Testimony to PA House State Government Committee
July 22nd, 2021

My name is Chris Fowler and I am Associate Professor of Geography and Demography at Penn State. My research and teaching focus on how the boundaries we draw shape the demographic and economic patterns we observe. I have studied neighborhoods, school districts, metropolitan areas, industrial clusters, labor markets, and for the last couple of years, congressional and legislative districts.

I want to emphasize that I come to this session as an expert in geography whose work has applications to redistricting rather than an expert in redistricting interested in geography. My goal today is to leave you with some thoughts on how to read maps carefully and how to understand the ways that the uneven distribution of the Commonwealth's population complicates the creation of a 'fair' map.

The underlying theme of the testimony I offer today is that there is no perfect map. There are no objective criteria that captures all of the values you and your constituents wish to see enacted. In fact, virtually all of the things we value in a redistricting map are in conflict with one another: if we value compactness, we will lose proportionality; if we are unwilling to split counties, we will likely split up communities of interest, and so on. Districting is about priorities and tradeoffs so being clear about your priorities and being transparent about where your map makes tradeoffs is important to achieve those priorities. If you do these things, you should end up with a map that the people of Pennsylvania can support and you will have earned their faith that you are acting to the best of your abilities in their interest.

To summarize the takeaways from my testimony

- Be careful to examine the scale of the units being mapped and look for the differences invariably contained within larger units
- Don't mistake the winner-take-all red/blue dichotomy for the preferences of a place. PA tends towards purple more than the extremes.
- Land doesn't vote; people do. The size of Pennsylvania means that we often obscure the places where the most people live when we are trying to view the whole Commonwealth. Delve into the details and make sure you have the whole picture.
- On the characteristics that matter for our interaction with the federal government (age, family structure, poverty), Pennsylvanians are evenly spread across the Commonwealth. Only partisan affiliation (Republican/Democrat) and percent African American are clustered.
- Proportional representation where statewide vote share matches the share of the Congressional delegation is an important goal for a fair map. Because Democrats tend to be clustered in urban areas and Republicans spread more evenly, proportionality comes into conflict with another goal--compactness. Gerrymandering to achieve proportionality may be a property of a fair map. Conversely, compactness may be used to 'neutrally' disempower Democratic partisans.
- Majority-minority districts are required by the Voting Rights Act but can also serve to pack African American voters, wasting their votes. Black Voting Age Population of 37% in a given district seems to be sufficient to elect African American legislators. As with proportional representation, gerrymandering may be necessary to achieve a fair map that gives minority populations electoral influence consistent with their share of the total population.
- Compactness makes sense as measure of quality only in Kansas. It is less reasonable when settlement patterns are linear or polycentric as we have in much of PA. Here, growth followed rivers and valleys and small towns grew into overlapping centers. While compactness is visually appealing, it makes little sense from a historical or socio-economic perspective.
- Arbitrarily splitting counties and municipalities runs counter to making a good map, but these boundaries may not do a good job of defining communities of interest. School district lines and stakeholder-defined boundaries may be more important so a reliance on local input and

knowledge is essential and should be allowed to overrule administrative boundaries where appropriate.

Map reading 101

Figure 1 shows a choropleth map of the Commonwealth with colors based on the vote share for President Biden in the 2020 election. The top row shows results in stark win/lose format that is characteristic of our winner-take-all election system. The middle row shows the vote share with more of a gradient revealing how much purple is hidden by the election results as they are commonly reported. The third row shows the Commonwealth with areal units proportional to population, it shrinks places with fewer people and inflates places where people are more densely settled. Moving from left to right the maps show increasingly fine resolution from Statewide results to results reported by Congressional district to results reported by municipality.

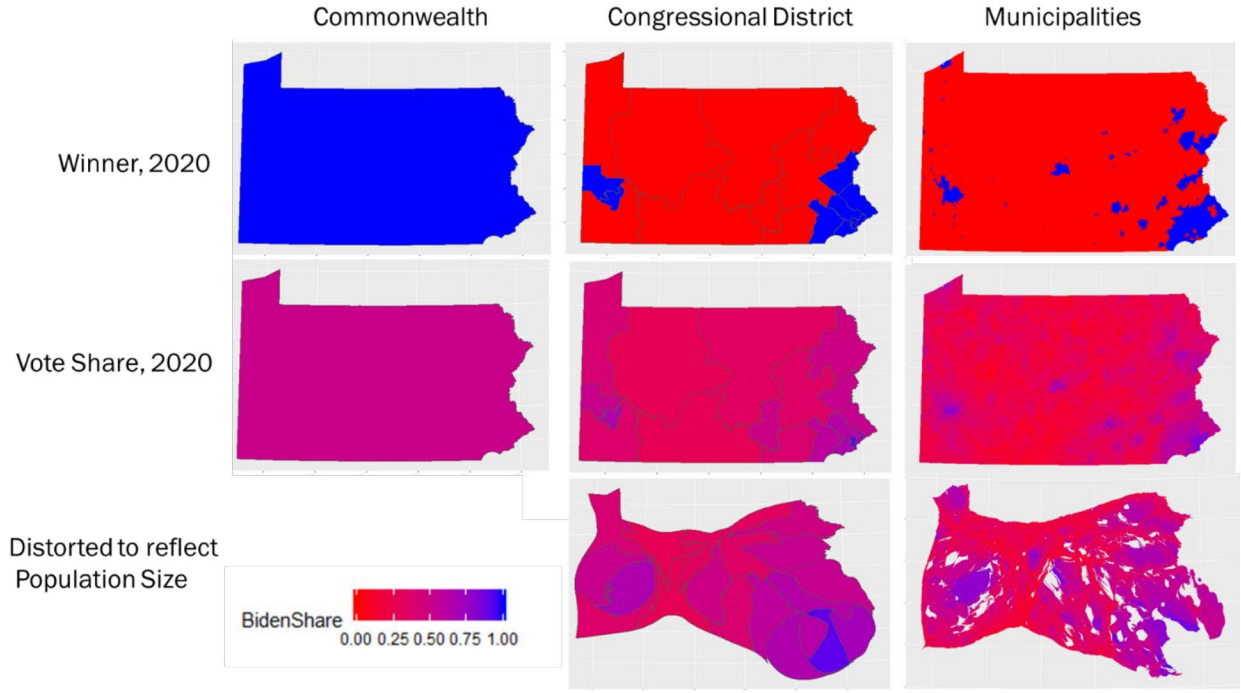

Figure 1 Pennsylvania 2020 Presidential election results by State, Congressional District and Municipality. Data from http://openelections.net

Some takeaways from this Figure:

1) As we examine the population of the Commonwealth at finer and finer scales, different settlement patterns emerge. As you draw a 'fair' map, it is important to be aware of these patterns and avoid the tendency to generalize. Partisans have sorted themselves geographically in the Commonwealth just as they have done across the country but what looks homogeneously red or blue at one scale may or may not look the same as we zoom in.
2) Representing the Commonwealth based strictly on the voting preferences of the majority in a single election gives the wrong impression about voter preferences. This effect is made worse when we use large geographic units like State or Congressional districts. Pennsylvania is heterogeneous with a mix of political preferences; maps should reflect that as shown in row 2.
3) Land doesn't vote; people do. When we look at the Commonwealth with our attention drawn to the people, not the land area as in Figure 1, row 3, we get a much better sense of how much detail is missed and why we can't draw our districts from a 50,000 ft view. Settlement patterns in the metropolitan areas are complex and impact a large proportion of Pennsylvania's population. These areas need to be handled with extreme care and at a finer resolution than the land area maps would suggest.

4) If I produced these exact same maps using the 2016, 2012, or 2008 election data, the results would be markedly different each time. These are all snapshots from a moment in time. There is a tendency to read these maps as revealing something permanent about the preferences of the voters of Pennsylvania, but they are ephemeral. Furthermore, there is considerable evidence that political parties only capture a small fraction of voters' actual preferences. In exercises I do in class with students at Penn State, we routinely find that students with strongly diverging political views actually have much in common in terms of their values; however, politics captures and amplifies the places where they disagree most strongly, masking the wide range of commonalities.
5) Given points 1 through 4 above, I urge you to draw a map that serves the interests of the people of the Commonwealth. Such a map would forego efforts to manipulate outcomes on the basis of partisan preference and would instead be legible to voters as an attempt to group people together by their shared needs and capacities.

There is good news on this front. While Figure 1 showed how sorted the Commonwealth is by partisan preference, Figure 2 shows Pennsylvania in a different light. I have taken four demographic characteristics that are relevant for how the people of Pennsylvania interact with the Federal government because these characteristics are presumably relevant for their policy preferences:

- Percent over 65 years of age,
- Percent of the workforce in manufacturing,
- Percent of households with children present, and
- Percent living in poverty.

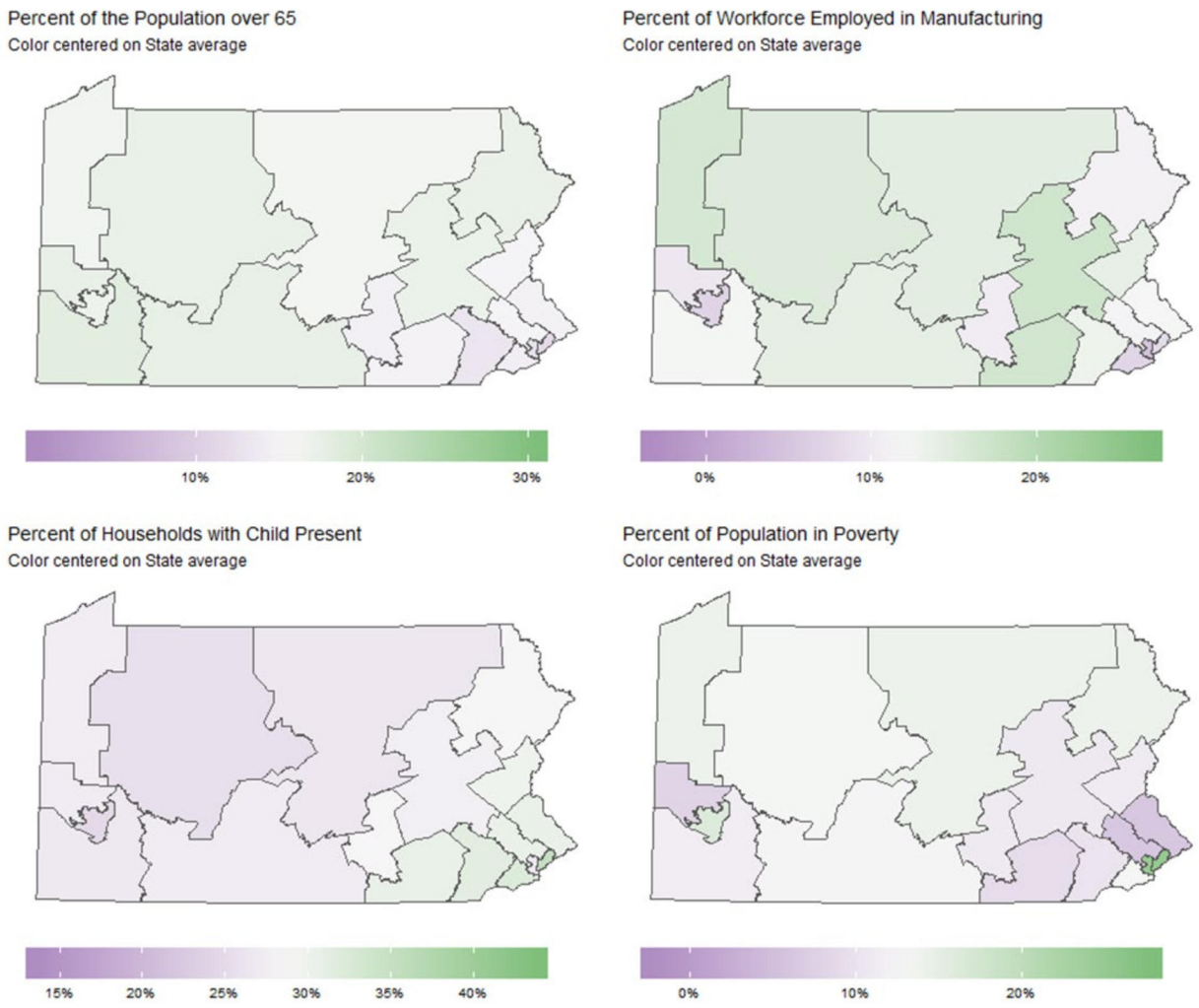

Figure 2 Divergence from State average for four demographic characteristics relevant to federal policy. Data from 2010 Decennial Census and ACS 2014-2018 5-year estimates.

These characteristics, which are relevant for determining our eligibility for major federal programs (among other things), are spread relatively evenly across the Commonwealth. In fact, some of my current research shows that almost no matter how you divide PA up into Congressional districts, every member of our delegation will represent a fairly similar mix of these important interest groups. I bring this to your attention because districting has devolved into a key area for partisan fights with packing and cracking to produce districts that go one way or another. I think it is important to be reminded that, despite that conflict, the needs of the people of Pennsylvania are actually fairly consistent, and our Representatives could go far by finding commonalities in those needs and promoting those commonalities in legislation.

Geography and the "Fair" map

The second piece of testimony I want to provide gives some background into how geography can help us understand the structure of a 'fair' map. The problem I want to raise here is that the standards we use to evaluate whether a map is fair or not can often be at odds with each other. Here I address issues around proportionality, minority representation, compactness, and splitting counties and municipalities.

Proportionality is about fairness to parties—proportionality means that the share of the overall vote will match the share of elected Representatives. This is an important standard, but geography and our

preferences for a clean map make this challenging. Democrats are clustered in Pennsylvania while Republicans are more evenly distributed. This means that compactness, a widely held value associated with 'fair' maps, will undermine proportionality by packing Democrats into a few highly Democratic districts and giving Republicans the capacity to win by smaller margins in a larger number of districts. To achieve proportionality, and by extension fairness to parties, we need to be willing to relax our assumption that compactness is a sign of fairness.

Minority representation. There are over 1.4 million African Americans and nearly 1 million Latinx residents of Pennsylvania. While the African American population is concentrated enough in Philadelphia to justify at least one and perhaps two 'majority minority' districts under the Voting Rights Act (VRA), the large concentration of African Americans in Pittsburgh is not likely to meet the law's standard for size. This standard is not met anywhere in the Commonwealth for the Latinx population. Moreover, the VRA standard intended to ensure that minorities can elect their preferred candidates when they are clustered in sufficient numbers to warrant it invites packing of the population that diminishes political influence. Evidence from North Carolina, and from the 115th Congress suggests that districts with around 37 to 39 percent Black Voting Age Population (BVAP) reliably elect black legislators to Congress (see Figure 3 below). VRA districts that go much higher than that may be diminishing rather than expanding the influence of minority groups by wasting votes. These percentages are not a certainty of course, but the blind use of a 50% threshold for creating a majority minority district almost certainly wastes a large number of African American votes.

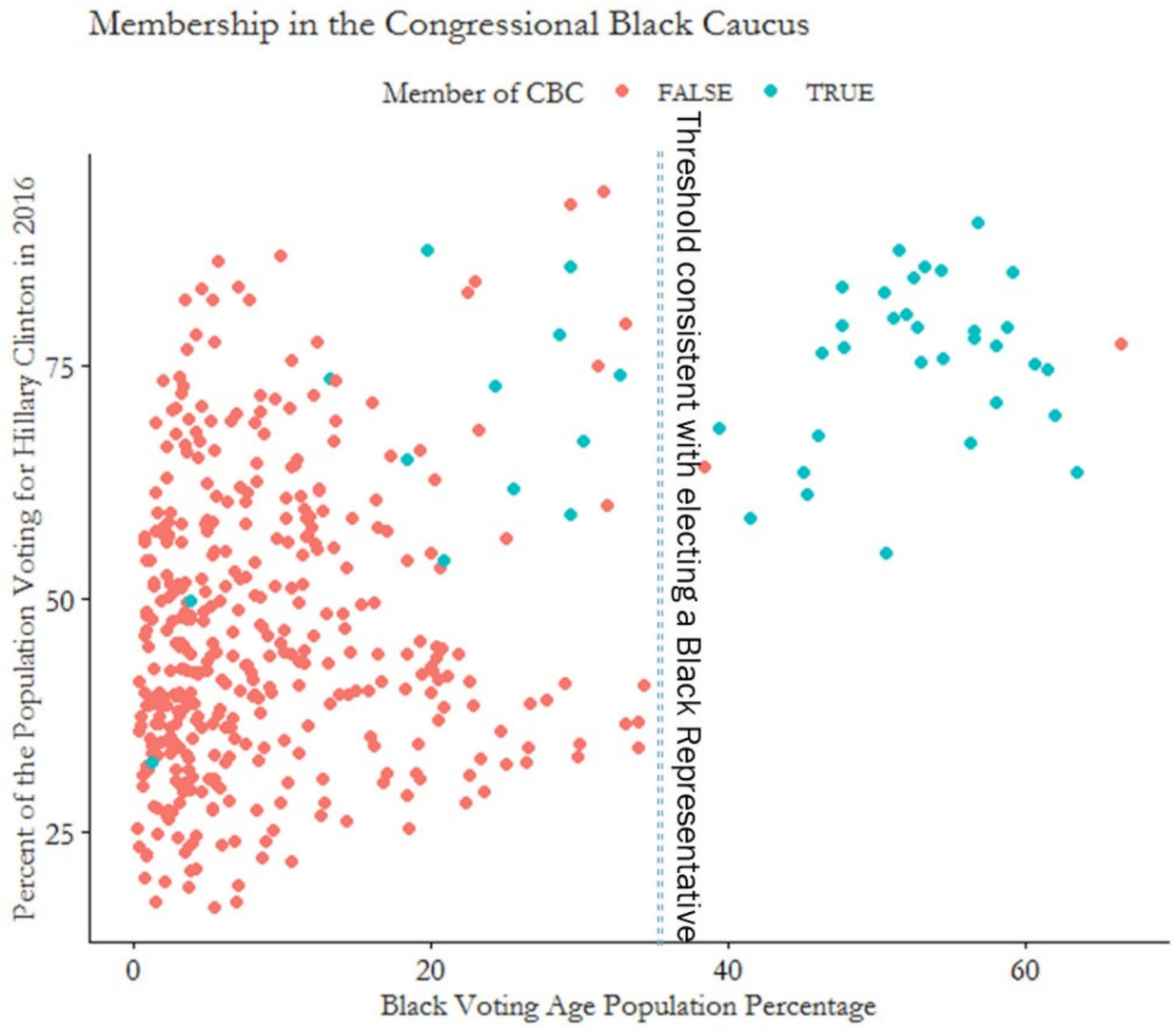

Figure 3: With two idiosyncratic exceptions, all Congressional districts with at least 37% BVAP elected legislators who affiliated with the Congressional Black Caucus in the 115th Congress. Data provided by Metric Geometry Gerrymandering Group (https://github.com/gerrymandr/bvap-cbc-notebook)

To balance the needs of the VRA and the goal of fairness to minority populations, careful consideration needs to be given to how districts are drawn; gerrymandering may be a solution to achieve fairness in this context. Figure 4 shows 'Chicago's earmuffs': one of the most famous gerrymanders to emerge out of the 2011 redistricting process. This obvious gerrymander, unlike so many of its kin, was not drawn for political gain--the earmuffs and the region they surround are both heavily Democratic--but to create a strongly Latinx district (the earmuffs) by joining two similar communities together without breaking apart the large African American community that lies geographically between them. Again, our preference for compactness runs up against another goal of a good map and so we need to be cautious and transparent about how we balance our priorities.

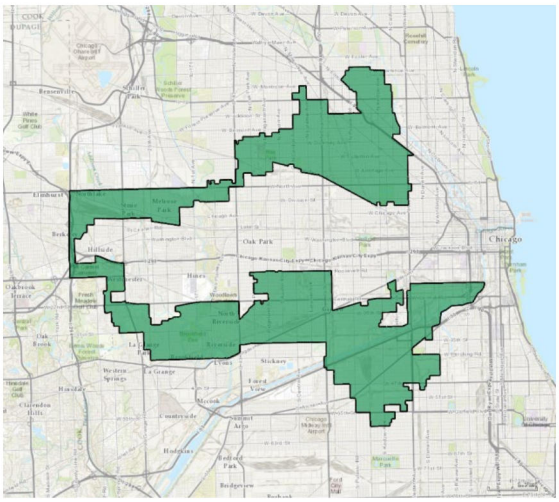

Figure 4 "Chicago's Earmuffs" Illinois 11 Credit: GIS (congressional districts, 2013) shapefile data was created by the United States Department of the Interior. 2: Data was rendered using ArcGIS® software by Esri. 3: File developed for use on Wikipedia and elsewhere by 7partparadigm.

Compactness is a property that ranks very highly among the characteristics desired by Pennsylvanians for their districting map. Nevertheless, as just shown, it comes into conflict with other values that people also care about. I want to make one further observation, which is that compactness is essentially comparing the shape of a district to its deviation from a perfect circle. This ideal perhaps makes sense in Iowa or Kansas, but it has little to do with patterns of settlement in much of PA. In Central PA, where I live, settlement patterns followed the rivers and valleys. Movement was easy over long distances along the valley bottoms and hard over the ridges. Even now, growth extends along these valleys; going over the ridge to the next valley can represent a significant change. This means that socio-economic patterns tend to be long and narrow, bent with the curve of the Appalachian range. A circle drawn on this landscape would connect multiple valleys and fail to capture the full extent of similarity along the valley bottom. It is, quite simply, the wrong shape to judge a district by in Pennsylvania. In eastern PA, early municipalities grew into regional centers and then merged with other centers to create a polycentric metro region that is, itself, part of the larger 'Eastern Megalopolis' encompassing DC, Philadelphia, and New York. A compact district does a poor job of capturing anything geographically meaningful here and will distract from efforts to attain other desirable properties. I raise these points with full knowledge that Pennsylvanians frequently express a preference for compact districts, and I believe maps should reflect those preferences. Nevertheless, do not blindly accept that compactness is a sign of a good or fair map. It may, in fact, represent the opposite.

Splitting counties, municipalities, and communities of interest. A key goal of a 'fair' map is to keep administrative units like municipalities and counties together and avoiding splits so that layers of government 'nest' and so that regional interests can jointly appeal to the same legislator as a coalition. For the Commonwealth's legislative map, this goal is enshrined in a constitutional requirement. The broader term 'communities of interest' is used to generalize for other forms of regionally distinct interest groups that do not necessarily have a formally recognized boundary. The district splits in Centre County are aggravating and the student mappers I worked with consistently sought ways to keep the County in a single district. While avoiding splits is a worthy goal, it ignores the history of these geographic units and how they matter (or fail to matter) for the people of Pennsylvania today. Some of Pennsylvania's county boundaries were established in the 1680s. My own borough was delineated in the 1890s. It is not a given that these boundaries are meaningful to the people who live with them now. Over the last century as economic and population growth have decentralized, many of these boundaries have lost meaning as 'containers' of communities of interest. Returning to Centre County, it is usually a surprise to our students to learn that they may in fact be in one of several municipalities rather than what they thought was simply

"State College." An hour's bike ride that I do from my home takes me through no fewer than seven different municipalities and my children's elementary school serves three.

Furthermore, while the focus on boundaries is usually on municipalities and counties, one crucial boundary that often gets ignored in the redistricting process is the one for school districts. Given the key role that school districts play in where people choose to live, it is anachronistic to ignore these boundaries in the redistricting process while fixating on municipal and county lines that may divide socio-economically similar communities. From a practical standpoint, I would urge you to consider school district boundaries in your mapping efforts while taking municipal and particularly county boundaries as a secondary priority.

If I can offer one final piece of advice, it is to begin this process by deciding what your priorities are and spelling them out clearly. Draw your maps and, as you draw, document your decisions and how they reflect your priorities. Make your draft maps and documentation public and get input from your members and from your constituents. Revise your map to the extent that this input is in line with your stated priorities.

Thank you for the opportunity to testify today. I applaud your efforts to make this process transparent and fair.