



**California Center for Population Research**  
**University of California - Los Angeles**

# **Racial Residential Segregation in American Cities**

Leah Platt Boustan

**PWP-CCPR-2016-024**

**February 22, 2016**

*California Center for Population Research  
On-Line Working Paper Series*

RACIAL RESIDENTIAL SEGREGATION IN AMERICAN CITIES

Leah Platt Boustan

## **ABSTRACT**

This chapter examines the causes and consequences of black-white residential segregation in the United States. Segregation can arise through black self-segregation, collective action to exclude blacks from white neighborhoods, or individual mobility of white households. Historically, whites used racially restrictive covenants and violence to exclude blacks from white areas. More recently, white departures from integrated neighborhoods is a more important factor. Many studies find that blacks who live in segregated metropolitan areas have lower educational attainment and lower earnings than their counterparts in more integrated areas. This difference appears to reflect the causal effect of segregation on economic outcomes. The association between segregated environments and minority disadvantage is driven in part by physical isolation of black neighborhoods from employment opportunities and in part by harmful social interactions within black neighborhoods, especially due to concentrated poverty. The chapter ends by reviewing potential policy solutions to residential segregation, which can be classified as place-based, people-based, or indirect solutions.

Leah Platt Boustan  
Department of Economics  
8283 Bunche Hall  
UCLA  
Los Angeles, CA 90095-1477  
and NBER  
lboustan@econ.ucla.edu

# I. Introduction

This chapter examines the causes and consequences of residential segregation in U.S. metropolitan areas, with an emphasis on segregation between black and white households. In theory, residential segregation may be generated by black self-segregation, collective action to exclude blacks from white neighborhoods, or individual moves by white households away from integrated neighborhoods. The most important of these factors appears to be individual decisions of white households choosing to leave racially mixed neighborhoods. There is some evidence that, rather than being a linear function of black population share, whites rapidly leave neighborhoods after the black population reaches a certain threshold (“tipping point”). Over the past few decades, an increasing share of residential segregation has taken place between jurisdictions in a metropolitan area rather than between neighborhoods within a jurisdiction. White households appear to avoid not only integrated neighborhoods but also racially mixed school districts or municipalities. Historically, whites used racially restrictive covenants and violence to exclude blacks from white areas. While many studies suggest that blacks continue to face subtle discrimination by real estate agents and in access to mortgage finance, the degree of this differential treatment has declined substantially over time.

Understanding the causes of residential segregation is particularly important if segregation has negative social or economic consequences, either for the residents of minority enclaves or for society as a whole. Many studies have found that blacks who live in segregated metropolitan areas have lower educational attainment and lower earnings than their counterparts in more integrated areas. This difference appears to reflect the causal effect of segregation on economic outcomes and not simply the fact that white residents are more likely to move away from poor black neighborhoods. Isolating the mechanisms that generate the association between segregated environments and minority disadvantage is an important input into effective public policy. The two most prominent explanations are the physical isolation of black neighborhoods from employment opportunities and the harmful social interactions within black neighborhoods due to concentrated poverty.

Potential policy solutions to residential segregation can be classified as either place-based policies, people-based policies, or indirect solutions. Place-based policies focus on neighborhoods, either improving minority neighborhoods in order to attract more white residents or requiring white suburbs to add housing options affordable to lower-income blacks. People-based policies instead assist black homeowners or renters directly, through either stronger

enforcement of fair housing laws, housing vouchers, or improved access to mortgage finance. Indirect approaches target the symptoms of residential segregation rather than the root causes—for example, by improving public transportation to reduce the isolation of black neighborhoods.

## II. Measurement of Racial Residential Segregation

Residential segregation can be defined as the separation of racial groups in urban space. The most common measure of residential segregation is the dissimilarity index (DI), which summarizes the degree to which geographic subunits, such as neighborhoods, mirror the demographic balance of a larger entity like a city or a metropolitan area. The DI ranges from zero to one. For illustration, consider a city with a population that is half black and half white and that is divided into two neighborhoods. In the least segregated distribution of the population, each neighborhood would itself be half black and half white, reflecting the city average (DI = 0). In the most segregated distribution, the first neighborhood would be entirely black and the second neighborhood would be entirely white (DI = 1).<sup>1</sup> It is standard to view cities with a DI under .3 as well integrated, those with a DI value between .3 and .6 as moderately segregated, and those with values above .6 as very segregated (Massey and Denton 1993, 20).

One benefit of using the dissimilarity index is that it can be consistently constructed with available census data over long periods of time. Cutler, Glaeser, and Vigdor (1999) present segregation series for sixty large cities from 1890 to 1990.<sup>2</sup> From 1890 to 1940, as blacks first began moving to cities in large numbers, the average city-level DI increased from .49 to .68. With the expansion of black ghettos during and after World War II, segregation rose again, peaking at an average DI of .73 in 1970. As some black households gained access to suburbs, residential segregation declined from 1970 to 1990.<sup>3</sup> By 1990, the average DI was .48 within central cities in this sample and .54 within metropolitan areas.

---

<sup>1</sup> Formally, the dissimilarity index is defined as  $\frac{1}{2} \sum_{i=1, \dots, n} |b_i - nb_i|$  where  $i$  indexes geographic subunits (here, neighborhoods),  $b_i$  is the share of all black residents in the larger unit (city) that live in subunit  $i$ , and likewise,  $nb_i$  is the share of all nonblack residents in the larger unit that live in subunit  $i$ .

<sup>2</sup> Cutler, Glaeser, and Vigdor use census tracts as their measure of neighborhoods from 1940 to 1990. In the earlier period, they rely on census wards, a less standardized unit of geography.

<sup>3</sup> For a more detailed version of this history, see Massey and Denton (1993, chap. 2).

Another benefit of the dissimilarity index is that it can be easily used to compare segregation levels across groups. Iceland and Scopilliti (2008) contrast the segregation levels of blacks, the foreign-born, and Hispanics from native-born, non-Hispanic whites in the 1990 and 2000 censuses. By this measure, blacks are the most segregated groups; in 2000, the average level of black residential dissimilarity is .67, compared with Hispanics (DI = .52) and the foreign-born (DI = .44).<sup>4</sup> Massey and Fischer (2003) construct similar indices for residential segregation of the poor from the affluent. Segregation by income level appears to be much lower than segregation by either race or ethnicity (DI = .373 in 2000). Income at a point in time may not fully reflect permanent lifetime income, particularly because of predictable increases in income with labor market experience. Therefore, neighborhoods that appear to be integrated by class may simply contain households of the same class at different stages in the life cycle.

Fischer et al. (2004) decompose national segregation trends into changes in segregation between metropolitan areas, between central cities and suburbs, between towns in the suburban ring, and finally between neighborhoods in the same jurisdiction.<sup>5</sup> Nationwide, the degree of black-white residential segregation fell by 32 percent from 1960 to 2000. Most of this decline can be attributed to falling segregation between neighborhoods *within* jurisdictions; the neighborhood component of total segregation declined by 60 percent. At the same time, segregation between cities and suburbs and between towns in the suburban ring increased. Fischer et al. concluded that segregation is now being reinforced by “[political] institutions—tax authorities, zoning districts, school precincts and the like—that make town lines attractive to moves and barriers to integration” (53).

The growing use of digital mapping software and the release of detailed, block-level data from the 2000 census have allowed scholars to investigate segregation at the subneighborhood level. In earlier work, the smallest unit of geography into which cities and towns could be divided was the census tract, a somewhat arbitrary area with roughly 4,000 residents intended to approximate a neighborhood. These tract-based indices were, for the most part, *aspatial* in the

---

<sup>4</sup> Note that the dissimilarity measures reported in Iceland and Scopilliti (2008) and Cutler, Glaeser, and Vigdor (1999) do not match because of differences in the sample of metropolitan areas under consideration and because of differences in the comparison group (native-born, non-Hispanic whites versus all nonblacks).

<sup>5</sup> Fischer et al. measure segregation using the Theil index, which, unlike the dissimilarity index, can be fully decomposed into its component parts.

sense that they did not distinguish between cities in which ten majority-black neighborhoods were clustered together and cities in which the same ten neighborhoods were scattered throughout the landscape.

With access to this detailed geographic data, a number of recent papers propose segregation indices in which the household, rather than the neighborhood, is taken as the unit of analysis. Reardon et al. (2008), for example, propose the spatial information theory index, which measures segregation in a series of concentric circles around a household and then aggregates these measures to the city level.<sup>6</sup> As the circles grow, cities with scattered pockets of black residence (like Providence, Rhode Island) look increasingly integrated whereas cities with concentrated black belts (like Los Angeles) do not.

Regardless of their level of geographic detail, segregation indices, by their very nature, measure the spatial distribution of groups *at a point in time*. A related interest is the dynamic process by which neighborhoods shift from all-white to all-black or from a single race area to an integrated area over time. Ellen (1999) classifies the most common forms of neighborhood transition experienced from 1970 to 1990. The share of the white metropolitan population living in a neighborhood that was less than 1 percent black fell from 63 percent in 1970 to 36 percent in 1990, suggesting that a larger number of white neighborhoods are now open to nominal amounts of integration. Likewise, over this period, the share of the white metropolitan population living in integrated neighborhoods (10 to 50 percent black) increased from 10 to 15 percent of the metropolitan total. However, Ellen finds that integrated neighborhoods are less stable than single-race areas. Seventy-six percent of neighborhoods that were integrated in 1970 remained integrated by 1980, and only 56 percent of the original group were still integrated by 1990. Contrast these rates of persistence with the fact that more than 80 percent of the majority-white or majority-black neighborhoods remained in their original category from 1970 to 1990.

Developing accurate measures of segregation is a necessary first step in assessing the causes of residential separation between groups and the social and economic consequences of these divisions. The next section turns to the literature on the processes that generate racial divisions in the housing market.

---

<sup>6</sup> See also Wu and Sui (2001); Jargowsky and Kim (2005); and Echenique and Fryer (2007).

### III. Causes of Racial Residential Segregation

In U.S. metropolitan areas, whites and blacks tend to live both in different jurisdictions and in different neighborhoods within jurisdictions. Cutler, Glaeser, and Vigdor (1999) provide a useful typology of the possible causes of racial residential segregation. First, blacks may prefer to live near other blacks, either because they enjoy the company of black friends and neighbors or because they share common preferences for local amenities, such as community centers or neighborhood restaurants. This self-segregation hypothesis is a racial variant of the “ethnic enclave” explanation for the segregation of new immigrants. Second, whites may use “collective action” (via legal or extralegal means) to exclude blacks from white neighborhoods. Historically, these tactics have included racially restrictive covenants on property and explicit violence against black neighbors. Some scholars argue that blacks still face systematic, albeit more subtle, discrimination by realtors, landlords, and financial institutions. Finally, residential segregation can arise even without coordinated attempts to exclude black households from white neighborhoods. If a sufficient number of whites leave areas as they become racially diverse, these individual actions can have a large effect on racial residential patterns. I will review the literature on the causes of residential segregation by considering each of these explanations in turn.

#### *Black Self-Segregation*

Residential segregation may arise simply because black households prefer to live in majority-black neighborhoods. One way to examine this hypothesis is to ask black households directly about their neighborhood preferences. The Multi-City Study on Urban Inequality, a survey conducted in Atlanta, Detroit, and Los Angeles in the mid-1970s and early 1990s, asked respondents to rank five stylized neighborhoods ranging from all-white to all-black. Thernstrom and Thernstrom (1997) report that the share of black respondents who ranked a majority-black neighborhood as either their first or second most preferred neighborhood *increased* over time from 68 percent to 82 percent, despite the passage of civil rights legislation and the decline in overt white racism. From this evidence, the Thernstroms conclude that any remaining segregation must be driven by black preferences for own-race neighbors and therefore should not be a matter of policy concern.

Krysan and Farley (2002) and Ihlanfeldt and Scafidi (2002) reinterpret the evidence from the Multi-City Study and find that, while some blacks prefer to live in majority-black neighborhoods, the role of self-segregation in explaining aggregate segregation patterns is quite small. First, when ranking neighborhoods, black respondents are most likely to select the integrated neighborhood (50 percent black and 50 percent white) as their first choice. Second, when asked open-ended questions about why they would avoid white neighborhoods, many blacks cite fear of white hostility and concerns about being ignored, harassed, or patronized by their neighbors, rather than a preference for living near other black households. Finally, the average black respondent reports a neighborhood preference that is more integrated than his or her *actual* residential locations, suggesting that blacks are unable—rather than unwilling—to move into white neighborhoods.

Recent work by Waldfogel (2008) explores a related cause of black self-segregation: shared preferences for “local private goods” such as retail shops and restaurants. If blacks and whites have sufficiently different tastes for local consumer goods, businesses that cater to a black clientele will be found only in black neighborhoods—a phenomenon that Waldfogel calls “preference externalities.” With sufficiently high fixed costs, firms will locate only in areas that contain a large enough consumer base to generate a profit. The resulting concentration of black-oriented retail in black neighborhoods will, in turn, prompt more black households to locate in the area, generating a self-reinforcing, segregated equilibrium. Waldfogel uses fast-food chains as a case study. He demonstrates that blacks prefer fried chicken, while whites prefer pizza. Not surprisingly, there are more fried chicken outlets in black neighborhoods than in white neighborhoods. While evidence of “preference externalities” is clearly present in the data, it is not apparent from this study whether such externalities are a large enough force to explain much of the contemporary segregation patterns.

### *White Collective Action*

Another potential cause of racial residential segregation is the organized efforts on the part of white homeowners or businesses to exclude black households from white areas. As legislation and social norms have changed over time, the nature of these efforts has evolved, from outright refusal to rent or sell to black households to more subtle steering of black clients toward black neighborhoods.

In the early twentieth century, property owners could enter legally enforceable contracts, known as racially restrictive covenants, that prohibited the sale, rental, or occupancy of the specified property by members of various groups (races, religions, etc.). These covenants were invalidated by the Supreme Court in the 1948 *Shelley v. Kramer* decision.<sup>7</sup> However, until the passage of the 1968 Fair Housing Act, owners could still refuse to sell or rent their property to black households on an individual basis. Sugrue (1996) argues persuasively that neighborhood associations served as substitutes for the legal arrangements embodied in formal racial covenants. He documents that more than 200 such neighborhood groups were founded in Detroit in the 1940s and 1950s.

The legal environment in which prospective home buyers operated changed in the late 1960s with the passage of the federal Fair Housing Act of 1968 and the Equal Credit Opportunity Act of 1974. Together, these pieces of legislation forbade home owners and landlords from taking race into account when selling or renting property and disallowed mortgage brokers from denying home loans due to the race of the borrower or the racial composition of the neighborhood. It is hard to directly assess the effectiveness of these federal laws because so many other aspects of the political and social environment were changing in the late 1960s. Collins (2004) instead analyzes twenty-two similar provisions passed at the state level before 1968. He finds no evidence that states with strong fair housing laws experienced faster growth in black homeownership or in the quality of the black-owned or black-rented housing stock, perhaps because these laws suffered from weak enforcement.

Many scholars argue that prospective black buyers and renters continue to face discrimination in the housing market even after the passage of the Fair Housing Act. Audit studies are the most direct method used to uncover such discrimination. In these studies, black and white auditors, posing as prospective renters, approach real estate agents. The auditors follow a rehearsed script and are coached to present themselves in an identical manner. One such ongoing experiment is the Housing Discrimination Study (see Yinger 1986; Ondrich, Stricker, and Yinger 1999). Ondrich and colleagues consider 781 auditor pairs who responded to “for

---

<sup>7</sup> Gotham (2000) reports that around 70 percent of new subdivisions in the Kansas City metropolitan area were covered by racial covenants in the 1940s and 1950s. According to Plotkin (1999), eighteen of the seventy-two neighborhoods in central-city Chicago made extensive use of these provisions. While covenants are recorded in historical deeds, the lack of a central repository has prevented scholars from assessing how common these provisions were nationwide.

rent” advertisements in twenty metropolitan areas. The authors find that black members of auditor pairs were less likely to be offered special rental incentives or to be shown the advertised (or equivalent) unit. In particular, 69 percent of white applicants in this study were shown the advertised unit compared with only 57 percent of black applicants.

Another strand of the discrimination literature analyzes data from real housing market activity. Because the Home Mortgage Disclosure Act requires that financial institutions report demographic information on mortgage applicants, the provision of mortgage loans has become the most common transaction of study. Munnell et al. (1996) compare the rejection rates of 1,200 black and Hispanic mortgage applicants and 3,300 white applicants in the Boston area. The authors find that, in the raw data, 28 percent of minority applicants are rejected compared with 10 percent of white applicants. After controlling for observable characteristics, including financial variables like net wealth and credit score, the gap between black/Hispanic applicants and white applicants shrinks from 18 to 8 percentage points but is still statistically significant and large. This evidence is consistent with the presence of discrimination motivated by racist attitudes or a distaste for black borrowers or black neighborhoods (so-called taste-based discrimination; see Becker 1957). An alternative interpretation is that race is being used as a proxy for default risk and, therefore, that mortgage brokers are engaging in statistical discrimination. Berkovec et al. (1996) show that blacks are twice as likely to default on mortgage debt as are whites (9 percent vs. 4.5 percent). A statistically significant racial default gap of 1.5 percentage points remains even after controlling for a full set of financial characteristics.

### *White Individual Action*

Despite evidence of persistent discrimination in housing and mortgage markets, collective efforts to exclude black households from white neighborhoods have become less frequent and less effective over time. However, even without coordination or overt hostility, residential segregation can arise from white preferences to avoid black neighborhoods. If whites begin leaving neighborhoods that become sufficiently diverse, these small individual actions can have a large collective impact on racial residential patterns.

A substantial body of work in economics, sociology, and demography has established that white households are more likely to leave neighborhoods with a high or rising black population share. In one of the best recent examples of this literature, Ellen (1999) matches individual-level data on mobility from the American Housing Survey to characteristics of census tracts in 1980

and 1990. She finds that a 10 percentage point increase in the black population share in an area from 1980 to 1990 heightens the probability that a white household moves out of the neighborhood by 2.5 to 3.0 percentage points. This pattern holds most strongly in neighborhoods with low initial black population shares and among homeowners and households with children.

The correlation that Ellen establishes between racial diversity and white mobility may be driven by an underlying aversion among white households to black neighbors. Alternatively, neighborhoods that are otherwise in decline may simultaneously lose white households and attract black residents.<sup>8</sup> Boustan (2010) addresses this omitted variables problem by comparing metropolitan areas that received large inflows of black migration from the rural South in the decades between 1940 and 1970. She develops an instrumental variables strategy to predict changes in black population using the fact that blacks followed chain migration patterns from southern states to specific northern cities. As a result, northern cities received exogenous flows of black migrants when their traditional southern sending states underwent agricultural and economic change. Her estimates suggest that every black arrival to a city led to 2.7 white departures.

These studies of household mobility do not differentiate between a direct aversion to living near black neighbors, on the one hand, and a perceived or actual correlation between an increasing black population share and other local characteristics, such as a high crime rate, on the other. Emerson, Chai, and Yancey (2001) conduct an attitudinal survey that attempts to disentangle concerns about the racial composition of a neighborhood from fear of crime, declining property values, and falling school quality. Respondents were asked whether they would buy a house in a hypothetical neighborhood with a given racial composition in which other local attributes were allowed to vary. The authors find that the presence of Hispanic or Asian neighbors has no effect on a white respondent's willingness to buy house in a given location. However, the black population share of a neighborhood matters even when the crime rate in the area is low and school quality is high. Only 25 percent of white respondents reported that they would be willing to buy a house in a neighborhood that was 15 percent black, regardless of the other local amenities, and no white respondents were willing to buy a house in a majority-black neighborhood.

---

<sup>8</sup> Black residents may be attracted to declining neighborhoods not because of the deteriorating housing stock or diminished local public goods per se but because of the falling housing prices associated with such decline.

Economists tend to be skeptical of surveys that ask respondents to report how they would behave under hypothetical conditions. Rather than asking respondents whether or not they would move into a given house, economists think about how much a household would need to be compensated (in the form of a lower housing price) in order to live in a neighborhood with given characteristics. According to this logic, neighborhood characteristics that are associated with lower housing prices must be those that the marginal homebuyer seeks to avoid. Estimating the relationship between housing or neighborhood attributes and housing prices is referred to as *hedonic regression*.

In a recent paper, Bayer, Ferreira, and McMillan (2007) question the use of hedonic methods in this context. If white households prefer white neighbors while black households prefer black neighborhoods, each group may sort into an own-race neighborhood. As long as the housing stock in the two neighborhood types is sufficiently large to accommodate the respective populations, houses in the white neighborhood may be no more expensive than houses in the black neighborhood *even if* all white households would be willing to pay some positive (and even large) amount to avoid living in the black neighborhood. The majority of the paper by Bayer, Ferreira, and McMillan which is beyond the scope of this review, develops an estimation technique to elicit mean preferences for neighborhood attributes in a sorting equilibrium of this nature.

### *Tipping Models*

Empirical models of household mobility typically treat households' decisions to leave a neighborhood as a series of independent actions. However, the movement of one household imposes externalities on the remaining residents through the resulting change in the neighborhood racial composition. Consider a neighborhood with ten white residents, all of whom prefer to live near white neighbors (although the intensity of those preference may vary). Imagine that, following some random event, one white resident leaves the area and is replaced by a black resident. Given the new racial balance in the neighborhood, one of the remaining white residents may now prefer to move out rather than to remain in the area. If he is replaced by a black resident, another white resident may be prompted to leave the area, and so on.

This example provides a simple illustration of the now canonical Schelling model of neighborhood "tipping," so called because of the potential for rapid neighborhood transition from majority white to majority black. In his 1971 paper, Schelling demonstrates that extreme

residential segregation can arise in equilibrium even if households have only a mild preference for living near others of the same race. Tipping models are characterized by the presence of multiple equilibria: two segregated equilibria (all white or all black) and one integrated equilibrium. The integrated equilibrium is often unstable because any perturbation in the neighborhood racial composition—say, the arrival of one new black household—may be enough to push some white residents above their tolerance level and encourage them to move out. As a result, the only stable outcome ends up being complete segregation.

While the concept of a neighborhood tipping point is both theoretically compelling and consistent with anecdotal evidence of particular neighborhoods, it is empirically challenging to demonstrate that it is a widespread phenomenon. In a recent paper, Card, Mas, and Rothstein (2008) generate a new set of predictions from the theory of neighborhood tipping. In particular, they argue that, while the white population in a neighborhood will begin to decline rapidly at the tipping point, there should be no sudden change in housing prices. Their reasoning is as follows: at the initial integrated equilibrium, both the marginal white and marginal black residents are equally willing to pay to live in the area. As the neighborhood crosses into the tipping region, the next (black) resident should be willing to pay incrementally less than the previous marginal black resident, even if white willingness to pay drops quickly. Therefore, housing prices will evolve continuously while the white population share experiences a discontinuous decline.

To test this prediction, one would need information about the existence and location of neighborhood tipping points. Card, Mas, and Rothstein devise a procedure to elicit these tipping points from housing market data, relying on the fact that the rate of white out-migration from a neighborhood, while generally rising with the black population share of an area, may accelerate at a certain point (defined as a tipping point). Card, Mas, and Rothstein establish that the white population declines rapidly at these empirically determined tipping points, while housing prices do not change.

### *School Districts and Local Public Goods*

Much of the increase in residential segregation from 1960 to 2000 took place between cities and suburbs, rather than between neighborhoods within the same jurisdiction (Fischer et al. 2004). To account for this pattern, explanations for segregation should move beyond their traditional emphasis on neighborhood interactions toward concerns about the local political economy of cities and towns. Alesina, Baqir, and Easterly (1999), for example, propose that a racially

fragmented electorate will be unable to agree on how best to spend government resources and will therefore prefer private consumption over public expenditure. They demonstrate that diverse cities allocate a smaller share of their budget to “productive” public goods, including road maintenance and sanitation.<sup>9</sup>

One aspect of local government that has undoubtedly been affected by racial diversity is public school systems, many of which were required to desegregate by race in the 1960s or 1970s. Before this period, residential segregation ensured that, even in diverse central cities, the typical white student attended a local school with predominantly white peers. Desegregation increased the exposure of white students to black peers and, in order to achieve this goal, often reassigned students to nonneighborhood schools. Parents may not have liked mixed-race classrooms and/or may have sought to avoid busing their children to school across town.

Reber (2005) documents that white enrollment declined in school districts under court order to desegregate. Rather than comparing districts that were compelled to desegregate with those that were not, groups which may differ along many different dimensions, she exploits variation in the timing of court orders. The paper shows that, in the years after the average desegregation plan was implemented, white enrollment declined by 11 to 18 percent. A decline in white enrollment in public schools could be driven either by the movement of white households from city to suburban school districts, a shift that would induce residential segregation across jurisdictions, or by a shift in white enrollment to private schools. Baum-Snow and Lutz (Forthcoming) document that “white flight” from city school districts was more common in the South, whereas white households in the North and West were more likely to substitute toward private schooling.

Economists have also used hedonic methods to infer how much white households are willing to pay to avoid desegregated schools. Early work by Clotfelter (1975) compares housing prices across high school attendance areas in Atlanta that were more or less affected by school desegregation. According to his estimates, the marginal white household at the time was willing to pay 2.5 percent more for an equivalent housing unit to avoid a 5 percentage point increase in black enrollment share. Boustan (2010) extends this method to a nationally representative set of northern and western cities, many of which were placed under court order to desegregate in the

---

<sup>9</sup> However, Alesina, Baqir, and Easterly also show that diverse cities spend more per resident in total government expenditures, and so the aggregate effect of racial diversity on government activity is not clear.

1970s. To control for differences in housing and neighborhood quality, she compares the prices of neighboring housing units on opposite sides of city-suburban school district borders before and after the implementation of desegregation plans. She finds that a 5 percentage point increase in the black enrollment share of the typical white school is associated with a 4 percent decline in housing prices. The higher estimate may be due to the fact that students were more likely to be bused to nonneighborhood schools in the North and West, an additional factor that white households may be willing to pay to avoid.

## **IV. Social and Economic Consequences of Segregation**

The extensive literature on the causes of residential segregation is predicated on the assumption that residential segregation has detrimental effects on minority households that are excluded from majority neighborhoods. However, as Cutler and Glaeser's (1997) thoughtful review of the topic makes clear, the formation of racial and ethnic neighborhoods has a theoretically ambiguous effect on their minority residents. On the one hand, if members of the minority group tend to be poor, living in a minority enclave may prevent residents from interacting with middle-class role models or from accessing a wide array of job opportunities. On the other hand, the alternative to racial segregation may not be perfect integration by race and class. Instead, as the barriers to black mobility are lifted, middle-class black households may have the resources to move to integrated neighborhoods, while poor blacks have no option but to remain in predominantly black—and increasingly poor—areas. In other words, residential segregation may have positive externalities on poor blacks by facilitating contact with the black middle class (on this point, see also Wilson 1987).

The effect of residential segregation on social and economic outcomes, therefore, is a question for empirical study. Early work on the consequences of residential segregation compared the employment rates of blacks who lived in isolated versus integrated neighborhoods in the same metropolitan areas (see Ellwood 1986; Ihlanfeldt and Sjoquist 1990). However, even if living in an isolated neighborhood is associated with lower employment rates, this relationship need not be causal; rather, it could be that black households that are already weakly attached to the labor market are the most likely to stay in isolated neighborhoods.

To address this selection problem, a newer strand of research compares black economic outcomes across metropolitan areas with different levels of residential segregation. Cutler and Glaeser (1997) argue that selection is less severe in this context because it is harder to move across metropolitan areas than it is to move between neighborhoods within a metropolitan area. They find that blacks living in segregated metropolitan areas like Detroit, Michigan, have lower high school graduation rates, lower earnings, and a higher probability of single parenthood than do blacks in integrated areas like San Jose, California.

However, even when contrasting metropolitan areas, concerns about omitted variables and reverse causality arise. For example, one may worry that white households are more likely to leave central cities if the resident black population is poor; in that case, black poverty could “cause” residential segregation. One solution to this problem is to look for exogenous sources of segregation driven by a city’s history or geography. Cutler and Glaeser use the number of rivers and streams passing through a metropolitan area as an instrumental variable for the area’s level of segregation. This strategy was previously proposed by Hoxby (2000), who argued that rivers were natural barriers that led to the creation of separate municipalities in the past. Ananat (2007) refines this approach even further, predicting contemporary segregation levels with a measure of the extent to which historical railroad crossings subdivided city land into separate neighborhoods. Even after instrumenting for segregation in this manner, Ananat finds that blacks who live in segregated metropolitan areas are less likely to complete high school or college and have lower earnings.

### *Spatial Mismatch*

The preponderance of the empirical evidence suggests that living in a more segregated metropolitan area is associated with poorer economic performance among African Americans. Understanding the mechanism behind this relationship is an important area of ongoing research. The “spatial mismatch” theory, first proposed by John F. Kain in the 1960s, emphasizes that black enclaves are often physically separated from employment opportunities. As a result, residents of these neighborhoods face high commuting costs and may lack information about new job openings. Kain (1968) poses the first test of this theory using data from Chicago and Detroit in the 1950s. He documents that firms located farther from black enclaves were less likely to employ black workers, though he cannot adjust for the endogenous location decisions of

firms; that is, firms with low skill requirements may locate near poor black neighborhoods, while firms with greater skill needs may locate in suburban areas.

A large empirical literature following from Kain's original work tests for the importance of spatial mismatch in explaining low black employment rates (see Kain [1991] and Ihlanfeldt and Sjoquist [1998] for surveys of this topic). As in Cutler and Glaeser (1997), the most recent strand of this research has exploited cross-metropolitan variation. Weinberg (2000), for example, evaluates the relationship between black residential centralization and black employment rates (relative to whites in the area). Using data from the 1980 census, Weinberg documents that a one standard deviation increase in the share of blacks living in the central city lowers black employment by 2 percentage points (see also Stoll 2006).

Spatial mismatch may have been a particularly potent force in the 1960s, when firms first began abandoning central cities for suburban campuses and black neighborhoods remained in downtown areas. However, as some black households gained access to the suburbs and others were able to afford cars, the physical distance between black neighborhoods and job opportunities may have become a less significant hurdle to employment than it once was. Boustan and Margo (2009) study the role of spatial mismatch over time by focusing on one large employer, the U.S. Postal Service, which remained in the central city over the twentieth century for largely legal-institutional reasons. The authors find that blacks substituted toward postal work, particularly at centrally located processing and distribution facilities, as other employment opportunities left the city (circa 1960). The response was particularly strong in segregated areas, where black neighborhoods were clustered near the central business district. However, the authors find that the relationship between residential segregation and postal employment attenuates over time, which they interpret as evidence that spatial mismatch is less relevant in explaining black employment patterns today.

### *Neighborhood/Peer Effects*

An alternative explanation for the detrimental effects of residential segregation on black economic outcomes emphasizes negative spillovers from other residents of black enclaves rather than the physical location of the neighborhoods themselves. Black neighborhoods are often characterized by high poverty rates. In 1990, 42 percent of the high-poverty neighborhoods, defined as census tracts in which at least 40 percent of residents live at or below the poverty line, were majority black. Furthermore, one-third of blacks in poverty lived in a high-poverty

neighborhood, compared with only 6 percent of poor whites (Jargowsky 1997, 16, 41). As a result of this concentrated poverty, residents of black enclaves are less likely to have friends or neighbors with a regular attachment to the labor force and, correspondingly, are more likely to have friends or neighbors engaged in risky or criminal behavior. Economists and sociologists refer to this mechanism as “neighborhood effects”; Ellen and Turner (1997) and Durlauf (2004) provide comprehensive reviews of the neighborhood effects literature.

Given that individuals choose where to live, it is hard to distinguish whether neighbors have correlated economic outcomes because they directly influence each other’s behavior or because they share a set of unobservable personal characteristics that, in turn, influence economic activity. One approach to this selection problem, best represented by the Moving to Opportunity (MTO) study, is to randomly assign households to neighborhoods. MTO offered a lottery to residents of public housing units, the winners of which were provided rental subsidies for housing units in the private market. Receipt of a rental subsidy was tied to selecting a neighborhood with a poverty rate below a certain threshold. Katz, Kling, and Liebman (2007) summarize the main findings from this policy experiment. While moving to a lower-poverty neighborhood had no effect on the labor force participation of the household heads, the vast majority of whom were female single parents, in the short run relocations generate substantial reductions in crime and behavioral problems among children and improvements in mental health and outlook for both parents and children.

Bayer, Ross, and Topa (2008) offer an alternative approach to uncover the presence of neighborhood effects without access to experimental data. The authors make use of a rich census data set that contains information on the block of residence and block of employment for individuals in the Boston metropolitan area in 2000. They demonstrate that residents of the same census block are 30 percent more likely to also *work* on the same block than are residents of the same census block group, a larger geographic unit that contains roughly ten census blocks. They argue that comparing residents of the same block to residents of the larger block group area adequately controls for concerns about residential sorting that occurs across neighborhoods. The authors interpret this finding as evidence that local neighbors serve as conduits for job information or job referrals.

The contrasting importance of neighbors as sources of job information in the experimental and nonexperimental data may be due to the different populations under consideration. The majority of block residents in the study by Bayer, Ross, and Topa (2008) had lived in the area for

many years, while MTO focuses on recent movers. Results may differ because neighborhood job networks benefit long-term residents more than newcomers. By moving, members of the MTO study may have lost access to old social networks that provided assistance with child care and other forms of employment support. In this case, the probability of employment may increase over time in new neighborhoods as residents have time to establish new support networks.

## **V. Proposed Policy Solutions to Residential Segregation**

Due to the complexity of metropolitan housing markets, residential segregation is a difficult problem to address through public policy and urban planning. The task is further complicated by the legal barriers to explicitly race-based housing policy. While, in the abstract, one could design a system of racial quotas at the neighborhood or town level—such quotas are in place in Singapore, for example (see Wong 2008)—a straightforward assault on racial segregation of this nature would likely be both unconstitutional and politically untenable. Given this legal constraint, any policy designed to combat residential segregation must be formally race-neutral, targeting neighborhoods or individuals on the basis of income rather than race. However, it is important to keep in mind that, while income is a reasonable proxy for race, income-based policies may not be successful in integrating poor or lower-middle-class white neighborhoods.

We can usefully divide policy solutions to residential segregation into three categories: place-based policies, people-based policies, and indirect approaches to the problems of residential segregation. Place-based policies either improve minority (poor) neighborhoods, rendering them more attractive to white entrants, or require white (rich) suburbs to add housing options affordable to lower-income homeowners or renters. People-based policies assist homeowners or renters directly, through stronger enforcement of fair housing laws, offers of housing vouchers, or improved access to mortgage finance. Indirect approaches target the symptoms of residential segregation, rather than the root causes—for example, by improving public transportation to reduce the isolation of black neighborhoods.

### **Place-Based Policies**

The goal of place-based policies is either to improve the housing stock or amenities in black neighborhoods to encourage white households to move in or to create affordable housing options

that allow black households to move into white neighborhoods. Ellen (1999) advocates using “community betterment projects” in black neighborhoods, such as improving school buildings, reducing crime rates, or investing in neighborhood infrastructure, to encourage integration. However, Emerson, Chai, and Yancey’s (2001) survey results suggest that white households are unwilling to move into black neighborhoods even if school quality is high and crime rates are low, casting doubt on the effectiveness of this strategy. Furthermore, policy makers should take seriously the possibility that neighborhood improvements often lead to increases in local housing prices. At the new prices, existing residents may no longer be able to afford to live in the neighborhood (Kennedy and Leonard 2001; Vigdor 2002). Through this gentrification process, a black neighborhood may simply convert into a white neighborhood, rather than becoming an integrated area.

An alternative place-based policy is to increase affordable housing options in the predominantly white suburbs. Many suburb towns have the autonomy to establish independent land-use policy. Often, suburbs use zoning laws to set minimum lot size requirements for building or to prevent the development of multifamily units. These rules increase the price of entry into the community by requiring that residents buy a certain amount of housing services, a policy that may intentionally or unintentionally price black households out of the area.

When land-use policy is conducted at the town level, individual communities may not consider the externality that their restrictions impose on other residents of the area. As a result, some states have created a system of oversight, requiring towns to file affordable housing plans to ensure that each community is providing a “fair share” of the state’s affordable housing needs. However, in many cases, states lack a mechanism to penalize towns that fail to follow their stated plan. In one exception, the Massachusetts “Anti-Snob Housing Act” allows developers to appeal projects that were rejected by local zoning boards before a state committee (Ihlanfeldt 2004).

In recent years, a growing number of jurisdictions have passed inclusionary zoning (IZ) laws intended to combat the restrictive effects of existing zoning statutes.<sup>10</sup> While each IZ plan is slightly different in its particulars, the standard approach has been to require developers to tie the construction of market-rate housing to the provision of affordable units. Many plans specify that

---

<sup>10</sup> More than 300 jurisdictions have IZ rules in place to date, with the largest concentrations in the Boston, San Francisco, and Washington, D.C., metropolitan areas.

a certain percentage of units in new developments should be rented at below-market rates. Towns often provide developers with compliance incentives—for example, allowing them to build at higher density—in order to avoid discouraging new development. Schuetz, Meltzer, and Been (2009, 2010) show that IZ has had varying degrees of success in terms of producing affordable housing units.

While the idea of IZ has caught on in some areas, it is unlikely to spread widely enough to be able to combat residential segregation in a systematic manner. Given that IZ must be voluntarily adopted by jurisdictions and that many of the same jurisdictions already use zoning restrictions to increase the effective price of entry into the community, it is unclear that the local political economy will support the adoption of IZ rules. From the perspective of efficient policy, it is not clear why rules to encourage the development of affordable housing should be layered on top of the existing set of zoning regulations, which actively *discourage* the construction of smaller, more affordable units. This dual system of regulation may create avenues for corruption or for “gaming” within the system. However, if reforming the existing zoning laws is politically untenable, inclusionary zoning may be a reasonable alternative.

### *People-Based Policies*

Rather than seek to change the available housing stock or neighborhood characteristics, people-based policies help individual home buyers or renters gain access to existing neighborhoods. This approach is typified by the Community Reinvestment Act (CRA) of 1977, which was revised in 1995 to encourage lending to low-income borrowers, regardless of the characteristics of the neighborhood in which they are purchasing a home.<sup>11</sup> Friedman and Squires (2005) hypothesized that, in its new form, the CRA may indirectly support racial integration by increasing loans to low-income (black) borrowers even if they are moving into middle- or upper-income (white) neighborhoods.

The authors examine the effect of CRA on neighborhood integration by comparing metropolitan areas with varying shares of CRA-covered loans. The cross-metropolitan variation arises from the fact that the CRA applies only to federally regulated depository institutions, not to foreign banks or other financial institutions that initiate mortgages. Sixty-seven percent of loans in the median metropolitan area are covered by CRA regulations. Friedman and Squires

---

<sup>11</sup> Avery, Calem, and Canner (2003) evaluate the effect of the CRA on low-income neighborhoods.

find that 15 percent of black households in metropolitan areas with above-median CRA lending settle in predominantly white areas (defined as at least 90 percent white), compared with only 8 percent in metropolitan areas with below-median CRA lending.

While these results suggest that facilitating loans to poor borrowers is an effective way to reduce residential segregation, one wonders whether the share of CRA-covered loans in a metropolitan area, indirectly determined by the set of available financial institutions, is correlated with other relevant area characteristics. Furthermore, Friedman and Squires's study covers years in which the housing market was expanding. Mayer and Pence (2008) demonstrate that, during this period, black borrowers were disproportionately encouraged to obtain subprime loans. Follow-up study is needed to determine what share of these black borrowers have fallen into foreclosure and what share remain in their homes.

### *Indirect Approaches*

Indirect policy approaches combat the consequences, rather than the root causes, of residential segregation. Policies of this type include extending public transit routes into poor (black) neighborhoods and subsidizing car ownership among the poor. Many of these policies implicitly assume that segregation is harmful because of the separation of black neighborhoods from job opportunities, rather than because of social pathologies that may develop in neighborhoods with concentrated poverty.

Holzer, Quigley, and Raphael (2003) examine an expansion of the rapid-transit system in San Francisco. They focus on one line extension that added two stations, one in a high-minority area in the city, and the other in a high-employment, low-minority area in the suburbs. While this extension was intended to facilitate suburban commuting into the city center, the paper explores its effect on minority employment rates near the suburban terminal. The authors surveyed firms before and after the expansion and found that firms close to the station increased their employment of Latino workers by 8 percent but slightly decreased their employment of blacks. The authors speculate that the two groups may compete with each other for similar jobs or that Latinos may have been better poised to take advantage of the new access to jobs given their higher preexpansion employment rates in the area. The authors caution that it would be premature to generalize from this case study and call for further research on the effect of public transit on minority employment.

While expanding public transit is one way to connect black neighborhoods to job opportunities, the vast majority of American workers commute by car. Raphael and Stoll (2001) point out that 76 percent of white households owned a car in the mid-1990s compared with only 47 percent of black households. Furthermore, black households face a higher employment penalty for nonownership: 83 percent of black car owners are employed, compared with only 45 percent of black nonowners, a gap of 38 percentage points. For whites, the gap between car owners and nonowners is only 22 percentage points. The authors also demonstrate that the employment penalty for not owning a car is higher for black households who live in segregated metropolitan areas. The authors reason that black households may be very sensitive to small subsidies for car ownership, which could be a far more effective and targeted approach to neighborhood isolation than is investment in public transit infrastructure.

## **VI. Conclusion**

This chapter has reviewed the causes and consequences of residential segregation in U.S. metropolitan areas. Residential segregation can arise without coordinated attempts to exclude black households from white neighborhoods if a sufficient number of white households choose to leave racially diverse neighborhoods. While there is strong evidence that white households leave neighborhoods as blacks arrive, it is not yet clear whether this response is large enough to account for contemporary levels of segregation. Understanding the quantitative contribution of each cause of segregation—black self-segregation, white collective action, and white mobility—to overall segregation levels will likely require using simulated models of the housing market akin to Bruch and Mare (2006) or Bayer, Ferreira, and McMillan (2007). This topic is at the current research frontier.

Given legal constraints, public policy to counteract residential segregation will need to be formally race-neutral, targeting neighborhoods or individuals on the basis of income rather than race. While the policies reviewed in this chapter may, indirectly, reduce racial segregation, they are actually designed to reduce segregation by income or class. Before advocating such policies to ameliorate segregation by race, it is important to first understand whether there are consequences to living in a majority-black neighborhood per se, or whether blacks are harmed by residential segregation only because of ancillary characteristics of black neighborhoods—

namely, that they tend to be physically isolated from employment opportunities and also tend to be sites of concentrated poverty.

## References

- Alesina, Alberto, Reza Baqir, and William Easterly. 1999. "Public Goods and Ethnic Divisions." *Quarterly Journal of Economics* 114:1243–1284.
- Ananat, Elizabeth Oltmans. 2007. "The Wrong Side of the Track(s): Estimating the Causal Effects of Racial Segregation on City Outcomes." NBER Working Paper 13343.
- Avery, Robert, Paul Calem, and Glenn Canner. 2003. "The Effects of the Community Reinvestment Act on Local Communities." Unpublished manuscript. Board of Governors of the Federal Reserve System.
- Baum-Snow, Nathaniel, and Byron Lutz. Forthcoming. "School Desegregation, School Choice and Changes in Residential Location Patterns by Race." *American Economic Review*.
- Bayer, Patrick, Fernando Ferreira, and Robert McMillan. 2007. "A Unified Framework for Measuring Preferences for Schools and Neighborhoods." *Journal of Political Economy* 115:588–638.
- Bayer, Patrick, Stephen L. Ross, and Giorgio Topa. 2008. "Place of Work and Place of Residence: Informal Hiring Networks and Labor Market Outcomes." *Journal of Political Economy* 116:1150–1195.
- Becker, Gary. 1957. *The Economics of Discrimination*. Chicago: University of Chicago Press.
- Berkovec, James A., Glenn B. Canner, Stuart A. Gabriel, and Timothy H. Hannan. 1996. "Race, Redlining, and Residential Mortgage Defaults: Evidence from the FHA-Insured Single-Family Loan Program." In *Mortgage Lending, Racial Discrimination and Federal Policy*, ed. John Goering and Ron Wienk, 251–288. Washington, DC: Urban Institute Press.
- Boustan, Leah Platt. 2010. "School Desegregation and Urban Change: Evidence from City Boundaries." NBER Working Paper 16434.
- . 2010. "Was Postwar Suburbanization White Flight? Evidence from the Black Migration." *Quarterly Journal of Economics* 124:417–443.
- Boustan, Leah Platt, and Robert A. Margo. 2009. "Race, Segregation, and Postal Employment: New Evidence on Spatial Mismatch" *Journal of Urban Economics* 65:1–10.
- Bruch, Elizabeth E., and Robert D. Mare. 2006. "Neighborhood Choice and Neighborhood Change." *American Journal of Sociology* 112:667–709.

- Card, David, Alexandre Mas, and Jesse Rothstein. 2008. "Tipping and the Dynamics of Segregation." *Quarterly Journal of Economics* 122:177–218.
- Clotfelter, Charles T. 1975. "The Effect of School Desegregation on Housing Prices." *Review of Economics and Statistics* 57:395–404.
- Collins, William J. 2004. "The Housing Market Impact of State-Level Anti-discrimination Laws, 1960–70." *Journal of Urban Economics* 55:534–564.
- Cutler, David M., and Edward L. Glaeser. 1997. "Are Ghettos Good or Bad?" *Quarterly Journal of Economics* 112:827–872.
- Cutler, David M., Edward L. Glaeser, and Jacob L. Vigdor. 1999. "The Rise and Decline of the American Ghetto." *Journal of Political Economy* 107:455–506.
- Durlauf, Steven. 2004. "Neighborhood Effects." In *Handbook of Regional and Urban Economics*, ed. J. V. Henderson and J.-F. Thisse. Amsterdam: North Holland.
- Echenique, Federico, and Roland Fryer. 2007. "A Measure of Segregation Based on Social Interactions." *Quarterly Journal of Economics* 121:441–485.
- Emerson, Michael O., Karen J. Chai, and George Yancey. 2001. "Does Race Matter in Residential Segregation? Exploring the Preferences of White Americans." *American Sociological Review* 66:922–935.
- Ellen, Ingrid Gould. 1999. *Sharing America's Neighborhoods: The Prospects for Stable Racial Integration*. Cambridge, MA: Harvard University Press.
- Ellen, Ingrid Gould, and Margery Austin Turner. 1997. "Does Neighborhood Matter? Assessing Recent Evidence." *Housing Policy Debate* 8:833–866.
- Ellwood, David T. 1986. "The Spatial Mismatch Hypothesis: Are There Teenage Jobs Missing in the Ghetto?" In *The Black Youth Employment Crisis*, ed. Richard B. Freeman and Harry J. Holzer. Chicago: University of Chicago Press.
- Fischer, Claude S., Gretchen Stockmayer, Jon Stiles, and Michael Hout. 2004. "Distinguishing the Geographic Levels and Social Dimensions of US Metropolitan Segregation, 1960–2000." *Demography* 41:37–59.
- Friedman, Samantha, and Gregory D. Squires. 2005. "Does the Community Reinvestment Act Help Minorities Access Traditionally Inaccessible Neighborhoods?" *Social Problems* 52:209–231.

- Gotham, Kevin Fox. 2000. "Urban Space, Restrictive Covenants and the Origins of Racial Residential Segregation in a US City, 1900–50." *International Journal of Urban and Regional Research* 24:616–633.
- Holzer, Harry J., John M. Quigley, and Steven Raphael. 2003. "Public Transit and Spatial Distribution of Minority Employment: Evidence from a Natural Experiment." *Journal of Policy Analysis and Management* 22:415–441.
- Hoxby, Caroline M. 2000. "Does Competition among Public Schools Benefit Students and Taxpayers?" *American Economic Review* 90:1209–1238.
- Iceland, John, and Melissa Scopilliti. 2008. "Immigrant Residential Segregation in US Metropolitan Areas, 1990–2000." *Demography* 45:79–94.
- Ihlanfeldt, Keith R. 2004. "Exclusionary Land-Use Regulations within Suburban Communities: A Review of the Evidence and Policy Prescriptions." *Urban Studies* 41:261–283.
- Ihlanfeldt, Keith R., and Benjamin Scafidi. 2002. "Black Self-Segregation as a Cause of Housing Segregation: Evidence from the Multi-city Study of Urban Inequality." *Journal of Urban Economics* 51:366–390.
- Ihlanfeldt, Keith R., and David L. Sjoquist. 1990. "Job Accessibility and Racial Differences in Youth Employment Rates." *American Economic Review* 80:267–276.
- . 1998. "The Spatial Mismatch Hypothesis: A Review of Recent Studies and Their Implications for Welfare Reform." *Housing Policy Debate* 9:849–892.
- Jargowsky, Paul A. 1997. *Poverty and Place: Ghettos, Barrios and the American City*. New York: Russell Sage Foundation.
- Jargowsky, Paul A., and Jeongdai Kim. 2005. "A Measure of Spatial Segregation: The Generalized Neighborhood Sorting Index." National Poverty Center Working Paper 05-03. Ann Arbor: University of Michigan.
- Kain, John F. 1968. "Housing Segregation, Negro Employment, and Metropolitan Decentralization." *Quarterly Journal of Economics* 82:175–197.
- . 1991. "The Spatial Mismatch Hypothesis: Three Decades Later." *Housing Policy Debate* 3:371–460.
- Katz, Lawrence, Jeffrey Kling, and Jeffrey Liebman. 2007. "Experimental Analysis of Neighborhood Effects." *Econometrica* 75:83–119.

- Kennedy, Maureen, and Paul Leonard. 2001. "Dealing with Neighborhood Change: A Primer on Gentrification and Policy Choices." Brookings Institution Center on Urban and Metropolitan Policy Working Paper.
- Krysan, Maria, and Reynolds Farley. 2002. "The Residential Preferences of Blacks: Do They Explain Persistent Segregation?" *Social Forces* 80:937–979.
- Ladd, Helen F. 1998. "Evidence on Discrimination in Mortgage Lending." *Journal of Economic Perspectives* 12:41–62.
- Massey, Douglas S., and Nancy A. Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA: Harvard University Press.
- Massey, Douglas S., and Mary J. Fischer. 2003. "The Geography of Inequality in the United States, 1950–2000." *Brookings-Wharton Papers on Urban Affairs* 4:1–40.
- Mayer, Chris, and Karen Pence. 2008. "Subprime Mortgages: What, Where and to Whom?" NBER Working Paper 14083.
- Munnell, Alicia H., Geoffrey M. B. Tootell, Lynn E. Browne, and James McEneaney. 1996. "Mortgage Lending in Boston: Interpreting HMDA Data." *American Economic Review* 86:25–53.
- Ondrich, Jan, Alex Stricker, and John Yinger. 1999. "Do Landlords Discriminate? The Incidence and Causes of Racial Discrimination in Rental Housing Markets." *Journal of Housing Economics* 8:185–204.
- Plotkin, Wendy. 1999. "Deeds of Mistrust: Racial Restrictive Covenants in Chicago, 1900–1953." Ph.D. diss., University of Illinois at Chicago.
- Raphael, Steven, and Michael Stoll. 2001. "Can Boosting Minority Car-Ownership Rates Narrow Inter-racial Employment Gaps?" *Brookings-Wharton Papers on Urban Economic Affairs* 2:99–145.
- Reardon, Sean F., Stephen A. Matthews, David O'Sullivan, Barrett A. Lee, Glenn Firebaugh, Chad R. Farrell, and Kendra Bischoff. 2008. "The Geographic Scale of Metropolitan Racial Segregation." *Demography* 45:489–514.
- Reber, Sarah J. 2005. "Court-Ordered Desegregation: Successes and Failures in Integration since Brown." *Journal of Human Resources* 40:559–590.
- Schelling, Thomas C. 1971. "Dynamic Models of Segregation." *Journal of Mathematical Sociology* 1:143–186.

- Schuetz, Jenny, Rachel Meltzer, and Vicki Been. 2009. "31 Flavors of Inclusionary Zoning: Comparing Policies from San Francisco, Washington DC and Suburban Boston." *Journal of the American Planning Association* 75:441–456.
- . 2010. "Silver Bullet or Trojan Horse? The Impacts of Inclusionary Zoning on Local Housing Markets." *Urban Studies* 47:1–33.
- Stoll, Michael. 2006. "Job Sprawl, Spatial Mismatch, and Black Employment Disadvantage." *Journal of Policy Analysis and Management* 25:827–854.
- Sugrue, Thomas J. 1996. *The Origins of the Urban Crisis: Race and Inequality in Postwar Detroit*. Princeton, NJ: Princeton University Press.
- Thernstrom, Stephan, and Abigail Thernstrom. 1997. *America in Black and White: One Nation, Indivisible*. New York: Simon and Schuster.
- Vigdor, Jacob L. 2002. "Does Gentrification Harm the Poor?" *Brookings-Wharton Papers on Urban Affairs* 3:133–182.
- Waldfogel, Joel. 2008. "The Median Voter and the Median Consumer: Local Private Goods and Residential Sorting." *Journal of Urban Economics* 63:567–582.
- Weinberg, Bruce. 2000. "Black Residential Centralization and the Spatial Mismatch Hypothesis." *Journal of Urban Economics* 48:110–134.
- Wilson, William Julius. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press.
- Wong, Maisy. 2008. "Estimating Ethnic Preferences Using Ethnic Housing Quotas in Singapore." Manuscript.
- Wu, X. Ben, and Daniel Z. Sui. 2001. "An Initial Exploration of a Lacunarity-Based Segregation Measure." *Environment and Planning B: Planning and Design* 28:433–446.
- Yinger, John. 1986. "Measuring Discrimination with Fair Housing Audits: Caught in the Act." *American Economic Review* 76:881–893.