

IN THE SUPREME COURT OF OHIO

Regina Adams, et al., Relators, v. Governor Mike DeWine, et al., Respondents.	Case No. 2021-1428 Original Action Filed Pursuant to Ohio Constitution, Article XIX, Section 3(A)
League of Women Voters of Ohio, et al., Relators, v. Governor Mike DeWine, et al., Respondents.	Case No. 2021-1449 Original Action Filed Pursuant to Ohio Constitution, Article XIX

PRESENTATION OF EVIDENCE BY RESPONDENTS HUFFMAN AND CUPP

VOLUME IV

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PRESENTATION OF EVIDENCE BY RESPONDENTS HUFFMAN AND CUPP

VOLUME I

Respondents, Speaker of the Ohio House of Representatives Robert Cupp, and Senate President Matthew Huffman submit the following evidence in this matter¹:

Exhibit	Item Description	Page no.
1	Deposition of Mr. Raymond DiRossi	HC001-HC284
VOLUME II		
2	Exhibits to Deposition of Mr. Raymond DiRossi	HC285-HC319
3	Deposition of Mr. Blake Springhetti	HC320-HC458
4	Exhibits to Deposition of Mr. Blake Springhetti	HC459-HC502
VOLUME III		
5	Senate President Huffman's Objections and Responses to Relators' Document Requests	HC503-HC514
6	Senate President Huffman's Objections and Responses to Interrogatories	HC515-HC529
7	Senate President Huffman's Objections and Responses to Relators' Requests for Admission	HC530-HC538
8	Speaker Cupp's Objections and Responses to Relators' Document Requests	HC339-HC548
9	Speaker Cupp's Objections and Responses to Relators' Interrogatories	HC549-HC562
10	Speaker Cupp's Objections and Responses to Relators' Requests for Admission	HC563-HC570
11	Mr. Raymond DiRossi's Objections and Responses to Relators' Subpoena Duces Tecum	HC571-HC580
12	Mr. Blake Springhetti's Objections and Responses to Relators' Subpoena Duces Tecum	HC581-HC590
13	Senator Gavarone's Objections and Responses to Relators' Subpoena Duces Tecum	HC591-HC600
14	Senator McColley's Objections and Responses to Relators' Subpoena Duces Tecum	HC601-HC610
15	Representative Wilkin's Objections and Responses to Relators' Subpoena Duces Tecum	HC611-HC620
16	Representative Oeslager's Objections and Responses to Relators' Subpoena Duces Tecum	HC621-HC630

¹ Respondents Huffman and Cupp also reserve the right to rely on any evidence presented in this matter by stipulation or presented by any other party.

17	Secretary of State LaRose's Objections and Responses to Relators' Document Requests	HC631-HC641
18	Secretary of State LaRose's Objections and Responses to Relators' Interrogatories	HC642-HC650
19	Secretary of State LaRose's Objections and Responses to Relators' Requests for Admission	HC651-HC663
20	Transcript of Ohio Redistricting Commission Meeting dated October 28, 2021	HC664-HC695
21	Email from Speaker Cupp on November 15, 2021 RE: "Congressional Map compare"	HC696-HC697
22	Testimony of Senator McColley	HC698-HC701
23	Testimony of Senator McColley	HC702-HC705
24	Email and Attachments from Senator McColley, November 16, 2021 RE: "SB 258 Ray notes"	HC706-HC716
25	Email from Patti Diamond on October 2, 2021 RE: "Redistricting"	HC717-HC718
26	Public Comment to Governor DeWine's Office by James Hitt on October 7, 2021	HC719-HC720
27	Public Comment to Governor DeWine's Office by Lawrence Polena on October 7, 2021	HC721-HC722
28	Email from Blake Springhetti on November 15, 2021 RE: "Substitute Senate Bill 258.Brief"	HC723-HC728
29	Email and Attachment from Heather Blessing on November 18, 2021 RE: "Turcer Testimony"	HC729-HC742
30	Dave's Redistricting 2020 Analysis of Ohio 2022 Congressional Districts	HC743-HC744
31	Cincinnati Enquirer Article dated December 2, 2021 "Jason Williams: Why this Cincinnati city councilman might challenge Republican Steve Chabot in 2022 election"	HC745-HC748
32	Axios Columbus Article dated November 19, 2021 "Ohio lawmakers pass new congressional district map"	HC749-HC754
33	Plain Dealer Article dated November 21, 2021 "Gov. Mike DeWine approves Ohio congressional map bill that likely strengthens GOP share"	HC755-HC763
34	The Hannah Report dated November 22, 2021 "DeWine Signs Congressional Redistricting Map"	HC764-HC765
35	ABCNews' Project FiveThirtyEight, "What Redistricting Looks Like in Every State" updated December 9, 2021 at 7:37 PM	HC766-HC772
VOLUME IV		
36	Affidavit and Expert Report of Dr. Michael Barber	HC773-HC819
37	Affidavit of Mr. Raymond DiRossi	HC820-HC837

Respectfully submitted this the 10th day of December, 2021

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Exhibit 36

IN THE SUPREME COURT OF OHIO

Regina Adams, *et al.*,

Relators,

v.

Governor Mike DeWine, *et al.*,

Respondents.

Case No. 2021-1428

Original Action Filed Pursuant to Ohio
Constitution, Article XIX, Section 3(A)

League of Women Voters of Ohio, *et al.*,

Relators,

v.

Governor Mike DeWine, *et al.*,

Respondents.

Case No. 2021-1449

Original Action Filed Pursuant to Ohio
Constitution, Article XIX


AFFIDAVIT OF MICHAEL BARBER

Now comes affiant Michael Barber, having been first duly cautioned and sworn, deposes and states as follows:


1. I am over the age of 18 and am competent to testify regarding the matters discussed below.
2. For the purposes of this litigation, I have been asked by counsel for Respondents Huffman and Cupp to analyze relevant data and provide my expert opinions.
3. To that end, I have personally prepared the report attached to this affidavit as Exhibit A, and swear to its authenticity and to the faithfulness of the opinions.

FURTHER THE AFFIANT SAYETH NAUGHT.

Executed on 9 December, 2021


Michael Barber

Sworn or affirmed before me and subscribed in the presence the 9 day of December, 2021,
in the state of Utah and County of Utah.


Notary Public

4891-5716-4549 v.1

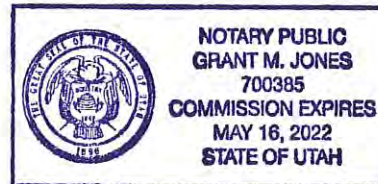


Exhibit A:
Expert Report of Michael Barber, PhD

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1 Introduction and Qualifications

I have been hired by the Respondents, President of the Ohio Senate, Matt Huffman; and Speaker of the Ohio House of Representatives, Robert R. Cupp to provide expert testimony in the following cases: *Adams, et al. v. DeWine, et al.* and *League of Women Voters of Ohio, et al. v. DeWine, et al.*. I have been asked by the Respondents to review the districting plans considered by the Ohio General Assembly in light of the requirements set forth in Article XIX of the Ohio Constitution as well as the present political geography of the state.

I am an associate professor of political science at Brigham Young University and faculty fellow at the Center for the Study of Elections and Democracy in Provo, Utah. I received my PhD in political science from Princeton University in 2014 with emphases in American politics and quantitative methods/statistical analyses. My dissertation was awarded the 2014 Carl Albert Award for best dissertation in the area of American Politics by the American Political Science Association.

I teach a number of undergraduate courses in American politics and quantitative research methods.¹ These include classes about political representation, Congressional elections, statistical methods, and research design.

I have worked as an expert witness in a number of cases in which I have been asked to analyze and evaluate various political and elections-related data and statistical methods. Cases in which I have testified at trial or by deposition are listed in my CV, which is attached to the end of this report. I have previously provided expert reports in a number of cases related to voting, redistricting, and election-related issues: *Nancy Carola Jacobson, et al., Plaintiffs, vs. Laurel M. Lee, et al., Defendants. Case No. 4:18-cv-00262 MW-CAS (U.S. District Court for the Northern District of Florida); Common Cause, et al., Plaintiffs, vs. Lewis, et al., Defendants. Case No. 18-CVS-14001 (Wake County, North Carolina); Kelvin Jones, et al., Plaintiffs, v. Ron DeSantis, et al., Defendants, Consolidated Case No.*

¹The political science department at Brigham Young University does not offer any graduate degrees.

4:19-cv-300 (U.S. District Court for the Northern District of Florida); Community Success Initiative, et al., Plaintiffs, v. Timothy K. Moore, et al., Defendants, Case No. 19-cv-15941 (Wake County, North Carolina); Richard Rose et al., Plaintiffs, v. Brad Raffensperger, Defendant, Civil Action No. 1:20-cv-02921-SDG (U.S. District Court for the Northern District of Georgia); Georgia Coalition for the People's Agenda, Inc., et. al., Plaintiffs, v. Brad Raffensperger, Defendant. Civil Action No. 1:18-cv-04727-ELR (U.S. District Court for the Northern District of Georgia); Alabama, et al., Plaintiffs, v. United States Department of Commerce; Gina Raimondo, et al., Defendants. Case No. CASE NO. 3:21-cv-00211-RAH-ECM-KCN (U.S. District Court for the Middle District of Alabama Eastern Division).

In my position as a professor of political science, I have conducted research on a variety of election- and voting-related topics in American politics and public opinion. Much of my research uses advanced statistical methods for the analysis of quantitative data. I have worked on a number of research projects that use “big data” that include millions of observations, including a number of state voter files, campaign contribution lists, and data from the US Census. I have also used geographic information systems and other mapping techniques in my work with political data.

Much of this research has been published in peer-reviewed journals. I have published nearly 20 peer-reviewed articles, including in our discipline's flagship journal, *The American Political Science Review* as well as the inter-disciplinary journal, *Science Advances*. My CV, which details my complete publication record, is attached to this report as Appendix A.

The analysis and opinions I provide in this report are consistent with my education, training in statistical analysis, and knowledge of the relevant academic literature. These skills are well-suited for this type of analysis in political science and quantitative analysis more generally. My conclusions stated herein are based upon my review of the information available to me at this time. I reserve the right to alter, amend, or supplement these conclusions based upon further study or based upon the availability of additional information. I am being compensated for my time in preparing this report at an hourly rate of \$400/hour. My

compensation is in no way contingent on the conclusions reached as a result of my analysis. The opinions in this report are my own, and do not represent the view of Brigham Young University.

2 Summary of Findings

Based on the evidence and analysis presented below, my opinions regarding the 2021 congressional redistricting process in Ohio can be summarized as follows:

- The contemporary political geography of Ohio is such that Democratic majorities are geographically clustered in the largest cities of the state while Republican voters dominate the suburban and rural portions of the state.
- This geographic clustering means that map drawers all face similar constraints when drawing the 15 districts throughout the state.
- A review of the Enacted Plan and districting plans put forward by the Ohio House and Senate Democratic caucuses shows a similar partisan composition of districts.²
- The House and Senate Democrats’ plans place many more incumbents into districts that cause incumbent “double bunking,” nearly all of whom are Republicans.
- Compared to the 2011-2020 district plan, the Enacted Plan creates more competitive districts, and is equal to or more competitive than the House and Senate Democrats’ plans across five of six comparisons.

²Throughout this report, I compare three different districting plans considered by the General Assembly. The first is the plan that was eventually adopted by the legislature and signed by the governor (SB 258, hereafter, “Enacted Plan”). The other two plans I consider are one introduced by House Democrats (HB 483, hereafter, “House Democrats’ plan”) and a plan introduced by Senate Democrats (SB 237, hereafter, “Senate Democrats’ plan”).

3 Political Geography of Ohio

3.1 Statewide, Ohio Leans Republican

Article XIX Section 1(C)(3)(a) of the Ohio Constitution indicates that a redistricting plan passed by the general assembly with less than a $3/5$ majority of each house and lacking an affirmative vote from $1/3$ of the members of both parties of each house “shall not pass a plan that unduly favors or disfavors a political party or its incumbents.” Understanding the political landscape of Ohio and how partisan preferences are distributed statewide and within the state may be helpful to the court in determining how to interpret this portion of the Ohio Constitution.

For the last several decades, Ohio has leaned Republican in federal elections. Figure 1 below shows the results of the average of federal elections in Ohio from 2000 through 2020. These races include: US President, US Senate, and US Congress.³ While not all races are up for election in each year, I create the index by averaging the two-party vote share of those races that occurred in each two-year cycle. As can be seen in the figure, Republican candidates have won a majority of votes cast for federal elections in seven of the last eleven election cycles.

3.2 Partisan Preferences Are Not Evenly Distributed

The relative stability of the statewide results over the last 20 years masks dramatic variation in the spatial location of Democratic and Republican voters within the state. The following section details this and shows in a variety of different ways that Democratic voters are heavily clustered in the urban areas of the state while suburban and rural portions of the state have trended towards Republicans.

³To create the index I sum by party all votes cast for each candidate in each race by year. I then take the fraction of votes cast for candidates of the two major parties that were cast for Democratic candidates in that year. There are other possible measures and methods one could use, such as considering candidate percentages before averaging, including third party voters, or looking at election outcomes.

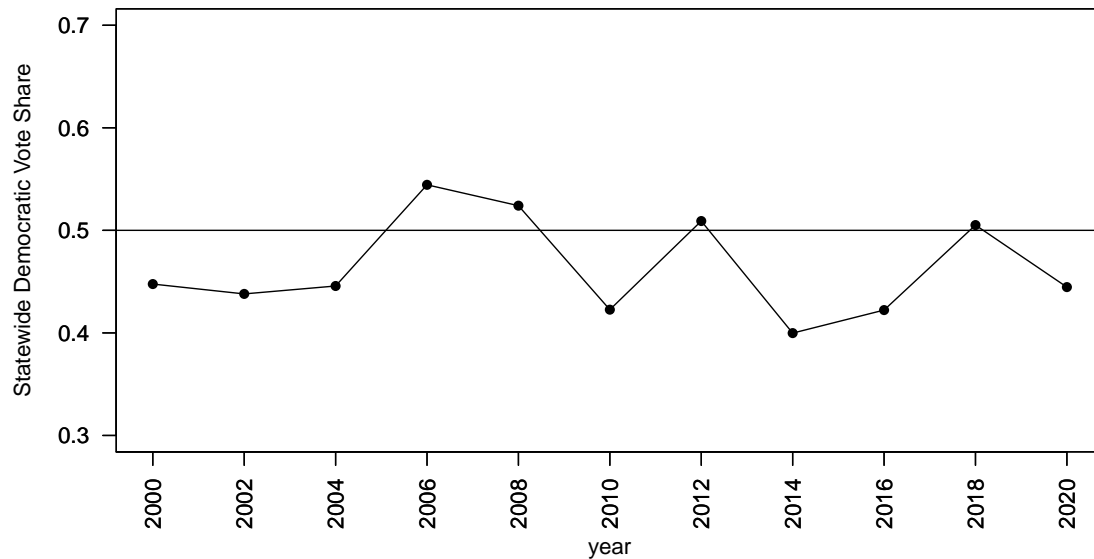


Figure 1: **Average Federal Election Results Over Time**

Figure 2 contains two maps. The left map shows the population density of Ohio, with red areas indicating portions of the state that are more densely populated with yellow and green areas showing portions of the state that are rural and sparsely populated. The right map shows an average of statewide election results across all precincts in the state for the years 2016-2020. Blue colors indicate precincts with majority Democratic voters and red colors indicate precincts with majority Republican voters. Comparing the two maps side-by-side shows an immediate pattern. Democratic voters tend to live in areas that are densely populated while Republican voters tend to live in more suburban and rural portions of the state. Scholars of political geography have noted this pattern, which is not unique to Ohio and is occurring throughout the United States with some exceptions (e.g. Brown and Enos (2021), Rodden and Chen (2013)).⁴ For example, Rodden and Chen (2013) note, “Democrats are highly clustered in dense central city areas, while Republicans are scattered

⁴Brown, Jacob R., and Ryan D. Enos. “The measurement of partisan sorting for 180 million voters.” *Nature Human Behaviour* (2021): 1-11.; Chen, Jowei, and Jonathan Rodden. “Unintentional gerrymandering: Political geography and electoral bias in legislatures.” *Quarterly Journal of Political Science* 8, no. 3 (2013): 239-269.

more evenly through the suburban, exurban, and rural periphery (pg. 241).”

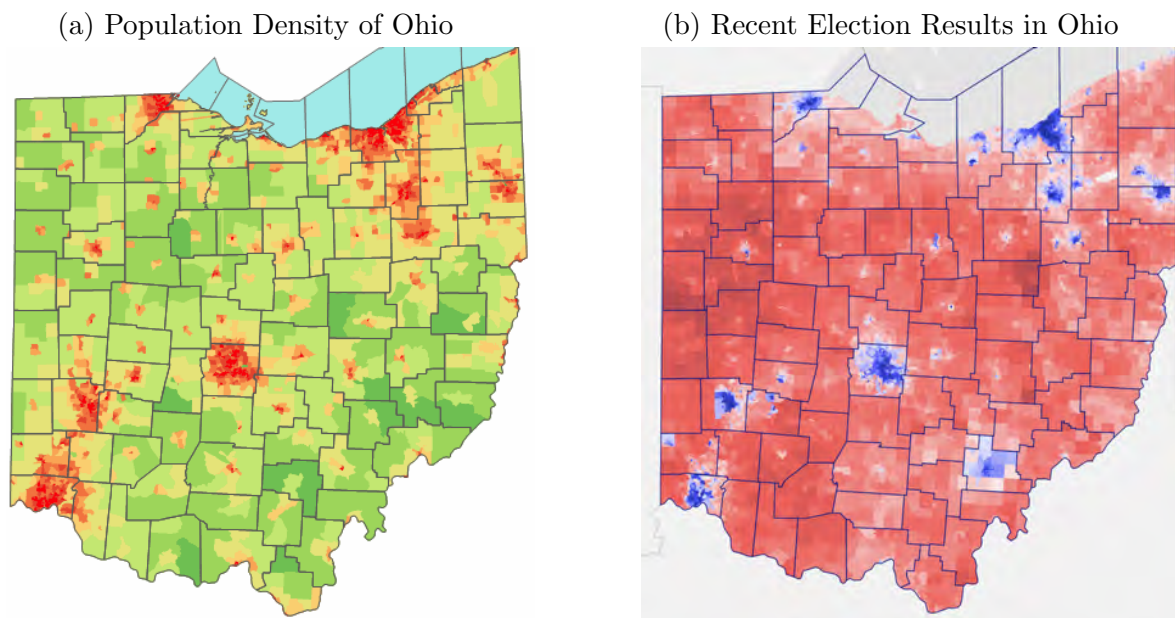


Figure 2: **Population Density (left) and 2016-2020 Precinct Election Results (right)**

We can test this idea more systematically by looking at the relationship between population density and Democratic vote shares in Ohio and measuring the correlation between the two factors. Figure 3 shows this relationship for all 88 counties in Ohio. The horizontal axis measures the population density of each county and the vertical axis shows the average Democratic vote share for statewide federal elections in that county from 2016-2020. The dashed red line shows the “line of best fit” between the two variables.⁵ As can be seen in the figure, there is a very strong and positive relationship. Counties that are more urban and densely populated are also more likely to vote for Democratic candidates. The correlation between the two variables is noted in the bottom right of the figure and is 0.77, which indicates a very strong relationship.⁶ It is instructive to look at these results at the county

⁵The line of best fit is the regression line from a simple regression of Democratic vote shares on the natural log of population density in the county. The slope of the line is 0.08 and is statistically significant at the $p < .01$ level.

⁶Correlation is a measure of the strength of the relationship between two variables and ranges from -1 to 1. A value of 1 would indicate perfect correlation while a value of -1 would indicate perfect negative correlation. The further away the correlation value is from zero, the stronger the relationship between the two variables.

level because counties are important political units in the redistricting process in Ohio, as detailed in the Ohio Constitution.

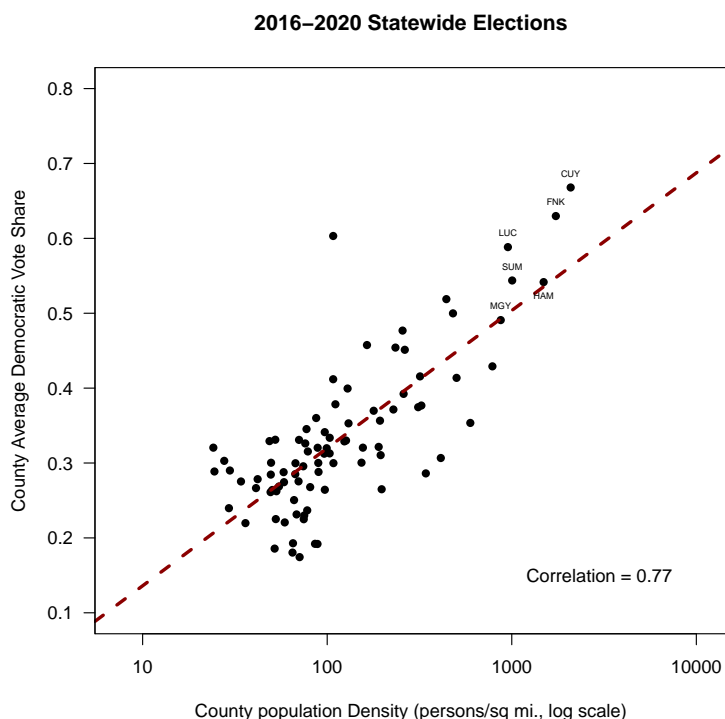


Figure 3: **Population Density and 2016-2020 County Election Results** - Each point is a county. The horizontal axis measures the population density of each county. The vertical axis measures the average Democratic vote share in that county. More dense counties tend to be more supportive of Democratic candidates.

While this relationship between density and Democratic votes exists across counties in Ohio, it is even more so the case that this relationship between Democratic support and urban areas persists when looking *within* counties. Within the most urban counties of the state, Democratic voters tend to cluster in the central, most urban and densely populated portions of the county while Republicans tend to live in the suburban periphery of these counties. To measure this I look at the six largest counties in Ohio by population - Franklin, Cuyahoga, Hamilton, Summit, Montgomery, and Lucas Counties. Each of these counties contains one of Ohio's largest cities - Columbus, Cleveland, Cincinnati, Akron, Dayton, and Toledo, respectively. To measure partisan preferences in these counties I calculate the average of statewide elections in 2016 for each precinct in each of these six counties. To

measure the tendency for clustering near the urban core, I then look at the relationship between a precinct's average Democratic vote share and how far that precinct is located from the urban center of the county.⁷ All six of these counties are defined by a dense urban core that radiates outward towards less dense suburban areas. Figure 4 shows this to be the case. Each point in each graph is a single precinct. The horizontal axis measures the distance in kilometers of that precinct from the center of the county. The vertical axis of each figure shows the average Democratic vote in that same precinct. A consistent pattern holds across all six counties. The closer a precinct is to the center of the county (and its associated major city) the more Democratic the precinct tends to vote. The red dashed line in each figure shows the line of best fit for this relationship in each county. In every case the line is sloped downwards, indicating that as one travels away from the county's center, voters tend to be more supportive of Republican candidates. The correlation (the measure of how strong this relationship is) between these two variables is noted in the bottom right of each figure and ranges from -0.52 in Hamilton County (Cincinnati) to -0.73 in Lucas County (Toledo). A correlation greater than .5 (or less than -.5) indicates a strong relationship between the two variables.

Rodden (2019) conducts a similar “distance from urban center” analysis of Ohio and Pennsylvania across multiple election cycles and finds similar results.⁸ Rodden notes the historical antecedents of this pattern, where he states, “[T]he city center is dominated by some mix of poor people, immigrants, and minorities, and they vote overwhelmingly for the parties of the left (pg. 104). He goes on to note, “Democrats win overwhelming majorities in city centers, with Republican vote share increasing as one exits the dense urban core and the working-class housing constructed in the late nineteenth or early twentieth centuries and moves to the inner-ring and then middle-ring suburbs, finally reaching its maximum in the distant exurbs and rural periphery (pg. 106).” I would add that this pattern has only been

⁷I proxy the urban center of the county by measuring the distance in kilometers each precinct is from the county courthouse.

⁸Rodden, Jonathan A. *Why cities lose: The deep roots of the urban-rural political divide*. Hachette UK, 2019.

exacerbated by recent trends of young and highly educated professionals seeking to live in the dense urban core combined with recent patterns of education polarization in which those with more education tend to vote for Democratic candidates.⁹

Figure 4 establishes a strong relationship between Democratic voters clustering in cities and Republican voters being more dispersed thorough the suburban and rural portions of the state. In many of the precincts closest to the center of these cities, people are voting with near unanimity for Democratic candidates (e.g. the values of vertical axis (top left of each panel) approach 1.0). And as one moves further away from the urban center of the county, there is a distinct decline, on average, in support for Democratic candidates such that the most Republican precincts tend to be those at the periphery of each county. And while these “peripheral” precincts are less Democratic than their “core” counterparts, there is not, however, a similar pattern of precincts at the edges of the county voting with near unanimity for Republican candidates.

Another way to consider this is to look at “lopsided” precincts - areas where one party receives a vast majority of ballots cast. Figure 5 shows the distribution of two-party vote shares for all precincts in the state in 2018 (left panel) and 2020 (right panel). The red vertical line in each panel is at 0.5, which indicates precincts where voters cast exactly half of their votes for Democratic and Republican candidates. There are two important takeaways from this figure. The first is that the largest group of precincts in Ohio lean majority Republican. The peak of each distribution is near 0.4, where voters in a precinct cast 40% of their votes for Democratic candidates and 60% of their votes for Republican candidates. And while the distribution trails off in each direction, there are still a large number of precincts that cast nearly unanimous votes for Democrats. These are the precincts at the far right of each figure with values of 0.8 to 1.0. There are not, however, an equal number of precincts that voted with near unanimity for Republican candidates. This is seen in the relative paucity of

⁹<https://www.nytimes.com/2021/09/08/us/politics/how-college-graduates-vote.html>,
<https://www.pewresearch.org/politics/2016/04/26/a-wider-ideological-gap-between-more-and-less-educated-adults/>

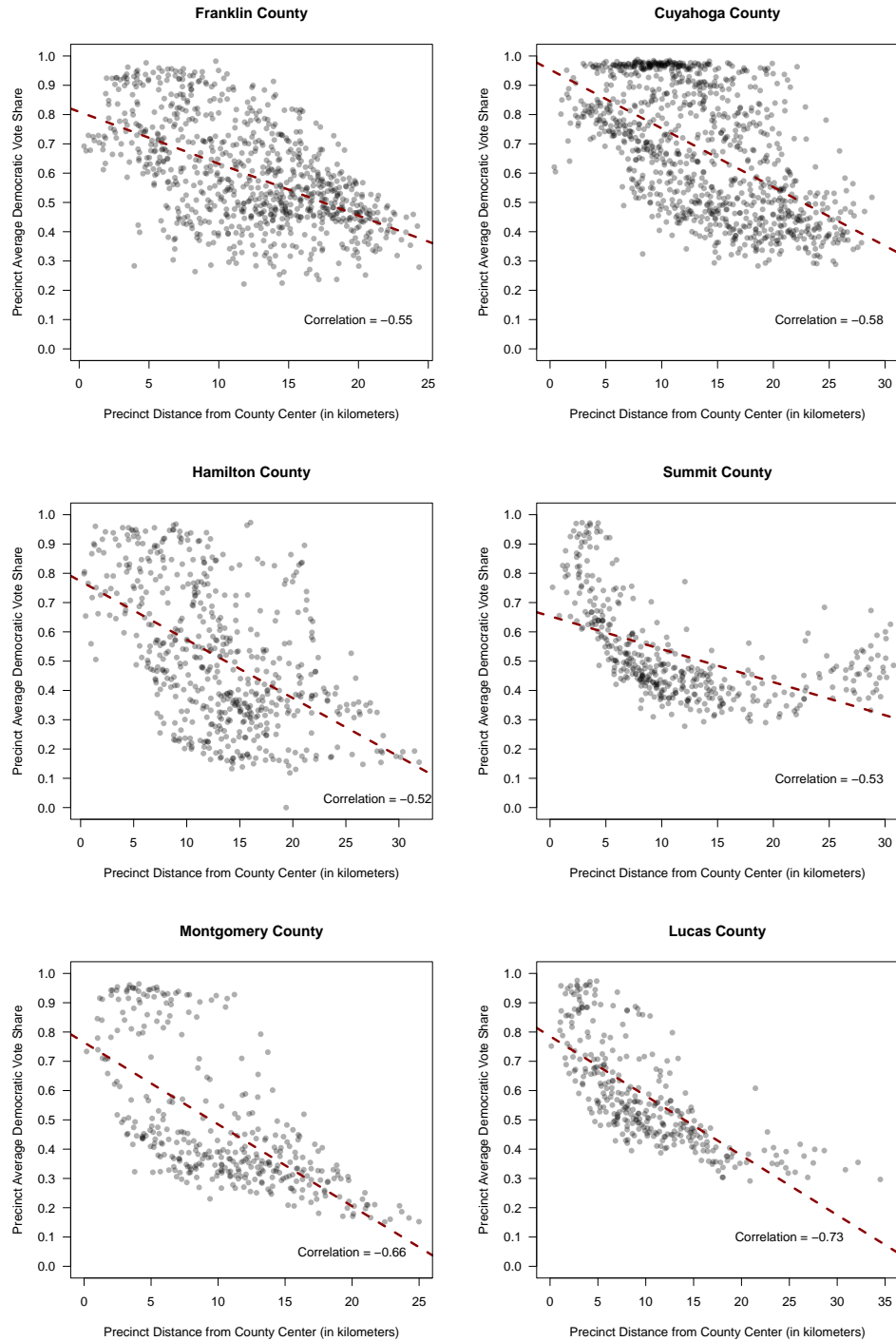


Figure 4: **Distance from County Center and Precinct Election Results** - Each point is a precinct. The horizontal axis shows the distance of that precinct from the geographic center of the county. The vertical axis shows the average Democratic voter share of that precinct. The overall trend (shown with a red dashed line) is that precincts near the urban core are heavily Democratic while precincts near the periphery of the county tend to be majority Republican.

precincts with values between 0 and 0.2.

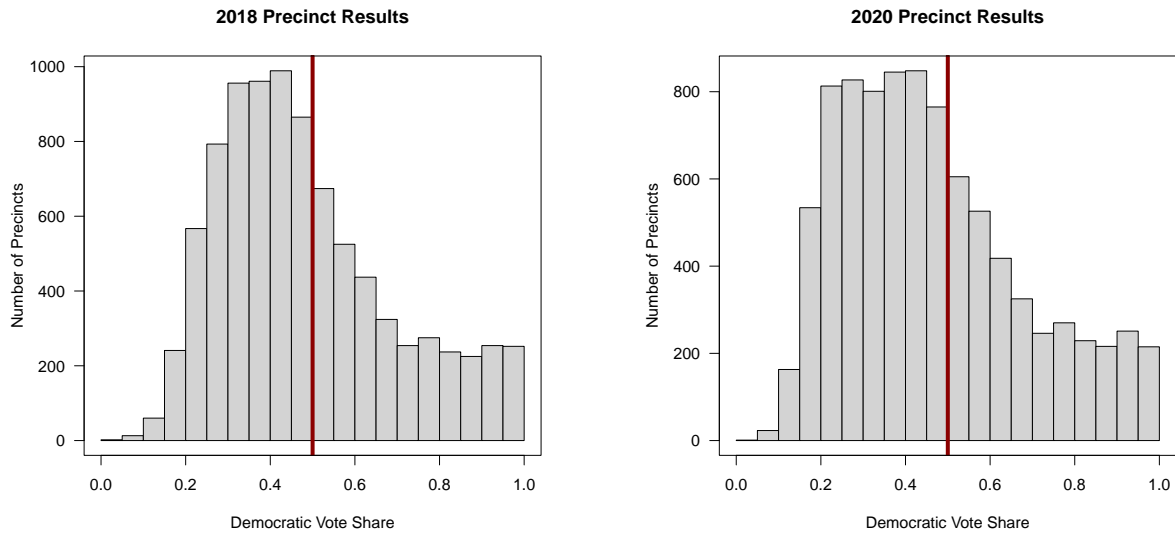


Figure 5: **Distribution of Precinct-Level Election Results for All Precincts in Ohio, 2018 (left) & 2020 (right)**

In the next sections I show how the unique political geography of Ohio constrains mapmakers in the districts they draw. I do this by showing that three different plans put forward all contain similar patterns of partisanship, which is influenced by the geographic distribution of voters throughout the state.

4 Proposed Maps

The political geography of Ohio — where Democrats are densely clustered in cities while Republicans are more evenly distributed across the state — means that redistricting plans that satisfy other criteria outlined in the Ohio Constitution, regardless of the author, are going to share many things in common. Districts that are largely (or nearly entirely) composed of the largest cities in Ohio will be overwhelmingly Democratic while districts that span the many rural counties of the state will be overwhelmingly Republican. The remaining districts will be somewhere in between.

In this section I provide a comparison of three different districting plans considered by the General Assembly. The first is the plan that was eventually adopted by the legislature and signed by the governor (SB 258, hereafter, “Enacted Plan”). The other two plans I consider are one introduced by House Democrats (HB 483, hereafter, “House Democrats’ plan”) and a plan introduced by Senate Democrats (SB 237, hereafter, “Senate Democrats’ plan”). I look specifically at these three plans for several reasons. First, the Enacted Plan has been “enacted,” and is the source of the present litigation. The House Democrats’ and Senate Democrats’ plans are plans introduced by the minority party and show the preferred districting plans of each of those bodies.

Article XIX, Section 2(A)(4)(a) of the Ohio Constitution states that “If a municipal corporation or township located in that county contains a population that exceeds the congressional ratio of representation, the authority shall attempt to include a significant portion of that municipal corporation or township in a single district and may include in that district other municipal corporations or townships that are located in that county and whose residents have similar interests as the residents of the municipal corporation or township that contains a population that exceeds the congressional ratio of representation.” Columbus is the only city in Ohio that has a population larger than the target population of a congressional district. The remaining large cities of Ohio are all small enough to constitute only a fraction of a congressional district and are entirely contained within a district in all three of

the proposed plans considered here. Each plan creates one district that is centered around Columbus, Ohio's largest city, and also includes some of the neighboring municipalities and townships. As of the 2020 Census, Columbus had a population of 905,748 people, making it larger than the target district population of 786,630. This requires any plan to place Columbus into two different congressional districts, something all three plans do. However each plan does this in a slightly different way. Given its population, and the requirements stated in Article XIX, Section 2(B)(4)(a) of Ohio's constitution, it would be reasonable for a map drawer to strive to keep the city together as much as possible. Given the irregular shape of Columbus, it would be difficult to craft a district that was entirely constructed from Columbus alone, and no plan does this. However, a comparison across the plans shows that the Enacted Plan does the best job of getting as close to this ideal as possible.

In the Enacted Plan, District 3 contains the largest portion of Columbus, with the remaining portion of the city being placed in District 15. 74% of the population of District 3 reside inside Columbus, with the remaining 26% of the district being suburbs and municipalities that are adjacent to Columbus.

In the House Democrats Plan, District 3 contains the largest portion of Columbus, with the remaining portion of the city being placed in District 12. 70% of the population of District 3 reside inside Columbus, with the remaining 30% of the district being suburbs and municipalities that are adjacent to Columbus.

In the Senate Democrats Plan, District 1 contains the largest portion of Columbus, with the remaining portion of the city being placed in District 2. 70% of the population of District 1 reside inside Columbus, with the remaining 30% of the district being suburbs and municipalities that are adjacent to Columbus.

5 Partisan Lean of Proposed Plans

In this section I compare the partisan composition of the districts in each of the three plans. I use statewide federal election results from 2012-2020 aggregated to the district level for each of three of the plans mentioned above. During 2012-2020 there were six statewide federal elections.¹⁰ For each proposed district I look at the two-party vote share in each of the six races separately as well as average together the two-party vote share for all six of the federal statewide races to create a partisan index for each proposed legislative district.

I divide the fifteen districts in each plan into three different categories based on the two-party performance of Democratic and Republican candidates for statewide offices in each district. First, I consider districts in which no Democratic candidate for statewide office has won a majority of the votes cast in that district. Second I consider districts in which both Democratic and Republican candidates for statewide office have won a majority of the votes cast in that district. Finally, I consider districts in which no Republican candidate for statewide office has won a majority of the votes cast in that district. As we will see below, the three proposed plans are remarkably similar to one another in this regard.

Figure 6 below shows the ranking of each of the 15 districts for all three plans according to the average of the six statewide federal elections that occurred in Ohio between 2012 and 2020. The point shows the average for each district and the grey lines show the range of outcomes for each district. The districts are ordered from most Republican at the bottom to most Democratic at the top according to the average. The shape and color of each point depend on the election outcomes in each district. Districts in which no statewide Democratic candidate has won a majority of votes in that district are shown as red circles. Districts in which no Republican candidate has won a majority of votes in that district are shown as blue squares. Districts in which both statewide Republican and Democratic candidates have won a majority of votes in that district are shown as green triangles.

¹⁰US President in 2020; US Senate in 2018; US President and US Senate in 2016; US President and US Senate in 2012.

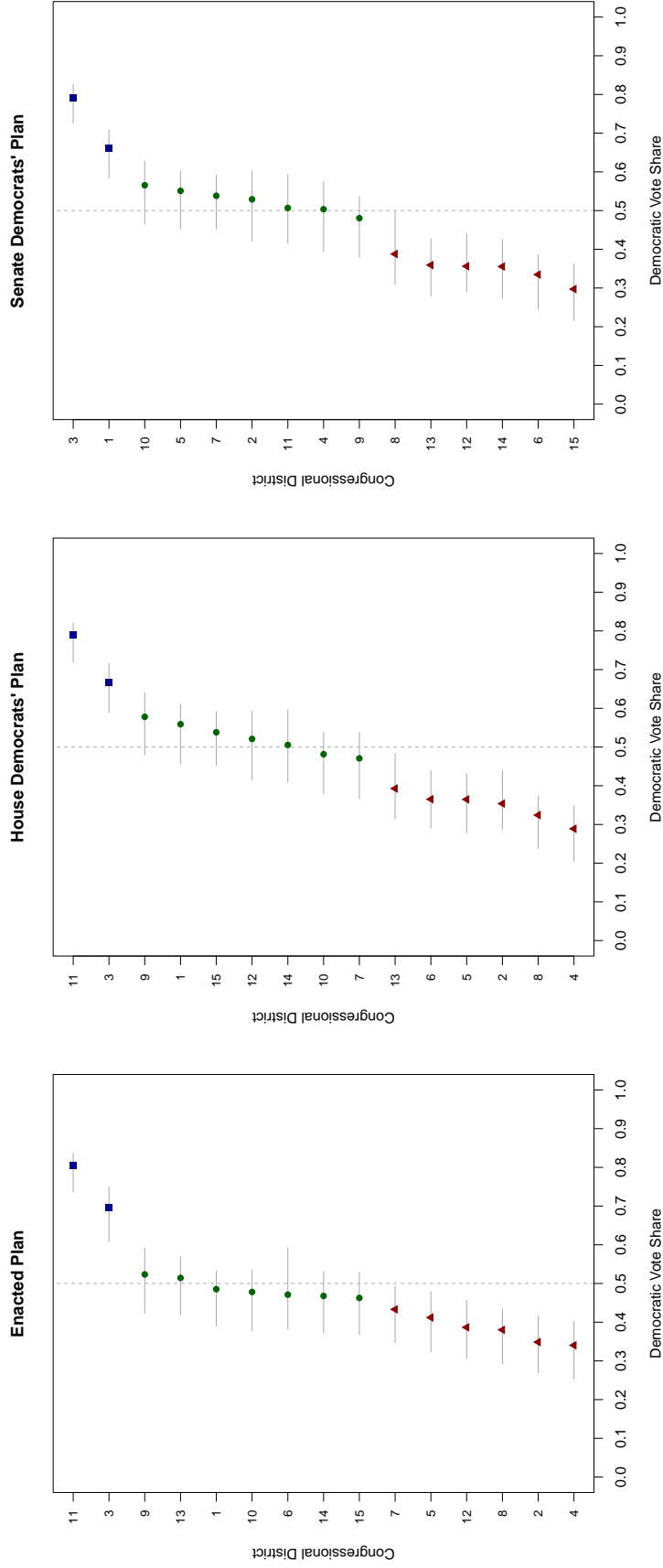


Figure 6: **Congressional District Partisan Averages** - The figure shows the value of the partisan index for each Congressional district in the Enacted Plan (left panel), the House Democrats Plan (middle panel) and the Senate Democrats Plan (right panel). Districts are ordered from most Republican at the bottom to most Democratic at the top. The grey line shows the range of election outcomes in each district. Districts in which no statewide Democratic candidate has won a majority of votes in that district are shown as red circles. Districts in which no Republican candidate has won a majority of votes in that district are shown as blue squares. Districts in which both statewide Republican and Democratic candidates have won a majority of votes in that district are shown as green triangles. A vertical dashed line is placed at .50 in each panel for reference.

As can be seen in the figure, the plans are quite similar. In all three plans, two districts are solidly Democratic (i.e. no statewide federal Republican candidate has won a majority of the two-party vote share in the district from 2012-2020). In all three plans, six districts are solidly Republican (i.e. no statewide federal Democratic candidate has won a majority of the votes in the district from 2012-2020). In all three plans, seven districts are competitive (i.e. both federal statewide Republican and Democratic candidates have won a majority of the votes in the district from 2012-2020).

It is important to note that partisan averages — such as the ones I have created here, and similar indices used in other reports in these cases — are useful, but not perfect. Every congressional race is different. Individual candidate factors such as prior elected experience, professional background, gender, and ties to the local community are all important factors in determining candidate success. Campaigns and the issues and policies that candidates choose to emphasize and endorse are also important. These factors all contribute to making each race unique and slightly different from what an index of statewide election results might predict. For example, in the congressional districts that were in place between 2011-2020, I compute the same partisan index of statewide federal elections aggregated by district and compare the index to the actual election results in those same districts over the decade. The difference between the partisan index and the actual election results indicates the degree to which particular candidates, electoral factors, campaign issues, and other factors can cause the actual results to vary substantially. For example, in the 2020 congressional election, the actual results in Ohio’s sixteen congressional districts varied, on average, by 5.8 percentage points from the average of the 2011-2020 partisan index. Furthermore, in some races, the difference between the actual election results and the partisan index of statewide federal elections differed by more than 15 percentage points.¹¹ In other words, no election will perfectly mirror the partisan average for that district based on an index of election results,

¹¹I exclude uncontested races here, where one candidate wins 100% of the two-party votes share. If I include these races, the average difference between the index and the actual results increases to an average of 6.8 percentage points with a maximum deviation of 39 percentage points.

and in some cases that difference can be quite large.

5.1 Heavily Republican Districts

Across all three plans there are six districts that are heavily Republican where no Democratic federal statewide candidate has won a majority of the two-party vote share in the district over the last ten years. Table 1 shows the partisan index for each of these districts across the three plans as well as the full range of statewide federal election results in each district. The table is divided into three sections. The left section of numbers shows the results for the Enacted Plan. The middle section of numbers shows the results for the House Democrats' Plan and the rightmost section of numbers shows the results for the Senate Democrats' Plan. The column labeled "District #" shows the assigned district number under each plan. The column labeled "Average" shows the average Democratic vote share in each district for each plan for the statewide federal races from 2012-2020. The column labeled "Range" shows the full range of election results from the statewide federal elections. For each plan, districts are sorted by the partisan average.

For example, District 4 in the Enacted Plan has a partisan index average of 34.0. In other words, across the six federal statewide races included in the average, Democrats won 34% of the votes cast. The range column shows that in the least favorable election for Democrats, the Democratic candidate won 25.3% of the votes in that district. In the most favorable election for Democrats, the Democratic candidate won 40.2% of the votes in that district.

The three plans are quite similar. All three create six districts that are heavily Republican in which no Democratic candidate for federal statewide office has won a majority of the two-party vote share in the district. The averages and ranges are all lean Republican, with the Democratic partisan index ranging from the mid-twenties to the high forties in the most favorable election and district for Democrats. Figure 7 shows a map containing the district boundaries of these six districts across all three plans. In all three plans these

districts mostly cover the rural counties of the state. In fact, there is overlap on 52 counties across the three plans. In other words, these 52 counties (or at least parts of these counties in some cases) are included in a safe Republican district in all three proposals. It is not always the case that the entire county is included, but could only include parts. For example, across all three plans, portions of Stark County are included in a safe Republican district, but not always the entire county (the Enacted Plan includes the entire county while the other plans only include the non-Canton parts of the county).

As discussed above, the political geography of Ohio is such that districts that span these rural counties will lean heavily towards Republicans.

One difference to note across the three plans, however, is the actual value of the partisan index in the Enacted Plan compared to the House and Senate Democrats' plans. In each district the House Democrats' plan and the Senate Democrats' plan has a lower Democratic partisan index than does the Enacted Plan. For example, the most Republican district in the Enacted Plan is District 4, with a partisan index of 34.0%. In the House Democrats' plan the most Republican district is also District 4, with a partisan index of 28.9%. This is a difference of 5.1 percentage points. Similarly, the most Republican district in the Senate Democrats' plan is District 15, with a partisan index of 29.7%. District 15 in the Senate Democrats' plan is 4.3% more Republican than the equivalent district (District 4) in the Enacted Plan. Scanning across the rows of Table 1 shows that this is the case in all six districts in the table. The House and Senate Democrats' plans pack more Republicans into these districts than does the Enacted Plan. The effect of this packing is to provide more Democratic votes in the remaining districts throughout the state.

Table 1: Heavily Republican Districts across Plans

Enacted Plan			House Democrats			Senate Democrats		
Partisan Index			Partisan Index			Partisan Index		
District #	Average	Range	District #	Average	Range	District #	Average	Range
4	34.0	[25.3 - 40.2]	4	28.9	[20.5 - 34.9]	15	29.7	[21.6 - 36.2]
2	34.8	[27.0 - 41.7]	8	32.4	[23.8 - 37.4]	6	33.4	[24.5 - 38.6]
8	38.0	[29.3 - 43.4]	2	35.4	[28.8 - 44.0]	14	35.5	[27.2 - 42.6]
12	38.7	[30.6 - 45.7]	5	36.4	[27.8 - 43.1]	12	35.6	[29.0 - 44.1]
5	41.2	[32.3 - 47.9]	6	36.5	[29.0 - 43.9]	13	35.9	[27.9 - 42.7]
7	43.3	[34.7 - 49.3]	13	39.3	[31.5 - 48.3]	8	38.8	[30.9 - 49.7]

Note: The left section of numbers shows the results for the enacted plan. The middle section of numbers shows the results for the House Democrats' Plan and the rightmost section of numbers shows the results for the Senate Democrats' Plan. The column labeled "District #" shows the assigned district number under each plan. The column labeled "Average" shows the average two-party Democratic vote share in each district for each plan for the statewide federal races from 2012-2020. The column labeled "Range" shows the full range of election results from the statewide federal elections. For each plan, districts are sorted by the partisan average.

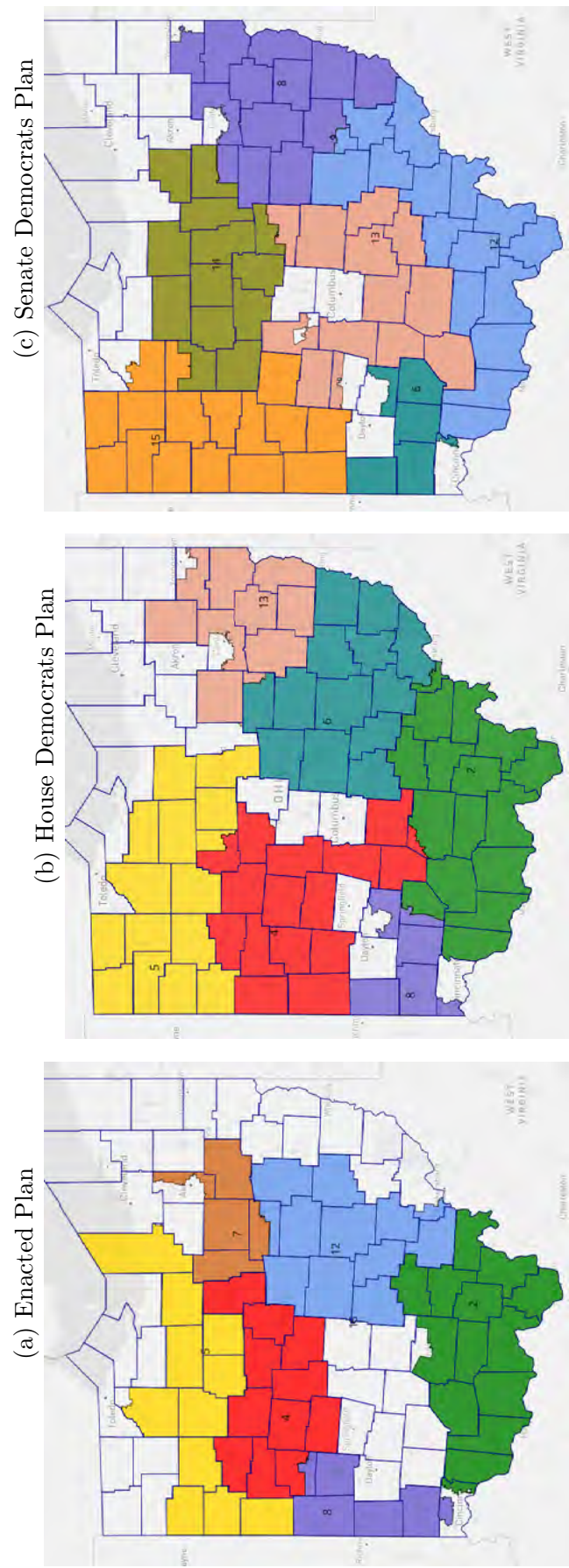


Figure 7: Heavily Republican Seat Boundaries Across All Three Plans

5.2 Heavily Democratic Districts

Across all three plans there are two districts that are heavily Democratic where no federal statewide Republican candidate has won a majority of the two-party vote share in the district over the last ten years. Table 2 shows the partisan index for each of these two districts across the three plans as well as the full range of statewide federal election results in each district. As above, the table is divided into three sections. The left section of numbers shows the results for the Enacted Plan. The middle section of numbers shows the results for the House Democrats' Plan and the rightmost section of numbers shows the results for the Senate Democrats' Plan. The column labeled "District #" shows the assigned district number under each plan. The column labeled "Average" shows the average Democratic vote share in each district for each plan for the statewide federal races from 2012-2020. The column labeled "Range" shows the full range of election results from the statewide federal elections. For each plan, districts are sorted by the partisan average.

For example, District 11 in the Enacted Plan has a partisan index average of 80.6. In other words, across the six federal statewide races included in the average, Democrats won 80.6% of the votes cast between the two major parties. The range column shows that in the least favorable election for Democrats, the Democratic candidate won 73.7% of the votes in that district. In the most favorable election for Democrats, the Democratic candidate won 83.6% of the votes in that district.

The three plans are remarkably similar. All three create two districts that are heavily Democratic in which no Republican candidate for federal statewide office has won a majority of the two-party vote share in the district. These two districts are centered around Columbus and Cleveland, the two largest cities in Ohio, and include a variety of the adjacent suburbs. Figure 8 shows a map of these districts across each plan.

As discussed above, the political geography of Ohio is such that districts that include these two large, heavily urban cities will lean strongly towards Democrats.

One difference to note is in the different treatment of the district that encompasses the

majority of Columbus (District 3 in the Enacted Plan and House Democrats’ plan. District 1 in the Senate Democrats’ plan). The House and Senate Democrats’ plans create a district that while centered in Columbus is slightly less Democratic by roughly 3-3.5 percentage points than the Enacted Plan. District 3 in the Enacted Plan has a partisan index of 69.9%. District 3 in the House Democrats’ plan has a partisan index of 66.7% and District 1 in the Senate Democrats’ plan has a partisan index of 66.1%. This cracking of Democratic voters by the House and Senate Democrats’ plans allow for more Democratic voters to be placed in the congressional districts that surround the Columbus area. However, this comes at the cost to keeping Columbus (or as much of Columbus as possible) in one congressional district. As noted earlier, the Enacted Plan does a better job of placing a larger share of Columbus into one congressional district than do either of the two other plans considered here.

Table 2: Heavily Democratic Districts across Plans

Enacted Plan			House Democrats			Senate Democrats		
Partisan Index			Partisan Index			Partisan Index		
District #	Average	Range	District #	Average	Range	District #	Average	Range
3	69.6	[60.9 - 75.0]	3	66.7	[58.9 - 71.6]	1	66.1	[58.4 - 70.8]
11	80.6	[73.7 - 83.6]	11	79.0	[72.0 - 82.0]	3	79.1	[72.6 - 82.6]

Note: The left section of numbers shows the results for the enacted plan. The middle section of numbers shows the results for the House Democrats’ Plan and the rightmost section of numbers shows the results for the Senate Democrats’ Plan. The column labeled “District #” shows the assigned district number under each plan. The column labeled “Average” shows the average two-party Democratic vote share in each district for each plan for the statewide federal races from 2012-2020. The column labeled “Range” shows the full range of election results from the statewide federal elections. For each plan, districts are sorted by the partisan average.

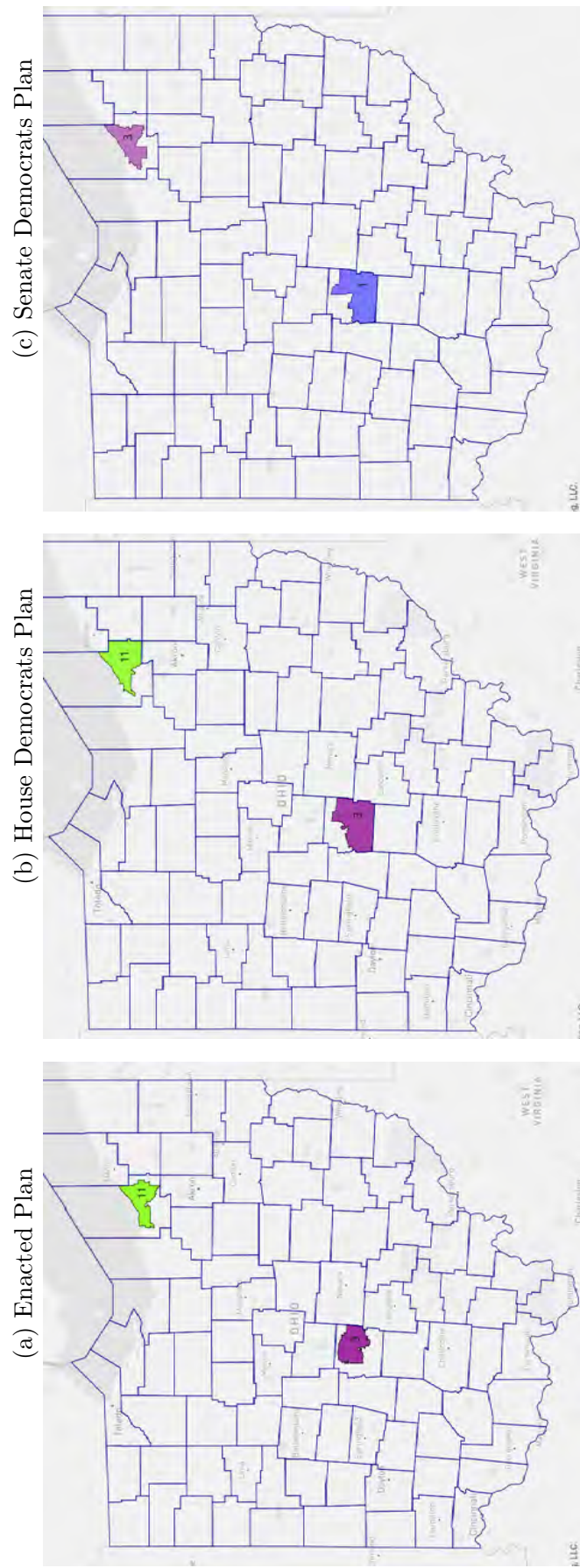


Figure 8: Heavily Democratic District Boundaries Across All Three Plans

5.3 Competitive Districts

Across all three plans there are seven districts that are competitive. In these districts both a Democratic and Republican federal statewide candidate has won a majority of the two-party vote share in the district over the last ten years at least once. Table 3 shows the partisan index for each of these two districts across the three plans as well as the full range of statewide federal election results in each district. As above, the table is divided into three sections. The left section of numbers shows the results for the Enacted Plan. The middle section of numbers shows the results for the House Democrats' Plan and the rightmost section of numbers shows the results for the Senate Democrats' Plan. The column labeled "District #" shows the assigned district number under each plan. The column labeled "Average" shows the average Democratic vote share in each district for each plan for the statewide federal races from 2012-2020. The column labeled "Range" shows the full range of election results from the statewide federal elections. For each plan, districts are sorted by the partisan average.

For example, District 15 in the Enacted Plan has a partisan index average of 46.3. In other words, across the six federal statewide races included in the average, Democrats won 46.3% of the votes cast between Republicans and Democrats. The range column shows that in the least favorable election for Democrats, the Democratic candidate won 36.8% of the votes in that district. In the most favorable election for Democrats, the Democratic candidate won 52.9% of the votes in that district.

Again, the three plans are similar. All three create seven districts in which both parties have won a majority of the two-party vote share in statewide federal elections. These districts are a combination of the remaining medium-sized cities of Ohio as well as the more suburban, and rural areas around these cities. Figure 9 shows a map of these districts across the three plans.

Table 3: Competitive Districts across Plans

Enacted Plan			House Democrats			Senate Democrats		
Partisan Index			Partisan Index			Partisan Index		
District #	Average	Range	District #	Average	Range	District #	Average	Range
15	46.3	[36.8 - 52.9]	7	47.1	[36.7 - 53.8]	9	48.0	[37.9 - 53.6]
14	46.8	[37.2 - 53.1]	10	48.1	[38.0 - 53.8]	4	50.3	[39.3 - 57.4]
6	47.1	[38.2 - 59.2]	14	50.5	[41.0 - 59.6]	11	50.7	[41.6 - 59.3]
10	47.8	[37.7 - 53.4]	12	52.1	[41.5 - 59.3]	2	52.9	[42.1 - 60.2]
1	48.5	[39.0 - 53.2]	15	53.8	[45.2 - 59.1]	7	53.8	[45.3 - 59.1]
13	51.4	[41.9 - 56.9]	1	55.9	[45.7 - 61.1]	5	55.1	[45.3 - 60.1]
9	52.3	[42.3 - 59.1]	9	57.8	[48.0 - 64.1]	10	56.5	[46.6 - 62.9]

Note: The left section of numbers shows the results for the enacted plan. The middle section of numbers shows the results for the House Democrats' Plan and the rightmost section of numbers shows the results for the Senate Democrats' Plan. The column labeled "District #" shows the assigned district number under each plan. The column labeled "Average" shows the average two-party Democratic vote share in each district for each plan for the statewide federal races from 2012-2020. The column labeled "Range" shows the full range of election results from the statewide federal elections. For each plan, districts are sorted by the partisan average.

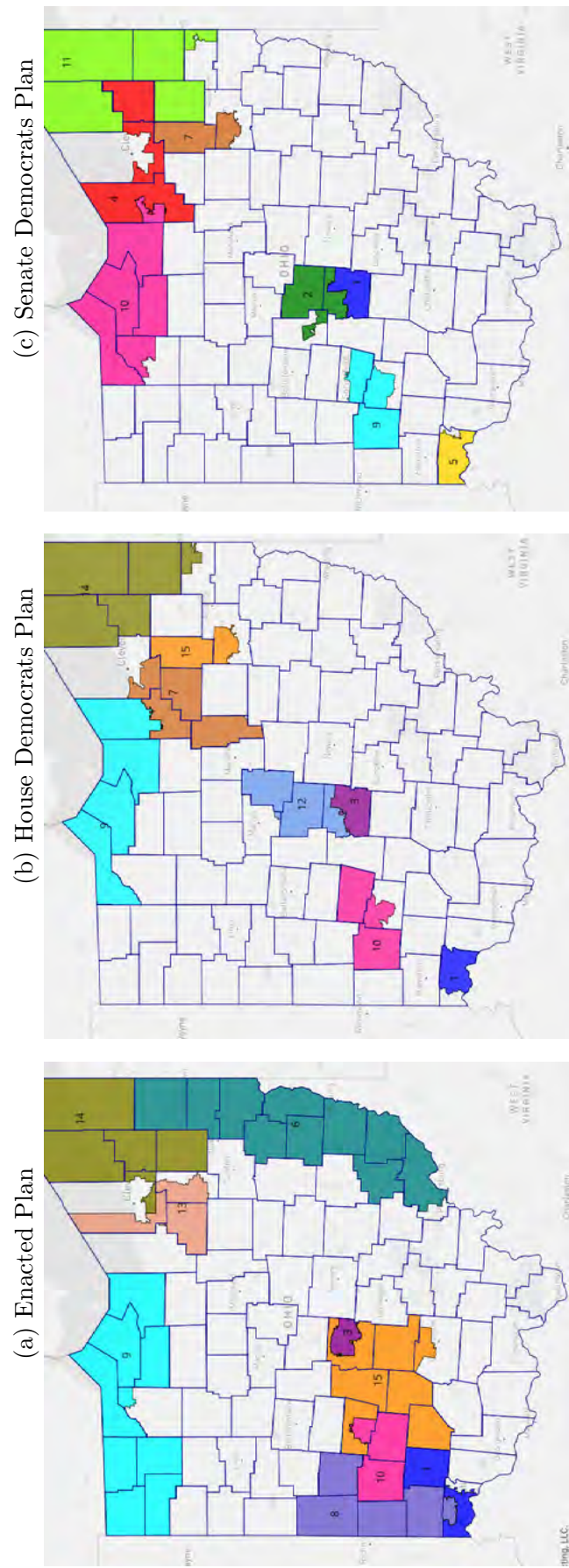


Figure 9: Competitive District Boundaries Across All Three Plans

Table 4 further explores the results of statewide federal elections in each district. The table shows the number of districts in which the Democratic candidate for statewide federal races from 2012-2020 won a majority of the two-party vote share in each district. The first column shows these results for the Enacted Plan. The second column of numbers shows the results for the House Democratic plan, and the third column of numbers shows the results for the plan put forward by Senate Democrats. There are a number of important feature to note from this table.

First, in all three plans there is dramatic variation in the number of districts in which the Democratic candidate for statewide office won a majority of votes. While these district boundaries are held constant, the quality and appeal of individual candidates as well as the overall electoral environment varies, and the change in the number of Democratic districts likewise varies dramatically as a result. In all three plans there are elections in which the Democratic candidate for statewide office won a majority of the votes in only two of the fifteen districts (2016 Senate race). Likewise, in all three plans the best Democratic performance occurred in the 2018 US Senate race where the Democratic candidate for statewide office won a majority of the votes cast in a majority of districts (9) in across all three plans. Again, it is worth emphasizing that these results are similar across all three proposed plans despite the differences in the particular boundaries across the plans.

Second, in two of the six total statewide contests over the last ten years the Democratic candidate for statewide office won a majority of the two-party vote share in the same number of districts across all three plans. This occurred in the 2018 US Senate race and the 2016 US Senate race. These specific contests are italicized in the table for easy reference.

Third, in places where the differences between plans are larger (i.e. 2016 presidential election), the difference is entirely attributable to candidate quality and variation in voters' preferences for those candidates. For example, consider the 2016 Presidential race. In the Enacted Plan the Democratic candidate for statewide office (Hillary Clinton) won a majority of votes in only two of districts while in the House Democratic plan and the Senate

Democratic plan Clinton won a majority of votes in six of the districts. However, under the same district boundaries and in the exact same election cycle, with candidates appearing on the same ballot, voters awarded a majority of votes to the Democratic candidate for US Senate in only two of the fifteen districts across all three plans. In other words, the differences in majority Democratic districts across plans in the 2016 election is not attributable to variation in the districting plans since under the same plans a different candidate in the same election performed equally well across plans. Stated differently, the same voters who cast ballots awarding majorities to the Democratic candidate for President in six of fifteen districts also chose different candidates in different races that caused the Democratic candidate for Senate to win the majority of votes in only two districts. Voter preferences are dynamic and can shift, even within the same election cycle, across races.

Table 4: Statewide Federal Election Results, 2012-2020, Across Districting Plans

	Enacted Plan	House Democrats	Senate Democrats
Election:	Number D Districts	Number D Districts	Number D Districts
2020			
President	4	6	7
2018			
<i>US Senate</i>	9	9	9
2016			
President	2	6	6
<i>US Senate</i>	2	2	2
2012			
President	6	7	8
US Senate	8	9	9

Note: Each column shows the number of districts where statewide Democratic candidates won a majority of votes in the district across proposed redistricting plans.

6 How Do The Plans Compare on other Metrics?

In this section I compare the Enacted Plan to the House and Senate Democrats’ plans. The metrics I choose are derived from statements in the Ohio Constitution regarding how districts should be drawn. Specifically I consider political boundary splits and the treatment of incumbents as an indication of activities meant to benefit one party over the other.

Table 5: Comparison of Plans

	Enacted Plan	House Democrats Plan	Senate Democrats Plan
Boundary Splits:			
Counties Split:	12	14	14
Total County Splits:	14	14	14
Incumbent ‘Double-Bunking’:			
Republican/Republican	2	4	6
Republican/Republican/Republican	0	3	0
Democrat/Democrat	0	0	0
Republican/Democrat	0	1/1	1/1
Total Legislators ‘Double Bunked’:	2	9	8

Boundary Splits:

Article XIX Section 1(C)(2)(b) of the Ohio Constitution details the way in which county, municipality, and township boundaries are to be divided. The top half of Table 5 considers the number of county splits. If a district is partially in one county and contains the entirety of an adjacent county, the county with the “partial” district is considered split while the adjacent whole county is not. Because counties’ populations do not always exactly add up to the population of the ideal district size, there will by necessity be some splits. Looking at Table 5 we see that the Enacted Plan splits 12 counties a total of 14 times while the House Democrats’ plan splits 14 counties 14 times. The Senate Democrats’ plan splits 14 counties 14 times.

Incumbent “Double-Bunking”: The second section of Table 5 looks at the rate of incumbent “double-bunking.” Double-bunking is a colloquial term for the situation in which two incumbents who currently represent different districts are drawn into the same district in the new plan. If the two incumbents are of the same party, this then forces them to compete with one another in a primary election for the party’s nomination. If the two incumbents are of a different party, this has the effect of forcing an incumbent to run in the general election against another incumbent or requiring them to run in a district in which they do not reside. One of the most foundational and well established principles of American politics is that legislators are strategic and re-election motivated.¹² Placing two incumbents, particularly of the same party, into a new district and forcing them to compete with one another in a primary election is something they strongly dislike and try to avoid at all costs. Of course, pleasing incumbent legislators is not the job of the General Assembly, but double-bunking legislators of the opposing party is a way to not only cause pain for your political rivals, but it also produces districts with no incumbent in the next election where candidates from your party will likely perform better due to the lack of any incumbency advantage. As such, it is a partisan tactic often used during redistricting and would indicate drawing boundaries with the intent to benefit a political party, something prohibited in Article XIX Section 1(C)(3)(a) of the Ohio Constitution which indicates that the legislature “shall not pass a plan that unduly favors or disfavors a political party or its incumbents.”

Ohio is losing one congressional district (going from 16 to 15), so initially there would need to be one case of double bunking as one legislator’s district will need to be subsumed into the remaining 15 districts. However, one incumbent, that I am aware of, has announced his intention to retire, while another has announced his intention to run for US Senate, leaving 14 incumbents who could still run for reelection in 2022.

¹²For example, waiting to run for election when a district is open rather than facing a strong incumbent, or waiting for an incumbent’s term limit if a state has term limits, or fundraising as a way to ward off potential challengers. Mayhew, David R. *Congress: The electoral connection*. Yale university press, 2004. Rogers, Steven. “Strategic challenger entry in a federal system: The role of economic and political conditions in state legislative competition.” *Legislative Studies Quarterly* 40, no. 4 (2015): 539-570.

The Enacted Plan double-bunks two incumbent Republican legislators who are placed in the same district (District 1). The House Democrats’ plan double-bunks nine incumbents total (8R-1D, out of 14 incumbents seeking reelection). It does this in a few ways. First, two pairs of Republicans are placed together into two districts (Districts 1 and 4). The House Democrats’ plan also “triple bunks” three Republicans together into District 6. Finally, the House Democrats’ plan places an incumbent Republican and Democrat into the same district in District 3. In the Senate Democrats’ plan, eight Republican incumbents are double bunked together (7R-1D). Three pairs of Republicans are placed together in Districts 5, 12, and 15. A Republican and Democratic incumbent are placed together in District 1.

7 Competitiveness and Comparisons to 2011 District Plan

In this section I consider the competitiveness of the districts in the Enacted Plan, the House Democrats’, and the Senate Democrats’ plans. I also include a comparison to the districting plan used in the previous redistricting cycle. Electoral competitiveness is an essential component of a liberal democracy. The threat of electoral defeat is critical to creating a democratic government in which elected officials are responsive to public opinion and are held accountable for their decisions while in office.¹³

To measure competitiveness, I use a variety of different metrics. The reason for this is that depending on the metric one uses, the results can vary dramatically. Thus, looking across multiple measures provides a more comprehensive view of the differences across the plans. Furthermore, each metric is increasingly restrictive in its definition of competitiveness.

¹³Mayhew, David R., 1974. *Congress: The Electoral Connection*. New Haven, CT: Yale University Press. Gordon, Sanford C., and Gregory Huber. “The effect of electoral competitiveness on incumbent behavior.” *Quarterly Journal of Political Science* 2, no. 2 (2007): 107-138. Ansolabehere, Stephen, David Brady, and Morris Fiorina. “The vanishing marginals and electoral responsiveness.” *British Journal of Political Science* 22, no. 1 (1992): 21-38. Dropp, Kyle, and Zachary Peskowitz. “Electoral security and the provision of constituency service.” *The Journal of Politics* 74, no. 1 (2012): 220-234.

The first measure I use is the same as the metric by which I divided the districts in the previous sections of the report. I consider a district competitive if both a Democratic and Republican candidate for statewide federal office between 2012-2020 have won a majority of the two-party vote share in that district. Table 6 shows these results and labels this the “bipartisan victories” metric. This approach has the virtue of considering the candidate-specific characteristics that a partisan average or index would not measure. For example, particular candidates from either party might outperform their party’s average candidate performance. This is important to consider because actual elections are determined by which candidate wins the most votes, not the result of an average of votes cast, and individual elections in individual districts are influenced by the characteristics and qualities of individual candidates. For example, Sherrod Brown has consistently won statewide in Ohio by large margins while other statewide Democratic candidates for Senate have not performed as well (e.g. Ted Strickland in 2016). Democratic candidates throughout the state that are similar to Brown in their issue positions, background, or other factors may perform better than candidates who are closer to Strickland on these metrics. Furthermore, the appeal (or lack of appeal) of particular candidates may vary across the state as well.

The next measure I use defines a district as competitive if the partisan index is within a certain range of values. Various expert reports in this case and others, as well as across literature in political science consider different ranges to be competitive, and I define two different measures here. The first range of competitiveness is based on the average difference in the two-party vote share of federal statewide elections over the 2012-2020 period. In this decade the average range of federal statewide election results in the fifteen districts across all three proposed plans is roughly 7.5 percentage points. I use this as a benchmark of the typical amount by which election results might vary in a given cycle. Thus, I take this 7.5 percentage points and apply it symmetrically around the 50% two-party threshold for winning a district. In other words, I consider a district that has a partisan index between 46.25% and 53.75% (for a total range of 7.5 points) to be competitive.

The final measure uses the partisan index but simply looks at races that are decided within 2 percentage points of 50% of the two-party vote share. Scholars have often used two percentage points as a heuristic for hyper-close races in which unforeseen or “knife-edge electoral shifts” can change election results.¹⁴ Furthermore, recent studies of the legislative incumbency advantage have suggested a decline in the benefit afforded to incumbents by voters with more recent estimates being between 3 and 4 percentage points, which divided symmetrically would yield roughly 2 points on either side of the 50% vote margin.¹⁵

Unlike the first metric described above, these two measures of competitiveness are based on the average performance of candidates. Both metrics have their benefits and drawbacks. The virtue of using the average is that it “washes out” the impact of any one particular candidate by aggregating multiple election results together. The virtue of the “bipartisan victories” metric described above is that it captures the fact that particular candidates can, and do, often perform very differently from what a partisan index would predict. Thus, the virtues of the first are in many ways the drawbacks of the second, and vice versa. As a result, including both presents a more complete picture.

Table 6: Comparison of Competitive Districts in Plans

	Enacted	House Democrats	Senate Democrats	2011-2020
Bipartisan Victories:	7	7	7	6
7.5% Index:	7	4	4	2
2% Index between:	2	2	3	0

Looking at the table, we see that the 2011 plan is less competitive across all three measures of competition than the Enacted Plan or either of the House and Senate Democrats’ plans. Using the most expansive definition of competitiveness, the “bipartisan victories” metric, the Enacted Plan has one more competitive district than the 2011-2020 districting plan had. Given the target population of each congressional district, this is more than

¹⁴Erikson, Robert S., and Rocío Titiunik. “Using regression discontinuity to uncover the personal incumbency advantage.” *Quarterly Journal of Political Science* 10, no. 1 (2015): 101-119.

¹⁵Jacobson, Gary C. “It’s nothing personal: The decline of the incumbency advantage in US House elections.” *The Journal of Politics* 77, no. 3 (2015): 861-873.

700,000 additional Ohio voters who will now live in a competitive congressional district than under the prior plan, by this metric. The differences are more substantial when looking at the ranges using the partisan index. Here there is a four seat increase in competitiveness when comparing the Enacted Plan to the 2011-2020 Plan on the second measure (more than 3 million additional voters in competitive districts by this metric), and there is a two seat increase in competitiveness when comparing the Enacted Plan to the 2011-2020 Plan on the third measure (approximately 1.5 million additional voters in hyper-competitive districts than before).

Furthermore, the Enacted Plan is equal in competitiveness to the House and Senate Democrats' plans using the bipartisan victories metric. When looking at the metrics based on the partisan index, the Enacted Plan has three more competitive districts than the House and Senate Democrats' plans using the 7.5% window of competitiveness and is equal to the House and Democrats' plan and has only one fewer hyper-competitive district compared to the Senate Democrats' proposal. Thus, by any metric presented here, the Enacted Plan increases competitiveness compared to the districts from the previous decade and is equal to or more competitive than the House and Senate Democrats' plans across five of six comparisons.

8 Conclusion

Based on the evidence and analysis presented above, my opinions regarding the 2021 congressional redistricting process in Ohio can be summarized as follows:

- The contemporary political geography of Ohio is such that Democratic majorities are geographically clustered in the largest cities of the state while Republican voters dominate the suburban and rural portions of the state.
- This geographic clustering means that map drawers all face similar constraints when drawing the 15 districts throughout the state.

- A review of the Enacted Plan, the House Democrats' Plan and Senate Democrats' Plan shows a similar partisan composition of districts.
- The House and Senate Democrats' plans place many more incumbents into districts that cause incumbent "double bunking."
- Compared to the 2011-2020 district plan, the Enacted plan creates more competitive districts, and is equal to or more competitive than the House and Senate Democrats' plans across five of six comparisons.

Appendix A - Curriculum Vitae

Michael Jay Barber

CONTACT INFORMATION

Brigham Young University
Department of Political Science
724 KMBL
Provo, UT 84602

barber@byu.edu
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ACADEMIC APPOINTMENTS

Brigham Young University, Provo, UT

August 2020 - present Associate Professor, Department of Political Science
2014 - July 2020 Assistant Professor, Department of Political Science
2014 - present Faculty Scholar, Center for the Study of Elections and Democracy

EDUCATION

Princeton University Department of Politics, Princeton, NJ

Ph.D., Politics, July 2014

- Advisors: Brandice Canes-Wrone, Nolan McCarty, and Kosuke Imai
- Dissertation: “Buying Representation: the Incentives, Ideology, and Influence of Campaign Contributions on American Politics”
- 2015 Carl Albert Award for Best Dissertation, Legislative Studies Section, American Political Science Association (APSA)

M.A., Politics, December 2011

Brigham Young University, Provo, UT

B.A., International Relations - Political Economy Focus, April, 2008

- *Cum Laude*

RESEARCH INTERESTS

American politics, congressional polarization, political ideology, campaign finance, survey research

PUBLICATIONS

19. **“Ideological Disagreement and Pre-emption in Municipal Policymaking”**
with Adam Dynes
Forthcoming at *American Journal of Political Science*
18. **“Comparing Campaign Finance and Vote Based Measures of Ideology”**
Forthcoming at *Journal of Politics*
17. **“The Participatory and Partisan Impacts of Mandatory Vote-by-Mail”**, with John Holbein
Science Advances, 2020. Vol. 6, no. 35, DOI: 10.1126/sciadv.abc7685
16. **“Issue Politicization and Interest Group Campaign Contribution Strategies”**, with Mandi Eatough
Journal of Politics, 2020. Vol. 82: No. 3, pp. 1008-1025

15. **“Campaign Contributions and Donors’ Policy Agreement with Presidential Candidates”**, with Brandice Canes-Wrone and Sharece Thrower
Presidential Studies Quarterly, 2019, 49 (4) 770–797
14. **“Conservatism in the Era of Trump”**, with Jeremy Pope
Perspectives on Politics, 2019, 17 (3) 719–736
13. **“Legislative Constraints on Executive Unilateralism in Separation of Powers Systems”**, with Alex Bolton and Sharece Thrower
Legislative Studies Quarterly, 2019, 44 (3) 515–548
Awarded the Jewell-Loewenberg Award for best article in the area of subnational politics published in *Legislative Studies Quarterly* in 2019
12. **“Electoral Competitiveness and Legislative Productivity”**, with Soren Schmidt
American Politics Research, 2019, 47 (4) 683–708
11. **“Does Party Trump Ideology? Disentangling Party and Ideology in America”**, with Jeremy Pope
American Political Science Review, 2019, 113 (1) 38–54
10. **“The Evolution of National Constitutions”**, with Scott Abramson
Quarterly Journal of Political Science, 2019, 14 (1) 89–114
9. **“Who is Ideological? Measuring Ideological Responses to Policy Questions in the American Public”**, with Jeremy Pope
The Forum: A Journal of Applied Research in Contemporary Politics, 2018, 16 (1) 97–122
8. **“Status Quo Bias in Ballot Wording”**, with David Gordon, Ryan Hill, and Joe Price
The Journal of Experimental Political Science, 2017, 4 (2) 151–160.
7. **“Ideologically Sophisticated Donors: Which Candidates Do Individual Contributors Finance?”**, with Brandice Canes-Wrone and Sharece Thrower
American Journal of Political Science, 2017, 61 (2) 271–288.
6. **“Gender Inequalities in Campaign Finance: A Regression Discontinuity Design”**, with Daniel Butler and Jessica Preece
Quarterly Journal of Political Science, 2016, Vol. 11, No. 2: 219–248.
5. **“Representing the Preferences of Donors, Partisans, and Voters in the U.S. Senate”**
Public Opinion Quarterly, 2016, 80: 225–249.
4. **“Donation Motivations: Testing Theories of Access and Ideology”**
Political Research Quarterly, 2016, 69 (1) 148–160.
3. **“Ideological Donors, Contribution Limits, and the Polarization of State Legislatures”**
Journal of Politics, 2016, 78 (1) 296–310.
2. **“Online Polls and Registration Based Sampling: A New Method for Pre-Election Polling”** with Quin Monson, Kelly Patterson and Chris Mann.
Political Analysis 2014, 22 (3) 321–335.
1. **“Causes and Consequences of Political Polarization”** In *Negotiating Agreement in Politics*. Jane Mansbridge and Cathie Jo Martin, eds., Washington, DC: American Political Science Association: 19–53. with Nolan McCarty. 2013.
 - Reprinted in *Solutions to Political Polarization in America*, Cambridge University Press. Nate Persily, eds. 2015
 - Reprinted in *Political Negotiation: A Handbook*, Brookings Institution Press. Jane Mansbridge and Cathie Jo Martin, eds. 2015

AVAILABLE
WORKING PAPERS

“Misclassification and Bias in Predictions of Individual Ethnicity from Administrative Records” (Revise and Resubmit at *American Political Science Review*)

“Taking Cues When You Don’t Care: Issue Importance and Partisan Cue Taking”
with Jeremy Pope

“A Revolution of Rights in American Founding Documents”
with Scott Abramson and Jeremy Pope (Under Review)

“410 Million Voting Records Show the Distribution of Turnout in America Today”
with John Holbein (Under Review)

“Partisanship and Trolleyology”
with Ryan Davis (Under Review)

“Who’s the Partisan: Are Issues or Groups More Important to Partisanship?”
with Jeremy Pope (Under Review)

“The Policy Preferences of Donors and Voters”

“Estimating Neighborhood Effects on Turnout from Geocoded Voter Registration Records.”
with Kosuke Imai

“Super PAC Contributions in Congressional Elections”

WORKS IN
PROGRESS

“Collaborative Study of Democracy and Politics”
with Brandice Canes-Wrone, Gregory Huber, and Joshua Clinton

“Preferences for Representational Styles in the American Public”
with Ryan Davis and Adam Dynes

“Representation and Issue Congruence in Congress”
with Taylor Petersen

“Education, Income, and the Vote for Trump”
with Edie Ellison

INVITED
PRESENTATIONS

“Are Mormons Breaking Up with Republicanism? The Unique Political Behavior of Mormons in the 2016 Presidential Election”

- Ivy League LDS Student Association Conference - Princeton University, November 2018, Princeton, NJ

“Issue Politicization and Access-Oriented Giving: A Theory of PAC Contribution Behavior”

- Vanderbilt University, May 2017, Nashville, TN

“Lost in Issue Space? Measuring Levels of Ideology in the American Public”

- Yale University, April 2016, New Haven, CT

“The Incentives, Ideology, and Influence of Campaign Donors in American Politics”

- University of Oklahoma, April 2016, Norman, OK

“Lost in Issue Space? Measuring Levels of Ideology in the American Public”

- University of Wisconsin - Madison, February 2016, Madison, WI

“Polarization and Campaign Contributors: Motivations, Ideology, and Policy”

- Hewlett Foundation Conference on Lobbying and Campaign Finance, October 2014, Palo Alto, CA

“Ideological Donors, Contribution Limits, and the Polarization of State Legislatures”

- Bipartisan Policy Center Meeting on Party Polarization and Campaign Finance, September 2014, Washington, DC

“Representing the Preferences of Donors, Partisans, and Voters in the U.S. Senate”

- Yale Center for the Study of American Politics Conference, May 2014, New Haven, CT

CONFERENCE PRESENTATIONS

Washington D.C. Political Economy Conference (PECO):

- 2017 discussant

American Political Science Association (APSA) Annual Meeting:

- 2014 participant and discussant, 2015 participant, 2016 participant, 2017 participant, 2018 participant

Midwest Political Science Association (MPSA) Annual Meeting:

- 2015 participant and discussant, 2016 participant and discussant, 2018 participant

Southern Political Science Association (SPSA) Annual Meeting:

- 2015 participant and discussant, 2016 participant and discussant, 2017 participant

TEACHING EXPERIENCE

Poli 315: Congress and the Legislative Process

- Fall 2014, Winter 2015, Fall 2015, Winter 2016, Summer 2017

Poli 328: Quantitative Analysis

- Winter 2017, Fall 2017, Fall 2019, Winter 2020, Fall 2020, Winter 2021

Poli 410: Undergraduate Research Seminar in American Politics

- Fall 2014, Winter 2015, Fall 2015, Winter 2016, Summer 2017

AWARDS AND GRANTS

2019 BYU Mentored Environment Grant (MEG), American Ideology Project, \$30,000

2017 BYU Political Science Teacher of the Year Award

2017 BYU Mentored Environment Grant (MEG), Funding American Democracy Project, \$20,000

2016 BYU Political Science Department, Political Ideology and President Trump (with Jeremy Pope), \$7,500

2016 BYU Office of Research and Creative Activities (ORCA) Student Mentored Grant x 3

- Hayden Galloway, Jennica Peterson, Rebecca Shuel

2015 BYU Office of Research and Creative Activities (ORCA) Student Mentored Grant x 3

- Michael-Sean Covey, Hayden Galloway, Sean Stephenson

2015 BYU Student Experiential Learning Grant, American Founding Comparative Constitutions Project (with Jeremy Pope), \$9,000

2015 BYU Social Science College Research Grant, \$5,000

2014 BYU Political Science Department, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$3,000

2014 BYU Social Science College Award, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$3,000

2014 BYU Center for the Study of Elections and Democracy, 2014 Washington DC Mayoral Pre-Election Poll (with Quin Monson and Kelly Patterson), \$2,000

2012 Princeton Center for the Study of Democratic Politics Dissertation Improvement Grant, \$5,000

2011 Princeton Mamdouha S. Bobst Center for Peace and Justice Dissertation Research Grant, \$5,000

2011 Princeton Political Economy Research Grant, \$1,500

OTHER SCHOLARLY ACTIVITIES Expert Witness in Nancy Carola Jacobson, et al., Plaintiffs, vs. Laurel M. Lee, et al., Defendants. Case No. 4:18-cv-00262 MW-CAS (U.S. District Court for the Northern District of Florida)

Expert Witness in Common Cause, et al., Plaintiffs, vs. LEWIS, et al., Defendants. Case No. 18-CVS-14001 (Wake County, North Carolina)

Expert Witness in Kelvin Jones, et al., Plaintiffs, v. Ron DeSantis, et al., Defendants, Consolidated Case No. 4:19-cv-300 (U.S. District Court for the Northern District of Florida)

Expert Witness in Community Success Initiative, et al., Plaintiffs, v. Timothy K. Moore, et al., Defendants, Case No. 19-cv-15941 (Wake County, North Carolina)

Expert Witness in Richard Rose et al., Plaintiffs, v. Brad Raffensperger, Defendant, Civil Action No. 1:20-cv-02921-SDG (U.S. District Court for the Northern District of Georgia)

Georgia Coalition for the People's Agenda, Inc., et. al., Plaintiffs, v. Brad Raffensberger, Defendant. Civil Action No. 1:18-cv-04727-ELR (U.S. District Court for the Northern District of Georgia)

Expert Witness in Alabama, et al., Plaintiffs, v. United States Department of Commerce; Gina Raimondo, et al., Defendants. Case No. CASE No. 3:21-cv-00211-RAH-ECM-KCN (U.S. District Court for the Middle District of Alabama Eastern Division)

Expert Witness in League of Women Voters of Ohio, et al., Relators, v. Ohio Redistricting Commission, et al., Respondents. Case No. 2021-1193 (Supreme Court of Ohio)

ADDITIONAL
TRAINING

EITM 2012 at Princeton University - Participant and Graduate Student Coordinator

COMPUTER
SKILLS

Statistical Programs: R, Stata, SPSS, parallel computing

Updated December 1, 2021

Exhibit 37

IN THE SUPREME COURT OF OHIO

Regina Adams, *et al.*,

Relators,

v.

Governor Mike DeWine, *et al.*,

Respondents.

Case No. 2021-1428

Original Action Filed Pursuant to Ohio
Constitution, Article XIX, Section 3(A)

AFFIDAVIT OF RAYMOND E. DiROSSI

INTRODUCTION

Now comes affiant Raymond E. DiRossi, having been first duly cautioned and sworn, deposes and states as follows:

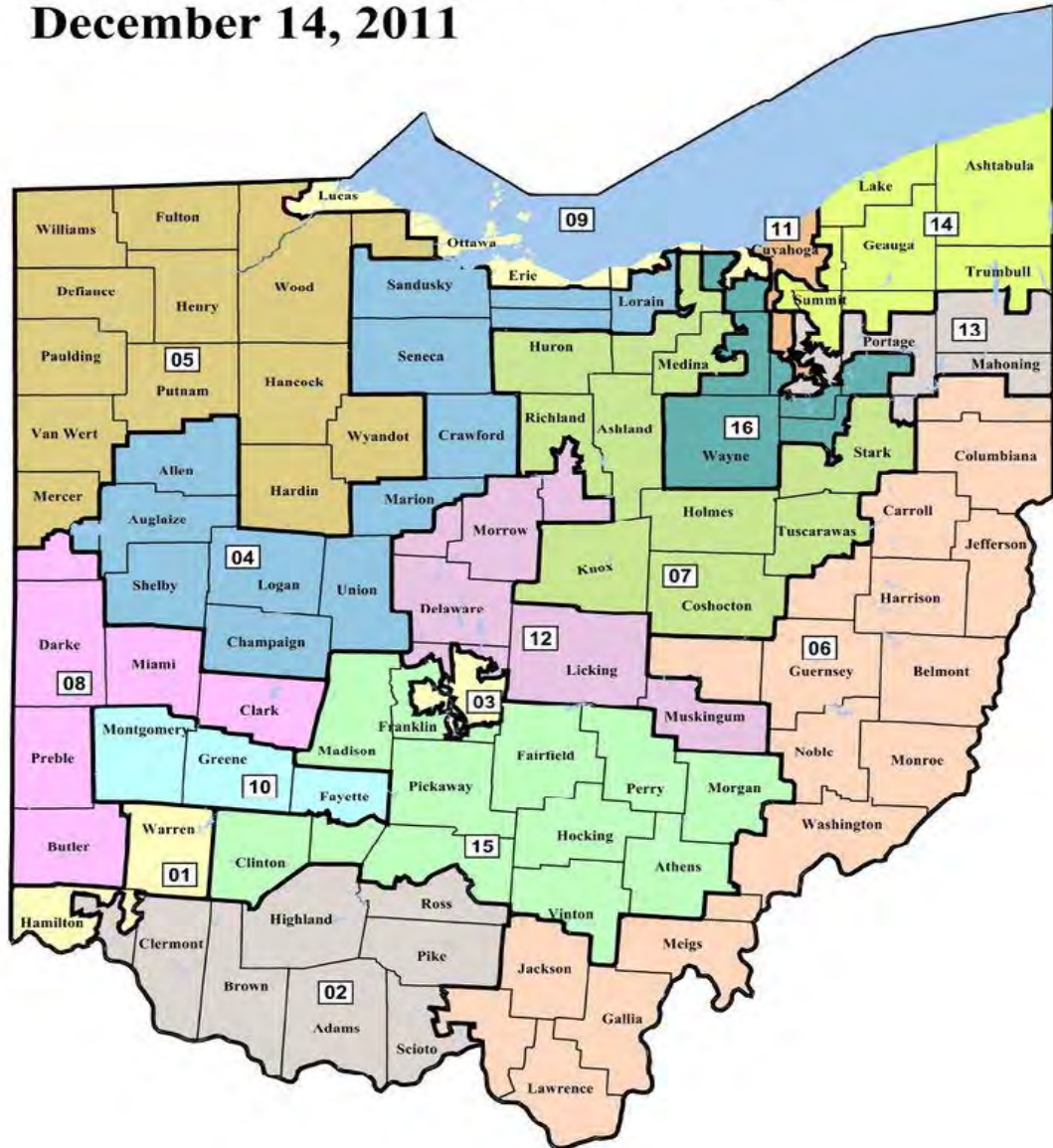
1. My name is Raymond E. DiRossi. I am over the age of 18, competent to give this testimony, and have personal knowledge of the facts set forth herein.
2. I am the Director for Budget and Finance in the Ohio Senate.
3. I participated in the drafting of Substitute Senate Bill no. 258 of the 134th General Assembly (“S.B. 258”), the bill passed by the General Assembly, and signed by the Governor, that establishes Ohio’s congressional districts that are set to take effect beginning in the 2022 election cycle. I will also refer to S.B. 258 as the “2021 Congressional Plan.” My role regarding S.B. 258 was to prepare maps for the bill sponsor, Senator Rob McColley, to review and approve. My primary objective was to create a congressional map that complies with Article XIX of the Ohio Constitution.

The 2011 Congressional Plan

4. In 2020, congressional elections were held in Ohio under a congressional plan enacted in 2011 using 2010 census data. *See* Substitute House Bill no. 369 of the 129th General

Assembly (the “2011 Congressional Plan”). A map of the 2011 Congressional Plan is set forth as follows:

Sub. H.B. 369 Congressional Map December 14, 2011

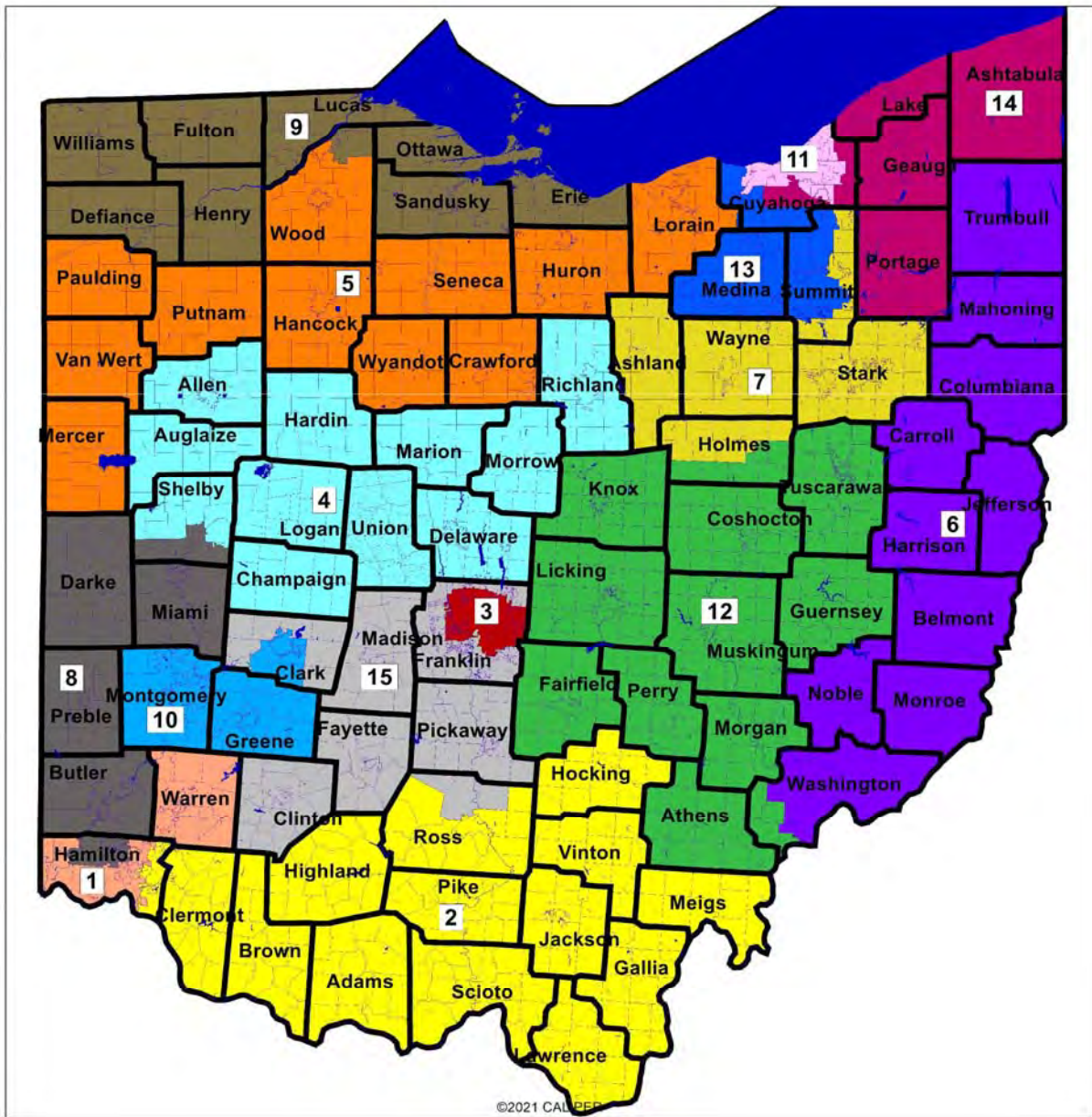


5. In the 2020 November general election, the following individuals were elected to Congress in Ohio:

CD 1	Steve Chabot (R)
CD 2	Brad Wenstrup (R)
CD 3	Joyce Beatty (D)
CD 4	Jim Jordan (R)
CD 5	Bob Latta (R)
CD 6	Bill Johnson (R)
CD 7	Bob Gibbs (R)
CD 8	Warren Davidson (R)
CD 9	Marcy Kaptur (D)
CD 10	Mike Turner (R)
CD 11	Marcia Fudge (D)
CD 12	Troy Balderson (R)
CD 13	Tim Ryan (D)
CD 14	David Joyce (R)
CD 15	Steve Stivers (R)
CD 16	Anthony Gonzalez (R)

The 2021 Congressional Apportionment

6. Apportionment is the process of dividing the 435 seats in the United States House of Representatives among the 50 states. At the conclusion of each decennial census, the results are used to calculate the number of seats to which each state is entitled. <https://www.census.gov/data/tables/2020/dec/2020-apportionment-data.html>. Based on the Census Bureau's 2020 census results, Ohio was apportioned 15 seats in 2021, as opposed to the 16 seats apportioned to the state under the 2010 census.
7. Representatives Tim Ryan (D) (CD 13) and Anthony Gonzalez (R) (CD 16) announced their intentions to not run for Congress, prior to the introduction of S.B. 258. Assuming they do not seek reelection, 14 incumbents will remain for the 15 districts that were created through the enactment of S.B. 258, the map of which is set forth as follows:



8. Of the 14 incumbent members of Congress who intend to seek reelection in November 2022, only two of them will be paired under the 2021 Congressional Plan:

District 1 – Steve Chabot (R) and Brad Wenstrup (R)

The 2021 Congressional Plan

9. As Senator McColley testified throughout the legislative proceedings on S.B. 258, the goals behind the map were to create more competitive districts than the 2011 Congressional Plan, reduce splits to counties, municipal corporations and townships, and reconfigure the so-called “Snake on the Lake”, “Duck” and “Sliver on the River” districts so that they would no longer be oddly-shaped districts.
10. To evaluate the competitiveness of a particular congressional district, there are 2 main decisions: (i) what election results to use; and (ii) what range of competitiveness to use.
11. In deciding what election results to use, I averaged the partisan results from the most recent 10 years of statewide federal elections in Ohio from 2012 to 2020. This includes the presidential elections held in Ohio in 2012, 2016 and 2020, and the United States Senate elections held in Ohio in 2012, 2016 and 2018. Those elections resulted in 3 Republican victories in Ohio (Trump in 2016; Portman in 2016; and Trump in 2020) and 3 Democrat victories in Ohio (Obama in 2012; Brown in 2012; and Brown in 2018).
12. In deciding what range of competitiveness to use, hours of testimony were heard during the legislative proceedings on the range of partisan results to use to determine a district’s competitiveness. Districts +/- 2% (an absolute 4% deviation) were described as “hyper competitive”, while districts with as much as +/- 5% (an absolute 10% deviation) were described as “competitive”.
13. In lieu of this testimony, Senators Matt Huffman and Rob McColley settled on a +/- 4% (an absolute 8% deviation) range to judge whether a district is competitive. An index was

used to estimate how generic candidates of each political party might perform in any particular district.

14. When applying the 10 years of statewide federal election results, and looking at districts with a range of +/-4% (an absolute 8% deviation), the 2021 Congressional Plan has 7 competitive districts. For consistency, the political lean I calculated for each district is stated as a Republican number. Thus, a 53% district would indicate a district 3% more Republican than 50-50. Likewise, 47% would indicate a district 3% more Democrat than 50-50. A brief discussion of each of the 7 competitive districts follows (in ascending order of absolute deviation from 50-50):

Congressional District 13 **48.6% Republican**

This district leans Democrat. President Biden beat President Trump by a very slim margin (Biden 50.4% to Trump 49.6%). This district in the 2011 Congressional Plan was a non-competitive 42% Republican district, but was made to be hyper competitive. There is no incumbent of either political party in this district.

Congressional District 1 **51.5% Republican**

This is another hyper competitive district. There is a Republican incumbent. This district leans slightly Republican at 51.5%. However, President Biden won the district with 50.9% of the vote. The same district in the 2011 Congressional Plan was a more Republican friendly leaning 53.6%, but was made to be hyper competitive in the 2021 Congressional Plan.

Congressional District 10 **52.2% Republican**

This is a competitive district, just barely outside the outer limit of being a hyper competitive district. There is a Republican incumbent. If you look at the House Democrat proposed map (HB 483) and the Senate Democrat proposed map (SB 273), each has a very similar district with the one in the 2021 Congressional Plan (although it is mysteriously re-numbered CD 9 in the Senate Democrat map and correctly numbered CD 10 in the House Democrat map). All three plans generally have the same footprint for this district; specifically, all three plans include all of Montgomery County, and all or part of Clark and Greene counties.

Congressional District 9**47.77% Republican**

This is another competitive district that is just barely outside the outer limit of being a hyper competitive district. There is a Democrat incumbent. This is another Democrat leaning seat. This district in the 2011 Congressional Plan was a non-competitive 36.3% Democrat district. In many ways, CD 9 is the perfect opposite of CD 1 (discussed above). CD 9 leans slightly Democrat, but President Trump narrowly defeated President Biden in this district. Similarly, CD 1 leans slightly Republican, but President Biden narrowly defeated President Trump in this district.

Congressional District 6**52.9% Republican**

This is a competitive district. There is a Republican incumbent. This district more than any of the 7 competitive districts has undergone a transition. This district, as proposed in the initial S.B. 258 map, changed in response to public testimony urging that all of Mahoning and Trumbull counties be included in the same district. Notably, and contrary to the public's requests, both the House and Senate Democrat maps split Trumbull County into two separate districts. Nevertheless, Mahoning and Trumbull counties are unified in the 2021 Congressional Plan, and will account for 54.7% of the district's population. With these changes, the district becomes much more competitive at 52.9% Republican instead of a previous 64.2% Republican.

Congressional District 14**53.2% Republican**

This is another competitive district. There is a Republican incumbent. This district has been a traditionally competitive seat in northeast Ohio. Losing its portion of northern Trumbull County and the northern suburbs of Summit County, and moving more into Cuyahoga County, makes the district slightly more Democrat leaning, reducing the index of 53.9% under the 2011 Congressional Plan to a more competitive 53.2%.

Congressional District 15**53.7% Republican**

This is another competitive district. There is a Republican incumbent, who was recently newly elected to this district in a special election. While this district leans Republican, the district underwent significant geography changes and now includes almost 540,000 Franklin county residents, which amounts to almost 68.5% of the district's population. This district in the 2011 Congressional Plan was a non-competitive 56.40% Republican district, but was made almost 3% more Democrat leaning.

15. Of these 7 competitive districts, 5 Republican leaning districts were made more Democrat, and 2 Democrat leaning districts were made more Republican, than the 2011 Congressional

Plan. All 7 districts were made more competitive, and none were made less competitive, than the 2011 Congressional Plan.

Analysis of Various Plans

16. When applying the +/- 4% range to the 2021 and 2011 Congressional Plans, as well as the House (HB 483) and Senate (SB 237) Democrat plans, the number of competitive districts in each of those plans is as follows:

○ 2021 Congressional Plan	7 competitive districts	(CDs 1,6,9,10,13,14,15)
○ Senate Democrat (SB 237)	5 competitive districts	(CDs 2,4,7,9,11)
○ House Democrat (HB 483)	5 competitive districts	(CDs 7,10,12,14,15)
○ 2011 Congressional Plan	2 competitive districts	(CDs 1,10)

17. Turning to the geography of the four plans, it must first be noted that Article XIX, Section 2(B)(5) allows for no more than 23 counties to be split. Below is a comparison of the total number of split counties in the 2021 and 2011 Congressional Plans, as well as the House and Senate Democrat plans:

○ 2021 Congressional Plan	12 counties split	76 whole counties
○ Senate Democrat (SB 237)	14 counties split	74 whole counties
○ House Democrat (HB 483)	14 counties split	74 whole counties
○ 2011 Congressional Plan	23 counties split	65 whole counties

18. The 2021 Congressional Plan only splits 12 counties. As a result, the vast majority of counties throughout Ohio will see reductions in, or the elimination of, the previous decade's splits. The following chart shows the impact at the county level of reducing the number of split counties statewide from 23 in the 2011 congressional plan to just 12 in the 2021 Congressional Plan.

County	2011 Plan (23 splits) Enacted	2021 Plan (12 splits) Enacted
Athens	Split: 2 CDs	Made Whole
Clark	Whole	Split: 2 CDs
Cuyahoga	Split: 4 CDs	Split: 3 CDs
Erie	Split: 2 CDs	Made Whole
Fairfield	Whole	Split: 2 CDs
Fayette	Split: 2 CDs	Made Whole
Franklin	Split: 3 CDs	Split: 2 CDs
Hamilton	Split: 2 CDs	Split: 3 CDs
Holmes	Whole	Split: 2 CDs
Huron	Split: 2 CDs	Made Whole
Lorain	Split: 3 CDs	Split: 2 CDs
Lucas	Split: 2 CDs	Made Whole
Mahoning	Split: 2 CDs	Made Whole
Marion	Split: 2 CDs	Made Whole
Medina	Split: 2 CDs	Made Whole
Mercer	Split: 3 CDs	Made Whole
Muskingum	Split: 2 CDs	Made Whole
Ottawa	Split: 2 CDs	Made Whole
Portage	Split: 3 CDs	Made Whole
Richland	Split: 2 CDs	Made Whole
Ross	Split: 2 CDs	Split: 2 CDs
Scioto	Split: 2 CDs	Made Whole
Shelby	Whole	Split: 2 CDs
Stark	Split: 3 CDs	Made Whole
Summit	Split: 4 CDs	Split: 2 CDs
Trumbull	Split: 2 CDs	Made Whole
Tuscarawas	Split: 2 CDs	Made Whole
Washington	Whole	Split: 2 CDs
Wood	Whole	Split: 2 CDs

19. The following chart shows the impact at the district level of reducing the number of split counties statewide from 23 in the 2011 Congressional Plan to just 12 in the 2021 Congressional Plan. Almost every congressional district in the 2021 Congressional Plan was improved from the standpoint of reducing the number of split counties within its boundaries. 7 districts are provided below as examples:

CD 4 2011 map	9 whole counties	5 partial counties
CD 4 2021 map	10 whole counties	1 partial county
The so-called “Duck” district from 2011		

CD 5 2011 map	11 whole counties	3 partial counties
CD 5 2021 map	9 whole counties	2 partial counties

CD 6 2011 map	13 whole counties	5 partial counties
CD 6 2021 map	9 whole counties	1 partial county
Note: The so-called “Sliver-on-the-River” district from 2011		

CD 7 2011 map	4 whole counties	6 partial counties
CD 7 2021 map	3 whole counties	2 partial county

CD 9 2011 map	0 whole counties	5 partial counties
CD 9 2021 map	8 whole counties	1 partial county
Note: The so-called “Snake on the Lake” district from 2011		

CD 13 2011 map	0 whole counties	5 partial counties
CD 13 2021 map	1 whole county	2 partial counties

CD 14 2011 map	3 whole counties	4 partial counties
CD 14 2021 map	4 whole counties	1 partial county

20. The following chart lists the thirty-five (35) splits of municipal corporations (cities or villages) or townships from the 2011 Congressional Plan, as these are the constitutionally referenced subdivisions:

	County	Subdivision split
1.	Cuyahoga County	Berea
2.	Cuyahoga County	Cleveland
3.	Cuyahoga County	Parma
4.	Cuyahoga County	Rocky River
5.	Fayette County	Jasper Township
6.	Fayette County	Union Township
7.	Franklin County	Columbus
8.	Franklin County	Gahanna
9.	Franklin County	Grandview Heights
10.	Franklin County	Grove City
11.	Franklin County	Groveport
12.	Franklin County	New Albany
13.	Franklin County	Obetz
14.	Franklin County	Westerville
15.	Franklin County	Worthington
16.	Hamilton County	Cincinnati
17.	Lorain County	Grafton Township
18.	Lucas County	Toledo
19.	Marion County	Claridon Township
20.	Medina County	Brunswick Township
21.	Mercer County	Butler Township
22.	Mercer County	Jefferson Township
23.	Ottawa County	Berlin Township
24.	Portage County	Brimfield Township
25.	Richland County	Madison Township
26.	Ross County	Twin Township
27.	Scioto County	Rush Township
28.	Stark County	Canton
29.	Stark County	Canton Township
30.	Stark County	Lake Township
31.	Stark County	Perry Township
32.	Stark County	Plain Township
33.	Summit County	Akron
34.	Summit County	Cuyahoga Falls
35.	Summit County	Springfield Township

21. Unlike the 2011 Congressional Plan that has 35 splits of municipal corporations or townships, the 2021 Congressional Plan only has 14 splits of municipal corporations or townships (NOTE: CDPs (Census designated places) are not identified in Article XIX and therefore not listed):

County	Subdivision split
1. Clark County	Mad River Township
2. Cuyahoga County	Rocky River
3. Cuyahoga County	Oakwood
4. Fairfield County	Columbus
5. Franklin County	Columbus
6. Hamilton County	Glendale
7. Hamilton County	Sycamore Township
8. Holmes County	Berlin Township
9. Lorain County	Columbia Township
10. Ross County	Union Township
11. Shelby County	Green Township
12. Summit County	Cuyahoga Falls
13. Washington County	Belpre Township
14. Wood County	Perrysburg Township

22. The Senate Democrats' map (SB 237) contained 15 splits of municipal corporations or townships. The following is a list of the municipal corporations or townships that were split in their map:

County		Subdivision split
1.	Clark County	Springfield
2.	Cuyahoga County	Berea
3.	Guernsey County	Cambridge
4.	Hamilton County	Madeira
5.	Hancock County	Findlay
6.	Franklin County	Columbus
7.	Franklin County	Prairie Township
NOTE: <i>Relators' expert Jonathan Rodden missed this split in his analysis</i>		
8.	Greene County	Beavercreek
9.	Knox County	Mount Vernon
10.	Lorain County	Amherst
11.	Mahoning County	Campbell
12.	Stark County	Massillon
13.	Union County	Marysville
14.	Wayne County	Wooster
15.	Wood County	Bowling Green

23. The House Democrats' map (HB 483) contained 20 splits of municipal corporations or townships. The following is a list of the municipal corporations or townships that were split in their map:

	County	Subdivision split
1.	Ashland County	Lake Township
2.	Clinton County	Liberty Township
3.	Clinton County	Union Township
4.	Cuyahoga County	Seven Hills
5.	Franklin County	Columbus
6.	Franklin County	Prairie Township
	<i>NOTE: Relators' expert Jonathan Rodden missed this split in his analysis</i>	
7.	Greene County	Beavercreek
8.	Greene County	Beavercreek Township
	<i>NOTE: Relators' expert Jonathan Rodden missed this split in his analysis</i>	
9.	Hamilton County	Green Township
10.	Hamilton County	Miami Township
	<i>NOTE: Relators' expert Jonathan Rodden missed this split in his analysis</i>	
11.	Holmes County	Walnut Creek Township
12.	Lorain County	North Ridgeville
13.	Mahoning County	Poland Township
14.	Marion County	Waldo Township
15.	Ross County	Concord Township
16.	Ross County	Buckskin Township
17.	Stark County	Canton Township
18.	Washington County	Fairfield Township
	<i>NOTE: Relators' expert Jonathan Rodden missed this split in his analysis</i>	
19.	Washington County	Dunham Township
20.	Wyandot County	Antrim Township

24. There is universal agreement that the city of Columbus in Franklin County is too large to be in one congressional district. Therefore, every map that was proposed contained a split of Columbus. The following shows how the 2021 Congressional Plan and the House and Senate Democrats' Plans split Columbus precincts:
1. 2021 Congressional Plan – Only 1 precinct split in Columbus
 - a. Ward 29 Precinct A
 2. Senate Democrats' Map (SB 237) – Columbus has 13 of its precincts split
 - a. Ward 14 Precinct A, Ward 14 Precinct E, Ward 17 Precinct A, Ward 22 Precinct D, Ward 24 Precinct C, Ward 30 Precinct C, Ward 43 Precinct A, Ward 61 Precinct D, Ward 62 Precinct B, Ward 66 Precinct F, Ward 8 Precinct A, Ward 8 Precinct F and Ward 8 Precinct H
 3. House Democrats' Map (HB 483) – Columbus has 6 of its precincts split
 - a. Ward 18 Precinct C, Ward 41 Precinct C, Ward 41 Precinct D, Ward 76 Precinct G, Ward 77 Precinct A and Ward 81 Precinct B
25. The 2021 Congressional Plan does all of the following:
- a. Drastically reduces the number of county splits by 9, from 23 to 12, from the 2011 Congressional Plan, which is a larger reduction in split counties than either plan proposed by the House or Senate Democrats (HB 483 and SB 237).
 - b. Drastically reduces the number of municipal corporation and township splits by 21, from 35 to 14, from the 2011 Congressional Plan, which again is a larger reduction in split municipal corporations and townships than either plan proposed by the House or Senate Democrats (HB 483 and SB 237).
 - c. More efficiently avoids double or triple bunking any incumbent seeking re-election in 2022. The House Democrats paired a total of 9 incumbents (8 Republicans; 1 Democrat) in 4 districts. The Senate Democrats paired 8 incumbents (7

Republicans; 1 Democrat) in 4 districts. No plan could avoid pairing 2 specific incumbents who both live in Cincinnati in the same district. That unavoidable pairing was the only one contained in the 2021 Congressional Plan.

- d. Creates 7 competitive districts giving a generic candidate of each party the ability to win any of the 7 competitive districts. As noted above, this is more competitive districts than the plans proposed by the House Democrats (HB 483) and the Senate Democrats (SB 237).

FURTHER THE AFFIANT SAYETH NAUGHT.

Executed on DEC. 10, 2021.


Raymond E. DiRossi

Sworn or affirmed before me and subscribed in my presence the 10TH day of December,
2021, in the state of OHIO and county of FRANKLIN.


Notary Public



FRANCIS M. STRIGARI, Attorney At Law
NOTARY PUBLIC - STATE OF OHIO
My commission has no expiration date
Sec. 147.03 R.C.