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Black Suburbanization and the Evolution of Spatial Inequality Since 1970

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ABSTRACT

Since 1970, the share of Black individuals living in suburbs of larger cities has risen from 16 to 36 percent. We present three facts illustrating how this suburbanization has changed spatial inequality. First, suburbanization entirely accounts for Black households' relative improvements in several key neighborhood characteristics, while Black city dwellers saw declines. Second, suburbanization accounts for over half of the increase in within-Black income segregation. Selective Black migration and muted suburban "White flight" both contribute to these patterns. Third, total Black population in central cities has plummeted since 2000, driven by young people and declines in high-poverty, majority-Black neighborhoods.

JEL Classification Codes: R23, J15, J11

Key Words: suburbanization, racial inequality

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Introduction

Racial segregation and racial differences in residential locations in the United States are among the most heavily studied areas of social science (e.g., Du Bois 1899; Franklin 1956; Schelling 1971; Wilson 1987; Massey and Denton 1993; Cutler, Glaeser and Vigdor 1999). An influential stylized fact in this literature is the concentration of Black individuals in large central cities—over 40 percent lived in the 40 most populous cities in 1970. However, the share of the Black population living in these central cities has fallen to 24 percent over the last half century, while the share living in their suburbs has risen from 16 to 36 percent. This population shift is similar in magnitude to the second wave of the Great Migration, which had long-lasting implications for racial segregation and Black outcomes more broadly (e.g., Collins and Wanamaker 2014; Black et al. 2015; Boustan 2016; Derenoncourt 2019). Although Black suburbanization may have similarly important effects, particularly for outcomes related to residential sorting and neighborhood composition, economists have done little research on the topic.

This paper conducts the first dedicated economic analysis of Black suburbanization, providing three stylized facts that update our understanding of spatial disparities in the United States. First, most relative gains in Black households' neighborhood characteristics since 1970 have occurred through suburbanization—Black city dwellers generally lost ground on the average household. Second, suburbanization has been associated with growing income segregation within Black households, accounting for well over half of the major increase that has occurred over the past 50 years. We show that selective suburbanization of high-income Black households and relatively low "White flight" in the suburbs help explain these two patterns. Third, total Black population in cities has declined steeply since 2000, driven by sharp decreases among young people and in high-poverty, majority-Black neighborhoods. In the same way that the geography of race in the twentieth century can only be understood in the context of the Great Migration, Black suburbanization and these associated trends are essential background for research and policy related to geographic racial disparities in the present.

We begin our analysis by documenting aggregate population trends in Section 1. We focus on a sample of 40 core-based statistical areas (CBSAs)—the 20 largest in the South and in the remainder of the country, defined according to total CBSA population in 1970. There have been drastic increases in both the share of the country's Black population (16 to 36 percent) and the total number of Black individuals (4 million to 13 million) living in the suburbs of these areas. In contrast, Black population in these central cities remained flat until 2000 and then declined significantly, leading their share of the national total to fall from 41 to 24 percent. While prior work has also noted this aggregate shift—most recently Logan (2014) and Frey (2015)—we add depth in several ways. We show that Black population growth in a metro area's suburbs is typically widespread and geographically diffuse and that Black population has declined since 2000 in nearly every large central city. In addition, in both cities and suburbs, Black population change in a census tract varies greatly with its initial characteristics.

In Section 2, we develop our first stylized fact—suburbanization has accounted for most gains in Black households' neighborhood characteristics in our sample. For example, while the neighborhood income of the average Black individual has modestly improved from 61 to 66 percent of the average White individual's neighborhood income, the figure has fallen from 58 percent to 50 for Black city dwellers. Similarly, the number of majority-Black, above-median income census tracts in the suburbs has nearly doubled since 1980, while the number in cities has fallen. These results suggest that Black households have largely achieved neighborhood improvements through migration, rather than through improvements in city neighborhoods that were initially majority Black, consistent with Wilson (1987)'s observations.[1] More broadly, this mixed progress on spatial outcomes bears similarities to trends in Black-White gaps in income and education. While the average gaps stagnated after 1980 (Altonji and Blank 1999; Neal 2006), the upper and lower portions of the Black income distribution followed opposite trajectories (Bayer and Charles 2018).

[1]Wilson (1987, p. 6): "... today's black middle class professionals no longer tend to live in [segregated black city] neighborhoods and have moved increasingly into mainstream occupations outside the black community [...]. Accompanying the black middle-class exodus has been a growing movement of stable working-class blacks [...] to higher-income neighborhoods in other parts of the city and to the suburbs. In the earlier years, the black middle and working classes were confined by restrictive covenants to communities also inhabited by the lower class[.]"

To better understand the mechanisms underlying these divergent neighborhood outcomes, we study both Black suburbanizers and the White response to their arrival. We first find evidence that Black suburbanizers are positively selected on income, although data limitations restrict this exercise to a subset of the main sample. Next, using microdata from Infutor Data Solutions, we show that suburbanizers from city neighborhoods that are over 80 percent Black tend to move to neighborhoods with higher socioeconomic status (SES) and higher housing costs than their origins.[2] Finally, we use some basic statistics and a replication of Boustan (2010)'s empirical strategy to show that "White flight has been much lower in the recent suburban setting than it was in central cities in earlier time periods (Card, Mas and Rothstein 2008; Shertzer and Walsh 2019; Derenoncourt 2019). This helps explain why middle-class Black households in the suburbs have been able to sustain gains in neighborhood SES, while they frequently did not in other settings (Pattillo-McCoy 2000; Derenoncourt 2019).

In Section 3, we turn to our second stylized fact—suburbanization's important role in the rapid increase in Black income segregation, which has nearly doubled since 1970 (Bischoff and Reardon 2014).[3] This trend is of particular interest because of Wilson (1987)'s influential argument that growing class stratification would have a number of negative effects on majority-Black city neighborhoods. We show that changes within central cities account for less than a quarter of the increase in income segregation indices. Instead, suburbanization and sorting within the suburbs explain the vast majority. To give a concrete example, the share of high-earning Black households living in high-poverty neighborhoods has fallen from 30 percent in 1970 to 20 percent today. The decrease is entirely driven by a large drop in the suburbs and the increase in the suburban share of total Black population—the figure has remained constant at about 40 percent in central cities.

The analysis in the first two sections illustrates that while many Black households have achieved significant gains through suburbanization, those in the city have instead seen neighborhood SES

[2]We are only able to consider suburbanizers from mostly Black neighborhoods because the Infutor data do not identify individual race.

[3]An important caveat is that our results on segregation are measured at the tract level. Logan and Parman (2017) show that within-tract measures of racial segregation show different patterns than tract or ward measures in the early and mid-twentieth century. This issue could be particularly important in our setting given that suburban tracts are physically larger than city tracts.

and population decline. These equilibrium effects in cities are an important part of the total incidence of Black suburbanization. In Section 4, we explore Black population decline in central cities in detail to provide our third stylized fact.

We first consider how patterns differ across cities and neighborhoods. Total Black population has fallen in nearly every large central city since 2000, regardless of region or economic trajectory. The decline is concentrated in high-poverty and majority-Black neighborhoods—census tracts that met these criteria in 1970 have since lost 60 percent of their Black population and 40 percent of total population. Population decline on this scale is a policy concern because it is associated with negative effects like school closures and reduced retail or grocery options.[4] Notably, the aggregate loss is not driven by gentrification of initially high-poverty areas—the vast majority of the total decline has occurred in areas that remain majority Black and high poverty today.

We then consider how migration and other demographic changes have contributed to the population decline. Population trends in our sample period may be affected by falling fertility rates and the echo effects of the Baby Boom and the Great Migration on age structures and death rates (Boustan and Shertzer 2013, Black et al. 2015). To separate suburbanization—and migration generally—from these forces, we use a simple demographic projection. We find that the natural growth rate of the central city Black population (defined as expected births minus expected deaths) has steadily slowed, accounting for about a third of the decline since 2000. The remaining two-thirds results from an increasing shortfall between the projected natural growth rate and actual growth, as cities have attracted and retained fewer Black households on net. Although out-migration of established households is often more salient, we find that the recent increase in the migration shortfall is instead driven by people under the age of 35. Broadly, these results highlight that city Black population decline results from demographic change and migratory churn and not only elevated out-migration.

Taken together, our results illustrate two main themes. First, Black outcomes, both neighborhood and individual, have diverged in cities and suburbs on a variety of dimensions (at least within

[4]Small et al. (2018) show that while high-poverty neighborhoods generally lost total population between 1970 and 1990, there has recently been heterogeneity across cities in different regions. However, in majority-Black high-poverty neighborhoods, all regions continued to see depopulation after 1990.

our sample of large metropolitan areas). Second, historically Black neighborhoods in central cities have experienced dramatic declines in both Black and total population, with associated decreases in income and increases in poverty. When we investigate the "causes of [these] effects," in the spirit of Gelman and Imbens (2013), evidence suggests that declining White flight in the suburbs, rising Black incomes, selective suburbanization of high-SES Black households, and broad demographic trends play important roles, but gentrification does not. Prior literature points to several other factors that may be important: job suburbanization (Miller 2020), changing relative amenities in cities and suburbs (Baum-Snow and Lutz 2011; Baum-Snow and Hartley 2020),[5] and declining housing discrimination in the suburbs (Bostic and Martin 2005; Turner et al. 2013). Our results also point to several "effects of causes" questions, such as how fair housing ordinances changed Black location decisions, or how suburban neighborhoods affect economic and social outcomes of Black households.

In addition to drawing attention to these themes, our results have implications for several areas of research and policy. First, programs that move households from high- to low-poverty areas (e.g., Moving to Opportunity) may have negative externalities on sending neighborhoods that are already suffering from severe population decline. Related research could also benefit from further studying Black suburbanization, as it represents a large-scale migration to generally higher-opportunity neighborhoods. Second, policies intended to reverse Black city population decline should address the attraction and retention of young people, rather than focusing only on retaining long-term residents. Finally and most broadly, improvements in racial discrimination in the labor or housing market may have heterogeneous impacts across space due to both sorting effects and differential direct effects across subsets of people (Wilson 1987; Aliprantis and Carroll 2018). Spatially targeted aid may be needed to counteract these effects.

The most directly related academic work is the long sociology literature on Black suburbanization (Farley 1970; Logan and Schneider 1984; Massey and Denton 1988; Alba and Logan 1991; Galster 1991; Schneider and Phelan 1993; Alba, Logan and Stults 2000; Logan 2014; Frey

[5]For some neighborhoods, capital destruction and long-run stigma associated with civil disturbances in the late 1960s may be important in driving relative amenity changes (Casey and Hardy 2018; Brooks et al. 2020).

2015).[6] The work is concentrated in the 1980s, when minority population in suburbs began to grow rapidly. Scholars documented, in a variety of contexts, that while the neighborhoods of Black suburbanites were generally higher income and whiter than the neighborhoods of Black city dwellers, they were nonetheless lower income and less White than the neighborhoods of White suburbanites with similar characteristics. We build on these initial facts by illustrating the important role that suburbanization has played in aggregate changes in Black neighborhood composition and income segregation over the past 50 years. In addition, we illustrate several important mechanisms that explain how these patterns have emerged. Finally, we connect suburbanization to the recent Black population decline in cities and explore the roles of net migration, evolving demographics, and neighborhood conditions.

The paper proceeds as follows. Section 1 describes our data and sample and provides a novel investigation of aggregate trends in Black suburban and central city populations since 1970. Section 2 examines how suburbanization has related to changes in neighborhood characteristics for Black households in cities and suburbs. Section 3 then explores the association between suburbanization and income segregation of Black households. In Section 4, we turn to cities and study the extent and causes of the decline in the Black central city population. Section 5 concludes by discussing potential economic and social implications of these patterns and areas for future research.

1 Data and Aggregate Trends

1.1 Data and Sample

Our primary dataset is a panel of census tract characteristics spanning 1970 to 2016. We draw tract characteristics from the 1970–2010 decennial censuses and the 2014–2018 American Community Survery (ACS), as standardized by Ruggles et al. (2020). We then map the characteristics into consistent 2010 tract boundaries using code provided by Logan, Xu and Stults (2014). We define metropolitan areas according to the most recent definition of core-based statistical areas (CBSAs),

[6] In addition to quantitative work, a number of ethnographies have examined Black suburbanites and the Black middle class more generally (e.g., Pattillo 1999; Lacy 2007).

central cities according to 2010 census place boundaries, and suburbs as a CBSA less its central city. To classify tracts into census place definitions, we use the Missouri Census Data Center's Geocorr tool.[7] We define Black as non-Hispanic Black alone, thus excluding Hispanic Black and individuals who report more than one race from being categorized as Black.[8]

Finally, we restrict to 40 populous metropolitan areas that serve as our primary sample. We select those with the largest total CBSA population in 1970 in order to focus on areas that were initially large, as well as to prevent baseline city versus suburban shares from entering the selection criteria. Since trends could differ between southern cities and cities in other parts of the United States because of, for example, differences in exposure to the Great Migration, we choose the 20 largest CBSAs from states that seceded in the Civil War and the 20 largest from the remainder of the country. We loosely refer to this set as the 40 largest cities, although it actually excludes a few northern cities that were in the national top 40.[9] In total, the metropolitan areas in our sample contained 57 percent of the national Black population in 1970 and 60 percent in 2016. Appendix Table A1 shows some basic summary statistics on population and racial composition in the 32,000 tracts included in our primary sample, and Appendix Table A2 shows their distribution across CBSAs, cities, and suburbs.[10]

We supplement the primary sample with two sources of microdata on migration from central cities to surrounding suburbs. First, the 1980 and 1990 long-form censuses allow us to identify households that suburbanized in the previous five years in about half of the sample CBSAs. This data also contain household demographic characteristics. Second, Infutor Data Solutions provides longitudinal individual address histories for the 2010–2016 time period, which have recently been

[7]This tool is available at `https://mcdc.missouri.edu/applications/geocorr.html`.

[8]Research has found that self-reported racial identity may respond to discrimination and other features of the social environment (Dahis, Nix and Qian 2020). We are unable to investigate the role of changing self-reported racial identity in driving our results, but this is an important topic for future research.

[9]The CBSAs included are Atlanta, GA; Baltimore, MD; Birmingham, AL; Boston, MA; Buffalo, NY; Charleston, SC; Charlotte, NC; Chicago, IL; Cincinnati, OH; Cleveland, OH; Dallas, TX; Detroit, MI; El Paso, TX; Greensboro, NC; Houston, TX; Jacksonville, FL; Kansas City, MO; Knoxville, TN; Los Angeles, CA; Memphis, TN; Miami, FL; Milwaukee, WI; Minneapolis, MN; Nashville, TN; New Orleans, LA; New York, NY; Orlando, FL; Philadelphia, PA; Pittsburgh, PA; Providence, RI; Richmond, VA; San Antonio, TX; San Diego, CA; San Francisco, CA; Seattle, WA; St. Louis, MO; Tampa, FL; Virginia Beach, VA; Washington, DC; Winston-Salem, NC.

[10]In a few cases, we classify multiple municipalities within one CBSA as a central city. These are Minneapolis and St. Paul; Oakland and San Francisco; and Kansas City, Missouri, and Kansas City, Kansas.

used in a number of academic research papers (e.g. Diamond, McQuade and Qian 2019, Mast 2021). The address histories are created from a variety of public and private record sources, including USPS change of addresses, property records, phone books, and magazine subscriptions. The data have poor coverage of young adults but closely tracks the over-25 population at the tract level, with about 0.9 observations per individual reported in the census. It reports location of residence at the address level, along with an estimated move date. However, the data do not provide an individual's race, which limits its applications in our study. Additional information on both of these sources is available in Appendix I.

1.2 Aggregate Trends in Suburban and Urban Black Population

A central stylized fact about the racial geography of the United States is that the Black population was disproportionately concentrated in the central cities of large metropolitan areas at the conclusion of the Great Migration in approximately 1970 (Farley et al. 1978). We begin our analysis with a detailed investigation of how this fact has changed. The top panel of Figure 1 shows the distribution of Black population across different types of places from 1970 to 2016. There has been a large decline in the share living in our 40 sample central cities, from 42 percent to 24 percent, and a corresponding rise in the share in the suburbs of those cities, while the share living in all other areas has remained roughly constant.[11] The bottom panel of Figure 1 shows the total Black population in each of these categories—suburban and other areas have increased sharply, while the number in large cities stayed flat through 2000 before beginning to decline. Appendix II.A discusses how these general population trends vary across regions.

While a large literature dating to the 1970s has documented some of these aggregate trends in Black suburbanization, important features have not been explored or not been connected systematically across disparate studies. First, suburbanization has been widespread across neighborhoods and metropolitan areas. Figure 2 illustrates this using the Los Angeles area as an example, and

[11]The trends for Black population look quite different than for White or Hispanic population, as shown in Appendix Figures A1 and A2. The shares have remained relatively stable for White population, while all areas saw rapid growth in Hispanic population.

Appendix Figures A3–A5 do the same for Chicago, Houston, and New York. In all cases, Black population was highly concentrated in a concentrated set of neighborhoods within each city proper in 1970 but has since dispersed widely, driven by both a decline in the share of tracts with nearly no Black households and a growth in the number of tracts with moderate or high numbers of Black households. This growth in areas that previously were entirely non-Black is consistent with evidence from earlier periods (Cutler, Glaeser and Vigdor 1999).

Second, the recent decline in central city Black population has occurred in nearly every large city, as shown in Appendix Figure A6, which plots the change since 2000 for the 13 cities with largest initial Black population. Despite the varying economic trajectories of these cities, all lost Black population between 2000 and 2016, and the drop was larger than 9 percent in 9 of the 13. Declines are even larger when removing Black immigrants (Appendix Figure A7).

Third, the magnitude of these changes varies significantly by baseline tract income and racial composition. We stratify tracts by their 1970 characteristics in Table 1 to illustrate this heterogeneity. In Panel A, we see that the city decline is concentrated in neighborhoods that were initially majority Black, where Black population has fallen from 7.5 million in 1970 to 3.7 million today. The drop is even larger in areas that were majority Black and high poverty (over 20 percent), which lost 60 percent of their Black population. Moreover, as shown in Panel B, total population in these neighborhoods fell by nearly 40 percent. In contrast, Black and total population in city neighborhoods that were not initially majority Black have grown substantially.

Surprisingly, Black population also fell in suburban tracts that were majority-Black in 1970, declining from 1.7 to 1.2 million. Meanwhile, the Black population in suburban neighborhoods that were not majority Black in 1970 increased over sevenfold, from 1.8 million to 13 million. This stark heterogeneity across tracts within cities and suburbs suggests that important dynamics related to income and class underlie the aggregate shift of Black population toward the suburbs, and the migration is large enough to potentially change basic patterns of neighborhood quality and income segregation. This pattern motivates our analysis in the next two sections.

2 City-Suburb Divergence in Neighborhood Characteristics

In addition to concentration in central cities, a second important stylized fact is that Black households have historically lived in segregated neighborhoods that were poorer and had lower average educational attainment than White households' neighborhoods, even conditional on household income (Pattillo 2005; Reardon, Fox and Townsend 2015). In this section, we investigate whether the suburbanization documented in Section 1.2 has changed this historical pattern. In our sample metropolitan areas, average neighborhood income and poverty rates have improved only moderately relative to White households since 1970. However, we show that these modest aggregate changes mask diverging outcomes in suburbs and central cities. These improvements are entirely driven by a combination of the rising share of Black households living in the suburbs (baseline neighborhood indicators are higher in the suburbs) and improving neighborhood characteristics within the suburbs, while relative neighborhood indicators for Black households living in central cities actually fell over this time period. We then study forces that may drive the divergence, including Black migration patterns, equilibrium responses of other races, and changes in the Black income distribution.

2.1 Evolution of neighborhood characteristics in cities and suburbs

We begin by considering neighborhood median household income. We plot the mean for Black individuals in cities and suburbs in Figure 3, normalizing each year by the mean neighborhood income for all White individuals in the sample. The trend has been modestly upward in aggregate—from 61 percent to 66 percent of mean White neighborhood income—but cities and suburbs have moved in opposite directions. Black relative neighborhood income in the suburbs increased from 72 percent in 1970 to 78 percent in 1990 before declining slightly, while cities have steadily declined from 58 percent to 50 percent. Of course, the overall average is pulled upward by both improvements in the suburban average and the increasing share of Black households living in suburbs. A similar result appears for neighborhood poverty rate, while the neighborhood college

share has increased rapidly everywhere due to the sharp national increase in college attainment. Appendix II.A shows that this pattern holds within each census region. The divergence suggests that Black households have generally obtained neighborhood improvements through migration, rather than because of improvement in historically Black city neighborhoods.

The trends in average neighborhood income raise a related question—what types of suburban neighborhoods are Black households living in? Appendix Figure A8 illustrates that Black suburbanites reside in an increasingly diverse set of tracts, while most Black city dwellers live in low-income and majority-Black neighborhoods. Panel A shows that nearly 50 percent of Black suburbanites lived in majority-Black neighborhoods in 1970, but this figure had fallen to around 35 percent by 2016. Meanwhile, the share in a tract with no racial majority rose from around 5 percent to almost 30 percent. Turning to Panel C, which shows the share of Black suburbanites living in neighborhoods in different median income ranges, we see that the share in tracts with median income below $60,000 (in 2018 dollars) has declined sharply, while the share living in higher-income neighborhoods has grown commensurately. In contrast, Panels B and D show that the distribution of neighborhood types among Black city dwellers has been relatively stagnant.[12]

2.2 Mechanisms

These findings suggest that improvements in Black neighborhood characteristics were driven by both improvements among Black households living in the suburbs and a rising Black suburban share. In this section, we first provide evidence on how reduced White flight and selective migration by Black households contributed to improvements in the suburbs. We then discuss the factors that contributed to the rising share of Black households living in the suburbs.

[12]This distribution of neighborhood types occurred through widespread growth in suburban Black population. Appendix Figure A9 shows substantial growth in suburban tracts with a wide variety of baseline 1970 demographic characteristics.

2.2.1 Suburban White flight

The results in the previous subsection suggest that Black suburbanization has netted many households improvements in neighborhood characteristics and led Black households to live in a wide variety of suburban areas with different income levels and racial compositions. Although there are certainly suburban areas that are majority Black and quite poor, this is still a stark contrast to the outcome of the Great Migration, when White households rapidly fled central city neighborhoods in response to Black arrivals, resulting in extreme racial segregation and high levels of concentrated poverty (Boustan 2010; Derenoncourt 2019; Shertzer and Walsh 2019). A similar response in the recent suburban setting would have caused neighborhood racial and economic characteristics to quickly change, potentially wiping out the gains made by Black households that suburbanized to initially higher-SES neighborhoods. In this subsection, we use two exercises to assess the response of White households and other suburban incumbents to an increase in Black population.

Our first exercise is motivated by Schelling (1971)'s canonical work on tipping points and Card, Mas and Rothstein (2008)'s attempt to empirically estimate tipping points in neighborhood racial composition. The latter paper finds important thresholds when a neighborhood reaches 5–20% non-White, with the exact number depending on the region. To see if this racial tipping occurs in our setting, we simply plot the evolution of population by race for the set of suburban tracts that were near this tipping range in 1980. We focus on neighborhoods that were 10–30 percent Black, conservatively raising the threshold value from the literature.[13] Results are shown in Figure 4.

Panel A shows the results when including all such tracts in our 40 large CBSAs. Mean White population stays nearly constant through the end of the sample period, while strong Black and Hispanic growth drive a roughly 70 percent increase in total population. The rapid overall growth immediately points to a difference from earlier settings where strong White flight occurred—many of these suburban areas were not fully built out in 1980, leaving room to add housing units and people. This may matter in both mechanical and behavioral ways. Mechanically, it means that a Black household can arrive without another household vacating a house. In addition, White house-

[13] We use 1980 as the starting point for this exercise because few suburban tracts fell in this range in 1970.

holds in newly built or rapidly growing places may actually have different behavioral responses to Black arrivals, perhaps because neighborhood racial identity is less established.

In Panel B, we examine the moderating role of housing supply elasticity by repeating the graph in Panel A but including only tracts with population over 3,000 in 1980 (approximately the median in the sample). These tracts were more built out, making it more difficult to add large numbers of housing units. The story indeed looks somewhat different—mean White population declines from 3,000 to 2,100, and total population only increases by about 15 percent. However, we do not see the type of neighborhood flipping that characterized White flight after World War II; each new non-White household is associated with a loss of less than one White household. Both panels suggest that the response to Black arrivals in the suburbs may be small relative to previous periods and contexts, which is especially notable because the time series spans more than 35 years, a long enough period to allow even slow-moving flight to occur.

In our second exercise, we examine the flight response more systematically by replicating Boustan (2010)'s main specification in our setting. Boustan studies the White response to Black population increases in central cities between 1940 and 1970 and finds that one Black arrival led to 2.7 White departures. We replace central cities with the set of suburban tracts that were over 90% White in 1970.[14] The most direct analogue of Boustan's specification is

$$\text{white\_sub}_{mrt} = \alpha_m + \beta_1 \text{black\_sub}_{mrt} + \gamma_1 \text{cbsa\_pop}_{mrt} + \nu_{rt} + \epsilon_{mrt}, \tag{1}$$

where m indexes metropolitan areas, r indexes northern or southern states, t indexes time, and, for example, white_sub is the White population in our suburban tracts of interest. However, the exercise is complicated by the rapid growth of the Hispanic population in our sample period. This may moderate the effect of Black population changes on White population, and changes in Hispanic population could also independently drive changes in both Black and White population. We use three different versions of the specification that account for Hispanic growth in different ways.

[14] We focus on this set of tracts because most suburbs were mostly White at the outset of the sample period. We also restrict to tracts with population over 1,000 in 1970 because an existing population is necessary for a flight response. The results are not very sensitive to either of these choices.

First, we replace Black population with minority (Hispanic and Black) population on the right-hand side. Second, we replace White population with non-Black population on the left-hand side. Third, we keep Black population on the right-hand side and White population as the dependent variable, but we also add a control for Hispanic population in the tracts of interest.

In addition to the differential importance of Hispanics, we also cannot directly apply Boustan's instrumental variable strategy. We instead use a coefficient stability approach to assess the potential role of unobserved variables in our OLS estimates. We first estimate the simple specification with no controls, then add controls for 10-year lags of Black percent, Hispanic percent, median household income, poverty rate, owner-occupancy rate, and vacancy rate. We then use the approach outlined in Oster (2019) to roughly estimate what the differences in coefficients and R^2 between the controlled and uncontrolled regressions imply about omitted variable bias.

Results are shown in Table 2. Column 1 shows the OLS estimates without control variables, and the different panels contain the different combinations of dependent and right-hand-side variables. The coefficient of interest ranges from -0.3 to -0.8, implying that a unit increase in Black (or minority) population is associated with less than a one unit decrease in White (or non-Black) population. This is substantially smaller than Boustan's baseline OLS estimate of -2.1, which lies outside the 95 percent confidence interval of all of our estimates. However, Boustan's estimate grows to -2.7 when using an instrumental variable that accounts for endogeneity in the Black arrivals rate, suggesting that our OLS estimates could also be biased toward zero.

Column 2 shows results with the added control variables. The estimates shrink toward zero in all specifications. Under the typical coefficient stability argument that the remaining omitted variables have a similar relationship to the dependent and right-hand side variables, this suggests the OLS results are biased away from zero, rather than toward it. To further investigate what the change in coefficients and R^2 imply about the magnitude of the bias, we employ techniques from Oster (2019).

The Oster estimator requires assumptions on the relative degree of selection on unobserved and unobserved variables and on the R^2 that would result from a hypothetical regression of the

outcome on treatment and both the observed and unobserved control variables (denoted R_{max}). We implement two versions of the restricted estimator from Oster (2019).[15] In both, we assume that selection on observed and unobserved variables is equal. In column 3, we assume that the R_{max} is equal to the controlled R^2 plus the difference between the controlled and uncontrolled R^2. That is, adding the omitted variables would increase R^2 by the same amount as adding the observed control variables did. This shifts the estimate for the White/minority specification (the largest OLS estimate) from -0.78 to -0.76. In column 4, we instead assume that R_{max} is equal to the controlled R^2 plus three times the difference between the controlled and uncontrolled R^2. The resulting estimate for White/minority falls to -0.72. Although coefficient stability approaches have limitations, these results provide evidence that our OLS estimates do not suffer from a large bias toward zero.

Both exercises in this section suggest that the suburban response to Black arrivals is muted relative to the White response to Black arrivals in cities during earlier time periods, helping to explain how Black suburbanization has led to gains in neighborhood quality. The difference could occur because the suburbs were generally a growing area during this time period, because racial attitudes have changed, or because Black arrivals to the suburbs were of a higher social class than the earlier arrivals from the rural South. This final point is particularly important because it means that our estimates may not reflect the response to policies that help low-income Black households move to the suburbs.

2.2.2 Selective migration

Next, we use microdata to examine Black households' suburbanization decisions, studying both selection into suburbanization and choice of suburban neighborhood. Because the available data on migration is more limited than tract characteristics, our exercises here use more limited samples

[15] The restricted estimator requires more assumptions than the primary estimator in Oster (2019), but it offers two benefits. First, it yields unique solutions that lie relatively close to the estimates from the controlled regression. In contrast, the full estimator frequently requires choosing one of multiple solutions, some of which are orders of magnitude different than the controlled solution. Second, it has a transparent and easily interpreted formula. Because coefficient stability approaches fundamentally rely on several unverifiable assumptions, these benefits outweigh the costs of the additional assumptions.

including fewer years and metro areas than the remainder of the paper.

First, Black suburbanizers appear to be positively selected from cities. In Appendix Figure A10, we plot the distributions of household income for Black households that suburbanized (defined as moving from a central city to its suburbs) in the five years prior to the 1980 or 1990 censuses versus those who remained in cities over the same period.[16] The suburbanizer distribution is well to the right, with a median income for this group if $38,000 (in 2018 dollars) versus $23,000 for city dwellers. This shows one channel that contributed to the divergence in neighborhood outcomes—higher-income households, which can afford high-SES neighborhoods, disproportionately moved to the suburbs. (This channel also contributes to the increased income segregation discussed in the next section.)

Second, Black suburbanizers may selectively migrate to areas with higher SES than their origin. The Infutor data allow us to assess this by comparing the origin and destination tracts of movers; however, it does not identify race. This limits related exercises in an important way—we can only identify likely Black suburbanizers as those who moved out of city neighborhoods that were nearly all Black. This group may follow different patterns than, for example, Black households that suburbanized from predominantly White city tracts. With that caveat in mind, we restrict to suburbanizers from city tracts that were over 80 percent Black in 2010 and compare characteristics of their origin and destination neighborhoods.[17] In addition, because the Infutor data have a more limited time period than historical census data, we consider only moves between 2010 and 2016.

Panel A of Figure 5 shows the relationship between median household incomes in the destination and origin tracts. In general, suburbanizers from these areas took a large step up in neighborhood income. At the average origin income of approximately $30,000, roughly 75 percent of suburbanizers saw an increase over $20,000. The average college share (Panel C) follows a similar pattern, and Panel B shows that migrants also typically move to tracts with higher median hous-

[16] As noted in Section 1.1, we can only uniquely identify migrants from a city to its suburbs in a subsample of metro areas. More details are provided in Appendix I.

[17] City tracts that meet this criteria are 93 percent Black on average. They contain 45 percent of the city Black population in our sample, and they are a particularly interesting set of neighborhoods because they saw the fastest Black population decline during our sample period.

ing costs. While the median cost may misrepresent the availability of very cheap units, Panel D shows that suburbanizers also generally move to neighborhoods where a substantially lower share of two-bedroom apartments have gross rent under $1,000.

These graphs show that suburbanizers from majority-Black neighborhoods are typically paying a higher housing cost to move to a higher income area with higher rates of college education. While there are some caveats—notably that tract median housing cost may differ from the cost suburbanizers actually pay—this suggests that, on average, they prefer the amenity bundle provided by suburban neighborhoods and are moving to access it. Combined with the evidence that suburbanizers are positively selected from cities, these results help explain how the city-suburb divergence in neighborhood characterstics occurred: out-migrants both move to places with higher SES than their origins and are higher income themselves.

2.2.3 Drivers of increased suburban share

The changing share of Black households living in suburbs (which are higher SES on average) has also affected average neighborhood characteristics for Black households. While we do not attempt to precisely decompose the many factors that may have contributed to this trend over a 50-year time period, past literature points to several. Perhaps most important, the Fair Housing Act was passed in 1968, and some forms of housing discrimination in the suburbs have subsequently declined (Bostic and Martin 2005; Turner et al. 2013).[18] In addition, job suburbanization (Miller 2020; Baum-Snow and Hartley 2020) and changing relative amenities in cities and suburbs (Baum-Snow and Lutz 2011; Baum-Snow and Hartley 2020) could influence Black suburbanization decisions.

Finally, the growth of the Black middle class has likely contributed to the rise in Black suburbanization (Landry and Marsh 2011; Frey 2015; Bayer and Charles 2018). To assess the importance of this channel, we use a simple decomposition of the relative importance of changing Black incomes and changing suburban share within income bins. Results are shown in Appendix Figure A11. While both factors matter, changes in the suburban share conditional on income explain

[18] Note that other research illustrates that housing discrimination has certainly not been eliminated. See, for example, Christensen and Timmins (2018).

about 70 percent of the total. This suggests that income growth contributes to the trend but is not the dominant factor. Instead, factors that increase the suburban share conditional on income, such as changes in housing discrimination or relative amenities in cities and suburbs, must also play a large role.

3 Income Stratification

In 1970, income segregation within Black households was lower than among the overall population. However, it has since risen rapidly and now scores about 50 percent higher on common segregation indices than the nation as a whole (Bischoff and Reardon 2014). This trend is of particular interest due to Wilson (1987)'s influential hypothesis that increasing Black class stratification could have a variety of negative effects on high-poverty, majority-Black city neighborhoods. In this section, we show that increased Black income segregation has largely occurred through suburbanization and changes in the suburbs. We also show that similar patterns appear for related statistics on income integration that have been highlighted by past literature.

Strong and growing income sorting between Black households in cities and suburbs is immediately apparent in the raw data. The mean household income in our sample was similar in the two areas in 1970: $50,000 in suburbs versus $49,000 in cities. However, in 2016, the figure had risen to $72,000 in suburbs versus only $54,000 in cities (Appendix Figure A12). Unsurprisingly, indices of Black income segregation at the tract level have increased sharply over the same time period. The time series of the segregation index developed in Reardon and O'Sullivan (2004), shown in the upper line of Figure 6, has increased from 0.1 in 1970 to 0.18 in 2016. (This metric can be interpreted as the share of total income variation that is between census tracts.) In the lower line on the figure, we freeze segregation within the suburbs and between cities and suburbs at 1970 levels and recompute the aggregate index in each year. The frozen suburbanization index rises by only about a quarter of the increase in the actual index, suggesting that changes in income segregation within cities have played a relatively small role in the overall trend.[19] In Appendix II.A, we show

[19]Farley (1970) describes several examples of majority-Black suburban enclaves that developed prior to World War

that this trend also occurs within each census region.

The same general pattern is visible in a number of measures that are easier to interpret than an aggregate index. For example, previous literature has noted that Black households tend to live in neighborhoods with lower median income than the neighborhoods of White households with a similar income (Bayer, Fang and McMillan 2014, Reardon, Fox and Townsend 2015). Figure 7 shows how this relationship has evolved differently for Black households in cities and suburbs. For the suburbs, shown in the left panel, we see that the correlation between household and neighborhood income has increased substantially. High-income Black households in the suburbs now live in much higher income neighborhoods than they did in 1970. For cities, in the right panel, the change has been much smaller. Another metric of income stratification is the rate at which high-income households share neighborhoods with households in poverty. Appendix Figure A13 shows the share of Black households earning over $100,000 (in 2018 dollars) who live in a tract with over 20 percent poverty. In central cities, this percentage has remained constant at about 40, while it has fallen from 22 percent to 10 percent for high earners in the suburbs. This has led the overall average to decline from 30 percent to 20 percent, with all of the improvements arising from the combination of decreasing suburban poverty exposure and an increasing suburban share. For both of these alternative measures, most of the changes have occurred outside of central cities.

A factor that may be both a cause and consequence of this pattern is the growth of high-SES, majority Black neighborhoods in the suburbs. These areas have received scholarly attention because they are both attractive to many high-SES Black households and historically scarce (Lacy 2007; Bayer, Fang and McMillan 2014; Lacy 2016; Aliprantis, Carroll and Young 2019). This scarcity has been used to explain why Black households tend to live in lower-SES neighborhoods than White households with equivalent characteristics—they may have to accept lower neighborhood SES in order to live in an area with a substantial Black population. In Figure 8, we show that the number of majority-Black tracts in our sample with median income above the sample median

II. These areas largely suffered from the same discrimination and segregation as majority-Black neighborhoods in cities. This helps explain why city and suburban mean Black incomes were similar in 1970, as well as why the arrival of higher income Black households increased income integration within the suburbs.

has risen from under 200 in 1970 to over 500 in 2016. However, again, the trend is nearly entirely driven by increases in the suburbs, where the number of such tracts grew from 20 in 1970 to 300 today. Meanwhile, the number of high-income, majority-Black tracts in cities has remained the same since 1980. Panel B shows a similar pattern for high-education majority-Black tracts.[20]

These findings suggest that municipal borders play an important role in the growing class stratification within Black households. The nature of that role, however, is an open question. One potential explanation comes from prior sociological research that suggests that high-SES Black neighborhoods struggle to maintain separation from lower-income Black households, leading indicators like neighborhood income to gradually decline (Pattillo-McCoy 2000). Suburbs may be distinct from cities in ways that help preserve this separation. For example, suburbs generally require a car in order to get around easily, and they also have relatively large shares of owner-occupied housing. These factors could create financial barriers that prevent the in-migration of lower-income households.

4 Black Population Decline in Central Cities

While many Black households have achieved significant gains through suburbanization, those in cities have instead seen neighborhood SES and population decline. The neighborhood income of the average Black city dweller has fallen relative to the sample average, and census tracts that were high poverty and majority Black in 1970 have since lost over 60 percent of Black and 40 percent

In this section, we explore Black population decline in central cities in detail. We focus on population decline because it is at the root of many amenity changes—large losses in a neighborhood can have negative effects ranging from school closures to reduced retail options to declining support for local institutions such as churches or block clubs. In addition, studying the population mechanics sheds light on the determinants of Black suburbanization. We first use a detailed analysis of heterogeneity across neighborhoods to distinguish the roles of gentrification and declining

[20]Similar results emerge when we stratify on whether a tract was majority Black in 1970, as shown in Appendix Figure A14. Whether in cities or suburbs, growth in high-SES majority-Black neighborhoods has generally been in neighborhoods that were not majority Black at the start of the sample period.

amenities or quality of life. Second, we use a simple demographic projection model to separate the contribution of changing fertility and death rates and the net migration of different age groups.

4.1 Decline in gentrified versus high-poverty neighborhoods

A self-reinforcing cycle of decline and disinvestment could be responsible for the large population losses in tracts that were high poverty and majority Black in 1970. Some residents move away due to low quality of life, and this further reduces quality of life and outside investment, generating further population loss. Alternatively, gentrification, which has increased greatly over the same time period that Black city population has declined, could reduce Black population in affected neighborhoods (Baum-Snow and Hartley 2020).

To assess the relative importance of these two stories, we tabulate Black population decline in our sample by 2016 tract characteristics. If gentrification is the dominant factor, we would expect to see that most decline has occurred in areas that now have low poverty rates and a relatively large White population. Alternatively, we may see that decline has been concentrated in areas that remain high poverty and majority Black today. The latter appears to be the case, as shown in Table 3. In Panel A, we see that central city tracts with 2016 poverty rates over 20 percent have lost one million Black people since 2000, while low-poverty tracts lost only 80,000. Panel B show that tracts that were both high poverty and majority Black in 2016 lost 830,000 Black people over the same time period. In contrast, majority-Black tracts that are not high poverty lost only 60,000, while all other city tracts (i.e., tracts that are not majority Black) lost 220,000.

These broad tract categories are useful because they capture many possible definitions of gentrification. However, there are also drawbacks. For example, it is possible that the total population change in areas that were high income in 2016 disguises opposite trends in tracts that were always high income and those that gentrified. In Appendix Table A3, we tabulate Black population in each year for census tracts that did and did not gentrify between 1970 and 2016. We say that a tract gentrified if its median income was below the CBSA median in 1970 and above it in 2016. We additionally separate "superstar" cities (Boston, Los Angeles, New York, Seattle, and San Francisco)

from others.

During the 2000–2016 time period when total Black city population in our sample fell, all gentrification categories saw declines. However, about 85 percent of the aggregate decline occurred in tracts that did not gentrify. This result does not occur because gentrified neighborhoods lost a smaller percentage of their Black population—the relative change was about 11 percent in both sets of tracts. Instead, the much lower baseline Black population in tracts that gentrified leads equal percent changes to have very different implications for the aggregate total. Interestingly, the lowest percentage decrease (-5 percent) was in non-superstar city tracts that gentrified, while the highest decrease (-21 percent) was in gentrified tracts in superstar cities. This may occur because amenity improvements help attract or retain Black households as long as they are not paired with too large of an increase in housing costs. Together, these results suggest that while gentrification can have large effects within a neighborhood and tends to be salient when it occurs, it is not common enough, at least in neighborhoods with a large initial Black population, to have a large effect at the aggregate level. Instead, it appears that the lion's share of decline occurs in areas with low SES, pointing to the importance of low or declining amenities.

4.2 Differences across age groups and the role of demographic trends

While our focus in this study is suburbanization and migration more broadly, demographic trends could also contribute to Black city population decline. To assess their importance, we now analyze heterogeneity across age groups and do some simple demographic projections. Table 4 contains the time series of Black population by age group for cities and suburbs in our sample. Panel A shows that the number of Black children in central cities has fallen by a remarkable 30 percent since 2000. The number of young adults (18–34) has fallen by 8 percent, and 35–64-year-olds have decreased by 5 percent. In contrast, the number of Black people over age 65 has increased by nearly 20 percent in cities. These figures are influenced by national demographic trends, as the total number of Black children in the United States decreased slightly over the same period and the Black over-65 population grew quickly. However, Panel C shows that the city share of the

sample total has changed differentially across age buckets, with its share of children falling from 64 percent to 33 percent and its share of senior citizens falling only from 66 percent to 40 percent.

These results suggest that households with children play a disproportionate role in the recent decline, a fact that has not, to our knowledge, been documented in prior literature. This may result from preferences over city and suburban amenities that vary with age and household status, leading different groups to respond differently to changes in the two areas (Boustan and Shertzer 2013; Albouy and Faberman 2019). Alternatively, the baseline age distribution of the Black population in cities may not have been at steady state in 1970, leading to changes over time even without any changes in preferences or amenities. Appendix Figure A15 shows that the Black city population was indeed disproportionately young in 1970, which was approximately the conclusion of the Great Migration. Moreover, this demographic story may also help explain the decline in total population, as a changing age distribution will lead the natural growth rate of the population to change over time.

Motivated by this evidence, we assess the importance of migration and changing natural growth rates using a simple and mechanical demographic model. We start with the central city Black age distribution in a given decade, say, 1970. We then simulate what the Black age distribution in 1980 would have been if there were no in- or out-migration. To do so, we mechanically age the population in each age bin and assume that people die and give birth at the average rate for that decade. (Note that fertility rates also fell over the sample period.) The exercise bears some similarities to Boustan and Shertzer (2013) but uses an accounting model rather than a regression-based approach.

This simulation allows us to compute two interesting objects. First, the implied natural growth rate (e.g., simulated population in 1980 − actual population in 1970) gives a sense of the demographic tailwind driven by the baseline age distribution at different points in time. Second, the observed shortfall (e.g., simulated population in 1980 − observed population in 1980) provides a measure of net migration, reflecting the relative attractiveness of cities. These objects can also be computed separately for different age groups and races.

Figure 9, Panel A plots actual growth, natural growth, and shortfall for total Black population in cities in each decade, all normalized by population at the beginning of the decade. Actual growth has fallen from 9 percent in the 1970s to -5 percent today, first turning negative in the 2000s, and natural growth has trended steadily downward, from 12 percent to 7 percent now. This decline in natural growth accounts for about a third of the observed population change, illustrating that a changing age structure and falling fertility are important factors in ongoing trends in Black city population. Of course, since our simulation uses the observed population distribution in each base period, age-selective migration in one period will also impact natural growth rates in the next.

The migration shortfall has also increased, accounting for the remainder of the decline. It hovered at -5 percent between 1980 and 2000 before falling to roughly -12 percent. This change has not been evenly distributed across age groups, as shown in Panel B of Figure 9. For people over age 35, the shortfall has remained steady at about -15 percent. This may reflect a general tendency to suburbanize after having children or increasing income over the life cycle. However, for people under 35, it fell from roughly 0 between 1980 and 2000 to -10 percent in the most recent decades. This suggests that the changing decisions of young people have played a key role in the decline. Early in the sample period, cities performed relatively well with young Black households, perhaps due to good employment opportunities, cheap housing options, or appealing amenities. This has since changed. The increasing shortfall among young Black people is not only different from earlier time periods, it is also significantly different than what we see from White and Hispanic populations today, as shown in Appendix Figure A16. All groups have a significant shortfall among people over age 35, but White and Hispanic populations have recently outperformed projected growth in the young population.

Studying differences across age groups and demographic trends improves our understanding of central city Black population decline in two main ways. First, trends have differed greatly across age groups, with young households and those with children playing a pivotal role in the decline. While not as salient as a long-time resident moving away from a neighborhood, a 25-year-old deciding not to move to that neighborhood has the same impact on its population. Second, both

forces identified above—the aging of the disproportionately young Black city population at the end of the Great Migration and the changing choices of different age groups—help drive the observed patterns.

5 Conclusion

We provide the first economic analysis of Black suburbanization. We show that high-income Black households are increasingly locating in suburban neighborhoods with relatively high SES. These suburbanizers have largely retained their gains in neighborhood quality in part because the White flight in response to their arrival is muted relative to earlier time periods. In cities, majority-Black neighborhoods have been unable to compensate for these departures because of both low net migration and slowing natural growth rates. This leads these areas to see declines in population as well as, because Black suburbanizers are positively selected, decreases in average neighborhood income. Together, these trends are leading to a divergence, with higher-income Black suburbanites increasingly living in more integrated neighborhoods with higher-quality indicators and lower-income Black city dwellers seeing their neighborhood characteristics stagnate or worsen. We believe our paper is the first to document these patterns in detail and explore their drivers and implications.

Our results illustrate an important feature of the evolution of urban geography and racial inequality in America—uneven progress. Similar patterns appear in the labor market: Bayer and Charles (2018) show that the racial wage gap has closed more quickly at higher quantiles of the distribution. More broadly, Wilson (1987) famously observed that reductions in discrimination and affirmative action programs could disproportionately benefit the Black middle class, enabling them to separate from low-income Black households in a variety of ways.

While we have taken a descriptive approach with the goal of laying out new stylized facts and identifying their candidate drivers in the spirit of Gelman and Imbens (2013), our findings lay the groundwork for a number of causal research questions. First, what role do municipal borders play in driving these changes? For example, do car dependence and owner-occupied housing help pre-

serve class sorting across municipalities? Second, how will the reallocation toward the suburbs affect the economic and social outcomes of Black individuals? Third, how have reduced housing discrimination and inadequate provision of public services in majority-Black neighborhoods affected Black migration patterns? Finally, what are the political implications of changing racial compositions of electoral districts?

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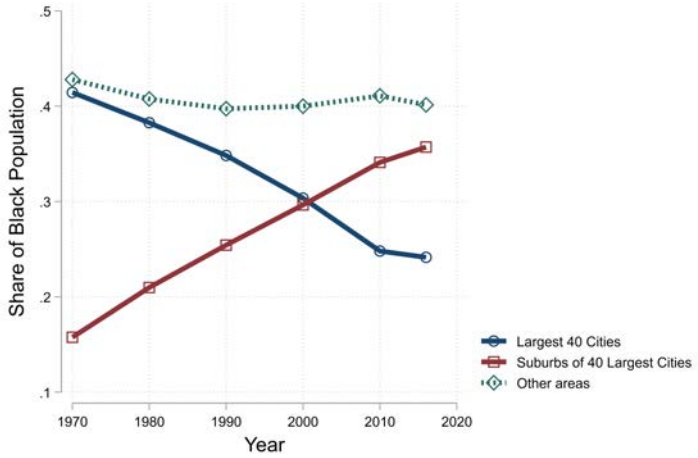
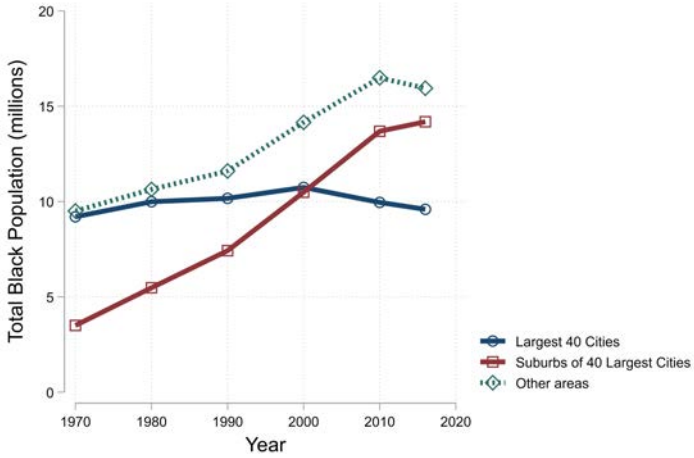
Figures and Tables

Figure 1: Change in Black Residential Locations Since 1970

Panel A: Share of Black Population



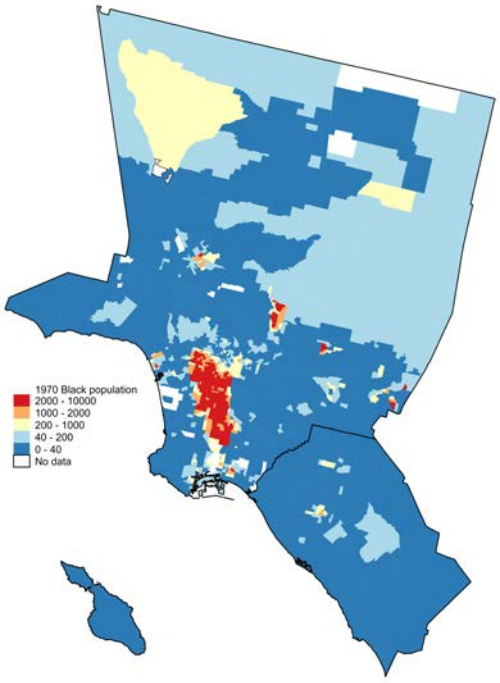
Panel B: Total Black Population



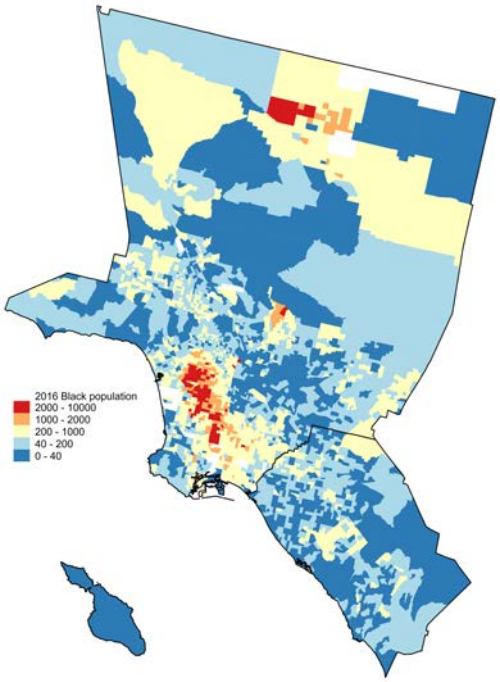
Notes: Total and share of Black population in large central cities, their suburbs, and other areas. Largest 40 cities is defined as the central cities of the most populous 20 CBSAs in southern states and in all other states, as measured in 1970. Suburbs are defined as the CBSAs containing these cities, less the principal city itself. Municipalities and CBSAs are consistently defined according to 2010 boundaries. We assign areas that had not been assigned to a census tract in 1970 or 1980 to the other areas category, inferring their population from the national Black population. The 40 central cities are Atlanta, GA; Baltimore, MD; Birmingham, AL; Boston, MA; Buffalo, NY; Charleston, SC; Charlotte, NC; Chicago, IL; Cincinnati, OH; Cleveland, OH; Dallas, TX; Detroit, MI; El Paso, TX; Greensboro, NC; Houston, TX; Jacksonville, FL; Kansas City, KS; Kansas City, MO; Knoxville, TN; Los Angeles, CA; Memphis, TN; Miami, FL; Milwaukee, WI; Minneapolis, MN; Nashville-Davidson, TN; New Orleans, LA; New York, NY; Oakland, CA; Orlando, FL; Philadelphia, PA; Pittsburgh, PA; Providence, RI; Richmond, VA; San Antonio, TX; San Diego, CA; San Francisco, CA; Seattle, WA; St. Louis, MO; St. Paul, MN; Tampa, FL; Virginia Beach, VA; Washington, DC; Winston-Salem, NC.

Figure 2: Spatial Distribution of Black Population in Los Angeles Metro Area

Panel A: Census Tract Black Population in 1970

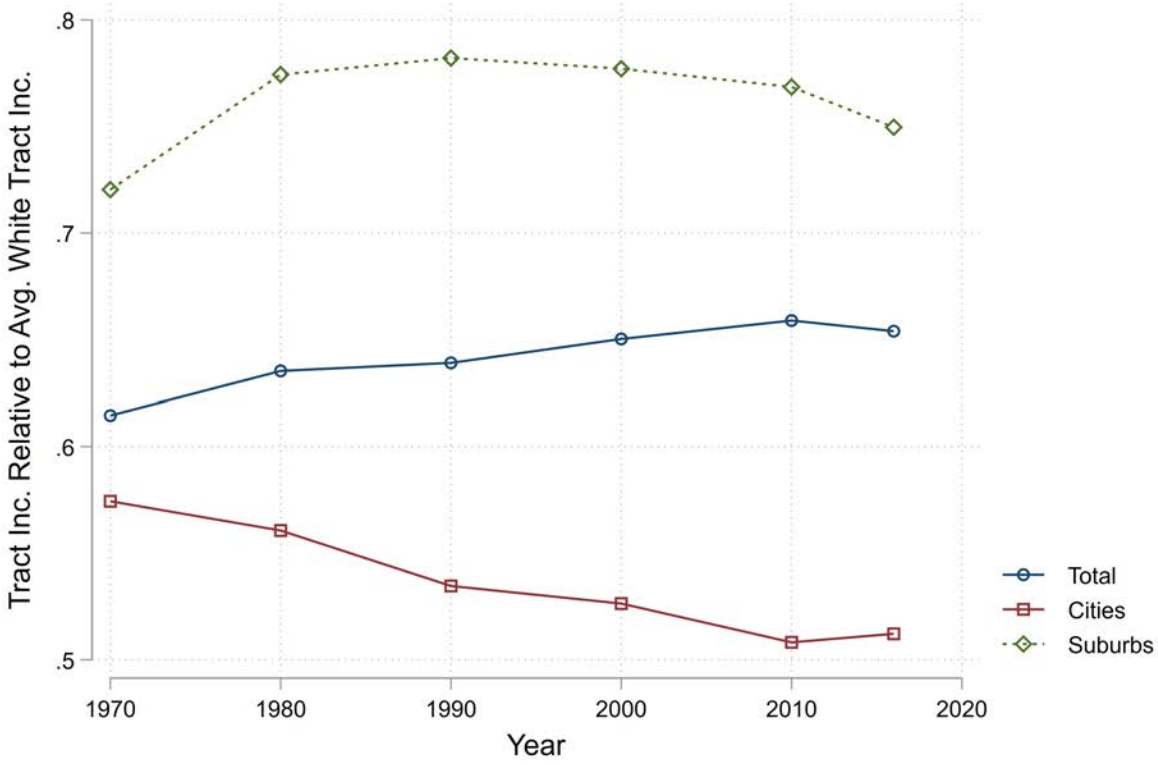


Panel B: Census Tract Black Population in 2016



Notes: Total Black population by census tract in the Los Angeles CBSA in 1970 (Panel A) and 2016 (Panel B). Tracts with 0–40 Black individuals are shown in dark blue; 40–200, light blue; 200–1,000, beige; 1,000–2,000, orange; and 2,000–10,000, red. Data are drawn from the 1970 census and the 2014–2018 ACS. Census tract boundaries are from 2010. Black lines represent county boundaries. Similar maps for Chicago, Houston, and New York City are in Appendix Figures A3, A4, and A5.

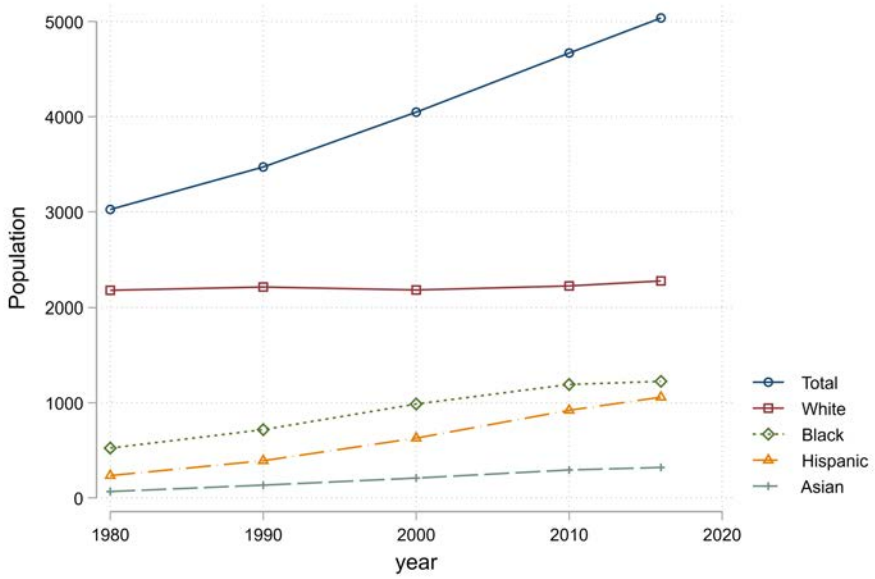
Figure 3: Neighborhood Income for Black Individuals Relative to White Individuals



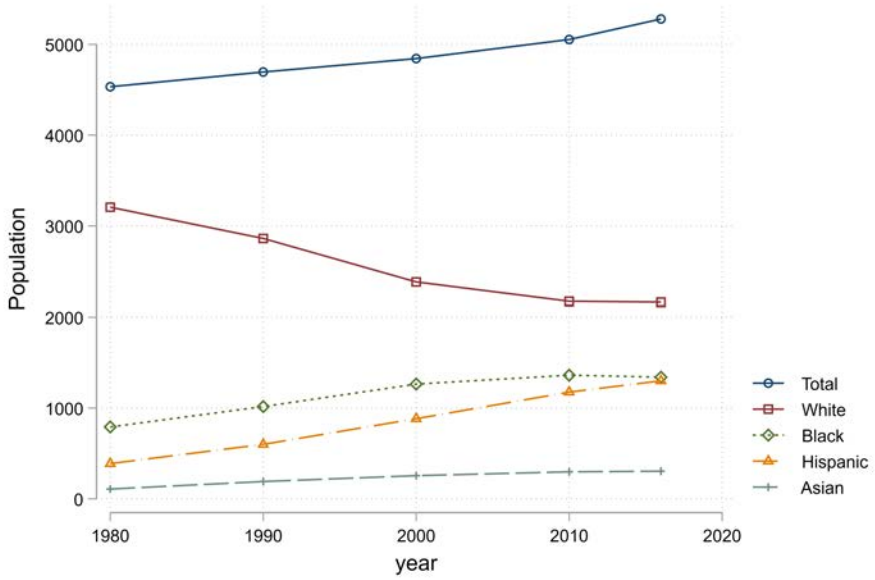
Notes: This figure plots the time series of average neighborhood median household income for Black individuals divided by the same statistic for White individuals. The blue line contains Black individuals in all tracts in our sample, while the green and red lines include only Black individuals in the suburbs and cities, respectively. In all cases, neighborhood income among White individuals (the denominator) includes all tracts in the sample. Census tract income data come from the 1970 to 2000 decennial censuses and the 2008–2012 and 2014–2018 ACS. The exercise uses our primary sample of 40 large cities and their suburbs.

Figure 4: Population by Race in Suburban Neighborhoods in Tipping Range in 1980

Panel A: All Tracts in Tipping Range

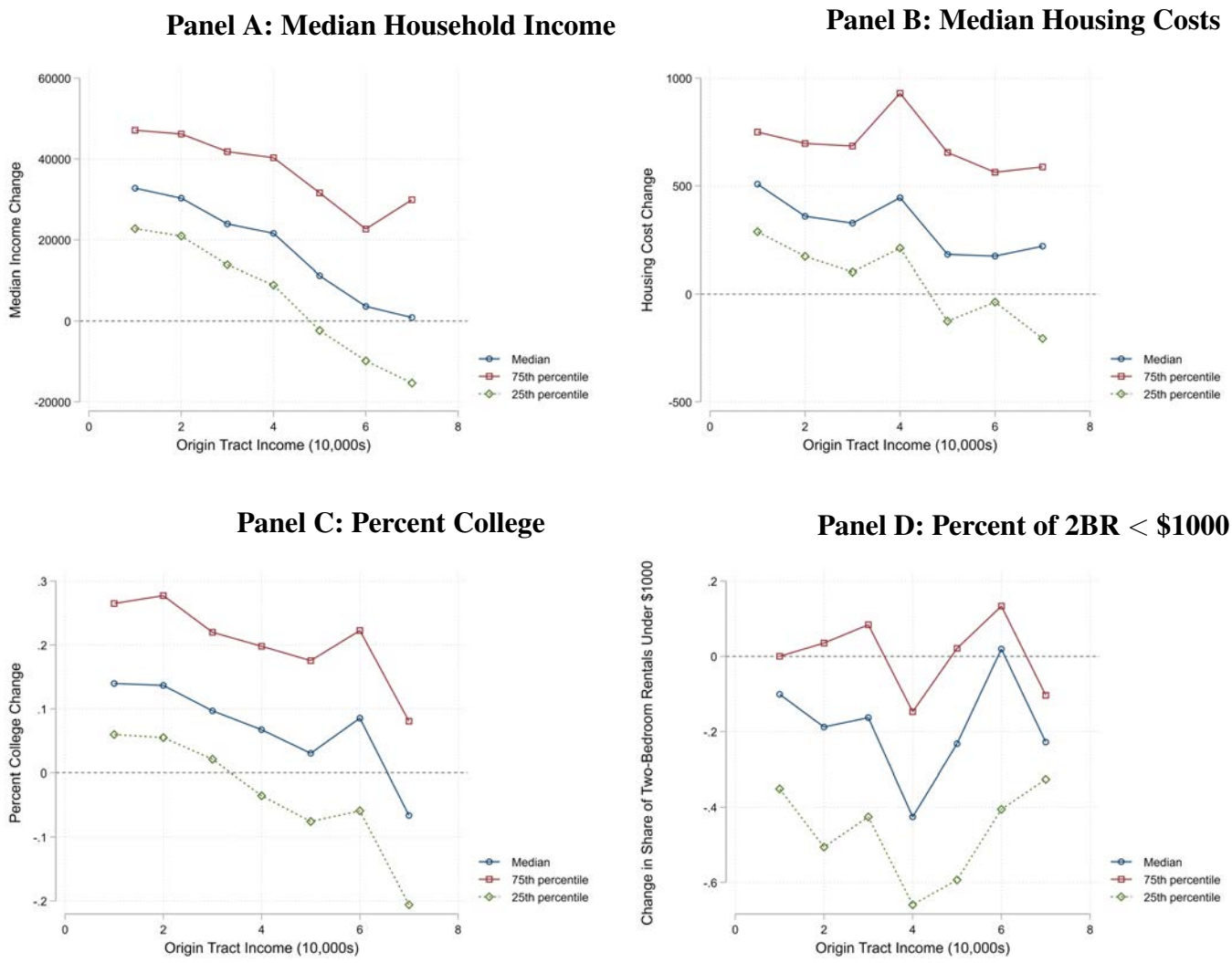


Panel B: Restricting to Tracts with 1980 Population Over 3,000



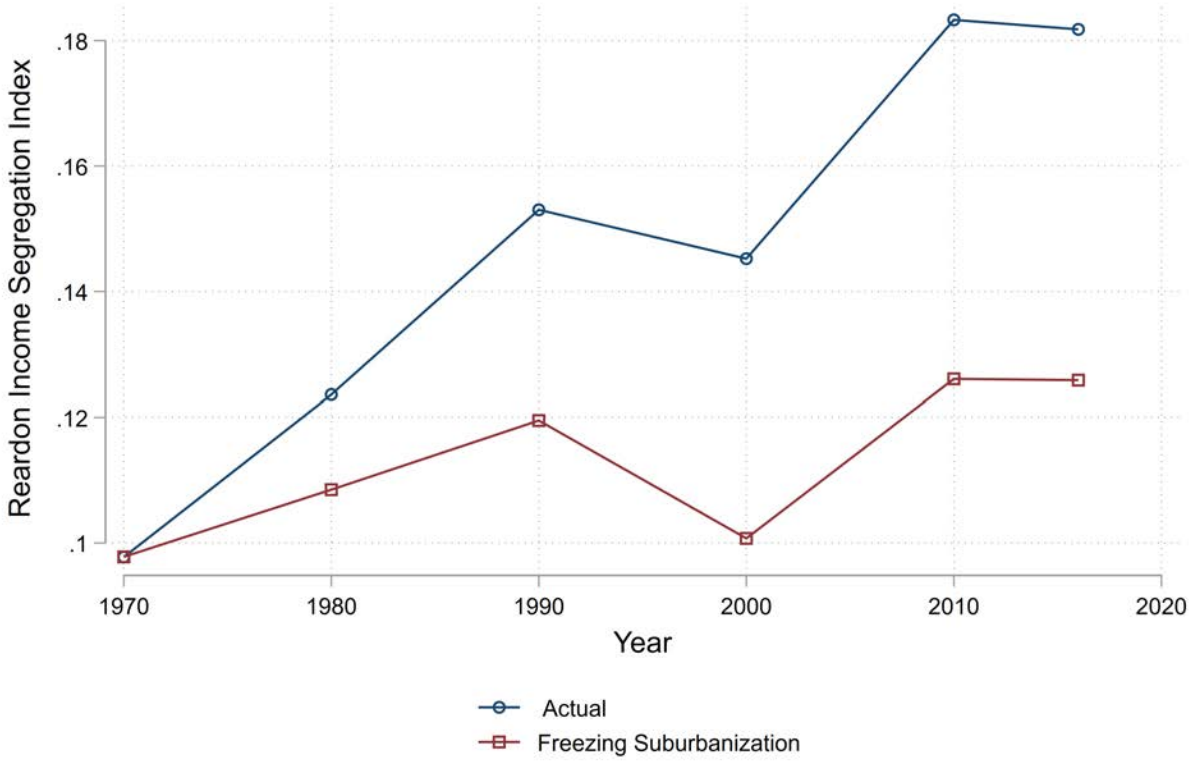
Notes: Time series of population by race for suburban tracts that were between 10 and 30 percent Black in 1980. The top panel includes all such tracts, while the bottom restricts to tracts that had population over 3,000 in 1980. This restriction helps to identify areas that were more built up in 1980 and likely had lower housing supply elasticity. The exercise includes our primary sample of 40 large cities and their suburbs.

Figure 5: Comparing Origin and Destination Neighborhoods of Suburbanizers from Highly Black Areas



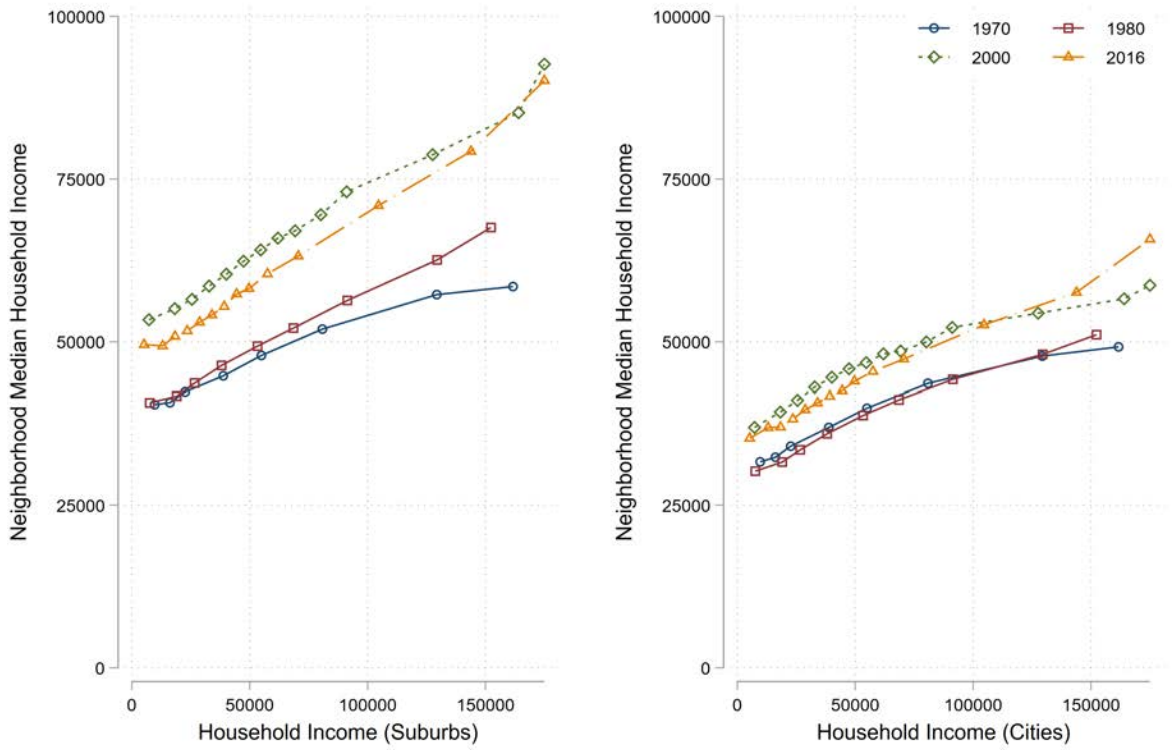
Notes: This figure shows the difference in neighborhood characteristics (destination minus origin) for people who suburbanized from city tracts that were over 80 percent Black, conditional on the median income of the origin tract. The blue line represents the median value of the difference, while the red and green are, respectively, the 75th and 25th quantiles. The sample includes only moves to the suburbs of the origin city during the years 2010-2016. Migration data is from Infutor Data Solutions, and tract characteristics are drawn from the 2008–2012 ACS. Median housing costs includes gross rent for renters and gross ownership costs for homeowners, and percent college is defined as the share of people over age 25 with at least a bachelor's degree. Panel D provides a measure of the availability of low-cost housing—the percent of two-bedroom rental units with gross rent below $1,000. The exercise includes our primary sample of 40 large cities and their suburbs.

Figure 6: Change in Income Segregation Within Black Households



Notes: This figure shows the evolution of the Reardon and O'Sullivan (2004) income segregation index within Black households from 1970 to 2016. The index can be interpreted as the share of the variation in household income that is between census tracts. The blue line shows the actual evolution of this index, while the red line shows the evolution under the counterfactual assumption that the share of Black households living in the suburbs and the income segregation of Black households in suburban tracts both remained frozen at their 1970 values. The index is computed using Census and ACS data on the distribution of Black households across income bins within census tracts, as detailed in Appendix I. The exercise uses our primary sample of 40 large cities and their suburbs.

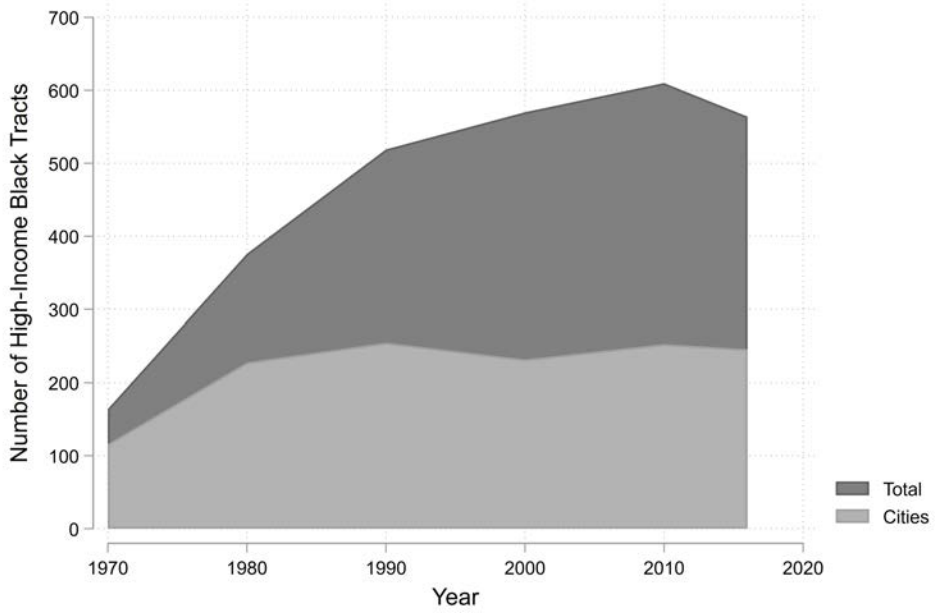
Figure 7: Black Household Income versus Neighborhood Income



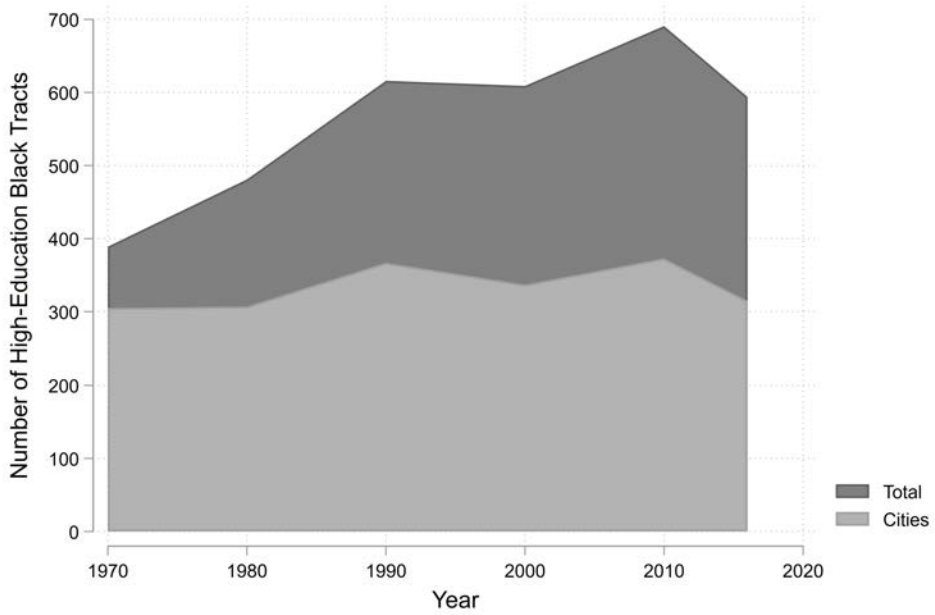
Notes: Evolution of the relationship between Black households' income and their neighborhood's median income. Each line shows the relationship in a different year, with median neighborhood income on the y-axis and household income on the x-axis. The left panel represents suburban households, while the right contains those in central cities. Household income is inflation-adjusted and set at the midpoint of each income bin provided by the Census Bureau in a given year. The exception is income bins with a lower limit exceeding $175,000, for which we set household income to $175,000 in order to remove top-coding differences across years. The exercise uses our primary sample of 40 large cities and their suburbs.

Figure 8: Growth in Majority-Black Neighborhoods with High Levels of Income and Education

Panel A: Median Income Above Sample Median



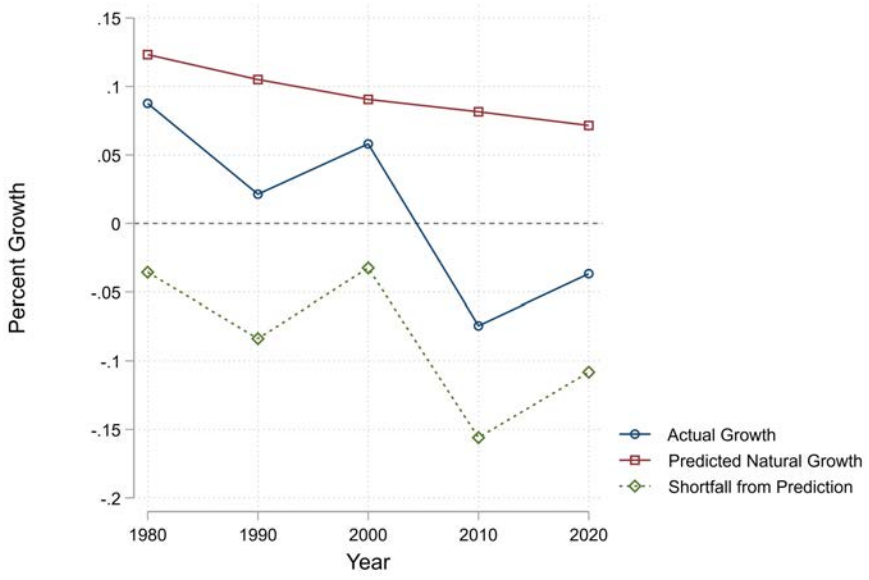
Panel B: College Share Above Sample Median



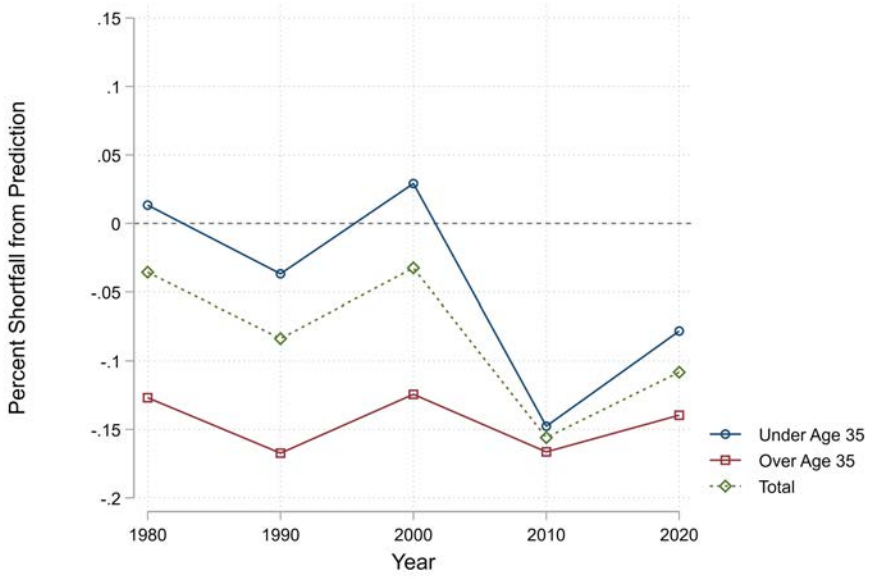
Notes: This figure shows the number of census tracts that are majority Black and either high income (Panel A) or high education (Panel B). High-income is defined as having tract median income above the median value in the sample, and high-education is defined analogously for share of residents over age 25 that have at least a bachelor's degree. In both panels, the light gray area represents the number of tracts that fit the definition in central cities, while the dark gray shows the total number of tracts that fit the given definition. The exercise uses our primary sample of 40 large cities and their suburbs.

Figure 9: Predicted Natural Growth and Realized Shortfall of Black Central City Population

Panel A: Overall Natural Growth and Realized Shortfall



Panel B: Realized Shortfall Separated by Age Group



Notes: Panel A compares the predicted natural growth rate in the Black population in central cities to the observed growth rate. Panel B plots the realized shortfall (the difference between predicted natural growth and observed growth) separately for people over and under age 35. As described in detail in Section 4, predicted population growth rates for year t are constructed by taking the true population age distribution in time $t-10$, mechanically aging the population in each five-year age bin, assuming people die and give birth at the average rate for that decade, and assuming that net-migration is zero for each age group. The predicted population growth rate is then: $(pop_{\text{simulated},t} - pop_{\text{observed,t-10}})/(pop_{\text{observed,t-10}})$. Census data on Black population in age bins are standardized following the procedures described in Appendix I. Race-age specific fertility rates in each year are taken from the Census Bureau, and age-specific mortality rates come from the Centers for Disease Control. The exercise uses the 40 large central cities in our primary sample.

Table 1: Black and Total Population By Tract Type (in millions)

Urban Status	*Racial majority in 1970*	*Poverty status in 1970*	*1970*	*1980*	*1990*	*2000*	*2010*	*2016*
Panel A: Black population								
City	Other	Low	1.01	2.97	4.06	5.22	5.27	5.19
City	Other	High	0.71	0.72	0.75	0.79	0.75	0.72
City	Black	Low	2.45	2.42	2.18	2.04	1.73	1.65
City	Black	High	5.03	3.87	3.18	2.69	2.20	2.03
Suburb	Other	Low	1.52	3.53	5.59	8.70	11.88	12.41
Suburb	Other	High	0.31	0.33	0.36	0.44	0.58	0.62
Suburb	Black	Low	0.64	0.67	0.62	0.58	0.51	0.48
Suburb	Black	High	1.03	0.94	0.83	0.76	0.71	0.67
Panel B: Total population								
City	Other	Low	22.6	22.8	24.2	26.3	26.6	27.9
City	Other	High	3.85	3.22	3.36	3.53	3.72	3.91
City	Black	Low	3.02	2.69	2.48	2.38	2.20	2.27
City	Black	High	5.93	4.43	3.91	3.64	3.50	3.66
Suburb	Other	Low	52.6	64.0	76.0	88.1	98.1	103.5
Suburb	Other	High	1.71	2.03	2.56	3.25	4.19	4.69
Suburb	Black	Low	0.87	0.84	0.82	0.82	0.83	0.87
Suburb	Black	High	1.32	1.20	1.15	1.19	1.29	1.37

Notes: This table reports the evolution of Black and total population in different types of neighborhoods. Panel A shows Black population, and Panel B shows total population (both in millions). High-poverty is defined as above 20 percent. Neighborhoods are categorized according to their 1970 characteristics. The exercise uses our primary sample of 40 large cities and their suburbs.

Table 2: Suburban Population Response to Increased Black Population

	(1) *OLS*	(2) *OLS w/controls*	(3) *Oster 1x*	(4) *Oster 3x*
Panel A: DV=White pop.				
Minority population	-0.802	-0.780	-0.759	-0.716
(S.E.)	(0.239)	(0.250)		
MSA population	0.042	0.057		
(S.E.)	(0.045)	(0.045)		
R^2	0.773	0.795		
N	156	156		
Panel B: DV=non-Black pop.				
Black population	-0.296	-0.025	0.246	0.789
(S.E.)	(0.336)	(0.436)		
MSA population	0.119	0.123		
(S.E.)	(0.019)	(0.030)		
R^2	0.644	0.694		
N	156	156		
Panel C: DV=White pop.				
Black population	-0.390	-0.261	-0.131	0.128
(S.E.)	(0.264)	(0.384)		
MSA population	0.059	0.063		
(S.E.)	(0.046)	(0.045)		
Hispanic population	-1.081	-1.060		
(S.E.)	(0.298)	(0.295)		
R^2	0.799	0.814		
N	156	156		

Notes: This table examines the population response to increased Black or minority populations in suburban census tracts that were over 90% White in 1970. Panel A considers the White population response to increased minority (Black and Hispanic) population, and Panel B shows the non-Black response to increased Black population. Finally, Panel C considers the White response to increased Black population, controlling for Hispanic population. Within a panel, Column 1 simply estimates Equation 1 using OLS. Column 2 adds controls for ten-year lags of Black percent, Hispanic percent, median household income, poverty rate, owner-occupancy rate, and vacancy rate. Columns 3 and 4 employ the restricted estimator from Oster (2019). The Oster 1x specification assumes that adding the unobservable controls to the regression would increase the R^2 by the same amount as did adding the observed controls, while the Oster 3x specification assumes that this would increase the R^2 by three times that amount. One CBSA (El Paso, TX) did not have any suburban tracts that were over 90% White in 1970 and is not included in the sample.

Table 3: Black Population (in millions) in Central City Tracts Stratified by 2016 Characteristics

Tract Type	*1970*	*1980*	*1990*	*2000*	*2010*	*2016*
Panel A:						
High poverty	7.06	7.36	7.20	7.25	6.46	6.17
Low poverty	2.14	2.63	2.96	3.49	3.49	3.42
Panel B:						
Majority Black, high poverty	5.38	5.59	5.31	5.20	4.52	4.34
Majority Black, low poverty	1.07	1.40	1.52	1.74	1.67	1.68
Not majority Black	2.75	3.00	3.34	3.80	3.77	3.57
Panel C:						
Majority Black	6.45	6.99	6.82	6.94	6.19	6.02
Majority White	0.63	0.68	0.76	0.93	0.97	0.91
Majority Hispanic	1.08	1.11	1.13	1.13	1.00	0.92
All other racial compositions	1.05	1.22	1.45	1.75	1.80	1.74

Notes: This table reports the time series of Black population in central city neighborhoods stratified by their 2016 characteristics. Panel A separates tracts that are high- and low-poverty, with high-poverty defined as over 20%. Panel B separates tracts into three categories—majority Black and high poverty, majority Black and low poverty, and all other tracts. Finally, Panel C separates tracts according to their racial majority. The 40 central cities in our primary sample are included.

Table 4: Black Population in Cities and Suburbs by Age Group

	1970	1980	1990	2000	2010	2016
Panel A: City total (millions)						
Age 0-17	3.52	3.19	2.96	3.16	2.47	2.17
Age 18-34	2.33	3.08	3.02	2.71	2.53	2.52
Age 35-64	2.57	2.74	3.07	3.68	3.73	3.53
Age 65-	0.57	0.77	0.94	1.02	1.05	1.21
Panel B: Suburb total (millions)						
Age 0-17	1.97	2.89	3.38	4.55	5.38	4.45
Age 18-34	1.20	2.70	3.36	3.96	5.13	4.77
Age 35-64	1.28	2.09	3.09	5.03	7.33	6.84
Age 65-	0.29	0.54	0.76	1.02	1.52	1.81
Panel C: City share (percent)						
Age 0-17	0.64	0.52	0.47	0.41	0.31	0.33
Age 18-34	0.66	0.53	0.47	0.41	0.33	0.35
Age 35-64	0.67	0.57	0.50	0.42	0.34	0.34
Age 65-	0.66	0.59	0.55	0.50	0.41	0.40

Notes: This table reports the time series of Black population in central cities and suburbs by age groups. Panel A reports central city totals; Panel B is suburb totals, and Panel C is the city share of metropolitan total. The procedure used to standardize the age bins available in each year are described in Appendix I. This exercise uses our primary sample of 40 large cities and their suburbs.

Appendices

This appendix contain further details about the exercises in main text. Section I contains more information about data sources and variable construction. Section II.A discusses how the main results are similar or different across different regions of the United States. Section II.B contains the additional figures and tables that are referenced in the main text.

I Data Preparation

I.A Panel of Census Tract Characteristics

We combine three main sources to produce the tract panel data used in most of our analysis. The first is the Longitudinal Tract Data Base (LTDB),[21] which provides tract characteristics for the years 1970, 1980, 1990, 2000, and 2010, mapped to consistent 2010 tract boundaries (Logan, Xu and Stults 2014). The first four years of characteristics are taken from decennial censuses, while 2010 is drawn from the 2008-2012 American Community Survey (ACS). Second, IPUMS provides additional tract variables for the years 1970, 1980, 1990, 2000, 2010, and 2016 (Manson et al. 2017). For the IPUMS data, the first five years are taken from decennial censuses, while 2016 is drawn from the 2014-2018 ACS. Finally, the third source is Census and American Community Survey (ACS) microdata for each of these years, again compiled by IPUMS (Ruggles et al. 2020).

The 1970-2010 LTDB forms the base of our panel, which we supplement with additional characteristics from IPUMS and the 2014-2018 ACS. To map the additional characteristics to consistent 2010 tract boundaries, we use the set of crosswalks provided in the LTDB. Finally, we impute some variables by combining the LTDB and the Census/ACS microdata. We do this when a variable of interest is not included in any of the datasets, but a similar variable is. For example, we may want the number of US-born non-Hispanic Black people who live in a census tract, but find that IPUMS contains only counts for non-Hispanic Black or US-born Black. This issue most frequently arises

[21] This can be accessed at `http://www.s4.brown.edu/us2010/Researcher/Bridging.htm`.

due to early censuses not distinguishing between Hispanic and non-Hispanic.

In these cases, we estimate the variable of interest by adjusting the available tract data using information from the microdata. Returning to the above example, we would use the microdata to calculate the share of non-Hispanic Black who were born in the US in the tract's city, then multiply the non-Hispanic Black count in the tract by this value. In the event that the microdata do not provide the necessary information at the city level, we calculate it at the county level. If it is not provided at the county level, we move to the CBSA level.

The following is a summary of the variables in our dataset and how they are constructed.

Population by race.— We draw the population of each race from the LTDB for the years 1970-2010 and the ACS for 2016. In the event that the non-Hispanic Black population is not available in a tract-year, we follow the imputation procedure described above.

Overall tract characteristics.— Characteristics of the overall tract population (that is, not of a particular race) are drawn directly from the LTDB and the 2014-2018 ACS. These characteristics are: median household income, share of occupied households, and share of college educated adults. We adjust incomes to 2018 dollars using the Consumer Price Index for all urban consumers

Characteristics by race.— We also include information on race-specific values of median household income, college education, and poverty. While race-specific tract poverty rates are available in all years, race-specific income and education rates are not. To construct them, we draw the closest available variabls from IPUMS and again follow the imputation process described above. For example, suppose that we observed tract median income for Black households, but not non-Hispanic Black households. We would use the microdata to calculate the ratio between median income for non-Hispanic Black households and all Black households in a tract's county and then multiply tract median Black income by this value.

In addition, there is a further complication in the years 1970 and 1980—household income for different racial groups is not available. However, we do observe *family* income split by demographic groups and household income for the overall population. We use this information to estimate median household income by race in a slightly different way. First, we run a regression of

median household income on median family income, the ratio between the number of families and households, and the interaction between these two variables for the overall population. Then, assuming these parameters are constant across demographic groups, we predict the value of median household income for each race using their respective explanatory variables. With these values in hand, we adjust for Hispanic status in the same way that we adjust in other years.

Income bins for Black households—We draw the distribution of Black households across income bins in each tract from IPUMS NHGIS. Due to data limitations, we use family income instead of household income in 1980. We classify suppressed income bins as zeros. The bins available in each year (not adjusted for inflation) are:

- 1970: less than 2,000; between 2,000 and 2,900; 3,000 and 4,999; 5,000 and 6,999; 7,000 and 9,999; 10,000 and 14,999; 15,000 and 24,999; 25,000 and more.
- 1980: less than 5,000; between 5,000 and 7,499; 7,500 and 9,999; 10,000 and 14,999; 15,000 and 19,999; 20,000 and 24,999; 25,000 and 34,999; 35,000 and 49,999; 50,000 and more.
- 1990: Less than 5,000; 5,000 to 9,999; 10,000 to 14,999; 15,000 to 24,999; 25,000 to 34,999; 35,000 to 49,999; 50,000 to 74,999; 75,000 to 99,999; 100,000 or more.
- 2000: Less than 10,000; 10,000 to 14,999; 15,000 to 19,999; 20,000 to 24,999; 25,000 to 29,999; 30,000 to 34,999; 35,000 to 39,999; 40,000 to 44,999; 45,000 to 49,999; 50,000 to 59,999; 60,000 to 74,999; 75,000 to 99,999; 100,000 to 124,999; 125,000 to 149,999; 150,000 to 199,999; 200,000 or more.
- 2010: Less than 10,000; 10,000 to 14,999; 15,000 to 19,999; 20,000 to 24,999; 25,000 to 29,999; 30,000 to 34,999; 35,000 to 39,999; 40,000 to 44,999; 45,000 to 49,999; 50,000 to 59,999; 60,000 to 74,999; 75,000 to 99,999; 100,000 to 124,999; 125,000 to 149,999; 150,000 to 199,999; 200,000 or more.
- 2016: Less than 10,000; 10,000 to 14,999; 15,000 to 19,999; 20,000 to 24,999; 25,000 to 29,999; 30,000 to 34,999; 35,000 to 39,999; 40,000 to 44,999; 45,000 to 49,999; 50,000

to 59,999; 60,000 to 74,999; 75,000 to 99,999; 100,000 to 124,999; 125,000 to 149,999; 150,000 to 199,999; 200,000 or more.

I.B Panel of Tract Population in Age x Race Bins

In addition to the main tract panel, we also construct a tract-level dataset containing the population of each race in five-year age bins from 0 to 74, as well as 75 and older. A variety of imputations are required to obtain this information in each year, since the census regularly changes the age and race bins that are released publicly. We again make these imputations by combining the available tract data and the census/ACS microdata. For example, if we observe the number of Hispanics in the age bin 20–30 in a tract in New York City, we use the share of Hispanics in their 20s that are between 20 and 25 in New York city to compute the tract value for the 20–24 and 25–29 age bins. Below is a description of the changes that must be made in each year of the sample.

- Year 1970: The data contain the correct age bins, but it does not distinguish non-Hispanic and Hispanic Black/White from Hispanic Black/White. We use the microdata to estimate the share Hispanic in each age bin.

- Year 1980: The data contain the desired race bins, but the age bins are 0–5, 5–17, 18–64, 65 or more. We use the microdata to estimate the share of each race x bin that falls into each five-year bin.

- Year 1990: The original data contain age bins of 5 years or less, but there is not information regarding the race of the Hispanic population. We again use the microdata to estimate the share of Hispanic population in each age bin that are of a particular race.

- Years 2000–2010: The original data contain the desired age and race bins.

- Year 2016: NHGIS provides 10-year age bins for White, Black and Hispanic. We again adjust using the microdata.

I.C Migration microdata

We use two data sources on migration. First, we use data from Infutor Data Systems to measure migration flows between neighborhoods between 2010 and 2016. These data are described in detail in Section 1.1 of the main text. Second, we use data from the 1980 and 1990 long-form decennial censuses on place of residence five years ago and household demographic and economic characteristics. This allows us to observe households that moved from a central city to one of its suburbs. However, because the Public Use Micro Areas (PUMAs) location identifiers in the ACS do not necessarily align with municipal boundaries, we can only identify suburbanizers in the following CBSAs: Baltimore, MD; Boston, MA/NH; Buffalo-Niagara Falls, NY; Chicago, IL; Cleveland, OH; Dallas-Fort Worth, TX; Greensboro-Winston Salem-High Point, NC; Houston-Brazoria, TX; Knoxville, TN; Los Angeles-Long Beach, CA; Memphis, TN/AR/MS; Minneapolis-St. Paul, MN; New Orleans, LA; New York, NY-Northeastern NJ; Orlando, FL Philadelphia, PA/NJ; Providence-Fall River-Pawtucket, MA/RI; Richmond-Petersburg, VA; San Antonio, TX; San Francisco-Oakland-Vallejo, CA; Seattle-Everett, WA; Norfolk-VA Beach–Newport News, VA; Washington, DC/MD/VA.

II Additional Results

II.A Regional Heterogeneity

Given historical differences across regions in urban development, racial discrimination, and racial disparities, one question is whether the patterns we document are driven by a particular region or are similar throughout the country. In this section, we explore how some of our key results differ across census regions (i.e., Northeast, Midwest, South, and West).

We start by replicating Figure 1—the time series of aggregate Black population in cities and suburbs—separately for each census region in Appendix Figure A17. This figure shows that the broad patterns in Figure 1 are similar across regions, with every region having a large decline in the share of Black households living in central cities and a rise in the suburbs. The magnitudes differ

across regions, with the rise in the share of Black households living in the suburbs being smaller in the West and particularly large in the Midwest and the South. The Black population share living outside of originally large cities is also larger in the West than in other regions, likely because the West had a greater number of areas that grew rapidly during this time period.

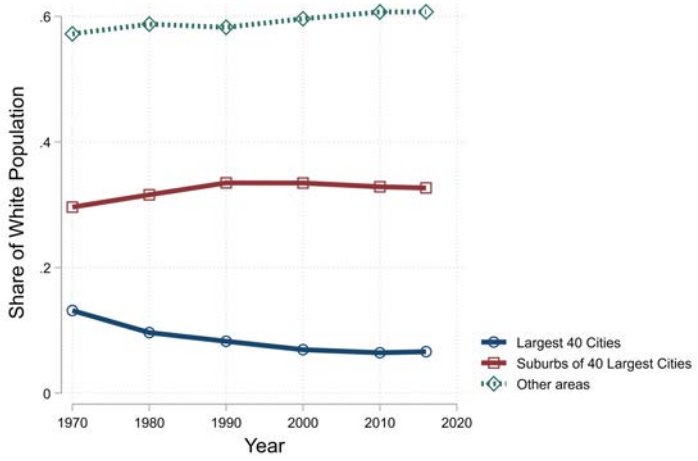
In Appendix Figure A18, we perform this same replication by region for Figure 3, which shows the change in Black household income relative to White households overall and for households living in central cities and their suburbs. We again see that the general pattern of falling relative income for Black households in central cities, along with rising average and suburban relative incomes, generally holds in most regions. In all regions, the majority of improvement in relative neighborhood incomes is driven by suburbanization. In most regions, this is entirely driven by rising relative neighborhood incomes in the suburbs and a rising share of households living in the suburbs. The exception is the West region, where relative Black neighborhood incomes in central cities do rise throughout the sample period. Still, even in the West, the majority of the increase in the average appears to be driven by the rising share of Black households living in the suburbs.

Finally, in Appendix Figure A19, we perform the income segregation exercise from Figure 6 separately for each region. The aggregate trend again seems to hold in every region, although increasing segregation within cities has played a larger role in the West than in other regions. On the whole, breaking these results out by region suggests that the overall patterns we find are replicated throughout the United States and are not driven by idiosyncratic patterns in a particular region. Similarly, Figure 2 and Appendix Figures A3, A4, and A5 plot maps of Black population change in the largest CBSA in each region. All look quite similar. Finally, Appendix Figure A6 shows that large cities across all regions lost total Black population between 2000 and 2016.

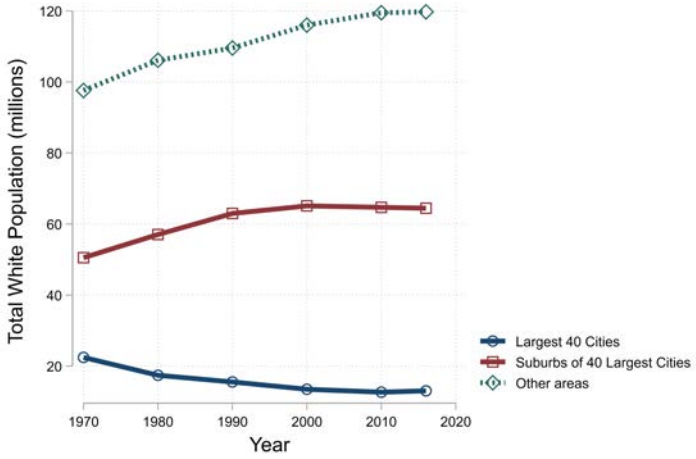
II.B Additional Figures and Tables

Figure A1: Change in Distribution of White Population Since 1970

Panel A: Share of White Population



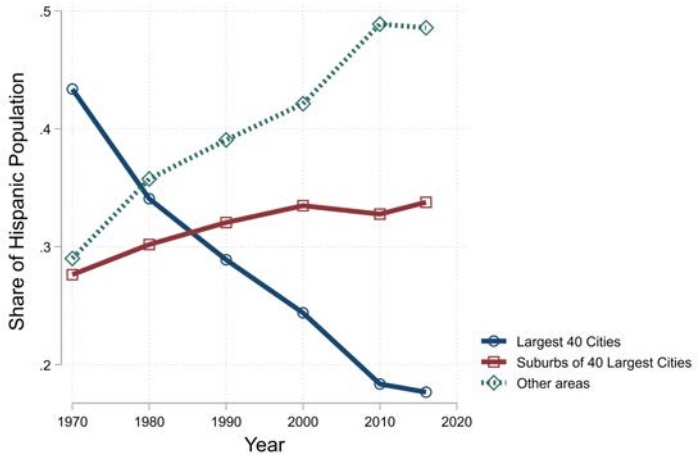
Panel B: Total White Population



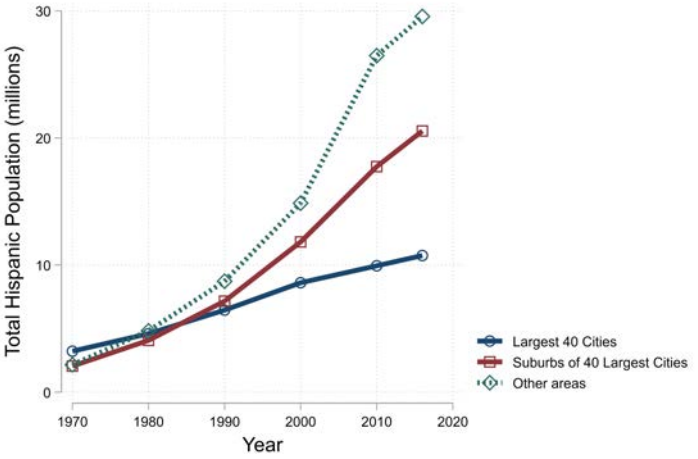
Notes: Total and share of White population in large central cities, their suburbs, and other areas. Largest 40 cities is defined as the central cities of the most populous 20 CBSAs in southern states and in all other states, as measured in 1970. Suburbs are defined as the CBSAs containing these cities, less the principal city itself. Municipalities and CBSAs are consistently defined according to 2010 boundaries. We assign areas that had not been assigned to a census tract in 1970 or 1980 to the other areas category, inferring their population from the national White population.

Figure A2: Change in Distribution of Hispanic Population Since 1970

Panel A: Share of Hispanic Population



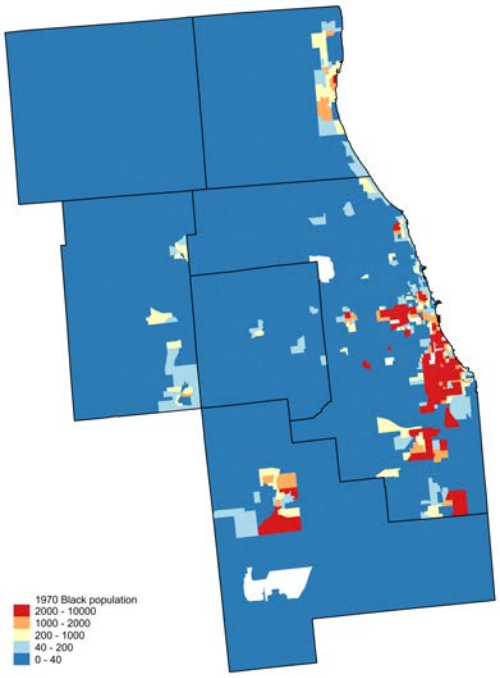
Panel B: Total White Population



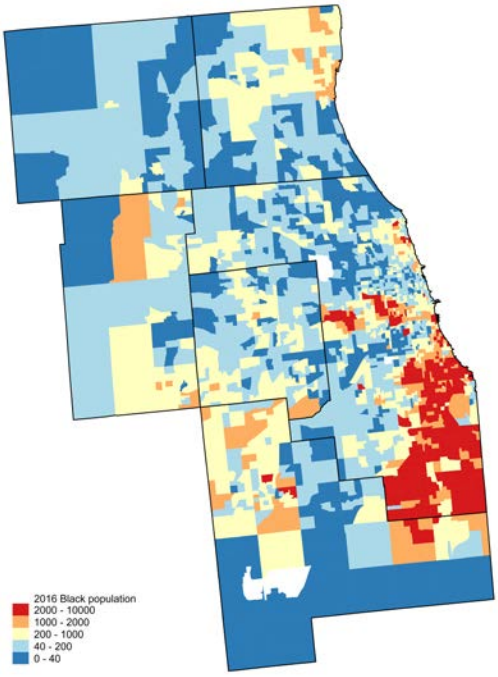
Notes: Total and share of Hispanic population in large central cities, their suburbs, and other areas. Largest 40 cities is defined as the central cities of the most populous 20 CBSAs in southern states and in all other states, as measured in 1970. Suburbs are defined as the CBSAs containing these cities, less the principal city itself. Municipalities and CBSAs are consistently defined according to 2010 boundaries. We assign areas that had not been assigned to a census tract in 1970 or 1980 to the other areas category, inferring their population from the national Hispanic population.

Figure A3: Black population in Chicago metro

Panel A: Census tract Black population in 1970



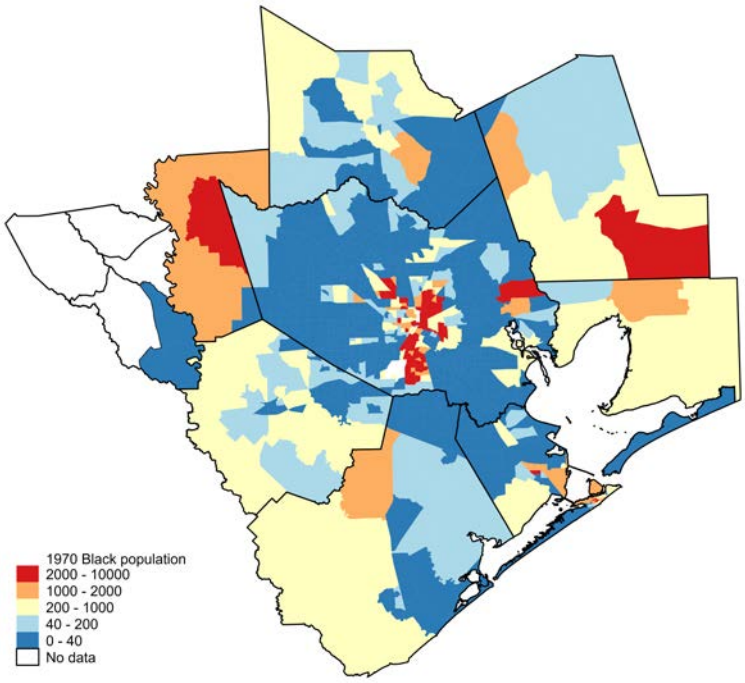
Panel B: Census tract Black population in 2016



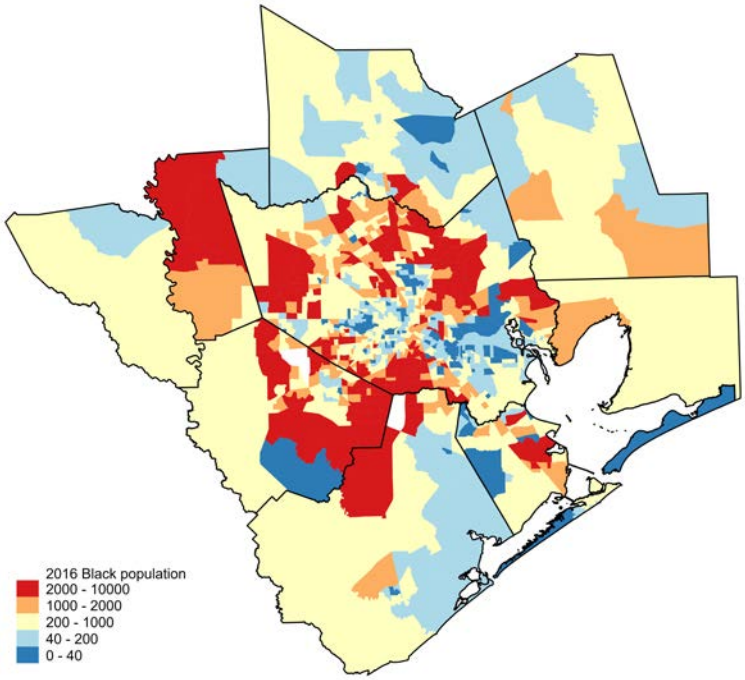
Notes: Total Black population by census tract in the Chicago CBSA in 1970 (Panel A) and 2016 (Panel B). Tracts with 0–40 Black individuals are shown in dark blue; 40–200, light blue; 200–1,000, beige; 1,000–2,000, orange; and 2,000–10,000, red. Data are drawn from the 1970 census and the 2014–2018 ACS. Census tract boundaries are from 2010. Black lines represent county boundaries.

Figure A4: Black population in Houston metro

Panel A: Census tract Black population in 1970



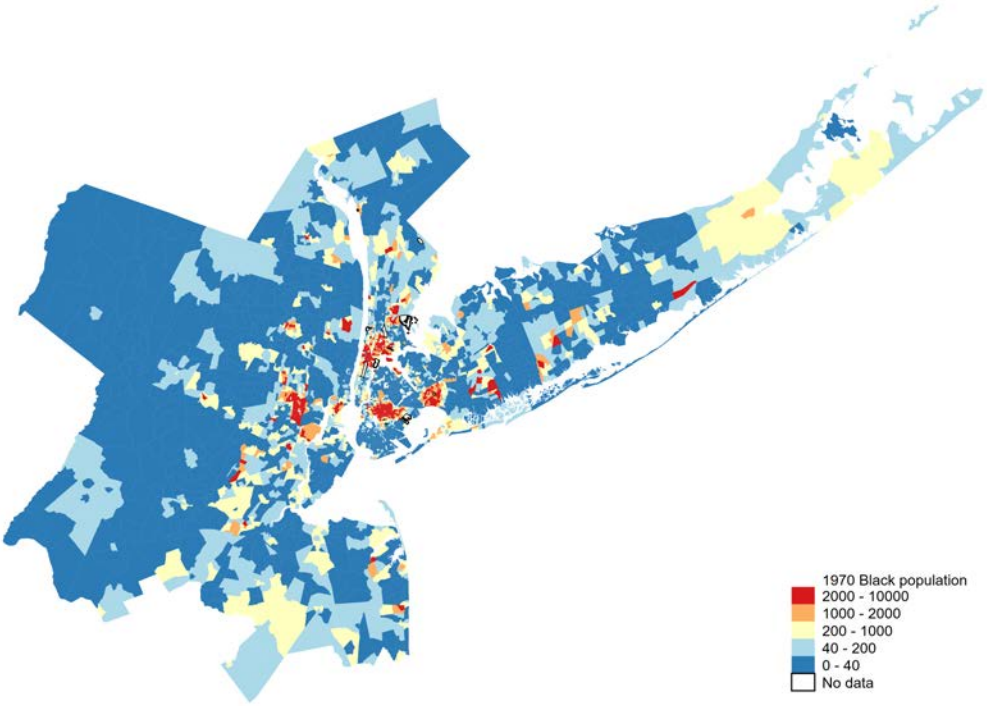
Panel B: Census tract Black population in 2016



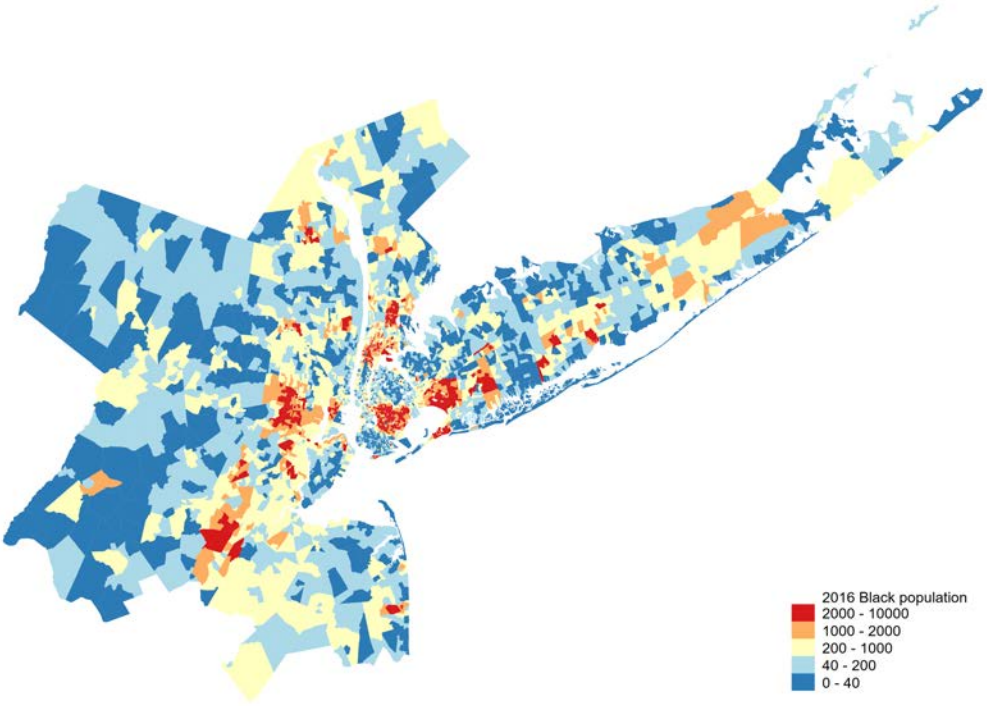
Notes: Total Black population by census tract in the Houston CBSA in 1970 (Panel A) and 2016 (Panel B). Tracts with 0–40 Black individuals are shown in dark blue; 40–200, light blue; 200–1,000, beige; 1,000–2,000, orange; and 2,000–10,000, red. Data are drawn from the 1970 census and the 2014–2018 ACS. Census tract boundaries are from 2010. Black lines represent county boundaries.

Figure A5: Black population in New York metro

Panel A: Census tract Black population in 1970

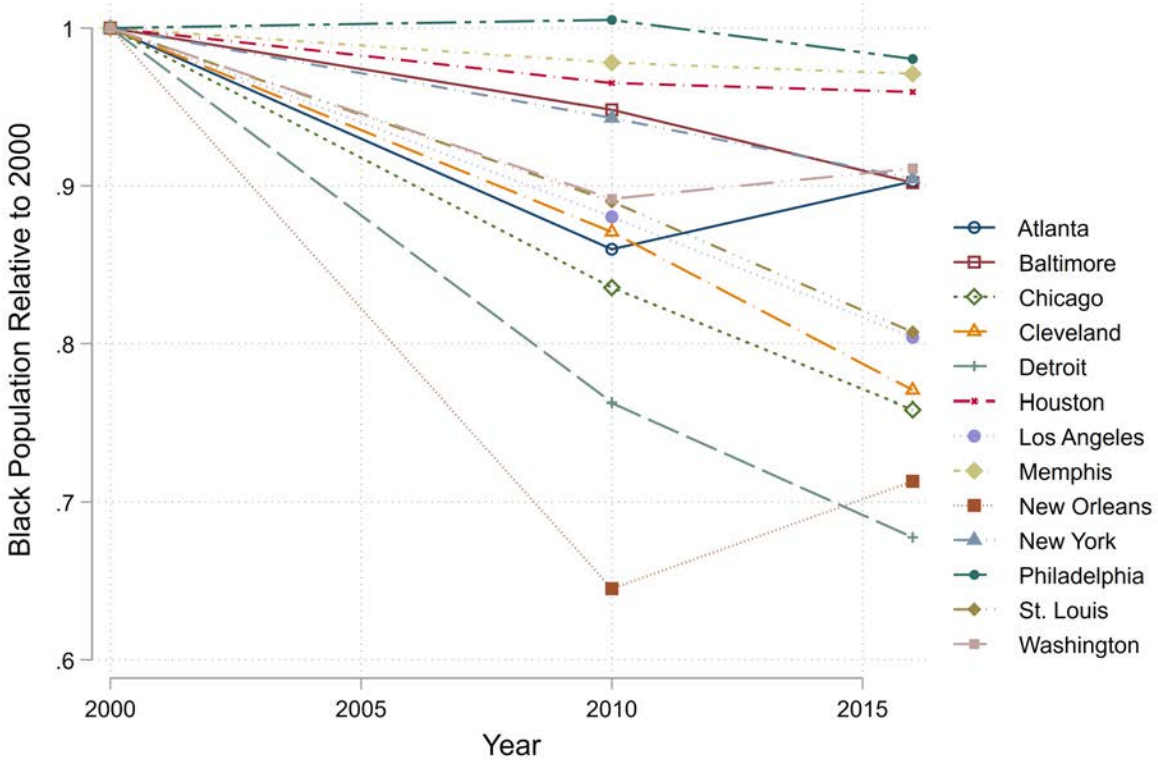


Panel B: Census tract Black population in 2016



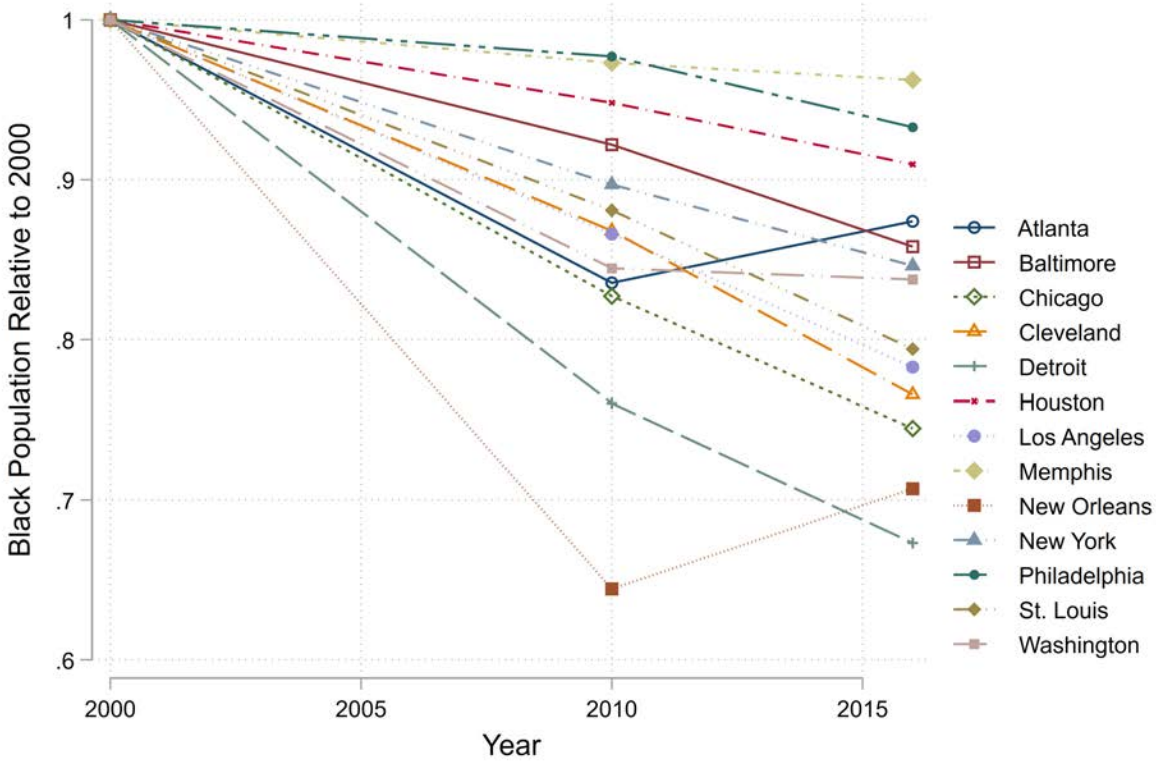
Notes: Note: Total Black population by census tract in the New York CBSA in 1970 (Panel A) and 2016 (Panel B). Tracts with 0–40 Black individuals are shown in dark blue; 40–200, light blue; 200–1,000, beige; 1,000–2,000, orange; and 2,000–10,000, red. Data are drawn from the 1970 census and the 2014–2018 ACS. Census tract boundaries are from 2010. Black lines represent county boundaries.

Figure A6: Black Population Decline in Major Cities



Notes: This figure shows the Black population in major central cities since 2000. The 13 central cities with the largest Black population in 1970 are included. Data for 2000 and 2010 come from the decennial census, while data for 2016 come from the 2014–2018 ACS.

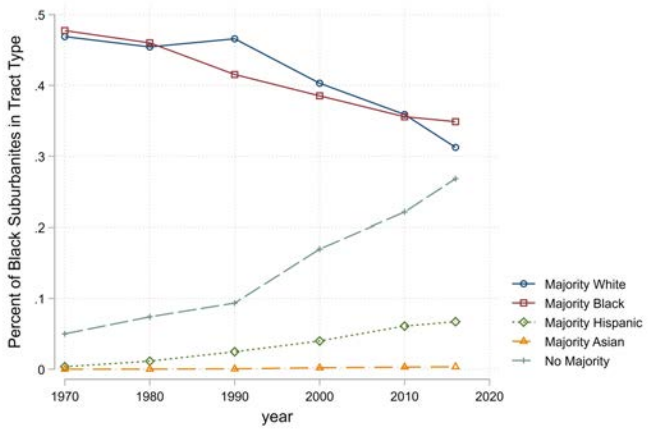
Figure A7: Native Black Population Decline in Major Cities



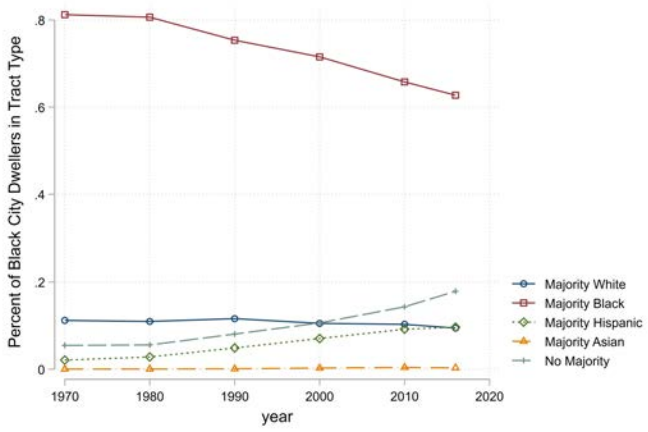
Notes: This figure shows the U.S.-born Black population in major central cities since 2000. The 13 central cities with the largest Black population in 1970 are included. Data for 2000 and 2010 come from the decennial census, while data for 2016 come from the 2014–2018 ACS.

Figure A8: Time Series of Neighborhood Types of Black Individuals

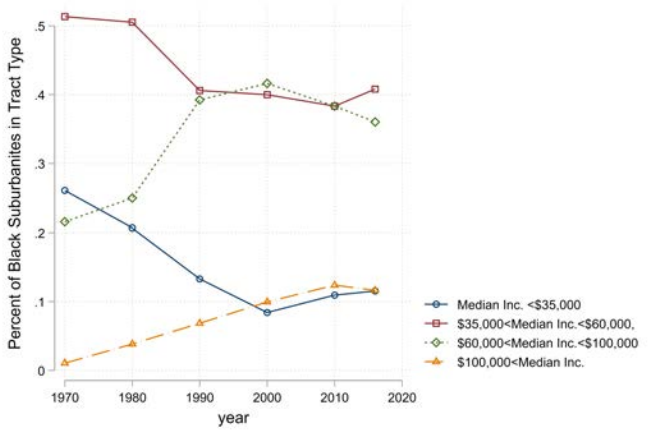
Panel A: Suburban Tracts Race Types



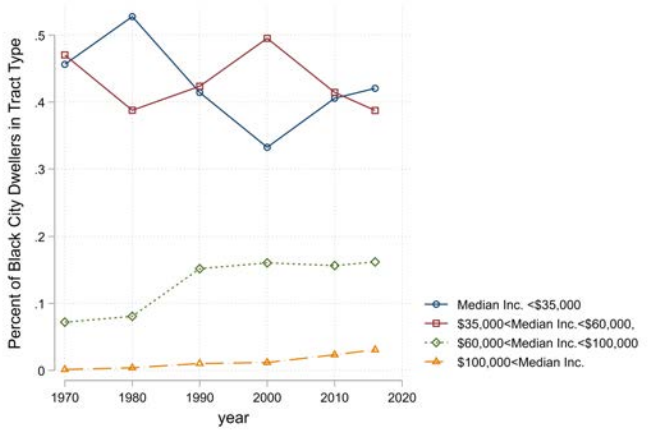
Panel B: Central City Tracts Race Types



Panel C: Suburban Tracts Income Types

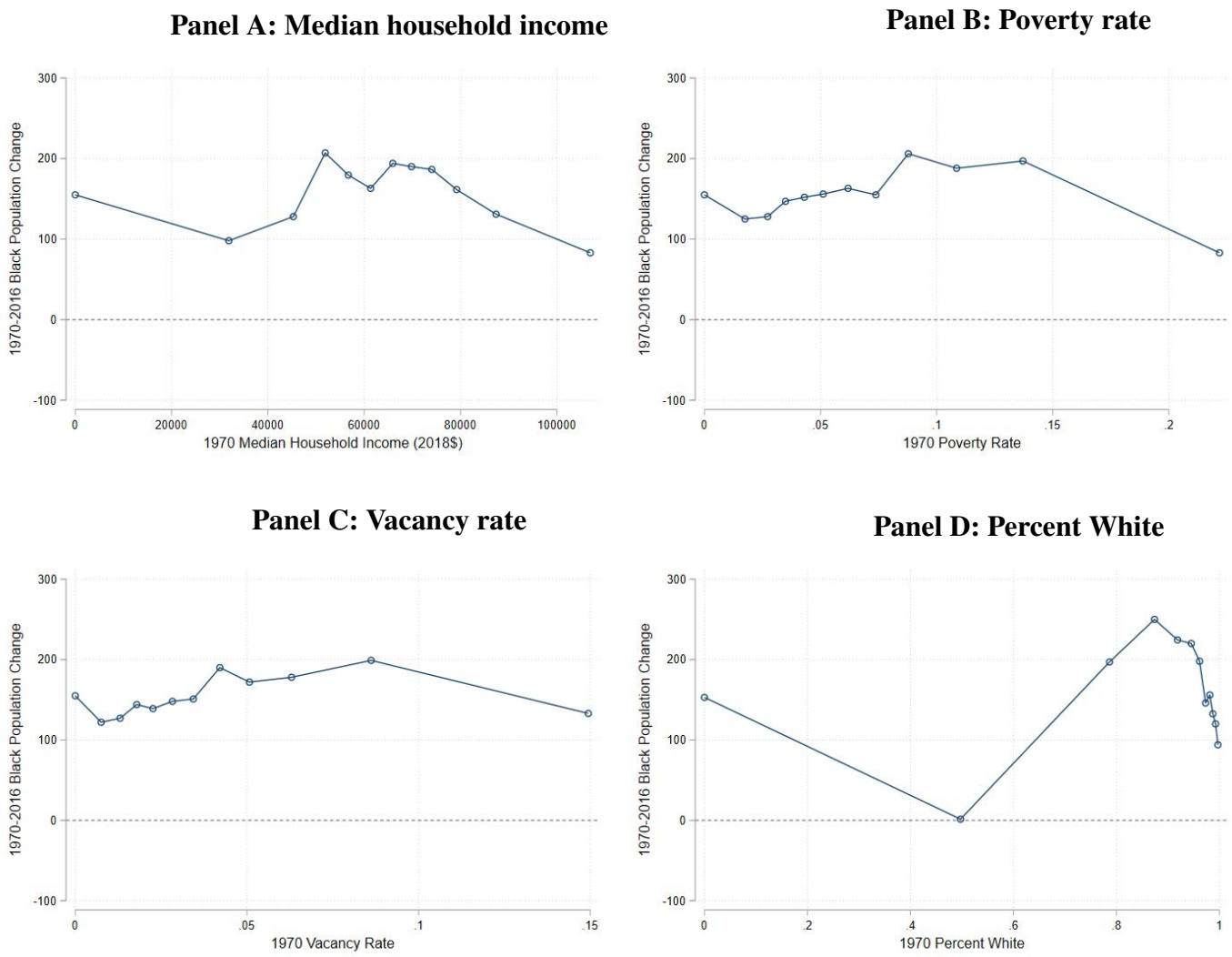


Panel D: Central City Tracts Income Types



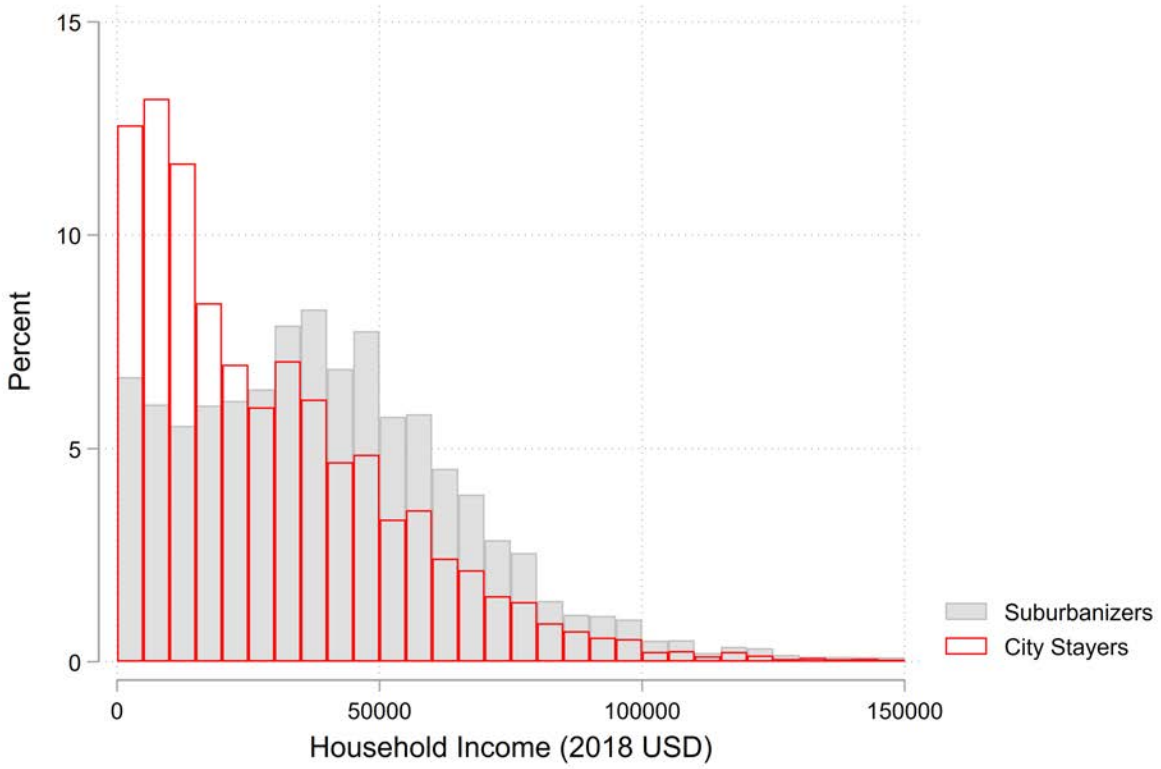
Notes: This figure shows the distribution of Black individuals living in different categories of census tracts, separately central cities and suburbs. Panels A and B report the distribution of tract racial composition in suburbs and central cities, respectively. Panels C and D do the same for tracts in ranges of median incomes. Data come from the 1970 to 2000 decennial census long forms and the 2008–2012 and 2014–2018 ACS. This exercise uses our primary sample of 40 large cities and their suburbs.

Figure A9: 1970–2016 Black population growth versus 1970 characteristics (suburban tracts)



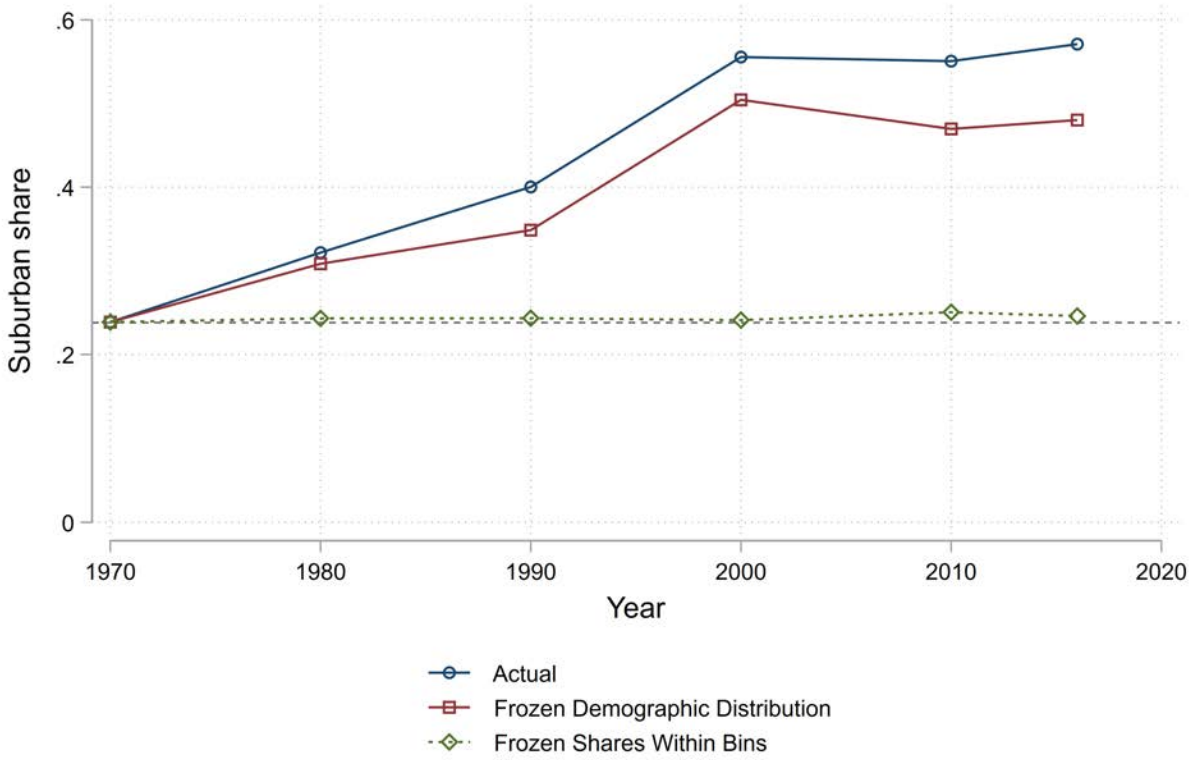
Notes:. This figure plots the relationship between 1970 characteristics of suburban tracts and the median change in tract total Black population between 1970 and 2016. Panel A shows the relationship with 1970 tract median household income; Panel B, poverty rate; Panel C, vacancy rate; and Panel D, percent White. Data come from the 1970 decennial census and the 2014–2018 ACS. This exercise uses the suburban tracts in our primary sample.

Figure A10: Selection of Suburbanizers from Cities



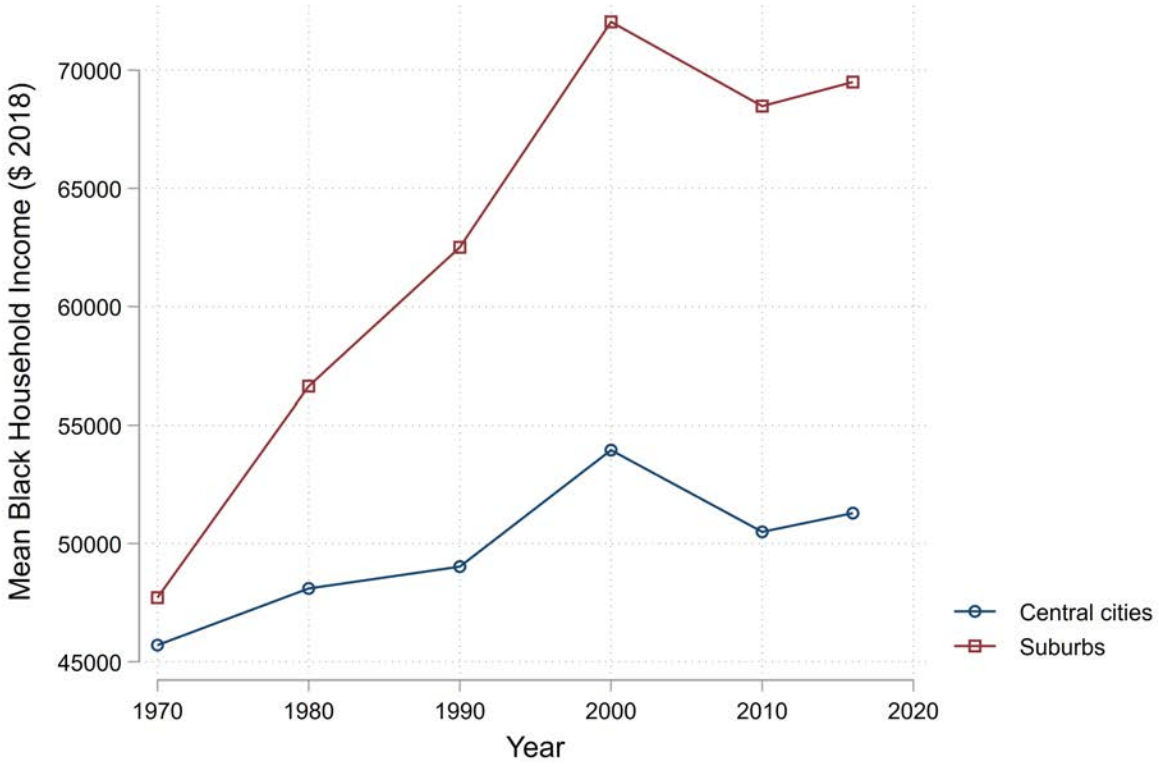
Notes: This figure plots the distributions of household income for Black households that suburbanized (solid gray rectangles) in the five years prior to the 1980 or 1990 censuses versus those who remained in central cities (hollow red rectangles). Suburbanizers are defined as moving from a central city to its suburbs. Data come from the 1980 and 1990 decennnial censuses. Only a subset of the CBSAs in our primary sample are included because the location identifiers in the census data do not always uniquely identify migrants from a city to its suburbs. More details are provided in Appendix I. The CBSAs included are Baltimore, MD; Boston, MA/NH; Buffalo-Niagara Falls, NY; Chicago, IL; Cleveland, OH; Dallas-Fort Worth, TX; Greensboro-Winston Salem-High Point, NC; Houston-Brazoria, TX; Knoxville, TN; Los Angeles-Long Beach, CA; Memphis, TN/AR/MS; Minneapolis-St. Paul, MN; New Orleans, LA; New York, NY-Northeastern NJ; Orlando, FL Philadelphia, PA/NJ; Providence-Fall River-Pawtucket, MA/RI; Richmond-Petersburg, VA; San Antonio, TX; San Francisco-Oakland-Vallejo, CA; Seattle-Everett, WA; Norfolk-VA Beach–Newport News, VA; Washington, DC/MD/VA.

Figure A11: Decomposition of Rise in Black Suburban Share



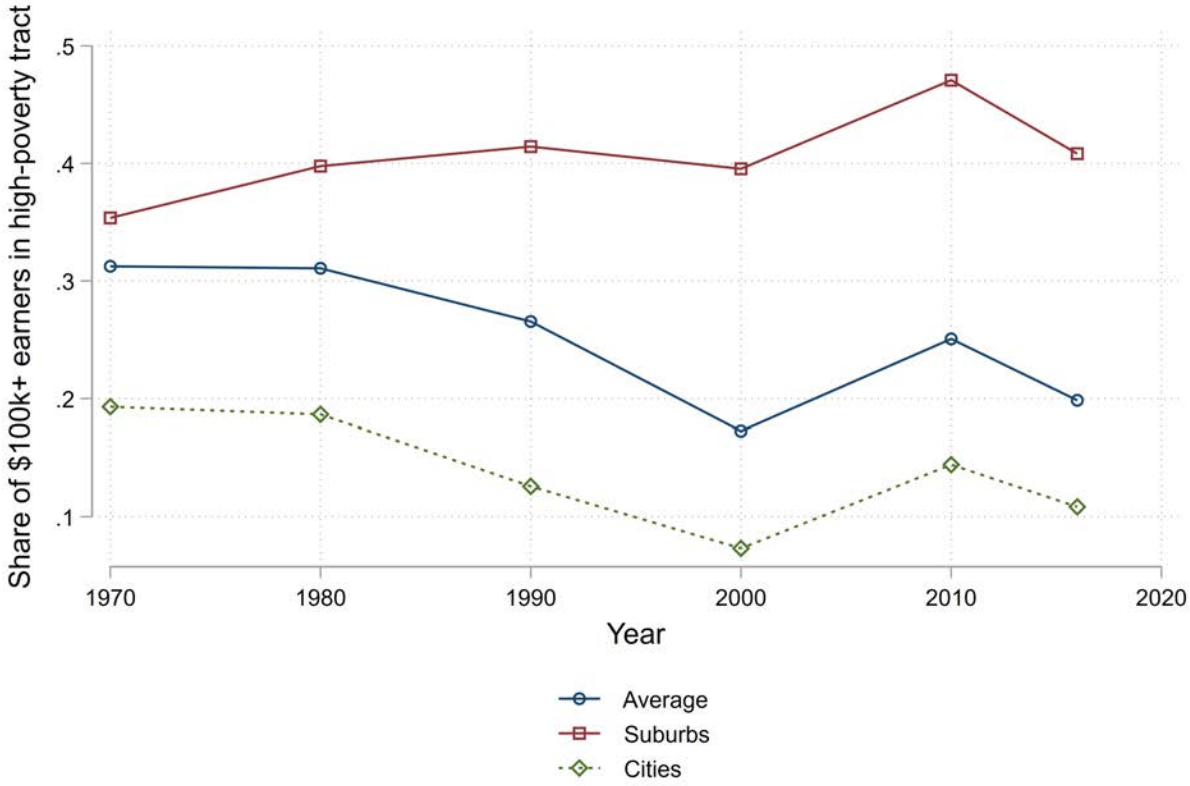
Notes: This figure decomposes the change in the share of Black households living in the suburbs between 1970 and 2016 into the change driven by changes in the income distribution of Black households and changes in the suburban share within income cells. The blue line with circular points shows the change in the actual suburban share for Black households. The red line with square points shows the implied change in the suburban share from freezing the Black income distribution at its 1970 value and allowing the suburban share within income bins to change. The green line with diamond points shows the implied change in the suburban share from freezing the suburban share within income bins and allowing the income distribution to change. Data come from the 1970 to 2000 decennial census long forms and the 2008–2012 and 2014–2018 ACS. This exercise uses our primary sample of 40 large cities and their suburbs.

Figure A12: Change in Mean Income Among Black Households in Cities and Suburbs



Notes: This figure shows the evolution of mean Black household income (in $2018) between 1970 and 2016 separately for central cities (blue, circle points) and suburbs (red, square points). To compute the mean, we use data on the number of Black households in each tract in a set of income bins. We then set household income in each cell at its midpoint. Data come from the 1970 to 2000 decennial census long forms and the 2008–2012 and 2014–2018 ACS. This exercise uses our primary sample of 40 large cities and their suburbs.

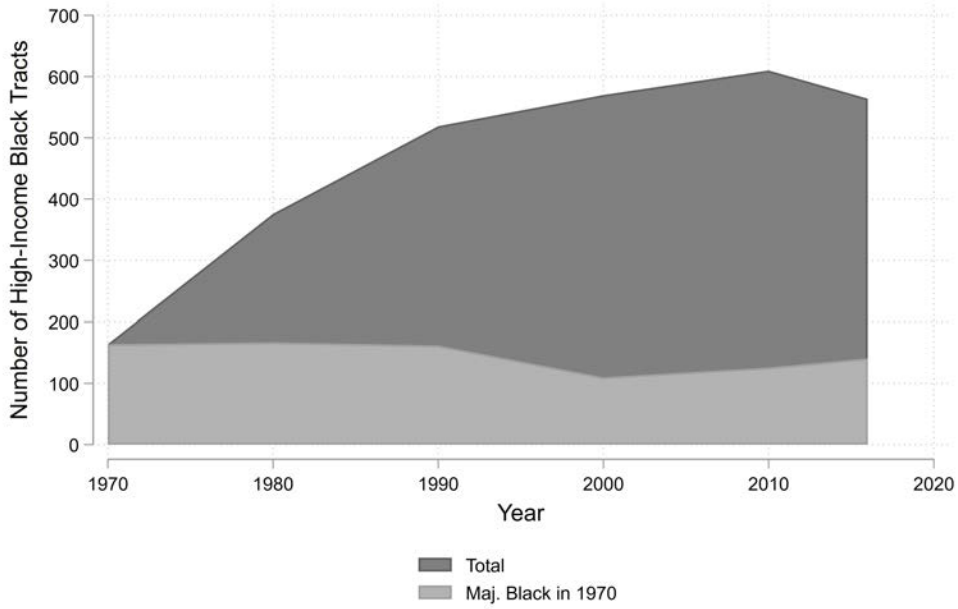
Figure A13: Share of Black High-Earners in High-Poverty Tracts



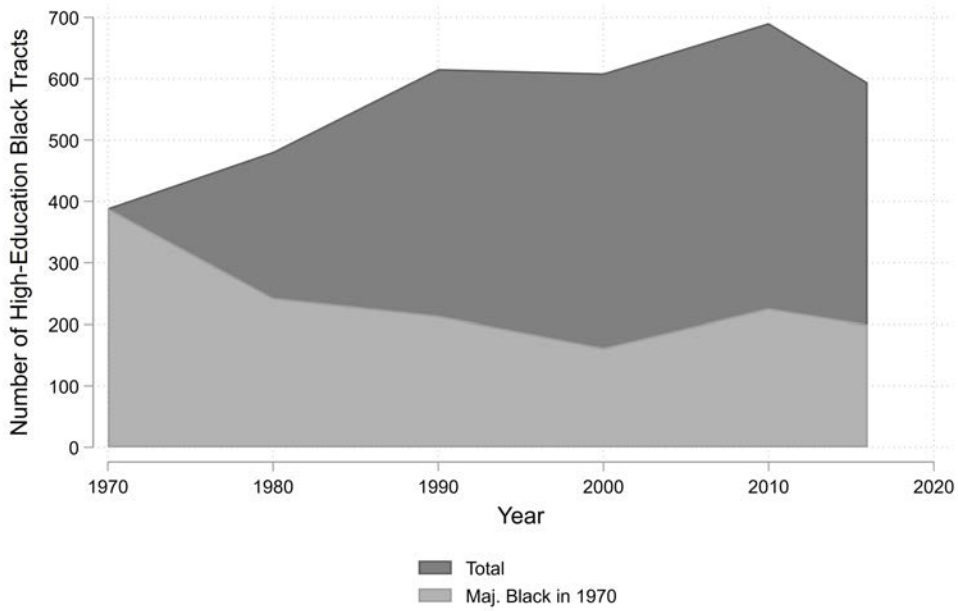
Notes: This figure shows the share of Black high-earners (households with income above $100k in 2018 dollars) who live in high-poverty census tracts (defined as poverty rates greater than 20%). The sample average is shown in blue, the average for high earners in central cities is shown in red and the average for high earners suburbs is shown with the dotted green line. The contemporaneous federal poverty threshold is used in each year. We identify high earners as those in income bins with midpoint above $100,000 (inflation adjusted to 2018). Data come from the 1970 to 2000 decennial census long forms and the 2008–2012 and 2014–2018 ACS. This exercise uses our primary sample of 40 large cities and their suburbs.

Figure A14: High-SES, Majority Black Tracts that were Majority Black in 1970

Panel A: Median Income Above Sample Median



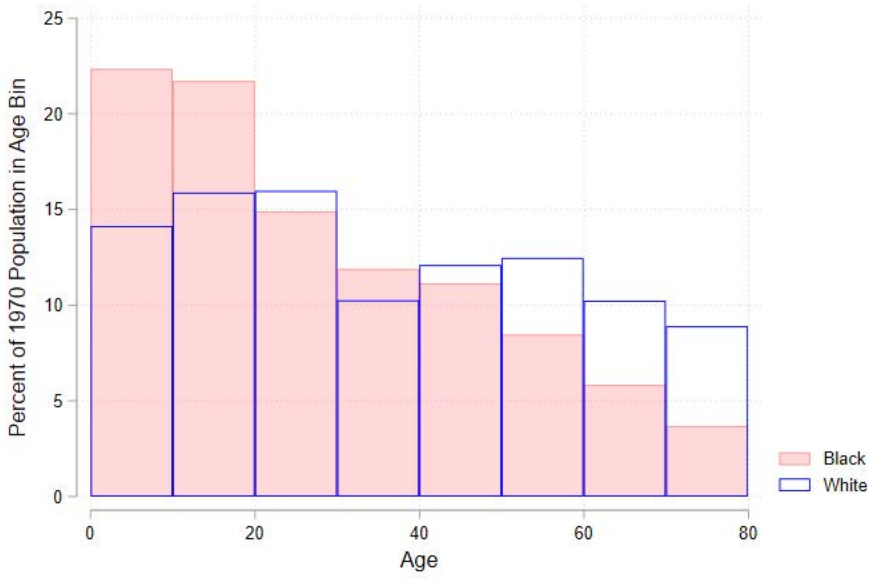
Panel B: College Share Above Sample Median



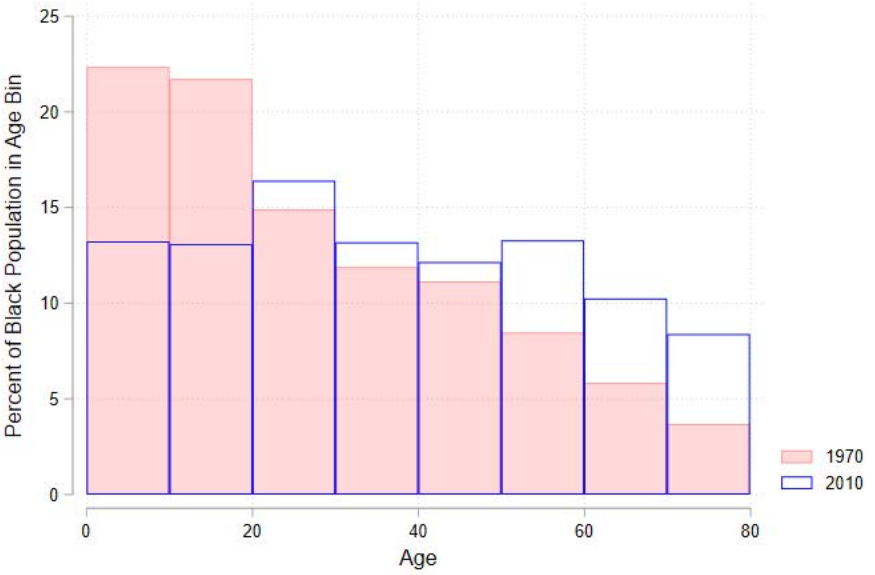
Notes: This figure shows the number of census tracts that are majority Black and either high income (Panel A) or high education (Panel B) among all neighborhoods and those that were majority-Black in 1970. High-income is defined as having tract median income above the median value in the sample, and high-education is defined analogously for share of residents over age 25 that have at least a bachelor's degree. In both panels, the light gray area represents the number of tracts that fit the definition and were majority Black in 1970, while the dark gray shows the total number of tracts that fit the given definition. The exercise uses our primary sample of 40 large cities and their suburbs.

Figure A15: Age Distribution of Black Population in Central Cities

Panel A: Black Versus White City Populations in 1970

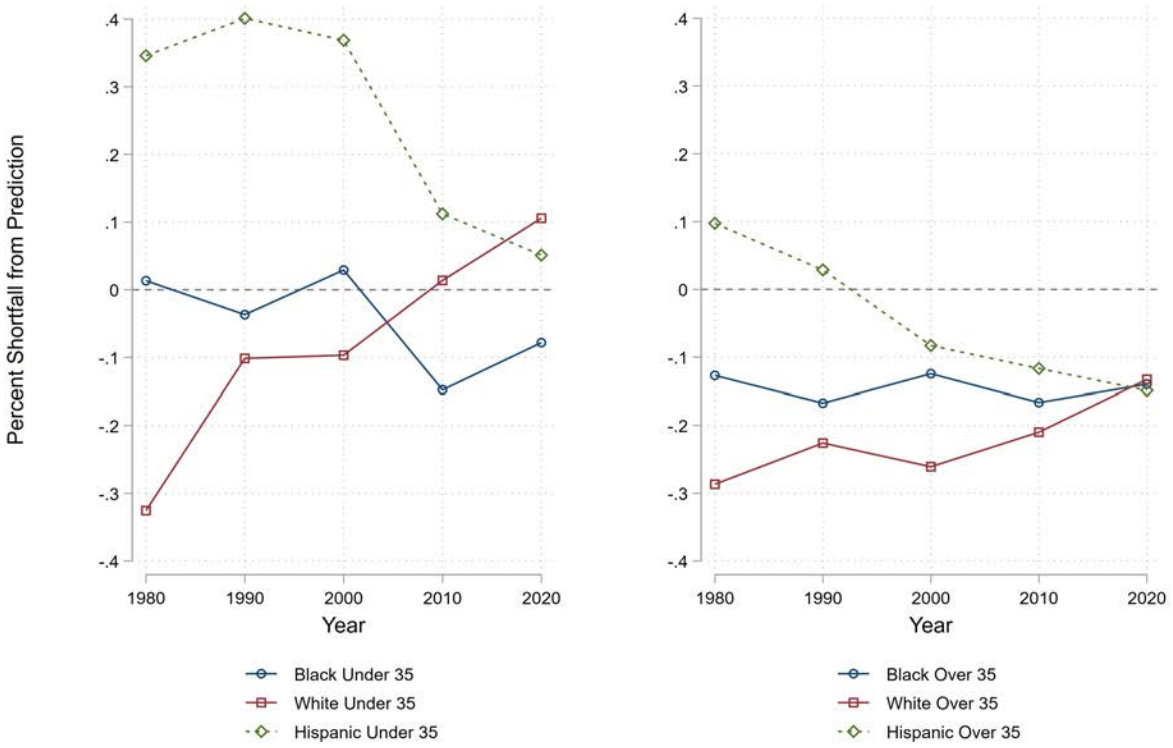


Panel B: Black City Populations in 1970 Versus 2016



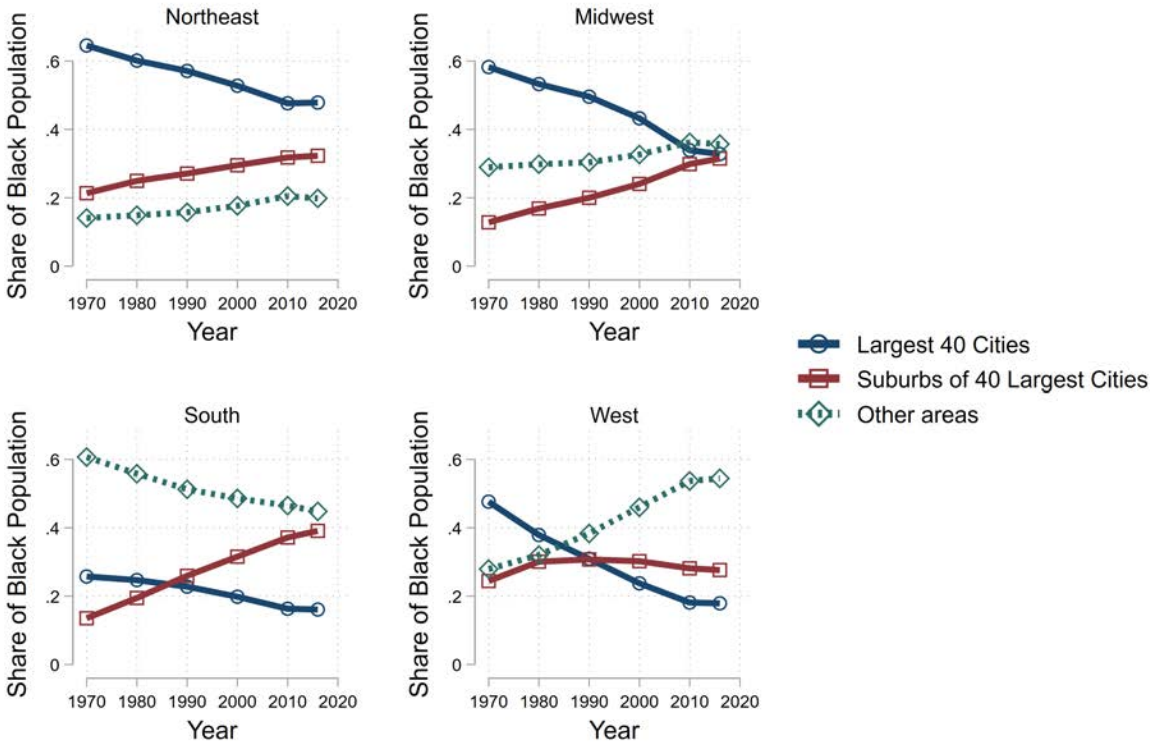
Notes: This figure shows the age distributions of the Black and White population in central cities in 1970 (Panel A) and the Black population in central cities in 1970 and 2016 (Panel B). Data come from the 1970 decennial census and the 2014–2018 ACS. This exercise uses the 40 large central cities included in our primary sample.

Figure A16: Central City Shortfall from Predicted Population by Age and Race



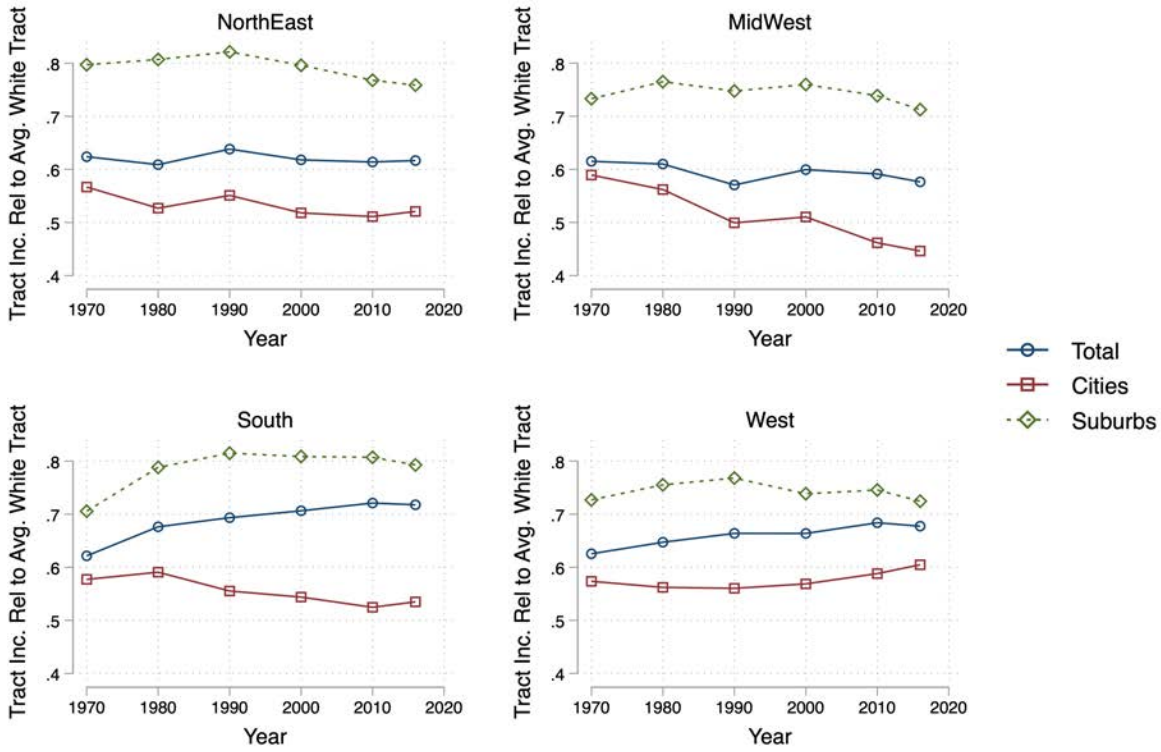
Notes: This figure shows the shortfall between predicted natural population growth and observed population growth for the Black, White, and Hispanic populations in central cities. The left panel shows the shortfall for people under age 35, while the right panel shows it for people over 35. As described in Section 4, predicted population growth rates for year t are constructed by taking the true population age distribution in time $t-10$, mechanically aging the population in each five-year age bin, assuming people die and give birth at the average rate for that decade, and assuming that net-migration is zero for each age group. The predicted population growth rate is then: $\frac{pop_{\text{simulated},t} - pop_{\text{observed,t-10}}}{pop_{\text{observed,t-10}}}$. Actual population by age comes from the 1970 to 2000 decennial censuses and 2008–2012 and 2014–2018 ACS. Race-age specific fertility rates in each year are taken from the Census Bureau. Age-specific mortality rates come from the Center for Disease Control. This sample includes the 40 large central cities in our primary sample.

Figure A17: Change in Distribution of Black Population Since 1970 by Region



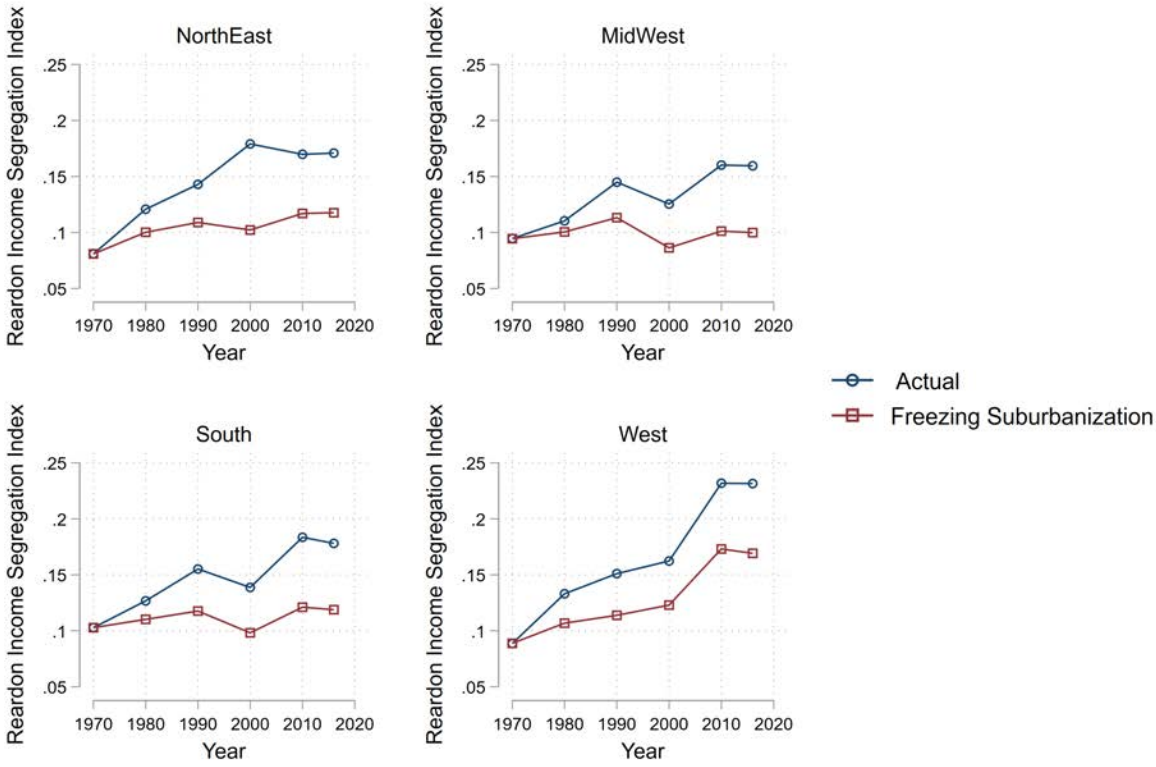
Notes: Total and share of Black population in large central cities, their suburbs, and other areas, separately for each census region. Largest 40 cities is defined as the central cities of the most populous 20 CBSAs in southern states and in all other states, as measured in 1970. Suburbs are defined as the CBSAs containing these cities, less the principal city itself. Municipalities and CBSAs are consistently defined according to 2010 boundaries. We assign areas that had not been assigned to a census tract in 1970 or 1980 to the other areas category, inferring their population from the total Black population in the census region.

Figure A18: Neighborhood Income for Black Individuals Relative to White Individuals by Region



Notes: This figure plots, separately for each census region, the time series of average neighborhood median household income for Black individuals divided by the same statistic for White individuals. The blue line contains Black individuals in all sample tracts in the region, while the green and red lines include only Black individuals in the suburbs and cities, respectively. In all cases, neighborhood income among White individuals (the denominator) includes all tracts in the full national sample. Census tract income data come from the 1970 to 2000 decennial censuses and the 2008-2012 and 2014-2018 ACS. The exercise uses our primary sample of 40 large cities and their suburbs.

Figure A19: Change in Income Segregation Within Black Households by Region



Notes: This figure shows the evolution of the Reardon and O'Sullivan (2004) income segregation index within Black households from 1970 to 2016, separately for each census region. The index can be interpreted as the share of the variation in household income that is between census tracts. The blue line shows the actual evolution of this index, while the red line shows the evolution under the counterfactual assumption that the share of Black households living in the suburbs and the income segregation of Black households in suburban tracts both remained frozen at their 1970 values. The index is computed using census and ACS data on the distribution of Black households across income bins within census tracts, as detailed in Appendix I. The exercise uses our primary sample of 40 large cities and their suburbs.

Table A1: Summary Statistics on Census Tracts in Primary Sample

Area	*Year*	*Total Pop.*	*Black*	*White*	*Hispanic*	*Other*	*High-poverty tracts*	*Majority-Black tracts*	*Total tracts*
City	1970	35.49	9.20	22.44	3.22	0.63	2255	1886	9790
City	1980	33.22	9.99	17.40	4.60	1.23	3405	2445	9790
City	1990	34.03	10.16	15.53	6.45	1.88	3972	2602	9790
City	2000	35.87	10.74	13.47	8.61	3.05	4360	2780	9790
City	2010	36.06	9.95	12.66	9.94	3.50	4927	2673	9790
City	2016	37.83	9.59	13.03	10.75	4.46	4515	2468	9790
Suburb	1970	56.53	3.49	50.51	2.05	0.48	1238	553	22695
Suburb	1980	68.11	5.47	57.04	4.07	1.54	1275	850	22695
Suburb	1990	80.56	7.41	62.96	7.15	3.03	1835	1100	22695
Suburb	2000	93.33	10.48	65.10	11.81	5.94	1953	1377	22695
Suburb	2010	104.50	13.69	64.69	17.75	8.38	3604	1600	22695
Suburb	2016	110.48	14.19	64.45	20.55	11.29	3301	1572	22695

Notes: This table shows summary statistics of the census tracts included in our primary sample, stratified by year and central city status. Population counts are in millions, and the Black, White, Hispanic, and Other columns show the total population of that group. High-poverty tracts shows the number of tracts that have a poverty rate over 20%, and majority-Black count is the number that are over half Black. Finally, tract count is the total number of sample tracts in cities or suburbs in a given year.

Table A2: Number of City and Suburban Tracts in Sample CBSAs

CBSA Title	City tracts	Suburban tracts
New York-Newark-Jersey City, NY-NJ-PA	2214	2432
Los Angeles-Long Beach-Anaheim, CA	986	1921
Chicago-Naperville-Elgin, IL-IN-WI	790	1412
Houston-The Woodlands-Sugar Land, TX	424	644
Dallas-Fort Worth-Arlington, TX	391	930
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	376	1088
San Francisco-Oakland-Hayward, CA	307	666
Detroit-Warren-Dearborn, MI	293	996
San Diego-Carlsbad, CA	268	358
San Antonio-New Braunfels, TX	260	195
Milwaukee-Waukesha-West Allis, WI	206	222
Baltimore-Columbia-Towson, MD	199	476
Minneapolis-St. Paul-Bloomington, MN-WI	195	593
Kansas City, MO-KS	187	329
Washington-Arlington-Alexandria, DC-VA-MD-WV	179	1173
Cleveland-Elyria, OH	174	458
Boston-Cambridge-Newton, MA-NH	174	822
New Orleans-Metairie, LA	173	222
Jacksonville, FL	162	96
Memphis, TN-MS-AR	156	155
Charlotte-Concord-Gastonia, NC-SC	151	385
Nashville-Davidson–Murfreesboro–Franklin, TN	146	232
Pittsburgh, PA	131	574
Seattle-Tacoma-Bellevue, WA	131	587
El Paso, TX	123	38
Atlanta-Sandy Springs-Roswell, GA	117	830
St. Louis, MO-IL	106	509
Virginia Beach-Norfolk-Newport News, VA-NC	99	313
Cincinnati, OH-KY-IN	89	407
Miami-Fort Lauderdale-West Palm Beach, FL	89	1112
Tampa-St. Petersburg-Clearwater, FL	88	648
Buffalo-Cheektowaga-Niagara Falls, NY	79	217
Richmond, VA	66	226
Greensboro-High Point, NC	52	115
Birmingham-Hoover, AL	48	215
Winston-Salem, NC	46	104
Providence-Warwick, RI-MA	39	326
Knoxville, TN	37	165
Orlando-Kissimmee-Sanford, FL	24	365
Charleston-North Charleston, SC	15	139

Notes: This table shows the number of city and suburban tracts in each CBSA in our primary sample.

Table A3: Black Population in Central City Tracts by Gentrification Status

Gentrification status	City type	Total 1970	Total 1980	Total 1990	Total 2000	Total 2010	Total 2016	Level change 2000-2016	Pct. change 2000-2016	Share of aggregate 2000-2016 change
Gentrified	All	1.56	1.36	1.34	1.41	1.32	1.24	-0.17	-0.12	0.14
Gentrified	Normal	0.84	0.75	0.74	0.80	0.80	0.77	-0.04	-0.05	0.03
Gentrified	Superstar	0.72	0.62	0.60	0.60	0.52	0.48	-0.13	-0.21	0.11
Not Gentrified	All	7.64	8.62	8.83	9.33	8.63	8.35	-0.98	-0.11	0.85
Not Gentrified	Normal	5.26	6.01	6.16	6.56	6.03	5.84	-0.72	-0.11	0.63
Not Gentrified	Superstar	2.38	2.61	2.66	2.77	2.60	2.51	-0.26	-0.09	0.23

Notes: This table reports the time series of Black population in central city neighborhoods according to whether they gentrified between 1970 and 2016. Gentrification is defined (at the tract level) as having neighborhood median income below the MSA median in 1970 and above it in 2016. Totals are reported in millions, as is the level change. Percentages are reported between 0 and 1. Share of aggregate 2000–2016 change represents the share of the total decline across all tract types that is accounted for by that tract type. Superstar cities are defined as Boston, Los Angeles, New York, San Francisco, Seattle, and Washington.