
Rising Price for Husbands? Evidence from Foreign Brides in Taiwan



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Who are Immigrant Brides and Bridegrooms?

- Immigrant brides are those who marry Taiwanese men and immigrate to Taiwan after marriage.
- Immigrant bridegrooms are those who marry Taiwanese women and immigrate to Taiwan after marriage.

Questions of Interest

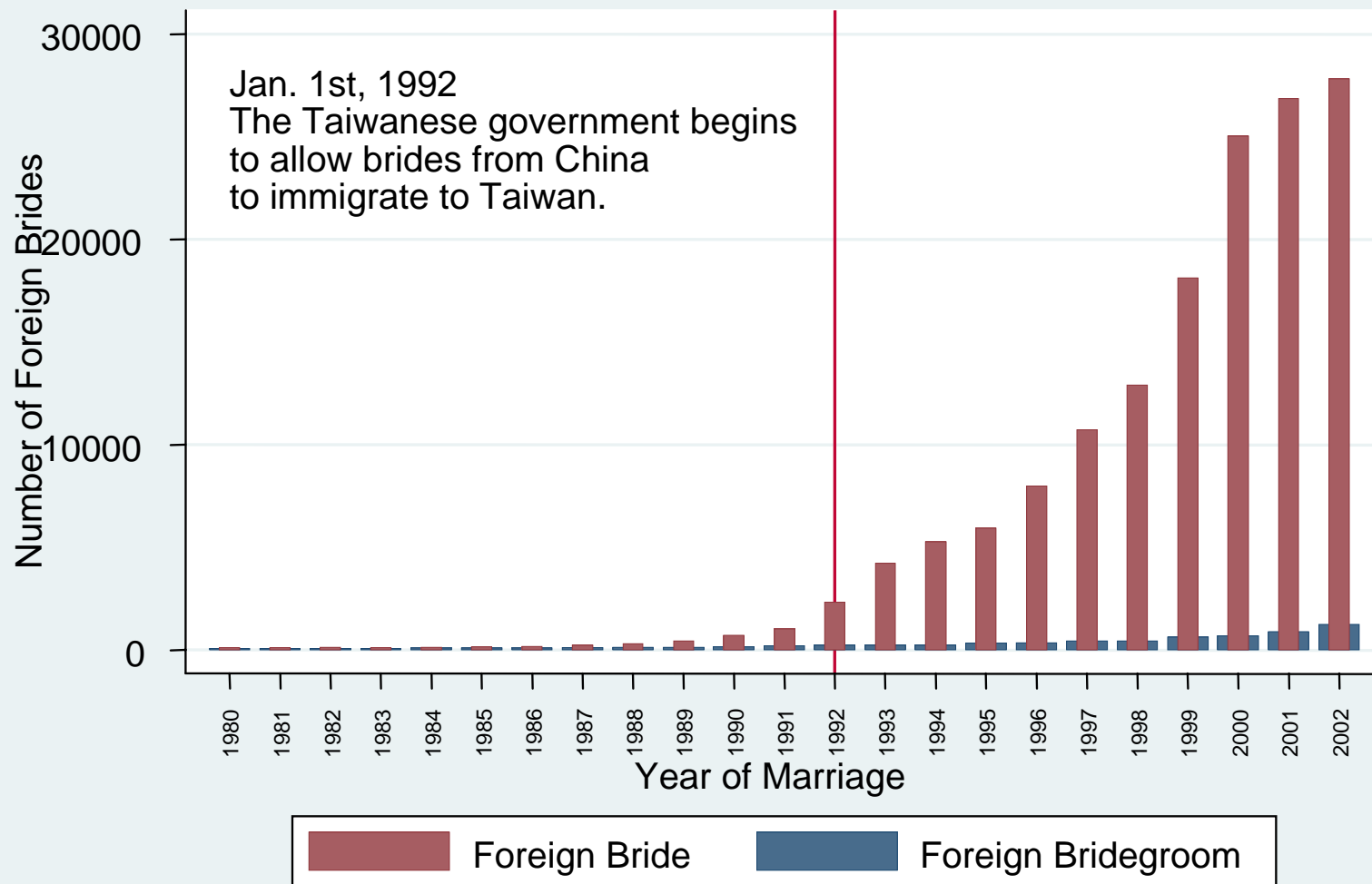
- How does the influx of foreign brides affect marriage prospects, labor force participation and other social and economic variables of Taiwanese Women?
- Are foreign brides substitutes for Taiwanese girls? Or would the Taiwanese men who are marrying foreign brides be unable to marry if there was no chance of ordering brides?

Background Information of Policy Change

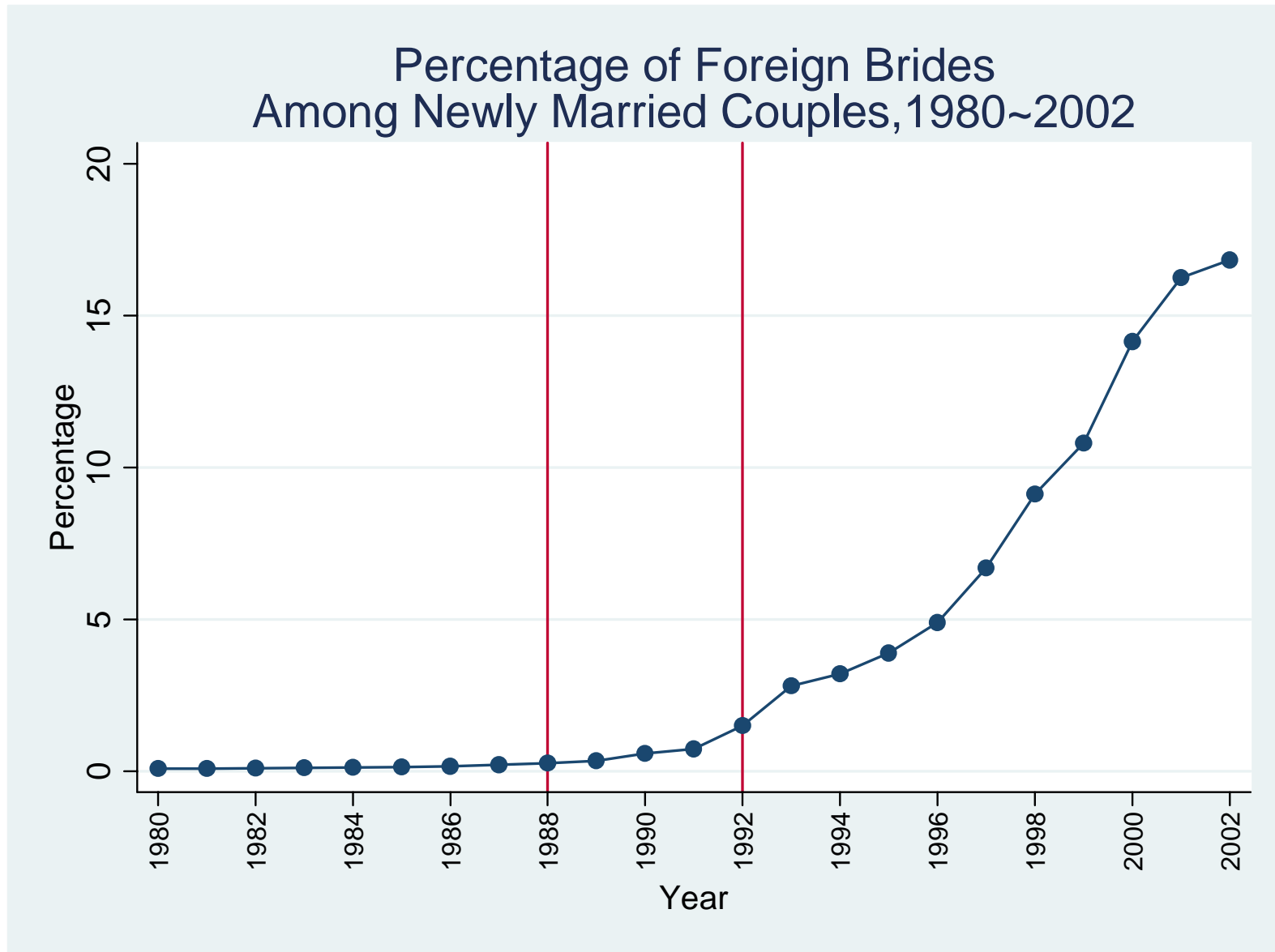
- 1987.11.2
 - After 39 years of segregation, out of humanitarian concerns, the government decides to remove obstacles for people from Taiwan and from Mainland China to interact with each other.
 - The Taiwan government begins to allow Taiwanese people to visit their relatives in China.
- 1992.1.1
 - The Taiwan government begins to allow immigrant brides from China to immigrate to Taiwan.

Number of Foreign Spouses Increases Dramatically after the Immigration Law Change

Numbers of Foreign Brides and Foreign Bridegrooms 1980-2002

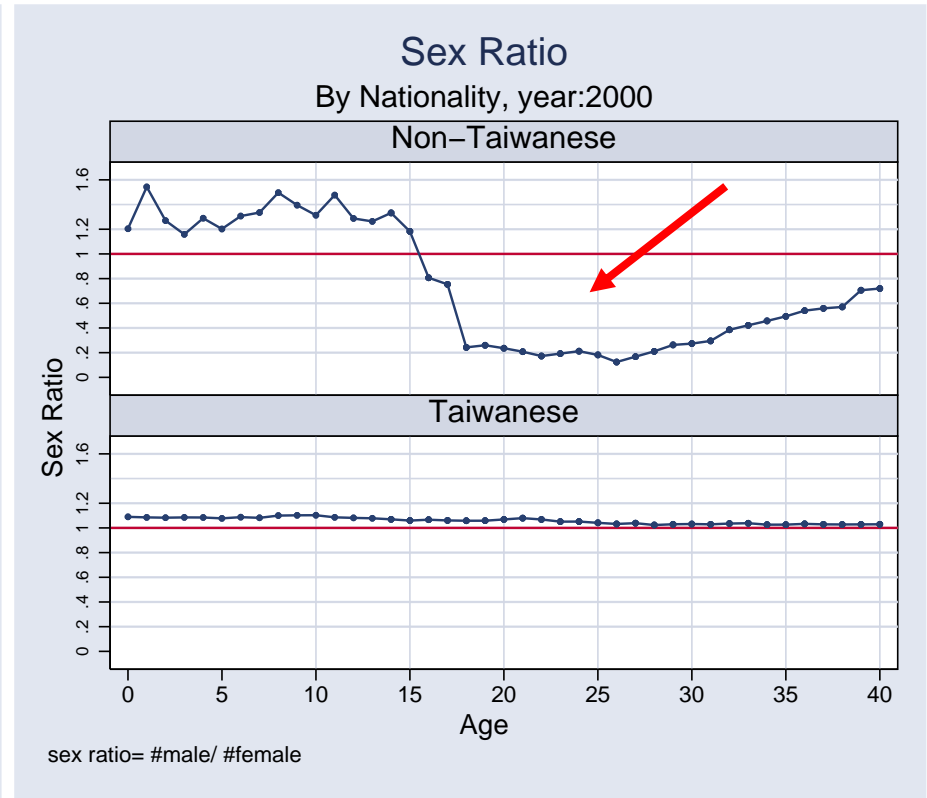
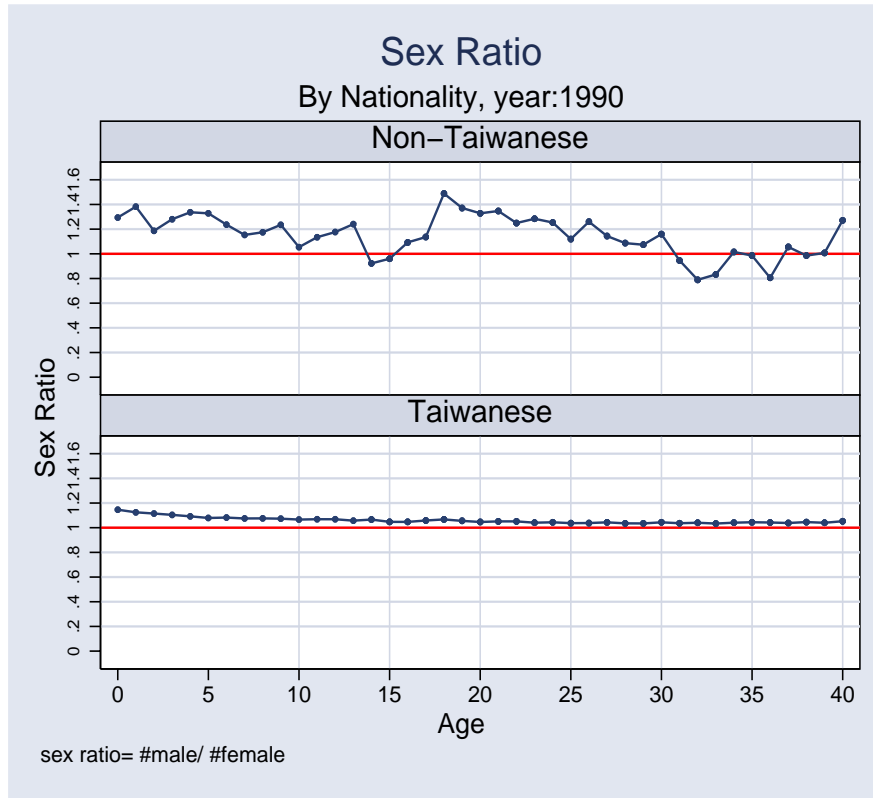


In 2002, 17% of Newly Married Wives are Foreign Born Brides



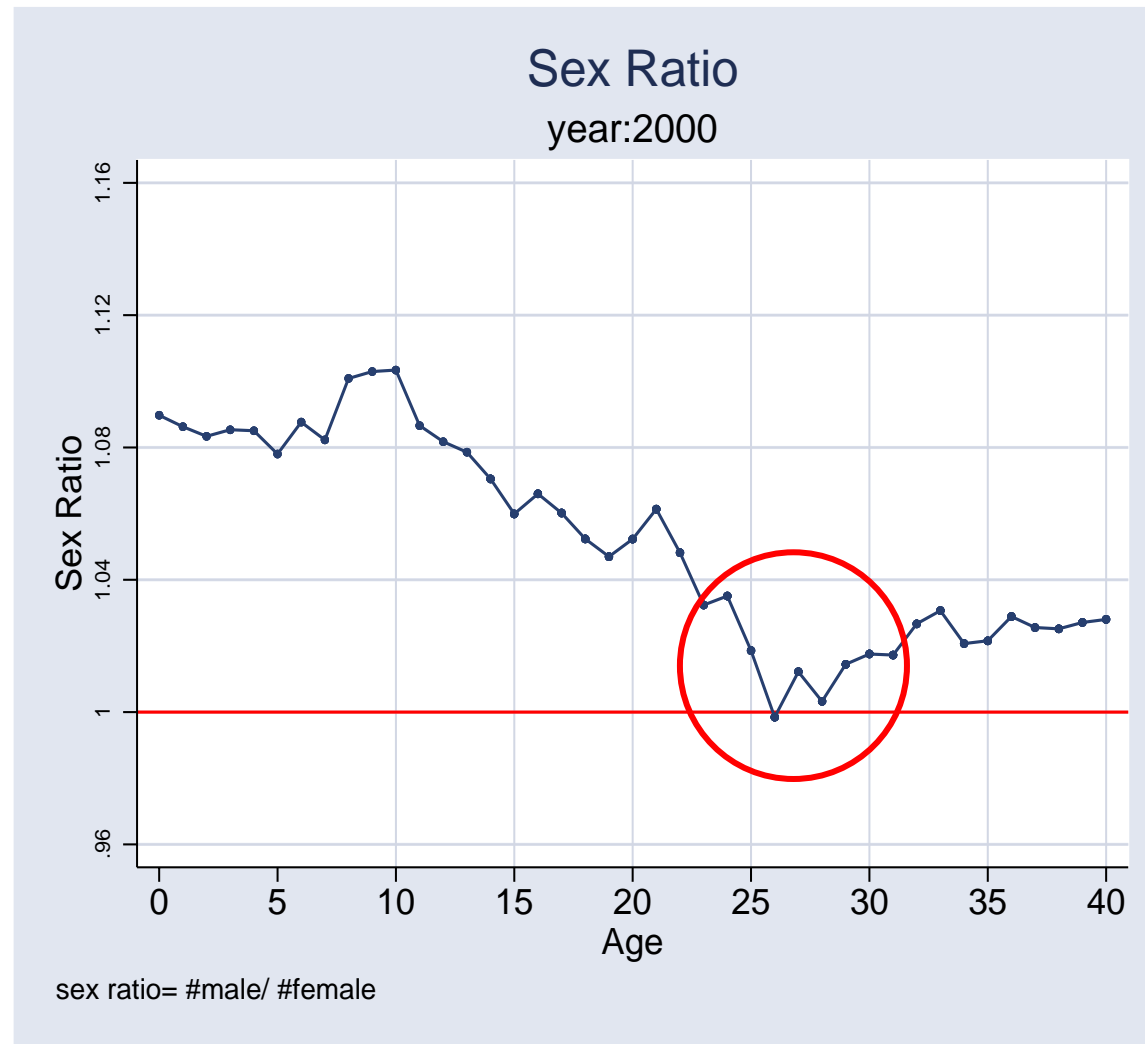
Unbalanced Sex Ratio for Non-Taiwanese, 2000 Census

Sex Ratio=Number of males / Number of females



Source: Taiwanese Census 1990, 2000

The Effects of Foreign Brides on the Sex Ratio of Prime Marriage Age (20~30)



Motivation

- The imbalance in the sex ratios induced by the immigration policy provides an opportunity to measure the causal effect of the sex ratios on the marriage and labor markets of Taiwanese women.
 - The variation in sex ratios was driven by the immigration law which is **exogenously** related to the outcomes of interest.
- Ongoing debates on whether the government of Taiwan should place a limit on the intake of marriage immigrants.

Outcomes of Interest

- The changes in the sex ratio affect...
 - Marriage rates
 - Education gap between brides and bridegrooms
 - Income gap between brides and bridegrooms
 - Age gap between brides and bridegrooms
 - Divorce rates
 - Labor force participation
 - Percentage of women living alone

First Dataset

- 1. Survey of Foreign Spouses, 2003
 - One time survey of all foreign spouses in Oct. 2003
 - Sample Size: 240,837
 - Detailed information on birth year, marriage year, year entering Taiwan, fertility, education and health of children, visa status, living expenses, marital status, age of spouse, education of spouse, etc.
 - 73% are interviewed; 27% are not interviewed
 - For those who are not interviewed, the data set contained information of age, education, marriage year, gender, original country, education of spouses from administrative data.

Second Dataset

2. Women's labor force participation and fertility survey.

- Years: 1988, 1990, 1993, 2000, 2003
- Sample size: around 28,500 per year. Total sample size is 142,532.
- Random Sample of Taiwanese Women Age ≥ 15 years old
- Information on women's marital status, marriage year if married, income information, fertility outcomes, fertility history, labor force participation history, ideal family size, spouse education, income, labor force participation, age.

Preview of Trends

– Foreign Brides:

- **Increasing** age differences (Younger Brides)
- **Increasing** Probability for Foreign Brides Marrying Taiwanese Men with More Education than Their Own

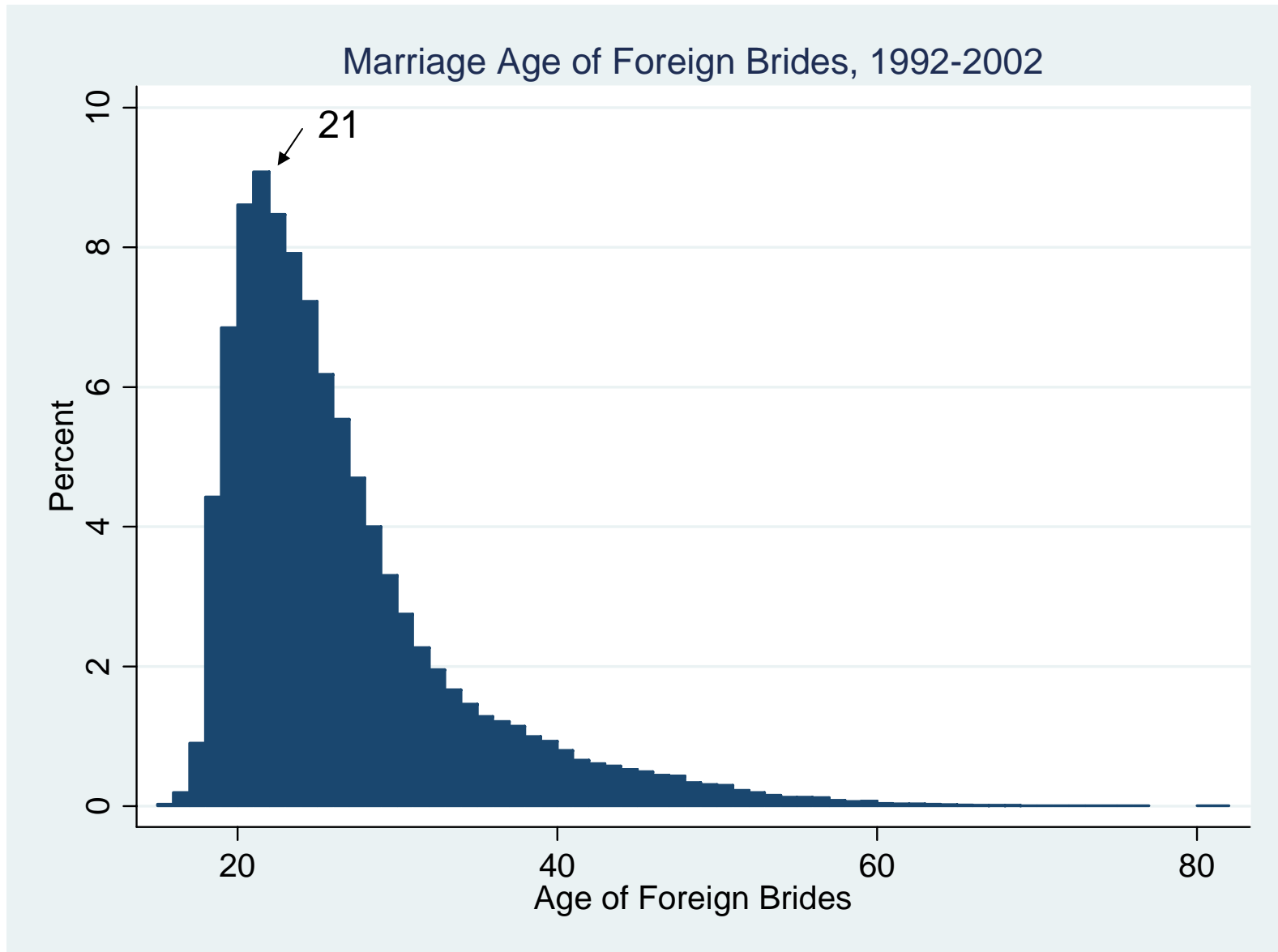
– Taiwanese brides:

- **Increasing** age differences
- **Decreasing** Probability of Taiwanese Women Marrying Taiwanese Men with More Education than Their Own

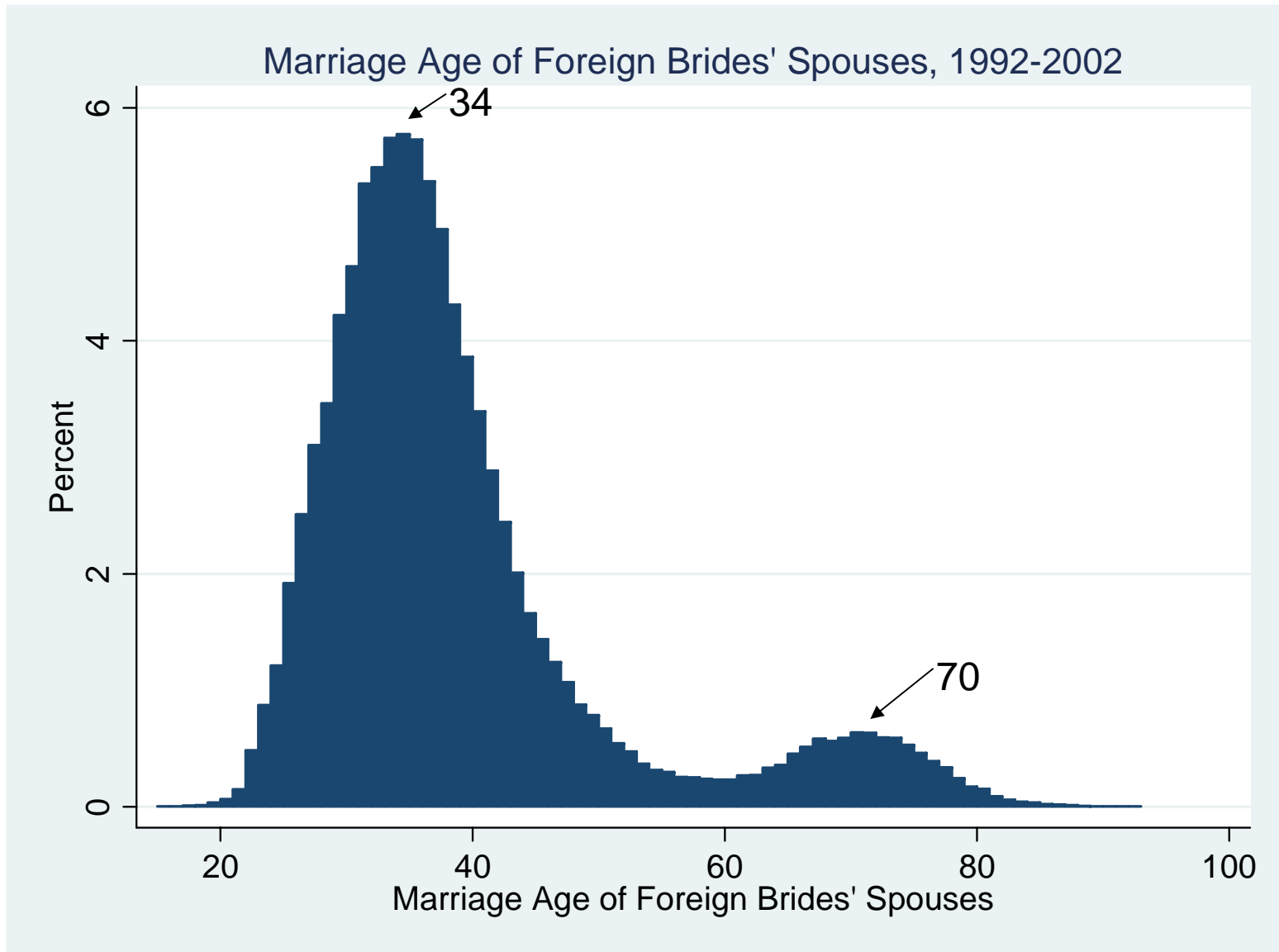
Summary Statistics of Survey of Foreign Spouses (First Dataset)

Age

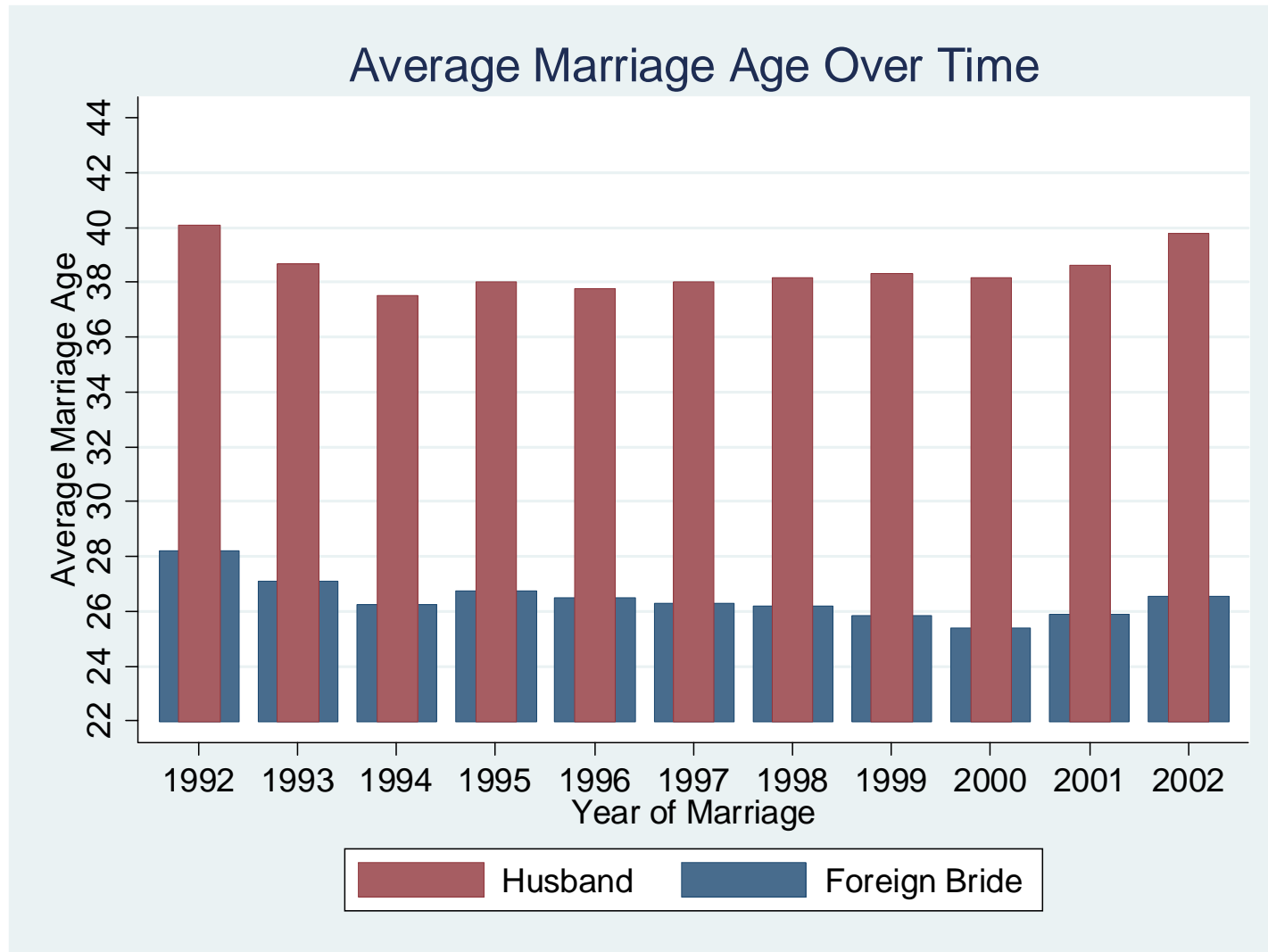
Mode of Foreign Bride Age is 21



Twin Peaks: Marriage Age of Spouses

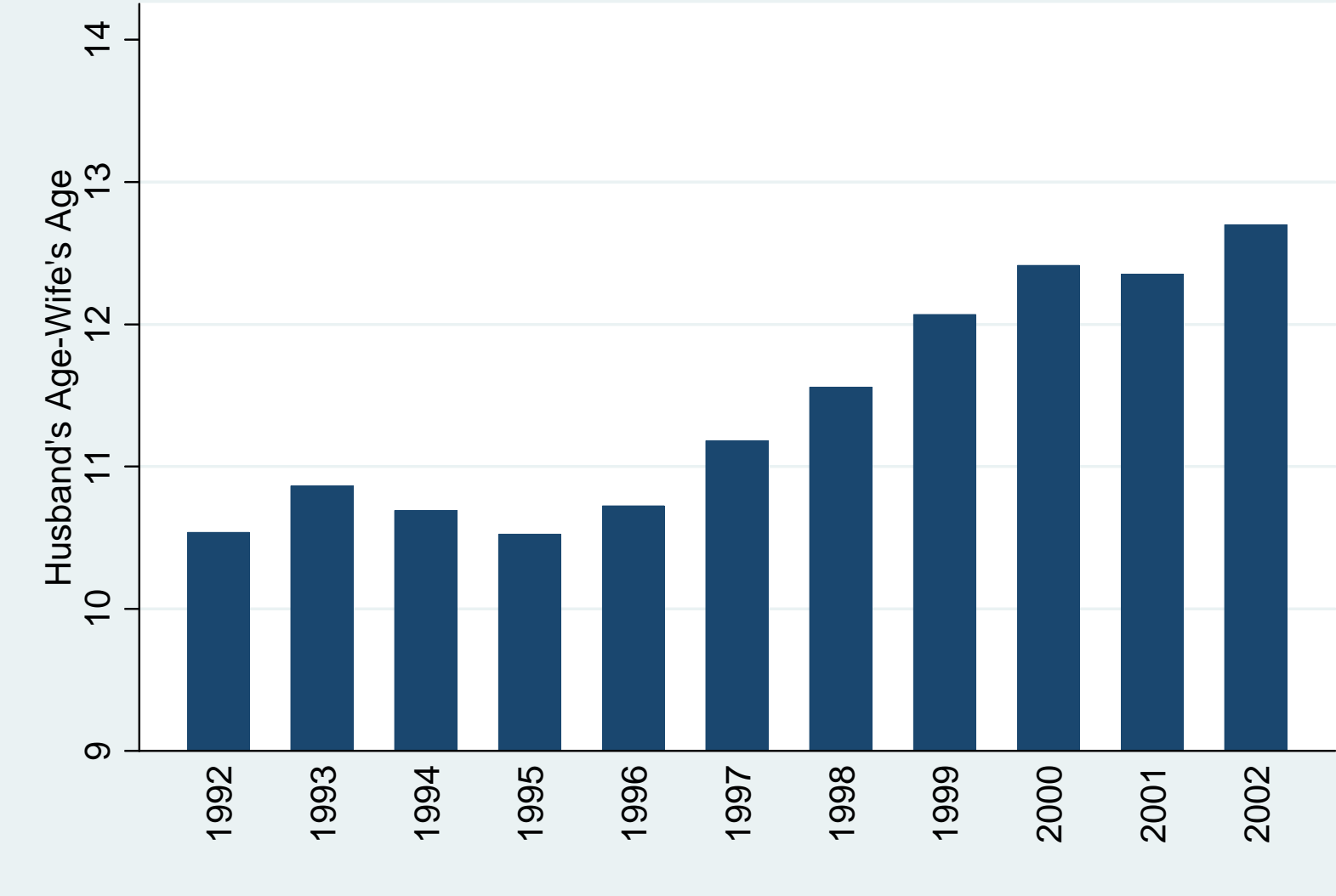


Decreasing Marriage Age of Foreign Brides over Time



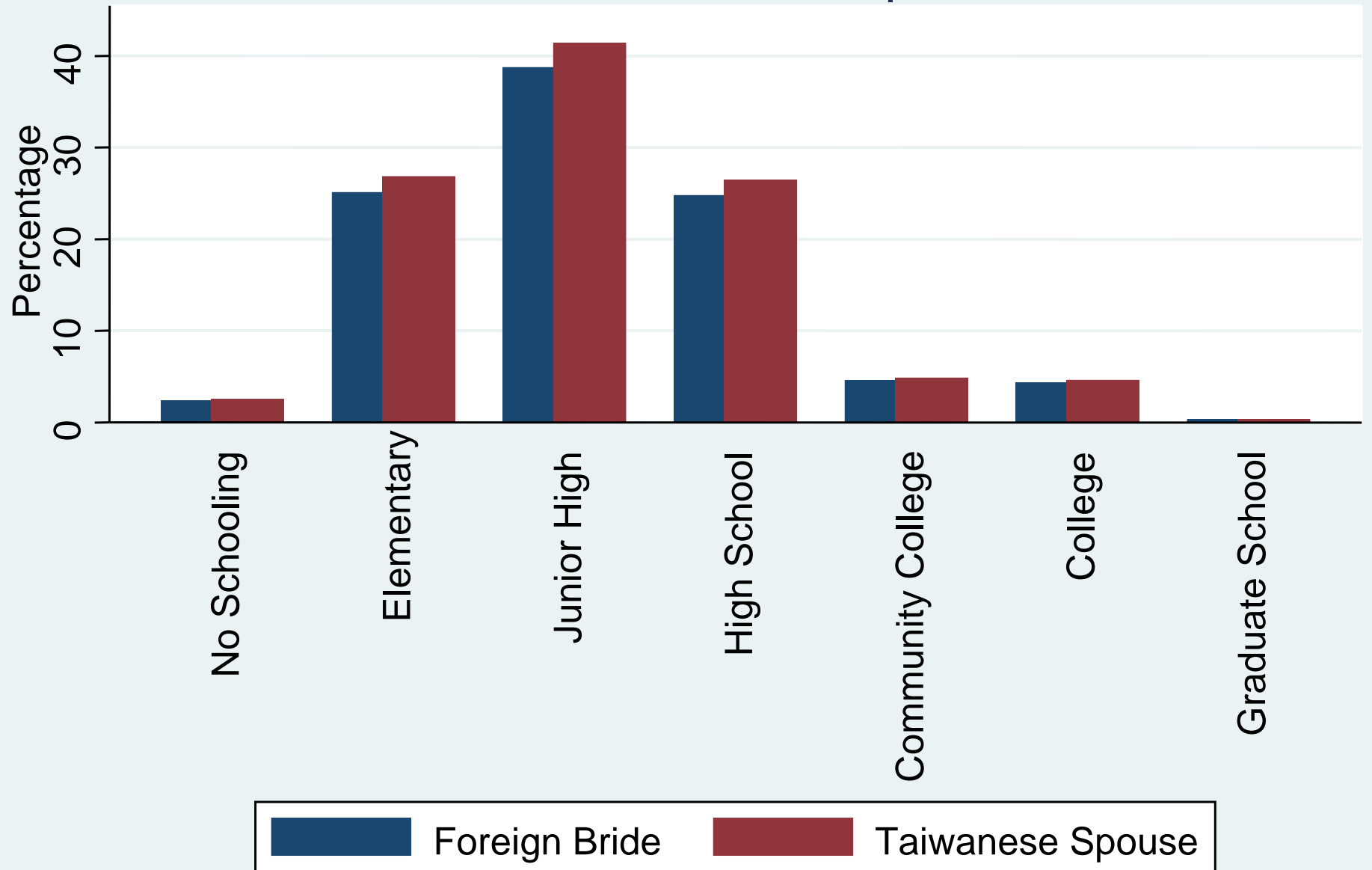
Increasing Age Differences over Time

Age Differences Between Foreign Brides and Spouses Over Time, 1992~2002

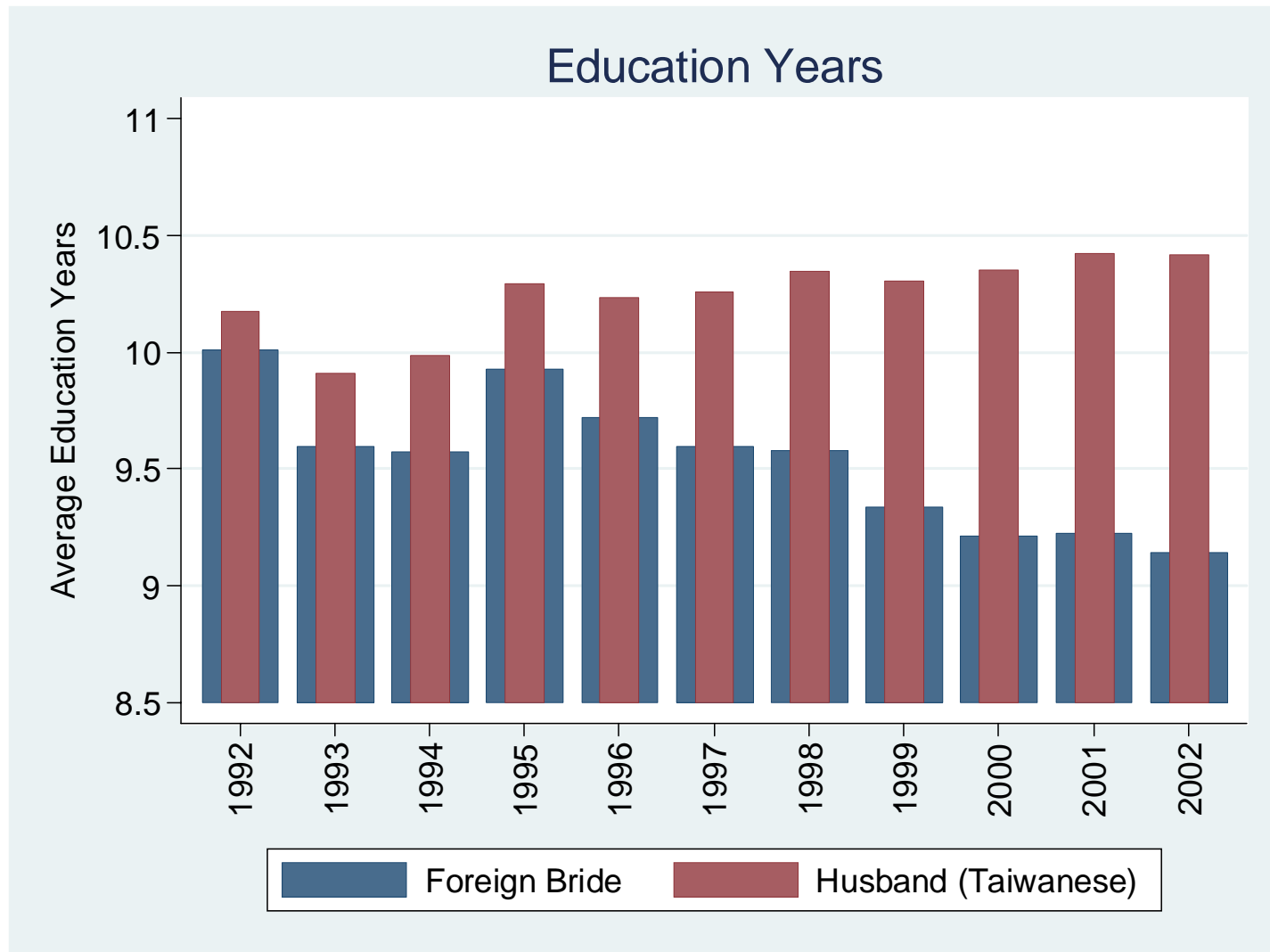


Education

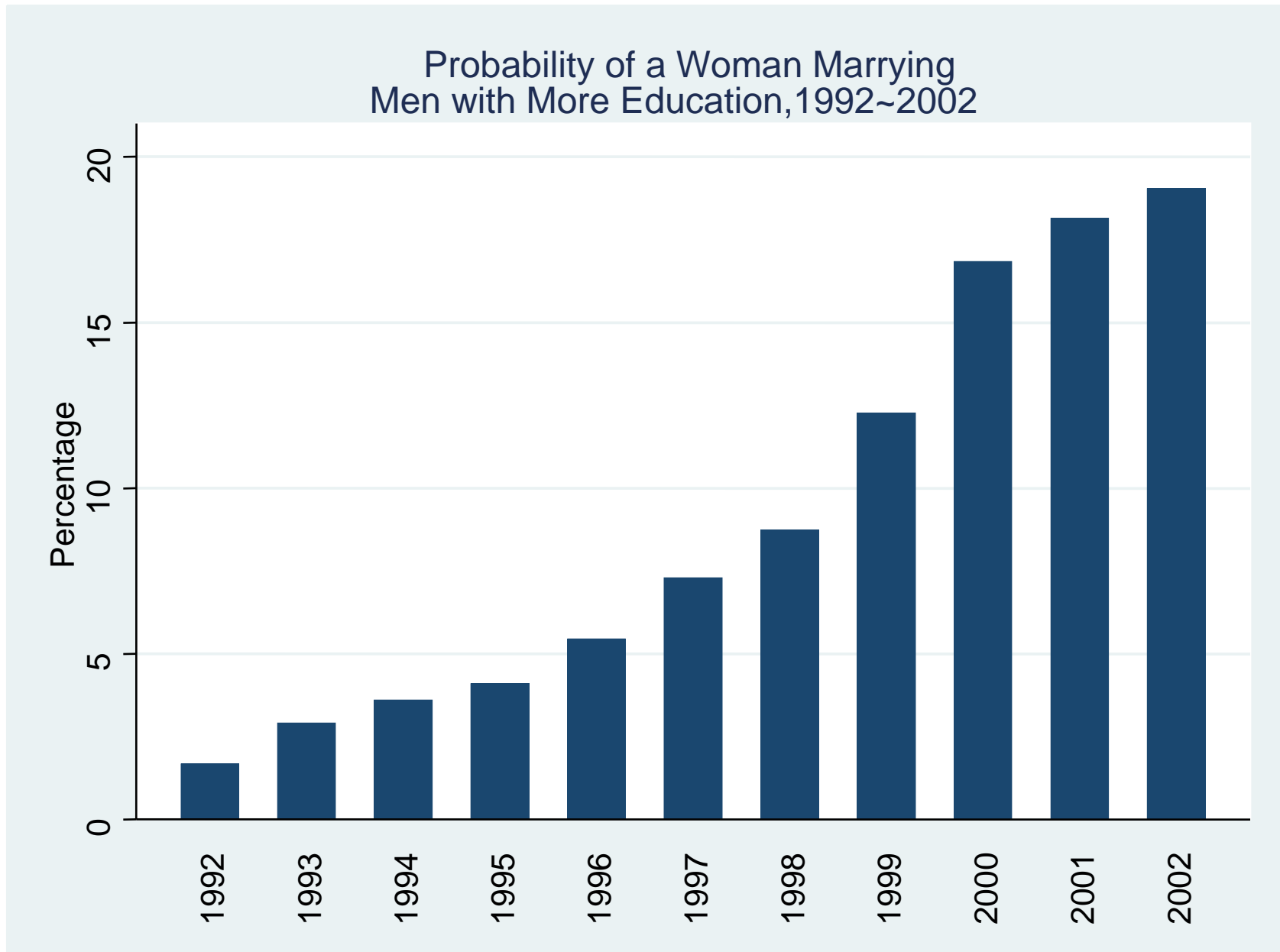
Education Levels of Foreign Brides and their Taiwanese Spouses



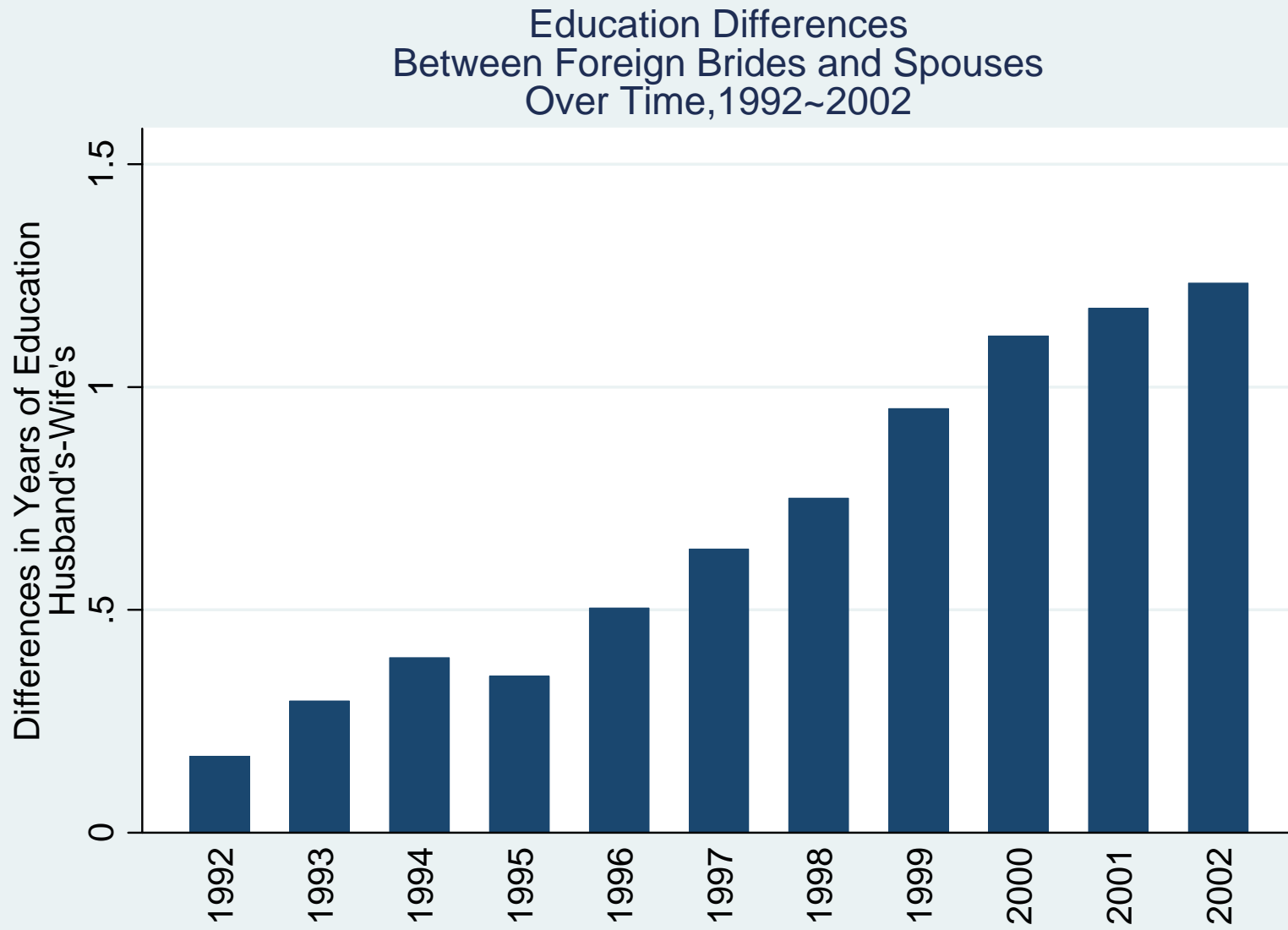
Decreasing Education Years of Foreign Brides Over Time



Increasing Probability for Foreign Brides Marrying Taiwanese Men with More Education than Their Own

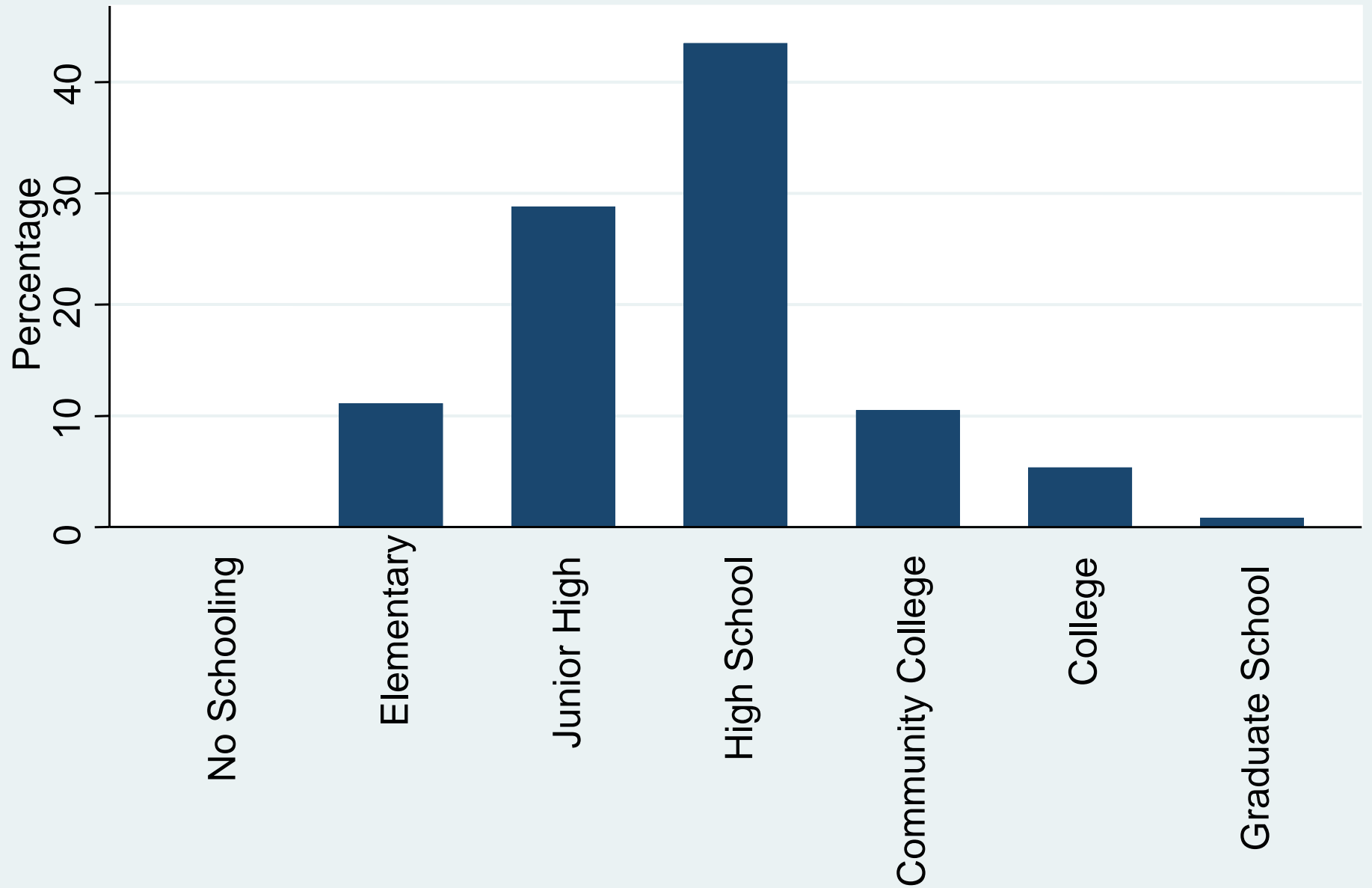


Increasing Education Differences over Time



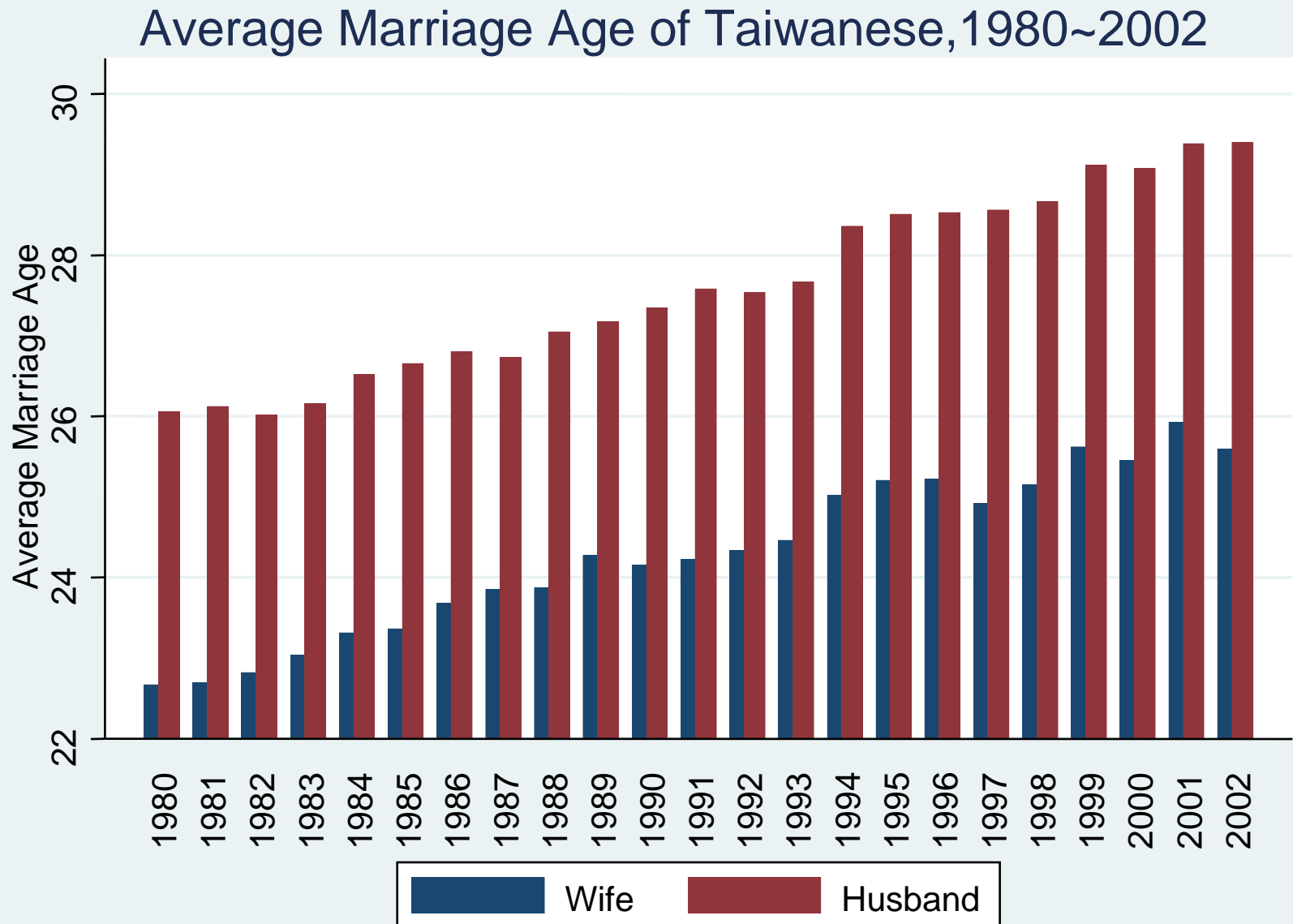
Summary Statistics of Women's Labor Force Participation and Fertility Survey (Second Dataset)

Education Levels of Married Taiwanese Women

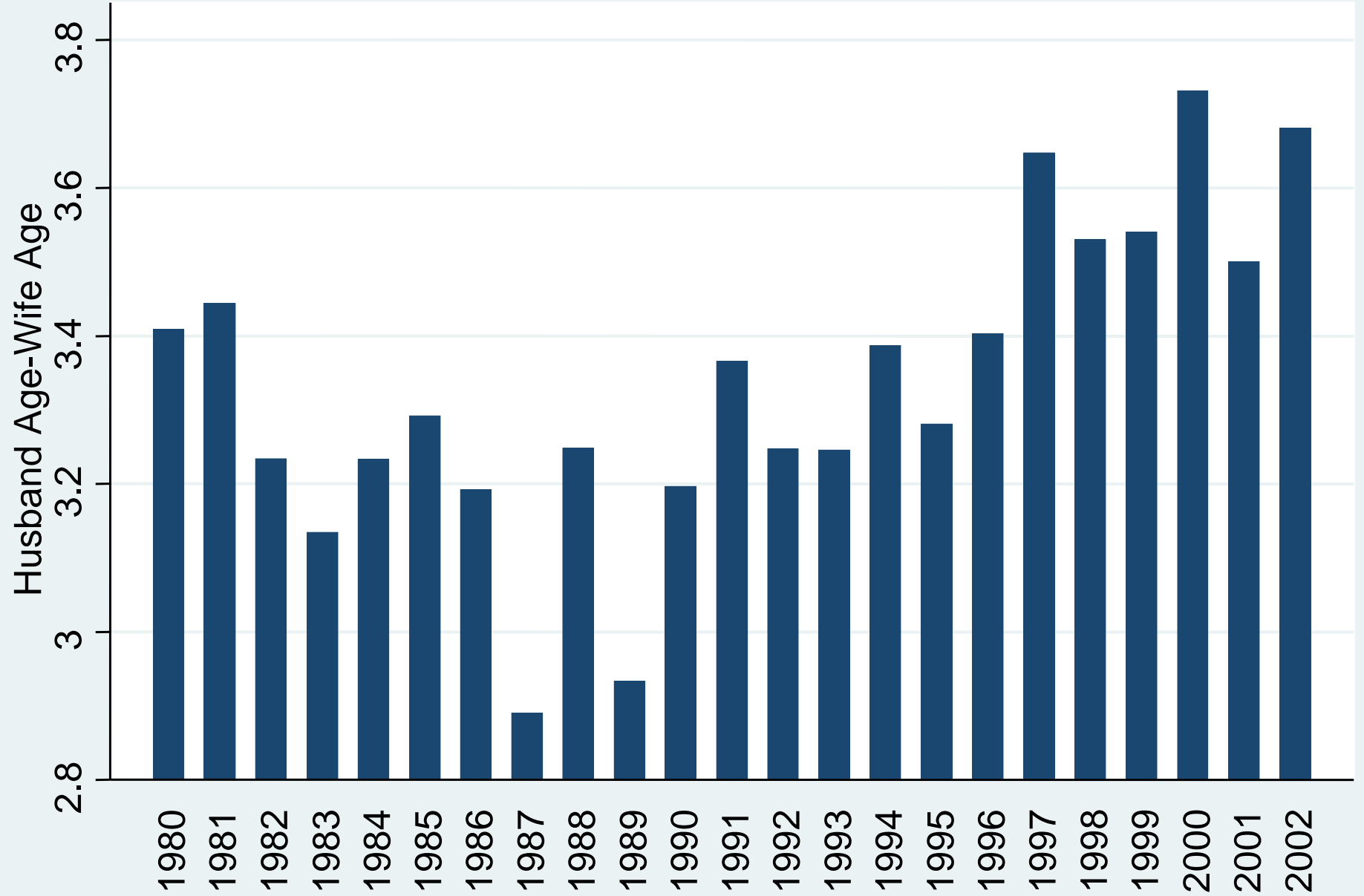


Birth Cohort 1961+

Increasing Marriage Age for Both Taiwanese Men and Women

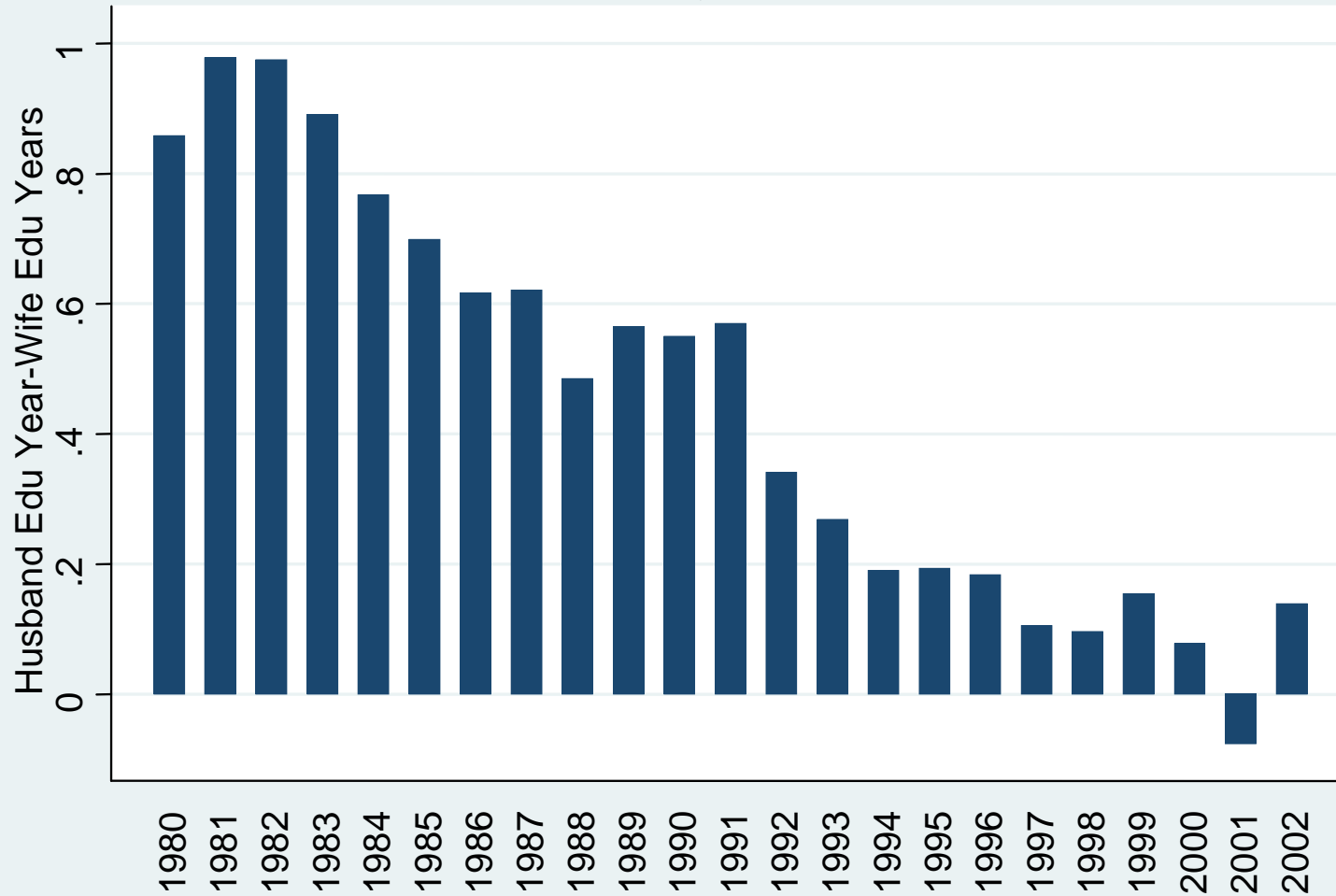


Age Differences Between Taiwanese Husbands and Wives, 1980~2002

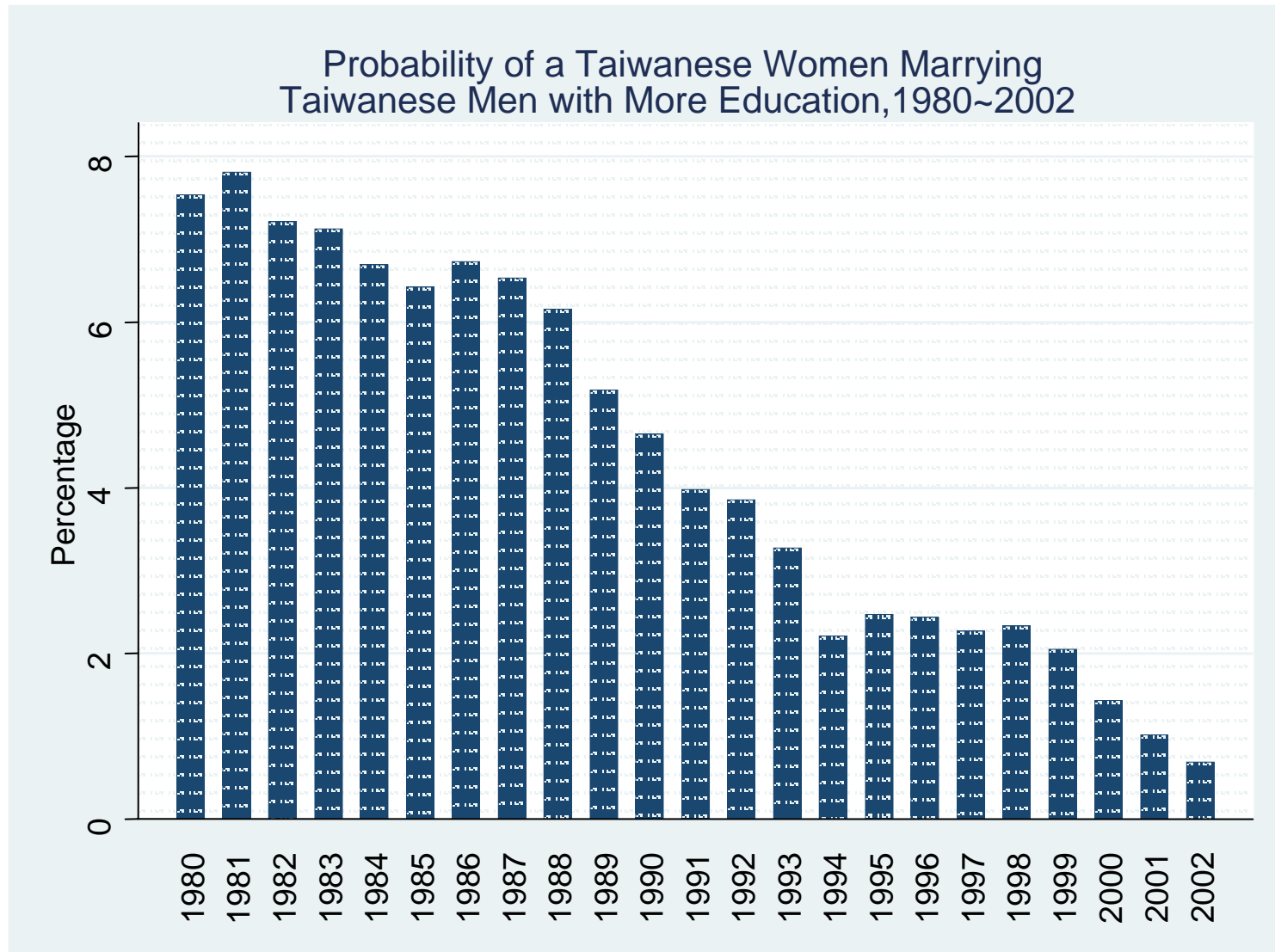


Decreasing Educational Differences for Taiwanese Couples

Educational Differences Between Taiwanese Husbands and Wives Over Time, 1980~2002



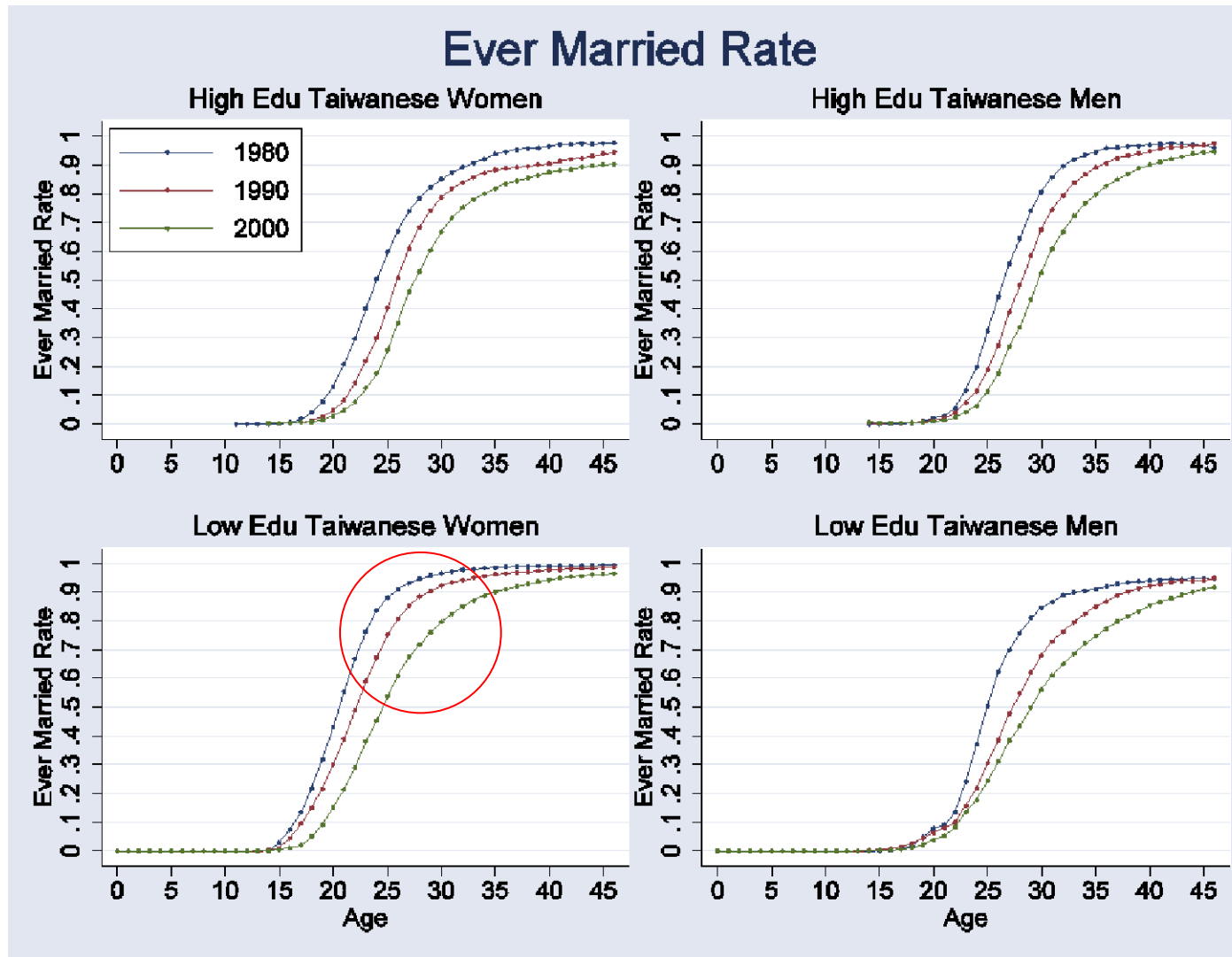
Decreasing Probability of Taiwanese Women Marrying Taiwanese Men with More Education than Their Own



Estimation

Previous Work

Marriage Rate: by year, sex, education (1980, 1990 and 2000 Census)



Previous Empirical Findings using Taiwanese Census Data 1980, 1990 and 2000

- Using a simple diff-in-diff (before vs. after, High school dropout vs. College graduates), I showed that the marriage rates for less educated Taiwanese women decreased more than those of the highly educated.
- I also showed that the labor force participation of less educated women increased more than the labor force participation of highly educated women.
- Objections:
 - Year of marriage is not observed in Census Data.
 - A simple diff-in-diff doesn't capture the time effects of the immigration law change. (which year you pick as "after")

Current Work

Empirical model

The estimating equation

for Taiwanese Girl i , married at age x in year t , of edu y , is

$$Y_{ixyt} = \alpha_0 + \alpha_1 \bullet Index_{xyt} + \alpha_2 \bullet X_i + t + \varepsilon_{ixyt}, \text{ where}$$

$Index_{xyt}$ is the proposed index measuring the impact of foreign brides
on a Taiwanese girl married at age x in year t , of edu y

X_i are the demographic control variables

t is the time trend

What are the desirable properties of a index?

- The impacts of foreign brides on Taiwanese women are not of the same magnitude. Some Taiwanese women are more influenced than others.
- A desirable index will capture the different magnitude of the effects of foreign brides on Taiwanese women based on Taiwanese women's age, education level, and year of marriage.

First Index

(Used for Married Couples Only)

Index for a Taiwanese Girl marriage at age x , edu y , in year t

$$Index_{x,y,t} = \sum_{husedu=j}^J \sum_{husage=i}^I \Pr_{x,y,i,j,1990} \frac{FB_{i,j,t}}{TM_{i,j,t}}$$

where,

$\Pr_{x,y,i,j,1990}$ = Probability of a Taiwanese girl of age x , edu y , in year 1990
who marry a man of age i and edu j in year 1990

$FB_{i,j,t}$ = Number of Foreign Brides who marry Taiwanese men
of age i , edu j , up to year $t-1$

$TM_{i,j,t}$ = Number of Taiwanese Men of age i , edu j , in year t

Identification

- The identification comes from the variation of the number of Taiwanese men taken away by foreign brides across time, age and education groups.
 - E.g. A Taiwanese women married at age 20 in 1990 (before the immigration law change) is less affected by foreign brides compared to a Taiwanese women married at age 20 in 2000.
 - E.g. Less educated women are more likely to be affected by foreign brides compared to highly educated women.

Outcomes of Interests for Married Taiwanese Women

- Age, Income, and Education Differences between husbands and wives
- Divorce Rates
- Fertility Outcomes

Index for Both Married and Single Persons

Indexes for the Impact of Foreign Brides on Taiwanese Girls

Index for a Taiwanese Girl age x , edu y , in year t

$$\text{Second Index}_{x,y,t} = \left[\sum_{husedu=j}^J \sum_{husage=i}^I \Pr_{x,y,i,j,1990} \frac{FB_{i,j,t}}{TM_{i,j,t}} \right] \cdot \Pr_{x,y,single,1990}$$

where,

$\Pr_{x,y,i,j,1990}$ = The probability of a Taiwanese girl of age x , edu y , in year 1990
who marry a man of age i and edu j in year 1990

$FB_{i,j,t}$ = Number of Foreign Brides who marry Taiwanese men
of age i , edu j , up to year $t-1$

$TM_{i,j,t}$ = Number of Taiwanese Men of age i , edu j , in year t

$\Pr_{x,y,single,1990}$ = The probability staying single for a Taiwanese girl
of age x , edu y in year 1990.

Outcomes of Interests

- Estimate the model separately for men and women
 - e.g. Examine whether foreign brides increases marriage rates for men and decreases marriage rates for women
- Outcomes of interests
 - Marriage Rates
 - Labor force participation

Thank You
