

Changing Intergroup Boundaries in Brazilian Marriages: 1991-2000

Abstract

Using data from the 1991 and 2000 Censuses of Brazil, this paper examines change in educational, racial and religious intermarriage. Different perspectives on social change make different predictions regarding shifts in the magnitude of marital homogamy within these three social characteristics. Racial homogamy is less pronounced in Brazil than in a variety of other contexts, educational homogamy is comparable to that reported in the United States, and religious homogamy is much more pronounced than either educational or racial homogamy. The most common pattern of social change is increased fluidity in mate selection. Homogamy parameters are becoming smaller for race, education and religion, but the pattern of change is not uniform. Boundaries appear to be increasing at the two tails of the education distribution and for some religious categories.

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The prevalence of marital homogamy provides insight into the social organization of group boundaries. For example, educational homogamy reflects the importance of social class (Schwartz and Mare 2005), and racial homogamy is a key indicator of race relations (Qian and Lichter, 2007). It follows that changing rates of intergroup marriage are indicative of shifts in the strength of social boundaries between groups. Marriage implies strong attachment in the most intimate of settings such that increasing intergroup marriage indicates that social barriers to interaction are weakening. The weakening of barriers may also extend to kin, friends and other social networks. Conversely, when social characteristics become more salient in interpersonal relationships then rates of intermarriage will decline. In turn, increased or decreased visibility of couples in heterogeneous relationships can be a force for social change. Change is further reinforced when new cohorts are reared in homes with greater degrees of homogeneity or heterogeneity.

Inherent in the modernization perspective is the notion that fundamental shifts in the nature of intergroup relationships will occur. In the case of mate selection, the perspective suggests that economic development, the expanding ideology of individual choice, and weakening of traditional social boundaries will lead to a shift in the relative importance of ascribed and achieved social characteristics. More specifically, as labor market opportunities become increasingly tied to human capital and less gender specific, and as educational opportunities expand, educational attainment will become more salient as an attractive

characteristic in mate selection. In contrast, race will diminish in importance as a relevant attribute of potential partners. As religious tolerance increases and becomes more a matter of personal choice than of family and community tradition, it may also become less important in mate selection. The modernization perspective has been criticized because it is built on a flawed premise of universal and deterministic change, and regularly relies on the substitution of geographic variation for temporal variation. As “modernization” proceeds, the consequences of educational expansion may not be universal, race may remain a contested category and religion may become more important as a source of personal identity for some people but not others.

The purpose of this research is to explore the relative importance of religion, race and education in mate selection in a society undergoing dramatic changes in race relations, educational expansion, and religious diversity. Religion, education and race each structure interpersonal interaction through various mechanisms, but the relative importance of these characteristics is not well understood. A large body of research has examined each and some research has examined the joint distributions of marriage by education and race. Few studies have offered a more comprehensive analysis of changing patterns of intermarriage by considering education, race, and religion.

This research addresses four sets questions about the nature of intergroup marriage in Brazil. Each set of questions involves both a description of the general tendency and a comparison of change between 1991 and 2000. First, how does the overall likelihoods of homogamy compare across education, race and religion? Second, do sub-categories of education, race and religion vary in the likelihood of homogamy? Third, are there specific patterns of heterogamy that are more common? Finally, is education associated with racial and religious

homogamy? Answers to these questions will not only provide information about the relevance of these three characteristics in mate selection, but also give clues about how broad social change influences the formation of intimate relationships.

Social Change and Inter-marriage

To understand the relative levels of educational, racial and religious endogamy in Brazil, we organize our discussion around Kalmijn's (1998) three influences of homogamy. Kalmijn's first influence of endogamy is the individual's preferences for certain spousal characteristics. These preferences act as important filters in determining who the person will interact with and to what level of intimacy the relationship can reach (Blossfeld and Timm 2003; Mare 2000, Kalmijn 1991a, 1991b, 1998; Blackwell and Lichter 2004; McPherson, Smith-Lovin and Cook 2001). Kalmijn's second influence is from the actions of third parties, through group identification and group sanctions. As group identification and group sanctions increase, endogamy increases (Fu 2001). It is important to note that included under group sanctions are any legal restrictions on inter-marriage. Finally, the third influence suggested by Kalmijn is the structure of the marriage market. That is, the size and diversity of potential spouses influences homogamy even if group and individual factors do not (Portes 1984; Lewis and Oppenheimer 2000). Together these three influences combine to control the amount of homogamy not only for education, race and religion, but any characteristic.

Education, race and religion form different contexts for the influence of preferences, third parties and marriage markets. For example, education is the most often used indicator of social class preferences. Religious beliefs and behavioral codes shape preferences based on moral judgments and racial preferences are shaped by social constructions of race. Educational and

religious institutions also provide a context where potential partners meet. Race affects marriage markets to the degree that neighborhoods, recreational activities and institutions such as education and religion are segregated.

We extend Kalmijn's (1998) framework by suggesting that not only are levels of intermarriage affected by preferences, third parties and market structure, but that any change in homogamy must be due to changes in at least one of the three influences. All of the current theorizing in this area can fit into one or more of these influences, despite most theories being directed at one particular type of endogamy (Katrňák, Kreidl and Fonadova 2006; Smits, Ultee and Lammers 1998; Kalmijn, 1998; Mare, 1991). Some of these theories of causes of change in homogamy include changes in social structure that reduce the importance of ascribed vs. merited characteristics (preferences), changes in group sizes—either through government actions or through demographic processes (market and third parties), changes in values about the meaning and purpose of marriage (preferences), increasing rates of cohabitation (markets), the large expansion of education (preferences and markets), and changes in the operation of the marriage market (third party and marriage market) (Treiman 1970, Mare 1991, Parsons and Platt 1970 Goode 1970; Thornton 2001, 2005; Kalmijn 1991a 1991b, 1998; Rosenfeld 2008, Qian and Lichter 2007). We also note that there has been some attempt to consolidate all of these social changes under the framework of modernization, or in the case of religion, secularization (Wilson 1976; Blau and Schwartz 1984; Smits, Utee, and Lammers 1998; Rosenfeld 2008). However, as has been documented elsewhere, the modernization and secularization framework is often built on a flawed premise of universal and deterministic change, and regularly relies on the substitution of geographic variation for temporal variation, if not in practice, then often in theory (Raymo and Xie 2000; Thornton 2001; Thornton 2005). In fact, however, changes in endogamy

appear to be path dependent, and frequently are subject to regional and cultural context (Halpin and Chan 2003; Raymo and Xie 2000; Smits, Utlee, and Lammers 2000; Katrnák, Kreidl and Fonadova 2006).

The Brazilian context is particularly interesting for the study of intermarriage because of its contrast to the primary locations of intermarriage research in the U.S. and Europe. One common problem for many locations is that they often do not have significant changes in education, religion and race (and especially all three simultaneously) over the period of observation, therefore making it difficult for researchers to examine trends in intermarriage. In contrast, even in just the last decades of the 20th century, Brazil experienced striking social changes. Brazil has a unique history in terms of race relations, especially compared to the U.S., but it has also had interesting recent changes in race relations and racial diversity. As well, Brazil's current change from a largely Catholic nation to a more heterogeneous Christian nation is also well documented. There has also been a relatively large increase in the number of Brazilians with no religion. Finally, the improvements in education over the past two decades provide an intriguing backdrop from which to study educational homogamy. Although we only examine changes in endogamy and homogamy from 1991-2000, we acknowledge that social changes prior to this would have contributed the direction and size of any intermarriage change. Therefore, we are careful to discuss social changes in the last few decades of the 20th century. In the paragraphs that follow we briefly outline some of the possible factors related to both the level of educational, racial and religious endogamy, and important social changes that may be related to transformations in educational, racial and religious endogamy from 1991-2000.

Social Context in Brazil

Education

Education in Brazil has historically been something only the elites could obtain. Over the past several decades, and particularly between 1970 and 2000, Brazil moved from a largely homogenous country of low education, to a country with a wide range of educational attainment (Esteve and McCaa 2007; Fígoli 2006; IBGE 2004). For example, in 1950 half of the population age 15 and above were illiterate, but by the end of the century that number had declined to 13.6%, and only 4.2% of children ages 10-14 were illiterate. More recent educational changes have moved beyond basic literacy levels by encouraging children to stay in school longer. For instance, between 1992 and 2001 the percent of 15-17 year olds not enrolled in school declined from 40.3% to 18.9%, implying that many youth are remaining in school for several years. In fact, Brazil's education ranking often supersedes its other rankings on national indicators. For example, in 2006, Brazil ranked 39th (out of 178 countries) in primary, secondary and tertiary education enrollment ratios, while it was 80th in life expectancy and 77th in GDP per capita (UNDP 2008). Interestingly, most of the increase in Brazil's education is due to its high levels of migration and urbanization (Silva and Hasenbalg 2000). Even considering moderate levels of segregation by SES, this has led to a much more educationally heterogeneous pool of possible spouses for the average Brazilian. Thus by 1991, with such an educationally heterogeneous population, educational homogamy is expected to be relatively low, although still significantly different from random assortment. In fact, there is some evidence that is the case (Esteve and McCaa 2007).

Due to the large expansion of education, educational homogamy in Brazil may have increased from 1991-2000. Research on the causes of change in educational homogamy¹ suggests that it responds strongly to changes in general life course patterns like increases in length of school attendance (Halpin and Chan 2003; Mare, 1991). As the educational needs of the country expand, not only are preferences concerning other endogamous marriage factors (such as race and religion) expected to decline, but preferences for educational homogamy are generally expected to increase (Kalmijn 1991b; Kalmijn 1998). Therefore, Brazil's attempt to improve education may have also increased people's preference for education in a marriage. Although, we have no evidence to suggest that group sanctions about educational intermarriage have changed, it may be that some informal sanctions by peers and family for higher education levels have increased (Esteve and McCaa 2007). As well, recent work suggests that education-induced delays in marriage shape the marriage market (especially for college educated), thus increasing educational endogamy (Mare 1991; Kalmijn 1991b; Blossfeld and Timm 2003). For Brazil, as education has increased, college has replaced high school as the primary social class partition (Schwartzman 2007). In sum, these changes point to an expected increase in educational homogamy between 1991 and 2000.

Contrary to the hypothesis above, changes in social inequality in Brazil suggest that educational homogamy should have decreased from 1991-2000. Increasing inequality among educational groups is also associated with greater educational endogamy (Fu and Heaton 2008). As SES inequality increases, preferences for similar SES also increase. As well, SES group

¹ Although we only focus on educational homogamy, it is important to note that it correlates highly with other measures of SES homogamy (Mare 2000; Raymo and Xie 2000; Fu and Heaton 2008; Rosenfeld 2008).

identification would increase and create stronger group sanctions against exogamy. Finally, increasing inequality also often means increasing segregation by class, thus constraining the marriage market. Likewise, decreases in inequality would be expected to have the opposite effect and decrease educational endogamy. Over the last two decades of the last century, there was a rise in inequality and poverty through most of the 1980's, followed by an equally large decline through the 1990's and early 2000's (Ferreira, Leite and Litchfield 2008). Thus, for 1991-2000, we might expect a decline in educational homogamy due to the decrease in inequality over the same time period.

Of course, most likely, both the expansion of education and the changes in inequality have important effects, and may influence educational homogamy in different ways across the educational distribution. Like other places, research in Brazil suggests that people tend to marry others of adjacent education levels (Schwartzman 2007). This pattern often results in higher endogamy rates for those at the two ends of the education spectrum because both groups have only one direction of choice other than their own level of education (i.e. people with the highest level of education can only marry people with the same or lower levels of education, and people with the lowest education can only marry people with the same or higher levels of education) (Fu and Heaton 2008). By comparison, there is often low educational endogamy for the middle education level because they have choices of spouses with both higher and lower adjacent levels of education (Esteve and McCaa 2007). There is also evidence that while educational homogamy has remained steady over the last few decades for the lowest education group, it has increased for the college educated, and that exogamy is more common than endogamy in the middle education level (Esteve and McCaa 2007). Thus, while higher levels of education are seeing an increase in homogamy due to the role of education in delaying marriage and constraining the marriage

market, lower levels of education may be experiencing an increase in educational intermarriage due to a decrease in inequality and a more educationally heterogeneous population (IBGE 2000; IBGE 2004).

Finally, it is important to note that the changes in education occurred across all levels of education and were experienced equally by men and women (Figoli 2006; Esteve and McCaa 2007). Typically, having similar educational distributions for men and women implies that hypergamy should decline (Goldstein and Kenney 2001; Sweeney and Cancian 2004). As educational homogamy has declined, in its place female hypergamy has increased slightly, while female hypogamy has almost tripled in size (from about 10% of the population in 1970 to 30% in 2000) (Esteve and McCaa 2007).

Race

The racial context of Brazil is complex (Bailey 2004; Sansone 2003) and continues to be contested (Bailey, 2008). While still a Portuguese colony, over 4 million slaves from Africa were brought to work primarily in the Northeastern region. For much of this period, White men far out-numbered white women leading to high levels of miscengation between white men and non-white female slaves (Telles 1992, 2004). By the end of the 19th century this resulted in a population largely made of mixed ancestry and a broad spectrum of skin colors. To this, the 20th century added a large stream of Asian immigrants, causing Brazil to have even higher levels of population admixture. Also, through much of its history Brazilian culture has emphasized color of skin over racial identity, in part due to the complex racial ancestry of many Brazilians. Thus, even within one family, an observer may classify members of the family in two or more races or skin colors (Telles 2004; Schwatzman 2007; Telles and Lim 1998). Racial classifications are

varied and flexible in Brazil (Penha-Lopes 1996). Compared with the predominance of a dichotomous distinction between Black and White in the United States, Brazilians have long recognized mixed racial ancestry. Racial designations are also influenced by social class (Penha-Lopes 1996; Schwartzman 2007). As well, unlike places like the United States and South Africa, Brazil has never had formal sanctions against interracial marriage since the abolition of slavery in the late 1800's. This is not to imply that there is no racism, but rather, that racial identification, and thus racial preferences and group sanctions, may not be as strong as in other countries (Bailey 2004). Because of this history, racial intermarriage is still common today—although marriages between blacks and browns are more common than between blacks and whites (and both are more common than black-white exogamy in the U.S.) (Degler 1986; Telles 2004).

Between 1980 and 2000, racial distribution in Brazil remained about the same, with blacks (*preta*) between 5-6%, browns (*parda*) 39-42% and whites (*branca*) 54-52% and less than 2% other (IBGE 2004). Although the distribution of race has seen only minor changes, two important transformations in the racial context occurred at the end of the 20th century. One change is that intermarriage appears to be more acceptable now than even two decades before (Telles 2004). Brazilians appear to recognize racial problems, and most are in favor of affirmative action policies (Bailey 2004). Interestingly, Bailey (2004) also shows that favoring affirmative action is more strongly (negatively) correlated with education than it is with race. All of these changes in values and attitudes point to possible changes in the preferences and informal sanctions around interracial marriage. Some work in the U.S. shows that people whose attitudes become favorable towards interracial relationships positively correlate with having more interracial relationships (Fiebert, Karamol and Kasdan 2000). Thus if the change in attitudes represents a reduction in racial endogamous preferences, or a reduction of informal sanctions

against racial intermarriage, then we would expect to see racial endogamy decline. One important caveat to this change is that for some people, the movement since the 1990's to address remaining racial inequalities may have increased the salience of race as a social identity, thus possibly increasing racial endogamy among those people (Daniel, 2006; Telles, 2004).

A second change in Brazil's racial context is that there has been a large migration from the predominately nonwhite Northern regions to the predominately white, economic center of the South and from the rural areas to the urban centers (IBGE 2000, 2004, 2007; Silva 1999). To the extent this migration racially integrates the marriage market by reducing racially segregated peer networks and residential segregation, racial endogamy should decline (Lee and Edmonston 2005; Qian and Lichter 2001; Massey and Denton 1993; McPherson, Smith-Lovin and Cook 2001; Quillian and Campbell 2003). The segregation literature in Brazil suggests some racial segregation is unexplained by SES, but that the level of racial segregation is far lower than the U.S. (Telles 2004). Of course, because the migration is primarily unidirectional, the reduction in segregation may primarily be in the South and in the urban areas, while the North and rural areas may continue to have higher levels of racial segregation, and consequently possibly higher levels of racial endogamy. Considering both the changes in attitudes toward more acceptance of racial intermarriage and the increasing racial heterogeneity in the marriage market due to migration, we expect that racial endogamy should decrease between 1991 and 2000.

Religion

The Brazilian religious context is also an interesting contrast for most locations of intermarriage research. Religious endogamy in Brazil has been historically high for several reasons. First, for most of Brazil's history, the population was almost entirely Roman Catholic. It

wasn't until the 1970's that Roman Catholics were less than 95% of the population (IBGE 2004). Being Catholic has always been a strong social identifier, and many people claim to be strong Catholics even without attending frequently. Even the Afro-Brazilian religions contain strong Catholic components, with some people participating in both religions (Prandi 2000). Second, the increase in Protestants over the last two decades, and especially since 1990, has dramatically changed the religious landscape of Brazil. Protestants (particularly the Pentecostal Protestants) have consistently separated themselves from the rest of the Brazilian society, and have made it a point of honor to be in stark contrast to the rest of society (McKinnon, Potter and Garrard-Burnett 2008; Chesnut 1997). Typically, religious groups that are more independent of society will have higher rates of religious endogamy (Cavan 1970). Third, sanctions against marrying outside of the Protestant faith are extremely high. And although not as strong, Catholic rhetoric is also negative toward religious intermarriage (Cavan 1970). Thus, based on the strong third party role religion plays in Brazil, religious endogamy is expected to be very high.

Theories of change in religious intermarriage typically work from a model that assumes societies move toward being less religious, and more secular, causing religious institutions to have less regulation and influence over the lives of the population, leading to a decrease in religious homogamy (Wilson 1976, Blau and Schwartz 1984; Rosenfeld 2008). Although there have been important changes in the religious context in Brazil, most people still claim to be religious. In 1970, 1% of the population reported being unaffiliated with any religion, by 2000 this had increased considerably to about 7% reporting no religious affiliation (IBGE 2004). Clearly, the rise in the number of nonreligious has been remarkable, and it may suggest a decline in the importance of religious identity, and thus a possible decline in religious endogamy.

Other important changes in religious context also predict a decline in religious homogamy. Primarily known for having the largest Roman Catholic population in the world, since the 1980's and especially since the 1990's Brazil has experienced a large change in the distribution of religious affiliation (McKinnon, Potter and Garrard-Burnett, 2008; Pierucci and Prandi, 2000). In 1970, 92% reported being Catholic, 7% Protestant, 1% without religion and 1% other religion, but by 2000 only 74% reported as Catholic, 15% Protestant, 7% no religion and 4% other (about half of which are Afro-Brazilian) (IBGE 2004). Protestants, and particularly Evangelical and Pentecostal Protestants, grew in part due to their counter culture (and thus counter Catholic) message that focused not only on eternal salvation, but on daily events and actions of their parishioners (McKinnon, Potter and Garrard-Burnett 2008). These Protestants typically have smaller congregations and have much higher control over their members, leading to lower teenage fertility and higher rates of marriage (McKinnon, Potter and Garrard-Burnett 2008). Nevertheless, assuming the group sanctions have remained constant, the sheer demographic increase in religious heterogeneity suggests that religious endogamy might decrease slightly.

Interactions

To this point our discussion has been conducted as though race, religion and education were independent social identities and unique social changes, which is far from reality. For example, race and education in Brazil are highly correlated. That is, despite the emphasis on phenotype through skin color over racial ancestry, as Telles (2004) explains, race in Brazil is bidimensional. One dimension is the cultural or ideational views of race discussed above. The second dimension, however, is related to the immense inequality within Brazilian society that is

highly correlated with skin color (Lam 1999; Silva and Hasenbalg 2000). More specifically, whites run the entire spectrum of social class, blacks are primarily located in the lower class and browns are also located in the lower class—with a few also found in the middle class. This results in nonwhites having lower educational attainment, lower wealth and worse health than whites. It should also be noted that compared to whites, it is substantially harder for nonwhites to increase their SES over their lifetime (Halsenbalg and Silva 1988).

Similarly, in Brazil, a prominent theme within race research is that “money whitens” (Schwartzman 2007). For example, nonwhites marry whites at higher rates when they have higher SES (Silva 1987, Telles 2004). This is due to the fact that more educated non-whites have few options but to marry well educated whites, but whites within that same education level, even at lower levels, have many possible white partners to choose from. As well, recent work by Schwartzman (2007) finds that for interracial couples, education is positively correlated with higher probabilities of identifying their children as white. Also, when comparing interviewer and self reported skin color, higher SES respondents are more likely to report lighter skin colors for their family compared to interviewers’ classifications of skin color (Telles and Lim 1998; Bailey and Telles 2006; Telles 2004). As well, the poor and nonwhites are more likely to be found in both Afro-Brazilian religions and in the recent increase in Evangelical or Pentecostal Protestants (McKinnon, Potter and Garrard-Burnett 2008; Chesnut 1997). It is clear that understanding changes in one type of endogamy requires adjusting for its relationship with other types of endogamy.

Status exchange is the most frequently examined concept regarding the interrelationship between homogamy or heterogamy across different social dimensions. The concept was applied

to explain marriage between minority and majority groups. The hypothesis was that black men with higher socioeconomic status would exchange this socioeconomic status for higher racial caste when marrying white women (Merton 1941). Recent research suggests that support of this hypothesis is weak and unreliable (Rosenfeld 2005). Alternatively, there is support for the equal status exchange hypothesis that individuals in low status minority groups with higher socioeconomic status are more likely to marry a spouse with a similar level of socioeconomic status, often leading to out-marriage from their racial or ethnic group (Fu 2008). We will consider the possibility of status exchange by examining the relationship between education and endogamy for each category of race and religion.

In sum, education, race and religion each shape individual preferences, include people in social contexts where norms about preferences are expressed, and provide social settings for interpersonal contact. Modernization theory implies that as achievement replaces ascription, religion and race will become less salient in interpersonal interaction as education becomes more central. More nuanced theories of development question the evidence for and simplistic logic behind this prediction. Research comparing change in the relative importance of these characteristics in mate selection is rare. Brazil provides an interesting setting for examination of changing patterns of mate selection because racial boundaries have been fluid, religious diversity is increasing and educational attainment is increasing. This paper examines changes the relative strength of homogamy, comparing race, education and religion. In addition, we examine category specific patterns of homogamy and heterogamy, as well as interrelationships across each of these characteristics.

Data

Data for this analysis are taken from the public use samples of the 1991 and 2000 Census of Brazil. These data have been collected and formatted to facilitate access by IPUMS International (international.ipums.org). Samples contain approximately 6 percent of all households that were included in the census. For our analysis, husbands and wives (including both legal and consensual unions) are matched. Respondents who are not native born are excluded from the analysis (less than 1% of the sample).

Following other research we limit our sample to couples where each spouse is under age 35. This allows us to focus on more recent marriages and to reduce potential bias if homogamous relationships have differential rates of marital stability. Race is classified as White, Black and Brown, where brown represents a mixture of racial backgrounds. Only 1.5 percent of the population reported a race other than these three categories in 2000 (the other responses being Asian, Indigenous and other race). Education is coded into five categories for no education, minimal primary education (some primary or up to four years), higher primary education (5 or 6 years completed), secondary education and post-secondary education. Religion is coded into five groups including Catholic, historical Protestants (Anglican, Episcopalian, Baptist, Lutheran, Methodist and Presbyterian), other Christian (mostly evangelical groups), Afro-Brazilian, and no religion. Other non-Christian religious groups such as Muslims, Jews and Buddhists were not included because these groups may reflect ethnicity and national origin as much as religious membership and because the groups are small (less than 0.5 %).

Tables 1, 2 and 3 show the cross-tabulation of each spouse's characteristics. Homogamy is the norm for the largest segments of the population including Whites, those with minimal primary education and Catholics. Other groups are not large enough to sustain high rates of

homogamy. There is also a noticeable decline in homogamy for race groups, some religious groups, and the least educated. The patterns are influenced by the shifting marginal distributions.

In order to adjust for marginal distributions, we use log-linear models with the baseline form:

$$\begin{aligned} \log F_{ijklmno} = & \beta_0 + \beta_i^{\text{HE}} + \beta_j^{\text{WE}} + \beta_k^{\text{HR}} + \beta_l^{\text{WR}} + \beta_m^{\text{HL}} + \beta_n^{\text{WL}} + \beta_o^{\text{T}} + \beta_{ik}^{\text{HEHR}} + \beta_{im}^{\text{HEHL}} + \beta_{io}^{\text{HET}} + \\ & \beta_{km}^{\text{HRHL}} + \beta_{ko}^{\text{HRT}} + \beta_{mo}^{\text{HLT}} + \beta_{jl}^{\text{WEWR}} + \beta_{jn}^{\text{WEWL}} + \beta_{jo}^{\text{WET}} + \beta_{ln}^{\text{WRWL}} + \beta_{lo}^{\text{WRT}} + \beta_{no}^{\text{WLT}} \\ & \beta_{ikm}^{\text{HEHRHL}} + \beta_{iko}^{\text{HEHRT}} + \beta_{iko}^{\text{HEHLT}} + \beta_{kmo}^{\text{HRHLT}} + \beta_{jln}^{\text{WEWRWL}} + \beta_{ilo}^{\text{WEWRT}} + \beta_{jlo}^{\text{WEWLT}} + \\ & \beta_{lno}^{\text{WRWLT}} + \beta_{ikmo}^{\text{HRHEHLT}} + \beta_{jlno}^{\text{WRWEWLT}}, \end{aligned}$$

where $F_{ijklmno}$ is the expected number of marriages between husbands in education category i , racial category k , religious category m and time period o and wives in education category j , racial category l , religious category n and time period o . This model includes associations among each of the husband's characteristics, and between each of the wife's characteristics, but does not allow for association between husband and wife characteristics. Patterns of homogamy and heterogamy are assessed by including dummy variables for each type of homogamy or heterogamy. First, we add dummy variables for general homogamy (1 if husband and wife have the same value on a given characteristics, and 0 otherwise). We then add category specific dummy variables (e.g. 1 if husband's race=white and wife's race = white, and 0 otherwise). We examine educational heterogamy by including a covariate for the absolute value of the difference between husband's education and wife's education. To consider patterns of religious heterogamy, dummy variables are added measuring particular combinations of husband's and wife's religion. Examination of residuals from prior models indicates that the most common

patterns include marriage between Catholics and Historical Protestants, Catholics and Afro-Brazilians, other Christians and Afro-Brazilians, and other Christians and no religion. Finally, the possibility of status exchange is evaluated by adding interaction terms for education and each category of racial and religious homogamy.

Homogamy

Table 4 reports goodness of fit statistics for various log-linear models. The first model includes parameters for the marginal distributions of husband's race, education and religion and interactions among these, and parameters for the marginal distributions of wife's race, education and religion and interactions among these. This first model also includes interactions between each of the preceding factors and time period. In other words, the model allows for all possible associations except for associations between characteristics of the husband and the wife. This model does not fit the data very well because there is substantial homogamy. Adding three parameters for homogamy on education, race and education, along with three parameters for change in homogamy dramatically improves the model fit. Indeed, 83 percent of the association between husband and wife characteristics can be explained by the tendency for educational, racial and religious homogamy. Of the three, religious homogamy is the largest. The parameter implies that couples are about 27 times more likely to marry someone of the same religion ($e^{3.283} = 26.66$) than someone of a different religion once marginal distributions have been taken into account. Likewise, couples are 5.2 times more likely to marry someone of the same race and 3.6 times more likely to marry someone with the same education. Each type of homogamy declined over the decade, but the parameter for change is quite small relative to the corresponding

parameter for homogamy. The magnitude of change is approximately the same for race and religion, but noticeable smaller for education.

Assuming that homogamy is uniform across groups may be an over-generalization. To test this, model 3 includes a homogamy parameter for each category of race, education and religion, as well as a change parameter for each. This model improves the overall fit, but only by about five percent. Parameters reported in Table 5 show the relative magnitudes of group specific homogamy. Racial homogamy is greatest for Blacks—a pattern that has been examined extensively in the United States. Whites also have high rates of homogamy. Not surprisingly, those with mixed ancestry (Brown) have much lower rates of homogamy. Homogamy is declining for Whites and Blacks at the same pace, but is increasing slightly for Browns.

Educational homogamy is greatest at the extremes of the distribution, but relatively low for those with primary education. Homogamy is also increasing somewhat for couples at the two ends of the distribution, signaling increasing isolation for the least and most educated. In contrast, those with more primary education or a secondary education are experiencing lower rates of homogamy. This mixed pattern explains the overall lower rate of change in educational homogamy compared with race and religion.

Religious homogamy is highest among the Historical Protestants, followed by newer Protestant groups. Afro-Brazilian groups and those with no religious preference have somewhat lower rates of homogamy, and Catholics have the lowest rate. Homogamy is actually increasing within Historical Protestants and Afro-Brazilian groups, but declining in other groups.

Heterogamy

In this section, we consider patterns of out-marriage in more detail. Racial heterogamy is not considered because adding more parameters would over-fit the data (there are nine cells in the race cross-tabulation, and the model of group specific homogamy uses eight degrees of freedom). The most common pattern of educational heterogamy is to marry a partner who has similar education. This creates a marriage gradient such that greater similarity in marriage leads to a greater likelihood of marriage. Model 4 adds a parameter for the absolute value in the difference in education and a parameter for change. This model noticeably improves the fit of the model. The parameter of the education gradient is large and suggests that the likelihood of marriage is reduced by about 70% for each step in educational difference. The parameter for change in the education gradient indicates that the gradient has moderated a little over the decade. Hypergamy is the second most commonly discussed aspect of educational heterogamy. More specifically, men tend to marry women who are less educated. We test for this by adding a dummy variable if the husband is more educated than the wife. We also add a dummy variable for change in hypergamy. Adding these effects does not improve the model fit substantially. Parameters indicate a tendency for hypergamy, but this tendency has declined by half over the decade. If a similar decline were observed in the next decade, hypergamy would disappear.

With five religious groups, there are several possible patterns of religious intermarriage. Preliminary analysis (not shown) identified 4 combinations with particularly high or low likelihoods of intermarriage. Effects for these combinations are estimated in Model 6. The model yields a modest improvement in fit. Parameters indicate that there are higher than average propensities for intermarriage between Catholics and Afro-Brazilians, and between Catholics and those with no religion. The first type of intermarriage is not surprising because in Brazil it is common for people to be involved in both Catholicism and Afro-Brazilian rituals (Prandi 2000).

It thus appears that Catholicism may not be as exclusive as some other groups. This could be because Catholicism has been able to incorporate diverse groups and allow some flexibility in religious practice. In contrast, the other-Christian group tends to be more exclusive, particularly when it comes to marrying those with Afro-Brazilian identity or with no religious preference (Oro and Semán 2000). Parameters for change indicate that each of the above noted tendencies toward or against intermarriage are weakening over time.

Status Exchange

We test for status exchange by including parameters for the interaction of education and group specific homogamy. Husband's and wife's education are considered in separate models because they are highly correlated (models 6 and 7). Inclusion of effects for the interaction between education and group specific homogamy yields only modest improvement in overall fit. Parameters for husband's and wife's education have the same sign, with one exception, and support similar conclusions. Higher educational attainment increases the likelihood of homogamy for whites and blacks, but more educated brown men are more likely to marry someone of a different race. The educational effect on white homogamy is increasing over time, but the reverse is true for educational effects of black homogamy. There is an increasing tendency for more educated brown women to marry exogamously, while the educational effect for brown men is stable.

Higher educational attainment increases the likelihood of religious exogamy for men and women in each religious group. Among men, the educational effect on exogamy is most evident among Historical Protestants, and among women the effect is comparatively large for Historical

Protestants, Afro-Brazilians and those with no religious preference. The association between education and religious exogamy has weakened over time for all groups except Afro-Brazilians.

Conclusion

Data from the last two censuses of Brazil allow us to compare levels of and trends in racial, educational and religious mate selection. Racial homogamy appears to be less pronounced in Brazil than in a variety of other cultural contexts. For example, Jacobson and Heaton (2008) report odds ratios of 35.8 in the United States, 9.68 in Hawaii, 37.11 in Canada, 9.63 in New Zealand, 237.7 in South Africa, 11.38 in Beijing, and 287.2 in Xinjiang Province, China. The comparable ratio for Brazil is 5.2, supporting the claim that racial boundaries are more fluid in Brazil. Not surprisingly, individuals with mixed ancestry are most likely to marry exogamously. The parameter for educational homogamy is similar to that reported for the United States by Fu and Heaton (2008). Consistent with prior research in Brazil and other contexts, educational homogamy is most pronounced at the lower and upper ends of the distribution. Religious homogamy is much more pronounced in Brazil than educational or racial homogamy. This difference is surprising given the attention that is generally focused on racial and educational homogamy, and suggests that more attention should be given to the role of religion in mate selection. Results suggest that the recent growth among non-Catholic groups is an important force shaping interpersonal interaction. Of course, some of the homogamy may appear because partners decide to belong to the same group. Even religious switching, however, signifies the importance of shared membership among married couples. Religion may play a greater role in day-to-day couple interaction than either social class or ethnicity. Although Catholics are

somewhat less likely to marry endogamously, all groups considered here show strong tendencies toward in-group marriage.

In addition to homogamy, results other aspects of mate selection are also evident. Three basic patterns are evident in these data. There is a strong educational gradient whereby partners who do not marry someone in the same educational category, still tend to marry a partner with similar educational attainment. People who marry out of their religion also show preference for or against marrying into other groups. In particular, there appears to be some compatibility between Catholics and Historical Protestants or Afro-Brazilians, and incompatibility between emerging evangelical groups and Afro-Brazilians and those who do not belong to a religious group. Contrary to the status exchange hypothesis, higher education appears to facilitate in marriage for whites and blacks, but education is associated with religious exogamy.

The most common pattern of social change is increased fluidity in mate selection. Homogamy parameters are becoming smaller for race, education and religion, but the pattern of change is not uniform. Boundaries appear to be increasing at the two tails of the education distribution and for some religious categories. Parameters for the education gradient, for the most prominent types of religious inter-marriage, and for the effects of education on inter-racial and inter-religious marriage are also becoming smaller for the most part. These patterns are not consistent with the prediction that achieved characteristics will become more important while ascribed characteristics diminish in relevance. Rather, they suggest an overall tendency toward more openness in mate selection, countered by increasing social boundaries at the tails of the education distribution and for some categories of religion.

A possible explanation for the declining rates of homogamy in all three areas (race, education and religion) is the expansion of beliefs in equality and freedom as inalienable rights. Research documents substantial worldwide changes in beliefs about freedom and equality over the past 50 years (Cott 2000; Inglehart and Baker 2000; Smith 1990; Thornton 2005; Thornton and Young-DeMarco 2001). Arland Thornton (2001, 2005) has argued that these values have had a particularly powerful influence in generating worldwide change in family behavior due to their perceived positive relationship with modernity. This ideational change would manifest itself through two primary mechanisms. First, it would change people's preferences. That is, groups once perceived as unequal and thus unattractive for marriage, may become seen as equals, thus making their attractiveness higher as well. Second, a society increasing its belief that individuals are free to make their own choices reduces the strength of group sanctions, thus reducing endogamy. The ideals of equality and freedom reduce the significance of race, religion and education boundaries, thus promoting the observed decline in homogamy.

Race, education and religion each shape the mate selection process in important ways in Brazil. Although race appears to be less of a boundary in Brazil than in other contexts, it is still important. Social class, as indexed by education, is about as important as race in Brazil. Religion plays an even greater role. Even though the constraints formed by race, education and religion appear to be weakening, they continue to provide important contexts for the most intimate of personal decisions.

References:

- Bailey, Stanley R. 2004. "Group dominance and the myth of racial democracy: Antiracism attitudes in Brazil." *American Sociological Review* 69:728-747.
- Bailey, Stanley R. 2008. "Unmixing for Race Making in Brazil." *American Journal of Sociology* 114: 577-614.
- Bailey, Stanley R., and Edward E. Telles. 2006. "'Multiracial Versus Collective Black Categories: Examining Census Classification Debates in Brazil.'" *Ethnicities* 6:74-101.
- Blackwell, Debra L., and Daniel T. Lichter. 2004. "Homogamy among dating, cohabiting, and married couples." *Sociological Quarterly* 45:719-737.
- Blau, Peter M., and Joseph E. Schwartz. 1984. *Crosscutting Social Circles: Testing a Macrostructural Theory of Intergroup Relations*. Orlando: Academic Press.
- Blossfeld, Hans-Peter, and Andreas Timm. 2003. "Education Systems as Marriage Markets in Modern Societies: A Conceptual Framework." Pp. 1-18 in *Who Married Whom? Education Systems as Marriage Markets in Modern Societies*, edited by Hans-Peter Blossfeld and Andreas Timm. Norwell, MA: Kluwer Academic Publishers.
- Cavan, Ruth S. 1970. "Concepts and Terminology in Interreligious Marriage." *Journal for the Scientific Study of Religion* 9:311-320.
- Chesnut, R. Andrew. 1997. *Born Again in Brazil: The Pentecostal Boom and the Pathogens of Poverty*. New Brunswick, NJ: Rutgers University Press.
- Cott, Nancy F. 2000. *Public Vows: A History of Marriage and the Nation*. Cambridge, Mass.: Harvard University Press.
- Daniel, G. Reginald. 2006. *Race and Multiraciality in Brazil and the United States: Converging Paths?* University Park: Pennsylvania State University Press.
- Degler, Carl N. 1986. *Neither Black nor White: Slavery and Race Relations in Brazil and the United States*. Madison: University of Wisconsin Press.
- Esteve, Albert., and Robert. McCaa. 2007. "Educational homogamy in Mexico and Brazil, 1970-2000: Guidelines and tendencies." *Latin American Research Review* 42:56-85.
- Ferreira, Francisco H. G., Phillippe G. Leite, and Julie A Litchfield. 2008. "The rise and fall of Brazilian inequality, 1981-2004." *Macroeconomic Dynamics* 12:199-230.
- Fiebert, Martin S., Holly Karamol, and Margo Kasdan. 2000. "Interracial Dating: Attitudes and Experience Among American College Students in California." *Psychological Reports* 87:1059-1064.
- Fígoli, Moema Gonçalves Bueno. 2006. "Evolução da educação no Brasil: uma análise das taxas entre 1970 e 2000 segundo o grau da última série concluída." *Revista Brasileira de Estudos de População* 23:129-150.

- Fu, Vincent Kang. 2001. "Racial intermarriage pairings." *Demography* 38:147-159.
- Fu, Xuanning. 2008. "Interracial Marriage and Family Socio-Economic Well-Being: Equal Status Exchange or Caste Status Exchange?" *Social Science Journal* 45 (1): 132–55.
- Fu, Xuanning N., and Tim B. Heaton. 2008. "Racial and Educational Homogamy: 1980 to 2000." *Sociological Perspectives* 51:735-758.
- Goldstein, Joshua R., and Catherine T. Kenney. 2001. "Marriage delayed or marriage forgone? New cohort forecasts of first marriage for U. S. women." *American Sociological Review* 66:506-519.
- Goode, William J. 1970. *World Revolution and Family Patterns*. New York: The Free Press.
- Halpin, Brendan, and Tak Wing Chan. 2003. "Educational homogamy in Ireland and Britain: trends and patterns." *British Journal of Sociology* 54:473-495.
- Hasenbalg, Carlos, and Nelson do Valle Silva. 1988. *Estrutura Social, Mobilidade e Raça*. São Paulo: Vértice.
- IBGE. 2000. "Migração e Deslocamento: Resultados da amostra." Pp. 147 in *Censo Demográfico 2000*. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística.
- . 2004. "Tendências Demográficas: Uma análise dos Resultados da Amostra do Censo Demográfico 2000." in *Estudos e Pesquisas Informação Demográfica e Socioeconômica*. Rio de Janeiro, RJ-Brasil: Instituto Brasileiro de Geografia e Estatística.
- . 2007. "Tendências Demográficas: Uma análise da população com base nos resultados dos Censos Demográficos 1940 e 2000." in *Estudos e Pesquisas Informação Demográfica e Socioeconômica*. Rio de Janeiro, RJ-Brasil: Instituto Brasileiro de Geografia e Estatística.
- Inglehart, Ronald, and Wayne E. Baker. 2000. "Modernization, Cultural Change, and the Persistence of Traditional Values." *American Sociological Review* 65 (1):19-51.
- Kalmijn, Matthijs. 1991a. "Status Homogamy in the United States." *American Journal of Sociology* 97:496-523.
- . 1991b. "Trends in Religious and Educational Homogamy." *American Sociological Review* 56:786-800.
- . 1998. "Intermarriage and homogamy: Causes, patterns, trends." *Annual Review of Sociology* 24:395-421.
- Katrnák, Tomáš, Martin Kreidl, and Laura Fónadová. 2006. "Trends in educational assortative mating in Central Europe: The Czech Republic, Slovakia, Poland, and Hungary, 1988-2000." *European Sociological Review* 22:309-322.
- Lam, David. 1999. "Generating Extreme Inequality: Schooling, Earnings, and Intergenerational Transmission of Human Capital in South Africa and Brazil. ." Department of Economics and Population Studies Center, University of Michigan.

- Lee, Sharon M., and Barry Edmonston. 2005. "New Marriages, New Families: U.S. Racial and Hispanic Intermarriage." *Population Bulletin* 60:5-10.
- Lewis, Susan K., and Valerie K. Oppenheimer. 2000. "Educational assortative mating across marriage markets: Nonhispanic whites in the United States." *Demography* 37:29-40.
- Mare, Robert D. 1991. "Five Decades of Educational Assortative Mating." *American Sociological Review* 56:15-32.
- . 2000. "Assortative mating, intergenerational mobility, and educational inequality." Los Angeles: University of California–Los Angeles, California Center for Population Research.
- Massey, Douglas S., and Nancy A. Denton. 1993. *American apartheid : segregation and the making of the underclass*. Cambridge, MA: Harvard University Press.
- McKinnon, Sarah, Joseph E. Potter, and Virginia Garrard-Burnett. 2008. "Adolescent fertility and religion in Rio de Janeiro, Brazil in the year 2000: The role of Protestantism." *Population Studies* 62:289-303.
- McPherson, Miller., Lynn. Smith-Lovin, and James M. Cook. 2001. "Birds of a feather: Homophily in social networks." *Annual Review of Sociology* 27:415-444.
- Merton, Robert K. 1941. "Intermarriage and the Social Structure: Fact and Theory." *Psychiatry* 4: 361–74.
- Oro, Ari Pedro and Pablo Semán. 2000. "Pentecostalism in the Southern Cone Countries: Overview and Perspectives." *International Sociology* 15 (4):605-627
- Parsons, Talcott and Gerald M. Platt. 1970. "Age, Social Structure, and Socialization in Higher Education." *Sociology of Education* 43:1-37.
- Penha-Lopes, Vânia. 1996. "WHAT NEXT? On Race and Assimilation in the United States and Brazil." *Journal of Black Studies* 26:809-826.
- Pierucci, Antônio F. and Reginaldo Prandi. 2000 "Religious Diversity in Brazil". *Ometematopma; Sociology* 15: 629-639.
- Portes, Alejandro. 1984. "The Rise of Ethnicity, Determinants of Ethnic Perceptions among Cuban Exiles in Miami." *American Sociological Review* 49:383-397.
- Prandi, Reginaldo. 2000. "African Gods in Contemporary Brazil: A Sociological Introduction to Candomblé Today." *International Sociology* 15 (4):641-663.
- Qian, Zhenchao C., and Daniel T. Lichter. 2001. "Measuring marital assimilation: Intermarriage among natives and immigrants." *Social Science Research* 30:289-312.
- . 2007. "Social Boundaries and Marital Assimilation: Interpreting Trends in Racial and Ethnic Intermarriage " *American Sociological Review* 72:68-94.
- Quillian, Lincoln, and Mary E. Campbell. 2003. "Beyond Black and White: The present and future of multiracial friendship segregation." *American Sociological Review* 68:540-566.
- Raymo, James M., and Yu Xie. 2000. "Temporal and Regional Variation in the Strength of Educational Homogamy." *American Sociological Review* 65:773-781.

- Rosenfeld, Michael J. 2005. "A Critique of Exchange Theory in Mate Selection." *American Journal of Sociology* 110:1284-1325.
- . 2008. "Racial, Educational and Religious Endogamy in the United States: A Comparative Historical Perspective." *Social Forces* 87:1-31.
- Sansone, Livio. 2003. *Blackness without Ethnicity: Constructing Race in Brazil*. New York: Palgrave Macmillan.
- Schwartz, Christine R., and Robert D. Mare. 2005. "Trends in Educational Assortative Marriage From 1940 to 2003 " *Demography* 42:621-646.
- Schwartzman, Luisa Farah. 2007 "Does Money Whiten: Intergenerational Changes in Racial Classification in Brazil." *American Sociological Review* 72:940-963.
- Silva, Nelson do Valle. 1987. "Distância Social e Casamento Inter-Racial no Brasil." *Estudos Afro-Asiáticos* 14:54-83.
- . 1999. "Racial Differences in Income: Brazil, 1988." Pp. 67–82 in *Race in Contemporary Brazil: From Indifference to Inequality*, edited by Rebecca Reichmann. University Park: Pennsylvania State University Press.
- Silva, Nelson do Valle, and Carlos Hasenbalg. 2000. "Trends in educational inequality in Brazil." Pp. 423-445 in *24th Annual Meeting of the Associao-Nacional-de-Pos-Graduacao-e-Pesquisa-Em-Ciencias-Sociais*. Rio De Janeiro, Brazil.
- Smith, Tom W. 1990. "Liberal and Conservative Trends in the United States since World War II." *Public Opinion Quarterly* 54 (4): 479-507.
- Smits, Jeroen, Wout Ultee, and Jan Lammers. 2000. "More or Less Educational Homogamy? A Test of Different Versions of Modernization Theory Using Cross-Temporal Evidence for 60 Countries." *American Sociological Review* 65:781-788.
- . 1998. "Educational Homogamy in 65 Countries: An Explanation of Differences in Openness Using Country-Level Explanatory Variables." *American Sociological Review* 63:264-285.
- Sweeney, Megan M., and Maria Cancian. 2004. "The Changing Importance of White Women's Economic Prospects for Assortative Mating." *Journal of Marriage and the Family* 66:1015-1028.
- Telles, Edward E. 1992. "Residential Segregation by Skin Color in Brazil." *American Sociological Review* 57:186-197.
- . 2004. "Transforming Brazil: A reform era in perspective." *American Journal of Sociology* 109:1242-1244.
- Telles, Edward E., and Nelson Lim. 1998. "Does it matter who answers the race question? Racial classification and income inequality in Brazil." *Demography* 35:465-474.
- Thornton, Arland. 2001. "The Development Paradigm: Reading History Sideways, and Family Change." *Demography* 38:449-465.
- . 2005. *Reading History Sideways: The Fallacy and Enduring Impact of the Developmental Paradigm on Family Life*. Chicago: The University of Chicago Press.

- Thornton, Arland T., and Linda Young-Demarco. 2001. "Four Decades of Trends in Attitudes Toward Family Issues in the United States." *Journal of Marriage and Family* 63:1009-1037.
- Treiman, Donald A. 1970. "Industrialization and Social Stratification." *Sociological Inquiry* 40:207-234.
- UNDP. 2008. "Human Development Indices: A statistical update 2008." New York: United Nations Development Programme.
- Wilson, Bryan. 1976. *Contemporary Transformations of Religion*. Oxford: Oxford University Press.

Table 1. Husband's Race by Wife's Race

				Wife's race			
				white	black	brown	Total
1991	Husband's race	white	Count	223678	3820	44845	272343
			% within Husband's race	82.1%	1.4%	16.5%	100.0%
			% within Wife's race	76.6%	18.5%	21.1%	51.9%
		black	Count	6017	11251	8564	25832
			% within Husband's race	23.3%	43.6%	33.2%	100.0%
			% within Wife's race	2.1%	54.6%	4.0%	4.9%
	brown	Count	62310	5535	159212	227057	
		% within Husband's race	27.4%	2.4%	70.1%	100.0%	
		% within Wife's race	21.3%	26.9%	74.9%	43.2%	
	Total	Count	292005	20606	212621	525232	
		% within Husband's race	55.6%	3.9%	40.5%	100.0%	
		% within Wife's race	100.0%	100.0%	100.0%	100.0%	
2000	Husband's race	white	Count	224987	9193	63247	297427
			% within Husband's race	75.6%	3.1%	21.3%	100.0%
			% within Wife's race	71.4%	28.8%	27.0%	51.2%
		black	Count	12855	14705	12874	40434
			% within Husband's race	31.8%	36.4%	31.8%	100.0%
			% within Wife's race	4.1%	46.0%	5.5%	7.0%
	brown	Count	77169	8072	158231	243472	
		% within Husband's race	31.7%	3.3%	65.0%	100.0%	
		% within Wife's race	24.5%	25.2%	67.5%	41.9%	
	Total	Count	315011	31970	234352	581333	
		% within Husband's race	54.2%	5.5%	40.3%	100.0%	
		% within Wife's race	100.0%	100.0%	100.0%	100.0%	

Table 2. Husband's Education by Wife' Education

				Wife's education					
				none	lo primary	hi primary	secondary	college	Total
1991	Husband's education	none	Count	32409	34688	4706	1319	114	73236
			% within Husband's education	44.3%	47.4%	6.4%	1.8%	.2%	100.0%
			% within Wife's education	56.1%	14.9%	4.1%	1.4%	.4%	13.9%
	lo primary	Count	Count	21764	143910	41866	17234	1519	226293
			% within Husband's education	9.6%	63.6%	18.5%	7.6%	.7%	100.0%
			% within Wife's education	37.6%	61.7%	36.3%	18.7%	5.6%	43.1%
	hi primary	Count	Count	2747	39546	42248	22727	2736	110004
			% within Husband's education	2.5%	35.9%	38.4%	20.7%	2.5%	100.0%
			% within Wife's education	4.8%	17.0%	36.7%	24.6%	10.2%	20.9%
	secondary	Count	Count	777	13481	23533	40346	8480	86617
			% within Husband's education	.9%	15.6%	27.2%	46.6%	9.8%	100.0%
			% within Wife's education	1.3%	5.8%	20.4%	43.7%	31.5%	16.5%
	college	Count	Count	112	1460	2835	10596	14079	29082
			% within Husband's education	.4%	5.0%	9.7%	36.4%	48.4%	100.0%
			% within Wife's education	.2%	.6%	2.5%	11.5%	52.3%	5.5%
Total	Count	Count	57809	233085	115188	92222	26928	525232	
		% within Husband's education	11.0%	44.4%	21.9%	17.6%	5.1%	100.0%	
		% within Wife's education	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
2000	Husband's education	none	Count	11024	25616	4384	1491	116	42631
			% within Husband's education	25.9%	60.1%	10.3%	3.5%	.3%	100.0%
			% within Wife's education	43.5%	11.0%	2.8%	1.1%	.4%	7.3%
	lo primary	Count	Count	11857	147858	59616	29054	1985	250370
			% within Husband's education	4.7%	59.1%	23.8%	11.6%	.8%	100.0%
			% within Wife's education	46.8%	63.2%	38.6%	21.1%	6.7%	43.1%
	hi primary	Count	Count	1779	42040	55927	36155	3235	139136
			% within Husband's education	1.3%	30.2%	40.2%	26.0%	2.3%	100.0%
			% within Wife's education	7.0%	18.0%	36.2%	26.2%	10.9%	23.9%
	secondary	Count	Count	613	17139	32139	61123	10291	121305
			% within Husband's education	.5%	14.1%	26.5%	50.4%	8.5%	100.0%
			% within Wife's education	2.4%	7.3%	20.8%	44.3%	34.7%	20.9%
	college	Count	Count	73	1185	2470	10109	14054	27891
			% within Husband's education	.3%	4.2%	8.9%	36.2%	50.4%	100.0%
			% within Wife's education	.3%	.5%	1.6%	7.3%	47.4%	4.8%
Total	Count	Count	25346	233838	154536	137932	29681	581333	
		% within Husband's education	4.4%	40.2%	26.6%	23.7%	5.1%	100.0%	
		% within Wife's education	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Table 3. Husband's Religion by Wife's Religion

				Wife's religion					
				Catholic	Historical Protestant	Other Christian	Afro-Brazilian	none	Total
1991	Husband's religion	Catholic	Count	426558	1901	9190	1984	2673	442306
			% within Husband's religion	96.4%	.4%	2.1%	.4%	.6%	100.0%
			% within Wife's religion	96.4%	25.0%	19.1%	28.5%	13.5%	84.2%
	Historical Protestant	Count	Count	975	4765	130	22	104	5996
			% within Husband's religion	16.3%	79.5%	2.2%	.4%	1.7%	100.0%
			% within Wife's religion	.2%	62.6%	.3%	.3%	.5%	1.1%
	Other Christian	Count	Count	3785	159	35252	60	550	39806
			% within Husband's religion	9.5%	.4%	88.6%	.2%	1.4%	100.0%
			% within Wife's religion	.9%	2.1%	73.2%	.9%	2.8%	7.6%
	Afro-Brazilian	Count	Count	1657	34	105	4166	234	6196
			% within Husband's religion	26.7%	.5%	1.7%	67.2%	3.8%	100.0%
			% within Wife's religion	.4%	.4%	.2%	59.9%	1.2%	1.2%
	none	Count	Count	9684	747	3491	721	16285	30928
			% within Husband's religion	31.3%	2.4%	11.3%	2.3%	52.7%	100.0%
			% within Wife's religion	2.2%	9.8%	7.2%	10.4%	82.1%	5.9%
Total	Count	Count	442659	7606	48168	6953	19846	525232	
		% within Husband's religion	84.3%	1.4%	9.2%	1.3%	3.8%	100.0%	
		% within Wife's religion	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
2000	Husband's religion	Catholic	Count	400639	3273	17369	1969	5475	428725
			% within Husband's religion	93.4%	.8%	4.1%	.5%	1.3%	100.0%
			% within Wife's religion	94.1%	19.9%	18.2%	29.8%	14.6%	73.7%
	Historical Protestant	Count	Count	1216	10885	330	40	206	12677
			% within Husband's religion	9.6%	85.9%	2.6%	.3%	1.6%	100.0%
			% within Wife's religion	.3%	66.3%	.3%	.6%	.6%	2.2%
	Other Christian	Count	Count	6504	390	67710	106	1557	76267
			% within Husband's religion	8.5%	.5%	88.8%	.1%	2.0%	100.0%
			% within Wife's religion	1.5%	2.4%	71.0%	1.6%	4.2%	13.1%
	Afro-Brazilian	Count	Count	1463	52	175	3637	321	5648
			% within Husband's religion	25.9%	.9%	3.1%	64.4%	5.7%	100.0%
			% within Wife's religion	.3%	.3%	.2%	55.1%	.9%	1.0%
	none	Count	Count	15741	1826	9744	845	29860	58016
			% within Husband's religion	27.1%	3.1%	16.8%	1.5%	51.5%	100.0%
			% within Wife's religion	3.7%	11.1%	10.2%	12.8%	79.8%	10.0%
Total	Count	Count	425563	16426	95328	6597	37419	581333	
		% within Husband's religion	73.2%	2.8%	16.4%	1.1%	6.4%	100.0%	
		% within Wife's religion	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Table 4. Goodness of Fit Statistics for Log-linear Models			
Model	χ^2_{LR}		Δ as % of M1
M1. Independence of husband and wife characteristics	1722058.7	10952	--
M2. General homogamy and change in homogamy	284269.6	10946	83.5
M3. Group specific homogamy and change in group specific homogamy	191241.4	10926	5.4
M4. M3 plus educational gradient and change in educational gradient	39478.4	10924	8.8
M5. M4 plus religious heterogamy and change in religious heterogamy	37471.3	10916	0.1
M6. M4 plus interactions between husband's education and group specific homogamy	32359.3	10908	0.4
M7. M4 plus interactions between wife's education and group specific homogamy	35485.6	10908	0.2

Table 5. Parameters from log-linear Models Examining Homogamy					
M2. General homogamy	Race		Education		Religion
Homogamy	1.650		1.292		3.283
Homogamy*year	-.283		-.154		-.245
M3. Group specific homogamy	Race				
	White		Black		Brown
Homogamy	2.407		3.547		.599
Homogamy*year	-.669		-.669		.130
	Education				
	none	Low primary	High primary	secondary	Post-secondary
Homogamy	1.990	.713	.700	1.577	2.927
Homogamy*year	.028 ^{n.s.}	.148	-.239	-.201	.043
	Religion				
	Catholic	Historic Protestant	New Protestant	Afro-Brazilian	None
Homogamy	2.805	4.048	3.805	3.356	3.229
Homogamy*year	-.143	.265	-.435	.211	-.502

Table 6. Log-linear Parameters for Heterogamy				
Education gradient	-1.263			
Change in education gradient	.085			
Religious intermarriage				
	Catholic-Historical Protestant	Catholic-Afro Brazilian	Other Christian-Afro Brazilian	Other Christian-none
parameter	1.059	.930	-1.105	-.531
change	-.222	-.063 ^{n.s.}	.147 ^{n.s.}	.134

Table 7. Effects of Education on Homogamy.				
Interaction of Education and:	Husband's characteristics		Wife's characteristics	
	parameter	change	parameter	change
White	.176	.032	.038	.066
Black	.107	-.105	.086	-.042
Brown	-.161	.001 ^{n.s.}	-.010 ^{n.s.}	-.043
Catholic	-.198	.030	-.205	.044
Historical Protestant	-.295	.079	-.351	.140
New Protestant	-.176	.091	-.111	.072
Afro-Brazilian	-.128	-.129	-.307	-.083
No religion	-.143	.057	-.336	.089