HEALTH STATUS AND BEHAVIORS

Monitoring the health status of infants, children, and adolescents allows health professionals, program planners, and policymakers to assess the impact of past and current health interventions and prevention programs and identify areas of need within the child population. Although indicators of child health and well-being are often assessed on an annual basis, some surveillance systems collect data at regular intervals, such as every 2, 4, or 5 years. Trends can be identified by examining and comparing data from one data collection period to the next when multiple years of data are available.

In the following section, mortality, disease, and health behavior indicators are presented by age group: infants, children, and adolescents. The health status indicators in this section are based on vital statistics and national surveys and surveillance systems. Population-based samples are designed to yield information that is representative of the maternal and child populations that are affected by, or in need of, specific health services or interventions.
FETAL MORTALITY

Fetal mortality is defined as the death of a fetus before 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, which are also called miscarriages. Only fetal deaths at 20 or more weeks’ gestation—often called stillbirths—are generally reported by states in the National Vital Statistics System. In 2012, there were 24,073 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 as high as the number of infant deaths (24,001 in 2011), which doubles the health and emotional toll when fetal and infant mortality are considered together. Causes of fetal death are similar to causes of infant death in the first month of life, including placental problems and preterm labor, birth defects, infection, umbilical cord accidents, and chronic conditions such as hypertension and diabetes.

Fetal mortality rates at 20 weeks or more have declined from 7.49 to 6.05 per 1,000 between 1990 and 2006 (figure 1). Most of this decline is attributed to reductions in fetal mortality at 28 weeks or more gestation, which declined from 4.30 to 2.97 per 1,000 between 1990 and 2006. However, there has been no change in fetal mortality from 2006 to 2012, a period during which infant mortality declined (see page on infant mortality).

As with infant mortality, there are large differences in fetal mortality rates by race and ethnicity. In 2012, fetal mortality rates at 20 or more weeks’ gestation were more than twice as high among non-Hispanic Black women as among non-Hispanic White women (10.67 versus 4.91 per 1,000; figure 2). Relative to non-Hispanic Whites, fetal mortality rates were also higher for American Indian/Alaska Native and Puerto Rican women (6.64 and 6.62 per 1,000, respectively).

Fetal mortality also varies by maternal age, with higher rates observed among younger and older women. In 2012, fetal mortality was highest among women aged 35 years and older (7.65 per 1,000), followed by those under 20 years of age (6.90 per 1,000). Women aged 25–34 years had the lowest fetal mortality rates, at about 5.50 per 1,000.

Prevention opportunities that may reduce the risk of stillbirth include avoiding smoking, substance use, and certain prescription and over-the-counter medications; maintaining a healthy weight; and preventing and managing chronic conditions before and during pregnancy through preconception and prenatal care. Careful clinical monitoring for women with high-risk conditions or vaginal bleeding may also avert fetal deaths, as early cesarean delivery can be lifesaving when medically necessary.
Figure 2. Fetal Mortality Rates per 1,000 Live Births and Fetal Deaths,* by Maternal Race/Ethnicity, 2012

*Fetal deaths with a 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. **May include Hispanics. †Separate data for Asians, Native Hawaiians, and other Pacific Islanders are not available.

Data Sources


Endnotes


INFANT MORTALITY

Infant mortality, or the death of a child within the first year of life, is a sentinel measure of population health that reflects the underlying well-being of mothers and families, as well as the broader community and social environment that cultivate health and access to health-promoting resources. In 2011, 24,001 infants died before their first birthday in the United States, representing an infant mortality rate of 6.07 deaths per 1,000 live births (table 1). Among grouped summary causes of death, preterm-related conditions accounted for 35.4 percent of all infant deaths, followed by congenital anomalies (20.9 percent; see page on birth defects), other perinatal conditions not directly related to prematurity (14.5 percent), and sudden unexpected infant death (SUID, 14.2 percent; see page on sleep-related SUID). About two-thirds of infant deaths occur in the neonatal period or within the first month of life (4.06 per 1,000 live births), with the remaining third occurring in the postneonatal period from 1 month to less than 1 year (2.01 per 1,000 live births). Neonatal mortality is predominantly related to prematurity, congenital anomalies, and other perinatal conditions; postneonatal mortality is mostly attributable to SUID, congenital anomalies, infection, and injury.

With the exception of 2000–2005, the U.S. infant mortality rate had been consistently declining at least every few years since it was first assessed in 1915 (figure 1). The substantial infant mortality decline over the 20th century has been attributed to economic growth, improved nutrition, new sanitary measures, and advances in clinical medicine and access to care. Infant mortality declines in the 1990s were aided particularly by the approval of synthetic surfactants to reduce the severity of respiratory distress syndrome (a common affliction of preterm infants) and the recommendation that infants be placed on their backs to sleep to prevent sudden infant death syndrome. The lack of progress between 2000 and 2005 has been attributed to increases in preterm birth and obstetric interventions such as inductions and cesareans, which have begun to decline in the last several years along with the infant mortality rate.

Table 1: Infant, Neonatal, and Postneonatal Mortality Rates per 1,000 Live Births,* by Summary Cause of Death,** 2011

<table>
<thead>
<tr>
<th>Summary Cause of Death</th>
<th>Infant Mortality</th>
<th>Neonatal Mortality</th>
<th>Postneonatal Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Rate per 1,000 Live Births</td>
<td>Percent of Deaths</td>
</tr>
<tr>
<td>All causes</td>
<td>24,001</td>
<td>6.07</td>
<td>100.0%</td>
</tr>
<tr>
<td>Preterm-related conditions</td>
<td>8,500</td>
<td>2.15</td>
<td>35.4%</td>
</tr>
<tr>
<td>Congenital anomalies</td>
<td>5,016</td>
<td>1.27</td>
<td>20.9%</td>
</tr>
<tr>
<td>Other perinatal conditions</td>
<td>3,478</td>
<td>0.88</td>
<td>14.5%</td>
</tr>
<tr>
<td>SUID</td>
<td>3,099</td>
<td>0.86</td>
<td>14.2%</td>
</tr>
<tr>
<td>Infection</td>
<td>906</td>
<td>0.23</td>
<td>3.8%</td>
</tr>
<tr>
<td>Injury</td>
<td>904</td>
<td>0.23</td>
<td>3.8%</td>
</tr>
<tr>
<td>All other causes</td>
<td>1,797</td>
<td>0.45</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

*Infant deaths are of those less than 1 year old; neonatal deaths are of those less than 28 days old; postneonatal deaths are of those at least 28 days old and less than 1 year old. **Preterm-related conditions: infant born preterm (<37 weeks) and an ICD-10 underlying cause-of-death code of K550, P000, P010, P011, P015, P020, P021, P027, P070–P073, P102, P220–229, P250–279, P280, P281, P360–369, P520–523, or P77. Developed by: Callaghan WM, MacDorman MF, Rasmussen SA, Qin C, Lackritz EM. The contribution of preterm birth to infant mortality rates in the United States. Pediatrics. October 2006;118(4):1566–1573. Other perinatal conditions: All other codes in P00–P96, regardless of prematurity. Congenital anomalies: Q00–Q99. SUID: R95–R99 and W75. Infections: A00–B99, G00, G03, I30, I33, I40, and J00–J42. Injury: J09, U01, V01–W74, and W76–Y36.

Figure 1. Infant, Neonatal, and Postneonatal Mortality Rates per 1,000 Live Births,* 1915–2011**

*Infant deaths are of those less than 1 year old; neonatal deaths are of those less than 28 days old; postneonatal deaths are of those at least 28 days old and less than 1 year old. **Data from 1915–1932 are a subset from states with birth registration, which became 100 percent by 1933.
In 2011, the U.S. infant mortality rate ranked 27th among industrialized nations, behind most European countries, Australia, Canada, Israel, and South Korea (table 2). Sweden had the lowest infant mortality rate, 2.1 per 1,000 live births, followed by Japan and Finland with infant mortality rates of 2.3 and 2.4 deaths per 1,000 live births, respectively. The United States 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. 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 United States significantly affects the infant mortality rate. Mortality among infants born at term (37 or more weeks’ gestation) is also higher in the United States.

Large and persistent disparities by race and ethnicity and educational attainment may also contribute to higher rates of infant mortality in the United States relative to other countries. With respect to maternal education, infant mortality decreases with increasing levels of education. In 2011, among the 33 states and the District of Columbia that had implemented the 2003 U.S. Standard Certificate of Live Birth as of January 1, 2010, infants born to mothers with less than a high school degree were more than twice as likely to die in their first year of life than infants born to mothers with a bachelor’s degree or higher (7.54 versus 3.63 per 1,000). Educational disparities in both neonatal and postneonatal mortality were present; however, the postneonatal disparity was higher, with infants of mothers with less than a high school diploma 1.69 times as likely to die in the first month of life and 3.26 times as likely to die between 1 month and 1 year of life as infants of mothers with a college degree or higher. If all infants in the United States had the same risk of death as those born to mothers with a college degree or higher, the United States would climb from 27th to 16th in international infant mortality rankings and tie with Austria, Germany, and the Netherlands.

### Table 2: International Infant Mortality Rates and Rankings,* Selected Countries,** 1960 and 2011

<table>
<thead>
<tr>
<th>Country</th>
<th>1960 Rate per 1,000 Live Births</th>
<th>Rank</th>
<th>2011 Rate per 1,000 Live Births</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>20.2</td>
<td>5</td>
<td>3.8</td>
<td>19</td>
</tr>
<tr>
<td>Austria</td>
<td>37.5</td>
<td>19</td>
<td>3.6</td>
<td>16</td>
</tr>
<tr>
<td>Belgium</td>
<td>31.4</td>
<td>17</td>
<td>3.4</td>
<td>10</td>
</tr>
<tr>
<td>Canada</td>
<td>27.3</td>
<td>12</td>
<td>4.8</td>
<td>23</td>
</tr>
<tr>
<td>Chile</td>
<td>120.3</td>
<td>27</td>
<td>7.7</td>
<td>28</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>20.0</td>
<td>4</td>
<td>2.7</td>
<td>5</td>
</tr>
<tr>
<td>Denmark</td>
<td>21.5</td>
<td>8</td>
<td>3.5</td>
<td>12</td>
</tr>
<tr>
<td>Finland</td>
<td>21.0</td>
<td>6</td>
<td>2.4</td>
<td>3</td>
</tr>
<tr>
<td>France</td>
<td>27.7</td>
<td>13</td>
<td>3.5</td>
<td>12</td>
</tr>
<tr>
<td>Germany</td>
<td>35.0</td>
<td>18</td>
<td>3.6</td>
<td>16</td>
</tr>
<tr>
<td>Greece</td>
<td>40.1</td>
<td>20</td>
<td>3.4</td>
<td>10</td>
</tr>
<tr>
<td>Hungary</td>
<td>47.6</td>
<td>23</td>
<td>4.9</td>
<td>24</td>
</tr>
<tr>
<td>Ireland</td>
<td>29.3</td>
<td>15</td>
<td>3.5</td>
<td>12</td>
</tr>
<tr>
<td>Israel</td>
<td>NA</td>
<td>NA</td>
<td>3.5</td>
<td>12</td>
</tr>
<tr>
<td>Italy</td>
<td>43.9</td>
<td>22</td>
<td>2.9</td>
<td>6</td>
</tr>
<tr>
<td>Japan</td>
<td>30.7</td>
<td>16</td>
<td>2.3</td>
<td>2</td>
</tr>
<tr>
<td>South Korea</td>
<td>NA</td>
<td>NA</td>
<td>3.0</td>
<td>7</td>
</tr>
<tr>
<td>Mexico</td>
<td>92.3</td>
<td>26</td>
<td>13.7</td>
<td>30</td>
</tr>
<tr>
<td>Netherlands</td>
<td>16.5</td>
<td>2</td>
<td>3.6</td>
<td>16</td>
</tr>
<tr>
<td>New Zealand</td>
<td>22.6</td>
<td>10</td>
<td>5.2</td>
<td>26</td>
</tr>
<tr>
<td>Norway</td>
<td>16.0</td>
<td>1</td>
<td>2.4</td>
<td>3</td>
</tr>
<tr>
<td>Poland</td>
<td>56.1</td>
<td>24</td>
<td>4.7</td>
<td>22</td>
</tr>
<tr>
<td>Portugal</td>
<td>77.5</td>
<td>25</td>
<td>3.1</td>
<td>8</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>28.6</td>
<td>14</td>
<td>4.9</td>
<td>24</td>
</tr>
<tr>
<td>Spain</td>
<td>43.7</td>
<td>21</td>
<td>3.2</td>
<td>9</td>
</tr>
<tr>
<td>Sweden</td>
<td>16.6</td>
<td>3</td>
<td>2.1</td>
<td>1</td>
</tr>
<tr>
<td>Switzerland</td>
<td>21.1</td>
<td>7</td>
<td>3.8</td>
<td>19</td>
</tr>
<tr>
<td>Turkey</td>
<td>189.5</td>
<td>28</td>
<td>7.7</td>
<td>28</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>22.5</td>
<td>9</td>
<td>4.3</td>
<td>21</td>
</tr>
<tr>
<td>United States</td>
<td>26.0</td>
<td>11</td>
<td>6.1</td>
<td>27</td>
</tr>
</tbody>
</table>

*Rankings are from lowest to highest infant mortality rates (IMRs). 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 people and listed in the Organisation for Economic Co-operation and Development database. NA = data not available.
In 2011, the infant mortality rate was highest for infants of non-Hispanic Black mothers (11.45 per 1,000 live births)—a rate 2.3 times that of non-Hispanic Whites (5.07 per 1,000; figure 2). Infant mortality was also higher among infants born to American Indian/Alaska Native and Puerto Rican mothers (8.21 and 7.84 per 1,000, respectively). Infant mortality was lowest among Cubans, Central and South Americans, and Asian/Pacific Islanders (~4.35 per 1,000); however, there is considerable variability within the Asian/Pacific Islander population, and higher infant mortality has been shown among Native Hawaiians. Excess prematurity and SUID tend to be the largest proximate causes of racial and ethnic disparities in infant mortality. If all U.S. infants had the same risk of dying as non-Hispanic Whites, the U.S. ranking among industrialized countries would move from 27th to 26th.

Infant mortality prevention strategies include clinical and population-based efforts to promote the health of women before and between pregnancies to prevent and manage chronic conditions and risk factors, such as diabetes, hypertension, smoking, unintended pregnancy, and short birth intervals, which may lead to prematurity, low birth weight, and congenital anomalies. Improving access to risk-appropriate prenatal and newborn care, such as progesterone therapy, antenatal steroids, and regionalized perinatal systems, can also reduce prematurity or morbidity among preterm infants. In addition, efforts to promote positive postpartum behaviors, such as breastfeeding, smoking cessation, and safe sleep practices, can help reduce the risk of SUID. Finally, programmatic and policy interventions to address the fundamental social determinants of health, such as education and housing, would reduce virtually all causes of infant death. Many of these prevention opportunities are being addressed through various state and community-based initiatives such as the Collaborative Improvement and Innovation Network (CoIN) to reduce infant mortality, the Healthy Babies Initiative, the Strong Start Initiative, Healthy Start, Best Babies Zones, and the Institute for Equity in Birth Outcomes, with support from multiple prevention components of the Affordable Care Act.

### Table: Infant, Neonatal, and Postneonatal Mortality Rates, by Maternal Race/Ethnicity, 2011

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Total Mortality Rate (per 1,000 live births)</th>
<th>Neonatal Mortality Rate (per 1,000 live births)</th>
<th>Postneonatal Mortality Rate (per 1,000 live births)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic White</td>
<td>5.07</td>
<td>1.76</td>
<td>3.31</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>7.62</td>
<td>1.76</td>
<td>3.84</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>4.70</td>
<td>1.26</td>
<td>3.51</td>
</tr>
<tr>
<td>Asian/Pacific Islanders</td>
<td>3.10</td>
<td>1.26</td>
<td>1.84</td>
</tr>
<tr>
<td>Hispanic (total)</td>
<td>3.63</td>
<td>1.52</td>
<td>2.11</td>
</tr>
<tr>
<td>Mexican</td>
<td>3.51</td>
<td>1.48</td>
<td>2.03</td>
</tr>
<tr>
<td>Puerto Rican</td>
<td>5.29</td>
<td>2.55</td>
<td>2.74</td>
</tr>
<tr>
<td>Cuban</td>
<td>3.46</td>
<td>0.88</td>
<td>2.58</td>
</tr>
<tr>
<td>Central and South American</td>
<td>3.24</td>
<td>1.12</td>
<td>2.12</td>
</tr>
</tbody>
</table>

*Infant deaths are of those less than 1 year old; neonatal deaths are of those less than 28 days old; postneonatal deaths are of those at least 28 days old and less than 1 year old. **May include Hispanics. †Separate data for Asians, Native Hawaiians, and other Pacific Islanders are not available.
Data Sources


Figure 2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. 2011 Linked Birth/Infant Death File. Analyzed by the U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau.

Endnotes


PRETERM BIRTH AND LOW BIRTH WEIGHT

Babies born preterm (before 37 completed weeks of gestation) or at low birth weight (less than 2,500 grams or 5.5 pounds) are at increased risk of immediate life-threatening health problems as well as long-term complications and developmental delays. Complications that can occur during the newborn period include respiratory distress, jaundice, anemia, and infection. Long-term complications can include learning and behavioral problems, cerebral palsy, lung problems, and vision and hearing loss.1,2

As a result of these risks, preterm birth and low birth weight are leading causes of infant death and childhood disability. Babies who are born the earliest and smallest have the highest risks of morbidity and mortality. For example, infants born very preterm (less than 32 weeks’ gestation) or at a very low birth weight (less than 1,500 grams) have 89 and 110 times the risk of dying in the first year of life as their full-term and non-low birth weight counterparts, respectively (see page on infant mortality). In other words, more than half of all infant deaths occur among the less than 2 percent of infants born very preterm or at low birth weight. However, even babies born “late preterm” (34–36 weeks’ gestation) or at moderately low birth weight (1,500–2,499 grams) are more likely than full-term and normal birth weight babies to experience morbidity and mortality. Preterm birth and low birth weight exact a heavy societal toll with the annual economic burden related to preterm birth estimated to exceed $26 billion, including costs for medical care and early intervention as well as lost productivity due to disabling conditions.3

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.3,4 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 that may be related to factors such as maternal hypertension, tobacco smoke exposure, and inadequate weight gain during pregnancy.2

In 2012, 11.55 percent of infants were born preterm and 7.99 percent were born at low birth weight. Less than 2 percent were born very preterm (1.93 percent) or at very low birth weight (1.42 percent). Between 1990 and 2006, the preterm birth rate increased more than 20 percent, from 10.62 to 12.80 percent; and the rate of very preterm birth increased by 6 percent, from 1.92 to 2.04 percent (figure 1). Rates of low and very low birth weight also peaked in 2006 at 8.26 and 1.49 percent, respectively, with 19 and 17 percent respective increases over 1990 levels. Reasons for the rise in preterm birth and low birth weight include increases in obstetric interventions, maternal age, and fertility treatments, which are more likely to result in multiple births.4,5 Since the 2006 peak, preterm birth declined by 10 percent and very preterm birth declined by 6 percent, while declines in low and very low birth weight were more modest at 3 and 4 percent, respectively. Reasons for these recent declines are not fully known but may be associated with declines in nonmarital childbirth6 and obstetric interventions, such as “elective” or non-medically indicated deliveries at less than 39 weeks.7

Preterm birth and low birth weight vary by race and ethnicity, with rates typically highest among infants born to non-Hispanic Black women. In 2012, 16.53 percent of babies born to non-Hispanic Black women were preterm and 13.18 percent were low birth weight, rates

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Figure 1. Very Preterm, Preterm, Very Low Birth Weight, and Low Birth Weight Rates, 1990–2012

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that were respectively 1.6 and 1.9 times that of non-Hispanic White infants (10.29 and 6.97 percent, respectively; figures 2 and 3). The disparity in very preterm and very low birth weight is even greater, with non-Hispanic Black infants being 2.4 and 2.6 times more likely than non-Hispanic White infants to be born very preterm (3.71 versus 1.55 percent, respectively) and very low birth weight (2.94 versus 1.13 percent, respectively). Compared to non-Hispanic White infants, Puerto Rican infants also had higher rates of preterm birth and low birth weight (13.23 and 9.40 percent, respectively), while Asian/Pacific Islander infants had a higher rate of low birth weight (8.21 percent). Racial and ethnic disparities in birth outcomes may be explained by differences in a variety of socioeconomic, psychosocial, behavioral, and medical risk factors.  

Rates of adverse birth outcomes also vary by maternal age. In 2012, very preterm, preterm, very low birth weight, and low birth weight rates were all highest among mothers less than 20 years of age.
age and aged 35 years or older (figures 4 and 5). For example, very preterm birth rates were 2.59 percent among teenaged mothers and 2.22 percent among those aged 35 years and older, compared to 1.72 among 25- to 29-year-olds and 1.75 percent among 30- to 34-year-olds. The higher rates of adverse birth outcomes among teens may be partly explained by socioeconomic disadvantage, while the higher rates among women aged 35 years and older tends to be a function of obstetric and medical complications and a greater probability of multiple births, both naturally and through fertility treatments, which have a substantially higher likelihood of preterm birth and low birth weight.8

Preventive interventions to reduce prematurity and low birth weight include screening and counseling to reduce smoking, alcohol, and substance use in pregnancy; comprehensive care before, during, and between pregnancies to identify and address chronic health conditions and to prevent unintended and rapid repeat pregnancies; place-based initiatives and care models that address social determinants such as housing and employment; and progesterone therapy to help sustain pregnancies among women with prior spontaneous preterm birth or with short cervical lengths.8 Other tertiary prevention efforts can reduce morbidity and mortality among infants born prematurely, such as improving access to risk-appropriate neonatal intensive care at delivery and antenatal corticosteroids that can promote fetal lung development prior to imminent premature delivery.8

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**Figure 4. Very Preterm and Preterm Birth Rates, by Maternal Age, 2012**

<table>
<thead>
<tr>
<th>Maternal Age</th>
<th>Very Preterm (&lt;32 weeks)</th>
<th>Preterm (&lt;37 weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1.93</td>
<td>11.55</td>
</tr>
<tr>
<td>Less than 20 Years</td>
<td>2.59</td>
<td>13.29</td>
</tr>
<tr>
<td>20–24 Years</td>
<td>1.97</td>
<td>11.48</td>
</tr>
<tr>
<td>25–29 Years</td>
<td>1.72</td>
<td>10.55</td>
</tr>
<tr>
<td>30–34 Years</td>
<td>1.75</td>
<td>10.97</td>
</tr>
<tr>
<td>35 Years and Older</td>
<td>2.22</td>
<td>13.61</td>
</tr>
</tbody>
</table>

**Figure 5. Very Low and Low Birth Weight Rates, by Maternal Age, 2012**

<table>
<thead>
<tr>
<th>Maternal Age</th>
<th>Very Low Birth Weight (&lt;1,500 grams)</th>
<th>Low Birth Weight (&lt;2,500 grams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1.42</td>
<td>7.99</td>
</tr>
<tr>
<td>Less than 20 Years</td>
<td>1.69</td>
<td>9.37</td>
</tr>
<tr>
<td>20–24 Years</td>
<td>1.43</td>
<td>8.24</td>
</tr>
<tr>
<td>25–29 Years</td>
<td>1.28</td>
<td>7.27</td>
</tr>
<tr>
<td>30–34 Years</td>
<td>1.33</td>
<td>7.47</td>
</tr>
<tr>
<td>35 Years and Older</td>
<td>1.71</td>
<td>9.18</td>
</tr>
</tbody>
</table>
Data Sources


Figure 4 and 5. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. 2012 Natality File. Analyzed by the Maternal and Child Health Bureau.

Endnotes


Suggested Citation

BIRTH DEFECTS

Birth defects, also known as congenital anomalies, occur in approximately 3 percent of all live births and are the second leading cause of infant mortality behind prematurity, accounting for 20.9 percent of all infant deaths in the United States in 2011 (see page on infant mortality). Birth defects are conditions present at birth that most often occur during the first trimester of pregnancy and cause structural changes in one or more parts of the body. Although most birth defects have unknown causes, they 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; obesity and uncontrolled diabetes; use of certain medications during pregnancy; a maternal age of more than 34 years; and a family history of birth defects.

Congenital heart defects are the most common type of birth defect in the United States, affecting nearly 1 percent of—or about 40,000—births per year. Atrioventricular septal defects, in which there is a hole in the wall of the heart chambers and valves, are a common type of congenital heart defect, with about 2,000 cases annually (table 1). Among the chromosomal abnormalities, trisomy 21, or Down syndrome, is the most common, with about 6,000 annual cases. Orofacial defects, including cleft lip and cleft palate, are another common type of birth defect, with approximately 7,000 cases annually.

In 2011, congenital heart defects and chromosomal abnormalities were the leading categories of infant death due to birth defects, accounting for 23.6 and 19.5 percent of deaths attributable to birth defects, respectively. Central nervous system defects, also known as neural tube defects, were the third leading category at 13.6 percent.

Infant mortality rates due to birth defects vary by several demographic characteristics, including maternal age, race/ethnicity, educational attainment, and rural/urban residence. For example, infant mortality due to birth defects generally increased with rurality, ranging from 11.21 per 10,000 live births among residents of large fringe metro areas to 13.89 per 10,000 live births among residents of rural nonmetropolitan areas.

Table 1. National Prevalence Estimates of Selected Major Birth Defects,* 2004–2006

<table>
<thead>
<tr>
<th>Defect Type</th>
<th>Estimated Annual Number of Cases</th>
<th>Prevalence per 10,000 Live Births</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Congenital heart defects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atrioventricular septal defect</td>
<td>1,966</td>
<td>4.71</td>
</tr>
<tr>
<td>Common truncus</td>
<td>301</td>
<td>0.72</td>
</tr>
<tr>
<td>Hypoplastic left heart syndrome</td>
<td>960</td>
<td>2.30</td>
</tr>
<tr>
<td>Tetralogy of Fallot</td>
<td>1,657</td>
<td>3.97</td>
</tr>
<tr>
<td>Transposition of great arteries</td>
<td>1,252</td>
<td>3.00</td>
</tr>
<tr>
<td><strong>Chromosomal abnormalities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trisomy 13</td>
<td>528</td>
<td>1.26</td>
</tr>
<tr>
<td>Trisomy 18</td>
<td>1,109</td>
<td>2.66</td>
</tr>
<tr>
<td>Trisomy 21 (Down syndrome)</td>
<td>6,037</td>
<td>14.47</td>
</tr>
<tr>
<td><strong>Orofacial defects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleft palate without cleft lip</td>
<td>2,651</td>
<td>6.35</td>
</tr>
<tr>
<td>Cleft lip with or without cleft palate</td>
<td>4,437</td>
<td>10.63</td>
</tr>
<tr>
<td><strong>Central nervous system defects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anencephaly</td>
<td>859</td>
<td>2.06</td>
</tr>
<tr>
<td>Encephalocele</td>
<td>341</td>
<td>0.82</td>
</tr>
<tr>
<td>Spina bifida without anencephaly</td>
<td>1,460</td>
<td>3.50</td>
</tr>
</tbody>
</table>

*Fourteen programs contributed data: Arkansas, Arizona, California (eight-county Central Valley), Colorado, Georgia (five-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 to 2006 was 4,038,506. **Estimates are adjusted for maternal race/ethnicity. †Estimates are adjusted for maternal age.
counties (suburban) to 16.25 per 10,000 live births among residents of noncore or completely rural counties (figure 1). Demographic differences in mortality rates attributable to birth defects may be due to differential exposures and the prevalence of birth defects, as well as differential access to screening and risk-appropriate care.

Certain birth defects can be prevented by maintaining a healthy weight before and during pregnancy, controlling diabetes, abstaining from substance use, talking to a doctor about which medications are safe to take during pregnancy, getting appropriate vaccinations to avoid infection, and taking a daily prenatal vitamin prior to and during pregnancy. In particular, taking folic acid before becoming pregnant has been shown to reduce the risk for neural tube defects by 50–70 percent. 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. Screening healthy newborns using pulse oximetry can be a useful, cost-effective way to identify babies born with critical congenital heart defects before they are discharged from the birth hospital.

Data Sources


Endnotes

Suggested Citation
SLEEP-RELATED SUDDEN UNEXPECTED INFANT DEATH

Sleep-related sudden unexpected infant death (SUID) accounts for the most deaths in infants between 1 month and 1 year of age at 38 percent in 2011 (see page on infant mortality). SUID is defined by a Healthy People 2020 objective to include deaths due to sudden infant death syndrome (SIDS), unknown causes, and accidental suffocation and strangulation in bed. 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. 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. SUID is generally believed to result from the intersection of three risks: a biological vulnerability (e.g., a dysfunctional arousal system); a critical period of development (1–6 months of age); and an environmental cofactor such as stomach or side sleep position, soft bedding, or overheating.

In 2011, there were a total of 3,403 cases of SUID, occurring at a rate of 0.86 per 1,000 live births (figure 1). The SUID rate generally declined from 1990 to 1998, which has been attributed to the American Academy of Pediatrics (AAP) recommendation that infants be placed to sleep on their backs, with an accompanying public awareness campaign known as “Back to Sleep.” The SUID rate generally plateaued from 1998 to 2009 but then declined for 2 consecutive years reaching a historic low in 2011.

Despite recent progress, SUID rates vary greatly by race and ethnicity. In 2011, SUID rates were highest for infants born to American Indian/Alaska Native and non-Hispanic Black mothers (2.01 and 1.62 per 1,000 live births, respectively); these rates were twice or more the rate among infants born to non-Hispanic Whites (0.84 per 1,000; figure 2). Compared with non-Hispanic Whites, the higher rate of SUID was the leading contributor to the higher overall infant mortality rate for American Indians/Alaska Natives, accounting for 37 percent of the disparity. SUID was the second leading cause of the higher non-Hispanic Black infant mortality rate, accounting for 12 percent of the disparity. SUID rates were generally lowest for infants born to Asian/Pacific Islander mothers (0.38 per 1,000) and Hispanic mothers (0.50 per 1,000), except for Puerto Ricans (1.19 per 1,000). However, SUID rates have been shown to be higher among infants born to Native Hawaiian mothers.

Racial and ethnic differences in safe sleep practices may contribute to SUID disparities (see page on safe sleep behavior). In 2011, 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. These form the basis of the new “Safe to Sleep” campaign and include recommendations beyond the back sleep position, such as sleeping in a safety-approved crib or bassinet, removing loose bedding and soft objects from the sleep surface, room sharing without bed sharing, breastfeeding, and avoiding exposure to tobacco smoke and other drugs. In addition, a new classification system developed by the Centers for Disease Control and Prevention may help improve SUID investigation and prioritize prevention opportunities at state and local levels.

Figure 1. Sleep-Related SUID* Mortality Rates per 1,000 Live Births, by Listed Cause of Death, 1990–2011

*Sudden unexpected infant deaths (SUID) include sudden infant death syndrome (SIDS; ICD-10 code of R95), unknown cause (R99), and accidental suffocation or strangulation in bed (W75).
Figure 2. Sleep-Related SUID* Mortality Rates per 1,000 Live Births, by Maternal Race/Ethnicity, 2011

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Rate per 1,000 Live Births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>0.86</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>0.84</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>1.62</td>
</tr>
<tr>
<td>American Indian/Alaska Native**</td>
<td>2.01</td>
</tr>
<tr>
<td>Asian/Pacific Islander**</td>
<td>0.38</td>
</tr>
<tr>
<td>Hispanic (Total)</td>
<td>0.50</td>
</tr>
<tr>
<td>Mexican</td>
<td>0.45</td>
</tr>
<tr>
<td>Puerto Rican</td>
<td>1.19</td>
</tr>
<tr>
<td>Cuban</td>
<td>†</td>
</tr>
<tr>
<td>Central and South American</td>
<td>0.33</td>
</tr>
</tbody>
</table>

* Sudden unexpected infant deaths (SUID) include sudden infant death syndrome (SIDS; ICD-10 code of R95), unknown cause (R99), and accidental suffocation or strangulation in bed (W75). **May include Hispanics. † Fewer than 20 deaths. Data did not meet standards of reliability or precision.

Data Sources


Figure 2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. 2011 Linked Birth/Infant Death File. Analyzed by the U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau.

Endnotes

Suggested Citation
SAFE SLEEP BEHAVIORS

Safe sleep behaviors are practices that reduce the risk of sleep-related sudden unexpected infant death (SUID), which accounts for the most deaths among infants aged 1 month to 1 year. SUID includes sudden infant death syndrome (SIDS), unknown causes, and accidental suffocation and strangulation in bed (see page on sleep-related SUID). Safe sleep practices recommended by the American Academy of Pediatrics (AAP) include placing an infant on his or her back in a separate crib or bassinet without soft bedding both at night and during naps.\(^1\) Additional practices with strong evidence for reducing the risk of SUID include breastfeeding, offering a pacifier before naptime or bedtime, and avoiding smoke and alcohol exposure during and after pregnancy.\(^1\)

In 2011, 74.0 percent of recent mothers in 23 states and New York City reported that their infant was laid down to sleep on his or her back most of the time (figure 1). The proportion of mothers reporting this safe sleep behavior was between 75.8 and 80.0 percent among non-Hispanic White, non-Hispanic American Indian/Alaska Native, non-Hispanic Asian, and non-Hispanic Native Hawaiian/other Pacific Islander mothers. Use of the back sleep position was lowest among non-Hispanic Black mothers (53.9 percent), followed by Hispanic mothers (66.0 percent).

The AAP recommends room sharing without bed sharing, in which infants may be brought into bed for breastfeeding or comfort but returned to a separate in-room crib or bassinet for sleep.\(^1\) Sharing a bed with an infant during sleep increases the risk of SUID, particularly with soft bedding and blankets, soft sleep surfaces like couches and armchairs, and parental smoking or substance use.\(^1\) In 2011, 43.3 percent of recent mothers in 13 states reported that their infants never slept in the same bed with an adult (figure 2). The proportion of mothers who reported no infant and adult bed sharing was highest among non-Hispanic White mothers (50.6 percent), followed by Hispanic mothers (38.3 percent). About one-quarter or fewer mothers from most other racial and ethnic groups reported never bed sharing. Conversely, mothers who reported always or often bed sharing ranged from 13.8 percent of non-Hispanic White mothers to 43.2 percent of non-Hispanic Asian mothers.

Back sleep position and never bed sharing increase with maternal age and education. For example, usual practice of back sleep position ranged from 64.4 percent among mothers with less than 12 years of education to 82.4 percent among those with 16 or more years of education. Similarly, never bed sharing ranged from 27.5 percent among mothers less than 20 years old to nearly 50 percent among mothers aged 30 years and older.

Figure 1. Infants Usually Placed to Sleep on Their Backs, by Maternal Race/Ethnicity, 2011*

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic White</td>
<td>74.0</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>80.0</td>
</tr>
<tr>
<td>Hispanic</td>
<td>53.9</td>
</tr>
<tr>
<td>Non-Hispanic American Indian/Alaska Native</td>
<td>66.0</td>
</tr>
<tr>
<td>Non-Hispanic Asian</td>
<td>78.4</td>
</tr>
<tr>
<td>Non-Hispanic Native Hawaiian/other Pacific Islander</td>
<td>76.6</td>
</tr>
<tr>
<td>Non-Hispanic Multiple Races</td>
<td>75.8</td>
</tr>
<tr>
<td>Total</td>
<td>72.5</td>
</tr>
</tbody>
</table>

*Includes data from 23 states (AR, CO, GA, HI, ME, MD, MI, MN, MO, NE, NJ, NM, NY, OK, OR, PA, RI, UT, VT, WA, WV, WY) and New York City. Mothers completed surveys between 2 and 9 months postpartum. Responses that included sleep positions other than the back (e.g., stomach, side) alone or in combination with the back are not counted as usually put to sleep on back. Multiple race data were not reported by 5 of 23 states (AR, HI, ME, NJ, WV); therefore, specific race categories may include multiple race mothers.
To reduce the risk of sleep-related SUID, the AAP also recommends removing soft bedding from infant sleep areas, such as blankets, quilts, and pillows. A recent national study found that 54.7 percent of U.S. infants are placed to sleep underneath or on top of potentially hazardous bedding. Resources to educate parents, caregivers, and health care providers regarding ways to reduce the risk for SIDS and other sleep-related causes of infant death are provided by the “Safe to Sleep” campaign (previously known as the “Back to Sleep” campaign). This collaborative effort at the federal, state, and local levels was renamed and expanded in 2012 to reflect the AAP’s broader recommendations and to address all sleep-related infant deaths. Crib distribution programs may also be effective in providing safe sleep education and cribs to mothers and families who may not be able to afford them.

Figure 2. Infant and Adult Bed Sharing, by Maternal Race/Ethnicity, 2011*

*Includes data from 13 states (GA, HI, MD, MN, MO, NE, NJ, NY without NY City, PA, VT, WA, WV, WI). Mothers completed surveys between 2 and 9 months postpartum. The question reflects whether the infant slept in the same bed with the mother or another adult. Percentages may not sum to 100 due to rounding. Multiple race data were not reported by 3 of 13 states (HI, NJ, WV); therefore, specific race categories may include multiple race mothers.

Data Sources
Figure 1 and 2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC). Pregnancy Risk Assessment Monitoring System, 2011. Analysis conducted by the CDC Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion.

Endnotes

Suggested Citation
SMOKING BEFORE AND DURING PREGNANCY

After alcohol, tobacco is the most prevalent substance consumed by women of child-bearing age. Smoking among nonpregnant women contributes to reduced fertility. Fetal effects of smoking during pregnancy include premature birth, fetal growth restriction/low birth weight, orofacial clefts, and heightened risk of sudden infant death syndrome. Notable maternal complications of smoking are placental abruption, premature rupture of membranes, and placenta previa. In addition, there is evidence of a causal relationship between maternal smoking and ectopic pregnancy.

In 2011, 22.7 percent of recent mothers in 23 states and New York City reported smoking in the 3 months before pregnancy. The proportion of mothers who smoked dropped by approximately half by the last 3 months of pregnancy (10.2 percent). Smoking during both preconception and prenatal periods varied by race and ethnicity. Smoking in the 3 months prior to pregnancy ranged from 6.1 percent among non-Hispanic Asian mothers to 41.6 percent among non-Hispanic American Indian-Alaska Native mothers (figure 1). Similarly, smoking in the last 3 months of pregnancy ranged from 2.0 percent among non-Hispanic Asian mothers to 16.9 percent among non-Hispanic American Indian/Alaska Native mothers. Preconception and prenatal smoking rates were also relatively low among Hispanic mothers (12.1 and 3.7 percent, respectively). Rates of smoking cessation, defined as not smoking in the last 3 months of pregnancy among those who smoked prior to pregnancy, were highest for Hispanic mothers (69.5 percent) and non-Hispanic Asian mothers (66.6 percent) compared to 55.3 percent overall.

The proportion of mothers who reported smoking before and during pregnancy also varied by maternal age. Compared to older mothers, preconception and prenatal smoking were more prevalent among mothers aged 20–24 years (33.1 and 16.0 percent, respectively) and under 20 years of age (32.4 and 15.5 percent, respectively; figure 2). Mothers aged 35 years or older were the least likely to smoke before conception (12.8 percent), while mothers aged 30–34 years and 35 years or older were least likely to smoke during the prenatal period (6.7 and 5.6 percent, respectively).

Smoking before and during pregnancy also varied by maternal education and marital status. Smoking before pregnancy was at least 3 times greater among mothers with 12 years of education or less (29.3 to 33.3 percent) than among those with 16 or more years of education (8.9 percent). Prenatal smoking was about 12 times greater among mothers with 12 years of education or less (17.0 to 17.2 percent) than among those with 16 or more years of education (1.5 percent). Smoking cessation rates were highest for mothers with more education (72.1 percent) and married mothers (65.3 percent) compared to 55.3 percent overall.

The proportion of mothers who reported smoking before and during pregnancy also varied by maternal age. Compared to older mothers, preconception and prenatal smoking were more prevalent among mothers aged 20–24 years (33.1 and 16.0 percent, respectively) and under 20 years of age (32.4 and 15.5 percent, respectively; figure 2). Mothers aged 35 years or older were the least likely to smoke before conception (12.8 percent), while mothers aged 30–34 years and 35 years or older were least likely to smoke during the prenatal period (6.7 and 5.6 percent, respectively).

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Figure 1. Cigarette Smoking Before and During Pregnancy, by Maternal Race/Ethnicity, 2011*

*Includes data from 23 states (AR, CO, GA, HI, ME, MD, MI, MN, MO, NE, NJ, NM, NY, OK, OR, PA, RI, UT, VT, WA, WV, WI, WY) and New York City. Mothers completed surveys between 2 and 9 months postpartum. Multiple race data were not reported by 5 of 23 states (AR, HI, ME, NJ, WV); therefore, specific race categories may include multiple race mothers. **Defined as the proportion of mothers who reported smoking in the 3 months before pregnancy. †Defined as the proportion of mothers who reported smoking in the last 3 months of pregnancy.
percent) than among those with 16 or more years of education (1.4 percent). This reflects a considerably higher cessation rate for mothers with at least 16 years of education (85.0 percent) than for those with 12 years of education or less (42.0 to 48.3 percent). Unmarried mothers were more than twice as likely as married mothers to smoke in the 3 months before pregnancy (36.3 versus 14.4 percent, respectively) and three times more likely to smoke during pregnancy (18.5 versus 5.1 percent, respectively).

In order to avoid early pregnancy complications, it is recommended that women quit smoking before they become pregnant. Due to awareness of the neonatal health consequences of smoking, pregnancy may be a time of heightened motivation to quit. The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians ask all pregnant women about tobacco use and provide augmented, pregnancy-tailored counseling for those who smoke.

Data Sources
Figure 1 and 2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), Pregnancy Risk Assessment Monitoring System, 2011–2012. Analysis conducted by the CDC Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion.

Endnotes

Suggested Citation
BINGE DRINKING BEFORE AND DURING PREGNANCY

Both preconception and prenatal alcohol consumption are associated with significant maternal and fetal health risks, particularly when that drinking is excessive. Binge drinking for women is defined as consuming four or more alcohol drinks (beer, wine, or liquor) on an occasion. Among non-pregnant women, binge drinking is more likely to lead to unprotected sex and multiple sex partners which in turn increases the risks of unintended pregnancy. Women who become pregnant without realizing it may continue alcohol use during the early first trimester when fetal organ systems are being formed, posing serious risk to fetal development throughout gestation. Prenatal drinking is associated with spontaneous abortion, prenatal and postnatal growth restriction, sudden infant death syndrome (SIDS), birth defects, and neurodevelopmental deficits such as Fetal Alcohol Syndrome (FAS).

In 2011, approximately one quarter (23.0 percent) of recent mothers in 23 states and New York City reported binge drinking in the 3 months prior to pregnancy (figure 1). The overwhelming majority of mothers discontinued binge drinking by the last 3 months of pregnancy (97.4 percent) and less than 1 percent (0.77 percent) reported binge drinking during the final 3 months of pregnancy. Binge drinking varied by maternal age prior to pregnancy but not during pregnancy. Pre-pregnancy binge drinking was most common among women aged 20–29 years (25–26 percent) and least common among women age 19 years or less (17.0 percent) and those age 35 years or older (17.8 percent). Quit rates for binge drinking did not vary by maternal age.

Both pre-pregnancy and prenatal binge drinking varied by race and ethnicity. Pre-pregnancy binge drinking was most common among non-Hispanic American Indian/Alaska Native, non-Hispanic White, non-Hispanic Native Hawaiian/Other Pacific Islander, and non-Hispanic mothers of multiple races (25–30 percent; figure 2). These women were approximately 2.5 to 3.0 times more likely to binge drink during the 3 months before pregnancy as non-Hispanic Asian mothers (9.1 percent). Prenatal binge drinking varied across race and ethnicity: compared to non-Hispanic White mothers (0.5 percent), binge drinking in the last 3 months of pregnancy was higher among Hispanic, non-Hispanic American Indian/Alaska Native, and non-Hispanic Black mothers (1.5, 1.4, and 0.9 percent, respectively). Binge drinking cessation rates were lower for non-Hispanic Asian, Hispanic, non-Hispanic Black, and non-Hispanic American Indian/Alaska Native mothers (89.8, 90.7, 95.1, and 95.7 percent, respectively) compared with non-Hispanic White mothers (98.7 percent).

Binge drinking before and during pregnancy also varied by maternal education and marital status. Pre-pregnancy binge drinking was lowest among those with less than a high school education. The overwhelming majority of mothers discontinued binge drinking by the last 3 months of pregnancy (97.4 percent) and less than 1 percent (0.77 percent) reported binge drinking during the final 3 months of pregnancy. Binge drinking varied by maternal age prior to pregnancy but not during pregnancy. Pre-pregnancy binge drinking was most common among women aged 20–29 years (25–26 percent) and least common among women age 19 years or less (17.0 percent) and those age 35 years or older (17.8 percent). Quit rates for binge drinking did not vary by maternal age.

Both pre-pregnancy and prenatal binge drinking varied by race and ethnicity. Pre-pregnancy binge drinking was most common among non-Hispanic American Indian/Alaska Native, non-Hispanic White, non-Hispanic Native Hawaiian/Other Pacific Islander, and non-Hispanic mothers of multiple races (25–30 percent; figure 2). These women were approximately 2.5 to 3.0 times more likely to binge drink during the 3 months before pregnancy as non-Hispanic Asian mothers (9.1 percent). Prenatal binge drinking varied across race and ethnicity: compared to non-Hispanic White mothers (0.5 percent), binge drinking in the last 3 months of pregnancy was higher among Hispanic, non-Hispanic American Indian/Alaska Native, and non-Hispanic Black mothers (1.5, 1.4, and 0.9 percent, respectively). Binge drinking cessation rates were lower for non-Hispanic Asian, Hispanic, non-Hispanic Black, and non-Hispanic American Indian/Alaska Native mothers (89.8, 90.7, 95.1, and 95.7 percent, respectively) compared with non-Hispanic White mothers (98.7 percent).

Binge drinking before and during pregnancy also varied by maternal education and marital status. Pre-pregnancy binge drinking was lowest among those with less than a high school education.

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**Figure 1. Binge Drinking Before and During Pregnancy, by Maternal Age, 2011**

<table>
<thead>
<tr>
<th>Maternal Age</th>
<th>Total</th>
<th>19 Years or Less</th>
<th>20-24 Years</th>
<th>25-29 Years</th>
<th>30-34 Years</th>
<th>35 Years or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepregnancy Binge Drinking</td>
<td>23.0</td>
<td>17.0</td>
<td>26.1</td>
<td>25.3</td>
<td>22.6</td>
<td>17.8</td>
</tr>
<tr>
<td>Prenatal Binge Drinking</td>
<td>0.77</td>
<td>0.76</td>
<td>0.87</td>
<td>0.91</td>
<td>0.64</td>
<td>0.60</td>
</tr>
</tbody>
</table>

*Includes data from 23 states (AR, CO, GA, HI, ME, MD, MI, MN, MO, NE, NJ, NM, NY, NC, OH, PA, RI, UT, VT, WA, WV, WI, WY) and New York City. Mothers completed surveys between 2 and 9 months postpartum.

1Reported binge drinking (≥ 4 drinks on an occasion) in the 3 months before pregnancy.

2Reported binge drinking (≥ 4 drinks on an occasion) in the last 3 months of pregnancy.
(12.5 percent) and above 20 percent for women with higher levels of education. The highest rate of pre-pregnancy binge drinking was among women with some college education (28.0 percent). However, binge drinking during the last 3 months of pregnancy was lowest among women with a college degree (0.49 percent) compared with 0.89-0.95 percent of women with less education. Binge drinking was greater among unmarried mothers versus married mothers both before pregnancy (26.2 versus 21.1 percent, respectively) and during the last 3 months of pregnancy (1.1 versus 0.58 percent, respectively).

Drinking before and during pregnancy continues to be an important public health concern. Screening for alcohol problems is recommended for adults by the U.S. Preventive Services Task Force and is recommended for adolescents by the American Academy of Pediatrics. Screening coupled with brief intervention strategies such as physician advice or counseling have proved effective in decreasing alcohol abuse and binge drinking in primary care settings in general and among women of childbearing age in particular.6,7

Data Sources
Figure 1 and 2. Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System, 2011. Analysis conducted by the Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion.

Endnotes

Suggested Citation
BREASTFEEDING

Breastfeeding has been shown to promote the health and development of infants, as well as their immunity to disease. It also confers a number of maternal health benefits, such as a decreased risk of breast and ovarian cancers and other chronic conditions, including cardiovascular disease. The American Academy of Pediatrics Section on Breastfeeding recommends exclusive breastfeeding—with no supplemental food or liquids—through the first 6 months of life and continued breastfeeding through at least the first year. One study indicated that suboptimal breastfeeding rates in the United States add an estimated $2.2 billion dollars annually to direct medical costs.

While three-quarters of infants born in 2010 were ever breastfed (76.5 percent), slightly less than half (49.0 percent) were fed breast milk for the first 6 months of life, and 16.4 percent were exclusively breastfed for that duration. Breastfeeding practices vary considerably by maternal race and ethnicity, age, and education. With respect to race and ethnicity, the proportion of infants to have ever been breastfed was higher among Asian, Hispanic, and non-Hispanic White infants (84.8, 77.9, and 78.8 percent, respectively) than non-Hispanic Black infants (61.9 percent; figure 1).

Infants born to mothers aged 30 years or older were most likely to have been breastfed (80.9 percent), while children born to mothers under 20 years of age were least likely to have ever been breastfed (51.3 percent; figure 2). Similarly, 17.9 percent of infants born to mothers aged 30 years or older breastfed exclusively at 6 months, compared to 5.8 percent of infants born to mothers younger than age 20.

With regard to maternal education, the proportion of infants to have ever been breastfed and to have been breastfed exclusively at 6 months was highest among those born to mothers with at least a college education (88.7 and 21.8 percent, respectively). Common barriers to exclusive breastfeeding include maternal employment, pain related to breastfeeding, and unsupportive hospital policies. The Affordable Care Act requires most health insurance plans to provide breastfeeding support, counseling, and equipment to pregnant and nursing women.

Figure 1. Infants* Who Are Breastfed, by Race/Ethnicity and Duration, 2010

Table:

*Includes only infants born in 2010; data are provisional. **Reported that the child was ever breastfed or fed human breast milk. †Exclusive breastfeeding is defined as only human breast milk—no solids, water, or other liquids. ‡Includes Hispanics.
Data Sources
Figure 1 and 2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. National Immunization Survey (NIS). Unpublished data. The 2010 provisional rates are based on the landline telephone sample in NIS to maintain comparability with previous years in the decade when only a landline sample was available.

Endnotes

Suggested Citation
CHILD OVERWEIGHT AND OBESITY

Childhood overweight and obesity is a significant public health issue, affecting nearly a third of all children in the United States. Obese children are at increased risk of several adverse health outcomes, including high blood pressure and cholesterol, asthma, and many other chronic physiologic and psychosocial health conditions. Childhood obesity is also associated with obesity in adulthood and children who are overweight are more likely to have severe obesity in adulthood.

Body mass index (BMI) is the ratio of weight to height squared that is used to define overweight and obesity. In children, BMI is categorized as a function of age and sex, since both of these factors affect body composition. Children below the 5th percentile of BMI for age are considered underweight, those between the 5th and 84th percentiles are considered to have a normal weight, those between the 85th and 94th percentiles are considered overweight, and those in the 95th percentile or above are considered obese. In 2011–2012, nearly 30 percent of children aged 2–11 years were overweight or obese, 66.9 percent were of normal weight, and 3.4 percent were underweight based on measured height and weight.

Children's weight status varies by a number of factors, including age, sex, and race and ethnicity. For example, school-aged children are more likely to be obese than preschool-aged children. In 2011–2012, 17.7 percent of children aged 6–11 years were obese, compared to 8.4 percent of children aged 2–5 years (figure 1). The percent of children who were overweight was similar by age: 14.5 percent of 2- to 5-year-olds and 16.5 percent of 6- to 11-year-olds.

With regard to race and ethnicity, nearly 40 percent of Hispanic children and 31.4 percent of non-Hispanic Black children aged 6–11 years were overweight or obese overall. By comparison, 26.1 percent of non-Hispanic White children and 15.5 percent of non-Hispanic Asian children were overweight or obese. Racial and ethnic differences in obesity were particularly pronounced among males: 18.6 percent of non-Hispanic Black males and 24.2 percent of Hispanic males were obese, compared to 7.9 percent of their non-Hispanic White counterparts (figure 2).

Several strategies may prevent childhood obesity, such as increasing physical activity, eating right, and reducing screen time. Dietary strategies for preventing childhood obesity include limiting access calories from fats and sugars, consuming smaller portions, and increasing intake of whole grains, vegetables, and fruits. The 2008 Physical Activity Guidelines for Americans recommend that children aged 6–11 years participate in 60 minutes or more per day of aerobic activity. The recommended amount of fruits and vegetables is 1–1.5 cups of each for children aged 2–8 years. Recommendations for children aged 9 years and older vary depending on their age, sex, and activity level. The Community Preventive Services Task Force also recommends behavioral interventions for reducing screen time (e.g., time spent watching television, playing computer games, or browsing the Internet) to improve physical activity, diet, and weight-related outcomes.

---

Figure 1. Weight Status* of Children Aged 2–11 Years, by Sex and Age, 2011–2012

<table>
<thead>
<tr>
<th>Sex</th>
<th>Underweight</th>
<th>Normal-Weight</th>
<th>Overweight</th>
<th>Obese</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>2-5 Years</td>
<td>6-11 Years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2</td>
<td>72.0</td>
<td>14.5</td>
<td>8.4</td>
</tr>
<tr>
<td>Female</td>
<td>3.6</td>
<td>62.2</td>
<td>16.5</td>
<td>17.7</td>
</tr>
<tr>
<td>Male</td>
<td>3.4</td>
<td>74.9</td>
<td>14.6</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2-5 Years</td>
<td>6-11 Years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.5**</td>
<td>73.1</td>
<td>14.4</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>3.9**</td>
<td>63.3</td>
<td>16.8</td>
<td>16.4</td>
</tr>
</tbody>
</table>

*Based on Body Mass Index (BMI, ratio of height to weight squared) growth charts for age and sex from measured height and weight: underweight is a BMI under the 5th percentile, normal weight is a BMI between the 5th and 84th percentile, overweight is a BMI between the 85th and 94th percentile, and obesity is a BMI in the 95th percentile or above. **Estimate is not reliable; relative standard error > 30 percent.
Figure 2. Weight Status* of Children Aged 2–11 Years, by Sex and Race/Ethnicity, 2011–2012

*Based on Body Mass Index (BMI; ratio of height to weight squared) growth charts for age and sex from measured height and weight: underweight is a BMI under the 5th percentile, normal weight is a BMI between the 5th and 84th percentile, overweight is a BMI between the 85th and 94th percentile, and obesity is a BMI in the 95th percentile or above. **Estimate is not reliable; relative standard error > 30 percent.

Data Sources
Figure 1 and 2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Health and Nutrition Examination Survey, 2011–2012. Unpublished estimates. Analyses conducted by the National Center for Health Statistics.

Endnotes

Suggested Citation
CHILD NUTRITION

Healthy eating habits begin in childhood and can affect a person’s health throughout their lifetime. Poor dietary habits adopted during childhood may have lifelong consequences, as children and adolescents who are overweight and obese are at substantially increased risk of being overweight and obese as adults. Additionally, poor diet quality is associated with an increased risk of osteoporosis, hypertension, type 2 diabetes, cardiovascular disease, and dental caries.1

The Healthy Eating Index-2010 (HEI-2010) is designed to measure dietary quality2 and can be used to assess how well a population eats on average, compared to the recommendations outlined in the 2010 Dietary Guidelines for Americans. Nine of the 12 HEI-2010 components address adequate consumption of healthy foods. The remaining three components assess intake of foods that should be consumed in moderation: refined grains, sodium, and empty calories. In the table below, the HEI-2010 total and component scores are averages across all children, based on a 24-hour dietary recall.

In 2009–2010, the overall composite score for the HEI-2010 among children aged 2–11 years was 53 out of 100 points, where 100 points indicates a diet that aligns with the 2010 Dietary Guidelines for Americans. With regard to the nine components of dietary adequacy, children received 100 percent of the possible points for whole fruit intake and 96 percent for dairy. Children were least likely to consume adequate amounts of greens and beans and whole grains with 18 and 22 percent, respectively, of possible points obtained (table 1). However, consumption of greens and beans was higher among female than male children (on average 20 versus 16 percent of points, respectively).

With regard to race and ethnicity, scores for individual HEI-2010 components varied, although the total HEI scores varied little between groups. Non-Hispanic White children were less likely than all other racial and ethnic groups to consume adequate amounts of greens and beans, meeting only 13 percent of possible points on average compared to about 25 percent for all other children (table 1). Conversely, non-Hispanic White and non-Hispanic children of other races were closer to consuming adequate amounts of seafood and plant proteins (48 and 62 percent of possible points, respectively) than non-Hispanic Black and Hispanic children (37 and 41 percent, respectively).

Similar differences in the consumption of seafood and plant proteins exist with regard to household income. Children in households with incomes of 200 percent or more of poverty consumed 55 percent of possible points, compared to 39 percent among children in households with incomes of less than 100 percent of poverty.

The overconsumption of refined grains, sodium, and empty calories was present across all racial and ethnic groups. Overall, the diet quality of children would be improved by increasing the consumption of whole grains, vegetables, seafood, and plant proteins; decreasing the consumption of sodium and empty calories; and increasing the relative proportions of mono- and poly-unsaturated to saturated fatty acids.

Table 1. Diet Quality Among Children Aged 2–11 as Measured by Healthy Eating Index (HEI-2010) Scores,* by Dietary Component and Race/Ethnicity, 2009–2010

<table>
<thead>
<tr>
<th>Dietary Component</th>
<th>Overall Average</th>
<th>Non-Hispanic White</th>
<th>Non-Hispanic Black</th>
<th>Hispanic</th>
<th>Non-Hispanic Other Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequacy (higher score indicates higher consumption)</td>
<td>53</td>
<td>52</td>
<td>52</td>
<td>54</td>
<td>53</td>
</tr>
<tr>
<td>Total fruit</td>
<td>91</td>
<td>86</td>
<td>88</td>
<td>98</td>
<td>97</td>
</tr>
<tr>
<td>Whole fruit</td>
<td>100</td>
<td>99</td>
<td>90</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total vegetables</td>
<td>40</td>
<td>38</td>
<td>38</td>
<td>44</td>
<td>41</td>
</tr>
<tr>
<td>Greens and beans</td>
<td>18</td>
<td>13</td>
<td>15</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>Whole grains</td>
<td>22</td>
<td>24</td>
<td>22</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Dairy</td>
<td>96</td>
<td>100</td>
<td>74</td>
<td>94</td>
<td>89</td>
</tr>
<tr>
<td>Total protein foods</td>
<td>81</td>
<td>75</td>
<td>90</td>
<td>86</td>
<td>85</td>
</tr>
<tr>
<td>Seafood and plant proteins</td>
<td>46</td>
<td>48</td>
<td>37</td>
<td>41</td>
<td>62</td>
</tr>
<tr>
<td>Fatty acids</td>
<td>28</td>
<td>24</td>
<td>38</td>
<td>29</td>
<td>33</td>
</tr>
<tr>
<td>Moderation (higher score indicates lower consumption)</td>
<td>53</td>
<td>52</td>
<td>52</td>
<td>54</td>
<td>53</td>
</tr>
<tr>
<td>Refined grains</td>
<td>44</td>
<td>45</td>
<td>47</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td>Sodium</td>
<td>49</td>
<td>50</td>
<td>48</td>
<td>52</td>
<td>35</td>
</tr>
<tr>
<td>Empty calories</td>
<td>51</td>
<td>48</td>
<td>51</td>
<td>57</td>
<td>56</td>
</tr>
</tbody>
</table>

*In this table, all scores are shown as a percentage of possible points. Total HEI-2010 scores reflect overall dietary quality. For the adequacy components, higher scores reflect higher intakes and a score corresponding to 100 indicates that the standard was met or exceeded on average. For the moderation components, higher scores reflect lower intakes because lower intakes are more desirable and a score corresponding to 100 indicates that the standard was met. For all components, a higher score indicates a higher quality diet.

Data Sources

Endnotes

Suggested Citation
CHILD ABUSE AND NEGLECT

Child abuse and neglect has been defined as "any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act, which presents an imminent risk of serious harm." 

In 2012, state child protective services agencies received approximately 3.4 million referrals, involving an estimated 6.3 million children, alleging abuse or neglect. Based on investigation, states reported that an estimated 678,810 unique children were victims of abuse or neglect in 2012, resulting in a national victimization rate of 9.2 per 1,000 children in the population.

Neglect was the most common type of maltreatment (experienced by 78.3 percent of victims), followed by physical abuse (18.3 percent), sexual abuse (9.3 percent), psychological maltreatment (8.5 percent), and medical neglect (2.3 percent; figure 1). About 10 percent of victims experienced other types of maltreatment including abandonment, threats of harm, or congenital drug addiction. Children may have experienced more than one type of maltreatment. In 2012, an estimated 1,640 children died as a result of abuse or neglect.

In 2012, children aged 0–3 years accounted for 33.6 percent of all victims, with 12.8 percent younger than 1 year of age. About one-quarter of victims were between the ages of 4 and 7 years, 18.7 percent were aged 8–11 years, 16.8 percent were aged 12–15 years, and 5.8 percent were aged 16–17 years (figure 2). With the exception of sexual abuse, children aged 0–2 years represented the largest proportion of victims in each maltreatment category. For example, 33.2 percent of those who experienced medical neglect were in this age group, as were 24.6 percent of those who experienced physical abuse.

Although the percentage of child victims by sex was similar for boys and girls (48.7 and 50.9 percent, respectively) the rate of abuse was higher among girls: 9.5 per 1,000 girls compared to 8.7 per 1,000 boys. Similarly, although 44.0 percent of victims were non-Hispanic White, rates of victimization were highest among non-Hispanic Black and American Indian and Alaska Native children: 14.2 and 12.4 per 1,000 children, respectively, compared to 8.0 per 1,000 among non-Hispanic White children.

Overall, 81.5 percent of perpetrators of abuse or neglect were parents of the victim (either alone or in conjunction with another person). Male relatives and male partners of the child’s parent were the perpetrators in another 3.0 and 2.3 percent of victimizations, respectively. Other types of perpetrators included foster parents, friends and neighbors, and legal guardians.

A variety of risk factors have been associated with child maltreatment, including child health and disability status, caregiver substance abuse, intimate partner or domestic violence, and poverty. The effects of child maltreatment can be serious and long lasting, ranging from increased risk of chronic emotional, behavioral, and physical illness to delinquency and criminality to lower levels of socioeconomic achievement. Taken together, the lifetime cost per victim of nonfatal child maltreatment has been estimated at $210,012, while the lifetime cost associated with one year of all confirmed cases has been estimated at $124 billion. Early childhood home visitation programs, where trained personnel visit the home during the child’s first two years of life, are recommended as an evidence-based way to prevent child maltreatment.
Figure 2. Reported Abuse and Neglect Among Children Under Age 18, by Age, 2012

Data Sources

Endnotes

Suggested Citation
SCHOOL READINESS

Early childhood is a critical period for learning and development. From birth to 5 years of age, children acquire language, develop learning and problem-solving skills, and obtain knowledge that is essential for helping them succeed in school and life. Children who begin kindergarten with early skills, such as early math, literacy, and attention-related skills, are more likely to have later academic achievement, while those with fewer or less developed skills are more likely to attain lower levels of education and be unemployed as adults.

School readiness can be defined as when a child possesses the skills, knowledge, and attitudes necessary for school and for later learning and life. It is suggested that school readiness is composed of five dimensions: physical well-being and motor development, social and emotional development, approaches to learning, language development and early literacy, and cognition and general knowledge. Although there is no standard measure of school readiness, there are several skills that can be assessed to indicate a child’s readiness for school. For example, skills pertaining to early literacy and cognitive development include a child’s ability to recognize the beginning sound of a word, recognize letters of the alphabet, clearly explain things that he or she has seen or done, write his or her first name, count to 20, recognize basic shapes, and use a pencil or crayon.

In 2007, the latest year for which data are available, approximately 93 percent of children aged 3–6 years not yet enrolled in kindergarten were reportedly understandable to strangers when speaking to them; 87 percent used their fingers when holding a pencil; 63 percent counted to 20 or higher; 60 percent could write their first name; 32 percent recognized all letters; and 8 percent could read the words written in books (figure 1).

School readiness varied widely by children’s race and ethnicity. Among children aged 3–6 years, a lower percentage of Hispanics demonstrated each of the six skills compared to their non-Hispanic counterparts. For example, in 2007, a lower percentage of Hispanic children could read written words in a book (3 percent) compared to non-Hispanic White (8 percent), non-Hispanic Black (16 percent), and non-Hispanic Asian or Pacific Islander children (8 percent; figure 2).

School readiness also varied by household income as a percent of poverty. Children living in households with incomes below 100 percent of poverty were less likely than those in households with higher incomes to recognize all letters (21 versus 35 percent, respectively), count to 20 or higher (49 versus 67 percent, respectively), and write his or her first name (46 versus 64 percent, respectively). The percentage of children who could hold a pencil with his or her fingers, read written words in books, and speak understandably to strangers did not vary as widely by poverty status.

A number of federal programs work to ensure that children are ready for school. Two of these are the Head Start and Early Head Start programs, administered by the Administration on Children and Families in the U.S. Department of Health and Human Services. These programs provide early education, health, nutrition, and social services to low-income children and families.

Figure 1. School Readiness Skills Among Children Aged 3–6 Years Not Yet Enrolled in Kindergarten, 2007

<table>
<thead>
<tr>
<th>Skill</th>
<th>Percent of Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech is understandable to strangers*</td>
<td>93</td>
</tr>
<tr>
<td>Holds a pencil with fingers†</td>
<td>87</td>
</tr>
<tr>
<td>Counts to 20 or higher</td>
<td>63</td>
</tr>
<tr>
<td>Writes first name††</td>
<td>60</td>
</tr>
<tr>
<td>Recognizes all letters</td>
<td>32</td>
</tr>
<tr>
<td>Reads written words in books‡</td>
<td>8</td>
</tr>
</tbody>
</table>

*Sometimes, often, or very often understandable to a stranger when speaking to them. †Use their fingers when holding a pencil as opposed to those who grip a pencil in their fists or cannot hold a pencil. ††Can write their first name, even if some letters are not quite right (e.g., backwards). ‡Children who read the words written in books as opposed to pretending to read.
### Data Sources


### Endnotes


### Suggested Citation

MATH AND READING ACHIEVEMENT

Students' achievement scores across school subjects are important indicators of their overall academic performance. The National Assessment of Educational Progress (NAEP) conducts periodic assessments to measure students' knowledge and skills and provides results on subject matter achievement. For mathematics, the NAEP assessment measures students' knowledge in number properties and operations, measurement, geometry, data analysis and statistics, and algebra. The NAEP reading assessment measures students' comprehension of both literary and informational texts. For all subjects, the National Assessment Governing Board sets three achievement levels—basic, proficient, and advanced—based on what students should know and be able to do at each grade assessed.

In 2013, 42 percent of fourth-graders and 36 percent of eighth-graders were at or above proficiency in mathematics. Math achievement levels varied widely by students' race and ethnicity. Among fourth-graders, the highest percentage of students performing at the advanced level were non-Hispanic Asians (23 percent), followed by non-Hispanic Whites (10 percent) and non-Hispanics of multiple races (10 percent; figure 1). Less than 6 percent of students from each of the other racial and ethnic groups performed at the advanced level. The highest percentage of fourth-grade students performing below the basic proficiency level were non-Hispanic Black students (34 percent), followed by non-Hispanic American Indians/Alaska Natives (32 percent) and Hispanics (27 percent). Fewer than 10 percent of non-Hispanic White and non-Hispanic Asian students performed below the basic proficiency level. Overall, similar patterns were observed among eighth-graders.

Reading achievement varies by grade level and sex. In 2013, 35 percent of fourth-graders and 36 percent of eighth-graders were at or above proficiency in reading. Among both fourth- and eighth-graders, a higher percentage of females performed at the proficient (29 and 36 percent, respectively) and advanced (10 and 6 percent, respectively) levels compared to their male counterparts (proficient: 25 and 28 percent, respectively; advanced: 7 and 3 percent, respectively). At both grade levels, a higher percentage of males performed below the basic proficiency level.

Figure 1. Proficiency* in NAEP Mathematics Among Students in Grade 4, by Race/Ethnicity,** 2013

*Performance standards are set by the National Assessment Governing Board. Basic, proficient, and advanced levels measure what students should know and be able to do at each grade assessed. Basic denotes partial mastery of prerequisite knowledge and skills. Proficient reflects solid academic performance. Advanced denotes superior performance. Examples of knowledge and skills demonstrated by students at each achievement level are available in the Nation’s Report Cards in Mathematics and Reading at http://nces.ed.gov/nationsreportcard/subjectareas.asp. **Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin.
Figure 2. Proficiency* in NAEP Reading Among Students, by Grade Level and Sex, 2013

*Performance standards are set by the National Assessment Governing Board. Basic, proficient, and advanced levels measure what students should know and be able to do at each grade assessed. "Basic" denotes partial mastery of prerequisite knowledge and skills. "Proficient" reflects solid academic performance. "Advanced" denotes superior performance. Examples of knowledge and skills demonstrated by students at each achievement level are available in the Nation's Report Cards in Mathematics and Reading at http://nces.ed.gov/nationsreportcard/subjectareas.asp.

Data Sources
Figure 1 and 2. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress.

Endnotes

Suggested Citation
SEXUAL ACTIVITY AND CONTRACEPTIVE USE

In 2013, 46.8 percent of students in grades 9–12 reported having had sexual intercourse at least once during their lifetime. While this self-reported prevalence among high school students has not changed significantly from 2011 (47.4 percent), there has been a sustained decrease since 1991, when 54.1 percent of high school students reported ever having had sexual intercourse.1

Among all students, a similar number of male and female high school students reported having ever had sex (47.5 and 46.0 percent, respectively). With respect to race and ethnicity, 60.6 percent of non-Hispanic Black high school students reported having ever had sexual intercourse, compared to 49.2 percent of Hispanic, 43.7 percent of non-Hispanic White, and 22.6 percent of non-Hispanic Asian high school students (figure 1). The proportion of students who reported having had sexual intercourse increased with grade level: 30.0 percent of 9th-grade students had done so, compared to 41.4 percent of 10th-graders, 54.1 percent of 11th-graders, and 64.1 percent of 12th-graders.

Overall, 34.0 percent of students reported current sexual activity, defined as sexual intercourse with at least one person during the past 3 months. Among those students who reported current sexual activity, 40.9 percent reported not using a condom (whether they or their partner wore it) during their last intercourse (figure 2). With regard to sex, 46.9 percent of females reported not using a condom, compared to 34.2 percent of males. Additionally, female students were more likely than male students to report that no method to prevent pregnancy had been used (by themselves or partners) during their last intercourse (15.7 and 11.5 percent, respectively). With regard to grade level, the proportion of sexually active students to report not using a condom was highest among 12th-graders (47.0 percent).

Contraceptive use is a key component to reducing unintended pregnancies,2 and the majority of pregnancies occurring to adolescents are unintended.3 The U.S. Department of Health and Human Services Healthy People 2020 campaign includes national goals to increase the proportion of adolescents aged 17 years and younger who have never had sexual intercourse, reduce the number of pregnancies among adolescent females, increase the proportion of births that are intended, and increase contraceptive use among females who are at risk of unintended pregnancy.4

Figure 1. High School Students Who Have Ever Had Sexual Intercourse, by Race/Ethnicity, 2013

![Figure 1](image1)

Figure 2. Lack of Contraceptive Use* During Last Sexual Intercourse Among Sexually Active** High School Students, by Sex, 2013

![Figure 2](image2)

*By themselves or partners. **Defined as having had sexual intercourse with at least one person during the past 3 months.
Data Sources

Endnotes

Suggested Citation
**STIs AND HIV/AIDS**

Sexually transmitted infections (STIs), such as chlamydia and gonorrhea, can pose serious, long-term health complications for adolescents and young adults.\(^1\) Although young people aged 15–24 years represent only one-quarter of the sexually experienced population, they acquire nearly half of all new STIs.\(^2\) Among adolescents and young adults, chlamydia continues to be the most common of all the STIs reported to the Centers for Disease Control and Prevention (CDC). Overall, there were 2,001.7 reported cases of chlamydia per 100,000 adolescents aged 15–19 years in 2012 (figure 1). Rates of chlamydia vary by sex, with 3,291.5 cases of chlamydia per 100,000 female adolescents and 774.8 cases per 100,000 male adolescents. Gonorrhea was less common, with rates of 376.8 per 100,000 among all adolescents, 521.2 per 100,000 female adolescents, and 239.0 per 100,000 male adolescents (figure 2).

Human immunodeficiency virus (HIV) is a disease that destroys cells that are critical to a healthy immune system. Acquired immunodeficiency syndrome (AIDS) is diagnosed when HIV has weakened the immune system enough that the body has difficulty fighting disease and infections. Early age at sexual initiation, unprotected sex, drug use, older sex partners, and lack of awareness place adolescents at an increased risk of contracting HIV.\(^3\) By the end of 2010, an estimated 7,272 adolescents between 15 and 19 years of age were living with a diagnosed HIV infection. With regard to race and ethnicity, 148.2 per 100,000 non-Hispanic Black adolescents and 7.1 per 100,000 non-Hispanic White adolescents were living with HIV.

Abstaining from sex and drug use is the most effective way to avoid HIV. Adolescents and young adults can also reduce their risk by knowing where to get tested for HIV, how to negotiate safer sex, and how to use a condom correctly. CDC has developed interventions that can be carried out locally to help reduce the risk to adolescents. One such program, Choosing Life: Empowerment! Action! Results!, is targeted to adolescents older than 16 and living with HIV/AIDS or at high risk for HIV.\(^4\)

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**Figure 1. Reported Chlamydia Infection Rates per 100,000 Adolescents Aged 15–19 Years, by Race/Ethnicity* and Sex, 2012**

*Rates by race/ethnicity should be interpreted with caution: 25.8% of case reports were missing race/ethnicity.*
Figure 2. Reported Gonorrhea Infection Rates per 100,000 Adolescents Aged 15–19 Years, by Race/Ethnicity* and Sex, 2012

*Rates by race/ethnicity should be interpreted with caution: 25.8% of case reports were missing race/ethnicity.

Data Sources

Endnotes


Suggested Citation
ADOLESCENT CHILDBEARING

Teen pregnancy is generally unintended and has long-term negative effects on future physical, behavioral, educational, and economic development of both mothers and children. Adolescent mothers are less likely than older mothers to finish high school or go on to college. Compared with babies of mothers in their 20s and early 30s, children born to teen mothers are more likely to be premature, have a low birth weight, weight, or die as infants. Children of adolescent mothers generally have poorer educational and behavioral outcomes than children born to older mothers and are more likely to initiate sex at an early age or to have a teen birth themselves.

According to preliminary data for 2013, the overall birth rate for adolescents aged 15–19 years was 26.6 births per 1,000 females, representing an 11 percent decline from 2012 (29.4 per 1,000) and a historic low for the nation. Birth rates for younger adolescents 15–17 years of age (12.3 per 1,000) declined by 13 percent while the rates for older adolescents, aged 18–19 years, declined by 8 percent to 47.4 per 1,000. Record lows were reached for both younger and older teens. The teen birth rate has fallen by more than 55 percent since 1991 (61.8 per 1,000), when the long-term decline began. The rate for teens aged 15–17 years has fallen 67 percent and the rate for those aged 18–19 years has declined by 47 percent.

Overall, birth rates for teenagers aged 15–19 years decreased for all racial and ethnic groups from 2011 to 2012, with declines ranging from 3 percent for American Indian/Alaska Native teens to 5 percent for Asian/Pacific Islander teens and 6–7 percent for non-Hispanic White, non-Hispanic Black, and Hispanic teens. Birth rates for younger teens aged 15–17 years decreased for all race and ethnic groups in 2012, while rates for older teens aged 18–19 years decreased for all but American Indian/Alaska Native and Asian/Pacific Islander adolescents.

Despite observed decreases, profound disparities continue to persist in adolescent childbearing rates across racial and ethnic groups. Among teens aged 15–19 years, birth rates ranged from a low of 9.7 per 1,000 females for Asian/Pacific Islander teens to a high of 46.3 per 1,000 females for Hispanic teens, an approximately fivefold difference. The birth rate among non-Hispanic White 15- to 19-year-olds was more than twice as low as those of both Hispanic and non-Hispanic Black teens of the same age.

The Community Preventive Services Task Force recommends both group-based and youth development behavioral interventions to protect against the risk of HIV/AIDS, other sexually transmitted diseases, and teen pregnancy. Group-based interventions, referred to as Comprehensive Risk Reduction Interventions for Adolescents, have shown results in reducing sexual activity, unprotected sex, and sexually transmitted infections and are applicable across a variety of populations and settings. Youth development behavioral interventions in these programs are coordinated with community service. Social, emotional, or cognitive competence training promotes prosocial norms, improved decisionmaking, self-determination, and positive peer or role model bonding, while community service provides opportunities to gain membership in groups with explicit rules and responsibilities.
### Data Sources


### Endnotes


### Suggested Citation


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### Figure 2. Birth Rates Among Adolescent Females Aged 15–19 Years, by Age and Race/Ethnicity, 2011 and 2012

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Total</th>
<th>Non-Hispanic White</th>
<th>Non-Hispanic Black</th>
<th>Hispanic</th>
<th>American Indian/Alaska Native*</th>
<th>Asian/Pacific Islander*</th>
</tr>
</thead>
<tbody>
<tr>
<td>15–19 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15–17 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–19 Years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*May include individuals of Hispanic origin. *Separate estimates for Asians, Native Hawaiians, and other Pacific Islanders were not available.
ADOLESCENT OVERWEIGHT AND OBESITY

Over the past 30 years, the prevalence of obesity has quadrupled among adolescents in the United States. In 2011–2012, 20.5 percent of youth aged 12–19 years were obese, 14.0 percent were overweight, 61.9 percent were of normal weight, and 3.6 percent were underweight. Overweight and obesity in adolescence is associated with overweight and obesity in adulthood, putting obese adolescents at increased risk of several adverse health conditions, including overweight and obesity later in life, high cholesterol and blood pressure, prediabetes, bone and joint problems, cancer, and other social and psychological health outcomes.

Adolescent weight status varies by several factors, including sex, race and ethnicity, and poverty status. In 2011–2012, nearly 40 percent of non-Hispanic Black and Hispanic youth were reportedly overweight or obese, compared to 31.2 percent of non-Hispanic White youth. Racial and ethnic differences varied by sex and were particularly pronounced among males, such that 21.4 percent of non-Hispanic Black males and 23.9 percent of Hispanic males were obese, compared to 18.3 percent of non-Hispanic White males (figure 1).

The prevalence of overweight and obesity also varies by poverty status. In 2011–2012, nearly 41 percent of youth living in households with incomes below 100 percent of poverty were overweight or obese. By comparison, 28.2 percent of youth living in households with incomes of 300 percent or more of poverty were overweight or obese. These differences were only notable among females: 17.1 and 25.9 percent of females living in households with incomes below 100 percent of poverty were overweight and obese, respectively, compared to 9.0 and 10.8 percent of their female counterparts living in households with incomes of 300 percent or more of poverty (figure 2).

The Community Preventive Services Task Force recommends several strategies for preventing obesity in community settings. For example, behavioral interventions for reducing screen time (e.g., time spent watching television, playing computer games, or browsing the Internet) have improved weight-related outcomes among children and adolescents.
Figure 2. Overweight and Obese Children Aged 12–19 Years, by Sex and Poverty Status,** 2011–2012

*Based on Body Mass Index (BMI, ratio of height to weight squared) growth charts for age and sex from measured height and weight: underweight is a BMI under the 5th percentile, normal weight is a BMI between the 5th and 84th percentile, overweight is a BMI between the 85th and 94th percentile, and obesity is a BMI in the 95th percentile or above. **The U.S. Census Bureau weighted average poverty threshold for a family of four was $23,492 in 2012.
PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR

The U.S. Department of Health and Human Services recommends that children and adolescents get 1 hour or more of physical activity every day, most of which should be moderate- to vigorous-intensity aerobic activity.\(^1\) Data from the 2013 Youth Risk Behavior Surveillance System showed that 27.1 percent of high school students were physically active for at least 60 minutes on each of the 7 previous days (figure 1).

Achievement of recommended levels of physical activity varied by both sex and grade level. Among high school students in all grades, a smaller proportion of females reported 60 minutes of physical activity on each of the previous 7 days than males (17.7 versus 36.6 percent, respectively). Students in the 9th grade were more likely to achieve the recommended level of physical activity than those in the 12th grade (30.4 versus 24.3 percent, respectively). With regard to race and ethnicity, 21.8 percent of non-Hispanic Asian students reported recommended levels of physical activity, compared to 28.2 percent of non-Hispanic Whites.

In conjunction with physical activity, experts recommend limiting sedentary behaviors. Specifically, the American Academy of Pediatrics recommends that parents limit children’s media time to 1–2 hours per day.\(^2\) This includes time spent watching TV or videos as well as time spent playing video or computer games. In 2013, 32.5 percent of high school students reported watching 3 or more hours of television per day on an average school day. There was no difference in the proportion of males and females who reported this level of television watching. However, students in 9th grade were slightly more likely to watch 3 or more hours of television than students in 12th grade (34.9 versus 31.3 percent, respectively).

The proportion of students who reported 3 or more hours of television watching varied significantly by race and ethnicity (figure 2). More than half of non-Hispanic Black students (53.7 percent) reported this level of television viewing, while the same was true for about one-quarter of non-Hispanic White and Asian students (25.0 and 24.5 percent, respectively) and more than one-third of Hispanic students (37.8 percent).

In the same year, 41.3 percent of high school students reported playing video games or using computers for something other than school work, such as computer games, for 3 or more hours per day on an average school day. The proportion varied by grade level, as 9th-grade students were more likely to engage in this behavior than those in 12th grade (44.8 versus 36.9 percent, respectively). These activities varied by race and ethnicity, with non-Hispanic Asian (51.5 percent) and non-Hispanic Black students (49.1 percent) more likely to report this level of video game and computer use than non-Hispanic White students (37.4 percent).

---

**Figure 1. Physical Activity* Among High School Students, by Grade, 2013**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percent of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>27.1</td>
</tr>
<tr>
<td>9th Grade</td>
<td>30.4</td>
</tr>
<tr>
<td>10th Grade</td>
<td>27.6</td>
</tr>
<tr>
<td>11th Grade</td>
<td>25.5</td>
</tr>
<tr>
<td>12th Grade</td>
<td>24.3</td>
</tr>
</tbody>
</table>

*Defined as physical activity that increased their heart rate and made them breathe hard some of the time for a total of at least 60 minutes on each of the last 7 days.
Figure 2. Sedentary Behavior in the Past Week Among High School Students, by Race/Ethnicity, 2013

Data Sources

Endnotes

Suggested Citation
ADOLESCENT NUTRITION

Adolescents face unique challenges to healthy eating as they become more independent from their families. Improving diet quality among this population is a key public health concern, as approximately one out of every five adolescents aged 12–19 years was obese in 2011–2012. Inadequate consumption of essential nutrients can have a negative impact on adult health. Adequate calcium intake in adolescence is essential to attainment of peak bone mass. In addition, poor diet quality can increase the risk of chronic diseases such as cardiovascular disease, cancer, and type 2 diabetes.

The Healthy Eating Index-2010 (HEI-2010) is designed to measure dietary quality and can be used to assess how well a population eats on average compared to the recommendations outlined in the 2010 Dietary Guidelines for Americans. Nine of the 12 HEI-2010 components address dietary adequacy of healthy foods. The remaining three components assess intake of foods that should be consumed in moderation: refined grains, sodium, and empty calories. In the table below, the HEI-2010 total and component scores are averages across all children, based on a 24-hour dietary recall.

In 2009–2010, the overall composite score for the HEI-2010 among adolescents aged 12–19 years was 46 out of 100 possible points, where 100 points indicates a diet that aligns with the 2010 Dietary Guidelines for Americans. With regard to the nine components of dietary adequacy, adolescents received 96 percent of the possible points for protein intake and 63 percent of the possible points for whole fruit intake. Adolescents were least likely to consume adequate amounts of greens and beans and whole grains, with 17 and 14 percent, respectively, of possible points obtained (table 1).

HEI-2010 scores for individual components varied with sex. Female adolescents consumed 50 percent of the possible points for vegetables compared to 43 percent for males. Female adolescents were also more likely to consume recommended levels of sodium than were male adolescents, with 42 and 38 percent, respectively, consuming moderate levels. Non-Hispanic White adolescents were closer to meeting recommended levels of dairy consumption (78 percent) than non-Hispanic Black and Hispanic adolescents (59 and 64 percent, respectively). Overconsumption of refined grains, sodium, and empty calories was prevalent across all racial and ethnic groups.

Overall composite scores for diet quality did not vary by household poverty level; however, these scores mask differences in consumption of individual components (table 1). With regard to seafood and plant proteins, adolescents in households with incomes of 200 percent or more of poverty consumed about 57 percent of possible points compared to 36 percent among those in households with incomes of less than 100 percent of poverty. Conversely, adolescents living in households with incomes of 200 percent or more of poverty had lower scores for optimal consumption of sodium compared to adolescents in households with incomes less than 100 percent of poverty (35 versus 43 percent, respectively).

### Table 1. Diet Quality Among Adolescents Aged 12–19 as Measured by Healthy Eating Index (HEI-2010) Scores,* by Poverty Status,** 2009–2010

<table>
<thead>
<tr>
<th>Dietary Component</th>
<th>Overall Average</th>
<th>Less Than 100% of Poverty</th>
<th>100–199% of Poverty</th>
<th>200% or More of Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adequacy (higher score indicates higher consumption)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total fruit</td>
<td>56</td>
<td>59</td>
<td>52</td>
<td>56</td>
</tr>
<tr>
<td>Whole fruit</td>
<td>63</td>
<td>60</td>
<td>46</td>
<td>72</td>
</tr>
<tr>
<td>Total vegetables</td>
<td>46</td>
<td>42</td>
<td>42</td>
<td>49</td>
</tr>
<tr>
<td>Greens and beans</td>
<td>17</td>
<td>19</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>Whole grains</td>
<td>14</td>
<td>12</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>Dairy</td>
<td>71</td>
<td>71</td>
<td>67</td>
<td>73</td>
</tr>
<tr>
<td>Total protein foods</td>
<td>96</td>
<td>94</td>
<td>93</td>
<td>97</td>
</tr>
<tr>
<td>Seafood and plant proteins</td>
<td>50</td>
<td>36</td>
<td>48</td>
<td>57</td>
</tr>
<tr>
<td>Fatty acids</td>
<td>36</td>
<td>39</td>
<td>40</td>
<td>34</td>
</tr>
<tr>
<td><strong>Moderation (higher score indicates lower consumption)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refined grains</td>
<td>39</td>
<td>41</td>
<td>44</td>
<td>35</td>
</tr>
<tr>
<td>Sodium</td>
<td>39</td>
<td>43</td>
<td>44</td>
<td>35</td>
</tr>
<tr>
<td>Empty calories</td>
<td>47</td>
<td>48</td>
<td>43</td>
<td>49</td>
</tr>
</tbody>
</table>

*In this table, all scores are shown as a percentage of possible points. Total HEI-2010 scores reflect overall dietary quality. For the adequacy components, higher scores reflect higher intakes and a score corresponding to 100 indicates that the standard was met or exceeded on average. For the moderation components, higher scores reflect lower intakes because lower intakes are more desirable and a score corresponding to 100 indicates that the standard was met. For all components, a higher score indicates a higher quality diet. "Empty calories" refers to calories from solid fats (i.e., sources of saturated fats and trans fats) and added sugars (i.e., sugars not naturally occurring). Total fruit includes 100 percent fruit juice. **The U.S. Census Bureau weighted average poverty threshold for a family of four was $23,492 in 2012.

### Data Sources


### Suggested Citation

MENTAL HEALTH

An individual is considered to have a mental disorder when he or she experiences changes in thinking, mood, or behavior as a result of distress or impairment. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), in 2012, 2.2 million adolescents aged 12–17 years (9.1 percent) had an MDE in the past year. Adolescent females were nearly three times as likely as adolescent males to have experienced a past-year MDE (13.7 versus 4.7 percent, respectively; figure 1). The occurrence of past-year MDEs was greater among older adolescents of both sexes. For example, among female adolescents, 5.4 percent of those aged 12 years and more than 15 percent of those aged 15–17 years experienced past-year MDE. Substance dependence or abuse commonly co-occurs with an MDE. Among youth who experienced a past-year MDE, 16.0 percent had a substance use disorder compared to 5.1 percent of adolescents without a past-year MDE (figure 2).

The occurrence of an MDE in the past year among adolescents was higher among those who reported being in poor health. Among adolescents in fair or poor health, nearly one-fifth (17.8 percent) reported experiencing a past-year MDE compared to 12.4 percent of those in good health, 9.2 percent of those in very good health, and 6.2 percent of those in excellent health. With respect to race and ethnicity, past-year occurrence of an MDE ranged from 4.2 percent among non-Hispanic Asian youth to 11.3 percent of non-Hispanic adolescents of multiple races.

Risk factors for depression include stress, experiencing a significant loss, and having an existing emotional or behavioral disorder. Primary care providers can screen for depression in adolescents when they experience changes in thinking, mood, or behavior as a result of distress or impairment.

Figure 1. Occurrence of Major Depressive Episode (MDE)* in the Past Year Among Adolescents Aged 12–17 Years, by Age and Sex, 2012

Figure 2. Past Year Substance Dependence or Abuse Among Adolescents Aged 12–17 Years, by Past Year Major Depressive Episode (MDE)*, 2012
systems following a collaborative care model are in place. By connecting primary care providers, case managers, and mental health specialists to each other and patients, systems can efficiently improve symptoms, adherence and response to treatment, remission, and recovery. Other mental health interventions can be found at SAMHSA's National Registry of Evidence-based Programs and Practices (NREPP), which is a database of interventions that have met minimum requirements for review and have been independently assessed and rated for quality and readiness for dissemination. NREPP is available to help the public learn more about evidence-based programs and practices to help determine which may best meet their needs.

Data Sources

Endnotes

Suggested Citation
VIOLENCE

Violence among adolescents occurs in multiple forms and is a critical public health issue in the United States. Instances of violence include physical fighting, dating violence, and homicide, which was the third leading cause of death among all persons aged 10–24 years in 2010 (the latest year for which data are available).1

Data from the Youth Risk Behavior Surveillance System show that in 2013, 8.1 percent of high school students reported being in a physical fight on school property during the preceding 12 months. This represents a decrease since 2011, when 12.0 percent of students reported such violence. The proportion of students to report fighting at school also varied by grade level, with 10.9 percent of 9th-graders reporting fighting compared to 4.9 percent of 12th-graders (figure 1).

In 2013, male students were more than twice as likely to report having been in a fight as female students (10.7 versus 5.6 percent, respectively). With regard to race and ethnicity, 12.8 percent of all non-Hispanic Black students reported fighting at school, compared to 9.4 percent of Hispanic students and 6.4 percent of non-Hispanic White students.

In addition to a physical fight, high school students may experience dating violence in the form of either physical violence or unwanted sexual advances. Approximately 1 of every 10 high school students who had been in a relationship during the past 12 months reported that they were hit, slapped, or otherwise physically hurt on purpose by their boyfriend or girlfriend at least once. The proportion of students who reported that they had experienced physical dating violence was higher among 12th-graders compared to 9th-graders (11.7 versus 8.8 percent, respectively) and higher among female students than male students (13.0 versus 7.4 percent, respectively).

Sexual dating violence is any unwanted kissing, unwanted touching, or being forced to have sexual intercourse by the person they are dating. In 2013, approximately 1 of every 10 high school students who had been in a relationship during the past 12 months reported this form of violence. Females were more than twice as likely as males to experience sexual dating violence (14.4 versus 6.2 percent, respec-
With regard to race and ethnicity, non-Hispanic Asian students (17.0 percent) were more likely to experience sexual dating violence than non-Hispanic White students (9.8 percent) and non-Hispanic Black students (8.9 percent; figure 2). School-based programs where students are taught about violence prevention are recommended as an evidence-based way to reduce youth violence. Both individual and group cognitive-behavioral therapy are also recommended.\textsuperscript{2,3}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2.png}
\caption{High School Students* Experiencing Dating Violence in the Past 12 Months, by Race/Ethnicity,** 2013}
\end{figure}

*Includes students who dated someone during the 12 months before the survey. **Data for Native Hawaiians, Other Pacific Islanders, American Indians, and Alaska Natives do not meet standards for reliability or precision. \textsuperscript{1}Defined as being hit, slammed into something, or injured with an object or weapon on purpose by someone whom they were dating. \textsuperscript{2}Defined as unwanted kissing, unwanted touching, or being physically forced to have sexual intercourse by someone whom they were dating.

\textbf{Data Sources}

\textbf{Endnotes}

\textbf{Suggested Citation}
BULLYING

Bullying is defined as unwanted, aggressive behavior that may be repeated and involves a real or perceived imbalance of power. Making threats, spreading rumors, attacking someone physically or verbally, and excluding someone from a group on purpose are all examples of bullying. Cyberbullying, or bullying that uses electronic technology, is different from other types of bullying in that it can happen at any time, messages and images can be posted anonymously and distributed quickly via the Internet, and they can be very difficult to delete after posting.¹

There is no specific factor that puts children at risk of being bullied or bullying others, although some groups, such as lesbian, gay, bisexual, or transgendered youth; youth with disabilities; and socially isolated youth may be at higher risk.² Being bullied has been associated with a wide range of short- and long-term emotional, physical, and developmental consequences, including depression, anxiety, headaches, sleeping problems, stomach ailments, and decreased academic achievement. Children who bully are also more likely to engage in violent and risky behaviors, such as drug and alcohol use and early sexual activity. Even children who witness bullying can be negatively affected.³

In 2013, 19.6 percent of high school students reported that they had been bullied on school property in the past year and approximately one in six high school students (14.8 percent) reported having been electronically bullied through e-mail, chat rooms, instant messaging, Web sites, or texting (figure 1). The likelihood of being bullied varied by a number of factors, including sex, grade level, and race and ethnicity. Females were more likely than males to have been bullied on school property (23.7 versus 15.6 percent, respectively) and more than twice as likely as males to have been electronically bullied (21.0 versus 8.5 percent, respectively).

Younger high school students were also more likely to report being bullied than older students: 25.0 percent of 9th-graders reported being bullied at school compared to 13.3 percent of 12th-graders (figure 1). Similarly, 9th-graders were slightly more likely than 12th-graders to report being bullied electronically (16.1 versus 13.5 percent, respectively).

Non-Hispanic Black students were less likely to report being bullied on school property or bullied electronically (12.7 and 8.7 percent, respectively) than all other racial and ethnic groups (figure 2). In comparison, non-Hispanic White students were significantly more likely

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**Figure 1. High School Students Who Were Bullied in the Past Year, by Grade and Location of Bullying, 2013**

<table>
<thead>
<tr>
<th>Location of Bullying</th>
<th>Total</th>
<th>9th grade</th>
<th>10th grade</th>
<th>11th grade</th>
<th>12th grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullied on School Property</td>
<td>19.6</td>
<td>14.8</td>
<td>16.1</td>
<td>14.5</td>
<td>14.9</td>
</tr>
<tr>
<td>Bullied Electronically</td>
<td>25.0</td>
<td>16.1</td>
<td>22.2</td>
<td>16.8</td>
<td>14.9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2. High School Students Who Were Bullied in the Past Year, by Race/Ethnicity and Location of Bullying, 2013**

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Bullied on School Property</th>
<th>Bullied Electronically</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic White</td>
<td>21.8</td>
<td>16.9</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>16.9</td>
<td>12.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>21.7</td>
<td>12.8</td>
</tr>
<tr>
<td>Non-Hispanic Asian</td>
<td>22.9</td>
<td>15.7</td>
</tr>
<tr>
<td>Non-Hispanic Native Hawaiian/Other Pacific Islander</td>
<td>21.4</td>
<td>18.0</td>
</tr>
<tr>
<td>Non-Hispanic American Indian/Alaska Native</td>
<td>24.4</td>
<td>18.9</td>
</tr>
</tbody>
</table>
to report electronic bullying (16.9 percent) than non-Hispanic Asian, Hispanic, and non-Hispanic Black high school students (12.9, 12.8, and 8.7 percent, respectively). Evidence-based recommendations to reduce bullying and its associated risks include both school-based programs that teach students about violence prevention and individual and group cognitive-behavioral therapy interventions for students exposed to violence.4,5

Data Sources

Endnotes

Suggested Citation
CIGARETTE SMOKING

The use of tobacco products, such as cigarettes, can lead to a variety of illnesses and conditions, including cancer, heart disease, and lung disease. Smoking is the leading preventable cause of death and disease in the United States, accounting for more than 1,200 deaths each day. Cigarette smoking among adolescents can result in both immediate and long-term damage. Adolescents who smoke face reduced lung function and slowed lung growth, which may increase their risk for chronic obstructive pulmonary disease. The earlier the age of initiation, the more likely individuals will develop nicotine addiction, which prolongs cigarette use. Almost 9 out of 10 cigarette users started smoking by age 18.

The rate of past month cigarette use among adolescents aged 12–17 years declined by nearly half, from 13.0 to 6.6 percent, between 2002 and 2012 (figure 1). Current cigarette use in 2012 varied by age, with rates of 13.6 percent among youth aged 16–17 years, compared to 4.6 percent of youth aged 14–15 years and 1.2 percent of youth aged 12–13 years.

While cigarette use rates were similar for adolescent males and females (6.8 and 6.3 percent, respectively), past-month use varied by race and ethnicity. Rates were highest among non-Hispanic American Indian/Alaska Native (11.8 percent), non-Hispanic White (8.2 percent), and non-Hispanic youth of multiple races (7.5 percent) while lowest among non-Hispanic Asian youth (1.7 percent).

The rate of past-month cigarette use was greater in nonmetro counties (9.0 percent) than in both large metro (5.6 percent) and small metro counties (7.1 percent; figure 2).

The rate of past year initiation of cigarette use among adolescents was 4.1 percent. Rates of past year initiation have only recently started to decline, with rates falling from 4.9 percent in 2010 to 4.1 percent in 2012.

Prevention strategies must focus on reducing initiation and continuation of cigarette use as well as promoting cessation. More than 80 percent of smokers under 18 years of age used cigarettes from the top three most advertised brands. Health communication interventions have been shown to effectively decrease tobacco use initiation and prevalence as well as increase cessation, especially as part of a set of comprehensive tobacco control measures. Successful messages used emotional appeal through personal testimonials or graphic images of harms caused by tobacco and also provided cessation services information. Smoke-free policies have been shown to effectively reduce tobacco-related morbidity and mortality, in addition to reducing tobacco use initiation and prevalence and increasing

Figure 1. Past Month Cigarette Use Among Adolescents Aged 12–17 Years, 2002–2012
cessation. Smoking may be restricted to designated outdoor locations or even completely banned. Initiation, prevalence, and intensity of cigarette smoking can be reduced by increasing tobacco prices. In addition, clinicians can play a role in promoting cessation as part of comprehensive pediatric care. Adolescents should be screened for tobacco use at every clinical encounter, and receive appropriate guidance regarding the risks of tobacco use and benefits of tobacco cessation.

Data Sources

Endnotes

Suggested Citation
SUBSTANCE USE

Drugs alter brain functioning, and early substance use is especially dangerous, as it increases an individual’s risk for drug abuse and addiction as well as teenage pregnancy, HIV/AIDS, other sexually transmitted diseases, motor vehicle accidents, crime, homicide, and suicide.\textsuperscript{1,2} Substance use includes the use of alcohol, as well as the use of illicit drugs including cocaine, hallucinogens, heroin, inhalants, marijuana, and nonmedical use of prescription-type psychotherapeutic drugs, such as pain relievers and stimulants.

Alcohol continues to be the most commonly used substance among adolescents aged 12–17 years, with 12.9 percent reporting past-month use in 2012 (figure 1). This reflects a decrease from 17.6 percent in 2002. Alcohol use varied greatly by age, with only 2.2 percent of youth aged 12–13 years reporting past-month use, compared to 11.1 percent of youth aged 14–15 years and 24.8 percent of youth aged 16–17 years. Past-month alcohol use also varied by race and ethnicity, with rates ranging from 4.9 percent among non-Hispanic Asian youth to 14.6 percent of non-Hispanic White youth (figure 1).

In 2012, 9.5 percent of adolescents reported using illicit drugs in the past month compared to 11.5 percent in 2002. In contrast to alcohol use, illicit drug use among adolescents has not consistently declined over the past decade and has remained between 9 and 10 percent since 2005. The rate of current illicit drug use was greater among older adolescents, ranging from 3.5 percent of those aged 12–13 years to 16.6 percent of those aged 16–17 years (figure 2).

Non-Hispanic Asian youth reported the lowest rates of past month illicit drug use (2.6 percent), while the highest rates were among non-Hispanic youth of multiple races (14.7 percent). Rates of past-month illicit drug use among non-Hispanic White, Hispanic, non-Hispanic Black, and non-Hispanic American Indian/Alaska Native youth were 9.6, 9.7, 10.2, and 12.1 percent, respectively.

Marijuana is consistently the most commonly used illicit drug among adolescents, with 7.2 percent reporting past-month use in 2012. This was followed by nonmedical use of prescription-type psychotherapeutics (2.8 percent; figure 2). There were no differences in past-month alcohol or illicit drug use between male and female adolescents.

Adolescence is an especially critical time for substance use prevention.\textsuperscript{2} Evidence-based prevention programs that focus on increasing protective factors and reducing risk factors for drug use can significantly reduce substance use among adolescents. Some risk factors include early aggressive behavior, lack of parental supervision, drug availability, and poverty. Protective factors include self-control, parental monitoring, academic competence, anti-drug use policies, and strong neighborhood attachment.\textsuperscript{3,4} The Community Preventive Services Task Force also recommends several school and community-based strategies to reduce underage drinking and alcohol-impaired driving.\textsuperscript{5,6}
Figure 2. Past Month Substance Use Among Adolescents Aged 12–17 Years, by Drug Type and Age, 2012

<table>
<thead>
<tr>
<th>Drug Type</th>
<th>12–13 Years</th>
<th>14–15 Years</th>
<th>16–17 Years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>12.9</td>
<td>11.1</td>
<td>11.1</td>
<td>24.8</td>
</tr>
<tr>
<td>Any I illicit Drug*</td>
<td>9.5</td>
<td>8.2</td>
<td>16.6</td>
<td>12.9</td>
</tr>
<tr>
<td>Marijuana</td>
<td>7.2</td>
<td>6.1</td>
<td>14.0</td>
<td>11.1</td>
</tr>
<tr>
<td>Non-Medical Use of Psychotherapeutics**</td>
<td>2.5</td>
<td>1.7</td>
<td>4.0</td>
<td>2.8</td>
</tr>
<tr>
<td>Inhalants</td>
<td>0.8</td>
<td>0.9</td>
<td>0.7</td>
<td>0.9</td>
</tr>
<tr>
<td>Hallucinogens*</td>
<td>0.2</td>
<td>0.5</td>
<td>1.2</td>
<td>0.5</td>
</tr>
<tr>
<td>Cocaine</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
</tbody>
</table>

*Illicit drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used non-medically. **Includes nonmedical use of pain relievers, sedatives, stimulants, and tranquilizers; does not include over-the-counter substances. *Includes LSD, PCP, and ecstasy.

Data Sources

Endnotes

Suggested Citation
HIGH SCHOOL COMPLETION

Education plays a critical role in the health and well-being of young adults in the United States. Previous studies have found that education is associated with better health outcomes. For example, those who graduate from high school have lower death rates and an average life expectancy 6–9 years greater than those who do not graduate from high school. Individuals who do not complete high school have higher rates of illness and earlier deaths.

In 2013, more than 90 percent of 18- to 24-year-olds not enrolled in high school had received a high school diploma or equivalent credential (e.g., General Educational Development certificate). High school completion was highest among non-Hispanic Asians (95.8 percent), non-Hispanic Native Hawaiians and other Pacific Islanders (95.3 percent), and non-Hispanic Whites (93.7 percent; figure 1). High school completion was lower among other racial and ethnic groups, including non-Hispanic persons of multiple races (92.5 percent), non-Hispanic Blacks (89.3 percent), non-Hispanic American Indians and Alaska Natives (86.2 percent), and Hispanics (81.8 percent).

High school completion also varies by age and sex. In 2013, a higher percentage of females had a high school degree or equivalent than their male counterparts (91.9 versus 89.4 percent, respectively; figure 2). These differences were also evident at specific ages. High school completion was highest among females who were 23 years of age (94.5 percent), and lowest among 18-year-old males and females (76.5 and 83.6 percent, respectively). High school completion programs for students at high risk of non-completion show strong evidence of effectiveness for all students and for the subset of students at risk for non-completion because they are pregnant or have children.3

![Figure 1. Young Adults Aged 18–24 Years Not Currently Enrolled in High School With a High School Degree or Equivalent, by Race/Ethnicity, 2013](image1)

![Figure 2. Young Adults Aged 18–24 Years Not Currently Enrolled in High School With a High School Degree or Equivalent, by Age and Sex, 2013](image2)
Data Sources

Endnotes