# Measuring Fertility in the United States

**Summary:** The U.S. population's total fertility rate is now approximately 1.7 births per female, which is below the replacement rate of 2.1 that is required for the U.S. population not to shrink without increases in immigration. Women are delaying motherhood, from the 2006 average age range of 25 to 29 to the 30 to 34 age range today.

## Introduction

Birth rates affect the potential size of the workforce, GDP, debt, and other macroeconomic indicators. Demographers and economists measure fertility using several different measures. Each measure has its advantages depending on the research focus. This post reports fertility trends from 2006 through 2019 for several of the most prominent measures. Data comes from the American Community Survey (ACS).

## Measures of Fertility

The **Age-Specific Fertility Rate (ASFR)** measures the annual number of births to women in a specific age cohort (typically a five-year age cohort, e.g., 24 to 29) per 1,000 women in that cohort. This measure relates the actual number of births to an age cohort within a year. The ASFR is useful for analyzing life-cycle patterns of fertility but cannot be used to track changes in the total fertility rate because the underlying population's age distribution changes over time.

Figure 1: Age-Specific Fertility Rates (ASFRs) Over Time

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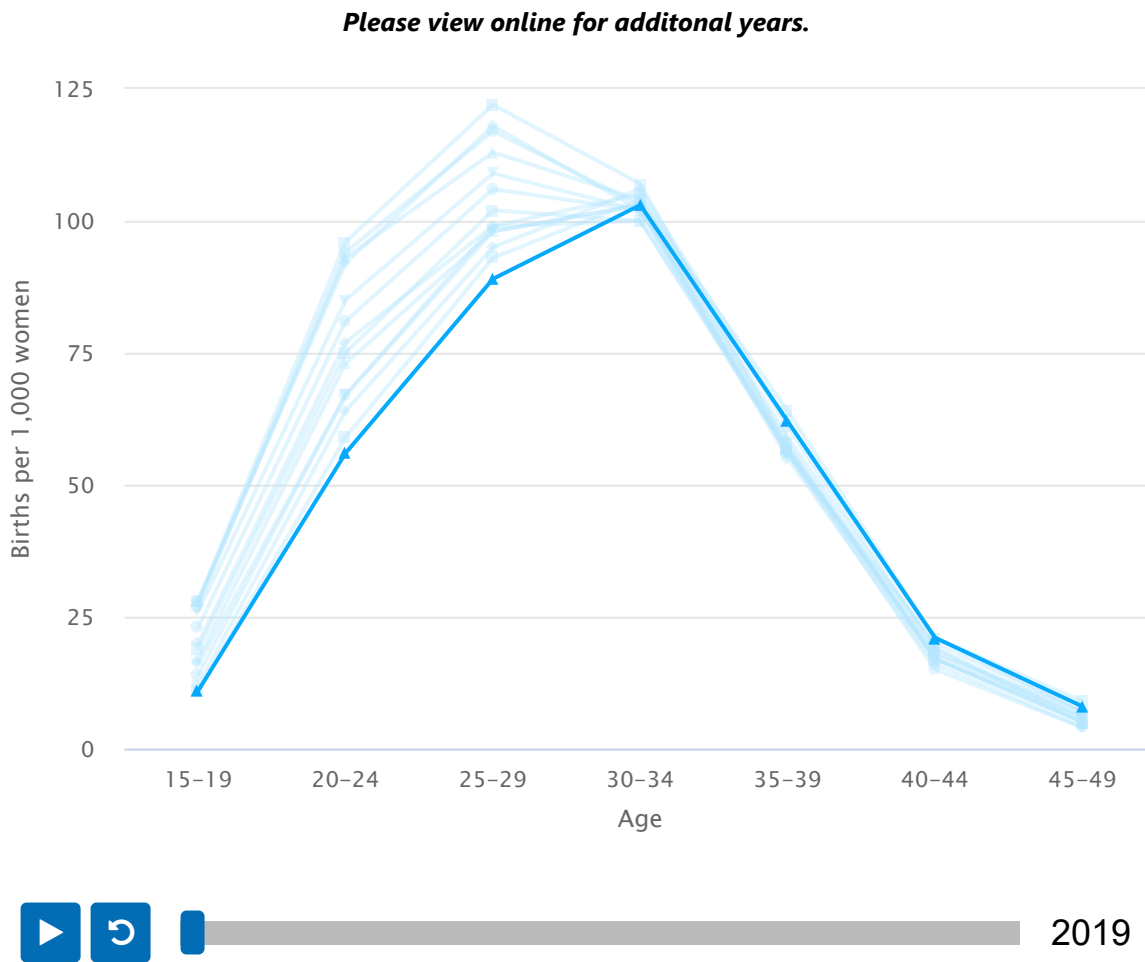
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Figure 1 plots the ASFR of women ages 15 to 49 in five-year age cohorts over the years 2006 through 2019. Teenage pregnancies decreased from a peak of 28 births per 1,000 women ages 15 to 19 in 2007 to under 11 births per 1,000 women in 2019. Fertility peaked in the 25 to 29 age group from 2006 through 2011 but peak fertility has risen to the 30 to 34 age group. Over this period, the number of births also *increased* for the three oldest cohorts: for example, the average number of births per 1,000 women ages 40-44 rose 40 percent from 15 to 21 births per 1,000 women. This indicates women have been delaying fertility and having children at older ages than has historically been the case.

The **Total Fertility Rate (TFR)** is the number of children a woman would have if she instantaneously progressed through all childbearing years with the given ASFR at each age.[1] The TFR is a theoretical measure of fertility that provides an idea of what fertility looks like on a yearly basis. Calculating the TFR requires only a single year of data and provides a reasonable comparison of fertility across years. However, the TFR does not reflect completed fertility over a woman's lifetime and can be skewed by timing changes in fertility. For example, if women in a certain age cohort postpone fertility, that delay will show up as a drop in TFR when that cohort is early in their childbearing years ceteris paribus.

The TFR is typically the measure used in discussion of a population's **replacement rate**, the rate required to maintain a population's current size, disregarding any potential migration effects. The concept of the replacement rate has been in place since around 1930 and is equal to about 2.1 for the U.S. (as for most developed countries). A number above 2.1 is associated with a growing population, and anything lower than 2.1 indicates population decline.

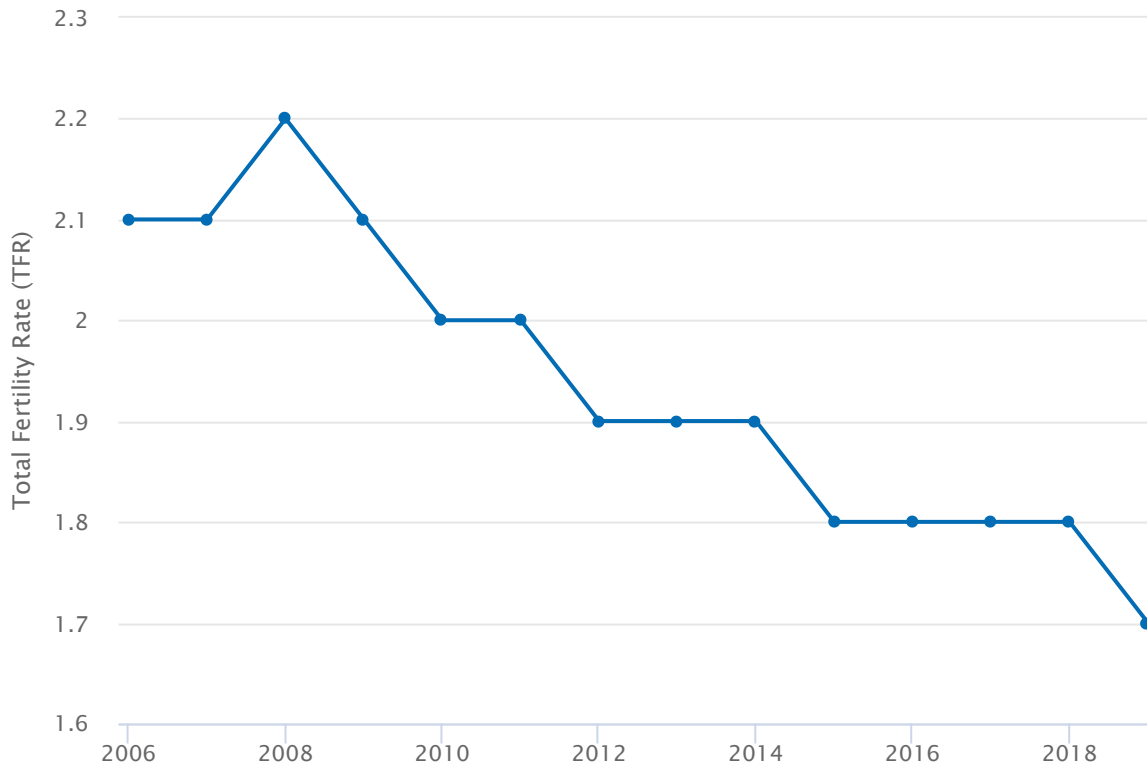## Figure 2: Total Fertility Rate (TFR)

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Figure 2 plots the calculated Total Fertility Rate (TFR) from 2006 through 2019. The TFR rose between 2007 and 2008 to approximately 2.2 births per woman, but fell below the replacement level in 2010, and continued declining further to 1.7 in 2019.

The **General Fertility Rate (GFR)** is a ratio that measures the number of births per 1,000 women of childbearing age. Like the TFR, the GFR provides a good picture of current fertility or fertility within a given year. Unlike the TFR, the GFR is not age-specific and is a measure of actual births. The GFR has the advantage of being easy to explain, but it is driven largely by changes in the underlying age structure of the population. For example, women in their 40s have very few children. So, as the share of the female population over 40 increases, the GFR will decrease even if the ASFRs and TFR are not changing.

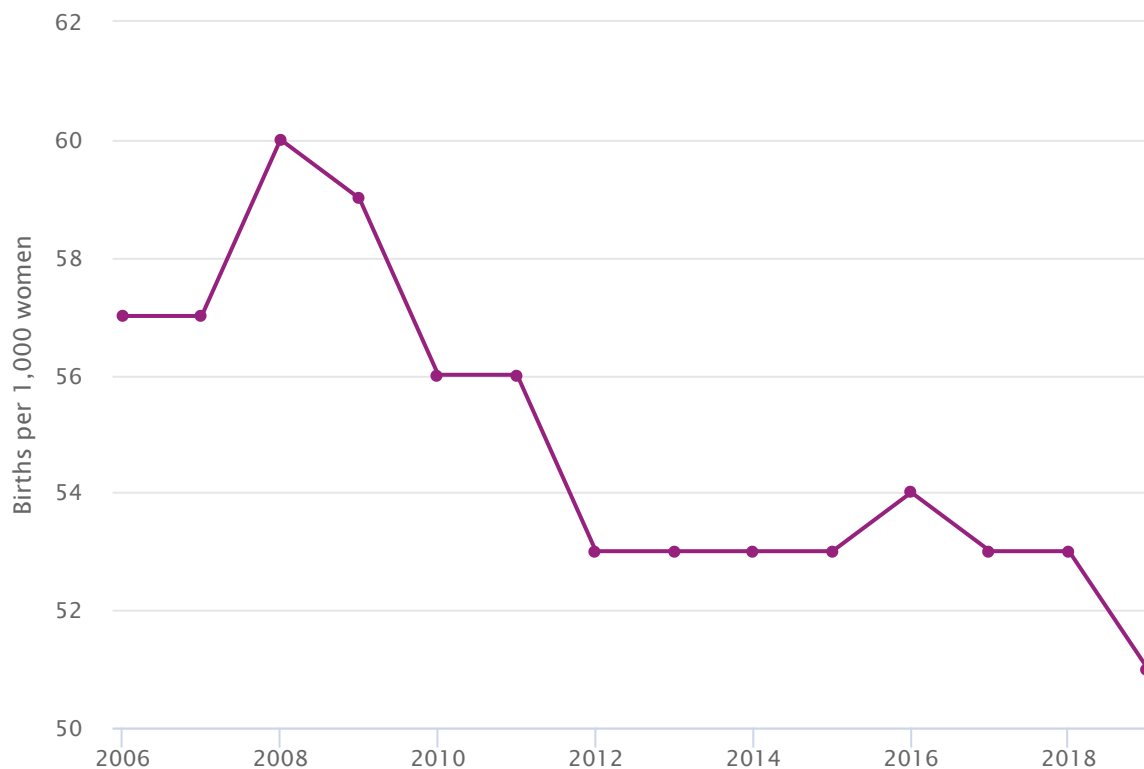## Figure 3: General Fertility Rate (GFR)

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Figure 3 plots the calculated General Fertility Rate (GFR) in births per 1,000 women from 2006 through 2019. The GFR followed a similar pattern to the TFR, rising in 2008 when it reached 60 births per 1,000 women of childbearing age, then declining. In 2019, births had fallen off to 51 per 1,000 women of childbearing age.

The **Completed Fertility Rate (CFR)** measures the number of children women had over their lifetimes. This measure can only be calculated for cohorts of women who are beyond childbearing years. CFRs give the most accurate measure of lifetime fertility but are not useful in calculation of current fertility rates, which are determined by women still at childbearing ages. We do not calculate CFRs because recent ACS surveys do not ask women how many children they have ever had.

*This analysis was conducted by Maddison Erbabian and Victoria Osorio. Prepared for the website by Mariko Paulson.*

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1. "Childbearing years" is defined as ages 15 to 49, consistent with most of the literature.  ↵