Exhibit 1

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF OHIO
EASTERN DIVISION

Michael Gonidakis, *et al.*,   :

                                                :   Case No. 2:22-cv-773

              Plaintiffs,   :

                                                :

       v.   :   Chief Judge Algenon Marbley

                                                :   Magistrate Judge Elizabeth Deavers

Frank LaRose,   :

                                                :

              Defendant.   :

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AFFIDAVIT OF MICHAEL GONIDAKIS

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STATE OF OHIO   }
COUNTY OF FRANKLIN   }   SS:

I, Michael Gonidakis, being first duly sworn, deposes and says as follows:

     1.   I am of sound mind, 18 years of age or older, and competent to make this affidavit.

     2.   I currently reside at the following address: 6586 Baronscourt Loop, Dublin, Ohio 43016.

     3.   I am a registered voter at the above address.

     4.   I resided at the above address during the most recent statewide election involving candidates for the Ohio House of Representatives and the Ohio Senate.

     5.   During the most recent statewide election involving candidates for the Ohio House of Representatives and the Ohio Senate, I lived within Ohio House of Representatives District 21 and Ohio Senate District 16.

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6.   However, since those legislative districts were created around ten years ago, Dublin, Ohio's population has grown by nearly 20%, from around 40,000 people to nearly 50,000 people. The population of the Columbus metropolitan area, which includes Dublin, Ohio, has grown by more than 10%.

7.   I typically participate in the statewide legislative primary election process, including the following activities: learning about candidates; supporting candidates, financially or otherwise; and associating with like-minded voters.

8.   For the most recent primary before for this one, I engaged in the following activity concerning my preferred candidates for the Ohio House of Representatives or the Ohio Senate including attending rallies and other political events, gathering with like-minded voters, donating money, and supporting candidates financially or otherwise.

9.   After the Ohio Redistricting Commission adopted the Third Plan, and Secretary of State Frank LaRose told the county boards of elections to adopt the Third Plan, I began engaging in my usual election-related activity concerning General Assembly legislative districts.

10.   A copy of that Third Plan is attached hereto as Exhibit A.

11.   I understand that the Ohio Supreme Court recently invalidated the Third Plan.

12.   Should Secretary LaRose stop implementing the Third Plan, then all my work to-date engaging in the election process will be for nothing.

13.   Should Secretary LaRose stop implementing the Third Plan, then I will have to either vote in my ten-year-old legislative district or I have no legislative district at all.

14.   The problem with my ten-year-old legislative district is that significantly more people live in it than before, meaning my voting power has been diluted relative to other Ohioans.

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15. My understanding is that there is more than a 10% difference in population between my old legislative districts and some other legislative districts in the state.

16. Whether my old districts are used, or the Third Plan is used, the ongoing confusion has hampered my ability to learn about candidates, support candidates, and associate with like-minded voters.
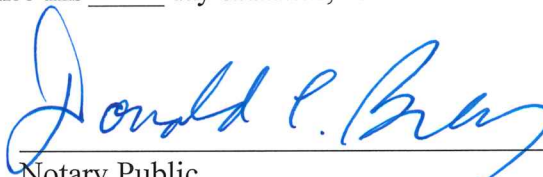
17. If a primary election for statewide legislative districts is eventually held, then I plan to vote.

18. If a primary election for statewide legislative office is eventually held, then I plan to engage in my usual election activity, including learning about candidates, supporting candidates, and associating with like-minded voters.

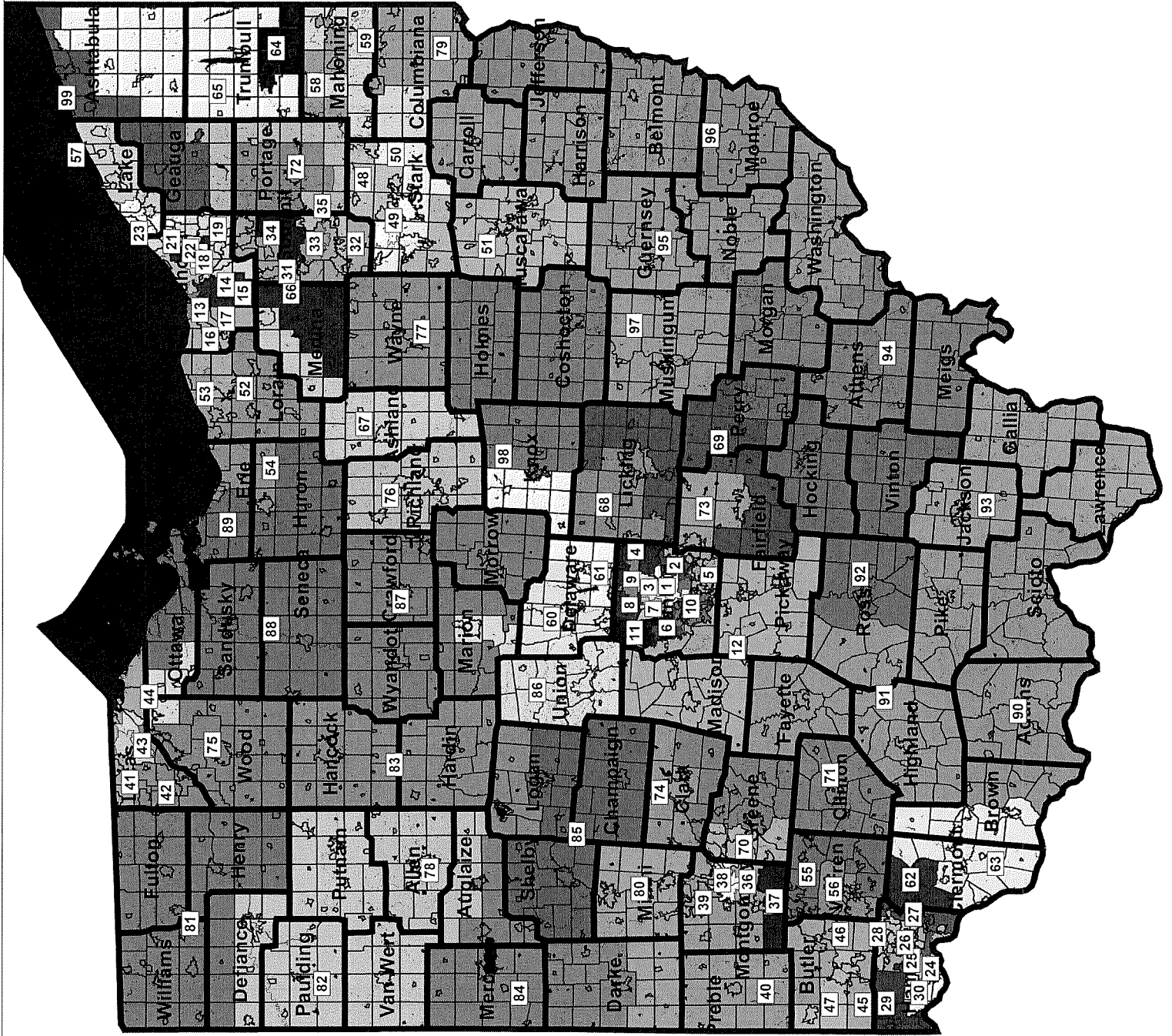FURTHER AFFIANT SAYETH NAUGHT

_____
Michael Gonidakis

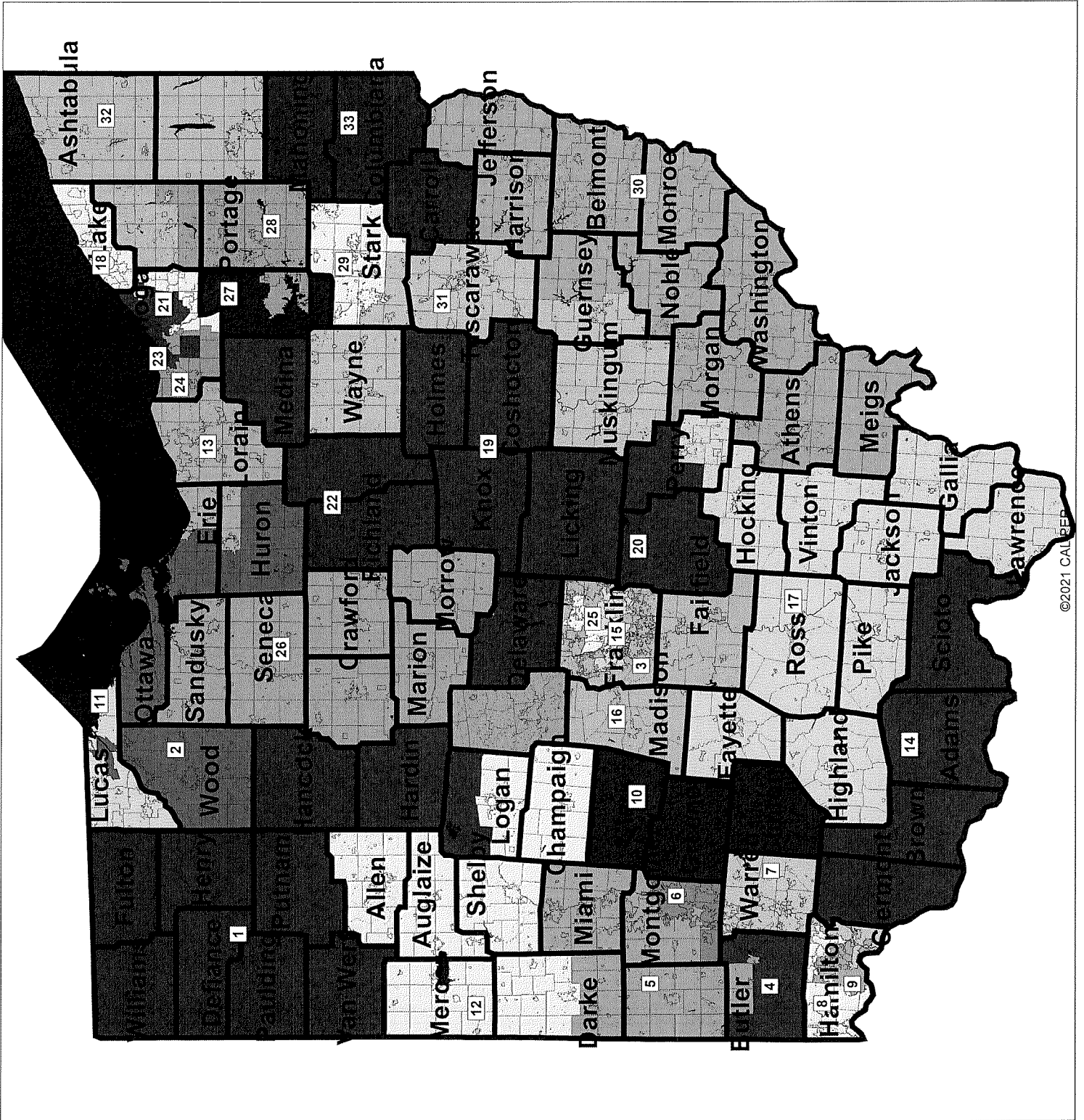Sworn to before me and subscribed in my presence this _18th_ day of March, 2022.

_____
Notary Public

DONALD CARL BREY, Attorney-At Law
NOTARY PUBLIC, STATE OF OHIO
My commission has no expiration date.

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EXHIBIT

A

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Pursuant to the 2020 U.S. Census, the population of Ohio as of April 1, 2020 was 11,799,448. The target population for each Ohio House district is therefore 119,186.

Statistical Information – Ohio House Districts
Revised February 24, 2022

House District	Population	Deviation
1	118,269	-0.77%
2	121,167	1.66%
3	119,267	0.07%
4	113,292	-4.95%
5	116,055	-2.63%
6	116,844	-1.97%
7	123,620	3.72%
8	123,378	3.52%
9	117,175	-1.69%
10	118,982	-0.17%
11	124,045	4.08%
12	114,076	-4.29%
13	125,018	4.89%
14	125,123	4.98%
15	125,126	4.98%
16	124,466	4.43%
17	124,902	4.80%
18	125,122	4.98%
19	123,250	3.41%
20	125,116	4.98%
21	125,129	4.99%
22	125,144	5.00%
23	124,913	4.81%
24	122,543	2.82%
25	115,014	-3.50%
26	120,124	0.79%
27	124,316	4.30%
28	120,869	1.41%
29	113,611	-4.68%
30	114,162	-4.22%
31	121,137	1.64%
32	121,972	2.34%
33	124,678	4.61%

GENERAL ASSEMBLY DISTRICT PLAN
REVISED FEBRUARY 24, 2022

House District	119,468	0.24%
34	124,362	4.34%
35	114,991	-3.52%
36	121,534	1.97%
37	122,075	2.42%
38	123,935	3.98%
39	117,193	-1.67%
40	114,264	-4.13%
41	117,985	-1.01%
42	113,597	-4.69%
43	113,261	-4.97%
44	123,472	3.60%
45	121,992	2.35%
46	123,473	3.60%
47	124,669	4.60%
48	116,324	-2.40%
49	113,282	-4.95%
50	113,841	-4.48%
51	118,043	-0.96%
52	123,651	3.75%
53	119,251	0.05%
54	120,633	1.21%
55	121,704	2.11%
56	124,111	4.13%
57	119,785	0.50%
58	123,071	3.26%
59	113,964	-4.38%
60	120,578	1.17%
61	124,425	4.40%
62	113,544	-4.73%
63	124,867	4.77%
64	114,353	-4.06%
65	116,342	-2.39%
66	118,575	-0.51%
67	115,385	-3.19%
68	120,418	1.03%
69	115,458	-3.13%
70	114,405	-4.01%

GENERAL ASSEMBLY DISTRICT PLAN
REVISED FEBRUARY 24, 2022

House District	121,758	2.16%
71	123,971	4.01%
72	116,122	-2.57%
73	115,928	-2.73%
74	124,936	4.82%
75	116,894	-1.92%
76	113,287	-4.95%
77	114,356	-4.05%
78	124,211	4.22%
79	113,487	-4.78%
80	114,464	-3.96%
81	122,058	2.41%
82	114,313	-4.09%
83	116,652	-2.13%
84	113,566	-4.72%
85	113,452	-4.81%
86	113,965	-4.38%
87	115,062	-3.46%
88	115,793	-2.85%
89	113,883	-4.45%
90	116,490	-2.26%
91	120,113	0.78%
92	114,124	-4.25%
93	114,126	-4.25%
94	114,020	-4.33%
95	114,521	-3.91%
96	123,138	3.32%
97	124,572	4.52%
98	118,269	-0.77%
99	121,167	1.66%

GENERAL ASSEMBLY DISTRICT PLAN
REVISED FEBRUARY 24, 2022

Pursuant to the 2020 U.S. Census, the population of Ohio as of April 1, 2020 was 11,799,448. The target population for each Ohio Senate district is therefore 357,559.

Statistical Information – Ohio Senate Districts
Revised January 2022

Senate District	Population	Deviation
1	350,009	-2.11%
2	344,251	-3.72%
3	348,329	-2.58%
4	368,937	3.18%
5	365,339	2.18%
6	358,600	0.29%
7	366,653	2.54%
8	348,642	-2.49%
9	357,681	0.03%
10	345,985	-3.24%
11	345,846	-3.28%
12	344,252	-3.72%
13	360,945	0.95%
14	353,762	-1.06%
15	356,280	-0.36%
16	361,499	1.10%
17	350,486	-1.98%
18	372,274	4.12%
19	357,680	0.03%
20	359,774	0.62%
21	375,395	4.99%
22	359,853	0.64%
23	375,257	4.95%
24	374,494	4.74%
25	360,062	0.70%
26	340,983	-4.64%
27	362,577	1.40%
28	370,798	3.70%
29	354,275	-0.92%
30	342,270	-4.28%
31	345,256	-3.44%
32	363,792	1.74%
33	357,212	-0.10%

GENERAL ASSEMBLY DISTRICT PLAN
REVISED FEBRUARY 24, 2022

Ohio's 33 Senate districts are comprised of the following Ohio House districts.

Senate District 1:	House Districts 81, 82, 83	
Senate District 2:	House Districts 44, 75, 89	Assigned to Senator Gavarone
Senate District 3:	House Districts 4, 5, 10	
Senate District 4:	House Districts 45, 46, 47	
Senate District 5:	House Districts 39, 40, 80	
Senate District 6:	House Districts 36, 37, 38	
Senate District 7:	House Districts 27, 55, 56	
Senate District 8:	House Districts 28, 29, 30	
Senate District 9:	House Districts 24, 25, 26	
Senate District 10:	House Districts 70, 71, 74	Assigned to Senator Hackett
Senate District 11:	House Districts 41, 42, 43	
Senate District 12:	House Districts 78, 84, 85	
Senate District 13:	House Districts 52, 53, 54	
Senate District 14:	House Districts 62, 63, 90	
Senate District 15:	House Districts 1, 2, 6	
Senate District 16:	House Districts 8, 11, 12	
Senate District 17:	House Districts 91, 92, 93	
Senate District 18:	House Districts 19, 23, 57	Assigned to Senator Cirino
Senate District 19:	House Districts 60, 61, 98	
Senate District 20:	House Districts 68, 69, 73	
Senate District 21:	House Districts 18, 21, 22	
Senate District 22:	House Districts 66, 67, 76	
Senate District 23:	House Districts 13, 14, 20	
Senate District 24:	House Districts 15, 16, 17	Assigned to Senator Dolan
Senate District 25:	House Districts 3, 7, 9	
Senate District 26:	House Districts 86, 87, 88	
Senate District 27:	House Districts 31, 32, 34	
Senate District 28:	House Districts 33, 35, 72	Assigned to Senator Sykes
Senate District 29:	House Districts 48, 49, 50	
Senate District 30:	House Districts 94, 95, 96	
Senate District 31:	House Districts 51, 77, 97	
Senate District 32:	House Districts 64, 65, 99	
Senate District 33:	House Districts 58, 59, 79	

All of the above assignments of Senators are made pursuant to Section 5, Article XI of the Ohio Constitution.

Exhibit 2

IN THE SUPREME COURT OF OHIO

League of Women Voters of Ohio, *et al.*,	
Bria Bennett, *et al.*,	
Ohio Organizing Collaborative, *et al.*,	
Relators,	Case Nos. 2021-1193; 2021-1198; 2021-1210
v.	
Ohio Redistricting Commission, *et al.*,	
Respondents.	

AFFIDAVIT OF DR. MICHAEL BARBER

Now comes affiant Dr. 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 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 2 March, 2022.

Michael Barber

Dr. Michael Barber

STATE OF FLORIDA

COUNTY OF PINELLAS

Sworn to and subscribed before me by means of online notarization this the 2nd day of March, 2022, by DR. MICHAEL BARBER, who appeared by way of two-way audio/video communication technology, and he provided his Utah driver's license as identification.

Cynthia D. Glaros
Notary Public, State of Florida
My Commission Expires: 06/30/2022

Cynthia D. Glaros
Notary Public, State of Florida
Commission # GG228737
My Commission Expires June 30, 2022

Online Notary Public. This notarial act involved the use of online audio/video communication technology.

4862-6147-6626

<u>Exhibit A</u>

Qualifications and Experience

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 several 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 several 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. 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 Raffensberger, 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); League of Women Voters of Ohio, et al., Relators, v. Ohio Redistricting Commission, et al., Respondents. Case No. 2021-1193 (Supreme Court of Ohio); Harper, et al., Plaintiffs, v. Hall et al., Defendants. Case No. 21-CVS-015426 (Wake County North Carolina); Carter, et al., Petitioners, v. Degraffenreid et al., Respondents. Case No. 464 M.D. 2021 (Commonwealth Court of Pennsylvania).* I have also recently testified before the Pennsylvania Legislative Reapportionment Commission regarding the Commission's proposed map for the Pennsylvania House of Representatives.

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 several

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

research projects that use very large datasets that include millions of observations, including state voter registration 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 B.

The analysis and opinions I provide below 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 am being compensated at a rate of $400.00 per hour. My compensation does not depend in any way on the outcome of the case or on the opinions or testimony that I provide.

Summary of Opinions

I have been asked to examine the partisan properties of the third redistricting plan for the Ohio State House of Representatives and Ohio Senate, adopted by the Ohio Redistricting Commission on 24 February 2022. I have also been asked to evaluate the most recent plans put forward by Professor Jonathan Rodden (Rodden III Plan) and the Democratic members of the Ohio Redistricting Commission (Sykes Russo Plan).

As has been noted in a number of filings to the court, Article XI, Section 6, requires that the proportion of seats that lean towards one political party or the other should closely correspond with the election results from statewide elections between 2012-2020. In my original report, as well as in the reports of plaintiffs' experts, we agree that the aggregation of statewide election results over this period yields a ratio of roughly 54% Republican and 46% Democratic.

The Ohio Redistricting Commission's third House plan achieves the statewide proportionality requirement by creating 54 Republican-leaning seats (54.5% of the 99-seat chamber) and 45 Democratic-leaning seats (45.5% of the 99-seat chamber). The partisan lean of each district in the House and Senate plans is based on the aggregation of 9 statewide elections from 2016-2020 and is (as far as I can determine) identical to the index produced by Dr. Rodden in his most recent report, filed on 28 February 2022.[2]

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[2] The elections used in the index are 2016: President, Senate; 2018: Senate, Governor, Attorney General, Auditor, Secretary of State, Treasurer; 2020: President. As Dr. Rodden described, the index is produced by adding up all the votes cast for each of the two major parties in each statewide election and dividing by the total number of votes cast for both of the two major parties, summing over all of those elections. Dr. Rodden notes that there is an alternative way to make these calculations in which the proportion of votes is tallied for each of the statewide

The Rodden III House plan does not achieve proportionality and has 57 Republican-leaning seats (57.6% of the 99-seat chamber) and 42 Democratic-leaning seats (42.4% of the 99-seat chamber).

The Sykes Russo plan is also not as close to proportionality as the Commission's plan.[3] The Sykes Russo plan has 55 Republican-leaning seats (55.6% of the 99-seat chamber) and 44 Democratic-leaning seats (44.4% of the 99-seat chamber).

The Ohio Redistricting Commission's third Senate plan achieves the statewide proportionality requirement by creating 18 Republican-leaning seats (54.5% of the 33-seat chamber) and 15 Democratic-leaning seats (45.5% of the 33-seat chamber). The Rodden III and Sykes Russo plans also create 18 Republican-leaning districts and 15 Democratic-leaning districts.

Comparison of House Maps

Table 1 below shows not only the total number of Republican and Democratic-leaning districts for each House plan, but also the number of districts that fall within various ranges in terms of the relative margins of the partisan index. For example, the first row of numbers in the table show the number of districts in each of the three plans with a partisan index between 0 and 45% Democratic, based on the results of the partisan index. These would be considered safe Republican districts. Looking across the row we see that all three plans generate between 51 and 52 safely Republican districts.

The next several rows break down the index into smaller, 1% margins around the 50% threshold for determining if a district is Republican or Democratic-leaning. For example, the second row of numbers shows the number of districts with a partisan index between 45 and 46% Democratic.[4] The row after that shows the number of districts with a partisan index between 46 and 47% Democratic, etc.

The colors in the first column of the table help the reader by indicating when the partisan index flips from being Republican-leaning (in red) to Democratic-leaning (in blue). This occurs when the partisan index moves from less than 50% to greater than 50% Democratic.

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elections first, and then the proportions are averaged across elections, and I report the results using that method as well. In general, the differences are small.

[3] Although using the alternative method of calculating the partisan index shown in the appendix of this report, the plan is proportional.

[4] Because the index represents the two-party vote share, the values of the index are currently measured as Democratic vote shares, but 100 minus the index would yield the Republican vote share. For example, a district with an index of 49% Democratic would have a reciprocal index value of 51% Republican.

Table 1 shows that the geography of Ohio is such that partisan preferences are not evenly distributed across the state, and as a result, the distribution of seat margins is not symmetric in any of the three plans. This is a function of Democratic voters in the state being densely clustered in homogenous precincts in the largest cities of the state while Republican voters are more scattered throughout the state in more heterogeneous districts. I discussed at length the unique political geography of Ohio and its implications for redistricting in my original report, filed on 21 October 2022.

Dr. Rodden notes the lack of competitive Republican-leaning districts in the Commission's plan compared to the number of competitive Democratic-leaning districts in the Commission's plan. However, it is important to note that this asymmetry is present in all three of the plans considered here. The Commission plan creates 1 district with a partisan index between 47-50% Democratic. The Rodden plan creates 3 districts in this range, and the Sykes Russo plan creates 2 districts in this competitive interval.

Given that these plans represent the preferred proposals of the plaintiffs and the Democratic members of the Commission, I would assume that if it were possible to create more competitive Republican-leaning districts, that these map makers would have done so. Not doing so implies that geography more so than partisan gains is the constraining factor.

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Districts % Democratic:	Commission	Rodden	Sykes Russo
[0-45)%	52	51	52
[45-46)%	0	1	0
[46-47)%	1	2	1
[47-48)%	1	2	1
[48-49)%	0	0	0
[49-50)%	0	1	1
[50-51)%	5	1	4
[51-52)%	14	1	3
[52-53)%	2	9	4
[53-54)%	1	0	3
[54-55)%	1	2	2
[55-100]%	22	29	28
R-leaning	54	57	55
D-leaning	45	42	44
R-leaning %	54.55%	57.58%	55.56%
D-leaning %	45.45%	42.42%	44.44%

Table 1: Comparison of Democratic-leaning districts and index margins across plans for Ohio House districts.

Furthermore, the Commission plan is also not alone in the abundance of competitive Democratic-leaning districts. All three plans contain many of these districts with partisan indices between 50% and 53%. Dr. Rodden uses 52% as a cutoff for competitive districts, but looking at his plan, there are 9 districts with a partisan index between 52-53%, which leads to an incorrect conclusion that the Rodden III plan does not also contain a large number of competitive Democratic-leaning districts.

Looking across the rows shows the similarity and differences in the plans. The Commission plan contains 21 districts that have a partisan index between 50-53% Democratic and 2 districts between 53-55% Democratic. The Rodden III plan contains 11 districts with a partisan index between 50-53% Democratic and 2 districts between 53-55% Democratic. The Sykes Russo plan also contains 11 districts in the 50-53% range and 5 districts between 53-55% Democratic.

The last row of the table shows the number of safe Democratic seats with a partisan index greater than 55%. The Commission's third proposal contains 22 of these districts. The Rodden III plan contains 29 of these districts and the Sykes Russo plan contains 28 of these districts.

At the end of this report I present the same table as Table 1, but calculate the partisan index using the alternative method noted by Dr. Rodden in his report. The results are similar but in some cases the number of districts in each category shifts.

The efficiency gap is another redistricting metric developed by academics and looks for the degree to which a political party's votes statewide are translated into seats in each district.[5] A description of this measure provided by the Brennen Center for Justice summarizes it: "[T]he efficiency gap counts the number of votes each party wastes in an election to determine whether either party enjoyed a systematic advantage in turning votes into seats. Any vote cast for a losing candidate is considered wasted, as are all the votes cast for a winning candidate in excess of the number needed to win."[6] In other words, under the efficiency gap the ideal strategy for a political party to maximize the impact of their voters is to distribute them as evenly as possible across districts so as to win by a narrow margin in the districts they win and lose by very large margins in the districts where they lose. Put another way, under the theory of minimizing wasted votes, "win by a little, lose by a lot" is the ideal strategy for a party to maximize their impact of their voters.[7]

The efficiency gap is calculated as Efficiency Gap = (Total Democratic Wasted Votes - Total Republican Wasted Votes) / Total Votes. In analyzing the Commission's legislative plan, I use the Democratic seat and vote margins which means that negative efficiency gap numbers indicate a districting plan that favors Republican voters and positive numbers indicate a plan that favors Democratic voters.

Using the 9 statewide elections described above, the third Commission map has an efficiency gap value of 2.43%, which indicates a slight bias in the direction of the Democratic Party. The Rodden III plan has an efficiency gap value of -1.13%, which indicates a slight bias in the direction of the Republican Party. The Sykes Russo plan has an efficiency gap value of 0.38%, which indicates a very small bias in the direction of the Republican Party. Overall, all of these numbers are small and indicate relative balance between the parties.

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[5] McGhee, Eric. "Measuring efficiency in redistricting." Election Law Journal: Rules, Politics, and Policy 16, no. 4 (2017): 417-442. Veomett, Ellen. "Efficiency gap, voter turnout, and the efficiency principle." Election Law Journal: Rules, Politics, and Policy 17, no. 4 (2018): 249-263. Plener Cover, Benjamin. "Quantifying partisan gerrymandering: An evaluation of the efficiency gap proposal." Stan. L. Rev. 70 (2018): 1131.
[6] https://www.brennancenter.org/sites/default/files/legal-work/How the Efficiency Gap Standard Works.pdf
[7] Of course, parties have other priorities and winning by a single vote might not be their ideal scenario in reality.

Comparison of Senate Maps

Table 2 below shows not only the total number of Republican and Democratic-leaning districts for each Senate plan, but also the number of districts that fall within various ranges in terms of the relative margins of the partisan index. For example, the first row of numbers in the table show the number of districts in each of the three plans with a partisan index between 0 and 45% Democratic, based on the results of the partisan index. These would be considered safe Republican districts. Looking across the row we see that all three plans generate between 16 and 17 safe Republican districts.

The next several rows break down the index into smaller, 1% margins around the 50% threshold for determining if a district is Republican or Democratic-leaning. For example, the second row of numbers shows the number of districts with a partisan index between 45 and 46% Democratic. The row after that shows the number of districts with a partisan index between 46 and 47% Democratic, etc.

The colors in the first column of the table help the reader by indicating when the partisan index flips from being Republican-leaning (in red) to Democratic-leaning (in blue). This occurs when the partisan index moves from less than 50% to greater than 50% Democratic.

Dr. Rodden notes the lack of competitive Republican-leaning districts in the Commission's plan compared to the number of competitive Democratic-leaning districts in the Commission's plan. However, it is important to note that this asymmetry is present in all three of the plans considered here. The Commission plan creates no district with a partisan index between 47-50% Democratic. Likewise, the Rodden plan only creates 1 district in this range, and the Sykes Russo plan creates only 1 district in this competitive interval.

Given that these plans represent the preferred proposals of the plaintiffs and the Democratic members of the Commission, I would assume that if it were possible to create more competitive Republican-leaning districts, that these map makers would have done so. Not doing so implies that geography more so than partisan gains is the constraining factor.

Furthermore, the Commission plan is also not alone in the abundance of competitive Democratic-leaning districts. Looking across the rows shows the similarity and differences in the number of competitive Democratic-leaning seats in the plans. The Commission plan contains 8 districts that have a partisan index between 50-53% Democratic and 0 districts between 53-55% Democratic. The Rodden III plan contains 3 districts with a partisan index between 50-53% Democratic and 1 district between 53-55% Democratic. The Sykes Russo plan contains 4 districts in the 50-53% range and 1 district between 53-55% Democratic.

The last row of the table shows the number of safe Democratic seats with a partisan index greater than 55%. The Commission's third proposal contains 7 of these districts. The Rodden III plan contains 11 of these districts and the Sykes Russo plan contains 10 of these districts.

At the end of this report I present the same table as Table 2, but calculate the partisan index using the alternative method noted by Dr. Rodden in his report. The results are similar but in some cases the number of districts in each category shifts.

Districts % Democratic:	Commission	Rodden	Sykes Russo
[0-45)%	16	17	16
[45-46)%	2	0	1
[46-47)%	0	0	0
[47-48)%	0	1	1
[48-49)%	0	0	0
[49-50)%	0	0	0
[50-51)%	2	3	2
[51-52)%	5	0	1
[52-53)%	1	0	1
[53-54)%	0	1	0
[54-55)%	0	0	1
[55-100]%	7	11	10
R-leaning	18	18	18
D-leaning	15	15	15
R-leaning %	54.55%	54.55%	54.55%
D-leaning %	45.45%	45.45%	45.45%

Table 2: Comparison of Democratic-leaning districts and index margins across plans for Ohio Senate districts.

The efficiency gap, which is described in more detail above, is another redistricting metric developed by academics and looks for the degree to which a political party's votes statewide are translated into seats in each district.

Using the 9 statewide elections described above, the third Commission map has an efficiency gap value of 2.08%, which indicates a slight bias in the direction of the Democratic Party. The Rodden III plan has an efficiency gap value of 2.24%, which indicates a slight bias in the direction of the Democratic Party. The Sykes Russo plan has an efficiency gap value of 2.33%, which also indicates a small bias in the direction of the Democratic Party. Overall, all of these numbers are small and indicate relative balance between the parties.

A Note on Partisan Indices

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 legislative race is different. Individual candidate factors such as prior legislative 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.

There are two different ways to illustrate this idea. The first is to examine how well partisan indices created from statewide election results (which we are using as a proxy for the partisan tendencies of a district) predict actual state legislative election results (which are the elections we actually care about in the context of legislative redistricting).

Using the districts from the 2012-2020 redistricting cycle, I compare actual state legislator election results in 2018 (2016 & 2018 for the Senate where even and odd numbered districts rotate elections) with averages of statewide election results for Governor, US Senate, and President in those same districts in 2016-2018. As one would expect, there is going to be some amount of slippage between the actual state legislature election result and what is predicted by the partisan index of statewide election results. Across the 99 districts in the House, the average difference between the actual election results and the partisan index for each district was 5 points in the House. This difference was 3.7 points in the Senate. The partisan index misclassifies the party of the winning state legislative candidate in 10 different districts across both chambers.

Another way to illustrate this pint is to look at the variation in the statewide elections that are used to generate the partisan index. Recall that the partisan indices discussed above and in other expert reports is an average of multiple statewide elections. Thus, while a district might have an average of exactly 50%, it is likely that no individual election actually produced an outcome of 50%, and it is entirely possible that there are statewide elections that went into calculating that average that are vastly different from the average.

For example, the partisan index is composed of the average of 9 different statewide elections. In the House, the median variation in those 9 elections was approximately 14.6 percentage points. In the Senate, the median variation in those 9 elections was approximately 14.5 percentage points. Thus, while a district may have a partisan index of 50%, there are elections that could range up to 7 percentage points on either side of the average – from 43% to 57% that average together to 50%. Keep in mind that this reflects the *median* variation. Many districts range by much more than this. In fact, in some districts the statewide election results used to create the partisan index varied by more than 20 percentage points.

Given these results, we should take all partisan indices with an appropriately sized grain of salt. They can certainly tell us about general trends, but no one should believe that they are going to perfectly predict state legislative election results in any given district, nor are they going to perfectly predict the overall partisan composition of the state legislature.

Appendix A: Results with Alternative Partisan Index

The tables below present the same results as Tables 1 and 2 above but use a slightly different method of calculating the partisan index. Rather than adding up all of the votes across each of the 9 statewide elections and then computing the two-party average vote share, this alternative method first calculates the average two-party vote share for each of the 9 elections separately and then takes the average of the 9 averages. Dr. Rodden notes that in his most recent report he uses the first approach and that in other previous reports he has used the latter method. My previous report used the first method as well. The first method gives equal weight to each *voter,* but weights elections with higher turnout (i.e. presidential elections) more. The second method gives equal weight to each *election*, but as a result gives greater weight to votes cast in lower turnout elections (non-presidential election year races). The results are typically similar. For completeness I present the alternative method below.

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Table 1A: Comparison of Democratic-leaning districts and index margins across plans for Ohio House districts. Using alternative method for calculating partisan index.

Districts % Democratic:	Commission	Rodden	Sykes Russo
[0-45)%	52	50	52
[45-46)%	0	2	1
[46-47)%	1	1	0
[47-48)%	1	3	1
[48-49)%	0	0	0
[49-50)%	0	0	0
[50-51)%	5	2	5
[51-52)%	13	1	1
[52-53)%	3	8	4
[53-54)%	1	1	4
[54-55)%	1	2	3
[55-100]%	22	29	28
R-leaning	54	56	54
D-leaning	45	43	45
R-leaning %	54.55%	56.57%	54.55%
D-leaning %	45.45%	43.43%	45.45%

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Table 2A: Comparison of Democratic-leaning districts and index margins across plans for Ohio Senate districts. Using alternative method for calculating partisan index.

Districts % Democratic:	Commission	Rodden	Sykes Russo
[0-45)%	16	16	16
[45-46)%	1	1	1
[46-47)%	1	0	0
[47-48)%	0	1	1
[48-49)%	0	0	0
[49-50)%	0	0	0
[50-51)%	2	3	2
[51-52)%	5	0	1
[52-53)%	1	0	1
[53-54)%	0	0	0
[54-55)%	0	1	1
[55-100]%	7	11	10
R-leaning	18	18	18
D-leaning	15	15	15
R-leaning %	54.55%	54.55%	54.55%
D-leaning %	45.45%	45.45%	45.45%

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Appendix B: Curriculum Vitae

Michael Jay Barber

CONTACT INFORMATION	Brigham Young University Department of Political Science 724 KMBL Provo, UT 84602	barber@byu.edu http://michaeljaybarber.com Ph: (801) 422-7492

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

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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

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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 (Revise and Resubmit)

"A Revolution of Rights in American Founding Documents"
with Scott Abramson and Jeremy Pope (Conditionally Accepted)

"410 Million Voting Records Show the Distribution of Turnout in America Today"
with John Holbein (Revise and Resubmit)

"Partisanship and Trolleyology"
with Ryan Davis (Under Review)

"Who's the Partisan: Are Issues or Groups More Important to Partisanship?"
with Jeremy Pope (Revise and Resubmit)

"Race and Realignment in American Politics"
with Jeremy Pope (Revise and Resubmit)

"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

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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)

Expert Witness in Regina Adams, et al., Relators, v. Governor Mike DeWine, et al., Respondents. Case No. 2021-1428 (Supreme Court of Ohio)

Expert Witness in Rebecca Harper, et al., Plaintiffs, v. Representative Destin Hall, et al., Defendants (Consolidated Case). Case No. 21 CVS 500085 (Wake County, North Carolina)

ADDITIONAL TRAINING   EITM 2012 at Princeton University - Participant and Graduate Student Coordinator

COMPUTER SKILLS   Statistical Programs: R, Stata, SPSS, parallel computing

Updated January 7, 2022

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Exhibit 3

IN THE SUPREME COURT OF OHIO

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

                Relators,

v.

Ohio Redistricting Commission, *et al.*,

                Respondents.
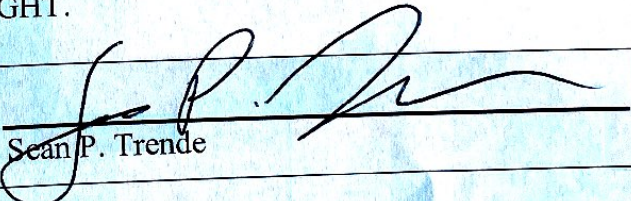
Case No. 2021-1193

AFFIDAVIT OF SEAN P. TRENDE

    Now comes affiant Sean P. Trende, having been first duly cautioned and sworn, deposes and states as follows:

1. I am over the age of 18 and fully competent to make this declaration. I have personal knowledge of the statements and facts contained herein.

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.
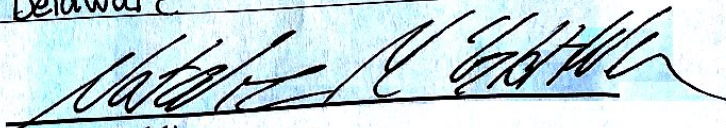
FURTHER THE AFFIANT SAYETH NAUGHT.

| Executed on **10 / 21** , 2021 | Sean P. Trende |

Sworn or affirmed before me and subscribed in my presence the **21st** day of October, 2021, in the state of **Ohio** and county of **Delaware** .

NATALIE CORRINE MCGLOTHLIN
Notary Public
State of Ohio
My Comm. Expires
February 16, 2026

Notary Public

4868-5993-8816 v.1

Exhibit A

EXPERT REPORT OF SEAN P. TRENDE

I, Sean P. Trende, do hereby declare the following:

1.   I am over 18 years of age and am competent to testify regarding the matters discussed in this report.

2.   I currently reside at 1146 Elderberry Loop, Delaware, OH 43015. My e-mail is trende.3@buckeyemail.osu.edu.

3.   I have been retained in this matter by the Respondents President of the Ohio Senate, Matt Huffman and Speaker of the Ohio House of Representatives, Robert R. Cupp, in the following three matters: *Ohio Organizing Collaborative et al. v. Ohio Redistricting Commission, et al.* (No. 2021-1210), *League of Women Voters of Ohio et al., v. Ohio Redistricting Commission et al.* (No. 2021-1193), and *Bria Bennett et al., v. Ohio Redistricting Commission et al.* (No. 2021-1198).

4.   I have been asked to review and provide opinions regarding the Expert reports filed by Relators' and Relators' Experts (collectively, "Relators' Experts"). More specifically, I have been asked to review the "Affidavit of William S. Cooper" [hereinafter "Cooper Report"], the "Affidavit of Dr. Jonathan Rodden" [hereinafter "Rodden Report"], the "Affidavit of Michael S. Latner" [hereinafter "Latner Report"] and "An Evaluation of the Partisan Bias in Ohio's Enacted State Legislative Districting Plan" [hereinafter "Warshaw Report"].

5.   All opinions contained in this report are offered to a reasonable degree of professional certainty. I am being compensated $400 per hour for my work in this case.

6.   My *curriculum vitae* is attached to this report as **Exhibit 1.**

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EXPERT CREDENTIALS

7.   I am currently enrolled as a doctoral candidate in political science at The Ohio State University. I have completed all of my coursework and have passed comprehensive examinations in both methods and American Politics. My coursework for my Ph.D. and M.A.S. included, among other things, classes on G.I.S. systems, spatial statistics, issues in contemporary redistricting, machine learning, computer programming and probability theory. I expect to receive my Ph.D. in May of 2022. My dissertation focuses on applications of spatial statistics to political questions.

8.   I joined RealClearPolitics in January of 2009. I assumed a fulltime position with RealClearPolitics in March of 2010. My title is Senior Elections Analyst. RealClearPolitics is a company of around 40 employees, with offices in Washington D.C. It produces one of the most heavily trafficked political websites in the world, which serves as a one-stop shop for political analysis from all sides of the political spectrum and is recognized as a pioneer in the field of poll aggregation. It produces original content, including both data analysis and traditional reporting. It is routinely cited by the most influential voices in politics, including David Brooks of *The New York Times*, Brit Hume of *Fox News*, Michael Barone of *The Almanac of American Politics*, Paul Gigot of *The Wall Street Journal*, and Peter Beinart of *The Atlantic*.

9.   My main responsibilities with RealClearPolitics consist of tracking, analyzing, and writing about elections. I collaborate in rating the competitiveness of Presidential, Senate, House, and gubernatorial races. As a part of carrying out these responsibilities, I have studied and written extensively about demographic trends in the country, exit poll data at the state and federal level, public opinion polling, and voter turnout and voting behavior.

10. In particular, understanding the way that districts are drawn and how geography and demographics interact is crucial to predicting United States House of Representatives races, so much of my time is dedicated to that task.

11. I am currently a Visiting Scholar at the American Enterprise Institute, where my publications focus on the demographic and coalitional aspects of American Politics. My first paper focused on the efficiency gap, a metric for measuring the fairness of redistricting plans.

12. I am the author of *The Lost Majority: Why the Future of Government is up For Grabs and Who Will Take It.* In this book, I explore the fluid nature of American political coalitions. As part of this analysis, I conducted a thorough analysis of demographic and political trends beginning in the 1920s and continuing through the modern times, noting the fluidity and fragility of the coalitions built by the major political parties and their candidates.

13. I co-authored the 2014 *Almanac of American Politics*. The Almanac is considered the foundational text for understanding congressional districts and the representatives of those districts, as well as the dynamics in play behind the elections. PBS's Judy Woodruff described the book as "the oxygen of the political world," while NBC's Chuck Todd noted that "[r]eal political junkies get two *Almanacs*: one for the home and one for the office." My focus was researching the history of and writing descriptions for many of the newly-drawn districts, including tracing the history of how and why they were drawn the way that they were drawn. In particular, I researched and wrote the descriptions for the state of Ohio.

14. I have spoken on these subjects before audiences from across the political spectrum, including at the Heritage Foundation, the American Enterprise Institute, the CATO Institute, the Bipartisan Policy Center, and the Brookings Institution. In 2012, I was invited to Brussels to speak about American elections to the European External Action Service, which is the European Union's

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diplomatic corps. I was selected by the United States Embassy in Sweden to discuss the 2016 elections to a series of audiences there, and was selected by the United States Embassy in Spain to fulfill a similar mission in 2018. I was invited to present by the United States Embassy in Italy, but was unable to do so because of my teaching schedule.

15. In the winter of 2018, I taught American Politics and the Mass Media at Ohio Wesleyan University. I taught Introduction to American Politics at The Ohio State University for three semesters from Fall of 2018 to Fall of 2019, and am currently teaching it. In the Springs of 2020 and 2021, I taught Political Participation and Voting Behavior at The Ohio State University. This course spent several weeks covering all facets of redistricting: how maps are drawn, debates over what constitutes a fair map, measures of redistricting quality, and similar topics.

16. It is my policy to appear on any major news outlet that invites me, barring scheduling conflicts. I have appeared on both Fox News and MSNBC to discuss electoral and demographic trends. I have been cited in major news publications, including *The New York Times*, *The Washington Post*, *The Los Angeles Times*, *The Wall Street Journal*, and *USA Today*.

17. I sit on the advisory panel for the "States of Change: Demographics and Democracy" project. This project is sponsored by the Hewlett Foundation and involves three premier think tanks: The Brookings Institution, the Bipartisan Policy Center, and the Center for American Progress. The group takes a detailed look at trends among eligible voters and the overall population, both nationally and in key states, to explain the impact of these changes on American politics, and to create population projections, which the Census Bureau abandoned in 1995. In 2018, I authored one of the lead papers for the project: "In the Long Run, We're All Wrong," available at https://bipartisanpolicy.org/wp-content/uploads/2018/04/BPC-Democracy-States-of-Change-Demographics-April-2018.pdf.

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18. I previously authored an Expert report in *Dickson v. Rucho*, No. 11-CVS-16896 (N.C. Super Ct., Wake County), which involved North Carolina's 2012 General Assembly and Senate maps. Although I was not called to testify, it is my understanding that my Expert report was accepted without objection. I also authored an Expert report in *Covington v. North Carolina*, Case No. 1:15-CV-00399 (M.D.N.C.), which involved almost identical challenges in a different forum. Due to what I understand to be a procedural quirk, where my largely identical report from *Dickson* had been inadvertently accepted by the plaintiffs into the record when they incorporated parts of the *Dickson* record into the case, I was not called to testify.

19. I authored two Expert reports in *NAACP v. McCrory*, No. 1:13CV658 (M.D.N.C.), which involved challenges to multiple changes to North Carolina's voter laws, including the elimination of a law allowing for the counting of ballots cast in the wrong precinct. I was admitted as an Expert witness and testified at trial. My testimony discussed the "effect" prong of the Voting Rights Act claim. I did not examine the issues relating to intent.

20. I authored reports in *NAACP v. Husted*, No. 2:14-cv-404 (S.D. Ohio), and *Ohio Democratic Party v. Husted*, Case 15-cv-01802 (S.D. Ohio), which dealt with challenges to various Ohio voting laws. I was admitted and testified at trial in the latter case (the former case settled). The judge in the latter case ultimately refused to consider one opinion, where I used an internet map-drawing tool to show precinct locations in the state. Though no challenge to the accuracy of the data was raised, the judge believed I should have done more work to check that the data behind the application was accurate.

21. I authored a report in *Fair Fight Action v. Raffensperger*, NO. 1:18-cv-5391-SCJ (N.D. Ga.) relating to Georgia's administration of its elections. The court there held that I was not qualified as an Expert in elections administration.

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22.   I served as a consulting Expert in *Lee v. Virginia Board of Elections*, No. 3:15-cv-357 (E.D. Va. 2016), a voter identification case. Although I would not normally disclose consulting Expert work, I was asked by defense counsel to sit in the courtroom during the case and review testimony. I would therefore consider my work *de facto* disclosed.

23.   I filed an Expert report in *Mecinas v. Hobbs*, No. CV-19-05547-PHX-DJH (D. Ariz. 2020). That case involved a challenge to Arizona's ballot order statute. Although the judge ultimately did not rule on a motion in limine in rendering her decision, I was allowed to testify at the hearing.

24.   I authored an Expert report in *Pascua Yaqui Tribe v. Rodriguez*, No. CV-20-00432-TUC-JAS (D. Ariz. 2020). I was allowed to testify at the hearing.

25.   I authored two Expert reports in *Feldman v. Arizona*, No. CV-16-1065-PHX-DLR (D. Ariz.). Plaintiffs in that case challenged an Arizona law prohibiting the collection of voted ballots by third parties that were not family members or caregivers and the practice of most of the state's counties to require voters to vote in their assigned precinct. My reports and testimony were admitted. Part of my trial testimony was struck in that case for reasons unrelated to the merits of the opinion; counsel for the state elicited it while I was on the witness stand and it was struck after Plaintiffs were not able to provide a rebuttal to the new evidence.

26.   I authored an Expert report in *Smith v. Perrera*, No. 55 of 2019 (Belize). In that case I was appointed as the court's Expert by the Supreme Court of Belize. In that case I was asked to identify international standards of democracy as they relate to malapportionment claims, to determine whether Belize's electoral divisions (similar to our congressional districts) conformed with those standards, and to draw alternative maps that would remedy any existing malapportionment.

27.   I authored Expert reports in *A. Philip Randolph Institute v. Smith*, No. 1:18-cv-00357-TSB (S.D. Ohio), *Whitford v. Nichol*, No. 15-cv-421-bbc (W.D. Wisc.), and *Common Cause v. Rucho*, NO. 1:16-CV-1026-WO-JEP (M.D.N.C.), which were efficiency gap-based redistricting cases filed in Ohio, Wisconsin, and North Carolina respectively. I testified at trial in the *Nichol* and *Rucho* cases.

28.   I am currently retained as a consultant to legal counsel for the Arizona Independent Redistricting Commission.

SUMMARY

29.   In assessing the political effects of the various proposed maps, Relator's Experts do not rely upon a single metric. In fact, Relators' Experts propose three different sets of elections to draw upon. In addition, Relators' Experts take four different approaches to aggregating those elections. These produce differing assessments of the maps, sometimes wildly so.

30.   Ohio shows significant signs of partisan clustering, especially among Democrats. This means that Democrats tend to live very close to other Democrats. This clustering has increased over the course of the last decade.

31.   This clustering makes it difficult to draw Democratic districts outside of a few metro areas. While Relators' Experts point to the September 15, 2021 Plan uploaded to the Ohio Redistricting Commission Website by Senator Vernon Sykes (hereinafter the "Sykes Plan") as evidence that a map can be drawn that complies with constitutional requirements and will elect fewer Republicans than the General Assembly Plan adopted by the Ohio Redistricting Commission (hereinafter the "Adopted Plan"), a granular review of the maps indicates that the Sykes Plan accomplishes this by rooting out Republican representation in the cities.

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REVIEW OF RELATORS' EXPERTS' REPORTS

A. The Relators' and Relators' various Experts produce differing estimates of the partisanship of plans.

32.   For my work in this report, I reviewed shapefiles, provided by counsel, of the Adopted Plan, the Sykes Plan, the Ohio General Assembly Districts adopted in 2012 ("hereinafter the "current maps"). I also received shapefiles of Ohio's Census blocks, townships, and villages and cities. All of these files came with vote totals from the 16 statewide partisan races conducted between 2012 and 2020 for the referenced geography.   All of my work was performed in R version 4.0.5.

33.   For his district assessments, Mr. Cooper averages the two-party vote share of the Democratic candidate for President in 2020, along with the vote shares of the Democratic candidates for Attorney General, Treasurer and Senate in 2018. *See* Cooper Report ¶ 12.

34.   Dr. Rodden includes the races that Mr. Cooper averages, but also includes all other statewide partisan races from 2016 and 2018 in his average. *See* Rodden Report ¶ 17. Dr. Latner appears to employ a similar metric. *See* Latner Report ¶ 10.

35.   Dr. Warshaw includes the races that Dr. Rodden includes, but also includes additional races from 2014 and 2012, for a total of 13 races. *See* Warshaw Report at 4.

36.   Not only do Relators' Experts select different races to evaluate, but they also take conflicting approaches in the method of calculation of district partisanship. For example, Mr. Cooper first calculates two-party vote share for each of the races he has selected, and then averages those four results. Dr. Rodden, on the other hand, appears to add up the votes across races first, and then take the average. Dr. Warshaw, by contrast, weights outcomes from 13 elections by year. He does not, to my knowledge, specify his weighting method. I am therefore unable to replicate

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his method with confidence. He also obtains results from PlanScore, which I believe relies only upon presidential data from 2016 and 2020, taken from across the country, not just Ohio.

37.   The choice between what I will call the Cooper and Rodden approaches is potentially consequential. Turnout is generally much higher in presidential years than in midterm years. Using Rodden's approach, therefore, will weight those presidential years more heavily than the midterm years. On the other hand, there are more races in midterm years (in Ohio), so using Cooper's approach weights the midterm races more heavily than the presidential-year races.

38.   To understand the potential differences, imagine a district with three races, the first two of which are held in the midterm year. In the first race, the candidate of Party A received 30 votes to Party B's 70. In the second, it was 35 to 65. In the third, it was 600 to 500. Using Cooper's approach (averaging 30%, 35% and 54.5%) results in a Party A receiving 39.8% of the vote in the district. Using Dr. Rodden's result (665 total votes for Party A versus 635 votes for Party B) results in Party A receiving 51.2% of the vote in the district.

39.   Even though the choice is consequential, there is no clear right or wrong approach; it is just important to realize when reviewing the reports that different approaches can yield different results in consequential ways.

40.   To facilitate an apples-to-apples comparison, I have taken the various races selected by each Expert and calculated estimates of election results. To keep all estimates on the same plane, I have aggregated using Cooper's approach (*supra* ¶¶36-38). I have summarized the number of Republican wins and losses in the evaluations of the plans utilizing the metrics proposed by the Relators' Experts. I have also added a simpler metric, often used to evaluate a district's performance: Whether President Trump won or lost a district in 2020. Finally, I have added the information using the Cooper approach on all 16 elections held over the past ten years.

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Table 1: Projected Republican Wins Under Various Proposed Election Selections

	Adopted House	Sykes House	Adopted Senate	Sykes Senate
Cooper	61	54	20	19
Rodden	62	56	21	19
Trump 2020 Only	63	56	22	21
All Elections	64	56	22	19
Warshaw	68	61	23	20

41.   As you can see, the evaluations of the maps differ significantly in their assessment of Republican wins and losses. These assessments would, in turn, alter the evaluation of Ohio's maps under various metrics of partisanship. For example, using Warshaw's races the difference between the number of senate seats under the Adopted Plan and the Sykes Plan is three seats. Under the Cooper and "Trump 2020" metrics, the difference is just a single seat. The possible range of Republican House seats under the Adopted Plan is between 61 and 68, while for the Sykes plan it is between 54 and 61. The Senate maps range from 20 to 23, Republican seats, and 19 to 21, Republican seats, respectively.

42.   There are also some differences between the partisanship estimates tabulated above and the tabulations made by the Relators' Experts in their reports. For instance, Cooper counts 55 Republican seats under the Sykes plan, while I count 54. Aggregating and disaggregating districts is an inexact science, especially if precincts and blocks are split. The difference between Cooper's count and mine comes from the estimation of the 54th district, which I estimate has a 50.15% Democratic performance, and he estimates has a 49.48% Democratic performance.

43.   Also, Table 1 finds more Democratic Senate districts in the Adopted Plan under the Rodden metric than the Rodden Report itself finds. *See* Rodden Report at 17 (finding 10 Democratic districts of 33, as opposed to the 12 in the table above). This once again illustrates the

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consequences of the Cooper vs. Rodden approaches to aggregating races to calculate district partisanship; if I use the Rodden approach, the numbers in his report match mine. Query whether a statistic that can result in a difference of two seats (of 33) when using modestly different approaches to averaging is useful for evaluating constitutional issues.

B. Ohio's Political Geography Shows Significant Signs of Partisan Clustering.

44.   Over the course of the past few decades, much of the United States has seen an increase in partisan sorting. This means that people increasingly live near people who share lifestyles, viewpoints and voting habits. *See, e.g.*, Corey Lang & Shanna Pearson-Merkowitz, "Partisan Sorting in the United States, 1972: 2012: New Evidence from a Dynamic Analysis," 48 *Pol. Geo.*, 119-129 (2015).

45.   Ohio is no exception to this trend. This section is dedicated to exploring those developments. The subsequent section will explore the political consequences of those developments.

46.   The changes that have occurred in Ohio over the course of the past decade are readily revealed with a pair of maps. Comparing the 2012 and 2020 elections is useful because both elections took place in a national environment where Democrats performed reasonably well: President Barack Obama won the national popular vote by just shy of four points while President Joe Biden won the national popular vote by a little over four points.

47.   At the beginning of the decade, Ohio Democrats showed substantial strength in Ohio's counties that housed its largest cities: Hamilton, Cuyahoga and Franklin. But Democrats also showed substantial strength in other counties. Appalachia was red, but only modestly so, while the counties that ran along Lake Erie leaned toward the Democrats. The Mahoning River Valley counties provided an additional source of Democratic strength. Note that the scale of these maps

is capped at 40% and 60%; one problem with choropleth maps is that outliers can overwhelm the color scale. In this case, allowing a staunchly Republican County such as Holmes County (which gave Trump 83% of the vote) to set the extreme of the color scale would leave much of the rest of the state a pale shading of pink, obscuring important distinctions in the crucial competitive range. We should nevertheless keep in mind that many of these dark red counties are, in reality, substantially redder than the coloring here would suggest.

Map 1: Romney (2012) and Trump (2020) Two-Party Vote Share, by County

48.   By 2020, this had changed dramatically. The urban centers had become bluer, but now Appalachia was solid red, while the Lake Erie shoreline, Western Reserve, and Mahoning River Valley were red-to-reddish-purple. The political firmament had changed significantly from when the last set of maps was drawn.

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49.   The following map illustrates these changes at the county level. Here, gradations of red and blue represent the degree of swing in Republican vote share from 2012 to 2020. One does not need a complicated statistical test to see the large swing against Democrats in Southeastern Ohio and along the Pennsylvania border, combined with the more modest (but still pronounced) swings along the Lake Erie shoreline. The only areas that swung toward Democrats were Franklin County (and its northern suburbs), along with Cincinnati and its northern suburbs.

Map 2: Vote Share Swing from Romney (2012) to Trump (2020)
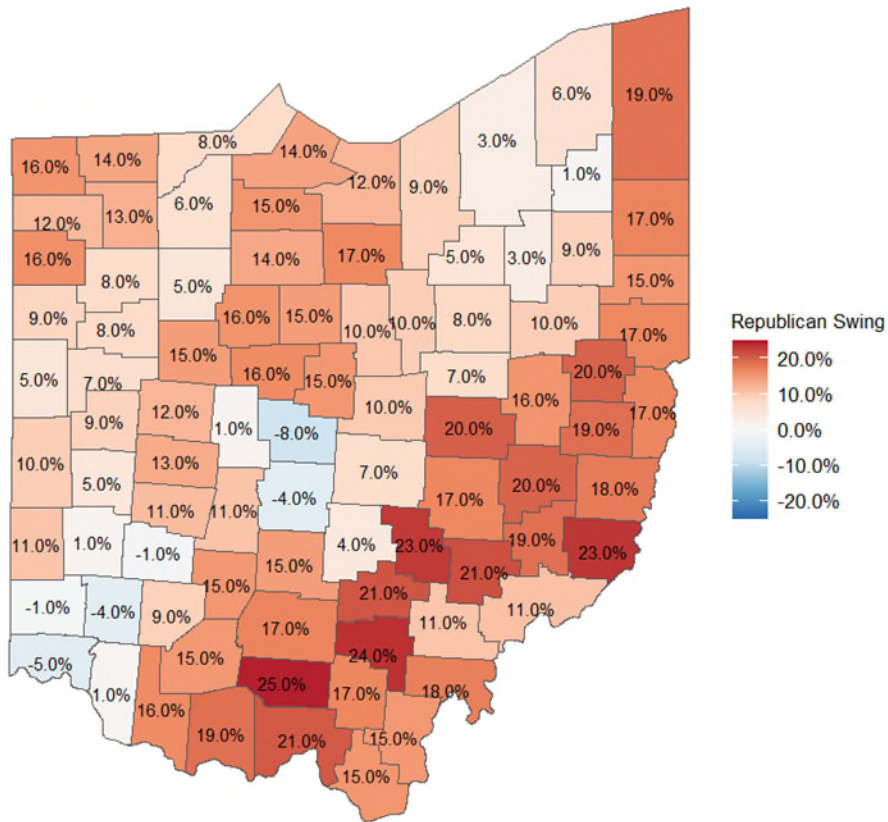
Note: Red = Republican. The scale is truncated at 40% and 60% of the vote

50.   The increased geographic concentration of the Democratic coalition is even starker when we look at the map 3, which examines the same data, only at the township and municipality

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level. This map seems particularly important, given the constitutional restrictions in Article XI §

3 on splitting townships and municipalities.

Map 3: Romney (2012) and Trump (2020) Two-Party Vote Share, at sub-County Level

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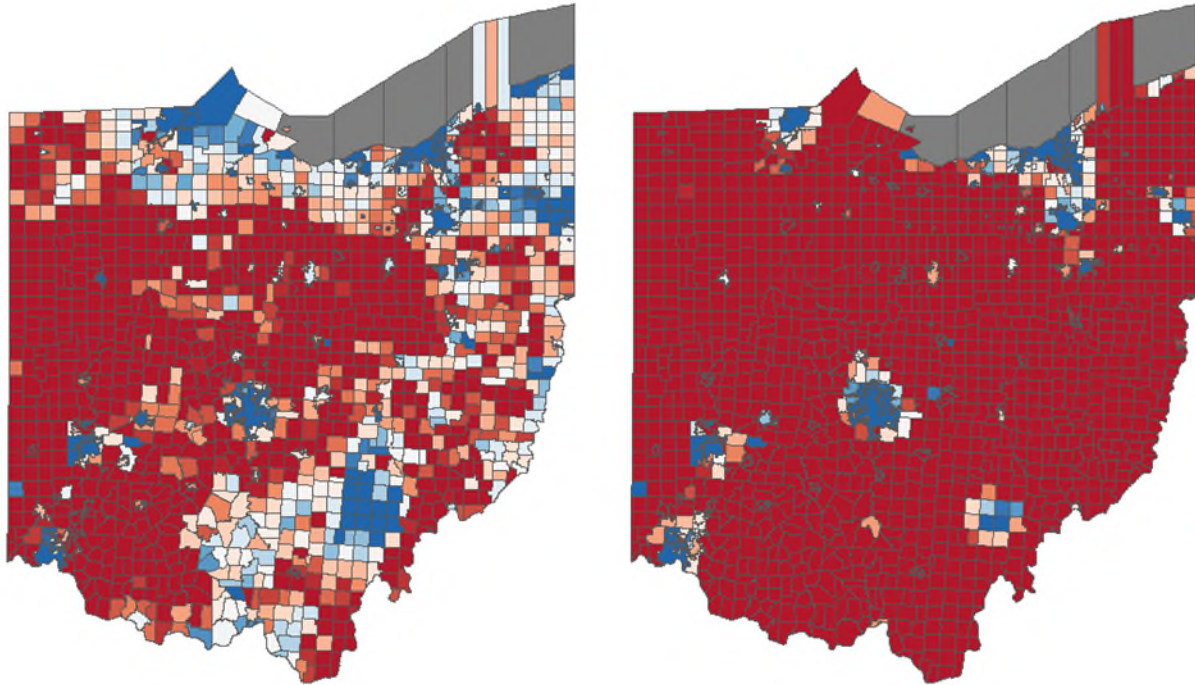
51.   We can also reproduce Map 2 at the sub-County level:

Map 4: Vote Share Swing from Romney (2012) to Trump (2020)
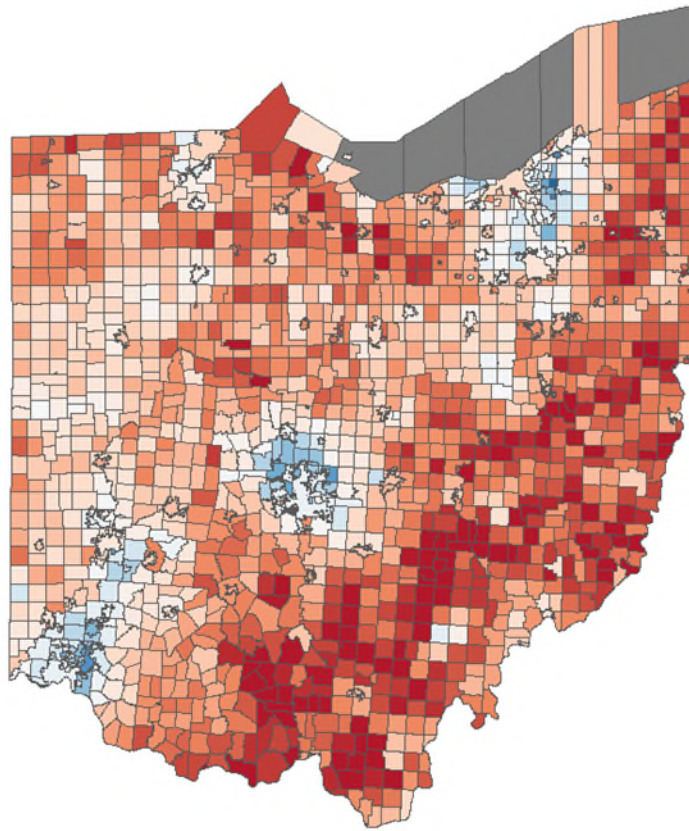
Note: Red = Republican. The scale is truncated at a 25% swing toward either party.

52.   It is much the same story as in Map 2; if anything, it is more pronounced. The significant blue and pink areas in southeastern and northern Ohio have substantially dried up by 2020, leaving islands of blue in Cincinnati, Athens, Toledo, Columbus and Cleveland-Akron. The political implications of this will be discussed shortly but should be apparent from this: In the past, it was not difficult to pair blue areas in Toledo with pink or purple areas nearby to create multiple Democratic districts outside of the city proper. Today, those areas simply don't exist.

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53.   We can take an even more granular look, evaluating the map at the census block

level. Here, it is more of the same. There is a smattering of blue in the cities and inner suburbs,

but otherwise the areas see no change or large red shifts in previously heterogeneous areas.

Map 5: Romney (2012) and Trump (2020) Two-Party Vote Share, at Census Block Level
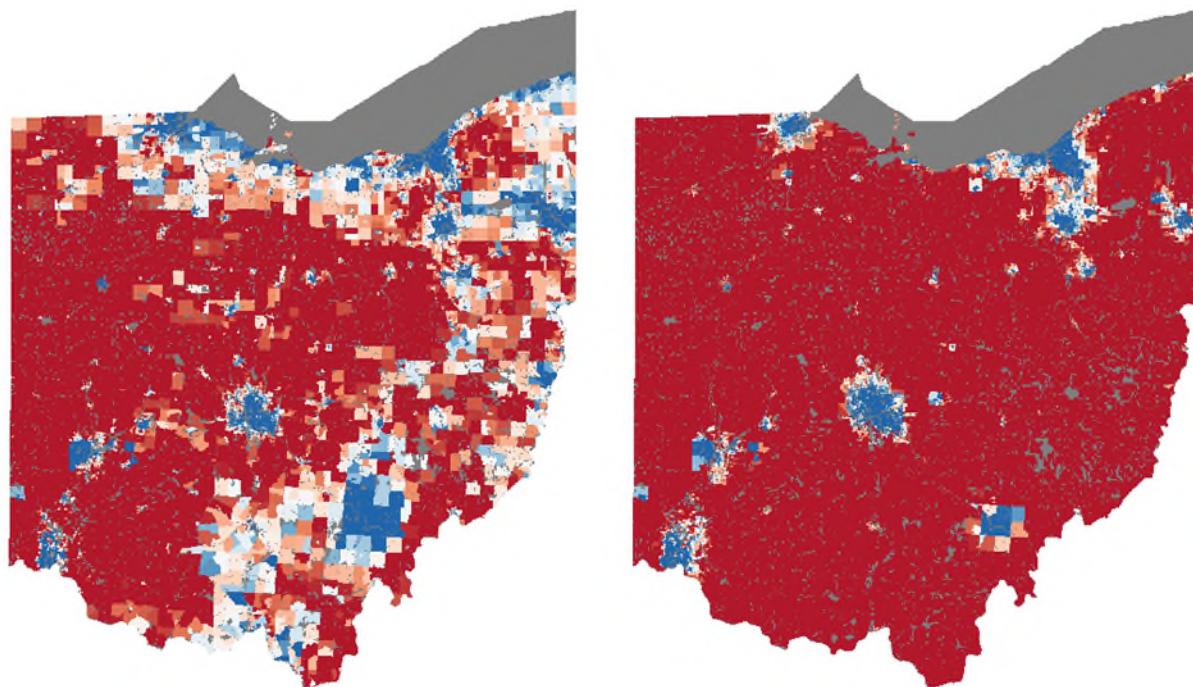
54.   Examining the swing in the block level (Map 6) illustrates the trend even further.

Blue swings are isolated dots in the big cities, while the rest of the map is largely a stretch of red.

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Map 6: Vote Share Swing from Romney (2012) to Trump (2020)
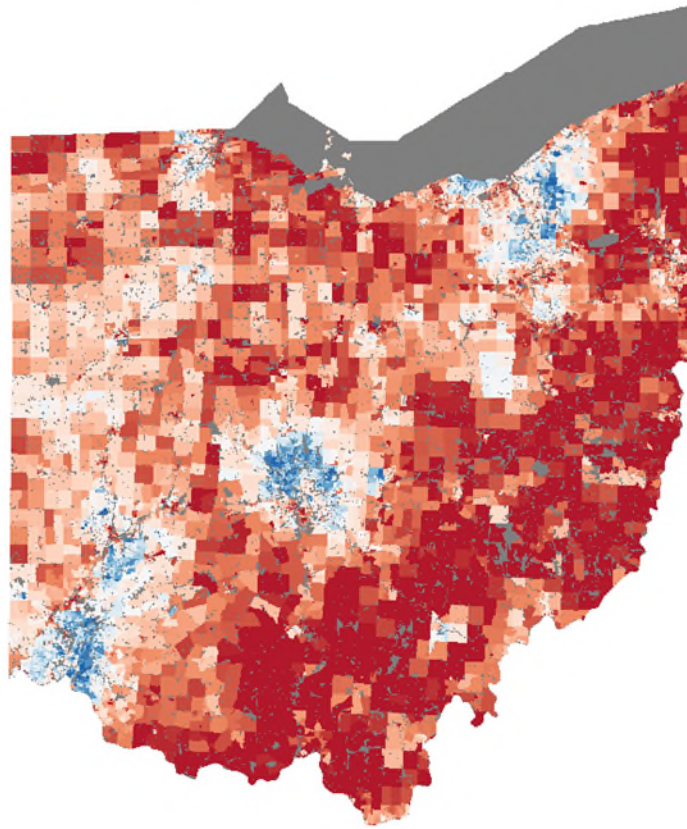
Note: Red = Republican. The scale is truncated at a 25% swing toward either party.

55.   Of course, as they say, land does not vote: People do. Many of these large blocks have few residents, while the blue blocks are fairly dense. We will explore the consequences of this for redistricting in the next section. However, by focusing on census blocks, that difference is minimized somewhat, as block populations (unlike county populations) vary between 0 and a few thousand people, rather than counties, which vary between 10,000 or so residents and over one million.

56.   We can summarize these findings by plotting the trend in Ohio over the past few decades by census bureau categorization of Core Based Statistical Areas ("CBSAs"). Each county is classified by the census bureau as belonging to a metropolitan area, a micropolitan area, or a rural area. I've further broken the metropolitan areas down into large metro areas, like Cleveland,

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Cincinnati and Columbus, or small metro areas like Dayton or Toledo. I have calculated the share

of the vote in Ohio for each group from 1988 to 2020, as well as the partisan lean of each group

(that is, how much more Republican the group is than the country as a whole).

Chart 1: Partisan Lean and Vote Share, Ohio CBSAs, 1988-2020
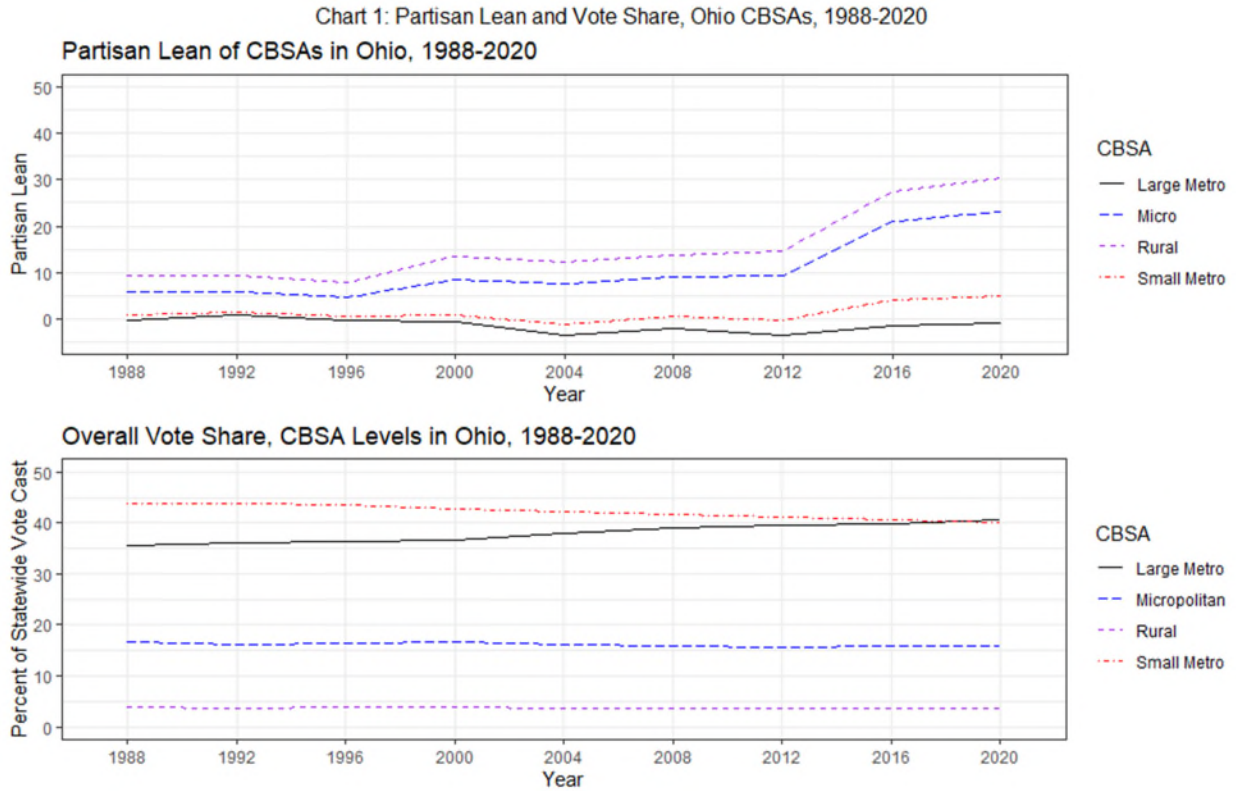
57.   This shows the substantial swing toward Republicans in micropolitan and rural

areas, along with the lack of accompanying swing toward Democrats in the metro areas. At the

same time, these groups have maintained their share of the overall vote with remarkable

consistency.

58.   We can also follow the approach taken by the seminal article on clustering and map

drawing. We start by looking at a scatterplot of the relationship between population density and

Republican vote share in 2012 and 2014. *See* Jowei Chen & Jonathan Rodden, "Unintentional

Gerrymandering: Political Geography and Electoral Bias in Legislatures," *8 Q.J. Pol. Sci.* 239,

242-44 (2013). Each dot in these charts represents a census block. Dots that are located further to

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the right represent higher-density blocks, and dots that are located higher in the chart represent blocks with higher Republican vote shares.

Chart 2: Relationship between density and vote share, 2012, 2020
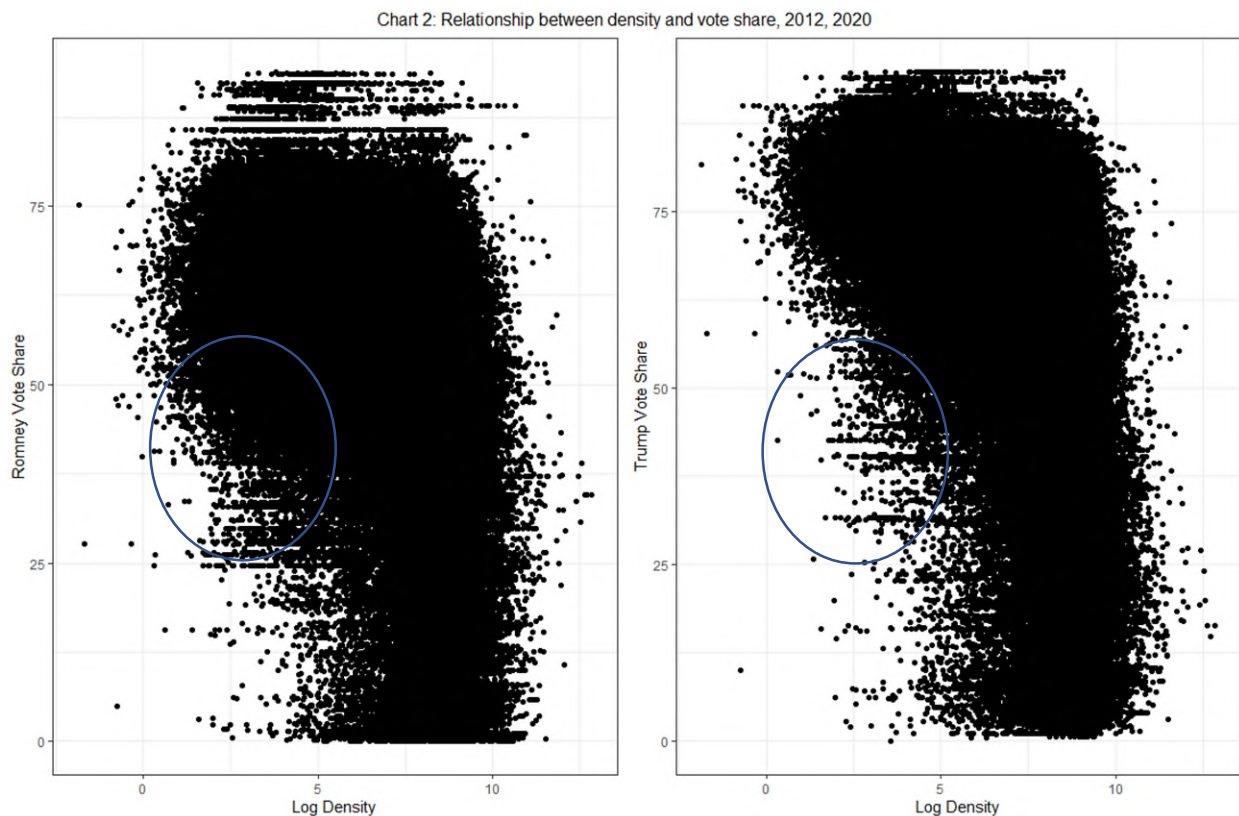
59.   Both the 2012 and 2020 maps have upper-left-to-lower-right shape, demonstrating that as density increases, so too does Democratic voting. Note though that while there are almost no low-density Democratic blocks, there are high-density Republican blocks. Note too that the 2012 map contains a section of blocks just below the 50% Romney vote share level that also have relatively low density (marked roughly by the ellipse in the chart). By 2020, that section had mostly thinned out, indicating a loss of low-density swing blocks. In particular, in 2012 there were 5,929 blocks with fewer than 148 people per square mile that gave Romney between 25 and 50% of the vote. In 2020, that number was just 772 (using Trump's vote share in 2020).

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60. We can follow the process in the Chen and Rodden article further by examining the distribution of census blocks as they move away from an arbitrary point in the state. *Id.* at 244. The article chooses downtown Miami as its starting point; I choose Hamilton County, Ohio. Both are large population centers located in a corner of the state (if we chose a population center in the center, we would risk overlapping areas that are equally distant from the point, but are quite far apart from each other).

Chart 3: Distance from Hamilton County, Ohio by Republican Vote Share, 2012 and 2020
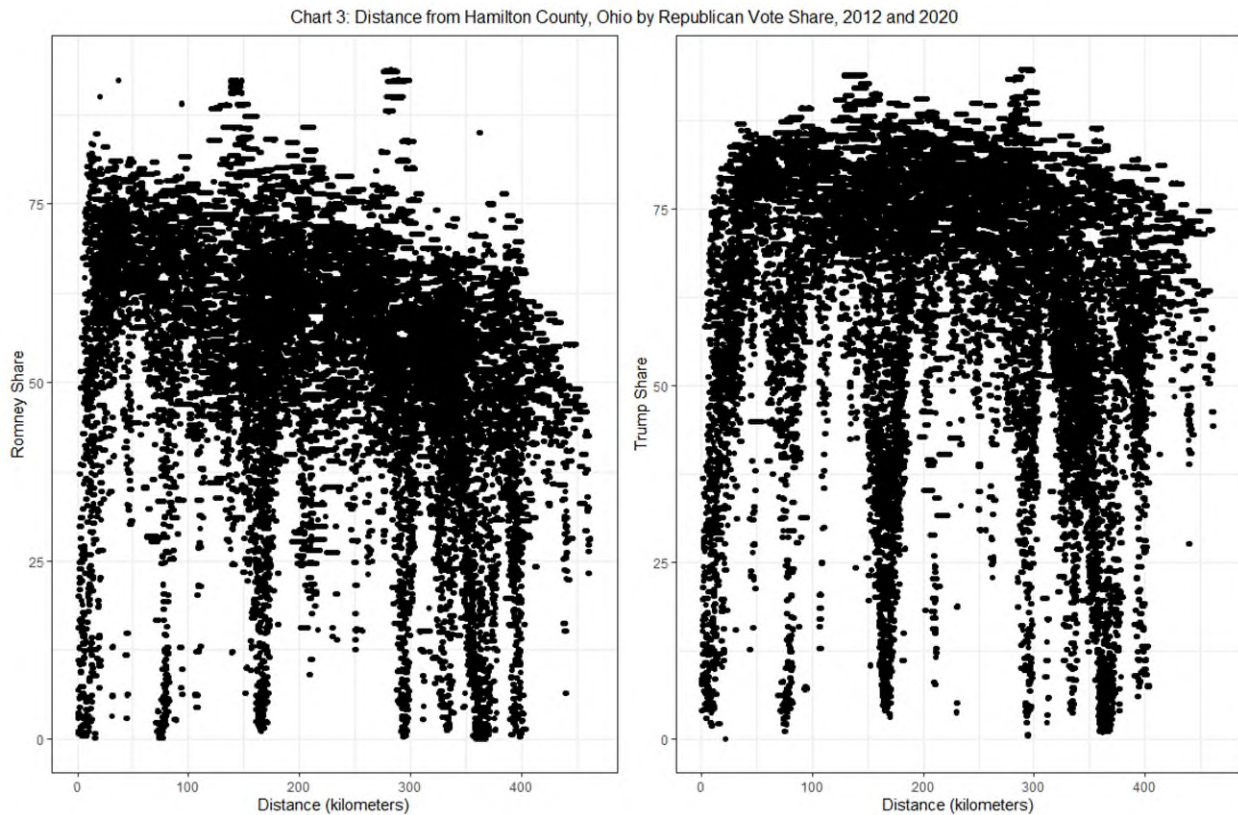
61. Dots located further to the right on Chart 3 reflect blocks that are increasingly distant from Hamilton County, while dots located higher in Chart 3 again show increased Republican vote shares. In a location with no partisan sorting, the map would look like a blob: there would be no relationship between distance and vote share.

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62.   That is not what we see here. Instead, we see three patterns. First, we see a "stalactite" pattern in Chart 3. These stalactites, which hang down from a "blob" reflect cities. The left-most stalactite is composed of blocks in Hamilton County, the one around 75 kilometers is blocks in Dayton, the one around 150 kilometers away is Columbus, while the four stalactites on the right of the map represent Toledo, Akron, Cleveland and Youngstown. In other words, there is a clear spatial structure in Democratic voting patterns. Democratic blocks are found largely in clusters, located at particularized distances from the map.

63.   This leads to the second pattern, which is the "blob" of Republican blocks at the top of Chart 3. As noted above, a "blob" shape represents a lack of correlation. Republican precincts simply look very different from Democratic precincts. They exist in fairly large numbers at almost every distance from Hamilton County.

64.   Chen and Rodden observed a similar structure in Florida (using census block groups) and concluded that "Democrats are far more clustered within homogenous precincts than are Republicans" and that "Democratic precincts tend to be closer to one another in space than Republican precincts." That is, "the nearest neighbors of pre dominantly Democratic precincts are more likely to be predominantly Democratic than is the case for Republican precincts." *Id.* at 245

65.   Finally, the structure changes between 2012 and 2020. In 2012, the Republican "blob" at the top of Chart 3 has a clear slope from upper-left to lower-right. Here, that suggests additional spatial structure: As one moves further away from Cincinnati, one encounters fewer heavily Republican blocks. This is consistent with what we had observed in our map of Ohio from 2012, where northern and eastern Ohio had a fair number of rural purple and blueish blocks. That slope is much less pronounced in 2020. Also, the stalactites appear better defined in 2020.

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66.   Finally, while a Moran's I analysis (a common statistical tool used to measure clustering) finds significant clustering in both 2012 and 2020, the value of the statistic increases from 0.66 to 0.78, suggesting a net increase in the amount of clustering within the state.

C. Clustering has made it difficult to draw rural Democratic seats, necessitating the evisceration of Republican representation in cities to counterbalance these difficulties to achieve proportionality.

67.   Dr. Rodden has written convincingly of the effect of this clustering on Democratic representation in American legislatures. To be clear, Dr. Rodden believes that gerrymandering has a significant effect on electoral outcomes. But when writing of Democrats' focus on gerrymandering as the source of their problems, he writes "[w]ithout a doubt, gerrymandering makes things *worse* for the Democrats, but their underlying problem can be summed up with the old real estate maxim: location, location, location." Jonathan Rodden, *Why Cities Lose* 2-3 (2019). He continues "[I]n many US states, Democrats are now concentrated in cities in such a way that even when districts are drawn without regard for partisanship, their seat share will fall well short of their vote share. It matters a great deal how the districts are drawn, and by whom, but because of where Democrats live, the very existence of winner-take-all-geographic districts has facilitated the systemic underrepresentation of Democrats." *Id.* at 3.
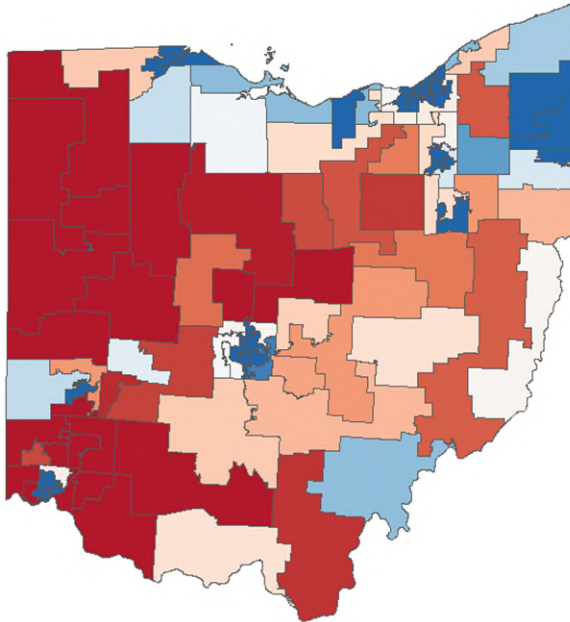
68.   Discussing Ohio specifically, Rodden writes of its "blue" towns: "as these towns [like Canton and Ashtabula] lose population and exhibit lower levels of turnout, they are increasingly swallowed up by their very conservative exurban and rural peripheries, where turnout is quite high, which turns the county red as a whole." *Id.* at 52.

69.   The consequences of this concentration in Ohio are apparent in Map 7, which compares the Republican presidential candidate's performance under the current House lines in
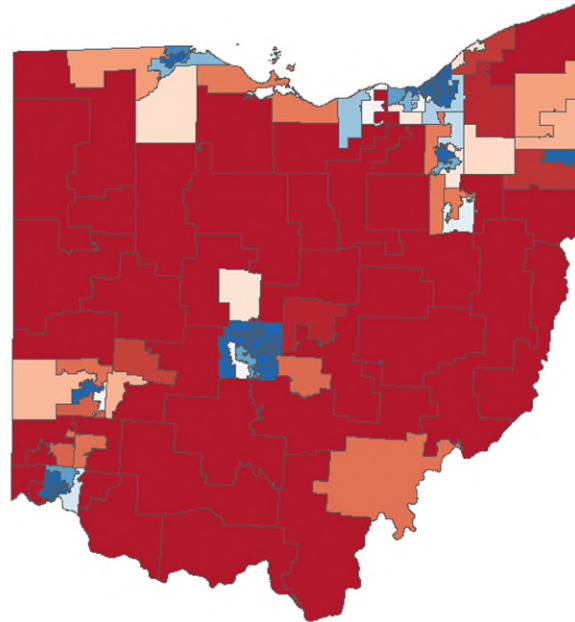
22

2012 versus 2020. Once again, these map colors are truncated at 40% and 60% performance.

Map 7: Presidential Vote Share Under Current House Lines, 2012-2020

Current Lines, Using 2012 POTUS   Current Lines, Using 2020 POTUS

70.   Notice that in 2012 there were a variety of blue or light red districts in southern Ohio. In particular, Democrats had opportunities in districts in Preble County, Scioto County, and Athens County. These dried up by the end of the decade.

71.   Likewise in Northeastern Ohio, Democratic districts in southern Stark County, southern Portage County, and in Ashtabula, Trumbull and Mahoning counties flipped toward Republicans. In Northwestern Ohio, districts in Wood, Sandusky, Ottawa, Erie, and northern Lorain County became difficult areas for Democrats to win.

72.   This is not to say that Democrats were without countervailing opportunities. Districts in eastern Hamilton County, Delaware County, outer Franklin County, and outer Cuyahoga County became places where Democrats could compete more aggressively than they

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could at the beginning of the decade. But the point is that Democrats lost opportunities throughout rural Ohio and in small metros, and gained opportunities only in the urban centers.

73.   Thus, it is unsurprising that the maps adopted by the Commission and the maps offered up by Senator and Representative Sykes differ almost exclusively in their treatment of cities; everyone seems to agree that rural areas can no longer reliably support Democratic representatives. Here, for example, are the evaluations of the partisanship of the districts under the Sykes map, using both the Cooper and Rodden approaches to aggregation (for an explanation of these differences see *supra* ¶¶ 37 - 39).

Map 8: Evaluation of House Districts in the Sykes Plan, Using Cooper Approach to Aggregation

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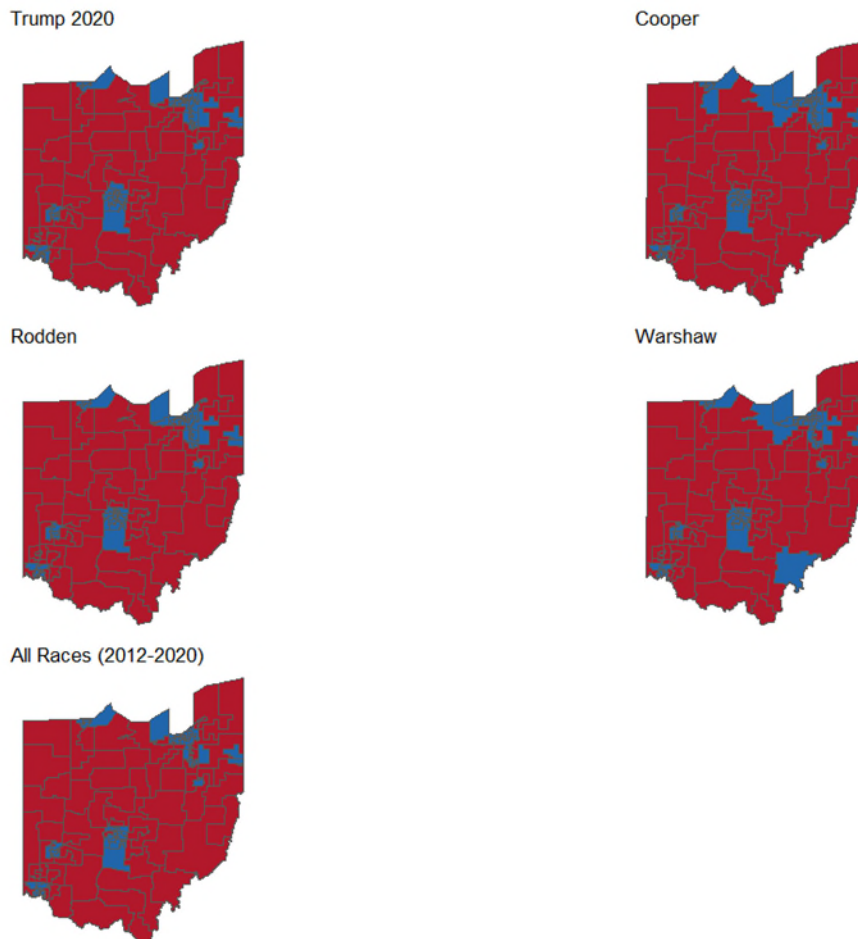
Map 9: Evaluation of House Districts in the Sykes Plan, Using Rodden Approach to Aggregation

74.   Regardless of the metric employed, the Democratic districts here are anchored around Cincinnati, Dayton, Columbus, Toledo, Loraine, Cleveland, Akron, Youngstown/Warren and Canton. The sole exception is that using the 13 races that Dr. Warshaw embraces and the Cooper approach to aggregation (remember, Dr. Warshaw weights the races, so this may not be his actual scoring of the district), the district around Athens, Ohio, would favor Democrats.

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75.   Again, there are disagreements on the particulars but not about the general rule:

None of the proposed maps create reliable representation for Democrats outside of the city centers,

because it is extremely difficult to draw Democratic districts in rural areas.

76.   This is also true of the Senate maps:

Map 10: Evaluation of Senate Districts under the Sykes Plan, Using Cooper Approach to
Aggregation

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Map 11: Evaluation of Senate Districts under Sykes Plan, Using Rodden Approach to

Aggregation

Trump

Cooper

Rodden

Warshaw

All Races

27
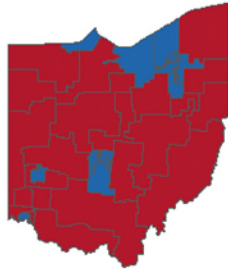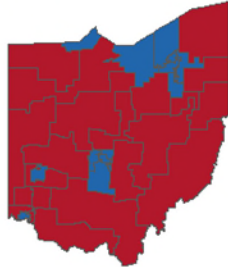
77.   Stripped to its essence, the debate that relators are attempting to introduce is really a debate about whether map-makers are required to counterbalance the lack of Democratic districts outside of large metro areas by drawing maps that minimize Republican representation in those urban cores.

78.   The lengths that the Sykes Plan goes to in order to avoid creating Republican districts in the city is obvious through a local analysis of the maps. The only attempt at a local analysis of districts is performed by Dr. Latner. Dr. Latner's evaluation of the discretionary choices behind the Ohio maps involves something of an "I know it when I see it approach." This is unsurprising, as there is no well-established political science metric for measuring packing and cracking at the local level. I draw upon my decade of experience as an election analyst, my experience conducting local analyses of congressional districts, including Ohio's, for the Almanac of American Politics, and my knowledge of Ohio's geography as a resident. I will confine myself here to analysis of the state House plans, since the Senate map is downstream of the districts drawn for the House. I will also use the Cooper method for aggregation, for brevity's sake.

79.   Latner writes of the Adopted Plan's districts in Hamilton County "In Hamilton County, I observe that House districts 24 and 25 are packed with 71 percent and 78 percent Democratic voters, respectively, with high proportions (41 percent and 52 percent, respectively) of voting age African-Americans, while adjacent House districts 27, 29 and 30 are safely Republican."

80.   "Safely Republican" would have been a reasonable description of District 27 in 2012, when now-Sen. Mitt Romney won it with 60% of the vote. But none of the Republican candidates on statewide tickets in 2018 approached that level of support, save for the Republican candidate for Treasurer. President Trump lost it (narrowly) in 2020.

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81.   More importantly, given the Democrats' "natural packing problem," it is difficult to avoid drawing at least two heavily Democratic districts in Hamilton County. The Sykes map draws three Democratic districts where Trump fell below 31% of the vote, and two districts where none of the statewide Republicans in 2012, 2016 or 2018 cleared 30%.

82.   To see what is going on in Hamilton County, an examination of maps of the Adopted Plan and the Sykes Plan, laid over census blocks shaded by partisan support (defined by the Cooper Metric) are useful.

Map 12: Sykes Plan, Hamilton County

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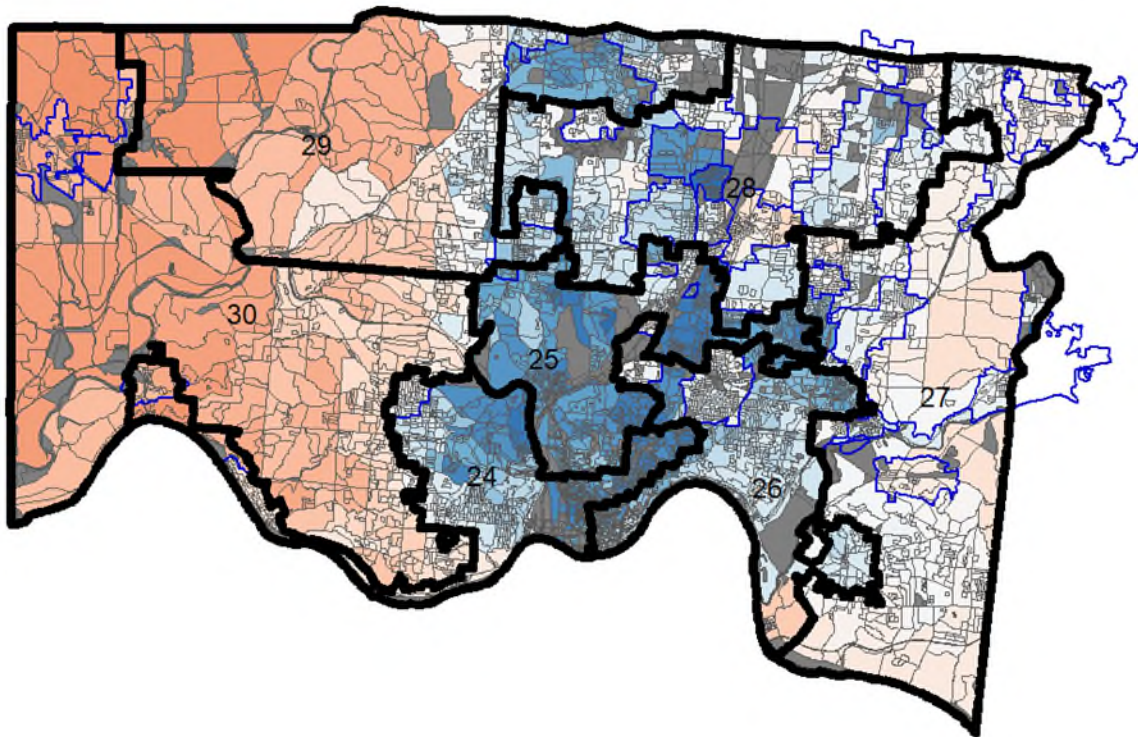
Map 13: Adopted Plan, Hamilton County
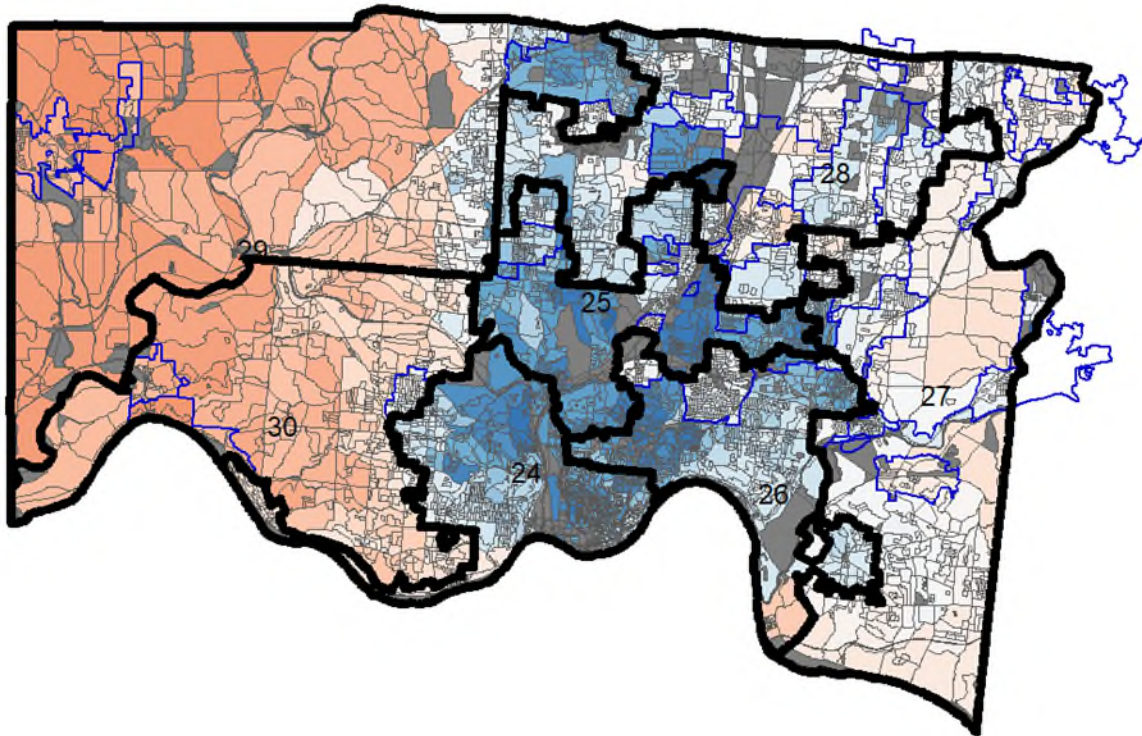
83.   Both the Adopted Plan and the Sykes Plan agree on the need to draw a swing district

in eastern Hamilton County, as well as four Democratic districts in central Hamilton County. The

differences are found in Districts 29 and 30, in western Hamilton County. The Sykes Plan reduces

Republican representation here via a tendril that runs along the Ohio River and ties the middle

class, heavily Republican suburbs of Cleves and North Bend with downtown. The 24th also pushes

further into western Hamilton County by adding the Republican-leaning city of Cheviot. Having

pulled these middle class, Republican leaning areas into a Cincinnati-based district, the Sykes Plan

then packs as many of the remaining Republicans into the 30th as possible. This then pushes the

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29th into more politically marginal territory in northern Hamilton County, creating a fifth district with a Democratic lean.

84.   If the goal is to even out the Republican dominance in rural Ohio by increasing the number of Democratic seats in urban areas, then this approach may be justified. If the goal is to ensure local representation and avoid excessive use of partisan information when drawing lines, this is harder to justify. After all, Hamilton County is not an overwhelmingly blue county. President Biden and Sen. Sherrod Brown both fell just short of 60% of the vote here, while the Democratic candidate for governor in 2018 and Secretary of State Hillary Clinton won by about ten points. The 57% of the seats that the Adopted Plan gives the Democrats here (with one of those Republican seats being very marginal) is roughly balanced, as opposed to the 71% of seats given by the Sykes Plan (with one of those Republican seats being very marginal).

85.   Another example comes in Franklin County. While this was previously a swing county (and, much earlier, solidly Republican), today it is deep blue, with Democrats routinely receiving around two-thirds of the vote here.

86.   Latner writes of Franklin County: "Democratic voters are packed into House districts 1-3 (Senate district 15), including what will now be a 53 percent voting age Black population in district 2. House districts 10 and 11 select municipalities in a manner to create two safe seats, one for each party. These district boundary configurations create the opportunity for a fairly safe Republican seat to be put together in Senate district 16."

87.   Franklin County is Democratic, but not so heavily Democratic that it should likely shock the conscience that Republicans in the county are given some representation.

88.   At the same time, it is very difficult to draw compact districts that do not include

large numbers of Democrats. Using the Cooper metric, Districts 1, 3, 5 and 6 in the Sykes Map

all show very low Republican vote shares, with Trump falling below 30% in all four.

89.   As with Cincinnati, political geography does Democrats no favors in Franklin

County. However, the Sykes Map works effectively against this geography.

Map 14: Franklin County Census Blocks
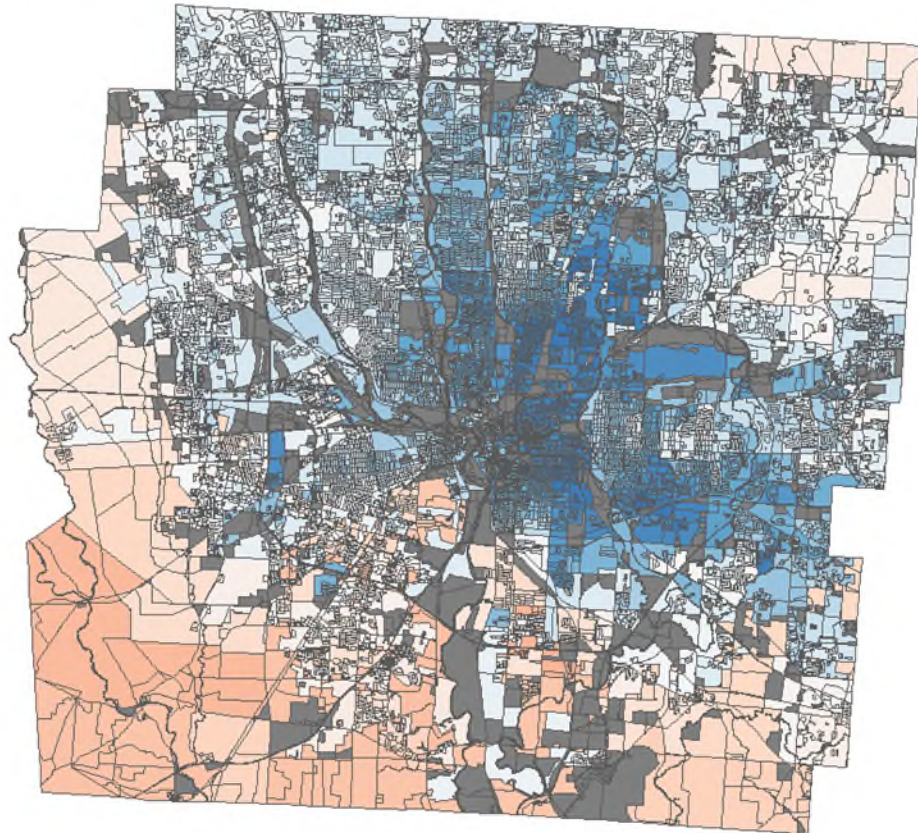
90.   As you can see, Franklin County includes a number of heavily Democratic census

blocks in the center. The northern suburbs are now relatively "blue," although lightly so. With

that said, the southwestern quadrant of the county is still relatively rural, and a compact Republican

district based in Pleasant, Prairie and Brown townships would fit here quite naturally. In addition,

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a swing district could probably be drawn in the northeastern portion of the county near Plain

Township and New Albany.

91. This is effectively what the Adopted Plan did.

Map 15: Adopted Plan, Franklin County
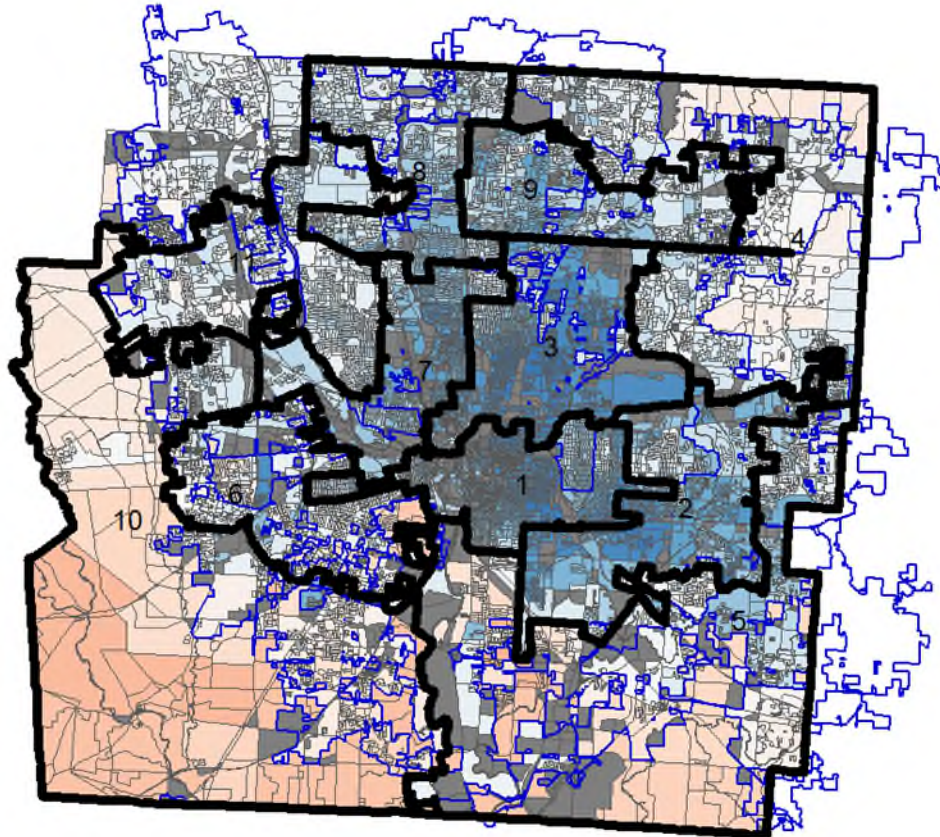
92. At the beginning of the last decade, this map probably would have yielded three

Republican districts: one in northeastern Franklin County, one in southwestern Franklin County,

and one in the Upper Arlington/Hilliard-based 11th District. Mitt Romney carried all of these

districts. But the shift against Republicans in the suburbs hurts Republican chances. President

Trump received only 40% of the vote in the 4th and 38% in the 11th. The 10th, however remains

Republican; Trump received 53% of the vote here. In addition, the 6th District, based in blue-

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collar southwest Columbus seems to be moving toward Republicans; Trump received almost 46% of the vote here.

93.   Looking at the average of all statewide races in these districts, Republicans would receive a majority of the vote in three districts: 4, 10 and 11. This, however, would roughly correspond with their countywide vote share.

94.   Finally, Franklin County can't support a full set of districts under the Supreme Court's one-person-one-vote jurisprudence. The Adopted Plan places the "extra" precincts in the city of Dublin, in the northwestern portion of the district. It merges these precincts with Union County, creating a Republican district there. While there are any number of ways to place the "extra" precincts, this one is sensible, as Dublin is a fast-growing suburb whose boundaries lie partly in Union County. Much of Jerome Township and even Plain City in Union County are increasingly extensions of Dublin.

95.   The Sykes map, by contrast, would almost certainly eliminate Republican representation in Franklin County altogether. President Trump came nowhere near carrying any of these districts; his best was the 10th district, where he received 45% of the vote. The 10th and 8th districts are the only ones where he received even 40% of the vote. Neither the Cooper nor the Rodden races show Republicans clearing 45% in any of the districts.

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Map 16: Sykes Plan, Franklin County
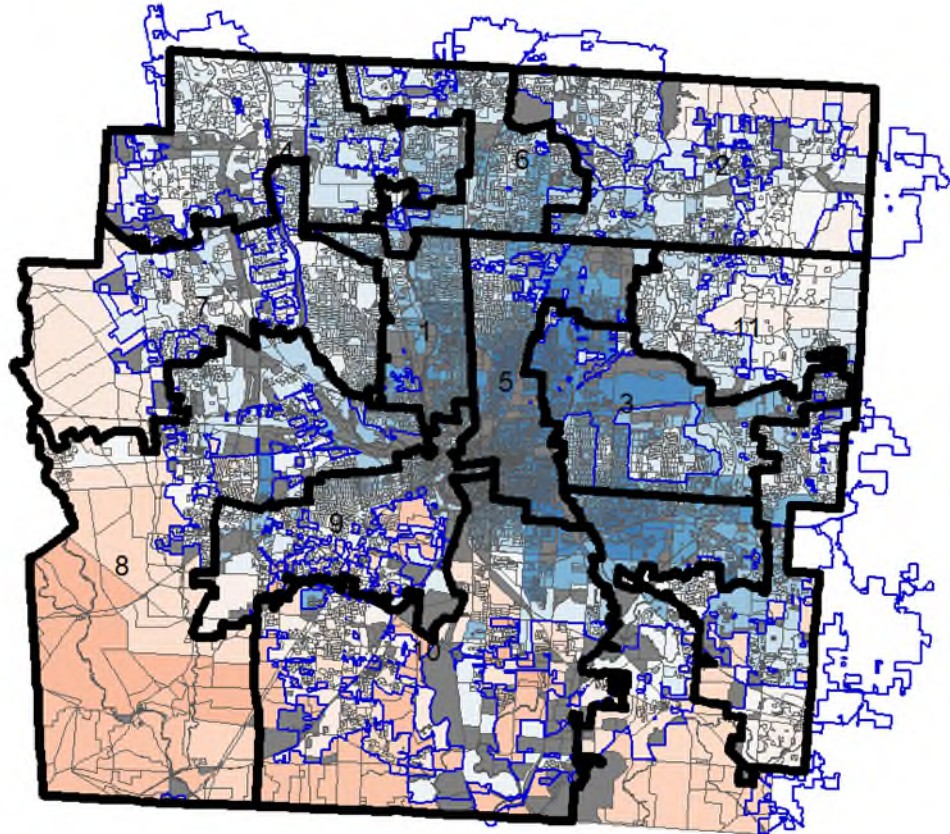
96.   Looking at the map in more detail reveals clear choices that have the effect of making it very difficult for any Republican to win a race in Franklin County. In this map Dublin is merged with the City of Worthington. Here, the effect creates a district that was carried by Romney, but where Trump received just 37% of the vote. The more rural townships in southwestern Franklin County are cracked between three districts and combined with heavily urban parts of Columbus. Heavily Republican and rural Pleasant and Prairie townships in the southwest corner of the county are now actually combined with downtown Columbus in the 8th District; it is difficult to conceive of a reason for this.

97.   Northeastern Franklin County is split between two districts, both of which are Democratic under any metric. The 11th meanders down the right side of the county.

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98.   The Sykes Plan takes a group of densely populated, heavily Democratic precincts located south of Bexley and Whitehall, and connects them via Groveport with Pickaway County, a rural county that gave Donald Trump over 70% of the vote. The result of joining these disparate groups together, however, is to create a district that does not come close to 50% Republican in any of the various metrics that Relators' Experts use.

99.   The end result of the Sykes Plan is to eliminate Republican representation in Franklin County. Moreover, it does so by making odd choices that are difficult to justify under any traditional redistricting criteria.

100.   In Lorain County, both Sykes Plan and the Adopted Plan agree that there should be a substantially Republican district drawn in the southern area of the district. Note that in both plans, this district is is, in reality, joined with other neighboring counties. At the beginning of the decade, this district was fairly Democratic, but by the end of the decade it was much more Republican; every metric gives it a Republican lean.

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Map 17: Sykes Plan, Lorain County (District 54 is Cropped)

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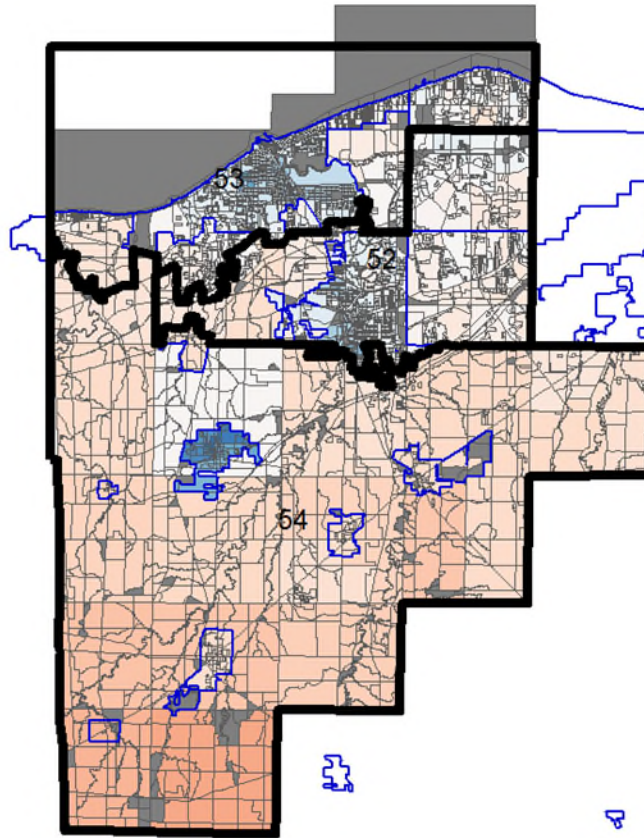
Map 18: Adopted Plan, Lorain County (District 53 is Cropped)
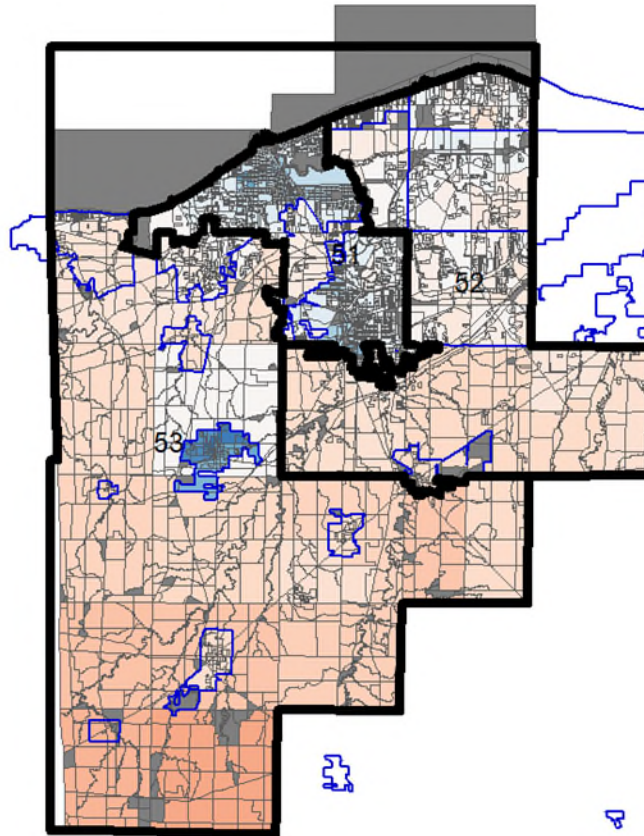
101.   The largest difference comes from a decision whether to align the two remaining

districts north-to-south or east-to-west. The Sykes Plan joins the deindustrialized city of Lorain

with some of Cleveland's upscale exurbs, such as Avon Lake. It also joins the similarly situated

city of Elyria with places like Avon and North Ridgeville. The Adopted Plan places Lorain and

Elyria in the same district, while joining together the Cleveland exurbs.

102.   To put these choices in perspective, according to the U.S. Census' American

Community Survey 5-year data, the median income in Elyria is $44,324, while the median income

in Lorain is $38, 291. The median income in Avon Lake is $83,018, the median income in Avon

is $109,916,   and   the   median   income   in   North   Ridgeville   is $77,221.   *See*

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https://www.census.gov/quickfacts/fact/table/northridgevillecityohio,avoncityohio,avonlakecityo
hio,loraincityohio,elyriacityohio,US/INC110219.

103.   Beyond this, the Adopted Plan and Sykes Plan are largely in agreement. Both maps
draw three Democratic districts in Toledo, two Democratic districts in Youngstown-Warren, one
Democratic district anchored in Stark County, one Democratic district in Portage County, and 14
Democratic districts in Cuyahoga and Summit counties.

104.   None of the Relators' Experts, however, conduct a thorough examination of the
maps "under the hood." While rating the competitiveness and lean of districts is a tricky business
where different metrics can produce contradictory outcomes, the maps and metrics mostly agree
that, outside of the Cleveland, Columbus and Cincinnati metro areas, there are very few
Democratic-leaning districts that can be drawn. The Adopted Plan and the Sykes Plan even agree
on what many of these districts must look like in their particulars.

105.   The approach of the Sykes Plan is to offset Democrats' difficulties in appealing to
rural and small-town Ohioans by avoiding the creation of Republican districts in the urban areas,
if possible, often by making choices that seem difficult to justify (such as joining downtown
Columbus with rural southwest Franklin County). Put differently, if we were to examine the Sykes
Plan in Lorain, Franklin, and Hamilton Counties alone, we would conclude that the districts drawn
in these counties were gerrymanders.

D. The Various Redistricting Criteria Offer Little Insight Into Whether Ohio's Map is Constitutional

106.   The Relators' Experts have calculated various metrics that purport to measure
partisan fairness. While it is unclear what the relevance of these metrics is to this litigation, Dr.
Warshaw nevertheless does a fair job describing many of the particular shortcomings and strengths

of the varying metrics. Warshaw Report at 6-14. Three important additional points, however, deserve to be made with respect to them.

107.   First, all of these are global metrics that only purport to measure the partisan fairness of a map as a whole. They are indifferent to anything that occurs at a local level. One therefore cannot immediately make the leap from a "high" (however that is defined) absolute efficiency gap score and an inference of partisan intent.

108.   In particular, all of these metrics ignore the potential effects of partisan clustering. As we've seen, and as Dr. Rodden has explained in his work, this clustering can alter the "baseline" efficiency gap/symmetry/mean-median/declination score that would result if a map were drawn blind to partisanship. In short, these metrics are blind to the reality – that all the map-drawers seem to agree upon – that the weakness of Democrats in rural and small-town Ohio requires drawing a majority of Ohio's state House districts such that Trump won by double digits. So, for example, even when using data from the less-clustered Ohio of 2012, and without observing the requirement that cities, villages and townships be kept intact to the extent practicable, Dr. Rodden finds a baseline mean-median difference of 0.02 in the Ohio Senate. *See* Rodden at 170.

109.   Second, the Court should not be moved by the fact that the Adopted Map appears to lean Republican on *multiple* scores. As Dr. Warshaw explains on page 15 of his report, these metrics are highly correlated, in part because they tend to measure the same thing. In other words, a map that scores in one direction on the efficiency gap metric will naturally tend to score in the same direction on the remaining metrics.

110.   Third, although the Relators' Experts refer to these scores when declaring the Adopted Map "extreme," that label is arbitrarily applied. This is as it must be, as the efficiency gap is largely useless in assessing the normative question of how high of an efficiency gap is "too

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high." In previous litigation, plaintiffs have suggested thresholds of 0.07, 0.075 and 0.125 when determining whether an efficiency gap is too high. Even those thresholds are arbitrary (Relators' Experts sought to link them to the number of seats wasted, which only pushes the question back one step to "how many seats are too many?").

111. Regardless, Dr. Warshaw's estimates of the efficiency gaps for the Ohio House of Representatives under the Adopted Plan (0.07) fails to cross the thresholds for extreme efficiency gaps suggested by plaintiffs in earlier litigation, even without accounting for the indisputable geographic clustering in Ohio. The mean-median difference of 4% likely should be "discounted" by the 2% mean-median gap that Dr. Rodden has previously found as a "baseline" mean-median difference in Ohio (even before accounting for the increased geographic clustering that has occurred since then). Overall, it is unclear what the Court is supposed to conclude from the various efficiency gap, symmetry, declination and mean-median scores reported by Relators' Experts.

CONCLUSION

112. Measuring the competitiveness of districts is a tricky business, and the Relators' Experts have produced numerous approaches to the task and numerous "baskets" of elections to be examined. These often produce contradictory results. Perhaps more importantly, Ohio's political geography makes it very difficult to draw Democratic districts outside of the major cities. The Sykes Plan appears to intentionally work to reduce Republican representation in the cities below what would normally occur under compact districts that did not actively work to reduce such representation.

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Exhibit 1

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EDUCATION

Ph.D., The Ohio State University, Political Science, expected 2022.

M.A.S. (Master of Applied Statistics), The Ohio State University, 2019.

J.D., Duke University School of Law, *cum laude*, 2001; Duke Law Journal, Research Editor.

M.A., Duke University, *cum laude*, Political Science, 2001. Thesis titled *The Making of an Ideological Court: Application of Non-parametric Scaling Techniques to Explain Supreme Court Voting Patterns from 1900-1941*, June 2001.

B.A., Yale University, with distinction, History and Political Science, 1995.

PROFESSIONAL EXPERIENCE

Law Clerk, Hon. Deanell R. Tacha, U.S. Court of Appeals for the Tenth Circuit, 2001-02.

Associate, Kirkland & Ellis, LLP, Washington, DC, 2002-05.

Associate, Hunton & Williams, LLP, Richmond, Virginia, 2005-09.

Associate, David, Kamp & Frank, P.C., Newport News, Virginia, 2009-10.

Senior Elections Analyst, RealClearPolitics, 2009-present.

Columnist, Center for Politics Crystal Ball, 2014-17.

Gerald R. Ford Visiting Scholar, American Enterprise Institute, 2018-present.

BOOKS

Larry J. Sabato, ed., *The Blue Wave*, Ch. 14 (2019).

Larry J. Sabato, ed., *Trumped: The 2016 Election that Broke all the Rules* (2017).

Larry J. Sabato, ed., *The Surge:2014's Big GOP Win and What It Means for the Next Presidential Election*, Ch. 12 (2015).

Larry J. Sabato, ed., *Barack Obama and the New America*, Ch. 12 (2013).

Barone, Kraushaar, McCutcheon & Trende, *The Almanac of American Politics 2014* (2013).

The Lost Majority: Why the Future of Government is up for Grabs – And Who Will Take It (2012).

PREVIOUS EXPERT TESTIMONY

Dickson v. Rucho, No. 11-CVS-16896 (N.C. Super. Ct., Wake County) (racial gerrymandering).

Covington v. North Carolina, No. 1:15-CV-00399 (M.D.N.C.) (racial gerrymandering).

NAACP v. McCrory, No. 1:13CV658 (M.D.N.C.) (early voting).

NAACP v. Husted, No. 2:14-cv-404 (S.D. Ohio) (early voting).

Ohio Democratic Party v. Husted, Case 15-cv-01802 (S.D. Ohio) (early voting).

Lee v. Virginia Bd. of Elections, No. 3:15-cv-357 (E.D. Va.) (early voting).

Feldman v. Arizona, No. CV-16-1065-PHX-DLR (D. Ariz.) (absentee voting).

A. Philip Randolph Institute v. Smith, No. 1:18-cv-00357-TSB (S.D. Ohio) (political gerrymandering).

Whitford v. Nichol, No. 15-cv-421-bbc (W.D. Wisc.) (political gerrymandering).

Common Cause v. Rucho, No. 1:16-CV-1026-WO-JEP (M.D.N.C.) (political gerrymandering).

Mecinas v. Hobbs, No. CV-19-05547-PHX-DJH (D. Ariz.) (ballot order effect).

Fair Fight Action v. Raffensperger, No. 1:18-cv-05391-SCJ (N.D. Ga.) (statistical analysis).

Pascua Yaqui Tribe v. Rodriguez, No. 4:20-CV-00432-TUC-JAS (D. Ariz.) (early voting).

COURT APPOINTMENTS

Appointed as Voting Rights Act expert by Arizona Independent Redistricting Commission

Appointed redistricting expert by the Supreme Court of Belize in *Smith v. Perrera*, No. 55 of 2019 (one-person-one-vote).

INTERNATIONAL PRESENTATIONS AND EXPERIENCE

Panel Discussion, European External Action Service, Brussels, Belgium, *Likely Outcomes of 2012 American Elections.*

Selected by U.S. Embassies in Sweden, Spain, and Italy to discuss 2016 and 2018 elections to think tanks and universities in area (declined Italy due to teaching responsibilities).

Selected by EEAS to discuss 2018 elections in private session with European Ambassadors.

TEACHING

American Democracy and Mass Media, Ohio Wesleyan University, Spring 2018.

Introduction to American Politics, The Ohio State University, Autumn 2018, 2019, 2020, Spring 2018.

Political Participation and Voting Behavior, Spring 2020, Spring 2021.

REAL CLEAR POLITICS COLUMNS

Full archives available at http://www.realclearpolitics.com/authors/sean_trende/