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Case No. 2:21-cv-01536-AMM

In compliance with this Court's order, doc. 45, Alabama Secretary of State John Merrill hereby files a copy of the expert reports of Thomas Bryan, a professional demographer, and M.V. Hood III, a political scientist.

Respectfully submitted,

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s/ James W. Davis

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CERTIFICATE OF SERVICE

I certify that on December 14, 2021, I electronically filed the foregoing notice with the Clerk of the Court using the CM/ECF system, which will send notice to all counsel of record.

s/ James W. Davis
Counsel for Secretary Merrill

My name is Thomas Bryan¹. I am a professional demographer and political redistricting expert witness. I have been retained by the State of Alabama to provide analysis and support in the case of *Singleton v. Merrill*.² A copy of my CV is attached to this report.

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

EXPERT QUALIFICATIONS

I graduated with a Bachelor of Science in History from Portland State University in 1992. I graduated with a Master of Urban Studies (MUS) from Portland State University in 1996, and in 2002 I graduated with a Masters in Management and Information Systems (MIS) from George Washington University. Concurrent with earning my Management and Information Systems degree, I earned my Chief Information Officer certification from the GSA.³

My background and experience with demography, census data and advanced analytics using statistics and population data began in 1996 with an analyst role for the Oregon State Data Center. In 1998 I began working as a statistician for the US Census Bureau in the Population Division – developing population estimates and innovative demographic methods. In 2001 I began my role as a professional demographer for ESRI Business Information Solutions, where I began developing my expertise in Geographic Information Systems (GIS) for population studies. In May 2004 I continued my career as a demographer, data scientist and expert in analytics in continuously advanced corporate roles, including at Altria and Microsoft through 2020.

In 2001 I developed a private demographic consulting firm “BryanGeoDemographics” or “BGD”. I founded BGD as a demographic and analytic consultancy to meet the expanding demand for advanced analytic expertise in applied demographic research and analysis. Since then, my consultancy has broadened to include litigation support, state and local redistricting, school redistricting, and municipal infrastructure initiatives. Since 2001, I have undertaken over 150 such engagements in three broad areas:

- 1) state and local redistricting,
- 2) applied demographic studies, and
- 3) school redistricting and municipal Infrastructure analysis.

¹ <https://www.linkedin.com/in/thomas-bryan-424a6912/>

² <https://redistricting.lls.edu/wp-content/uploads/AL-singleton-20210927-complaint.pdf>

³ Granted by the General Services Administration (GSA) and the Federal IT Workforce Committee of the CIO Council.

My background and experience with redistricting began with McKibben Demographics from 2004-2012, when I provided expert demographic and analytic support in over 120 separate school redistricting projects. These engagements involved developing demographic profiles of small areas to assist in building fertility, mortality and migration models used to support long-range population forecasts and infrastructure analysis. Over this time, I informally consulted on districting projects with Dr. Peter Morrison. In 2012 I formally began performing redistricting analytics and continue my collaboration with Dr. Morrison to this day.

I have been involved with over 40 significant redistricting projects, serving roles of increasing responsibility from population and statistical analyses to report writing to directly advising and supervising redistricting initiatives. Many of these roles were served in the capacity of performing Gingles analyses, risk assessments and Federal and State Voting Rights Act (VRA) analyses in state and local areas.

In each of those cases, I have personally built, or supervised the building of, one or more databases combining demographic data, local geographic data and election data from sources including the 2000, the 2010 and now 2020 decennial Census. I also innovated the use of the US Census Bureau's statistical technique of "iterative proportional fitting" or "IPF" of the Census Bureau's American Community Survey (ACS) and the Census Bureau's Special Tabulation of Citizen Voting Age Population Data to enable the development of districting plans at the Census block level. This method has been presented and accepted in numerous cases I have developed or litigated. These data have also been developed and used in the broader context of case-specific traditional redistricting principles and often alongside other state and local demographic and political data.

In 2012 I began publicly presenting my work at professional conferences. I have developed and publicly presented on measuring effective voting strength, how to develop demographic accounting models, applications of using big data and statistical techniques for measuring minority voting strength – and have developed and led numerous tutorials on redistricting. With the delivery of the 2020 Census, I have presented on new technical challenges of using 2020 Census data and the impact of the Census Bureau's new differential privacy (DP) system. This work culminated with being invited to chair the "Assessing the Quality of the 2020 Census" session of the 2021 Population Association of America meeting, featuring Census Director Ron Jarmin.

I have written professionally and been published since 2004 in numerous peer-reviewed academic publications. I am the author of “Population Estimates” and “Internal and Short Distance Migration” in the definitive demographic reference “The Methods and Materials of Demography”. In 2015 I joined a group of professional demographers serving as experts in the matter of *Evenwel, et al. v. Texas* case. In *Evenwel* I served in a leadership role in writing an Amicus Brief on the use of the American Community Survey (ACS) in measuring and assessing one-person, one vote. I also successfully drew a map for the State of Texas balancing both total population from the decennial census and citizen voting age population from the ACS (thereby proving that this was possible – a key tenet of the case). I believe this was the first and still only time this technical accomplishment has been achieved in the nation at a state level. In 2017 I co-authored “From Legal Theory to Practical Application: A How-To for Performing Vote Dilution Analyses.” In 2019 I co-authored “Redistricting: A Manual for Analysts, Practitioners, and Citizens”. In 2021 I authored an assessment of the impact of the U.S. Census Bureau’s approach to ensuring respondent privacy and Title XIII compliance by using a disclosure avoidance system involving differential privacy and was certified as an expert by the US District Court of Alabama Eastern Division. In 2021 I also co-authored ““The Effect of the Differential Privacy Disclosure Avoidance System Proposed by the Census Bureau on 2020 Census Products: Four Case Studies of Census Blocks in Alaska”.

I have been retained to develop, analyze and/or critique four state redistricting plans in 2021, including the state legislature for the Republican Texas House Committee on Redistricting, the state senate for Democratic Counsel for the State of Illinois, and state senate and legislature for Republican Counsel for the State of Wisconsin.

I have been deposed once in the last four years, in the matter of *Harding v. County of Dallas*.

I maintain membership in numerous professional affiliations, including:

- International Association of Applied Demographers (Member and Board of Directors)
- American Statistical Association (Member)
- Population Association of America (Member)
- Southern Demographic Association (Member)

My rate is \$350 per hour for analysis, research and report writing, and \$500 per hour for depositions and testimony.

In this report, I provide:

- 1) A demographer's perspective on the Alabama redistricting process and the *Singleton v. Merrill* case.
- 2) A summary and interpretation of traditional redistricting principles.
- 3) A discussion of "One Person One Vote" (OPOV) and its relevance to this case.
- 4) A discussion and analysis of the census and DOJ definitions of "Black" population.
- 5) An independent and factual analysis of plaintiffs' plan, the State of Alabama's enacted plan, and several other hypothetical plan options illustrating further alternative plan scenarios worthy of consideration.
- 6) A series of maps of alternative whole-county plans, as well as maps demonstrating features of Plaintiff's plan and the enacted plan.

Based on my knowledge and experience as a demographer, I conclude, among other points presented in this report, that:

- 1) the whole county plan suggested by plaintiffs has population deviation among the districts so that some persons votes are weighted more than others, and that deviation at the beginning of the decade is likely to result in far greater deviation by the end of the decade than a plan with zero deviation;
- 2) a map-drawer can racially gerrymander while keeping counties whole;
- 3) a requirement to keep counties whole does not necessarily result in the political result plaintiffs apparently desire, which is two congressional districts likely to elect a Democrat;
- 4) while counties were historically important communities of interest, before advances in communications and transportation, they have far less importance today; and
- 5) plaintiffs' whole county plan does not observe the important traditional districting criteria of preserving the core of existing districts.

It is my understanding that plaintiffs have also proposed modification to the whole county plan with county splits to result in less, or no, deviation. Because such alternatives are no longer whole county plans, and because the focus of this report is on the effect of a whole county requirement, this report focuses on the whole county plan proposed in plaintiffs' complaint.

I reserve the right to supplement this report.

1) A demographer's perspectives on the Alabama redistricting process and issues posed in *Singleton v. Merrill*.

The Alabama State Legislature is responsible for drawing both congressional and state senate and state house boundaries, as well State Board of Education districts. Both chambers of the state legislature must approve a single redistricting plan. The governor may veto the lines drawn by the state legislature⁴ On May 5, 2021 the State of Alabama issued the "Reapportionment Committee Redistricting Guidelines", which stated among other things:

- "No district shall be drawn that subordinates race-neutral districting criteria to considerations of race, color, or membership in a language minority group (except...) to comply with Section 2";
- "Districts shall be composed of contiguous and reasonably compact geography";
- "Districts shall respect communities of interest...including but not limited to ethnic, racial, economic, tribal, social, geographic or historical identities"; and
- "The legislature shall try to preserve the cores of the existing districts"

Using population estimates from the Census Bureau, the Alabama legislature began to develop redistricting plans in May of 2021. Once the 2020 Census data were delivered in August of 2021, the Alabama legislature utilized that data to continue the redistricting process⁵. Plans were drawn in compliance with the published criteria for redistricting⁶, which includes (among other guidance):

- Ila. Districts shall comply with the United States Constitution, including the requirement that they equalize total population; and
- Iib. Congressional districts shall have minimal population deviation.

On November 4, 2021 the proposed plans were signed into law⁷ by Governor Kay Ivey.

⁴ https://ballotpedia.org/Redistricting_in_Alabama_after_the_2020_census

⁵ <https://www.census.gov/newsroom/press-releases/2021/population-changes-nations-diversity.html>,
<https://www.census.gov/newsroom/press-releases/2021/2020-census-redistricting-data-easier-to-use-format.html>

⁶ <http://www.legislature.state.al.us/aliswww/reapportionment/Reapportionment%20Guidelines%20for%20Redistricting.pdf>

⁷ Alabama enacted a congressional map on Nov. 4, 2021, after Gov. Kay Ivey (R) signed the proposal into law.[1] The Alabama House of Representatives voted 65-38 in favor of the map on Nov. 1 followed by the Alabama State Senate voting 22-7 on Nov. 3.[1][2] This map takes effect for Alabama's 2022 congressional elections.

Alabama enacted state legislative maps for the state Senate and House of Representatives on Nov. 4, 2021, after Gov. Kay Ivey (R) signed the proposals into law.[1] Senators approved the Senate map on Nov. 1 with a 25-7 vote.[3] Representatives approved the Senate map on Nov. 3 with a 76-26 vote.[1] For the House proposal, representatives

On September 27, 2021 (prior to the completion of the 2021 Alabama redistricting process) plaintiffs Bobby Singleton, Rodger Smitherman, Eddie Billingsley, Leonette W. Slay, Darryl Andrews, and Andrew Walker sued John H. Merrill in his official capacity as the Alabama Secretary of State stating:

“Alabama’s current Congressional redistricting plan, enacted in 2011, Ala. Act No. 2011-518, is malapportioned and racially gerrymandered, packing black voters in a single majority-black Congressional district and minimizing their influence in five majority-white districts. This action is brought to require the Alabama Legislature to enact a new plan with 2020 census data that remedies the existing unconstitutional gerrymander by restoring Alabama’s traditional redistricting principle of drawing its Congressional districts with whole counties.⁸”

Plaintiffs in the case thereby claim (prior to the delivery of the actual plan) that: a) there is an existing racial gerrymander; and b) the only appropriate remedy is drawing a plan using whole counties, subordinating all other traditional redistricting principles. It is asserted that strict adherence to the county-line rule would remedy the racial gerrymanders in Alabama’s current congressional redistricting plan, while affording Black voters two performing coalition districts instead of just the one majority-Black district, in which Black voters are now alleged to be excessively concentrated (“packed”). Plaintiffs go on to propose a remedial districting plan complying with their proposed county “bright line” rule. That is – Alabama’s congressional districts must exactly follow county boundaries – and in so doing must subordinate all other traditional redistricting criteria. Including achieving zero population deviation.

Plaintiffs state in their complaint (P.20) that

“By returning to Alabama’s traditional redistricting principle of aggregating whole counties, Alabama can remedy the existing racial gerrymander, restore a measure of rationality and fairness to Alabama’s Congressional redistricting process, and afford African Americans an opportunity to elect candidates of their choice in at

voted 68-35 in favor on Nov. 1 and senators followed on Nov. 3 with a 22-7 vote.[4] These maps take effect for Alabama's 2022 legislative elections.

Alabama's seven United States representatives and 140 state legislators are all elected from political divisions called districts. District lines are redrawn every 10 years following completion of the United States census. Federal law stipulates that districts must have nearly equal populations and must not discriminate on the basis of race or ethnicity.

Source: https://ballotpedia.org/Redistricting_in_Alabama_after_the_2020_census

⁸ <https://redistricting.ils.edu/wp-content/uploads/AL-singleton-20210927-complaint.pdf>

least two districts. Restoring the integrity of county boundaries will advance the representation of black citizens and, indeed, the fair representation of all Alabamians.”

After the Alabama Legislature passed a congressional districting plan, Plaintiffs amended their complaint to challenge the new plan as an alleged racial gerrymander. They continue to argue that the cure is to require Alabama to keep counties whole. Adjudicating the extent to which the Alabama enacted plan is or is not a racial gerrymander is not within the scope of this report or my expertise. However, in this report I shall examine evidence that supports a discussion of whether the Singleton remedy is a racial gerrymander or not.

It is unknown why plaintiffs attempt to revert Alabama congressional redistricting to comply with a county bright line rule as “the” remedy. As cited in the complaint – the use of county lines for redistricting is not without precedent. For a century and a half, Alabama drew its Congressional districts with whole counties⁹ until the 1960 Census. Alabama has not kept all counties whole for the purposes of congressional redistricting since then. Further, while Alabama’s state constitution (Art. IX, § 200) provides that state *senate* districts be contiguous and avoid county splits, the state constitution does not address counties in with respect to congressional districts.

All states must comply with the federal constitutional requirements related to population and anti-discrimination. For congressional redistricting, the Apportionment Clause of Article I, Section 2, of the U.S. Constitution requires that all districts be as nearly equal in population as practicable, which essentially means exactly equal¹⁰. Since the 1960 Census, the “one person, one vote” rule emerged from the Supreme Court’s decision in *Wesberry v. Sanders* (1964) means that Congressional districts must have equal populations so that one person’s vote counts as much as another’s vote. However, it is my understanding that in *Tennant v. Jefferson County*, the Supreme Court of the United States reaffirmed that mathematical precision is not constitutionally required for Congressional districts and that minor deviations from population equality *can be justified* by sufficiently important state interests.

⁹ See https://archives.alabama.gov/legislat/ala_maps/getstart.html State’s exhibit 114-1 in *Chestnut v. Merrill*, CA No. 2:18-CV-00907-KOB (N.D. Ala.)

¹⁰ <https://www.ncsl.org/research/redistricting/redistricting-criteria.aspx>

Plaintiffs also cite the New Jersey SCOTUS case of *Karcher v. Daggett*, which explains circumstances¹¹ under which states can deviate from absolutely perfectly balanced districts. In addition to the instructive outcomes of these cases, the Congressional Research Service has published history and guidance on the use of counties in the context of other criteria¹²:

“...county boundaries, along with contiguity and compactness criteria, as the basis for the construction of congressional district boundaries have historically been state requirements. It appears that it is the fact that many states had such a requirement that makes Altman note that “most congressional districts were contiguous...; and, with the exception of districts in large urban areas, most congressional districts during this period [presumably, 1842-, 1963] were composed of whole counties.” Courts have recognized that preserving political boundaries is a valid consideration for redistricting. The splitting of county and city boundaries has primarily occurred as a result of the political equality requirement in the post-*Baker v. Carr* era and as a result of the Voting Rights Act redistricting requirements. Nineteen states required that the preservation of political subdivision boundaries be a factor in congressional redistricting, and one state allowed it to be a factor in the 2000 redistricting cycle.”

Therefore, while preserving county boundaries is a traditional districting principle, and was used more strictly before the “one person, one vote” rule was announced, it is unclear why county lines should be prioritized over other redistricting criteria or why doing so would result in a better plan. Therefore, it is this demographer’s goal in this report to offer an independent, objective, and factual analysis of the performance of plaintiff’s plan, the State of Alabama’s enacted plan, and several independently generated plans that could be considered other options or scenarios not considered by either party.

¹¹ In *Karcher v. Daggett*, another case that did not involve the more demanding racial gerrymandering standards, the Court suggested that acceptable population deviations for a Congressional redistricting plan can be determined by identifying those alternative plans which produce the lowest population deviations while respecting the state’s policy of preserving political subdivisions (in that case municipalities). 462 U.S. at 739-40. “The showing required to justify population deviations is flexible, depending on the size of the deviations, the importance of the State’s interests, the consistency with which the plan as a whole reflects those interests, and the availability of alternatives that might substantially vindicate those interests yet approximate population equality more closely. By necessity, whether deviations are justified requires case-by-case attention to these factors.” *Id.* at 741.

¹² <https://crsreports.congress.gov/product/pdf/R/R42831/3>

2) Traditional Redistricting Principles

In addition to these mandatory standards set out by the U.S Constitution and the Voting Rights Act, states may adopt their own redistricting criteria, or principles, for drawing the plans. Those criteria appear in state constitutions or statutes, or may be adopted by a legislature, chamber, or committee, or by a court that is called upon to draw a plan when the legislative process fails. The Congressional Research Service explains¹³:

“Many of the “rules” or criteria for drawing congressional boundaries are meant to enhance fairness and minimize the impact of gerrymandering. These rules, standards, or criteria include assuring population equality among districts within the same state; protecting racial and language minorities from vote dilution while at the same time not promoting racial segregation; promoting geographic compactness and contiguity when drawing districts; minimizing the number of split political subdivisions and “communities of interest” within congressional districts; and preserving historical stability in the cores of previous congressional districts.”

The following districting principles (or criteria) have been adopted by many states:

- *Preservation of communities of interest*: District boundaries should respect geographic areas whose residents have shared interests, such as neighborhoods and historic areas.
- *Continuity of representation*. There is a benefit to continuing the political and geographic stability of districts. This can be measured with:
 - *Preservation of districts (“core retention”)*: A redrawn district should include as much of the same residential population as the former district did, as allowed by the minimum population that needs to be rebalanced.
 - *Incumbents*: Districts should not be drawn to include pairs of incumbents.
- *Compactness*: Districts should be geographically compact and not irregular.
- *Contiguity*: All parts of a district should be connected at some point with the rest of the district. Simply put, contiguity means that a pedestrian could walk from any point within the district to any other point within it without needing to cross the district’s boundaries; and
- *Preservation of counties and other political subdivisions*: District boundaries should not cross county, city, or town, boundaries to the extent practicable.

¹³ <https://crsreports.congress.gov/product/pdf/R/R42831/3>

Plaintiffs' allegations fixate on the preservation of county boundaries, and it is in this regard that I now focus. More than a dozen states consider using counties as boundaries for redistricting a state or federal plan, including Alabama, Iowa, Idaho, Kentucky, Massachusetts, Michigan, Mississippi, Missouri, Nebraska, New Jersey, North Carolina Ohio, Texas, West Virginia and Wyoming. Iowa and West Virginia stand out as states that particularly emphasize the use of counties in drawing congressional districts.¹⁴

In Iowa, Section 37 of their constitution states "a congressional district is composed of two or more counties it shall not be entirely separated by a county belonging to another district and no county shall be divided in forming a congressional district." §42.4.b Redistricting Standards goes on to state:

"Congressional districts shall each have a population as nearly equal as practicable to the ideal district population, derived as prescribed in paragraph "a" of this subsection. No congressional district shall have a population which varies by more than one percent from the applicable ideal district population, except as necessary to comply with Article III, section 37 of the Constitution of the State of Iowa."

I am aware of no such requirement under Alabama law. The Singleton complaint does not acknowledge Iowa as an example of using county boundaries for congressional redistricting but does refer to West Virginia. Article 1, Section 4 of the West Virginia Constitution states "Representatives to Congress. For the election of representatives to Congress, the state shall be divided into districts which shall be formed of contiguous counties and be compact. Each district shall contain, as nearly as may be, an equal number of population, to be determined according to the rule prescribed in the constitution of the United States." I am aware of no such requirement under Alabama law. It is also my understanding that West Virginia never split counties in a congressional map prior to 2010, when the map was challenged and ultimately addressed in *Tennant v. Jefferson County*. I am aware of no such history in Alabama; rather, it is my understanding that Alabama has routinely split one or more counties in its congressional map since the 1960s.

¹⁴ <https://www.ncsl.org/Portals/1/Documents/Redistricting/DistrictingPrinciplesFor2010andBeyond-9.pdf>

Plaintiffs also refer to Georgia and the case of in *Abrams v. Johnson*. On pages 44 of their amended complaint, plaintiffs write:

“the Supreme Court affirmed a court-ordered Congressional redistricting plan that honored “Georgia’s ‘strong historical preference’ for not splitting counties outside the Atlanta area.” *Id.* At 99 (citation omitted). The Court agreed that Georgia’s 159 counties provide “ample building blocks for acceptable voting districts without chopping any of those blocks in half.”

What plaintiffs did not mention in their complaint was the actual text in the decision that explained why counties were an acceptable form of geography specific to use in Georgia:

“The court acknowledged that maintaining political subdivisions alone was not enough to justify less than perfect deviation in a court plan... (“[W]e do not find legally acceptable the argument that variances are justified if they necessarily result from a State’s attempt to avoid fragmenting political subdivisions by drawing congressional district lines along existing county, municipal, or other political subdivision boundaries”). The District Court, in conformance with this standard, considered splitting counties outside the Atlanta area, but found other factors “unique to Georgia” weighed against it.

The court went on to state:

“Georgia has an unusually high number of counties: 159, the greatest number of any State in the Union apart from the much-larger Texas. These small counties represent communities of interest to a much greater degree than is common, and we agree with the District Court that “such a proliferation” provides “ample building blocks for acceptable voting districts without chopping any of those blocks in half.” 864 F. Supp., at 1377.”

The court then went on to describe the remarkably small deviations that resulted from having so many pieces of geography from which to use. The inference in the plaintiff’s complaint is that all of Georgia is drawn with intact counties (which it is not), that Georgia requires the use of counties statewide for congressional redistricting (which it does not) and that Georgia’s matter is somehow representative and can be considered illustrative for other states (which the court expressly said it was not). In summary, while there are a number of unique instances where states can and do rely on counties for congressional redistricting – they are very limited and are not generalizable to Alabama in the way plaintiffs suggest.

3) Abiding by “One Person, One Vote”

The core purpose of the Census is to apportion political power, and to allow states and localities to draw political districts that equalize political power through “one person, one vote” or OPOV. The “one person, one vote” principle is meant to ensure that voters in each election district hold equally weighted ballots. Equalizing total population during redistricting, to the last person, accomplishes this end. Any difference from perfectly balanced population during redistricting will introduce what is formally known as “deviation”. Using a simple example: let us say that:

- A state has 20,000 people and needs to be divided into 2 congressional districts.
- The state will redistrict using traditional redistricting principles.
- The state has gotten an exception to balancing their population perfectly. State leadership gives District 1 10,125 people (overpopulated by 1.25%), and District 2 9,875 (underpopulated by 1.25%).

In this scenario, the population deviation is 2.5%. The impact of this difference is beyond numeric though. District 1 does not enjoy the benefits of one person one vote. Since they are overpopulated, each resident’s vote is diluted. One person = .9875 votes. Similarly, District 2 *more than enjoys the* benefits of one person one vote. Since they are underpopulated, each resident’s vote is magnified. One person = 1.0125 votes.

The entire legal and political impact of OPOV and unbalanced population is beyond the scope of this paper, but the demographic impact is not. Conventionally, the concept of “deviation” is only measured at a point in time – when redistricting is done. In *Singleton v. Merrill* the court is being asked to accept what is characterized as a small amount of deviation to mitigate much more serious alleged ulterior motives. Since plaintiffs ask for leniency in allowing some population deviation as of 2020 in their plan, I contemplated the impact of that deviation not just in 2020 – but over the course of the decade from 2020 to 2030 (that is, the period of time that the districts are to be used). Other than as a thought exercise, I would not do this for a normal redistricting analysis because congressional districts usually start with the smallest deviation possible: 0 or 1 person. However, if we are being asked to allow for *some* deviation among districts now - then I argue that we should know the impact of this deviation over the decade of their anticipated use, not just the year they were developed. In Section 4 (“Deviations”) I perform a demographic analysis where I produce a series of rigorous population forecasts, then assess what I *expect* the deviations to be over time from the plaintiff’s plan, the State of Alabama’s plan and a variety of other independently developed plans. I did not have any a priori knowledge or expectations whether the plaintiffs plan would perform better than, the same, or worse than a plan such as Alabama’s starting with zero deviation.

4) Census Race Definitions

On page 29 of their amended complaint, plaintiffs state:

“The Plaintiffs’ proposed Whole County Plan uses the official 2020 census data released on August 12, 2021. With an overall maximum deviation of only 2.47%, it contains a Black Belt District 7 that is only 0.11% above ideal population and has 49.9% black registered voters...”

The text of their report refers to a percent of Black voters, without reference or citation. On the following pages of their complaint, plaintiffs present a map and an almost illegibly small table that appears to show “%BL 18 In this table, District 6 appears to have “40.55%”, District 7 appears to have “45.81%” and the total appears to have “25.06% of “%BL 18+”. It is unknown what this is because it is also presented without reference or citation.

In the field of demography, and indeed in redistricting cases, the definition of the population in question is critical. Since the foremost purpose of the census is to generate statistics for the purpose of apportionment and redistricting – it is unclear why here plaintiffs refer to undocumented voting strength statistics rather than census Black Voting Age Population. Before I proceed, I will here try to define and document the true “Black” population of the two Black districts in the plaintiff’s remedial plan.

The 2010 Census allowed respondents to self-declare their ethnic and racial identification:

“In order to facilitate enforcement of the Voting Rights Act, the Census Bureau asks each person counted to identify their race and whether they are of Hispanic or Latino origin. Beginning with the 2010 Census (and continuing in 2020) the racial categories available in the Census were: White, Black, American Indian, Asian, Native Hawaiians and other Pacific Islanders, and Some Other Race. Persons of Hispanic or Latino origin might be of any race. Persons were given the opportunity to select more than one race – and that race could be in combination with Hispanic or non-Hispanic origin.”¹⁵

The result is that the Census Bureau reports 263 different population counts for each level of Census geography in the country. A “Black” in Alabama therefore can be Black alone, or perhaps in combination with other races or possibly even also Hispanic. Since 2010, the number and proportions of multi-race populations in the United States has grown markedly.¹⁶ An examination of Appendix 1 “Census 2020 Alabama Black Population Total, non-Hispanic and

¹⁵ “How to Draw Redistricting Plans That Will Stand Up In Court”, National Conference of State Legislators (NCSL), January 22, 2011, p. 17.

¹⁶ Experts own independent observations.

Hispanic Combinations” reveals numerous new and important findings on who Blacks are in Alabama.

In Appendix 1 the population is reported starting in total, then progressing by row through race alone and race in combination for Alabama’s Black population. Column A shows the total population and Column B shows the % of the total population for that group. Column C shows the non-Hispanic population and Column D shows the % of the total population for that group. Column E shows the Hispanic population and Column F shows the % of the total population for that group. In Appendix 2, the same format follows for the Alabama Black Voting Age Population (VAP).

In Appendix 1 (P.43), Column A (Total Population) I show that the Black or African American alone population is 1,296,162 – or 25.8% of the population. At the bottom of the table, I show the incremental impact of Black alone or in combination. When all other race combinations are added, the Black population is 1,364,736 – or 27.2% of the population as shown in Table 4.1 (P.15). This represents an additional 68,574 Blacks, or 5.0% of the total Alabama Black population.

In Appendix 2, Column A (Voting Age Population) I see that the Black or African American alone population is 981,723 – or 25.1% of the population. At the bottom of the table, I show the incremental impact of Black alone or in combination. When all other race combinations are added, the Black population is 1,014,372 – or 25.9% of the VAP as shown in Table 4.2 (P.15). This represents an additional 68,574 Blacks, or 3.2% of the Alabama Black VAP.

The “%BLK 18+” population in the plaintiff’s report appears to be Alabama’s Black alone VAP from the 2020 Census. But in this matter precise definitions matter. This “alone” definition is the one most consistently used historically in VRA cases because a) a multi-race classification did not exist prior to 2000; and b) the “alone” definition has been most defensible from a political science / Gingles 2 voting behavior perspective. On September 1, 2021 the DOJ published “Guidance under Section 2 of the Voting Rights Act, 52 U.S.C. 10301, for redistricting and methods of electing government bodies”¹⁷ which states:

The Department’s initial review will be based upon allocating any response that includes white and one of the five other race categories identified in the response. Thus, the total numbers for “Black/African American,” “Asian,” “American Indian/Alaska Native,” “Native Hawaiian or Other Pacific Islander,” and “Some other race” reflect the total of the single-race responses and the multiple

¹⁷ <https://www.justice.gov/opa/pr/justice-department-issues-guidance-federal-statutes-regarding-redistricting-and-methods>

responses in which an individual selected a minority race and white race. The Department will then move to the second step in its application of the census data by reviewing the other multiple-race category, which is comprised of all multiple-race responses consisting of more than one minority race. Where there are significant numbers of such responses, the Department will, as required by both the OMB guidance and judicial opinions, allocate these responses on an iterative basis to each of the component single-race categories for analysis. *Georgia v. Ashcroft*, 539 U.S. 461, 473, n.1 (2003).

In order to facilitate analysis that reflects current DOJ guidance, I will include analysis containing both Black alone (individuals who identify Black as their only race and are not Hispanic) or in combination (people who identify as Black plus one or more other categories, hereafter referred to as the “All Black” definition in this report) as appropriate.

Table 4.1 Singleton Plan Total Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	720,903	178,921	190,043	24.8%	26.4%
2	709,514	184,471	197,316	26.0%	27.8%
3	715,486	121,007	131,328	16.9%	18.4%
4	712,333	40,533	47,917	5.7%	6.7%
5	727,206	125,405	139,063	17.2%	19.1%
6	720,310	298,729	308,741	41.5%	42.9%
7	718,527	339,093	350,328	47.2%	48.8%
Grand Total	5,024,279	1,288,159	1,364,736	25.6%	27.2%

Table 4.2 Singleton Plan Voting Age Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	559,860	131,988	137,385	23.6%	24.5%
2	553,805	139,700	145,697	25.2%	26.3%
3	556,784	92,167	96,652	16.6%	17.4%
4	550,055	31,122	33,882	5.7%	6.2%
5	569,546	96,864	103,325	17.0%	18.1%
6	562,843	227,389	233,260	40.4%	41.4%
7	564,273	257,502	264,171	45.6%	46.8%
Grand Total	3,917,166	976,732	1,014,372	24.9%	25.9%

Table 4.3 HB1 Plan Total Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	717,754	185,771	196,827	25.9%	27.4%
2	717,755	216,019	228,648	30.1%	31.9%
3	717,754	175,783	187,284	24.5%	26.1%
4	717,754	51,314	59,655	7.1%	8.3%
5	717,754	123,355	136,782	17.2%	19.1%
6	717,754	137,209	145,897	19.1%	20.3%
7	717,754	398,708	409,643	55.5%	57.1%
Grand Total	5,024,279	1,288,159	1,364,736	25.6%	27.2%

Table 4.4 HB1 Plan Voting Age Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	557,535	137,354	142,777	24.6%	25.6%
2	557,677	161,893	167,971	29.0%	30.1%
3	564,281	135,659	141,011	24.0%	25.0%
4	556,133	39,507	42,819	7.1%	7.7%
5	561,187	95,014	101,339	16.9%	18.1%
6	552,286	100,385	104,551	18.2%	18.9%
7	568,067	306,920	313,904	54.0%	55.3%
Grand Total	3,917,166	976,732	1,014,372	24.9%	25.9%

Table 4.5 Existing 2011 Plan Total Population by District (Replicates in part Plaintiff Figure 10)

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	726,276	188,431	199,586	25.9%	27.5%
2	693,466	211,862	224,221	30.6%	32.3%
3	735,132	186,438	198,228	25.4%	27.0%
4	702,982	46,919	54,662	6.7%	7.8%
5	761,102	130,351	144,648	17.1%	19.0%
6	740,710	120,130	128,681	16.2%	17.4%
7	664,611	404,028	414,710	60.8%	62.4%
Grand Total	5,024,279	1,288,159	1,364,736	25.6%	27.2%

Table 4.6 Existing 2011 Plan Voting Age Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	564,302	139,380	144,863	24.7%	25.7%
2	539,812	159,212	165,202	29.5%	30.6%
3	576,455	143,415	148,910	24.9%	25.8%
4	543,423	36,006	39,038	6.6%	7.2%
5	595,873	100,325	107,050	16.8%	18.0%
6	572,838	89,754	93,787	15.7%	16.4%
7	524,463	308,640	315,522	58.8%	60.2%
Grand Total	3,917,166	976,732	1,014,372	24.9%	25.9%

5) Analysis and Evaluation of Plans

Next, I analyze and evaluate the enacted Alabama plan and plaintiffs' proposed plan using the following measures traditional redistricting criteria:

- A. communities of interest, including:
- B. core retention analysis;
- C. incumbency; and
- D. compactness.

For the purposes of independent comparison and context, I attempted to develop additional Alabama redistricting plans using plaintiff's method of whole counties¹⁸ (consistent with our understanding of the Plaintiff's plan that no other traditional redistricting criteria were considered). In their complaint, plaintiffs go to great lengths discussing the history of redistricting in Alabama and enacted and contested congressional plans. But plaintiffs only offer one remedial plan, with no discussion of whether alternate plan scenarios (and their associated political and demographic outcomes) using their county bright line rule are even possible, nor the long-term consequences of the population deviation they propose. Plaintiffs also do not discuss whether keeping counties whole will always necessarily result in a plan with two Black minority influence districts. It does not.

In the vacuum created by that omission, our goal was to determine whether the plaintiffs plan was the *only way* to develop Alabama congressional districts using whole counties (with their unique demographic and political outcomes and unavoidable population deviation). Was the omission of alternative county-based plans an oversight, or by necessity? Are there *less* favorable political or demographic outcomes plaintiffs chose to overlook? Perhaps there are better outcomes the plaintiffs were unaware of? Without alternate scenarios or analysis, I cannot know. The only way of knowing whether their exact use of whole counties is the best remedy to a questionable harm, I need to know the breadth of outcomes possible with plaintiff's proposed remedy. Is it the strategy and methodology of using whole counties that provides the needed potential relief, or is it the exact combination of counties they propose? If no other combinations of counties provide viable relief, then I must ask why the inflexibility and consequences of one exact county-based plan proposed by the plaintiffs best serves the needs of all the people of Alabama.

¹⁸ Since these plans are developed using counties, the preservation of political subdivisions is given. The contiguity of counties in these alternate plans was enforced.

A. Communities of Interest

The concept of “communities of interest” (COIs) is frequently used, but not always easy to apply to redistricting. The U.S. Supreme Court has specified districts should contain “communities defined by actual shared interests.”¹⁹ The concept of COI can be difficult to define, and, consequently, making use of such an intangible concept in the actual constructing of boundaries may be difficult and arbitrary.²⁰ A broad, commonly used definition is “a group of people who share similar social, cultural, and economic interests, and who live in a geographically defined area”. Others have gone to greater lengths. The University of Michigan Center for Urban, State and Local Policy (CLOSUP) defined communities of interest as:

“While there is no set definition of COIs, we think of a COI as a group of people in a specific geographic area who share common interests (such as economic, historic, cultural, or other bonds) that are linked to public policy issues that may be affected by legislation. CLOSUP's research suggests that COIs can consist of religious, ethnic, or immigrant communities, neighborhoods, people in tourism areas, regional media markets, outdoor recreation or natural resource areas, economic zones, and much more. Examples of COIs include: historical communities; economic communities; racial communities; ethnic communities; cultural communities; religious communities; immigrant communities; language communities; geographic communities; neighborhoods; economic opportunity zones; tourism areas; school districts; outdoor recreation areas; communities defined by natural features; creative arts communities; media markets, etc.

Notably, CLOSUP’s definition does *not* include administrative geography such as counties. Thus COIs can have an infinite array of interpretations and applications in redistricting. In a statewide plan such as in Alabama, meaningful COIs may exist at various geographic scales; not all of them can be preserved simultaneously. Even if one were to consider them all, it would not be possible to preserve them all. In preserving any one or more of them, it would necessarily divide other communities. And those COIs in one part of the state may not prevail in others. Do statewide COIs trump local ones? So then, which COIs should Alabama seek to preserve? Should Alabama rank those in any given area, and if so, on what basis? According to how many members they have? But how can that even be ascertained?

¹⁹ *Miller v. Johnson*, 515 U.S. 900, 919–20 (1995).

²⁰ Matthew J. Streb, *Rethinking American Electoral Democracy*, 2nd ed. (New York: Routledge, 2011), p. 111; Brunell, *Redistricting and Representation*, p. 66; Brickner, “Reading Between the Lines...,” p. 16.

Plaintiffs in this case have sought to elevate just one COI above all others: county geography. Before I proceeded, I investigated county geography and its uses in Alabama's history further to better understand and possibly defend the use of counties for redistricting. In the United States, counties are administrative units of geography and can be thought of as communities of interest. There are over 3,000 of them nationwide (and 67 in Alabama). As administrative units of geography they serve a wide variety of purposes, from finance to infrastructure to services and planning and more. While counties are unquestionably "geographically defined areas" from our first COI definition above, they are rarely uniquely and decisively bound historical communities; economic communities; racial communities; ethnic communities and so forth (from CLOSUP's definition). And this is true in Alabama.

In states such as Alabama, county boundaries preceded the introduction of the automobile. Drawing on the work of Stephan²¹ (1977), a county can be described as a community representing the spatial distribution of a population resulting from its interaction with a governmental unit in accordance with time-minimization theory. Prior to the widespread adoption of long-distance communication devices, transportation technology was the determining factor in this interaction. Thus, county boundaries resulted from the necessity for people to travel between dispersed residences and a county seat under limiting conditions of time and the average velocity of the means of transportation. If county boundaries were too large, portions of the population would not have been able to interact with a center; if too small, then the cost of maintaining the centers would have been unnecessarily high, assuming there were enough local resources to maintain them at all. Ergo, counties are communities of interest historically formed under the constraints of time minimization. They do not have the same importance today that they held before modern communications and transportation.

Alabama is a state rich in history and diversity. With over 5 million residents, the yellowhammer state spans from the mountainous Tennessee Valley to the south by Mobile Bay covering over 52,000 square miles. It contains some of the richest farming country in the nation, alongside tech corridors and growing urban areas. The communities of interest shared by people dependent on a local economy is not defined by county boundaries, when citizens often live in suburbs and bedroom communities in neighboring counties. It could be argued that few Alabamians perceptively regard the administrative county they live in as the foremost, let alone singular definition of their "community of interest". Indeed, it would be difficult to imagine any resident arguing their administrative geography topping their college football allegiances.

²¹ Stephan, G. (1977). Territorial Division: The least-time constraint behind the formation of subnational boundaries. *Science* 1996 (April): 522-523.

Today, much of the historic development and utility of counties as transportation hubs has changed. We no longer need to consider how long it takes on horseback to get from one county seat to another. Their current characteristics and utility are based on residuals of this history. Thus the historic utility of counties and their relevance as communities of interest is changing. If a redistricter were to argue for their prevailing use in designing a plan, they would need to do so for them as individual units as well as for why certain counties in aggregate represent a unifying geography. To the very degree that one argues administrative geographies are important as unique and defining COIs, one argues *against* their collective use and value as homogeneous and representative units of political geography. As with any COI, the aggregation of counties as communities of interest does not somehow a priori create a greater COI. In fact – the voice of any individual county may be eroded when it is aggregated into election districts with other counties. In the *Singleton v. Merrill* complaint – there are no arguments for why counties should prevail not only as a community of interest, but *the* community of interest. In the absence of such a justification, I argue that other COIs capturing regional characteristics, cultural differences and more in Alabama can only be considered and captured using sub-county granularity.

I will go on to show in this section that not only are numerous other configurations of congressional districts possible using counties in Alabama, but that:

- a) there are significant and negative continuity of representation impacts of a county-based redistricting plan on Alabama's Black residents, as demonstrated with a core retention analysis and incumbency analysis;
- b) the use of counties does not remedy gerrymandering, as shown with a compactness analysis; and
- c) the introduction of a deviation from perfectly balancing the size of congressional districts today has long-term and far reaching implications for One Person One Vote in Alabama, as shown with a series of population forecasts.

I conclude by discussing the political performance, the racial outcomes and impact to incumbents of the Plaintiff's plan and more.

B. Core Retention Analysis

Courts have recognized the need to preserve the core of a prior established district as a legitimate redistricting criterion,²² as well as the avoidance of contests between incumbents.²³ Core retention fosters the continuity of political representation. A *Core Retention Analysis* (CRA) is simply a demographic accounting of the addition, subtraction, and substitution of persons that would be brought about by a proposed realignment of a district's existing boundaries. A CRA is a way of quantifying precisely how a proposed realignment would affect the continuity of political representation among a district's current residents and eligible voters.

Here, a CRA can be especially useful in exposing differential effects on specific groups of residents that amount to the denial or abridgement of the right to vote. To illustrate: suppose that 1,000 people now reside in a district in which Blacks constitute 480 (48%) of all the district's eligible voters (a Black "influence" district). Since this district now has too many residents (based upon the 2020 Census), a proposed boundary change retains 800 of its current residents and resituate 200 others in an adjacent district with too few people, thereby satisfying the newly-established requirement that every newly-drawn district be properly apportioned with 800 residents. Here, the "core" of the former district has fully retained numerically: all 800 residents of the newly-drawn district were part of the former district, maintaining the continuity of political representation among the proposed new district's current residents and eligible voters. That district would have a Core Retention percentage of 100%.

The CRA might also show that 150 of all 200 proposed resituated residents are Black. By this measure, "core retention" differs markedly for Blacks, because only 330 (480 minus 150) of the original 480 Black "core" of the former district has been retained. In short, the proposed new district would retain only 69% of the original Black core, thereby depriving 31% of Blacks of continuity of political representation.

Core Retention Analysis has usually only considered only the total populations of districts in comparisons across plans. As illustrated above, that limitation obscures other potentially problematic aspects of redistricting. In this case, I have broadened this standard demographic accounting model, using standard methodology, to present a full evaluation of various alternative redistricting plans, focusing on the right to vote by a protected group.

²² *Abrams v. Johnson*, 521 U.S. 74, 84 (1997).

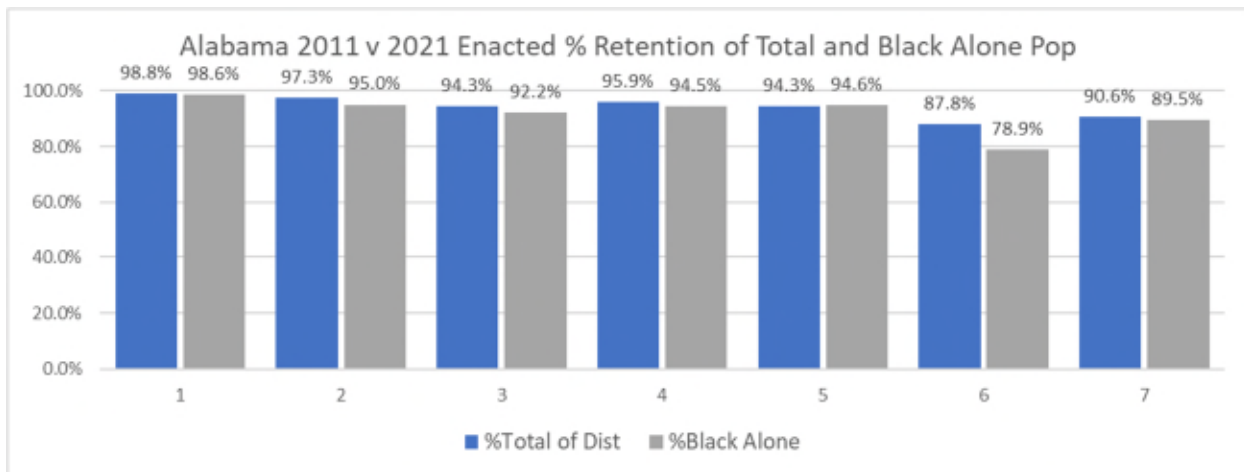
²³ *Bush v. Vera*, 517 U.S. 952 (1996).

Three core retention analyses follow:

- 1) Alabama 2011 v Alabama 2021 enacted
- 2) Alabama 2011 v Singleton
- 3) Alabama 2021 v Singleton

In Figure 5.1 it can plainly be seen that core retention of the total population and the Black population by the State of Alabama 2021 enacted plan compared to the 2011 existing Alabama plan is significant, consistent and comparable, which should have been expected given the least change approach of the 2021 plan.

Figure 5.1 Core Retention of Total and Black Population: 2011 Existing v 2011 Enacted Plans



In Tabl1 5.1 (below) the 2011 existing plan is shown in column 1, and the 2021 enacted plan is shown in column 2. The total population in column 3 is the number of total persons, and the Black population in column 4 is the number of Black persons who were retained and displaced in the 2021 enacted plan. For example, in the first row (1, 1) the total population of 717,754. This is intuitive. The existing 2011 D1 was reduced by exactly the number of persons necessary to balance – leaving 739 persons displaced to D2 and 7,783 persons displaced to D7. Concurrently, 185,771 Black persons are retained in D1, while 158 are displaced to D2 and 2,502 are displaced to D7.

At the bottom of Table 5.1(P.23) is a row named “Number Retained” which is the population in Alabama that did not change districts in the 2021 plan. The next row is “Percent Retained” which is the percent of the population that did not change districts in the 2021 plan. Alabama kept a remarkable 94.1% of the total population and 91.8% of the Black population intact with their 2021 enacted plan. The remainder is “Number Displaced” that were moved to some other district.

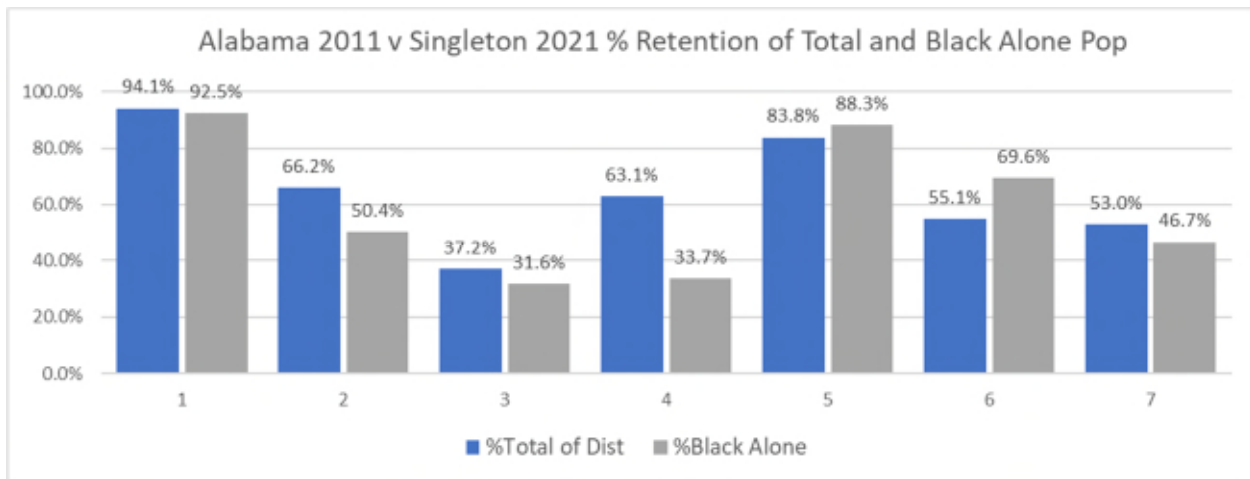
Table 5.1 Core Retention of 2011 Existing and 2021 Enacted Plan

Current 2011 Base District	New 2021 Enacted District	Total Population	Black Alone Population
1	1	717,754	185,771
	2	739	158
	7	7,783	2,502
1 Total		726,276	188,431
2	2	674,947	201,201
	7	18,519	10,661
2 Total		693,466	211,862
3	2	41,867	14,534
	3	693,265	171,904
3 Total		735,132	186,438
4	3	1,697	2
	4	674,218	44,318
	5	185	0
	6	5,012	18
	7	21,870	2,581
4 Total		702,982	46,919
5	4	43,533	6,996
	5	717,569	123,355
5 Total		761,102	130,351
6	3	22,792	3,877
	6	650,382	94,806
	7	67,536	21,447
6 Total		740,710	120,130
7	2	202	126
	4	3	0
	6	62,360	42,385
	7	602,046	361,517
7 Total		664,611	404,028
Number Retained		4,730,181	1,182,872
Percent Retained		94.1%	91.8%
Number Displaced		294,098	105,287
Grand Total		5,024,279	1,288,159

Figure 5.2 presents a core retention analysis of total population and Black population for the Singleton plan compared to the 2011 existing Alabama plan. Here I show two significant effects. First, the Singleton plan has significantly lower core retention, due to the large movements of population necessary to support their plan objective. To that end, I can see that the core retention of the Black population relative to total is:

- comparable in D1;
- much poorer in D2, D3 and D4;
- slightly better in D5 (in a part of Alabama distant from the Black influence discussion);
- slightly better in D6 (due to significant *non*-Black population being disgorged to other districts as part of the apparent attempt to improve the Black racial performance of D6); and
- worse in D7 (where Black population was disproportionately disgorged to D6 in an apparent attempt to balance the Black populations between the two districts).

Figure 5.2 Core Retention of Total and Black Population: State of Alabama 2011 v Singleton



Clearly, the State of Alabama's newly enacted 2021 plan registers consistently and significantly higher levels of core retention for both total and Black population than the Singleton plan - a result that should have been anticipated by the plaintiffs.

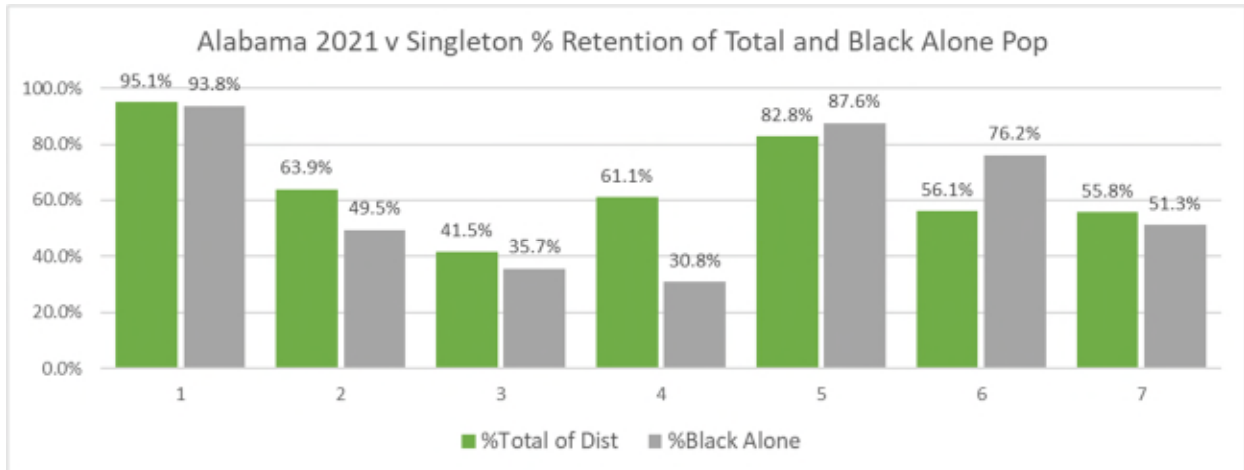
Table 5.2 (P.25) is consistent with Table 5.1 (P.23) except that it compares the Singleton plan with the 2011 existing plan. The significant difference shown in Figures 5.1 and 5.2 are reflected numerically here. The total population and Black population retained is significantly lower than Alabama's CRA shows, and the number displaced is significantly higher. At the bottom of Table 5.2 is the total retained population: 3,257,263 and Black retained population: 743,381. The Singleton plan displaces 1,472,918 more total and 439,491 more Black Alabamians than the enacted 2021 Alabama plan.

Table 5.2 Core Retention of 2011 Existing and Singleton Proposed Plan

Current 2011 Base District	Proposed 2021 Singleton District	Total Population	Black Alone Population
1	1	683,333	174,358
	7	42,943	14,073
1 Total		726,276	188,431
2	1	37,570	4,563
	2	458,812	106,834
	7	197,084	100,465
2 Total		693,466	211,862
3	2	309,507	88,989
	3	273,123	58,903
	4	91,103	8,617
	7	61,399	29,929
3 Total		735,132	186,438
4	3	105,133	15,001
	4	443,687	15,801
	5	89,525	10,361
	7	64,637	5,756
4 Total		702,982	46,919
5	4	123,421	15,307
	5	637,681	115,044
5 Total		761,102	130,351
6	3	278,425	35,751
	4	54,122	808
	6	408,163	83,571
6 Total		740,710	120,130
7	6	312,147	215,158
	7	352,464	188,870
7 Total		664,611	404,028
Grand Total		5,024,279	1,288,159
Number Retained		3,257,263	743,381
Percent Retained		64.8%	57.7%
Number Displaced		1,767,016	544,778
Grand Total		5,024,279	1,288,159

This analysis is followed by a core retention analysis of the Singleton plan compared to the State of Alabama 2021 enacted plan. Since the Alabama 2021 enacted plan is similar to the original 2011 plan – it is no surprise that the pattern of retention by district, by total and Black population is consistent – but just slightly different.

Figure 5.3 Core Retention of Total and Black Population: State of Alabama 2021 v Singleton



This superior record for the State’s Plan reflects the advantage of a least change approach: simply adjusting existing boundaries where necessary, instead of completely redrawing all districts, as plaintiffs did. Overall, the differences in core retention shows the significant incremental loss of the continuity of representation borne disproportionately by Alabama’s Black population.

It is also worth noting that in the process of reapportioning the state population after Census 2020, the state effectively unpacked District 7 in an effort to balance each districts population. In examining Table 4.5 (P.16) I show that the existing (that is, pre-apportionment) plan had 664,611 total and 404,028 Black alone population. I show in Table 4.3 (P.16) that the new HB1 plan has 717,754 total and 398,708 Black alone population. That is, D7 added (717,754-664,611) or 53,143 total persons, while disgorging (404,028 – 398,708) or 5,320 Black alone persons to adjacent districts. It is difficult to argue that the State of Alabama deliberately packed Black population when their plan demonstrates that they in fact *unpacked* District 7 (resulting in a reduction in Black alone population from 60.8% to 55.5%) of the total population to the degree practicable while holding other traditional redistricting criteria.

C. Incumbency Analysis

The current residential address of congressional incumbents were geocoded on 11-14-2021. Alabama's enacted plan respects incumbents. While not stated explicitly in their report, the plaintiff plan *does not* respect incumbents. Plaintiffs' plan (Figure 5.4) pairs Palmer and Rogers in proposed District 3 and leaves District 7 unrepresented.

In our subsequent analysis, I consider 13 alternate plans built from counties. Among these - two plans: Plan 2 (S2) Figure 5.5 and Plan 3 (1) Figure 5.6 avoid pairing incumbents - demonstrating that other combinations of counties are possible that respect traditional redistricting principles.

Figure 5.4 Hatcher Plan

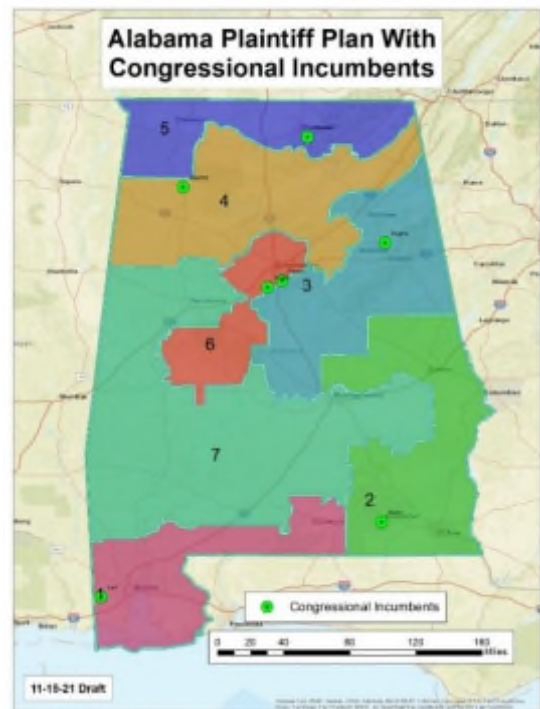


Figure 5.5 Alternate Plan 2 (S2)

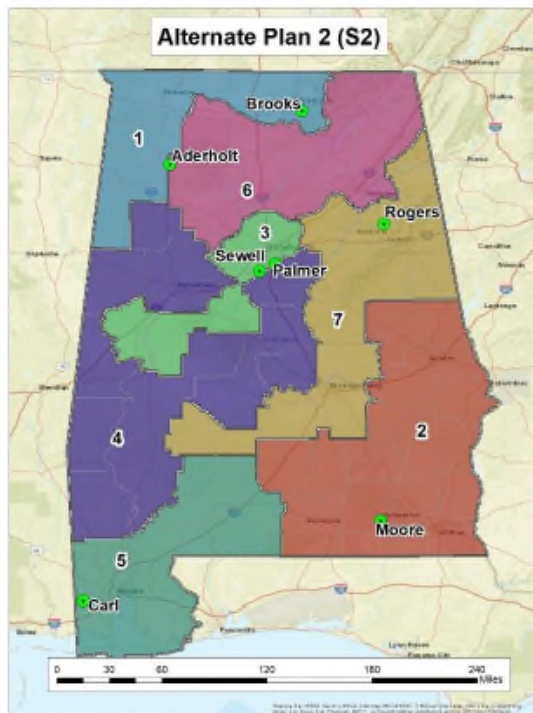
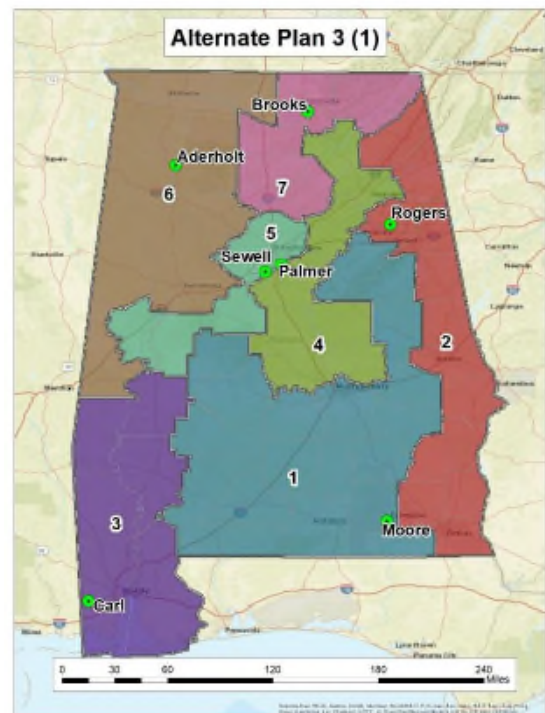


Figure 5.6 Alternate Plan 3 (1)



D. Compactness

Compactness of districts is a measure to ensure that districts do not excessively deviate from being “reasonably shaped” that is intended to deter gerrymandering. This of course is an enormously ambiguous and arbitrary description of what compactness actually is. Compactness was relatively easy to attain before “One Person One Vote”. However, with the development of both technology²⁴ and redistricting law (especially Baker v. Carr, which led to splitting of geography as population deviations were driven lower) compactness became less and less possible. Today, while most compactness measures are absolute, they can still effectively serve as a tool compare one plan against another and to determine which is superior (even if multiple plans have poor compactness).²⁵ But what measure does an expert use? “To deter gerrymandering, many state constitutions require legislative districts to be “compact.” Yet, the law offers few precise definitions other than “you know it when you see it,” which effectively implies a common understanding of the concept. In contrast, academics have shown that compactness has multiple dimensions and have generated many conflicting measures”.²⁶ There is no professional consensus on a “right” measure, and every widely used measure works differently. A district that is “most compact” by one measure can easily and frequently be less compact by another. For this reason, I pick the four most common compactness measures (Polsby-Popper, Schwartzberg, Reock and Convex Hull) - each of which has unique features, and strengths and weaknesses.²⁷ I then compare the compactness of each district of each plan individually and in aggregate.



²⁴ The 1971 and 1981 Reapportionments used limited computer mapping for the first time. 1991 added significant geographic technology— Census Tiger Files— Geographic Information Systems.

²⁵ <https://www.ncsl.org/Documents/legismgt/Compactness-Hofeller.pdf>

²⁶ “How to Measure Legislative District Compactness If You Only Know it When You See it” <https://gking.harvard.edu/presentations/how-measure-legislative-district-compactness-if-you-only-know-it-when-you-see-it-7>

²⁷ The Polsby-Popper and Schwartzberg ratios place high importance on district perimeter. Thus, they are highly susceptible to bias due to shoreline complexity. Therefore, districts that are trimmed around shorelines may end up with a low compactness score through no fault of the district's authors and may not necessarily be a true indicator of gerrymandering. This is precisely why it's important to use multiple compactness scores (in this case the Polsby-Popper, Schwartzberg, Reock and Convex Hull measures) and let the reader judge which one is a better fit based on the geography of the district and method of calculation each score uses. A higher score means more compact, but the scores using different measures cannot be directly compared to each other. Source: https://cdn.azavea.com/com.redistrictingthenation/pdfs/Redistricting_The_Nation_Addendum.pdf

In Table 5.3 below I assess the State of Alabama compactness by district, by method. Within each method, the higher the score the better. Using District 5 as an example, it scores highest in Polsby-Popper, Schwartzberg and Convex Hull, but in fact performs the worst in Reock. This table enables us to assess the performance of individual districts across methods. This illustrates exactly why it is beneficial to look at multiple, highly regarded methods when performing compactness analysis. Since the values within each method are similar (but are in fact mathematically different) it is not possible to summarize accurately across plans. In order to compare the Alabama enacted plan with the plaintiff plan, I summarize the compactness scores by method.

Going into this analysis, I gave the plaintiff plan the benefit of the doubt. Alabama's plan was built from the lowest level of Census geography: census blocks, which is exactly the geography and methodology alleged by the plaintiffs to create the gerrymandering problem they seek to remedy. I assumed that because the plaintiff plan was alleged to remedy gerrymandering and was built from whole, geometrically simple counties, it would score decisively better in a compactness analysis over a plan such as Alabama's. I was wrong.

In Table 5.3 below I show the existing scores by district, by compactness measure. The scores shaded in green are the "best" in each measure, that is: most compact. The scores shaded in red are the poorest, that is: least compact. Not all districts are ranked the same in each measure, which is why I use multiple measures and examine each individually as well as in aggregate. The last column "Total" is simply a sum of the scores across plans for that district and is designed to provide a final summary ranking of the compactness of each district. The last row "Sum" is simply a sum of the scores for all districts in the plan for that measure. This is calculated to enable a summary comparison of metrics from one plan to another. A higher score in "Sum" means that by that measure, that plan is more compact. For this exercise, I interpret whichever plan has the majority of high scores to be the "more compact" plan. Table 5.3 is the compactness scores for the existing Alabama 116th congressional plan and serves as a basis for comparison.

Table 5.3 Alabama Existing (2011) 116th Plan Compactness Scores

District	Polsby-Popper	Schwartzberg	Reock	Convex_Hull	Total
1	0.16	0.40	0.42	0.71	1.70
2	0.22	0.47	0.49	0.74	1.93
3	0.22	0.47	0.36	0.73	1.79
4	0.18	0.43	0.36	0.62	1.59
5	0.29	0.53	0.22	0.77	1.82
6	0.14	0.37	0.43	0.69	1.63
7	0.13	0.36	0.38	0.62	1.49
Sum	1.34	3.04	2.66	4.90	

In Table 5.4 below the results pass the “eyeball test” that is: you can just look at District 2 and see that it has simple geometry. It has numerous straight segments and is compact in the sense it fits nicely in its circumscribing circle. But some details in the table are not intuitive. The districts with significant lengths of riparian boundaries tend to score poorly (and are hard to see from a statewide map). Smaller river segments have greater sinuosity, thus greater lengths. Districts 1, 4, 6, and 7 have long lengths of river boundaries. District 5 has a lot of straight segments but suffers from being elongated (fits poorly in a circle).

Table 5.4 Alabama 2021 Enacted Plan Compactness Scores

District	Polsby-Popper	Schwartzberg	Reock	Convex_Hull	Total
1	0.20	0.44	0.40	0.71	1.75
2	0.26	0.51	0.50	0.76	2.02
3	0.25	0.50	0.36	0.77	1.88
4	0.19	0.44	0.36	0.61	1.60
5	0.32	0.56	0.30	0.80	1.98
6	0.15	0.39	0.31	0.68	1.55
7	0.19	0.44	0.43	0.68	1.74
Sum	1.55	3.28	2.67	5.01	

In Table 5.4, I first note that by looking at the “Sum” row at the bottom - compactness scores are higher in each measure than the 2011 congressional plan. As expected, each method ranks each district differently. Polsby-Popper and Schwartzberg and Convex-Hull ranks D5 as being the best, while Reock ranks D2 highest. In looking at the last column “Total” I show that D2 actually prevails as the most compact district. My interpretation is that the highest ranking districts are comparable, but that D4, D6 and D7 are least compact – due in part to a significant amount of border being waterways at the Bankhead Lake intersection in western Jefferson County.

In Table 5.5 I show the compactness scores by district for the Singleton proposed plan. The Polsby-Popper and Schwartzberg scores join the Alabama enacted plan in outperforming the existing congressional plan. However, by the Reock and Convex Hull measures, the plaintiff plan trails not only the existing (2011) plan but also the enacted Alabama plan.

Table 5.5 Singleton Plan Compactness Scores

District	Polsby-Popper	Schwartzberg	Reock	Convex_Hull	Total
1	0.23	0.48	0.29	0.65	1.67
2	0.22	0.46	0.41	0.70	1.79
3	0.24	0.49	0.31	0.73	1.77
4	0.22	0.47	0.32	0.67	1.69
5	0.27	0.52	0.25	0.75	1.79
6	0.19	0.44	0.30	0.68	1.61
7	0.18	0.42	0.45	0.70	1.74
Sum	1.56	3.29	2.33	4.88	

Alternate Plans

In their complaint, plaintiffs propose one remedial plan using whole counties. Plaintiffs do not acknowledge let alone propose any alternative plans or strategies or address whether any other configuration of counties is even possible. Plaintiffs do not mention protecting incumbents, and in fact pair two incumbents in District 3 (Alabama's existing plan and proposed plan protect incumbents). So. Alternative plans were explored and drawn with whole counties to demonstrate that options exist under the plaintiff's premise. Many in fact. The alternative plans are presented to make points about expanded deviations and possible political outcomes of drawing other whole county maps. I do not express an opinion about the legality of any deviation in the alternative plans.

2018 Election Gov # and % D Districts

In order to characterize the plans and compare them with the performance of the plaintiff's plan, I collected the results of the 2018 election²⁸ which were reported for each of Alabama's 1,992 voting precincts. I aggregated these precincts to the county level for assessing the plaintiff's plan and alternate plans 1-13, and I approximated the geography of the 7 whole districts of the enacted Alabama plan. I then measured the voting performance for governor as:

G18GOVRIVE (# of Republican governor votes) /

G18GOVRIVE (# of Republican governor votes) + G18GOVDMAD (# of Democratic governor votes) + G18GOVOWRI (# of other / write in governor votes).

Percentages shown are the resulting % voting for the Republican governor in each plan.

In order to create a uniform and accurate measure of the number and percent Black majority or influence districts, I calculated the number of Black alone or in combination first for counties, then for Census blocks. The number of Black districts reported in Table 5.6 (P.32) refers to the number that are over 40% "All Black" in the plan, and the percent refers to the exact percent "All Black" in those districts. I reinforce: no effort has been made in this analysis to create "alternative" plans to complement the Alabama plan using sub-county geography. As I am sure both parties in this case would concede – the number of "alternative" plans using subcounty geography such as voting precincts or even Census blocks is immeasurable.

²⁸ <https://redistrictingdatahub.org/state/alabama/>

Table 5.6 Alternate Plan Characteristics

Plan	Deviation	Incumbents Safe?	2018 Election Gov # and % D Districts	# and % Black Districts > 40%
Plaintiff	2.5%	N	Two, 41.4% and 44.0%	Two, 42.9% and 48.8%
1 (S1)	0.6%	N	One, 41.3%	One, 43.0%
2 (S2)	1.0%	Y	One, 41.3%	One, 43.0%
3 (1)	2.1%	Y	One, 41.3%	One, 43.9%
4 (2)	2.1%	N	One, 41.4%	One, 42.9%
5 (3)	1.2%	N	One, 41.4%	One, 42.9%
6 (4)	1.5%	N	One, 41.3%	Two, 42.4% and 43.0%
7 (5)	0.7%	N	One, 41.3%	One, 43.0%
8 (1B)	2.5%	N	Two, 41.3% and 44.1%	Two, 43.0% and 48.7%
9 (2B)	6.2%	N	One, 44.2%	None
10 (3B)	4.9%	N	One, 41.3%	Two, 42.6% and 43.0%
11 (4B)	4.3%	N	One, 44.2%	One, 41.1%
12 (5B)	6.0%	N	Two, 41.3% and 45.4%	Two, 43.0% and 46.2%
13 (6B)	3.1%	N	One, 41.4%	Two, 42.5% and 42.9%
Alabama	0.0%	Y	31.9%	57.1%

The plaintiffs plan, alternate plans and the Alabama enacted plan are shown in the Map Appendices 1-16. Detailed maps of the Alabama and plaintiff plans are as follows:

The Alabama Enacted Plan:

- Percent Black Alone Voting Age Population by county is presented in Map Appendix 17.
- Voting Age Population by County is presented in Map Appendix 18.
- Percent Black Alone Voting Age Population by VTD²⁹ is presented in Map Appendix 19.
- Voting Age Population by VTD is presented in Map Appendix 20.

The Singleton Proposed Plan:

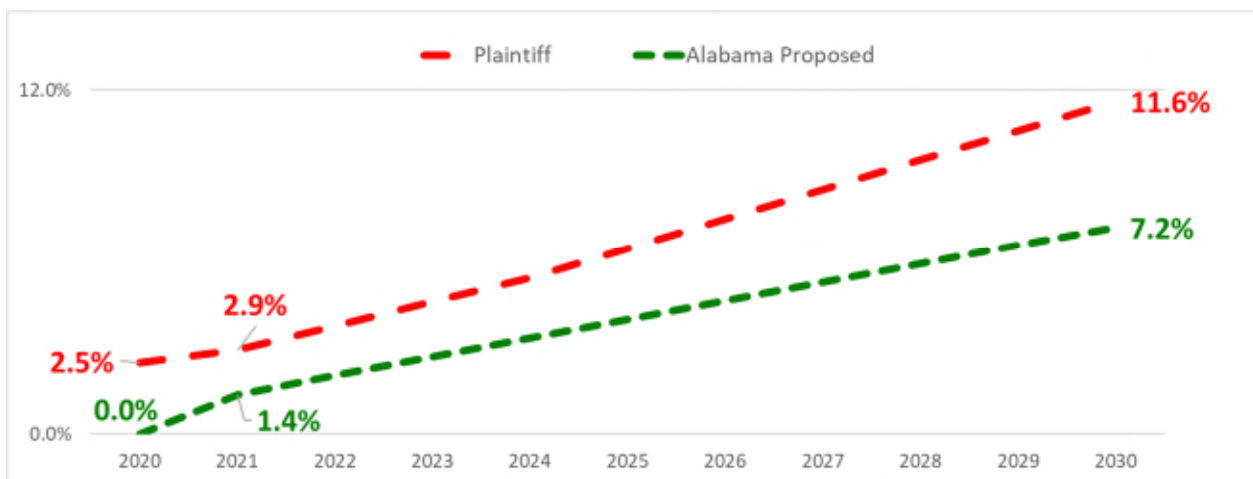
- Percent Black Alone Voting Age Population by county is presented in Map Appendix 21.
- Voting Age Population by County is presented in Map Appendix 22.
- Percent Black Alone Voting Age Population by VTD is presented in Map Appendix 23.
- Age Population by VTD is presented in Map Appendix 24.
- District 6 Percent Black Alone Voting Age Population by VTD is presented in Map Appendix 25.

²⁹ VTDs are Voting Districts. "VTD" is a census term for a geographic area, such as an election precinct, where election information and data are collected; boundaries are provided to the Census Bureau by the states. Since boundaries must coincide with census blocks, VTD boundaries may not be the same as the election precinct and may include more than one precinct. Source: <https://www.ncsl.org/research/redistricting/the-redistricting-lexicon-glossary.aspx>

Deviation

The Plaintiff's plan results in a 2020 population deviation of 2.5%, well beyond the one person/one vote conventional deviation of +/- 1 person for congressional districts. Compare this to the State of Alabama's enacted plan, which is actually +/- one person. However, neither of these two deviations are likely to remain static until redistricting again can be effected using the 2030 census. That is, these deviations are likely to change over the coming decade. As such, I have developed an approach using conventional demographic methods to estimate the population deviation of the plans over the course of the decade to 2030. The premise is that if we are going to consider opening the door to *some* deviation in 2020 to meet other redistricting requirements - we should make an informed decision based on the expected deviation over the course of the decade that will follow. As a demographic expert, I propose under this circumstance that it is beneficial to assess the impact and utility of a districting plan *over the course of the decade that it is expected to perform*. Not just the base redistricting year that it begins. Using professionally developed small-area population projection methods (see Appendix 4) I am able to forecast the annual population by congressional district of: 1) the plaintiff's plan; 2) the State of Alabama enacted plan; and 3) other draft plans I have developed for 2020-2030. This approach allows one to see the expected annual deviation over the period of time that a given plan is likely to be in effect, which is from 2020 to 2030, when the next decennial census will be taken.

Figure 5.7: Population Deviations 2020-2030: Plaintiff Proposed and Alabama Enacted Plans – Projected 2020-2030



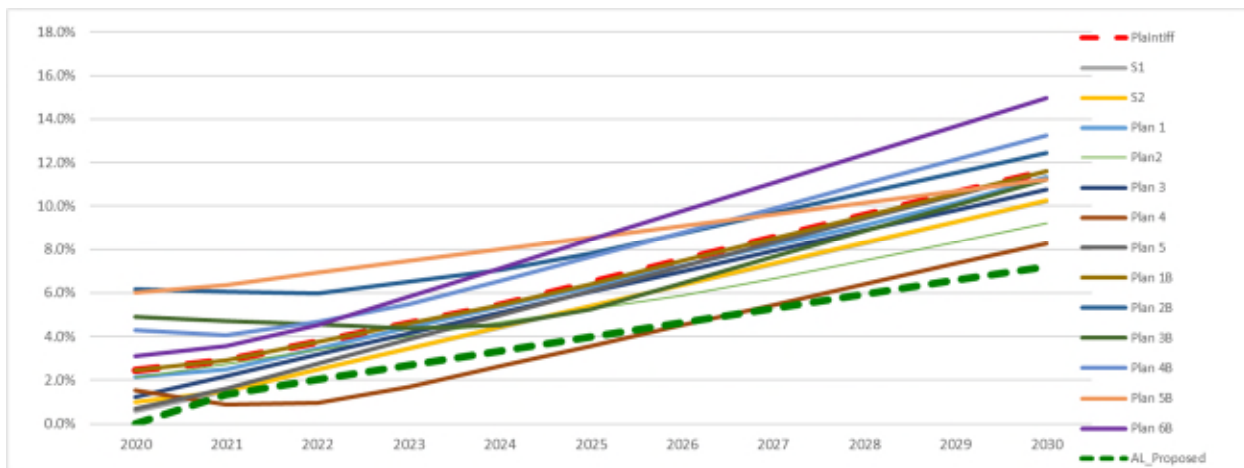
In Figure 5.7, the red dotted line is the plaintiff's plan, and the green dotted line is the enacted Alabama plan. The plaintiff's plan begins in 2020 with a deviation of 2.5%. Based on the forecast population growth over the decade from 2020-2030, the deviation of the plaintiff plan is expected to grow to 11.6%.

By comparison, the Alabama enacted plan begins in 2020 with a deviation of 0.0%. Based on the forecast population growth over the decade from 2020-2030, the deviation of the Alabama enacted plan is expected to grow to 7.2%. The change is already underway, impacting both plans. In 2021, I estimate the 2.5% deviation in the plaintiff's plan for 2020 is currently actually 2.9%, and the deviation in the Alabama enacted plan is already actually 1.4% because of likely population shifts between the date of the census and today.

In Figure 5.8 the plaintiff plan and Alabama enacted plan are compared with 13 alternative county-based plans that I independently and personally developed using whole counties. As with Figure 5.8, the deviation trends for these alternate plans range anywhere from 0.7% to 6.2% in 2020 and grow to between 8.3% and 15% by 2030. One plan, Plan 4 actually shows a short-term decline in deviation, before increasing modestly throughout the decade.

In examining these trends, I have two observations. First – where the deviation is throughout the decade and where it ends in 2030 is strongly driven by where they start in 2020. The plans that start with the lowest deviation tend to end with the lowest deviations. This is critical to understanding their utility throughout the decade. Deviations in congressional plans are conventionally zero, to support the concept of “one-person, one vote”. Here, plaintiffs argue that *some* deviation is palatable for their benefit of realizing two Democrat performing districts. But plaintiffs do not argue how much deviation is palatable, nor do they address the long-term consequences of opening this door. I argue that if some deviation in the base year is tolerable, that in order to make an informed decision whether the trade-off is worth it, one must consider the expected impact of the introduced deviation for the lifespan of the plan – not just for the year it was based.

Figure 5.8: Population Deviations 2020-2030: Plaintiff Proposed and Alabama Enacted Plans – Projected 2020-2030



The second observation is that difference in the trends and their outcomes are also driven by unique combinations of geography across the state – some of which are going to have continued population decline over the decade, while some will remain relatively stable, while others will grow dramatically. So. Not only does the starting point matter, but the combination of shrinking, stable and growing geographies that comprise the districts matters as well. This is not to argue that population forecasts should now become a traditional redistricting criteria. Rather, population forecasts should be created, studied and considered as I have done here for their unique ability to show long-term impacts and utility of redistricting plans.

Index of Misallocation

In addition to the obvious insights on long-term utility of a redistricting plan provided by population forecasts, I have gone on to link these forecasts to a measure that shows how many people would need to be “re-allocated” in order to meet the one person one vote +/- 1 person standard over time. This measure, known as the Index of Misallocation (IOM), was introduced by Swanson³⁰ to examine the effect of population estimation errors. Comparing the misallocation under the Plaintiff’s plan to that under the State’s plan, as shown in Figure 5.9 (P.36):

In 2020:

- The IOM under the State’s enacted plan is 0.08295%. Multiplying 0.008295 by the total 2020 population of 5,024,279 yields **4,168**, the number of people that would have to be re-distributed to meet the one person/one vote requirement in 2020 by reducing the IOM (and total deviation) to zero.
- The IOM under the Singleton proposed 2020 plan is 0.317056%. Multiplying 0.00317056 by the total 2020 population of 5,024,279 yields **15,929**, the number of people that would have to be re-distributed to meet the one person/one vote requirement in 2020 by reducing the IOM (and total deviation) to zero.

In 2020 the State’s plan requires 11,761 fewer people to be re-distributed in order to have an IOM of zero in 2020 than does the Plaintiff’s plan.

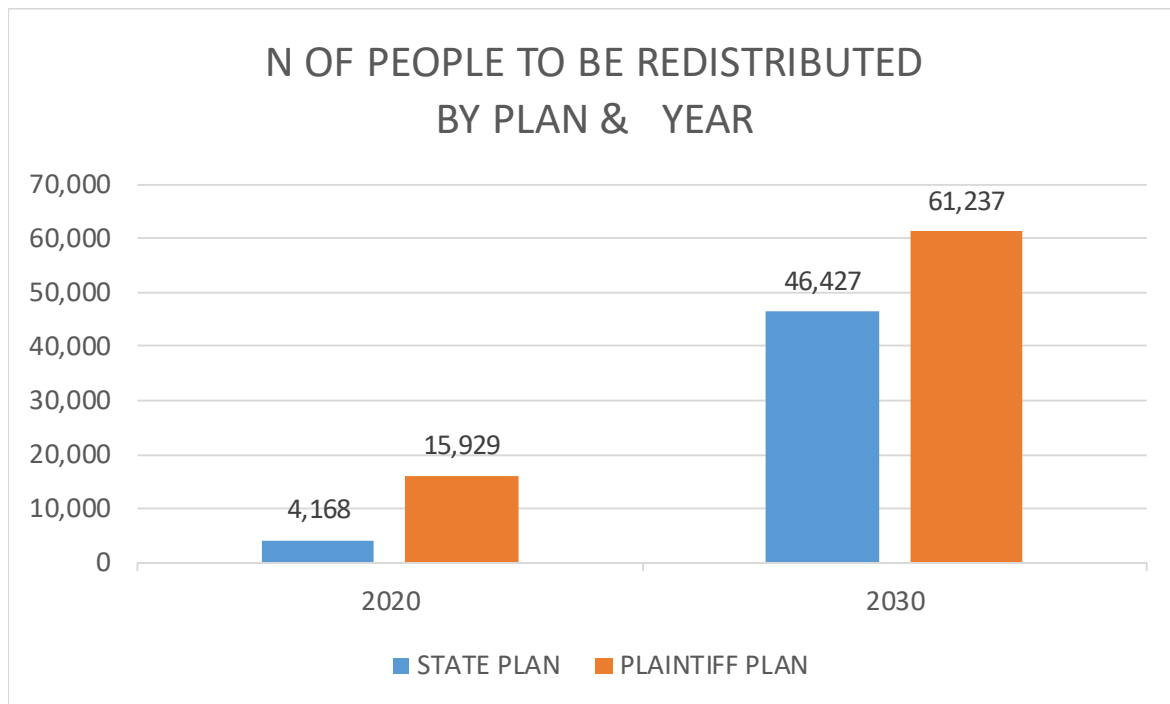
³⁰ Swanson, D. A. (1981) Allocation Accuracy in Population Estimates: An Overlooked Criterion with Fiscal Implications. pp. 13-21 in Small Area Population Estimates, Methods and Their Accuracy and New Metropolitan Areas Definitions and Their Impact on the Private and Public Sector, Series GE-41 No.7, U.S. Bureau of the Census.

In 2030:

- The IOM under the State's enacted plan is 0.88012%. Multiplying 0.0088012 by 5,275,078, the expected total 2030 population under the State's Plan, yields **46,427**, the number of people that would have to be re-distributed to meet the one person/one vote requirement in 2020 by reducing the IOM (and total deviation) to zero.
- The IOM under the Singleton plan is 1.15424%. Multiplying 0.0115424 by 5,305,364, the expected total 2030 population under the Plaintiff's plan, yields **61,237**, the number of people that would have to be re-distributed to meet the one person/one vote requirement by reducing the 2030 IOM (and the total deviation) to zero.

By 2030, the State's plan requires 14,810 fewer people to be re-distributed in order to have an IOM of zero than does the Plaintiff's plan.

Figure 5.9: Index of Misallocation by Plan and by Year

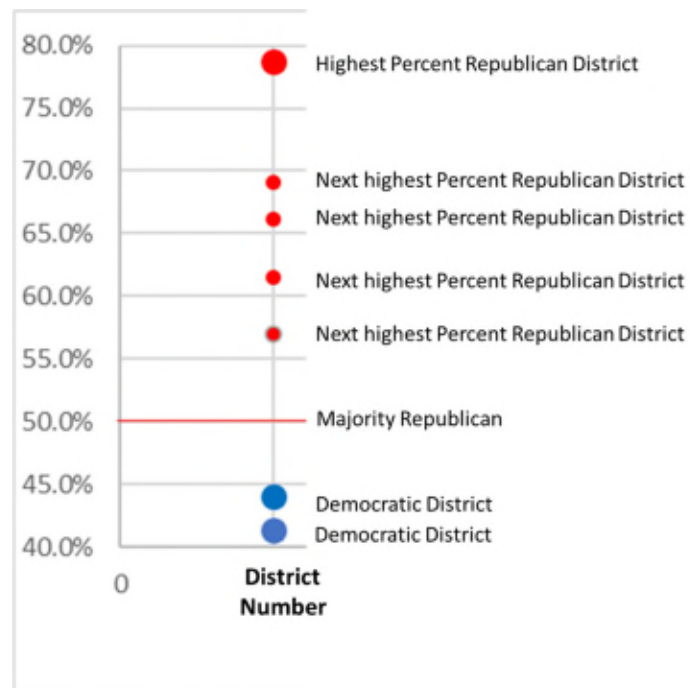


Political Performance

In order to characterize the plans and compare them with the performance of the plaintiff's plan, I collected the results of the 2018 election³¹ which were reported for each of Alabama's 1,992 voting precincts. I aggregated these precincts to the county level for assessing the plaintiff's plan and alternate plans 1-13, and I approximated the geography of the 7 whole districts of the enacted Alabama plan. Percentages shown in this analysis are the resulting % voting for the Republican governor in each plan.

As shown in Figure 5.10 below - for ease of explanation, the percent voting Republican in the 2018 governor's race is shown as points on a vertical axis for each plan. The lower numbers, *below* the 50% mark, represent districts that did (or would) have voted for the Democratic candidate. Those points *above* the 50% mark, represent districts that did (or would) have voted for the Republican governor.

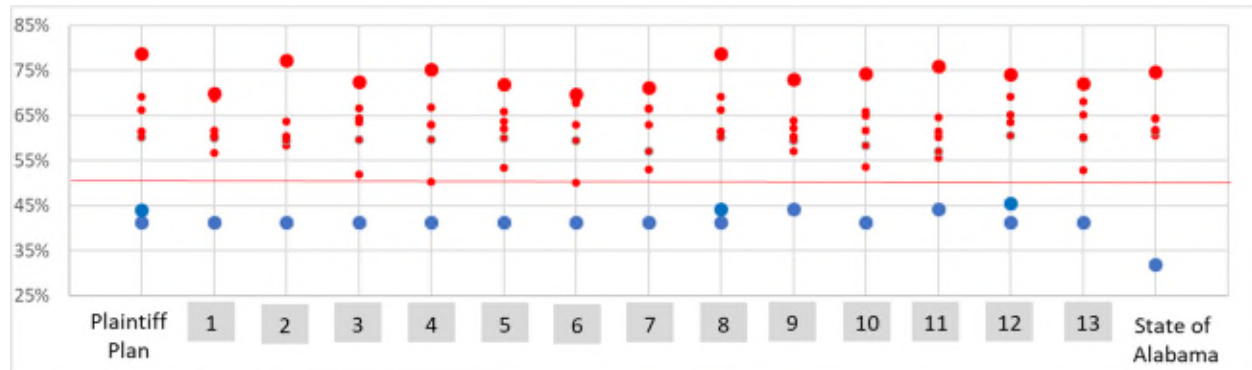
Figure 5.10 Political Performance Data Visualization Explanation



³¹ <https://redistrictingdatahub.org/state/alabama/>

Figure 5.11 shows the variety of outcomes by plan for the 2018 Alabama governor's race. To the left, I show the plaintiff's plan. Note the two blue dots at the bottom, representing the two districts that would have voted democratic in the 2018 election – consistent with the election performance proffered in the plaintiff's complaint. Moving from left to right, I work through 13 alternate plans. Plans 8 and Plan 12 are distinctive in that they both offer a political remedy of two democratic voting districts, consistent with the plaintiff's plan. These two plans are also notable because they are options that also afford strong Black voting strength options. Plan 9 in particular is notable because it creates one "super-majority" district near 80% 2018 Republican voting strength – consistent with the plaintiff plan. Other plans, including 1-7, 9-11 and 13 show a variety of distributions of Republican and Democratic voting strength for the seven congressional districts. To the right, I show the State of Alabama's enacted plan.

Figure 5.11 Political Performance of Alabama Plans: % Republican Votes in 2018 Governor's Race



Racial Composition

Next, I measured the % Black alone or in combination (including with Hispanic) under different scenarios, demonstrating that there are numerous districting scenarios that can afford a variety of Black influence districts.

As shown in Figure 5.12 (P.39) - for ease of explanation, the percent All Black (that is – percent Black alone or in combination) is shown on a vertical axis, with a point representing the value for each of the 7 Congressional districts. The lower numbers, *below* the red 40% mark, are values for districts lower than the threshold presented in the plaintiff's complaint. The two values *above* the red line are the two districts presented as viable Black influence districts in the plaintiff's complaint.

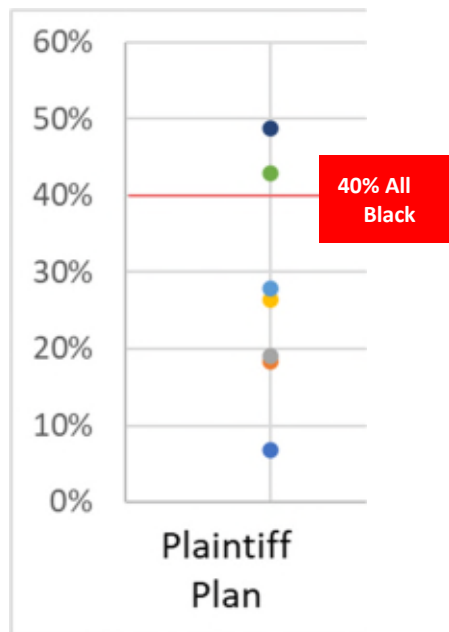
Figure 5.12 Racial and Ethnic Performance of Alabama Plans Data Visualization Explanation

Figure 5.13 shows the variety of race outcomes by plan. To the left, I show the plaintiff's plan. Note the two dots at the top, above the red line representing the two districts that are Black influence. Moving from left to right, I work through 13 alternate plans. As with our findings for political performance, Plans 8 and Plan 12 are distinctive in that they both offer two Black influence districts. Other plans, including 1-7, 9-11 and 13 show a variety of distributions "All Black" strength representation. To the right, the State of Alabama's enacted plan is shown with one Black majority district.

Figure 5.13 Racial and Ethnic Performance of Alabama Plans: % All Black

It is here that I pause to reflect on the possibility that the Singleton plan, not the State of Alabama plan represents a racial gerrymander.

First, I performed a simple examination of the area that was produced as District 6 in the Singleton plan. As shown in Map 25, District 6 is anchored in Birmingham and extends southwest. A visual examination suggests that if an analyst were to begin with a district in Birmingham with the objective of creating a Black minority influence district – the only *possible* direction they could have gone was southwest – into the northern black belt portion of District 7. As shown the area encircled on Map 25 in the Map Appendix, an analyst would by necessity need to exclude as much *non-Black* possible along the way to do so. And that is in fact what the Singleton plan shows. There is a significant “choke point” in the middle of the district where the plaintiffs appear to have avoided as much non-Black population as possible – then they appear to have expanded the district just as much as possible to capture as much Black population as possible to raise District 6 to a point of semi-equitability in terms of race and political performance as District 7. There is no other direction or way District 6 could be extended beyond Birmingham except to achieve this goal. As a results, in Table 5.5 (P.30) “Singleton Plan Compactness Scores” District 6 is shown as having the lowest compactness scores in the Singleton plan – by far.

Plaintiffs may say that the combination of counties they chose for District 6 was driven by a desire to come as close to perfect deviation as possible while using whole counties. Even if that were true, the fact remains that a map drawer can still racially gerrymander while using whole counties if race predominates in his choice of which counties to include in a district. In examining the numerous possible combinations of counties that could possibly comprise a remedial plan, I observe that alternate plans 3, 6, 8, 10, 12 and 13 offer county-based solutions that yield two Black influence districts that are above 40%. Conversely, alternate plans 1, 2, 4, 5, 7, 9, and 11 offer county-based solutions that yield only one Black influence district. It can hardly be argued that the simple use of counties, and the one remedial plan based on them is a unique solution to remedy alleged racial gerrymandering. With the use of counties removed as a unique, exclusive solution – the only remaining argument defending the plaintiff’s plan is that of political performance in their favor. That is, the argument that is made that Black registered voters have the opportunity to elect the candidates of their choice while remaining a minority influence in Districts 6 and 7. Without counties as the determining factor for this, I could argue that there are innumerable geographic combinations besides those constrained by counties that could potentially meet – and even exceed the performance touted by plaintiffs if that was their objective.

Conclusion

In summarizing this analysis, I reach several conclusions:

- 1) The introduction of population deviation in 2020 has long-standing and far reaching implications for OPOV. The whole county plan suggested by plaintiffs has population deviation among the districts so that some persons votes are weighted more than others. The introduction of *any amount* of deviation should be defended in terms of why that is an optimal amount (in the context of other plan deviations) weighing all of the other pros and cons of other viable scenarios using Alabama counties as the plaintiffs propose. Further, the long-term consequences of the 2020 deviation in the plaintiff's plan should be considered. A decision to accept the Singleton plan does not only have consequences for the present, but for many years in the future.
- 2) The use of counties to create congressional districts in Alabama does not prevent racial gerrymandering – and may in fact create it in the plaintiff's plan. The plaintiffs do not appear to have proven why the Alabama enacted plan is a racial gerrymander, and in the process have paid bare a process by which a map-drawer can racially gerrymander while keeping counties whole. There are numerous possible combinations of counties that can create Congressional district scenarios with low deviations. Some of these result in one Black minority influence district, some results in two.
- 3) A requirement to keep counties whole does not necessarily result in the political result plaintiffs apparently desire either, which is two congressional districts likely to elect a Democrat. In much the same way I have illustrated that different viable combinations of counties can results in one or two Black minority districts – so too can the use of counties yield one or two Democratic performing districts.
- 4) While counties were historically important communities of interest, before advances in communications and transportation, they have far less importance as communities of interest today; and
- 5) Plaintiffs' whole county plan does not observe the important traditional districting criteria of preserving the core of existing districts. Continuity of representation is a significant and prevailing factor and represents a well-established community of interest. The plaintiff plan introduces significant disruptions to continuity of representation. The plaintiff plan not only is vastly inferior to the State of Alabama enacted plan for the total population – but it is also demonstrably and significantly biased against the Black population of Alabama.

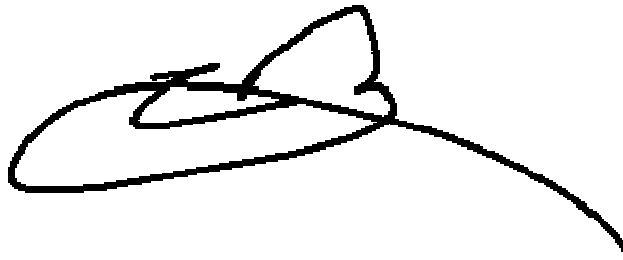
DECLARATION

* * * * *

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

/s Thomas Bryan
Thomas Bryan

December 10, 2021
Date

A handwritten signature in black ink, appearing to be 'Thomas M. Bryan', written over a horizontal line.

Appendix 1: Census 2020 Alabama Black Population Total, non-Hispanic and Hispanic Combinations (through 3 races, excluding 4-, 5- and 6-race Black combinations)

Race	Total (A)	% of Total (B)	AL non-Hisp (C)	% of Total (D)	AL Hispanic (E)	% of Total (F)
Total, Hispanic or Latino:	5,024,279		4,760,232		264,047	
Population of one race:	4,767,326	94.89%	4,575,614	91.07%	191,712	3.82%
Black or African American alone	1,296,162	25.80%	1,288,159	25.64%	8,003	0.16%
Population of two races:	243,473	4.85%	175,750	3.50%	67,723	1.35%
White; Black or African American	45,429	0.90%	43,911	0.87%	1,518	0.03%
Black or African American; American Indian and Alaska Native	6,301	0.13%	6,012	0.12%	289	0.01%
Black or African American; Asian	2,049	0.04%	1,939	0.04%	110	0.00%
Black or African American; Native Hawaiian and Other Pacific Islander	492	0.01%	456	0.01%	36	0.00%
Black or African American; Some Other Race	5,421	0.11%	2,983	0.06%	2,438	0.05%
Population of three races:	12,093	0.24%	8,085	0.16%	4,008	0.08%
White; Black or African American; American Indian and Alaska Native	4,493	0.09%	3,986	0.08%	507	0.01%
White; Black or African American; Asian	972	0.02%	899	0.02%	73	0.00%
White; Black or African American; Native Hawaiian and Other Pacific Islander	172	0.00%	165	0.00%	7	0.00%
White; Black or African American; Some Other Race	1,441	0.03%	573	0.01%	868	0.02%
Black or African American; American Indian and Alaska Native; Asian	124	0.00%	115	0.00%	9	0.00%
Black or African American; American Indian and Alaska Native; Native Hawaiian and Other Pacific Islander	13	0.00%	13	0.00%	0	0.00%
Black or African American; American Indian and Alaska Native; Some Other Race	146	0.00%	72	0.00%	74	0.00%
Black or African American; Asian; Native Hawaiian and Other Pacific Islander	145	0.00%	129	0.00%	16	0.00%
Black or African American; Asian; Some Other Race	86	0.00%	43	0.00%	43	0.00%
Black or African American; Native Hawaiian and Other Pacific Islander; Some Other Race	27	0.00%	20	0.00%	7	0.00%
Total "All Black"	1,364,736	27.2%	1,350,192	26.9%	14,544	0.3%

Appendix 2: Census 2020 Alabama Black Voting Age Population, non-Hispanic and Hispanic Combinations (through 3 races, excluding 4-, 5- and 6-race Black combinations)

Race	VAP (A)	% of VAP (B)	AL non-Hisp (C)	% of Total (D)	AL Hispanic (E)	% of Total (F)
Total:	3,917,166		3,750,310		166,856	
Population of one race:	3,751,169	95.76%	3,630,366	92.68%	120,803	3.08%
Black or African American alone	981,723	25.06%	976,732	24.93%	4,991	0.13%
Population of two races:	158,371	4.04%	114,790	2.93%	43,581	1.11%
White; Black or African American	18,106	0.46%	17,569	0.45%	537	0.01%
Black or African American; American Indian and Alaska Native	4,692	0.12%	4,530	0.12%	162	0.00%
Black or African American; Asian	1,130	0.03%	1,075	0.03%	55	0.00%
Black or African American; Native Hawaiian and Other Pacific Islander	262	0.01%	250	0.01%	12	0.00%
Black or African American; Some Other Race	3,470	0.09%	2,024	0.05%	1,446	0.04%
Population of three races:	6,741	0.17%	4,620	0.12%	2,121	0.05%
White; Black or African American; American Indian and Alaska Native	2,714	0.07%	2,452	0.06%	262	0.01%
White; Black or African American; Asian	325	0.01%	295	0.01%	30	0.00%
White; Black or African American; Native Hawaiian and Other Pacific Islander	75	0.00%	69	0.00%	6	0.00%
White; Black or African American; Some Other Race	721	0.02%	344	0.01%	377	0.01%
Black or African American; American Indian and Alaska Native; Asian	80	0.00%	73	0.00%	7	0.00%
Black or African American; American Indian and Alaska Native; Native Hawaiian and Other Pacific Islander	12	0.00%	12	0.00%	0	0.00%
Black or African American; American Indian and Alaska Native; Some Other Race	103	0.00%	55	0.00%	48	0.00%
Black or African American; Asian; Native Hawaiian and Other Pacific Islander	82	0.00%	76	0.00%	6	0.00%
Black or African American; Asian; Some Other Race	51	0.00%	31	0.00%	20	0.00%
Black or African American; Native Hawaiian and Other Pacific Islander; Some Other Race	14	0.00%	11	0.00%	3	0.00%
	1,014,372	25.9%	1,006,083	25.7%	8,289	0.2%

Appendix 3 Compactness Measures

Polsby-Popper

The Polsby-Popper (PP) measure (Polsby & Popper, 1991) is the ratio of the area of the district (A_D) to the area of a circle whose circumference is equal to the perimeter of the district (P_D). A district's Polsby-Popper score falls with the range of $[0, 1]$ and a score closer to 1 indicates a more compact district.

$$PP = \frac{4\pi}{P_D^2} \times A_D$$



Circumference Equal to District Perimeter

Schwartzberg

The Schwartzberg score (S) compactness score is the ratio of the perimeter of the district (P_D) to the circumference of a circle whose area is equal to the area of the district. A district's Schwartzberg score as calculated below falls with the range of $[0, 1]$ and a score closer to 1 indicates a more compact district.

$$S = \frac{1}{P_D/C} = \frac{1}{P_D/(2\pi\sqrt{A_D/\pi})}$$



Circle with Area Equivalent to the District

Source: <https://fisherzachary.github.io/public/r-output.html>

Appendix 3 Compactness Measures (continued)

Reock Score

The Reock Score (R) is the ratio of the area of the district (A_D) to the area of a minimum bounding circle (A_{MBC}) that encloses the district's geometry. A district's Reock score falls within the range of $[0, 1]$ and a score closer to 1 indicates a more compact district.

$$R = \frac{A_D}{A_{MBC}}$$



Minimum Bounding Circle of Original Gerrymander

Convex Hull

The Convex Hull score is a ratio of the area of the district to the area of the minimum convex polygon that can enclose the district's geometry. A district's Convex Hull score falls within the range of $[0, 1]$ and a score closer to 1 indicates a more compact district.

$$CH = \frac{A_D}{A_{MCP}}$$



Convex Hull of Original Gerrymander

Appendix 4 Forecasting Methodology

The population forecasting methodology found in this report is based on two concepts known as face validity (Smith, Tayman, and Swanson, 2013: 304) and Plausibility (Smith, Tayman, and Swanson, 2013: 307-308)¹. Face validity is the extent to which a forecast uses the best methods for a particular purpose, is based on reliable data, and uses reasonable assumptions. Plausibility is the extent to which a forecast is consistent with historical trends, with the assumptions inherent in the model, and with projections for other areas.

Using these concepts as a foundation, the population forecasts found in this report are developed from three standard methods, linear extrapolation and geometric extrapolation, each of which is used separately and also in conjunction with the third, a “ratio” method known as “shift-share,” creating four separate projections: (1) linear (2) geometric; (3) linear shift-share; and (4) geometric shift-share. As will be discussed along with the descriptions of these methods, the four projections are then averaged to produce a single forecast. Geometric, linear and “ratio” extrapolative projection methods are particularly useful when data series are limited temporally, which is the case with the data used to redistrict Alabama, where I have only limited 2010 and 2020 data that are both in the form of 2020 census geography per PL 94-171.

What are trend extrapolation methods? Trend extrapolation involves fitting mathematical models to historical data and using these models to project future population values. Although there are many different methods by which historical values can be modeled, it is convenient to organize these methods into three categories (Smith, Tayman, and Swanson, 2013: 185-213): (1) Simple extrapolation methods, which require data from only two points in time and of which there are three major approaches, linear change, geometric change, and exponential change; (2) Complex extrapolation methods, which require data from a number of points in time and of which there are different approaches, including linear trends, curve fitting and ARIMA time series; and (3) Ratio extrapolation methods, in which the population of a smaller area is expressed as a proportion of the population of a larger area in which the smaller area is located and of which there are three major approaches, constant-share, shift-share, and share-of-growth.

Both simple and complex trend extrapolation methods suffer from several shortcomings. They do not account for differences in demographic composition or for differences in the components of growth. That is, they are not fundamentally based on the fundamental demographic equation and are unable to incorporate information specific to trends in births, deaths, and migration. As such, they can provide little if any information on the projected demographic characteristics of the population. Because they have no theoretical content beyond the structure of a given model itself, they cannot be related to behavioral or socioeconomic theories of population growth.

Consequently, they have limited usefulness for analyzing the determinants of population growth or for simulating the effects of changes in particular variables or assumptions. In addition, they can lead to unrealistic or even absurd results if carried too far into the future. In spite of their shortcomings, trend extrapolation methods have a number of advantages over other projection methods. They do not need large amounts of data, can be readily applied and are easy to describe.

In spite of their simplicity and lack of theoretical content and demographic detail, applications of the Trend Extrapolation Method (TEM) often produced reasonably accurate projections of total population, even for projection horizons extending far into the future (Smith, Tayman, and Swanson 2013: 185). Small data requirements make these methods particularly useful for small geographic area population projections. In fact, a TEM is used to create the official sub-county population projections for Arizona (Office of the State Demographer 2016). Despite their simplicity and lack of demographic dynamics, TEMs can produce total population projections with a similar degree of accuracy as total population projections from more complex models (Smith, Tayman, and Swanson 2013: 331-337). On this note, it is important to keep in mind that there is a certain irreducible level of uncertainty regarding the future and no projection method—no matter how complex or sophisticated—can consistently improve projection accuracy beyond that level. Based on evidence to date, the relatively small amount contained in TEMs provide as much guidance about the future as does the much larger amount of information contained in more complex models.

So, I employ three of the extrapolative models described earlier (linear, geometric, and shift-share) for four major reasons. First, in this redistricting exercise, only a total population number is needed, not age-sex and other characteristics of Alabama's population. As already noted, simple extrapolative models are well suited for this task because they can generate projected total populations from low input requirements with minimal computational and assumption burdens. Second, there is no need to "borrow" data from other sources, which means there are data transfers and computations that are at higher risk of containing transcription, computing, and assumption errors than are the extrapolative models. Third, the extrapolative methods I employ are highly transparent and can be replicated and described easily. Fourth, also as noted earlier, there is no evidence that complex models provide more accurate forecasts of the total population than those produced by simple methods (Green and Armstrong, 2015). To the specific point of using extrapolative methods, Tayman, Swanson, and Baker (2021) observe that "the preponderance of evidence suggests that these methods can produce total population forecasts of comparable accuracy to those produced by more complicated forecasting techniques."

Because a geometric model moves a population through time in accordance with a constant ratio, the population will increase faster than would be the case if a linear model was used, which will only increase the population by a constant difference. This means that the geometric model will produce higher population projections at a given point in the future than will a linear model using the same data. As such, these two approaches can be viewed, respectively, as providing high and low scenarios from the same input data, which can be viewed as providing an indication of the uncertainty inherent in the forecasting process by giving high and low boundaries for each annual forecast from 2021 to 2030. Combining these two methods with the shift-share method will produce somewhat more nuanced views and by averaging all four of the projections, I obtain a “medium” scenario, which serves as the projection I expect to be the most accurate per Smith, Tayman, and Swanson (2013: 364). That is, the average becomes our forecast.

In spite of the uncertainty involving the future, the key question to ask is does a forecast provide a stronger basis for decision-making than the alternative, which is to not make a forecast, a decision that basically states that there will be no change from the present? I believe that a forecast provides a stronger basis when looking at alternative redistricting plans for Alabama because if there is one point upon which all parties can agree, there will be change as the state moves through the decade to 2030.

Linear Extrapolation (LINE)

The linear extrapolation method (LINE) assumes that the population will change by the same number of persons in the future as it did in the past. Past and future time periods are measured by years in this application. Using years as the time period, average annual absolute change (r) during the base period is computed as:

$$r = (PI - Pb) / y$$

where r is the average annual absolute change during the base period; PI is the population in the launch year (2020) ; Pb is the population in the base year (2010); and y is the number of years in the base period (i.e., 10). Population projections using the linear extrapolation method are computed as:

$$Pt = PI + (t \times r)$$

where Pt is the population in the target year and t is the number of years from the launch year, PI , which is 2020.

Geometric Extrapolation (GEO)

The average annual absolute “multiplier” during the base period is computed as:

$$R = (PI / Pb)(1/y)$$

where R is the average annual multiplier during the base period, PI is the population in the launch year (2020); Pb is the population in the base year (2010); and y is the number of years in the base period (i.e., 10). Population projections using the geometric extrapolation model are computed as

$$Pt = PI \times Rt$$

where Pt = the total population in the target year and t is the number of years from the launch year, PI, which is 2020.

Shift-Share (SHIFT)

The shift-share (SHIFT) method accounts for changes in population shares over the base period and this application assumes a linear trend in shares over the projection horizon (the number of years into the future that the target year is from the launch year) . It can be used in conjunction with either the LINE or the GEO method.

$$Pit = (Pt)[(Pil / PI) + ((t/y)\{(Pil / PI) - (Pib / Pb)\})]$$

where i denotes the smaller unit (i.e., county); P is the larger unit (State of Alabama); t is the number of years in the projection horizon; y is the number of years in the base period (2020-2010); and b, l, and t refer to the base, launch, and target years. The t/y term implements the linear trend and relates the length of the base period to the length of the projection horizon.

Endnote

1. A population estimate provides information about a present or past population (Swanson and Stephan, 2004: 770). Demographers typically refer to information about the future as either a projection or a forecast (Smith, Tayman, and Swanson, 2013: 2-4). Although these two terms are often used interchangeably, they can be differentiated according to the expected likelihood of their outcomes. A projection may be defined as the numerical outcome of a particular set of assumptions regarding the future population. It is a conditional calculation showing what the future population would be if a particular set of assumptions were to hold true. Because a projection does not attempt to predict whether those assumptions actually will hold true, it can be incorrect only if a mathematical error is made in its calculation. A projection can never be proven right or wrong by future events. A forecast may be defined as the projection that is most likely to provide an accurate prediction of the future population. As such, it represents a specific viewpoint regarding the validity of the underlying data and assumptions. A forecast reflects a level of judgment beyond that found in a projection, and it can be proven right or wrong by future

events (or, more realistically, it can be found to have a relatively small or large error). Projection is a more inclusive term than forecast: All forecasts are projections but not all projections are forecasts.

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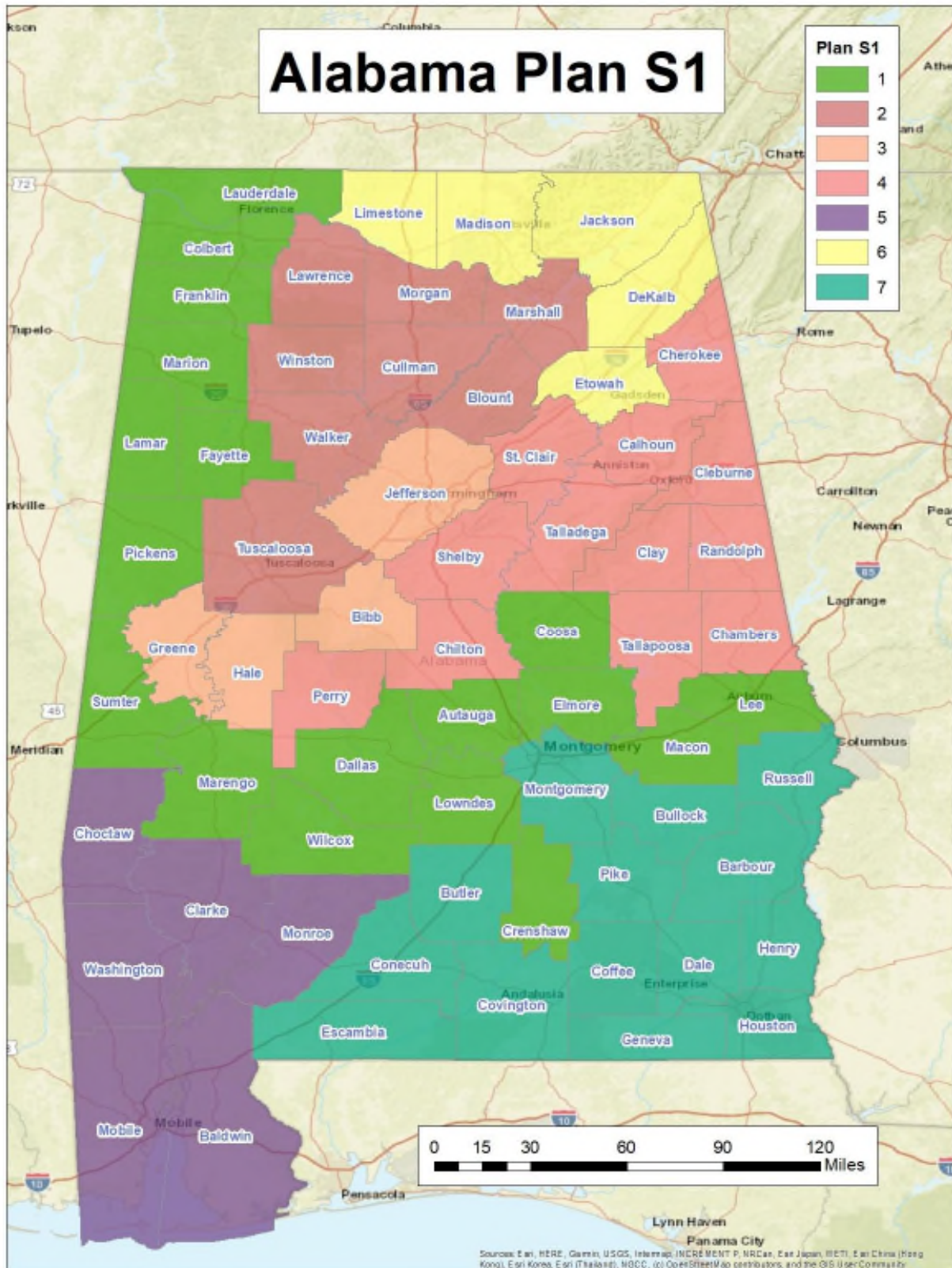
Smith, S., Tayman, J., & Swanson, D. (2013). A practitioner's guide to state and local population projections. Dordrecht, The Netherlands: Springer.

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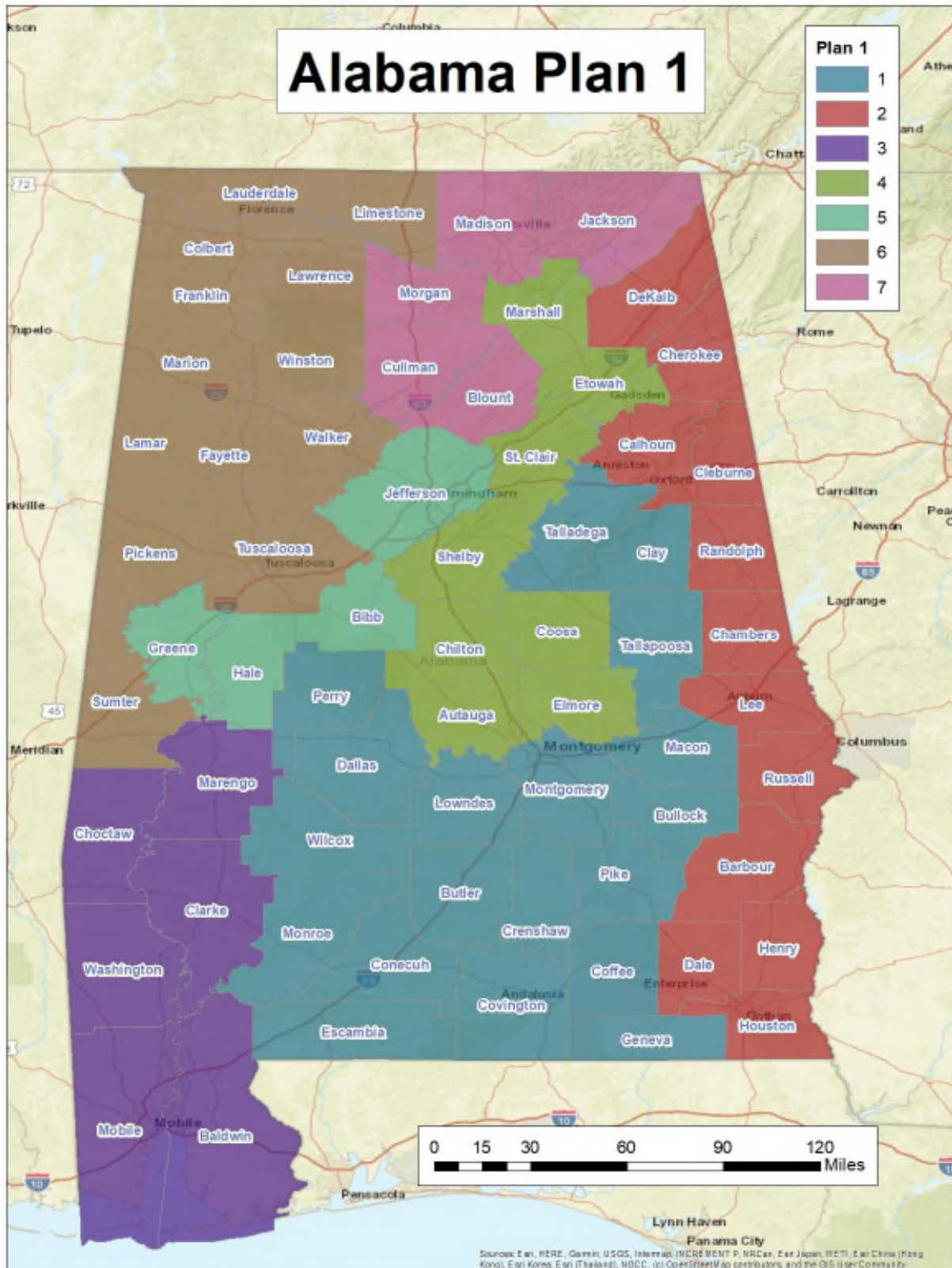
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Map Appendices

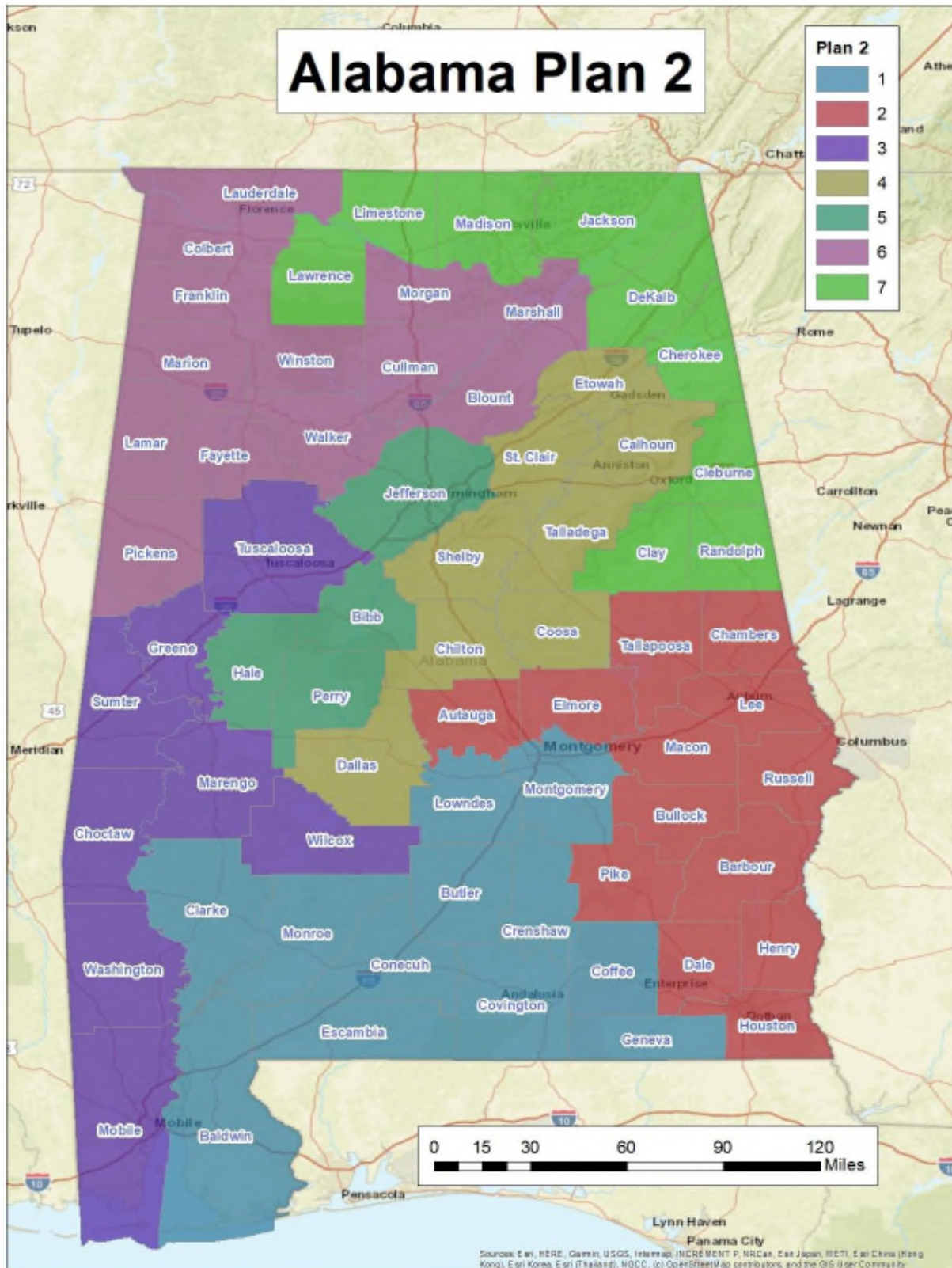
Map Appendix 2 (Plan S1)



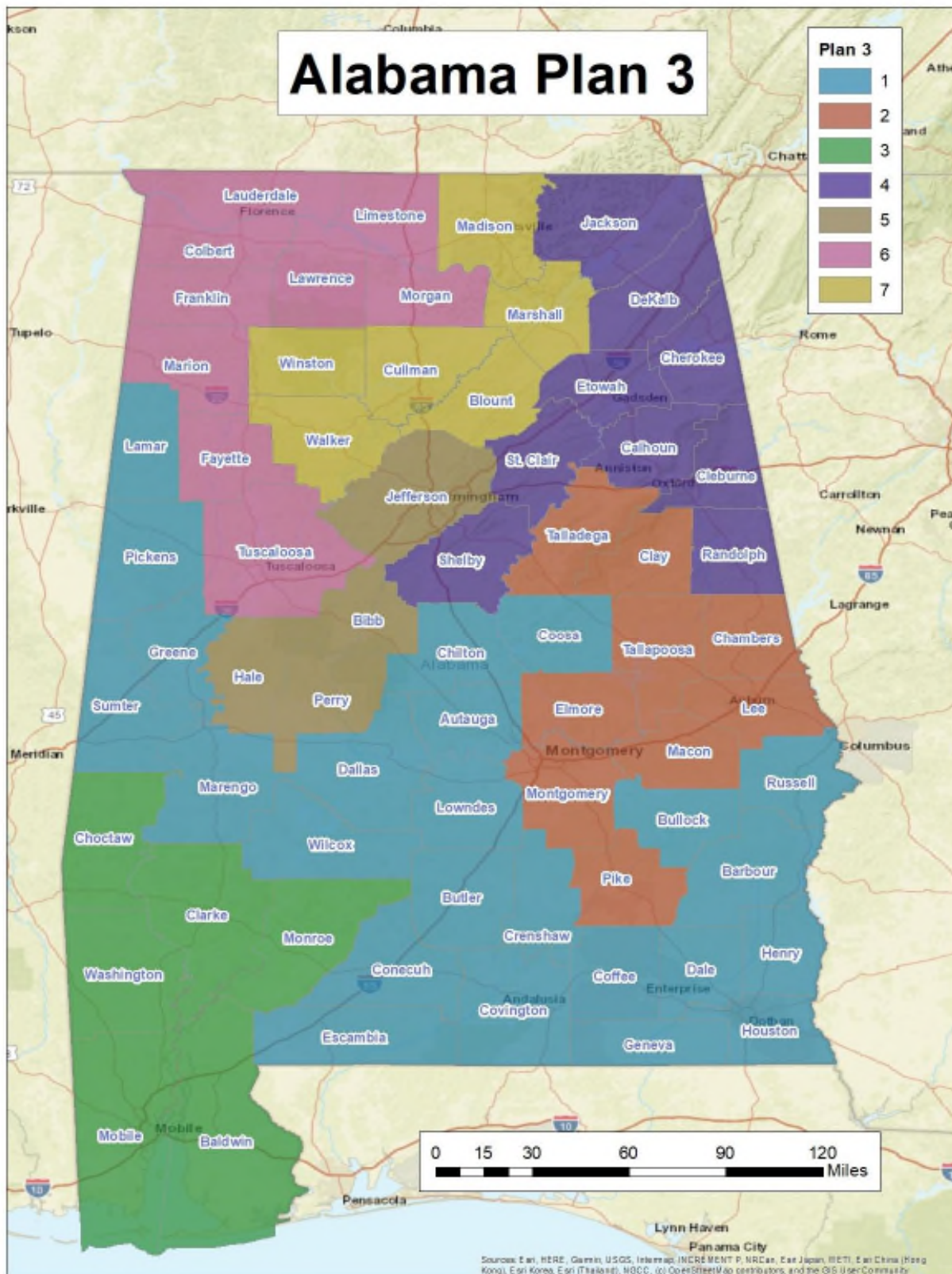
Map Appendix 4 (Plan 1)



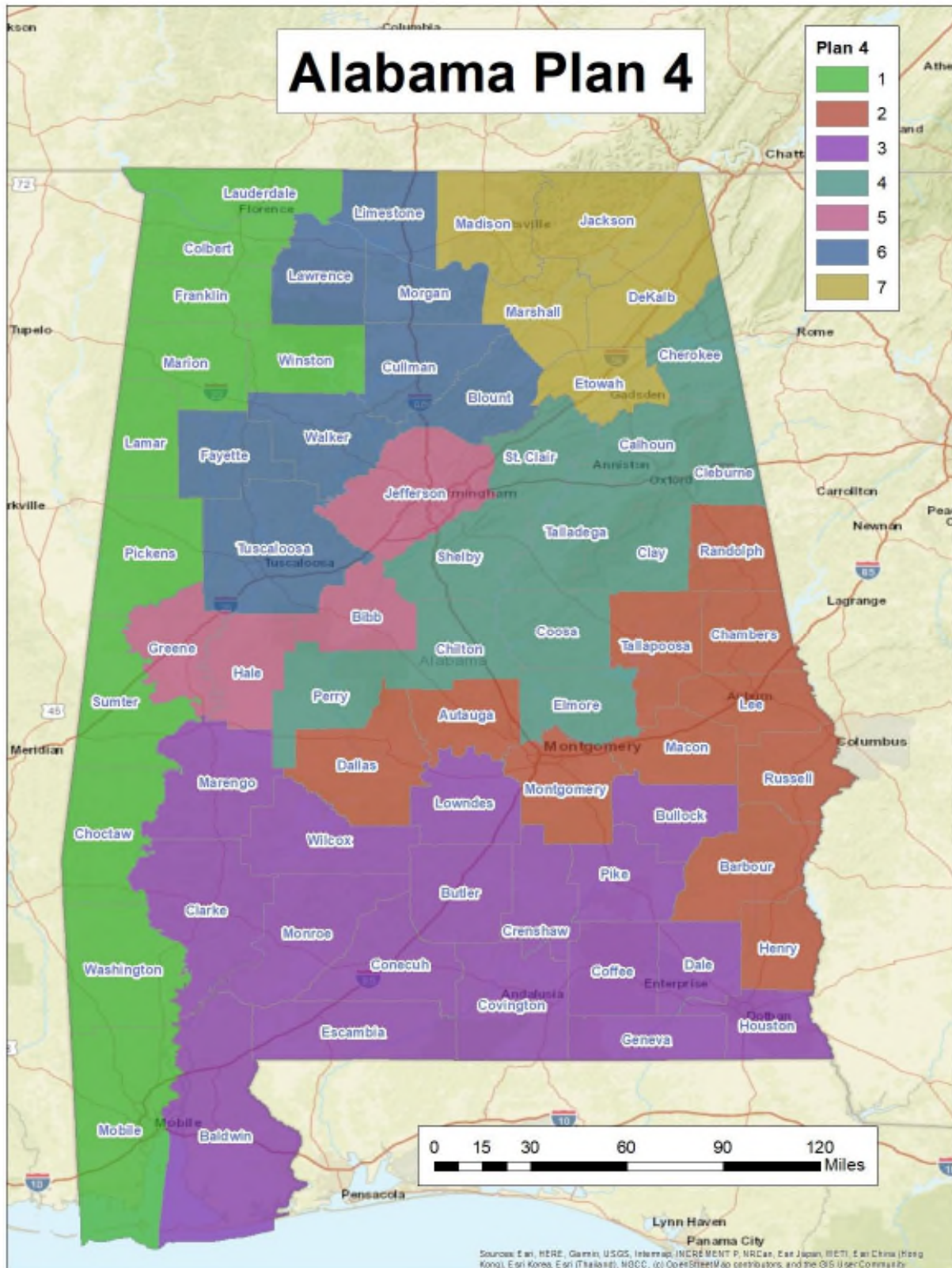
Map Appendix 5 (Plan 2)



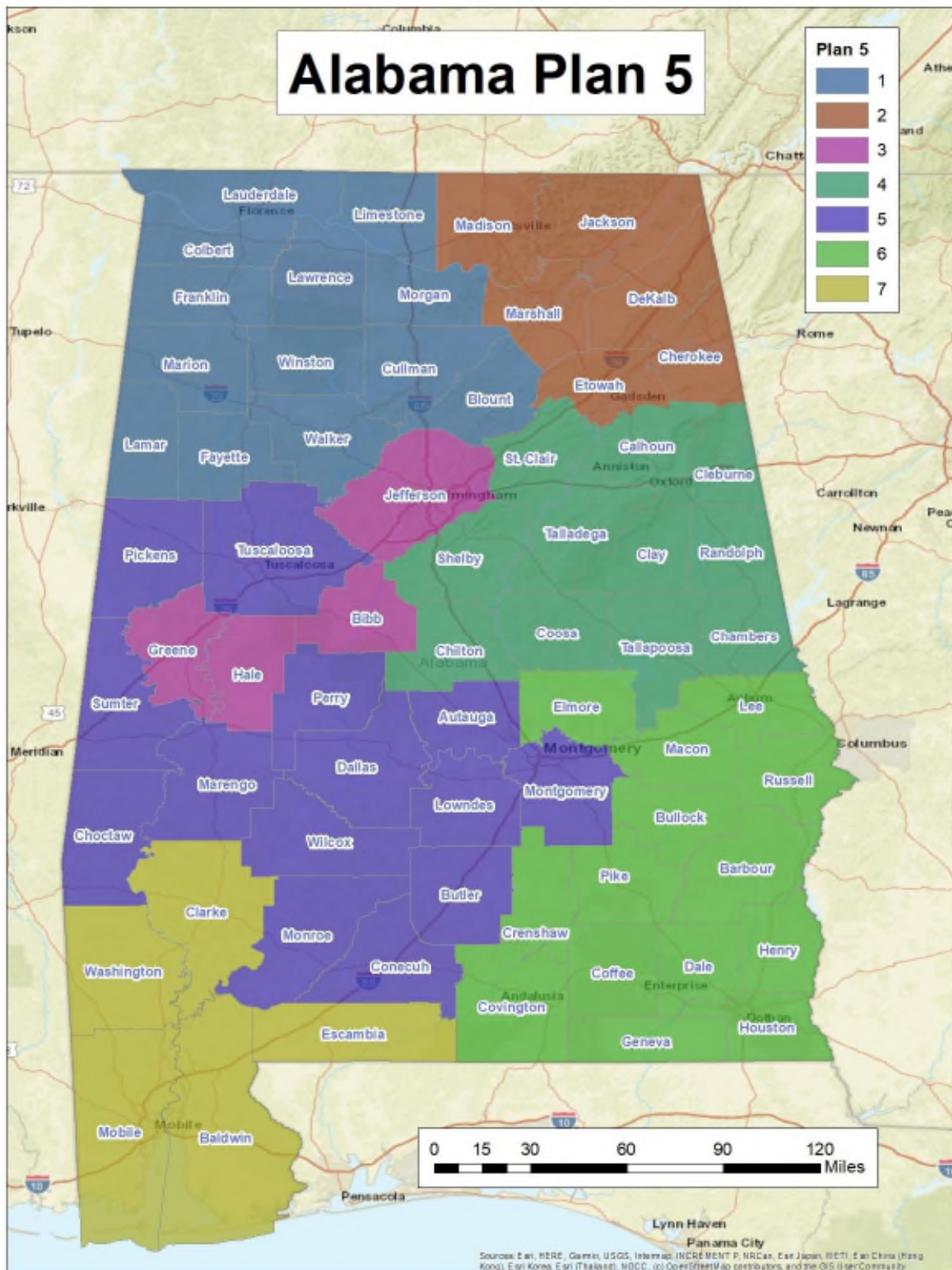
Map Appendix 6 (Plan 3)



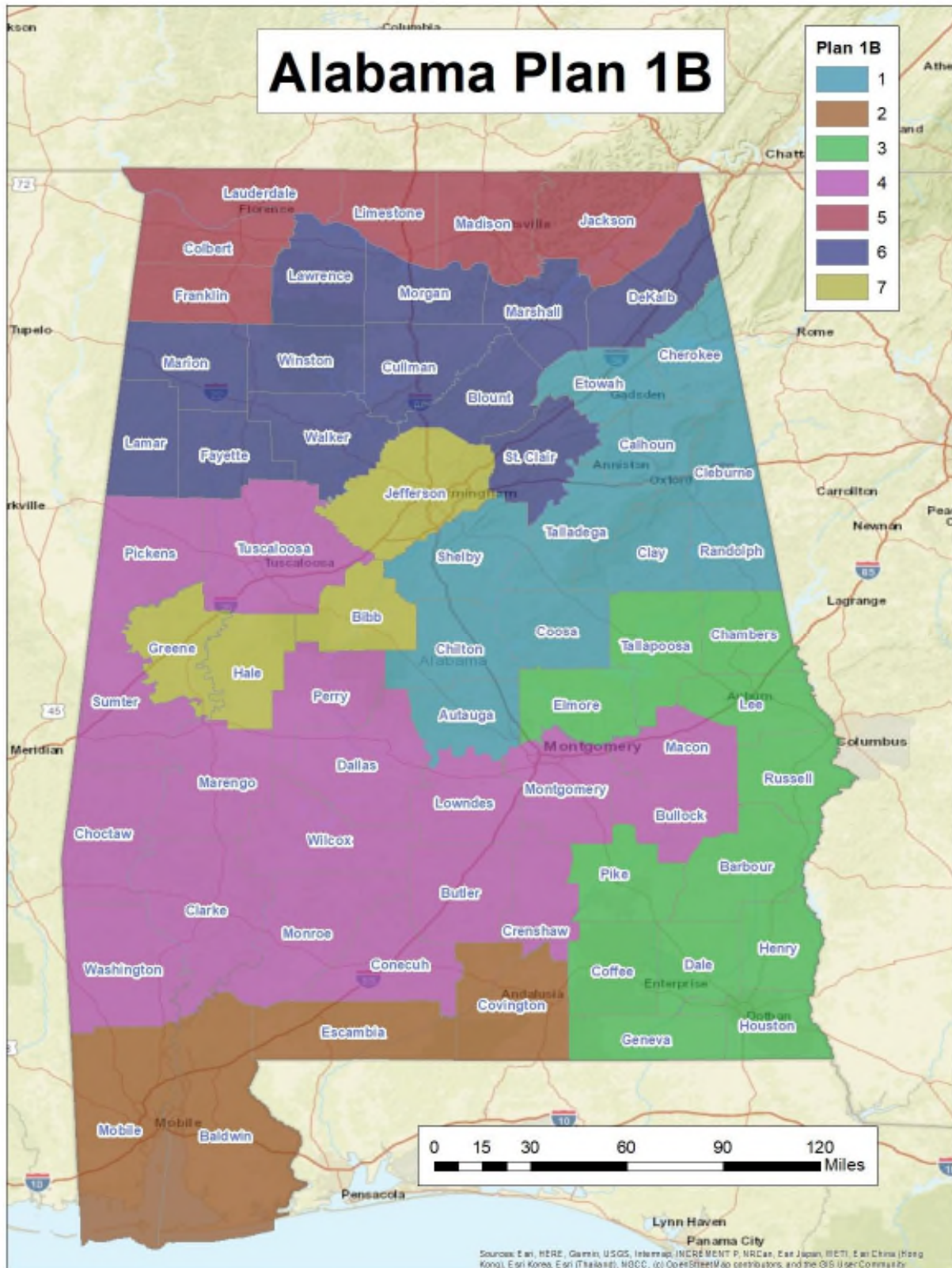
Map Appendix 7 (Plan 4)



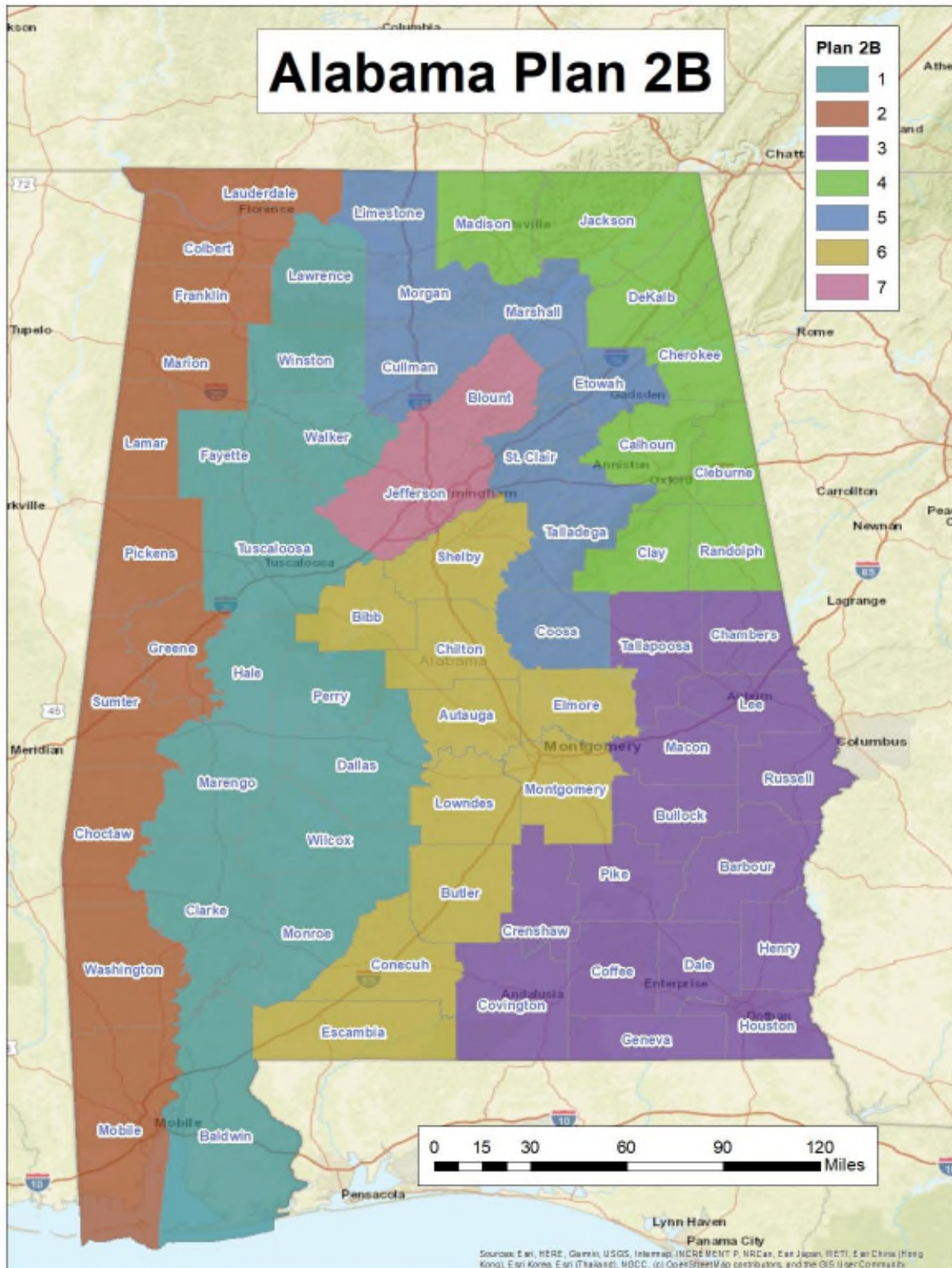
Map Appendix 8 (Plan 5)



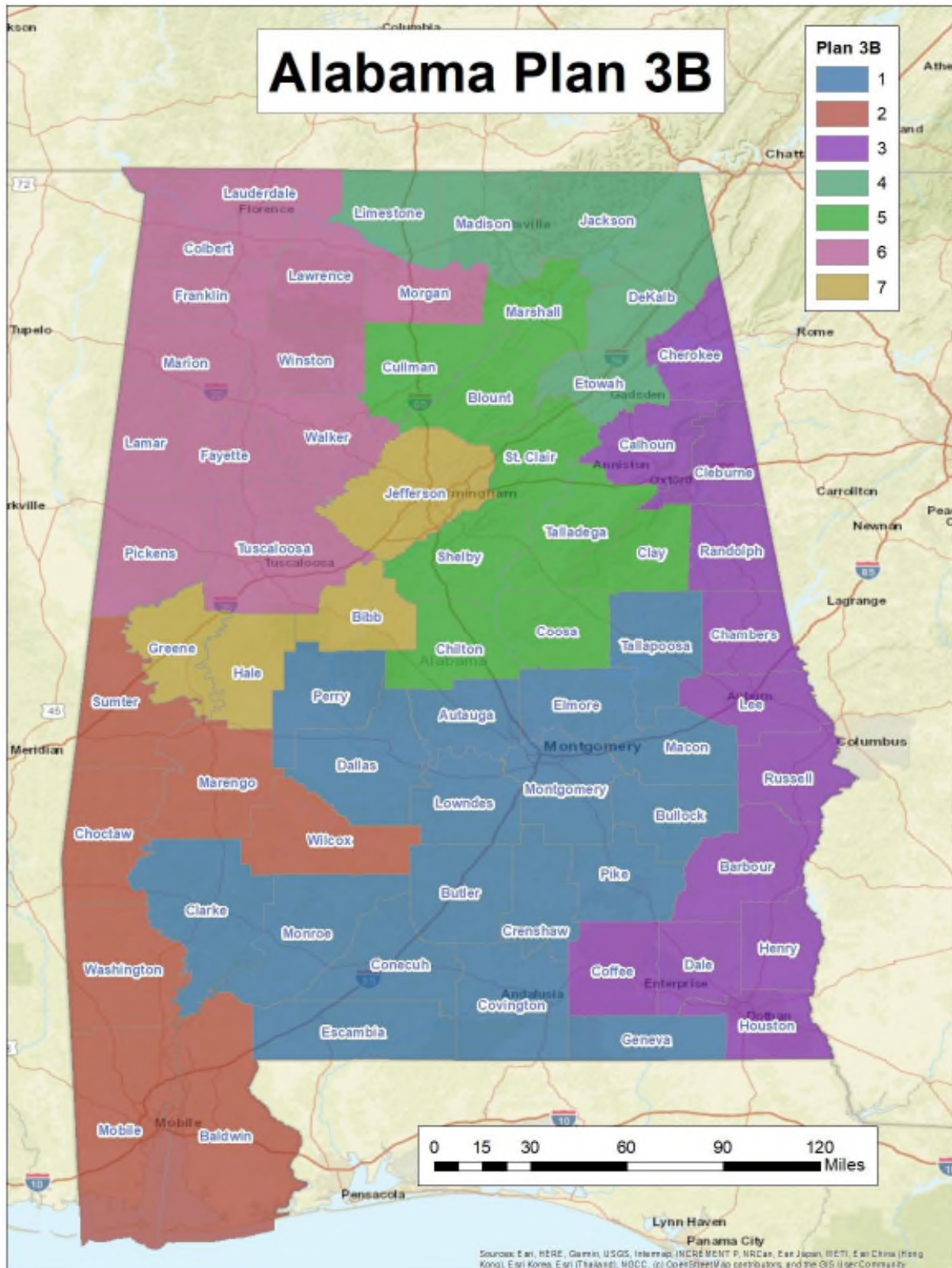
Map Appendix 9 (Plan 1B)



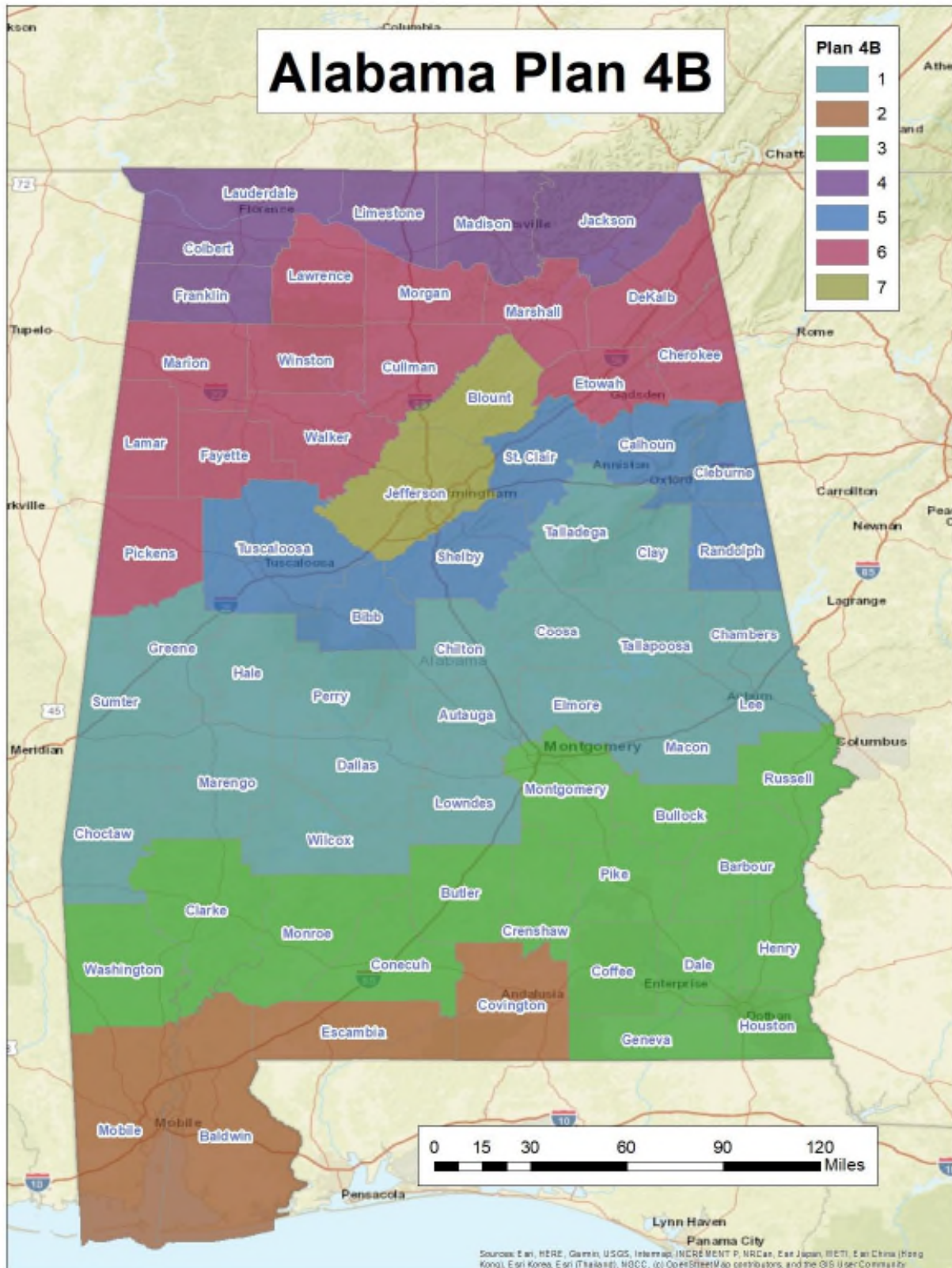
Map Appendix 10 (Plan 2B)



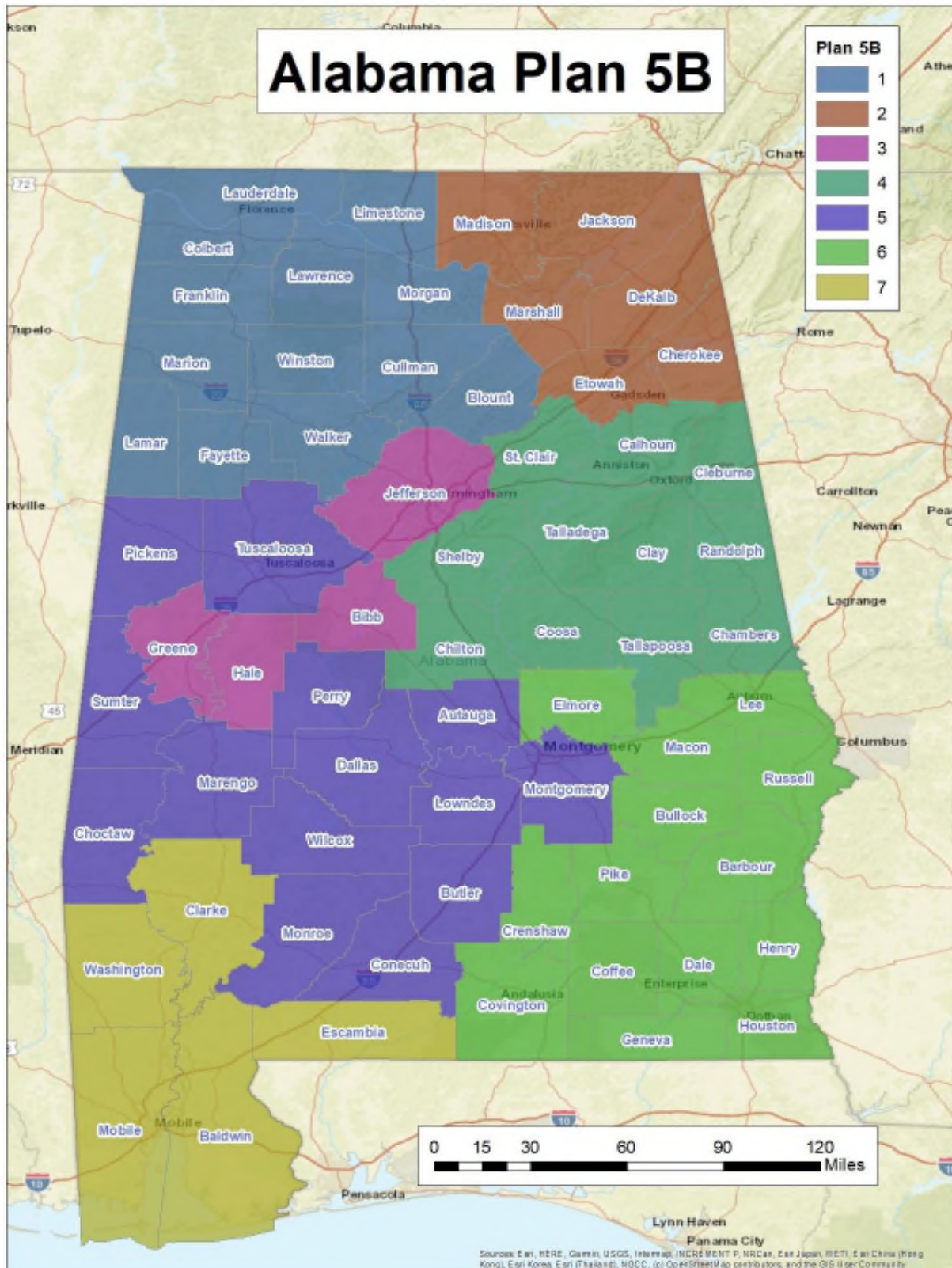
Map Appendix 11 (Plan 3B)



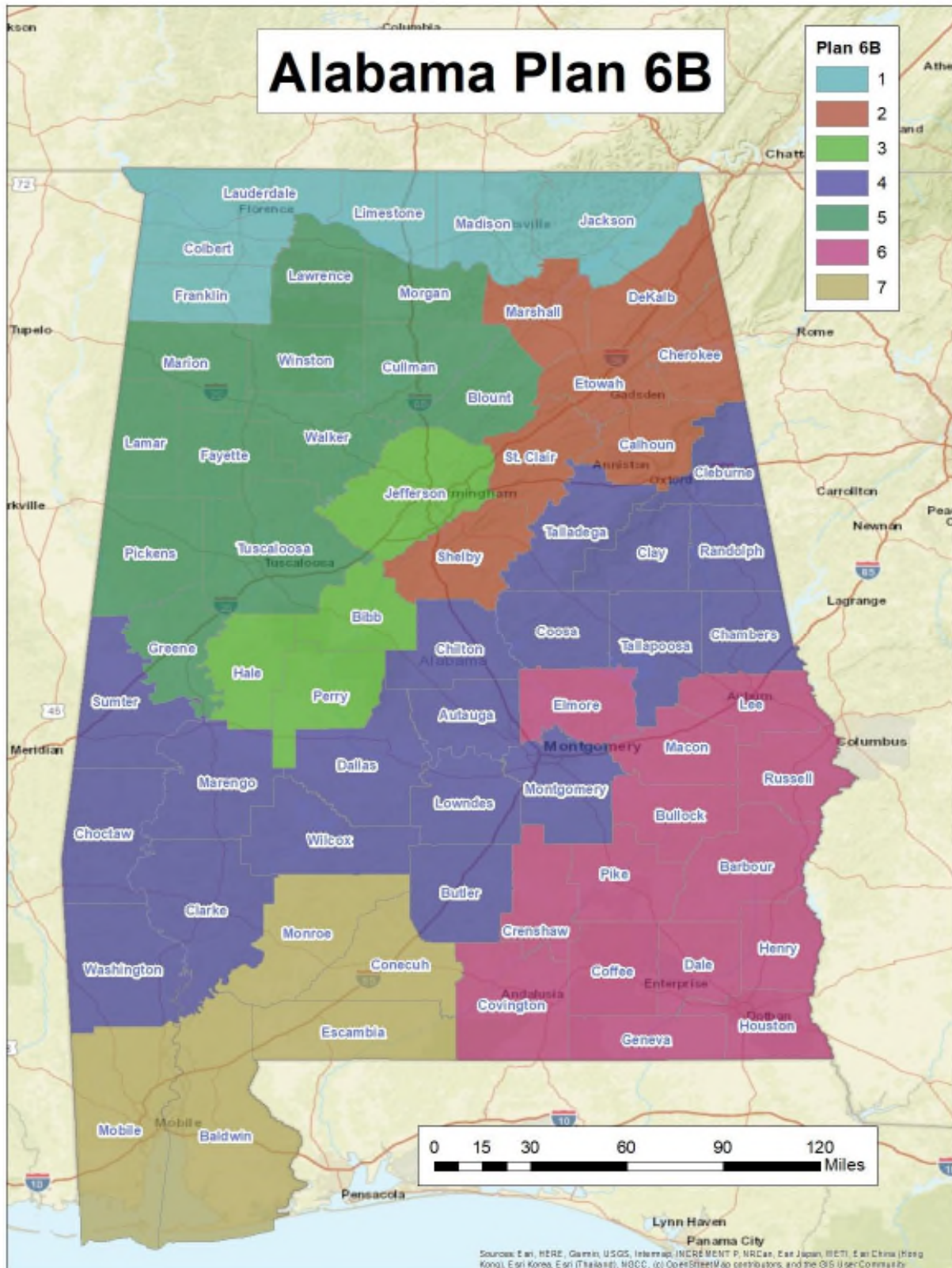
Map Appendix 12 (Plan 4B)



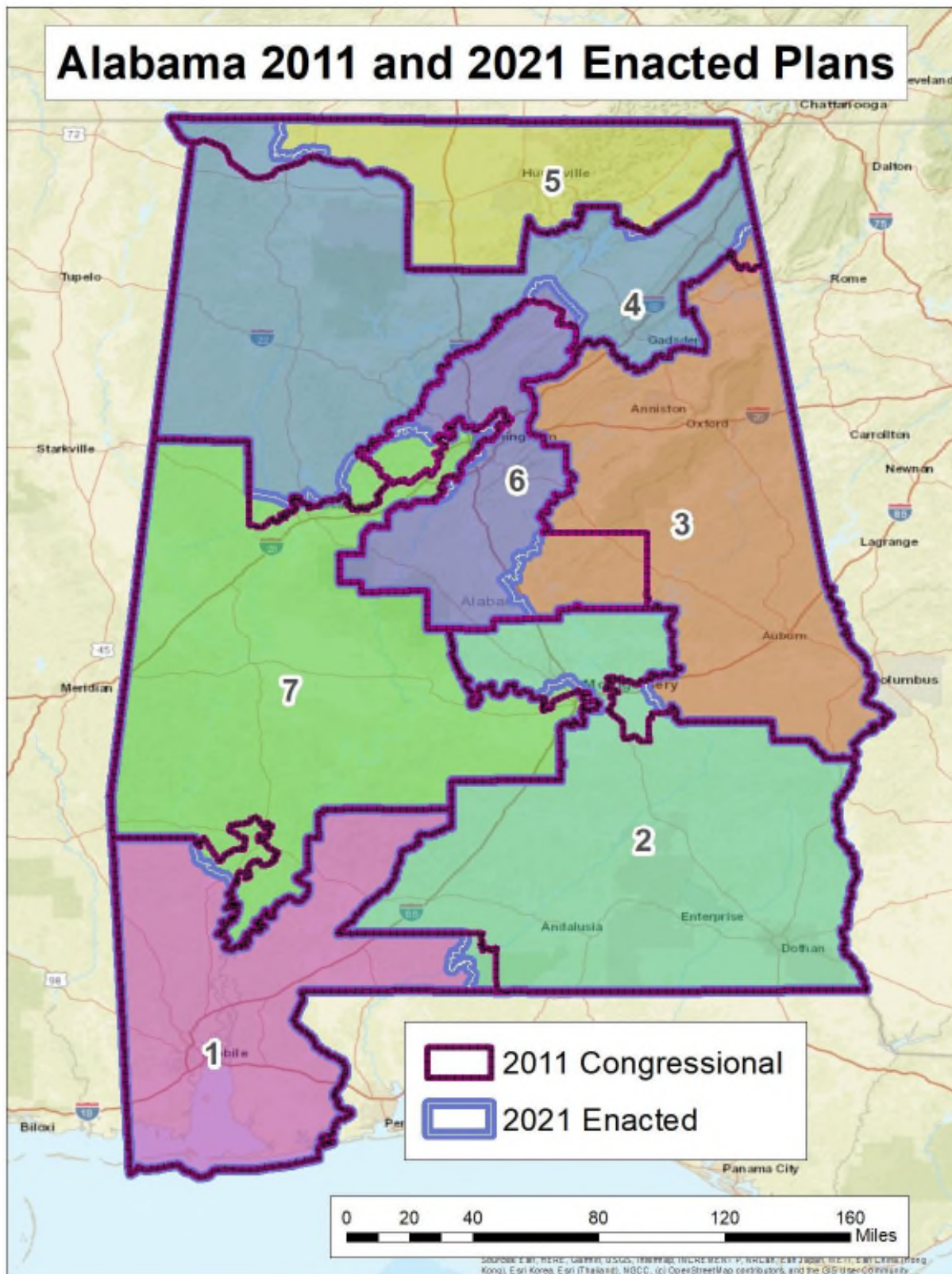
Map Appendix 13 (Plan 5B)



Map Appendix 14 (Plan 6B)

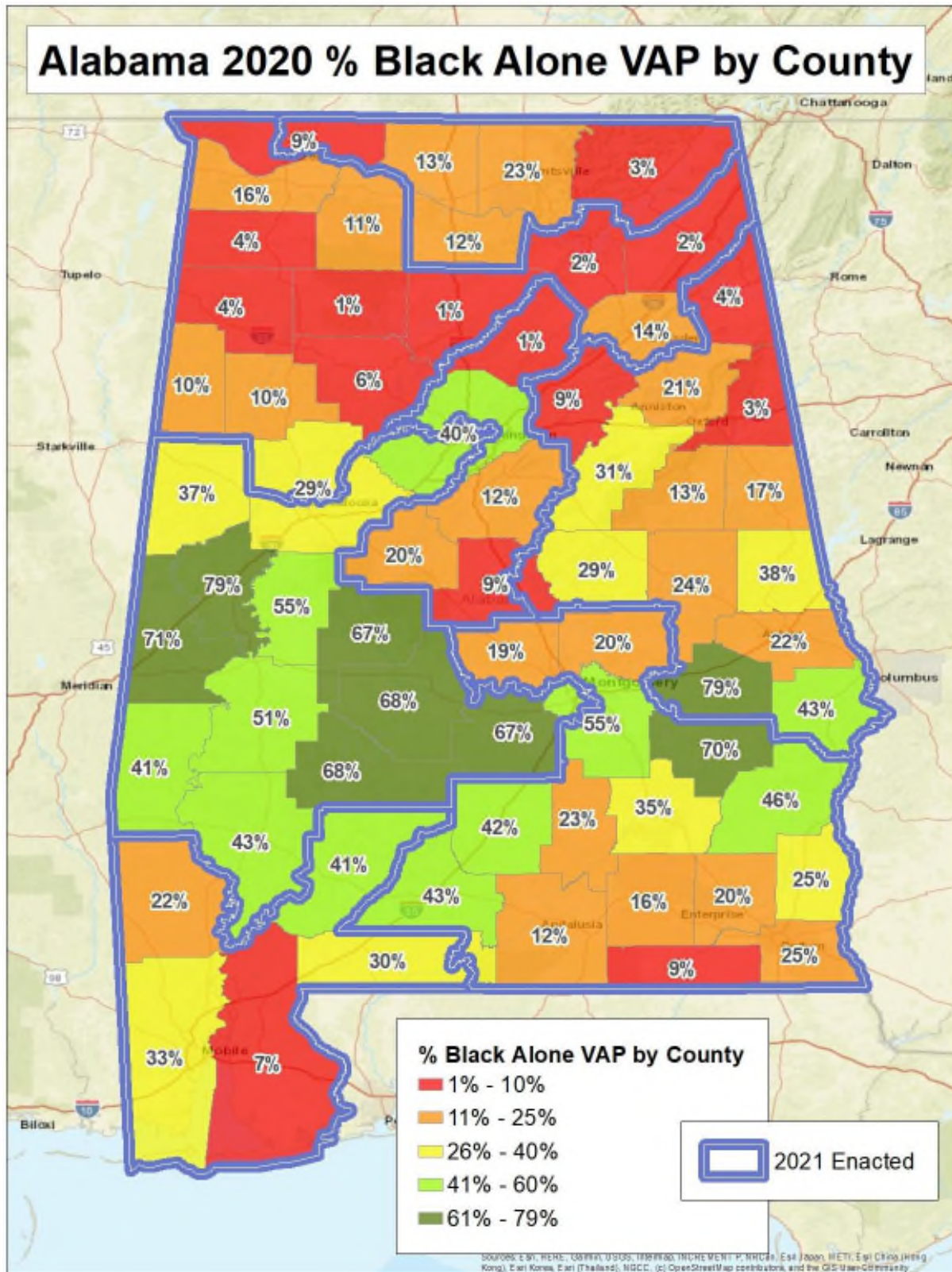


Map Appendix 16 (State of Alabama 2011 and 2021 Enacted Plans)

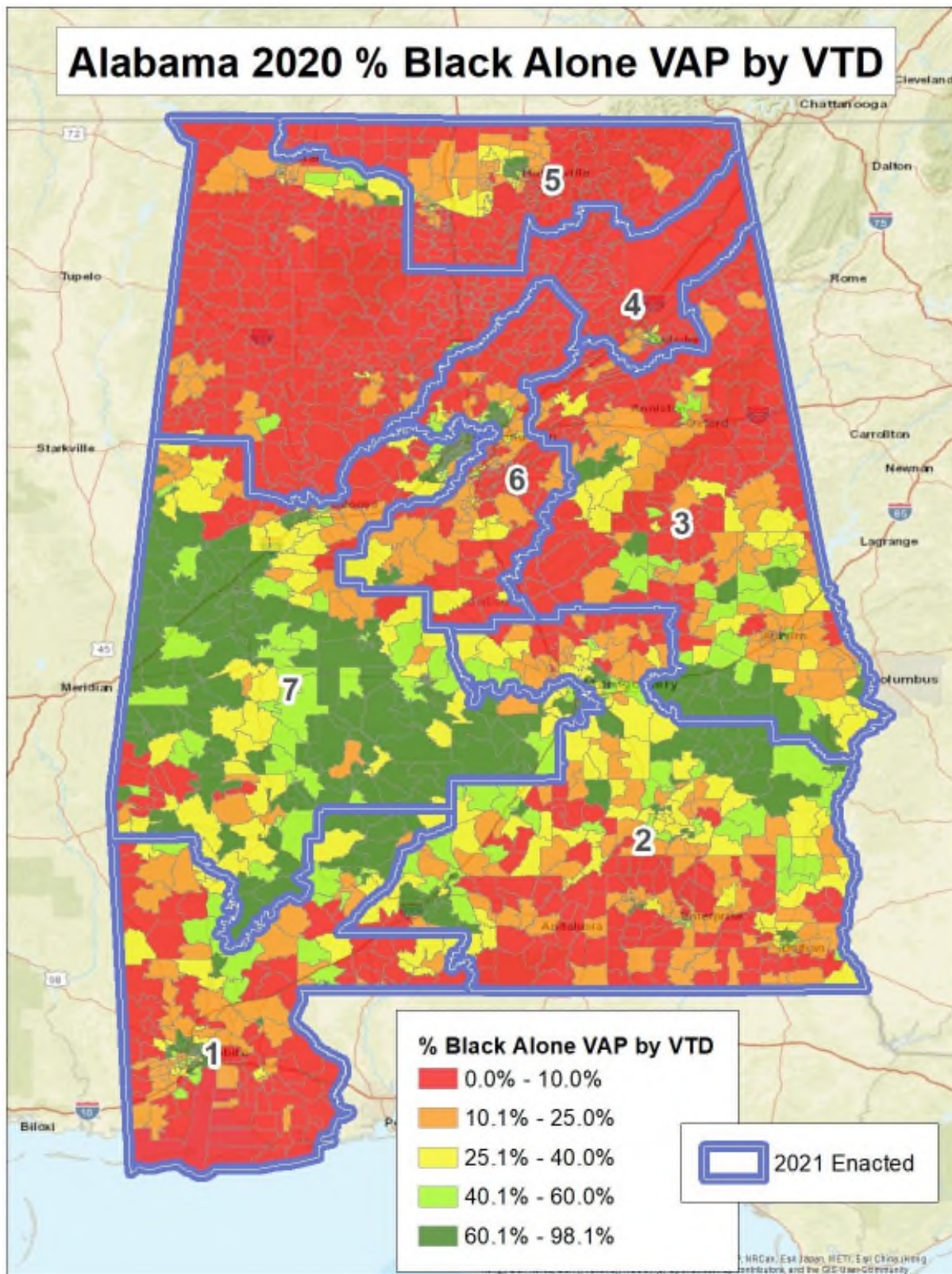


**Alabama Enacted Plan
Map Appendices
% Black Alone and VAP
By County and VTD**

Map Appendix 17 (State of Alabama Percent Black Alone VAP by County)

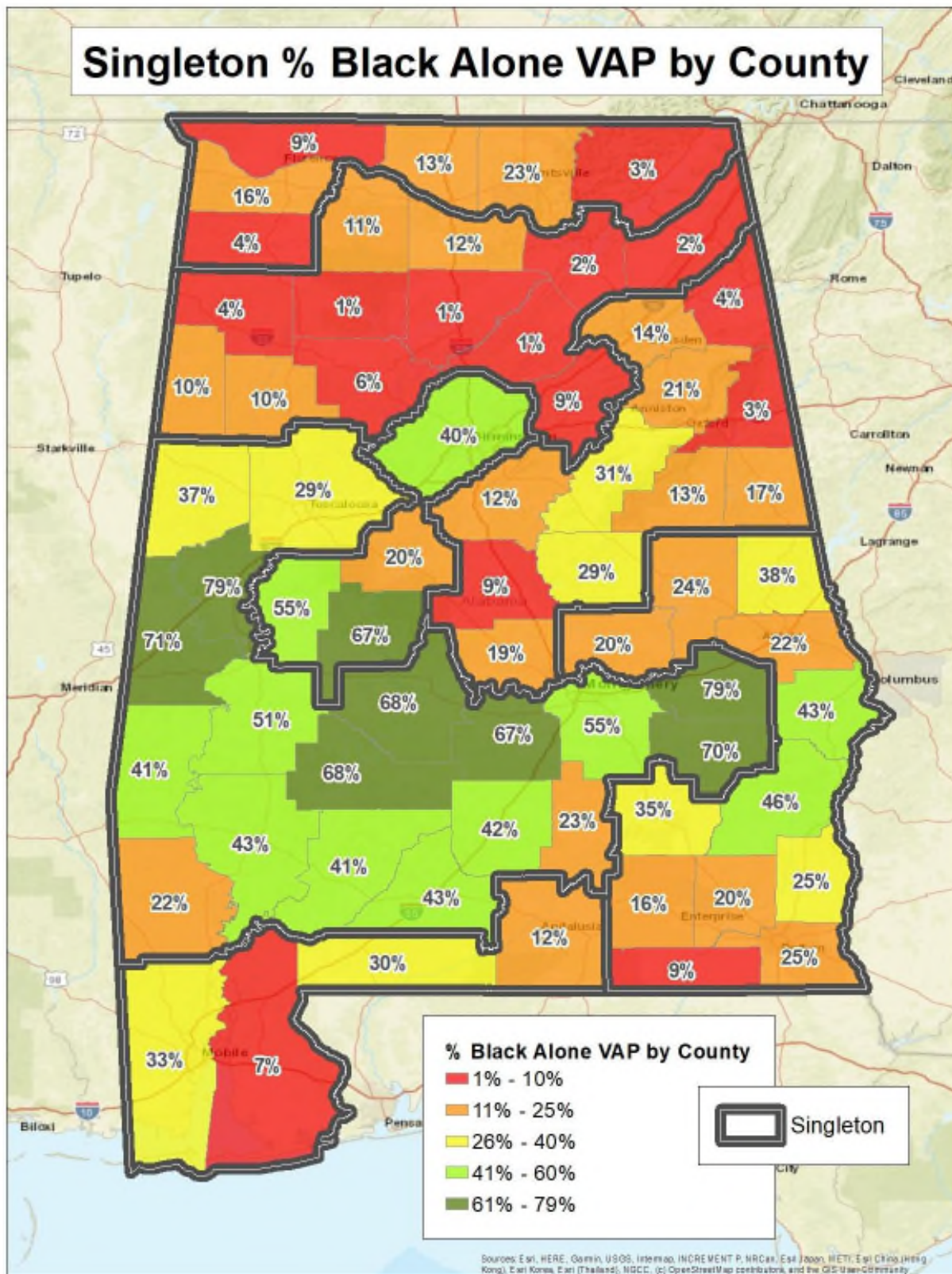


Map Appendix 19 (State of Alabama Percent Black Alone VAP by VTD)

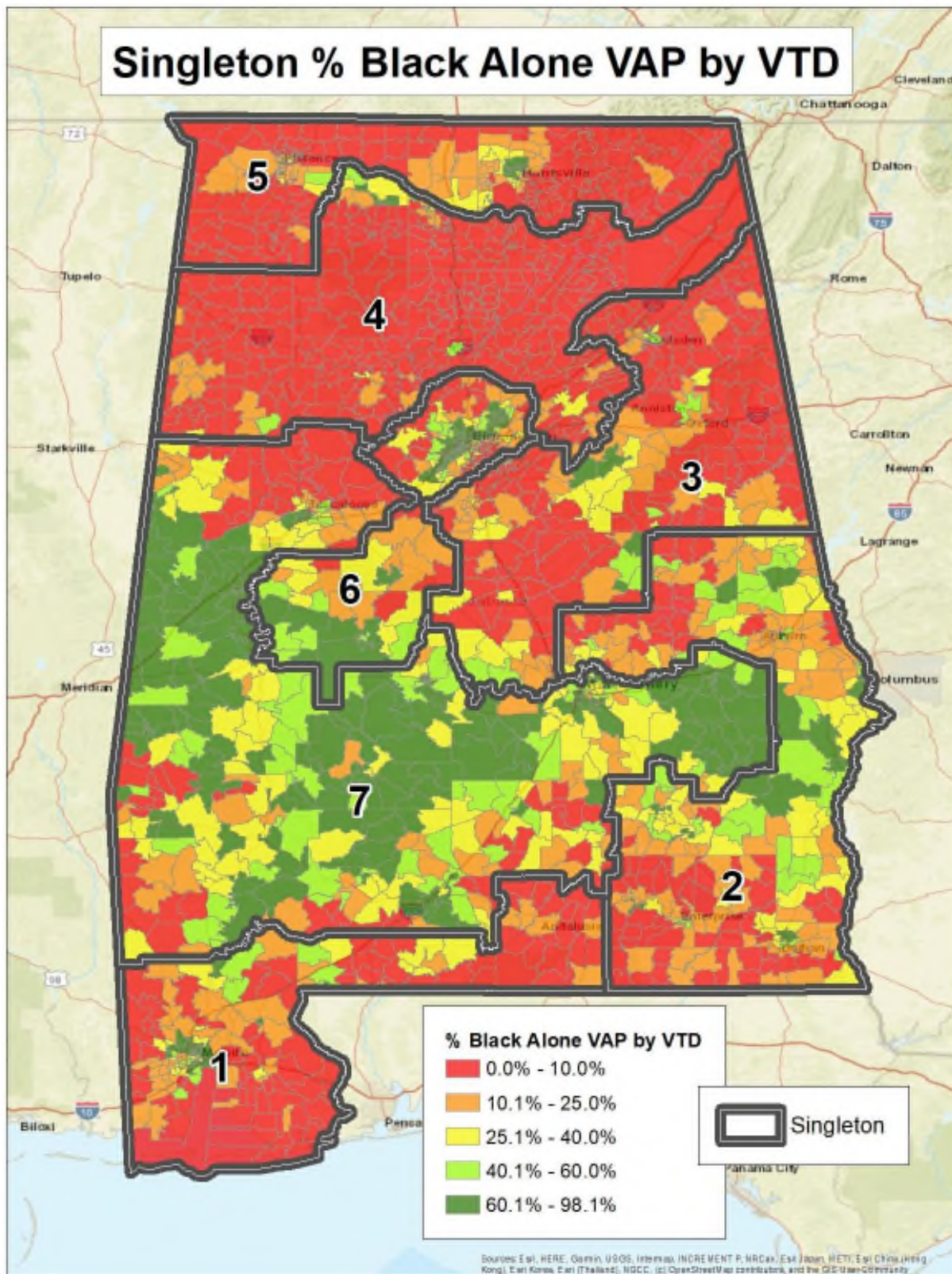


**Singleton Plan
Map Appendices
% Black Alone and VAP
By County and VTD**

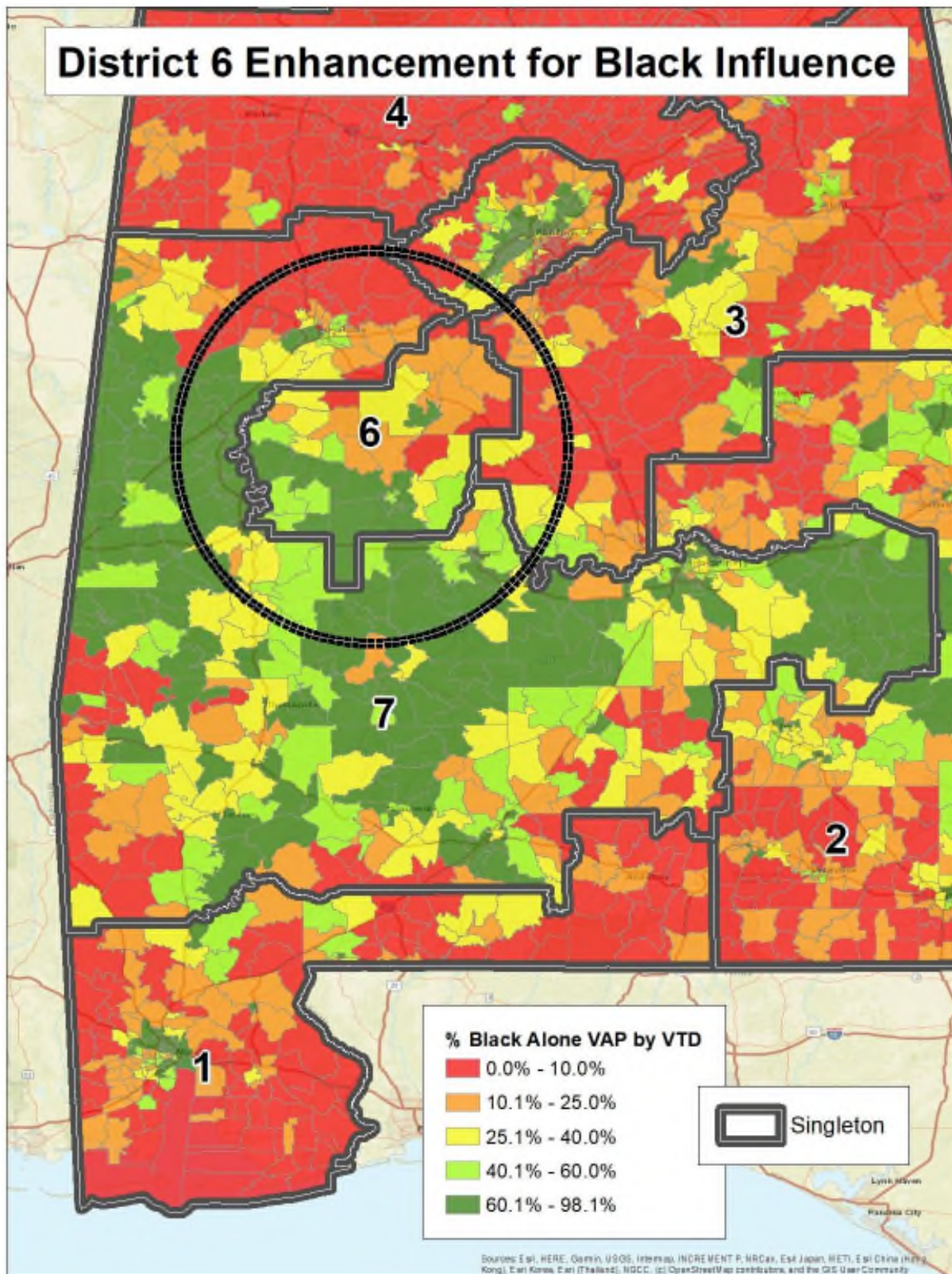
Map Appendix 21 (Singleton Percent Black Alone VAP by County)



Map Appendix 23 (Singleton Percent Black Alone VAP by VTD)



Map Appendix 25 (Singleton Percent Black Alone VAP by VTD)



My name is Thomas Bryan¹. I am a professional demographer and political redistricting expert witness. I have been retained by the State of Alabama to provide analysis and support in the case of *Milligan v. Merrill* and *Caster v. Merrill*.² A copy of my CV is attached to this report.

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

EXPERT QUALIFICATIONS

I graduated with a Bachelor of Science in History from Portland State University in 1992. I graduated with a Master of Urban Studies (MUS) from Portland State University in 1996, and in 2002 I graduated with a Masters in Management and Information Systems (MIS) from George Washington University. Concurrent with earning my Management and Information Systems degree, I earned my Chief Information Officer certification from the GSA.³

My background and experience with demography, census data and advanced analytics using statistics and population data began in 1996 with an analyst role for the Oregon State Data Center. In 1998 I began working as a statistician for the US Census Bureau in the Population Division – developing population estimates and innovative demographic methods. In 2001 I began my role as a professional demographer for ESRI Business Information Solutions, where I began developing my expertise in Geographic Information Systems (GIS) for population studies. In May 2004 I continued my career as a demographer, data scientist and expert in analytics in continuously advanced corporate roles, including at Altria and Microsoft through 2020.

In 2001 I developed a private demographic consulting firm “BryanGeoDemographics” or “BGD”. I founded BGD as a demographic and analytic consultancy to meet the expanding demand for advanced analytic expertise in applied demographic research and analysis. Since then, my consultancy has broadened to include litigation support, state and local redistricting, school redistricting, and municipal infrastructure initiatives. Since 2001, I have undertaken over 150 such engagements in three broad areas:

- 1) state and local redistricting,
- 2) applied demographic studies, and
- 3) school redistricting and municipal Infrastructure analysis.

¹ <https://www.linkedin.com/in/thomas-bryan-424a6912/>

² <https://redistricting.ils.edu/case/milligan-v-merrill/> and <https://redistricting.ils.edu/case/caster-v-merrill/>

³ Granted by the General Services Administration (GSA) and the Federal IT Workforce Committee of the CIO Council.

My background and experience with redistricting began with McKibben Demographics from 2004-2012, when I provided expert demographic and analytic support in over 120 separate school redistricting projects. These engagements involved developing demographic profiles of small areas to assist in building fertility, mortality and migration models used to support long-range population forecasts and infrastructure analysis. Over this time, I informally consulted on districting projects with Dr. Peter Morrison. In 2012 I formally began performing redistricting analytics and continue my collaboration with Dr. Morrison to this day.

I have been involved with over 40 significant redistricting projects, serving roles of increasing responsibility from population and statistical analyses to report writing to directly advising and supervising redistricting initiatives. Many of these roles were served in the capacity of performing Gingles analyses, risk assessments and Federal and State Voting Rights Act (VRA) analyses in state and local areas.

In each of those cases, I have personally built, or supervised the building of, one or more databases combining demographic data, local geographic data and election data from sources including the 2000, the 2010 and now 2020 decennial Census. I also innovated the use of the US Census Bureau's statistical technique of "iterative proportional fitting" or "IPF" of the Census Bureau's American Community Survey (ACS) and the Census Bureau's Special Tabulation of Citizen Voting Age Population Data to enable the development of districting plans at the Census block level. This method has been presented and accepted in numerous cases we have developed or litigated. These data have also been developed and used in the broader context of case-specific traditional redistricting principles and often alongside other state and local demographic and political data.

In 2012 I began publicly presenting my work at professional conferences. I have developed and publicly presented on measuring effective voting strength, how to develop demographic accounting models, applications of using big data and statistical techniques for measuring minority voting strength – and have developed and led numerous tutorials on redistricting. With the delivery of the 2020 Census, I have presented on new technical challenges of using 2020 Census data and the impact of the Census Bureau's new differential privacy (DP) system. This work culminated with being invited to chair the "Assessing the Quality of the 2020 Census" session of the 2021 Population Association of America meeting, featuring Census Director Ron Jarmin.

I have written professionally and been published since 2004. I am the author of “Population Estimates” and “Internal and Short Distance Migration” in the definitive demographic reference “The Methods and Materials of Demography”. In 2015 I joined a group of professional demographers serving as experts in the matter of *Evenwel, et al. v. Texas* case. In *Evenwel* I served in a leadership role in writing an Amicus Brief on the use of the American Community Survey (ACS) in measuring and assessing one-person, one vote. I also successfully drew a map for the State of Texas balancing both total population from the decennial census and citizen voting age population from the ACS (thereby proving that this was possible – a key tenet of the case). We believe this was the first and still only time this technical accomplishment has been achieved in the nation at a state level. In 2017 I co-authored “From Legal Theory to Practical Application: A How-To for Performing Vote Dilution Analyses.” In 2019 I co-authored “Redistricting: A Manual for Analysts, Practitioners, and Citizens”. In 2021 I authored an assessment of the impact of the U.S. Census Bureau’s approach to ensuring respondent privacy and Title XIII compliance by using a disclosure avoidance system involving differential privacy and was certified as an expert by the US District Court of Alabama Eastern Division. In 2021 I also co-authored ““The Effect of the Differential Privacy Disclosure Avoidance System Proposed by the Census Bureau on 2020 Census Products: Four Case Studies of Census Blocks in Alaska”.

I have been retained to develop, analyze and/or critique four state redistricting plans in 2021, including the state legislature for the Republican Texas House Committee on Redistricting, the state senate for Democratic Counsel for the State of Illinois, and state senate and legislature for Republican Counsel for the State of Wisconsin.

I maintain membership in numerous professional affiliations, including:

- International Association of Applied Demographers (Member and Board of Directors)
- American Statistical Association (Member)
- Population Association of America (Member)
- Southern Demographic Association (Member)

I have been deposed once in the last four years, in the matter of *Harding v. County of Dallas*.

My rate is \$350 per hour for analysis, research and report writing, and \$500 per hour for depositions and testimony.

In this report, I provide:

- 1) A demographer's perspective on the Alabama redistricting process and the *Milligan v. Merrill* and *Caster v. Merrill*.⁴
- 2) A summary and interpretation of traditional redistricting principles.
- 3) A discussion and analysis of the census and DOJ definitions of "Black" population.
- 4) An independent and factual analysis of the plaintiffs' plan and the State of Alabama's enacted plan using the traditional redistricting criteria of:
 - A. communities of interest, including:
 - B. core retention analysis;
 - C. incumbency; and
 - D. compactness.

This includes an in-depth analysis of proposed remedial Black majority districts 2 and 7.

Note that I use the terms "*Milligan*" and "*Hatcher Plan*" referring to plan characteristics and maps throughout my report interchangeably.

⁴<https://redistricting.lls.edu/case/milligan-v-merrill/> and <https://redistricting.lls.edu/case/caster-v-merrill/>

1) A demographer's perspectives on the Alabama redistricting process and issues posed in *Milligan v. Merrill* and *Caster v. Merrill*

The Alabama State Legislature is responsible for drawing both congressional and state senate and state house boundaries, as well State Board of Education districts. Both chambers of the state legislature must approve a single redistricting plan. The governor may veto the lines drawn by the state legislature⁵ On May 5, 2021 the State of Alabama issued the "Reapportionment Committee Redistricting Guidelines", which stated among other things:

- "No district shall be drawn that subordinates race-neutral districting criteria to considerations of race, color, or membership in a language minority group (except...) to comply with Section 2";
- "Districts shall be composed of contiguous and reasonably compact geography";
- "Districts shall respect communities of interest...including but not limited to ethnic, racial, economic, tribal, social, geographic or historical identities"; and
- "The legislature shall try to preserve the cores of the existing districts"

Using population estimates from the Census Bureau, the Alabama legislature began to develop redistricting plans in May of 2021. Once the 2020 Census data were delivered in August of 2021, the Alabama legislature utilized that data to continue the redistricting process⁶. Plans were drawn in compliance with the published criteria for redistricting⁷, which includes (among other guidance):

- Ila. Districts shall comply with the United States Constitution, including the requirement that they equalize total population; and
- Iib. Congressional districts shall have minimal population deviation.

On November 4, 2021 the proposed plans were signed into law⁸ by Governor Kay Ivey.

⁵ https://ballotpedia.org/Redistricting_in_Alabama_after_the_2020_census

⁶ <https://www.census.gov/newsroom/press-releases/2021/population-changes-nations-diversity.html>,
<https://www.census.gov/newsroom/press-releases/2021/2020-census-redistricting-data-easier-to-use-format.html>

⁷ <http://www.legislature.state.al.us/aliswww/reapportionment/Reapportionment%20Guidelines%20for%20Redistricting.pdf>

⁸ Alabama enacted a congressional map on Nov. 4, 2021, after Gov. Kay Ivey (R) signed the proposal into law.[1] The Alabama House of Representatives voted 65-38 in favor of the map on Nov. 1 followed by the Alabama State Senate voting 22-7 on Nov. 3.[1][2] This map takes effect for Alabama's 2022 congressional elections.

Alabama enacted state legislative maps for the state Senate and House of Representatives on Nov. 4, 2021, after Gov. Kay Ivey (R) signed the proposals into law.[1] Senators approved the Senate map on Nov. 1 with a 25-7 vote.[3]

This report is submitted in *Milligan v. Merrill* and *Caster v. Merrill*. Plaintiffs in both cases allege that Section 2 of the Voting Rights Act requires Alabama to draw two majority-black districts (the Milligan Plaintiffs also assert claims of racial gerrymandering and intentional gerrymandering). The Milligan plaintiffs present a plan in their complaint (“the Hatcher plan”) that significantly changes the representational landscape of the state and deviates far from a “least change” approach.

Districts 2 and 7 are majority black by plaintiffs’ calculations, but barely so. In order for them to have accomplished this, some of the most obvious changes introduced by the Hatcher plan include numerous splits of counties that have always remained whole in districting plans and in aggregate have remained in the same congressional district for decades. The most significant of these splits are the ones of District 1 and District 2 through Mobile and Baldwin counties. In the Hatcher plan, District 2 connects the areas in Mobile County that are heavily black in population with counties in the Black Belt region, including Barbour and Russell counties on the Georgia line. District 1 connects the whiter areas of Mobile County with wiregrass counties, extending along the Florida line to Houston County. In the Hatcher plan, District 7 includes areas of west central Alabama that are heavily black in population – also with counties in the Black Belt region. The *Caster* plaintiffs have not yet presented a demonstrative plan, and no plaintiffs will submit an expert report until the day this report is due.

For purposes of this report, I am assuming that the demonstrative plans in both cases will be based on the same basic structure as the Hatcher plan, even if there are differences around the edges. If any plaintiffs present a demonstrative plan with a substantially different structure or that alters the opinions herein, those issues will be addressed in a supplemental or rebuttal report. Because of time constraints during this accelerated schedule, most of my focus will be on the *Milligan* plaintiffs’ allegations, but the opinions asserted about the “Hatcher plan” apply equally to *Caster* to the extent the *Caster* plaintiffs rely on a similar demonstrative plan. Some of my opinions asserted in my report for *Singleton v. Merrill* (the “whole county” case) may be

Representatives approved the Senate map on Nov. 3 with a 76-26 vote.[1] For the House proposal, representatives voted 68-35 in favor on Nov. 1 and senators followed on Nov. 3 with a 22-7 vote.[4] These maps take effect for Alabama's 2022 legislative elections.

Alabama's seven United States representatives and 140 state legislators are all elected from political divisions called districts. District lines are redrawn every 10 years following completion of the United States census. Federal law stipulates that districts must have nearly equal populations and must not discriminate on the basis of race or ethnicity.

Source: https://ballotpedia.org/Redistricting_in_Alabama_after_the_2020_census

applicable to arguments made in *Milligan* and *Caster*, and I understand that my Singleton report may be submitted for that purpose. I reserve the right to supplement this report.

2) Traditional Redistricting Principles

In addition to these mandatory standards set out by the U.S Constitution and the Voting Rights Act, states may adopt their own redistricting criteria, or principles, for drawing the plans. Those criteria appear in state constitutions or statutes, or may be adopted by a legislature, chamber, or committee, or by a court that is called upon to draw a plan when the legislative process fails. The Congressional Research Service explains⁹:

“Many of the “rules” or criteria for drawing congressional boundaries are meant to enhance fairness and minimize the impact of gerrymandering. These rules, standards, or criteria include assuring population equality among districts within the same state; protecting racial and language minorities from vote dilution while at the same time not promoting racial segregation; promoting geographic compactness and contiguity when drawing districts; minimizing the number of split political subdivisions and “communities of interest” within congressional districts; and preserving historical stability in the cores of previous congressional districts.”

These traditional districting principles (or criteria) have been adopted by many states and serve as the framework that I will use in this report:

- *Preservation of communities of interest*: District boundaries should respect geographic areas whose residents have shared interests, such as neighborhoods and historic areas.
- *Continuity of representation*. There is a benefit to continuing the political and geographic stability of districts. This can be measured with:
 - *Preservation of districts (“core retention”)*: A redrawn district should include as much of the same residential population as the former district did, as allowed by the minimum population that needs to be rebalanced.
 - *Incumbents*: Districts should not be drawn to include pairs of incumbents.
- *Compactness*: Districts should be geographically compact and not irregular.
- *Contiguity*: All parts of a district should be connected at some point with the rest of the district. Simply put, contiguity means that a pedestrian could walk from any point within the district to any other point within it without needing to cross the district’s boundaries; and finally:
- *Preservation of counties and other political subdivisions*: District boundaries should not cross county, city, or town, boundaries to the extent practicable.

⁹ <https://crsreports.congress.gov/product/pdf/R/R42831/3>

3) Census Race Definitions

In the field of demography, and indeed in redistricting cases, the definition of the population in question is critical. Since the foremost purpose of the census is to generate statistics for the purpose of apportionment and redistricting, it is unclear why here plaintiffs refer to undocumented voting strength statistics rather than census Black Voting Age Population. Before we proceed, we will here try to define and document the true “Black” population of the two Black districts in the plaintiff’s remedial plan.

The 2010 Census allowed respondents to self-declare their ethnic and racial identification:

In order to facilitate enforcement of the Voting Rights Act, the Census Bureau asks each person counted to identify their race and whether they are of Hispanic or Latino origin. Beginning with the 2010 Census (and continuing in 2020) the racial categories available in the Census were: White, Black, American Indian, Asian, Native Hawaiians and other Pacific Islanders, and Some Other Race. Persons of Hispanic or Latino origin might be of any race. Persons were given the opportunity to select more than one race – and that race could be in combination with Hispanic or non-Hispanic origin.¹⁰

The result is that the Census Bureau reports 263 different population counts for each level of Census geography in the country. A “Black” in Alabama therefore can be Black alone, or perhaps in combination with other races or possibly even also Hispanic. Since 2010, the number and proportions of multi-race populations in the United States has grown markedly.¹¹ An examination of Appendix 1 (P.31) “Census 2020 Alabama Black Population Total, non-Hispanic and Hispanic Combinations” reveals numerous new and important findings on who Blacks are in Alabama.

In Appendix 1 (P.31) the population is reported starting in total, then progressing by row through race alone and race in combination for Alabama’s Black population. Column A shows the total population and Column B shows the % of the total population for that group. Column C shows the non-Hispanic population and Column D shows the % of the total population for that group. Column E shows the Hispanic population and Column F shows the % of the total population for that group. In Appendix 2 (P.32), the same format follows for the Alabama Black Voting Age Population (VAP).

¹⁰ “How to Draw Redistricting Plans That Will Stand Up In Court”, National Conference of State Legislators (NCSL), January 22, 2011, p. 17.

¹¹ Experts own independent observations.

In Appendix 1 (P.31), Column A (Total Population) we see that the Black or African American alone population is 1,296,162 – or 25.8% of the population. At the bottom of the table, we see the incremental impact of Black alone or in combination. When all other race combinations are added, the Black population is 1,364,736 – or 27.2% of the population. This represents an additional 68,574 Blacks, or 5.0% of the total Alabama Black population.

In Appendix 2 (P.32), Column A (Voting Age Population) we see that the Black or African American alone population is 981,723 – or 25.1% of the population. At the bottom of the table, we see the incremental impact of Black alone or in combination. When all other race combinations are added, the Black population is 1,014,372 – or 25.9% of the VAP. This represents an additional 68,574 Blacks, or 3.2% of the Alabama Black VAP.

In this matter precise definitions matter. This “alone” definition is the one most consistently used historically in VRA cases because a) a multi-race classification did not exist prior to 2000; and b) the “alone” definition has been most defensible from a political science / Gingles 2 voting behavior perspective. On September 1, 2021 the DOJ published “Guidance under Section 2 of the Voting Rights Act, 52 U.S.C. 10301, for redistricting and methods of electing government bodies”¹² which states:

“The Department’s initial review will be based upon allocating any response that includes white and one of the five other race categories identified in the response. Thus, the total numbers for “Black/African American,” “Asian,” “American Indian/Alaska Native,” “Native Hawaiian or Other Pacific Islander,” and “Some other race” reflect the total of the single-race responses and the multiple responses in which an individual selected a minority race and white race. The Department will then move to the second step in its application of the census data by reviewing the other multiple-race category, which is comprised of all multiple-race responses consisting of more than one minority race. Where there are significant numbers of such responses, the Department will, as required by both the OMB guidance and judicial opinions, allocate these responses on an iterative basis to each of the component single-race categories for analysis.”¹³

In order to facilitate analysis that reflects current DOJ guidance, we will include analysis containing both Black alone or in combination (hereafter referred to as the “All Black” definition in this report as appropriate.

¹² <https://www.justice.gov/opa/pr/justice-department-issues-guidance-federal-statutes-regarding-redistricting-and-methods>

¹³ *Georgia v. Ashcroft*, 539 U.S. 461, 473, n.1 (2003).

Table 4.1 Hatcher Plan Total Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	717,754	110,043	121,355	15.3%	16.9%
2	717,755	369,876	383,401	51.5%	53.4%
3	717,753	153,144	163,967	21.3%	22.8%
4	717,753	50,872	58,822	7.1%	8.2%
5	717,755	129,314	143,250	18.0%	20.0%
6	717,754	85,270	93,167	11.9%	13.0%
7	717,755	389,640	400,774	54.3%	55.8%
Grand Total	5,024,279	1,288,159	1,364,736	25.6%	27.2%

Table 4.2 Hatcher Plan Voting Age Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	556,317	81,316	86,113	14.6%	15.5%
2	559,876	278,856	286,698	49.8%	51.2%
3	563,228	117,517	122,319	20.9%	21.7%
4	555,304	38,846	41,937	7.0%	7.6%
5	562,504	99,539	106,140	17.7%	18.9%
6	553,734	64,095	67,699	11.6%	12.2%
7	566,203	296,563	303,466	52.4%	53.6%
Grand Total	3,917,166	976,732	1,014,372	24.9%	25.9%

Table 4.3 HB1 Plan Total Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	717,754	185,771	196,827	25.9%	27.4%
2	717,755	216,019	228,648	30.1%	31.9%
3	717,754	175,783	187,284	24.5%	26.1%
4	717,754	51,314	59,655	7.1%	8.3%
5	717,754	123,355	136,782	17.2%	19.1%
6	717,754	137,209	145,897	19.1%	20.3%
7	717,754	398,708	409,643	55.5%	57.1%
Grand Total	5,024,279	1,288,159	1,364,736	25.6%	27.2%

Table 4.4 HB1 Plan Voting Age Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	557,535	137,354	142,777	24.6%	25.6%
2	557,677	161,893	167,971	29.0%	30.1%
3	564,281	135,659	141,011	24.0%	25.0%
4	556,133	39,507	42,819	7.1%	7.7%
5	561,187	95,014	101,339	16.9%	18.1%
6	552,286	100,385	104,551	18.2%	18.9%
7	568,067	306,920	313,904	54.0%	55.3%
Grand Total	3,917,166	976,732	1,014,372	24.9%	25.9%

Table 4.5 Existing 2011 Plan Total Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	726,276	188,431	199,586	25.9%	27.5%
2	693,466	211,862	224,221	30.6%	32.3%
3	735,132	186,438	198,228	25.4%	27.0%
4	702,982	46,919	54,662	6.7%	7.8%
5	761,102	130,351	144,648	17.1%	19.0%
6	740,710	120,130	128,681	16.2%	17.4%
7	664,611	404,028	414,710	60.8%	62.4%
Grand Total	5,024,279	1,288,159	1,364,736	25.6%	27.2%

Table 4.6 Existing 2011 Plan Voting Age Population by District

District	Total Pop	Black Alone Pop	All Black Pop	% Black Alone	% All Black
1	564,302	139,380	144,863	24.7%	25.7%
2	539,812	159,212	165,202	29.5%	30.6%
3	576,455	143,415	148,910	24.9%	25.8%
4	543,423	36,006	39,038	6.6%	7.2%
5	595,873	100,325	107,050	16.8%	18.0%
6	572,838	89,754	93,787	15.7%	16.4%
7	524,463	308,640	315,522	58.8%	60.2%
Grand Total	3,917,166	976,732	1,014,372	24.9%	25.9%

Precision here is important. Plaintiffs cite numerous demographic figures without defining them. In districts they are proposing such as D2, the Black alone population is 49.8% - e.g. not a majority.¹⁴ While the Black alone *or in combination* population is 51.2%. Whether D2 is defensible as a majority district depends on the definition being used. In this case, if the plaintiffs use any other definition of Black besides “Black alone” an analysis of the voting behavior of those incremental, not Black alone voters would be warranted for a Gingles claim.

Using the tables above and Appendix 1(P.31) / Appendix 2 (P.32) I documented the demographic references by paragraph in the Milligan report and attempted to replicate them.

- Para 42. “On August 12, 2021, the U.S. Census Bureau released the results of the 2020 Census. Alabama’s population grew by 5.1% between 2010 and 2020. Alabama’s current population identifies as 63.1% non-Hispanic white, 26.9% as any part Black, 5.3% as Hispanic or Latino, 2.3% as any part American Indian/Alaska Native, and 2% as any part Asian.” My analysis shows that the 26.9% Black here is actually Black alone and Hispanic and Black + White and Hispanic. The true % any part Black is in fact 27.2%

¹⁴ Milligan complaint paragraph 88

- Para 87. “Demonstrative CD 7 would have a BVAP of 52.6%, which is sufficient for Black voters to elect a representative of choice despite the persistence of racially polarized voting in Alabama.” My analysis in Table 4.2 (P.10) shows BVAP for Hatcher D7 as being 52.4% and All Black as 53.6%. I am unable to ascertain the definition of the BVAP of 52.6% or the defense of it being sufficient for Black voters.
- Para 100. “District 1 is a district that was approximately 25.7% BVAP.” My analysis in Table 4.6 (P.11) shows D1 All Black as 25.7%.
- Para 101. “District 1 is a district that was approximately 30.6% BVAP.” My analysis in Table 4.6 (P.11) shows D2 All Black as 30.6%.
- Para 102. “District 1 is a district that was approximately 25.8% BVAP.” My analysis in Table 4.6 (P.11) shows D3 All Black as 25.8%.
- Para 165. “In the HB 1 plan signed by the Governor, the BVAP in CD 1 is 25.6%, the BVAP in CD 2 is 30.1%, and the BVAP in CD 3 is 25%.” My analysis in Table 4.4 (P.10) shows all three of these populations as being “All Black”.

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4) Analysis and Evaluation of Plans

Next, we analyze and evaluate the enacted Alabama plan and plaintiffs' proposed plan and using the following traditional redistricting principles:

- A. communities of interest, including:
- B. core retention analysis
- C. incumbency; and
- D. compactness.

A. Communities of Interest

The concept of "communities of interest" (COIs) is frequently used, but not always easy to apply to redistricting. The U.S. Supreme Court has specified districts should contain "communities defined by actual shared interests."¹⁵ The concept of COI can be difficult to define, and, consequently, making use of such an intangible concept in the actual constructing of boundaries may be difficult and arbitrary.¹⁶ A broad, commonly used definition is "a group of people who share similar social, cultural, and economic interests, and who live in a geographically defined area". Others have gone to greater lengths. The University of Michigan Center for Urban, State and Local Policy (CLOSUP) defined communities of interest as:

"While there is no set definition of COIs, we think of a COI as a group of people in a specific geographic area who share common interests (such as economic, historic, cultural, or other bonds) that are linked to public policy issues that may be affected by legislation. CLOSUP's research suggests that COIs can consist of religious, ethnic, or immigrant communities, neighborhoods, people in tourism areas, regional media markets, outdoor recreation or natural resource areas, economic zones, and much more. Examples of COIs include: historical communities; economic communities; racial communities; ethnic communities; cultural communities; religious communities; immigrant communities; language communities; geographic communities; neighborhoods; economic opportunity zones; tourism areas; school districts; outdoor recreation areas; communities defined by natural features; creative arts communities; media markets, etc."

Alabama is a state rich in history and diversity. With over 5 million residents, the yellowhammer state spans from the mountainous Tennessee Valley to the south by Mobile Bay covering over

¹⁵ *Miller v. Johnson*, 515 U.S. 900, 919–20 (1995).

¹⁶ Matthew J. Streb, *Rethinking American Electoral Democracy*, 2nd ed. (New York: Routledge, 2011), p. 111; Brunell, *Redistricting and Representation*, p. 66; Brickner, "Reading Between the Lines...", p. 16.

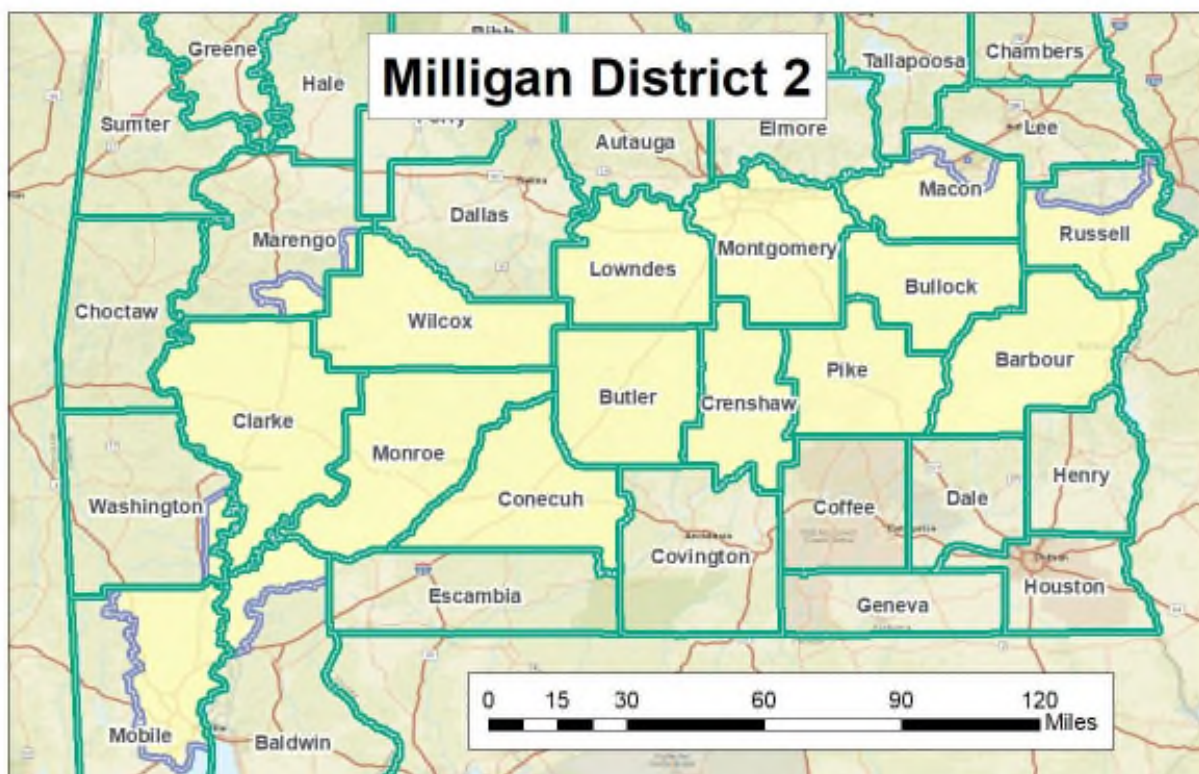
52,000 square miles. It contains some of the richest farming country in the nation, alongside tech corridors and growing urban areas.

Here I assess the Hatcher plan Districts 2 and 7 – the *Milligan* remedial majority Black districts. In examining Map Appendix 7 (P.44 Hatcher Percent Black Alone VAP by VTD) it seems visually obvious that two majority Black districts cannot be created without some equitable division of the Black belt – adding some portion to Mobile to create a Black majority District 2 and adding some portion Birmingham to create a Black majority District 7.

Hatcher Plan District 2

In examining Figure 4.1 below, I note that several previously intact counties have been split – including Baldwin, Mobile, Macon, Marengo, Macon, Russell and Washington, none of which have historically been split between districts.

Figure 4.1 Milligan District 2



In examining District 2 – my attention was drawn to the southeasterly Mobile / Baldwin County area – which have been split in a way in the Hatcher plan that is not consistent with any existing administrative or physical geography. My investigation revealed that neither Mobile nor Baldwin County have ever been split in any historical congressional configuration. And since the 1970s, both counties have been paired together in one whole district with the same representative.

Looking closer at Map Appendix 11 (P.48, D2 Division of Mobile in Hatcher Plan) it can be seen that District 2 was drawn into Mobile County just as far as was necessary to include the several heavily Black populous VTDs¹⁷ in and around Mobile. In fact, no effort was made to try and conform the boundaries of D2 to the existing city boundaries of Mobile. Doing so would have included several heavily *non-Black* VTDs that would dilute the percent Black in D2 to something less than a defensible majority. It is difficult to argue that the extension of D2 into central Mobile County was for any other purpose than adding Black population to reach the bare majority plaintiffs claim to have achieved there. There are no other surrounding (non-Black) areas that were included.

I have reviewed the testimony of Bradley Byrne and Jo Bonner from the case of *Chestnut v. Merrill*, where I understand the plaintiffs requested essentially the same relief as the *Milligan* and *Caster* plaintiffs (two majority-black districts with a structure similar to the Hatcher plan). As former Congressmen who represented District 1, I would expect them to be knowledgeable of communities of interest in the area. Aside from racial differences, the entire southwest corner of Alabama represents a significant Alabamian community of interest (COI) – with numerous strong economic, transportation, cultural and historic interests. Mobile County has a rich history as the first European settlement in Alabama and as one of the oldest cities in the U.S., Mobile is also home to North America’s first Mardi Gras celebration. The history steeped in being Alabama’s only port and its coastal location brings the people of Mobile County together economically as well as socially.

This COI has similar and shared economic, geographical, historical and social interests, as well as being key to Alabama’s economy. Mobile and Baldwin Counties make up Alabama’s only coastal district and the state’s only port (Mobile) is in Mobile County. Major shipping, rail and highways merge along the Mobile River and Mobile Bay. Mobile County has many large employers in key industries such as aviation/aerospace, shipbuilding, chemical, steel manufacturing, healthcare, and oil/gas. Many residents in Mobile County work in these industries. Highways and major interstates (10 and 65) connect the different parts of the county so people who live in different parts of the county can easily get to the main port of Mobile where the economy and culture thrive. The county is a national leader in training and workforce development. They train locals who live in Mobile County to stay and work there as well.

¹⁷ VTDs are Voting Districts. “VTD” is a census term for a geographic area, such as an election precinct, where election information and data are collected; boundaries are provided to the Census Bureau by the states. Since boundaries must coincide with census blocks, VTD boundaries may not be the same as the election precinct and may include more than one precinct. Source: <https://www.ncsl.org/research/redistricting/the-redistricting-lexicon-glossary.aspx>

Baldwin County is the fastest growing county in the state. It is connected to Mobile County by Interstates 10 and 65. There are shipyards in both counties and Alabama's shoreline covers both counties. Baldwin County is a major tourist area along the Gulf Coast. The economic development of both sides of the two counties have been merging. There is also cooperation between the local governments of both counties as they have a shared economy and shared political interest. Mobile, Baldwin County and adjacent counties should be considered a unified community of interest (COI) when creating districts.

As Congressman Bradley Byrne testified in the *Chestnut v Merrill* case in 2019, Mobile and Baldwin Counties are closely connected culturally and economically:

"you've got people who have some sort of a connection on both sides of the bay. And we've found over the last 20 years that the economic development efforts of both sides of the bay have been merging. And so we're actually doing a lot more cooperative things between the two counties. And each county sort of living off of the other in various ways. So the cooperation between local government, local economic developers, local civic leaders on both sides of the bay is something we've worked very, very hard on. And it's paying off for us in a big way."¹⁸

Former Congressman Josiah Bonner also testified at the *Chestnut v Merrill* case, arguing that Mobile County and Baldwin County represent a Community of Interest:

"...you've got Mobile and Baldwin counties in the southern part of the district that not only are connected by Mobile Bay but front the Gulf of Mexico. And so, therefore, everything -- I would call it a hub and spoke. Everything that radiates out radiates from the shared economies, the shared history, the shared social occasions, such as Mardi Gras, the shared political interests from Mobile and Baldwin counties."¹⁹

Due to time constraints, I will rely on this history, evidence and testimony as my defense of why Mobile and Baldwin counties are an inseparable COI. I have limited my assessment of the D2 impact of the Hatcher plan to Mobile and Baldwin counties with population changes and the traditional redistricting principles of core retention and compactness. Other county splits in the Hatcher plan are not trivial – but it is my professional assessment that the splits in Mobile and Baldwin would create the most harm.

¹⁸ Chestnut v. Merrill, Transcript of Bench Trial V. IV page 679

¹⁹ Chestnut v. Merrill, Transcript of Bench Trial V. IV page 764

Comparing Table 4.2 Hatcher Plan Voting Age Population by District (P.10) with Table 4.6 Existing 2011 Plan Voting Age Population by District (P.11) with the numeric impact of the Hatcher plan on the Black population in D1 is clear. They are reduced from 139,380 (or 24.7% Black alone) to 81,316 (or 14.6% Black alone) – resulting in over 58,000 Blacks changing representation from their neighbors to a new constituency including large Black populations east to Montgomery and beyond. What is notable is that displacement of 58,000 Blacks is from areas where they have a high percentage of the total population. These “high percentage” Blacks replace very nearly the same number of Blacks from southeastern Alabama that had been in District 2 previously – that Hatcher now moves out into District 1. That is – the Hatcher plan trades a similar number of Blacks between D1 and D2 but just exchanges low Black density and high Black density populations. This effect can be seen in the core retention analysis (CRA) I performed on the Hatcher plan (P.23).

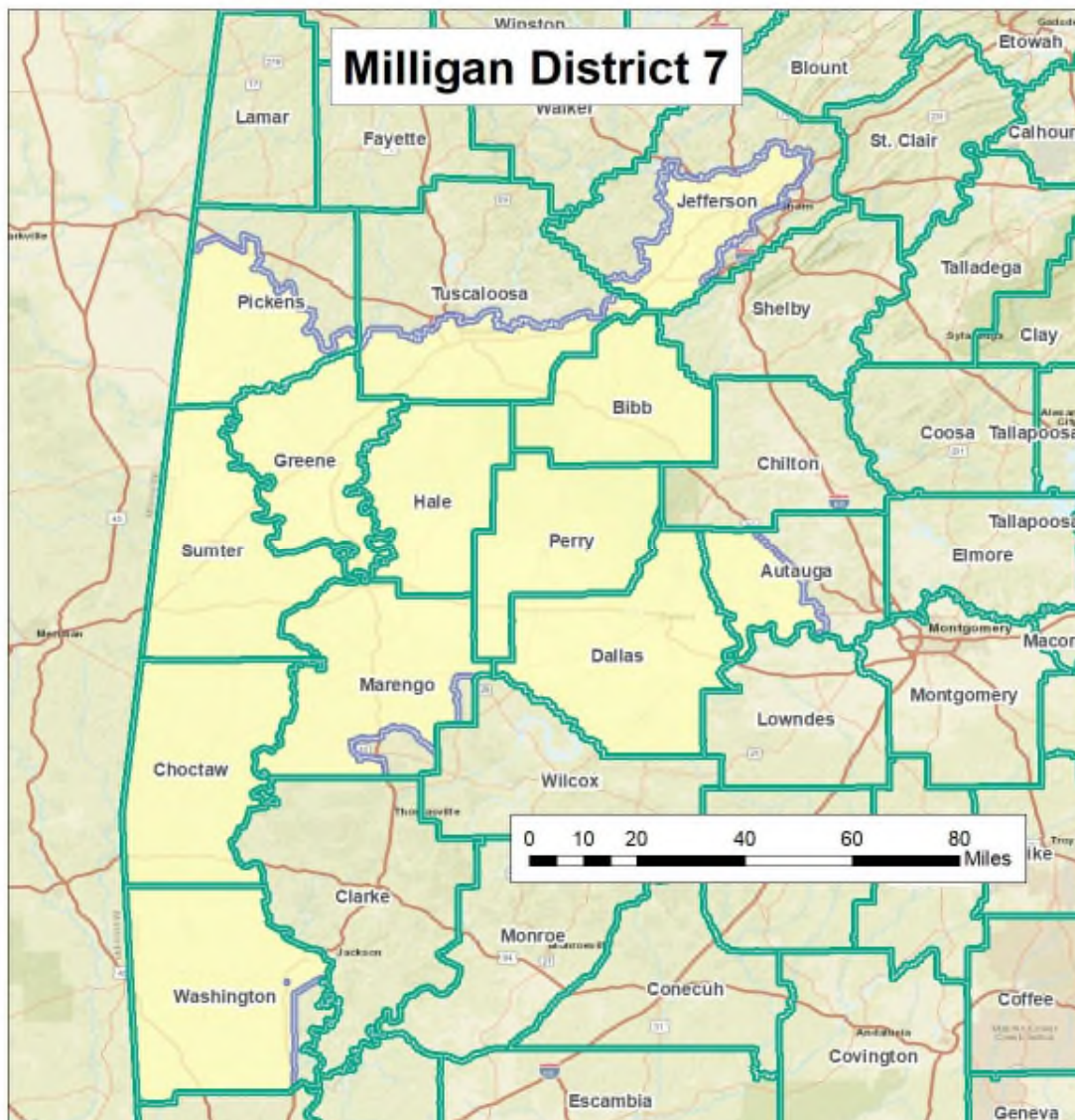
In my CRA Figure 5.2 (P.23) I show that District 1 (from which *Milligan* plaintiffs excise the Black portions of Mobile County) retains 58.7% of its total population while only retaining 27.6% of its Black population. Over 72% of the Black population (largely from Mobile) in District 1 would lose their continuity of representation under the Hatcher plan because they would be getting moved to District 2. In D2 I show that only 36.8% of the total population and 58.7% of the Black population is retained (because numerous non-Black populations were moved out of the district). If Plaintiffs wanted to strengthen D2 as a Black district – how does disgorging 41% of the existing Black population in the district accomplish that? The apparent answer is that the existing Black populations and neighborhoods in D2 were not the *right* Black populations. *Milligan* plaintiffs needed to replace them with a different Black population that represented a higher share of their neighboring population – no matter how far geographically they had to stretch or what consequences to communities of interest that created.. This leads me to compactness.

In my compactness analysis (P.27-29) I show that the overall Hatcher plan performs much more poorly than the existing (2011) Alabama Congressional plan – driven in part by the very poor compactness of the new D2 and even moreso by the collateral compactness damage done to D1. In the existing plan, the sum of the four compactness scores for D1 (Table 5.3, P.28) was 1.70 and D2 was 1.93. In the Alabama enacted plan, the sum of compactness scores (Table 5.4, P.29) was improved for D1 at 1.75 and D2 at 2.02. By comparison – the Hatcher compactness scores worsened considerably (Table 5.5, P.30) with the sum of compactness scores in D1 at 1.29 and D2 at 1.51.

Milligan District 7

In examining Figure 4.2 below, I note that several previously intact counties have been split – including Autauga, Marengo, Pickens and Washington (Tuscaloosa and Jefferson were already split).

Figure 4.2 Milligan District 7



Of these splits, the most closely examined historically is the often maligned “thumb” of D7 into Birmingham. . In examining Map Appendix 9 (P.46) (D6 to D7 Moves of Populous Black VTDs in Hatcher Plan – marked with dots) I closely studied the Hatcher plan relative to the existing 2011 plan boundaries. Knowing that the plaintiffs in *Milligan* had to add Black population in order to reach their Black majority requirement, I noted that the existing boundaries around Birmingham were expanded in a very nearly exact way to only add heavily Black VTDs, and to avoid less Black VTDs. These VTDs are noted with blue “dots” in Map Appendix 9.

Looking even more closely at Map Appendix 10 (P.47) (D6 to D7 Populous Black VTDs in Hatcher Plan) – it can be clearly seen that the HB1 boundary (in grey and white) is actually drawn more closely into Birmingham than the existing 2011 plan boundaries. This apparent race-blind attempt to improve D7 compactness has the effective consequence of disgorging several heavily Black VTDs out of D7 into D6. That is, the result of HB1 was that Black population was unpacked (rather than packed) out of the district. By comparison, plaintiffs clearly and deliberately drew their plan with the only purpose of *including* Black population. They made no apparent attempt to align their new boundaries with Birmingham municipal boundaries or any other community of interest, except those VTDs that are heavily Black.

As with our analysis of D1 and D2, we can see the impact of the changes in the Hatcher plan to D6 and D7. The core retention of Blacks in D6 is significantly altered. 81.5% of the total population in D6 is retained – while only 60% of the Black population is retained. The result here is that the continuity of representation for 40% of the Black population in D6 is disrupted. Further, the resulting core retention in the Hatcher plan for D7 (at 84.5% of total and 83.4% of Blacks) lags that of HB1 (at 90.6% of total and 89.5% of Blacks).

In my compactness analysis (P.27--29) I show that the Hatcher plan performs comparably to the existing (2011) Alabama Congressional plan for Districts 6 and 7. In the existing plan, the sum of compactness scores for D6 was 1.63 and D7 was 1.49. In the Alabama enacted plan, the sum of the four compactness scores for D6 was worse at 1.55 and for D7 was significantly better at 1.74. By comparison – the Hatcher compactness for D6 was identical at 1.63 and for D7 was only slightly worse at 1.42.

B. Core Retention Analysis

Courts have recognized the need to preserve the core of a prior established district as a legitimate redistricting criterion,²⁰ as well as the avoidance of contests between incumbents.²¹ Core retention fosters the continuity of political representation. A *Core Retention Analysis* (CRA) is simply a demographic accounting of the addition, subtraction, and substitution of persons that would be brought about by a proposed realignment of a district's existing boundaries. A CRA is a way of quantifying precisely how a proposed realignment would affect the continuity of political representation among a district's current residents and eligible voters.

Here, a CRA can be especially useful in exposing differential effects on specific groups of residents that amount to the denial or abridgement of the right to vote. To illustrate: suppose that 1,000 people now reside in a district in which Blacks constitute 480 (48%) of all the district's eligible voters (a Black "influence" district). Since this district now has too many residents (based upon the 2020 Census), a proposed boundary change retains 800 of its current residents and resituate 200 others in an adjacent district with too few people, thereby satisfying the newly-established requirement that every newly-drawn district be properly apportioned with 800 residents. Here, the "core" of the former district has been fully retained numerically: all 800 residents of the newly-drawn district were part of the former district, maintaining the continuity of political representation among the proposed new district's current residents and eligible voters.

The CRA might also show that 150 of all 200 proposed resituated residents are Black. By this measure, "core retention" differs markedly for Blacks, because only 330 (480 minus 150) of the original 480 Black "core" of the former district has been retained. In short, the proposed new district would retain only 69% of the original Black core, thereby depriving 31% of Blacks of continuity of political representation.

Core Retention Analysis has usually only considered only the total populations of districts in comparisons across plans. As illustrated above, that limitation obscures other potentially problematic aspects of redistricting. In this case, we have broadened this standard demographic accounting model, using standard methodology, to present a full evaluation of various alternative redistricting plans, focusing on the right to vote by a protected group.

²⁰ *Abrams v. Johnson*, 521 U.S. 74, 84 (1997).

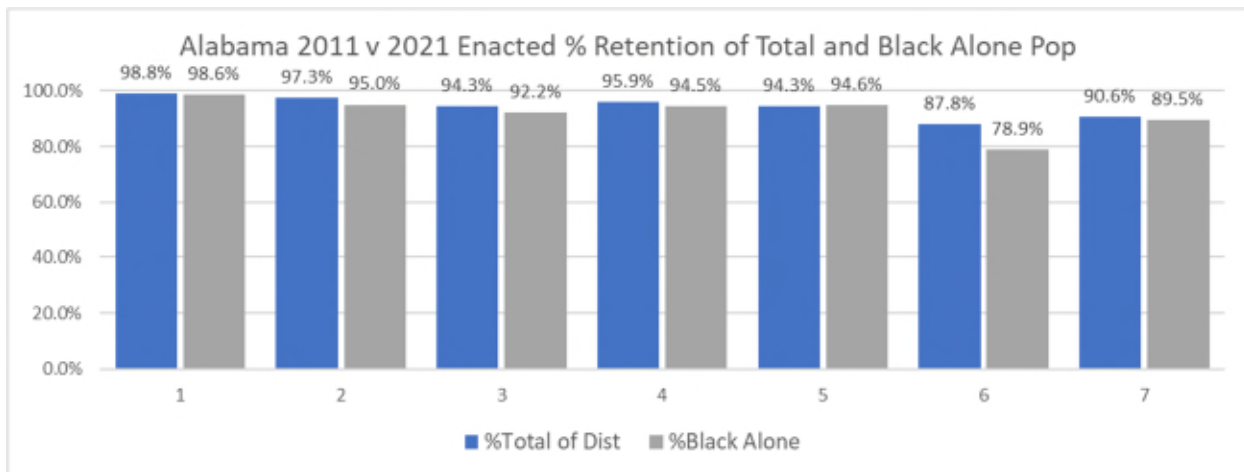
²¹ *Bush v. Vera*, 517 U.S. 952 (1996).

Three core retention analyses follow:

- 1) Alabama 2011 v Alabama 2021 enacted
- 2) Alabama 2011 v Hatcher
- 3) Alabama 2021 v Hatcher

In Figure 5.1 it can plainly be seen that core retention of the total population and the Black population by the State of Alabama 2021 enacted plan compared to the 2011 existing Alabama plan is significant, consistent and comparable, which should have been expected given the least change approach of the 2021 plan.

Figure 5.1 Core Retention of Total and Black Population: 2011 Existing v 2011 Enacted Plans



In Table 5.1 (P.22) the 2011 existing plan is shown in column 1, and the 2021 enacted plan is shown in column 2. The total population in column 3 is the number of total persons, and the Black population in column 4 is the number of Black persons who were retained and displaced in the 2021 enacted plan. For example, in the first row (1, 1) the total population is 717,754. This is intuitive. The existing 2011 D1 was reduced by exactly the number of persons necessary to balance – leaving 739 persons displaced to D2 and 7,783 persons displaced to D7. Concurrently, 185,771 Black persons are retained in D1, while 158 are displaced to D2 and 2,502 are displaced to D7.

At the bottom of Table 5.1 (P.22) is a row named “Number Retained” which is the population in Alabama that did not change districts in the 2021 plan. The next row is “Percent Retained” which is the percent of the population that did not change districts in the 2021 plan. Alabama kept a remarkable 94.1% of the total population and 91.8% of the Black population intact with their 2021 enacted plan. The remainder is “Number Displaced” that were moved to some other district.

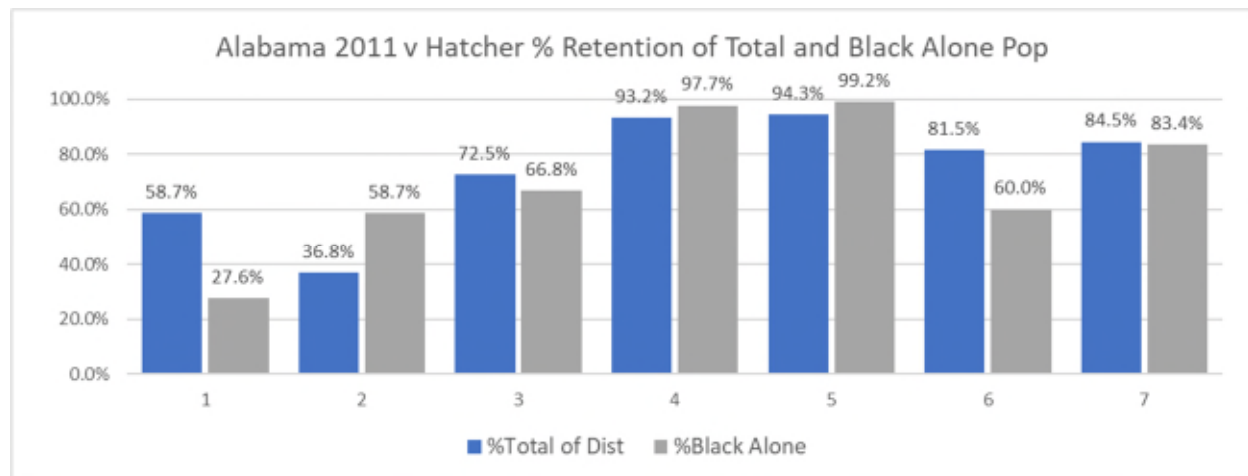
Table 5.1 Core Retention of 2011 Existing and 2021 Enacted Plan

Current 2011 Base District	New 2021 Enacted District	Total Population	Black Alone Population
1	1	717,754	185,771
	2	739	158
	7	7,783	2,502
1 Total		726,276	188,431
2	2	674,947	201,201
	7	18,519	10,661
2 Total		693,466	211,862
3	2	41,867	14,534
	3	693,265	171,904
3 Total		735,132	186,438
4	3	1,697	2
	4	674,218	44,318
	5	185	0
	6	5,012	18
	7	21,870	2,581
4 Total		702,982	46,919
5	4	43,533	6,996
	5	717,569	123,355
5 Total		761,102	130,351
6	3	22,792	3,877
	6	650,382	94,806
	7	67,536	21,447
6 Total		740,710	120,130
7	2	202	126
	4	3	0
	6	62,360	42,385
	7	602,046	361,517
7 Total		664,611	404,028
Number Retained		4,730,181	1,182,872
Percent Retained		94.1%	91.8%
Number Displaced		294,098	105,287
Grand Total		5,024,279	1,288,159

Figure 5.2 presents a core retention analysis of total population and Black population for the Hatcher plan compared to the 2011 existing Alabama plan. Here we can see two significant effects. First, the Hatcher plan has significantly lower core retention, due to the large movements of population necessary to support their plan objective. To that end, we can see that the core retention of the Black population relative to total is:

- much poorer in D1 (due to Black population around Mobile being disgorged to D2 as part of the apparent attempt to improve the Black racial performance in D2 - see Map Appendix 11, P.49);
- much better in D2 (due to significant *non*-Black population being disgorged to other districts as part of the apparent attempt to improve the Black racial performance in D2);
- worse in D6 (due to Black population around Birmingham being disgorged to D7 as part of the apparent attempt to improve the Black racial performance in D7 - see Map Appendix 9 and 10, P.47-48).
- comparable in D7

Figure 5.2 Core Retention of Total and Black Population: State of Alabama 2011 v Hatcher



Clearly, the State of Alabama's newly enacted 2021 plan registers consistently and significantly higher levels of core retention for both total and Black population than the Hatcher plan - a result that should have been anticipated by the plaintiffs.

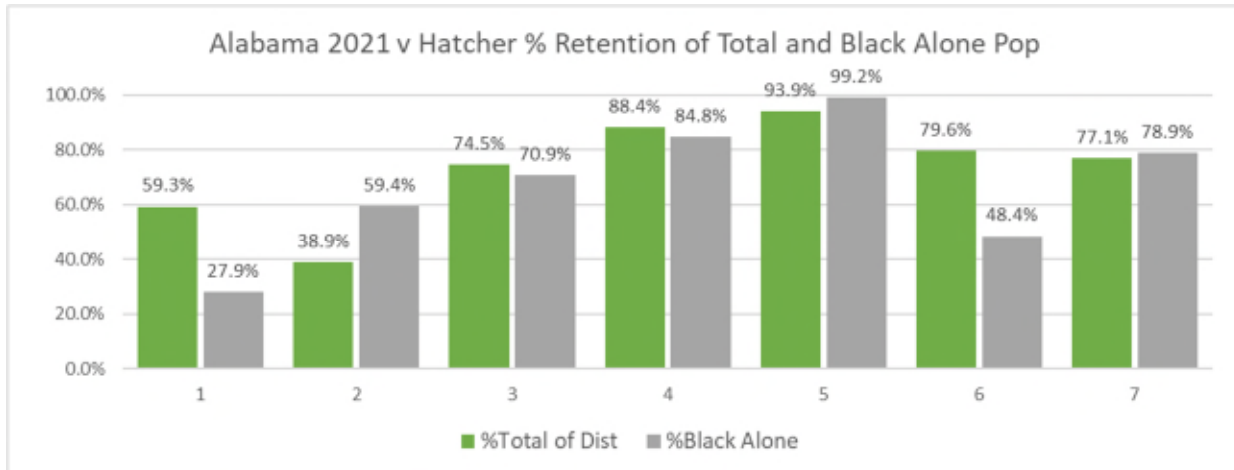
Table 5.2 (P.24) is consistent with Table 5.1 (P.22) except that it compares the Hatcher plan with the 2011 existing plan. The significant difference shown in Figures 5.1 and 5.2 are reflected numerically here. The total population and Black population retained is significantly lower than Alabama's CRA shows, and the number displaced is significantly higher. At the bottom of Table 5.2 is the total retained population: 3,752,981 and Black retained population: 885,238. The Hatcher plan displaces 977,200 more total and 297,634 more Black Alabamians than the enacted 2021 enacted Alabama plan.

Table 5.2 Core Retention of 2011 Existing and Hatcher Proposed Plan

Current 2011 Base District	Proposed 2021 Hatcher District	Total Population	Black Alone Population
1	1	426,386	52,042
	2	285,394	133,723
	7	14,496	2,666
1 Total		726,276	188,431
2	1	291,368	58,001
	2	255,316	124,383
	3	142,954	27,717
	7	3,828	1,761
2 Total		693,466	211,862
3	2	94,200	48,989
	3	533,053	124,597
	6	107,879	12,852
3 Total		735,132	186,438
4	3	41,746	830
	4	655,082	45,831
	5	185	0
	6	5,012	18
	7	957	240
4 Total		702,982	46,919
5	4	43,532	1,037
	5	717,570	129,314
5 Total		761,102	130,351
6	6	603,905	72,114
	7	136,805	48,016
6 Total		740,710	120,130
7	2	82,845	62,781
	4	19,139	4,004
	6	958	286
	7	561,669	336,957
7 Total		664,611	404,028
Number Retained		3,752,981	885,238
Percent Retained		74.7%	68.7%
Number Displaced		1,271,298	402,921
Grand Total		5,024,279	1,288,159

This analysis is followed by a core retention analysis of the Hatcher plan compared to the State of Alabama 2021 enacted plan. Since the Alabama 2021 enacted plan is similar to the original 2011 plan – it is no surprise that the pattern of retention by district, by total and Black population is consistent – but just slightly different.

Figure 5.3 Core Retention of Total and Black Population: State of Alabama 2021 v Hatcher



This superior record for the State’s Plan reflects the advantage of a least change approach: simply adjusting existing boundaries where necessary, instead of completely redrawing all districts, as plaintiffs did. Overall, the differences in core retention shows the significant incremental loss of the continuity of representation borne disproportionately by Alabama’s Black population.

It is also worth noting that in the process of reapportioning the state population after Census 2020, the state effectively unpacked District 7 in an effort to balance each district's population. In examining Table 4.5 (P.11) we see that the existing (that is, pre-apportionment) plan had 664,611 total and 404,028 Black alone population. We see in Table 4.3 (P.10) that the new 2021 HB1 plan has 717,754 total and 398,708 Black alone population. That is, D7 added (717,754-664,611) or 53,143 total persons, while disgorging (404,028 – 398,708) or 5,320 Black alone persons to adjacent districts. It is difficult to argue that the State of Alabama deliberately packed Black population when their plan demonstrates that they in fact *unpacked* District 7 (resulting in a reduction in Black alone population from 60.8% to 55.5%) of the total population.to the degree practicable while holding other traditional redistricting criteria.

C. Incumbency Analysis

The current residential address of congressional incumbents were geocoded on 11-14-2021. This file is acknowledged to be highly confidential and will be maintained as such throughout the analysis. Alabama's enacted plan respects incumbents (Figure 5.6).

While not stated explicitly in their report, the plaintiff plan *does not* respect incumbents (Figure 5.4).

Plaintiff's plan pairs Rep. Moore and Rep. Carl in proposed District 1 and leaves District 2 unrepresented.

Plaintiff's plan goes on to pair Rep. Sewell and Rep. Palmer both in District 6 leaving District 7 unrepresented.

Figure 5.4 Hatcher Plan

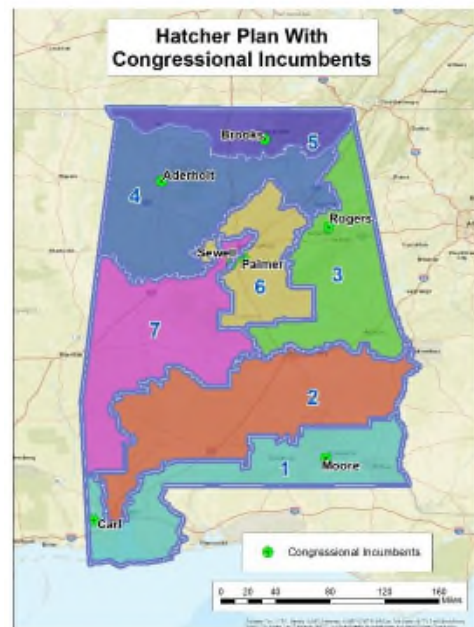


Figure 5.5 Alabama Existing 2011 Plan

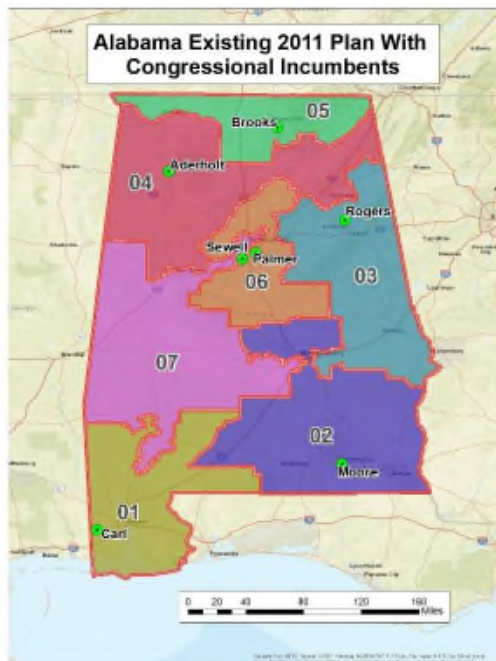
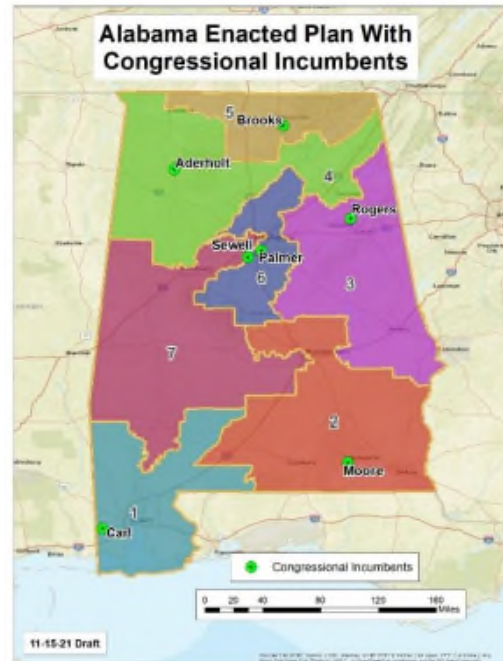


Figure 5.6 Alabama Enacted Plan



D. Compactness

Compactness of districts is a measure to ensure that districts do not excessively deviate from being “reasonably shaped” that is intended to deter gerrymandering. This of course is an enormously ambiguous and arbitrary description of what compactness actually is. Compactness was relatively easy to attain before “One Person One Vote”. However, with the development of both technology²² and redistricting law (especially *Baker v. Carr*, which led to splitting of geography as population deviations were driven lower) compactness became less and less possible. Today, while most compactness measures are absolute, they can still effectively serve as a tool compare one plan against another and to determine which is superior (even if multiple plans have poor compactness).²³ But what measure does an expert use? “To deter gerrymandering, many state constitutions require legislative districts to be “compact.” Yet, the law offers few precise definitions other than “you know it when you see it,” which effectively implies a common understanding of the concept. In contrast, academics have shown that compactness has multiple dimensions and have generated many conflicting measures”.²⁴ There is no professional consensus on a “right” measure, and every widely used measure works differently. A district that is “most compact” by one measure can easily and frequently be less compact by another. For this reason, we pick four of the most common statistical measures (Polsby-Popper, Schwartzberg, Reock and Convex Hull) - each of which has unique features, and strengths and weaknesses.²⁵ We then compare the compactness of each district of each plan individually and in aggregate.



²² The 1971 and 1981 Reapportionments used limited computer mapping for the first time. 1991 added significant geographic technology— Census Tiger Files— Geographic Information Systems.

²³ <https://www.ncsl.org/Documents/legismgt/Compactness-Hofeller.pdf>

²⁴ “How to Measure Legislative District Compactness If You Only Know it When You See it” <https://gking.harvard.edu/presentations/how-measure-legislative-district-compactness-if-you-only-know-it-when-you-see-it-7>

²⁵ The Polsby-Popper and Schwartzberg ratios place high importance on district perimeter. Thus, they are highly susceptible to bias due to shoreline complexity. Therefore, districts that are trimmed around shorelines may end up with a low compactness score through no fault of the district's authors and may not necessarily be a true indicator of gerrymandering. This is precisely why it's important to use multiple compactness scores (in this case the Polsby-Popper, Schwartzberg, Reock and Convex Hull measures) and let the reader judge which one is a better fit based on the geography of the district and method of calculation each score uses. A higher score means more compact, but the scores using different measures cannot be directly compared to each other. Source: https://cdn.azavea.com/com.redistrictingthenation/pdfs/Redistricting_The_Nation_Addendum.pdf

In Table 5.3 below we assess the State of Alabama compactness by district, by method. Within each method, the higher the score the better. Using District 5 as an example, it scores highest in Polsby-Popper, Schwartzberg and Convex Hull, but in fact performs the worst in Reock. This table enables us to assess the performance of individual districts across methods. This illustrates exactly why it is beneficial to look at multiple, highly regarded methods when performing compactness analysis. Since the values within each method are similar (but are in fact mathematically different) it is not possible to summarize accurately across plans. In order to compare the Alabama enacted plan with the plaintiff plan, we summarize the compactness scores by method.

In Table 5.3 we see the existing scores by district, by compactness measure. The scores shaded in green are the “best” in each measure, that is: most compact. The scores shaded in red are the poorest, that is: least compact. Not all districts are ranked the same in each measure, which is why we use multiple measures and examine each individually as well as in aggregate. The last column “Total” is simply a sum of the scores across plans for that district and is designed to provide a final summary ranking of the compactness of each district. The last row “Sum” is simply a sum of the scores for all districts in the plan for that measure. This is calculated to enable a summary comparison of metrics from one plan to another. A higher score in “Sum” means that by that measure, that plan is more compact. For this exercise, we interpret whichever plan has the majority of high scores to be the “more compact” plan. Table 5.3 is the compactness scores for the existing Alabama 116th congressional plan and serves as a basis for comparison.

Table 5.3 Alabama Existing (2011) 116th Plan Compactness Scores

District	Polsby-Popper	Schwartzberg	Reock	Convex_Hull	Total
1	0.16	0.40	0.42	0.71	1.70
2	0.22	0.47	0.49	0.74	1.93
3	0.22	0.47	0.36	0.73	1.79
4	0.18	0.43	0.36	0.62	1.59
5	0.29	0.53	0.22	0.77	1.82
6	0.14	0.37	0.43	0.69	1.63
7	0.13	0.36	0.38	0.62	1.49
Sum	1.34	3.04	2.66	4.90	

In Table 5.4 below the results pass the “eyeball test” that is: you can just look at District 2 and see that it has simple geometry. It has numerous straight segments and is compact in the sense it fits nicely in its circumscribing circle. But some details in the table are not intuitive. The districts with significant lengths of riparian boundaries tend to score poorly (and are hard to see from a statewide map). Smaller river segments have greater sinuosity, thus greater lengths. Districts 1, 4, 6, and 7 have long lengths of river boundaries. District 5 has numerous straight line segments but suffers from being elongated (that is, it fits poorly in a circle).

Table 5.4 Alabama 2021 Enacted Plan Compactness Scores

District	Polsby-Popper	Schwartzberg	Reock	Convex_Hull	Total
1	0.20	0.44	0.40	0.71	1.75
2	0.26	0.51	0.50	0.76	2.02
3	0.25	0.50	0.36	0.77	1.88
4	0.19	0.44	0.36	0.61	1.60
5	0.32	0.56	0.30	0.80	1.98
6	0.15	0.39	0.31	0.68	1.55
7	0.19	0.44	0.43	0.68	1.74
Sum	1.55	3.28	2.67	5.01	

In Table 5.4, we first note that by looking at the “Sum” row at the bottom - compactness scores are higher in each measure than the 2011 congressional plan. As expected, each method ranks each district differently. Polsby-Popper and Schwartzberg and Convex-Hull ranks D5 as being the best, while Reock ranks D2 highest. In looking at the last column “Total” we see that D2 actually prevails as the most compact district. My interpretation is that the highest ranking districts are comparable, but that D4, D6 and D7 are least compact – due in part to a significant amount of border being waterways at the Bankhead Lake intersection.

In Table 5.5, we see the compactness scores by district for the Hatcher proposed plan. In aggregate by method - all of the compactness scores are inferior not just to the HB1 plan but also the existing (2011) Alabama plan. Only D4 and D6 in the Hatcher plan outperform the Alabama existing 2011 plan – while the remaining five new Alabama districts outperform the Hatcher plan.

Table 5.5 Hatcher Plan Compactness Scores

District	Polsby-Popper	Schwartzberg	Reock	Convex_Hull	Total
1	0.14	0.38	0.20	0.57	1.29
2	0.15	0.39	0.27	0.69	1.51
3	0.18	0.43	0.27	0.72	1.60
4	0.19	0.44	0.43	0.71	1.76
5	0.26	0.51	0.20	0.82	1.79
6	0.14	0.37	0.41	0.71	1.63
7	0.14	0.38	0.27	0.63	1.42
Sum	1.20	2.89	2.06	4.85	

Conclusion

In my opinion as a demographer, the Hatcher plan is inferior not just to the existing 2011 plan but to the State's 2021 enacted plan in several ways. District 2 of the Hatcher plan shows evidence of racial gerrymandering in that the population was clearly separated by race in Mobile County (see Map Appendices 7, 11 P.44, 48). That split, and dividing parts of Mobile from Baldwin County, also disrupts a long-standing and important community of interest. District 7 in the Hatcher plan also shows evidence of racial gerrymandering in Jefferson County in that adjacent Black population from D6 was separated by race and packed into D7 (see Map Appendices 7, 9 P.44,46) while the Alabama enacted plan *unpacked* Black population in the same area.

The Hatcher plan performs more poorly than the 2021 enacted plan with respect to all traditional districting criteria. It splits communities of interest, splits counties unnecessarily, scores worse on core retention and compactness, and creates two pairs of incumbents in two districts. I see considerable evidence that D2 and D7 were drawn with race as the prevailing factor; and I do not see evidence of accommodating any traditional districting criteria that could explain the ways in which Mobile and Jefferson Counties are split in the Hatcher plan.

Appendix 1: Census 2020 Alabama Black Population Total, non-Hispanic and Hispanic Combinations (through 3 races, excluding 4-, 5- and 6-race Black combinations)

Race	Total (A)	% of Total (B)	AL non-Hisp (C)	% of Total (D)	AL Hispanic (E)	% of Total (F)
Total, Hispanic or Latino:	5,024,279		4,760,232		264,047	
Population of one race:	4,767,326	94.89%	4,575,614	91.07%	191,712	3.82%
Black or African American alone	1,296,162	25.80%	1,288,159	25.64%	8,003	0.16%
Population of two races:	243,473	4.85%	175,750	3.50%	67,723	1.35%
White; Black or African American	45,429	0.90%	43,911	0.87%	1,518	0.03%
Black or African American; American Indian and Alaska Native	6,301	0.13%	6,012	0.12%	289	0.01%
Black or African American; Asian	2,049	0.04%	1,939	0.04%	110	0.00%
Black or African American; Native Hawaiian and Other Pacific Islander	492	0.01%	456	0.01%	36	0.00%
Black or African American; Some Other Race	5,421	0.11%	2,983	0.06%	2,438	0.05%
Population of three races:	12,093	0.24%	8,085	0.16%	4,008	0.08%
White; Black or African American; American Indian and Alaska Native	4,493	0.09%	3,986	0.08%	507	0.01%
White; Black or African American; Asian	972	0.02%	899	0.02%	73	0.00%
White; Black or African American; Native Hawaiian and Other Pacific Islander	172	0.00%	165	0.00%	7	0.00%
White; Black or African American; Some Other Race	1,441	0.03%	573	0.01%	868	0.02%
Black or African American; American Indian and Alaska Native; Asian	124	0.00%	115	0.00%	9	0.00%
Black or African American; American Indian and Alaska Native; Native Hawaiian and Other Pacific Islander	13	0.00%	13	0.00%	0	0.00%
Black or African American; American Indian and Alaska Native; Some Other Race	146	0.00%	72	0.00%	74	0.00%
Black or African American; Asian; Native Hawaiian and Other Pacific Islander	145	0.00%	129	0.00%	16	0.00%
Black or African American; Asian; Some Other Race	86	0.00%	43	0.00%	43	0.00%
Black or African American; Native Hawaiian and Other Pacific Islander; Some Other Race	27	0.00%	20	0.00%	7	0.00%
Total "All Black"	1,364,736	27.2%	1,350,192	26.9%	14,544	0.3%

Appendix 2: Census 2020 Alabama Black Voting Age Population, non-Hispanic and Hispanic Combinations (through 3 races, excluding 4-, 5- and 6-race Black combinations)

Race	VAP (A)	% of VAP (B)	AL non-Hisp (C)	% of Total (D)	AL Hispanic (E)	% of Total (F)
Total:	3,917,166		3,750,310		166,856	
Population of one race:	3,751,169	95.76%	3,630,366	92.68%	120,803	3.08%
Black or African American alone	981,723	25.06%	976,732	24.93%	4,991	0.13%
Population of two races:	158,371	4.04%	114,790	2.93%	43,581	1.11%
White; Black or African American	18,106	0.46%	17,569	0.45%	537	0.01%
Black or African American; American Indian and Alaska Native	4,692	0.12%	4,530	0.12%	162	0.00%
Black or African American; Asian	1,130	0.03%	1,075	0.03%	55	0.00%
Black or African American; Native Hawaiian and Other Pacific Islander	262	0.01%	250	0.01%	12	0.00%
Black or African American; Some Other Race	3,470	0.09%	2,024	0.05%	1,446	0.04%
Population of three races:	6,741	0.17%	4,620	0.12%	2,121	0.05%
White; Black or African American; American Indian and Alaska Native	2,714	0.07%	2,452	0.06%	262	0.01%
White; Black or African American; Asian	325	0.01%	295	0.01%	30	0.00%
White; Black or African American; Native Hawaiian and Other Pacific Islander	75	0.00%	69	0.00%	6	0.00%
White; Black or African American; Some Other Race	721	0.02%	344	0.01%	377	0.01%
Black or African American; American Indian and Alaska Native; Asian	80	0.00%	73	0.00%	7	0.00%
Black or African American; American Indian and Alaska Native; Native Hawaiian and Other Pacific Islander	12	0.00%	12	0.00%	0	0.00%
Black or African American; American Indian and Alaska Native; Some Other Race	103	0.00%	55	0.00%	48	0.00%
Black or African American; Asian; Native Hawaiian and Other Pacific Islander	82	0.00%	76	0.00%	6	0.00%
Black or African American; Asian; Some Other Race	51	0.00%	31	0.00%	20	0.00%
Black or African American; Native Hawaiian and Other Pacific Islander; Some Other Race	14	0.00%	11	0.00%	3	0.00%
	1,014,372	25.9%	1,006,083	25.7%	8,289	0.2%

Appendix 3 Compactness Measures

Polsby-Popper

The Polsby-Popper (PP) measure (Polsby & Popper, 1991) is the ratio of the area of the district (A_D) to the area of a circle whose circumference is equal to the perimeter of the district (P_D). A district's Polsby-Popper score falls with the range of $[0, 1]$ and a score closer to 1 indicates a more compact district.

$$PP = \frac{4\pi}{P_D^2} \times A_D$$



Circumference Equal to District Perimeter

Schwartzberg

The Schwartzberg score (S) compactness score is the ratio of the perimeter of the district (P_D) to the circumference of a circle whose area is equal to the area of the district. A district's Schwartzberg score as calculated below falls with the range of $[0, 1]$ and a score closer to 1 indicates a more compact district.

$$S = \frac{1}{P_D/C} = \frac{1}{P_D/(2\pi\sqrt{A_D/\pi})}$$



Circle with Area Equivalent to the District

Source: <https://fisherzachary.github.io/public/r-output.html>

Appendix 3 Compactness Measures (continued)

Reock Score

The Reock Score (R) is the ratio of the area of the district (A_D) to the area of a minimum bounding circle (A_{MBC}) that encloses the district's geometry. A district's Reock score falls within the range of $[0, 1]$ and a score closer to 1 indicates a more compact district.

$$R = \frac{A_D}{A_{MBC}}$$



Minimum Bounding Circle of Original Gerrymander

Convex Hull

The Convex Hull score is a ratio of the area of the district to the area of the minimum convex polygon that can enclose the district's geometry. A district's Convex Hull score falls within the range of $[0, 1]$ and a score closer to 1 indicates a more compact district.

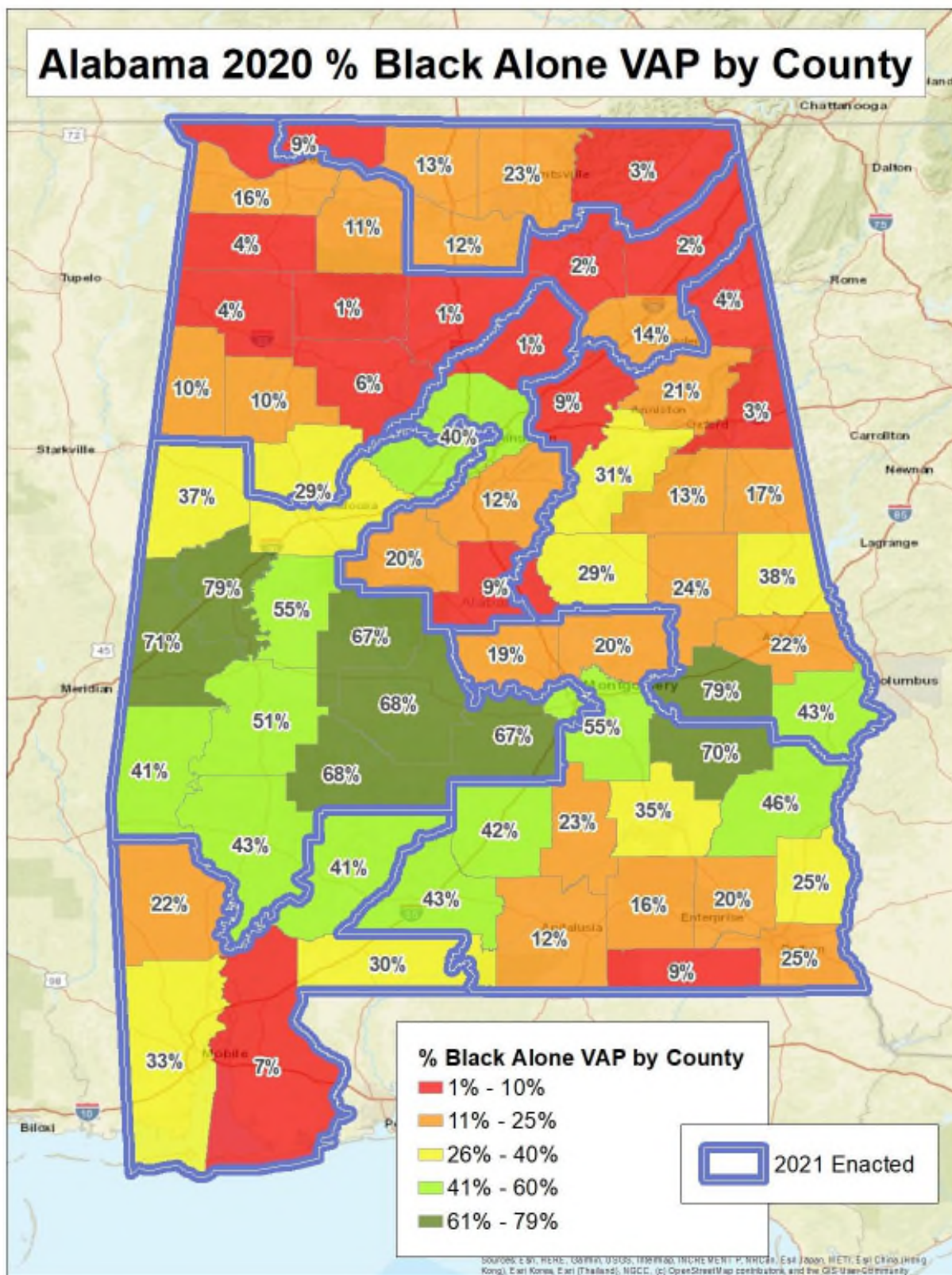
$$CH = \frac{A_D}{A_{MCP}}$$

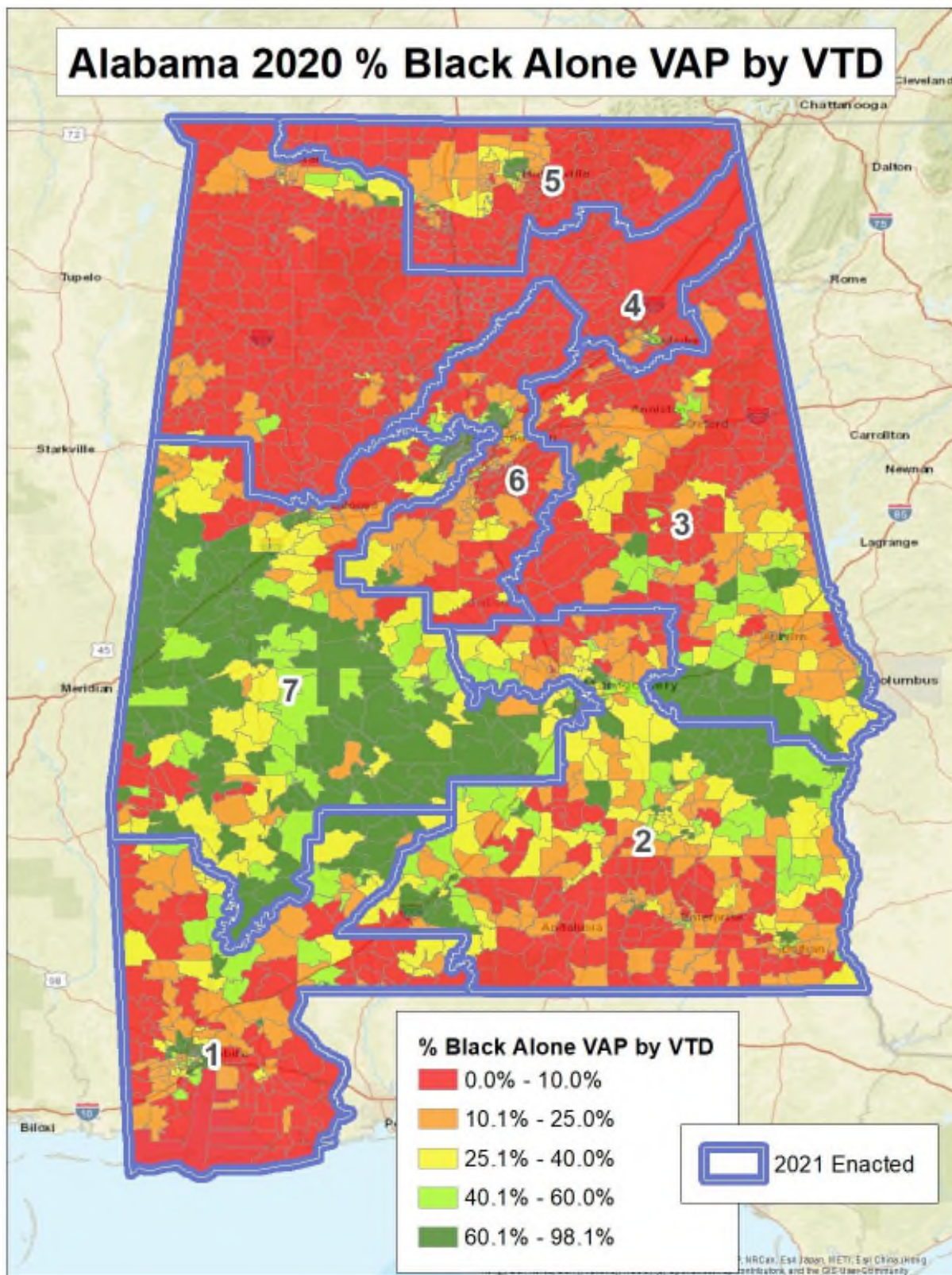


Convex Hull of Original Gerrymander

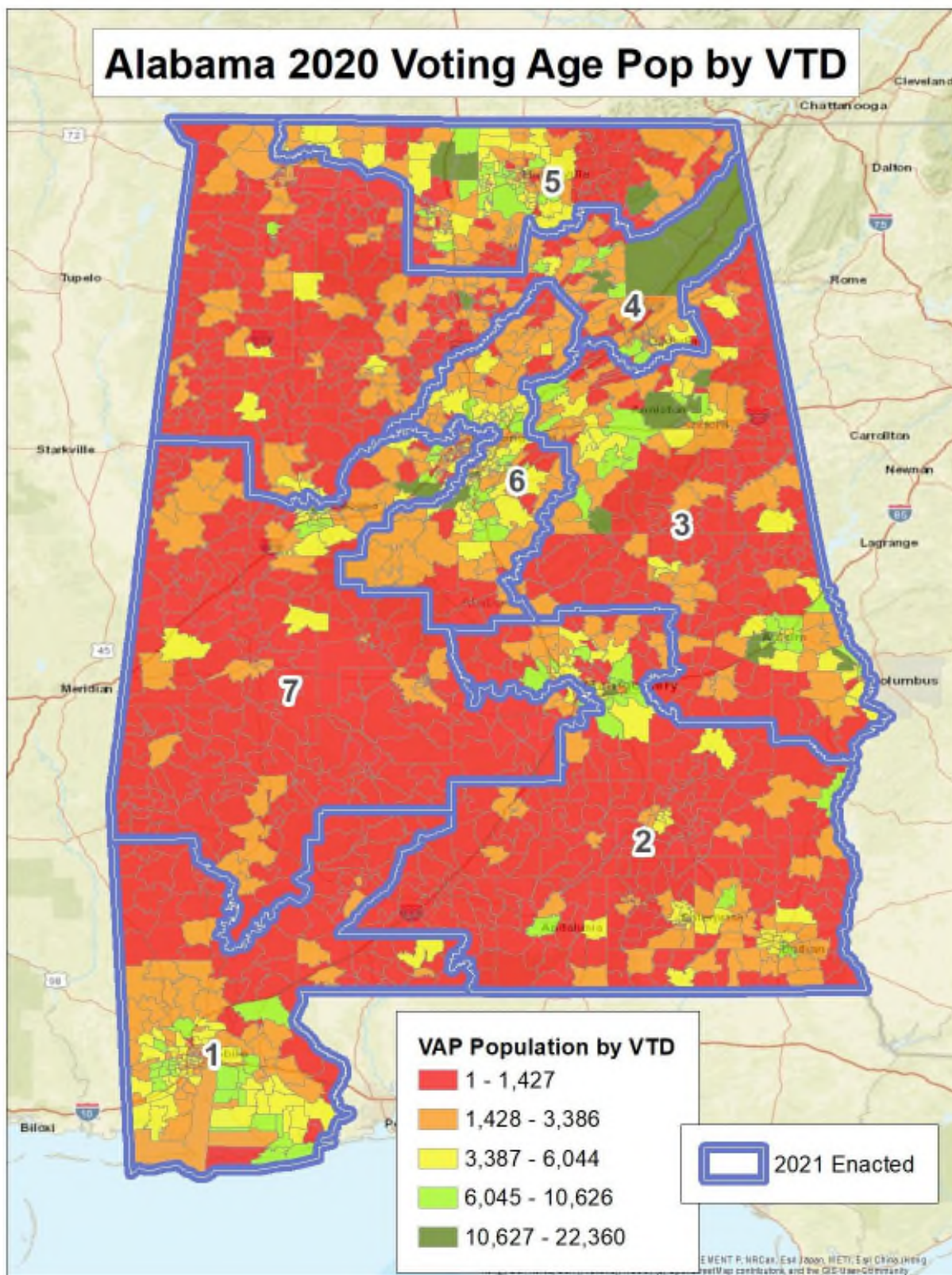
Map Appendices

**Alabama Enacted Plan
Map Appendices
% Black Alone and VAP
By County and VTD**

Map Appendix 1 (State of Alabama Enacted Plan Percent Black Alone VAP by County)**Map Appendix 2 (State of Alabama Enacted Plan Voting Age Population by County)**

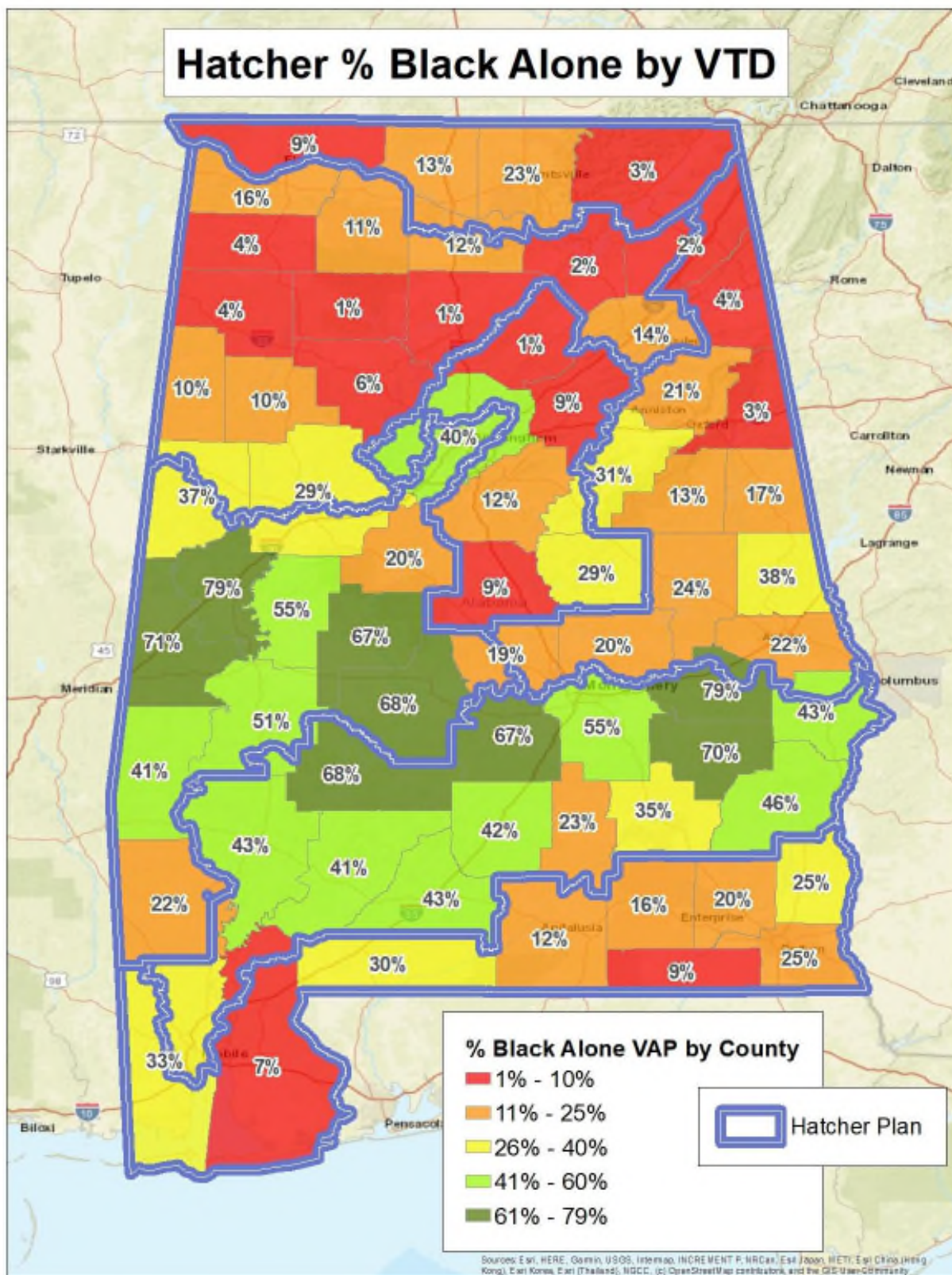


Map Appendix 4 (State of Alabama Voting Age Population by VTD)

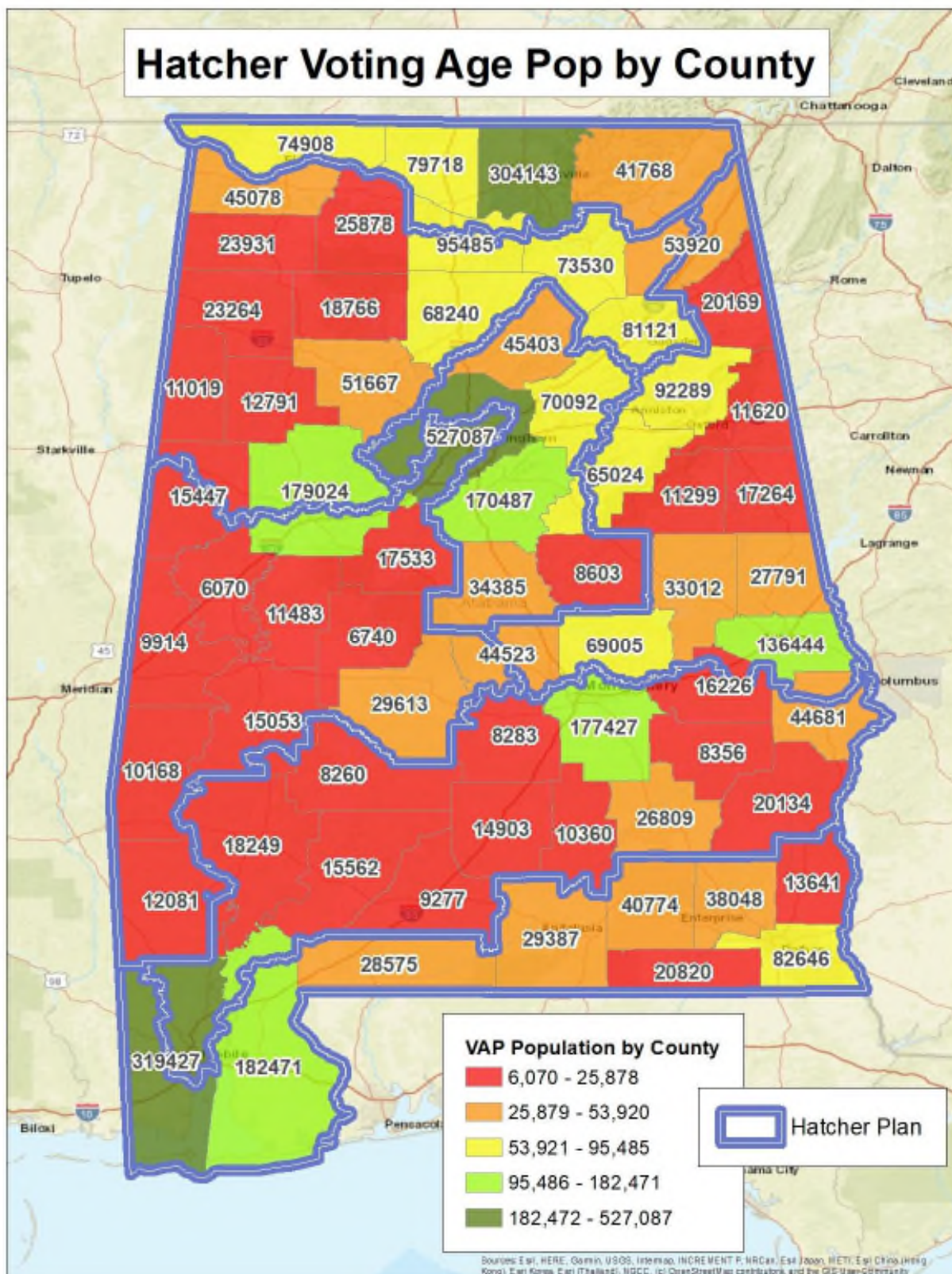


**Hatcher Plan
Map Appendices
% Black Alone and VAP
By County and VTD**

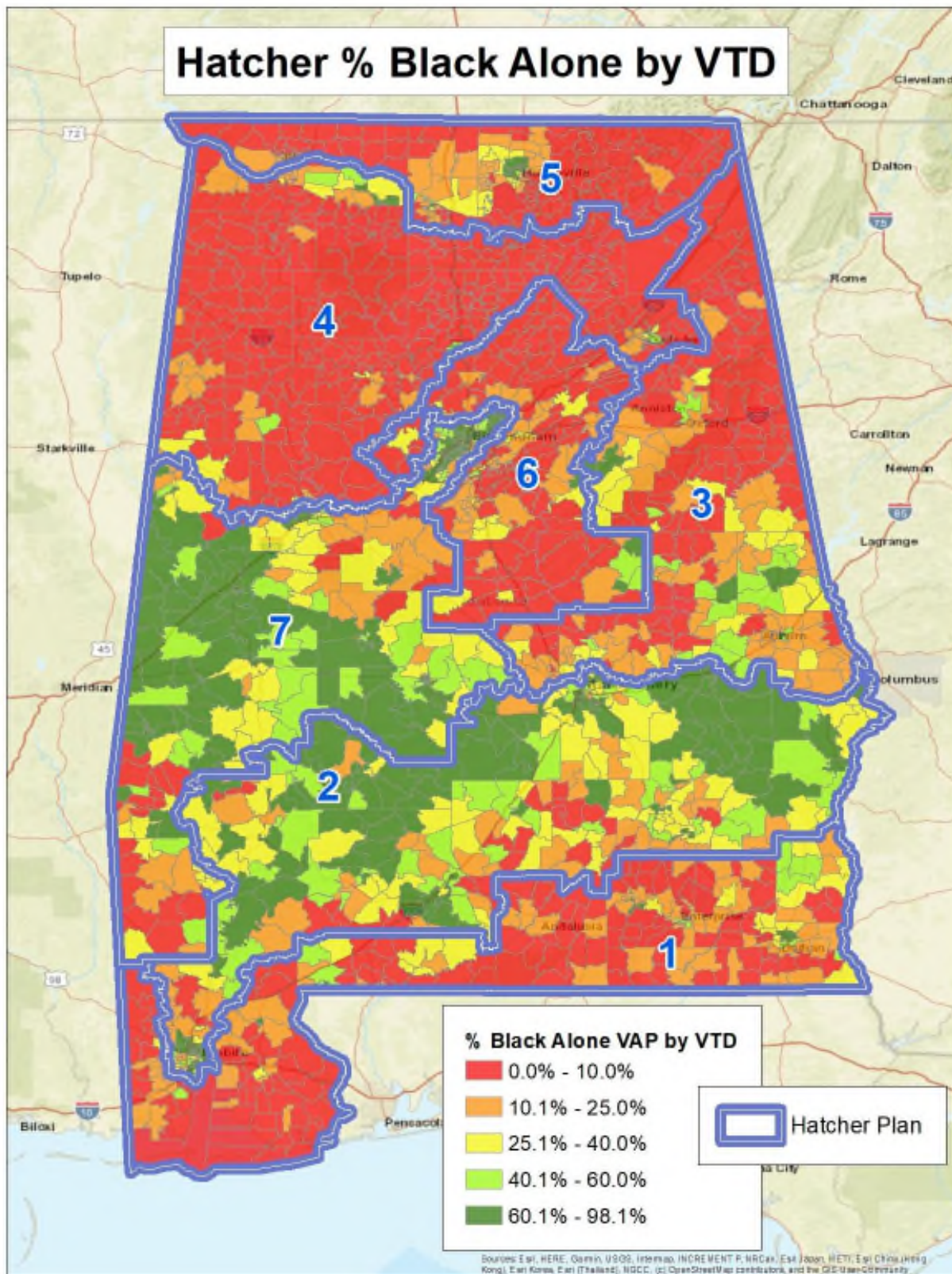
Map Appendix 5 (Hatcher Percent Black Alone VAP by County)



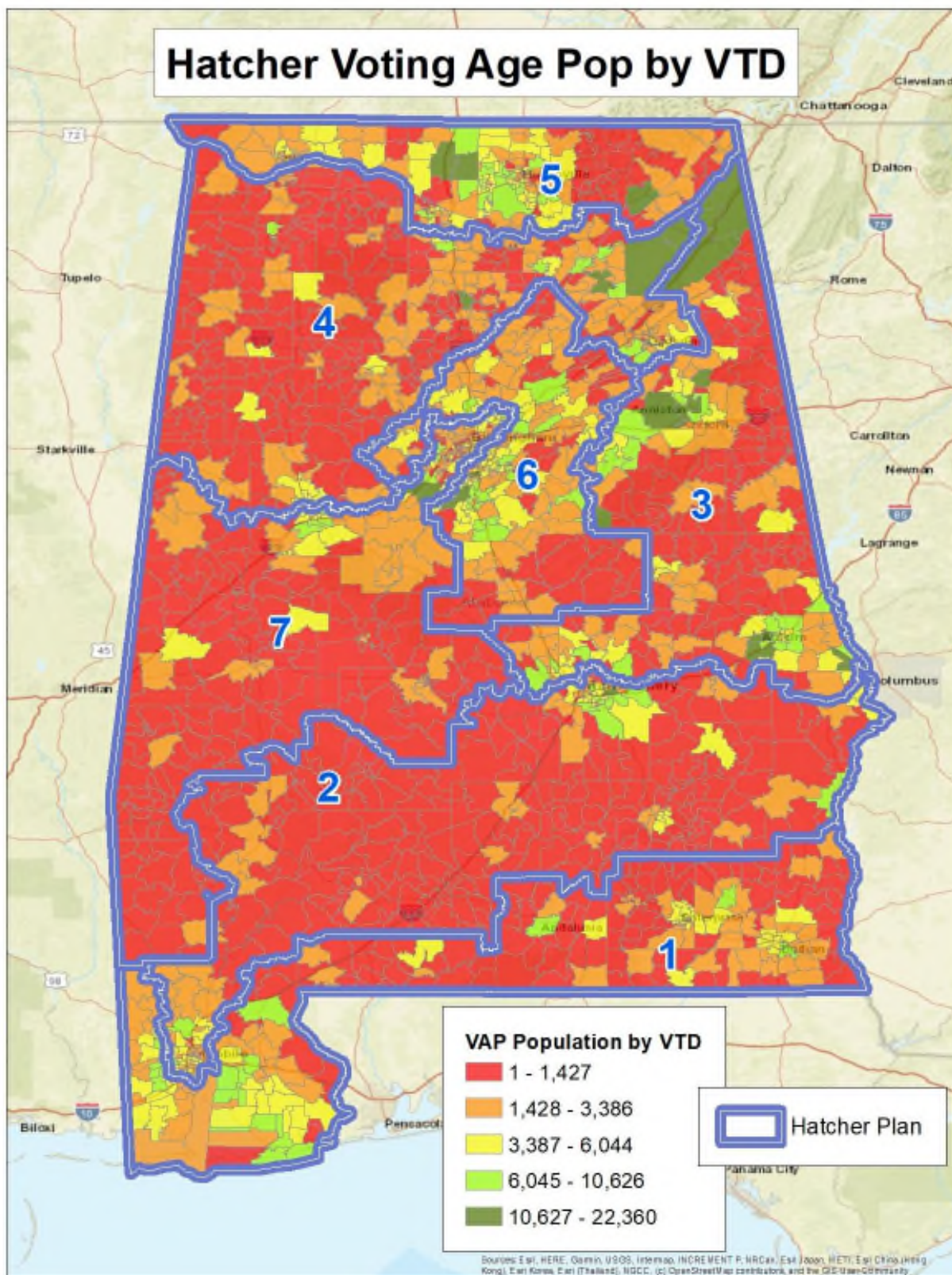
Map Appendix 6 (Hatcher Voting Age Population by County)



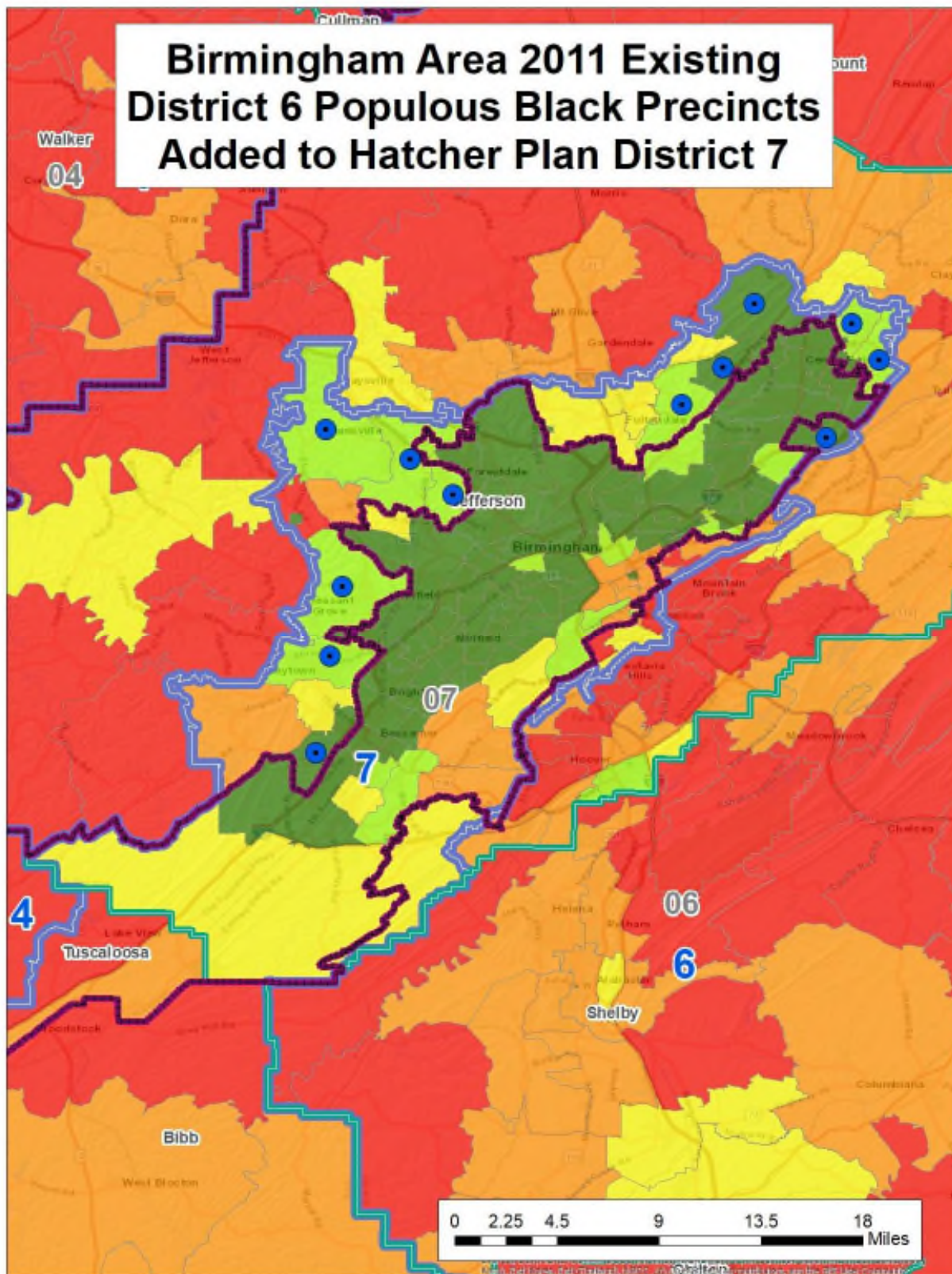
Map Appendix 7 (Hatcher Percent Black Alone VAP by VTD)



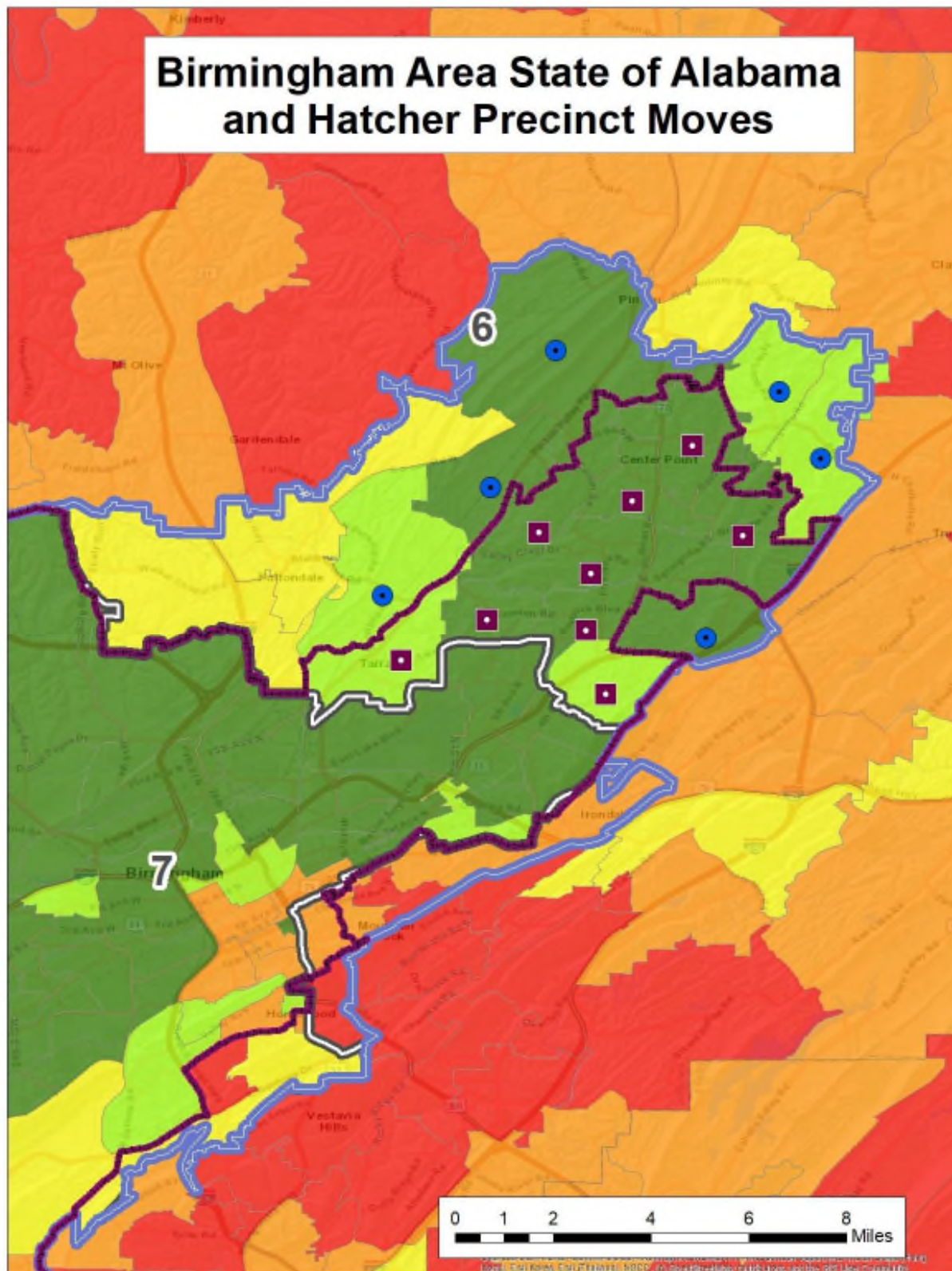
Map Appendix 8 (Hatcher Voting Age Population VAP by VTD)



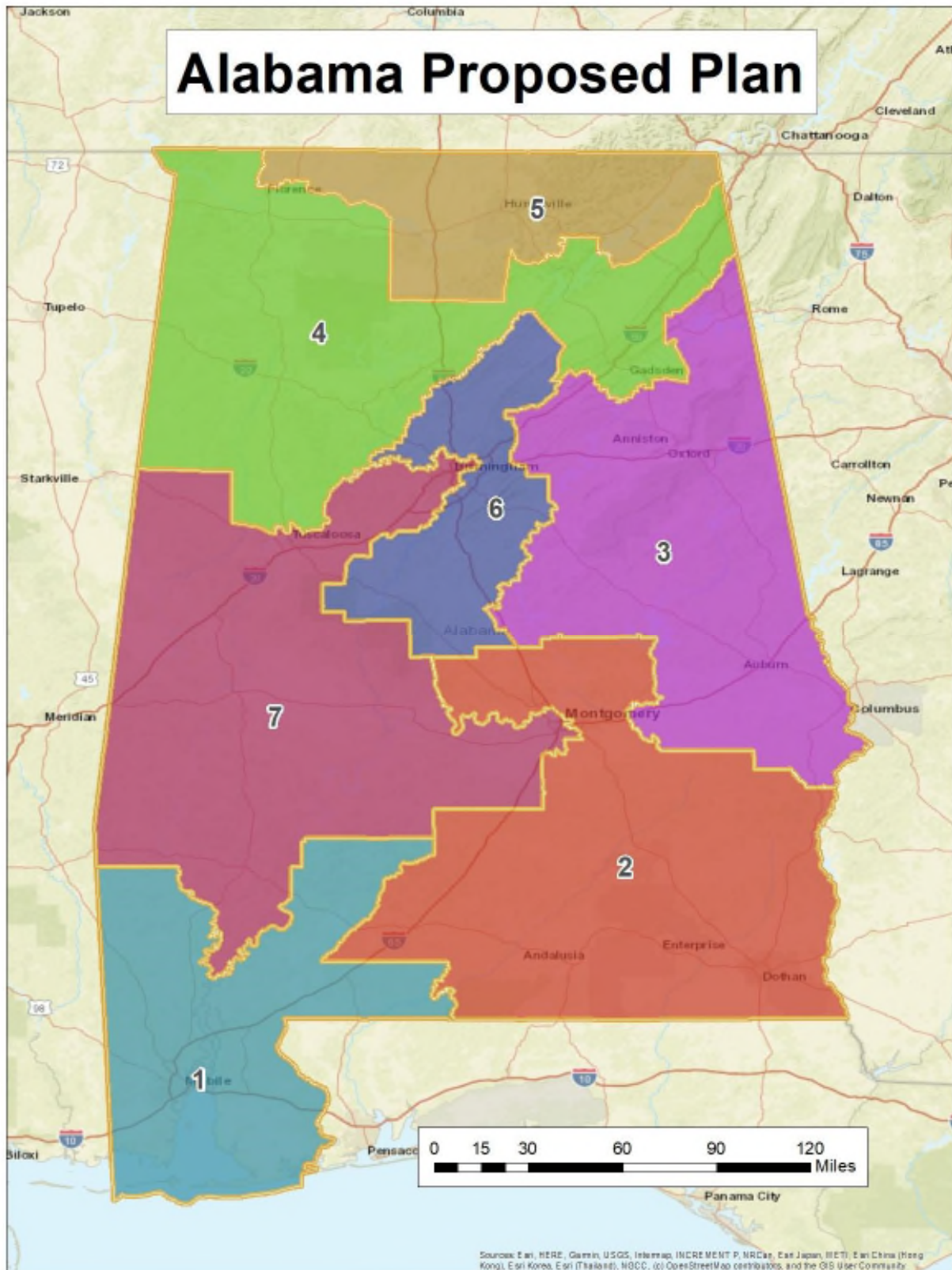
Map Appendix 9 (D6 to D7 Moves of Populous Black VTDs in Hatcher Plan – marked with dots)



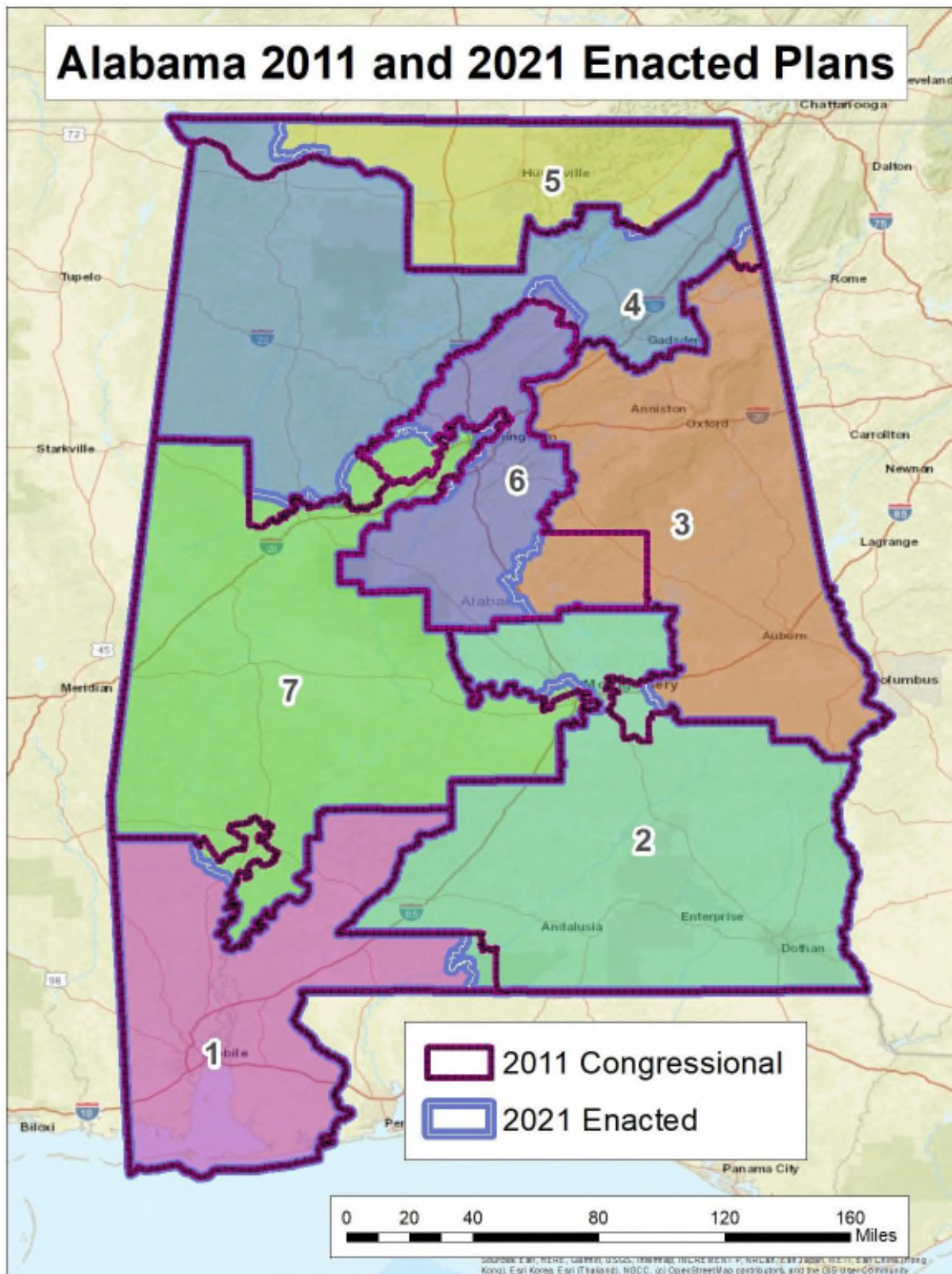
Map Appendix 10 (D6 to D7 Moves of Populous Black VTDs in Hatcher Plan – marked with dots, D7 to D6 Moves of Populous Black VTDs in Alabama Enacted Plan marked with squares)



Map Appendix 12 (State of Alabama Proposed Plan)



Map Appendix 13 (State of Alabama 2011 and 2021 Enacted Plans)



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Redistricting Résumé and C.V.

Introduction

I am an applied demographic, analytic and research professional who leads a team of experts in state and local redistricting cases. I have subject matter expertise in political and school redistricting and Voting Rights Act related litigation, US Census Bureau data, geographic information systems (GIS), applied demographic techniques and advanced analytics.

Education & Academic Honors

2002 MS, Management and Information Systems - George Washington University

2002 GSA CIO University graduate* - George Washington University

1997 Graduate credit courses taken at University of Nevada at Las Vegas

1996 MUS (Master of Urban Studies) Demography and Statistics core - Portland State University

1992 BS, History - Portland State University

Bryan GeoDemographics, January 2001-Current: Founder and Principal

I founded Bryan GeoDemographics (BGD) in 2001 as a demographic and analytic consultancy to meet the expanding demand for advanced analytic expertise in applied demographic research and analysis. Since then, my consultancy has broadened to include litigation support, state and local redistricting, school redistricting, and municipal infrastructure initiatives. Since 2001, BGD has undertaken over 150 such engagements in three broad areas:

- 1) state and local redistricting,
- 2) applied demographic studies, and
- 3) school redistricting and municipal Infrastructure analysis.

The core of the BGD consultancy has been in state and local redistricting and expert witness support of litigation. Engagements include:

Granted by the General Services Administration (GSA) and the Federal IT Workforce Committee of the CIO Council.

<http://www.gwu.edu/~mastergw/programs/mis/pr.html>

State and Local Redistricting

- 2021: Served as Consultant to the Arizona Independent Redistricting Commission, presenting “Pros and Cons of (Census data) Differential Privacy”. July 13, 2021.
 - <https://irc.az.gov/sites/default/files/meeting-agendas/Agenda%207.13.21.pdf>
- 2021: Chosen by Virginia Senator Tommy Norment to be the Republican nominee for the position of Special Master to the Virginia Supreme Court in designing the Legislative, Senate and Congressional redistricting plans for the State of Virginia. Did not end up serving.
 - https://www.vacourts.gov/courts/scv/districting/special_masters_nominations_senator_norment.pdf
- 2021: Retained as demographic and redistricting expert for the Wisconsin Legislature in *Johnson v. Wisconsin Elections Commission*, No. 2021AP001450-OA (Wis. Supreme Court) and related Wisconsin redistricting litigation. Offering opinions on demography and redistricting for redistricting plans proposed as remedies in impasse suit.
- 2021: Retained as demographic and redistricting expert by the State of Alabama Attorney General’s office. Currently serving as the State’s demographic and redistricting expert witness in the matters of *Milligan v. Merrill*, *Thomas v. Merrill* and *Singleton v. Merrill* over Alabama’s Congressional redistricting initiatives.
- 2021: Retained as nonpartisan demographic and redistricting expert in the State of North Carolina to prepare commissioner redistricting plans for Granville County, Harnett County, Jones County and Nash County. Each proposed plan was approved and successfully adopted.
- 2021: Retained as demographic and redistricting expert by Democratic Counsel for the State of Illinois in the case of *McConchie v. State Board of Elections*. Prepared expert report in defense of using the American Community Survey to comply with state constitutional requirements in the absence of the (then) delayed Census 2020 data.
 - <https://redistricting.ils.edu/case/mcconchie-v-ill-state-board-of-elections/>.
- 2021: Retained by counsel for the Chairman and staff of the Texas House Committee on Redistricting as a consulting demographic expert. Texas House Bill 1 subsequently passed by the Legislature 83-63.
 - <https://capitol.texas.gov/BillLookup/History.aspx?LegSess=873&Bill=HB1>
- 2021: In the matter of the *State of Alabama, Representative Robert Aderholt, William Green and Camaran Williams v. the US Department of Commerce; Gina Raimondo; the US Census Bureau and Ron Jarmin* in US District Court of Alabama Eastern Division. Prepared a demographic report for Plaintiffs analyzing the effects of using Differential Privacy on Census Data in Alabama and was certified as an expert witness by the Court.

- <https://www.alabamaag.gov/Documents/news/Census%20Data%20Manipulation%20Lawsuit.pdf>
- <https://redistricting.lls.edu/case/alabama-v-u-s-dept-of-commerce-ii/>
- 2020: In the matter of *The Christian Ministerial Alliance (CMA), Arkansas Community Institute v. the State of Arkansas*. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Providing demographic and analytic litigation support.
 - https://www.naacpldf.org/wp-content/uploads/CMA-v.-Arkansas_FILED-without-stamp.pdf
- 2020: In the matter of *Louisiana State Conference of the NAACP, Allen and Anthony v. the State of Louisiana* in US District Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Providing demographic and analytic litigation support for the analysis and testing of LA Supreme Court Districts.
 - <https://apnews.com/c44c986a29ec4035a87e5ca94d4e6324>
 - <https://www.bloomberglaw.com/public/desktop/document/AllenetalvStateofLouisianaOfficeoftheGovernorDivisionofAdministra?1595341263>
- 2020: In the matter of *Aguilar, Gutierrez, Montes, Palmer and OneAmerica v. Yakima County* in Superior Court of Washington under the Washington Voting Rights Act ("WVRA" Wash. Rev. Code § 29A.92.60). In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Providing demographic and analytic litigation support.
 - <https://bloximages.newyork1.vip.townnews.com/yakimaherald.com/content/tncms/assets/v3/editorial/a/4e/a4e86167-95a2-5186-a86c-bb251bf535f1/5f0d01eec8234.pdf.pdf>
- 2018-2020: In the matter of *Flores, Rene Flores, Maria Magdalena Hernandez, Magali Roman, Make the Road New York, and New York Communities for Change v. Town of Islip, Islip Town Board, Suffolk County Board of Elections* in US District Court. On behalf of Defendants - provided a critical analysis of plaintiff's demographic and environmental justice analysis. The critique revealed numerous flaws in both the demographic analysis as well as the tenets of their environmental justice argument, which were upheld by the court. Ultimately developed mutually agreed upon plan for districting.
 - <https://nyelectionsnews.wordpress.com/2018/06/20/islip-faces-section-2-voting-rights-act-challenge/>
 - <https://www.courthousenews.com/wp-content/uploads/2018/06/islip-voting.pdf>
- 2017-2020 In the matter of *NAACP, Spring Valley Branch; Julio Clerveaux; Chevon Dos Reis; Eric Goodwin; Jose Vitelio Gregorio; Dorothy Miller; and Hillary Moreau v East Ramapo Central School District (Defendant)* in United States District Court Southern District Of New York

(original decision May 25, 2020), later the U.S. Second Circuit Court of Appeals. On behalf of Defendants, developed mutually agreed upon district plan and provided demographic and analytic litigation support.

- <https://www.lohud.com/story/news/education/2020/05/26/federal-judge-sides-naacp-east-ramapo-voting-rights-case/5259198002/>
- 2017-2020: In the matter of *Pico Neighborhood Association et al v. City of Santa Monica* brought under the California VRA. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Providing demographic and analytic litigation support. Executed geospatial analysis to identify concentrations of Hispanic and Black CVAP to determine the impossibility of creating a minority majority district, and demographic analysis to show the dilution of Hispanic and Black voting strength in a district (vs at-large) system. Work contributed to Defendants prevailing in landmark ruling in the State of California Court of Appeal, Second Appellate District.
 - <https://www.santamonica.gov/press/2020/07/09/santa-monica-s-at-large-election-system-affirmed-in-court-of-appeal-decision>
- 2019: In the matter of *Johnson v. Ardoin / the State of Louisiana* in United States District Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support.
 - <https://www.brennancenter.org/sites/default/files/2019-10/2019-10-16-Johnson%20v.%20Ardoin-132-Brief%20in%20Opposition%20to%20MTS.pdf>
- 2019: In the matter of *Suresh Kumar v. Frisco Independent School District et al.* in United States District Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support. Successfully defended.
 - <https://www.friscoisd.org/news/district-headlines/2020/08/04/frisco-isd-wins-voting-rights-lawsuit>
 - <https://www.courthousenews.com/wp-content/uploads/2020/08/texas-schools.pdf>
- 2019: At the request of the City of Frisco, TX in collaboration with demographic testifying expert Dr. Peter Morrison. Provided expert demographic assessment of the City's potential liability regarding a potential Section 2 Voting Rights challenge.
- 2019: In the matter of *NAACP v. East Ramapo Central School District* in US District Court Southern District of NY. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support.

- 2019: In the matter of *Johnson v. Ardoin* in United States District Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support. Prepared analysis of institutionalized prison population versus noninstitutionalized eligible to vote population.
 - <https://casetext.com/case/johnson-v-ardoin>
- 2019: In the matter of *Vaughan v. Lewisville Independent School District et al.* in United States District Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support.
 - <https://www.nbcdfw.com/news/local/lawsuit-filed-against-lewisville-independent-school-district/1125/>
- 2019: In the matter of *Holloway, et al. v. City of Virginia Beach* in United States District Court, Eastern District of Virginia. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support.
 - <https://campaignlegal.org/cases-actions/holloway-et-al-v-city-virginia-beach>
- 2018: At the request of Kirkland City, Washington in collaboration with demographic testifying expert Dr. Peter Morrison. Performed demographic studies to inform the City's governing board's deliberations on whether to change from at-large to single-member district elections following enactment of the Washington Voting Rights Act. Analyses included gauging the voting strength of the City's Asian voters and forming an illustrative district concentrating Asians; and compared minority population concentration in pre- and post-annexation city territory.
 - https://www.kirklandwa.gov/Assets/City+Council/Council+Packets/021919/8b_SpecialPresentations.pdf#:~:text=RECOMMENDATION%3A%20It%20is%20recommended%20that%20City%20Council%20receive,its%20Councilmembers%20on%20a%20citywide%2C%20at-%20large%20basis
- 2018: At the request of Tacoma WA Public Schools in collaboration with demographic testifying expert Dr. Peter Morrison. Created draft concept redistricting plans that would optimize minority population concentrations while respecting incumbency. Client will use this plan as a point of departure for negotiating final boundaries among incumbent elected officials.
- 2018: At the request of the City of Mount Vernon, Washington., in collaboration with demographic testifying expert Dr. Peter Morrison. Prepared a numerous draft concept plans that preserves Hispanics' CVAP concentration. Client utilized draft concept redistricting plans to work with elected officials and community to agree upon the boundaries of six other districts to establish a proposed new seven-district single-member district plan.

- 2017: In the matter of *Pico Neighborhood Association v. City of Santa Monica*. In collaboration with demographic testifying expert Dr. Peter Morrison. Worked to create draft district concept plans that would satisfy Plaintiff's claim of being able to create a majority-minority district to satisfy Gingles prong 1. Such district was not possible, and the Plaintiffs case ultimately failed in California State Court of Appeals Second Appellate District.
 - <https://law.iustia.com/cases/california/court-of-appeal/2020/b295935.html>
- 2017: In the matter of *John Hall, Elaine Robinson-Strayhorn, Lindora Toudle, Thomas Jerkins, v. Jones County Board of Commissioners*. In collaboration with demographic testifying expert Dr. Peter Morrison. Worked to create draft district concept plans to resolve claims of discrimination against African Americans attributable to the existing at-large voting system.
 - <http://jonescountync.gov/vertical/sites/%7B9E2432B0-642B-4C2F-A31B-CDE7082E88E9%7D/uploads/2017-02-13-Jones-County-Complaint.pdf>
- 2017: In the matter of *Harding v. County of Dallas* in U.S. District Court. In collaboration with demographic testifying expert Dr. Peter Morrison. In a novel case alleging discrimination *against* White, non-Hispanics under the VRA, I was retained by plaintiffs to create redistricting scenarios with different balances of White-non-Hispanics, Blacks and Hispanics. Deposed and provided expert testimony on the case.
 - <https://www.courthousenews.com/wp-content/uploads/2018/08/DallasVoters.pdf>
- 2016: Retained by The Equal Voting Rights Institute to evaluate the Dallas County Commissioner existing enacted redistricting plan. In collaboration with demographic testifying expert Dr. Peter Morrison, the focus of our evaluation was twofold: (1) assess the failure of the Enacted Plan (EP) to meet established legal standards and its disregard of traditional redistricting criteria; (2) the possibility of drawing an alternative Remedial Plan (RP) that did meet established legal standards and balance traditional redistricting criteria.
 - <http://equalvotingrights.org/wp-content/uploads/2015/01/Complaint.pdf>
- 2016: In the matter of *Jain v. Coppell ISD et al* in US District Court. In collaboration with demographic testifying expert Dr. Peter Morrison. Consulted in defense of Coppell Independent School District (Dallas County, TX) to resolve claims of discriminatory at-large voting system affecting Asian Americans. While Asians were shown to be sufficiently numerous, I was able to demonstrate that they were not geographically concentrated - thus successfully proving the Gingles 1 precondition could not be met resulting the complaint being withdrawn.
 - <https://dockets.justia.com/docket/texas/txndce/3:2016cv02702/279616>
- 2016: In the matter of *Feldman et al v. Arizona Secretary of State's Office et al* in SCOTUS. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided analytics on the locations and proximal demographics of polling

stations that had been closed subsequent to *Shelby County v. Holder* (2013) which eliminated the requirement of state and local governments to obtain federal preclearance before implementing any changes to their voting laws or practices. Subsequently provided expert point of view on disparate impact as a result of H.B. 2023. Advised Maricopa County officials and lead counsel on remediation options for primary polling place closures in preparation for 2016 elections.

- <https://arizonadailyindependent.com/2016/04/05/doj-wants-information-on-maricopa-county-election-day-disaster/>
- https://www.supremecourt.gov/DocketPDF/19/19-1257/142431/20200427105601341_Brnovich%20Petition.pdf
- 2016: In the matter of *Glatt v. City of Pasco, et al.* in US District Court (Washington). In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided analytics and draft plans in defense of the City of Pasco. One draft plan was adopted, changing the Pasco electoral system from at-large to a six-district + one at large.
 - <https://www.pasco-wa.gov/DocumentCenter/View/58084/Glatt-v-Pasco---Order---January-27-2017?bidId=>
 - <https://www.pasco-wa.gov/923/City-Council-Election-System>
- 2015: In the matter of *The League of Women Voters et al. v. Ken Detzner et al* in the Florida Supreme Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Performed a critical review of Florida state redistricting plan and developed numerous draft concept plans.
 - <http://www.miamiherald.com/news/politics-government/state-politics/article47576450.html>
 - https://www.floridasupremecourt.org/content/download/322990/2897332/file/OP-SC14-1905_LEAGUE%20OF%20WOMEN%20VOTERS_JULY09.pdf
- 2015: In the matter of *Evenwel, et al. v. Abbott / State of Texas* in SCOTUS. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Plaintiffs. Successfully drew map for the State of Texas balancing both total population from the decennial census and citizen population from the ACS (thereby proving that this was possible). We believe this may be the first and still only time this technical accomplishment has been achieved in the nation at a state level. Coauthored SCOTUS Amicus Brief of Demographers.
 - https://www.supremecourt.gov/opinions/15pdf/14-940_ed9g.pdf
 - <https://www.scotusblog.com/wp-content/uploads/2015/08/Demographers-Amicus.pdf>

- 2015: In the matter of *Ramos v. Carrollton-Farmers Branch Independent School District* in US District Court (Texas). In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Used 2009-2013 5-year ACS data to generate small-area estimates of minority citizen voting age populations and create a variety of draft concept redistricting plans. Case was settled decision in favor of a novel cumulative voting system.
 - https://starlocalmedia.com/carrolltonleader/c-fb-isd-approves-settlement-in-voting-rights-lawsuit/article_92c256b2-6e51-11e5-adde-a70cbe6f9491.html
- 2015: In the matter of *Glatt v. City of Pasco et al.* in US District Court (Washington). In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Consulted on forming new redistricting plan for city council review. One draft concept plan was agreed to and adopted.
 - <https://www.pasco-wa.gov/923/City-Council-Election-System>
- 2015: At the request of Waterbury, Connecticut, in collaboration with demographic testifying expert Dr. Peter Morrison. As a result of a successful ballot measure to convert Waterbury from an at-large to a 5-district representative system, consulted an extensive public outreach and drafted numerous concept plans. The Waterbury Public Commission considered alternatives and recommended one of our plans, which the City adopted.
 - <http://www.waterburyobserver.org/wod7/node/4124>
- 2014-15: In the matter of *Montes v. City of Yakima* in US District Court (Washington). In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Analytics later used to support the Amicus Brief of the City of Yakima, Washington in the U.S. Supreme Court in *Evenwel v. Abbott*.
 - <https://casetext.com/case/montes-v-city-of-yakima-3>
- 2014: In the matter of *Harding v. County of Dallas* in the US Court of Appeals Fifth Circuit. In the novel case of Anglo plaintiffs attempting to claim relief as protected minorities under the VRA. Served as demographic expert in the sole and limited capacity of proving Plaintiff claim under Gingles prong 1. Claim was proven. Gingles prongs 2 and 3 were not and the case failed.
 - <https://electionlawblog.org/wp-content/uploads/Dallas-opinion.pdf>
- 2014: At the request of Gulf County, Florida in collaboration with demographic testifying expert Dr. Peter Morrison. Upon the decision of the Florida Attorney General to force inclusion of prisoners in redistricting plans – drafted numerous concept plans for the Gulf County Board of County Commissioners, one of which was adopted.
 - <http://myfloridalegal.com/ago.nsf/Opinions/B640990E9817C5AB85256A9C00631387>

- 2012-2015: In the matter of *GALEO and the City of Gainesville* in Georgia. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants -consulted on defense of existing at-large city council election system.
 - <http://atlantaprogressivenews.com/2015/06/06/galeo-challenges-at-large-voting-in-city-of-gainesville/>
- 2012-: Confidential. Consulted (through Morrison & Associates) to support plan evaluation, litigation, and outreach to city and elected officials (1990s - mid-2000s). Executed first statistical analysis of the American Community Survey to determine probabilities of minority-majority populations in split statistical/administrative units of geography, as well as the cumulative probabilities of a “false-negative” minority-majority reading among multiple districts.
- 2011-: Confidential. Consulted on behalf of plaintiffs in Committee (Private) vs. State Board of Elections pertaining to citizen voting-age population. Evaluated testimony of defense expert, which included a statistical evaluation of Hispanic estimates based on American Community Survey (ACS) estimates. Analysis discredited the defendant’s expert’s analysis and interpretation of the ACS.

School Redistricting and Municipal Infrastructure Projects

BGD worked with McKibben Demographics from 2004-2012 providing expert demographic and analytic support. These engagements involved developing demographic profiles of small areas to assist in building fertility, mortality and migration models used to support long-range population forecasts and infrastructure analysis in the following communities:

Fargo, ND 10/2012	Charleston, SC 8/08
Columbia, SC 3/2012	Woodland, IL 7/08
Madison, MS 9/2011	White County, IN 6/08
Rockwood, MO 3/2011	Gurnee District 56, IL 5/08
Carthage, NY 3/2011	Central Noble, IN 4/08
NW Allen, IN 9/2010	Charleston First Baptist, SC 4/08
Fayetteville, AR 7/2010	Edmond, OK 4/08
Atlanta, GA 2/2010	East Noble, IN 3/08
Caston School Corp., IN 12/09	Mill Creek, IN 5/06
Rochester, IN 12/09	Rhode Island 5/06
Urbana, IL 11/09	Garrett, IN 3/08
Dekalb, IL 11/09	Meridian, MS 3/08
Union County, NC 11/09	Madison County, MS 3/08
South Bend, IN 8/09	Charleston 12/07
Lafayette, LA 8/09	Champaign, IL 11/07
Fayetteville, AR 4/09	Richland County, SC 11/07
New Orleans, LA 4/09	Lake Central, IN 11/07
Wilmington New Hanover 3/09	Columbia, SC 11/07
New Berry, SC 12/08	Duneland, IN 10/07
Corning, NY 11/08	Union County, NC 9/07
McLean, IL 11/08	Griffith, IN 9/07
Lakota 11/08	Rensselaer, IN 7/07
Greensboro, NC 11/08	Hobart, IN 7/07
Guilford 9/08	Buffalo, NY 7/07
Lexington, SC 9/08	Oak Ridge, TN 5/07
Plymouth, IN 9/08	Westerville, OH 4/07

Projects Continued

Baton Rouge, LA 4/07
 Cobb County, GA 4/07
 Charleston, SC District 20 4/07
 McDowell County, NC 4/07
 East Allen, IN 3/07
 Mt. Pleasant, SC District 2 2/07
 Peach County, GA 2/07
 North Charleston, SC District 4 2/07
 Madison County, MS revisions 1/07
 Portage County, IN 1/07
 Marietta, GA 1/07
 Porter, IN 12/06
 Harrison County, MS 9/06
 New Albany/Floyd County, IN 9/06
 North Charleston, SC 9/06
 Fairfax, VA 9/06
 Coleman 8/06
 DeKalb, GA 8/06
 LaPorte, IN 7/06
 NW Allen, IN 7/06
 Brunswick, NC 7/06
 Carmel Clay, IN 7/06
 Calhoun, SC 5/06
 Hamilton Community Schools, IN 4/06
 Dilworth, MN 4/06
 Hamilton, OH 2/06
 West Noble, IN 2/06
 New Orleans, LA 2/06
 Norwell, IN 2/06
 Middletown, OH 12/05
 West Noble, IN 11/05
 Madison, MS 11/05
 Fremont, IN 11/05
 Concord, IN 11/05

Allen County 11/05
 Bremen, IN 11/05
 Smith Green, IN 11/05
 Steuben, IN 11/05
 Plymouth, IN 11/05
 North Charleston, SC 11/05
 Huntsville, AL 10/05
 Dekalb, IN 9/05
 East Noble, IN 9/05
 Valparaiso, IN 6/05
 Penn-Harris-Madison, IN 7/05
 Elmira, NY 7/05
 South Porter/Merriville, IN 7/05
 Fargo, ND 6/05
 Washington, IL 5/05
 Addison, NY 5/05
 Kershaw, SC 5/05
 Porter Township, IN 3/05
 Portage, WI 1/05
 East Stroudsburg, PA 12/04
 North Hendricks, IN 12/04
 Sampson/Clinton, NC 11/04
 Carmel Clay Township, IN 9/04
 SW Allen County, IN 9/04
 East Porter, IN 9/04
 Allen County, IN 9/04
 Duplin, NC 9/04
 Hamilton County / Clay TSP, IN 9/04
 Hamilton County / Fall Creek TSP, IN 9/04
 Decatur, IN 9/04
 Chatham County / Savannah, GA 8/04
 Evansville, IN 7/04
 Madison, MS 7/04
 Vanderburgh, IN 7/04
 New Albany, IN 6/04

Publications

- “The Effect of the Differential Privacy Disclosure Avoidance System Proposed by the Census Bureau on 2020 Census Products: Four Case Studies of Census Blocks in Alaska” PAA Affairs, (with D. Swanson and Richard Sewell, Alaska Department of Transportation and Public Facilities). March 2021.
 - <https://www.populationassociation.org/blogs/paa-web1/2021/03/30/the-effect-of-the-differential-privacy-disclosure?CommunityKey=a7bf5d77-d09b-4907-9e17-468af4bdf4a6> .
 - <https://redistrictingonline.org/2021/03/31/study-census-bureaus-differential-privacy-disclosure-avoidance-system-produces-concerning-results-for-local-jurisdictions/>
 - <https://www.ncsl.org/research/redistricting/differential-privacy-for-census-data-explained.aspx>
- In the matter of the *State of Alabama, Representative Robert Aderholt, William Green and Camaran Williams v. the US Department of Commerce; Gina Raimondo; the US Census Bureau and Ron Jarmin* in US District Court of Alabama Eastern Division. Declaration of Thomas Bryan, Exhibit 6. Civil Action NO. 3:21-CV-211, United States District Court for Middle Alabama, Eastern Division. Assessing the impact of the U.S. Census Bureau’s approach to ensuring respondent privacy and Title XIII compliance by using a disclosure avoidance system involving differential privacy. March 2021.
 - <https://redistricting.ils.edu/wp-content/uploads/AL-commerce2-20210311-PI.zip>
- Peter A. Morrison and Thomas M. Bryan, Redistricting: A Manual for Analysts, Practitioners, and Citizens (2019). Springer Press: Cham Switzerland.
- “Small Area Business Demography.” in D. Poston (editor) Handbook of Population, 2nd Edition. (2019). Springer Press: London (with P. Morrison and S. Smith).
- “From Legal Theory to Practical Application: A How-To for Performing Vote Dilution Analyses.” *Social Science Quarterly*. (with M.V. Hood III and Peter Morrison). March 2017
 - <http://onlinelibrary.wiley.com/doi/10.1111/ssqu.12405/abstract>
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 - www.scotusblog.com/wp-content/uploads/2015/08/Demographers-Amicus.pdf)

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- “Internal and Short Distance Migration” by Bryan, Thomas in J. Siegel and D. Swanson (eds.) The Methods and Materials of Demography, Condensed Edition, Revised. (2004). Academic/Elsevier Press: Los Angeles (with D. Swanson and P. Morrison).
- “Population Estimates” by Bryan, Thomas in J. Siegel and D. Swanson (eds.) The Methods and Materials of Demography, Condensed Edition, Revised. (2004). Academic/Elsevier Press: Los Angeles (with D. Swanson and P. Morrison).
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Professional Presentations and Conference Participation

- Session Chairman on Invited Session “Assessing the Quality of the 2020 Census”, including Census Director Ron Jarmin at the 2020 Population Association of America meeting May 5, 2021.
 - <https://paa2021.secure-platform.com/a/organizations/main/home>
- “The Effect of the Differential Privacy Disclosure Avoidance System Proposed by the Census Bureau on 2020 Census Products: Four Case Studies of Census Blocks in Alaska”. 2021 American Statistical Association - Symposium on Data Science and Statistics (ASA-SDSS). With Dr. David Swanson.
 - <https://ww2.amstat.org/meetings/sdss/2021/index.cfm>
- “New Technical Challenges in Post-2020 Redistricting” 2020 Population Association of America Applied Demography Conference, 2020 Census Related Issues, February 2021. With Dr. Peter Morrison.
 - <https://www.youtube.com/watch?v=ETvvoECt9sc&feature=youtu.be>
- “Tutorial on Local Redistricting” 2020 Population Association of America Applied Demography Conference, February 2021. With Dr. Peter Morrison.
 - <https://www.youtube.com/watch?v=ETvvoECt9sc&feature=youtu.be>

- “Demographic Constraints on Minority Voting Strength in Local Redistricting Contexts” 2019 Southern Demographic Association meetings (coauthored with Dr. Peter Morrison) New Orleans, LA, October 2019. Winner of annual E. Walter Terrie award for best state and local demography presentation.
 - <http://sda-demography.org/2019-new-orleans>
- “Applications of Big Demographic Data in Running Local Elections” 2017 Population and Public Policy Conference, Houston, TX.
- “Distinguishing ‘False Positives’ Among Majority-Minority Election Districts in Statewide Congressional Redistricting,” 2017 Southern Demographic Association meetings (coauthored with Dr. Peter Morrison) Morgantown, WV.
- “Devising a Demographic Accounting Model for Class Action Litigation: An Instructional Case” 2016 Southern Demographic Association (with Peter Morrison), Athens, GA.
- “Gauging Hispanics’ Effective Voting Strength in Proposed Redistricting Plans: Lessons Learned Using ACS Data.” 2012 Conference of the Southern Demographic Association, Williamsburg, VA.
- “Characteristics of the Arab-American Population from Census 2000 and 1990: Detailed Findings from PUMS.” 2004 Conference of the Southern Demographic Association, (with Samia El-Badry) Hilton Head, SC.
- “Small-Area Identification of Arab American Populations,” 2004 Conference of the Southern Demographic Association, Hilton Head, SC.
- “Applied Demography in Action: A Case Study of Population Identification.” 2002 Conference of the Population Association of America, Atlanta, GA.

Primary Software Competencies

ESRI ArcGIS: advanced

SAS: intermediate

Microsoft Office: advanced

Professional Affiliations

International Association of Applied Demographers (Member and Board of Directors)

American Statistical Association (Member)

Population Association of America (Member)

Southern Demographic Association (Member)

American BAR Association (Affiliated Professional: Solo, Small Firm and General Practice Division)

Relevant Work Experience

January 2001- April 2003 ESRI Business Information Solutions / Demographer

Responsibilities included demographic data management, small-area population forecasting, IS management and software product and specification development. Additional responsibilities included developing GIS-based models of business and population forecasting, and analysis of emerging technology and R&D / testing of new GIS and geostatistical software.

May 1998-January 2001 U.S. Census Bureau / Statistician

Responsibilities: developed and refined small area population and housing unit estimates and innovative statistical error measurement techniques, such as Loss Functions and MAPE-R.

Service

Eagle Scout, 1988, Boy Scouts of America. Member of the National Eagle Scout Association. Involved in leadership of the Boy Scouts of America Heart of Virginia Council.



References

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Dr. Peter Morrison

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310-266-9580

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ALABAMA
(SOUTHERN DIVISION)**

BOBBY SINGLETON, *et al.*,

Plaintiffs,

v.

**JOHN MERRILL, in his official
capacity as Alabama Secretary of State**

Defendant.

Case No. 2:21-cv-01291-AMM

THREE-JUDGE COURT

EVAN MILLIGAN, *et al.*,

Plaintiffs,

v.

**JOHN MERRILL, in his official
capacity as Alabama Secretary of State**

Defendant.

Case No. 2:21-cv-01530-AMM

MARCUS CASTER, *et al.*,

Plaintiffs,

v.

**JOHN MERRILL, in his official
capacity as Alabama Secretary of State**

Defendant.

Case No.: 2:21-cv-1536-AMM

EXPERT REPORT OF M.V. HOOD III

I, M.V. Hood III, affirm the conclusions I express in this report are provided to a reasonable degree of professional certainty. In addition, I do hereby declare the following:

I. INTRODUCTION AND BACKGROUND

My name is M.V. (Trey) Hood III, and I am a tenured professor at the University of Georgia with an appointment in the Department of Political Science. I have been a faculty member at the University of Georgia since 1999. I also serve as the Director of the School of Public and International Affairs Survey Research Center. I am an expert in American politics, specifically in the areas of electoral politics, racial politics, election administration, and Southern politics. I teach courses on American politics, Southern politics, and research methods and have taught graduate seminars on the topics of election administration and Southern politics.

I have received research grants to study election administration issues from the National Science Foundation, the Pew Charitable Trust, and the Center for Election Innovation and Research. I have also published peer-reviewed journal articles specifically in the area of election administration, including redistricting. My academic publications are detailed in a copy of my vita that is attached to this report as Exhibit A. Currently, I serve on the editorial boards for *Social Science Quarterly* and *Election Law Journal*. The latter is a peer-reviewed academic journal focused on the area of election administration.

During the preceding five years, I have offered expert testimony (through deposition or at trial) in fifteen cases around the United States: *Bethune-Hill v. Virginia State Board of Elections*, 3:14-cv-00852 (E.D. Va.), *Common Cause v. Rucho*, 1:16-cv-1026 (M.D. N.C.), *Greater Birmingham Ministries v. Merrill*, 2:15-cv-02193 (N.D. Ala.), *Anne Harding v. County of Dallas, Texas*, 3:15-cv-00131 (N.D. Tex.), *Feldman v. Arizona Secretary of State's Office*, 2:16-cv-16-01065 (Ariz.), *League of Women Voters v. Gardner*, 226-2017-cv-00433 (Hillsborough Superior Court), *Ohio A. Philip Randolph Institute v. Ryan Smith*, 1:18-cv-357 (S.D. Ohio), *Libertarian Party of Arkansas v. Thurston*, 4:19-cv-00214 (E.D. Ark.); *Chestnut v. Merrill*, 2:18-cv-907 (N.D. Ala.), *Common Cause v. Lewis*, 18-CVS-014001 (Wake County Superior Court); *Nielsen v. DeSantis*, 4:20-cv-236 (N.D. Fla.); *Western Native Voice v. Stapleton*, DV-56-2020-377 (Montana Thirteenth Judicial District Court); *Driscoll v. Stapleton*, DV-20-0408 (Montana Thirteenth Judicial District Court); and *North Carolina v. Holmes*, 18-CVS-15292 (Wake County Superior Court).

I am receiving \$400 an hour for my work on this case and \$400 an hour for any testimony associated with this work. In reaching my conclusions, I have drawn on my training, experience, and knowledge as a social scientist who has specifically conducted research in the area of redistricting. My compensation in this case is not dependent upon the outcome of the litigation or the substance of my opinions.

II. SCOPE AND OVERVIEW

I have been asked by counsel for the defendant to provide a functional analysis for District 7 in the congressional plan passed in 2021 and for Districts 6 and 7 from the plan proffered by the Singleton plaintiffs. These analyses are located in Section III of this report. I was also asked to briefly discuss the topic of white support for Republican minority candidates (Section IV). This report was prepared to meet the Court's December 10, 2021 deadline in contemplation of plaintiffs' motion for a preliminary injunction. I reserve the right to supplement this report later in this case following that hearing.

Note: Throughout this report I refer to different congressional plans. The plan challenged in this matter is referred to as the enacted plan, or the 2021 plan. The previous plan from 2011 is the benchmark plan and the plaintiffs' plan is the Singleton or whole county plan.

III. DISTRICT FUNCTIONALITY ANALYSES

In the recent case *Alabama Legislative Black Caucus v. Alabama* the U.S. Supreme Court ruled that, in relation to the use of race in redistricting, the pertinent question was to be found in Section 2, not Section 5, of the Voting Rights Act.¹ Specifically, the issue is not *how to maintain the present minority percentages in majority-minority districts, instead the issue is the extent to which [the State] must preserve existing minority percentages in order to maintain the minority's present ability to elect the candidate of its choice.*² Using this guidance I have undertaken a prospective vote dilution analysis using prongs two and three of the standard *Gingles* test.³ Unlike a typical Section 2 *Gingles* analysis that is a retrospective in nature, a Section 2 analysis examining a never before used district is, instead, a prospective matter. For the third prong the question is not whether a minority candidate of choice is typically defeated by a majority white voting bloc; such is not obviously the case in a new districting scheme. Instead, the germane question to pose is forward-looking: if said district is not constituted as a majority-minority district would it be the case in an open seat scenario that the preferred candidate of the black community would most likely be defeated?

To answer a question posed under such a scenario I rely on what is termed a district functionality analysis. Such an analysis can also be used to gain insight into how a proposed or enacted (but yet to be employed) district might operate prior to being used in an actual election. As none of the districts under analysis in this report have ever been employed in an election, I will be making use of past voting behavior to draw inferences about how these different district configurations might operate if used in an actual election scenario.

¹When Alabama redrew its legislative districts in 2012 the state was a covered jurisdiction under Section 5. At present, Section 5 is currently unenforceable.

²See *Alabama Legislative Black Caucus v. Alabama*, 575 U.S. ____ (2015). Page 4.

³See M.V. Hood III, Peter A. Morrison, and Thomas M. Bryan. 2017. "From Legal Theory to Practical Application: A How-To for Performing Vote Dilution Analyses." *Social Science Quarterly* for a discussion of how to conduct a Section 2 vote dilution analysis.

The functionality analyses presented in this expert report consist of several components which are then combined in a final step. First, one needs to estimate the manner in which various racial groups are voting. Here, I rely on precinct-level vote returns and racial turnout data to estimate how whites, blacks, and other minorities are casting ballots.⁴ More specifically, I analyze two state-level contests: the 2020 presidential election and the 2018 gubernatorial race. Ecological Inference is a statistical method that allows one to use aggregate-level data (precincts in this case) to make extrapolations concerning individual-level behavior. Using this technique one can determine the percentages of each racial group that voted for a particular candidate. Sometimes this step is referred to as a racially polarized voting (or racial bloc voting) analysis.

The next step in the process involves the application of turnout data by race. In the case of Alabama, the race of registrants is a known quantity. Using archived copies of the voter registration and history databases from the Alabama Secretary of State I was able to calculate voter turnout rates for whites, blacks, and other minorities by running a series of database queries. Registrants were aggregated into precincts which were, in turn, combined to estimate turnout for the various district configurations in question.

The final piece of requisite information concerns the racial population (VAP) breakdown of the district to be analyzed. These data are derived from reports based on the district population that rely on 2020 Census data. One can then take these voting age population figures and combine them with the aforementioned turnout data to derive an estimate of the number of white, black, and other minority voters to estimate turnout in a hypothetical election. Finally, one can combine these turnout numbers with the estimated vote percentages by race to derive vote share estimates. Aggregating these estimates one can determine the estimated vote share for each candidate. In the case of a general election, the process would terminate with a vote estimate for each political party in the race being analyzed. For example, what would be the estimated Democratic (Republican) vote share in said district.

The functionality analyses below address District 7 in the 2021 enacted plan and Districts 6 and 7 in the Singleton whole-county plan. Time did not permit a functionality analysis of the plan presented in the *Milligan* complaint.

⁴Outside of African Americans, all other minorities are grouped into a category labeled *Other*.

A. District 7: 2021 Enacted Plan

As drawn in 2011 and again in 2021, CD 7 is a majority-black VAP district currently represented by the Honorable Terry Sewell. The district was 60.55% black VAP in 2011 and in the current configuration is 54.22% BVAP—a drop of 6.3-points.⁵

2020 Presidential Election

The estimates in Table 1 below for enacted Congressional District 7 are based on the results from the 2020 presidential contest.

Table 1. Estimated Vote Share by Race, 2020 Presidential Election

Racial Group	Democratic Vote (Biden)	Republican Vote (Trump)	Independent Vote (Jorgenson)
Black	.9861 [.9829, .9886]	.0110 [.0084, .0142]	.0030 [.0023, .0037]
White	.1650 [.1540, .1756]	.8310 [.8203, .8417]	.0041 [.0031, .0051]
Other	.3182 [.1380, .5402]	.3419 [.1633, .4911]	.3399 [.2644, .4382]

Notes: Entries are EI point estimates with 95% confidence intervals in brackets.

As displayed in Table 2 below, the enacted CD 7 is 54.22% black voting age population; 39.21% white voting age population, and 6.57% other voting age population. These figures represent the potential voting electorate for CD 7.

Table 2. Racial Breakdown for Enacted CD 7

Racial Group	Percent	Number of Voters
Black VAP	54.22%	308,006
White VAP	39.21%	227,739
Other VAP	6.57%	37,322
Total		568,067

Next, I will make use of historical registration and turnout data from the Alabama Secretary of State. Data in Table 3 below are from the 2020 general election. The table below indicates what the electorate in enacted CD 7 might resemble in a general election scenario.

Table 3. Turnout by Race for Enacted CD 7

Racial Group	Electorate	Turnout Percent	Number of Voters
Black VAP	308,006	57.93%	178,428
White VAP	222,739	63.62%	141,707
Other VAP	37,322	45.00%	16,795
Total	568,067		336,929

⁵Source: *Preclearance Submission of Alabama Act No. 2011-518* and report generated from Alabama Reapportionment Office.

Having come up with an estimate of what the electorate for enacted CD 7 might resemble, one can now combine these data with the estimated vote percentages by race in Table 1 in order to estimate vote shares by party (see Table 4).

Table 4. Estimated Vote by Party for Enacted CD 7

	(D)	(R)	(I)
Black	175,948	1,963	535
White	23,382	117,758	581
Other	5,344	5,742	5,709
Total	204,673	125,463	6,825
Vote Percentage	60.75%	37.24%	2.03%

Having produced an estimate of the number of Democratic votes, the last step in the process would be to simply divide this number by the size of the estimated electorate in order to determine the estimated percentage of votes a Democratic candidate would receive in enacted CD 7. At 54.22% BVAP, enacted CD 7 would yield an estimated Democratic vote percentage of **60.75%** based on the results of the 2020 presidential election.

2018 Gubernatorial Election

The estimates in Table 5 below for enacted Congressional District 7 are based on the results from the 2018 gubernatorial contest.

Table 5. Estimated Vote Share by Race, 2018 Gubernatorial Election

Racial Group	Democratic Vote (Maddox)	Republican Vote (Ivey)
Black	.9732 [.9684, .9780]	.0268 [.0220, .0316]
White	.2633 [.2545, .2722]	.7367 [.7278, .7455]
Other	.7266 [.4838, .8845]	.2734 [.1155, .5162]

Notes: Entries are EI point estimates with 95% confidence intervals in brackets.

As displayed in Table 6 below, the enacted CD 7 is 54.22% black voting age population; 39.21% white voting age population, and 6.57% other voting age population. These figures represent the potential voting electorate for CD 7.

Table 6. Racial Breakdown for Enacted CD 7

Racial Group	Percent	Number of Voters
Black VAP	54.22%	308,006
White VAP	39.21%	227,739
Other VAP	6.57%	37,322
Total		568,067

Next, I will make use of historical registration and turnout data from the Alabama Secretary of State in order to estimate the number of each racial group. Data in Table 7 below are from the 2018 general election. The table below indicates what the electorate in enacted CD 7 might resemble in an off-year general election scenario.

Table 7. Turnout by Race for Enacted CD 7

Racial Group	Electorate	Turnout Percent	Number of Voters
Black VAP	308,006	49.53%	152,555
White VAP	222,739	52.32%	116,537
Other VAP	37,322	35.55%	13,268
Total	568,067		282,360

Having come up with an estimate of what the electorate for enacted CD 7 might resemble, one can now combine these data with the estimated vote percentages by race in Table 5 in order to estimate vote shares by party (see Table 8).

Table 8. Estimated Vote by Party for Enacted CD 7

	(D)	(R)
Black	148,467	4,088
White	30,684	85,853
Other	9,641	3,627
Total	188,792	93,569
Vote Percentage	66.86%	33.14%

Having produced an estimate of the number of Democratic votes, the last step in the process would be to simply divide this number by the size of the estimated electorate in order to determine the percentage of votes a Democratic candidate would receive in enacted CD 7. At 54.22% BVAP, enacted CD 7 would yield an estimated Democratic vote percentage of **66.86%** based on the results of the 2018 gubernatorial election.

B. District 6: Singleton Plan

In this section I will present a functionality test for Congressional District 6 as proposed under the Singleton (also known as the Whole County) Plan. I will again present the results of an analysis relying on the 2018 gubernatorial and the 2020 presidential elections. As configured in the Singleton Plan, District 6 is 40.55% BVAP, 51.37% WVAP, and 8.08% other VAP.

2020 Presidential Election

The estimates in Table 9 below for Congressional District 6 (Singleton Plan) are based on the results from the 2020 presidential contest.

Table 9. Estimated Vote Share by Race, 2020 Presidential Election

Racial Group	Democratic Vote (Biden)	Republican Vote (Trump)	Independent Vote (Jorgenson)
Black	.9817 [.9739, .9871]	.0146 [.0093, .0225]	.0037 [.0025, .0050]
White	.2153 [.2055, .2243]	.7801 [.7710, .7900]	.0046 [.0035, .0058]
Other	.2756 [.1145, .4809]	.4152 [.1736, .5608]	.3093 [.2435, .4093]

Notes: Entries are EI point estimates with 95% confidence intervals in brackets.

As displayed in Table 10 below, CD 6-Singleton is 40.55% black voting age population; 51.37% white voting age population, and 8.08% other voting age population. These figures represent the potential voting electorate for hypothetical CD 6.

Table 10. Racial Breakdown for Singleton CD 6

Racial Group	Percent	Number of Voters
Black VAP	40.55%	228,233
White VAP	51.37%	289,132
Other VAP	8.08%	45,478
Total		562,843

Data in Table 11 use historical turnout and registration data from the 2020 general election. The table below indicates what the electorate in Singleton CD 6 might resemble in a general election scenario.

Table 11. Turnout by Race for Enacted CD 6

Racial Group	Electorate	Turnout Percent	Number of Voters
Black VAP	228,233	62.19%	141,938
White VAP	289,132	67.80%	196,032
Other VAP	45,478	51.15%	23,262
Total	562,843		361,232

The turnout estimates from Table 11 and the estimated vote percentages from Table 9 are combined in Table 12 which presents estimates of hypothetical votes shares by political party.

Table 12. Estimated Vote by Party for Singleton CD 6

	(D)	(R)	(I)
Black	139,341	2,072	525
White	42,206	152,924	902
Other	6,411	9,658	7,195
Total	187,957	164,655	8,622
Vote Percentage	52.03%	45.58%	2.39%

Having produced an estimate of the number of Democratic votes, the last step in the process would be to simply divide this number by the size of the estimated electorate in order to determine the estimated percentage of votes a Democratic candidate would receive in Singleton CD 6. At 40.55% BVAP, CD 6 would yield an estimated Democratic vote percentage of **52.03%** based on the results of the 2020 presidential election.

2018 Gubernatorial Election

The estimates in Table 13 below for enacted Singleton CD 6 are based on the results from the 2018 gubernatorial contest.

Table 13. Estimated Vote Share by Race, 2018 Gubernatorial Election

Racial Group	Democratic Vote (Maddox)	Republican Vote (Ivey)
Black	.9769 [.9694, .9837]	.0231 [.0163, .0306]
White	.3069 [.2987, .3140]	.6931 [.6860, .7013]
Other	.3987 [.1648, .6600]	.6013 [.3400, .8352]

Notes: Entries are EI point estimates with 95% confidence intervals in brackets.

As displayed in Table 14 below, Singleton CD 6 is 40.55% black voting age population; 51.37% white voting age population, and 8.08% other voting age population. These figures represent the potential voting electorate for CD 6.

Table 14. Racial Breakdown for Singleton CD 6

Racial Group	Percent	Number of Voters
Black VAP	40.55%	228,233
White VAP	51.37%	289,132
Other VAP	8.08%	45,478
Total		562,843

Next, I will make use of historical registration and turnout data from the Alabama Secretary of State in order to estimate the number of each racial group. Data in Table 15 below are from the 2018 general election. The table below indicates what the electorate in Singleton CD 6 might resemble in an off-year general election scenario.

Table 15. Turnout by Race for Singleton CD 6

Racial Group	Electorate	Turnout Percent	Number of Voters
Black VAP	228,233	52.75%	120,393
White VAP	289,132	55.24%	159,717
Other VAP	45,478	40.42%	18,382
Total	562,843		298,492

Having come up with an estimate of what the electorate for Singleton CD 6 might resemble, one can now combine these data with the estimated vote percentages by race in Table 13 in order to estimate vote shares by party (see Table 16 below).

Table 16. Estimated Vote by Party for Singleton CD 6

	(D)	(R)
Black	117,612	2,781
White	49,017	110,700
Other	7,329	11,053
Total	173,958	124,534
Vote Percentage	58.28%	41.72%

Having produced an estimate of the number of Democratic votes, the last step in the process would be to simply divide this number by the size of the estimated electorate in order to determine the percentage of votes a Democratic candidate would receive in Singleton CD 6. At 40.55% BVAP, CD 6 would yield an estimated Democratic vote percentage of **58.28%** based on the results of the 2018 gubernatorial election.

C. District 7-Singleton Plan

In this section I will present a functionality test for Congressional District 7 as proposed under the Singleton (also known as the Whole County) Plan. I will again present the results of an analysis relying on the 2018 gubernatorial and the 2020 presidential elections. As configured in the Singleton Plan, District 7 is 45.82% BVAP, 47.24% WVAP, and 6.94% other VAP.

2020 Presidential Election

The estimates in Table 17 below for Congressional District 7 (Singleton Plan) are based on the results from the 2020 presidential contest.

Table 17. Estimated Vote Share by Race, 2020 Presidential Election

Racial Group	Democratic Vote (Biden)	Republican Vote (Trump)	Independent Vote (Jorgenson)
Black	.9838 [.9799, .9869]	.0123 [.0094, .0161]	.0038 [.0030, .0048]
White	.0925 [.0833, .1016]	.9035 [.8943, .9127]	.0040 [.0031, .0050]
Other	.4658 [.2945, .6030]	.2261 [.1126, .3812]	.3082 [.2400, .3949]

Notes: Entries are EI point estimates with 95% confidence intervals in brackets.

As displayed in Table 18 below, CD 7-Singleton is 45.82% black voting age population; 47.24% white voting age population, and 6.94% other voting age population. These figures represent the potential voting electorate for hypothetical CD 7.

Table 18. Racial Breakdown for Singleton CD 7

Racial Group	Percent	Number of Voters
Black VAP	45.82%	258,550
White VAP	47.24%	266,563
Other VAP	6.94%	39,161
Total		564,273

Data in Table 19 use historical turnout and registration data from the 2020 general election. The table below indicates what the electorate in Singleton CD 7 might resemble in a general election scenario.

Table 19. Turnout by Race for Enacted CD 7

Racial Group	Electorate	Turnout Percent	Number of Voters
Black VAP	258,550	55.41%	143,262
White VAP	266,563	65.95%	175,798
Other VAP	39,161	43.84%	17,168
Total	564,273		336,228

The turnout estimates from Table 19 and the estimated vote percentages from Table 17 are combined in Table 20 which presents estimates of hypothetical votes shares by political party.

Table 20. Estimated Vote by Party for Singleton CD 7

	(D)	(R)	(I)
Black	140,942	1,762	544
White	16,261	158,834	703
Other	7,997	3,882	5,291
Total	165,200	164,477	6,539
Vote Percentage	49.13%	48.92%	1.94%

Having produced an estimate of the number of Democratic votes, the last step in the process would be to simply divide this number by the size of the estimated electorate in order to determine the estimated percentage of votes a Democratic candidate would receive in Singleton CD 7. At 45.82% BVAP, CD 7 would yield an estimated Democratic vote percentage of **49.13%** based on the results of the 2020 presidential election.

2018 Gubernatorial Election

The estimates in Table 21 below for enacted Singleton CD 7 are based on the results from the 2018 gubernatorial contest.

Table 21. Estimated Vote Share by Race, 2018 Gubernatorial Election

Racial Group	Democratic Vote (Maddox)	Republican Vote (Ivey)
Black	.9698 [.9634, .9751]	.0302 [.0249, .0366]
White	.1861 [.1780, .1941]	.8139 [.8059, .8220]
Other	.7166 [.5320, .8455]	.2834 [.1545, .4680]

Notes: Entries are EI point estimates with 95% confidence intervals in brackets.

As displayed in Table 22 below, Singleton CD 7 is 45.82% black voting age population; 47.24% white voting age population, and 6.94% other voting age population. These figures represent the potential voting electorate for CD 7.

Table 22. Racial Breakdown for Singleton CD 7

Racial Group	Percent	Number of Voters
Black VAP	45.82%	258,550
White VAP	47.24%	266,563
Other VAP	6.94%	39,161
Total		564,273

Next, I will make use of historical registration and turnout data from the Alabama Secretary of State in order to estimate the number of each racial group. Data in Table 23 below are from the 2018 general election. The table below indicates what the electorate in Singleton CD 7 might resemble in an off-year general election scenario.

Table 23. Turnout by Race for Singleton CD 7

Racial Group	Electorate	Turnout Percent	Number of Voters
Black VAP	258,550	47.92%	123,897
White VAP	266,563	54.42%	145,063
Other VAP	39,161	32.52%	12,735
Total	564,273		281,695

Having come up with an estimate of what the electorate for Singleton CD 6 might resemble, one can now combine these data with the estimated vote percentages by race in Table 21 in order to estimate vote shares by party (see Table 24 below).

Table 24. Estimated Vote by Party for Singleton CD 7

	(D)	(R)
Black	120,155	3,742
White	26,996	118,067
Other	9,126	3,609
Total	156,278	125,418
Vote Percentage	55.48%	44.52%

Having produced an estimate of the number of Democratic votes, the last step in the process would be to simply divide this number by the size of the estimated electorate in order to determine the percentage of votes a Democratic candidate would receive in Singleton CD 7. At 45.82% BVAP, CD 7 would yield an estimated Democratic vote percentage of **55.48%** based on the results of the 2018 gubernatorial election.

D. Summary of Functionality Analyses

Here, I provide a summary of the primary findings from the functionality analyses undertaken in this section. Table 25 below details the estimated Democratic vote share for various district configurations under study.

Table 25. Estimated Democratic Vote Share

Plan	District	Election	Estimated (D) Vote
Enacted	CD 7	2018 Gubernatorial	66.86%
Enacted	CD 7	2020 Presidential	60.75%
Singleton	CD 6	2018 Gubernatorial	58.28%
Singleton	CD 6	2020 Presidential	52.03%
Singleton	CD 7	2018 Gubernatorial	55.48%
Singleton	CD 7	2020 Presidential	49.13%

For all of the functional analyses performed, racially polarized voting is present with black voters overwhelmingly supporting the Democratic candidate and more than a majority of white voters casting a ballot for the Republican candidate. Black voter support for Democratic candidates ranged from a low of 97.0% to a high of 98.6% (mean =97.9), while white support for Republican candidates ranged from 69.3% to 90.4% (mean=79.3).

Given the presence of racially polarized voting, enacted CD 7 which is drawn as a majority black district demonstrates a consistent ability to elect an African American candidate of choice (in this case the Democratic candidate). CD 6 and CD 7 under the Singleton Plan are not majority minority districts. As drawn, CD 6 and CD 7 could be characterized as black influence districts. It is not obvious, given a number of qualifications, whether the Singleton Plan might elect black candidate of choice in either of these proposed congressional districts. In CD 6 the estimated Democratic vote share hovers just above the fifty-percent mark for one contest analyzed and for CD 7 one estimate has the Democratic vote share below that level.

One proviso to consider concerns the fact that EI point estimates predicting voting behavior, like all statistical estimates, come with a range of uncertainty within which the true percentage is thought to lie (i.e. the confidence interval). For estimates that barely produce a Democratic vote plurality using the point estimates, as is the case in CD 7 (Singleton), an estimate relying on the lower confidence bound will reduce the Democratic vote share estimate. In some cases, the estimate may drop below a winning percentage.

A second caveat that should be considered in this redistricting cycle involves issues relating to the Census Bureau's application of a disclosure avoidance system in order to maintain privacy of individual Census records.⁶ As described succinctly by the National Conference of State Legislatures:

⁶2020 Decennial Census: Disclosure Avoidance Modernization (<https://www.census.gov/programs-surveys/decennial-census/decade/2020/planning-management/process/disclosure-avoidance.html>).

Differential privacy will mean that, except at the state level, population and voting age population will not be reported as enumerated. And, race and ethnicity data are likely to be farther from the “as enumerated” data than in past decades, when data swapping was used to protect small populations. (In 2010, at the block level, total population, total housing units, occupancy status, group quarters count and group quarters type were all held invariant.) This may raise issues for racial block voting analyses.⁷

The differential privacy system employed makes it impossible to count persons by racial/ethnic classification with 100% accuracy. Instead, it is likely that the actual percentage of a racial minority group in a newly drawn congressional district may actually differ from the reported percentage. Such a discrepancy could matter in the case of a district with high levels of racially polarized voting that produces a bare Democratic majority. If the racial composition of the district is, in actuality, below the reported level, the Democratic vote share would also be below the level calculated using the Census data.

Finally, one must also be mindful that the minority candidate of choice may differ in a Democratic primary as compared to a general election scenario where, as demonstrated, African Americans will support the Democratic nominee. In a Democratic primary, white and black voters may support different candidates. If there is an insufficient number of black voters to constitute a majority in a Democratic primary, the black community may be unable to elect their candidate of choice. If African Americans comprise a majority in a district, given identified voting proclivities, they will also make up a majority of a Democratic primary. Under such a scenario, the black community will also be able to elect their candidate of choice in the Democratic Primary. For districts where a minority group makes up a sizable share but less than a majority of the electorate, it may or may not be the case that the minority group is present in sufficient number to elect their candidate of choice in the Democratic Primary.⁸

⁷Quoted from National Conference of State Legislatures. “Differential Privacy for Census Data Explained.” (<https://www.ncsl.org/research/redistricting/differential-privacy-for-census-data-explained.aspx>).

⁸I had hoped to analyze some recent Democratic Primary elections as part of the functionality analyses presented in this report. Unfortunately, I was unable to obtain voter registration and history data from the Alabama Secretary of State for the 2018 or 2020 Democratic primary elections as these data were not available.

IV. WHITE SUPPORT FOR MINORITY REPUBLICAN CANDIDATES

Do white voters vote for minority Republican candidates? This was a research question that I analyzed in a peer-reviewed journal article. In this article, a co-author and myself examined the voting behavior of white voters as it related to support for minority GOP candidates in U.S. Senate and gubernatorial elections.⁹ In short, we found that white conservatives support minority Republican candidates at the same rates or at significantly higher rates than Anglo (non-Hispanic white) GOP nominees. In our study voting on the part of white conservatives is colorblind—the primary explanatory factor appears to be ideological congruence between the voter and the candidate. Stated succinctly, ideology trumps race in the case of white Republicans and their support for GOP minority nominees.

In Alabama specifically, Republican state house member Kenneth Paschal (HD 73) is one example of white voters electing a minority candidate. Paschal is an African American who ran in a Shelby County district which is 84.1% white VAP.¹⁰ Given the racial composition of HD 73, no candidate can win elective office without the support of white voters. In order to fill a vacancy for HD 73, a special Republican Primary was held on March 30, 2021 in which five candidates participated. In this contest Paschal came in second to Leigh Hulsey, a white candidate.¹¹ With no candidate in the primary having received a majority of the vote, Paschal and Hulsey were forced into a runoff. In the April 27th runoff, Paschal defeated Hulsey 51.1% to 48.9%.¹² Finally, Paschal faced a white Democrat, Sheridan Black, in the Special General Election held on July 13, 2021. In this contest, Paschal won with 74.7% of the vote to 25.1% for Black.¹³

⁹M.V. Hood III and Seth C. McKee. 2015. “True Colors: White Conservative Support for Minority Republican Candidates.” *Public Opinion Quarterly* 79(1): 28-52.

¹⁰Howard Koplowitz. “Kenneth Paschal Wins Alabama House Seat.” *AL.com*. July 14, 2021. *Alabama Legislative Black Caucus v. Alabama* (2:12-cv-00691). Document 337-1. Page 25.

¹¹Source: Alabama Secretary of State (<https://www.sos.alabama.gov/sites/default/files/election-2021/Certification%20of%20Primary%20Results.pdf>).

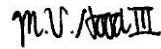
¹²Source: Alabama Secretary of State (https://www.sos.alabama.gov/sites/default/files/election-2021/HD73_Republican_Party-Certification_of_Results-Special_Primary_Runoff_Election.pdf)

¹³Source: Alabama Secretary of State (<https://www.sos.alabama.gov/sites/default/files/election-2021/Canvass%20of%20HD73%20Results.PD>).

V. DECLARATION

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

Executed on December 10, 2021.



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Appendix: Data Sources

2018 and 2020 General Election Voter Registration and History Databases

Source: Alabama Secretary of State

2018 and 2020 General Election Precinct Vote Returns

Source: Alabama Secretary of State (<https://www.sos.alabama.gov/alabama-votes/voter/election-data>)

District-Level Population Data

Source: Alabama Reapportionment Office

District Configurations

Source: Alabama Reapportionment Office

Exhibit A

Curriculum Vitae
(December 2021)

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Academic Positions:

University of Georgia

Director, SPIA Survey Research Center, 2016-present

Director of Graduate Studies, 2011-2016

Professor, 2013-present

Associate Professor, 2005-2013

Assistant Professor, 1999-2005

Texas Tech University

Visiting Assistant Professor, 1997-1999

Education:

Ph.D.	Political Science	Texas Tech University	1997
M.A.	Political Science	Baylor University	1993
B.S.	Political Science	Texas A&M University	1991

Peer-Reviewed Books:

Rural Republican Realignment in the Modern South: The Untold Story. Forthcoming May 2022.
Columbia, SC: The University of South Carolina Press. (Seth C. McKee, co-author).

The Rational Southerner: Black Mobilization, Republican Growth, and the Partisan Transformation of the American South. 2012. New York: Oxford University Press.
(Quentin Kidd and Irwin L. Morris, co-authors).
[Softcover version in 2014 with new Epilogue]

Peer-Reviewed Publications:

“Getting the Message: Opinion Polarization over Election Law.” Forthcoming 2022. *Election Law Journal*. (Seth C. McKee, co-author).

- “Tracking Hispanic Political Emergence in Georgia: An Update.” 2021. *Social Science Quarterly* 102(1): 259-268. (Charles S. Bullock, III, co-author).
- “Switching Sides but Still Fighting the Civil War in Southern Politics.” 2020 (Online). *Politics, Groups, and Identities*. (Christopher Cooper, Scott H. Huffmon, Quentin Kidd, Gibbs Knotts, Seth C. McKee, co-authors).
- “The Election of African American State Legislators in the Modern South.” 2020. *Legislative Studies Quarterly* 45(4): 581-608. (Charles S. Bullock, III, William Hicks, Seth C. McKee, Adam S. Myers, and Daniel A. Smith, co-authors).
- “What’s in a Name? Gauging the Effect of Labels on Third Party Vote Shares.” 2020 (Online). *Journal of Elections, Public Opinion & Parties*. (Seth C. McKee, co-author).
- “Why Georgia, Why? Peach State Residents’ Perceptions of Voting-Related Improprieties and their Impact on the 2018 Gubernatorial Election.” 2019. *Social Science Quarterly* 100(5): 1828-1847. (Seth C. McKee, co-author).
- “Palmetto Postmortem: Examining the Effects of the South Carolina Voter Identification Statute.” 2019. *Political Research Quarterly* (Scott E. Buchanan, co-author).
- “Contagious Republicanism in Louisiana, 1966-2008.” 2018. *Political Geography* 66(Sept): 1-13. (Jamie Monogan, co-author).
- “The Comeback Kid: Donald Trump on Election Day in 2016.” 2019. *PS: Political Science and Politics* 52(2): 239-242. (Seth C. McKee and Daniel A. Smith, co-authors).
- “Election Daze: Mode of Voting and Voter Preferences in the 2016 Presidential Election.” 2017-2018. *Florida Political Chronicle* 25(2): 123-141. (Seth C. McKee and Daniel A. Smith, co-authors).
- “Out of Step and Out of Touch: The Matter with Kansas in the 2014 Midterm.” 2017. *The Forum* 15(2): 291-312. (Seth C. McKee and Ian Ostrander, co-authors).
- “From Legal Theory to Practical Application: A How-To for Performing Vote Dilution Analyses.” 2018. *Social Science Quarterly* 99(2): 536-552. (Peter A. Morrison and Thomas M. Bryan, co-authors).
- “Race, Class, Religion and the Southern Party System: A Field Report from Dixie.” 2016. *The Forum* 14(1): 83-96.
- “Black Votes Count: The 2014 Republican Senate Nomination in Mississippi.” 2017. *Social Science Quarterly* 98(1): 89-106. (Seth C. McKee, coauthor).
- “Sunshine State Dilemma: Voting for the 2014 Governor of Florida.” 2015. *Electoral Studies* 40: 293-299. (Seth C. McKee, co-author).

- “Tea Leaves and Southern Politics: Explaining Tea Party Support Among Southern Republicans.” 2015. *Social Science Quarterly* 96(4): 923-940. (Quentin Kidd and Irwin L. Morris, co-authors).
- “True Colors: White Conservative Support for Minority Republican Candidates.” 2015. *Public Opinion Quarterly* 79(1): 28-52. (Seth C. McKee, co-author).
- “Race and the Tea Party in the Old Dominion: Split-Ticket Voting in the 2013 Virginia Elections.” 2015. *PS: Political Science and Politics* 48(1):107-114. (Quentin Kidd and Irwin L. Morris, co-authors).
- “The Damnedest Mess: An Empirical Evaluation of the 1966 Georgia Gubernatorial Election.” 2014. *Social Science Quarterly* 96(1):104-118. (Charles S. Bullock, III, co-author).
- “Candidates, Competition, and the Partisan Press: Congressional Elections in the Early Antebellum Era.” 2014. *American Politics Research* 42(5):670-783. (Jamie L. Carson, co-author).
[Winner of the 2014 Hahn-Sigelman Prize]
- “Strategic Voting in a U.S. Senate Election.” 2013. *Political Behavior* 35(4):729-751. (Seth C. McKee, co-author).
- “Unwelcome Constituents: Redistricting and Countervailing Partisan Tides.” 2013. *State Politics and Policy Quarterly* 13(2):203-224. (Seth C. McKee, co-author).
- “The Tea Party, Sarah Palin, and the 2010 Congressional Elections: The Aftermath of the Election of Barack Obama.” 2012. *Social Science Quarterly* 93(5):1424-1435. (Charles S. Bullock, III, co-author).
- “Much Ado About Nothing?: An Empirical Assessment of the Georgia Voter Identification Statute.” 2012. *State Politics and Policy Quarterly* 12(4):394-314. (Charles S. Bullock, III, co-author).
- “Achieving Validation: Barack Obama and Black Turnout in 2008.” 2012. *State Politics and Policy Quarterly* 12:3-22. (Seth C. McKee and David Hill, co-authors).
- “They Just Don’t Vote Like They Used To: A Methodology to Empirically Assess Election Fraud.” 2012. *Social Science Quarterly* 93:76-94. (William Gillespie, co-author).
- “An Examination of Efforts to Encourage the Incidence of Early In-Person Voting in Georgia, 2008.” 2011. *Election Law Journal* 10:103-113. (Charles S. Bullock, III, co-author).
- “What Made Carolina Blue? In-migration and the 2008 North Carolina Presidential Vote.” 2010. *American Politics Research* 38:266-302. (Seth C. McKee, co-author).

- “Stranger Danger: Redistricting, Incumbent Recognition, and Vote Choice.” 2010. *Social Science Quarterly* 91:344-358. (Seth C. McKee, co-author).
- “Trying to Thread the Needle: The Effects of Redistricting in a Georgia Congressional District.” 2009. *PS: Political Science and Politics* 42:679-687. (Seth C. McKee, co-author).
- “Citizen, Defend Thyself: An Individual-Level Analysis of Concealed-Weapon Permit Holders.” 2009. *Criminal Justice Studies* 22:73-89. (Grant W. Neeley, co-author).
- “Two Sides of the Same Coin?: Employing Granger Causality Tests in a Time Series Cross-Section Framework.” 2008. *Political Analysis* 16:324-344. (Quentin Kidd and Irwin L. Morris, co-authors).
- “Worth a Thousand Words? : An Analysis of Georgia’s Voter Identification Statute.” 2008. *American Politics Research* 36:555-579. (Charles S. Bullock, III, co-author).
- “Gerrymandering on Georgia’s Mind: The Effects of Redistricting on Vote Choice in the 2006 Midterm Election.” 2008. *Social Science Quarterly* 89:60-77 (Seth C. McKee, co-author).
- “Examining Methods for Identifying Latino Voters.” 2007. *Election Law Journal* 6:202-208. (Charles S. Bullock, III, co-author).
- “A Mile-Wide Gap: The Evolution of Hispanic Political Emergence in the Deep South.” 2006. *Social Science Quarterly* 87:1117-1135. (Charles S. Bullock, III, co-author).
- “Punch Cards, Jim Crow, and Al Gore: Explaining Voter Trust in the Electoral System in Georgia, 2000.” 2005. *State Politics and Policy Quarterly* 5:283-294. (Charles S. Bullock, III and Richard Clark, co-authors).
- “When Southern Symbolism Meets the Pork Barrel: Opportunity for Executive Leadership.” 2005. *Social Science Quarterly* 86:69-86. (Charles S. Bullock, III, co-author).
- “The Reintroduction of the *Elephas maximus* to the Southern United States: The Rise of Republican State Parties, 1960-2000.” 2004. *American Politics Research* 31:68-101. (Quentin Kidd and Irwin Morris, co-authors).
- “One Person, [No Vote; One Vote; Two Votes...]: Voting Methods, Ballot Types, and Undervote Frequency in the 2000 Presidential Election.” 2002. *Social Science Quarterly* 83:981-993. (Charles S. Bullock, III, co-author).
- “On the Prospect of Linking Religious Right Identification with Political Behavior: Panacea or Snipe Hunt?” 2002. *Journal for the Scientific Study of Religion* 41:697-710. (Mark C. Smith, co-author).

- “The Key Issue: Constituency Effects and Southern Senators’ Roll-Call Voting on Civil Rights.” 2001. *Legislative Studies Quarterly* 26: 599-621. (Quentin Kidd and Irwin Morris, co-authors).
- “Packin’ in the Hood?: Examining Assumptions Underlying Concealed-Handgun Research.” 2000. *Social Science Quarterly* 81:523-537. (Grant Neeley, co-author).
- “Brother, Can You Spare a Dime? Racial/Ethnic Context and the Anglo Vote on Proposition 187.” 2000. *Social Science Quarterly* 81:194-206. (Irwin Morris, co-author).
- “Penny Pinching or Politics? The Line-Item Veto and Military Construction Appropriations.” 1999. *Political Research Quarterly* 52:753-766. (Irwin Morris and Grant Neeley, co-authors).
- “Of Byrds[s] and Bumpers: Using Democratic Senators to Analyze Political Change in the South, 1960-1995.” 1999. *American Journal of Political Science* 43:465-487. (Quentin Kidd and Irwin Morris, co-authors).
- “Bugs in the NRC’s Doctoral Program Evaluation Data: From Mites to Hissing Cockroaches.” 1998. *PS* 31:829-835. (Nelson Dometrius, Quentin Kidd, and Kurt Shirkey, co-authors).
- “Boll Weevils and Roll-Call Voting: A Study in Time and Space.” 1998. *Legislative Studies Quarterly* 23:245-269. (Irwin Morris, co-author).
- “Give Us Your Tired, Your Poor,...But Make Sure They Have a Green Card: The Effects of Documented and Undocumented Migrant Context on Anglo Opinion Towards Immigration.” 1998. *Political Behavior* 20:1-16. (Irwin Morris, co-author).
- “¡Quedate o Vente!: Uncovering the Determinants of Hispanic Public Opinion Towards Immigration.” 1997. *Political Research Quarterly* 50:627-647. (Irwin Morris and Kurt Shirkey, co-authors).
- “¿Amigo o Enemigo?: Context, Attitudes, and Anglo Public Opinion toward Immigration.” 1997. *Social Science Quarterly* 78: 309-323. (Irwin Morris, co-author).

Invited Publications:

- “Race and the Ideological Transformation of the Democratic Party: Evidence from the Bayou State.” 2005. *American Review of Politics* 25:67-78.

Book Chapters:

- “The 2020 Presidential Nomination Process.” 2021. In *The 2020 Presidential Election in the South*, eds. Branwell DuBose Kapeluck and Scott E. Buchanan. Lanham, MD: Rowman & Littlefield. (Aaron A. Hitefield, co-author).

“Texas: A Shifting Republican Terrain.” 2021. In *The New Politics of the Old South*, 7th ed., Charles S. Bullock, III and Mark J. Rozell, editors. New York: Rowman and Littlefield Publishers, Inc. (Seth C. McKee, co-author).

“Texas: Big Red Rides On.” 2018. In *The New Politics of the Old South*, 6th ed., Charles S. Bullock, III and Mark J. Rozell, editors. New York: Rowman and Littlefield Publishers, Inc. (Seth C. McKee, co-author).

“The Participatory Consequences of Florida Redistricting.” 2015. In *Jigsaw Puzzle Politics in the Sunshine State*, Seth C. McKee, editor. Gainesville, FL: University of Florida Press. (Danny Hayes and Seth C. McKee, co-authors).

“Texas: Political Change by the Numbers.” 2014. In *The New Politics of the Old South*, 5th ed., Charles S. Bullock, III and Mark J. Rozell, editors. New York: Rowman and Littlefield Publishers, Inc. (Seth C. McKee, co-author).

“The Republican Party in the South.” 2012. In *Oxford Handbook of Southern Politics*, Charles S. Bullock, III and Mark J. Rozell, editors. New York: Oxford University Press. (Quentin Kidd and Irwin Morris, co-authors).

“The Reintroduction of the *Elephas maximus* to the Southern United States: The Rise of Republican State Parties, 1960-2000.” 2010. In *Controversies in Voting Behavior*, 5th ed., David Kimball, Richard G. Niemi, and Herbert F. Weisberg, editors. Washington, DC: CQ Press. (Quentin Kidd and Irwin Morris, co-authors).
[Reprint of 2004 *APR* article with Epilogue containing updated analysis and other original material.]

“The Texas Governors.” 1997. In *Texas Policy and Politics*, Mark Somma, editor. Needham Heights, MA: Simon & Schuster.

Book Reviews:

The Resilience of Southern Identity: Why the South Still Matters in the Minds of Its People. 2018.
Reviewed for *The Journal of Southern History*.

Other Publications:

“Provisionally Admitted College Students: Do They Belong in a Research University?” 1998. In *Developmental Education: Preparing Successful College Students*, Jeanne Higbee and Patricia L. Dwinell, editors. Columbia, SC: National Resource Center for the First-Year Experience & Students in Transition (Don Garnett, co-author).

NES Technical Report No. 52. 1994. “The Reliability, Validity, and Scalability of the Indicators of Gender Role Beliefs and Feminism in the 1992 American National Election Study: A Report to the ANES Board of Overseers.” (Sue Tolleson-Rinehart, Douglas R. Davenport, Terry L. Gilmour, William R. Moore, Kurt Shirkey, co-authors).

Grant-funded Research (UGA):

Co-Principal Investigator. “Georgia Absentee Ballot Signature Verification Study.” Budget: \$36,950. 2021. (with Audrey Haynes and Charles Stewart III). Funded by the Georgia Secretary of State.

Co-Principal Investigator. “The Integrity of Mail Voting in the 2020 Election.” Budget: \$177,080. (with Lonna Atkeson and Robert Stein). Funded by the National Science Foundation.

Co-Principal Investigator. “Georgia Voter Verification Study.” Budget: \$52,060. 2020. (with Audrey Haynes). Funded by Center for Election Innovation and Research.

Co-Principal Investigator. “An Examination of Non-Precinct Voting in the State of Georgia.” Budget: \$47,000. October 2008-July 2009. (with Charles S. Bullock, III). Funded by the Pew Charitable Trust.

Co-Principal Investigator. “The Best Judges Money Can Buy?: Campaign Contributions and the Texas Supreme Court.” (SES-0615838) Total Budget: \$166,576; UGA Share: \$69,974. September 2006-August 2008. (with Craig F. Emmert). Funded by the National Science Foundation. REU Supplemental Award (2008-2009): \$6,300.

Principal Investigator. “Payola Justice or Just Plain ‘Ole Politics Texas-Style?: Campaign Finance and the Texas Supreme Court.” \$5,175. January 2000-Januray 2001. Funded by the University of Georgia Research Foundation, Inc.

Curriculum Grants (UGA):

Learning Technology Grant: “Converting Ideas Into Effective Action: An Interactive Computer and Classroom Simulation for the Teaching of American Politics.” \$40,000. January-December 2004. (with Loch Johnson). Funded by the Office of Instructional Support and Technology, University of Georgia.

Dissertation:

“Capturing Bubba's Heart and Mind: Group Consciousness and the Political Identification of Southern White Males, 1972-1994.”

Chair: Professor Sue Tolleson-Rinehart

Papers and Activities at Professional Meetings:

“Rural Voters in Southern U.S. House Elections.” 2021. (with Seth C. McKee). Presented at the Virtual American Political History Conference. University of Georgia. Athens, GA.

“Mail It In: An Analysis of the Peach State’s Response to the Coronavirus Pandemic.” 2020. (with Audrey Haynes). Presented at the Election Science, Reform, and Administrative Conference. Gainesville, FL. [Virtually Presented].

“Presidential Republicanism and Democratic Darn Near Everything Else.” 2020. (with Seth C. McKee). Presented at the Citadel Southern Politics Symposium. Charleston, SC.

“Why Georgia, Why? Peach State Residents’ Perceptions of Voting-Related Improprieties and their Impact on the 2018 Gubernatorial Election.” 2019. (with Seth C. McKee). Presented at the Election Science, Reform, and Administrative Conference. Philadelphia, PA.

“The Demise of White Class Polarization and the Newest American Politics.” 2019. (with Seth C. McKee). Presented at the Annual Meeting of the Southern Political Science Association. Austin, TX.

“The Geography of Latino Growth in the American South.” 2018. (with Seth C. McKee). State Politics and Policy Conference. State College, PA.

“A History and Analysis of Black Representation in Southern State Legislatures.” 2018. (with Charles S. Bullock, III, William D. Hicks, Seth C. McKee, Adam S. Myers, and Daniel A. Smith). Presented at the Citadel Symposium on Southern Politics. Charleston, SC.

Discussant. Panel titled “Southern Distinctiveness?” 2018. The Citadel Symposium on Southern Politics. Charleston, SC.

Roundtable Participant. Panel titled “The 2018 Elections.” 2018. The Citadel Symposium on Southern Politics. Charleston, SC.

“Still Fighting the Civil War?: Southern Opinions on the Confederate Legacy.” 2018. (with Christopher A. Cooper, Scott H. Huffman, Quentin Kidd, H. Gibbs Knotts, and Seth C. McKee). The Citadel Symposium on Southern Politics. Charleston, SC.

“Tracking Hispanic Growth in the American South.” 2018. (with Seth C. McKee). Presented at the Annual Meeting of the Southern Political Science Association. New Orleans, LA.

“An Assessment of Online Voter Registration in Georgia.” 2017. (with Greg Hawrelak and Colin Phillips). Presented at the Annual Meeting of Election Sciences, Reform, and Administration. Portland, Oregon.

Moderator. Panel titled “What Happens Next.” 2017. The Annual Meeting of Election Sciences, Reform, and Administration. Portland, Oregon.

“Election Daze: Time of Vote, Mode of Voting, and Voter Preferences in the 2016 Presidential Election.” 2017. (with Seth C. McKee and Dan Smith). Presented at the Annual Meeting of the State Politics and Policy Conference. St. Louis, MO.

“Palmetto Postmortem: Examining the Effects of the South Carolina Voter Identification Statute.” 2017. (with Scott E. Buchanan). Presented at the Annual Meeting of the Southern Political Science Association. New Orleans, LA.

Panel Chair and Presenter. Panel titled “Assessing the 2016 Presidential Election.” 2017. UGA Elections Conference. Athens, GA.

Roundtable Discussant. Panel titled “Author Meets Critics: Robert Mickey's Paths Out of Dixie.” 2017. The Annual Meeting of the Southern Political Science Association. New Orleans, LA.

“Out of Step and Out of Touch: The Matter with Kansas in the 2014 Midterm Election.” (with Seth C. McKee and Ian Ostrander). 2016. Presented at the Annual Meeting of the Southern Political Science Association. San Juan, Puerto Rico.

“Contagious Republicanism in North Carolina and Louisiana, 1966-2008.”(with Jamie Monogan). 2016. Presented at the Citadel Symposium on Southern Politics. Charleston, SC.

“The Behavioral Implications of Racial Resentment in the South: The Intervening Influence of Party.” (with Quentin Kidd and Irwin L. Morris). 2016. Presented at the Citadel Symposium on Southern Politics. Charleston, SC.

Discussant. Panel titled “Partisan Realignment in the South.” 2016. The Citadel Symposium on Southern Politics. Charleston, SC.

“Electoral Implications of Racial Resentment in the South: The Influence of Party.” (with Quentin Kidd and Irwin L. Morris). 2016. Presented at the Annual Meeting of the American Political Science Association. Philadelphia, PA.

“Racial Resentment and the Tea Party: Taking Regional Differences Seriously.” (with Quentin Kidd and Irwin L. Morris). 2015. Poster presented at the Annual Meeting of the American Political Science Association. San Francisco, CA.

“Race and the Tea Party in the Palmetto State: Tim Scott, Nikki Haley, Bakari Sellers and the 2014 Elections in South Carolina.” (with Quentin Kidd and Irwin L. Morris). 2015. Presented at the Annual Meeting of the Southern Political Science Association. New Orleans, LA.

Participant. Roundtable on the 2014 Midterm Elections in the Deep South. Annual Meeting of the Southern Political Science Association. New Orleans, LA.

“Race and the Tea Party in the Old Dominion: Split-Ticket Voting in the 2013 Virginia Elections.” (with Irwin L. Morris and Quentin Kidd). 2014. Paper presented at the Citadel Symposium on Southern Politics. Charleston, SC.

“Race and the Tea Party in the Old Dominion: Down-Ticket Voting and Roll-Off in the 2013 Virginia Elections.” (with Irwin L. Morris and Quentin Kidd). 2014. Paper presented at the Annual Meeting of the Southern Political Science Association. New Orleans, LA.

- “Tea Leaves and Southern Politics: Explaining Tea Party Support Among Southern Republicans.” (with Irwin L. Morris and Quentin Kidd). 2013. Paper presented at the Annual Meeting of the Southern Political Science Association. Orlando, FL.
- “The Tea Party and the Southern GOP.” (with Irwin L. Morris and Quentin Kidd). 2012. Research presented at the Effects of the 2012 Elections Conference. Athens, GA.
- “Black Mobilization in the Modern South: When Does Empowerment Matter?” (with Irwin L. Morris and Quentin Kidd). 2012. Paper presented at the Citadel Symposium on Southern Politics. Charleston, SC.
- “The Legislature Chooses a Governor: Georgia’s 1966 Gubernatorial Election.” (with Charles S. Bullock, III). 2012. Paper presented at the Citadel Symposium on Southern Politics. Charleston, SC.
- “One-Stop to Victory? North Carolina, Obama, and the 2008 General Election.” (with Justin Bullock, Paul Carlsen, Perry Joiner, and Mark Owens). 2011. Paper presented at the Annual Meeting of the Southern Political Science Association. New Orleans.
- “Redistricting and Turnout in Black and White.” (with Seth C. McKee and Danny Hayes). 2011. Paper presented the Annual Meeting of the Midwest Political Science Association. Chicago, IL.
- “One-Stop to Victory? North Carolina, Obama, and the 2008 General Election.” (with Justin Bullock, Paul Carlsen, Perry Joiner, Jeni McDermott, and Mark Owens). 2011. Paper presented at the Annual Meeting of the Midwest Political Science Association Meeting. Chicago, IL.
- “Strategic Voting in the 2010 Florida Senate Election.” (with Seth C. McKee). 2011. Paper Presented at the Annual Meeting of the Florida Political Science Association. Jupiter, FL.
- “The Republican Bottleneck: Congressional Emergence Patterns in a Changing South.” (with Christian R. Grose and Seth C. McKee). Paper presented at the Annual Meeting of the Southern Political Science Association. New Orleans, LA.
- “Capturing the Obama Effect: Black Turnout in Presidential Elections.” (with David Hill and Seth C. McKee) 2010. Paper presented at the Annual Meeting of the Florida Political Science Association. Jacksonville, FL.
- “The Republican Bottleneck: Congressional Emergence Patterns in a Changing South.” (with Seth C. McKee and Christian R. Grose). 2010. Paper presented at the Citadel Symposium on Southern Politics. Charleston, SC.
- “Black Mobilization and Republican Growth in the American South: The More Things Change the More They Stay the Same?” (with Quentin Kidd and Irwin L. Morris). 2010. Paper presented at the Citadel Symposium on Southern Politics. Charleston, SC.

“Unwelcome Constituents: Redistricting and Incumbent Vote Shares.” (with Seth C. McKee). 2010. Paper presented at the Annual Meeting of the Southern Political Science Association. Atlanta, GA.

“Black Mobilization and Republican Growth in the American South: The More Things Change the More They Stay the Same?” (with Quentin Kidd and Irwin L. Morris). 2010. Paper presented at the Annual Meeting of the Southern Political Science Association. Atlanta, GA.

“The Impact of Efforts to Increase Early Voting in Georgia, 2008.” (With Charles S. Bullock, III). 2009. Presentation made at the Annual Meeting of the Georgia Political Science Association. Callaway Gardens, GA.

“Encouraging Non-Precinct Voting in Georgia, 2008.” (With Charles S. Bullock, III). 2009. Presentation made at the Time-Shifting The Vote Conference. Reed College, Portland, OR.

“What Made Carolina Blue? In-migration and the 2008 North Carolina Presidential Vote.” (with Seth C. McKee). 2009. Paper presented at the Annual Meeting of the Florida Political Science Association. Orlando, FL.

“Swimming with the Tide: Redistricting and Voter Choice in the 2006 Midterm.” (with Seth C. McKee). 2009. Paper presented at the Annual Meeting of the Midwest Political Science Association. Chicago.

“The Effect of the Partisan Press on U.S. House Elections, 1800-1820.” (with Jamie Carson). 2008. Paper presented at the Annual Meeting of the History of Congress Conference. Washington, D.C.

“Backward Mapping: Exploring Questions of Representation via Spatial Analysis of Historical Congressional Districts.” (Michael Crespín). 2008. Paper presented at the Annual Meeting of the History of Congress Conference. Washington, D.C.

“The Effect of the Partisan Press on U.S. House Elections, 1800-1820.” (with Jamie Carson). 2008. Paper presented at the Annual Meeting of the Midwest Political Science Association. Chicago.

“The Rational Southerner: The Local Logic of Partisan Transformation in the South.” (with Quentin Kidd and Irwin L. Morris). 2008. Paper presented at the Citadel Symposium on Southern Politics. Charleston, SC.

“Stranger Danger: The Influence of Redistricting on Candidate Recognition and Vote Choice.” (with Seth C. McKee). 2008. Paper presented at the Annual Meeting of the Southern Political Science Association. New Orleans.

- “Backward Mapping: Exploring Questions of Representation via Spatial Analysis of Historical Congressional Districts.” (with Michael Crespin). 2007. Paper presented at the Annual Meeting of the American Political Science Association. Chicago.
- “Worth a Thousand Words? : An Analysis of Georgia’s Voter Identification Statute.” (with Charles S. Bullock, III). 2007. Paper presented at the Annual Meeting of the Southwestern Political Science Association. Albuquerque.
- “Gerrymandering on Georgia’s Mind: The Effects of Redistricting on Vote Choice in the 2006 Midterm Election.” (with Seth C. McKee). 2007. Paper presented at the Annual Meeting of The Southern Political Science Association. New Orleans.
- “Personalismo Politics: Partisanship, Presidential Popularity and 21st Century Southern Politics.” (with Quentin Kidd and Irwin L. Morris). 2006. Paper presented at the Annual Meeting of the American Political Science Association. Philadelphia.
- “Explaining Soft Money Transfers in State Gubernatorial Elections.” (with William Gillespie and Troy Gibson). 2006. Paper presented at the Annual Meeting of the Midwest Political Science Association. Chicago.
- “Two Sides of the Same Coin?: A Panel Granger Analysis of Black Electoral Mobilization and GOP Growth in the South, 1960-2004.” (with Quentin Kidd and Irwin L. Morris). 2006. Paper presented at the Citadel Symposium on Southern Politics. Charleston, SC.
- “Hispanic Political Emergence in the Deep South, 2000-2004.” (With Charles S. Bullock, III). 2006. Paper presented at the Citadel Symposium on Southern Politics. Charleston.
- “Black Mobilization and the Growth of Southern Republicanism: Two Sides of the Same Coin?” (with Quentin Kidd and Irwin L. Morris). 2006. Paper presented at the Annual Meeting of the Southern Political Science Association. Atlanta.
- “Exploring the Linkage Between Black Turnout and Down-Ticket Challenges to Black Incumbents.” (With Troy M. Gibson). 2006. Paper presented at the Annual Meeting of the Southern Political Science Association. Atlanta.
- “Race and the Ideological Transformation of the Democratic Party: Evidence from the Bayou State.” 2004. Paper presented at the Biennial Meeting of the Citadel Southern Politics Symposium. Charleston.
- “Tracing the Evolution of Hispanic Political Emergence in the Deep South.” 2004. (Charles S. Bullock, III). Paper presented at the Biennial Meeting of the Citadel Southern Politics Symposium. Charleston.

- “Much Ado about Something? Religious Right Status in American Politics.” 2003. (With Mark C. Smith). Paper presented at the Annual Meeting of the Midwest Political Science Association. Chicago.
- “Tracking the Flow of Non-Federal Dollars in U. S. Senate Campaigns, 1992-2000.” 2003. (With Janna Deitz and William Gillespie). Paper presented at the Annual Meeting of the Midwest Political Science Association. Chicago.
- “PAC Cash and Votes: Can Money Rent a Vote?” 2002. (With William Gillespie). Paper presented at the Annual Meeting of the Southern Political Science Association. Savannah.
- “What Can Gubernatorial Elections Teach Us About American Politics?: Exploiting and Underutilized Resource.” 2002. (With Quentin Kidd and Irwin L. Morris). Paper presented at the Annual Meeting of the American Political Science Association. Boston.
- “I Know I Voted, But I’m Not Sure It Got Counted.” 2002. (With Charles S. Bullock, III and Richard Clark). Paper presented at the Annual Meeting of the Southwestern Social Science Association. New Orleans.
- “Race and Southern Gubernatorial Elections: A 50-Year Assessment.” 2002. (With Quentin Kidd and Irwin Morris). Paper presented at the Biennial Southern Politics Symposium. Charleston, SC.
- “Top-Down or Bottom-Up?: An Integrated Explanation of Two-Party Development in the South, 1960-2000.” 2001. Paper presented at the Annual Meeting of the Southern Political Science Association. Atlanta.
- “Cash, Congress, and Trade: Did Campaign Contributions Influence Congressional Support for Most Favored Nation Status in China?” 2001. (With William Gillespie). Paper presented at the Annual Meeting of the Southwestern Social Science Association. Fort Worth.
- “Key 50 Years Later: Understanding the Racial Dynamics of 21st Century Southern Politics” 2001. (With Quentin Kidd and Irwin Morris). Paper presented at the Annual Meeting of the Southern Political Science Association. Atlanta.
- “The VRA and Beyond: The Political Mobilization of African Americans in the Modern South.” 2001. (With Quentin Kidd and Irwin Morris). Paper presented at the Annual Meeting of the American Political Science Association. San Francisco.
- “Payola Justice or Just Plain ‘Ole Politics Texas Style?: Campaign Finance and the Texas Supreme Court.” 2001. (With Craig Emmert). Paper presented at the Annual Meeting of the Midwest Political Science Association. Chicago.
- “The VRA and Beyond: The Political Mobilization of African Americans in the Modern South.” 2000. (With Irwin Morris and Quentin Kidd). Paper presented at the Annual Meeting of the Southern Political Science Association. Atlanta.

- “Where Have All the Republicans Gone? A State-Level Study of Southern Republicanism.” 1999. (With Irwin Morris and Quentin Kidd). Paper presented at the Annual Meeting of the Southern Political Science Association. Savannah.
- “Elephants in Dixie: A State-Level Analysis of the Rise of the Republican Party in the Modern South.” 1999. (With Irwin Morris and Quentin Kidd). Paper presented at the Annual Meeting of the American Political Science Association. Atlanta.
- “Stimulant to Turnout or Merely a Convenience?: Developing an Early Voter Profile.” 1998. (With Quentin Kidd and Grant Neeley). Paper presented at the Annual Meeting of the Southern Political Science Association. Atlanta.
- “The Impact of the Texas Concealed Weapons Law on Crime Rates: A Policy Analysis for the City of Dallas, 1992-1997.” 1998. (With Grant W. Neeley). Paper presented to the Annual Meeting of the Midwest Political Science Association. Chicago.
- “Analyzing Anglo Voting on Proposition 187: Does Racial/Ethnic Context Really Matter?” 1997. (With Irwin Morris). Paper presented to the Annual Meeting of the Southern Political Science Association. Norfolk.
- “Capturing Bubba's Heart and Mind: Group Consciousness and the Political Identification of Southern White Males, 1972-1994.” 1997. Paper presented at the Annual Meeting of the Midwest Political Science Association. Chicago.
- “Of Byrds[s] and Bumpers: A Pooled Cross-Sectional Study of the Roll-Call Voting Behavior of Democratic Senators from the South, 1960-1995.” 1996. (With Quentin Kidd and Irwin Morris). Paper presented to the Annual Meeting of the Southern Political Science Association. Atlanta.
- “Pest Control: Southern Politics and the Eradication of the Boll Weevil.” 1996. (With Irwin Morris). Paper presented to the Annual Meeting of the American Political Science Association. San Francisco.
- “Fit for the Greater Functions of Politics: Gender, Participation, and Political Knowledge.” 1996. (With Terry Gilmour, Kurt Shirkey, and Sue Tolleson-Rinehart). Paper presented to the Annual Meeting of the Midwest Political Science Association. Chicago.
- “¿Amigo o Enemigo?: Racial Context, Attitudes, and White Public Opinion on Immigration.” 1996. (With Irwin Morris). Paper presented to the Annual Meeting of the Midwest Political Science Association. Chicago.
- “¿Quedate o Vente!: Uncovering the Determinants of Hispanic Public Opinion Towards Immigration.” 1996. (With Irwin Morris and Kurt Shirkey). Paper presented to the Annual Meeting of the Southwestern Political Science Association. Houston.

“Downs Meets the Boll Weevil: When Southern Democrats Turn Left.” 1995. (With Irwin Morris). Paper presented to the Annual Meeting of the Southern Political Science Association. Tampa.

“¿Amigo o Enemigo?: Ideological Dispositions of Whites Residing in Heavily Hispanic Areas.” 1995. (With Irwin Morris). Paper presented to the Annual Meeting of the Southern Political Science Association. Tampa.

Chair. Panel titled “Congress and Interest Groups in Institutional Settings.” 1995. Annual Meeting of the Southwestern Political Science Association. Dallas.

“Death of the Boll Weevil?: The Decline of Conservative Democrats in the House.” 1995. (With Kurt Shirkey). Paper presented to the Annual Meeting of the Southwestern Political Science Association. Dallas.

“Capturing Bubba’s Heart and Mind: The Political Identification of Southern White Males.” 1994. (With Sue Tolleson-Rinehart). Paper presented to the Annual Meeting of the Southern Political Science Association. Atlanta.

Areas of Teaching Competence:

American Politics: Behavior and Institutions

Public Policy

Scope, Methods, Techniques

Teaching Experience:

University of Georgia, 1999-present.

Graduate Faculty, 2003-present.

Provisional Graduate Faculty, 2000-2003.

Distance Education Faculty, 2000-present.

Texas Tech University, 1993-1999.

Visiting Faculty, 1997-1999.

Graduate Faculty, 1998-1999.

Extended Studies Faculty, 1997-1999.

Teaching Assistant, 1993-1997.

Courses Taught:

Undergraduate:

American Government and Politics, American Government and Politics (Honors), Legislative Process, Introduction to Political Analysis, American Public Policy, Political Psychology, Advanced Simulations in American Politics (Honors), Southern Politics, Southern Politics (Honors), Survey Research Internship

Graduate:

Election Administration and Related Issues (Election Sciences), Political Parties and Interest

Groups, Legislative Process, Seminar in American Politics, Southern Politics; Publishing for Political Science

Editorial Boards:

Social Science Quarterly. Member. 2011-present.

Election Law Journal. Member. 2013-present.

Professional Service:

Listed expert. MIT Election Data and Science Lab.

Keynote Address. 2020 Symposium on Southern Politics. The Citadel. Charleston, SC.

Institutional Service (University-Level):

University Promotion and Tenure Committee, 2019-2022.

University Program Review Committee, 2009-2011.

Chair, 2010-2011

Vice-Chair, 2009-2010.

Graduate Council, 2005-2008.

Program Committee, 2005-2008.

Chair, Program Committee, 2007-2008.

University Libraries Committee, 2004-2014.

Search Committee for University Librarian and Associate Provost, 2014.