Accounting for Demography and Preferences: Estimates of Ethnic Residential Segregation with Minimum Segregation Measures[*]

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Abstract

The index of dissimilarity (*D*) is the most widely used quantitative measure of residential segregation. Conventional interpretations of *D* assume that normatively desirable residential patterns correspond to neighborhood ethnic compositions that match the ethnic demography of a city or metropolitan area. However, survey data show that ethnic groups often hold average preferences for same-group contact that exceed—sometimes dramatically—their share of the population in a city or metropolitan area. In this paper we compare *D* scores with the minimum segregation measure *D**, which returns the lower bound on segregation for a given average preference level and metropolitan area ethnic distribution. Positive scores on this difference indicate that a metropolitan area is more segregated than necessary to satisfy average in-group preferences, while negative scores indicate that a metropolitan area is less segregated than necessary. We use data from census 2000 to calculate *D* and *D**, and analyze the associations of the difference with theoretically important predictors of ethnic residential segregation.

Although ethnic[1] residential patterns captured the attention of the founding members of the Chicago School of Human Ecology (Burgess 1923, 1928; Park and Burgess 1925; Park 1926; McKenzie 1926), the quantitative measurement of segregation began in earnest during the decade immediately following World War II (Jahn, Schmid, and Schrag 1947; Jahn 1950; Cowgill and Cowgill 1951; Duncan and Duncan 1955). Since that time, scholars have employed a wide array of indicators to assess patterns of segregation, with each decennial census spurring a new round of analysis (e.g., Taeuber and Taeuber 1965; Van Valey, Roof, and Wilcox 1977; Massey and Denton 1987; Farley and Frey 1994; Logan, Stults, and Farley 2004; Logan and Stults 2011). Since the publication of Duncan and Duncan's (1955) seminal review of segregation indexes—ushering in what Massey and Denton (1988, p. 281) call the *Pax Duncana*—most quantitative analyses of segregation have featured, *inter alia*, the index of dissimilarity (frequently abbreviated as "*D*"). Although *D* has been critiqued for several methodological weaknesses (Cortese, Falk, and Cohen 1976; Winship 1977; White 1983), it continues to be widely employed (e.g., Timberlake and Iceland 2007; Iceland and Scopilliti 2008; Spivak, Bass, and St. John 2011).

The index of dissimilarity is a two-group, symmetrical measure of evenness of population distribution. When applied to residential segregation, *D* indicates the extent to which the ethnic composition of more fine-grained geographic units (such as census block groups or tracts) matches the ethnic composition of more coarse-grained geographic units (such as cities or metropolitan areas). The index ranges from 0 to 100 (or 0 to 1.0) and can be interpreted as the percentage of one of the two groups that would have to move (and be replaced by members of the other group[2]) in order to achieve a completely even distribution. Hence, *D* registers the deviation of the *empirical* world (represented by an observed *D* score) from a *counterfactual*

[1] In this paper we use the term "ethnic" as shorthand for the more cumbersome "racial and ethnic" or "racial/ethnic."
[2] Duncan and Duncan (1955) also use the abbreviation *D* to refer to "displacement" because of this interpretation of replacement of one group with another.

world (represented by a *D* score of 0) in which all members of the two groups live in block groups or tracts with precisely the percentage of members of their own group and the other group that exist in the city or metropolitan area. Massey and Denton (1993) offer the rule of thumb that *D* scores above 60 are high, between 30 and 60 are moderate, and below 30 are low. Although there is not an inherently normative connotation to the terms "high" and "low," most analysts assume that "high" segregation scores are undesirable and "low" scores are desirable.[3]

In this paper we do not take a position on the moral standing of segregation; however, we argue that the interpretation of *D* as the deviation of the empirical from the desirable is flawed (or at least overly restrictive), because it does not take into account group preferences for neighborhood ethnic composition, combined with the ethnic demography of the higher-order geographic unit. Much survey data show that members of at least the three largest minority groups typically analyzed—non-Latino blacks and Asians and Latinos of all "races"—report preferences for living with higher proportions of own-group members than usually exist in their cities or metropolitan areas. For example, data from the Multi-City Study of Urban Inequality (MCSUI) (Bobo et al. 2000), shown in Table 1 below indicate that black respondents report a first or second preference for neighborhoods that are an average of 55% to 65% black across the four cities included in the MCSUI. Yet blacks make up only between 6% and 25% of these four metropolitan areas; hence, in order for blacks to achieve a *D* score of 0 they would have to live in neighborhoods that are substantially less black than they would prefer, at least on average. Put

[3] And for sound historical and empirical reasons. Historically, residential segregation was a key mechanism ensuring the subjugation of African Americans, particularly in the Northeast and Midwest where Jim Crow laws were not available to maintain social distance between blacks and whites. Empirically, residential segregation can be a powerful cause of the concentration of poverty in minority neighborhoods (Massey 1990; Massey and Eggers 1990; Massey and Denton 1993; Massey, Gross, and Shibuya 1994; Massey and Fischer 2000; however, see Jargowsky 1997; Quillian 2010). In turn, highly spatially concentrated poverty is thought to be a key demographic precondition for pernicious "neighborhood effects" on children and families (Wilson 1987; Mayer and Jencks 1989; Massey, Gross, and Eggers 1991; Sampson, Morenoff, and Gannon-Rowley 2002).

conversely, if blacks are to live in neighborhoods that match their reported average neighborhood ethnic preferences, they must mathematically experience at least some level of segregation.

That level of segregation is well described by minimum segregation measures (Massey and Gross 1991; Fossett 2004), which represent "the theoretical minimum level of racial residential segregation that can be achieved *without violating individual preferences*" (Fossett 2004, p. 2, emphasis in original). Conceptually, minimum segregation measures record the level of segregation that would obtain if the households of two groups A and B were placed strategically into neighborhoods so as to maximize two desiderata: first, members of group A's preference for a certain level of same-group contact (or, alternatively, separation from members of group B) is satisfied, and second, segregation must be kept at the minimum possible level to achieve the first goal. Minimum segregation measures indicate the degree to which an aggregate-level demographic outcome such as residential segregation can be affected by individual-level preferences, combined with the ethnic demography of a city or metropolitan area. In Fossett's words (2004, p. 6, emphasis in original), these measures capture the "insight that the *structural propensity* for segregation is shaped by the way individual-level preferences for neighborhood ethnic mix express themselves under differing demographic conditions."

Although there exist minimum segregation versions of a variety of indexes (Fossett 2004, p. 16), in this paper we focus on D^*. Originally employed by Massey and Gross (1991) to analyze the minimum level of segregation whites would require to keep their exposure to blacks at desired levels, D^* can be used to derive the minimum level of segregation any group would require to match their preferences for neighborhood ethnic composition. We calculate D and D^* scores for non-Latino whites, blacks, and Asians and Latinos of all races, and then derive a new variable, $D\Delta$, which is the difference between D and D^*. We present descriptive statistics of this variable for metropolitan areas, central cities, and suburbs, and then and regress the metropolitan

area-level version on variables derived from prior research on determinants of ethnic residential segregation.

We believe this analysis makes two important contributions to the demographic literature on ethnic residential segregation. First, whereas prior research using the index of dissimilarity either remains silent on the issue of the "desirable" level of segregation or, more commonly, assumes that desirability uniformly refers to low levels of segregation, our estimates allow for the notion of desirability to vary, and to be incorporated into quantitative analyses of segregation. Second, our estimates explicitly account for variation in the ethnic demography of metropolitan areas. Such variation is often modeled on the right-hand side of regression equations predicting levels of segregation; however, our estimates incorporate this variation in the indicator itself. Taken together, these contributions provide new answers to very old questions about patterns of ethnic segregation in U.S. metropolitan areas.

Background

In the sections below we provide a brief overview of empirical findings regarding patterns and determinants of ethnic segregation. We also direct readers to summaries of the empirical levels of residential inequality in 2000 found in studies by the Lewis Mumford Center at SUNY-Albany (Lewis Mumford Center 2001a, 2001b) and by Iceland et al. (2002) and Wilkes and Iceland (2004), and to reviews of the theoretical explanations for residential inequality found in Farley and Frey (1994), Charles (2003), Fischer et al. (2004), Iceland (2004), Logan et al. (2004), and Timberlake and Iceland (2007).

Empirical Segregation Patterns in 2000

Findings from recent research show that in 2000, African Americans continued to be the most segregated racial/ethnic group in the U.S. For example, Iceland et al. (2002) report

weighted (by the MA minority population) average minority/white dissimilarity index scores in 2000 of 64.0 for blacks, 50.9 for Latinos and 41.1 for Asians and Pacific Islanders. Findings from analyses of census data from 1980, 1990, and 2000 also indicate that while black segregation was slowly declining over time, segregation among Latinos and Asians was stagnating or even increasing (Massey and Denton 1987; Farley and Frey 1994; Frey and Farley 1996; Lewis Mumford Center 2001a; Iceland et al. 2002). This latter trend likely results from high levels of immigration from Latin America and Asia during the 1980s and 1990s (Iceland 2004). Heavy flows of new immigrants may have increased the size and density of ethnic enclaves, including "ethnic communities" located in the suburbs of metropolitan areas (Lewis Mumford Center 2001b; Logan, Alba, and Zhang 2002). Such flows would cause measures of both isolation and dissimilarity to increase in cities that are popular destinations for Latino and Asian immigrants. As a result, the Latino population experienced as much segregation in 2000 as it did in 1970, and the foreign-born population overall was more segregated in 2000 than in 1970 (Fischer et al. 2004).

Explanations for Cross-sectional Variation in Levels of Segregation

Spatial assimilation theory. There are two complementary (though sometimes framed as competing) theoretical approaches to understanding the levels of and change in residential segregation. First, spatial assimilation theory posits that minority groups experience a process towards residential integration in part by adopting the language and cultural practices of a society's majority group (Massey 1985). Numerous empirical studies confirm that English language acquisition is positively associated with spatial assimilation, especially for Latinos (Alba and Logan 1991; Logan, Alba, and Leung 1996; Logan et al. 1996; Massey and Denton 1987).

A second engine of spatial assimilation, according to spatial assimilation theory, is socioeconomic mobility. Immigrant ethnic groups tend to start at the bottom of the socioeconomic ladder, and therefore are only able to purchase residence in low-SES neighborhoods. As these groups experience socioeconomic mobility, they convert increases in household SES into upward residential mobility, resulting in their occupying higher-status neighborhoods (Massey and Denton 1985). Empirical evidence from prior research provides some support for the spatial assimilation perspective. SES plays a moderate role in explaining patterns of segregation for Latinos and Asians, and less so for African Americans, though the spatial assimilation returns to SES have increased for blacks over time (Denton and Massey 1988; Iceland et al. 2005; Iceland and Wilkes 2006; Logan et al. 2004; Massey and Fischer 1999).

Finally, the role of preferences for the ethnic composition of neighborhoods can be incorporated into spatial assimilation theory, because preferences for other-group contact are intimately linked to the entire assimilation process, what Gordon (1964) called "identification assimilation." Contemporary scholarship on residential preferences has grown out of work done by Schelling (1969; 1971), who demonstrated how micro-level residential choice can result in aggregate patterns of residential segregation. Clark (1986) ignited a debate by arguing that individual preferences alone, or in combination with group differences in economic position, could explain the current ethnic housing patterns. The Schelling model provided the theoretical basis for his argument and all subsequent research done in this vein. Many more sophisticated simulation models have followed in the footsteps of Schelling incorporating not only preferences for residing near members of one's own group. These models now include multiple types of preferences, multiple ethnic groups, urban and demographic conditions, and intergroup

inequality in socioeconomic status (Fossett 2004; Fossett and Waren 2005; Clark and Fossett 2008).

Schelling's simulations have held up to empirical scrutiny, as survey findings on preferences show that all major ethnic groups hold own group housing preferences, many stronger than the mild preferences he used in his original two group analysis (Clark and Fossett 2008). A study done in Detroit using show cards showing different ethnic mixes within neighborhoods found that blacks preferred areas that were half white and half black. Whites preferred neighborhoods that were nearly all white (Farley et al. 1978). These general findings have been replicated over time and for other groups (Clark 1992; Farley et. al 1997). Differences in desired ethnic composition of one's neighborhood are important to arguments that preferences, even in the absence of ethnic discrimination, create high levels of segregation. blacks may prefer 50/50 areas, but in reality they are hard to find and even when they do exist are often in the midst of an ethnic transition. blacks will enter mixed neighborhoods and stay; whites will not enter or stay (Clark and Fossett 2008). Putting whites' preferences aside, even if one theoretically attempted to fulfill blacks' residential preference for 50/50 neighborhoods segregation would persist. Fifty-fifty neighborhoods are (in almost every case) incompatible with citywide integration, which occurs when all neighborhoods match the ethnic composition of the city (Fossett 2006). The predominant conclusion arising from studies of whites' preferred ethnic composition in neighborhoods is that blacks are viewed as least desirable neighbors, with Asians being most desirable, and Latinos in the intermediate, although, the number one preference of whites is to live with other whites (Zubrinsky and Bobo 1996).

This accumulating literature led to research examining how own-group preferences develop. Some argue that it is a result of attachments to group identity or culture rooted in the socialization of youth. Others claim that they are a result of ethnocentric evaluations or that

neighborhood mix is predictive of future conditions and home values (Keating 1994). Finally, some assert that preferences are shaped by expectations that members of one's own group will be more welcoming and supportive and that other groups are insensitive or overtly hostile. In sum, residential preferences to live in a neighborhood among co-ethnics result from the interplay of social psychology and the history of group dynamics and relations (Clark and Fossett 2008).

Place stratification theory. Proponents of the place stratification model (Logan and Molotch 1987) acknowledge that SES and other household-level characteristics are important determinants of residential location, but in addition emphasize the role of discrimination in shaping residential patterns. More specifically, negative out-group sentiments among majority group members become embedded in government, financial, insurance, and real estate institutions, leading to the exclusion of minority group members from neighborhoods dominated by the majority group. As a result, minority group members are limited in their ability to translate their neighborhood preferences and socioeconomic characteristics into "locational attainment."

Indirect empirical support for the place stratification model comes from the historically high levels of Black/White segregation, and from inequalities in locational attainment. For example, middle class blacks tend to live in neighborhoods with significantly lower median incomes and higher poverty rates than statistically comparable white (Alba and Logan 1991; Alba, Logan, and Stults 2000; Logan et al. 1996; Pattillo-McCoy 1999, 2000). In addition, scholars have documented discrimination in the housing market against African Americans, and to a lesser extent Latinos and Asians, through the use of audit studies (Turner and Ross 2003; Turner et al. 2002).

More direct empirical support has been limited, however, largely due to a lack of data that clearly demonstrates effects of discrimination on lower levels of locational attainment for

minorities (see, e.g., South and Crowder 1998). Researchers sympathetic to the place stratification perspective tend to conclude that, after controlling for measures suggested by the spatial assimilation model, residual ethnic inequality should be interpreted as the combined effects of discrimination. Yet some unknown portion of such residuals could be generated by other processes–for example, minority families' decisions to trade residential integration with white for propinquity to close friends and extended family members, central city jobs, or more densely populated urban cores (Clark 1986). Therefore, as with most other prior research on MA-level residential inequality, the findings we present should be interpreted as measures of the effects of variables suggested by the spatial assimilation model, not as an adjudication between the spatial assimilation and place stratification perspectives.

Ecological context. A third set of predictors of minority spatial assimilation has been grouped under the rubric "ecological context." These are typically characteristics of metropolitan areas that are thought to constrain or abet the operation of spatial assimilation processes, and to have effects on segregation in their own right. For example, cross-sectional research has found that inter-city variation in residential inequality in 2000 was associated with the region, "functional specialization" (such as whether the metropolitan area has a concentration of manufacturing jobs or retirement-age population), age, size, proportion minority, population growth, and income inequality of metropolitan areas. Logan et al. (2004) found that the segregation of blacks and Latinos from white was considerably lower in southern and western cities, though region was less important for White/Asian segregation. On average, cities devoted to retirement and durable goods manufacturing had more White/Black segregation, and cities with functional specializations in government, military, and higher education were less segregated. Cities with specializations in non-durable goods manufacturing were less segregated for blacks and more segregated for Latinos and Asians. Larger cities were more segregated for

all three minority groups, whereas the percentage of each minority group was only substantially related to segregation for blacks. Finally, cities with newer housing stock and higher minority: white median income ratios were less segregated than cities with older housing stock and higher levels of income inequality between whites and ethnic minorities.

Data and Variables

Data

The data for this paper come from two sources. First, we calculate *D* scores and independent variables with data from the 2000 U.S. Census. Although more recent data are available in the form of the American Community Survey, these data suffer from high levels of sampling variability at the tract level. Given that our primary purpose in this paper is to compare empirical levels of segregation with the hypothetical levels under the assumptions of minimum segregation measures, we believe the gain in reliability of measurement makes up for the vintage of the data. We generate these preferences levels with data from the 1992-1994 Multi-City Study of Urban Inequality (MCSUI), the 2004 Detroit Area Study (DAS), the 2004-2005 Chicago Area Study (CAS), and the 2000 General Social Survey (GSS). Although we provide several possible values for each group's preference levels, we establish a baseline through the use of these data, as described in more detail below.

The units of analysis are the 323 metropolitan areas (MAs) that were defined in the 2000 census, which we analyze alongside separate analyses of their central cities and suburban rings. The majority of these MAs (250) are Metropolitan Statistical Areas, such as Battle Creek/Kalamazoo, MI and Columbus, OH. An additional 73 are Primary Metropolitan Statistical Areas, such as Chicago, IL and Kenosha, WI, nested within the Chicago, IL/Gary, IN/Kenosha, WI Consolidated Metropolitan Statistical Area. We restrict our analyses to MAs with at least

2,500 (1,000 for central cities and suburban rings) members of each ethnic group in 2000, because segregation indexes calculated with small group populations can be unreliable (Logan et al. 2004; Iceland, Sharp, and Timberlake 2011). This selection criterion yields 323 MAs, 318 central cities, and 321 suburban rings for whites,[4] 226 MAs, 228 central cities, and 205 suburban rings for Asians, 282 MAs, 289 central cities and 251 suburban rings for blacks, and 265 MAs, 267 central cities, and 259 suburban rings for Latinos.

Dependent Variable

The dependent variable is the difference between the observed level of segregation experienced by non-Latino whites, blacks, and Asians, and Latinos of all races (with each group compared to all others, including members of "other races") and the minimum level of segregation required to satisfy each group's hypothetical (though, again, derived from survey estimates) preferences for same-group neighbors. For the empirical measure segregation, we use the index of dissimilarity, computed as

$$D = 0.5\left(\sum_{i=1}^{I}\left|\frac{a_i}{A} - \frac{b_i}{B}\right|\right)100, \tag{1}$$

where a_i and b_i are the number of members of groups A and B in neighborhood i, and A and B are the number of members of groups A and B in the city or MA. As calculated above, D ranges from 0 to 100, with higher scores indicating more difference between the empirical distribution of the population and a completely even distribution.

The minimum segregation measure is D^*. As discussed in Fossett (2004, p. 31), D^* can be calculated as

$$D^* = \left(1 - \frac{A/T}{B/T} \cdot \frac{(1-\delta)}{\delta}\right)100 \text{ (for } A/T < \delta\text{; otherwise, } D^* = 0), \tag{2}$$

[4] Several MAs do not have central cities (e.g., Middlesex/Somerset/Hunterdon and Bergen/Passaic, NJ and Nassau/Suffolk, NY) and one does not have suburbs (Anchorage, AK). Other than these examples, there are fewer than 1,000 whites in the central cities of Benton Harbor, MI and Brazoria, TX, and in the suburbs of Laredo, TX.

where A and B are as described above, T is the total population of groups A and B (thus, $B / T = (1 - A / T)$), and δ is the desired proportion of group A by members of group A (or, conversely, $(1 - \delta)$ is the maximum proportion of group B that is tolerated by group A). Equation 2 simplifies somewhat to

$$D^* = \left(1 - \frac{(A - A\delta)}{B\delta}\right)100 \tag{3}$$

and the difference between D and D^*, which we abbreviate in this paper as $D\Delta$, is

$$D\Delta = \left[0.5\left(\sum_{i=1}^{I}\left|\frac{a_i}{A} - \frac{b_i}{B}\right|\right) - \left(1 - \frac{(A - A\delta)}{B\delta}\right)\right]100 \tag{4}$$

The $D\Delta$ quantity is the difference between the actual level of segregation (as measured in terms of evenness of population distribution) experienced by group A and the minimum level group A would experience *if they were to live in neighborhoods that satisfied their average preferences for neighborhood ethnic composition*, assuming indifference to the precise ethnic makeup of group B. Positive scores on $D\Delta$ indicate that a metropolitan area is more segregated than necessary to satisfy the ethnic preferences of group A, while negative scores indicate that a metropolitan area is less segregated than necessary.

Obviously, the magnitude of $D\Delta$ depends profoundly on the value of D^*, which in turn depends both on the ethnic demography of a city or metropolitan area (captured in the values for A / T and B / T in equation 2) and on the choice of the parameter δ for each group. We derive baseline estimates of these parameters from several sources. First, the MCSUI includes questions regarding the desired number of same-group "houses" in an imaginary 15-house 'neighborhood." Asian, Black, and Latino (but not non-Latino white) respondents were presented show cards with 15, 10, 7, 2, and 0 same-group houses colored in on the cards and asked to rank them in terms of preference from most to least desirable. We took a weighted average of the percentage of same-group neighbors (with the number of respondents choosing each "neighborhood" as the weights)

for the first and second-most desirable neighborhoods, and then averaged those percentages, giving two-thirds weight to the first preference and one-third weight to the second preference.[5] Similar questions were asked of blacks on the 2004 DAS, about a decade after the fielding of the MCSUI.

A second measure of preferences comes from questions on the Boston and Los Angeles MCSUI surveys, the DAS, the CAS, and the GSS. Here respondents were given a blank 15-house show card and asked to fill in the houses with one of several (depending on the survey) ethnic groups. For each survey and city we calculated the average percentage of own-group members desired by whites, Asians, blacks, and Latinos. Results of these calculations are shown in the top panel of Table 1 below in the rows labeled "ideal neighborhood." Preferences derived from the "1st/2nd preference" method are one-third to two-thirds higher than those derived from the "ideal neighborhood" method, within metropolitan area and ethnic group.

Using the data from Table 1 below, we calculate D^* scores for blacks ranging between 57.4 (in Detroit using the "ideal neighborhood method) and 95.0 (in Los Angeles using the "1st/2nd preference method). The variation in these scores relates partly to variation in average preferences, but more importantly to variation in the ethnic demography of the four metropolitan areas. Because Atlanta and Detroit have higher percentages of blacks than Boston and Los Angeles, less segregation (again, measured in terms of D) is required to satisfy blacks' specified

[5] It is tempting and reasonable to suspect that blacks' (and Asians' and Latinos', for that matter) preferences are heavily affected by the perception that they will be treated poorly by potential non-black neighbors, and therefore the available survey data do not capture blacks' "pure" preferences. While this is certainly a concern, at least three arguments suggest that these data capture at least one, and probably cognitive, facet of blacks' ethnic preferences. First, notice that all three groups report similarly high preferences for same-group neighbors. Given that Latinos and Asians have historically not experienced the same degree of poor treatment at the hands of whites, it is significant that all three minority groups report roughly the same average preferences. Second, the show cards do not specify the race of the other-group houses (see Zubrinsky and Bobo [1996] for a variation on this); hence, it is not obvious that blacks would assume the non-black houses are white, although in Atlanta, Boston, and Detroit this would be a reasonable assumption. Finally, Timberlake (2000) found that blacks' preferences for black neighbors in Atlanta are uncorrelated with their beliefs that whites "tend to discriminate against other groups," lending some construct validity to the preference measure. In any event, we vary the δ parameter in equation 3 to capture a wide range of possible average preferences for all groups.

preferences for same-group contact. *D** scores for Asians are slightly higher in Boston and Los Angeles only, and Latino *D** scores are high in Boston and somewhat lower in Los Angeles (and in fact zero using the "ideal neighborhood method"), owing to the large Latino population in the latter metropolitan area (about 35%). Finally, *D** scores for whites are estimated to be zero in Boston, Detroit, and Chicago, owing to the combination of relatively low average preferences for percent white (between 47% and 55%) and the relatively high percentage of whites in these three metropolitan areas (71%, 81%, and 59% in 2000, respectively). In the analyses shown below, we allow δ to vary by increments of 0.05 to 0.20, depending on the analysis, which yields variation in $D\Delta$ as a function of the assumed average preference each group has for same-group members.

(Table 1 about here)

Independent Variables

We predict $D\Delta$ with a variety of independent variables shown in past literature to be associated with segregation scores in cross-sectional analyses. These include several measures of spatial assimilation, or predictors of residential integration, and several measures of ecological context, which capture historical and structural forces that may affect segregation.

Spatial assimilation. We test the two central propositions of spatial assimilation theory—that acculturation and socioeconomic mobility lead to minority spatial assimilation—by estimating effects of four metropolitan area-level variables on 2000 levels of and 1970 to 2000 change in our four measures of residential inequality. We operationalize acculturation as the MA-level percentage of Asians and Latinos that speak English at least somewhat well. We measure socioeconomic status as the percentage of each group who have more than a high school degree, the percentage of each group owning their own homes, and the percentage of each group's average income relative to that of the other three groups.

Ecological context. Following the examples of much prior research, we assess the impact of ecological context on levels of and changes in residential inequality. First, we control for several population characteristics, including the natural log of population size and the percentage of each MA's population that lives in the suburbs. We control for the "functional specialization" of MAs (Farley and Frey 1994) by controlling for the percentage of employed workers age 16 and over in the manufacturing and government sectors, the percentage of the population over age 5 in college, and the percentage of the population age 65 and over. We include the percent foreign born of each group to account for the tendency of immigrants to settle in segregated enclaves in particular MAs. Finally, we measure the percentage of each MA that did not live in the same house five years earlier to capture the dynamic nature of each metropolitan area. This measure ranges from a low of about 28% in Johnstown, PA, to about 68% in College Station, TX.

Second, we include several measures of housing supply because processes of ethnic integration and turnover depend on the availability of housing both in neighborhoods undergoing transition and in neighborhoods into which departing residents can move. We measure both the MA-level percentage of vacant housing and the percentage of new housing that was constructed between 1990 and 2000, because the effects of housing availability on residential segregation may vary by whether the housing in minority neighborhoods is simply vacant, and therefore less likely to attract integrating whites, or whether it is new construction, which is more likely to attract a more diverse group of residents. We also control for the percentage of housing built prior to 1940 to capture the degree to which residential patterns are likely to be old and therefore entrenched. Finally, we control for region by including dummy variables for the census region of the MA. Means for all variables used in the analysis are shown in Table 2 below.

(Table 2 about here)

Findings

Our analysis proceeds in two steps. First, Figures 1 and 2 provide descriptive analyses of the distributions of $D\Delta$ by ethnic group and hypothetical preference level (δ). We then analyze the results from ordinary least squares regression models showing the effects of the independent variables on $D\Delta$ scores calculated at the MA level, holding the value of δ at 0.50.

Descriptive Analyses

Distributions of $D\Delta$ for metropolitan areas. Figure 1 below shows histograms of the $D\Delta$ variable for the four ethnic groups under consideration. The histograms depicted in Figure 1 use three values of δ for each group, derived roughly from the observed lower and upper bounds of the average percentage of own-group neighbors found in the survey data shown in Table 1. For whites, all observed data come from the "ideal neighborhood" method described above. Each of the other groups feature "1st/2nd preference" scores that are 40% to 60% higher; hence, we imputed an upper bound to whites of about 90% preferred own-group neighbors. For the other groups, the range of δ values comes from the rough upper and lower bound and the mean of the estimates shown in Table 1. Note that all three groups feature δ values of 0.50 and 0.70. For ease in comparison these histograms are outlined in solid and dashed bold lines, respectively.

Recall that positive $D\Delta$ scores indicate that a MA is more segregated than necessary to achieve the average preferences of a group for own-group neighborhood composition, while negative scores indicate that a MA is not segregated enough to achieve this goal. For whites at $\delta = 0.50$ or 0.70, virtually all MAs are more segregated than necessary to enable whites to live in neighborhoods that are at least 50% white (see Figure 1, histograms A1 and A2). Exceptions are MAs with relatively small non-Latino white populations, such as El Paso, TX (17.4%) and Miami, FL (21.1%). Using Miami as an example, in 2000 the observed white-other index of

dissimilarity score was 44.3, whereas the minimum segregation score was 73.3. That is, in order for all whites in the Miami metropolitan area to live in neighborhoods that were at least 50% white, segregation would have to correspond to a *D* score of 73.3. Hence, Miami is 29.0 index of dissimilarity points "too low" to grant whites residential preferences corresponding to $\delta = 0.50$ (44.3 – 73.3 = –29.0).

Of course, these MAs are in the vast minority; far more common is for segregation scores to be higher than necessary for whites to achieve the preferences for a 50% or 70% white neighborhood. These are largely MAs with white populations large enough that the proportion white exceeds the δ value of 0.70, such as Detroit, MI at 70.7% white, or Buffalo, NY at 83.3% white. More interesting are examples of MAs with smaller white populations that would require some level of segregation to enable neighborhoods to be 70% white, but in which the observed *D* scores far exceed that level. For example, with a non-Latino white population of 40.4%, the New York, NY PMSA would require a *D* score of 32.3 to ensure whites' preferences for same-group contact at $\delta = 0.70$. However, the observed *D* score for New York in 2000 was 65.5, indicating that New York was 33.2 points "too segregated" for these (hypothetical) preferences (32.3 – 65.5 = –33.2).

When δ is allowed to reach its hypothesized maximum (for non-Latino whites) of 0.90, the distribution of MAs for whites becomes more uniform, with a mean of -6.1 and a median of -8.7 (see Figure 1, histogram A3). This indicates that if whites held extreme preferences for in-group contact, about half of U.S. metropolitan areas would be too segregated and half not segregated enough to enable their preferences. MAs with $D\Delta$ scores above 0 for $\delta = 0.90$ are uniformly MAs with very high non-Latino white populations, such as Pittsburgh, PA (89.4%) and Wheeling, WV (95.4%). MAs with white populations that high need no segregation to

ensure 90% white neighborhoods, yet Pittsburgh's white-other *D* score in 2000 was 57.6 and Wheeling's was 40.6.

(Figure 1 about here)

For Asians, the distributions of $D\Delta$ vary little across increasing values of δ. Virtually all MAs are "not segregated enough" to allow Asians to live in neighborhoods that are at least 50% Asian. This is entirely due to the fact that most MAs have very small Asian populations[6]; hence, it would take a great deal of segregation to enable Asians to satisfy desires for same race contact as high as 50%. The one exception is the case of Honolulu, HI, which had an Asian (including native Hawai'ian and other Pacific Islander) population of 69.3% in 2000 and an Asian-other *D* score of 34.0. Because no segregation would be necessary to ensure that Asians could live in neighborhoods that are 50% to 70% Asian, the resulting $D\Delta$ score is 34.0 – 0 = 34.0.

For African Americans, the story is more varied. At relatively low levels of preference for in-group contact ($\delta = 0.30$), many MAs are, not surprisingly, more segregated than necessary to achieve these preferences (see Figure 1, histogram C1). However, nearly three-fourths of the MAs in our black sample featured $D\Delta$ scores less than 0, indicating that blacks' preferences for same-group neighborhood contact were not being met on average, even at relatively low average preference levels. This is likely a surprising finding for most readers, yet it highlights the crucial importance of ethnic demography. Of the 76 MAs with $D\Delta$ scores above 0 for $\delta = 0.30$, the average percent black was 26.4% in 2000, and included some of the largest and most well-known cities in the United States, including Baltimore, Chicago, Cleveland, Detroit, Houston, New York, Philadelphia, and Washington, DC. However, the average percent black in MAs with $D\Delta$ scores less than 0 (indicating "not enough" segregation for $\delta = 0.30$) was 7.2%. In these MAs, it would take very high levels of segregation to allow all blacks to live in neighborhoods

[6] Fully 95% of the 323 MAs examined here feature Asian populations lower than 8%.

that are just 30% black, levels that are not empirically recorded by the index of dissimilarity. Hence, although a very large fraction of the black population lives in cities with "too much" segregation for low levels of same-group contact, the vast majority of metropolitan areas are, in the limited sense discussed here, "not segregated enough."

The foregoing discussion suggests that if blacks' preferences for same-group contact were even higher than 30%, the percentage of MAs that are "not segregated enough" would increase. And, in fact, that is what we observe in Figure 1, histograms C2 and C3. At $\delta = 0.50$,[7] just 24 of the 282 MAs in the black sample featured $D\Delta$ scores greater than 0, indicating more segregation than necessary to achieve an average preference level of 50%. Most of these (19) were in the South, including large MAs such as Atlanta, Baltimore, Memphis, and New Orleans, and smaller MAs such as Albany and Macon, GA and Pine Bluff, AR. In the non-South, the five "too segregated" MAs were Chicago, Detroit, Flint, MI, Gary, IN, and Newark, NJ. Finally, histogram C3 shows that if blacks' average preferences were as high as 70% (a figure exceeding the upper bound of any of the preference data shown in Table 1), just two MAs—Albany, GA and Pine Bluff, AR—would not be segregated enough to enable these preferences.

Finally, the distributions of $D\Delta$ for Latinos bear a striking resemblance to those for blacks. At low levels of same-group preference ($\delta = 0.30$) a sizeable minority (46) of metropolitan areas are more segregated than necessary to enable all Latinos to live in neighborhoods with at least 30% Latino residents (see histogram D1). Not surprisingly, these are MAs with relatively large Latino populations, primarily in western states such as California, Texas, Arizona, and New Mexico. For example, the Los Angeles/Long Beach PMSA had a Latino population of 44.6% in 2000, meaning that no segregation would be required to ensure

[7] The average of all preference scores for blacks in Table 1 is 50.2%.

the 30% preference threshold. However, the Latino-other *D* score in Los Angeles in 2000 was 51.1, yielding a $D\Delta$ value of 51.1 also.

When δ shifts to 0.50 (histogram D2), only 18 MAs remain "too segregated." These are MAs with very high Latino populations, including El Paso and Laredo, TX (78.1% and 94.4%, respectively) and Jersey City, NJ (39.8%), the only non-western MA with a $D\Delta$ score greater than 0. At $\delta = 0.70$, just six MAs remain more segregated than necessary to achieve neighborhood compositions of at least 70% Latinos. These are four MAs in Texas—El Paso, Brownsville, McAllen, and Laredo—plus Las Cruces, NM, and Miami, FL.

Average DΔ *scores*. Figure 2 below shows MA-level average $D\Delta$ scores across the range of plausible δ values. This analysis conceals the variation depicted in Figure 1 but allows us to explore how $D\Delta$ changes with respect to δ, and across central cities, suburbs, and metropolitan areas. We have bolded the zero point on the vertical axis to indicate the value of δ for which the observed level of segregation is, on average, at its minimum possible level to satisfy the assumed preferences of the four ethnic groups. Note that for whites, that level is achieved at very high preference levels, ranging from about 0.80 for central cities to 0.90 for suburbs, with the metropolitan area δ just slightly lower than that for suburbs. This indicates that if whites' preferences levels were in the neighborhood of those reported on several national- and city-level surveys, whites on average live in places that are far more segregated than necessary to achieve these preferences.

(Figure 2 about here)

For the three minority groups, Figure 2 shows the reverse pattern from that of whites, though there are stark differences between blacks and the other two groups. For Asians, even at the lowest levels of δ (0.05) presented in this analysis, average levels of Asian segregation are "too low" to achieve these preferences, at least with central cities, suburbs, and metropolitan

areas as the units of analysis. For Latinos, very low levels of δ correspond to "too much" segregation, but as δ exceeds 0.10, the curves drop below the zero point. For blacks, the point at which segregation becomes "too low" to satisfy hypothetical average preferences occurs a d value of 0.20 for metropolitan areas and 0.25 for central cities. Interestingly, blacks' average $D\Delta$ score for suburbs is indistinguishable from Latinos' experiences in central cities and metropolitan areas overall. This reflects the fact that blacks are generally somewhat less segregated in suburbs than in MAs overall, and thus, for a given δ level, blacks in suburbs are further away from the zero point than their central city counterparts.

Regression results. The findings in Figure 2 suggest that, on average, whites tend to live in places with more segregation than necessary to satisfy their average neighborhood preferences, except at very high levels of preference for same-group contact. By contrast, except at very low levels of same-group preferences, ethnic minorities live in places with "too little" segregation, again, on average. However, as shown in Figure 1, there is substantial variability in the $D\Delta$ scores. We next turn to an analysis of the correlates of that variability via the regression results reported in Table 3. We report coefficients and standard errors[8] from ordinary least squares regressions of the $D\Delta$ scores (with $\delta = 0.50$[9]) for each group on the independent variables described above. The coefficients are in deviation units, calculated by subtracting each MA's score on each variable from the group mean. This yields constant terms that can be interpreted as the predicted value on the dependent variable for an MA that is average on all of the predictors included in the model. Positive coefficients indicate a relationship that tends

[8] These standard errors assume that the data were gathered via a simple random sample. However, our samples correspond to censuses of all MAs with enough ethnic representation for reliable analysis. Hence, we recommend treating the standard errors as the consistency of the estimates of the associations between the independent variables and $D\Delta$.

[9] We chose this value because it is close to the average for each group's average preferences from the survey data shown in Table 1. Tables like Table 3 with different values of δ are available from the authors upon request.

toward more segregation than necessary to achieve ethnic preferences, with negative coefficients indicating a relationship tending toward not enough segregation to achieve ethnic preferences.

To begin with, and as shown in Figures 1 and 2, the constant terms indicate that an MA that is average on all characteristics in the model is about 40 points too segregated for whites to live in neighborhoods with at least 50% white residents. By contrast, the average MA is not segregated enough to allow the three minority groups to live in neighborhoods with that degree of ethnic composition. With respect to the socioeconomic variables, we find that the percentage of Asians and Latinos in a metropolitan area who speak English well is associated with lower levels of segregation, and that this association is over three times stronger for Latinos (though the difference is only significant at $\alpha = .10$[10]). Education and relative income tend to be associated with too much segregation for whites and not enough for blacks and Latinos, indicating that whites in high-SES MAs are more segregated than in lower-SES MAs, with the reverse association holding for blacks and Latinos. Finally, home ownership has a strong positive effect for whites, blacks, and Latinos, suggesting that the constraint on mobility brought about by homeownership results in more rigid residential patterns. Not surprisingly, the opposite effect holds for the three minority groups with respect to the percentage of in-movers in a MA, as this indicates more dynamic residential patterns. On the other hand, high levels of residential mobility are associated with higher levels of segregation for whites, suggesting that mobility serves to increase minority contact with other minorities, rather than with whites.

(Table 3 about here)

[10] Test statistics for differences in associations follow the form $t_{\left(\beta_k^i - \beta_k^j\right)} = \dfrac{\left(\beta_k^i - \beta_k^j\right)}{\sqrt{\sigma^2_{\beta_k^i} + \sigma^2_{\beta_k^j}}}$, where β_k^i and β_k^j is the k^{th} coefficient from ethnic groups *i* and *j* (for $i \neq j$) and $\sigma^2_{\beta_k^i}$ and $\sigma^2_{\beta_k^j}$ are squared standard errors from Table 3.

The other ecological context variables in the model provide a mix of relationships, with few systematic patterns of note. One exception is the strong and uniformly positive association of MA size and segregation, especially for the three minority groups. As we noted earlier, although on average, MAs tend not to be segregated enough to grant minorities their (average and hypothetical) preferences, the exceptions tend to be very large MAs that experienced high levels of migration of blacks from the South during the Great Migration or high levels of immigration from Latin America and Asia over the past three or four decades. One further indication of the importance of ethnic demography is the large gaps between MAs in the Midwest and South and the West for blacks. Even net of all of the other variables in the model, Midwestern and Southern MAs are, on average over ten points more segregated than would be necessary for blacks to live in neighborhoods that are at least 50% black.

Conclusions

In this paper we began by arguing that traditional interpretations of the index of dissimilarity assume that normatively desirable residential patterns correspond to neighborhood ethnic mixes that match the overall ethnic demography of a city or metropolitan area. We noted that this logic does not take into account either groups' preferences for neighborhood ethnic mix, or the likelihood that the ethnic demography of a metropolitan area would support such preferences absent a sometimes substantial degree of residential segregation. We then introduced a simple procedure for assessing the extent to which metropolitan areas are more or less segregated than would be necessary to achieve groups' average preferences for same-group neighbors. This method entailed taking the difference between the observed index of dissimilarity score and D^*, or the minimum segregation measure corresponding to the lower bound on segregation possible when group ethnic preferences are not violated.

Descriptive analysis showed stark differences between non-Latino whites and the three large minority groups under consideration. First, at moderate levels of in-group preference ($\delta = 0.50$ or 0.70), virtually all MAs were more segregated than necessary for whites to achieve their preferences. Only when assumed preference levels approach their theoretically plausible upper bound ($\delta = 0.90$) does the segregation level for a substantial fraction of MAs appear "too low." This finding indicates that there is a high likelihood that whites would tolerate increased residential integration, although we note that research has shown greater willingness for whites to live with Latinos and Asians than with African Americans (Zubrinsky and Bobo 1996, p. 356).

For Asians the story is completely different. With the sole exception of Honolulu, HI, each of the 226 MAs analyzed for Asians was not segregated enough for Asians to achieve average preferences for neighborhood ethnic mix corresponding to observed preference levels from MCSUI survey data. We urge caution in interpreting this finding, however, because the preference data for Asians come from just one city—Los Angeles—which likely substantially limits the generalizeability of our preference data. Nevertheless, given the relatively low percentage of Asian residents in most U.S. metropolitan areas, it would take extraordinarily low levels of in-group preference among Asians to arrive at the conclusion that Asians are "too segregated" in most MAs, at least in the narrow sense of "too segregated" used in this paper. Put differently, from the point of view of maximizing preferences for in-group neighborhood contact, the problem for Asians in the U.S. isn't too much segregation; it's too little. Of course, maximizing in-group contact is just one of many possible outcomes of residential patterns…

For blacks and Latinos our descriptive analyses showed striking similarities. At relatively low levels of average in-group preference, a large majority of MAs are still "not segregated enough" to enable these preferences. The exceptions are notable because they tend to be MAs that garner much scholarly and public attention due to their size or heavy representation of

minorities. Hence, while it is true that a very fraction of blacks and Latinos live in MAs that are more segregated than necessary for their same-group residential preferences to be achieved, it is also true that (1) these gaps are not nearly as large as the gaps between the observed index of dissimilarity and the zero point on that scale (indicating completely even distribution), and (2) a large majority of MAs feature black and Latino populations that are less residentially segregated than would enable them to meet their average preference levels.

Regression analyses lend additional support for these conclusions, as we found large positive associations between MA size and $D\Delta$ for the three minority group, indicating that large MAs tend toward higher levels of segregation than necessary for the residential preferences of these groups to be achieved. In addition, we found large positive gaps for blacks between midwestern and southern MAs and the omitted category, western MAs. This indicates that MAs in regions with historically large black populations tend to be more segregated than necessary. Similarly, we found a negative gap for Latinos between midwestern MAs—traditionally not popular destinations for Latin American immigrants (except for Chicago)—and western MAs, which contain some of the highest representations of Latinos in the United States.

In conclusion, then, we have confirmed a decades-old finding in the literature—that segregation tends to be highest in MAs with the largest minority populations. Traditional accounts of this empirical regularity point to the threat felt by native-born whites at the rapid encroachment of large fractions of minority residents and the resulting exclusionary actions taken by whites to keep their neighborhoods ethnically homogeneous (Blumer 1958; Blalock 1967; Olzak 1992; Bobo and Hutchings 1996; Sugrue 1996). On the other hand, two additional findings suggest that there may be room for both optimism and pessimism in the data, at least to the extent that residential desegregation is a shared goal of American citizens. On the optimistic side of the ledger, we have shown that unless whites have extremely high levels of preference for

in-group members, in most MAs there is substantial room for whites to allow for the entry of nonwhites into their neighborhoods. That is, the fact that whites almost uniformly live in MAs with "too much" segregation to match their preferences suggests that there exists space for whites to experience more integration without violating average preferences for neighborhood ethnic composition.

A more pessimistic interpretation of the data points to the large number of MAs that are not segregated enough for blacks and Latinos to achieve even relatively modest average in-group preference levels. This finding suggests that in many MAs it may be difficult to increase residential integration much further than has already occurred, or at least that further integration will come at the expense of minorities' desires to live in neighborhoods with substantial concentrations of co-ethnics. This reasoning would suggest that future declines in residential segregation will occur in larger cities, where the residential preferences of blacks and Latinos are not being met due to too much segregation. Indeed, in an analysis of change in segregation from 1970 to 2000, Timberlake and Iceland (2007) found this precise relationship—MA with larger populations experienced steeper declines in segregation over time. This is a welcome trend for those interested in fostering residential desegregation, for such declines, though in a minority of MAs, affect a very large proportion of the black and Latino population. The analysis presented here suggests that this trend is likely occurring due to an interaction between the ethnic preferences of minority populations and the ethnic demography of U.S. metropolitan areas.

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Table 1. Point Estimates for Preference for Own-group Neighbors, Actual Own-group Percentages in 2000, and Minimum Segregation Scores, by Ethnic Group

Data source/metro area/measure	Whites	Asians	Blacks	Latinos
Preference for own-group neighbors				
MCSUI, 1992-1994				
Atlanta (1st/2nd preference)	—	—	63.8	—
Detroit (1st/2nd preference)	—	—	56.2	—
Boston				
1st/2nd preference	—	—	56.2	60.0
Ideal neighborhood	55.0	—	33.9	37.5
Los Angeles				
1st/2nd preference	—	70.1	61.6	66.7
Ideal neighborhood	47.1	46.5	41.7	41.7
Detroit Area Study, 2004				
1st/2nd preference	—	—	56.1	—
Ideal neighborhood	52.2	—	41.5	—
Chicago Area Study, 2004-2005 (ideal neighborhood)	55.2	—	43.6	45.1
General Social Survey, 2000 (ideal neighborhood)	60.1	—	46.9	39.1
Actual own-group percentage in metro area, 2000				
Atlanta	60.4	3.6	29.1	6.5
Detroit	70.7	2.7	23.3	2.9
Boston	80.7	5.4	7.2	5.9
Los Angeles	36.2	13.5	8.1	41.7
Chicago	58.6	5.1	18.9	17.2
Minimum segregation score (D^*)[a]				
MCSUI, 1992-1994				
Atlanta (1st/2nd preference)	—	—	76.8	—
Detroit (1st/2nd preference)	—	—	76.4	—
Boston				
1st/2nd preference	—	—	93.9	95.8
Ideal neighborhood	0.0	—	84.8	89.5
Los Angeles				
1st/2nd preference	—	93.3	94.5	64.2
Ideal neighborhood	36.4	82.0	87.7	0.0
Detroit Area Study, 2004				
1st/2nd preference	—	—	76.3	—
Ideal neighborhood	0.0	—	57.2	—
Chicago Area Study, 2004-2005 (ideal neighborhood)	0.0	—	69.9	74.8

[a] See equation 3 in text for calculation of D^*.

Table 2. MA-Level Means of the Variables, by Ethnic Group

Variables	White	Asian	Black	Latino
Dependent variables (MA-level version)				
At δ = .30	41.6	-53.6	-15.7	-34.1
At δ = .50	39.8	-58.6	-33.4	-46.7
At δ = .70	30.2	-60.7	-42.7	-54.4
At δ = .90	-6.1	-62.2	-47.8	-59.5
Independent variables				
Socioeconomic status				
% good or better English speakers	—	51.3	—	57.1
% with greater than a high school degree	54.6	63.3	43.6	36.0
% homeowners	70.7	50.8	42.6	44.3
Relative average income	37.0	9.5	-31.5	-22.1
Other population characteristics				
MA population (in 100,000; logged in analysis)	6.9	9.3	7.7	8.1
% suburban	58.2	60.0	59.5	58.3
% manufacturing	14.1	13.6	14.4	13.7
% government	15.6	15.7	15.5	15.6
% in college	7.6	8.0	7.5	7.6
% age 65 and over	12.6	12.1	12.6	12.3
% foreign born of each group	1.7	81.7	4.1	38.0
% in-movers	47.1	48.1	47.0	48.0
Housing characteristics				
% vacant housing	8.2	7.5	8.2	8.1
% housing built since 1990	17.8	18.2	17.6	18.4
% housing built before 1939	14.1	13.2	13.7	12.9
Region				
Northeast	0.180	0.195	0.181	0.170
Midwest	0.229	0.221	0.223	0.211
South	0.381	0.354	0.422	0.385
West	0.189	0.217	0.152	0.223

Note : N (MAs) = 323 for whites, 226 for Asians, 282 for blacks, and 265 for Latinos.

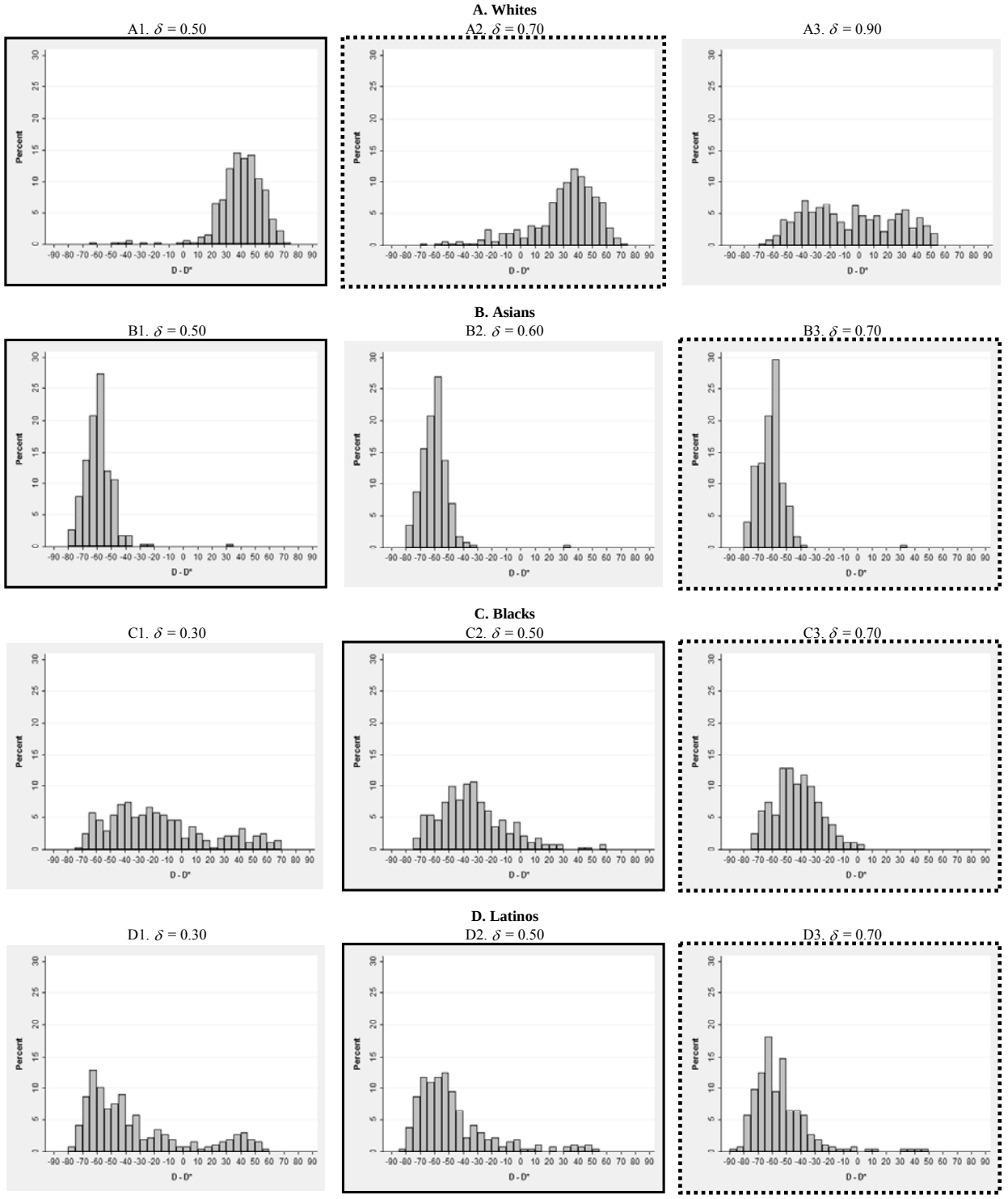

Figure 1. Distributions of $D\Delta$, by In-Group Ethnicity and Value of δ (Average Proportion Own Group Preferred)

Note: Histograms surrounded by a bold line have comparable δ values of 0.50; those bordered by a dashed line have comparable δ values of 0.70. *N* (MAs) = 323 for whites, 226 for Asians, 282 for blacks, and 265 for Latinos.

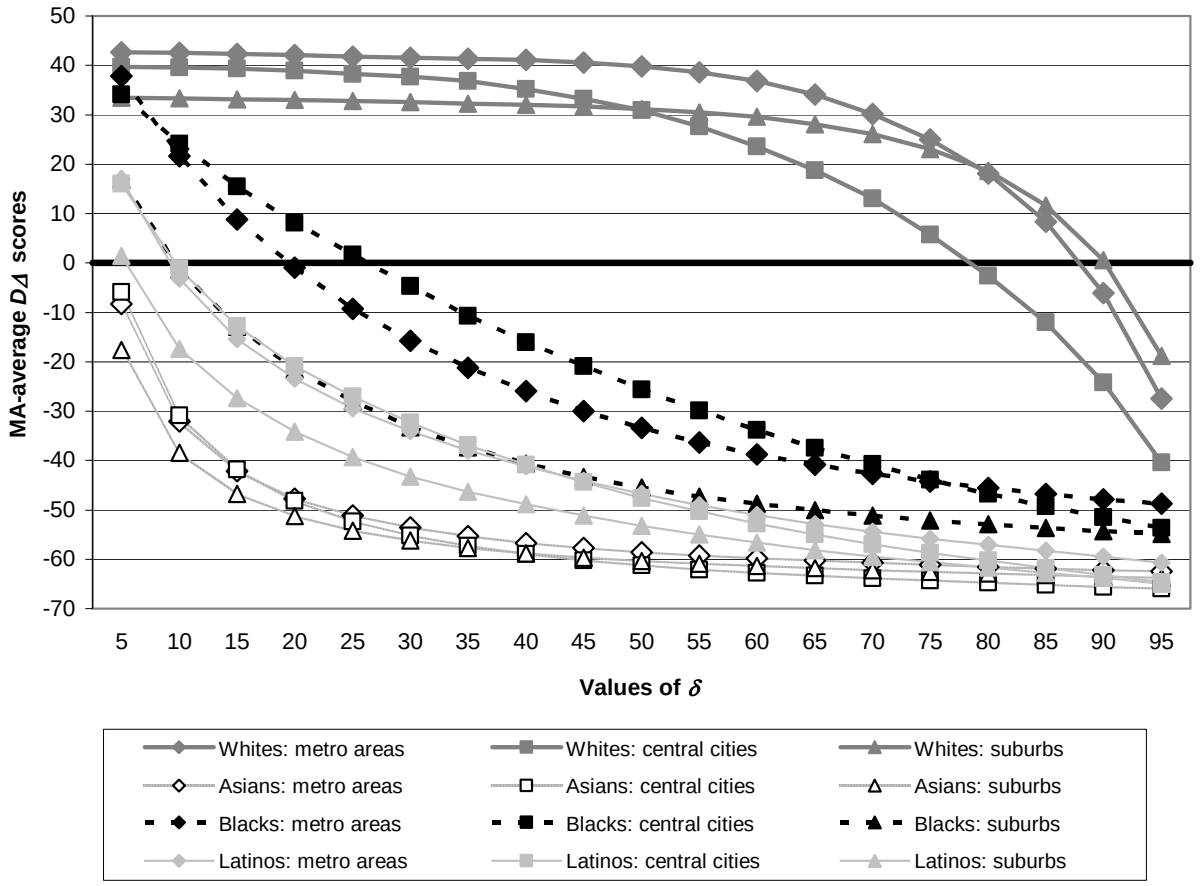

Figure 2. Metropolitan Area-level Average *DΔ* Scores, by Race/Ethnicity and Values of δ (Average Proportion Own Group Preferred)

Table 3. Coefficients and Standard Errors from Ordinary Least Squares Regressions of $D\Delta$ (with $\delta = 0.50$) on MA-level Characteristics

	White		Asian		Black		Latino	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
% good or better English speakers	—	—	-0.27 *	0.13	—	—	-0.88 **	0.31
% with greater than a high school degr	0.25 *	0.12	0.08	0.08	-0.27	0.15	-0.56 **	0.20
% homeowners	1.41 ***	0.19	-0.14	0.08	0.54 ***	0.14	1.03 ***	0.16
Relative average income	0.37 ***	0.04	0.01	0.03	-0.93 ***	0.13	-0.71 ***	0.16
Log of MA population	2.13 *	0.86	5.10 ***	0.79	7.43 ***	1.21	6.30 ***	1.49
% suburban	0.16 ***	0.04	-0.04	0.04	0.00	0.06	-0.28 ***	0.08
% manufacturing	0.35 *	0.15	0.17	0.14	0.43	0.23	-0.36	0.29
% government	0.02	0.20	0.11	0.18	1.28 ***	0.31	0.34	0.39
% in college	0.09	0.23	0.67 **	0.25	-0.41	0.31	0.56	0.43
% age 65 and over	-0.78	0.56	-0.36 ***	0.07	-0.25	0.15	-0.10	0.12
% foreign born	0.25	0.30	-0.35	0.25	-0.96 *	0.39	-1.26 **	0.48
% in-movers	1.09 ***	0.22	-0.87 ***	0.20	-0.91 **	0.32	-1.13 **	0.37
% vacant housing	-0.07	0.20	0.48 *	0.22	0.05	0.31	0.29	0.37
% housing built since 1990	-0.84 ***	0.15	-0.09	0.13	-0.11	0.23	0.09	0.25
% housing built before 1939	0.52 ***	0.15	-0.10	0.14	-0.14	0.21	-0.12	0.28
Northeast	1.95	3.19	-1.68	3.01	6.38	4.44	5.39	6.56
Midwest	1.26	2.51	1.30	2.24	12.85 ***	3.70	-9.32 *	4.55
South	2.14	2.25	1.64	1.80	14.23 ***	3.58	-2.99	3.78
Constant	39.8 ***	0.65	-58.6 ***	0.56	-33.4 ***	0.92	-46.7 ***	1.16
No. of cases (MAs)	323		226		282		265	
Adjusted R^2	0.551		0.377		0.579		0.515	