# Women's Educational Attainment, Marital Status and the Timing of Childbearing: An Analysis of Recent Trends in the United States (1995-2001)

Hyeyoung Woo
The University of Texas at Austin
Department of Sociology & Population Research Center
1 University Station G1800
Austin, TX 78712-0544
Phone: (512) 471-5514 Fax: (512) 471-4886
E-mail: hywoo@prc.utexas.edu

R. Kelly Raley
The University of Texas at Austin
Department of Sociology & Population Research Center
1 University Station G1800
Austin, TX 78712-0544
Phone: (512) 471-5514 Fax: (512) 471-4886
E-mail: kraley@prc.utexas.edu

## Introduction

While the total fertility rate has been stable since the 90's in the U.S., past decades witnessed substantial changes to the timing of childbearing by socioeconomic status (Martin 2000; Rindfuss, Morgan & Offutt 1996; Mare 1995; Chen & Morgan 1991). That is, women with a college degree report lower birth rates in their early or mid reproductive years and are more likely to have a child after they reach age 30. Among these previous studies, a recent publication by Martin (2000) showed that from 1975 to 1995 first birth rates among women past 30 diverged by education. In his paper, he argued that rising birth rates after 30 reflect some women's increasing ability to use their incomes and human capital to facilitate childbearing and child raising (Martin 2000: 530) during the period between 1970-1975, and 1990-1995.In this paper, we examine whether this divergence continues since 1995 and extend Martin's analysis by including marital status as well as age, education, and period as covariates to estimate the change in first birth rates among women age 30 and older.

## Data and Method

Our analyses employ data from the 2002 National Survey of Family Growth (NSFG). The NSFG is a nationally representative cross sectional data that has a sample of 7,643 women aged 15 to 44 in 2002. Since the NSFG is designed specifically for research related to reproductive behaviors, it provides almost complete pregnancy histories and marital histories as well as demographic information. Another advantage of the NSFG is its large sample size. Using NSFG, we calculate first birth rates among women age 30 and other and estimate event history models. To facilitate our analysis, we

convert the cross sectional data into the person-year data. For both the descriptive and multivariate analyses, we use a censored sample that includes only person-years for women aged 30 or older who had not given birth. First birth rates are calculated by dividing the number of first births to women at a specific age and level of educational attainment (numerator), by the number of all women at that category who had never given birth (denominator).

In the event history models, our dependent variable is a first birth. The variable is dichotomous, indicating that a live birth equals to 1 and otherwise the value is 0 during the given period. Our primary independent variables are educational attainment and marital status. We measure the effect of educational attainment by constructing an education variable with four categories; less than high school (< 12 years), high school (=12), some college (< 16) and four year college degree or more (=16+). In addition, we control for race, age and year. Race variable has two values which are 'African American' and 'non-Hispanic White'. They are coded 1 and 0, respectively. Age and year are continuous variables. We also include interaction terms to determine whether the effects of education to vary by year.

**Results and Discussion**

Our results indicate that the first birth rates among women past 30 have decreased since 1995, although the proportion of childless at age 30 is increasing (the results are not shown here). However, first birth rates are declining differently by education. Figure 1 presents the change in first birth rates by education.

(Figure 1 about here)

Figure 1 shows that the first birth rate declined from 1995-1997 to 1999-2001. However, the first birth rate for women with college degree or more declined less than for women with no college degree and the difference between two groups is widening.

(Table 1 about here)

Table 1 shows estimates from logistic regression. In the model, the coefficient for age and race are negative consistent with Martin (2000). Women are less likely to have a child as they get older after age 30. Although the coefficient is not statistically significant, it is also true that non-Hispanic African American women have lower probability to have a first child than non-Hispanic Whites. The part of reasons is that African Americans experience their childbearing in earlier reproductive ages than Whites.

As expected, the first birth rate is higher for married women than non married women. In addition, the results show that there has been a significant decline in first birth rates after age 30 from 1995 to 2001. With the interaction term between education and year included in the mode, none of the main effects of education is significant. However, the period and education interaction terms shows that the decline in birth rates is lower for women with a college degree than women with less than a high school degree ($p< .10$).

These results suggest that educational differences in first birth rates past age 30 continue to grow. This may be because women with more education face fewer constraints to childbearing than less educated women. However, we can not conclude that recent institutional accommodations have facilitated childbearing among college

educated women give the decline in first birth rates past age 30. Future analyses will investigate the influence of marital status as a constraint to childbearing and how this constraint varies by educational attainment. We will also perform further analysis to see how late first childbearing affects second or third birth rates and whether these patterns vary by educational attainment.

**Reference**

Chen, R. and S. Philip Morgan. 1991. "Recent Trends in the Timing of First Births in the United States." *Demography* 28: 513-33.

Mare, Robert D. 1995. "Demography and the Evolution of Educational Inequality." CDE Working Paper 95-10. Madison: Center for Demography and Ecology, University of Wisconsin. Retrieved from the website at http://www.ssc.wisc.edu/cde/cdewp/95-10.pdf.

Martin, Steven P. 2000. "Diverging Fertility Among U.S. Women Who Delay Childbearing Past Age 30." *Demography*, 37 (4): 523-533.

Rindfuss, Ronald R., S. Philip Morgan and Kate Offutt. 1996. "Education and the Changing Age Pattern of American Fertility: 1963-1989." *Demography*, 33 (3): 277-290.

**Figure 1. First Birth Rates among Women Past 30**

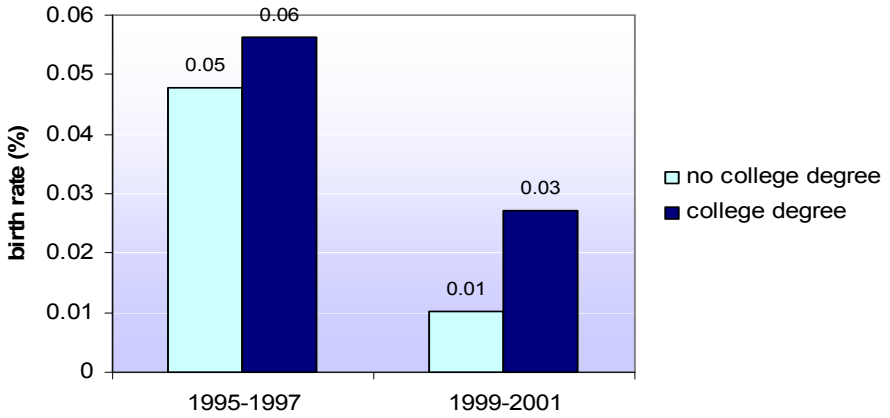


**Table 1. Hazard Model for First Birth Rates among Women Past 30**

| | Model | | |
|---|---|---|---|
| Variable | Coefficient | | S.E. |
| Race | | | |
| (non-Hispanic White) | | | |
| non-Hispanic Black | -0.2729 | | 0.1831 |
| Age (yearly change) | -0.1446 | *** | 0.0265 |
| Educational Attainment | | | |
| (less than high school) | | | |
| high school | 0.0533 | | 0.4318 |
| some college | -0.1858 | | 0.4219 |
| college or more | 0.1423 | | 0.4141 |
| year changes, 1995-2001 | -0.3202 | * | 0.1242 |
| Interaction terms between year and educational attainment | | | |
| (year × less than high school) | | | |
| year × high school | 0.1490 | | 0.1352 |
| year × some college | 0.1872 | | 0.1319 |
| year × college or more | 0.2312 | | 0.1293 |
| Marital status | | | |
| (non-married) | | | |
| married | 0.5416 | ** | 0.175 |
| Intercept | 1.7162 | | 0.9397 |
| -2Log-Likelihood | 2653.13 | | |

Note: The values in parenthesis are the reference groups.
* $p<.05$; ** $p<.01$; *** $p<.001$