

For blacks in America, the gap in neighborhood poverty has declined faster than segregation

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Black residential segregation has been declining in the United States. That accomplishment rings hollow, however, if blacks continue to live in much poorer neighborhoods than other Americans. This study uses census data for all US metropolitan areas in 1980 and 2010 to compare decline in the neighborhood poverty gap between blacks and other Americans with decline in the residential segregation of blacks. We find that both declines resulted primarily from narrowing differences between blacks and whites as opposed to narrowing differences between blacks and Hispanics or blacks and Asians. Because black–white differences in neighborhood poverty declined much faster than black–white segregation, the neighborhood poverty disadvantage of blacks declined faster than black segregation—a noteworthy finding because the narrowing of the racial gap in neighborhood poverty for blacks has gone largely unnoticed. Further analysis reveals that the narrowing of the gap was produced by change in both the medians and shapes of the distribution of poverty across the neighborhoods where blacks, whites, Hispanics, and Asians reside.

neighborhood poverty | residential segregation | racial inequality | Gini index

Non-Hispanic blacks (hereafter “blacks”) generally live in poorer neighborhoods than other Americans. In metropolitan areas in 2010, for example, blacks were nearly four times more likely than other residents to live in neighborhoods where the poverty rate was 40% or higher. The racial divide persists even when comparing households of the same income (1). One study finds that the average black household with annual earnings of \$75,000 resides in a higher-poverty neighborhood than the average white household with annual earnings of less than \$40,000 (2). However, racial differences in neighborhood environments were even greater in the past (3). In this article, we document a significant narrowing of the black–nonblack gap in neighborhood poverty levels since 1980 and compare that decline with the decline in black residential segregation over the same period.

The residential clustering of rich and poor in America is important because of the diminished life chances for residents of high-poverty neighborhoods (4, 5). In addition to more noise and congestion and the absence of green space, high-poverty neighborhoods in America often are characterized by poor schools, reduced access to healthy food, high crime rates, and weak social institutions. Sizable neighborhood inequality is particularly troubling when high neighborhood poverty is associated with race (6). If exposure to poverty adversely affects child development and educational attainment, as recent research suggests (7–11), then disparities in the neighborhood poverty environments of blacks versus more advantaged groups may be an important factor in the persistence of racial inequality across generations (12).

The term “black neighborhood disadvantage” is used in this article as shorthand for the difference in poverty rates of the neighborhoods where blacks and other Americans live. Although black neighborhood disadvantage requires black residential segregation—blacks and nonblacks cannot be unequally distributed across rich and poor neighborhoods unless they are unequally distributed across neighborhoods—the neighborhood disadvantage

of blacks need not change at the same rate, or even in the same direction, as black residential segregation. This study compares the two trends and quantifies the contributions of black–white, black–Hispanic, and black–Asian neighborhood change to overall change in the segregation and neighborhood disadvantage of blacks in metropolitan America.

The findings advance our understanding of how racial neighborhood segregation and inequality have been changing in America. By using a common metric for neighborhood segregation and inequality, we show that the neighborhood disadvantage of blacks has declined faster than the neighborhood segregation of blacks, and by applying a decomposition method, we show that black disadvantage declined faster than black segregation primarily because of trends for blacks vis-à-vis whites, as opposed to blacks vis-à-vis Hispanics or Asians. Further analysis reveals that the decline in black neighborhood disadvantage was due to changes in the shapes as well as in the medians of the race-specific neighborhood poverty distributions.

Change in the Neighborhood Poverty Disadvantage of Blacks, 1980–2010

In America, neighborhoods are where the nation’s economic cleavages are most visibly “etched in place” (13). Neighborhood conditions historically have been particularly harsh for blacks, as depicted in Fig. 1. The Lorenz curve (14) in Fig. 1 is constructed by arranging the 57,370 US metropolitan neighborhoods (census tracts) from poorest (highest poverty rate) to least poor based on

Significance

Racial inequality in America persists in part because of racial differences in exposure to adverse neighborhood environments. Blacks in particular are significantly more likely than other Americans to live in high-poverty neighborhoods—neighborhoods characterized by poor schools and limited access to healthcare, jobs, and beneficial social networks—resulting in inequality of opportunity, as life chances are diminished for residents of such neighborhoods. In addition, the greater exposure to crime, noise, and congestion implies a lower quality of life, on average, for black Americans. Because black neighborhood disadvantage results in inequality of life chances based on race, it is important to determine the direction, pace, and sources of change in black–nonblack differences in neighborhood poverty in America.

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Data deposition: The dataset used in this analysis has been archived in the Interuniversity Consortium for Political and Social Research (ICPSR) at the University of Michigan. The deposit number is 36626.

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census data for 1980. The curve plots the cumulative proportion of blacks in the neighborhoods (x axis) by the cumulative proportion of nonblacks in the neighborhoods (y axis), where nonblacks consist of Hispanics, Asians, and non-Hispanic whites. If blacks and nonblacks were distributed equivalently over rich and poor neighborhoods, 10% of each group would reside in the poorest 10% of neighborhoods, 20% of each group in the poorest 20% of neighborhoods, and so on, coinciding with the diagonal line of equality in Fig. 1. Instead, the Lorenz curve lies well below the line, reflecting a high concentration of blacks in poorer-than-average neighborhoods.

The degree of black neighborhood disadvantage is quantified as the difference between the Lorenz curve and the line of equality. There are two standard ways to measure this difference. The first, the index of dissimilarity (D), measures the difference as the vertical distance between the curve and the line of equality at its greatest point. The second, the Gini coefficient (15), is the proportion of the area below the diagonal that falls within the curve (the shaded area in Fig. 1). Both indexes range in value from zero (no black disadvantage) to 1.0 (all blacks live in poorer neighborhoods than all nonblacks). We use the Gini in our analysis because it is based on information for the entire distribution and is decomposable (Table 1) whereas D is based on a single point on the Lorenz curve and is not decomposable.

The Gini coefficient is 0.65 in Fig. 1 ($D = 0.51$), indicating large differences in the neighborhood poverty rates for blacks and other Americans in 1980. The curve includes the point (0.50, 0.077), for example, indicating that in 1980 only 7.7% of nonblacks lived in neighborhoods where the poverty rate was as high as or higher than where the typical (median) black lived. By 2010, this figure had increased from 7.7 to 22.5% and the Gini had declined to 0.39. To understand how this reduction in black neighborhood disadvantage came about, note that the Lorenz curve—and thus its associated Gini—is a population-weighted average of the black–white, black–Hispanic, and black–Asian Lorenz curves (for a figure showing the three Lorenz curves, see Fig. S1).

Hence change in the black–nonblack Gini from 1980 to 2010 derives from change in the three constituent Ginis plus change in the population composition of the nonblack population. Formally, let the black–nonblack Gini at a point in time be expressed as $G = \sum_i p_i G_i$, where i indexes the nonblack group

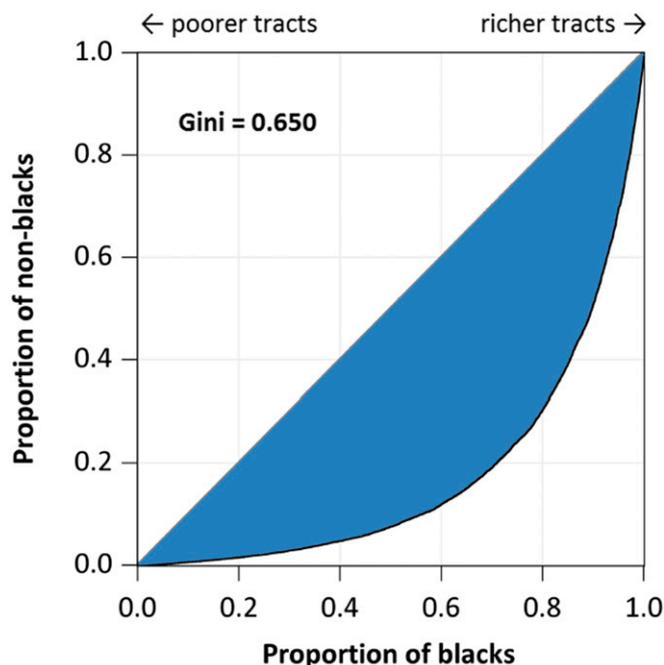


Fig. 1. Lorenz curve showing black neighborhood disadvantage in 1980.

Table 1. Decomposition of decline in black neighborhood disadvantage, 1980–2010

Component	Change in Gini	Contribution	
		Additive	Interactive
Black–white inequality	−0.211	−0.170	−0.189
Black–Hispanic inequality	−0.171	−0.025	−0.014
Black–Asian inequality	−0.156	−0.007	−0.003
Population composition		−0.062	−0.066
Joint change			0.008
Total change		−0.264	−0.264

Note: from 1980 to 2010, the Hispanic share of the nonblack metropolitan population grew from 8.4 to 21.4%, and the Asian portion grew from 2.0 to 7.3%. The additive model weights by the simple average of the group's share of the nonblack population in 1980 and 2010, whereas the interactive model weights by the group's share of the nonblack population in 1980.

of interest, p_i is the proportion of the nonblack population in that group, and G_i is the Gini value for that group vis-à-vis blacks. Then change in the black–nonblack Gini from time 1 to time 2 is

$$G_2 - G_1 = \sum_i \bar{G}_i (p_{i2} - p_{i1}) + \sum_i (G_{i2} - G_{i1}) \bar{p}_i, \quad [1]$$

where $\bar{G}_i = (G_{i2} + G_{i1})/2$, the average value of G_i at times 1 and 2, and \bar{p}_i is the average proportion at times 1 and 2. Eq. 1 assumes additive effects. To separate out the interactive effect of change in G and change in p , we weight by the initial (instead of the average) values of G and p :

$$G_2 - G_1 = \sum_i G_{i1} (p_{i2} - p_{i1}) + \sum_i p_{i1} (G_{i2} - G_{i1}) + \sum_i (p_{i2} - p_{i1}) (G_{i2} - G_{i1}). \quad [2]$$

We are not aware of prior work that has decomposed change in inequality by partitioning the Gini in this manner.

Table 1 reports the additive and interactive components of the decline in black neighborhood disadvantage from 1980 to 2010. There are two critical findings. The first is that black–nonblack neighborhood inequality declined by 40% based on the Gini, from 0.65 in 1980 to 0.39 in 2010 (D declined by 43%, from 0.51 to 0.29). Although blacks today are still much more likely than other Americans to live in high-poverty neighborhoods, there has been a sizable narrowing of the black–nonblack neighborhood poverty gap since 1980. The second critical finding is that the reduction was driven primarily by the narrowing of neighborhood poverty rates between whites and blacks. Because whites constitute the majority of the nonblack population, the notable decline of 0.21 Gini units in black–white inequality (Table 1) had a large compressing effect on black–nonblack neighborhood inequality, accounting for the large majority of the overall decline. Change in the composition of the nonblack population was the next largest factor, accounting for about one-fourth of the decline. Change in black–Hispanic and in black–Asian inequality combined was responsible for only about 10% of the decline in black–nonblack neighborhood inequality.

Change in the Neighborhood Segregation of Blacks, 1980–2010

Residential segregation in America has been the subject of much research in the social sciences (6, 16–23). Black segregation has been a particular concern because of its magnitude and history. As recently as 1980 the Gini coefficient for black–nonblack residential segregation in metropolitan America was 0.89 ($D = 0.75$), far exceeding the degree of inequality in black–nonblack neighborhood poverty at that time (Gini = 0.65, $D = 0.51$).

Table 2. Decomposition of decline in black segregation, 1980–2010

Component	Change in Gini	Contribution	
		Additive	Interactive
Black–white segregation	–0.114	–0.092	–0.102
Black–Hispanic segregation	–0.122	–0.018	–0.010
Black–Asian segregation	–0.118	–0.005	–0.002
Population composition		–0.013	–0.013
Joint change			–0.001
Total change		–0.128	–0.128

See the note in the legend of Table 1.

Changes in the Distribution of Neighborhood Poverty by Race: Median Shifts and Shape Shifts

Although blacks on average still live in the poorest neighborhoods, they live in relatively better neighborhoods vis-à-vis nonblacks in 2010 than in 1980. As shown in the Gini decompositions above, most of the relative gain of blacks from 1980 to 2010 was due to narrowing differences in the poverty rates of neighborhoods where blacks and whites live. In this section, we use relative distribution methods (27) to compare change in the distribution of neighborhood poverty directly for blacks versus whites, blacks versus Hispanics, and blacks versus Asians. We focus on change in the overlap of the distributions because increasing overlap means declining black disadvantage. Relative distribution methods account for change in the overlap of two distributions by separating the contributions of median shifts from the contributions of shape shifts. The method enables us to determine, for example, how much of the decline in black–white neighborhood disadvantage is due to convergence in the median neighborhood poverty rate for blacks and whites and how much is due to changes in the shapes of the two distributions.

From the declines in inequality observed in Table 1, we know that there is greater overlap in the black–white, black–Hispanic, and black–Asian distributions in 2010 than there was in 1980. Which distributions moved, and in what direction? Table 3 provides descriptive data. From 1980 to 2010, there was a leftward shift in the black distribution, toward lower poverty neighborhoods, and a rightward shift in the distribution for each of the other groups, toward poorer neighborhoods. Blacks, then, were the only major population group in metropolitan America who were living in lower-poverty neighborhoods in 2010 than in 1980. As a result, the difference in median neighborhood poverty rates declined by 4.6 percentage points for blacks and whites, by 5.0 percentage points for blacks and Hispanics, and by 4.4 percentage points for blacks and Asians. These median shifts are likely to account for much of the decline in the neighborhood disadvantage of blacks.

Black neighborhood disadvantage might also have been diminished by shifts in the shapes of neighborhood poverty distributions. The effects of shape shifts depend on the location as well as the size of the shifts. Shape shifts are most consequential where the two distributions being compared overlap the most. For whites and blacks, for example, whites’ shape shifts have the greatest effect when they occur in the neighborhoods where poverty

Table 3. Median shift in neighborhood poverty from 1980 to 2010, by group

Group	Proportion poor at median		Median shift
	1980	2010	
Blacks	0.218	0.189	–0.029
Whites	0.069	0.086	+0.017
Hispanics	0.157	0.178	+0.021
Asians	0.073	0.088	+0.015

rates are above average for whites, where there is the greatest overlap with prevailing neighborhood poverty rates for blacks.

Figs. 4–6 show the neighborhood poverty distribution for blacks relative to the distributions for whites (Fig. 4), Hispanics (Fig. 5), and Asians (Fig. 6) in 1980 and 2010. The figures reveal narrowing of the black neighborhood disadvantage with respect to each of the other racial/ethnic groups. The convergence is particularly notable for blacks and Hispanics. If those trends continue, in the near future Hispanics will tend to live in poorer neighborhoods than blacks.

Close inspection of the figures reveals the median shifts reported in Table 3—the leftward shift of the black distribution and the rightward shift of the distributions for whites, Hispanics, and Asians. More obvious, however, is the “flattening” of the curves for whites, Hispanics, and Asians. For whites especially, the peak of the curve declined notably, and the right (higher poverty) tail enlarged. Because the distributions for whites, Hispanics, and Asians all thickened in the regions of the curve where a large share of blacks reside, we expect to find that white, Hispanic, and Asian shape shifts all contributed to the decline in black disadvantage, independent of median shifts. The shape of the black distribution in 2010 closely resembles its shape in 1980, so we anticipate that change in the shape of the black distribution contributed little to the decline in black disadvantage (except in the case of Hispanics, where a small shape shift for blacks is likely to be consequential due to the substantial overlap in the Hispanic and black distributions).

Table 4 reports results using relative distribution methods to isolate the contributions of median shifts and shape shifts. As expected, median shifts were responsible for much of the decline in black neighborhood disadvantage, accounting for about three-fourths of the black–white decline, half of the black–Hispanic decline, and two-thirds of the black–Asian decline. For black disadvantage vis-à-vis whites and Asians, the remainder of the decline was due to the shape shift for whites and Asians, respectively—none was due to shape shift in the poverty distribution for blacks themselves. Indeed, the shape shift effect for blacks is negative (but small) when blacks are compared with whites, indicating that black neighborhood disadvantage vis-à-vis whites would have increased, not declined, had the distributions for blacks and whites remained constant except for the shape of blacks’ neighborhood poverty distribution. The decline in black disadvantage vis-à-vis Hispanics was driven roughly equally by blacks’ shape shift (28%) and by Hispanics’ shape shift (25%). This finding is not surprising, given the considerable overlap in the neighborhood poverty distributions for blacks and Hispanics. Finally, there is a negative interaction effect for blacks and Asians, indicating that the joint effect of median shifts and shape shifts operated to reduce the magnitude of the decline in black neighborhood disadvantage vis-à-vis Asians.

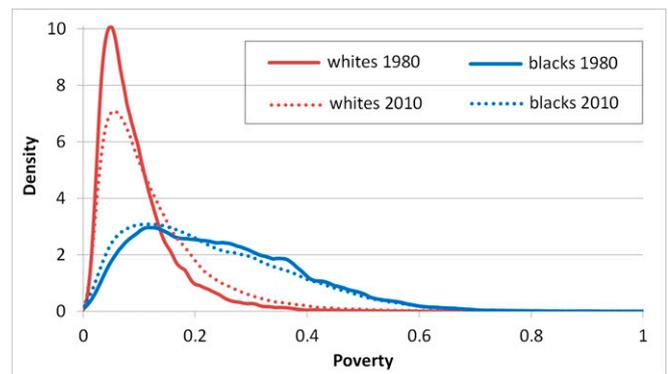


Fig. 4. Distribution of neighborhood poverty rates in 1980 and 2010: blacks versus whites.

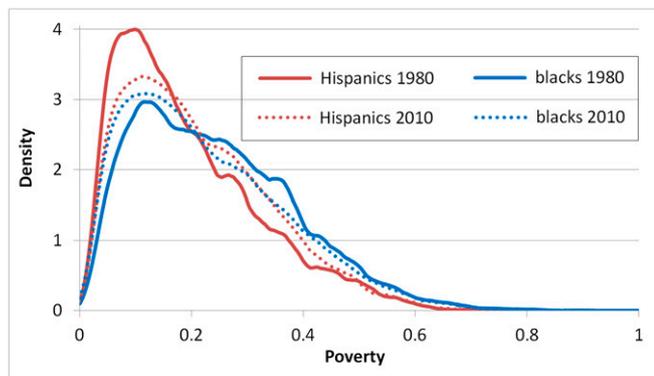


Fig. 5. Distribution of neighborhood poverty rates in 1980 and 2010: blacks versus Hispanics.

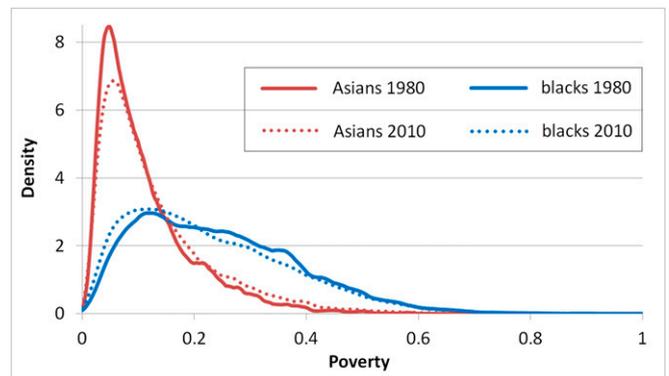


Fig. 6. Distribution of neighborhood poverty rates in 1980 and 2010: blacks versus Asians.

Conclusions About Neighborhood Change for Blacks: Upward Economic Mobility with Modest Racial Integration

Blacks have been achieving more equal economic residential footing with other Americans faster than they have been achieving residential integration with other Americans. This state of affairs raises the question of why, during a period of legal sanctions against housing discrimination on the basis of race, black neighborhood disadvantage has proved to be more tractable than black neighborhood segregation. As shown in this study, the principal source of the faster decline in black disadvantage than in black segregation is the greater black–white convergence in neighborhood poverty rates than in neighborhood coresidence. Blacks have become less residentially disadvantaged primarily because of their diminished neighborhood poverty differences with whites, the largest racial group in America. The narrowing of black–Hispanic and black–Asian differences matters much less for either black disadvantage or black segregation.

The findings of this study challenge three perceptions about the racial stratification of America's neighborhoods. First, the end of black segregation is not at hand. As of 2010, the black–nonblack segregation Gini was 0.76, with half of the metropolitan black population living in neighborhoods that were home to only 3.6% of the nonblack population. Clearly, the residential segregation of blacks remains very high in America.

Second, in contrast to the view that blacks have become less segregated largely because Hispanics and Asians have served as a buffer between blacks and whites (28), we find that Hispanic–black and Asian–black integration collectively accounted for only about 18% of the decline in black segregation from 1980 to 2010. White–black integration, in contrast, accounted for about 72% of the decline. To be sure, white–black differences count more because whites outnumber Hispanics and Asians. However, that is the point: had white–black segregation not changed, the decline in the residential segregation of blacks between 1980 and 2010 would have been only about one-fourth as large. That fact is not easily deduced from patterns of mobility into or out of poor neighborhoods (29, 30) or from research on white flight from neighborhoods as blacks move in (31). It is difficult to infer aggregate neighborhood change from household migration (32), and only by directly decomposing the change in black–nonblack segregation do we discover that the decline in the residential segregation of blacks in America has been driven primarily by reduction in the residential separation of blacks and whites.

Third, the reduction in black segregation was not the most significant change in the racial stratification of America's neighborhoods from 1980 to 2010. Over this period, there was a much greater—although less noticed—narrowing of neighborhood poverty differences between blacks and other Americans in general and between blacks and whites in particular.

Our analysis reveals the sources of the narrowing neighborhood poverty gap between blacks and other Americans. We now

know that the decline in black disadvantage resulted primarily from the narrowing of the black–white gap in neighborhood poverty. We also know how distributional changes produced the decline in black disadvantage: shape shifts for whites, Hispanics, and Asians accounted for part of the decline in the relative disadvantage of blacks, but a larger portion of the decline was due to median shifts—lower neighborhood poverty rates for blacks and higher rates for whites, Hispanics, and Asians. The growth in neighborhood poverty rates for whites squares with census reports showing a sharp increase in the number of poor whites living in poor neighborhoods (33). The decline in neighborhood poverty for blacks is consistent with evidence of the movement of blacks into middle-income neighborhoods (18, 34, 35); when a growing middle class black population moves from low income to middle income neighborhoods that are predominantly black, black neighborhood disadvantage declines faster than black segregation, in line with the findings here. The reasons for these trends are only partly understood. It is likely that the gentrification of poor urban areas (36) and a softening of white aversion to black neighbors (figure 3.5 in ref. 37) are responsible for some of the reduction in black neighborhood disadvantage. The movement of immigrant populations to new destinations (38, 39) might have played a role as well.

In light of evidence that racial disparity in neighborhood economic conditions serves as a source of racial differences in life chances (8, 9), black neighborhood disadvantage undercuts the American ideal of equality of opportunity. The Gini value for black–white inequality in neighborhood poverty was 0.48 in 2010, indicating that on average blacks still reside in significantly poorer neighborhoods than whites. A serious concern is that black–white differences in wealth inequality (40)—inequality that itself is based to a large extent on racial differences in housing assets (41)—might slow or halt further narrowing of the black–white neighborhood poverty gap. With the high cost of housing, for example, intergenerational transfers are likely to become increasingly important, so black deficiencies in home wealth today might make it

Table 4. Median and shape shift components of the decline in black neighborhood disadvantage, 1980–2010

Relative distribution component	Comparison population		
	Whites, %	Hispanics, %	Asians, %
Median shift	73	50	67
Shape shift for blacks	–11	28	<0.5
Shape shift for comparison population	39	25	51
Interaction	–1	–2	–18

Results are the average contributions to within-decade change, from the relative distribution analysis.

more difficult for the next generation of blacks to escape high-poverty neighborhoods. There is no guarantee, then, that the decline in black-white neighborhood inequality will continue. Although residential segregation dominates the headlines, the future direction and pace of change in racial neighborhood inequality is likely to have greater implications for American society.

Materials and Methods

Neighborhood Data. When we ask whether blacks now live in neighborhoods that are more economically similar to the neighborhoods where other Americans live, we want to know about disparities in conditions for blacks and other Americans without regard to whether they live in Atlanta or Detroit or Los Angeles. By pooling the neighborhood data for all US metropolitan areas, we compare the poverty rates of neighborhoods without regard to their metropolitan location. In line with many prior studies, we use census-defined tracts to measure neighborhoods. Census tracts are designed to be relatively homogeneous units with an optimum size of about 4,000. We assembled racial composition at the tract level from the 1980 and 2010 decennial censuses. Neighborhood poverty rate is the percentage of individuals living below the poverty line, which we assembled from long-form census data for 1980 and from 5-y estimates centered on 2010 from the American Community Survey. To base findings on the same neighborhoods in 1980 and 2010, we used data where the 1980 census tracts were standardized to 2010 boundaries (42). We excluded tracts where more than 25% of residents live in group quarters (such as prisons), yielding a consistent set of 57,370 neighborhoods for both years. Using census data for all places designated as “metropolitan areas” by the US Census Bureau captures 77% of the total US population in 1980 and 84% in 2010. We begin with 1980

because it is the first year with adequate census data for Hispanics. The four major racial/ethnic groups in the analysis—Hispanics, non-Hispanic whites, non-Hispanic blacks, and Asians—comprise more than 97% of the US population.

Methods. This study provides a design for revealing the loci of change in the relative gains or losses of population groups. The design combines Gini decomposition with relative distribution methods. Although there are various ways to decompose inequality and segregation (43), the decomposition method introduced here identifies the group comparisons that matter most for the relative gains or losses of one population (e.g., blacks) vis-à-vis another (e.g., nonblacks). Relative distribution analysis in turn identifies the distributional changes—median shifts versus shape shifts—that account for the change in a particular group comparison (e.g., blacks versus whites). Both methods deepen our understanding of change in inequality between groups by pinpointing where the change is coming from—which subpopulations, and which parts of the distribution, are driving the change. By combining the decomposition of Ginis with the decomposition of distributional change using relative distribution methods, the analysis here provides a template for future research investigating the relative gains and losses of groups.

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Supporting Information

Firebaugh and Acciai 10.1073/pnas.1607220113

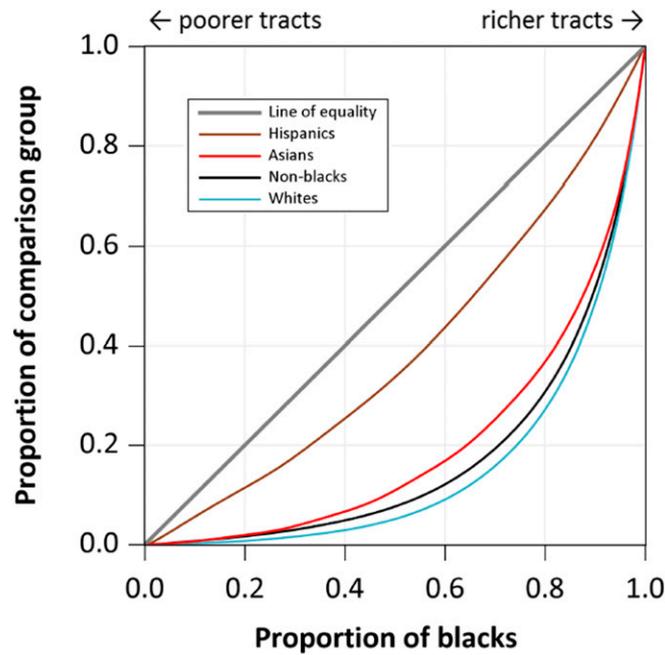


Fig. S1. Components of black neighborhood disadvantage: Lorenz curves showing black disadvantage relative to whites, Hispanics, and Asians in 1980.

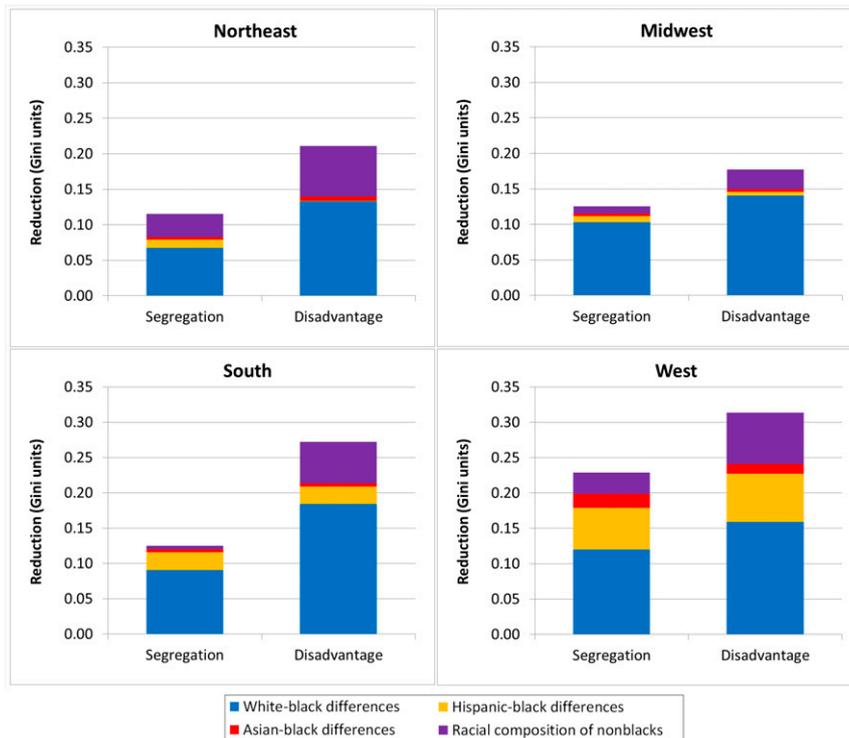


Fig. S2. Decline in black segregation versus decline in black neighborhood disadvantage from 1980 to 2010, by region.