

PRETERM BIRTH

Babies born preterm, before 37 completed weeks of gestation, are at increased risk of immediate life-threatening health problems, as well as long-term complications and developmental delays. Among preterm infants, complications that can occur during the newborn period include respiratory distress, jaundice, anemia, and infection, while long-term complications can include learning and behavioral problems, cerebral palsy, lung problems, and vision and hearing loss. As a result of these risks, preterm birth is a leading cause of infant death and childhood disability. Although the risk of complications is greatest among those babies who are born the earliest, even those babies born “late preterm” (34 to 36 weeks’ gestation) are more likely than

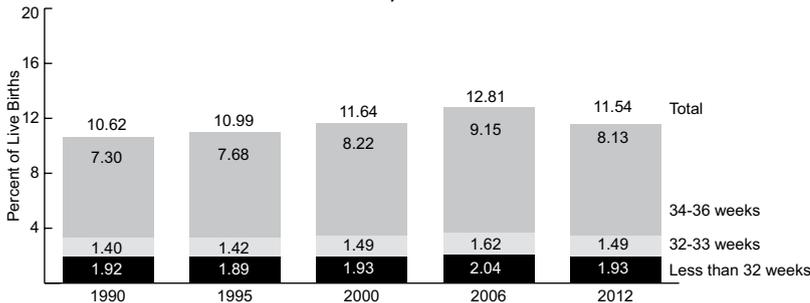
full-term babies to experience morbidity and mortality.¹

According to preliminary data for 2012, 11.54 percent of infants were born preterm. Overall, 8.13 percent of babies were born at 34 to 36 weeks’ gestation, 1.49 percent were born at 32–33 weeks’ gestation, and 1.93 percent were “very preterm” (less than 32 weeks’ gestation). Between 1990 and 2006, the preterm birth rate increased more than 20 percent from 10.62 to 12.80 percent, but has declined by nearly 10 percent since 2006. Recent declines are greatest among the largest category of late preterm infants born at 34 to 36 weeks’ gestation, which may be linked to practice-based efforts to reduce “elective” deliveries prior to 39 weeks that are not medically necessary.²

The preterm birth rate varies by race and ethnicity. In 2012, according to preliminary data, 16.53 percent of babies born to non-Hispanic Black women were born preterm, compared to 10.29 percent of babies born to non-Hispanic White women, and 10.15 percent of babies born to Asian/Pacific Islander women. Among babies born to Hispanic women, 11.58 percent were born preterm, while the same was true for 13.25 percent of babies born to American Indian/Alaska Native women. The causes of preterm birth are not well understood, but are linked to infection and vascular disease, as well as medical conditions, such as diabetes and hypertension, which may necessitate labor induction or cesarean delivery.³

Preterm Birth, by Completed Weeks of Gestation, 1990–2012*

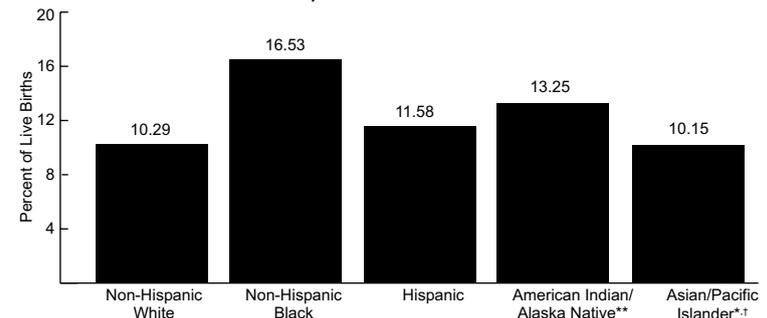
Source (I.1, I.2): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Data for 2012 are preliminary.

Preterm Birth, by Maternal Race/Ethnicity, 2012*

Source (I.1): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Data are preliminary. **Includes Hispanics. †Separate data for Asians and Native Hawaiians and Other Pacific Islanders not available.

LOW BIRTH WEIGHT

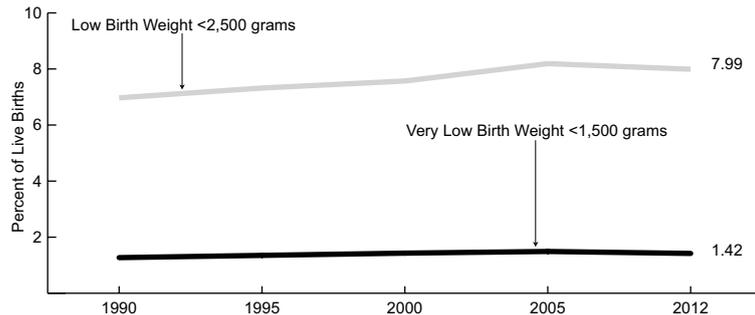
Infants born at low birth weight (less than 2,500 grams or 5.5 pounds) and especially very low birth weight (less than 1,500 grams or 3.25 pounds) are more likely than infants of normal birth weight to die in the first year of life and to experience long-range physical and developmental health problems. The majority of very low birth weight infants are born prematurely, whereas those born at moderately low birth weight include a mix of prematurity as well as fetal growth restriction, which may be related to factors such as maternal hypertension, tobacco smoke exposure, or inadequate weight gain during pregnancy.⁴

According to preliminary data for 2012, 7.99 percent of infants were born at low birth weight, including 1.42 percent who were born at very low birth weight. After steady increases, rates of low and very low birth weight peaked in 2006 at 8.26 and 1.49 percent, respectively, and have declined only slightly since then. Reasons for the increase in low birth weight may mirror those behind increases in prematurity, including increases in obstetric interventions, maternal age, and fertility treatments.⁵ A rise in multiple births, which increase with maternal age and fertility treatments and are at high risk of low birth weight, has strongly influenced the rise in low birth weight; however, rates of low birth weight have also increased for singleton births.⁵

Infants born to non-Hispanic Black women have the highest rates of low and very low birth weight (13.18 and 2.94 percent, respectively), levels that are about two or more times greater than for infants born to women of other race and ethnic groups. For example, low and very low birth weight rates among non-Hispanic Whites were 6.97 and 1.13 percent, respectively. Given their heightened risk of death, the large disparity in very low birth weight is a major contributor to the mortality gap between non-Hispanic Black and White infants.⁶ In 2009, 23.1 percent of very low birth weight infants died in the first year of life, compared to 5.3 percent of all low birth weight infants and 0.2 percent of normal birth weight infants.⁷

Low and Very Low Birth Weight, 1990–2012*

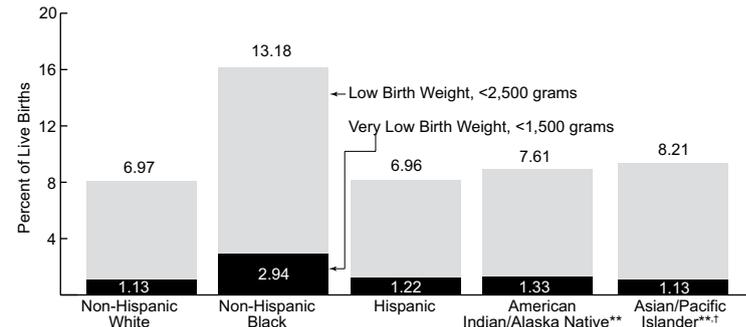
Source (I.1, I.2): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Data for 2012 are preliminary.

Low and Very Low Birth Weight, by Maternal Race/Ethnicity, 2012*

Source (I.1): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Data for 2012 are preliminary. **Includes Hispanics. †Separate data for Asians and Native Hawaiians and Other Pacific Islanders not available.

INFANT MORBIDITY

Morbidity is a measure of disease, illness or injury within a population. Like infant mortality, conditions resulting from prematurity and low birth weight are strongly associated with infant morbidity.^{8,9} Infant morbidity can be measured by the presence of diagnosed conditions, such as respiratory distress and hyperbilirubinemia (or jaundice), as well as by service utilization indicators, including admission to a neonatal intensive care unit (NICU) and length of hospital stay.¹⁰

In 2009-2010, 12.1 percent of infants in a 30-state area were reported to have been admitted to a neonatal intensive care unit (NICU). A NICU is a department within the hospital that provides constant, specialized care for in-

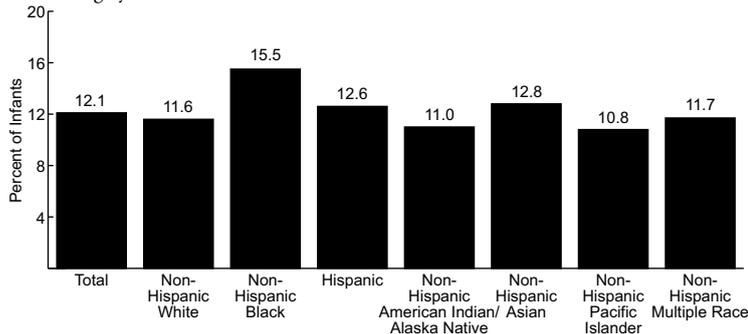
fants who are born sick, prematurely and/or at a very low birth weight. Not all hospitals have a NICU. NICU admission varied by maternal characteristics. NICU admission was lowest among infants born to mothers with 16 or more years of education (10.7 percent, compared to 12.9 percent of infants born to mothers with less than 12 years of education and approximately 12.5 percent of those born to mothers with 12 to 15 years of education; data not shown). Rates of NICU admission were highest among infants born to non-Hispanic Black mothers, with one-sixth (15.5 percent) having been admitted to the NICU, compared to 11.6 percent of infants born to non-Hispanic White mothers, 12.6 percent born to Hispanic mothers, and 12.8 percent born to non-Hispanic Asian mothers.

Asian mothers.

In 2009-2010, more than 7 percent of infants stayed in the hospital for 6 or more days. The proportion of infants with the longest hospital stays varied by maternal age, education, and race/ethnicity factors. Infants born to mothers aged 35 years and older were more likely to have a stay of this duration than those born to mothers aged 20-34 years, as were infants born to mothers with less education and infants born to non-Hispanic Black mothers. For example, 8.4 percent of infants born to mothers with 12 years of education had long hospital stays of six or more days, compared to 5.6 percent of those born to mothers with 16 or more years of education (data not shown).

NICU Admission, by Race/Ethnicity, 2009-2010*

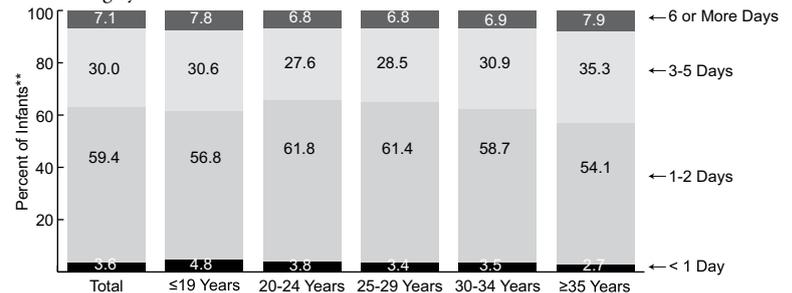
Source (I.3): Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System



*Includes data from a total of 30 states and New York City; 25 states contributed both years. Mothers completed surveys between 2 and 9 months postpartum.

Hospital Length of Stay, by Maternal Age, 2009-2010*

Source (I.3): Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System



*Includes data from a total of 30 states and New York City; 25 states contributed both years. Mothers completed surveys between 2 and 9 months postpartum. **Totals may not equal 100 due to rounding.

INFANT MORTALITY

Based on preliminary data for 2011, 23,910 infants died before their first birthday, reflecting an infant mortality rate of 6.05 deaths per 1,000 live births. This represents a decrease of 11.9 percent from the 2005 rate (6.87 per 1,000 live births). Currently, about two-thirds of infant deaths in the United States occur before 28 days

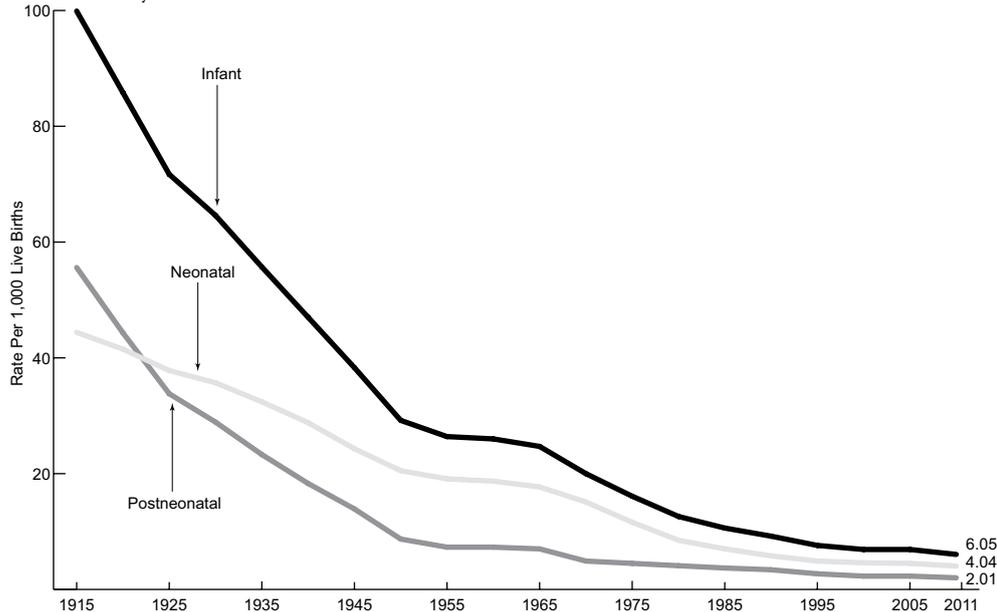
(neonatal mortality: 4.04 per 1,000 live births), with the remaining third occurring in the postneonatal period between 28 days and under 1 year (2.01 per 1,000 live births). Neonatal mortality is generally related to short gestation and low birth weight and other perinatal conditions related to prematurity as well as congenital malformations, while postneonatal mortality is

mostly related to Sudden Infant Death Syndrome (SIDS), congenital malformations, and unintentional injuries.¹¹ In 2011, the leading causes of infant mortality were congenital malformations, followed by disorders related to short gestation and low birth weight, and SIDS.¹² However, when multiple causes related to prematurity are grouped, preterm birth becomes the leading cause of infant death in the United States, accounting for over a third of all infant deaths.¹³

With the exception of plateaus in 1955-1959 and 2000-2005, infant mortality has generally declined since it was first assessed in 1915. The substantial infant mortality decline over the 20th century has been attributed to economic growth, improved nutrition, and new sanitary measures, as well as advances in clinical medicine and access to care.^{14,15} Infant mortality declines in the 1990s were aided particularly by the approval of synthetic surfactants (or substance in the lungs needed for breathing) to reduce the severity of respiratory distress syndrome (RDS), a common affliction of preterm infants, and the recommendation that infants be placed on their backs to sleep to prevent SIDS. The lack of progress between 2000 and 2005 has been attributed to increases in preterm birth,¹⁶ which have begun to decline in the last several years, perhaps due to practice-based efforts to reduce “elective” deliveries prior to 39 weeks that are not medically necessary.¹⁷

Infant, Neonatal, and Postneonatal Mortality Rates,* 1915-2011**

Source (I.4, I.5, I.6): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Infant deaths are under 1 year; neonatal deaths are under 28 days; postneonatal deaths are between 28 days and under 1 year.

**2011 data are preliminary; data from 1915-1932 are a subset from states with birth registration, which became 100% by 1933.

Despite improvements in infant mortality over time, disparities by race and ethnicity persist. Due to inconsistencies in the reporting of race and ethnicity on the birth and death certificate, infant mortality rates by race and ethnicity are more accurately assessed from maternal race and ethnicity, which is achieved by linking infant death certificates to their corresponding birth certificates. In 2009, the latest year of available

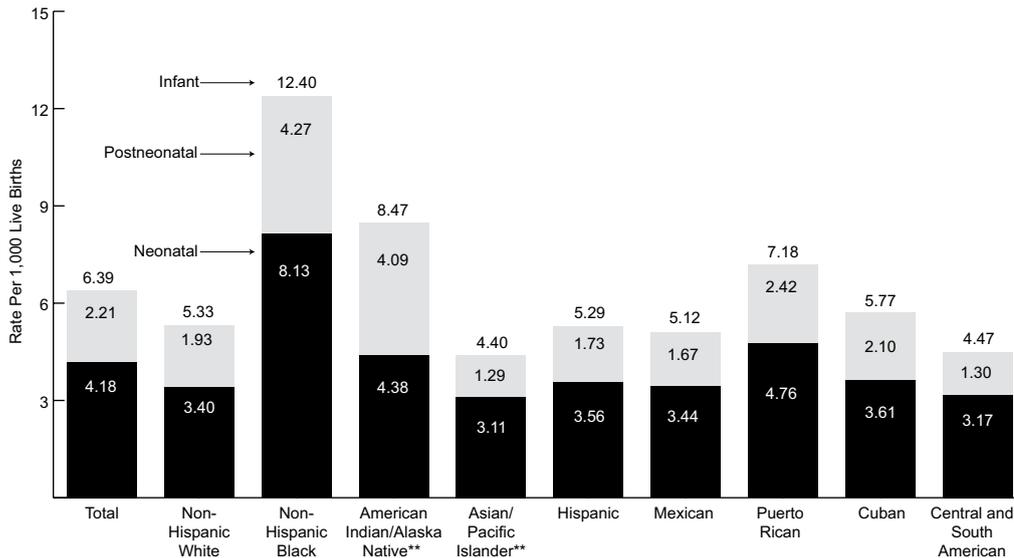
linked data, the infant mortality rate was highest for infants of non-Hispanic Black mothers (12.40 per 1,000 live births)—a rate 2.3 times that of non-Hispanic Whites (5.33 per 1,000). Infant mortality was also higher among infants born to American Indian/Alaska Native and Puerto Rican mothers (8.47 and 7.18 per 1,000, respectively). Although infant mortality was lowest among Asian/Pacific Islanders (4.40 per

1,000), there is considerable variability within this population and higher infant mortality has been shown among Native Hawaiians.¹⁸

Similar to overall infant mortality, neonatal mortality was highest among infants of non-Hispanic Black mothers (8.13 per 1,000), followed by Puerto Rican and American Indian/Alaska Native mothers (4.76 and 4.38 per 1,000, respectively). Postneonatal mortality was more than twice as high for infants of both non-Hispanic black and American Indian/Alaska Native mothers (4.27 and 4.09 per 1,000, respectively) than for non-Hispanic Whites (1.93 per 1,000). Consistent with these patterns in the timing of excess infant mortality, the majority of the infant mortality disparity between non-Hispanic Blacks and non-Hispanic Whites is due to causes related to prematurity and to a lesser extent, SIDS, congenital malformations, and injury.^{13,19} The American Indian/Alaska Native infant mortality gap is mostly explained by SIDS, congenital malformations, prematurity, and injury while the excess among Puerto Rican mothers is mostly related to prematurity.^{13,19}

Infant, Neonatal, and Postneonatal Mortality Rates,* by Race/Ethnicity, 2009

Source (I.7): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Infant deaths are under 1 year; neonatal deaths are under 28 days; postneonatal deaths are between 28 days and under 1 year. Infant deaths are weighted, so numbers may not exactly add to totals due to rounding. **Includes Hispanics.

INTERNATIONAL INFANT MORTALITY

In 2009, the U.S. infant mortality rate (6.4 infant deaths per 1,000 live births) ranked 27th in infant mortality among industrialized nations with populations of 2.5 million or greater, behind most European countries, Canada, Australia, Israel, and Republic of Korea. Japan was ranked first with the lowest infant mortality rate of 2.4 per 1,000 live births, followed by Sweden and Finland with infant mortality rates of with 2.5 and 2.6 deaths per 1,000 live births, respectively. The U.S. did not always rank this low; in 1960, it ranked 11th, with Norway, the Netherlands and Sweden reporting the three lowest rates among industrialized nations that year.

Differences in infant mortality rates among industrialized nations may reflect variation in the definition, measurement, and reporting of fetal and infant deaths. However, analyses by gestational age indicate that this disparity is most likely related to the high rate of preterm birth in the United States.²⁰ Infants born preterm (or less than 37 weeks gestation) have higher rates of death and disability than infants born at term (37 weeks gestation or more). Although the United States compares favorably with European countries with respect to the survival of preterm infants, the higher rate of preterm birth in the U.S. overall significantly impacts the infant mortality

rate. Mortality among infants born at term (37+ weeks' gestation) is also higher in the United States.

International Infant Mortality Rates and Rankings, * Selected Countries, ** 1960 and 2009

Source (I.8): The Organisation for Economic Co-operation and Development (OECD)

Country	Infant Mortality Rates per 1,000 live births		Infant Mortality Rankings*	
	1960	2009	1960	2009
Australia	20.2	4.3	5	19
Austria	37.5	3.8	19	14
Belgium	31.4	3.5	17	11
Canada	27.3	4.9	12	22
Chile	120.3	7.9	27	28
Czech Republic	20.0	2.9	4	4
Denmark	21.5	3.1	8	5
Finland	21.0	2.6	6	3
France	27.7	3.9	13	17
Germany	35.0	3.5	18	11
Greece	40.1	3.1	20	5
Hungary	47.6	5.1	23	23
Ireland	29.3	3.3	15	10
Israel	---	3.8	---	14
Italy	43.9	3.9	22	17
Japan	30.7	2.4	16	1
Mexico	92.3	14.6	26	30
Netherlands	16.5	3.8	2	14
New Zealand	22.6	5.2	10	24
Norway	16.0	3.1	1	5
Poland	56.1	5.6	24	25
Portugal	77.5	3.6	25	13
Republic of Korea	---	3.2	---	8
Slovak Republic	28.6	5.7	14	26
Spain	43.7	3.2	21	8
Sweden	16.6	2.5	3	2
Switzerland	21.1	4.3	7	19
Turkey	189.5	10.2	28	29
United Kingdom	22.5	4.6	9	21
United States	26.0	6.4	11	27

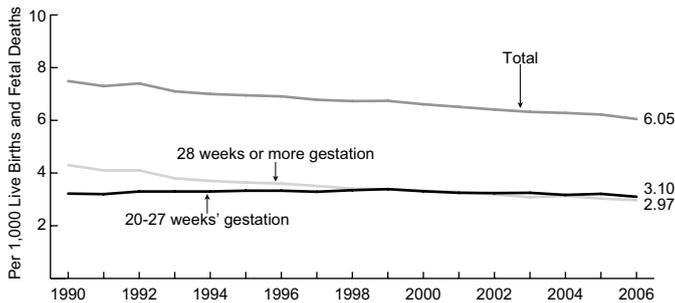
*Rankings are from lowest to highest infant mortality rates (IMR). Countries with the same IMR receive the same rank. Relative rankings may be affected if not all countries have reported data. **Countries with at least 2.5 million population and listed in the OECD database. ---Data not available

FETAL MORTALITY

Fetal mortality is defined as the death of a fetus prior to birth, regardless of gestational age. Based on survey data, more than a million fetal losses are estimated to occur annually in the United States, most of which are early fetal losses, also called miscarriages.²¹ Only fetal deaths at 20 or more weeks' gestation—often called stillbirths—are generally reported by states in the National Vital Statistics System. In 2006, the latest year for which national data have been reported, there were 25,972 fetal deaths at 20 or more weeks' gestation, for a rate of 6.05 fetal deaths per 1,000 live births plus fetal deaths. The number of fetal deaths is similar to the number of infant deaths (28,509 in 2006).²²

Fetal Mortality Rates,* 1990–2006

Source (1.9): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Fetal deaths with stated or presumed period of gestation of 20 weeks or more; cases of unknown gestational age are proportionally assigned according to the known gestational age distribution; rates do not sum to the total due to slight differences in the denominator.

Similar to trends for infant mortality, fetal mortality rates have generally declined over time. Since 1990, fetal mortality rates at 20 weeks or more have fallen by nearly 20 percent from 7.49 to 6.05 per 1,000 in 2006. Most of this decline is attributed to reductions in fetal mortality at 28 weeks or more, which declined from 4.30 to 2.97 per 1,000 between 1990 and 2006.

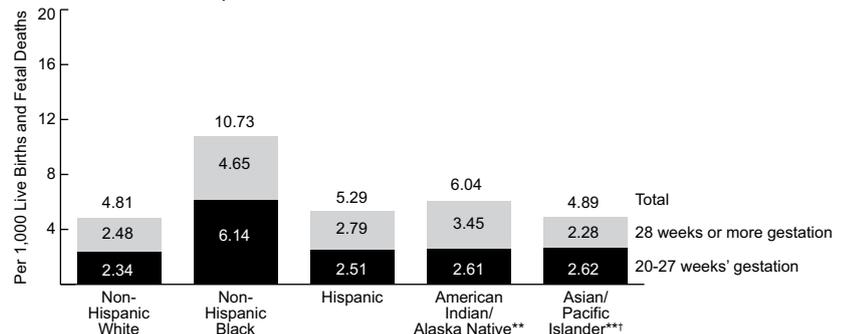
As with infant mortality, there are large differences in fetal mortality by race and ethnicity. In 2006, fetal mortality rates at 20+ weeks were more than twice as high among non-Hispanic Black women as for non-Hispanic White women (10.73 versus 4.81 per 1,000). The majority of this disparity (64 percent) was due to higher

non-Hispanic Black fetal mortality rates at 20–27 weeks' gestation. Relative to non-Hispanic Whites, fetal mortality rates were also higher for non-Hispanic American Indian/Alaska Native and Hispanic women (6.04 and 5.29 per 1,000, respectively).

Causes of fetal death include preterm labor, birth defects, infection, placental problems, such as abruption or inadequate blood flow, and chronic conditions, such as hypertension and diabetes.^{23,24} Avoiding smoking and substance use, maintaining a healthy weight, and preventing and managing chronic conditions prior to and during pregnancy through preconception and prenatal care, may help to reduce risk of stillbirth.²⁴

Fetal Mortality Rates,* by Maternal Race/Ethnicity, 2006

Source (1.9): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Fetal deaths with stated or presumed period of gestation of 20 weeks or more; cases of unknown gestational age are proportionally assigned according to the known gestational age distribution; rates do not sum to the total due to slight differences in the denominator. **Includes Hispanics. †Separate data for Asians and Native Hawaiians and Other Pacific Islanders not available.

BIRTH DEFECTS

Birth defects occur in approximately 3 percent of all live births and are the leading cause of infant mortality, accounting for approximately 20 percent of all infant deaths in the United States in 2009.^{25,26} Birth defects are conditions present at birth that cause structural changes in one or more parts of the body.²⁷ Birth defects develop before a baby is born and generally occur during the first trimester of pregnancy.

Although the causes of most birth defects are unknown, birth defects are thought to be caused by a combination of genetic, behavioral, and environmental factors. Some factors that have been linked to birth defects include: tobacco, alcohol and illicit drug use during pregnancy; uncontrolled medical conditions such as diabetes and obesity; use of some medications during pregnancy; maternal age younger than 20 and over 35 years; a family history of birth defects; and inadequate levels of folic acid (a B vitamin used by our bodies to make new cells) before and during pregnancy.²⁸ Taking folic acid before becoming pregnant has been shown to reduce the risk for neural tube defects by 50-70 percent.²⁸

Congenital heart defects are the most common type of birth defect in the United States, affecting nearly 1% of—or about 40,000—births per year.²⁹ Trisomy 21, or Down syndrome, is a common birth defect with an estimated 6,000

cases identified annually.²⁶ Orofacial clefts, including cleft lip and cleft palate, are another common type of birth defect with approximately 7,000 cases identified annually.²⁶

Screening tests that can identify some birth defects can be administered during both the first and second trimesters of pregnancy and may include blood tests, ultrasounds and/or testing of the placenta or amniotic fluid. Screen-

ing healthy newborns using pulse oximetry can be a useful and cost-effective way to identify babies born with critical congenital heart defects before they are discharged from the birth hospital.³⁰ Although the survival of babies and children with birth defects has been improving, racial and socioeconomic disparities in the survival of these individuals with very special health care needs still persist.^{31,32}

Selected Birth Defects, 2004-2006*

Source (I.10): National Birth Defects Prevention Network

Birth Defects	Cases per Births	Estimated Annual Number of Cases	Prevalence per 10,000 Live Births
Chromosomal anomalies**			
Trisomy 21 (Down syndrome)	1 in 691	6037	14.47
Trisomy 18	1 in 3,762	1109	2.66
Trisomy 13	1 in 7,906	528	1.26
Neural tube defects***			
Spina bifida without anencephaly	1 in 2,858	1460	3.50
Anencephaly	1 in 4,859	859	2.06
Encephalocele	1 in 12,235	341	0.82
Orofacial defects			
Cleft lip with and without cleft palate	1 in 940	4437	10.63
Cleft palate without cleft lip	1 in 1,574	2651	6.35
Cardiovascular defects			
Atrioventricular septal defect	1 in 2,122	1966	4.71
Tetralogy of Fallot	1 in 2,518	1657	3.97
Transposition of great arteries	1 in 3,333	1252	3.00
Hypoplastic left heart syndrome	1 in 4,344	960	2.30
Common truncus	1 in 13,876	301	0.72

*14 programs contributed data: Arkansas, Arizona, California [8-county Central Valley], Colorado, Georgia [5-county metropolitan Atlanta], Illinois, Iowa, Kentucky, Massachusetts, North Carolina, Oklahoma, Puerto Rico, Texas, and Utah. The number of live births represented by these 14 programs from 2004-2006 was 4,038,506. **Estimates adjusted for maternal age. ***Estimates adjusted for maternal race/ethnicity.

SIDS/SUID

In 2010, there were a total of 3,610 or 0.9 sudden unexpected infant deaths (SUID) per 1,000 live births, accounting for 15 percent of all infant deaths. SUID includes sudden infant death syndrome (SIDS) and other sleep-related infant deaths due to unknown cause and accidental suffocation and strangulation in bed.³³ These causes of death have been grouped due to evidence that some deaths previously classified as SIDS are now being assigned to other sleep-related causes of death.³⁴ For example, SIDS rates declined from 1998 to 2001 while death rates due to other unknown causes and accidental suffocation and strangulation in bed were rising. Altogether, SUID generally declined from 1990 to 1998 and has remained relatively stable since

then without significant multi-year changes.

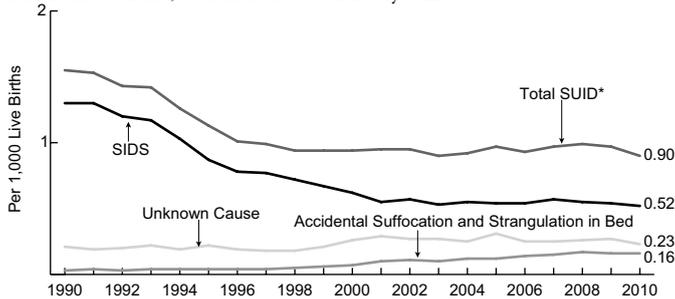
SUID rates vary greatly by race and ethnicity. In 2009, SUID rates were highest for infants born to American Indian/Alaska Native and non-Hispanic Black mothers (2.14 and 1.92 per 1,000, respectively); these rates were more than twice the rate among infants born to non-Hispanic Whites (0.94 per 1,000). The SUID disparity explained 38 percent of the total infant mortality gap between American Indian/Alaska Natives and non-Hispanic Whites and 14 percent of the excess non-Hispanic Black infant mortality compared with non-Hispanic Whites (data not shown). SUID rates were generally lowest for infants born to Hispanic mothers (0.53 per 1,000), except for Puerto Ricans (1.15 per 1,000), and those born to Asian/Pacific Islander

mothers (0.37 per 1,000). However, SUID rates have been shown to be higher among infants born to Native Hawaiian mothers.³⁵ Racial/ethnic differences in safe sleep practices may contribute to SUID disparities (see page 30).

In 2012, the American Academy of Pediatrics released expanded recommendations to promote safe sleep environments and other protective factors that can reduce the risk of sleep-related infant deaths.³⁶ These form the basis of the new Safe to Sleep campaign (formerly Back to Sleep),³⁷ and go beyond the back sleep position, including recommendations such as use of a firm sleep surface without soft bedding, room-sharing without bed-sharing, breastfeeding, and avoiding exposure to tobacco smoke and other drugs.

SUID* Mortality Rates, by Listed Cause of Death, 1990-2010

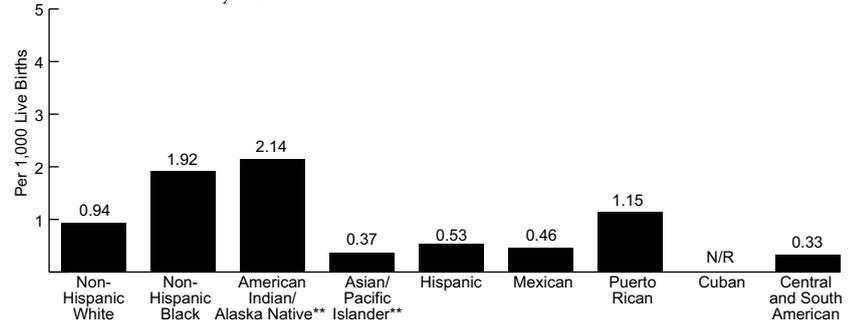
Source (I.11, I.12): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Sudden Unexpected Infant Deaths (SUID) includes SIDS (798.0/R95), Unknown Cause (799.9/R99), and Accidental Suffocation or Strangulation in Bed (E913.0/W75).

SUID* Mortality Rates, by Maternal Race/Ethnicity, 2009

Source (I.13): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Sudden Unexpected Infant Deaths (SUID) includes SIDS (R95), Unknown Cause (R99), and Accidental Suffocation or Strangulation in Bed (W75) **Includes Hispanics. N/R: Fewer than 20 deaths; data did not meet the standard of reliability or precision.

MATERNAL MORBIDITY

Diabetes and hypertension are the most commonly reported health conditions among pregnant women. Diabetes, both chronic and gestational (developing only during pregnancy), may pose health risks to a woman and her baby. Women with gestational diabetes are at increased risk for developing diabetes later in life.³⁸ In 2011, among the 36 states and District of Columbia that collected this information on the revised birth certificate, chronic or pre-existing diabetes was reported in 7.4 per 1,000 live births while gestational diabetes was reported in 48.2 per 1,000 live births. Chronic diabetes was highest among non-Hispanic American Indian/Alaska Native mothers (17.0 per 1,000 live births) and lowest among non-Hispanic White and non-Hispanic Asian mothers (6.4 and 6.6 per 1,000, respectively). However, non-Hispanic Asian mothers had the highest rate of gestational diabetes at 86.8 per 1,000 live births, followed by non-Hispanic Native Hawaiian/Pacific Islander (65.8 per 1,000).

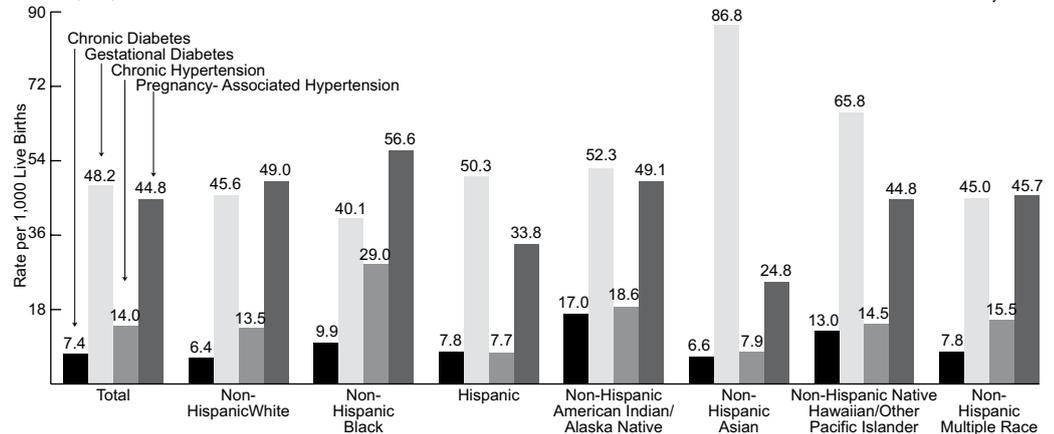
Hypertension during pregnancy can also be either chronic in nature or gestational. Severe hypertension during pregnancy can result in pre-eclampsia, fetal growth restriction, and early delivery.³⁹ In 2011, in the 36 states and District of Columbia that used the revised birth certificate, chronic and pregnancy-associated hypertension was reported in 14.0 and 44.8 per 1,000 live

births, respectively. Chronic hypertension was most common in non-Hispanic Black women (29.0 per 1,000 live births) and least common among Hispanic and non-Hispanic Asian women (7.7 and 7.9 per 1,000, respectively). Pregnancy-associated hypertension was reported in about 50 per 1,000 live births to non-Hispanic Black, non-Hispanic American Indian/Alaska Native, and non-Hispanic White mothers and was lowest among non-Hispanic Asian mothers (24.8 per 1,000). Although these conditions are known to be under-reported on the birth certificate, patterns by race and ethnicity are not likely to be affected.⁴⁰

A recent national study of hospital discharge data found that severe maternal morbidity, which includes life-threatening complications such as kidney or heart failure, blood clots, infection, and hemorrhage, occurs at a rate of 12.9 per 1,000 delivery hospitalizations.⁴¹ Severe maternal morbidity is more than 100 times as common as pregnancy-related mortality—translating to about 52,000 women affected annually—and it is estimated to have increased by 75 percent over the past decade. Rises in chronic conditions, including obesity, diabetes, hypertension, and cardiovascular disease, are likely to have contributed to this increase.

Selected Maternal Morbidities and Risk Factors in Pregnancy, by Race/Ethnicity, 2011*

Source (I.14): Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



*Data are from 36 states and the District of Columbia that implemented the 2003 revision of the death certificate as of January 1, 2011, representing 83 percent of all U.S. births.

PREGNANCY-RELATED MORTALITY

A pregnancy-related death is defined as a death which occurs during or within one year of the end of a pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes such as injury.⁴² This definition includes more deaths than the traditional definition of maternal mortality, which counts pregnancy-related deaths only up to 42 days after the end of pregnancy. Although maternal mortality in the United States declined dramatically over the last century, there has been some reversal of this trend in the last several decades, and racial and ethnic disparities in maternal and pregnancy-

related mortality persist.⁴²⁻⁴⁴

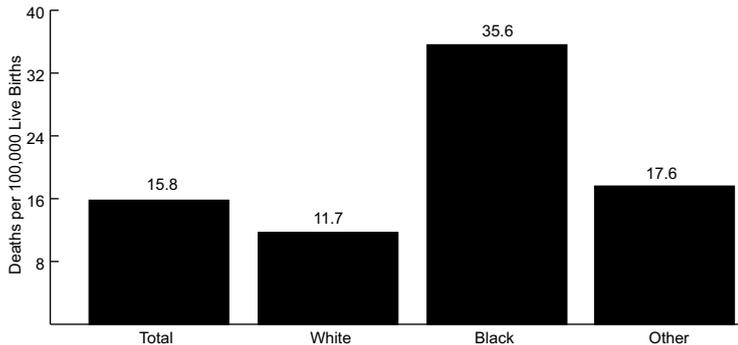
In 2006–2009, the latest years for which data are available, a total of 2,689 deaths were found to be pregnancy-related at a rate of 15.8 deaths per 100,000 live births. The pregnancy-related mortality rate has more than doubled from 1987 levels of 7.2 deaths per 100,000.⁴² This dramatic rise may reflect improved ascertainment of pregnancy-related deaths as well as increases in chronic conditions and severe maternal morbidity.^{41,44} The pregnancy-related mortality ratio among Black women was 3 times the rate for White women in 2006–2008 (35.6 versus 11.7 per 100,000), a disparity that has remained relatively constant. The pregnancy-related mortality ratio also increases with age. Women aged 35–39

years are more than twice as likely to die from pregnancy-related causes as women aged 20–24; for women older than 39 years, the risk increases five-fold (data not shown).⁴⁴

Some of the most common causes of pregnancy-related death in 2006–2009 were cardiovascular disease (14.6%), infection or sepsis (14.0%), non-cardiovascular medical conditions (11.9%) diseases of the heart muscle (cardiomyopathy, 11.8%), and uncontrolled bleeding (hemorrhage, 11.0%). The proportion of pregnancy-related deaths due to cardiovascular disease and cardiomyopathy have increased significantly since 1987, while the percentage of deaths attributable to hemorrhage and hypertensive disorders of pregnancy have declined.⁴⁴

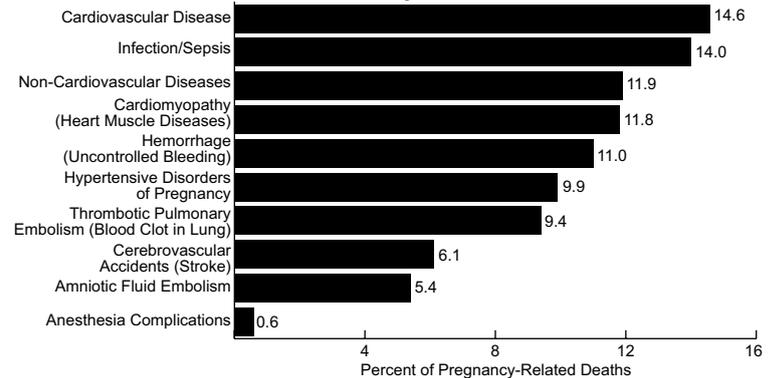
Pregnancy-Related Mortality Ratios, by Race, 2006–2009

Source (I.15): Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Pregnancy Mortality Surveillance System



Leading Causes of Pregnancy-Related Deaths,* 2006–2009

Source (I.15): Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Pregnancy Mortality Surveillance System



*The cause of death was unknown for 5.3% of all pregnancy-related deaths.