

## ***Chapter 10***

# ***Race, space, and the geography of representation***

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### CHAPTER SUMMARY

This chapter examines gerrymandering through the lens of race and geography. Fowler combines specific case studies with high-level concepts in geography, such as the Modifiable Areal Unit Problem.

## 1 INTRODUCTION

From its concrete links to the Voting Rights Act to broader concerns of social justice and representation, the geography of race is critical to any discussion of districting. Drawing districts that offer fair representation for minority populations requires that we take into account not only how and to what extent populations are currently clustered or dispersed, but also that we understand and account for the spatial processes that have led to clustering or dispersion.

In this chapter, I look at the geography of race as it applies to districting. In §2, I argue that contemporary population distributions may strongly impact prospects for district representation, but that they should not be taken for granted or considered neutral, natural, or fixed. I turn to a case study of Philadelphia to examine the ways that historical policies of the local and federal government segregated the Black population. The resultant distribution of Philadelphia's Black communities structures the possibilities for district-based representation, simultaneously producing opportunities for representation and vulnerability to gerrymandering. Considering these and other effects of segregation, I make the case that we must be

cautious in treating the current spatial distribution of the Black population as the basis for an unbiased map. In §3, I survey ways that geographers grapple with the effects of units and scale, introducing the *Modifiable Areal Unit Problem* (MAUP). I suggest that multiscale measures can illuminate questions of community and neighborhood and can give us traction on fair practices in redistricting. By examining the underlying geographic processes that produce what we ultimately call “the data” used for districting, we can do more to adapt the districting process to treat marginalized groups fairly.

## 2 POPULATION DISTRIBUTION: CAUSE AND EFFECT

Geographers examine both the distribution of things in space and the processes that produced those distributions. This includes outcomes like segregation or intermixing of populations as well as processes like the expression of housing preferences or the impact of lending institutions on home buying outcomes. Disentangling proximity and causality requires careful attention to boundaries, spatial outliers, edge effects, and scale. In this chapter, I want to look at some factors relevant to the spatial arrangements of people and try to bring all of these concepts to bear.

### 2.1 CONCENTRATION AND SEGREGATION IN PENNSYLVANIA

How do various population-level attributes come to spread out or concentrate in the ways that they do? And what are the impacts of these human distributions? We have already seen in Chapter 0, Chapter 2, and Chapter 5 (and really throughout the book) that the distributions of people can cause various effects in redistricting, but the distributions themselves are caused by other effects. Walking back along this chain of causality can help us to better understand what constitutes fair practices in drawing districts.

In collaboration with political scientist Linda Fowler, I examined the distribution of various socio-economic variables across tens of thousands of randomly generated 18-district Congressional plans for the Commonwealth of Pennsylvania. Our research asks how much the district-level properties can look different from the state-level properties, as we sample districting plans at random. Our research asks how much difference there can be (a) among districts in the same plan and (b) between each district and the state as a whole, as the lines vary. Based on data from the 2010 decennial Census and the 2008–2012 American Community Survey we find that for characteristics like **percent over 65** and **percent in Manufacturing** there is very little variation between districts and between plans. In other words, no matter where the boundaries between electoral districts are placed, the population composition in each district remains close to that of the Commonwealth as a whole.

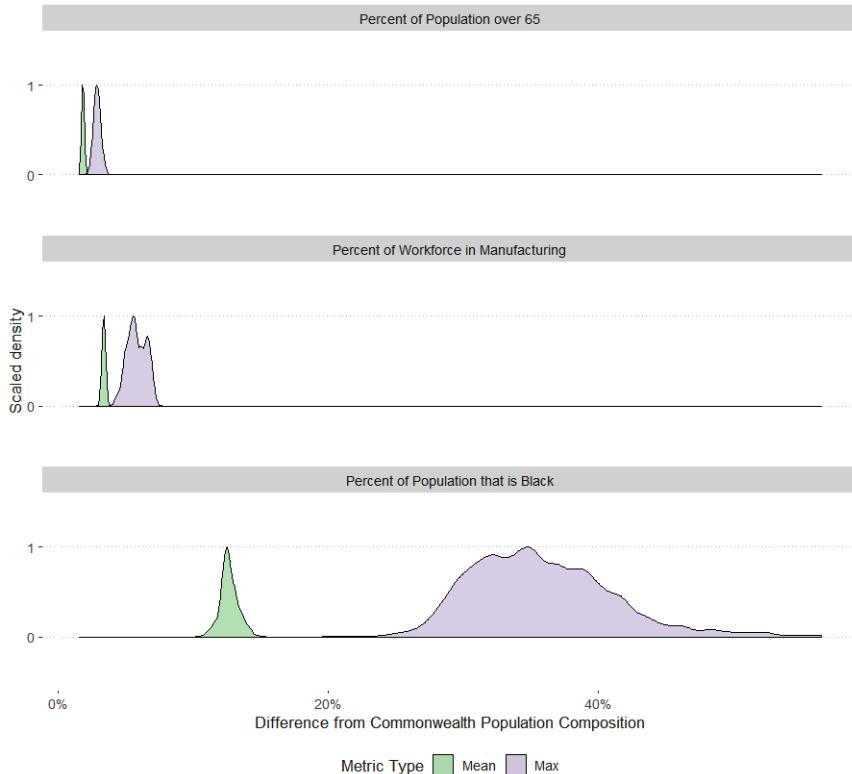


Figure 1: For Pennsylvania's 18 Congressional districts, it is far easier to control the composition of the Black population than it is for other socio-economic characteristics that are more evenly distributed. In these density plots, districting plans appearing farther to the right vary more from the state average on the measured variable. Likewise, a wider curve means that boundary shifts can change how evenly the variable is distributed within a plan. For the share of seniors, most plans show an average of 1–2% variation from the state average of 15.42%. In these plans the district with the maximum difference from the state is usually only about 3–4% different. Manufacturing employment varies a bit more, with an average of 3–5% and maximally different districts as high as 7–8% more or less than the State average of 11.83%. In comparison, for percent Black the average plan has a mean difference of 12–14% from the state average with maximally different districts frequently more than 40% above the state average.

In contrast, the **percent Black** variable varies widely between districts and plans. This is because the Black population is concentrated primarily in a few parts of the state. Thus, the variation of Black population between districts is itself subject to significant change depending on how districts are drawn. This contrast is illustrated by Figure 1, which shows the distribution of both mean district distance and maximum district distance from the state average for selected population measures across a set of randomly drawn plans. In applied terms, this analysis demonstrates that it is relatively difficult to draw districts that concentrate or disperse seniors or the manufacturing workforce, but relatively easy to manipulate the Black population share.

However, this analysis of manipulability has to be viewed alongside representability in the first place. Seniors make up 15.42% of Pennsylvania's population in the 2010

Census, while individuals in the manufacturing sector make up 11.83% and those identifying as Black make up a nearly identical 11.87%. It is never the case that seniors or those in the manufacturing sector can constitute the majority in a district, while random plans found up to *three* majority-Black districts out of 18.

## REPRESENTATIONAL CONSEQUENCES

The literature on districting and representation has recognized that spatially concentrated populations can be at an advantage or a disadvantage in the districting process. On one hand, concentrated populations are more easily ‘cracked’ or ‘packed’ than their dispersed counterparts, but on the other hand, dispersion makes representation impossible (Chen and Rodden 2013; Rodden 2019; Webster 2013; but see Jiahua Chen et al. 2019).

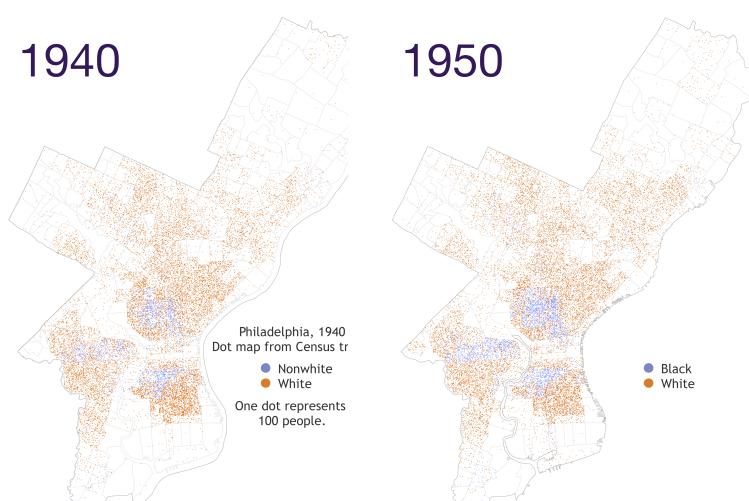
Even aside from how distribution drives representational possibilities in spatial terms alone, it may have other consequences for political representation. Concentration is closely associated with what political theorists call “descriptive representation”—electing representatives who share identity characteristics with their voting base—and some researchers have argued that district-based elections have negative consequences for dispersed minorities, but not for concentrated minorities (Bowler, Donovan, and Brockington 2003). And sociologist Robert Vargas (2016) notes other significant impacts from cracking that go beyond electoral representation. Latino communities in Chicago that were kept whole in the districting process could successfully request support from local government programs, whereas cracked communities went without.

In general, though, there is a risk that geographic concentration might be treated as a ‘natural’ situation with remedies that are outside the purview of ‘fair’ districting. This book is coming at a time when algorithmic sampling (ensemble) methods are on the rise, leveraging distributions of randomly generated plans to distinguish gerrymandering from neutral consequences of the spatial reality (Chen and Cottrell 2016; Chin, Herschlag, and Mattingly 2019; Duchin 2018; Ramachandran and Gold 2018). Finding fairness in this way risks cementing the distribution of each population as a given. However, contemporary population distributions of race, economics, and partisanship are far from natural, in the sense of indifferent or unbiased. To see this, let’s consider a few of the historical factors leading to segregation and concentration, and investigate the ways that this has been and still is associated with significant costs to certain segregated communities. For our main example, we will look at the Black population in Philadelphia, Pennsylvania.

## 10.1 LEGACIES OF SEGREGATION

Neighborhood change in Philadelphia offers a lens into the mixed legacies of segregation and mobility. In the maps below (Figure 2) we present a series of maps of population by race. The first map shows White versus non-White population in 1940, the first year that Census tract-level data were available for Philadelphia (<https://data2.nhgis.org>). It is also the closest Decennial Census to the height of redlining. Historical sources—including redlining maps themselves—suggest that many, though far from all, people, in the “non-White” category in Philadelphia were Black. After this, the maps show relative Black and White populations for each Decennial Census. It is important to note here that the maps are all by Census tract. Tract boundaries are shown, and the maps should not be used to make inferences about segregation at the sub-tract level. Also, except for the first map, the series only shows Black and White populations, and does not include people of more than one race.

The maps thus offer only a limited set of snapshots. What these maps do show, however, is that Philadelphia has grown both more integrated and more segregated in the last eighty years. Major Black populations North, South, and West of downtown have indeed been present from 1940 to 2010. However, the more precise locations of some of these groups has varied. For example, the area west of downtown has long been considered West Philadelphia, an historically Black, working class neighborhood. The Easternmost part is where the University of Pennsylvania is located, and the University’s presence has, especially more recently, caused gentrification and pushed Black communities further west. On an only somewhat similar note, Black populations have indeed been mobile, finding residence in more areas of the city. This is perhaps especially obvious starting in 1970, but overall the maps suggest that the problematic constraints of redlining and racial covenants had lingering effects, but that Black people were able to overcome some of them in terms of finding more places in the city to establish communities. A final point worth making is in terms of integration. Philadelphia is far from fully integrated, but some integration between Black and White people is present.



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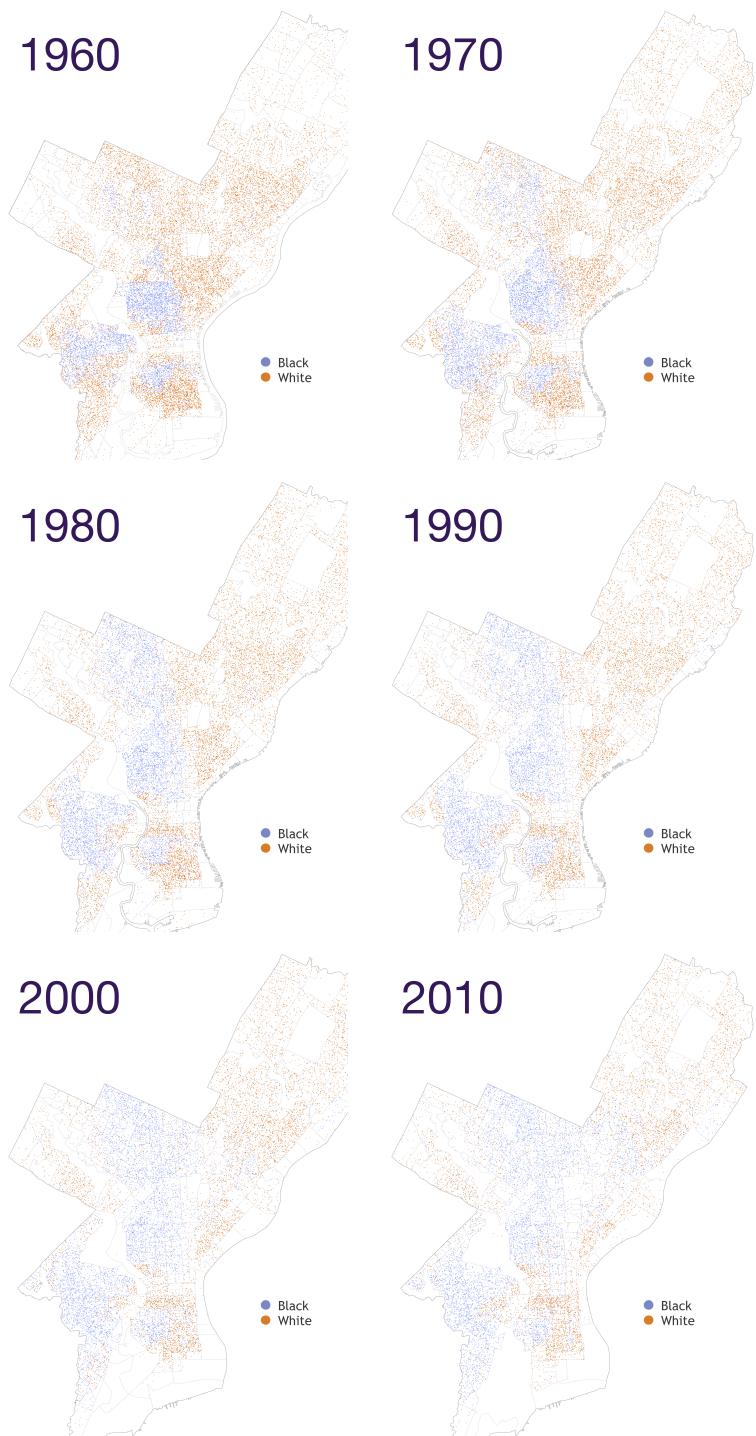


Figure 2: A history of integration and segregation in Philadelphia

## 2.2 MIGRATION AND STATE-SPONSORED SEGREGATION

An extensive body of literature has documented the ways that state actions and policies have constrained where members of minoritized groups can reside (Massey and Denton 1993; Wilson 1987). In Detroit (Thomas and Bekkering 2015), Chicago (Sampson 2012), Los Angeles (Davis 1992), and many other cities, the segregation and concentration of Black residents can be traced at least in part to the combined effects of state racism.<sup>1</sup> Individuals, agencies, and jurisdictions may 1) *create* laws that have intentionally disparate impacts on Black communities; 2) *interpret* the law in a way that marginalizes Black people; or 3) *enforce* the law selectively so that Black disadvantages are exacerbated. This section details selected policies that led to segregation patterns in Philadelphia.

The majority of Pennsylvania's Black population is concentrated in the Philadelphia metropolitan area (nearly two-thirds, according to the 2010 Census), though significant Black populations can be found in other cities like Pittsburgh and Harrisburg. Black people streamed to Philadelphia at the turn of the 20th century because of job opportunities and the presence of an established Black community dating back many years (Smucker and Hardy n.d.). Anthropologist Isabel Wilkerson has documented the acceleration of this pattern in the period known as the Great Migration, beginning around the time of the first World War, drawing people especially from the southeast states of Florida, Georgia, South Carolina, North Carolina, and Virginia (Wilkerson 2011). The growth in Philadelphia's longstanding Black community became a draw for other Black people around the country, resulting in what is known as linked migration. Once they arrived in Philadelphia, however, Black residents faced severe restrictions on their living choices, ranging from extreme income inequality to overtly racist practices in the housing market (Santucci 2019).

The situation of Black communities is very different than that of most European migrant groups, which were initially concentrated and exposed to significant constraints in housing choice in Philadelphia, but ultimately fully dispersed in the city (Pais, South, and Crowder 2012). The reasons for this difference are numerous. I address two of them here: restrictive racial covenants and redlining.

### RESTRICTIVE COVENANTS

In response to the early migration waves, Northern cities and states rushed to enact laws designating restricted zones for Black residents, until the Supreme Court disallowed municipal racial zoning (Buchanan v. Warley, 1917). Once cities were barred from explicit racial zoning, authorities turned to individual contracts to do the same work.

<sup>1</sup> Following Kendi (2019:24), I understand racism to mean “the marriage of racist policies and racist ideas that produces and normalizes racial inequalities.” Crucially for my purposes here with regard to districting, this includes not only overt beliefs in racial superiority but also ostensibly race-blind policies that allow established racial inequalities to persist uncontested.

*Racial covenants* significantly constrained where Black Philadelphians could live in the first part of the 20th century. Often drafted by property developers, racial covenants were statements in legal deeds that prevented homeowners from selling their property to non-White buyers (Figure 3). Recent work by Santucci and the Federal Reserve Bank of Philadelphia has assembled extensive documentation of this practice in Philadelphia specifically (Santucci 2019). These racial covenants were most prevalent in middle-income neighborhoods, which would have been the first step for Black families looking to move out of high-poverty neighborhoods (Santucci 2019, 3). In 1948, the U.S. Supreme Court heard the case of *Shelley v. Kraemer* and ruled racial covenants unconstitutional on 14th Amendment grounds. This put racial covenants in a legal gray area for decades: unenforceable, but still widespread and powerful. The practice was not conclusively ended until the Fair Housing Act in the 1968 Civil Rights Act (Brooks and Rose 2013; Santucci 2019, 10).

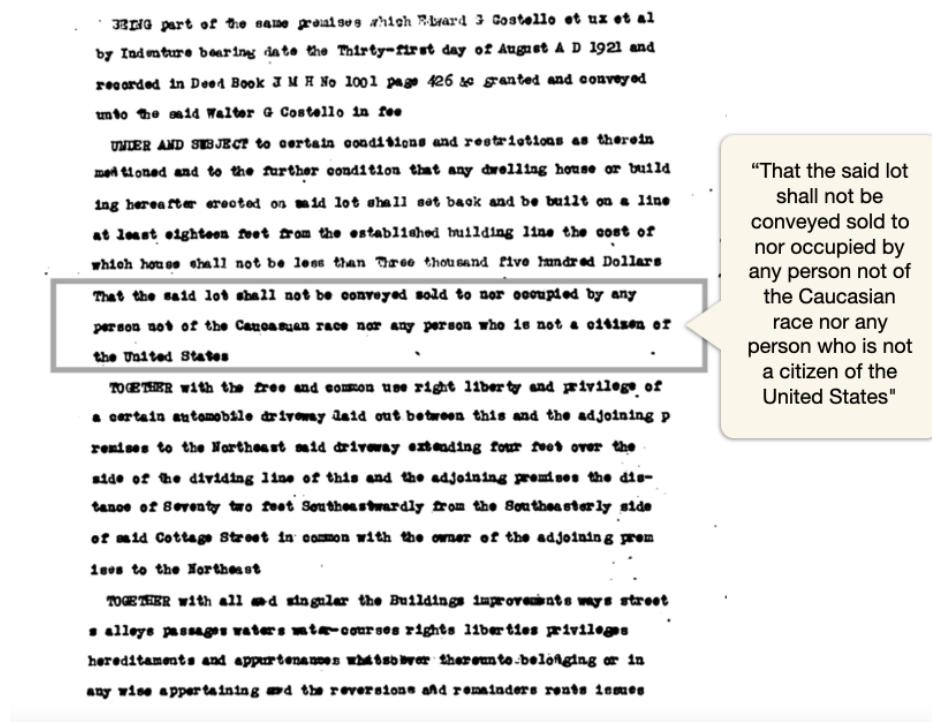


Figure 3: Racially restrictive covenant forbidding sale to "any person not of the Caucasian race nor any person who is not a citizen of the United States." Philadelphia 1927 Source: Santucci 2019 and Philadelphia Department of Records.

Legal restrictions on home sales expressly blocked the Black community from dispersing in this and other cities. These practices were implicated in the exclusion of Black families from affluent neighborhoods in ways that constrained their access to jobs, education, and opportunity.

## REDLINING

Another institutional mechanism dictating the locations of Black communities was *redlining*, which was at its peak in the 1930s. In brief, redlining was the practice of designating zones for mortgages and other home loans, and it entwined federal agencies, state and municipal planners, and banks in a system that locked in patterns of segregation and economic stratification. Areas designated as high risk—disproportionately made up of immigrant and Black communities—were often marked in red, leading to the term ‘redlining.’ For example, Amy Hillier (2003, 2005) has written extensively on the ways in which the Federal Home Owners Loan Corporation (HOLC) drew maps partitioning Philadelphia based on race. HOLC maps determined where federally backed mortgages would be available and where they would be withheld. Private mortgage lenders generally followed the HOLC’s guidance in this regard, such that mortgages were extremely hard to access in places receiving the lowest HOLC rating: ‘fourth grade’ or ‘high risk.’ HOLC assessors were explicit in their reasoning for identifying some neighborhoods as ‘fourth grade,’ frequently citing the presence of Black communities (but also Jewish, Italian, and Irish people). A 1937 HOLC map for Philadelphia is shown in Figure 4.

The high-risk designation constrained Black people’s access to mortgage capital, which limited Black homeowners’ capacity to upgrade their properties and decreased the desirability of these properties for new homebuyers (who could access credit for purchases in other parts of the city). Thus, redlining led to slow or negative growth in home values and held back wealth accumulation in Black neighborhoods. Even as policies like the Fair Housing Act eliminated legal and formal constraints on where Black Philadelphians could locate, the wealth disparities resulting from earlier policies and practices further entrenched barriers to movement because of the capital needed to afford homes elsewhere. Sociologist Rachel Woldoff (Woldoff 2011; Woldoff and Ovadia 2009) documents the long-term compounding of this wealth handicap for Black homeowners into the present day, noting how middle-class Black households have continually worked to “buy up” into more affluent neighborhoods, only to have those neighborhoods decline in value around them. This cycle leaves these families underwater on mortgages and thus with less capital to pass on to each successive generation than equivalent White households would gain through the housing market.

Wealth disparities further entrenched barriers to movement for Black Philadelphians because of the capital needed to afford homes elsewhere. Woldoff (Woldoff 2011; Woldoff and Ovadia 2009) documents the continued relevance of this wealth constraint for Black homeowners into the present day.

These were not the only government and individual actions that limited where Black people could live in Philadelphia and the rest of the United States. For instance, post-WWII restrictions in the GI Bill kept Black veterans from accessing mortgage support available to White veterans (Woods 2013). Planning decisions, particularly around the development of the Interstate Highway System, frequently split, emptied, or placed hard borders on Black neighborhoods (Flint 2011; Hanlon 2011; Karas 2015). These same policies facilitated the exodus of White residents, increasing racial disparities further. Discussing these and other policies and actions

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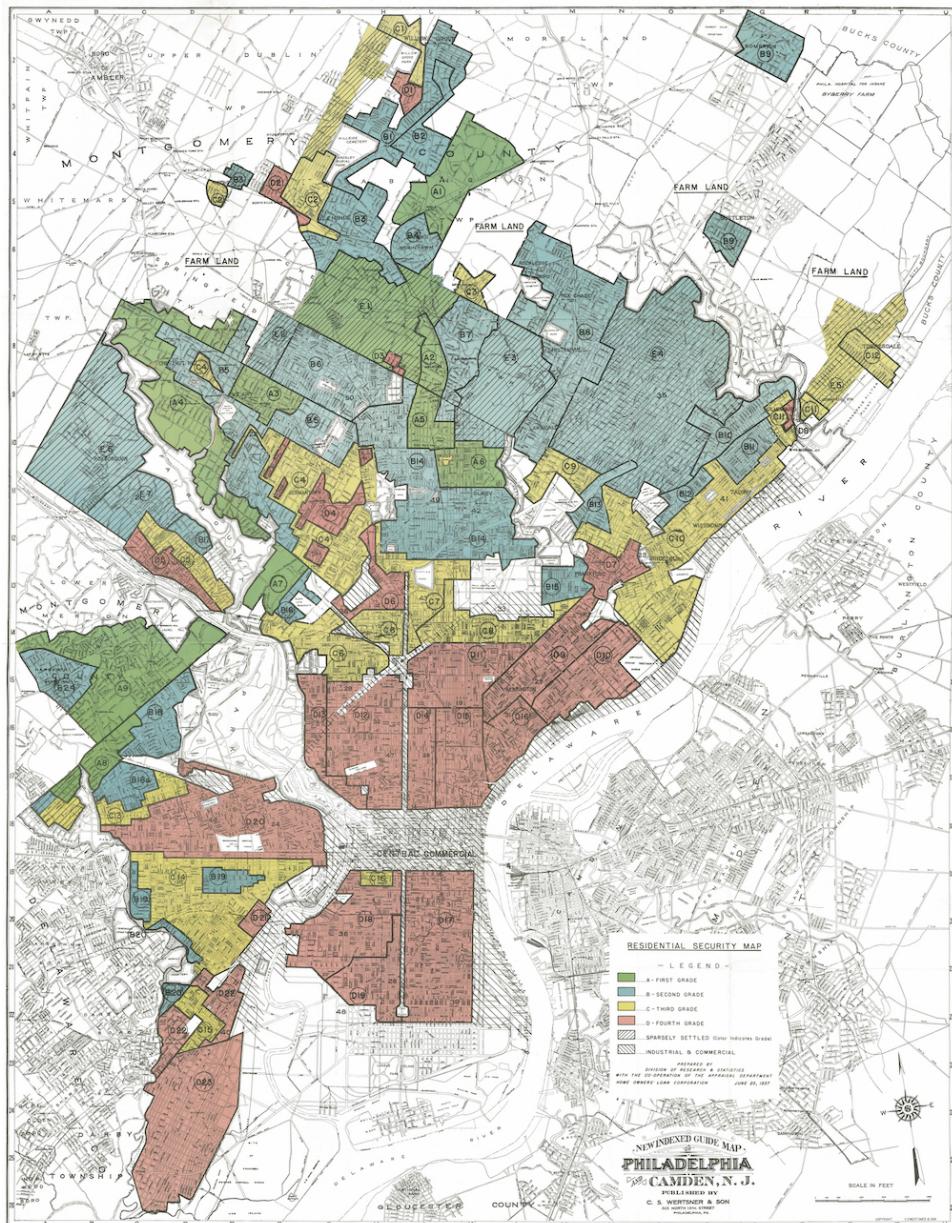


Figure 4: HOLC map for Philadelphia and Camden (Nelson et al. 2019)

in detail is beyond the scope of this chapter. The key takeaway is that the contemporary geography of race reflects many decades of layered public and private practices of exclusion.

## 2.3 DISTRICTS, SEGREGATION, AND FAIRNESS

The impact of spatial segregation has been high. In *American Apartheid*, sociologists Massey and Denton (1993) document the ways in which segregation dampens economic upturns and increases the impact of downturns for Black Americans. A broader body of literature on concentrated poverty and race has further established the significant negative consequences of segregation for political efficacy, wealth accumulation, education, and exposure to crime (Friedman, Tsao, and Chen 2013; Grengs 2007; Jargowsky 2014; Kozol 1991; Peterson, Krivo, and Browning 2006; Saporito and Sohoni 2007; Wilson 1987). More locally, Black respondents consistently report stronger preferences for living in mixed-race neighborhoods than White respondents (Bader and Krysan 2015). And research on both rental and home-buying markets indicates that minorities continue to face limits on their choices that go beyond constraints imposed by income (Ahmed and Hammarstedt 2008; Christensen and Timmins 2018; Korver-Glenn 2018).

Redistricting has a powerful tool meant to block discriminatory practices and promote electoral opportunity for racial minorities: the Voting Rights Act (VRA) of 1965. Despite the VRA—or sometimes under its cover—current districting practices continue to employ packing and cracking at the expense of Black communities (Curtis 2016). But the VRA only requires that we seek a districting plan that secures electoral opportunity; it does not tell us how to find such plans or whether they are possible.

Reformers should explore a range of remedies, both through districts and with alternative systems of election, for their effects on communities of color and other marginalized populations. Districts that are ‘fair’ to marginalized populations may fall outside the norms established by ensemble districting measures and may require careful manipulation (some would say gerrymandering) to achieve representation consistent with population share. Often, vulnerable communities that are composed of more recent immigrants or are spatially dispersed for other reasons would be better served by non-districted solutions. (see Chapter 23 and Chapter 21).

# 3 GEOGRAPHY ON MULTIPLE SCALES

Concentration is not the only population outcome that should concern parties seeking fair districting outcomes. If we take the lessons of the previous section to heart—that the spatial configuration of the population is not just a starting point for districting, but also the end point of a whole host of spatial processes that may or may not be just—then it is essential that we examine the data for other forms of spatial organization. Multiscale analysis, a set of exploratory tools for examining population distributions in space, can be an important step in this process.

### 3.1 THE MODIFIABLE AREAL UNIT PROBLEM

Population data are almost always aggregated into spatial units, such as zip codes, school districts, voting precincts, or census tracts. Spatial aggregation, or the process of making these units, turns out to be quite delicate when it comes to reporting statistics. Many common kinds of statistics are wildly sensitive to the choice of spatial subdivision. Even statistics that sound secure, such as “Percent Black” or “Democratic Vote Share in the 2016 Presidential Election,” report only limited truths about the populations in a place, because they depend heavily on whether you report by county, by tract, or by something else. This feature of spatially aggregated data is called the Modifiable Areal Unit Problem (MAUP). This concept has a long history in geography, dating back at least to Gehlke and Biehl (1934), and has served as a thread uniting different eras of geographical inquiry (Fotheringham and Wong 1991; Openshaw and Taylor 1979, 1981; Wong 2004). To give one example: geographer Elizabeth Root found that the choice of units for designating the size of “neighborhoods” was significant for determining the magnitude of effects between class and certain kinds of birth defects (Root 2011). In Root’s study, choosing one set of units could significantly mask the relationship that was unmistakable with another choice.

Geographers distinguish between two aspects of the MAUP: **scale** and **zoning**. Within the MAUP context, scale refers to the size of the units of aggregation. Sometimes a phenomenon can appear or disappear when you change the scale, as we will see below. Zoning is about the potential to change the observation by shifting the borders without necessarily changing scale. In this sense, all of gerrymandering can be considered one big zoning MAUP. Given a fixed number of electoral districts, boundary changes can produce plans with widely diverging election results, as we’ve seen. The wider the range of possible outcomes, the more zoning is an issue. For more viewpoints on MAUP, see the scale experiments in Chapter 5 and the discussion of segregation measures in Chapter 15.

### 3.2 MULTISCALE MEASURES

The population composition of an apartment building (a ‘fine’ or ‘micro’ scale) may shape the information its residents can access about job opportunities, but the composition of the labor market as a whole (a ‘broad’ or ‘macro’ scale) will also impact the likelihood that they get a job. Both contexts may be important for predicting whether an individual is employed and with what outcome. A growing body of literature within geography considers population sorting processes on multiple scales, encouraging us to look beyond a given set of observations to examine the spatial processes at work to produce them (Fowler 2016, 2018; Östh, Clark, and Malmberg 2014; Reardon et al. 2008). Each research contribution typically begins with clarifying why scale matters for the measurements at hand (in terms of health, education, political efficacy, and so on), and then goes on to argue that any analysis on a single fixed scale would fall short.

## 10.2 SCALE EFFECTS IN TWO CITIES

As a case study, we can consider two major American cities, Philadelphia and Chicago. Their non-White populations have very different demographic shares and distributions; we can consider the consequences for city council representation. The population of Philadelphia is around 12.29% Hispanic and 42.22% Black based on the 2010 Census. Chicago, on the other hand, is about 28.90% Hispanic and 32.36% Black. For this analysis, we sampled ten thousand possible city council districting plans for each city. As Chicago's city council consists of 50 members and Philadelphia's only 10, we considered both council sizes for each city. For each plan generated, we counted the number of districts with majority-Hispanic and majority-Black populations. The full results are shown in the histograms in Figure 5, and the table below records the expectations.

	Chicago	Philadelphia
Hispanic population	28.90 %	12.29 %
% Majority-Hispanic districts (out of 10)	15.37 %	.075 %
% Majority-Hispanic districts (out of 50)	22.95 %	5.395 %
Black population	32.36 %	42.22 %
% Majority-Black districts (out of 10)	28.9 %	41.28 %
% Majority-Black districts (out of 50)	28.51 %	38.45 %

One important observation we can make is that shifting to a finer scale of districting—50 districts instead of 10—boosts Hispanic representation in both cities, but actually slightly reduces the Black seat share.

For example, in research on diverse neighborhoods in Seattle, Lumley-Sapanski and Fowler (2017) found that diversity on the neighborhood scale was stable over time because of small, homogeneous communities within those neighborhoods. People interviewed for the project felt that they benefited from the ethnoracial mixing around them. Nevertheless, mixing was stable only because there were community anchors (a Hispanic community center, a Korean Baptist church) that kept very specific, ethnically homogeneous groups tied to the neighborhood. Thus, a positive contextual effect associated with (diverse) neighborhood ethnoracial composition was made possible by the opposite (homogeneous) composition on a smaller scale.

Sociospatial contexts can also have different meanings depending on the scale at which they appear in the population. Homogeneity measured on micro scales is consistent with positive effects on social capital (Merry 2013) and the reverse is also true: political scientist Robert Putnam has found evidence that in neighborhoods that score high in a certain kind of diversity, residents report fewer friends and less community cooperation (Putnam 2007). When homogeneity signifies a broadly segregated community, as when suburbs and city are segregated in a metropolitan area, the effect of the macro context may work in the opposite direction of the micro context. Significantly, both contexts may operate at the same time, with the negative effects of the macro context dampened by the positive micro effects and the positive micro effects masked by the negative macro context (Fowler 2016). An openness to processes taking place on multiple scales creates opportunities to

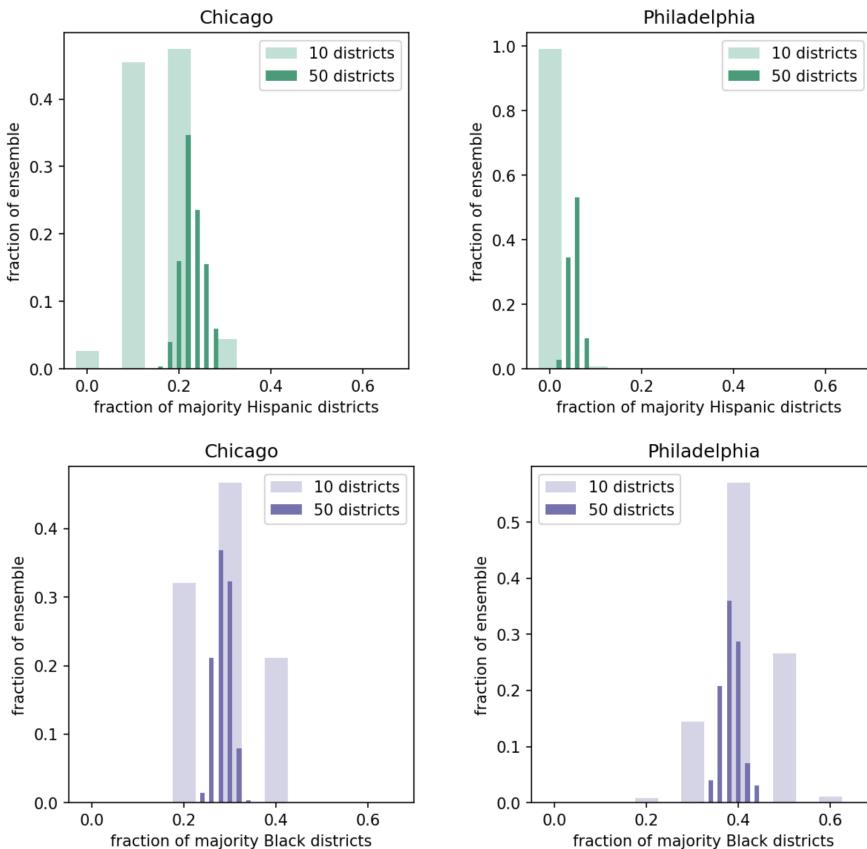


Figure 5: Sampling of city council districting plans for Chicago and Philadelphia. The choice of how many districts are in the plans being generated (10 or 50) has different implications for Black and Hispanic representation.

better understand why people are sorted as they are and how this sorting is likely to affect them. These examples suggest the enduring metaphor of a *checkerboard* configuration that looks very diverse (black and white neatly interspersed) when viewed from a certain distance, but looks completely homogeneous at both the smallest scale (zoomed in to a single square) or the largest (zoomed out to see a gray mix from far away). The analogy to neighborhood squares within a checkerboard city is one that more than a few geographers have used in their arguments about the importance of scale (Figure 6; see Morrill 1991, Wong 1993).

### 3.3 APPLICATIONS TO DISTRICTING

One area where multiscale analysis can support districting efforts is in helping to understand how communities inform the process. Through this, we can build a more comprehensive understanding of the human impact of different districting plans.

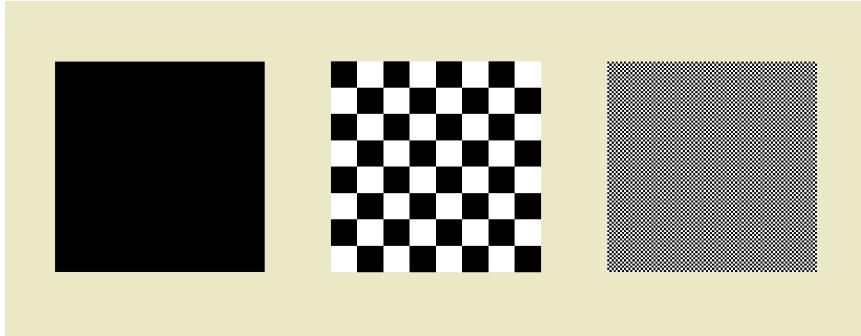


Figure 6: Zooming out from a checkerboard pattern changes the picture from homogeneous (all one color, left), to diverse (checkerboard, middle), to homogeneous again (gray blend of black and white, right).

To get an intuitive handle on this, consider that a competitive district (party affiliation mixed close to 50/50 at the district scale) where populations are clustered tightly within the district (e.g., segregation by ethnicity in neighborhoods within the district) may contain large groups with different priorities. If, on the other hand, population mixing takes place across multiple smaller scales within the district, then at least some of the key variables correlated with location are likely to be shared across party affiliation. In this context, a competitive district is more likely to function as intended, with candidates competing to represent shared interests rather than single-group interests.

A nuanced example is found in the work of Johnston and Pattie (2016), who conducted a multiscale analysis of ethnic groups in Sydney, Australia. One kind of scale they examine is not spatial but taxonomic: in their study of immigration, they break down broad categories such as “Asian” into cohorts that migrated for similar reasons and at similar times. They find that some cohorts are located all in one quadrant of the city but scattered evenly across that quadrant (micro-scale dispersal, meso-scale segregation). Other groups live in tight clusters, but those clusters are scattered across the city (micro-scale segregation, macro-scale dispersal). Their observation of these sorting patterns on different scales allowed them to better understand how different communities were shaped by changing views on race and immigration. And it would obviously carry strong implications for a districting analysis, because the ability of districts to secure representation depends on the relationship between the size of the district and the clusters of population. Furthermore, even being seen as a salient community might depend on these factors of scale and clustering. Meso-scale segregation becomes an asset in terms of making a community visible, whereas micro-scale segregation linked to macro-scale dispersal may be visible or not depending on how boundaries are drawn.

We should aspire to draw boundaries with a clearer understanding of which communities are being contained and which communities are being broken up by proposed boundaries. Garrett Nelson will take this up in the next chapter.

## 4 CONCLUDING THOUGHTS: PAY ATTENTION TO RACE

Districting and gerrymandering are fundamentally geographic problems because of their conjoining of spatial and social processes. Districting begins from the assumption that how we draw boundaries matters. This chapter has highlighted the uneven spatial processes that drive observed population distributions. This can help to see communities on different scales, identify shared versus conflicting interests in populations, and determine which groups it might be especially important to keep intact in a district. Overall, this can help us to reason about the best way to meet the fundamental goal of providing voters with good and fair representation.

A geographer's perspective on districting compels us to examine not only how our boundaries are drawn, but also who is made visible by our choices and what led to the configurations we observe. Race has played an outsized role in shaping America's human geography. Fair districting must therefore be attentive to the multiple landscapes of race.

## REFERENCES

- Ahmed, Ali M., and Mats Hammarstedt. 2008. "Discrimination in the Rental Housing Market: A Field Experiment on the Internet." *Journal of Urban Economics* 64(2): 362–72.
- Bader, M. D. M., and M. Krysan. 2015. "Community Attraction and Avoidance in Chicago: What's Race Got to Do with It?" *The Annals of the American Academy of Political and Social Science* 660(1): 261–81. <http://ann.sagepub.com/cgi/doi/10.1177/0002716215577615> (18 June 2015).
- Bowler, Shaun, Todd Donovan, and David Brockington. 2003. *Electoral Reform and Minority Representation: Local Experiments with Alternative Elections*. Ohio State University Press.
- Brooks, Richard R.W., and Carol M. Rose. 2013. "Saving the Neighborhood: Racially Restrictive Covenants," Law, and Social Norms." 19.
- Chen, Jiahua et al. 2019. "Minority Voter Distributions and Partisan Gerrymandering." <http://arxiv.org/abs/1911.09792>
- Chen, Jowei, and David Cottrell. 2016. "Evaluating Partisan Gains from Congressional Gerrymandering: Using Computer Simulations to Estimate the Effect of Gerrymandering in the US House." *Electoral Studies* 44: 329–40.
- Chen, Jowei, and Jonathan Rodden. 2013. "Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures." *Quarterly Journal of Political Science* 8(3): 239–69.

- Chin, Andrew, Gregory Herschlag, and Jonathan Mattingly. 2019. "The Signature of Gerrymandering in *Rucho v. Common Cause*." *South Carolina Law Review* 70(4).
- Christensen, Peter, and Christopher Timmins. 2018. *Sorting or Steering: Experimental Evidence on the Economic Effects of Housing Discrimination*. National Bureau of Economic Research.
- Curtis, Michael Kent. 2016. "Using the Voting Rights Act to Discriminate: North Carolina's Use of Racial Gerrymanders, Two Racial Quotas, Safe Harbors, Shields, and Inoculations to Undermine Multiracial Coalitions and Black Political Power." *Wake Forest Law Review* 51: 421.
- Davis, Mike. 1992. "City of Quartz: Excavating the Future in Los Angeles. 1990." New York: Vintage.
- Duchin, Moon. 2018. "Gerrymandering Metrics: How to Measure? What's the Baseline?" arXiv preprint arXiv:1801.02064 .
- Flint, Anthony. 2011. *Wrestling with Moses: How Jane Jacobs Took on New York's Master Builder and Transformed the American City* . Random House Trade Paperbacks.
- Fotheringham, A. Stewart, and David W.S. Wong. 1991. "The Modifiable Areal Unit Problem in Multivariate Statistical Analysis." *Environment and planning A* 23(7): 1025–44.
- Fowler, Christopher S. 2016. "Segregation as a Multi-Scalar Phenomenon and Its Implications for Neighborhood-Scale Research: –2010." *Urban Geography* 37(1).
- Fowler, Christopher S. 2018. "Key Assumptions in Multiscale Segregation Measures: How Zoning and Strength of Spatial Association Condition Outcomes." *Environment and Planning B: Urban Analytics and City Science* 45(6): 1055–72. <http://journals.sagepub.com/doi/10.1177/2399808318760570>
- Friedman, Samantha, Hui shien Tsao, and Cheng Chen. 2013. "Housing Tenure and Residential Segregation in Metropolitan America." *Demography* 50(4).
- Gehlke, Charles E, and Katherine Biehl. 1934. "Certain Effects of Grouping upon the Size of the Correlation Coefficient in Census Tract Material." *Journal of the American Statistical Association* 29(185): 169–70. <http://amstat.tandfonline.com/doi/pdf/10.1080/01621459.1934.10506247> (20 July 2017).
- Grengs, Joe. 2007. "Reevaluating Poverty Concentration With Spatial Analysis: Detroit in the 1990s." *Urban Geography* 28(4): 340–60. <http://www.tandfonline.com/doi/abs/10.2747/0272-3638.28.4.340> (12 June 2017).
- Hanlon, James. 2011. "Unsightly Urban Menaces and the Rescaling of Residential Segregation in the United States." *Journal of Urban History* 37(5): 732–56.
- Hillier, Amy E. 2003. "Who Received Loans? Home Owners' Loan Corporation Lending and Discrimination in Philadelphia in the 1930s." *Journal of Planning History* 2(1): 3–24. <http://journals.sagepub.com/doi/10.1177/1538513202239694> (6 December 2019).

- \_\_\_\_\_. 2005. "Residential Security Maps and Neighborhood Appraisals." *Social Science History* 29(2): 207–33. [https://www.cambridge.org/core/product/identifier/S014555320001292X/type/journal\\_article](https://www.cambridge.org/core/product/identifier/S014555320001292X/type/journal_article) (6 December 2019).
- Jargowsky, Paul A. 2014. "Segregation, Neighborhoods, and Schools." In *Choosing Homes, Choosing Schools Choosing Homes, Choosing Schools*, eds. A. Lareau and K.A. Goyette. New York: Russell Sage Foundation, 97–136.
- Johnston, Ron J., and Charles Pattie. 2006. *Putting Voters in Their Place*. Oxford: Oxford University Press.
- Karas, David. 2015. "Highway to Inequity: The Disparate Impact of the Interstate Highway System on Poor and Minority Communities in American Cities." *New Visions for Public Affairs* 7: 9–21.
- Kendi, Ibram X. 2019. *How to be an Antiracist*. New York: One World.
- Korver-Glenn, Elizabeth. 2018. "Compounding Inequalities: How Racial Stereotypes and Discrimination Accumulate across the Stages of Housing Exchange." *American Sociological Review* 83(4): 627–56.
- Kozol, Jonathan. 1991. *Savage Inequalities: Children in America's Schools*. New York: Crown.
- Lumley-Sapanski, Audrey, and Christopher S. Fowler. 2017. "'Planning Dissonance' and the Bases for Stably Diverse Neighborhoods: The Case of South Seattle." *City & Community* 16(1): 86–115. <http://doi.wiley.com/10.1111/cico.12224>
- Massey, Douglas S., and Nancy A. Denton. 1993. *American Apartheid*. Cambridge, Massachusetts: Harvard University Press.
- Merry, Michael S. 2013. *Equality, Citizenship, and Segregation: A Defense of Separation*. New York: Palgrave Macmillan. (29 September 2016).
- Morrill, Richard L. (1991). On the measure of geographic segregation. In *Geography research forum* (Vol. 11, No. 1, pp. 25–36).
- Nelson, Robert K., LaDale Winling, Richard Marciano, and Nathan Connolly. 2019. "Mapping Inequality." In *American Panorama*, eds. Robert K. Nelson and Edward L. Ayers. <https://s3.amazonaws.com/holc/tiles/PA/Philadelphia/1937/holc-scan.jpg>
- Openshaw, Stan, and Peter J. Taylor. 1979. "A Million or so Correlation Coefficients: Three Experiments on the Modifiable Areal Unit Problem." In *Statistical Applications in the Spatial Sciences*, ed. Neil Wrigley. London: Pion, 127–44.
- \_\_\_\_\_. 1981. "The Modifiable Areal Unit Problem." In *Quantitative Geography: A British View*, eds. Neil Wrigley and Robert John Bennett. London: Routledge, 60–69.
- Östh, John, William A. V. Clark, and Bo Malmberg. 2014. "Measuring the Scale of Segregation Using k-Nearest Neighbor Aggregates." *Geographical Analysis* 47(1): 34–49. <http://doi.wiley.com/10.1111/gean.12053> (1 October 2014).

- Pais, Jeremy, Scott J. South, and Kyle Crowder. 2012. "Metropolitan Heterogeneity and Minority Neighborhood Attainment: Spatial Assimilation or Place Stratification?" *Social Problems* 59(2): 258–81.
- Peterson, Ruth D., Lauren J. Krivo, and Christopher R. Browning. 2006. "Segregation and Race/Ethnic Inequality in Crime: New Directions." In *Taking Stock: The Status of Criminological Theory*, eds. F. T. Cullen, J. P. Wright, and K. R. Blevins. New Brunswick: Transaction, 169–90. (14 May 2014).
- Putnam, Robert D. 2007. "E Pluribus Unum: Diversity and Community in the Twenty-First Century." *Scandinavian Political Studies* 30(2): 137–74.
- Ramachandran, Gowri, and Dara Gold. 2018. "Using Outlier Analysis to Detect Partisan Gerrymanders: A Survey of Current Approaches and Future Directions." *Election Law Journal: Rules, Politics, and Policy* 17(4): 286–301.
- Reardon, Sean F. et al. 2008. "The Geographic Scale of Metropolitan Racial Segregation." *Demography* 45(3): 489–514.
- Rodden, Jonathan. 2019. *Why Cities Lose: The Deep Roots of the Urban-Rural Political Divide*. New York: Basic Books.
- Sampson, Robert J. 2012. *Great American City: Chicago and the Enduring Neighborhood Effect*. Chicago: University of Chicago Press.
- Santucci, Larry. 2019. How Prevalent Were Racially Restrictive Covenants in 20th Century Philadelphia? A New Spatial Data Set Provides Answers. FRB of Philadelphia Payment Cards Center Discussion Paper. <https://perma.cc/64B7-G3R8>
- Saporito, Salvatore, and D. Sohoni. 2007. "Mapping Educational Inequality: Concentrations of Poverty among Poor and Minority Students in Public Schools." *Social Forces* 85(3): 1227–53. (29 December 2018).
- Smucker, Janneken, and Charles Hardy. "Goin' North." <http://goinnorth.org/about>
- Thomas, June Manning, and Hans Bekkering. 2015. *Mapping Detroit: Land, Community, and Shaping a City*. Detroit: Wayne State University Press.
- U.S. Census Bureau. 2010. "Decennial Census of the Population." <https://factfinder.census.gov> (12 December 2019).
- U.S. Supreme Court. 1948. *Shelley v. Kraemer*.
- Vargas, Robert. 2016. *Wounded City: Violent Turf Wars in a Chicago Barrio*. New York: Oxford University Press. (5 December 2019).
- Webster, Gerald R. 2013. "Reflections on Current Criteria to Evaluate Redistricting Plans." *Political Geography* 32: 3–14. <https://linkinghub.elsevier.com/retrieve/pii/S0962629812001151>
- Wilkerson, Isabel. 2011. *The Warmth of Other Suns: The Epic Story of America's Great Migration*. Vintage.
- Wilson, William Julius. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press.

- Woldoff, RA, and S. Ovadia. 2009. "Not Getting Their Money's Worth: African-American Disadvantages in Converting Income, Wealth, and Education into Residential Quality." *Urban Affairs Review*. (11 March 2013).
- Woldoff, Rachael A. 2011. *White Flight/Black Flight: The Dynamics of Racial Change in an American Neighborhood*. Ithaca: Cornell University Press.
- Wong, D.W., 1993. Spatial indices of segregation. *Urban studies*, 30(3), pp.559-572.
- Wong, D.W.S. 2004. "The Modifiable Areal Unit Problem (MAUP)." *Worldminds: Geographical Perspectives on 100 Problems*. [http://link.springer.com/chapter/10.1007/978-1-4020-2352-1\\_93](http://link.springer.com/chapter/10.1007/978-1-4020-2352-1_93) (2 February 2017).
- Woods, Louis Lee. 2013. "Almost 'No Negro Veteran... Could Get A Loan': African Americans, the GI Bill, and the NAACP Campaign against Residential Segregation, 1917–1960." *Journal of African American History* 98(3): 392–417.