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Black Suburbanization: Causes and Consequences of a Transformation of American Cities

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ABSTRACT

Since 1970, the share of Black individuals living in suburbs of large cities has risen from 16 to 36 percent. This shift is as large as the post-World War II wave of the Great Migration. We first show that Black suburbanization has led to major changes in neighborhoods, accounting for a large share of recent increases in both the average Black individual's neighborhood quality and within-Black income segregation. We then show that changes in relative suburban amenities and housing prices explain about 60 and 30 percent, respectively, of Black suburbanization, while regional reallocation, changing educational attainment, and gentrification play only minor roles.

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 (Du Bois 1899, Franklin 1956, Schelling 1971, Wilson 1987, Massey and Denton 1993, Card, Mas and Rothstein 2008). 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 and has been shown to be an important factor in falling residential segregation (Cutler, Glaeser and Vigdor 1999). But while the Great Migration is widely understood as a foundational event in American economic history, Black suburbanization has received little attention from economists.[1] It may play an important role in the evolution of Black households' neighborhood quality, schools, public services, and intergenerational mobility.[2]

This paper conducts the first dedicated economic analysis of Black suburbanization, and the results substantially improve our understanding of why this trend has occurred and the extent to which it has altered the racial and economic geography of the United States since 1970. We first document that Black population growth has been widespread across suburban neighborhoods with different characteristics and in different regions. Meanwhile, population has declined drastically in city neighborhoods that were initially majority Black. We then show that suburbanization plays a major role in both rising income segregation within the Black population and a growing divergence in neighborhood quality of Black suburbanites and city dwellers. In the second half of the paper, we use a model-based decomposition to explore the causes of Black suburbanization. We find that changes in relative amenities and prices explain about 60 and 30 percent of the trend, respectively,

[1] Recent work on the Great Migration includes Collins and Wanamaker (2014), Black et al. (2015), Boustan (2016), and Derenoncourt (2022). Work on Black suburbanization is largely in the sociology literature, as we review below.

[2] The provision of public services, including schools, typically changes at municipal borders, and Chetty and Hendren (2018) estimate that intergenerational mobility is generally higher in the suburbs.

while other forces such as rising education levels, regional reallocation, gentrification of Black city neighborhoods, and suburban decline play modest roles. Finally, we argue that suburbanization has increased within-Black stratification due to a lack of low-cost suburban housing and relatively low White flight.

We begin by examining aggregate population trends between 1970 and 2016 in Section 2. 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, according to total population in 1970. There have been drastic increases in both the share of Black population (16 to 36 percent) and the total Black population (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. These trends do not mirror general suburbanization patterns; the Black share of the suburban population nearly tripled, rising from 5 to 13 percent.

A large literature has documented aspects of this shift and shown that racial disparities in neighborhood quality and local services persist within the suburbs (Farley 1970, Logan and Schneider 1984, Frey 1985, Massey and Denton 1988, Logan 2014, Frey 2015).[3] However, the bulk of the literature dates from the 1980s or earlier, and more recent work focuses almost exclusively on Black-White disparities within suburbs (Galster 1991, Schneider and Phelan 1993, Logan 2014). We conclude our section on aggregate trends by bringing the literature up to date on Black suburbanites' neighborhood characteristics. Between 1980 and 1990, there was a sharp upwards inflection point in Black population growth in low-poverty and racially diverse suburban neighborhoods, and these areas have since accounted for most of Black suburbanization. Black suburbanites have also become much less concentrated in aging inner-ring suburbs since 1980. These facts are significant changes to the pessimistic conclusions of the earlier literature, and they imply that suburbanization may represent a major change to the average Black household's neighborhood experience.

In Section 3, we explore the role of Black suburbanization in three specific trends in neighborhood composition. Understanding suburbanization's effect on neighborhoods is crucial to un-

[3]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).

derstanding how it may change individual outcomes and racial disparities—a long literature has pointed to the importance of neighborhoods for both factors. Chyn and Katz (2021) review the evidence for neighborhood effects on individual outcomes, while Wilson (1987), Durlauf (1996), Andrews et al. (2017), Bayer, Charles and Park (2021) discuss how neighborhood effects help preserve racial inequality. First, we illustrate suburbanization's important role in the rapid increase in residential income segregation within the Black population, which has nearly doubled since 1970 (Bischoff and Reardon 2014). We show that changes within central cities account for less than a quarter of the increase in income segregation indices, while 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 explained by a large drop in suburbs and increased suburbanization—about 40 percent of urban high earners lived in high-poverty neighborhoods throughout the sample period.

We next consider a related phenomenon: a divergence in neighborhood conditions between Black households in cities and suburbs. Suburbanization has accounted for most gains in Black households' neighborhood characteristics, with Black city dwellers in some cases even experiencing relative declines. For example, while the neighborhood median 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 to 50 percent for Black city dwellers. This mixed progress 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). Suburbanization also accounts for about half of the improvement in the average Black individual's neighborhood intergenerational mobility (as estimated by Chetty et al. [2018]).

Our final neighborhood trend is severe population decline in city neighborhoods that were majority Black in 1970. Given the suburbanization documented above, it is perhaps unsurprising that there was some Black population decline in central cities. However, the decline in historically-

Black neighborhoods has been extremely large, concentrated, and accompanied by large declines in total population. For example, census tracts that were majority Black and had poverty rate above 20% in 1970 have since lost 60% of their Black population and 40% of total population.[4] The decline is particularly strong among children, whose numbers have fallen by 30% since just 2000. Population decline on this scale is a policy concern because of its association with school closures, reduced retail or grocery options, and reduced tax revenue and intergovernmental transfers. It thus represents another way that city and suburban neighborhoods are diverging.

In Section 4, we shift focus to the causes of Black suburbanization. We use a model-based decomposition of changes in Black residential locations to estimate the importance of changing housing prices, amenities, and educational attainment, as well as migration across regions. We find that amenities (which appear in the model as a residual) explain about 60% of the observed suburbanization, prices explain 30%, and rising educational attainment and regional reallocation together explain only 10%. The fact that rising relative suburban amenities for Black households were counterintuitively accompanied by falling relative suburban home prices helps explain why the trend has been so dramatic. This is possible because the population is only 13% Black and amenities for Black and White households are imperfectly correlated. (For example, Black households are more affected by changes in racial discrimination or emergent homophily effects in the suburbs.) This limits the effect of Black amenity improvements on suburban home prices.

While the decomposition shows that rising city prices contribute to suburbanization, the data suggests that gentrification in historically-Black city neighborhoods does not play a large role. Very few of these neighborhoods experienced gentrification, and suburbanizers from historically-Black areas are positively selected on income and tend to migrate to more expensive neighborhoods than their origin. If gentrification played a role in suburbanization, it was mostly through discouraging Black people from moving to city neighborhoods with an initially low Black share, not through direct displacement. The results also do not support an important role for general suburban decline, as Black population growth has not been concentrated in poor areas and model estimates of

[4]For some of these neighborhoods, capital destruction and long-run stigma associated with civil disturbances in the late 1960s may be important drivers of population decline (Casey and Hardy 2018, Brooks et al. 2020).

suburban amenities rise substantially for both Black and White households.

Last, in Section 5, we investigate why suburbanization has been associated with rising stratification within the Black population. Motivated by Wilson (1987), we show that the suburbs had very few inexpensive rental units in 1970, making high-income Black households disproportionately able to suburbanize and take advantage of falling discrimination in the wake of the Fair Housing Act. For a lower-middle income renter, only 20% of affordable units were located in the suburbs in 1970, while the figure was 80% for an upper-middle income household looking to buy a home. While the median housing price in cities and suburbs has since converged, this difference in housing availability at the bottom of the distribution has persisted, preventing lower-income Black households from following the middle class as described in other contexts by Pattillo-McCoy (2000).[5] To help explain this persistence, we replicate the empirical specification of Boustan (2010) and find that White flight in our context has been low relative to central cities in earlier time periods (Shertzer and Walsh 2019, Derenoncourt 2022).

Overall, the paper makes two main contributions to the connected literatures on segregation, racial disparities, and neighborhood effects. The first is a new characterization of how Black suburbanization has transformed metropolitan America. This provides important context for the growing body of literature on racial disparities in neighborhood socioeconomic status (Bayer, Fang and McMillan 2014, Reardon, Fox and Townsend 2015, Bayer, Charles and Park 2021). In addition, the findings suggest that the "moves to opportunity" studied in the literature on mobility voucher programs (e.g. Ludwig et al. 2013, Chetty, Hendren and Katz 2016) are already occurring at a large scale through suburbanization. Moreover, results on population decline in historically-Black city neighborhoods point to potentially important equilibrium effects of large-scale voucher programs. Finally, the connection between suburbanization and stratification, highlights that improvements in racial discrimination in the housing or labor market may have heterogeneous impacts across subsets of people (Wilson 1987, Aliprantis and Carroll 2018). The second contribution is our study of the causes of Black suburbanization and its association with stratification, which have not been

[5]This connects to prior work that has shown the importance of differential minimum costs of housing for residential sorting more generally (Hamilton 1975; Fischel 2005; Banzhaf and Mangum 2019).

quantitatively investigated in past literature. These findings add to the literature on the historical determinants of modern racial segregation and spatial inequality (e.g. Massey and Denton 1993, Cutler, Glaeser and Vigdor 1999, Shertzer, Twinam and Walsh 2022) by examining an understudied trend that has played a large role in recent changes to the geography of race in America.

The paper proceeds as follows. Section 1 describes the data and sample, and Section 2 studies aggregate trends in Black suburbanization since 1970. Section 3 examines the role of suburbanization in three specific neighborhood trends. In Section 4, we study the causes of suburbanization, and we then examine potential causes of divergence in Section 5. Second 6 concludes.

1 Data and Sample

Our primary data set 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), 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. We define Black as non-Hispanic Black alone.[6]

Our primary sample consists of 40 populous metropolitan areas. 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 U.S. 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 country's 40 largest cities.[7] In total, the metropolitan areas in our sample contained

[6]Research has found that self-reported racial identity may respond to the social environment (Dahis, Nix and Qian 2020). We are unable to investigate the role of changing self-reported racial identity in our results.

[7]The CBSAs included are Atlanta, GA, Baltimore, MD, Birmingham, AL,Boston, MA, Buffalo, NY, Charleston,

57% of the national Black population in 1970 and 60% in 2016. Appendix Table A1 shows summary statistics on the 32,000 tracts included in our primary sample, and Appendix Table A2 shows their distribution across CBSAs, cities, and suburbs.[8]

We supplement our primary data set with information on intergenerational mobility, migration, and a variety of amenity metrics. We draw tract-level measures of intergenerational mobility from Chetty et al. (2018)'s Opportunity Atlas. The migration data, discussed in further detail in Appendix II.B, consists of individual microdata from the 1980 and 1990 censuses and individual address histories from Infutor Data Solutions. The amenity data, discussed in more detail in Appendix **??**, consists of murder rates drawn from the FBI's Uniform Crime Records, job suburbanization rates from Miller (2020), racial animus measures from a combination of Google search data and election records, and court-ordered school desegregation dates from Baum-Snow and Lutz (2011).

2 Aggregate Trends in Suburban Black Population

At the conclusion of the Great Migration in 1970, the Black population in the United States was disproportionately concentrated in the central cities of large metropolitan areas (Farley et al. 1978). We begin our analysis with a detailed descriptive analysis of how this stylized 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 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. The bottom panel of Figure 1 shows that the total Black population in suburban and other areas has increased sharply, while the number in large cities stayed flat through 2000 before beginning to decline. This aggregate pattern does

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

[8] 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.

not appear to be driven by any particular region of the country, as we discuss in detail in Appendix II.A. However, the trend does differ from the general population—the Black suburban population increased by a factor of nearly 10, while the non-Black suburban population rose only around 80 percent. As shown in Appendix Figures A1 and A2, the share in each area has remained relatively stable for White population, while Hispanic growth has been rapid everywhere.

Black suburbanization has also been widespread within metropolitan areas. In Figure 2, we plot the Black population in tracts in the Los Angeles CBSA as an example, and Appendix Figures A3 to A5 do the same for Chicago, Houston, and New York. In all cases, Black population was highly concentrated in a small set of neighborhoods within the 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 illustrates suburbanization's role in Cutler, Glaeser and Vigdor (1999)'s finding that Black growth in previously all-White areas has been a major factor in declining racial segregation.

A large literature has noted this aggregate shift and explored the neighborhood level changes that underlie it (Farley 1970, Frey 2015). Early work documented that suburbs with fast Black population growth in the 1970s and 1980s tended to have small tax bases and be relatively dense and close to the central city (Logan and Schneider 1984, Schneider and Phelan 1993). Racial disparities persisted within the suburbs for variables such as school quality and neighborhood racial composition (Rose 1976, Massey and Denton 1988, Galster 1991, Logan 2014).[9] However, this literature has been sparse since the early 1990s, and the small amount of recent work has focused on racial disparities within the suburbs rather than overall changes for the Black population. We next update this literature by examining neighborhood trends from 1970 to 2016.

First, while White-Black gaps within suburbs remain intact, Black suburban growth has not

[9]These findings led the literature to take a very pessimistic view on Black suburbanization. For example, after discussing the literature from the 1980s, Schneider and Phelan (1993) write: "these studies show that suburban blacks tend to live in highly segregated suburbs which are not only close to the central city, but also are characterized by few jobs, poor governmental services, and high tax rates...Thus, although initial reports of increased black suburbanization in the 1970s generated some optimism that the United States was entering a new era of racial integration with a decline in discrimination, the preponderance of evidence suggests a continuation of limited black access to better-endowed, more desirable communities throughout the metropolis."

been concentrated in especially disadvantaged neighborhoods. As shown in Panel A of Figure 3, Black population growth has been fastest in suburban tracts in the middle three quintiles of their CBSA income distribution. Growth in the top and bottom quintiles has been slower and roughly equal. In 1970, 45% of Black suburbanites lived in bottom income quintile tracts, and only 13% lived in the top two quintiles. By 2016, those numbers had changed to 23% and 28%. Notably, this change began to occur in force in roughly 1990, after the bulk of existing literature was written. Panel B provides an alternative measure of economic disadvantage, showing that the vast majority of growth has occurred in tracts with poverty rate below 20%.

Second, the Black suburban population lives in a racially diverse set of tracts, as shown in Panel C. Growth in majority-White tracts has been similar to majority-Black, and growth in tracts with no racial majority has skyrocketed since 1990. These patterns fit well with recent evidence on stable integration in multiethnic neighborhoods (Logan and Zhang 2010) and run counter to worries that suburban racial integration would be temporary. Finally, Panel D shows Black population growth in some specific categories of interest. The increase in majority-Black tracts that are above median income has been roughly equal to the increase in high-poverty, majority-Black tracts (about 1 million). However, while these categories attract popular attention, they represent a small share of the overall trend. Both are dwarfed by growth in non-majority Black tracts.[10]

To conclude this section, we consider how physical characteristics of Black suburbanites' neighborhoods have changed over time in Appendix Figure A10. The share that lives in the closest tercile of distance to CBD (calculated within CBSAs) has decreased from 27 to 21%. Similarly, the share living in tracts in the oldest tercile of housing stock has declined from 43% to 33%, and the share living in the top tercile of population density has fallen sharply. Like with neighborhood composition, these changes began to occur in 1980 and 1990, leading the current distribution of Black households across suburban neighborhoods to look quite different than in earlier work.

[10] Appendix Figure A9 replicates Figure 3 with population levels instead of growth.

3 Consequences of Black Suburbanization

The previous section illustrates that the distribution of Black households across municipalities and neighborhoods has transformed over the past 50 years. In this section, we study suburbanization's role in three specific trends in neighborhood composition—increased within-Black income segregation, diverging neighborhood quality for Black households in cities and suburbs, and stark population loss in city neighborhoods that were majority Black in 1970.

These trends are important to understanding how suburbanization may affect racial disparities more broadly. Neighborhood conditions have important effects on individuals (Sampson, Morenoff and Gannon-Rowley 2002, Chyn and Katz 2021), with recent quasi-experimental work showing relationships with children's future economic outcomes and adults' mental and physical health (Jacob 2004, Ludwig et al. 2013, Chetty, Hendren and Katz 2016). This creates the connection between neighborhoods and racial disparities in individual outcomes that has been noted in a long line of academic work. For example, Wilson (1987) discusses how Black middle-class out-migration from city neighborhoods during the 1970s and 1980s might affect the remaining population through lost social or economic spillovers, and Durlauf (1996), Andrews et al. (2017), and Bayer, Charles and Park (2021) note racial disparities in neighborhood composition and discuss how they may exacerbate and preserve disparities in other outcomes.

3.1 Income Segregation

In 1970, residential income segregation within Black households was lower than among the overall population. However, it now scores about 50% higher on common indices than does the population as a whole (Bischoff and Reardon 2014).[11] We show that increased Black income segregation has largely occurred through suburbanization and changes within the suburbs.

Strong and growing income sorting between Black households in cities and suburbs is immedi-

[11] Income segregation indices may be biased upwards in the period since 2000 due to small-sample bias arising from the introduction of the American Community Survey (Logan et al. 2018). Bischoff et al. (2022) argue that this bias does not change the qualitative findings in Bischoff and Reardon (2014).

ately apparent in the raw data. The income in the two areas was similar 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, as shown in Appendix Figure A12. Unsurprisingly, indices of within-Black income segregation (across tracts within CBSAs) have increased sharply over the same time period. The time series of the income segregation index developed in Reardon and O'Sullivan (2004) is shown in Panel A of Figure 4. The overall index, which can be interpreted as the share of income variation that is between tracts, has increased from 0.1 to 0.18.[12] The graph also shows the index within suburbs, which began at a higher level than the within-city index and has also increased more quickly. In Panel B, we freeze income 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 actual increase, suggesting that changes in income segregation within cities have played a relatively small role in the overall trend.[13,14]

The same general pattern is visible in a number of measures that are easier to interpret than an aggregate index. 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 to 10 percent for high earners in the suburbs. This has led the overall average to decline from 30 to 20 percent, with the entire decrease arising from the combination of decreasing suburban poverty exposure and an increasing suburban share. In addition, previous literature has noted that Black households tend to live in neighborhoods with lower median income than White households with a similar income (Bayer, Fang and McMillan 2014, Reardon, Fox and Townsend 2015). Appendix Figure A14 shows that the correlation between household and neighborhood income has increased substantially for Black households in the suburbs, while the change has been much smaller in cities.

[12] 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 can exhibit different patterns than tract or ward measures. This may be of particular importance in large suburban tracts.

[13] Farley (1970) describes several examples of majority-Black suburban enclaves that developed prior to World War 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 segregation within the suburbs.

[14] In Appendix II.A, we show that this trend also occurs within each Census Region.

3.2 Neighborhood Divergence

In conjunction with increased income segregation, suburbanization has been associated with significant changes to Black households' neighborhood composition. Neighborhood characteristics of suburbanites and city dwellers have diverged, and a disproportionate share of improvements in the average Black household's neighborhood quality has occurred through suburbanization and improvements in the suburbs.

Figure 5 shows how two key neighborhood characteristics have evolved differently for Black individuals in cities and suburbs. The first characteristic is the average adult income (measured at age 31-37) of children who lived in the neighborhood in the 1990s with parents whose income was near the 25th percentile of the national income distribution, as estimated by Chetty et al. (2018).[15] Panel A shows that the average Black individual's neighborhood future income has gradually increased from the 33rd to the 38th percentile, driven by improvements for both city dwellers and suburbanites as well as an increase in the suburban share. In Panel C, we recompute the average future income under the counterfactual assumption that the suburban share and future income in the suburbs remained at their 1970 levels. These two forces account for over half of the overall improvement. While we would ideally have a time series of neighborhood future income to allow for both neighborhood change and migration, these results suggest that suburbanization is a major way that Black households have improved economic opportunity.

Panels B and D of Figure 5 repeat the exercise for neighborhood median household income. To account for income growth and economic changes over time, we normalize by the average neighborhood income for White individuals in each year (always including both cities and suburbs in the normalization). The trend has been modestly upwards overall—from 61% to 66% of mean White neighborhood income—but cities and suburbs have moved in opposite directions. Black relative neighborhood income in the suburbs increased from 72% in 1970 to 78% in 1990 before declining slightly, while cities have steadily declined from 58% to 50%. Suburbanization thus accounts for

[15] We use the 25th percentile because it is the closest available estimate to the average Black household's income rank, and we take the estimate that includes children of all races.

more than 100% of relative improvements in Black households' neighborhood income.[16]

Finally, growth in high-SES, majority-Black neighborhoods has been disproportionately concentrated 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, Aliprantis, Carroll and Young 2019). Figure 6 shows that the number of majority-Black tracts in our sample with median income above the sample median 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.

3.3 Population Decline in Historically-Black City Neighborhoods

The last consequence we study is Black and total population decline in city neighborhoods that were majority-Black in 1970. Given the aggregate rate of Black suburbanization, some Black population decline in cities is to be expected. Indeed, Appendix Figure A11 shows that all of the largest central cities in the sample lost total Black population between 2000 and 2016. However, it does not follow that decline would be highly concentrated in historically-Black neighborhoods, or that overall population in these neighborhoods would also fall. This decline may have effects beyond demography, such as school closures, reduced retail options, and declining support for churches and other local institutions. Recent work has also linked foreclosures and vacant homes to increased crime (Ellen, Lacoe and Sharygin 2013, Cui and Walsh 2015).

Table 1 shows that city Black population decline has been concentrated in neighborhoods that were initially majority Black, which saw a decrease from 7.5 million in 1970 to 3.7 million today. The percentage drop is even larger in majority-Black areas that also had poverty rates above 20% in 1970, which have since lost 60% of their Black population. Growth in other groups did not offset this loss, as total population in these neighborhoods fell by over 30% (as shown in Panel

[16]Similar results appear for poverty, while college share has increased rapidly in cities and suburbs due to the sharp national increase in college attainment. Appendix II.A shows that patterns hold within Census Regions.

B). In contrast, Black and total population in city neighborhoods that were not initially majority Black have grown substantially. Interestingly, Black population in majority-Black suburban tracts declined from 1.7 to 1.2 million, but total population did not fall.

Next, Table 2 shows differences across age groups. Because age data is not consistently available at the tract level, we consider central cities as a whole and focus on the period since 2000, when total Black city population began to fall. Panel A shows that the number of Black children in cities has fallen by 30%. Young adults (18-34) have fallen by 8%, and 35-64 year-olds have decreased by 5%. In contrast, the Black over-65 population increased by nearly 20%. These figures are influenced by national demographic trends, as the number of Black children in the U.S. decreased slightly over this period and the over-65 population grew quickly. However, Panel C shows that the city share of the sample total has fallen less for senior citizens than other ages.

This suggests that households with children may play a disproportionate role in Black city population decline, consistent with early evidence from Frey (1985) and Alba and Logan (1991). This may result from age-varying moving costs or preferences over amenities that lead different groups to respond differently to changes in cities and suburbs (Bayer et al. 2016, Bartik and Rinz 2018, Boustan and Shertzer 2013, Albouy and Faberman 2019). In addition, the relatively young age of Black arrivals during Great Migration may have created a lopsided age distribution in cities that led to asymmetric growth rates across age groups.

4 Causes of Black Suburbanization

We now shift attention to the causes of Black suburbanization. We begin with a decomposition of three broad factors. First, changes in demographic and regional composition, such as the growth of the Black middle class and migration to the South, may have increased suburbanization. Second, relative amenities—broadly defined to include racial discrimination—may have improved in the suburbs. Finally, relative housing prices may have changed due to either gentrification, aging housing stock, or other factors. We combine a Oaxaca-Blinder decomposition, which separates the contribution of changing individual composition and changing suburban shares within types

of individuals, with a neighborhood choice model that further decomposes within-type changes in suburban shares into price and amenity components. Baum-Snow and Hartley (2020) use a similar approach to explain central-city gentrification. We caution that the exercise is descriptive and does not incorporate, for example, feedback between amenity changes and house price adjustments.

After presenting the decomposition estimates, we consider four specific causal explanations for the increase in Black suburbanization—rising education and changing migration across regions, falling socioeconomic status and housing prices in some formerly middle-class suburbs, gentrification in central cities, and rising relative suburban amenities. We discuss the extent to which each would generate outcomes consistent with the decomposition and other moments in the data. Finally, we investigate how the amenity changes implied by the decomposition correlate with proxies for four key amenities.

4.1 Decomposition Methodology

We want to decompose the change in the share of Black households living in the suburbs into the components explained by compositional changes, price changes, and amenity changes. Let k index an individual's demographic group and region, g index neighborhood type, μ_{kt} be the share of people that are type k at time t, and P_{kgt} be the probability that a type k person chooses neighborhood g in time t. We can then write the suburban share of Black households as:

$$\frac{N_{St}}{N_t} = \sum_k \mu_{kt} \times \sum_{g \in \mathrm{S}} P_{kgt}, \tag{1}$$

where S is the set of suburban neighborhoods. Let $\Delta x = x_{t'} - x_t$. The change in Black suburban share from t to t' can be written as:

$$\Delta \frac{N_S}{N} = \underbrace{\sum_k \Delta\mu_{kt} \times \sum_{g \in \mathrm{S}} P_{kgt}}_{\text{Term A: Suburbanization due to change in composition}} + \underbrace{\sum_k \mu_{kt'} \times \sum_{g \in \mathrm{S}} \Delta P_{kgt}}_{\text{Term B: Suburbanization due to change in choice probabilities}} \tag{2}$$

To further decompose Term B into changes due to prices and amenities, we model neighborhood choice. We write indirect utility for individual i of type k as:

$$v_{igt}^k = A_{gt}^k - \beta^k r_{gt} + \epsilon_{igt} \tag{3}$$

where r_{gt} and A_{gt}^k are housing costs and type-specific amenities in neighborhood g at time t and $\epsilon_{igt} \sim$ EV-1. Choice probabilities P_{kgt} then take the standard logit form:

$$P_{kgt}(\mathbf{A_t^k}, \mathbf{r_t}, \beta^k) \equiv P(v_{igt}^k > v_{ig't}^k \; \forall \; g' \neq g | \mathbf{A_t^k}, \mathbf{r_t}, \beta^k) = \frac{exp(A_{gt}^k - \beta^k r_{gt})}{\sum_{g'} exp(A_{g't}^k - \beta^k r_{g't})} \tag{4}$$

where $\mathbf{A_t^k}$ and $\mathbf{r_t}$ are amenity and price vectors for all neighborhoods. We can then break Term B in Equation 2 into a price component and an amenity component:

$$\begin{aligned} \sum_k \mu_{kt'} \times \sum_{g \in \text{Suburbs}} \Delta P_{kgt} = \; & \underbrace{\sum_k \mu_{kt'} \times \left[P_{kgt}(\mathbf{A_t^k}, \mathbf{r_{t'}}, \beta^k) - P_{kgt}(\mathbf{A_t^k}, \mathbf{r_t}, \beta^k) \right]}_{\text{Term B1: Change in suburban choice probability due to changing price distribution}} \\ & + \underbrace{\sum_k \mu_{kt'} \times \left[P_{kgt}(\mathbf{A_{t'}^k}, \mathbf{r_{t'}}, \beta^k) - P_{kgt}(\mathbf{A_t^k}, \mathbf{r_{t'}}, \beta^k) \right]}_{\text{Term B2: Change in suburban choice probability due to changing amenities}} \end{aligned} \tag{5}$$

Our final decomposition results will be estimates of Term A in Equation 2 (the compositional change contribution), Term B1 in Equation 5 (the price change contribution), and Term B2 in Equation 5 (the amenity change contribution). To arrive at these estimates, we directly measure μ_{kt} and P_{kgt}, estimate Equation (3), and then plug these parameters into Equations (2) and (5).

To implement this approach empirically, we first define neighborhood type g to be {suburban tracts with over 15% poverty in 1970, other suburban tracts, city tracts that were majority-Black in 1970, other city tracts}, defined separately within each CBSA.[17] Second, we define an individual's type k according to college education status and CBSA of residence, and we include only individ-

[17] El Paso and Providence had no majority-Black neighborhoods in 1970, while Milwaukee and Minneapolis had no high-poverty suburban neighborhoods. These categories are thus empty in our estimation. We divide suburban tracts based on poverty rather than percent Black because there were few majority-Black suburban tracts in 1970.

uals in our sample CBSAs in the estimation. This allows us to examine suburbanization separately from reallocation across CBSAs or regions. Third, we define the relevant housing price r_{gt} for a neighborhood type as the tract median owner-occupied housing value of the median Black person living in the neighborhood type. Owner-occupied values appear to be higher quality than census data on rents, particularly in early years when rents are top-coded at low values. Finally, we use the Black population in our sample CBSAs as the primary sample.

To estimate Equation (3), we first calibrate β^k to match estimates of the elasticity of population to housing prices from Albouy, Ehrlich and Liu (2016) and Calder-Wang (2021). We set β^k equal in all types and calibrate so that the implied aggregate elasticity in 1970 matches the target value. We assume that this elasticity is constant over time, and we note that we are matching an estimate of the overall elasticity, rather than a race-specific estimate. Because neighborhood amenities are difficult to directly measure, we include neighborhood-type fixed effects to estimate A^k_{gt}. The model thus infers amenity improvements in places where price changes are not large enough to explain the observed increase in population. We investigate the robustness of results to specification choices and also estimate the model for the White population to provide a point of comparison.

4.2 Decomposition Results

Figure 7 shows the decomposition results for each year of the sample period. The lower two lines show the predicted suburban share among Black individuals in our sample CBSAs when incorporating only regional reallocation and changes in education—these factors together explain only 10% of the observed increase from 1970 to 2016. With both factors included, this represents Term A in Equation 2. When we change the neighborhood choice probabilities to reflect the observed change in housing prices (adding Term B1 in Equation 5), the predicted suburban share rises to 42% of the observed change. This implies that changes in amenities (Term B2 in Equation 5) account for the remaining 58% of suburbanization. We note again that these are partial equilibrium results. They suggest that amenities and prices both changed by enough to have large effects on the Black suburban share, but they do not explain why amenities changed or represent a counterfactual

simulation of, for example, how the suburban share would have evolved if amenities had remained constant.

Next, we examine the changes in prices and estimated amenities in each neighborhood type in Figure 8. We measure amenities as the residual of the model prediction with prices included (Term B2 in Equation 5). Panel A shows that amenities relative to initially majority-Black city neighborhoods rapidly rose in all other neighborhood types from 1970 to 2000, explaining most of suburbanization in this period. The increase was largest in low-poverty suburban neighborhoods, but amenities in minority-Black city neighborhoods went up by nearly as much. This early increase in amenities is required to rationalize the data because, as shown in Panel C, relative suburban housing prices (measured as the within-neighborhood type median weighted by Black population) increased from 1970 to 1990 before beginning a steady fall. For reference, Panel B shows the amenity estimates when we estimate the model for White households, while Panel D shows changes in median housing costs weighted by total population. In the next section, we use the patterns in these graphs to explore specific causal explanations.

Finally, we estimate the predicted suburban share under several alternative specifications. We double and halve the price elasticity and explore different price metrics: the mean tract housing cost for a Black individual and the mean and median tract housing cost across all individuals. As shown in Appendix Figure A15, the overall time series looks similar in each case. Appendix Figure A16 shows that the share of suburbanization that can be explained by prices remains between 25% and 45% across specifications, while the amenity component varies between 50% and 70%.

4.3 Specific Causal Explanations

Below, we present four a priori plausible causal explanations for Black suburbanization and consider whether their implications for neighborhood composition, amenities, and prices match the decomposition results and other moments in the data.

4.3.1 Rising Education Levels and Southern Migration of Black Households

Over the last fifty years, the composition of Black households has changed significantly. Educational attainment and incomes of Black Americans have risen, particularly in the right-tail of the earnings distribution (Altonji and Blank 1999, Neal 2006, Bayer and Charles 2018). If living in the suburbs is a normal good or college-educated households have a higher preference for suburban living, these changes may drive suburbanization. Frey (2015) points to both increasing education and the rising Black migration to the South as potential causes of suburbanization.

As discussed above, the lower two lines in Figure 7 show the predicted level of Black suburbanization from freezing prices and amenities at their 1970 levels and allowing educational and regional composition to evolve as they did in the data. These compositional changes predict a modest increase of two percentage points in Black suburbanization, which represents only 10 percent of the observed increase. Of course, the decomposition does not incorporate general equilibrium effects of the compositional change, such as price changes or homophily effects from the implied growth in the suburban Black population. However, these forces do not necessarily point in the same direction, and the partial equilibrium effects of compositional changes are quite small, suggesting that general equilibrium effects are also likely small.

4.3.2 Declining Suburbs May Attract Price-Sensitive Black Households

Recent literature has highlighted the rapid growth of suburban poverty (e.g. Allard 2017), as well as quick depreciation of a subset of the suburban housing stock (Rolheiser 2021). In our specific context, Howell and Timberlake (2014) show that increased housing affordability in suburbs is associated with future Black population growth. This literature suggests that price-sensitive Black households may be drawn to declining suburbs in a self-reinforcing cycle of decreasing amenities, White flight, and decreasing housing prices. A specific example would be if aging post-war housing stock led to price decreases in an initially middle-class suburb, attracting price-sensitive Black households, and White flight occurred in response to the Black arrivals, resulting in a high-poverty, majority-Black suburban neighborhood.

The decomposition provides little support for this dynamic. Returning to Figure 8, we see that relative amenities for Black households improve in all suburban neighborhoods relative to initially-Black city neighborhoods, and prices in high-poverty suburbs remained roughly flat. For White households, amenities in low-poverty suburbs rose markedly relative to all other types of neighborhoods, while amenities in high-poverty suburbs did not change much relative to city neighborhoods. These estimates are inconsistent with dramatic declines in suburban quality of life.

A limitation of the decomposition is that it does not allow neighborhoods to change categories over time—some initially low-poverty neighborhoods may have seen rapid poverty increases. However, as shown earlier in Figure 3, the number of Black suburbanites living in high-poverty (measured contemporaneously) tracts has grown much more slowly than the number in low-poverty tracts. Only about 7% of the total growth in the Black suburban population has been in tracts with over 30% poverty (a common definition for concentrated poverty), and the figure increases to only 15% with a 20% poverty threshold. This suggests that while a cycle of decline may have occurred in some specific towns or neighborhoods, this dynamic does not explain a large share of Black suburbanization.

4.3.3 Gentrification Displacing Black Households from Historically-Black Neighborhoods

The decomposition showed that relative price increases in central cities explain about a third of Black suburbanization. While this implies that price increases in cities mattered broadly, the typical notion of gentrification and displacement is more narrow—rising prices in a neighborhood displacing incumbent residents (McKinnish, Walsh and White 2010, Brummet and Reed 2019). A commonly discussed causal chain is that prices in historically-Black neighborhoods may have risen in response to highly-educated households' increasing demand to live in central cities, pushing Black incumbents to the suburbs. Baum-Snow and Hartley (2020) show that gentrification has indeed been associated with increasing white share in central cities, and Couture and Handbury (2020) illustrate the extent of gentrification since 2000 more broadly. In this section, we study this specific concept of gentrification and displacement, and we consider the broader role of relative

price shifts between cities and suburbs in the next subsection.

Beginning with our estimates of the change in White households' amenity valuations in Panel B of Figure 8, we see no marked rise for historically-Black central city neighborhoods. Their valuation has not changed much relative to other city neighborhoods or high-poverty suburban neighborhoods, and they decline relative to low-poverty suburban neighborhoods. This is inconsistent with in-migration of White households displacing Black residents in these areas at a large scale. Conversely, there is a large increase in relative amenity valuations of minority-Black city neighborhoods between 2000 and 2016, particularly relative to low-poverty suburbs, consistent with these areas being more likely to gentrify after the onset of urban revival.

More directly, we next compare the time series of Black population in two categories of historically-Black city neighborhoods: those that moved up more than one decile in the CBSA income distribution between 1970 and 2016 and those that did not. This very broad characterization of income growth encompasses many definitions of gentrification. Panel A of Figure 9 shows that Black population declined by 3.1 million in historically-Black neighborhoods that did not see significant income increases, versus only 700,000 in areas where income improved. This implies that non-gentrified neighborhoods account for over 80% of the total decline. However, this result does not occur because income-improving neighborhoods lost a smaller percentage of their Black population—the decline was between 50% and 55% in both categories, as shown in Panel B. Instead, the low baseline Black population in tracts that later saw income improvements leads similar percentage changes to have very different implications for the aggregate total. Even in "superstar" cities (Boston, Los Angeles, New York, Seattle, and San Francisco) where gentrification may be stronger, the decline in tracts where income improved still only accounts for 31% of the total.

Next, we look at housing prices and migration. Appendix Figure A17 shows that the tract of the average Black city dweller in 1970 did not see large increases (relative to the rest of the CBSA) over the following 50 years in either median housing value or rent. In addition, two exercises show migration patterns that are inconsistent with gentrification driving displacement to the suburbs. Appendix Figure A18 shows that Black suburbanizers were positively selected from cities in late

1970s and late 1980s (the time periods in which Census microdata enables us to identify suburbanizers for a subset of our sample). Appendix Figure A19 uses data from Infutor Data Solutions to show that, during the 2010-2016 time period, suburbanizers from majority-Black neighborhoods tended to move to higher-cost, higher-income areas. Additional details on these exercises and the underlying samples are included in Appendix II.B.

These results cast doubt on the idea that direct gentrification and displacement in majority-Black neighborhoods has been a major cause of suburbanization or central city Black population decline. While it can have large effects within a neighborhood, gentrification is not common enough, at least in majority-Black neighborhoods, to have a major aggregate effect. If gentrification-related forces played a role, it was likely by causing Black households who otherwise would have located in non-Black city neighborhoods to instead locate in the suburbs. This potential force can be seen in Figure 8, Panel D, which shows that median home prices in initially minority-Black city neighborhoods rose by nearly $100,000 relative to those of majority-Black neighborhoods. This roughly tripled the 1970 gap between majority-Black and other city neighborhoods. It also opened up a $50,000 gap between minority-Black city neighborhoods and low-poverty suburbs, where almost no gap existed initially.

4.3.4 Relative Suburban Amenities Improved Without Increasing Prices

The decomposition results suggest that improvements in relative suburban amenities are the most important force driving Black suburbanization, explaining roughly 60 percent of the overall shift. In this section, we discuss some specific changes that may generate this amenity trend, and we also highlight that these amenity improvements were not paired with suburban price increases.

Past literature points to several reasons that the suburbs may have become more attractive to Black households over the sample period. First, Wilson (1987) argues that the Civil Rights Movement and Fair Housing Act made the suburbs more appealing to the Black middle class, due to declines in both explicit discrimination and general racial animus. Due to racial homophily, initial growth in the suburban Black population spurred by falling discrimination may have made

the suburbs yet more attractive to Black households.[18] While these forces are difficult to assess in the data, Black population grew across a wide variety of suburban neighborhood types, which is consistent with a widespread decline in discrimination rather than a trend concentrated in a particular neighborhood type.

Second, majority-Black city neighborhoods may have seen amenities decline due to forces such as decreasing quality of public services, closing retail establishments (Meltzer and Schuetz 2012), shifts in job opportunities (Wilson 1997, Miller 2020), and rising crime (Evans, Garthwaite and Moore 2016). If these amenity changes create Black flight, that may further amplify the initial change (Wilson 1987). While our approach does not allow us to assess absolute amenities, the rapid population decline and relative amenity decline in these areas is consistent with this story. Third, amenities in the suburbs may have improved for all households, continuing patterns from the post-war period. The decomposition also provides support for this theory, as relative amenities for low-poverty suburban neighborhoods rose substantially for both Black and White households.

Crucially, this rise in relative suburban amenities was paired with relative price declines in suburbs after 2000. This means that the general equilibrium price increase which one would have expected to moderate improvements in Black amenities did not occur consistently over the full sample period. This lack of price feedback helps explain the extent and speed of suburbanization. Several factors may explain this somewhat surprising pattern. First, the U.S. population is only 13% Black, so changes in Black preferences for different neighborhood types represent relatively small shifts in demand, limiting their impact on prices. Second, suburban neighborhoods in many metro areas have relatively high housing supply elasticities, muting the effect of the demand increase that does occur (Baum-Snow and Han 2019). Third, the amenity trends we highlight differentially affect Black and White valuations. For example, discrimination and homophily effects of an increasing Black suburban share primarily affect Black households. This means that overall demand may not even change in the same direction as demand from Black households.

[18] See McPherson, Smith-Lovin and Cook (2001) for a literature review on homophily.

4.4 Relationship Between Suburbanization with Directly Measured Amenities

To support our amenity-based explanation, we next explore the correlation between model-estimated amenities and direct amenity measures across CBSAs. We focus on changes between 1970 to 2000, which is when the suburban amenity premium rises and when amenity data is most complete. We study four amenities that changed significantly and likely differentially in cities and suburbs: job location (Miller 2020), school quality (Baum-Snow and Lutz 2011); racial animus (Bostic and Martin 2005, Turner et al. 2013); and crime (Evans, Garthwaite and Moore 2016).

We combine a number of data sources for this investigation. First, we compute the difference between the murder rate in a central city and its suburbs using the FBI's Uniform Crime Records.[19] Second, Miller (2020) provides data on the 1970 to 2000 change in the share of a CBSA's jobs that are located in the suburbs. For school quality, we employ a major shifter that occurred during our sample period: court-ordered desegregation of large central city school districts. Baum-Snow and Lutz (2011) show that these orders were valued by Black households and provide the years in which they occurred. Finally, we construct a measure of the change in racial animus using two different data sources. We use George Wallace's vote share in the 1968 presidential election, drawn from Leip (2022), as a pre-period metric. For a post-period metric, we take the rate of Google searches for racial slurs between 2004 and 2007 from Stephens-Davidowitz (2014). We then take the difference between each CBSA's rank among sample CBSAs on the first metric and the second to yield an approximation of its change in animus. While this metric concerns the whole CBSA rather than a city-suburb differential, it likely disproportionately impacts Black households in predominantly White areas such as the suburbs.

We then estimate the relationship between these measures and model-estimated amenities. Let g index CBSA, $X_{g,t}$ be a vector of measured amenities, and $A_{g,t}$ be the model-estimated relative amenities in suburbs versus cities. We estimate:

$$\Delta A_g = \alpha + \Delta X_g \beta + \epsilon_g \tag{6}$$

[19] We use the panel constructed by Kaplan (2021) and follow the cleaning procedure in Chalfin et al. (2022).

where X is expressed in standard deviations and model amenities as the residual in the model-predicted suburban share.[20] (For desegregation orders, X is instead a dummy variable for whether a CBSA's central city received an order between 1970 and 2000.)

Table 3 reports results. Column (1) shows bivariate regressions of model amenities on each metric. The relationship has the expected sign for three of the four, but increases in the city-suburban murder rate differential are surprisingly negatively associated with suburban amenity changes. There are two reasons this could occur. First, it may be that the initial murder differential is the primary determinant of differences in suburbanization rates across CBSAs, and changes in the differential are less important. To explore this possibility, we also regress the estimated amenity change on the level of the murder differential in 1980 (approximately the midpoint of the period). It exhibits a strong positive relationship. Second, it may be an artifact of the dramatic swings in the overall murder rate during the sample period. A sharp rise from 1960 to 1990 was followed by a sharp fall between 1990 and 2000. If the murder rate has lagged effects on neighborhood choice—perhaps due to slow-moving neighborhood reputations—then looking at contemporaneous changes may provide a misleading picture.

Next, Columns (2) and (3) report results from a multivariate regression of model-estimated amenities on all of the metrics, with Column (2) including the change in the murder differential and Column (3) instead including the 1980 level. The adjusted R^2 coefficients are 0.39 and 0.40, and racial animus and job suburbanization appear to play the biggest roles. Adding region fixed effects in columns (4) and (5) reduces the adjusted R^2 slightly to 35% and 38%.

These exercises show that the model residual is strongly correlated with amenity metrics, which can explain a substantial share of its variance across CBSAs. This suggests that the model-estimated amenities are capturing real changes in neighborhood desirability, although reverse causality and endogenous amenities prevent us from drawing causal conclusions.

[20] We use model-estimated amenities in the suburbs as a whole, rather than in each of our neighborhood categories, because data on observed amenity metrics is not available at the tract level.

5 Causes of the Association Between Suburbanization and Stratification

In this section, we shift our focus from why suburbanization has occurred in the aggregate to why it has been associated with increased income segregation and neighborhood divergence. The association could occur because of differences in either the resources or preferences of high versus low-income Black households, and it may also be moderated by the behavior of other races. We provide suggestive evidence of the importance of both differences in resources and the response of other races to Black arrivals.

Our analysis is informed by two arguments from prior literature. First, Wilson (1987) noted that higher-status Black households were better positioned to take advantage of the improvements that followed the Civil Rights Movement and that this implied, counterintuitively, that reduced constraints on employment or residence could increase stratification within the Black community. He pointed to the out-migration of the Black middle class from majority-Black city neighborhoods following the Fair Housing Act as one example. We show that there have been large differences in cost of living in the cities and suburbs throughout the sample period, particularly at the low end of the distribution, likely making Black households with more resources more likely to suburbanize.

Second, Pattillo-McCoy (2000) observed that the exit of the Black middle class from historical ghettos predates the Civil Rights Movement by decades, as evidenced by Du Bois (1899) and Frazier (1932).[21] She argued that recent increases in stratification did not result from new middle-class flight, but rather because the lower classes had stopped following the middle class to new locations. To help explain why the separation was largely maintained in our context, we show that White flight in the suburbs has been relatively muted, preventing the drastic price decreases that allowed lower-income households to follow in other settings.

[21] Pattillo highlights the following quote from DuBois (1899, page 305-306): "the best classes move to the west and leave the dregs behind. The parents and grandparents of some of the best families of Philadelphia Negroes were born in the neighborhood of Sixth and Lombard at a time when all Negroes, good, bad and indifferent, were confined to that and a few other localities. With the greater freedom of domicile which has since come, these slum districts have sent a stream of emigrants westward."

5.1 Housing Affordability in Cities and Suburbs

To motivate our exercise, consider the extreme case of a strict minimum cost of suburban housing. In this example, households below some income threshold would be unable to afford any suburban unit, so any increase in Black suburbanization would generate stratification. Reality is of course more complicated—some suburbs have good public transit and very cheap housing, and even expensive suburbs may have some cheap rental units. To assess the role of housing costs in differential suburbanization across incomes, we thus examine the share of the units that are affordable at a given income that are located in the suburbs. If this share is low, then a non-price shock that makes the suburbs more appealing (e.g. reduced suburban housing discrimination following the Fair Housing Act) does not affect many options in the consumer's choice set, and it is unlikely that they will move as a result. If the share is high, then they are more likely to suburbanize in response to the shock. Note that this explanation, especially at low incomes, largely concerns the availability of cheap housing stock in the suburbs, while the city-suburb price convergence shown in the previous section was based on the median price.

Ideally, we would observe the full distribution of housing prices and rents in each tract and use these data to estimate the suburban share of housing units that are affordable at difference incomes. Unfortunately, the best available data for our sample period contains only median values for each tract. To approximate the suburban share of the affordable set, we first identify the tracts in which a household with a given income would be able to afford the median unit according to common rules of thumb: rent below 40% of income for rental units and home price below 2.5x income for owner-occupied units.[22] We then weight each tract by the number of rental or owner-occupied units, depending on which cost we are considering, and compute the share that are located in the suburbs. In addition, we incorporate the added cost of car dependence in the suburbs by increasing the income requirement to afford a given housing cost by $5,000 for suburban tracts.[23]

[22]While there is no formal justification for these standards, they are frequently used in a variety of contexts. For example, many organizations define severe rent burden as spending over 40% of income on rent.

[23]It is difficult to precisely estimate the cost of car ownership. In 2021, the American Automobile Association estimated it at $10,000 for a new car. We halve this estimate to approximate the difference between owning a car and using public transportation. Including car-ownership does not change the conclusions of this exercise, but we

Results for 1970 and 2016 are shown in Figure 10. As income increases, a larger and larger share of a household's affordable set lies in the suburbs. For a renting household in 1970 with income of $20,000 (about $20,000 below the median Black family income at the time), only 20% of affordable units were located in the suburbs. In contrast, for a household earning $60,000 and looking for owner-occupied housing, almost 80% of affordable units were located in the suburbs. This pattern could lead high-income households to respond more strongly to suburban improvements, creating the divergence we documented earlier. Trends are similar in 2016, illustrating that this differential has persisted despite changes in city and suburban median prices.

The difference between the suburban shares for rental and owner-occupied housing highlights that the paucity of rental units in the suburbs may be another barrier for low-income households. Even if their income meets our rule of thumb for a given home price, saving a down payment and qualifying for a mortgage may still be prohibitive. This points to a reason that suburbanization may be an especially important mediator of within-race income segregation for Black households—their relatively low wealth (Derenoncourt et al. 2022).

5.2 Suburban White Flight

Next, we study the equilibrium response of other races to shed light on why stratification between the cities and suburbs has been maintained over time, rather than following the course of the Great Migration, when White households rapidly fled central city neighborhoods in response to Black arrivals, reducing housing prices and resulting in extreme racial segregation (Boustan 2010, Shertzer and Walsh 2019, Derenoncourt 2022). We show that White flight is significantly lower in our context. This reduces downward pressure on housing prices, preventing suburban neighborhoods from becoming affordable for lower-income Black households and helping to sustain income segregation.

We examine the flight response by replicating Boustan (2010)'s main specification in our setting. Boustan studies the White response to Black population increases in central cities between

incorporate it in order to highlight that it may be a barrier to suburbanization for some households.

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.[24] The most direct analogue of Boustan's specification is:

$$\text{white\_sub}_{mrt} = \alpha_m + \beta_1 \text{black\_sub}_{mrt} + \gamma_1 \text{cbsa\_pop}_{mrt} + \nu_{rt} + \epsilon_{mrt}, \tag{7}$$

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. 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.

Results are shown in Table 4. 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% confidence interval of all of our estimates.

Column 2 shows results controlling for 10-year lags of Black percent, Hispanic percent, median

[24] We focus on this set of tracts because 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.

household income, poverty rate, owner-occupancy rate, and vacancy rate. 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 towards 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).[25] 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 this approach has limitations, these results suggest that our OLS estimates do not suffer from a large bias towards zero.

This exercise suggests that the suburban White response to Black arrivals is muted relative to the White response to Black arrivals in cities during earlier time periods, consistent with previous work on stable integration and heterogeneity in tipping points (Ellen 1998, Card, Mas and Rothstein 2008, and Ellen, Horn and O'Regan 2012). This acts to preserve stratification between Black households in cities and suburbs by preventing drastic decreases in suburban housing prices.

[25]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.

6 Conclusion

We study how Black suburbanization has reshaped the geography of race in America. Black households have rapidly shifted to the suburbs and located in a wide variety of suburban neighborhoods. A model-based decomposition suggests that they have been drawn largely by improving relative amenities and falling relative housing costs in the suburbs. In addition, Black suburbanizers are positively selected, in part due to the expensive suburban housing stock, and White flight in response to their arrival has been relatively muted. Meanwhile, these same changes in relative amenities have led to slow or negative Black population growth in central cities, particularly in neighborhoods that were majority Black in 1970. Together, Black suburbanization has not only reduced residential segregation as documented in Cutler, Glaeser and Vigdor (1999), but has also led to a divergence in which higher-income Black suburbanites increasingly live in more integrated neighborhoods with higher quality indicators and lower-income Black city dwellers have seen their neighborhood characteristics stagnate.

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: for example, Bayer and Charles (2018) show that the racial wage gap has closed more quickly at higher quantiles of the distribution. More broadly, Wilson (1987) argued that reductions in discrimination and other civil rights progress could disproportionately benefit the Black middle class, enabling them to separate from low-income Black households in a variety of ways.

Our findings lay the groundwork for a number of important research questions. First and most importantly, how has suburbanization affected the economic and social outcomes of Black individuals? In addition to changes in neighborhood composition and public services for movers, equilibrium effects on both sending and receiving neighborhoods may be important. Second, what roles have reduced housing discrimination and inadequate provision of public services in majority-Black neighborhoods played in the rising relative suburban amenities that we document? We provide some evidence that these factors matter for variation in suburbanization across cities, but further

research could examine national trends, construct new metrics, or employ quasi-experiments. Last, what implications does changing racial composition in suburban jurisdictions and electoral districts have for municipal finances and political representation?

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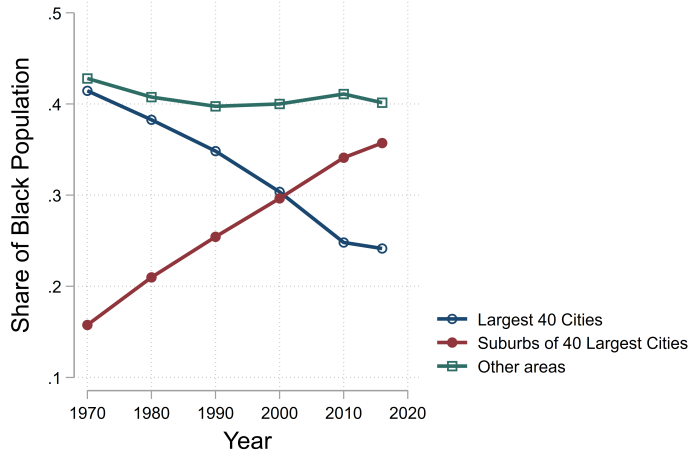
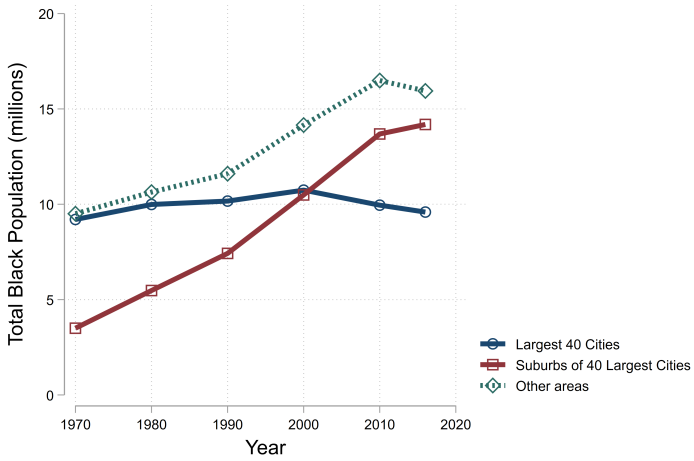
Figures and Tables

Figure 1: Change in Black Residential Locations Since 1970

Panel A: Share of Black Population



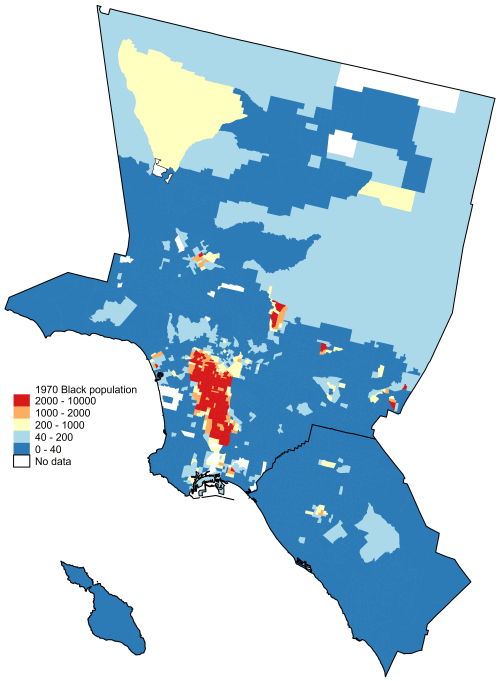
Panel B: Total Black Population



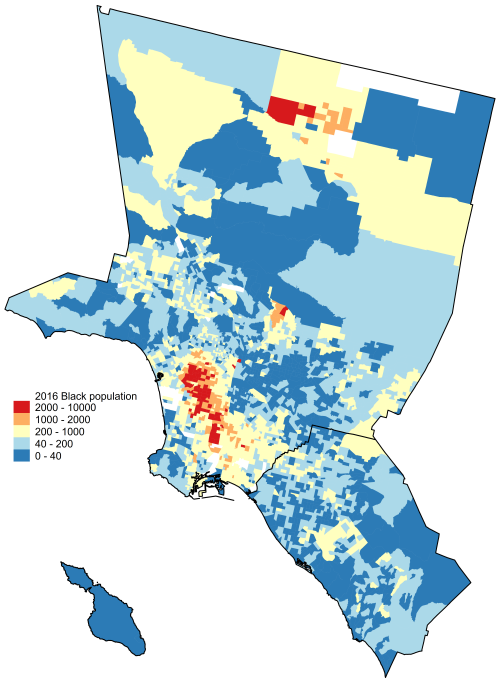
Notes: Total and share of Black population in large central cities, their suburbs, and other areas. Largest 40 cities is defined as the central cities of the most populous 20 CBSAs in southern states and in all other states, as measured in 1970. Suburbs are defined as the CBSAs containing these cities, 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

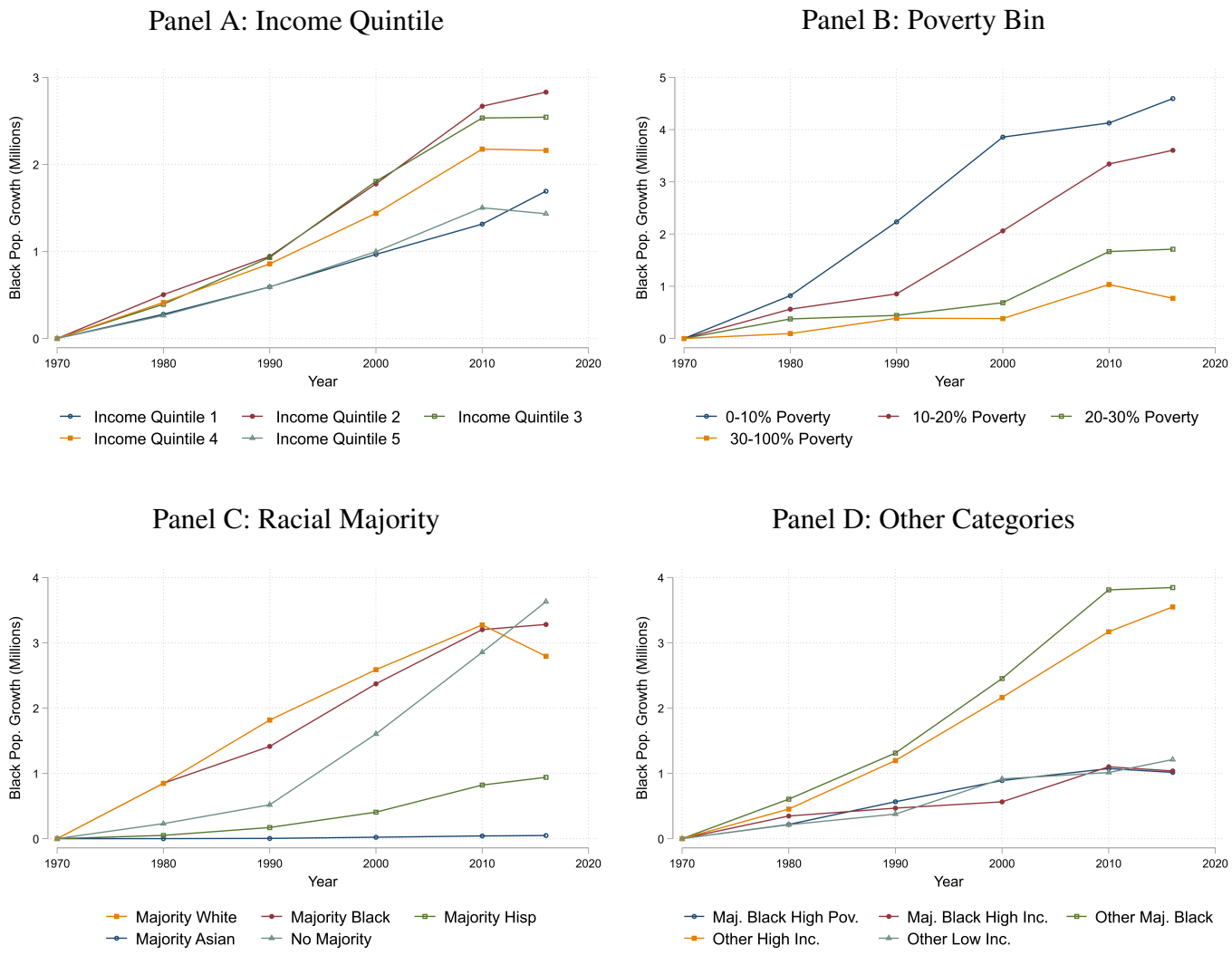


Panel B: Census Tract Black Population in 2016



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 to 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.

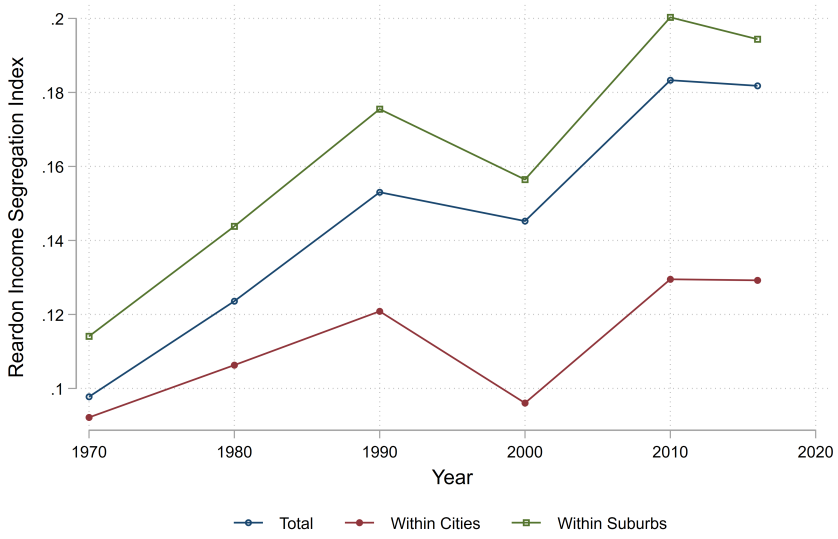
Figure 3: Black Population Growth Since 1970 in Suburban Neighborhood Categories



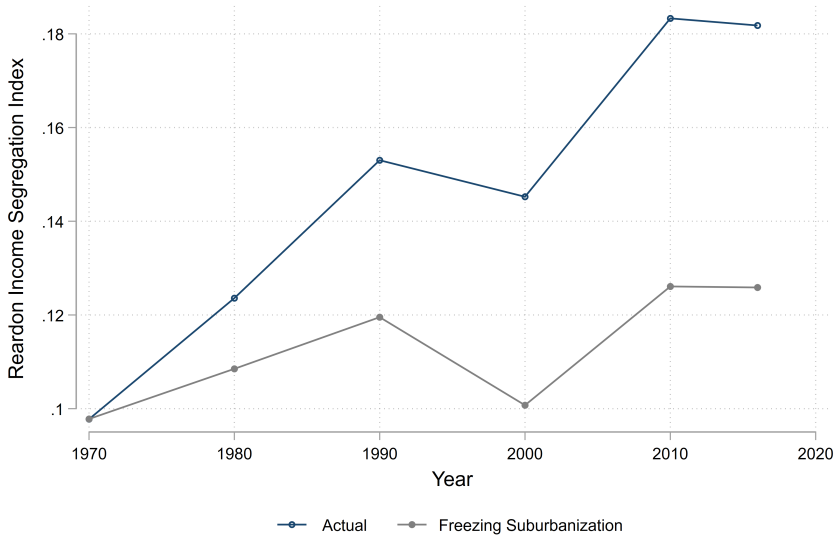
Notes: This figure shows Black population growth since 1970 in different types of suburban neighborhoods. All neighborhood characteristics are measured contemporaneously in each year. Panel A shows quintiles of median household income, computed within CBSAs. Panels B and C categorize tracts based on poverty rate and racial majority, respectively. Panel D focuses on growth in majority-Black neighborhoods with different socioeconomic status, defining high poverty as above 20% and high income as above the CBSA median. Data come from the 1970 to 2010 decennial censuses and the 2008-2012 and 2014-2018 ACS. This exercise uses our primary sample of 40 large cities and their suburbs.

Figure 4: Change in Income Segregation Within Black Households

Panel A: Segregation Index in City, Suburbs, and Overall

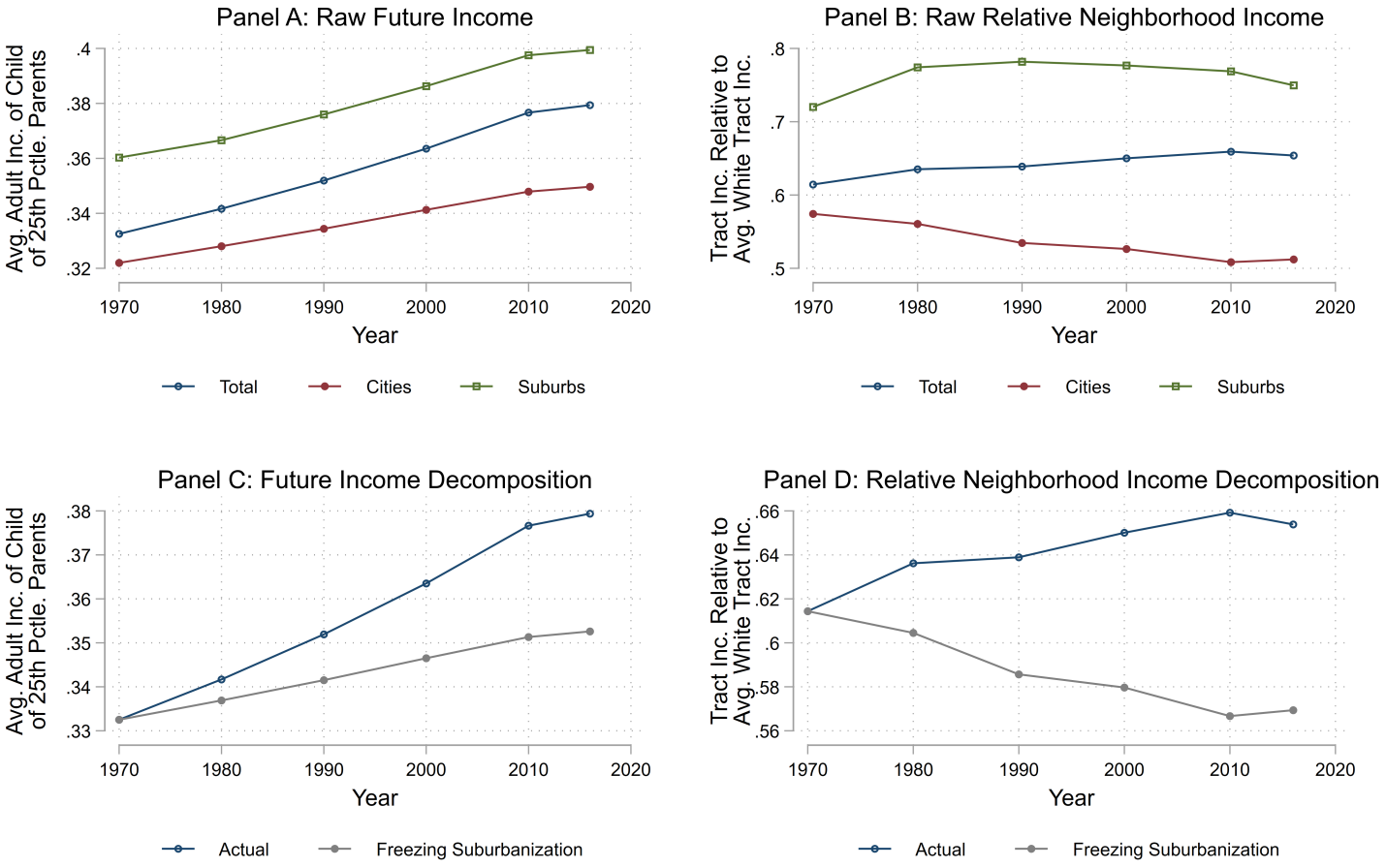


Panel B: Decomposition of Contribution of Suburbanization



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. In Panel A, the blue line shows the time series of the index in the full sample, while the other lines show the evolution of the index within cities and suburbs. In Panel B, the blue line again shows the overall values, while the gray 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.

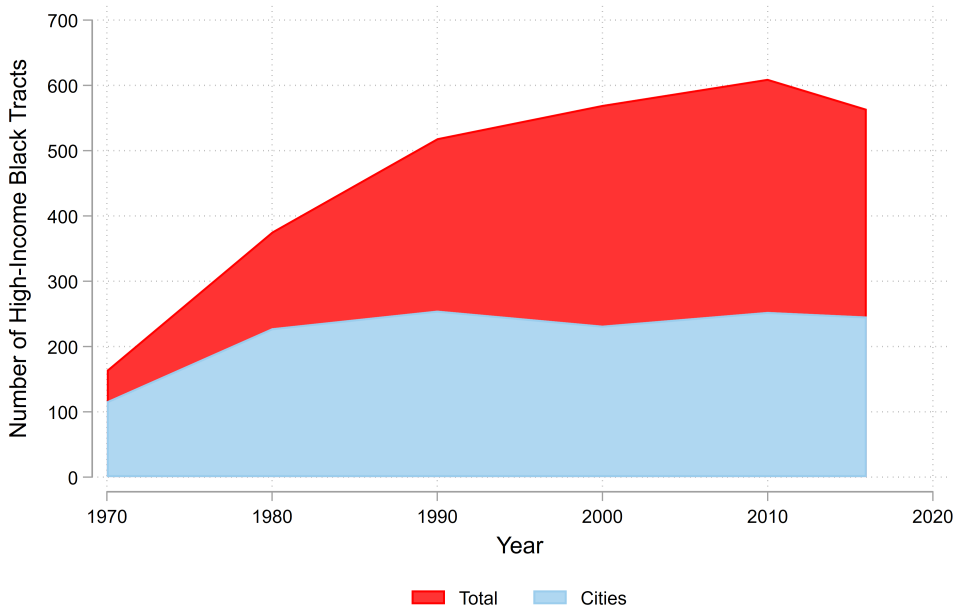
Figure 5: Divergence in Neighborhood Characteristics



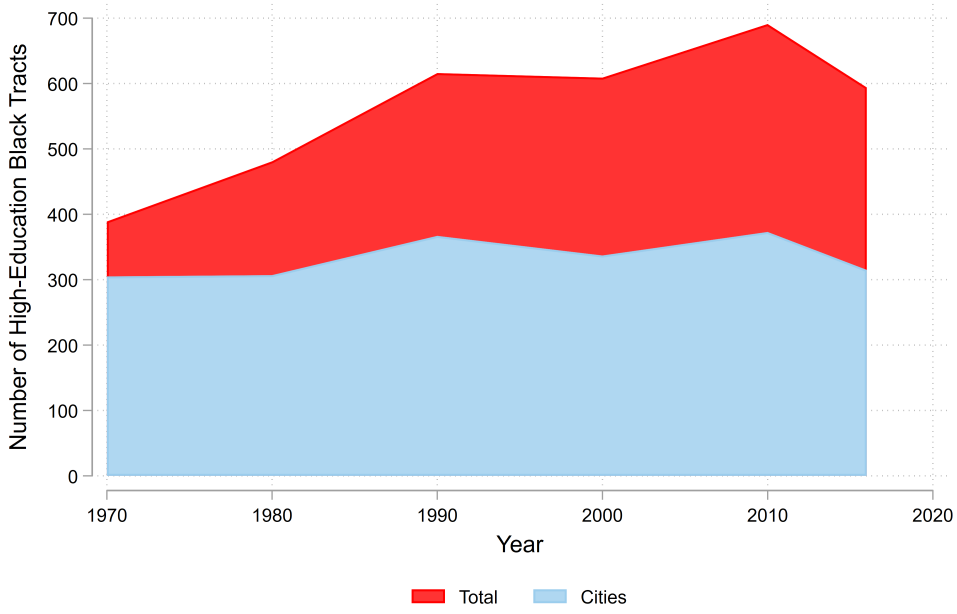
Notes: This figure illustrates how two neighborhood characteristics have changed differentially for Black individuals in cities and suburbs. In Panels A and C, the characteristic is the average adult income (measured at age 31-37) of children who lived in the neighborhood in the 1990s with parents whose income was near the 25th percentile of the national income distribution, as estimated by Chetty et al. (2018). In Panels B and D, the characteristic is neighborhood median household income, normalized by the neighborhood income of the average White household in the same year. The upper two panels show the mean values of these characteristics for Black individuals living in cities, suburbs, and the full sample. In the lower panels, the blue line shows the observed time series for the full sample, and the gray line shows the predicted value under the counterfactual assumption that the share of Black households living in the suburbs and neighborhood characteristics of suburban tracts both remained frozen at their 1970 values.

Figure 6: Growth in Majority-Black Neighborhoods with High Levels of Income and Education

Panel A: Median Income Above Sample Median

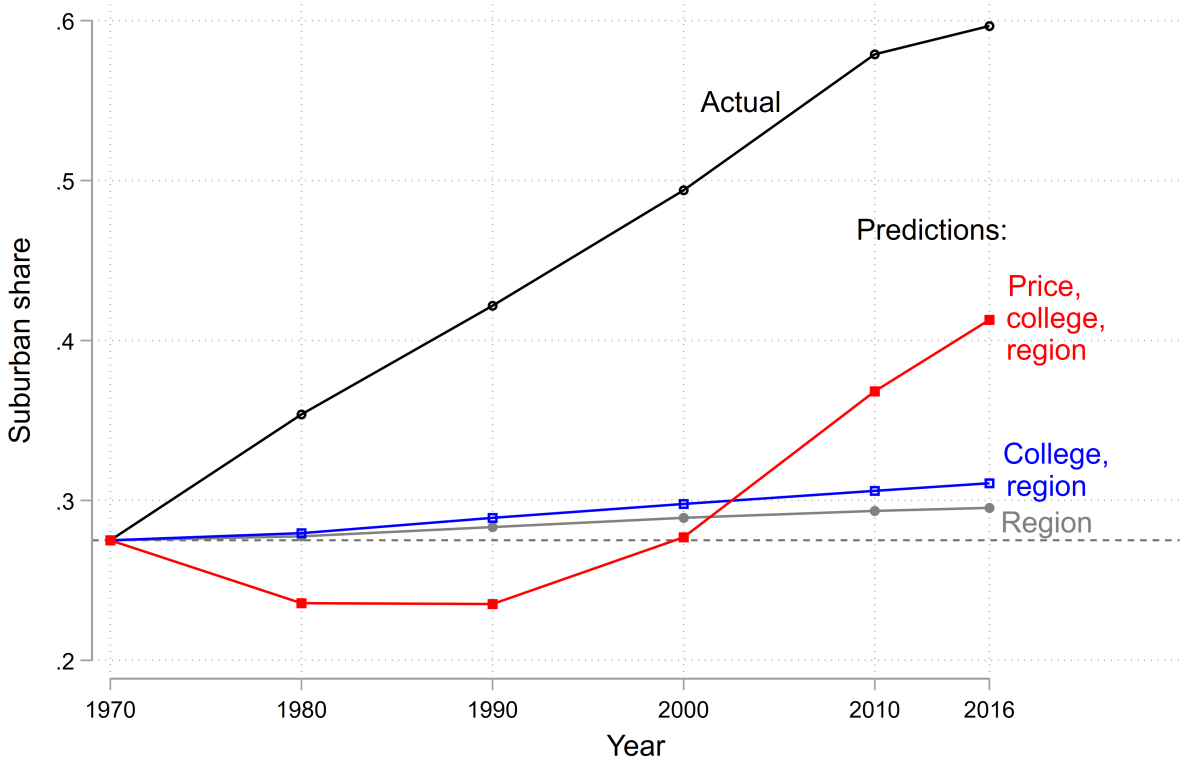


Panel B: College Share Above Sample Median



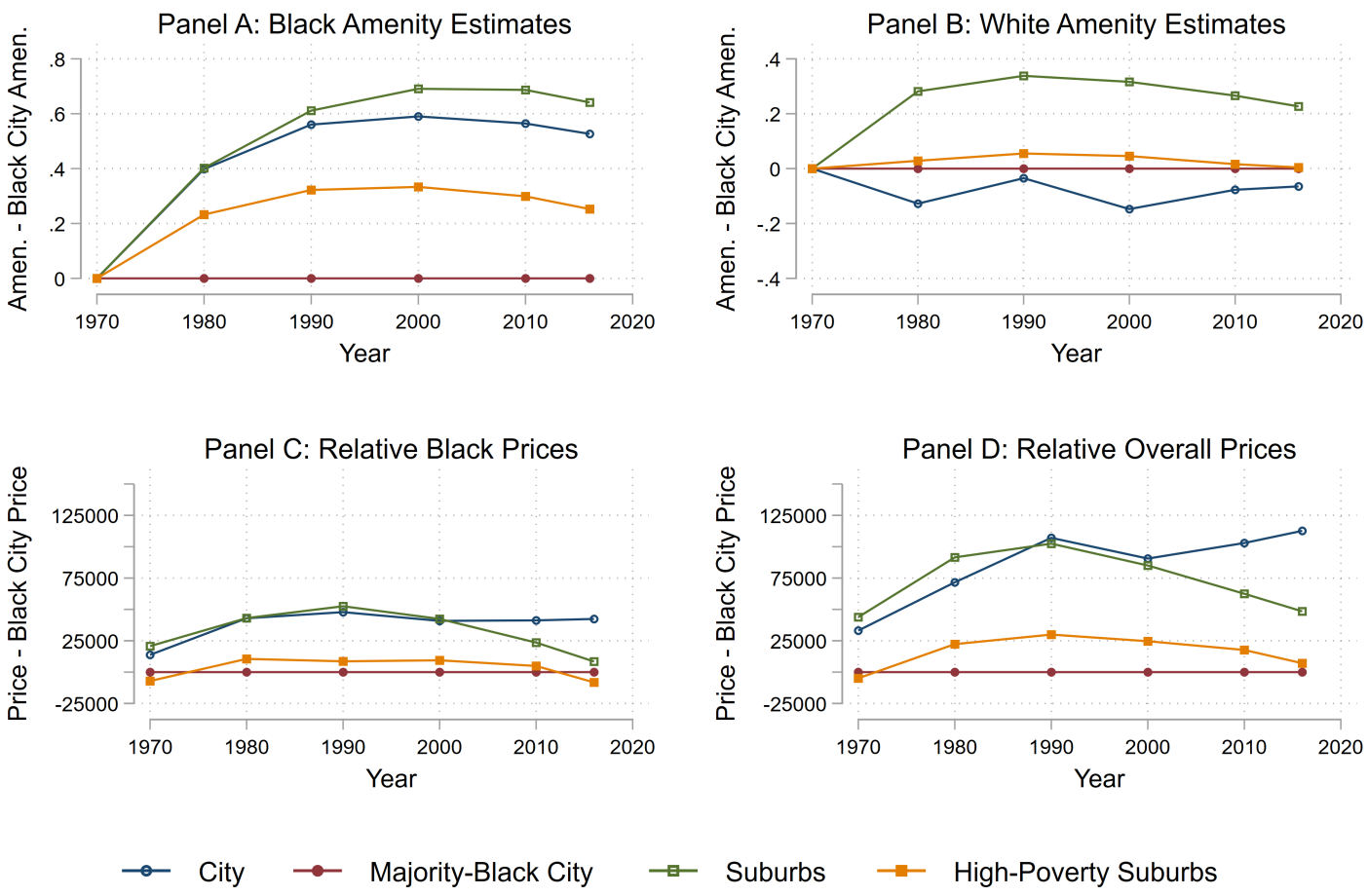
Notes: This figure shows the number of census tracts that are majority Black and either high income (Panel A) or high education (Panel B). High-income is defined as having tract median income above the median value in the sample, and high-education is defined analogously for share of residents over age 25 that have at least a bachelor's degree. In both panels, the blue area represents the number of tracts that fit the definition in central cities, while the red 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 7: Decomposition of Change in the Black Suburban Share



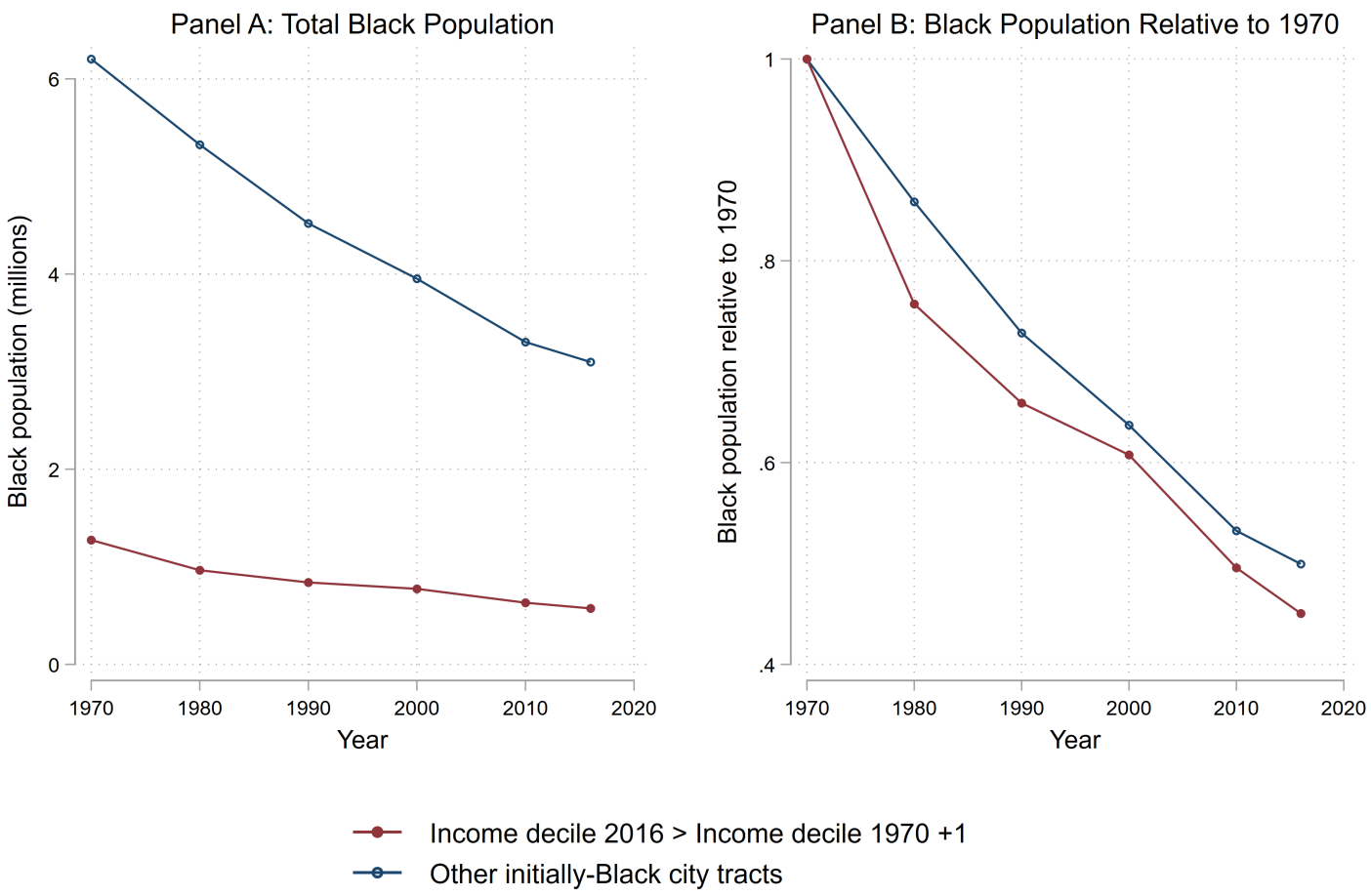
Notes: Model predictions of the suburban share among the Black population in our sample CBSAs. The top, black line shows the observed suburban share. The gray line labeled "Region" shows the prediction from holding the share of the population in each neighborhood type fixed at its 1970 value within CBSAs, but allowing the population to follow the observed reallocation across CBSAs. The blue line labeled "College, region" holds the share of each neighborhood type fixed within each CBSA $\times$ {college educated, not college educated} cell and allows the population in each cell to follow the observed path. (This is Term A in Equation 2.) Finally, the red line labeled "Price, college, region" incorporates a calibrated response to the change in prices in each neighborhood type. (This adds Term B1 from Equation 5 to the blue line.) The contribution of amenities to suburbanization (Term B2 in Equation 5) is equal to the gap between the observed change and the prediction incorporating prices. Note that while the model estimation includes four neighborhood types, we aggregate those to suburban and not suburban for this figure. Further details on the model specification and estimation are in Section 4.1.

Figure 8: Relative Housing Prices and Amenity Estimates by Neighborhood Type



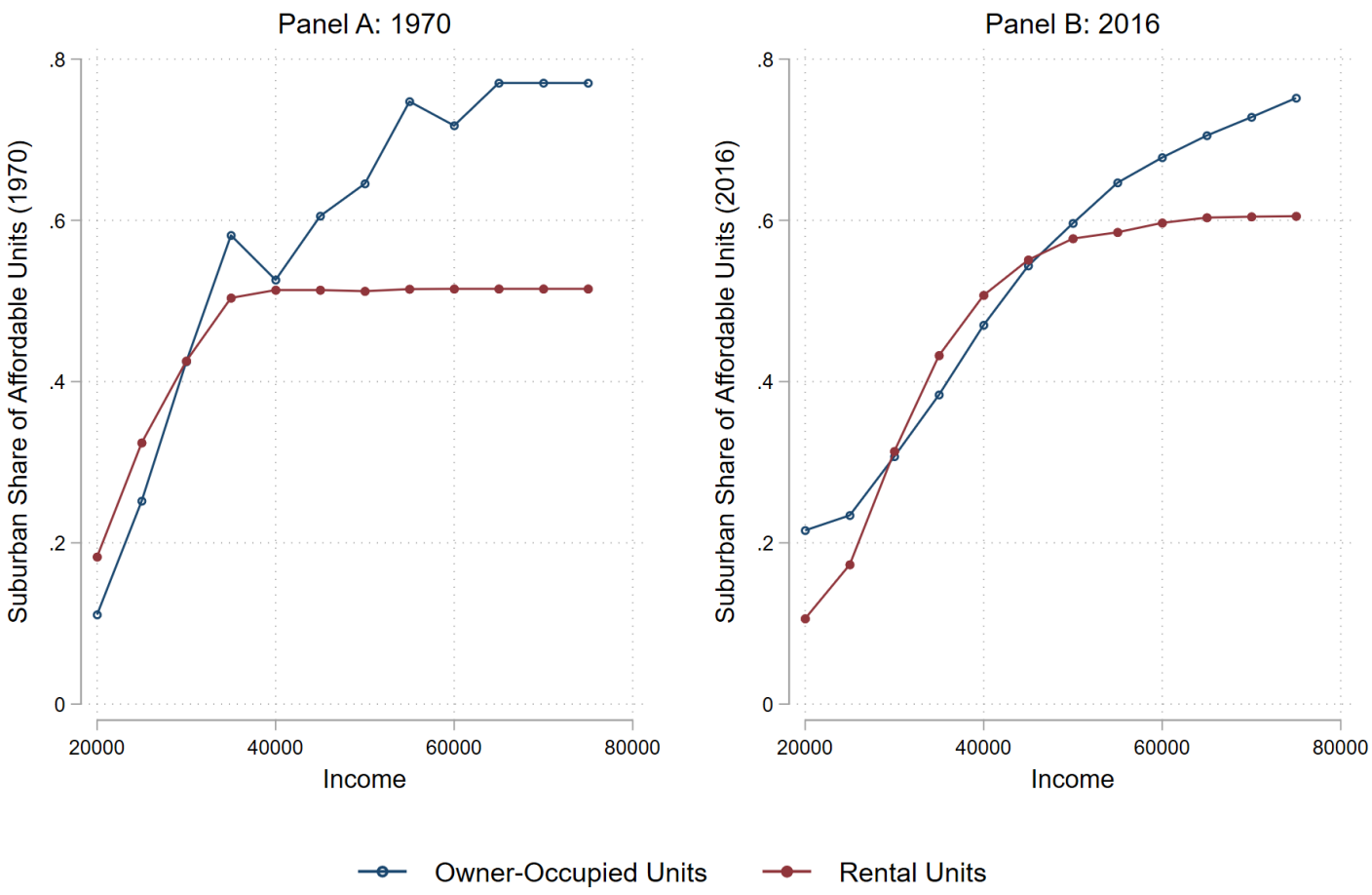
Notes: This figure shows the time series of relative amenities and housing prices by neighborhood type. Amenities are measured as the residual of the model prediction with prices included (Term B2 in Equation 5), and we normalize by subtracting the estimate in initially-Black city neighborhoods from each neighborhood type. Panel A shows implied amenities from estimating the model for Black individuals, while Panel B shows results from estimating the model for White individuals. In Panel C, home prices in a neighborhood type are the tract median owner-occupied housing value of the median Black person living in that neighborhood type (the price measure used to estimate the model for Black individuals). In Panel D, we take the same value for the median person in the neighborhood type (the measure used in the model with White individuals). In both cases, we normalize by subtracting the price in initially-Black city neighborhoods from all neighborhood types. Further details on the model specification and estimation are in Section 4.1.

Figure 9: Gentrification and Black Population Change in Historically-Black City Neighborhoods



Notes: This figure examines Black population change in city neighborhoods that were majority-Black in 1970. Panel A shows total Black population in the subset of these neighborhoods that experienced a median income increase of greater than one decile (measured within CBSA) between 1970 and 2016 and in the subset that did not. Panel B shows Black population in the two sets of neighborhoods as a share of their 1970 Black population.

Figure 10: Share of Affordable Units in Cities and Suburbs



Notes: The approximate share of "affordable" rental and owner-occupied housing units that are in the suburbs for people with different incomes. To construct this estimate, we identify the census tracts in which a person with a given income would be able to afford the median unit according to two common rules of thumb: rent below 40% of income for rental units and home price below annual income multiplied by 2.5 for owner-occupied units. We then weight tracts by the number of rental or owner-occupied units that they contain and compute the share of the set of affordable tracts that are located in the suburbs. To incorporate greater car dependence in the suburbs, we further increase the income requirement to afford each housing cost by $5,000 for suburban tracts. Rent values in 1970 are top-coded at a relatively low level, leading the suburban share of rental units to level off at a lower income than in 2016.

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: 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.

Table 3: Relationship Between Model Amenities and Directly Measured Amenities Across CBSAs

	Bivariate Regressions	Multivariate Regressions			
		No Controls		Region FE	
	(1)	(2)	(3)	(4)	(5)
Δ Racial animus percentile	-0.039	-0.047	-0.051	-0.020	-0.027
	(0.026)	(0.022)	(0.021)	(0.030)	(0.028)
Δ Job Suburbanization	0.085	0.092	0.078	0.098	0.084
	(0.022)	(0.022)	(0.027)	(0.025)	(0.028)
Δ Central city school deseg order	-0.021	-0.021	-0.023	-0.018	-0.020
	(0.026)	(0.022)	(0.021)	(0.023)	(0.021)
Δ City - Suburb Murder rate	-0.053	-0.014		-0.015	
	(0.025)	(0.023)		(0.024)	
1980 City - Suburb Murder rate	0.074		0.028		0.032
	(0.023)		(0.027)		(0.027)
Adjusted(-within) R2		0.39	0.40	0.35	0.38
N	35	35	35	35	35

Notes: This table reports the across-CBSA relationship between changes in model-estimated relative suburban amenities and direct measures of relative amenity changes. Changes are measured from 1970 to 2000. Column (1) shows results from bivariate regressions of the model amenity changes on each amenity measure, while Columns (2) through (5) show results from a multivariate regression of model amenity changes on changes in all amenity measures. Columns (4) and (5) additionally include Census Region fixed effects. Columns (2) and (4) include the 1970-200 change in the city versus suburban murder rate as the crime variable, while Colums (3) and (5) instead include the 1980 level. Change in racial animus is measured as the difference between a CBSA's percentile ranking in racially charged Google searches in the 2004 to 2007 period (taken from Stephens-Davidowitz (2014)) and its percentile ranking in vote share for George Wallace in the 1968 presidential election (taken from Leip (2022)). The change in job suburbanization is measured as the 1970 to 2000 change in the suburban share of total jobs in a CBSA, taken from Miller (2020). The 1970 to 2000 change and the 1980 level of the murder rate in the central city relative to the suburbs is measured using the FBI's Uniform Crime Records. Central city school desegregation orders between 1970 and 2000 are taken from Baum-Snow and Lutz (2011). Desegregation orders are represented with a dummy variable, while the other variables are measured in standard deviation units. The sample consists of the 35 CBSAs (out of 40 in the sample) with non-missing data for all amenity measures. Robust standard errors are reported in parentheses.

Table 4: 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.

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),[26] 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 data sets, 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

[26] 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 does 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 data set 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 contains the correct age bins, but it does not distinguish non-Hispanic and Hispanic Black/White from Hispanic black/white. We use the micro data to estimate the share Hispanic in each age bin.

- Year 1980: The data contains 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 contains 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 contains 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.

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 A6. 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 A7, we perform this same replication by region for Figure 5, 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 A8, we perform the income segregation exercise from Figure 4 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 US 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 A11 shows that large cities across all regions lost total Black population between 2000 and 2016.

II.B Additional Migration Results

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

First, 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.

Second, Infutor Data Solutions provides longitudinal individual address histories for the 2010-2016 time period, which have recently been 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. It reports location of residence at the address level, along with an estimated move date. However, the data does not provide an individual's race, which limits its applications in our study.

First, Black suburbanizers appear to be positively selected from cities. In Appendix Figure A18, we plot the distributions of household income for Black households who moved 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. The suburbanizer distribution is well to the right, with a median income for this group of $38,000 (in 2018 dollars) versus $23,000 for city-dwellers.

Second, Black suburbanizers may selectively migrate to areas with higher socioeconomic status than their origin. The Infutor data allows 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% Black in 2010 and compare characteristics of their origin and destination neighborhoods.[27] In addition, because the Infutor data has a more limited time period, we consider only moves between 2010 and 2016.

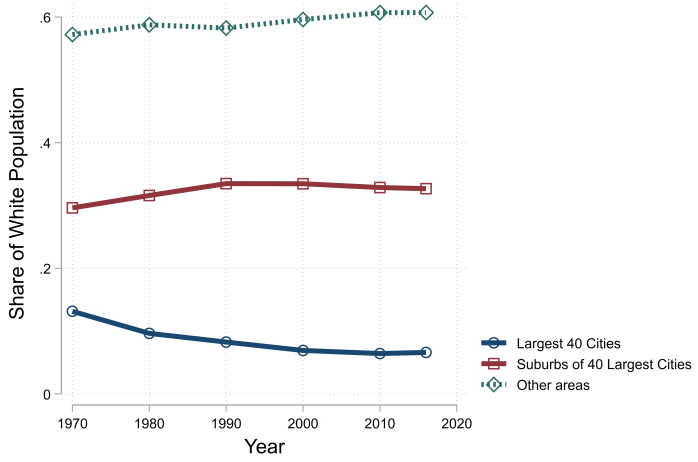
Panel A of Figure A19 shows the relationship between median household incomes in the destination and origin tracts. In general, suburbanizers from these areas took a large step up in neighborhood income. At the average origin income of approximately $30,000, roughly 75% of suburbanizers saw an increase 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 housing 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.

[27]City tracts that meet this criteria are 93% Black on average. They contain 45% 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.

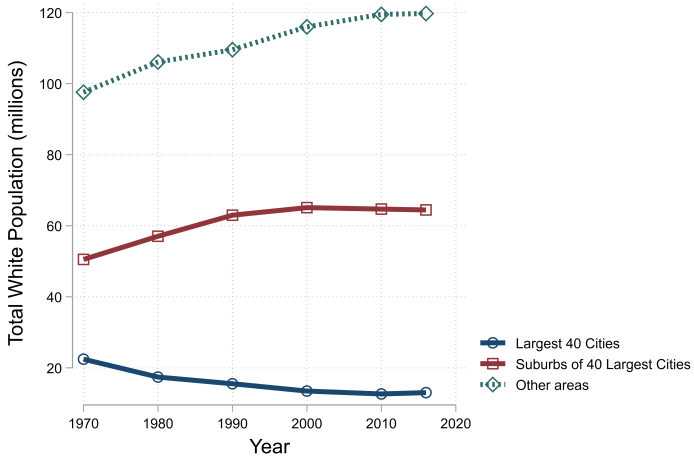
II.C Additional Figures and Tables

Figure A1: Change in Distribution of White Population Since 1970

Panel A: Share of White Population



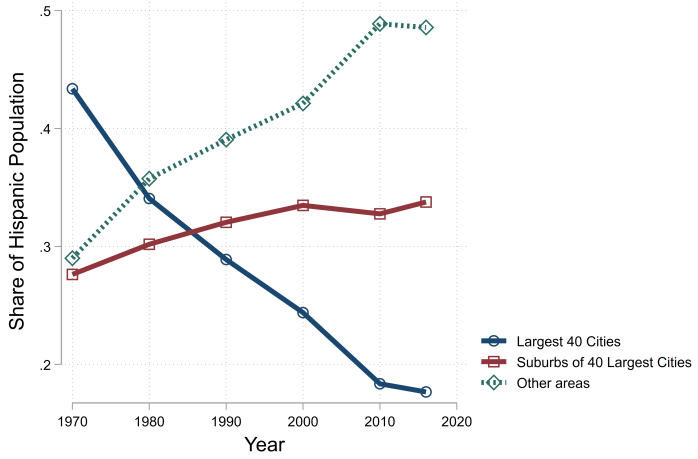
Panel B: Total White Population



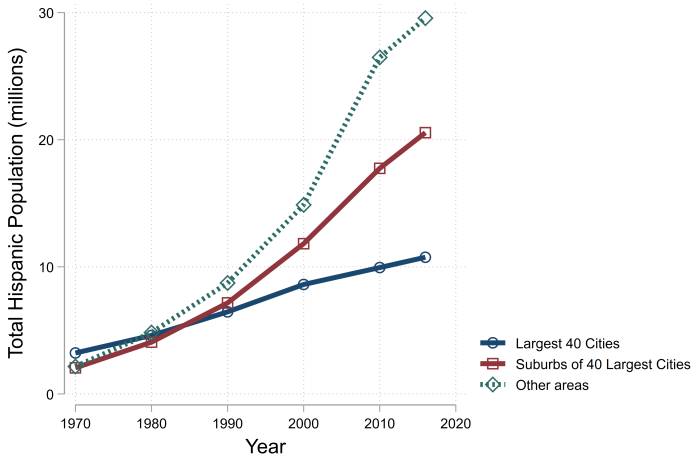
Notes: Total and share of White population in large central cities, their suburbs, and other areas. Largest 40 cities is defined as the central cities of the most populous 20 CBSAs in southern states and in all other states, as measured in 1970. Suburbs are defined as the CBSAs containing these cities, 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



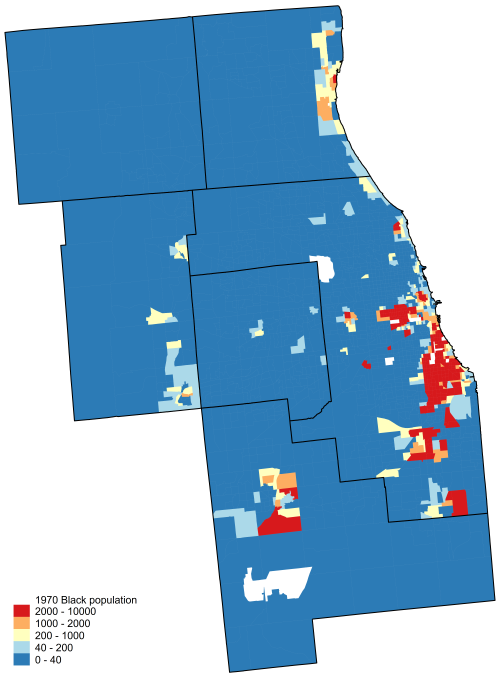
Panel B: Total Hispanic Population



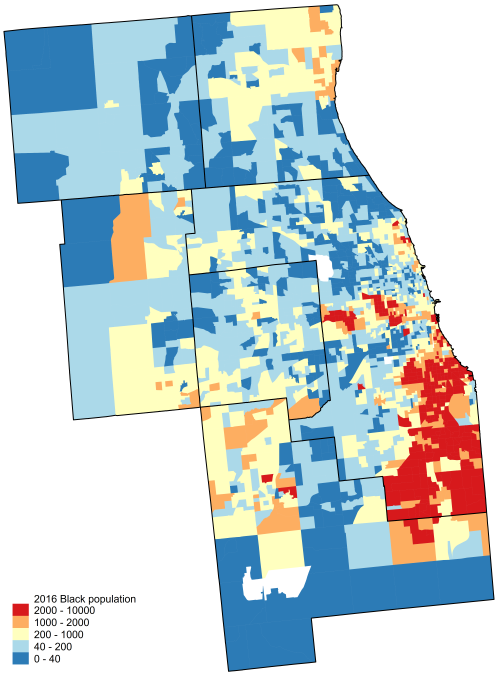
Notes: Total and share of Hispanic population in large central cities, their suburbs, and other areas. Largest 40 cities is defined as the central cities of the most populous 20 CBSAs in southern states and in all other states, as measured in 1970. Suburbs are defined as the CBSAs containing these cities, 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



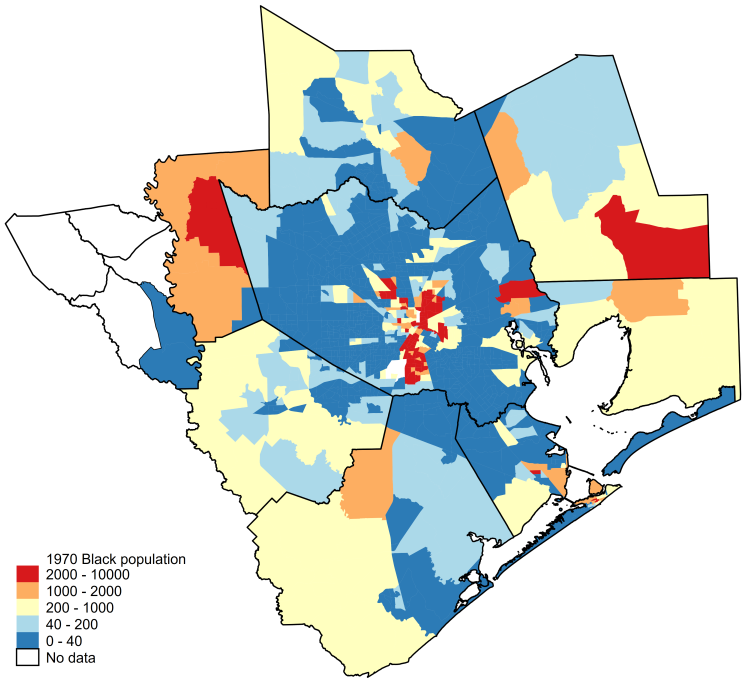
Panel B: Census tract Black population in 2016



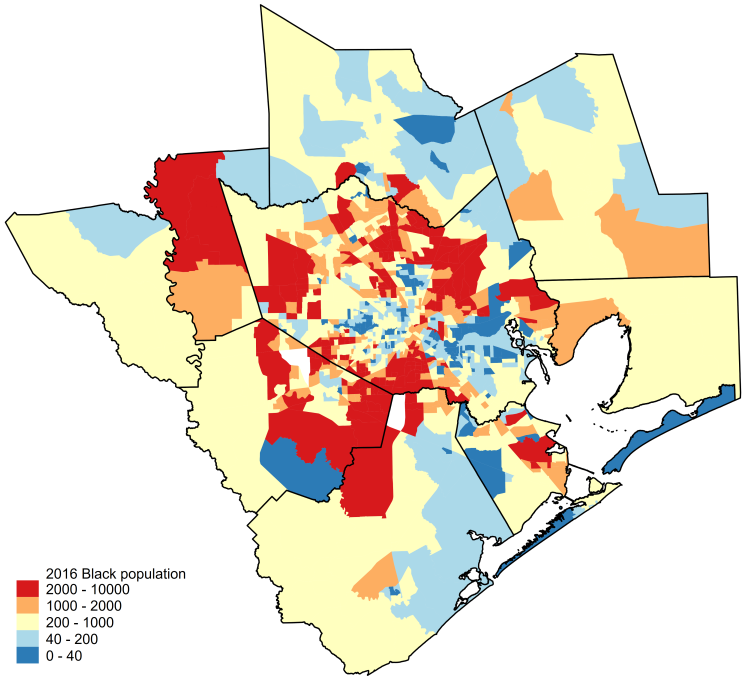
Notes: Total Black population by census tract in the Chicago CBSA in 1970 (Panel A) and 2016 (Panel B). Tracts with 0-40 Black individuals are shown in dark blue; 40-200, light blue, 200-1,000, beige; 1,000-2,000, orange; and 2,000 to 10,000, red. Data are drawn from the 1970 census and the 2014-2018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



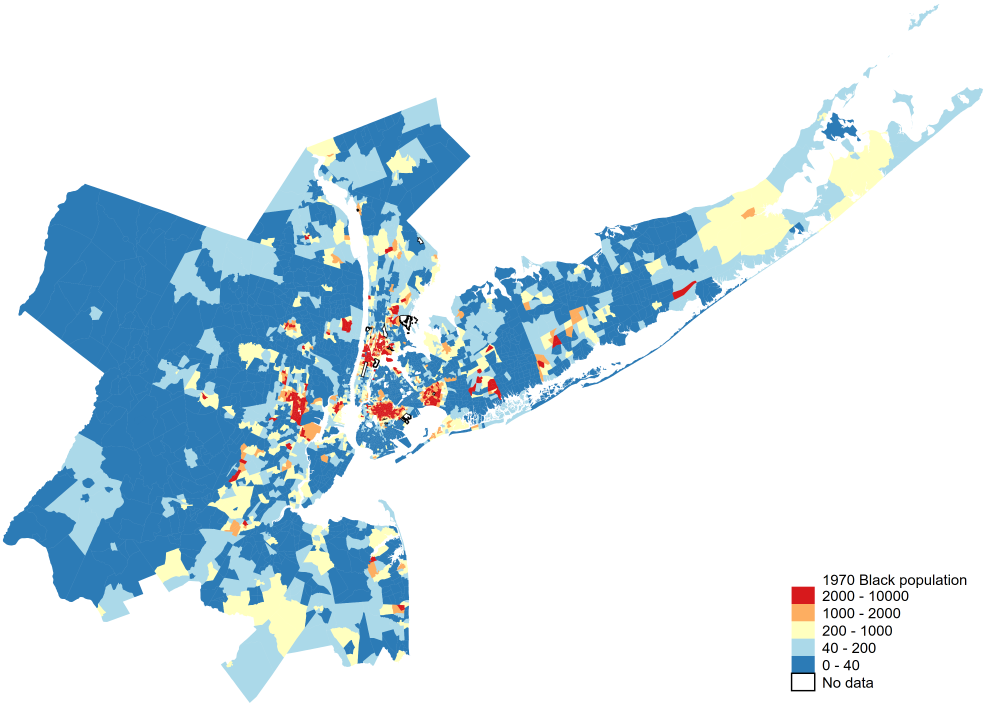
Panel B: Census tract Black population in 2016



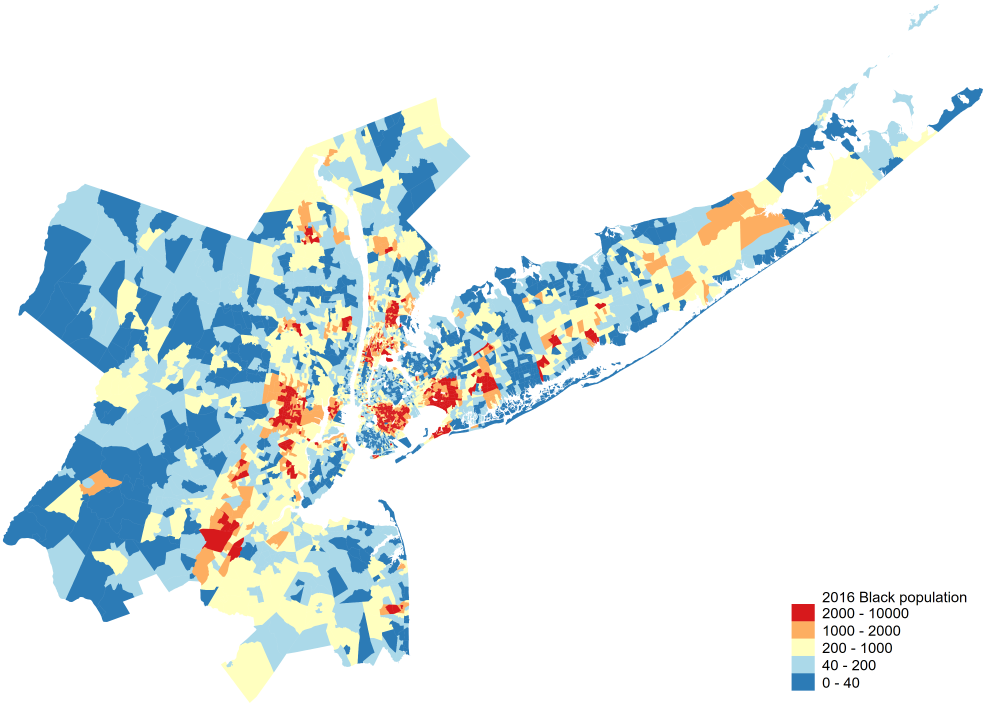
Notes: Total Black population by census tract in the Houston CBSA in 1970 (Panel A) and 2016 (Panel B). Tracts with 0-40 Black individuals are shown in dark blue; 40-200, light blue, 200-1,000, beige; 1,000-2,000, orange; and 2,000 to 10,000, red. Data are drawn from the 1970 census and the 2014-2018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

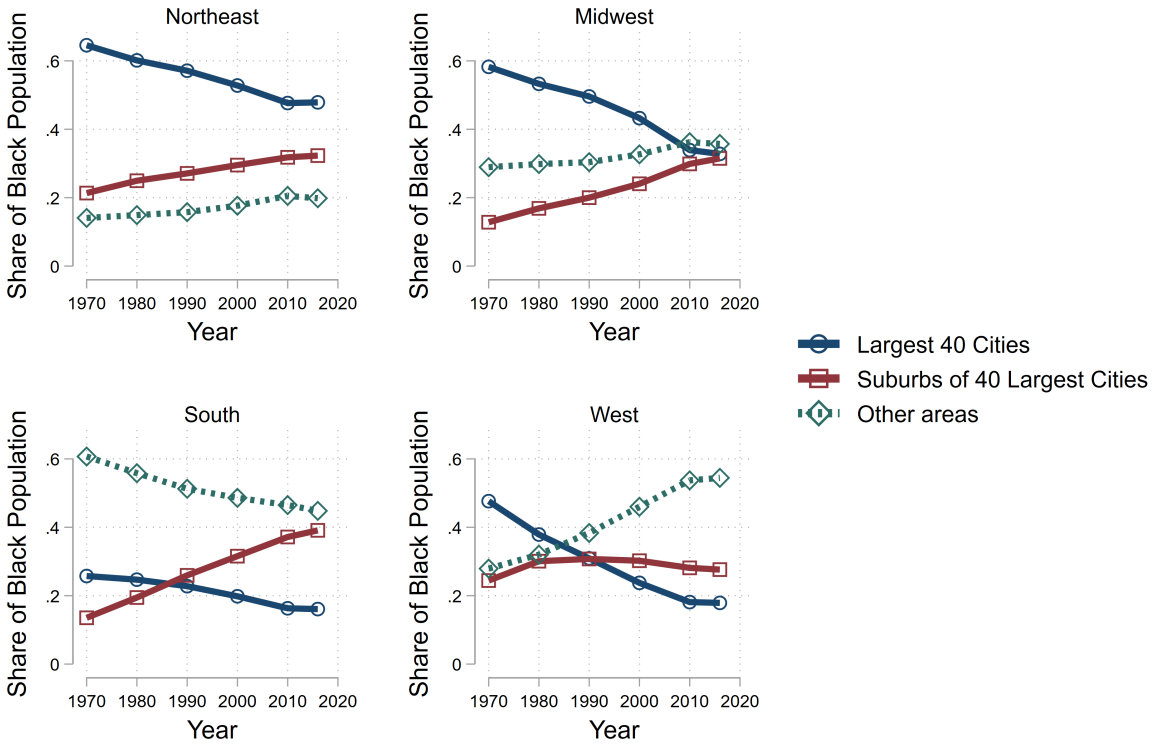


Panel B: Census tract Black population in 2016



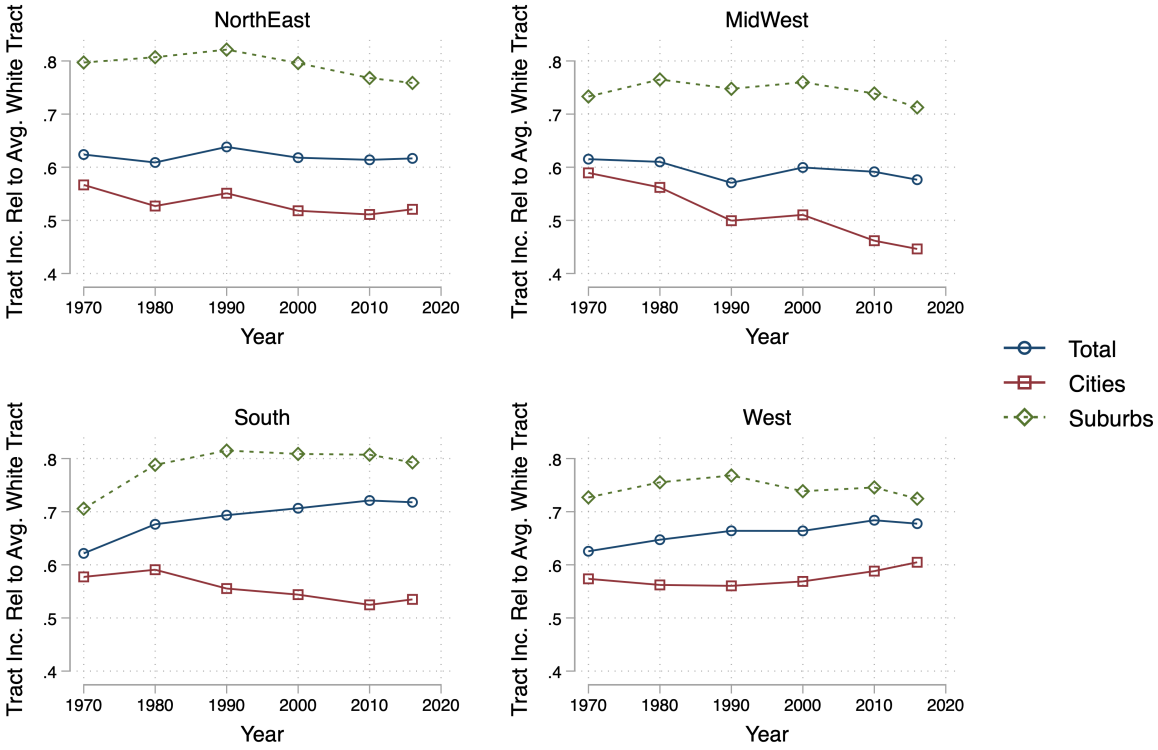
Notes: Total Black population by census tract in the New York CBSA in 1970 (Panel A) and 2016 (Panel B). Tracts with 0-40 Black individuals are shown in dark blue; 40-200, light blue, 200-1,000, beige; 1,000-2,000, orange; and 2,000 to 10,000, red. Data are drawn from the 1970 census and the 2014-2018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

Figure A6: Change in Distribution of Black Population Since 1970 by Region



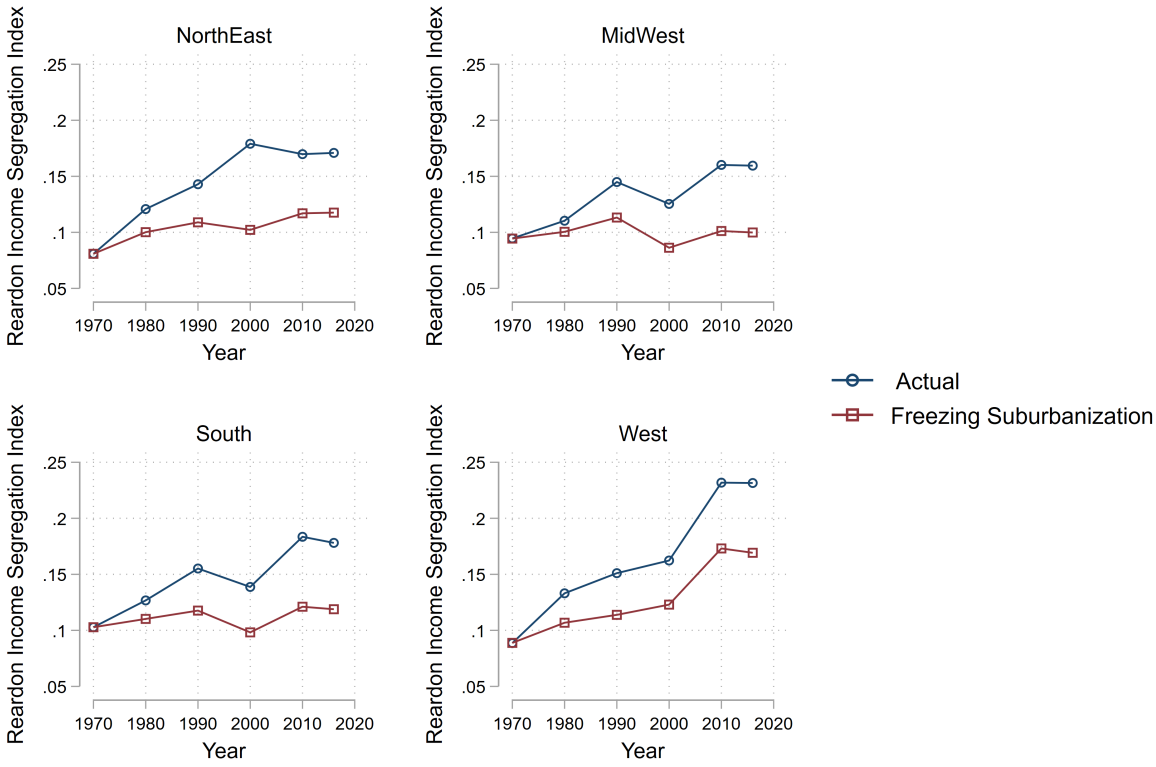
Notes: Total and share of Black population in large central cities, their suburbs, and other areas, separately for each Census Region. Largest 40 cities is defined as the central cities of the most populous 20 CBSAs in southern states and in all other states, as measured in 1970. Suburbs are defined 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 A7: Neighborhood Income for Black Individuals Relative to White Individuals by Region



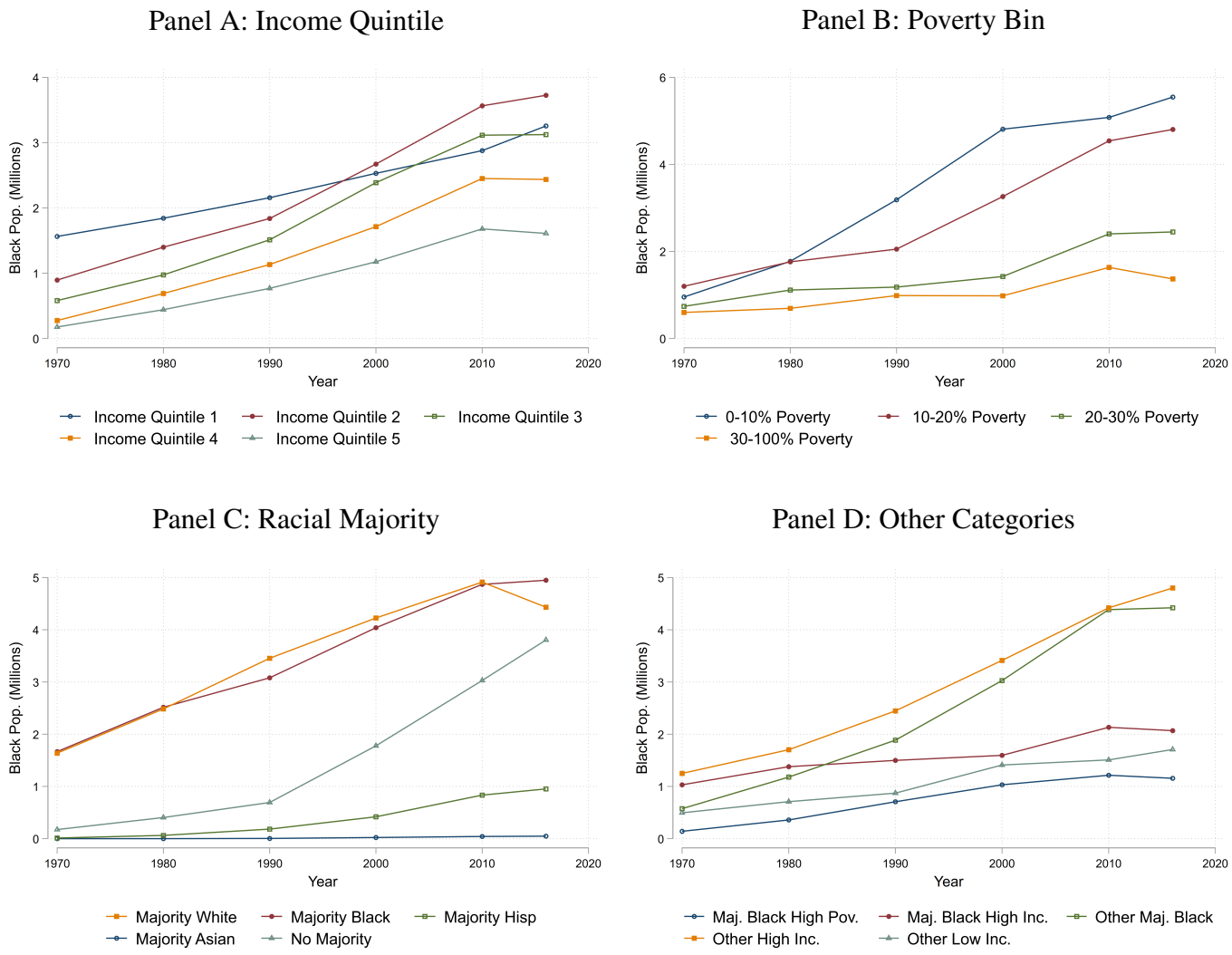
Notes: This figure plots, separately for each Census Region, the time series of average neighborhood median household income for Black individuals divided by the same statistic for White individuals. The blue line contains Black individuals in all sample tracts in the region, while the green and red 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 comes 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 A8: Change in Income Segregation Within Black Households by Region



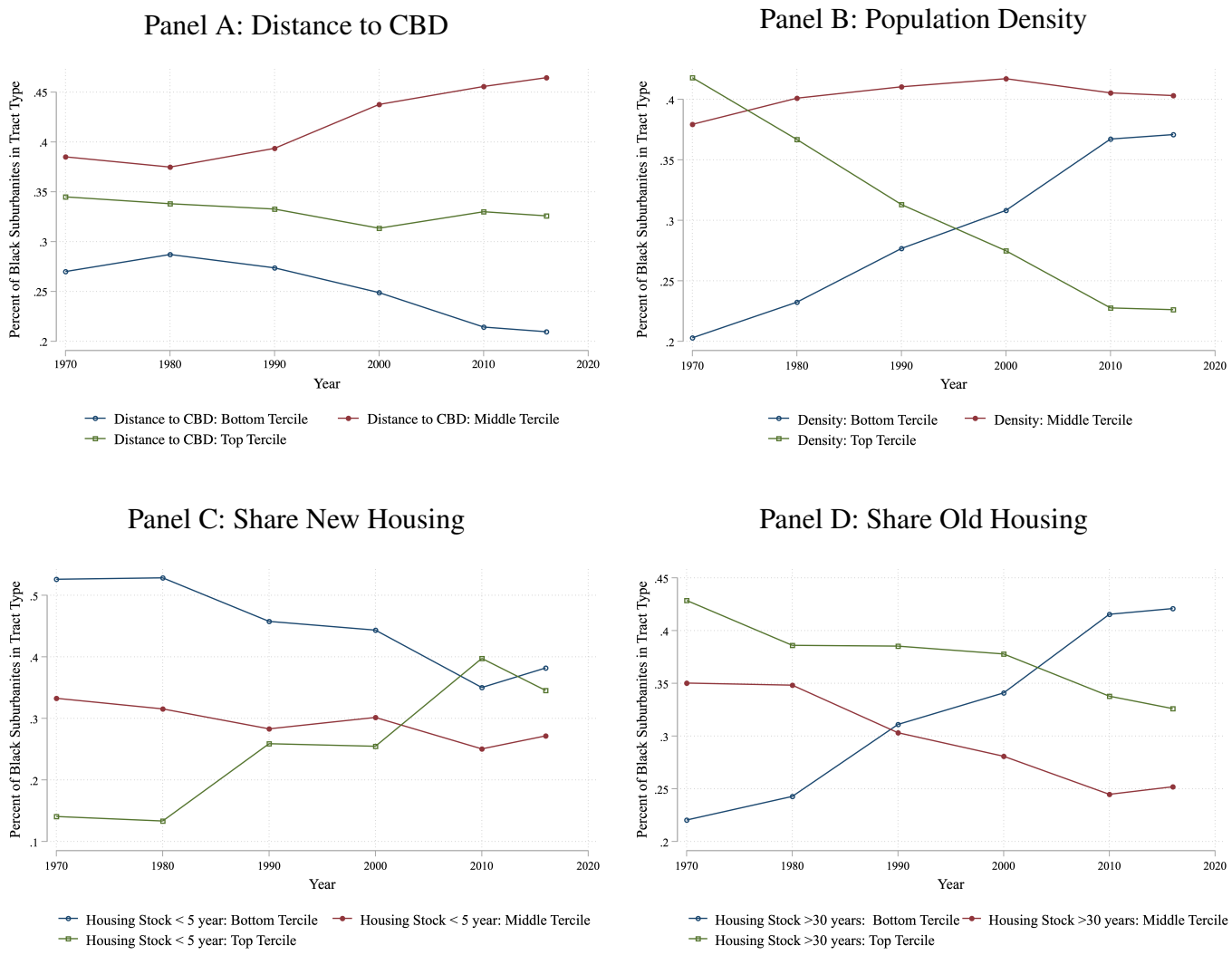
Notes: This figure shows the evolution of the Reardon and O'Sullivan (2004) income segregation index within Black households from 1970 to 2016, separately for each Census Region. The index can be interpreted as the share of the variation in household income that is between census tracts. The blue line 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.

Figure A9: Black Population in Suburban Neighborhood Categories



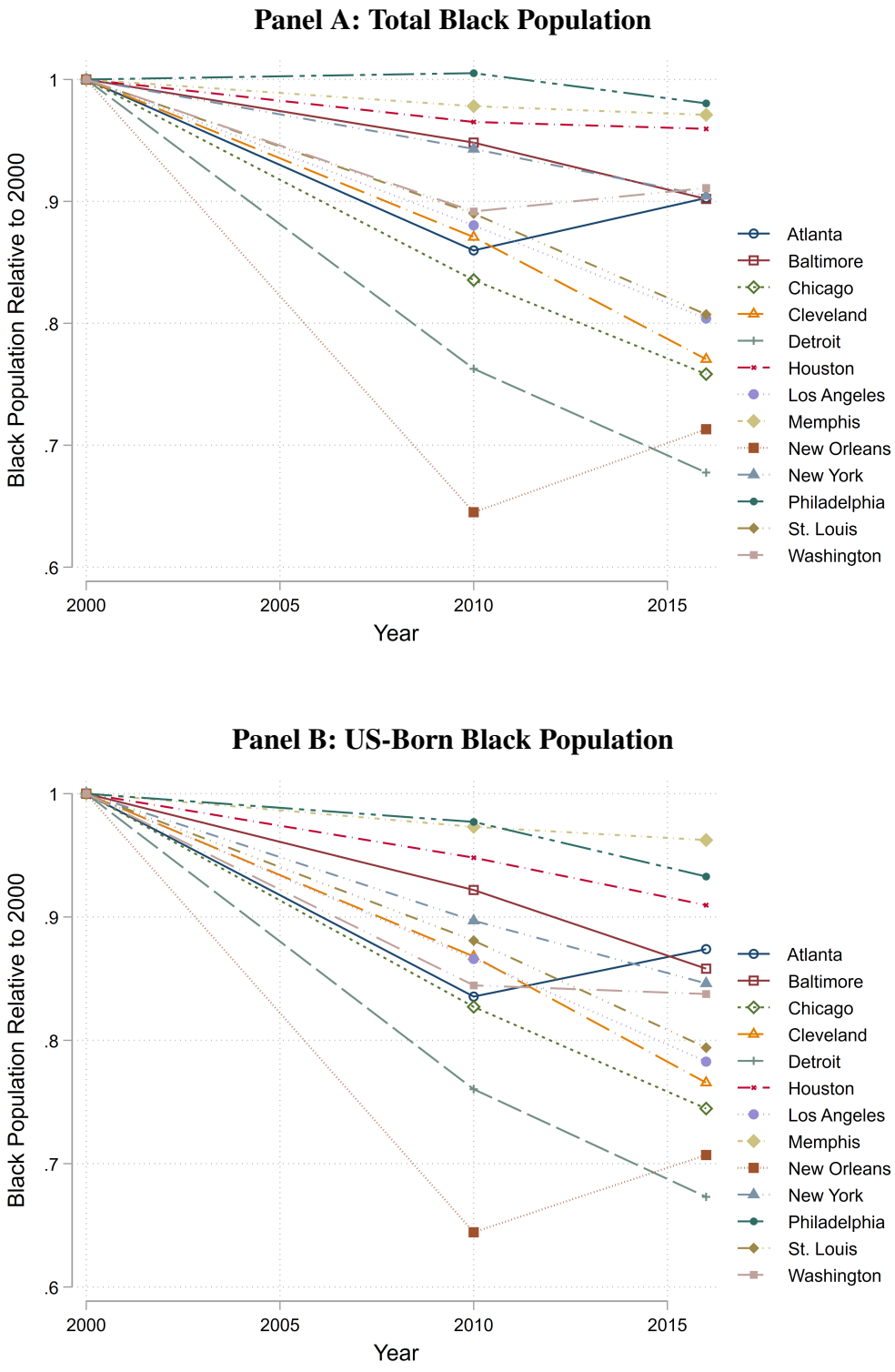
Notes: This figure shows Black population levels since 1970 in different types of suburban neighborhoods. All neighborhood characteristics are measured contemporaneously in each year. Panel A shows quintiles of median household income, computed within CBSAs. Panels B and C categorize tracts based on poverty rate and racial majority, respectively. Panel D focuses on growth in majority-Black neighborhoods with different socioeconomic status, defining high poverty as above 20% and high income as above the CBSA median. Data come from the 1970 to 2010 decennial censuses and the 2008-2012 and 2014-2018 ACS. This exercise uses our primary sample of 40 large cities and their suburbs.

Figure A10: Physical Characteristics of Black Suburbanite Neighborhoods



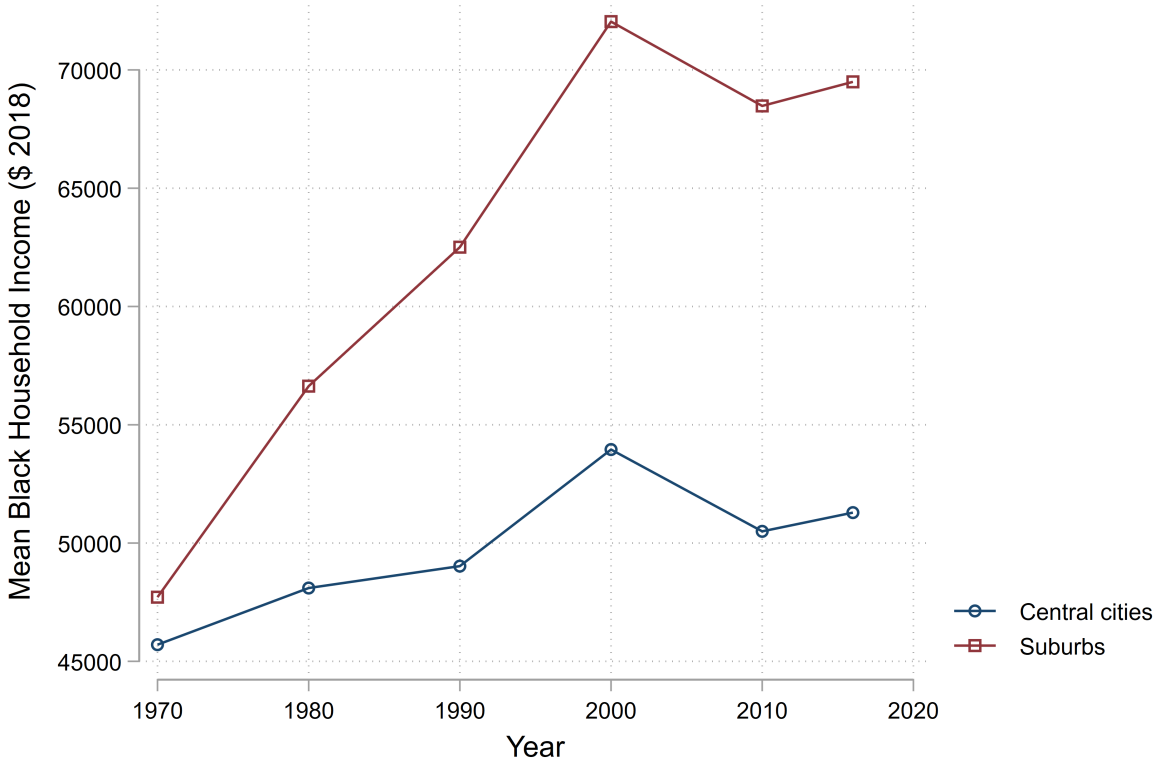
Notes: This figure shows the share of the Black suburban population living in different categories of census tracts. Panel A shows the share in different terciles of distance from tract centroid to CBSA central business district. Panel B shows terciles of population density. Panel C classifies tracts into terciles based on the share of their housing units that were built in the last 5 years. Panel D instead uses the share of housing units that are older than 30 years. Data come from the 1970 to 2000 decennial census long forms and the 2008-2012 and 2014-2018 ACS. This exercise uses the suburban tracts in our primary sample of 40 large cities.

Figure A11: Black Population Decline in Major Cities



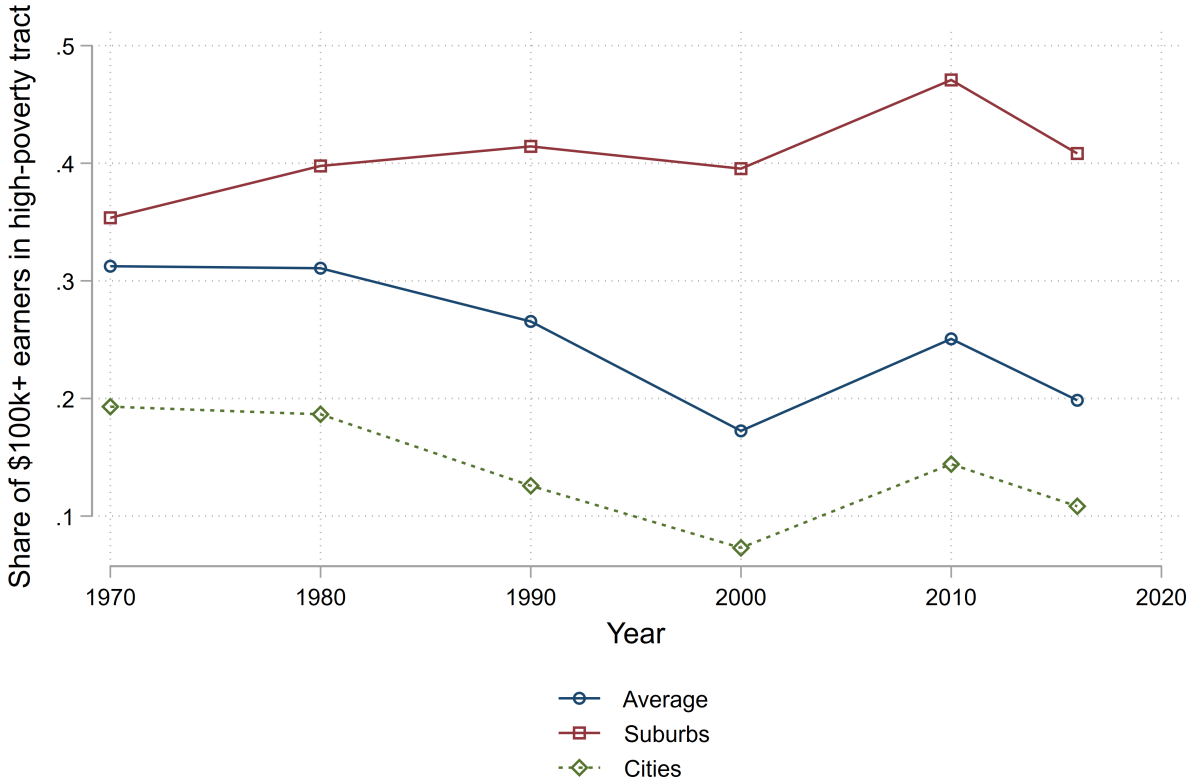
Notes: This figure shows the Black population in major central cities since 2000. The 13 central cities with the largest Black population in 1970 are included. Data for 2000 and 2010 come from the decennial census, while data for 2016 come from the 2014-2018 ACS.

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



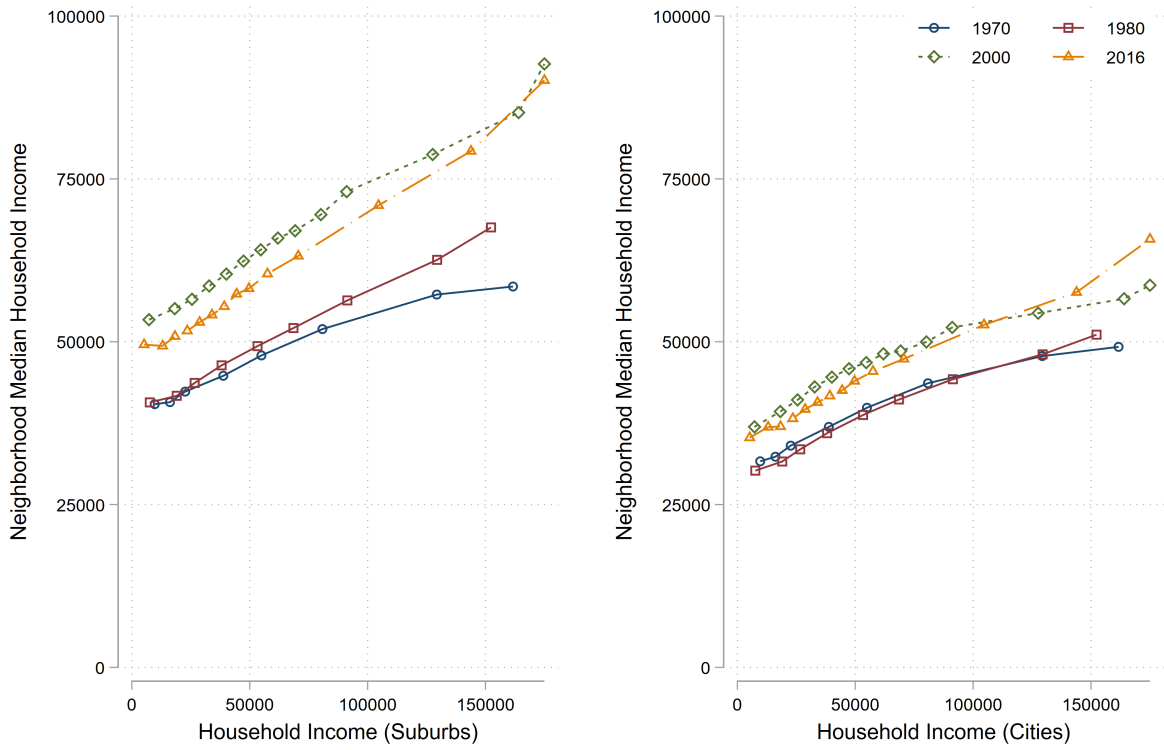
Notes: This figure shows the evolution of mean Black household income (in $2018) between 1970 and 2016 separately for central cities (blue, circle points) and suburbs (red, square points). To compute the mean, we use data on the number of Black households in each tract in a set of income bins. We then 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



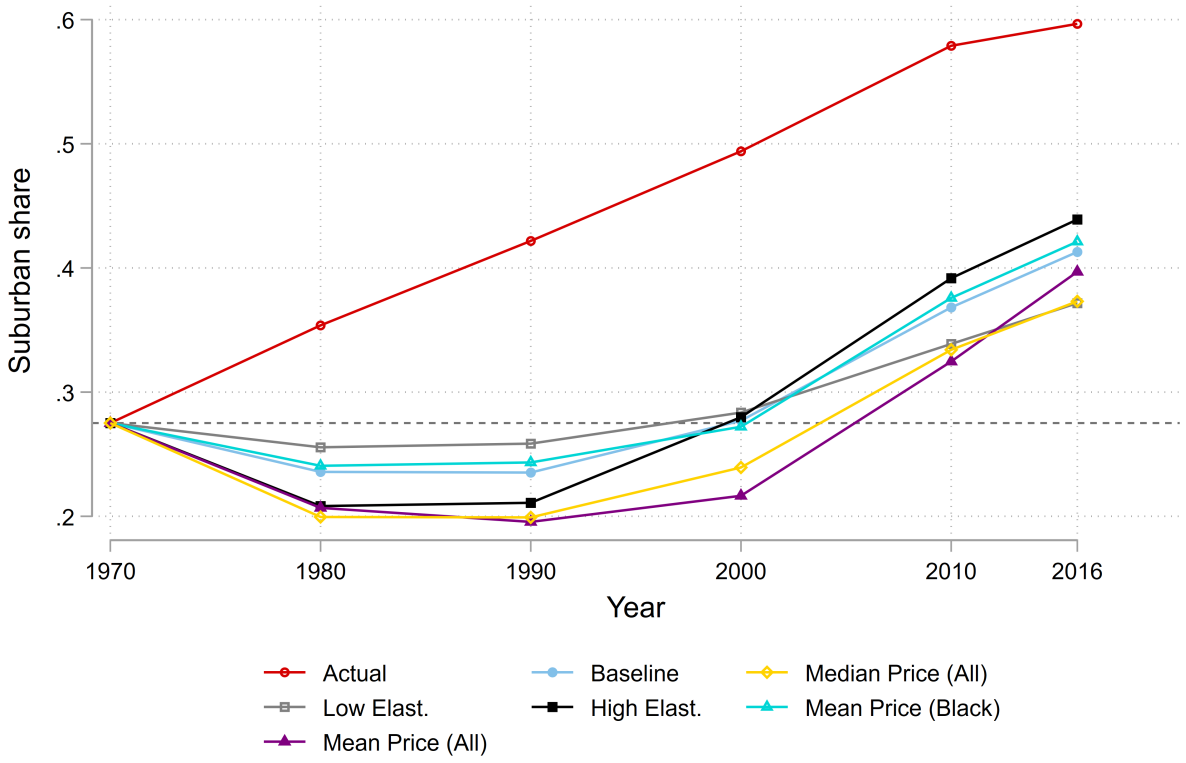
Notes: This figure shows the share of Black high-earners (households with income above $100k in 2018 dollars) who live in high-poverty census tracts (defined as poverty rates greater than 20%). The sample average is shown in blue, the average for high earners in central cities is shown in red and the 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: Black Household Income versus Neighborhood Income



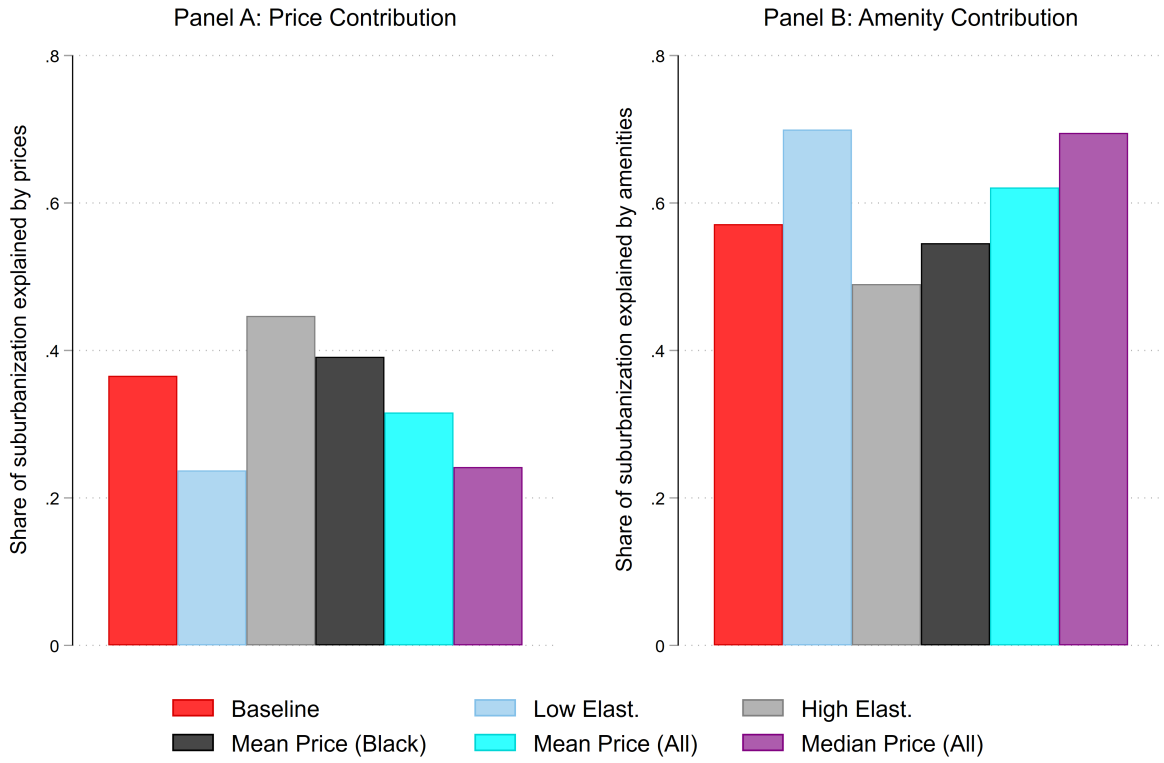
Notes: Evolution of the relationship between Black households' income and their neighborhood's median income. Each line shows the relationship in a different year, with median neighborhood income on the y-axis and household income on the x-axis. The left panel represents suburban households, while the 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 A15: Robustness of Decomposition



Notes: This figure shows the predicted suburban share from simulations that incorporate prices in different ways. The Baseline specification measures the housing price for a neighborhood type as the median tract home value for the median Black person living in that neighborhood type. Median Price (All) instead uses the mean for any person in the neighborhood type, and Mean Price (Black) and Mean Price (All) use mean values. The Low Elasticity specification halves the baseline price elasticity calibration, while the High Elasticity specification doubles it. Further details on the model specification and estimation are in Section 4.1.

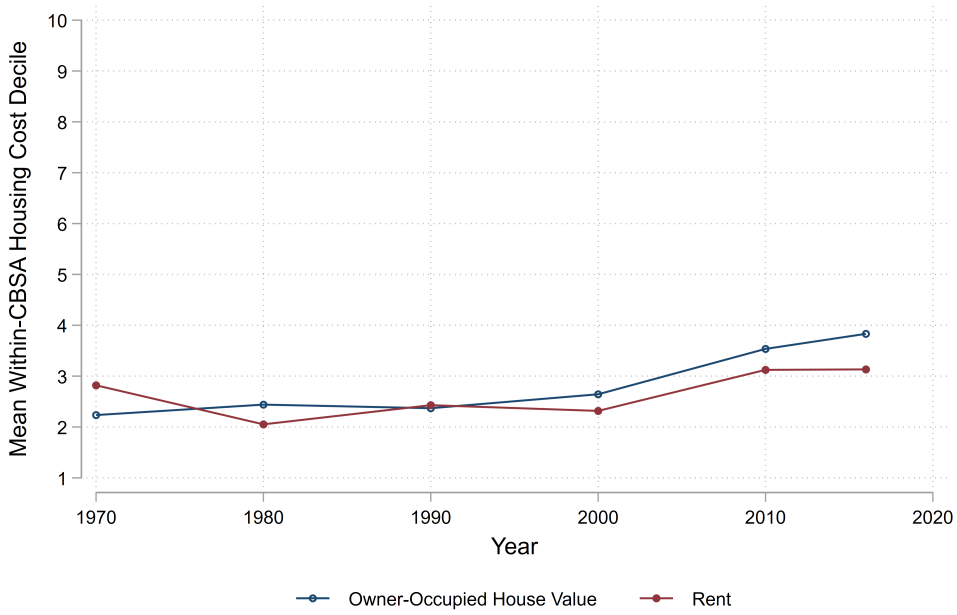
Figure A16: Robustness of Amenity and Price Contributions



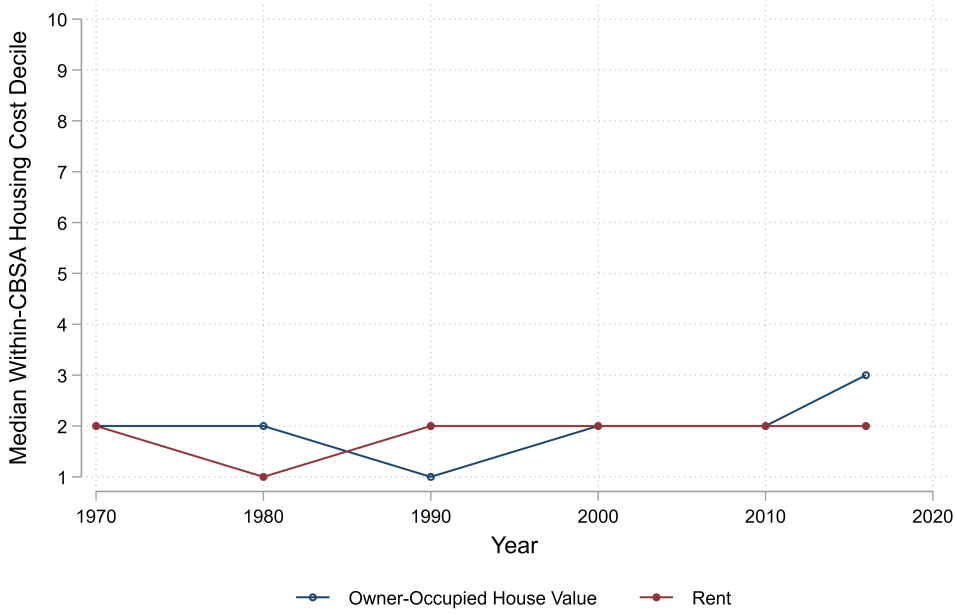
Notes: This figure shows the share of the increased Black suburban share from 1970 to 2016 that is explained by housing prices and amenities in various model specifications. The Baseline specification measures the housing price for a neighborhood type as the median tract home value for the median Black person living in that neighborhood type. Median Price (All) instead uses the median for any person in the neighborhood type, and Mean Price (Black) and Mean Price (All) use mean values. The Low Elasticity specification halves the baseline price elasticity calibration, while the High Elasticity specification doubles it. The change in the simulated suburban share from each of these specifications is shown in Panel C of Figure 8, and further details on the model specification and estimation are in Section 4.1.

Figure A17: Housing Costs in City Neighborhoods (Weighted by 1970 Black Population)

Panel A: Mean Within-CBSA Decile

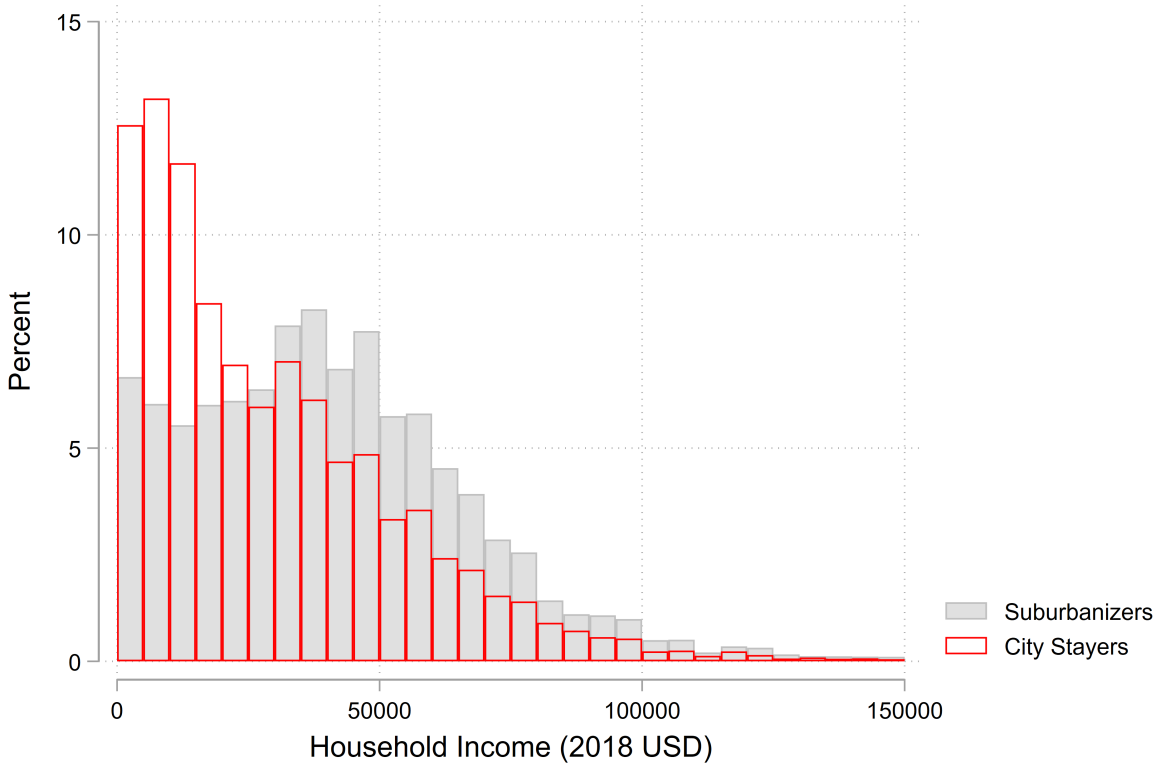


Panel B: Median Within-CBSA Decile



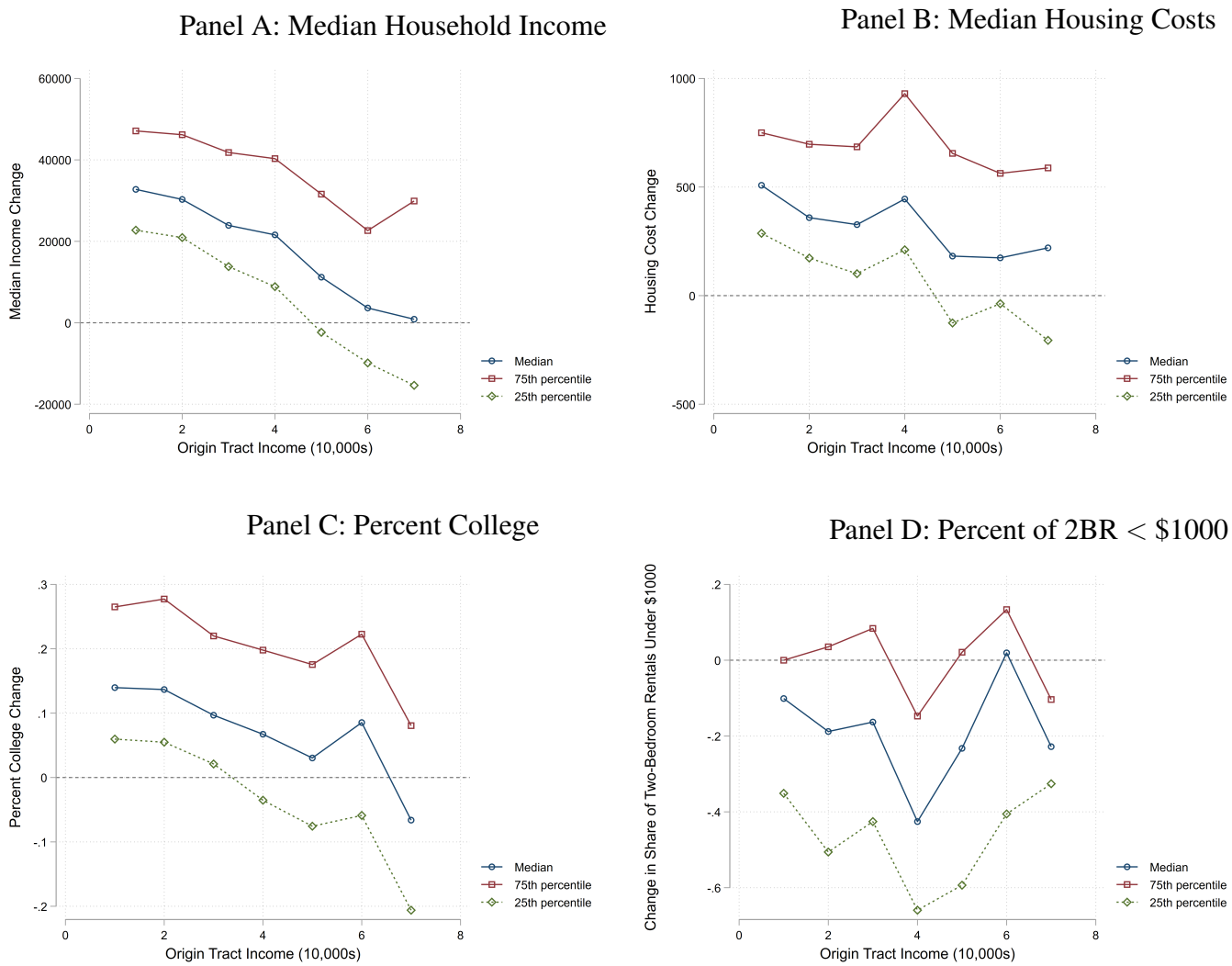
Notes: This figure shows the time series of the mean (Panel A) and median (Panel B) within-CBSA deciles of home value and rent for city neighborhoods, weighted by Black population in 1970. This illustrates the subsequent change in housing costs in the neighborhood of the average Black city dweller in 1970. The measure of both home values and rents in each tract is the median as reported by the Census and the ACS.

Figure A18: Selection of Suburbanizers from Cities



Notes: This figure plots the distributions of household income for Black households who 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 A19: 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.

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.