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ABSTRACT

Over the past half-century, U.S. four-year colleges have shifted from enrolling mostly men to enrolling mostly women, while the economic position of non-college men has weakened markedly. We examine how these changes correspond with the evolving structure of marriage markets across cohorts and places. As college men have become increasingly scarce, college women have maintained stable marriage rates by marrying high-earning non-college men. This shift—combined with the broader economic decline of non-college men—has sharply reduced the pool of economically stable partners available to non-college women: the share of non-college men who earn above the national median and are not married to college women has fallen by more than 50%. Cross-area evidence shows that education gaps in marriage are smaller where non-college men face lower rates of joblessness and incarceration. Taken together, the evidence suggests that deteriorating outcomes for men have primarily undermined the marriage prospects of non-college women.

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Introduction

In recent decades, men and boys—particularly those from lower-income backgrounds—have faced a growing set of challenges, including economic instability, deteriorating health, and weakened social ties (Binder and Bound, 2019; Reeves, 2024*b*; Umberson, Lin and Cha, 2022). These challenges are particularly visible in the classroom: men are now twice as likely as women to rank in the bottom decile of high school GPA scores and have fallen behind women in college enrollment (Autor et al., 2023; DiPrete and Buchmann, 2013; Goldin, Katz and Kuziemko, 2006). Today, 1.6 million more women than men attend four-year colleges in the U.S.

These divergent trends in college enrollment raise an important question: how do growing gender gaps in education shape marriage patterns for college and non-college women? One possibility is that the increasing relative scarcity of college men primarily affects college women, given that college men are their primary marriage partners. Alternatively, college women may respond to these changes in ways that shift the impact onto non-college women, reshaping their marriage opportunities. As college men become scarcer, college women may increasingly marry higher-earning non-college men who, in earlier cohorts, were often partnered with non-college women. Understanding how these shifting dynamics have affected both groups is essential for interpreting broader trends in family formation, fertility, and the intergenerational transmission of economic advantages—and for anticipating how these patterns may evolve as gender gaps in college enrollment continue to widen (Bailey and Lin, 2022; Hu and Qian, 2023; Kearney, 2022; McLanahan, Tach and Schneider, 2013).

The central goal of our study is to describe how the decline in the relative number of college men, alongside the economic stagnation of non-college men, corresponds with changes in marriage patterns among college and non-college women. We combine evidence from two complementary sources of variation—changes across U.S. birth cohorts and differences across commuting zones—to examine how women's marriage outcomes vary with the educational composition and economic standing of men in their marriage markets. Our analysis draws on the Current Population Survey (CPS), the American Community Survey (ACS), and linked Census and tax records from the Opportunity Atlas (Chetty et al., 2018). We divide the sample into four groups: college women (women with at least a four-year degree), non-college women (all other women), college men, and non-college men.

Three puzzles guide our analysis. First, how has the growing scarcity of college men—who are the primary marriage partners for college women—been reflected in marriage outcomes among college women? Second, to what extent have these shifts generated spillovers for non-college women, and how do the economic and demographic circumstances of non-college men relate to their marriage outcomes? Third, to what extent do education gaps in marriage appear across areas

versus within them, and how are these patterns associated with local economic and social conditions of men? Together, these questions frame our investigation into how the educational and economic position of men aligns with women's marriage outcomes across cohorts and places.

This study situates these patterns within established evidence on trends in assortative mating by education (Chiappori, Salanié and Weiss, 2017; Eckstein, Keane and Lifshitz, 2023; Lafortune, Salisbury and Siow, 2024; Lundberg, Pollak and Stearns, 2016; Schwartz and Mare, 2005). A subset of this work emphasizes how changes in sorting patterns can reinforce or exacerbate income inequality (Breen and Salazar, 2011; Breen and Andersen, 2012; Eika, Mogstad and Zafar, 2019). We focus specifically on the recently documented rise in marriages between highly educated women and less educated men (Esteve et al., 2016; Hirschl, Schwartz and Boschetti, 2024; Qian, 2017; Van Bavel, Schwartz and Esteve, 2018). The increase in these types of marriages has helped sustain overall marriage rates for college women amid the increasing relative scarcity of college men. The U.S. experience contrasts with that of countries with more traditional gender norms, where marriage rates among highly educated women have declined as their educational attainment has outpaced that of men (Kalmijn, 2013; Raymo and Iwasawa, 2005; Raymo and Park, 2020). These trends raise the possibility that the adaptation of college women in the U.S. may have reshaped the prospects of non-college women, who historically partnered with non-college men.

The analysis also connects to a large body of work on the relationship between men's economic outcomes and marriage, including the "marriageable men" hypothesis (Cherlin, 2005; Edin and Kefalas, 2011; Lichter et al., 1992; Wilson, 1987).[1] Several studies have examined how economic shocks—such as trade exposure, automation, or increased labor demand in industries employing mostly men—affect men's earnings and employment and, in turn, influence local marriage and fertility rates (Anelli, Giuntella and Stella, 2024; Autor, Dorn and Hanson, 2019; Black, McKinnish and Sanders, 2003; Kearney and Wilson, 2018; Shenhav, 2021). The effects of these shocks vary, likely due to context-specific factors such as marriage norms and the mechanisms through which they shape marriage markets—beyond their direct impact on men's economic outcomes—including shifts in women's labor market participation, local demographics, and gender ratios (e.g., Charles and Luoh, 2010; Jácome, 2017; Zaremba, 2022). We complement this literature, which focuses on isolating the causal effects of specific shocks, by examining the broader nationwide relationship between local economic outcomes for men and marriage rates for college versus non-college women. We also document the extent to which local marriage markets exhibit similar patterns when analyzed by parental income rather than education, providing new evidence on how marriage outcomes shape broader patterns of intergenerational mobility (Bailey and Lin,

[1] Related studies examine how improvements in women's labor market or educational outcomes—either directly or relative to men—affect marriage rates (Bertrand, Kamenica and Pan, 2015; Geruso and Royer, 2018; Low, 2024; McCrary and Royer, 2011; Shenhav, 2021).

2022; Chadwick and Solon, 2002; Goldman, Gracie and Porter, 2024).

In this paper, we show that the stagnation of men's college enrollment has coincided with sharply diminishing marriage prospects for non-college women. First, we document that over the past half-century, college women have maintained stable marriage rates amid a growing scarcity of college men by increasingly partnering with a select group of *high-earning* non-college men. The share of marriages in which the wife has a four-year college degree and the husband does not has quadrupled. This shift, combined with the broader economic and social decline of non-college men, has sharply eroded the marriage market for non-college women, who have historically partnered with non-college men. The share of non-college men who both earn above the national median and are not married to a college woman has dropped by more than 50%. From the perspective of non-college women, many of the men who once formed the core of their marriage market now offer less economically, and a growing share of the remaining high earners are now marrying college women. Second, we show that data from recent cohorts across U.S. commuting zones closely mirror these historical patterns. Marriage rates for non-college women are more sensitive than those for college women to a wide range of adverse outcomes for non-college men. In areas where these men face low rates of joblessness and incarceration, differences in marriage rates between non-college and college women are significantly smaller.

Results

A Half-Century of College and Marriage

One indicator of the broader challenges facing men and boys is their declining presence in higher education relative to women. Over the past 50 years, U.S. college campuses have shifted from majority-men to majority-women (DiPrete and Buchmann, 2013; Goldin, Katz and Kuziemko, 2006). Figure A.1*A* summarizes this well-established trend. Among cohorts born between 1930 and 1980, the share of men completing at least four years of college increased from 18.2% to 39.2%, while for women it rose more sharply, from 9.6% to 46.4%. As a result, Figure I*A* shows that the ratio of college men to college women declined from 1.8 to 0.8 over this period, making college men increasingly scarce relative to college women.

Both theory and empirical evidence suggest that this demographic shift has important implications for opposite-gender marriage patterns, given people's tendency to marry partners with similar educational backgrounds (Becker, 1973; Blossfeld, 2009; Chiappori, Iyigun and Weiss, 2009; Eika, Mogstad and Zafar, 2019; Mare, 1991).[2] A decline in the number of opposite-gender

[2]This reasoning excludes same-gender pairings. However, opposite-gender pairings account for approximately 99% of current marriages, providing a useful framework for analyzing marriage trends among most Americans (Kreider et al., 2023; Black et al., 2007; Fisher, Gee and Looney, 2018).

individuals within a given educational group can lower marriage rates for the gender in relative surplus by reducing the availability of similarly educated partners. Alternatively, marriage rates could remain stable if individuals adjust by increasing assortative matching within the shrinking pool of similarly educated partners or by expanding intermarriage across educational groups, potentially reshaping marriage patterns across the broader educational distribution. Thus, the increasing scarcity of college men naturally raises the question of *incidence*: has this scarcity primarily affected college women, or have they adapted in ways that shift the impact—at least in terms of overall marriage rates—onto non-college women?

Previously documented trends in marriage rates by education effectively rule out the possibility that the declining availability of college men has had a large negative impact on marriage rates for college women (Hirschl, Schwartz and Boschetti, 2024; Lundberg, Pollak and Stearns, 2016; McLanahan, 2004). Figure I*B* replicates these trends using our definition of marriage at age 45, showing that despite the growing scarcity of college men, marriage rates among college women declined only modestly. Among those born in 1930, 77.7% were married at age 45, compared to 71.0% for the 1980 cohort. In contrast, marriage rates among non-college women fell much more sharply: while 78.7% of non-college women born in 1930 were married at age 45, only 52.4% of those born in 1980 were married at the same age. At the population level, these shifts contributed to an overall decline in marriage rates of 24.9pp for men and 17.6pp for women (see Figure A.2).

Before examining how college women adjusted to the growing scarcity of college men, it is worth highlighting three additional points about the widening educational gaps in marriage. First, while fertility has also declined for non-college women (Figure A.3*A*), the drop has been less steep than the decline in marriage. As a result, a growing share of children born to non-college mothers are being raised outside of married two-parent households (Bailey, Guldi and Hershbein, 2013; Bailey and DiPrete, 2016; Kearney, 2022).

Second, the patterns observed in Figure I*B* remain robust across alternative definitions of marriage. Similar trends persist when measuring marriage at younger ages (Figure A.1*B*), accounting for ever-married rates that include divorced individuals (Figure A.1*C*), or incorporating cohabiting partnerships into the definition of marriage (Figure A.1*D*). Parallel patterns of widening educational gaps are also evident among men (Figure A.1*E*). Our classification of individuals based on whether they completed four or more years of college aligns naturally with these observed trends. Figure A.1*F* provides a detailed breakdown, showing that marriage rates have remained relatively stable for women with a four-year degree or more, while they have declined substantially for women who did not finish high school, completed only high school, or attended college but did not earn a four-year degree. Finally, Figure A.4 shows that similar education gaps in marriage rates have emerged across all race groups that can be consistently measured in the CPS over these cohorts.

Third, the growing educational gaps in marriage arise from increasing differences in marriage rates between Americans with *relatively* higher versus lower educational attainment, rather than from compositional changes driven by rising college attendance. If newly enrolled women had a higher propensity to marry than typical non-college women, observed marriage trends might partially reflect changes in the composition of the college versus non-college groups. However, Figure A.5, following the approach of Novosad, Rafkin and Asher (2022), demonstrates that compositional shifts do not explain these widening educational gaps. Marriage rates have declined significantly among Americans at lower levels of the educational distribution. In the 1930 cohort, 76.6% of women at the 25th percentile of the education distribution were married, compared to 53.8% in the 1980 cohort. For context, the educational attainment at the 25th percentile shifted from women without a high school degree in the 1930 cohort to women with a high school degree or some college in the 1980 cohort. In contrast, marriage rates at higher educational levels (e.g., the 75th percentile) have remained relatively stable.

The stable marriage rates among college women, despite the shrinking relative supply of college men, suggest two plausible explanations: are they increasingly marrying within a shrinking pool of college men, or are they shifting toward non-college men?[3] Distinguishing between these possibilities is important for two reasons. First, if college women are marrying non-college men more often, it could partly explain declining marriage rates among non-college women, especially if college women select the most "marriageable" men from that group. Second, each explanation points to a different future trajectory for educational gaps in marriage. If stable marriage rates reflect increased assortative matching within the college-educated pool, continued growth in gender disparities in higher education (Reeves, 2024*a*) may eventually drive down marriage rates for college women as the pool of college men shrinks further. Some scholars and media reports, often citing anecdotal evidence, suggest this shift is already affecting young college women's dating and marriage prospects (e.g., Bernstein, 2024; Cox, 2023; Hill, 2024; Inhorn, 2023; Saner, 2015; Birger, 2015; Louie Sussman, 2023). Alternatively, if college women increasingly prefer non-college men over remaining single, this substitution may further constrain marriage prospects for non-college women.

[3] A third possibility is that college women respond to the shrinking pool of similarly educated men by "marrying up" in age—partnering with men from older cohorts where college men were more common. This "marriage squeeze," arises from demographic imbalances across cohorts leave one group (college women) with fewer potential partners of similar age and education (e.g., Akers, 1967; Sautmann, 2011). However, Figure A.6 shows that spousal age gaps have declined similarly for college and non-college women, suggesting that age-heterogeneous matching has not substantially offset the squeeze.

We distinguish between these two explanations by examining changes over time in whom college and non-college women marry. Interpreting trends in the share of a group married to college versus non-college men is complicated by shifts in the relative sizes of these groups. For instance, a stable share of college women marrying college men over time might indicate increased assortative matching, given the declining relative supply of college men. To aid interpretation, we implement a "reduced-form" version of the Choo and Siow (2006) framework, which decomposes changes in marriage outcomes into two components: one driven by shifts in college attendance rates by gender and the other by changes in preferences—which determine the value or "marital surplus" of different pairings.

We refer to our approach as reduced form because we do not impose additional structure to identify the specific drivers of changes in marital surplus. We do not explicitly model factors such as changes in women's earnings and labor supply (Bertrand et al., 2021), shifts in the composition of educational groups, evolving social norms (Loscocco and Walzer, 2013), changing complementarities between consumption and leisure (Isen and Stevenson, 2010), or tax policy effects on marriage incentives (Stone, 2021). Instead, marital surplus serves as a composite measure capturing the cumulative influence of these and other underlying forces. The model categorizes individuals into college and non-college "types," with preferences over spousal types, and equilibrium transfers that clear the market. Marital surplus is a function of the underlying preferences and represents the surplus value of a given pairing relative to remaining single. Importantly, the framework identifies aggregate surplus of each particular pairing and cannot separately identify preferences for men and women. We estimate marital surplus using marriage outcomes from the 1930 cohort and then predict future marriage trends by holding surplus fixed while allowing for actual changes in college attendance rates by gender. Additional details on the model's implementation are provided in the Supplementary Information.

Figure IIA shows that if marital surplus of different pairings had remained at their 1930 levels, marriage rates for college women would have declined by 16.7pp due to the shrinking *relative* supply of college men and increased competition for the *overall* smaller pool of non-college men, who largely marry non-college women. However, the actual decline was only 6.7pp, indicating that changing surplus values boosted marriage rates by 10.0pp for college women. A significant portion of this increase stems from a greater-than-expected rise in marriages to non-college men. In the 1980 cohort, 20.8% of college women married non-college men—6.9pp (49.6%) higher than predicted based on 1930 surplus values. This trend, which we describe as college women substituting toward non-college men, is best understood in relation to the model's predictions, which account for shifting group sizes. Although the share of college women married to non-college men

declined from 23.6% to 20.8%, the absolute number of such marriages rose substantially due to increased college enrollment and changes in the marital surplus of this pairing. Figure III illustrates this transformation: the share of women who are college-educated and married to non-college men has quadrupled. In the 1930 cohort, only 2.3% of women were college-educated and married to a non-college man, compared to 9.6% in the 1980 cohort—exceeding expectations based on 1930 surplus values by 3.2pp (50%).

Economic outcomes differ between college women who marry non-college men and those who marry college men. As shown in Figure IV*A*, college women who marry non-college men have consistently high rates of labor force participation—exceeding those of their peers married to college men. In earlier cohorts, Figure IV*B* shows that they also earned slightly more on average, conditional on working: in the 1930 cohort, college women married to non-college men earned about $\$6,100$ more than those married to college men. By the 1980 cohort, this pattern had reversed, with an earnings advantage of $\$19,700$ for college women married to college men. This reversal parallels trends observed in other high-income countries, where women marrying down in education tend to be lower earners (e.g., Dribe and Nystedt, 2013). Even so, college women who marry non-college men remain economically active and relatively successful, often earning at similar levels to their spouses. However, these patterns partly reflect joint household decisions—such as reducing labor supply when one spouse earns more—making it difficult to separate selection into marriage from adjustments that occur after marriage.

Figure II*B* shows that marriage outcomes for non-college women have taken a markedly different path. Based on 1930 cohort patterns, marriage rates for non-college women should have risen by 7pp due to the growing *relative* abundance of non-college men, their primary marriage partners. Instead, the share of non-college women marrying non-college men fell sharply from 69.3% to 43.1%, driving the overall decline in their marriage rates. This represents a stark break from previous cohorts, where non-college Americans married at high rates. Marriages to college men also declined slightly more than predicted, consistent with the broader trend toward increased assortative mating at the lower end of the education distribution (Eika, Mogstad and Zafar, 2019). Overall, the primary driver of falling marriage rates among non-college women is the reduced surplus value of unions between non-college men and non-college women.

In Figures A.7*A* and A.7*B*, we present the corresponding results for men. Echoing the patterns observed for college women's marriages to non-college men, the share of non-college men married to college women rose markedly—from 3.2% in the 1930 cohort to 14.4% in the 1980 cohort. From men's perspective, however, this shift primarily reflects the growing relative supply of college-educated women rather than changes in marital surplus.[4] As with women, the decline in marriage

[4]The decomposition between supply effects and preferences, or "marital surplus," need not align exactly for men and women, since individuals may marry outside their own cohort.

rates among non-college men is driven chiefly by falling marital surplus of unions with non-college women. Finally, college men married both college and non-college women at lower rates than predicted under constant surplus values, possibly suggesting an overall decline in the value of marriage among this group.

The widening education gaps in marriage between the 1930 and 1980 birth cohorts can largely be attributed to college women marrying non-college men at higher rates than expected and non-college women marrying men from this group at lower rates than expected. This period coincided with broad declines in non-college men's outcomes, particularly in the labor market (Binder and Bound, 2019; Reeves, 2024*b*). Figure V*A* shows that their average real earnings at age 45 declined from $\$56,400$ for the 1930 cohort to $\$50,000$ for the 1980 cohort. Although most of the earnings decline occurred prior to the 1960 cohort, subsequent declines in non-college men's overall percentile rank suggest a continued erosion of their socioeconomic status (see Figure A.9). Notably, this decline cannot be attributed solely to increasing negative selection into the non-college group based on economic prospects. Figure A.8 shows that real earnings declined among men with *relatively* less education, while earnings growth was strongest at the top of the education distribution.

As marriages between college women and non-college men have become more common, college women have increasingly married higher-earning non-college men. Figure V*B* shows that real earnings for non-college men who marry college women have risen over time, from $\$61,400$ for the 1930 cohort to $\$68,400$ for the 1980 cohort. In contrast, average earnings for all other non-college men have declined even more sharply than the aggregate figures suggest, falling from $\$56,400$ to $\$46,100$. These shifts have significant implications for non-college women. Figure VI*A* shows that the share of non-college men who both earned above-median incomes within their birth cohort and were not married to a college woman plummeted from 72.9% in the 1930 cohort to 35.3% by the 1980 cohort. What was once a reliable pool of potential spouses for non-college women has been depleted—both by economic decline and by increased competition from college-educated women. These changes coincided with rising earnings for non-college women (Figure VI*B*), potentially further weakening the marriage value of non-college men.

As college men became relatively scarce, college women increasingly married economically well-off non-college men, who had previously formed a key part of the marriage market for non-college women. With gender gaps in college attendance continuing to widen (Reeves, 2024*a*), the fact that stable marriage rates for college women have been sustained primarily through increased marriages to non-college men—rather than greater assortativity within the shrinking pool of college men—suggests that further growth in these gaps could exacerbate educational disparities in marriage.

We assess this prediction in Figure A.10 by forecasting age 45 marriage rates through the 1994 birth cohort, using marriage and cohabitation outcomes at earlier ages as a "surrogate" (Athey et al.,

2019). Since the 1970 cohort, the ratio of women married at age 45 to those married or cohabiting at age 30 has remained relatively stable for both college and non-college women. Assuming this pattern holds, our projections suggest that education gaps in marriage will continue to widen. The growing gender disparity in college attendance, combined with worsening economic outcomes for non-college men, will likely continue to place the greatest burden on non-college women. Americans born in the mid-1990s are on track to become the first cohort where fewer than 50% of non-college women are married at age 45.

Declining Outcomes for Men and Marriage for Non-College Women

To better understand the relationship between the presence of economically viable non-college men and marriage rates among non-college women, we examine data from recent cohorts and geographic variation in men's economic outcomes. The impact of economic shocks to men on women's marriage rates depends on both the setting and the nature of the shock (e.g., Autor, Dorn and Hanson, 2019; Kearney and Wilson, 2018). Rather than focusing on a single shock, we aim to complement this literature by exploring whether the challenges faced by non-college men—and the corresponding decline in marriage rates among non-college women—are evenly distributed across regions or concentrated in specific areas. If these challenges and outcomes are closely linked and geographically concentrated, targeted interventions—designed to improve outcomes for non-college men and the marriage prospects of non-college women—could be more effectively directed toward areas where these challenges are most acute.

We use ACS data from 2017–2021 to construct a sample analogous to our national analysis, focusing on individuals aged 40–49. We calculate the employment-to-population ratio (EPOP) for non-college men across 2,351 PUMAs, each with an average population of 140,000. To isolate variation in men's outcomes, we residualize EPOP on fixed effects for 50 quantiles of women's college attendance rates. This approach ensures that we compare areas with similar college attendance for women but differing employment levels of men, though conditioning on women's college attendance rates does not meaningfully change the results. Residualized EPOP varies substantially across PUMAs (SD = 7.6pp), with non-college men's non-employment rates ranging from below 5% in some areas to over 40% in others.

Just as observed in the time-series data, Figure VII*A* shows that marriage rates for non-college women are highly sensitive to outcomes for non-college men. A 1 SD decline (7.6pp) in the EPOP for non-college men is associated with a 4.2pp (7.3%) decline in marriage rates for non-college women. Given the substantial variation in men's employment outcomes, this translates into large differences in marriage rates. In areas with the lowest employment rates for non-college men (bottom 2.5% of the PUMA distribution), the marriage rate for non-college women is 44.5%, compared to 66.0% in areas with the highest employment rates for non-college men (top 2.5%).

On the other hand, marriage rates for college women exhibit a much weaker, albeit still positive, relationship with outcomes for non-college men. A 1 SD decline in the EPOP for non-college men is associated with a 2.4pp (3.4%) decline in marriage rates for college women. Education gaps in marriage vary significantly across PUMAs with different EPOP levels for non-college men, driven by the differing slopes for college women compared to non-college women. In areas with the lowest employment rates for non-college men, there is a 17.9pp gap in marriage rates between college- and non-college women. This gap decreases by 9.2pp or 51.4% in communities with the highest employment rates for non-college men.

One possible explanation for these patterns is that non-college women have similar partnership rates across areas with different employment-to-population ratios (EPOP) for non-college men but are more likely to marry their partners in areas where these men are more consistently employed. However, Figure A.11 shows that this is not the case. When we expand our outcome definition to include both married and unmarried but cohabiting partners, we find that gaps in partnership rates between college and non-college women are 64.2% smaller in communities with the highest employment rates for non-college men.

Figure A.3*B* shows that unlike marriage, gaps in fertility between college and non-college women are not strongly associated with EPOP for non-college men. We define fertility as the share of women aged 25–44 with their own child at home.[5] For college women, fertility declines almost one-for-one with marriage rates as EPOP for non-college men decreases. In contrast, for non-college women, the association between fertility and EPOP for non-college men is approximately 60% weaker than the association with marriage. In areas where men are less likely to work, non-college women continue to have children, but often outside of marriage (Currie and Schwandt, 2014; Kearney, 2022).

One challenge in interpreting these results is that location, marriage outcomes, and EPOP are measured simultaneously, meaning differences across areas may partly reflect couples' joint location decisions. For example, some couples—particularly those in marriages between non-college men and women—may choose to live in regions with better employment opportunities for non-college men to maximize household income (e.g., Jayachandran et al., 2024). To address this, we use Opportunity Atlas (OA) data from Chetty et al. (2018), which link adult outcomes to the commuting zones where individuals grew up, based on administrative IRS records. This approach allows us to analyze variation in the marriage market individuals were born into rather than the areas they may have moved to as adults—potentially after marriage. Notably, most Americans, including those from high-income families, remain in their childhood commuting zones as adults, making these early environments a crucial component of marriage markets, even without conditioning on

[5]The broader age range for measuring fertility ensures that the results are not driven by the tendency of non-college women to have children at younger ages compared to college women.

endogenous adult residential choices (Goldman, Gracie and Porter, 2024; Sprung-Keyser et al., 2022).

An additional advantage of these data is that they allow us to examine these patterns through a related but distinct lens: parental income, which we refer to as "class" for shorthand. Class-based differences in marriage outcomes play a key role in shaping intergenerational mobility (Bailey and Lin, 2022; Chadwick and Solon, 2002). We compare marriage outcomes for women from high-income (75th percentile of parental income) and low-income (25th percentile) families, alongside outcomes for men from low-income families. While class and education are distinct, they are closely linked: 51.1% of women from high-income families attend a four-year college, compared to just 23.6% of those from low-income families.

In Figure VII*B*, we replicate the analysis from Figure VII*A*, replacing education with class and adult PUMA with childhood commuting zone. Using OA data, we find similar results: a 1 SD decrease (4pp) in employment for men from low-income families corresponds to a 5.3pp (14.8%) decline in marriage rates for women from low-income families. In contrast, the same decline in men's employment is associated with a more modest 2.1pp (3.6%) drop in marriage rates for women from high-income families. These forces combine to substantially narrow class gaps in marriage rates, which fall from 29.4pp to 11.9pp (a 59.5% reduction) between communities with the highest and lowest EPOP for men from low-income families. This result holds even after controlling for outmigration rates from childhood CZs, confirming that migration patterns do not drive the observed relationship. Simply put, class gaps in marriage rates are most pronounced in areas where employment rates for men from low-income families are particularly low.

These findings are not specific to the particular measure of outcomes for men: class gaps in marriage are significantly larger in communities where men from low-income families struggle across a broad range of metrics. In Figure VII*C*, we illustrate the two slopes from Figure VII*B* using alternative measures of outcomes for men from low-income families, including incarceration, failure to complete high school, mortality, and average earnings percentile.[6] Across all these outcomes, women from low-income families are significantly more sensitive than women from high-income families to the conditions faced by men from low-income families.

These patterns appear to reflect the commuting zone-level relationship between class gaps in marriage for women and outcomes for men from low-income families, rather than broader regional differences in demographic composition or attitudes toward marriage. In Figure VII*C*, we demonstrate that women from low-income families are highly sensitive to the outcomes of men from low-income families within specific race and ethnicity groups, as well as within states but across commuting zones.[7] The final bar in Figure VII*C* shows that the patterns documented in

[6]Incarceration, high school dropout, and mortality rates are multiplied by -1 so that an improvement of 1 SD in these measures is interpreted as a positive change.

[7]Commuting zones can cross state boundaries, so each commuting zone is assigned to the state where the majority

Figure VII are similar without conditioning on college attendance rates among women. Class or education gaps in marriage are significantly larger in communities where non-college men, or men from low-income families, face challenges across a wide range of outcomes.

In Figure VIII, we map marriage rates for women from low-income families alongside the average earnings percentile for men from low-income families, both by childhood commuting zone. The two series are spatially correlated, with an overall correlation of 0.49 documented in Figure A.13. Regions such as the Southeast, parts of the Mid-Atlantic, and the industrial Midwest (e.g., Ohio, Indiana, and southern Michigan) stand out as areas where men from low-income families face significant challenges and women from low-income families are less likely to be married. There are notable exceptions to this pattern that warrant further investigation. For instance, in southern Texas, women from low-income families have very low marriage rates despite men from low-income families in the area achieving strong economic outcomes. Conversely, parts of Appalachia have relatively high marriage rates for women from low-income families, even though men in these areas face poor economic conditions.

We replicate these maps separately for White, Black, and Hispanic Americans in Figure A.12, revealing several notable differences compared to the pooled patterns across all races. For example, in parts of rural New England, such as Central Maine, White men from low-income families face poor economic outcomes, and White women from low-income families have low marriage rates. In contrast, in parts of the Southeast, such as South Carolina, Black men from low-income families perform relatively well, and marriage rates for Black women from low-income families are comparatively high. Despite these differences, Figure A.13 shows a consistent and clear correlation across all racial and ethnic groups between the outcomes of men from low-income families and the marriage rates of women from low-income families.

Conclusion

America is becoming increasingly polarized along education and class lines, and family dynamics are no exception (Bailey and Dynarski, 2011; Doob, 2015; Fischer and Mattson, 2009).[8] Both historically and geographically, declining educational attainment of men is linked to widening class gaps in marriage for women. As men struggle in the classroom and labor market, marriage rates among non-college women decline, while college women continue to marry at consistently high rates. These trends directly affect the resources available to children born to mothers without col-

of its population resides.

[8]There is some evidence that these long-running trends have begun to reverse, with modest declines in college wage premiums and faster wage growth at the bottom of the distribution since around 2015 (e.g., Aeppli and Wilmers, 2022). These shifts affect only the youngest cohorts in our sample, and it remains unclear whether they reflect changes across all cohorts in these years or primarily among new entrants to the labor market.

lege degrees, potentially deepening class-based disparities in economic opportunity (Autor et al., 2023; Chetty et al., 2024; Kearney, 2022).

Shifting cultural norms and attitudes around marriage may also contribute to the declining marriage rates among non-college Americans (e.g., Loscocco and Walzer, 2013; Murray, 2013; Thornton and Young-DeMarco, 2001). Nonetheless, our analysis underscores the substantial role of demographic and economic factors. The class polarization of marriage is particularly pronounced in cohorts and regions of the U.S. where non-college men face significant economic and social challenges. In present-day communities where non-college men are stably employed and not involved with the criminal justice system, marriage rates for non-college women remain above 60%—levels last observed nationally for non-college women born in the mid-1950s.

Improving outcomes for men—potentially enhancing the marriage prospects of non-college women—is an important area for researchers and policymakers. While some solutions may focus on labor market or economic interventions, many challenges extend beyond economics to deeper social and cultural factors (Bertrand and Pan, 2013; Reeves, 2022). It is also worth exploring whether college or other educational and economic interventions help men become more dependable partners in modern marriages (Ananat, 2024; Virtanen et al., 2024). Including marriage and fertility as outcome variables in studies of these interventions is a first step in this direction. There is also the possibility that marriage and family itself influence men's labor market outcomes, but this channel remains insufficiently understood and warrants further study (Binder, 2021; Killewald and Lundberg, 2017). Ultimately, addressing the economic, social, and cultural challenges facing non-college men is not only vital for their own well-being, but may also contribute to reducing class disparities in family formation and improving long-term economic and social stability.

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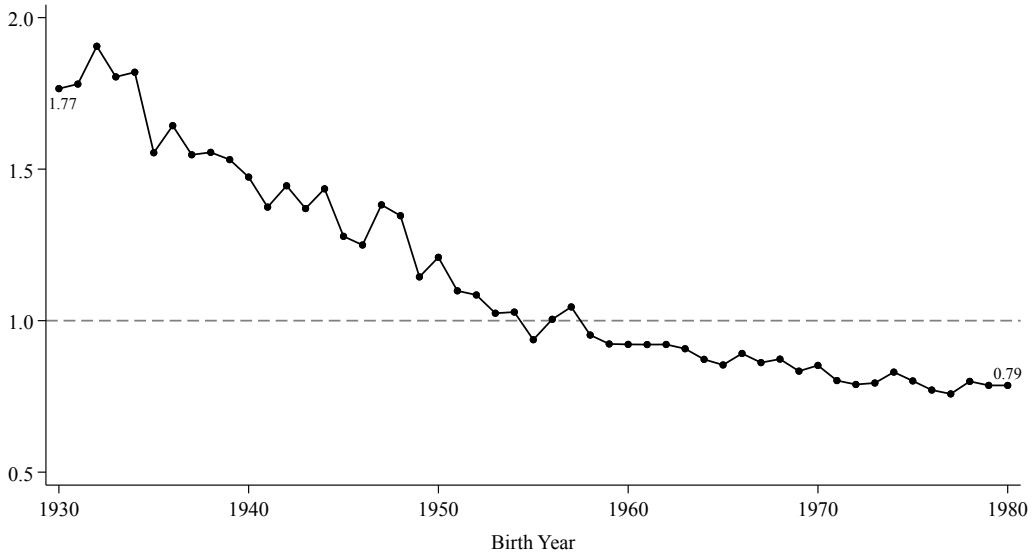
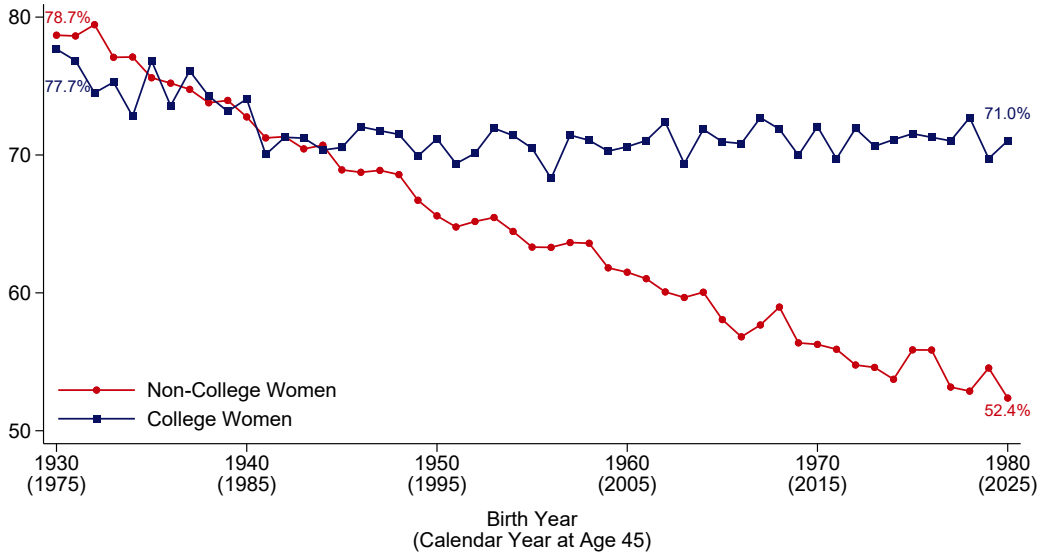
FIGURE I: Growing Gender Gaps in Education and Education Gaps In Marriage

A: Number of College Men per College Woman (Four-Year College)



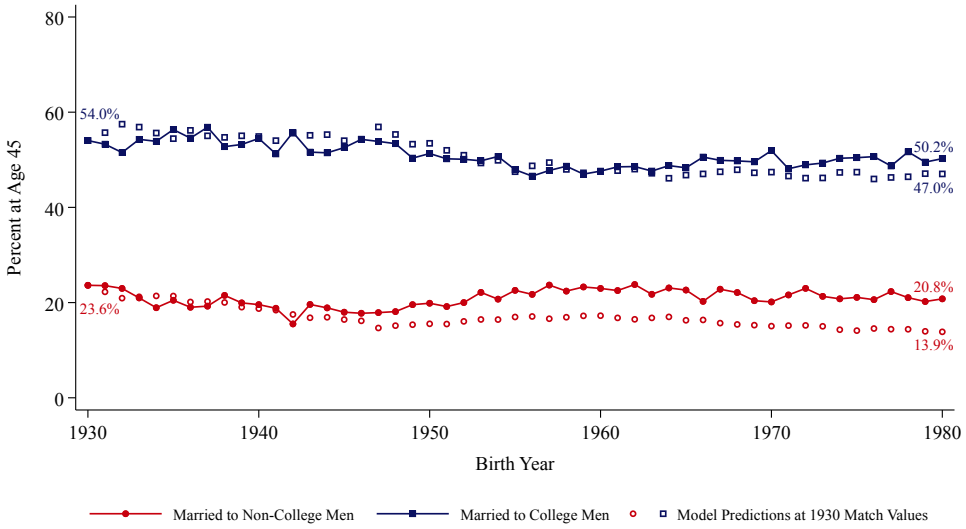
B: Percent of Women Married at Age 45 by Education



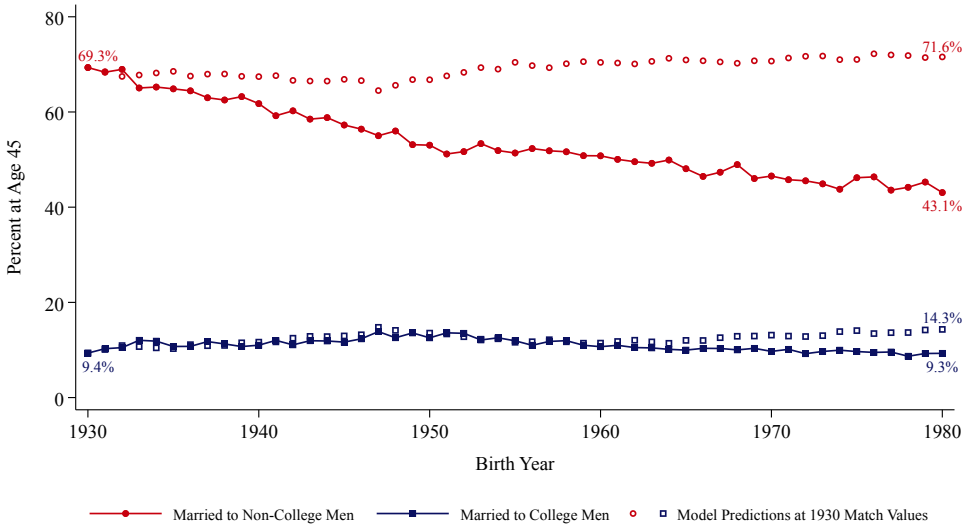
Notes: This figure shows trends in college attendance rates by gender, and women's marriage rates by college attendance. The sample includes individuals born between 1930 and 1980 who were aged 40 to 49 when surveyed in the CPS. Panel A depicts the ratio of men to women who completed at least four years of college. Panel B presents the share of women who were married at the time of the survey, disaggregated by whether they completed four years of college. See Supplementary Information for details on sample construction and variable definitions.

FIGURE II: Trends in Marriage by Spouse Education vs. Matching Model Predictions Holding 1930 Match Values Fixed

A: College Women

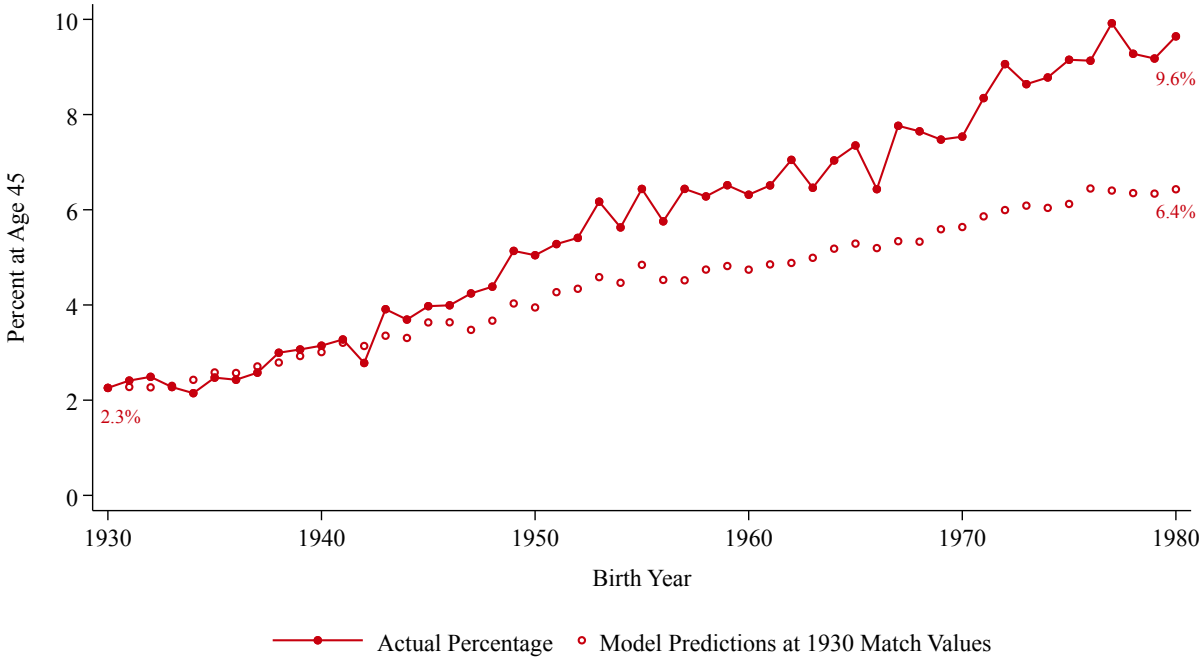


B: Non-College Women



Notes: This figure illustrates changes in the share of women married to college and non-college men, alongside predictions of how these marriage rates would evolve if match values remained constant at levels estimated for the 1930 birth cohort. The sample includes individuals born between 1930 and 1980 who were aged 40 to 49 when surveyed in the CPS. Panel A depicts the share of women with a four-year college degree married to a spouse with (blue line) or without (red line) a four-year college degree. Hollow circles are predicted marriage rates of these same two series, derived from a Choo and Siow (2006) model that holds match values fixed at 1930 levels while allowing college attendance rates by gender to evolve as observed in the data. Panel B provides equivalent information for women without a four-year college degree. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions, and the Supplementary Information section on matching model for details on model predictions.

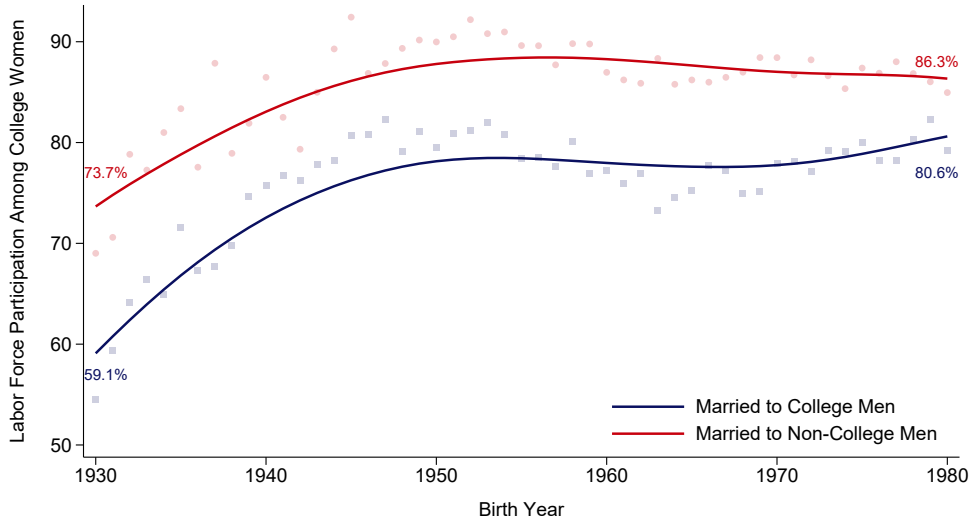
FIGURE III: Percent of Women who are College-Educated and Married to Non-College Men



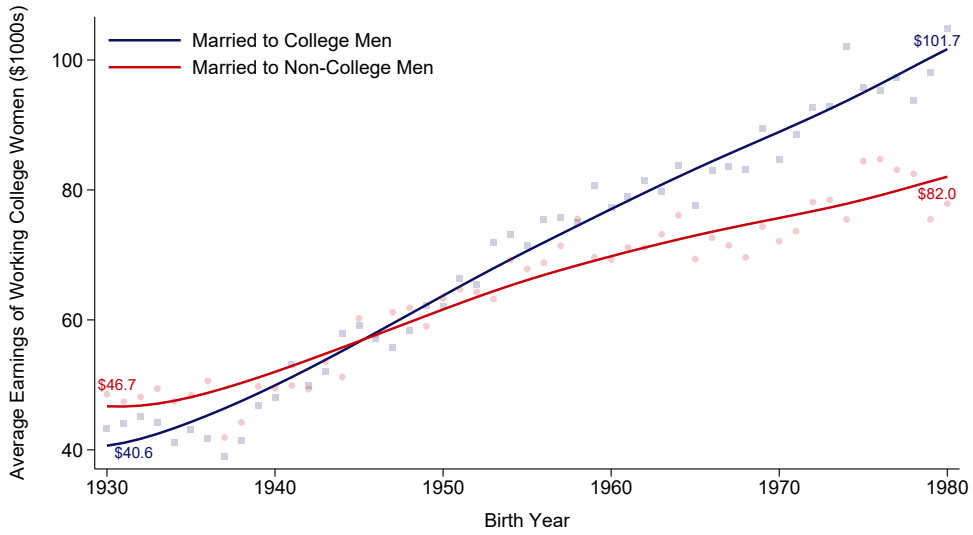
Notes: This figure shows trends in the share of all women, by birth year, who completed at least four years of college and married a man who did not, alongside predicted marriage rates assuming match values remained constant at levels estimated for the 1930 birth cohort. The sample includes women born between 1930 and 1980 who were aged 40–49 when surveyed in the CPS. Hollow circles represent predicted shares from a Choo and Siow (2006) model, which holds match values fixed at 1930 levels while allowing gender-specific college attendance rates to evolve as observed. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions, and the Supplementary Information section on matching model for details on model predictions.

FIGURE IV: College Women's Employment and Earnings by Spouse's Education

A: Labor Force Participation



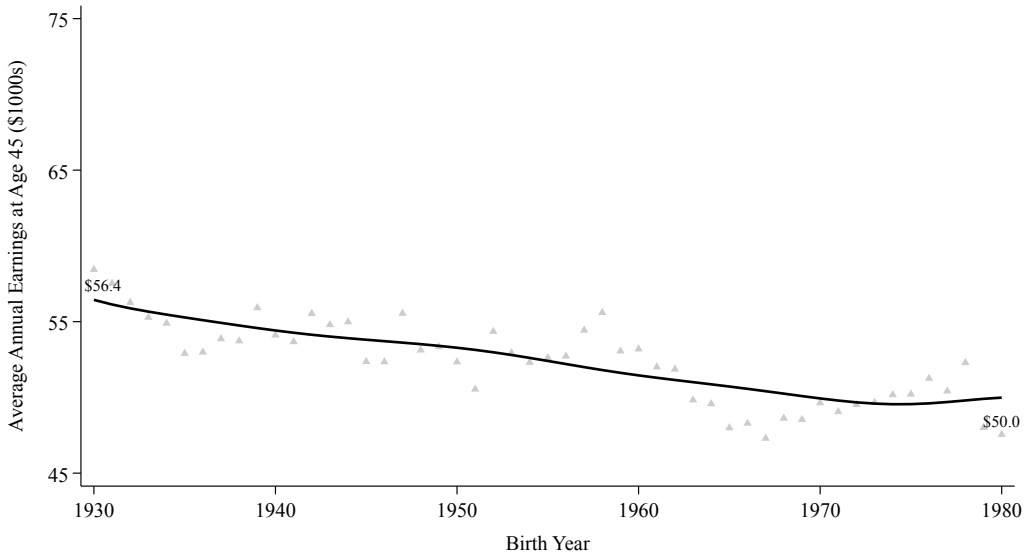
B: Average Annual Earnings Conditional on Positive Earnings



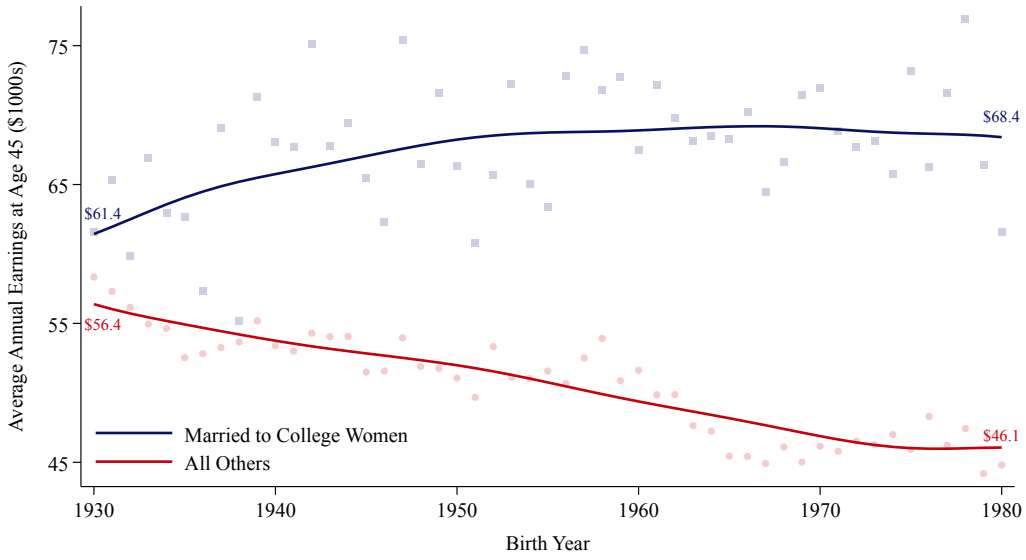
Notes: This figure shows trends in labor force participation and earnings for college-educated women. The sample includes women born between 1930 and 1980 who completed at least four years of college and were aged 40–49 when surveyed in the CPS. In each panel, outcomes are presented separately for college women married to a college-educated man (blue lines) and those married to a non-college man (red lines). Panel A presents labor force participation. Panels B shows average annual wage and salary earnings conditional on working. Earnings are measured in thousands of 2024 dollars, adjusted for inflation using the CPI-U. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE V: Declines in Real Earnings for Non-College Men

A: All Non-College Men



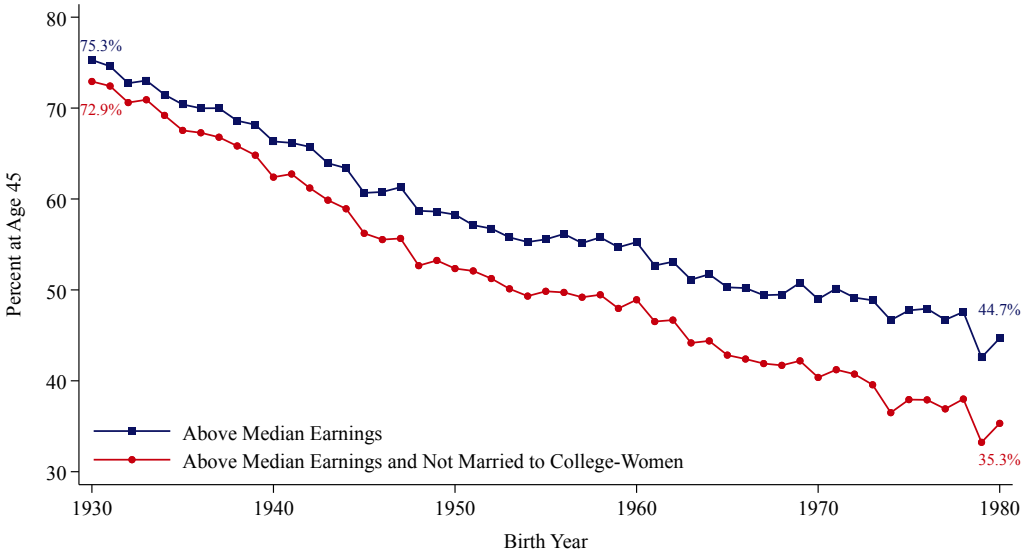
B: Separately for Non-College Men Married to College Women



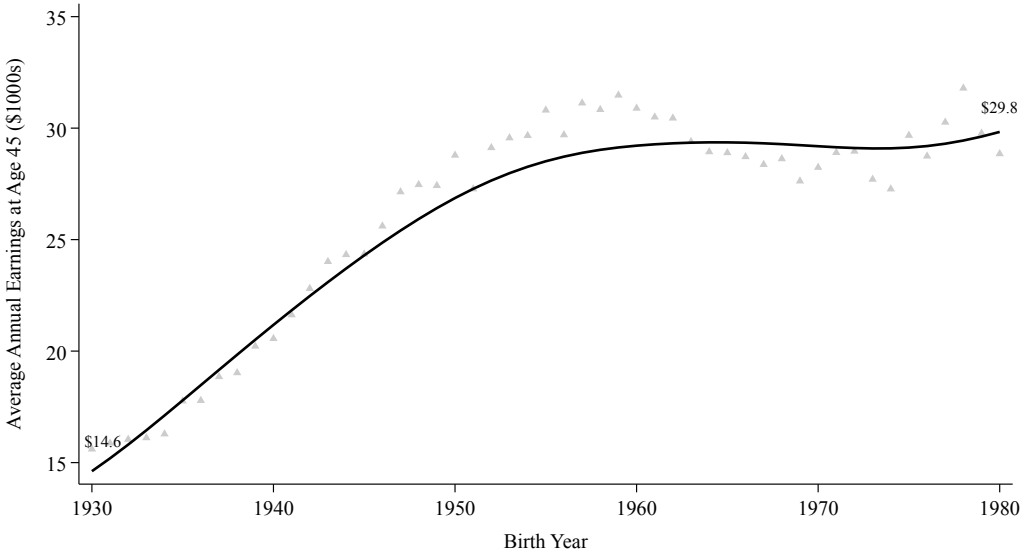
Notes: This figure illustrates trends in earnings for non-college men. The sample includes men born between 1930 and 1980 who had fewer than four years of college attendance and were aged 40 to 49 when surveyed in the CPS. Panel A presents average annual wage and salary earnings for all non-college men. Panel B disaggregates the analysis, showing earnings separately for non-college men married to a college woman and all others. Earnings are measured in thousands of 2024 dollars, adjusted for inflation using the CPI-U. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE VI: Trends in Earnings for Non-College Men and Women

A: High-Earning, Available Non-College Men



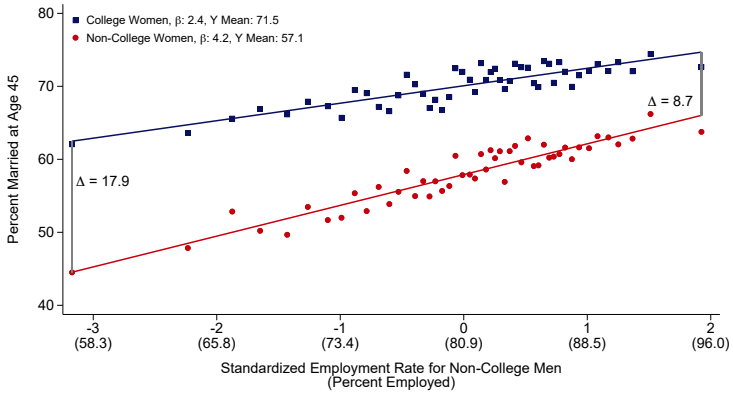
B: Real Earnings for Non-College Women



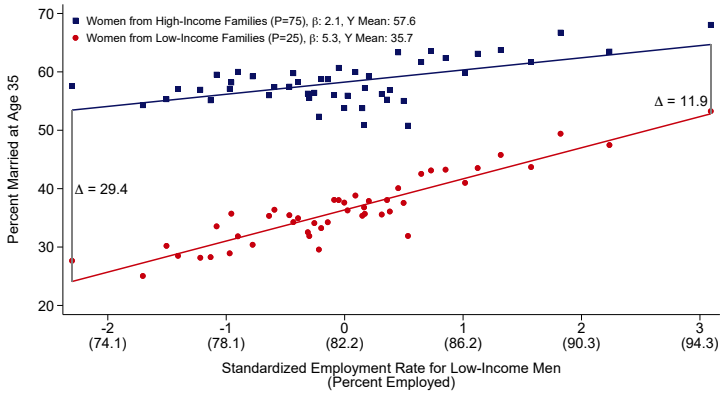
Notes: This figure shows trends in earnings for non-college men and women. The sample includes individuals born between 1930 and 1980 who had fewer than four years of college attendance and were aged 40–49 when surveyed in the CPS. Panel A depicts the trends in the economic status and marriage market availability of men without a four-year college degree. The dark blue line represents the percentage of non-college men with earnings above the median for their birth cohort. The red line indicates the percentage of non-college men who both earn above the median and are not married to a college-educated woman. Panel B shows the average annual wage and salary earnings for all non-college women. Earnings are expressed in thousands of 2024 dollars, adjusted for inflation using the CPI-U. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE VII: Marriage for Women vs. Area-Level Outcomes for Men

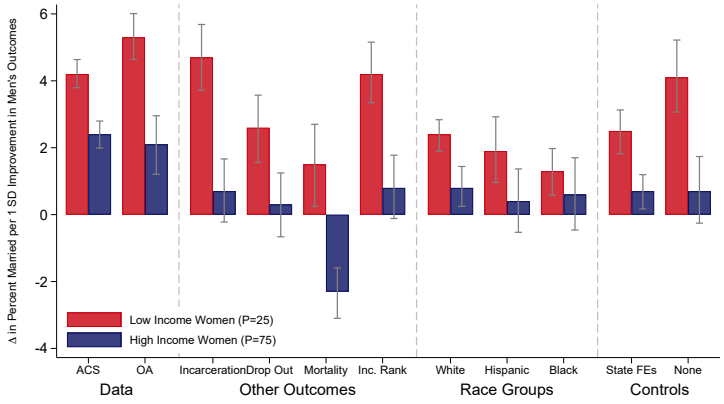
A: Adulthood Location; by Education



B: Childhood Location; by Parental Income



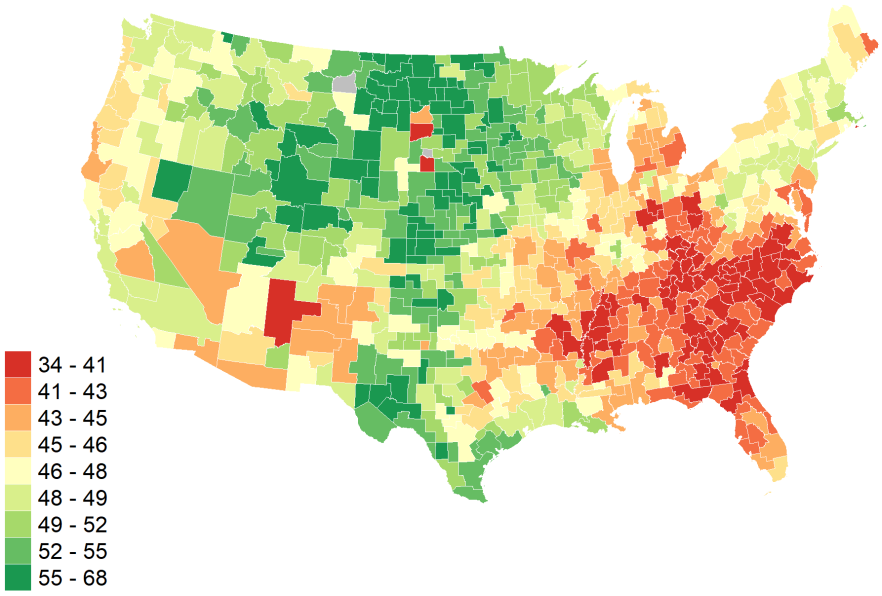
C: Association Between Marriage and Men's Outcomes



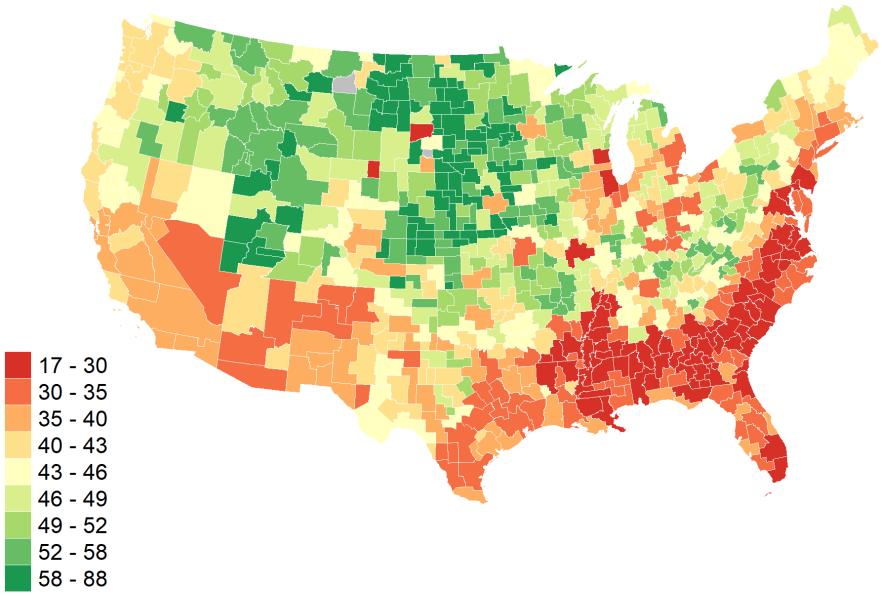
Notes: This figure shows the area-level association between women's marriage rates and men's outcomes. In Panel A, we use data from the 2017–2021 American Community Survey (ACS) to create a binned scatter plot of marriage rates for individuals aged 40–49, separately for college and non-college women, against employment (EPOP) rates for non-college men. Data are at the Public Use Microdata Area (PUMA) level, with EPOP for non-college men standardized by across-PUMA variance. Panel B presents a similar analysis using data from Chetty et al. (2018) and Chetty et al. (2016) at the commuting zone level, focusing on individuals born between 1978–1983. Instead of conditioning on college attendance, the data are split by parental income (25th vs. 75th percentile). Marriage rates are measured at ages 32–37, while men's employment is measured in 2015 using ACS data, standardized by the across-commuting-zone variance. We regress the x and y variables (for each sample) on the area's overall college attendance rate for women in Panel A and the share of women that were born to parents below the median household income in Panel B, and plot the residuals after adding back the mean of each series. Panel C extends the analysis in Panel B to various subgroups and outcomes for men. The first two bars replicate the slopes from Panels A and B with grey bars showing 95% confidence intervals. Subsequent bars replace men's employment for low-income families with outcomes such as incarceration, high school dropout rates, mortality rates and individual earnings rank (based on W-2 data). We multiply incarceration, high school dropout, and mortality by -1 so that an increase of 1 SD can be interpreted as the effect of these measures *improving* by 1 SD. Additional bars show the earnings rank relationship for racial subgroups (White non-Hispanic, Black non-Hispanic, and Hispanic) and repeat the earnings rank analysis while controlling for state fixed effects and omitting the women's low-income share control. All series are weighted by total population in the respective datasets. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE VIII: The Geography of Women's Marriage and Men's Earnings

A: Individual Income Percentile; Men From Low-Income (P=25) Families



B: Percent Married; Women from Low-Income (P=25) Families



Notes: This figure shows spatial variation in income and marriage rates using data from Chetty et al. (2018) at the commuting zone level, focusing on individuals born between 1978–1983. Panel A depicts the mean individual earnings rank in 2015 (based on W-2 data) for men born to parents at the 25th income percentile in each commuting zone. Panel B shows the marriage rates of women born to parents at the 25th income percentile, measured between ages 32–37.