Abstract

Metropolitan level diversity has increased since 1980, and the main contours of diversity appear reasonably consistent across geographic scales. However, diversity looks different in Buffalo than it does in Dallas, and the role played by diverse principal cities during the period of interest is quite different from the role played by segregated White suburbs. Our decomposition of diversity within metropolitan areas indicates that, while principal cities continue to influence the overall diversity of metro areas, their impact is declining. In fact, principal cities have often become less diverse since 1980, while near-in places have seen substantial increases in diversity during the same period. We also document the diminishing contribution of places with substantial White majorities to overall metropolitan segregation. In contrast, the increased contribution of majority Black places and majority Hispanic places is troubling. So is the fact that a closer look at individual metro areas like Seattle and Chicago reveals the continued development of White suburbs between 1980 and 2010. The patterns we observe are quite complex and suggest a need for further analysis of the spatial and scalar processes driving changes in diversity within and between metropolitan areas.

Introduction

As the title of a recent book aptly puts it, an ethnoracial ‘diversity explosion’ is underway in the United States (Frey 2014). The rapid growth of minority groups via immigration, natural increase, intermarriage, and related processes has boosted the proportional representation of Asians and especially Hispanics while reducing White demographic dominance. This increasing evenness in the distribution of the American population across racial-ethnic categories is what we mean by the concept of diversity (see White 1986). Maximum diversity, when all racial-ethnic groups are the same size, will not be attained any time soon. However, the significance of the diversification trend is apparent in debates over its potential consequences for the economy, education, politics, intergroup relations, and social cohesion (Bean and Stevens 2003; Borjas 1999; Lee and Bean 2010; Lichter 2013; Lindsay and Singer 2003; Putnam 2007).

The main contours of diversity change appear reasonably consistent across geographic scales. Studies of states, metropolitan areas, counties, places, and neighborhoods support several generalizations about diversity during the period from 1980 to the present (Farrell and Lee 2011; Franklin 2014; Lee, Iceland, and Farrell 2014; Lee, Iceland, and Sharp 2012; Logan, Zhang, and Xu 2010;
Wright et al. 2014). For example, gains in diversity magnitude have been pervasive, affecting large majorities of each type of unit and resulting in substantial mean increases. The structure of diversity has shifted as well, away from populations made up of one or two ethnoracial groups and toward those with three or more present. Another tendency that spans scales is for the number of Whites to decline in the most diverse multi-ethnic settings.

With a few notable exceptions (Farrell 2008; Lichter, Parisi, and Taquino 2015; Parisi, Lichter, and Taquino 2011), existing research addresses diversity one geographic scale at a time. This approach, while informative, misses an opportunity to link lower-scale changes to higher-scale patterns. Our purpose here is to examine the impact of diversity changes at the place level—in suburbs and principal cities—on trends for metropolitan areas. Stereotypes have long contrasted homogeneous suburbia with diverse urban centers, but suburbs now display a range of racial-ethnic mixes, not to mention variety on age, household type, socioeconomic status, and other compositional dimensions (Farrell 2014; Hall and Lee 2010; Hanlon, Vicino, and Short 2006; Singer, Hardwick, and Brettell 2008). Moreover, generalizations about increasing diversity at the metropolitan level may hide the rise of minority-dominated segregated places, or changes in diversity that only affect certain kinds of places. Diversity can be expected to vary markedly from place to place, both within and across metro contexts, and so empirical analysis at multiple scales remains necessary.

Beyond its empirical objectives, two broader issues motivate our analysis. The first is an ongoing methodological concern about how best to conceptualize and measure phenomena such as diversity and segregation. We seek to contribute to the multidisciplinary dialog on this topic. Second, we highlight the significance of places for the study of urban structural change. 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 recognized identities and reputations—influence the spatial sorting of metropolitan dwellers by race-ethnicity, income, and other attributes.

These two motivations are elaborated upon in the background portion of the paper. We then turn to our central research aim: exploring the role played by places in metropolitan diversity trends. Data from the 1980 through 2010 decennial censuses allow us to construct a pair of ethnoracial diversity measures (the Entropy index $E$ and Theil’s $H$) for places located in 50 metro areas that have an abundance of suburbs and principal cities. Our analysis begins by describing longitudinal shifts in the distribution of diversity scores for the full sample of places and for the subset of places in each metropolis. Next, we decompose overall diversity at multiple geographic scales, focusing on place characteristics that account for within-metro patterns of diversity change. The final empirical section maps the dynamics of place-level changes in four illustrative metropolises: Chicago, Dallas, San Francisco, and Seattle.

**Background**

*Studying Diversity and Segregation*
Our interest in the mechanisms that underlie rising metropolitan diversity engages with a growing literature on the methodologies for representing diversity and segregation. The development of this literature has been prompted by awareness that single-measure accounts of residential settlement patterns are insufficient for describing instances of change and stability (Wright, Holloway, and Ellis 2011). Here we briefly describe aspects of the literature to which our paper speaks.

How to move beyond single measures remains something of an open question. Johnston et al. (2010:93) specifically call out the “absence of any indication of variation” as a major limitation of single-measure studies of segregation. We address this concern through the creation of diversity profiles that depict the distribution of place-level diversity scores within metro areas. Our use of a decomposition technique to unpack the scales and sources of variation in diversity provides a more nuanced approach as well.

Fischer and Mattson (2009) confront the single-measure problem by expanding the study of segregation and diversity along multiple dimensions, including income, education, and immigration status (also see Reardon and Bischoff 2011). Rather than follow Fischer and Mattson’s lead, we move the focus away from the many individual or household attributes for which diversity measures could be calculated and toward place-level characteristics that bring context to our observations. The next section of the paper identifies a handful of such characteristics that theory and research suggest are associated with diversity. Despite the modest number of correlates considered, the method we employ is flexible enough to incorporate additional features of places or of other geographic units. Moreover, a companion piece (Tach et al. n.d.) looks at nonracial aspects of place diversity and how they interact with the ethnoracial dimension of diversity examined here.

Another type of challenge to single-measure representations of diversity and segregation has come from scholars probing the spatial processes that may describe residential settlement patterns (Crowder and South 2008; Folch and Rey 2014; Lloyd et al. 2014; Morrill 1991; Reardon and O’Sullivan 2004; Reardon et al. 2009; Wong et al. 2007). Thanks to their contributions, a wide range of tools is now available to better understand how segregation is configured. We use a very rough measure, distance from the principal city, to represent one facet of the spatial processes at work in our data. As noted in the next section, this measure has direct relevance for spatial assimilation and invasion-succession models. It also bears on theoretical debates about the suburbanization of poverty (Farrell 2008; Howell and Timberlake 2014; Jones 2008; Madden 2003).

Finally, our research contributes to an expanding body of scholarship on the scales of segregation (Ellis et al. 2012; Fowler 2015; Lee et al. 2008; Lichter et al. 2015; Monkkonen and Zhang 2014; Reardon et al. 2009; Spielman and Logan 2013). Our methodology closely mirrors that of Parisi et al. (2011) and Reardon and Firebaugh (2002), who leverage the decomposition of Theil’s $H$ to investigate segregation at multiple scales. However, the way we understand the role of scale is more closely linked to Fowler’s (2015) theorization. He shies away from methods that indicate some correct scale for measuring segregation and exhorts researchers to look for interplay across scales. The descriptive nature of the current study does not give us access to the kind of relationship-across-scale measures proposed by Fowler, but future work may seek to construct them.
Why Places Matter

The emphasis on metropolitan places in our multi-scale analysis of racial-ethnic diversity can be readily justified. First and foremost, these places are relevant to diversity because most Americans live in them, including disproportionate shares of Blacks, Hispanics, and Asians. (Over nine-tenths of the members of each of the three groups are metro dwellers.) A large majority of metro places are also incorporated, possessing legally prescribed powers and functions, and therefore have responsibility for dealing with diversity-related issues inside their boundaries. At one extreme, places may encourage immigrant-fueled diversification as an economic and demographic revitalization strategy (Carr, Lichter, and Kafalas 2012). Alternatively, they may attempt to counter diversity via zoning, annexation, affordable housing restrictions, and other mechanisms that dilute or deter minority growth (Jackson 1985; Rothwell and Massey 2009). Such actions of places, combined with their social and economic characteristics and their local history of race relations, determine whether they will develop reputations more or less conducive to diversity. Both White and minority homeseekers appear responsive to place reputations (Krysan and Bader 2007).

The significance of places for understanding ethnoracial diversity and segregation shows up empirically in a handful of decomposition studies on which we build. The studies have used Theil’s $H$ to measure how much less diverse, on average, neighborhoods (census tracts or blocks) are than their respective metropolitan areas (Farrell 2008; Lichter et al. 2015; Parisi et al. 2011). For our purposes, the key finding from this work lies in the relative contributions of the various nested geographic components to $H$ over time. Since 1990 between-place differences have become more important: increasing shares of metro segregation are due to the dissimilar racial-ethnic compositions (i.e., the divergent diversity magnitudes) observed among cities and suburbs. By contrast, neighborhood-level diversity patterns within cities and suburbs now account for smaller shares than in previous years.

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 the types of places likely to increase or decrease metro-level diversity. Fortunately, both theory and research provide some guidance about which place characteristics might be associated with diversity change.

The first characteristic of interest is distance to the metropolitan core. Urban structural models from the heyday of the Chicago School to the present identify the core—typically the largest city or set of principal cities—as a site where minority and immigrant groups concentrate, rendering it very diverse. However, as members of these groups experience upward socioeconomic mobility and (in the case of immigrants) acculturation, they are predicted to leave the core behind for the suburbs (Alba and Logan 1991; Farrell 2014). For reasons of cost and accessibility, their spatial assimilation will be proximity-dependent. Thus, nearby place destinations should become more ethnoracially mixed than peripheral ones and give a greater boost to metro-wide diversity. This spatial assimilation hypothesis receives partial support from scholarship documenting an inverse distance gradient in the diversity of suburban places (Farrell 2005; Hall and Lee 2010).
We also think that the initial diversity magnitude of a place should be related to its subsequent diversity change and, ultimately, to the trend in metropolitan diversity. 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. Beyond such ceiling and floor effects, the invasion-succession model of community change considers high diversity a temporary state (Hartmann 1993; Lee 2007). Although new arrivals from a different racial-ethnic background than the current residents may elevate the diversity of a place for a while, eventually an inflection or ‘tipping point’ is reached. After that point, succession is expected to accelerate, with incumbents departing, newcomers from the ‘invading’ group filling most of the vacancies, and the composition of the place turning more homogeneous. At least one recent investigation yields place-level evidence relevant to the succession hypothesis. Lee and Hughes (2015) show that ethnoracial diversity declines (i.e., increased homogeneity) between 1980 and 2010, though rare, were more common in places with high diversity levels at the beginning of the period.

Central to the succession process are racial residential preferences, broadly reflecting in-group affinity and out-group avoidance. Whether obtained through surveys (Charles 2006; Emerson, Yancey, and Chai 2001; Harris 2001; Krysan et al. 2009) or inferred from inter-neighborhood mobility patterns (Crowder, Hall, and Tolnay 2011; Crowder, Pais, and South 2012; Pais, South, and Crowder 2009), the preference data reveal (1) a desire to live among a substantial number of co-ethnic 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 non-racial problems such as declining property values, poor schools and the like (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.

One obvious hypothesis to be formulated from the preference literature is that the single-group composition of predominantly Black or Hispanic places will persist or intensify over time, detracting from any metro-wide change toward greater diversity. Conversely, the favorable evaluation of White places makes them attractive destinations for members of multiple groups, a fact that could lead to subsequent diversity gains. We should note, however, a contrary hypothesis based on the place stratification perspective: that White communities are not particularly receptive to ethnoracial diversification and will seek to resist it via the implementation of an array of policies and institutional practices. The ability to block minority in-movement may be limited to a subset of extremely affluent and/or legally resourceful suburban municipalities.

**Methodology**

**Sample and Data**

Our examination of the relationship between place- and metropolitan-level diversity uses place population counts from the U.S. decennial censuses for 1980, 1990, 2000, and 2010. The starting file contains all 29,261 places listed in one or more of those censuses. We have subsequently reduced the file to include only the 7,157 places located in a Census Bureau-recognized metropolitan area that had:
(1) at least 29 places in 1980 and (2) at least one place with over 50,000 inhabitants in 1980. The reduction process limits us to 50 metro areas (defined in constant 2010 boundaries), with Providence, RI having the fewest places (48) and New York, NY the most (748)\(^1\). These areas range in 2010 population size from Harrisburg, PA’s 253,092 residents to New York’s 16,248,590. 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.

In order to permit consistent and meaningful comparison of changing diversity across census years, we have collapsed categories from the race x Hispanic origin crosstabulations for each decade into five panethnic groups: non-Hispanic White (hereafter White), non-Hispanic Black (Black), non-Hispanic Asian and Pacific Islander (Asian), Hispanic, and Other. In all years 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 included in the Other category as well.

**Diversity Measurement and Decomposition**

We rely on two different measures of diversity: scaled Entropy \((E)\), and Theil’s \(H\). Both measures are chosen because of their popularity within the growing literature on ethnoracial diversity (see, e.g., Fischer et al. 2004; Lee et al. 2014; Lichter et al. 2015). Theil’s \(H\), as discussed below, also has some very desirable properties with respect to decomposition. We define scaled Entropy as:

\[
E = \sum_{m=1}^{M} \pi_m \ln\left(\frac{1}{\pi_m}\right) \frac{\ln(m)}{\ln(m)}
\]  

(1)

Following Reardon and Firebaugh’s (2002) notation, \(m\) denotes one of our five panethnic categories, \(\pi_m\) is the proportion of the total population in category \(m\), and \(\ln\) refers to the natural log with \(\ln(1/\pi_m)\) treated as 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: all residents of a place or metropolis belong to the same group.

Again following Reardon and Firebaugh (2002, p. 46), we define Theil’s \(H\) as a measure of the ratio of within-unit diversity to total diversity:

\[
H = \frac{1}{TE} \sum_{j=1}^{J} t_j \left(E - E_j\right)
\]  

(2)

where \(T\) and \(t_j\) refer to the population of the whole and subunit \(j\) respectively, and \(E\) and \(E_j\) refer to the entropy for the whole and subunit \(j\) respectively. The structure of the latter part of Equation 2 \((E - E_j)\) means that positive values for \(H\) convey the degree to which subunits are less diverse than the population as a whole, while negative values of \(H\) convey that the subunits are, on average, more

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\(^1\) Throughout the text we refer to metropolitan areas by the name of their largest city (based on 2010 population). Many metro areas have multiple large cities within their borders, and these cities are typically concatenated in the Census Bureau title such that Providence is officially the Providence-New Bedford-Fall River, RI-MA Metro Area and New York is officially the New York-White Plains-Wayne, NY-NJ Metro Division.
diverse than the population as a whole. Thus, higher values of $H$ convey the opposite meaning of higher values of $E$. Given the constraints on $E$, and the composition of our aggregate population $T$, $H$ has a theoretical range of $-0.23$ (most diverse) to $0.7$ (most segregated) although this range will vary within the decomposition structure we define below.

Given the similarity to our own analytic goals, we borrow the notation of Parisi et al. (2011) to define the decomposition of our measure $H$ into subunits. As with Parisi et al’s paper, we define $H_{XY}$ as $H$ for all clusters $y$ in $Y$ based on a calculation using subunits $x$ such that:

$$H_{XY} = \frac{1}{TE} \sum_{y=1}^{Y} \sum_{x=1}^{X} t_x (E_y - E_x)$$  \hspace{1cm} (3)

If our observations are places $p$ within the universe of places included in this analysis $U$, then $H_{pU}$ would be equal to $H$ from Equation 2 (the summation over $y$ drops out as there is only one group). By way of comparison, the contribution of a subunit within our analytic group, for example metro areas $M$, would be represented by $H_{pM}$. We use this decomposition strategy to stratify the contribution to total $H$:

$$H_{pU} = H_{RU} + H_{MR} + H_{GM} + H_{PG}$$  \hspace{1cm} (4)

Equation 4 can be interpreted as $H_{pU}$ (total segregation in our sample of places) equaling the sum of differences between regions $R$ plus the sum of differences between metro 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. In the analysis that follows, we group places within metro areas in several different ways to consider the importance of a range 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.\(^2\)

**Place Characteristics**

Three grouping variables are designed to distinguish among places within metropolitan areas, based on certain characteristics of those places relevant to our hypotheses. The first grouping variable measures the distance of a place from the nearest principal city within its metropolis. ‘Principal city’ is a Census designation referring to the largest city (or cities) in a metropolitan area. Areas may have multiple principal cities if a given city meets certain population and employment thresholds. The principal city designation only dates to 1999, so we use a recent (2009) designation rather than trying to match characteristics for our 1980 data.

In our sample the average number of principal cities in a metro area is 4.5. 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-metro principal city for each place in our sample. Subsequently we divide places by quartile within their metro area to group them into a spatial hierarchy of five groups: principal city, then nearest to furthest

\(^2\) The Census assigns four metro areas to multiple regions. For the purposes of creating a nested hierarchy for this analysis, we have assigned all places in Philadelphia, PA to the Northeast region, all places in Louisville, KY to the South region, and all places in Youngstown, OH and Cincinnati, OH to the Midwest region.
quartile. This grouping rests on the contestable assumption that all principal cities play the same conceptual role within a given metro area. As a robustness check, we calculate a similar distance measure based on the largest principal city within each area by population in 1980.³

In line with the succession hypothesis, our second grouping variable captures the diversity magnitude of a place at the beginning of the study period. Places are categorized by their 1980 E values into five quantiles ranging from most segregated (i.e., most homogeneous) to most diverse.

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 recommendations of Holloway et al. (2012) and classify places into eight categories. The classification scheme consists of five majority categories (Asian, Black, Hispanic, Other, White) where the named racial group constitutes at least 50% of the place population; a High White category where the White population exceeds 90%; a No Majority category where no group exceeds 50%; and an Empty category for places that had 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.

**Results**

**Distributional Shifts**

A starting point for the present analysis is the well-documented fact that ethnoracial diversity has consistently risen in U.S. metropolitan areas for at least the last 30 years. As noted earlier, researchers often explain this rise from a compositional perspective, emphasizing the influence of increased immigration from Latin America (especially Mexico) and Asia and a broadening of the locations that receive significant immigrant flows. The general upward trend in diversity is illustrated in

³ Results not shown; available from the authors upon request.
the Figure 1 boxplots for our sample of metro places.

![Figure 1. Changing diversity for sample of 7,157 places, 1980-2010](image)

We aim to identify the source of this diversification at the place level, examining how shifting place diversity shapes metro areas. In pursuit of that aim, it should be acknowledged that diversity has not changed evenly across metropolitan America. A growing literature parses the differences among areas, highlighting the significant contribution of 'new destination' metropolises in the West and South to broader diversity trends (Flippen and Kim 2015; Lichter et al. 2015; Park and Iceland 2011). Our intent, however, is to provide an even finer-grained analysis that looks at places within metro areas as drivers of the overall trend toward a more diverse nation.

The diversity profile featured in Figure 2 shows the probability density function for scaled Entropy ($E$) scores in the 50 sample metro 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. This overstates the variation in diversity since smaller, more numerous places tend to be outliers in the diversity profile. Nevertheless, our unweighted approach draws attention to the dramatic change in composition experienced in many places during the study period. By overlaying the values for two census-year profiles (1980 and 2010) on one chart, we can see how different the experience of diversity change has been across metro areas.

A consistent story throughout most of the panels in the figure is that the numerous places with very low Entropy in 1980 (reflecting low diversity or high segregation) have spread out across the range of possible 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 single case. Two variations on this theme are apparent. One is the shifting and shrinking of a pronounced 1980 bulge of low-diversity places in metro areas ranging from Albany and Allentown to Portland and Seattle. However, we also observe significant movement towards greater diversity in areas without a distinct low-diversity bulge in 1980, as exemplified by Atlanta, Charlotte, Houston, or Los Angeles.
Figure 2. Overlapping diversity profiles for 50 metro areas showing scaled entropy, 1980 and 2010

Decomposition of Diversity

What accounts for the changing distribution of place diversity across metro areas shown in Figure 2? We address this question via the technique described earlier, in which 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 diversity. 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 less diversity or more segregation, the opposite of $E$’s directional interpretation.

Table 1. Baseline decomposition of $H$, 1980-2010: absolute value and percent of total

<table>
<thead>
<tr>
<th></th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>Change 80 to 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total $H$</td>
<td>0.237</td>
<td>100.0%</td>
<td>0.248</td>
<td>100.0%</td>
<td>0.230</td>
</tr>
<tr>
<td>Between Regions</td>
<td>0.030</td>
<td>12.7%</td>
<td>0.037</td>
<td>15.0%</td>
<td>0.034</td>
</tr>
<tr>
<td>Between Metros</td>
<td>0.058</td>
<td>24.3%</td>
<td>0.064</td>
<td>25.8%</td>
<td>0.059</td>
</tr>
<tr>
<td>Within Metros</td>
<td>0.149</td>
<td>63.0%</td>
<td>0.147</td>
<td>59.3%</td>
<td>0.137</td>
</tr>
</tbody>
</table>

To provide a baseline, Table 1 presents a decomposition of $H$ with no within-metro grouping. The table gives us the overall scope of change in segregation, or in the average degree to which place diversity is less than metro diversity. What we see is that, of the total place-level segregation of .237 in 1980, .149 or 63% is a function of segregation at the place level within metro areas, while much smaller portions can be attributed to differences between regions (12.7%) or differences between metro areas (24.3%). Moreover, when we look at segregation change between 1980 and 2010 (last two columns), most of the decrease in segregation—or increase in diversity—is happening within metro areas (-16.8%), more than enough to counteract increasing 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, we should see less segregation between regions and between metro areas within regions as immigrant and minority populations spread throughout the U.S. metropolitan hierarchy and settle in nontraditional places. In fact, between-metro 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% of the total to 15.6% of the total). This may be a function of the sample employed—perhaps the requirement that metro areas have at least 29 places in 1980 excludes many of the new destinations—but it does support our focus on explaining diversity change within metropolitan contexts.

We turn next to a range of decompositions that might explain the structure of changing diversity within Metro areas as indicated by Table 1. One possibility, derived from spatial assimilation theory and research, is that minority groups settle originally near the metropolitan core and gradually make their way to outlying suburban places. Because the process is expected to unfold in a proximity-dependent fashion, we distinguish places based on their distance from the nearest principal city in their metro area. Table 2 shows some support for the spatial assimilation hypothesis. The principal cities themselves are

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Note that we are now examining only “Within Metro” change, the bottom line from Table 1 is the top line of Table 2.
far more diverse than other places, but they have grown relatively more segregated in every decade, totaling a 62.3% increase 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. Looking down the columns of Table 2, we can see further evidence of spatial assimilation, with increasingly distant places declining, but at a slower rate than closer places.

**Table 2. Decomposition of within-metro $H$ by place distance from nearest principal city, 1980-2010**

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro $H$</td>
<td>0.149</td>
<td>100.0%</td>
<td>0.147</td>
<td>100.0%</td>
<td>0.137</td>
<td>100.0%</td>
<td>0.125</td>
<td>100.0%</td>
<td>-0.025</td>
</tr>
<tr>
<td>Principal Cities</td>
<td>-0.077</td>
<td>-51.7%</td>
<td>-0.060</td>
<td>-41.1%</td>
<td>-0.043</td>
<td>-31.5%</td>
<td>-0.029</td>
<td>-23%</td>
<td>0.048</td>
</tr>
<tr>
<td>Closest</td>
<td>0.043</td>
<td>28.7%</td>
<td>0.031</td>
<td>21%</td>
<td>0.019</td>
<td>13.8%</td>
<td>0.010</td>
<td>8.3%</td>
<td>-0.032</td>
</tr>
<tr>
<td>2nd Quartile</td>
<td>0.043</td>
<td>29.1%</td>
<td>0.034</td>
<td>23.4%</td>
<td>0.026</td>
<td>18.7%</td>
<td>0.016</td>
<td>13.2%</td>
<td>-0.027</td>
</tr>
<tr>
<td>3rd Quartile</td>
<td>0.032</td>
<td>21.5%</td>
<td>0.027</td>
<td>18.3%</td>
<td>0.024</td>
<td>17.2%</td>
<td>0.020</td>
<td>15.7%</td>
<td>-0.013</td>
</tr>
<tr>
<td>Furthest</td>
<td>0.019</td>
<td>12.4%</td>
<td>0.019</td>
<td>13.2%</td>
<td>0.018</td>
<td>12.8%</td>
<td>0.015</td>
<td>11.8%</td>
<td>-0.004</td>
</tr>
<tr>
<td>Within Groups</td>
<td>0.090</td>
<td>60.1%</td>
<td>0.096</td>
<td>65.3%</td>
<td>0.094</td>
<td>69%</td>
<td>0.092</td>
<td>74%</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Our second grouping mechanism is based on the magnitude of place diversity in 1980. As noted earlier, this characteristic permits an evaluation of the succession hypothesis: that diversity change within metropolitan areas is due to once-diverse places passing a ‘tipping point’ in composition and becoming more homogeneous or segregated over time, inhabited by different racial-ethnic groups. A logical alternative would be that diverse places simply become more diverse. The decomposition results in Table 3 offer strong support for the succession and ‘tipping point’ construction of place-level change. Segregation in the most diverse places increases 67.4%, and while these places represent the only group to reduce within metro segregation in 2010, 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 segregated (or least diverse) 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.
Within Groups

Empty in 1980

High

Majority

Metro

Table

contributing ethnic majority in 1980 places was similar, rising from .002 to .007, an increase of 250%. Places that had no racial change in absolute value. While Majority White places contributed relatively little to segregation across the entire three-decade period, High White places (more than 90% White) saw their contribution to overall segregation decrease 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, Majority Black places contributed 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 Majority Hispanic places was similar, rising from .002 to .007, an increase of 250%. Places that had no racial-ethnic majority in 1980 experienced an increase in segregation during the study period of 95%, contributing -.02 in 1980 and only -.002 in 2010.

Table 3 Decomposition of within-metro $H$ by 1980 place diversity, 1980-2010

<table>
<thead>
<tr>
<th></th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>Change 80 to 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro $H$</td>
<td>0.149</td>
<td>100.0%</td>
<td>0.137</td>
<td>100.0%</td>
<td>0.137</td>
</tr>
<tr>
<td>Most Segregated</td>
<td>0.030</td>
<td>20.3%</td>
<td>0.021</td>
<td>15.6%</td>
<td>0.021</td>
</tr>
<tr>
<td>2nd Quantile</td>
<td>0.051</td>
<td>34.4%</td>
<td>0.032</td>
<td>23.7%</td>
<td>0.032</td>
</tr>
<tr>
<td>3rd Quantile</td>
<td>0.060</td>
<td>40.0%</td>
<td>0.030</td>
<td>21.9%</td>
<td>0.030</td>
</tr>
<tr>
<td>4th Quantile</td>
<td>0.044</td>
<td>29.6%</td>
<td>0.019</td>
<td>13.8%</td>
<td>0.019</td>
</tr>
<tr>
<td>Most Diverse</td>
<td>-0.092</td>
<td>-62.0%</td>
<td>-0.047</td>
<td>-34.6%</td>
<td>-0.047</td>
</tr>
<tr>
<td>Empty in 1980</td>
<td>-</td>
<td>-</td>
<td>0.018</td>
<td>13.0%</td>
<td>0.018</td>
</tr>
<tr>
<td>Within Groups</td>
<td>0.056</td>
<td>37.8%</td>
<td>0.064</td>
<td>46.7%</td>
<td>0.064</td>
</tr>
</tbody>
</table>

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 majority in 1980. This grouping modifies our thinking about the general reduction in segregation of more segregated or homogeneous places reported in Table 3. As the decomposition in Table 4 makes clear, segregation in Majority Black and Hispanic places does not behave the same way that segregation does in White places. While Majority White places contributed relatively little to segregation across the entire three-decade period, High White places (more than 90% White) saw their contribution to overall segregation decrease 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, Majority Black places contributed 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 Majority Hispanic places was similar, rising from .002 to .007, an increase of 250%. Places that had no racial-ethnic majority in 1980 experienced an increase in segregation during the study period of 95%, contributing -.02 in 1980 and only -.002 in 2010.

Table 4. Decomposition of $H$ by 1980 place majority racial-ethnic group, 1980-2010

<table>
<thead>
<tr>
<th></th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>Change 80 to 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro $H$</td>
<td>0.149</td>
<td>100.0%</td>
<td>0.137</td>
<td>100.0%</td>
<td>0.137</td>
</tr>
<tr>
<td>Maj. Black</td>
<td>0.001</td>
<td>0.4%</td>
<td>0.008</td>
<td>5.6%</td>
<td>0.008</td>
</tr>
<tr>
<td>Maj. Hispanic</td>
<td>0.002</td>
<td>1.7%</td>
<td>0.007</td>
<td>5.3%</td>
<td>0.007</td>
</tr>
<tr>
<td>Maj. White</td>
<td>-0.023</td>
<td>-15.2%</td>
<td>-0.035</td>
<td>-25.5%</td>
<td>-0.035</td>
</tr>
<tr>
<td>High White</td>
<td>0.159</td>
<td>106.7%</td>
<td>0.090</td>
<td>65.6%</td>
<td>0.090</td>
</tr>
<tr>
<td>No Majority</td>
<td>-0.020</td>
<td>-13.4%</td>
<td>-0.004</td>
<td>-3.1%</td>
<td>-0.004</td>
</tr>
<tr>
<td>Empty in 1980</td>
<td>-</td>
<td>-</td>
<td>0.018</td>
<td>13%</td>
<td>0.018</td>
</tr>
<tr>
<td>Within Groups</td>
<td>0.030</td>
<td>19.8%</td>
<td>0.054</td>
<td>39.1%</td>
<td>0.054</td>
</tr>
</tbody>
</table>
We highlight the key changes from Table 4 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 5 reports where places of a particular majority type in 1980 wound up 30 years later. So, 84.6% of places that were Majority Black in 1980 remained Majority Black in 2010, and the persistence rate was even higher among Majority Hispanic places (95.2%). By comparison, only 43 percent of the 1980 High White places were still High White by 2010. Note, however, that none of the places categorized as No Majority in 1980 became Majority White or High White. Instead, they were more or less equally likely to stay No Majority, become Majority Black, or become Majority Hispanic. An additional 10% of them became majority Asian. This indicates that—in line with Whites’ aversion to the presence of minorities and immigrants—the most diverse places are not shifting toward a segregated White composition but rather toward majority minority status.

### Table 5 Transition matrix for majority racial-ethnic category, 1980 to 2000: percent of places in 1980

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maj. Asian</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Maj. Black</td>
<td>0.00</td>
<td>84.62</td>
<td>5.49</td>
<td>0.00</td>
<td>1.10</td>
<td>0.00</td>
<td>8.79</td>
<td>0.00</td>
</tr>
<tr>
<td>Maj. Hispanic</td>
<td>2.38</td>
<td>0.00</td>
<td>95.24</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2.38</td>
</tr>
<tr>
<td>Maj. Other</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Maj. White</td>
<td>0.96</td>
<td>9.00</td>
<td>10.24</td>
<td>0.00</td>
<td>53.01</td>
<td>1.15</td>
<td>25.65</td>
<td>0.00</td>
</tr>
<tr>
<td>High White</td>
<td>0.00</td>
<td>0.97</td>
<td>0.56</td>
<td>0.00</td>
<td>52.64</td>
<td>43.09</td>
<td>2.75</td>
<td>0.00</td>
</tr>
<tr>
<td>No Majority</td>
<td>9.30</td>
<td>25.58</td>
<td>30.23</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>34.88</td>
<td>0.00</td>
</tr>
<tr>
<td>Empty in 1980</td>
<td>0.12</td>
<td>3.14</td>
<td>3.30</td>
<td>0.03</td>
<td>41.31</td>
<td>43.75</td>
<td>4.34</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Note: “Empty” denotes places with less than 100 persons in 2010.

### Metropolitan Archetypes

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

- Principal cities are still diverse but becoming less so, relatively speaking.
- Metro places that are not principal cities (i.e., suburbs) are growing more diverse, with closer-in places increasing their diversity the most.
- The most diverse places are becoming more segregated; all other places are becoming more diverse.
- In absolute terms, places with a High White racial-ethnic structure in 1980 have contributed the most to the rise in within-metro diversity.
- Majority Black and Majority Hispanic places, though playing a relatively small role in within-metro diversity, have undergone large increases in segregation between 1980 and 2010.
- No Majority places exhibit declining diversity and tend to transition to a majority minority structure.

Because of the complexity of such changes, it is instructive to examine them for individual metropolitan areas. Given space constraints, we focus on four areas: Chicago, Dallas, San Francisco, and
Seattle. These areas were selected for their capacity to clarify the link between the shifting diversity profiles in Figure 2 and the decompositions in Tables 2-4.

Figure 2 shows a number of metropolitan areas that have fairly flat diversity profiles in both 1980 and 2010, with a significant shift towards greater diversity. (Atlanta and Charlotte are examples.) In Figure 3 we can see how this type of change has unfolded for metropolitan Dallas. The increasing diversity of the metro area was most pronounced in and around the City of Dallas, where the vast majority of places saw a decrease in percent White of at least 25%. (The mean change in percent White for all places in the Dallas area was -25%.) The three largest cities in the area were No Majority places by 2010, emphasizing the continued importance of principal cities as drivers of metro-wide diversity. Arlington, for instance, had been 90% White in 1980 but was only 45% White 30 years later. Across the metro area, most of the High White 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 the City of Dallas. Even accounting for the significant number of new places appearing between 1980 and 2010—104 of the 216 places in 2010 were not covered by the 1980 census—the number of High White places shrank from 66 to 19 during the period. This suggests that even the rapid expansion of metropolitan Dallas did not include the creation of new White enclaves at the place level. Due to an absence of No Majority places in 1980, the Dallas area did not exhibit increased segregation in its most diverse places as was often the case elsewhere.

San Francisco shares a great deal with Dallas in terms of its flat diversity profile, but it was already a far more diverse metropolitan area in 1980. San Francisco’s principal cities both became more diverse over the three decades, going from Majority White to No Majority. None of the area’s 28 High White places changed to No Majority status the way several of those in Dallas did, but all but two of them dropped to Majority White. In contrast, over half of the 1980 Majority White places were No Majority by 2010 (26 out of 49). Places classified as No Majority in 1980 either remained that way (3 out of 6) or became majority minority. The spatial pattern of diversity change in San Francisco is complicated by the physical geography of the region as well as the tremendous growth in neighboring metro areas. Broadly speaking, however, the greatest increases in diversity appear to have occurred in the places closest to the principal cities, consistent with spatial assimilation logic.

A second type of diversity profile in Figure 2 features a notable bulge of places with low diversity in 1980, the bulge subsequently shrinking and shifting towards greater diversity. Examples include Boston and Minneapolis, but Western counterparts also exist. In Figure 3 we treat the Seattle metropolitan area as an illustration of this profile type.

Like Dallas, Seattle experienced significant population growth during the study period, and that growth was associated with an upward trend in overall diversity. In contrast to Dallas, however, the growth in Seattle was channeled heavily into suburbs that, while less White than they might have been in previous decades, were still predominantly White. Of 135 new places recognized between 1980 and 2010, 93 were Majority White in 2010 and 36 were High White. Although new places continued to be Majority White, places already present in 1980 saw an average decrease in White representation of 20%. Indeed, only two of 56 High White places in 1980 retained that classification by 2010. In general
terms Seattle conforms to both spatial assimilation and succession hypotheses, with diversity occurring in the metropolitan core and spreading outward. A notable geographic feature is the concentration of minority population growth in a few suburban places located south of the City of Seattle, most notably Kent, Renton, and Tukwila. These places represent the largest of a series of communities in the corridor extending between Seattle and Tacoma (a principal city to the south) that have been magnets for Seattle’s burgeoning immigrant population.

No analysis of changing ethnoracial diversity would be complete without attention to the metropolis that has been the centerpiece of urban research in the United States. Thus, we follow a well-trod path and examine Chicago. The Chicago metro area shows evidence of multiple processes at work, but their spatial expression is not obvious. Similar to the three other areas in Figure 3, virtually all places in metropolitan Chicago underwent significant declines in percent White. The City of Chicago was and continues to be No Majority, with the proportion of White residents falling between 1980 and 2010. Yet new places were much less diverse than in other metro areas, even Seattle. Of 107 new places recognized after 1980, a remarkable 55 remained High White in 2010 and 48 remained Majority White. Unlike Dallas, San Francisco, and Seattle, Chicago had Majority Black places in 1980, all of which persisted as Majority Black over 30 years. Three new places, 14 Majority White places, and four High White places became Majority Black by 2010. These changes hint that metro-wide diversity has been supported by the increasing segregation of majority minority places. If a spatial pattern can be discerned for Chicago, it is the extension of diversity into some of the suburbs, particularly along major highway corridors and in locations to the south of the city.
Figure 3: Racial categorization, population size, and change in percent white in four metro areas, 1980-2010. Note: Symbol size is proportional to population in 2010. Places with no population in 1980 are excluded from maps. Source: US Census and author calculations.
Conclusion

Racial-ethnic diversity has been on the rise in metropolitan America more or less consistently since 1980. This larger trend, however, masks substantial variation. Increasing diversity looks quite different in Buffalo than it does in Dallas, and the role played by diverse principal cities during the period of interest is quite different from the role played by segregated White suburbs. The research presented here reinforces the need to be sensitive to the full range of spatial and scalar processes that underlie metro-wide diversity patterns. Our empirical results are complex, only beginning to shed light on how and where metropolitan diversity change occurs. Nevertheless, some provocative lessons emerge.

Our decomposition analysis indicates that, while principal cities continue to influence the overall diversity of metro areas, their impact is declining. In fact, principal cities have often become less diverse. In some instances such a change may reflect a ‘return to the city’ or gentrification. Yet among the four case-study metropolises that we examined in detail, diverse principal cities experienced diversity decreases as they shifted toward majority minority configurations. This finding raises questions related to our theorization of these diverse, central places. Both spatial assimilation and invasion-succession models suggest that minority and immigrant populations in the metropolitan core should move outward as they attain social and economic status. This 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 whether, as in principal cities, it is a precursor to the development of segregated minority majority communities constitutes an important and unresolved issue.

One of the most significant changes we document is the diminishing contribution of High White 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 increased contribution of Majority Black places and Majority Hispanic places—the opposite side of the White flight ‘coin’—is troubling. So is the fact that a closer look at individual metro areas like Seattle and 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 metropolises in the upper Midwest and Northeast, 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. For example, why are so few White suburbs being created in Dallas and so many being created Seattle? Both metro areas have registered explosive growth in recent decades. Both are gateways for new immigrants. While we can speculate about the reasons for such differences, it is clear that 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, decomposing diversity across geographic scales, and examining the spatial configuration of changing populations 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
diversity patterns at the metro level. By refining our explanatory framework and methods, we hope to provide a fuller account of the forces responsible for the range of diversity trajectories observed in our data.

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