

Declines in Triplet and Higher-order Multiple Births in the United States, 1998–2014

Joyce A. Martin, M.P.H, Michelle J.K. Osterman, M.H.S., and Marie E. Thoma, Ph.D.

Key findings

Data from the National Vital Statistics System

- The triplet and higher-order birth rate declined 41% from 1998 to 2014, or from about 1 in every 515 births in 1998 to one in every 880 births in 2014.
- Triplet and higher-order birth rates were down by about 50% or more for women aged 25 and over. Rates were essentially unchanged for women under 25.
- The largest declines in triplet and higher-order birth rates by race and Hispanic origin for 1998–2014 were for non-Hispanic white women, down 46% compared with a 15% decline for Hispanic women, and essentially no change for non-Hispanic black women.
- Triplet and higher-order birth rates were down from 1998–2000 to 2012–2014 in 42 states; declines of more than 50% were observed in 7 states.

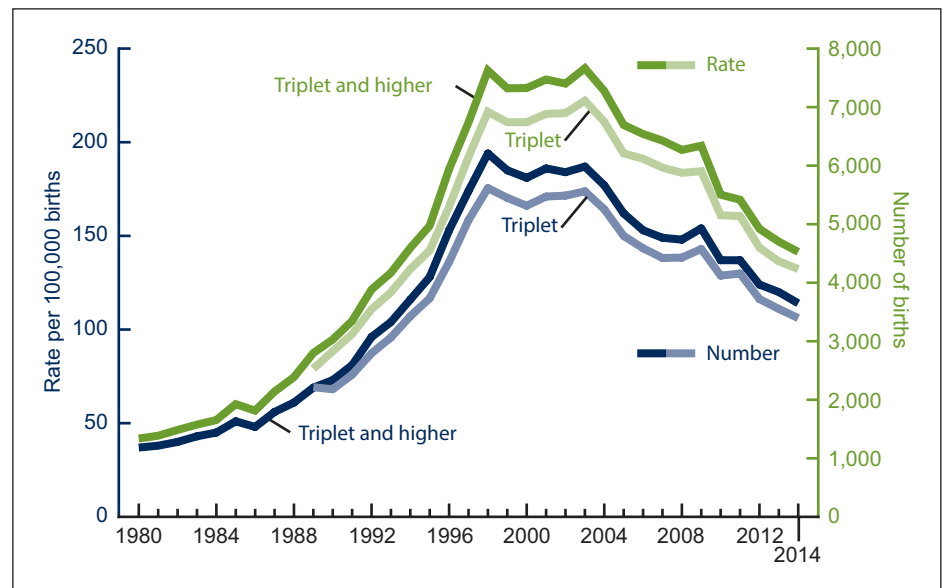
The incidence of triplet and higher-order multiple births rose fourfold during the 1980s and 1990s (1–3). This rise was associated with older maternal age and the increased use of fertility-enhancing therapies (4,5) and was of concern because of the greater risk of adverse outcome of triplet and higher-order births compared with singletons and the added toll of these pregnancies on maternal health (6). Since 1998, however, this trend has edged downward (3). This report explores the recent downturn in triplet and higher-order births by maternal demographic factors.

Keywords: state rates • National Vital Statistics System

Are births in triplet and higher-order deliveries on the decline in the United States?

Since peaking in 1998, the triplet and higher-order birth rate was down 41%, from 193.5 to 113.5 (2014) per 100,000 births (Figure 1). Most of the decline

Figure 1. Number and rate of triplet and triplet and higher births: United States, 1980–2014



NOTES: Triplet and higher births are births in triplet and higher-order multiple deliveries. Information differentiating between triplet and triplet and higher births is not available for 1980–1988. Access data table for Figure 1 at: http://www.cdc.gov/nchs/data/databriefs/db243_table.pdf#1. SOURCE: NCHS, National Vital Statistics System.



occurred over the last decade—the rate has dropped 36% since 2004.

The number of triplet and higher-order births declined from 7,625 to 4,526 from 1998 to 2014, or from about 1 in every 515 births in 1998 to about 1 in every 880 births in 2014.

The vast majority of all triplet and higher-order births (more than 90%) are triplets; quadruplet and higher-order multiple births comprise less than 10% of all triplet and higher births.

Similar to the trend in triplet and higher births, the trend in the birth rate for triplets only peaked in 1998 and then declined 40% from 1998 (175.5) to 2014 (106.1).

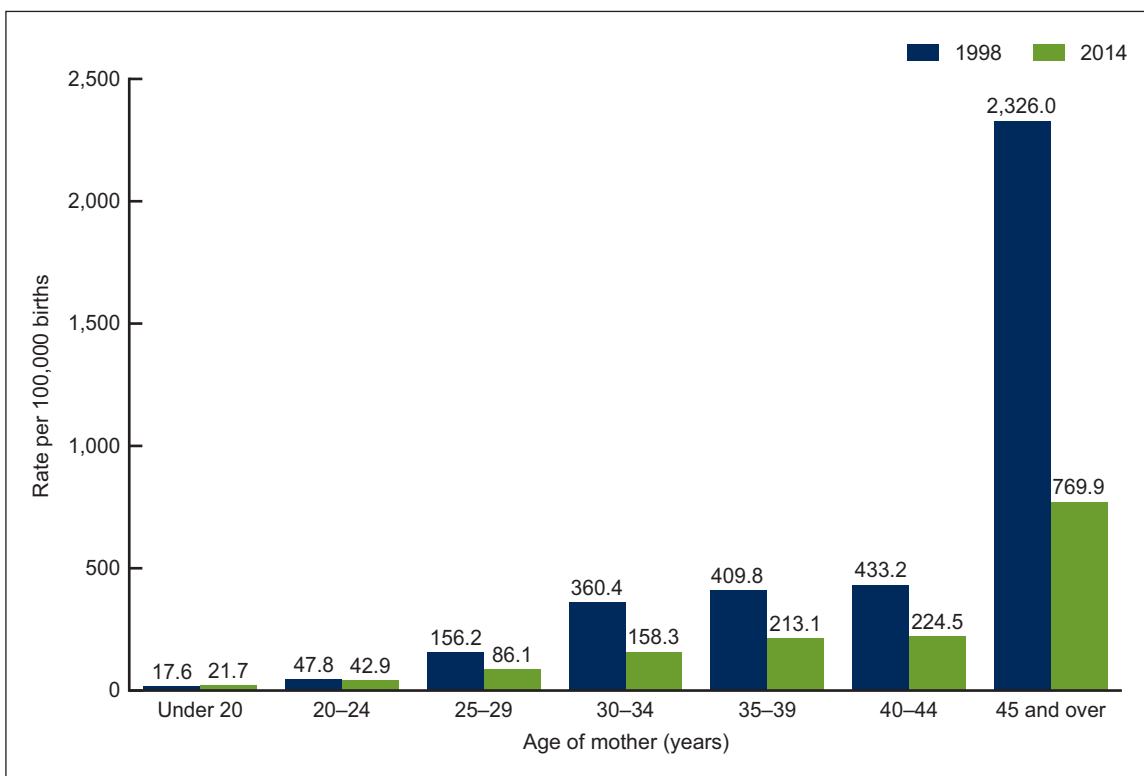
Did triplet and higher-order birth rates decline for women of all ages?

Triplet and higher-order birth rates were down by nearly 50% or more for women aged 25 and over (Figure 2). Rates for women under 25 were essentially unchanged.

The largest decline was for older mothers aged 45 and over, down by two-thirds, from 2,326.0 to 769.9 per 100,000 births.

In both 1998 and 2014, triplet and higher-order rates rose with increasing maternal age. In 2014, mothers in the oldest age group (45 and over) were more than 35 times more likely than teen mothers to give birth to a triplet (769.9 compared with 21.7).

Figure 2. Rate of triplet and higher-order births, by age of mother: United States, 1998 and 2014



NOTES: Triplet and higher births are births in triplet and higher-order multiple deliveries. Access data table for Figure 2 at: http://www.cdc.gov/nchs/data/databriefs/db243_table.pdf#2.

SOURCE: NCHS, National Vital Statistics System.

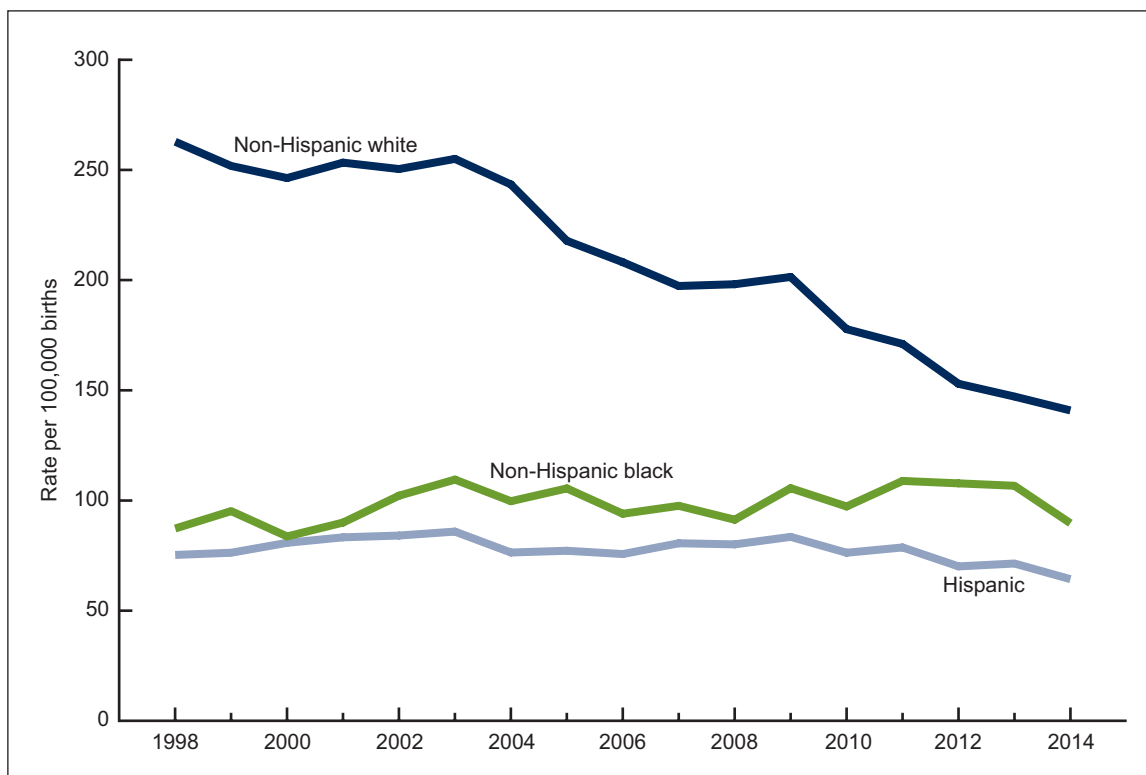
Do recent trends in triplet and higher-order births vary by race or Hispanic origin group?

The most pronounced change in triplet and higher-order birth rates among the three largest race and Hispanic origin groups was for non-Hispanic white women (Figure 3). The rate for this group declined 46% from 1998 to 2014, dropping from 262.8 to 140.9 per 100,000 births.

Triplet and higher-order rates for non-Hispanic black women fluctuated but were essentially unchanged from 1998 (87.3) to 2014 (89.7). The rate for Hispanic women also fluctuated but was down 15% from 1998 (75.3) to 2014 (64.3).

Despite larger declines, non-Hispanic white women were still more likely to have a triplet or higher-order birth in 2014 than non-Hispanic black (57% more likely) and Hispanic women (more than twice as likely).

Figure 3. Triplet and higher-order birth rates, by race and Hispanic origin of mother: United States, 1998–2014



NOTES: Triplet and higher births are births in triplet and higher-order multiple deliveries. Access data table for Figure 3 at: http://www.cdc.gov/nchs/data/databriefs/db243_table.pdf#3.
SOURCE: NCHS, National Vital Statistics System.

How widespread were declines in triplet and higher-order birth rates across states?

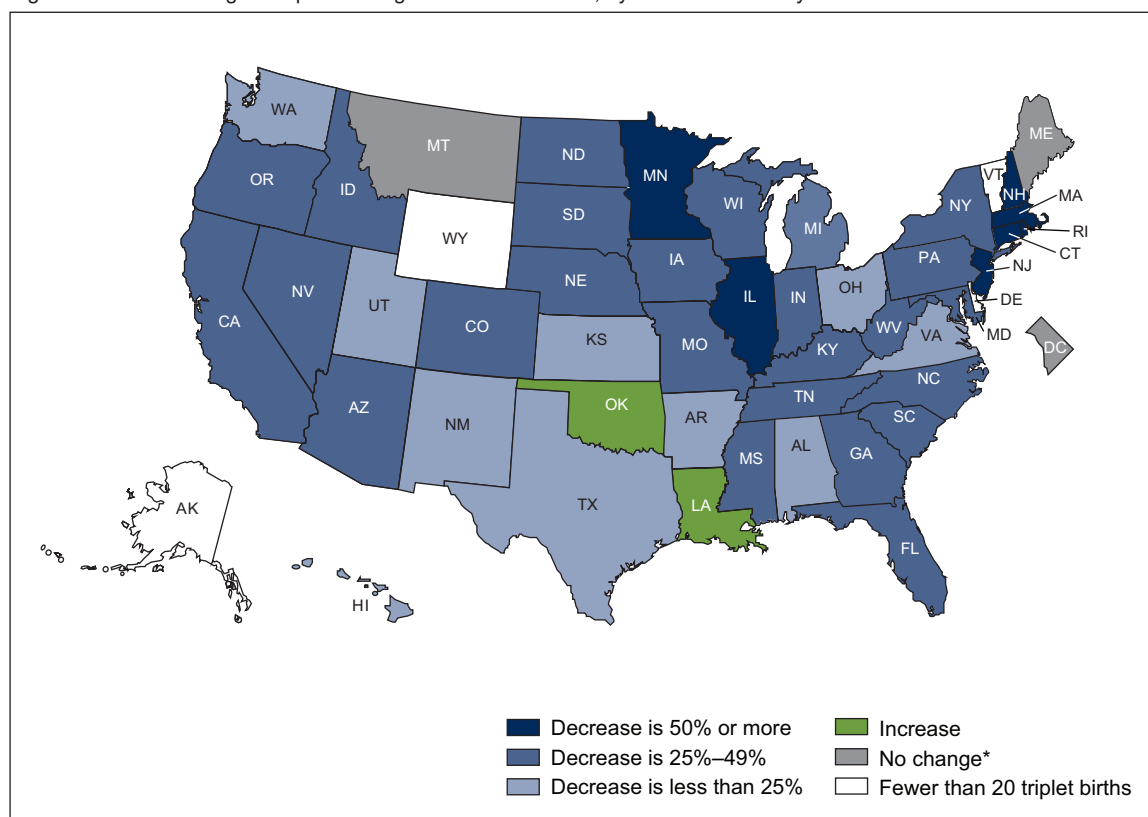
Triplet and higher-order rates declined from 1998–2000 to 2012–2014 in 42 of the 47 reporting areas (46 states and the District of Columbia) for which there was a sufficient number of births to calculate reliable rates (Figure 4).

In seven states—Connecticut, Illinois, Massachusetts, Minnesota, New Hampshire, New Jersey, and Rhode Island—triplet and higher-order rates for the most recent period (2012–2014) were at least 50% lower than for those of the earlier period (1998–2000).

Reductions of 25%–49% were reported for an additional 25 states. Declines in Maine, Montana, and the District of Columbia were not statistically significant.

Triplet and higher-order birth rates increased modestly in two states, Oklahoma (8%) and Louisiana (4%).

Figure 4. Percent change in triplet and higher-order birth rates, by state: Combined years 1998–2000 and 2012–2014



* Difference is not statistically significant ($p = 0.05$).

NOTES: Triplet and higher births are births in triplet and other higher-order multiple deliveries. Access data table for Figure 4 at:

http://www.cdc.gov/nchs/data/databriefs/db243_table.pdf#4.

SOURCE: NCHS, National Vital Statistics System.

Summary

Following large upswings from 1980 to 1998, the number and rate of triplet and higher-order multiple births in the United States fell 41% from 1998 to 2014. Reductions in triplet and higher-order births were concentrated among women aged 25 and over and among non-Hispanic white women—the populations for whom the largest increases had been observed previously (1). Triplet and higher-order birth rates also declined in most U.S. states.

The decline in higher-order multiple births over the last decade and a half cannot be attributed to changes in the maternal age distribution (older women are more likely to have a multiple birth and are more likely to seek fertility-enhancing services). That is, the trend toward older age at childbearing has continued throughout the study period with the percentage of births to women aged 30 and over rising from 36% in 1998 to 44% in 2014 (2,3). Changes in assisted reproductive technologies (ART) practices, such as reducing the number of embryos transferred in ART procedures, have been associated with the decline in higher-order multiple births (7,8).

Triplet and higher-order multiple births continue to be at higher risk of poor outcome—7% of triplets and higher-order births born in 2013 did not survive their first year of life compared with 0.5% of singletons (9), and those who did survive were more likely to suffer long-term morbidities (6). Despite the recent progress in reducing triplet and higher-order births documented in this report, the rate remains three times as high as before ART and non-ART therapies (e.g., ovulation-inducing drugs) became more widespread.

Definitions

Triplet birth: Individual live birth in a triplet pregnancy.

Triplet birth rate: The number of triplet births per 100,000 total births.

Triplet and higher-order birth: Individual live birth in a triplet and other higher-order multiple delivery pregnancy.

Triplet and higher-order birth rate: The number of triplet and higher-order multiple births per 100,000 total births.

Data sources and methods

This report is based on birth certificate data for 1998–2014 from the National Vital Statistics System. The vital statistics natality file includes information for all births occurring in the United States. The natality file includes information on a wide range of maternal and infant demographic and health characteristics for babies born in the United States (available from: http://www.cdc.gov/nchs/data_access/vitalstatsonline.htm). Final data may also be accessed from the interactive data access tool, VitalStats, available from: <http://www.cdc.gov/nchs/VitalStats.htm>.

This report presents rates of live births in triplet and higher-order pregnancies. A triplet and higher-order pregnancy is one in which the number of fetuses delivered live or dead at any given time in the pregnancy is three or more regardless of gestational age, or if the fetuses were delivered at different times during the pregnancy.

Because of the small number of triplet and higher-order births annually by state, the number of these births are combined for the years 1998–2000 and 2012–2014 to calculate more reliable state-specific rates. Rates for 2012–2014 could not be calculated for four states: Alaska, Delaware, Vermont, and Wyoming because of the small number of triplet and higher-order births.

About the authors

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