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Fertility Change in the American Indian/ Alaska Native Population, 1980-2013

Brief Abstract:
Since 1990, Vital Statistics reports show a dramatic decline in the total fertility rates of American Indian and Alaska Native (AI/ AN) women. No published research has examined this fertility decline, perhaps because of the substantial concerns about data quality for the AI/ AN population. The fertility decline documented by Vital Statistics may be explained by 1) a racial incongruence in the data systems used to calculate fertility rates; 2) compositional changes within the AI/ AN population; or 3) real changes in fertility unrelated to changes in racial identification. We use data from the Census and American Community Survey to examine changes in AI/ AN fertility from 1980-2013. We find declining total fertility rates when fertility is calculated within a single data system. Preliminary analyses further indicate that total fertility rates for AI/ AN women are stable within the subgroups of married and unmarried women, but that marriage rates have changed over time.

Extended Abstract:

In the 1980s, the American Indian and Alaska Native population had higher fertility rates than non-Hispanic whites and some other racial and ethnic groups (Snipp 1997). Since 1990, however, Vital Statistics reports show a dramatic decline in American Indian and Alaska Native (hereafter American Indian or AI/ AN) total fertility rates; Figure 1 shows that TFRs for the American Indian population is now lower than the TFRs for both white and black (also see Martin et al. 2015). Concurrent with this decline, the American Indian population as measured in the Census has increased, largely because of changes in racial self-identification related to changes in the categories and wording of racial identity items. This leads to several possible explanations for the decline in American Indian fertility rates as calculated and published by Vital Statistics: First, the decline could be a mechanical artifact of an increase in the denominator, the population at risk of a birth. Second, the decline could be due to compositional changes within the American Indian population. Third, there may be real changes in fertility that are unrelated to changes in who identifies as American Indian. Below, we discuss these possible explanations in more detail.

A mechanical decline could arise from incongruence in racial identity between the two data systems used to calculate American Indian fertility rates. The estimates of the number of American Indian women of childbearing age who are at risk of a birth (the denominators used in TFR calculations) come from Census population counts. Since 1960 when people were first allowed to self-identify their race on the Census, the AI/ AN population has grown more rapidly that demographers would predict from birth rates as more people join the group through identification (Jobe 2004; Liebler, Bhaskar, and Rastogi 2014). Additionally, after the 2000 Census allowed people to select multiple races, the enumerated AI/ AN population doubled from two million in 1990 to four million in 2000 (Liebler and Ortyl 2014). Data on the number of births

(the numerator for fertility rates) comes from Vital Statistics birth certificate data. The identification of race from the birth certificate data differs from the identification of race from the decennial Census in two important ways. First, unlike on the Census, where a women or a member of her household reports her race, there is variation across and within states in who identifies a mother's race on the birth certificate data form; this information may come from "worksheets completed by the mother, by direct interview of the mother, or by abstraction from the medical record" (Schoendorf and Branum 2006). A study in California comparing race and ethnicity data on birth certificate forms with mothers' self-identification in post-partum interviews found high levels of disagreement for Native American women; only 54% of women who self-identified as Native American were classified as Native American in the birth certificate data (Baumeister et al, 2000). Second, although 2003 revisions of birth certificate allow the selection of multiple races, estimates published in Vital Statistics reports are based on single-race categories. In summary, because the numerator and denominator for the fertility statistics published by Vital Statistics come from different sources, it is possible that a decline in fertility estimates is not the result of changes in fertility behavior but merely an artifact of changes in population identification and data collection.

The second explanation for the declining American Indian TFRs is compositional changes within the American Indian population. A high proportion of individuals who identify as AI/AN at one point in time change racial identification between census years; less than one-third of people who included an AI/AN identification in 2000 or 2010 had the same race and ethnicity responses in both of those censuses (Liebler et al. 2014). People who identify with the single racial category of AI/AN are more likely to speak an American Indian language in the home, are more likely to live in poverty, have lower levels of education, and have lower earnings than people who identify a second race in addition to AI/AN (Glick and Han 2015; Huyser, Sakamoto, and Takei 2010; Huyser, Takei, and Sakamoto 2014). "New" American Indians have higher education levels (Eschbach, Supple, and Snipp 1998; Liebler and Ortyl 2014). People who "left" the AI/AN identification group had similar demographics to people who joined the group, but they differ from people who are consistent with their self-identification (Liebler et al. 2014). It is possible that these changes in the composition of the AI/AN population are related to changes in fertility. For example, if there were no race differences in fertility but there were educational differences in fertility, TFRs for the AI/AN racial category could change as the educational characteristics of who identifies as AI/AN changes. In this case, changing TFRs would reflect changes in the educational composition of the AI/AN population but not changes in fertility behavior (contingent on education).

Finally, there may be a real change in fertility among American Indians. This population had relatively high fertility for decades, and a decline could signify a shift toward convergence with the fertility patterns of other racial and ethnic groups. Alternatively, a sharp decline in period fertility could reflect changes in fertility timing or marriage behavior across cohorts, possibly because of changes in educational attainment, economic circumstances, or migration from rural areas (especially reservations) to cities.

An exhaustive search of the literature shows no published research focused on American Indian fertility (or marriage) in demography or public health journals since Snipp's 1997 article in *Population Research and Policy Review*. Additionally, we have consulted with demographers and sociologists who have recently published articles on racial identity, stratification and poverty, or health among American Indian populations, and none of these scholars are aware of research-in-progress on American Indian fertility or family demography.

In this paper, we investigate American Indian fertility rates between 1980 and 2013 using Census and American Community Survey (ACS) data with the goal of identifying whether there has been a change in fertility behavior. We also investigate whether any period changes in fertility behavior can be explained by shifts in fertility timing, changes in marriage incidence and stability, or changes in social and geographic context.

DATA AND METHODS

Data

To address the question of racial incongruence across data systems, we calculate fertility rates within a single data system. By using a single data source for the numerator and the denominator, we overcome one of the potential data issues with estimates from Vital Statistics. We use the Census for years 1980, 1990, and 2000 and ACS for 2001-2013. The Census and ACS are the only plausible data sources given that Native Americans comprise such a small share of the U.S. population.

Births. Both the Census and the ACS link children to their mothers if they reside in the same household. We estimate births based on whether a woman is linked to a child less than one year old. We include women ages 15 to 45 as our population at risk, and we use the standard method of calculating TFR.

Racial Identification. One of the challenges of examining AI/ AN fertility is deciding how to define the AI/ AN population consistently across time and across the decennial Census and ACS. We test five operationalizations of AI/ AN identity. These include identifying as AI/ AN only (no other race), multiple-race identity with AI/ AN as one race, and including Native American, American Indian, Alaska Native, or the name of a specific tribal group in response to the ancestory question.

Analysis Plan

We first calculate TFRs by year, combining ACS data into multi-year groupings, yielding estimates for 1980, 1990, 2000, 2001-2005, 2006-2010, and 2011-2013. We compare these TFRs across the different operationalizations of AI/ AN identification and with the estimates from Vital Statistics. We also compare age-specific fertility rates to identify which age groups (if any) are registering declines in fertility. Next, we calculate TFRs by marital status and chart changes in the marital status of the population. Finally, we examine tribal variation in TFRs. We study the four tribes with the largest populations of women of childbearing age—Cherokee, Chippewa, Navajo, and Sioux.

Other analyses (results not included in this extended abstract) include examining variations by urban versus rural location, education, and region. Next steps

for this project include estimating how much of the decreases in period fertility might be attributable to a cohort change in fertility timing.

PRELIMINARY RESULTS

The preliminary results shown in Figure 2 show the TFRs for women ages 15-45 categorized as American Indian using three different operationalizations. All three trend lines show a decline that is consistent with the decline in TFRs reported in Vital Statistics. Our findings of declining TFRs estimated within a single data system are evidence against the explanation of a mechanical decline.

Age-specific fertility rates show fertility declines across multiple age groups, with the largest declines concentrated among younger women and almost no decline among women over age 30. For example, we find a decrease for women ages 20-24 from 146 births per 1,000 in 1980 to 71 births per 1,000 in 2011-13 for women who identify a single race of AI/ AN. Using the ancestry question to define the AI/ AN population, we find a similar fertility decrease among women in their early twenties from 139 per 1,000 to 71 per 1,000 in 2011-13. We also find very large decreases in fertility among teenage women (ages 15-19).

Our preliminary estimates of TFRs by marital status (shown in Figure 3 and Table 1) indicate that TFRs for American Indian women are stable within the subgroups of married and unmarried women. The proportion of American Indian women who are married has declined over time, however, as shown in Table 2. Thus, the story of fertility decline may be intimately tied to changes in marriage. (Notably, other racial/ ethnic groups who have experienced major changes in marriage patterns have not experienced such drastic declines in fertility levels.)

Finally, preliminary results suggest substantial variation across tribal groups in TFRs for 1980 and in changes in TFRs since then. For example, Table 3 shows that the Navajo had a relatively high TFR in 1980 (2.10) and experienced a sharp decline with a TFR of 1.24 for 2011-13. In contrast, the Chippewa had a TFR of 1.66 in 1980 and a TFR of 2.07 in 2011-13, an increase in fertility.

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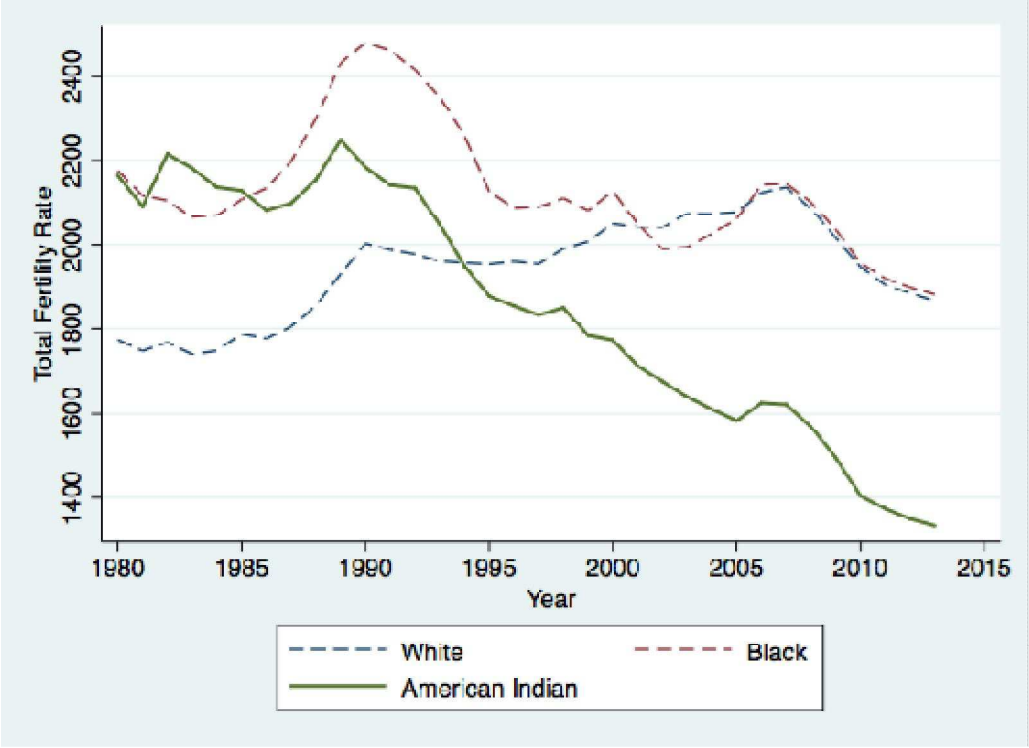
Figure 1. Annual total fertility rate by race of mother: United States, 1980-2013



Data source: Adapted from National Vital Statistics Reports, Vol 64. No 1, Jan 15, 2015 (Martin et al. 2015)

Figure 2. TFRs by year for different operationalizations of the AI/ AN population.

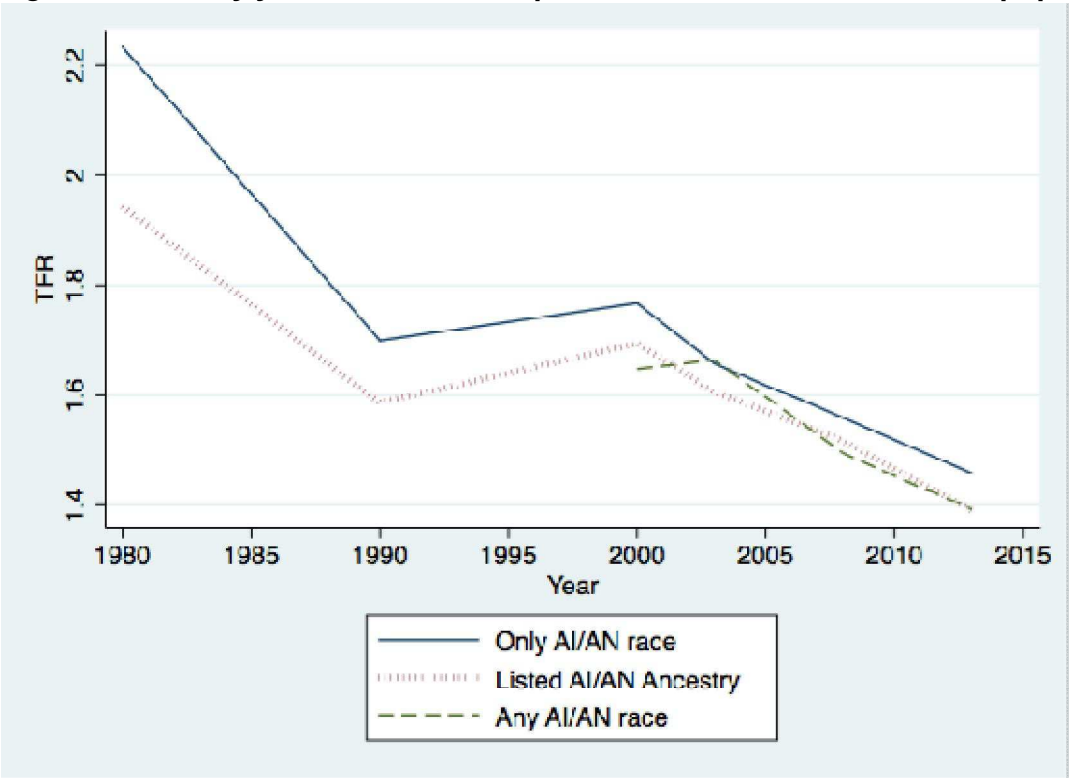


Figure3. TFRs by year and marital status for women who identify AI/ NA race and no other race.

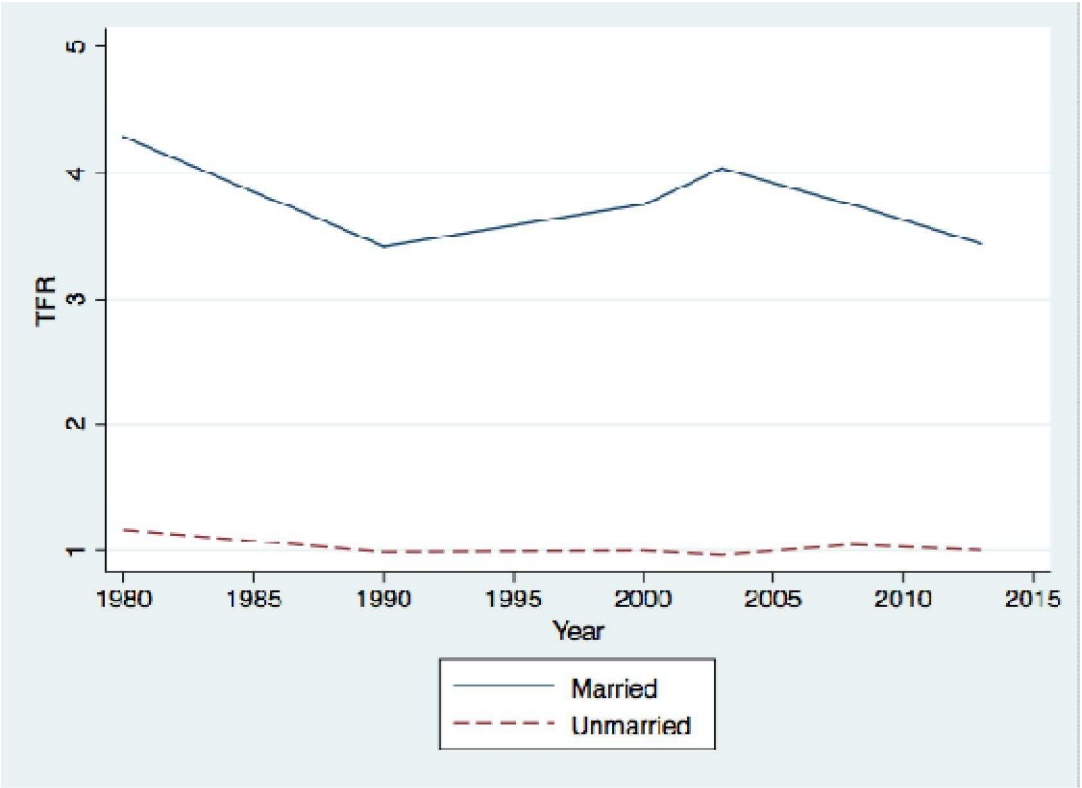


Table 1. TFRs by year and marital status, by different operationalizations of the AI/ AN population

Year	AI/AN, single race		AI/AN, as single or multiple race		AI/AN Ancestry	
	Unmarried	Married	Unmarried	Married	Unmarried	Married
1980	1.15	4.28	n.a.	n.a.	0.77	3.54
1990	0.99	3.41	n.a.	n.a.	0.75	3.15
2000	1.00	3.74	0.90	3.66	0.81	3.75
2001-2005	0.97	4.04	1.00	4.01	0.81	3.87
2006-2010	1.04	3.75	0.92	3.83	0.87	3.67
2011-2013	1.00	3.44	0.87	3.36	0.83	3.55

Table 2. Share of AI/ AN population that is currently married, by different operationalizations of the AI/ AN population

Year	AI/AN, single race	AI/AN, as single or multiple race	AI/AN Ancestry
1980	48.5	n.a.	59.4
1990	44.0	n.a.	55.1
2000	41.0	40.7	47.8
2001-2005	37.5	37.2	45.0
2006-2010	31.8	32.1	39.1
2011-2013	29.9	29.3	35.6

Table 3. TFRs by year and tribal affiliation

Year	Cherokee	Chippewa	Navajo	Sioux	Other/None
1990	1.38	1.66	2.10	1.96	1.68
2000	1.63	1.42	1.98	2.35	1.71
2001-2005	0.99	1.62	2.05	2.41	1.67
2006-2010	1.23	2.05	1.39	2.27	1.54
2011-2013	1.56	2.07	1.24	1.66	1.40