Infant Mortality

Infant mortality is an important measure of maternal and infant health as well as the overall health status of the population (CDC, 2013). Infant mortality in the U.S. is defined as the death of an infant before his or her first birthday. It does not include still births. Infant mortality is composed of neonatal (less than 28 days after birth) and postneonatal (28 to 364 days after birth) deaths.

This indicator presents infant mortality for the U.S. based on death certificate data and linked birth and death certificate data recorded in the National Vital Statistics System (NVSS). The NVSS registers virtually all deaths and births nationwide, with linked birth and death data coverage in this indicator from 1940 to 2017 and from all 50 states and the District of Columbia.

What the Data Show

In 2017, a total of 22,341 deaths occurred in children under 1 year of age, 816 fewer deaths than were recorded in 2016 (CDC, 2020). Exhibit 1 presents the national trends in infant mortality between 1940 and 2017 for all infant deaths as well as infant deaths by sex, race, and ethnicity. A striking decline has occurred during this time period, with total infant mortality rates dropping from nearly 50 deaths per 1,000 live births in 1940 to under six deaths per 1,000 live births in 2017. Beginning around 1960, the infant mortality rate has decreased or remained generally level each successive year through 2017.

Exhibit 1 presents infant mortality rates in the U.S. by sex and some races (whites and blacks) for the entire period of record, and ethnicity and other races (American Indians or Alaska Natives, Asians or Pacific Islanders) since first reported in 1995. Infant mortality rates continue to be highest among males and highest among blacks. Though declining overall, the infant mortality rate for blacks (10.8 per 1,000 live births in 2017) is still twice the rate compared to white infants (4.9 per 1,000 live births in 2017).

Also in 2017, the infant mortality rate was 5.1 per 1,000 live births for Hispanic infants. The mortality rate was 4.7 per 1,000 live births for non-Hispanic white infants and 10.9 per 1,000 live births for non-Hispanic black infants (Exhibit 1).

Exhibit 2 presents leading causes of infant death in the U.S. for the most recent reporting year. In 2017, the 10 leading causes of infant mortality in the U.S. accounted for 68 percent of all infant deaths (Exhibit 2), with the subgroup consisting of congenital anomalies (i.e., congenital malformations, deformations, and chromosomal abnormalities) having the highest rate at 1.2 per 1,000 live births (CDC, 2020). This category alone accounts for 20.6 percent of all infant deaths in 2017 (Exhibit 2). In 2017, the top 10 leading causes and their ranks remained the same as those in 2016 except that newborn affected by maternal complications of pregnancy surpassed sudden infant death syndrome to become the third leading cause, and diseases of the circulatory system surpassed respiratory distress of the newborn to become the eighth leading cause (CDC, 2020).

In 2017, congenital anomalies were the primary cause of infant death, followed by disorders related to short gestation and low birthweight, among all of the reported racial and ethnic groups except for

non-Hispanic blacks. The leading causes of infant mortality among non-Hispanic blacks were disorders related to short gestation and low birthweight, followed by congenital anomalies. There were small differences in some of the other leading causes of infant mortality between racial and ethnic groups as shown in Exhibit 2.

In addition, the Centers for Disease Control and Prevention (CDC) reports a substantial difference in the leading causes of death during the neonatal versus the postneonatal periods. Disorders related to short gestation and low birthweight and congenital anomalies were the first and second leading causes of death for neonates, respectively, and congenital anomalies and sudden infant death syndrome were the first and second leading causes of death for postneonates respectively, based on 2017 data (NCHS, 2018).

Limitations

- Cause of death rankings denote the most frequently occurring causes of death among those eligible to be ranked. The rankings do not necessarily denote the causes of death of greatest public health importance. Further, rankings of cause-specific mortality could change depending on the defined list of causes that are considered and, more specifically, the types of categories and subcategories that are used for such rankings.
- Mortality rates are based on the underlying cause of death as entered on a death certificate by a physician. Incorrect coding and low rates of autopsies that confirm the cause of death may occur. Additionally, some individuals may have had competing causes of death. When more than one cause or condition is entered by the physician, the underlying cause is determined by the sequence of conditions on the certificate, provisions of the International Classification of Diseases, and associated selection rules and modifications. Consequently, some misclassification of reported mortality might occur as a result of these uncertainties, as well as the underreporting of some causes of death.

Data Sources

Infant mortality rates for total, males, and females in Exhibit 1 were obtained from data published by CDC's National Center for Health Statistics in its Deaths report (NCHS, 2019a), which provide annual natality data from 1975 to 2017 and decadal data for 1940, 1950, 1960, and 1970. Data for whites and blacks for 1940 to 2015 were obtained from the NCHS Deaths report (NCHS, 2019a), and from Table 3 of NCHS's Health, United States report for 2016 onward (NCHS, 2019c). The infant mortality rates for 1995 to 2017 in Exhibit 1 for American Indians or Alaska Natives, Asians or Pacific Islanders, non-Hispanic whites, non-Hispanic blacks, and Hispanics were obtained from Table 2 of NCHS's Health, United States report, which presents infant mortality statistics from the period linked birth/infant death data set (NCHS, 2019b).

For leading cause of infant death data shown in Exhibit 2, numbers for the 10 leading causes and the total number of infant deaths for each population group (used to calculate percentages) were extracted from CDC's WONDER Linked Birth/Infant Death Records Online Database (CDC, 2020) (https://wonder.cdc.gov/lbd.html). Supporting documentation for leading cause of infant death data came from available NVSS documentation (NCHS, 2018).

References

CDC (Centers for Disease Control and Prevention). 2020. Linked birth/infant death records for 2007-2017 on CDC WONDER online database. Last reviewed February 10, 2020. Accessed

February 21, 2020. https://wonder.cdc.gov/lbd.html.

CDC. 2013. CDC grand rounds: Public health approaches to reducing U.S. infant mortality. MMWR 62(31):625-628. https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6231a3.htm.

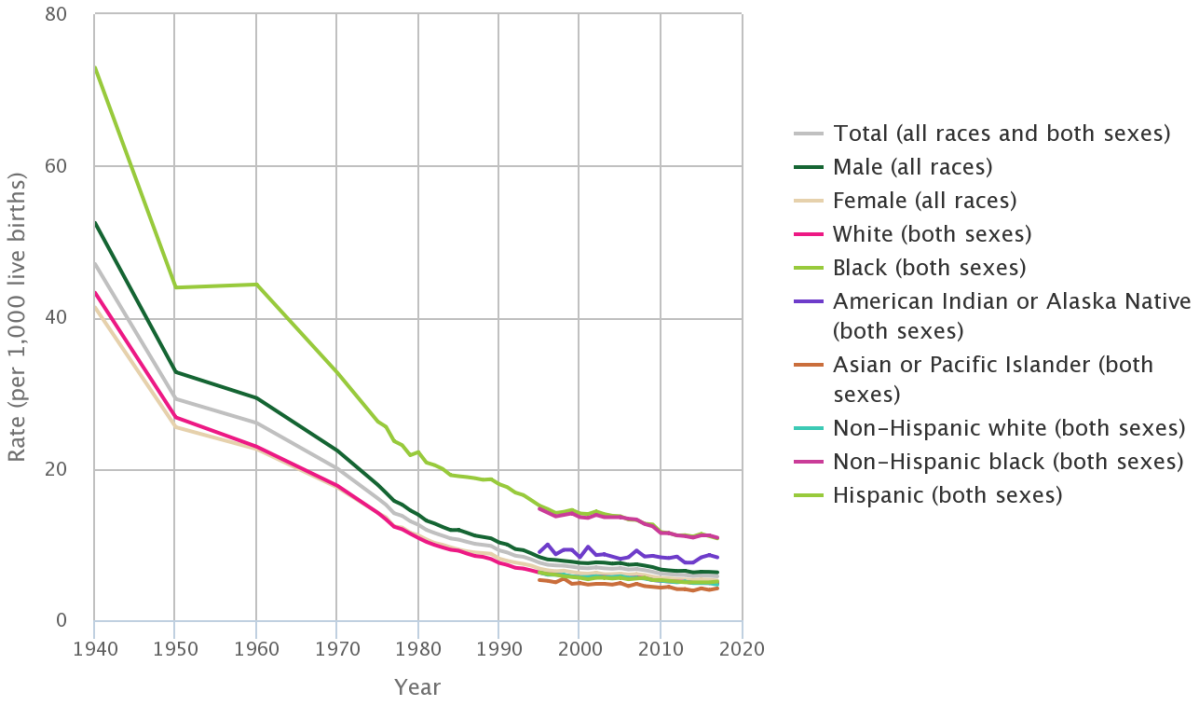
NCHS (National Center for Health Statistics). 2019a. Deaths: Final data for 2017. Table 13. National Vital Statistics Reports 68(9). https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_09-508.pdf (PDF) (77 pp, 1.8MB).

NCHS. 2019b. Health, United States, 2018. Table 2. https://www.cdc.gov/nchs/data/hus/2018/002.pdf (PDF) (2 pp, 89K).

NCHS. 2019c. Health, United States, 2018. Table 3. https://www.cdc.gov/nchs/data/hus/2018/003.pdf (PDF) (2 pp, 64K).

NCHS. 2018. Mortality table, LCWK4. Infant, neonatal, and postneonatal deaths, percent of total deaths, and mortality rates for the 15 leading causes of infant death, by race and Hispanic origin, and sex: United States, 2017. https://www.cdc.gov/nchs/data/dvs/lcwk/lcwk4_hr_2017-508.pdf (PDF) (27 pp, 370K).

Exhibit 1. Infant mortality rates in the U.S. by sex, race, and ethnicity, 1940–2017



Race was reported based on the race of the child (1940–1979) or the race of the mother (since 1980). Annual infant mortality rates were not available prior to 1975. Data are presented in 10-year intervals between 1940 and 1970.

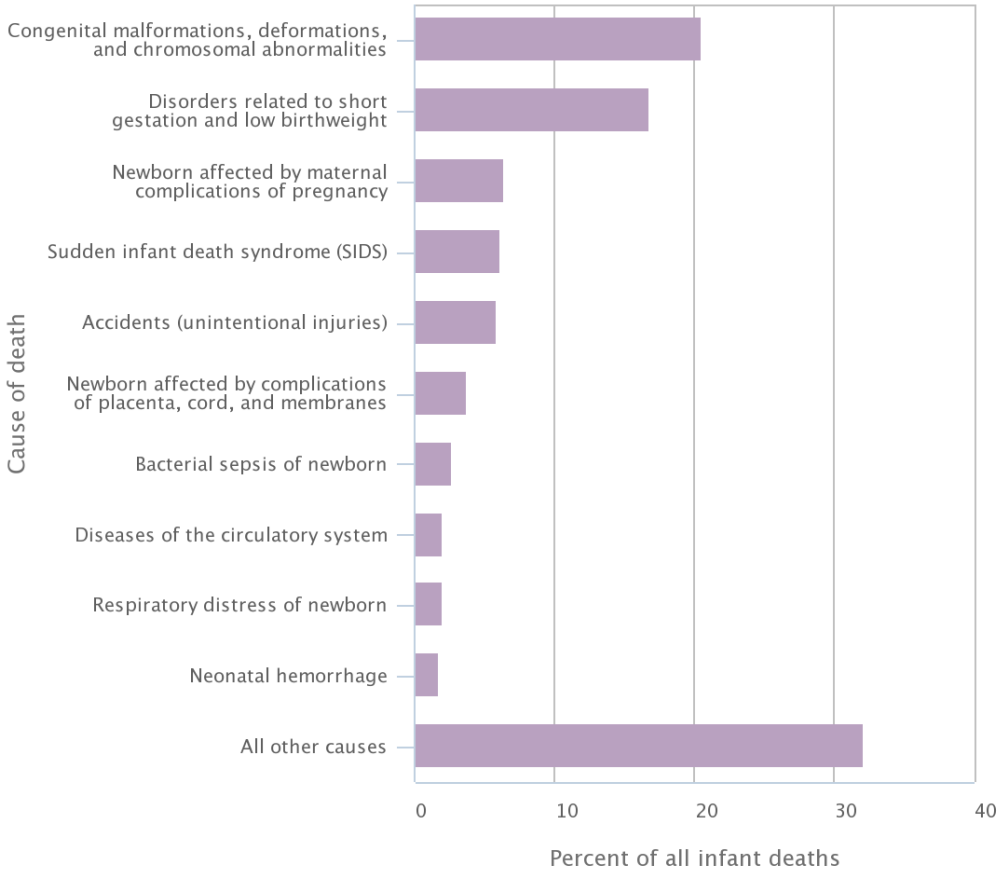
Data from 1940–2017 for total, males, and females, and from 1940–2015 for blacks and whites are from NCHS, 2019a. Data for whites and blacks from 2016–2017 are from NCHS, 2019c, and data for the other reported groups from 1995 onward are from NCHS, 2019b.

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: NCHS, 2019a,b,c

Exhibit 2. Leading causes of infant death in the U.S., 2017

All races



"Infant deaths" are those occurring before the age of 1.

Trend analysis has not been conducted because these data represent a single snapshot in time. For more information about uncertainty, variability, and statistical analysis, view the technical documentation for this indicator.

Data source: CDC, 2020

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