# REVIEW OF PROPOSED ONONDAGA COUNTY LEGISLATIVE MAP, BY SEAN P. TRENDE, Ph.D.

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# 1 Expert Qualifications

## 1.1 Career

I serve as Senior Elections Analyst for Real Clear Politics. I joined Real Clear Politics in January of 2009 and assumed a fulltime position in March of 2010. Real Clear Politics is a company of approximately 50 employees, with its main offices in Washington D.C. It produces one of the most heavily trafficked political websites in the world, which serves as a one-stop shop for political analysis from all sides of the political spectrum and is recognized as a pioneer in the field of poll aggregation. Real Clear Politics produces original content, including both data analysis and traditional reporting.

My main responsibilities with Real Clear Politics consist of tracking, analyzing, and writing about elections. I collaborate in rating the competitiveness of Presidential, Senate, House, and gubernatorial races. As a part of carrying out these responsibilities, I have studied and written extensively about demographic trends in the country, exit poll data at the state and federal level, public opinion polling, and voter turnout and voting behavior. In particular, understanding the way that districts are drawn and how geography and demographics interact is crucial to predicting United States House of Representatives races, so much of my time is dedicated to that task.

I am currently a Visiting Scholar at the American Enterprise Institute, where my publications focus on the demographic and coalitional aspects of American Politics.

I am also a Lecturer at The Ohio State University. My courseload is detailed below.

## 1.2 Publications and Speaking Engagements

I am the author of the 2012 book The Lost Majority: Why the Future of Government is up For Grabs and Who Will Take It. In this book, I explore realignment theory. It argues that realignments are a poor concept that should be abandoned. As part of this analysis, I conducted a thorough analysis of demographic and political trends beginning

in the 1920s and continuing through modern times, noting the fluidity and fragility of the coalitions built by the major political parties and their candidates.

I also co-authored the 2014 Almanac of American Politics. The Almanac is considered the foundational text for understanding congressional districts and the representatives of those districts, as well as the dynamics in play behind the elections. My focus was researching the history of and writing descriptions for many of the 2012 districts, including tracing the history of how and why they were drawn the way that they were drawn. Because the 2014 Almanac covers the 2012 elections, analyzing how redistricting was done was crucial to my work. I have also authored a chapter in Dr. Larry Sabato's post-election compendium after every election dating back to 2012.

I have spoken on these subjects before audiences from across the political spectrum, including at the Heritage Foundation, the American Enterprise Institute, the CATO Institute, the Bipartisan Policy Center, and the Brookings Institution. In 2012, I was invited to Brussels to speak about American elections to the European External Action Service, which is the European Union's diplomatic corps. I was selected by the United States Embassy in Sweden to discuss the 2016 elections to a series of audiences there and was selected by the United States Embassy in Spain to fulfill a similar mission in 2018. I was invited to present by the United States Embassy in Italy, but was unable to do so because of my teaching schedule.

## 1.3 Education

I received my Ph.D. in political science at The Ohio State University in 2023. I passed comprehensive examinations in both Methodology and American Politics. The first chapter of my dissertation involves voting patterns on the Supreme Court from 1900 to 1945; the second chapter involves the application of integrated nested LaPlace approximations to enable the incorporation of spatial statistical analysis in the study of United States elections. The third chapter of the dissertation involves the use of communities of interest in redistricting simulations. In pursuit of this degree, I also earned a Mas-

ter's Degree in Applied Statistics. My coursework for my Ph.D. and M.A.S. included, among other things, classes on G.I.S. systems, spatial statistics, issues in contemporary redistricting, machine learning, non-parametric hypothesis tests and probability theory. I also earned a B.A. from Yale University in history and political science in 1995, a Juris Doctor from Duke University in 2001, and a Master's Degree in political science from Duke University in 2001.

In the winter of 2018, I taught American Politics and the Mass Media at Ohio Wesleyan University. I taught Introduction to American Politics at The Ohio State University for three semesters from Fall of 2018 to Fall of 2019, and again in Fall of 2021. In the Springs of 2020, 2021, 2022 and 2023, I taught Political Participation and Voting Behavior at The Ohio State University. This course spent several weeks covering all facets of redistricting: how maps are drawn, debates over what constitutes a fair map, measures of redistricting quality, and similar topics. It also covers the Voting Rights Act and racial gerrymandering claims. I also taught survey methodology in Fall of 2022 and Spring of 2024.

## 1.4 Prior Engagements as an Expert

A full copy of all cases in which I have testified or been deposed is included on my C.V., attached as Exhibit 1. In 2021, I served as one of two special masters appointed by the Supreme Court of Virginia to redraw the districts that will elect the Commonwealth's representatives to the House of Delegates, state Senate, and U.S. Congress in the following decade. The Supreme Court of Virginia accepted those maps, which were praised by observers from across the political spectrum. [1]

In 2019, I was appointed as the court's expert by the Supreme Court of Belize.

[1] *See, e.g.*, *New Voting Maps, and a New Day, for Virginia*, The Washington Post (Jan. 2, 2022), available at `https://www.washingtonpost.com/opinions/2022/01/02/virginia-redistricting-voting-maps-gerrymander`; Henry Olsen, *Maryland Shows How to do Redistricting Wrong. Virginia Shows How to Do it Right*, The Washington Post (Dec. 9, 2021), available at `https://www.washingtonpost.com/opinions/2021/12/09/maryland-virginia-redistricting`; Richard Pildes, *Has VA Created a New Model for a Reasonably Non-Partisan Redistricting Process*, Election Law Blog (Dec. 9, 2021), available at `https://electionlawblog.org/?p=126216`.

In that case I was asked to identify international standards of democracy as they relate to malapportionment claims, to determine whether Belize's electoral divisions (similar to our congressional districts) conformed with those standards, and to draw alternative maps that would remedy any existing malapportionment.

I served as a Voting Rights Act expert to counsel for the Arizona Independent Redistricting Commission in 2021 and 2022.

# 2 Scope of Engagement

I have been retained by the Onondaga County Legislature to evaluate the proposed Onondaga County Legislature Map (hereinafter "Proposed Map"). I have been retained and am being compensated at a flat fee, determined on an ongoing basis, to provide my expert analysis to determine if the map complies with the relevant criteria found in the New York Municipal Home Rule Law § 34(4)(a)-(f). My fees are in no way contingent on my conclusions. I conclude that, with a reasonable degree of certainty typical of my field, that the map does comply with the relevant statute. Using the computerized simulation technique I used in *Harkenrider v. Hochul*,[2] I conclude with a reasonable degree of certainty that the Proposed Map was not drawn to discourage competition or for the purpose of favoring or disfavoring incumbents or other particular candidates or political parties. Using the same techniques, I conclude that it was not enacted with the purpose or effect of reducing the opportunity of minority groups to elect their candidates of choice.

# 3 Analysis

[2] 38 N.Y.3d 494, 506, 519–20 (2022)

## 3.1 Overview

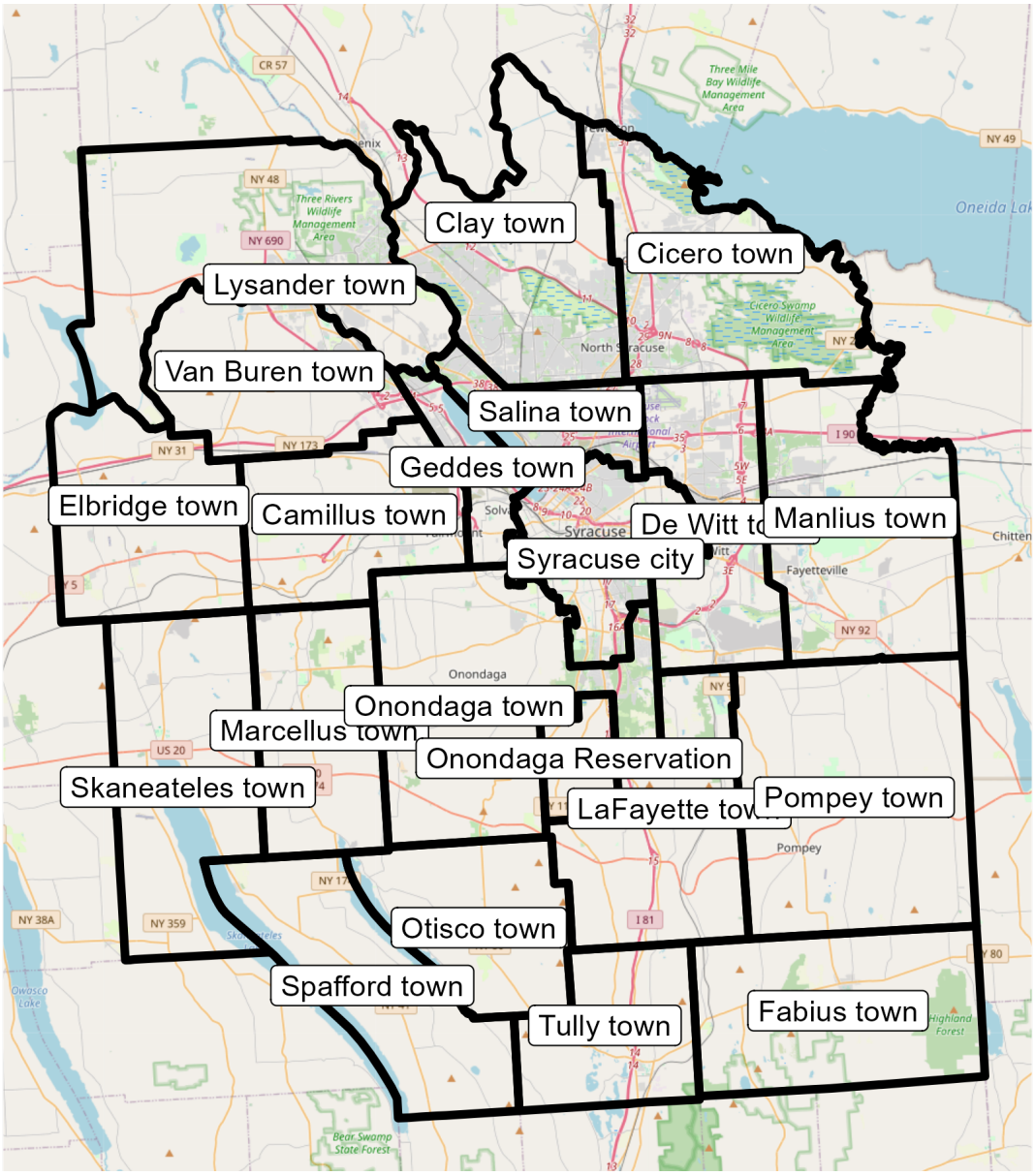
This report concerns redistricting in Onondaga County, New York. While I am certain that the Legislature is thoroughly familiar with much of this section, it's nevertheless useful for setting the base for the more complex analysis that follows.

Using the prisoner-adjusted data made available from the New York Legislative Task Force on Demographic Research and Reapportionment, Onondaga County had a post-Decennial census population of 478,151 individuals. Of these, 379,416 were of voting age. The voting age population of the county was reasonably diverse. The voting age population was 76.2% non-Hispanic White, 10.8% Black (including Hispanic),[3] 0.7% Native American (including Hispanic), 4.1% Asian (including Hispanic), 5.2% multi-Racial (including Hispanic), 4.7% Hispanic, 1.9% "Other," and a small fraction unknown (.0003%). The non-White population is overwhelmingly concentrated in the City of Syracuse. That municipality is only 51.6% non-Hispanic White; the remainder of the county, however, is 87.3% non-Hispanic White.

Onondaga County is divided into 21 jurisdictions, plotted below:

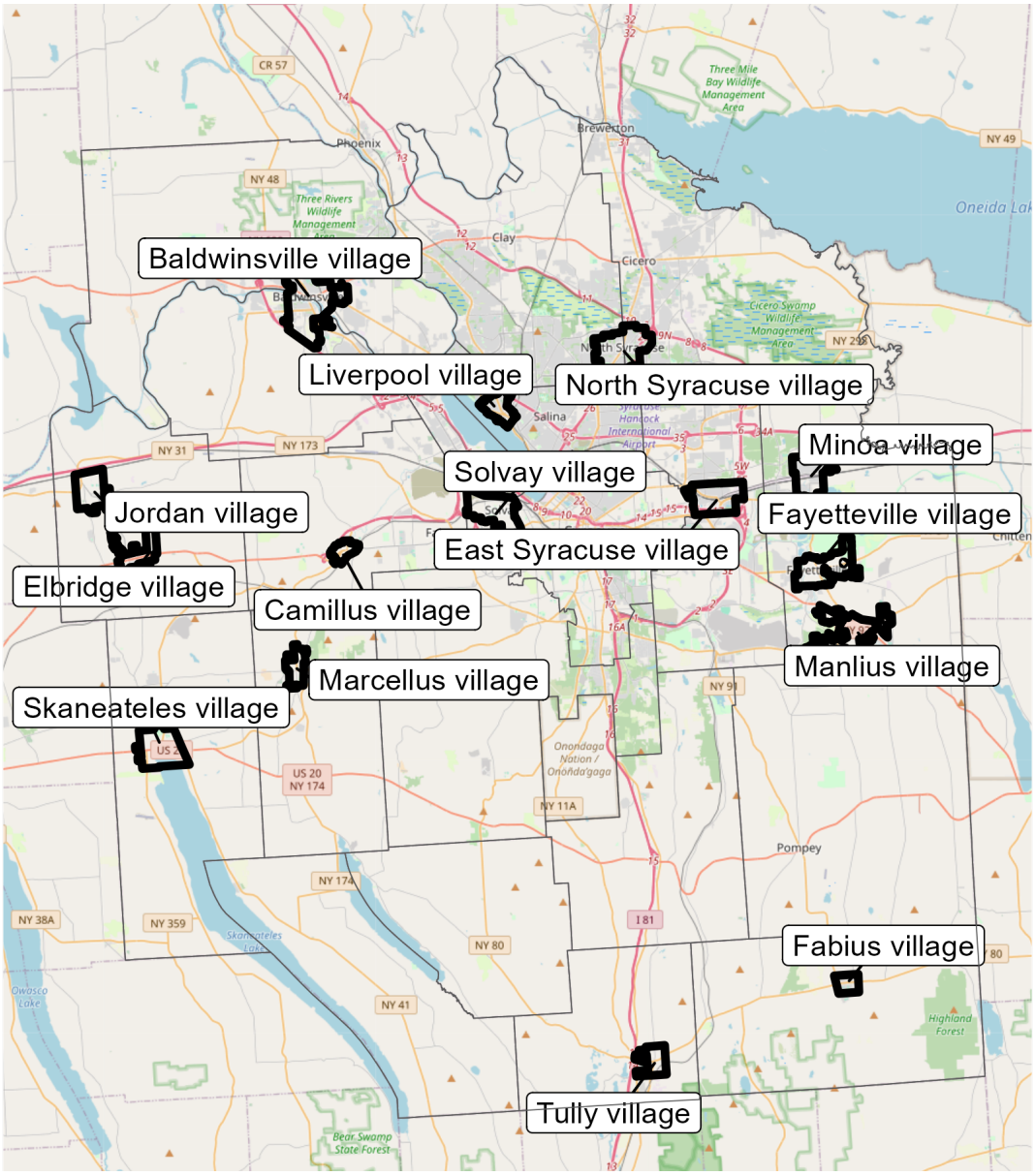
[3]Because the United States Census Bureau considers "Hispanic" to be an ethnicity, rather than a race, it is possible for a Black individual to also identify as Hispanic (think Jasson Domínguez). These totals are also reported separately (i.e., non-Hispanic Black) but, for these purposes, I report them together to get a full view of the Black population. Because of this double-count (a Hispanic Black individual is counted as both Black and Hispanic), however, total racial numbers can exceed 100%.

Figure 1: Towns of Onondaga County, New York




Onondaga is further divided into 15 villages. They are plotted on the following image. There are also a number of census-designated places (CDPs) but because they are not directly addressed in the Municipal Home Rule Law, I do not consider them here.

Figure 2: Villages of Onondaga County, New York

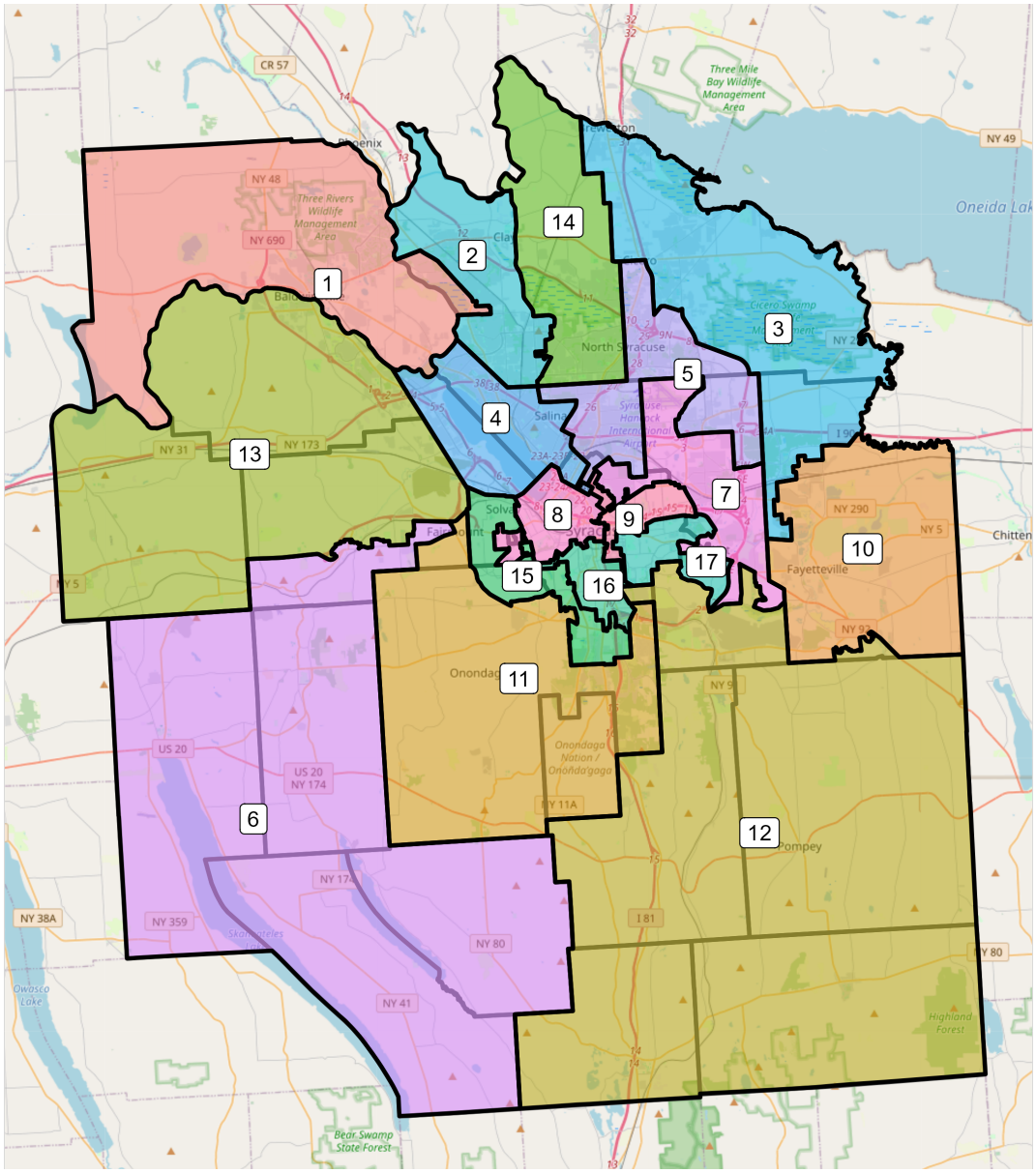



Note that some villages, such as Baldwinsville and North Syracuse, straddle town lines.

Because of population shifts, the previous legislative districts had become malapportioned. The most heavily populated district (9) had a population of 30,637, while the most lightly populated district (3) had a population of just 26,381. This 15.18% deviation was beyond the limits allowed by the U.S. Constitution, to say nothing of the Home Rule

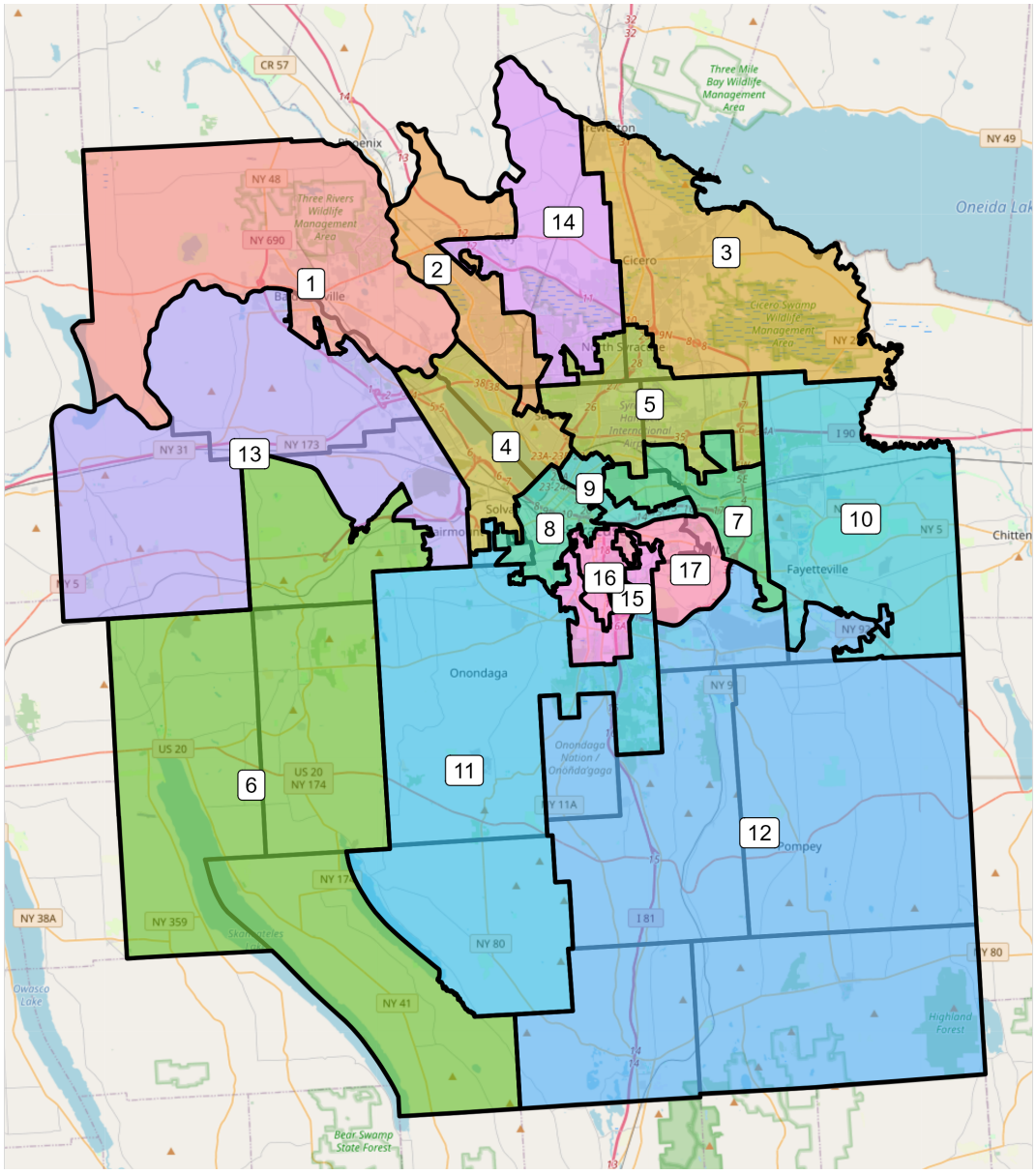
Statute. The old districts were as follows:

Figure 3: Previous (2011-2021) Onondaga County Legislative Map



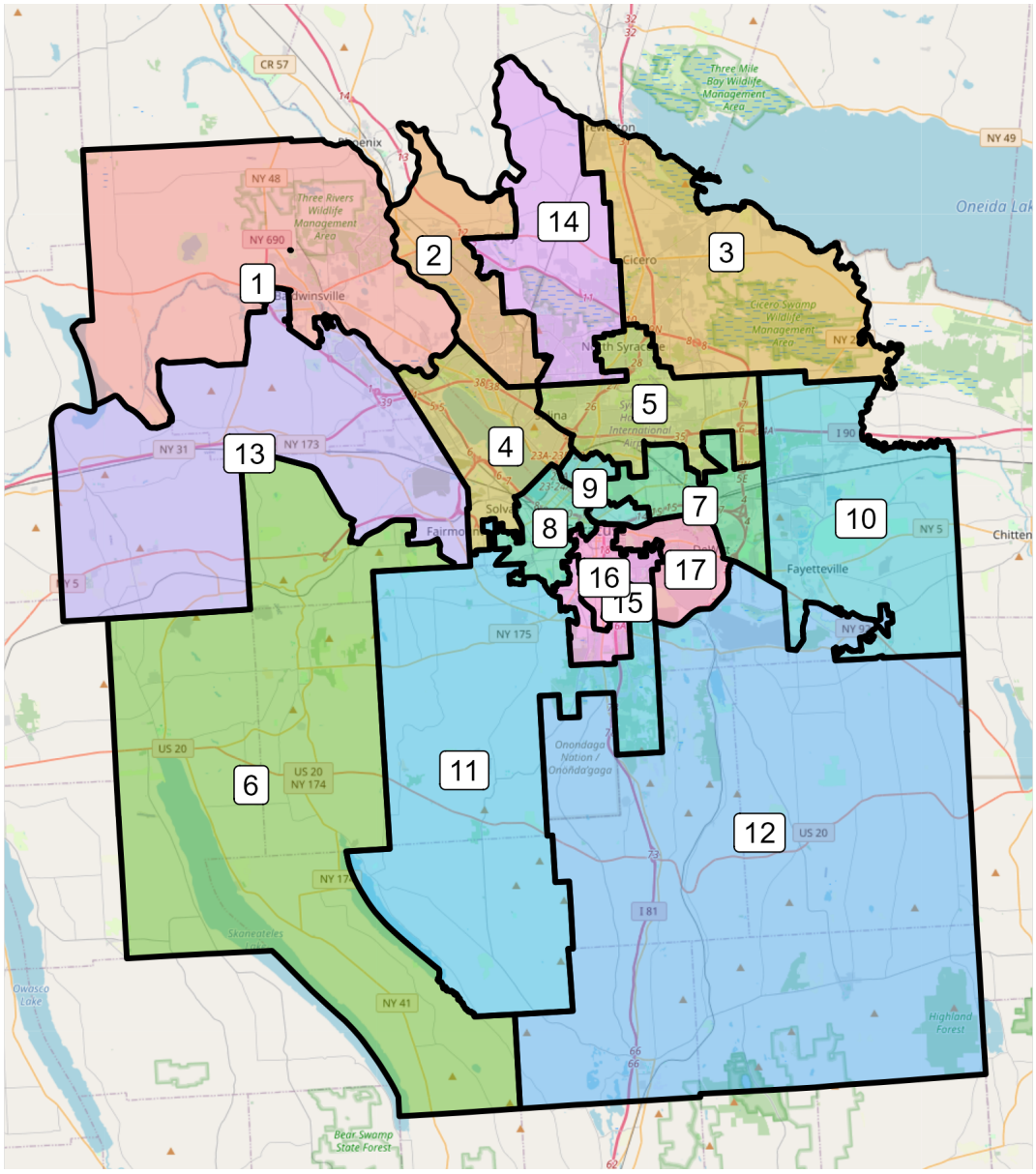

The districts for the map drawn in 2022 are as follows:

Figure 4: Enacted Onondaga County Legislative Map, 2022




The Proposed map is as follows:

Figure 5: Proposed Onondaga County Legislative Map




The 2022 map eliminated three town splits from the 2011-2021 map. The Proposed Map eliminates an additional two splits. It removes splits of DeWitt and Salina. Like the 2022 map, it empowers the City of Syracuse. Under the last decade's map, the population of the city was split between nine districts. The Proposed Map is split between six. The Proposed map creates three districts entirely within Syracuse (9, 15, 16), whereas the earlier map only had two such districts (9, 16). The remaining three districts partly

contained within the City of Syracuse (7, 8, 17) retain their substantial majorities of population located within the city. In short, under the new maps, every resident of Syracuse lives in a district where Syracuse residents cast a majority of the votes. In addition, multiple town traversals are eliminated.

With this foundation, we can now turn to our discussion of the relevant criteria required by New York Municipal Home Rule Law § 34(4)(a)-(f) ("Home Rule Criteria").

## 3.2 Home Rule Criteria (a): Equal Population.

New York law now requires states to use the prisoner-adjusted population for reapportionment, rather than the topline reported census numbers. The census-adjusted populations can be difficult to compute precisely, because Onondaga County election districts sometimes split census blocks, which are the "quarks" of redistricting. Using the prisoner-adjusted population for the electoral districts in Onondaga County, I have arrived at the following population counts for the newly drawn districts. As you can see, all of the deviations are under 2.5%, meaning that the districts comply with New York law.

Figure 6: Population Deviations, Onondaga County

| District | Population | % Deviation |
|---|---|---|
| 6 | 27,521 | −2.15% |
| 1 | 27,686 | −1.57% |
| 10 | 27,722 | −1.44% |
| 2 | 27,755 | −1.32% |
| 11 | 27,836 | −1.03% |
| 13 | 27,906 | −0.78% |
| 4 | 27,914 | −0.76% |
| 5 | 27,954 | −0.61% |
| 16 | 28,041 | −0.30% |
| 14 | 28,124 | −0.01% |
| 12 | 28,141 | 0.05% |
| 3 | 28,251 | 0.44% |
| 8 | 28,321 | 0.69% |
| 15 | 28,581 | 1.62% |
| 17 | 28,786 | 2.34% |
| 9 | 28,800 | 2.39% |
| 7 | 28,812 | 2.44% |

## 3.3 Home Rule Criteria (b): Minority Rights.

### 3.3.1 Overview

The second priority requires that districts "shall not be drawn with the intent or result of denying or abridging the equal opportunity of racial or language minority groups to participate in the political process or to diminish their ability to elect representatives of their choice."

There are potentially two different aspects to this statute. The intent requirement is dealt with in the gerrymandering sections below. The effect requirement appears to be more akin to a Voting Rights Act claim in federal court; it is dealt with here.

As noted above, the minority population in Onondaga County is largely concentrated within Syracuse City. Of the almost 400 VTDs in Onondaga County, 92 – around 1/3 — have a Black Voting Age Population (BVAP) above 15%. Only four of them are

located outside of the City of Syracuse, and the highest BVAP in those precincts is 25%. Of the 23 majority BVAP precincts in Onondaga County, all of them are located in the City of Syracuse.

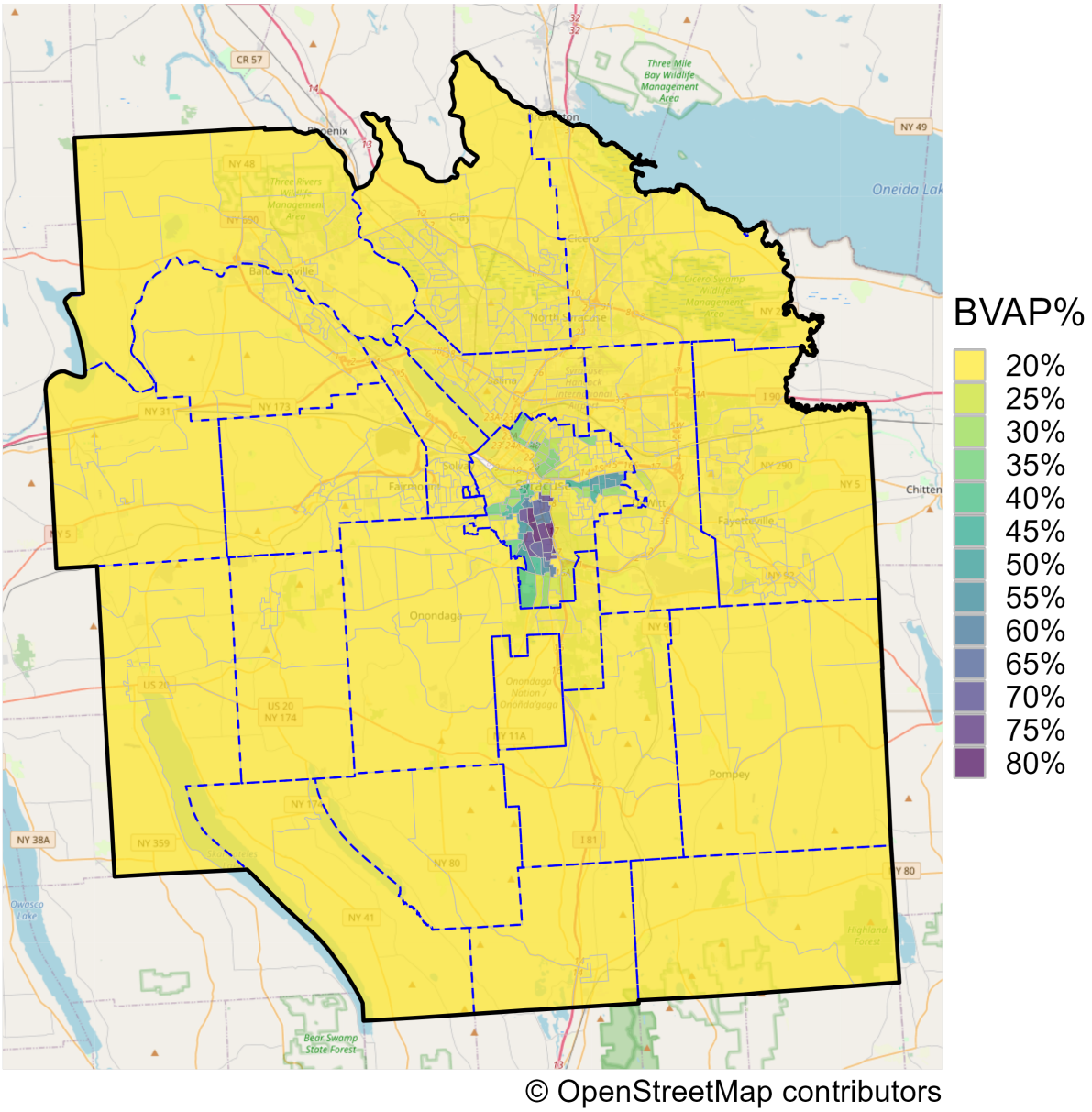
If we aggregate the Person of Color[4] population in Onondaga County, 149 precincts have populations that are more than 15% People of Color, and 60 precincts are majority Persons of Color VAP. Of the latter, all are located in the City of Syracuse; of the former, 69 are located outside Syracuse, although just two of them have non-White VAPs that exceed 40% (one of which is the Onondaga Reservation).

For other groups it is more striking. American Indians constitute more than 15% of the voting age population in just 1 precinct in Onondaga County. Asian-Americans constitute more than 15% of the voting age population in 16 precincts, none of which are outside of Syracuse and only two of which are greater than 30% Asian. There are no precincts with greater than 15% Hawaiian VAP or 15% unknown VAP; all of the 6 precincts with greater than 15% "other" VAPs are in Syracuse. Of the 22 precincts with larger than 15% Hispanic VAPs, all are in Syracuse and none are majority Hispanic.

We can see this more clearly in the following two maps. The first map shows the precincts in Onondaga County, shaded by BVAP. The map colors are truncated at 20% and 80% BVAP, meaning any precinct below 20% BVAP is shaded the same color, while any precinct about 80% BVAP is shading the color. This keeps gradations that we are not particularly interested in (say, between 5% and 10% BVAP) from overwhelming the color scheme. You can see that the Black population Syracuse contains a cluster in southwest Syracuse, a smaller one in eastern Syracuse, and one north of the city.

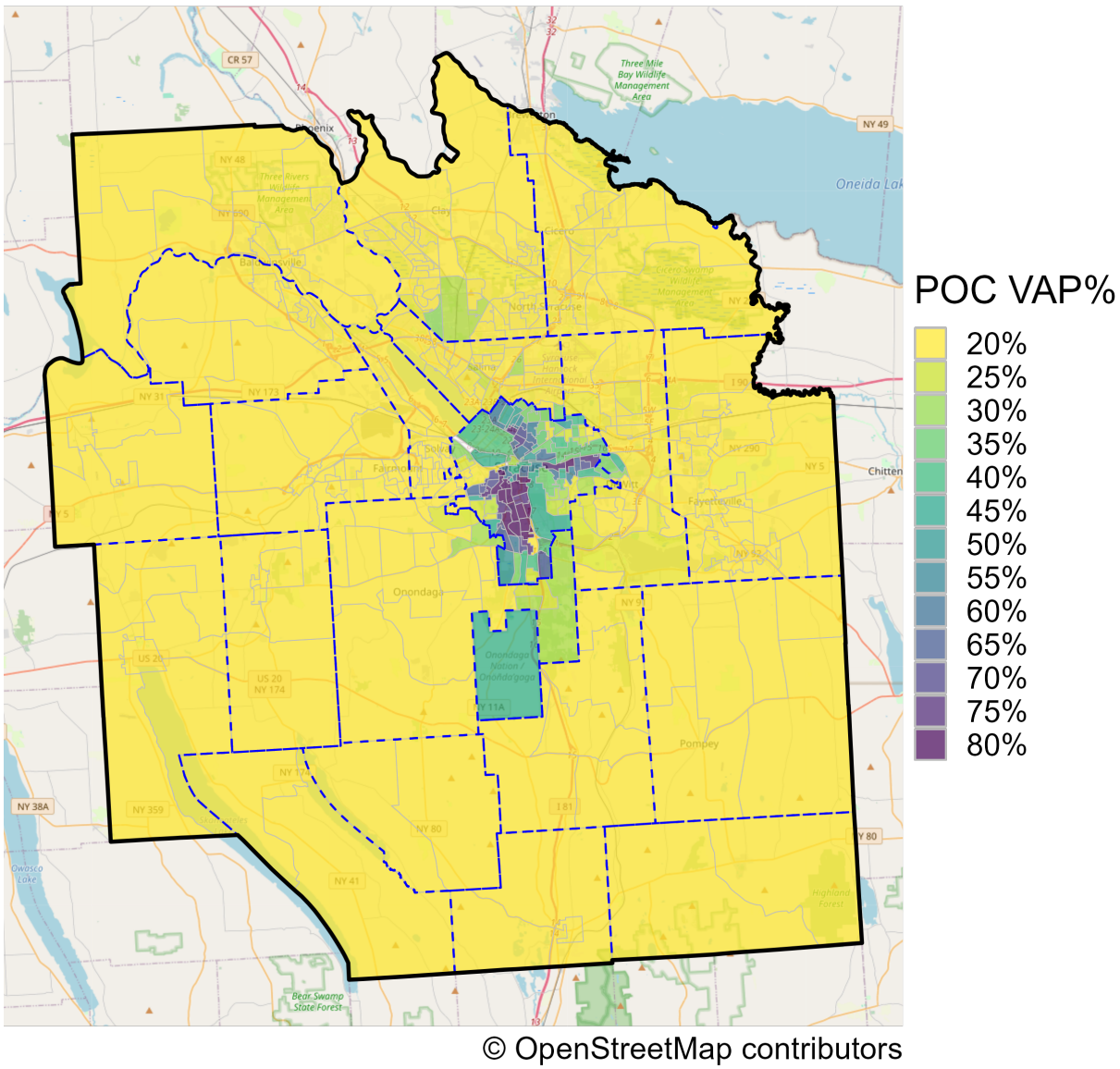
[4]I generally aggregate all voters of color throughout this analysis because it simplifies analysis for purposes of the ecological inference calculations below and because it would provide for the largest number of protected districts. In the racial gerrymandering section, I also break out the Black population, which is the largest minority population in the county and only group large and compact enough to theoretically constitute a majority of the population in a reasonably configured district.

Figure 7: Distribution of Black Voting Age Population in Onondaga County. Towns and the City of Syracuse are depicted with dashed blue lines.




If we look at the distribution of all persons of color in Syracuse, we see a more even distribution. However, we still see concentrations in the same areas of Syracuse, and see that the population is, in fact, concentrated in Syracuse.

Figure 8: Distribution of Black Voting Age Population in Onondaga County. Towns and the City of Syracuse are depicted with dashed blue lines.




Thus, when we talk about protecting minority rights in Onondaga County, we are almost entirely talking about the population in Syracuse. Regardless, like the 2022 Map, the Proposed Map creates an additional district where a coalition of persons of color are a majority of the voting age population. It also creates a sixth district where they constitute a substantial portion of that population; this is at least in part the effect

of increasing the number of districts contained within the City of Syracuse. This is an increase of one such district from the 2022 map, and an increase of two from the Previous Map. Black voters are reduced to 47.4% of the vote in District 16, but as we shall see that does not negate their ability to select their candidate of choice in the district. Moreover, that is an increase of 2.5% from the 2022 map's BVAP.

### 3.3.2 Analysis in even-numbered years

To determine the voting patterns of minority voters in the region, I've employed ecological inference. Ecological inference is a well-established technique in political science for determining the voting patterns of individuals in an area on the basis of aggregated vote shares. *See* Gary King, *A Solution to the Ecological Inference Problem* (1997). By examining patterns of voting at the precinct level, analysts can calculate reasonable estimates for voting patterns of different groups.

For this analysis, I used the races that I used in *Harkenrider v. Hochul*. These are: 2016 Presidential, 2016 Senate, 2018 Senate, 2018 Governor, 2018 Attorney General and 2020 President. I also added 2022 Senate, 2022 Governor, 2022 Attorney General and 2022 Comptroller; obviously the results of these elections were unavailable at the time the maps were drawn.

The upshot is that there is very little evidence of racially polarized voting in Onondaga County for these races. Even in races like the 2022 governor's race – the high tide of Republicanism in New York in the past 20 years – White voters cast their ballots for the same candidates as non-White voters. The results are summarized in the following table. Each column represents a race. The first number reflects the estimated vote share cast by the racial group for the Democratic candidate. The numbers in parentheses reflect the 95% confidence interval.[5]

[5]Technically, these are "credible intervals," which reflect a Bayesian analogue to confidence intervals or error margins.

Figure 9: Ecological Inference Estimates, Onondaga County, Even-Numbered Years

| Race | 2016 Pres. | 2016 Sen. | 2018 Sen. | 2018 Gov. | 2018 AG | 2020 Pres. | 2022 Sen. | 2022 Gov. | 2022 AG | 2022 Comp. |
|---|---|---|---|---|---|---|---|---|---|---|
| Persons of Color | 90.8% (87.8%, 93.4%) | 87.5% (83.6%, 91.1%) | 89.5% (85.9%, 92.6%) | 91.9% (89.1%, 94.1%) | 91.2% (88.1%, 93.7%) | 85.2% (80.8%, 89.6%) | 85.7% (80.8%, 89.4%) | 82.6% (76.8%, 87.5%) | 84.7% (79%, 89.1%) | 85.5% (79.9%, 89.8%) |
| Non-Hispanic White | 53% (52.2%, 53.8%) | 69.6% (69%, 70.1%) | 59.5% (58.9%, 39.9%) | 49.6% (48.9%, 50.3%) | 54.4% (53.7%, 55%) | 57.3% (56.5%, 58.1%) | 57.6% (57.2%, 58%) | 52.5% (52%, 52.9%) | 53.2% (52.7%, 53.7%) | 56.9% (56.5%, 57.4%) |

In almost every race, Persons of Color and Non-Hispanic Whites prefer the Democratic candidates. The one exception is the 2018 Governor's race, although with the error margins there is some question about White voting preferences. Overall in Onondaga County, White voters consistently prefer Democratic candidates in the even-numbered years, and therefore do not vote as a bloc to defeat the minority candidate of choice.

If we look only at the City of Syracuse, which is where minority-majority districts would have to be drawn, the results are even more striking:

Figure 10: Ecological Inference Estimates, City of Syracuse, Even-Numbered Years

| Races | 2016 Pres. | 2016 Sen. | 2018 Sen. | 2018 Gov. | 2018 AG | 2020 Pres. | 2022 Sen. | 2022 Gov. | 2022 AG | 2022 Comp. |
|---|---|---|---|---|---|---|---|---|---|---|
| Persons of Color | 89.4% (84.9%, 93.3%) | 88.9% (84.5%, 92.7%) | 87.3% (80.6%, 92.2%) | 89.2% (84.5%, 92.9%) | 87.2% (81%, 92.1%) | 87.6% (81.6%, 92%) | 79.6% (71.3%, 87.1%) | 81.6% (73.6%, 88.8%) | 81.2% (72%, 88.5%) | 82.8% (74.9%, 89.6%) |
| Non-Hispanic White | 71.9% (68.1%, 75.1%) | 83.1% (80.3%, 85.6%) | 77.3% (74.4%, 80.3%) | 68.5% (65.6%, 71.5%) | 74.4% (71.3%, 77.4%) | 74.3% (71.6%, 77.4%) | 76.5% (74.1%, 78.9%) | 71.4% (69.1%, 73.6%) | 72.5% (70%, 75.1%) | 74.9% (72.7%, 77.1%) |

In short, there's little evidence of legally significant racially polarized voting in this area in the even-numbered years.

### 3.3.3 Analysis in 2021

In the odd-numbered years, the results are more equivocal. In the 2021 Supreme Court election for the Fifth Judicial District, Persons of Color for Onondaga County voted overwhelmingly again for Anthony Brindisi, the Democratic candidate. But White voters split between Danielle Fogel, the Republican, and Brindisi. The vote was within the confidence interval, meaning that we can't say with confidence which candidate non-Hispanic Whites supported.

Figure 11: Ecological Inference Results, Onondaga County, 2021 Supreme Court, Fifth Judicial District

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Brindisi | 85.5% | 80.8% | 89.6% |
| PoC | Fogel | 14.5% | 10.4% | 19.2% |
| White | Brindisi | 49.3% | 48.4% | 50.1% |
| White | Fogel | 50.7% | 49.9% | 51.6% |

In the City of Syracuse itself, however, White and Black voters both voted overwhelmingly for the Democratic candidate. In other words, there was no evidence of polarization in the jurisdiction where voters of color are generally located in Onondaga County.

Figure 12: Ecological Inference Results, City of Syracuse, 2021 Supreme Court, Fifth Judicial District

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Brindisi | 78.3% | 69.5% | 86.3% |
| PoC | Fogel | 21.7% | 13.7% | 30.5% |
| White | Brindisi | 72.7% | 70.2% | 75.1% |
| White | Fogel | 27.3% | 24.9% | 29.8% |

Likewise, two of three elections in the City of Syracuse in 2021 yield no substantial evidence of racially polarized voting.

Figure 13: Ecological Inference Results, City of Syracuse City Court Judge, 2021

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Clarke | 80.4% | 71.8% | 87.7% |
| PoC | Zeigler | 19.6% | 12.3% | 28.2% |
| White | Clarke | 65.5% | 62.6% | 68.2% |
| White | Zeigler | 34.5% | 31.8% | 37.4% |

Figure 14: Ecological Inference Results, City of Syracuse President of Common Council, 2021

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Hudson | 81.3% | 73.5% | 88.0% |
| PoC | Carroll | 18.7% | 12.0% | 26.5% |
| White | Hudson | 72.8% | 70.5% | 75.2% |
| White | Carroll | 27.2% | 24.8% | 29.5% |

The only race in Syracuse that suggests any racially polarized voting is the 2021 three-way mayoral race. In that election, voters of color appear to have coalesced behind Khalid Bey while White voters coalesced behind Ben Walsh.

Even this is complicated by the fact that although Hispanic and Black voters clearly seemed to have preferred Bey, Asian voters split badly. In other words, it is unclear if there was coalition voting among voters of color in this election.

Regardless, White voters usually do not vote as a bloc to defeat the minority candidate of choice in the City of Syracuse; the results countywide are difficult to interpret.

Figure 15: Ecological Inference Results, City of Syracuse Mayor, 2021

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Bey | 59.8% | 48.1% | 68.9% |
| PoC | Walsh | 26.9% | 19.2% | 38.2% |
| PoC | Burman | 13.3% | 8.7% | 18.8% |
| NH White | Bey | 16.3% | 12.3% | 20.6% |
| NH White | Walsh | 71.8% | 67.7% | 75.3% |
| NH White | Burman | 11.9% | 9.9% | 13.6% |

Figure 16: Ecological Inference Results, City of Syracuse Mayor, 2021, White and Asian Voters

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| Asian | Bey | 38.4% | 24.1% | 54.3% |
| Asian | Walsh | 35.4% | 20.0% | 53.4% |
| Asian | Burman | 26.2% | 14.6% | 40.9% |
| NH White | Bey | 14.8% | 11.1% | 19.9% |
| NH White | Walsh | 73.7% | 68.7% | 77.8% |
| NH White | Burman | 11.5% | 9.6% | 13.3% |

### 3.3.4 Analysis in 2023

Finally, analysis of the 2023 elections, which occurred after the most recent round of redistricting in Onondaga County, is likewise equivocal. The Comptroller race does not show evidence of statistically significant voting, as both White voters and voters of color supported Comptroller Masterpole.

The County Clerk race is a bit more complicated. There was statistically significant racially polarized voting, however it was not legally significant. That is to say, to the extent that White voters voted as a bloc, they did not do so in sufficient numbers to defeat the minority candidate of choice. The remaining two races, however, showed legally and racially signficant voting. Taken as a whole, however, we would not say that the majority votes sufficiently as a bloc to usually defeat the minority candidate of choice.

Figure 17: Ecological Inference Results, Onondaga County Clerk, 2023

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Essi | 74.0% | 66.4% | 80.6% |
| PoC | Dell | 26.0% | 19.4% | 33.6% |
| White | Essi | 48.7% | 47.9% | 49.4% |
| White | Dell | 51.3% | 50.6% | 52.1% |

Figure 18: Ecological Inference Results, Onondaga County Comptroller, 2023

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Masterpole | 67.6% | 60.6% | 74.1% |
| PoC | Jordan | 32.4% | 25.9% | 39.4% |
| White | Masterpole | 65.2% | 64.6% | 65.8% |
| White | Jordan | 34.8% | 34.2% | 35.4% |

Figure 19: Ecological Inference Results, Onondaga District Attorney, 2023

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Keller | 64.6% | 58.0% | 70.8% |
| PoC | Fitzpatrick | 35.4% | 29.2% | 42.0% |
| White | Keller | 35.9% | 35.2% | 36.6% |
| White | Fitzpatrick | 64.1% | 63.4% | 64.8% |

Figure 20: Ecological Inference Results, Onondaga County Executive, 2023

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Kinne | 70.8% | 63.6% | 77.2% |
| PoC | McMahon | 29.2% | 22.8% | 36.4% |
| White | Kinne | 35.9% | 35.1% | 36.7% |
| White | McMahon | 64.1% | 63.3% | 64.9% |

Likewise, in the City of Syracuse itself, there is no evidence of racially polarized voting.

Figure 21: Ecological Inference Results, Onondaga County Comptroller, 2023, Syracuse City

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Masterpole | 70.9% | 61.5% | 80.0% |
| PoC | Jordan | 29.1% | 20.0% | 38.5% |
| White | Masterpole | 83.4% | 80.9% | 85.9% |
| White | Jordan | 16.6% | 14.1% | 19.1% |

Figure 22: Ecological Inference Results, Onondaga County Clerk, 2023, Syracuse City

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Essi | 66.3% | 55.1% | 76.1% |
| PoC | Dell | 33.7% | 23.9% | 44.9% |
| White | Essi | 74.3% | 70.9% | 77.9% |
| White | Dell | 25.7% | 22.1% | 29.1% |

Figure 23: Ecological Inference Results, Onondaga District Attorney, 2023, Syracuse City

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Keller | 64.5% | 53.1% | 75.1% |
| PoC | Fitzpatrick | 35.5% | 24.9% | 46.9% |
| White | Keller | 55.9% | 51.6% | 59.7% |
| White | Fitzpatrick | 44.1% | 40.3% | 48.4% |

Figure 24: Ecological Inference Results, Onondaga County Executive, 2023, Syracuse City

| Race | Party | Estimate | Lower 95% | Upper 95% |
|---|---|---|---|---|
| PoC | Kinne | 58.5% | 45.6% | 71.3% |
| PoC | McMahon | 41.5% | 28.7% | 54.4% |
| White | Kinne | 56.4% | 52.1% | 60.5% |
| White | McMahon | 43.6% | 39.5% | 47.9% |

Finally, I note that the recent Onondaga County sheriff's election went to a Democrat.

## 3.4 Home Rule Criteria (c): Contiguity

The maps do appear to be contiguous. There does not seem to be a serious issue here.

## 3.5 Home Rule Criteria (d): Compactness

The fourth priority requires that districts "shall be as compact in form as practicable." This is a difficult concept to flesh out. There is no agreed-upon "best metric," and the search for such a metric is likely fruitless. This is because compactness is a multi-

faceted concept, and each of these metrics explores a different aspect of compactness. *See* Aaron Kaufman, Gary King, and Mayya Komisarchik, "How to Measure Legislative District Compactness if you Only Know it When you See it," 65 *Am. J. Poli. Sci.* 553 (2021). Which facet is most important is a normative question, to which different experts may (and have) give different answers. There are, after all, dozens, if not hundreds, of compactness measures, all of which provide some insight into some aspect of compactness. See, e.g., https://alarm-redist.org/redistmetrics/articles/compactness.html. To provide some analysis as to what these metrics really describe, and to give some insight as to their pros and cons to assist the court in its decisions, I will describe various metrics. The first metric is the Reock score. It is the first metric discussed here, but it was also among the first numeric measures of compactness developed. In lay terms, we might imagine the smallest circle that wholly encloses the district without cutting it, called the "minimum bounding circle." The Reock score is the percentage of that circle that the district would fill, expressed as a decimal. Were a district perfectly circular, it would fill 100% of that minimum bounding circle, and the Reock score would be 1. Were a district somehow a line segment, it would fill 0% of that district, and the Reock score would be 0.

In practical terms, Reock scores measure how distended a district is. Elongated districts have low Reock scores, while districts with high Reock scores tend to be, for lack of a better word, "stocky." Reock scores do have real limitations for redistricting purposes. One can imagine a circular district, which would have a Reock score of 1. Now imagine a map maker carves out a narrow, serpentine channel running into the center of the district. The district would still fill a large portion of the Minimum Bounding Circle, and thus would score well on the compactness score. Likewise, a district covered with small protrusions, like potato eyes, could nevertheless score well on Reock scores, even though such inlets and protrusions might signify a gerrymander or be identified by laypeople as not compact.

Polsby-Popper scores help to address this. In lay terms, imagine taking a district and then stretching it until it is shaped into a circle. That circle would have the same

perimeter as the district. The Polsby-Popper score is the percentage of such a circle (i.e. a circle with the same perimeter as the district) that such a district would fill.

Practically speaking, a "smoother" district will have a higher Polsby-Popper score, while a district with many "arms and inlets" will have lower Polsby-Popper scores. Once again, a perfectly circular district would have no arms and inlets, so its area would be the same as that of a circle with the same perimeter; it would fill 100% of the circle and would receive a Polsby-Popper score of one. As more and more "bends" are added to the district, its perimeter will increase, and it will fill less and less of the circle with the same perimeter as the district.

This approach has limitations as well. Polsby-Popper scores can be sensitive to features that mapmakers are intended to follow. For example, river boundaries tend to meander, which can increase the perimeter of a district if they are followed. At the same time, mapmakers are often instructed to follow natural features, such as river boundaries. Thus, a mapmaker who forms a district boundary out of precincts drawn by straight lines and who avoids precincts that follow river boundaries would be rewarded with a higher Polsby-Popper score. If one looks carefully at the Enacted Map, one will see that the strange shape on the boundary of Districts 12 and 10 is the irregular shape of Manilius. Likewise, North Syracuse forms part of the boundary between 5 and 3. Following the boundaries of jurisdictions such as these can affect a Polsby-Popper score.

Likewise, some states have very regular edges – think Colorado – while other states have irregular coastlines – think Maine. Districts that respect those shorelines will have more "arms and inlets" and therefore higher perimeters simply by virtue of state geography, and their Polsby-Popper scores will suffer. This can be somewhat avoided by including "water blocks" (explored above), but if comparative analyses are performed within a state it ought not matter as much. Put differently, in Alabama (which has a relatively short shoreline and fairly straight borders), every map has districts which follow the Gulf Shoreline; thus every map will have districts with their boundaries "inflated by nature."

Regardless, one can quickly see the difficulty here. There's no clear point where a district fills a sufficient portion of its minimum bounding circle or circle with a similar perimeter to be considered "compact."

Even if there were a clear definition of "compact," it is difficult to interpret "as practicable" as establishing a clear-cut minimum boundary. This is because there exists a near-infinite number of possible maps. Because of this, it is impossible for a mapdrawer to have confidence that they have drawn the most compact possible map.

Regardless, interpreting this map is particularly complicated. Taking the Previous Map as a baseline, the average Polsby-Popper score in the Proposed Map is worse than that of the previous map. It is, however, improved from the 2022 Map. As noted above, some portion of that is due to the way city boundaries are handled. For example, District 12 includes a protrusion that likely increases its perimeter and harms the Polsby-Popper score. This, however, reflects the irregular boundaries of Manilius. At the same time, the Reock score shows improvement from the 2022 Map, which was itself an improvement over the Previous Map. This may reflect the attempt to move districts within the City of Syracuse, which would make districts more "stocky" while conforming the district boundaries to at times meandering boundaries.

## 3.6 Home Rule Criteria (e): Partisan Intent

The fifth priority requires that districts

> shall not be drawn to discourage competition or for the purpose of favoring or disfavoring incumbents or other particular candidates or political parties. The maintenance of cores of existing districts, of pre-existing political subdivisions including cities, villages, and towns, and of communities of interest shall also be considered. To the extent practicable, no villages, cities or towns except those having more than forty percent of a full ratio for each district shall be divided.

While this covers a potentially large range of situations, I have focused on the "for the purpose of favoring or disfavoring incumbents or other particular candidates or political parties" prong.

### 3.6.1 Method

For this litigation, I have conducted a simulation analysis of the Enacted Map. Specifically, I employed the same simulation technique that I utilized in *Harkenrider v. Hochul*. Simulation analysis is widespread in political science and is the subject of one of my dissertation papers. The simulation approach to redistricting has been accepted in multiple courts, including state courts in New Mexico,[6] Maryland,[7] Ohio,[8] North Carolina,[9] and Pennsylvania.[10]

For this report, I have employed a broadly accepted "package" in R called "redist," which generates a representative sample of districts.[11] As I explained in the *Harkenrider* case, there are a variety of proposed simulation techniques, but they all proceed from the same basic principle: precincts are aggregated together in a random fashion, potentially subject to a variety of parameters, to form districts in thousands or tens of thousands of maps. This creates an "ensemble" of maps that reflect what we would expect in a state if maps were drawn without respect to partisan criteria. If the map is drawn without partisan intent, its partisan features should resemble those that appear in the ensemble. The more the map deviates from what we observed in the ensemble, the more likely it becomes that partisan considerations played a heavy role.

While the math is quite complicated, this approach produces a random sample of

[6] *See Republican Party of N.M. v. Oliver*, No. S-1-SC-40146, 2023 WL 8182964 (N.M. Nov. 27, 2023); *Republican Party of N.M. v. Oliver*, No. D-506-CV-202200041 (N.M. 5th Dist. Oct. 6, 2023).

[7] *See Szeliga v. Lamone*, No. C-02-CV-21-001816 (Md. Cir. Ct., Anne Arundel Cnty. 2022).

[8] *See League of Women Voters of Ohio v. Ohio Redistricting Comm'n*, 195 N.E.3d 974 (Ohio 2022)

[9] *See Harper v. Hall*, 867 S.E.2d 554 (N.C. 2022); *Harper v. Lewis*, No. 5:19-CV-452-FL, 2019 WL 5405279 (E.D.N.C. Oct. 22, 2019); *Common Cause v. Lewis*, 358 F. Supp. 3d 505 (E.D.N.C. 2019).

[10] See *League of Women Voters of Pa. v. Com.*, 178 A.3d 737 (Pa. 2018).

[11] *See, e.g.*, Benjamin Fifeld, et. al, *Automated Redistricting Simulation using Markov Chain Monte Carlo*, 29 Jrnl. Computational and Graphical Statistics 715 (2020); Cory McCartan & Kosuke Imai, *Sequential Monte Carlo for Sampling Balanced and Compact Redistricting Plans*, 17 Annals of Applied Statistics 3300-3323 (2023).

maps that mirrors the overall distribution of available maps, much as a high-quality poll will produce a random sample of respondents that reflects the overall population. While the process is complicated, it can be run on a laptop computer. Indeed, these simulations were run at home on a Dell desktop computer using a free, widely employed computer programming language (R version 4.3.2).

Importantly, these maps are drawn without providing the software with any political information. In other words, these maps help inform an analyst what maps would tend to look like in Onondaga County if they were drawn without respect for politics.

Of course, other features, such as respect for county lines, compactness, or respect for geographic features could play a role in the drawing of district lines as well; these traditional redistricting criteria are almost always viewed as valid considerations by courts. To account for this, when removing the connections that create districts, the algorithm can be instructed to favor the removal of connections that will result in districts that remain within specified parameters when deciding which connections to remove. It can be instructed to remove connections in such a way that equally populated districts will be created, or to prefer breaks that will create compact districts, or will respect county boundaries, or any number of other factors.

### 3.6.2 Data Construction

To perform the simulations, I first needed to organize the data appropriately. A shapefile of blocks for Onondaga County provides the basis for this analysis.[12] This starting shapefile provides the geographic boundaries for the census blocks, as well as the place to which they are assigned. These data were then merged with adjusted population data

[12]A shapefile can be thought of as a special type of spreadsheet. It has columns for data, and rows for each geographic unit. Shapefiles can be saved in various formats, such as ESRI shapefile format, geojson, or gpkg. The description I provide references how shapefiles are interpreted in the R environment by the Simple Features package ("sf"), which I use throughout my report. For example, the basic shapefile from which I begin has columns for the "GEOID," which is a unique geographic identifier assigned by the US Census Bureau for each block in the United States, the name of the locale, and the type of locale (i.e., village, census-designated place, etc.). What makes a spreadsheet a shapefile is the final column, labeled geometry. This consists of a series of latitude and longitude coordinate pairs, which delineate the boundaries of the geographic unit (here, the census block). A computer can then interpret these boundaries to create images of the geographic unit, or to analyze these.

made available by the New York Legislative Task Force on Demographic Research and Reapportionment. I then matched the blocks to the district lines using R. The result is a shapefile that contains demographic counts by census block, the city/town/village/cdp to which the block is assigned, and the district to which the block is assigned. The blocks then incorporate political information from the 2016-2020 elections in New York and the 2021 Supreme Court race in Onondaga County. While the proper election for measuring partisanship can be controversial, if elections are truly drawn without respect to politics, given the correlation between political outcomes, the differences with respect to election selected should be marginal. The blocks and accompanying data were then re-aggregated to the precinct level.[13] Precincts that were split by the Enacted Map were split in a similar fashion here.

### 3.6.3 Setting up Simulations

Because New York law disfavors splitting jurisdictions, the simulations were instructed to avoid splitting certain polities. In particular, precincts from villages and towns whose population was less than 40% of the ideal population of a legislative seat (here, 11,212 residents) were merged together, unless they were split by the Enacted Map or by county boundaries. This ensured that these locales would not be split in any of the simulations. The populations of districts were allowed to vary by 2.5% in either direction of the ideal population, ensuring that the maps complied with the New York Home Rule Law's directives.

Overall, the simulation program was instructed to create 125,000 maps containing 17 districts. It was asked to avoid splitting jurisdictions with populations in excess of 40% of the ideal district population any more than necessary. Partisanship is measured using the same dataset I utilized in *Harkenrider* for the analysis of state Senate maps: statewide races between 2016 and 2020. I do not look at 2022 data here, as those data were not available when these maps were drawn in 2021 and therefore could not be used

[13]Shapefiles for the precinct boundaries in even-numbered years were obtained from Redistricting Data Hub; shapefiles for the precinct boundaries in odd-numbered years were obtained through counsel.

to assess intent. As a secondary analysis, I also examine the 2021 state Supreme Court race in Onondaga County.

### 3.6.4 Analysis

Once the simulation is completed, we can then compare the partisanship of the districts in the Enacted Map to those of the map ensembles. We can think of this approach as answering the questions, "What would happen if we selected 5,000 individuals, gave them basic instructions to keep districts modestly compact and to keep populations roughly equal, withheld political information from them, and then sent them out to draw maps? What sorts of maps might they produce?" If our Enacted Map looks nothing like this ensemble, we would conclude that it was highly unlikely that the drawers of the map had behaved in a manner similar to that of our 5,000 individuals. If, however, the Enacted Map reflects the ensemble, we could not support such a belief.

Once the simulation creates our 5,000 maps, it calculates the compactness and partisan lean of the districts. We can then compare the simulated districts to the Enacted Map to ensure that they perform comparably well on traditional redistricting criteria. That is to say, we ensure that the Legislature would not have to sacrifice traditional redistricting criteria in order to achieve more balanced maps.

To best illustrate the degree to which the Enacted Map reflects outliers when compared to maps drawn without partisan information, I employed the "gerrymandering index," proposed by Bangia et al. (2017) and endorsed by McCartan & Imai in their original working paper setting forth the algorithm used to generate the districts in this report. See Cory McCartan & Kosuke Imai, "Sequential Monte Carlo for Sampling Balanced and Compact Redistricting Plans," at 25, on file with author.

It is conceptually similar to the idea of root mean squared error (used throughout statistics). To calculate the index, we take each of the 50,000 simulated maps and rank the districts from most heavily Democratic to least heavily Democratic. We then average Democratic vote shares across ranks. This tells us, generally speaking, what percentage

Democratic vote share we would expect the most heavily Democratic district to have in a map drawn without respect to politics, what we would expect the second-most heavily District to have, and so forth.

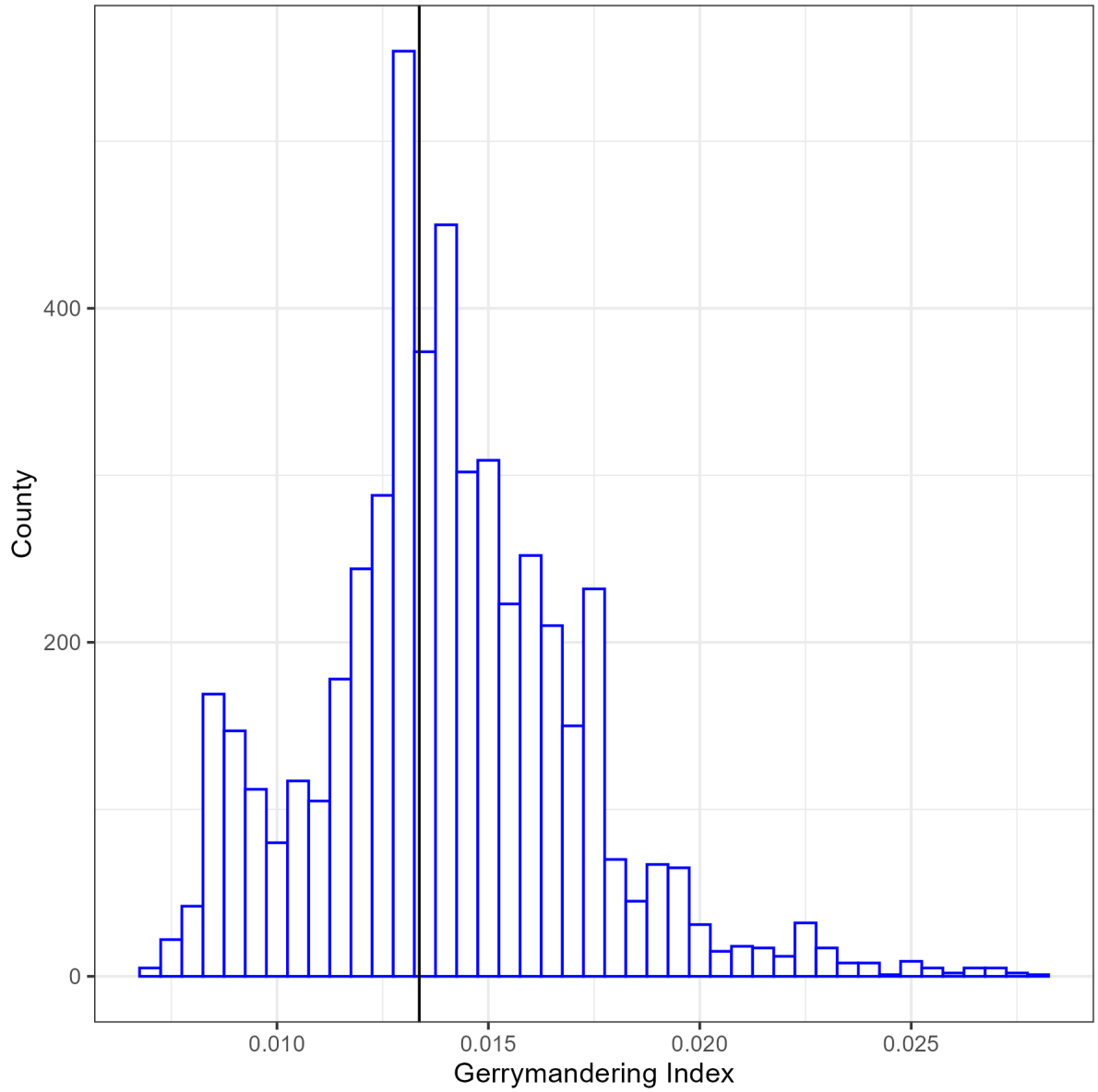
Of course, some areas might be conducive to a wide range of partisan outcomes depending how the map is drawn. Other areas, like Syracuse, are so heavily Democratic that the districts that are drawn there are likely to vary very little from that average. Put differently, we might be very surprised, due to simple geography, if a map's most Democratic district varies from that average by more than a few points; we might be less surprised if some districts in the middle of the distribution exhibited more variability.

In short, this approach recognizes that, even when drawing districts without access to partisan data, individuals have multiple options available to them. At times these options will give rise to a substantial number of potential partisan outcomes. At other times, they will not. To help account for this, we then calculate the deviations in each map in the ensemble from the mean for each "bin." To make this less abstract: say that the most heavily Democratic district in the ensemble, on average, gives the Democrats 89% of the vote. A district in the ensemble whose most heavily Democratic district was 92% Democratic would have a deviation of 3% for that rank, while one whose most heavily Democratic district was 97% Democratic would have a deviation of 8%. The second most heavily Democratic district in maps in the ensemble is, on average, 85.1% Democratic. A map whose second most heavily Democratic district has a Democratic vote share of 87% would have a deviation of 1.9%, and so forth. To emphasize large deviations (and to make them all positively signed) these values are then squared and added together to give us a sense of how far maps drawn without respect to political data will tend to naturally vary from expectations.

In simplified terms, this gives us the total deviation from the ensemble for all the districts in the maps, while giving more weight to particularly large misses. The square root is then taken, which effectively puts everything back on a percentage scale. We then engage in the same exercise for the Enacted Map and compare these scores to those in

the ensemble.

Figure 25: Histogram of Gerrymandering Index Scores, even-numbered elections. Enacted Map illustrated with vertical line; 95% cutoff illustrated with dashed vertical line.

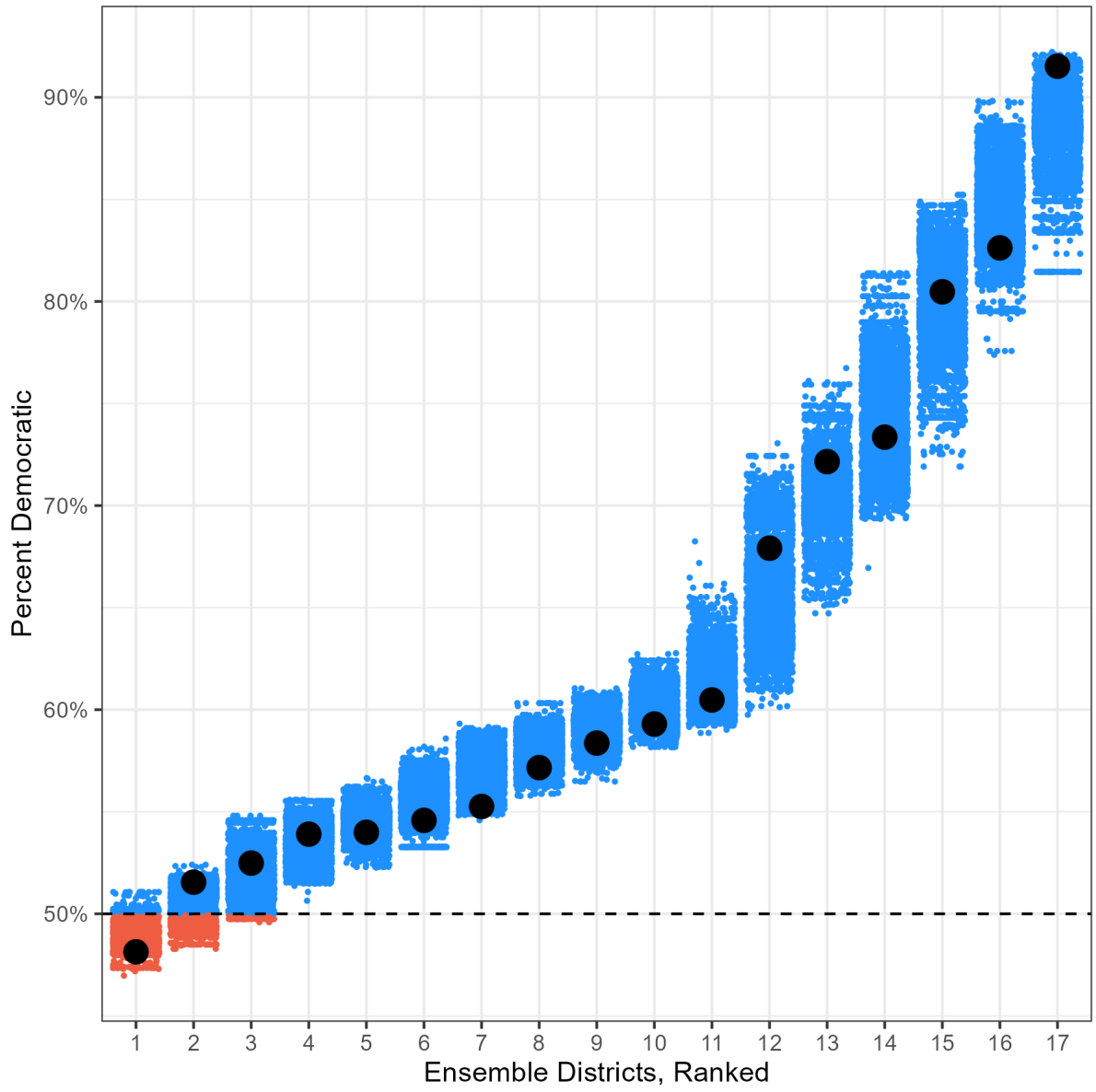



The ensemble maps have, on average, a Gerrymandering Index of around 0.0125. The Enacted Map also has a Gerrymandering Index of 0.013. This means that it falls squarely within the distribution of gerrymandering indices that we might find when draw-

ing maps without respect to politics. We would therefore conclude, at least from the data output, that this map appears not to be drawn primarily to favor a party.

Interrogating the maps from a different angle also demonstrates that we lack a sufficient basis to conclude that the maps were drawn with the intent to favor the Republican Party, or to discourage the creation of competitive districts.

Figure 26: Ranked partisanship of districts, ensemble maps. Ranked partisanship scores for the Enacted Map are depicted by black dots.



To see this, consider the above dotplot. In this plot, all 17 districts in each of the 5,000 simulated maps were sorted from most Democratic to least Democratic. Each of these districts then received a dot in the plot. At the far right, above the number 17, you will notice a large cluster of blue dots spread between 79% and 93%. That means in every simulated plan, the most heavily Democratic district fell somewhere between roughly 79% and 93% Democratic.

The next cluster to the left, hovering above the number 16, consists of blue dots ranging between 77% and 90%. This means that in all of the 125,000 simulated maps, the second-most Democratic district typically fell roughly between 77% and 90% Democratic. As you can see, in some areas there is quite a bit of variation in what the maps draw. Other districts have a much tighter range; district 9 falls between around 55% to just above 60% Democratic.

I have overlaid these dots from the simulated maps with dots from the Enacted Map. This allows us to compare the partisanship of the Enacted Map directly to that of the simulations. If the Enacted Map was not drawn to favor or disfavor a political party, it should hew closely to the results produced by the simulated maps (which were, of course, drawn blind to partisanship). On the other hand, if map drawers relied heavily upon politics when drawing the lines, we should expect significant deviations. In both the ensemble and the Enacted Map, sometimes the dots will fall on the low end of the range, and sometimes it will fall on the high end of the range due to the choices made by mapmakers as an inevitable part of the map drawing process. What we should not see is what we saw in *Harkenrider*, where dots fall wildly outside of the range of ensemble districts in such a way that it is obvious that the maps favor or disfavor some party or another.

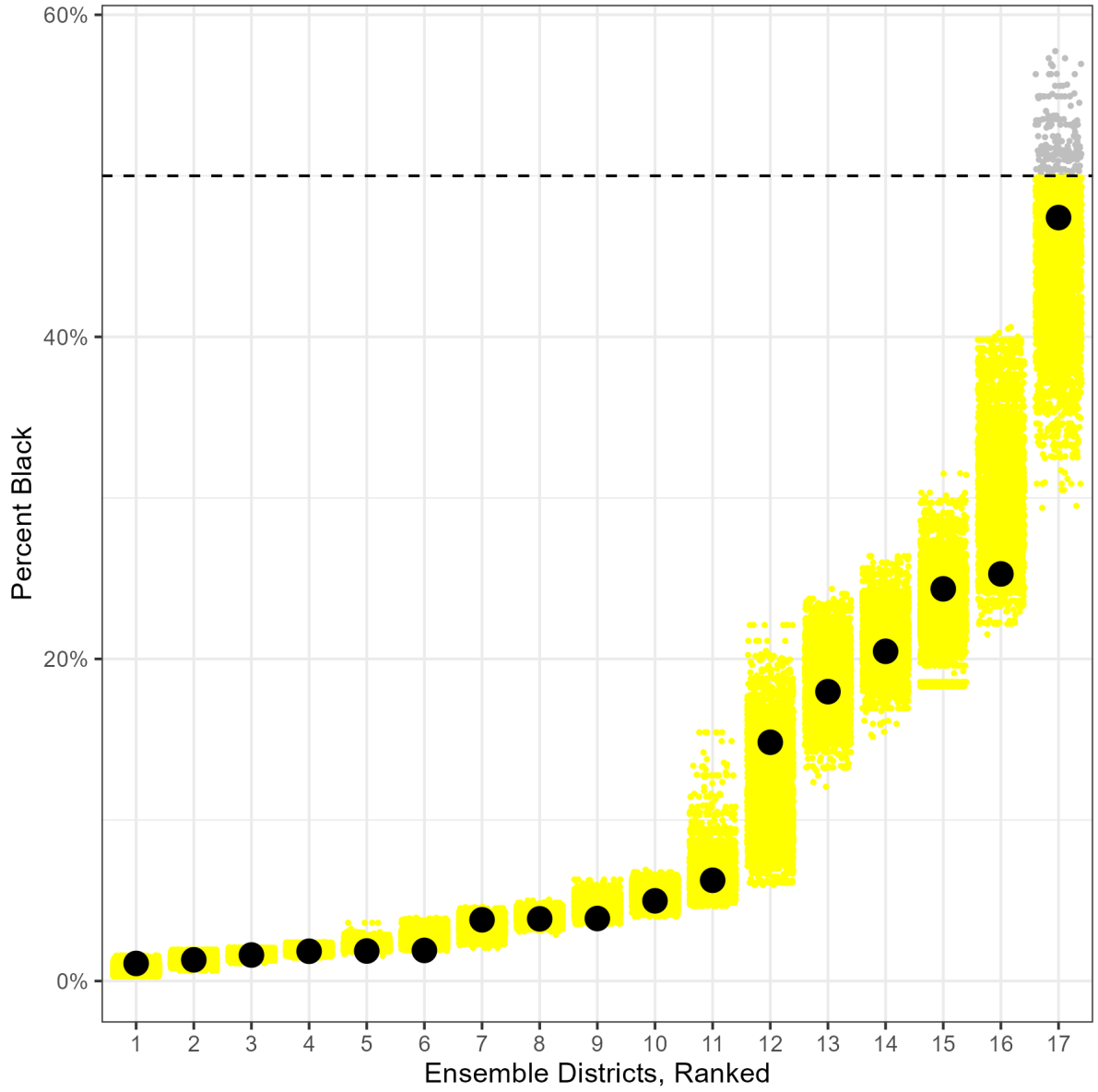
Here, however, we see little deviation. All of the districts drawn show partisanship that falls within ranges that are consistent with partisan-neutral map-drawing. In short, use of the statistical techniques that I employed in *Harkenrider* to demonstrate partisan intent there leads to a contrary conclusion here: There is insufficient statistical evidence

to conclude that these maps were drawn with an intent to assist a political party, or represent a partisan gerrymander.

The even-numbered elections are the ones that I used to explore the maps in *Harkenrider*. I use them as my primary mode of analysis for three reasons here, even though county legislative elections are held in odd-numbered years. First, these are the elections that I used before, and it is worthwhile to use consistent methodologies. Second, as mentioned above, our elections are presently so heavily polarized that it does not matter much which elections you use. Absent a strong reason, I am not inclined to change elections, and given the strong correlation I do not see a reason to do so here. Finally, it is my understanding that county elections in New York will be held in even numbered years going forward, pending litigation.

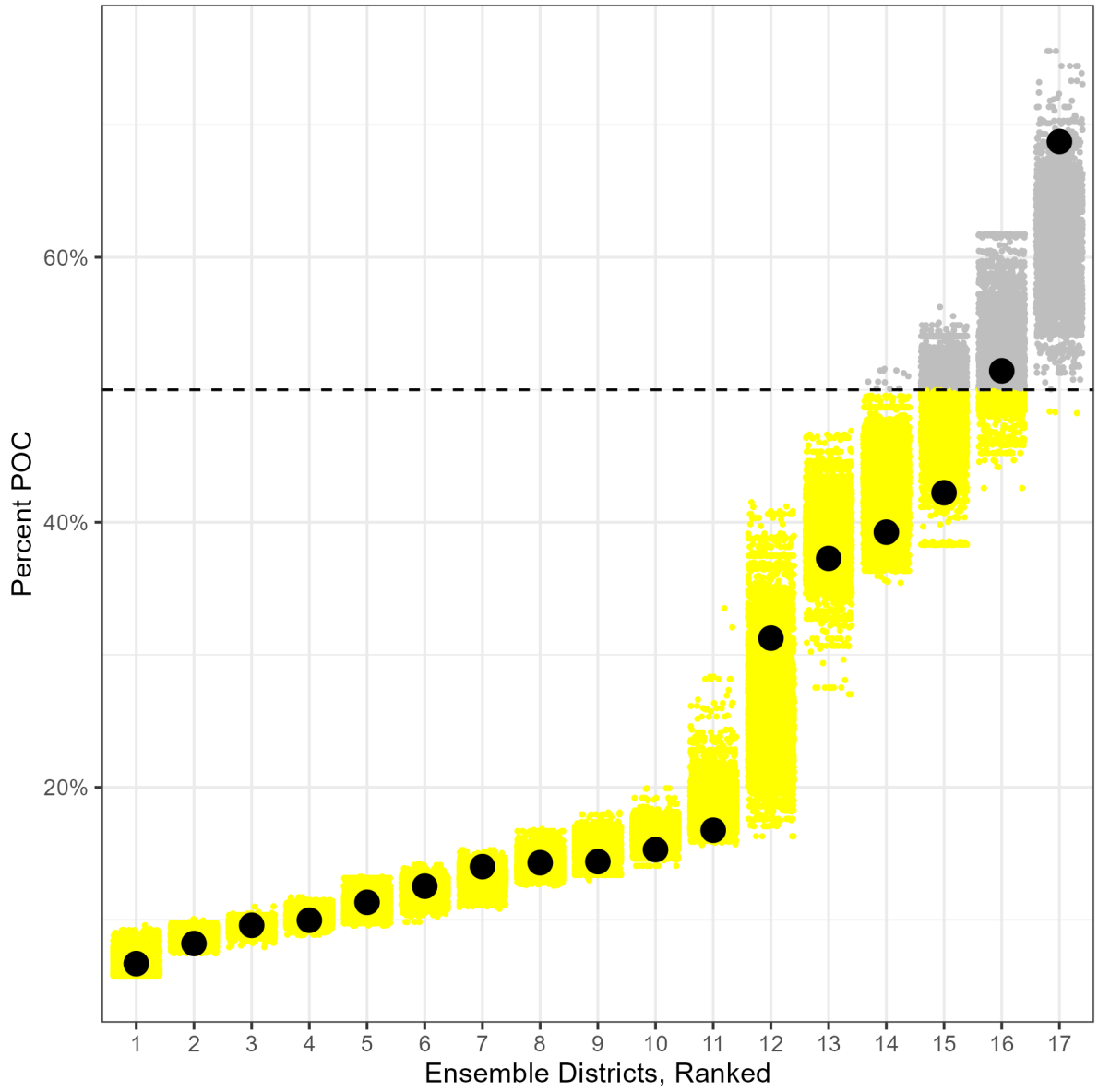
We can also examine whether there is evidence of intentional dilution on the basis of race using similar techniques, by substituting in racial information of the districts for political information. If we look at the distribution of Black residents of voting age, there is very little evidence of racial gerrymandering; the maps almost perfectly reflect what we would expect from a race-blind draw.

Figure 27: Ranked BVAP of districts, ensemble maps, 2022 elections. Ranked BVAP scores for the Enacted Map are depicted by black dots and are numbered.




Likewise, if we aggregate minority voters, the map falls squarely within the parameters we'd expect from a race-neutral draw.

Figure 28: Ranked PoC% of districts, ensemble maps, 2021 election. Ranked PoC% for the Enacted Map are depicted by black dots and are numbered.




# 4 Conclusion

In conclusion, it appears that the Proposed Map comports with the provisions of New York Municipal Home Rule Law § 34(4)(a)-(f).

I declare under penalty of perjury under the laws of the State of Ohio that the foregoing is true and correct to the best of my knowledge and belief. Executed on 19 November, 2024 in Delaware, Ohio.

Sean Trende

Sean P. Trende