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 (Kiely et al., 1994). 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). For full-term-LBW infants, underlying causes include factors such as maternal smoking, weight at conception, and gestational weight gain, whereas for preterm-LBW infants, the etiology largely remains unexplained (CDC, 1994). 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 (Bosetti et al., 2010; Proietti et al., 2013; Sram et al., 2005).

This indicator presents the percentage of LBW infants born in the U.S. based on natality data reported to the National Vital Statistics System (NVSS). The NVSS registers virtually all deaths and births nationwide, with data coverage from 1933 to 2012 and from all 50 states and the District of Columbia.

The data presented are based on singleton births only from 1995-2012. 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). 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.

What the Data Show

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).

In general, small differences in the percent of singleton LBW babies among maternal age categories are evident for both preterm births (Exhibit 1) and full-term births (Exhibit 2). In 2012, the frequency of LBW babies among preterm births is highest for mothers who are 40 years and older (41.3 percent), followed by mothers less than 20 years old (40.0 percent), and lowest in mothers who are in the 20-39 age group (38.9 percent) (Exhibit 1). The frequency of LBW babies among full-term births in 2012 is highest for mothers less than 20 years old (3.9 percent), followed by mothers who are 40 years and older (3.0 percent), and lowest in mothers who are in the 20-39 age group (2.5 percent) (Exhibit 2).

Among both the preterm and full-term births, black women had consistently higher frequencies of LBW babies compared to any of the other racial groups reported from 1995 to 2012. This racial pattern is evident in 2012 for all three maternal age groups. For preterm births, the difference is most apparent in the 20-39 age group, with 47.7 percent for blacks, followed by 40.9 percent for Asians/Pacific Islanders, 36.0 percent for whites, and 34.7 percent for American Indians. This same racial pattern was seen with mothers less than 20 years old, but not for mothers 40 years and older,

where American Indians had a higher percent of preterm births than whites (Exhibit 1). For full-term births, this racial pattern difference is most apparent for mothers less than 20 years old, with 5.8 percent for blacks followed by 3.9 percent for Asians/Pacific Islanders, 3.3 percent for whites, and 3.1 percent for American Indians (Exhibit 2). Different racial patterns were seen for mothers in the 20-39 and 40 and older age groups, which both reported the highest and lowest percentages among blacks and whites, respectively. For mothers in the 20-39 age group, blacks were followed by Asian/Pacific Islanders and then American Indians, but for mothers in the 40 and older group, blacks were followed by American Indians and then Asian/Pacific Islanders.

For preterm births, there was an increase in LBW for all races except Asians/Pacific Islanders from 2011 to 2012 for mothers aged 20-39 years, a decrease in LBW for all races except Asians/Pacific Islanders for mothers aged 40 years and older, and slight fluctuations (increases for whites and American Indians, but decreases for blacks and Asian/Pacific Islanders) for mothers less than 20 years (Exhibit 1). For full-term births, decreases in LBW from 2011 to 2012 occurred for mothers less than 20 years and 20-39 years for all races except American Indian mothers aged 20-39. For mothers aged 40 years and older, an increase in LBW was seen for all races except blacks (Exhibit 2).

Hispanic women and non-Hispanic women had similar frequencies of full-term LBW babies. For example, in 2012, the percent of full-term LBW babies for Hispanic women in the three maternal age groups ranged from 2.3 to 3.2 percent compared to a range of 2.6 to 4.3 percent for non-Hispanic women (Exhibit 2). A larger difference in frequencies was seen for Hispanic women and non-Hispanic women for preterm LBW babies. For example, in 2012, the percent of preterm LBW babies for Hispanic women in the three maternal age groups ranged from 34.4 to 38.2 percent compared to a range of 40.3 to 42.3 percent for non-Hispanic women (Exhibit 1).

Limitations

- Complete reporting of natality indicators such as LBW may vary due to differences in the reporting requirements established by each state. In some states, the number of LBW babies may be underreported.

Data Sources

The data used for this indicator were public-use natality data (1995-2012) obtained from the Centers for Disease Control and Prevention's (CDC's) National Center for Health Statistics (NCHS), Division of Vital Statistics, accessed via CDC's NCHS VitalStats (CDC, 2014) available at http://www.cdc.gov/nchs/vitalstats.htm.

References

Bosetti, C., M.J. Nieuwenhuijsen, S. Gallus, S. Cipriani, C. La Vecchia, and F. Parazzini. 2010. Ambient particulate matter and preterm birth or birth weight: a review of the literature. Arch. Toxicol. 84:447–460.

CDC (Centers for Disease Control and Prevention). 2014. National Center for Health Statistics. VitalStats. Accessed August 12, 2014. http://www.cdc.gov/nchs/vitalstats.htm.

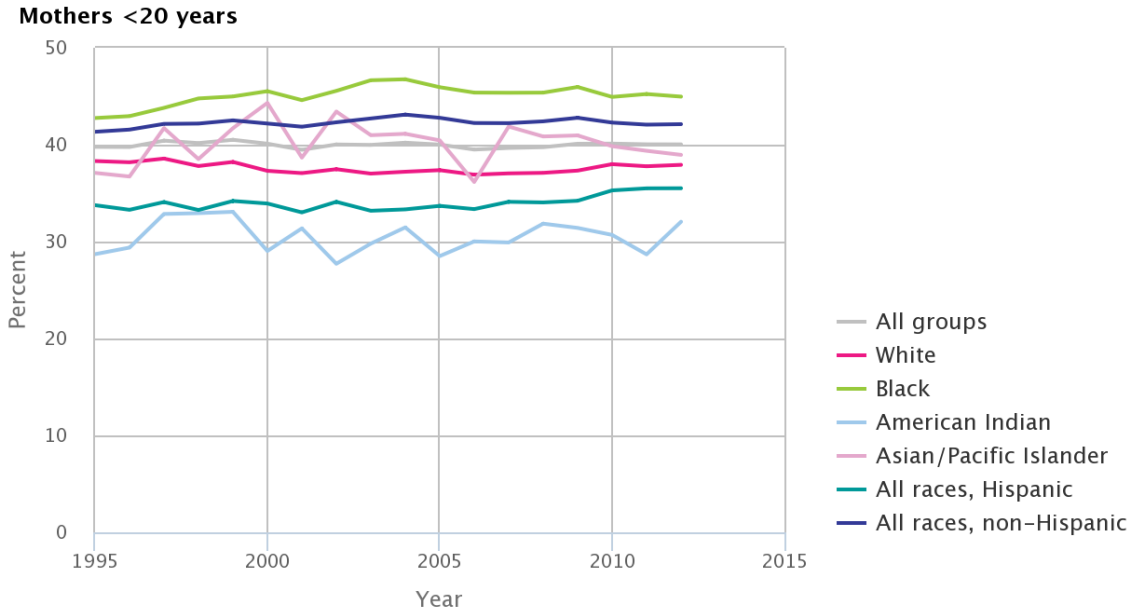
CDC. 1994. Increasing incidence of low birthweight—United States, 1981-1991. MMWR 43(18):335-339. http://www.cdc.gov/mmwr/preview/mmwrhtml/00030918.htm.

Kiely, J.L., K.M. Brett, S. Yu, and D.L. Rowley. 1994. Low birthweight and intrauterine growth retardation. In: Wilcox, L.S., and J.S. Marks, eds. From data to action: CDC's public health surveillance for women, infants, and children. CDC's maternal and child health monograph 1994. Atlanta, GA: Centers for Disease Control and Prevention. http://stacks.cdc.gov/view/cdc/11354.

Proietti, E., M. Roosli, U. Frey, and P. Latzin. 2013. Air pollution during pregnancy and neonatal outcome: A review. Journal of Aerosol Medicine and Pulmonary Drug Delivery 26(1):9-23.

Sram R.J., B. Binkova, J. Dejmek, and M. Bobak. 2005. Ambient air pollution and pregnancy outcomes: A review of the literature. Environ. Health Perspect. 113(4):375-382. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1278474/pdf/ehp0113-000375.pdf (PDF) (8 pp, 143KB).

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, 1995–2012



Preterm deliveries are births occurring before 37 weeks gestation.

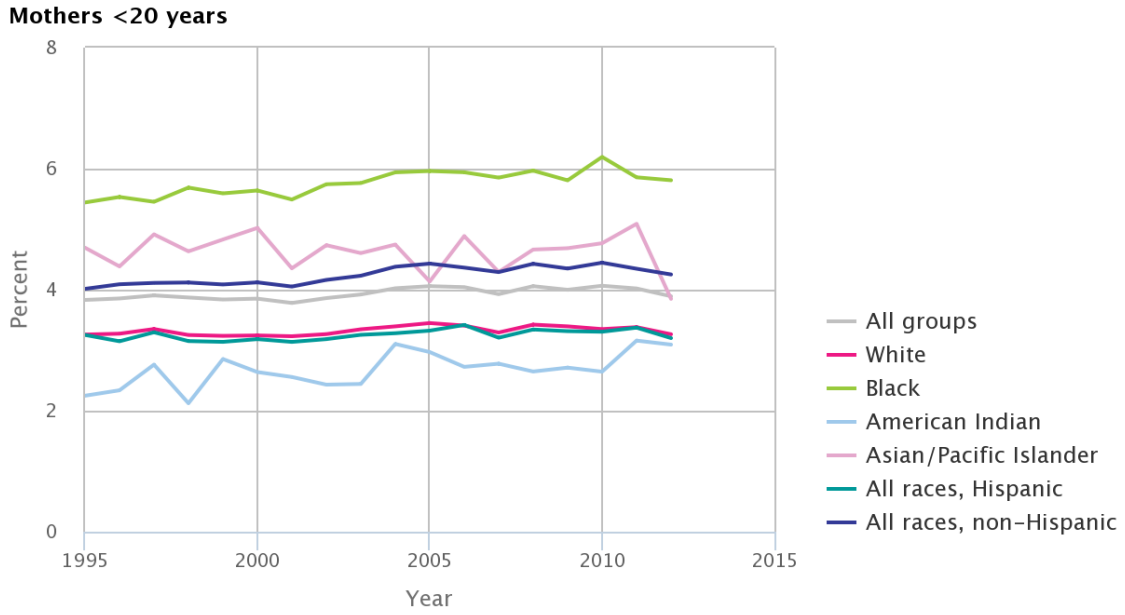
Data represent singleton births only.

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, 2014

Visit http://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, 1995-2012



Full-term births are births occurring at or after 37 weeks gestation.

Data represent singleton births only.

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, 2014

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