Maximizing Status or Social Similarity: Attraction Among Socially Distant Partners under Varying Market Conditions

Audrey N. Beck*

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Abstract:

Social distance, a measure of how "close" individuals prefer to be to others with dissimilar characteristics, is often used to highlight salient social boundaries. Few studies have examined the context of socially distant marriages, or how individuals make tradeoffs in mate characteristics when marrying such partners. This paper determines how attraction varies as a function of partner characteristics under conditions of male scarcity and surplus. I find that both socially close and distant marriages are more attractive under conditions of male scarcity than surplus. There is a strong attraction to more similar partners, layered with a preference for hypergamy among educationally distant marriages. However, detailed analyses by the bride's characteristics illustrate that hypogamous and more distant pairings are less attractive among higher status women than women with lower status characteristics; indicating that market constraints have a differential impact on the type of distant marriages that are attractive. Schoen's harmonic mean is used to determine the magnitude of mutual attraction independent of the population composition. This analysis uses multivariate linear regression as well as MSA level fixed effects.

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*Please address all correspondence to Audrey N. Beck, abeck@soc.duke.edu. Duke University, Department of Sociology, Box 90088, Durham, NC 27708. Working paper in progress, please do not cite without permission of author.

INTRODUCTION

Marriage decisions occur not only within a geographic area, which defines a certain quantity of potential partners, but also within a larger stratification system, with associated norms that proscribe whom individuals should marry. The latter serves to shape partner preferences, while the former can constrain individuals from obtaining these preferences or provide an optimal setting in which to realize such preferences. Whom individuals marry and how they respond to marriage market constraints have important implications for a number of societal and individual-level processes. Not only do these processes affect the landscape of marriage and non-marriage patterns, but they also affect individual level economic wellbeing and marital stability.

Whom individuals marry when crossing social boundaries and whether socially distant marriages are more attractive when there is a scarcity of similar mates, have thus far been investigated in two separate veins of research. The first vein examines status relationships and social similarity between partners, and the second primarily examines whether marriage is more likely under conditions of mate scarcity conditions. This paper joins a number of disparate threads in the literature, by examining which socially distant pairings are more attractive alternatives under varying market conditions.

Little study has focused on the context in which socially distant marriages occur; and further, how individuals make tradeoffs in mate characteristics when marrying more socially distant partners. This paper examines how attraction to such marriages varies across marriage market contexts and explicitly considers the relative attractiveness of combinations of mate characteristics. In previous analyses, I found that marriage market conditions structure mate alternatives (Beck 2005: WP). In particular, socially distant marriages broadly defined are more attractive under conditions of male scarcity in the marriage market than under conditions of abundance. Here I will examine how attraction to socially distant marriage varies as a result of status differentials, and the degree of social similarity between partners. Further, I will also determine whether there is evidence of status exchange when individuals marry partners of a different race.

According to demographic sex ratio theory, outmarriage for a particular gender should be more likely under conditions of scarcity of the opposite gender (Akers 1967; Muhsam 1974; Schoen 1981). Sex ratio imbalances can occur for a variety of reasons,

including an excess of males among births, and the lower mortality of girls (Akers 1967). Yet, differences in immigration, high rates of incarceration and idleness among various subpopulations often can have more dramatic effects on the sex ratio, and its more qualitative counterpart, Wilson's (1987) Male Marriageable Pool Index (MMPI) than differences at birth. A number of studies have tested whether male and female-specific marriage rates or prevalence rates follow patterns of sex ratio theory (Akers 1967; Kiecolt and Fossett 1995; Lichter et al. 1991). However, considerably less work has explicitly tested whether outmarriage is more attractive; a few exceptions include; Lichter, Anderson and Hayward (1995) and Spanier and Glick (1980). This paper will determine how attraction to socially distant partners varies as a function of partner characteristics under conditions of male scarcity and male surplus as measured by the sex ratio, and the sex ratio of employed men (MMPI).

This analysis will use multivariate linear regression with MSA fixed effects in which the dependent variable is the natural logarithm of the magnitude of marriage attraction between the pairing under study; the marriage market will be measured at the metropolitan statistical area (MSA) level.

This study improves over previous study in a number of ways. First, it examines questions at the intersection of two areas of sociological theory that have received little empirical examination. Second, it measures the marriage market at the local level; many studies measure at a level too highly aggregated, which is unlikely to influence marriage decision-making. Third, in utilizing Schoen's harmonic mean, this study takes into account the underlying population at-risk for marriage. Fourth, it simultaneously considers distance not only in terms of education, but in race and age as well.

This paper examines attraction to socially similar and distant marriages across contexts. It first examines this process for all individuals, and then examines how this may differ by the race, age and education level of the wife. Finally, this paper examines more complex or layered forms of socially distant marriage across contexts.

Theories of Social Distance and Empirical Evidence

Social distance, as a measure of how "distant" individuals prefer to be to others with dissimilar characteristics, has often been used to highlight salient boundaries within

a given society[1]. These social boundaries have "the twin functions of preventing 'unequal' people from entering one's own social sphere and restricting one's own interaction possibilities to 'equals'"(Haller 1981:768). By extension, social closeness is based on the idea that certain social characteristics are associated with a similar lifestyle and consumption patterns (Prandy and Lambert 2003). Processes of social closure solidify the lifestyle differences into persistent social structures (Haller 1981; Prandy and Jones 2001; Smits, Ultee and Lammers 1998); thus, lifestyle differences, patterns of affinity and the stratification system are often intertwined upon observation.

The degree of social distance preferred by individuals is often revealed in their choice of friends, neighborhoods and mates. Marriage, as one of the most intimate relationships, has often been studied in this context to reveal how boundaries shift over time in terms of characteristics such as race, age and education. Haller (1981) suggests that the stratification system creates interaction boundaries, which restrict pools of eligibles to those in a similar position, and provide opportunities for couples to fall in love (777). Socially distant marriages are often the most infrequent, with socially close matches being the most common pairing (Kalmijn 1991; Mare 1991). Some established patterns of social distance have been found in terms of race and ethnicity[2] (Lee and Fernandez 1998; Pagnini and Morgan 1990), education (Mare 1991), and religion (Ellman 2002) to highlight a few oft-studied dimensions.

While research has found that there are differing levels of affinity between groups, the exact nature of social distance has yet to be fully explored. Additionally, while it is not unreasonable to assume a given racial and educational hierarchy, it is unclear how distant groups are once multiple dimensions are included or whether distances between groups are equal. Further, while it is likely that social distance may differ by gender, this has also been rarely explored. Muhsam (1990) highlights the complexity of this when he suggests that attraction between distant partners is not only a function of the distance between values of the characteristic under study, the propensity

[1]Early work explored salient boundaries, by asking respondents to indicate how close they preferred to be to different ethnic and racial groups, thus establishing race and ethnic hierarchies (Bogardus 1925).
[2] Interracial or ethnic marriages have often been used as a marker of a reduction in social distance between groups, associated with a reduction in prejudice or as a marker of assimilation. While such marriages do say something important about how boundaries are shifting, or the nature of the stratification system; such processes are certainly multidimensional, captured not only by marriage, but residential and friendship choice, economic and educational attainment to name a few.

of these individuals to interact, but the characteristics that accompany those under study as well.

I will outline why socially similar marriages are expected to be the most attractive pairing. Then I will outline the limited theory on socially distant marriage as suggested by Davis (1941) and Merton (1941) including status exchange and social distance theory[3] (Drachsler 1921; Price and Zubrzycki 1962). I will also highlight how market availability is thought to restrict and shape marriage choice. Finally, I draw a few hypotheses from the intersection of these two literatures.

Patterns of similarity of mate characteristics are a widespread and longstanding phenomenon (Burgess and Wallin 1943). Theory purports that these patterns are a natural outgrowth of individuals' desire to be near those socially similar. In part this may be attributable to the greater likelihood of socially similar people to reinforce each other's views and actions (Lazarsfeld and Merton 1954). Additionally, endogamy is one of the fundamental expectations of a stratification system[4].

Marriage patterns reflect not only a desire for a mate of a similar cultural background, but similar socioeconomic background and potential (Kalmijn 1991). Such patterns are also hypothesized to reflect a greater likelihood of socially similar people to interact. While there is some debate, meeting in social settings such as school, work and the neighborhood, can produce homogamy (Kalmijn and Flap 2001; but see Stevens 1991). Thus, educational attainment may not only function, for some, through facilitating a meeting place, but more importantly may serve as a marker for social similarity once individuals have left educational institutions. Kalmijn (1994) asserts that characteristics such as educational attainment are useful proxies for attractiveness, and a means of reducing the pool of eligibles in the marriage market, as well as badges that signify status (428). The principle, known as the matching hypothesis, would predict attraction should be highest among socially similar partners.

Research has established not only evidence of salient social boundaries, but also tracked changes in important dimensions in partner attractiveness. A shift from ascription

[3] Term used by Muhsam (1990), one of the earliest theories on intermarriage has not garnered either much research nor a well-established name.

[4] Social similarity in partner choice is intertwined with the stratification system within which it is situated, with the stringency of endogamy relating to the rigidity of the system (Davis 1941).

to achievement is reflected in the shift from social class origin to education as an important social boundary for assortative mating (Kalmijn 1991). While there is a wealth of research documenting mating patterns based on father's occupation (Berent 1954; Burgess and Wallin 1943; Centers 1949; Hope 1972) and occupations (Hope 1972; Hout 1982; Hunt 1940; Marvin 1918), increasingly education is used as it reflects not only an achieved characteristic, but has important consequences in economic and social spheres[5].

A number of studies have found that as social distance in educational attainment increases marriage becomes less likely (Kalmijn 1991), and that after controlling for shifts in the educational distributions of spouses educational homogamy has increased over time (Kalmijn 1991; Mare 1991; Schwartz and Mare 2006). There is also evidence of strong barriers to intermarriage between individuals between different levels of education (Qian 1997; Qian 1998). For instance, barriers exist between high school graduates and those with some college and between those with some college and college degrees (Kalmijn 1991). Additionally, Schwartz and Mare (2006) find increasing barrier rigidity at the upper end of the education distribution before the mid-1970s, and at both ends thereafter (22).

There is also evidence that marriages tend to be age homogamous, though the definition of heterogamy varies (Gshur and Okun 2003; Vera et al. 1985). Vera et al. (1985) find that age heterogamous marriages are most common among the lower class and that both marriages with older wives and older husbands are more common among blacks.

The most common interracial pairing between blacks and whites have been black men and white women, followed by white men and black women (Kalmijn 1993; Model and Fisher 2002; Qian 1997). African Americans have the highest endogamy rates, whereas after controlling for group size whites are the most likely to intermarry (Qian 1997:268). Other studies also find a strong boundary between whites and blacks even among those of Latino ethnicity (Qian and Cobras 2004). Interracial marriage is found to be most commonly educationally homogamous and increasingly common for those with higher levels of education, in 1980 and 1990 (Qian 1997).

[5] Additionally, occupations have a number of limitations in empirical studies. Not only may jobs that women hold before marriage be unreliable indicators of status, but early jobs are fraught with uncertainty and may be a poor indicator of future jobs (Kalmijn 1994:428).

In practice, homogamy exists either because different groups desire to marry within their groups, or because lower status groups are excluded from social interaction with higher status groups (Kalmijn 1994:424). Studies like Fu (2001) attempt to disentangle these dimensions, by examining the differential marriage patterns between those with higher levels of education, who would be more able to realize their preferences, and those with less education.

Hypergamy, in which men can marry down and women up, is a historically sanctioned pattern (Davis 1941). However, Davis (1941) established a few ruling principles for hypergamy: it should be more frequent among those who are less distant in status, it should always be the exception, with endogamy the rule, hypergamy should be more frequent across weaker boundaries, and finally there is generally a balance or exchange of characteristics even within hypergamous unions. This is part of a larger body of work that suggests that individuals try to marry high status partners, also called the competition hypothesis (Kalmijn 1994). However, Kalmijn (1994) cites that both matching, and competition (status) can produce similar patterns that can be difficult to distinguish, since matching is associated with cultural aspects and competition with the economic resources that the partners share (423).

However, hypergamy was largely expected to be incompatible within a stratification system in which races were hierarchically ordered (Davis 1941). Status exchange adds additional dimensions and suggests that individuals are likely to exchange status when intermarrying. Thus, an individual of a higher status race or ethnicity who marries someone of a lower status race or ethnic group is likely to marry someone who also has another higher status characteristic such as higher educational attainment. Thus, in effect, the higher status race individual is exchanging their racial status, with the other individual's education status. However, this was suggested to differ by gender. Davis (1941) argues that as women, and not men, marry for economic support a white female can be "advantaged" by a union with a higher status black male, but a white man cannot be similarly "advantaged" by a union to a higher status black female (hypogamy). Further, latter unions not only cross racial barriers, but violate the patrilineal principle as

white men would acquire the status of their spouse instead of the reverse which is the rule in endogamous and even the alternative interracial pairing (Davis 1941)[6].

Gullickson and Fu (2005) clearly operationalize this concept, whites in interracial unions should be more upwardly mobile, and less downwardly so than if they married other whites, the opposite should be true for blacks in interracial unions (1). Though, I would add that the magnitude of this pattern should be lower in black wife/white husband unions given traditional gender norms. There have been many attempts to test status exchange (Kalmijn 1993; Gullickson 2005; Gullickson and Fu 2005; Rubin 1968; Fu 2001; Glen et al. 1974; Rosenfeld 2005; Monahan 1976; Heer 1966, 1974; Model and Fisher 2002; Porterfield 1978; Rockwell 1976; Schoen 1995; Schoen and Thomas 1989; Schoen and Wooldredge 1989; Schoen et al. 1989). A number of these studies have found evidence for status exchange and a racial hierarchy among whites and blacks; see Gullickson (2005) for an extensive review of this literature.

Fu (2001) critiques the frequently used hypergamy ratio approach[7] as he argues that the status exchange hypothesis is not concerned whether women are more likely to marry up or down, but whether men of different groups are equally desirable (150). These ratios also highly depend on sex differences in educational attainment (Kalmijn 1993). Further, such an approach does not account for distance in up or down marriages, thus, Fu (2001) examines intermarriage pairings as opposed to counts.

Kalmijn (1993) provides an alternative interpretation of this tendency by suggesting that education may have different meanings for blacks and whites. For example, given a lower financial return to education for black men, a male advantage in education may not equate with an advantage in status (141). Thus, mixed marriages could be homogamous with respect to status, but not education. In fact social distance theory can be thought of as an alternative interpretation of apparent exchange patterns.

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[6] Status exchange theory does not explicitly outline which marriages between black women and white men should be the most attractive, it leaves open the possibility that relatively speaking hypogamy may be the most attractive possibility. It does, however, suggest that a hypogamous exchange is not equivalent to a hypergamous one between black men and white women.

[7] The hypergamy ratio approach is when the ratio of the number of marriages where women marry up versus down in education of actual marriages is compared to hypothetical marriages that would have taken place if weak racial group boundaries existed once taking into account population composition differences (Fu 2001).

Social distance theory suggests that inequality between men and women should be taken into account. Thus, the distance between men of one group and women of another, and vice versa, should be considered, not simply the aggregate distance between groups. Muhsam (1990) suggests that if within both groups men hold a higher status than women, "the distance of male downmarriages is necessarily larger than that of female downmarriages. As a consequence the former type of marriage can be expected to be less frequent than the latter type" (311).

If we assume that whites have a higher status than blacks, and men higher than women, than contemporary patterns of black white intermarriage patterns appear to fit social distance theory (Muhsam 1990). According to this theory, white women and black men are socially closer than white men are to black women. However, Muhsam (1990) argues that theory is unsatisfactory even given the confirmatory evidence, as discrimination against women is of a different degree and character than discrimination against blacks, thus these differences are not additive (312). Muhsam (1990) finds evidence to support this theory both with black white marriage patterns in the US, and interracial marriage in Brazil, though contradictory evidence in intermarriage patterns in Israel.

Sociological theory contends that norms and values develop around imbalanced sex ratios (Guttentag and Secord 1983). Central to the sex ratio hypothesis is the concept of dyadic power, in which the gender in short supply is in a stronger bargaining position because of the more plentiful potential partners. Men's structural power, derived from political and economic institutions, can overlap with or strengthen dyadic power when men are the scarcer gender. This theory also predicts that when there is a surplus of mates, men and women will use their dyadic power in different ways. Women are expected to marry more frequently when they have dyadic power as they have a stronger incentive to marry for economic reasons, while men are expected to use their power to obtain relationships without necessarily any commitment (Fossett and Kiecolt 1993).

There is some evidence that men and women respond asymmetrically to similar market conditions[8] (Cox 1940; Fossett and Kiecolt 1993).

A woman frustrated in her attempt to find a similar partner may seek a partner from a type of man she would normally not consider, or decide to remain single (Anderson 1989; Fossett and Kiecolt 1993; Guttentag and Secord; Heer and Grossbard-Shectman 1981). Thus, it is expected that under male scarcity, attraction to outmarriage should be higher than when males are abundant. Additionally, patterns of socially close marriages may differ across contexts. If men and women respond asymmetrically, women may rush to marry socially close partners under conditions of scarcity, thus causing attraction to such marriage to be higher than when men are abundant. However, if low sex ratios exert a progressive effect on women's desire to marry, such that they become disillusioned with the prospect of finding a suitable partner, or if men use their dyadic power to avoid marriage, than we would expect that attraction to socially close marriage to be lower in scarcity contexts.

Most work finds that market availability has significant, but often small effects on family formation patterns (McLaughlin et al. 1993; Lloyd and South 1996; Wilson and Neckerman 1986; Landale and Tolnay 1991; Preston and Richards 1975; Fossett and Kiecolt 1990). Some find little or no evidence that mate availability affects marriage (Farley and Allen 1987; Farley and Bianchi 1987; Lichter et al. 1991; Schoen and Kluegel 1988; O'Hare 1988; White 1981). However, these studies either measure the marriage market at a larger than ideal geographic unit or often use sex-specific rates or proportion married; measures that will be affected by underlying composition and shifts in composition. Further, none of these studies examine how market constraints affect whom one marries.

A few notable studies address whether and how imbalances in supply affect partner choice. Stier and Shavit (1994) in a study of assortative mating in Israel find that Afro-Asian women that face severe marriage squeezes are more likely to stay single and those that marry are more likely to outmarry (79). Spanier and Glick (1980) find that the lower sex ratio among blacks is associated with women marrying men who tend to be

[8] Early evidence also indicated that the asymmetric process was more pronounced among black females than white, and more pronounced among white males than black (Cox 1940). Later evidence tends to find that black marriage is less responsive to market conditions than white marriage (Lichter et al. 1991).

older, less educated and often previously married more often than their white counterparts (717). Spanier and Glick (1980) measure their marriage market at the national level, so they cannot precisely identify whether those couples that are more socially distant were in fact in imbalanced locales or not, thus specifying a local marriage market will be an improvement.

In one of the few direct tests of this particular aspect of the theory, Lichter et al. (1995) using the NLSY, analyze the transition to marriage and patterns of educational homogamy among those whom marry. While they find little evidence that mate availability affects patterns of educational homogamy they do find evidence that mate availability is associated with increasing likelihood that a woman will marry up versus down on education, and to remain unmarried as compared to marrying down on education. However, this study does not also consider how marriage distance in race or age may vary, in addition to education, across contexts.

Women who have the highest levels of education will be constrained by social norms that dictate that they should not marry someone of less educational attainment and will therefore be limited to the pool of highly educated men. This will be further compounded by race. Guttentag and Secord (1983) also argue that as more black women then men attain higher levels of occupational prestige, the shortage is especially severe among the black population (226). While white women with higher levels of education experience the shortage that comes from normatively restricted downward marriage, this is further compounded for black women who do not even have as many eligible highly educated men. These ceiling effects, and conversely floor effects will be examined in analyses separated by the wife's education level and race.

A number of studies are not able to isolate first marriages or recent marriages in all or some years of their analyses (Fu 2001; Schwartz and Mare 2005[9]; Qian 1997). Thus, insofar as some spouses may attain more education or similarity in other characteristics after marriage it would be difficult to distinguish between matching and competition. Further, many studies specify the marriage market at the national level, thus

[9] Schwartz and Mare (2005) find that the difference between first and prevailing marriages can be conceptualized as "lead and lag" where first marriages display a pattern first, followed by prevailing marriages (16). Thus, we can expect that analyses of prevailing marriages may not correspond, or will lag behind concurrent factors that are associated with the likelihood of marriage of marital sorting.

controlling for only the distributions at that level (Fu 2001; Qian 1997; Schwartz and Mare 2005).

Gray (1987) suggests "the probability that a marriage occurs between the members of two specified groups can be decomposed as the product of the probability that the two partners will meet in the marriage market and the probability that, having met, they will be chosen by each other as marriage partners" (Gray 1987:37). Pullum and Peri (1999) argue that a model that fully describes the specific marriages under study would include components that measure the male propensity to marry, the female propensity to marry and the distributions of pairings and marginal distributions of characteristics of those who actually marry. Pullum and Peri (1999) along with many other studies of assortative mating can only estimate the latter because they only incorporate information on married couples.

Typical loglinear models do not control for the underlying population as they only control for the population composition of those whom actually marry, not the total eligible population or the differential propensity of some groups to marry. Kalmijn (1993) partially addresses the criticism of marginal distributions not reflecting the at-risk population by adjusting the marginals to this population. However, he cites that "this approach does not address the problem of different numbers of men and women in the population, nor does it provide a model of the probabilities of marrying" (136). A similar critique could be leveled at measures of social distance in marriage such as the Index of Intermarriage Distance (Lee and Fernandez 1998; Parkman and Sawyer 1967). This may be particularly problematic when characteristics under study are related to being at-risk for marriage, such as the association of higher education with delayed marriage. Likewise, studies on marriage have often grappled with "the two sex problem", that is that complications "arise because observed age-specific male and female occurrence/exposure rates are influenced by the age-sex composition of the population" (Schoen and Wooldredge 1989:467). Schoen's harmonic mean is a method that will be utilized to address both of these common concerns in the marriage literature. This method is able to determine the magnitude of mutual attraction to marriage that is independent of the composition of the population (Schoen and Wooldredge 1989).

This paper will look at three dimensions of social distance: race, age and education.

Hypothesis 1: Socially close partners will be more attractive across contexts, and for all characteristics under more detailed examination. However, it is anticipated that social closeness may be more attractive under scarcity.

Hypothesis 2: Socially distant marriages should be more attractive under conditions of male scarcity. However even given an overall higher magnitude of attraction to distance under scarcity, marriages in which the woman is marrying "up" should be more attractive relative to "down" marriages in male surplus conditions than scarcity. Marriages in which the woman is marrying down relative to up should be more attractive under male scarcity conditions.

However, women with certain characteristics may be in a structurally better position to marry up when they are in a poor marriage market (for example, white, young and highly educated women), or in a worse position and less able to marry up when they are in a good market (for example, black, older and less educated women). Thus, women, with certain characteristics may be relatively successful in either market though the patterns of relative attractiveness should hold.

Theory suggests that interracial exchange marriages should be more attractive than educationally homogamous pairings. One possibility is that exchange pairings are more attractive in male surplus conditions, because women are simultaneously in a more favorable bargaining position relative to their group of same race men, but are simultaneously constrained by their own characteristics from being able to marry up on more or homogamously on more than one dimension. If such marriages indeed represent an exchange relationship and are no longer distant, then they may not follow the hypothesized pattern for distant marriages. Or, it could be that women in an unfavorable market position can only marry up if they exchange one of their characteristics. While theory suggests that distant marriages should be more attractive under male scarcity conditions, it is unknown whether additional layers of distance or exchanges in distant characteristics ameliorate or make this pattern stronger.

MEASURING ATTRACTION TO MARRIAGE

Schoen's harmonic mean is a method that will be utilized to address both of these common concerns in the marriage literature. This method is able to determine the

magnitude of mutual attraction to marriage that is independent of the composition of the population (Schoen and Wooldredge 1989).

Schoen's harmonic mean function can be written as:

$$N_{ij} = \alpha_{ij} \frac{M_i F_j}{nM_i + mF_j} \quad (1)$$

where N_{ij} is the number of marriages between males aged *i* and females aged j in a time period (characteristics i and j could be any characteristic, age is used as an illustrative example). M_i is the number of eligible[10] males aged i during a time period. F_j is the number of eligible females aged *j* during a time period and m and n are the lengths of the ith and jth intervals in years. α_{ij} is the force of attraction between males aged i and females aged j (Qian and Preston 1993). This function was written for the simple case of one characteristic. From equation 1, one can then determine the force of attraction for the different combinations of individual characteristics.

$$\alpha_{ij} = N_{ij} \times [n / M_i + m / F_j] \quad (2)$$

Written another way, the force of attraction can also be expressed as:

$$\alpha_{ij} = n \times W_m(I,J) + m \times W_f(I,J) \quad (3)$$

where $W(I,J)$ is the rate for I, J marriages, and subscripts m and f represent males and females. In equation 3, it becomes more evident that the magnitude of attraction is a weighted sum of the male- and female-specific marriage rates. If the age intervals are one year, this measure ranges between 0 and 1, however, given that the age intervals in this case are 5, the upper bound can be higher, but this does not alter the pattern of attraction magnitudes between different types of marriages.

DATA

This paper utilizes the1980 IPUMS census sample. The marriage market is measured at the metropolitan statistical area (MSA) level, given that local sex ratios are more likely to structure marriage choice than national ones. More recent census data do not identify either the timing of the marriage under study, nor the number. Additional analyses will be incorporated later which use the Survey of Income and Program

[10] Eligible is the number of unmarried individuals, individuals separated but not divorced are excluded.

Participation to predict recent first marriage status based on partner characteristics. These predictions are then used to simulate the omitted marital information and applied to the 1980 data to confirm this methodology. Then, this method, in conjunction with recent SIPP data, will be used to analyze the 2000 IPUMS census sample. The focus of this additional data and analyses is primarily to confirm that this process is not unique to 1980 and to highlight whether these patterns are also an important part of the marital landscape in more recent years.

MULTIVARIATE LINEAR MODELS

This analysis will use multivariate linear regression in which the dependent variable is the natural logarithm of the magnitude of marriage attraction for the pairing under study. This analysis will also account for the possibility that MSAs may differ in difficult to measure ways, for example in terms of normative context. Further, individuals might sort themselves into MSAs based on such unmeasurable dimensions. Therefore, these models will employ MSA level fixed effects to minimize bias that is a result of such processes and omitted variables at the MSA level[11].

I isolate those women who married for the first time in the two years prior to the census and link such women to their spouses. I determine this by restricting the married population to women who indicate they are currently married and on their first marriage and the age at first marriage is within two years of their current age. There is no similar restriction on men. This analysis will use the age range of 18 to 44 for women (ADF) and 16 to 60 for men (ADM). Extending the upper bounds of the age range of the men did not result in an appreciable number of additional marriages, nor alter the results in any significant way. For any particular age combination, attraction is calculated as a function of marriages within the range of 2 years below and 2 years above the spouses' ages. For example, for a pairing between a 25 year-old man and a 20 year-old woman, attraction is a function of marriages between men aged 23 to 27 and women aged 18 to 22. This avoids the small sample sizes and potentially biased estimates from calculating and analyzing attraction using only marriages and eligible partners within specific age combinations. Race has two categories, white and black (RDM, RDF). Education is

[11] There are only small differences between models with and without MSA fixed effects, thus only the fixed effects results are presented. Full results can be provided by request.

collapsed into three categories (EDM, EDF) [less than high school, high school, and more than high school]. Future work could attempt to parse out the college educated category, but it is not done so here to avoid misspecification that may come as a result of misappropriating those currently enrolled in college. Thus, the unit of observation is the force of attraction between a man and woman of a specific set of characteristics within a MSA.

As the focus of this paper is to understand marriage in terms of social distance, a series of dummy variables are created that capture social closeness and deviations from social closeness. There are three sets of analyses, the first set uses a set of dichotomous variables that captures social distance in detail, the second set collapses some of these in order to additionally analyze distance by wife's education level, race and age. The third set includes a mutually exclusive set of variables to understand how attraction varies by both the race and education of the partners. All three sets include a series of binary variables to control for MSA characteristics and are interacted with measures of supply imbalance in a similar fashion. In the first set of analyses, social distance defined with dichotomous variables created to indicate racial exogamy, and age and educational heterogamy, where the omitted category is racial endogamy and age and educational homogamy. The omitted categories are white/white marriages that are homogamous on education [EDM-EDF=0] (as captured by the categories) and age [ADM-ADF=-2 to 7]. The first set of variables capture age differences between the groom and bride: 8 to 12 (D1), 13+ (D2), and less than or equal to –3 (D3). The second set captures racial differences between the bride and groom: both the bride and groom are black (D4), white bride and black groom (D5), and black bride and white groom (D6). The third set captures educational distance, where the education categories "less than high school", "high school" and "more than high school" are coded 1,2 and 3: when (EDM-EDF) =1 (D7), when (EDM-EDF) =2 (D8), when (EDM-EDF) =-1 (D9), and when (EDM-EDF) =-2 (D10). These dichotomous variables are interacted with the measures of male scarcity and low concentration as illustrated in the first set of analyses. These are used in the first set of analyses.

The baseline model is:

$$\log(\alpha)_p = \beta_o + (\sum_{i=1}^{10} \beta_i D_{ip}) + \gamma_2 C2_p + ... + \gamma_n Cn_p + u_p \qquad (4)$$

The baseline model will simply reflect weighted averages of social distance, where *C* represents a series of binary variables to capture *p* MSA-specific intercepts and control for unmeasured differences at the MSA level. I then incorporate interactions with the supply imbalance of one's socially close category with the measures of socially distant marriages. The definition of socially close not only allows individuals to choose among same age partners, but also allows the women to look for eligibles among slightly older while men can look for eligibles slightly younger than themselves. Here imbalanced supply will be measured in two ways:

Sex Ratio:

$$SR_{sc} = \frac{M_{ijk}}{F_{ijk}} \quad (5)$$

Where i, j, and k, represent the race, age category and education category of the men (M) in the numerator and the women (F) in the denominator. The sc denotes that the ratio is the imbalance among the socially close. The sex ratio is the number of men in a woman's socially close category divided by the number of women with the same characteristics as the woman, also those socially close. An indicator is created to denote a supply imbalance in the SR that disadvantages women:

$SRI_{sc} = 1$ when $SR_{sc} < 1$, 0 otherwise.

A sex ratio of less then 1 indicates that there are more socially close females than socially close men to marry. Conversely, when the sex ratio is greater than or equal to 1, there are exactly the same or more socially close men than women. This is interacted with the marriage combinations that are socially distant:

MMPI:

$$MMPI_{sc} = \frac{EMPM_{ijk}}{F_{ijk}} \quad (6)$$

Where EMPM is the number of socially close employed men. The $MMPI_{sc}$ is the number of socially close employed men divided by the number of socially close women. Wilson (1987) argues that the increasing joblessness among black urban males, in

combination with more general disadvantage, was largely responsible for increasing non- and delayed marriage patterns in the black community. Thus, this measurement may more finely isolate available men, particularly for black women. An indicator is created to denote a supply imbalance in the MMPI that disadvantages women:

$MMPII_{sc}$ =1 when $MMPI_{sc}$ <1, 0 otherwise.

This is also interacted with the marriage combinations that are socially distant: interracial marriage, marriages in which partners have different levels of educational attainment, and marriages that are heterogamous on age. This produces the following two models:

$$\log(\alpha)_p = \beta_o + (\sum_{i=1}^{10} \beta_i D_{ip}) + (\sum_{i=1}^{10} \beta_i D_{ip} SRI_{sc}) + \beta_{21p} SRI_{sc} + ... \quad (7)$$

$$\log(\alpha)_p = \beta_o + (\sum_{i=1}^{10} \beta_i D_{ip}) + (\sum_{i=1}^{10} \beta_i D_{ip} SRI_{sc}) + \beta_{21p} MMPII_{sc} + ... \quad (8)$$

The second set of analyses simplifies the first by collapsing the man older categories 8 to 12, and 13+ into one indicator, both interracial parings into one indicator of interracial marriage, and finally education collapsed into man more educated and woman more educated indicators. In the included appendices these sets of analyses illustrate the multiplicative effects of additional dimensions of social distance, thus one can examine attraction to both distance in race and education by multiplying the exponentiated coefficients, though the primary focus in the text is how each individual dimension varies as a function of context and wife's characteristics. However, the third set of analyses is dichotomized as mutually exclusive in order to understand both how distant characteristics might overlap in different ways by partner characteristics, but also to understand the relative attractiveness of one or more dimensions of social distance. Three variables represent divergences from white endogamy, these variables are only coded 1 if the status is the *only* divergence from white, race and educational endogamy (white wife/black husband, black wife/white husband, both black). Another series of variables are homogamous on race, but heterogamous on education (both black/wife more educated, both black/wife less educated, both white/wife more educated, both white/wife less educated). Finally, a set of indicators for race and educational distance are included (white wife/black husband & wife more educated, white wife/black husband & wife less educated, black wife/white husband & wife more educated, black wife/white husband &

wife less educated). A couple can only have a value of 1 for one of these indicators. Couples that are age heterogamous are included as indicated by their races and education levels. Given that this additional, for some couples-the third, layer of social distance might be obscuring differences in attraction on race and education, this is also analyzed with a sub-sample of age homogamous couples. This will highlight differences between one and two dimensions of social distance, whereas the former will include a third dimension without explicitly modeling what form it might take. Sample sizes preclude parsing out all the various race, age and education combinations, however separating the analyses in this way begins to uncover how multiple dimensions may work together to produce the patterns we see in more simple analyses of race and education for example.

DESCRIPTIVE RESULTS

[Descriptive Table 1 Here]

Table 1 illustrates descriptive statistics for the sample; it is evident that socially similar pairings are the most attractive across all characteristics. It is also evident that less socially distant pairings are more attractive than more socially distant pairings; for example, one level difference in education is more attractive than two, and pairings that include men aged 8 to12 years older are more attractive than pairings in which the husband is 13 or more years older.

[Descriptive Table 2 Here]

Table 2 illustrates average market characteristic for women in the sample. Approximately 70% of women in the sample live in MSAs in which there is a scarcity, or less than the equivalent number of men of a similar race, age and education level. More women live in scarcity conditions, as defined by similar characteristics, when one defines age as an important marital sorting criterion then typical studies that either more broadly define a preferred age range or exclude it altogether. However, given that age heterogamy is a dimension of social distance under study, it is an important distinction here. Further, the average market context is more beneficial for women with higher levels of education.

REGRESSION RESULTS

Appendices correspond to the tables presented in the body of the paper, these are included for the interest of the reader and include exponentiated values of regression

parameters. The tables presented in the results section represent the magnitudes of attraction after multiplicative adjustment for the interactions of interest. For example from Appendix 1, the estimate for marriage attraction for socially close whites pairings under surplus conditions in the sex ratio model is 0.795, to arrive at the magnitude of attraction for pairings between black men and women under surplus, this must be multiplied by the value for the regression coefficient, or 0.648, arriving at 0.515, the value shown in Table 1 for attraction to marriage among black men and women under surplus conditions. To arrive at the value under scarcity conditions, 0.657, one must additionally multiply these values by the main effect for scarcity and the interaction of black intraracial pairings with scarcity ($0.795 \times 0.648 \times 1.1666 \times 1.093$). The tables in the text thus present these values, for easier comparative purposes. Values are denoted as nonsignificant if one of the adjustment factors is nonsignificant, appendices should be referred for full information on the significance level of all parameters.

[Regression Table 1 Here]

Regression results illustrate patterns of attraction to socially close and distant marriages under both sex ratio and MMPI contexts; the discussion will primarily focus on the sex ratio results as both measurement produce very similar results, but large differences between the two measurements will be highlighted when they occur. It is evident from Table 1 that there is a strong preference for socially similar partners among white couples, which is the omitted category, as evidenced by the higher magnitude of attraction to socially close partners in both male surplus and scarcity contexts as compared to age, race, and education deviations from white age and education homogamy. As expected, attraction to socially close partners is higher under scarcity conditions for whites (0.869) than under surplus conditions (0.795), and this difference is statistically significant. Further, intraracial pairings for blacks also follow this pattern. With the exception of interracial pairings between black women and white men, all socially distant pairings are more attractive under conditions of male scarcity than surplus. Overall marriage, both socially close and distant pairings are more attractive when there are fewer similar men relative to women, providing support for theory that suggests that there may be a rush to marry under scarcity conditions. All differences between contexts in Table 1 are statistically significant.

Again, socially distant marriages on education are more attractive under conditions of scarcity than surplus (0.393, 0.195, 0.389, 0.269 versus 0.346, 0.149, 0.332, 0.134). In both contexts, one deviation on education is more attractive than two regardless of whether they are up or down. Pairings in which the woman is marrying up on education are more attractive than the alternative in which the woman is marrying down, however under scarcity conditions marriages in which women are two education categories higher are more attractive than marriages in which women are two education categories lower. This illustrates that there is a strong preference for partners with more similar levels of education, layered with a preference for higher status partnerships for women. That the higher status or "up" pairings for women are not always more attractive alternatives likely reflects constraints in which women with the lower levels of education are less likely to interact with men with higher levels, and may also be less attractive to men with at least some college education. However, under conditions of scarcity, marriages where a woman is marrying up one versus down one are very similar (0.393 vs. 0.389); whereas under surplus conditions the "up" marriages are much more attractive than the "down" marriages (0.346 vs. 0.332). This provides some evidence for hypothesis 2, that given more favorable market conditions, women may be more successful in marrying up relative to marrying down.

Schoen and Wooldredge (1989) find that small differences in age often lead to small adjustments in attraction, thus in accordance I have only isolated age differences which can be hypothesized to be significantly socially distant and produce large differences in adjustments. Similar to their findings, I find that large differences in age are unattractive alternatives, but those in which the husband is older are generally more preferred to pairings in which the wife is older, even given the asymmetry in definitions. Marriages in which the husband is 8 to 12 years older are also an attractive alternative to homogamy under scarcity (0.356), only one difference in education in both directions are more preferred pairings. The estimated magnitude of attraction between women and men who are 8 to 12 years older is 41% as large as social closeness under scarcity, and 30% as large as social closeness under male surplus. In both settings, marriages in which the wife is 13 or more years younger are one of the least attractive alternatives, 0.065 in surplus and 0.233 in scarcity conditions. This provides additional evidence that age is an

important noneconomic attribute in the marriage market (also see Schoen and Wooldredge 1989; South 1991).

While there is a strong preference for intraracial pairings, interracial pairings between white women and black women follow the hypothesized patterns suggested by sex ratio theory. Attraction to interracial pairings between white women and black men is higher under scarcity conditions (0.279) than surplus conditions (0.157). However, interracial pairings between black women and white men are more attractive when there is a surplus of similar black men, 0.181 versus 0.157 in scarcity. Though the difference across context is small, it still runs counter to theory. It may be as suggested by White (1981) that black marriage is less responsive to sex ratio context, and while this contention is not supported by the equally dissimilar rates across context for socially close marriages for whites and blacks, it will be further investigated in separate analysis by race. It may also be that as Guttentag and Secord (1983) suggest that sex ratios among whites structure interracial marriages, and that market constraints among blacks are secondary. Though this possibility is not examined here, it warrants further investigation. Further, interracial pairings are more attractive among black men and white women, than white men and black women as would be expected by previous study.

[Regression Table 2 Here]

The next set of analyses examines how attraction to socially close and distant marriage varies by education, race, and age of the wife. Theory would predict that attraction may vary by partner characteristics, and further given that women at the tail ends of the education distribution are unable to marry up, or down, it will be important to understand how attraction varies by relevant categories. Attraction to social closeness varies dramatically by wife's education, with those with high school degrees and more having higher magnitudes than those with less than high school degrees. While there are some similar magnitudes of attraction across education levels, because attraction to socially close marriages varies so much, these magnitudes also vary dramatically relative to the socially close magnitudes.

Consistently, those with some college or more have the lowest attraction to socially distant marriage under surplus, and consistent with theory, socially distant marriage is more attractive under male scarcity conditions. As compared to women with

high school degrees, pairings with a partner that has less education, a combination that is likely to have implications for the economic wellbeing of the couple, are less attractive (0.313 for more educated women, 0.446 for less educated women under scarcity). This supports the hypothesis that women with higher status characteristics are more attracted to, or in a better position to marry other high status partners. Pairings with women with high school degrees and men with higher levels of education are also more attractive in scarcity then surplus conditions (0.408 versus 0.348). These magnitudes of attraction for "up" marriages are higher than for pairings that involve a woman with less than high school (compare to 0.263 and 0.263 for women with less than high school degrees). It is likely that women with a high school degree are more attractive than are those with less than a high school degree. Also, attraction to "up" marriages is invariant to context among women with less than high school degrees, this could indicate their characteristics are relatively unattractive regardless of market context, or that they are largely excluded from the competition for higher status partners. Finally, for women with high school degrees, "down" marriages are more attractive than "up" marriages, a result unexpected in lieu of the aggregate findings. This may also indicate the less competitive position of women with high school degrees.

Pairings in which the wife is older are more attractive among those with more than high school and less than high school under conditions of scarcity versus surplus, differences in these pairings among women with only a high school degree are not statistically significant. Pairings in which the wife is younger are actually more attractive under surplus than scarcity (0.359 versus 0.292) for women with only a high school degree. In fact for women with high school degrees the pattern of attraction for socially close and age distant marriages run counter to sex ratio theory. Interracial pairings follow the hypothesized patterns for pairings throughout the education distribution, but the differences between contexts are rather small for those with more than a high school degree. In fact, the interaction is nonsignificant, implying that there may be no difference between contexts for highly educated women.

Attraction to socially close pairings are more attractive under scarcity at both ends of the education distribution, but lower under scarcity for pairings which involve a

woman with a high school degree. Attraction to socially close partners, and overall attraction is lowest among those with less than high school degrees.

[Regression Table 3 Here]

For pairings in which the bride is white, all socially distant pairings follow the hypothesized relationship. Interracial pairings are the least attractive pairings, followed by age differences, woman more educated and man more educated. "Up" marriages are 40% as attractive under surplus and 42% as attractive under scarcity as socially close pairings, but this difference is not statistically significant. A wife with more education is 37.4% as attractive as socially close pairings under surplus and 40.3% as attractive under scarcity, whereas for pairings in which the wife is black are 49.7 and 55% respectively. Thus pairings in which the woman is more educated are relatively more attractive to socially close pairings for pairings with black women than white, this is also true for pairings in which the wife is older. This supports Spanier and Glick (1980) finding that the lower sex ratio for blacks at a national level is associated with women marrying men who tend to be older and less educated compared to their white counterparts at a local level. Again, interracial pairings are more attractive under surplus conditions for black women, but these differences are small and entirely disappear in the MMPI model, which may more accurately reflect market contexts for black women.

There are also large differences by age of bride. The overall magnitude of attraction is much lower for women over 25. Most socially distant marriages among younger women follow SRT, however marriages in which the woman is older follow the reverse pattern. Though, this may represent a small and unique bunch of marriages. Differences in attraction to men with higher levels of education do not appear significantly different across contexts for younger women. Interracial marriages are relatively more attractive for older women, and are actually less attractive for older women in scarcity conditions. Not only are interracial pairings more attractive for older women in comparison to younger women, a finding consistent with Schoen and Wooldredge's (1989) findings for North Carolina and Virginia, they are also more attractive than other socially distant pairings relative to socially close pairings.

[Regression Table 4 Here]

Table 4 and 5 illustrates how individuals may be combining distant characteristics under different market conditions. Table 4 includes all individuals while Table 5 restricts the sample to only those who marry homogamously on age. In Table 5, Model 1, interracial pairings that include white women and black men are more attractive than pairings between black women and white men, though all are less attractive than intraracial pairings. It is evident that attraction to educationally homogamous (0.126) and pairings in which women are less educated (0.126) are more, and equally so, attractive in comparison to pairings where women are more educated (0.124) in white wife/black husband pairings. Exchange unions are no more attractive than homogamous pairings for white wife/black husband pairings, but such unions are relatively (equally) more attractive than homogamous pairings then when white women marry white men. When white women marry within their race hypergamous unions are more attractive (0.297) than hypogamous ones (0.278) , but both are significantly less attractive than homogamous ones (0.758). Educationally heterogamous marriages are more attractive among black wife/white husband pairings than homogamous ones, with women marrying down being the most attractive permutation. This differs from same race peers that marry black men. This provides evidence for status exchange and is also inline with previous findings (Kalmijn 1993; Qian 1997). However, hypergamous unions are more attractive (0.126) than homogamous ones (0.069) when black women marry white men. While the relative ranking of hypogamy and hypergamy among black women is the same whether they marry white or black men, it is perhaps surprising that homogamy is not the most attractive educational pairing for black women when they marry white men. Further, white men are more attracted to marrying up versus homogamously when they marry black women than when they marry white women, and black men are more attracted to marrying down versus homogamously when they marry white women than black. None of these detailed race and education pairings are significantly different across contexts.

[Regression Table 5 Here]

In Table 5, I restrict the sample to only those who marry homogamously on age. In analyses not shown, it became evident that the difference in attraction between hypergamous and educationally homogamous pairings in interracial pairings was sensitive to how age heterogamy was treated. Thus, after excluding those that

additionally marry heterogamously on age, hypergamy is more attractive than homogamy among white women and black men. Though the magnitude of difference is between these two types of pairings is small. Attraction between black women and white men in hypergamous unions is greatly reduced after excluding age heterogamous unions. This also suggests that interracial pairings tend to have other distant characteristics either in addition to, or as an alternative to distant education. Given that the exclusion impacts the educationally homogamous pairings to a greater extent for white women and hypergamous pairings for black women, it may be more likely to be an alternative distant category for white women, and an additional distant category for black women. It is possible that another type of exchange is taking place, perhaps there is an exchange for the likely economic stability that may come from marrying a man substantially older. It also suggests that future research should consider how other distant characteristics may be exchanged for differences in racial status, or how other dimensions may provide a more nuanced understanding of this crude conceptualization.

CONCLUSIONS

I find a strong preference for social similarity regardless of context, but a stronger attraction to similar partners under male scarcity conditions. This pattern holds for virtually all groups under closer scrutiny, with the exception of pairings that include a wife with a high school degree. All distant characteristics appear more attractive under conditions of mate scarcity than surplus, with the exception of interracial marriages among black wives and white husbands which are more attractive under surplus conditions. Other research has also found evidence that these marriages cannot be explained by educational distributions (Kalmijn 1993). Marriages between white men and black women deserve not only further empirical study, but also theoretical consideration. There is also evidence that higher status unions for women are more attractive than lower status unions, but up and down movements appear to be constrained such that less distant movements are always more attractive than more distant unions. Higher status unions are also more attractive, likely as they are more attainable, relative to lower status unions under surplus conditions than scarcity conditions. Education level of the wife is related to increasing attraction to intermarriage under surplus conditions, but this pattern is reversed under male scarcity conditions. There is also evidence of status exchange among

interracial partners. Attraction to pairings by race and education pairings shifts in distinct ways once age heterogamous unions are excluded in the analysis, suggesting that future research should examine such pairings in a more detailed manner. Higher status interracial marriages are always more attractive than lower status pairings for whites women, while the reverse holds for black women. Some of the more complex forms of socially distant marriage do not appear significantly more or less attractive across contexts. Future direction for this research will include incorporating recent data into this analysis and could also explore how the degree of surplus or scarcity of similar men affects attraction to social distance.

Table 1: Attraction to Marriage, by Mate Characteristics

	N	Mean	SD
Pairings by Race			
Both White	89762	0.765	0.551
Both Black	11019	0.510	0.490
White Husband, Black Wife	165	0.151	0.218
Black Husband, White Wife	586	0.232	0.276
Pairings by Education			
Same Education	66488	0.921	0.564
Husband, 1 Higher	16372	0.397	0.272
Husband, 2 Higher	1850	0.199	0.205
Wife, 1 Higher	14725	0.396	0.300
Wife, 2 Higher	2097	0.229	0.253
Pairings by Age			
Same Age	55607	0.868	0.575
Husband 3 to 7 years older	32339	0.693	0.482
Husband 8 to 12 years older	6911	0.298	0.253
Husband 13 + years older	2900	0.228	0.256
Wife 3 + years older	3775	0.268	0.292

Table 2: Market Conditions, 1980

A. Distribution of Women, by Marital Status and Market Context		
	First Marriages	Eligible Women
Sex Ratio		
Balanced, or Male Surplus	30.0	40.6
Male Scarcity	70.0	59.4
MMPI		
Balanced, or Male Surplus	22.4	32.1
Male Scarcity	77.6	67.9
B. Average Market Ratio, by Education and Marital Status		
Sex Ratio		
Less than a High School Degree	1.126	0.972
High School Degree	0.951	0.826
More than a High School Degree	0.758	0.887
MMPI		
Less than a High School Degree	0.828	0.659
High School Degree	0.776	0.654
More than a High School Degree	0.702	0.820
N	101532	3084387

Table 1: Multiplicative Adjustment, Interpretation of Within MSA Results, 1980

Model	1. Baseline†	2. Sex-Ratio†		3. MMPI†	
Conditions		Surplus	Scarcity	Surplus	Scarcity
Variable					
Estimated socially close magnitude of marriage attraction	0.841	0.795	0.869	0.746	0.880
White Wife, Black Husband	0.238	0.157	0.279	0.140	0.272
Black Wife, White Husband	0.135	0.181	0.123	0.193	0.127
Black Wife, Black Husband	0.633	0.515	0.657	0.542	0.633
Wife 3 or more years older	0.262	0.204	0.303	0.181	0.290
Wife 8 to 12 years younger	0.357	0.238	0.356	0.211	0.357
Wife 13 or more years younger	0.237	0.065	0.233	0.073	0.236
Wife 1 educational category lower	0.377	0.346	0.393	0.320	0.393
Wife 2 educational categories lower	0.183	0.149	0.195	0.114	0.194
Wife 1 educational category higher	0.363	0.332	0.389	0.309	0.398
Wife 2 educational categories higher	0.214	0.134	0.269	0.125	0.269

*All coefficients are significant at $p<0.01$ or greater

Table 2: Interpretation of Within MSA Results by Woman's Education, 1980

Female Chacteristic Model † Conditions	< HS SR	< HS MMPI	HS SR	HS MMPI	> HS SR	> HS MMPI
Estimated socially close magnitude of marriage attraction	0.368	0.332	0.935	0.914	0.742	0.696
Interracial Pairing	0.130	0.112	0.156	0.145	0.163	0.153
Wife 3 or more years older	0.202	0.205	0.224	0.220	0.171	0.151
Wife 8 or more years younger	0.307*	0.791*	0.359	0.388	0.167	0.171
Wife less education	0.263	0.249	0.348	0.325	--	--
Wife more education	--	--	0.383	0.358	0.239	0.232
Male Scarcity Conditions						
Interracial Pairing	0.280	0.250	0.257	0.247	0.177*	0.179*
Wife 3 or more years older	0.294	0.261*	0.214*	0.214*	0.325	0.306
Wife 8 or more years younger	0.283*	0.238*	0.292	0.300	0.292	0.304
Wife less education	0.263	0.267	0.408	0.409	--	--
Wife more education	--	--	0.446	0.451	0.313	0.312*
Male Scarcity Indicator	0.453	0.456	0.756	0.794	0.924	0.928
N	11178	11178	39383	39383	50971	50971

*Indicates a nonsignificant estimate or interaction

Table 3: Interpretation of Within MSA Results by Woman's Race and Age, 1980

Female Chacteristic Model † Conditions	White SR	White MMPI	Black SR	Black MMPI	<=25 SR	<=25 MMPI	> 25 SR	> 25 MMPI
Estimated socially close magnitude of marriage attraction	0.813	0.761	0.362	0.332	0.798	0.759	0.298	0.362
Interracial Pairing	0.158	0.141	0.094	0.088	0.129	0.121	0.404	0.664
Wife 3 or more years older	0.185	0.167	0.218	0.223	0.322	0.310	0.119	0.101
Wife 8 or more years younger	0.218	0.198	0.170	0.181	0.211	0.191	0.174	0.485*
Wife less education	0.328	0.307	0.182	0.178	0.317	0.303	0.247	0.383*
Wife more education	0.304	0.282	0.180	0.154	0.297	0.277	0.168	0.243
Male Scarcity Conditions								
Interracial Pairing	0.283	0.268	0.086	0.088	0.248	0.234	0.318	0.201
Wife 3 or more years older	0.299	0.278	0.232	0.231	0.062	0.320	0.243*	0.243*
Wife 8 or more years younger	0.298	0.325	0.322*	0.321*	0.324	0.324	0.263*	0.262*
Wife less education	0.367*	0.341	0.255*	0.194	0.394*	0.385*	0.251	0.252*
Wife more education	0.360	0.360	0.295	0.286	0.407	0.404	0.238	0.238
Male Scarcity Indicator	0.893	0.879	0.535	0.516	0.994	0.986	0.601	0.599
N	90348	90348	11184	11184	76699	76699	24843	24843

*Indicates a nonsignificant estimate or interaction

Table 4: Multiplicative Adjustment, Interpretation of Within MSA Results, 1980

Model	1. Baseline†	2. Sex-Ratio†		3. MMPI†	
Conditions		Surplus	Scarcity	Surplus	Scarcity
Variable					
Estimated socially close magnitude of marriage attraction	0.758	0.754	0.759*	0.715	0.809
White Wife, Black Husband Only	0.126	0.084	0.148*	0.076	0.145
Black Wife, White Husband Only	0.069	0.095	0.064*	0.126	0.063
Black Wife, Black Husband Only	0.484	0.438	0.495*	0.481	0.483
WW, BH Wife More Educated	0.124	0.085	0.085*	0.083	0.082*
WW, BH Wife Less Educated	0.126	0.077	0.077*	0.019	0.015*
BW, WH Wife More Educated	0.082	0.121	0.121*	0.079	0.178*
BW, WH Wife Less Educated	0.074	0.088	0.088*	0.109	0.150*
Both White, Wife More Educated	0.278	0.280	0.280*	0.260	0.289*
Both White, Wife Less Educated	0.297	0.779	0.779*	0.292	0.299*
Both Black, Wife More Educated	0.246	0.225	0.225*	0.207	0.208
Both Black, Wife Less Educated	0.222	0.203	0.203*	0.233	0.300

*Indicates a nonsignificant estimate or interaction

Table 5: Multiplicative Adjustment, Within Age Homogamous Unions

Model	1. Baseline†	2. Sex-Ratio†		3. MMPI†	
Conditions		Surplus	Scarcity	Surplus	Scarcity
Variable					
Estimated socially close magnitude of marriage attraction	0.899	0.823	0.924	0.769	0.936
White Wife, Black Husband Only	0.119	0.079	0.139	0.071	0.136
Black Wife, White Husband Only	0.069	0.084	0.065	0.111	0.063
Black Wife, Black Husband Only	0.553	0.458	0.575	0.495	0.551
WW, BH Wife More Educated	0.100	0.066	0.077*	0.069	0.073*
WW, BH Wife Less Educated	0.121	0.092	0.082*	0.088	0.078*
BW, WH Wife More Educated	0.073	0.067	0.106*	0.052	0.161
BW, WH Wife Less Educated	0.053	0.094	0.042	0.103	0.091*
Both White, Wife More Educated	0.319	0.300	0.331*	0.276	0.344*
Both White, Wife Less Educated	0.349	0.322	0.355*	0.301	0.357*
Both Black, Wife More Educated	0.270	0.208	0.253	0.207	0.300
Both Black, Wife Less Educated	0.233	0.208	0.215	0.236	0.251

*Indicates a nonsignificant estimate or interaction

Appendix 1: Exponentiated Within MSA Multivariate Linear Regression Results, for Table 1

Variable	Baseline†	Sex-Ratio†	MMPI†
Estimated socially close magnitude of marriage attraction	0.841***	0.795***	0.746***
Estimated multiplicative adjustment factor for variable *i*			
White Wife, Black Husband	0.283***	0.197***	0.188***
Black Wife, White Husband	0.161***	0.228***	0.259***
Black Wife, Black Husband	0.753***	0.648***	0.726***
Wife 3 or more years older	0.311***	0.257***	0.242***
Wife 8 to 12 years younger	0.424***	0.299***	0.283***
Wife 13 or more years younger	0.282***	0.082***	0.098***
Wife 1 educational category lower	0.448***	0.435***	0.429***
Wife 2 educational categories lower	0.218***	0.187***	0.153***
Wife 1 educational category higher	0.432***	0.418***	0.414***
Wife 2 educational categories higher	0.254***	0.169***	0.168***
*Social Distance Indicators*Male Scarcity Indicators (Men of Similar Race, Education and Age Range)*			
White Wife, Black Husband		1.628***	1.647***
Black Wife, White Husband		0.622***	0.557***
Black Wife, Black Husband		1.166***	0.991
Wife 3 or more years older		1.356***	1.361***
Wife 8 to 12 years younger		1.372***	1.435***
Wife 13 or more years younger		3.273***	2.738***
Wife 1 educational category lower		1.040**	1.041**
Wife 2 educational categories lower		1.200***	1.438***
Wife 1 educational category higher		1.072***	1.093**
Wife 2 educational categories higher		1.829***	1.820***
Male Scarcity Indicator		1.093***	1.179***
N	101532	101532	101532
R^2	0.550	0.559	0.561

***p <0.001, ** p <0.01, *p <0.05

† Results are fixed effects within MSA

Appendix 2: Multiplicative Adjustment, Interpretation of Within MSA Results by Woman's Education, 1980

Female Chacteristic	< HS	< HS	HS	HS	> HS	> HS
Model †	SR	MMPI	SR	MMPI	SR	MMPI
Conditions						
Estimated socially close magnitude of marriage attraction	0.368***	0.332***	0.935***	0.914***	0.742***	0.696***
Interracial Pairing	0.353***	0.337***	0.167***	0.159***	0.220***	0.220***
Wife 3 or more years older	0.548***	0.616***	0.240***	0.241***	0.230***	0.217***
Wife 8 or more years younger	0.835	2.383	0.384***	0.425***	0.225***	0.246***
Wife less education	0.715***	0.749***	0.372***	0.356**	--	--
Wife more education	--	--	0.410***	0.392***	0.322***	0.333***
Male Scarcity Conditions						
Interracial Pairing	1.750***	1.626*	2.038***	1.963***	0.870	0.875
Wife 3 or more years older	1.184*	0.930	1.181***	1.120*	1.529***	1.519***
Wife 8 or more years younger	0.629*	0.219*	1.005	0.888	1.404***	1.333***
Wife less education	0.812***	0.782***	1.451***	1.445***	--	--
Wife more education	--	--	1.440***	1.448***	1.051***	1.010
Male Scarcity Indicator	1.232***	1.373***	0.809***	0.869***	1.245***	1.333***
N	11178	11178	39383	39383	50971	50971
R^2	0.529	0.533	0.571	0.569	0.571	0.574

***p <0.001, ** p <0.01, *p <0.05

† Results are fixed effects within MSA

Appendix 3: Multiplicative Adjustment, Interpretation of Within MSA Results by Woman's Race and Age, 1980

Female Chacteristic	White	White	Black	Black	<=25	<=25	> 25	> 25
Model †	SR	MMPI	SR	MMPI	SR	MMPI	SR	MMPI
Conditions								
Estimated socially close magnitude of marriage attraction	0.813***	0.761***	0.362***	0.332***	0.798***	0.759***	0.298***	0.362***
Interracial Pairing	0.194***	0.185***	0.259***	0.266***	0.162***	0.160***	1.355	1.834***
Wife 3 or more years older	0.227***	0.219***	0.602***	0.672***	0.404***	0.408**	0.401***	0.278***
Wife 8 or more years younger	0.268***	0.260***	0.470***	0.546*	0.265***	0.251***	0.583*	1.339
Wife less education	0.404***	0.403***	0.504***	0.536***	0.397***	0.399***	0.829**	1.059
Wife more education	0.374***	0.371***	0.496***	0.464**	0.372***	0.365***	0.563***	0.669***
Male Scarcity Conditions								
Interracial Pairing	1.634***	1.644***	0.623***	0.641**	1.543***	1.482***	0.239***	0.183***
Wife 3 or more years older	1.471***	1.442***	0.721***	0.665***	0.786***	0.796***	1.081	1.457
Wife 8 or more years younger	1.246***	1.420***	1.279	1.140	1.230***	1.309***	0.751	0.327
Wife less education	1.019	0.961*	0.945	0.874*	0.998	0.979	0.504***	0.398***
Wife more education	1.078***	1.106***	1.111**	1.193***	1.100***	1.124***	0.703***	0.593***
Male Scarcity Indicator	1.098***	1.155***	1.479***	1.554***	1.245***	1.299***	2.017***	1.654*
N	90348	90348	11184	11184	76699	76699	24843	24843
R^2	0.540	0.544	0.623	0.616	0.551	0.555	0.510	0.508

***p <0.001, ** p <0.01, *p <0.05

† Results are fixed effects within MSA

Appendix 4: Exponentiated Within MSA Multivariate Linear Regression Results, for Table 4

Variable	1. Baseline†	2. Sex-Ratio†		3. MMPI†	
		Surplus	Scarcity	Surplus	Scarcity
Estimated socially close magnitude of marriage attraction	0.758***	0.754***	1.007	0.715***	1.079***
Estimated multiplicative adjustment factor for variable *i*					
White Wife, Black Husband Only	0.166***	0.111***	1.751***	0.106***	1.769***
Black Wife, White Husband Only	0.091***	0.126***	0.668*	0.177***	0.460***
Black Wife, Black Husband Only	0.638***	0.581***	1.122***	0.673***	0.931*
WW, BH Wife More Educated	0.164***	0.111***	1.012	0.116***	0.915
WW, BH Wife Less Educated	0.166***	0.124***	0.821	0.127***	0.751
BW, WH Wife More Educated	0.108***	0.112***	1.426	0.111***	2.078
BW, WH Wife Less Educated	0.097***	0.152***	0.765	0.153***	1.270
Both White, Wife More Educated	0.367***	0.367***	1.004	0.364***	1.028
Both White, Wife Less Educated	0.392***	0.406***	0.954**	0.408***	0.949**
Both Black, Wife More Educated	0.324***	0.276***	1.075	0.290***	0.931*
Both Black, Wife Less Educated	0.293***	0.268***	1.000	0.326***	1.192**
N	101532	101532		101532	
R^2	0.393	0.394		0.395	

***p <0.001, ** p <0.01, *p <0.05

† Results are fixed effects within MSA

Appendix 5: Exponentiated Within MSA Multivariate Linear Regression Results, for Table 5

Variable	1. Baseline†	2. Sex-Ratio†		3. MMPI†	
		Surplus	Scarcity	Surplus	Scarcity
Estimated socially close magnitude of marriage attraction	0.899***	0.823***	1.123***	0.769***	1.217***
Estimated multiplicative adjustment factor for variable *i*					
White Wife, Black Husband Only	0.132***	0.096***	1.563***	0.092***	1.577***
Black Wife, White Husband Only	0.077***	0.102***	0.691*	0.144***	0.467***
Black Wife, Black Husband Only	0.615***	0.557***	1.116***	0.644***	0.914***
WW, BH Wife More Educated	0.111***	0.080***	1.047	0.090***	0.872
WW, BH Wife Less Educated	0.135***	0.112***	0.795	0.115***	0.729
BW, WH Wife More Educated	0.081***	0.081***	1.422	0.068***	2.526*
BW, WH Wife Less Educated	0.059***	0.114***	0.400**	0.134***	0.729
Both White, Wife More Educated	0.355***	0.364***	0.984	0.359***	1.023
Both White, Wife Less Educated	0.388***	0.391***	0.983	0.391***	0.975
Both Black, Wife More Educated	0.300***	0.253***	1.082*	0.269***	1.190**
Both Black, Wife Less Educated	0.259***	0.253***	0.921*	0.307***	0.873*
N	87946	87946		87946	
R^2	0.385	0.400		0.405	

***p <0.001, ** p <0.01, *p <0.05

† Results are fixed effects within MSA

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