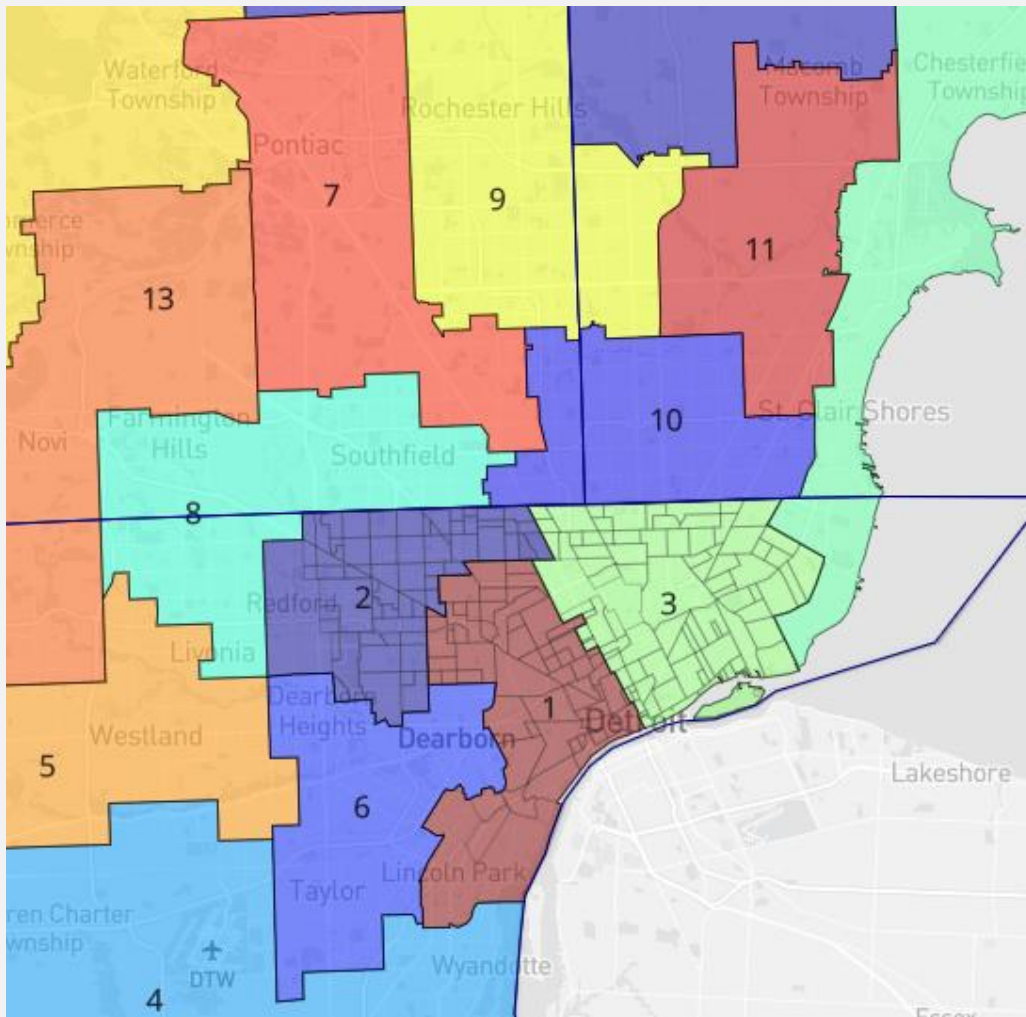


A PROPOSED REMEDIAL MAP OF MICHIGAN SENATE ELECTORAL DISTRICTS “IPPSR SENATE 4/1/2024”

“The commission shall receive for consideration written submissions of proposed redistricting plans and any supporting materials, including underlying data, from any member of the public,” CONST. of MI Art. IV § 6(8).



Jon X. Eguia. April 1, 2024

Latest version available [here](#).

As the Michigan Independent Citizen Redistricting Commission begins work to draw a Remedial map of electoral districts to be used in the 2026 and 2030 elections to the Michigan Senate, I submit this map proposal as an example to show that it is possible to draw a map that:

- i. redraws the boundaries of the six districts (districts D1, D3, D6, D8, D10 and D11) found to be in violation of the Equal Protection clause in *Agee v Benson*, with their new boundaries set not on the basis of race, thus providing the main remedy required by the Court;
- ii. leaves intact almost all of the other 32 districts in the official 2022 MI Senate map adopted by the Commission in 2021, thus narrowly targeting the revision to attain exclusively the remedy sought by the *Agee v Benson* ruling, and maximally deferring to the Commission's work otherwise;
- iii. creates districts of opportunity for minority voters, wherever they constitute a majority in a geographically compact area, to comply with the Voting Rights Act;
- iv. reflects the communities of common interests in the City of Detroit and surrounding areas in Metro Detroit;
- v. preserves the partisan fairness results attained by the official 2022 MI Senate map, introducing no new advantage or disadvantage to any party through these changes;
- vi. performs at least as well as the official 2022 MI Senate map on equalizing population across districts, respecting county, city and township boundaries, and compactness.

This document is divided into three sections. In Part I, I present the map, overall and district by district. In Part II I explain the motivation, process, and method I used to draw it. And in Part III, I evaluate the map according to quantitative measures of compliance with its objectives.

The map is publicly available at [this link](#) at

<https://davesredistricting.org/join/0df27ad5-cbc6-4701-9954-02acafc9b6f4>

Shapefiles are available at [this link](#) at

<https://drive.google.com/file/d/1B4UrZdVsANI36Kp-TXZyWnsktm9PrmP3/view?usp=sharing>

PART I. THE “IPPSR SENATE 4/1/2024” MAP

This map preserves 32 of the 38 districts in the official 2022 MI Senate map, which the State of Michigan makes available at <https://www.michigan.gov/micrc/mapping-process/final-maps>.

This proposed map only revises districts D1, D2, D3, D6, D7, D8, D10 and D11, all of them in Wayne Co., Oakland Co., or Macomb Co. All these revised districts are shown here.

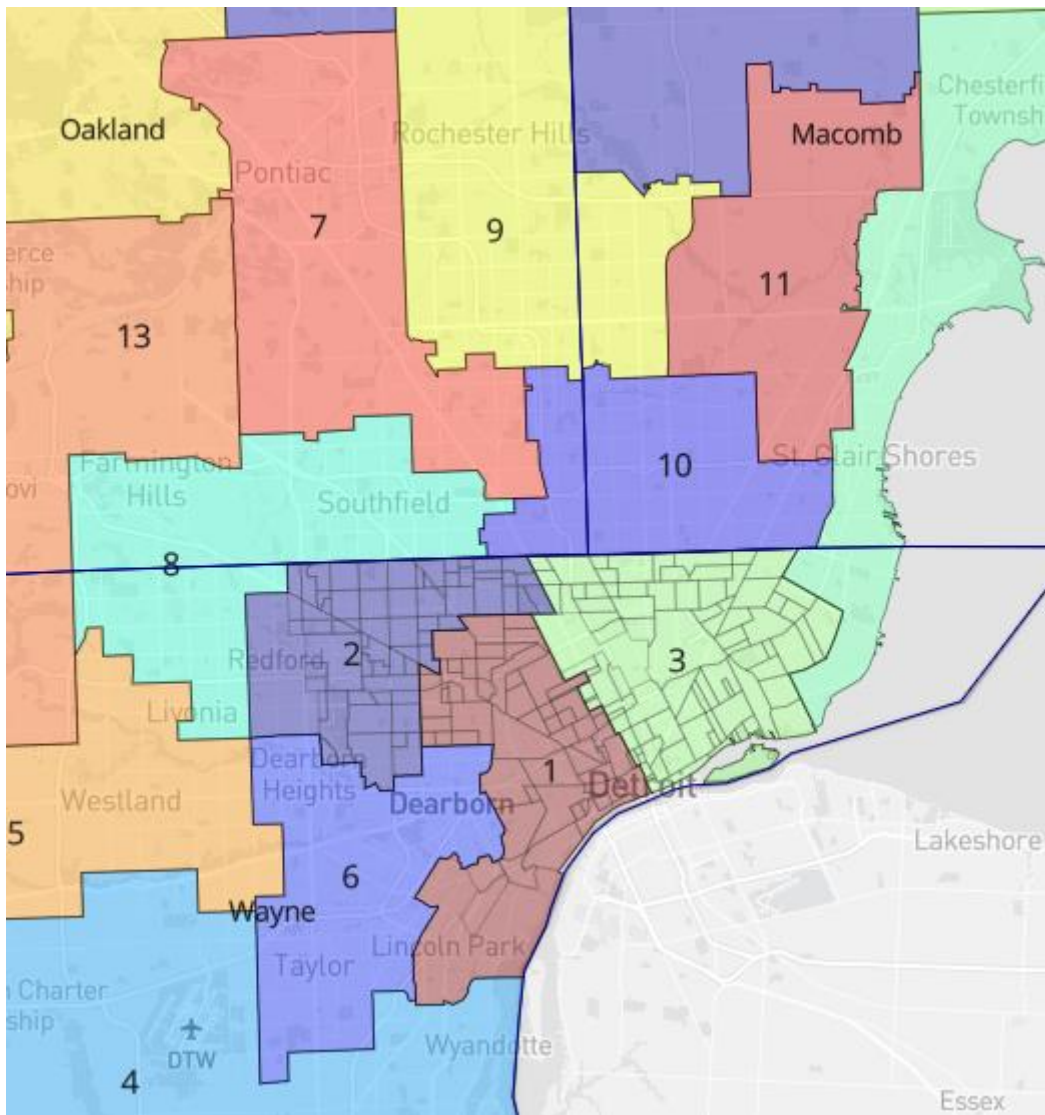


Figure 1. Map of all eight revised districts (districts D1, D2, D3, D6, D7, D8, D10 and D11).

I next provide a more focused map of the districts in Wayne Co. that are in or adjacent to the City of Detroit.

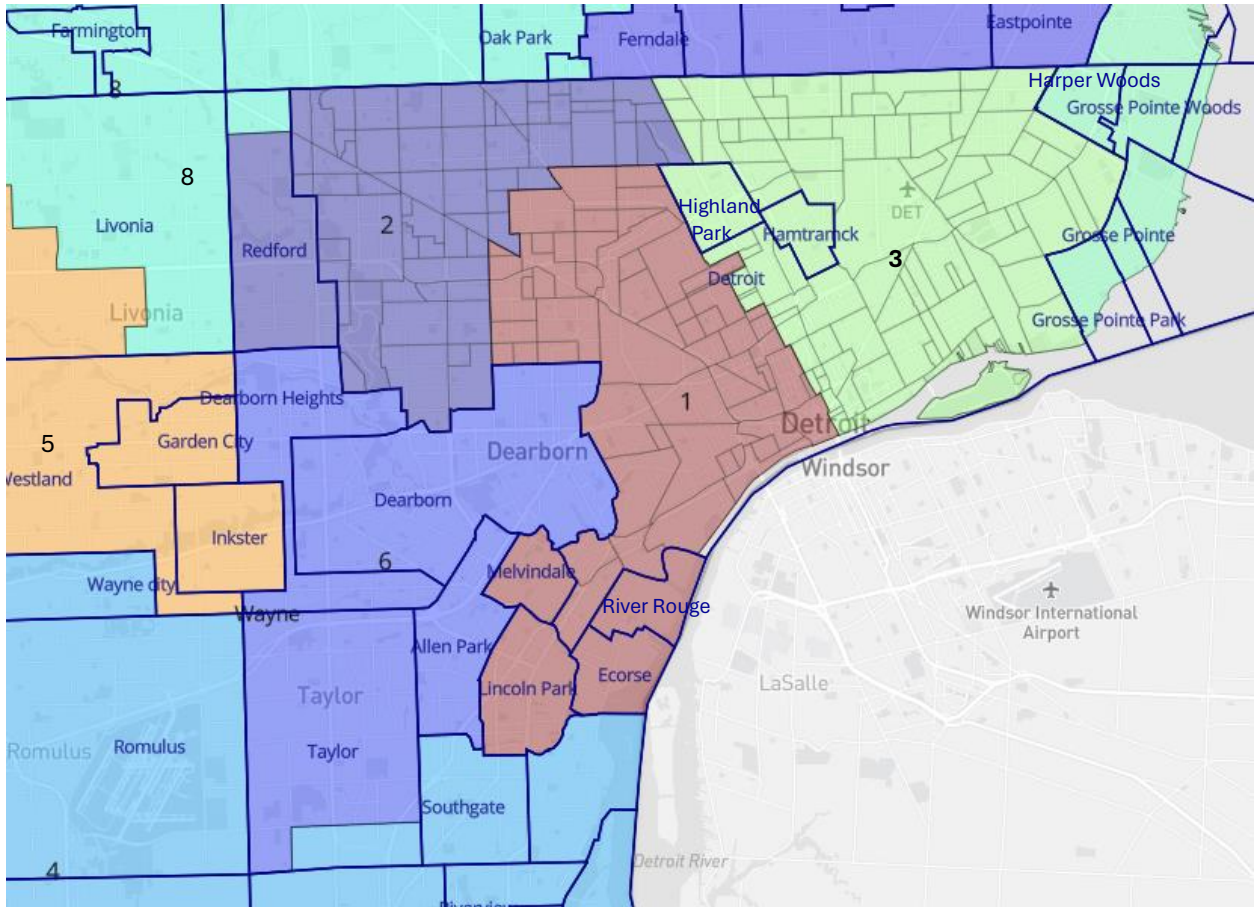


Figure 2. Districts D1, D2, D3, and D6.

Next, I show and I describe each district individually, starting with district D3 on the East Side of Detroit, and proceeding in a clockwise spiral to end in district D11 in central Macomb Co.

Names in blue refer to cities, and blue lines to their boundaries; soft gray lines denote the boundaries of current neighborhoods as compiled by the City of Detroit.

I.i. DISTRICT 3: DETROIT EAST

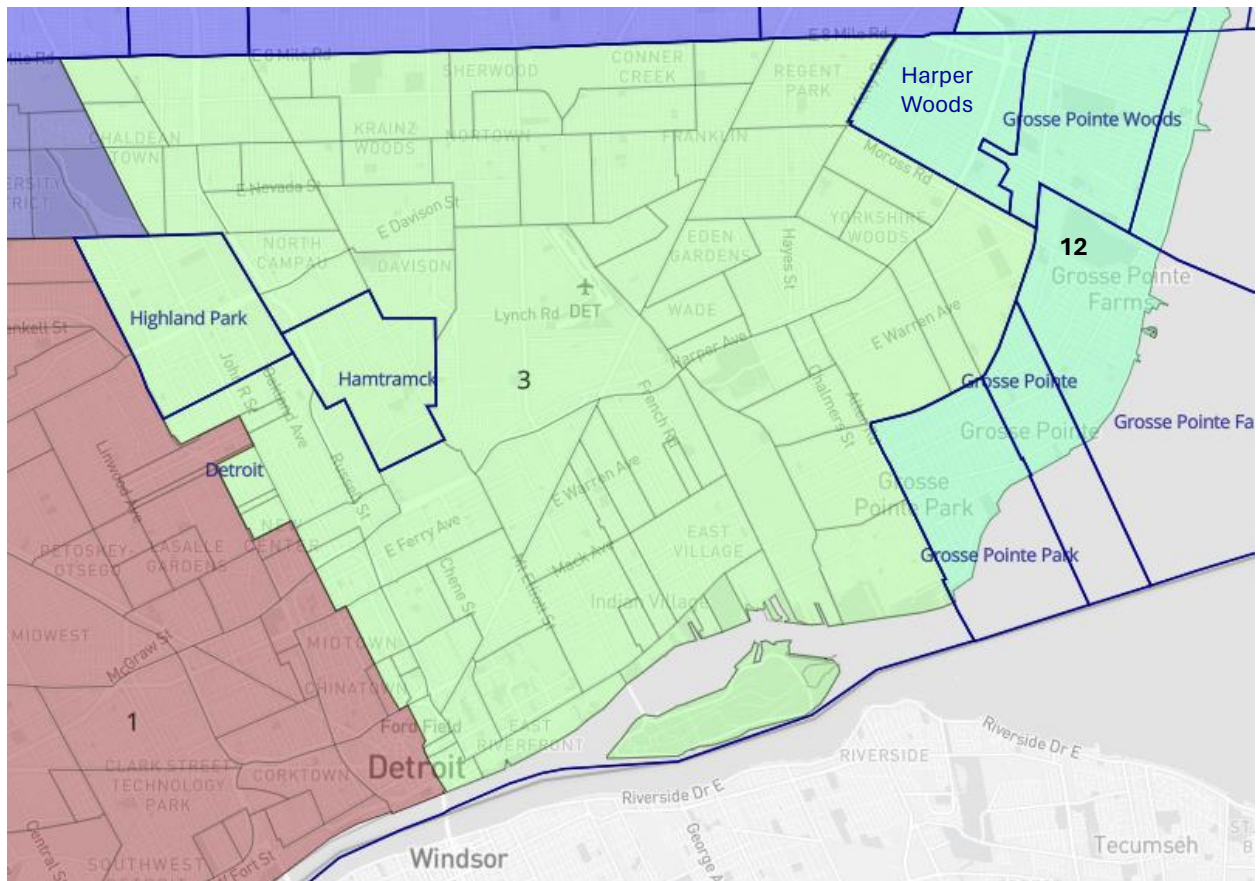


Figure 3. District D3: Detroit East Side.

District D3 includes Detroit's East side, and the cities of Hamtramck and Highland Park.

City, county, and international borders set the district boundaries to its north, east and south. To the west, north of Highland Park the district's boundary follows the dividing line between city council districts 2 and 3 along Woodward Ave. according to the 2026 plan enacted by the City in February 2024; between the Detroit River and Wayne State University it follows the dividing line between city council districts 5 and 6 according to the same plan, and between Wayne State and Highland Park it follows neighborhood boundary lines mostly along Woodward Ave. and the M-10 (the Lodge) freeway.

Most of the district is constituted of low-income neighborhoods and communities.

I.ii. DISTRICT 1: SOUTHWEST AND MIDWEST DETROIT

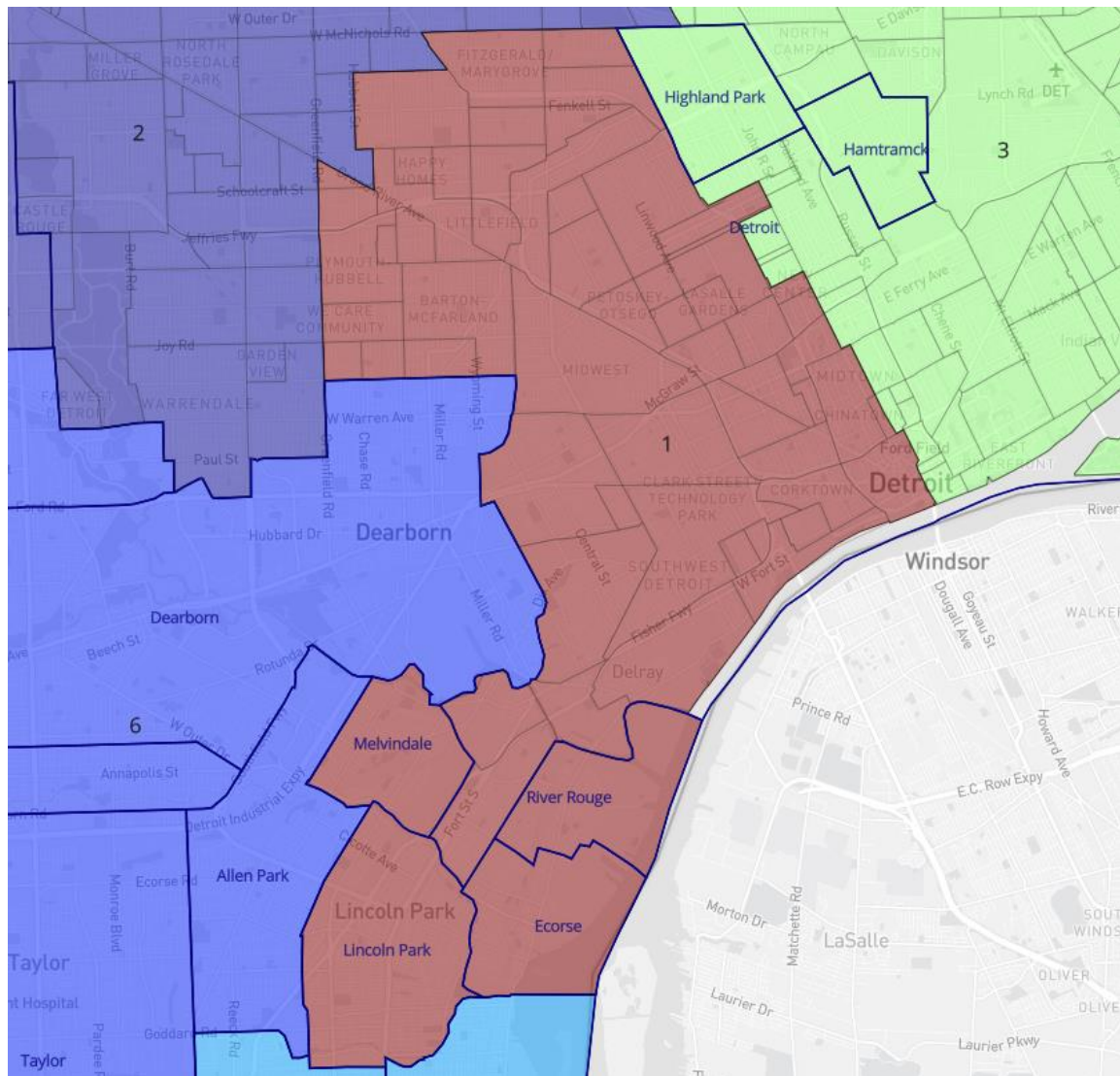


Figure 4. District 1: South-west and Mid-west Detroit, and adjacent cities and neighborhoods.

District D1 includes Southwest Detroit and the four Downriver cities nearest to Detroit (namely River Rouge, Melvindale, Lincoln Park and Ecorse), plus Midwest Detroit and the closest neighborhoods in West Detroit, up to 6 Mile Rd at the northern boundary of the district, and up to Greenfield Rd to the west.

This district includes the largest Spanish-speaking community in the state, in Southwest Detroit, and it is predominantly low-income in most of its residential areas, with the dense business area in Downtown Detroit as an exception of great economic activity concentrated in a small geographic area.

I.iii. DISTRICT 6: DEARBORN

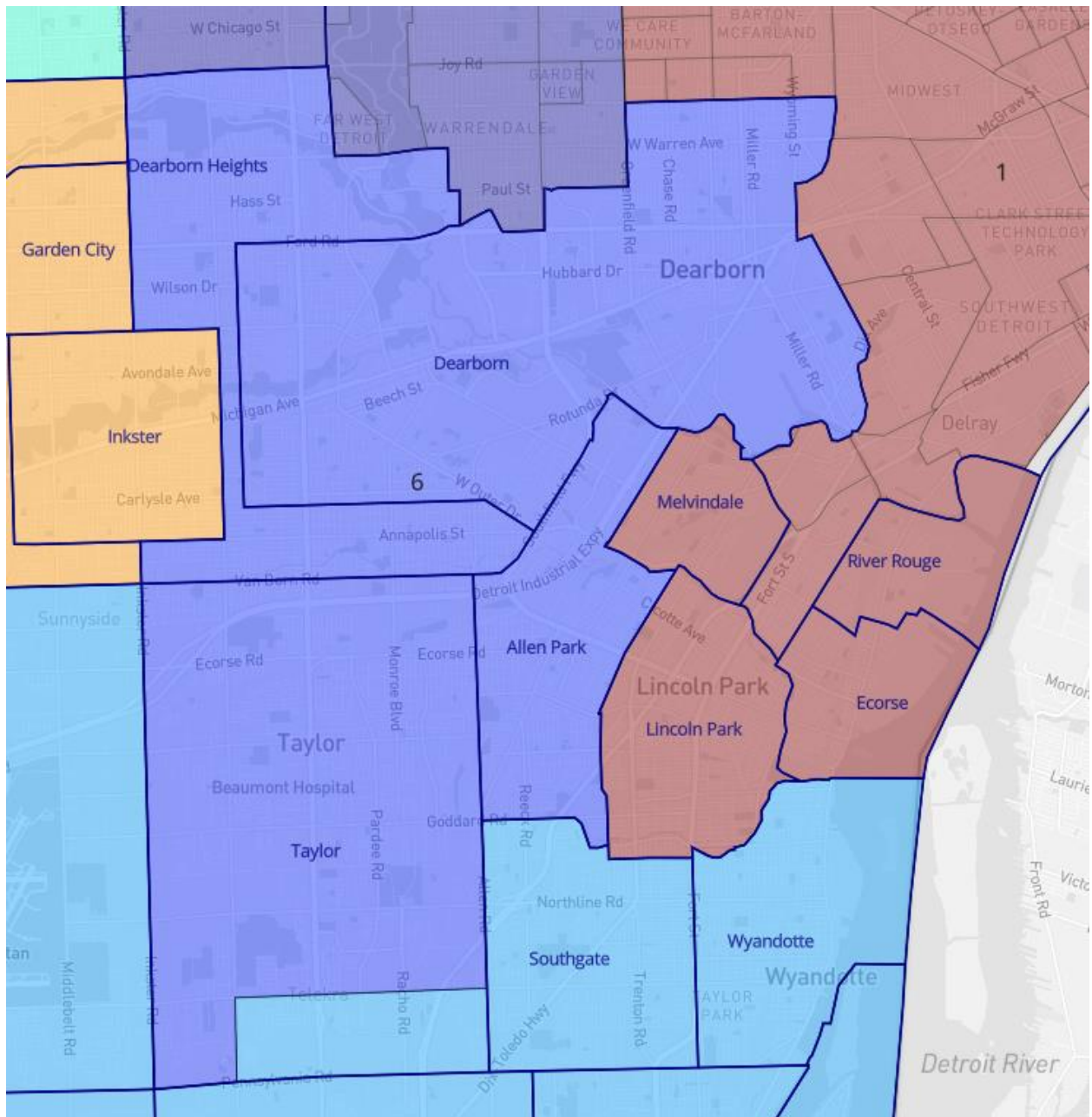


Figure 5. District 6: Dearborn.

District D6 includes the cities of Dearborn, Dearborn Heights, and Allen Park in their entirety, and most of the City of Taylor. The boundaries of the district follow city boundaries, except where they cut through the City of Taylor following the boundary of district D4 as drawn by the Commission in its 2022 Official Senate map (district D4 is left unchanged as in the 2022 map).

This district includes the largest Muslim and Arab-American communities in the state.

I.iv. DISTRICT 2: WEST DETROIT AND REDFORD

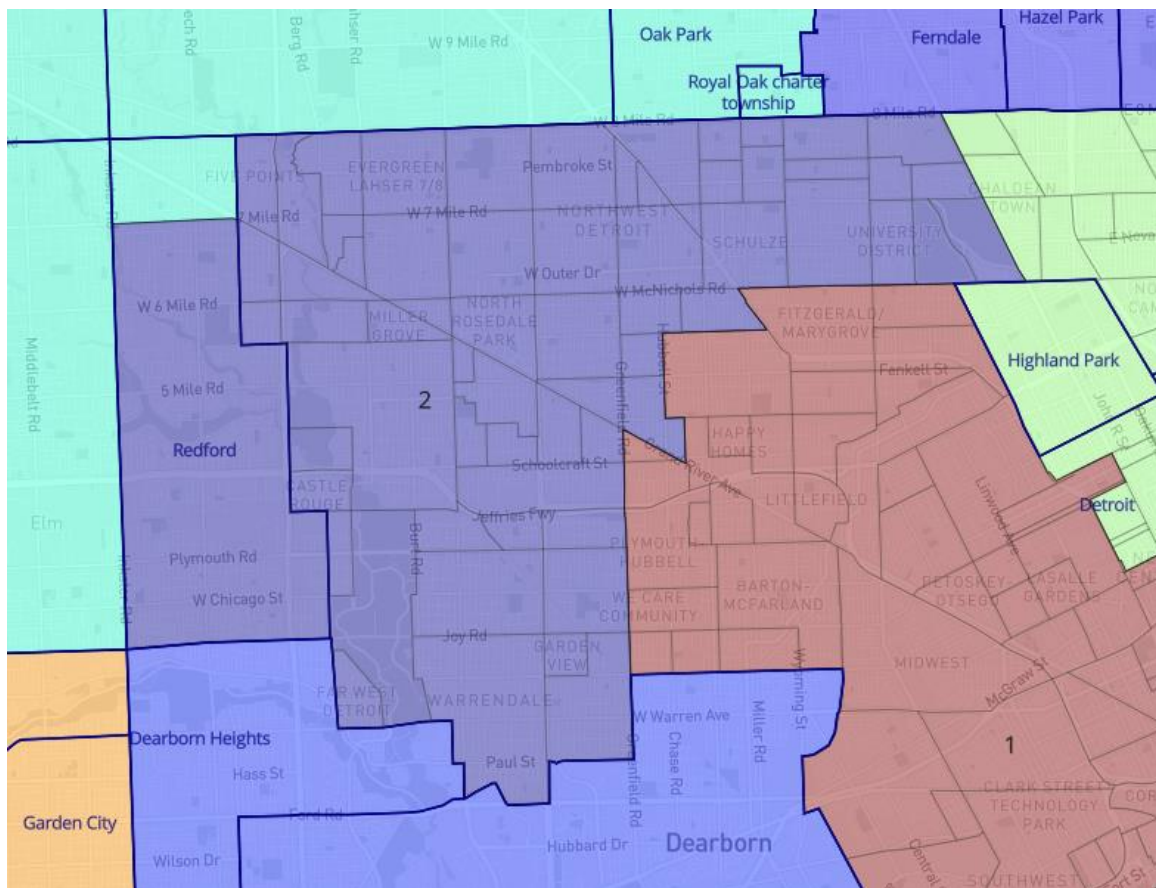


Figure 6. District 2: West Detroit and Redford.

District D2 contains neighborhoods on the west side of Detroit, north of 6 Mile Rd., west of Greenfield Rd., and those closest to the intersection of these two roads, plus most of the City of Redford adjacent to Detroit, immediately to its west. The boundary lines follow the county boundary along 8 Mile Rd to the north, the City of Detroit 2026 city council district boundaries between 8 Mile Rd and Highland Park, city boundaries dividing Detroit and Highland Park along 6 mile Rd, and then neighborhood boundaries within the City of Detroit first following 6 Mile Rd, and ultimately Greenfield Rd., to the city boundary separating Detroit and Dearborn. The district boundary then follows Detroit city limits and then Redford township limits until 7 Mile Rd, where the boundary cuts a 1.5 mile straight line through Redford along 7 Mile Rd to connect back to the Detroit city limits.

While most of the neighborhoods in the core of this district are low income, the district includes some of the relatively more affluent areas of the City of Detroit, in Palmer Woods and Sherwood Forest adjacent to the Detroit Golf Club at its easternmost end, and the also relatively more affluent Redford township to its westernmost end.

Figure 7. District 8. Farmington, Southfield, and adjacent Detroit suburbs.

District D8 is composed of several Detroit suburbs northwest of the City of Detroit limits, on both sides of 8 Mile Rd., including much of Livonia in Wayne Co., and all of Farmington, Southfield City, Oak Park, Huntington Woods, and Pleasant Ridge in Oakland Co. The boundary lines on the West half of this district are pinned down by the boundaries of districts D5 and D13, left unchanged from the Commission's 2022 Senate map. The boundary separating district D8 from districts D8 and D2 follows city and township boundaries, except for a straight 1.5mile connecting line along 7 Mile Rd. through Redford township, necessary to better equalize population across districts.

These suburbs include considerable economic disparity, featuring some of the most affluent communities in the state of Michigan (in Huntington Woods and Pleasant Ridge), and richer than average areas in Farmington and Livonia, in close proximity to areas such as Southfield and Oak Park with average household income similar to but below the state's average household income.

I.vi. DISTRICT 7: PONTIAC AND BLOOMFIELD

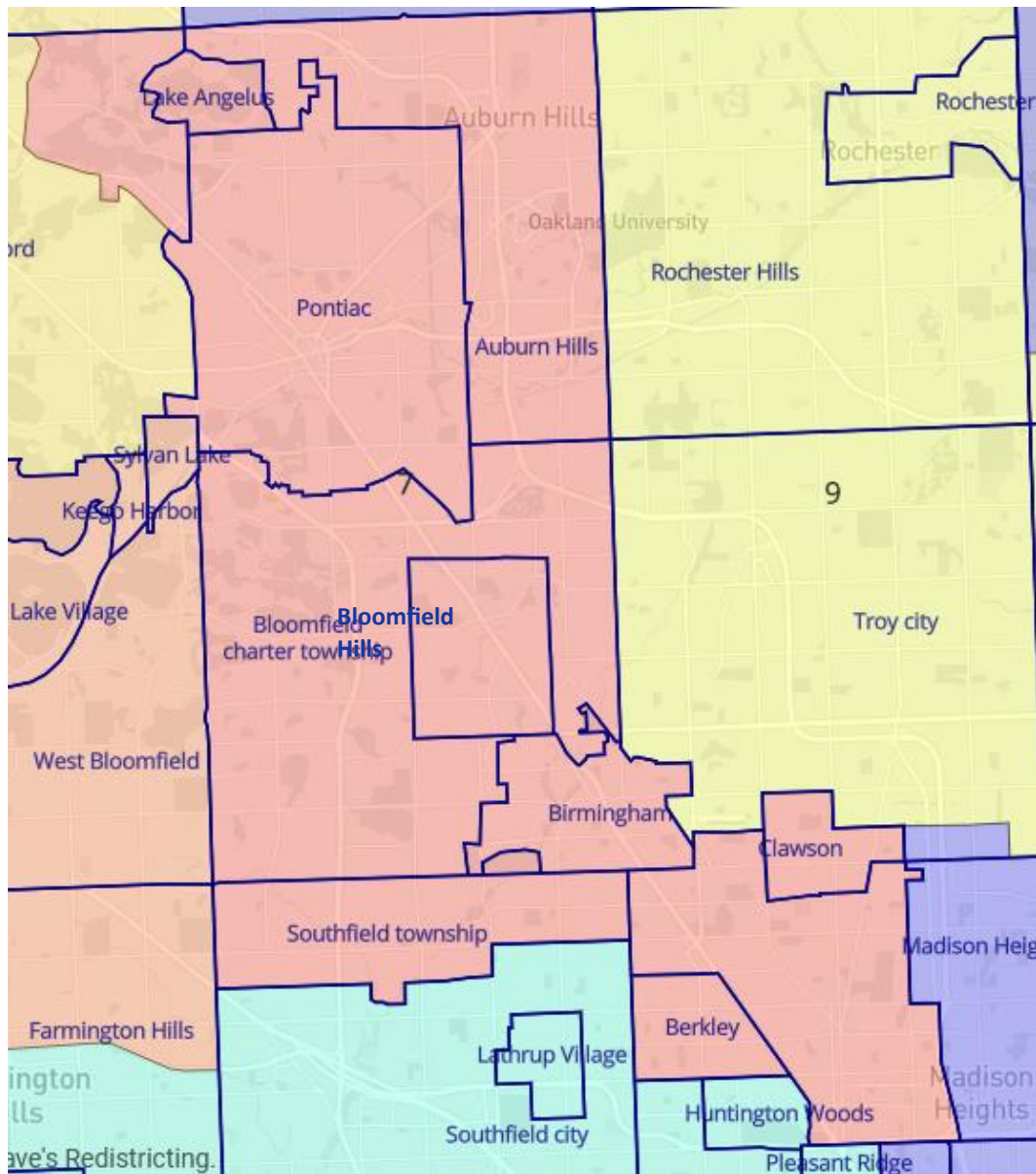


Figure 7. District 7: Pontiac, Bloomfield and surrounding Communities.

District D7 includes Pontiac, Auburn Hills, Bloomfield, Royal Oak City and smaller municipalities adjacent to these. Its boundary lines to the west, north and east are pinned down by the boundaries of districts D13, D23, D24 and D9 left unchanged from the Commission's 2022 Senate map. The district boundaries to the south follow, without exception, city and township boundary lines.

District D7 features extreme economic inequality, including some of the poorest neighborhoods in the state in Pontiac, with some of the richest in close proximity in Bloomfield charter township.

I.vii. DISTRICT 7: WARREN.

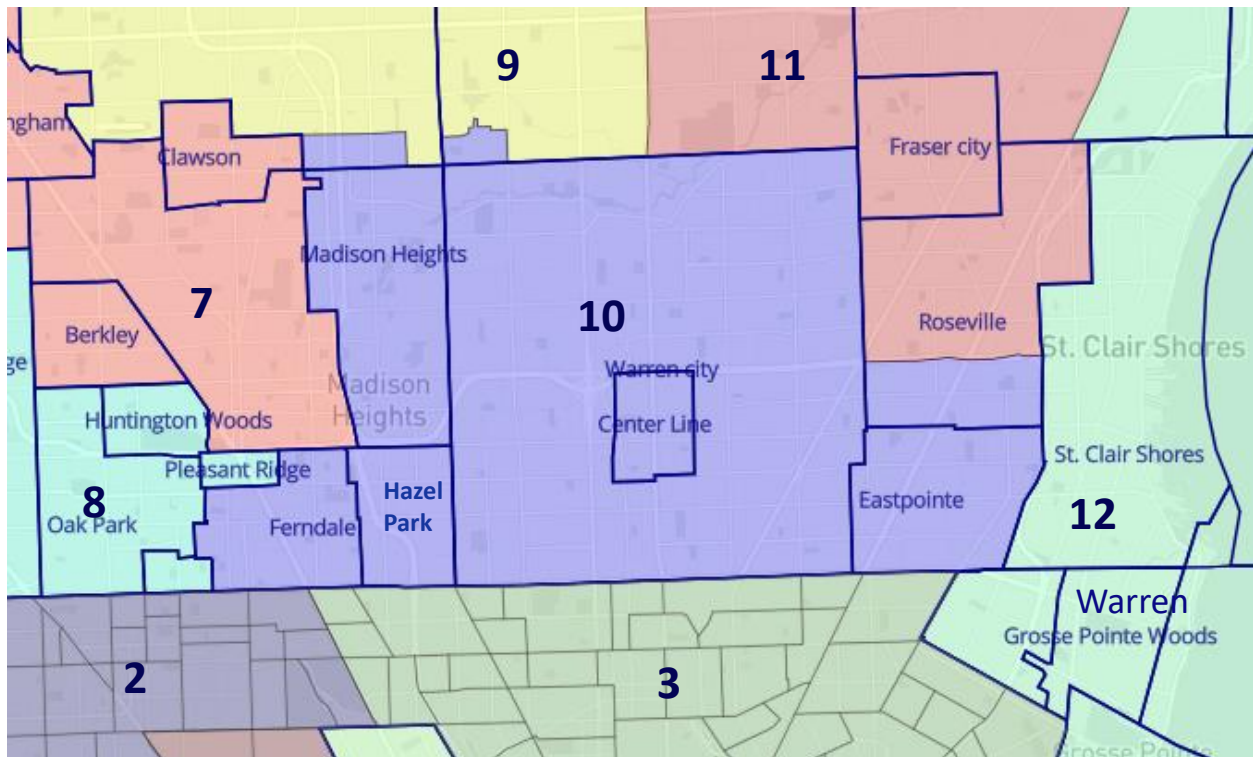


Figure 9. District 10: Warren.

District D10 is centered on Warren City, and it includes the surrounding cities of Madison Heights, Hazel Park and Ferndale.

District boundaries are either pinned down by the boundary of District D10, inherited from the Commission's 2022 Senate map, or else they follow city and township boundary lines, except where it cuts a short straight line through Roseville along 11 Mile Rd.

This is predominantly a middle, working class district, with average incomes ranging from 25% below (Centerline) to 25% above (Ferndale) the average for the state of Michigan.

I.viii. DISTRICT 11: SOUTH-CENTRAL MACOMB

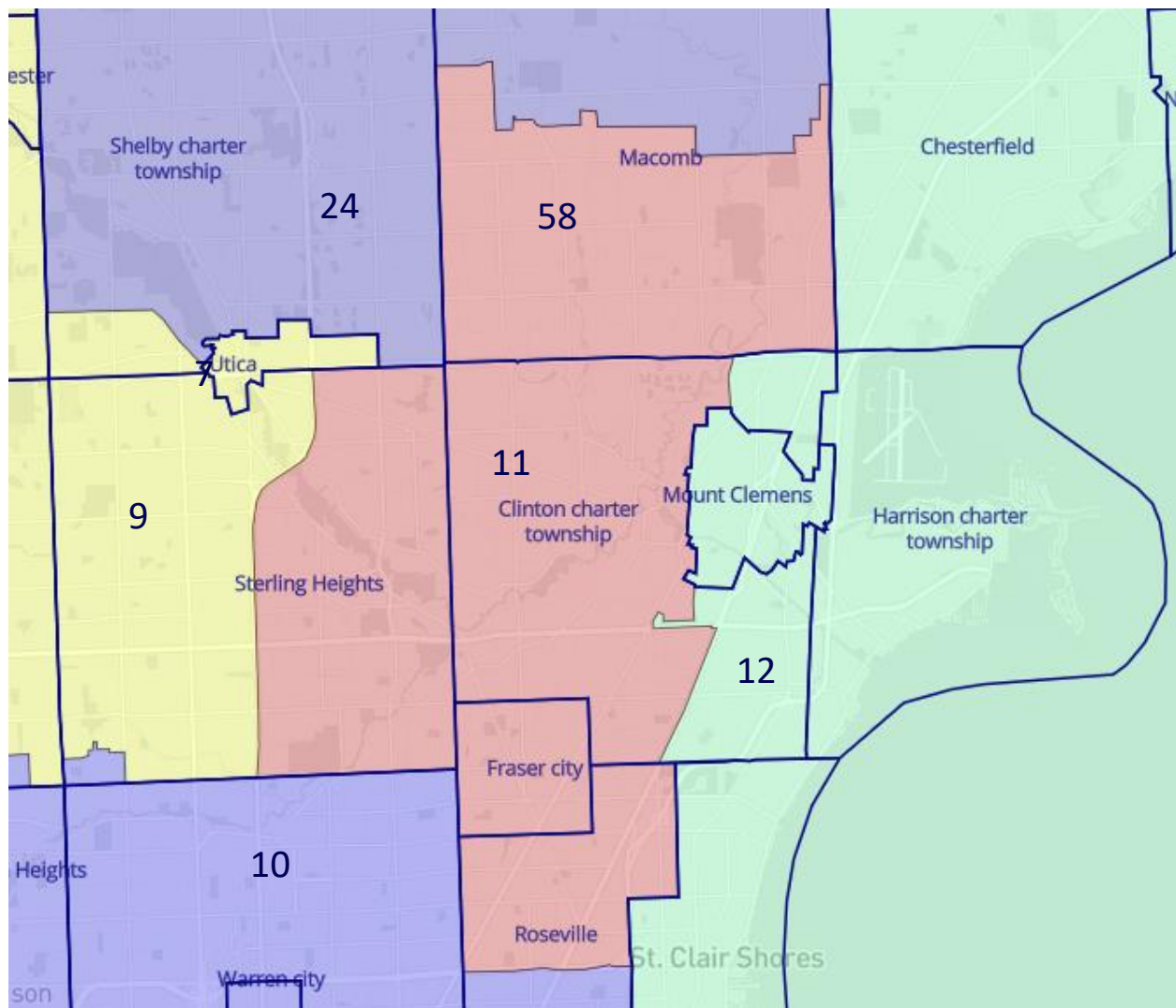


Figure 10. District 11: Parts of South-Central Macomb.

District D11 is mostly hemmed in by the boundaries of districts D9, D24 and D12, left unchanged from the Commission's 2022 Michigan Senate map, which explains its relatively elongated shape, and its configuration as a composition of incomplete fractions of multiple municipalities.

The only adjusted boundary is the one separating district D11 from D12. Relative to its 2022 predecessor, the new District D11 withdraws completely from the City of Detroit and from Eastpointe, and partially from Roseville, northward toward a more compact shape by taking up the Eastern part of Sterling Heights. The new boundary follows city lines, except through Roseville, where it follows a straight line along 11 Mile Rd.

PART II. MOTIVATION AND PROCESS

II.i. About the author.

I, Jon X. Eguia, am a Professor of Economics and (by courtesy), of Political Science at Michigan State University, and an affiliate of the *Institute for Public Policy and Social Research* (IPPSR), also at Michigan State University.



I have been a resident of Michigan since 2014.

My expertise on redistricting focuses on partisan fairness. I am the author of one peer-reviewed article and one unpublished working paper on redistricting; I have been invited to discuss this work at the Michigan Law School and the New York University Law School, and I am the lead author of the 163-page Report: “Michigan Redistricting Map Analysis” released by the IPPSR in December 2021, and quoted in the federal Court Opinion in the case *Agee v. Benson*, which has triggered the current effort to redraw the Michigan legislative maps. In addition, in 2020 and 2021, I served on two Orientation and Training panels for the Michigan Independent Citizen Redistricting Commission, and throughout the 2021 redistricting process, I was frequently quoted in the Michigan media (newspapers, radio and television) on the topic. In December 2023, I was a panelist at a conference for citizen commissioners and reform advocates on redistricting, organized by *Common Cause*.

In January 2024, I submitted a proposed remedial map for the Michigan House of Representatives, which the Commission embraced for consideration as a Draft map, naming it “Trillium”, and evaluating it for performance on VRA compliance (“Trillium” remains available for consultation on the Commission’s website as one of the Commission’s “Draft” map).

I have received funding from IPPSR, and I am also indirectly grateful to the Joyce Foundation and Kellogg Foundation for their support of IPPSR’s initiatives to support the redistricting process in Michigan.

II.ii. The task.

On December 21, 2023, a federal Court 3-judge panel in the Western District of Michigan, South Division, ruled on the case *Agee v Benson*, declaring that seven districts in the official 2022 Michigan House map, and six in the Michigan Senate map (namely, districts D1, D3, D6, D8, D10 and D11), were impermissibly drawn “*predominantly on the basis of race*”, in violation of the Equal Protection clause in the 14th Amendment to the U.S. Constitution. These districts must therefore be redrawn. Subsequently, the Commission, heeding the Court’s guidance and embracing mapping suggestions from the public, has successfully adopted a Remedial Michigan House map that the Court has accepted for the 2024-2030 Michigan House elections. Further, as of the time of writing, the Commission plans to adopt a Remedial Michigan Senate map over the Summer of 2024, ready for use in the 2026 Michigan Senate election.

The Michigan Senate has 38 state senators, one per district. Holding fixed the other 32 districts that are not directly affected by the *Agee v Benson* ruling, the remedy required by the Court consists of drawing six electoral districts in the following geographic area, in a manner consistent with federal Law, and with seven criteria on redistricting listed in Article IV §6 (13) in the constitution of the State of Michigan.

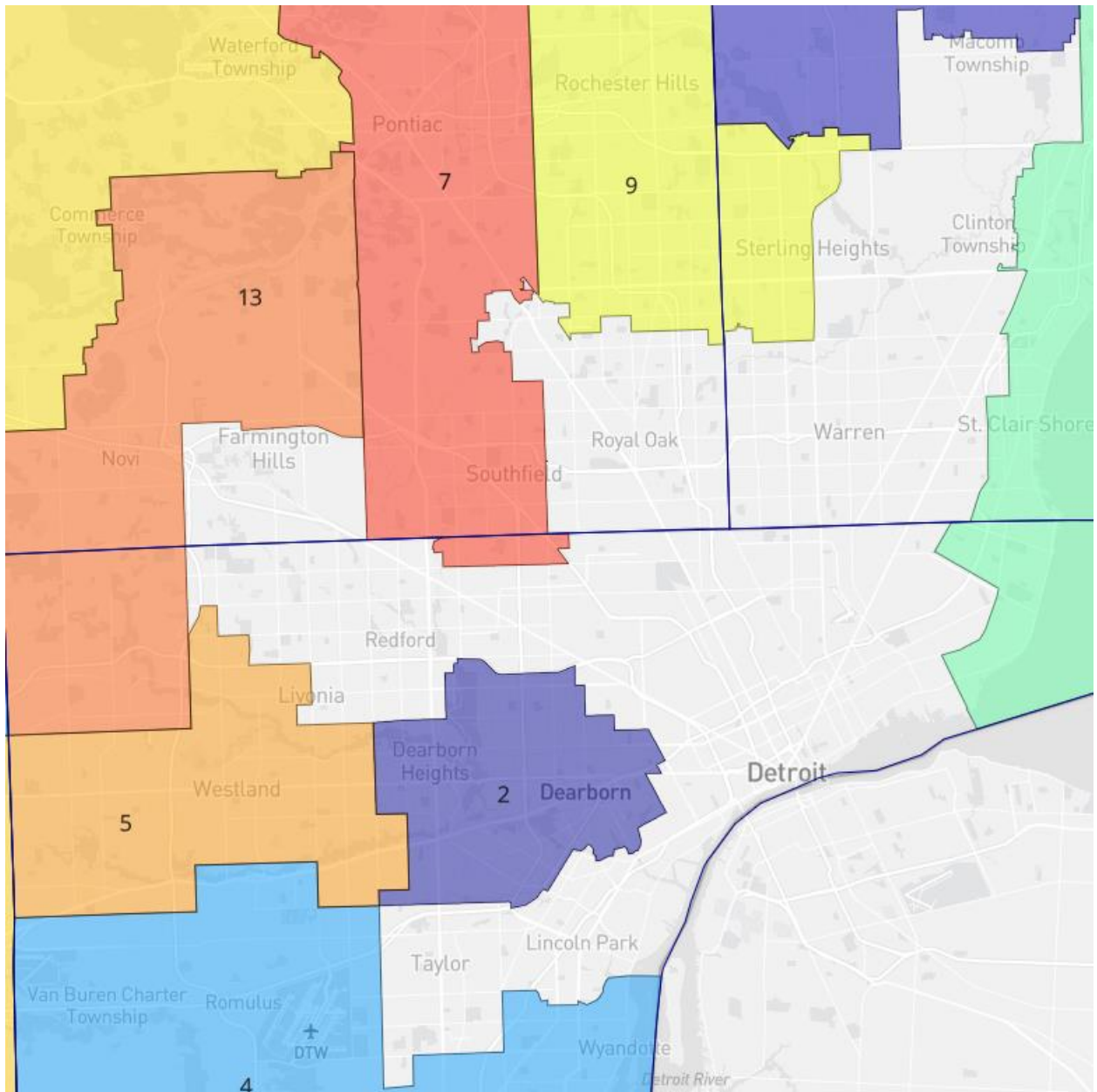


Figure 11. The required remedy: to map the gray area into six lawful districts.

As can be surmised by visual inspection, districts D2 and D7 protrude into the geographic area that must be redrawn, much constraining any possible redrawing, and compromising the goal of drawing districts compliant with the seven criteria in the Michigan Constitution.

Redrawing other districts was not explicitly required in the *Agee v Benson* Opinion, but nor was it explicitly forbidden, and providing the remedy sought by the Court becomes a much more

attainable goal if districts D2 and D7 are redrawn as well. The *Agee v Benson* Opinion requires a remedy that appears to necessitate redrawing districts D2 and D7.

Therefore, the practical exercise I undertake is to consider thirty of the 2022 MI Senate districts fixed, and to draw ten districts out of the geographic areas covered by districts D1, D2, D3, D6, D7, D8, D10 and D11.

The starting canvas for this exercise is the following:

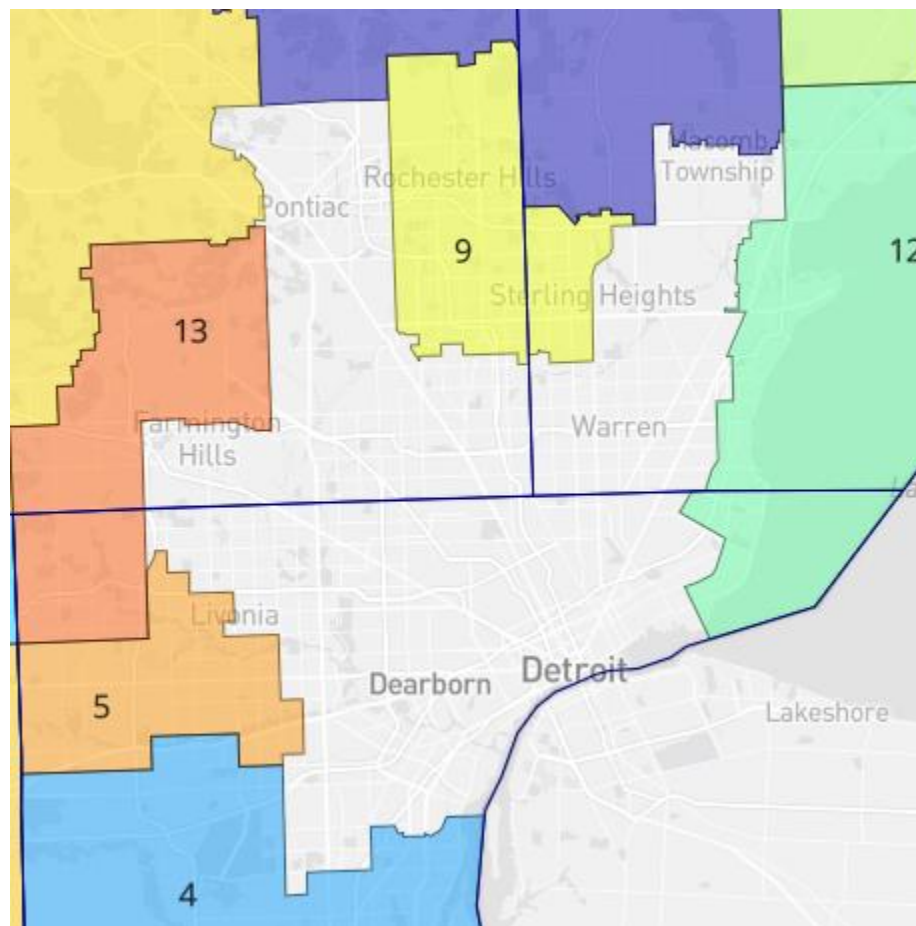


Figure 12. A more realistic remedy: to map this gray area into eight law-compliant districts.

While the court panel did not explicitly rule out edits to additional districts, a principle of minimal intervention, with maximal deference for the previous work of the Commission, favors maintaining as many of the other districts as possible intact, as in the official 2022 Michigan Senate districts, and to narrowly tailor the redrawing to the minimal goal of providing the remedy required by the Court's ruling.

While the Commission may opt for a more expansive redrawing in its Remedial map, any map drawn outside the original process outlined by the Michigan Constitution deviates from this constitutional path, and thus, I argue, the deviation should be minimized, by providing the remedy required by the *Agee v Benson* ruling in a manner that respects as much of the Commission's original work as possible.

With this in mind, the map I propose only introduces changes to three additional districts (districts D2 and D7), changes I find necessary to provide the required remedy in the six senatorial districts struck down by *Agee v Benson*.

II.iii. Sources of information and tools used.

I use the mapping software freely available to the public through the online redistricting application "Dave's Redistricting App" or "DRA 2020" at <https://davesredistricting.org>.

This app allows mapping not only by precinct, but also by Census block, making it possible to better align the districts to communities of interest whose borders might not align with precinct boundaries.

The app also provides county, city, and township boundaries as a layer, along with demographic information, past election results for each precinct, and computations about how any map drawn on or uploaded to the app respects county boundaries and compactness goals, among others.

In addition to the data available in the app, to identify Communities of Interest (COIs) I use the following sources:

- Within the City of Detroit, to determine where exactly to place district boundaries, I use two main sources, both generated by processes internal to the City of Detroit and its citizens. My main source is the [Current City of Detroit Neighborhoods](#) interactive map made publicly available by the City of Detroit at its data portal at <https://data.detroitmi.gov>. The City of Detroit describes this map as: "*Current (non-historic) neighborhood boundaries as compiled by Department of Neighborhoods staff in concert with community groups,*" and

its latest update dates to December 6, 2023. This is thus an ideal resource to determine community boundaries within the City of Detroit.

With a 1.1-mile exception through Downtown and Brush Park, wherever possible, I align district boundaries to neighborhood boundaries, so that each neighborhood (a neighborhood as defined with input from Detroit community groups) is kept whole within the same district. Almost all neighborhoods are kept whole in this manner.

My second resource is the [map of 2026 City Council districts](#), adopted by the City of Detroit in 2026, and made public at the above link as well. Through the Downtown and Brush Park neighborhoods, I use the boundary line between City Council districts 5 and 6.

-Both across neighborhoods within cities, and across cities, to determine which areas constitute a community with common interests that can be well advanced by a single representative, I use Census data, publicly available at data.census.gov on household income and language spoken at home, seeking to keep together large linguistic minorities, and to put together communities with more aligned economic interests.¹

II.iv. The Process.

I set to draw eight districts out of the area in Figure 12, following exactly the process that the Commission's legal counsel advised the Commission to follow:

STEP 1: To draw districts with no attention to race, without any data input on race.

STEP 2: To evaluate whether race-informed targeted adjustments are needed, narrowly tailored to attain compliance with the Voting Rights Act.

STEP 3: To seek comments from the communities affected by the redraw.

At a first round of map-drawing, to make sure that these eight districts are not drawn "predominantly on the basis of race", I proceeded to draw without any attention to race, without populating the demographic information in each district. I drew contiguous, equal population

¹ I have personally explored some of this geographic area on foot, specifically its southern and eastern edge along districts 6, 1 and 3 on this map, from Dearborn to the eastern part of Detroit, observing the character of its neighborhoods and their comparative urban development. While less quantifiable, it is possible that this direct personal experience added context to any decision, in a way that was not the case for other geographic areas I have only studied in maps and tables, and not experienced in person.

districts, drawing district boundaries that follow community (neighborhood) boundaries, city boundaries and county boundaries, and seeking to keep together communities with more aligned interests that constitute more meaningful units of representation.

I deferred attention to VRA compliance to a second step, in which I evaluated whether the map produced without any racial considerations provides adequate opportunities for representation to all minority communities that are large enough in a compact geographic area to qualify for protection under the Voting Rights Act; if the Step 1 map did not provide such opportunities, I would edit it to propose an alternative that does provide these legally required opportunities.

And, third, having completed a Step 2 map and –obviously unable to replicate the Commission’s Public Outreach— I sent the map for comments to representatives of the three largest minority communities affected by this redrawing:

- The *Anti-Discrimination Council*, which works to defend the interests of Arab-Americans;
- The *Detroit Hispanic Development Corporation*, which works on behalf of Hispanic residents in Detroit; and
- The *Michigan Democratic Party Black Caucus*, some of whose members represent Black residents in Detroit, and who have been involved in support of Plaintiffs in the Agee v Benson case, from which the need to draw this Remedial map arises.

I append the collected comments as Step 3.

As this 3-step process developed, in the end, the final map I have presented in this document is the Step 1 map, drawn without information on or consideration of race. Step 2 introduced no changes to this map, as I will discuss below in Part 3 of this document, where I evaluate the map. In Step 3 I only record and publicize feedback –whether positive or critical— to this proposed map.

Attentive to the 3-judge panel’s assertion *“that the Commission put cities like Gross Pointe, Bloomfield Hills, and Birmingham—some of the wealthiest cities in Michigan, where Porsches and Range Rovers are commonplace, and Cadillacs more numerous than Chevrolets—in the same districts as some of the poorest neighborhoods in Detroit, itself belies the idea that “communities of interest” were paramount in drawing these districts”* (Agee v Benson), and because “communities of interest” are paramount in drawing the districts in this proposed map, I start by recognizing that the greatest community of interest of the citizens of Detroit is amongst themselves, rather than with areas outside their city.

I note as well the comments in the 3/15/2024 Report by Special Master Grofman on the Remedial House map. Grofman observed disapprovingly that *“the 2022 map had an excessive number of extrusions that placed pieces of Wayne County (usually pieces of substantial Black population) together in a district with a portion of a different county.”* Grofman further notes approvingly the following two key features of the 2024 Remedial House map:

- a) Looking only at the revised districts, the Remedial Plan *“reduces the number of districts with pieces of both Wayne and Macomb from 5 to 2 and reduces the number of districts with pieces of both Wayne and Oakland from 4 to 2”*
- b) *“Dearborn, with a high middle eastern / North African origin population, was fragmented in the 2022 map; it is kept largely whole in the 2024 remedial map.”*²

Following this guidance, I set to draw a map that reduces the extrusions from the City of Detroit to Macomb Co. from 3 to 0, and from Detroit to Oakland Co. from 4 to 0; that keeps Dearborn whole, and that joins avoids pairing poor Detroit neighborhoods with communities outside the city that are richer in terms of household income than the Michigan average.

-STEP 1. DRAW A MAP WITHOUT CONSIDERATION OF RACE

Looking at the blank (or, rather, gray) canvas in Figure 12, I start drawing districts for the City of Detroit, commencing with its fixed boundary against the unchanged district D12, along the

² Grofman goes on to list another two key features, related to VRA compliance, which comes into consideration only in Step 2 of this mode of drawing a map.

city's northeastern boundary, and following the city's northern boundary along 8 Mile Rd and southeastern boundary along the Detroit River westward to populate district D3. Including the cities of Hamtramck and Highland Park, which are completely enclosed by Detroit, district D3 aligns almost perfectly to the Eastern side of Detroit, east of Woodward Ave. As noted above, the boundary I choose departs at times from Woodward Ave, to respect neighborhood boundaries and the boundaries of Highland Park, and to align with the boundaries, parallel and every close to Woodward Ave., that the City of Detroit itself has very recently chosen to draw for its own city council districts.

Next I attempted to draw district D1, taking up the near-west side of Detroit, but drawing district D1 entirely within Detroit –while leaving the Commission's 2022 boundaries of districts D4 and D5 intact— would then force a split of Dearborn from Dearborn Heights and a misconfigured district D6 or D8 (or both). So I realized that D1 and D6 must be drawn together. The premise of keeping Dearborn and Dearborn Heights together gave a core to district D6. The premise of not pairing poor areas of Detroit with rich suburban cities meant that Allen Park (richer than average in Michigan; twice as rich as Detroit) should be in district D6 with Dearborn, and not in district D1 with Southwest Detroit. Contiguity then pinned down that Taylor completes D6, and that the poorer Downriver cities of River Rouge, Ecorse, Melvindale and Lincoln Park are the ones that join Southwest Detroit in D1.

Here are the 2022 median household income comparisons of these cities, rounded to the nearest hundred dollars, in table form:

City or Township	Income	District
Allen Park	\$73,800	D6
Dearborn	\$64,600	D6
Taylor	\$59,400	D6
Dearborn Heights	\$58,300	D6
Lincoln Park	\$55,800	D1
Ecorse	\$45,500	D1
Melvindale	\$38,900	D1
Detroit	\$37,800	D1
River Rouge	\$26,300	D1

The limits of district D1 to the northwest within Detroit were determined by population equality and compactness, subject to always following neighborhood boundary lines so that no neighborhood is broken up.

District D2 then takes up the remainder of West Detroit, and it goes beyond the city, but still within Wayne Co., into the adjacent Redford township, which, while at \$66,400 average household income, is much richer than Detroit, it is nevertheless poorer than the average in Michigan. Further, district D2 at no point extrudes more than 2.5 miles from the city limits of Detroit.

This Detroit-centric approach to drawing this map –consciously chosen as an appropriate approach in a Remedial map whose origin stems from the need to guarantee the Equal Protection rights of the citizens of Detroit— together with the self-imposed constraint of keeping the remedy narrowly targeted to Agee v Benson ruling by preserving the boundaries of districts D5 and D13 from the official 2022 MI Senate map, created difficulties in crafting district D8 in the area of Detroit suburbs northwest of the city. I thus paused with this area that necessarily straddles Wayne Co. and Oakland Co., deferring its drawing for later, while I first tackled the area to be drawn in Macomb Co.

This was easier. Hemmed in by districts D12, D24 and D9, left unchanged from the official 2022 MI Senate map, the new district D11 retrenches northward to a more compact shape, setting its new boundary along the boundary of the city of Warren, and splitting Roseville as needed for population equality.

I next drew district D10, centered in Warren, stretching from Eastpointe to Ferndale to the west, always following city boundaries in its new boundary lines (breaking city lines only where it inherits lines of district D9 in the 2022 map) and constituting one of the most compact, cohesive, and economically homogeneous districts.

Finally, I drew the boundary line that divides the area of districts D8 into D7 into these two districts. These two districts were more difficult to draw, because they include much more disparate areas, from some of the poorest neighborhoods in the entire state (in Pontiac) to the most affluent communities in Bloomfield, Birmingham and Huntington Woods, inevitably drawn

together given the constraints inherited by the lines of districts D9, D24, and D13 in the official 2022 map. If we were to also redraw district D13, we could redraw districts D7 and D8 differently, attaining three new districts that are more compact and avoid any straddling of the county line, something like this:

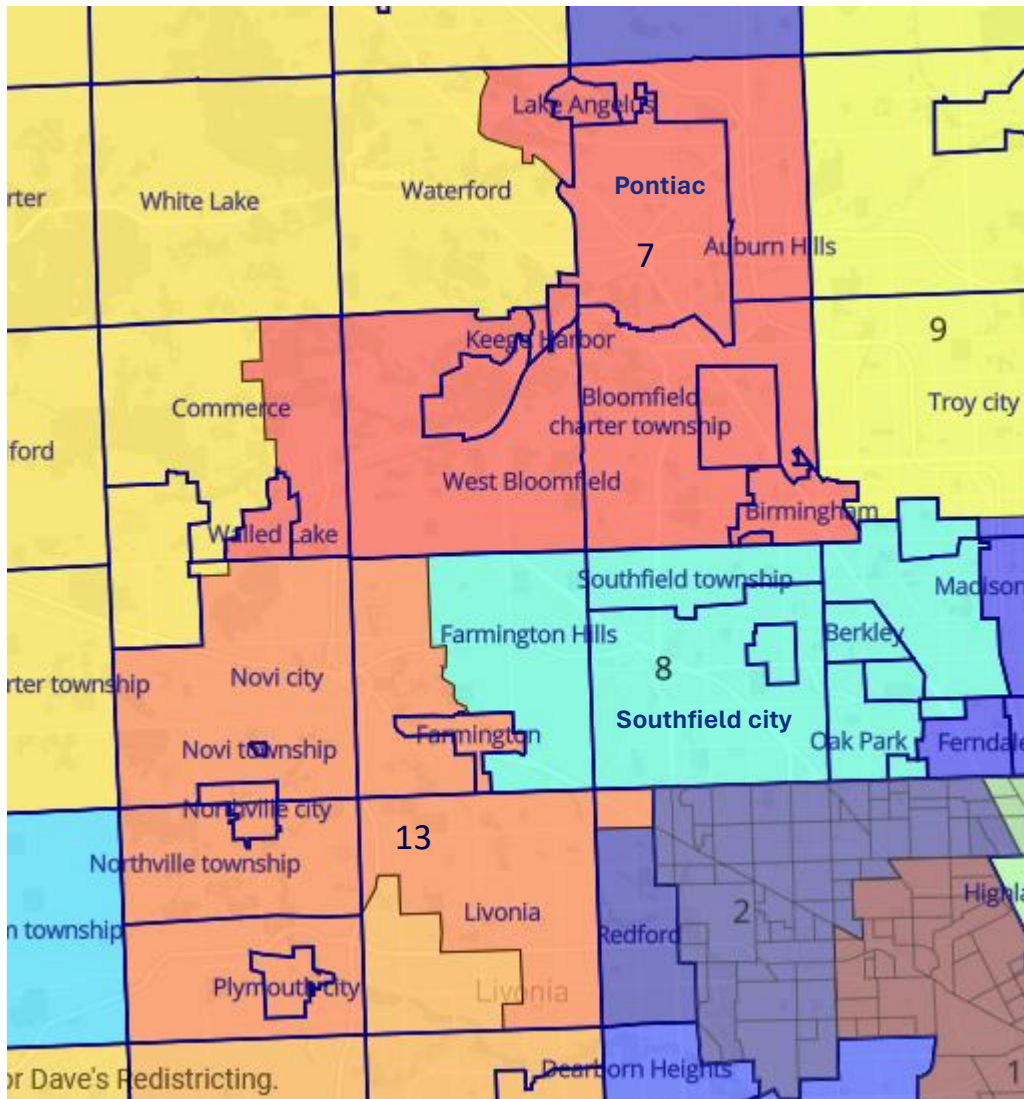


Figure 13. An alternative configuration of D7, D8 and D13.

But the variation in Figure 13 does not address the problem that citizens in the poorest parts of Pontiac and the extremely affluent residents in the neighboring town of Bloomfield, just on the side of M-24, have divergent interests and representational needs (as do the rich residents of Southfield township and the poorer residents of nearby Royal Oak township), and yet their geographic proximity pushes them to a common district, to be represented by a single representative who must attend to

their disparate needs. Since respect for boundaries (Criterion 6) and compactness (Criterion 7) are the lowest-ranked redistricting criteria in the Michigan contribution, I prime introducing the fewest possible changes from the official 2022 map over improvements on these two lowest-ranked criteria and thus I do not pursue the variant depicted in Figure 13.

This completed a draft map of eight districts, drawn without attention to race.

STEP 2. CHECK FOR OPPORTUNITIES FOR REPRESENTATION OF MINORITY PREFERENCES.

I then proceeded to analyze this draft map, searching for any minority community that constitutes a majority over a reasonably compact area with large enough population (about 265,000 residents) to constitute a district, but that currently is split into two districts in such a manner that its candidates of choice might lose in both districts (“cracking”); or a large enough, geographically compact minority community that it should get a majority in two districts, but it has been put together in such a way that it constitutes a majority in only one (“packing”). As I show below, I did not find any.

I found that the draft map generates three districts in which among citizens of voting age, those who identify as Black (counting those who also identify as any other race or ethnicity Hispanic) constitute a majority. These are districts D2 and D3, which are both 81% “Black-inclusive CVAP” (for “Citizens of Voting Age Population”) and district D1, which is 57% so.

These numbers remain similar under alternative definitions of the relevant minority: 82%, 77% and 53% “Black-inclusive VAP”, now as a share of all adults, not just citizens; or 80%, 75% and 51% of “Black-exclusive VAP” as a share of all adults in districts D2, D3 and D1 respectively, now counting as “Black” only those who identify as “Black” exclusively, and not to any other race or ethnicity.

Either way, the draft includes three districts that are unambiguously effective for Black voters: if they vote cohesively, their candidates of choice will win.

In addition, a fourth district, D8, features a large minority of citizens of voting age population who identify (inclusively) as Black: 38%. That might (or might not) be sufficient for the district to be a district of opportunity for Black voters to elect their candidate of choice.³

Black voters in districts D1, D2 and D3 can already elect their candidate of choice.

First, I seek to find whether there is any other minority community, outside these districts, that could constitute a majority, but is split straddling two districts (it is “cracked”) in such a way that it constitutes a sufficiently large minority to elect its candidates of choice in neither.

I find neither. Fixing districts D1, D2 and D3, opening up districts D6, D7, D8, D10 and D11 for possible redrawing, looking for opportunities to draw a district with a Black majority, we find the following:

³ If this map were to be considered for adoption, it would go through the VRA analysis, estimating (per analysis by Max Palmer) the percentage Black VAP in primary and general election turnout, and in the primary and general election pool, to provide some indicia as to whether or not it is likely that the Black VAP minority in D8 is sufficiently large to get its candidates of choice elected; a share of 38% is right at the cusp where it may or may not be: in the analysis of the House remedial map, district D53 with as low Black VAP as 33% was estimated to be likely one of opportunity, but D26 with 36% was not, and D10 with 42.5% was a knife-edge “maybe.” It depends on local conditions.

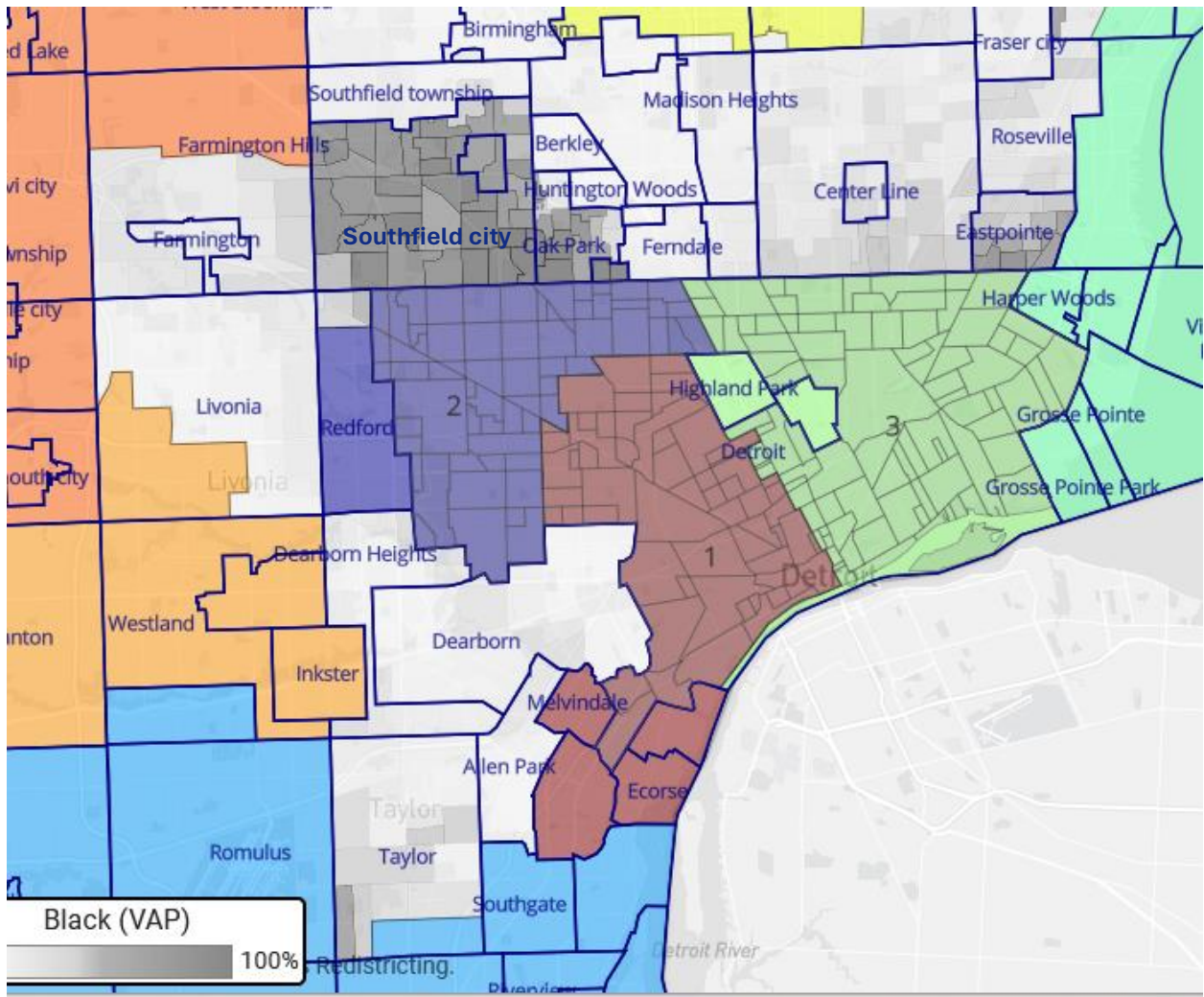


Figure 14. Black share of voting age population, by unassigned precinct.

The only substantial cluster of Black population is around Southfield city. But the total Black population in Southfield and all surrounding cities and townships is just shy of 100,000 people, which is only 38% of the population of a district... similar to the percentage in district D8. There is no Black community that could be formed into a fourth Black-majority district.

Now, onto a second question: do any of these three Black-majority districts (D1, D2, D3) “pack” Black voters in artificially high majorities in a way that, if distributed in a more appropriate way according to traditional redistricting criteria, would result in them forming a majority in two districts? Certainly not deliberately, as the districts were drawn without attention to race. And certainly not district D1, for under some definitions of race and ethnicity, it barely constitutes a Black majority district (with Black voters representing only 51% of the population, there is no room to lose any and keep this majority).

District D3 features a large Black majority, of about 80%, but it is close to optimal according to traditional redistricting criteria of respect for county and city boundaries (Criterion 6) and compactness (Criterion 7). It has not artificially put together any disparate communities. Rather, it follows the boundaries of a recognizable community: the Eastern side of Detroit. The resulting district is overwhelmingly Black because the geographically compact minority community it represents is itself overwhelmingly Black, and to seek a “less Black” district requires breaking up this community.

The conclusion is not as clear in the case of district D2. It too features a large Black majority of about 80%, and it too was drawn according to traditional redistricting criteria of respect of county and city boundaries (Criterion 6) and compactness (Criterion 7), but being the last of the three Detroit districts to be drawn, its drawing was constrained by the boundaries of D1 and D3, and the result is less optimal for D2: it spills beyond the city boundaries, straddling between the City of Detroit and Redford township, and it is less compact. Besides, it is adjacent to district D8, which straddles over two counties, is not compact, and it features a substantial minority Black population. Perhaps districts D2 and D8 could be redrawn into two more compact districts, such that two better defined communities emerge, both of which are districts of opportunity for Black minority voters?

Keeping fixed all other districts, consider a possible targeted edit, tailored to creating two districts that capture two geographically cohesive, Black minority communities that are large enough to be able to get their candidates of choice elected. In practice, the exercise amounts to partitioning the white and gray area in Figure 15 into two districts with the desired characteristics.

Two reasonably compact districts that are effective for Black voters to elect their candidates of choice can be created, by taking out of D2 some heavily-Black precincts in Detroit, and substituting them for overwhelmingly white precincts in Livonia, thus diluting the Black vote in D2, and elevating the Black vote in D8. Figure 16 is an example of such configuration. In this variation, the share of Black-inclusive citizens among citizens of voting age population is 71% in D2 and 48% in D8, enough in both cases for a politically cohesive Black vote to get its candidates of choice elected; the share of Black-exclusive voting age population is 70% in D2 and 44% in D8. So now we have four, not three, districts of opportunity for Black voters. But is this a better configuration? It’s not as if the new D8 lets a cohesive, homogeneous, minority community of interest that was previously hidden emerge; rather, the new D8 carves out a part of the City of Detroit, and brings it out into a different community (the suburbs), so as to attain a different racial balancing or quota.

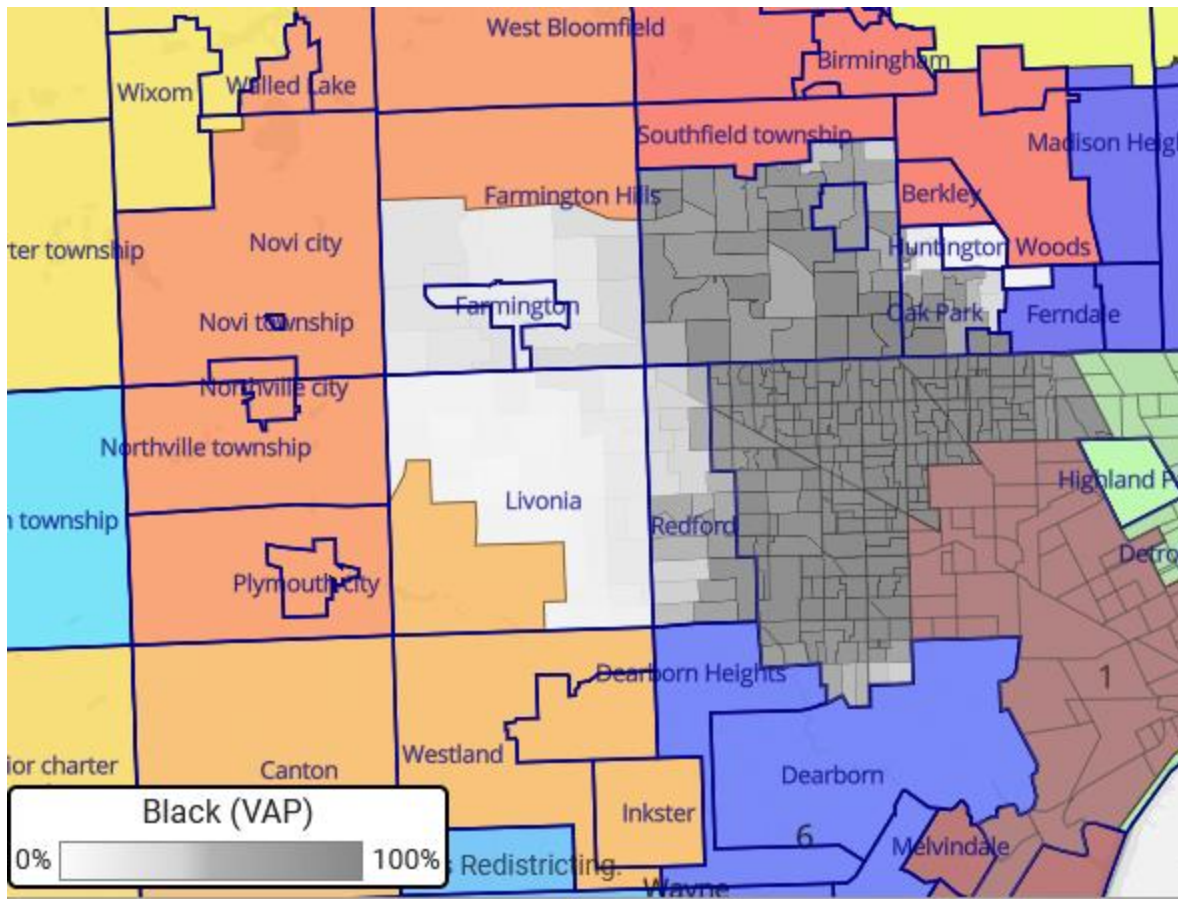


Figure 15. Black share of voting age population in precincts in D2 and D8.

And in doing so, it falls pray to the pitfall explicitly condemned in the *Agee v Benson* ruling: putting together some of the wealthiest cities in Michigan (Huntington Woods, \$184,000 household income) with some of the poorest neighborhoods of Detroit (\$41,300 household income specifically for zip 48219). Conversely, parts of affluent Livonia (\$92,500 household income) are brought into D2 whose core remains in Detroit (\$37,800). The new boundaries in Figure 16 do not delineate two communities of interest.

Rather, they reflect two racially motivated admixtures of two distinct communities, one composed of low-income, predominantly Black residents in Detroit, and a second one composed of high or very high income and predominantly white residents in affluent suburbs (Farmington, Farmington Hills, Livonia, Huntington Woods) –with Southfield City reflecting an intermediate case in average income (\$64,000)— mixed in predominantly for racial reasons to attain a desired racial composition in each district.

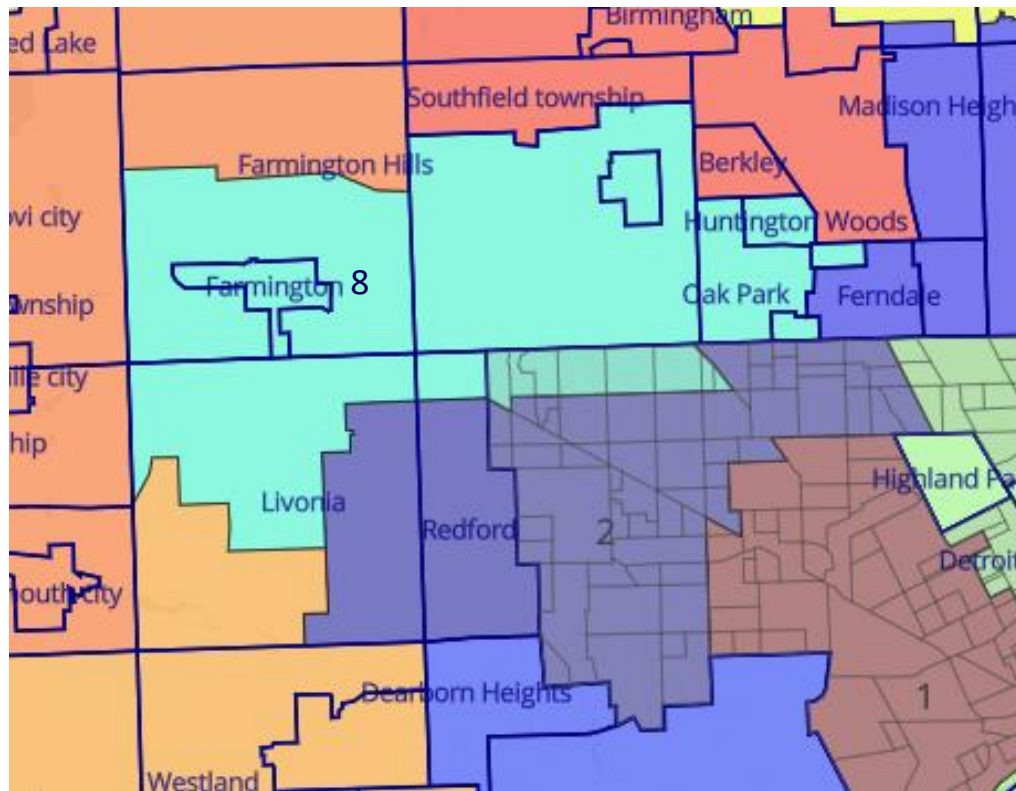


Figure 16. An alternative, in which D2 and D8 elect Black voters' candidates of choice.

So there is a trade-off between the configuration with no consideration to race in Figure 1, and the race-conscious alternative configuration of D2 and D8 in Figure 16: the residents in each district have more common interests if we configure D2 and D8 as in Figure 1 than if we configure them as in Figure 16, D2 is more compact as in Figure 1 than Figure 16 (D8 is more compact on some measures, less so in others), and the configuration in Figure 1 introduces two fewer city splits (one in Detroit, and one in Livonia) than the configuration in Figure 16. But Figure 16 turns D8 into a clear district of opportunity for Black voters. And there are no partisan implications: either configuration reliably elects two Democrats to represent D2 and D8.

To resolve this trade-off between better respecting traditional redistricting criteria, and gaining a –somewhat artificially created— additional district of opportunity for minority voters, I follow the advice of the Brennan Center for Justice, in its 2/16/2024 memo “Considerations in Redrawing Michigan’s State House Map”, included as written public comments to the Commission for 2/22/2024. Quote, under “How best to minimize the likelihood of further racial-gerrymandering liability”:

“the best way for the Commission to ensure that maps are legally compliant is to carefully document –both in its discussions for the record and in written submissions to the special master– how the adopted map makes sense for independent non-racial reasons.”

[...] “the Commission will likely be much likely to be more successful in defending districts in Metro Detroit from renewed allegations of racial gerrymandering if the evidence it submits to the special master shows that districts, individually and as a whole, keep recognizable and logical communities with shared needs and interests together.”

[...] “Due to residential patterns in Metro Detroit, drawing districts in an even-handed manner primarily to comply with the Michigan constitution’s community of interest and partisan fairness requirements will almost certainly result in a fairly significant number of naturally occurring Black majority districts.”

[...] “the Commission should choose to adopt a map not based upon which map has the largest number of Black districts, but based primarily upon which map best complies with other requirements of Michigan law.”

[...] “in reviewing maps, the Commission may come across a strong basis in evidence, including from public testimony and submissions, to believe that the design of a particular district in a map may be preventing a sizable and politically cohesive group of Black voters from being able to elect their preferred candidates due to racial bloc voting by white voters. In those instances, there is no barrier to map drawers making narrowly tailored and district-specific adjustments to undo the damage caused by such maps.”

This approach favors the configuration in Figure 1, over the one in Figure 16: the map in Figure 1 “makes sense for independent non-racial reasons”, its districts better “keep recognizable and logical communities with shared needs and interests together”, it features three “naturally occurring Black majority districts”. The Commission will do as it sees fit, but I follow the Brennan Center’s instruction to choose a map “*not based upon which map has the largest number of Black districts, but based primarily upon which map best complies with other requirements of Michigan law.*” Between the map in Figure 1, and the one in Figure 16, that’s the map in Figure 1.

This completed my map-drawing process. I settled on the map in Figure 1 that had emerged from Step 1, which was drawn without consideration of race.

Following the example of United Kingdom's boundary commissions for England, Scotland, Wales, and Northern Ireland, tasked with redistricting these territories for parliamentary elections in the United Kingdom, I then attempted to assign a descriptive name to each district. Attempting to name districts with a label that is descriptive of the territory in the district encourages the creation of districts aligned with geographically meaningful communities... which are the ones for which existing names are descriptive (say, hypothetically, "Troy" or "Downriver"). The custom of naming districts only by numbers (MI Senate-1, MI Senate-2, etc.) can hide the reality of gerrymandered districts that do not represent any meaningful geographic communities and can only be labeled in a misleading or cumbersome way.

STEP 3. COMMENTS FROM REPRESENTATIVES OF AFFECTED MINORITIES.

-The Michigan Democratic Party Black Caucus.

I received feedback on the *IPPSR Senate 4/1/2024* map from Virgil Kai Smith, former state representative, and from Nicholas D. Barnes, political strategist working for the Michigan Democratic Party Black Caucus. Throughout this redistricting process, the Caucus has been salient in local media as an engaged voice and has been supportive of Plaintiffs in the *Agee v Benson* lawsuit. We discussed the *IPPSR Senate 4/1/2024* map over zoom.

Mr. Smith and Mr. Barnes both indicated support for the *IPPSR Senate 4/1/2024* map.

"I like 1, 2, 3. I think this is good. I like the basic structure" summarized Mr. Smith, adding that with so many Black people from Detroit moving into Redford, it makes sense for D2 to include Redford as well, because the Black population on the west side of Detroit has more in common with the population of Redford, than with the population in suburbs to the north. Mr. Barnes concurred: *"I agree. We came to the same conclusion: this is on the right direction."*

Based on their on-the-ground knowledge and understanding of the local communities in the City of Detroit, they indicated that the line that divides the east side of Detroit from its west side of Detroit, north of Highland Park, is not Woodward Ave. but rather a little bit to the east of Woodward, closer to John R., so specifically, they suggested that the boundary line between

districts D2 and D3 from 6 Mile Rd to 8 Mile Rd would be better situated along John R. St., the CN railroad tracks, or highway 75 (all three of them located between 0.2 miles and 1.5 miles east of Woodward Ave.), with the historic Chaldean Town and the current neighborhoods of Penrose and better included in district D2.

Subsequently, Mr. Barnes and I (working on behalf of the IPPSR) collaborated to develop a revised map that incorporates this change, aligning the boundary between districts D2 and D3 with the CN railroad tracks and highway 75, therefore moving the neighborhoods of State Fair, Penrose, Grixdale Farms and Greenfield Park from district D3 to district D2, along with population equalizing tweaks to the boundaries between districts D1 and D2 and between D2 and D3. Specifically:

- i. The neighborhood of Hubell-Lindon moves from district D2 to district D1; and
- ii. The neighborhoods of Downtown and Brush Park, split between districts D1 and D3 along the 2026 City Council boundary line on *IPPSR Senate 4/1/2024*, are both fully in district D3 in on the revised map.

I refer to this map as “*Barnes-IPPSR*”, depicted in Figure 17a in full, and zoomed in to its Detroit area in Figure 17b.

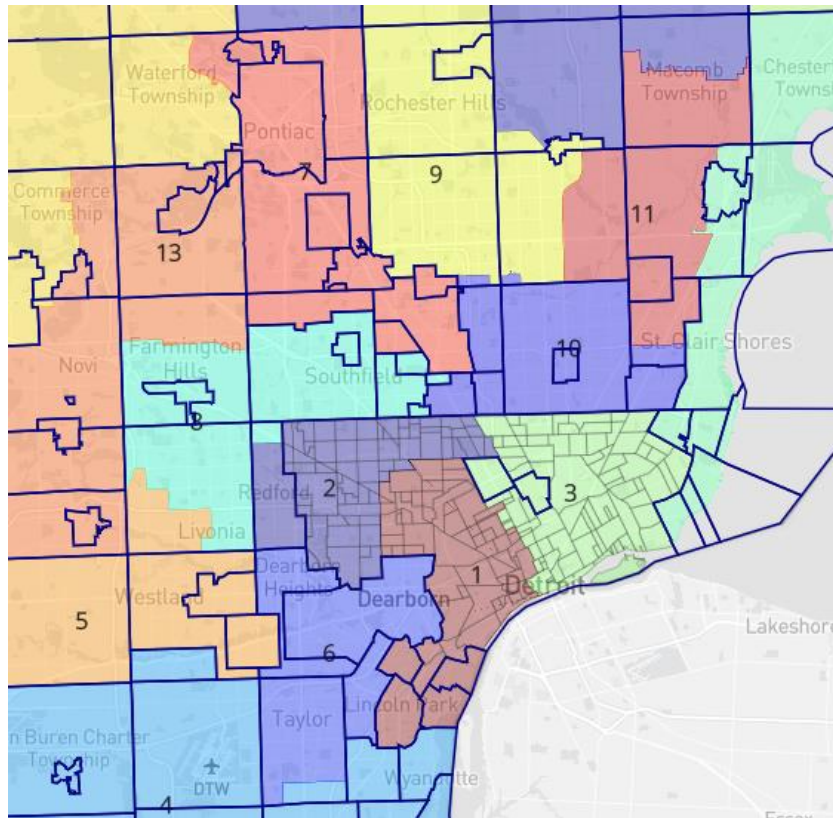
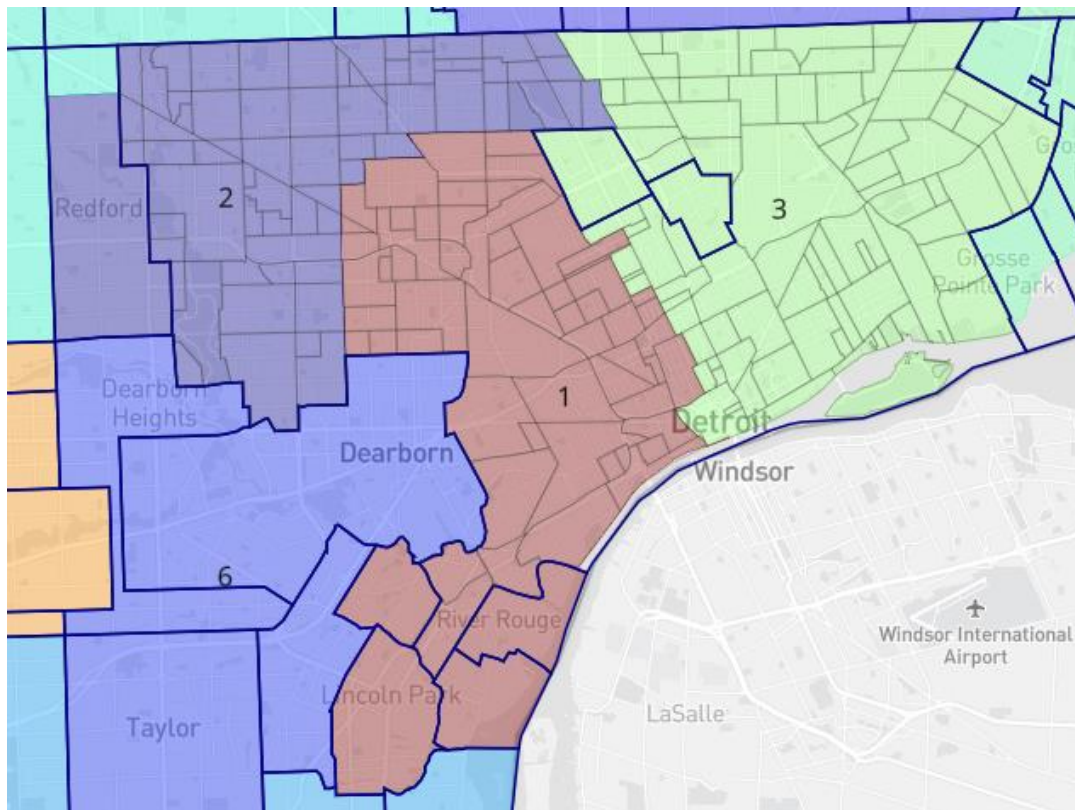


Figure 17. “Barnes-IPPSR” map above (a) and zoomed to its Detroit districts below (b).



The shapefile for the *Barnes-IPPSR* map is available at [this link](#). It is also available in DRA 2020 at [this link](#).

Note that *Barnes-IPPSR* and *IPPSR Senate 4/1/2024* differ in only seven precincts (four of them at the boundary between districts D2 and D3; two of them at the boundary between districts D1 and D3; and one of them at the boundary between districts D1 and D2), so the properties of *Barnes-IPPSR* are very similar to those of *IPPSR Senate 4/1/2024*, which are detailed in Part III of this document.

Anticipating results from Part III, *Barnes-IPPSR* is drawn almost entirely (with the possible exception of those seven precincts) without consideration of race; it performs better on population equality than the adopted 2022 MI Senate map; it creates three majority-Black districts (D1, D2 and D3) and a fourth with a substantial Black minority; it reflects the communities of Black residents in Detroit, Arab American residents in Dearborn (albeit see comments on that point below) and Hispanic/Latino residents in Southwest Detroit; it has small –and arguably positive– effects on partisan fairness; it performs well on respecting county, city and township boundaries, and it is more compact than the 2022 MI Senate map.

Specifically, in districts D1, D2, D3 and D8, the share of citizens of voting age population (CVAP) who identify as Black (alone or in combination with other racial or ethnic identifications) is respectively 58.1%, 81.2%, 79.5% and 37.8%; the share of all residents of voting-age (VAP) who identify as Black (alone or in combination) is respectively 54.5%, 82.3%, 75.9% and 36.6%; and the share of all residents of voting-age population who identify as non-Hispanic Black alone is 51.9%, 79.6%, 73.4% and 34.8%.

-The Anti-Discrimination Committee on behalf of Arab Americans in and around Dearborn.

I received feedback from Abed Ayoub, National Executive Director of the Arab American Anti-Discrimination Committee (ADC). According to its own website, the ADC is “*the largest Arab American grassroots organization in the United States.*” We discussed the *IPPSR Senate 4/1/2024* map over an extended zoom meeting.

According to the ADC, a community of interest for residents who share an Arab American culture, Middle-Eastern ancestry and/or Muslim religion exists and is centered around Dearborn and Dearborn Heights. Always according to the ADC, this community extends as well into the Warrendale neighborhood in the City of Detroit, “as far north as Joy Rd. and east to Wyoming.”

The area of this COI contains 213,000 residents. In addition, Mr. Ayoub indicated that a certain commonality of interests, and continuity in the needs for representation exists between the core of this COI, and the adjacent cities of Inkster, Garden City, and Melvindale, and Detroit neighborhoods north of Warrendale “up to Jeffreys.”

In Figure 18 I depict the COI in dark blue, and the areas with some shared affinities in lighter blue.

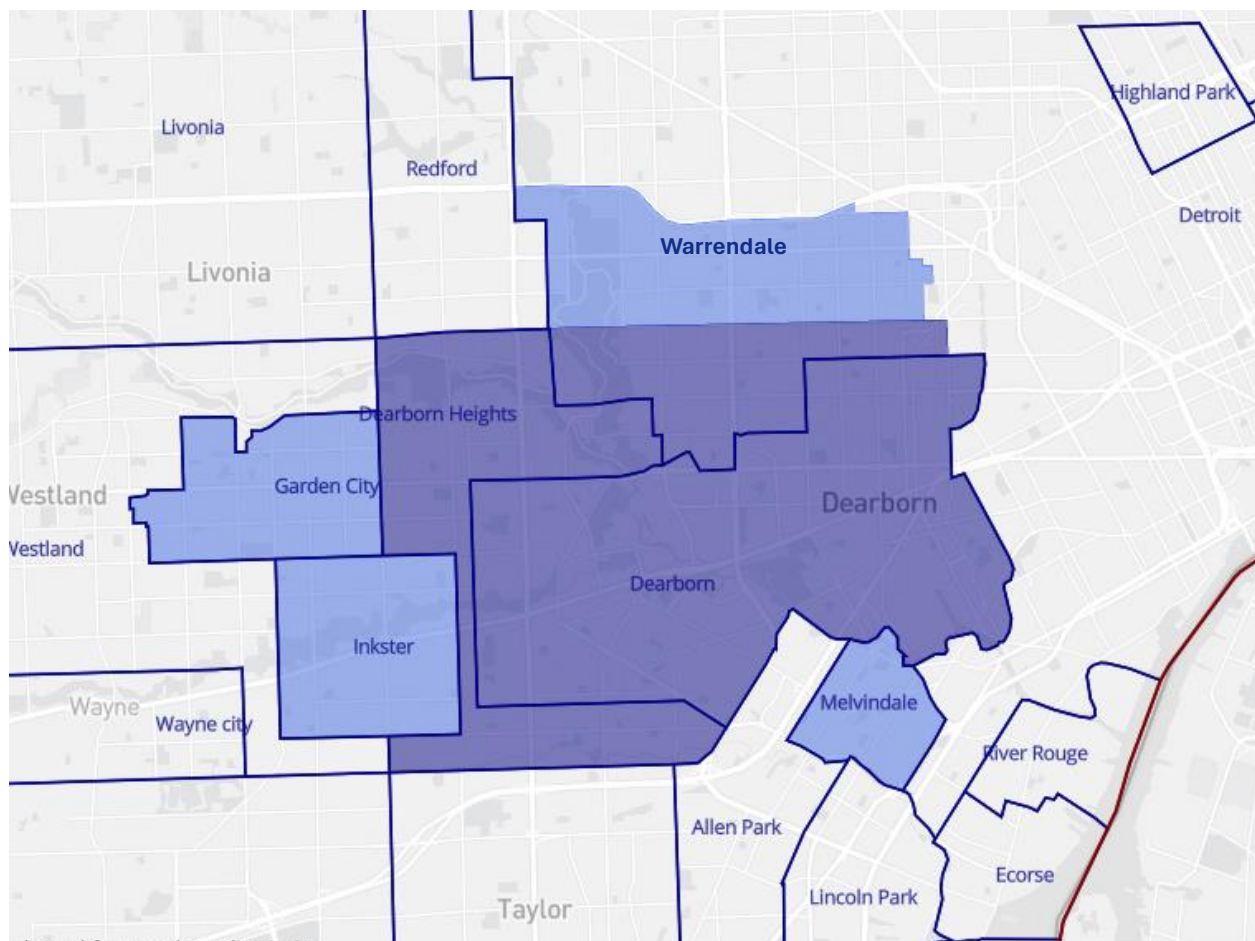


Figure 18. An Arab American Community of Interest.

Mr. Ayoub, expressed that an ideal district for their community would be one in which the COI is kept whole in a district, and that the district be completed to its total population of about 265,000 residents by adding some of the light blue areas of shared interests and needs for representation.

Creating the ideal district as described by the ADC would require reallocating Allen Park, and most of Taylor, to a new district. Allen Park and Taylor do not have many interests or representational needs in common with district D1 centered in Southwest Detroit, so just as Allen Park and Taylor were perceived to be not a good fit for the Dearborn based district (D6 in my numbering), they are also not a good fit for D1. Rather, the ADC finds that Allen Park and Taylor have more in common with district D4, which stretches further south and southwest.

The ADC thus advocates for a more expansive redrawing in the remedial map, suggesting a counterclockwise redrawing that involves changing the boundaries of districts D4 and D5 as well, as follows:

The Dearborn district D6 sheds Taylor and Allen Park to its south, and pushes north to gain Warrendale up to Joy Rd and Wyoming St. from district D2, and west to gain Inkster and Garden City from D5. In turn, D2 pushes north as well, crossing 8 Mile Rd into Macomb Co. to gain Oak Park, Royal Oak Township (not the City of Royal Oak), and the eastern half of Southfield from district D8. Note that Oak Park (\$62,000), Royal Oak Township and Southfield (\$64,000) are all relative low income suburbs, below the Michigan average household income, so their interests are not as disparate from those of the Detroit residents of D2; D2 sheds Redford instead. District D8 in turn pushes south taking up the whole of Livonia from D5, and Redford from D2. District D5 pushes south as well, gaining Romulus, Van Buren and Sumpter from district D4, which completes the circle by picking up Taylor and Allen Park from D6. Minor adjustments to the boundaries between D1 and D2 (to equalize population after district D6 gains a few precincts from D1), and the southern boundary of district D7 (to include the extremely affluent Huntington Woods and Pleasant Ridge vacated by D8 in D7, and not in the Detroit-based D2) complete this variation.

The result is the following configuration, which I name the *Ayoub-Eguia* Remedial Michigan Senate map.

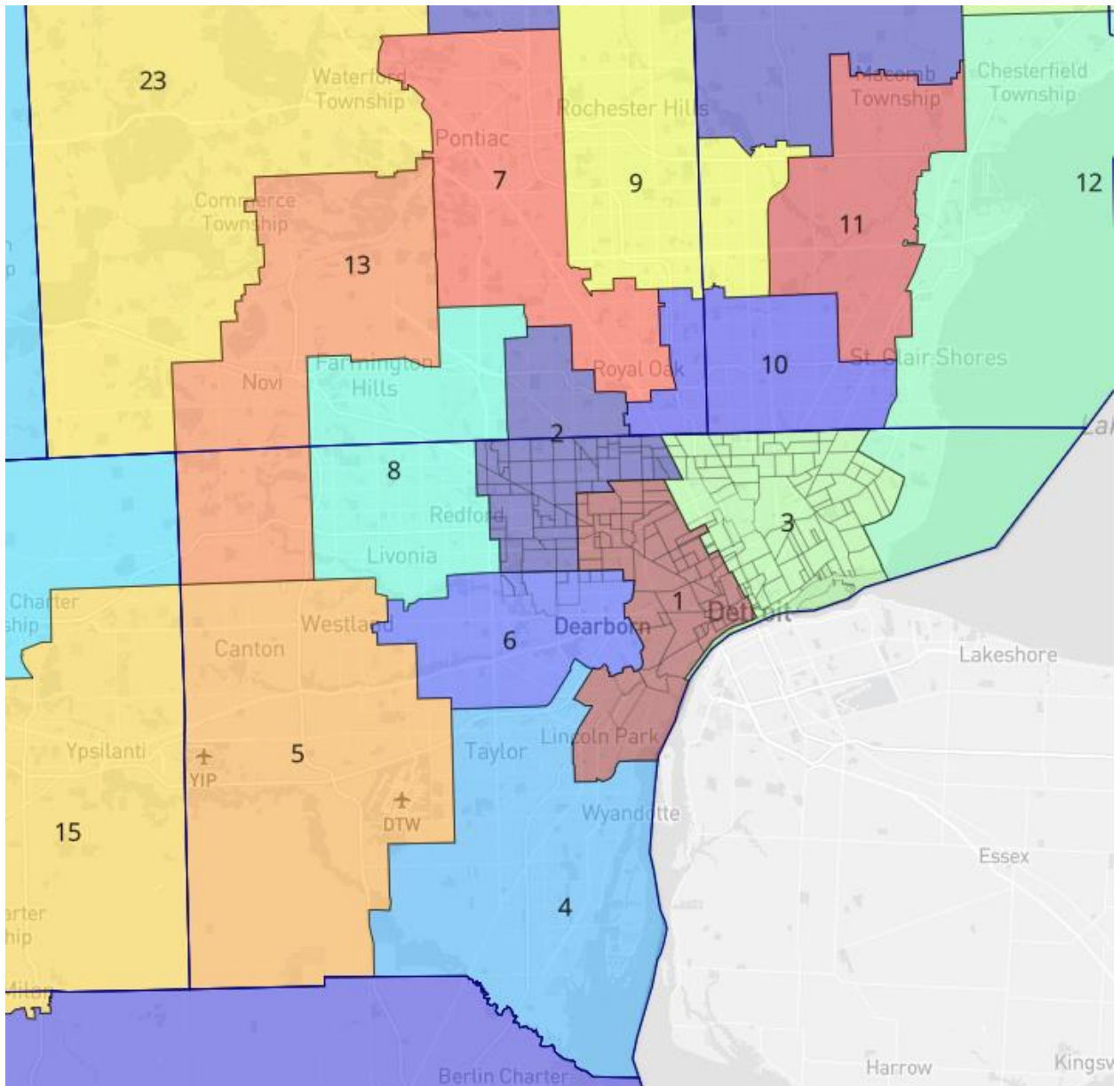


Figure 19a. Ayoub-Eguia map with an Arab American COI in D6.

I next zoom on the area around district D6.

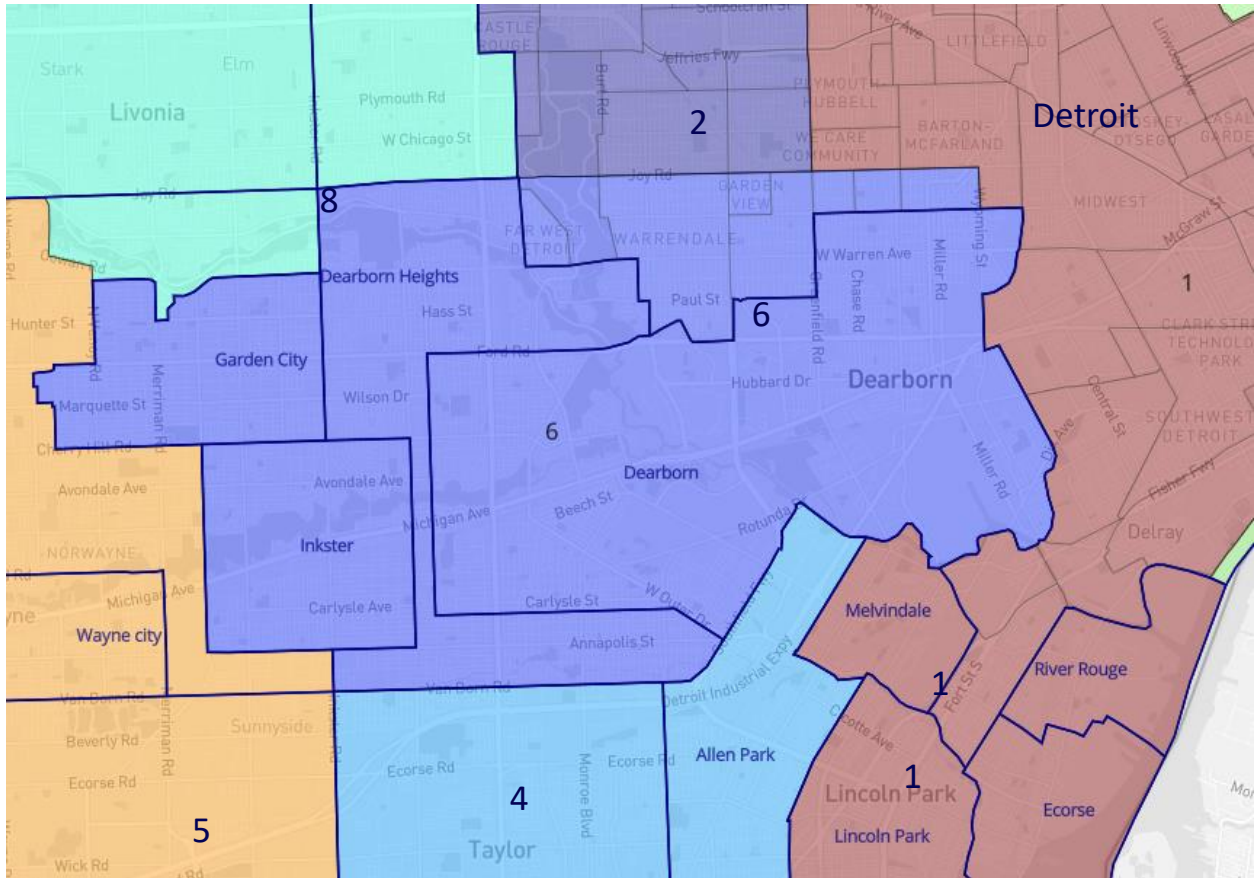


Figure 19b. District D6 in the Ayoub-Eguia map.

This map's shapefile is available at [this link](#).

In the *Ayoub-Eguia* map, the share of Black voting-age citizens among all such citizens is 84.2% in district D2, 80.6% in district D3, and 56.7% in district D1, and no other district has a Black minority large enough for it to be a district of opportunity for Black voters. The effort to create a district around the COI identified by the Anti-Discrimination Committee, together with the constraint of not stretching the Detroit-based district D2 into rich communities, resulted in district D2 expanding into majority Black suburbs, thus concentrating the Black population into districts D1-D3, with only small minorities of Black voters in other suburban districts.

PART III. EVALUATION

Subjective evaluations of one’s own creation are always difficult, as enough detachment to avoid positive bias is hard to avoid. I thus turn solely to objective, quantitative measures to assess the main proposed remedial map “*IPPSR Senate 4/1/2024*” depicted in Figure 1, according to the goals set on Page 2 of this document.

III.i. Districts are drawn not according to race, i.e. the map provides remedy.

While this is a question of process, more than a question of outcomes, some evidence from the racial composition of each district sheds light on this question. The MGGG Redistricting Lab at Tufts University created 100,000 maps of Michigan Senate districts, computationally generated according to an algorithm that did not consider racial information. In almost all such maps (to be precise, in more than 95,000 of them), the number of districts with at least a certain share of residents of voting age population who identify as “Black” is in the range indicated on the first row of Table 1 below. The number in the 2022 MI Senate map is on the second row, and the number in this map on the third row. On the last two rows, if a cell contains two or three numbers, it means that the number of districts in which the share of voters who identify as “Black” is above the threshold depends on whether we count only voters who identify exclusively as “Black” (leading to the lowest number), or also voters who identify as another race, or as “Hispanic”, as well as identifying as “Black” (leading to the highest number).

# Districts at least ____ “Black”	45%	50%	55%	65%	75%	85%
<i>Almost all maps drawn without considering race</i>	2 to 4	1 to 3	1 to 3	0 to 2	0 to 1	0 to 1
<i>2022 MI Senate map</i>	0	0	0	0	0	0
<i>This map</i>	3	3	2 or 3	2	1 or 2	0

Table 1. Do these maps look like those drawn without attention to race?

If the numbers for a given map are not aligned within the range met by most maps drawn without attention to race, that is indicative statistical evidence that the maps were probably drawn paying attention to race. The 2022 MI Senate map is one such case; almost all maps drawn without attention to race feature at least one district that is at least 55% Black, whereas the 2022

MI Senate map features no district with more than 55%, 50% or even 45% Black voting-age population. The map I proposed resolves this discrepancy, yielding the high end of the range of expected number of districts with over 50%, 55%, 65% or 75% Black share of voting age population. The reason for this map to be on the high end of the distribution of number of districts with a large Black majority is that this map follows county and city boundaries more rigidly than those in the ensemble, so two of its districts have most of their population in Detroit, whereas those in the MGGG ensemble more frequently spill out of the city.

III.ii. Most other districts are left intact, i.e. the remedy is narrowly tailored.

As discussed above, this map edits the boundaries of two additional districts (districts D2 and D7), besides the six that must be redrawn. Thus, it preserves 30 out of 38 districts that the Court did not explicitly require to be redrawn. I explained above why these two districts ought to be redrawn.

III.iii. The map provides sufficient districts of opportunity to comply with the VRA.

It is difficult to establish conclusively if a district is a district of opportunity, in which the candidates preferred by this minority (if it votes as a bloc) get elected to office: districts in which this minority constitutes over 50% of the voting-age population are definitely districts of opportunity, but for those in which it constitutes a large minority (say between 40% and 50%), it depends on voting patterns in primary elections, over which we have insufficient data... but the closer to 50% the size of the minority, the stronger the likelihood that the district will function as one of opportunity to the minority.

It is also difficult to assess how many districts of opportunity a map ought to establish. It depends on what degree of compactness we deem reasonable, and other “totality of circumstances” of uneasy interpretation.

Quantitatively, we can at least assess how many districts of opportunity a map likely creates, both the certain ones (above 50% share of voting-age residents of a given minority group), and the less certain ones (between say 40% and 49%).

This is the breakdown of the share of voting-age voters who identify as “Black” in this proposed map, again providing two percentages, the lower one using the most restrictive notion of “Black” identification, and the larger one using the most inclusive notion. I order the districts from lowest to highest “Black” identification.

<i>District</i>	<i>6</i>	<i>11</i>	<i>7</i>	<i>10</i>	<i>8</i>	<i>1</i>	<i>3</i>	<i>2</i>
<i>Between</i>	8.5%	9.6%	14.4%	19.3%	34.8%	50.1%	74.5%	79.8%
<i>and</i>	9.5%	10.5%	15.7%	20.8%	36.6%	53.5%	77.1%	82.5%

Table 2. Share of voting-age residents who identify as "Black" in the redrawn districts.

Districts D2, D3 and D1 (all fully or largely in the City of Detroit) are districts in which Black residents constitute a majority of the voting age population, and so they can surely elect their candidates of choice if they vote cohesively. Perhaps District 8 might be too, depending on voting patterns.

For comparison, the adopted 2022 MI Senate map created districts in which we know with confidence that Black voters can elect their candidates of choice.

Further, more than 98% of all maps computationally generated by the MGGG Lab without attention to race create at least 2 Black-majority districts, and all 100,000 of them created at least one district that is 48% Black; whereas the 2022 MI Senate map created no district above 45% Black. In contrast, the map I propose creates three majority Black districts; a majority of maps in the MGGG ensemble create at most two majority Black districts, and more than 99,400 of them create at most three. In fact, more than 97,000 of the MGGG ensemble maps create at most three districts with more than 45% of Black voting age population. So the number of districts with a Black majority of residents of voting age, or with at least 45% share of Black residents among those of voting age, is at the high end of what is to be expected to arise in maps drawn without attention to race; any more would be unlikely to emerge except with deliberate racial intent.

While VRA compliance ultimately rests on more factors than just these calculations, what these numbers show is that the current proposal generates more reliable districts of opportunity for voters who identify as “Black” than the 2022 MI Senate map, and at least as many as almost any map that pays no attention to race.

III.iv. The map reflects neighborhood communities in Detroit and Metro Detroit.

While “communities of interest” remain difficult to identify in an objective manner, and thus a quantitative analysis of compliance with the constitutional criterion of reflecting such communities remains elusive⁴, this proposed revision map exhibits the following desirable feature:

Almost every revised district boundary line outside the City of Detroit in this proposal follows either the county boundary line dividing Wayne Co. from Macomb Co., or a city boundary line, and the two exceptions in which, to attain population equality, lines must cut through a city or township, they do so through a shortest straight line laid along a major road: a 1.5 mile section along 7 Mile Rd in Redford township, and a 2 mile section along 11 Mile Rd in Roseville.

District lines within the City of Detroit invariably follow at least one, and where possible two, boundary lines drawn by Detroiters in line-drawing processes internal to the City: the neighborhood boundary lines according to the most recent map of neighborhoods that the City of Detroit’s Department of Neighborhoods compiled “*in concert with community groups*,” and the boundary lines of 2026 City Council districts to be used in the 2025 municipal election, as approved by the City in February 2024. All district boundaries follow neighborhood boundaries, to the precision of a Census block, so that no neighborhood is split across two districts, and, in addition, where possible, the neighborhood lines follow the 2026 City Council district boundaries lines, which themselves follow neighborhood lines.

This is arguably the best approximation to a map of communities in the City of Detroit, compiled by the very same communities that we seek to represent. All district boundary lines are lines reused from boundary lines first drawn by Detroiters themselves; no new lines are cut through the city by an outsider map-drawer.

In grouping different cities together, I aimed at common interests and needs for representation as captured by similarity in economic conditions; shared interest in county issues by virtue of being in the same county; and geographic proximity; besides the singular goal of

⁴ The constitutional assertion that “*Districts shall reflect the state’s diverse population*” appears to be more of an aspirational value to be internalized, than a concrete operationalizable and measurable instruction.

keeping Dearborn and Dearborn Heights together due to the prominence of a minority faith (Islam) in these two cities.

Here are cities and townships in the redrawn area, ordered by income, and with their district assignment (note that geographic constraints imply that cities cannot just be grouped in income brackets, since far apart cities must be in separate districts). On the left half of the table, cities with higher-than-average 2022 household income in Michigan; on the right, those with lower-than-average income; data from the U.S. Census.

City	Income	District	City	Income	District
Huntington Woods	\$184,815	D8	Redford	\$66,484	D2
Southfield Township	\$171,678	D7	Dearborn	\$64,600	D6
Birmingham	\$151,556	D7	Southfield City	\$63,980	D8
Bloomfield Township	\$151,300	D7	Madison Heights	\$63,224	D10
Berkley	\$108,125	D7	Oak Park	\$61,991	D8
Farmington Hills	\$101,728	D8	Warren	\$61,633	D10
Royal Oak City	\$92,799	D7	Fraser	\$61,039	D11
Livonia	\$92,458	D8	Hazel Park	\$59,576	D10
Farmington City	\$92,128	D8	Taylor	\$59,352	D6
Ferndale	\$86,120	D10	Dearborn Heights	\$58,335	D6
Clawson	\$82,713	D7	EastPointe	\$57,953	D10
Sterling Heights	\$75,381	D11	Roseville	\$57,274	D11
Allen Park	\$73,792	D6	Lincoln Park	\$55,777	D1
Clinton	\$68,987	D11	Center Line	\$52,067	D10
			Ecorse	\$45,473	D1
			Pontiac	\$40,307	D7
			Hamtramck	\$39,648	D3
			Melvindale	\$38,918	D1
			Detroit	\$37,761	D1, D2, D3
			Highland Park	\$30,341	D3
			River Rouge	\$26,343	D1

III.v. The map preserves partisan fairness.

In this and related analyses of partisan fairness in MI Senate maps, I use election results from the 2016 and 2020 U.S. Presidential elections, the 2018 and 2020 U.S. Senate elections in Michigan, and the 2018 Michigan Governor election, as reported by DRA 2020.

The area included in districts D1, D2, D3, D6, D7, D8, D10 and D11 is heavily Democratic. In fact, the Democratic Party won seven of these eight districts (all but D11) in each of these five elections, according to both the district boundaries in the remedial map I propose, and according to the adopted 2022 MI Senate map.

Therefore, the revision to the district boundaries only affects the probability that either party wins the one swing district: D11. In the 2022 MI Senate map, the Democratic candidate wins it in four out of five elections in my sample (all but the 2016 Presidential); in my proposed remedial plan, the GOP wins the district in another two electoral environments: the 2020 Presidential and 2020 U.S. Senate elections, both of which were won narrowly by Democrats statewide.

So, on average over these five elections, the revision adds 0.4 seats to the GOP.

Across the entire state, on average over these five elections, under the remedial map I propose, the partisan composition in the MI Senate would be Democrats 20.2 – 17.8 Republicans, whereas, under the 2022 map, it would be on average Democrats 20.6 – 17.4 Republicans.

Is this “fair”? The short answer is “yes.” The longer answer follows, to the end of the section.

Whether a map is “fair” depends on the notion of fairness one uses to answer the question. So far, the Commission has used four measures proposed by its hired partisan fairness consultant, Dr. Lisa Handley. The MI Constitution Art IV §6 (13d) specifies that: “*A disproportionate advantage to a political party shall be determined using accepted measures of partisan fairness.*” Whether these four measures are particularly “accepted” ones, either in previous Court cases on partisan gerrymandering or in the academic literature, is questionable at best.

The Commission has paid most attention to a notion based on bringing as close to zero the gap in the share of votes that are so called “wasted” for each party. But this is a highly problematic notion with perverse effects if turnout can vary across districts; namely, this measure encourages parties to suppress turnout in districts they win, so as to minimize the votes wasted by the losing party. Its creators (Eric McGhee and Nicholas Stephanopoulos) have since shifted to advocate for a simpler notion of the “Efficiency Gap”, one that has better properties and relies solely on statewide vote shares and seat outcomes.

Of the other measures that the Commission uses, deviation from Proportionality is standard, and is the measure that *Voters Not Politicians* recommends the Commission to focus on.⁵ The mean-median difference is standard in the academic literature, whereas the Lopsided Margin is just one of many measures in the literature, with no more acceptance by scholars or courts than any of many other possible alternatives.

More broadly, consider two competing normative principles on partisan fairness. One view is that fairness requires the seat share of any party to be some proportion of its statewide vote share; Proportionality as used by Commission (the seat share should be similar to the vote share), and the better version of the Efficiency Gap are possible measures within this view. A contrasting view is that partisan fairness requires maps to be “neutral” in the sense that the partisan seat outcome should be similar to the outcome if maps were drawn without attention to partisan considerations; the difference is that fair outcomes under this second view depend on the distribution of support for each party, and not only on statewide vote totals for each party.

In addition to Proportionality and the better definition of the Efficiency Gap, I consider two measures of the “neutral” principle of partisan fairness. The first is the only one of all these measures that has been accepted in Court (at least, in rulings that stood and were not later repealed on appeal) in previous cases on partisan gerrymandering.

1. **The Outlier Test.** The MGGG Redistricting Lab at Tufts created 100,000 possible MI Senate district maps, and computed the number of seats that each party would get according to those maps, if each Michigan precinct voted as in the 2016 Presidential election, 2018 US Senate election, and 2018 MI Governor election. We obtain a distribution of maps, from those most favorable to Democrats, to those most favorable to Republicans. The “Outlier” test requires that a map not be an extreme, among the most favorable to either party, but rather, that it lie with the 9 out of 10 maps in the middle.

The second measure originates in my own published research, but it has not been embraced in any Court ruling.

2. **The Jurisdictional Advantage.** This measure compares the seat outcome under a given map, to a benchmark “neutral” seat outcome if representation were by jurisdiction (counties and cities),

⁵ Letter from VNP to the Commission, March 25, 2024. Voters Not Politicians is the civil rights organization that led the constitutional amendment to create an independent redistricting commission.

with the party that obtained most votes in each jurisdiction gaining representation proportional to the population of the jurisdiction.⁶ I use data from the 2016 and 2020 U.S. Presidential election, the 2018 and 2020 MI Senate election, and the 2018 MI Governor election.

These are the hypothetical results in each of these elections, if votes were aggregated using the remedial map I propose, together with the range of Democratic seats acceptable according to the Outlier test, and the ideally fair number of Democratic seats according to Proportionality, the better computation of the Efficiency gap, and the Jurisdictional benchmark.

	This proposed map		Acceptable DEM Range	Proportional benchmark	Efficiency Gap	Jurisdictional benchmark
	DEM	GOP				
2020 PRES	20	18	n.a.	19.5	20.1	19.4
2016 PRES	18	20	14 to 18	19.0	18.9	15.5
2020 U.S. SEN	18	20	n.a.	19.3	19.6	18.7
2018 U.S. SEN	22	16	17 to 22	20.1	21.5	20.6
2018 GOV	23	15	19 to 24	20.9	22.7	21.5
Average	20.2	17.8		19.8	20.6	19.1

Table 4. Proposed map partisan outcomes compared to Partisan fairness benchmarks.

In the next table, we note the difference between the Democratic seats under the remedial map I propose to each of the benchmarks. Positive numbers indicate that under this map, the Democratic party gets more seats than is fair according to the measure, and negative ones that it gets fewer seats. The Outlier test has a built-in acceptable range with two seats up or down from its midpoint, so any positive or negative value outside this range is indicative of a map deemed to advantage a party according to this measure. The other three measures proscribe an exact ideally fair number of seats that is unattainable in practice, so they are better interpreted to mean that the map is fair according to these measures if it is within some range (perhaps, again within two seats) of the value deemed ideally fair by the measure.

⁶ The list of jurisdictions used contains 109 jurisdictions: the 79 smallest counties, 26 large cities in the four largest counties (Wayne, Oakland, Macomb, and Kent); and the rest of each of these four largest counties, each treated as an independent jurisdiction.

	Outlier Test	Deviation from Proportional	Efficiency Gap	Jurisdictional Advantage
2020 PRES	-	+0.5	-0.1	+0.6
2016 PRES	Acceptable (+2)	-1.0	-0.9	+2.5
2020 U.S. SEN	-	-1.3	-1.6	-0.7
2018 U.S. SEN	Acceptable (+2.5)	+0.9	+0.5	+1.4
2018 GOV	Acceptable (+1.5)	+2.1	+0.3	+1.5
Average	Acceptable (+2)	+0.4	-0.4	+1.1

Table 3. Proposed map Partisan fairness scores.

The proposed remedial map obtains acceptable scores close to zero on all measures; though it favors Democrats in three out of four of these measures, the magnitudes are small, within acceptable ranges. By giving an extra +0.4 seats to the GOP, relative to the 2022 official map, this proposal has brought the deviation from proportional down from +0.8 to +0.4 (better) and the deviation from the jurisdictional advantage from +1.5 to +1.1 (better as well) but the Efficiency Gap from a perfect 0 to -0.4 (worse), while the proposed remedial map remains acceptable according to the Outlier test (the map gives Democrats two seats more than the midpoint of the acceptable range, but this is within the admissible range).⁷

Further note that in *League of Women Voters v Independent Citizen Commission*, the Michigan Supreme Court ruled that the pursuit of a zero value on measures of partisan fairness was not necessary, and that there exists some acceptable leeway from perfection on any given measure. Given this precedent and given that measures conflict on the direction that would be an improvement, I deem this plan as good on partisan fairness as the 2022 MI Senate map.

In summary: the proposed remedial map has limited consequences for partisan fairness, and the slight shift toward the GOP is of debatable normative merit: several measures—including the most salient one of Proportionality—see it as a slight improvement, others as slightly negative, and

⁷ According to the other measures that the Commission uses (the median-mean differences, the Lopsided Margin, and the problematic version of the EG), the *IPPSR Senate 4/1/2024* shows a small advantage to the GOP, of the same sign but larger than the official 2022 MI Senate map. Those measures, however, do not determine a fair number of seats for a party; rather, they define “fair” as a mathematical formula based on the distribution of vote shares across districts, and as such, they are manipulable in the sense that among maps with the same score on these formulas, one can choose one that favors one or another party more by letting it win more seats.

all agree that the effect is not large and that both the 2022 Senate map, and this proposed remedial map, are fair; across measures, neither provides a substantial advantage to either party.

III.vii. This map does not provide an advantage or disadvantage to any candidate.

This proposed remedial map was drawn without any information about candidates. In particular, incumbents' addresses and whether the proposed districts pair incumbents against each other or not is unknown. As such, the map does not "provide" any advantage to any candidate; if the map ends up being advantageous or disadvantageous to particular candidates, it is merely by happenstance.

III.viii. This map is better on population equality, county boundaries and compactness.

The ideal district population, which would equalize the population across all districts, is 265,193 inhabitants. The largest deviation in the 2022 MI Senate map is D12's population, which at 258,715 inhabitants, is a deviation of 6,478 inhabitants, or 2.44%.

District 12 is left intact, and it also constitutes the largest deviation in the map proposed here, so with regard to the largest deviation, the remedial map is no worse (it could be no better without revising district D12) than the adopted 2022 MI Senate map.

In fact, among the 8 district it revises, the largest deviation from perfect population equality in the remedial map is 0.8%, down from 1.4% in the 2022 MI Senate map.

The map in this proposal performs better than the adopted 2022 MI Senate map on respecting county boundaries. The adopted 2022 MI Senate map splits 31 counties across at least two districts, creating a total of 147 pieces of a county in the state assigned to a distinct district. This proposed map still splits 31 counties (as it necessarily must, since the 30 intact districts by themselves split 31 counties), but it reduces the number of separate pieces to 142, that is, it eliminates five separate pieces, by virtue of seeking to follow, and preferably not cross, county lines. Specifically, the following five inter-county splits, from East to West, do not occur:

1. District D11 is now fully in Macomb Co., it no longer crosses over into Wayne Co.
2. District D3 is now fully in Wayne Co. and it is no longer split across three counties (Wayne Co., Oakland Co. and Macomb Co.), eliminating two splits.

3. District D7 is now fully in Oakland Co. and no longer crosses over into Wayne Co.
4. And conversely, district D6 is now fully in Wayne Co. and no longer crosses over into Oakland Co.

In addition, district D10, which straddled Macomb Co. and Wayne Co. now straddles Macomb Co. and Oakland Co. instead.

The new districts are also more compact.

The Reock compactness score of a district is the ratio of the area of the district to the area of the smallest circle that would completely enclose the district. This captures how concentrated near its center the district is. Values range from a minimum (worst) score of zero to a theoretical but impossible in practice maximum (best) score of 1, which is attained if all districts are perfect circles. The average Reock compactness score of the ten revised districts is 0.39, compared to 0.36 in the 2022 MI Senate map.

The Popper-Polsby compactness score of a district captures how smooth is the border of the district. Formally, it is ratio of the area of the district to the area of a circle whose circumference is equal to the length of the boundary of the district. The average Popper-Polsby score in the ten revised districts is 0.35, compared to 0.31 in the 2022 MI Senate map, which also approximates to 0.36.

SUMMARY

This proposed map provides the remedy to the Michigan Senate district map required by the Court ruling in *Agee v Benson*, by editing the boundaries of eight districts (districts D1, D3, D6, D8, D10 and D11 as required by the ruling, and D2 and D7 as well).

I drew the new district boundaries without any no consideration of race. The new district boundaries reflect instead community boundaries: district boundaries follow county boundaries, city boundaries, and Detroit neighborhood boundaries as compiled by the City of Detroit in concert with community groups.

The resulting map aligns in its district demographics with the distribution of demographic characteristics of computationally generated maps drawn without attention to race; it creates strictly more districts in which minority Black citizens, if they vote cohesively, are guaranteed to get their candidates of choice elected, than either a majority of computationally generated maps drawn without attention to race, or than the official 2022 MI Senate map; it better represents communities with common economic interests, it preserves the partisan fairness of the official 2022 MI Senate map, and it improves on that map's scores on respecting county boundaries and compactness.

The remedial map *IPPSR Senate 4/1/2024* that I propose and any map that the Commission may draw share the same goal in common: to provide the remedy required by the Court ruling in *Agee v Benson* by redrawing the districts affected by the ruling not predominantly on the basis of race, while adhering to the seven Michigan constitutional criteria. I accompany the map proposal with a detailed reasoning of my mapping process. Such reasoning, and the underlying principles behind the specific drawing choices I make (such as preferring to bring communities with more similar rather than more disparate or opposed economic interests together in the same unit of representation, or cutting through the City of Detroit only along boundary lines that Detroiters themselves have recently embraced for their neighborhood or city council district maps) may also be used by the Commission as it draws a map or as it chooses among maps that are different from the one I propose here.

I therefore submit the *IPPSR Senate 4/1/2024* remedial map proposal as a proof-of-concept, hoping that it can be useful both as an illustrative example, and as an explanation of the reasoning behind each mapping choice, an explanation that may help those entrusted with the responsibility to adopt an official map, as they make their own decisions.

Note: At the time of writing (4/1/2024), this document may still contain errors that have not been corrected yet. All errors are my own, and I apologize for each of them. If you find one, I'd be grateful if you alert us. This is a "live" document, and I will maintain an updated version, correcting errors as I become aware of them. The most recently updated version will be available at:

<https://sites.google.com/msu.edu/eguia/redistricting>