

SUPREME COURT OF THE STATE OF NEW YORK  
COUNTY OF STEUBEN

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TIM HARKENRIDER, GUY C. BROUGHT,  
LAWRENCE CANNING, PATRICIA CLARINO,  
GEORGE DOOHER, JR., STEPHEN EVANS, LINDA  
FANTON, JERRY FISHMAN, JAY FRANTZ,  
LAWRENCE GARVEY, ALAN NEPHEW, SUSAN  
ROWLEY, JOSEPHINE THOMAS, AND MARIANNE  
VIOLANTE,

Index No. E2022-0116CV

Petitioners,

-against-

GOVERNOR KATHY HOCHUL, LIEUTENANT  
GOVERNOR AND PRESIDENT OF THE SENATE  
BRIAN A. BENJAMIN, SENATE MAJORITY LEADER  
AND PRESIDENT PRO TEMPORE OF THE SENATE  
ANDREA STEWART-COUSINS, SPEAKER OF THE  
ASSEMBLY CARL HEASTIE, NEW YORK STATE  
BOARD OF ELECTIONS, AND THE NEW YORK  
STATE LEGISLATIVE TASK FORCE ON  
DEMOGRAPHIC RESEARCH AND  
REAPPORTIONMENT,

Respondents.

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**AFFIDAVIT OF DR. MICHAEL BARBER, PH.D**

STATE OF UTAH     )  
                              ) ss:  
COUNTY OF UTAH )

DR. MICHAEL BARBER, Ph.D, being sworn, deposes and says that:

- 1. I am over 18 years of age and am not a party to this case.
- 2. I swear under penalty of perjury to the faithfulness of the opinions expressed in this affidavit, and, to the best of my knowledge, to the truth and accuracy of the factual statements made herein.

### **Education, Employment, and Qualifications**

3. 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.

4. I teach a number of undergraduate courses in American politics and quantitative research methods.<sup>1</sup> 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 as Exhibit A. 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,*

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

*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.

5. 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 research projects that use “big data” that include millions of observations, including several state voter files, campaign contribution lists, and data from the US Census. I have also used geographic information systems and other mapping techniques in my work with political data. Much of this research has been published in peer-reviewed journals. I have published nearly 20 peer-reviewed articles, including in our discipline's flagship journal, *The American Political Science Review* as well as the inter-disciplinary journal, *Science Advances*. My CV, which details my complete publication record is attached as Exhibit A.

6. 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 \$500 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.

### **Political Geography of New York**

7. Scholarship in political science has noted that the spatial distribution of voters throughout a state can have an impact on the partisan outcomes of elections when a state is, by necessity, divided into a number of legislative districts. This is largely the case because Democratic-leaning voters tend to live in urban areas while Republican-leaning voters tend to live in the more rural portions of the country.<sup>2</sup> This geographic distribution of voters is largely the case in New York as well. Neither expert report submitted by the plaintiffs discusses the political geography of New York in any systematic way. Mr. LaVigna states that he reviewed the districts “in light of New York’s political geography” (pg 2. LaVigna Report), however, he provides no data or systematic analysis to indicate what he means by this.

8. Mr. LaVigna provides no quantitative analysis of the Enacted Plan. There are a variety of locations in which he asserts that particular districts are “Republican-leaning” or “Democratic-leaning,” however there is no indication of what data or evidence he used to arrive at these conclusions. Furthermore, in concluding that the plan is a partisan gerrymander, he often uses the phrase “no coherent explanation” for the shape of the districts. However, he does not

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<sup>2</sup> See for example Stephanopoulos, N. O. and McGhee, E. M., Partisan Gerrymandering and the Efficiency Gap, *The University of Chicago Law Review* 82: 831-900, (2015); Chen, J. and Rodden, J., Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures, *Quarterly Journal of Political Science* 8: 239-269, (2013); Nall, C., The Political Consequences of Spatial Policies: How Interstate Highways Facilitated Geographic Polarization, *Journal of Politics*, 77(2): 394-406, (2015); Gimple, J. and Hui, I., Seeking politically compatible neighbors? The role of neighborhood partisan composition in residential sorting, *Political Geography* 48: 130-142 (2015); Bishop, B., *The Big Sort: Why the Clustering of Like-Minded America is Tearing Us Apart*, Houghton Mifflin Press (2008); and Jacobson, G. C., and Carson, J. L., *The Politics of Congressional Elections*, 9th ed. Lanham, MD: Rowman and Littlefield (2016).

compare the plan to any other alternative plan, simulated or otherwise. It is therefore impossible to know how he arrives at the conclusion that there is “no coherent explanation” for the composition of the districts aside from simply asserting that it is the case. The analysis he conducts is fundamentally qualitative and subjective in nature.

9. There is nothing wrong, per se, with a qualitative approach to evaluating a state’s map. However, qualitative research requires the same standards and rigor as quantitative research. King, Keohane, and Verba (2021), arguably the most influential recent work on qualitative research, describe the need for rigorously defined standards in qualitative research as the following:

We argue that nonstatistical research will produce more reliable results if researchers pay attention to the rules of scientific inference---rules that are sometimes more clearly stated in the style of quantitative research....Indeed the distinctive characteristic that sets social science apart from casual observation is that social science seeks to arrive at valid inferences by the systematic use of well-established procedures of inquiry (pg. 4).<sup>3</sup>

10. From my review of Mr. LaVigna’s analysis, there is no systematic process by which he determines if a district constitutes a gerrymander or not. Mr. LaVigna does not describe any methods, data, or processes that would be consistent with analysis in political science, or the social sciences more generally. Instead, I would describe his report as more akin to “casual observation,” rather than rigorous social science.

### **Introduction to Simulations Analysis**

11. To gauge the range of possible partisan outcomes of congressional districts drawn in New York, I conduct simulated districting analyses to allow me to produce a large number of districting plans that follow traditional districting criteria using small geographic units as

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<sup>3</sup> King, Gary., Verba, Sidney., Keohane, Robert O., *Designing Social Inquiry: Scientific Inference in Qualitative Research*, New Edition. United States: Princeton University Press, 2021

building blocks for hypothetical legislative districts (precincts, or voting tabulation districts (VTDs)).

12. For my simulations, I use a program known as “*redist*” developed by Fifield et al. (2020) and implemented using the statistical software program “R”.<sup>4</sup> Notably, this is the same program, run using the same statistical software that Mr. Trende uses for his simulations analysis in his report.<sup>5</sup>

13. One potential advantage of the simulation-based approach in general is the ability to compare a proposed map to a set of maps that are drawn without consideration of criteria such as partisanship. If the proposed map is similar to the set of simulated maps, it is reasonable to assume that the proposed map was not drawn primarily with partisan intent. If the map differs from the simulations, it is important to recognize that a variety of factors could have played into the deviation, but the underlying idea is that a deviation from the simulations reflects a choice by the mapmaker to prioritize some factor that was not made a priority in the simulations.

14. However, a major factor in the validity of the simulated maps is whether or not they constitute a representative sample of the trillions of legally valid possible maps that could be drawn.<sup>6</sup> If the sample produced by the simulations is not representative, then we may be

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<sup>4</sup> Fifield, Benjamin, , Michael Higgins, Kosuke Imai, and Alexander Tarr. “Automated redistricting simulation using Markov chain Monte Carlo.” *Journal of Computational and Graphical Statistics* 29, no. 4 (2020): 715-728. Fifield, Benjamin, Kosuke Imai, Jun Kawahara, and Christopher T Kenny. 2020. “The essential role of empirical validation in legislative redistricting simulation.” *Statistics and Public Policy* 7 (1): 52–68. Kenny, Christopher T., Cory McCartan, Benjamin Fifield, and Kosuke Imai. 2020. *redist: Computational Algorithms for Redistricting Simulation*. <https://CRAN.R-project.org/package=redist>. McCartan, Cory, and Kosuke Imai. 2020. “Sequential Monte Carlo for sampling balanced and compact redistricting plans.” arXiv preprint arXiv:2008.06131.

<sup>5</sup> The process of simulating districting plans has been recognized and used in a variety of redistricting cases, including in North Carolina, Ohio, Pennsylvania, Michigan, and Alabama. See *League of Women Voters of Ohio v. Ohio Redistricting Commission* (2021); *Harper v. Hall* (2021); *Common Cause v. Lewis* (2019); *Harper v. Lewis* (2019); *League of Women Voters of Pennsylvania v. Commonwealth of Pennsylvania* (2018); *Caster v. Merrill* (2021).

<sup>6</sup> Tam Cho, Wendy K., and Yan Y. Liu. “Toward a talismanic redistricting tool: A computational method for identifying extreme redistricting plans.” *Election Law Journal* 15, no. 4 (2016): 351-366. Cho, Wendy K. Tam, and

comparing a proposed map to a biased selection of alternative maps, which renders the value of the comparison meaningless.

### **Replicating Mr. Trende's Simulation Model**

15. In conducting the simulations, I try to adhere as closely to the decisions made by Mr. Trende in programming the algorithm so that the set of simulations I produce closely resembles his simulations results. I do this not because the decisions made in programming the algorithm by Mr. Trende are necessarily the most accurate, nor because they result in a set of maps that follows state and federal laws governing redistricting. Instead, I follow his decisions to show that even if we accept his particular programming decisions, the results and analysis he performs from the resulting simulations do not support the conclusion that the Enacted map is drawn to systematically benefit the Democratic Party.

16. Generating a representative sample of maps requires ensuring that the algorithm drawing the maps is following the legal criteria that govern the redistricting process. The Constitution of New York states that the following redistricting criteria shall be considered:

- (i) Districts shall not be drawn to have the purpose of, nor shall they result in, the denial or abridgment of racial or language minority voting rights, and districts shall be drawn so that, based on the totality of the circumstances, racial minority language groups do not have less opportunity to participate in the political process than other members of the electorate and to elect representatives of their choice.
- (ii) Districts shall contain an equal number of inhabitants (to the extent practicable).
- (iii) Each district shall consist of contiguous territory.
- (iv) Each district shall be as compact in form as practicable.

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Bruce E. Cain. "Human-centered redistricting automation in the age of AI." *Science* 369, no. 6508 (2020): 1179-1181. McCartan, Cory, and Kosuke Imai. "Sequential Monte Carlo for sampling balanced and compact redistricting plans." arXiv preprint arXiv:2008.06131 (2020).

(v) Districts shall not be drawn to discourage competition or for the purpose of favoring or disfavoring incumbents or other particular candidates or political parties.

(vi) Consider the maintenance of cores of existing districts.

(vii) Consider pre-existing political subdivisions, including counties, cities, and towns, and of communities of interest.

17. Furthermore, there are possible federal requirements related to the Voting Right Act that may need to be considered. For congressional maps, the federal Constitution also imposes a more exacting population equality requirement.

18. Mr. Trende notes in his report how he attempts to comply with some of these requirements. Others are not mentioned. I will discuss their use in the algorithm in turn.

19. The first factor listed above deals with minority voting rights. This would also dovetail with any requirements that might apply under the Voting Rights Act as well. Mr. Trende does not instruct the algorithm to incorporate or consider any racial data (Trende Report, pg. 18). As a result, I also instruct the simulation algorithm to not consider race when drawing the district lines, not as an endorsement of the validity of that approach to building a simulation model, but only to attempt to replicate Mr. Trende's methodology. Mr. Trende discusses the outcome of the model with regards to race, but it is not a factor explicitly considered or coded into the statistical model.

20. With respect to equal population, congressional districts are constrained to contain a truly equal population. It is not possible to place such a strict constraint on the model. Because of this, I relax the constraint to allow for a +/- .5% deviation, or a roughly 3,900-person deviation. This is common in redistricting simulations of congressional districts and is true of both my simulations as well as those presented by Mr. Trende in his report (Mr. Trende reports



that he allows for a 1% population deviation). The process for zeroing out population on any given simulation map would have minimal to no impact on the partisan outcomes.<sup>7</sup>

21. In both my simulations and those of Mr. Trende, the model is constrained to create geographically contiguous districts.

22. With regard to geographic compactness, Mr. Trende notes that he instructed the model to generate “reasonably compact” districts (Trende Report, pg. 10). Compactness in the algorithm is set using a “compactness parameter,” essentially a single number with higher numbers indicating a preference for the model to generate more compact districts. I am unsure of what specific value Mr. Trende chose because he does not indicate his choice in his report; however, in my experience any value aside from 1 leads to poor performance by the algorithm, and 1 is the default value set by the creators of the algorithm.<sup>8</sup>

23. The next factor in the list is the prohibition on consideration of partisanship or partisan advantage. Mr. Trende and I both accomplish this by instructing the algorithm to draw districts without any information about the partisanship or partisan lean of the precincts that are assembled into the various districts.

24. The next factor is the consideration or maintenance of the cores of the existing districts using during the 2012-2020 elections. Mr. Trende makes no statement about this factor,

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<sup>7</sup> See for example: Expert report of Dr. Wesley Pegden in *League of Women Voters of Pennsylvania* case, whose simulations use a 2% population constraint. Expert report of Dr. Jonathan Mattingly in *Harper v. Hall* in North Carolina, whose congressional simulations use a 1% population constraint and states, “We have verified in previous work in related settings that the small changes needed to make the districting plan have perfectly balanced populations do not change the results.” See also expert report of Daniel Magleby in *Harper v. Hall* in North Carolina. Also, expert report of Kouske Imai in *League of Women Voters of Ohio v. Ohio Redistricting Commission*, who uses a 0.5% population deviation and states, “Although this deviation is greater than the population deviation used in the Enacted plan, it only accounts for less than 4,000 people and hence has no impact on the conclusions of my analysis.”

<sup>8</sup> [https://www.rdocumentation.org/packages/redist/versions/3.0.7/topics/redist\\\_smc](https://www.rdocumentation.org/packages/redist/versions/3.0.7/topics/redist\_smc)

and I take this to indicate that his model does not consider the previous districts when conducting the simulations.

25. The final factor is the consideration of pre-existing political subdivisions --- counties, cities, towns, and communities of interest. Mr. Trende notes that he instructs the model to avoid splitting county boundaries (Trende Report, pg. 10). There is no mention of any constraints to avoid divisions of cities or towns and no consideration of other communities of interest. I follow this by instructing the model to respect county boundaries as often as possible.

26. Specifically, I instruct the model to conduct 50,000 simulations that each generate 26 congressional districts by assembling VTDs into districts that meet the redistricting criteria discussed above.

27. Once the simulated district plans are complete, only then do I compute the partisan composition of each district in each plan. For the partisan composition of each district I rely on the election results from seven statewide elections disaggregated to the level of the election precinct. The particular races are 2020: President; 2018: Governor, US Senate, Attorney General, and Comptroller; 2016: President, and US Senate. These are the same elections used by Mr. Trende with the addition of the 2018 Comptroller election. This is the most extensive set of statewide elections that I could obtain given the time constraints. Once the partisan data are matched to the precinct, I calculate the partisan composition of each district for each election in all of the 50,000 simulated plans. In the analysis below I present the results for the average of all seven of these elections. Averages of multiple elections have the benefit of “washing out” the impact of any election, since individual elections can vary due to particular idiosyncratic candidate features. Furthermore, particular years can vary due to national electoral waves (i.e.

2018 was an especially good year for Democrats while 2016 was an especially good year for Republicans nationwide).

### **Partisan Lean of Districts Compared to Simulations**

28. Having established that my simulation methodology very closely mirrors that of Mr. Trende, in this section I show that the results of the simulations do not support the conclusion that the Enacted plan is systematically tilted or beneficial to the Democratic party.

29. Mr. Trende presents the results of his simulations using what he calls a “gerrymandering index. There are multiple reasons why this method of comparing the Enacted plan to the simulations is less preferred to the method I use later in this section of simply showing the number of districts carried by each party in the average of past elections.

30. The first reason is that this method of presenting the results of a redistricting simulations exercise has not, to my knowledge, been used in any expert reports by Mr. Trende or any other expert in any redistricting cases in this cycle or any previous cycles. Novelty in and of itself is not necessarily bad. However, using the gerrymandering index in the manner that Mr. Trende does in his report eliminates the ability to see whether the plan is systematically differing from the simulations in a Republican direction, a Democratic direction, or if the deviations from the simulations are relatively evenly split between the parties.

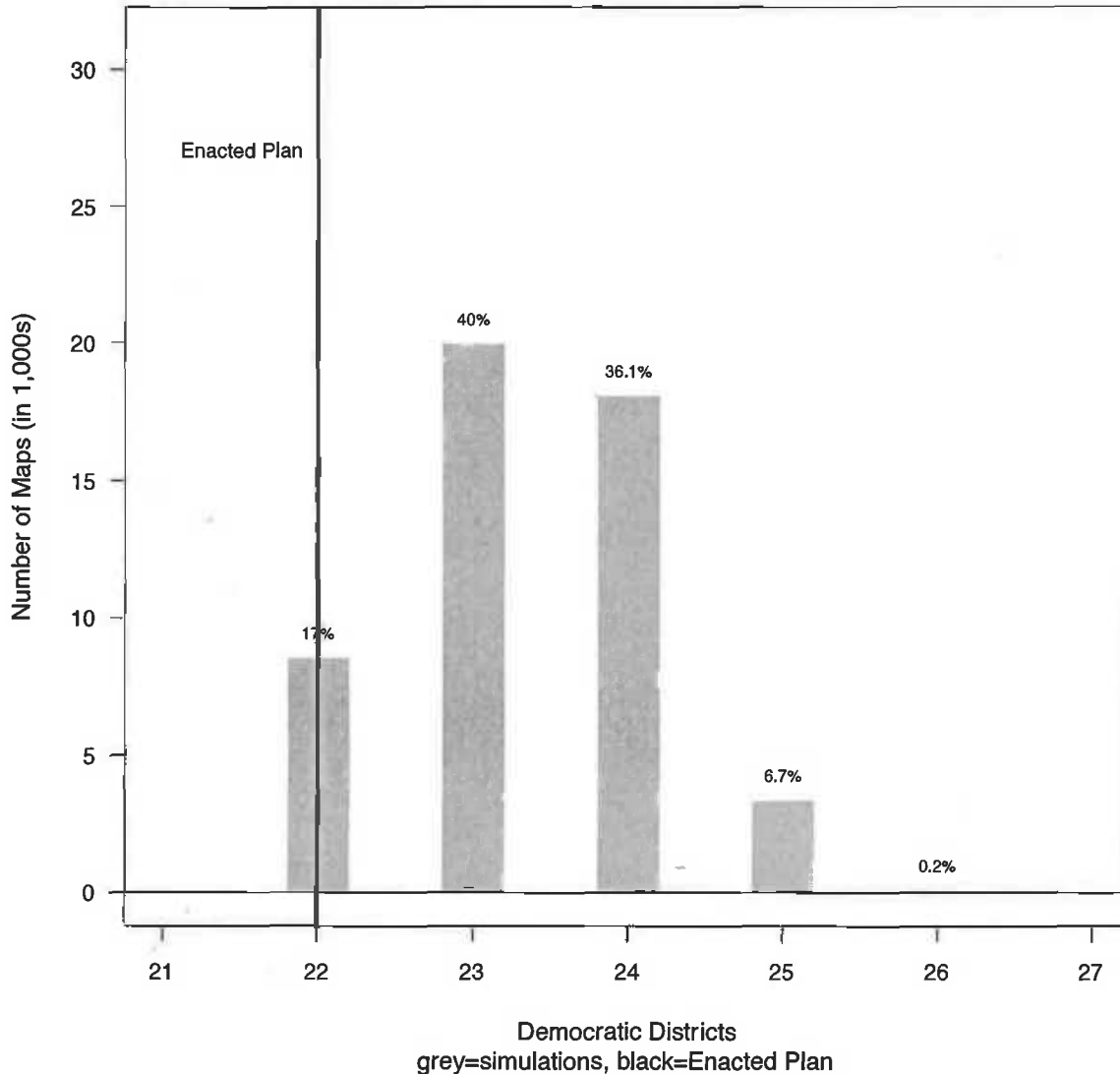
31. This has important implications because Mr. Trende interprets the results of this analysis to indicate that the plan benefits Democrats (see pg. 14, Trende Report). However, the results of his analysis can tell us literally nothing about the direction or party that is benefitted by any deviation from the Enacted plan and the simulation results.

32. Figure 1 below displays a much more common method of comparing a set of simulations to the Enacted plan than does the gerrymandering index that Mr. Trende used. I

begin by calculating a partisan index for each district in the Enacted plan and in the 50,000 simulations. The partisan index is the proportion of the two-party vote share cast for the Democratic candidate across all of the seven statewide elections noted earlier. If a district in the simulations or in the Enacted Congressional plan has a partisan index greater than 0.50, I call that a Democratic-leaning district, or that the Democratic party “carried” the district. Likewise, if a district in the simulations has a partisan index less than 0.50, I call that a Republican-leaning district, or that the Republican Party “carried” the district. The grey histogram shows the distribution of the number of seats carried by Democrats in the 50,000 simulated maps. The simulations generate between 22 and 26 Democratic-leaning districts, and the numbers above each bar in the histogram display the proportion of simulated maps that generate each outcome.

33. For example, in 40% of the simulations there are 23 Democratic-leaning districts (and therefore 3 Republican-leaning districts). In 36.1% of the simulations there are 24 Democratic-leaning districts (and therefore 2 Republican-leaning districts). The solid black vertical line shows the results of calculating the same partisan index for the Enacted Congressional plan. The Enacted plan generates 22 Democratic leaning districts, which is in line with the distribution of Democratic-leaning seats generated by the simulations (17% of the simulations generate this result). If anything, the Enacted plan generates fewer Democratic-leaning districts than the typical simulation. As noted above, the most common outcome in the simulations is 23 Democratic-leaning seats, which is one more than the Enacted Congressional plan generates, and the second most common outcome is 24 Democratic-leaning seats, which is two more than the Enacted Congressional plan generates. None of the 50,000 simulations has fewer than 22 Democratic-leaning districts (and therefore none has more than 4 Republican-leaning districts).

**Comparison to 50,000 simulated NY congressional plans:  
 (drawn with population equality, compactness, and minimal county splits)**



**Figure 1: The grey distribution is the number of Democratic seats generated from the 50,000 simulations. The vertical black line is the number of Democratic leaning seats in the Enacted Congressional plan. The Enacted plan generates 22 Democratic leaning districts. The partisan lean of districts in the simulations and the Enacted Congressional plan are calculated as the two-party vote share of statewide partisan elections from 2016-2020.**

34. Recall that in using the simulations we are comparing the Enacted Congressional map to a set of maps drawn by the computer using only those criteria that I (based on Trende's chosen criteria) instructed the algorithm to follow – namely, equal population, contiguity, geographic compactness, and a preference for fewer county splits. Both the Enacted Congressional plan and the simulations account for the unique political geography of New York. Doing so shows us that the New York plan is within the range of simulation results and if anything leans slightly towards the Republican party by generating 22 Democratic-leaning districts rather than 23, which is the modal outcome in the simulations. By no standard definition would the plan be considered an outlier.

35. Mr. Trende does not report his results showing the number of seats carried by Democrats or Republicans from his simulations. However, the figure on page 15 of his report allows us to see what such an analysis would show. In that figure we see that there are 21 districts in which *none* of the simulations produced a Republican-leaning district. Furthermore, there is one additional district in which nearly all the simulations generate a Democratic-leaning district, and another district in which the vast majority of the simulations generate a Democratic-leaning district. The remaining three districts are Republican-leaning in the majority, or all of the simulations. Given this, we can deduce that by far the most common outcome in his simulations is a map that produces 23 Democratic-leaning districts and 3 Republican-leaning districts --- one more Democratic district than the Enacted plan creates. This outcome aligns with the results I present in Figure 1 above. If anything, the 2022 Enacted Congressional plan favors the Republican Party when compared to Mr. Trende's simulation results.

### **Maintenance of District Cores**

36. The New York Constitution recognizes maintaining the core of previous districts as a valid redistricting criteria. Neither Mr. Trende nor Mr. LaVigne discuss or take into account this factor when discussing the 2022 Enacted Congressional map, notwithstanding its inclusion in the state's constitution. The following section reports the composition of the 2022 Enacted districts in terms of how they are composed from pieces of previous special-master drawn 2012 districts. For each set of districts, I note the largest percent of the new 2022 districts that is retained from the old 2012 districts. In all cases but one, the new districts retain greater than 50% of the old district population. In the one case where this is not the case, the new district (District 19) is composed of nearly equal parts of two old districts (Districts 19 and 22). This is largely because in losing a district it would not be possible to have high core retention of districts as the remaining 26 districts must "absorb" the population of the outgoing districts while at the same time also adjusting to shifts in the population over the last decade.

How Old	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
1	55.22%	38.61%	10.18%																								100%	
2	36.03%	57.11%	4.86%																									100%
3	4.03%	72.23%	0.65%										4.74%															100%
4		2.45%	96.88%	0.07%																								100%
5		0.04%	98.60%	2.44%																								100%
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**Conclusion**

Based on the evidence and analysis presented above, it is my opinion that even accepting Mr. Trende's analysis, the Enacted Plan is not systematically tilted or beneficial to the Democratic party, and if anything, favors the Republican party.

  
MICHAEL BARBER

Sworn to before me this 24  
day of February, 2022

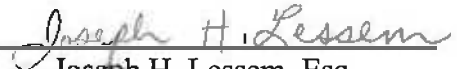
  
Notary Public



CERTIFICATION

I certify that the foregoing AFFIDAVIT OF DR. MICHAEL BARBER, PH.D complies with the word count limit set forth in Uniform Rule 208.8-b and this Court's rules. Exclusive of caption and signature block, the affidavit contains 4,315 words.

Dated: February 24, 2022

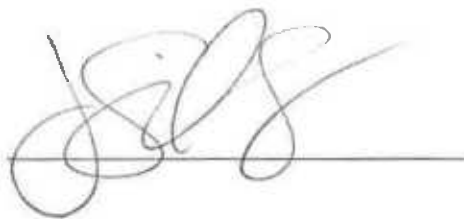
  
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Joseph H. Lessem, Esq.

CERTIFICATE OF CONFORMITY PURSUANT TO N.Y. C.P.L.R. § 2309(c)

I, J Scott Esplin, do hereby certify and attest that I am an attorney duly admitted to practice law in the State of Utah.

I make this certification for the purposes of compliance with New York State Civil Practice Law & Rules Section 2903(c) with regard to the Affidavit of Michael Barber, a copy of which is annexed hereto, to be filed in Supreme Court in Steuben County, State of New York.

Said Affidavit, acknowledged and sworn by Mr. Barber before a Notary Public in and for the State of Utah, and said Affidavit being therein sworn in the State of Utah, is and appears to be, based upon my review of said document and notarization thereof, in conformity with the laws of the State of Utah for the making of an affidavit and the notarization thereof.

A handwritten signature in black ink, appearing to read "J Scott Esplin", is written over a horizontal line. The signature is stylized and cursive.