"Childlessness in the United States, 1970-1995: The Role of Compositional Changes in Explaining Time Trends"

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Extended abstract:

Childlessness among women age 40-44 – that is, childlessness among women who can be assumed to have finished childbearing – nearly doubled between 1980 and 2000 (Dye 2005). This increase in childlessness has commonly been attributed to an increase in competition between childbearing and other activities for women, and in particular has been associated with women's increased commitment to the labor force during this period. However, other dramatic changes in the United States population also took place over this period. Notably, the proportion of the population marrying declined, and marriage was postponed to later ages among those marrying. In addition, the size of racial and ethnic minority groups relative to the majority white population increased. The impact of these changes on childlessness relative to the impact of women's changing professional roles has not been formally examined. This paper assesses the contribution of changes in educational attainment, changes in marriage behaviour, and changes in race-ethnic composition on population levels of childlessness in the United States. Results from initial regression analyses using data from the June Fertility Supplement of the 1995 Current Population Survey are provided here. The completed paper will use data from additional survey years to describe trends over a longer time period and will further refine analyses.

Background

Among recent cohorts of women in the United States, about 1 in 5 women have no children by the end of their childbearing years (Dye 2008). These levels are higher than in recent cohorts, although not in comparison to historical levels – among women born in the first decade of the twentieth century, for example, who were in their peak childbearing years during the Great Depression, almost 25% of women had no children (Casper and Bianchi 2002). Among these cohorts, childlessness was primarily attributed to economic deprivation or to medical sterility. In recent cohorts, in contrast, many women are childless by choice. Analyses of contemporary childlessness tend to focus on attitudinal factors as predictors of childlessness, with particular attention to the relationship between commitment to family and commitment to other activities (Abma and Martinez 2006; Heaton, Jacobson, and Holland 1999; Jacobson and Heaton 1991; Park 2005; Rovi 1994).

Levels of childlessness vary significantly by sociodemographic factors such as marital history and educational attainment (Abma and Martinez 2006; Lundquist, Budig, and Curtis 2009). Hispanic women are less likely to be childless than non-Hispanic women, but recent evidence suggests that white and African American women do not differ significantly in levels of childlessness. The distribution of these factors has changed significantly over the past three decades. Women are increasingly likely to obtain secondary and post-secondary education, and marriage rates have declined, especially among African American. These compositional changes are likely to have contributed to changes in overall levels of childlessness in the United States.

Data and methods

Data

The preliminary results shown here rely on data from the June Fertility Supplement of the 1995 Current Population Survey.

For the full paper, data from both earlier (1985) and later (2000, 2004) CPS fertility supplements will be added to the analysis. These additional survey years will make it possible to extend the analysis over a long time period. In addition, since some birth cohorts are eligible for more than one survey year, adding surveys will increase sample sizes and provide more statistical power for examining interactions between three or more variables (e.g. race-education-marital history interactions).

Dependent variable and analytic sample

Analysis is limited to women age 40 or older at the time of the survey. Birth rates in the United States to women age 40 and over are low, and first-birth rates are lower: 9.2 births per thousand women and 2.0 births per thousand women, respectively in 2005 (Martin et al. 2007). The majority of women age 40 and over can therefore be assumed to have completed childbearing. A dichotomous variable is created for these women, with the value of 1 for women who have borne no children and 0 for women who have borne at least one child.

The preliminary analysis examines five five-year birth cohorts of women who were between the ages of 40 and 64 in 1995. These cohorts were born in 1930-34, 1935-39, 1940-44, 1945-49, 1950-54; that is, they include women who were age 40-44 in 1974, 1979, 1984, 1989, and 1994.

The full paper will use data from earlier CPS fertility supplements to increase sample sizes for the earlier cohorts of women and data from later fertility supplements to extend the analysis to women from the 1955-59 and 1960-64 birth cohorts.

Independent variables

The goals of this analysis are to assess the impact of large-scale population changes on childlessness in the United States. Independent variables are limited to the primary stratifying factors in fertility in the U.S.: race-ethnicity, educational attainment, and marital history. Three race-ethnic groups are included in the preliminary analysis: non-Hispanic whites, non-Hispanic blacks, and Hispanic women. Educational attainment is also measured in three categories: no high school degree, high school degree or GED and some college, and bachelor's degree or higher. Using the CPS marriage history variables, women are classified as ever-married or never-married.

The final paper will explore more detailed classifications for all of these variables. For instance, the addition of other surveys will expand sample sizes and make it possible to distinguish between U.S. and foreign-born Hispanics. The final analysis will explore more detailed educational categories (e.g., separating women with a high school degree from women with some college; distinguishing between GED and high school diploma) as well. Finally, in the final analysis women who have been divorced or separated will be distinguished from women in intact marriages as well as from never-married women.

Methods

Preliminary analyses use logistic regression to predict childlessness among women who have completed childbearing in five five-year birth cohorts. Results are presented as a series of nested models. The first model includes only dummy variables for birth cohort; education, race-

ethnicity, and marital status are added in subsequent models. The goal of these analyses is not to show sociodemographic variation in childlessness, which has been analyzed in previous studies (e.g. Abma and Martinez 2006; Lundquist, Budig, and Curtis 2009). Instead, the outcome of interest is change in the coefficients for the cohort variables. Change in these coefficients is used to assess the degree to which change over time is accounted for by compositional change.

In exploratory analyses, all two-way interactions were tested. In these preliminary results, only interactions with time and only interactions which were jointly significant are presented in results tables. In addition, three-way interactions between education, marital status, and cohort were tested; these interactions were not statistically significant and are not presented. Two-way interactions are presented in separate models for clarity of presentation and explanations. These interactions will be explored more fully in the complete paper when larger sample sizes are available.

For the full paper, more formal methods of decomposition may be applied.

Preliminary results

Table 1 presents results from nested logistic regressions modeling the log-likelihood of childlessness among women age 40-44. Table 2 adds results from models including interactions between independent variables.

Model 1 (Table 1) shows unconditional time trends in childlessness. Not accounting for any compositional changes, women in the 1945-49 and 1950-54 birth cohorts are significantly more likely to be childless than women in the 1930-34 (reference) birth cohort. Relative to women age 40-44 in 1974 (the 1930-34 birth cohort), the odds of childlessness for women finishing childbearing in the early and mid 1990s (1945-49 and 1950-54 birth cohorts) were 1.4 times (b=0.33; OR=1.4) and 1.8 times (b=0.59; OR=1.8) higher, respectively.

Controlling for changes in educational attainment during this time period reduces the cohort coefficients somewhat (Model 2); that is, some of the increase in childlessness is attributable to higher education levels in the later cohorts. Changes in the race-ethnic composition of the U.S. population account for little of the increase in childlessness (Model 3). Once declines in the proportion of women marrying are incorporated (Model 4), the difference between the 1930-34 and 1950-54 cohorts is reduced by about half relative to the unconditional model. (Note that the magnitude of decline in the cohort coefficients associated with the addition of control variables is largely invariant to the order in which the control variables are added to the model.) Overall, compositional changes, predominantly in educational attainment and marital status, account for about half of the increase in childlessness between the cohorts that completed childbearing in the mid-1970s and those finishing their reproductive years in the mid-1990s.

Model 5 includes interactions between race-ethnicity and cohort variables. The interactions between Hispanic and time trend variables are not individually statistically significant, and a Wald test does not reject the hypothesis that they are jointly not significant. However, sample sizes for Hispanic women are small, and may not be adequate to detect interactions; the final paper, which will use additional datasets to increase sample sizes and permit analysis of different Hispanic subgroups, may show different results. Interactions between the 1945-49 and 1950-54 and African American variables are statistically significant, negative, and larger than the main effects for cohorts. That is, childlessness in these cohorts of African American women actually

declined relative to levels of childlessness in the earlier cohorts. For example, the odds of being childlessness for African American women in the 1950-54 cohort were 0.6 times those of African American women in the 1930-34 cohort (0.35+-0.81=-0.46; exp(-0.46)=0.6). These interactions suggest very different time trends in childlessness for white and African American women. Similarly, interactions between marital status and cohort variables are also statistically significant and negative (Model 6). Among never-married women, childlessness increased between the 1930s birth cohorts and the 1950s birth cohorts.

Preliminary conclusions

Between 1974 and 1994, the odds that women age 40-44 would remain childless increased by about 80%. Increasing educational attainment among women accounts for part of this increase, as does the increasing proportion of women never marrying. Together with changing race-ethnic composition, these factors explain about half of the increase in childlessness between these two cohorts. Furthermore, interactions suggest that time trends in childlessness were different for different population subgroups in these cohorts.

References

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Table 1: Logistic regression of childlessness on birth cohort and other sociodemographic variables

	Model 1			Model 2			Model 3			Model 4		
	B	SE		B	SE		B	SE		B	SE	
Intercept	-2.09	0.06	***	-2.22	0.07	***	-2.22	0.07	***	-2.40	0.07	***
1930-34 cohort												
1935-39 cohort	-0.05	0.09		-0.09	0.09		-0.09	0.09		-0.14	0.10	
1940-44 cohort	0.12	0.08		0.04	0.08		0.04	0.08		-0.03	0.09	
1945-49 cohort	0.33	0.08	***	0.20	0.08	**	0.20	0.08	**	0.11	0.09	
1950-54 cohort	0.59	0.07	***	0.44	0.07	***	0.44	0.07	***	0.26	0.08	**
No high school degree				-0.05	0.07		-0.05	0.07		-0.21	0.08	*
High school degree/some college												
Bachelor's degree or higher				0.82	0.05	***	0.82	0.05	***	0.75	0.05	***
Non-hispanic White												
Non-hispanic Black							-0.04	0.07		-0.60	0.09	***
Hispanic							-0.02	0.15		-0.25	0.17	
Ever married												
Never married										3.29	0.08	***
-2 log likelihood	14440			14138			14137			11929		

Data: Current Population Survey, 1995. N=18004 women age 40 and over. Omitted categories in *italics*. *: p<.05; **: p<.01; ***: p<.001.

Table 2: Logistic regression of childlessness incorporating interaction terms

	Model 5			Model 6		
	B	SE		B	SE	
Intercept	-2.46	0.08	***	-2.46	0.08	***
1930-34 cohort						
1935-39 cohort	-0.12	0.10		-0.10	0.10	
1940-44 cohort	-0.02	0.10		-0.02	0.10	
1945-49 cohort	0.18	0.09	*	0.19	0.09	*
1950-54 cohort	0.35	0.09	***	0.36	0.09	***
No high school degree	-0.22	0.08	**	-0.21	0.09	*
Bachelor's degree or higher	0.74	0.05	***	0.74	0.05	***
Non-hispanic White						
Non-hispanic Black	-0.13	0.23		-0.59	0.09	***
Hispanic	0.29	0.46		-0.25	0.17	
Ever married						
Never married	3.33	0.08	***	4.00	0.27	***
Interactions: race-ethnicity x cohort						
Black x 35-39	-0.14	0.32				
Black x 40-44	0.01	0.30				
Black x 45-49	-0.78	0.29	**			
Black x 50-54	-0.81	0.27	**			
Hispanic x 35-39	-0.10	0.64				
Hispanic x 40-44	-0.61	0.63				
Hispanic x 45-49	-0.36	0.55				
Hispanic x 50-54	-1.03	0.55				
Interactions: marital status x cohort						
Never married x 35-39				-0.51	0.35	
Never married x 40-44				-0.26	0.34	
Never married x 45-49				-0.86	0.31	**
Never married x 50-54				-1.02	0.30	***
-2 log likelihood	11904			11907		

Data: Current Population Survey, 1995. N=18004 women age 40 and over. Omitted categories in *italics*. *: p<.05; **: p<.01; ***: p<.001.