

TEMPORAL AND REGIONAL VARIATION IN
UNITED STATES RACIAL INTERMARRIAGE, 1980-2000

Vincent Kang Fu *

University of Utah

Department of Sociology

30 September 2009

* An earlier version of this paper was presented as a poster at the 2003 Annual Meeting of the Population Association of America, Boston, Massachusetts. I thank anonymous reviewers and seminar participants from the Consortium of Utah Demographers for their helpful comments. Direct correspondence to Vincent Kang Fu (vincent.fu@soc.utah.edu, 801-585-5930), University of Utah, Department of Sociology, 380 S 1530 E Rm 301, Salt Lake City, UT 84112-0250.

TEMPORAL AND REGIONAL VARIATION IN UNITED STATES RACIAL INTERMARRIAGE, 1980-2000

ABSTRACT

This paper describes 1980-2000 change over time and regional variation in U.S. Black/White and Latino/White intermarriage. I confirm past findings that Black/White intermarriage increased uniformly across the nation during the 1980s and 1990s. However, I also describe substantial geographic variation in intermarriage. The tendency for Blacks and Whites to marry within their own group was 10-20 times as strong in the South than in the West and 5 times as strong in the Northeast and Midwest than in the West. Substantial geographic variation was also apparent for Latinos, with tendencies for Latinos and Whites to marry within their own group in the West one quarter of the same tendencies in the Northeast and South. This paper also confirms past findings of increases in Latino/White intermarriage over the 1980s, but new the estimates accounting for geographic variation presented here yield no evidence of increasing Latino/White intermarriage over the 1990s. Overall, this paper describes substantial geographic variation in intermarriage overlooked by previous studies and largely confirm most past findings of increases over time in Black/White and Latino/White intermarriage.

TEMPORAL AND REGIONAL VARIATION IN UNITED STATES RACIAL INTERMARRIAGE, 1980-2000

INTRODUCTION

This paper estimates trends in racial intermarriage that account for the uneven distribution of racial and ethnic groups across the United States. Many studies have investigated intermarriage trends (Gullickson 2006; Kalmijn 1993; Qian 1997; Qian & Lichter 2007), but these studies generally assume that racial and ethnic groups are uniformly distributed throughout the U.S. This is problematic for studying intermarriage because this assumption confounds the uneven geographic distribution of racial and ethnic groups with measures of intermarriage tendencies. Some studies do acknowledge that people typically find their spouses in their local communities (Rosenfeld 2001; Harris & Ono 2005), but these studies do not examine changes over time in intermarriage. This paper advances the research frontier by combining these two related literatures.

This paper also advances the research frontier by describing broad regional differences in Black/White and Latino/White intermarriage. Past national studies provide only summary measures for the entire U.S. (e.g., Fu 2001; Qian & Lichter 2007). Other studies focus on individual cities or regions, but study these areas in isolation and cannot compare different parts of the country (e.g., Liang & Ito, 1999). A few studies do acknowledge some regional variation (Gullickson 2006; Kalmijn 1993), but this paper describes such variation more systematically.

The results presented here confirm past findings that Black/White intermarriage increased uniformly across the nation during the 1980s and 1990s. However, the tendency for Blacks and Whites to marry within their own group was 10-20 times as strong in the South than in the West and 5 times as strong in the Northeast and Midwest than in the West. Substantial geographic variation also appeared for Latinos, with tendencies for Latinos and Whites to marry within their own group in the West one quarter of the same tendencies in the Northeast and South. This paper also confirms past findings of increases in Latino/White intermarriage over the 1980s, but new the estimates accounting for geographic variation presented here yield no evidence of increasing Latino/White intermarriage over the 1990s. Overall, this paper describes substantial geographic variation in intermarriage overlooked by previous studies and largely confirm most past findings of increases over time in Black/White and Latino/White intermarriage.

The history of U.S. race relations gives researchers good reason to investigate regional variation. Slavery was abolished in the north after the American Revolution but continued for almost another century in the South. Even after the Civil War, the century of legalized Jim Crow racism in the South continued to distinguish it from the north. For Latinos in the nineteenth century, there was only mild conflict with Anglos in the Southeast, but conflict in the Southwest was bitter (Weber, 1992). In the late twentieth century, Cubans in South Florida have been much better integrated than many Latinos elsewhere in the U.S. Although this has seldom been investigated, intermarriage tendencies likely vary across the nation as well.

A long tradition of research in social stratification has used assortative marriage to describe the important boundaries that structure social interaction. Because families

formed by marriage socialize the next generation, individuals (under the influence of their natal families and the state) tend to be very selective in their search for a suitable spouse. If people are indifferent to a particular social boundary in their marriage choices, then that boundary likely plays an insignificant role in structuring other spheres of life. On the other hand, social boundaries that are never or seldom crossed in marriage likely represent deep-seated divisions in society.

In addition to measuring the strength of group boundaries, racial and ethnic intermarriage is also a driving force behind the weakening of group boundaries. Children who are the products of intermarriages are likely to consider the distinction between their parents' groups to be of reduced importance because they have been socialized into both groups. Intermarriages are also likely to promote a greater degree of intergroup contact among extended family members (Goldstein, 1999) and other members of the couple's social network. Previous research has yet to fully describe how this process varies across the U.S.

BACKGROUND

Two basic determinants of interracial marriage are population composition (Blau & Schwartz, 1984; Lichter et al., 1991) and the social structure (Kalmijn, 1998). At a basic level, the availability of potential marriage partners plays a fundamental role in producing intermarried couples. If the pool of potential spouses is more homogenous, fewer intermarriages will occur. If members of different groups are more numerous, then, everything else equal, more intermarriages will occur. These observations are important for accurately measuring U.S. racial intermarriage given the highly uneven

distribution of groups across the U.S. Table 1 shows that in 2000 only 58 percent of the West region was non-Latino White, compared to 81 percent of the Midwest. Blacks were 19 percent of the South population but only 5 percent of the West. Latinos were 24 percent of the West population but only 5 percent in the Midwest. The magnitude of these regional differences raises the importance of accounting for local marriage market conditions when measuring intermarriage tendencies.

A skewed sex ratio or a sex-specific shortage of suitable spouses may also raise intermarriage rates. These factors may be important for Black/White intermarriage given high incarceration rates for Black men and their lower educational attainment compared to Black women (Wilson 1987). However, the main consequence of these patterns has been lower overall marriage rates for Black women (Crowder & Tolnay 2000). The sex ratio may also influence intermarriage for Latinos because of the high sex ratio for Latino immigrants, especially among those from Mexico (Schmidley 2001).

Theoretical arguments about intermarriage place less emphasis on the role of population composition and more emphasis on how the social structure affects intermarriage. Because marriage organizes the inter- and intra-generational transmission of social and financial resources, intermarriage tendencies are useful measures of the importance of social boundaries. The tendency to intermarry net of the effects of population composition is the aspect of intermarriage of greatest interest to theoretical arguments because it is this aspect that reflects the social structure. If individuals easily cross a social boundary to form a tie as intimate and durable as marriage, then that social boundary is likely inconsequential for other forms of social interaction as well.

This paper contributes to the literatures on intermarriage trends and regional differences in the structure of U.S. race relations. I discuss both of these literatures below, emphasizing the dual roles of population composition and social structure as determinants of intermarriage.

Intermarriage trends

Available research provides a consistent national picture of increasing intermarriage of Whites with Blacks and Latinos in the final decades of the twentieth century. Rosenfeld (2002) reports 1970-1990 changes in intermarriage using a measure called the endogamy odds ratio (EOR), which describes the tendency to marry within one's own group. Between 1970 and 1990 EORs declined from 51,901 to 5,533 for Blacks, 2,023 to 387 for Puerto Ricans, and 820 to 167 for Mexican Americans. For the 1990s, Qian and Lichter (2007) also report increased Black/White and Latino/White intermarriage. Gullickson (2006) documents 1850-2000 Black/White intermarriage trends and also finds increases in the last half of the twentieth century. These increases are consistent with findings from a variety of studies using other datasets and other measures (e.g., Kalmijn, 1993; Qian, 1997; Schoen & Cheng, 2006; Schoen & Wooldredge, 1989).

Because theoretical arguments about intermarriage emphasize social structural determinants, these studies describe intermarriage using odds ratios derived from log-linear models that control for the effects of population composition. Harris and Ono (2005) point out a significant weakness of these national studies in their failure to account for variation in population composition across local marriage markets where most people

find their spouses. The intermarriage measures used by national studies make the dubious assumption that people choose their spouses from a marriage market that has the nation's population composition, when in reality people typically find their spouse in the local community, which can have a population composition dramatically different from the nation's.

Harris and Ono provide improved estimates of 1990 EORs significantly lower than traditional ones, suggesting that intermarriage tendencies were actually stronger than previously reported. This paper extends their work and previous national trend studies by providing national estimates of intermarriage over time that account for the population composition of local marriage markets.

Social Structure

The structure of race relations in a region affects the importance of group distinctions to marriage choice. The question, then, is how does the structure of race relations vary regionally? Little research has explicitly considered this question, but much of the available research has focused on Whites and Blacks and differences between the South and the rest of the country.

Sociologists have long linked the legacy of slavery and Jim Crow racism to stronger boundaries between Whites and Blacks in the South. Research on racial attitudes (Firebaugh & Davis, 1988; Quillian, 1996; Tuch, 1987; Wilson, 1986) provides extensive evidence of stronger antiblack prejudice in the South that has persisted to the present day and remains even after controlling for individual- and group-level characteristics (Quillian, 1996; Kulinski et al. 1997). Many observers have also

contributed to a group threat framework arguing that prejudice depends on the degree to which a disadvantaged group represents a perceived or actual threat to the dominant group's privileges (Blumer 1958; Blalock 1967; Lieberson 1980; Quillian 1996; Taylor 1998).

A few studies have examined regional variation in Black/White intermarriage (Gullickson 2006; Jacobson & Heaton 1996; Kalmijn 1993; Qian 1999). Gullickson's (2006) study provides the best examination of differences between the South and non-South, documenting stronger racial boundaries in the post-Civil Rights-era South and providing evidence that historical trends are consistent with a group threat framework.

Much less research has investigated regional differences in the structure of race relations for Latinos. There is no South/non-South divide that exists for Blacks, but Latinos do have several areas of high population concentration. The coincidence of high demand for unskilled labor in the U.S. and political and economic unrest in Mexico led to high levels of labor migration to the U.S. throughout most of the twentieth century. Geographic proximity and the annexation of Mexican territory via the 1848 Treaty of Guadalupe Hidalgo led to concentrated settlement in the Southwest. Also important to the formation of U.S. Latino communities was the end of the Spanish-American War in 1898, which gave the U.S. control over Puerto Rico and Cuba. The social and economic ties established between the U.S. and Puerto Rico led to the formation of substantial Puerto Rican communities in Northeastern cities, especially New York. Mass migration from Cuba began after Castro's 1959 socialist revolution, with the new arrivals concentrated mainly in Florida.

Evidence regarding the explanatory power of a group threat approach for Latinos is mixed (Taylor 1998; Bobo & Hutchings 1996). Three studies have examined regional variation in Latino/White intermarriage (Jacobson & Heaton 1996; Qian 1999; Rosenfeld 2002). The strongest of these is Rosenfeld's (2002) study, which finds no difference between the Southwest and other parts of the country in the propensity for intermarriage between Mexican Americans and Whites.

From research on racial attitudes, it seems plausible to expect that after controlling for population composition, intermarriage propensities between Blacks and Whites will be lowest in the South. For Latinos, the group threat framework suggests that Latino/White intermarriage tendencies will be weaker in the Southwest and other areas of high Latino concentration. This study will build on prior research by more systematically examining regional variation in intermarriage tendencies.

Segregation and Change Over Time

Past estimates of intermarriage trends have shown increases over time (e.g., Gullickson 2006; Qian, 1997; Qian & Lichter 2007; Rosenfeld, 2002). However, these estimates of intermarriage tendencies may be over- or under-estimates depending on changes in the uneven geographic distribution of groups. If groups became more segregated, then these estimates may under-estimate the actual degree of social change. Greater measured intermarriage tendencies at later periods occur between more segregated groups. If groups became less segregated, then these estimates would over-estimate the change over time. Lower levels of segregation (instead of changes in the social structure) would be responsible for increased intermarriage.

Table 2's indices of dissimilarity reveal changes over time. The region and state level experienced small decreases in Black/White segregation, from 21.9 in 1980 to 20.9 in 2000 for regions. However, at the census tract level for metropolitan areas, segregation declined significantly from 73.8 in 1980 to 65.0 in 2000. Thus, decreased Black/White segregation may account in part for recent increases in Black/White intermarriage¹.

Latino/White segregation also generally saw small declines between 1980 and 2000, falling from 49.7 in 1980 to 45.6 in 2000 at the state level, although segregation actually increased slightly at the census tract level for metropolitan areas, growing from 50.7 in 1980 to 51.5 in 2000. These relatively modest changes in Latino/White segregation likely have no more than a small influence on racial intermarriage. Thus, from these Latino/White segregation measures it is not clear that conventional estimates of intermarriage increases are either under-estimates or over-estimates. Nevertheless, as Harris and Ono (2005) have demonstrated, accounting for the uneven distribution of Latinos across the nation can be important in obtaining more valid measures of intermarriage tendencies.

DATA

Datasets

To describe intermarriage patterns I use the 5 percent samples from the 1980, 1990, and 2000 Decennial U.S. Censuses of Population and Housing (U.S. Department of Commerce, Bureau of the Census 1983, 1993, 2003). To identify married couples from the individual-level data, I match householders with their spouses living in the same households². The 1980 dataset is unweighted and I use simple counts of couples. For the 1990 and 2000 couples, I weight the counts using the householder's person weight (U.S. Department of Commerce, 1993:59).

I classify respondents as non-Latino Black, Latino³, non-Latino White, and non-Latino Other⁴. For ease of writing, I omit the modifier non-Latino below. The racial classification is straightforward for the 1980 and 1990 data but the multiple race responses of the 2000 Census introduce ambiguity. Since only 2.4 percent of the U.S. population selected more than one race category in the 2000 Census (Grieco & Cassidy, 2001), I focus on respondents reporting only one race, although I do include all Latinos regardless of the racial group(s) they reported. To avoid small cell counts I only examine intermarriages of Whites with Blacks and Latinos, excluding all of forms of intermarriage.

It may be desirable to include covariates such as education in the model to understand how patterns of educational assortative marriage affect racial and ethnic assortative marriage and better identify the preferences of marriage candidates. However, because intermarriages are relatively few in number to begin with, cross-classifying marriages by other variables in addition to region produces an unworkable number of zero or small cell counts, leading to unstable estimates⁵.

Prevalence Versus Incidence

Intermarriage has theoretical importance because it describes the importance of social distinctions. Specifically, the rate at which intermarriage occurs in a population at a given point in time describes the importance of social distinctions. Thus, Census data are not ideal for studying marriage choice because census data provide information only about the stock of marriages intact on Census day, which could have been formed at any point in the past at any place in the world. Furthermore, intact marriages over-represent more stable marriages that have survived to Census day. I discuss several restrictions below necessary for describing geographic variation in intermarriage tendencies.

To exclude immigrants married abroad, I adopt the common practice (e.g., Qian, 1997) of restricting the sample to couples where the husband and wife are both U.S. born⁶. To address problems with differential dissolution of marriages, I attempt to restrict the sample to recently married couples. Because only the 1980 PUMS includes data on marriage order and age at first marriage, I rely on age restrictions and use all marriages where both spouses are aged 20 or over and either the husband or the wife is under age 30⁷.

Studying marriage behavior in a marriage market also requires attention to migration. Effectively approximating the marriage market from which these recently married couples chose their spouses necessitates restricting the sample to non-migrants. Couples recently moving into a new marriage market did not choose their spouse from that marriage market. Thus, recent in-migrants to a marriage market need to be excluded. Half of the respondents in the 1980 PUMS and all of the respondents in the 1990 and 2000 PUMS have data on where they lived five years before the census. Thus, I include

only couples where at least one member was living in their current marriage market five years before the date of the census. Couples where both were living elsewhere five years ago are less likely to have been living in their current marriage market at the time of marriage, although certainly some of them may have moved to their current marriage market and married within the past five years. However, non-migrant couples are much more likely to have met each other and married in their current marriage market⁸.

Eliminating migrants does come at a cost, and I present several sets of results to illustrate the sensitivity of the results to this migration restriction.

Marriage Market Geography

Another important issue is the appropriate unit of geography to approximate the geographic area within which people search for a spouse. Existing national studies assume that individuals select from a national marriage market with the nation's population composition. This is clearly an unrealistic assumption. However, identifying an appropriate alternative is a difficult task.

I present a series of estimates using a variety of increasingly specific marriage markets: Census Bureau regions, Census Bureau divisions, states, and metropolitan areas (see notes to Table 1 for definitions of regions and divisions). Regions, divisions, and states have the advantage of coverage in that they include the entire U.S. and their boundaries do change over the study period. However, they are unrealistic marriage markets because most of the geographic units are too large (e.g., regions, divisions, California) and a few are too small (e.g., Rhode Island).

Among the available alternatives, metropolitan areas⁹ are the best approximation to a marriage market. As defined by the Census Bureau, Metropolitan Areas (MAs) generally contain a core population nucleus along with surrounding areas that have a high degree of economic and social integration (based on commuting data) with the core area (U.S. Department of Commerce, 1994:13-1). Consolidated Metropolitan Statistical Areas (CMSAs) are concatenations of MSAs with total populations greater than one million.

Metropolitan areas are a reasonable approximation to marriage markets. Because of the costs of traveling to places further away, marriage candidates are likely to carry out their searches in the local area. Research suggests that sites such as parks, cafes, shopping centers, schools, and private social gatherings are common places that married couples identify as the place where they met (Bozon & Heran, 1989). These sites are all likely to be in the local metropolitan area.

One disadvantage of metropolitan areas as marriage markets is changes over time in definitions of metropolitan areas. I base the metropolitan area definitions used in this study on Jaeger et al.'s (1998) equivalency file that aggregates the geographic units available in the Census, known as Public Use Microdata Areas (PUMAs), into metropolitan areas that are consistent across the 1980 and 1990 Censuses. No corresponding equivalency file for metropolitan areas in the 2000 Census is available. For the 2000 Census, I aggregate PUMAs into metropolitan areas using Jaeger et al.'s rules¹⁰, although I do not implement thorough provisions to make the definitions consistent with earlier ones. I only modify Jaeger et al.'s metropolitan areas to combine

five 1980-1990 MSAs with neighboring areas to be consistent with the CMSA definitions in the 2000 Census.

Compared to regions, divisions, and states, using metropolitan areas as marriage markets excludes rural areas and hence cannot provide a full portrait of national intermarriage patterns. However, rural areas have few intermarriages and including them as distinct marriage markets would lead to small cell counts which violate statistical assumptions necessary for valid hypothesis tests. I also restrict the sample to metropolitan areas with at least 20 minority group husbands and 20 minority group wives in my sample for the three censuses.

GEOGRAPHIC VARIATION AMONG METROPOLITAN AREAS

Log-linear Models

I estimate log-linear models (using Clogg & Eliason's [1987] technique for incorporating sampling weights) to describe marriage preferences. Log-linear models are Poisson regression models for the counts in the husband's race by wife's race by marriage market by year contingency tables generated from the Census data. These models produce measures of marriage patterns that are invariant to the marginal distributions of husbands and wives. Given the influence of population composition on marriage outcomes, it is imperative to control for population composition to accurately gauge the preferences of marriage partners. I include effects for the marginal distribution of husband's and wife's race, which control for the population composition of each marriage market.

I also include in the models terms for the interaction of husband's race and wife's race. These are the main parameters of interest. They describe endogamy in marriage outcomes. The modeling procedure allows us to interpret the interaction terms for husbands and wives belonging to the same minority group as a measure of the importance of the White/minority group distinction in shaping marriage outcomes. Using Black/White intermarriage as an example, the coefficient for the Black husband*Black wife interaction measures the importance of the distinction between Blacks and Whites to marriage outcomes. It can be interpreted as an odds ratio and is the ratio of two odds: (1) the odds that a Black person marries a Black spouse instead of a White spouse to (2) the odds that a White person marries a Black spouse instead of marrying a White spouse. If the odds that a Black person marries a Black spouse is the same as the odds that a White person marries a Black spouse, this means that the distinction between Blacks and Whites has no effect on marriage outcomes: Blacks and Whites are equally likely to marry Blacks. An odds ratio of one means that the distinction between Blacks and Whites does not affect marriage choice. Odds ratios greater than one suggest that Blacks and Whites tend to marry within their own group. Larger odds ratios indicate that the racial distinction is more important in shaping marriage outcomes. I call this odds ratio the endogamy odds ratio (EOR) and it is the odds ratio used by Lieberman and Waters (1988:173) and Rosenfeld (2002:156).

For marriage market k , the EOR is equivalent to the cross-product ratio:

$$EOR_k = \frac{WW_k \times BB_k}{WB_k \times BW_k},$$

where WW_k is the number of White/White marriages, BB_k is the number of Black-Black marriages, WB_k is the number of White wife/Black husband marriages, and BW_k is the number of Black wife/White husband marriages in marriage market k . If Blacks and Whites are more likely to marry within their respective groups than to marry spouses of the other group, then the numerator of this ratio will be large and the denominator will be small, resulting in a large EOR.

I first estimate log-linear model (1), which is a baseline model with no regional variation and no change over time in endogamy, but including terms allowing the population composition to vary between marriage markets and over time. This constant, common EOR model embodies the standard national uniformity assumption and also imposes the assumption of temporal invariance:

$$\log m_{hwm_t} = \lambda + \lambda_h + \lambda_w + \lambda_m + \lambda_t + \lambda_{hm} + \lambda_{wm} + \lambda_{hw} + \lambda_{ht} + \lambda_{wt} + \lambda_{hmt} + \lambda_{wmt}. \quad (1)$$

where h indexes husband's race, w indexes wife's race, m indexes marriage market, and t indexes time. The parameters λ_{hmt} and λ_{wmt} account for variation in population composition among metropolitan area marriage markets over time. The λ_{hw} parameter is the common EOR estimated over all of the marriage markets and assumed to be constant over time.

The second model (2) adds one additional effect to allow change over time in the EOR but continues to assume that the EOR is uniform throughout the entire U.S. This model embodies the standard model of national uniformity and change over time (although it does account for variation among marriage markets in population composition):

$$\begin{aligned} \log m_{hwmt} = & \lambda + \lambda_h + \lambda_w + \lambda_m + \lambda_t + \lambda_{hm} + \lambda_{wm} + \lambda_{hw} + \lambda_{ht} + \lambda_{wt} + \lambda_{hmt} + \lambda_{wmt} \\ & + \lambda_{hwt}. \end{aligned} \quad (2)$$

The third model (3) adds terms describing broad regional differences in endogamy to the second model. Marriage markets in different regions are allowed to vary with respect to their endogamy tendencies but change over time is assumed to be constant over all regions:

$$\begin{aligned} \log m_{hwmt} = & \lambda + \lambda_h + \lambda_w + \lambda_m + \lambda_t + \lambda_{hm} + \lambda_{wm} + \lambda_{hw} + \lambda_{ht} + \lambda_{wt} + \lambda_{hmt} + \lambda_{wmt} \\ & + \lambda_{hwt} + \lambda_{hwr} \end{aligned} \quad (3)$$

The fourth model (4) relaxes the previous model by allowing for regional differences in the rate of change over time:

$$\begin{aligned} \log m_{hwmt} = & \lambda + \lambda_h + \lambda_w + \lambda_m + \lambda_t + \lambda_{hm} + \lambda_{wm} + \lambda_{hw} + \lambda_{ht} + \lambda_{wt} + \lambda_{hmt} + \lambda_{wmt} \\ & + \lambda_{hwt} + \lambda_{hwr} + \lambda_{hwrt} \end{aligned} \quad (4)$$

I also present a fifth model unique to each marriage market assumption that involves specific restrictions on changes over time and regional variation in intermarriage tendencies based on inspection of the coefficients from unconstrained models.

Black/White Intermarriage

Table 3 lists the fit statistics for the Black/White intermarriage models. For each of the marriage market assumptions, I first estimate Model 1 which allows for no change over time in Black/White intermarriage and also represents the standard assumption of national uniformity in intermarriage tendencies. This is the baseline null model. It has a positive BIC statistic for region and division marriage markets, indicating that this is a less plausible model than the saturated model. For state and metropolitan area marriage

markets, the BIC statistics for Model 1 are actually negative, indicating that this null model is more plausible than the saturated model. This baseline model allowing for no change over time and no regional variation will be improved upon by later models.

For each of the marriage market assumptions, Model 2 is a significant improvement over the baseline Model 1 (e.g., for region marriage markets BIC falls from 1047.06 to 288.59). This indicates that, not surprisingly, terms allowing change over time significantly improve model fit. Also, for each of the marriage market assumptions, Model 3 improves on Model 2 (e.g., for division marriage markets BIC falls from 160.73 to -192.68), revealing that Black/White intermarriage tendencies vary across regions. In contrast, Model 4 does not significantly improve on Model 3 for any of the marriage market assumptions (e.g., for state marriage markets BIC *rises* from -1334.04 to -1286.76). This reveals that while intermarriage has changed over time and varies across regions, the magnitudes of the trends are not unique for each region.

For each of the marriage market assumptions, the best fitting model with the most negative BIC statistic was the specialized Model 5. Regardless of the geographic unit used for the marriage market, the models revealed that intermarriage tendencies in the Northeast and Midwest were the same but differed from intermarriage tendencies in the West and South. With region, division, and state marriage markets, the best fitting Model 5 found uniform national changes over time in Black/White intermarriage over the 1980s and 1990s. In other words, the rate of change was consistent over the three regions. Only the models estimated using metropolitan-area marriage markets differed. For this last set of results at the bottom of Table 3, the best fitting model allowed no change over time during the 1980s, but did allow for increases in intermarriage over the 1990s.

How might we reconcile these results? The different marriage market assumptions yield a remarkably similar set of results. All four assumptions agree about the basic structure of regional variation—with respect to Black/White intermarriage, the U.S. can be divided into regions: the West, the South, and a combined Northeast and Midwest unit. Furthermore, all four marriage market assumptions also agree that any trends in intermarriage have been uniform across the U.S. Moreover, the finding that intermarriage increased during the 1990s was also consistent across the different marriage market assumptions.

The only point on which the marriage market assumptions produce different results concerns changes over the 1980s. The less realistic region, division, and state marriage markets find that increases occurred in both the 1980s and 1990s. The more realistic metropolitan area marriage markets, however, found no changes over time in the 1980s. Although metropolitan area marriage markets are more realistic, they also come at a great cost in terms of representativeness. The sample size of 307,500 from the 66 metropolitan marriage markets is less than half of the sample for region marriage markets. It is difficult to weigh the advantage of realistic marriage markets against the cost of decreased sample size, but the preponderance of the evidence in the form of consistent results with region, division, and state marriage markets suggests the conclusion that Black/White intermarriage did increase over the 1980s.

Table 4 lists the coefficient estimates from Model 5 for each of the marriage market assumptions. The results here are also quite consistent. Estimates of the 1980 Black/White EOR for the Northeast and Midwest ranged from 23,000 to 31,000. Behaviorally this means that Blacks were 23,000 to 31,000 times as likely to marry Blacks than they were to marry Whites. For the 1980 South the Black/White EOR ranged from 56,000 to 81,000. In the 1980 South, Blacks were 56,000 to 81,000 times as likely to marry a Black spouse as they were to marry a White spouse. And finally, in the 1980 West, the EORs ranged from 4,000 to 8,000. Blacks in the 1980 West were 4,000 to 8,000 times as likely to marry endogamously as they were to intermarry with a White spouse.

For the region, state, and division marriage markets that produced 1980s changes, the estimated EORs declined by between 74 and 68 percent. For estimates of change between 1980 and 2000, the four marriage market assumptions produced estimated declines between 88 and 93 percent.

Overall, the story here is the remarkable consistency of the results across the different marriage market assumptions. Even though the increasingly specific marriage markets lost more and more couples due to the migration restrictions, they still produced a consistent pattern of higher intermarriage in the West and lower intermarriage in the South. The estimates of 1980s change were also consistent with declines in the EORs on the order of 70 percent. The estimates of 1980-2000 change were also consistent with estimated EOR declines on the order of 90 percent.

Latino/White Intermarriage

Table 5 lists the fit statistics for the Latino/White intermarriage models. I apply the same strategy as in Table 3. For each of the marriage market assumptions, I first estimate Model 1 which allows for no change over time in intermarriage and also represents the standard assumption of national uniformity in intermarriage tendencies. This is the baseline null model. It has a positive BIC statistic for region, division, and state marriage markets, indicating that this is a less plausible model than the saturated model. For metropolitan area marriage markets, the BIC statistic for Model 1 is actually negative, indicating that this null model is more plausible than the saturated model. This baseline model allowing for no change over time and no regional variation will be improved upon by later models.

For each of the marriage market assumptions, Model 2 is a significant improvement over the baseline Model 1 (e.g., for region marriage markets BIC falls from 3779.48 to 3531.32). This indicates that, not surprisingly, terms allowing change over time significantly improve model fit. Also, for each of the marriage market assumptions, Model 3 improves on Model 2 (e.g., for division marriage markets BIC falls from 1951.04 to 47.06), revealing that Latino/White intermarriage tendencies vary across regions. In contrast, Model 4 offers little or no improvement over Model 3 for any of the marriage market assumptions (e.g., for state marriage markets BIC falls only from -1144.27 to -1159.45). This reveals that while intermarriage has changed over time and varies across regions, the changes over time are fairly similar across regions.

For each of the marriage market assumptions, the best fitting model with the most negative BIC statistic was the specialized Model 5. Regardless of the geographic unit used for the marriage market, the models revealed that intermarriage tendencies changed uniformly across the U.S. only for the 1980s but not during the 1990s. These specialized models also revealed strong geographic differences in Latino/White intermarriage at the Census Bureau's division level (for marriage markets that supported divisions). For metropolitan area marriage markets it was possible to find models with modestly more negative BIC statistics than the listed -741.10 for Model 5, but I prefer Model 5 because even more specialized models risk over-fitting the data.

How might we reconcile these results? As in the analysis of Black/White intermarriage, the different marriage market assumptions yield a remarkably similar set of results. All four assumptions agree about the basic structure of change over time—increases in Latino/White intermarriage occurred only during the 1980s but not during the 1990s. Furthermore, all four marriage market assumptions also agree that any trends in intermarriage have been uniform across the U.S. Moreover, the three marriage market assumptions for which this level of detail was available, all found regional variation at the Census Bureau's division level.

Table 6 lists the coefficient estimates from Model 5 for each of the marriage market assumptions. No metropolitan area marriage markets from the New England nor the East South Central Divisions met my selection criteria and I do not report estimates for the divisions for metropolitan area marriage markets. In all other cases I report the EORs for each division. The results here are also largely consistent. In general the estimated EORs tended to be relatively low in the Pacific and Mountain Divisions and relatively high in the Northeast (New England and Mid-Atlantic Divisions) and South (South Atlantic, East South Central, and West South Central Divisions).

Estimates of the 1980 Latino/White EOR for New England ranged from 180 to 240. Behaviorally this means that Latinos were 180 to 240 times as likely to marry Latinos than they were to marry Whites. For the 1980 Mid-Atlantic Division the estimated Latino/White EORs ranged from 130 to 240. In the 1980 East North Central Division, Latinos were 70 to 110 times as likely to marry a Latino spouse as they were to marry a White spouse. In the 1980 West North Central Division, the estimated EORs ranged from 60 to 100. Latinos in the 1980 South Atlantic Division were 30 to 330 times as likely to marry endogamously as they were to intermarry with a White spouse. The estimated EORs for the 1980 East South Central Division ranged from 90 to 330. In the 1980 West South Central Division, Latinos were 80 to 330 times as likely to marry another Latino than to marry a White spouse. In the 1980 Mountain Division, the estimated EORs ranged from 40 to 70. For the 1980 Pacific Division, the estimated EORs ranged from 30 to 50. And finally, the estimated declines during the 1980s ranged from 43 to 48 percent.

Overall, the story here is the remarkable consistency of the results across the different marriage market assumptions. Even though the increasingly specific marriage markets lost more and more couples due to the migration restrictions, they still produced a consistent pattern of higher intermarriage in the West and lower intermarriage in the South and Northeast. The estimates of 1980s change were also consistent with declines in the EORs on the order of 45 percent. The estimates of no 1990s change were also consistent across the marriage market assumptions.

DISCUSSION AND CONCLUSION

How do results that account for regional variation compare to conventional estimates of intermarriage trends? In Table 7 I present conventional measures of marriage preferences estimated under the assumption that the marriage market is the entire nation. The odds ratios in the first column provide solid evidence of increased Black/White intermarriage (declining endogamy) for both the 1980s and 1990s. These are the conventional estimates of the strength of group boundaries. For 1980, the odds that a Black person marries a Black spouse instead of a White spouse are 27,144 times the odds that a White person marries a Black spouse instead of a White spouse. Blacks are much more likely to marry Blacks than Whites are. The corresponding 1990 estimate is 8,001 and by 2000, the estimate had fallen to 2,343.

These national estimates match up well with the regional estimates for the Northeast and Midwest. However, the West EORs are consistently lower and the South EORs are consistently higher than the national EORs. The national estimates are useful as an overall summary measure of intermarriage for the entire nation; the regional

measures describe variability across the nation. The conventional 1980 national endogamy odds ratio for Black/White intermarriage of 27,144 contrasts sharply with the estimates of 4,000-8,000 for the West metropolitan areas and 56,000-81,000 for the South. The 1980 tendency for Blacks and Whites to marry within their own group was on the order of 10-20 times stronger in the South cities compared to the West. In addition, the South's 1980 endogamy odds ratio was perhaps twice as great as the estimate for the entire nation, whereas the West's was one-third to one-sixth of the national estimate. Clearly, it is useful to account for geographic variability to accurately describe intermarriage patterns.

The estimated rates of change differ slightly between the national estimates and the regional estimates: the national estimates decline by two-thirds per decade, whereas my decline by about 70 percent over the 1980s and another 70 percent over the 1990s. The regional estimates are subject to migration restrictions but do approximate better the marriage markets from which people are choosing their spouses than the conventional estimates do. The national estimates poorly approximate the marriage markets from which people choose their spouses but do include the entire U.S. population. The conventional national estimates and the new regional estimates are both flawed but in different ways. The national estimates confound intermarriage tendencies with the uneven geographic distribution of groups, whereas the new regional estimates omit migrants (and large portions of the country when using metropolitan area marriage markets). However, both sets of estimates do largely agree that intermarriage has increased over the 1980s and 1990s. The regional estimates also describe how

intermarriage tendencies vary across the country and demonstrate that intermarriage has increased consistently across the U.S.

The comparison is more complicated for Latino/White intermarriage. The national EORs are 157 in 1980, decline to 85 by 1990 and 75 by 2000. The 1980 national estimate is useful as an overall national summary, but it does not acknowledge the higher rates on intermarriage in the West and lower rates of Latino/White intermarriage in the Northeast and South. The estimated rate of change during the 1980s is consistent between my regional results and conventional national estimates. Both suggest that by 1990s the EORs had fallen to slightly more than half of the value in 1980. On point where my estimates differ from the conventional estimates is with respect to 1990s changes. None of my marriage market assumptions provide any evidence for increases in intermarriage over the 1990s. The conventional estimates do suggest that intermarriage increased over the 1990s, although by only a small amount. This is the main difference between my results and the national estimates.

For Latino/White intermarriage, there is also evidence of great regional variation in the level of intermarriage. The estimated EORs in the Northeast and South were regularly 3-7 times as great as the estimated EORs for the Mountain and Pacific Division metropolitan areas. This pattern of geographic differences persisted through the 1980s and 1990s.

The findings reported here demonstrate that regional estimates of intermarriage tendencies provide additional information about intermarriage patterns. The great regional variation discovered here suggests that although traditional, national measures are valuable national summaries, they mask regional differences.

One general pattern is that declines in endogamy are greater for regions and groups that initially had higher levels of endogamy. Black/White endogamy is greater than Latino/White endogamy, but the 1980-2000 decline for Blacks (90 percent) was generally greater than the 1980-2000 decline for Latinos (45 percent). This suggests that changes over time in intermarriage may follow an S-shaped or logistic curve where progress slows as endogamy trends toward an asymptote.

The conclusions drawn here using data on change over time in racial intermarriage are sensitive to changes over time in the institution of marriage. One noteworthy change is increases in age at marriage (Goldstein & Kenney, 2001). In successive Census samples, fewer and fewer couples met my age criteria. Another noteworthy change is the rise in cohabitation. Casper and Cohen's (2000) annual estimates showed a greater than four-fold increase from 1977 to 1997 in the number of cohabiting U.S. couples, from about one million to well over four million. The increasing availability of cohabitation as an option suggests that some couples who intermarried in the late 1970s might have instead cohabited in later years since a cohabiting union may be a less formal union than a marriage. This suggests, however, that the observed increases in intermarriage during the 1980s and 1990s are actually an underestimate of the extent to which group boundaries weakened. If cohabitation had not been a readily available option later in the period, then some of the interracial cohabiting partners observed in the 1990 and 2000 Census might have been marriages. This strengthens the conclusions about increases in intermarriage.

Conventional intermarriage estimates assume that intermarriage patterns are uniform across the entire nation. Clearly this is not the case and regional differences are

substantial. This study's description of regional variation in intermarriage patterns represents a step forward in understanding an axis of variation in the importance of racial and ethnic distinctions. Further research would do well to investigate sources of the observed regional variation. Doing so may also shed light on the sources of variation over time.

However, it is also true that regional concentration and intermarriage are not exogenous. The same factors that lead to preferences for co-ethnic spouses likely also lead to preferences for co-ethnic neighbors at the neighborhood and broader regional levels. Thus, even if conventional national intermarriage estimates confound intermarriage tendencies with uneven geographic distribution, national intermarriage estimates still usefully describe the social structure, as reflected in both spouse selection and residential choice. Nevertheless, residential location and intermarriage are conceptually distinct. Marriage is an intimate, highly consequential, long-term property relationship, which organizes the inter- and intra-generational transfer of resources from husband to wife, and from parents to children and grandchildren. Residential choices also have a great influence on well being, but are usually more fluid and less permanent than marriage, today's high divorce rates notwithstanding. Relationships between neighbors are not nearly as intimate or important as relationships between spouses. This is reflected in attitudes about residential integration and intermarriage. By 1996, 86 percent of Americans stated opposition to racial residential segregation, whereas by 1997, only 67 percent of Americans approved of intermarriage between Whites and Blacks (Schuman et al., 1997:107). Thus, even though choices of spouse and residential location are related, they are distinct phenomena and to accurately describe the social structure

with intermarriage, it is worthwhile to account for the confounding influence of uneven geographic distribution.

REFERENCES

- Abrahamson, M. & Carter, V. (1986). Tolerance, Urbanism, and Region. *American Sociological Review*, 51, 287-294.
- Agresti, A. (2002). *Categorical Data Analysis*. Second edition. New York: Wiley.
- Blau, P. and Schwartz, J. (1984). *Crosscutting Social Circles*. New York: Academic Press.
- Bozon, M. and Heran, F. (1989). Finding a Spouse: A Survey of how French Couples Meet. *Population: An English Selection* 44, 91-121.
- Casper L. and Cohen, P. 2000. How does POSSLQ measure up? Historical estimates of cohabitation. *Demography* 37, 237-45.
- Clogg, Clifford C. and Eliason, Scott R. (1987). Some Common Problems in Log-Linear Analysis. *Sociological Methods and Research* 16, 8-44.
- Davis, F. (1991). *Who is Black? One Nation's Definition*. University Park: Pennsylvania State University Press.
- Farley, R. (1999). Racial Issues: Recent Trends in Residential Patterns and Intermarriage. Pp. 85-128 in N. Smelser and J. Alexander, eds. *Diversity and Its Discontents*. Princeton, New Jersey: Princeton University Press.
- Farley, R. and Frey, W. (1994). Changes in the Segregation of Whites From Blacks During the 1980s: Small Steps Toward a More Integrated Society. *American Sociological Review* 59, 23-45.
- Firebaugh, G. and Davis, K. (1988). Trends in Antiblack Prejudice, 1972-1984: Region and Cohort Effects. *American Journal of Sociology* 94, 251-272.

- Frey, W. and Farley, R. (1996). Latino, Asian, and Black Segregation in U.S. Metropolitan Areas: Are Multi-ethnic Metros Different? *Demography* 33, 35-50.
- Fu, V. K. (2001). Racial Intermarriage Pairings. *Demography* 38, 147-159.
- Gart, J. and Zweifel, J. (1967). On the Bias of Various Estimators of the Logit and Its Variance with Application to Quantal Bioassay. *Biometrika* 54, 181-187.
- Gibson, C. and Jung, K. (2002). Historical Census Statistics on Population Totals by Race, 1790 to 1990, and by Hispanic Origin, 1970 to 1990, for the United States, Regions, Divisions, and States. Population Division Working Paper No. 56. Washington, D.C.: U.S. Census Bureau.
- Goldstein, J. (1999). Kinship Networks That Cross Racial Lines: The Exception or the Rule? *Demography* 36, 399-407.
- Goldstein, J. and Kenney, C. (2001). Marriage Delayed or Marriage Forgone? New Cohort Forecasts of First Marriage for U.S. Women. *American Sociological Review* 66, 506-519.
- Gordon, M. (1964). *Assimilation in American Life: The Role of Race, Religion, and National Origins*. New York: Oxford University Press.
- Grieco, E. and Cassidy, R. (2001). Overview of Race and Hispanic Origin. Washington, D.C.: U.S. Department of Commerce Census Bureau Economics and Statistics Administration.
- Gullickson, A. (2006). Black/White Interracial Marriage Trends, 1850-2000. *Journal of Family History* 31, 289-312.

- Harris, D. and Ono, H. (2005). How Many Interracial Marriages Would There Be If All Groups Were of Equal Size in All Places? A New Look at National Estimates of Interracial Marriage. *Social Science Research* 34, 236-251.
- Hwang, S. and Saenz, R. (1990). The Problem Posed by Immigrants Married Abroad on Intermarriage Research: The Case of Asian Americans. *International Migration Review* 24, 563-576.
- Jacobson, C. and Heaton, T. (1996). Regional and Racial and Ethnic Composition Effects on Intermarriage Rates in the United States. *Family Perspectives* 30, 353-367.
- Jaeger, D.; Loeb, S.; Turner, S.; and Bound, J. (1998). Coding Geographic Areas Across Census Years: Creating Consistent Definitions of Metropolitan Areas. National Bureau of Economic Research Working Paper 6772.
- Kalmijn, M. (1993). Trends in Black/White Intermarriage. *Social Forces* 72, 119-146.
- Kennedy, R. (2003). *Interracial Intimacies: Sex, Marriage, Identity, and Adoption*. New York: Pantheon Books.
- Liang, Zai and Ito, Naomi. (1999). Intermarriage of Asian Americans in the New York City Region: Contemporary Patterns and Future Prospects. *International Migration Review* 33, 876-896.
- Lichter, D.; LeClere, F.; and McLaughlin, D. (1991). Local Marriage Markets and the Marital Behavior of Black and White Women. *American Journal of Sociology* 96, 843-867.
- Liebertson, S. and Waters, M. (1988). *From Many Strands*. New York: Russell Sage Foundation.

- Logan, J. (2001). Ethnic Diversity Grows, Neighborhood Integration Lags Behind. Lewis Mumford Center Report. Albany, New York: University at Albany Lewis Mumford Center.
- Massey, D. and Denton, N. (1993). *American Apartheid*. Cambridge, MA: Harvard University Press.
- Monahan, T. (1976). An Overview of Statistics on Interracial Marriage in the United States with Data on Its Extent from 1963-1970. *Journal of Marriage and the Family* 38, 223-231.
- Oppenheimer, V. (1988). A Theory of Marriage Timing. *American Journal of Sociology* 94, 563-591.
- Peterson, W. (1987). Politics and the Measurement of Ethnicity. Pp. 187-233 in W. Alonso and P. Starr, eds. *The Politics of Numbers*. New York: Russell Sage Foundation.
- Qian, Z. (1997). Breaking the Racial Barriers: Variations in Interracial Marriage Between 1980 and 1990. *Demography* 34, 263-276.
- Qian, Z. and Lichter, D. (2001). Measuring Marital Assimilation: Inter-marriage among Natives and Immigrants. *Social Science Research* 30, 289-312.
- Qian, Z. and Lichter, D. (2007). Social Boundaries and Marital Assimilation. *American Sociological Review* 72, 68-94.
- Quillian, L. (1996). Group Threat and Regional Change in Attitudes Toward African Americans. *American Journal of Sociology* 102, 816-860.
- Rosenfeld, M. (2002). Measures of Assimilation in the Marriage Market: Mexican Americans 1970-1990. *Journal of Marriage and Family* 64, 152-162.

Schuman, H.; Steeh, C.; Bobo, L.; and Krysan, M. (1997). *Racial Attitudes in America: Trends and Interpretations*. Revised edition. Cambridge, Massachusetts: Harvard University Press.

Stevens, L. Nye. (1998). Decennial Census: Preparations for Dress Rehearsal Underscore the Challenges for 2000. Testimony before the Subcommittee on the Census, Committee on Government Reform and Oversight, U.S. House of Representatives. GAO/T-GGD-98-84. Washington, D.C.: U.S. General Accounting Office.

Tolbert, C. and Killian, M. (1987). *Labor Market Areas for the United States*. Washington, D.C.: Agriculture and Rural economy division, Economic Research Service, U.S. Department of Agriculture. Staff paper no. AGES870721.

Tolbert, C. and Sizer, M. (1996). *U.S. Commuting Zones and Labor Market Areas: A 1990 Update*. Washington, D.C.: Rural economy division, Economic Research Service, U.S. Department of Agriculture. Staff paper no. AGES-9614.

Tuch, S. (1987). Urbanism, Region, and Tolerance Revisited: The Case of Racial Prejudice. *American Sociological Review* 52, 504-510.

U.S. Census Bureau. (2001). Population and Housing Tables PHC-T-6. Table 1. Population by Race and Hispanic or Latino Origin, for the United States, Regions, Divisions, and States, and for Puerto Rico: 2000. Revision date 2 April 2001. Retrieved 17 July 2004 (<http://www.census.gov/population/cen2000/phc-t6/tab01.xls>).

U.S. Census Bureau. (2002). 1990 Census Mail Response Rates by 1990 Geographic Boundaries/FAQs. Revision date 23 May 2001. Retrieved 28 August 2005 (<http://www.census.gov/dmd/www/mailresp.html>).

U.S. Census Bureau. (2004a). Census 2000 Final Response Rates. Revision date 2 April 2004. Retrieved 28 August 2005

(<http://www.census.gov/dmd/www/response/2000response.html>).

U.S. Census Bureau. (2004b). *Statistical Abstract of the United States 2003*.

Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Commerce, Bureau of the Census. (1983). *Census of Population and Housing, 1980: Public Use Microdata Sample A, United States*. [machine-readable data file] prepared by the Bureau of the Census. Washington, D.C.: U.S. Department of Commerce, Census Bureau (producer). Ann Arbor, Michigan: Inter-university Consortium for Political and Social Research (distributor).

U.S. Department of Commerce, Bureau of the Census. (1993). *Census of Population and Housing, 1990 United States: Public Use Microdata Sample: 5 Percent Sample* Computer file. Second release. Washington, D.C.: U.S. Department of Commerce, Census Bureau (producer). Ann Arbor, Michigan: Inter-university Consortium for Political and Social Research (distributor).

U.S. Department of Commerce. (1994). *Geographic Areas Reference Manual*.

Washington, D.C.: U.S. Department of Commerce Economics and Statistics

Administration Bureau of the Census.

U.S. Department of Commerce, Bureau of the Census. (2003). *Census of Population and Housing, 2000: Public Use Microdata Sample: 5-percent Sample*. ICPSR release.

Washington, D.C.: U.S. Department of Commerce, Census Bureau [producer]. Ann Arbor, Michigan: Inter-university Consortium for Political and Social Research [distributor].

Weber, D. (1992). The Spanish Legacy in North America and the Historical Imagination. *Western Historical Quarterly* 23, 4-24.

Wilson, T. (1986). Interregional Migration and Racial Attitudes. *Social Forces* 65, 177-186.

Table 1: 2000 Racial and ethnic composition of the United States by region

	Northeast	Midwest	South	West	National
Non-Latino White	73.4%	81.4%	65.8%	58.4%	69.1%
Blacks	11.4%	10.1%	18.9%	4.9%	12.3%
American Indians	0.3%	0.6%	0.7%	1.9%	0.9%
Asians and Pacific Islanders	4.0%	1.9%	2.0%	8.4%	3.7%
Latino	9.8%	4.9%	11.6%	24.3%	12.5%

Source: U.S. Census Bureau (2004b)

Columns do not sum to 100 percent because Hispanics can be of any race and respondents belonging to more than one race were excluded.

Census Bureau regions and divisions:

Northeast region

New England division: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Middle Atlantic division: New Jersey, New York, Pennsylvania

Midwest region

East North Central division: Illinois, Indiana, Michigan, Ohio, Wisconsin

West North Central division: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

South region

South Atlantic division: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia

East South Central division: Alabama, Kentucky, Mississippi, Tennessee

West South Central division: Arkansas, Louisiana, Oklahoma, Texas

West region

Mountain division: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming

Pacific division: Alaska, California, Hawaii, Oregon, Washington

Table 2: 1980, 1990, and 2000 Indices of dissimilarity with Whites

	Regions			Divisions			States			Census tract Metro areas		
	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
Blacks	21.9	24.9	20.9	22.0	25.6	22.2	27.9	27.1	27.4	73.8	68.8	65.0
Hispanics	25.2	26.5	24.5	37.6	37.5	35.0	49.7	49.5	45.6	50.7	50.6	51.5

Indices of dissimilarity at the census tract level for metropolitan areas are weighted averages over metropolitan areas with weights proportional to the national share of the minority group in the metropolitan area.

Sources: Indices of dissimilarity for regions, division, and states come from author's calculations using tabulations in Gibson and Jung (2002) for 1980 and 1990. For 2000, these indices of dissimilarity come from author's calculations using tabulations from U.S. Census Bureau (2001). Indices of dissimilarity at the census tract level for metropolitan areas are from Logan (2001, 30).

Table 3: Fit Statistics for Models of 1980-2000 Regional Variation and Trends in Black/White Intermarriage by Marriage Market Assumption

	Residual df	G ²	BIC
Region marriage markets (N=755,446)			
Model 1: National uniformity, no change over time	11	1195.95	1047.06
Model 2: National uniformity, uniform 1980s and 1990s change over time	9	410.41	288.59
Model 3: Four regions, uniform 1980s and 1990s change over time	6	31.06	-50.15
Model 4: Four regions, regional differences in 1980s and 1990s change over time	0	0	0
Model 5: Three regions (Northeast+Midwest, South, West), uniform 1980s and 1990s changes over time	7	31.60	-63.15
Division marriage markets (N=733,539)			
Model 1: National uniformity, no change over time	26	1241.73	890.59
Model 2: National uniformity, uniform 1980s and 1990s change over time	24	484.87	160.73
Model 3: Four regions, uniform 1980s and 1990s change over time	21	90.94	-192.68
Model 4: Four regions, regional differences in 1980s and 1990s change over time	15	59.23	-143.36
Model 5: Three regions (Northeast+Midwest, South, West), uniform 1980s and 1990s changes over time	22	91.33	-205.79
State marriage markets (N=701,236)			
Model 1: National uniformity, no change over time	152	1772.56	-273.45
Model 2: National uniformity, uniform 1980s and 1990s change over time	150	1089.92	-929.17
Model 3: Four regions, uniform 1980s and 1990s change over time	147	644.67	-1334.04
Model 4: Four regions, regional differences in 1980s and 1990s change over time	141	611.19	-1286.76
Model 5: Three regions (Northeast+Midwest, South, West), uniform 1980s and 1990s changes over time	148	648.26	-1343.91
Metropolitan area marriage markets (66 metros; N=307,500)			
Model 1: National uniformity, no change over time	197	1926.01	-563.33
Model 2: National uniformity, uniform 1980s and 1990s change over time	195	1547.14	-916.92
Model 3: Four regions, uniform 1980s and 1990s change over time	192	1105.17	-1320.98
Model 4: Four regions, regional differences in 1980s and 1990s change over time	186	1079.92	-1270.42
Model 5: Three regions (Northeast+Midwest, South, West), uniform 1990s changes only	193	1105.20	-1343.59

Table 4: 1980-2000 Endogamy odds ratios for Black/White intermarriage by marriage market assumption

Marriage market assumption	1980 Northeast and Midwest EOR	1980 South EOR ^a	1980 West EOR ^a	1980-1990 change	1980-2000 change
Region	10.30	10.93	9.02	-1.34	-2.62
	0.10	0.08	0.09	0.11	0.11
	29,733	55,826	8,267	0.26	0.07
Divison	10.30	10.98	8.97	-1.34	-2.64
	0.11	0.08	0.10	0.11	0.11
	29,733	58,689	7,864	0.26	0.07
State	10.37	11.12	8.82	-1.14	-2.64
	0.11	0.09	0.10	0.12	0.12
	31,333	67,508	6,768	0.32	0.07
Metropolitan area	10.05	11.30	8.31		-2.08
	0.09	0.12	0.13		0.10
	23,156	80,822	4,064		0.12

Figures listed are coefficient, standard error, and exponentiated coefficient

^aStandard error is for difference from Northeast+Midwest

Differences between South and Northeast+Midwest, and West and Northeast+Midwest are statistically significant with $p < 0.001$.

Difference between 1980-1990 change and 1980-2000 change is statistically significant with $p < 0.001$.

Table 5: Fit Statistics for Models of 1980-2000 Regional Variation and Trends in Latino/White Intermarriage by Marriage Market Assumption

	Residual df	G ²	BIC
Region marriage markets (N=747,194)			
Model 1: National uniformity, no change over time	11	3928.24	3779.48
Model 2: National uniformity, uniform change over time	9	3653.04	3531.32
Model 3: Four regions, uniform change over time	6	88.88	7.73
Model 4: Four regions, regional differences in change over time	0	0	0
Model 5: Four regions, 1980s change only	7	94.06	-0.61
Division marriage markets (N=725,668)			
Model 1: National uniformity, no change over time	26	2535.48	2184.62
Model 2: National uniformity, uniform change over time	24	2274.91	1951.04
Model 3: Four regions, uniform change over time	21	330.46	47.06
Model 4: Four regions, regional differences in change over time	15	251.21	48.79
Model 5: Divisional differences, uniform 1980s change only	17	124.36	-105.05
State marriage markets (N=694,591)			
Model 1: National uniformity, no change over time	152	2848.71	804.15
Model 2: National uniformity, uniform change over time	150	2584.96	567.29
Model 3: Four regions, uniform change over time	147	833.04	-1144.27
Model 4: Four regions, regional differences in change over time	141	737.15	-1159.45
Model 5: Divisional differences, uniform 1980s change only	143	704.20	-1219.30
Metropolitan area marriage markets (N=190,384)			
Model 1: National uniformity, no change over time	98	1157.16	-34.20
Model 2: National uniformity, uniform change over time	96	1042.95	-124.10
Model 3: Four regions, uniform change over time	93	479.97	-650.61
Model 4: Four regions, regional differences in change over time	87	410.56	-647.08
Model 5: Divisional differences, uniform 1980s change only	91	365.17	-741.10

Table 6: 1980-2000 Endogamy odds ratios for Latino/White intermarriage by marriage market assumption

Marriage market assumption	1980 New England EOR	1980 Mid-Atlantic EOR ^a	1980 E N Central EOR ^a	1980 W N Central EOR ^a	1980 S Atlantic EOR ^a	1980 E S Central EOR ^a	1980 W S Central EOR ^a	1980 Mountain EOR ^a	1980 Pacific EOR ^a	1980-1990 change
Region	5.47	Same as New England	4.61	Same as E N Central	5.81	Same as S Atlantic	Same as S Atlantic	3.91	Same as Mountain	-0.65
	0.58		0.07		0.6			0.05		0.04
	237.46		100.48		333.62			49.90		0.52
Divison	5.50	5.43	4.70	4.23	4.85	5.89	5.41	4.22	3.76	-0.64
	0.14	0.14	0.14	0.17	0.14	0.20	0.14	0.14	0.14	0.04
	244.69	228.15	109.95	68.72	127.74	361.41	223.63	68.03	42.95	0.53
State	5.20	5.20	4.60	4.02	4.53	4.54	5.04	3.79	3.54	-0.66
	0.14	0.15	0.15	0.18	0.15	0.21	0.14	0.15	0.14	0.04
	181.27	181.27	99.48	55.70	92.76	93.69	154.47	44.26	34.47	0.52
Metro area		4.87	4.26	4.07	3.39		4.39	3.79	3.41	-0.56
		0.07	0.10	0.26	0.12		0.08	0.085	0.07	0.05
		130.32	70.81	58.56	29.67		80.64	44.26	30.27	0.57

*p < 0.05

**p < 0.01

***p < 0.001

Figures listed are coefficient, standard error, and exponentiated coefficient

^aStandard error is for difference from first division

Difference between 1980 and 1990+2000 is statistically significant with p < 0.001

All EORs are statistically significant with p < 0.001

Table 7: National endogamy odds ratio estimates by race and year

	Black/White EOR	Latino/White EOR
1980 point estimate	27,144	157
95 percent CI: Upper limit	24,168	151
Lower limit	30,486	164
N	483,772	
1990 point estimate	8,001	85
95 percent CI: Upper limit	7,223	82
Lower limit	8,863	89
N	378,075	
2000 point estimate	2,343	75
95 percent CI: Upper limit	2,141	72
Lower limit	2,563	79
N	267,863	

Sources: 1980 US Census PUMS A, 1990 and 2000 US Census 5 percent PUMS

NOTES

¹These segregation measures describe the entire population, even those who may not be at risk of marrying.

²This choice omits subfamily couples who live in households where another person is the head. I exclude subfamily couples to maintain consistency between the three samples. The 1990 and 2000 PUMS are weighted samples and the household weight is the appropriate weight to use for estimating family characteristics (U.S. Department of Commerce 1993, 59). There are no suitable weights for 1990 or 2000 subfamily couples because neither spouse is a household head. Because the 1980 PUMS is not weighted, 1980 subfamily couples could have been included, but in order to maintain consistency between the three samples, I exclude subfamily couples from all the datasets. This should have little effect on the results because for the 1990 PUMS only 1.17 percent (unweighted) of couples were subfamily couples. In the 1980 PUMS, only 1.04 percent were subfamily couples.

³Combining all of the different Latino groups into a single category undoubtedly obscures a great deal of informative variation, given the diverse characteristics of the groups and the importance of the distinctions. I use this larger pan-ethnic group primarily to avoid unworkably small cell counts, which is especially important for this study because I cross-classify the marriages by marriage market. There is evidence, however, that these larger categories instituted by and used in U.S. official statistics have powerful effects in shaping individuals' perceptions (Peterson 1987).

⁴The small size of the Asian Pacific Islander population and the sample size restrictions discussed below preclude a parallel analysis of API intermarriage.

⁵It is also unclear whether or not it is useful to control for other possible covariates when measuring intermarriage tendencies. If preferences for one's own group are weak but intermarriages are few because of great educational inequality between two groups, then marriage tendencies controlling for education would be a poor indication of the impact of intermarriage on future generations. Intermarriage tendencies measured without controlling for education would show greater tendencies toward endogamy and better reflect the implications of intermarriage for future generations.

⁶The PUMS samples contain information about year of arrival for immigrants. Qian and Lichter (2001) have used this information to study the marriage behavior of immigrants who arrived at a young age, presumably before they married. Hwang and Saenz (1990) combined year of arrival data with 1980 information on year of first marriage to relax the native-born-only restriction to include immigrants married in the U.S. in their study. Including immigrants in my analyses is possible, but it would be necessary to control for immigrant status because endogamy tendencies are stronger for immigrants than natives (Gordon 1964; Qian & Lichter 2001). Not controlling for immigrant status would make conclusions vulnerable to the alternative explanation that changes over time in the immigrant share of the sample are responsible for the changes over time in intermarriage. Thus, I restrict the sample to couples where both spouses are U.S. born.

⁷High quality estimates of differential racial and ethnic exogamy by age are not available. Thus it is not known how age restrictions might affect the representation of endogamous and exogamous marriages in the sample.

⁸Restricting the sample to non-migrants may bias the results because some respondents who were in the pool of potential marriage partners when couples married have left the marriage market by the time the census questionnaires were fielded. However, with the variables available in the census, excluding migrant couples is the best choice. Nonetheless, this sample restriction comes at some cost, although not imposing such a restriction likely leads to even more serious bias.

⁹Labor Market Areas (Tolbert & Killian 1987; Tolbert & Sizer 1996) may be a superior marriage market approximation. Tolbert and Sizer used commuting data to group counties into economically and socially integrated labor markets. The advantage of LMAs over MAs is that LMAs include the entire U.S. The disadvantage, however, is that the Census microdata samples that include geographic codes for LMAs represent only a 1 or less sample of the U.S. population. Thus, they contain a smaller number of intermarriages. This creates difficulties especially because I examine regional variation in intermarriage patterns. Moreover, a dataset with this level of geography is not available for the 2000 Census.

¹⁰ Jaeger et al. (1998) based their metropolitan area definitions on 1980 county groups and 1990 PUMAs, erring on the side of being overly inclusive when the available geographic codes could not be matched perfectly. Jaeger et al.'s metropolitan areas include PUMAs that are entirely within the MA or partially in the MA and partially rural. When a PUMA is in multiple MAs, it is assigned to the metropolitan area with the greatest share of the PUMA's population. They produced consistent geographic codes for the 132 metropolitan areas with 1990 populations exceeding 250,000.