

EXHIBIT A

IN THE
UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

DONALD AGEE, JR., et al.,

Plaintiffs,

v.

**JOCELYN BENSON, in her official
capacity as the Secretary of State of
Michigan, et al.,**

Defendants.

No. 1:22-cv-272

ANALYSIS OF PROPOSED MICHIGAN HOUSE MAPS

Sean P. Trende, Ph.D.

March 8, 2024

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1 Qualifications

My qualifications are set forth fully in my Expert Report of Sean P. Trende, dated January 18, 2023 (“Trende Trial Report”) in this matter and have not changed significantly since then. I have attached an updated version of my *c.v.* as Exhibit 1. The only substantive changes to my qualifications are that I have testified or been deposed in additional cases, and that I was formally awarded my Ph.D in December.

2 Evaluation of Proposed Map

2.1 Overview of the map submission process

I was asked to review and compare the ten Draft Proposed Maps that the Commission initially published (the “Ten Maps”), as well as the final version of the Motown Sound map that the Commission approved (“Proposed Map”). I was also asked to compare the Proposed Map to the Tiger Lily Map, which was not officially proposed as one of the Ten Maps but nevertheless appears closely related.

Throughout this analysis, I will use the following shorthand to group the districts from the Hickory Map:

- I will refer to Hickory Districts 16, 17 and 18 collectively as the “Western Spokes.”
- I will refer to Hickory Districts 5, 6, 7 and 8 collectively as the “Oakland Spokes.”
- I will refer to Hickory Districts 10, 11, 12, 13, and 14 collectively as the “Macomb Spokes.”
- I will refer to Hickory Districts 1, 2, 3, 4 and 9 collectively as the “South/Central Detroit Districts.”

Following this Court’s December 21, 2023 Opinion and Order striking down Michigan House Districts 1, 7, 8, 10, 11, 12, and 14 as unconstitutional racial gerrymanders

(collectively, the “Gerrymandered Districts”), the Commission reconvened for the purpose of drawing remedial maps. The Commission initially set forth ten Draft Proposed Maps for comment and consideration. These were named “Bergamot,” “Bergamot 2” (or “Lakeshore”), “Tulip,” “Water Lily,” “Spirit of Detroit,” “Daisy 2,” “The Riverwalk,” “Motown Sound,” “Willow,” and “Szetela Version 4.”

I have produced images for all the maps in the following subsection. However, they may conceptually be divided into five categories, which are useful for subsequent discussions.

2.1.1 Category 1: Minor Repairs

The Tulip and Daisy 2 maps made the fewest changes to the Hickory Plan. In addition to the Gerrymandered Districts, Tulip alters the boundaries of districts 4, 9 and 13. Those three districts, however, retain much of their present form. The Western Spokes are unaltered, as are Hickory 5 and 6 in the Oakland Spokes. While the remaining districts are somewhat recognizable, they are substantially altered and are made more compact, eliminating much of the “spoke” concept.

The Daisy 2 map on the other hand, introduced by Commissioner Anthony Eid, reflected near-defiance of this Court’s order. It changed only the Gerrymandered Districts. The problem is that by refusing to alter District 4, and particularly by refusing to alter districts 9 and 13, the map created a bottleneck between Districts 9, 4, and the Detroit River. This meant that the map effectively recreated the unconstitutional District 10 (renumbered 11) and District 1. District 14 retained most of its prior form. Districts 11 (renumbered 10) and 12 and districts 7 and 8 were substantially altered, giving an East-West orientation rather than a north-south orientation.

2.1.2 Category 2: The Bergamots

As one might expect, Bergamot 1 and Bergamot 2 are closely related. They reconfigure all of the South/Central Detroit Districts, as well as the Oakland Spokes and

Macomb Spokes (although District 14 does retain its basic configuration from Hickory). The Western Spokes are mostly maintained, save for two precincts flipped from District 16 to District 4. The only substantive difference between the two maps is the treatment of southeastern Macomb County and eastern Wayne County. Bergamot 1 keeps St. Clair Shores split between District 11 and 62, while placing Harper Woods with Detroit and Eastpointe. Bergamot 2 splits St. Clair Shores three ways between 10, 13 and 62 and places Harper Woods with the Grosse Pointes.

2.1.3 Category 3: Szetela 4

Commissioner Szetela's map is the most far reaching of the maps. It uproots and substantially redraws the Western Spokes, the Oakland Spokes, the Macomb Spokes, and the South/Central Detroit Districts. Perhaps more controversially, it also goes beyond these districts, altering districts 15, 19, 25, 26, 58 (and making minor changes to others). It was, however, the only remedial map that also created 10 majority Black districts, which would seemingly settle Plaintiffs' VRA claims as well.

2.1.4 Category 4: Willow and Water Lily

These maps both uproot the Macomb Spokes and the Oakland Spokes, and redraw the South/Central Detroit districts. They leave the Western Spokes intact. Both maps redraw districts 1, 2, 3, 4, 9, 10, 12 and 13 in the same manner. The differences are in the treatment of the Oakland Spokes. Water Lily does not cross 8-mile into Oakland County while Willow does 4 times, retaining more of the "Spoke" concept.

2.1.5 Category 5: Motown Sound, Spirit of Detroit, and Riverwalk

These maps are likewise variations on a single theme, undoing the Macomb Spokes and Oakland Spokes and redrawing the South/Central Detroit districts. Taking Spirit of Detroit as the baseline, the Riverwalk FC differs only in its treatment of western Wayne County. It substantially reconfigures Districts 16 and 17 in the Western Spokes,

and makes changes to districts 3, 4 and 8. Motown Sound,¹ on the other hand, has a moderately different configuration of eastern Wayne County and southeastern Macomb. All three configurations introduce a three-way split of St. Clair Shores.

Although the Tiger Lily Map was not officially one of the 10 maps included by the Commission, I was asked by counsel to evaluate it. It is very close to the Motown Sound map, and clearly belongs in this family.

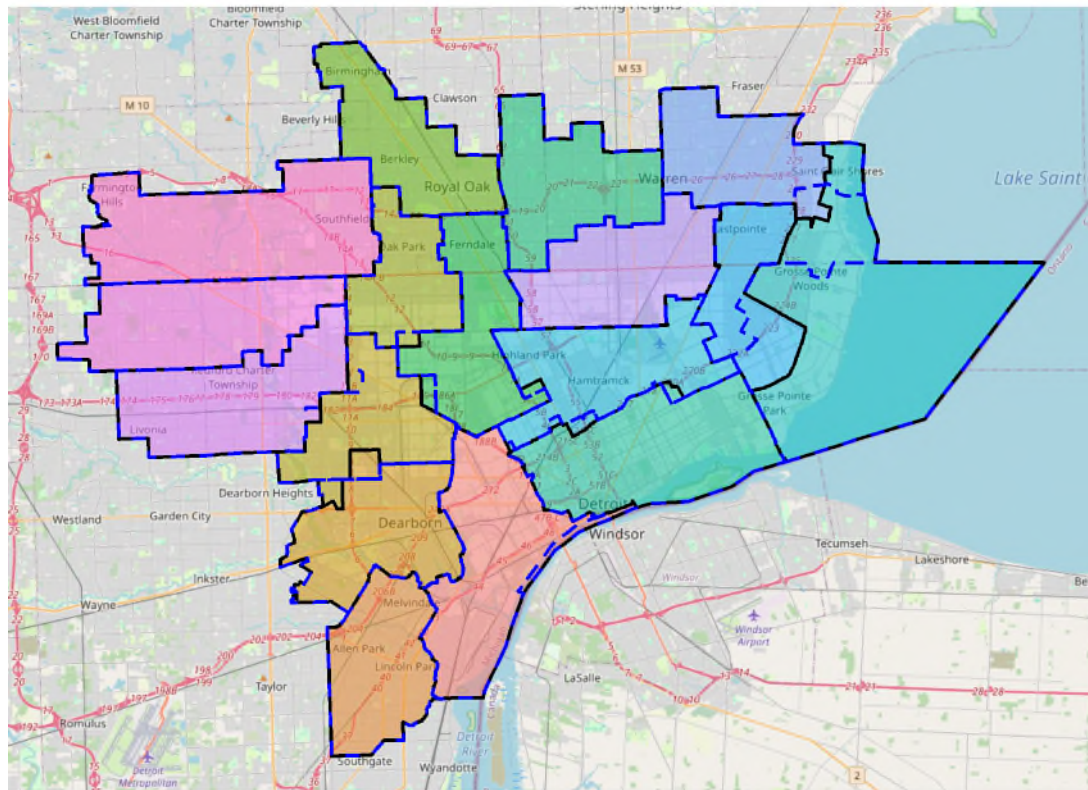
2.1.6 The Proposed Map

The actual Proposed Map is a variation on Motown Sound. It makes some relatively minor changes to the boundaries of districts 3, 4, 15 and 16, as well as to the boundaries of districts 10 and 12 (including the introduction of a strange “double traversal” of the Macomb/Wayne County border in District 12).

The following figure compares the Hickory and Proposed Map. The Hickory Map is illustrated in the background with black lines and shaded fill. The Proposed Map is illustrated with blue dashed lines and no fill.

¹The shapefile provided on the Commission’s website does not appear to match the map they provide. I have opted to follow the shapefile for my descriptions below.

Figure 2: Tiger Lily Map, with Proposed Map overlaid in dashed blue lines



In this figure, the dashed blue lines depict the Proposed Map boundaries, while the black lines and shaded interiors depict the Tiger Lily district boundaries. Because the Proposed Map boundaries are drawn on top of the Tiger Lily boundaries, it is often difficult to see the black line. This is because the boundaries of the districts are so closely related.

We can see this more precisely by comparing the populations of the districts. To accomplish this, some districts have to be renumbered; I renumbered Tiger Lily District

7 as 8, District 8 as 14, District 14 as 11, and District 11 as 7. Doing so matches the numbering found in the Proposed Map.

After doing this we see that 93.7% of the population of the Tiger Lily map is placed in the same district as the Proposed Map. Moreover, the bulk of the changed populations reside in two districts. specifically:

- Proposed District 1 contains all but 319 of the individuals residing in Tiger Lily 1.
- Proposed District 2 contains 100% of the individuals residing in Tiger Lily 2.
- Proposed District 3 contains all but 6,148 of the individuals residing in Tiger Lily 3.
- Proposed District 4 contains all but 9,260 of the individuals residing in Tiger Lily 4.
- Proposed District 5 contains 100% of the individuals residing in Tiger Lily 5.
- Proposed District 6 contains 100% of the individuals residing in Tiger Lily 6.
- Proposed District 7 contains all but 2,300 of the individuals residing in Tiger Lily 7.
- Proposed District 8 contains all but 3,374 of the individuals residing in Tiger Lily 8.
- Proposed District 9 contains all but 2,604 of the individuals residing in Tiger Lily 9.
- Proposed District 10 contains all but 34,123 of the individuals residing in Tiger Lily 10.
- Proposed District 11 contains 100% of the individuals residing in Tiger Lily 11.
- Proposed District 12 contains all but 30,812 of the individuals residing in Tiger Lily 12.

- Proposed District 13 contains all but 6,187 of the individuals residing in Tiger Lily 13.
- Proposed District 14 contains 100% of the individuals residing in Tiger Lily 14.
- Proposed District 16 contains all but 2,473 of the individuals residing in Tiger Lily 16.
- Proposed District 17 contains 100% of the individuals residing in Tiger Lily 17.
- Proposed District 18 contains 100% of the individuals residing in Tiger Lily 18.

For perspective, Michigan House districts contain approximately 90,000 residents. So every 900 residents moved constitutes 1% of the district population.

2.1.8 Summary

The following table summarizes the features of the various maps, with respect to Districts 1-19, 26, 56-58, and 61.² I was also asked to evaluate the Tiger Lily map here as well. The first four rows show the compactness, by examining the average Reock and Polsby-Popper scores, as well as the least compact district under each map using both measures. The next five rows show the number of districts meeting various BVAP thresholds under each map. The next three rows show the number of split counties, places, and precincts, while the final rows show the various partisan fairness metrics, using both the Trump-Biden election and the 2012-2020 elections as baselines.

²Most maps do not change all of these districts, but the Szetela 4 map does reach out into several suburban districts.

Figure 3: Summary of submitted maps

Test	Hickory	Proposed	Szetela 4	Riverwalk FC	Spirit of Detroit	Motown Sound	Tiger Lily	Willow	Water Lily	Tulip	Daisy	Bergammon 2	Bergammon 1
Avg. Reock	0.3446	0.3821	0.4007	0.4001	0.3949	0.3822	0.3935	0.4080	0.4214	0.3872	0.3659	0.3991	0.4015
Min. Reock	0.1720	0.2137	0.1948	0.2102	0.2137	0.2137	0.2137	0.2137	0.2137	0.1720	0.1336	0.1821	0.1819
Avg. Polsby-Popper	0.3234	0.3742	0.3699	0.3746	0.3653	0.3669	0.3752	0.3798	0.4081	0.3380	0.3322	0.3865	0.3934
Min. Polsby-Popper	0.1383	0.1383	0.1559	0.1383	0.1383	0.1383	0.1383	0.1383	0.1383	0.1383	0.1383	0.1383	0.1383
BVAP > 60%	0	5	6	6	6	5	6	5	5	3	2	5	5
BVAP > 55%	4	7	8	7	8	7	8	7	7	8	6	7	7
BVAP > 50%	6	8	10	9	9	9	9	8	8	9	8	8	8
BVAP > 47.5%	6	8	10	9	9	9	9	9	8	9	8	8	8
BVAP > 45%	8	9	10	10	9	9	9	9	8	9	8	8	8
Split Counties	10	6	7	7	7	7	7	7	3	6	7	4	4
Split Places	35	33	32	33	33	33	34	33	32	32	35	33	33
Split 2020 VTDs	42	42	42	42	42	42	41	42	42	42	42	42	42
Eff. Gap	-0.051	-0.051	-0.051	-0.051	-0.051	-0.051	-0.043	-0.051	-0.051	-0.051	-0.051	-0.051	-0.051
Mean-Median	-0.015	-0.015	-0.015	-0.015	-0.015	-0.015	-0.012	-0.015	-0.015	-0.015	-0.015	-0.015	-0.015
Lopsided Margins	-0.051	-0.053	-0.054	-0.054	-0.054	-0.053	-0.049	-0.054	-0.055	-0.054	-0.052	-0.054	-0.054
D Wins	49.1%	49.1%	49.1%	49.1%	49.1%	49.1%	50.0%	49.1%	49.1%	49.1%	49.1%	49.1%	49.1%
Eff. Gap (2012-20)	-0.036	-0.036	-0.036	-0.036	-0.036	-0.036	-0.045	-0.048	-0.048	-0.048	-0.036	-0.036	-0.048
Mean-Median (2012-20)	-0.021	-0.021	-0.021	-0.021	-0.021	-0.021	-0.022	-0.022	-0.022	-0.022	-0.021	-0.021	-0.022
Lopsided Margins (2012-20)	-0.050	-0.052	-0.052	-0.053	-0.053	-0.052	-0.057	-0.057	-0.057	-0.056	-0.051	-0.053	-0.057
D Wins (2012-20)	52.7%	52.7%	52.7%	52.7%	52.7%	52.7%	51.8%	51.8%	51.8%	51.8%	52.7%	52.7%	51.8%

At the outset we can make two important observations. First, credit where it is due: all of these maps represent improvements over the Hickory Map. Second, we must make a less complimentary observation: These maps should forever put to rest the Commission's claim at trial that drawing bizarrely shaped districts was needed to draw maps with sufficient partisan fairness. Using the 2020 presidential election, all of the maps have practically the same partisan fairness metrics as Hickory. Using the 2012-2020 election, most of the maps have the same partisan fairness metrics as Hickory, and all are substantially similar to Hickory.

Turning to the summaries, we see that all of the maps feature more compact districts than the Hickory Plan. They also feature fewer county splits and place splits. The Szetela map stands out for creating ten majority BVAP districts, while the original iterations of Riverwalk, Spirit of Detroit, and Motown sound featured nine (as did Tulip). The Proposed Map contains one fewer majority BVAP district. Overall, this

demonstrates that it is, in fact, possible to create compact districts that respect county and city boundaries and satisfy plaintiff's VRA challenge by drawing ten majority BVAP districts.

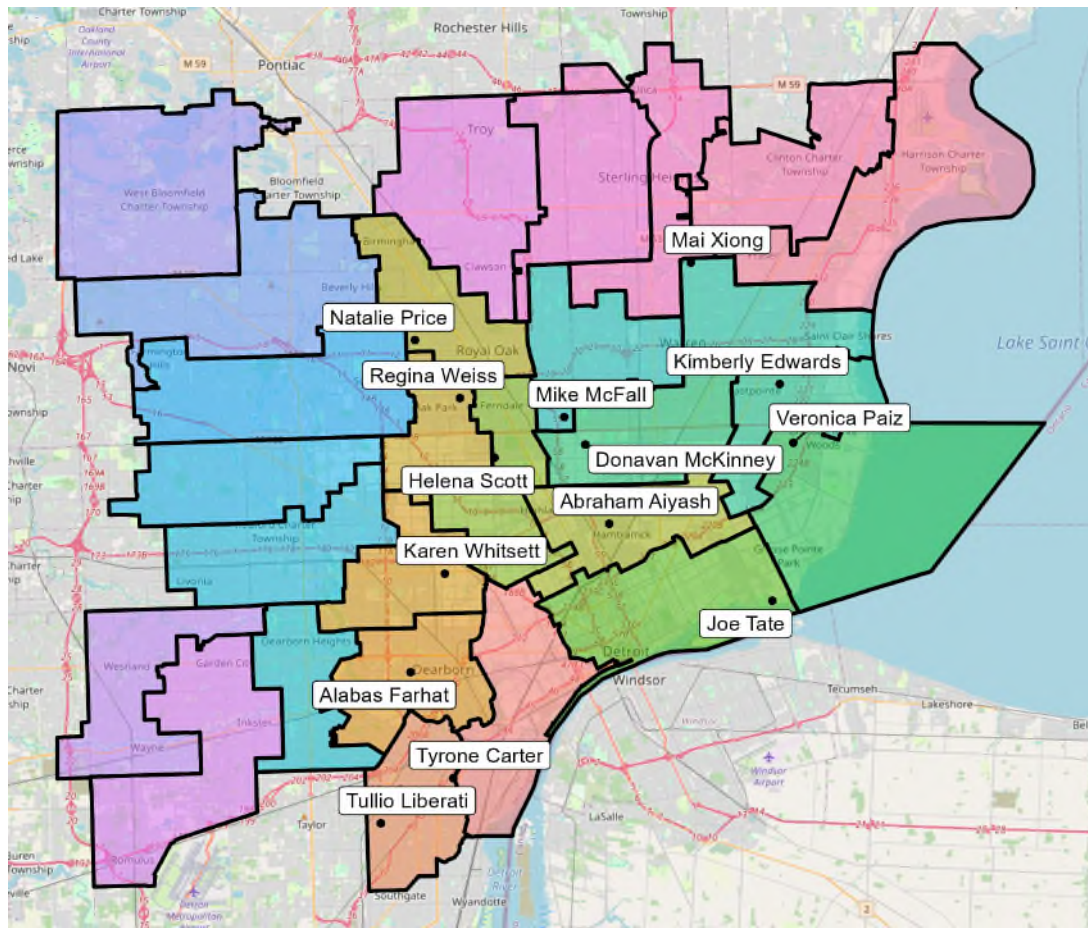
With that background, I turn to two particular pieces of analysis.

2.2 The Proposed Map does not place any incumbents in the same district, which is unlikely to have happened by chance.

2.2.1 Almost every map placed at least two incumbents in the same district.

Almost all of the Ten Maps placed at least two incumbents in the same district. The following map shows the location of current Michigan House incumbents in the Oakland Spokes and Macomb Spokes, as well as in South/Central Detroit.

Figure 4: Location of Incumbents, Proposed Map



Note that here every incumbent is placed in their own district. This is highly unlikely to have happened by chance. As noted in the Trende Trial Report, I participated in drawing the district boundaries in Virginia. We were criticized there for pairing too many incumbents together. We wrote in response that “[m]uch of this is simply a function of the fact that the existing lines split municipalities and counties regularly, and we have eliminated those splits. . . . Any redistricting map featuring this degree of geographic consolidation will almost certainly pair incumbents together; if those incumbents live in a narrowly defined geographic area the chances of being paired together are increased.” Bernard Grofman, Ph.D. and Sean Trende, “Memorandum to the Chief Justice and Justices of the Supreme Court of Virginia,” at 3 (Dec. 27, 2021) (available at <https://www.supremecourt.gov/doclib/recordings/20211227%20Memorandum%20to%20the%20Chief%20Justice%20and%20Justices%20of%20the%20Supreme%20Court%20of%20Virginia.pdf>):

[//www.vacourts.gov/courts/scv/districting/2021_virginia_redistricting_memo.pdf](http://www.vacourts.gov/courts/scv/districting/2021_virginia_redistricting_memo.pdf)).

It is therefore the norm for maps that undo gerrymanders (such as the Hickory Plan) to pair incumbents together. It's frankly shocking that no incumbents were paired together as the map drawers unwound bacon-like districts. While the Court's eye may naturally be drawn to Representative Tyrone Carter and House Speaker Joe Tate, who live on the boundary of their districts, this would be a mistake. These members reside near city boundaries, which provide natural cleavages for districts.

What is more surprising is that the cluster of incumbents representing districts 5, 6, 7 and 8 (Price, Weiss, Scott and McFall), and 11, 12, and 13 (Paiz, Edwards, and Xiong) were all given their own districts. This isn't to say that the mapmakers should have tried to pair them together. Rather, it is to suggest that it is highly unlikely that maps that were drawn without any awareness of their residences would have kept them separate.

There are two ways we might test this. First, we can look at the other maps that were drawn. They are depicted below:

Figure 5: Location of Incumbents, Tiger Lily Map

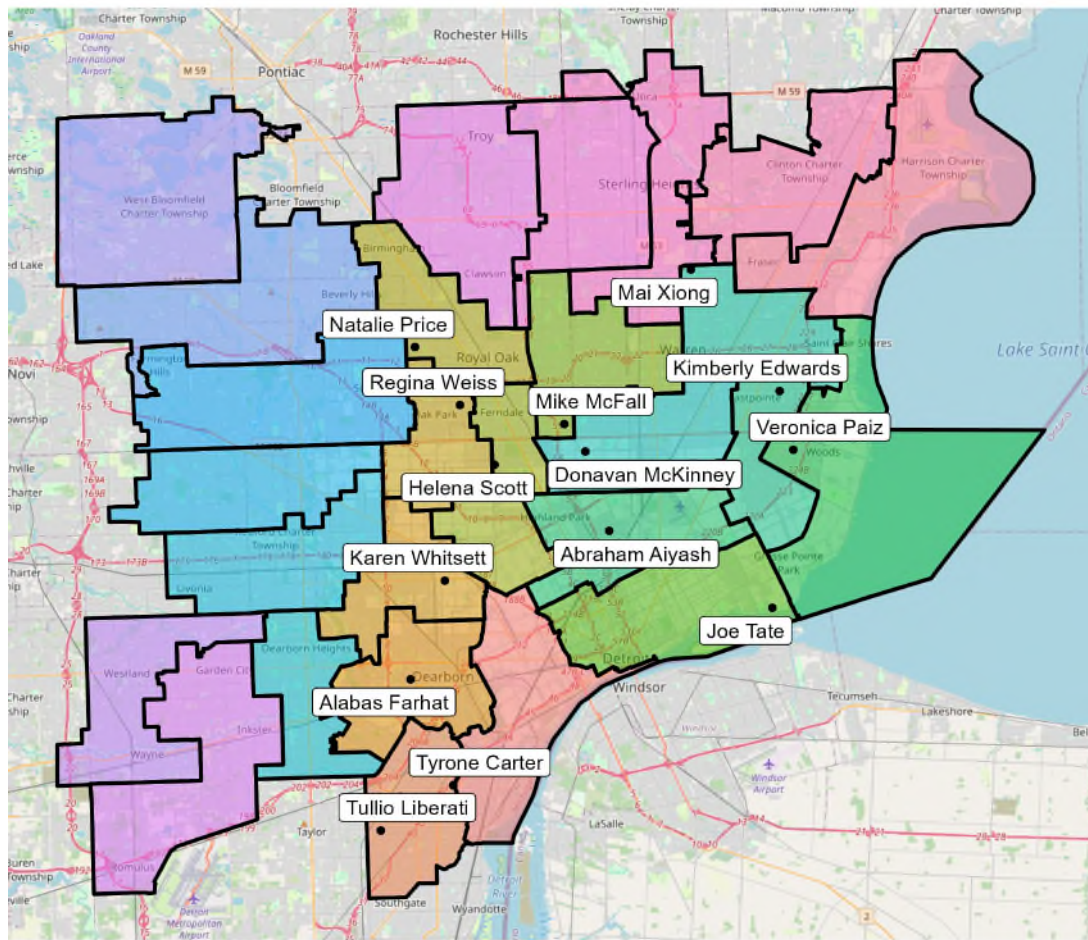


Figure 6: Location of Incumbents, Motown Sound Map

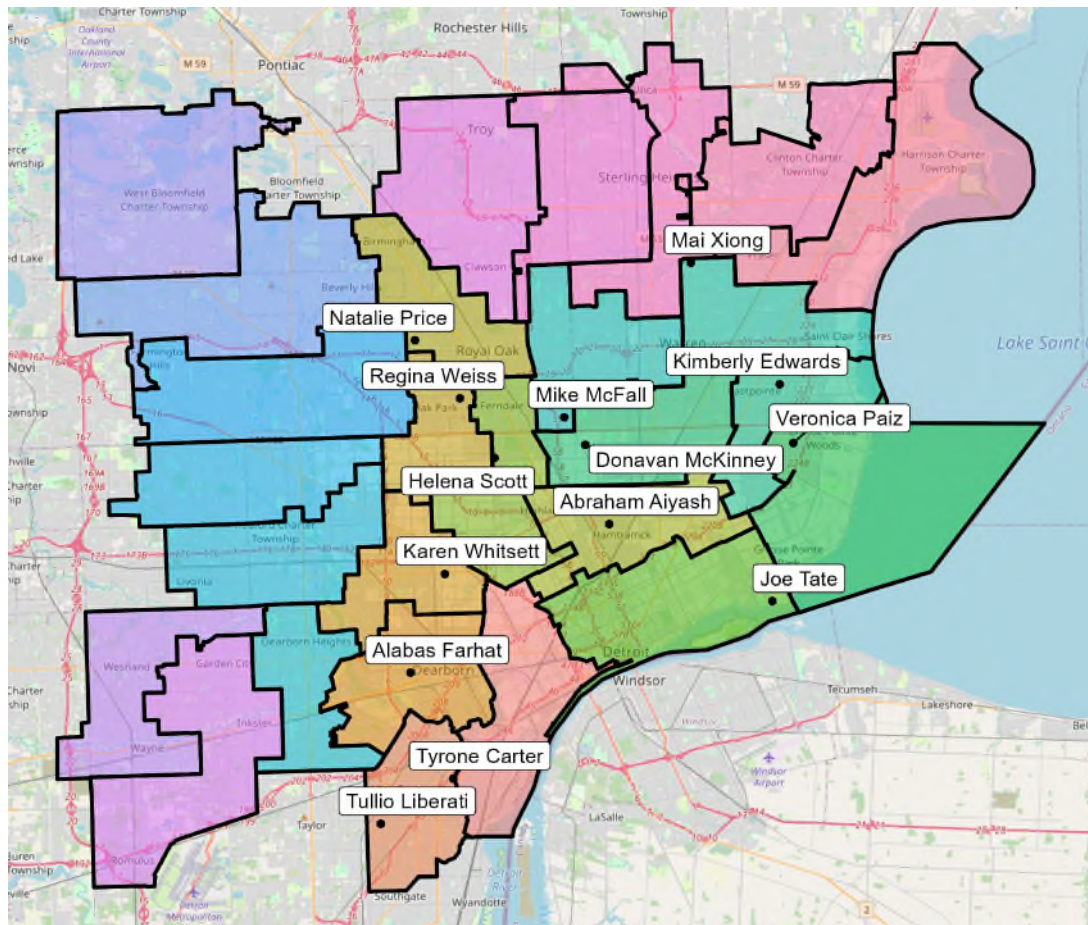


Figure 7: Location of Incumbents, Spirit of Detroit Map

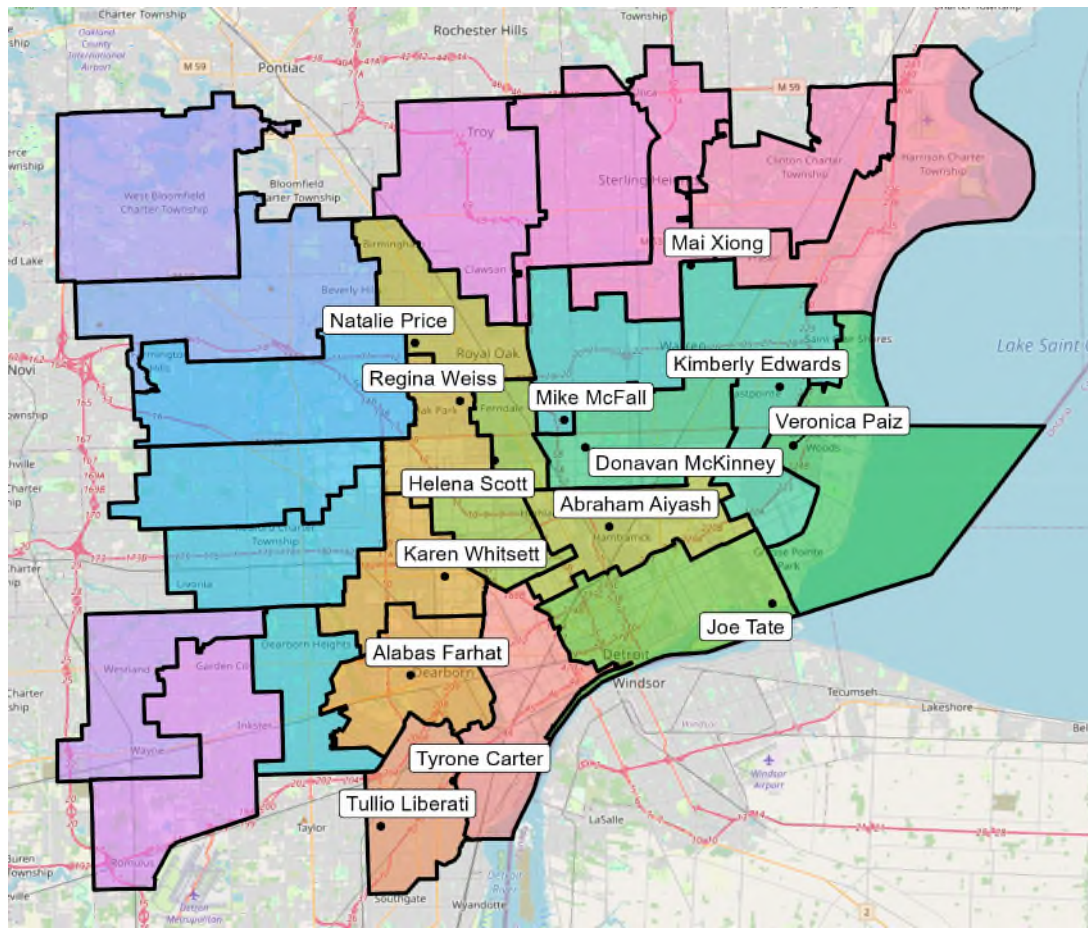


Figure 8: Location of Incumbents, Riverwalk Map

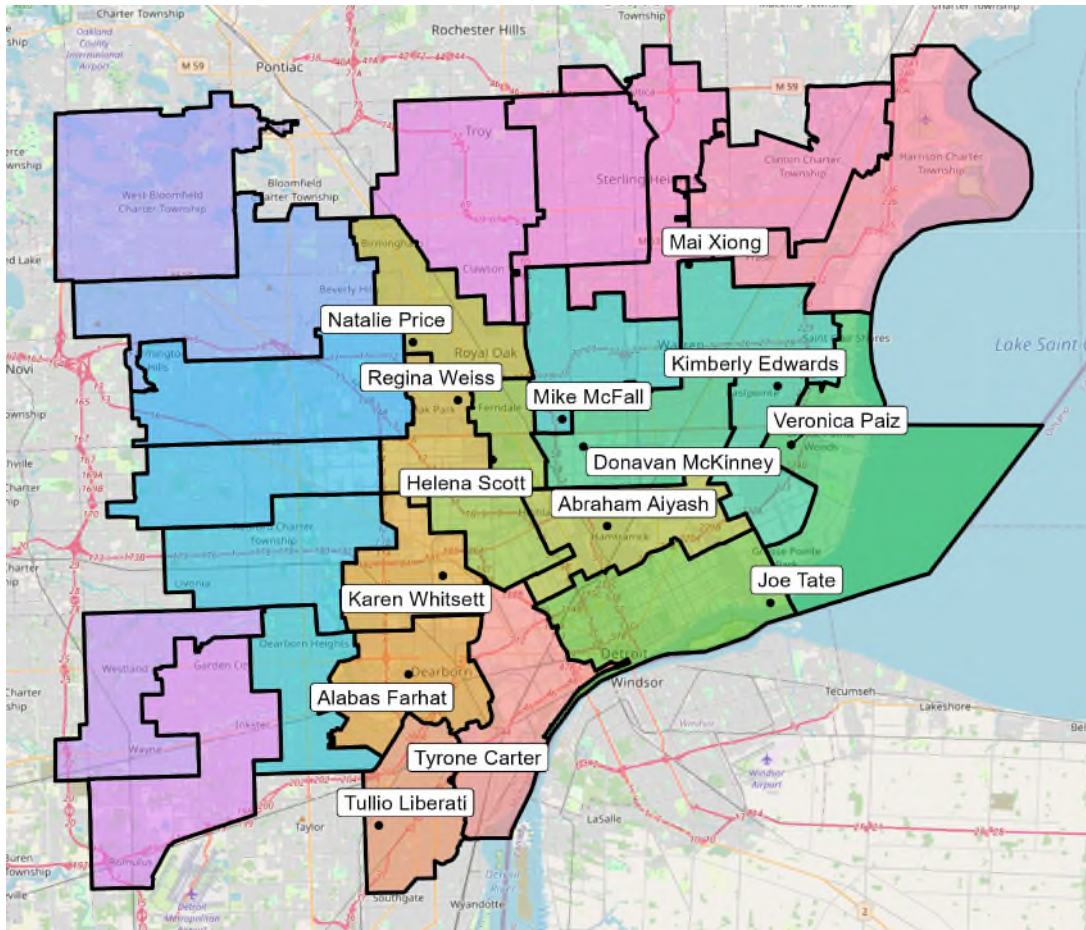


Figure 9: Location of Incumbents, Szetela 4

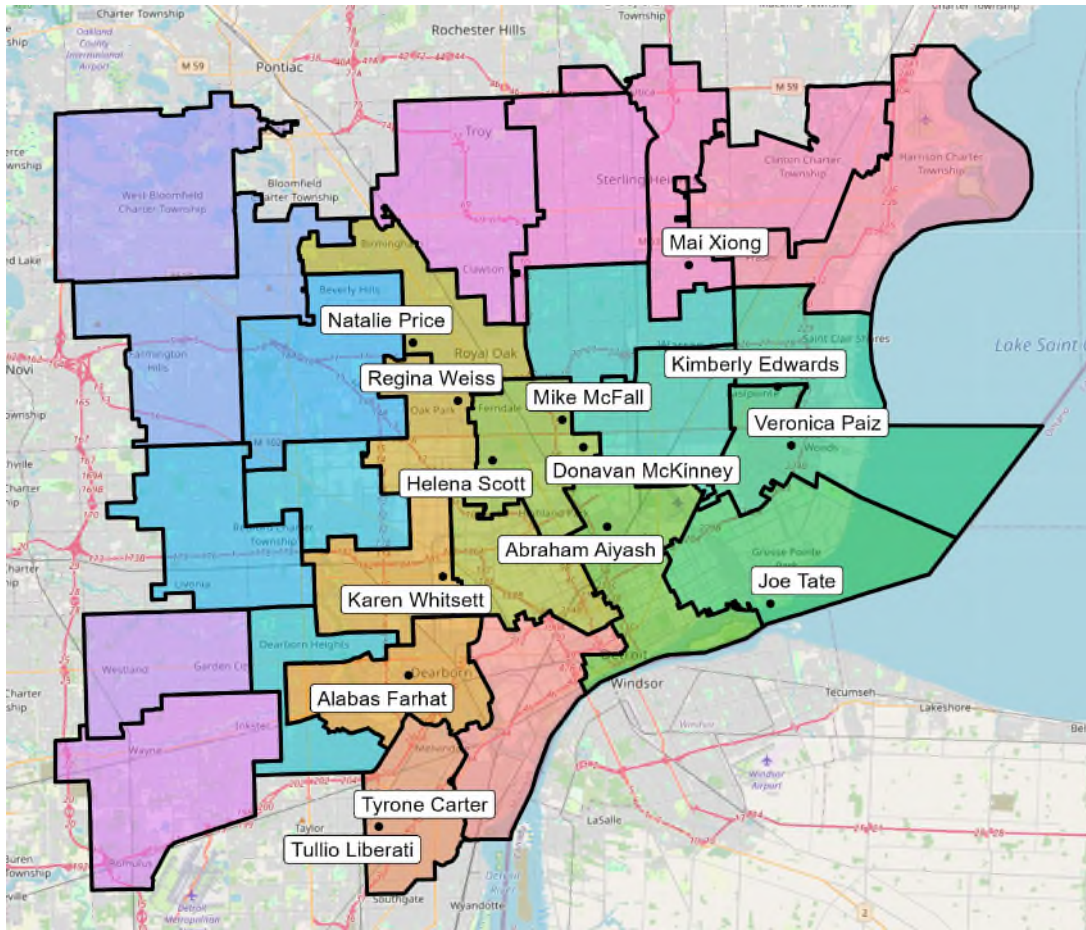


Figure 10: Location of Incumbents, Willow Map

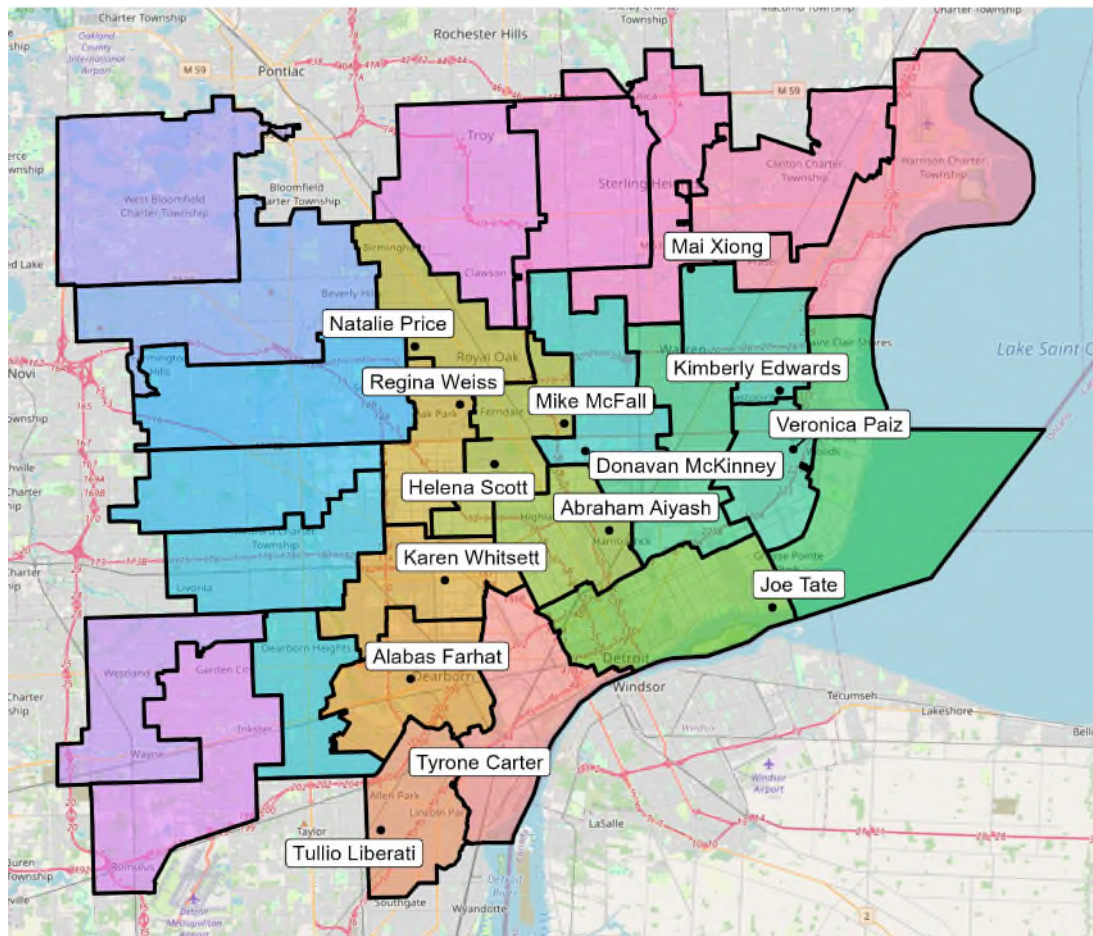


Figure 11: Location of Incumbents, Water Lily Map

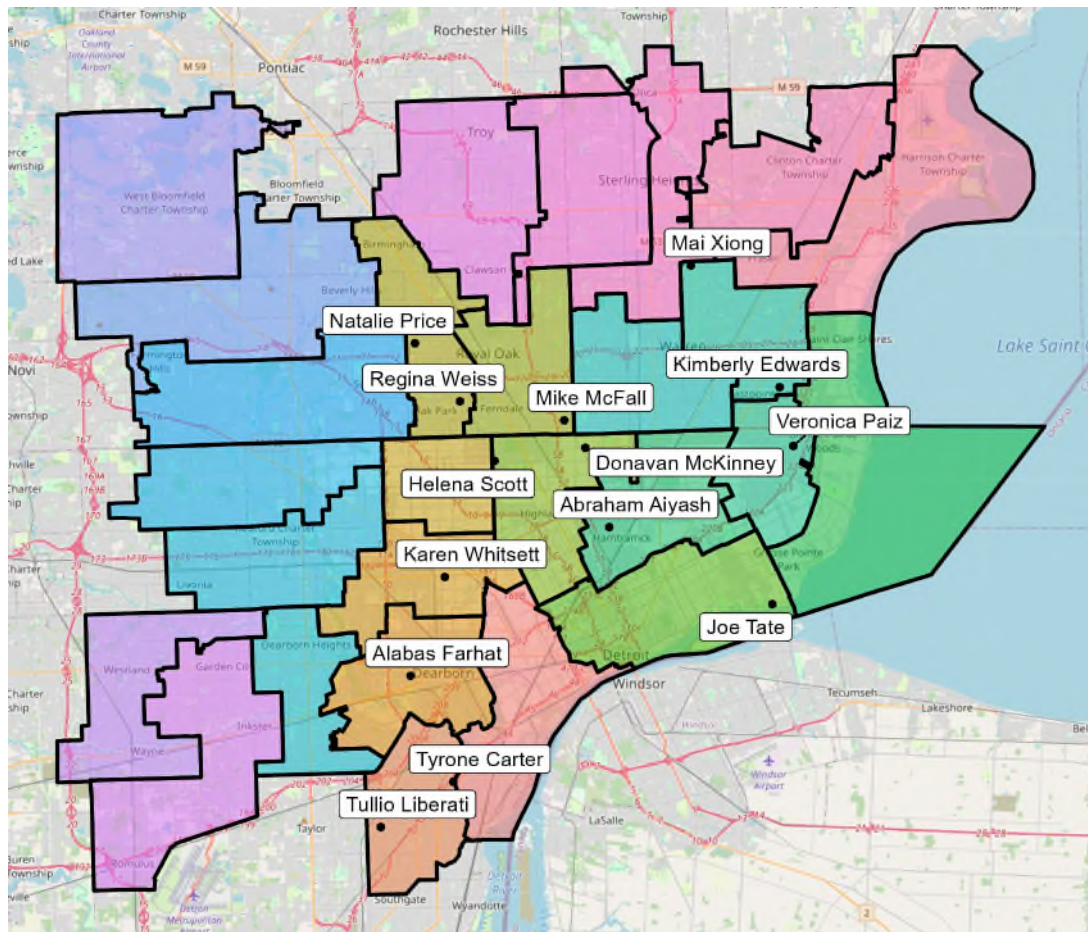


Figure 12: Location of Incumbents, Tulip Map

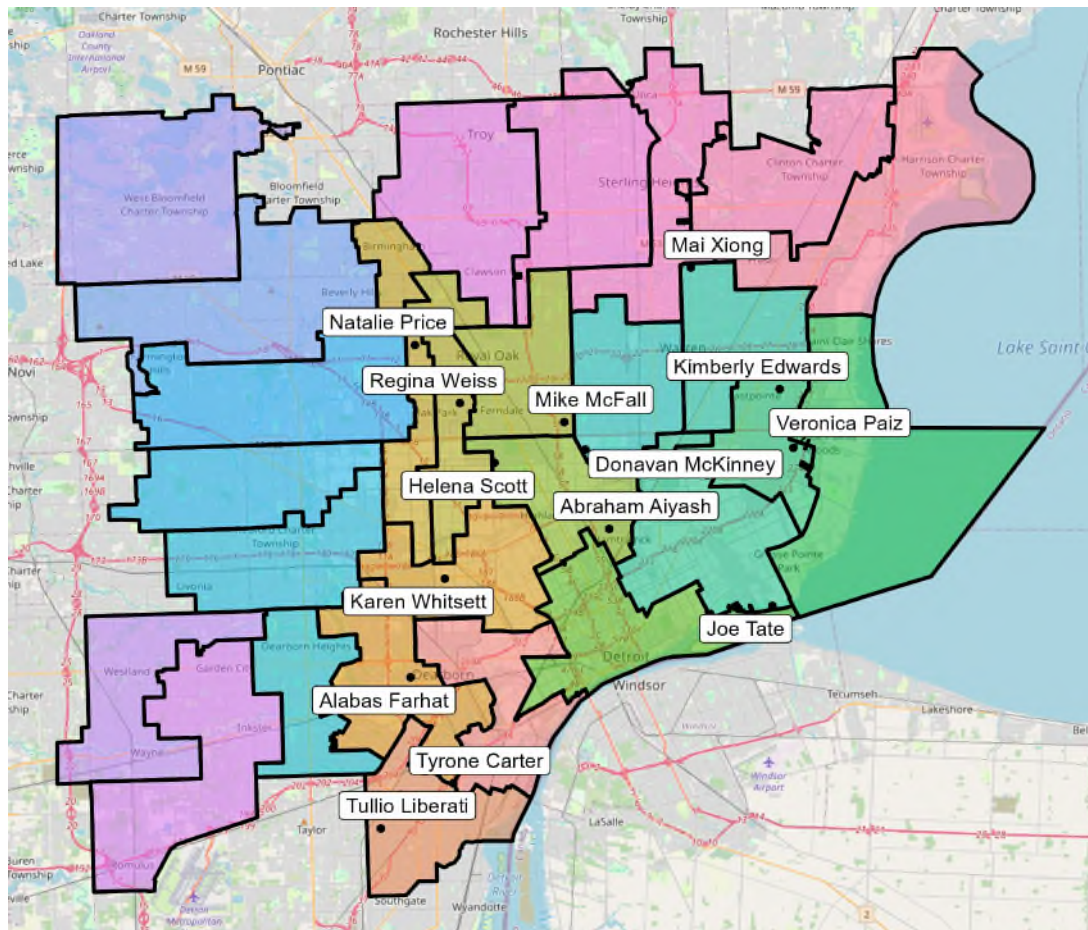


Figure 13: Location of Incumbents, Daisy Map

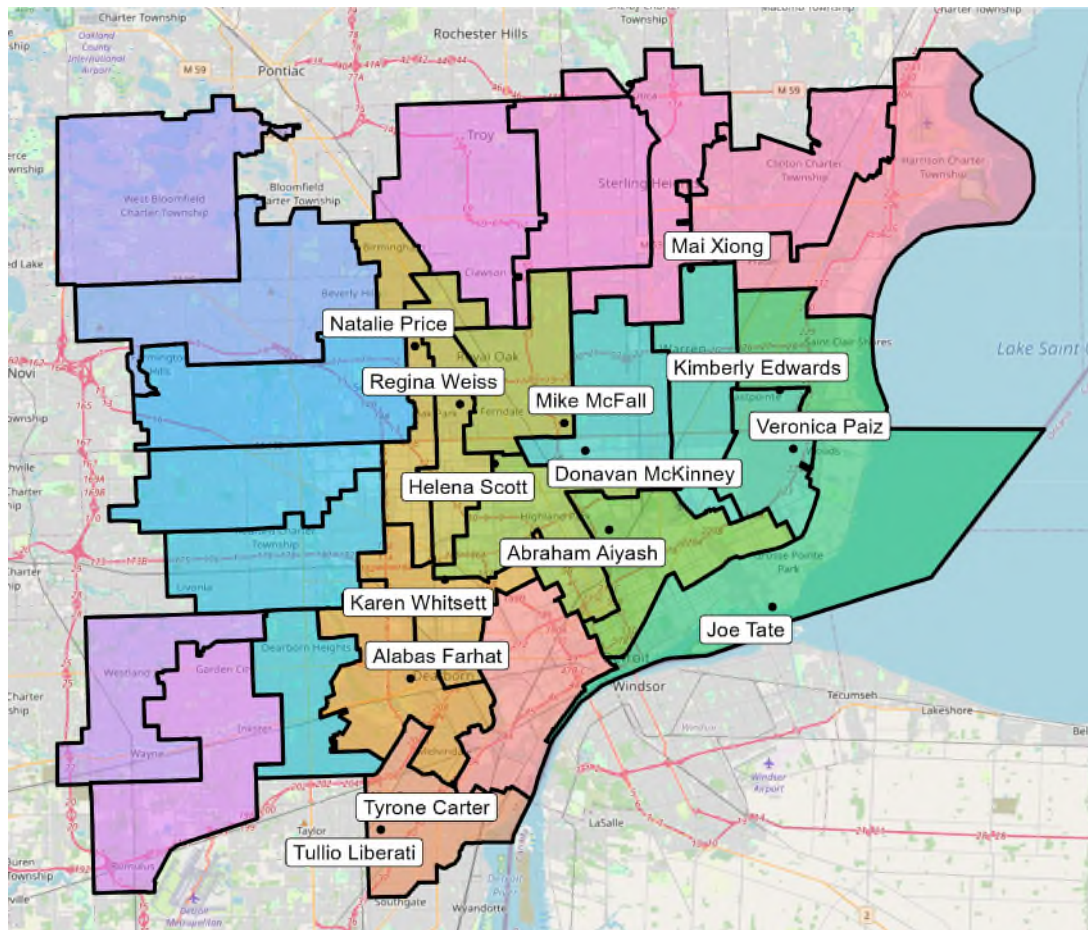


Figure 14: Location of Incumbents, Bergamot 1 Map

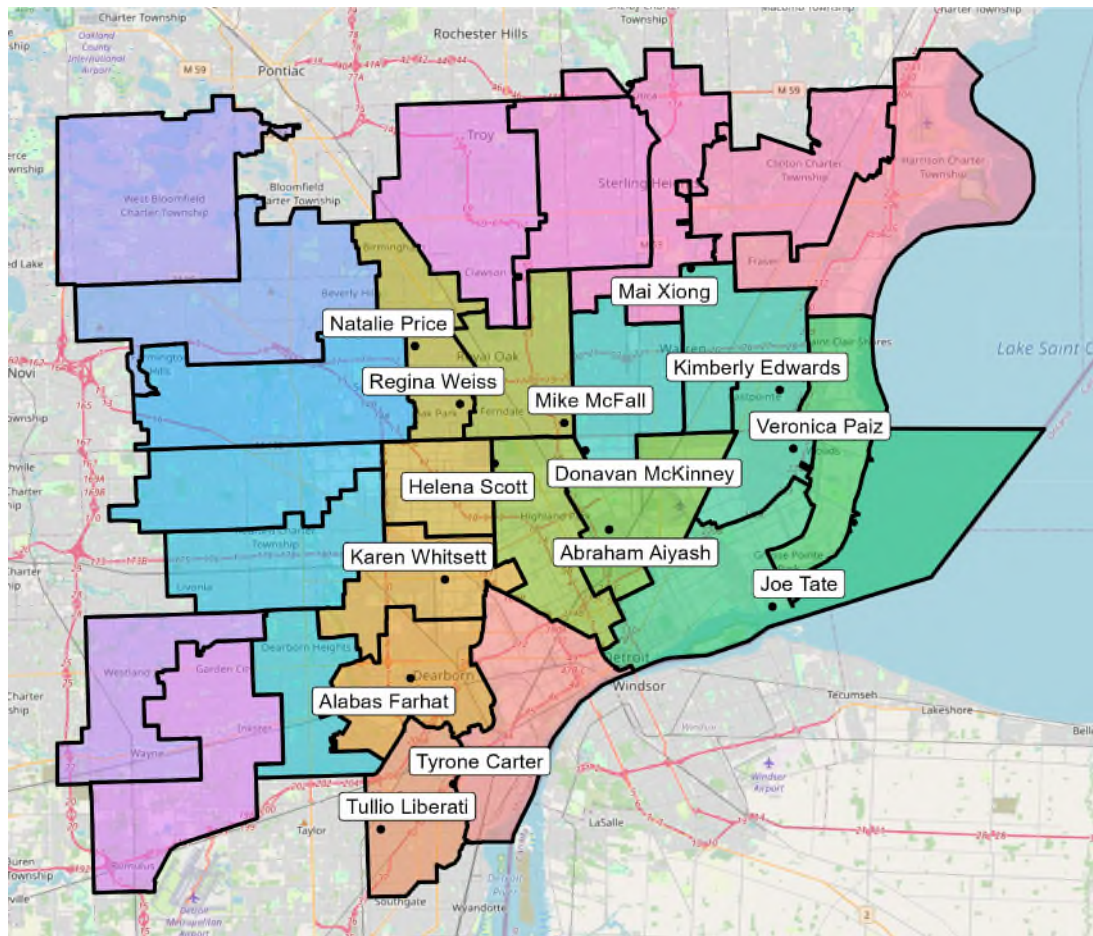
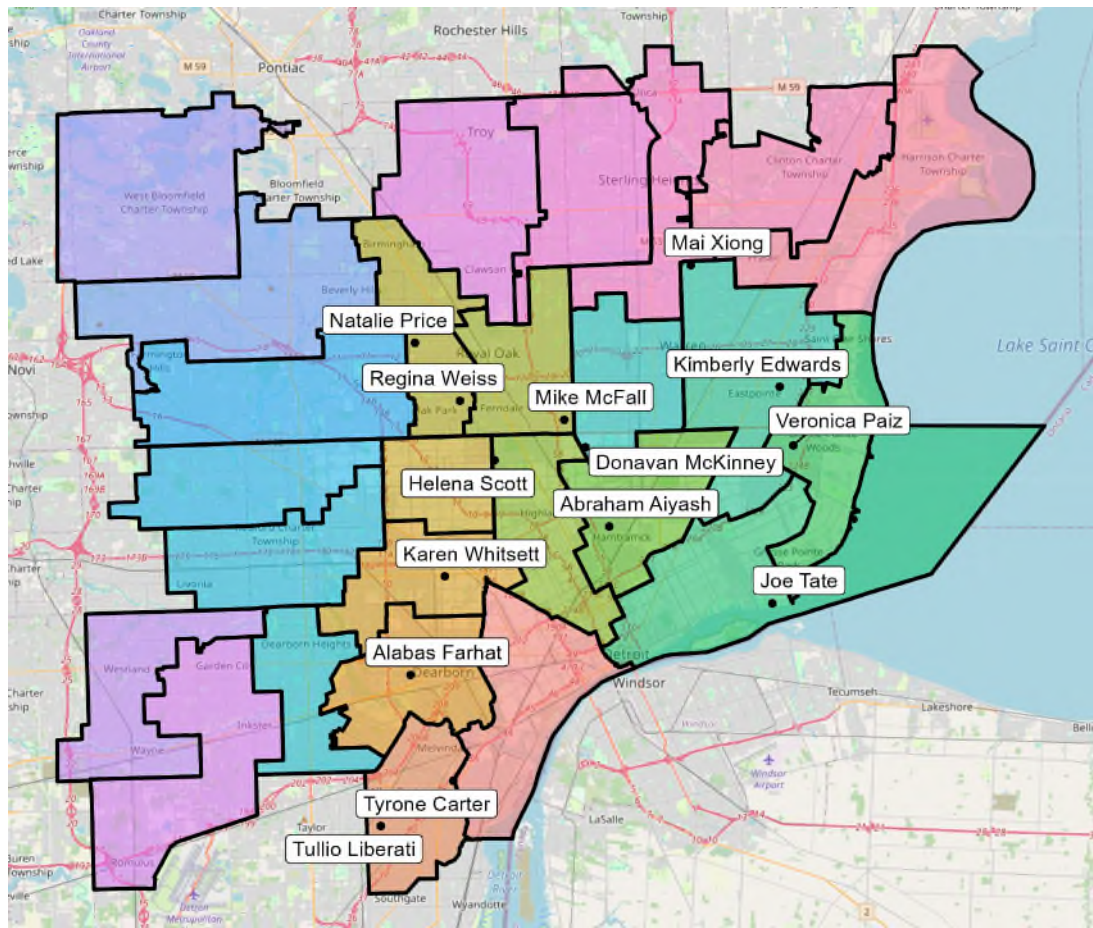


Figure 15: Location of Incumbents, Bergamot 2 Map



One glance was all it took me to see why the Motown configuration was picked from the bunch. As you can see, most of these maps place at least one pair of incumbents in the same district. Bergamot 1 pairs together Reps. Paiz and Edwards, and Reps Price and Weiss. Bergamot 2 retains the latter pairing. Willow pairs together Reps. Edwards and Xiong as well as Reps. Scott and McFall. Tulip places Reps. Scott and Aiyash in the same district, along with Reps. Edwards and Paiz. Szetela’s map pairs together seven incumbents in three districts, while Willow Lawn pairs six incumbents in three districts. Even Daisy, which basically retains the heart of the Hickory map, pairs together Reps. Paiz and Edwards. The only maps that don’t pair incumbents are the Riverwalk family of districts, including Tiger Lily.

2.2.2 Simulations

To further test this theory, I ran a new set of computer simulations. I generated 100,000 draws using the technique outlined in my initial report. I operated under the following constraints:

- districts must be contiguous;
- district populations may not vary by more than $\pm 2.5\%$ from the ideal population.
- districts must be reasonably compact;
- districts must keep intact any locale that the maps above consistently kept intact;
- districts may not split precincts that were not split in any map; and
- districts must minimize splits of the remaining locations.

The simulation set consisted of all precincts contained within Hickory Districts 1-14 and 16-18.

I then located the precinct in which each of the incumbents above lived, and looked to see how many maps had at least one district that paired together at least one pair of incumbents. The answer confirmed the intuition above: of the 100,000 draws from the pool of maps recorded, only 1,090 – just over 1% – failed to pair any incumbents.

The traditional threshold in political science for rejecting the possibility that an outcome occurred by chance is 5%. We would therefore reject the possibility here that this all occurred by chance. It's highly unlikely that these maps were drawn without an intent to protect at least some incumbents.

2.3 The Proposed Map still contains indicia of the racial gerrymander that characterized the Hickory Plan.

Finally, I was asked to examine whether the Proposed Map had sufficiently eliminated the racial gerrymander from the Hickory Plan. This was a tricky question to

answer, as the maps seem to disagree on the extent to which districts had to be altered to comply with the Court's order. The maps range from Commissioner Szetela's far-reaching map, to Commissioner Eid's effective recreation of Hickory with the Daisy map. While the Commission can, subject to state limitations, exceed this Court's mandate, it can't fall short of it. What that entails is ultimately a fight for the lawyers, rather than the experts.

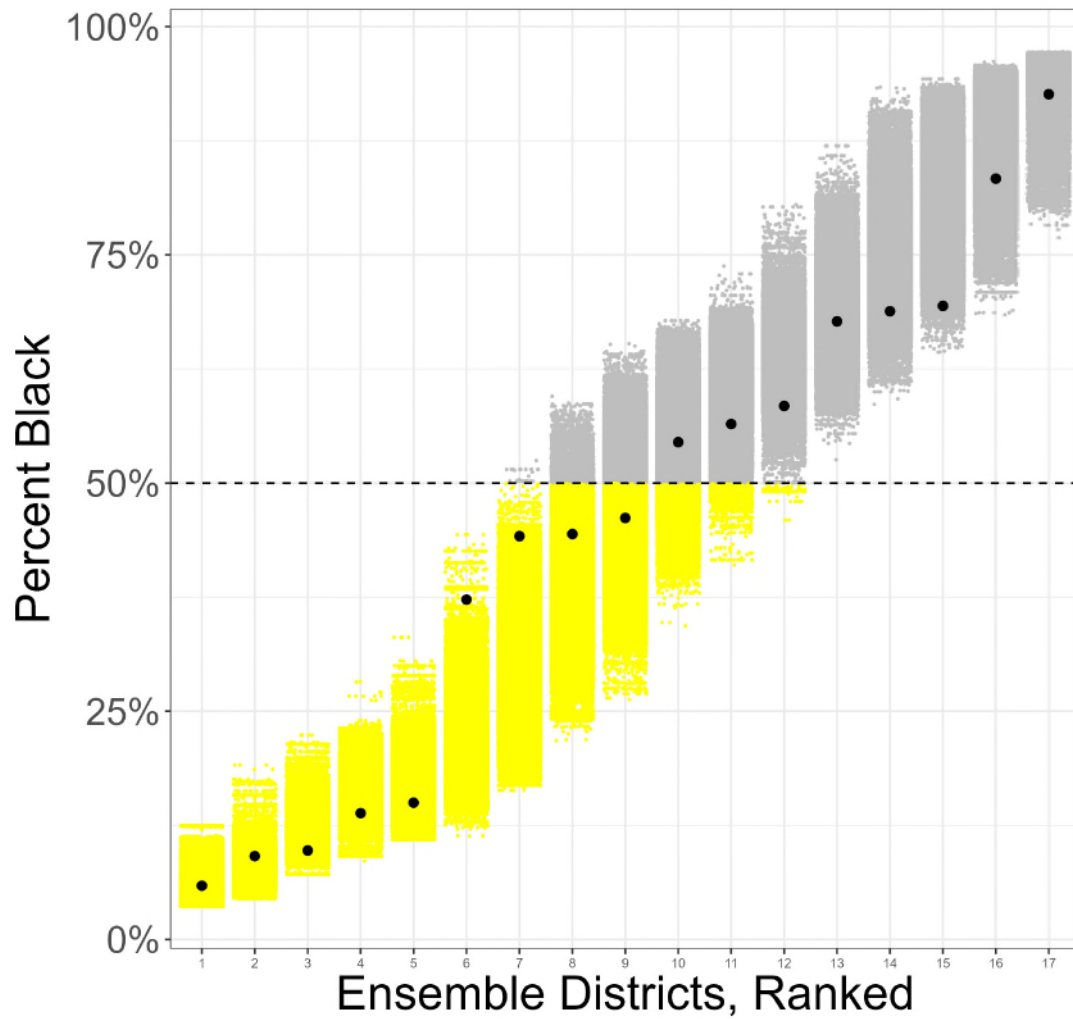
For purposes of these simulations, however, because most maps made substantial changes to districts 1-14, I ran simulations on these districts. And because many of the maps made changes to districts 16 and 17, and because an argument can be made that those districts, along with 18, are part of the overall "spoke" scheme that defined the racial gerrymander in Hickory, I also included the precincts from those three districts in my simulations.

To evaluate the Szetela map, I ran a separate set of 100,000 simulations based upon all precincts contained within the districts that her map alters.

The results show that *most* of the maps did, in fact, purge the taint of the Hickory districts. I include the racial dotplots for all maps in an Appendix. Here, however, I just show the dotplots for the Proposed Map, which does not purge the gerrymander.

The dotplots are explained more thoroughly in my expert report, but the gist is as follows: Each dot represents a district. The far right column represents the distribution of the districts with the highest BVAPs in each map, while the second right-most column reflects the second highest BVAP districts in each map, and so forth. The black dots reflect the districts in the Proposed Map. As you can see, once again the Commission artificially depressed the BVAPs in the most heavily Black districts, and raised them in a handful of others (though not past the crucial 50% mark).

Figure 16: Racial Dotplots, Proposed Map



Of more direct interest are the gerrymandering indices. Again, I use these in the same way I did in the Trende Trial Report and as I presented them at trial. This metric reflects, in effect, the root mean squared error (RMSE) of the proposed districts, relative to the average ensemble district in each rank. In plainer English: It tells us how far the districts in the map being evaluated fall from what the ensemble districts suggest that we should expect.

To create these charts (histograms), we proceed as follows. First, the average BVAP for the most heavily Black district in each Ensemble map is calculated, then the

average for the second most heavily Black district in each Ensemble map is calculated, and so forth. This tells us the average racial distribution we would expect in race-blind districts.

Of course, drawing districts is more complicated than this. There are multiple ways districts could be drawn, even when operating under constraints for compactness and so forth. Mapmakers may be drawn toward one configuration, or may opt to move a different set of cities together, or may make functionally random choices. In other words, some variation from the mean is natural, and expected.

To help account for this, the computer goes through each map and calculates how far from the average each district is. That is, if the district with the highest BVAP in the collection of ensemble maps is, on average, 90%, and the computer draws a map where the highest BVAP is 95%, the deviation of 5% is recorded. This calculation is repeated for each district in the map. After all deviations are calculated for a map, the deviations are squared, added together, divided by the number of districts in the map, and then the square root is taken. In plain terms, this gives us, for any given map, the average deviation found in the map from what we would *expect* with a race-blind draw.

This procedure is then repeated for every map in the ensemble. This then gives us a range of what type of deviations might be expected to occur naturally as a part of a truly race-blind map-drawing process. The gerrymandering index is then calculated for the proposed map.

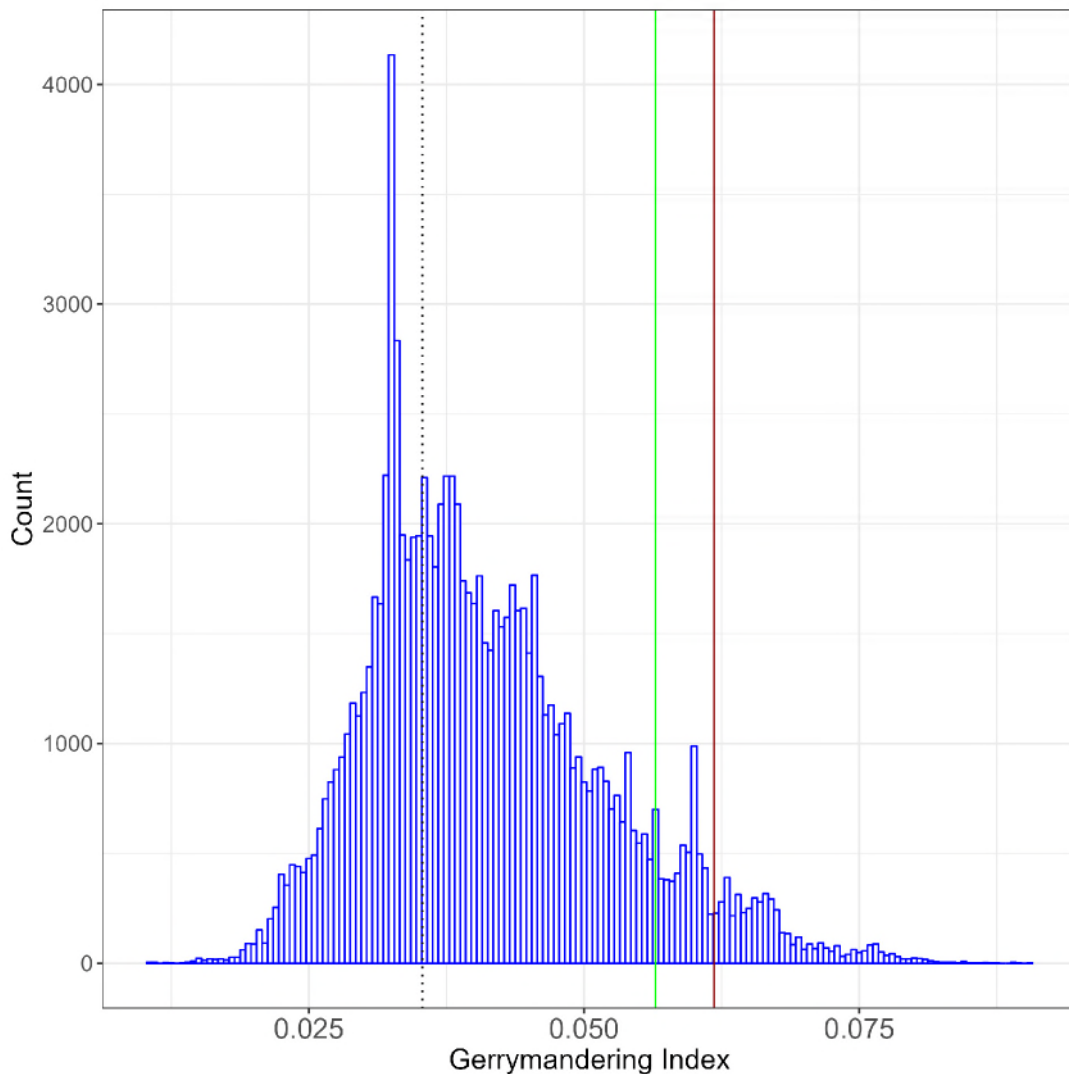
If a proposed map has a gerrymandering index that is greater than 95% of the ensemble districts, we conclude that race likely predominated in the drawing of the map, since it would be unlikely to draw a map as extreme as the proposed map in a race-neutral process. Of course, by allowing some variation in how maps can be drawn, a map-maker could bring *some* racial information in, so long as she compensated by adhering more strictly to the other criteria for other districts. Thus, it becomes a true test of whether race predominates in the drawing of the plan.

Most of the ten maps that were proposed did not have gerrymandering indices

that large. Consider, for example, the Willow and Water Lily maps. Here, both map sets fall well within the range of what we find with race-neutral maps.

Figure 17: Gerrymandering Index, Willow and Water Lily Maps

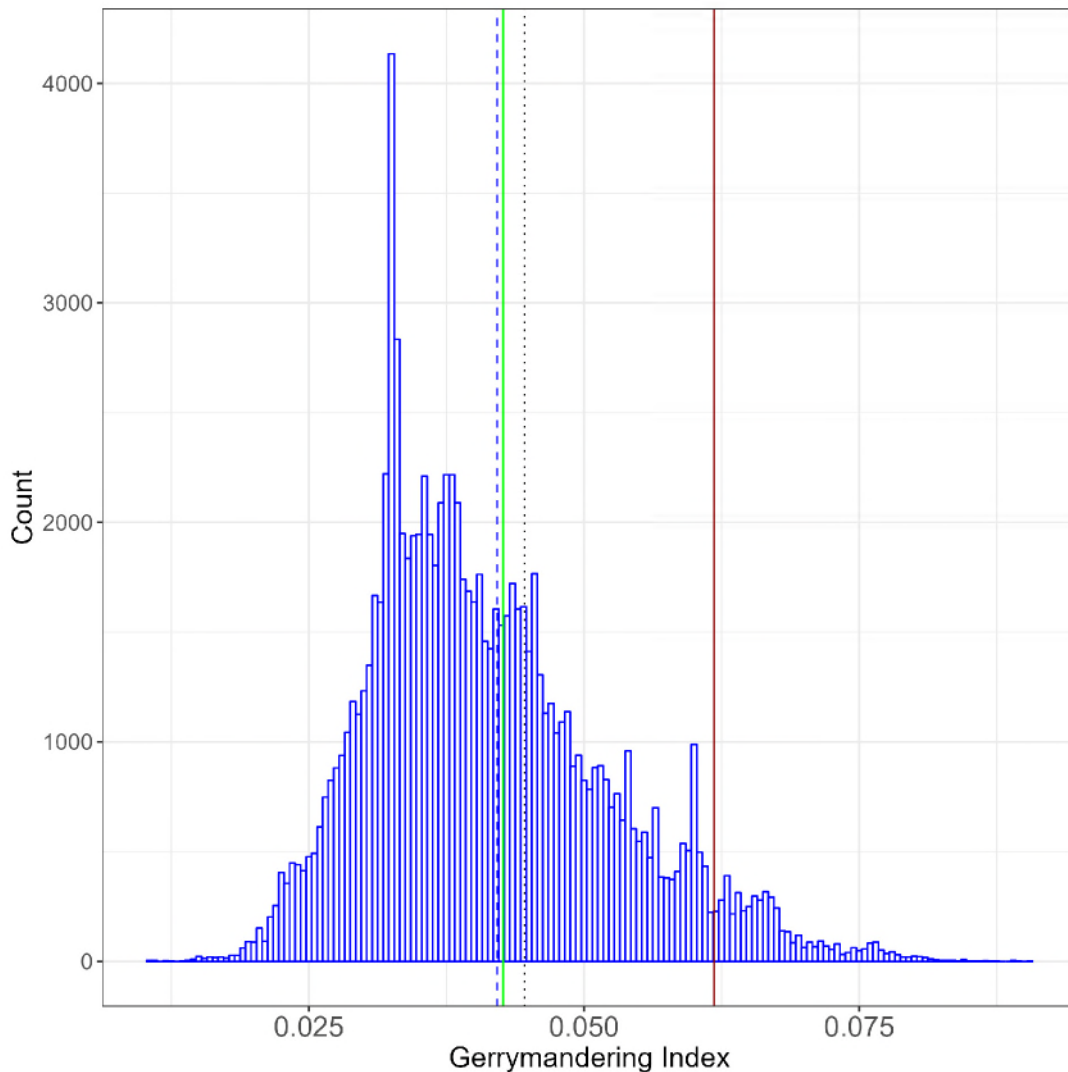
(a) Each column reflects a count for ensemble maps with a given Gerrymandering Index. The red solid line reflects the 95th percentile mark for ensemble gerrymandering indices. A map that scored to the right of the line would not be a map where race predominated, while a map that scored to the left of the line would be. The dotted line reflects the Gerrymandering Index for the Water Lily map, while the solid green line reflects the Gerrymandering Index for the Willow map



The same is true of the Spirit of Detroit and Riverwalk districts:

Figure 18: Gerrymandering Index, Spirit of Detroit, Riverwalk and Tiger Lily Maps

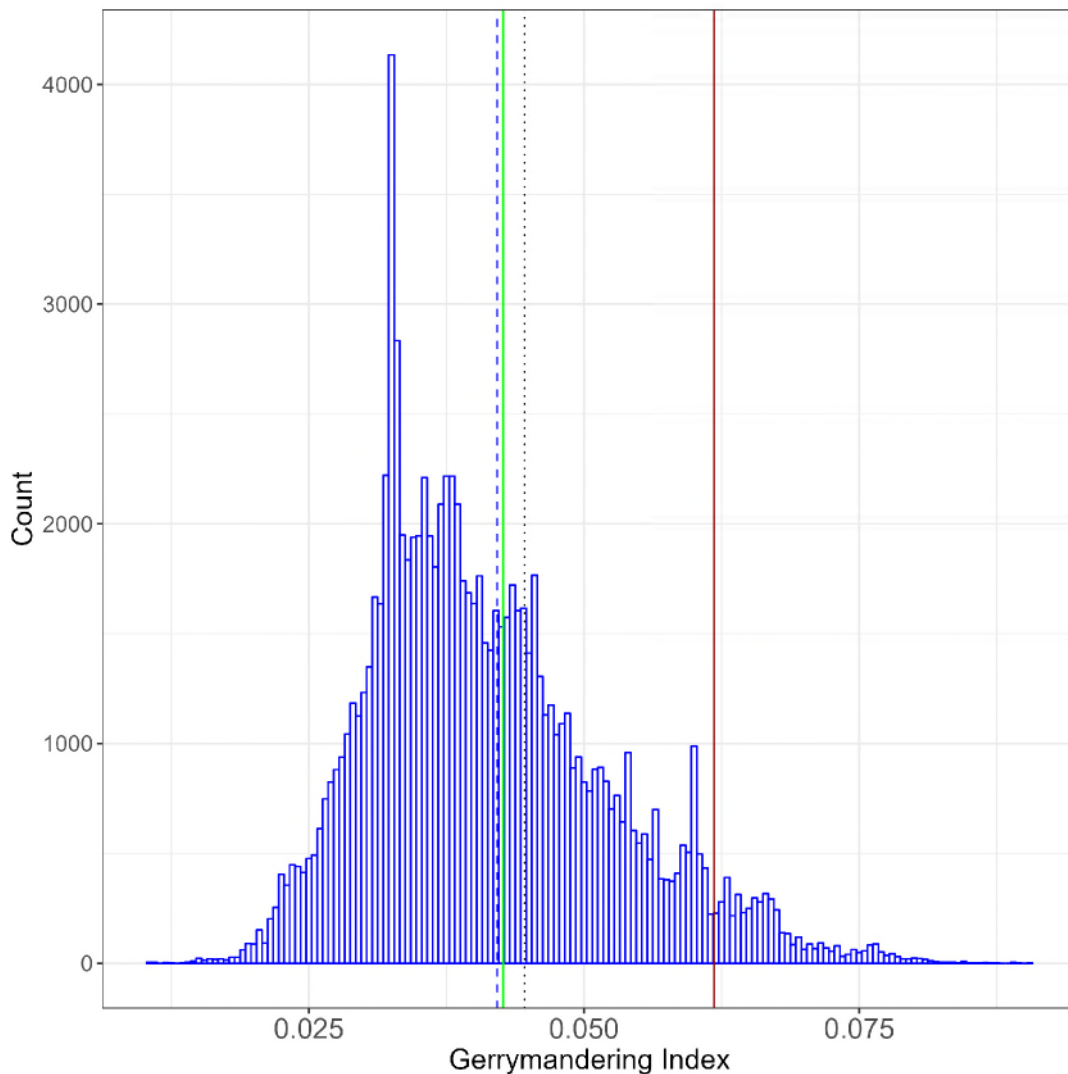
(a) Each column reflects a count for ensemble maps with a given Gerrymandering Index. The red solid line reflects the 95th percentile mark for ensemble gerrymandering indices. A map that scored to the right of the line would not be a map where race predominated, while a map that scored to the left of the line would be. The dotted line reflects the Gerrymandering Index for the Riverwalk FC map, the blue dashed line reflects the Gerrymandering Index for the Tiger Lily map, while the solid green line reflects the Gerrymandering Index for the Spirit of Detroit map



Likewise, the Bergamot maps have low gerrymandering indices, indicating that they had successfully purged the taint of the Hickory maps.

Figure 19: Gerrymandering Index, Bergamot 1 and 2 Maps

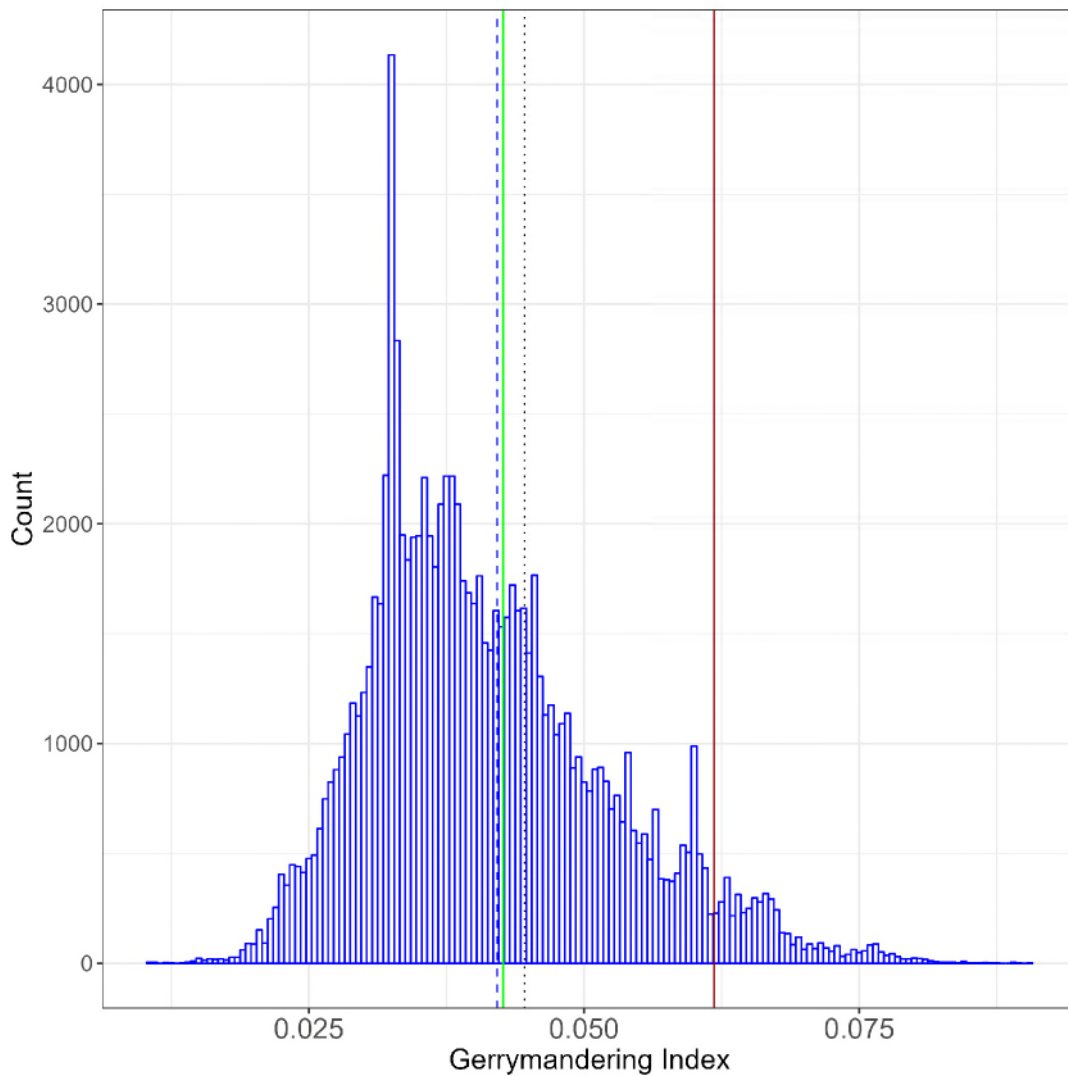
(a) Each column reflects a count for ensemble maps with a given Gerrymandering Index. The red solid line reflects the 95th percentile mark for ensemble gerrymandering indices. A map that scored to the right of the line would not be a map where race predominated, while a map that scored to the left of the line would be. The dotted line reflects the Gerrymandering Index for the Bergamot 2 map, while the solid green line reflects the Gerrymandering Index for the Bergamot 1 map



Obviously, the Daisy Map produces a very large gerrymandering index. The Tulip map, which maintains much of the gerrymander from the Hickory map, produces a large gerrymandering index, though not as large as Commissioner Eid's Daisy map did.

Figure 20: Gerrymandering Index, Daisy and Tulip Maps

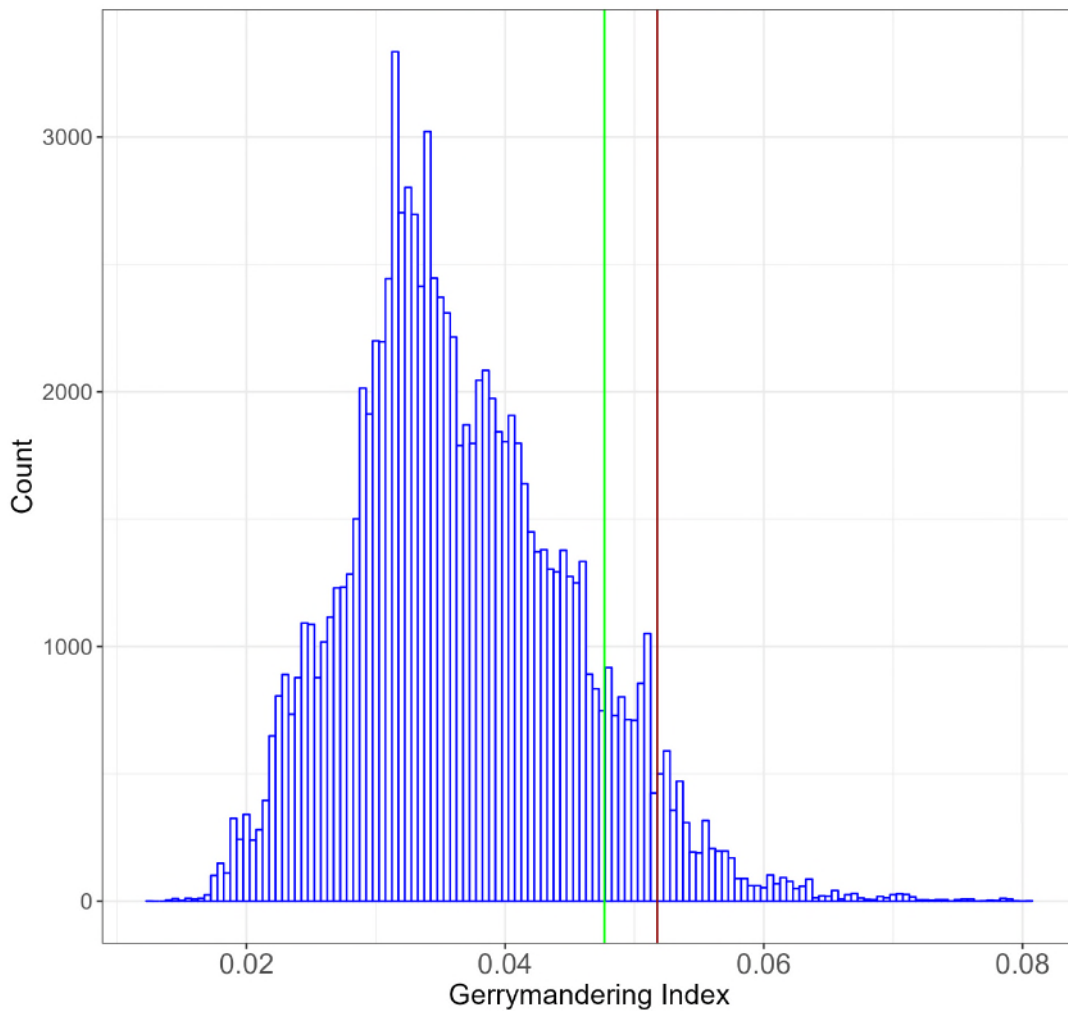
(a) Each column reflects a count for ensemble maps with a given Gerrymandering Index. The red solid line reflects the 95th percentile mark for ensemble gerrymandering indices. A map that scored to the right of the line would not be a map where race predominated, while a map that scored to the left of the line would be. The dotted line reflects the Gerrymandering Index for the Tulip map, while the solid green line reflects the Gerrymandering Index for the Daisy map



The Szetela Map likewise produces a relatively small gerrymandering index, suggesting that it is possible to produce 10 Black majority districts without allowing race to predominate.

Figure 21: Gerrymandering Index, Szetela Map

(a) Each column reflects a count for ensemble maps with a given Gerrymandering Index. The red solid line reflects the 95th percentile mark for ensemble gerrymandering indices. A map that scored to the right of the line would not be a map where race predominated, while a map that scored to the left of the line would be. The solid green line reflects the Gerrymandering Index for the Szetela map



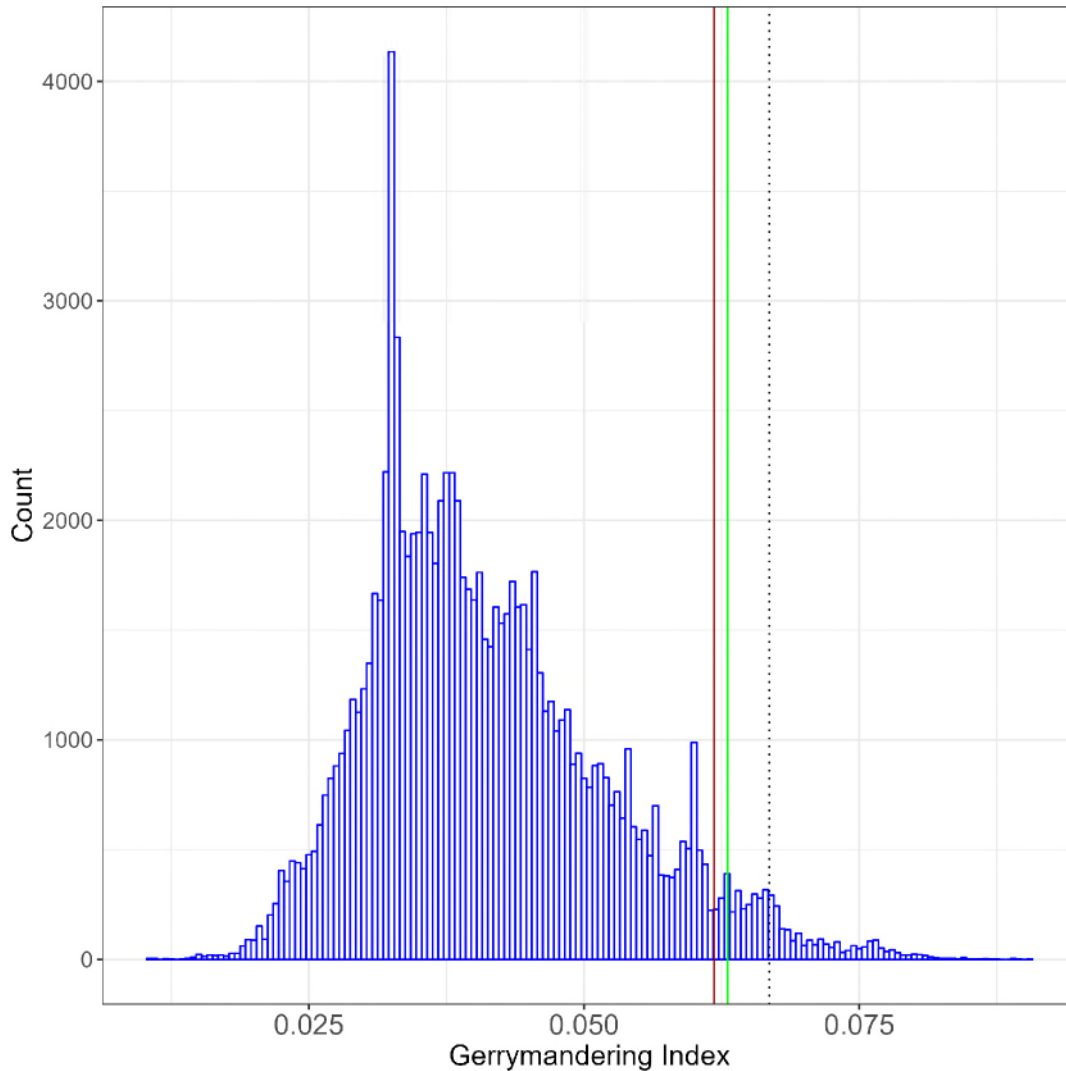
The Motown Sound map, on the other hand, still retains large gerrymandering

indices; the Proposed Map is even more extreme. Thus, the Proposed Map likely retains too much of the taint of the Hickory Map.³

³At first glance it may seem surprising that Motown Sound generates larger gerrymandering indicies than the Riverwalk or Spirit of Detroit Maps, since they are so closely related. The problem is that the particular changes made in the eastern Wayne/Macomb districts alter the BVAPs of those districts substantially and create large deviations from expectations. It is doubtful that the computer would have generated a three-way split of St. Clair shores, or the double-traversal of 8-Mile Rd. created in the Proposed Map

Figure 22: Gerrymandering Index, Motown Sound and Proposed Maps

(a) Each column reflects a count for ensemble maps with a given Gerrymandering Index. The red solid line reflects the 95th percentile mark for ensemble gerrymandering indices. A map that scored to the right of the line would not be a map where race predominated, while a map that scored to the left of the line would be. The dotted line reflects the Gerrymandering Index for the Proposed Map, while the solid green line reflects the Gerrymandering Index for the Motown Sound map



III. Conclusion

The Proposed Map reflects a step in the right direction. However, the fact that it separates incumbents such that all of them are in a different district is very unlikely

to have occurred by chance, especially given that other submitted maps did not do so. Also, it still bears some of the hallmarks of a racial gerrymander that characterized the Hickory Map.

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 8 March, 2024 in Seattle, Washington.

Sean Trende

Sean P. Trende

3 Exhibit 1

SEAN P. TRENDE

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strende@realclearpolitics.com

EDUCATION

Ph.D., The Ohio State University, Political Science, 2023. Dissertation titled *Application of Spatial Analysis to Contemporary Problems in Political Science*, September 2023.

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

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

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

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

PROFESSIONAL EXPERIENCE

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

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

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

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

Senior Elections Analyst, RealClearPolitics, 2010-present.

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

Visiting Scholar, American Enterprise Institute, 2018-present.

BOOKS AND BOOK CHAPTERS

Larry J. Sabato, ed., *The Red Ripple*, Ch. 15 (2023).

Larry J. Sabato, ed., *A Return to Normalcy?: The 2020 Election that (Almost) Broke America* Ch. 13 (2021).

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

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

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

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

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

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

PREVIOUS EXPERT TESTIMONY AND/OR DEPOSITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

Ohio Organizing Collaborative, et al v. Ohio Redistricting Commission, et al, No. 2021-1210 (Ohio) (political gerrymandering).

NCLCV v. Hall, No. 21-CVS-15426 (N.C. Sup. Ct.) (political gerrymandering).

Szeliga v. Lamone, Case No. C-02-CV-21-001816 (Md. Cir. Ct.) (political gerrymandering).

Montana Democratic Party v. Jacobsen, DV-56-2021-451 (Mont. Dist. Ct.) (early voting; ballot collection).

Carter v. Chapman, No. 464 M.D. 2021 (Pa.) (map drawing; amicus).

NAACP v. McMaster, No. 3:21-cv-03302 (D.S.C.) (racial gerrymandering).

Graham v. Adams, No. 22-CI-00047 (Ky. Cir. Ct.) (political gerrymandering).

Harkenrider v. Hochul, No. E2022-0116CV (N.Y. Sup. Ct.) (political gerrymandering).

LULAC v. Abbott, Case No. 3:21-cv-00259 (W.D. Tex.) (racial/political gerrymandering/VRA).

Moore et al., v. Lee, et al., (Tenn. 20th Dist.) (state constitutional compliance).

Agee et al. v. Benson, et al., (W.D. Mich.) (racial gerrymandering/VRA).

Faatz, et al. v. Ashcroft, et al., (Cir. Ct. Mo.) (state constitutional compliance).

Coca, et al. v. City of Dodge City, et al., Case No. 6:22-cv-01274-EFM-RES (D. Kan.) (VRA).

Milligan v. Allen, Case No. 2:21-cv-01530-AMM (N.D. Ala.) (VRA).

Nairne v. Ardoin, NO. 22-178-SDD-SDJ (M.D. La.) (VRA).

Robinson v. Ardoin, NO. 22-211-SDD-SDJ (M.D. La.) (VRA).

Republican Party v. Oliver, No. D-506-CV-2022-00041 (N.M. Cir. Ct. (Lea County)) (political gerrymandering).

COURT APPOINTMENTS

Appointed as Voting Rights Act expert by Arizona Independent Redistricting Commission (2020)

Appointed Special Master by the Supreme Court of Virginia to redraw maps for the Virginia House of Delegates, the Senate of Virginia, and for Virginia's delegation to the United States Congress for the 2022 election cycle.

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

INTERNATIONAL PRESENTATIONS AND EXPERIENCE

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

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

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

TEACHING

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

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

Political Participation and Voting Behavior, Springs 2020, 2021, 2022, 2023.

Survey Methodology, Fall 2022, Spring 2024.

PUBLICATIONS

James G. Gimpel, Andrew Reeves, & Sean Trende, "Reconsidering Bellwether Locations in U.S. Presidential Elections," Pres. Stud. Q. (2022) (forthcoming, available online at <http://doi.org/10.1111/psq.12793>).

REAL CLEAR POLITICS COLUMNS

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

4 Exhibit 2

Figure 23: Racial Dotplots, Bergamot 1 Map

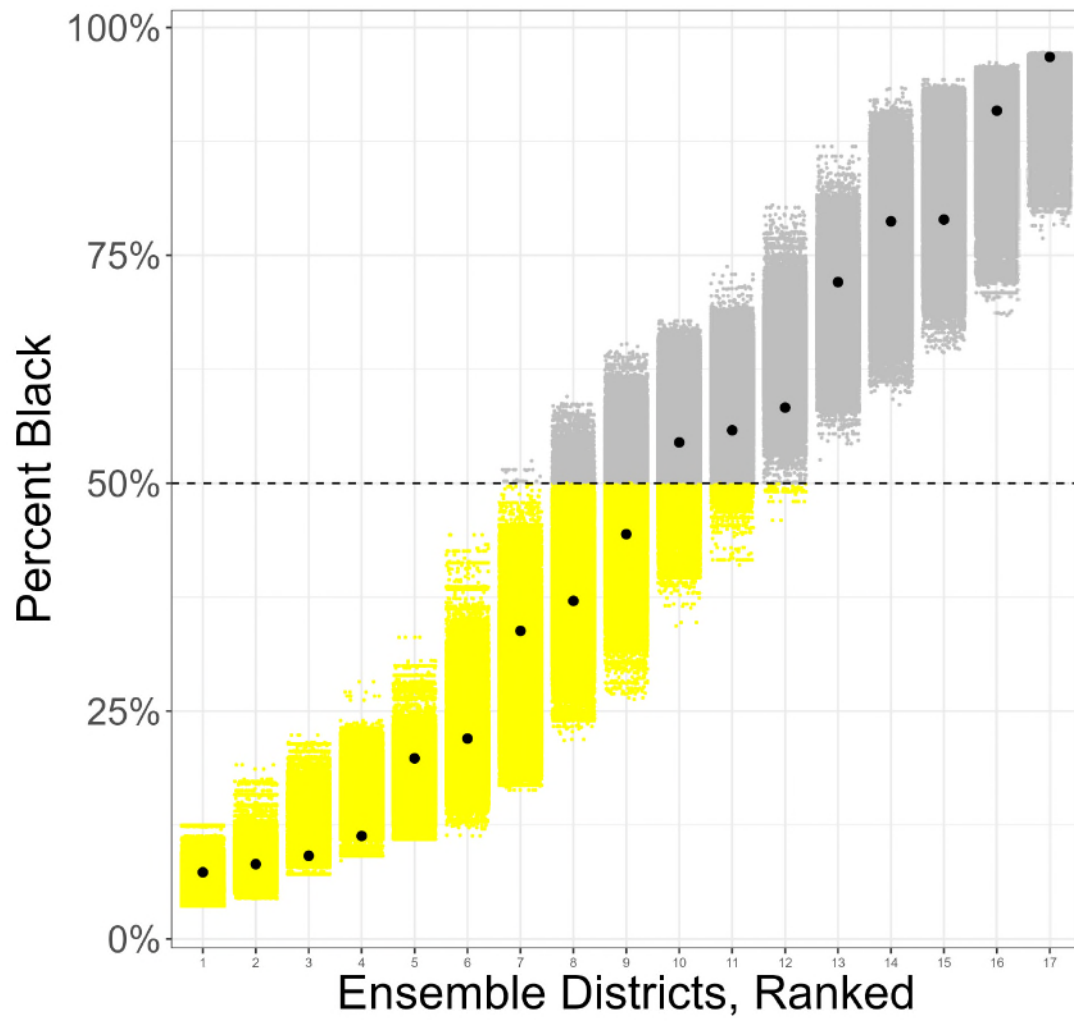


Figure 24: Racial Dotplots, Bergamot 2 Map

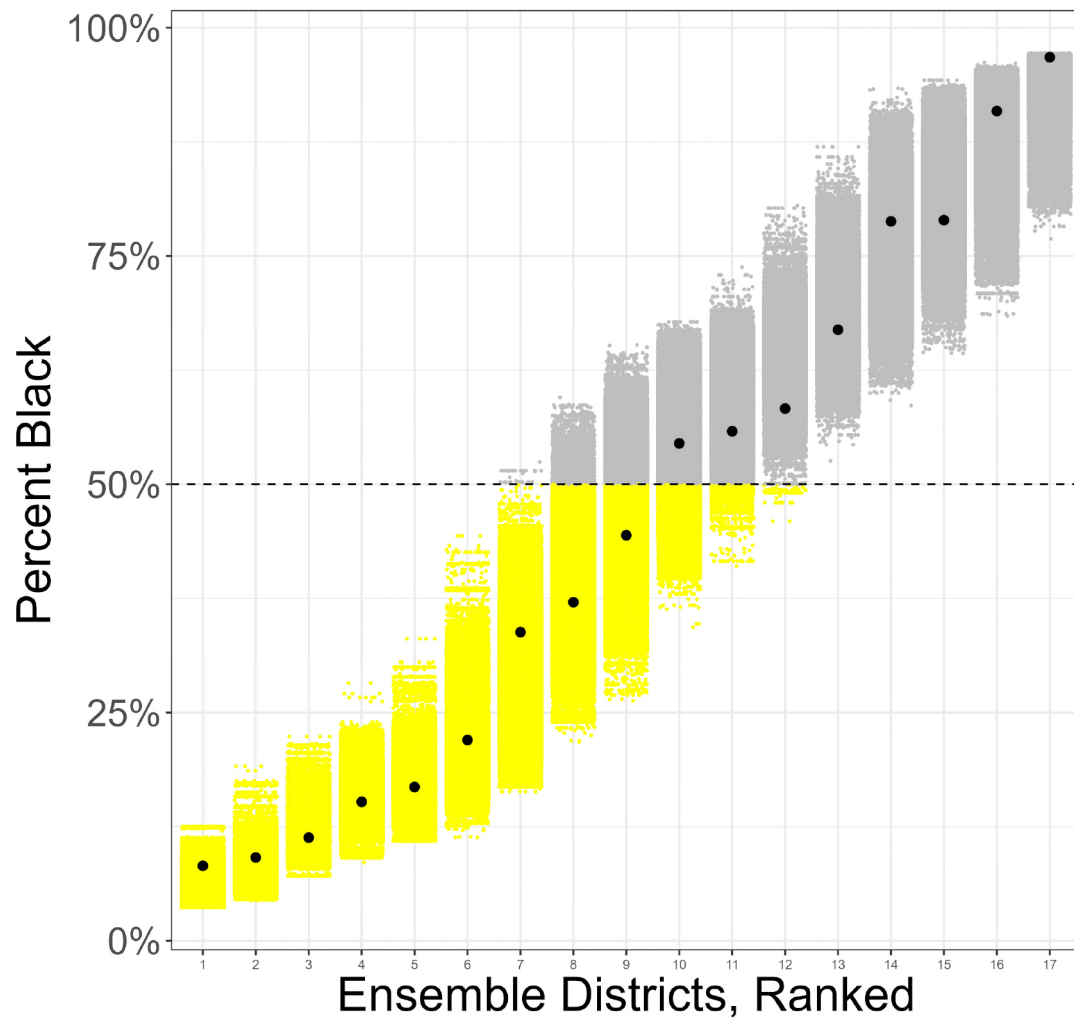


Figure 25: Racial Dotplots, Daisy Map

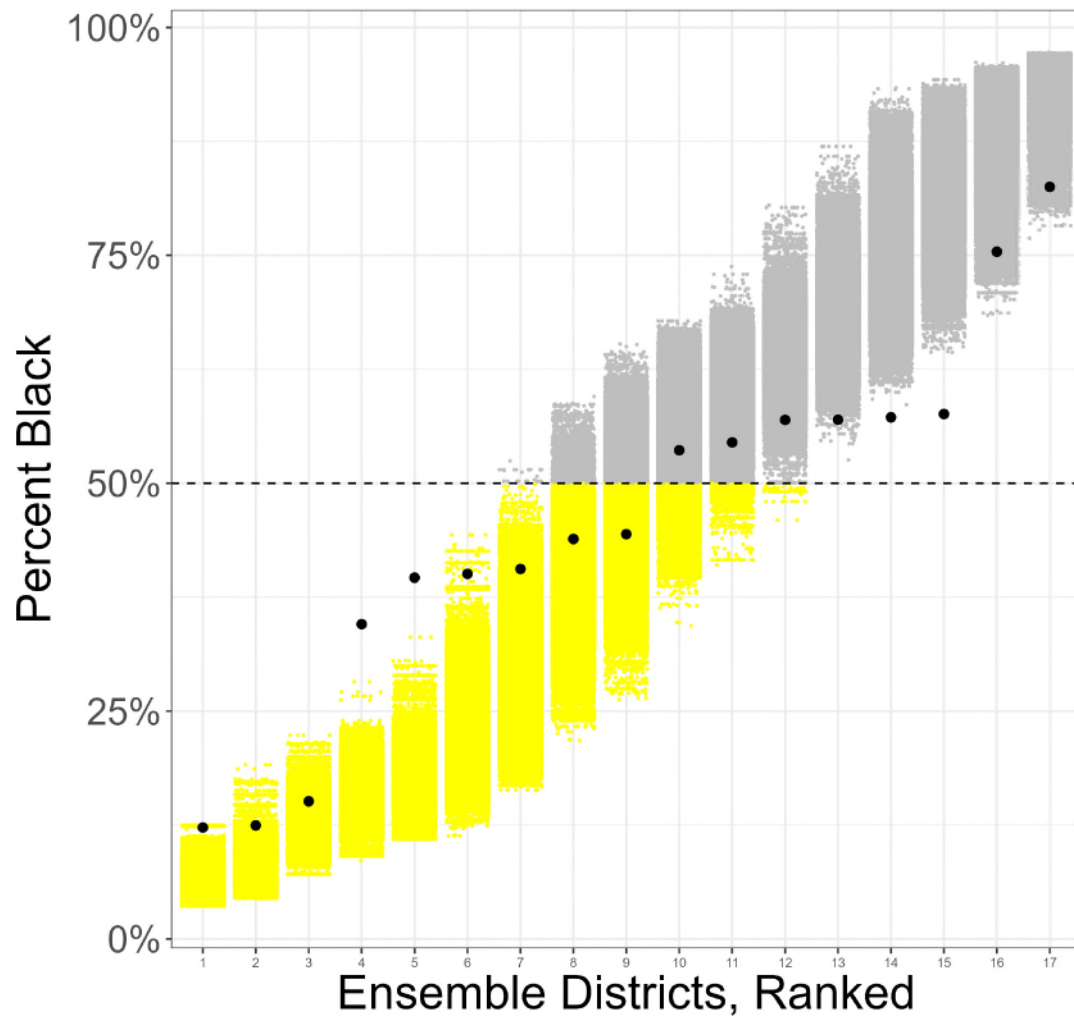


Figure 26: Racial Dotplots, Motown Sound Map

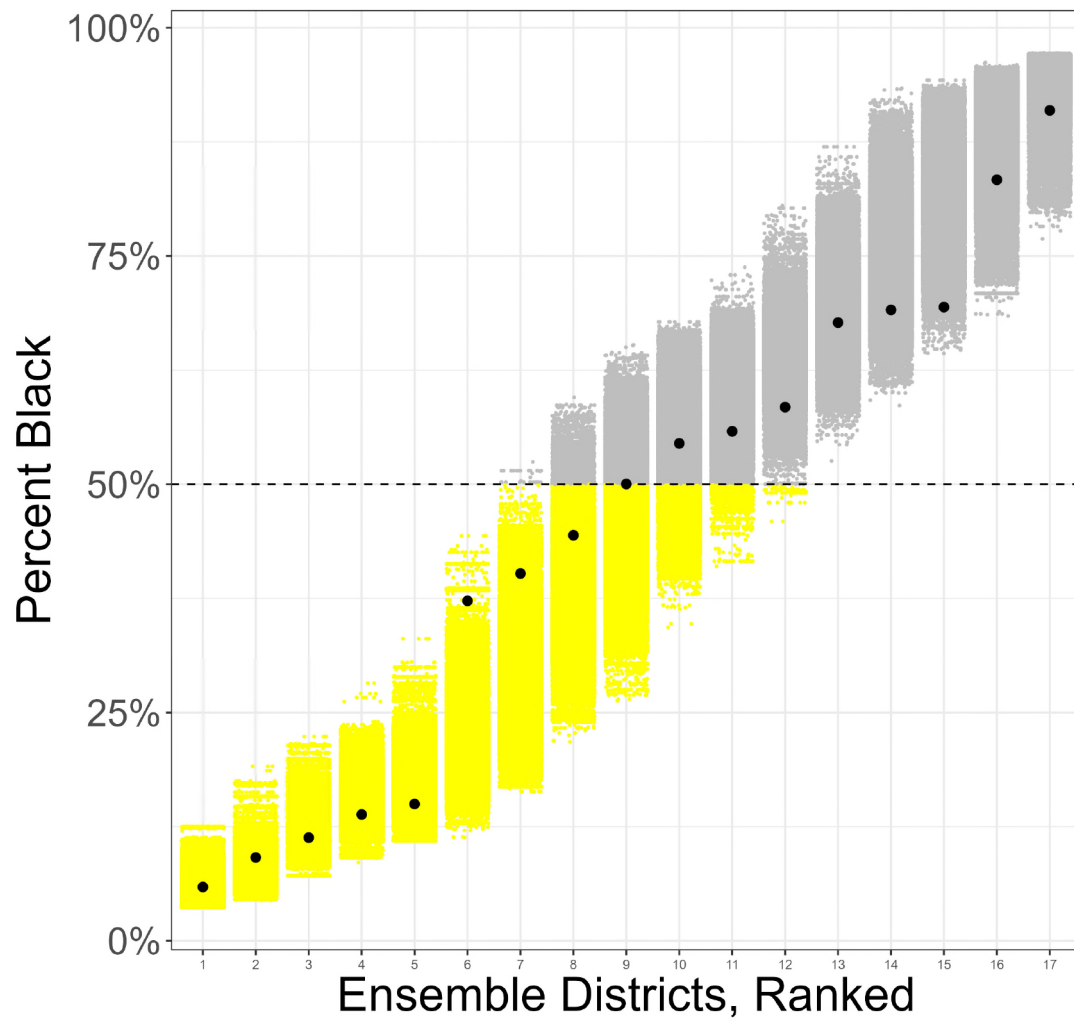


Figure 27: Racial Dotplots, Spirit of Detroit Map

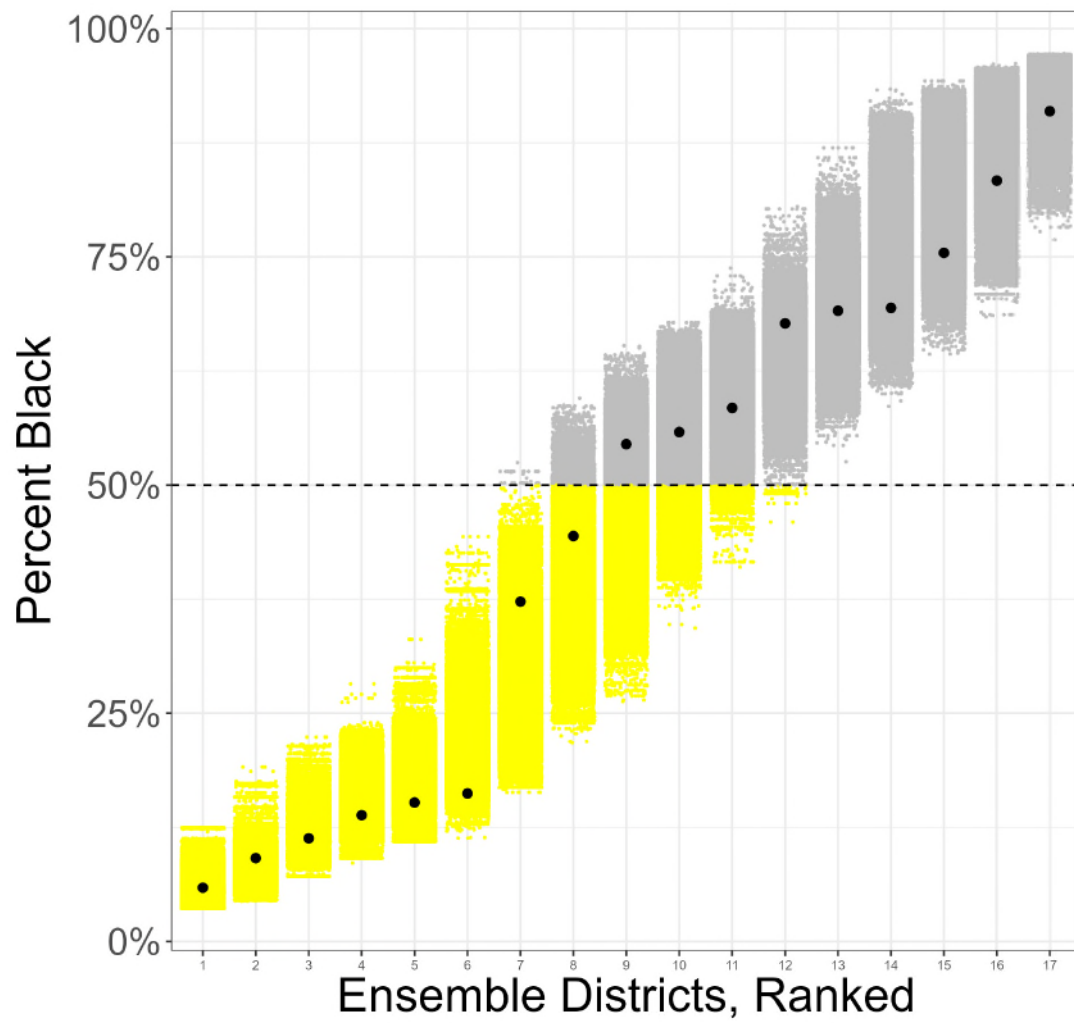


Figure 28: Racial Dotplots, Riverwalk FC Map

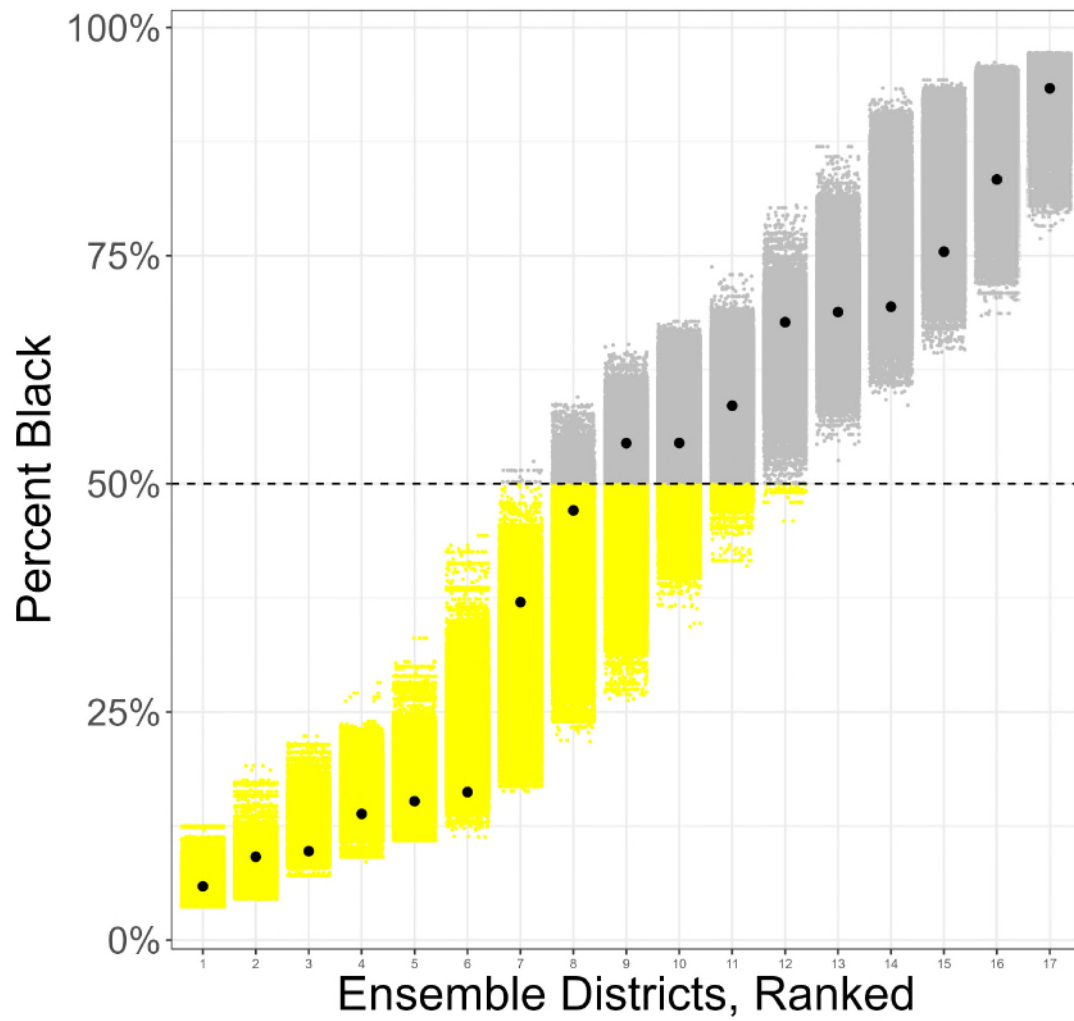


Figure 29: Racial Dotplots, Spirit of Detroit Map

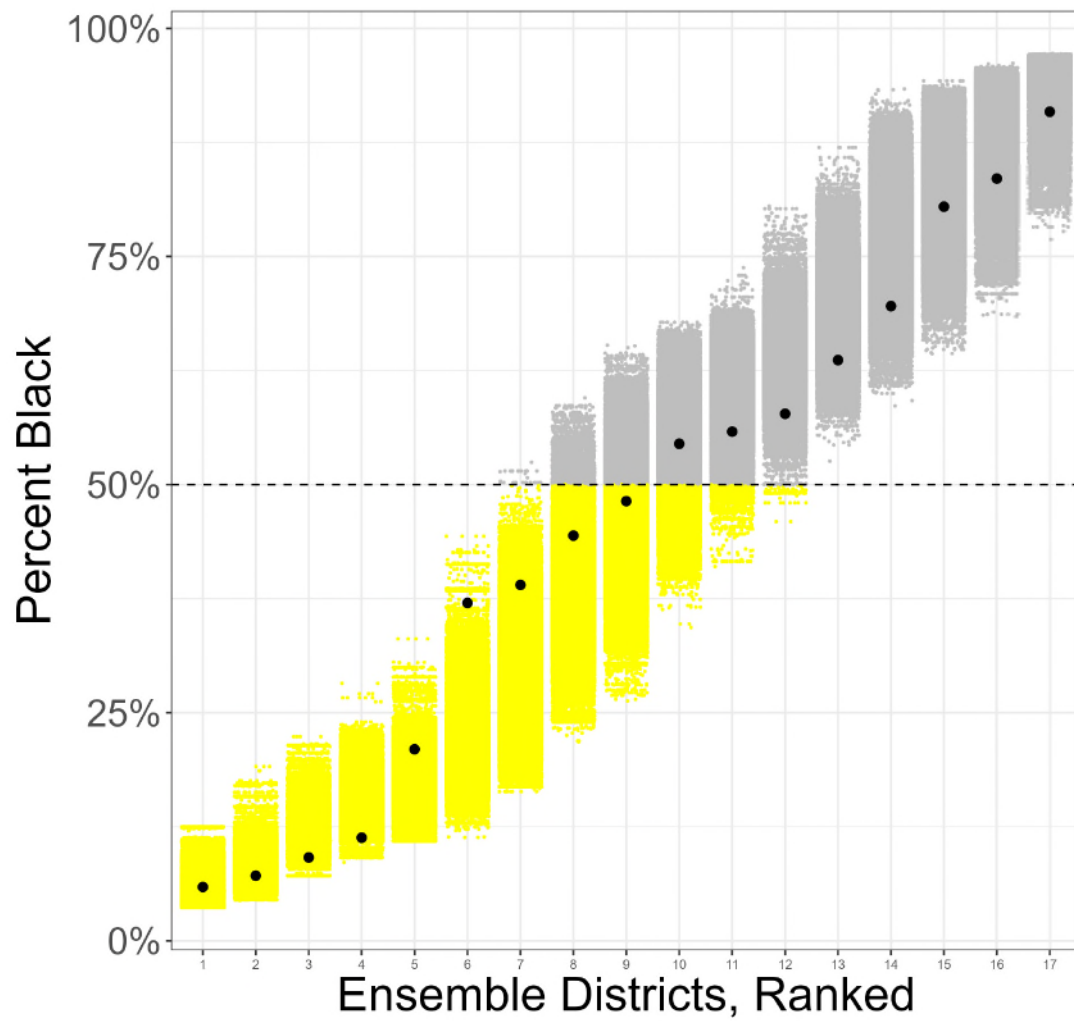


Figure 30: Racial Dotplots, Spirit of Detroit Map

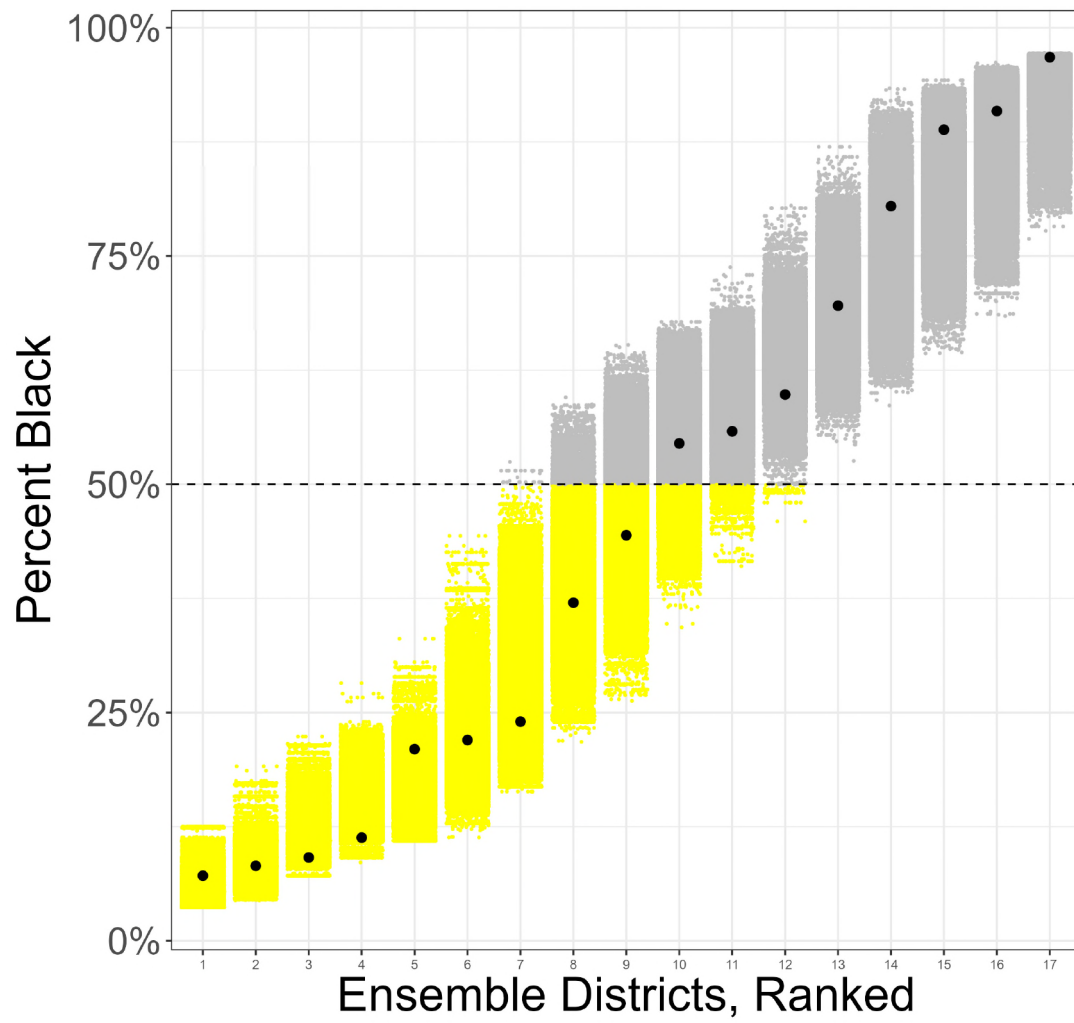


Figure 31: Racial Dotplots, Proposed Map

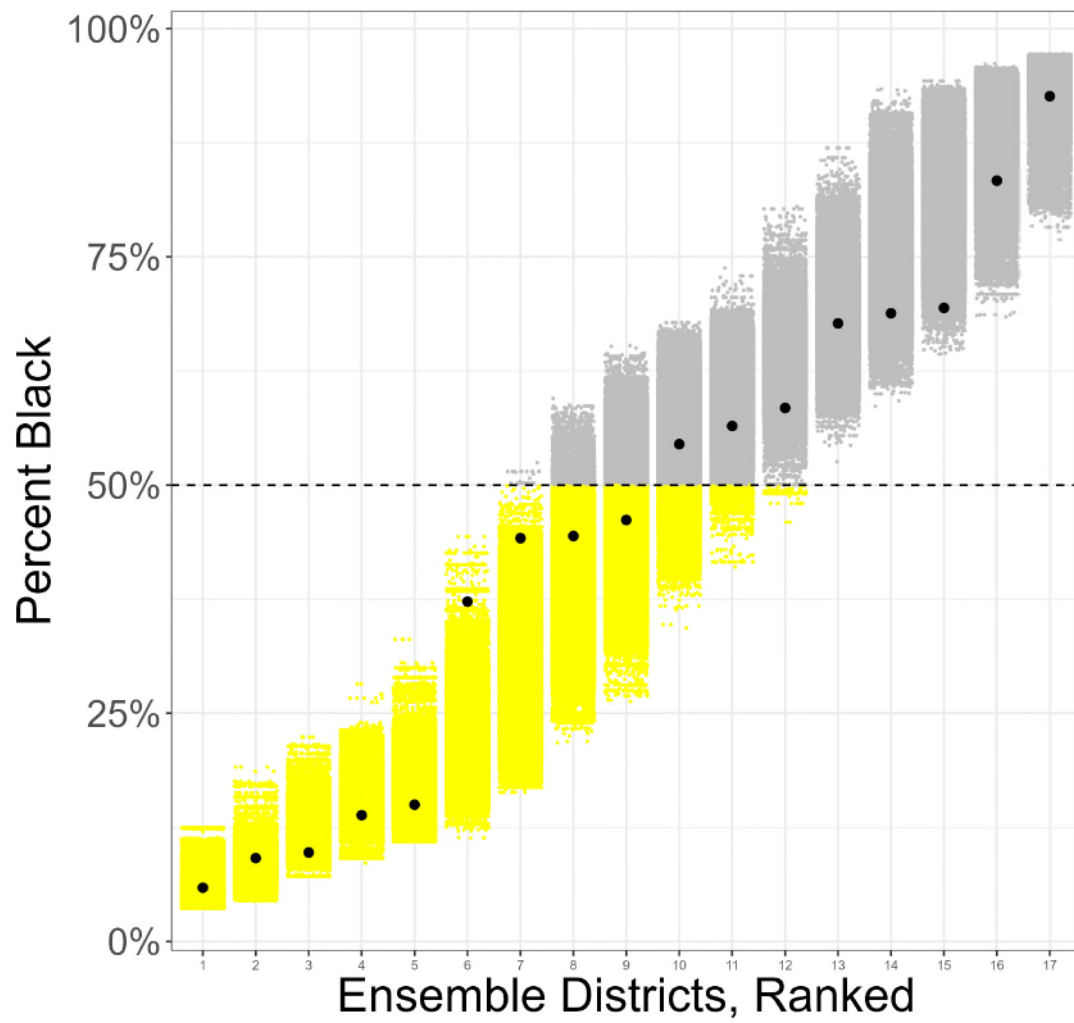


Figure 32: Racial Dotplots, Tulip Map

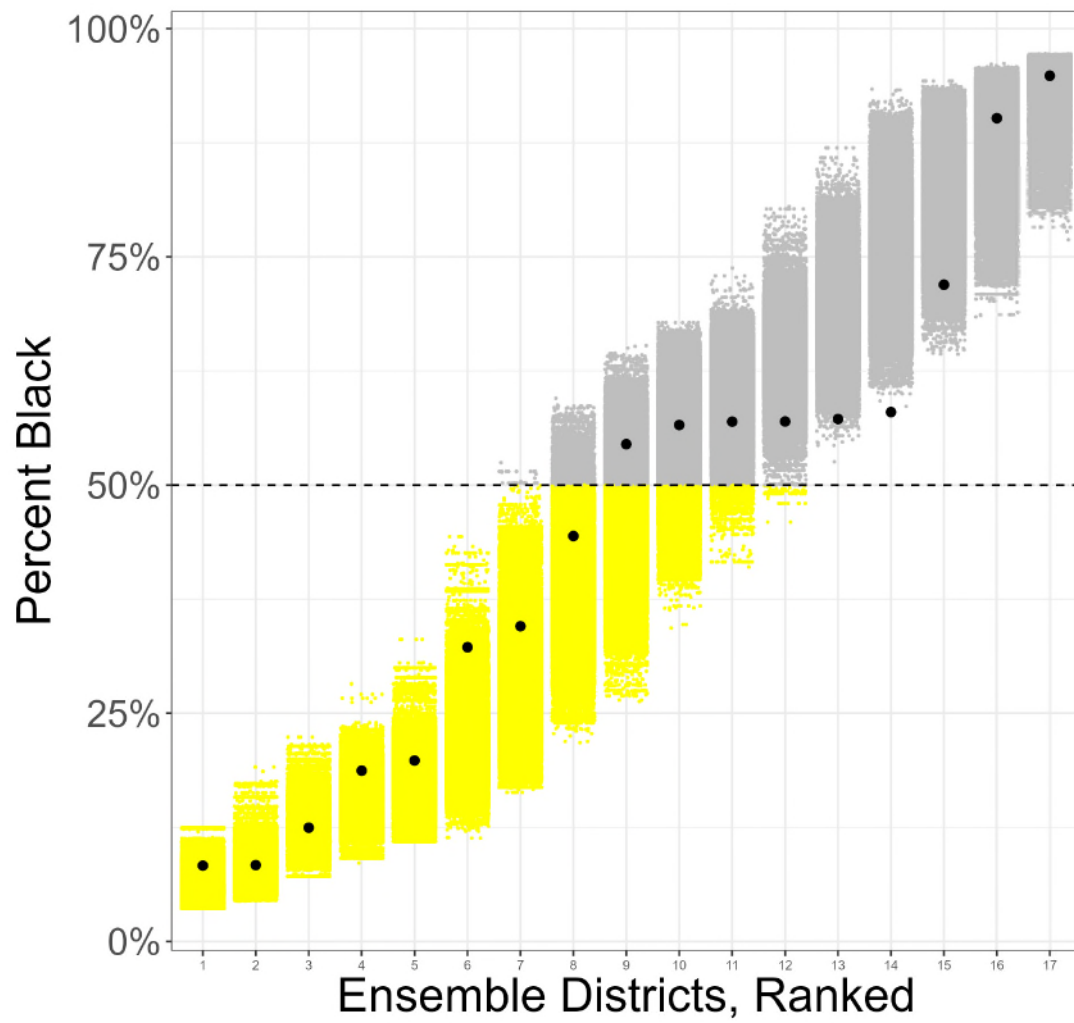


Figure 33: Racial Dotplots, Tiger Lily Map

