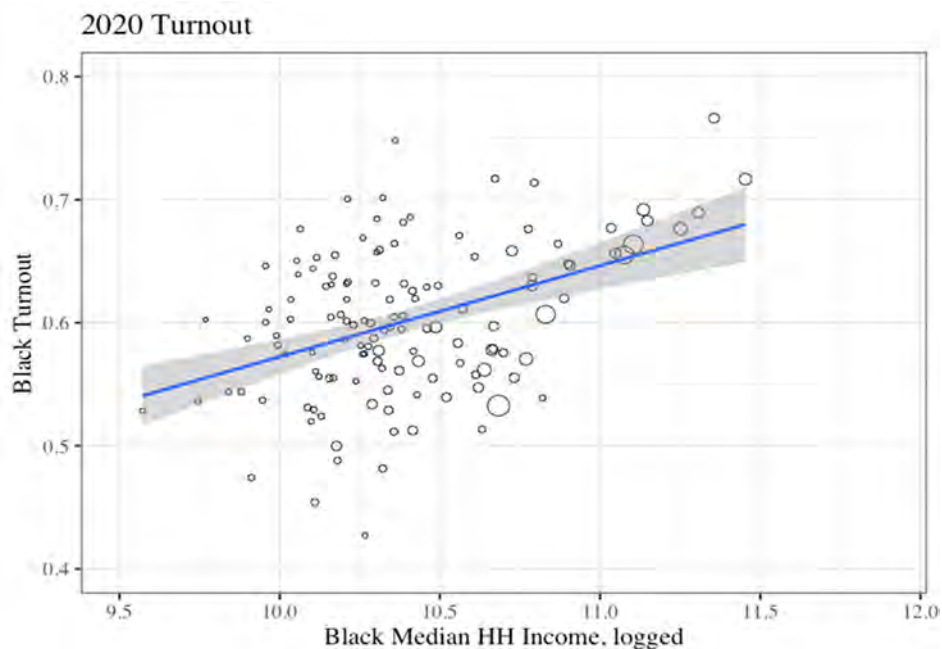


Figure 28. Association between Black median household income and 2020 Black turnout (2015-2019 ACS).

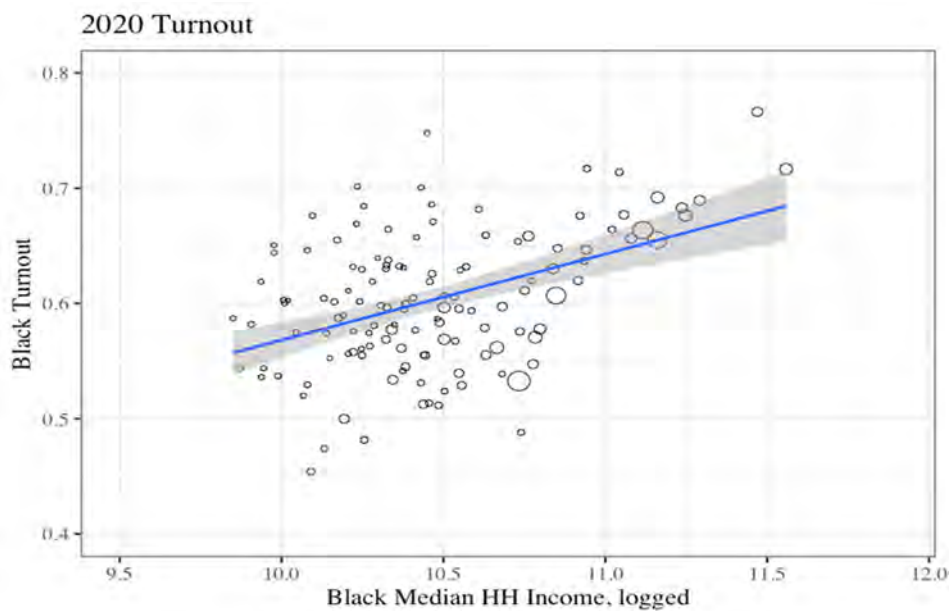


Figure 29. Association between Black median household income and 2020 Black turnout (2016-2020 ACS).

g. Replication of the Relationship Between Turnout and Socioeconomic Disparities Using 2022 General Election Data

This section replicates the analysis of Black turnout and socioeconomic disparities, as measured with the 2016-2020 ACS, using the 2022 general election data. This analysis shows that all the four socioeconomic indicators are once again statistically associated with Black turnout levels.

Starting with education, Figures 30 and 31 show that both measures of educational attainments are associated with Black turnout (at $p < 0.001$). The discrete difference between counties with the highest percentage of Black population with less than a high school degree compared to counties with the lowest percentage of Black population with less than a high school degree amount to a 12.5 [8.2, 16.7] percentage point decline in Black turnout. When comparing counties with the highest share of bachelor's degrees to those with the lowest share of a bachelor's degrees, I find a discrete difference of 13.3 [9.3, 17.3] percentage points in turnout. This means that counties with lower levels of Black education attainment have significantly lower levels of Black turnout.

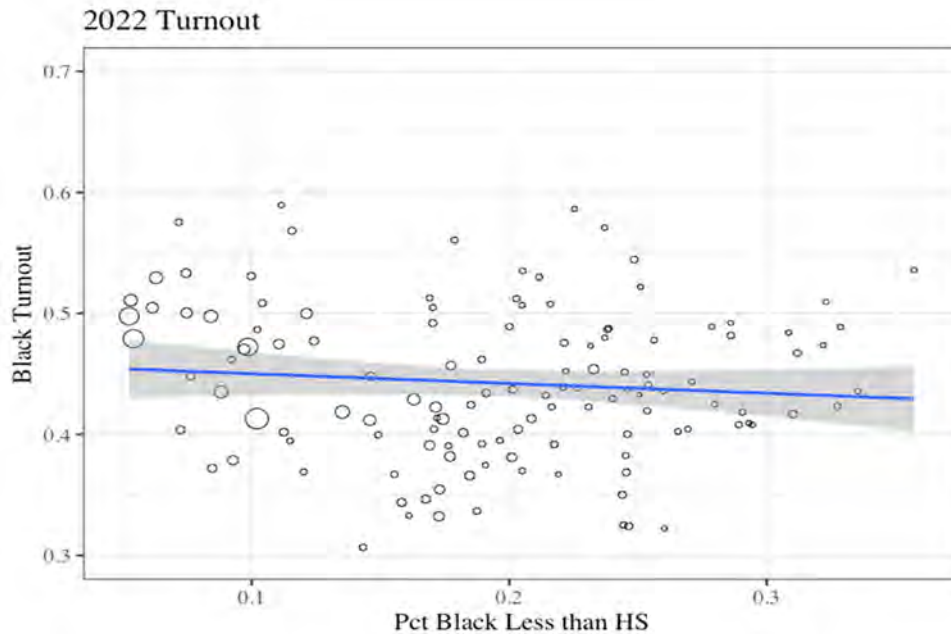


Figure 30. Association between Black less than high school education and 2022 Black turnout (2016-2020 ACS).

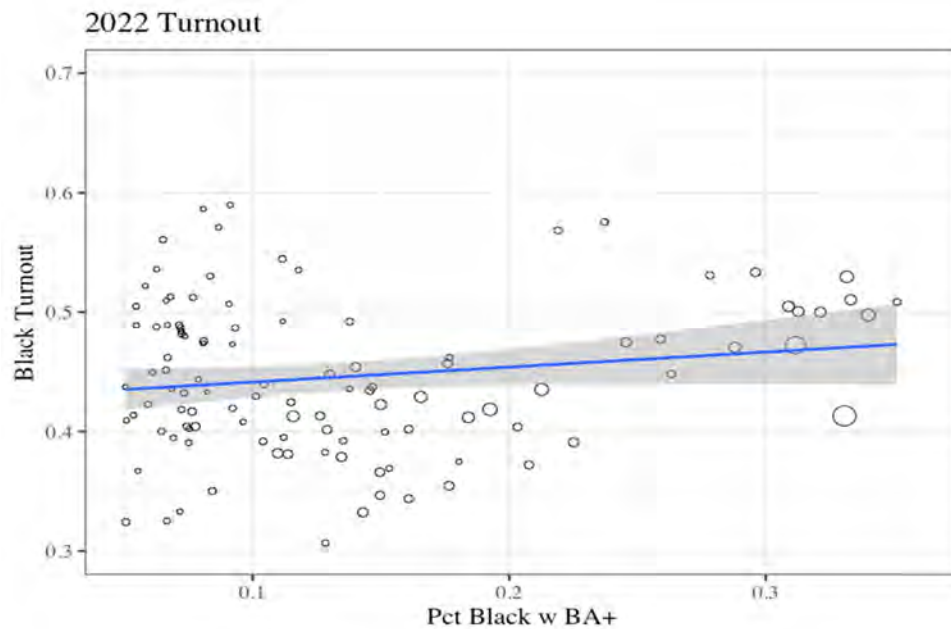


Figure 31. Association between Black 4-year degree and 2022 Black turnout (2016-2020 ACS).

Moving on to indicators of economic disparities, I find that as the percentage of counties with Blacks below the poverty line rises, Black turnout declines (see Figure 32). This relationship is statistically significant (at $p < 0.001$). Substantively, counties with the highest levels of Black poverty have a 20.4 [16.5, 24.2] percentage point *lower* Black turnout than counties with the lowest levels of Black poverty. Replacing poverty levels with median household income leads to the same

conclusion. As Figure 33 shows, logged household income is statistically associated with Black turnout. Specifically, counties with the highest Black median household income report 19.0 [15.4, 22.6] percentage point higher Black turnout than counties with the lowest median household income. In sum, this replication analysis using the 2022 general election data further underscores how socioeconomic disparities are linked to turnout levels.

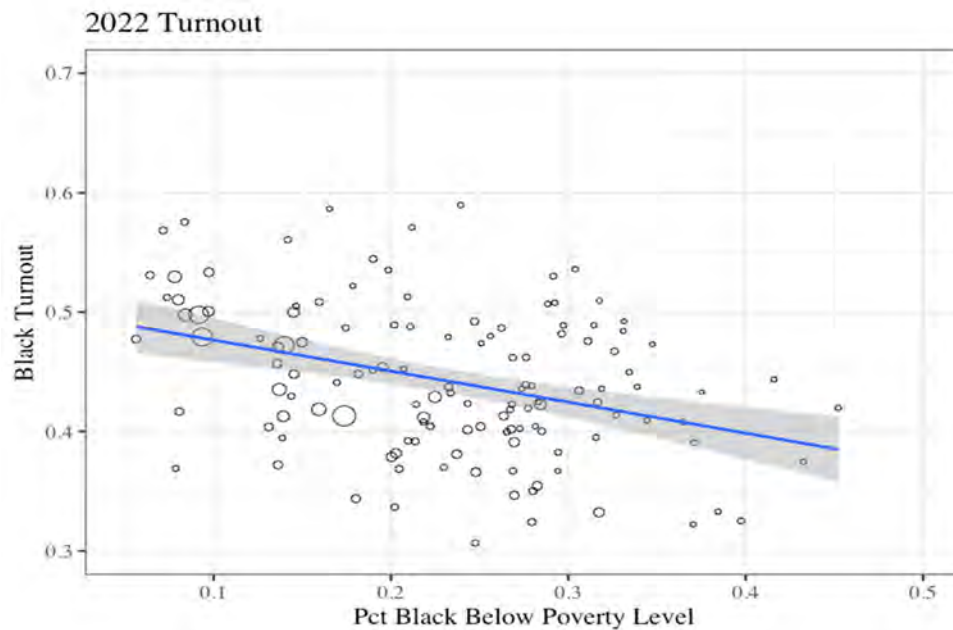


Figure 32. Association between Black poverty rates and 2022 Black turnout (2016-2020 ACS).

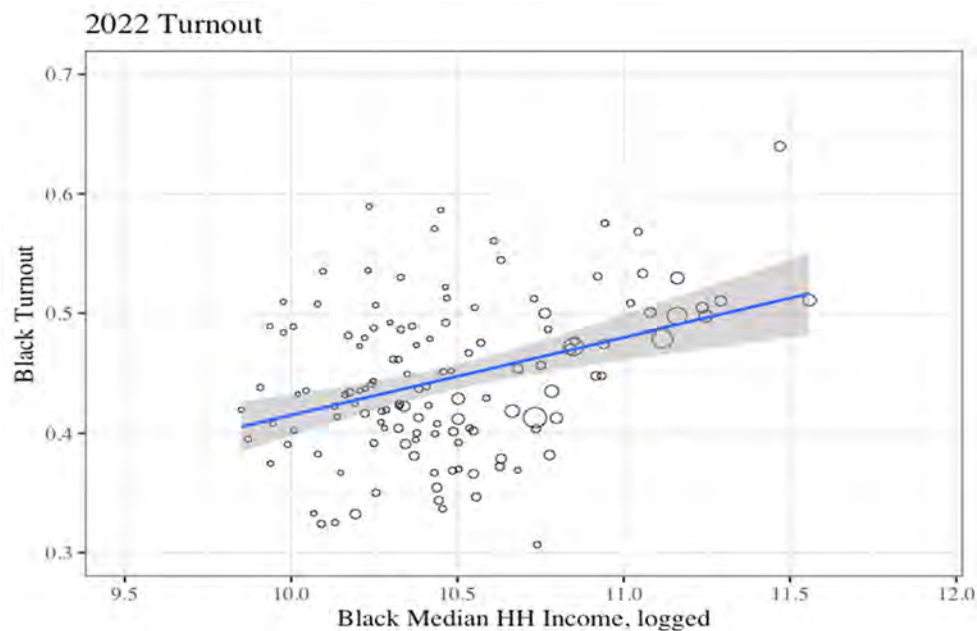


Figure 33. Association between Black median household income and 2022 Black turnout (2016-2020 ACS).

3. Other Forms of Voter Participation

This next section examines disparities between Blacks and whites among other modes of voter participation. I downloaded the 2020 Cooperative Election Study (CES) common form post-election survey.⁹ The CES is a widely used publicly available survey dataset political scientists use to write academic papers and inform our scientific knowledge of the American voter. The full dataset contains 61,000 interviews. I subset the data to Georgia respondents, of which there are 2,002. To compare white vs. Black political participation, I further subset the data to only non-Hispanic white and Black respondents. This yields a dataset of $n=1,753$. Finally, 339 individuals whom CES initially interviewed in the pre-election survey did not take the post-election survey; thus, the final dataset is $n=1,414$. All tabulations presented below include survey weights to ensure that the analysis is representative of the target audience.¹⁰

The survey asks a battery of political participation questions where respondents indicate they have (1) or have not (0) participated in such an act.

1. Attend local political meetings (such as school board or city council)
2. Put up a political sign (such as a lawn sign or bumper sticker)
3. Work for a candidate or campaign
4. Attend a political protest, march or demonstration
5. Contact a public official
6. Donate money to a candidate, campaign, or political organization

I also analyze two other yes (1) / no (0) questions related to political participation:

1. Did a candidate or political campaign organization contact you during the 2020 election?
2. Have you ever run for elective office at any level of government (local, state or federal)?

Below I present cross-tabulations between each item and race (white/Black), along with a chi-square statistical test. The cross-tabulation shows, for instance, the share of whites that participate in a particular activity vs. the share of whites that do not participate in such activity. The analysis is designed to assess whether Blacks and whites engage in political participation at different rates. If the chi-square p-value is .10, then we can say that we have 90% confidence that this relationship has not occurred by chance. In short, the lower the p-value, the more statistical confidence we have that whites and Blacks behave differently politically.

Overall, the results strongly point to relative Black disparity in political participation. In five of the eight survey items, a statistically significant relationship exists between race and political

⁹ Available at: <https://cces.gov.harvard.edu>.

¹⁰ Weighting data here has the effect of growing the sample size of the dataset to $n=1,557$ respondents.

participation (at either $p < .10$ or $p < .05$). That is, whites are more likely to say they engaged in the political activity than are Blacks.

For instance, 5.9% of whites say they attended a political meeting, whereas 3.5% of Blacks said they did ($p < 0.05$). On political signs, 17.9% of whites put one up vs. 6.5% of Blacks ($p < 0.001$). Whites are also more likely to report having worked for a candidate or campaign (3.6% vs. 1.8%, $p < 0.05$). One of the larger differences emerges on the question regarding contacting a public official. Twenty-one percent (21%) of whites say they contacted an official, whereas 8.8% of Blacks report doing so ($p < 0.001$). Differences emerge across donation behavior too: 24.4% vs. 13.6% ($p < 0.001$).

There are three questions where significant statistical differences do not emerge, although whites nonetheless engage in the political activity to a greater degree than do Blacks: political protest (whites at 6.2% vs. Blacks at 4.4%, $p = 0.142$); being contacted by a political campaign organization (61.3% vs. 61.3%, $p = 0.995$), and running for office (1.7% vs. 0.7%, $p = 0.12$).

Attend local political meetings (such as school board or city council)?

<i>Race</i>	<i>No</i>	<i>Pct. No</i>	<i>Yes</i>	<i>Pct. Yes</i>
White	954	94.08%	60	5.92%
Black	523	96.49%	19	3.51%
<i>Chi-2 = 4.262 DF = 1 P-Value = 0.039</i>				

*Table 4. Political attendance.***Put up a political sign (such as a lawn sign or bumper sticker)?**

<i>Race</i>	<i>No</i>	<i>Pct. No</i>	<i>Yes</i>	<i>Pct. Yes</i>
White	832	82.05%	182	17.95%
Black	507	93.54%	35	6.46%
<i>Chi-2 = 38.863 DF = 1 P-Value = 0</i>				

*Table 5. Political signs.***Work for a candidate or campaign?**

<i>Race</i>	<i>No</i>	<i>Pct. No</i>	<i>Yes</i>	<i>Pct. Yes</i>
White	978	96.35%	37	3.65%
Black	533	98.16%	10	1.84%
<i>Chi-2 = 3.934 DF = 1 P-Value = 0.0473</i>				

*Table 6. Campaign work.***Attend a political protest, march, or demonstration?**

<i>Race</i>	<i>No</i>	<i>Pct. No</i>	<i>Yes</i>	<i>Pct. Yes</i>
White	951	93.79%	63	6.21%
Black	519	95.58%	24	4.42%
<i>Chi-2 = 2.155 DF = 1 P-Value = 0.1421</i>				

Table 7. Political protest.

Contact a public official?

<i>Race</i>	<i>No</i>	<i>Pct. No</i>	<i>Yes</i>	<i>Pct. Yes</i>
White	801	78.99%	213	21.01%
Black	495	91.16%	48	8.84%
<i>Chi-2 = 37.513 DF = 1 P-Value = 0</i>				

*Table 8. Contacting officials.***Donate money to a candidate, campaign, or political organization?**

<i>Race</i>	<i>No</i>	<i>Pct. No</i>	<i>Yes</i>	<i>Pct. Yes</i>
White	767	75.64%	247	24.36%
Black	469	86.37%	74	13.63%
<i>Chi-2 = 24.882 DF = 1 P-Value = 0</i>				

*Table 9. Political donations.***Did a candidate or political campaign organization contact you during the 2020 election?**

<i>Race</i>	<i>No</i>	<i>Pct. No</i>	<i>Yes</i>	<i>Pct. Yes</i>
White	392	38.66%	622	61.34%
Black	210	38.67%	333	61.33%
<i>Chi-2 = 0 DF = 1 P-Value = 0.9953</i>				

Table 10. Campaign contacts.

Have you ever run for elective office at any level of government (local, state or federal)?

<i>Race</i>	<i>No</i>	<i>Pct. No</i>	<i>Yes</i>	<i>Pct. Yes</i>
White	986	98.31%	17	1.69%
Black	539	99.26%	4	0.74%
<i>Chi-2 = 2.414 DF = 1 P-Value = 0.1202</i>				

Table 11. Running for office.

All told, the results are compelling: White Georgians engage in a wide range of political activity at higher rates than Black Georgians, including activities like donating to campaigns, contacting public officials, and posting political signs. And as the academic literature discussed earlier in this report shows, these differences are directly attributable to socioeconomic disparities in health, education, and income.

Conclusion

The picture these data paint is straightforward: Black Georgians experience significant disparities in income, education, and health compared to non-Hispanic white Georgians. And these disparities cause Black Georgians to be less likely to participate effectively in the political process as measured by voter turnout and other forms of voter participation like making political donations, engaging elected officials, and even running for office. These trends are in accord with overwhelming academic literature showing that Blacks suffer socioeconomic disparities and so are therefore less likely than whites to participate in the political process. These findings therefore provide strong evidence for the presence of Senate Factor 5 in the state of Georgia.

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Associate Professor, University of New Mexico, 2020 - Present
Associate Professor, University of California, Riverside 2019 - 2020
Assistant Professor, University of California, Riverside 2012 - 2019
Assistant Analyst, Greenberg Quinlan Rosner, Washington DC 2005-2007
Field Associate, Greenberg Quinlan Rosner, Washington DC 2003-2005

Education

Ph.D., Political Science, University of Washington 2007 - 2012
Committee: Matt Barreto (chair), Chris Parker, Luis Fraga, Chris Adolph, Peter Hoff
M.A., Political Science, University of Washington, 2009
B.A., Psychology, California State University, Chico, 1998 - 2002
Minor: Political Science
Honors: *Cum Laude*, NCAA Scholar-Athlete in soccer

Research Fields

American Politics, Political Behavior, Methods, Race and Ethnic Politics, Immigration

Books

2. **Collingwood, Loren.** *Campaigning in a Racially Diversifying America: When and How Cross-Racial Electoral Mobilization Works.* 2020. Oxford University Press.

Featured in *Veja*, Brazil

1. **Collingwood, Loren** and Benjamin Gonzalez O'Brien. *Sanctuary Cities: The Politics of Refuge.* 2019. Oxford University Press.

Featured in *Teen Vogue*, *Seattle Times*; *Phoenix New Times*

Articles

40. Gonzalez O'Brien, Ben, **Loren Collingwood**, and Michael A. Paarlberg. "What Leads to Refuge? Sanctuary Policies and the Influence of Local Demographics and Partisanship." *Urban Affairs Review*. (Conditional Accept).
39. **Collingwood, Loren**, Gabriel Martinez, and Kassra Oskooii. "Undermining Sanctuary? When Local and National Partisan Cues Diverge." *Urban Affairs Review*. (Forthcoming).
38. **Collingwood, Loren** and Benjamin Gonzalez O'Brien. "Is Distance to Drop Box an Appropriate Proxy for Drop Box Treatment? A Case Study of Washington State." *American Politics Research*. (Forthcoming)
37. Barreto, Matt, Michael Cohen, **Loren Collingwood**, Chad Dunn, and Sonni Waknin. "A Novel Method for Showing Racially Polarized Voting: The Promise of Bayesian Improved Surname Geocoding." *New York University Review of Law and Social Change*. 46(1). (Forthcoming)
36. Barreto, Matt, **Loren Collingwood**, Sergio Garcia-Rios, and Kassra Oskooii. "Estimating Candidate Support: Comparing Iterative EI & EI-RxC Methods." *Sociological Methods & Research*. (Forthcoming).
35. Morín, Jason L., Rachel Torres, and **Loren Collingwood**. 2021. "Cosponsoring and Cashing in: U.S. House Members' support for punitive immigration policy and financial payoffs from the private prison industry." *Business and Politics*. 23(4): 492-509.

Featured in KOAT-ABQ news
34. Newman, Benjamin; Merolla, Jennifer; Shah, Sono; Lemi, Danielle; **Collingwood, Loren**; Ramakrishnan, Karthick. 2021. "The Trump Effect: An Experimental Investigation of the Emboldening Effect of Racially Inflammatory Elite Communication." *British Journal of Political Science* 51(3): 1138-1159.

Featured in New York Times; Washington Post; The Times of India; Washington Post; NBC News; New York Times; Forbes; NBC News
33. **Collingwood, Loren** and Sean Long. 2021. "Can States Promote Minority Representation? Assessing the Effects of the California Voting Rights Act." *Urban Affairs Review*. 57(3): 731-762.

Featured in NPR; Modesto Bee, IVN News San Diego; Woodland Daily Democrat; Silicon Valley Voice; Spectrum 1; Washington Post; Politico
32. Oskooii, Kassra, Nazita Lajevardi, and **Loren Collingwood**. 2021. "Opinion Shift and Stability: Enduring Individual-Level Opposition to Trump's 'Muslim Ban'." *Political Behavior*. 43: 301-337.

Featured in Washington Post
31. Hickel, Flavio, Rudy Alamillo, Kassra Oskooii, and **Loren Collingwood**. 2020. "When American Identity Trumps Latinx Identity: Explaining Support for Restrictive Immigration Policies." *Public Opinion Quarterly*. 84(4), 860-891.

Featured in Academic Times

30. Walker, Hannah, **Loren Collingwood**, and Tehama Lopez Bunyasi. 2020. "White Response to Black Death: A Racialized Theory of White Attitudes About Gun Control." *DuBois Review: Social Science Research on Race*. 17(1): 165-188.
29. Filindra, Alexandra, **Loren Collingwood**, and Noah Kaplan. 2020. "Anxiety and Social Violence: The Emotional Underpinnings of Support for Gun Control." *Social Science Quarterly*. 101: 2101-2120.
28. McGuire, William, Benjamin Gonzalez O'Brien, Katherine Baird, Benjamin Corbett, and **Loren Collingwood**. 2020. "Does Distance Matter? Evaluating the Impact of Drop Boxes on Voter Turnout." *Social Science Quarterly*. 101: 1789-1809.
27. Reny, Tyler, Ali Valenzuela, and **Loren Collingwood**. 2020. "'No, You're Playing the Race Card': Testing the Effects of Anti-Black, Anti-Latino, and Anti-Immigrant Appeals in the Post-Obama Era." *Political Psychology*. 41(2): 283-302.

Featured in VOX The Weeds Podcast

26. **Collingwood, Loren**, Benjamin Gonzalez O'Brien, and Joe Tafoya. 2020. "Partisan Learning or Racial Learning: Opinion Change on Sanctuary City Policy Preferences in California and Texas." *Journal of Race and Ethnic Politics*. 5(1): 92-129.
25. **Collingwood, Loren** and Benjamin Gonzalez. 2019. "Covert Cross-Racial Mobilization, Black Activism, and Political Participation Pre-Voting Rights Act." *Florida Historical Quarterly* 97(4) Spring.
24. Gonzalez O'Brien, Ben, Elizabeth Hurst, Justin Reedy, and **Loren Collingwood**. 2019. "Framing Refuge: Media, Framing, and Sanctuary Cities." *Mass Communication and Society*. 22(6), 756-778.
23. DeMora, Stephanie, **Loren Collingwood**, and Adriana Ninci. 2019. "The Role of Super Interest Groups in Public Policy Diffusion." *Policy and Politics*. 47(4): 513-541.
22. **Collingwood, Loren**, Stephen Omar El-Khatib, Ben Gonzalez O'Brien. 2019. "Sustained Organizational Influence: American Legislative Exchange Council and the Diffusion of Anti-Sanctuary Policy." *Policy Studies Journal*. 47(3): 735-773.
21. **Collingwood, Loren** and Benjamin Gonzalez O'Brien. 2019. "Public Opposition to Sanctuary Cities in Texas: Criminal Threat or Immigration Threat?" *Social Science Quarterly*. 100(4): 1182-1196.
20. Reny, Tyler, **Loren Collingwood**, and Ali Valenzuela. 2019. "Vote Switching in the 2016 Election: Racial and Immigration Attitudes, Not Economics, Explains Shifts in White Voting." *Public Opinion Quarterly*. 83(1): 91-113.

Featured in VOX; The Week; The Economist; New York Times; The Economist

19. Gonzalez-O'Brien, Benjamin, **Loren Collingwood**, and Stephen Omar El-Khatib. 2019. "The Politics of Refuge: Sanctuary Cities, Crime, and Undocumented Immigration." *Urban Affairs Review*. 55(1): 3-40.

Featured in WaPo Monkey Cage I; and Monkey Cage II; WaPo Fact Check; InsideHigherEd; PolitiFact; The Hill; Christian Science Monitor; Pacific Standard; NBC News; Huffington Post; Seattle Times; The Denver Post; San Jose Mercury News; Chicago Tribune; San Diego Union Tribune; VOX

18. Oskooii, Kassra, Sarah Dreier, and **Loren Collingwood**. 2018. "Partisan Attitudes Toward Sanctuary Cities: The Asymmetrical Effects of Political Knowledge." *Politics and Policy* 46(6): 951-984.
17. **Collingwood, Loren**, Jason Morín, and Stephen Omar El-Khatib. 2018. "Expanding Carceral Markets: Detention Facilities, ICE Contracts, and the Financial Interests of Punitive Immigration Policy." *Race and Social Problems*. 10(4): 275-292.

Featured in CityLab; The Guardian; Mother Jones; NPR
16. **Collingwood, Loren**, Benjamin Gonzalez O'Brien, and Sarah K. Dreier. 2018. "Evaluating Public Support for Legalized Marijuana: The Case of Washington." *International Journal of Drug Policy*. 56: 6-20.
15. **Collingwood, Loren**, McGuire, Will, Gonzalez O'Brien, Ben, Baird, Katie, and Hampson, Sarah. 2018. "Do Dropboxes Improve Voter Turnout? Evidence from King County, Washington." *Election Law Journal*. 17:1.

Featured in Seattle Times; CBS News
14. **Collingwood, Loren**, Nazita Lajevardi, and Kassra Oskooii. 2018. "A Change of Heart? How Demonstrations Shifted Individual-Level Public Opinion on Trump's Muslim Ban." *Political Behavior*. 40(4): 1035-1072.

Featured in VOX; ThinkProgress; LSE Blog; Al Jazeera; San Francisco Chronicle; NPR; Business Insider; Washington Post
13. **Collingwood, Loren**, Ashley Jochim, and Kassra Oskooii. 2018. "The Politics of Choice Reconsidered: Partisanship and Minority Politics in Washington's Charter School Initiative." *State Politics & Policy Quarterly* 18(1): 61-92.
12. Newman, Ben, Sono Shah, and **Loren Collingwood**. 2018. "Race, Place, and Building a Base: Ethnic Change, Perceived Threat, and the Nascent Trump Campaign for President." *Public Opinion Quarterly*. 82(1): 122-134.

Featured in Pacific Standard; LSE Blog; Newsweek
11. Skulley, Carrie, Andrea Silva, Marcus J. Long, **Loren Collingwood**, and Ben Bishin, "Majority Rule vs. Minority Rights: Immigrant Representation Despite Public Opposition on the 1986 Immigration Reform and Control Act." 2018. *Politics of Groups and Identities*. 6(4): 593-611.
10. Alamillo, Rudy and **Loren Collingwood**. 2017. "Chameleon Politics: Social Identity and Racial Cross-Over Appeals." *Politics of Groups and Identities*. 5(4): 533-650.

Featured in WaPo's Monkey Cage; NBC News; Los Angeles Times
9. **Collingwood, Loren**, Kassra Oskooii, Sergio Garcia-Rios, and Matt Barreto. 2016. "eiCompare: Comparing ecological inference estimates across EI and EI:RxC." *The R Journal*. 8(2): 92-101.

Featured in Investigate West
8. Barreto, Matt, **Loren Collingwood**, Christopher Parker, and Francisco Pedraza. 2015. "Racial Attitudes and Race of Interviewer Item Non-Response." *Survey Practice*. 8:5.

7. Barreto, Matt and **Loren Collingwood**. 2015. "Group-based Appeals and the Latino Vote in 2012: How Immigration Became a Mobilizing Issue." *Electoral Studies*. 40:490-499.

Featured in Latino Decisions blog

6. **Collingwood, Loren**, Matt Barreto, and Sergio Garcia-Rios. 2014. "Revisiting Latino Voting: Cross-Racial Mobilization in the 2012 Election." *Political Research Quarterly*. 67(3): 632-645.

Featured in LSE Blog

5. Jurka, Tim, **Loren Collingwood**, Amber Boydston, Emiliano Grossman, and Wouter van Atteveldt. 2013. "RTextTools: A Supervised Learning Package for Text Classification in R" *The R Journal*. 5(1).
4. **Collingwood, Loren**. 2012. "Education Levels and Support for Direct Democracy." *American Politics Research*, 40(4): 571-602.
3. **Collingwood, Loren** and John Wilkerson. 2012. "Tradeoffs in Accuracy and Efficiency in Supervised Learning Methods." *Journal of Information Technology and Politics*, 9(3).
2. **Collingwood, Loren**, Matt Barreto and Todd Donovan. 2012. "Early Primaries, Viability, and Changing Preferences for Presidential Candidates." *Presidential Studies Quarterly*, 42(2).
1. Barreto, Matt, **Loren Collingwood**, and Sylvia Manzano. 2010. "A New Measure of Group Influence in Presidential Elections: Assessing Latino Influence in 2008." *Political Research Quarterly*. 63(4).

Featured in Latino Decisions blog

Book Chapters

11. **Collingwood, Loren**, Stephanie DeMora , and Sean Long. "Demographic Change, White Decline, and the Changing Nature of Racial Politics in Election Campaigns." In *Cambridge Handbook in Political Psychology*. Edited by Danny Osborne and Chris Sibley. [Forthcoming].
10. Morín, Jason L. and **Loren Collingwood**. "Contractor Politics: How Political Events Influence Private Prison Company Stock Shares in the Pre and Post Trump Era." In *Anti-immigrant Rhetoric, Actions, and Policies during the Trump Era (2017-2019)*. [Forthcoming]
9. Parker, Christopher S., Christopher C. Towler, **Loren Collingwood**, and Kassra Oskooii. 2020. "Race and Racism in Campaigns." In *Oxford Encyclopedia of Persuasion in Political Campaigns*. Edited by Elizabeth Suhay, Bernard Grofman, and Alexander H. Trechsel. DOI: 10.1093/oxfordhb/9780190860806.013.38
8. **Collingwood, Loren**, and DeMora, Stephanie. 2019. "Latinos and Obama." In Jessica Lavariega Monforti (ed.) *Latinos in the American Political System: An Encyclopedia of Latinos as Voters, Candidates, and Office Holders*.
7. DeMora, Stephanie, and **Collingwood, Loren**. 2019. "George P. Bush." In Jessica Lavariega Monforti (ed.) *Latinos in the American Political System: An Encyclopedia of Latinos as Voters, Candidates, and Office Holders*.

6. El-Khatib, Stephen Omar, and **Collingwood, Loren**. 2019. "Ted Cruz." In Jessica Lavariega Monforti (ed.) *Latinos in the American Political System: An Encyclopedia of Latinos as Voters, Candidates, and Office Holders*.
 5. **Collingwood, Loren**, Sylvia Manzano and Ali Valenzuela. 2014. "November 2008: The Latino vote in Obama's general election landslide." In *Latino America: How America's Most Dynamic Population Is Poised to Transform the Politics of the Nation*. By Matt Barreto and Gary Segura. New York: Public Affairs Press. (co-authored chapter with Matt Barreto and Gary Segura)
 4. **Collingwood, Loren**, Justin Gross and Francisco Pedraza. 2014. "A 'decisive voting bloc' in 2012." In *Latino America: How America's Most Dynamic Population Is Poised to Transform the Politics of the Nation*. By Matt Barreto and Gary Segura. New York: Public Affairs Press. (co-authored chapter with Matt Barreto and Gary Segura)
 3. Barreto, Matt, **Loren Collingwood**, Ben Gonzalez, and Chris Parker. 2011. "Tea Party Politics in a Blue State: Dino Rossi and the 2010 Washington Senate Election." In William Miller and Jeremy Walling (eds.) *Stuck in the Middle to Lose: Tea Party Effects on 2010 U.S. Senate Elections*. Rowan and Littlefield Publishing Group.
 2. **Collingwood, Loren** and Justin Reedy. "Criticisms of Deliberative Democracy." In Nabatchi, Tina, Michael Weiksner, John Gastil, and Matt Leighninger, eds., *Democracy in motion: Evaluating the practice and impact of deliberative civic engagement*. New York: Oxford University Press, 2010.
 1. **Collingwood, Loren**. "Initiatives." In Haider-Markel, Donald P., and Michael A. Card. *Political Encyclopedia of U.S. States and Regions*. Washington, DC: CQ Press, 2009.
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Software

R package: **RTextTools**. This package uses supervised learning methods to automate text classification. Coauthors include Jurka, Boydston, Grossman, and van Atteveldt. Available on CRAN.

R package: **eiCompare**. This package compares outcomes between ecological inference (EI) estimates and EI:Rows by Columns (RxC) estimates. Primary purpose is employed in racially polarized voting analysis. Development Version available here: [eiCompare](#) or on CRAN. Coauthors include Barreto, Oskooii, Garcia-Rios, Burke, Decter-Frain, Murayama, Sachdeva, Henderson, Wood, and Gross.

R package: **Rvoterdistance**. Calculates distance between voters and multiple polling locations and/or ballot drop boxes. Ports C++ code for high speed efficiency. Available on CRAN.

R package: **Rweights**. Creates survey weights via iterative variable raking. Survey design object and weights vector are produced for use with R, Stata, and other programs. Currently in alpha form with unix tarball available here: [Rweights](#).

R package: **Rmturkcheck**. Functions for cleaning and analyzing two-wave MTurk (or other) panel studies. Available: [Rmturkcheck](#)

R package: **RCopyFind**. Functions for extracting data frames then plotting results from WCopyFind plagiarism text program. Co-authored with and Maintained by Steph DeMora. Available: [RCopyFind](#)

Under Review / Working Papers

Barreto, Matt, Michael Cohen, **Loren Collingwood**, Chad Dunn, and Sonni Waknin. “Using Bayesian Improved Surname Geocoding (BISG) to Assess Racially Polarized Voting in Voting Rights Act Challenges.” [Revise & Resubmit]

Decter-Frain, Ari, Pratik Sachdeva, **Loren Collingwood**, Juandalyn Burke, Hikari Murayama, Matt Barreto, Scott Henderson, Spencer Wood, and Joshua Zingher. “Comparing BISG to CVAP Estimates in Racially Polarized Voting Analyses.” [Revise & Resubmit]

Hickel Jr., Flavio R., Kassra A.R. Oskooii, and **Loren Collingwood**. “Social Mobility Through Immigrant Resentment: Explaining Latinx Support for Restrictive Immigration Policies and Anti-Immigrant Candidates.” [Revise & Resubmit]

Collingwood, Loren, Jason Morín, and Edward Vargas. “Protesting Detention: How Protests Activated Group Empathy and Party ID to Shift Attitudes on Child Detention.” [Working Paper]

Paarlberg, Michael A. and **Loren Collingwood**. “Fact or Fiction: Testing the link between local immigration policy and the MS-13 ‘Threat’.” [Working Paper]

Awards, Grants, and Fellowships

Matt Barreto and Loren Collingwood. Detection of Vote Dilution: New tools and methods for protecting voting rights. Data Science for Social Good project selection, University of Washington. 2020

Loren Collingwood. Measuring Cross-Racial Voter Preferences. UCR Faculty Senate. \$3,500. 2019.

Francisco Pedraza and Loren Collingwood. Evaluating AltaMed’s 2018 GOTV Efforts in Los Angeles. \$12,000. 2018-2019.

Allan Colbern, Loren Collingwood, Marcel Roman. A Mess in Texas: The Deleterious Effects of SB4 on Public Trust in Law Enforcement. Center for American Progress. \$7,100. 2018.

Karthick Ramakrishnan, Mindy Romero, Loren Collingwood, Francisco Pedraza, Evaluating California’s Voter’s Choice Act. Irvine Foundation. \$150,000, 2018-2019.

William McGuire, Loren Collingwood, Ben Gonzalez O’Brien, and Katie Baird, “Evaluating the Impact of Drop Boxes and Get-Out-The-Vote Advertising on Voter Turnout in Pierce County, WA.” MIT Election Data and Science Lab, \$16,365, 2017

Justin Freebourn and Loren Collingwood, Blum Initiative \$4,000, 2017

Hellman Fellowship Grant, UC Riverside, \$30,000, 2014-2015

Best Dissertation Award, 2013 Western Political Science Association

UC Riverside Harrison & Ethel Silver Fund, \$2,000, 2013

Best Graduate Student Paper Award State Politics section, 2012 American Political Science Association

Texas A&M Experimental Methods Winter Institute, \$800, January, 2011

UseR! 2011 Conference travel grant, \$1000, August, 2011

Center for Statistics and the Social Sciences travel grant, \$870, January, 2011

David J. Olson Research Grant, University of Washington Political Science, \$2,000, January, 2011

Warren Miller Scholarship Award, Inter-University Consortium for Political and Social Research, Summer 2009

Matthews Fellowship, University of Washington, Winter 2008 - Spring 2009

Brennan Center for Justice, New York University [with Matt Barreto]

Indiana Voter Identification Study, \$40,000 – Oct. 2007, 6 months

Teaching Experience

POSC 10 (American Politics); POSC 146 (Mass Media & Public Opinion); POSC 171 (State Politics); POSC 104S (Race and Ethnic Politics Special Topics); POSC 108 (Race and Ethnic Politics)

POLS 300: Immigration Politics with Focus on Latino Politics

POLS 300: The Voting Rights Act: Causes and Effects

POSC 202A: Introduction to Quantitative Methods (Graduate)

POSC 207: Statistical Programming and Data Science for the Social Sciences (Graduate)

POSC 207: Quantitative Text Analysis (Graduate)

POSC 220: Graduate Seminar in Race and Ethnic Politics in the U.S.

POSC 256: Graduate Seminar in Public Opinion

POSC 253: Graduate Seminar in Electoral Politics

Text Classification with R using the `RTextTools` package, UNC-Chapel Hill Workshop

Text Analysis with Political Data, Claremont Graduate School, 2019

CSSS Intermediate R Workshop 2011, Instructor (Summer)

POLS 501: Advanced Research Design and Analysis, Teaching Assistant (2 quarters)

ICPSR Summer Course: Methodological Issues in Quantitative Research on Race and Ethnicity, Teaching Assistant

POLS 202: Introduction to American Politics, Teaching Assistant

CSSS Math Camp 2011, Teaching Assistant

POLS 499D: Center for American Politics and Public Policy Undergraduate Honors Seminar (2 quarters)

Professional Service

Co-editor, *Politics of Groups and Identities*, 2020-2021

Reviewer, Political Behavior, Journal of Information Technology and Politics, American Politics Research, Social Sciences Quarterly, Journal of Politics, Politics of Groups and Identities, American Journal of Political Science, Political Research Quarterly, State Politics and Public Policy, American Political Science Review, British Journal of Political Science, Journal of Race and Ethnic Politics, Urban Studies, Urban Affairs Review; many other journals

Conference Papers and Presentations

Collingwood, Loren and Benjamin Gonzalez O'Brien. "Sanctuary Cities: The Politics of Refuge." Invited Talk California Lutheran University. (October 2020).

Collingwood, Loren. "Sanctuary Cities: The Politics of Refuge." Invited Talk California State University, Chico. (March 2020).

Collingwood, Loren. "Sanctuary Cities: The Politics of Refuge." Invited Talk Humboldt State University. (March 2020).

Collingwood, Loren. "Campaigning in a Racially Diversifying America: Whether and How Cross-Racial Electoral Mobilization Works." Invited Talk Oregon State University. (February 2020).

Collingwood, Loren and Benjamin Gonzalez O'Brien. "Sanctuary Cities: The Politics of Refuge." Invited Talk University of San Diego. (November 2019).

Collingwood, Loren. "Campaigning in a Racially Diversifying America: Whether and How Cross-Racial Electoral Mobilization Works." Invited Talk University of Massachusetts. (January 2020).

Collingwood, Loren. "Campaigning in a Racially Diversifying America: Whether and How Cross-Racial Electoral Mobilization Works." Invited Talk University of New Mexico. (December 2019).

Collingwood, Loren and Benjamin Gonzalez O'Brien. "Sanctuary Cities: The Politics of Refuge." Invited Talk California State University, Northridge, Los Angeles. (November 2019).

Collingwood, Loren and Benjamin Gonzalez O'Brien. "Sanctuary Cities: The Politics of Refuge." Invited Talk Occidental College, Los Angeles. (November 2019).

Collingwood, Loren (with Sean Long). "Can States Promote Minority Representation? Assessing the Effects of the California Voting Rights Act." UC Irvine Critical Observations on Race and Ethnicity Conference. (November 2019).

Collingwood, Loren. "Sanctuary Cities: The Politics of Refuge." Invited Talk University of Geneva, Switzerland. (November 2019).

Collingwood, Loren. "Sanctuary Cities: The Politics of Refuge." Invited Talk University of Bern, Switzerland. (October 2019).

Collingwood, Loren. "Sanctuary Cities: The Politics of Refuge." Invited Talk ETH Zurich, Switzerland. (October 2019).

Collingwood, Loren. "Sanctuary Cities: The Politics of Refuge." Invited Talk London School of Economics, U.K. (October 2019).

Collingwood, Loren. "Sanctuary Cities: The Politics of Refuge." Invited Talk University of Leeds, U.K. (October 2019).

Valenzuela, Ali, Kassra Oskooi, and Loren Collingwood. "Threat or Reassurance? Framing Midterms Results among Latinos and Whites." American Political Science Association, Washington, DC. (August 2019).

Paarlberg, Michael A. and Loren Collingwood. "Much Ado about Nothing: Local Immigration Policy and the MS-13 'Threat' ." American Political Science Association, Washington, DC. (August 2019).

Collingwood, Loren. "A Mess in Texas: The Deleterious Effects of SB4 on Public Trust in Law Enforcement." International Center for Local Democracy (ICLD) Conference on Local Democracy. Umea, Sweden (June 2019).

Collingwood, Loren. "The #FamiliesBelongTogether Outcry: How Protests Shifted Attitudes on Immigrant Family Separation and Child Detention." Invited Talk University of California, Irvine (May 2019).

Collingwood, Loren. "Text Analysis with R." Invited talk and presentation. Claremont Graduate University (May 2019)

Collingwood, Loren. "The #FamiliesBelongTogether Outcry: How Protests Shifted Attitudes on Immigrant Family Separation and Child Detention." PRIEC. UC Davis (May 2019).

Collingwood, Loren. "Data Analysis with R." Invited presentation and training Cal Poly Pomona (May 2019)

Collingwood, Loren. "The #FamiliesBelongTogether Outcry: How Protests Shifted Attitudes on Immigrant Family Separation and Child Detention." Invited Talk Northern Arizona University (May 2019)

Collingwood, Loren (with Jason Morín). "Contractor Politics: How Political Events Influence Private Prison Company Stock Shares in the Pre and Post Trump Era." Invited Talk Universidad Nacional Autonoma de Mexico, Distrito Federal, Mexico (February 2019).

Roman, Marcel, Allan Colbern, and Loren Collingwood. "A Mess in Texas: The Deleterious Effects of SB4 on Public Trust in Law Enforcement." PRIEC Consortium. University of Houston (December 2018)

Collingwood, Loren. "The #FamiliesBelongTogether Outcry: How Protests Shifted Attitudes on Immigrant Family Separation and Child Detention." Invited Talk University of Illinois Chicago (November 2018)

Collingwood, Loren. "Ongoing Research in Sanctuary Cities and Immigration Politics." Invited Talk University of Pennsylvania Perry World House (November 2018)

Collingwood, Loren. "Unfair Detention: How Protests Activated Racial Group Empathy to Shift Attitudes on Child Detention." Invited Talk Rutgers University (October 2018)

Collingwood, Loren. "Unfair Detention: How Protests Activated Racial Group Empathy to Shift Attitudes on Child Detention." UCR Alumni Research Presentation Washington and Philadelphia (October 2018)

Collingwood, Loren, Jason Morin. "Expanding Carceral Markets: Detention Facilities, ICE Contracts, and the Financial Interests of Punitive Immigration Policy." Invited Talk UCLA (October 2018).

Collingwood, Loren, Nazita Lajevardi, and Kassra Oskooii. "Opinion Shift and Stability: Enduring Opposition to Trump's "Muslim Ban". APSA (September 2018).

Collingwood, Loren, Jason Morin, and Stephen Omar El-Khatib. "Expanding Carceral Markets: Detention Facilities, ICE Contracts, and the Financial Interests of Punitive Immigration Policy." American Political Science Association Conference (August 2018).

Collingwood, Loren, Sergio Garcia-Rios, and Hannah Walker. "The Impact of Exposure to Police Brutality on Political Attitudes Among Black and White Americans." Cooperative Comparative Post-Election Survey (CMPS) Conference. (August, 2018).

Collingwood, Loren, Nazita Lajevardi, and Kassra Oskooii. "Opinion Shift and Stability: Enduring Opposition to Trump's "Muslim Ban". Politics of Race Immigration and Ethnicity Consortium (August 2018).

Collingwood, Loren, Jason Morin, and Stephen Omar El-Khatib. "Expanding Carceral Markets: Detention Facilities, ICE Contracts, and the Financial Interests of Punitive Immigration Policy." Politics of Race Immigration and Ethnicity Consortium, Michigan State University (April 2018)

Collingwood, Loren, Benjamin Gonzalez O'Brien, and Joe Tafoya. "Partisan Learning or Racial Learning: Opinion Change on Sanctuary City Policy Preferences in California and Texas." Midwest Political Science Association Conference (April 2018).

El-Khatib, Stephen Omar and Loren Collingwood. "State Policy Responses to Sanctuary Cities: Explaining the Rise of Sanctuary City Legislative Proposals." Midwest Political Science Association Conference (April 2018).

Hannah Walker, Loren Collingwood, and Tehama Lopez Bunyasi. "Under the Gun: Black Responsiveness and White Ambivalence to Racialized Black Death." Midwest Political Science Association Conference (April 2018).

Hannah Walker, Loren Collingwood, and Tehama Lopez Bunyasi. "Under the Gun: Black Responsiveness and White Ambivalence to Racialized Black Death." Western Political Science Association Conference (April 2018).

DeMora, Stephanie, Adriana Ninci, and Loren Collingwood. "Shoot First in ALEC's Castle: The Diffusion of Stand Your Ground Laws." Politics of Race Immigration and Ethnicity Consortium, ASU (February 2018).

El-Khatib, Stephen Omar and Loren Collingwood. "State Policy Responses to Sanctuary Cities: Explaining the Rise of Sanctuary City Legislative Proposals." Politics of Race Immigration and Ethnicity Consortium, UCR (September 2017).

Collingwood, Loren, Nazita Lajevardi, and Kassra Oskooii. "A Change of Heart? How Protests Shifted Individual-Level Public Opinion on Trump's Muslim Ban." APSA (September 2017).

Collingwood, Loren, McGuire, Will, Gonzalez O'Brien Ben, Hampson, Sarah, and Baird, Katie. "Do Dropboxes Improve Voter Turnout? Evidence from King County, Washington." APSA (September 2017).

Collingwood, Loren, Reny, Tyler, Valenzuela, Ali. "Flipping for Trump: In 2016, Immigration and Not Economic Anxiety Explains White Working Class Vote Switching." UCLA (May 2017).

Collingwood, Loren, Nazita Lajevardi, and Kassra Oskooii. "A Change of Heart? How Protests Shifted Individual-Level Public Opinion on Trump's Muslim Ban." UCLA (May 2017).

Collingwood, Loren, Nazita Lajevardi, and Kassra Oskooii. "A Change of Heart? How Protests Shifted Individual-Level Public Opinion on Trump's Muslim Ban." Politics of Race Immigration and Ethnicity Consortium, UCSB (May 2017).

Reny, Tyler, Ali Valenzuela, and Loren Collingwood. "Public Reactions to Anti-Latino Appeals in the Age of Obama: Race, Illegality and Changing Norms." Vancouver, Western Political Science Association Conference (April. 2017).

Collingwood, Loren, McGuire, Will, Gonzalez-O'Brien Ben, Hampson, Sarah, and Baird, Katie. "Do Dropboxes Improve Voter Turnout? Evidence from King County, Washington." WPSA (April 2017).

Gonzalez-O'Brien, Benjamin, Loren Collingwood, and Stephen El-Khatib. "Gimme Shelter: The Myth and Reality of the American Sanctuary City". Vancouver, Western Political Science Association Conference WPSA (April 2017).

Rush, Tye, Pedraza, Francisco, Collingwood, Loren. "Relieving the Conscience: White Guilt and Candidate Evaluation." Politics of Race Immigration and Ethnicity Consortium, UCI (March 2017).

Reny, Tyler, Ali Valenzuela, and Loren Collingwood. "Public Reactions to Anti-Latino Appeals in the Age of Obama: Race, Illegality and Changing Norms." Philadelphia, American Political Science Association Conference (Sept. 2016)

Barreto, Matt, Loren Collingwood, Sergio Garcia-Rios, and Kassra Oskooii. "Estimating Candidate Support: Comparing EI & EI-RxC." Chicago, Midwest Political Science Association Conference (April 2016)

Bishin, Benjamin, Loren Collingwood, and Erinn Lauterbach. "Cross-Racial Mobilization in a Rapidly Diversifying Polity: Latino Candidates and Anglo Voters" Chicago, Midwest Political Science Association Conference (April 2016)

Gonzalez-O'Brien, Benjamin, Loren Collingwood, and Stephen El-Khatib. "Gimme Shelter: The Myth and Reality of the American Sanctuary City". San Diego, Western Political Science Association Conference (April 2016)

Collingwood, Loren and Antoine Yoshinaka. The new carpetbaggers? Analyzing the effects of migration on Southern politics. The Citadel Conference on Southern Politics, Charleston, SC (Mar 2016)

Alamillo, Rudy and Loren Collingwood. Chameleon Politics: Social Identity and Racial Cross-Over Appeals. American Political Science Association Conference, San Francisco (Sept 2015)

Reny, Tyler, Ali Valenzuela, and Loren Collingwood. "Public Reactions to Anti-Latino Appeals in the Age of Obama: Race, Illegality and Changing Norms." San Francisco, American Political Science Association Conference (Sept 2015)

Alamillo, Rudy and Loren Collingwood. Chameleon Politics: Social Identity and Racial Cross-Over Appeals. Western Political Science Association Conference, Las Vegas (April 2015)

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Collingwood, Loren and Ashley Jochim. 2012 Midwest Political Science Association Annual Conference (April) Chicago, IL. "Electoral Competition and Latino Representation: The Partisan Politics of Immigration Policy in the 104th Congress."

Collingwood, Loren. 2012 Western Political Science Association Annual Conference (March) Portland, OR. "The Development and Use of Cross-Racial Mobilization as Campaign Strategy in U.S. Elections: The Case of Texas 1948-2010."

Collingwood, Loren. 2012 Institute for Pragmatic Practice Annual Conference (March) Seattle, WA. "Changing Demographics, Rural Electorates, and the Future of American Politics."

Collingwood, Loren. 2012 Politics of Race, Immigration, and Ethnicity Consortium (January) Riverside, CA. "The Development of Cross-Racial Mobilization: The Case of Texas 1948-2010."

Collingwood, Loren. 2011 American Political Science Association Annual Conference (September) Seattle, WA. "The Pursuit of Victory and Incorporation: Elite Strategy, Group Pressure, and Cross Racial Mobilization."

Forman, Adam and Loren Collingwood. 2011 American Political Science Association Annual Conference (September) Seattle, WA. "Measuring Power via Presidential Phone Records." (Poster)

Collingwood, Loren with (Tim Jurka, Wouter Van Atteveldt, Amber Boydston, and Emiliano Grossman). UseR! 2011 Conference. (August) Coventry, United Kingdom. "RTextTools: A Supervised Learning Package for Text Classification in R."

Jurka, Tim, Loren Collingwood, Wouter Van Atteveldt, Amber Boydston, and Emiliano Grossman. 2011 Comparative Agendas Project Conference. (June) Catania, Italy. "RTextTools: A Supervised Learning Package for Text Classification in R."

Collingwood, Loren and John Wilkerson. 2011 Journal of Information Technology & Politics Conference. (May) Seattle, WA. "Tradeoffs in Accuracy and Efficiency in Supervised Learning Methods."

Collingwood, Loren. 2011 Politics of Race, Immigration, and Ethnicity Consortium (May) Davis, CA. "The Pursuit of Victory and Incorporation: Elite Strategy, Group Pressure, and Cross Racial Mobilization"

Collingwood, Loren. 2011 Western Political Science Conference (April) San Antonio, TX. "Race-Matching as Targeted Mobilization."

Collingwood, Loren. 2011 Western Political Science Conference (April) San Antonio, TX. "The Pursuit of Victory and Incorporation: Elite Strategy, Group Pressure, and Cross Racial Mobilization"

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Collingwood, Loren (with John Wilkerson). Invited Talk: Rice University. (April, 2011) "Tradeoffs in Accuracy and Efficiency in Supervised Learning Methods."

Collingwood, Loren. 2011 Midwest Political Science Association Annual Conference (April) Chicago, IL. "Race-Matching as Targeted Mobilization."

Collingwood, Loren and John Wilkerson. 2011 Text as Data Conference. (March) Evanston, IL. "Tradeoffs in Accuracy and Efficiency in Supervised Learning Methods."

Collingwood, Loren and John Wilkerson. 2011 Southern Political Science Conference. (January) New Orleans, LA. "Tradeoffs in Accuracy and Efficiency in Supervised Learning Methods."

Collingwood, Loren (with Ben Gonzalez). 2010 American Political Science Association Annual Conference. (September) Washington, DC. "The Political Process in Florida: Modeling African American Registration Rates Post *Smith v. Allwright*, 1944-1964."

Wilkerson, John, Steve Purpura, and Loren Collingwood. 2010 NSF Funded Tools for Text Workshop. (June) Seattle, WA. "Rtexttools: A Supervised Machine Learning Package in an R-Wrapper."

Collingwood, Loren and Marcela Garcia-Castanon. 2010 Western Political Science Association Annual Conference. (April) San Francisco, CA. "Negativity as a Tool: candidate poll standing and attack politics."

Collingwood, Loren. 2010 Politics of Race, Immigration, and Ethnicity Consortium. (January) Riverside, CA. "White Outreach: A spatial approach to modeling black incorporation in Florida post *Smith v. Allwright*, 1944-1965."

Collingwood, Loren. 2009 Western Political Science Association Annual Conference. (March) Vancouver, BC. "Levels of Education, Political Knowledge and Support for Direct Democracy."

Collingwood, Loren. 2009 Western Political Science Association Annual Conference. (March) Vancouver, BC. "The Negativity Effect: Psychological underpinnings of advertising recall in modern political campaigns."

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Collingwood, Loren and Marcela Garcia-Castanon. 2009 Western Political Science Association Annual Conference. (March) Vancouver, BC. "Switching codes: analyzing Obama's strategy for addressing Latinos in the 2008 presidential campaign."

Collingwood, Loren, (with Matt Barreto and Sylvia Manzano) 2009 Shambaugh Conference. (March) University of Iowa, IA. "More than one way to shuck a tamale: Latino influence in the 2008 general election."

Collingwood, Loren and Marcela Garcia-Castanon. 2009 Midwest Political Science Association Annual Conference. (April) Chicago, IL. "Switching codes: analyzing Obama's strategy for addressing Latinos in the 2008 presidential campaign."

Collingwood, Loren and Marcela Garcia-Castanon. 2009 Pacific Northwest Political Science Conference. (October) Victoria, BC. "Negativity as a Tool: predicting negative responses and their effectiveness in the 2008 campaign season."

Collingwood, Loren and Francisco Pedraza (with Matt Barreto and Chris Parker). 2009 Center for Statistics and the Social Sciences 10th Anniversary Conference. (May) Seattle, WA. "Race of interviewer effects: perceived versus actual."

Collingwood, Loren (with Matt Barreto, Chris Parker, and Francisco Pedraza). 2009 Pacific Northwest Political Science Conference. (October) Victoria, BC. "Race of interviewer effects: perceived versus actual."

Barreto, Matt, Loren Collingwood and Todd Donovan. 2008 Midwest Political Science Association Annual Conference. (April) Chicago, IL. "Early Presidential Primaries, Viability, and Vote Switching in 2008."

Collingwood, Loren. 2008 Midwest Political Science Association Annual Conference. (April) Chicago, IL. “Levels of Education and Support for Direct Democracy: A Survey Experiment.”

Collingwood, Loren. 2008 American Political Science Association Annual Conference. (September) Boston, MA. “Levels of Education and Support for Direct Democracy: A Survey Experiment.” (Poster)

Collingwood, Loren. 2008 American Political Science Association Annual Conference. (September) Boston, MA. “Response Effects in Multi-Candidate Primary Vote Questions.” (Poster)

Computer Skills

R, Stata, Python, WinBugs/JAGS, L^AT_EX, SPSS, MySQL, Access, ArcGIS, Some C++ when interacting with R.

Reports

Collingwood, Loren. (2008). *The Washington Poll: pre-election analysis*. www.washingtonpoll.org.

Collingwood, Loren. (2008). *Democratic underperformance in the 2004 gubernatorial election: explaining 2004 voting patterns with an eye towards 2008*. www.washingtonpoll.org.

Barreto, Matt, Loren Collingwood, Francisco Pedraza, and Barry Pump. (2009). *Online voter registration in Washington State and Arizona*. Commissioned by Pew Research Center.

Collingwood, Loren, Todd Donovan, and Matt Barreto. (2009). *An assessment of ranked choice voting in Pierce County, WA*.

Collingwood, Loren. (2009). *An assessment of the fiscal impact of ranked choice voting in Pierce County, WA*. Commissioned by the League of Women Voters.

Barreto, Matt, and Loren Collingwood. (2009). *Latino candidates and racial block voting in primary and judicial elections: An analysis of voting in Los Angeles County board districts*. Commissioned by the Los Angeles County Chicano Employees Association.

Barreto, Matt, and Loren Collingwood. (2011). *A Review of Racially Polarized Voting For and Against Latino Candidates in Los Angeles County 1994-2010*. Commissioned by Los Angeles County Supervisor Gloria Molina. August 4.

Collingwood, Loren. (2012). *Recent Political History of Washington State: A Political Map*. Commissioned by the Korean Consulate.

Collingwood, Loren. (2012). *Analysis of Polling on Marijuana Initiatives*. Commissioned by Greenberg Quinlan Rosner.

Collingwood, Loren, Sean Long, and Francisco Pedraza. (2019). *Evaluating AltaMed Voter Mobilization in Southern California, November 2018*. Commissioned by AltaMed.

Relevant Work Experience

Collingwood Research, LLC

Statistical Consulting and Analysis

January 2008 - Present

Conducted over 200 projects involving political research, polling, statistical modeling, redistricting analysis and mapping, data analysis, micro-targeting, and R software development for political and non-profit clients. Clients include: Greenberg Quinlan Rosner, Latino Decisions, Pacific Market Research, Beck Research, Squier Knapp Dunn Communications, Anzalone-Lizst Research, League of Women Voters, Shelia Smoot for Congress, pollster.com, Comparative Agendas Project, Amplified Strategies, Gerstein Bocian & Agne, Strategies 360, the Korean Consulate, the California Redistricting Commission, Monterey County Redistricting Commission, ClearPath Strategies, Los Angeles County Council, Demchak & Baller Legal, Arnold & Porter LLP, JPM Strategic Solutions, National Democratic Institute (NDI) – on site in Iraq, Latham & Watkins, New York ACLU, United States Department of Justice (Demography), Inland Empire Funder's Alliance (Demography), Perkins & Coie, Elias Law Group; Campaign Legal Center; Santa Clara County (RPV Analysis); Native American Rights Fund (NARF); West Contra Costa Unified School District (Demography); Lawyers' Committee for Civil Rights Under Law; LatinoJustice PRLDEF, Voces de Frontera; Roswell, NM Independent School District

Expert Witness Work

Expert Witness: *LOWER BRULE SIOUX TRIBE v. LYMAN COUNTY*, 2022

Expert Witness: *Walen and Henderson v. Burgum and Jaeger No 1:22-cv-00031-PDW-CRH*, 2022

Expert Witness: *Faith Rivera, et al. v. Scott Schwab and Michael Abbott No. 2022-CV-000089*, 2022

Expert Witness: *LULAC Texas et al. v. John Scott et al (1:21-cv-0786-XR)*, 2022

Expert Witness: *Pendergrass v. Raffensperger (N.D. Ga. 2021)*,

Expert Witness: *Johnson, et al., v. WEC, et al., No. 2021AP1450-OA*, 2021

Expert Witness: *East St. Louis Branch NAACP vs. Illinois State Board of Elections*, 2021

Expert Witness: *LULAC of Iowa vs. Pate*, 2021-2022

Expert Witness: *United States Department of Justice vs. City of Hesperia*, 2021-2022

Expert Witness: *NAACP vs. East Ramapo Central School District*, New York, 2018-2019

Riverside County, Corona and Eastvale, 2015

Los Angeles County Redistricting Commission, 2011

Racially Polarized Voting analysis of Latino and Asian candidates in San Mateo County and alternative map creation, 2010-2011

State of California, Citizens Redistricting Commission, including Blythe, CA, in Riverside County, 2011

Monterey County, CA Redistricting, alternative map creation, 2011

Greenberg Quinlan Rosner

Assistant Analyst, Anna Greenberg

June 2005 - May 2007

Assisted in the development of questionnaires, focus group guidelines, memos, and survey reports for political, non-profit, and corporate clients. Moderated in-depth interviews and focus groups.

Greenberg Quinlan Rosner

Field Associate

December 2003 - June 2005

Managed qualitative and quantitative data collection process in the U.S. and internationally. Provided methodological advice, including sample stratification, sampling Latino populations, and modal sampling strategies.

Congressman Adam Schiff

Database Manager

March 2003 - June 2003

Managed constituent mail and survey databases; updated and maintained Member's Congressional voting record.

Strategic Consulting Group

Field Organizer, Carol Roberts for Congress

July 2002 - November 2002

Recruited and coordinated over 100 volunteers for mailings, canvassing, phone banking, and GOTV operations. Developed internship program and managed 15 interns from local colleges and high schools.

Institute for Policy Studies

Intern, John Cavanagh

May 2001 - August 2001

Provided research assistance for projects advocating reform of the WTO, World Bank, and IMF. Worked on reports and op-ed pieces on global economic issues advocating fair trade.

EXHIBIT D

Grant, Annie Lois, et al.v. Raffensperger, Brad, E

Page 1

1 UNITED STATES DISTRICT COURT
2 FOR THE NORTHERN DISTRICT OF GEORGIA
3 ATLANTA DIVISION

4 ANNIE LOIS-GRANT et al.,)
5)
6 Plaintiffs,)
7)
8 vs.) CIVIL ACTION FILE
9) NO. 1:22-CV-00122-SCJ
10 BRAD RAFFENSPERGER, in his)
11 official capacity as the)
12 Georgia Secretary of State,)
13 et al.,)
14)
15 Defendants.)
16 _____)

17 Deposition of Blakeman Esselstyn
18 (Signature is reserved.)
19 February 16, 2023
20 9:00 a.m.

21 Remote via Zoom technology

22 Reported by: Carla J. Hopson, RPR, CCR-1816
23
24
25

1 drawing a plan, right?

2 A I would say at some level, yes.

3 Q When you're drawing redistricting plans
4 for jurisdictions like the 16 North Carolina
5 earlier, do you use the features of the software
6 that you referenced to display racial information
7 while you're drawing those maps.

8 A I'm literally thinking back to my
9 process. Not certainly. Not always. I can think
10 of some where I did not or at least -- yeah, at
11 least one where I didn't. The -- and there's sort
12 of a distinction that -- in the software I was
13 using.

14 The columns you specify at the beginning
15 of the process are going to be the columns that get
16 exported when you provide a table -- a summary table
17 of the demographics.

18 So -- but I -- I am quite certain that
19 there are multiple cases where I was not looking at
20 race when I was drawing the redistricting plans.

21 Q And when you were drawing the
22 illustrative plans in this case, at any point did
23 you display racial information of the underlying
24 geography on your screen?

25 A Yes.

1 Q And what kind of racial information
2 would you display while you were drawing the
3 illustrative plans?

4 A For the underlying geography, I would --
5 it would be the black percentage of the population
6 meaning the -- any part black voting age percent.

7 Q And did you use a theme or a shading of
8 precincts or counties to look at that any part black
9 population while you were drawing?

10 A I think so. I think that I -- I think
11 that I may have. I'm not a hundred percent sure,
12 but I think that I may have, yes.

13 Q And did you utilize that display of
14 racial information about the underlying geography
15 while you were drawing the illustrative plans for
16 House and Senate?

17 A The shading?

18 Q Yes.

19 A I'm not totally sure.

20 Q Did you utilize any of the racial
21 information that you displayed on the screen while
22 you were drawing the illustrative plans to inform
23 the decisions you made about which parts of
24 districts went in and out of a particular districts?

25 A Yes.

1 Q Did you turn on racial shading or
2 features to determine where black voters were
3 located as part of your initial process of deciding
4 where to begin?

5 A I don't recall. Maybe.

6 Q I'm assuming you focused on areas where
7 were higher concentrations of black voters in terms
8 of looking for where new districts could be drawn,
9 right?

10 A Yes.

11 Q So at the end of Paragraph 13 you have
12 this phrase, in accordance with traditional
13 redistricting principles. What does that phrase
14 mean in the context of Paragraph 13?

15 A That phrase is mostly referencing the
16 other guidelines that were adopted by the two
17 chambers in the General Assembly. And I would say
18 that the guidelines that the chambers adopted are
19 fairly typical of the types of guidelines that are
20 used traditionally in other jurisdictions.

21 Q So when you're using the phrase
22 traditional redistricting principles there, you're
23 referring to the principles outlined in the Georgia
24 General Assembly's guidelines involving
25 redistricting?

1 Baldwin County -- well, what I'm trying to ask is,
2 the illustrative District 23 only reaches Baldwin
3 County by including Hancock and Washington as you've
4 drawn it, right?

5 A Yes.

6 Q Okay. Do you know if there's any
7 connections between Screven County in the southeast
8 part of Districts 23 as you've drawn it and Greene
9 County on the northwest side?

10 A Any connections in -- I mean, I imagine
11 there are road connections. One can -- you're
12 talking about commonalties maybe.

13 Q Can you identify any reason why both
14 Screven County and Greene County are in the same
15 district on illustrative 23?

16 A I can say that it was -- the
17 determination or reason would be that after
18 considering a number of principles that arrangement
19 seem to be an appropriate configuration.

20 Q And what principles were those that you
21 considered to reach the conclusion it was an
22 appropriate arrangement?

23 A Population equality, contiguity,
24 preserving political subdivisions, compliance with
25 the Voting Rights Act, the -- I mean, I guess what

1 I'm trying to get as if you're asking for a reason,
2 and I don't want to say that there is no reason that
3 they're both in there. But at the same time it
4 is -- it's based on the totality of the
5 considerations in drawing that whole area of the
6 plan, which included really all of the
7 considerations of traditional principles we've
8 talked about.

9 So I can't say -- they decision to
10 include this piece of this county and this county
11 here was based on, you know, principle 1, 4 and 5.
12 It's -- it's a totality -- it's this multi-layered
13 thing. And so the ultimate configuration is based
14 on a -- all of the considerations that we've talked
15 about.

16 Q And one of those considerations is
17 communities of interest, right?

18 A Yes.

19 Q And so can you identify any community of
20 interest that's shared by Screven County and Greene
21 County?

22 A No, my approach to communities of
23 interest is more trying to keep them intact to the
24 extent possible rather than trying to make any two
25 areas of a district be something that could be

1 considered part of one community of interest.

2 Q You mentioned compliance with the Voting
3 Rights Act as a principle you considered in the
4 drafting of Senate 23. How did you go about
5 considering compliance with the Voting Rights Act in
6 the drafting of Senate 23 on the illustrative plan?

7 A As I mentioned that because it's one of
8 the ones that is in the -- would have been in the
9 Senate's list of adopted principles. In this
10 instance what I was asked to do by counsel was see
11 whether additional majority black districts could be
12 drawn. And I think there's language in the Voting
13 Rights Act about not diluting or lessening the
14 ability of certain --

15 This is not specifically -- yeah, in
16 terms of general my understanding of compliance with
17 the Voting Rights Act, there is language about not
18 diluting a community's voting presence. So in
19 general as part of what I would have been doing here
20 would be like not cracking the black community.

21 Q And you refer to not cracking the black
22 community. Do you consider the black community in
23 Baldwin County and Richmond County and McDuffie
24 County, for example, to be the same community or
25 different communities?

1 A Good question. I would -- I guess in
2 this -- I did use the word community. Maybe
3 population would have been a better choice of words
4 because some folks would -- would characterize
5 racial groups as a community of interest. And so I
6 think some people would say that that is -- that
7 they, as you described, could be considered one
8 community.

9 Often as I'm drawing a map I guess I can
10 think of them both as a community with a shared
11 interest or a shared characteristic I should say.
12 But also they are -- they have their distinctive
13 elements as well.

14 Q In the configuration of districts 23,
15 the counties that you split kind of starting in the
16 north, then going around are Wilkes, Greene,
17 Baldwin, Richmond and McDuffie Counties, right?

18 A Yes.

19 Q And are you aware that for each of those
20 county splits you included the highest concentration
21 of black voters in the county Senate District 23 and
22 the more white population portion of the county
23 outside of District 23?

24 A I am not aware that that's the case.

25 Q Okay. Let me mark --

1 A And, yeah, if you can just be able to
2 refer back to that wording as we -- as we go to
3 another exhibit because, again, I just wanted to
4 make sure I understand the just kind of mathematical
5 relationship you're describing.

6 Q Certainly. We're going to look at a
7 chart.

8 A Okay.

9 Q I just introduced Exhibit Number 9,
10 which is Mr. Morgan's report in this case.

11 A Yep.

12 Q And I'd like for us to go to Page number
13 17. Let me know when you're there.

14 A 17, yes.

15 Q And I believe you said you reviewed Mr.
16 Morgan's report as part of your preparation for this
17 deposition.

18 A Yes.

19 Q So on page 17 there's a chart for --
20 that has each of the five-county split with a
21 portion in District 23 and outside of District 23.
22 Do you see that?

23 A Yes.

24 Q And in each case the portion of the
25 county in District Senate 23 has a higher AP Black

1 VAP percentage in the portion outside of Senate
2 District 23 on the illustrative plan, right?

3 A Yes.

4 Q And were you aware that -- I think you
5 said you weren't -- that every county split you made
6 in Senate District 23 had this type of racial
7 differentiation on the population?

8 A Okay. I misunderstood your question. I
9 thought you were talking about the -- you said
10 something about the highest concentration, and I
11 thought you were saying that I had somehow selected
12 the highest concentration possible in isolating one
13 section of a county from the other section.

14 You used that superlative term highest,
15 and I thought you were saying that I had taken --
16 like if I was taking precincts, that there's no
17 other combination of precincts that I could have
18 taken that would have been higher than what I took.

19 So that's what I understood. And that's
20 why I wanted to maybe refer back to the way you had
21 asked the question.

22 So, yes, I have looked at this chart.
23 There is something that I don't agree with in terms
24 of Mr. Morgan's characterization here. In the
25 preceding paragraph he says that I took the lion's

1 illustrative plan, is that right?

2 A The discussion of the communities in
3 Columbia County that were largely inhabited by
4 people with a connection to Fort Gordon is something
5 I partially learned from the public comment from
6 the -- I believe it was actually in Columbia County.
7 That hearing was held in Columbia County, I think.
8 If not, it was northern Richmond County.

9 That's more to do, I guess you could
10 say, with the configuration of District 22 than 23.
11 So I did learn about some of the concerns in that
12 area, but I did not -- I don't remember hearing a
13 comment that specifically would have, you know, been
14 consistent with the choice I made in drawing Senate
15 District 23.

16 And you -- the other one you said was
17 17?

18 Q Yes.

19 A Yeah. I don't remember one related to
20 17 as well. I'm just looking at it on Figure 5 now
21 to see if jobs my memory.

22 I'm sorry. That was a no, I don't.

23 Q And again, you didn't watch videos of
24 public comment or read transcripts of it -- of those
25 comments until you had drawn the illustrative plan,

1 is that right?

2 A So -- after I'd drawn the first
3 illustrative plan. So the area in Bibb County did
4 not change from the PI plan to the December '22
5 plan. Baldwin County did change a little bit. So
6 my review of the comments and such was in late 2022.

7 Q Thank you. We've been going about an
8 hour and half and I'm going to move to District 25.
9 Do you want to take a break at this point, Mr.
10 Esselstyn?

11 A Sure. Sounds good.

12 MR. TYSON: We can go off the record.

13 (Recess.)

14 Q (By Mr. Tyson) All right, Mr. Esselstyn.
15 I want to turn next to Senate District 25, which is
16 on Figure 6, Page 13 of your report. Do you see
17 that?

18 A Yes.

19 Q And looking at Senate District 25 as
20 drawn on the illustrative plan, it includes portions
21 of Clayton County and portions of Henry County,
22 right?

23 A That's correct.

24 Q So in terms of the decision to connect
25 this part of Clayton with Henry County, can you tell

1 me what factors went into putting those two counties
2 together in District 25?

3 A I'm trying to recall. Again, this is
4 one that I did not -- I altered part of Fayette
5 County for the December 2022 plan but did not change
6 the orientation or the alignment of District 25.

7 Let me look back at what it looked like
8 under the enacted plan.

9 Yeah, I don't recall specific reasons
10 other than the kind of trial and error, as I
11 mentioned, that a lot of this is kind of iterative
12 in. I would have maybe looked at different
13 possibilities, and this one seemed to be the best
14 combination.

15 Q Okay. And creating District 25 where
16 you have -- I know we talked earlier about District
17 10 that runs down that eastern side of Henry County
18 to Butts County.

19 A Yes.

20 Q Do you see that? Are you aware of the
21 racial makeup of the components of Districts 10, the
22 different counties that you included in District 10?

23 A I'm sorry. Could you ask the -- repeat
24 the question? And I aware --

25 Q Sure.

1 what the plan components report is for Maptitude?

2 A Yes. So this goes district by district,
3 and for each district it provides the portions of,
4 in this case, counties that comprise that district
5 and some statistics related to that.

6 Q So if we go down to Page 24. That's the
7 beginning at the bottom of the page there, District
8 10 onto Page 25. Do you see that?

9 A Yes.

10 Q And looking at the voting age -- the
11 black voting age population percentage of the
12 portion of each county included in Districts 10,
13 you'd agree that on Black voting age population only
14 DeKalb County is a majority black voting population
15 for the portion in Districts 10, right?

16 A I'm just -- so this column says AP black
17 which I presume means any part black. And it's not
18 clear whether it is the --

19 Oh, I see. You've got -- and then -- my
20 bad. The voting age population is indicated there.
21 So I need to look at that part.

22 Yes. So Rockdale -- the total
23 population is majority any part black but not a
24 voting age population.

25 Q And so you'd agree that the only county

1 portion on this report with a majority black voting
2 age population is DeKalb County in District 10,
3 right?

4 A Yes.

5 Q And from our conversation earlier,
6 you're not able to identify any communities of
7 interest between south DeKalb County and Butts
8 County in Districts 10, right?

9 A Correct.

10 Q Let's move on your report over to
11 District 28. And that's on Page 14 of your report.
12 And this is an additional district in southwestern
13 metro Atlanta that you included as a new majority
14 black district, correct?

15 A I'm just getting there. Yes. Correct.

16 Q And this district connects parts of
17 Clayton County with north Fayette, south Fulton and
18 Coweta County down into Newnan, right?

19 A Yes.

20 Q Would you consider Coweta County to be a
21 more rural or a more urban county?

22 A More -- it's more rural than the other
23 three counties that you mentioned.

24 Q And Clayton County is a fairly urban
25 county, isn't it?

1 A I believe so.

2 Q So can you tell me about anything the
3 geography encompassed on this Senate District 28 has
4 in common besides the racial makeup of the people in
5 it?

6 A So again, when I'm looking at
7 communities of interest and the communities of
8 interest principle, I'm not trying to make sure that
9 every piece of a district has some unifying factor.
10 So I will say I remember, for example, that the
11 shape of the part that goes down into Coweta is
12 trying to keep most of -- it's either Newton or
13 Newnan.

14 Q Newnan, yes.

15 A Newnan. Thank you.

16 -- keep most of that in one district.
17 So that was an example. That's kind of the -- in
18 thinking about communities of interest trying not
19 to, you know, cut that community in half. So that
20 was a consideration.

21 But as far as trying to ensure that
22 every -- every corner has something in common with
23 every other corner, that was not part of my
24 calculus.

25 Q And you'd agree that Newnan was whole on

1 the enacted Senate plan in 28 as well, right,
2 because Coweta was whole as a county?

3 A I think that's right. Just let me
4 quickly check Figure 3.

5 Yes. But I think that Douglas County
6 was divided. I may be getting this confused with
7 the House plan. But I believe that Douglas County
8 was divided in the enacted plan but is made whole in
9 the illustrative plan.

10 Q Which one? Douglas County?

11 A I think so.

12 Q Okay. And in the illustrative plan,
13 District 35 you know makes Douglas whole but it also
14 connects portions of Fulton County with parts of
15 south Paulding County, right?

16 A Right.

17 Q Do you know the racial makeup of that
18 part of south Paulding County?

19 A No. I mean do I know? I don't know it
20 off the top of my head. There are -- probably one
21 of the exhibits we could look at would give me a
22 clue but -- or a better informed answer.

23 Q Okay. Were you aware of any connections
24 between Paulding County and Fulton County when you
25 configured illustrative District 35 this way?

1 A I believe that some of the definitions
2 of metro Atlanta include Paulding County. And so in
3 that sense they would be considered generally part
4 of metro Atlanta. I think there was one of the
5 witnesses at the PI stage kind of testified about
6 how, you know, parts of southwest metro Atlanta or
7 western metro Atlanta would have shared concerns, be
8 they about traffic or development or that kind of
9 thing.

10 That is reasonable to think of that as
11 being a community -- the metro Atlanta community
12 and, you know, some slice of the metro Atlanta
13 community.

14 Q Let's move to the comparative
15 characteristics for the Senate plan. I know we've
16 talked about some of this already. What I want to
17 do is go through a little bit more detail on some of
18 these specifically. So first on the population
19 equality number.

20 A Yes.

21 Q You would agree with me that the
22 deviation range on the illustrative plan -- or
23 rather I should say the total deviation on the
24 illustrative plan is almost double the deviation
25 range used on the enacted Senate plan, right?

1 A I would want to look at the numbers. I
2 don't --

3 Q Okay.

4 A Go ahead.

5 Q I believe if we go back to your
6 appendices you have the deviation ranges broken out,
7 is that right?

8 A Yep. If you get to the page number
9 before I do, that might speed up.

10 Q All I have is Attachment H. I'm using
11 paper, so I don't have the pdf pages numbers.

12 A Oh, okay. G. Here we go. H.

13 Q And so the enacted plan total deviation
14 is 2.01 from minus 1.03 to plus 0.98 and the
15 illustrative plan deviation, total deviation is 3.57
16 from minus 1.67 to a plus 1.9. Is that right?

17 A Yes.

18 Q And you didn't report that increase in
19 total deviation in your written report, did you?

20 A I did not. Getting back to your earlier
21 question, almost double. I mean, it's -- it's less
22 than 1.8 times. So almost double? I'm not sure I
23 agree with that.

24 Q Okay.

25 A That's a fuzzy description.

1 Q But you would agree it's 1.56 points
2 higher on total deviation, right?

3 A Yes.

4 Q And even though it's a higher total
5 deviation on the illustrative plan versus the
6 enacted plan, you determined that it still complied
7 with the traditional principles of population
8 equality, it being the illustrative plan?

9 A Yes.

10 Q In Paragraph 36, to go back to where
11 were on Page 15 --

12 A Just for the record, that was Page 77,
13 if we're going back to look at something like that.

14 Q Okay.

15 A You said now Page 15?

16 Q Right. It's the downside of one of us
17 using pape and one uses electronic, I suppose.

18 A Okay. I'm on page 15.

19 Q Okay. So this is the discussion of
20 compactness and the reporting of compactness
21 metrics, correct?

22 A Yes.

23 Q And you report the average compactness
24 scores for the enacted and the illustrative plans,
25 but this includes -- the average score includes all

1 56 districts, not just the ones that were changed,
2 right?

3 A Right.

4 Q And you didn't run a compactness score
5 report only for the districts that were changed to
6 compare those with the enacted plan; correct?

7 A Correct.

8 Q Do you know if the districts that you
9 changed on the illustrative plan from the enacted
10 plan are more or less compact as a whole than the
11 enacted plan?

12 A So compactness depends on which metric
13 you just. You know, some -- some districts can be
14 more compact based on one metric and less compact on
15 another. So, again, repeating the question was
16 whether I know whether the districts I changed were
17 on the whole more compact or less compact?

18 Q Yes.

19 A I don't -- I don't know. I can guess,
20 but I don't think I can say with certainty.

21 Q So let's look at Figure 8. Can you just
22 explain to me what Figure 8 shows?

23 A Yes. So Figure 8 is a series of sorted
24 bar charts basically, and for the four measures,
25 compactness measures, that can be applied to

1 individual districts, the four that I reference in
2 the previous page, Reock, Schwartzberg,
3 Polsby-Popper and Area/Convex Hull, what it does is
4 take the compactness scores for the enacted plan and
5 put them in order from most compact to least
6 compact, left to right.

7 And then specifically for the districts
8 that are additional majority black districts in the
9 illustrative plan, it places those basically within
10 this sorted order so that you can see how the
11 compactness -- the various compactness stores for
12 those three districts kind of compares to the
13 distribution of compactness scores for the entirety
14 of the enacted plan.

15 Q So the only illustrative plan districts
16 that are included on Figure 8 are the colored lines,
17 the white or the grayish lines are enacted plan
18 districts, is that right?

19 A That's write.

20 Q So you didn't score, for example, Senate
21 Districts 20 or Senate District 17 on the
22 illustrative plan as part of Figure 8, right?

23 A Right.

24 Q Let's like next at Paragraph 39, county
25 splits. And you'd agree that the illustrative plan

1 splits more counties than the enacted plan; correct?

2 A Correct.

3 Q And it splits more precincts than the
4 enacted plan, right?

5 A Correct. Yes.

6 Q And so how did you determine the
7 illustrative plan complies with the legislative
8 principle about boundaries of counties and precincts
9 it splits more counties and VTDs than the enacted
10 plan?

11 A So the -- so the language of the
12 guideline adopted in this case by the Senate is not
13 explicit. It just says that the boundaries of
14 counties and precincts should be considered. And I
15 mentioned that in the first sentence of Paragraph
16 39. The following sentence says that typically
17 that's taken to mean that counties should be kept
18 intact to the extent possible.

19 Another consideration that I have seen
20 and sometimes one of the -- one of the reports that
21 you can generate in Maptitude shows not only the
22 county divisions but the number of people in each
23 portion of the county in a split county.

24 So one thing -- and this came up, I
25 think, during our conversation in the PI phase was

1 A Other than that, those maps would still
2 -- the shapes of the districts would be different in
3 a few cases but they would still -- the reflection
4 of which districts got changed would be accurate
5 except for District 128.

6 Q Okay. And we'll get to that report in a
7 little bit. We can refer to that when we get there.
8 My question was just addressing this report, so --

9 A Got it. I'm just trying to be as
10 efficient as possible.

11 Q Certainly. So let's go to District 64
12 in Paragraph 49, and this district connects parts of
13 Fulton County through Douglas County with south
14 Paulding County, right?

15 A Yes.

16 Q And earlier you focused on making
17 Paulding County whole in the Senate map, and here
18 Paulding County is divided into several pieces on
19 the House map, right?

20 A I don't agree with that. I think you
21 said I focused on keeping Paulding County whole but
22 --

23 Q I'm sorry. I meant to say Douglas
24 County. So in the Senate plan you referenced
25 keeping Douglas County whole.

1 A Yeah.

2 Q And in the House plan here Douglas
3 County is divided to allow District 64 to connect
4 these pieces of Fulton and south Paulding, right?

5 A Yeah. I mean, if we were to look back
6 at how it was -- it's hard to see in Figure 12. But
7 I might say that there is a portion of Douglas
8 County included in the district which serves as a
9 connection between Fulton and Paulding Counties, the
10 portions in Fulton and Paulding Counties.

11 And this is an example of -- the smaller
12 population size of these districts means that I
13 don't think I could have kept Douglas County whole
14 because, as I recall, its population is around
15 145,000 people and these districts are 60,000, so --

16 Q And aside from being in the Atlanta
17 metro area, as you identified, for connecting parts
18 of Fulton and Paulding in the Senate plan, is there
19 anything else you can identify -- a community that's
20 kept whole in Senate District -- I mean, House
21 District 64?

22 A Not that I can recall. There -- not
23 that I can recall.

24 Q So let's move over to south Metro,
25 Paragraph 50. And here we have two districts.

1 First District 74 that connects portions of Clayton
2 with portions of Fayette, is that right?

3 A Yes.

4 Q Do you know if the portion of Fayette in
5 that district is majority black?

6 A I don't.

7 Q Would it surprise you if it was 16.01 AP
8 black VAP in Fayette County in District 74?

9 A That's lower than I would expect. But I
10 -- I don't know that it wouldn't surprise me.

11 Q Do you consider the south part of
12 Fayette County to be a rural area?

13 A I don't have an opinion on that.

14 Q Okay. And so can you identify any
15 communities that are kept whole in House District
16 74?

17 A None that I can recall there. I think
18 -- is this the one where we talked about Irondale?
19 I -- I believe there were -- in the area in Clayton
20 County, I believe it was a census-designated place,
21 maybe not an incorporated one, but I have a, again,
22 somewhat hazy recollection that there is a community
23 that this was drawn to keep mostly intact.

24 Q Okay. Do you recall if that
25 census-designated place was in Clayton or Fayette

1 County?

2 A Not with certainty.

3 Q Are you aware of any other reason to
4 connect Clayton and Fayette Counties the way
5 District 74 does on the illustrative plan?

6 A I'm just seeing if looking at the
7 enacted arrangement will jog my memory. Yeah, it's
8 been -- it's been a while since I -- this is not one
9 of the areas that I changed for the December 2022
10 plan, so it's far enough back that I don't have a
11 recollection.

12 Q Okay. And moving over, you also changed
13 House District 78 on the way to 116 and 117, right?

14 A Are you just saying on the way to 116
15 and 117 as a -- just sort of a geographic --

16 Q I'm sorry. I'm moving from west to
17 east. So the next district to the east is District
18 78, is that right?

19 A Yes, and 78 changed. I just wasn't sure
20 if you were saying that I changed it on the way, if
21 it -- if "on the way" was modifying my action of
22 changing it.

23 Okay. I'm -- yes, I'm pretty certain
24 that 78 was changed as well.

25 Q Okay. And do you have an opinion about

1 whether the part of 78 that's in Spalding County is
2 a rural of Georgia?

3 A I would have to look to say with any
4 kind of confidence. I -- and there's no one
5 definition of rural, but -- so I'm -- I don't have
6 an opinion.

7 Q And it appears from the boundaries here
8 that the city of Griffin is not in District 78. Do
9 you recall whether you included the city of Griffin
10 in that district or not?

11 A I don't recall.

12 Q And District 117 -- or actually, I'm
13 sorry. Let's do District 116, the next district to
14 the east. And it crosses over the interstate. Do
15 you recall the conversation we had at the PI hearing
16 about 116 crossing the interstate?

17 A I do, yes. Not super clearly, but I do
18 remember that was a topic of conversation.

19 Q And District 116 includes a small
20 portion of Clayton County in that district, right?

21 A Yes.

22 Q And then one more district to the west,
23 District 117, the new district and you've identified
24 as whole in Henry County, right?

25 A That's right.

1 Q And you don't know because you didn't
2 look at political data if Districts 117 and 74
3 currently have Republican incumbents?

4 A I did not.

5 Q Is there any community you can identify
6 in District 117 that is being kept whole in its
7 configuration on the illustrative plan?

8 A Not with the information I have in front
9 of me or based on memory, but there may be some. I
10 just -- I don't have -- as I said, not based on what
11 I have in my mind or in front of me.

12 Q Who would you need to have to determine
13 that?

14 A Maps of things like incorporated areas
15 or census-designated places, other campus-type
16 things, whether they are educational institutions
17 or military facilities, that sort of thing, other
18 parks, those -- those kinds of communities of
19 interest that have clearly defined boundaries as
20 opposed to the kind that --

21 Well, that would be a layer, if they
22 were also a layer of kind of community -- defined
23 communities, that would be another thing I could
24 look at and specify.

25 Perhaps minority groups, if -- sometimes

1 there might be a smaller pocket of one of the less
2 populous minority groups, for example, major
3 employers. There are a lot of things that people
4 consider communities of interest.

5 Q But you didn't list any communities that
6 you considered to keep whole in District 117 in your
7 report, right?

8 A That's correct.

9 Q Let move down to Macon and take a look
10 at this area.

11 A Okay.

12 Q So in Paragraph 51 you reference a
13 comment from Ms. Wright, the director of the General
14 Assembly's reapportionment office -- excuse me --
15 about this area being a community of interest. Do
16 you see that?

17 A Yes.

18 Q And specifically were you referring to
19 the connection between Macon-Bibb and counties
20 surrounding it or Macon-Bibb and Twiggs and
21 Wilkinson particularly?

22 A The -- Twiggs and Wilkinson Counties are
23 what she identified as a -- constituting a single
24 community of interest.

25 Q And that was in reference to the way

1 that Senate District 26 was configured on the
2 illustrative plan at the PI hearing, right?

3 A I don't remember the context. I just
4 made a note of -- it was in a written statement,
5 right?

6 Q Uh-hmm. Do you recall that -- I'm
7 sorry.

8 A Okay. I don't recall whether it was in
9 reference to a Senate plan or a House plan.

10 Q It's your recall that the illustrative
11 Senate plan takes Senate District 26 out of Twiggs
12 and Wilkinson County and puts it wholly within Macon
13 and then a piece of Houston County, right?

14 A That's right.

15 Q So in this configuration of a House,
16 though, instead of keeping Macon -- well, you've
17 have connected Macon with Twiggs and Wilkinson on
18 this configuration of the House plan unlike the
19 configuration of the Senate -- District Senate in
20 Macon on the illustrative Senate plan, right?

21 A That's correct.

22 Q You also reference comments at the
23 public hearing held about keeping Macon whole. Do
24 you see that in Footnote Number 13?

25 A Yes.

1 Q And was this also a public comment that
2 you located after you drawn Districts 145 and 149 in
3 at least the PI plan in 2021?

4 A Yes.

5 Q You say in the language --

6 A Again, I'm sorry -- yes, that particular
7 comment was identified after -- afterwards, yes.

8 Q In Paragraph 51 you also state the
9 orientation of Districts 142 and 143 ensures that
10 the northern portions of Macon-Bibb County stay in a
11 Macon-Bibb County district with portions of Macon
12 rather than being put in a district with a more
13 rural neighboring county like McGriff, right?

14 A Yes.

15 Q And District 149, as you've configured
16 it, puts portions of south Macon into a district
17 within more rural neighboring counties like Twiggs
18 and Wilkinson, right?

19 A Yes.

20 Q What was the basis for choosing to push
21 south Macon districts into more rural neighboring
22 counties while -- and not placing northern Macon
23 districts into more rural neighboring counties?

24 A Can you say the final part of your
25 question again? What was the decision? What was

1 the --

2 Q What was the reason for why you followed
3 this public comment that you've cited for Districts
4 142 and 143 but not for District 149?

5 A So the public, as I recall, was
6 specifically about northern Macon-Bibb County and
7 specifically mentioned, I believe, Monroe County.
8 So that -- in that sense, this person was
9 specifically talking about that portion of
10 Macon-Bibb County.

11 And then -- so you could say that it
12 didn't really apply to south Macon-Bibb County.
13 That's -- that's not what the commenter was talking
14 about.

15 And then as far as the reason, I think I
16 gave a similar answer before and it's -- I don't
17 feel comfortable specifying a reason for any
18 decision. There are a multitude of reasons, and
19 it's a part of this multi-layered puzzle with lots
20 of considerations and so on.

21 Q And just so I understand, I mean,
22 these -- you'd agree all these districts centered on
23 Macon are all very close to 50 percent majority
24 black, right?

25 A They're all close to 50 percent, yes.

1 types of industries that would benefit from
2 hydropower -- old fashioned hydropower to power
3 those various kinds of -- whether it was
4 manufacturing or processing, that kind of thing.

5 Q Did you read about the fall line before
6 or after you drew the connection between Macon and
7 Milledgeville in your PI plan in 2021?

8 A I think I was familiar with it in a
9 general sense. I've looked a lot at North Carolina
10 geography, and that fall line is not unique to
11 Georgia. In North Carolina -- I think my daughter
12 learned in kindergarten or something about the major
13 regions of the state being the mountains and the
14 Piedmont and the Coastal Plain.

15 So that -- that general kind of
16 distinction or that characterization of cites that
17 are along these -- these boundary areas, these edges
18 is something I was generally familiar with.

19 And also the idea that the Black Belt,
20 while often talked about that in terms of its
21 demography as what defines it also has been defined
22 in terms of its -- essentially it's geology. It's
23 the soil types that are in that area.

24 So the actual article, I did not read
25 until later, but I was generally aware of that

1 division, that -- those relationships, if you will.

2 Q Looking at District 145, did you make
3 any changes aside from the change to -- between 145
4 and 147 between the PI plan and the December 5th
5 report?

6 A I did not.

7 Q So let's move to the comparative
8 characteristics of the House plan. And you'd agree
9 that the total deviation of the illustrative House
10 plan is higher than the total deviation on the
11 enacted House plan, is that right?

12 A So the total deviation I would need to
13 look at the -- I'm pretty sure it's the case, but I
14 don't want to reply with certainty.

15 Q Attachment L?

16 A Okay. Thank you.

17 Q I think it's Page 134.

18 A Yes. Okay. Total deviation, yes.

19 Q So you'd agree the illustrative plan
20 total deviation is higher than the enacted plan?

21 A Yes.

22 Q And it's more than a point higher from
23 2.74 to 3.85, right?

24 A That's right.

25 Q And you didn't include that total

1 deviation number in your written report, just in the
2 exhibits, right?

3 A That's right.

4 Q Is the way that you determined that the
5 illustrative plan complied with the traditional
6 principle of population equality for the House the
7 same as the methods you used for making that
8 determination for the Senate illustrative plan?

9 A I think generally, yes.

10 Q In paragraph 57 you talk about
11 compactness. And we, again, have the average scores
12 for four of the five metrics and then a cut edge
13 score. Would you expect average compaction scores
14 to be the same if 155 of the 180 districts on a plan
15 are the same?

16 A No. I mean, it could be. But --

17 Q Okay.

18 A -- that's saying that --

19 Q Okay. So you didn't break out the
20 compactness scores for the 25 districts that you
21 changed. You only reported here in Table 6 the
22 average for all 180 districts for four of those five
23 measures, and then over on Table 7 the scores for
24 just the new majority black districts, right?

25 A That's right. In the text of the

1 report. But the -- the attachments include
2 compactness scores for all the districts in both
3 enacted and illustrative as well as other summary
4 and metrics.

5 Q And was your method of determining that
6 the plan complied with the traditional principle of
7 compactness generally the same process for the House
8 illustrative plan as for the Senate Illustrative
9 plan?

10 A Yes.

11 Q And for Figure 17, like the Senate,
12 these charts -- the only districts on these four
13 charts that are from the illustrative plan are the
14 colored lines. And the gray lines are districts on
15 the enacted plan, right?

16 A That's right.

17 I'm sorry. If you -- if you wouldn't
18 mind repeating that question again. I just tuned
19 out for a moment.

20 Q Sure. In Figure 17, the --

21 A Yes.

22 Q -- in all four charts the only districts
23 from the illustrative plan on those charts are the
24 colored lines. The gray lines refer or are
25 districts on the enacted plan, right?

1 A That's right.

2 Q And in Table 7 when you reported the
3 various compactness scores for the new majority
4 black districts, you didn't show the compactness
5 scores for the enacted plan districts that
6 correspond to those districts, right?

7 A That's right.

8 Q And in Paragraph 59, Table 8, you'd
9 agree that the illustrative plan -- I'm sorry.

10 A Just a second. When you say the
11 districts that correspond, meaning the districts
12 that have the same number?

13 Q Either the districts that have the same
14 number or that are in the same general geographic
15 area. You didn't report either of those compactness
16 scores, right?

17 A Yes. Right.

18 Q In Paragraph 59, Table 8, you'd agree
19 that the illustrative plan splits one more county
20 and one more VTD in the enacted plan, right?

21 A Yes.

22 Q Then in Paragraph 60 we get to
23 communities of interest, and I see again a reference
24 to the two campuses of Georgia College and the
25 central community of Milledgeville. Are there are

EXHIBIT E

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1 UNITED STATES DISTRICT COURT
2 FOR THE NORTHERN DISTRICT OF GEORGIA
3 ATLANTA DIVISION

4 ANNIE LOIS GRANT, et al.,

5 Plaintiffs,

6 v.

CIVIL ACTION FILE
NO. 1:22-CV-00122-SCJ

7 BRAD RAFFENSPERGER, in his
8 official capacity as the
9 Georgia Secretary of
10 State, et al.,

11 Defendants.

12 COAKLEY PENDERGRASS, et al.,

13 Plaintiffs,

14 v.

CIVIL ACTION FILE
NO. 1:21-CV-05339-SCJ

15 BRAD RAFFENSPERGER, et al.,
16 Defendants.

17 VIDEOTAPED ZOOM DEPOSITION OF
18 MAXWELL PALMER, Ph.D.

19 February 22, 2023

20 9:28 A.M.

21 Lee Ann Barnes, CCR-1852B, RPR, CRR, CRC
22
23
24
25

1 question, for the record.

2 BY MR. JACOUTOT:

3 Q. So let me ask you this: What is your
4 standard for determining racial polarization?

5 A. So determining racial polarization, to me,
6 comes in three parts.

7 First, I have to see if -- and just to
8 simplify, just for black and white voters as I'm
9 looking for here. If black voters vote
10 cohesively -- that is, do they -- do the large
11 majority of the black voters support the same
12 candidate -- then do white voters vote cohesively,
13 do a large majority of white voters support the same
14 candidate, and then are they different candidates or
15 not. So you first have to have a candidate of
16 choice for each group and then those have to be
17 different candidates.

18 Q. Okay. And how do you -- how do you define
19 cohesively as used in that standard?

20 A. I don't have a bright-line test. Here the
21 results are unambiguous regardless of any cutoff you
22 might want to use.

23 Q. And you didn't examine any primary data in
24 your analysis; right? It was strictly limited to
25 general elections and runoffs, I believe.

1 A. That's correct.

2 Q. Okay. Do you know if there's a -- and
3 this is just for how you operate personally in this
4 area.

5 But do you know if there is a cutoff, like
6 or a threshold level of support that you need to
7 achieve in order to find -- in order for you to find
8 that a -- a group voted cohesively in a given
9 election?

10 A. I don't have a bright-line cutoff.

11 Q. If a group voted 55 percent for the same
12 candidate, would you -- would you find that to be
13 cohesive voting of that group?

14 A. Generally weakly cohesive or not cohesive.

15 Q. Okay. And if there's weak cohesion --

16 A. Sorry. I -- I would say that's not
17 cohesive.

18 Q. Okay. What about 60 percent?

19 Have you ever seen a -- examined an
20 election contest where an indiv- -- a group that you
21 were analyzing voted 60 percent for a candidate -- a
22 given candidate, would you -- have you ever said
23 that that was sufficiently cohesive, in your
24 opinion, for your -- for purposes of your racial
25 polarization analysis?

EXHIBIT F

2/23/2023

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Dr. John Alford

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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

COAKLEY PENDERGRASS, et al.,

Plaintiffs,

vs.

BRAD RAFFENSPERGER, in his
official capacity as the
Georgia Secretary of State,
et al.,

Defendants.

Civil Action No.

2:21-CV-05449-SCJ

ANNIE LOIS GRANT, et al.,

Plaintiffs,

vs.

BRAD RAFFENSPERGER, in his
official capacity as the
Georgia Secretary of State,
et al.,

Defendants.

Civil Action No.

1:22-CV-00122-SCJ

Videotaped deposition of DR. JOHN ALFORD, taken
remotely in the above-captioned cause, before
Rachel F. Gard, CSR, RPR, CRR, commencing at
the hour of 11:00 a.m. Eastern on Thursday,
February 23, 2023.

DIGITAL EVIDENCE GROUP
1730 M Street, NW, Suite 812
Washington, D.C. 20036
(202) 232-0646

2/23/2023

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1 Dr. Palmer's expert report?

2 A It certainly -- I think it certainly goes
3 to some part of my discussion of Dr. Palmer's
4 report, but I would say it is primarily as a sort
5 of adjunct to the discussion of primaries in
6 Dr. Handley's report.

7 Q Okay. So in terms of your analysis of
8 Dr. Palmer's findings and conclusions, you
9 primarily relied on the analysis and data that he
10 himself provided in his report; Is that fair?

11 A So that's correct. But I'm also making
12 the point that because he has no primary analysis,
13 we really don't have anything other than the
14 general election setting to look at. And so I
15 think that's important to understand what we know
16 in that setting, although it's not in his report,
17 we can get that from, you know, sort of
18 comparable -- for time frame that's comparable
19 from Dr. Handley's report and my analysis of the
20 Republican primary, but it's not analysis that's
21 in my report as sort of checking his analysis,
22 something like that, because it's not analysis

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1 I think one of the ways that you can recognize the
2 limited nature of the general election fact
3 pattern from what we care about in this case is to
4 look at some elections where that party signal is
5 not going to be such as a strong driver, and
6 Dr. Handley does that looking at primaries. She
7 looks only at Democratic primaries and, as she
8 points out, I think correctly, that can tell you
9 maybe quite a bit about black voting behavior but
10 maybe not so much generally about white voting
11 behavior since most black voters in Georgia are in
12 the -- if they vote in the primary, vote in the
13 Democratic primary.

14 When you expand that out and say what does
15 that Democratic primary tell us about black voter
16 behavior in Georgia, it tells you quite a bit. On
17 the other hand, most whites in Georgia, if they
18 voted in a primary, vote in the Republican
19 primary. So the behavior of white voters in the
20 Democratic primary doesn't necessarily translate
21 out more broadly.

22 Absent any evidence from a Republican

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1 primary, you might conclude that the white voters
2 in the Democratic primary are sort of unusual and
3 that the white voters in the Republican primary
4 would not support a black candidate.

5 And the evidence here suggests that white
6 voters in the Republican primary did support black
7 candidates. Herschel Walker, I'm not even sure
8 you need an EI analysis to tell you this since
9 Herschel Walker essentially carried every county
10 in Georgia, hard to see how he could have done
11 that without having the majority of the white or
12 at least a plurality of the white vote. I think
13 he had only two counties where he didn't have an
14 outright majority. He had a plurality in every
15 county.

16 I think clearly that's not the result of a
17 large turnout of black voters in that Republican
18 primary. So again, if Republicans are voting in
19 the general election for Republicans and are
20 voting that way because someone is a Republican
21 versus because someone is white, this provides
22 some -- another piece of evidence, right. You

EXHIBIT G

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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

ANNIE LOIS GRANT, et al.,

Plaintiffs,

vs.

CIVIL ACTION FILE

BRAD RAFFENSPERGER, in
his official capacity as
the Georgia Secretary of
State, et al.,

NO. 1:22-CV-00122-SCJ

Defendants.

COAKLEY PENDERGRASS, et
al.,

Plaintiffs,

CIVIL ACTION FILE

vs.

NO. 1:21-CV-05339-SCJ

BRAD RAFFENSPERGER, et
al.,

Defendants.

REMOTE VIDEO DEPOSITION OF
ORVILLE VERNON BURTON, PH.D.

February 17, 2023

1:24 p.m.

Suite 200

1600 Parkwood Circle

Atlanta, Georgia

Tracy A. Williams, B-2168, RPR

Jesse Wiggins, Videographer

1 other people, and it might lead me to it.

2 Q. Okay. And then you read everything you
3 could and that -- and then summarized that
4 information. Would that be fair to say?

5 A. Yes, and analyzed it and put it together
6 so that it's not just one source, but all evidence
7 that sort of points in a direction.

8 Q. Okay. I'm going to refer back to your
9 report. I may need to just leave it up for a while,
10 but -- sorry about that.

11 We are going to go to Page 3, and the
12 second paragraph there on Page 3 of your report
13 indicating that "For the next 40 years, Georgia
14 failed to go to a redistricting cycle without
15 objection from the Department of Justice."

16 Do you see that statement there?

17 A. Yes.

18 Q. Okay. And you would agree that the
19 redistricting plans drawn in 1971, 1981, '91, and
20 2001 were drawn by Democratic legislatures, correct?

21 A. Yes.

22 Q. And you would agree that the
23 Republican-drawn maps in 2011 were precleared by the
24 Department of Justice on the first attempt, correct?

25 A. Yes.

1 the 2010 census."

2 A. Yes.

3 Q. Okay. And were the maps that you refer to
4 that packed black voters, were they challenged by
5 anyone?

6 A. I know that in 2010, they were being
7 challenged. I cannot remember if that went to court
8 or if they were approved by the Justice Department
9 before they got the court case together. But I know
10 that Stacey Abrams and Jason Carter, Jimmy Carter's
11 grandson, were working to challenge it. But I don't
12 remember what -- I think the Justice Department
13 approved the plan is my memory. But it may be wrong.

14 Q. Okay. So were the maps ever found to be
15 illegal, to your knowledge? Again, I know you're
16 not --

17 A. No, no. I don't think they were, not to my
18 knowledge.

19 Q. Okay. And then you reference in the next
20 paragraph and talk about 2015 mid-decade
21 redistricting in 2015. And you would agree that that
22 case was dismissed after the Democrats won their
23 seats, correct?

24 A. Yes. I thought I said that in the report.

25 Q. Okay. And you'd agree that the 2015 maps

1 were never found to be illegal by any court, correct?

2 A. That's right. Correct. Yes.

3 Q. Okay. And then regarding redistricting,
4 again in 2010, the Georgia legislature created a
5 record number of majority districts. Does that sound
6 correct to you?

7 A. Yes. Well, excuse me. Would you state the
8 question again?

9 Q. Sure. In -- regarding redistricting in
10 2010, the Georgia legislature created a record number
11 of majority districts. I believe you say that in
12 your report.

13 A. You mean majority black districts? I think
14 you said "majority districts," and I think I said
15 "majority black districts."

16 Q. You did. I apologize. I misspoke.

17 A. But you meant majority black districts?

18 Q. Yes, sir.

19 A. Yes.

20 Q. Okay. Thank you. And that was the plan
21 drawn by the Republican legislature that was
22 precleared by the Department of Justice, correct?

23 A. Yes.

24 Q. And then let's look at Page 47. Actually,
25 what I would like to do is, we'll look at Page 47.

1 robocall?

2 A. I did not. But as I noted here, someone
3 said that racist appeals didn't hurt the candidates
4 making them in Georgia. Throughout the South, it
5 actually helped them.

6 Q. Are any of the racial appeals that you
7 discuss in your report, Dr. Burton, in Georgia from a
8 State House race in recent elections?

9 A. I don't remember without going back, you
10 know, into the report and see. I think I was just
11 looking at the level, explaining how these work in
12 Georgia. I'm not sure I paid attention to whether
13 they were in the State House or just in the general
14 elections where we had someone like a black candidate
15 like Warnock.

16 Q. Okay. Did your research show any racial
17 appeals in any state legislative races in the state
18 of Georgia in the last ten years?

19 A. I don't remember if I did or not. I
20 discussed different candidates or different people
21 using these appeals, but I don't know if it was in
22 the legislature or just at the state level.

23 Q. Okay. Do you recall specifically looking
24 at examples of racial appeals in a State Senate race
25 here in Georgia?

1 A. The same answer, I do not.

2 Q. Okay. On Page 70, you refer to when
3 Governor Kemp faced a primary challenge from former
4 Senator David Perdue. You would agree that Perdue
5 lost the primary overwhelmingly, correct?

6 A. I don't remember overwhelmingly, but he
7 lost.

8 Q. Okay. And on page --

9 A. Yes, against Kemp, yes.

10 Q. Okay. And on Page 73, you talk about
11 Donald Trump. But you would agree that Donald Trump
12 lost the election in Georgia in 2020, correct?

13 A. Yes. By how many votes, did he remind us?

14 Q. On Page 74, the first full paragraph, you
15 refer to Jody Hice. Do you see that?

16 A. Yes.

17 Q. And Jody Hice lost the primary, correct?

18 A. Yes.

19 Q. Also, you refer to Butch Miller --

20 A. Yes.

21 Q. -- and Butch Miller also lost the primary
22 election, correct?

23 A. Yes.

24 Q. On Page 76 --

25 A. Okay.

EXHIBIT H

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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

ANNIE LOIS GRANT, et al.,)
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Plaintiffs,)
) CIVIL ACTION
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) 1:22-CV-00122-SCJ
BRAD RAFFENSPERGER, in his)
)
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Georgia Secretary of State,)
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Defendants.)

COAKLEY PENDERGRASS, et al.)
)
Plaintiffs,)
) CIVIL ACTION
vs.) FILE NO.
) 1:21-CV-05339-SCJ
BRAD RAFFENSPERGER, et al.,)
)
Defendants.)

THE VIDEOTAPED DEPOSITION OF:

Loren Collingwood, Ph.D.

Tuesday, February 28th, 2023

10 a.m.

via Zoom videoconference

Amanda A. Bilbrey, CCR

1 of way that's typically done in court cases. I mean,
2 I know people look at certain things, but it's
3 pretty -- it's pretty tough to do in the context of,
4 say, NVRA cases, I would say.

5 Q So if you see a pattern of racially
6 polarized voting, based on your analysis of the data,
7 you don't believe there's a way to determine if that's
8 caused just by partisan political preference rather
9 than by race?

10 A Well, typically when I look at polarized
11 voting, specifically look to ask -- to look at the
12 bivariate relationship between racial identification
13 in a group and vote preference. And so party is not
14 usually considered as a matter.

15 Q Okay. And you weren't asked to look in
16 these two cases at the role of partisanship in voting
17 patterns, were you?

18 A No, I was not.

19 Q This webpage, Exhibit 9, also talks about
20 Collingwood Research's work with redistricting. It
21 says: We develop electoral districts designed to
22 ensure fair elections, equitable representation, and
23 electoral outcomes that comply with the standards
24 outlined by federal and state voting rights laws.

25 Is that an accurate description of what

1 tell the story. So I didn't really feel the need to
2 keep going.

3 Q Would you agree there are places in Georgia
4 where the black median household income is higher than
5 the white median household income?

6 A I'm trying to think on my analysis, looking
7 at some of the areas, I did see there's a few spots
8 where, say, quarter turnout was higher. There's
9 certainly going to be some -- probably some areas in
10 Georgia, in and around Atlanta, that probably has a
11 higher -- black folks there are doing better than,
12 say, white folks in other parts of the state. But I
13 was looking mainly at, you know, kind of overall
14 averages and things.

15 Q But do you know of any -- do you know of any
16 locality, you know, whether it's a county or a city or
17 a neighborhood where the measured black median income
18 is higher than the measured white median income in the
19 same locality?

20 A Yeah. I'm -- I would have to go and look at
21 the data more closely on that. It's probably the case
22 somewhere, but I just can't think off the top of my
23 head, you know, exactly where that would be.

24 Q Going to part C, page 7, effect on political
25 participation. You say in the first sentence of that

1 section: Socioeconomic disparities like these
2 unquestionably affect political participation.

3 Do you agree with that sentence?

4 A Yes.

5 Q And is that true -- is that sentence true
6 for voters regardless of their race?

7 A It is.

8 Q Tell me -- at the end of that paragraph, you
9 have a reference to a hookworm eradication program.
10 Why is that relevant?

11 A Well, No. 1, I don't get a lot of chances to
12 write about hookworms. No. 2, it's a very interesting
13 study, because it -- it uses this program from, like,
14 the '30s that applied a randomization process to the
15 counties that got an eradication program. And then
16 the idea is those counties then -- the health of the
17 people there were better, and that later on they had
18 people, like, many decades later had higher levels of
19 education and also higher levels of political
20 participation in voter turnout. And so it's a unique
21 way to get at something that just is done in a kind of
22 unique fashion that we don't normally see.

23 Q How did you come across this, if you came
24 across this Henderson paper or book where Henderson
25 talks about it?

1 Q And you've got Sub-A statewide analysis, and
2 you found that generally in the years that you've
3 looked at white turnout was higher than black turnout,
4 with the exception for the 2012 being the narrowest
5 gap of the years you've looked at there, right, in
6 Table 3?

7 A Yeah. That's correct.

8 Q And 2012 was the year President Obama ran
9 for reelection; correct?

10 A Correct.

11 Q Is it your opinion that higher motivation of
12 black voters in that particular election may have
13 affected the turnout gap?

14 A That is a pretty plausible hypothesis.

15 Q So motivation -- voter motivation is a
16 factor that goes into turnout of voters for both black
17 and white voters; correct?

18 A Certainly individual level or group-based
19 motivation, you know, can, you know, effect turnout.
20 Yeah.

21 Q So based on 2012, would you agree that black
22 voters are able to turn out in nearly the same
23 percentages as white voters if they choose to do so in
24 Georgia?

25 A There is certainly that possibility, yes.

1 me what you were doing there. You talk about 2014 to
2 2018 elections.

3 A So this is effectively the same thing that
4 we did above. It just then walks through each -- the
5 same set of results, but for each election.

6 Q Right. Okay. So 5, 6, and 7, you're
7 saying --

8 A So I guess the same general -- yeah.

9 Q Right. So 5 is 2018 --

10 A Yeah.

11 Q I apologize. I'm talking over you.

12 A No worries.

13 Q And Figure 6 is 2016 and Figure 7 is 2014;
14 correct?

15 A Correct.

16 Q Let's go back to Figure 5. Are you aware in
17 2018 Stacey Abrams, who is African-American, was
18 running for governor as a Democrat?

19 A Yes.

20 Q Okay. Did you consider whether that may
21 have affected black voter motivation and therefore
22 black voter turnout in 2018?

23 A I mean, I, you know, as a -- I didn't
24 particularly write about specific types of candidates
25 in different elections. But, you know, I'm very --

1 I'm pretty familiar with that. You know, as someone
2 who doesn't live in Georgia and read the news in
3 Georgia, I'm pretty familiar with -- that election got
4 a lot of attention, like, through the New York Times,
5 Washington Post, kind of nationally. So I'm familiar
6 with that -- that election. So it makes sense that
7 that's why you see that. Yeah.

8 Q Because if you -- I mean, if you look in
9 Figure 5 and you see -- I'm counting at least five
10 counties above the blue line. It looks like maybe six
11 or seven are right on the blue line in Figure 5.

12 Would you agree with that?

13 A Yeah. It's -- that -- it's hard to say
14 exactly. But it's definitely, you know, a little
15 different than the -- than the other ones.

16 Q Yeah.

17 A Yeah.

18 Q But then if we go back up to Figures 1 and
19 2, the white/black differential based on registrants,
20 there aren't as many dots above the blue line in
21 Figures 1 and 2 for the 2022 and 2020 elections as in
22 2018; right?

23 A Yeah. I mean, without doing a, you know,
24 detailed kind of -- you know, had to spreadsheet them
25 all out and count them all up, but that certainly

1 high school education or college education; correct?

2 A Yeah. Yeah.

3 Q And by showing that for black voters, for
4 example, on Figure 22, as the higher percentage -- as
5 the percentage of black voters with less than a high
6 school education goes up, turnout goes down, you don't
7 know whether that's also true for white voters?

8 A I don't.

9 Q On a footnote on 24, on Footnote 7, you said
10 you excluded counties with a thousand registered black
11 voters or fewer.

12 Why did you use that cutoff?

13 A It's -- it's just kind of an even thousand.
14 There's not very many counties that fit that bill,
15 and, you know, it's just -- that's not a lot of people
16 for a county to have that few of registered black
17 voters. So, you know, in social science we have to
18 kind of set cutoffs. I try to set those cutoffs not
19 at all based on correlations with how the results
20 might change as an a priori design. I tend to try to
21 choose sensible numbers based on experiences with
22 these types of data. Sometimes I used 10, 25, 50,
23 100. In this case, 1,000 made sense.

24 Q What is the -- the gray shading on Figure 22
25 around the blue line? What's that showing?

1 race in Georgia is a barrier to voting?

2 A Well, yeah. I would say that just based on
3 the data that I look at, all else equal, if you're
4 black versus white -- this is a very important, all
5 else equal -- your probability of turning out to vote
6 is going to be lower.

7 Q But as far as external factors preventing a
8 black voter from exercising the right to vote, you're
9 not commenting on any such external factors, are you?
10 Preventing somebody from voting in a particular cycle?

11 A I guess could you give me an example of an
12 external factor?

13 Q Well, I mean, like, you know, there used to
14 be a law that -- there used to be a white primary, and
15 if you weren't white you couldn't vote in it. I mean,
16 you know, do you know of anything like that preventing
17 a black voter today from voting?

18 A I don't know of any specific race-specific
19 laws like what Georgia and many other southern states
20 had previously, if that's what you mean. Yeah. I'm
21 not commenting on that.

22 Q Are you -- have you concluded that racism in
23 Georgia causes the lower levels of voting
24 participation by black voters in Georgia compared to
25 white voters in Georgia?

1 A I don't have a specific measure of racism
2 that's associated with voter turnout here. A social
3 scientist would likely look at all of this and
4 potentially say the reasons we're seeing this is -- is
5 because of that. But those variables don't measure
6 that specifically. So it would have to be taken under
7 a more holistic analysis, which some people would make
8 that case. I'm a little bit -- in this case, I just
9 want to focus on the actual variables that I'm looking
10 at.

11 Q You're really -- you're just -- you're just
12 analyzing the data?

13 A That's right.

14 Q You've used -- you've used the term "social
15 scientist" a couple times in the last few minutes.
16 Are you a social scientist?

17 A Yeah.

18 Q Do you have a degree in social science?

19 A Well, political science is a social science
20 field, so, yes.

21 Q Do you have an opinion that Georgia's recent
22 redistricting maps or prior redistricting maps, say
23 since 2010, have caused the lower levels of black
24 participation that you've found in your data analysis?

25 A I can't speak to those directly. I haven't

1 looked at them directly for this report.

2 Q Turning to page 44 you have a Section 3,
3 other forms of voter participation. And as you say
4 there at the first sentence: The next section
5 examines disparities between blacks and whites among
6 other modes of voter participation.

7 And it says you used the 2020 Cooperative
8 Election Study. Explain what that is in detail.

9 A So the data set that I briefly discussed
10 earlier, it's a survey of voters or eligible voters, I
11 believe, usually around four -- 30- to 60,000
12 respondents across the United States at least 18-plus
13 age. And it asks a bunch of questions. It's
14 conducted by a couple of folks, I think, out of
15 Harvard and a couple other places. A lot of political
16 scientists contribute modules and questions to it.

17 So it's one of the top two or three data
18 sources for people who do political behavior research
19 and political science in American politics, and it's
20 widely used, widely published off of. And so I was
21 able to download that. That's what's known as a
22 common content form, which is free. So you can
23 download that and then subset just to the state here
24 of Georgia. It still yields a pretty sizable sample
25 size.

1 Q On Table 10, campaign contacts, you'd agree
2 the responses there for whites and blacks are pretty
3 similar, aren't they?

4 A They're statistically indistinguishable.

5 Q Table 11 is also pretty close, isn't it?

6 A Also statistically indistinguishable.

7 Q And it's your opinion that the differences
8 that you see in these Tables 4 to 11 are due to
9 socioeconomic differences between black and white
10 voters?

11 A Well, this analysis, that's certainly one of
12 the -- one of the differences, but it could also be
13 long-running discrimination in Georgia. I -- this
14 analysis doesn't allow me to say specifically why
15 these differences are. I can just see that there are
16 differences.

17 Q You then come to a conclusion on page 38 of
18 your report. You say: These findings provide strong
19 evidence for presence of Senate Factor 5 in the state
20 of Georgia.

21 Could you elaborate on that at all?

22 A Well, just, I mean, across pretty much every
23 seen analysis there's a difference between white and
24 black political participation, which is related to
25 socioeconomic barriers, which reduces black voter