Low Birthweight

The term "low birthweight" (LBW) is typically used for any infant weighing less than 2,500 grams (5 pounds, 8 ounces) at birth (HHS-HSRA, 2015). Weight is a critical health measure because LBW children are more prone to death and disability than their counterparts.

The etiology of LBW differs for full-term-LBW infants (born at and after 37 completed weeks of gestation) and preterm-LBW infants (born before 37 completed weeks of gestation), and is influenced by the duration of gestation and the rate of fetal growth (Kramer, 2013). Factors influencing an infant being small for his/her gestational age include maternal cigarette smoking and alcohol/drug use, maternal weight at conception, pregnancy-induced hypertension/pre-eclampsia, being the first-born, congenital anomalies, and other genetic factors (CDC, 1994; Kramer, 2013). Various exposures have been implicated as risk factors for full-term-LBW (e.g., maternal exposure to lead, diethylstilbestrol, and toxic substances in the workplace) (Kiely et al., 1994; Sram et al., 2005). The strength of the possible association between maternal exposure to air pollution (e.g., particulate matter, carbon monoxide, ozone) and LBW continues to be researched (e.g., Bosetti et al., 2010; Proietti et al., 2013; Sram et al., 2005; U.S. EPA, 2018).

This indicator presents the percentage of LBW infants born in the U.S. from 1995 to 2017 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 are 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. Additionally, the data are stratified and reported for preterm (less than 37 weeks) and full-term (37 weeks and over) births because of the strong association between birthweight and gestational age. 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, 2015). Due to the change in the NCHS's metric for assessing gestational age, data from 2014 to 2017 are not directly comparable to data from 2013 and earlier.

What the Data Show

Exhibit 1 presents the percent of LBW infants among preterm births, and Exhibit 2 presents the percent of LBW infants among full-term births. As expected, the percent of total LBW deliveries among preterm births is much higher than the percent of total LBW deliveries among full-term births across each of the three maternal age categories (Exhibits 1 and 2).

Preterm births

Among preterm births from 1995 to 2017, mothers aged 20-39 years consistently had the lowest percent of LBW babies. From 1995 to 2013, mothers aged 40 years and older had the highest percent of LBW babies each year except for 2005 and 2009. From 2014 to 2017 though, mothers less than 20 years old had the highest percent of LBW babies. In 2017, the most current reporting year, the frequency of LBW babies among preterm births is highest for mothers less than 20 years old (58.8 percent), followed by mothers who are 40 years and older (54.2 percent), and lowest in mothers who are in the 20-39 age group (52.0 percent) (Exhibit 1).

Among preterm births, black women had consistently higher percentages of LBW babies compared to any of the other racial groups reported during the time period covered by this indicator. For preterm births by race in 2017, the percent of LBW for mothers less than 20 years old was 67.5 percent for blacks, followed by 58.9 percent for Asians/Pacific Islanders, 55.0 percent for whites, and 50.1 percent for American Indians. A slightly different pattern was observed for mothers in the 20-39 age group, with 63.1 percent for blacks, 55.0 percent for Asians/Pacific Islanders, 48.2 percent for American Indians, and 47.9 percent for whites. Similar to the racial pattern for mothers less than 20 years old, blacks also had the highest percent (63.2) of LBW babies, followed by Asians/Pacific Islanders (55.1 percent), whites (51.1 percent), and American Indians (47.9 percent) for mothers who are 40 years and older (Exhibit 1).

For ethnicity, the same general pattern was seen from 1995 to 2017, where non-Hispanic mothers in all age groups had higher percentages of preterm LBW babies than Hispanic mothers in the same age group. For example, in 2017, the percent of preterm LBW babies for Hispanic women less than 20 years of age was 60.9 percent among non-Hispanic mothers and 54.3 percent among Hispanic mothers (Exhibit 1).

Full-term births

Among full-term births from 1995 to 2017, mothers aged 20-39 years had the lowest percent of LBW babies for every reporting year, while mothers less than 20 years had the highest percent of LBW babies. The frequency of LBW babies among full-term births in 2017, the most recent reporting year, is highest for mothers less than 20 years old (3.8 percent), followed by mothers who are 40 years and older (2.8 percent), then mothers who are in the 20-39 age group (2.4 percent) (Exhibit 2).

Among full-term births, black women had consistently higher frequencies of LBW babies compared to any of the other racial groups reported during the time period covered by this indicator. This racial pattern is evident from 1995 to 2017 for all three maternal age groups, with one exception: American Indian mothers 40 years and older had a slightly higher percentage of full-term LBW infants than black mothers in 2014. For full-term births by race in 2017, the most recent reporting year, the percentage of LBW babies for mothers less than 20 years old was 5.6 percent for blacks, followed by 4.1 percent for Asians/Pacific Islanders, 3.1 percent for whites, and 2.6 percent for American Indians. For mothers in the 20-39 year age group, blacks (4.3 percent) also had the highest percentage of LBW babies, followed by Asians/Pacific Islanders (3.1 percent), American Indians (2.4 percent), and then whites (2.0 percent). Mothers aged 40 years and older followed the same racial pattern (Exhibit 2).

By age group, non-Hispanic mothers less than 20 years old and those in the 20-39 year age group had higher percentages of full-term LBW babies than Hispanic mothers during the entire period from 1995 to 2017. For mothers aged 40 years and older, the LBW percentages varied among Hispanic and non-Hispanic mothers from 1995 to 2009. Since 2010, non-Hispanic mothers have consistently seen slightly higher rates of LBW than Hispanic mothers. In 2017, the percent of full-term LBW babies for Hispanic women in the three maternal age groups ranged from 2.1 to 3.2 percent compared to a range of 2.5 to 4.1 percent for non-Hispanic women (Exhibit 2).

Limitations

- Complete reporting of natality indicators such as LBW may vary due to differences in the reporting requirements established by each vital registration jurisdiction. In some jurisdictions, the number of LBW babies may be underreported.
- 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 2014 to 2017 data 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 CDC's NCHS, Division of Vital Statistics. Data from 1995 to 2014 were accessed from the CDC's NCHS "VitalStats" website. As of July 22, 2016, NCHS permanently closed the VitalStats 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).

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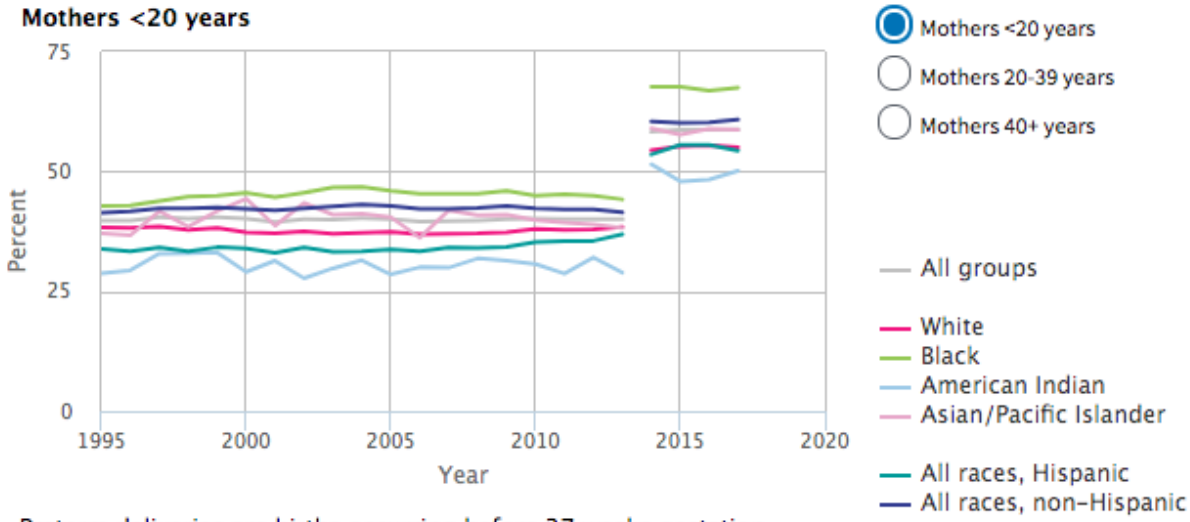
Exhibit 1. Percent of low birthweight infants (<2,500 grams) among all preterm infants born in the U.S. by mother's age, race, and ethnicity, 1995–2017



Preterm deliveries are births occurring before 37 weeks gestation.

Data represent singleton births only.

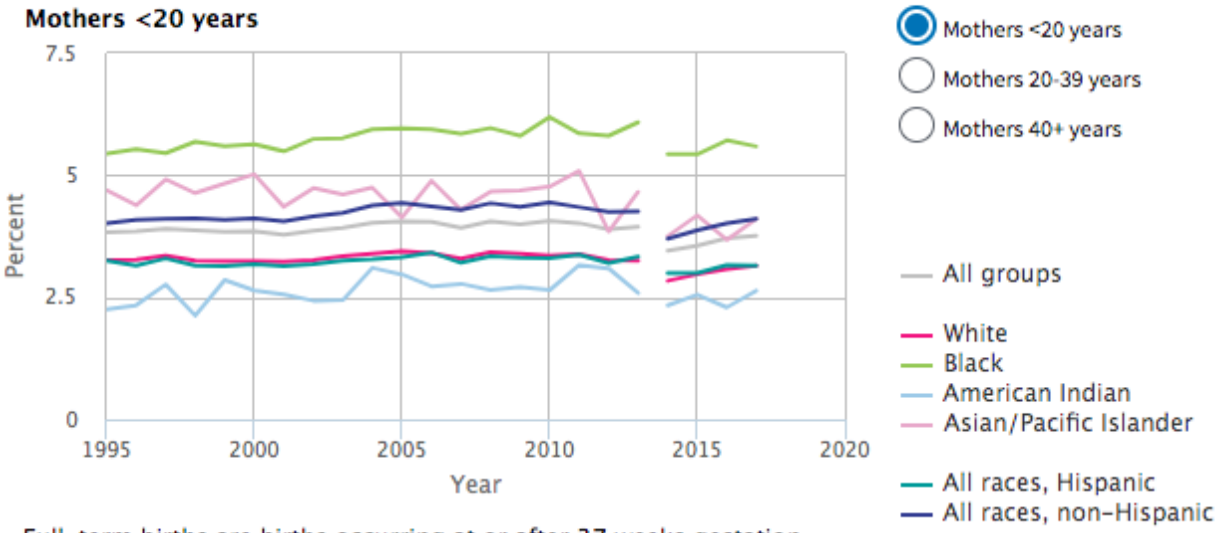
Due to differences in estimating gestational age, data from 1995 to 2013 should not be directly compared with data from 2014 to 2017.

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

Data source: CDC, 2018

Visit https://www.epa.gov/roe to see the full exhibit.

Exhibit 2. Percent of low birthweight infants (<2,500 grams) among all full-term infants born in the U.S. by mother's age, race, and ethnicity, 1995–2017



Full-term births are births occurring at or after 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 presented here. For more information about uncertainty, variability, and statistical analysis, view the technical documentation for this indicator.

Data source: CDC, 2018

Visit https://www.epa.gov/roe to see the full exhibit.