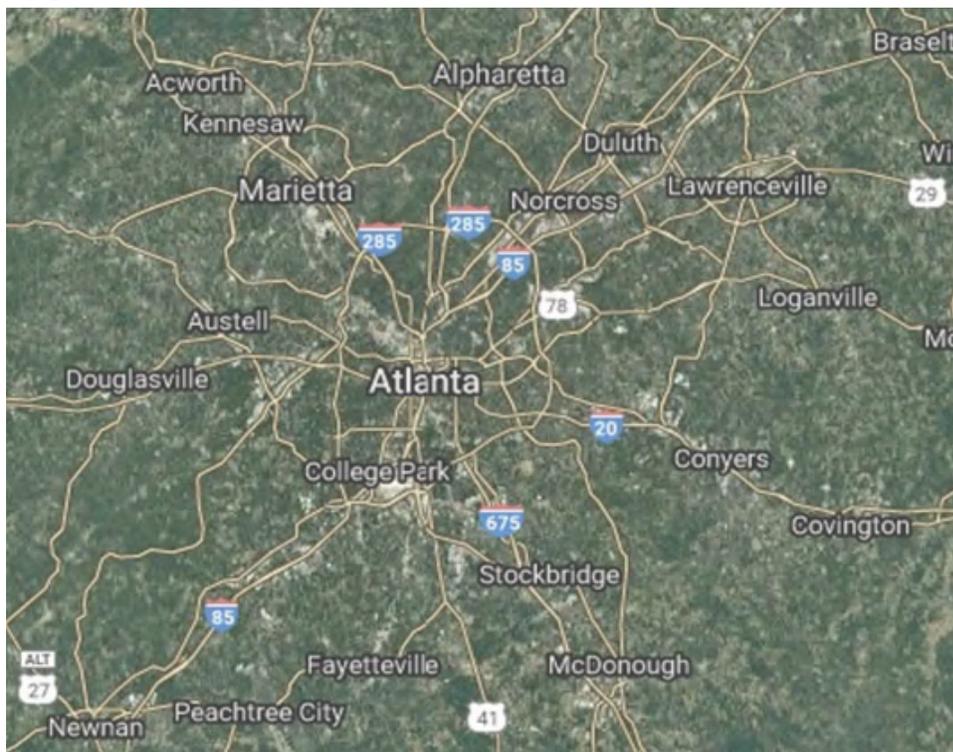


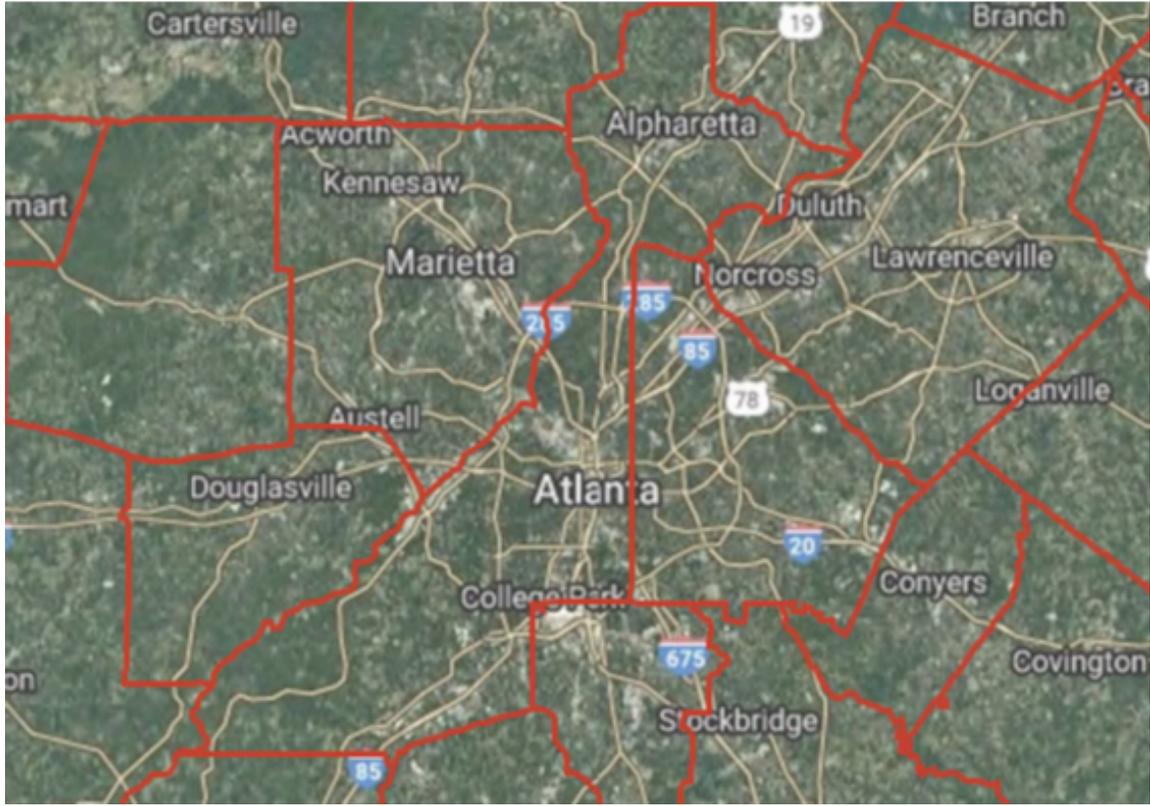
I. State Overview

There are four primary geographic areas of Georgia discussed in this paper. They are: (1) the Atlanta Metro Area (MRA), the largest metro area in the state; (2) the southwest portion of the state that comprises District 2, the only minority opportunity district in a rural area in the state; (3) Savannah metro area in the southeast; and (4) the Augusta metro area in the eastern edge of the state, crossing into South Carolina.

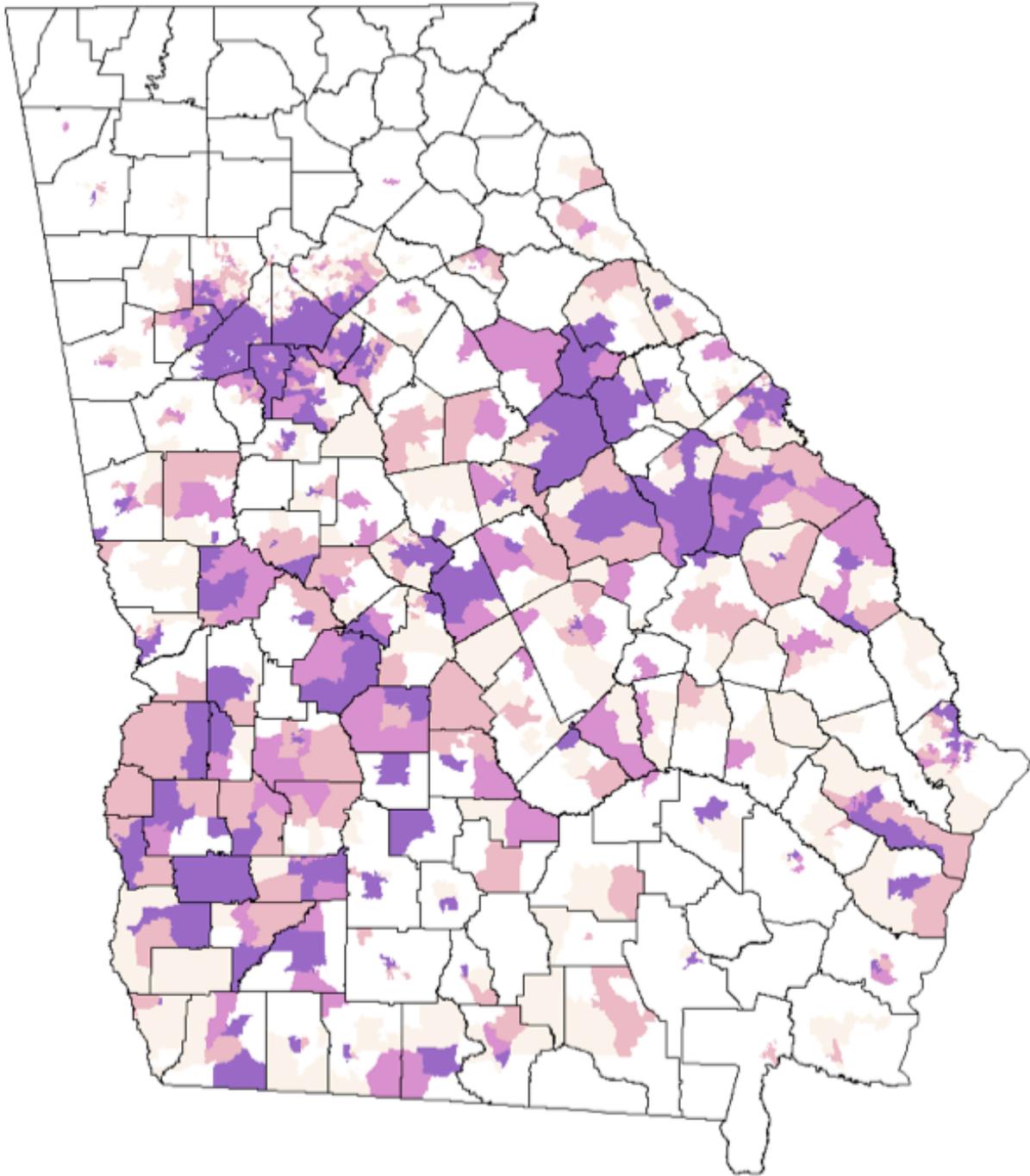
The MRA is called the “Atlanta-Sandy Springs-Alpharetta GA Metro Statistical Area” and is the largest metro area in the state and the ninth largest in the country. It includes over 6 million of the 10 million people in the state and spans across 39 of Georgia’s 159 counties. The MRA contains most of the Black population in the state, highly concentrated in a half-moon shape in the urban and suburban areas to the south-southwest of Atlanta.



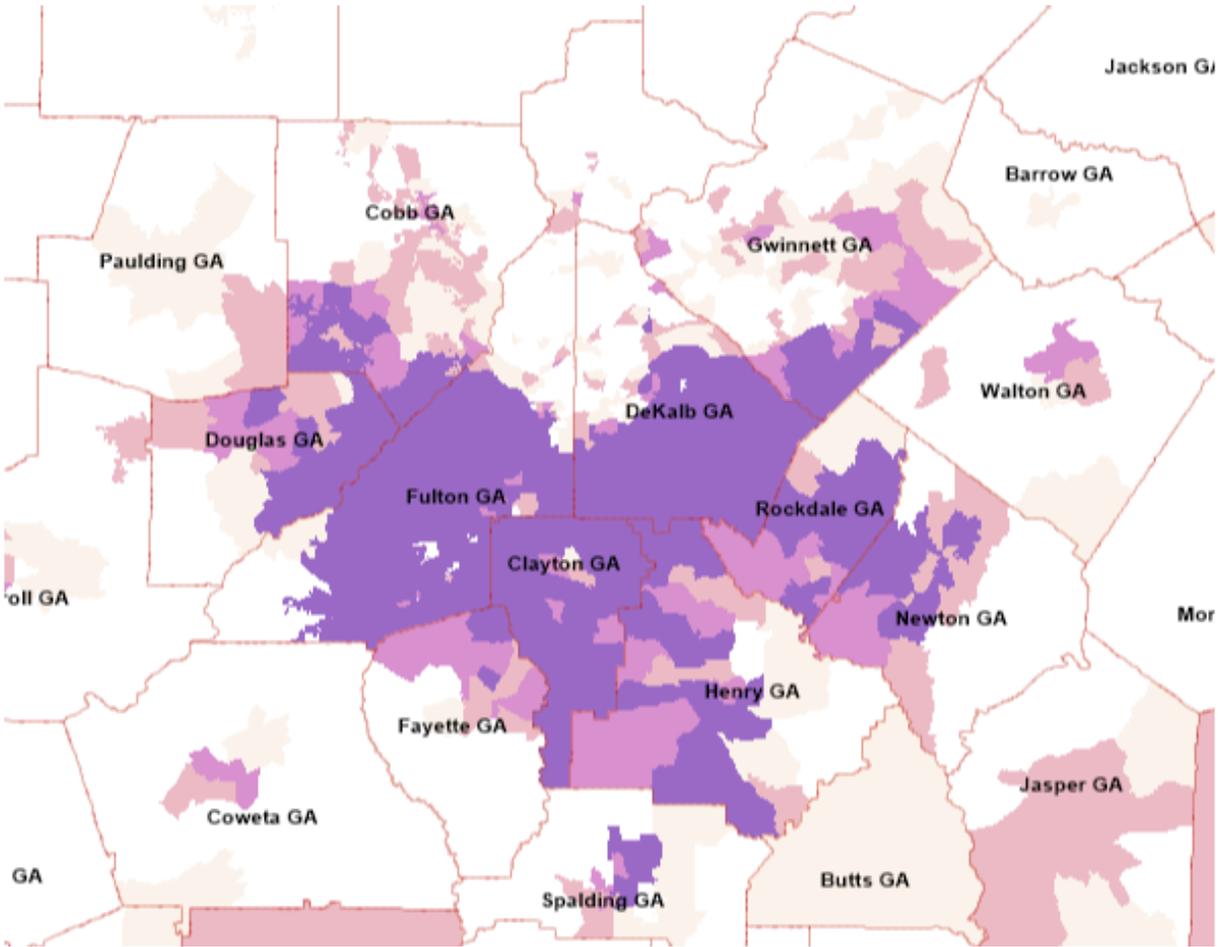
GA-01: Atlanta Metro Area Map – Google Hybrid



GA-02: Atlanta Metro Area Map with County Lines in Red

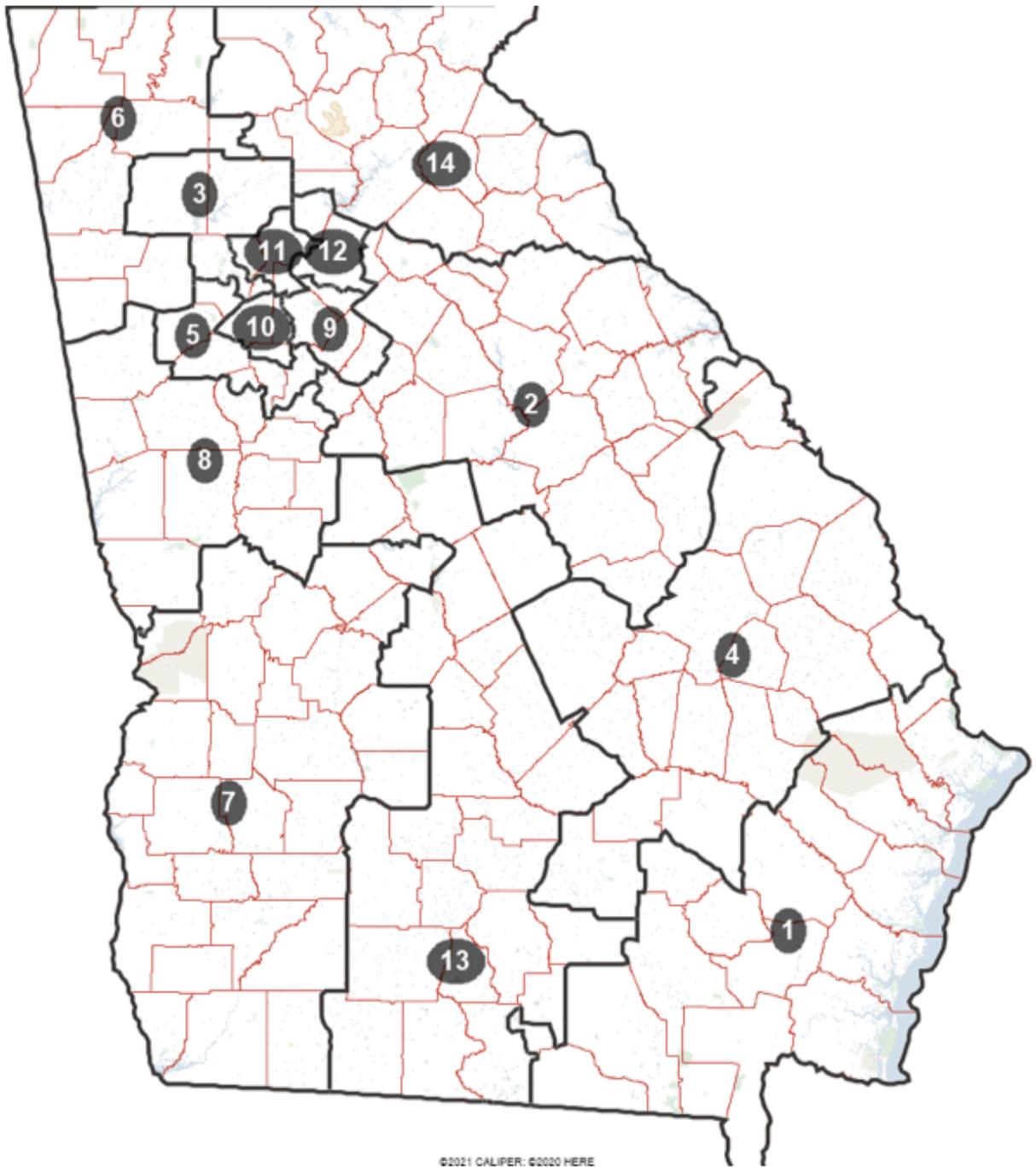


GA-03: *Statewide Black Population Distribution*

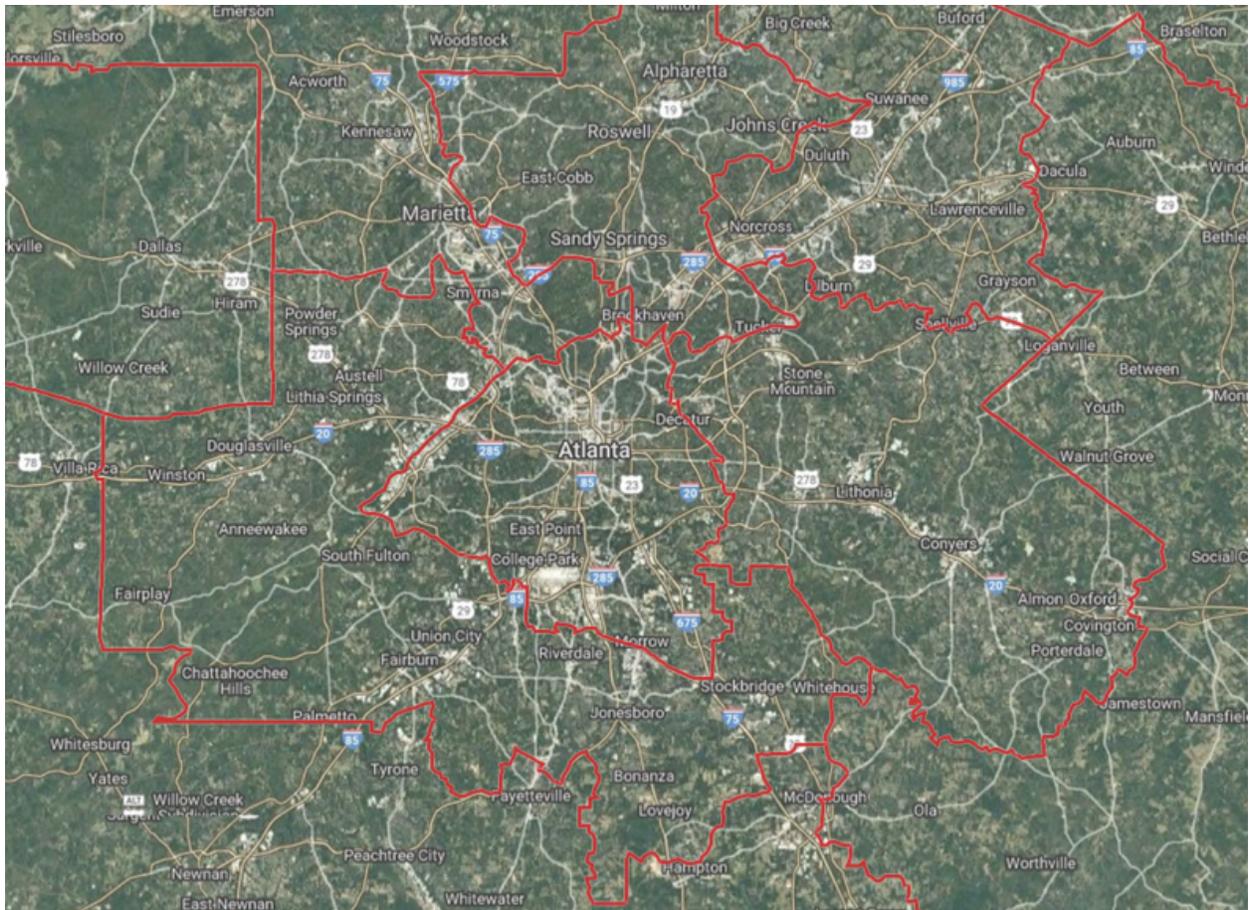


GA-04: Black population distribution zoom of MRA

The concentration of Black voters into this region of the MRA presents map-drawing challenges for VRA compliance. There are five minority opportunity districts in the state, four of which are drawn in the MRA. However, because of the concentration of Black voters, the districts around the MRA are drawn in in a star-like formulation emanating from Atlanta at the center and expanding outward.



GA-05: 2010 Congressional District Map



GA-06: 2010 Congressional District Map, MRA Zoom

There are two highly populous counties in the MRA: Fulton and DeKalb. Fulton County is the state's most populous and the only one with over 1 million residents. Fulton County grew by over 15 percent since 2010 and accounts for 10 percent of the state's population. Fulton is 45.5 percent white and 44.5 percent Black. The shape of the county is not compact and is described illustratively in Wikipedia as resembling "a sword with its handle at the northeastern part, and the tip is the southwestern portion."

The population of Georgia in the 2020 census is 10,711,904. Divided by 14 Congressional districts, each district must have 765,136 people. Therefore, with a population of over 1 million, Fulton County must be split up into at least 2 districts. In the 2010 map, the 5th, 6th, 11th, and 13th Districts all contained some part of Fulton County.

The second-largest county by population in the MRA is DeKalb. It contains much of the suburban MRA including 10 percent of the City of Atlanta. The demographics are 54.3 percent Black, 33.36 percent white and 9.8 percent Hispanic.

Outside the MRA's four minority opportunity districts, there is a fifth in rural southwestern Georgia, District 2. While this district has changed shape and size with each redistricting cycle, Democrats have held this district since 1875 and, with the exception of the 2004 presidential election, has voted for the Democratic nominee for president and governor each election in this century. Currently, Representative Sanford Bishop holds this seat and he has since 1993. Since 2002, he has won by a margin of 17 to 35 points with the exception of the 2010 election where he won by only a margin of 3 points. In 2020, Bishop won by 19 points over his Republican challenger.

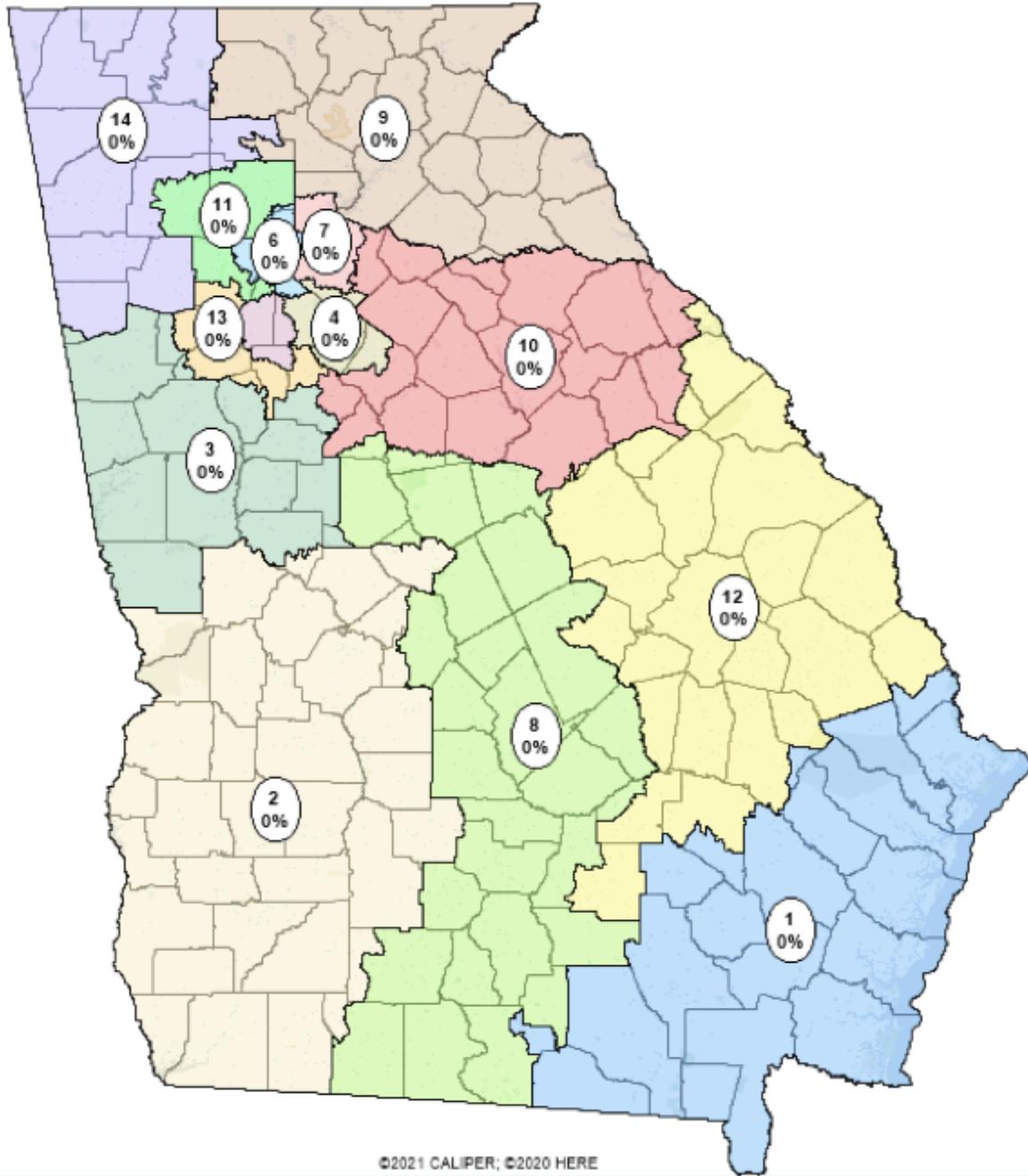
For the 2020 cycle, a key consideration for District 2 is how high the Black population needs to be in order to keep it as a minority opportunity district. There is not a blanket requirement that to create a minority opportunity district that the minority population needs to exceed 50 percent. And, given the historic dominance of the minority candidate of choice in this district, it is likely that a lower threshold than 50 percent Black in the district will maintain the minority population's ability to elect its candidate of choice. In the good governance map discussed below, the Black population drops below 50 percent in this district. In urban districts, it is much more likely that dropping the minority population below the 50 percent threshold will maintain the minority opportunity district status because of the higher voter turnout in urban areas over rural areas. However, this is perhaps a risky map for the minority Black population because it does not meet that 50 percent threshold in a rural district.

Two other metro areas in the state are Savannah and Augusta. In Savannah there are three major counties and it is the third most populous metro area in Georgia. The Augusta metro area is second, however the area crosses into South Carolina. Therefore, its demographics are less critical for redistricting analysis because it is not wholly contained within Georgia's state lines. Neither metro area are minority opportunity districts.

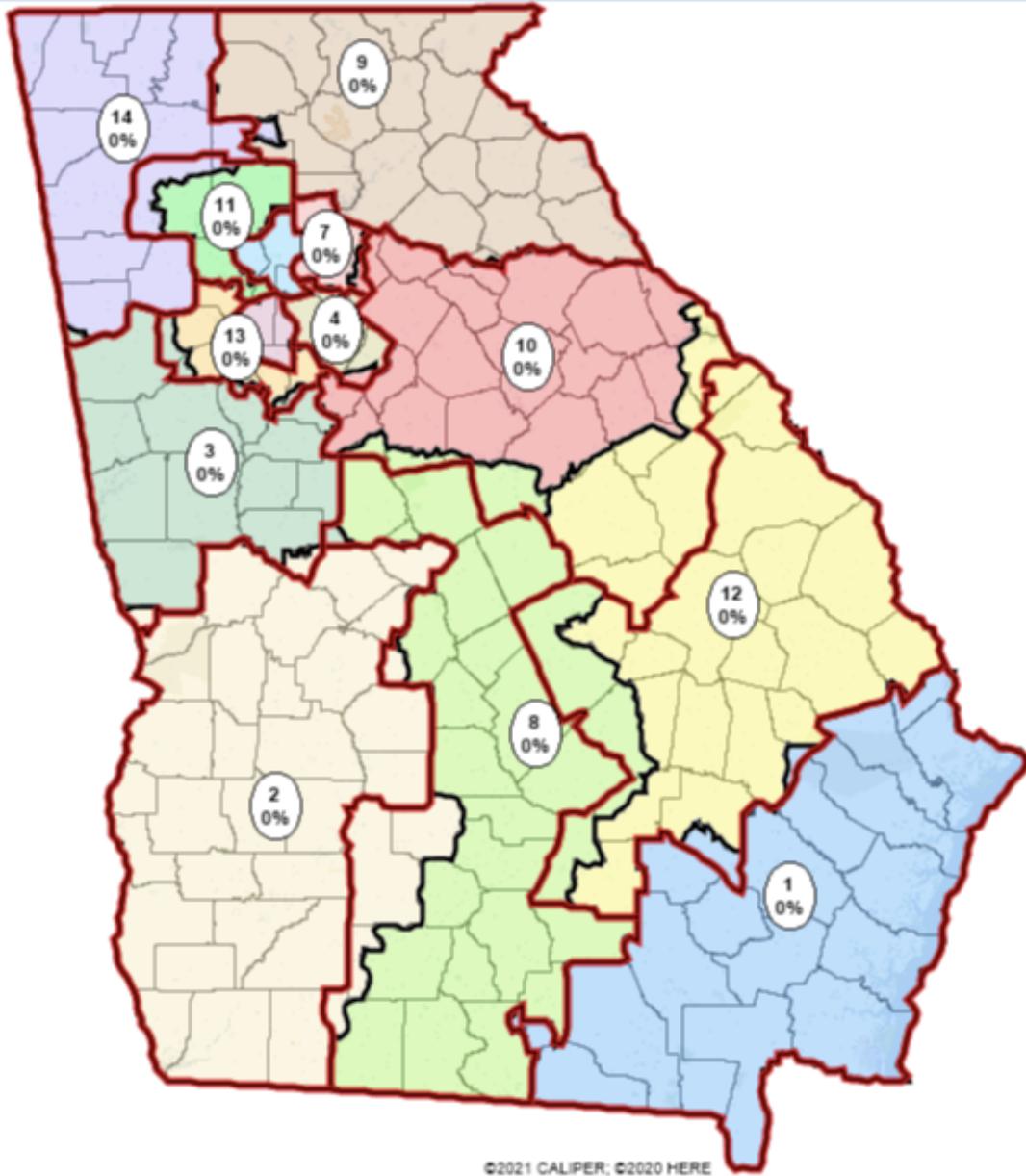
II. Maps Drawn

A. Least Change

The least change map below seeks to keep the district lines as similar to the previous maps as possible. Georgia's population increased by over 1 million people in the last decade, but the state did not gain a congressional seat for the first time since 1990. As mentioned above, to achieve population equality within the districts, each district must have 765,136 people. To accommodate this population shift, Districts 2, 10 and 11 boundaries changed the most in the least change map that I drew below.



MAP GA-07: Least Change



Map GA-08: This is a map showing the 2010 lines in red and the 2020 least change lines from 2020

District 2 is the VRA district in the rural southwest of the state. This area of the state did not grow in population as quickly as parts of the urban and suburban areas of the state. Therefore, the eastern boundary of the district moved eastward into District 8. District 10 is in the northeast portion of the state and, while not in the MRA itself, sits on the outskirts of the

urban sprawl of the MRA. The MRA experienced most of the population growth in the state and, as a result, District 10's geographic size reduced dramatically because its population increased. The southern boundary of District 10 moved north, which expanded the northern boundary of District 12. District 12's expansion included all or parts of 6 counties from 2010's District 10. District 11, like District 10, was effected by the urban population growth in the MRA. District 11 sits to the northwest of the MRA and also experienced substantial growth. As a result, the western boundary of District 11 moved east to make the geographic area of the District smaller. This had the effect of moving the shared border with District 14 east and south because, as a rural district, the population grew at a slower rate than the urban areas.

All districts achieved the equality of population at 765,136 with the exception of District 2, which has four extra people at 765,140. This flaw in the map could make it subject to legal challenge because if a person could draw a similar map with perfect population equality that is also within the bounds of the other legal constraints it would be a better map.

The least change map I drew also maintains the status quo in terms of political polarization. Of the fourteen districts in the state, six are held by Democrats (Districts 2, 3, 5, 6, 7, and 13) and eight are held by Republicans (Districts 1, 3, 8, 9, 10, 11, 12, and 14). Of the fourteen, only two districts are in the less certain "lean" category (as opposed to the "safe" category), Districts 2 and 7 for the Democrats. The rest of the districts fall squarely within the partisan framework of one party or the other.



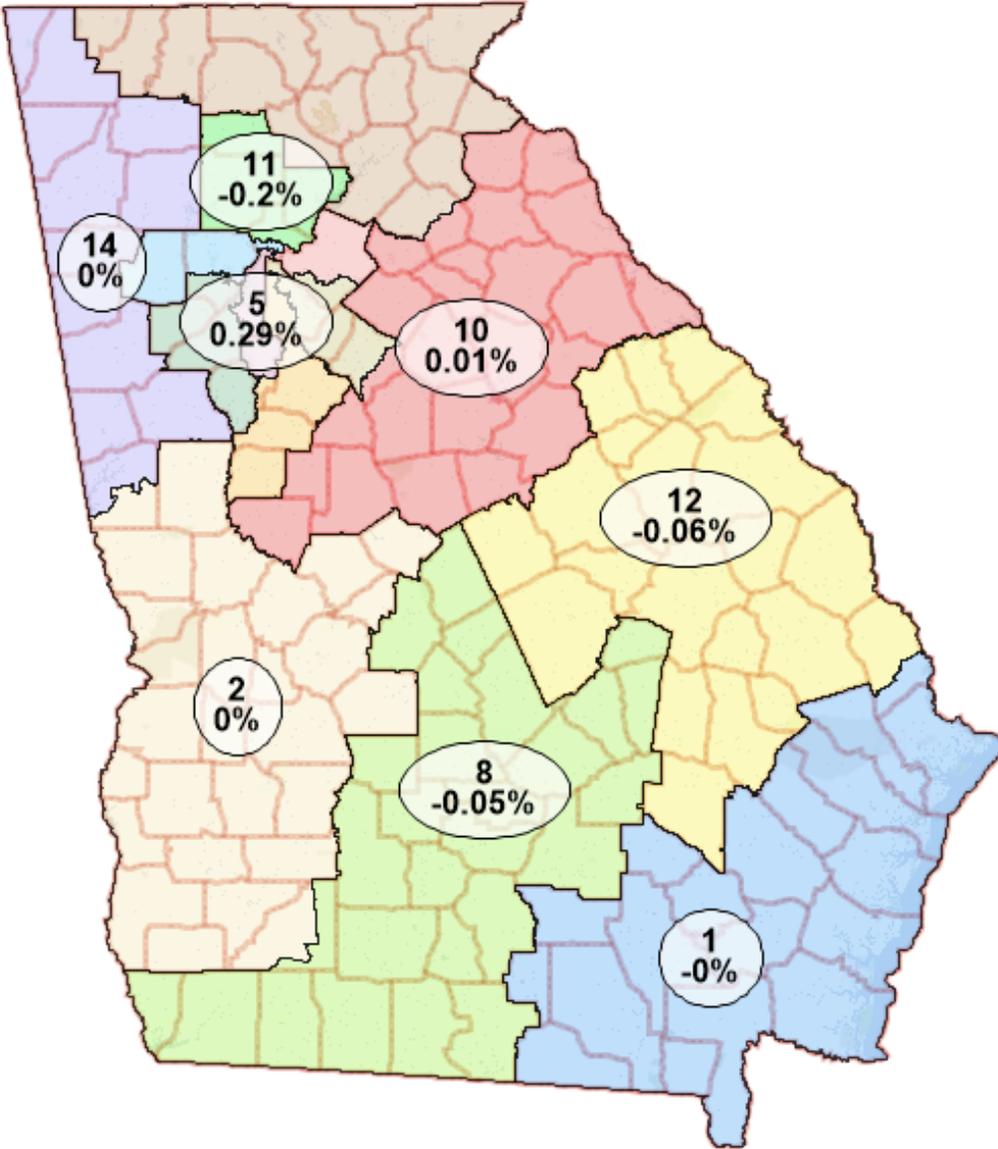
District Data

District	Candidate Scenario	Pop. 2020	Hispanic CVAP 2019	Non-Hisp. Black CVAP 2019	Non-Hisp. Asian CVAP 2019	Non-Hisp. Native CVAP 2019	Chance of 1+ Flips†	Chance of Democratic Win	Predicted Vote Shares	Biden (D) 2020	Trump (R) 2020
1	Republican Incumbent	765,136	4.4%	29.9%	1.5%	0.6%	No	5%	40% D / 60% R	143,894	188,288
2	Democratic Incumbent	765,140	3.0%	48.5%	1.2%	0.5%	Yes	86%	56% D / 44% R	170,202	148,692
3	Republican Incumbent	765,136	3.5%	25.7%	1.5%	0.6%	No	2%	36% D / 64% R	145,718	236,092
4	Democratic Incumbent	765,136	4.0%	63.6%	3.5%	0.4%	No	>99%	77% D / 23% R	280,655	70,113
5	Democratic Incumbent	765,136	3.6%	57.8%	3.5%	0.3%	No	>99%	82% D / 18% R	300,095	45,620
6	Democratic Incumbent	765,136	5.7%	15.0%	8.0%	0.5%	No	92%	58% D / 42% R	219,222	177,252
7	Democratic Incumbent	765,136	10.2%	20.6%	12.4%	0.5%	Yes	82%	55% D / 45% R	171,510	158,388
8	Republican Incumbent	765,136	3.2%	31.6%	1.3%	0.5%	No	1%	35% D / 65% R	125,138	205,552
9	Republican Incumbent	765,136	5.4%	7.1%	1.1%	0.8%	No	<1%	24% D / 76% R	83,870	288,623
10	Republican Incumbent	765,136	4.0%	24.7%	2.6%	0.4%	No	5%	39% D / 61% R	160,431	217,730
11	Republican Incumbent	765,136	5.8%	17.8%	2.8%	0.6%	No	6%	40% D / 60% R	168,040	219,318
12	Republican Incumbent	765,136	3.6%	36.1%	1.4%	0.5%	No	7%	41% D / 59% R	146,108	182,906
13	Democratic Incumbent	765,136	5.4%	64.5%	2.4%	0.4%	No	>99%	76% D / 24% R	274,484	73,332
14	Republican Incumbent	765,136	5.1%	9.3%	0.8%	0.9%	No	<1%	26% D / 74% R	84,268	249,946

GA-09: PlanScore of Georgia Least Change.

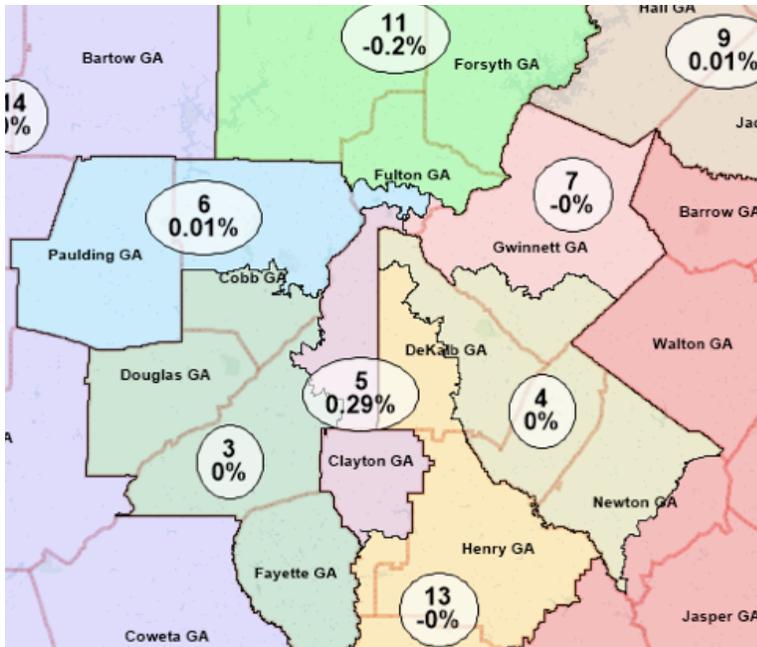
B. Good Governance

This good governance map seeks to keep counties together, first and foremost, while also retaining the five minority opportunity/VRA districts. There are 159 counties in Georgia, divided evenly between the 14 districts would be approximately 11.3 counties per district. Of course, this assumes that each county has equal population, which is not the case. For example, Fulton County, the state's most populous, has over 1 million people. Equality of population requires that 765,136 people reside in each district. Therefore, Fulton County must be broken up at a minimum into two districts to achieve population equality.



Map GA-10: Georgia Good Governance Entire State Image

The good governance map I drew divides only 10 of the 159 counties in the state. However, this map does not perfectly comply with population equality, particularly in the MRA. This map could get closer to perfect population equality with more work around the MRA. Districts 1, 2, 14 and 9 all meet the 0% standard deviation metric. However, I did not break the county lines on the border between Districts 8 and 12 and Districts 10 and 12. Therefore, those populations are not perfectly equal.



Map GA-11: Zoom of MRA

Another version of this map could take this framework, but then decide that the overarching good governance principle is to keep cities and towns together, rather than counties. That would allow the map more flexibility to cross county lines to more perfectly comply with population equality while still maintaining a devotion to good governance to keep political subdivisions together. The county framework is limiting mostly because the counties cannot break down into small enough sections to allow for flexibility with the population.

In this good governance map the VRA districts changed so as to comply with a second good governance principle: compact districts. In the 2010 map the VRA districts were 2, 13, 4, 5, and 7, with all but District 2 containing some part of the star pattern from the urban core of the MRA. As described above, the MRA is generally split into a star-like pattern emanating from Atlanta outward. This is so that Black population in the south-southwestern suburbs of Atlanta can be split into multiple districts to draw minority opportunity districts. This Black population

concentration outside the MRA must be split at least four ways to maintain that number of minority opportunity districts.

In this good governance map, the VRA districts are different than the 2010 map. Previously, District 13 had a half-moon shape around District 5, the shape of which was eliminated. Instead, I sought to draw four more compact VRA districts in the MRA. To achieve this, I drew Districts 3, 4, 5, and 13 in a star shape emanating from Atlanta and Fulton County and going outward south, southeast and southwest. The districts are necessarily long and narrow to capture the demographics in the southern part of the MRA sufficient to create the VRA districts.

Another feature of the more compact District 3 is that District 14 also became more elongated north to south along the western border of the state. While it still touches the northern border, it goes all the way south to District 2. This is different from the 2010 map where District 3 sits in between District 14 and 2 along the western border of the state.

Along the western border of the state, Districts 2 and 8 changed from the 2010 map. In 2010, District 2 takes up the entire southwest corner of the state. However, to keep District 2 a VRA district with the necessary demographics and Black population, I drew District 8 along the southern border of the state underneath District 2 and all the way to the western edge.

The principles of political subdivisions and compactness are in conflict visually in the southern two-thirds of the state. The districts, including Districts 8, 12, and 1 are oddly shaped and “jut” into one another. However, the image of the districts with the underlying county map lines shows that the purpose of the Districts’ shapes is to follow county lines. Where perhaps it would make more sense to split the counties for compactness and other political subdivision purposes, this map’s guiding principle is to keep counties intact where possible. This accounts

for the narrow southwestern arm of District 10 into District 2 and the northeast running arm of District 8 into District 12.

The nature of the counties in Georgia makes for a challenging exercise to both keep them together and assign close to equal populations in each district. The counties are nowhere near uniform; they have all different shapes and have vastly different populations. From tens of thousands in rural areas to over one million people in Fulton County. This makes for a bit of gamesmanship when assigning counties to different districts. More time could be spent in an effort to more perfectly assign populations.

Finally, this map largely maintains the status quo of political polarization with 6 Democratic seat and 8 Republican seats. One major change between the good governance map and the least change map is District 2. In the least change map the district was assigned a “leans dem” political determination, while the good governance map assigns District 2 a straight “Dem” political determination. In the good governance map, a primary focus was to maintain District 2 as a VRA minority opportunity district with the demographics. This comes through in the PlanScore analysis.



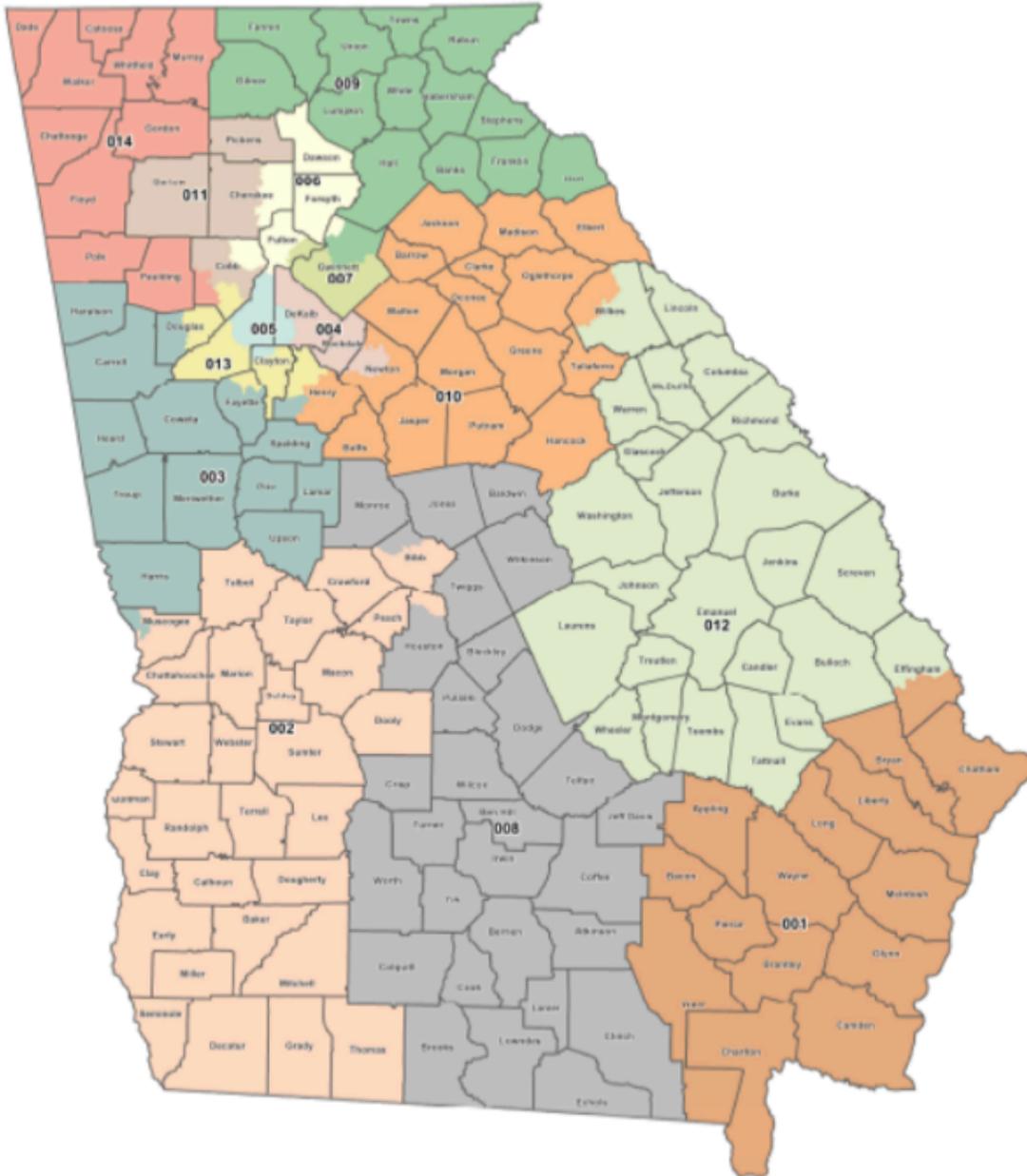
District Data

District	Candidate Scenario	Pop. 2020	Hispanic CVAP 2019	Non-Hisp. Black CVAP 2019	Non-Hisp. Asian CVAP 2019	Non-Hisp. Native CVAP 2019	Chance of 1+ Flips [†]	Chance of Democratic Win	Predicted Vote Shares	Biden (D) 2020	Trump (R) 2020
1	Republican Incumbent	765,135	4.5%	29.9%	1.5%	0.6%	No	6%	40% D / 60% R	144,360	187,621
2	Democratic Incumbent	765,142	3.2%	48.1%	1.4%	0.4%	No	88%	56% D / 44% R	177,170	150,953
3	Republican Incumbent	765,148	5.0%	57.7%	1.9%	0.4%	No	96%	62% D / 38% R	265,909	102,136
4	Democratic Incumbent	765,139	4.6%	55.1%	4.2%	0.5%	No	>99%	72% D / 28% R	260,018	92,789
5	Democratic Incumbent	765,135	4.6%	51.7%	4.0%	0.3%	No	>99%	76% D / 24% R	266,583	68,626
6	Democratic Incumbent	765,147	5.7%	19.9%	3.9%	0.6%	Yes	65%	52% D / 48% R	192,627	203,550
7	Democratic Incumbent	765,199	10.7%	26.2%	11.5%	0.4%	No	94%	59% D / 41% R	185,048	139,699
8	Republican Incumbent	764,756	3.4%	32.1%	1.1%	0.5%	No	<1%	34% D / 66% R	114,316	200,342
9	Republican Incumbent	765,240	6.9%	4.7%	1.2%	0.9%	No	<1%	24% D / 76% R	77,783	275,824
10	Republican Incumbent	765,205	2.9%	22.8%	1.5%	0.4%	No	1%	34% D / 66% R	131,968	237,632
11	Republican Incumbent	765,741	5.2%	7.0%	6.3%	0.9%	No	1%	35% D / 65% R	146,052	254,953
12	Republican Incumbent	764,684	3.4%	36.6%	1.5%	0.5%	No	7%	41% D / 59% R	150,041	186,641
13	Democratic Incumbent	765,101	3.6%	47.9%	3.2%	0.5%	No	>99%	70% D / 30% R	271,315	105,792
14	Republican Incumbent	765,136	3.6%	13.7%	0.9%	0.6%	No	<1%	27% D / 73% R	90,442	255,294

GA-12: Georgia Good Governance PlanScore.

C. Map Adopted

On November 22, 2021, the state legislature passed a map, as seen and discussed below, that Governor Kemp signed into law on December 30, 2021. The map is considered a republican gerrymander because it is predicted to be a 5D/9R map, which reduces the number of Democratic districts by one.



GA-13: Georgia Adopted Map, December 30, 2021

The same day the governor signed the map into law three different lawsuits were filed in the Northern District of Georgia. In the first, *Pendergrass v. Raffensperger*, five voters in Cobb and Douglas Counties (on the western edge of the MRA) brought suit to challenge the map claiming violations of Section 2 of the Voting Rights Act of 1965. The plaintiffs claim that the map dilutes the Black population where otherwise a sufficiently compact majority-Black district could be drawn. Currently the Black populations of these two counties are split with Cobb County split between Districts 6, 11, 14 and 13 and Douglas County split between Districts 3 and 13.

The other two lawsuits also bring claims under Section 2 of the Voting Rights Act. Claiming in one suit that the state senate and legislative maps also purposefully dilute the influence of Black voters and in the other claiming that changes to voting laws in the state should be required to undergo preclearance by the United State Department of Justice.

Most of the differences in the adopted map and the least change map I drew are in the northeast section of the MRA and include particularly Districts 4, 6, 7, and 9.

Where my map has District 9 expanding in a southeasterly direction along the eastern state border, the adopted map creates an arm of District 9 southwesterly in between Districts 6 and 7. This is causing controversy because currently a Black Democratic congresswoman represents District 6. By moving District 9 in between those two districts, District 6 will likely flip for the republicans.

Whereas in previous maps only the districts to the south of the MRA (Districts 4 and 5) formed a star-like pattern, this adopted map makes Districts 6 and 11 more elongated north to south emanating from the central Atlanta area and extending outward. This, in turn, extends District 14 around and underneath District 11.

The border between the adopted map's Districts 2 and 8 in the southern half of the districts are cleaner and follow along the county lines more than my least change map does. However, the adopted map creates an arm of District 2 in a northeasterly direction into District 8, whereas my map attempted to keep the shape of District 2 relatively rectangular, closer to the 2010 map shape.

Finally, in the southeast corner of the state, my least change map sought to keep the borders in a similar shape and appearance of the 2010 map and only shifting them to achieve population equality. This adopted map makes the border of Districts 1, 8 and 12 much cleaner in that they largely are following county lines. District 12 is more compact and has a rounder shape than the least change or the 2010 map.

III. Appendix

Maps/Images List

- GA-01: Atlanta MRA Map – Google Hybrid
- GA-02: Atlanta MRA with County Lines in Red
- GA-03: Black Population Distribution Statewide
- GA-04: Black Population Distribution MRA Zoom
- GA-05: 2020 Congressional Districts
- GA-06: 2020 Congressional Districts MRA Zoom
- GA-07: Least Change
- GA-08: Least Change with 2010 Comparison in red
- GA-09: PlanScore of Least Change Map
- GA-10: Good Governance Entire State Image
- GA-11: Good Governance MRA Zoom
- GA-12: PlanScore of Good Governance Map
- GA-13: Georgia Map Adopted December 30, 2021