

Some Tools for Redistricting Analysis: PA House Preliminary Redistricting Plan¹

Region-Level Variances and Outlier Identification

Robert Hess, January 18, 2022²

Introduction

This report addresses some of the potential weaknesses of the Pennsylvania Legislative Reapportionment Commission (LRC) Preliminary Plan (the Plan) for the Pennsylvania House of Representatives released on December 16, 2021. It lists several specific districts as candidates for modification to improve the Plan from the perspective of its compliance with required features and from the perspective of incumbency. It also characterizes some region-level imbalances that the LRC might mitigate to improve its acceptance statewide.

In the process, the report uses some analytical perspectives and provides some analytical tools that could aid the LRC in its final design adjustments by looking at key design criteria:

- **The analysis** focuses on five required and preferred characteristics of the Plan that highlight some potential weaknesses that might strengthen any legal challenges. It lists district outliers and maximally affected political subdivisions identified by ranking metrics for five characteristics we deem critical for a politically palatable, fair, judicially reviewable, and judicially enforceable districting design evaluation.
- **The tools** include graphical diagrams, color-coded maps, and some new quantitative metrics that help to highlight the interplay of design constraints, to uncover unrecognized regional biases, and to measure some new stakeholder preferences.

Five Perspectives

We look at the Plan from five different perspectives:

1. Compactness of district shapes;
2. Population variance from the Census-determined district population target (64,053 persons);
3. Splitting of political subdivisions;
4. Impact of district design on incumbency;
5. Constituent continuity of districts³

Note: The first three of these perspectives relate to clearly stated Constitutional requirements.⁴ Perspectives 4 and 5 relate to continuity of representative government that seems to have played a role

¹ This analysis uses two resources published by the LRC: 1) the prisoner-adjusted database of demographic and geographics boundaries assembled by the PA Data Resource Center and certified by the LRC titled "2021 Data Set #2 (with prisoner reallocation)" (<https://www.redistricting.state.pa.us/resources/GISData/Census/2021/2021-DataSet2-WithPrisoner/LRC%20Data%20Release%202%20-%20Geography.zip>); 2) the Plan district boundary demography and geography file. We used two forms of this information, both shared by the LRC: in ESRI shapefile form (https://www.redistricting.state.pa.us/Resources/GISData/Districts/Legislative/House/2021-Preliminary/SHAPE/LRC_H_Preliminary.zip) and via Dave's Redistricting app (<https://davesredistricting.org/join/a3157651-f2a6-4df1-ab3c-ffc38404bc7d>).

² The author is an volunteer with and a manager of Concerned Citizens of Democracy, an anti-gerrymandering organization. Please attribute any inaccuracies or errors in the data or methods to the author solely.

³ Constituent continuity is a concept similar to incumbency but analyzed from the voter perspective. A constituent experiences continuity of representation if the district in which they reside remains unchanged, after adjusting for potential district numbering changes. This concept uses the 2021 Data Set #2 referenced in Footnote 1 above.

⁴ Pennsylvania Constitution, Article 2, Section 16: The Commonwealth shall be divided into 50 senatorial and 203 representative districts, which shall be composed of compact and contiguous territory as nearly equal in population as practicable. Each senatorial district shall elect one Senator, and each representative district one Representative. Unless absolutely necessary no county, city, incorporated town, borough, township or ward shall be divided in forming either a senatorial or representative district. (Apr. 23, 1968, P.L. App. 3, Prop. No. 1)

in the design for the Plan House districts – continuity of incumbency, and continuity of groups of population constituencies.

We look at these perspectives in two ways: from the bottom up in the sense that we look at the features of individual districts; and from the top down in the form of summary maps and tables.

As the document is relatively long, the Table of Contents included below facilitates access:

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Key Observations

Below are the major observations we discovered. Appendix A summarizes definitions and sources for the material used in the analysis of each perspective:

Compactness:

- The distribution of compactness by district (bell-shaped) suggests that compactness was not a major design criterion for this plan.
- A relatively large number of districts in the middle of the state exhibit poor compactness.
- Philadelphia districts exhibit average compactness for the most part.
- Many districts in Allegheny County exhibit low to very-low compactness, including several in and around Pittsburgh. The connect group of Districts 19, 21, and 24 comprise an opportunity for a redesign to remove considerable gerrymandering.

Population Variance:

- Many of the districts surrounding Pittsburgh host populations somewhat above the target. This tends to dilute individual voter power.
- Many of the Philadelphia districts host populations somewhat below the target. This tends to increase voter power. In fact, the large number of these districts suggests that Philadelphia may come close to hosting more districts if all districts were at or below the target number.
- The large number of districts with below-target population in the Scranton - Wilkes-Barre area suggest that this region may also host an extra district with judicious design

Splitting

- Increasing splits tend to strongly limit the capacity to achieve compactness of districts. Each additional split appears to be associated with a 0.04 reduction in the upper-limit of compactness measured using the Polsby-Popper and Reock indexes, and an 8 point reduction of the KIWYSI score.
- Several Allegheny County districts suffer from compactness challenges. Many of these districts also involve considerable splitting, which arises partly because of the shapes of the underlying political subdivisions, but also due to excessive gerrymandering.
- Appendix C lists the political subdivisions split in the Plan.

Incumbency

- A total of 14 current incumbents now reside outside the District they currently hold. Of these, two have announced plans to retire from the House.
- Five of the affected incumbents are registered Democrats, nine are registered Republicans
- Around and including Scranton, Districts 113, 114, and 118 appear to dis-enfranchise the incumbents (one R, two D).

Constituent Continuity

- In the Plan, many House district boundaries changed materially but constituent continuity, for the most part remains above 50%.
- However, numerous constituent populations will change representatives (the constituents remain in the same district but the incumbent changes).
- The aggregate LCC Score of 65% is relatively low and lies in the range that many designed-from-scratch House district plans score.

Constitutional Requirements

The sequence of linked graphs portrayed below provide an overview of the relationships between the three design requirements, along with contiguity, laid out in the Pennsylvania constitution – compactness, population equality, and minimal splitting. With this tool, each dot in the charts represents one House district as constructed in the Plan. Three of the charts compare each of the

relationships between pairs of required criteria – the upper-left plots the number of splits against population variance; the upper-right plots the number of splits against compactness; the lower-left plots compactness against population variance. For completeness, a “transfer” plot on the lower-right connects compactness portrayed on the y-axis in the lower-left diagram with compactness portrayed on the x-axis in the upper-right diagram.

With this tool, the metrics for all three criteria for a single district appear in one diagram in the context of the corresponding values for all other districts. The points for each district connect to make a rectangle with one point in each of the four graphs. This rectangle is depicted as dotted orange lines in the diagrams below.

The tool quickly highlights the most problematic districts as the “outliers”, those whose metrics fall well above or well below the average for all districts. The “negative outliers” are those with the largest number of splits, the largest absolute population variances, and the lowest compactness scores.

Each diagram highlights the characteristics of a selected district. Each district appears as one point on each chart and the dotted-lines connect the points in adjacent diagrams to each other.

Some general take-aways apply to these charts with all districts taken as a group:

- Within the roughly 9% population variation exhibited by the districts, splitting appears to play very little role (top-left part of the diagram). A few districts with more-than-average political subdivision splits remain below the population target, but this does not apply broadly.
- Increasing splits tend to strongly limit the capacity for a House district to achieve compactness. Each additional split appears to be associated with a 0.04 reduction in the upper-limit of compactness measured using the Polsby-Popper and Reock indexes, and an 8-point reduction of the KIWYSI score.
- There is little relationship between population variance and compactness. However, the most compact districts in the LRC Preliminary Plan rank near the very best (lowest) by population variance from the target population.

Outlier Discussion – Constitutional Requirements

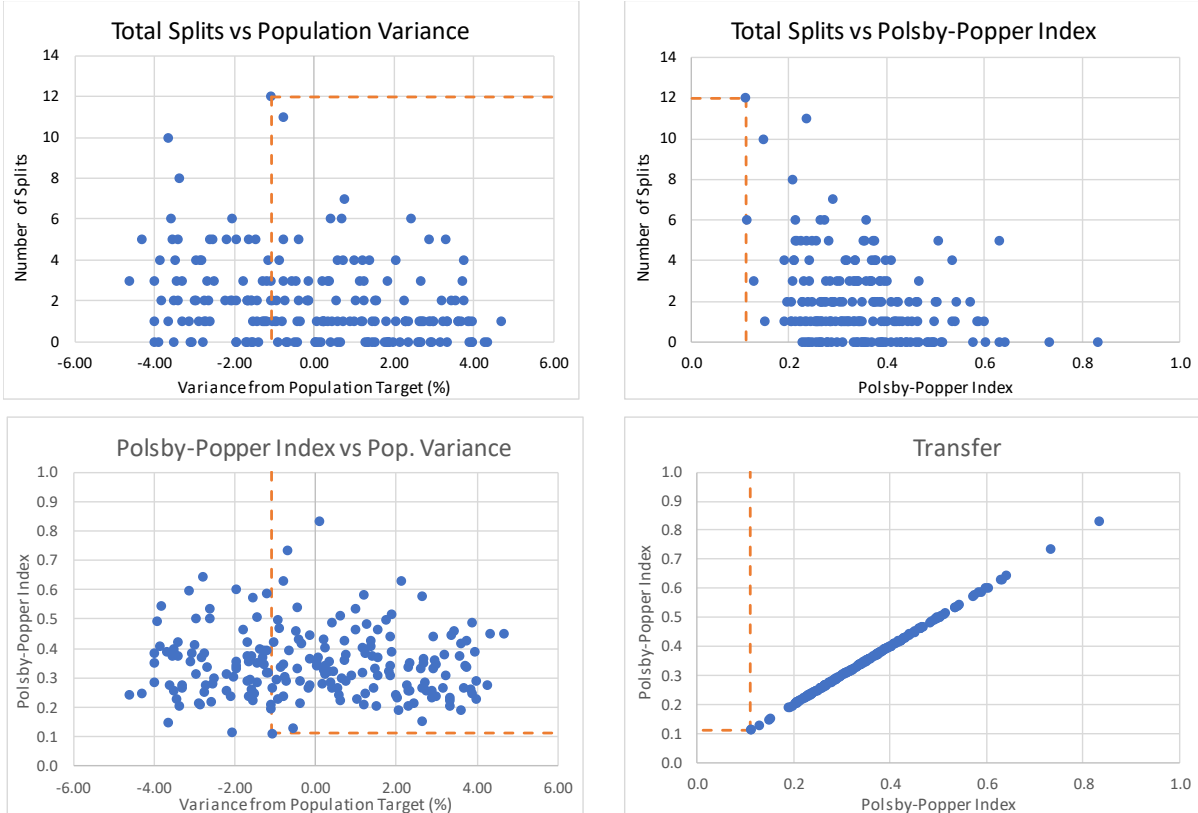
This section identifies districts that appear to violate or to nearly violate one or more of the constitutional requirements. They include:

1. District 19 – Allegheny County - Pittsburgh
2. District 40 – Parts of Allegheny and Washington Counties
3. District 24 -- Allegheny – NE Pittsburgh
4. District 21 -- Allegheny – Pittsburgh, Shaler, Reserve, Millvale
5. District 50 – Lancaster County – Part of Lancaster City and its southern and western suburbs
6. District 129 – Berks County – Parts of Reading, Wyomissing and surrounding suburbs
7. District 127 – Berks County – Parts of Reading and suburbs running southwest

Some district, though outliers, exhibit positive overall characteristics that explain the extreme metrics

8. District 111 – Susquehanna County and part of Wayne County
9. District 31 – Bucks County – Newtown and surrounding suburbs
10. District 98 – Parts of Lancaster and Lebanon Counties
11. District 184 – Philadelphia – eastern part of South Philadelphia
12. District 10 – Lawrence County except the southern and eastern municipalities

District 19 (Allegheny County - Pittsburgh) Compliance with Constitutional Requirements

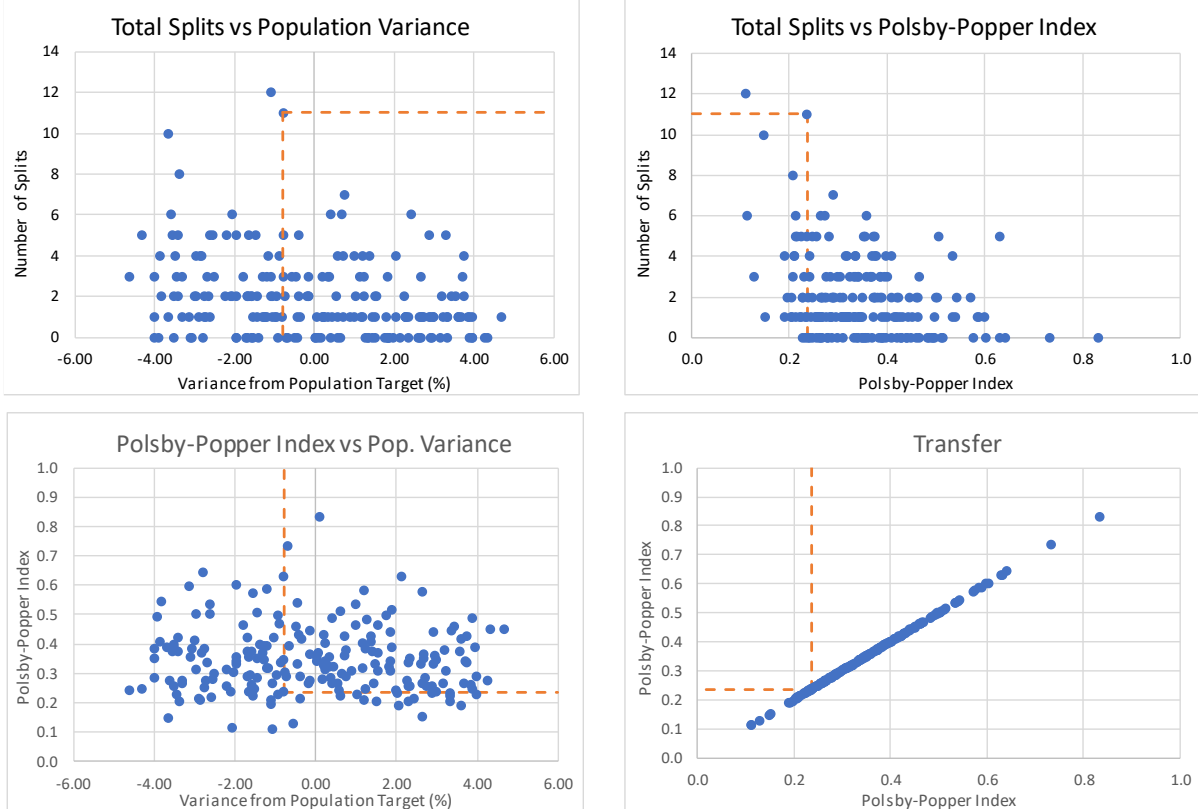


Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 19 in southern Pittsburgh ranks as the most non-compliant of the House districts in the Plan. This district resembles the current 19th district, retaining from the 2012 district design the highly gerrymandered shape (Polsby-Popper Index=0.11, DRA KIWYSI Score=1 of 100) that follows the city's southwest boundary. This district ranks among the least compact and among those with the most splits (12 Pittsburgh wards) among the 203 House districts.

Although it satisfies the requirements for a minority coalition district, the cost in terms of compactness and ward splits should warrant a much more careful redesign.

District 40 (Allegheny, Washington Counties) Compliance with Constitutional Requirements

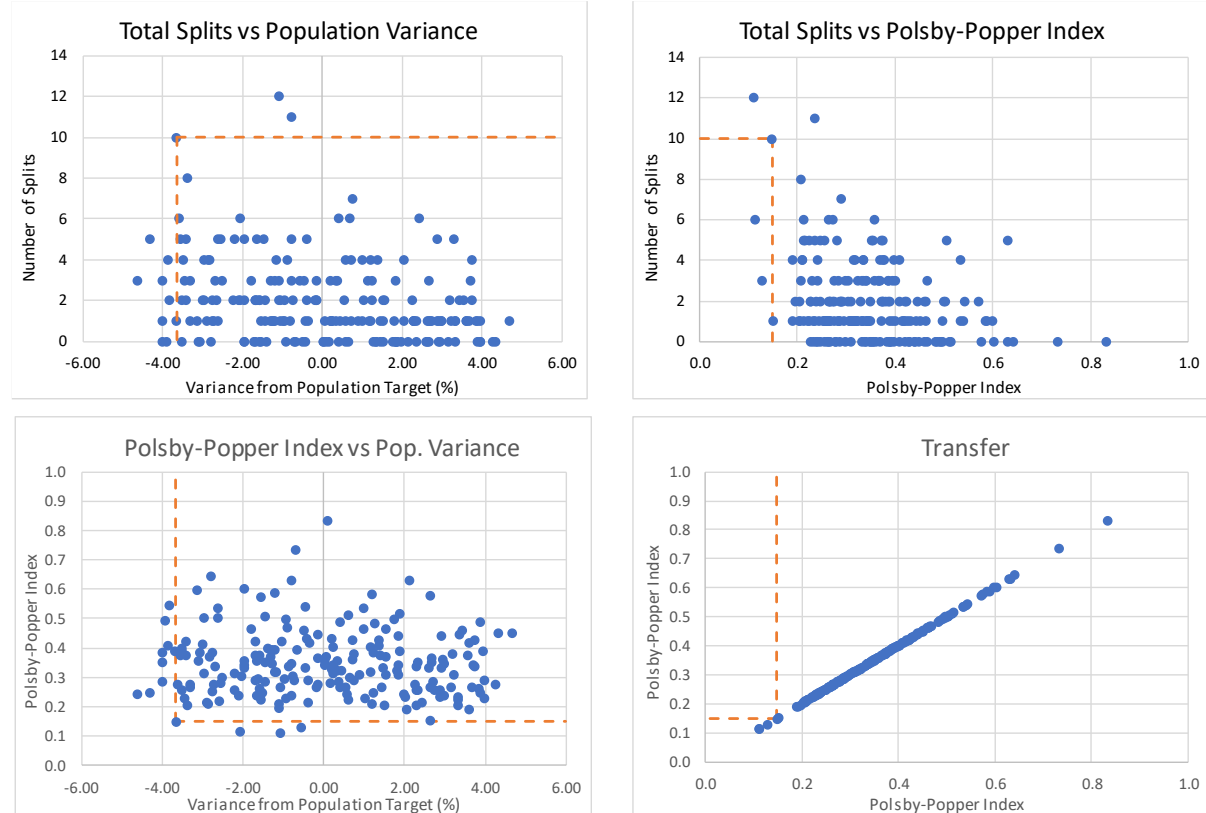


Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 40 bridging southern Allegheny County and Washington County is split into two county segments, parts of three Allegheny municipalities (South Fayette, Upper St. Clair, Bethel Park) and parts of six Wards (Upper St. Clair 03, Bethel Park 01, Bethel Park 02, Bethel Park 05, Bethel Park 06, Bethel Park 08), ranking it second among district splits. Compactness (Polsby-Popper Index=0.24, KIWYSI Score=43) ranks among the bottom quarter of districts.

This district improves upon the existing “C”-shaped District 40, but the number of splits should be reduced.

District 24 (Allegheny – NE Pittsburgh) Compliance with Constitutional Requirements

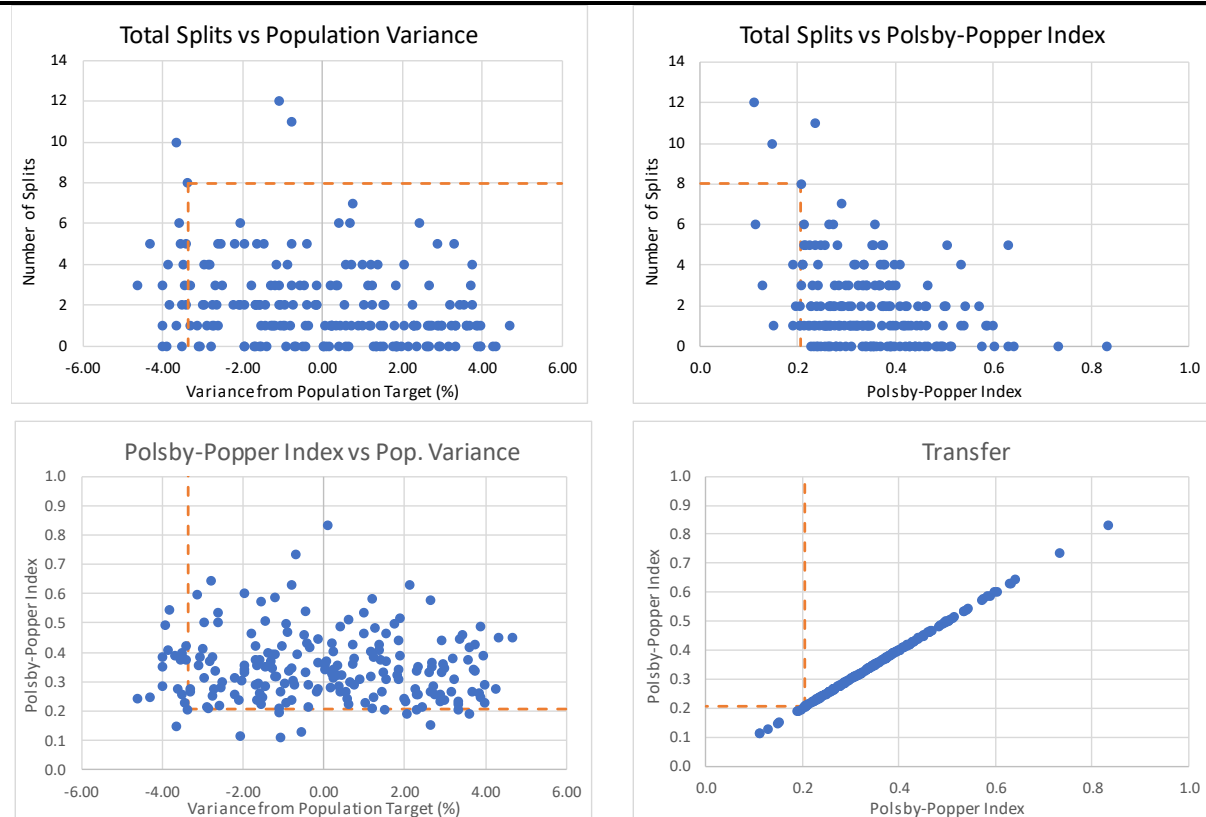


Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 24 ranks third in the number of splits (8 Pittsburgh wards, and the addition of a tiny piece of Aspinwall borough). Its compactness ranks among the 5 worst, and its population variance at -3.6% is among the largest negative variances. One is tempted to guess that the unusual addition of Aspinwall District 03 arose from a desperate attempt to achieve population compliance while achieving a minority coalition district. It abuts the highly gerrymandered District 19 at its southwestern end.

From a geographic standpoint, this district is discontinuous. The way to access the Aspinwall Borough portion of this district is by way of the Highland Park Bridge then along Freeport Road through the Borough's District 01.

District 21 (Allegheny – Pittsburgh, Shaler, Reserve, Millvale) Compliance with Constitutional Requirements

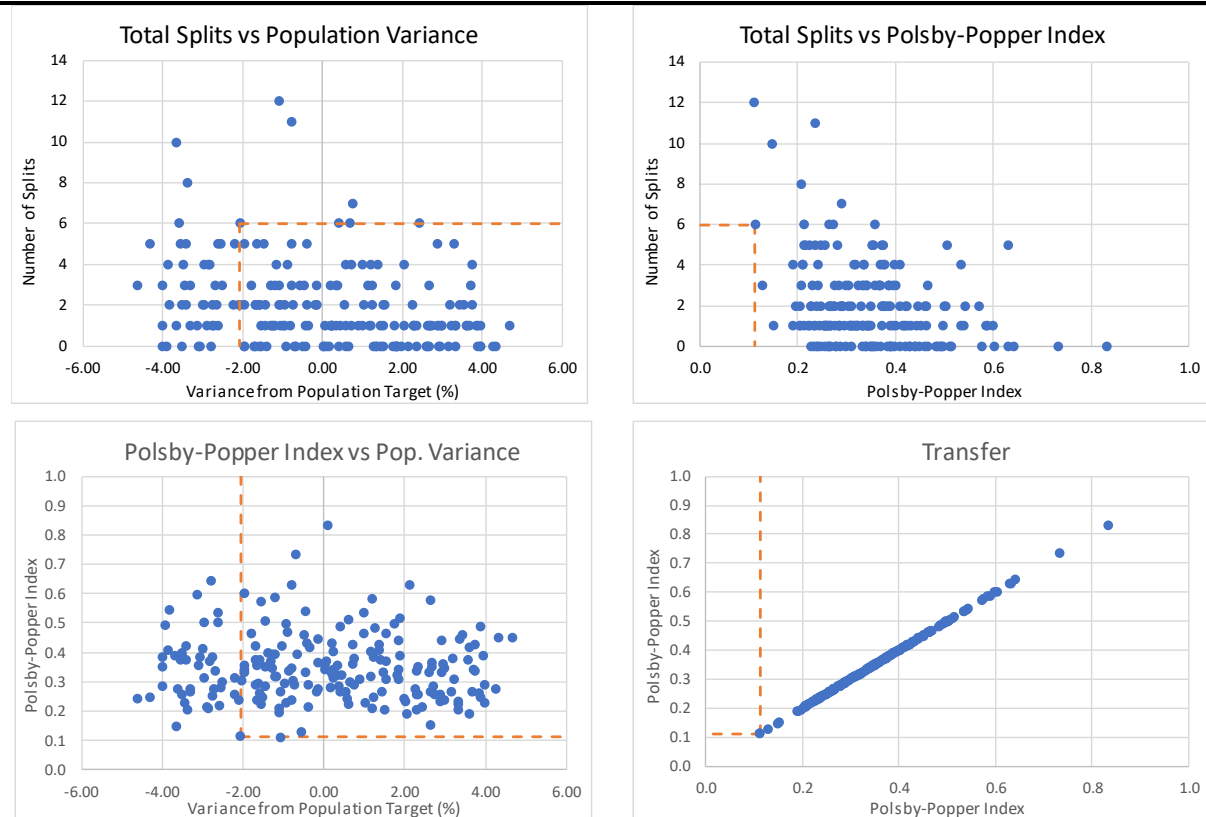


Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 21, the northwestern neighbor of District 24 and also a neighbor of District 19, includes a part of Pittsburgh, splitting 7 Wards in the process, as well as the full municipalities of Shaler, Reserve, and Millvale. With a total of 8 splits, this district ranks 4th worst. Not surprisingly, it also ranks low from a compactness standpoint.

This district hosts a low population, falling below the target by 3.4%. While its southern neighbor District 24 (see above) also hosts a low population, three other neighbors to the North, East, and West could afford to lose some population. District 20, the northwestern neighbor, currently hosts an above-target population.

District 50 (Lancaster - Part of Lancaster City and suburbs) Compliance with Constitutional Requirements

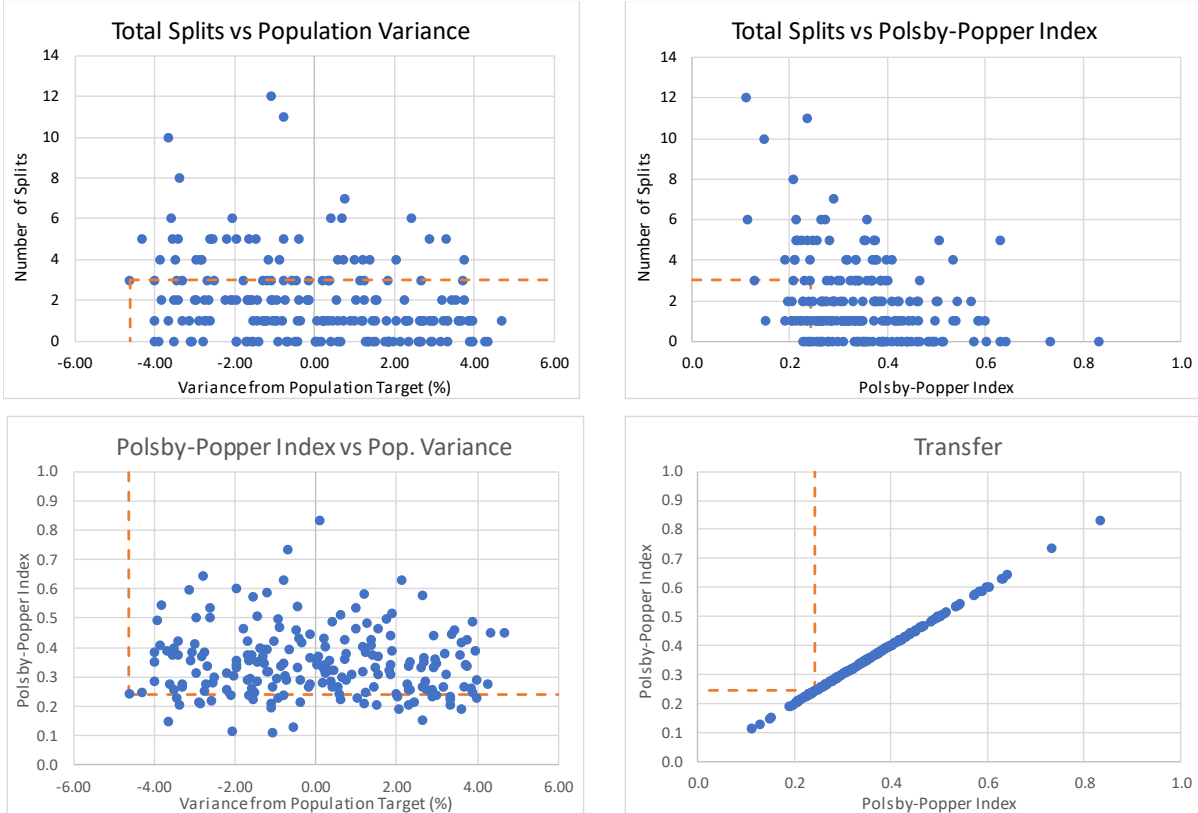


Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 50, with an extreme shape negatively affecting its compactness using the Polsby-Popper and KIWYSI metrics, assembles a population with a racial minority coalition district. This is perhaps its only redeeming feature.

VRA considerations might offset its other design deficiencies but an additional review seems warranted.

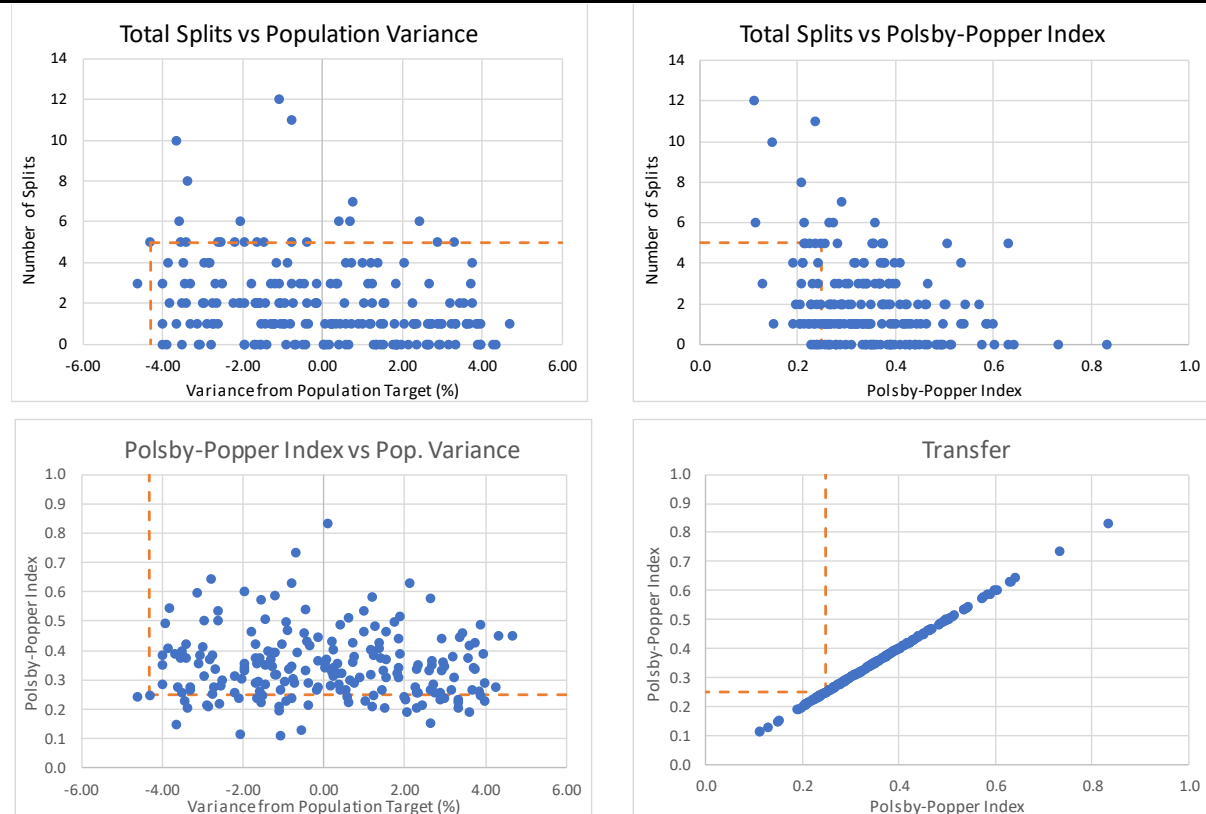
District 129 (Berks – Part of Reading and suburbs) Compliance with Constitutional Requirements



Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 129 ranks as the district with the least population and also suffers from poor compactness. It does create a district with a minority coalition population consisting primarily of Latinx residents, which helps the overall design to comply with VRA requirements.

District 127 (Berks – Part of Reading and suburbs) Compliance with Constitutional Requirements

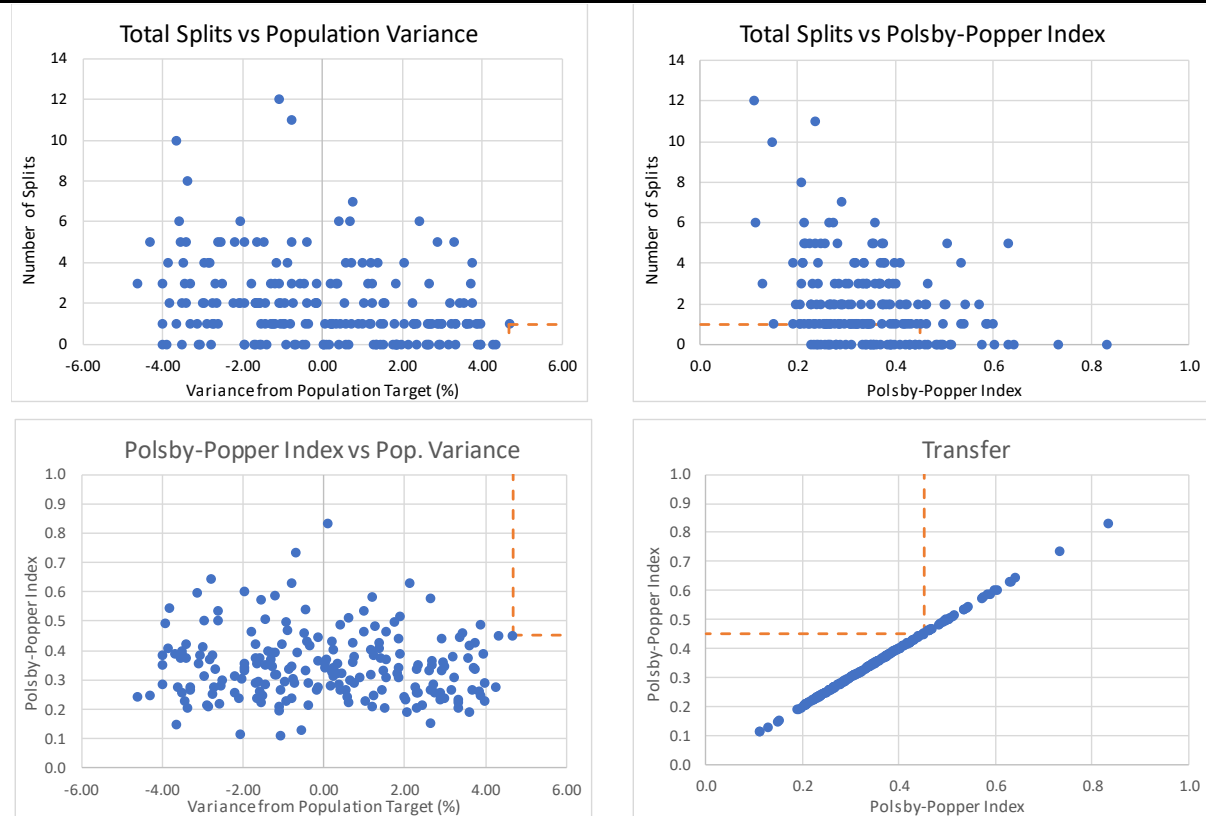


Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 127 enjoys a Latinx population majority helping the total Plan to achieve compliance with the VRA. The cost of achieving this is its second-lowest population total and a low compactness as measured by the Polsby-Popper index and the KIWYSI score (the Reock index is low but not among the extreme values). With 5 splits involving municipalities (two separate parts of Reading city) and 3 Reading City wards at the northern edge of the city). The district also encircles a small incidental discontinuity of District 128 – sports fields adjacent to Angelica Creek Park owned by Cumru Township.

Trade-offs between complying with the design criteria itemized in the Pennsylvania Constitution and Federal laws like those that arise from the Voting Rights Act represent an important reason for documenting design decisions.

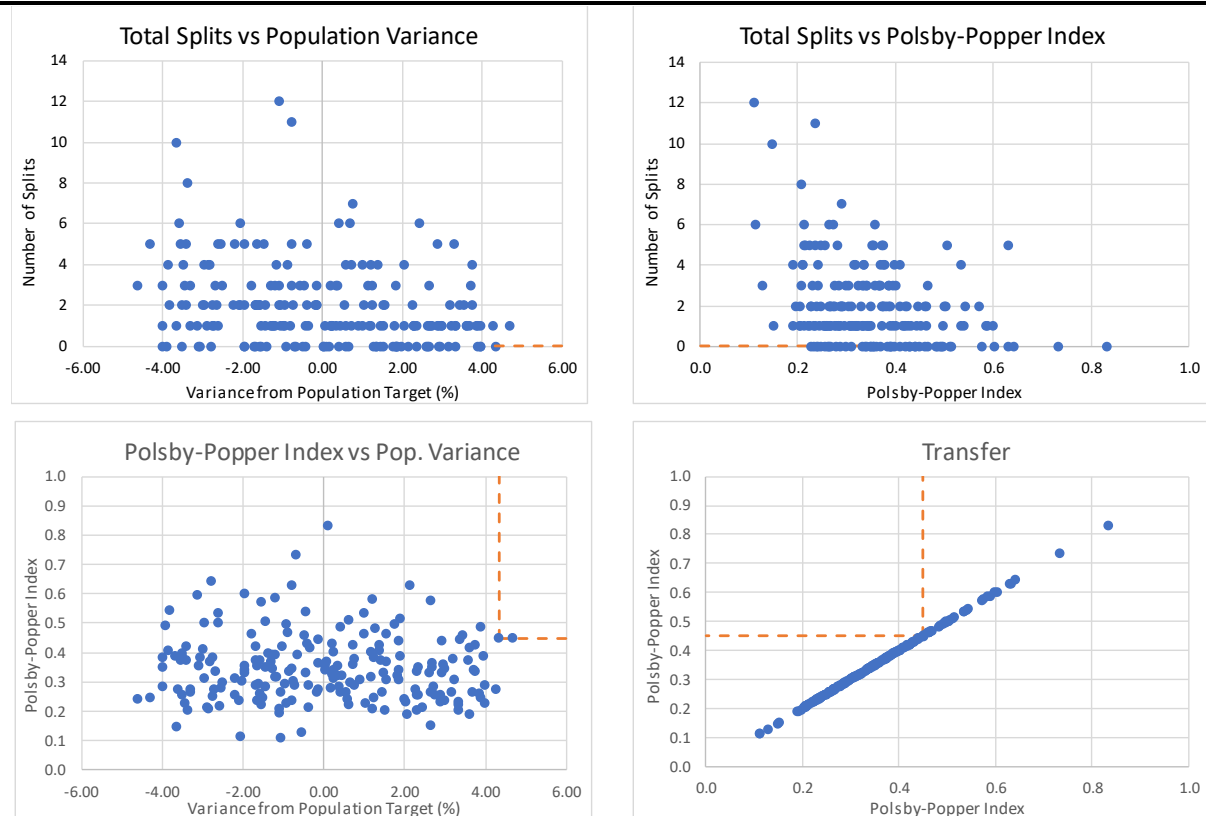
District 111 (Susquehanna and Wayne Counties) Compliance with Constitutional Requirements



Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 111 hosts the largest population among the 203 House districts in the Plan with a variance from the target of 4.67%. However, it ranks as one of the simplest of the designs, including all of Susquehanna County and all but the 8 southernmost municipalities in Wayne County. It sports only this one split of Wayne County that strictly follows municipal boundaries. It scores relatively low from a compactness standpoint largely for technical reasons – its Polsby-Popper index is depressed by the meandering of the Delaware River along the northwestern part of Wayne County; its Reock index is lowered by the long east-west dimension and the shorter north-south dimension; its KIWYSI score (not easily diagnosed) probably suffers from the inverted “L”-shaped appearance of the district.

District 31 (Bucks County – Newtown and suburbs) Compliance with Constitutional Requirements

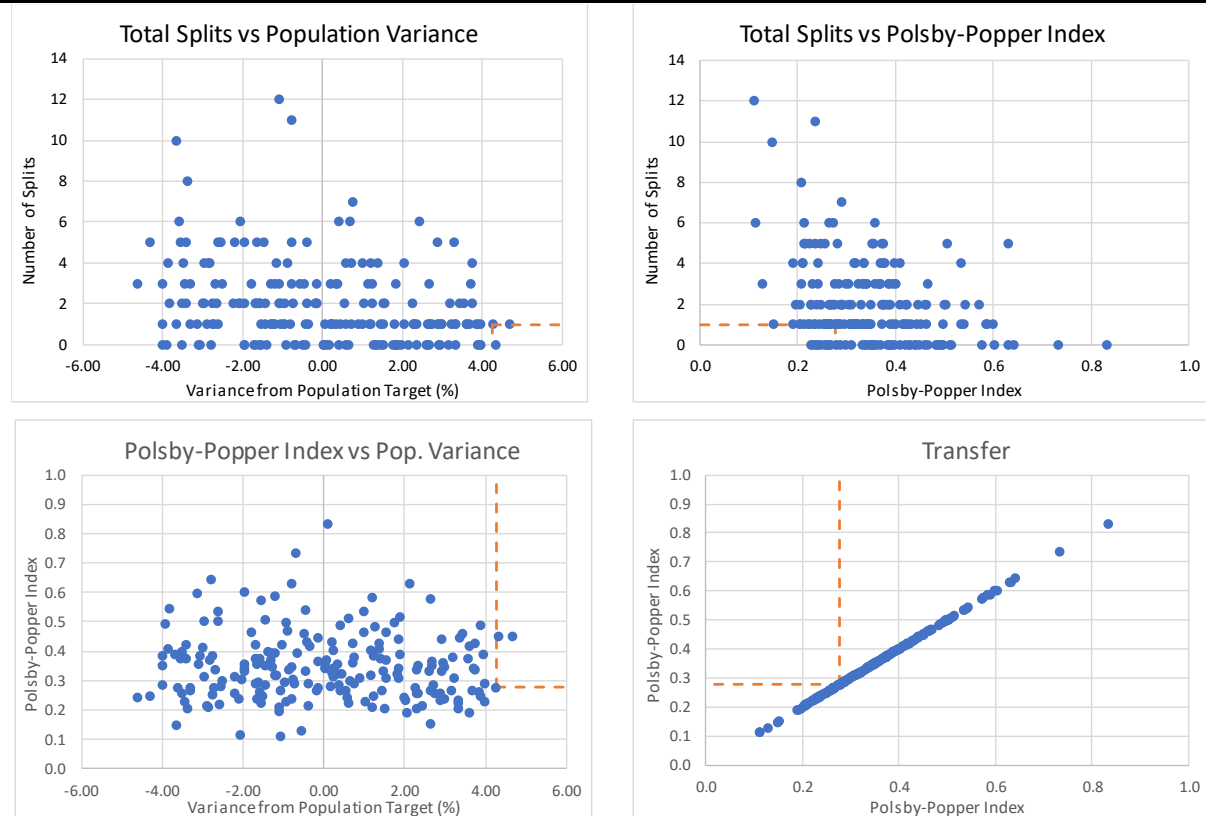


Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 31 consists of 6 municipalities in Bucks County (the townships of Lower Makefield, Newtown, Upper Makefield and Wrightstown, the boroughs of Newtown and Yardley). It is one of 49 districts (about a quarter of all districts) constructed without splitting a political subdivision. It hosts a large population, exceeding the target by 4.32%, ranking it second among all districts. The simplicity of the shape and the smoothness of the boundaries provide the basis for top-quartile compactness values for the Polsby-Popper index and the KIWYSI score. A somewhat elongated shape lowers its Reock index value somewhat.

In this case, the major trade-off involves population variances versus splitting. There are some tactical design limitations associated with this district, as all but District 140, its neighbor to the south, host above-target populations as well. Portions of Lower Makefield township could be shifted to this district.

District 98 (Parts of Lancaster and Lebanon Counties) Compliance with Constitutional Requirements

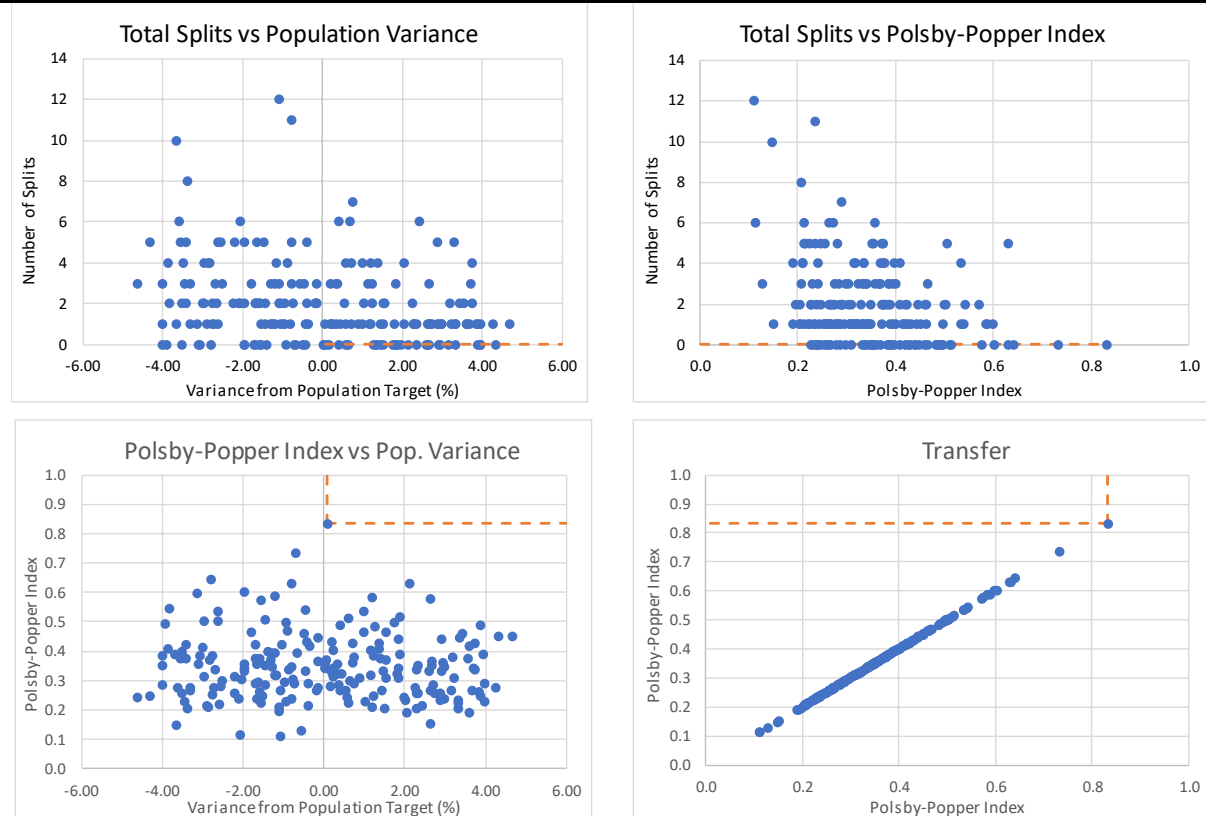


Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 98 hosts the third-largest population among the Plan districts at 4.26% above target. The district cuts across the Lancaster County/Lebanon County border, its only split. It encompasses the boroughs of Elizabethtown and Mount Joy in Lancaster County along with the adjoining townships of Conoy, East Donegal, Mount Joy, and West Donegal. The two Lebanon townships, South Londonderry and South Annville, account for a little over 12,000 of the total district population. The two boroughs host just under 20,000 residents.

All of the districts in this part of the state include above-target population levels, suggesting that any tactics for reducing the population of this district would necessarily involve multiple districts. In fact, District 37 which abuts this district to the east, ranks 4th in population.

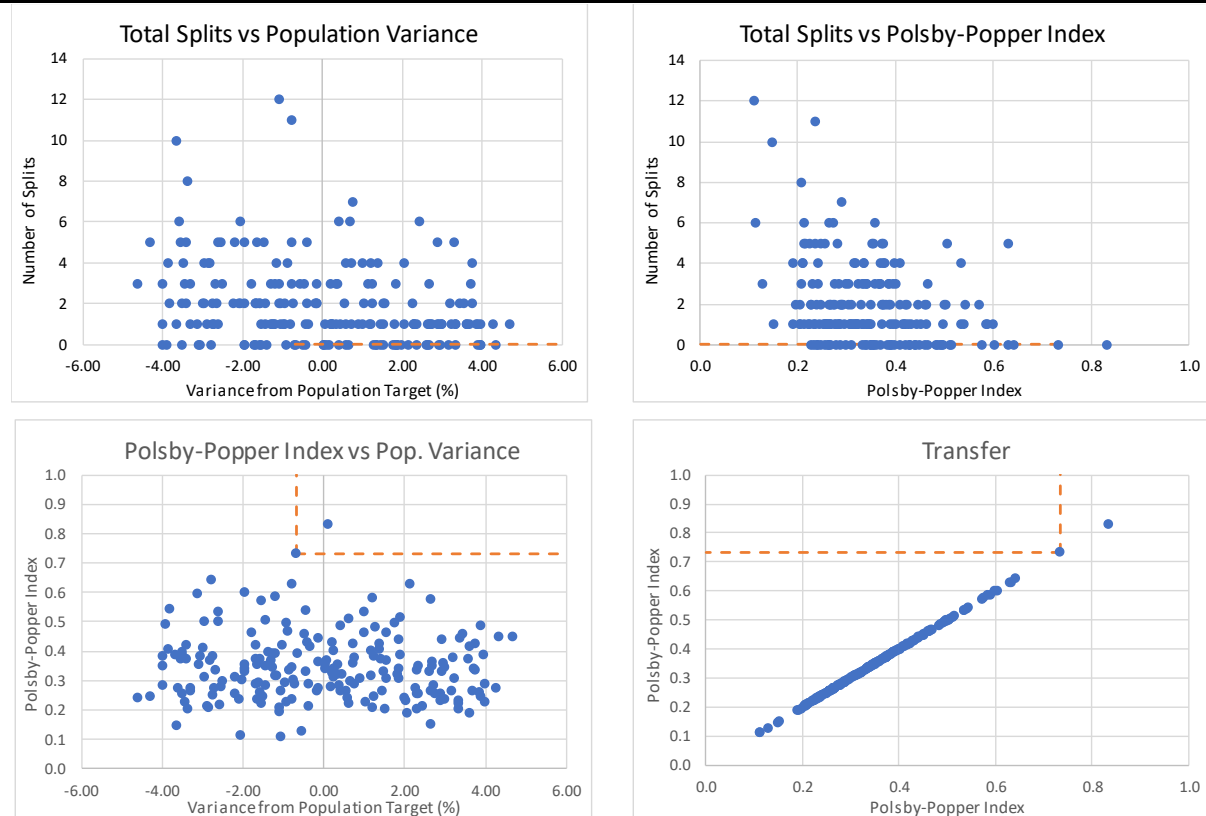
District 184 (South Philadelphia east of Broad) Compliance with Constitutional Requirements



Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 184 ranks as the most compact district by all three compactness metrics we use here. It consists of Philadelphia Wards 01 and 39 which have a combined population of 64,108 residents, which varies from the target by 0.08%, only 55 persons above the target. From a compactness standpoint, it benefits from its small size, its adjacency to the Delaware River producing convex curvature, and the use of Broad Street, a long straight divide often used historically as an urban boundary to subdivide Philadelphia. So, its boundary has a simple shape, it has no protuberances, and is well proportioned in its north/south-east/west dimensions. The happy coincidence of the population total of the two member Wards brings this district near the top in this analysis.

District 10 (much of Lawrence County) Compliance with Constitutional Requirements



Sources: PA LRC Preliminary House Plan, Dave's Redistricting App

District 10 posts the second-ranked Polsby-Popper index, the 4th-ranked Reock index, and at 100 shares the top KIWYSI score with six other districts in the state. Lawrence County is roughly teapot shaped. This district extends due south from the “lid” part of the county, terminating before including the municipalities along the county’s southern and eastern borders. The resulting district shape is roughly rectangular, which informs its high ranking from a compactness standpoint. The district also strictly follows the municipal boundaries. So, it has split no political subdivisions. The total population, which includes the county seat, New Castle, and the smaller settlement of New Wilmington at the northern edge of the county, stands at 63,610 a miniscule 0.7% below the target.

Judicious and fortunate distribution of the population of the municipalities in the county afforded the ability to construct this district with high marks.

Incumbency and Constituent Continuity

Two other dimensions of analysis involve the continuity of incumbency and a related concept of continuity of constituents. The first addresses how the changes of district boundaries affect incumbent representatives.

From our analysis, we find that 20 incumbent representatives will find themselves residents of a district with a different district number than they currently represent.⁵ Of these, a total of 14 current incumbents will end up “stacked” in districts with two incumbents. Two incumbents, as of January 5, 2022, will not run for re-election and one incumbent in an existing district will not run, leaving 11 districts for which an incumbent-incumbent race may take place. Seven of the potential races involve incumbents of the same party (6 involving a pair of Republicans), indicating that the head-to-head election may take place during the primary. The summary of this impact appears in the “Summary of Incumbency Analysis” below.

This part of the analysis introduces **two new metrics: the “Legislative Constituency Continuity” or LCC score, and the “Legislative Incumbency Continuity” or LIC score.** Two other aspects of the impact of redefining boundaries on the election process include:

- 1) the impact of rearranging the constituents of each previous district. The rearrangement can range from 100% to 0% of the constituents of previous district A now vote in district B, where A and B could be the same numerically or different. We have named the sum of the greatest proportion of constituents that remain collected as a group in a district the “Legislative Constituency Continuity Score” (LCC);
- 2) the degree to which the constituents of legislator A remain voters in legislator’s district upon rearrangement. We have named the proportion of voters whose legislative incumbent remains the same the “Legislative Incumbency Continuity Score” (LIC).

Overall, the continuity of constituent populations, the LCC score, averages 66% in this Plan. In other words, an average of 66% of the largest group of constituents in each existing district will remain together as constituents in one new district. The district could have a different number but the collection of about 66% of the voters, on average, will have remained the same. A total of 11 districts retain all of their previous voters, although 8 of these acquire additional voters as well. Six districts include no prior voters. This can happen when a district number moves from one part of the state to another.

The LIC Score measures an alternative perspective relating to constituent continuity to incumbents. This answers the question: “How many of my current constituents will remain part of the district I will represent in the 2022 election, and what proportion of the new district do they comprise?” The table on the “Incumbency Summary Analysis” table below provides this information for the new districts that may have stacked incumbents. In each new district, some proportion of the voters will have voted from the district the incumbent now represents. This proportion can range from 0% (no current constituents come from the old district) to 100% (all of the current constituents come from the old district). Among the potential contests listed, the shares range from 7.3% (David Zimmerman, stacked into new District 100 from old District 99) to 91.8% (Mark Longietti, stacked in District 7, his current district).

⁵ We know of no official aggregate source for the residences of Pennsylvania legislators. We employed a listing available on Redistricting Data Hub: <https://redistrictingdatahub.org/dataset/2021-pa-state-house-incumbent-addresses/>, updated by hand as of January 5, 2022.

Summary Charts for Analysis Metrics

The information that follows consists of five one-page summaries, one for each metric:

1. Compactness of district shapes;
2. Population variance from the Census-determined district population target (64,053 persons);
3. Splitting of political subdivisions;
4. Impact of district design on incumbency;
5. Constituent continuity of districts⁶

These new tools provide broad geographical and analytical overviews of the state of the Plan from the perspective of each metric alone.

Three of the pages – for compactness, for population variance, and for constituent continuity – share a similar design. In the top center is a table listing the top 10 and bottom 10 districts ranked by the metric. To the right is a histogram displaying the distribution of metric values. To the left is an analytical scatter-plot identifying an important relationship or lack of one. The lower half of the page displays three maps colored with the key ranges exhibited by districts. The center map displays the entire state; the left and right maps zoom in on Allegheny County and Philadelphia County, respectively.

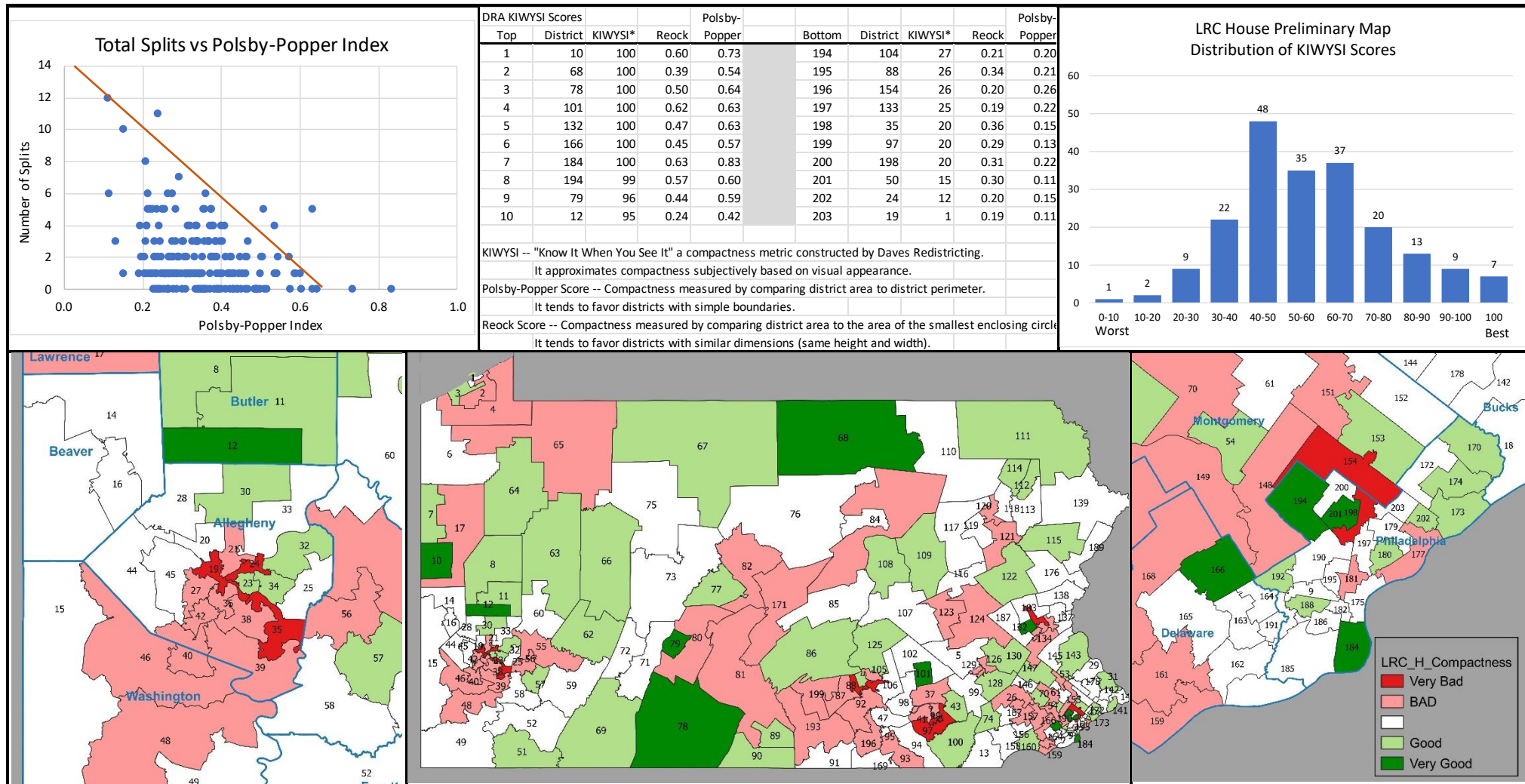
As a group, these single-page summaries should provide one way for a reader to get a quick snapshot of the way each metric is distributed statewide.

Appendix A at the back of this document provides some background information on the sources of data lying behind each page, and the nature of the metrics each page displays.

Appendix B displays all of the background quantitative data for each district used in the preparation of these summary pages.

⁶ Constituent continuity is a concept similar to incumbency continuity but analyzed from the voter perspective. Constituents experience continuity of representation if the district in which they vote remains the same as a large group of its neighbors.

PA House Preliminary Plan Summary Compactness Analysis

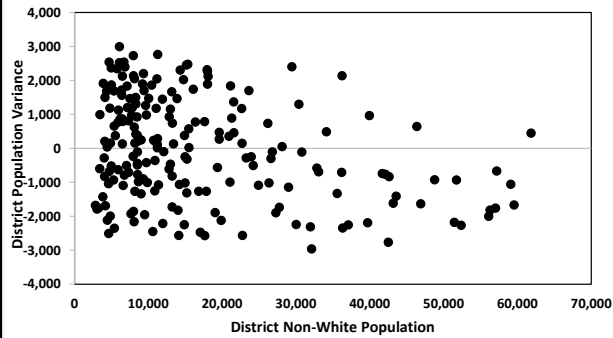


Key Observations:

- The distribution of compactness by district (bell-shaped) suggests that compactness was not a major design criterion for this plan.
- Splits seem to correlate with an upper limit on compactness – the more a district splits political subdivisions, the lower its potential compactness.
- A relatively large number of districts in the middle of the state exhibit low compactness.
- Philadelphia districts exhibit average compactness for the most part.
- Not the case for those in Pittsburgh, in which many exhibit low to very-low compactness.

PA House Preliminary Plan Summary Population Variance Analysis

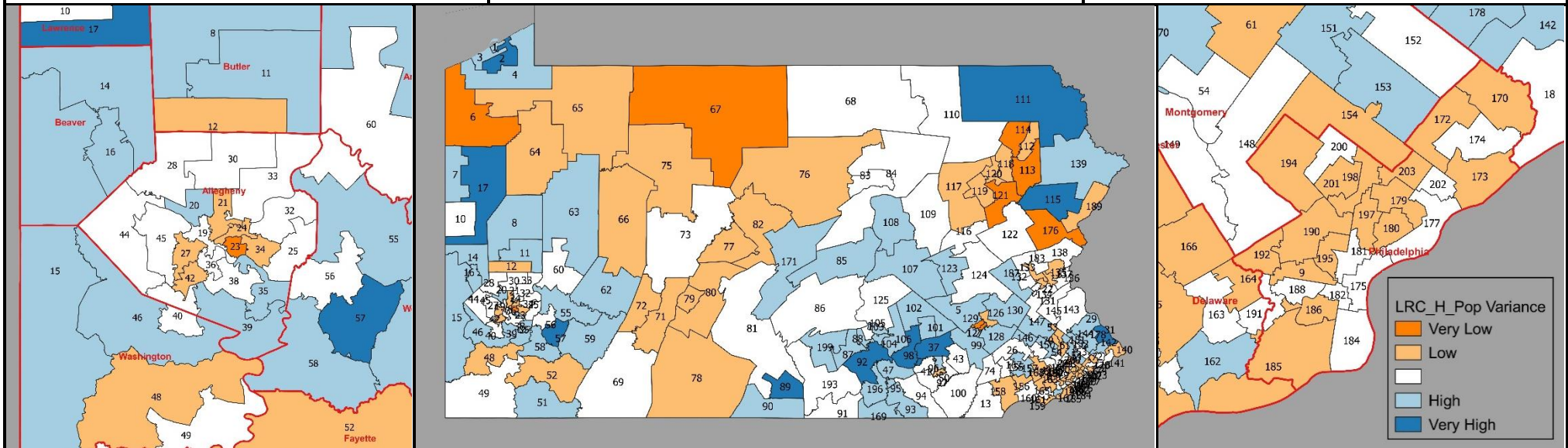
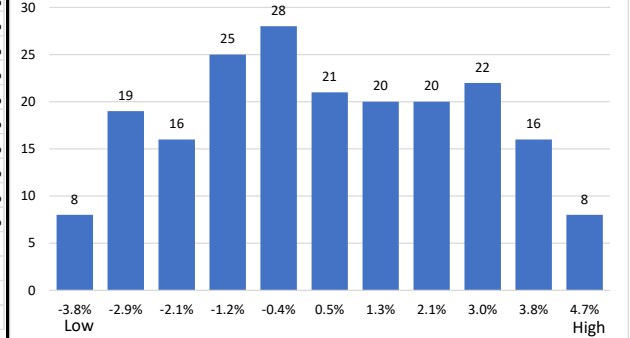
LRC House Preliminary Map
Population Variance



Population Variances				% Non-White						% Non-White	
High	District	Var.	% Var.			Low	District	Variance	% Var.		
1	111	2993	4.7%	9%		194	24	-2343	-3.7%	59%	
2	31	2768	4.3%	17%		195	6	-2351	-3.7%	9%	
3	98	2731	4.3%	12%		196	114	-2449	-3.8%	17%	
4	17	2540	4.0%	7%		197	23	-2473	-3.9%	28%	
5	37	2540	4.0%	10%		198	67	-2507	-3.9%	8%	
6	57	2524	3.9%	9%		199	121	-2563	-4.0%	37%	
7	89	2478	3.9%	23%		200	176	-2565	-4.0%	23%	
8	92	2478	3.9%	10%		201	113	-2566	-4.0%	29%	
9	2	2455	3.8%	23%		202	127	-2762	-4.3%	69%	
10	115	2404	3.8%	44%		203	129	-2957	-4.6%	53%	

Target Population for all districts is 64,053 persons.
Variances up to +5% and -5% may be allowable based on prior judicial rulings.
The non-white proportions represent the total population less the non-Hispanic white population.

LRC House Preliminary Map
Distribution of Variances



(Note: Dark-blue shaded districts host population well above the target, light blue shaded districts somewhat above target, light orange shaded districts somewhat below target and dark orange shaded districts host populations well below target.)

Key Observations:

- Many of the districts surrounding Pittsburgh host populations somewhat above the target. This tends to dilute individual voter power.
- Many of the Philadelphia districts host populations somewhat below the target. This tends to increase voter power. In fact, the large number of these districts suggests that Philadelphia may come close to hosting more districts than the target number if all districts were at or below target.
- The large number of districts with below-target population in the Scranton - Wilkes-Barre area suggests that this region may also host an extra district.

PA House Preliminary Plan Summary Political Subdivision Splitting

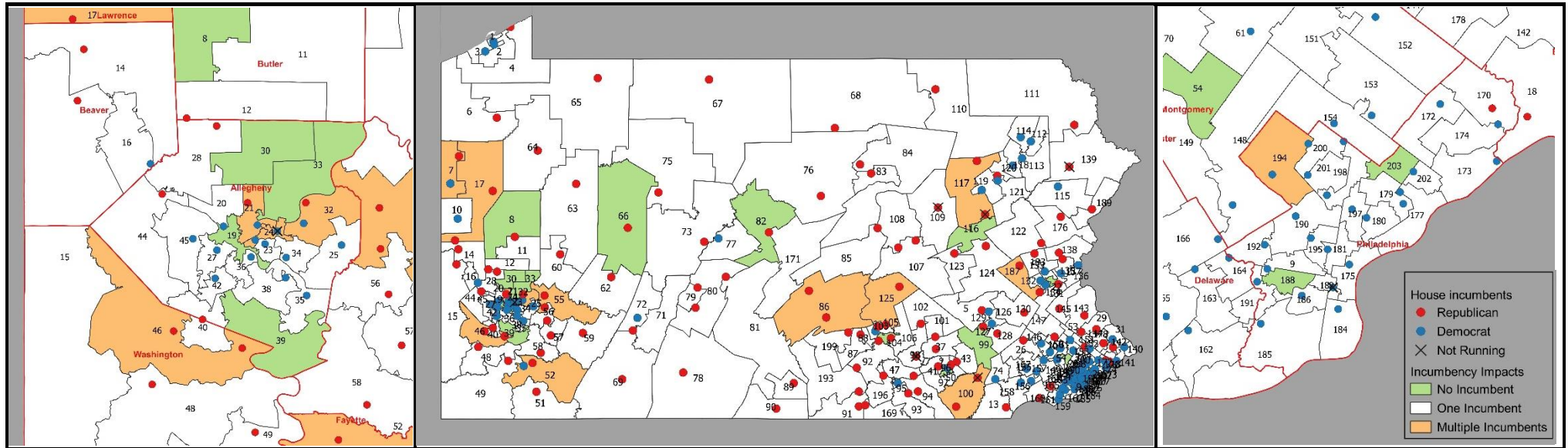
Districts with the Most Subdivision Design Splits							Splits by Political Subdivision Type																				
Rank	District	Total	County	Municipality	Ward	VTD																					
1	19	12	0	0	12	0	<div>Splits by Political Subdivision Type</div> <table><tr><th></th><th>Required*</th><th>Total</th><th>Design</th></tr><tr><td>County</td><td>158</td><td>184</td><td>26</td></tr><tr><td>Municipality</td><td>33</td><td>113</td><td>80</td></tr><tr><td>Ward</td><td>0</td><td>99</td><td>99</td></tr><tr><td>VTD</td><td>0</td><td>0</td><td>0</td></tr></table> <p>* A required split occurs if population exceeds the upper variance limit of 5.00%.</p> <p>"Design" splits are those in excess of the required splits.</p>		Required*	Total	Design	County	158	184	26	Municipality	33	113	80	Ward	0	99	99	VTD	0	0	0
	Required*	Total	Design																								
County	158	184	26																								
Municipality	33	113	80																								
Ward	0	99	99																								
VTD	0	0	0																								
2	40	11	2	3	6	0																					
3	24	10	0	2	8	0																					
4	21	8	0	1	7	0																					
5	177	7	0	0	7	0																					
6	191	6	2	1	3	0																					
7	131	6	3	2	1	0																					
8	126	6	0	2	4	0																					
9	50	6	0	3	3	0																					
10	39	6	0	1	5	0																					

Counties with Large Design Splits				Municipalities with Large Design Splits				Wards with Large Design Splits			
Rank	County	Design	Total	Rank	Municipality	Design	Total	Rank	Ward	Design	Total
1	Philadelphia	2	25	1	Allegheny-PITTSBURGH	4	8	1	Philadelphia-PHILADELPHIA-60000_WARD 31	3	3
2	Northampton	2	6	2	Berks-SPRING	2	2	2	Philadelphia-PHILADELPHIA-60000_WARD 08	3	3
3	Delaware	2	10	3	Lackawanna-SCRANTON	2	3	3	Allegheny-PITTSBURGH-61000_WARD 04	2	2
4	Wayne	1	1	4	Lehigh-SALISBURY	2	2	4	Philadelphia-PHILADELPHIA-60000_WARD 51	2	2
5	Washington	1	4	5	Philadelphia-PHILADELPHIA	2	25	5	Philadelphia-PHILADELPHIA-60000_WARD 41	2	2
6	Union	1	1	6	Lancaster-MANHEIM	2	2	6	Allegheny-UPPER ST. CLAIR-79274_WARD 03	1	1
7	Schuylkill	1	3	7	Berks-CUMRU	2	2	7	Montgomery-UPPER DUBLIN-79008_DISTRICT 05	1	1
8	Pike	1	1	8	Montgomery-WHITPAIN	1	1	8	Delaware-UPPER DARBY-79000_DISTRICT 05	1	1
9	Montgomery	1	13	9	Luzerne-WEST PITTSTON	1	1	9	Delaware-UPPER DARBY-79000_DISTRICT 03	1	1
10	Mifflin	1	1	10	Allegheny-WEST MIFFLIN	1	1	10	Allegheny-TRAFFORD-77272_DISTRICT 01	1	1

Key Observations:

- Many of the districts surrounding Pittsburgh host populations somewhat above the target. This tends to dilute individual voter power.
- Philadelphia, because of its large population and complex ward designs, exhibits many districts with ward design splits.
- Allegheny County includes many complex boundaries involving wards within Pittsburgh and the municipalities in other parts of the county.
- Appendix C lists all political subdivisions split by the House Plan.

PA House Preliminary Plan Summary Incumbency Analysis (as of 1/5/2022)



(Note: Green-shaded districts on the maps highlight “hijacked” districts with no resident incumbent; orange-shaded districts highlight “stacked” districts with two or more incumbents resident in the same district. Red-shaded dots indicate the residence of Republican incumbents, blue-shaded dots represent Democratic Incumbents.)

Incumbency Variances					
Hijacked (No current incumbent in new district)			Stacked (Multiple Incumbents in new district)		
District	Incumbent	Party	District	Reps	Incumbents (Party, LIC Score)
8	Timothy Bonner	R	7	2	Mark Longietti(D, 92), Parke Wentling(R, 8)
19	Jake Wheatley	D	17	2	Timothy Bonner(R, 53), Aaron Bernstine(R, 32)
22	Peter Schweyer	D	21	2	Sara Innamorato(D, 30), Lori Mizgorski(R, 37)
30	Lori Mizgorski	R	24	2	Jake Wheatley(D, 23), Edward Gainey(Dx, 50)
33	Carrie Delrosso	R	32	2	Anthony Deluca(D, 89), Carrie Delrosso(R, 8)
39	Michael Puskaric	R	46	2	Michael Puskaric(R, 14), Jason Ortity(R, 34)
50	Pam Snyder	D	52	2	Pam Snyder(D, 22), Ryan Warner(R, 60)
54	Robert Brooks	R	55	2	Robert Brooks(R, 32), Jason Silvis(R, 31)
82	Johnathan Hershey	R	86	2	Johnathan Hershey(R, 29), Perry Stambaugh(R, 70)
99	David Zimmerman	Rx	100	2	David Zimmerman(Rx, 7), Bryan Cutler(R, 70)
104	Susan Helm	R	117	2	Tarah Toohil(Rx, 53), Karen Boback(R, 45)
116	Tarah Toohil	Rx	125	2	Andrew Lewis(R, 48), Joseph Kerwin(R, 20)
188	Rick Krajewski	D	187	2	Ryan Mackenzie(R, 60), Gary Day(R, 42)
203	Isabella Fitzgerald	D	194	2	Pamela Delissio(D, 68), Chris Rabb(D, 33)

Note: an "x" next to party affiliation indicates that the incumbent will not run for re-election.

LIC Score: the "Legislative Incumbent Continuity" score is the proportion of new district voters who the incumbent represented in the old district.

PA House Preliminary Plan

Summary Constituent Continuity Analysis

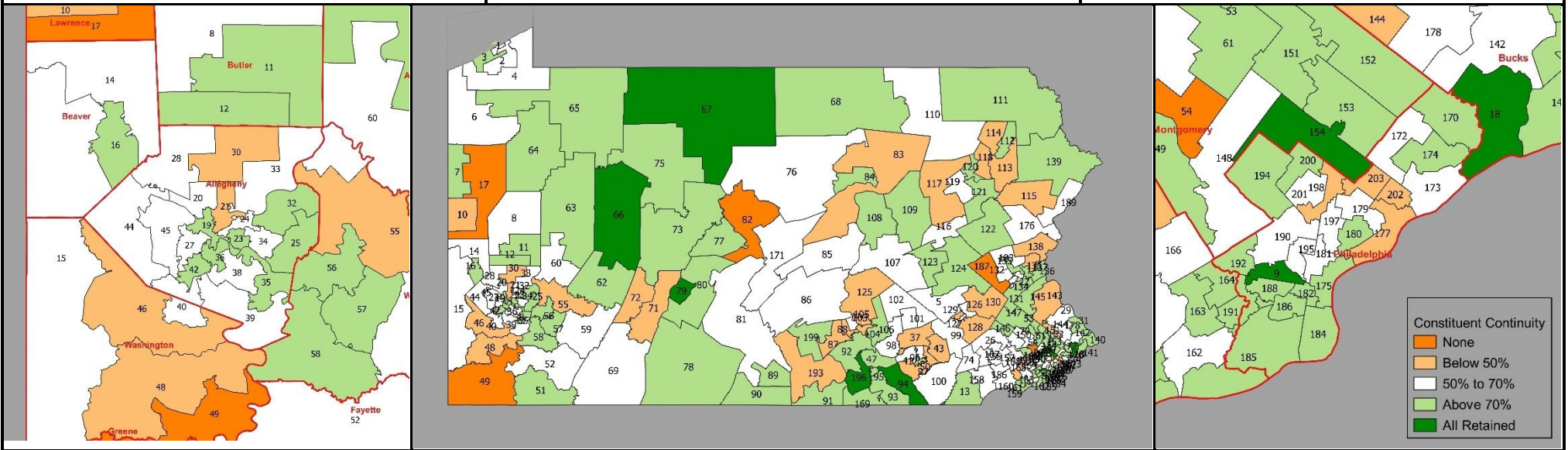
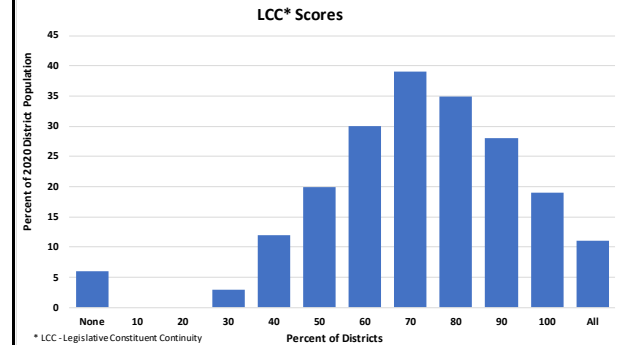
Summary Remap Statistics

District Numbers Not Changed	177
Districts with No Retained Population	6
Districts with All Population Retained	11
Those Adding Regions	8
Aggregate LCR Score	66%
District Numbering Changes	
001->002, 002->001, 008->014, 009->190, 010->009, 014->010, 017->008, 022->187, 043->099, 049->050, 050->096, 054->070, 070->054, 087->088, 088->087, 096->097, 097->043, 099->049, 103->125, 104->103, 125->104, 134->022, 137->138, 138->137, 187->134, 190->017	

Constituency Continuity

High	District	LCC Score	Low	District	LCC Score
1	7	100	194	104	30
2	9	100	195	129	30
3	18	100	196	29	24
4	62	100	197	14	23
5	66	100	198	17	0
6	67	100	199	49	0
7	79	100	200	54	0
8	94	100	201	82	0
9	109	100	202	125	0
10	122	100	203	187	0

LCC (Legislative Constituent Continuity) Score measure the proportion of constituents in a district in 2020 who are also constituents in the district in the plan.
A score of 100 indicates that all current voters in the district remain in the district.
A score of 0 indicates that no current voters in the district remain in the district.



(Note: "Legislative Constituent Continuity", or LCC, measures the proportion of a district's voters who remain in the same district after boundary changes (after accounting for possible shifts in the district number affecting these constituents). Dark green shaded districts retain all existing constituents. Light-green shaded districts retain 70% or more of existing constituents. Light orange shaded regions retain some constituents but less than 50% of them. Dark orange shaded regions retain no current constituents. All regions may include new constituents.

Key Observations:

- In the preliminary plan, many House district boundaries changed materially but constituent retention, for the most part, remains above 50%.
- However, numerous constituent populations will change representatives (the constituents remain in the same district but the incumbent changes).
- The aggregate LCR Score of 65% is relatively low and lies in the range that many designed-from-scratch House district plans score.
- Around and including Scranton, Districts 113, 114, and 118 appear to disenfranchise the incumbents (one Republican, two Democrats).

Appendix A – Background on and Sources for the Metrics

Compactness

This characteristic is listed in the Pennsylvania Constitution among the state legislative district design criteria⁷. For the most part, this section uses a score for each district created by Daves Redistricting App⁸ (DRA) which uses the acronym “KIWYSI” (know it when you see it). This score is a composite of the Polsby-Popper⁹ compactness metric and the Reock¹⁰ compactness metric also computed for each district by the DRA.

Population Variance

The Pennsylvania constitution states that district populations be “...as nearly equal in population as practicable.”¹¹ This section uses the maps and data provided by the Pa Data Center to the LRC that includes adjustments for prisoner residence.¹² This is often referred to as the “Data Set 2”. Population variance for this purpose is simply the difference between the district population computed from this data set and accompanying maps with the target population of 64,053 persons (total population 13,002,700 divided by 203 House districts and rounded to the nearest whole number of persons).

Splitting

This analysis relied entirely on geographic characterizations provided by the LRC through its website of political subdivisions and for the Plan’s district boundaries.

Incumbency

The section analyzes the current residence of record of each current Senate representative in relation to the boundaries of the proposed House districts in the Plan. The Pennsylvania constitution requires state legislators to have resided in the district they represent for at least one year.¹³ This requirement leads to the potential for redrawn boundaries to eliminate an incumbent legislator from residency in the district they represent. In turn, this can lead to new districts with no incumbent or multiple incumbents. We used the lists of legislators and residences from the Redistricting Data Hub along with selected updates.¹⁴

⁷ Pennsylvania Constitution, Article 2, Section 16: The Commonwealth shall be divided into 50 senatorial and 203 representative districts, which shall be composed of compact and contiguous territory as nearly equal in population as practicable. Each senatorial district shall elect one Senator, and each representative district one Representative. Unless absolutely necessary no county, city, incorporated town, borough, township or ward shall be divided in forming either a senatorial or representative district. (Apr. 23, 1968, P.L. App. 3, Prop. No. 1)

⁸ Dave’s Redistricting: <https://davesredistricting.org/maps#home>

⁹ Polsby, Daniel D.; Popper, Robert D. (1991). “The Third Criterion: Compactness as a procedural safeguard against partisan gerrymandering”. *Yale Law & Policy Review*. 9 (2): 301–353.

¹⁰ Reock, Ernest (1961). “A Note: Measuring Compactness as a Requirement of Legislative Apportionment”. *Midwest Journal of Political Science*. 5 (1): 70–74.

¹¹ Article 2, Section 16 of the Pennsylvania Constitution, op. cit.

¹² PA State Data Center: <https://www.redistricting.state.pa.us/resources/GISData/Census/2021/2021-DataSet2-WithPrisoner/LRC%20Data%20Release%202%20-%20Geography.zip>

¹³ Pennsylvania Constitution, Article 2, Section 5: Senators shall be at least 25 years of age and Representatives 21 years of age. They shall have been citizens and inhabitants of the State four years, and inhabitants of their respective districts one year next before the election (unless absent on the public business of the United States or of this State), and shall reside in their respective districts during their terms of service.

¹⁴ Redistricting Data Hub: <https://redistrictingdatahub.org/dataset/2021-pa-state-house-incumbent-addresses/>. Updated as of 1/5/2022.

Constituent Continuity

Much like incumbency, redrawing district boundaries reassigns entire neighborhoods of voters from representation by one legislator in an existing district to one in a new district. This section employs a metric we call the “Legislative Constituent Continuity Score” or LCC Score, which is the largest proportion of the current population in the new district who reside in one existing district.¹⁵ That is, the population of the current district consist of several collections of residents where each collection resides in the same existing district. The LCC Score is the largest of these proportions. This proportion can vary from 0 to 100 depending on the district design. The aggregate LCC Score is the sum of the retained voters divided by total state population and it represents the degree of representation continuity which the new district design incorporates.

A related score, the “Legislative Incumbent Continuity Score” or LIC Score, measures the constituent continuity from an incumbent’s perspective. It is the proportion of the current population in the new district who reside in the incumbent’s current district. This score also can vary from 0 to 100.

Again, we use the LRC-approved Data Set 2 for this analysis.

¹⁵ A technical note: This sometimes requires renumbering the prior districts for metric calculation purposes. We reassign existing district numbers to temporary ones by maximizing the number of persons who remain in the same numbered district. This mapping from existing district numbers to temporary district numbers occasionally has multiple local solutions. We always use an approximate pairwise Pareto-optimal solution (an assignment scheme in which swapping no two district numbers yields a larger number of retained persons) to this reassignment process in our metric.

Raw Data

Note: this data table is downloadable from:

<https://docs.google.com/spreadsheets/d/1t4nlnPdr6Q9AOhEFqJnWfembuTZLRiad/edit?usp=sharing&ouid=101338006753710270137&rtpof=true&sd=true>

Compactness				Population Variance					Splitting					Constituency		Incumbency							
District	Reock	Polsby-Popper	KIWYSI Score	Population	Non-White Population	Black Population	Hispanic Population	Abs Pop % Var	Total Splits	County	Municipality	Ward	VTD	Old District	LCC Score	New District	Rep Count	LIC Score	Old District	Incumbent		Party	Run?
1	0.2705	0.3088	46	65,227	22,635	10,660	5,597	1.83	0	0	0	0	0	2	61.0	1	1	38	1	Patrick Harkins		D	Y
2	0.3998	0.2603	45	66,508	15,169	6,607	3,363	3.83	1	0	1	0	0	1	46.9	2	1	19	2	Robert Merski		D	Y
3	0.3399	0.3899	66	65,250	7,816	1,290	1,769	1.87	0	0	0	0	0	3	73.7	3	1	78	3	Ryan Bizzarro		D	Y
4	0.2989	0.2554	35	65,800	4,836	517	1,093	2.73	1	0	1	0	0	4	61.5	4	1	66	4	Curtis Sonney		R	Y
5	0.2737	0.3080	53	65,035	9,731	1,749	4,881	1.53	1	0	1	0	0	5	46.9	5	1	50	5	Barry Jozwiak		R	Y
6	0.4155	0.3889	62	61,702	5,387	1,572	1,014	-3.67	1	1	0	0	0	6	54.5	6	1	59	6	Bradley Roae		R	Y
7	0.4698	0.4399	74	65,917	10,437	5,495	1,068	2.91	0	0	0	0	0	7	91.5	7	2	92	7	Mark Longietti		D	Y
8	0.4543	0.5758	91	65,738	4,339	544	904	2.63	0	0	0	0	0	10	15.3	17	0	53	8	Timothy Bonner		R	Y
9	0.2092	0.2817	47	62,422	46,895	36,282	2,908	-2.55	5	0	0	5	0	190	60.7	10	1	87	9	Christopher Sainato		D	Y
10	0.6042	0.7329	100	63,610	8,521	3,431	1,367	-0.69	0	0	0	0	0	9	91.0	17	1	32	10	Aaron Bernstine		R	Y
11	0.4113	0.4407	75	65,236	4,777	789	1,167	1.85	0	0	0	0	0	11	70.2	11	1	71	11	Marci Mustello		R	Y
12	0.2373	0.4211	95	62,962	6,587	859	1,597	-1.70	0	0	0	0	0	12	100.0	12	1	100	12	Daryl Metcalfe		R	Y
13	0.4365	0.3555	64	64,075	15,492	2,584	9,537	0.03	0	0	0	0	0	13	85.0	13	1	95	13	John Lawrence		R	Y
14	0.3140	0.3080	47	66,108	8,124	3,195	1,216	3.21	1	0	1	0	0	14	46.1	14	1	47	14	James Marshall		R	Y
15	0.2651	0.2650	50	65,744	5,339	1,085	1,111	2.64	1	1	0	0	0	15	59.5	15	1	59	15	Joshua Kail		R	Y
16	0.5195	0.3336	62	65,722	13,176	7,240	1,733	2.61	0	0	0	0	0	16	77.0	16	1	77	16	Robert Matzie		D	Y
17	0.3303	0.2884	41	66,593	4,673	672	784	3.97	1	0	1	0	0	8	50.9	7	2	8	17	Parke Wentling		R	Y
18	0.5135	0.4295	65	63,773	23,259	5,114	6,715	-0.44	0	0	0	0	0	18	98.3	18	1	98	18	Kathleen Tomlinson		R	Y
19	0.1878	0.1111	1	63,363	33,065	24,980	2,419	-1.08	12	0	0	12	0	19	73.0	24	0	23	19	Jake Wheatley		D	Y
20	0.3961	0.3803	62	66,099	11,161	4,621	1,569	3.19	2	0	1	1	0	20	61.0	20	1	61	20	Emily Kinkead		D	Y
21	0.4596	0.2064	38	61,895	8,061	2,745	1,498	-3.37	8	0	1	7	0	21	32.3	21	2	30	21	Sara Innamorato		D	Y
22	0.4267	0.2552	41	62,647	43,584	5,980	34,839	-2.20	5	0	2	3	0	187	0.0	134	0	64	22	Peter Schwyer		D	Y
23	0.4904	0.4079	73	61,580	17,034	2,671	2,539	-3.86	4	0	0	4	0	23	88.1	23	2	90	23	Dan Frankel		D	Y
24	0.1991	0.1485	12	61,710	36,311	26,376	2,199	-3.66	10	0	2	8	0	24	53.5	24	1	50	24	Edward Gainey		Dx	N
25	0.4035	0.3857	61	64,844	17,620	10,279	1,532	1.23	3	0	2	1	0	25	87.4	25	1	88	25	Brandon Markosek		D	Y
26	0.2915	0.2786	42	64,162	11,206	2,349	3,988	0.17	0	0	0	0	0	26	53.4	26	1	48	26	Timothy Hennessey		R	Y
27	0.4016	0.2094	39	62,230	14,029	4,444	1,629	-2.85	4	0	1	3	0	27	57.1	27	1	56	27	Daniel Deasy		D	Y
28	0.4103	0.3239	56	64,340	11,239	1,003	1,619	0.45	1	0	1	0	0	28	77.5	28	1	80	28	Robert Mercuri		R	Y
29	0.3167	0.3499	60	65,554	8,284	1,006	2,614	2.34	0	0	0	0	0	29	21.6	29	1	24	29	Meghan Schroeder		R	Y
30	0.3625	0.4323	72	64,187	6,473	740	1,206	0.21	1	0	1	0	0	30	47.4	21	0	37	30	Lori Mizgorski		R	Y
31	0.3492	0.4497	72	66,821	11,260	1,033	2,244	4.32	0	0	0	0	0	31	86.7	31	1	87	31	Perry Warren		D	Y
32	0.3773	0.4009	68	64,205	22,701	17,596	1,430	0.24	1	0	1	0	0	32	84.0	32	2	89	32	Anthony Deluca		D	Y
33	0.2779	0.3204	47	64,267	8,604	2,078	1,402	0.33	1	0	1	0	0	33	54.5	32	0	8	33	Carrie Delrosso		R	Y
34	0.4457	0.3989	70	61,813	30,035	23,650	1,827	-3.50	4	0	1	3	0	34	61.3	34	1	62	34	Summer Lee		D	Y
35	0.3610	0.1506	20	65,753	23,636	17,677	1,802	2.65	1	0	1	0	0	35	80.3	35	1	81	35	Austin Davis		D	Y
36	0.5404	0.2089	39	64,828	16,377	7,461	2,914	1.21	4	0	1	3	0	36	76.0	36	1	76	36	Jessica Benham		D	Y
37	0.3410	0.2276	43	66,593	6,690	829	2,979	3.97	0	0	0	0	0	37	51.0	37	1	56	37	Melinda Fee		R	Y
38	0.3496	0.2279	40	63,445	12,813	4,247	1,142	-0.95	2	0	2	0	0	38	71.6	38	1	70	38	Nickolas Pisciotano		D	Y
39	0.3280	0.2132	37	65,617	6,399	1,562	998	2.44	6	0	1	5	0	39	60.0	46	0	14	39	Michael Puskaric		R	Y
40	0.4089	0.2366	43	63,547	7,047	722	1,362	-0.79	11	2	3	6	0	40	70.8	40	1	71	40	Natalie Mihalekstuck		R	Y
41	0.3936	0.2217	43	64,434	14,900	2,375	7,861	0.59	1	0	1	0	0	41	66.6	41	1	74	41	Brett Miller		R	Y
42	0.4021	0.2388	41	62,714	9,032	1,167	1,922	-2.09	2	0	1	1	0	42	83.8	42	1	84	42	Daniel Miller		D	Y
43	0.5302	0.5101	89	64,434	8,507	989	4,399	0.59	0	0	0	0	0	99	64.0	43	1	23	43	Keith Greiner		R	Y
44	0.4340	0.2829	46	64,290	10,709	2,425	2,056	0.37	3	0	3	0	0	44	77.2	44	1	82	44	Valerie Gaydos		R	Y
45	0.4674	0.3179	53	64,797	13,241	6,601	1,755	1.16	1	0	1	0	0	45	50.3	45	1	58	45	Anita Kulik		D	Y
46	0.2388	0.2032	28	66,183	6,472	1,668	1,248	3.33	1	0	1	0	0	46	33.6	46	2	34	46	Jason Ortitay		R	Y
47	0.2908	0.3318	57	64,984	12,823	3,736	4,761	1.45	1	0	1	0	0	47	85.2	47	1	100	47	Keith Gillespie		R	Y
48	0.2744	0.2459	42	63,071	8,646	3,639	1,315	-1.53	0	0	0	0	0	48	43.9	48	1	47	48	Timothy Oneal		R	Y
49	0.3902	0.2960	56	63,427	5,907	1,792	989	-0.98	1	1	0	0	0	50	63.4	49	1	36	49	Donald Cook		R	Y
50	0.3047	0.1125	15	62,727	35,578	7,414	23,303	-2.07	6	0	3	3	0	96	58.6	52	0	22	50	Pam Snyder		D	Y

Compactness				Population Variance					Splitting					Constituency		Incumbency						
District	Reock	Polsby-Popper	KIWYSI Score	Population	Non-White Population	Black Population	Hispanic Population	Abs Pop % Var	Total Splits	County	Municipality	Ward	VTD	Old District	LCC Score	New District	Rep Count	LIC Score	Old District	Incumbent	Party	Run?
51	0.3615	0.3701	69	65,033	7,718	3,327	849	1.53	0	0	0	0	0	51	76.0	51	1	74	51	Matthew Dowling	R	Y
52	0.2897	0.2832	46	63,125	5,300	1,973	673	-1.45	1	0	1	0	0	52	56.8	52	2	60	52	Ryan Warner	R	Y
53	0.2737	0.2749	42	61,935	19,865	3,411	5,073	-3.31	3	0	3	0	0	53	88.7	53	1	91	53	Steven Malagari	D	Y
54	0.4133	0.4669	70	63,471	32,836	13,427	13,881	-0.91	0	0	0	0	0	70	68.0	55	0	32	54	Robert Brooks	R	Y
55	0.2385	0.1912	32	65,364	8,296	3,254	1,096	2.05	4	0	3	1	0	55	25.1	55	2	31	55	Jason Silvis	R	Y
56	0.4226	0.2408	42	64,425	5,529	1,290	942	0.58	4	0	3	1	0	56	70.8	56	1	73	56	George Dunbar	R	Y
57	0.509	0.3884	69	66,577	6,091	1,649	1,118	3.94	0	0	0	0	0	57	73.1	57	1	75	57	Eric Nelson	R	Y
58	0.3863	0.2663	46	66,397	5,779	1,819	929	3.66	1	0	1	0	0	58	65.4	58	1	66	58	Eric Davanzo	R	Y
59	0.3785	0.3463	59	65,968	3,888	567	839	2.99	1	0	1	0	0	59	53.8	59	1	64	59	Leslie Rossi	R	Y
60	0.5219	0.3568	58	64,259	4,111	841	579	0.32	3	1	1	1	0	60	49.8	60	1	49	60	Abigail Major	R	Y
61	0.3381	0.3047	47	62,741	15,222	3,469	2,086	-2.05	2	0	2	0	0	61	91.2	61	1	92	61	Laura Hanbidge	D	Y
62	0.447	0.4091	74	64,920	6,442	1,984	1,298	1.35	0	0	0	0	0	62	87.7	62	1	90	62	James Struzzi	R	Y
63	0.5458	0.4633	82	65,048	3,427	637	606	1.55	2	1	1	0	0	63	81.0	63	1	82	63	Donna Oberlander	R	Y
64	0.5664	0.5026	87	62,365	4,169	527	732	-2.64	2	1	1	0	0	64	82.4	64	1	82	64	R James	R	Y
65	0.2995	0.2675	41	61,937	4,450	1,013	852	-3.30	1	1	0	0	0	65	72.0	65	1	75	65	Kathy Rapp	R	Y
66	0.568	0.5343	87	62,378	2,834	178	520	-2.62	1	0	1	0	0	66	99.3	66	0	100	66	Brian Smith	R	Y
67	0.4366	0.4933	82	61,546	4,625	907	977	-3.91	0	0	0	0	0	67	97.4	67	1	98	67	Martin Causer	R	Y
68	0.3909	0.5407	100	63,772	4,007	402	895	-0.44	1	1	0	0	0	68	89.9	68	1	91	68	Clinton Owlett	R	Y
69	0.5306	0.4983	89	63,457	3,419	815	734	-0.93	1	0	1	0	0	69	60.5	69	1	63	69	Carl Metzgar	R	Y
70	0.3878	0.2851	42	65,793	16,082	5,608	3,401	2.72	1	0	1	0	0	54	-0.1	70	1	36	70	Matthew Bradford	D	Y
71	0.2867	0.2927	46	63,012	4,598	1,130	996	-1.63	2	1	1	0	0	71	42.0	71	1	44	71	James Rigby	R	Y
72	0.3755	0.3989	64	63,159	9,324	4,612	1,441	-1.40	0	0	0	0	0	72	42.3	72	1	48	72	Frank Burns	D	Y
73	0.433	0.265	49	63,375	4,702	839	1,879	-1.06	2	1	1	0	0	73	67.1	73	1	74	73	Thomas Sankey	R	Y
74	0.491	0.4275	67	64,512	21,578	10,792	6,972	0.72	1	0	1	0	0	74	54.0	74	1	64	74	Dan Williams	D	Y
75	0.4962	0.311	51	62,629	3,843	294	1,036	-2.22	2	0	2	0	0	75	87.5	75	1	89	75	Michael Armanini	R	Y
76	0.3146	0.345	58	63,226	4,064	633	971	-1.29	1	1	0	0	0	76	56.4	76	1	59	76	Stephanie Borowicz	R	Y
77	0.3416	0.3366	66	62,327	13,219	1,731	2,809	-2.69	3	0	2	1	0	77	76.2	77	1	81	77	Harry Conklin	D	Y
78	0.5024	0.642	100	62,267	3,033	311	666	-2.79	0	0	0	0	0	78	80.2	78	1	80	78	Jesse Topper	R	Y
79	0.4351	0.5882	96	63,269	6,735	2,204	1,038	-1.22	1	0	1	0	0	79	94.3	79	1	97	79	Louis Schmitt	R	Y
80	0.2974	0.2531	40	62,295	3,254	325	726	-2.74	1	1	0	0	0	80	92.9	80	1	96	80	James Gregory	R	Y
81	0.4112	0.2283	33	64,708	5,361	1,635	1,260	1.02	2	1	1	0	0	81	63.4	81	1	62	81	Richard Irvin	R	Y
82	0.4577	0.2303	35	61,843	11,946	2,144	2,080	-3.45	3	0	2	1	0	82	-0.1	86	0	29	82	Johnathan Hershey	R	Y
83	0.3003	0.339	53	64,069	11,209	5,097	1,688	0.02	0	0	0	0	0	83	73.7	83	1	74	83	Jeff Wheeland	R	Y
84	0.2202	0.1964	29	63,349	7,315	2,600	2,048	-1.10	2	2	0	0	0	84	40.3	84	1	44	84	Joseph Hamm	R	Y
85	0.2393	0.3398	55	66,424	4,979	801	1,650	3.70	3	3	0	0	0	85	52.3	85	1	57	85	David Rowe	R	Y
86	0.4181	0.372	70	64,092	4,427	386	1,725	0.06	1	1	0	0	0	86	69.8	86	2	70	86	Perry Stambaugh	R	Y
87	0.3875	0.2767	40	65,501	11,892	2,195	2,558	2.26	2	0	2	0	0	88	39.0	87	1	22	87	William Rothman	R	Y
88	0.3384	0.2056	26	65,520	13,890	2,451	3,321	2.29	1	0	1	0	0	87	49.9	88	1	50	88	Sheryl DeLozier	R	Y
89	0.3614	0.4861	79	66,531	15,337	3,529	8,206	3.87	0	0	0	0	0	89	81.1	89	1	83	89	Robert Kauffman	R	Y
90	0.2602	0.4287	73	64,923	6,194	1,236	1,940	1.36	0	0	0	0	0	90	77.7	90	1	81	90	Paul Schemel	R	Y
91	0.2548	0.2996	53	64,472	8,314	1,123	3,991	0.65	0	0	0	0	0	91	83.2	91	1	83	91	Daniel Moul	R	Y
92	0.3774	0.2453	40	66,531	6,526	930	2,373	3.87	1	0	1	0	0	92	92.6	92	1	90	92	Dawn Keefer	R	Y
93	0.3264	0.2415	44	65,319	9,635	2,856	3,051	1.98	0	0	0	0	0	93	96.1	93	1	100	93	Paul Jones	R	Y
94	0.2278	0.3154	50	63,281	8,555	2,252	2,670	-1.21	1	0	1	0	0	94	99.9	94	1	100	94	Stanley Saylor	R	Y
95	0.529	0.2321	51	66,193	36,235	12,227	19,542	3.34	0	0	0	0	0	95	93.0	95	1	96	95	Carol Hillelans	D	Y
96	0.3814	0.2345	42	65,891	21,128	4,198	10,636	2.87	5	0	2	3	0	97	45.8	96	1	47	96	P Sturla	D	Y
97	0.2905	0.1287	20	63,700	10,900	1,939	5,167	-0.55	3	0	3	0	0	43	47.6	97	1	11	97	Steven Mentzer	R	Y
98	0.4568	0.2773	46	66,784	7,955	1,185	3,444	4.26	1	1	0	0	0	98	63.3	98	1	67	98	David Hickernell	Rx	N
99	0.4212	0.3343	54	66,451	6,835	858	3,125	3.74	4	1	3	0	0	49	-0.1	100	0	7	99	David Zimmerman	Rx	N
100	0.4792	0.3422	66	64,207	4,860	577	2,395	0.24	1	0	1	0	0	100	60.0	100	2	70	100	Bryan Cutler	R	Y
101	0.6157	0.6302	100	65,422	21,562	1,800	17,008	2.14	0	0	0	0	0	101	64.2	101	1	64	101	Francis Ryan	R	Y
102	0.2859	0.3489	51	65,771	6,362	666	2,985	2.68	0	0	0	0	0	102	66.9	102	1	67	102	Russ Diamond	R	Y
103	0.5275	0.3672	66	63,950	26,807	13,088	7,352	-0.16	3	1	1	1	0	104	4.1	103	1	42	103	Patty Kim	D	Y
104	0.2095	0.2033	27	65,021	39,956	18,465	13,459	1.51	2	0	1	1	0	103	58.9	105	0	46	104	Susan Helm	R	Y
105	0.2926	0.2326	39	65,356	30,390	13,940	5,833	2.03	1	0	1	0	0	105	51.6	125	1	48	105	Andrew Lewis	R	Y

District	Compactness			Population Variance					Splitting					Constituency		Incumbency						
	Reock	Polsby-Popper	KIWYSI Score	Population	Non-White Population	Black Population	Hispanic Population	Abs Pop % Var	Total Splits	County	Municipality	Ward	VTD	Old District	LCC Score	New District	Rep Count	LIC Score	Old District	Incumbent	Party	Run?
106	0.3826	0.2671	46	66,080	14,754	2,988	5,065	3.16	0	0	0	0	0	106	71.4	106	1	71	106	Thomas Mehaffie	R	Y
107	0.3536	0.3318	55	65,921	4,988	1,075	1,805	2.92	1	1	0	0	0	107	55.2	107	1	59	107	Kurt Masser	R	Y
108	0.5891	0.5154	85	65,258	7,167	1,101	3,012	1.88	0	0	0	0	0	108	63.3	108	1	72	108	Lynda Schlegelculver	R	Y
109	0.5797	0.5846	92	64,825	5,904	874	2,141	1.21	1	0	1	0	0	109	88.7	109	1	90	109	David Millard	Rx	N
110	0.3527	0.3442	50	63,536	4,965	533	1,200	-0.81	1	1	0	0	0	110	57.5	110	1	59	110	Tina Pickett	R	Y
111	0.3667	0.4516	79	67,046	6,091	1,198	1,960	4.67	1	1	0	0	0	111	76.6	111	1	78	111	Jonathan Fritz	R	Y
112	0.3373	0.4104	66	62,127	7,643	1,117	2,970	-3.01	2	0	1	1	0	112	71.4	112	1	65	112	Kyle Mullins	D	Y
113	0.4265	0.3861	61	61,487	17,654	3,537	8,132	-4.01	3	0	2	1	0	113	31.3	113	1	53	113	Thom Welby	D	Y
114	0.5105	0.5422	93	61,604	10,602	2,039	4,570	-3.82	2	0	1	1	0	114	35.7	114	1	39	114	Bridget Kosierowski	D	Y
115	0.3423	0.4242	75	66,457	29,443	11,260	13,286	3.75	2	0	2	0	0	115	54.4	115	1	49	115	Maureen Madden	D	Y
116	0.27	0.268	48	63,945	30,795	1,525	27,597	-0.17	2	2	0	0	0	116	56.5	117	0	53	116	Tarah Toohil	Rx	N
117	0.4847	0.3556	56	62,062	4,830	447	1,968	-3.11	0	0	0	0	0	117	46.3	117	2	45	117	Karen Boback	R	Y
118	0.4451	0.3555	61	62,791	8,172	1,510	3,974	-1.97	5	1	3	1	0	118	44.1	118	1	43	118	Michael Carroll	D	Y
119	0.4555	0.3828	62	62,099	9,505	2,785	3,670	-3.05	0	0	0	0	0	119	64.4	119	1	65	119	Gerald Mullery	D	Y
120	0.3677	0.2136	30	62,198	7,987	2,356	2,680	-2.90	1	0	1	0	0	120	81.3	120	1	84	120	Aaron Kaufer	R	Y
121	0.4397	0.2861	45	61,490	22,764	6,543	12,647	-4.00	0	0	0	0	0	121	78.2	121	1	78	121	Edwin Pashinski	D	Y
122	0.4804	0.4831	80	64,866	7,318	1,074	3,646	1.27	0	0	0	0	0	122	81.5	122	1	95	122	Doyle Heffley	R	Y
123	0.3805	0.2548	41	65,886	7,114	1,734	2,942	2.86	1	0	1	0	0	123	64.2	123	1	64	123	Timothy Twardzik	R	Y
124	0.4155	0.2474	40	64,846	6,542	1,231	3,075	1.24	2	2	0	0	0	124	65.8	124	1	73	124	Jerome Knowles	R	Y
125	0.4603	0.4174	68	63,820	7,944	2,108	1,943	-0.36	1	0	1	0	0	125	19.2	125	2	20	125	Joseph Kerwin	R	Y
126	0.2923	0.2741	37	61,746	31,946	3,352	25,860	-3.60	6	0	2	4	0	126	71.5	126	1	67	126	Mark Rozzi	D	Y
127	0.3184	0.2485	32	61,291	42,507	4,948	35,085	-4.31	5	0	2	3	0	127	77.2	127	1	76	127	Manuel Guzman	D	Y
128	0.3759	0.4608	76	66,257	9,341	2,097	3,555	3.44	2	0	2	0	0	128	36.0	128	1	41	128	Mark Gillen	R	Y
129	0.2922	0.2421	42	61,096	32,108	4,342	24,354	-4.62	3	0	2	1	0	129	32.6	129	1	33	129	James Cox	R	Y
130	0.4163	0.4969	82	65,179	5,945	660	2,957	1.76	0	0	0	0	0	130	41.8	130	1	44	130	David Maloney	R	Y
131	0.3562	0.2644	43	64,304	9,028	1,335	3,511	0.39	6	3	2	1	0	131	90.1	131	1	91	131	V Mackenzie	R	Y
132	0.4699	0.6316	100	63,549	24,213	4,297	13,511	-0.79	5	0	2	3	0	132	50.4	132	1	53	132	Michael Schlossberg	D	Y
133	0.1864	0.2231	25	63,061	21,051	4,103	12,632	-1.55	1	0	1	0	0	133	84.1	133	1	83	133	Jeanne Mcneill	D	Y
134	0.3819	0.2074	39	63,349	36,192	5,322	27,560	-1.10	3	0	2	1	0	22	62.1	187	1	60	134	Ryan Mackenzie	R	Y
135	0.3159	0.2756	39	62,319	27,741	4,441	18,238	-2.71	1	0	1	0	0	135	90.2	135	1	88	135	Stephen Samuelson	D	Y
136	0.4236	0.2903	47	63,804	23,938	6,980	11,961	-0.39	2	0	2	0	0	136	93.1	136	1	93	136	Robert Freeman	D	Y
137	0.5242	0.3752	65	63,038	14,978	2,973	6,181	-1.58	2	0	2	0	0	138	48.1	137	1	33	137	Joseph Emrick	R	Y
138	0.3098	0.3933	63	63,633	9,745	1,922	4,078	-0.66	0	0	0	0	0	137	52.5	138	1	41	138	Ann Flood	R	Y
139	0.3529	0.3659	58	65,757	9,409	1,124	4,888	2.66	3	2	1	0	0	139	83.3	139	1	86	139	Michael Peifer	Rx	N
140	0.383	0.388	65	61,806	14,873	4,788	4,753	-3.51	2	0	1	1	0	140	73.0	140	1	73	140	John Galloway	D	Y
141	0.4155	0.4902	78	64,322	19,601	6,723	7,668	0.42	0	0	0	0	0	141	73.1	141	1	59	141	Tina Davis	D	Y
142	0.345	0.3396	48	65,233	11,063	2,353	2,838	1.84	3	0	2	1	0	142	71.9	142	1	71	142	Frank Farry	R	Y
143	0.6057	0.4621	83	64,682	8,098	884	2,965	0.98	1	0	1	0	0	143	49.7	143	1	49	143	Shelby Labs	R	Y
144	0.2381	0.3202	55	65,208	12,989	1,626	4,970	1.80	1	0	1	0	0	144	44.5	144	1	47	144	F Polinchock	R	Y
145	0.3252	0.3124	48	64,212	8,161	1,230	3,131	0.25	1	0	1	0	0	145	93.4	145	1	94	145	Craig Staats	R	Y
146	0.2945	0.3614	57	65,943	18,009	8,012	4,375	2.95	0	0	0	0	0	146	70.8	146	1	72	146	Joseph Ciresi	D	Y
147	0.3632	0.4437	74	66,195	7,989	1,432	2,235	3.34	1	0	1	0	0	147	85.2	147	1	83	147	Tracy Pennycuick	R	Y
148	0.3265	0.2874	38	63,587	12,980	2,739	2,345	-0.73	2	0	1	1	0	148	63.3	148	1	66	148	Mary Daley	D	Y
149	0.2108	0.267	32	64,410	20,916	5,168	4,307	0.56	2	0	1	1	0	149	81.8	149	1	84	149	Tim Briggs	D	Y
150	0.4275	0.4617	83	63,738	15,232	3,057	2,674	-0.49	0	0	0	0	0	150	64.1	150	1	67	150	Joseph Webster	D	Y
151	0.3309	0.2246	34	66,173	18,104	4,184	2,667	3.31	5	0	2	3	0	151	67.9	151	1	66	151	William Stephens	R	Y
152	0.2245	0.3249	64	64,189	13,409	2,983	3,604	0.21	3	0	1	2	0	152	77.1	152	1	77	152	Nancy Guent	D	Y
153	0.3966	0.3734	73	66,327	18,019	8,459	3,324	3.55	2	0	1	1	0	153	88.1	153	1	90	153	Benjamin Sanchez	D	Y
154	0.2	0.2627	26	63,038	26,349	16,413	3,505	-1.58	0	0	0	0	0	154	99.8	154	1	100	154	Napoleon Nelson	D	Y
155	0.4269	0.3083	56	64,628	15,481	2,975	3,141	0.90	1	0	1	0	0	155	63.6	155	1	65	155	Danielle Frielotten	D	Y
156	0.3358	0.3952	65	63,235	13,234	3,778	4,537	-1.28	1	0	1	0	0	156	61.9	156	1	66	156	Dianne Herrin	D	Y
157	0.4153	0.2378	40	62,988	14,208	1,413	2,047	-1.66	0	0	0	0	0	157	61.8	157	1	65	157	Melissa Shusterman	D	Y
158	0.512	0.3417	63	62,792	16,830	2,313	9,552	-1.97	0	0	0	0	0	158	59.5	158	1	57	158	Christina Sappey	D	Y
159	0.2651	0.2554	38	61,801	37,101	27,805	5,409	-3.52	0	0	0	0	0	159	80.6	159	1	80	159	Brian Kirkland	D	Y
160	0.4931	0.4472	80	63,956	12,101	2,225	1,969	-0.15	2	2	0	0	0	160	59.9	160	1	53	160	Wendell Williams	R	Y

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	Reock	Polsby-Popper	KIWYSI Score	Population	Non-White Population	Black Population	Hispanic Population	Abs Pop % Var	Total Splits	County	Municipality	Ward	VTD	Old District	LCC Score	New District	Rep Count	LIC Score	Old District	Incumbent	Party	Run?
161	0.3798	0.2121	42	63,804	14,984	7,653	2,297	-0.39	5	0	2	3	0	161	77.7	161	1	74	161	Leanne Krueger	D	Y
162	0.4281	0.3749	58	64,947	21,304	14,273	2,276	1.40	4	0	2	2	0	162	71.0	162	1	70	162	David Dellosa	D	Y
163	0.4314	0.3328	57	63,755	26,611	17,624	2,961	-0.47	3	0	1	2	0	163	76.4	163	1	75	163	Michael Zabel	D	Y
164	0.463	0.3506	61	63,129	48,778	30,061	5,787	-1.44	2	0	0	2	0	164	92.3	164	1	93	164	Gina Curry	D	Y
165	0.4771	0.3297	59	62,800	10,877	2,697	1,824	-1.96	2	0	1	1	0	165	55.5	165	1	58	165	Jennifer Omara	D	Y
166	0.4524	0.5719	100	63,050	9,860	2,002	1,821	-1.57	2	0	1	1	0	166	61.9	166	1	62	166	Greg Vitali	D	Y
167	0.48	0.1893	38	66,369	17,955	1,932	3,138	3.62	1	0	1	0	0	167	70.7	167	1	69	167	Kristine Howard	D	Y
168	0.3781	0.2891	44	62,978	11,380	2,038	2,009	-1.68	2	0	1	1	0	168	48.1	168	1	47	168	Christopher Quinn	R	Y
169	0.2646	0.2644	50	64,977	8,462	1,598	3,467	1.44	0	0	0	0	0	169	99.8	169	1	100	169	Kate Klunk	R	Y
170	0.4431	0.5015	84	62,164	19,060	4,321	4,560	-2.95	2	0	0	2	0	170	87.9	170	1	88	170	Martina White	R	Y
171	0.2302	0.2581	33	65,554	4,114	559	1,317	2.34	1	1	0	0	0	171	62.6	171	1	60	171	Kerry Benninghoff	R	Y
172	0.3846	0.3745	58	62,968	24,917	5,871	6,099	-1.69	2	0	0	2	0	172	59.1	172	1	59	172	Kevin Boyle	D	Y
173	0.4505	0.4657	76	62,913	28,987	11,682	10,442	-1.78	3	0	0	3	0	173	57.5	173	1	58	173	Michael Driscoll	D	Y
174	0.284	0.4018	69	64,791	26,194	8,675	6,603	1.15	3	0	0	3	0	174	84.7	174	1	84	174	Ed Neilson	D	Y
175	0.3594	0.3363	46	63,492	19,375	4,531	4,390	-0.88	4	0	0	4	0	175	81.9	175	1	80	175	Marylouise Isaacson	D	Y
176	0.2871	0.3506	54	61,488	14,138	4,119	6,437	-4.00	1	1	0	0	0	176	59.7	176	1	66	176	Jack Rader	R	Y
177	0.2889	0.2907	39	64,541	34,137	15,012	15,053	0.76	7	0	0	7	0	177	51.2	177	1	51	177	Joe Hohenstein	D	Y
178	0.5467	0.3361	56	65,518	7,517	619	1,904	2.29	1	0	1	0	0	178	53.3	178	1	55	178	Wendi Thomas	R	Y
179	0.3797	0.3704	57	62,240	56,311	23,900	25,584	-2.83	4	0	0	4	0	179	62.9	179	1	63	179	Jason Dawkins	D	Y
180	0.5458	0.5058	92	63,123	51,752	11,078	35,970	-1.45	5	0	0	5	0	180	73.4	180	1	73	180	Angel Cruz	D	Y
181	0.4137	0.3192	44	63,310	41,699	24,599	8,552	-1.16	4	0	0	4	0	181	78.0	181	1	83	181	Malcolm Kenyatta	D	Y
182	0.383	0.3788	62	64,526	19,598	4,843	4,298	0.74	4	0	0	4	0	182	84.5	182	1	84	182	Brian Sims	Dx	N
183	0.346	0.3027	52	63,566	8,519	1,206	4,546	-0.76	3	2	1	0	0	183	63.3	183	1	67	183	Zachary Mako	R	Y
184	0.6259	0.8329	100	64,108	28,119	3,309	9,975	0.09	0	0	0	0	0	184	99.8	184	1	100	184	Elizabeth Fiedler	D	Y
185	0.2994	0.3724	64	61,863	39,717	30,212	2,753	-3.42	5	2	1	2	0	185	74.0	185	1	77	185	Regina Young	D	Y
186	0.3096	0.2989	54	62,436	43,176	28,297	4,432	-2.52	3	0	0	3	0	186	84.6	186	2	85	186	Jordan Harris	D	Y
187	0.3049	0.4162	65	66,360	14,309	2,382	5,359	3.60	1	0	1	0	0	134	59.8	187	2	42	187	Gary Day	R	Y
188	0.2835	0.3948	72	63,288	42,108	25,088	4,005	-1.19	3	0	0	3	0	188	86.7	9	0	0	188	Rick Krajewski	D	Y
189	0.2565	0.3153	48	62,158	27,265	9,873	12,213	-2.96	4	1	3	0	0	189	57.0	189	1	52	189	Rosemary Brown	R	Y
190	0.3517	0.3748	61	61,787	52,393	45,461	2,924	-3.54	5	0	0	5	0	17	-0.2	190	1	32	190	Amen Brown	D	Y
191	0.4974	0.3583	60	64,501	61,856	55,503	2,307	0.70	6	2	1	3	0	191	79.2	191	1	80	191	Joanna McClinton	D	Y
192	0.3996	0.3854	71	62,293	57,040	51,713	1,965	-2.75	2	0	0	2	0	192	95.8	192	1	96	192	Morgan Cephas	D	Y
193	0.3275	0.2737	39	63,951	8,515	1,013	4,642	-0.16	2	1	1	0	0	193	44.6	193	1	49	193	Torren Ecker	R	Y
194	0.5707	0.602	99	62,791	17,851	8,822	3,379	-1.97	0	0	0	0	0	194	74.9	194	2	68	194	Pamela Delissio	D	Y
195	0.4902	0.3692	63	63,221	42,623	34,159	3,596	-1.30	3	0	0	3	0	195	65.7	195	1	66	195	Donna Bullock	D	Y
196	0.4622	0.2351	45	65,953	9,210	2,463	3,561	2.97	1	0	1	0	0	196	87.1	196	1	90	196	Seth Grove	R	Y
197	0.4085	0.3537	59	62,999	59,094	18,285	38,034	-1.65	5	0	0	5	0	197	66.6	197	1	69	197	Danilo Burgos	D	Y
198	0.3142	0.2167	20	62,387	59,546	48,357	5,151	-2.60	5	0	0	5	0	198	29.7	198	1	30	198	Darisha Parker	D	Y
199	0.4223	0.2582	45	65,527	10,058	3,088	2,757	2.30	1	0	1	0	0	199	81.6	199	1	87	199	Barbara Gleim	R	Y
200	0.3945	0.4204	61	63,389	57,192	52,100	1,828	-1.04	1	0	0	1	0	200	73.4	194	1	33	200	Chris Rabb	D	Y
201	0.4829	0.5987	95	62,053	56,127	49,541	2,842	-3.12	1	0	0	1	0	201	60.0	201	1	61	201	Stephen Kinsey	D	Y
202	0.4459	0.5342	92	64,695	46,380	12,519	17,893	1.00	4	0	0	4	0	202	37.8	202	1	38	202	Jared Solomon	D	Y
203	0.3274	0.4214	63	61,873	51,457	26,722	14,689	-3.40	2	0	0	2	0	203	36.0	200	0	29	203	Isabella Fitzgerald	D	Y

Appendix C

List of Split Political Subdivisions

Summary of Political Divisions Affected by Splits
 PA LRC Preliminary State House Plan 12 /15/2021
 (Sources: See back page)

Splits by Political Subdivision Type			
	Required*	Actual	Design
County	158	184	26
Municipality	33	113	80
Ward	0	99	99
VTD	0	0	0

* A required split occurs if population exceeds the upper variance limit of 5.00%.

"Design" splits are those in excess of the required splits.

Political Divisions with Design Splits

(Note: some may have multiple splits)

County	Municipality	Ward	VTD
Allegheny	Allegheny-ASPINWALL	Allegheny-BETHEL PARK WARD 01	
Armstrong	Allegheny-BETHEL PARK	Allegheny-BETHEL PARK WARD 02	
Berks	Allegheny-MCCANDLESS	Allegheny-BETHEL PARK WARD 05	
Bradford	Allegheny-MCDONALD	Allegheny-BETHEL PARK WARD 06	
Cambria	Allegheny-MOON	Allegheny-BETHEL PARK WARD 08	
Chester	Allegheny-PITTSBURGH	Allegheny-PITTSBURGH WARD 02	
Crawford	Allegheny-PLUM	Allegheny-PITTSBURGH WARD 03	
Cumberland	Allegheny-SOUTH FAYETTE	Allegheny-PITTSBURGH WARD 04	
Delaware	Allegheny-TRAFFORD	Allegheny-PITTSBURGH WARD 07	
Huntingdon	Allegheny-UPPER ST. CLAIR	Allegheny-PITTSBURGH WARD 08	
Juniata	Allegheny-WEST MIFFLIN	Allegheny-PITTSBURGH WARD 10	
Lehigh	Beaver-ELLWOOD CITY	Allegheny-PITTSBURGH WARD 11	
Luzerne	Berks-CUMRU	Allegheny-PITTSBURGH WARD 12	
Lycoming	Berks-EXETER	Allegheny-PITTSBURGH WARD 13	
Mifflin	Berks-READING	Allegheny-PITTSBURGH WARD 14	
Montgomery	Berks-SPRING	Allegheny-PITTSBURGH WARD 15	
Northampton	Bucks-MIDDLETOWN	Allegheny-PITTSBURGH WARD 17	

County	Municipality	Ward	VTD
Philadelphia	Bucks-NEW BRITAIN	Allegheny-PITTSBURGH WARD 18	
Pike	Bucks-NORTHAMPTON	Allegheny-PITTSBURGH WARD 19	
Schuylkill	Bucks-TELFORD	Allegheny-PITTSBURGH WARD 20	
Union	Cambria-TUNNELHILL	Allegheny-PITTSBURGH WARD 23	
Washington	Centre-FERGUSON	Allegheny-PITTSBURGH WARD 24	
Wayne	Centre-STATE COLLEGE	Allegheny-PITTSBURGH WARD 26	
	Chester-CALN	Allegheny-PITTSBURGH WARD 27	
	Chester-EAST GOSHEN	Allegheny-PITTSBURGH WARD 28	
	Clarion-EMLENTON	Allegheny-TRAFFORD DISTRICT 01	
	Clearfield-LAWRENCE	Allegheny-UPPER ST. CLAIR WARD 03	
	Cumberland-MECHANICSBURG	Berks-READING WARD 11	
	Cumberland-SHIPPENSBURG	Berks-READING WARD 12	
	Cumberland-SOUTH MIDDLETON	Berks-READING WARD 14	
	Dauphin-HARRISBURG	Berks-READING WARD 16	
	Dauphin-LOWER PAXTON	Bucks-MIDDLETOWN DISTRICT LOWER	
	Delaware-DARBY	Centre-FERGUSON DISTRICT NORTHEAST	
	Delaware-MARPLE	Dauphin-HARRISBURG WARD 09	
	Delaware-MIDDLETOWN	Delaware-MARPLE WARD 04	
	Delaware-RIDLEY	Delaware-MIDDLETOWN DISTRICT 02	
	Erie-HARBORCREEK	Delaware-RIDLEY WARD 01	
	Fayette-SEVEN SPRINGS	Delaware-RIDLEY WARD 05	
	Jefferson-FALLS CREEK	Delaware-UPPER DARBY DISTRICT 03	
	Lackawanna-MOOSIC	Delaware-UPPER DARBY DISTRICT 05	
	Lackawanna-SCRANTON	Lackawanna-SCRANTON WARD 10	
	Lancaster-LANCASTER	Lackawanna-SCRANTON WARD 21	
	Lancaster-MANHEIM	Lancaster-LANCASTER WARD 02	
	Lancaster-MANOR	Lancaster-LANCASTER WARD 06	
	Lancaster-SALISBURY	Lancaster-LANCASTER WARD 08	
	Lancaster-WEST LAMPETER	Lehigh-ALLENTOWN WARD 08	
	Lehigh-ALLENTOWN	Lehigh-ALLENTOWN WARD 11	
	Lehigh-NORTH WHITEHALL	Lehigh-ALLENTOWN WARD 13	
	Lehigh-SALISBURY	Lehigh-SALISBURY WARD 03	
	Lehigh-UPPER MACUNGIE	Montgomery-HORSHAM DISTRICT 02	
	Luzerne-WEST PITTSTON	Montgomery-HORSHAM DISTRICT 03	

County	Municipality	Ward	VTD
	Monroe-MIDDLE SMITHFIELD	Montgomery-LOWER MERION WARD 05	
	Monroe-STROUD	Montgomery-UPPER DUBLIN DISTRICT 05	
	Montgomery-FRANCONIA	Philadelphia-PHILADELPHIA WARD 02	
	Montgomery-HORSHAM	Philadelphia-PHILADELPHIA WARD 04	
	Montgomery-LOWER MERION	Philadelphia-PHILADELPHIA WARD 05	
	Montgomery-UPPER DUBLIN	Philadelphia-PHILADELPHIA WARD 06	
	Montgomery-UPPER GWYNEDD	Philadelphia-PHILADELPHIA WARD 07	
	Montgomery-WHITPAIN	Philadelphia-PHILADELPHIA WARD 08	
	Northampton-HANOVER	Philadelphia-PHILADELPHIA WARD 10	
	Northampton-LOWERSAUCON	Philadelphia-PHILADELPHIA WARD 12	
	Northampton-PALMER	Philadelphia-PHILADELPHIA WARD 13	
	Philadelphia-PHILADELPHIA	Philadelphia-PHILADELPHIA WARD 15	
	Pike-DELAWARE	Philadelphia-PHILADELPHIA WARD 18	
	Schuylkill-ASHLAND	Philadelphia-PHILADELPHIA WARD 23	
	Westmoreland-DERRY	Philadelphia-PHILADELPHIA WARD 25	
	Westmoreland-LOWERBURRELL	Philadelphia-PHILADELPHIA WARD 28	
	Westmoreland-MURRYSVILLE	Philadelphia-PHILADELPHIA WARD 30	
	Westmoreland-NORTH HUNTINGDON	Philadelphia-PHILADELPHIA WARD 31	
	York-DOVER	Philadelphia-PHILADELPHIA WARD 33	
	York-SPRINGETTSBURY	Philadelphia-PHILADELPHIA WARD 35	
		Philadelphia-PHILADELPHIA WARD 37	
		Philadelphia-PHILADELPHIA WARD 40	
		Philadelphia-PHILADELPHIA WARD 41	
		Philadelphia-PHILADELPHIA WARD 42	
		Philadelphia-PHILADELPHIA WARD 44	
		Philadelphia-PHILADELPHIA WARD 45	
		Philadelphia-PHILADELPHIA WARD 46	
		Philadelphia-PHILADELPHIA WARD 48	
		Philadelphia-PHILADELPHIA WARD 49	
		Philadelphia-PHILADELPHIA WARD 51	
		Philadelphia-PHILADELPHIA WARD 52	
		Philadelphia-PHILADELPHIA WARD 55	
		Philadelphia-PHILADELPHIA WARD 56	
		Philadelphia-PHILADELPHIA WARD 57	

County	Municipality	Ward	VTD
		Philadelphia-PHILADELPHIA WARD 58	
		Philadelphia-PHILADELPHIA WARD 60	
		Philadelphia-PHILADELPHIA WARD 61	
		Philadelphia-PHILADELPHIA WARD 62	
		Philadelphia-PHILADELPHIA WARD 64	
		Philadelphia-PHILADELPHIA WARD 66	
		Westmoreland-LOWER BURRELL WARD 04	

Sources

- PA Legislative Reapportionment Commission, Preliminary Plans: <https://davesredistricting.org/join/a3157651-f2a6-4df1-ab3c-ffc38404bc7d>
- 2021 PA Certified Redistricting Data, Dataset 2 (with prisoner reallocation): <https://www.redistricting.state.pa.us/resources/GISData/Census/2021/2021-Dataset2-WithPrisoner/LRC%20Data%20Release%20%20-%20Geography.zip>