THE EFFECT OF RESTRICTED UNIVERSES ON COHORT BIRTH EXPECTATIONS

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ABSTRACT

Past national surveys regarding birth expectations have usually been restricted to currently married women, a fact which has led demographers to question the usefulness of these data. Because the June 1976 Current Population Survey includes the expectations of all women in a cohort regardless of marital status, it provides the data needed to evaluate biases due to restricted survey universes. At older ages, where there are substantial differences in lifetime expectations between currently married and single women, there are relatively few single women; at younger ages, however, where the proportion of single women in a cohort is relatively large, the differences in expectations are small. This counterbalancing effect makes the lifetime birth expectations of currently married women a close approximation of all women in a cohort. The analysis also indicates that the observed intracohort declines in lifetime birth expectations since 1967 were due largely to the addition at subsequent survey dates of previously unmarried women; nevertheless, some "true" cohort declines also seem to have occurred.

INTRODUCTION

Since the 1955 Growth of American Families (GAF) study (Freedman et al. 1959) the hope has been that data on birth expectations could be used successfully to estimate completed marital fertility for cohorts of women still in their childbearing years. After the 1960 GAF study Whelpton, Campbell, and Patterson (1966) assessed the accuracy of birth expectations for the period 1955 to 1960. Births expected in the next 5 years by women surveyed in the 1955 GAF study were compared with those actually born in the previous 5 years to women surveyed in 1960. The result was that close agreement was found between <u>expected</u> and <u>actual</u> average numbers of births for the 5-year period. However, the fact that surveys regarding birth expectations have previously been limited to currently married or to ever-married women has led certain demographers, notably Ryder and Westoff (1967), to question the usefulness of these data for population projections or for intracohort fertility comparisons.

Siegel and Akers (1969) have summarized two principal drawbacks of expectations data due to limiting the sample to currently married women:

1. "Because women have most of their babies shortly after marriage and because the surveys covered married women only, in a very short time the majority of births occur to women who were not represented in the survey. (Our rough calculations show that in five years about 50 percent of the births, and in ten years nearly 80 percent of the births, will occur to women not now married.)
2. "The limitation of the surveys to married women means that the proportion of women covered by the surveys varies between ages in the same cohort and for the same age over time. Because of this, comparisons are difficult to interpret."

The June 1976 Current Population Survey was the first nationwide survey to ask number of children born to date and additional births expected for all women, regardless of marital status, in a broad age range of the childbearing years (Moore 1976). The age of the woman surveyed was 14 to 39 years for women currently married and living with their husbands and 18 to 34 years for all other woman. Thus, expectations of completed fertility are available for total cohorts of women in the age range 18 to 34 years.

The fact that all women in a cohort were surveyed allows us to examine differences by marital status. An additional survey question on date of first marriage made it possible to select out women who were already married at the time of previous surveys. This enables us to make some assessment of whether previously observed intracohort changes over time in the birth expectations of currently married women are "true" cohort changes or whether they are artifacts of adding to the survey universe women first marrying at later ages.

DIFFERENTIALS IN LIFETIME BIRTH EXPECTATIONS BY MARITAL STATUS

An indication of the magnitude and direction of the bias in cohort lifetime birth expectations resulting from the exclusion of single (never-married), widowed, divorced, and separated women is shown in table 1. The data show that, for individual age groups, the lifetime birth expectations of currently married women exceed the expectations of all women in the cohort by about one-tenth of a child per woman. For example, <u>all</u> women 22 to 24 years old in 1976 expected an average of 2,022 children per 1,000 women, whereas <u>currently</u> married women (excluding separated) of the same age expected an average of 2,145.

The second block of data in table 1 shows that the expectations of currently married women are from 4 to 7 percent higher than those of all

Table 1. Lifetime Births Expected per 1,000 Women by Marital Status: June 1976

(Data limited to women reporting on birth expectations.)

Age (1)	All women (2)	Ever married women (3)	Currently married (exc. separated) (4)	Widowed, divorced, and separated (5)	Single (6)
			Lifetime births expected per 1,000 women		
Total, 18-34	2,160	2,286	2,291	2,256	1,794
18-19	2,087	2,123	2,163	(B)	2,072
20-21	1,989	2,111	2,122	2,030	1,859
22-24	2,022	2,121	2,145	1,940	1,781
25-29	2,098	2,197	2,202	2,161	1,424
30-34	2,445	2,541	2,536	2,574	939
			Ratio to rates for all women		
Total, 18-34	1.000	1.058	1.061	1.044	0.831
18-19	1.000	1.017	1.036	(B)	0.993
20-21	1.000	1.061	1.067	1.021	0.935
22-24	1.000	1.049	1.061	0.959	0.881
25-29	1.000	1.047	1.050	1.030	0.679
30-34	1.000	1.039	1.037	1.053	0.384
			Number of women (thousands)		
Total, 18-34	23,125	17,174	14,880	2,296	5,952
18-19	2,768	733	670	63	2,036
20-21	2,847	1,463	1,296	167	1,384
22-24	4,350	3,084	2,714	371	1,266
25-29	7,153	6,246	5,394	853	907
30-34	6,007	5,648	4,806	842	359

B: Base less than 75,000.

women in the cohort. On the other hand, the expectations of single women fall short of those of all women in the cohort by a range of 1 percent for 18 and 19 year olds to 62 percent for 30 to 34 year olds.

Although the expectations of older single women differ markedly from the average for all women in the same cohort, nevertheless, the effect of single women's expectations on the average for all women depends not only on the difference of the level of expectations between single and ever-married women but also on the proportion of single women in each cohort. Among 18 and 19 year olds, where single women constitute about 74 percent of the cohort, the difference in expectations between single and ever-married women is less than one-tenth of a child per woman. Among 30 to 34 year olds, however, where the expectations of ever-married women exceed those of single women by an average of 1.6 children, single women constitute only 6 percent of the cohort. These two examples illustrate the counterbalancing effects on cohort averages of proportion single and of differences in levels of expectations by marital status. Thus, the ratios of lifetime births expected by ever-married women to those of all women in the cohort (table 1, column 3) show that the overall effect in 1976 of excluding single women from a cohort did not exceed 6 percent (for the 20 to 21 year olds) and was as low as 2 percent (for the 18 to 19 year olds).

The June 1976 CPS also included lifetime birth expectations for widowed, divorced, and separated women. Comparing lifetime expectations of currently married women with those of all ever-married women shows the effect of excluding women who are widowed, divorced, and separated. Rates shown for currently married women are only marginally higher, with the exception of women 30 to 34 years old, than rates for all ever-married women. Thus, the exclusion of widowed, divorced, and separated women from many previous surveys of birth expectations may very well be

Table 2. Lifetime Births Expected per 1,000 Wives Reporting on Birth Expectations in 1971 and 1976 by Number of Years Since First Marriage: June 1976

1971 Current Population Survey		1976 Current Population Survey			
				Wives first married:	
Age in 1971 (1)	All wives (2)	Age in 1976 (3)	All wives (4)	On or before June 1971 (5)	After June 1971 (6)
		Lifetime births expected per 1,000 wives			
14-17	2,497	19-22	2,159	2,166	2,158
18-19	2,256	23-24	2,128	2,193	2,094
20-21	2,375	25-26	2,111	2,224	1,944
22-24	2,404	27-29	2,258	2,317	1,952
25-29	2,620	30-34	2,536	2,571	1,865
30-34	2,991	35-39	2,994	3,017	(B)
		Percentage difference from 1971 rate for "All wives"			
14-17	(X)	19-22	-13.5	-13.3	-13.6
18-19	(X)	23-24	- 5.7	- 2.8	- 7.2
20-21	(X)	25-26	-11.1	- 6.4	-18.1
22-24	(X)	27-29	- 6.1	- 3.6	-18.8
25-29	(X)	30-34	- 3.2	- 1.9	-28.8
30-34	(X)	35-39	+ 0.1	+ 0.9	(B)
		Number of wives (thousands)			
14-17	165	19-22	2,491	199	2,292
18-19	687	23-24	1,932	669	1,263
20-21	1,342	25-26	2,054	1,230	824
22-24	2,957	27-29	3,339	2,792	547
25-29	4,514	30-34	4,806	4,561	245
30-34	3,982	35-39	4,206	4,145	61

B: Base less than 75,000. X: Not applicable.

discounted as having much of a biasing effect on expectations data.

Although the expectations data shown in table 1 indicate the likelihood of biases in previous surveys that have omitted unmarried women from their sample universe, nevertheless, lifetime birth expectations of currently married women closely approximate expectations of all women in a cohort. Thus, the omission of women not currently married in previous surveys does not seem to diminish significantly the value of these statistics in examining intercohort differences in birth expectations.

DIFFERENTIALS IN BIRTH EXPECTATIONS BY INTERVAL SINCE FIRST MARRIAGE

The June 1976 CPS also indicates the extent of biases in intracohort comparisons of the birth expectations of currently married women which are due to the increasing proportions of women first married as a cohort ages. When making intracohort comparisons of data from two different survey dates, we would ideally like to select at the later data only those women who were in the survey universe at the earlier date. Ryder and Westoff (1967) have suggested that, if the data are not analyzed in this manner, observed intracohort differences in expectations may be due to including women at later dates who were not currently married at a prior survey date.

The inclusion of more recently married women in a cohort tends to lower the birth expectations of all currently married women in a cohort because of the negative relationship between age at first marriage and birth expectations. This is shown in columns 5 and 6 of table 2 where women first married since June 1971 have lower expectations than the women first married on or before June 1971. However, where large differences exist in lifetime expectations between these two groups of women (for example, among women age 25 to 29 in 1971), the number of women married within the last five years is so small as to produce almost no difference between the rates expected by all wives (2,536 per 1,000 wives) and those married on or before June 1971

Table 3. Lifetime Births Expected per 1,000 Wives Reporting on Birth Expectations in 1967 and 1976 by Number of Years Since First Marriage: June 1976

1967 Survey of Economic Opportunity		1976 Current Population Survey			
				Wives first married:	
Age in 1967[a] (1)	All wives (2)	Age in 1976[b] (3)	All wives (4)	On or before March 1967 (5)	After March 1967 (6)
		Lifetime births expected per 1,000 wives			
18-19	2,720	27-28	2,232	2,593	2,098
20-21	2,916	29-30	2,367	2,569	2,123
22-24	2,856	31-33	2,541	2,669	2,053
25-29	3,037	34-38	2,940	3,014	1,885
		Percentage difference from 1967 rate			
18-19	(X)	27-28	-17.9	- 4.7	-22.9
20-21	(X)	29-30	-18.8	-11.9	-27.2
22-24	(X)	31-33	-11.0	- 6.5	-28.1
25-29	(X)	34-38	- 3.2	-0.8	-37.9
		Number of wives (thousands)			
18-19	588	27-28	2,107	570	1,537
20-21	1,087	29-30	2,084	1,139	945
22-24	2,486	31-33	2,979	2,361	619
25-29	3,773	34-38	4,328	4,043	285

a - Age in February-March 1967 SEO study

b - Age in 1976 is 9 years and 3 months older than 1967 ages since midpoint of 1967 survey is taken as March 1.

X - Not applicable.

(2,571 per 1,000 wives). In fact, none of the differences shown in the 1976 birth expectations of all wives and those of wives first married 5 or more years ago exceed one-tenth of a child for any age group in table 2.

Table 2 shows two types of intracohort changes between June 1971 and June 1976, a "gross" change where there is no control for interval since first marriage (column 4) and a "net" change where the interval since first marriage is used as a controlling variable (column 5). The "gross" declines over the 5-year period appear to be greater than the "net" declines. However, no statistically significant ($p < .05$) declines in lifetime expectations occurred between 1971 and 1976 for wives who were first married by June 1971. In fact, with the exception of wives 20 to 21 years old in 1971, no differences were statistically significant between the 1971 rates in column 2 and the rates for all wives in column 4.

Differences over the longer time period of 1967 to 1976 are shown in table 3. Lifetime birth expectations for all wives in 1976 (column 4) show a large gross decline for women who were 18 to 24 years old in 1967. However, the net cohort rates for 1976 (column 5), based on women who had been married in 1967, are much closer to the 1967 rates, although these too show evidence of a decline over the 9-year period. The magnitude of the differences of the 1976 rates relative to the 1967 rates is especially striking for the youngest age group. For all wives who were 18 and 19 years old in 1967, a gross decline of 17.9 percent in lifetime expectations is recorded over the 9-year period, whereas a net cohort decline of only 4.7 percent occurs for those women who had married by the time of the 1967 survey. The difference between gross and net changes for women 25 to 29 years old in 1967 is relatively small, since this group had already completed the majority of its lifetime fertility by 1967.

In addition to showing differences in gross and net cohort changes, tables 2 and 3 also indicate the level of consistency in the expectations of comparable samples of women at two survey dates. Over the 5-year period expectations appear to have changed by no more than 6 or 7 percent for women 18 to 34 years old in 1971, with the average being around 2 to 3 percent (table 2). The level of change over the 9-year period is slightly greater with an average change of about 4 percent for women 18 to 29 years old in 1967 (table 3).

The decomposition of birth expectations by interval since first marriage suggests that, for the 5-year period of time examined in this paper, lifetime expectations for all currently married women in a cohort can reasonably be utilized to

measure short term intracohort changes in lifetime birth expectations. The longer 9-year period, however, substantiates the Ryder-Westoff statement that the confounding effect of the addition of recently married women to a cohort as it ages produces gross changes in cohort expectations that significantly overestimate the true cohort change. Unfortunately, the younger age groups, which will contribute substantially more future births than older age groups, are more subject to such a bias since they incur the greatest number of future additions from subsequent first marriages.

SUMMARY

Data from the June 1976 Current Population Survey indicate some substantial differences in lifetime birth expectations between currently married and single women. Where the differences in the expectations are the largest at the older ages, there are relatively few single women; at the younger ages, however, where the proportion of single women in a cohort is relatively large, the differences in expectations between single and currently married women are small. Thus, the lifetime birth expectations of either currently married or ever-married women, to which previous surveys have been limited, may reasonably serve as a proxy for the expectations of all women in a cohort, regardless of marital status.

The data were also examined to ascertain whether recently observed intracohort declines in lifetime births expected by currently married women were true declines or whether they were artifacts of the changing composition of the cohorts due to the subsequent addition of women first marrying at later ages. Although the observed intracohort declines in birth expectations were shown to be due, in a large part, to the subsequent addition to the sample universe of previously unmarried women, nonetheless some "true" cohort declines seem to have occurred since 1967.

This paper is substantially the same as our paper which appeared in Demography, August 1977, Vol. 14, No. 3.

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