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# The Contributions of Places to Metropolitan Ethnoracial Diversity and Segregation: Decomposing Change Across Space and Time

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## Abstract

Although the trend toward greater ethnoracial diversity in the United States has been documented at a variety of geographic scales, most research tracks diversity one scale at a time. Our study bridges scales, asking how the diversity and segregation patterns of metropolitan areas are influenced by shifts in the racial/ethnic composition of their constituent places. Drawing on 1980–2010 decennial census data, we use a new visual tool to compare the distributions of place diversity for 50 U.S. metro areas over three decades. We also undertake a decomposition analysis of segregation within these areas to evaluate hypotheses about the roles of different types of places in ethnoracial change. The decomposition indicates that although principal cities continue to shape the overall diversity of metro areas, their relative impact has declined since 1980. Inner suburbs have experienced substantial increases in diversity during the same period. Places with large white majorities now contribute more to overall metropolitan diversity than in the past. In contrast, majority black and majority Hispanic places contribute less to metropolitan diversity than in the past. The complexity of the patterns we observe is underscored through an inspection of two featured metropolises: Chicago and Dallas.

### Keywords

Diversity; Segregation; Race/ethnicity; Multiscale; Places

## Introduction

An ethnoracial “diversity explosion” (Frey 2015) is underway in the United States, fueling debate over its consequences for the economy, education, politics, intergroup relations, and social cohesion (Borjas 1999; Lee and Bean 2010; Lichter 2013; Lindsay and Singer 2003; Peri 2012; Putnam 2007). The rapid growth of minority groups via immigration, natural

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increase, intermarriage, and related processes has boosted the representation of Hispanics and Asians nationally while reducing white demographic dominance. Similar shifts are evident for most states, metropolitan areas, communities, and neighborhoods. At each geographic scale, rising diversity has been accompanied by changes in racial/ethnic structure, away from populations made up of one or two groups and toward those with three or more (Lee et al. 2014; Logan and Zhang 2010; Parisi et al. 2015; Wright et al. 2014).

As we use the term, *diversity* refers to an internal, aspatial property. It describes within-unit population composition—that is, how evenly the residents of a metropolis (or some other unit) are distributed among ethnoracial categories (White 1986). Diversity is related but not identical to the concept of segregation, which compares the distribution of two or more ethnoracial groups across spatial units (e.g., the extent to which blacks and whites are spread unevenly among metropolitan neighborhoods). In the multigroup case, segregation can be operationalized as a relative, scale-spanning measure of diversity, telling us how much less diverse the average neighborhood is than its metro area as a whole (Iceland 2004; Reardon and Firebaugh 2002). Segregation thus provides a spatial treatment of racial/ethnic distributions, while diversity emphasizes the compositional aspect. Based on this distinction, a diverse metropolis may be more or less segregated if different groups live in separate homogeneous communities or share the same ones.

Our research adds to a body of work in demography, geography, and sociology that decomposes metropolitan ethnoracial segregation into its scale-specific components. A common finding from this work, which typically employs neighborhoods (census tracts or blocks) as the cornerstone unit in the decomposition, is the increasing contribution of between-place differences to overall patterns (Farrell 2008; Fischer et al. 2004; Lichter et al. 2015). Like previous investigators, we make use of census-defined places, which comprise principal cities, suburbs, towns, and other recognizable communities. But in a departure from most prior research, we treat places rather than tracts as our basic unit, examining how place-level diversity changes shape metro-level trends.

Good reasons exist to focus on places. For instance, stereotypes have long contrasted homogeneous suburbia with the diverse urban core, but suburban places now display a range of racial/ethnic mixes, not to mention variety on housing type, socioeconomic status, and other dimensions (Hall and Lee 2010; Hanlon et al. 2006; Singer et al. 2008). Moreover, generalizations about metropolitan-wide diversity may hide homogeneous minority-dominated places or changes in diversity that only affect certain kinds of places. Because we expect diversity to vary from place to place as well as by attributes of place, empirical analysis at multiple scales remains necessary.

Beyond our empirical objectives, two broader issues motivate our analysis. The first is an ongoing methodological concern about how best to study diversity and segregation. We seek to advance the multidisciplinary dialog on this topic. Second, we highlight the significance of places for research on urban structural trends. Cities, suburbs, and towns often take a backseat to neighborhoods in urban research, yet the dual statuses of the former—as government jurisdictions and as symbolic communities with perceived reputations—influence the spatial sorting of metropolitan dwellers by race/ethnicity, income, and other

attributes. A segmented change framework is proposed to better understand the connections among race-based sorting, the attributes and trajectories of places, and metropolitan-wide ethnoracial patterns.

These two motivations are elaborated in the background section. We then turn to our central empirical aim: exploring the role of places in metropolitan diversity and segregation trends. Data from the 1980–2010 censuses allow us to construct related diversity and segregation measures (the entropy index *E* and Theil's *H*) for places located in 50 metro areas with an abundance of suburbs and principal cities. Our analysis begins by describing longitudinal shifts in the distribution of diversity scores for the full place sample and for the subset of places in each area. The latter task is accomplished with a new graphic tool: the diversity profile. Next, we decompose overall segregation at multiple geographic scales, focusing on place characteristics that account for within-metropolitan differences in racial/ethnic diversity change. A final empirical section illustrates the dynamics of place-level changes in Chicago and Dallas.

## Background

### Studying Diversity and Segregation

Our interest in the place-level mechanisms that underlie metropolitan racial patterns engages an extensive literature about how to strengthen the methods for representing diversity and segregation (Clark et al. 2015; Fowler 2016; Lloyd et al. 2014; Massey and Denton 1988; Reardon et al. 2008; Wong 1998; Wright et al. 2014). One problematic type of conventional practice identified by this literature is the reliance on measures suited to a small number of groups. Examples include the use of the dissimilarity index (*D*) to track segregation between blacks and whites (or any pair of groups) or the depiction of diversity as the percentage of blacks or Hispanics in a community. These measures mask important details and become cumbersome when applied to complex racial/ethnic structures. Given such limitations, we follow the lead of other investigators toward the entropy statistics *E* and *H*, which can accommodate populations consisting of multiple groups.

A second problematic issue involves employing a single measure of central tendency—typically the mean—to document changes in diversity and segregation (Johnston et al. 2014). How to improve upon mean values remains an open question despite recognition that metropolises and the places within them exhibit a range of trajectories over time (Bader and Warkentien 2016; Hall et al. 2016; Lee and Hughes 2016; Reardon et al. 2009). Johnston and his associates (2010:93) specifically called out the "absence of any indication of variation" as a major limitation of single-measure studies of segregation. To address this concern, we create diversity profiles that compare the distribution of place-level diversity scores within metropolitan areas in 1980 and 2010. Variations in diversity are also anticipated by our segmented change perspective, introduced later.

Historically, scholarship has paid more attention to describing diversity and segregation patterns than to understanding their sources. Recent advances are apparent on this front, with regression and decomposition analyses deployed separately or together to highlight the structural correlates of ethnoracial residential distributions (Brown and Sharma 2010; Farrell

2016; Iceland and Scopilliti 2008; Lichter et al. 2015; Logan et al. 2004). Our own decomposition strategy offers further insights about such correlates for census-defined places. We identify a handful of place characteristics that theory and research suggest are associated with diversity. Despite the few characteristics considered, the method we use is flexible enough to incorporate additional features of places or of other geographic units.

Another traditional challenge in research on diversity and segregation has been to adequately capture the spatial processes that shape racial/ethnic settlement. However, thanks to the efforts of numerous investigators (Brown and Chung 2006; Crowder and South 2008; Folch and Rey 2016; Lloyd et al. 2014; Morrill 1991; Reardon and O'Sullivan 2004; Reardon et al. 2009; Walker 2016; Wong et al. 2007), tools are now available to better represent the spatial configuration of segregation. We use a very rough measure—distance from the nearest principal city—to examine one facet of the spatial processes at work in our data. As noted later, this measure has direct relevance to a multinodal perspective on how contemporary metropolitan areas are spatially organized.

Our research bolsters scholarship that criticizes the analysis of ethnoracial segregation at a single geographic scale (Ellis et al. 2012; Lee et al. 2008; Lichter et al. 2015; Monkkonen and Zhang 2014; Reardon et al. 2008; Spielman and Logan 2013). Our methodology mirrors that of Reardon and Firebaugh (2002), Parisi et al. (2011), and others who leveraged the decomposition of Theil's $H$ to investigate segregation at multiple scales. Conceptually, the way we understand the role of scale aligns well with ideas presented by Fowler (2016), who shied away from methods that indicate some correct scale for measuring segregation and exhorted researchers to look for interplay across scales. Although the current study does not incorporate the kind of relationship-across-scale measures proposed by Fowler, this remains a fruitful direction for future work.

## How Places

Matter The emphasis on census-defined places in our own multiscale investigation of metropolitan racial/ethnic diversity can be readily justified. First, most Americans live in such places, including disproportionate shares of blacks, Hispanics, Asians, and immigrants. More than nine-tenths of the members of each of these groups are metropolitan dwellers, with Asians the highest at 97 %; by comparison, the national metro population contains four-fifths of all whites (Wilson and Singer 2011; Wilson et al. 2012). Places also constitute symbolic entities, with recognized names and reputations, some conducive to diversity and some not (Bader and Krysan 2015; Krysan and Bader 2007). Most places are incorporated as well, possessing governmental powers and functions that make them responsible for diversity-related issues inside their boundaries. At one extreme, places may seek to attract immigrants as an economic and demographic revitalization strategy (Carr et al. 2012). Alternatively, places may use zoning, annexation, affordable housing restrictions, or other mechanisms to dilute or deter minority growth (Pendall 2000; Rothwell and Massey 2009).

Place-based policies are hardly the only drivers of diversity and segregation. As we argue in the next section, the distribution of ethnoracial populations across places is responsive to the residential preferences held by metro dwellers and to differences in group- and place-specific growth rates. A place's accessibility to immigrants and minorities depends on its

intrametropolitan location and the presence of housing options for varied income levels. Importantly, how a place changes in composition will be conditioned by its starting point with respect to diversity magnitude and structure. For example, a community that is all-white at Time 1 ($t_1$) might be expected to follow a different pathway than an already diverse, multigroup place.

This range of possible pathways leads us to adopt a segmented change framework (Hall et al. 2016). Based on Portes and Zhou's (1993) segmented assimilation model, the framework proposes that the experiences of places and immigrant-rich minority groups are intertwined. Similar to minority assimilation, places do not conform to a single ethnoracial trajectory over time. Instead, they may shift in different directions and at different speeds or remain stable, and their initial diversity (and other starting-point characteristics) should shape how they evolve. The trajectories of places reflect where people of color wind up as they pursue economic opportunities and encounter obstacles such as prejudice and institutional discrimination. Although some places undergo diversity increases due to the arrival of immigrants, others are likely to become more homogeneous as the sorting of white and minority residents into separate communities promotes racial isolation. Simply put, the segmented change framework anticipates numerous diversity trajectories for places, which in turn will influence metro-wide segregation.

The significance of places for understanding ethnoracial diversity and segregation shows up empirically in decomposition studies that have used Theil's *H* to measure how much less diverse, on average, neighborhoods (census tracts or blocks) are than the respective metropolitan areas, places, or other units in which they are nested (Farrell 2008; Fischer et al. 2004; Lichter et al. 2015; Parisi et al. 2011). For our purposes, the key finding from this work is about the changing contributions of the nested geographies to *H*. Between-place differences have become more important since 1990: increasing shares of metropolitan segregation are due to the dissimilar racial/ethnic compositions observed among cities and suburbs. By contrast, neighborhood-level diversity patterns now account for smaller shares.

## Place Characteristics of Interest

We treat places rather than neighborhoods as the smallest units of observation. When comparing place and metropolitan diversity with Theil's *H*, our decomposition extends to subsets of places—defined by their values on particular characteristics—that are likely to increase or decrease metropolitan-level segregation. The segmented change framework encompasses both theory and research about which place characteristics might be relevant. In pursuit of parsimony, we focus on five key characteristics: (1) distance to the nearest principal city, (2) initial racial/ethnic diversity magnitude, high (3) housing and (4) income diversity, and (5) residential preferences.

The first characteristic is *distance to the nearest principal city*—that is, a prominent place possessing a large population relative to other places in its metropolitan area (Frey et al. 2006). Consistent with multinodal conceptions of urban structure (Hanlon et al. 2006; Lang 2003), most of the metro areas in our sample have more than one such city. Many principal cities occupy a core location where minority and immigrant groups concentrate, rendering them very diverse (Foner 2013; Price and Benton-Short 2008; Waldinger and Lee 2001). But

as members of these groups experience upward socioeconomic mobility, they may leave the core behind for the suburbs (Alba and Logan 1991; Farrell 2016). Of course, some recent immigrants settle directly in suburban principal cities upon arrival (Singer et al. 2008). Irrespective of origin (in the core or suburbia), subsequent moves made by households of color will be proximity-dependent. Thus, nearby places should become more ethnoracially mixed than peripheral ones and should give a greater boost to metropolitan-wide diversity. This proximity hypothesis receives partial support from research finding an inverse distance gradient in the diversity of suburban places (Farrell 2005; Hall and Lee 2010; cf. Walker 2016).

Consistent with the starting-point notion embedded in our segmented change framework, the $t_1$ values of four characteristics are expected to matter in the long term. A place's *initial racial/ethnic diversity magnitude* should be related to its subsequent diversity change and, ultimately, to the trend in metropolitan segregation. Intuition tells us that places with a high level of diversity at $t_1$ have less potential for future diversification; low-diversity places have more. In addition to such ceiling and floor effects, scholarship on neighborhood racial change often considers high diversity a fragile state (Friedman 2008; Holloway et al. 2012; Lee et al. 2014). Because the growth of one group eventually outpaces all others, an inflection point in diversity is reached. After that point, ethnoracial transition is expected to accelerate, with the ascendant group filling most vacancies, other groups departing (or at least increasing less rapidly), and the composition of the neighborhood turning more homogeneous. Lee and Hughes (2015) documented this kind of transition at the place level, showing that ethnoracial diversity declines between 1980 and 2010, although rare, were more common in places with high diversity levels at the beginning of the period.

Cross-sectionally, *high housing* and *income diversity*, the third and fourth place characteristics of interest, should be associated with high racial/ethnic diversity. Underlying this linkage is the correlation between race and income: a wider range of incomes in a place typically means a more ethnoracially diverse population (Bayer et al. 2004; Bruch 2014; Reardon and Bischoff 2011). And because income influences housing choice, places with a mix of housing options will tend to have both greater income and greater ethnoracial diversity. These correlations are strengthened by institutional constraints on minority access to housing, which have significant implications for racial segregation. However, in hypothesizing that ethnoracial diversity is correlated with income and housing diversity, we must again be sensitive to floor and ceiling effects over time. Places with high levels of income or housing diversity in 1980 may experience decreasing ethnoracial diversity thereafter because, mathematically, those high initial levels are likely to drop somewhat. The reverse would be true for places with homogeneous housing stocks or income distributions that can shift only in the direction of greater diversity.

Central to community racial/ethnic change are *residential preferences*, reflecting in-group affinity and out-group avoidance. Whether obtained through surveys (Charles 2006; Clark 2002; Emerson et al. 2001; Krysan et al. 2009) or inferred from interneighborhood mobility patterns (Crowder et al. 2011, 2012; Pais et al. 2009), the preference data reveal (1) the desire of all races to live among a substantial number of coethnic neighbors, and (2) the assessment of heavily African American or Hispanic communities as less desirable than

white ones. The second preference, which is not expressed exclusively by whites, may be due to racial prejudice or to the interpretation of an area's minority composition as a proxy for nonracial problems, such as declining property values or poor schools (Ellen 2000). Regardless of what underlies it, this type of preference points to the initial racial/ethnic structure of a community—the specific groups present—as a possible antecedent of later shifts in diversity. Consequently, we consider the majority ethnoracial group in a place as a fifth axis for decomposing *H*.

One hypothesis based on the preference literature is that the single-group composition of predominantly black or Hispanic places at $t_1$—despite the different forces producing these places—will persist or intensify over time, detracting from any metropolitan-wide change toward greater diversity. Conversely, the favorable evaluation of white places could make them attractive destinations for members of multiple groups, leading to subsequent diversity gains. We should note, however, a contrary hypothesis from the political economy and place stratification perspectives: that white communities are not particularly receptive to ethnoracial diversification and will resist it through an array of institutional policies and practices (Massey and Denton 1993; Pendall 2000; Rothwell and Massey 2009; Squires and Kubrin 2006; Turner et al. 2013).

## Methodology

### Sample and Data

Our examination of the relationship between place- and metropolitan-level diversity uses place population counts from the 1980–2010 decennial censuses. The starting file contains all 29,261 places listed in one or more of those four censuses. We have subsequently reduced the file to include only the 7,157 places located in a U.S. Census Bureau–recognized metropolitan area that had (1) at least 29 places in 1980 and (2) at least one place with more than 50,000 inhabitants in 1980.[1] To eliminate problems engendered by places crossing metro area borders and by changing metro area delineations, we assign places to a metropolitan area based on their centroid location and 2010 metro area boundaries. The reduction process limits us to 50 areas, with Providence (Rhode Island) having the fewest places in 2010 (48) and New York having the most (748).[2] These areas range in 2010 population size from 253,092 in Harrisburg, Pennsylvania, to 16,248,590 in New York City.[3] Taken as a whole, our analytic sample of places serves as home to approximately 85.7 million people in 1980 and 127 million people in 2010, roughly 38 % and 41 % of the total (place and nonplace) U.S. population in their respective years.

To permit consistent and meaningful comparison of changing diversity across census years, we collapsed categories from the race × Hispanic origin cross-tabulations for each decade into five panethnic groups: non-Hispanic white (hereafter, white), non-Hispanic black (black), non-Hispanic Asian or Pacific Islander (Asian), Hispanic, and Other. In all years,

[1]Practical considerations guided our selection of the threshold for including metropolitan areas in our sample. It was important that the sample include a broad range of metropolitan areas but only those with enough places in 1980 so that they could be grouped into as many as six categories with multiple observations in each category.
[2]Throughout the text, we identify metropolitan areas by the name of their largest city (based on 2010 population).
[3]The population counts refer to persons living in places and exclude persons living outside of places but in these metropolitan areas.

the American Indian/Alaska Native count is included in the Other category as are people identifying with a race not covered by census categories. In 2000 and 2010, persons reporting two or more races are assigned to the Other category as well. Although these multirace persons constitute a very small share of the total population, previous research indicated that their inclusion as Other produces a slightly higher than expected rise in diversity between 1990 and 2000 (Lee and Hughes 2015). A sensitivity analysis that omitted the Other category, including those reporting two or more races, did not change any of our substantive findings.

## Ethnoracial Diversity: Measurement and Decomposition

We rely on two measures of ethnoracial diversity: scaled entropy (symbolized by *E*), and Theil's information theory index (*H*). We chose *E* because of its popularity in research on ethnoracial diversity from the neighborhood to the state level (Allen and Turner 1989; Farrell and Lee 2011; Lee et al. 2014; Wright et al. 2014). The latter measure, *H*—an indicator of segregation that compares lower-scale diversity with higher-scale diversity (Farrell 2008; Fischer et al. 2004; Lichter et al. 2015)—has the advantage of being decomposable over scale.

We define scaled entropy as:

$$E=\frac{\sum_{m=1}^{M}\pi_m \ln\left(\frac{1}{\pi_m}\right)}{\ln(M)}. \quad (1)$$

Following Reardon and Firebaugh's (2002) notation, *m* denotes one of our five panethnic categories, $\boldsymbol{\pi}_m$ is the proportion of the total population in category *m*, and ln refers to the natural log with $\ln(1/\boldsymbol{\pi}_m)$ treated as 0 when $\boldsymbol{\pi}_m$ equals 0. By scaling our entropy values by ln(*M*), we constrain the range of *E* from 0 to 1. When *E* equals 1, diversity is maximized: all panethnic groups are identical in size. A zero value, on the other hand, indicates the absence of diversity (homogeneity) such that all residents of a place or metropolis belong to the same group.

Following the notation of Parisi et al. (2011), we define Theil's *H* as the ratio of within-unit diversity to total diversity:

$$H=\frac{1}{TE}\sum_{j=1}^{J} t_j\,(E-E_j), \quad (2)$$

where *T* and $t_j$ refer to the population of the whole study area *J* and its geographic subunit *j*, respectively; *E* and $E_j$ refer to the entropy for the whole area *J* and its subunit *j*, respectively. The structure of the latter part of Eq. (2), $(E - E_j)$, means that higher values for *H* convey the degree to which subunits are *less* diverse than the population as a whole; lower values of *H* convey that the subunits contain, on average, a distribution that mirrors that of the population as a whole. Thus, higher values of *H* convey the opposite meaning of higher values of *E*.

Given the similarity to our own analytic goals, we further borrow the notation of Parisi et al. (2011) to describe the decomposition of $H$ into subunits. Specifically, we define $H_{JK}$ as $H$ for all clusters $k$ in $K$ based on a calculation using geographic subunits $j$ in study area $J$ such that

$$H_{JK}=\frac{1}{TE}\sum_{k=1}^{K}\sum_{j=1}^{J\text{ in }k}t_j\ (E_k-E_j)\,. \quad (3)$$

An important characteristic of Eq. (3) is that we can observe the individual contribution of subunits $k$ to the overall $H_{JK}$. Although $H_{JK}$ is constrained to values between 0 and 1 (Reardon and Firebaugh 2002), $H_{Jk}$ can be positive or negative with negative values, indicating subunits that are more diverse than the population of $K$ as a whole. The significance of the magnitude of the values for $H_{Jk}$ is more difficult to interpret because both the proportion of the population in $k$ and the difference from the population distribution of $K$ contribute positively to the absolute value of $H_{Jk}$. We revisit the interpretation of $H_{Jk}$ later in the analysis.

Fleshing out the decomposition of $H$ for present purposes, if our observations are places $p$ in $P$ within the universe of places included in this analysis $U$, then $H_{PU}$ would be equal to $H$ from Eq. (2). (The summation over $k$ drops out because there is only one group.) By way of comparison, the contribution of a subunit within our analytic group—for example, metropolitan areas $M$ — would be represented by $H_{PM}$. We use this decomposition strategy to stratify the contribution to total $H$:

$$H_{PU}=H_{RU}+H_{MR}+H_{GM}+H_{PG}. \quad (4)$$

Equation (4) can be interpreted as $H_{PU}$ (total segregation in the sample of places) equaling the sum of differences between regions $R$ plus the sum of differences between metropolitan areas $M$ within those regions plus the sum of differences between groups $G$ within those areas plus the sum of $H$ for places $P$ within those groups. Our analysis groups places within metropolitan areas in several different ways to consider the importance of possible explanations for changing diversity. As long as each observation is nested hierarchically, the decomposition is quite flexible to a range of grouping and ordering strategies.[4]

## Place Characteristics

Five grouping variables are designed to distinguish among places within metropolitan areas, based on the characteristics of those places relevant to our hypotheses. The first grouping variable, which bears on the proximity hypothesis, measures the distance of a place from the nearest principal city within its metropolis. Because the principal city concept dates to only 1999, we use a recent (2009) designation rather than trying to match characteristics for

[4]The U.S. Census assigns four metropolitan areas to multiple regions. For the purposes of creating a nested hierarchy, we have assigned all places in Philadelphia to the Northeast region, all places in Louisville (Kentucky) to the South region, and all places in Youngstown and Cincinnati (Ohio) to the Midwest region.

1980. In our sample, the average number of principal cities in a metropolitan area is 4.5, which is consistent with multinodal approaches to urban structure. Nine areas have a single principal city, and Chicago, (11), Miami, (11), San Francisco, (12), and Los Angeles, (25), have the most principal cities. Our distance measure uses place centroids to identify the nearest within-metropolitan principal city for each place in the sample. We then divide places by quartile within their metropolitan area to group them into a spatial hierarchy of five categories: principal city, then nearest to farthest quartile. This grouping rests on the contestable assumption that all principal cities play the same role within a given metropolitan area.

In line with starting-point logic from the segmented change framework, our second, third, and fourth grouping variables capture different aspects of place diversity at the beginning of the study period. Places are categorized by their 1980 $E$ values into five quantiles ranging from most homogeneous to most diverse for ethnoracial composition (based on the five panethnic categories identified earlier), and housing type, which consists of four nominal categories (owner-occupied/detached, owner-occupied/attached, renter-occupied/detached, renter-occupied/attached). Both the ethnoracial and housing diversity measures can be neatly fit into Eq. (1). Household income diversity requires a slightly different operationalization because its categories represent ordered bins. We use five categories based on census-reported values for household income quintiles in 1979 (U.S. Census Bureau 2014)[5] to compute $E_O$, an ordinal entropy index. $E_O$ is maximized when the two groups at the lowest and highest extremes each constitute 50 % of the population (for more details on this measure, see Galster and Booza 2007; Reardon et al. 2006).

Finally, to evaluate the hypothesis inspired by the residential preferences literature, we group places according to their initial racial/ethnic structure. A simple way to capture this structure is with each place's majority race (if any) as of 1980. We loosely follow the precedent set in previous work (Farrell and Lee 2011; Holloway et al. 2012) and classify our sample of 7,157 places into eight types or categories based on 1980 population counts. The classification scheme consists of Black Majority (91 places), Hispanic Majority (42), Asian Majority (0), and Other Majority (0) categories, where the named racial group constitutes more than 50 % of the place population. White Majority places are divided into (1) a White Dominant (2,690) category, where whites make up 90 %[6] or more of the place total; and (2) a Shared White (1,045) category, where more than 50 % but less than 90 % of a place's residents are white. The last two types are No Majority (43) places, where no group exceeds 50 %, and an Empty (3,246) category for places with fewer than 100 people (including those places with zero population in 1980). We also construct the majority race variable for 2010 so that transitions in the racial/ethnic structure of places can be documented over time.

[5]The upper thresholds for the 20th, 40th, 60th, and 80th percentiles of household income in 1979 dollars are 7,000, 13,000, 20,000, and 29,000 respectively.

[6]We tested our decompositions for robustness to a change in the threshold for identifying White Dominant places. Setting the threshold at 85 % and 95 % instead of 90 % did not alter the substantive conclusions of this analysis.

# Results

## Distributional Shifts

Our analysis begins with the well-documented fact that ethnoracial diversity has risen in U.S. metropolitan areas since at least 1980. Researchers have often explained this rise from a compositional perspective, emphasizing the influence of increased immigration from Latin America (mainly Mexico) and Asia (mainly China and India) and a proliferation of the locations that receive significant immigrant flows, especially “new destination” metropolises in the West and South (Flippen and Kim 2015; Frey 2015; Hall 2013; Singer 2005). The general upward trend in diversity is illustrated in the Fig. 1 boxplots for our sample of metropolitan places.

We aim to identify the source of this diversification at the place level, examining how shifting place diversity shapes metropolitan areas. The diversity profile featured in Fig. 2 shows the probability density function for scaled entropy ($E$) scores in the 50 sample metropolitan areas. The $E$ score for each place in a given area—from the largest principal city to the smallest suburb—contributes exactly the same amount to the probability density function,[7] overstating the variation in diversity because smaller places tend to be outliers in the diversity profile. Nevertheless, our distributional approach moves beyond mean trends and draws attention to the varied changes evident for places during the study period. By overlaying the profiles for two census years (1980 and 2010) on one chart, we can see how different the experience of diversity change has been across metropolitan areas.

A consistent story throughout most of the panels in the figure is that the many places with very low entropy in 1980 (reflecting low ethnoracial diversity) have spread out across the range of possible $E$ values by 2010. Many metropolitan areas retain a bulge of places with low entropy in 2010, but that bulge is smaller and to the right (toward higher diversity) in every case. Two variations on this theme are apparent. One is the shifting and shrinking of a pronounced 1980 bulge of low-diversity places in metropolitan areas from Albany (New York) and Allentown (Pennsylvania) in the Northeast to Portland (Oregon) and Seattle in the Northwest. The smaller Northeastern and Midwestern metropolises are particularly notable in this respect. Although they still retain a higher density of low-diversity places, areas such as Harrisburg show the degree to which increasing diversity is driven by changes in the most homogeneous places. However, we also observe significant movement toward greater diversity in areas without a distinct low-diversity bulge in 1980, as exemplified by Atlanta, Charlotte (North Carolina), Houston , and Los Angeles. Even the initially most diverse metros (e.g., San Francisco and Washington, DC) have increased their diversity. We single out Dallas and Chicago in a later section, finding that what seem to be similar profiles actually mask divergent patterns at the place level.

## Decomposition of Diversity

What accounts for the changing distribution of place diversity across metropolitan areas shown in Fig. 2? We address this question via the technique described earlier, in which

[7]It would also be reasonable to produce the diversity profiles weighted by population, but the graph then becomes a story about the largest places rather than about the distribution of places, as intended here.

Theil's $H$ is decomposed at multiple geographic scales to observe the contribution of each scale in each census year. By grouping places based on their characteristics, we can estimate the contribution of different kinds of places to changes in overall ethnoracial segregation. It is important to note again that the meaning of high and low values switches as we move from scaled entropy ($E$) as our metric to Thiel's $H$. High values on $H$ denote more segregation (i.e., lower relative diversity) among places, the opposite of $E$'s directional interpretation.

To provide a baseline, Table 1 presents a decomposition of $H$ with no within-metropolitan grouping. The table gives us the overall scope of change in segregation: specifically, the average degree to which individual place diversity is less than the aggregate diversity of all metropolitan places in our sample. Of the total place-level segregation of .237 in 1980, .149 (63 %) is a function of segregation at the place level within metro areas.[8] Moreover, when we look at segregation change between 1980 and 2010 (last two columns of Table 1), most of the decrease in segregation—or increase in relative diversity—is happening within metropolitan areas (−16.8 %), more than enough to counteract rising segregation between regions (10.0 %). This last result is interesting in light of the potential role that "new destinations" play in increasing diversity. If new destinations are important, less segregation should occur between regions and between metro areas within regions as immigrant and minority populations spread throughout the United States. In fact, between-metropolitan segregation accounts for almost the same share in 2010 (25.2 %) as it did in 1980 (24.3 %), and between-region segregation actually increases (from 12.7 % to 15.6 % of the total). Such patterns could be a function of our sample; perhaps the requirement that metro areas have at least 29 places in 1980 excludes many of the new destinations.

Another finding from Table 1 concerns the variable pace of change in within-metro segregation. Between the first two census years, the absolute change in within-metro segregation is small in absolute terms (.149 to .147) but large in relative terms (63.0 % to 59.3 %) because within-metro change partially offsets increasing segregation at the between-metro and between-region scales. In subsequent years, absolute change in within-metro segregation is considerably larger (e.g., .137 to .125 for 2000 to 2010), but its share of total segregation is fairly constant given that within-metro decreases are matched by decreases at the other scales as well.

We next turn to a range of decompositions that might explain the structure of changing diversity within metropolitan areas as indicated by the final row of Table 1.[9] Table 2, and the tables that follow, decompose $H_{GM}$ from Eq. (4) into its component parts $H_{gM}$. This strategy lets us see the relative contribution of each grouping of places to the total within-metro $H$. The last row of each table indicates the remaining within-group contribution, interpretable as the within-metro segregation not explained by our grouping mechanism.

According to the proximity hypothesis, one scenario is that minority groups will initially settle in core or suburban nodes and then gradually diffuse outward from these nodal cities.

[8] See Parisi et al. (2011) for an examination of the contribution of within-place segregation.
[9] In Tables 2–5, we examine only within-metro change; the bottom line from Table 1 is the top line of Tables 2–5.

Hence, we distinguish places based on their distance from the nearest principal city in their metropolitan area. Table 2 shows some support for the proximity hypothesis. The principal cities themselves are far more diverse in absolute terms than other places, but their advantage has eroded every decade, totaling a 62.3 % increase in their contribution to segregation from 1980 to 2010. Put another way, the increase in $H$ of .048 for principal cities is nearly double the aggregate decline of −.025 for within-metro $H$ overall. Principal cities are still more diverse than the population as a whole, and their large size increases the magnitude of the dampening (negative) effect they have on overall metropolitan segregation. Nevertheless, growing general and minority populations outside of these cities limit their segregative effect.[10] Looking down the columns of Table 2, we can see further evidence of a spatial diffusion process, with increasingly distant places declining in $H$ but at a slower rate than closer places have. A replication of this decomposition employing distance from the largest principal city rather than the nearest one produces very similar results.[11]

Our second grouping mechanism is based on the magnitude of place ethnoracial diversity in 1980. This characteristic permits an evaluation of the hypothesis that diversity change within metropolitan areas is due to once-diverse places passing an inflection point in composition and becoming more homogeneous over time. The decomposition results in Table 3 offer support for the hypothesized place-level pattern: the contribution to segregation of the most diverse places increases from −.09 to −.03 during the 30-year span. Although these places represent the only group with a negative effect on within-metro segregation, their contribution drops from −62 % of the within-metro total in 1980 to −24.1 % in 2010. In contrast, the other categories of places all exhibit a decreased level of segregation both in absolute value and in terms of their contribution to overall within-metro segregation. For example, the most homogeneous places as of 1980 contributed .030, or 20.3 % of the total $H$ in that year. By 2010, this value had decreased to only .016, or 12.8 % of the total.

Table 4, covering housing type diversity (defined by tenure and attached/detached status), conveys the same message as Table 3. The more homogeneous places with respect to initial (1980) housing composition contribute the most to segregation, while the places with the most diverse housing mix are more ethnoracially diverse than the metropolitan population as a whole, thus dampening segregation. As with racial/ethnic diversity, the most homogenous places do not contribute as much to segregation as the second quartile, a clear reminder that the magnitude of the observed effect reflects both the population size of the places in these groups and their difference from the population distribution. One must presume that the most homogenous places are smaller than the next category for this result to hold. Because the decomposition by place income diversity closely parallels that for housing type diversity, it is not reported in tabular form here.

As suggested by the residential preferences literature, our final grouping of places considers whether changes in segregation and diversity are associated with the initial racial/ethnic structure of a place: namely, which racial population (if any) constituted a numerical

[10]With a few notable exceptions (Detroit; Miami; Gary, Indiana; Camden, Ohio), principal cities saw a mean increase in diversity ($E$) of .26 between 1980 and 2010. This indicates that the change in Table 2 is overwhelmingly due to shifts in population location and distribution in other kinds of places rather than a resegregation of these diverse places.

[11]Results of the replication are available from the corresponding author upon request.

majority in 1980. This grouping modifies our thinking about the general reduction in segregation attributed to more homogeneous places in Table 3. As the decomposition in Table 5 makes clear, racial homogeneity in Black and Hispanic Majority places does not behave the same way that it does in White places. Although White Shared places contribute relatively little to segregation across the entire three-decade span, the contribution of White Dominant places to overall segregation decreases markedly from .159 (106.7 % of the total) in 1980 to .057 (45.7 % of the total) in 2010—a 64.2 % decline in absolute value. By contrast, Black places contribute only .001 (0.4 % of the total) in 1980 but .007 (5.7 % of the total) in 2010—a dramatic 700 % increase. The contribution of Hispanic places to segregation is similar, rising from .002 to .007, or an increase of 250 %. Places with no racial/ethnic majority in 1980 have experienced a 95 % decrease in magnitude during the study period, contributing −.02 in 1980 and only −.002 in 2010.

We highlight the key changes from Table 5 with a transition matrix in which the 1980 and 2010 racial/ethnic structures of places serve as origin and destination, respectively. Each row of Table 6 reports where places of a particular majority type in 1980 wound up 30 years later. So, 84.6 % of places that were Black in 1980 remained Black in 2010, and the persistence rate was even higher among Hispanic places (95.2 %). By comparison, only 43 % of the 1980 White Dominant places were still White Dominant by 2010. (More than nine-tenths of the places that transitioned out of White Dominant transitioned to White Shared.) However, none of the places categorized as No Majority in 1980 became White Shared or White Dominant. Instead, they were likely to stay No Majority, become Black, or become Hispanic. An additional 10 % of them became Asian Majority, indicating that —in line with whites' aversion to the presence of minorities and immigrants—the most diverse places are not shifting toward a whiter composition but rather toward majority-minority status. Conversely, 85 % of the new places that formed after 1980 were either White Dominant or White Shared.

## Metropolitan Archetypes

To concisely summarize the results of the preceding section, we have found the following:

- Principal cities are still diverse but are becoming relatively less so.
- Metropolitan places that are not principal cities have grown more diverse, with suburbs near such cities increasing their diversity the most.
- The most diverse places in 1980 are becoming relatively more homogeneous; all other places are becoming more diverse.
- In absolute terms, places with a White Dominant racial/ethnic structure in 1980contributed the most to within-metropolitan segregation decline and rising diversity.
- Majority Black and Hispanic places, although playing a small role in within-metro segregation, underwent relative diversity decreases between 1980 and 2010.
- No Majority places exhibit declining diversity and tend to transition to a majority-minority structure.

- More than 80 % of new places recognized by the census after 1980 are White Dominant or White Shared, but this percentage varies widely across metropolitan areas.

Because of the complexity of such changes, it is instructive to examine them for individual metropolitan areas. Given space constraints, we focus on just two areas: Dallas and Chicago. Figure 2 shows a number of metropolises that have fairly flat diversity profiles in both 1980 and 2010, and also a significant shift toward greater diversity. Dallas and Chicago fit this general profile. Both began with relatively high metro-level diversity in 1980 (*E* of .49 and .56, respectively), and both increased in diversity by 2010 (*E* of .77 and .75, respectively). Yet, their similarity at the metropolitan scale obscures significant place-level differences.

In Dallas, the three largest cities in the area—Dallas, Fort Worth, and Arlington—were No Majority places by 2010, emphasizing the continued importance of principal cities as drivers of metropolitan-wide diversity. Arlington, for instance, had been 90 % white in 1980 but was only 45 % white three decades later. Across the metropolitan area, most of the White Dominant places saw significant declines in white representation despite the persistence of a pair of notable “doughnut hole” suburbs—Highland Park and University Park—surrounded by Dallas proper. Most notable, however, is that of 104 new places recognized between 1980 and 2010, only 15 were White Dominant, which is extremely unusual in our sample. This finding suggests that the rapid expansion of metropolitan Dallas did not include the creation of new white enclaves at the place level. Because of an absence of No Majority places in 1980, the Dallas area did not exhibit increased relative homogeneity in its most diverse places, as was often the case elsewhere.

Chicago tells a profoundly different kind of story at the place level. Like Dallas, virtually all places recognized by 1980 in metropolitan Chicago manifested significant declines in percentage of whites. The city of Chicago was and continues to be No Majority, with the proportion of white residents falling between 1980 and 2010. However, new places, those recognized by the Census Bureau between 1980 and 2010, were much less diverse than in Dallas. Of 107 new places that appeared after 1980, a remarkable 55 remained White Dominant in 2010, and 48 remained White Shared. Chicago had Black Majority places in 1980, all of which persisted as Black over 30 years. Some of these places—such as Harvey and Markham, Illinois, or Gary, Indiana—experienced tremendous economic upheaval and population loss. Three new places, 14 White Shared places, and four White Dominant places became Black by 2010. These changes hint that metropolitan-wide diversity has been supported by the emergence and persistence of majority-minority places.

## Conclusion

Racial/ethnic diversity has been on the rise in metropolitan America since 1980. This larger trend, however, masks substantial local variation, as anticipated by the segmented change framework. Increasing diversity looks quite different in Buffalo, New York, than it does in Miami, and the role played by diverse principal cities during the period of interest is quite different from the role played by homogeneous white suburbs. Our research reinforces the need to be sensitive to the full range of spatial and scalar processes that underlie metro-wide

diversity and segregation patterns. The results we have presented only begin to shed light on where and how metropolitan ethnoracial change occurs. Nevertheless, some provocative lessons emerge.

Our decomposition analysis indicates that although principal cities continue to influence the overall diversity of metropolitan areas, their impact is declining. In fact, principal cities have often become relatively less diverse. In all cases in our sample, this change reflects a continued loss of white share of population. This finding raises questions related to theorization of the multinodal metropolis. Our understanding of diffusion processes suggests that minority and immigrant populations in core and suburban principal cities should move outward from these nodes as they attain social and economic status. The expected sort of movement does appear to be happening; we see nearby suburbs with significant diversity gains. However, whether that diversity will ultimately prove a stable outcome or instead, as in principal cities, is a precursor to the development of segregated majority-minority communities constitutes an important and unresolved issue.

One of the most significant changes we document is the decreasing contribution of White Dominant places to overall metropolitan segregation. This trend strikes us as encouraging insofar as it signals the gradual demise of the privileged, homogeneous white enclaves that characterized suburbanization during the 1950s and 1960s. On the other hand, the decreased contribution to diversity of black places and Hispanic places—the opposite side of the "white flight" coin—is troubling. So is the fact that a closer look at individual metropolitan areas such as Chicago reveals the continued development of white suburbs between 1980 and 2010, consistent with predictions based on racial residential preferences. In Chicago, as in Detroit and a number of smaller Midwestern and Northeastern metropolises, we know that the white exodus to the suburbs and the inner-city concentration of poor, largely black populations are ongoing dynamics. But twists to this conventional wisdom also appear that resist easy explanation. Why, for example, are so few white suburbs being created in Dallas? Although we can speculate about the reasons for such differences, more work must be done to disentangle the variation between metropolitan areas as well as within them.

The challenges ahead should not detract from the value of the approach taken here. Conceptualizing places as meaningful units, describing metropolitan diversity profiles, and decomposing segregation across geographic scales are all important steps toward an improved understanding of ethnoracial trends in U.S. metropolitan areas. Moreover, the few place characteristics employed in the decomposition exercise provide useful insights about the types of places driving patterns at the metropolitan level. Through future refinements of our explanatory framework and methods, we hope to provide a fuller account of the forces responsible for the changing spatial configurations of racial and ethnic groups observed in our data.

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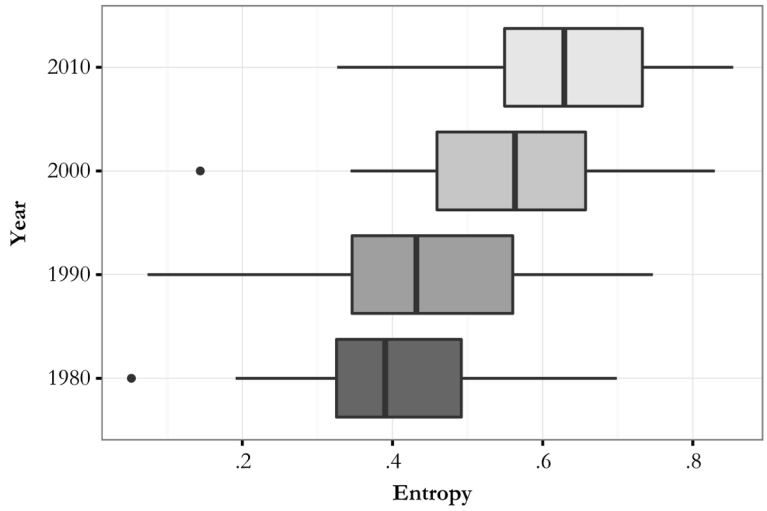
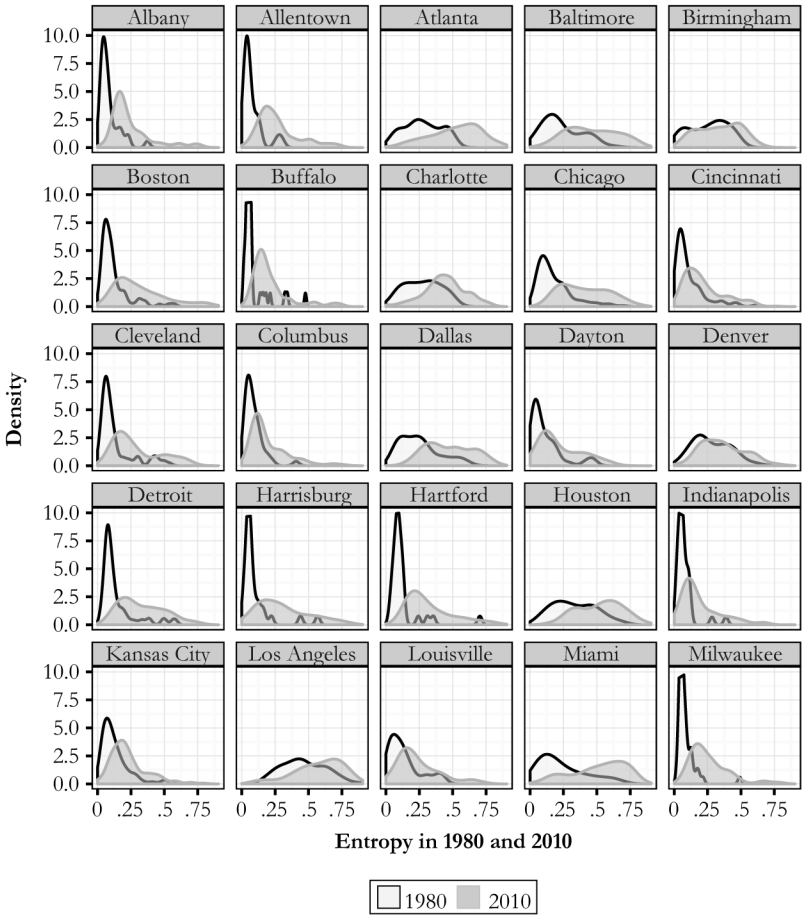



**Fig. 1.**
Changing diversity for sample of 7,157 metropolitan places, 1980–2010



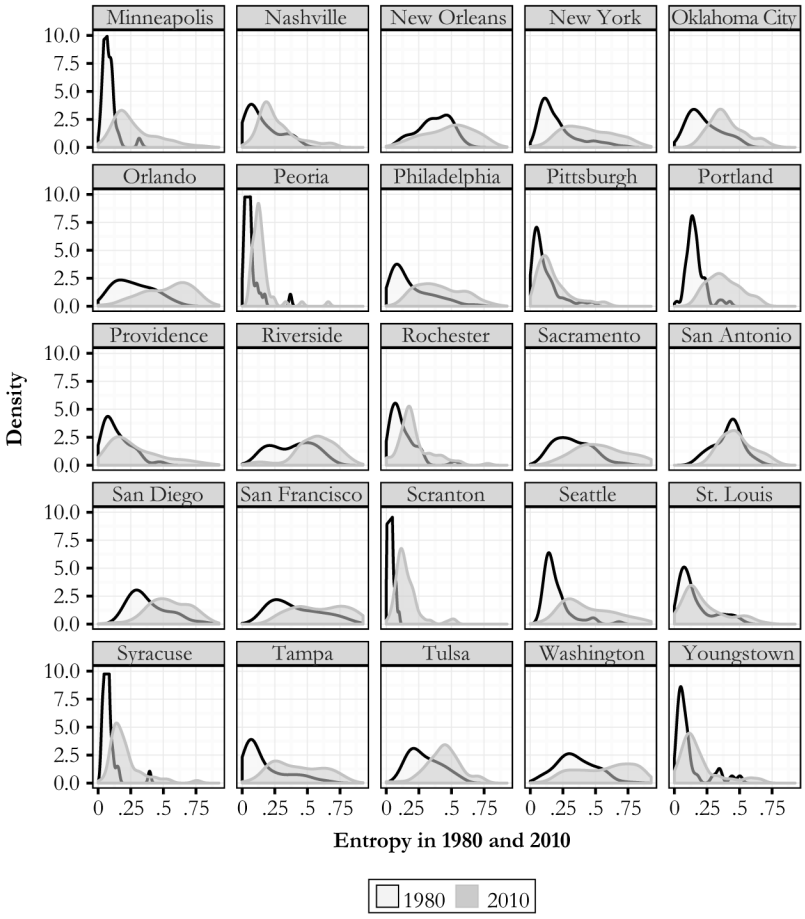



**Fig. 2.**

Overlapping diversity profiles for 50 metropolitan areas, 1980 and 2010

**Table 1**

Baseline decomposition of *H*, 1980–2010

| | 1980 | | 1990 | | 2000 | | 2010 | | Change 1980 to 2010 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** |
| Total *H* | 0.237 | 100.0 | 0.248 | 100.0 | 0.230 | 100.0 | 0.211 | 100.0 | −0.026 | −11.0 |
| Between Regions | 0.030 | 12.7 | 0.037 | 15.0 | 0.034 | 15.0 | 0.033 | 15.6 | 0.003 | 10.0 |
| Between Metros | 0.058 | 24.3 | 0.064 | 25.8 | 0.059 | 25.5 | 0.053 | 25.2 | −0.004 | −6.9 |
| Within Metros | 0.149 | 63.0 | 0.147 | 59.3 | 0.137 | 59.5 | 0.125 | 59.2 | −0.025 | −16.8 |

**Table 2**

Decomposition of within-metro *H* by place distance from nearest principal city, 1980–2010

| | 1980 | | 1990 | | 2000 | | 2010 | | Change 1980 to 2010 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** |
| Metro *H* | 0.149 | 100.0 | 0.147 | 100.0 | 0.137 | 100.0 | 0.125 | 100.0 | −0.025 | −16.8 |
| Principal Cities | −0.077 | −51.7 | −0.060 | −41.1 | −0.043 | −31.5 | −0.029 | −23.0 | 0.048 | 62.3 |
| Closest | 0.043 | 28.7 | 0.031 | 21.0 | 0.019 | 13.8 | 0.010 | 8.3 | −0.032 | −74.4 |
| 2nd Quartile | 0.043 | 29.1 | 0.034 | 23.4 | 0.026 | 18.7 | 0.016 | 13.2 | −0.027 | −62.8 |
| 3rd Quartile | 0.032 | 21.5 | 0.027 | 18.3 | 0.024 | 17.2 | 0.020 | 15.7 | −0.013 | −40.6 |
| Farthest | 0.019 | 12.4 | 0.019 | 13.2 | 0.018 | 12.8 | 0.015 | 11.8 | −0.004 | −21.1 |
| Within Groups | 0.090 | 60.1 | 0.096 | 65.3 | 0.094 | 69.0 | 0.092 | 74.0 | 0.003 | 3.3 |

**Table 3**

Decomposition of within-metro *H* by 1980 place racial/ethnic diversity, 1980–2010

| | 1980 | | 1990 | | 2000 | | 2010 | | Change 1980 to 2010 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** |
| Metro *H* | 0.149 | 100.0 | 0.147 | 100.0 | 0.137 | 100.0 | 0.125 | 100.0 | −0.025 | −16.8 |
| Most Homogeneous | 0.030 | 20.3 | 0.026 | 17.6 | 0.021 | 15.6 | 0.016 | 12.8 | −0.014 | −46.7 |
| 2nd Quantile | 0.051 | 34.4 | 0.042 | 28.4 | 0.032 | 23.7 | 0.022 | 17.8 | −0.029 | −56.9 |
| 3rd Quantile | 0.060 | 40.0 | 0.045 | 30.5 | 0.030 | 21.9 | 0.018 | 14.4 | −0.042 | −70.0 |
| 4th Quantile | 0.044 | 29.6 | 0.030 | 20.7 | 0.019 | 13.8 | 0.011 | 8.7 | −0.033 | −75.0 |
| Most Diverse | −0.092 | 62.0 | −0.072 | −48.9 | −0.047 | 34.6 | −0.030 | −24.1 | 0.062 | 67.4 |
| Empty in 1980 | – | – | 0.016 | 11.1 | 0.018 | 13.0 | 0.017 | 13.4 | – | – |
| Within Groups | 0.056 | 37.8 | 0.060 | 40.5 | 0.064 | 46.7 | 0.071 | 57.0 | 0.015 | 26.8 |

**Table 4**

Decomposition of within-metro *H* by 1980 place housing-type diversity, 1980–2010

| | 1980 | | 1990 | | 2000 | | 2010 | | Change 1980 to 2010 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** |
| Metro *H* | 0.149 | 100.0 | 0.147 | 100.0 | 0.137 | 100.0 | 0.125 | 100.0 | −0.025 | −16.8 |
| Most Homogeneous | 0.029 | 19.7 | 0.026 | 17.4 | 0.021 | 15.4 | 0.015 | 12.1 | −0.014 | −48.3 |
| 2nd Quantile | 0.036 | 23.9 | 0.028 | 18.9 | 0.021 | 15.1 | 0.013 | 10.4 | −0.023 | −63.9 |
| 3rd Quantile | 0.019 | 12.5 | 0.014 | 9.2 | 0.009 | 6.3 | 0.005 | 4.3 | −0.013 | −68.4 |
| 4th Quantile | 0.007 | 4.7 | 0.003 | 2.0 | 0.003 | 2.3 | 0.003 | 2.1 | −0.004 | −57.1 |
| Most Diverse | −0.026 | −17.1 | −0.021 | −14.3 | −0.016 | −11.5 | −0.011 | −8.5 | 0.015 | 57.7 |
| Empty in 1980 | – | – | 0.009 | 6.3 | 0.010 | 7.6 | 0.010 | 8.1 | – | – |
| Within Groups | 0.084 | 56.4 | 0.089 | 60.4 | 0.089 | 64.7 | 0.089 | 71.5 | 0.005 | 6.0 |

**Table 5**

Decomposition of within-metro *H* by 1980 place majority racial/ethnic category, 1980–2010

| | 1980 | | 1990 | | 2000 | | 2010 | | Change 1980 to 2010 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** | ***H*** | **%** |
| Metro *H* | 0.149 | 100.0 | 0.147 | 100.0 | 0.137 | 100.0 | 0.125 | 100.0 | −0.025 | −16.8 |
| White Dominant | 0.159 | 106.7 | 0.123 | 83.7 | 0.090 | 65.6 | 0.057 | 45.7 | −0.102 | −64.2 |
| White Shared | −0.023 | −15.2 | −0.033 | −22.5 | −0.035 | −25.5 | −0.026 | −21.2 | −0.004 | −17.4 |
| Black Majority | 0.001 | 0.4 | 0.005 | 3.5 | 0.008 | 5.6 | 0.007 | 5.7 | 0.007 | 700.0 |
| Hispanic Majority | 0.002 | 1.7 | 0.006 | 4.2 | 0.007 | 5.3 | 0.007 | 5.7 | 0.005 | 250.0 |
| No Majority | −0.020 | −13.4 | −0.012 | −7.9 | −0.004 | −3.1 | −0.002 | −1.2 | 0.019 | 95.0 |
| Empty in 1980 | – | – | 0.016 | 11.1 | 0.018 | 13.0 | 0.017 | 13.4 | – | – |
| Within Groups | 0.030 | 19.8 | 0.041 | 27.9 | 0.054 | 39.1 | 0.065 | 51.9 | 0.035 | 116.7 |

**Table 6**

Transition matrix by place majority racial/ethnic category, 1980 and 2010

| | 2010 Majority Category | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1980 Majority Category** | **White Dominant** | **White Shared** | **Black Majority** | **Hispanic Majority** | **Asian Majority** | **Other Majority** | **No Majority** | **Empty[a]** |
| White Dominant | 43.09 | 52.64 | 0.97 | 0.56 | 0.00 | 0.00 | 2.75 | 0.00 |
| White Shared | 1.15 | 53.01 | 9.00 | 10.24 | 0.96 | 0.00 | 25.65 | 0.00 |
| Black Majority | 0.00 | 1.10 | 84.62 | 5.49 | 0.00 | 0.00 | 8.79 | 0.00 |
| Hispanic Majority | 0.00 | 0.00 | 0.00 | 95.24 | 2.38 | 0.00 | 2.38 | 0.00 |
| Asian Majority | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other Majority | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| No Majority | 0.00 | 0.00 | 25.58 | 30.23 | 9.30 | 0.00 | 34.88 | 0.00 |
| Empty[a] | 43.75 | 41.31 | 3.14 | 3.30 | 0.12 | 0.03 | 4.34 | 4.00 |

[a]Places non-existent or with less than 100 persons in census year.