

EXHIBIT K

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
EASTERN DIVISION**

MICHAEL GONIDAKIS et al.,

Plaintiffs,

THE OHIO ORGANIZING
COLLABORATIVE, COUNCIL ON
AMERICAN-ISLAMIC RELATIONS, OHIO,
OHIO ENVIRONMENTAL COUNCIL,
SAMUEL GRESHAM JR., AHMAD
ABOUKAR, MIKAYLA LEE, PRENTISS
HANEY, PIERRETTE TALLEY, and
CRYSTAL BRYANT,

Intervenor-Plaintiffs,

v.

FRANK LAROSE, in his official capacity,

Defendant.

Case No. 2:22-cv-00773

Circuit Judge Amul R. Thapar
Chief Judge Algenon L. Marbley
Judge Benjamin J. Beaton
Magistrate Judge Elizabeth Preston Deavers

DECLARATION OF PROFESSOR MICHAEL S. LATNER

BACKGROUND & QUALIFICATIONS

1. I am a Professor in the Political Science Department at California Polytechnic State University. I have a PhD in Political Science from the University of California at Irvine, and my research focuses on representation, electoral system design, and statistical methods in elections and in designing electoral districts. I have extensive experience with redistricting and have specialized in analyzing electoral district maps for compliance with constitutional and statutory requirements, which includes analysis of partisan advantage present in district maps. Over the past two decades, I have analyzed the properties of various types of electoral systems across the globe, the impact of the 2011 redistricting cycle on representation in Congress, the causes and consequences of redistricting across state legislatures, and have conducted numerous analyses of the ways that electoral rules have shaped electoral outcomes in state and local elections in the United States. A copy of my curriculum vitae is attached as **Exhibit 1**.

2. I teach courses in Voting Rights and Representation; Campaigns and Elections; Political Participation; Democracy, Design and Public Policy; and Quantitative Methods in Political Analysis. I also serve as a voting rights Senior Fellow at the Union of Concerned Scientists' Center for Science and Democracy, one of the nation's largest non-partisan science advocacy organizations. In the last ten years I have given dozens of speeches, interviews, and presentations on quantitative political analysis of electoral districts and how to analyze partisan advantage. I have also written and contributed to peer reviewed papers and books on the topic of electoral district maps, a list of which is included in my curriculum vitae.

3. I have been invited as an expert to speak at several universities on the topic of redistricting and gerrymandering, including the University of California Hastings School of Law and Emory University School of Law. My first co-authored book on the topic, *Gerrymandering in America*, which has received over 100 academic citations, was also cited for our measures of

the magnitude of partisan bias produced in the 2011 redistricting cycle in an amicus brief by political science professors submitted to the United States Supreme Court in *Gill v. Whitford*, 138 S. Ct. 1916 (2018). *See* Brief for Political Science Professors as Amici Curiae 3. This portion of the amicus brief was cited by Justice Elena Kagan in her concurrence. *See* 138 S. Ct. at 1941.

4. I am familiar with and have studied Article XI of the Ohio Constitution. I am also familiar with recent opinions of the Ohio Supreme Court regarding the drawing of an Ohio General Assembly district plan for the 2020 redistricting cycle: *League of Women Voters of Ohio v. Ohio Redistricting Comm.*, No. 2021-1193 (Ohio Sept. 23, 2021), Slip Opinion No. 2022-Ohio-65, Slip Opinion No. 2022-Ohio-342, and Slip Opinion No. 2022-Ohio-789.

5. I have previously been asked by Intervenor-Plaintiffs in litigation before the Ohio Supreme Court to analyze four General Assembly District plans enacted by the Ohio Redistricting Commission (“Commission”) for the 2020 redistricting cycle. That assignment required me to determine whether each of those plans are proportional and whether they primarily favor or disfavor a political party, as defined respectively in Sections 6(B) and 6(A) of Article XI of the Ohio Constitution. The Ohio Supreme Court has relied upon my expert analysis of those plans in concluding that they violate both Section 6(B), *see League of Women Voters of Ohio v. Ohio Redistricting Comm.*, No. 2021-1193 (Ohio Sept. 23, 2021), Slip Opinion No. 2022-Ohio-65 ¶¶ 121–12 (first Commission map); Slip Opinion No. 2022-Ohio-789 ¶ 41 (third Commission map), and Section 6(A), *see* Slip Opinion No. 2022-Ohio-342 ¶¶ 32, 42 (second Commission map); Slip Opinion No. 2022-Ohio-789 ¶ 33 (third Commission map).¹

¹ Objections to the Commission’s fourth plan are pending before the Ohio Supreme Court. *See* No. 2021-1210 (Ohio Sept. 27, 2021), Pets.’ Objs. (Apr. 1, 2022).

6. I am receiving compensation for my study and testimony at an hourly rate of \$250 per hour. My compensation is in no way dependent on the outcome of the dispute.

DOCUMENTS REVIEWED

7. As part of my work, I reviewed the Intervenor-Plaintiffs' Complaint in this matter, Article XI of the Ohio Constitution, statements and dissents released by the Ohio Redistricting Commission pursuant to Section 8(C)(2) of Article XI of the Ohio Constitution at the time it enacted each General Assembly district plan, and the three above-cited opinions of the Ohio Supreme Court regarding the drawing of an Ohio General Assembly district plan for the 2020 redistricting cycle: Slip Opinion No. 2022-Ohio-65, Slip Opinion No. 2022-Ohio-342, and Slip Opinion No. 2022-Ohio-789.

ASSIGNMENT & SUMMARY OF OPINIONS

8. I have been asked by the Intervenor-Plaintiffs to analyze a number of proposed and enacted General Assembly District plans for the 2020 redistricting cycle. I have been asked to determine whether each plan is proportional and whether each plan primarily favors or disfavors a political party, as defined respectively in Sections 6(B) and 6(A) of Article XI of the Ohio Constitution as these provisions have been interpreted by the Ohio Supreme Court in the cases cited above.

9. I have been asked to analyze two of the four General Assembly district plans that have been passed by the Ohio Redistricting Commission (the "Commission") for the 2020 redistricting cycle: 1) a revised plan adopted on February 24, 2022 (the "Third Commission Plan"), and 4) a revised plan adopted on March 28, 2022 (the "Fourth Commission Plan").² I have also been asked to analyze the General Assembly district plan adopted during the previous

² These plans both include maps for the state House and Senate. References below to these individual maps will retain this nomenclature, e.g., "Third Commission House".

redistricting cycle by the Ohio Apportionment Board, which was “the body then responsible for drawing Ohio’s legislative-district maps[.]”³ on September 30, 2011 (“2011 Plan”), for compliance with Sections 6(A) and 6(B) of Article XI if used during the 2022 elections. Finally, I have been asked to analyze: 1) a plan submitted to the Commission on March 28, 2022 by two independent map drawers hired by the Commission, Douglas Johnson and Michael McDonald (“Johnson/McDonald Plan”); 2) a revised version of the Johnson/McDonald Plan, which was modified by Dr. Megan Gall to address some minor technical issues (“Revised Johnson/McDonald Plan”), and 3) a plan submitted to the Commission on February 15, 2022 by Ms. Bria Bennett, one of the named petitioners in *Bennett, et al. v. Ohio Redistricting Commission, et al.*, No. 2021-1198 (Ohio Sept. 24, 2021), which was the third plan prepared by Dr. Jonathan Rodden for the associated state redistricting litigation (“Rodden III Plan”).⁴

10. To conduct this analysis, I rely on total population data from the 2010 and 2020 Decennial Census and 2016-2020 election data from the Voting and Election Science Team (VEST) datahub, unless otherwise noted.⁵ These data, including shapefile data, are publicly available through several repositories and mapping projects.⁶ Each of the plans passed by the Commission, as well as the Johnson/McDonald Plan and the Rodden III plan are available for download on the Ohio Redistricting Commission’s website.⁷ To analyze the 2011 Plan, I used 2020 Census population data and overlaid the 2020 state legislative House plan TIGRIS

³ Slip Opinion No. 2022-Ohio-65, ¶ 340.

⁴ In a letter to the Ohio Redistricting Commission dated February 15, 2022, counsel for the petitioners in *Bennett and League of Women Voters* stated that the Rodden III plan “fully complies” with Article XI, Section 3’s line-drawing requirements and Article XI, Section 5’s requirements for the numbering of state Senate districts. I have also independently reviewed the Rodden III plan for constitutional compliance. I have not identified any deviations from these line-drawing and numbering requirements.

⁵ <https://dataverse.harvard.edu/dataverse/electionscience>.

⁶ I obtained data from the following:

Redistricting Data Hub: <https://redistrictingdatahub.org/data/about-our-data/#pl>.

Dave’s Redistricting App: <https://davesredistricting.org/>.

⁷ <https://www.redistricting.ohio.gov/maps>.

redistricting files provided by the U.S. Census, i.e., last decade's House plan that was used in the 2020 election.

11. The Third and Fourth Commission Plans, as well as the 2011 Plan, systematically disfavor Democratic voters by drawing the boundaries for House and Senate districts in an asymmetric manner that minimizes the number of legislative seats that Democrats can win with a given percentage of statewide votes, while retaining a larger number of seats that Republican can reliably win with the same percentage of statewide votes. If adopted for the 2022 election, each of these plans would give Ohio voters highly unequal ability to alter or reform their government by electing candidates who support their policy positions, based on their political party association. Put simply, each of these plans have the effect of giving Republican voters substantially more weight and thus more power to elect candidates and influence policy than they provide to Democratic voters. The bias observed in these plans is not an inevitability of political geography or constitutional constraints. The availability of fully compliant but unbiased maps suggest that the 2011, Third Commission, and Fourth Commission Plans are intentionally drawn to maximize partisan advantage over fairness.

12. The 2011 Plan and Third and Fourth Commission Plans also run afoul of the Ohio's constitution's proportionality requirement. If the 2011 Plan were used with the 2022 population currently in place, Democratic voters are expected to win, at most, 35 percent of House seats, while Republicans are likely to win approximately 64 percent of statewide seats with 54 percent of the vote. That outcome reflects an extraordinary 12 percent disproportionality in the House. The 2011 Senate Plan would currently produce a Senate disproportionality of approximately 16 percent. Unfortunately, the Third and Fourth Commission Plans do not perform any better and would perform substantially worse under slightly more favorable

circumstances for Republicans. The Third and Fourth House Plans would produce respective disproportionalities of approximately 12 and 13 percent, and the Third and Fourth Senate Plans would produce disproportionalities of 13 and 18 percent. Moreover, with just a 2-point swing in favor of the Republican Party, the Third and Fourth Commission Plans would yield 17-19 additional Republican House seats and 6-8 additional Senate seats, while a 2-point swing favoring Democrats would yield *zero* additional seats in their favor.

13. By contrast, the Johnson/McDonald, Revised Johnson/McDonald, and Rodden III plans each achieve substantially greater proportionality and partisan symmetry than any of the Commission plans or the 2011 Plan. With respect to partisan symmetry, only one of these maps (the Rodden III Senate) exhibits any statistically significant bias. And in that map, the observed bias is below the 10 percent mark that my previous research has used to distinguish “extreme” from “moderate” partisan gerrymanders. The Johnson/McDonald, Revised Johnson/McDonald, and Rodden III plans are also visibly less skewed to favor either political party, exhibiting seats/votes curves that are far more symmetric than alternatives in terms of votes/seats ratios.

14. With respect to proportionality, the seats/votes curves also show that the Johnson/McDonald, Revised Johnson/McDonald, and Rodden III Plans correspond more closely to voter preferences across a wide range of possible party vote shares. Whereas the 2011, Third Commission, and Fourth Commission Plans all exhibit disproportionality in the double digits (12 to 18 percent), disproportionality in the Johnson/McDonald, Revised Johnson/McDonald, and Rodden III Plans ranges from 1 to 7 percent. Moreover, these plans are more responsive to swings in party support, rewarding both parties for comparable swings in support, which is a necessary condition of fair districting practices.

* * *

15. The remainder of this report discusses my general understanding of the background in this matter, the research I conducted, and provides a detailed discussion of the results of my analyses.

OVERVIEW OF PARTISAN GERRYMANDERING

16. Partisan gerrymandering occurs when members of a political party in control of redistricting manipulate the geographic boundaries of electoral districts in a manner that systemically advantages their party. The goal of partisan gerrymandering is to secure an advantage in future elections in good and bad election cycles alike. Effectively gerrymandered districts can give one party control of a state legislature or a congressional delegation for a full decade, even in swing states that have a closely split electorate, where both parties can win statewide depending on the political climate.

17. There are two main techniques employed in gerrymandering: “packing,” which wastes votes by unnecessarily concentrating the constituents of the disfavored party into a small handful of districts, and “cracking,” which splits constituents of the disfavored party across several districts where they cannot form an electoral majority.⁸ In both instances, the votes for the disfavored party are wasted and the votes for the favored party are strategically distributed to create seemingly close contests in a large number of districts that nonetheless have been drawn to produce reliable electoral majorities.⁹

18. A partisan gerrymander generates what is called “partisan bias.” Partisan bias is measured by reviewing the difference between the share of seats that a party receives for a given vote share, and the seat share that the other party would receive for the same votes. A biased map

⁸ Bernard Grofman and Cervas, Jonathan, (2020), “The Terminology of Districting”. Available at SSRN: <https://ssrn.com/abstract=3540444>, p.14.

⁹ *Ibid.*

enables the advantaged party to win seats in the legislature with a smaller vote share than that required by the disadvantaged party.

19. Political geography, or the geographic dispersion of Democratic and Republican voters, can constrain districting options, but the actual drawing of districts is always a political choice. For example, in a state where Democratic voters are heavily concentrated into dense urban populations, it may not be possible to draw a districting plan that is strongly biased in favor of Democrats. However, even if geographic considerations constrain the range of districting possibilities, there is strong evidence that it is nearly always possible to create approximately unbiased districting plans, even in states with much higher partisan voter concentrations than in Ohio.¹⁰

20. The harms caused by partisan gerrymandering are well documented. Recent research provides empirical evidence that voters' associational rights are diminished: partisan bias in districting plans is associated with the disfavored party contesting fewer districts, with candidates for the disadvantaged party having weaker resumés, and with lower donor support.¹¹ Conversely, the favored party need not put resources into contesting packed districts, allowing for more efficient political expenditures.

21. Partisan bias also has negative policy and social consequences. When the ideological representation of individual districts is distorted, that distortion shapes the composition of legislatures and the policies that they produce.¹² In turn, research has shown that

¹⁰ McGann, Anthony j., Smith, Charles A., Latner, Michael, and Keena, Alex, "Geography and Gerrymandering: Political Choice under Demographic Constraints" PSA papers; <https://www.psa.ac.uk/sites/default/files/conference/papers/2017/PSA%20Compactness%20Bias%20paper.pdf>

¹¹ Stephanopoulos, Nicholas and Warshaw, Chris, (2019). "The Impact of Partisan Gerrymandering on Political Parties" Available at SSRN: <https://ssrn.com/abstract=3330695> or <http://dx.doi.org/10.2139/ssrn.3330695>

¹² Caughey, Devin, Chris Tausanovitch, and Christopher Warshaw. (2017) "Partisan Gerrymandering and the Political Process: Effects on Roll-Call Voting and State Policies." *Election Law Journal: Rules, Politics, and Policy* 16, no. 4 (December 2017): 453–469.

social policy and health outcomes are impacted by legislative bias, with biased legislatures exhibiting less responsiveness to the health needs of statewide constituencies.¹³ Because government policies typically apply statewide, it is the entire population that is potentially harmed by partisan bias. For example, biased state legislatures have gone further in enacting restrictive election laws that potentially impact all voters within a state, and they were less likely to expand voting opportunities amid the COVID-19 pandemic.¹⁴

22. Partisan gerrymandering is a fundamental assault on the principle of democracy. It replaces rule by the people with rule by entrenched partisan interests that choose district boundaries and empower certain constituencies at the expense of others. In other words, it gives unequal voting power to voters based on party association and preference. Partisan gerrymandering can effectively determine electoral outcomes, in spite of changes in voter support and variable turnout. In addition to the harms it causes to democracy, partisan gerrymandering causes direct, material harm to voters in the form of distorted policy outcomes. Finally, by protecting politicians from accountability, partisan bias contributes to the erosion of support for democratic government and the rule of law, fueling the rise of authoritarianism.¹⁵ Accordingly, the overwhelming—if not unanimous—consensus among political scientists is that a system that provides for minority rule or creates unequal voting rights is no longer a democracy or a government instituted for the equal protection and benefit of its citizens.

ANALYSIS AND OPINIONS

¹³ *Gerrymandering the States*, Ch.6.

¹⁴ *Ibid.*

¹⁵ Ozan O. Varol, (2015). “Stealth Authoritarianism”, 100 *Iowa L. Rev.* 1673; <https://ilr.law.uiowa.edu/print/volume-100-issue-4/stealth-authoritarianism/>.

I. Proportionality Analysis: Whether the Proportion of Districts that Favor Each Political Party Corresponds Closely With the Statewide Preferences of the Voters of Ohio

23. The people of Ohio have enshrined proportionality as a constitutional requirement for drawing assembly districts. As a general matter, the principle of proportionality means that the number of seats won by political parties in a parliament or assembly should correspond with or be broadly proportionate to the number of votes cast in support of those parties.¹⁶ Proportionality is a scientifically accepted concept that can be measured by the degree to which an electoral system or district scheme reflects the statewide preferences of voters.¹⁷

24. Broadly speaking, political scientists assess the proportionality of an electoral district map by comparing how the proportion of votes cast for a party relates to the proportion of seats that the party would be expected to win. A simple illustration demonstrates the principle of proportionality and how disproportionality can emerge in an election. Imagine a 5-seat state assembly, with 100 voters in each district and two parties (A and B) competing for seats. In an election, Party B wins narrow 51 percent/49 percent victories in districts 1, 2 and 3, but loses badly in districts 4 and 5, where Party A voters are heavily concentrated. Looking at the state as a whole, Party A is preferred by a 59 percent majority of voters, but Party B has won 60 percent of the assembly seats. See Table 1. Since the number of seats won by Party A does not correspond closely to the statewide voter preferences, the map is not proportional, and actually

¹⁶ Douglas Rae (1967) *The Political Consequences of Electoral Laws*. New Haven, CT/London: Yale University Press; Michael Gallagher, “Proportionality, Disproportionality, and Electoral Systems” *Electoral Studies*, (1991), 10, 1; Arend Lijphart (1994) *Electoral Systems and Party Systems. A Study of Twenty-Seven Democracies 1945–1990*. Oxford University Press; G. Bingham Powell (2000) *Elections as Instruments of Democracy: Majoritarian and Proportional Visions*. Yale University Press; David Farrell (2001) *Electoral Systems. A Comparative Introduction*. London: Palgrave.

¹⁷ Interest in the relationship between votes cast and seats won can be traced back to the origins of election science. See, for example, John Stuart Mill, “Of True and False Democracy: Representation of All and Representation of the Majority Only” in *Considerations on Representative Government* (1861). For a more recent treatment, see Matthew Shugart and Rein Taagepera, “The Number of Parties and Proportionality: Two Key Tools for Analysis” in *Votes from Seats: Logical Models of Electoral Systems*. (2017, Cambridge University Press).

violates the principle of majority rule in this case. The difference between the percentage of votes (41 percent) and the percentage of seats (60 percent) won by Party B is the level of disproportionality in this election: 19 points.

TABLE 1

How Disproportionality Emerges

Differences between the proportion of votes and seats won produce disproportionality.

SEATS	PARTY A VOTES	PARTY B VOTES	PARTY A SEATS	PARTY B SEATS
1	49	51	0	1
2	49	51	0	1
3	49	51	0	1
4	75	25	1	0
5	75	25	1	0
Statewide	59%	41%	40%	60%

Table 1. Disproportionality Illustration

25. Although there are various ways to measure proportionality,¹⁸ Section 6(B) of Article XI of the Ohio Constitution specifies a particular one. Under Section 6(B), the Commission must draw a map where “[t]he statewide proportion of districts whose voters, based on statewide state and federal partisan general election results during the last ten years, favor each political party correspond[s] closely to the statewide preferences of the voters of Ohio.” In recent rulings interpreting Section 6(B), the Ohio Supreme Court has further directed that “[C]ompetitive districts . . . must either be excluded from the proportionality assessment or be allocated to each party in close proportion to its statewide vote share.” Slip Op. 2022-Ohio-342,

¹⁸ Taagepera, R. *Predicting Party Sizes: The Logic of Simple Electoral Systems*. (2007) Oxford University Press.

¶ 62; see also Slip Opinion No. 2022-Ohio-789, ¶ 38 (reaffirming this guidance). The Ohio Supreme Court has defined “competitive districts,” i.e., toss-ups, as those with a Democratic or Republican vote share in the range of 50 and 52 percent. Slip Opinion No. 2022-Ohio-789, ¶¶ 39-41. I accordingly tailored my proportionality analysis to conform with the provisions of Section 6(B).

26. My analysis proceeded in five steps. For each plan I first calculated the statewide preferences of the voters of Ohio, based on statewide state and federal partisan general election results during the last ten years. Second, I calculated the statewide proportion of districts whose voters favor each political party, as well as the proportion of toss-up districts, based on the same set of statewide elections. Third, pursuant to the Ohio Supreme Court’s guidance, I assessed proportionality in two ways: 1) excluding toss-ups that range between 48-52 percent (a 2-point advantage or less for either party), calculating the percentage of districts that favored Democratic and Republican voters, and 2) including toss-ups, allocating even very close seats to the party with the highest estimated vote share. Fourth, to determine whether the statewide election figures “correspond closely” to the partisan seat shares from a given plan, I calculated the difference between statewide vote shares and allocated seat shares for each party. Finally, I compared these differences among each of the plans I was evaluating. I evaluated both the House and Senate maps in each plan.

27. I start by calculating the statewide preferences of Ohio voters based on statewide state and federal partisan general election results during the last ten years. I find that the average results of statewide Democratic and Republican vote shares from 2012 through 2020 are 45.9 percent and 54.1 percent, respectively. See Table 2.

TABLE 2

Statewide Preferences of Ohio Voters

RACE	DEMOCRATIC VOTES	REPUBLICAN VOTES	DEMOCRATIC SHARE	REPUBLICAN SHARE
2012 Presidential	2,827,709	2,661,439	51.5%	48.5%
2012 Senate	2,762,766	2,435,744	53.1%	46.9%
2014 Governor	1,009,359	1,944,848	34.2%	65.8%
2014 Attorney General	1,178,426	1,882,048	38.5%	61.5%
2014 Auditor	1,149,305	1,711,927	40.2%	59.8%
2014 Secretary of State	1,074,475	1,811,020	37.2%	62.8%
2014 Treasurer	1,323,325	1,724,060	43.4%	56.6%
2016 Presidential	2,394,164	2,841,005	45.7%	54.3%
2016 Senate	1,996,908	3,118,567	39.0%	61.0%
2018 Governor	2,070,046	2,235,825	48.1%	51.9%
2018 Senate	2,358,508	2,057,559	53.4%	46.6%
2018 Attorney General	2,086,715	2,276,414	47.8%	52.2%
2018 Auditor	2,008,295	2,156,663	48.2%	51.8%
2018 Secretary of State	2,052,098	2,214,273	48.1%	51.9%
2018 Treasurer	2,024,194	2,308,425	46.7%	53.3%
2020 Presidential	2,679,165	3,154,834	45.9%	54.1%
Sum of votes	30,995,458	36,534,651	45.9%	54.1%
Divided by number of races	16	16	-	-
Composite (2012-2020)	1,937,216	2,283,416	45.9%	54.1%
Composite (2016-2020)	2,261,349	2,614,419	46.4%	53.6%

Table 2. Statewide Preferences of Ohio Voters

28. Next, using 2016-2020 precinct-level election data from the Voting and Election Science Team (VEST),¹⁹ (the only years for which I was able to obtain publicly available

¹⁹ VEST provides the most comprehensive, composite precinct-level data and is regularly used by social scientists and public mapping projects. While data on statewide voter preferences is available for the 2012, 2014, 2016, 2018, and 2020 elections, precinct-level VEST data is available only for the elections in 2016, 2018, and 2020. I am not aware of any other source for precinct-level data for the 2012 and 2014 elections. Due to these data limitations, I projected seats won based on data from 2016, 2018, and 2020, and I compared these seats won with statewide composite voter preferences drawn from the 2012, 2014, 2016, 2018, and 2020 elections.

precinct-level results), I determined the statewide composite for 2016-2020: 46.4 percent Democratic and 53.6 percent Republican.²⁰

29. For each plan, I then calculated the statewide proportion of districts whose voters favor each political party, as well as the total number of toss-ups. Under a normal distribution, about 7 percent of districts would fall into this “toss-up” range, *i.e.*, 7 House seats and 2 Senate seats. However, the Third and Fourth Commission Plans have a significant and unusually large numbers of House and Senate districts that lean Democratic by razor-thin margins.

30. My review of the Third and Fourth Commission Plans reveals that only a small number of district populations changed between those two Plans. Specifically, there was only a change of 451 census blocks out of 276,478 (0.0016 percent of census blocks), which impacts only 0.265 percent of the total population. Otherwise, the Third and Fourth Commission Plans are identical, which explains their similar performance.

a. Proportionality When Toss-Up Districts Are Excluded

31. Tables 3 and 4 display statewide vote share for each of the examined plans, in the House and Senate, respectively. The tables lay out the Democratic (DEM) and Republican (GOP) seats and seat share for each plan, as well as the toss-up districts that are estimated to yield vote shares from 48 to 52 percent for either party.

²⁰ This composite measure is calculated by treating each election as a sample. That is, instead of taking the total votes for both parties across elections and dividing Democratic votes by the total, I take the average of each estimated vote share across elections, so that each election has equal weight in determining the average estimate for each district.

TABLE 3

Proportionality of House Plans

PLAN	VOTE SHARE (DEM/GOP)	NUMBER OF SEATS (DEM/GOP/TOSS-UPS)	SEAT SHARE (DEM/GOP/ TOSS-UPS)	DEM/GOP SEAT SHARE (EXCLUDING TOSS-UPS)	DISPROPORTIONALITY (EXCLUDING TOSS- UPS)
Fourth Commission Plan	46%/54%	28/54/17	28%/55%/17%	34%/66%	12%
Third Commission	46%/54%	26/54/19	26%/55%/19%	33%/67%	13%
2011 Plan	46%/54%	31/59/9	31%/60%/9%	34%/66%	12%
Johnson/McDonald	46%/54%	42/51/6	42%/52%/6%	45%/55%	1%
Revised Johnson/McDonald	46%/54%	42/51/6	42%/52%/6%	45%/55%	1%
Rodden III	46%/54%	40/56/3	40%/57%/3%	41%/59%	5%

Table 3. Proportionality of House Plans

32. The Third and Fourth Commission House Plans perform similarly in how they generate extremely disproportional outcomes. Specifically, both plans create an unusually large number of toss-up districts: 19 in the Third House Plan, 17 in the Fourth House Plan. Because these toss-ups all barely lean Democratic, the reliably Democratic estimated seat shares fall to 26 and 28 percent, respectively, when those toss-up districts are removed. Recalculating proportionality without toss-ups yields respective seat shares of 33 and 34 percent. Compared to the 46 percent statewide vote share estimate for Democratic voters, those Democratic seat shares yield respective disproportionalities of 13 and 12 percent. That is, Democratic voters have a 12-13 percent deficit in seat shares relative to their vote share, while Republicans gain a 12-13 percent seat advantage relative to their 54 percent vote share.

33. The 2011 House Plan generates a similar 12 percentage point disproportionality, but does not rely solely on toss-up districts to mimic proportionality. Instead, the 2011 plan begins with a reliable Republican seat share advantage of 6 points (60 percent of seats with 54 percent of the statewide vote), and that seat advantage is then amplified once toss-ups are

accounted for. Previous research I have conducted also indicates that the 2011 House Plan was one of the most biased maps in the country last redistricting cycle.²¹

34. By contrast, the Johnson/McDonald, Revised Johnson/McDonald, and Rodden III House Plans exhibit less than half the disproportionality of the above plans, and the seat shares in these plans are not greatly impacted by the removal of toss-up districts. The Johnson/McDonald Plan and Revised Johnson/McDonald Plan both contain 42 Democratic leaning seats after removal of toss-ups, a 4 percent difference than the Democratic vote share. When disproportionality without toss-ups is calculated, that difference drops to a single percentage point. For the Rodden III House Plan, Democratic voters are estimated to hold majorities in 40 seats excluding toss-ups, compared to 56 seats for Republicans. Overall disproportionality after removing toss-ups yields a disproportionality of 5 percent, less than half the disproportionality observed in the Third and Fourth Commission Plans, or the 2011 House Plan.

35. The disproportionality of the Senate Plans largely mirrors what is observed in the House Plans. See Table 4. Both Commission-adopted Senate plans and the 2011 Plan exhibit large disproportionalities ranging from 13 to 18 percent, and in the Commission-adopted plans, the disproportionality is largely the result of toss-up districts that are attributed to the Democratic Party. The 2011 Plan, in contrast, is disproportional with or without toss-ups. And once again, the Johnson/McDonald, Revised Johnson/McDonald, and Rodden III plans are more proportional than the alternatives, with or without toss-ups excluded. Overall, the Third Commission Plan is the least proportional, and the plans that comes closest to achieving perfect proportionality are the Johnson/McDonald and Revised Johnson/McDonald Plans. The next section shows that the

²¹ *Gerrymanndering in America*, pp. 88-94; *Gerrymanndering the States*, pp. 191-207.

Johnson/McDonald and Revised Johnson/McDonald plans are also the fairest in responding to minor shifts in voter preferences.

TABLE 4

Proportionality of Senate Plans

PLAN	VOTE SHARE (DEM/GOP)	NUMBER OF SEATS (DEM/GOP/TOSS-UPS)	SEAT SHARE (DEM/GOP/ TOSS-UPS)	DEM/GOP SEAT SHARE (EXCLUDING TOSS-UPS)	DISPROPORTIONALITY (EXCLUDING TOSS- UPS)
Fourth Commission Plan	46%/54%	9/18/6	27%/55%/18%	33%/67%	13%
Third Commission	46%/54%	7/18/8	21%/55%/24%	28%/72%	18%
2011 Plan	46%/54%	9/21/3	27%/63%/9%	30%/70%	16%
Johnson/McDonald	46%/54%	13/18/2	42%/52%/6%	42%/58%	4%
Revised Johnson/McDonald	46%/54%	13/18/2	42%/55%/6%	42%/58%	4%
Rodden III	46%/54%	12/18/3	36%/55%/9%	39%/61%	7%

Table 4. Proportionality of Senate Plans

b. Proportionality When Toss-Up Districts Are Included

36. As noted above, the Third and Fourth Commission plans have an unusually large number of districts that lean Democratic by razor-thin margins. If the lean of the districts is unbiased, or randomly distributed between the two parties, it is reasonable to expect the parties to split these districts roughly 50/50 over the course of elections due to ebbs and flows in voter support. However, the design of the toss-up districts in the Third and Fourth Commission Plans looks anything but random.

37. Tables 5 and 6 display the results of my analysis when toss-up districts are allocated to each party, including the impact of minor (2 percent) uniform vote swings for the Fourth Commission Plan, Third Commission Plan, 2011 Plan, Johnson/McDonald Plan, Revised Johnson/McDonald Plan, and the Rodden III Plan.

TABLE 5

Swing Analysis of House Plans

PLAN	SEAT SHARES WITH TOSS-UPS (D/R)	TOSS-UPS (D/R)	+2% D SWING	SEAT SHARES WITH D SWING	+2% R SWING	SEAT SHARES WITH R SWING
Fourth Commission	45%/55%	17/0	no change	45%/55%	+6 GOP	23%/72%
Third Commission	45%/55%	19/0	no change	45%/55%	+19 GOP	26%/74%
2011 Plan	35%/64%	4/5	+5 DEM	40%/60%	+1 GOP	32%/68%
Johnson/McDonald	45%/55%	3/3	+3 DEM	49%/51%	+3 GOP	42%/58%
Revised Johnson/McDonald	45%/55%	3/3	+3 DEM	49%/51%	+3 GOP	42%/58%
Rodden III	43%/57%	2/1	+1 DEM	44%/56%	+2 GOP	41%/59%

Table 5. Swing Analysis of House Plans

TABLE 6

Swing Analysis of Senate Plans

PLAN	SEAT SHARES WITH TOSS-UPS (D/R)	TOSS-UPS (D/R)	+2% D SWING	SEAT SHARES WITH D SWING	+2% R SWING	SEAT SHARES WITH R SWING
Fourth Commission	45%/55%	6/0	no change	45%/55%	+6 GOP	27%/73%
Third Commission	45%/55%	8/0	no change	45%/55%	+8 GOP	21%/79%
2011 Plan	30%/70%	1/2	+2 DEM	36%/64%	+1 GOP	28%/72%
Johnson/McDonald	45%/55%	2/0	no change	45%/55%	+2 GOP	39%/61%
Revised Johnson/McDonald	45%/55%	2/0	no change	45%/55%	+2 GOP	39%/61%
Rodden III	42%/58%	2/1	+1 DEM	44%/56%	+2 GOP	41%/59%

Table 6. Swing Analysis of Senate Plans

38. The unusually large number of toss-up seats in the Third and Fourth Commission House plans create extreme seat share advantages favoring Republican voters with a minor, 2-point vote share swing in their favor. Specifically, because all toss-ups are already allocated to Democrats, and because there are no correspondingly close Republican districts (that range in value from 48-50 percent), a two-point statewide shift favoring Democrats yields *zero* additional Democratic seats. The same size swing (2-point) in favor of Republicans yields them a seat share advantage of 16 percentage points, or 72 percent of seats with 56 percent of the statewide vote.

39. As noted earlier, the 2011 House Plan does not rely heavily on toss-ups, but it is still disproportional because Democratic voters start at a major disadvantage in seat shares. Even though Democrats are estimated to gain 5 seats from a 2-point uniform vote swing in their favor, they would still win only 40 percent of House seats with 48 percent of the vote. By contrast, Republicans would build on their already solid advantage, winning an estimated 68 percent of House seats with 56 percent of the vote. Under the 2011 House Plan, a GOP supermajority is more or less baked into place.

40. Notably, under either the Johnson/McDonald, Revised Johnson/McDonald, or Rodden III plans, both parties would benefit from minor vote swings in their favor, as should be the case under a fair plan. Moreover, with fewer extremely close districts in play, minor shifts in voter preferences produce only minor shifts in seat changes. In a very close statewide election, small shifts may very well determine partisan control over the legislature, but neither of these plans would allow massive seat share advantages to accrue for a party from a minor shift in voter sentiment. Again, the magnitude of seat changes between parties is likely to be *proportional to changes in vote share*.

41. Accordingly, I conclude that the statewide proportion of districts allocated in the Third and Fourth Commission House maps, and the 2011 House map, do not correspond, much less correspond closely, to the statewide preferences of the voters of Ohio. By contrast, I conclude that the statewide proportion of districts in the Johnson/McDonald, Revised Johnson/McDonald, and Rodden III House Plans corresponds closely to the statewide preferences of the voters of Ohio, and will be proportionally responsive when those preferences change.

42. Similarly, I conclude that the statewide proportion of districts in the Third and Fourth Commission Senate maps, and the 2011 Senate map, do not correspond closely to the statewide preferences of the voters of Ohio. Overall, the performance of the maps are strikingly similar: either a large number of Democratic-leaning toss-ups provides a massive Republican seat bonus with a minor shift in voter preferences (the Third and Fourth Senate Plans), or the plan is strongly disproportional from the outset (the 2011 Senate Plan).

43. In addition, and again by contrast, I conclude that the statewide proportion of districts in the Johnson/McDonald, Revised Johnson/McDonald, and Rodden III Senate Plans correspond closely to the statewide preferences of the voters of Ohio.

II. Symmetry Analysis: Whether a Plan Favors Republican Voters and Disfavors Democratic Voters

44. The primary metric I adopt in this section is partisan symmetry, a broadly accepted metric used by political scientists to measure partisan bias.²² The principle of partisan symmetry requires that a districting system award the same number of seats to each party's candidates if they receive the same statewide vote share. Originally developed by Andrew Gelman and Gary King, the measure has a long history of peer-reviewed scientific application,²³ and it has been relied upon by the Ohio Supreme Court in assessing compliance with both

²² Barry Burden and Corwin Smidt, "Evaluating Legislative Districts Using Measures of Partisan Bias and Simulations," *Sage Open*, 10, 4, 2020; <https://doi.org/10.1177/2158244020981054>; Anthony J McGann, Charles Anthony Smith, Michael Latner, Alex Keena, "A Discernable and Manageable Standard for Partisan Gerrymandering" *Election Law Journal*, 14, 4, 2015; John F. Nagle, "Measures of Partisan Bias for Legislating Fair Elections", *Election Law Journal*: 2015. pp. 346-360.<http://doi.org/10.1089/elj.2015.0311>.

²³E.R.Tufte, (1973). "The relationship between seats and votes in two-party systems." Bernard Grofman and Gary King, "The Future of Partisan Symmetry as a Judicial Test for Partisan Gerrymandering after *LULAC v Perry*" *Election Law Journal*, 6,1,2007. Available at <https://gking.harvard.edu/files/jp.pdf>; *American Political Science Review*, 67, 540–554; Andrew Gelman and Gary King, "Estimating Incumbency Advantage Without Bias" *American Journal of Political Science*, Vol. 34, No. 4, pp. 1142-1164, November 1990, Available at SSRN: <https://ssrn.com/abstract=1084180>; Available at <https://gking.harvard.edu/files/jp.pdf> *American Political Science Review*, 67, 540–554.

Section 6(B), e.g. Slip Opinion No. 2022-Ohio-65 ¶ 122, and Section 6(A), e.g. Slip Opinion No. 2022-Ohio-789 ¶ 33.

45. Partisan symmetry differs from proportionality, which I discussed above, in fundamental ways. In a two-party system, the principle of partisan symmetry requires that the number of seats won by a party when it receives a certain percentage of the statewide vote will be the same for each party, while the principle of proportionality requires that the number of seats won by a party correspond with or be proportionate to the number of votes cast in support of that party. The question posed by a partisan symmetry analysis, in other words, is how many more (or fewer) seats does one party get for some share of the statewide vote as compared to what another party gets for that same statewide vote share.

46. Scientifically accepted measures of partisan symmetry follow logically from the principle that an electoral system should treat voters equally regardless of which party they choose to associate with, and that the party that wins the most votes should win the most seats.²⁴ I estimate symmetry in two ways: (1) a simple measure of skewness (S) that can be calculated by hand,²⁵ and (2) a computational model of symmetry with statistical confidence intervals. The computational symmetry models estimate symmetry in the seats-votes function across a range of vote shares, while S measures asymmetry or skewness in the distribution of support for parties across the districts.

47. To calculate the simple measure of symmetry (or skewness), S , I take the districts that are 5 percent above or below the statewide average of party support and determine what proportion of those districts favor Democrats and what proportion favor Republicans, relative to their statewide vote share. That is, a plan's bias under S equals the proportion of seats with

²⁴ McGann, et.al., "A Discernable and Manageable Standard for Partisan Gerrymandering".

²⁵ This metric was first developed by Anthony McGann, during the writing of *Gerrymandering the States*, p. 30.

Democratic vote share above five percent of the Democratic average minus the proportion of seats with Republican vote share above five percent of the Republican average. Put simply, S tells you whether a districting plan creates more Republican or Democratic leaning districts relative to the parties' statewide vote shares. A negative value for S means Republicans are advantaged while a positive value means Democrats are advantaged. In this report, simple S is charted graphically in the form of histograms. See, e.g., Figure 1. A symmetrical plan would show similar distributions of districts on either side of the vertical line denoting the average vote share; an asymmetrical plan would give the favored party more districts past the line denoting the average vote share for the party.

48. For the computational models, I calculate partisan symmetry for the plans, but instead of assuming uniform vote swing across districts, I impute random “noise” (up to five points) in 1,000 simulations of district vote distributions to reflect the idiosyncrasies and perturbations that occur in real elections over time. The procedure also allows me to calculate confidence intervals to provide estimates of statistical significance. In this report, the computational model is charted as a seats/votes S-curve function. See, e.g., Figure 1.

49. Tables 7 and 8 summarize the results of the two symmetry measures for each of the plans I evaluated.²⁶ Among the possible House maps, I would consider the 2011 House Plan and both the Fourth and Third Commission House Plans to be “extreme” gerrymanders in the sense that they all exhibit more than a 10 percent seat share advantage for voters of one party (in this case, Republicans), compared to other voters. All three plans exhibit measures of S and (statistically significant) computational asymmetries greater than 10 percent. That is, when the

²⁶ I should note that the simple S and computational symmetry measures diverge somewhat because they are calculated using different metrics (the number of safe seats v change in the seats/votes curve as voter preferences change). The computational measure is superior in that it is a truly predictive estimate of future performance, and it is possible to estimate the statistical significance of differences across different plans.

statewide party votes range between 45 and 55 percent, as they have in actual elections over the last decade, Democratic voters can be expected to receive 11 to 14 percent fewer seats than Republicans for the same vote share.

50. The Johnson/McDonald, Revised Johnson/McDonald, and Rodden III House plans are more symmetric than any of the other plans at a statistically significant level. For example, if we compare the respective estimated House symmetry scores from those plans (-5.3, -5.2, and -8.4) to the symmetry scores for the Third (-11.6) or Fourth Commission (-11.3) plans, or the 2011 House Plan (-14.3), we can say with greater than 95 percent confidence that the Johnson/McDonald, Revised Johnson/McDonald, and Rodden III plans would produce lower asymmetries over the next decade. Moreover, there are no statistically significant asymmetries in either of the Johnson/McDonald designed maps or the Rodden III Senate plan. Among these plans, the Revised Johnson/McDonald House Plan is the most symmetric.

51. The Senate plans largely mirror the House plans in asymmetry scores. Whether calculated using skewness (S) in the distribution of partisan support across seats or the computational estimate, asymmetries are higher on average in the Third and Fourth Commission Plans and the 2011 Plan, compared to the Johnson/McDonald, Revised Johnson/McDonald, or Rodden III Senate plans. The one exception is that the Fourth Commission Senate Plan and the Rodden III Senate plan have the same S score, that is, in both plans, there are 15 districts where Republicans do at least 5 percent better than their statewide average, and 12 districts where Democrats do at least 5 percent better than their statewide average. In the Fourth Commission Senate Plan, two toss-up Democratic-leaning Senate seats between 51.5 and 51.9 are included in the 12 Democratic districts, but if they were excluded, it would yield an S measure of 30 percent (10 D seats) – 45 percent (15 R seats) = -15 percent. In the Rodden III Plan, counting only 52

percent or higher as the cut off would have no impact on the S score. While the S measure is simple to calculate, it can be quite sensitive to cut-off points (5 percent), which is why it is also important to consider the computational asymmetry measure, where I find no statistical asymmetry in the Rodden III Senate Plan. The difference between the Rodden III and Fourth Commission plans is also clearly observable in histograms that show the overall partisan distribution of seats.

TABLE 7

Asymmetry in House Plans

PLAN	SIMPLE S	ASYMMETRY	(95% CONFIDENCE)
Fourth Commission	-11	-11.3	(5.6)
Third Commission	-13	-11.6	(5.94)
2011 Plan	-14	-14.3	(6.09)
Johnson/Mc Donald	-4	-5.2	(5.63)
Revised Johnson/Mc Donald	-1	-5.3	(5.65)
Rodden III	-6	-8.4	(5.38)

Table 7. Asymmetry in House Plans

TABLE 8

Asymmetry in Senate Plans

PLAN	SIMPLE S	ASYMMETRY	(95% CONFIDENCE)
Fourth Commission	-9	-12.9	(10.6)
Third Commission	-12	-11.1	(10.2)
2011 Plan	-12	-14.6	(10.9)
Johnson/Mc Donald	2	-4.8	(10.6)
Revised Johnson/Mc Donald	2	-4.8	(10.6)
Rodden III	-9	-6.4	(9.89)

Table 8. Asymmetry in Senate Plans

52. The graphs below illustrate the two symmetry scores for each of the plans I evaluated, and provide a straightforward way of observing asymmetries in districting plans. The logic of symmetry requires that districting plans allocate district seats in equal numbers to parties with comparable levels of district-level support. That is, a histogram of a symmetric plan looks the same on both sides of the statewide party vote share average. In terms of a seats/votes function, the curve of seats won to votes won should intersect at the 50 percent point (50 percent of seats for 50 percent of votes).

53. Figure 1 provides a hypothetical example of what a perfectly symmetric (and because it is centered at 50 percent, proportional) districting plan looks like. In the figure, there are six competitive districts, with Party A winning between 45 and 55 percent of the vote. On either side of the six-seat column, there are five districts where Party A wins between 55 and 65 percent, and five districts where Party B wins between 55 and 65 percent, and so on. Both parties receive an equal share of districts (38 percent) 5 percent or more above their statewide average (50 percent). The symmetric distribution of districts necessarily produces a symmetric seats-votes function, as shown in the panel on the right. You can see that if Party A wins 60 percent of the vote, it receives 71 percent of the seats, but Party B also receives 71 percent of seats with 60 percent of the vote.²⁷

²⁷ Note also that the histogram need not be centered on 50 percent of the vote to be symmetric. The median district might have Party A winning, say, 70 percent of the vote (in a state dominated by Party A), but that would produce an identical seats-votes function: if there was a 20-point swing away from Party A and it only won 50 percent of the vote, it would still receive 50 percent of the seats.

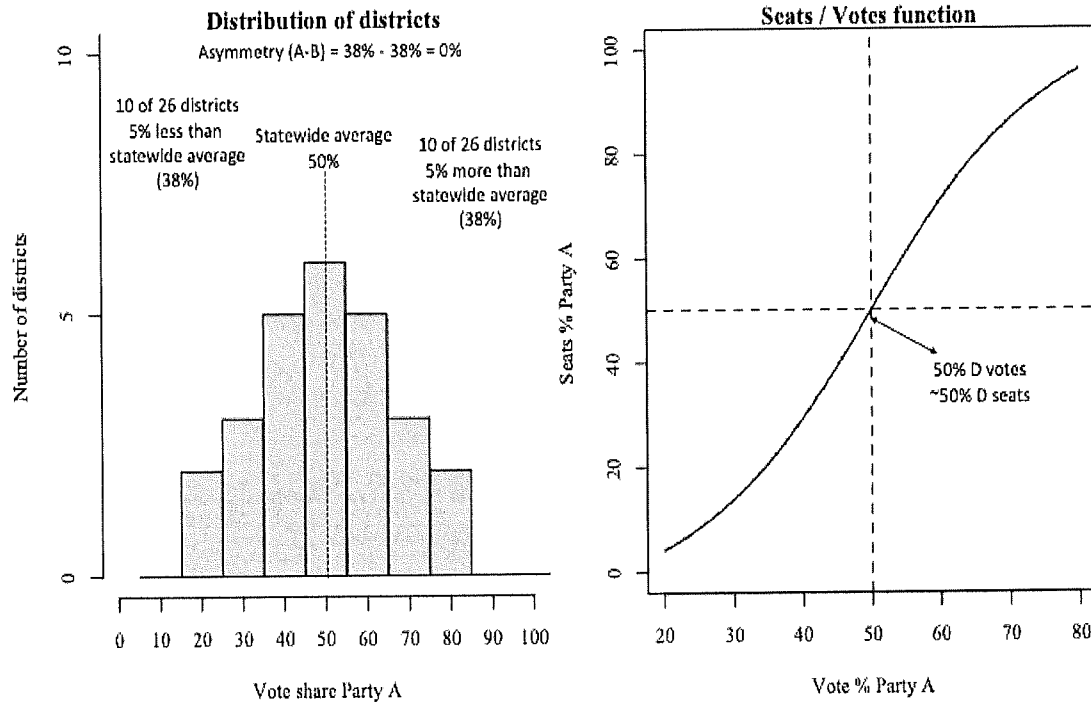


Figure 1: Illustrative Example of Perfect Symmetry

54. Applying this methodology, Figures 2-13 display a series of histograms of the allocation of seats for each of the plans I have been asked to evaluate, as well as the estimated seats/votes function. Figure 2 illustrates the distribution of House seats under the Fourth Commission Plan. From the skewed histogram, it is readily observable that Republicans pick up nearly half of House seats prior to the 50% vote mark on the x-axis. 46 seats are estimated to hold a higher percentage of Republicans than 5 percent or more of their statewide average (54 percent), compared to 35 seats where Democrats earn more than 51 percent vote share (5 percent above their statewide average of 46 percent). The seats/votes estimate shows that Democrats are expected to win 44 percent of seats with 50 percent of the statewide vote, while Republicans win 56 percent of seats with the same vote share.

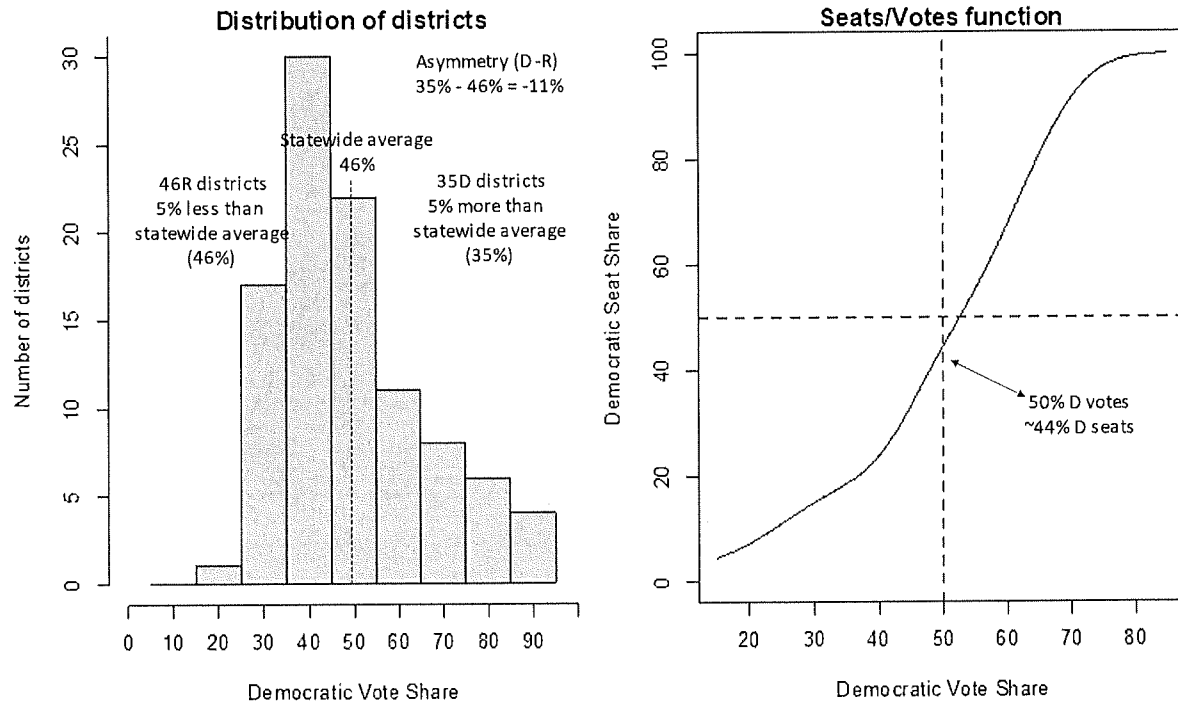


Figure 2: Fourth Commission House Plan

55. The Fourth Commission Senate Plan performs similarly, packing Democrats into uncompetitive districts (the far right of the histogram), so that they have 12 seats (36 percent) at 5 percent more than their statewide vote share, compared to 15 seats (45 percent) for Republicans. See Figure 3. Again, Democrats are projected to win 44 percent of seats with 50 percent of the statewide vote.

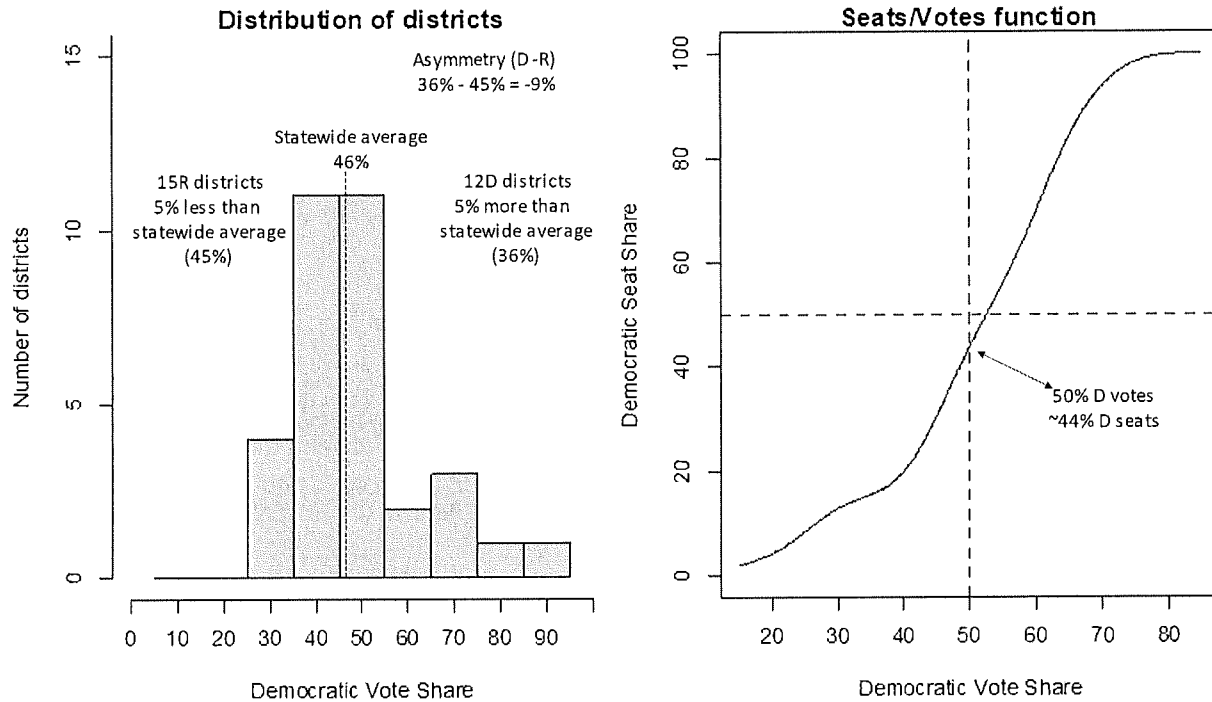


Figure 3: Fourth Commission Senate Plan

56. Figures 4 and 5 shows the histogram and seats/votes function for the Third Commission House and Senate Plan. The partisan distribution of House seats is nearly identical to the Fourth Commission Plan, but slightly worse on the S measure, given that Republicans have an additional seat advantage (and Democrats one less seat above 51 percent). The Third Commission Senate Plan is also similar to the Fourth, except that there is one less toss-up district above the 51 percent cut-off (though more toss-ups overall), increasing S from -9 percent to -12 percent.

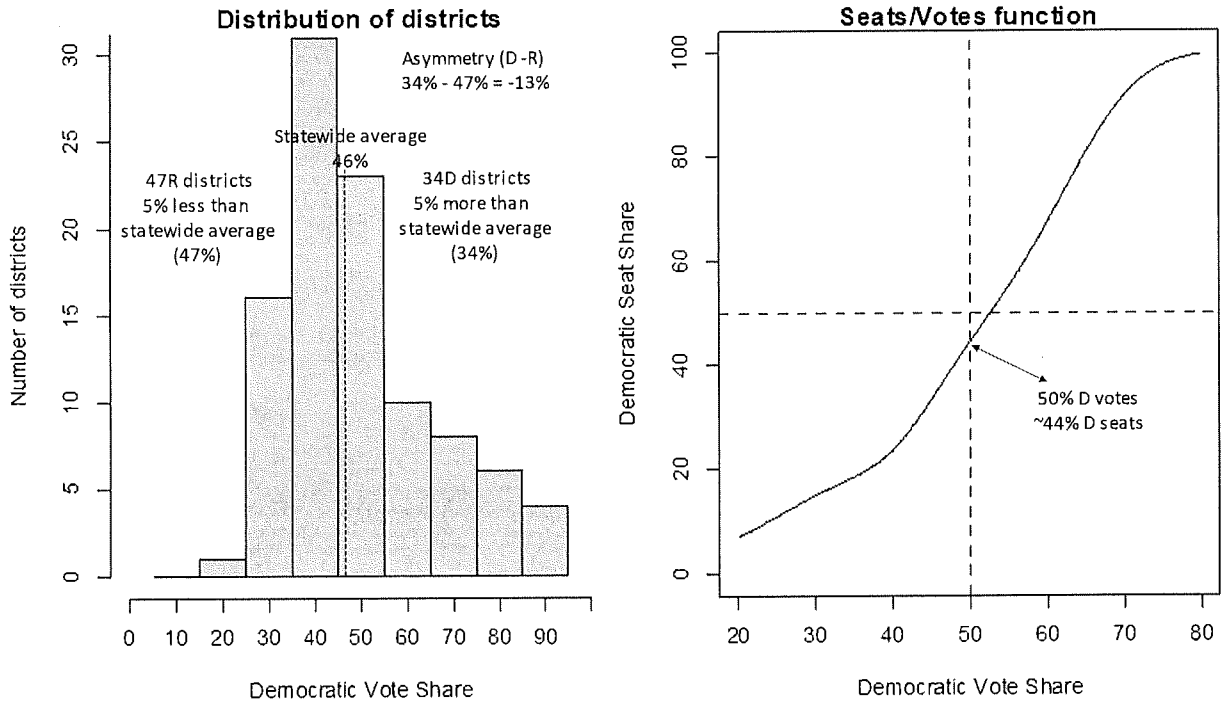


Figure 4: Third Commission House Plan

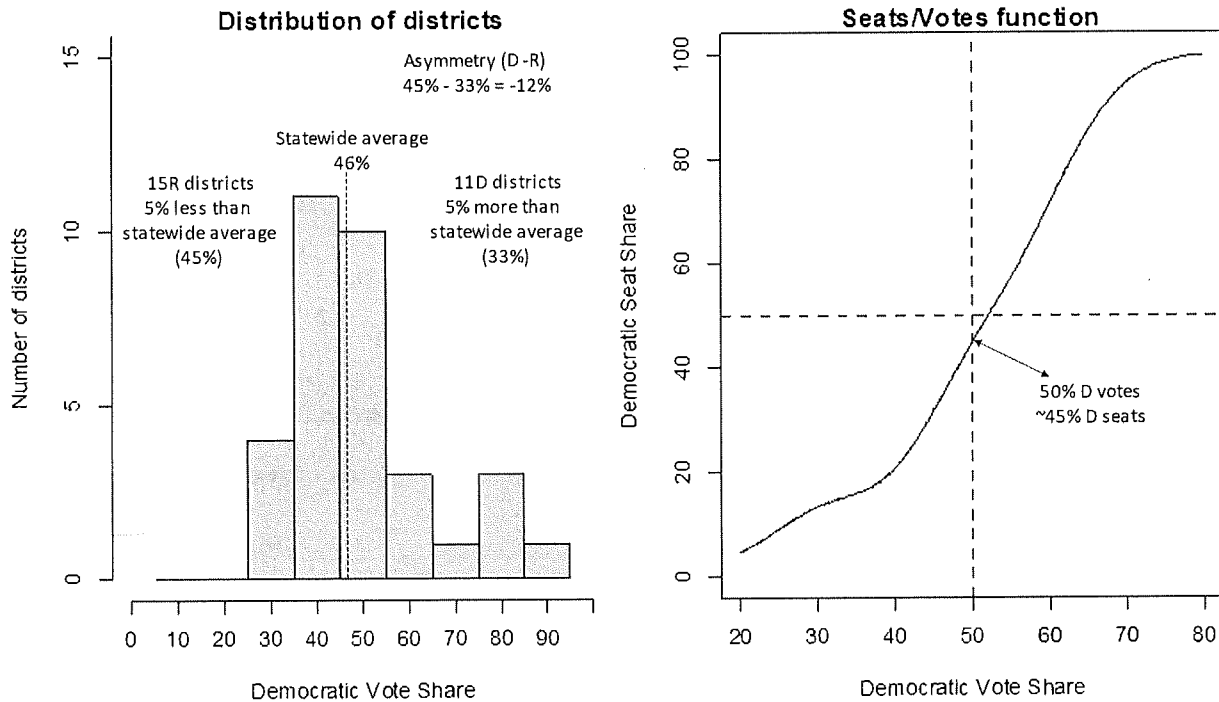


Figure 5: Third Commission Senate Plan

57. The 2011 House and Senate Plans show even greater skew and bias in the partisan distribution of districts. Figure 6 shows the distribution for the 2011 House Plan, with several heavily packed Democratic districts on the far right of the histogram. This classic packing strategy is projected to yield far fewer (33) seats where Democrats do better than their statewide average compared to Republicans (47 seats). Democrats are projected to win an average of 42 percent of House seats statewide with 50 percent of the vote. The 2011 Senate Plan looks similar to and performs similarly to the Third Commission Plan. See Figure 7. Under the 2011 Senate Plan Democrats are projected to win only 42 percent of Senate seats on average, with 50 percent of the statewide vote.

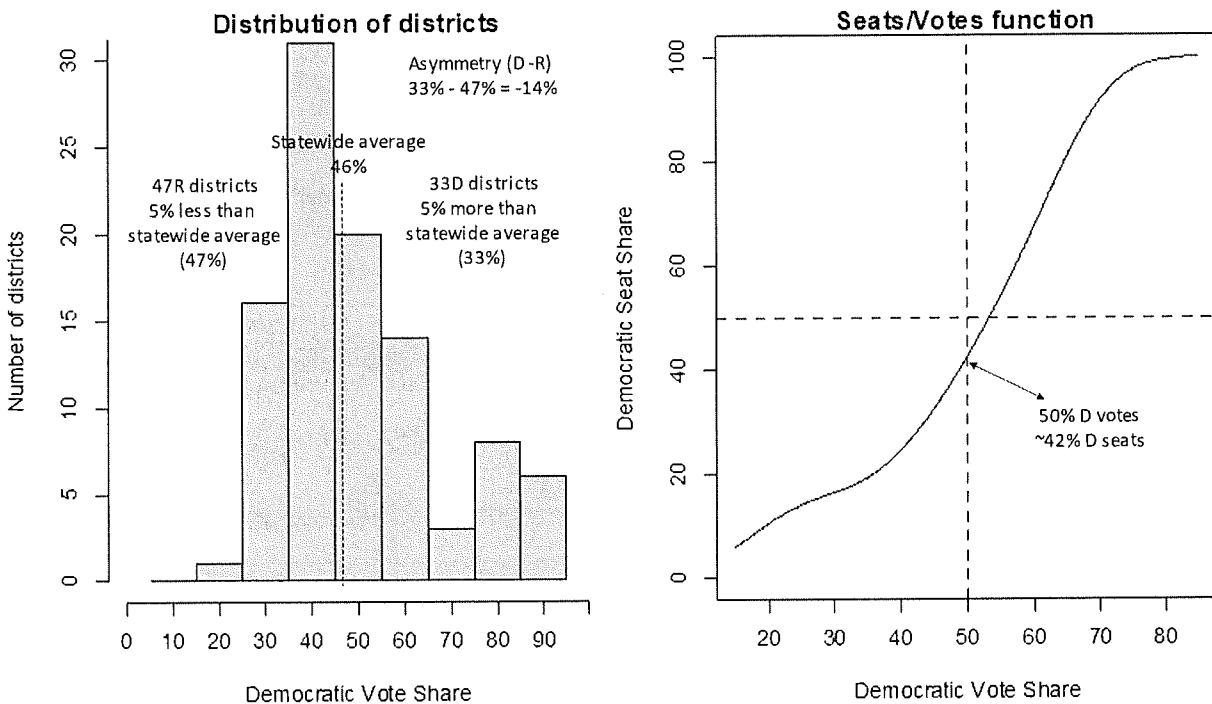


Figure 6: 2011 House Plan

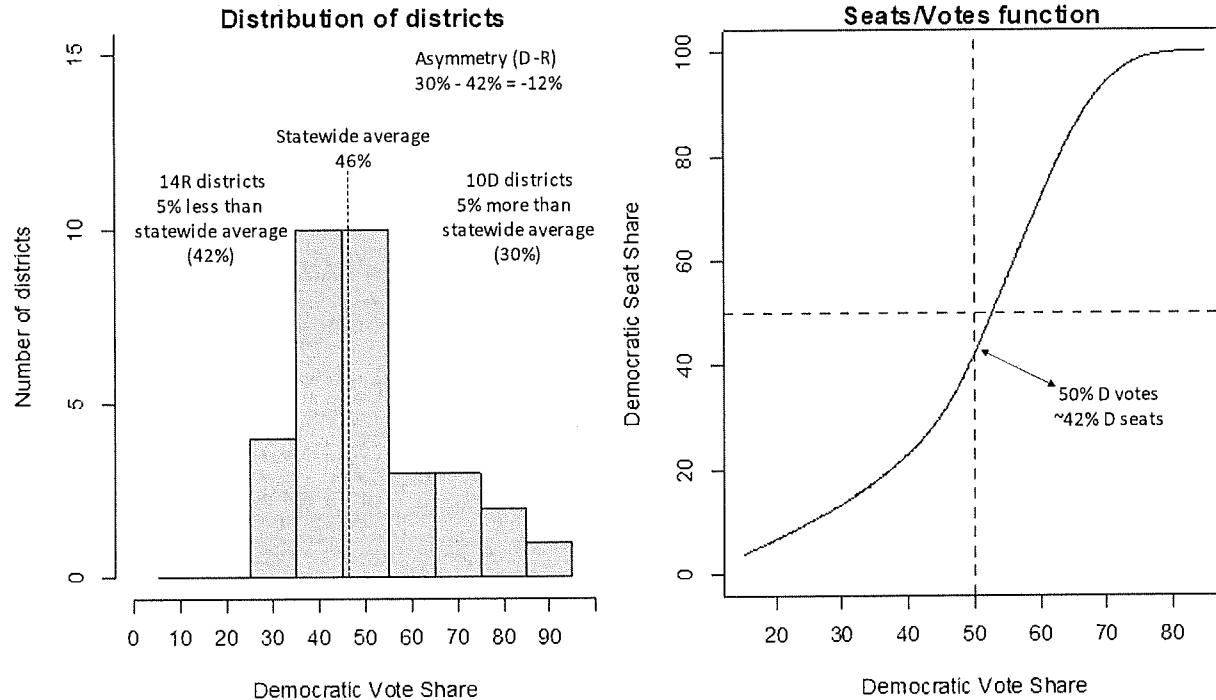


Figure 7: 2011 Senate Plan

58. Turning to the maps designed by Johnson/McDonald, the greater symmetry of the histograms is immediately observable in Figures 8-11. In the Revised Johnson/McDonald House Plan (Figure 8), there is a nearly equal number of House seats where Republicans (45) and Democrats (44) perform above their statewide vote shares, resulting in an *S* of 1. The original Johnson/McDonald House Plan is also visibly more symmetric (Figure 9). In the Johnson/McDonald and Revised Johnson/McDonald Senate Plans, Democrats have one more seat above their statewide vote share than Republicans. (Note that the original and revised Johnson/McDonald Senate Plans yield identical asymmetry results because House districts in both were combined to produce the same map. See Figures 10-11.) Overall, the Johnson/McDonald and Revised Johnson/McDonald Plans come closest to the conceptual and empirical ideals of proportionality and symmetry.

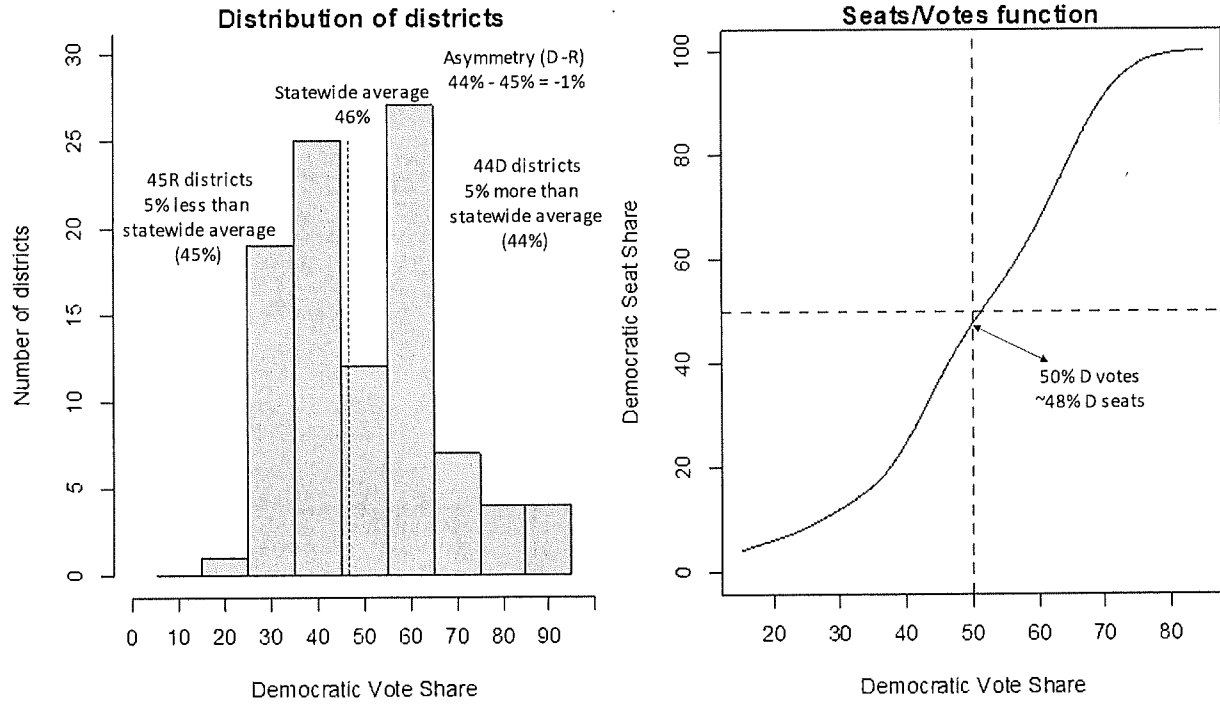


Figure 8: Revised Johnson-McDonald House Plan

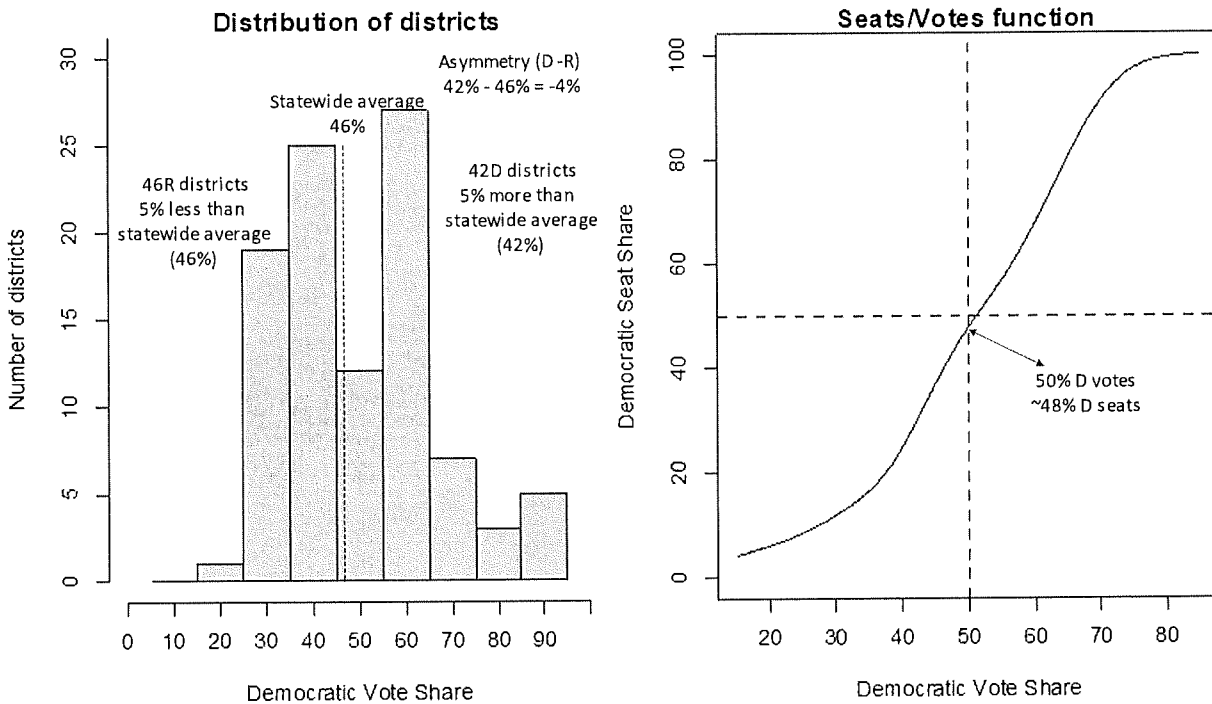


Figure 9: Johnson-McDonald House Plan

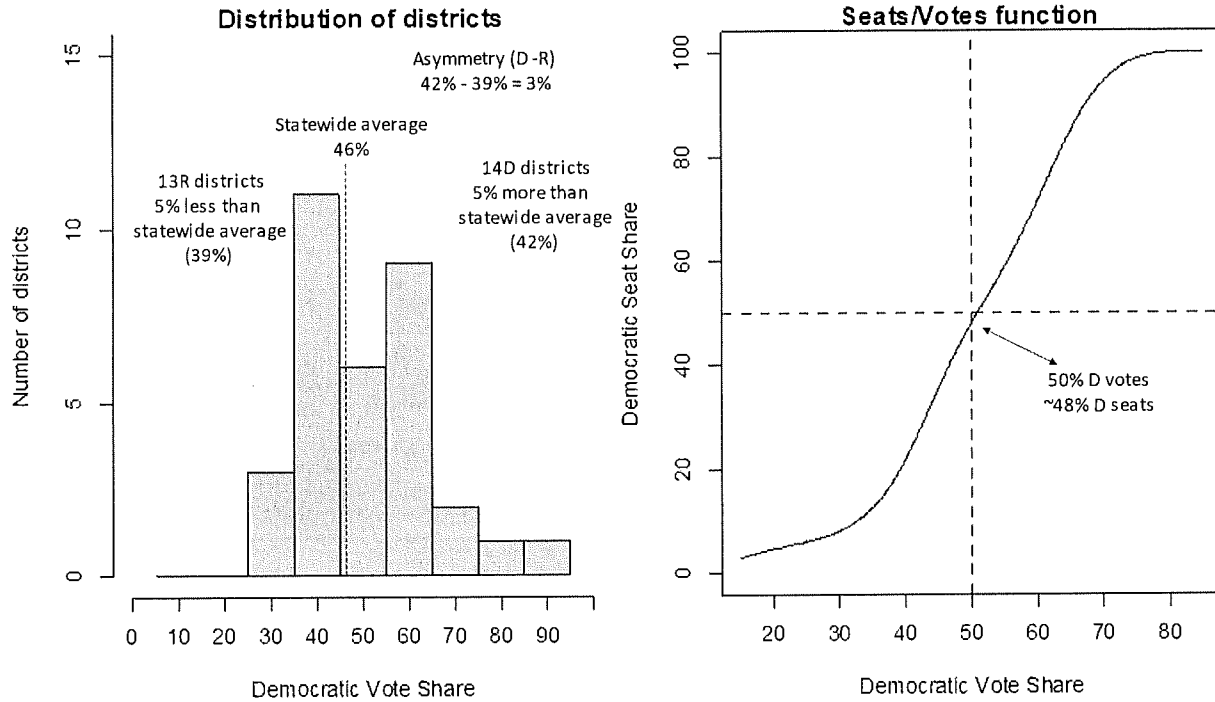


Figure 10: Revised Johnson/McDonald Senate Plan

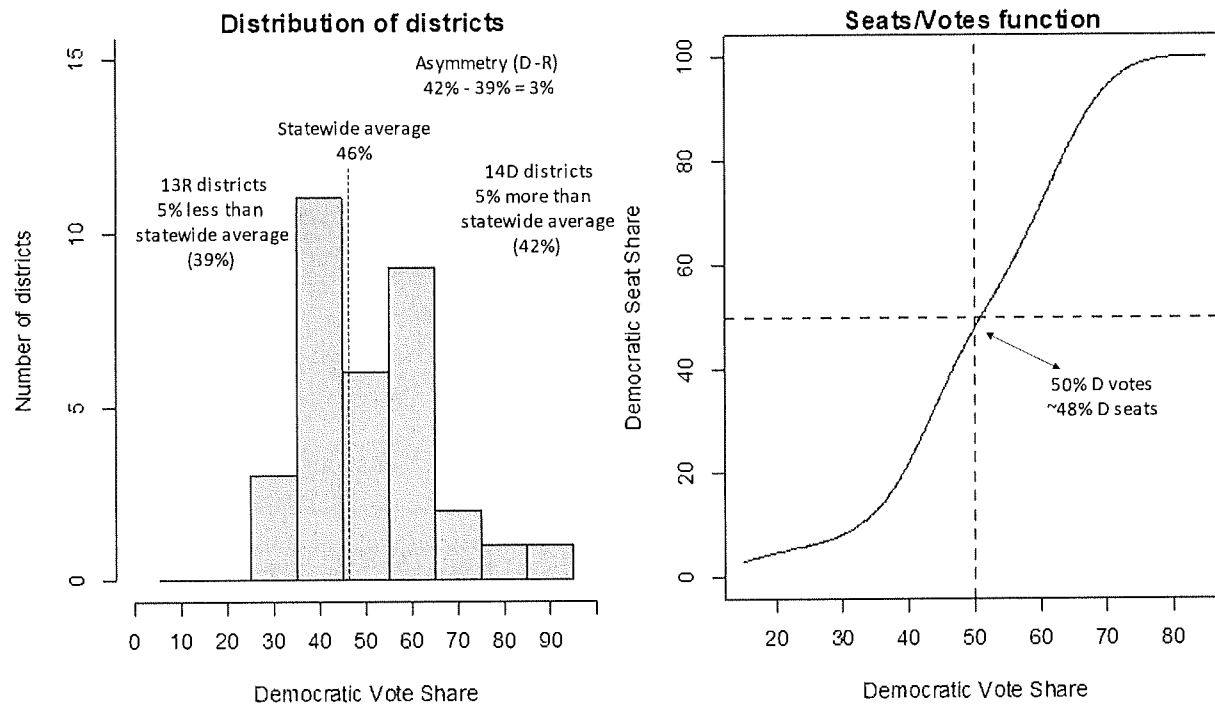


Figure 11: Johnson/McDonald Senate Plan

59. Similarly, the Rodden III House and Senate plans visibly outperform any of the Commission maps under consideration, as well as the 2011 Plan. See Figures 12-13. In both the House and Senate maps, the partisan distribution of districts is substantially more symmetric, and the projected vote shares for Democrats at the 50 percent vote share mark is closer to a 50 percent seat share than any of the other maps, save for the Johnson/McDonald-designed maps.

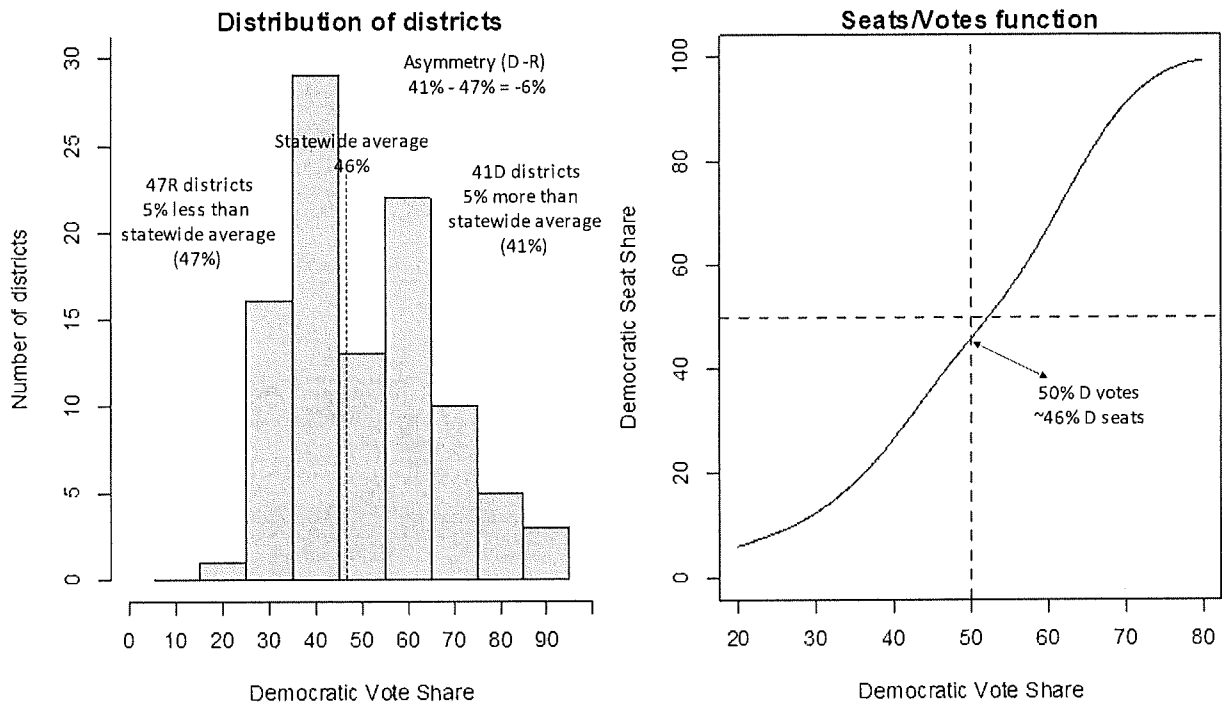


Figure 12: Rodden III House Plan

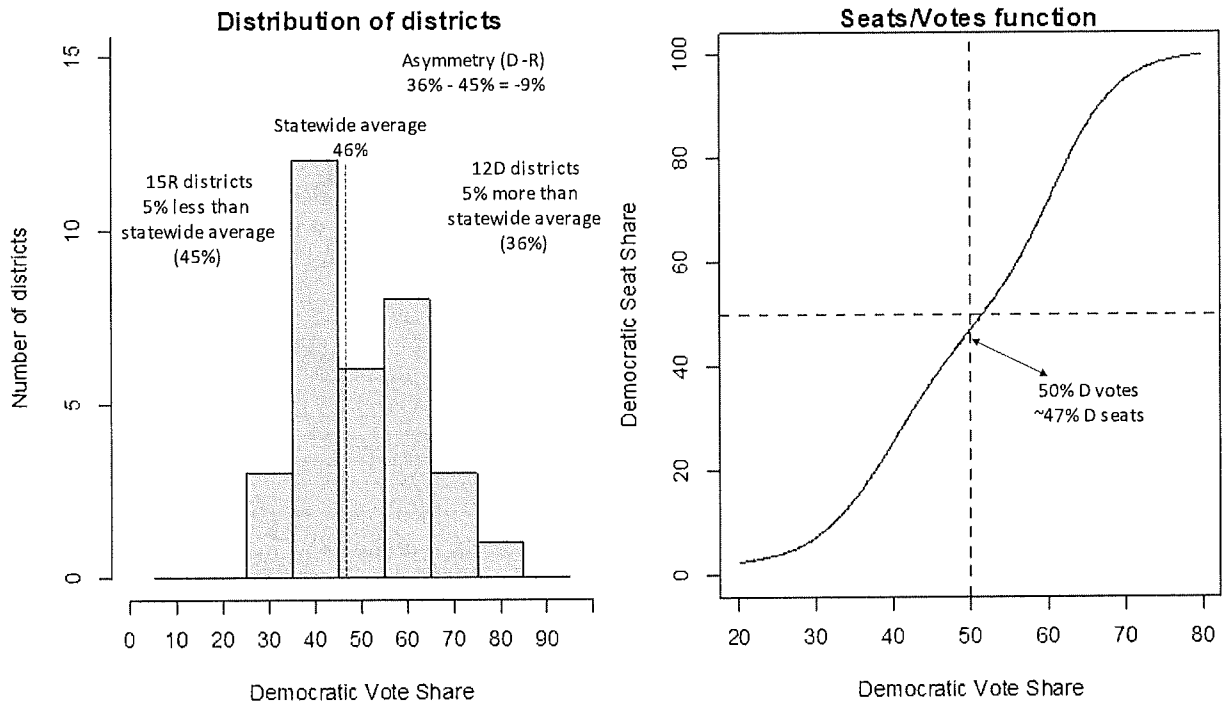


Figure 13: Rodden III Senate Plan

60. In conclusion, the histograms show that both the Johnson/McDonald, Revised Johnson/McDonald, and Rodden III Plans are visibly and statistically more symmetric than any the Commission's Plans or the 2011 Plan, with greater parity in the percentage of seats where each party wins more than its statewide average. Under the Johnson/McDonald, Revised Johnson/McDonald and Rodden III plans, Democrats and Republicans are expected to receive similar seat shares with 50 percent of votes, as the seats/votes curve is visibly closer to the 50 percent votes/seats intersection. Crucially, there are no statistically significant asymmetries in either of the Johnson/McDonald-designed maps or the Rodden III Senate plan.

CONCLUSIONS

61. I conducted a proportionality analysis of the Third and Fourth Commission Plans, the 2011 Plan, the Johnson/McDonald Plan, the Revised Johnson/McDonald Plan, and the

Rodden III Plan. The Commission's Plans and the 2011 Plan violate Section 6(B) of Article XI because the proportion of districts in the enacted plan that favor the Republican Party do not correspond closely with the statewide preferences of Ohio voters. As demonstrated by comparison to the Johnson/McDonald, Revised Johnson/McDonald, and Rodden III plans, the Commission could have—but chose not to—adopt a plan that complies with the proportionality requirements of the Ohio Constitution.


62. The proportionality in both of the Johnson/McDonald-designed plans, and the Rodden III Plan, come much closer to true proportionality as defined by the political science literature, and as required by the Ohio Constitution. Under these plans, seat shares for both political parties are expected to change proportional to change in voters' preferences across elections. In short, these plans are responsive, but not hyper-responsive, which meets the expectation of fairness.

63. I conducted an asymmetry analysis of the Third and Fourth Commission Plans, the 2011 Plan, the Johnson/McDonald and Revised Johnson/McDonald Plans, and the Rodden III Plan. The Commission's Plans and the 2011 Plan primarily favor and give disproportionate political control over the future of Ohio to one political party and its members, as demonstrated by the significant asymmetries in partisan support across districts in the Plans. Those asymmetries would allow a minority of Republican voters to elect a majority of seats in the General Assembly. Similarly, they would enable a narrow majority of Republican voters to elect a supermajority of seats in the General Assembly. By the same token, the Commission Plans and 2011 Plan greatly disadvantage and burden citizens who vote for Democratic candidates, as they cannot obtain the same level of political power as Republicans, even with the same number of votes.

64. In short, the Commission's Plans and 2011 Plan treats Ohio citizens differently based on their political party preference or political associations, and do not give their votes equal weight or representation, thereby violating the core principles of political equality and procedural justice. The Johnson/McDonald, Revised Johnson/McDonald, and Rodden III Plans perform exceptionally well in terms of not favoring either parties' voters, that is, treating voters equally regardless of which party they associate with. For both the House and Senate, these plans come closest to assuring that a majority of Ohio voters can elect a majority of representatives. Moreover, as voter preferences change over time, these plans are expected to reward voters with a proportional share of seats.

65. My opinions and conclusions as expressed in this report are to a reasonable degree of professional and scientific certainty. My conclusions have been reached through the proper application of statistical analysis, and using standard concepts and metrics relied upon by experts in the field of political science. My opinions will continue to be informed by any additional material that becomes available to me. I reserve the right to update and/or supplement my opinions if Intervenor-Plaintiffs provide additional information.

I declare under penalty of perjury that the foregoing is true and correct. Executed on
April 6, 2022.



Michael S. Latner

EXHIBIT 1

Michael Steven Latner

mlatner@calpoly.edu, [@mlatner](https://twitter.com/mlatner), [mikelatner.com](https://www.mikelatner.com)

Appointments

Union of Concerned Scientists

2019- Senior Fellow

2018-2019 Kendall Science Fellow

California Polytechnic State University, San Luis Obispo

2019-Professor of Political Science

2014-2018 Associate Professor of Political Science

2008-2014 Assistant Professor of Political Science

2007-2008 Lecturer in Political Science

University of Southern California

2006-2007 Teaching Fellow

University of California, Irvine

2005-2007 Lecturer

Field Research Corporation

1996-2000 Project Manager, Senior Survey Supervisor

Education

Ph.D., Political Science, University of California at Irvine, 2008

M.A., Political Science, University of California at Irvine, 2004

B.A., Political Science, California State University Chico, 1995

A.A., Butte Community College, Oroville, CA, 1993

Books

Gerrymandering the States: Partisanship, Race, and the Transformation of American Federalism with Anthony J. McGann, Charles Anthony Smith, and Alex Keena., Cambridge University Press, 2021. <https://www.cambridge.org/core/books/gerrymandering-the-states/27FBE0280F339E739758A29DF7CD74A2#fndtn-information>

Gerrymandering in America: The House of Representatives, The Supreme Court, and the Future of Popular Sovereignty with Anthony J. McGann, Charles Anthony Smith, and Alex Keena., Cambridge University Press, 2016.

<https://www.cambridge.org/core/books/gerrymandering-in-america/C2A9A40879A353AC7484B49834CB54E4>

Peer-Reviewed Publications

"Common Forms of Gerrymandering in the United States" *Decisions*, (32) with Alex Keena, Anthony J. McGann, and Charles Anthony Smith. (2019)
<https://journals.kozminski.edu.pl/pub/5797>

Our Unhealthy Democracy: How Voting Restrictions Harm Public Health—and What We Can Do about It, policy paper published by Union of Concerned Scientists, Center for Science and Democracy, October 2019, <https://www.ucsusa.org/resources/our-unhealthy-democracy>

"Diagnosing Electoral Integrity" chapter in *Electoral Integrity in America: Securing Democracy*, Pippa Norris, Sarah Cameron and Thomas Wynter (eds.), Oxford University Press, 2018.
<https://www.electoralintegrityproject.com/electoral-integrity-in-america/>

Building a Healthier Democracy: The Link Between Voting Rights and Environmental Justice, Union of Concerned Scientists research report, September 2018
<https://www.ucsusa.org/sites/default/files/attach/2018/09/building-a-healthier-democracy-report.pdf>

“Measuring Legislative Behavior: An Exploration of Digitaldemocracy.org” with Alexander M., Dekhtyar, Foaad Khosmood, Nicole Angelini, and Andrew Voorhees, *California Journal of Politics and Policy*, vol 9, issue 3, 2017. <https://doi.org/10.5070/P2cjpp9336921>

“Darwinian Democracy? How evolutionary theory informs constitutional design” chapter in *Handbook of Biology and Politics*, Steven Peterson and Albert Somit (eds.), Edward Elgar Publishing, 2017.
<https://www.elgaronline.com/view/9781783476268.00037.xml>

“A Discernable and Manageable Standard for Partisan Gerrymandering” with Anthony J. McGann, Charles Anthony Smith, and Alex Keena. December, 2015., *Election Law Journal: Rules, Politics, and Policy*. 14(4): 295-311.
<https://doi.org/10.1089/elj.2015.0312>

“The Calculus of Consensus Democracy: Rethinking *Patterns of Democracy* without veto players” with Anthony J. McGann, *Comparative Political Studies*, 2013, Vol 46, pp. 823-850, <http://dx.doi.org/10.1177/0010414012463883>

“Mapping the Consequences of Electoral Reform” with Kyle Roach, in *California Journal of Politics and Policy*, 2011, vol 3, issue 1. <https://escholarship.org/uc/item/9mv9b480>

“Geographical Representation Under Proportional Representation: The Cases of Israel and The Netherlands,” with Anthony McGann, *Electoral Studies*, 2005, vol 24, issue 4.
<https://www.sciencedirect.com/science/article/pii/S0261379405000247>

Expert Witness Reports/Testimony

Gonidakis v. LaRose, No. 2:22-cv-00773, Ohio April 06, 2022

League of Women Voters of Ohio v. Ohio Redistricting Comm., No. 2021-1193 (Ohio Sept. 23, 2021), Slip Opinion No. 2022-Ohio-65, Slip Opinion No. 2022-Ohio-342, and Slip Opinion No. 2022-Ohio-789.

SLO County Citizens for Good Government v. County of San Luis Obispo Board of Supervisors, Case No. 22CVP-0007, California, Feb. 09, 2022

Recent Technical/Research Consultation Papers

The 2020 Randolph W. Thrower Symposium, Emory School of Law, Panel III: Violations and Enforcement: Identifying and Rectifying Campaign and Election Violations:
<https://law.emory.edu/academics/journals/emory-law-journal-symposium.html>

Securing Fair Elections: Challenges to Voting in Georgia and the United States (2019), co-author, Scholars Strategy Network,
https://scholars.org/sites/scholars/files/12.10.19_Securing_Fair_Elections_Report_FINAL.p

df

“Possible Results of Proportional-voting Systems for Seattle Port Commission Elections” with Jack Santucci, June 30th 2018, prepared for More Equitable Democracy

City of Pismo Beach Digital Engagement Strategy, 2015, prepared for the City of Pismo Beach

“Building a Healthier Democracy” presentation at National Advisory Board meeting, Union of Concerned Scientists, New York, New York, September 2018

Guest, Data-Driven Strategies to Promote Youth Turnout, Massachusetts Institute of Technology, August 28-29, 2018

Census Counts 2020 Taskforce <https://censuscounts.org>

Presenter, Redistricting and Election Law Panel, American Political Science Association annual meeting, Boston, Massachusetts, August 2018

“Feminist Messaging in the 2018 Congressional Elections” presented at the Cal Poly Alumni retreat, Lair of the Golden Bear, June 2018

Presenter and Discussant, Voting in 2018 and Beyond: Ensuring Access and Accountability of the Ballot in America, Hastings Constitutional Law Quarterly 2018 Symposium

“Diagnosing Electoral Integrity” Electoral Integrity Project pre-APSA workshop, San Francisco, California, August 2017

“Will the Revolution be Digitized?” presented at the Cal Poly Alumni retreat, Lair of the Golden Bear, June 2017

Fellowships, Awards, and Professional Recognition

Senior Fellow (Voting Rights), Center for Science and Democracy, Union of Concerned Scientists, 2019-

Kendall Science Fellow (Voting Rights), Union of Concerned Scientists, 2018-2019

Faculty Scholar, Institute for Advanced Technology and Public Policy, 2015-present

Research Scholarship and Creative Activity Grant for California Redistricting Project, 2016

Common Cause Redistricting Research Competition, 3rd Place, 2015

Gold Medal, California Mid-State Fair Home Brewing Competition, Milk Stout, 2014

Wilma Rule Award, Californians for Electoral Reform, 2013

CA State Faculty Support Grant, 2009-10 (pre-doctoral)

2003 U.C. Regents Pre-Dissertation Fellowship
2003 Summer research award, School of Social Sciences
2001 Summer research fellowship for ICPSR, University of Michigan
2000-01 William Podlich Fellow, Center for the Study of Democracy, U.C. Irvine
1995 Charles McCall Award, California State University Social Science Research Council

Election Consulting/Management

Susan Funk for Atascadero City Council 2018
Jimmy Paulding for SLO County Supervisor 2018
Aaron Gomez for San Luis Obispo City Council 2016
Dawn Ortiz-Legg for State Assembly 2016
Eric Michielssen for SLO County Supervisor 2016
Len Colamarino for Atascadero City Council 2014
Jim Patterson for SLO County Supervisor 2012
Brian Sturtevant for Atascadero City Council 2010
John Graham for Congress, 2004
John McCain for President, 2000

Recent Non-peer reviewed professional publications/news articles/blogs

A compilation of my blog publications can be found at mikelatner.com

Current Teaching Rotation

POLS 590 MPP Graduate Writing Seminar (Fall section)
POLS 568 Democracy, Design and Public Policy
POLS 560 Quantitative Methods
POLS 470 Democracy: A Cookbook
POLS 445 Voting Rights and Representation
POLS 375 California Politics
POLS 317 Campaigns and Elections
POLS 316 Political Participation
POLS 112 American and California Government

Other Courses Taught

POLS 470 Evolutionary Perspectives in Political Science
Metropolitan Inequality (USC)
California Politics (UCI)
The American Political System (UCI)

University service

Quantitative Reasoning assessment committee, 2016-
Academic Senate Instruction Committee, 2014-2017
CLA Assessment Committee 2018
CLA Commencement, College Marshall, 2013-2016, 2018
POLS Phi Beta Kappa Supervisor, 2018-
POLS Curriculum Committee, 2011-2016
POLS MPP Committee, 2007-
POLS Assessment Committee, 2008, 2009, 2011-2016, 2018
POLS Alumni Advisory Board, 2007-

Political Science Club, 2009

POLS Paper Awards Committee, 2009, 2011, 2012

POLS Guest Speaker Committee 2007-2009