

Report on the Environment

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Preterm Delivery

Preterm delivery is defined as delivery prior to 37 completed weeks of gestation. The shorter the gestational age of an infant, the more likely it is for that infant to suffer adverse effects. Preterm birth, along with low birthweight, is the second leading cause of infant death (see the [Infant Mortality indicator](#)), and preterm infants are at higher risk for health and developmental problems (IOM, 2006).

The determinants of preterm births are not fully known and the causes are often multi-factorial. Maternal high-risk conditions (e.g., infertility problems, vaginal spotting, inadequate maternal weight gain), previous history, socioeconomic status, smoking, alcohol consumption, and multiple gestation pregnancy are some of the known risk factors for preterm delivery. Environmental contaminants (e.g., lead, environmental tobacco smoke, air pollution) are possible risk factors for preterm birth (CDC, 2016), which continue to be studied to better understand the strength of their associations with preterm delivery.

This indicator presents the proportion of U.S. infants born prior to 37 completed weeks of gestation, based on natality data reported to the National Vital Statistics System (NVSS), which is maintained by the Centers for Disease Control and Prevention's (CDC's) National Center for Health Statistics (NCHS). The NVSS registers virtually all deaths and births nationwide, with data coverage from 1933 to 2017. The NVSS collects data from 57 vital registration jurisdictions, including all 50 states, the District of Columbia, New York City, and five territories (NCHS, 2019).

The data presented here on preterm delivery were based on singleton births only. This was done to eliminate the effect of multiple births. The data are presented across three maternal age groups (under 20 years, 20-39 years, and 40 years and older), and by race and ethnicity.

Beginning in 2014, NCHS transitioned from using the last normal menses (LMP) for estimating newborn gestational age to the obstetric estimate of gestation at delivery (OE), or to the clinical estimate (CE) when the OE is unavailable, due to increasing evidence showing that the OE measure has greater validity compared with the LMP-based measure (NCHS, 2015a). Due to the change in the NCHS's metric for assessing gestational age, data from 2014 onward are not directly comparable to data from 2013 and earlier (CDC, 2014, NCHS 2015a).

What the Data Show

While both the CE-/OE- and LMP-based estimates show general declines in preterm birth rates (NCHS, 2012, 2015b, 2016), they are in fact different measures of preterm birth rates, and are therefore described separately for the periods 1995 to 2013 and 2014 to 2017. Exhibit 1 shows that preterm deliveries of singleton infants increased from 1995 (9.8 percent) to 2006 (11.1 percent), then decreased to 9.7 percent by 2013. From 2014 to 2017, the percentage of preterm singleton infants increased slightly from 7.7 percent to 8.1 percent. The largest overall increase (1.3 percent) between 1995 and 2013 occurred among mothers in the 40 and over age group, with the percent of preterm births ranging from 12.0 percent (1995 and 1996) to 13.9 percent (2006 and 2007) but still at 13.3 percent by 2013. For the 20-39 year old maternal group, preterm deliveries ranged from a

low of 9.2 percent (1996) to a high of 10.7 percent (2006) and then decreased to 9.4 percent by 2013. Among those under 20 years of age, preterm deliveries peaked at 13.9 percent in 2006 and decreased to their lowest percentage (from 1995 to 2013) of 12.2 percent in 2013 (Exhibit 1).

From 2014 to 2017, mothers over 40 years old had the highest rate of preterm births, followed by mothers under age 20 and then mothers ages 20 to 39. For example, in 2017 (the most recent reporting year) the percent of preterm births was 11.7 percent for mothers aged 40 years and older, 9.2 percent for mothers less than 20 years old, and 7.9 percent for mothers aged 20 to 29. The percent of preterm births has increased slightly for all maternal age groups and most years (Exhibit 1).

From 1995 to 2013, preterm delivery across races has shifted up and down slightly, with small percent differences (2.2 percent or less) over time (Exhibit 1). Specifically, from 1995 to 2013 the percent of preterm births ranged from 8.5 percent (1995 and 1996) to 10.1 percent (2005 and 2006) for white mothers, 14.2 percent (2013) to 16.4 percent (1995) for black mothers, 11.0 percent (1996) to 13.0 percent (2006) for American Indian mothers, and 8.7 percent (2012 and 2013) to 9.6 percent (2006 and 2007) for Asian/Pacific Islander mothers. From 1995 to 2013, the percent of preterm births was higher among Hispanic mothers except in 2005 when the percent was 11.0 percent for both Hispanic and non-Hispanic mothers.

The 2014 to 2017 data also show variations by race, with the percent of preterm singleton births being the highest among black mothers, followed by American Indian, white, and Asian/Pacific Islander mothers. For example, in 2017 the percent of preterm births was 11.3 percent for black mothers, 10.2 percent for American Indian mothers, 7.5 percent for white mothers, and 7.3 percent for Asian/Pacific Islander mothers. In 2014 and 2015, the percent of preterm births was the same among Hispanic and non-Hispanic mothers (7.7 percent and 7.8 percent, respectively). In 2016 and 2017, however, Hispanic mothers showed slightly higher rates of preterm births than non-Hispanic mothers (Exhibit 1).

Limitations

- The primary measure used to determine the gestational age of the newborn from 1995 to 2013 is the interval between the first day of the mother's last normal menses (LMP) and the date of birth (CDC, 2013). This measurement is subject to error for reasons such as imperfect maternal recall or misidentification of the LMP because of post conception bleeding, delayed ovulation, or intervening early miscarriage. In 2014, the measure used to determine the gestational age of the newborn transitioned to the obstetric estimate of gestation at delivery (OE), but the clinical estimate (CE) was used when the OE was unavailable. Thus, the data from 2014 to 2017 include both CE and OE estimates, which are unique measures of gestational age and also subject to uncertainty (e.g., a physician could over- or underestimate the gestational age). Problems with reporting gestational age persist and may occur more frequently among some subpopulations and among births with shorter gestations (CDC, 2014, 2019).
- To prevent confusion about the significance of any differences among data obtained using LMP- or CE-/OE-based measures, data queries for this indicator are separate for years 1995-2013 and 2014-2017.

Data Sources

The data used for this indicator are public-use natality data (1995-2017) obtained from the CDC's

NCHS, Division of Vital Statistics. Data from 1995 to 2014 were accessed from CDC's NCHS "Vital Stats" website. As of July 22, 2016, NCHS permanently closed the Vital Stats website. Data beginning in 2015 were accessed from CDC's Wide-ranging Online Data for Epidemiologic Research (WONDER) online natality database, available at <https://wonder.cdc.gov/Natality.html> (CDC, 2018).

References

CDC (Centers for Disease Control and Prevention). 2019. CDC WONDER natality data summary. Last reviewed July 1, 2019. Accessed August 28, 2019. <https://wonder.cdc.gov/wonder/help/natality.html>.

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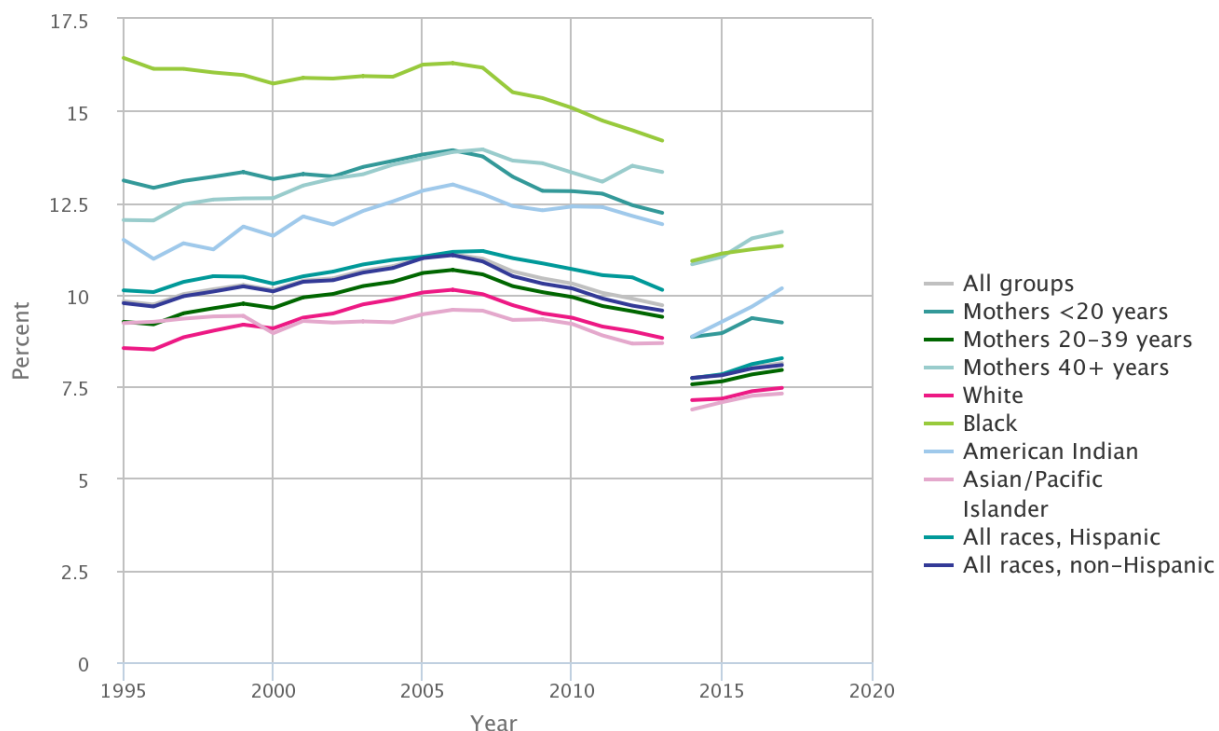
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NCHS. 2012. Births: Final data for 2010. National Vital Statistics Reports 61(1). https://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_01.pdf (PDF) (72 pp, 1.7MB).

Exhibit 1. Percentage of preterm deliveries in the U.S. by mother's age, race, and ethnicity, 1995–2017



Preterm deliveries are births occurring before 37 weeks gestation.

Data represent singleton births only.

Due to differences in estimating gestational age, data from 1995 to 2013 should not be directly compared with data from 2014 to 2017.

Information on the statistical significance of the trends in this exhibit is not currently available. For more information about uncertainty, variability, and statistical analysis, view the technical documentation for this indicator.

Data source: CDC, 2018