CDC Health Disparities and Inequalities Report — United States, 2011
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Infant mortality rates are an important indicator of the health of a nation because they are associated with maternal health, quality of and access to medical care, socioeconomic conditions, and public health practices (1,2). The U.S. infant mortality rate (the number of deaths among infants aged <1 year per 1,000 live births) declined from approximately 100 deaths per 1,000 births in 1900 (3) to 6.89 in 2000 (4). However, the rate did not decline substantially from 2000 to 2005. The infant mortality rate declined slightly but significantly from 6.86 in 2005 to 6.68 in 2006. The 2007 rate (6.75) was not significantly different from the 2006 rate (6.68) (4–6). In addition, considerable differences in infant mortality rates among racial/ethnic groups have persisted and even increased, demonstrating that not all racial/ethnic groups have benefited equally from social and medical advances (5,7).

To analyze trends and variations in infant mortality in the United States, CDC analyzed data from linked birth–infant death data sets (linked files) for 2000–2006 (8). In these data sets, information from the birth certificate is linked to information from the death certificate for each infant (aged <1 year) who dies in the United States. This allows researchers to use the more accurate race/ethnicity data from the birth certificate for infant mortality analysis (8,9). Linked data are available through 2006. Data by maternal race and Hispanic ethnicity are based on information reported by the mother during the birth registration process. Race and ethnicity are reported separately on birth certificates, and persons of Hispanic origin might be of any race. Data from the main mortality file (i.e., death certificates not linked to birth certificates) are available for 2007 and are used for the overall infant mortality rate but not for race/ethnicity comparisons (6). Infant mortality rates were calculated as the number of infant deaths per 1,000 live births in the specified group. Percentage change over time was calculated by comparing the rates for the beginning and end points in each period. Differences between infant mortality rates were assessed for statistical significance by using the z test (p<0.05). National data on infant mortality according to educational attainment and family income status were not analyzed; these data are not available because they are either not collected or collected inconsistently.

During 2007, a total of 29,138 infant deaths occurred in the United States, with a U.S. infant mortality rate of 6.75 deaths per 1,000 live births (6), compared with 6.89 during 2000 (5). The infant mortality rate in the United States was higher than the rate for the majority of other developed countries, in part because of a substantially higher percentage of preterm births, a critical risk factor for infant mortality (10).

During 2006, the latest year for which reliable race/ethnicity data are available, the overall U.S. infant mortality rate was 6.68 infant deaths per 1,000 live births, with considerable disparities by race and Hispanic origin (Table). The highest infant mortality rate was for non-Hispanic black women (13.35), with a rate 2.4 times that for non-Hispanic white women (5.58). Compared with non-Hispanic white women (5.58), infant mortality rates were 48% higher for American Indian/Alaska Native (AI/AN) women (8.28) and 44% higher for Puerto Rican women (8.01). Compared with non-Hispanic white women (5.58), infant mortality rates were 4% lower for Mexican (5.34) women and 18% and 19% lower for Asian/Pacific Islander (A/PI) (4.55) and Central or South American women (4.52), respectively. Cuban mothers also had a low rate (5.08). Percentage changes from 2000 to 2006 in infant mortality rates for each racial/ethnic group were not statistically significant.

Racial/ethnic differences in infant mortality rates might reflect, in part, differences in maternal sociodemographic and behavioral risk factors. For example, infant mortality rates are higher than the U.S. average among infants born to mothers who are adolescents, unmarried, smokers, have lower educational levels, had a fourth or higher order birth, or did not obtain adequate prenatal care (5). Substantial racial/ethnic disparities in income and access to health care also might contribute to differences in infant mortality (11). Racial/ethnic groups with the lowest infant mortality rates tend to have a smaller percentage of births to women with some or all of these characteristics, whereas the racial/ethnic groups with the highest infant mortality rates tend to have a higher percentage of births to women with some or all of these characteristics. However, the influence of an individual risk factor can vary considerably by race/ethnicity, indicating different medical profiles and life experiences for women of different racial/ethnic groups (7,12). For example, because of worsening health profiles, advancing maternal age might have more of an effect on infants born to black women than to white women (12). Conversely, reports indicate that supportive cultural and family environments among Mexican women contribute to low infant mortality rates, despite lower income and health insurance levels and a higher prevalence of certain risk factors (5,13,14). Other factors frequently mentioned as contributing to racial/ethnic differences in infant mortality include differences in maternal preconception health, infection, stress, racism, and social and cultural differences (7,12,15–17).

Risk factors associated with infant mortality rates are also risk factors for preterm or low birth-weight delivery and can affect infant mortality either directly or through the mechanism of preterm or low birth-weight delivery. In 2006, the percentage of infants born preterm (<37 completed weeks’ gestation) was substantially higher for non-Hispanic black (18.5%), Puerto Rican (14.4%), and AI/AN (14.2%) mothers than for non-Hispanic white mothers (11.7%).
(13). Infant mortality rates are substantially higher for preterm and low birth-weight infants, and even limited changes in the percentages of preterm or low birth-weight births can have a major impact on infant mortality rates (5).

The findings in this report are subject to at least two limitations. First, because of small numbers for AI/ANs, A/PIs, and Cubans, which might cause wide fluctuations in rates, trends and differences in infant mortality rates for these populations should be interpreted with caution. Second, not all infant deaths in the linked birth/infant death file used in this analysis are linked to their corresponding birth certificate. In 2006, 1.3% of infant death records were not linked; a record weight was added to the file to compensate for the unlinked records. However, the effect on the rates in this report is minimal.

Infant mortality is a complex problem with limited improvement nationally during the past years, despite the efforts of numerous infant mortality reduction programs (18,19). The United States appears unlikely to meet its national health objective for 2010 of an infant mortality rate of 4.5 infant deaths per 1,000 live births (objective 16-1b) or the overarching goal of eliminating disparities among racial/ethnic populations (20). The recent plateau in the U.S. infant mortality rate and the longstanding racial/ethnic disparities continue to generate concern among researchers and policymakers. For example, the difference in the infant mortality rate for non-Hispanic whites and non-Hispanic blacks was 13.8% in 2000 and 139.2% in 2006 (Table). Prevention of preterm birth is critical to lowering the overall infant mortality rate and reducing racial/ethnic disparities (21).

### TABLE. Infant mortality rates, by maternal race and Hispanic ethnicity — linked birth–infant death data sets, United States, 2000 and 2006

<table>
<thead>
<tr>
<th>Maternal race/ethnicity</th>
<th>2000 Infant mortality rate</th>
<th>Difference compared with non-Hispanic white mothers (%)</th>
<th>2006 Infant mortality rate</th>
<th>Difference compared with non-Hispanic white mothers (%)</th>
<th>Change in infant mortality rate from 2000 to 2006 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian/Alaska Native†</td>
<td>8.30</td>
<td>45.6§</td>
<td>8.28</td>
<td>48.4§</td>
<td>-0.2</td>
</tr>
<tr>
<td>Asian/Pacific Islander†</td>
<td>4.87</td>
<td>-14.6§</td>
<td>4.55</td>
<td>-18.5§</td>
<td>-6.6</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>13.59</td>
<td>138.4§</td>
<td>13.35</td>
<td>139.2§</td>
<td>-1.8</td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>5.70</td>
<td>Ref.</td>
<td>5.58</td>
<td>Ref.</td>
<td>-2.1</td>
</tr>
<tr>
<td>Hispanic, total§</td>
<td>5.59</td>
<td>-1.9</td>
<td>5.41</td>
<td>-3.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Central or South American</td>
<td>4.64</td>
<td>-18.6§</td>
<td>4.52</td>
<td>-19.0§</td>
<td>-2.6</td>
</tr>
<tr>
<td>Cuban</td>
<td>4.54</td>
<td>-20.4</td>
<td>5.08</td>
<td>-9.0</td>
<td>11.9</td>
</tr>
<tr>
<td>Mexican</td>
<td>5.43</td>
<td>-4.7§</td>
<td>5.34</td>
<td>-4.3§</td>
<td>1.7</td>
</tr>
<tr>
<td>Puerto Rican</td>
<td>8.21</td>
<td>44.0§</td>
<td>8.01</td>
<td>43.5§</td>
<td>-2.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6.89</strong></td>
<td><strong>—</strong></td>
<td><strong>6.68</strong></td>
<td><strong>—</strong></td>
<td><strong>-3.0</strong></td>
</tr>
</tbody>
</table>


* Number of deaths among infants aged <1 year per 1,000 live births.
† Includes persons of Hispanic and non-Hispanic origin.
§ Significant difference (p<0.05) by Z test.
¶ Includes other categories of Hispanic origin and Hispanics whose specific category is unknown.
** Category not applicable.

### References


