General, Age-Specific, and Total Fertility Rates in Montana, 2010-2019

AT A GLANCE

- The general fertility rate in Montana decreased over the past ten years at a rate of −1.02 births per 1,000 women per year.

- The total fertility rate in Montana decreased over the past ten years at a rate of −0.03 estimated lifetime births per woman per year.

- The fertility rate among women in their teens and twenties decreased over the past ten years, whereas the fertility rate among women in the thirties and forties did not significantly change over the past ten years.

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Introduction

The total fertility rate, which is an estimate of the number of births a woman will have during her lifetime, has been steadily declining over the past decade in the United States, from 1.93 births per woman in 2010 to 1.73 births per woman in 2018.[1] Economists have taken note of this, as declining fertility rates may harm the economy. People who are struggling financially may choose to have fewer children to compensate; and if enough families do this, the diminished workforce and number of consumers can lead to even further economic troubles.[2,3] Declining rates of childbirth may also have some positive effects on society. Women may be choosing to have fewer children to focus on their educations and careers or simply delaying childbirth until their educations are complete.[4] In this case, the economic effects of a more well-educated and more experienced workforce could compensate for the smaller workforce. A smaller population may also produce less pollution and be better for the environment. For these reasons, this is a trend that federal, state, and local governments may also be interested in monitoring. This report describes the general, age-specific, and total fertility rates among women in Montana between the years of 2010 and 2019 and examines the trend of each.

Methods

Data in this report came from the Montana Deparmtne of Public Health and Human Services' Office of Vital Records and from the National Center for Health Statistics (NCHS) population estimates based on the U.S. Census. Population and birth data for this report were restricted to female Montana residents between the ages of 15 and 44, inclusive. This age range was chosen because the vast majority of births occur to women within this age range; and it is, therefore, considered to be the reproductive years.

The general fertility rate was calculated for each year from 2010 to 2019 as births per thousand women aged 15 to 44, and five-year, age-specific fertility rates were also calculated for those years. A total fertility rate, which is the estimate of the number of children a woman will have during her lifetime given current age-specific fertility rates, was then calculated by adding each of the five-year age-specific fertility rates and multiplying by five.

Linear regression was used to test each of the seven fertility rates for a significant ($p < 0.05$) trend over time. The parameter estimate of the regression was then used to determine the rate at which each increased or decreased, on average, per year.

Results

General and Total Fertility Rates:
The general fertility rate significantly decreased from 2010 to 2019, at a rate of −1.02 births per 1,000 women per year; and the total fertility rate also significantly decreased, at a rate of −0.03 estimated lifetime births per woman per year (Figures 1 and 2 and Table).

Teens and Twenties:
The fertility rate among women in their teens and twenties decreased from 2010 to 2019 (Figure 1). The fertility rate among women aged 15 to 19 decreased at a rate of −1.84 births per 1,000 women per year, the fertility rate among women aged 20 to 24 decreased at a rate of −3.53 births per 1,000 women per year, and the fertility rate among women aged 25 to 29 decreased at a rate of −1.98 births per 1,000 women per year; and all of these decreases were statistically significant.

Thirties and Forties:
The fertility rate among women in their thirties and forties did not change significantly between 2010 and 2019 (Figure 1). The fertility rate among women aged 30 to 34 increased at a rate of 0.24 births per 1,000 women per year, the fertility rate among women aged 35 to 39 increased at a rate of 0.39 births per 1,000 women per year, and the fertility rate among women aged 40 to 44 increased at a rate of 0.16 births per 1,000 women per year; but none of these increases were statistically significant.

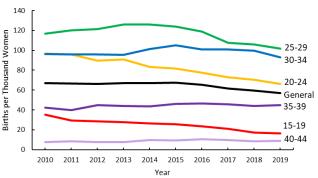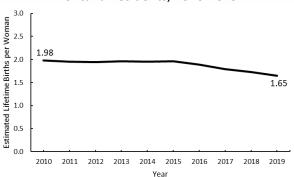**Figure 1:** Fertility Rates by Age-Group Montana Residents, 2010-2019

Figure 2: Total Fertility Rate Montana Residents, 2010-2019

Discussion

Both the general and the total fertility rate declined among Montana women over the past decade. This is due primarily to a substantial decrease in births among women aged 15 to 24. On the contrary, there has been a small, statistically insignificant, increase in births among women aged 30 to 44 years. This is similar to what is being observed at the national level. The fertility rate among women in their teens and twenties in the United States has substantially decreased over the past decade, and the corresponding increase among women in their thirties and forties has not been nearly as large.[1] Since ages 15 to 24 roughly correspond to the high school and college years, a plausible explanation for Montana's declining fertility rate is greater educational achievement among Montana women. In 2010, 27% of births

were to a mother with a bachelor's degree or higher educational attainment; and in 2019, that increased to 31%. It is possible that the decline in the total fertility rate is due to delayed childbirth instead of forgone childbirth. Many women may simply be waiting until their thirties to have children so that they can focus on their educations during their twenties. Such a phenomenon would produce a downward spike in the total fertility rate that would eventually rebound.[5] This was observed in the 1970's when the U.S. total fertility rate reached a low of 1.74.[6] Future research could investigate this possibility by exploring how educational attainment among women has changed during the past decade. Researchers should also explore ways to enable women who would like to have more children be able to accomplish this by investigating the effectiveness of interventions such as workplace daycare, child tax credits, and paid family leave. The current trend of rapidly decling fertility rates may impact the economy, and state and national governements should continue to monitor these rates.

Table: General, Age-Specific, and Total Fertility Rates
Montana Residents, 2010 and 2019

	2010	2019	Rate of Change per Year*
Fertility Rate **Births per 1,000 Women**			
General[†]	67.0	56.8	—1.02[§]
Age group (years)			
15-19	35.2	16.3	—1.84[§]
20-24	96.8	66.0	—3.53[§]
25-29	116.8	101.8	—1.98[§]
30-34	96.5	93.0	0.24
35-39	42.2	44.8	0.39
40-44	7.6	8.9	0.16
Total Fertility Rate[¶]	1.98	1.65	—0.03[§]

*Average rate of change per year from 2010 to 2019 based on the linear regression parameter estimate
[†]Aged 15-44 years
[§]Statistically significant ($p < 0.05$)
[¶]Estimated lifetime births per woman

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