

MISSOURI

LEAST CHANGE REDISTRICTING PLAN PROPOSAL

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Introduction

Criteria and Priorities of Plan:

This least change plan for Missouri is based on 2 primary criteria. First, the plan aims to comply with all federal and state laws, including the Missouri constitution's guidelines for the state legislature when drawing congressional district boundaries. In regard to federal laws, this plan complies with the Voting Rights Act (VRA) and the one person, one vote requirement by achieving perfect population equality. In regard to state laws, in 2020, Missouri voters passed ballot measure Amendment 3, which reordered the priorities to be considered in redistricting and returned the power of redistricting to the state legislature and bipartisan redistricting commissions from the state demographer. Those priorities are listed below in order:

- a. Districts shall be as nearly equal as practicable in population, and shall be drawn on the basis of one person, one vote. Nearly as equal as practicable is defined as no more than a 1% deviation from the ideal population of the district calculated from dividing the number of districts by the statewide population. A deviation of up to 3% is allowed if necessary to follow political subdivision lines consistent with priority d.
- b. Districts shall be established in a manner so as to comply with all requirements of the United States Constitution and applicable federal laws, including, but not limited to, the Voting Rights Act of 1965 (as amended).
- c. Districts shall be composed of contiguous territory as compact as may be. Areas which meet only at the points of adjoining corners are not contiguous. In general, compact districts are those which are square, rectangular, or hexagonal in shape to the extent permitted by natural or political boundaries.
- d. Communities shall be preserved. Districts shall satisfy this requirement if district lines follow political subdivision lines to the extent possible, using the following criteria, in order of priority. First, each county shall wholly contain as many districts as its population allows. Second, if a county wholly contains one or more districts, the remaining population shall be wholly joined in a single district made up of population from outside the county. If a county does not wholly contain a district, then no more than two segments of a county shall be combined with an adjoining county. Third, split counties and county segments, defined as any part of the county that is in a district not wholly within that county, shall each be as few as possible. Fourth, as few municipal lines shall be crossed as possible.
- e. Districts shall be drawn in a manner that achieves both partisan fairness and, secondarily, competitiveness. "Partisan fairness" means that parties shall be able to translate their popular support into legislative representation with approximately equal efficiency. "Competitiveness" means that parties' legislative representation shall be substantially and similarly responsive to shifts in the electorate's preferences. Using an electoral performance index calculated by taking the total votes received by each party in the three preceding general elections for governor, for United

States Senate, and for President of the United States and divided by the total votes cast for both parties in these elections, the difference between the two parties' total number of wasted votes cast for a losing candidate or for a winning candidate in excess of the threshold needed for victory shall not exceed fifteen percent. Similarly, in simulated elections where the hypothetical statewide vote shifts by one percent, two percent, three percent, four percent, and five percent in favor of each party, the difference between the two parties' total wasted votes, divided by the total votes cast for the two parties, shall not exceed fifteen percent.

- i. Important note: this priority has never been implemented before and was lowered in priority by the passing of Amendment 3 in 2020

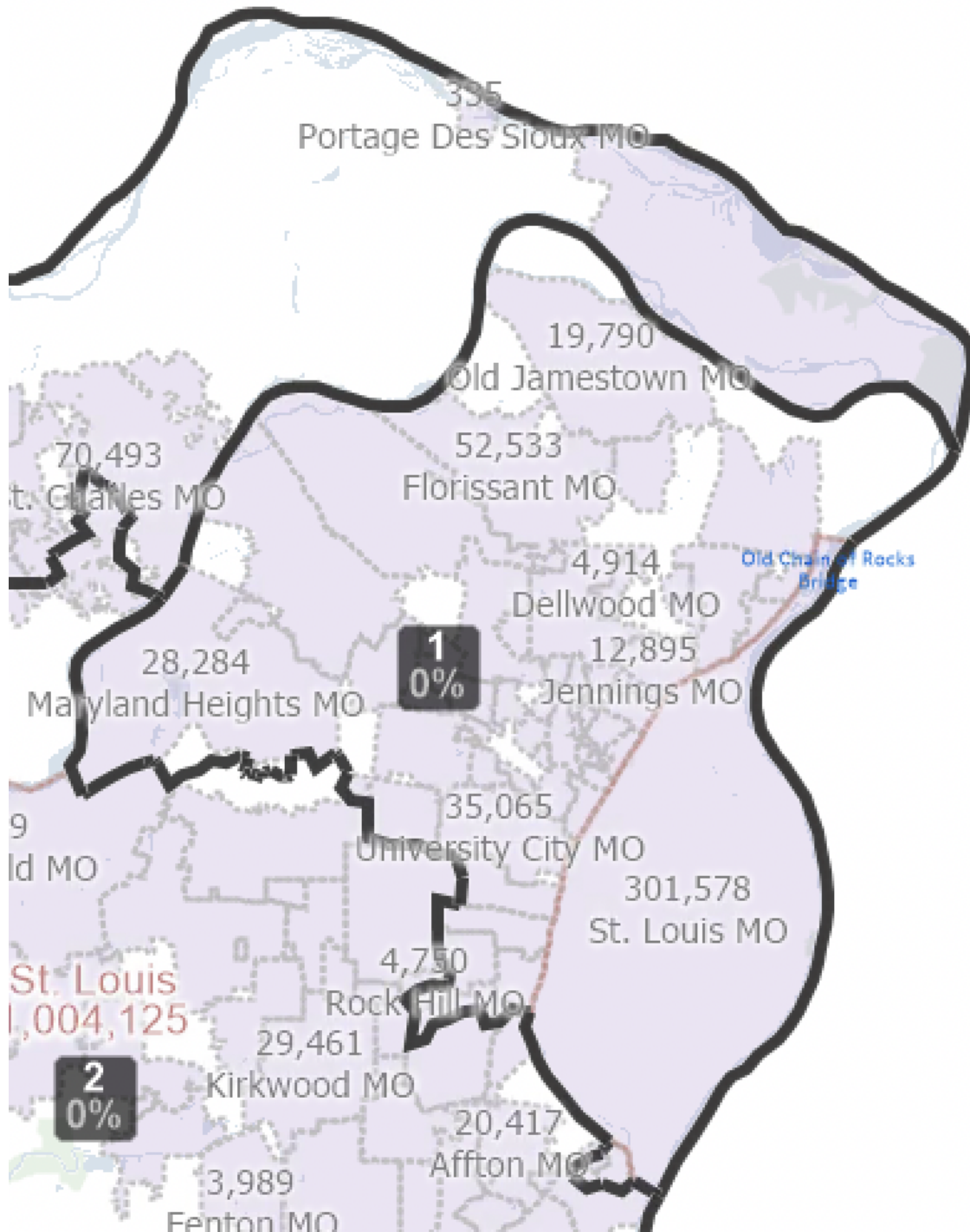
The second criteria for this plan is deviating as little as possible from the current district boundaries drawn in 2010. With the 2020 census reporting a population increase of 165,986 from 2010, some deviation from the boundaries is necessary in order to ensure all districts reach the ideal population value of 769,364. Since the total population of Missouri as reported by the 2020 census is an odd number, it is necessary that one district has one more person than the ideal population value.

Tensions between Criteria and Priorities:

There are some tensions between the two priorities of this plan, but since this plan attempts to deviate as little as possible from the current Missouri districts that were drawn in 2010 in compliance with federal and state laws, most tensions were easily resolved. Changes to the district boundaries were made only to ensure that all districts reach the new ideal population value as a result of overall population increase over the last decade; the districts as a whole are largely unchanged and retain their legal compliance. Counties and municipalities were split only to achieve perfect population and in continued compliance with federal and state laws. One person, one vote requirements required some municipal changes, but I will discuss these changes under the state law sections of respective districts below.

District Analysis

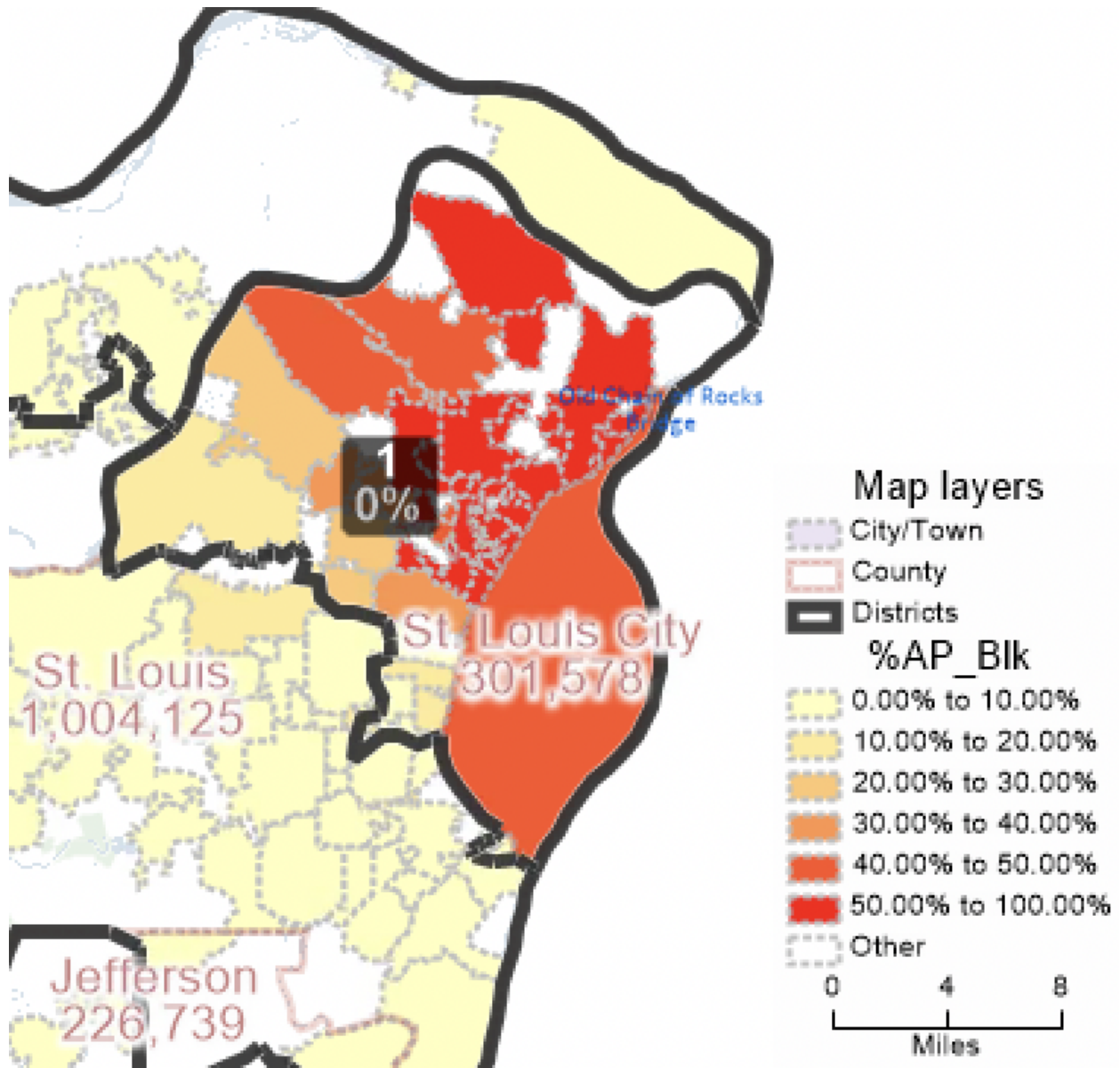
District 1



Voting Rights Act:

District 1 is Missouri's only VRA district, wholly encompassing the city of St. Louis and the core of the St. Louis Metropolitan Area and wholly within St. Louis County. District 1 is 48.8% Non-Hispanic African-American, and with the exception of Grandview, a municipality in the Kansas City metropolitan area, every municipality and voting district in Missouri that is 40% or more African-American is in District 1. Under this plan, District 1 has been preserved as a VRA district, and changes to the district boundaries were guided by VRA considerations; municipalities with significant African-American populations were targeted to be added into the district. In the northwest portion of District 1, Bridgeton, Champion, and Maryland Heights were three municipalities that were subsumed into the district from District 2. Bridgeton, which is at least 24.5% African-American, was previously divided between District 1 and 2, but now is wholly in District 1. Maryland Heights and Richmond Heights, which are 13.2% and 10.3% African-American respectively, were also in the same situation and are now wholly in District 1.

Figure 1: Black Percentage by Municipality of District 1



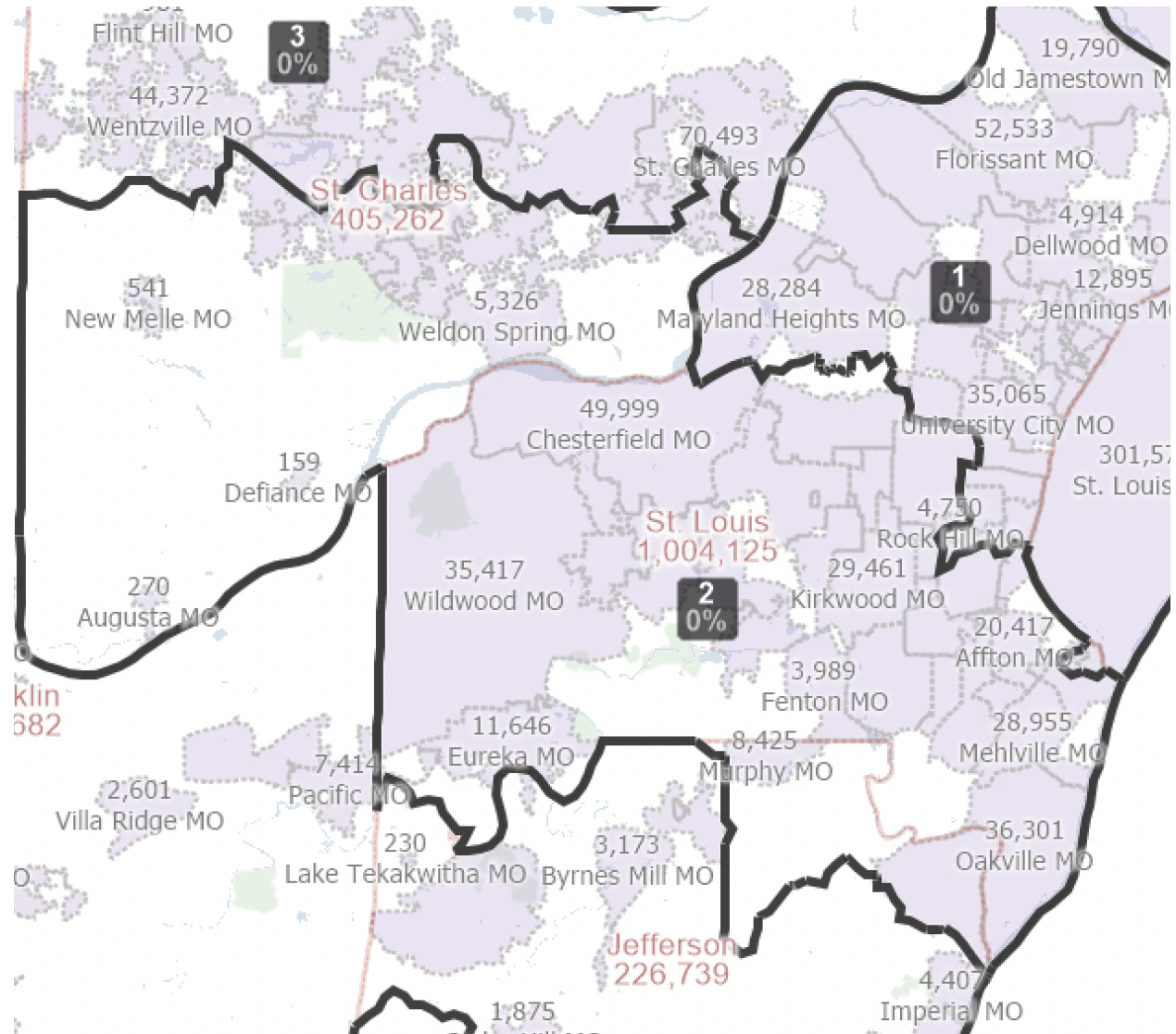
State Laws:

Minimal County and Municipal Splits:

The only changes made pertain only to the state priority of minimal county and municipal splits. District 1 remains, as before, wholly within St. Louis County, meaning there are no county splits. Former municipalities that were split between District 1 and 2 are now wholly in District 1; municipalities were chosen with consideration of their African-American population given that District 1 is Missouri’s only VRA district. Aside from municipalities mentioned in the VRA section, Clayton and Brentwood were

added to District 1 wholly to resolve former municipal splits and due to their proximity and connections to St. Louis proper—Clayton being home of Washington University in St. Louis. In order to achieve ideal population value, unincorporated areas were added to the northwestern section of District 1 to prevent further municipal splits. The only municipal split is Rock Hill, and its split from the former map has been untouched.

District 2:

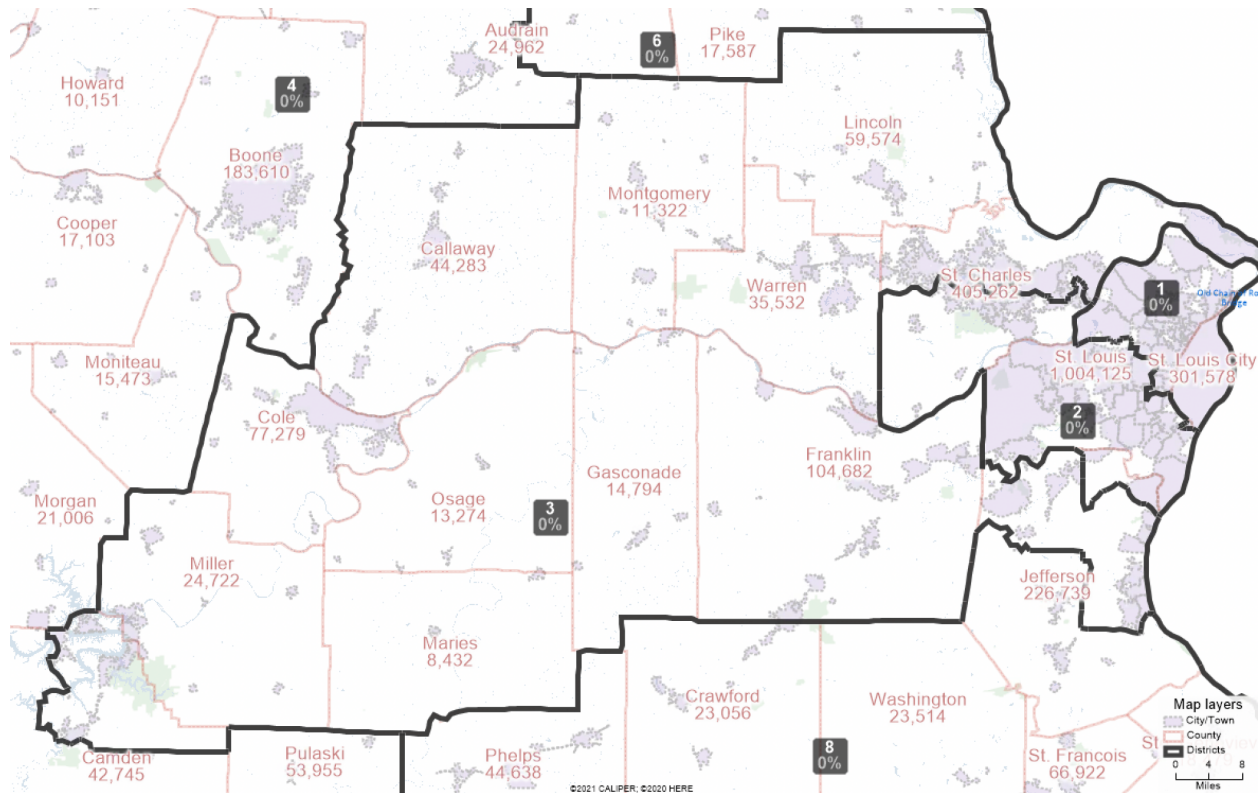


State Law:

Minimal County and Municipal Splits:

Aside from areas lost to District 1, the only changes made pertain only to the state priority of minimal county and municipal splits. Under the previous plan, St. Charles County and Jefferson County were split by District 2; this plan split no further counties than these two. In Jefferson County, only unincorporated areas were added to achieve ideal population value and no municipal splits occurred. In St. Charles County, Defiance, New Melle, Dardenne Plain and Augusta were wholly subsumed with no municipal splits; these cities were chosen since there were no clean unincorporated areas adjacent to the district borders and they are populated parts of the contiguous St. Louis urban agglomeration most cleanly adjacent to the previous district borders. However, due to the need to reach ideal population value and the fact that municipal splits had already occurred in the contiguous municipalities in northern St. Charles County under the previous plan, Lake St. Louis, O’Fallon, and small portions of Wentzville were split as municipalities. While the former two had been split before under the old plan, Wentzville was a new split and was chosen since it is next to Lake St. Louis.

District 3

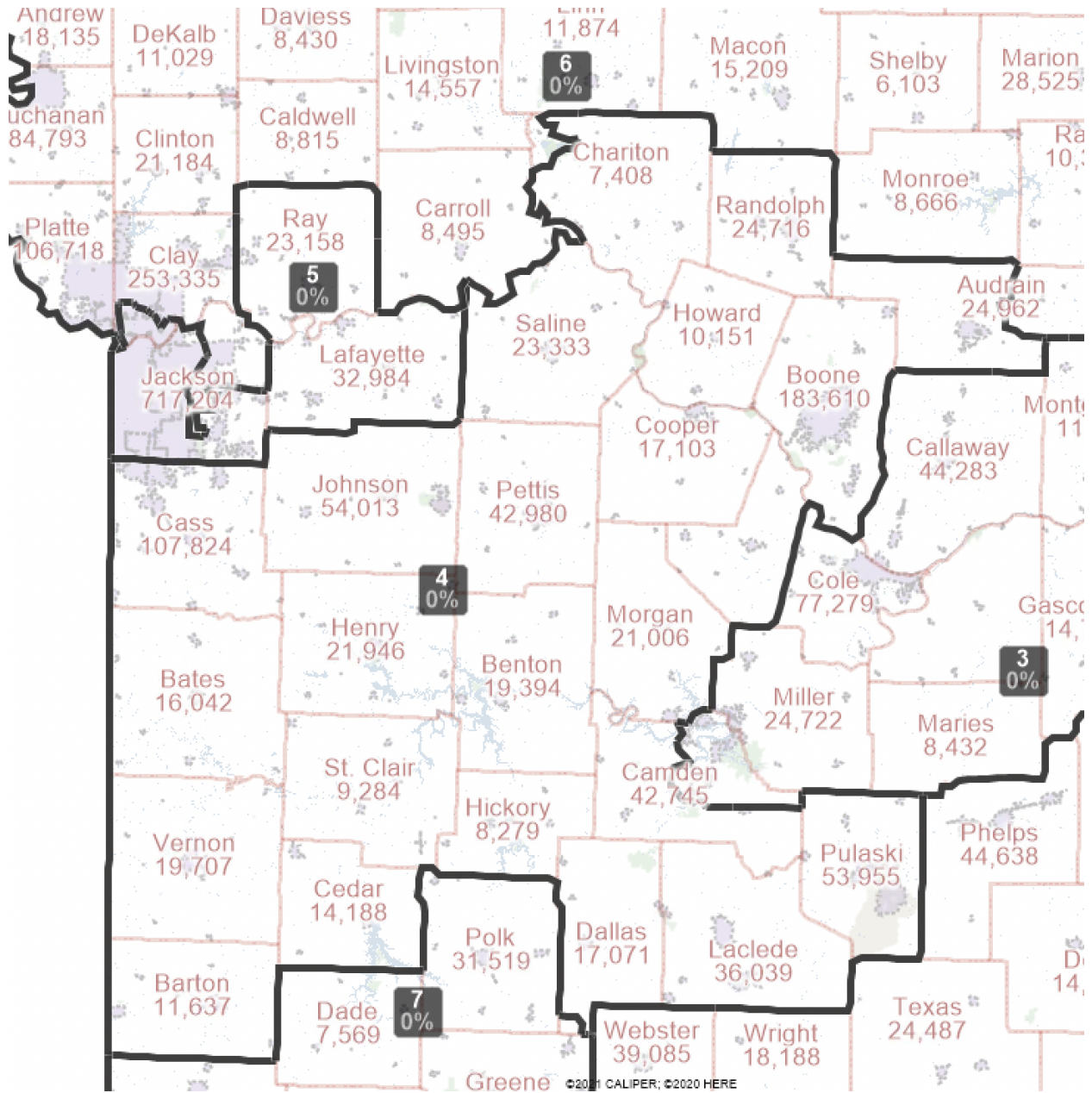


State Law:

Minimal County and Municipal Splits:

Aside from areas lost to District 2, the only changes made pertain only to the state priority of minimal county and municipal splits. Under the previous plan, Jefferson County was split by District 2 and 3, with 3 being wholly in Jefferson County; this plan split no further counties than Jefferson County. Under the previous plan, Festus and Crystal City were municipalities that were split between District 3 and 8, separated from two contiguous municipalities to their north. In order to achieve the ideal population value, District 3 subsumed these two cities such that Festus and Crystal City are now entirely within District 3, and now the entirety of 4 contiguous municipalities bordering the Mississippi River in Jefferson County are within one district.

District 4:



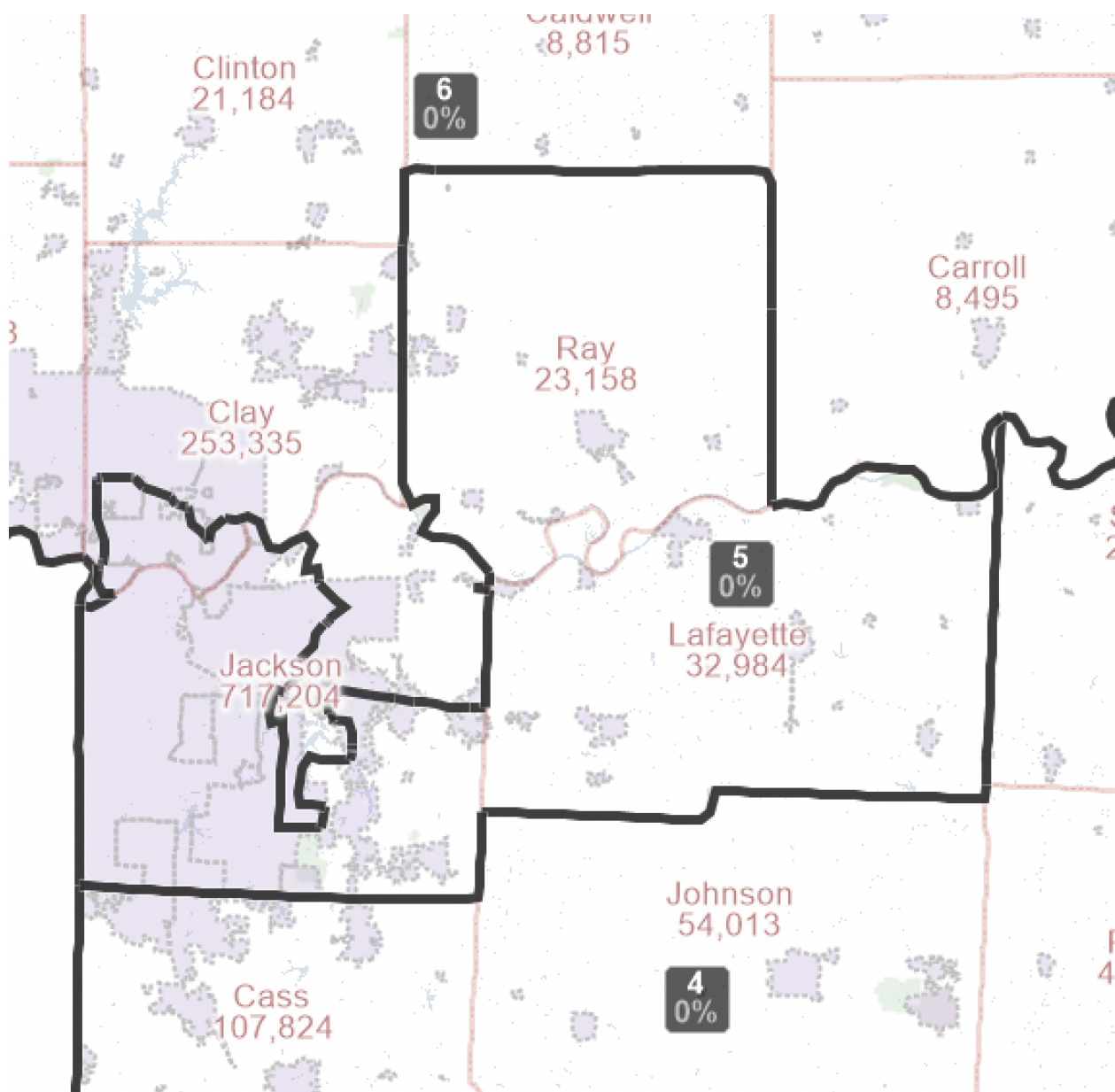
State Law:

Minimal County and Municipal Splits:

District 4 saw county line changes in absorbing Saline County from District 5, Chariton County from District 6, and losing Webster County to District 8 and Dade County and parts of Dallas County to District 7. Saline County was wholly absorbed with no county splits and was chosen due to it being south of the Missouri River and distant from the Kansas City conurbation like its neighboring District 4

counties while Chariton County was mostly absorbed with unincorporated areas and the municipality of Sumner being left to District 6 but otherwise no municipal splits. Chariton County was chosen since it is east of the Missouri River and distant from the Kansas City conurbation like the eastern counties of District 5 are and is split between the 2 districts of District 6 and 7, complying with state law. Dade and Webster County were wholly lost with no county splits, while a tiny part of unincorporated southwestern Dallas County was lost with no municipal splits. Dallas County is split between District 6 and 7 only as well, complying with state law. These counties were chosen to be lost and/or split since they were on the border with other districts and were proximate to significant conurbations in respective neighboring districts.

District 5:

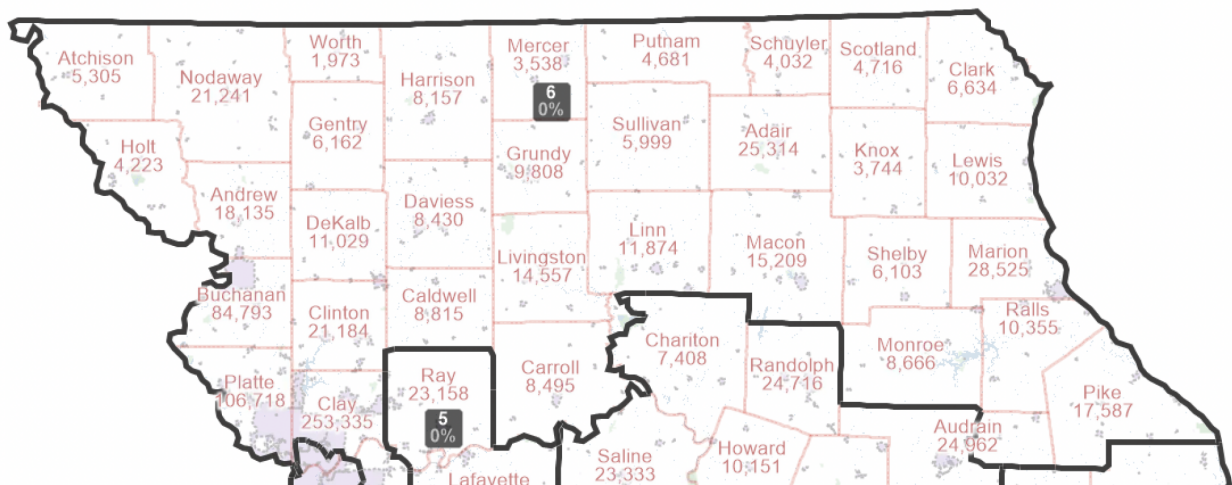


State Law:

Minimal County and Municipal Splits:

Aside from areas lost to District 4, the only changes made pertain only to the state priority of minimal county and municipal splits. District 5 previously encompassed the four counties of Ray, Lafayette, Saline, and Jackson, with Jackson being split with one other district in compliance with state law; with the exception of Saline being absorbed wholly by District 4, District 5 holds all three remaining districts and only Jackson County is still split. The previous plan split the municipalities of Blue Springs, Lee's Summit, Independence, and Lake Lotswana; with least changes, these remain the only municipalities that are split. More portions of Blue Springs, Lee's Summit, and Lake Lotswana were absorbed to reach the ideal population value, and no further municipal splits occurred besides these that expanded on previously existing splits.

District 6:

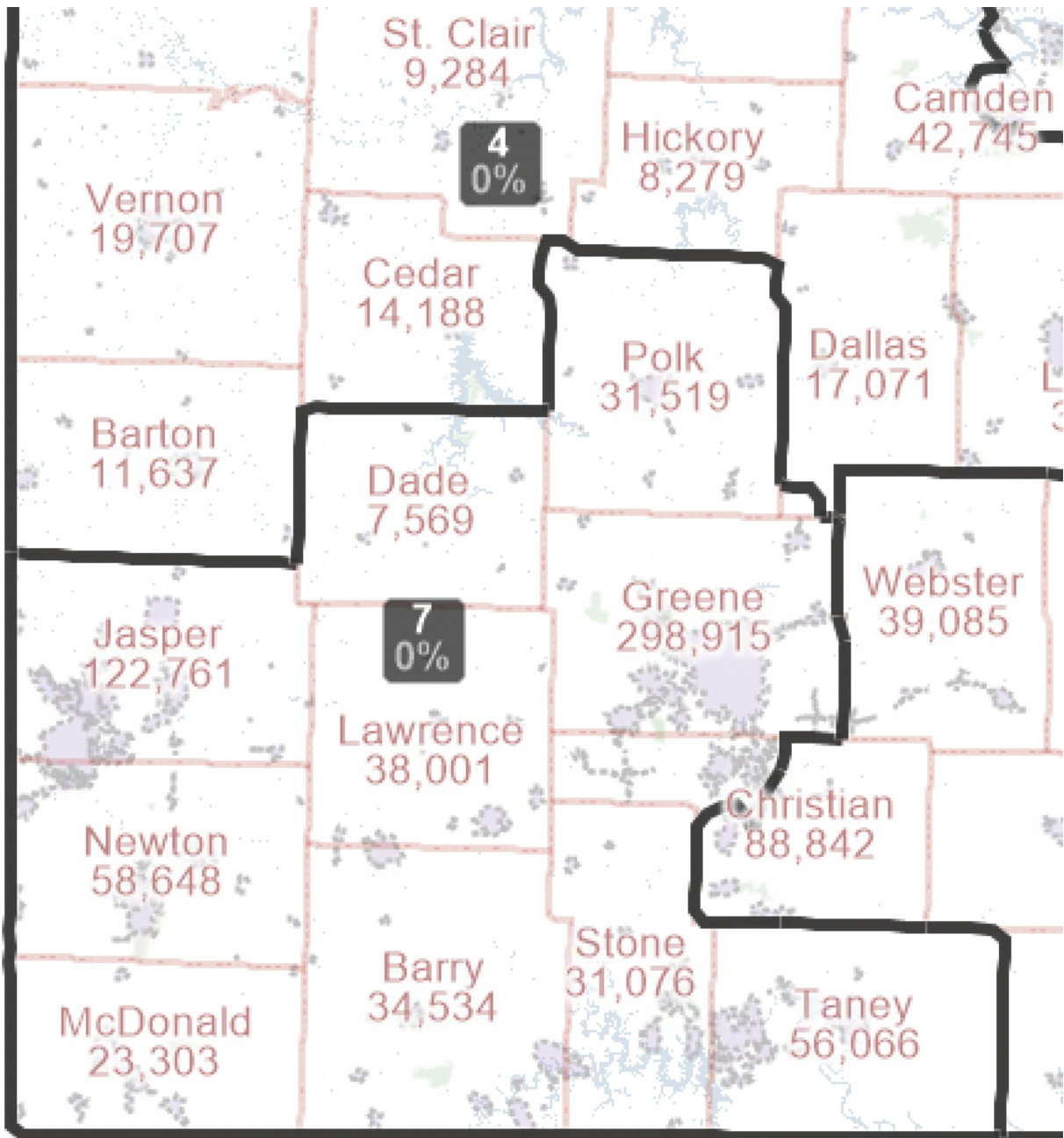


State Law:

Minimal County and Municipal Splits:

Aside from areas lost to District 4 and 5, including the previously mentioned split of Chariton County, no other changes were made to the existing plan.

District 7:

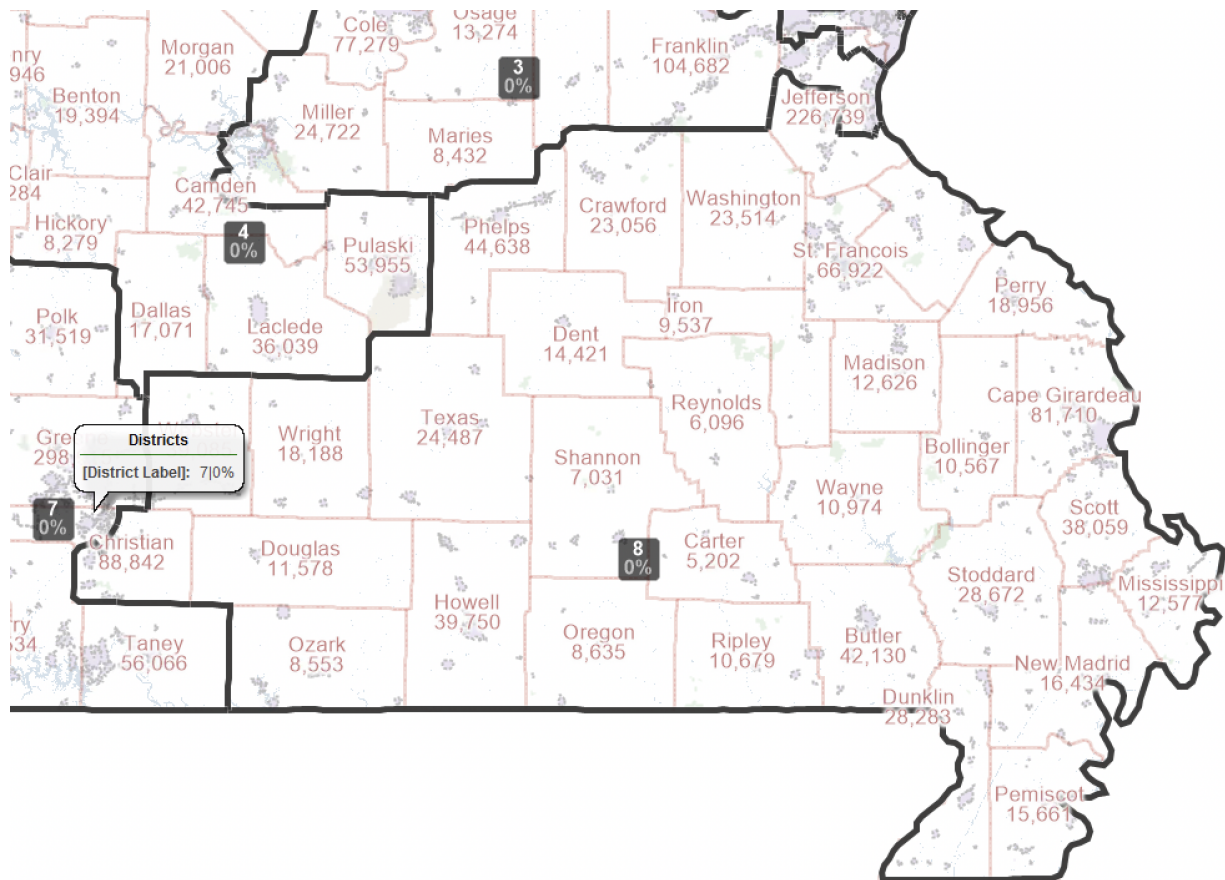


State Law:

Minimal County and Municipal Splits:

Aside from the aforementioned Dade County being lost to District 4, the only changes made pertain only to the state priority of minimal county and municipal splits. These include gaining a small portion of unincorporated southwestern Dallas County from District 4 and losing parts of Webster and Christian County to District 8. Formerly, Webster County was split between District 7 and 8 as allowed by state law, but District 7 lost all of its share of Webster County in order to avoid further county splits, leading to the whole of Webster County being a part of District 8. Rogersville is a municipal split resulting from this, but the city itself is split on the county line. District 7 previously included the entirety of Christian County, but now has split the county in half with District 8 and the city of Ozark is slightly split on its southeastern corner. These splits were necessary in order to affect the southern portions of the Springfield metro area as minimally as possible and represent the least amount of change possible from the previous plan.

District 8:



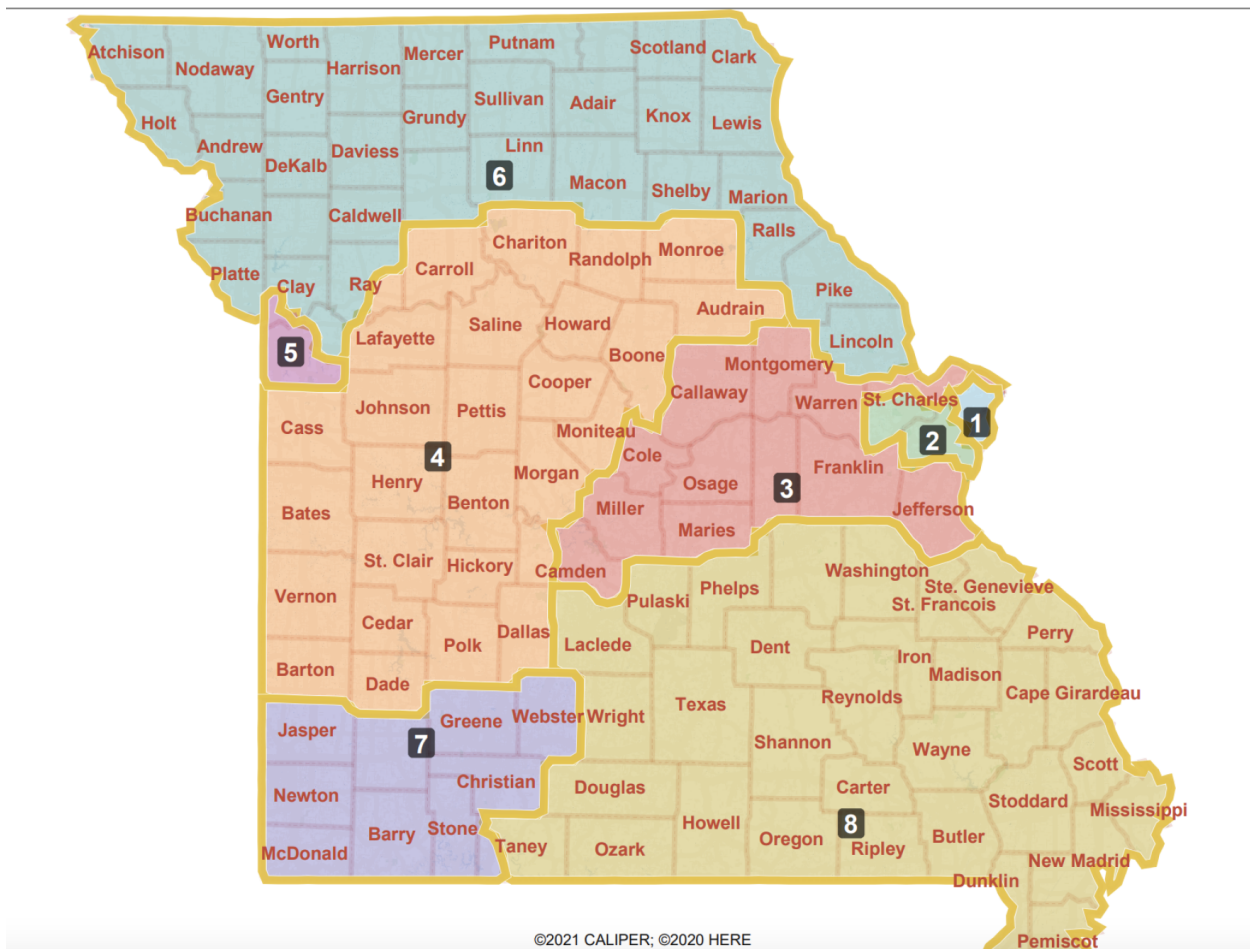
State Law:

Minimal County and Municipal Splits:

Aside from aforementioned areas lost to District 7 and 2, including the previously mentioned splits of Jefferson and Christian counties, no other changes were made to the existing plan.

Comparison to Proposed Maps

HB2117, advanced by Missouri House Redistricting Committee on 01/12/2022



On January 12, 2022, the Missouri House Redistricting Committee advanced a proposed plan by Representative Dan Shaul, shown above.

Shaul’s proposal and my map differ in what they prioritize, which then explains the differences in how our maps are drawn. Shaul’s plan is not a least change plan, and rather is intent on preserving the current partisan landscape of Missouri—two Democratic districts and six Republican districts. Notably,

District 5 has been drawn to split only Clay and Jackson counties and no longer includes the rural counties of Lafayette and Saline entirely and part of Ray County; this was done in order to keep the district, which is centered on Kansas City, reliably Democratic, but includes the far more significant change to the district's boundaries of losing three entire counties than my least change plan. Parts of St. Charles County, including Lake St. Louis and Wentzville, were added to District 2 just like in my map, and parts of St. Louis County were added to District 1, again similar to my plan; but this was done with the express purpose of preserving District 1's Democratic lead and increasing the competitiveness of District 2 for Republicans. The entirety of Jefferson County is in District 3, when under the previous plan and my plan it was split. District 3 also gained parts of southeastern Camden County, though Camden had already been split under the previous plan and in mine, and the formerly split Audrain County has been fully subsumed from District 3 by District 4. District 6 gained Lincoln County, which I included in District 3 as it had been under the previous plan, and District 7 lost Polk County which I had preserved in my plan.

Under Section 2 of the VRA, District 1 is a legally mandated majority-Black district, and under the previous plan had a 51.7% Black population. My least change plan preserved District 1 as a VRA district with a Black plurality of 48.8%. This proposed plan also preserves District 1 as a VRA district with a Black plurality of 48.9%—very close to my demographic makeup.

My plan splits 10 counties, while Shaul's plan splits 7.

Conclusion

My Least Change Plan for Missouri seeks to uphold all federal and state laws regarding redistricting and achieve the new ideal population value set by the 2020 Census for all 8 electoral districts while making as few changes as possible to the current district boundaries. With regard to the Voting Rights Act, Missouri's only VRA district in District 1 has been maintained and expansion of the district took into account racial demographics that have strengthened its minority-majority status and further unites African-American voters in St. Louis. With the principle of as few splits as possible set as a priority in the Missouri state constitution, counties and municipalities were split only when necessary to achieve ideal population value, and many boundary changes actually resolved county and municipal splits under the current plan and reunited contiguous urban areas. With few exceptions, new splits were made in counties and municipalities that had already been split, resulting in little to no net change in the number of municipalities and counties split. By necessity, District 3 had a deviation of 1 above the ideal population value as the total population of Missouri cannot not be divided evenly into 8 districts. Otherwise, all districts are perfectly balanced in population, uphold all laws, and have deviated as little as possible from the current plan.

Appendix

Figure 2: Image of Statewide Plan

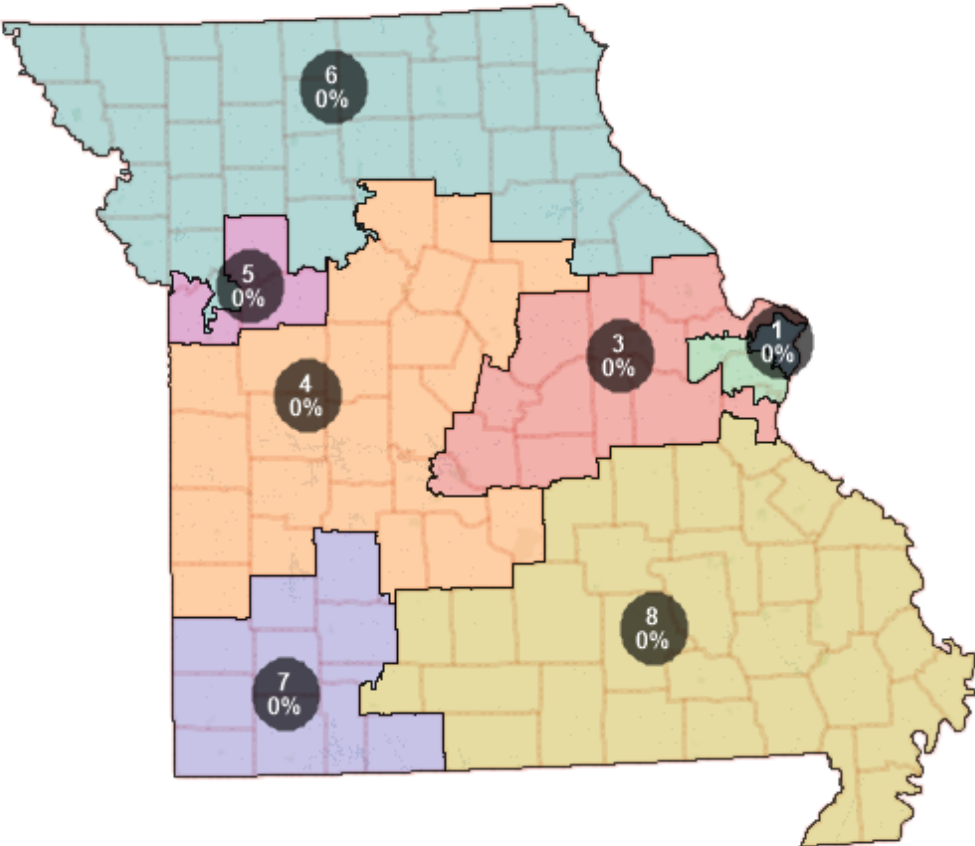


Figure 3: Statewide Comparison

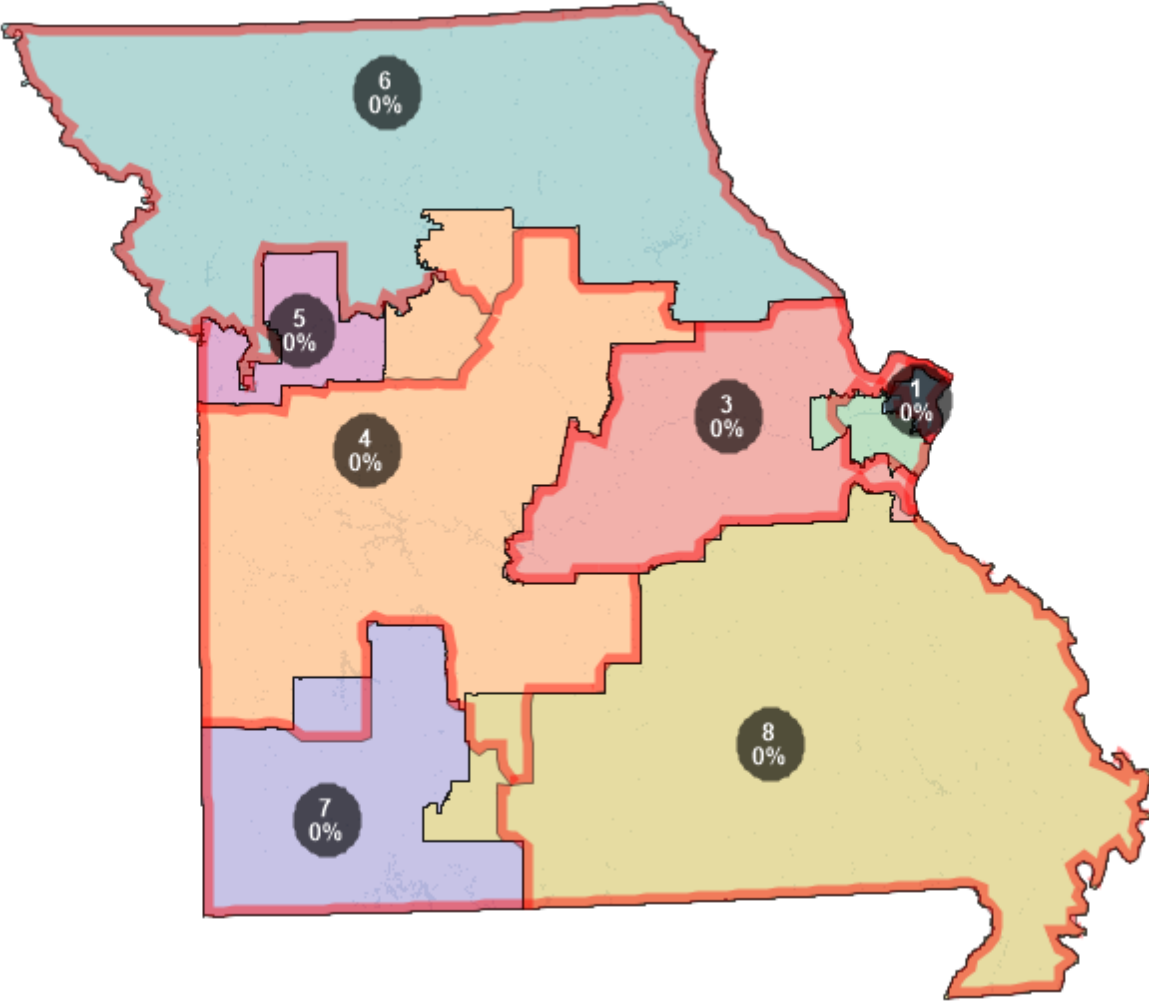


Figure 4: Kansas City Zoom In

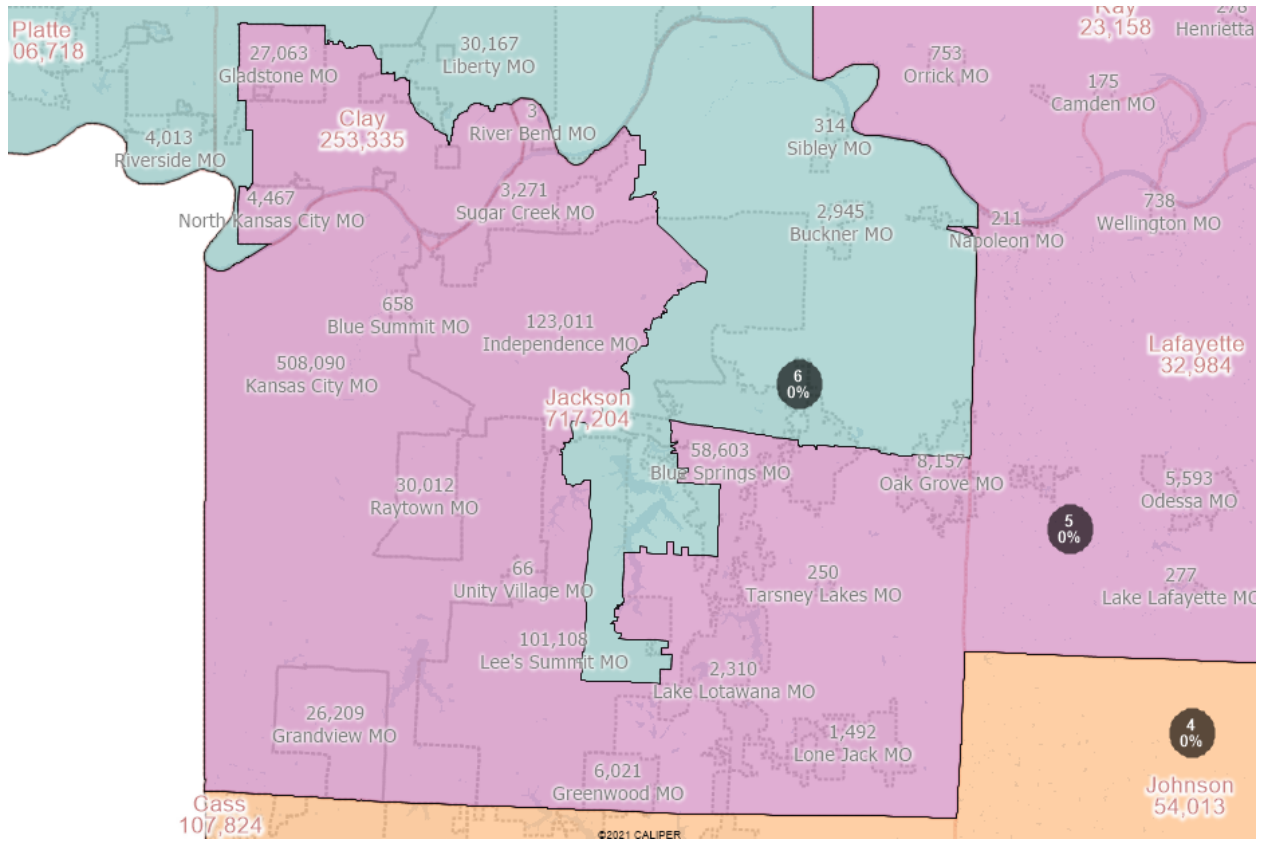


Figure 5: Kansas City Comparison

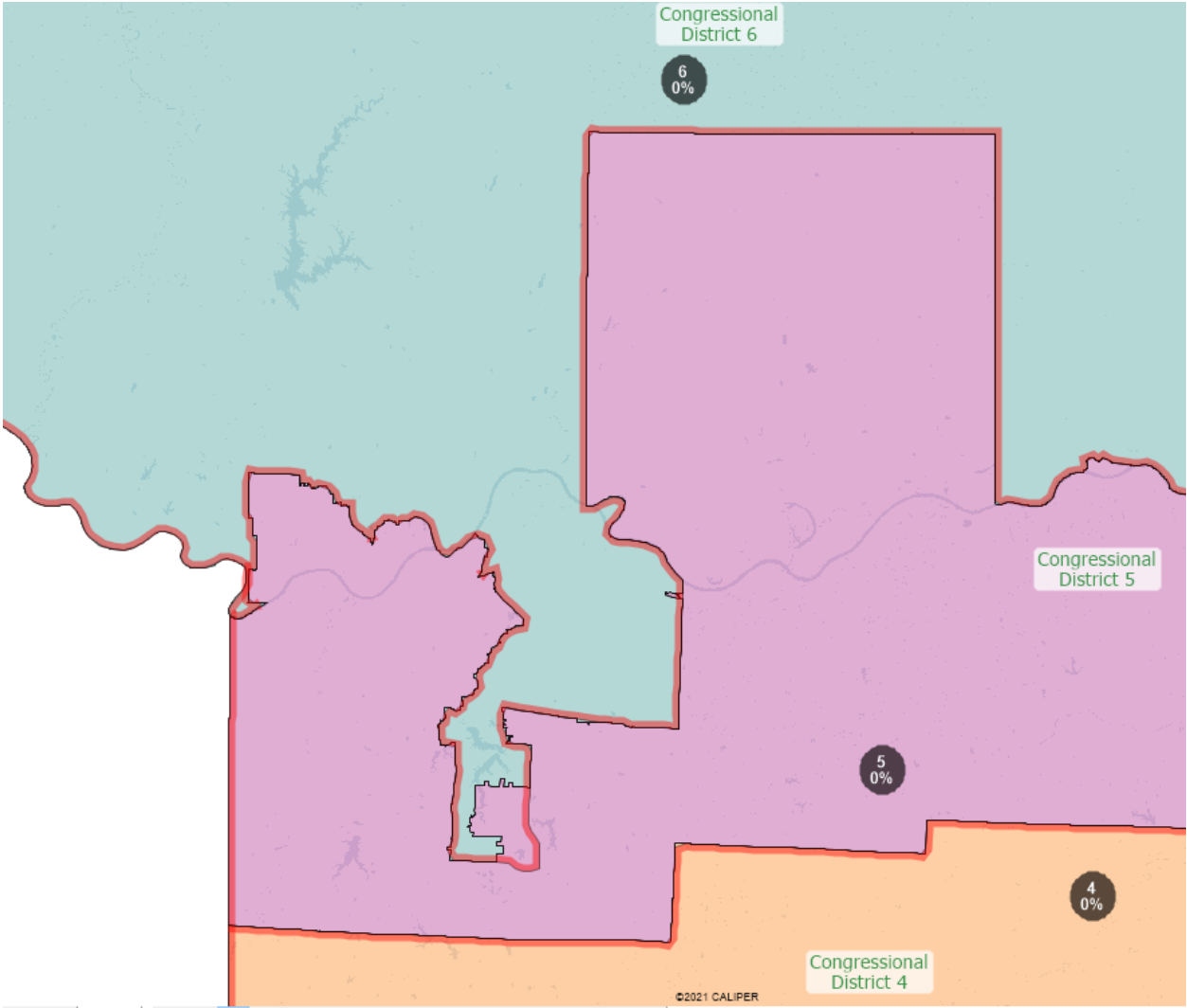


Figure 6: St. Louis Zoom In

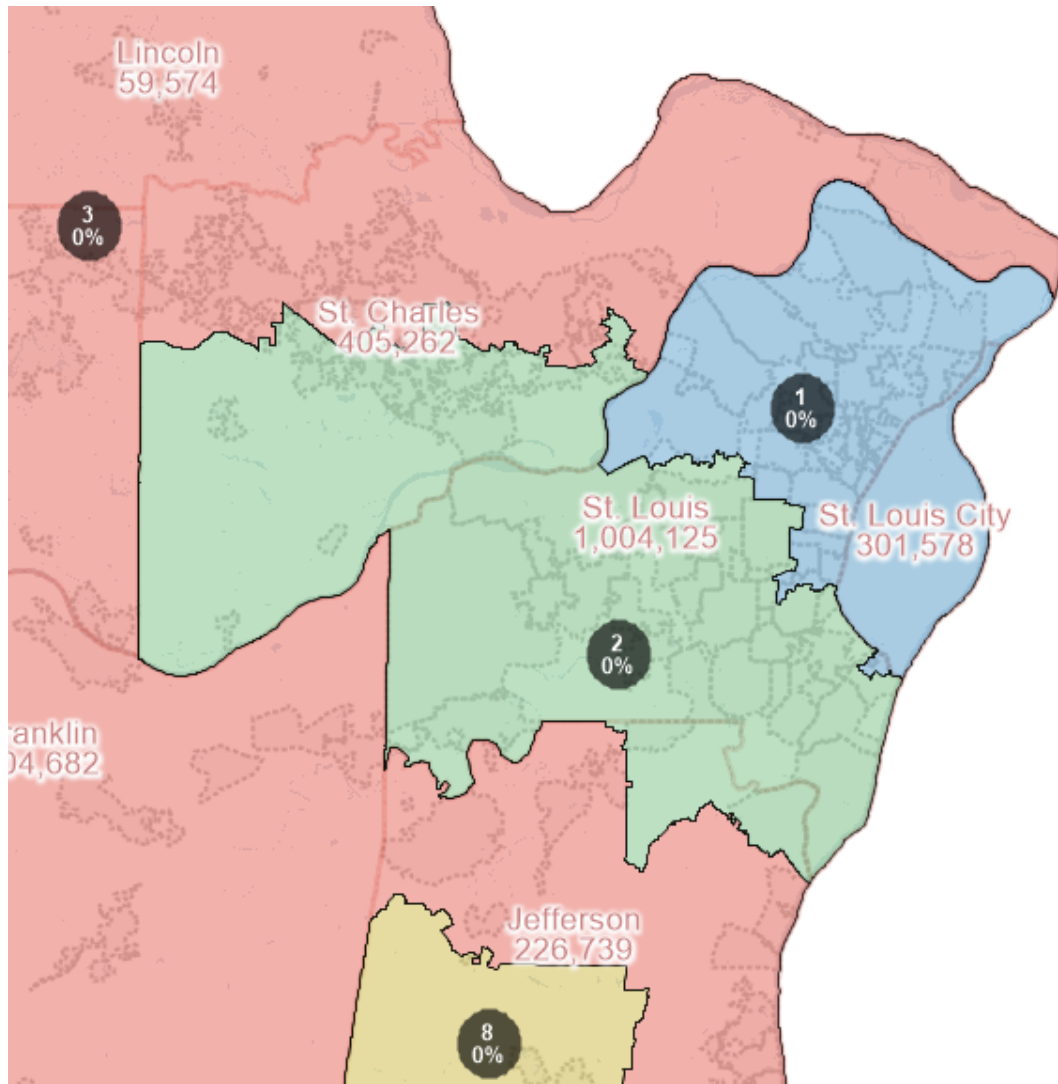


Figure 7: St. Louis Comparison

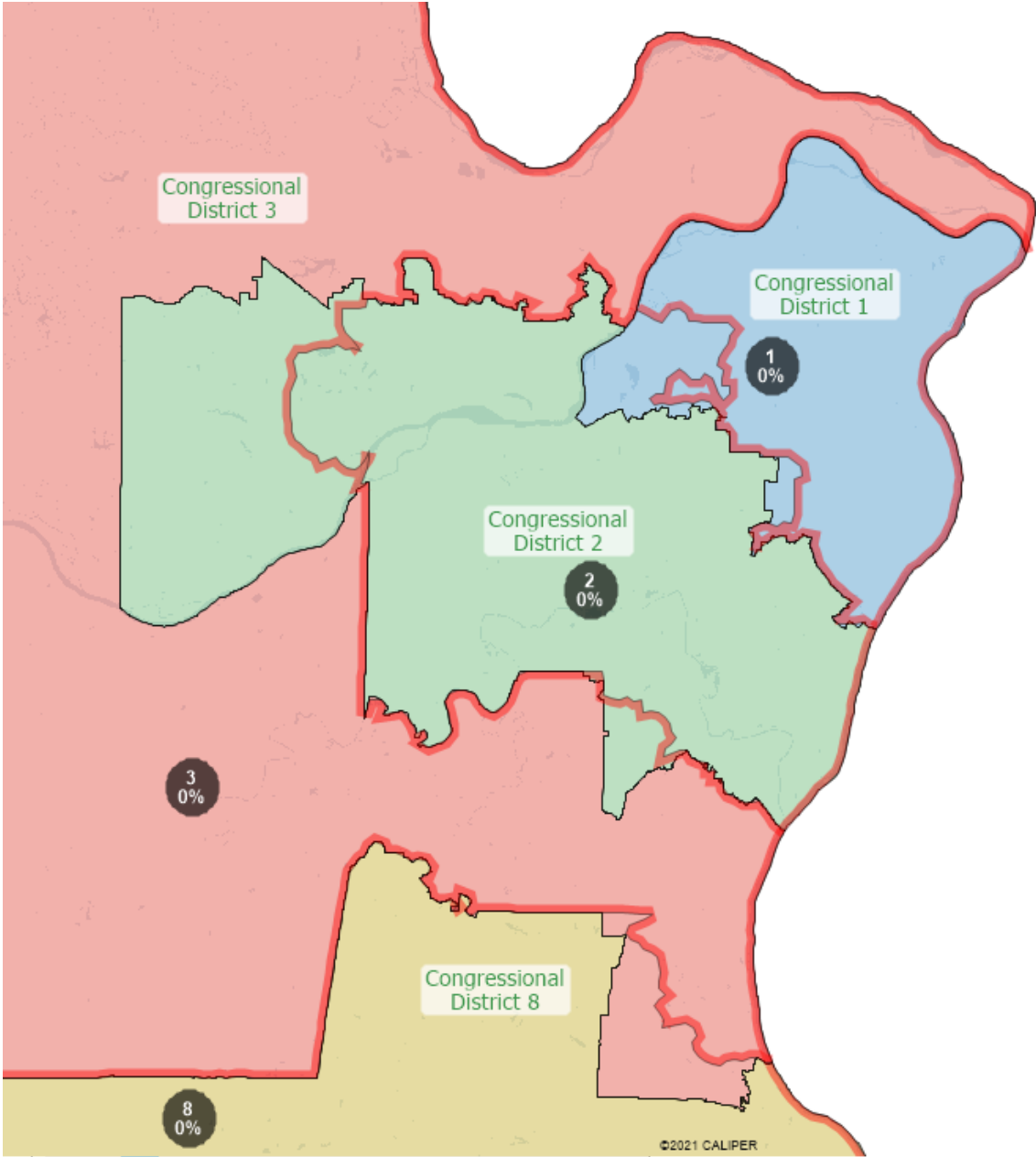


Figure 8: Statewide Partisan Map

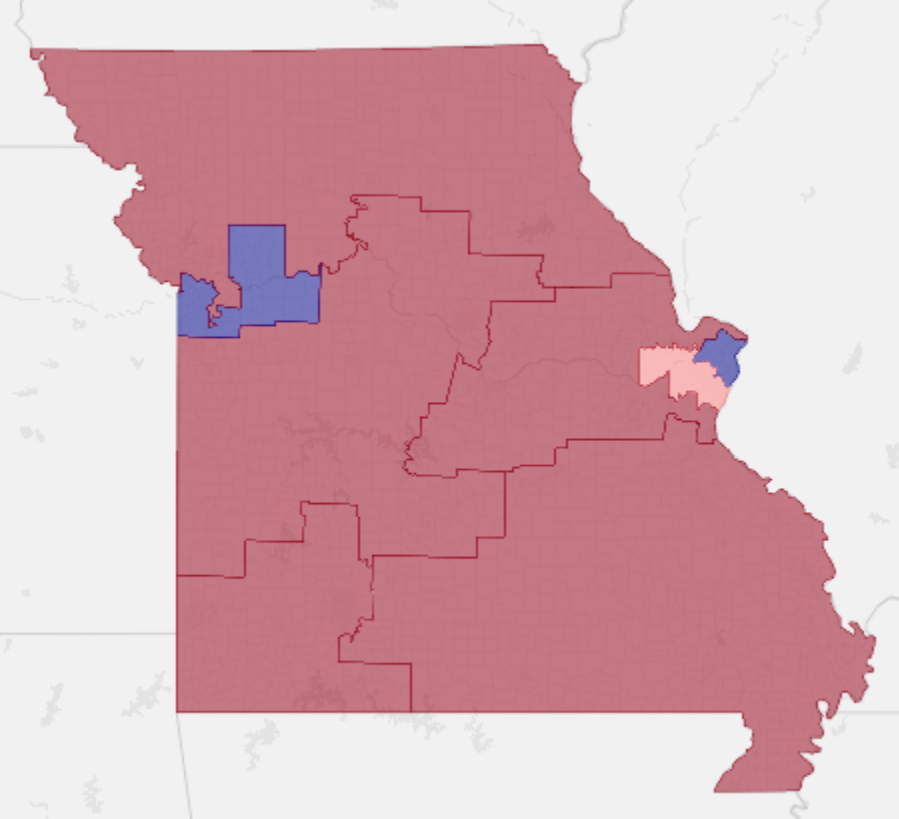
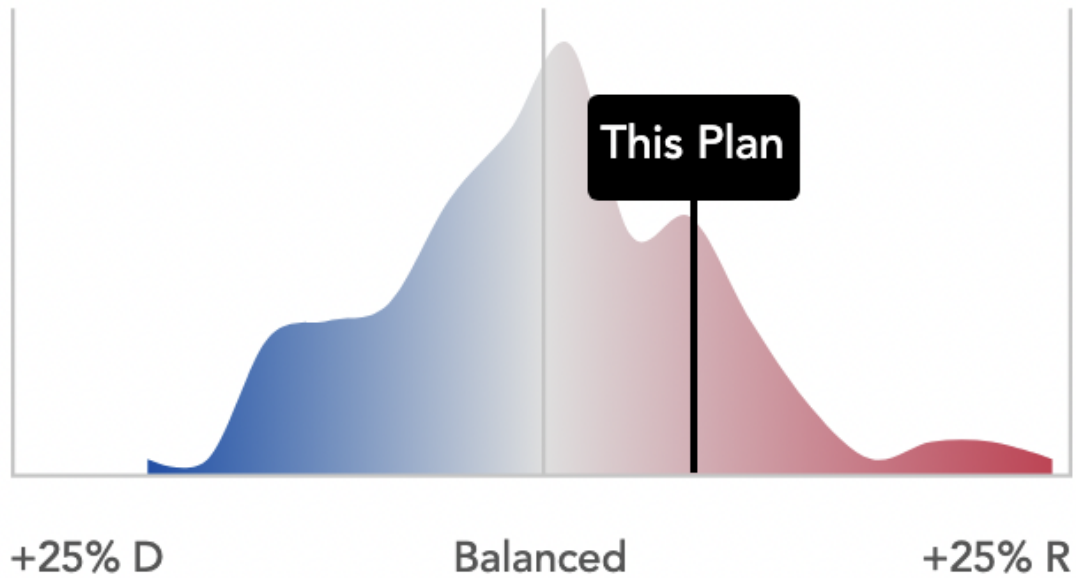


Figure 9: Compactness Measures

	Reock	Schwartzberg	Alternate Schwartzberg	Polsby-Popper	Population Polygon	Area/Convex Hull	Population Circle	Ehrenburg	Perimeter	Length-Width
Sum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4,575.55	N/A
Min	0.28	1.52	1.53	0.19	0.32	0.71	0.26	0.23	N/A	0.69
Max	0.54	2.14	2.27	0.42	0.94	0.83	0.87	0.52	N/A	150.93
Mean	0.44	1.90	2.00	0.27	0.70	0.76	0.51	0.35	N/A	39.66
Std. Dev.	0.09	0.27	0.30	0.09	0.20	0.04	0.23	0.11	N/A	52.34
District	Reock	Schwartzberg	Alternate Schwartzberg	Polsby-Popper	Population Polygon	Area/Convex Hull	Population Circle	Ehrenburg	Perimeter	Length-Width
1	0.54	1.60	1.68	0.36	0.87	0.75	0.75	0.42	97.28	1.99
2	0.42	2.13	2.26	0.20	0.75	0.76	0.46	0.24	199.53	9.41
3	0.35	2.12	2.27	0.19	0.32	0.75	0.26	0.40	665.22	61.08
4	0.44	1.96	2.07	0.23	0.60	0.71	0.27	0.30	902.81	0.69
5	0.47	2.14	2.20	0.21	0.79	0.71	0.64	0.27	322.75	12.85
6	0.28	2.06	2.22	0.20	0.55	0.73	0.32	0.23	1,043.21	150.93
7	0.53	1.52	1.53	0.42	0.94	0.83	0.87	0.45	434.49	10.48
8	0.49	1.63	1.77	0.32	0.79	0.80	0.52	0.52	910.26	69.84

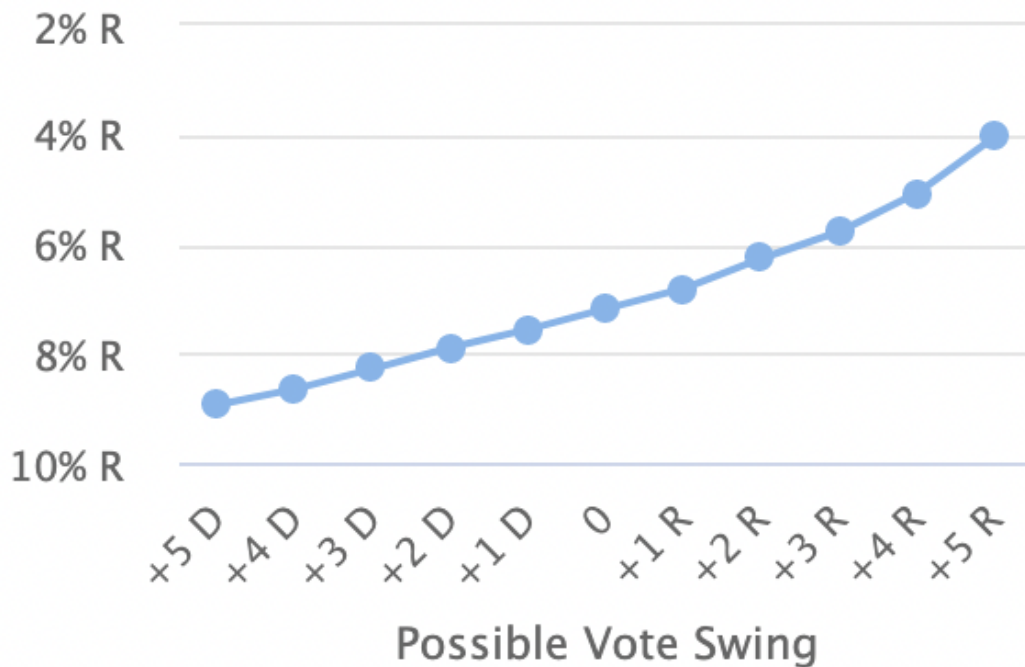
Figure 10: PlanScore Statistics

Efficiency Gap: 7.2% R



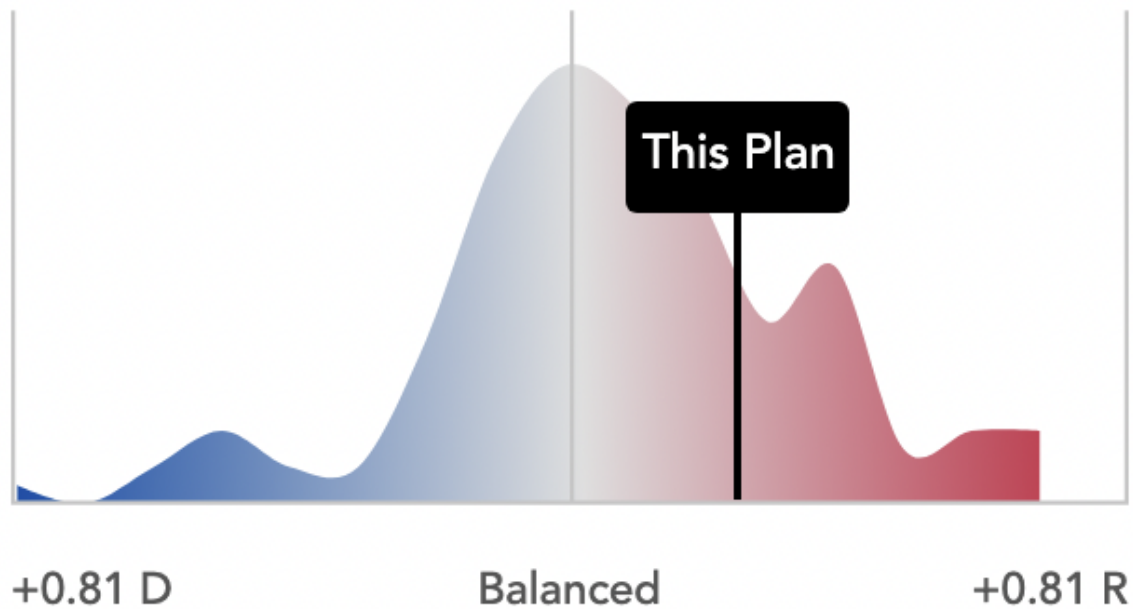
Votes for Republican candidates are expected to be inefficient at a rate 7.2% R lower than votes for Democratic candidates, favoring Republicans in 82% of predicted scenarios.*

Sensitivity Testing



Sensitivity testing shows us a plan's expected efficiency gap given a range of possible vote swings. It lets us evaluate the durability of a plan's skew.

Declination: 0.25 R



The difference between mean Democratic vote share in Democratic districts and mean Republican vote share in Republican districts along with the relative fraction of seats won by each party leads to a declination that favors Republicans in 91% of predicted scenarios.*

Partisan Bias

The parties' statewide vote shares are 43.6% (Democratic) and 56.4% (Republican) based on the model. Partisan bias is shown only where the parties' statewide vote shares fall between 45% and 55%. Outside this range the metric's assumptions are not plausible.

Mean-Median Difference

The parties' statewide vote shares are 43.6% (Democratic) and 56.4% (Republican) based on the model. The mean-median difference is shown only where the parties' statewide vote shares fall between 45% and 55%. Outside this range the metric's assumptions are not plausible.

Figure 11: Dave's Redistricting

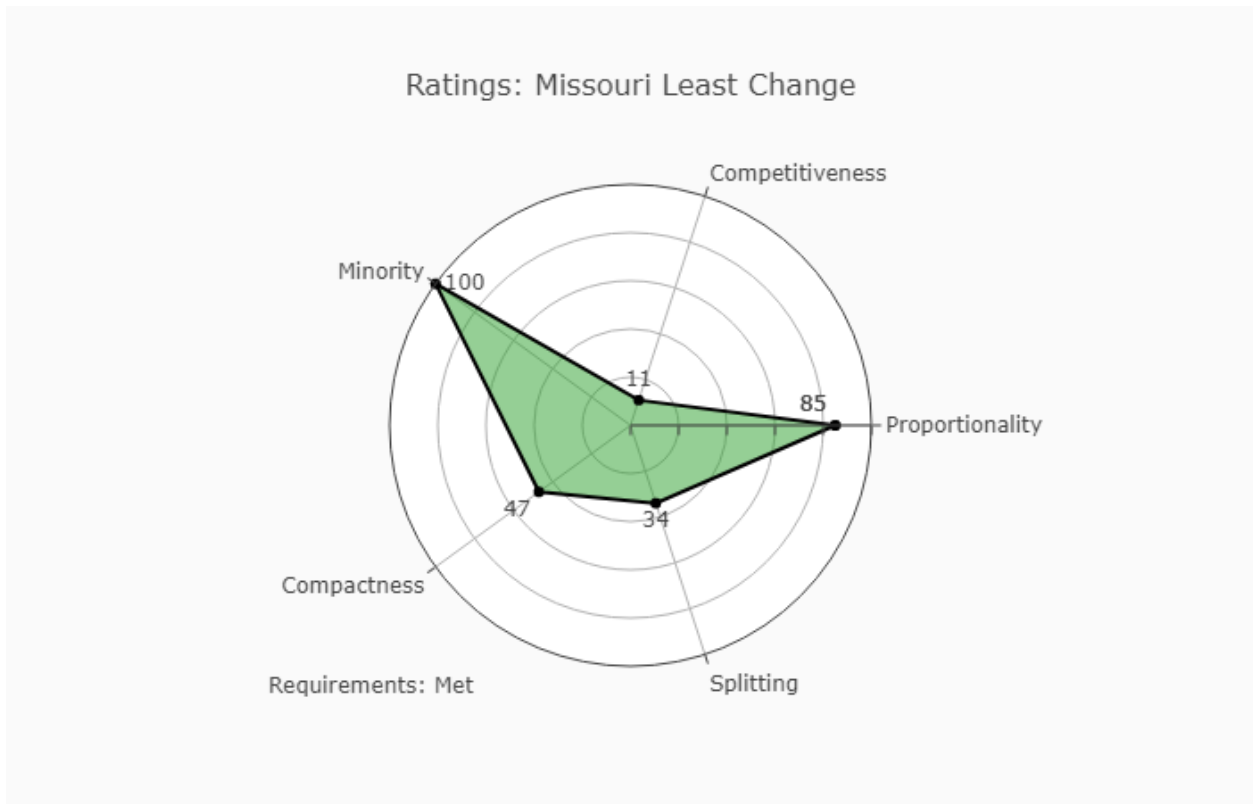


Figure 12: County Splits

County	District	Population
<i>Split Counties:</i>		
Audrain MO	4	19,108
Audrain MO	6	5,854
Camden MO	3	26,954
Camden MO	4	15,791
Chariton MO	4	7,249
Chariton MO	6	159
Christian MO	7	66,437
Christian MO	8	22,405
Clay MO	5	79,038
Clay MO	6	174,297
Dallas MO	4	16,536
Dallas MO	7	535
Jackson MO	5	634,184
Jackson MO	6	83,020
Jefferson MO	2	56,684
Jefferson MO	3	119,596
Jefferson MO	8	50,459
St. Charles MO	2	176,341
St. Charles MO	3	228,921
St. Louis MO	1	467,786
St. Louis MO	2	536,339
<i>Split VTDs:</i>		
Audrain MO	4	405
Audrain MO	6	229

Figure 13: City Splits

District	City/Town	Population	% Pop	District	City/Town	Population	% Pop
1	Rock Hill MO	1,882	39.62%	4	Marceline MO	2	0.09%
1	Creve Coeur MO	366	1.94%	4	Greenwood MO	321	5.33%
1	Lemay MO	4,002	23.38%	4	Pleasant Hill MO	8,766	99.87%
1	Webster Groves MO	6,522	27.16%	4	Lee's Summit MO	2,670	2.64%
2	Eureka MO	11,575	99.39%	4	Kansas City MO	104	0.02%
2	Wentzville MO	525	1.18%	4	Sunrise Beach MO	105	24.36%
2	Rock Hill MO	2,868	60.38%	4	Emma MO	119	59.20%
2	Pacific MO	1,092	14.73%	4	Blackburn MO	212	94.64%
2	Lake St. Louis MO	3,134	18.76%	4	Greenwood MO	5,700	94.67%
2	Dardenne Prairie MO	12,492	98.03%	4	Pleasant Hill MO	11	0.13%
2	O'Fallon MO	48,937	53.59%	5	Blue Springs MO	30,143	51.44%
2	Cottleville MO	5,567	99.22%	5	Grain Valley MO	10,251	65.60%
2	St. Peters MO	16,058	27.81%	5	Oak Grove MO	7,164	87.83%
2	Creve Coeur MO	18,468	98.06%	5	Lee's Summit MO	67,341	66.60%
2	St. Charles MO	17,552	24.90%	5	Kansas City MO	362,266	71.30%
2	Lemay MO	13,115	76.62%	5	North Kansas City MO	4,467	100.00%
2	Webster Groves MO	17,488	72.84%	5	Gladstone MO	25,855	95.54%
3	Sunrise Beach MO	326	75.64%	5	Sugar Creek MO	3,271	100.00%
3	Festus MO	12,706	100.00%	5	Claycomo MO	1,343	100.00%
3	Crystal City MO	4,740	100.00%	5	Independence MO	117,068	95.17%
3	Eureka MO	71	0.61%	5	Excelsior Springs MO	181	1.72%
3	Wentzville MO	43,847	98.82%	5	Excelsior Estates MO	205	98.09%
3	Sullivan MO	5,413	78.38%	5	Lawson MO	2,382	93.74%
3	Pacific MO	6,322	85.27%	5	Emma MO	82	40.80%
3	Lake St. Louis MO	13,573	81.24%	5	Blackburn MO	12	5.36%
3	Dardenne Prairie MO	251	1.97%	5			
3	O'Fallon MO	42,379	46.41%				
3	Cottleville MO	44	0.78%				
3	St. Peters MO	41,674	72.19%				
3	St. Charles MO	52,941	75.10%				

District	City/Town	Population	% Pop	District	City/Town	Population	% Pop
6	Marceline MO	2,121	99.91%				
6	Blue Springs MO	28,460	48.56%				
6	Grain Valley MO	5,376	34.40%				
6	Oak Grove MO	993	12.17%				
6	Lee's Summit MO	31,097	30.76%				
6	Kansas City MO	145,720	28.68%				
6	North Kansas City MO	0	0.00%				
6	Gladstone MO	1,208	4.46%				
6	Sugar Creek MO	0	0.00%				
6	Claycomo MO	0	0.00%				
6	Independence MO	5,943	4.83%				
6	Excelsior Springs MO	10,372	98.28%				
6	Excelsior Estates MO	4	1.91%				
6	Lawson MO	159	6.26%				
7	Ozark MO	17,904	84.12%				
7	Rogersville MO	683	17.53%				
7	Strafford MO	2,561	100.00%				
7	Saddlebrooke MO	41	13.27%				
8	Ozark MO	3,380	15.88%				
8	Rogersville MO	3,214	82.47%				
8	Strafford MO	0	0.00%				
8	Saddlebrooke MO	268	86.73%				
8	Festus MO	0	0.00%				
8	Crystal City MO	0	0.00%				
8	Sullivan MO	1,493	21.62%				