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Quantifying Separate and Unequal

Racial-Ethnic Distributions of Neighborhood Poverty in Metropolitan America

Theresa L. Osypuk
Northeastern University, Boston
Sandro Galea
University of Michigan School of Public Health, Ann Arbor
Nancy McArdle
Dolores Acevedo-Garcia
Harvard School of Public Health, Boston

Researchers measuring racial inequality of neighborhood environment across metropolitan areas have traditionally used segregation measures; yet such measures are limited for incorporating a third axis of information, including neighborhood opportunity. Using Census 2000 tract-level data for the largest U.S. metropolitan areas, the authors introduce the interquartile-range overlap statistic to summarize the substantial separation of entire distributions of neighborhood environments between racial groups. They find that neighborhood poverty distributions for minorities overlap only 27%, compared to the distributions for Whites. Furthermore, the separation of racial groups into neighborhoods of differing poverty rates is strongly correlated with racial residential segregation. The overlap statistic provides a straightforward, policy-relevant metric for monitoring progress toward achieving more equal environments of neighborhood opportunity space.

Keywords: *concentrated poverty; neighborhood; neighborhood poverty; race and ethnicity; racial inequality; geography of opportunity; residential segregation*

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Congress passed the Housing Act of 1949, declaring the "goal of a decent home and a suitable living environment for every American family." However, this goal has still not been attained. As a result of racial segregation, class segregation, and urban sprawl, U.S. metropolitan areas (MAs) exhibit an uneven "geography of opportunity"—that is, patterns of racial-ethnic inequality within MAs that affect access to opportunity neighborhoods (Briggs 2005; Galster and Killen 1995; Ihlanfeldt 1999; Pastor 2001). This unequal geography is concerning, because individuals' place of residence influences their opportunities and life outcomes.

Equality of individual opportunity derives from the larger opportunity structure within which individuals interact. Galster and Killen (1995: 9) define "the opportunity structure" as "the panoply of markets, institutions, and systems that act on and convert personal attributes into outputs affecting social advancement." For instance, the metropolitan opportunity structure affecting youth includes housing, mortgage, and labor markets; local political, criminal justice, social service delivery, and educational systems; and local social networks. Opportunity is envisioned as an input for well-being and social advancement—that all populations should have access to communities with good schools, public services, and economic prospects (Briggs 2005). Although the conventional notion of equal opportunity overlooks the geographic dimensions, the reality is that these goods (e.g., in employment and education (Cutler and Glaeser 1997) are patterned spatially within metropolitan America (Pastor 2001).

Racial segregation is one important contributor to this unequal geography of opportunity. The spatial separation of populations along racial-ethnic lines—and to a lesser extent along economic lines—is a key feature of the social organization of U.S. urban areas (Massey 2001). Racial residential segregation remains high in the United States, especially for Blacks versus Whites, although Hispanics and Asians also experience moderate segregation from Whites (Iceland, Weinberg, and Steinmetz 2002). Decades of federal, state, and local housing policies and decisions have contributed to racial residential segregation and concentration of poverty, by funding urban renewal and slum clearance programs that displaced stable, minority neighborhoods, by siting public housing in impoverished areas, by subsidizing suburban development at the outskirts of population centers, and by enacting exclusionary housing ordinances (Briggs 1997; Galster 1988). Other factors have contributed to racial residential segregation (Acevedo-Garcia, Lochner, et al. 2003; Galster 1988), including housing discrimination that minorities encounter when attempting to rent, purchase, or finance housing (Turner et al. 2002; Yinger 1995); the preferences of each group to live in certain types of neighborhoods (Clark 1986) (including White avoidance of Black neighborhoods and Black avoidance of all-White neighborhoods in anticipation of racial hostility (Yinger 1995); and the lower socioeconomic status and housing affordability among minorities compared to Whites (and therefore economic segregation) (Clark 1986; Galster 1988). One important consequence of residential segregation is the concentration of poverty among minorities, or the pattern that impoverished Blacks are likely to live in high-poverty neighborhoods (Fischer 2003; Massey 2001; Massey and Fischer 2000). The costs of such unequal geographies of opportunity are high. For example, the literature on neighborhood effects is documenting that growing up or living in a high-poverty neighborhood may negatively influence social, economic, and/or health outcomes (Brooks-Gunn et al. 1997; Ellen and Turner 1997; Kawachi and Berkman 2003; National Research Council 2002; Orr et al. 2003).[1]

Although a vast body of work has documented the patterns of racial segregation and concentrated poverty in U.S. MAs, it may enhance policy relevance to operationalize the extent of racial-ethnic inequality in a way that permits regular monitoring of access to opportunity neighborhoods. The aim of this article is to provide a straightforward operationalization of the geography of opportunity that would allow quantifying the actual range of neighborhood environments available to different racial-ethnic groups as well as quantifying how separate and unequal this range is between racial-ethnic groups. Examining differences across metro areas is a first step toward identifying factors associated with a more equal or unequal geography of opportunity, including policies that could potentially reduce inequality. The extent to which the range of neighborhoods for different racial-ethnic groups may be vastly different within and across MAs may provide stronger support for an argument of separate and unequal opportunity spaces.

The Average, the Tail, and the Distribution of Neighborhood Opportunity

The geography of opportunity is often indicated by residential racial or class segregation statistics (Briggs 2005). Segregation indices provide a useful and straightforward metric for understanding the extent to which people of different groups share the same neighborhoods as well as the spatial nature of this separation within the MA (Iceland, Weinberg, and Steinmetz 2002). However, the method of calculating segregation indices is limited for incorporating inequality across a third axis of information such as neighborhood quality.[2] Other methods have been used for describing neighborhood quality by racial group, such as calculations of means or of proportions of those above a certain threshold of neighborhood poverty (the tail of the distribution). However, as we argue, these methods may be more limited for illustrating the degree to which neighborhood quality differs between racial groups, compared to a method that incorporates information on the entire distribution of neighborhood quality.

The mean. Prior work has documented that, on average, neighborhood environment is worse for minorities compared to Whites. For example, the exposure measure has been used by demographers to denote the average neighborhood environment of a certain group (Logan 2002; Massey and Fischer 2000). The exposure measure has several strengths, including avoiding arbitrary definition of poor and nonpoor neighborhoods, using all information on a group's distribution across income categories and neighborhoods, and summarizing the mean neighborhood poverty rate for any subgroup of interest (e.g., using Lieberson's P* isolation index to estimate the percentage poverty neighborhood of the typical poor person; Massey and Fischer 2000). However, its utility for summarizing differential neighborhood opportunity for different groups relies on the extent to which the mean in the MA represents the distribution of neighborhood poverty for different groups. This critique is not something unique to exposure measures but rather to any statistic of central tendency.

According to classic statistics, the mean is a primary order statistic of a distribution: its location. The mean has several attractive properties for probability theory, which relates to why it is so frequently used. The variance is a second-order statistic; it improves the description of the distribution when used in conjunction with the mean (Rosner 2000). If a distribution displays a wide degree of dispersion, the mean on its own may be less informative for summarizing the distribution, compared to a distribution with narrow dispersion. Indeed, there is some emerging evidence that the variance in outcomes is substantially broader for minorities and narrower for Whites (Acevedo-Garcia, Osypuk, et al. 2003; Osypuk et al. 2006). Given this evidence, a measure of central tendency (such as the exposure measure) might be a more accurate or appropriate measure of neighborhood context for Whites than for minorities.

Aside from how well the mean represents two distributions with different variances, the variance is informative for the comparison of two groups. Often, the variance is used only insofar as it informs comparisons of the mean, such as for calculating the standard error of the mean or for ensuring that assumptions are not violated with methods based on the mean (e.g., homoskedasticity in regression analyses). However, the variance can also be used to tell whether the distributions themselves are similar or different, in terms of how well two distributions can be distinguished or discriminated from each other. For many continuous exposures of interest, even if the means differ, the distributions of two groups will completely overlap on the exposure; it is just that the distribution of the exposure is shifted slightly worse in one group compared to the other. Therefore, although the *average* exposure is worse for one group, the prediction utility of the exposure value for discriminating between two groups is limited by this large amount of overlap. Conversely, if the two means not only differ but the majority of the observations for each group also fall on either side of a division, then two distributions are substantially separate, and this allows the two groups to be well discriminated by the exposure factor. Sociologically, this separation of distributions may provide more compelling evidence of separate contexts than would a comparison of means.

Extending this argument to neighborhood environments, although the exposure measure illustrates that on average two groups differ on a neighborhood characteristic, it does not incorporate the variance that would help illustrate to what extent a person's location in the distribution on the neighborhood characteristic would discriminate or differentiate between two groups. Indeed, the exposure measure has been critiqued for its utility as a measure of segregation because it does not incorporate dispersion (James and Taeuber 1985). If the distributions of two racial-ethnic groups substantially overlap with respect to their neighborhood environment, then a comparison of means is a poor indicator of unequal neighborhood environments, since many people of both racial groups live in the same type of neighborhood. The substantive separation of the distribution of neighborhood quality by race-ethnicity would illustrate not only that average context differs (as the exposure statistic provides) but also that the two groups experience a vastly unequal context across the range of neighborhoods (which is something a mean cannot provide without dispersion). Therefore, for a continuous measure of neighborhood quality, a measure of distribution dispersion in conjunction with the mean would help us understand (more than a mean alone would) to what extent *entire populations* of minorities and Whites live in same or different types of neighborhoods in the MA and whether they live in comparable types of neighborhoods (opportunity neighborhoods). However, with few exceptions (Jargowsky 1997; Massey and Fischer 2000), limited work has analyzed the variance of neighborhood environments across MAs as of substantive interest.[3]

The tail. Aside from using a mean to evaluate the racial inequality in neighborhood poverty, other researchers have used proportions, by creating cutoffs of 20%, 30%, or 40% (Galster et al. 2003; Jargowsky 1997; Kingsley and Pettit 2003) of those in poverty to estimate the proportion of a group living in high poverty neighborhoods – in other words, those in the tail of the neighborhood poverty distribution.[4] There may be several disadvantages to using thresholds to identify high poverty neighborhoods. For example, any cutoff is arbitrary (Massey and Fischer 2000), since the distribution of neighborhood poverty is continuous and unimodal, not bimodal with "low poverty" and "high poverty" thresholds clearly defined (Jargowsky 1997). In addition, implicit in the category created by a universally applied cutoff (e.g., such as 20% neighborhood poverty) is that it signifies the same construct of a disadvantaged neighborhood, regardless of the metro area and regardless of the mean or distribution of neighborhood poverty for any given MA. Some research does suggest a threshold of high-poverty neighborhoods with certain social outcomes (Galster 2002; Jargowsky 1997). If threshold effects exist, then using that cutpoint could strengthen one's analysis. However, there are many possible effects of neighborhood poverty on different outcomes, which may have different thresholds. Therefore identifying one cutoff for one threshold may be too restrictive.

In addition, some have criticized that too much social science attention has focused on the poor and poor neighborhoods, omitting focus on the affluent (Massey 1996). For example, affluent neighborhoods may be more predictive of children's developmental outcomes than impoverished neighborhoods are (Brooks-Gunn et al. 1997). Yet even then, a focus on the tail does not illuminate the range of opportunity to which most people are exposed. Moreover, rich and poor neighborhoods inhabit the two ends of the neighborhood economic distribution. Our focus on the range of neighborhoods in terms of the universe of existing opportunity space is meant to direct attention not only to minorities who disproportionately inhabit high-poverty neighborhoods but also to Whites who disproportionately inhabit low-poverty ones—two sides of a coin that are not adequately measured by focusing on either tail alone. In addition, we direct attention to the central 50% of the neighborhood poverty distributions to operationalize the opportunity space of populations, whereas many past studies have focused on the ends of the distributions.

Using either the mean or a proportion of neighborhood poverty may be more limited than focusing on the distribution for policy or intervention purposes. For example, since exposure measures produce an average neighborhood as the summary statistic, such a neighborhood may not actually exist. Therefore, this precludes identifying, mapping, studying in detail, or intervening on such neighborhoods, whereas such processes can be done with threshold measures or with frequency-based distributional methods, since each neighborhood is classified clearly in the data (Jargowsky 1997). However, even if such neighborhoods are identified with threshold measures, this essentially isolates the high-risk tail of the distribution from the rest of the distribution, which may affect intervention efficacy. Geoffrey Rose (1985) theorizes that more effective prevention of adverse outcomes may be achieved by intervening on the entire population (a population-based approach) than intervening on only the high-risk tail of a distribution. With a population-based approach, the goal is to shift the entire distribution in the better direction, which includes the tail. If we apply this reasoning to neighborhoods, intervening only on the neighborhoods in the high-risk tail of the distribution to address adverse environments there, to affect other social outcomes, may be limited, since the structural causes of neighborhood poverty as a whole are not affected. Interventions to reduce or prevent the effects of high-poverty neighborhoods may be more effective if they targeted the entire distribution of neighborhood poverty (e.g., by affecting regional factors such as economic conditions, income inequality, availability of rental housing in suburban areas, or housing discrimination; Galster et al. 2003; Massey 2001), instead of intervening on high-poverty neighborhoods only (e.g., neighborhood revitalization interventions).

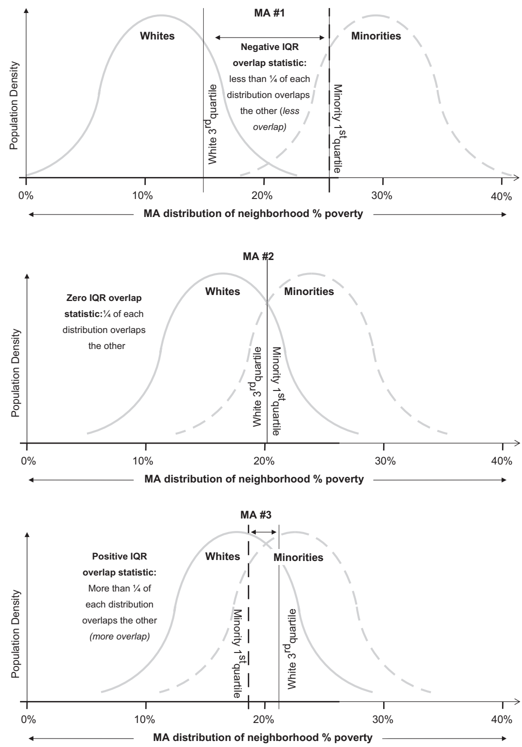
The distribution and distribution overlap. We sought to overcome some of the limitations of means and proportions for characterizing racial inequality in neighborhood environments. In this article, two of our objectives were to characterize the *distribution* of neighborhood poverty within MAs and to characterize the *racial disparities in these distributions*. We sought to do this within the framework of the geography of opportunity (Briggs 2005; Ihlanfeldt 1999; Galster and Killen 1995; Pastor 2001). To determine the opportunity space for individuals, instead of focusing on the mean or the high-risk tail of high-poverty neighborhoods, we focus on the central 50% of the distribution of neighborhood poverty for each racial group within each MA. We therefore define the opportunity space for a given racial-ethnic group as the interquartile range (IQR) of the neighborhood poverty distribution for that group (i.e., actual neighborhood environments where the central half of the population of that group lives). The values of the lower and upper bound of the IQR are the 25th and 75th percentiles of the distribution, and the difference between the upper and lower bounds of the IQR is a measure of the spread for the middle 50% of the distribution. For example, if for a given metro the opportunity space (IQR) for Whites is given by neighborhoods with poverty rates between 3% and 7%, this would mean that half of the White population of that metro area lives in a neighborhood where between 3% and 7% of households live in poverty. In addition, 25% of the White population lives in neighborhoods with poverty rates lower than 3%, and another 25% of Whites live in neighborhoods with poverty rates higher than 7%. While many measures of dispersion exist (standard deviation, variance, coefficient of variation, IQR), we chose the IQR to characterize dispersion, because it uses percentiles for its definition and is therefore invariant to the absolute size of the median or mean. Moreover, it focuses on the middle of the distribution, aligning conceptually with our notion of an opportunity space.

After defining this opportunity space for each racial group, we then compare the opportunity space available to different racial-ethnic groups to see whether two groups share the opportunity space, by comparing whether and by how much the IQR for the two groups overlaps. We call this number the IQR Overlap Statistic (IQR-OS), and it is calculated by subtracting the upper (third) quartile for one group from the lower (first) quartile for another group (see Figure 1). For example, If Hispanics had an opportunity space (IQR) of neighborhood poverty from 9% to 20% in the metro area, the IQR-OS would be given by the difference between the third quartile for Whites (7%) and the first quartile for Hispanics (9%), or 7 – 9= –2. A negative value of the statistic denotes that the neighborhood opportunity spaces for the two groups do not overlap; less than 25% of each distribution overlaps the distribution of the other group. In other words, there is some overlap among the neighborhoods with the highest poverty rates for Whites and among the lowest poverty rates for Hispanics, but the middle part (opportunity space) of the distributions for Whites and Hispanics do not overlap at all.

Objectives and Summary

In this article, we pursue three main objectives: (1) to characterize the neighborhood opportunity space for various racial-ethnic groups by using a measure that captures both the values of the central 50% of the distribution and distributional spread; (2) to quantify the degree of separateness of race-ethnic-specific neighborhood poverty distributions and neighborhood opportunity spaces in the largest 100 metro areas; and (3) to assess the association between the extent of separateness in racial-ethnic neighborhood poverty distributions and other MA factors such as residential segregation. To carry out these objectives, we introduce the IQR-OS, a measure of distributional overlap to characterize the degree of separateness (i.e., overlap) of two groups' distributions on a continuous measure of neighborhood poverty.

Figure 1
Illustration of the Interquartile Range Overlap Statistic of Neighborhood Poverty for Three Hypothetical Metro Areas



As hypothesized, our analysis finds considerably worse neighborhood opportunity space (IQR) for Blacks and Hispanics, compared to Whites. There is also substantial separation, or nonoverlap, of neighborhood poverty distributions (on the IQR-OS) between Whites and minorities. We find that on average, only 27% of the worst tail of the White distribution of neighborhood poverty overlaps the other 73% of the minority distributions of neighborhood poverty. We find considerably larger dispersion (over 2.5 times larger) in neighborhood poverty among minorities than among Whites, indicating that statistics relying on the mean may be more informative or meaningful for Whites. Last, we find that in highly segregated metro areas, there is less racial overlap in the distributions of neighborhood poverty, both before and after adjusting for other measures of metropolitan context. The IQR-OS and segregation are strongly correlated, which provides evidence of *why* racial residential segregation matters: the vastly worse neighborhood quality environments within which minorities reside compared to Whites in U.S. MAs.

Method

Data

We used Census 2000 tract-level data from the Summary Files 1 and 3, packaged in the Neighborhood Change Database (Geolytics 2003). In this analysis, we used census tracts as the lower unit of analysis as a proxy for neighborhoods. To pursue a nationwide study of neighborhoods, we needed to apply a criterion for data that is readily available; we therefore defined neighborhoods as census tracts in agreement with prior literature on residential segregation and poverty concentration (Jargowsky 1997, 2003; Massey and Denton 1988). Also in line with prior work, we examined neighborhoods within metropolitan statistical areas and primary MAs, since they approximate housing and labor markets (Jargowsky 2003), and we restricted our analysis to the largest 100 MAs (Booza, Cutsinger, and Galster 2006; Kingsley and Pettit 2003). We excluded tracts with zero population (215 tracts) and tracts with less than 500 population (458 tracts, 1.2% tracts, 0.6% of population).

Variables and Measures

Neighborhood poverty. We operationalized neighborhood opportunity by a deprivation measure: the proportion of people in the tract below the official poverty line in 1999, percentage poverty, or the neighborhood poverty rate.[5] This variable was derived by Geolytics (2003) from Census 2000 SF-3, Table 87. Although neighborhood poverty captures only one aspect of the multidimensional concept of neighborhood deprivation and is thus just one possible proxy for neighborhood disadvantage, we used it here, because it is straightforward and therefore easy to interpret, is often used by others, and prior literature has demonstrated how neighborhood poverty is associated with a range of detrimental outcomes (Ellen and Turner 1997).

Race-ethnicity. To examine race-specific neighborhood poverty distributions, we applied four different weights to the tract-level measure of proportion of population in poverty, based on the tract-level counts of the total population, and of each racial-ethnic group, to calculate measures of central tendency and distribution. The total tract population was derived from SF-1 Table P1, and the tract racial-ethnic counts were derived from SF-1 Table P4, for the largest three racial-ethnic groups in the United States: Non-Hispanic (NH) Whites alone, Non-Hispanic Blacks alone, and Hispanics (of any race). In this article, White refers to NH White and Black to NH Black. We did not analyze Asians or Native Americans, because of their small and unbalanced population sizes across MAs.

Exposure indices. First, we calculated an exposure index of the mean neighborhood poverty rate in which the average person of each racial group resides in each MA. Exposure measures have been used by demographers to measure segregation (exposure of one racial group to another, the interaction index; Massey and Denton 1988). In addition, exposure measures have been applied to measure one group's exposure to a neighborhood characteristic (e.g., a neighborhood condition exposure index; Galster and Mikelsons 1995; Logan 2002; Massey and Fischer 2000). The formula for the Neighborhood Condition Exposure Index, as shown in Equation 1, is calculated as a weighted average of the neighborhood poverty for each group in each metro area. It is interpreted as the neighborhood poverty rate experienced by the average member of a given racial-ethnic group:

$$ {}_{\mathrm{b}}\mathrm{E}_{\mathrm{c}} = \sum_{\mathrm{i}=1}^{\mathrm{n}} \left[\left(\frac{\mathrm{b}_i}{\mathrm{B}} \right) (\mathrm{C}_i) \right] \tag{1} $$

where i = tract, b_i = number of a certain group (e.g., Blacks) in tract i; B = Total population of a certain group (e.g., Blacks) in the metropolitan area, or the sum of all b_i; C_i = a tract-level summary measure (proportion, mean, median, etc.), such as percentage poor (Galster and Mikelsons 1995).

We built upon the exposure mean as a statistic of central tendency to also provide statistics of distribution spread. We calculated exposures for quartiles of the neighborhood poverty distribution for the entire population and for each racial group. The IQR of neighborhood poverty is the central 50% of the distribution of neighborhood poverty located between the first and third quartile.

IQR-OS. Derived from the race-specific exposure measures above, we developed a measure of overlap between the White and minority 50% of the distributions of neighborhood poverty in each MA: the IQR-OS. We subtracted the minority first quartile from the White third quartile to determine the amount of IQR overlap between two MA race-specific distributions of neighborhood poverty.[6] Negative values for this statistic denote that the White and minority IQRs of neighborhood poverty within an MA do not overlap (or less than 25% of each distribution overlaps the other). Positive values denote that the White and minority IQRs do overlap (e.g., more than 25% of each distribution overlaps the other).[7] The interpretation of a zero IQR overlap statistic value is that 25% of each distribution overlaps the other; or in other words, 75% of the minority population lives in neighborhoods with higher poverty rates than 75% of the Whites in that MA. Notably, the value of 0 is not neutral. The absolute value of the IQR-OS indicates the number of percentage points of IQR (non)overlap on the percentage neighborhood poverty scale or the number of points by which the minority first quartile was separated from the White third quartile (see Figure 1 for a heuristic of three different [hypothetical] MAs with three different racial IQR overlap statistics for neighborhood poverty).

Distributional overlap measure. We calculated a secondary measure of the extent of overlap of two racial-ethnic neighborhood poverty distributions that is nonparametric and frequency based.[8] Using the percentiles of the race-specific neighborhood poverty distributions, we determined the point in the two distributions where the proportion of the sample of each group was balanced on either side. This is the point in the distribution where the percentage of the White sample in the high-poverty (right) tail equaled the percentage of the minority sample in the low-poverty (left) tail.[9] The theoretical range of this statistic is 0% to 50%, where 0 indicates no overlap and 50 indicates complete overlap.

Analytic Method

Correlation and regression analyses. We focus our bivariate and multivariate analyses on the IQR-OS measure given the focus of the article on the opportunity space for the central 50% of the populations. Using SAS 8.1, we first calculated Spearman correlations between the minority-White neighborhood poverty IQR overlap statistic and other MA race-specific variables. We then executed a multiple linear regression with IQR-OS regressed on metropolitan racial residential segregation and demographic variables, stratified by race-ethnic group (Black-White IQR-OS or Hispanic-White IQR-OS) and examined the two segregation measures in separate models. We selected our independent variables following Logan, Stults, and Farley's (2004) analysis of metropolitan inequality and residential segregation and tested racial residential segregation (dissimilarity and isolation), the size and growth of each minority group, group income and poverty levels, nativity, minority suburbanization, age of housing stock, and regional differences. Specific variables and coding are detailed in Table 3 (measures derived from Census 2000 data; Lewis Mumford Center 2001).

Graphing. Using R Software 2.3.1, we graphed our results with boxplots and density line graphs. One set of boxplots depicts two levels of distributions in parallel boxplot graphs: the distribution of neighborhoods within metro areas and the distribution of metro areas within the United States. The boxplot methods used the first and third quartiles of race-specific metropolitan distributions of neighborhood poverty for the top and bottom lines of each box. The median of neighborhood poverty for each MA was marked by a heavy line in the center of the box. The boxplots in Figure 2 were ordered each time by the median MA neighborhood poverty rate for each group. We also graphed parallel boxplots depicting two racial groups simultaneously within each MA, to display the degree of racial IQR overlap within MAs. These graphs were ranked by the MA IQR-OS. We drew a dotted line at 20% neighborhood poverty as an anchor for comparisons across graphs to denote one threshold for high neighborhood poverty (Galster 2002; Galster et al. 2003). We graphed density curves to depict the continuous distributions of the population across neighborhood poverty for the entire population by race; density curves may be conceptualized as smoothed histograms (Rosner 2000).

Results

Our final sample size was 38,855 tracts in 100 MAs, which housed over 173 million population. Table 1 displays the average neighborhood poverty environment for each racial group, based on the exposure measure. The average American in the largest 100 MAs lives in a neighborhood that is 11.8% poor based on the mean or 7.8% poor based on the median.

On average, the neighborhood poverty rate for Whites (median 5.8%) is lower than for the total population, as expected. Blacks and Hispanics have a distribution of neighborhood poverty that is over 2.5 times wider and shifted substantially worse than Whites. For example, the median neighborhood

Table 1
Exposure Measures for National Average Neighborhood (Tract) Poverty, for Total Population and by Racial Group in 100 Largest Metropolitan Areas (*N* = 38,855 Tracts)

		Percentage of Neighborhood Poverty, 1999 (in Percentage)						
	N	*M*	Minimum	First Quartile	Median	Third Quartile	Maximum	Interquartile Range
Total population	173,365,372	11.77	0.00	4.05	7.81	15.95	100.00	11.91
Non-Hispanic White	109,547,002	8.09	0.00	3.30	5.77	10.20	100.00	6.91
Non-Hispanic Black	25,150,369	20.12	0.00	8.98	17.46	28.74	100.00	19.76
Hispanic	27,390,113	18.88	0.00	9.04	16.68	26.49	100.00	17.46

poverty for Blacks across the nation is 17.5%, and the Black IQR is 9.0 to 28.7, an IQR of 20 points (compared to the IQR of 7 points for Whites).

Average Differences in Neighborhood Environment by Metro Area

The distribution of neighborhood poverty for the total population varied substantially by MA. For instance, Middlesex, New Jersey, had the lowest median neighborhood poverty rate (the left-most boxplot in Figure 2a) at 3.3%, with an IQR of 4.0 percentage points (first quartile of 2.2% and third quartile of 6.2%). However, McAllen, Texas, had the MA with the highest median poverty rate; the typical (median) resident lives in a neighborhood with 38.3% poverty, with an IQR of 19.8 points. The other feature apparent in Figure 2 is that the variance (IQR) of neighborhood poverty is strongly positively correlated with the median (rho = 0.66, $p < .0001$).

Average Differences in Neighborhood Environment by Race-Ethnicity, and Metropolitan Area

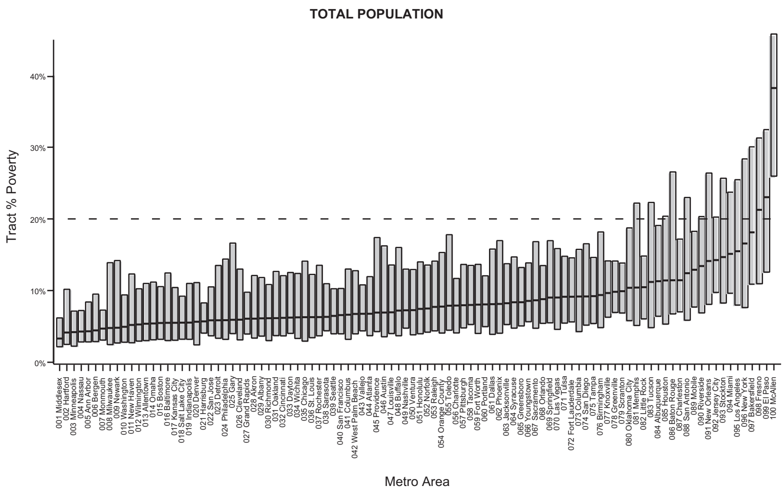
Figures 2b through 2d illustrate race-ethnic-specific neighborhood poverty distributions by MA. The left-most observation in Figure 2b illustrates that the MA where Whites are exposed to the lowest median poverty rate is Middlesex, New Jersey (3.0%). The lowest and highest medians of neighborhood poverty by race were: for Whites, Middlesex (3.0%) and McAllen (26.0%); for Blacks, Middlesex (4.9%) and McAllen (34.7%); and for Hispanics, Baltimore (6.4%) and McAllen (39.6%).

When comparing Figures 2b through 2d, the neighborhood poverty distributions for Whites have lower medians everywhere and smaller IQRs (in all but one instance), compared to the distributions for Blacks and Hispanics; and this was confirmed by numeric comparisons of statistics across MAs (not shown). For instance, in Akron, the IQR is 6 percentage points for Whites, versus 21 points for Blacks, and 16 points for Hispanics. Therefore, Blacks and Hispanics live in a much broader range of neighborhood poverty environments than Whites across these 100 largest U.S. MAs.

Separateness of Racial-ethnic Neighborhood Poverty Distributions

In Table 2, we present the IQR-OS and the Distributional Overlap measure results nationally and by MA, ranked in several ways. On average, for

Figure 2
Boxplots: Metropolitan Distributions (Interquartile Ranges) of Neighborhood Poverty, for Total Population and by Racial and Ethnic Group



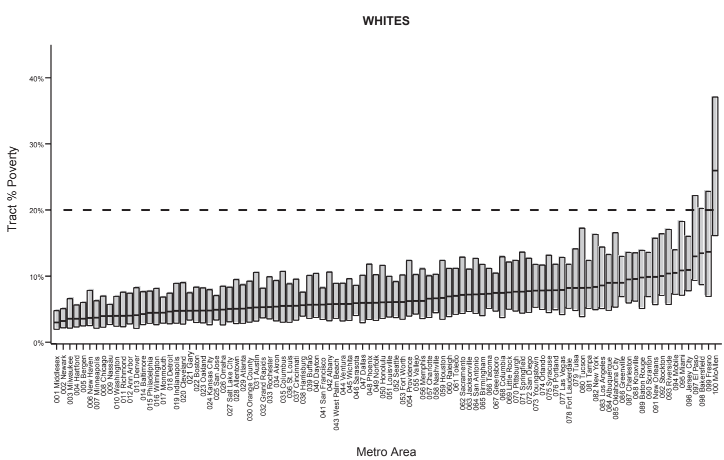


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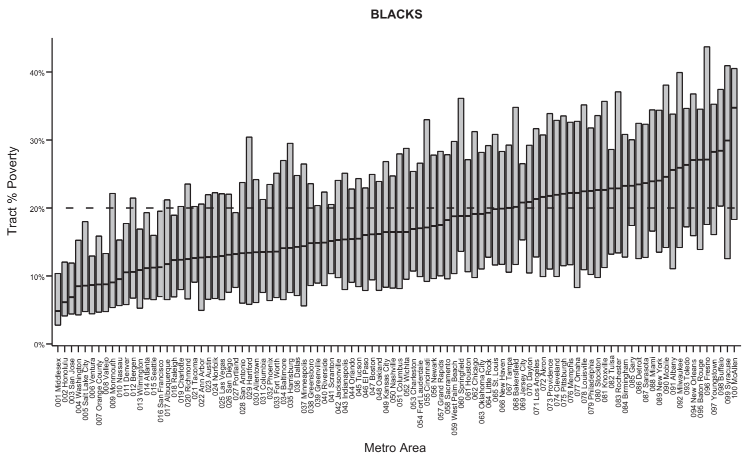
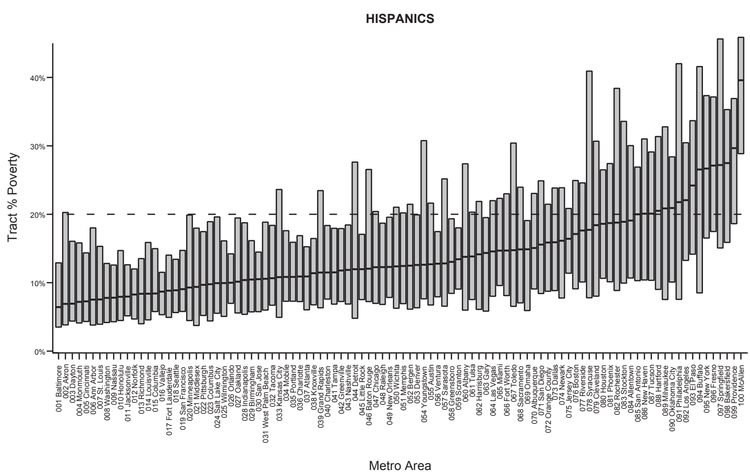
Figure 2 (continued)





these MAs, the IQR of Whites barely overlaps the IQR of Blacks for neighborhood poverty. The IQR-OS equals 1.22 for the Black-White percentage point and 1.16 for Hispanic-White percentage point overlap of neighborhood poverty. This translates into 27% of each minority distribution overlapping

(text continues on p. 24)

Table 2
Racial and Ethnic Overlap of Neighborhood Poverty for 100 largest Metropolitan Areas (MAs) in 2000

	Ranked Alphabetically				Ranked by Black-White IQR-OS		Ranked by Black-White Percentage Overlap		Ranked by Hispanic-White IQR-OS		Ranked by Hispanic-White Percentage Overlap	
	White-Black		White-Hispanic		White-Black		White-Black		White-Hispanic		White-Hispanic	
MA Name	IQR-OS	% Overlap	IQR-OS	% Overlap	MA Name	IQR-OS	MA Name	% Overlap	MA Name	IQR-OS	MA Name	% Overlap
Average for 100 MAs	1.2	27.2	1.2	27.1								
Akron, OH	–0.6	24.4	5.5	43.6	Buffalo, NY	–10.2	Gary, IN	12.8	Providence, RI	–6.3	Providence, RI	19.4
Albany, NY	–0.4	24.3	4.6	33.9	Gary, IN	–10.0	Milwaukee, WI	14.4	Hartford, CT	–3.4	Newark, NJ	20.9
Albuquerque, NM	6.7	41.7	4.2	34.8	Milwaukee, WI	–7.6	Buffalo, NY	15.2	Newark, NJ	–2.7	Hartford, CT	21.4
Allentown, PA	3.3	29.4	–1.2	23.2	Toledo, OH	–6.0	Newark, NJ	16.1	New Haven, CT	–2.6	Springfield, MA	22.8
Ann Arbor, MI	2.5	31.9	3.6	39.3	Detroit, MI	–5.1	Detroit, MI	17.2	Springfield, MA	–1.4	New Haven, CT	22.9
Atlanta, GA	2.0	30.4	2.6	32.4	Newark, NJ	–4.6	Youngstown, OH	18.6	Allentown, PA	–1.2	Allentown, PA	23.2
Austin, TX	4.0	32.6	3.8	32.6	Youngstown, OH	–4.3	Chicago, IL	18.8	Milwaukee, WI	–1.0	Boston, MA	23.2
Bakersfield, CA	8.5	39.0	4.3	28.8	Sarasota, FL	–4.1	Sarasota, FL	19.6	Boston, MA	–0.8	Milwaukee, WI	24.0
Baltimore, MD	1.1	26.9	4.1	40.2	New Haven, CT	–3.9	New Haven, CT	20.3	New York, NY	–0.2	Bergen, NJ	24.3
Baton Rouge, LA	0.0	24.7	6.7	40.7	Rochester, NY	–3.5	Toledo, OH	20.4	Bergen, NJ	–0.1	New York, NY	24.5
Bergen, NJ	–0.8	22.8	–0.1	24.3	St. Louis, MO	–2.8	Rochester, NY	20.5	Chicago, IL	0.0	Chicago, IL	25.0
Birmingham, AL	–1.0	22.6	6.0	41.1	Chicago, IL	–2.8	St. Louis, MO	20.8	Philadelphia, PA	0.2	Philadelphia, PA	25.5
Boston, MA	–1.1	22.4	–0.8	23.2	Philadelphia, PA	–2.5	Grand Rapids, MI	21.4	Orange County, CA	0.5	Orange County, CA	26.1

(continued)

Table 2 (continued)

	Ranked Alphabetically				Ranked by Ranked by Black-White IQR-OS		Ranked by Black-White Percentage Overlap		Ranked by Hispanic-White IQR-OS		Ranked by Hispanic-White Percentage Overlap	
	White-Black		White-Hispanic		White-Black		White-Black		White-Hispanic		White-Hispanic	
MA Name	IQR-OS	% Overlap	IQR-OS	% Overlap	MA Name	IQR-OS	MA Name	% Overlap	MA Name	IQR-OS	MA Name	% Overlap
Buffalo, NY	–10.2	15.2	1.6	27.4	Grand Rapids, MI	–1.8	Philadelphia, PA	21.8	Cleveland, OH	1.0	Cleveland, OH	26.4
Charleston, SC	2.8	32.4	6.0	43.5	West Palm Beach, FL	–1.4	Cleveland, OH	22.0	Ventura, CA	1.0	Los Angeles, CA	26.5
Charlotte, NC	2.0	31.6	2.8	33.3	Boston, MA	–1.1	Boston, MA	22.4	Middlesex, NJ	1.0	Rochester, NY	26.6
Chicago, IL	–2.8	18.8	0.0	25.0	Birmingham, AL	–1.0	Birmingham, AL	22.6	Rochester, NY	1.0	Ventura, CA	27.1
Cincinnati, OH	0.3	26.7	5.2	43.4	Cleveland, OH	–1.0	Bergen, NJ	22.8	Los Angeles, CA	1.1	Phoenix, AZ	27.2
Cleveland, OH	–1.0	22.0	1.0	26.4	Louisville, KY	–0.9	West Palm Beach, FL	22.8	San Jose, CA	1.3	Buffalo, NY	27.4
Columbia, SC	5.3	34.7	7.1	48.4	Bergen, NJ	–0.8	Louisville, KY	23.9	Dallas, TX	1.3	Dallas, TX	28.0
Columbus, OH	2.5	27.7	6.3	40.2	Little Rock, AR	–0.6	Kansas City, KS	24.1	Nassau, NY	1.4	Houston, TX	28.0
Dallas, TX	3.0	31.2	1.3	28.0	Akron, OH	–0.6	Memphis, TN	24.1	Harrisburg, VA	1.5	San Antonio, TX	28.3
Dayton, OH	–0.1	24.6	6.0	44.9	Memphis, TN	–0.6	Albany, NY	24.3	Buffalo, NY	1.6	Bakersfield, CA	28.8
Denver, CO	2.4	30.7	1.9	29.6	Albany, NY	–0.4	Akron, OH	24.4	Gary, IN	1.6	Middlesex, NJ	28.9
Detroit, MI	–5.1	17.2	2.6	33.3	Kansas City, MO	–0.4	Little Rock, AR	24.4	Phoenix, AZ	1.7	Denver,CO	29.6
El Paso, TX	14.3	46.0	8.0	33.6	Mobile, AL	–0.2	Dayton, OH	24.6	Houston, TX	1.7	San Jose, CA	30.1
Fort Lauderdale, FL	1.9	28.5	6.9	47.2	Hartford, CT	–0.2	Hartford, CT	24.6	Minneapolis, MN	1.8	Fresno, CA	30.2
Fort Worth, TX	3.3	33.1	2.0	30.4	New Orleans, LA	–0.2	Baton Rouge, LA	24.7	Grand Rapids, MI	1.8	Fort Worth, TX	30.4
Fresno, CA	5.3	29.2	5.3	30.2	Dayton, OH	–0.1	Mobile, AL	24.8	Denver, CO	1.9	Harrisburg, PA	30.4
Gary, IN	–10.0	12.8	1.6	30.6	Baton Rouge, LA	0.0	New Orleans, LA	24.8	Greensboro, NC	2.0	Gary, IN	30.6
Grand Rapids, MI	–1.8	21.4	1.8	30.6	Harrisburg, PA	0.0	Nassau, NY	25.2	Sarasota, FL	2.0	Grand Rapids, MI	30.6

(continued)

Table 2 (continued)

	Ranked Alphabetically				Ranked by Ranked by Black-White IQR-OS		Ranked by Black-White Percentage Overlap		Ranked by Hispanic-White IQR-OS		Ranked by Hispanic-White Percentage Overlap	
	White-Black		White-Hispanic		White-Black		White-Black		White-Hispanic		White-Hispanic	
MA Name	IQR-OS	% Overlap	IQR-OS	% Overlap	MA Name	IQR-OS	MA Name	% Overlap	MA Name	IQR-OS	MA Name	% Overlap
Greensboro, NC	1.8	31.0	2.0	31.6	Springfield, MA	0.0	Wichita, KS	25.2	Fort Worth, TX	2.0	Omaha, NE	30.8
Greenville, SC	4.0	35.3	5.7	39.9	Nassau, NY	0.1	Harrisburg, PA	25.3	San Antonio, TX	2.4	Sarasota, FL	31.3
Harrisburg, PA	0.0	25.3	1.5	30.4	Wichita, KS	0.1	Springfield, MA	25.3	San Francisco, CA	2.4	Greensboro, NC	31.6
Hartford, CT	–0.2	24.6	–3.4	21.4	Omaha, NE	0.2	Jersey City, NJ	25.6	Omaha, NE	2.5	Minneapolis, MN	31.6
Honolulu, HI	7.5	49.4	7.1	43.3	Oakland, CA	0.3	Oakland, CA	25.7	Detroit, MI	2.6	Oklahoma City, OK	32.1
Houston, TX	1.7	27.8	1.7	28.0	Cincinnati, OH	0.3	Omaha, NE	25.7	Atlanta, GA	2.6	Nassau, NY	32.3
Indianapolis, IN	0.9	26.7	3.5	33.0	Syracuse, NY	0.6	Syracuse, NY	25.8	Oakland, CA	2.6	Wichita, KS	32.3
Jacksonville, FL	1.3	28.3	5.9	48.0	Minneapolis, MN	0.7	Pittsburgh, PA	26.1	Monmouth, NJ	2.7	Atlanta, GA	32.4
Jersey City, NJ	0.7	25.6	4.6	34.9	Jersey City, NJ	0.7	Tulsa, OK	26.2	Washington, D.C.	2.8	Austin, TX	32.6
Kansas City, KS	–0.4	24.1	3.0	33.4	Pittsburgh, PA	0.9	Cincinnati, OH	26.7	Salt Lake City, UT	2.8	Tucson, AZ	32.6
Knoxville, TN	2.3	29.2	6.7	43.3	Indianapolis, IN	0.9	Indianapolis, IN	26.7	Charlotte, NC	2.8	Oakland, CA	32.7
Las Vegas, NV	6.3	38.0	4.8	35.2	Tulsa, OK	0.9	Providence, RI	26.7	West Palm Beach, FL	2.9	Indianapolis, IN	33.0
Little Rock, AR	–0.6	24.4	4.6	38.2	Richmond, VA	1.0	Minneapolis, MN	26.8	Kansas City, KS	3.0	San Diego, CA	33.0
Los Angeles, CA	1.6	27.0	1.1	26.5	Baltimore, MD	1.1	Baltimore, MD	26.9	Wilmington, DE	3.0	Charlotte, NC	33.3
Louisville, KY	–0.9	23.9	5.4	42.7	San Francisco, CA	1.2	Los Angeles, CA	27.0	Wichita, KS	3.3	Detroit, MI	33.3
McAllen, TX	18.8	39.8	8.2	34.7	Jacksonville, FL	1.3	Miami, FL	27.0	Nashville, TN	3.4	Kansas City, KS	33.4
Memphis, TN	–0.6	24.1	4.1	35.3	Providence, RI	1.3	Columbus, OH	27.7	Seattle, WA	3.5	El Paso, TX	33.6
Miami, FL	1.7	27.0	8.7	42.0	Monmouth, NJ	1.5	Houston, TX	27.8	Indianapolis, IN	3.5	Albany, NY	33.9

(continued)

Table 2 (continued)

	Ranked Alphabetically				Ranked by Ranked by Black-White IQR-OS		Ranked by Black-White Percentage Overlap		Ranked by Hispanic-White IQR-OS		Ranked by Hispanic-White Percentage Overlap	
	White-Black		White-Hispanic		White-Black		White-Black		White-Hispanic		White-Hispanic	
MA Name	IQR-OS	% Overlap	IQR-OS	% Overlap	MA Name	IQR-OS	MA Name	% Overlap	MA Name	IQR-OS	MA Name	% Overlap
Middlesex, NJ	2.0	36.0	1.0	28.9	Los Angeles, CA	1.6	New York, NY	28.0	Richmond, VA	3.6	Salt Lake City, UT	33.9
Milwaukee, WI	–7.6	14.4	–1.0	24.0	Miami, FL	1.7	San Francisco, CA	28.0	Ann Arbor, MI	3.6	West Palm Beach, FL	34.2
Minneapolis, MN	0.7	26.8	1.8	31.6	Houston, TX	1.7	Jacksonville, FL	28.3	Austin, TX	3.8	Nashville, TN	34.4
Mobile, AL	–0.2	24.8	6.7	48.6	Tampa, FL	1.8	Tampa, FL	28.4	Baltimore, MD	4.1	Washington, D.C.	34.4
Monmouth, NJ	1.5	28.8	2.7	36.6	Greensboro, NC	1.8	Fort Lauderdale, FL	28.5	Youngstown, OH	4.1	Wilmington, DE	34.6
Nashville, TN	2.1	29.2	3.4	34.4	Fort Lauderdale, FL	1.9	Monmouth, NJ	28.8	Memphis, TN	4.1	McAllen, TX	34.7
Nassau, NY	0.1	25.2	1.4	32.3	Middlesex, NJ	2.0	Richmond, VA	28.9	Albuquerque, NM	4.2	Albuquerque, NM	34.8
New Haven, CT	–3.9	20.3	–2.6	22.9	Charlotte, NC	2.0	Fresno, CA	29.2	San Diego, CA	4.3	Jersey City, NJ	34.9
New Orleans, LA	–0.2	24.8	7.9	41.8	Atlanta, GA	2.0	Knoxville, TN	29.2	Raleigh, NC	4.3	Richmond, VA	34.9
New York, NY	2.8	28.0	–0.2	24.5	Nashville, TN	2.1	Nashville, TN	29.2	Bakersfield, CA	4.3	Stockton, CA	34.9
Newark, NJ	–4.6	16.1	–2.7	20.9	Tacoma, WA	2.1	Orlando, FL	29.3	Tacoma, WA	4.4	Las Vegas, NV	35.2
Norfolk, VA	3.5	32.8	5.5	42.7	Knoxville, TN	2.3	Allentown, PA	29.4	Scranton, PA	4.5	Memphis, TN	35.3
Oakland, CA	0.3	25.7	2.6	32.7	Denver, CO	2.4	Atlanta, GA	30.4	Portland, OR	4.5	Syracuse, NY	35.3
Oklahoma City, OK	5.5	33.0	6.4	32.1	Ann Arbor, MI	2.5	Denver, CO	30.7	Little Rock, AR	4.6	Sacramento, CA	35.4
Omaha, NE	0.2	25.7	2.5	30.8	Columbus, OH	2.5	Greensboro, NC	31.0	Albany, NY	4.6	Raleigh, NC	35.8
Orange County, CA	4.6	38.3	0.5	26.1	Orlando, FL	2.6	Dallas, TX	31.2	Toledo, OH	4.6	Youngstown, OH	35.8
Orlando, FL	2.6	29.3	4.7	40.5	San Jose, CA	2.6	Sacramento, CA	31.3	Jersey City, CA	4.6	San Francisco, CA	35.9

(continued)

Table 2 (continued)

	Ranked Alphabetically				Ranked by Ranked by Black-White IQR-OS		Ranked by Black-White Percentage Overlap		Ranked by Hispanic-White IQR-OS		Ranked by Hispanic-White Percentage Overlap	
	White-Black		White-Hispanic		White-Black		White-Black		White-Hispanic		White-Hispanic	
MA Name	IQR-OS	% Overlap	IQR-OS	% Overlap	MA Name	IQR-OS	MA Name	% Overlap	MA Name	IQR-OS	MA Name	% Overlap
Philadelphia, PA	–2.5	21.8	0.2	25.5	Seattle, WA	2.6	Charlotte, NC	31.6	Orlando, FL	4.7	Riverside, CA	36.2
Phoenix, AZ	5.4	34.1	1.7	27.2	Washington, D.C.	2.7	Ann Arbor, MI	31.9	Las Vegas, NV	4.8	Monmouth, NJ	36.6
Pittsburgh, PA	0.9	26.1	7.2	44.4	New York, NY	2.8	Seattle, WA	32.3	Vallejo, CA	4.9	Seattle, WA	37.7
Portland, OR	3.5	33.2	4.5	38.7	Wilmington, DE	2.8	Charleston, SC	32.4	St. Louis, MO	4.9	Tulsa, OK	37.9
Providence, RI	1.3	26.7	–6.3	19.4	Charleston, SC	2.8	Austin, TX	32.6	Cincinnati, OH	5.2	Toledo, OH	38.1
Raleigh, NC	4.2	35.9	4.3	35.8	Dallas, TX	3.0	Wilmington, DE	32.6	Fresno, CA	5.3	Little Rock, AR	38.2
Richmond, VA	1.0	28.9	3.6	34.9	Scranton, PA	3.2	Norfolk, VA	32.8	Syracuse, NY	5.4	Scranton, PA	38.2
Riverside, CA	8.5	38.8	6.9	36.2	Sacramento, CA	3.3	Oklahoma City, OK	33.0	Louisville, KY	5.4	Tampa, FL	38.4
Rochester, NY	–3.5	20.5	1.0	26.6	Fort Worth, TX	3.3	Fort Worth, TX	33.1	Tampa, FL	5.5	Portland, OR	38.7
Sacramento, CA	3.3	31.3	5.8	35.4	Allentown, PA	3.3	Portland, OR	33.2	Akron, OH	5.5	Tacoma, WA	38.8
St. Louis, MO	–2.8	20.8	4.9	42.2	Portland, OR	3.5	Tacoma, WA	33.7	Norfolk, VA	5.5	Vallejo, CA	39.1
Salt Lake City, UT	3.5	35.8	2.8	33.9	Norfolk, VA	3.5	Washington, D.C.	33.9	Greenville, SC	5.7	Ann Arbor, MI	39.3
San Antonio, TX	6.6	37.5	2.4	28.3	Salt Lake City, UT	3.5	Stockton, CA	34.0	Sacramento, CA	5.8	Greenville, SC	39.9
San Diego, CA	5.1	36.1	4.3	33.0	Austin, TX	4.0	Phoenix, AZ	34.1	Jacksonville, FL	5.9	Baltimore, MD	40.2
San Francisco, CA	1.2	28.0	2.4	35.9	Greenville, SC	4.0	Scranton, PA	34.4	Charleston, SC	6.0	Columbus, OH	40.2
San Jose, CA	2.6	38.1	1.3	30.1	Raleigh, NC	4.2	Columbia, SC	34.7	Dayton, OH	6.0	Orlando, FL	40.5
Sarasota, FL	–4.1	19.6	2.0	31.3	Ventura, CA	4.5	Greenville, SC	35.3	Birmingham, AL	6.0	Baton Rouge, LA	40.7
Scranton, PA	3.2	34.4	4.5	38.2	Orange County, CA	4.6	Salt Lake City, UT	35.8	Columbus, OH	6.3	Birmingham, AL	41.1

(continued)

Table 2 (continued)

	Ranked Alphabetically				Ranked by Ranked by Black-White IQR-OS		Ranked by Black-White Percentage Overlap		Ranked by Hispanic-White IQR-OS		Ranked by Hispanic-White Percentage Overlap	
	White-Black		White-Hispanic		White-Black		White-Black		White-Hispanic		White-Hispanic	
MA Name	IQR-OS	% Overlap	IQR-OS	% Overlap	MA Name	IQR-OS	MA Name	% Overlap	MA Name	IQR-OS	MA Name	% Overlap
Seattle, WA	2.6	32.3	3.5	37.7	San Diego, CA	5.1	Raleigh, NC	35.9	Stockton, CA	6.4	New Orleans, LA	41.8
Springfield, MA	0.0	25.3	–1.4	22.8	Fresno, CA	5.3	Middlesex, NJ	36.0	Oklahoma City, OK	6.4	Miami, FL	42.0
Stockton, CA	6.6	34.0	6.4	34.9	Columbia, SC	5.3	San Diego, CA	36.1	Tulsa, OK	6.6	St. Louis, MO	42.2
Syracuse, NY	0.6	25.8	5.4	35.3	Phoenix, AZ	5.4	Tucson, AZ	36.9	Baton Rouge, LA	6.7	Louisville, KY	42.7
Tacoma, WA	2.1	33.7	4.4	38.8	Vallejo, CA	5.4	San Antonio, TX	37.5	Mobile, AL	6.7	Norfolk, VA	42.7
Tampa, FL	1.8	28.4	5.5	38.4	Oklahoma City, OK	5.5	Las Vegas, NV	38.0	Knoxville, TN	6.7	Honolulu, HI	43.3
Toledo, OH	–6.0	20.4	4.6	38.1	Las Vegas, NV	6.3	San Jose, CA	38.1	Fort Lauderdale, FL	6.9	Knoxville, TN	43.3
Tucson, AZ	8.8	36.9	6.9	32.6	Stockton, CA	6.6	Ventura, CA	38.2	Tucson, AZ	6.9	Cincinnati, OH	43.4
Tulsa, OK	0.9	26.2	6.6	37.9	San Antonio, TX	6.6	Orange County, CA	38.3	Riverside, CA	6.9	Charleston, SC	43.5
Vallejo, CA	5.4	43.8	4.9	39.1	Albuquerque, NM	6.7	Riverside, CA	38.8	Columbia, SC	7.1	Akron, OH	43.6
Ventura, CA	4.5	38.2	1.0	27.1	Honolulu, HI	7.5	Bakersfield, CA	39.0	Honolulu, HI	7.1	Pittsburgh, PA	44.4
Washington, D.C.	2.7	33.9	2.8	34.4	Riverside, CA	8.5	McAllen, TX	39.8	Pittsburgh, PA	7.2	Dayton, OH	44.9
West Palm Beach, FL	–1.4	22.8	2.9	34.2	Bakersfield, CA	8.5	Albuquerque, NM	41.7	New Orleans, LA	7.9	Fort Lauderdale, FL	47.2
Wichita, KS	0.1	25.2	3.3	32.3	Tucson, AZ	8.8	Vallejo, CA	43.8	El Paso, TX	8.0	Jacksonville, FL	48.0
Wilmington, DE	2.8	32.6	3.0	34.6	El Paso, TX	14.3	El Paso, TX	46.0	McAllen, TX	8.2	Columbia, SC	48.4
Youngstown, OH	–4.3	18.6	4.1	35.8	McAllen, TX	18.8	Honolulu, HI	49.4	Miami, FL	8.7	Mobile, AL	48.6

Note: The IQR-OS denotes the number of percentage points of the neighborhood poverty distribution that the two groups' IQRs overlap. Negative values indicate that there is no IQR overlap and that there is a separation of the IQRs of the two distributions by the absolute value of the IQR-OS. Positive values indicate that the IQRs from the two distributions overlap by that number of points. The distributional overlap measure indicates the proportion of each distribution that one group overlaps the other, based on the inflection point in the distribution where the proportion of the White distribution falling above a certain line equals the proportion of the minority distribution falling below that line.

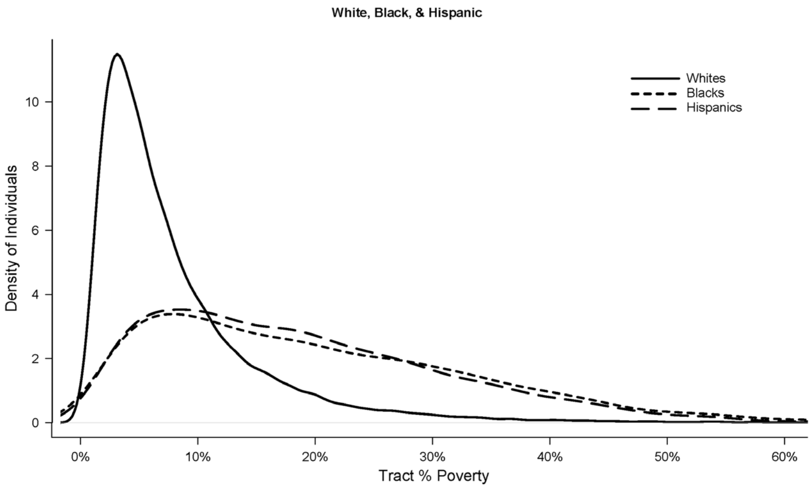
the Whites' distribution. However, there was variability across the nation. As seen in column 2 of Table 2 ("Ranked by Black-White IQR-OS"), the MAs with the least amount of Black-White IQR-OS overlap in neighborhood poverty were Buffalo, New York (–10.2); Gary, Indiana (–10.0); Milwaukee, Wisconsin (–7.6); Toledo, Ohio (–6.0); and Detroit, Michigan (–5.1). As seen in column 3, the places with the lowest distributional overlap between Blacks and Whites with respect to neighborhood poverty were Gary, Indiana (12.8%); Milwaukee, Wisconsin (14.4%); Buffalo, New York (15.2%); Newark, New Jersey (16.1%); and Detroit, Michigan (17.2%). As seen in column 4, For Hispanic-White overlap, the most unequal IQR-OS MAs were Providence, Rhode Island (–6.3); Hartford, Connecticut (–3.4); Newark, New Jersey (–2.7); New Haven, Connecticut (–2.6); and Springfield, MA (-1.4). As seen in column 5, on the distributional overlap measure for Hispanics versus Whites, the most unequal MAs were Providence, Rhode Island (19.4%); Newark, New Jersey (20.9%); Hartford, Connecticut (21.4%); Springfield, MA (22.8%); and New Haven, Connecticut (22.9%). The two measures (IQR-OS and percentage distributional overlap) were strongly positively correlated (Blacks = .97, $p < .0001$; Hispanics = .85, $p < .0001$).

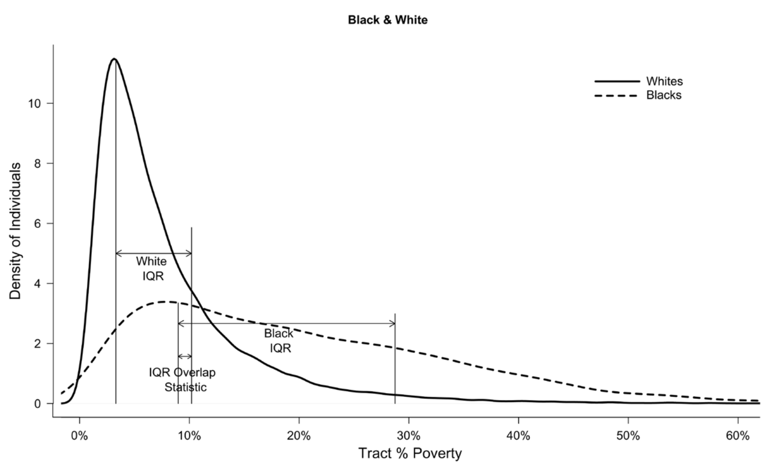
There was relatively little overlap between minorities and Whites for neighborhood poverty in the majority of MAs. As column 2 of Table 2 shows, in 32 MAs, or one third of MAs, the Black and White neighborhood poverty IQRs do not overlap. Seventy-two MAs had an overlap of 3 points or fewer between the Black and White IQR of neighborhood poverty, and 84 MAs had overlap of 5 points or fewer. Therefore, the degree of Black-White IQR overlap was nil or small for the vast majority of the largest 100 MAs. Only 11 of these MAs had no IQR overlap between Hispanics and Whites, and 70 MAs had less than 5 points of Hispanic-White overlap.

Graphs

Figure 3 depicts the distribution of actual neighborhood poverty values using density curves. Figure 3a depicts the neighborhood poverty values (density) for all three racial-ethnic groups. The Black and Hispanic distributions are very similar and different from that of Whites. In Figure 3a, the solid Black line denotes a tall-thin distribution of neighborhood poverty for Whites, indicating that the vast majority of Whites in the United States live in low-poverty neighborhoods. The broad-short distributions with heavy right tails for minorities denoted by the dashed lines indicate that minorities

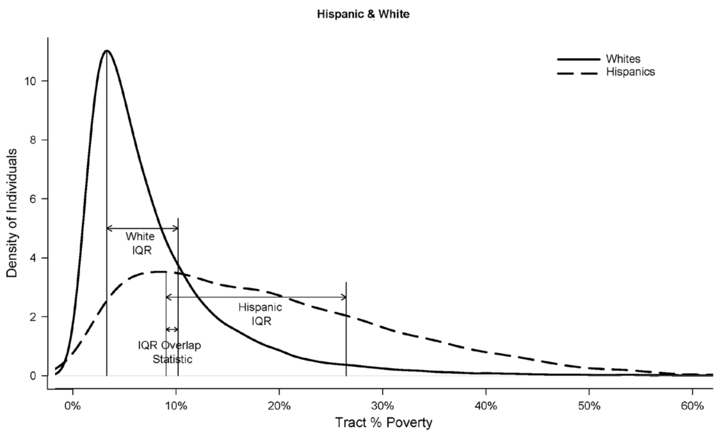
Figure 3
Density Graphs: Distributions of Neighborhood Poverty by Race and Ethnicity, 100 Largest Metropolitan Areas.





(continued)

Figure 3 (continued)

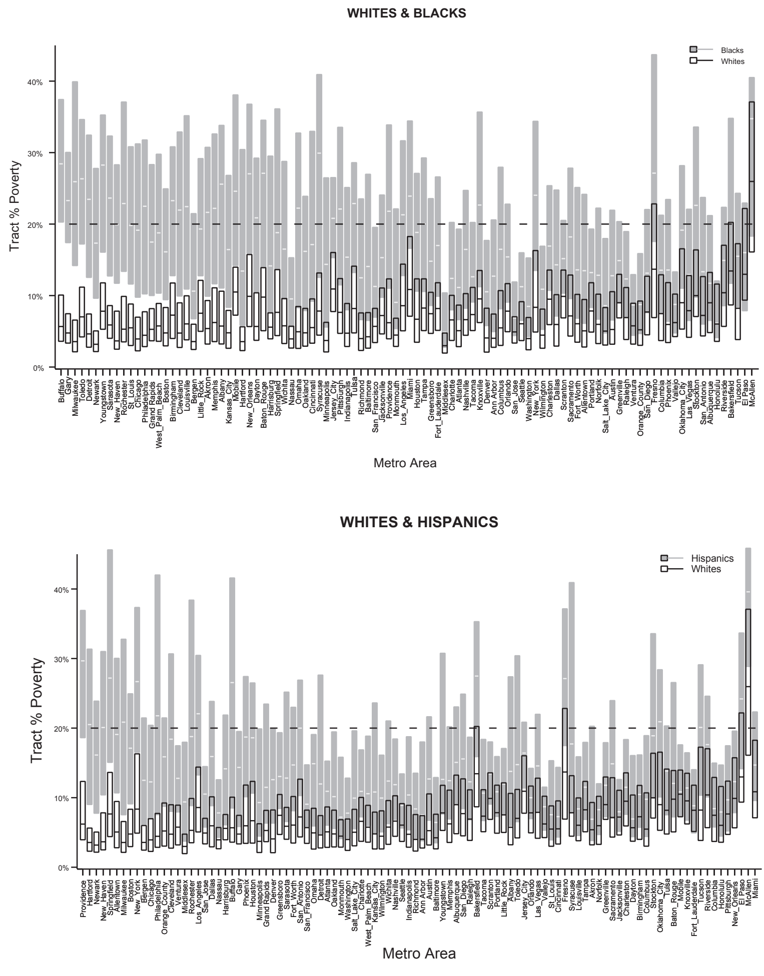


Note: We used kernel density estimation with a Gaussean smoothing kernel, a smoothing technique to estimate the relative probabilities of each neighborhood poverty value.

are more likely to live in higher poverty neighborhoods and their distributions are much broader. Figures 3b and 3c depict the densities for two groups (White, minority) with the quartiles and IQR-OS marked with vertical lines; these figures denote the small amount of IQR overlap in neighborhood poverty between minorities and Whites.

Figures 4a and 4b illustrate the racial nonoverlap of many of the IQRs of neighborhood poverty with boxplots. The two boxes in the same vertical column indicate two race-specific neighborhood poverty distributions for the same MA, ranked by the IQR-OS. For example in Figure 4a, the leftmost column indicates the Black and White distributions (IQRs) of neighborhood poverty for Buffalo, NY. The black-outline box (with no fill) is the White IQR, and the gray-filled box is the Black IQR. This figure illustrates the nonoverlap of IQRs if the White box (denoted by the solid Black line) is hollow (e.g., as we see for Buffalo and for MAs on the left). One third (n = 32) of MAs display nonoverlapping IQRs (a visual depiction of Table 2, column 2) between Blacks and Whites. The higher medians and much wider IQRs for minorities (vs. Whites) are also apparent in these figures. For example, in one third of MAs, the median neighborhood poverty for Blacks is above the 20% threshold, whereas the median for Whites is never

Figure 4
Boxplots: White and Minority Group Interquartile Range Overlap of Neighborhood Poverty for 100 Largest Metropolitan Areas, Ranked by the IQR-OS



above this threshold. Indeed, the White third quartile is only above 20% in only 4 of 100 MAs. So in most MAs, the vast majority of Whites live well below the high-poverty threshold, although this is not the case for Blacks.

Associations Between Separateness of Neighborhood Poverty Distributions and MA Segregation and Poverty

Correlation analysis. The correlation analyses (Table 3, column 1) demonstrate that MAs with higher racial-ethnic separation of neighborhood poverty distributions (MAs scoring low on the IQR overlap measure) were higher for racial residential segregation. Spearman correlations were very high for IQR-OS with dissimilarity scores (Black-White dissimilarity= –.83, $p < .001$; Hispanic-White dissimilarity = –.80, $p < .001$), and with Black isolation (rho = –.66, $p < .001$), although lower for Hispanic isolation (rho = –.38, $p < .001$). The IQR-OS was also positively correlated between minority groups (rho = 0.34, $p < .001$). The moderate magnitude of this correlation, however, suggests different patterns by racial-ethnic minority group across the United States, so that areas that have large nonoverlap for Blacks (vs. Whites) may be areas that have only moderate nonoverlap for Hispanics (vs. Whites).

MAs with more racial overlap in neighborhood poverty had lower medians and smaller variance for minority neighborhood poverty and higher median and larger variance for White neighborhood poverty. MAs with more racial overlap in neighborhood poverty distributions were also more likely to have smaller absolute populations of minorities (not shown), smaller proportions of minorities, higher minority suburbanization, and lower proportions of older housing.

Multiple linear regression analyses. The associations between higher racial residential segregation and lower neighborhood poverty overlap maintained in the presence of other metropolitan demographic and income variables. For example, a 10-point increase in Black-White dissimilarity was associated with a 2.14 point decrease in neighborhood poverty overlap between Blacks and Whites (Table 3, Model 1). The coefficients for Black isolation (Model 2) and Hispanic-White dissimilarity (Model 3) were comparable in magnitude to that of Black-White dissimilarity, although the coefficient for Hispanic isolation (Model 4) was about 29% smaller. The segregation regression coefficients were all negative and replicate the correlation analyses.

Discussion

Although limited prior work has situated neighborhood quality and racial inequality within a distributional framework, such an approach

Table 3
Analyses With Metropolitan Area Interquartile Range Overlap Statistic of Neighborhood Poverty Distributions (*N* = 100 Metropolitan Areas)

	Black-White IQR-OS					Hispanic-White IQR-OS				
	Correlation With Black-White IQR-OS	Multiple Regression				Correlation With Hispanic-White IQR-OS	Multiple Regression			
		Model 1		Model 2			Model 3		Model 4	
	Rho	Beta	*SE*	Beta	*SE*	Rho	Beta	*SE*	Beta	*SE*
Minority-White dissimilarity[a]	–0.83***	–21.40***	3.05	—	—	–0.80***	–23.99***	2.63	—	—
Minority isolation[a]	–0.66***	—	—	–22.41***	3.12	–0.38***	—	—	–15.14***	3.31
Population size (log)	–0.02	0.64*	0.28	1.03**	0.30	–0.31**	–0.02	0.20	–0.77***	0.22
% minority[a]	–0.39***	–5.02	3.19	20.66***	5.47	–0.23*	1.44	1.52	13.65**	4.16
Growth in minority population 1990–2000[a]	0.41***	1.67	1.33	–1.03	1.42	0.06	0.00	0.23	–0.63*	0.29
% suburban among minorities[a]	0.21*	0.74	0.92	1.47	0.93	0.24*	0.80	0.56	1.10	0.70
% foreign born	0.40***	–1.12	3.04	0.55	3.07	–0.26**	5.29**	1.81	7.61**	2.36
% housing units built before 1990	–0.49***	2.34	4.40	–2.16	4.36	–0.40***	–0.18	2.25	–9.00**	2.76
Region: Northeast	NA	–0.86	0.60	–1.75**	0.64	NA	–0.76	0.56	–0.88	0.73
Region: South	NA	–0.40	0.70	–0.74	0.72	NA	–0.24	0.49	–0.35	0.67
Region: West	NA	–2.29*	0.95	–3.65***	1.05	NA	–0.40	0.47	–0.40	0.63
% population below poverty	0.21*	59.49**	17.47	16.26	18.53	0.46***	4.16	9.23	–6.82	12.15
% of minority population below poverty[a]	–0.40***	–28.93*	11.47	–21.32†	11.66	–0.12	2.58	8.29	–2.41	10.42

(continued)

Table 3 (continued)

	Black-White IQR-OS					Hispanic-White IQR-OS				
	Correlation With Black-White IQR-OS	Multiple Regression				Correlation With Hispanic-White IQR-OS	Multiple Regression			
		Model 1		Model 2			Model 3		Model 4	
	Rho	Beta	*SE*	Beta	*SE*	Rho	Beta	*SE*	Beta	*SE*
Median income total population	–0.07	–0.48	0.68	–1.76*	0.69	–0.57***	–1.14†	0.66	–2.72***	0.79
Median income, minorities[a]	0.48***	0.47	0.87	0.63	0.86	–0.07	0.63	0.95	2.01†	1.17
Neighborhood poverty median, total population	0.44***	—	—	—	—	0.57***	—	—	—	—
Neighborhood poverty IQR, total population	0.17†	—	—	—	—	0.23*	—	—	—	—
Neighborhood poverty median, Whites	0.44***	—	—	—	—	0.66***	—	—	—	—
Neighborhood poverty IQR, Whites	0.48***	—	—	—	—	0.57***	—	—	—	—
Neighborhood poverty median, minorities[a]	–0.50***	—	—	—	—	–0.29**	—	—	—	—
Neighborhood poverty IQR, minorities[a]	–0.41***	—	—	—	—	–0.30**	—	—	—	—

Note: IQR = Interquartile Range; IQR-OS = Interquartile Range Overlap Statistic; all proportion and segregation variables are coded from 0 to 1 (a 1-point increase is interpreted as an increase from 0% to 100%); Median income: 1-point increase is associated with a $10,000 increase. Percentage growth variables: 100% growth is coded as 1, 200% growth is coded as 2, etc. The log of MA population size ranges from 13.2 to 16.1. The reference group for the region indicator variable is the Midwest. Regression analyses are weighted by the MA population size. Neighborhood poverty median and IQR variables were not included in the regression analyses because the IQR-OS is a function of these numbers computationally. Higher values of IQR-OS indicate greater degree of overlap of neighborhood poverty distributions between racial and ethnic groups.

a. "Minority" and "Minorities" refers to Blacks in Models 1 through 2 and refers to Hispanics in Models 3 through 4.

†$p < .10$. ***$p < .001$. **$p < .01$. *$p < .05$.

emphasizes the vast racial-ethnic imbalance of distributions of neighborhood environment in a way that may be more powerful than means or proportions. Our analysis yields three principal findings: (1) the distributions of neighborhood poverty are substantially separate between racial minorities and Whites indicating separate neighborhood opportunity spaces; (2) this separation of neighborhood context is strongly associated with residential segregation; and (3) minorities exhibit a much larger amount of variation in neighborhood context than do Whites.

Substantial Racial-ethnic Separateness of Neighborhood Poverty Distributions

First, not only do Blacks and Hispanics exhibit considerably worse average (mean) neighborhood environment compared to Whites (consistent with prior studies; Logan 2002; Massey and Fischer 2000), but we found that the central 50% of the Black and Hispanic populations (IQRs) also face a considerably worse neighborhood opportunity space than Whites, indicated by the limited overlap of neighborhood poverty between Whites and minorities in terms of this opportunity space. On average across these 100 largest MAs, the minority and White distributions each overlapped the other only 27%, indicated by an IQR-OS that barely exceeds zero. In fully one third of these metro areas, the Black and White IQRs did not overlap for neighborhood poverty. These results indicate insubstantial overlap of neighborhood opportunity spaces between minorities and Whites, indicating a much different, considerably worse universe of neighborhood quality for minorities.

Traditional applications of the exposure statistic use the mean, which may be limited for understanding the extent to which the entire distribution is different between two groups, since two places may have the same mean but very different distributional spread. For example, in both Syracuse and Buffalo, New York, Blacks live on average in neighborhoods with 28.6% poverty (the exposure measure mean); but the IQR of neighborhood poverty is over 50% higher for Syracuse (28.4), as compared with Buffalo (17.1). Due to the differential Black spread, combined with the distributions for Whites, Buffalo attains the most unequal IQR-OS of White-Black neighborhood poverty, whereas Syracuse falls in the middle. Alternately, two places may have very different means of neighborhood poverty but still overlap substantially. For example, in Bakersfield, California, the neighborhood poverty mean for Blacks is 23%, compared to 15% for Whites. But there is high overlap (IQR-OS = 8.5) due to the larger than normal dispersion for both racial groups.

Segregation

Second, although the patterns on average indicate separate neighborhood environments by race, there was considerable variation across MAs; and this variation was strongly correlated with residential segregation, before and after adjusting for metropolitan covariates. As argued by Massey and Fischer (2000), in the presence of low racial segregation, few residents live in high-poverty neighborhoods. But as segregation increases, the numbers of neighborhoods and residents in high-poverty neighborhoods increase. These patterns may be driven by income generation and neighborhood sorting (economic and racial residential segregation; Jargowsky 1997).

Although prior demographic literature has found that average neighborhood environments are worse for minorities (based on exposure measures; Logan 2002; Massey and Fischer 2000), and although segregation literature finds that minorities live in separate neighborhoods than Whites (e.g., unevenness; Iceland, Weinberg, and Steinmetz 2002) and that Blacks exhibit simultaneously higher economic and racial segregation than other groups do (Fischer 2003), the overlap statistics provide straightforward metrics for monitoring *why* racial segregation matters. Our measure may therefore be considered a more specific type of segregation index—one that combines MA racial separation with a specific neighborhood characteristic. It can be applied to any continuous neighborhood characteristic to assess other dimensions of neighborhood quality than just percentage poverty.

One compelling finding was that MAs can exhibit a very good universe for one group but a horrible universe for another, as indicated in metros with lack of distributional overlap, where the minority distribution of neighborhood poverty exceeds recognized thresholds for negative social outcomes (e.g., above 20%). This between-racial-group variation within place suggests the potential for change. So even if the distribution of neighborhood poverty were fixed within any given MA (in absolute terms, perhaps because of certain forces generating higher metropolitan poverty), this does not preclude addressing the vast racial-ethnic imbalance in neighborhood poverty within MAs (the relative inequalities). In fact, from a policy perspective, the relative inequality within MAs may be more addressable than the inequality between metro areas, since a range of good-opportunity neighborhoods does exist in most metro areas; it's just that Whites are disproportionately residing in them and minorities are not.

Larger Variance in Neighborhood Opportunity Space for Minorities

Third, we find much larger variation (IQRs over 2.5 times wider) in neighborhood environments for minorities, and conversely, much tighter distributions for Whites. Given the incredible variation in environment experienced by minorities across different places, point estimates of average environment might therefore be more meaningful for Whites than they are for minorities—a methodological rationale to incorporate variance. However, the variation is meaningful substantively, to inform for whom place matters most. Larger variation among minorities indicates that the specific MA within which one lives seems to matter much more for minorities than for Whites, in terms of neighborhood quality. For minorities, some MAs have vastly better opportunity spaces than others, whereas anywhere Whites live seems to be relatively good (small variance around a good mean). For example, the best 10 metro areas for Blacks based on the lowest median neighborhood poverty rate all fell below 10%; whereas in the 10 worst metro areas for Blacks, the median neighborhood poverty was above 25%. These are substantial differences. Our correlation analyses indicated that when minorities are more likely to share the same neighborhood opportunity space (high IQR-OS values), the typical (absolute) neighborhood environment is better for minorities, compared to typical environments when overlap is nil.

Of course it is important to situate this relative variation (among Blacks) in a racial-ethnic comparison, noting that relatively speaking, the vast majority of Whites still live in better neighborhood environments than the vast majority of minorities in the vast majority of areas. For example, in fully one third of metro areas, over half of the Black population lives in neighborhoods with poverty rates exceeding recognized thresholds for adverse social outcomes (e.g., 20%; Galster 2002). On the other hand, only one MA displayed a White median of neighborhood poverty above this threshold, and only four MAs displayed the third quartile of White neighborhood poverty above this threshold. So in most cases, Whites lived well below this threshold.

Larger variation for minorities compared to Whites has been documented for cross-sectional outcomes at the metropolitan and state levels (Acevedo-Garcia, Osypuk, et al. 2003; Osypuk et al. 2006) and for temporal patterns. For example, Galster et al. (2003) found that White neighborhoods were much more likely to exhibit stable neighborhood poverty rates over a 10-year period, compared with Black and Hispanic neighborhoods.

Some literature suggests that larger variance may result from a group with increased vulnerability to external insult. Schmalhousen (1949: 276) notes, "A system on the boundary of its tolerance along any dimension . . . is more vulnerable to small differences in circumstance along any dimension," and this leads to higher variance in outcomes (Galea, Ahern, and Karpati 2005; Levins and Lopez 1999). So an exposure that may have a small effect on a population that is not living "on the edge" may have a large effect on more vulnerable populations: those in household or neighborhood poverty.

Policy Implications

Identifying vulnerable populations has important policy implications. A population's vulnerability (e.g., being more or less susceptible or resilient) may interact with an external insult to produce a certain adverse outcome in the first place, as well as to allow effective recovery from an adverse outcome should the outcome occur. If an effect of some external insult (e.g., a hurricane or the exposure to a certain infectious disease) only emerges in the presence of vulnerability, then the effect may be able to be prevented (e.g., by certain policies) by either preventing the external insult or by decreasing the vulnerability of the population. For example, the social science literature on disasters notes that social vulnerability exacerbates the effects of and recovery from a natural disaster such as a hurricane or earthquake, powerfully illustrated with the impact of Hurricane Katrina on the poor, Black, New Orleans population (Cutter and Emrich 2006). Although the vulnerability of a place includes its physical infrastructure or governmental response, it also includes the composition of its population. Indeed, population socioeconomic composition may be a powerful indicator of social vulnerability; however, we contend that it is not only this absolute level of vulnerability but also the relative vulnerability—inequality—that matters.

Focusing on a specific type of neighborhood such as high-poverty neighborhoods versus examining the entire distribution of neighborhood poverty speaks to different policy implications. Preventing detrimental outcomes may be better achieved by working toward shifting the entire distribution than by focusing on the high-risk end of the distribution (i.e., high-poverty neighborhoods; Rose 1985). One type of intervention to alleviate negative effects of neighborhood poverty targets only high-poverty neighborhoods, many of which are predominantly minority, versus interventions that improve minority access to the full spectrum of neighborhoods across the entire metro area. However a focus on the entire distribution of neighborhood poverty, as we do in this article, is consistent with forces that shape racial-ethnic inequality in metropolitan America. For example, the fragmentation of governance and resulting exclusionary land-use regimes in MAs operates across the entire range of municipalities to reduce housing options for low-income and minority populations (Pendall 2000).

Segregation statistics provide one metric for understanding whether different racial groups live in the same neighborhoods. Yet while neighborhood racial-ethnic integration may be one avenue for achieving better neighborhood environments for minorities, the real priority is to create access for all to communities of opportunity, for good services, amenities, and environments (Briggs 2005). Therefore, calculating MA-specific estimates of the racial separateness of neighborhood opportunity spaces allows ranking places to highlight good areas and shame unequal areas and track whether particular metros are making progress toward a more equal distribution of opportunity spaces over time, using a concrete measure of why segregation matters—namely, neighborhood poverty or other measures of neighborhood quality.

Rankings of best and worst places are quite appealing to the media and are often a motivating lever for policy makers. A low ranking may stimulate policy makers to take action to rectify the low ranking, whereas a high ranking may spur attention to the area to identify best practices. For example, after Oklahoma City was ranked as one of the fattest cities in the nation, the mayor undertook a campaign to reduce obesity (Associated Press 2008). Policy changes resulting from this low ranking included adding 300 miles of sidewalks to encourage walking and building new gyms in schools for children to increase physical activity (Mott 2008).

Likewise, our measures of overlap may be important for benchmarking and monitoring progress toward social goals and stimulating policy to improve access to opportunity neighborhoods. Addressing the adverse effects of neighborhood poverty will likely involve explicitly altering the distribution of where impoverished people live, in addition to place-based efforts to improve the detrimental context of high-poverty neighborhoods (Katz 2004). Concentrated poverty neighborhoods are a housing market phenomenon, although they are not widely recognized as such (Yinger 2001). Therefore, improving access of minorities to lower poverty neighborhoods within MAs is a function of housing affordability (Joint Center for Housing Studies 2006), of the presence of and access to affordable housing in low-poverty areas, including the zoning in such areas for permitting construction of multifamily units (Pendall 2000), as well as preventing, prosecuting, and redressing housing discrimination (Yinger 2001). Alleviating poverty concentration therefore requires increasing the supply of affordable housing in suburban jurisdictions, scaling up access of minorities to housing mobility policies and rental assistance policies (Goering, Feins, and Richardson 2003), as well as diminishing discriminatory barriers that limit the presence of minority families in those communities (Joint Center for Housing Studies 2006).

Limitations

This article provides a cross-sectional snapshot of neighborhood poverty distributions by MA and racial-ethnic group in Year 2000. However, a considerable number of neighborhoods moved in and out of poverty from 1990 to 2000 (Kingsley and Pettit 2003); moreover, neighborhoods and their residents are constantly churning and changing. Future analyses should examine how distributional characteristics of neighborhood poverty (the dispersion), and the racial-ethnic distributional overlap of populations, change across time and covary with other aspects of metropolitan change (e.g., income inequality, job growth, economic and racial residential segregation, population composition, housing policies). The factors influencing changes in the distribution may operate differently than factors influencing the base rate.

There are many differences between MAs that may explain or understate the absolute differences in the neighborhood poverty distribution. For instance, since official poverty calculations do not take housing costs into consideration, areas with higher poverty (and therefore higher neighborhood poverty) rates are partially reflecting higher rent burdens and housing costs. Although some recommend a correction for geographic price variation, the calculation understates housing price differences. Implementing such an adjustment would likely increase the neighborhood poverty rate in large MAs, so since we did not implement any adjustment here, our analyses likely underestimate neighborhood poverty on an absolute scale (Yinger 2001).

Since we wished to characterize the universe of the distribution for entire racial-ethnic groups, we did not focus on subgroups (e.g., socioeconomic subgroups; the poor vs. nonpoor). Given that an important policy topic regards the concentration of the poor in high-poverty neighborhoods, future analyses should examine the racial-ethnic (non)overlap among the poor (or other socioeconomic groups) across neighborhood poverty and examine increases and decreases across time, to confirm findings of prior concentrated poverty studies (Jargowsky 1997; Massey and Fischer 2000) and to focus explicitly on the racial-ethnic aspect of neighborhood concentrated poverty.

Conclusion

In conclusion, this analysis found that not only is the average neighborhood poverty environment worse for the average Black or Hispanic person compared to Whites but also that the racial-ethnic distributions in neighborhood environment barely overlap and that this lack of overlap is strongly associated with racial residential segregation. In fact, the IQR-OS may be used as another type of residential segregation statistic. Not only do minorities disproportionately inhabit high-poverty neighborhoods but Whites also disproportionately inhabit low-poverty ones. This separate distribution of neighborhood environment may provide a compelling argument for the implications of residential segregation for equal access to opportunity neighborhoods. Our findings support a clear geography of inequality in neighborhood opportunity spaces and thus opportunity structure that is strongly patterned by race-ethnicity across MAs.

Notes

1. Although the strongest evidence that poor neighborhoods adversely affect health outcomes derives from the Moving to Opportunity (MTO) experiment, much neighborhood health evidence is limited for deducing causation due to internal validity threats. Notably, MTO found null effects for employment and earnings (Orr et al. 2003).

2. Nearly all studies of economic segregation examine are stratified by race and ethnicity, and racial segregation is often calculated within socioeconomic status groups (Hanson 2000). Calculating segregation indices for subsets of the population masks important patterns, since a good deal of the population is omitted from or ignored in the analysis (St. John and Clymer 2000). Although neighborhood poverty reflects economic segregation, our intention here is to use neighborhood poverty to operationalize neighborhood quality.

3. Massey and Fischer (2000) do discuss variance, but as a methodological nuisance, and their focus is concentrated poverty, not neighborhood poverty.

4. Still, other researchers have identified deprived neighborhoods relative to the metropolitan area mean (Booza, Cutsinger, and Galster 2006), which allows controlling for extraneous factors that vary between MAs that may confound the estimation of poverty (e.g., cost of living). One drawback may be that every area will include some tracts that are defined as deprived, regardless of absolute conditions. Although in a prior draft we explored relative measures, the variation across metro areas was compelling so we focused on absolute measures.

5. Our term "neighborhood poverty rate" should not be confused with the term used by Jargowsky (1997: 20), which he defined as a metropolitan area–level measure for the percentage

total population residing in tracts > 40% poverty. Our term coincides with Jargowsky's term "poverty rate" (p. 9).

6. The determination of which group to use for the first and third quartiles for calculating the interquartile range-overlap statistic (IQR-OS) is determined by comparing medians and by which variable direction is "good." Since low values are good and the median for Whites is better than for minorities, the third quartile is used from the White distribution and the first quartile from the minority distribution.

7. An assumption for this method is that the minority distribution is shifted worse than the White distribution; the assumption holds for our analysis.

8. This measure of overlap is secondary to the IQR-OS for our analyses, since the IQR-OS is a more appropriate indicator for comparing the opportunity space of the central half of the populations for racial groups.

9. As with the IQR-OS, the order of the two racial distributions matters for calculation of the distributional overlap measure. Note that this distributional overlap measure does not indicate the amount of overlap occurring in the joint distribution of neighborhood poverty for the two groups. Our measure calculates the percentage of overlap occurring in each distribution compared to the other.

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Theresa L. Osypuk is an Assistant Professor at Northeastern University, Bouvé College of Health Sciences. She is a social epidemiologist researching how place matters for racial disparities in social outcomes, including health, specifically in relation to housing markets, residential segregation, and neighborhoods. Her recent publications include two articles in *American Journal of Epidemiology* and an article in *Health Affairs*, discussing the impact of racial residential segregation on health disparities.

Sandro Galea is a Professor of Epidemiology at the University of Michigan School of Public Health. His research focuses on the social and economic determinants of population health, the epidemiology of mental health and substance misuse, and the consequences of disasters and mass trauma. His most recent book is *Macrosocial Determinants of Population Health*.

Nancy McArdle is an author and researcher with expertise in analyzing housing and population trends and changing patterns of racial change and segregation. She received her master's in public policy from Harvard's Kennedy School of Government and worked as a research analyst with the Joint Center for Housing Studies, Harvard University. She is a contributing author to the book, *Twenty-first Century Color Lines: Multiracial Change in Contemporary America.*

Dolores Acevedo-Garcia is an Associate Professor of Society, Human Development, and Health at the Harvard School of Public Health. She has a doctoral degree in public policy and demography. Her research interests include the effect of social determinants (e.g., residential segregation, immigrant integration) on health disparities, especially along racial-ethnic lines, and the role of nonhealth policies (e.g., housing policies, immigrant policies) in reducing those disparities.