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Daniel T. Lichter *Cornell University*

Joseph P. Price *Brigham Young University*[*]

Jeffrey M. Swigert *Southern Utah University*[**]

Mismatches in the Marriage Market

Objective: *This article provides an assessment of whether unmarried women currently face demographic shortages of marital partners in the U.S. marriage market.*

Background: *One explanation for the declines in marriage is the putative shortage of economically attractive partners for unmarried women to marry. Previous studies provide mixed results but are usually focused narrowly on sex ratio imbalances rather than identifying shortages on the multiple socioeconomic characteristics that typically sort women and men into marriages.*

Methods: *This study identifies recent marriages from the 2008 to 2012 and 2013 to 2017 cumulative 5-year files of the American Community Survey. Data imputation methods provide estimates of the sociodemographic characteristics of unmarried women's potential (or synthetic) spouses who resemble the husbands of otherwise comparable married women. These estimates are compared with the actual distribution of unmarried men at the national, state, and local area levels to identify marriage market imbalances.*

Results: *These synthetic husbands have an average income that is about 58% higher than the actual unmarried men that are currently available to unmarried women. They also are 30% more likely to be employed (90% vs. 70%) and 19% more likely to have a college degree (30% vs. 25%). Racial and ethnic minorities, especially Black women, face serious shortages of potential marital partners, as do low socioeconomic status and high socioeconomic status unmarried women, both at the national and subnational levels.*

Conclusions: *This study reveals large deficits in the supply of potential male spouses. One implication is that the unmarried may remain unmarried or marry less well-suited partners.*

Recent declines in U.S. marriage are reflected both in delayed marriage and increases in permanent singlehood, punctuated by intermittent spells of nonmarital cohabitation (Lichter & Qian, 2008; Manning, Brown, & Payne, 2014). One argument is that the traditional economic foundations of marriage have been eroded by a deteriorating job market, a consequence of automation, deskilling, deunionization, and global competition for cheap labor (Lundberg, Pollak, & Stearns, 2016; Sweeney, 2002). Indeed, Wilson's (1987) "marriageable male" hypothesis provides a useful theoretical and empirical benchmark, claiming that declines in marriage are driven at least in part by

Department of Policy Analysis & Management, 1302A Martha Van Rensselaer Hall, Cornell University, Ithaca, NY, 14853 (dtl28@cornell.edu).

[*] Department of Economics, Brigham Young University, Provo, UT 84604.

[**] Department of Economics and Finance, Southern Utah University, Cedar City, UT 84720.

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reductions in employment prospects and earnings among men, especially less-skilled racial and ethnic minorities at the bottom of the education distribution. High rates of incarceration and substantial out-marriage to White women, especially among Black men, have also left many minority women without marital partners (Crowder & Tolnay, 2000). The fact that women's educational levels now exceed men's (Buchmann & DiPrete, 2006; Van Bavel, Schwartz, & Esteve, 2018) further implies that young women—by necessity—are less financially dependent on husbands than in the past and that educational hypogamy has become more commonplace (Breen & Salazar, 2011; Qian, 2017). Young women seemingly face shortages of demographically similar men to marry.

This article provides new estimates of spousal mismatches in the marriage market. Specifically, we compare the demand-side sociodemographic characteristics that women typically seek in male partners with the availability or supply of these characteristics in the marriage market. We use methods for imputing missing data (in effect, creating "synthetic husbands") to infer the likely sociodemographic profiles of the husbands of unmarried women if they married. We make the assumption that these women would marry men comparable with the husbands of demographically similar women who are currently married. We accomplish our goals using national and subnational data from the most recently released cumulative 5-year files (2008–2012 and 2013–2017) of the annual American Community Survey (ACS; www.census.gov/programs-surveys/acs). By identifying the counterfactual case (i.e., the likely demographic profile of husbands if unmarried women became married), we provide a direct assessment of whether women currently face demographic constraints in the marriage market. Our study—for the first time—identifies both surpluses and deficits of so-called synthetic husbands in the marriage market.

This didactic exercise shows that unmarried women face overall shortages of economically attractive partners with either a bachelor's degree or incomes of more than $40,000 a year. Most previous work suggests that women are more likely to remain unmarried than to "settle" by marrying partners who are mismatched on age, education, or race (Lewis & Oppenheimer, 2000; Lichter, Anderson, & Hayward, 1995). A recent study by Qian (2017), however, indicated that patterns of assortative mating have shifted, switching from a tendency in 1980 for women to "marry up" in socioeconomic status to a pattern today of "marrying down." This reversal suggests, at a minimum, that growth in the pool of marriageable men has not kept pace with the rapid rise in women's socioeconomic status. Our study reinforces the commonplace view that women today face new marriage trade-offs at a time when finding a suitable marital match has become more difficult.

Background

Marriage Market Imbalances and Marital Search

Large but declining majorities of both single and cohabiting young women (and men) intend, expect, or plan to marry (Kuo & Raley, 2016; Manning, Longmore, & Giordano, 2007; Vespa, 2014). This implies that recent marriage trends and mate selection processes may simply result from shifting marital attitudes and preferences. They may also reflect third-party constraints, such as parental and religious influences, changing cultural norms, and legal restrictions on marriage (Kalmijn, 1998) and, as we assume here, uneven marriage market opportunities and constraints (Lichter & Qian, 2019). Indeed, the wish to marry is not always realized, which explains why marriage rates often fall well short of women's marital expectations or plans to marry (Gibson-Davis, Edin, & McLanahan, 2005). This is the case among poor single mothers, who typically hold conventional aspirations for marriage but are much less likely than middle-class single women to actually marry (Lichter, Batson, & Brown, 2004). Deficits in the supply of economically attractive men may be the reason why.

From a search–theoretic demographic perspective, the marriage market is similar to the matching of employers and employees in the labor market (England & Farkas, 1986; Lichter et al., 1992). In a two-sided matching process, both employers and employees arguably seek the "best" match possible. Workers with unequal skills, different wage demands, and other qualifications are sorted into jobs that presumably match the particular needs of employers (i.e., that the supply and demand for workers are in equilibrium) in competitive labor markets.

Similarly, marriage-seeking men and women usually sort on similar characteristics in the marriage market. They presumably seek marriage partners who match their socioeconomic status, age, race, and attractiveness, among other valued traits (Schwartz, 2013). A fair or equitable exchange is revealed in positive assortative mating or marital homogamy.

Of course, there is no assurance that marriage markets are in demographic equilibrium—where the demand for partners with particular sociodemographic profiles matches the supply. National and local area demographic shortages of potential marital partners, for example, mean that some women will necessarily remain unmarried or will have to search longer for a suitable partner. Shortages of marriageable men imply increasing singlehood and delayed marriage (as indicated by the rise in age at first marriage). Alternatively, women may instead "settle" for a marital match that falls short of their aspirations in a spouse (i.e., the "reservation quality partner," to use the terminology of England & Farkas [1986]). This will be expressed in new patterns of marital hypogamy or downward marital mobility.

Measuring Disequilibria in the Marriage Market

How best to measure marriage market mismatches is not obvious, although it will undoubtedly require taking into account surpluses (or deficits) in the demographic supply of both men and women with specific traits that are commonly exchanged in marriage. In the contemporary U.S. marriage market literature, for example, job stability, earnings, and education play a large and singular role in the mate selection process (Charles, Hurst, & Killewald, 2013; McClendon, Kuo, & Raley, 2014). Nearly 80% of unmarried women indicate that a "steady job" would be very important to them in choosing a spouse (Wang & Parker, 2014). A partner with a good job is usually viewed as a necessary but insufficient condition for marriage (Schneider, Harknett, & Stimpson, 2019). Qualitative research also suggests that women often gauge the "marriageability" of potential male partners by the effort put into finding and keeping a job, as well as by the source of income, that is, earnings from a stable job or from illicit or illegal activities (Smock, Manning, & Porter, 2005; Thomas, 2012).

For some low-income women, marriage may be a problem (i.e., exposure to abuse) rather than a solution (e.g., reducing poverty and inequality). Low or declining earnings among potential male partners also may heighten fears of divorce while discouraging women from getting married (Waller & Peters, 2008). For cohabiting couples, a good job is typically a requirement before committing to marriage or for making marriage financially feasible (Smock et al., 2005). The implication is clear: Mismatches in the marriage market in the form of shortages of economically attractive men may exacerbate uncertainty and heighten disincentives to marriage, especially at a time of rising education and growing financial independence among American women (Gibson-Davis et al., 2005; Schwartz, Zeng, & Xie, 2016; Watson & McLanahan, 2011).

Generally, we recognize that U.S. marriage market conditions—the demographic composition of potential male partners—have undergone substantial change during the past 3 decades. Conventional social norms surrounding marriage, including positive assortative mate selection based on the shared sociodemographic traits of partners (e.g., age, race, education, and income), have arguably been upended or altered by new economic realities and growing family complexity (Qian & Lichter, 2011). Marriage market mismatches—demographic shortages or surpluses of potential spouses—are likely to be distributed unevenly in the unmarried population. For example, economic globalization has disproportionately affected working class men and laborers at the bottom of the education distribution (Autor, Dorn, & Hanson, 2019; Oppenheimer, Kalmijn, & Lim, 1997). Under these circumstances, it is hardly surprising that the conventional model of "husband as breadwinner" and "wife as homemaker" has increasingly given way to more equalitarian marriages or to other less traditional family arrangements, such as cohabitation and single parenthood (Goldscheider, Bernhardt, & Lappegård, 2015). This is likely to be the case in particular among professional and highly educated women. Marriage market mismatches are likely to be expressed unevenly, which ultimately contributes to diverse patterns of partnering and parenting among American women (Sassler, 2010; Smock & Greenland, 2010).

Race also continues to play a nontrivial role in America's highly segmented marriage market. Racial and ethnic disparities in the quantum and tempo of marriage have accelerated over time (Raley, Sweeney, & Wondra, 2015). America's historically disadvantaged racial and ethnic minority populations remain highly stratified by the usual economic predictors of marriage: education, job stability, earnings, and poverty. At the same time, interracial marriages have increased significantly since *Loving v. Virginia* (in 1967), which abolished antimiscegenation laws. The extraordinary recent growth of Hispanic and Asian immigrant populations also has added diversity to the pool of potential marriage partners (Charles & Luoh, 2010; Qian, Lichter, & Tumin, 2018). The racial dimension of marriage and mate selection processes has likely contributed to further imbalances in the marriage market (i.e., as shortages in one segment of the market create new demands for a mate in other segments).

Charles and Luoh (2010) have also shown that the mass incarceration of Black men has depleted the pool of unmarried men in inner-city urban neighborhoods, which has greatly reduced the prospect of marriage among Black women. On average, Black men are roughly seven times more likely than White men to be incarcerated (Lopoo & Western, 2005; Raley et al., 2015). Race remains a significant demographic dimension of national and local marriage market mismatches, especially as educational and income constraints are amplified within many low-income and residentially segregated minority populations (Wilson, 1987). Indeed, numerical shortages of same-race potential partners with attractive socioeconomic and demographic profiles represent an especially salient dimension of the mismatches among disadvantaged minority women.

Current Study

Our overall goal is largely descriptive: to appropriately characterize U.S. marriage market conditions for currently unmarried women with different sociodemographic profiles. We have two specific objectives.

First, we use data imputation methods to infer what the sociodemographic characteristics of each woman's spouse would be if they married a man with similar characteristics to the husbands of comparable women. We build on an imputation method used by Sassler and McNally (2003) to reclaim missing partner information for cohabiters and on other approaches that create so-called "synthetic spouses" when only one spouse in the household is available for analysis (Hamermesh & Pfann, 2005). Rather than focusing narrowly on sex ratio imbalances (Cohen & Pepin, 2018), we identify shortages on the many possible characteristics (e.g., age, education, income, etc.)—both at the national and subnational levels—that typically sort women and men into marriages.

Second, we compare the distribution of characteristics of synthetic husbands with the distribution of all unmarried men in our sample. The goal is to identify the shares of women without a suitable marriage match and the specific female subpopulations that face the greatest risk of a "tight" marriage market—one with a demographic shortage of men to marry. Our discussion of marriage market imbalances focuses primarily on (a) low-educated or poor women who are sometimes the target of recent marriage promotion programs (Lichter, Graefe, & Brown, 2003; Ooms, 2019) and (b) highly educated women who have ostensibly "priced" themselves out of the marriage market and now face shortages of economically attractive men to marry (DiPrete & Buchmann, 2006; Musick, Brand, & Davis, 2012). Or, stated differently, men may have become less competitive in the marriage market, falling behind on those economic and demographic traits that made them attractive to women as marriage partners.

Methods

Data and Sample Restrictions

Our analyses use ACS 5-year samples covering the years 2008 to 2012 and 2013 to 2017. The ACS provides a rich set of sociodemographic characteristics for all unmarried and currently married women and their spouses, including sex, age, race/ethnicity, education, income, employment status, and number and age of children. Sample sizes are sufficiently large to observe the alignment of the national and subnational (state and local) supply and demand of opposite-sex partners in the marriage market.

We split our sample into four groups based on sex (males and females) and marital status (i.e., married, spouse present; unmarried). We do not consider same-sex couples, which are not identified for all years and subnational areas during

Table 1. *Summary Statistics*

	Married women	Married men	Unmarried women	Unmarried men
Employed	69.54	90.95	74.62	69.55
Unemployed	3.79	3.65	7.05	8.28
Not in the labor force	26.66	5.41	18.33	22.17
Personal income	33,785 (44,591)	70,353 (76,479)	32,332 (36,028)	34,552 (43,854)
Percent White	79.39	79.87	67.15	69.93
Percent Black	5.47	6.24	18.47	15.16
Percent Hispanic	15.56	15.20	16.59	17.34
Age	36.50 (6.65)	38.90 (7.49)	33.72 (6.31)	33.32 (6.20)
High school graduate	91.96	89.98	89.59	85.08
Some college	73.09	66.37	66.92	54.00
College graduate	42.04	37.08	33.35	24.89
N	2,389,035	2,389,035	1,512,154	1,711,805

Note: Unmarried individuals are between the ages of 25 and 45. All married individuals are included for which at least one spouse is aged 25 to 45. Standard deviations are provided in parentheses.

our 10-year study period. Our married-couple sample also does not include cohabiting couples, which are included here with other unmarried persons. Previous studies indicate that cohabiting couples are often highly unstable and less likely than in the past to lead to marriage (Guzzo, 2018; Lichter, Michelmore, Turner, & Sassler, 2016). Interracial and other forms of heterogamy also are more likely to cohabit rather than marry (Blackwell & Lichter, 2000). Moreover, marriage is linked to higher rates of commitment and fertility and confers certain legal rights and obligations that are not imposed on cohabiting couples. In some additional analyses (not shown, but available upon request), we treated cohabiting couples as "married" and found results that are similar to those reported here.

An important feature of our study is that we restrict the sample of currently married women to those who married in the past 5 years. Unlike studies of intact marriages (Qian & Lichter, 2007), the characteristics we observe for marriage markets and for actual and synthetic spouses more closely match characteristics at the time of marriage. Our sample of unmarried individuals includes those between the ages of 25 and 45, whereas the sample of married individuals are drawn from recently married couples in which at least one spouse is aged 25 to 45. By age 25, the majority of women are still unmarried but will have achieved their highest level of education. By age 45, however, more than 95% of ever-married women will have married (Goldstein & Kenney, 2001). These age restrictions also have the benefit of reducing biases from age-selective patterns of divorce and mortality.

Matching Spousal Characteristics

Table 1 provides summary statistics for each of the key variables used in our matching exercise reported separately for each of the four groups. Married men and women are on average older than their unmarried counterparts, and they have higher education levels. Unmarried women are slightly more likely to be employed but earn slightly less than their married counterparts. These observed similarities and differences are largely consistent with the conventional wisdom that married men are more "economically attractive" or "marriageable" than unmarried men and that most single women (by definition) must rely on their own employment and earnings to support themselves and their families.

For example, the average total personal income of married men is $70,000 compared with $35,000 for unmarried men (measured in 2017 dollars). Nearly 40% (37%) of married men are college graduates compared with only 25% of unmarried men. Although the difference is small in absolute terms, the relative difference in employment status is large. About twice as many unmarried as married women are unemployed (7.05% vs. 3.79%). The largest relative difference between married versus unmarried women is the percentage Black (6% vs. 18%), a result that highlights the persistent marriage gap between Blacks and Whites.

Imputing Synthetic Spouses

The key empirical goal is to determine the characteristics of the spouse to whom the unmarried women in our sample would likely be married, assuming they exhibit the same mate selection patterns as currently married women. Current patterns of marital homogamy represent the statistical if not cultural norm. We identify these counterfactual husbands (i.e., synthetic spouses) by matching each unmarried woman to the married woman or set of married women who have a similar set of observable characteristics. These characteristics are based on several conventional matching variables, including age, race, education, income, and employment status (Lichter & Qian, 2019). We also include military veteran status, acknowledging that military veterans are likely to consider veteran status when selecting a spouse (especially if we assume that veterans exhibit certain traits, such as a strong sense of pride, honor, and integrity, which enhance their attractiveness in the marriage market; Moore, 2011). Military service also provides opportunities for marrying other veterans (e.g., interactions on military bases or, later, at veterans' organizations such as the Veterans of Foreign Wars).

The ACS data include social and demographic characteristics that provide the basis for marital matches, but lack other traits that may be involved in the marital decision-making process. For example, the ACS lacks indicators of personality traits, intelligence, or physical attractiveness (e.g., weight, beauty, or physical features). Of course, these unobserved traits may be correlated with getting and keeping a good job or earning a wage premium (e.g., in the case of height among men). Goldscheider and Waite (1986) argued that employment provides the resources to start and maintain a stable household and a clear indicator of economic prospects in the future. Steady employment may be indicative of other desirable factors, such as ability, motivation, and reliability, which also make for more attractive or sought-after marital partners.

We estimate the characteristics of synthetic spouses using two alternative approaches. Our first approach is to use a standard hot-deck imputation in which we randomly draw a spouse out of the set of possible matches and repeat this process for all unmarried women in our samples. As an additional sensitivity test, a second imputation approach takes the average of each characteristic across the set of possible matches for each unmarried woman. We then use these averages to estimate the characteristics of each synthetic spouse. This is a conventional form of cell mean imputation (see Van Buuren, 2018).

Once we have estimated the synthetic spouse of each of the unmarried women in our sample (aged 25–45), we compare the characteristics of the synthetic spouses with those of actual unmarried men in our sample. We group our data into bins based on age (3-year age categories), race, ethnicity, education (i.e., within 2 years), income (in categories based on increments of $5,000), employment, and military veteran status. We then randomly assign unmarried men in each bin to a synthetic spouse, if one exists. This creates a one-to-one matching between the synthetic spouses and actual unmarried men. Unlike most previous studies of marital homogamy, a distinctive feature of our approach is that we account for local opportunity structures by further requiring exact matches of synthetic spouses to real single men on public use microdata areas (PUMAs) of residence (for exceptions, see Choi & Tienda, 2017; Qian et al., 2018). This process results in a set of unmarried men successfully matched to synthetic spouses, a set of synthetic spouses who have no match, and a set of unmarried men who have no match. We then use information about whether an observation successfully matched to estimate a regression of match probability on the characteristics of unmarried women aged 25 to 45. This provides evidence about which types of characteristics have either an excess demand or a supply shortage in the marriage market.

Results

Baseline Estimates of Marital Mismatch

In Table 2, the first two columns provided our initial hot-deck estimates of the mismatch between the synthetic spouses of the unmarried women (or the characteristics of men these women would likely marry if, in fact, they married) and the actual unmarried men that were available for them to marry. The synthetic spouses had an average income that was about 55% higher ($53,000 vs. $35,000), were 26% more likely to be employed (87% vs. 70%), and were 18% more likely to have a college degree (29% vs. 25%) than the actual unmarried men who were available in the United States. These estimates suggested large differences in

Table 2. *Comparison of Synthetic Spouses and Unmarried Men*

	Unmarried men	Synthetic spouse of unmarried women	Difference in means	Percentage difference
Employed	69.55	87.30	−17.75	25.52
Unemployed	8.28	5.45	2.83	34.17
Not in the labor force	22.17	7.25	14.92	67.31
Personal income	34,552 (43,854)	52,757 (56,354)	−18,205	52.69
Percent White	69.93	69.44	0.49	0.70
Percent Black	15.16	18.26	−3.10	20.43
Percent Hispanic	17.34	15.42	1.92	11.06
Age	33.32 (6.20)	36.29 (8.48)	−2.97	8.91
High school graduate	85.08	88.96	−3.88	4.56
Some college	54.00	60.96	−6.96	12.88
College graduate	24.89	29.43	−4.54	18.26
N	1,711,805	1,497,915		

Note: Unmarried men are aged between 25 and 45. Synthetic spouses are those of unmarried women aged 25 to 45. The percentage difference is calculated as follows: (Unmarried Man Mean − Synthetic Spouse Mean)/(Unmarried Man Mean) × 100. All differences between unmarried men and synthetic spouses of unmarried women are statistically significant at the .01 level.

the demand and supply of unmarried men with certain characteristics.

In Figures 1 and 2, we overlaid the distribution of age, income, education, and race of the synthetic spouses and the unmarried men observed in these data. Figure 1 was based on hot-deck imputation, whereas the results in Figure 2 were based on mean imputation. The locations along the distribution where the shaded bars were higher indicated shortages of unmarried men with specific characteristics. The results in these figures revealed the mismatch for each characteristic separately.

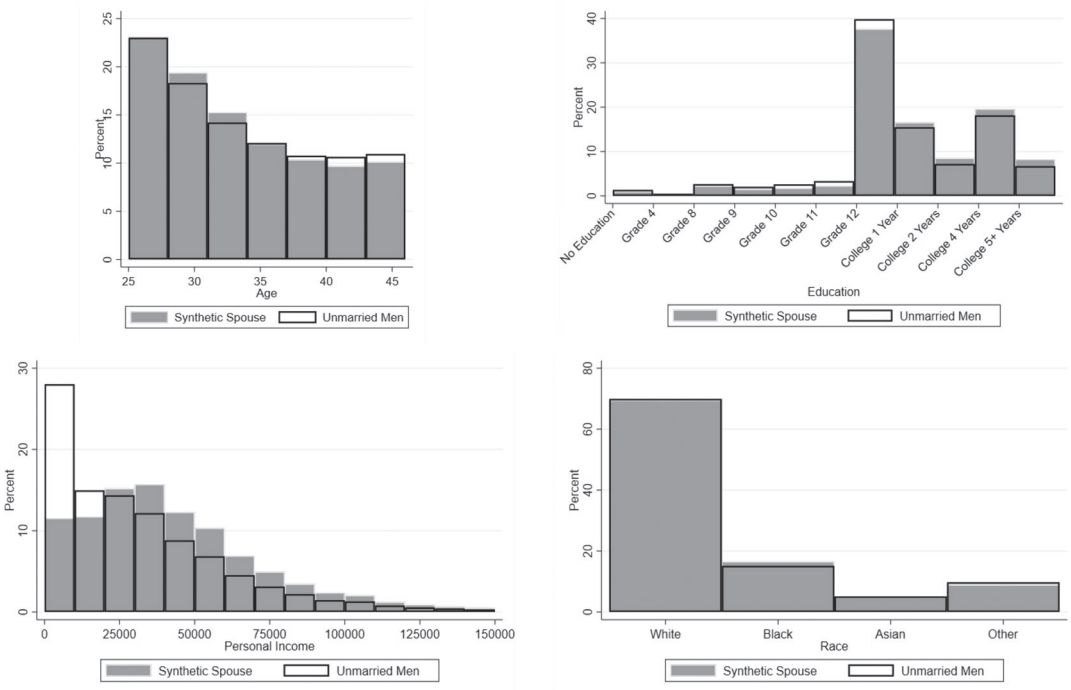
The results in both Figures 1 and 2 clearly highlighted large income- and education-based mismatches in the marriage market. Specifically, there was an excess supply of men with incomes less than $20,000 (with a shortage of men with incomes greater than $40,000) as well as a marriage market mismatch in education—too many men had only a high school degree and too few had a college or graduate degree. However, there was some evidence in previous studies that fathers who marry their child's mother may, as a result, experience increases in income (Killewald, 2013). To the extent that this happens, our estimates of the shortage of higher earning men may be slightly inflated, but nevertheless still cannot fully explain the magnitude of the male shortage.

In contrast to these estimates, the racial distributions were well matched, except for the possible oversupply of unmarried Black men, a pattern clearly consistent with Wilson's (1987) "marriageable male" hypotheses. Because less-educated racial and ethnic minorities have disproportionately high rates of incarceration, the evidence here of well-matched racial distribution seemingly indicated that any effects of the mass incarceration of Blacks on the overall marriage market were modest, a result consistent with the results reported by Lopoo and Western (2005).

Multidimensional Matching in the Marriage Market

In Table 3, our results showed how women's sociodemographic characteristics jointly determined whether they experienced a demographic shortfall of unmarried men—those with a demographically suitable bundle of characteristics. Specifically, we created an indicator for whether synthetic spouses actually matched the observed pool of unmarried men. We interpreted this as a measure of the ease with which unmarried women were likely to find a suitable marital match. The variables in our imputation models and matching exercise included the aforementioned socioeconomic characteristics of the unmarried woman (see the Methods section). For ease of exposition, we multiplied the coefficients and standard errors by 100 so that they each represented the percentage point change

Figure 1. Comparison of Distribution of Synthetic Spouses and Actual Unmarried Men Using Hot-Deck Imputation.



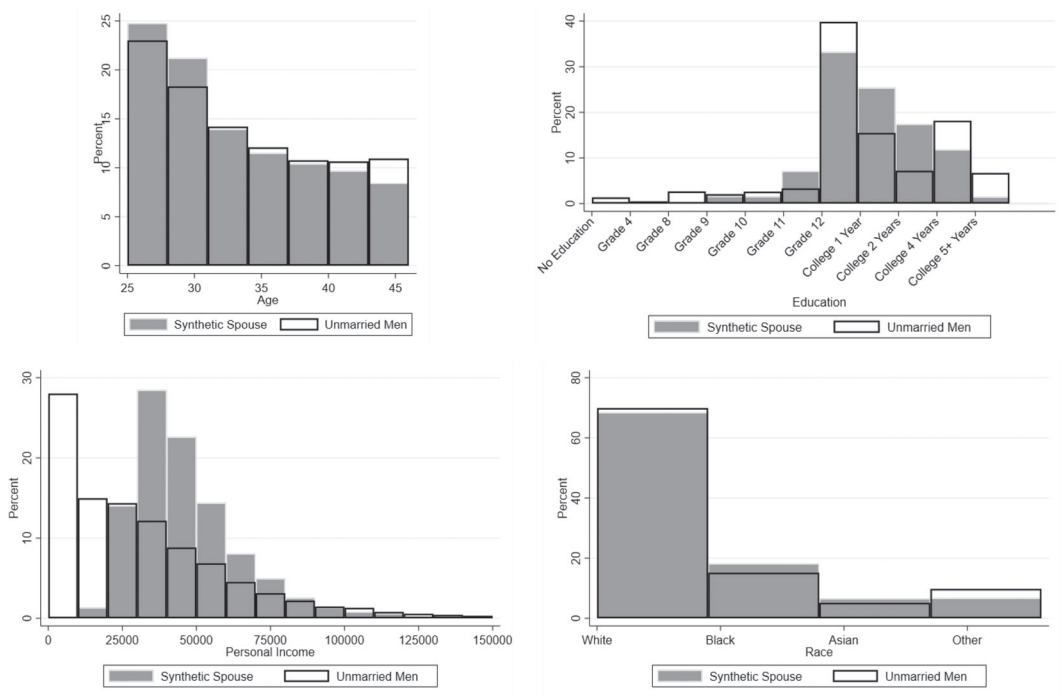
Note: Imputation was run for all individuals. Married couples used in imputation were married in the previous 5 years. Presented are restrictions of theoretical spouses aged 25 to 45 and unmarried men aged 25 to 45.

in the probability of finding a match among the pool of unmarried men. We ran the imputation models separately for three types of marital matches: matches nationwide, matches within state, and matches with PUMA.

The overall results in Table 3 indicated that younger women and less-educated women were more likely to find demographically suitable potential marital partners available to them. Conversely, older and highly educated women were most likely to face shortages of marital partners. This finding was consistent with other related empirical evidence that sex-ratio imbalances increase with women's age and that the gender reversal in educational attainment has upended traditional patterns of educational hypergamy among American women (see Lichter & Qian, 2019; Van Bavel et al., 2018). Race also placed constraints on marital opportunities. For example, within states, Black women were 15.01 percentage points less likely to have a suitable match. Asian women were 3.50 percentage points less likely to have a match. The difficulty in finding a match was larger within PUMAs than within states, especially among Asians ($b = -27.23$).

Indeed, whether we considered national, state, or local areas as marriage markets clearly mattered in our matching exercise. This was to be expected (Brien, 1997). It is plausible—even likely—that some underlying heterogeneity existed across geographic areas in women's ability to find suitable matches. By definition, the pool of potential marital partners in our study was larger and more heterogeneous at the national and state levels than at the local-area levels. By requiring marital matches to take place within the same PUMA (column 3, Table 3), our approach in effect accounted for population heterogeneity, that is, we held places constant (by looking at matching within specific places), which led to demonstrable differences in the magnitudes of several of the estimates. For example, a 10% increase in a woman's age was associated with a 2.42 percentage point decrease in likelihood of finding a match

Figure 2. Comparison of Distribution of Synthetic Spouses and Actual Unmarried Men Using Mean Imputation.



Note: Imputation was run for all individuals. Presented are restrictions of theoretical spouses aged 25 to 45 and unmarried men aged 25 to 45.

nationwide. When we required all matches to occur within the same PUMA, a 10% increase in women's age correlated with a 15.32 percentage point decrease in the likelihood of finding a suitable match.

In Table 4, we presented analysis that applied the same empirical specification used in column 3 of Table 3 (i.e., the within PUMA specification), but disaggregated the analysis by race (columns 1–2), education (columns 3–4), and income (columns 5–7) of the woman. These estimates, regardless of specification, provided several general conclusions. For example, older women on average were much less likely find a suitable marital match (within PUMAs). This is especially true among women who were highly educated (column 3, Table 4). A 10% increase in age among women with a college degree was associated with a 24.48 percentage point decrease in the likelihood of a suitable match. In contrast, age mattered much less among the least-educated women—those with a high school degree or less who had only a 4.47 percentage point decrease in finding a match. One implication was that delaying marriage, for whatever reason but perhaps especially if pursuing college degrees, had the effect of reducing women's local-area access to demographically suited marital partners. One substantive implication is that this has created upward demographic pressures for more heterogamous marriages among highly educated women (Qian, 2017).

Another general conclusion is that both low and high socioeconomic status women faced the largest deficits in the availability of synthetic or suitable male partners (columns 3–7, Table 4). This was indicated by the statistically significant and negative coefficients in virtually every cell of Table 4 (columns 3–7). These negative estimates had a clear interpretation: They represented deviations from the reference categories in our models—women with some college education or with incomes of more than $20,000 but less than $40,000. These women "in the middle" evidently faced the fewest demographic constraints in local marriage markets.

Table 3. *Characteristics That Predict Whether an Unmarried Woman Is Likely to Have a Potential Match*

	All matches	Matches within state	Matches within PUMA
Log personal income	−0.32***	−0.12***	−1.07***
	(0.04)	(0.04)	(0.04)
Log age	−2.42***	−8.10***	−15.37***
	(0.20)	(0.21)	(0.21)
Black	−15.01***	−14.37***	−17.19***
	(0.11)	(0.11)	(0.10)
Asian	−3.50***	−8.73***	−27.23***
	(0.16)	(0.18)	(0.15)
Other race	−1.96***	−5.51***	−10.62***
	(0.13)	(0.14)	(0.14)
Hispanic	−0.30***	0.18	−13.80***
	(0.10)	(0.11)	(0.11)
Some college	−3.47***	−3.54***	−4.70***
	(0.09)	(0.09)	(0.10)
College graduate	−1.54***	−2.77***	−7.60***
	(0.09)	(0.09)	(0.10)
Not in the labor force	−39.96***	−36.09***	−25.71***
	(0.13)	(0.13)	(0.12)
Unemployed	−40.44***	−36.36***	−25.74***
	(0.17)	(0.17)	(0.15)
Mean of matched	66.35	60.21	39.67
N		1,511,601	

Note: Robust standard errors are in parentheses. Excluded groups are White, high school or less education, and employed. Women are aged 25 to 45. Matches were within 2 years of education, income within $5,000, and age within 3 years. Coefficients and standard errors are multiplied by 100. As these are samples, mean of match does not indicate the probability a woman has a unique match in reality but, rather, it is an indicator for the ease of finding a match. PUMA, public use microdata area. $^{*}p < .1$; $^{**}p < .05$; $^{***}p < .01$.

Finally, it was also the case that minorities—Black, Asian, and other racial minority women, including Hispanics of any race—were significantly less likely to find suitable marital partners, regardless of their education or income levels (columns 3–7, Table 4). When we compared Black and White women separately (columns 1–2, Table 4), we found considerable similarity in the direction but not the magnitude of sociodemographic factors associated with women's access to synthetic spouses. The largest differences were with respect to unemployment and labor force nonparticipation. Specifically, White unmarried women—those who were detached from the labor force—were much more likely than their Black unmarried counterparts to face shortages of potential marital partners. These White women were about one third less likely to find a match than their employed White counterparts. For Black women, these figures were much lower.

To further explore possible race differences, we included interaction terms for Black × College Graduate and Black × Income ≥ 100,000 in our models. They indicated whether demographic mismatches were significantly larger for Black than White women with a college degree or with high income (data not shown). Indeed, we found that Black women with college degrees were significantly less likely (about 3 percentage points) to be matched than similarly educated White women. Racial differences were even larger when we considered high-income women. For Black women with incomes of $100,000 or more, the difference from otherwise similar White women was about 15 percentage points, a result that clearly highlighted deficits in suitable partners among high socioeconomic status Black women.

Discussion and Conclusion

Claims that today's unmarried women face serious shortages of "good men" to marry are commonplace in the family sciences literature (Kreager, Cavanagh, Yen, & Yu, 2014; Raley & Bratter, 2004). Previous studies have typically focused narrowly on sex ratio imbalances—on the question of whether low-income or minority women face deficits in men available to marry (Blau, Kahn, & Waldfogel, 2000; Lichter et al., 1992). Our analysis, based on 10 years of data from the ACS, provides a direct test of such claims based on the national and subnational availability of men who are typically matched to women with a specific characteristics or skills.

Our analyses provide clear evidence of an excess supply of men with low income and education and, conversely, shortages of economically attractive unmarried men (with at least a bachelor's degree and higher levels of income) for women to marry. One implication is that promoting good jobs may ultimately be the best marriage promotion policy rather than marriage education courses that teach new relationship skills. Of course, other policy efforts aimed at

Table 4. *Characteristics That Predict Whether an Unmarried Woman Is Likely to Have a Potential Match Within PUMA*

	Black	White	College degree	High school or less education	Income ≤20,000	Income ≥40,000	Income ≥100,000
Log personal income	−0.74***	−1.35***	−2.57***	1.47***	−9.87***	−10.41***	−0.32
	(0.09)	(0.05)	(0.07)	(0.11)	(0.11)	(0.19)	(0.53)
Log age	−14.50***	−14.04***	−24.48***	−4.47***	−16.44***	−15.01***	−13.60***
	(0.48)	(0.26)	(0.36)	(0.65)	(0.29)	(0.41)	(1.22)
Black	–	–	−19.01***	−13.22***	−22.61***	−22.00***	−18.25***
			(0.19)	(0.32)	(0.14)	(0.19)	(0.55)
Asian	–	–	−23.93***	−37.58***	−27.19***	−24.61***	−18.41***
			(0.20)	(0.51)	(0.20)	(0.24)	(0.52)
Other race	–	–	−11.77***	−9.96***	−12.87***	−12.86***	−15.90***
			(0.28)	(0.31)	(0.20)	(0.29)	(0.76)
Hispanic	−7.26***	−13.94***	−9.81***	−17.00***	−13.74***	−12.45***	−10.03***
	(0.49)	(0.13)	(0.23)	(0.28)	(0.16)	(0.23)	(0.68)
Some college	−4.64***	−5.25***	–	–	−2.04***	−0.78***	2.13**
	(0.20)	(0.12)			(0.15)	(0.26)	(0.95)
College graduate	−6.63***	−8.63***	–	–	−4.43***	−3.39***	−0.47
	(0.22)	(0.12)			(0.12)	(0.17)	(0.60)
Not in the labor force	−7.06***	−33.11***	−35.87***	−13.40***	−30.47***	−29.91***	−25.50***
	(0.28)	(0.16)	(0.25)	(0.31)	(0.26)	(0.38)	(0.74)
Unemployed	−8.73***	−34.44***	−33.14***	−14.82***	−29.23***	−29.23***	−25.14***
	(0.30)	(0.19)	(0.27)	(0.41)	(0.27)	(0.40)	(0.84)
Mean of matched	29.57	45.48	37.78	34.48	42.53	38.46	28.31
N	279,186	1,015,041	504,098	157,423	873,166	445,889	53,341

Note: Robust standard errors in parentheses. This table is based on within PUMA matches (column 3 of Table 2) but splits the sample based on the characteristic of the unmarried women. Women are aged 25 to 45. Coefficients and standard errors are multiplied by 100. PUMA, public use microdata area. $^{*}p < .1$; $^{**}p < .05$; $^{***}p < .01$.

securing women's economic independence (i.e., equal pay legislation) are also important in the case of single mothers who often face constraints on marital search behavior and have limited prospects for "marrying up" (Bzostyek, McLanahan, & Carlson, 2012; Lichter et al., 2003). Our estimates of marriage market disequilibria are instructive, especially at a time when marriage is sometimes viewed as an economic panacea (for a discussion, see Lichter et al., 2004). In the case of unmarried minority women, for example, shortages of highly educated unmarried men also impose serious constraints on the marital search process. Black women, for example, are about 17 percentage points less likely than White women to have a match in their local marriage market area (PUMA).

Our findings also make the case that highly educated White women face shortages of marriageable men. For highly educated women, the marriage market implications of new gender imbalances in educational achievement seem increasingly clear (Buchmann & DiPrete, 2006). They will either increasingly remain unmarried or, alternatively, conventional patterns of marital educational hypergamy (i.e., women marrying up in education) may give way to educational hypogamy as women adapt to deficits in the pool of highly educated men (Qian, 2017). Previous studies, although now dated, suggest that most unmarried women choose to remain single rather than to "marry down" or nonassortatively (Lewis & Oppenheimer, 2000; Lichter et al., 1995). In today's highly competitive marriage market, however, this is an issue worth revisiting (Qian, 2017; Schwartz & Han, 2014).

This study is not without some limitations. For example, we acknowledge that there are unmeasurable selection factors that may differentiate married women from unmarried women. Our results should therefore be interpreted to indicate what the marriage market should look like if all women were to have a plausible match, regardless of their inclination toward marriage. It is also worth noting that selection is

unlikely to be homogeneous across demographic groups; indeed, this may explain why we find that higher educated women experience higher marriage rates, even though they have less potential matches. The implication is that they may increasingly "marry down" in education (Qian, 2017).

A large share of adolescents and young adults today expect to marry, and this is little changed from previous generations (Anderson, 2016; Manning et al., 2007). This makes clear that most women—Black or White, rich or poor, highly educated or uneducated—have "high hopes" for marriage, yet growing shares of women today either delay marriage or remain unmarried altogether (Gibson-Davis et al., 2005; Lichter et al., 2004). Our study uncovers the demographic reality of large deficits in the supply of men who are suited or well matched for today's unmarried women. If nothing else, our empirical results indicate that the U.S. marriage market is currently in disequilibria. The supply of unmarried men is out of demographic balance with the demand for marriageable men among America's currently unmarried women. Whether this is new or different from past generations is unclear, as is the question of whether marriage market mismatch is fully or partly responsible for the ongoing "retreat from marriage." What is clear is that the characteristics of potential spouses—male and female—have become more diverse over time with rising educational levels among women, increasing racial diversity, and new patterns of income and educational inequality.

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