

Supplementary Information

Data and Variable Definitions

Our analysis uses data from the Current Population Survey (CPS), the American Community Survey (ACS), and the Opportunity Atlas (OA) to measure educational attainment, marriage, and economic outcomes among American adults across time and geographic regions (Flood et al., 2024; Ruggles et al., 2024; Chetty et al., 2016, 2018).

We use consistent variable definitions for the CPS and ACS. The CPS provides a reliable annual time series dating back to 1968, while the 5-year ACS file offers a larger sample size that supports cross-area comparisons. In addition, we draw on OA data for complementary geographic analyses with an expanded set of outcomes, though these data rely on different samples and variable definitions.

Household survey data

Sample. We focus on respondents who are 40–49 years old at the time of the survey. For simplicity, we refer to their marriage outcomes as representing marriage rates at age 45. For historical analyses, we use the CPS March Annual Social and Economic Supplement (ASEC) files from 1968–2024, covering birth cohorts from 1930–1980. For cross-area analyses, we rely on the 2017–2021 5-year ACS file.

Education. Our primary education measure is college completion, defined as obtaining a four-year college degree or higher. Prior to 1992, the CPS asked respondents for their highest grade of school completed but not about degree completion. For those years, we define college completion as having attended at least 4 years of college.

Marriage. Results in our historical analysis rely on information on spousal education. In the CPS, spousal education can only be observed for married heads of households and for the spouses of married heads of households. Therefore, our primary marriage definition for those results is being either a household head with a spouse present or the spouse of a household head. This definition mis-classifies 1.3% of the sample who report being married with a spouse present in the survey question on marital status but whom we classify as single. There is no noticeable difference in marriage rate trends between the two definitions. For the cross-area analysis using the ACS, we employ the person-based marital status variable.

Fertility. Figure A.3 presents supplementary results on fertility trends. For historical trends, we rely on the CPS Fertility and Marriage Supplement, which asks respondents about the number of live births ever had. By contrast, the ACS—which we use for cross-area analysis—does not ask respondents directly about fertility. For those results, we instead define a derived fertility measure as being the head of household or their spouse or unmarried partner with at least one own child

under age 18 living at home at the time of the survey. To account for the fact that mothers’ age at childbirth varies systematically by education, we use a slightly broader sample window and focus on respondents at ages 25-44.

Economic Outcomes. We measure earnings using pre-tax wage and salary income, adjusted to current U.S. dollars using the CPI-U. Employment status is taken directly from the respective survey questions in both the CPS and ACS.

Geography. For the ACS cross-area results, we define areas using the Public Use Microdata Area (PUMA) associated with the respondent’s household at the time of the survey.

Opportunity Atlas Data

Sample. The OA provides cross-area adulthood outcome estimates by parent income and childhood location. The main OA estimates we use are based on individuals born between 1978–1983, as recorded in Census and tax data.

Parent Income. OA estimates are available by parent income percentile during an individual’s childhood. We interpret this as a proxy for socioeconomic status. Our analysis compares outcomes for individuals from families at the 25th percentile of the parent income distribution to those from families at the 75th percentile.

Marriage and Economic Outcomes. From the OA, we use measures of marriage, employment, incarceration, educational attainment, and individual income ranks. Chetty et al. (2018) provide detailed variable definitions. We also incorporate a life expectancy measure from Chetty et al. (2016), which is defined by adulthood location rather than childhood location.

Geography. OA estimates are reported at the childhood commuting zone level. These estimates are weighted by exposure, reflecting the number of years a child resided in each commuting zone prior to reaching age 18.

Matching Model

We use the transferable utility model of the marriage market developed by Choo and Siow (2006). The following description closely follows the presentation of the Choo and Siow (2006) model as outlined in Goldman, Gracie and Porter (2024). In our application, there are two types of individuals: college and non-college. Men’s types are indexed by j , and women’s types are indexed by k . Preferences for men,

$$U_{k,i}^m = \alpha_{j(i),k}^m - \tau_{j(i),k} + \varepsilon_{k,i}, \tag{1}$$

and women,

$$U_{j,i}^w = \alpha_{j,k(i)}^w + \tau_{j,k(i)} + \varepsilon_{j,i}, \quad (2)$$

where α is the systematic component, τ represents transfers, and ε is the idiosyncratic component. The idiosyncratic component follows a Type I extreme value distribution. For men, $U_{k,i}^m$ reflects the preference of individual i , who is a type $j(i)$ man, for marrying a type k woman. Similarly, $U_{j,i}^w$ represents the preference of individual i , a type $k(i)$ woman, for marrying a type j man.

Marital surplus,

$$\gamma_{j,k} \equiv (\alpha_{j,k}^m + \alpha_{j,k}^w) - (\alpha_{j,0}^m + \alpha_{0,k}^w)$$

captures the value of a j,k marriage relative to the utility j and k would attain if they were single. Choo and Siow (2006) show that the equilibrium number of matches between types j and k ,

$$\mu_{j,k} = \sqrt{e^{\gamma_{j,k}} \mu_{j,0} \mu_{0,k}}, \quad (3)$$

is a function of the marital surplus and the number of types j and k who remain single, $\mu_{j,0}$ and $\mu_{0,k}$. The equilibrium also must obey adding up: the total number of type t in the market must be equal to the sum of the number of t who marry and the number who remain single:

$$m_j = \mu_{j,0} + \sum_{k=1}^T \mu_{j,k}$$

$$w_k = \mu_{0,k} + \sum_{j=1}^T \mu_{j,k}.$$

Substituting the expression for the equilibrium number of matches, $\mu_{j,k}$, into the adding up constraints yields a concise definition of the model equilibrium,

$$m_c = \mu_{c,0} + \sqrt{e^{\gamma_{c,c}} \mu_{c,0} \mu_{0,c}} + \sqrt{e^{\gamma_{c,n}} \mu_{c,0} \mu_{0,n}} \quad (4)$$

$$m_n = \mu_{n,0} + \sqrt{e^{\gamma_{n,c}} \mu_{n,0} \mu_{0,c}} + \sqrt{e^{\gamma_{n,n}} \mu_{n,0} \mu_{0,n}} \quad (5)$$

$$w_c = \mu_{0,c} + \sqrt{e^{\gamma_{c,c}} \mu_{c,0} \mu_{0,c}} + \sqrt{e^{\gamma_{n,c}} \mu_{n,0} \mu_{0,c}} \quad (6)$$

$$w_n = \mu_{0,n} + \sqrt{e^{\gamma_{c,n}} \mu_{c,0} \mu_{0,n}} + \sqrt{e^{\gamma_{n,n}} \mu_{n,0} \mu_{0,n}}. \quad (7)$$

This is a system of four equations and four endogenous variables.

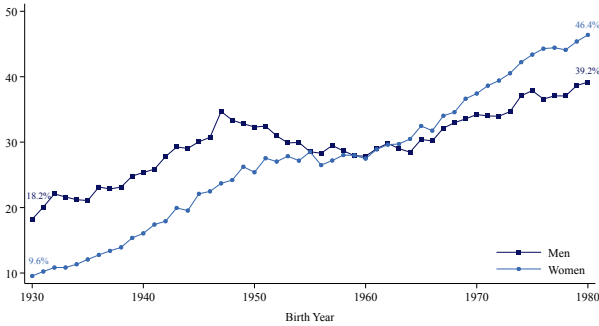
We estimate the model under the assumption that marriage markets are closed within birth cohorts and that all marriages are exclusively opposite-gender. The model predictions in Figure

II are constructed using values of μ based on women's marriage outcomes for the 1930 cohort. For instance, $\mu_{c,n}$ represents the fraction of non-college women born in 1930 who married college men. The share of type j men who remained single ($\mu_{j,0}$) was imputed using $\mu_{c,n}$ and the observed m_j for the 1930 cohort.

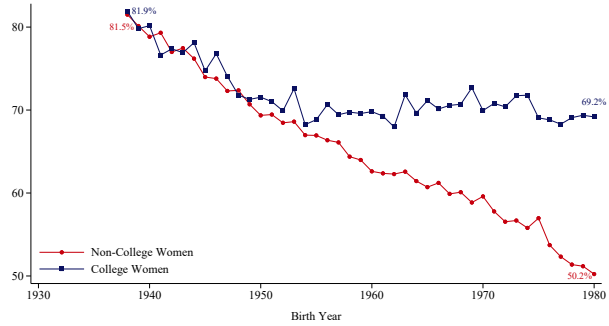
Using these initial μ values, we estimate γ^{1930} based on Equation 3. We then allow m_j and w_k to evolve across cohorts as observed in the data, while holding γ fixed at γ^{1930} . This approach enables us to estimate how μ changes over time by solving Equations 4–7. Because the initial μ used to estimate γ^{1930} were defined based on women's marriage outcomes, the model predictions align perfectly with the data for the 1930 cohort.

FIGURE A.1: Trends in Education and Marriage; Alternative Samples

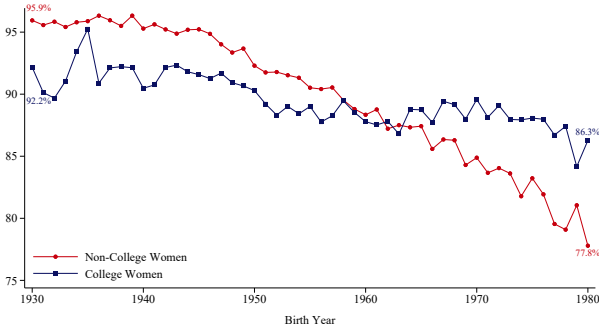
A: Percent with Four-Year College



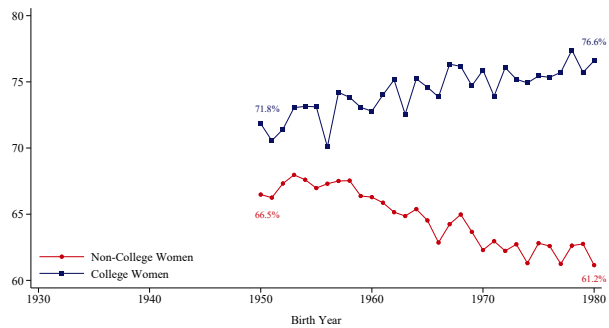
B: Percent of Women Married (Age 35)



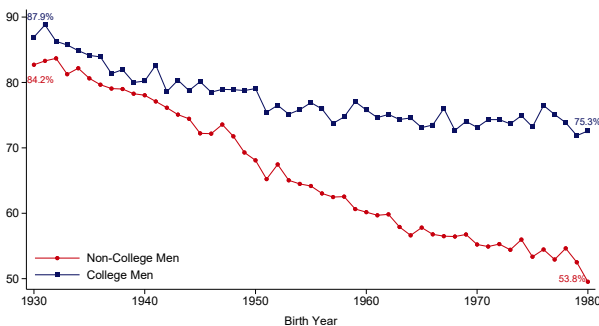
C: Percent of Women Ever Married by Age 45



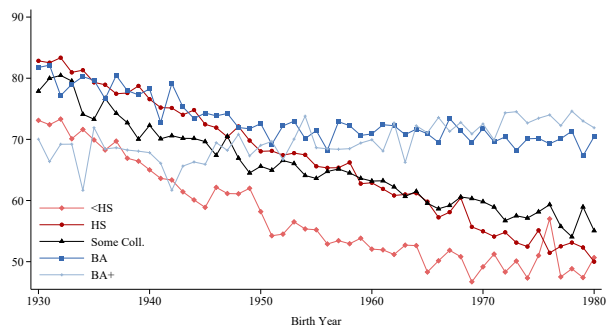
D: Pct. of Women Married/Cohabiting (Age 45)



E: Percent of Men Married (Age 45)

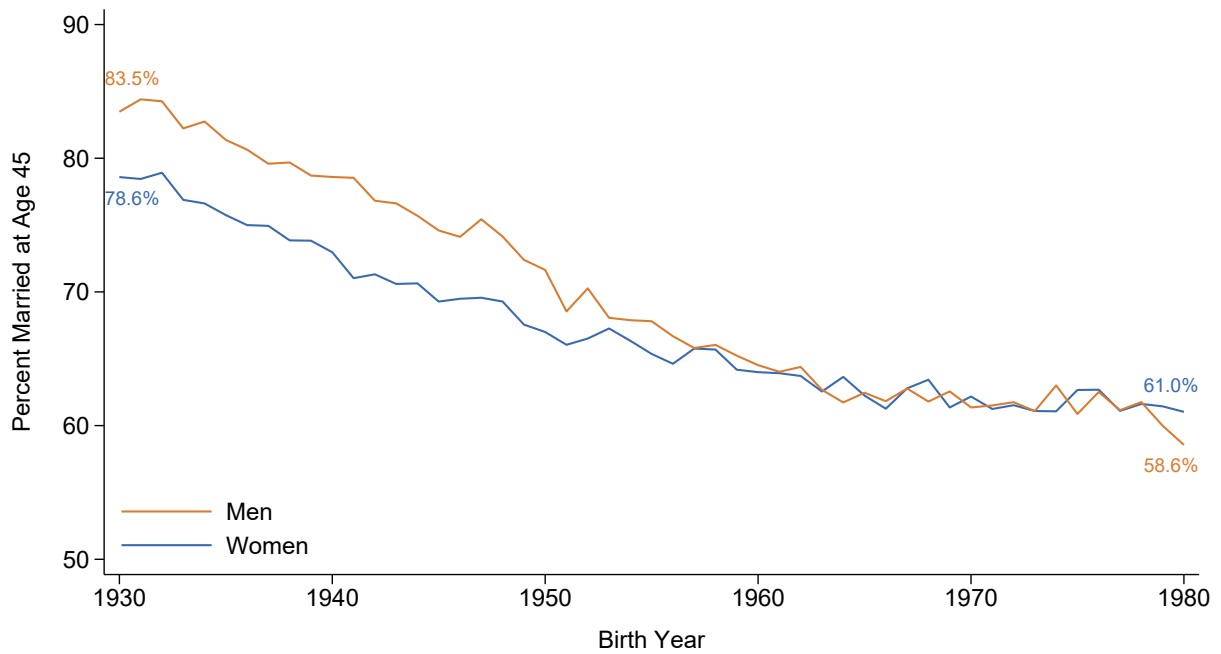


F: Percent of Women Married (Age 45)



Notes: This figure presents trends in college attendance and marriage rates across various definitions and samples. Panel A shows the underlying data from Figure I.A, illustrating the share of women and men who attended at least four years of college by birth year. Panel B modifies Figure I.B by using a sample of women surveyed in the CPS at ages 30–39, focusing on cohorts with data spanning the full range of ages. Panel C replicates Figure I.B but examines the share of women “ever married” by age 45. Panel D replicates Figure I.B, including women who are living with an unmarried partner. Panel E replicates the analysis from Figure I.B for men. Panel F extends Figure I.B by including detailed education categories: more than four years of college, some college (fewer than four years), a high school diploma, and less than a high school education. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

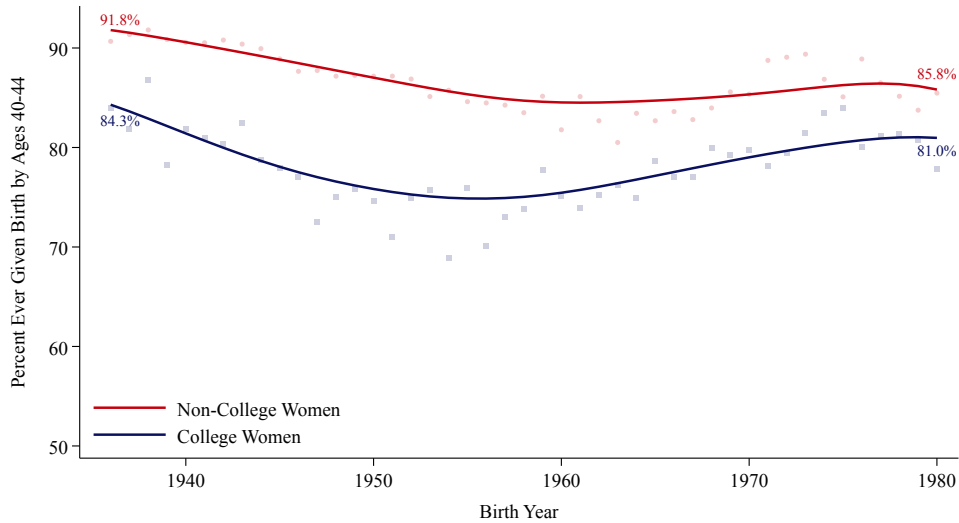
FIGURE A.2: Overall Trends in Marriage Rates



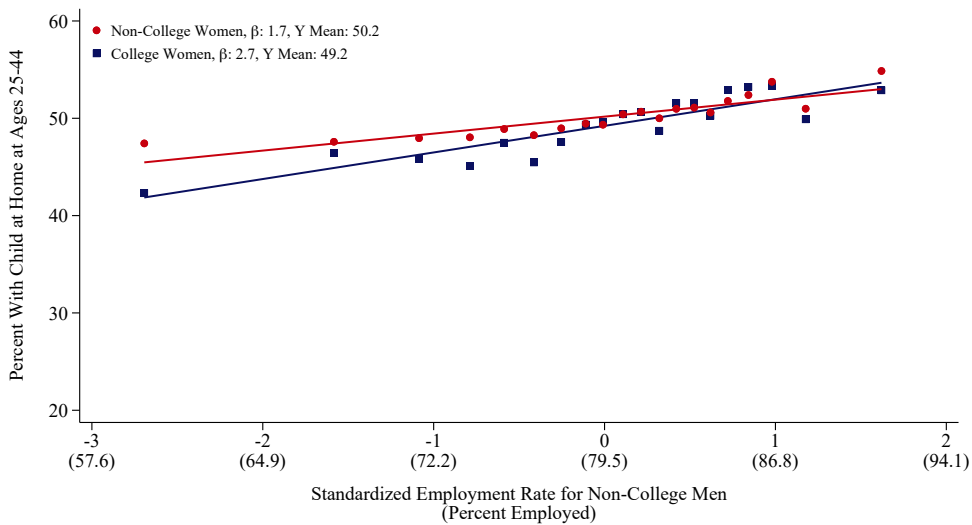
Notes: This figure shows trends in marriage rates by gender. The sample includes individuals born between 1930 and 1980 who were aged 40–49 when surveyed in the CPS. The blue line represents women, and the orange line represents men. Each line shows the share of individuals who were married at the time of the survey by birth cohort. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE A.3: Historical Trends and Cross-Area Variation in Fertility

A: Percent of Women Who Have Given Birth

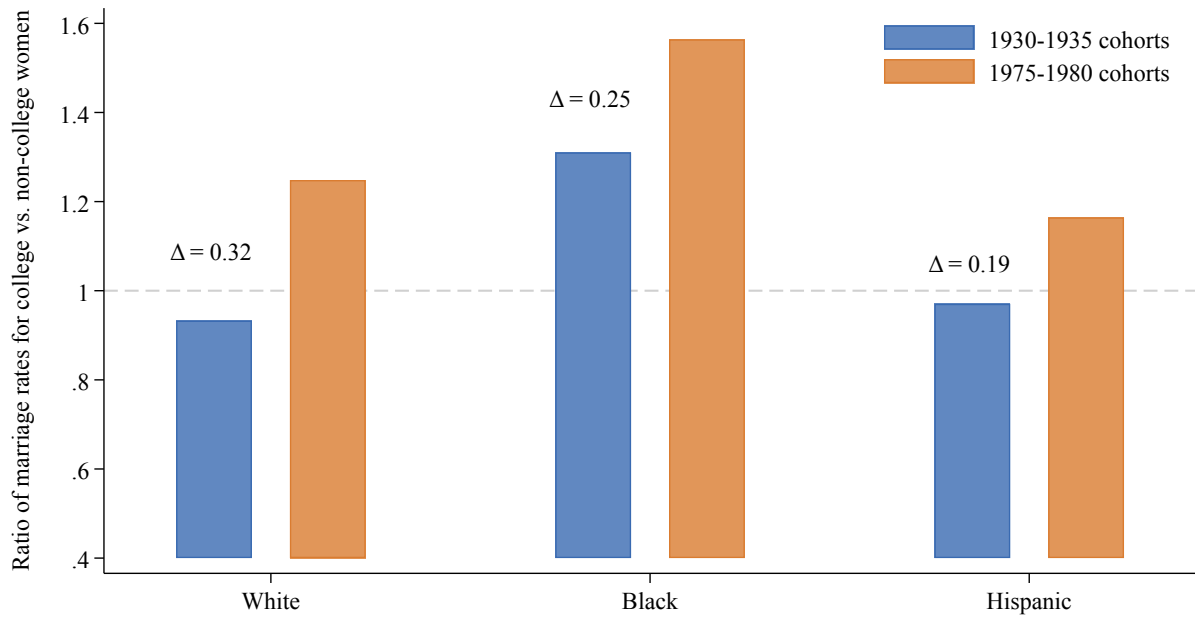


B: Child-at-Home Rates vs. Men’s Employment Rates (2017-2021)



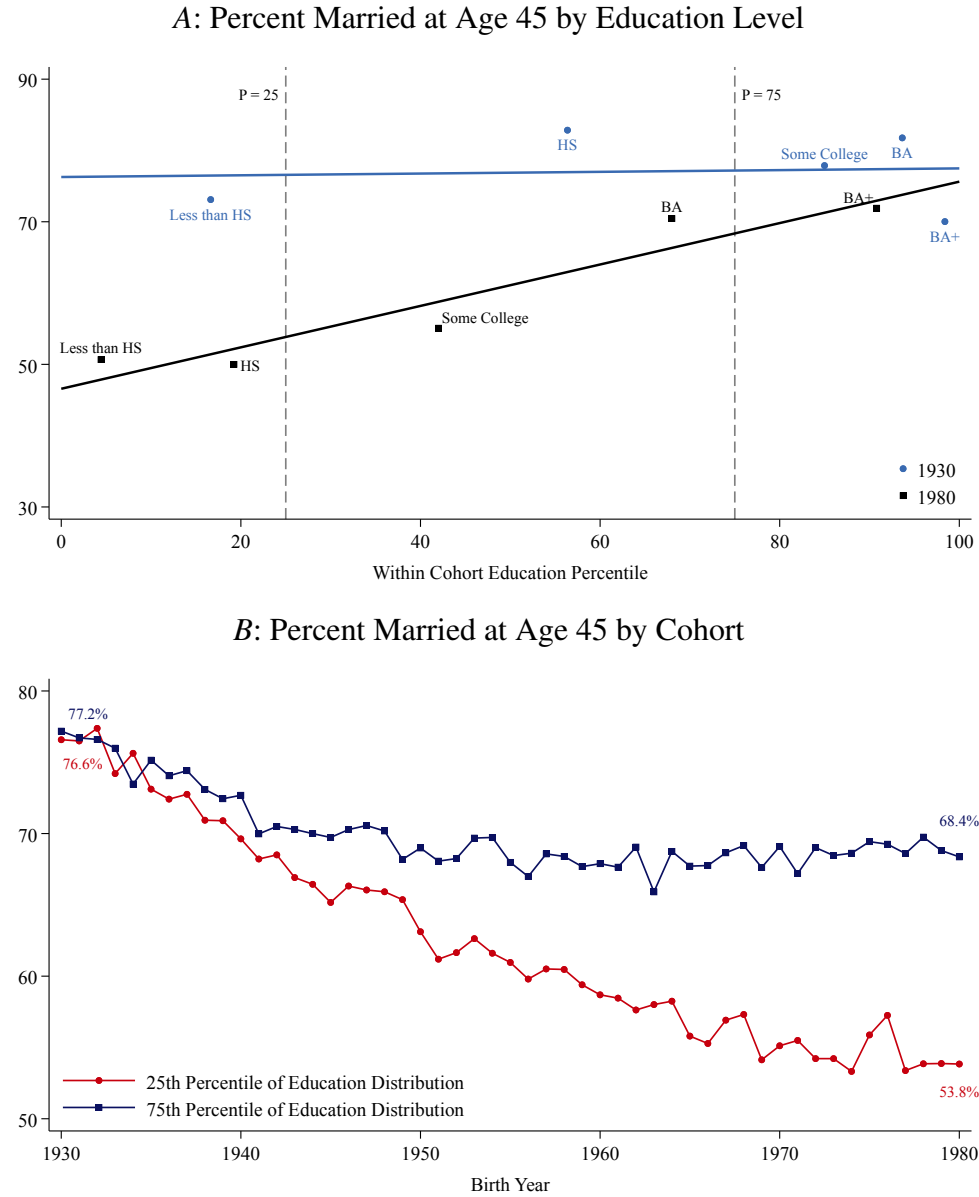
Notes: This figure shows historical trends and current cross-area patterns in fertility for women with and without a four-year college degree. Panel A is analogous to Figure 1B and is based on the CPS Fertility and Marriage Supplement; it plots the share of women born between 1936 and 1980 who have ever had at least one live birth by ages 40-44. Panel B is analogous to Figure VIIA and is based on the 2017-2021 5-year ACS. The ACS does not directly ask respondents about fertility, so we define a derived measure as being head of household or their spouse with at least one own child living at home at the time of the survey (“child-at-home”). The sample is restricted to respondents at ages 25-44. Panel B shows a binned scatter plot of child-at-home rates, separately for college and non-college women, against employment rates for non-college men (EPOP). Data are the the Public Use Microdata Area (PUMA) level, with EPOP standardized by across-PUMA variance. Child-at-home rates and men’s EPOP are residualized on the PUMA’s college attendance rate for women. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE A.4: Ratio of Marriage Rates for College Women to Non-College Women by Race and Cohort



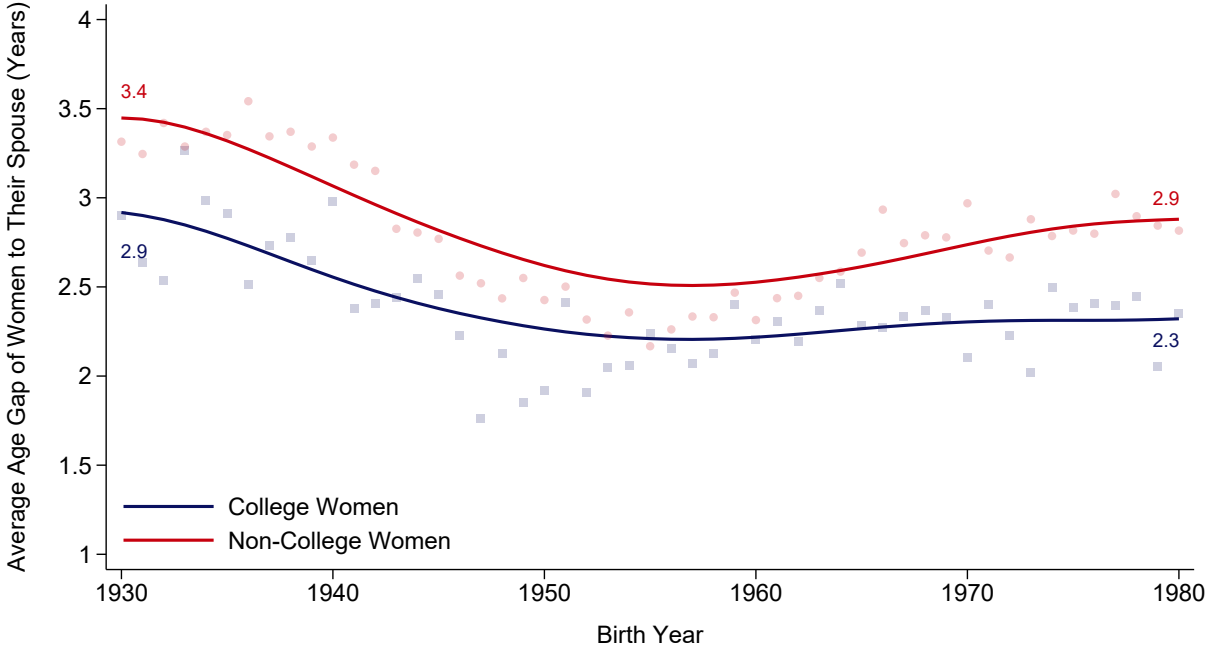
Notes: This figure shows the evolution of the marriage gap by education and race. Each bar represents the ratio of marriage rates for college-educated women to those for non-college women within the same race and birth cohort. Blue bars correspond to women born between 1930 and 1935, and orange bars correspond to women born between 1975 and 1980. The sample includes women born in these cohorts who were aged 40–49 when surveyed in the CPS. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE A.5: Marriage by Women’s Relative Education Rank



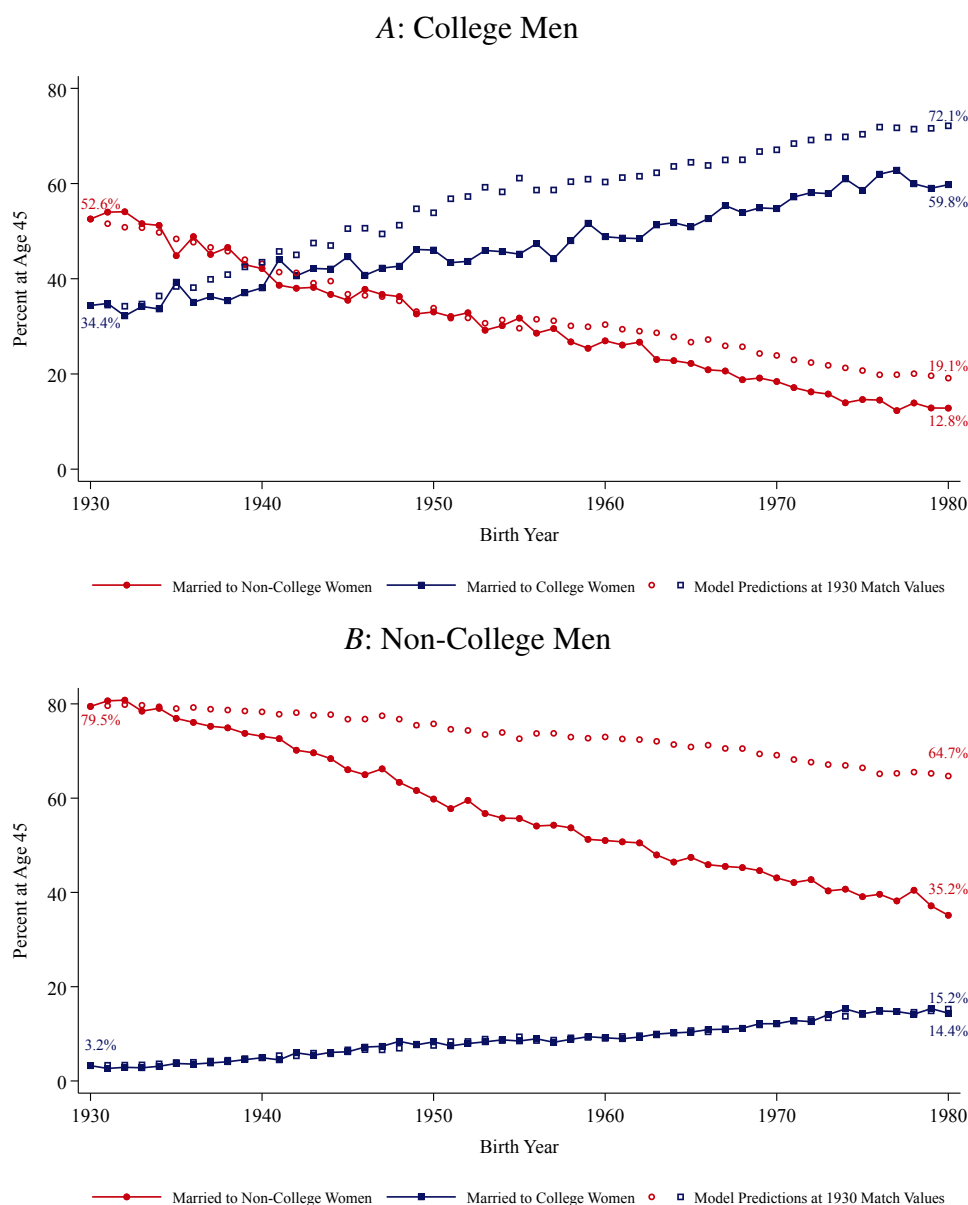
Notes: This figure shows trends in marriage rates for women by education percentile and birth year. Panel A plots marriage rates by detailed education categories—less than high school, high school diploma, some college (fewer than four years), four years of college, and more than four years—for women born in 1930 (blue line) and 1980 (black line). Panel B shows marriage rates by birth year for women at the 25th (red line) and 75th (blue line) education percentiles within their birth cohort. In both panels, the y-axis represents the share of women married at the time of the CPS survey. The sample includes individuals aged 40–49 when surveyed in the CPS. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE A.6: Trends in Age Gaps of Women to Their Spouse’s by Education



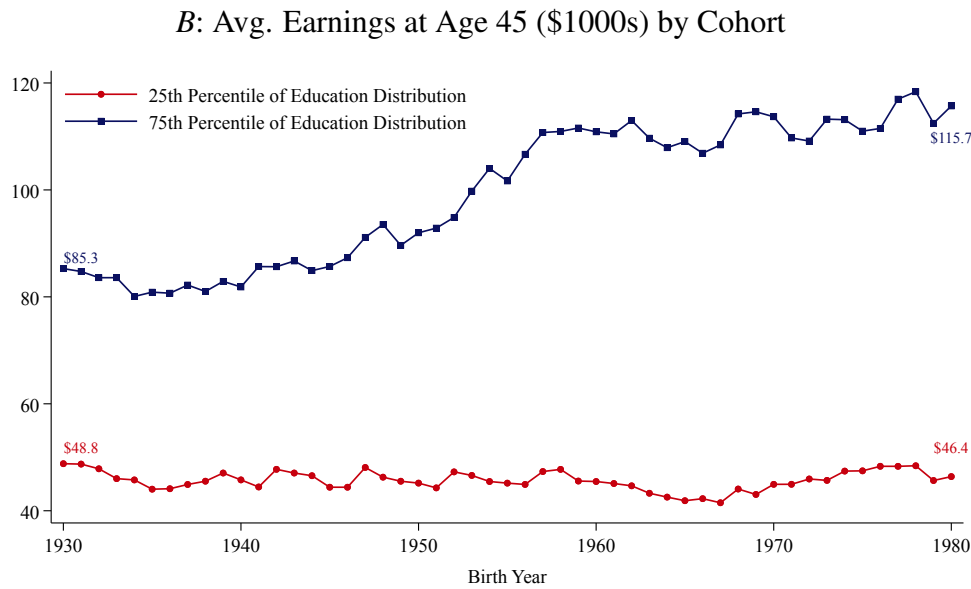
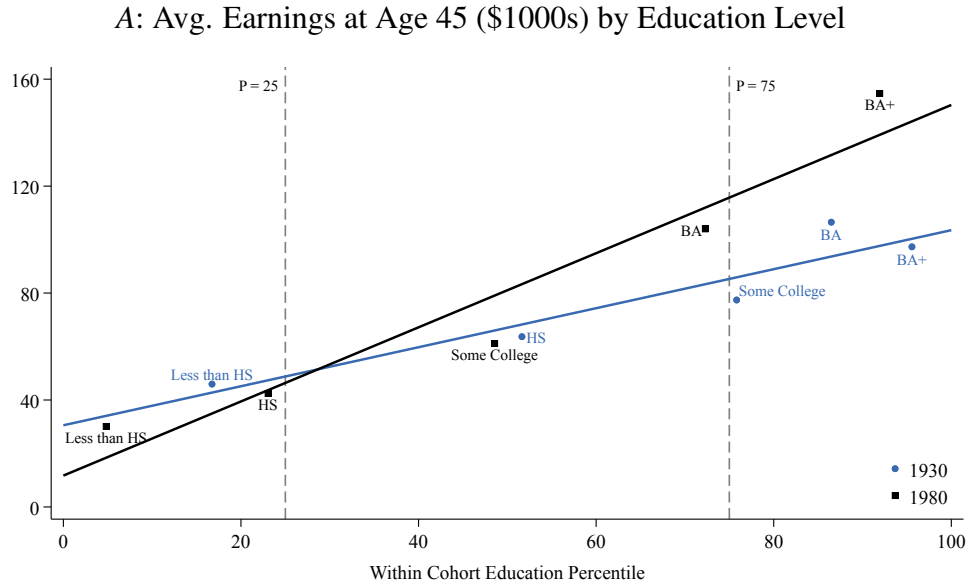
Notes: This figure shows trends in spousal age gaps by women’s education. The sample includes women born between 1930 and 1980 who were aged 40–49 when surveyed in the CPS. The blue line represents women who completed at least four years of college, and the red line represents women without a four-year college degree. Each line shows the average age difference between women and their spouse by birth cohort. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE A.7: Trends in Men’s Marriage Outcomes vs. Matching Model Predictions Holding 1930 Match Values Fixed



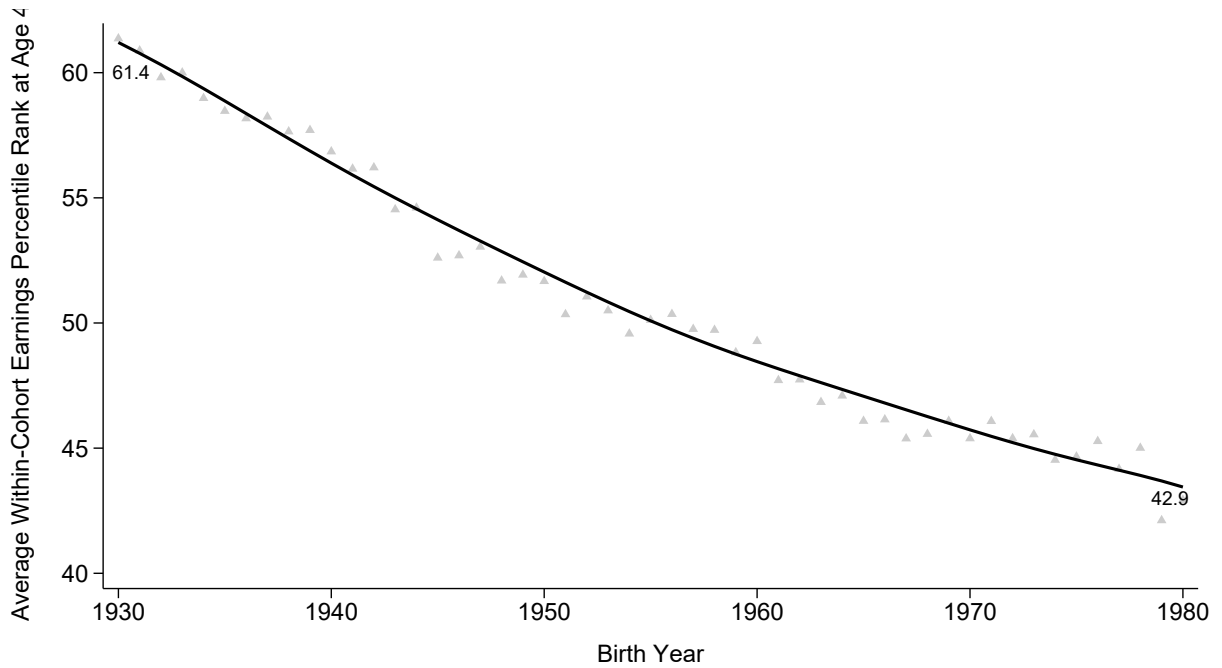
Notes: This figure illustrates changes in the share of men married to college and non-college women, alongside predictions of how these marriage rates would evolve if match values remained constant at levels estimated for the 1930 birth cohort. The sample includes individuals born between 1930 and 1980 who were aged 40 to 49 when surveyed in the CPS. Panel A depicts the share of men 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 men 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 section on the matching model for details on model predictions.

FIGURE A.8: Earnings by Men's Relative Education Rank



Notes: This figure shows trends in average earnings by education percentile and birth year. Panel A plots average earnings by detailed education categories—less than high school, high school diploma, some college (fewer than four years), a four-year college degree, and postgraduate education—for men born in 1930 (blue line) and 1980 (black line). Panel B shows average earnings by birth year for men at the 25th (red line) and 75th (blue line) education percentiles within their birth cohort. Earnings are reported in thousands of 2024 dollars at the time of the CPS survey. The sample includes individuals aged 40–49 when surveyed in the CPS. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

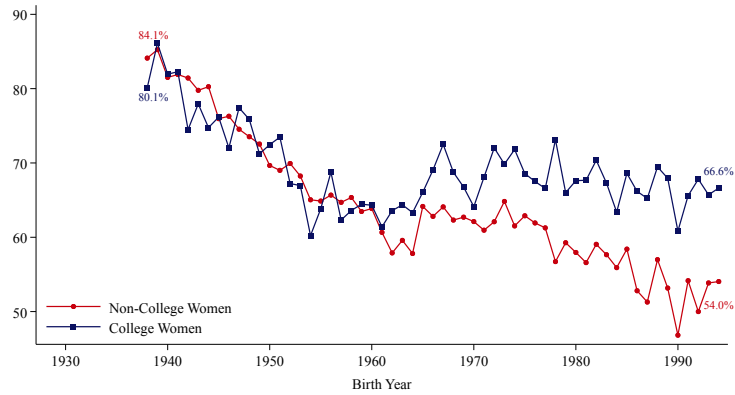
FIGURE A.9: Non-College Men's Relative Earnings Rank



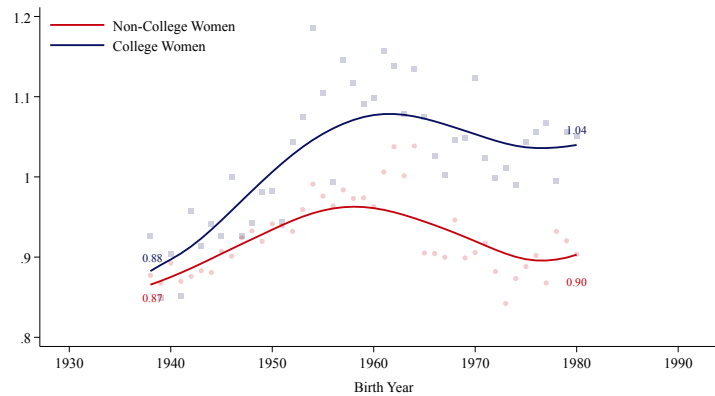
Notes: This figure shows trends in earnings for non-college men. The sample includes men born between 1930 and 1980 who had fewer than four years of college attendance and were aged 40–49 when surveyed in the CPS. The solid black line depicts the within-cohort percentile rank of earnings for non-college men born in each year. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE A.10: Forecasting Marriage Outcomes for Recent Cohorts

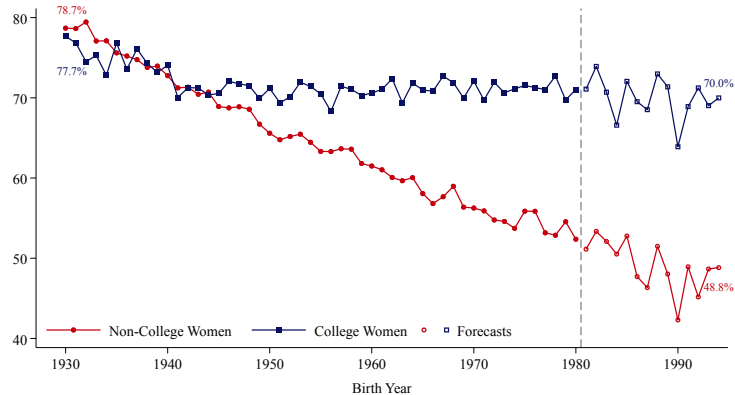
A: Percent of Women Married/Cohabiting at Age 30



B: Ratio of Women Married at Age 45 versus Age 30

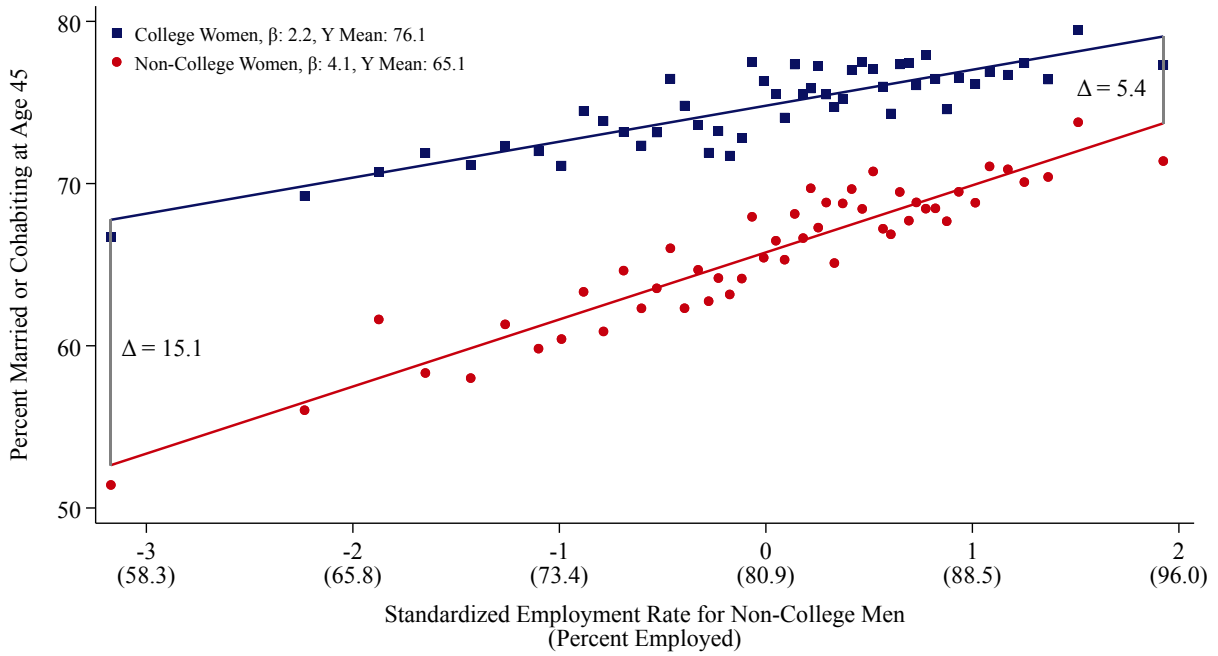


C: Percent of Women Married at Age 45 by Education



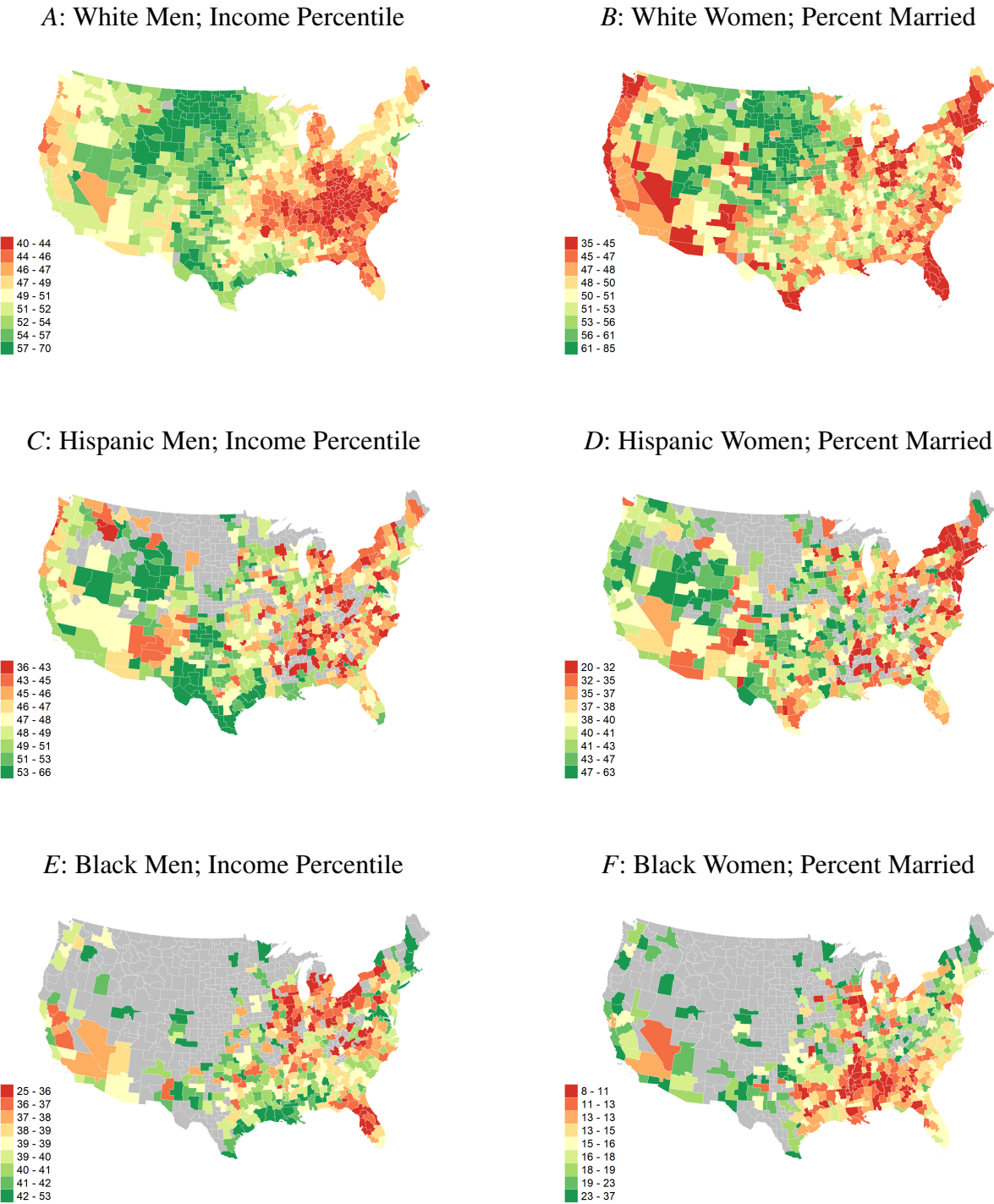
Notes: This figure shows trends in marriage rates for college and non-college women, including forecasts of age-45 marriage rates for recent cohorts (1981–1994). Panel A replicates *IB*, showing the share of non-college and college women who are married, but also includes those listed in the CPS as unmarried but cohabiting with a partner at age 30. Panel B presents the ratio of women married at ages 40–49 (as shown in Figure *IB*) to those married or cohabiting at age 30, by cohort. Panel C uses these ratios from Panel B to project marriage rates at ages 40–49 for cohorts born between 1981 and 1994, based on the data shown in Panel A. See the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE A.11: Marriage and Cohabitation for Women vs. Employment of Non-College Men



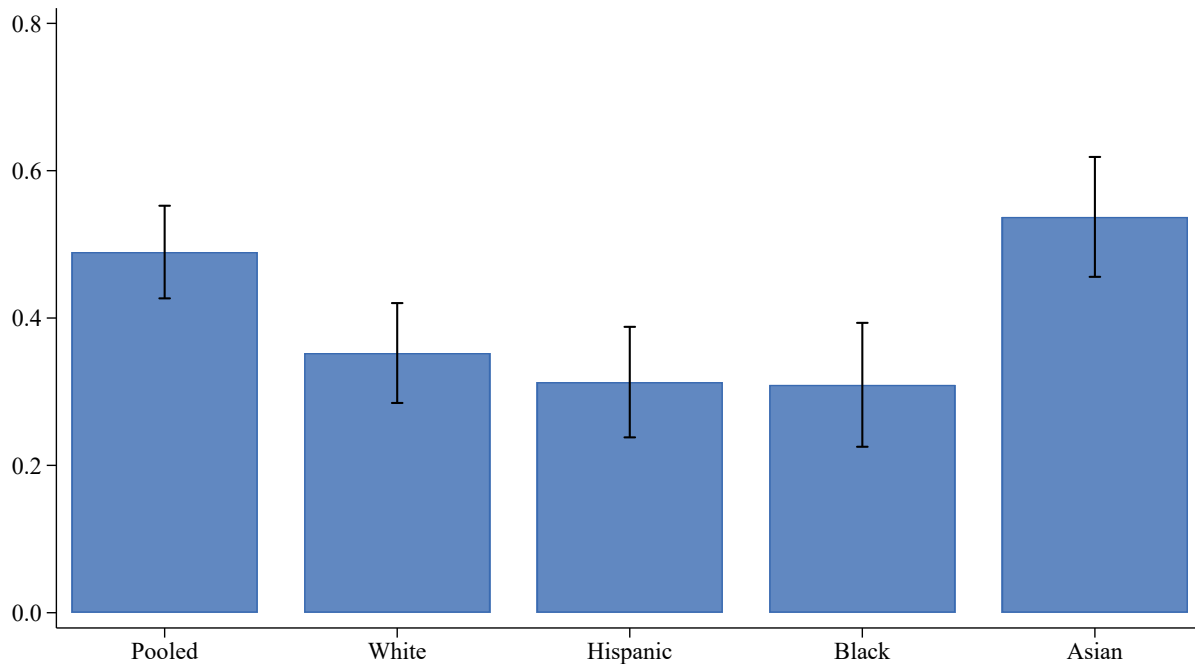
Notes: This figure shows the area-level association between women’s marriage or cohabitation rates and employment (EPOP) rates for non-college men. It is a replication of **VIIA** with an expanded outcome variable that includes being married or living with an unmarried partner. See the notes for **VIIA** for the methodology underlying the figure and the Supplementary Information section on data and variable definitions for details on sample construction and variable definitions.

FIGURE A.12: The Geography of Women’s Marriage and Men’s Earnings by Race



Notes: This figure shows spatial variation in income and marriage rates by racial group using data from Chetty et al. (2018) at the commuting zone level, focusing on individuals born between 1978–1983. Panels A and B display results for White non-Hispanic men and women, Panels C and D for Hispanic individuals, and Panels E and F for Black non-Hispanic individuals. The left-hand panels show 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. The right-hand panels present the marriage rates of women born to parents at the 25th income percentile, measured between ages 32–37.

FIGURE A.13: Correlation Between Marriage Rates for Women and Earnings for Men from Low-Income Families at the Commuting Zone-Level



Notes: This figure shows the commuting zone-level correlation between income and marriage rates using data from Chetty et al. (2018), focusing on individuals born between 1978–1983. The first bar represents the correlation between the mean individual earnings rank in 2015 (based on W-2 data) for men born to parents at the 25th income percentile and the marriage rates of women born to parents at the same income level, measured between ages 32–37, weighted by the population below median income levels. The next four bars show the same correlations, disaggregated by race (White non-Hispanic, Hispanic, Black non-Hispanic, and Asian), with both marriage rates and earnings calculated within each subgroup. Correlations are weighted by the number of children in each group who grew up in each commuting zone. Black error bars represent 95% confidence intervals.