

RECENT FERTILITY TRENDS AMONG AMERICAN INDIANS IN THE UNITED STATES

By

Michael J. Levin
Ethnic and Racial Statistics Programs Area
Population Division
U.S. Bureau of the Census
Washington, D.C. 20233

and

Nancy Breen
ASA Research Fellow
Statistical Research Division
U.S. Bureau of the Census
Washington, D.C. 20233

Paper presented at the annual meetings of the Population Association of America, Chicago, Illinois, April 29 to May 2, 1987

The authors thank C. Matthew Snipp for overall direction of the American Indian demography project, Jeff Passel and a second Bureau reviewer for helpful comments, and Emily Lennon for statistical and clerical assistance.

RECENT FERTILITY TRENDS AMONG AMERICAN INDIANS IN THE UNITED STATES

By Michael J. Levin and Nancy Breen, U.S. Bureau of the Census

Between 1970 and 1980 the population of American Indians in the United States experienced phenomenal growth. The count of American Indians in the 1980 census was 1,364,033, an increase from 1970 of 571,303 or 72 percent (Table 1 and Figure 1). There are several possible explanations for the enormous change. Immigration as a cause of this growth can be easily dismissed since barely 1 percent of the Indian population in 1980 was foreign born. Either the relationship between the other parts of the demographic equation - fertility and mortality - changed drastically or there were dramatic changes in racial identification during the decade. Passel and Berman (1986) and Snipp (1987a) have recently shown that much of this change should be attributed to changing self-identification rather than to natural growth alone; in fact, natural growth can only account for 39.7 percent of the difference between the 1970 and 1980 counts of American Indians in the United States (Passel and Berman 1986:165).

The research reported here uses the own-children reverse survival method of fertility analysis to help substantiate the hypotheses presented by Snipp and by Passel and Berman about the error of closure, but also has as an equally important purpose, to explore differential fertility by characteristic of women. Most large-scale fertility research relies on censuses and intercensal estimates for denominators and vital registration for births in analyzing fertility: this research focuses on fertility information derived from a single source - the 1980 census - to assess the contribution of fertility to the growth of the Indian population.

The method used for this paper is the own-children method of fertility estimation, developed and refined by Cho, Retherford, and others (see especially Cho, Retherford, and Choe, 1986). The method is a reverse-survival technique for estimating age-specific birth rates for years previous to a census or household survey. Enumerated children are first matched to mothers within households on the basis of responses to questions on age, sex, marital status, relationship to householder, and, in the present application, number of children ever born. The matched (i.e., "own") children, classified by own age and mother's age, are reverse-survived to estimate numbers of births by age of mother in previous years. Reverse-survival is also used to estimate numbers of women by age in previous years. After adjustments are made for incorrect enumeration and unmatched ("non-own") children, age-specific birth rates are calculated by dividing the number of births by the number of women. Estimates are computed for each previous year or group of years back to 15 years before the census.

For this analysis no corrections have been made for incorrect enumeration. Years of time are grouped into periods 1965-69, 1970-74, and 1975-79. Since the Census was taken April 1, 1980, these periods run from April 1 to April 1. For example, 1975-79 means April 1, 1975 to April 1, 1980. Age-specific birth rates are aggregated to total fertility rates.

The own children method has three stages - a matching of women, husbands, and children; creation of mother-children matrices for various characteristics of women (or their husbands); and the fertility estimation procedures.

The first stage of the method involves matching of children to mothers within the same household. Children are computer-matched to mothers on the basis of responses to questions on age, sex, marital status, relation-

ship to householder, and number of children ever born to the mother. Here, since we wished to examine fertility of American Indian women only, the mother also had to be an American Indian, without regard to the race of her husband. And children were matched to mothers regardless of the child's race. Children were matched within subfamilies if subfamilies were present. If unmatched children remained after this matching procedure, the match was based on the other variables.

Race of mother could not be used, however, when computing the adjustment factors for non-own (unmatched) children, since mothers of these children could not be identified. To deal with this problem, the normal procedure would be to compute the non-own adjustment factor for children of a specified age as the ratio of all children of that age to all matched children of that age, no matter what race; here only non-own American Indian children, identified by race, were used. In effect, then, unadjusted fertility estimates were first calculated by mother's race. These rates were then adjusted upward for non-own children by means of adjustment factors by child's race.

Households were included in the American Indian data set if anyone in the household was American Indian. Two assumptions are made in adjusting the data: first, we assume that mothers of non-own children are roughly the same ages as mothers of own children; second, since American Indian mothers may have children who are not identified as American Indian, we assume that non-own American Indian children in these households have the same age distribution as all children regardless of the child's own race.

Reverse-survival requires life tables. Because mortality data for American Indians were available for 1980 from the Indian Health Service (IHS), we used life tables derived from these data (on the basis of age specific

out

mortality rate for American Indians). Census derived denominators were used. The Census Bureau and IHS use different definitions of American Indian which may cause some under-reporting of American Indian deaths. However, prevailing mortality levels are lower than for the United States as a whole because of the youthfulness of the American Indian population (Passel and Berman 1986:170); therefore, reverse-survival factors are necessarily close to one and quite insensitive to errors of even several years of life expectancy (Retherford, Chamrathirong, and Wanglee, 1980). The life expectancy at birth in 1980 for American Indians based on these data was 73.9 years for females and 66.5 years for males.]

Fertility estimates are also affected by other factors. Fertility estimates of American Indians are based on the self-identified race of mothers. If women reported as American Indian are not American Indian using some objective criteria, having been born on a reservation or being a "card-carrying" member of a tribe, then the fertility estimates for American Indians may be affected by the different criteria used in defining Indians. Further in this paper we used data based on the 1980 U.S. sample questionnaires covering about 20 percent of the population in order to compare fertility differentials for educational attainment, labor force participation, and poverty status. Each individual in the sample has an assigned weight designed to make the sample representative of the total population, and the fertility estimates presented are based on the weighted samples. (Use of the Census sample causes sampling variance on the numbers in this paper, but these variances are very small and do not affect the conclusions.)

out

Another factor influencing the fertility estimates involves the assumptions about non-own (or unmatched) children. In the United States, children tend to live with their mothers for the first 15 years. However, some American Indian women migrate from rural-reservation areas to towns and cities, temporarily leaving their children in the care of relatives or friends (Price 1981). Adoption and fosterage also increase the proportion of non-own children in the population. Although our application of the own children method assumes that the mothers of non-own children are approximately the same ages as the mothers of own children, in the aggregate it is highly likely that women leaving their children behind to go to work in other areas would tend to be younger women, and that women adopting would tend to be older. We can not use these additional factors in our analysis, because we don't know the extent of this situation.

About 11.5 percent of all American Indian children in the 1980 census were non-own (Table 2). There was an almost direct correlation between age and proportion non-own, that is, the older the child, the more likely not to be in the mother's house. Many times older children will not be in the house because of movements for adoption, fosterage, or to have better educational opportunities. Urban children were slightly less likely to be non-own than rural children, perhaps showing the effects of mothers leaving their children behind.

FINDINGS

The 1980 census collected information on children ever born alive from each adult female. These data were used in matching children to mothers so that a woman would not have more children matched to her than that she had ever borne. The data can also be used to give an indication of completed

fertility as of 1980; through cohort analysis, we get an idea about the change in fertility over time as a direct measure to be compared to the indirect measure obtained from the own-children analysis.

For women over 35, women who are likely to be close to completing or to have completed their fertility, there seems to have been a change in fertility over time. The average number of children per women 55 to 64 was ~~3630~~³⁸⁰⁰ per 1000 women compared to ~~4113~~⁴¹⁰⁰ for women 45 to 54 (an apparent reflection of reduced mortality causing higher fertility) and ~~3461~~³⁵⁰⁰ for women 35 to 44 (who may not have completed fertility). This pattern is also seen for all geographic breakdowns - for urban and rural areas, metro and non-metro areas, and on and off reservations.

As would be expected, women in urban areas had consistently lower fertility than those in rural areas (with women in urbanized areas having had even lower fertility), those in metro areas having had lower fertility than those in non-metro areas, and those on reservations having had higher fertility than those off reservations.

The children ever born data give only a measure of completed fertility and do not really show the change in fertility [on a year-by-year basis] over time. Although vital registration in combination with census denominators give fertility estimates, the own children method has been developed to give fertility estimates over time from a single source.

The average American Indian female will have had 2.4 children (~~2409~~²⁴⁰⁰ per 1000 women) during her reproductive span based on the retrospective data for the 1975 to 1979 period (that is, the total fertility rate - TFR - was 2.4). This rate compares with ~~2722~~²⁷⁰⁰ children per 1000 women for the period 1970 to 1974 period, and ~~3398~~³⁴⁰⁰ children per 1000 women for the 1965 and 1969 period, a decline of nearly one child during the period of analysis (Table 4). As before, urban

fertility was lower than rural fertility, with the decline in urban areas from ²⁹⁰⁰2935 to ²¹⁰⁰2094 children per 1000 women compared to ⁴⁰⁰⁰4012 to ²⁹⁰⁰2861 for rural areas (although the percentage decline was greater in rural areas).

Women in rural areas were having approximately one additional child compared ^{with} to women in urban areas. The fertility of women in the sub-category of urbanized areas was even lower than that in all urban areas, and in fact, during the 1975 to 1979 period was below replacement at ¹⁹⁰⁰1939 children per 1000 women. These statistics suggest that American Indian women in urbanized areas were not replacing themselves and their husbands.

Fertility on reservations was greater even than in all rural areas, and was highest of all the geographical areas considered. The fertility decline seen for the other areas, however, was also seen for reservations, as the rate dropped from ⁴³⁰⁰4296 per 1000 in the 1965 to 1969 period to ³⁶⁰⁰3585 between 1970 and 1974 and ³²⁰⁰3180 between 1975 and 1979. The TFR in the last period was about one child less than in the first period. This rate is significantly less than that in many developing areas of the world, but was higher than for the U.S. population as a whole.

Age specific fertility rates (ASFRs) show fertility for various age groups of women, and can help pinpoint where the fertility decline has been taking place. About half of the decrease in the TFR for all American Indian women in the 15 years before the census occurred in the 20 to 24 year age group as women who had been having 214 children per 1000 women in the 1965 to 1969 period had only 158 per 1000 in the 1975 to 1979 period (Table 5 and Figures 2 through 7). Most of the rest of the decrease was found for women 25 to 29 in the respective periods.

American Indian women on reservations showed the same decreases in fertility as women off reservations, although the levels differed.

During 1965 to 1969 about 1 in every 4 women 20 to 24 on a reservation had a child during ^{any particular} the year; this rate decreased to 1 in 5 during the 1975 to 1979 period. Women on reservations continue having babies at older ages than those off reservations. For example, for the women 35 to 39, the ASFRs were about twice as much for American Indian women on reservations as for those off the reservation. As before, however, fertility continued to decrease for each age group.

CONCLUSION

Passel (1976) has previously discussed patterns of change in *American Indian* fertility from the 1960s and Passel and Berman (1986) have looked at similar data from the 1970s. These authors used the two source approach and found that the "patterns indicate that the American Indian population as measured in the decennial censuses is growing by "recruitment", i.e., changes in self-identification" (Passel and Berman 1986:164) rather than from greatly increased fertility.

The comparatively low fertility rates of American Indians cannot account for the 6 percent annual increase in the American Indian population between 1970 to 1980. The data presented here are consistent with suppositions by Passel and Berman (1986) and Snipp (1987); they suggest that much of the increase in the counts of American Indians between 1970 and 1980 is due to a reidentification of persons who did not consider themselves American Indian in the 1970 census, but who did consider themselves American Indian in the 1980 census.

We will continue our own analysis of the fertility of American Indians in a subsequent paper, looking at differentials by educational attainment, labor force participation, and poverty, to see how these factors have affected American Indian fertility. The Census Bureau as a whole is also looking at

the variables contributing to counts and characteristics of American Indians. A number of alternative formulations of the race item are being tested and analyzed. The tests include small focus groups, the National Content Test and reinterview studies completed in 1986, two tests in 1986, and another test in 1987. These tests will allow us insight into the general problem of identifying American Indians, and, in some cases, will provide information on the fertility of American Indians as well.

BIBLIOGRAPHY

- Cho, Lee-Jay, Robert D. Retherford and Minja Choe
1986 The Own-Children Method of Fertility Estimation. Honolulu:
East-West Center, University of Hawaii Press.
- Passel, Jeffrey S.
1976 Provisional Evaluation of the 1970 Census Count of American
Indians. *Demography* 13(3): 397-409.
- Passel, Jeffrey S. and Patricia A. Berman
1986 Quality of 1980 Census Data for American Indians. *Social
Biology* 33(3-4): 163-182.
- Price, John A.
1981 North American Indian Families, in *Ethnic Families in America*,
Charles H. Mindel and Robert W. Habenstein, eds. New
York: Elsevier North Holland.
- Retherford, Robert D., Aphichat Chamrathirong, and Anuri Wanglee
1980 The Impact of Alternative Mortality Assumptions on Own-
Children Estimates of Fertility for Thailand. *Asian and
Pacific Census Forum* 6(3):5-8.
- Snipp, C. Matthew
1987 Who are American Indians? Some Observations about the Perils
and Pitfalls of Data for Race and Ethnicity. *Population
Research and Policy Review* (forthcoming).

Table 1. American Indians in the United States: 1900 to 1980

Census Year	Population	Changing From Preceding Census	
		Number	Percent
1980.....	1,364,033	571,303	72.1
1970.....	792,730	269,139	51.4
1960.....	523,591	166,092	46.5
1950.....	357,499	12,247	3.5
1940.....	345,252	1,900	0.6
1930.....	343,352	98,915	40.5
1920.....	244,437	-32,490	-11.7
1910.....	276,927	39,731	16.8
1900.....	237,196

Source: PC80-1-B1, General Population Characteristics, United States Summary, Table 40.

Table 2. Percentage of Non-own American Indian Children by Age of Child and Residence: 1980

Age of child	Total	Urban	Rural
Total.....	11.5	10.7	12.3
0 years.....	7.9	7.6	8.3
1 year.....	8.8	8.5	9.1
2 years.....	9.2	8.6	9.8
3 years.....	9.7	8.5	11.0
4 years.....	10.9	9.8	12.1
5 years.....	11.0	10.0	12.1
6 years.....	11.3	10.0	12.6
7 years.....	11.8	10.5	13.0
8 years.....	11.9	11.4	12.5
9 years.....	12.6	12.2	13.0
10 years.....	12.0	11.3	12.9
11 years.....	12.6	12.0	13.3
12 years.....	13.1	12.1	14.0
13 years.....	15.3	14.5	16.1
14 years.....	14.6	14.6	14.5

Source: U.S. Bureau of the Census unpublished own-children tabulations derived from 1980 census data.

Table 3. Children Ever Born by Residence and Age Group of American Indian Females: 1980

(Rates are per 1000 women)

Residence	Age Group		
	35 to 44 years	45 to 54 years	55 to 64 years
Total.....	3461	4113	3830
Urban.....	3164	3612	3282
Urbanized areas.....	3040	3497	3140
Rural.....	3857	4732	4464
Metro areas.....	3124	3596	3289
Non-metro areas.....	3904	4733	4435
Reservations.....	4090	5031	4616
Non-Reservation areas..	3206	3696	3426

Source: U.S. Bureau of the Census unpublished own-children tabulations derived from 1980 census data.

Table 4. American Indian Total Fertility Rates by Residence and Time Period: 1980

(Rates are per 1000 women)

Residence	Time Period		
	1975-1979	1970-1974	1965-1969
Total.....	2409	2722	3398
Urban.....	2094	2322	2935
Urbanized areas.....	1939	2168	2778
Rural.....	2861	3284	4012
Metro areas.....			
Non-metro areas.....	2902	3306	4024
Reservations.....	3180	3585	4296
Non-Reservation areas..	2103	2379	3022

Source: U.S. Bureau of the Census unpublished own-children tabulations derived from 1980 census data.

Table 5. Age Specific Fertility Rates of American Indians by
Time Period: 1980

(Rates are per 1000 women)

Age Group	Time Period		
	1975-1979	1970-1974	1965-1969
Total Fertility Rates..	2409	2722	3398
15 to 19 years.....	84	88	91
20 to 24 years.....	158	175	214
25 to 29 years.....	121	131	167
30 to 34 years.....	68	83	112
35 to 39 years.....	33	43	66
40 to 44 years.....	12	19	25
45 to 49 years.....	4	5	6
RESERVATIONS:			
Total Fertility Rates..	3180	3585	4296
15 to 19 years.....	97	99	98
20 to 24 years.....	193	215	252
25 to 29 years.....	155	171	210
30 to 34 years.....	102	120	158
35 to 39 years.....	56	71	94
40 to 44 years.....	24	31	39
45 to 49 years.....	9	10	8
NON-RESERVATIONS:			
Total Fertility Rates..	2103	2379	3022
15 to 19 years.....	78	84	88
20 to 24 years.....	144	161	201
25 to 29 years.....	109	117	149
30 to 34 years.....	56	68	92
35 to 39 years.....	24	32	52
40 to 44 years.....	7	13	18
45 to 49 years.....	3	3	4

Source: U.S. Bureau of the Census unpublished own-children tabulations derived from 1980 census data.

Note: Total fertility rates here are determined by summing the age specific rates and multiplying by 5 to account for the combined 5 year age groups of women.

Figure 1

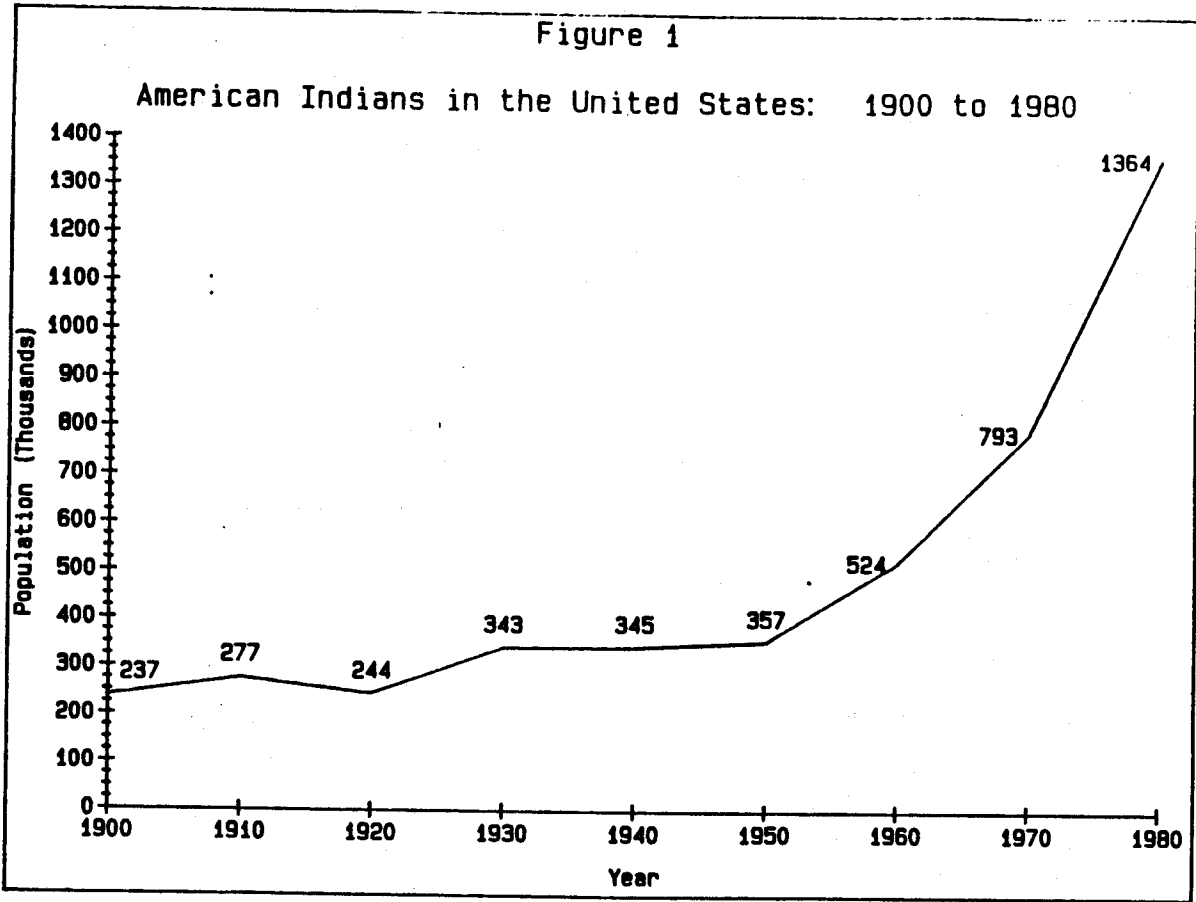


Figure 2

