1980-1990 CHANGE OVER TIME AND REGIONAL VARIATION IN U.S. RACIAL AND ETHNIC INTERMARRIAGE

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NOTE TO SESSION ORGANIZER: The current draft of the paper examines only 1980-1990 intermarriage. Analysis of data from the 2000 Census is in progress.

ABSTRACT

I examine 1980-2000 change over time and regional variation in U.S. racial and ethnic intermarriage patterns. Previous studies of intermarriage typically make two assumptions: (1) intermarriage tendencies are uniform across the nation and (2) people choose their spouse from a pool that has the nation's racial and ethnic composition. I relax both assumptions by describing regional heterogeneity in intermarriage tendencies and I also provide a national assessment of change over time in intermarriage that accounts for the uneven geographic distribution of groups. Between 1980 and 1990, the tendency to marry within one's own group for Blacks and Whites declined by 70 percent for Black/White intermarriage and 40 percent for Latino/White intermarriage. For Blacks and Whites, intermarriage tendencies were strongest in the West and weakest in the South. For Latinos, intermarriage tendencies were strongest in Florida and the West and weakest in the Northeast.

Introduction

How do racial and ethnic intermarriage patterns vary across the United States? Many studies of U.S. racial and ethnic intermarriage use aggregate national data and assume that intermarriage patterns are uniform throughout the entire country. Other studies focus on individual cities or regions, but study these areas in isolation and cannot provide the means to compare different parts of the country. This paper describes broad regional differences in U.S. racial and ethnic intermarriage patterns.

This paper also provides a more accurate estimate of changes over time in intermarriage by accounting for regional differences in population composition. Past research typically assumes that people choose their spouse from a marriage market that includes the entire nation. This is a troublesome assumption for studying intermarriage because racial and ethnic groups are distributed unevenly across the United States. Thus, past research confounds change over time in intermarriage with change over time in the geographic distribution of groups. If U.S. racial and ethnic groups have become increasingly concentrated in different parts of the country, then conventional estimates showing increases in intermarriage tendencies are under-estimates. On the other hand, if groups have become more evenly dispersed, then past studies have over-estimated increases in intermarriage tendencies.

The assumption of national uniformity is widespread and is consistent with a traditional view in sociology that regional differences are inheritances from pre-modern society that are steadily eroding (Wirth 1937). However, researchers studying U.S. race and ethnicity have good reason to be attentive to regional variation. Even after accounting for the uneven geographic distribution of racial and ethnic groups, one would not be surprised to find regional variation in racial stratification patterns considering the history of race relations in different parts of the United States. 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 little conflict with Anglos in the Southeast, but there was bitter conflict in the Southwest (Weber 1992). Moreover, the internment of Japanese Americans during World War II was directed primarily at Japanese Americans on the Pacific coast, omitting most Japanese Americans in Hawaii and elsewhere in the country.

If tendencies to intermarry vary across the United States, this would provide individual-level behavioral evidence for regional variation in the structure of race relations. This would be evidence that these group distinctions are more important in some regions than others. Furthermore, if increases in intermarriage are confined to particular regions, this would suggest that this type of social change is confined only to portions of the United States.

A long tradition of research in social stratification has used assortative mating patterns to describe the important boundaries that structure social interaction. Because families formed by marriage are the sites where much of the socialization of the next generation occurs, individuals (under the influence of their natal families and the state) often take great pains to find a suitable spouse. If people pay no mind to a particular social boundary in their marriage choices, then it is unlikely that the boundary of interest plays a significant 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 has also been viewed as 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 may 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.

Regional variation in intermarriage

Spouse availability and spouse preferences are two main determinants of marriage pairings. A well-established tradition of research has emphasized the importance of the supply of potential marriage partners in shaping marriage outcomes (Blau and Schwartz 1984; Lichter et al. 1991). Marriage preferences are revealed by the extent to which observed marriage patterns deviate from the pattern expected based solely on population composition.

Population composition

At a basic level, the availability of potential marriage partners plays a fundamental role in shaping intermarriage patterns. To take an extreme case, if a society is racially homogenous, then racial intermarriage is impossible because potential spouses of other groups are simply not available. Population composition has a significant influence even in more conventional situations. If we conceive of marital selection as a search process (Oppenheimer 1988), then it is apparent that potential spouses belonging to larger groups are much more easily found than potential spouses belonging to smaller groups. Everything else equal, people will be more likely to marry spouses belonging to larger groups because they will be more likely to come into contact with such spouses.

Population composition is a significant issue for studies of racial and ethnic intermarriage because it is well known that these groups are not distributed evenly across the United States. Table 1 shows the 1990 distribution of racial and ethnic groups in different regions of the United States. Asians and Pacific Islanders comprised 7.7 percent of the West region's population but only 1.3 percent of the Midwest and South. Blacks were only 5.4 percent of the population in the West region but were 18.5 percent of the South's population. Latinos made up 19.1 percent of the West region but only 2.9 percent of the Midwest population. Whites were 75.8 percent of the West region's population but 87.2 percent of the Midwest's population. Based on population composition alone, groups will be more likely to intermarry in regions where they make up a smaller proportion of the population of potential marriage partners.

Harris and Ono (2001) advanced an important argument about intermarriage and the geographic distribution of groups. They argued that conventional national intermarriage studies overstate the tendency for minority groups to marry endogamously (within their own group) because they assume that people choose their spouses from a marriage market that has the nation's racial and ethnic composition. They contend that this national marriage market assumption is methodologically untenable because racial and ethnic groups tend to be geographically concentrated. Thus, nationally measured endogamy tendencies are biased upwards because of the geographic concentration of groups. People may marry endogamously not because of a preference for marriage partners belonging to their own group but simply because they tend to live in areas with large concentrations of their own group.

Focusing on residents of metropolitan areas, Harris and Ono used the 1990 U.S. Census PUMS to produce national estimates of intermarriage tendencies controlling for differences in population composition between metropolitan areas. They compared their estimates to conventional national estimates and found that, as they expected, the uneven geographic distribution of racial and ethnic groups in the United States does bias downward conventional estimates of intermarriage tendencies. Their estimates provide evidence that the distinctions between Blacks and Whites, Asians and Whites, and Hispanics and Whites are indeed less important to marriage outcomes than conventional findings suggest. The difference was greatest for marriages between Hispanics and Whites where the estimates differed by over twenty standard errors, but smallest for marriages between Blacks and Whites, where the estimates differed by one standard error.

Harris and Ono have a promising argument about the effect of local population composition on marriage outcomes. However, they crudely identified the marriage markets from which couples selected their spouses by not accounting for migration and assuming that the couple's residence at the time of the census is the marriage market in which they carried out their marriage search. Furthermore, Harris and Ono assume national uniformity in intermarriage tendencies and do not acknowledge the possibility that intermarriage tendencies might vary across the nation.

Structure of race relations

After accounting for population composition, the propensity to intermarry reveals the importance of group distinctions in structuring marriage choice. 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 across different regions? Little research has explicitly considered this question. 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. During the Jim Crow era strict guidelines regulated interaction between Blacks and Whites:

> The white person had to be clearly in charge at all times, and the black person, clearly subordinate, so that each kept his or her place... The black had to be deferential in tone and body language... and never bring up a delicate topic or contradict the white... The courtesies expected of blacks were not reciprocated by Whites. The black went to the whites' back door and knocked; the white went to the black's front door and didn't need to knock. The sidewalk was for whites, not blacks. The white man had to be called "Mister," but he called the black man "Boy," "Uncle," or by his first name. To whites, black women had only first names. White males could stare and make lewd remarks and passes at black women, but it was dangerously taboo for black men to behave in the same way toward white women (Davis 1991, 64).

Research on racial attitudes (Quillian 1996; Firebaugh and Davis 1988; Tuch 1987; Wilson 1986) provides extensive documentation 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). Although interregional migration and communication may promote convergence in attitudes for the entire United States (Wilson 1986), the South's distinctiveness has endured. The persistence of a higher degree of anti-Black prejudice in the South is usually attributed to cultural arguments, with Southerners thought of as less tolerant on a variety of measures (Abrahamson and Carter 1986).

Whereas research on racial attitudes has documented Southern Whites' stronger antiblack prejudice, research on residential segregation has found lower levels of Black/White segregation in the South compared to other portions of the country. This was true for metropolitan areas in 1990 (Farley and Frey 1994), 1980, and 1970 (Massey and Denton 1993). Researchers argue that these patterns are not due to weaker group boundaries between Blacks and Whites but are instead a result of greater governmental authority at the county level in the South (Farley and Frey 1994) and a distinctive Southern suburbanization pattern where White residential areas expanded into areas inhabited by rural Blacks (Massey and Denton 1993).

For Latinos, there is not the South/non-South divide that exists for Blacks. However, Latinos do have a region of high population concentration in the Southwest. Military conflict played a major role in the history of Latinos in the United States. The 1848 Treaty of Guadalupe-Hidalgo ended the Mexican-American War and resulted in the annexation of almost half of Mexico's territory, which because the U.S. states of Arizona, California, and New Mexico. The coincidence of high demand for unskilled labor in the United States and political and economic unrest in Mexico also led to a great deal of labor migration from Mexico to the United States throughout almost all of the twentieth century.

Also important in the formation of U.S. Latino communities was the end of the Spanish-American War in 1898 which gave the United States control over Puerto Rico and Cuba. The social and economic ties established between the United States and Puerto Rico led to the formation of substantial Puerto Rican communities in Northeastern cities, especially New York. Cuba was granted independence soon after the United States gained control in 1898. Mass migration from Cuba began after Castro's 1959 socialist revolution, with the new arrivals concentrated mainly in Florida.

Latinos tend to be below average with respect to indicators of socioeconomic status such as family income and high school completion, although there is variation among groups and by nativity. At the same time that slowly growing numbers of Latinos are taking advantage of educational and occupational opportunities to enter the middle class, many are unable to do so (Camarillo and Bonilla 2001). Latinos are also targeted by vitriolic anti-immigrant rhetoric (Brimelow 1995) that threatens to close off the path to social integration.

Apart from acknowledging the regional concentrations of different Latino groups, little research is available describing regional variation in the strength of social boundaries. Data on regional variation in residential segregation patterns are available, however. For Latinos, the lowest 1990 segregation measures were in the West and the highest measures were for cities in the Northeast (Frey and Farley 1996). The sources of this variation are not well known, although segregation may be greater in the Northeast because Puerto Ricans are more likely to have African ancestry and hence may be perceived as less welcome neighbors.

Large-scale migration from Asia to what is now the United States began in the mid-1800s with migrants from China drawn by the discovery of gold in California, migrants from Japan, Korea, and the Philippines arriving to work in Hawaii's sugar plantations, and Punjabi Sikh migrants from India arriving to work on the Pacific coast. Attempts to exclude these immigrants also began during the mid-1800s and culminated in a series of legislative actions between 1924 and 1934 which ended virtually all immigration from Asia. Large-scale immigration resumed after the passage of the Immigration Act of 1965 permitted immigration from Asia under preferences for skilled workers and family reunification. The United States was also the destination for much of the 1970s refugee flow from Southeast Asia (Chan 1991). Asian Americans have been portrayed as a rapidly assimilating model minority immigrant success story due to their high average educational attainment and socioeconomic status (Woo 2000). But alternative views suggest that Asian Americans' racial identity is still highly salient (Tuan 1998).

Although Asian Americans are concentrated on the East and West coasts of the United States, little is known about regional variation in the structure of API/White relations. Data on residential segregation is suggestive, however. For Asians, the lower 1990 metropolitan segregation measures were in the West (Frey and Farley 1996). However, there is little additional descriptive or analytical information available about regional variation in the structure of API/White relations.

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. If this is indeed the case, this would support the contention of residential segregation researchers that the South's comparatively low levels of segregation are due to a distinctive suburbanization pattern as opposed to weak group boundaries. For Latinos and Asians, we might expect residential segregation patterns to be consistent with intermarriage patterns and find higher intermarriage propensities in the West.

Previous research

The standard findings regarding U.S. racial and ethnic intermarriage are: (1) very little intermarriage between Whites and Blacks, but more intermarriage of Whites with APIs and Latinos; and (2) recent increases over time in intermarriage.

Black/White Intermarriage

Research on intermarriage between Blacks and Whites has the longest history. Much of the earliest research is quite fragmented but data from major metropolitan areas in the early 20th century indicates that at most 1 percent of Blacks married Whites (Drachsler 1921, 50; Panunzio 1942, 699). There is some evidence that increasing proportions of Blacks married Whites from the late 1950s to the late 1960s (Heer 1966, 265; Monahan 1977). However, for the entire United States by 1970, only 1.2 percent of married Black men were married to White women and only 0.7 percent of married Black women were married to White men (Heer 1974, 248).

The social change associated with the Civil Rights Movement and the Supreme Court's 1967 *Loving v. Virginia* decision invalidating anti-miscegenation laws marked the beginning of substantial increases in Black/White intermarriage. Kalmijn (1993) reports that (in the 33 states with available marriage license data) the percentage of Black men marrying White women rose from 2.4 percent in the early 1970s to 5.2 percent in the mid-1980s. The corresponding change for Black women was from 0.72 percent to 2.1 percent.

The percentages reported here do not control for the effect of population composition on intermarriage outcomes. However, measures of endogamy tendencies that do control for the effect of population composition also provide evidence for increases over time in the propensity to intermarry. Rosenfeld (2002) uses a measure of the tendency to marry within one's own group and reports decreases in the endogamy odds ratios describing young Blacks and Whites' marriage patterns, from 52,000 in 1970 to 16,000 in 1980 and to 5500 in 1990.

Latino/White Intermarriage

Although the post-1965 boom in immigration from Latin America has prompted much recent research on intermarriage between Latinos and Whites, there is in fact a much longer history of Latino/White intermarriage. For the nineteenth century in various parts of what is now the Southwestern United States, studies found virtually no intermarriage in one region (Cazares et al. 1984), small proportions intermarrying (Bean and Bradshaw 1970) in another region, and numerous White settlers marrying Mexican women (Craver 1982) in a third area.

Much more research is available describing intermarriage in the decades after 1950. The proportions intermarrying ranged from over one-third in California (Schoen et al. 1978), to 20 percent in Albuquerque, New Mexico (Murguia and Frisbie 1977) and Los Angeles, California (Mittelbach and Moore 1968), to 12-20 percent for women in San Antonio, Texas, and finally to less than 12 percent for New York City's Puerto Ricans (Fitzpatrick 1966) and San Antonio's men (Murguia and Frisbie 1977).

By the late twentieth century, it was possible to identify Latinos in the U.S. Census and more comprehensive statistics became available. Nationally, the percentage of young Mexican American women married to Mexican American men declined from 77 percent in 1970 to 74 percent in 1980 to only 66 percent in 1990 (Rosenfeld 2002). As was the case for Blacks, there is evidence of increasing intermarriage for Mexican Americans in the late twentieth century after controlling for population composition. For young, native-born Cuban Americans, Mexican Americans, and Puerto Ricans, the endogamy odds ratios fell from a high of 2000 for 1970 Puerto Ricans to a low of 170 for 1990 Mexican Americans (Rosenfeld 2002).

Asian Pacific Islander/White Intermarriage

For APIs there exists some fragmentary information about intermarriage in the early 20th century. The earliest empirical work describes a period where the API population of the United States was dominated by male labor migrants, resulting in a highly skewed sex ratio. Thus, over half of the Chinese and Japanese American men marrying in New York City married outside of their group (Drachsler 1921). By the 1930s the sex ratio imbalance had lessened and only about a quarter of New York City's Chinese American men were marrying outside their group (Schwartz 1951).

Much more data are available regarding the marriage behavior of APIs in the late 20th century, although much of it is still fragmentary. In the 1970s, the proportions outmarried for APIs ranged from 12 to 15 percent for Chinese men and women in New York City (Sung 1990) and were between 28 percent and 74 percent for Chinese, Japanese, and Korean men and women in Los Angeles (Kitano et al. 1984).

Data from the U.S. Census provide more comprehensive descriptions of intermarriage patterns for APIs later in the twentieth century. Qian (1997) used data from the 1980 Census to find that 45 percent of young, native-born Asian American men and 53 percent of young, native-born Asian American women outmarried. From the 1990 Census the corresponding percentages were 61 percent for Asian American men and 67 percent for Asian American women. Rosenfeld

(2002) provides statistics that control for the effect of population composition on marriage outcomes. He found declines in the endogamy odds ratios for young, native-born Chinese, Filipino, and Japanese Americans, ranging from a high of 12,000 for Chinese Americans in 1970 to a low of 420 for Filipino Americans in 1990. Thus, the pattern of increases over time in intermarriage (decreases in endogamy) in recent decades was found for APIs as it was for Blacks and Latinos.

Geographic variation

Available research provides a consistent national picture of increasing intermarriage of Whites with APIs, Blacks, and Latinos in the final decades of the twentieth century. It is also well established that, nationally, the proportions of Blacks marrying Whites is much lower than the proportions of APIs and Latinos marrying Whites. However, little is known about geographic variation in intermarriage.

A few studies have expressly investigated geographic variation in intermarriage patterns. Taken as a whole, the research reviewed above provides evidence for geographic variation because there are obvious differences in proportions intermarrying among different areas at similar points in time. However, the studies do not uniquely identify geographic variation because they differ with respect to the timing and source of their data. Thus, it is difficult to make precise claims about the nature and degree of geographic variation.

A few studies do document more Black/White intermarriage outside the South than in the South (Kalmijn 1993, Monahan 1976, Farley 1999) but these studies do not adequately control for geographic differences in population composition. A portion of the difference may be due to the fact that Blacks in the South tend to marry other Blacks simply because Blacks are a greater proportion of the population in the South.

Two studies (Rosenfeld 2002; Jacobson and Heaton 1996) use log-linear models to control for population composition and provide some descriptive information regarding regional variation in intermarriage patterns. Rosenfeld (2002) finds no difference between the Southwest and other parts of the country in the propensity for intermarriage between Mexican Americans and Whites. Jacobson and Heaton (1996) provide evidence of substantial geographic variation in intermarriage patterns but they do not present parameter estimates describing the variation. Furthermore, neither of the two studies use theoretically informed marriage markets to calculate their estimates.

Geographic variation and change over time

Conventional estimates of intermarriage tendencies assuming national marriage markets and national uniformity have shown increases over time (e.g., Qian 1997). However, these estimates may be over- or under-estimates depending on changes in segregation. If groups became more segregated during the same period, then these estimates would be under-estimates of the actual degree of social change. The greater measured intermarriage tendency at the later period occurs between more segregated groups. If groups became less segregated, then these estimates would over-estimate the change over time. The greater measured intermarriage tendency at the later period occurs between less segregated groups.

Measured changes in the level of segregation depend on the level of measurement. Table 2 presents indices of dissimilarity for minority groups with Whites calculated for various levels of geography. At the region and division levels, Blacks became more segregated from Whites during the 1980s. At the state level, segregation decreased slightly and at the census tract level for metropolitan areas, segregation also decreased. For APIs, segregation decreased at the region, division, and state levels. However, segregation increased slightly at the census tract level. For Latinos, segregation changed little over the 1980s.

There is not an overall pattern to the changes in segregation over the 1980s. Thus, it is not clear of conventional estimates of intermarriage tendencies are over-estimates or under-estimates. Nonetheless, the estimates of intermarriage tendencies provided in this paper will account for the effects of changes in segregation on measured changes in intermarriage tendencies.

Summary

The research carried out for this paper addresses the deficiencies of past research pointed out above and describes the nature and the extent of regional variation in intermarriage tendencies. This research describes regional variation in 1980 and 1990 marriage patterns using national samples that provide consistent data for different regions of the United States, allowing for regional comparisons of intermarriage patterns. This research also considers changes over time in intermarriage after accounting for geographic variation.

Data

Datasets

I use two U.S. Census microdata samples from 1980 and two from 1990 to describe intermarriage patterns. For 1980 I use the Public Use Microdata Samples (PUMS) A (U.S. Department of Commerce 1983) and D (Tolbert and Killian 1987). For 1990 I use the PUMS A (U.S. Department of Commerce 1993) and L (Tolbert and Sizer 1996). These samples differ in their size and level of geographic detail.

The 1980 and 1990 PUMS A Samples are 5 percent samples of the U.S. population with geographic detail at the county group (1980) and public use microdata area (PUMA 1990) levels. County groups and PUMAs are generally groups of contiguous counties with a total population of 100,000 or more (U.S. Department of Commerce 1994). Also available for these samples is a set of metropolitan areas defined by the Census Bureau based on the concept of a densely settled core area and surrounding suburbs.

The 1980 PUMS D sample is a 1 percent sample and the 1990 PUMS L is a 0.5 percent sample of the U.S. population. Both datasets have geographic detail at the Labor Market Area (LMA) level. Using inter-county journey to work information to gauge economic integration, Tolbert and Killian (1987; Tolbert and Sizer 1996) grouped counties into 382 LMAs for 1980 and 394 for 1990.

To identify married couples from the individual-level data, I match householders with their spouses living in the same households[1]. The 1980 PUMS datasets are unweighted and I use simple counts of different types of couples. For the 1990 couples, I weight the counts using the householder's person weight (U.S. Department of Commerce 1993, 59), normalizing the weighted counts to have their sum equal the total unweighted number of couples.

I classify respondents as Asians and Pacific Islanders (APIs), Blacks, Latinos, Whites, and Others. Combining all of the API groups into a single category and 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 these larger pan-ethnic groups primarily to avoid unworkably small cell counts, which is especially important for this study because I cross-classify the marriages by region. 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; Espiritu 1992). Also, to avoid small cell counts I only include intermarriages of Whites with APIs, Blacks, and Latinos, excluding marriages between members of different minority groups.

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

It 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. On the other hand, intermarriage tendencies measured without controlling for education would show greater tendencies toward endogamy and better reflect the implications of intermarriage for future generations. Thus, the desirability of controlling for education and other covariates is debatable. I choose not to control for these covariates and interpret my parameter estimates as controlling only for gross differences in group size.

Prevalence versus incidence

I impose restrictions on the sample in order to understand how group distinctions affect marriage choice. Census data are not ideal for this because census data provide information about the *prevalence* of intermarriage, not the *incidence* of intermarriage. In other words, census data provide information about the couples living in an area at a particular point in time. Marital choice is better measured with incidence data that provide information about the marriages formed in an area over a period of time. Intact marriages at a particular point in time could have been formed at any time in the past anywhere in the world and contain only the more stable marriages that survive to census day. The sample needs to be restricted to include only recent marriages formed in the area of interest.

To exclude immigrants married abroad, a common practice is to restrict the sample to couples where the husband and wife are both U.S. born (Qian 1997; Fu 2001). However, both the 1980 and 1990 PUMS 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 United States 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 and 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.

To restrict the sample to recently married couples requires information on age at marriage. The 1980 PUMS includes data on marriage order and age at first marriage. Thus, it is possible to approximate incidence data for first marriages using the 1980 data. One might, for example, estimate year of marriage and restrict the sample to marriages formed since 1975 (Hwang et al. 1994, 1997). However, similar questionnaire items were not included in the 1990 PUMS. Thus, any sample restrictions imposed on the 1990 PUMS will produce a more crude approximation of incidence data than the sample restrictions possible for the 1980 PUMS. The standard approach has been to restrict the sample to couples where both spouses are aged 20-29 (Qian 1997; Rosenfeld 2002), aged 20-34 (Qian and Lichter 2001), under age 35 (Fu 2001), or where wives are under age 30 (Blackwell and Lichter 2000). Because I measure change between 1980 and 1990, I need to maintain comparability between the two samples, and I use only information available in both samples to restrict the sample. For this study, I explored a variety of sample restriction rules and chose the one that was the best compromise between reducing bias and maintaining a workable sample size. The sample I chose includes all marriages where both spouses are aged 20 or over and either the husband or the wife is under age 30.

In 1990, 64.8 percent of women and 56.1 percent of men marrying were under age 30. The median age at marriage for women was 26.7 years and for men it was 28.7 years. In 1980, 76.9 percent of women and 68.0 percent of men marrying were under age 30. The median age at marriage in 1980 was 23.7 for women and 25.9 for men (Clarke 1995, Tables 8, 9).

For the 1980 PUMS, the age restriction I impose retains 66.1 percent of the U.S.-born marriages formed since 1975 (Table 3). The remaining 33.9 percent of the marriages formed since 1975 were to couples where at least one spouse was under age 20 or both spouses were aged 30 or older. Marriages of U.S.-born couples formed since 1975 comprise 61.4 percent of this sample. The remaining 38.6 percent were married before 1975. Simplistic national estimates of endogamy tendencies based on this sample are biased upward compared to estimates derived from the sample of U.S.-born couples married after 1975. The estimated parameters from my sample are 2.8 percent to 5.5 percent greater than the estimates from the ideal sample. Table 3 describes the relationship of different samples to the ideal sample and displays the sensitivity of simplistic endogamy parameter estimates to different sample selection rules. The sample of couples where at least one spouse is under age 25 yields less biased estimates, but this comes at too great of a cost with respect to sample size.

High 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. Thus, the findings reported here are vulnerable to this problem.

Marriage market definitions

An important issue is the appropriate level of geography to approximate the marriage market. 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. The possibilities available with census data include regions, divisions, states (and other combinations thereof), metropolitan areas, PUMAs, and LMAs. I describe each alternative below.

The Census Bureau divides the United States into four regions based on states: the West, Midwest, South, and Northeast. The regions are further divided into a total of 9 divisions. The West region contains the Pacific (Washington, Oregon, California, Alaska, and Hawaii) and Mountain (Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah) divisions. The Midwest region contains the East North Central (Ohio, Indiana, Illinois, Michigan, Wisconsin) and West North Central (Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas) divisions. The South region contains the South Atlantic (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida), East South Central (Kentucky, Tennessee, Alabama, Mississippi), and West South Central (Arkansas, Louisiana, Oklahoma, Texas) divisions. The Northeast region contains the New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut) and Middle Atlantic (New York, New Jersey, Pennsylvania) divisions. These geographic regions took shape in the late 1800s based on particularities of climate, topography, economic system, ethnic composition, and systems of local government. They remain in use today largely because of inertia (U.S. Department of Commerce 1994, ch. 6).

The 1980 and 1990 PUMS A also provide information about each respondent's state of residence. States are in some cases likely to be too large to be appropriate for use in approximating marriage markets and in other cases they are likely to be too small. Larger states such as California and Texas have considerable internal geographic variation and would be crude approximations for marriage markets. Likewise, smaller states such as Connecticut or Vermont are also crude approximations to marriage markets because state lines are easily crossed in daily life.

A more appropriate choice might be metropolitan areas. 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 with the core area (U.S. Department of Commerce 1994:13-1). The level of integration is based on commuting data. For the 1990 Census, the Census Bureau defined Metropolitan Statistical Areas (MSAs) as

> one or more counties that contain a city of 50,000 or more inhabitants, *or* contain a Census Bureau-defined urbanized area (UA) and have a total population of at least 100,000 (75,000 in New England). Counties containing the principal concentration of population--the largest city and surrounding densely settled area--are components of the MSA. Additional counties qualify to be included by meeting a specified level of commuting to the counties containing the population concentration and by meeting certain other requirements of metropolitan character, such as a specified minimum population density or percentage of the population that is urban (U.S. Department of Commerce 1994:13.1-13.2).

In New England, MSAs are defined using cities and towns instead of counties. Consolidated Metropolitan Statistical Areas (CMSAs) are MSAs with populations greater than one million. Coherent subdivisions of CMSAs are called Primary Metropolitan Statistical Areas (PMSAs). Metropolitan areas are likely to be a workable 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 and Heran 1989). These sites are all likely to be in the local metropolitan area.

One disadvantage of using metropolitan areas as marriage markets is that they exclude rural areas and hence cannot provide a full portrait of national intermarriage patterns. Another problem is the small differences between the Census Bureau's 1980 and 1990 definitions for metropolitan areas due to population growth and other intercensal changes. Jaeger et al. (1998) produced a set of metropolitan area definitions that are consistent across the 1980 and 1990 Censuses. They 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 (1) 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.

Labor Market Areas (Tolbert and Killian 1987; Tolbert and Sizer 1996) provide an alternative marriage market approximation that does include the entire United States. Tolbert and Sizer used commuting data to group counties into labor markets. The advantage of LMAs over MAs is that LMAs include the entire United States. The disadvantage, however, is that the Census microdata samples that include geographic codes for LMAs represent only a 1 percent 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.

Migration and marriage markets

If we wish to study marriage behavior in a marriage market using prevalence data, we must also consider migration. The age restriction discussed above limits the sample to recently married couples. To effectively approximate the marriage market from which these recently married couples chose their spouses it is necessary to restrict the sample to non-migrants. Couples recently moving into a 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 PUMS have data on where they lived five years before the census. Thus, I exclude couples who were not living in their current marriage market five years before the date of the census. These couples 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 market.

Restricting 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. Despite the significant costs of this restriction, not imposing such a restriction likely leads to even more serious bias in the results.

Another way to investigate the robustness of the conclusions to this sample restriction is to relax the sample restriction by using different definitions of marriage markets. I carry out similar analyses using regions, divisions, and states as marriage markets in order to assess the robustness of the results to the migration sample restriction. If we take marriage markets to be larger geographic units, then the migration sample restriction will be a smaller burden. Couples who are lost because they move out of their marriage market will be retained if they remain within their state when I take states to be marriage markets. Couples who are lost because they move out of their state will be retained if they remain within their division when I take divisions to be marriage markets. Although these larger geographic units are less theoretically appropriate as marriage markets because of their large scale, they retain a greater portion of the sample. With metropolitan areas as marriage markets the trade-off is a more theoretically justified marriage market for a greater degree of sample selection. With larger geographic units as marriage markets, the trade-off is a less appropriate marriage market definition for a lesser degree of sample selection. The more robust conclusions ought to remain regardless of the choice of modeling strategy.

Intermarriage incidence: sensitivity to marriage market assumptions

To provide evidence supporting the use of local geographic areas as marriage markets I begin by first presenting results that illustrate the sensitivity of endogamy measures to marriage market assumptions. In a later section I describe the nature and the extent of geographic variation in intermarriage tendencies.

In this first section I present measures of endogamy estimated under the assumption that marriage markets are the nation, regions, divisions, states, and labor market areas. I use the 1980 and 1990 PUMS A samples for national, regional, divisional, and state marriage markets. For LMA marriage markets, I use the 1980 PUMS D and 1990 PUMS L Samples.

The degree to which endogamy estimates vary with marriage market assumptions demonstrates the effect of different marriage market assumptions on endogamy estimates. I also investigate whether or not increases in intermarriage measured at the national level are robust to alternative marriage market assumptions. Finally, I investigate how the relative rank ordering of minority groups with respect to endogamy tendencies varies with marriage market assumptions.

Log-linear models

I use log-linear models to describe marital preferences. Log-linear models produce measures of marriage patterns that are invariant to changes in the marginal distributions of husbands and wives. Given the overwhelming influence of population composition on marriage outcomes, it is imperative to control for population composition in order to accurately gauge the preferences of marriage partners. Logan (1996) has initiated important work on a behavioral model for marriage choice, but log-linear models are the best technique currently available.

I use log-linear models to describe the pattern of association in a cross-classification of couples by husband's race, wife's race, and marriage market. I include effects for the interaction of husband's race with marriage market and the interaction of wife's race with marriage market (along with the lower-order terms). These terms 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 the extent of endogamy in marriage outcomes. I use dummy coding for the variables and have Whites as the omitted categories for husband's race and wife's race.

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. 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 marrying 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 Lieberson and Waters (1988, 173) and Rosenfeld (2002, 156).

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

$EOR_k = \dfrac{WW_k \times BB_k}{WB_k \times BW_k}$, 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/Black marriages, and BW_k is the number of Black/White 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 cross-product ratio or a large EOR.

The log-linear models I estimate for these first analyses assume that the importance of group distinctions in shaping marriage outcomes is constant throughout the entire country:

$$\log m_{ijk} = \lambda + \lambda_i^H + \lambda_j^W + \lambda_k^M + \lambda_{ik}^{HM} + \lambda_{jk}^{WM} + \lambda_{ij}^{HW}$$

i, *j* = White, minority

k = 1, ..., M (where M is the number of marriage markets)

The λ_i^H and λ_j^W parameters account for the population sizes of husbands and wives, respectively. The λ_k^M parameters account for differences among marriage markets in population size. The parameters λ_{ik}^{HM} and λ_{jk}^{WM} are the interactions of husband's race and wife's race with marriage market, respectively, and account for variation in population composition among marriage markets. The absence of a three-way interaction of husband's race with wife's race and marriage market indicates that the endogamy odds ratio (λ_{ij}^{HW}) is assumed to be constant for all of the marriage markets. In other words, the assumption is that the United States is homogenous with respect to marital preferences and that the tendency to intermarry (after controlling for variation among marriage markets in population composition) is uniform through the entire country. I present odds ratios estimated under the assumption that marriage markets are the nation, regions, divisions, states, and LMAs. Each marriage market assumption provides a different sort of geographic unit from which people living in each area choose their spouse. I account for the uneven distribution of racial groups across the United States by controlling for the racial and ethnic composition of the population at the marriage market level. The EORs estimated by these models are common odds ratios that can be likened to the average tendency to marry within one's own group across the different marriage markets.

The maximum likelihood estimator of this common odds ratio is known to be upwardly biased for data with small cell counts (Agresti 1990, 235-237). Thus, I present Mantel-Haenszel (MH) estimates (Mantel and Haenszel 1959; Agresti 2002, 234) of the common odds ratios in addition to the ML estimates. The MH estimator is asymptotically normally distributed around the true value of the common odds ratio even when data are sparse (Robins et al. 1986), whereas ML estimates are not known to be consistent with small sample sizes. The MH estimates will be more useful for state and LMA marriage markets because these are most vulnerable to small cell counts. The formula for the Mantel-Haenszel estimator of the common odds ratio is:

$$\hat{\theta}_{MH} = \frac{\sum_k WW_k BB_k / (WW_k + BB_k + WB_k + BW_k)}{\sum_k WB_k BW_k / (WW_k + BB_k + WB_k + BW_k)}$$

This is a weighted average of the sample odds ratios for each marriage market that gives more weight to larger marriage markets with presumably more precise estimates. To calculate the standard error of the MH estimate, we let $\hat{\theta}_{MH} = R/S = (\sum_k R_k)/(\sum_k S_k)$ with $R_k = WW_k BB_k \,/\, (WW_k + BB_k + BW_k + WB_k)$ and then the estimated variance of the log of the Mantel-Haenszel odds ratio is:

$$\hat{\sigma}^2[\log \hat{\theta}_{MH}] = \frac{1}{2R^2}\sum_k \frac{(WW_k + BB_k)R_k}{(WW_k + BB_k + BW_k + WB_k)} + \frac{1}{2S^2}\sum_k \frac{(BW_k + WB_k)R_k}{(WW_k + BB_k + BW_k + WB_k)} + \frac{1}{2RS}\sum_k \frac{(WW_k + BB_k)S_k + (BW_k + WB_k)R_k}{(WW_k + BB_k + BW_k + WB_k)}$$

Results: proportions

I begin by describing proportions of groups that are intermarried. Table 4 is a national cross-classification of husband's race by wife's race from 1980. It includes endogamous marriages and intermarriages with Whites only. The lightly shaded cells are column percentages while the more darkly shaded cells are column percentages. White and Black men and women are most likely to be married endogamously with percentages exceeding 95 percent. About half of API men and women and almost 70 percent of Latino men and women are married endogamously. Whites are most commonly intermarried with Latinos, with slightly over 1 percent of Whites married to Latinos. Slightly less than 0.2 percent of White men and women are married to APIs. Almost 0.4 percent of White women are married to Black men but only 0.06 percent of White men are married to Black women. These proportions are poor measures of marriage preferences because they do not account for population composition. However, they do indicate that endogamy is the dominant pattern for Whites and Blacks whereas substantial proportions of APIs and Latinos are not endogamous.

Table 5 is the corresponding cross-classification for 1990. Because the data are weighted, the reported counts are rounded to the nearest integer. The dominance of endogamy for Whites and Blacks reappears, although there are small declines the in the proportions. The proportions of exogamous APIs and Latinos are also slightly smaller than they were in 1980. The other patterns are largely consistent with the 1980 data. Whites are most likely to intermarry with Latinos, with about 2 percent of White men and women marrying Latinos. About 0.2 percent of White men and women marry APIs. Three-fifths of one percent of White women are married to Black men, but only 0.16 percent of White men are married to Black women.

There are some indications that intermarriage has increased through the 1980s. However, a more accurate assessment needs to use EORs to gauge intermarriage tendencies. I turn to those results in the next section.

Results: odds ratios

The discussion below focuses on three questions:

(1) Do endogamy tendencies decrease (intermarriage increase) between 1980 and 1990?

(2) How do the point estimates and magnitude of change over time depend on the marriage market assumptions?

(3) How do the EORs compare among APIs, Blacks, and Latinos?

I first discuss the estimates describing marriages between Blacks and Whites, followed by marriages of Whites with Latinos and finally with APIs. Table 6 lists ML and MH estimates of odds ratios computed using different assumptions about marriage markets. Shaded figures are ML estimates.

Black/White intermarriage

The odds ratios in the top panel of Table 6 provide solid evidence of increased Black/White intermarriage between 1980 and 1990. The degree of change over time depends on the marriage market assumption, however. The odds ratios listed in the first row of figures are calculated assuming that the marriage market is national and hence do not account for the uneven geographic distribution of minority groups. These are the conventional estimates of the strength of group boundaries and include all marriages of native-born respondents where one spouse is under age 30. 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 95 percent confidence interval for this odds ratio is relatively narrow, ranging from 24,168 to 30,486. The corresponding 1990 estimate is 8856 with a 95 percent confidence interval of (7995, 9811). According to this measure, the importance of the Black/White distinction to marriage outcomes in 1990 was one-third of its importance a decade earlier.

In both 1980 and 1990, as the marriage market assumption becomes more specific, the ML estimates generally increase whereas the MH estimates decline. For 1980, the ML estimates rise from 27,144 for national marriage markets to 37,653 for state marriage markets all the way to 156,254 for LMA marriage markets. The corresponding rise for the 1990 odds ratios is from 8856 for the nation to 9292 for states to 22,420 for LMAs. The increase, especially for LMA-level EORs, may be due to the known upward bias of the ML estimates. In fact, the MH estimates are smaller than their ML counterparts in all cases. Furthermore, the MH estimates appear to decline as the marriage market assumption becomes more specific, falling from 27,933 for 1980 region marriages markets to 25,604 for 1980 state marriage markets and from 8227 for 1990 region marriage markets to 7762 for 1990 state marriages to 4,701 for 1990 LMA marriage markets.

The extent of 1980-1990 change depends on the estimator and marriage market assumption. Excluding the LMA-level estimates as potential outliers, the 1990 EOR ranges from one-fourth (State ML) to one-third (National ML) of the 1980 EOR. Although the magnitude of the decline may vary somewhat, these results confirm earlier findings of 1980-1990 increases in intermarriage.

The pattern of ML estimates is surprising given Harris and Ono's (2001) argument that national statistics *over*-estimate the tendency to marry within one's group because they do not account for the uneven geographic distribution of groups. When controlling for population composition at the region, division, and state levels, the national estimate may actually be an *under*-estimate. However, the MH estimates are consistent with Harris and Ono's argument. Excluding LMA-level estimates, the MH EORs decline as marriage markets become more specific.

Latino/White intermarriage

The estimated EORs for Latinos are significantly smaller than the ones for Blacks, indicating that the distinction between Whites and Latinos is much less important for marriage choice than the distinction between Whites and Blacks. The conventional national estimate of the 1980 EOR is 157 with a 95 percent confidence interval of (151, 164). The 1980 odds that a Latino marries a Latino is 157 times the odds that a White person marries a Latino. In absolute terms this is substantial, but it is much smaller than the estimate for Blacks. The same odds ratio for 1990 is 95, representing a decline of approximately one-third. Thus, the importance of the Latino/White distinction to 1990 marriage outcomes is two-thirds of its importance in 1980.

The 1980-1990 increase in intermarriage remains for the different marriage market assumptions and for the two EOR estimators. However, the estimates are sensitive to the estimator used and assumptions about the scope of the marriage market. For each estimator, the estimated EOR declines as the marriage market becomes more specific. When the region is taken to be the marriage market, the 1980 ML EOR is 122. For 1980, the division-level ML EOR is 98. The 1980 ML estimate of the common EOR using states as marriage markets is 74. Using LMAs as the marriage market, the ML EOR falls to 59. This decline is consistent with Harris and Ono's argument that national endogamy measures are biased upward because they do not control for the geographic concentration of groups. The 1980 MH EORs are consistently smaller than their ML counterparts and show the same pattern of decline, ranging from 86 for region marriage markets to 46 for LMA marriage markets.

The 1990 Latino EORs are uniformly smaller than the 1980 EORs, providing evidence for a decrease in the importance of the distinction between Latinos and Whites in structuring marriage choice. The 1990 EORs also display the same pattern of decreases as the marriage market becomes more specific. At the LMA level the 1990 MH EOR point estimate is 26 with a 95 percent confidence interval of (22, 30). Thus, taking LMAs as marriage markets, the odds that Latinos marry Latinos is only 26 times the odds that Whites marry Latinos. This EOR is not negligible but it is much smaller than the 1980 MH EOR of 46 and it is extremely small compared to even the lowest estimated EOR for Blacks. Estimates of the 1980-1990 decline range from approximately one-third (National ML) to one-half (LMA ML). This is a substantial decline, although the magnitude of the decline is smaller than it was for Blacks.

API/White intermarriage

For APIs, the conventional national EOR was 692 for 1980 with a 95 percent confidence interval of (607, 790). The odds that an API marries an API spouse instead of a White spouse are 692 times the odds that a White person marries an API spouse instead of a White spouse. This is significantly lower than any of the 1980 EORs for Blacks, but this is substantially higher than the 1980 EORs for Latinos. The corresponding 1990 estimate is 406, with a 95 percent confidence interval of (353, 467). This represents a 40 percent decline over the decade.

The 1980-1990 decline observed with national EORs does not survive for EORs estimated using state and LMA marriage markets. At the national, division, and state levels, the 1990 EORs are smaller than the corresponding 1980 figures. However, the state MH and LMA ML point estimates actually increase from 1980 to 1990, although there is substantial overlap in their 95 percent confidence intervals. There is also substantial overlap of the 95 percent confidence intervals for the state ML and LMA MH estimates. Thus, measured at the state and

LMA level, there is no evidence that the distinction between APIs and Whites became less important in shaping marriage outcomes between 1980 and 1990. This is contrary to what one would conclude from examining conventional national-level EORs. Thus, the evidence about increased intermarriage for APIs and Whites is mixed. Whether declines in the EORs are observed depends on the marriage market assumption.

The do EORs decline as the marriage market becomes more specific. Taking regions to be marriage markets, the 1980 ML EOR is 281 and falls steadily to 56 at the LMA level. The Mantel-Haenszel estimates also decline from 222 at the region level to 19 at the LMA level. The 1980 MH estimates are consistently smaller than their ML counterparts. The same patterns appear for 1990. The region ML estimate is 147 and falls to 57 at the LMA level. The region MH estimate is 138 and falls steadily to 15 at the LMA level. The difference between the national estimates and the region estimates is subtantial. The national estimates are nearly three times the regional estimates. Thus, especially for APIs, the bias in EORs estimated at the national level identified by Harris and Ono is quite severe.

At the national, regional, and division levels, the API/White EORs and consistently larger than the corresponding Latino/White EORs. This suggests that the API/White distinction is more important to marriage outcomes than the Latino/White distinction. However, there is substantial overlap in the 95 percent confidence intervals of EORs measured at the state and LMA levels. This suggests that there is no evidence for a difference between the importance of the API/White and Latino/White distinctions. Thus, conclusions about the relative ordering of the importance of group distinctions is also sensitive to assumptions about the scale of the marriage market.

Summary

To summarize: For Latinos and APIs, the pattern of decreases in the EORs was clearly consistent with the argument that their geographic concentration biases upwards EORs measured at the national level. In fact, the EORs declined consistently from the national to the regional, divisional, state, and LMA levels. For Blacks, the MH estimates generally declined from the region to the LMA levels. However, the ML EORs at the region, division, state and LMA levels were generally higher than the national-level EORs. For Blacks in 1990, the lowest EOR was at the LMA level, but the estimate had a wide confidence interval. Thus, there is not much evidence to support Harris and Ono's contention for Blacks that national estimates of intermarriage patterns are over-estimates because they do not account for the uneven geographic distribution of Blacks.

As for decreases between 1980 and 1990, the patterns were consistent for Blacks and Latinos. The EORs decreased for all marriage market assumptions, falling the greater distance for Blacks. For APIs, however, decreases were apparent at the national, region, and division levels, but there was no evidence of decrease for EORs measured at the state and LMA levels.

For comparisons among the three groups, Blacks far and away had the highest EORs. With regard to influencing marriage outcomes, the distinction between Blacks and Whites was overwhelmingly more important than the distinctions between Latinos and Whites and between APIs and Whites. The EORs for Blacks were in the thousands and tens of thousands, whereas the EORs for Latinos and APIs ranged from the teens to the hundreds. At the LMA and state levels, there was no evidence of differences in the importance of the distinction between APIs and Whites and the distinction between Latinos and Whites. Measured at the national, region, and division levels, the distinction between APIs and Whites was more important than the distinction between Latinos and Whites.

These results demonstrate that conclusions about change over time in the importance of group boundaries and conclusions about the relative importance of different group boundaries depend on marriage market assumptions. Thus, it is important to use theoretically informed marriage markets when one seeks to measure the importance of group boundaries. National-level measures of intermarriage tendencies may confound geographic concentration with the importance of group distinctions in structuring marriage outcomes.

Geographic variation among metropolitan areas

The above findings demonstrate the importance of accounting for variation in population composition in measuring endogamy tendencies. Conclusions about social change and the relative importance of different group boundaries depend on assumptions about the marriage markets from which people choose their spouses. However, the EORs estimated in the previous section assume that endogamy tendencies are uniform throughout the entire United States and hence do not allow for regional comparisons. This second set of findings directly investigates geographic variation in intermarriage patterns and focuses on two main research questions:

(1) what is the extent of geographic variation in intermarriage tendencies?

(2) are the intermarriage increases observed during the 1980s at the national level robust to regional variation?

Data and log-linear models

For these analyses I use metropolitan areas to approximate marriage markets. Identifying the appropriate geographic unit to approximate the population from which people choose a spouse is a difficult problem. Nevertheless, Census Bureau-defined metropolitan areas are a reasonable choice, as metropolitan areas are economically and socially integrated regions. Another reasonable alternative is LMAs (Tolbert and Killian 1987; Tolbert and Sizer 1996), but the 1 percent (1980 PUMS D) and 0.5 percent (1990 PUMS L) samples for which LMAs are defined are too small to provide the means to investigate geographic variation. Metropolitan areas are defined for the 5 percent 1980 and 1990 PUMS A Samples. I also restrict the sample to metropolitan areas inhabited by at least 20 minority group husbands and 20 minority group wives.

The sample of all native-born householder couples where both are aged 20 or over and at least one partner is under age 30 numbers 483,772 for 1980. Restricting the sample to endogamous marriages of Whites, Blacks, Latinos, and APIs and intermarriages with Whites leaves 477,546 marriages. Of these couples, 65 percent or 311,963 lived in the Census Bureau-defined metropolitan areas used by Jaeger et al. (1998). By design, half or 156,458 of these were included in the migration subsample. Of these couples, 79.3 percent included at least one partner who lived in the same metropolitan area five years before the census. For the 1990 sample, a total of 371,613 couples met my race criteria. Of these, 231,013 or 62.2 lived in the Jaeger et al. (1998) version of the Census Bureau metropolitan areas. Among the metropolitan area couples, 79.5 percent met my migration criterion.

For the first research question, whether there is regional variation in endogamy tendencies, I first estimate log-linear model (1) which is a baseline model assuming a common EOR for each metropolitan area marriage market but including terms allowing the composition of each marriage market to vary. This common EOR model embodies the standard national uniformity assumption and is the same log-linear model estimated in the previous section:

$$\log m_{ijk} = \lambda + \lambda_i^H + \lambda_j^W + \lambda_k^M + \lambda_{ik}^{HM} + \lambda_{jk}^{WM} + \lambda_{ij}^{HW}$$

I use dummy coding for metropolitan area, husband's race, and wife's race. The omitted category for the race variables is Whites. The parameters λ_{ik}^{HM} and λ_{jk}^{WM} account for variation in population composition among metropolitan area marriage markets. The λ_{ij}^{HW} parameter is the common EOR estimated over all of the marriage markets. I relax the first model's national uniformity assumption in log-linear model (2) which is a model of broad regional variation that allows metropolitan areas in each of the four Census Bureau regions to have a distinct estimated EOR:

$$\log m_{ijk} = \lambda + \lambda_i^H + \lambda_j^W + \lambda_k^M + \lambda_{ik}^{HM} + \lambda_{jk}^{WM} + \lambda_{ijr}^{HWR} \qquad r = \text{NE, MW, S, W}$$

The parameters λ_{ijr}^{HWR} allow the terms representing the tendency to marry within one's own group to vary across different regions. In other words, each one of these parameters describes the common tendency toward endogamy among the metropolitan area marriage markets within a region. The third model (3) is a more detailed model based on inspection of the residuals.

$$\log m_{ijk} = \lambda + \lambda_i^H + \lambda_j^W + \lambda_k^M + \lambda_{ik}^{HM} + \lambda_{jk}^{WM} + \lambda_{ijr}^{HWR*} \qquad \text{coding for r varies}$$

The crucial test of geographic variation is between Models (1) and (2). Model (2) fitting better is evidence that the national uniformity assumption does not permit an adequate description of intermarriage patterns.

For each minority group I also estimate an additional set of models to show whether or not increases in intermarriage observed at the national level remain after accounting for geographic variation. For these models I restrict the sample to metropolitan areas which met the minimum cell count criterion in both 1980 and 1990. The first of the models (Model 8091) addressing this second research question is again a baseline model, assuming no broad regional variation and no change over time in endogamy, although terms are included to account for differences among the metropolitan areas in population composition:

$$\log m_{ijkl} = \lambda + \lambda_i^{H} + \lambda_j^{W} + \lambda_k^{M} + \lambda_l^{T} + \lambda_{ik}^{HM} + \lambda_{jk}^{WM} + \lambda_{ij}^{HW} + \lambda_{ikl}^{HMT} + \lambda_{jkl}^{WMT}$$

$$l = 1980, 1990$$

The second model (Model 8092) adds one additional parameter to allow change over time in the EOR but continues to assume that the EOR is uniform throughout the entire United States. 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):

$$\log m_{ijkl} = \lambda + \lambda_i^{H} + \lambda_j^{W} + \lambda_k^{M} + \lambda_l^{T} + \lambda_{ik}^{HM} + \lambda_{jk}^{WM} + \lambda_{ij}^{HW} + \lambda_{ikl}^{HMT} + \lambda_{jkl}^{WMT} + \lambda_{ijl}^{HWT}$$

The third model (Model 8093) adds terms describing broad regional in endogamy to the second model. Regions are allowed to vary with respect to their endogamy tendencies but the extent of change over time is assumed to be constant for each region:

$$\log m_{ijkl} = \lambda + \lambda_i^{H} + \lambda_j^{W} + \lambda_k^{M} + \lambda_l^{T} + \lambda_{ik}^{HM} + \lambda_{jk}^{WM} + \lambda_{ij}^{HW} + \lambda_{ikl}^{HMT} + \lambda_{jkl}^{WMT} + \lambda_{ijl}^{HWT} + \lambda_{ijr}^{HWR*}$$

The fourth model (Model 8094) relaxes the previous model by allowing for regional differences in change over time.

$$\log m_{ijkl}\ \lambda + \lambda_i^{H} + \lambda_j^{W} + \lambda_k^{M} + \lambda_l^{T} + \lambda_{ik}^{HM} + \lambda_{jk}^{WM} + \lambda_{ij}^{HW} + \lambda_{ikl}^{HMT} + \lambda_{jkl}^{WMT} + \lambda_{ijl}^{HWT} + \lambda_{ijr}^{HWR*} + \lambda_{ijlr}^{HWTR*}$$

The crucial comparison for this research question about change over time is between Model (8092) and Model (8093). Model (8092) assumes national uniformity in endogamy as well as change over time. Model (8093) allows for broad regional variation but retains the assumption of national uniformity in change over time. If the coefficient describing change over time in Model (8093) remains statistically significant, this would be evidence that changes in endogamy tendencies are robust to regional variation in intermarriage patterns. Despite geographic differences in the tendency to marry within one's own group, we would still be able to conclude that intermarriage has changed on a national level.

My dataset has the potential to produce biased estimates because the sample is restricted to couples living in metropolitan areas where at least one member also lived five years before the census. Furthermore, for each minority group, I restrict attention to metropolitan areas with at least 20 minority group husbands and wives in order to eliminate metropolitan areas with small cell counts. To determine whether my conclusions are robust to these sample restrictions, at the end of this paper I present analyses using alternative marriage markets that include rural residents and for which the migration restriction is less harsh.

Intermarriage between Blacks and Whites

Table 7 shows the 73 metropolitan areas I used to describe 1980 Black/White intermarriage patterns. Out of Jaeger et al. (1998)'s 132 metropolitan areas, 73 in my sample had at least 20 Black men and Black women. Eight metropolitan areas were in the Northeast, 15 in the Midwest, 42 in the South, and the remaining eight in the west. Table 7 also shows the estimated EOR for each metropolitan area marriage market. The product of the counts of the two types of intermarriages (Black female, White male and Black male, White female) in each marriage market is the denominator of the estimated EOR and if either one is zero, the estimate does not exist. Because many of the metropolitan areas had zero cells for the counts of intermarriages, I added 0.5 to each cell when calculating the EORs in Table 7. This estimator of the population EOR is generally less biased than other available alternatives (Agresti 2002, 70-71; Gart and Zweiful 1967). In the log-linear models I use the untransformed counts.

The median sample EOR was 24,131. In the Northeast, all metropolitan areas except New York were below the median. In the Midwest, half of the metropolitan areas are below the median. In the South, only one-quarter of the metropolitan areas are below the median. All the metropolitan areas in the West were below the median. The wide range of the EORs, from 485 for Seattle-Tacoma, Washington to 536,703 for Kansas City, MO-KS contrasts sharply with the conventional estimate of 27,144 from Table 6. There certainly is a great deal of variation across metropolitan areas. Furthermore, there appear to be broad regional patterns as well.

The fit statistics listed in Table 8 confirm this. Model Black81 is the national uniformity model that allows for variation in marriage market population composition but assumes national uniformity in the EOR. The model does not fit well according to G^2, the conventional goodness-of-fit likelihood ratio chi-square statistic. However, the BIC of -615.19 is negative, suggesting that this model is more plausible than the saturated model. Model Black82 allows the four Census Bureau regions to have distinct EORs. The fit of Model Black82 improves greatly compared to Model Black81, according to a likelihood ratio test. The BIC of -680.86 also indicates that this model is much more plausible than the previous model. Upon examining the coefficients for Model Black82, it appeared that only three distinct EORs were needed to account for regional variability. Thus, Model Black83 has parameters for distinct EORs for the South, West, and a combined Northeast and Midwest region. The fit of the model does not worsen much according to the likelihood ratio test, and the BIC statistic reveals that this model is even more plausible than Model Black82.

The estimated EORs listed in Table 9 for 1980 Black/White intermarriage reveal substantial geographic variation. The estimated EOR for the South is a formidable 117,889. This shows that the distinction between Blacks and Whites in the South was tremendously important to marriage outcomes in 1980. Blacks had 117,889 times greater odds of marrying Blacks than Whites had. The EOR for the combined Northeast and Midwest region was 33,279, also quite large. The EOR for metropolitan areas in the West was 3,730, much lower than elsewhere in the country. These estimated EORs contrast sharply with the EORs listed in Table 6. The single, national point estimates for EORs listed in Table 6 are generally accurate for the Northeast and Midwest, but they significantly misrepresent intermarriage patterns in the South and West.

For 1990, the general regional pattern remained the same. Seventy-seven metropolitan areas (listed in Table 10) met the minimum cell size requirements. The national median EOR was 9,471. Four of the seven Northeast metropolitan areas were below the median, two-thirds of the 17 Midwest metropolitan areas were below the median, one-third of the 43 Southern metropolitan areas were below the median, and all of the 10 Western metropolitan areas were below the median. The smallest EOR was again Seattle-Tacoma, WA at 571. The largest was Birmingham, AL at 159,424. This variability contrasts sharply with the conventional single national point estimate of 8,856 listed in Table 6.

Table 8 lists the fit statistics for the models of 1990 regional variation. The general pattern is the same as it was for 1980. The best fitting model was one with three distinct regions for the United States: the South, West, and a combined Northeast and Midwest region. As listed in Table 9, the estimated urban EOR for the South was 16,944. For the combined Northeast and Midwest region the estimated EOR was 8,837. And the estimate was 2,034 for the West. As in 1980, the distinction between Blacks and Whites was the most important to marriage outcomes in the South and least important in the West.

The basic descriptive statistics showed a substantial decrease in the EORs between 1980 and 1990. The median 1980 EOR was 24,131 and fell by over one-half to 9,471 in 1990. The estimated regional EORs also declined substantially. The most significant decline was for the South which fell from 117,889 in 1980 to 16,944 in 1990. Table 11 lists the fit statistics for the log-linear models describing change over time. Sixty-nine metropolitan areas appeared in both the 1980 and 1990 data, and I restrict the sample to these areas.

Model Black8091 allows the population composition to vary across metropolitan areas and over time but assumes national uniformity in the EOR and no change from 1980 to 1990. This model does not fit well according to the goodness-of-fit likelihood-ratio test statistic. However, because of the large sample size I consider the BIC statistic of -1186.48 which suggests that this model is more plausible than the saturated model. Model Black8092 also assumes national uniformity but estimates different national EORs for 1980 and 1990, allowing for change over time. The fit of the model improves significantly and according to the BIC statistic it is even more plausible than the previous model. Model Black8093 adds terms for regional variation but constrains the rate of change to be the same for each region, significantly improving the fit and the plausibility of the model. Model Black8094 adds terms allowing the different regions to have different rates of change over time. According to a likelihood ratio test, the fit of the model improves significantly, but the plausibility of the model actually declines according to the BIC statistic.

Inspection of the coefficients from Model Black8093 suggests that the EORs in the Northeast and Midwest are the same. Thus, I estimate Model Black8095 which estimates a common EOR for metropolitan areas in those two regions. This model has a smaller BIC and is thus more plausible than Model Black8093. The larger BIC statistic of Model Black8096 suggests that even with this specification, there is no evidence of regional differences in change over time. Thus, I prefer Model Black8095, which allows different regions of the United States to vary but constrains the rate of change over time to be the same for each region.

Table 12 lists the estimated parameters for the log-linear models. According to Model Black8095, the EORs declined by 70 percent from 1980 to 1990. The estimated 1980 EOR for the Northeast and Midwest was 32,565 and the fitted value for 1990 was 9,639. The estimated 1980 EOR for the South was 68,186 and the fitted value for 1990 was 20,183. The estimated 1980 EOR for the West was 5,796 and the fitted value for 1990 was 1,716. The conclusion here is consistent with past research: the 1980s increase in intermarriage over time remains even after accounting for geographic variation in the tendency to intermarry. The magnitude of the decline is also similar, with the conventionally estimated decline from Table 6 at 70 percent.

Intermarriage between Latinos and Whites

Table 13 lists the 1980 EORs describing marriages between Latinos and Whites. Thirty-two metropolitan areas met my minimum population criterion. The median 1980 EOR was 63. Both of the Northeast metropolitan areas were above the median, three of the four Midwest metropolitan areas were above the median, eight of the eleven Southern metropolitan areas were above the median, but 14 of the 17 Western EORs were *below* the median. The smallest EOR was ten for the San Diego, CA metropolitan area. The largest EOR was 317 for the Cleveland-Akron-Lorain, OH metropolitan area. The national 1980 point estimate listed in Table 6 was 157. Again, the single national statistic obscures a great deal of variation at the metropolitan area level. Overall, the EORs appear to be relatively low in the West and higher elsewhere in the country.

Also worthy of note is the small size of these EORs compared to the Black/White EORs. The largest Latino/White EOR is smaller than *every single one* of the 1980 and 1990 Black/White EORs. The 1980 median for Blacks was 24,131, compared to a paltry 63 for Latinos. Clearly, the importance of the distinction between Blacks and Whites is much greater than the distinction between Latinos and Whites in shaping marriage outcomes.

Table 14 lists the fit statistics for the log-linear models describing broad regional variation in the 1980 Latino/White EORs. The national uniformity model (Latino81) does not fit the data well according to the goodness-of-fit likelihood-ratio chi-square statistic. The BIC statistic also suggests that the saturated model is a more plausible model. The second model relaxes the national uniformity assumption and describes broad regional variation in intermarriage by estimating a distinct EOR for each of the four Census Bureau regions. The fit of the model improves significantly and the model becomes more plausible than the saturated model according to the BIC statistic. Examination of the residuals from Model Latino82 suggested that Florida metropolitan areas were distinct from the rest of the South. Model Latino83 estimates a distinct Florida parameter and the fit and plausibility of the model improve. Further inspection of the coefficients suggested Model Latino84, which combines the Northeast, Midwest, and South (excluding Florida) into a single region. The fit of this simpler model deteriorates little and the plausibility improves according to the BIC statistic.

Table 15 lists the fitted EORs for the preferred Model Latino84. In the Northeast, Midwest, and South the fitted EOR is 117. The estimated EORs for the West and Florida are 27 and 18, respectively. The geographic pattern is consistent with one aspect of the pattern for Blacks: low EORs in the West. The exceptions here are Florida which has EORs in the neighborhood of those for the West and that the rest of the South is not significantly higher than the Northeast and Midwest. Florida's low EOR may be due to the preponderance of Cubans among Florida's Latinos. The married, native-born Cubans in my sample are likely the descendants of the first wave of Cuban migrants who arrived with greater economic resources and were more likely to have lighter complexions.

For 1990, the overall pattern changes slightly. Table 16 lists EORs from the 48 metropolitan areas in the sample. The median EOR was 28. The four Northeast metropolitan areas are above the median, the 10 Midwest and 14 Southern metropolitan are evenly split by the median, but 13 of the 20 Western metropolitan areas are *below* the median. Descriptively, the metropolitan areas in the Northeast tend to be above the median whereas metropolitan areas in the West tend to be below the median. The range of the EORs was from 5 in the Washington, D.C. metropolitan area to 164 in the Hartford-New Britain-Middletown, CT metropolitan area. Noteworthy were the numerous metropolitan areas with EORs near or below 10, especially in the South and West.

Table 14 lists the fit statistics for the log-linear models describing broad regional variation in 1990 Latino/White intermarriage patterns. The null model (Latino91) of national uniformity fits poorly according to the goodness-of-fit likelihood-ratio chi-square statistic, but with a BIC of -84.33, it is more plausible than the saturated model. Model Latino92 which relaxes the assumption of national uniformity and estimates a different EOR for each of the four Census Bureau regions, fits significantly better than the previous model and is more plausible according to the BIC statistic. Inspection of the residuals and estimated coefficients led to Model Latino93 and then to Model Latino94, which describes four broad regions: the Northeast, combined Midwest and South, the West, and Florida. This model is the most plausible according to the BIC statistic.

Table 15 lists the estimated EORs from the preferred model. The estimated EOR for the Northeast is 83. For the combined Midwest and South, the estimated EOR is 40. For the West and Florida, the estimated EORs are 20 and 17, respectively. In 1990 the Northeast has become the region where the distinction between Latinos and Whites has the greatest effect on marriage outcomes. Compared to 1980, the Midwest and South are no longer regions where the Latino/White distinction was the most important. The EOR is high in the Northeast in large part because of the large share of Puerto Ricans and Dominicans among the Latino populations of the New York and Philadelphia metropolitan areas. These groups are more likely to have African ancestry and hence may be less desirable to Whites as marriage partners. The distinctiveness of Florida appears again in the 1990 data, likely for the same reasons as in 1980.

With regard to change over time, the decline in the median EORs (from 63 to 28) suggests that the importance of the distinction between Latinos and Whites in shaping marriage outcomes has decreased between 1980 and 1990. By comparing the fitted EORs in Table 15 it also appears that there have been declines, especially for the South and Midwest. To more formally determine if this is the case, I estimated log-linear models to describe changes over time. Restricting the sample to metropolitan areas appearing in both years left the 32 1980 metropolitan areas. Table 17 contains the fit statistics for the models describing change over time in the EORs. The preferred model is the same as the one for Blacks: regional variation but national uniformity in the rate of change. Model Latino8093 was the most plausible model according to the BIC statistic.

Table 18 contains the estimated EORs from Model Latino8093. This model assumes that the United States is divided into five regions: the Northeast, Midwest, South (excluding Florida), West, and Florida. The estimated change is a constant 40 percent decline in EORs for each region between 1980 and 1990. The 1980 estimated EOR for the Northeast was 124, falling to 76 in 1990. The 1980 estimated EOR for the South was 95, falling to 58 in 1990. The 1980 estimated EOR for the Midwest was 69, falling to 42 in 1990. The 1980 estimated EOR for the West was 31, falling to 19 in 1990. The 1980 estimated EOR for Florida was 25, falling to 15 in 1990. The proportionate decline in the EORs was not as great as it was for Blacks (70 percent for Blacks vs. 40 percent for Latinos), although the EOR for Latinos was much lower to begin with. As for Blacks, the conclusion here is consistent with past research: the 1980s decrease over time in the tendency to marry within one's own group remains after accounting for geographic variation in intermarriage. The magnitude of the decrease also matches the conventional decrease observed in Table 6.

Intermarriage between APIs and Whites

For Blacks and Latinos we have found substantial geographic variation in intermarriage patterns. The general pattern has been smaller EORs in the West. The South has had distinctively high EORs for Blacks, whereas the Northeast had distinctively high EORs for 1990 Latinos. For both Blacks and Latinos, however, the observed decrease in the national EORs remained after controlling for regional variation.

For APIs, we also find geographic variation in intermarriage patterns. However, for the metropolitan areas examined here, there is no evidence of change over time. Listed in Table 19 are the three 1980 metropolitan areas that met the minimum cell size criterion for APIs. The Honolulu, HI metropolitan area had an EOR of seven. The San Francisco-Oakland-San Jose, CA and Los Angeles-Anaheim-Riverside, CA metropolitan areas had EORs of 92 and 164, respectively. Table 20 lists the fit statistics for the log-linear models describing regional variation in intermarriage patterns. Model API81, the national uniformity model, does not fit the data well according to the goodness-of-fit likelihood ratio test statistic and the BIC statistic. Model API82 has two distinct regions (Honolulu, HI and California) and fits well according to the goodness-of-fit likelihood ratio test statistic and is more plausible than the saturated model according to the BIC statistic. Table 21 lists the fitted EORs for Honolulu, HI and California. The estimated EOR for Honolulu, HI is seven and for California is 131. Thus, endogamy is much stronger in California than Hawaii. The exceedingly low Honolulu, HI EOR is consistent with arguments about the unimportance of racial distinctions in Hawaii.

Four additional metropolitan areas met the minimum sample size criterion for the 1990 data, giving a total of seven metropolitan areas. These are listed in the bottom portion of Table 19. The highest EOR is 272 for the New York-Northern New Jersey-Long Island metropolitan area. Sacramento, CA is also high with an EOR of 238. The remaining five metropolitan areas are in the West and range from nine for Honolulu, HI to 92 for San Francisco-Oakland-San Jose, CA. The best fitting log-linear model describing 1990 geographic variation in intermarriage patterns has three regions: New York-Northern New Jersey-Long Island; Honolulu, HI; and the rest of the West. According to the fit statistics listed in Table 20, Model API93 fits the data adequately and is more plausible than the saturated model. Table 21 lists the estimated EORs. The estimated EOR for New York was 275, for Honolulu, HI it was nine, and for the rest of the West the estimated EOR was 81.

With regard to change over time, I restrict the sample to the three metropolitan areas that appeared in both 1980 and 1990. Comparing the descriptive statistics, there appears to be a decline only for the Los Angeles-Anaheim-Riverside, CA metropolitan area. There appears to be no change for the other two areas. Table 22 lists the fit statistics for the models describing change over time. The best model is Model API8093 which has no change in intermarriage patterns between 1980 and 1990, although this model allows for differences in the intermarriage patterns between Honolulu, HI and the two California metropolitan areas. Table 23 lists the estimated EORs from the models describing change over time. The estimated 1980 and 1990 EORs for the two California metropolitan areas is 100. The estimated 1980 and 1990 EORs for

Honolulu, HI is eight. Thus, after accounting for geographic variation, the data analyzed here provide no evidence of increasing intermarriage between 1980 and 1990 for APIs. Although the test carried out here may not be especially powerful, this conclusion is inconsistent with the conclusion of an increase in intermarriage drawn from the conventional national estimates in Table 6. This conclusion is consistent, however, with the observation that there was no significant 1980-1990 change in the state- and LMA-level EORs.

Summary

The preceding analyses have provided evidence for geographic variation in intermarriage patterns and demonstrated that after accounting for geographic variation, the 1980-1990 increases in intermarriage observed in previous research remain for Black/White and Latino/White intermarriage but not for API/White intermarriage.

For Blacks and Whites, the tendency to intermarry was weakest in the South. In the 1980 South, Blacks had 115,000 times greater odds of marrying Blacks than did Whites. This odds ratio was over three times greater than the Northeast and Midwest odds ratio and over 30 times greater than the West odds ratio. In 1990 the South odds ratio was 17,000. The 1990 Midwest and Northeast odds ratio was half of this and the West odds ratio was an eighth of the South's. After restricting the sample to metropolitan areas meeting the minimum sample size criterion for both census years, the regional variation is no longer as extreme and I find that the tendency to marry within one's own group declines by two-thirds over the 1980s.

In 1980 the tendency for Latinos and Whites to marry within their own group is strongest in the Northeast, Midwest, and South (excluding Florida). In those areas, the odds that Latinos marry Latinos is 117 times the odds of Whites marrying Latinos. The West odds ratio is one-fourth of this odds ratio. The 1980 tendency to marry within one's own group was weakest in Florida, with an odds ratio of 18 which is one-sixth of the odds ratio for most of the country. In 1990 the tendency for Latinos and Whites to marry within their own groups was strongest in the Northeast with an odds ratio of 83. This odds ratio was over four times greater than the West and Florida odds ratios and twice that of the Midwest and South odds ratio. Estimating 1980-90 change in the odds ratios after restricting the sample to metropolitan areas appearing in both the 1980 and 1990 samples reveals that the odds ratios measuring the tendency to marry within one's own group declined by 40 percent over the 1980s.

One key finding for API/White intermarriage is the relatively weak tendency to marry within one's own group in Hawaii. The odds of APIs marrying other APIs is 7-9 times greater than Whites' odds of marrying APIs for 1980 and 1990 Hawaii. The odds ratio was almost 20 times greater in 1980 California and nine times greater for the 1990 West. The 1990 New York City odds ratio was 275. The analyses provided no evidence of increases over time in intermarriage, although the comparison was limited to three metropolitan areas.

These results demonstrate clearly that boundaries between Whites and Blacks are much stronger than boundaries between Whites and the other two groups. The odds ratios for Blacks are in the thousands whereas the odds ratios for the other two groups range from single digits to a few hundred. The relative ranking of APIs and Latinos is ambiguous. The 1990 New York City odds ratio of 345 is higher than any of the estimated regional odds ratios for Latinos, but the 7-9 Hawaii odds ratios for APIs are also lower than any of the estimated regional odds ratios for Latinos.

The results summarized above derive from samples of metropolitan area residents that are subject to minimum cell count and migration restrictions. These restrictions have the potential to bias the results. To investigate the robustness of these results to the sample selection rules, I carry out an additional set of analyses described below.

Region, division, and state marriage markets

I present a final set of analyses that use states, divisions, and regions as marriage markets. These geographic units are less appropriate as marriage markets compared to metropolitan areas or labor markets areas because of their size. However, their advantage is that they retain a greater portion of the entire PUMS A samples. The effect of restricting the sample to non-migrants is less harsh because these geographic units are larger in scale and hence people who have moved are more likely to have moved within the marriage market. Furthermore, I am able to retain couples residing in rural areas which were excluded from the metropolitan area samples. The preceding analyses confound intermarriage tendencies with urban/rural status and migration status. The analyses presented here are more likely to confound intermarriage tendencies with population composition. We might view these analyses and the metropolitan area analyses as a set of bounds within which the true estimates lie. In this section, I use the same modeling strategy that I used for the previous set of analyses. For each minority group I compare the results for the models estimated using the different samples.

Black/White intermarriage

For intermarriage between Blacks and Whites, the pattern of regional variation is the same as the pattern found in previous analyses. The tendency to marry within one's own group is strongest in the South, weakest in the West, with a combined Northeast and Midwest region in between. The model fit statistics in Table 24 and estimated endogamy odds ratios in Table 25 provide evidence for this conclusion. Thus, for intermarriage between Blacks and Whites, we observe the same pattern of geographic variation whether we use metropolitan areas, states, divisions, or regions as marriage markets. These alternative EOR estimates are very close to the ones based on metropolitan area marriage markets in Table 9.

Table 26 shows the model fit statistics for the models describing change over time and Table 27 lists the estimated EORs from those models. The substantive results are the same as those for the previous set of analyses: there is a uniform increase over time in Black/White intermarriage. The estimated magnitude of the change is similar as well. For the metropolitan area analyses, the estimated decline in the EOR was 70 percent. The estimated decline for these new models is about 74 percent.

The national total of Black/White inter- and endogamous marriages was 226,641 for 1980 and 347,576 for 1990. The migration restriction discarded between 7.4 percent (region marriage markets) and 24.3 percent (state marriage markets) of the 1980 couples and between 6.8 percent (region marriage markets) and 13.5 percent (state marriage markets) of the 1990 couples.

Latino/White intermarriage

For intermarriage between Latinos and Whites, the pattern of geographic variation does depend on the marriage market assumption. Table 28 shows that each marriage market assumption leads to a different best fitting model. In fact, with regions as marriage markets, the only model that fit well was the saturated model. No simpler models fit the data adequately. However, the substantive results based on the estimated EORs listed in Table 29 are largely consistent. Regardless of the marriage market assumption, group boundaries are weakest in the West (and Florida when it is identifiable) but strongest in the Northeast and South. Although the estimated EORs vary somewhat, this is largely the same pattern of regional variation that was observed using metropolitan areas as marriage markets. The EORs from these analysis tend to be larger than the EORs from the metropolitan area analyses, perhaps indicating that metropolitan areas are a better marriage market approximation.

Fit statistics for models describing change over time are listed in Table 30 and the estimated EORs are listed in Table 31. Using states as marriage markets, the best fitting model allows change over time to vary by region, but using divisions and regions as marriage markets yields a model that suggests uniform change over time for the entire nation. The model using states as marriage markets provides evidence for larger increases in intermarriage in the South and Midwest compared to the Northeast and West. The other two models suggest a nationally uniform decline of about 46 percent in the tendency to marry within one's own group. This is in line with the national estimate of 39 percent using metropolitan areas as marriage markets.

The national total of Latino/White inter- and endogamous marriages meeting my selection criteria was 218,565 for 1980 and 342,639 for 1990. The migration restriction discarded between 7.44 percent (region marriage markets) and 14.3 percent (state marriage markets) of the 1980 couples and between 6.66 percent (region marriage markets) and 13.2 percent (state marriage markets) of the 1990 couples.

API/White intermarriage

For intermarriage between APIs and Whites, it is not terribly useful to compare estimates derived from these alternative marriage market assumptions with the previous analyses because the previous analyses included only a handful of metropolitan areas. However, it is worth noting that the estimated EORs from the preferred models for the West and Hawaii are similar to the estimated EORs from the previous models. Table 32 lists the fit statistics for the models and Table 33 lists the estimated EORs. It is also noteworthy that the pattern of geographic variation depends on the marriage market assumption. Using states and divisions as marriage markets provides evidence that residents of the West (compared to the rest of the United States as a whole) have a distinctively low tendency to marry within their own group. However, using regions, the most coarse marriage market assumption, suggests that the major distinction is between the Northeast and the rest of the United States (1980) and that the tendency to marry within one's own group is actually uniform throughout the entire country (1990). In contrast to the metropolitan area analyses which provided no evidence of increases over time, these alternative estimates (Tables 34, 35) all suggest that API/White intermarriage has increased over time.

The national total of API/White inter- and endogamous marriages was 208,010 for 1980 and 322,621 for 1990. The migration restriction discarded between 7.49 percent (region marriage markets) and 24.5 percent (state marriage markets) of the 1980 couples and between 6.69 percent (region marriage markets) and 13.4 percent (state marriage markets) of the 1990 couples.

Summary

What is the impact of these analyses on our research questions regarding regional variation, the relative ordering of groups, and change over time? These alternative analyses provide additional evidence for the contention that there is regional variation in intermarriage. These analyses are also consistent with earlier findings about the rarity of Black/White intermarriage compared to API/White and Latino/White intermarriage. These analyses also confirm earlier findings suggesting ambiguity about the relative ranking for APIs and Latinos. With respect to change over time, these alternative analyses again provide evidence for a nationally uniform rate of increase over time for Black/White and Latino/White intermarriage. And contrary to the metropolitan area analyses, these models provide evidence for an increase over time in API/White intermarriage.

Conclusion

The main findings of this research are:

1) The analyses carried out here provide evidence that the level of Black/Whihte endogamy has declined substantially over the 1980s for Blacks. There is also evidence that endogamy has declined for Latinos, although not to the same extent as the decline for Blacks. However, the evidence that endogamy has declined for APIs is much weaker.

2) After controlling for population composition, there is substantial geographic variation in the tendency for Blacks and Whites to intermarry. There is a great deal of endogamy in the South, less in the Northeast and Midwest, and the lowest degree of endogamy in the West. However, the level of endogamy is relatively high in all regions. For the Northeast, Midwest, and especially the South, the level of endogamy is greater than conventional national estimates.

3) There is substantial geographic variation in intermarriage patterns for Latinos and Whites after controlling for population composition. The level of endogamy is lower in the West and Florida and higher in the rest of the country. By 1990, the levels of endogamy were mostly below previous national estimates.

4) After controlling for population composition, there is some geographic variation in intermarriage patterns for APIs and Whites. The level of endogamy is low in Hawaii, higher in California and substantially higher in 1990 New York. Especially by 1990, regional endogamy levels tended to be lower than previous national estimates.

5) Compared to Latinos and APIs, the level of endogamy for Blacks is extraordinarily high. The levels of endogamy for Latinos and APIs are similar in magnitude.

6) For Latinos and APIs there is strong evidence that their geographic concentration in particular parts of the United States upwardly biases endogamy tendencies measured assuming a national marriage market. For Blacks, however, their unique pattern of regional variation in intermarriage tendencies leads to higher estimates after controlling for the population composition of local areas. In any case, it is clear that to accurately

describe intermarriage tendencies, it is important to account for local population composition.

7) Analyses carried out using alternative marriage market assumptions largely support the substantive conclusions of the preferred metropolitan area analyses. These alternative analyses provide moderate evidence for increases in API/White intermarriage during the 1980s.

The findings reported here demonstrate that conventional national-level estimates of endogamy tendencies obscure a great deal about intermarriage patterns. The great geographic variation discovered here suggests that traditional, national measures rely on methodologically and substantively untenable assumptions. The conventional 1980 national endogamy odds ratio for Black/White intermarriage of 27,000 contrasts sharply with the estimates of 3,700 for Western metropolitan areas, 33,000 for Northeastern and Midwestern metropolitan areas, and 120,000 for Southern metropolitan areas. The 1980 tendency for Blacks and Whites to marry within their own group is over 30 times stronger in Southern cities compared to Western cities. Also, the South's endogamy odds ratio is over four times greater than the estimate for the entire nation whereas the West's endogamy odds ratio only about one-seventh of the national estimate. Clearly, it is necessary to account for geographic variability in order to accurately describe intermarriage patterns.

For Latino/White and API/White intermarriage, there was some evidence that national estimates for endogamy are biased upward because they do not account for the uneven geographic distribution of these groups. For instance, the estimated 1990 national endogamy odds ratio for Latino/White intermarriage was 95, but my estimates were 83 for Northeastern cities, 40 for Midwestern and Southern cities, and 20 for Florida and Western cities. Thus, after accounting for geographic variation in population composition, it is clear that the national estimate overstates the tendency for Latinos and Whites to marry within their own group.

These results also raise questions about conclusions drawn from earlier studies about which group boundaries are more difficult to cross. Whereas there is little question that crossing the Black/White divide is extremely difficult, my findings are ambiguous regarding whether or not it is more difficult to cross the Latino/White or API/White divide. In some regions, API/White boundaries are stronger, but in other regions Latino/White boundaries are stronger. This contrasts with national-level findings suggesting that boundaries between APIs and Whites are stronger than boundaries between Latinos and Whites.

Finally, the results presented here confirm earlier findings that intermarriage with Whites has increased for Blacks and Latinos, but the evidence regarding API/White intermarriage is mixed. The limited metropolitan area analyses suggest no increases over time for API/White intermarriage, although the analyses using alternative marriage market assumptions do provide evidence of increases over time. The research reported here also provides evidence that the rate of change is uniform throughout the entire country.

One important issue to consider when investigating change over time in racial intermarriage is changes over time in the institution of marriage over the same period. One of the most noteworthy recent changes is the rise in cohabitation (Smock 2000). 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.

Some researchers have argued that cohabitation is replacing marriage as a family form, whereas others view it as a stage in the courtship process (Smock 2000). If cohabitation has indeed been replacing marriage over the past several decades, then this is a serious threat to the validity of conclusions drawn from studies of intermarriage which by definition focus only on marital unions. However, substantial evidence suggests that cohabitation is predominately a stage in the marriage process. For some, cohabitation may simply be a prelude to marriage. For example, the percentage of women's first marriages that were preceded by cohabitation increased from 39 percent for the 1980-1984 marriage cohort to 53 percent for the 1990-1994 marriage cohort (Bumpass and Lu 2000). Bumpass and Lu (2000) also find that cohabiting unions have short durations with about half lasting less than a year before they become marriages or end in separation. Only small proportions of cohabiting unions endure significantly longer (Smock 2000, 3). Cohabiting unions ending in separation may be more exploratory in nature (Oppenheimer 2003), more serious than a dating relationship but less committed than a full-fledged marriage.

Other research and theoretical arguments also support the contention that cohabitation is a more casual, less desirable union than marriage. Cherlin (2000) offers three arguments about this. First, he cites survey findings that the vast majority of never-married young adults in fact still wish to marry. Second, the wedding ceremony and formal declarations of commitment before friends and family strengthen the bonds holding the union together, creating an enforceable trust not present in cohabiting unions. Finally, Cherlin argues that marriage increases social status because it signals the successful fulfillment of adult social roles. Moreover, Goldstein and Kenney (2001) estimate that over 90 percent of American women born in the

1950s and early 1960s will eventually marry. If marriage is a nearly universal phenomenon for these women, then studies of interracial marriage that omit cohabitation still can provide valid inferences about the strength of group boundaries.

Nevertheless, comparisons of the assortative mating patterns of cohabiting unions and marriages can provide evidence about the nature of cohabiting unions. If cohabiting unions differ from marriages in the pattern of sorting, this suggests that cohabitation and marriage are distinct types of unions (Smock 2000). Harris and Ono's (2001) finding that interracial pairings are more common in cohabiting unions than in marriages is evidence that the social context of cohabiting unions differs from marriages. The more exploratory and less formal nature of cohabiting unions raise fewer barriers against interracial pairings than the elaborate ceremony and public declarations associated with marriages.

The increasing availability of cohabitation as an option suggests that some couples who intermarried in the late 1970s might cohabit instead in the late 1980s. This suggests, however, that the observed increases in intermarriage during the 1980s are actually an underestimate of the extent to which group boundaries weakened. If cohabitation had not been a readily available option in the late 1980s, then some of the interracial cohabitations observed in the 1990 Census might have been marriages. This strengthens the conclusions that Black/White and Latino/White intermarriage increased during the 1980s.

One serious weakness of this study is the potential bias due to the harsh migration restriction. However, the alternative analyses provide evidence that most findings are robust to the migration restriction. Furthermore, sound theoretical reasons support the use of metropolitan areas as marriage markets.

A final, noteworthy issue is the measurement of racial and ethnic identity. The 1980 and 1990 U.S. Census allowed respondents to select only a single response to the racial identity question. This forces researchers to assume that respondents with parents of different races have the same marriage patterns as respondents with parents of the same race. This likely has at most a small effect on the results as the couples in this study were born in the 1960s or earlier, during a time when intermarriage was extremely rare. Even by the year 2000, only 2 percent of the U.S. population reported more than one racial background (Grieco and Cassidy 2001).

Research on intermarriage of mixed ancestry Whites suggests that respondents of mixed backgrounds are more likely to intermarry than respondents with parents of the same background (Lieberson and Waters 1988). Thus, the results reported here may be over-estimates of the tendency of mono-racial respondents to intermarry. However, any bias is likely to be small. Because Black/White intermarriage has been so low and because of the power of the "one drop rule" (Davis 1991), the bias should be minimal for intermarriage between Blacks and Whites. However, there is the possibility of slightly more bias for Latino/White and API/White intermarriage. These two groups have historically been smaller in number than Blacks and have been more likely to intermarry with Whites. There is also more ambiguity about the racial identification of children of one Latino and one White parent, and children of one API and one White parent (Xie and Goyette 1997).

This paper describes broad regional variation in intermarriage patterns and change over time. This paper also provides a glimpse at the substantial variation in intermarriage patterns among metropolitan areas, even within regions.

NOTES

1. This choice omits subfamily couples who live in households where another person is the head. I exclude subfamily couples to maintain consistency between the 1980 and 1990 samples. The 1990 PUMS is a weighted sample and the household weight is the appropriate weight to use for estimating family characteristics (U.S. Department of Commerce 1993, 59). There is no suitable weight for 1990 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 two samples, I exclude subfamily couples from both the 1980 and 1990 data. 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.

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Table 1: 1990 Racial and ethnic composition of the United States by region

	Northeast	Midwest	South	West	National
Non-Hispanic White	79.4%	85.8%	71.8%	66.7%	75.6%
Blacks	11.0%	9.6%	18.5%	5.4%	12.1%
Am. Ind.	0.2%	0.6%	0.7%	1.8%	0.8%
APIs	2.6%	1.3%	1.3%	7.7%	2.9%
Hispanics	7.4%	2.9%	7.9%	19.1%	9.0%

Source: Gibson and Jung (2002)
Columns do not sum to 100 percent because Hispanics can be of any race.

Census Bureau regions and divisions:
Northeast region
- New England: Connecticut , Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
- Middle Atlantic: New Jersey, New York, Pennsylvania

Midwest region
- East North Central: Illinois, Indiana, Michigan, Ohio, Wisconsin
- West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

South region
- South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
- East South Central: Alabama, Kentucky, Mississippi, Tennessee
- West South Central: Arkansas, Louisiana, Oklahoma, Texas

West region
- Mountain: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
- Pacific: Alaska, California, Hawaii, Oregon, Washington

Table 2: 1980 and 1990 Indices of dissimilarity with Whites

	Regions		Divisions		States		Census tract Metro areas	
	1980	1990	1980	1990	1980	1990	1980	1990
Blacks	21.9	24.9	22.0	25.6	27.9	27.1	73.8	68.8
APIs	41.8	36.9	44.1	39.6	46.3	43.9	41.2	42.0
Hispanics	25.2	26.5	37.6	37.5	49.7	49.5	50.7	50.6

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). Indices of dissimilarity at the census tract level for metropolitan areas are from Logan (2001, 30).

Table 3: Comparison of ideal national incidence data sample to samples based on age restrictions

	Ideal sample: Married since 1975	Both aged 20+, one under age 30	Both aged 20+, wife under age 30	Both aged 20-30	Both aged 20+, one under age 25
Black log OR	9.667	10.203	10.281	10.426	9.927
Bias		5.5%	6.4%	7.9%	2.7%
API log OR	6.417	6.598	6.640	6.649	6.260
Bias		2.8%	3.5%	3.6%	-2.4%
Latino log OR	4.853	5.073	5.088	5.139	4.960
Bias		4.5%	4.8%	5.9%	2.2%
% of sample married since 1975	100.0%	66.1%	56.2%	55.7%	84.2%
% married since 1975 included in sample	100.0%	61.4%	75.2%	78.2%	49.2%
N	346,198	486,063	463,751	321,345	202,103

N includes endogamous marriages for Whites, APIs, Blacks, and Latinos; and intermarriages involving Whites. The estimated parameters listed are national endogamy measures.

Table 4: 1980 Cross-classification of husband's race by wife's race

		Wife's race											
		White		Black		API		Latino		Other		Total	
Husband's race	White	412,937	97.7%	349	0.93%	727	50.5%	5,351	30.8	1,669	52.7%	421,033	
		98.1%		0.06		0.17		1.27		0.40			100%
	Black	1,626	0.38	37,302	99.1							38,928	
		4.2%		95.8									100%
	API	584	0.14			712	49.5					1,296	
		45.1%				54.9							100%
	Latino	5,906	1.4					12,052	69.2			17,958	
		32.9%						67.1					100%
	Other	1,810	0.43							1,500	47.3	3,310	
		54.7%								45.3			100%
	Total	422,863	100%	37,651	100%	1,439	100%	17,403	100%	3,169	100%	482,525	

Household heads and spouses, both native born and aged 20 or over, one under age 30

Table 5: 1990 Cross-classification of husband's race by wife's race

		Wife's race											
		White		Black		API		Latino		Other		Total	
Husband's race	White	321,114	96.9%	538	2.1%	774	58.9%	6,000	37.9	1,791	59.4%	330,218	
		97.2%		0.16		0.23		1.82		0.54			100%
	Black	1,832	0.6	24,570	97.9							26,401	
		6.9%		93.1									100%
	API	635	0.2			541	41.1					1,176	
		54.0%				46.0							100%
	Latino	6,161	1.9					9,834	62.1			15,996	
		38.5%						61.5					100%
	Other	1,766	0.5							1,226	40.6	2,992	
		59.0%								41.0			100%
	Total	331,509	100%	25,108	100%	1,315	100%	15,835	100%	3,017	100%	376,783	

Because counts are weighted and rounded to the nearest integer, columns and rows may not sum to totals
Household heads and spouses, both native born and aged 20 or over, one under age 30

Table 6: Endogamy odds ratio estimates by race and marriage market assumption

	1980				1990			
	Point	95 percent CI			Point	95 percent CI		
	estimate	Lower	Upper	N	estimate	Lower	Upper	N
Blacks								
National ML	27,144	24,168	30,486	482,525	8,856	7,995	9,811	376,783
Region ML	34,672	28,769	41,787	223,895	8,697	7,824	9,668	350,852
Region MH	27,933	23,558	33,121		8,227	7,410	9,134	
Division ML	35,307	29,181	42,720	217,206	8,875	7,961	9,895	340,817
Division MH	26,121	21,932	31,110		7,893	7,083	8,796	
State ML	37,653	30,666	46,231	207,469	9,292	8,273	10,436	325,954
State MH	25,604	21,244	30,861		7,762	6,917	8,710	
LMA ML	156,254	73,330	332,954	37,392	22,420	13,093	38,391	30,068
LMA MH	36,391	18,752	70,621		4,701	3,065	7,209	
Latinos								
National ML	157	151	164		95	91	99	
Region ML	122	115	130		70	67	73	
Region MH	86	81	91		53	50	55	
Division ML	98	92	105		54	52	57	
Division MH	80	75	85		48	46	50	
State ML	74	69	79		41	39	43	
State MH	60	56	64		37	35	38	
LMA ML	59	50	71		31	26	37	
LMA MH	46	39	55		26	22	30	
APIs								
National ML	692	607	790		406	353	467	
Region ML	258	209	318		147	126	171	
Region MH	222	181	273		138	118	161	
Division ML	217	175	270		125	106	146	
Division MH	180	146	224		118	101	140	
State ML	80	61	104		58	48	70	
State MH	22	16	29		26	21	33	
LMA ML	56	29	106		57	31	106	
LMA MH	19	10	36		15	8	29	

Ns include endogamous marriages for APIs, Blacks, Latinos, Whites, and Others as well as intermarriages with Whites. ML estimates are maximum-likelihood estimates. MH estimates at Mantel-Haenszel estimates described in the text.

Table 7: 1980 Endogamy odds ratios for Blacks

Region	Metropolitan area	Endogamy odds ratio
Northeast	New Haven-Meriden CT	5,443
	Pittsburgh-Beaver Valley PA	11,612
	Rochester, NY	11,799
	Hartford-New Britain-Middletown	12,817
	Philadelphia-Wilmington-Trenton	14,914
	Buffalo-Niagara Falls, NY	21,637
	Boston-Lawrence-Salem-Lowell-B	23,701
	National median	*24,131*
	N.Y.-North. N.J.-Long Island	28,116
Midwest	Flint, MI	3,935
	Columbus, OH	6,528
	Milwaukee-Racine, WI	6,930
	Dayton-Springfield, OH	7529
	Cincinnati-Hamilton, OH-KY-IN	8484
	Grand Rapids MI	16277
	Detroit-Ann Arbor, MI	19402
	National median	*24,131*
	Youngstown-Warren, OH	24622
	Cleveland-Akron-Lorain, OH	28688
	Toledo, OH	30894
	Indianapolis, IN	51039
	Saginaw-Bay City-Midland, MI	54999
	St. Louis, MO-IL	67346
	Chicago-Gary-Lake County, IL-IN	72126
	Kansas City MO-KS	536703
South	Fayetteville, NC	1335
	Lakeland-Winter Haven FL	7,856
	Tampa-St. Petersburg-Clearwater, FL	9803
	Washington, DC-MD-VA	10,360

Region	Metropolitan area	Endogamy odds ratio
	Charleston, SC	10431
	Tulsa, OK	10532
	Beaumont-Port Arthur, TX	11077
	Knoxville, TN	12638
	Montgomery, AL	13344
	San Antonio, TX	14584
	Miami-Fort Lauderdale, FL	15024
	Austin, TX	15561
	Orlando, FL	16691
	Jacksonville, FL	18300
	National median	*24,131*
	Pensacola, FL	24131
	Richmond-Petersburg, VA	30070
	Louisville, KY-IN	34713
	Little Rock-North Little Rock, AR	38661
	Norfolk-Virginia Beach-Newport	40671
	Chattanooga, TN-GA	44065
	Charlotte-Gastonia-Rock Hill N	44211
	West Palm Beach-Boca Raton-Del Rey, FL	45,423
	Augusta, GA-SC	45815
	Lexington-Fayette, KY	47,023
	Macon-Warner Robins, GA	52,767
	Greenville-Spartanburg, SC	53361
	Dallas-Fort Worth, TX	53,918
	Oklahoma City, OK	59,857
	Houston-Galveston-Brazoria, TX	64,571
	Nashville, TN	79,515
	Columbia, SC	87,889
	Atlanta, GA	88,442
	Shreveport, LA	92,137
	Memphis, TN-AR-MS	101,773
	New Orleans LA	125,701

Region	Metropolitan area	Endogamy odds ratio
	Mobile, AL	148,005
	Birmingham, AL	156,735
	Baltimore, MD	159,792
	Greensboro-Winston-Salem-High	173,298
	Jackson, MS	219,177
	Raleigh-Durham, NC	286,431
	Baton Rouge, LA	337,365
West	Seattle-Tacoma, WA	485
	Phoenix, AZ	1,725
	San Francisco-Oakland-San Jose	2,203
	Denver-Boulder, CO	2,981
	Los Angeles-Anaheim-Riverside, CA	4,923
	San Diego CA	10,508
	Las Vegas NV	10,910
	Sacramento, CA	16,629
	National median	*24,131*

Table 8: Fit statistics for Black/White intermarriage models

Model	Residual df	G^2	BIC
1980: 73 metropolitan areas (N=93,549)			
Black81 National uniformity	72	208.94	-615.19
Black82 Four regions	69	108.93	-680.86
Black83 Three regions: S, NE+MW, W	70	109.81	-691.43
1990: 77 metropolitan areas (N=142,035)			
Black91 National uniformity	76	284.64	-617.01
Black92 Four regions	73	186.70	-680.36
Black93 Three regions: S, NE+MW, W	74	186.08	-691.84

Table 9: Endogamy odds ratios for Blacks and Whites in 1980 and 1990

		1980			1990		
		Log OR	std err	OR	Log OR	std err	OR
Model 1 National uniformity		10.42	0.13	33,419	9.10	0.08	8,912
Model 2 Four regions	NE	10.19	0.29	26,707	9.17	0.18	9,629
	MW	10.56	0.27	38,585	9.02	0.15	8,299
	S	11.68	0.27	117,889	9.74	0.14	16,944
	W	8.22	0.21	3,730	7.62	0.15	2,034
Model 3 Three regions	NE+MW	10.41	0.19	33,279	9.09	0.12	8,837
	S	11.68	0.27	117,889	9.74	0.14	16,944
	W	8.22	0.21	3,730	7.62	0.15	2,034

All coefficients statistically significant with $p < 0.001$

Table 10: 1990 Endogamy odds ratios for Blacks

Region	Metropolitan area	Endogamy odds ratio
Northeast	Buffalo-Niagara Falls, NY	1,898
	Rochester, NY	2,947
	Boston-Lawrence-Salem-Lowell-B	5,095
	Philadelphia-Wilmington-Trenton	5,873
	National median	*9,471*
	N.Y.-North. N.J.-Long Island,	12,747
	Hartford-New Britain-Middletown	19,010
	Pittsburgh-Beaver Valley PA	43,479
Midwest	Omaha, NE-IA	483
	Peoria, IL	1,099
	Columbus, OH	1,764
	Dayton-Springfield, OH	2,229
	Minneapolis-St.Cloud MN-WI	3,783
	Indianapolis, IN	4,384
	Wichita, KS	4,745
	Toledo, OH	4,767
	Cleveland-Akron-Lorain, OH	5,416
	Chicago-Gary-Lake County, IL-IN	6,123
	Cincinnati-Hamilton, OH-KY-IN	9,170
	National median	*9,471*
	Flint, MI	9,471
	Detroit-Ann Arbor, MI	13,202
	Youngstown-Warren, OH	16,602
	Kansas City MO-KS	32,456
	St. Louis, MO-IL	39,070
	Milwaukee-Racine, WI	100,446
South	Daytona Beach, FL	1,703
	Little Rock-North Little Rock, AR	1,748
	Fayetteville, NC	2,444
	Chattanooga, TN-GA	3,053

Region	Metropolitan area	Endogamy odds ratio
	Norfolk-Virginia Beach-Newport	3,923
	Tampa-St. Petersburg-Clearwater, FL	3,954
	Washington, DC-MD-VA	4,337
	West Palm Beach-Boca Raton-Del Rey, FL	4,355
	Tulsa, OK	5,442
	Orlando, FL	6,381
	Dallas-Fort Worth, TX	7,360
	Killeen-Temple, TX	7,806
	San Antonio, TX	8,034
	National median	*9,471*
	Oklahoma City, OK	9,610
	Atlanta, GA	9,619
	Baltimore, MD	9,802
	Louisville, KY-IN	10,416
	Charleston, SC	10,492
	Macon-Warner Robins, GA	10,744
	Houston-Galveston-Brazoria, TX	13,847
	Lakeland-Winter Haven FL	14,209
	Knoxville, TN	14,757
	Austin, TX	15013
	Nashville, TN	15327
	Augusta, GA-SC	16,276
	Richmond-Petersburg, VA	18648
	Columbia, SC	19,745
	Raleigh-Durham, NC	22926
	Charlotte-Gastonia-Rock Hill NC	23714
	Pensacola, FL	24316
	Baton Rouge, LA	30803
	Memphis, TN-AR-MS	33661
	Montgomery, AL	33807
	Miami-Fort Lauderdale, FL	41,286
	Greensboro-Winston-Salem-High	78,374

Region	Metropolitan area	Endogamy odds ratio
	Mobile, AL	93995
	Shreveport, LA	102092
	Jackson, MS	102165
	Greenville-Spartanburg, SC	104721
	New Orleans LA	124297
	Jacksonville, FL	125942
	Beaumont-Port Arthur, TX	130534
	Birmingham, AL	159424
West	Seattle-Tacoma, WA	571
	Portland-Vancouver, OR-WA	587
	Denver-Boulder, CO	820
	Las Vegas NV	931
	San Francisco-Oakland-San Jose, CA	1,574
	Phoenix, AZ	1,711
	Los Angeles-Anaheim-Riverside, CA	3,023
	Fresno, CA	3,313
	San Diego CA	3,426
	Sacramento, CA	7,100
	National median	*10,023*

Table 11: Fit statistics for models of 1980-1990 change in Black/White intermarriage

Model		Residual df	G^2	BIC
Black8091	National uniformity, no change over time	137	540.56	-1147.83
Black8092	National uniformity, uniform change over time	136	464.01	-1212.05
Black8093	Four regions, uniform change over time	133	284.15	-1354.93
Black8094	Four regions, regional differences in change over time	127	272.25	-1329.87
Black8095	Three regions, uniform change over time	134	284.23	-1367.18
Black8096	Three regions, regional differences in change over time	132	272.96	-1353.80

69 metropolitan areas (N=225,028)

Table 12: 1980-1990 Endogamy odds ratios for Black/White intermarriage

		Log OR	std err	OR
Model Black8091 National and temporal uniformity		9.59	0.07	14,574
Model Black8092 National uniformity	1980	10.39	0.13	32,565
	1990	9.14	0.15[b]	9,293
Model Black8095 Three regions Uniform 1980-90 change	NE+MW	10.37	0.15	31,761
	S	11.13	0.16[c]	68,186
	W	8.67	0.16[b]	5,796
	1980-1990 change	-1.22	0.15	0.296

[b]Standard error is for difference from 1980.
[c]Standard error is for difference from Northeast and Midwest.

Table 13: 1980 Endogamy odds ratios for Latinos

Region	Metropolitan area	Endogamy odds ratio
Northeast	*National median*	*63*
	N.Y.-North. N.J.-Long Island, NY-NJ-	96
	Philadelphia-Wilmington-Trenton, PA-DE-NJ	170
Midwest	Detroit-Ann Arbor, MI	40
	National median	*63*
	Kansas City MO-KS	77
	Chicago-Gary-Lake County, IL-IN-WI	99
	Cleveland-Akron-Lorain, OH	317
South	Miami-Fort Lauderdale, FL	17
	Tampa-St. Petersburg-Clearwater, FL	19
	Killeen-Temple, TX	54
	National median	*63*
	El Paso, TX	71
	Brownsville-Harlingen, TX	121
	Austin, TX	134
	San Antonio, TX	136
	Dallas-Fort Worth, TX	139
	Houston-Galveston-Brazoria, TX	157
	Corpus Christi, TX	169
	McAllen-Edinburg-Mission, TX	237
West	San Diego CA	10
	San Francisco-Oakland-San Jose	11
	Santa Barbara-Santa Maria-Lompoc, CA	17
	Sacramento, CA	18
	Tucson, AZ	24

Region	Metropolitan area	Endogamy odds ratio
	Albuquerque, NM	26
	Los Angeles-Anaheim-Riverside, CA	30
	Stockton, CA	30
	Salt City-Ogden, UT	44
	Denver-Boulder, CO	44
	Visalia-Tulare-Porterville, CA	50
	Fresno, CA	55
	National median	*63*
	Phoenix, AZ	70
	Bakersfield, CA	88
	Portland-Vancouver, OR-WA	124

Table 14: Fit statistics for Latino/White intermarriage models

Model		Residual df	G^2	BIC
1980: 32 metropolitan areas (N=51,134)				
Latino81	National uniformity	31	416.21	80.10
Latino82	Four regions: NE,MW,S,W	28	185.30	-118.28
Latino83	Five regions: NE,MW,S,W,FL	27	138.32	-154.42
Latino84	Three regions: NE+MW+S,W,FL	29	146.23	-168.20
1990: 48 metropolitan areas (N=80,775)				
Latino91	National uniformity	47	457.85	-84.33
Latino92	Four regions: NE,MW,S,W	44	201.59	-305.99
Latino93	Five regions: NE,MW,S,W,FL	43	177.09	-318.95
Latino94	Four regions: NE,MW+S,W,FL	44	182.89	-324.69

Table 15: Endogamy odds ratios for Latinos and Whites in 1980 and 1990

		1980			1990		
		Log OR	s.e.	OR	Log OR	s.e.	OR
Model 1 National uniformity		3.88	0.04	48	3.38	0.32	30
Model 4	NE+MW+S	4.76	0.07	117			
	NE				4.42	0.09	83
	MW+S				3.68	0.05	40
	W	3.31	0.06	27	2.98	0.04	20
	FL	2.89	0.29[a]	18	2.86	0.18[a]	17

All coefficients statistically significant with $p < 0.001$

[a]Standard error is for difference from South.

Table 16: 1990 Endogamy odds ratios for Latinos

Region	Metropolitan area	Endogamy odds ratio
Northeast	*National median*	*28*
	Boston-Lawrence-Salem-Lowell-B	67
	N.Y.-North. N.J.-Long Island, NY	78
	Philadelphia-Wilmington-Trenton, PA-NJ	108
	Hartford-New Britain-Middletown, CT	164
Midwest	Minneapolis-St..Cloud MN-WI	8
	Detroit-Ann Arbor, MI	14
	Wichita, KS	16
	Toledo, OH	17
	Kansas City MO-KS	25
	National median	*28*
	Milwaukee-Racine, WI	35
	Chicago-Gary-Lake County, IL-IN	39
	St. Louis, MO-IL	41
	Grand Rapids MI	50
	Cleveland-Akron-Lorain, OH	75
South	Washington, DC-MD-VA	5
	Tampa-St. Petersburg-Clearwater, FL	9
	New Orleans LA	11
	Oklahoma City, OK	11
	Miami-Fort Lauderdale, FL	24
	El Paso, TX	24
	National median	*28*
	McAllen-Edinburg-Mission, TX	35
	Killeen-Temple, TX	35
	San Antonio, TX	43
	Houston-Galveston-Brazoria, TX	48
	Dallas-Fort Worth, TX	50
	Austin, TX	52

Region	Metropolitan area	Endogamy odds ratio
	Brownsville-Harlingen, TX	53
	Corpus Christi, TX	76
West	Las Vegas, NV	6
	Modesto, CA	8
	Portland-Vancouver, OR-WA	12
	San Francisco-Oakland-San Jose, CA	12
	Sacramento, CA	13
	San Diego CA	14
	Albuquerque, NM	15
	Los Angeles-Anaheim-Riverside, CA	19
	Salt City-Ogden, UT	20
	Seattle-Tacoma, WA	20
	Stockton, CA	21
	Santa Barbara-Santa Maria-Lompoc, CA	21
	Tucson, AZ	25
	National median	*28*
	Bakersfield, CA	30
	Visalia-Tulare-Porterville, CA	32
	Denver-Boulder, CO	34
	Colorado Springs, CO	38
	Phoenix, AZ	38
	Fresno, CA	47
	Salinas-Seaside-Monterey, CA	52

Table 17: Fit statistics for models of 1980-1990 change in Latino/White intermarriage

Model		Residual df	G^2	BIC
Latino8091	National uniformity, no change over time	63	876.26	135.02
Latino8092	National uniformity, uniform change over time	62	800.56	71.08
Latino8093	Five regions, uniform change over time	58	283.98	-398.43
Latino8094	Five regions, regional change over time	54	243.69	-391.66

32 metropolitan areas (N=128,759)

Table 18: 1980-1990 Endogamy odds ratios for Latino/White intermarriage

		Log OR	std err	OR
Model Latino8091 National and temporal uniformity		3.58	0.03	36
Model Latino8092 National uniformity	1980	3.88	0.04	48
	1990	3.41	0.05[a]	30
Model Latino8093 Four regions Uniform 1980-90 change	NE	4.82	0.09	124
	MW	4.24	0.12[b]	69
	S	4.56	0.10[b]	95
	W	3.42	0.08[b]	31
	FL	3.23	0.16[c]	25
	1980-1990 change	-0.50	0.05	0.61

[a]Standard error is for difference from 1980.
[b]Standard error is for difference from Northeast.
[c]Standard error is for difference from South.

Table 19: 1980 and 1990 Endogamy odds ratios for APIs

Region	Metropolitan area	Endogamy odds ratio
1980		
West	Honolulu, HI	7
	San Francisco-Oakland-San Jose, CA	92
	LA-Anaheim-Riverside, CA	164
1990		
Northeast	New York-North New Jersey-Long Island, NJ-NY	272
West	Honolulu, HI	9
	Seattle-Tacoma, WA	38
	San Diego, CA	53
	LA-Anaheim-Riverside, CA	79
	San Francisco-Oakland-San Jose, CA	92
	Sacramento, CA	238

Table 20: Fit Statistics for API/White intermarriage models

Model		Residual df	G^2	BIC
1980: 3 metropolitan areas (N=7,490)				
API81	National uniformity	2	60.62	42.79
API82	Two regions: CA, HI	1	1.79	-7.12
1990: 7 metropolitan areas (N=23,820)				
API91	National uniformity	6	66.40	5.33
API92	Two regions: NY, W	5	54.08	3.19
API93	Three regions: NY, HI, W	4	9.57	-31.15

Table 21: Endogamy odds ratios for APIs and Whites in 1980 and 1990

			Log OR	std err	Odds ratio
1980					
Model API81	National uniformity		4.07	0.19	58
Model API82	Two regions	California	4.87	0.21	131
		Hawaii	1.91	0.37[a]	7
1990					
Model API91	National uniformity		4.16	0.12	64
Model API93	Three regions	New York	5.62	0.42	275
		West (excluding HI)	4.39	0.14	81
		Hawaii	2.25	0.30[b]	9

All coefficients statistically significant with $p < 0.001$

[a]Standard error is for difference from California.
[b]Standard error is for difference from West.

Table 22: Fit statistics for models of 1980-1990 change in API/White intermarriage

Model		Residual df	G^2	BIC
API8091	National uniformity, no change over time	5	104.97	55.97
API8092	National uniformity, uniform change over time	4	104.80	65.60
API8093	Two regions (CA,HI), no change over time	4	5.39	-33.81
API8094	Two regions (CA,HI), uniform change over time	3	4.63	-24.77
API8095	Two regions (CA,HI), regional differences in change over time	2	2.06	-17.54

3 metropolitan areas (N=18,039)

Table 23: 1980-1990 Endogamy odds ratios for API/White intermarriage

			Log OR	std err	Odds ratio
Model API8091	National uniformity, 1980, 1990		4.01	0.11	55
Model API8092	National uniformity	1980	4.07	0.19	58
		1990	3.97	0.24[a]	53
Model API8093	Two regions No change over time	CA	4.60	0.13	100
		HI	2.10	0.24[b]	8

[a]Standard error is for difference from 1980.
[b]Standard error is for difference from California.

Table 24: Fit statistics for Black/White intermarriage models by marriage market assumption

Model		Residual df	G^2	BIC
State Marriage Markets 1980 (N=194,268)				
Black81S:	National uniformity	50	215.38	-393.47
Black82S:	Four regions	47	73.26	-499.06
Black83S:	Three regions: NE+MW, S, W	48	75.18	-509.32
1990 (N=300,532)				
Black91S:	National uniformity	50	375.49	-255.18
Black92S:	Four regions	47	165.77	-427.06
Black93S:	Three regions: NE+MW, S, W	48	166.48	-438.96
Division Marriage Markets 1980 (N=203,519)				
Black81D:	National uniformity	8	138.72	40.93
Black82D:	Four regions	5	10.80	-50.32
Black83D:	Three regions: NE+MW, S, W	6	12.64	-60.70
1990 (N=314,586)				
Black91D:	National uniformity	8	245.89	144.61
Black92D:	Four regions	5	31.47	-31.83
Black93D:	Three regions: NE+MW, S, W	6	31.76	-44.19
Region Marriage Markets 1980 (N=209,806)				
Black81R:	National uniformity	3	117.50	80.74
Black82R:	Three regions: NE+MW, S, W	1	2.19	-10.06
1990 (N=323,913)				
Black91R:	National uniformity	3	210.03	171.97
Black92R:	Three regions: NE+MW, S, W	1	0.31	-12.37

Table 25: Endogamy odds ratios for Black/White intermarriage models by marriage market assumption

		1980			1990		
		Log OR	std err	OR	Log OR	std err	OR
State MMs	NE+MW	10.27	0.16	28,717	8.97	0.09	7,878
Model Black 3S Three regions	S	11.65	0.19	114,736	9.84	0.10	18,804
	W	8.32	0.18	4,095	7.44	0.12	1,704
Division MMs	NE+MW	10.25	0.15	28,393	8.96	0.09	7,785
Model Black 3D Three regions	S	11.37	0.17	86,868	9.73	0.09	16,798
	W	8.44	0.17	4,637	7.47	0.11	1,763
Region MMs	NE+MW	10.26	0.15	28,582	8.95	0.09	7,705
Model Black 2R Three regions	S	11.28	0.16	78,878	9.69	0.09	16,111
	W	8.53	0.17	5,050	7.53	0.11	1,859

All coefficients statistically significant with $p < 0.001$

Table 26: Fit statistics for models of 1980-1990 Change in Black/White intermarriage by marriage market assumption

Model		Residual df	G^2	BIC
State Marriage Markets (N=494,780)				
Black8091S	National uniformity, no change over time	101	745.36	-578.94
Black8092S	National uniformity, uniform change over time	100	590.87	-720.33
Black8093S	Four regions, uniform change over time	97	251.05	-1020.80
Black8094S	Four regions, regional change over time	94	239.03	-993.49
Division Marriage Markets (N=518,105)				
Black8091D	National uniformity, no change over time	17	557.54	333.85
Black8092D	National uniformity, uniform change over time	16	384.61	174.08
Black8093D	Four regions, uniform change over time	13	50.21	-120.84
Black8094D	Four regions, regional change over time	10	42.27	-89.31
Region Marriage Markets (N=533,719)				
Black8091R	National uniformity, no change over time	7	509.54	417.22
Black8092R	National uniformity, uniform change over time	6	327.53	248.40
Black8093R	Four regions, uniform change over time	3	7.08	-32.48
Black8094R	Four regions, regional change over time	0	0.00	0.00

Table 27: 1980-1990 Endogamy odds ratios for Black/White intermarriage by marriage market assumption

		Log OR	std err	OR
State Marriage Markets Model Black8093S Four regions Uniform 1980-90 change	NE	10.31	0.16	30,031
	MW	10.30	0.17[a]	29,792
	S	11.30	0.16[a]	80,580
	W	8.66	0.17[a]	5,779
	1980-1990 change	-1.35	0.12	0.260
Division Marriage Markets Model Black8093D Four regions Uniform 1980-90 change	NE	10.26	0.15	28,624
	MW	10.29	0.16[a]	29,525
	S	11.14	0.15[a]	68,597
	W	8.71	0.16[a]	6,057
	1980-1990 change	-1.33	0.11	0.264
Region Marriage Markets Model Black8093R Four regions Uniform 1980-90 change	NE	10.25	0.15	28,339
	MW	10.29	0.16[a]	29,407
	S	11.08	0.14[a]	64,861
	W	8.77	0.15[a]	6,451
	1980-1990 change	-1.33	0.11	0.264

[a]Standard error is for difference from Northeast.

Table 28: Fit statistics for Latino/White intermarriage models by marriage market assumption

Model		Residual df	G^2	BIC
State Marriage Markets 1980 (N=187,254)				
Latino81S	National uniformity	50	939.88	332.87
Latino82S	Four regions	47	278.18	-292.41
Latino83S	Five regions: NE, MW, S, W, FL	46	213.22	-345.23
1990 (N=297,482)				
Latino91S	National uniformity	50	992.84	362.69
Latino92S	Four regions	47	228.26	-364.09
Latino93S	Five regions: NE, MW, S, W, FL	46	189.89	-389.86
Division Marriage Market 1980 (N=196,111)				
Latino81D:	National uniformity	8	779.10	681.61
Latino82D:	Four regions	5	94.49	33.55
Latino83D:	Six regions: NE, MW, Pacific, Mtn, E S Cent, S Atl + W S Cent	3	18.53	-18.03
1990 (N=310,844)				
Latino91D:	National uniformity	8	999.56	898.38
Latino92D:	Four regions	5	139.57	76.34
Latino93D:	Six regions: NE, MW, Pacific, Mtn, S Atl, E+W S Cent	3	7.56	-30.38
Region Marriage Markets 1980 (N=202,298)				
Latino81R:	National uniformity	3	1126.35	1089.70
Latino82R:	Three regions: NE+MW, S, W	1	16.96	4.74
1990 (N=319,832)				
Latino91R:	National uniformity	3	1651.56	1613.54
Latino92R:	Three regions: NE+S, MW, W	1	13.50	0.82

Table 29: Endogamy odds ratios for Latino/White intermarriage models by marriage market assumption

		1980			1990		
		Log OR	std err	OR	Log OR	std err	OR
State MMs Model Latino3S Five regions	NE	4.97	0.13	145	4.66	0.08	106
	MW	4.56	0.10	95	3.74	0.07	42
	S	5.57	0.07	263	4.43	0.05	84
	W	3.42	0.05	31	3.03	0.03	21
	FL	3.81	0.22[a]	45	3.63	0.13[a]	38
Division MMs Model Latino3D Six regions	NE	5.26	0.12	193	4.89	0.07	133
	MW	4.70	0.09	110	3.85	0.07	47
	Pacific	3.50	0.05	33	3.13	0.04	23
	Mtn	4.24	0.10[b]	69	3.69	0.07[b]	40
	E S Cent	6.78	0.30[c]	880			
	S Atl + W S Cent	5.61	0.07	272			
	S Atl				4.00	0.10[d]	55
	E S Cent + W S Cent				4.84	0.05	127
Region MMs Four regions	NE	5.31	0.12	202	4.93	0.07	138
	MW	4.70	0.09	110	3.86	0.07	47
	S	6.13	0.06	462	5.23	0.04	187
	W	3.73	0.04	42	3.30	0.03	27

All coefficients statistically significant with $p < 0.001$

[a]Standard error is for difference from South.
[b]Standard error is for difference from Pacific.
[c]Standard error is for difference from South Atlantic and West South Central.
[d]Standard error is for difference from East South Central and West South Central.

Table 30: Fit statistics for models of 1980-1990 change in Latino/White intermarriage by marriage market assumption

Model		Residual df	G^2	BIC
State Marriage Markets (N=484,736)				
Latino8091S	National uniformity, no change over time	101	2135.51	813.28
Latino8092S	National uniformity, uniform change over time	100	1932.72	623.59
Latino8093S	Four regions, uniform change over time	97	560.34	-709.52
Latino8094S	Four regions, regional change over time	94	506.44	-724.15
Division Marriage Markets (N=506,955)				
Latino8091D	National uniformity, no change over time	17	1998.19	1774.88
Latino8092D	National uniformity, uniform change over time	16	1778.66	1568.48
Latino8093D	Six regions, uniform change over time	11	71.47	-73.03
Latino8094D	Six regions, regional change over time	6	25.44	-53.38
Region Marriage Markets (522,130)				
Latino8091R	National uniformity, no change over time	7	2994.37	2902.21
Latino8092R	National uniformity, uniform change over time	6	2777.92	2698.92
Latino8093R	Four regions, uniform change over time	3	34.17	-5.33
Latino8094R	Four regions, regional change over time	0	0.00	0.00

Table 31: 1980-1990 Endogamy odds ratios for Latino/White intermarriage by marriage market assumption

			Log OR	std err	OR
State Marriage Markets Model Latino8094S Four regions Regional 1980-90 change	1980	NE	4.98	0.13	145
		MW	4.56	0.16[a]	95
		S	5.39	0.14[a]	220
		W	3.42	0.13[a]	31
	1990	NE	4.66	0.15[b]	106
		MW	4.05	0.19[b]	58
		S	4.64	0.17[b]	104
		W	3.34	0.16[b]	28
Division Marriage Markets Model Latino8093D Six regions Uniform 1980-90 change		NE	5.45	0.07	233
		MW	4.56	0.09[a]	96
		S Atl	4.78	0.10[a]	119
		E S Central + W S Central	5.57	0.07[a]	263
		Pacific	3.67	0.07[a]	39
		Mountain	4.29	0.08[a]	73
		1980-1990 change	-0.63	0.04	0.533
Region Marriage Markets Model Latino8093R Four regions Uniform 1980-90 change		NE	5.48	0.07	239
		MW	4.56	0.08[a]	95
		S	5.93	0.07[a]	377
		W	3.85	0.07[a]	47
		1980-1990 change	-0.62	0.04	0.540

[a]Standard error is for difference from Northeast.
[b]Standard error is for difference from 1980.

Table 32: Fit statistics for API/White intermarriage models by marriage market assumption

Model		Residual df	G^2	BIC
State Marriage Markets 1980 (N=177,895)				
API81S:	National uniformity	50	184.15	-420.29
API82S:	Four regions	47	123.18	-445.00
API83S:	Three regions: W, HI, NE+MW+SO	48	42.71	-537.56
1990 (N=279,527)				
API91S:	National uniformity	50	164.02	-463.02
API92S:	Four regions	47	116.32	-473.10
API93S:	Three regions: W, HI, NE+MW+SO	48	48.95	-553.01
Division Marriage Markets 1980 (N=186,524)				
API81D:	National uniformity	8	39.34	-57.75
API82D:	Four regions	5	5.05	-55.63
API83D:	Two regions: W, NE+MW+S	7	9.86	-75.10
1990 (N=292,478)				
API91D:	National uniformity	8	34.18	-66.51
API92D:	Four regions	5	20.08	-42.85
API93D:	Two regions: W, NE+MW+S	7	24.13	-63.98
Region Marriage Markets 1980 (N=192,431)				
API81R:	National uniformity	3	26.99	-9.51
API82R:	Two regions: NE, MW+S+W	2	6.43	-17.90
1990 (N=301,040)				
API91R:	National uniformity	3	8.20	-29.64
API92R:	Two regions: NE, MW+S+W	2	1.48	-23.75

Table 33: Endogamy odds ratios for API/White intermarriage models by marriage market assumption

		1980			1990		
		Log OR	std err	OR	Log OR	std err	OR
State MMs Model API3S Three regions	W	4.64	0.16	104	4.17	0.11	65
	HI	1.89	0.16[a]	7	2.04	0.24[a]	8
	NE+MW+S	6.49	0.28	657	5.37	0.20	215
Division MMs Model API3D Two regions	W	5.12	0.12	167	4.70	0.09	110
	NE+MW+S	6.67	0.25	790	5.39	0.19	219
Region MMs Model API1R National uniformity		5.54	0.11	254	5.03	0.08	152
Model API2R Two regions	NE	7.25	0.39	1,408	5.78	0.31	325
	MW+S+W	5.41	0.11	223	4.93	0.08	138

All coefficients statistically significant with $p < 0.001$

[a]Standard error is for difference from West.

Table 34: Fit statistics for models of 1980-1990 Change in API/White intermarriage by marriage market assumption

Model		Residual df	G^2	BIC
State Marriage Markets (N=457,422)				
API8091S	National uniformity, no change over time	101	351.68	-964.69
API8092S	National uniformity, uniform change over time	100	348.17	-955.16
API8093S	Four regions, uniform change over time	97	244.25	-1019.99
API8094S	Four regions, regional change over time	94	239.50	-985.64
Division Marriage Markets (N=479,002)				
API8091D	National uniformity, no change over time	17	89.84	-132.51
API8092D	National uniformity, uniform change over time	16	73.52	-135.76
API8093D	Four regions, uniform change over time	13	30.58	-139.45
API8094D	Four regions, regional change over time	10	25.13	-105.67
Region Marriage Markets (N=493,471)				
API8091R	National uniformity, no change over time	7	53.37	-38.39
API8092R	National uniformity, uniform change over time	6	35.19	-43.46
API8093R	Four regions, uniform change over time	3	5.98	-33.35
API8094R	Four regions, regional change over time	0	0.00	0.00

Table 35: 1980-1990 Endogamy odds ratios for API/White intermarriage by marriage market assumption

		Log OR	std err	OR
State Marriage Markets Model API8093S Four regions Uniform 1980-90 change	NE	6.53	0.28	683
	MW	5.84	0.40[a]	343
	S	5.42	0.39[a]	226
	W	4.05	0.27[a]	57
	1980-1990 change	-0.33	0.16	0.72
Division Marriage Markets Model API8093D Four regions Uniform 1980-90 change	NE	6.77	0.25	868
	MW	6.07	0.38[a]	434
	S	5.68	0.36[a]	292
	W	5.21	0.25[a]	182
	1980-1990 change	-0.55	0.13	0.58
Region Marriage Markets Model API8093R National uniformity Uniform 1980-90 change	1980 National	5.54	0.11	254
	1980-1990 change	-0.56	0.13	0.57

[a]Standard error is for difference from Northeast.