

Infant Mortality in Colorado



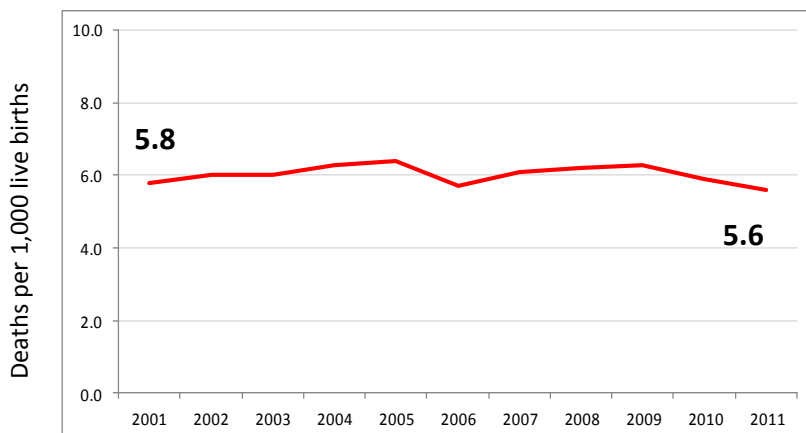
Healthy People goal:
By 2020 the infant mortality rate
will be reduced to 6.0 deaths per
1,000 births¹



Why is infant mortality an issue?

Infant mortality refers to the death of an infant before his or her first birthday. Infant mortality rates are often used as indicators of the health and well-being of a nation or state. The infant mortality rate is defined as the number of deaths among all births in one year, expressed as deaths per 1,000 births. In the United States, 25,000 infants die every year, including nearly 400 in Colorado.^{1,2} In Colorado in 2011 there were 362 deaths out of 65,052 births for a rate of 5.6; the U.S. rate was 6.1.³ Twelve states have lower infant mortality rates than Colorado.⁴ Forty-nine out of over 200 countries have lower infant mortality rates than the United States.⁵

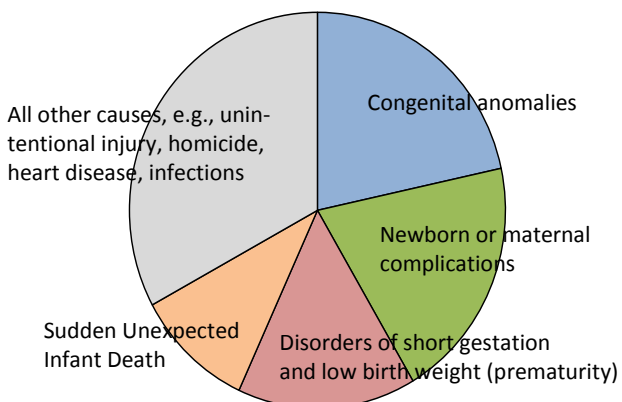
Infant Mortality Rate, Colorado, 2001-2011



Over the past 10 years, Colorado's infant mortality rate has been close to the Healthy People 2020 goal of 6.0 deaths per 1,000 births. It met the goal in the two most recent years, 2010 and 2011, as well as in 2001 and 2006.

What are the major causes of infant mortality?

Major Causes of Infant Mortality, Colorado, 2011



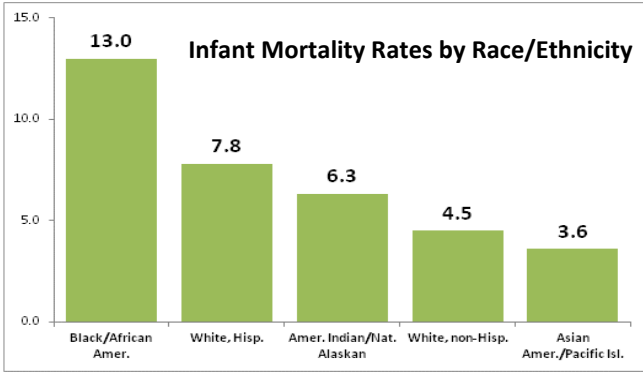
Congenital malformations and chromosomal abnormalities contribute 22 percent of all infant deaths.² Newborn and maternal complications comprise another 20 percent, and disorders related to prematurity and low birth weight contribute 15 percent. Sudden Unexpected Infant Death (SUID), including Sudden Infant Death Syndrome (SIDS), accidental suffocation and strangulation in bed, and undetermined deaths, make up 10 percent. All other causes make up the remaining 33 percent. Some causes of death are preventable, while others are more difficult to address.

Infant Mortality in Colorado

Social and Economic Health Disparities in Colorado, 2011²

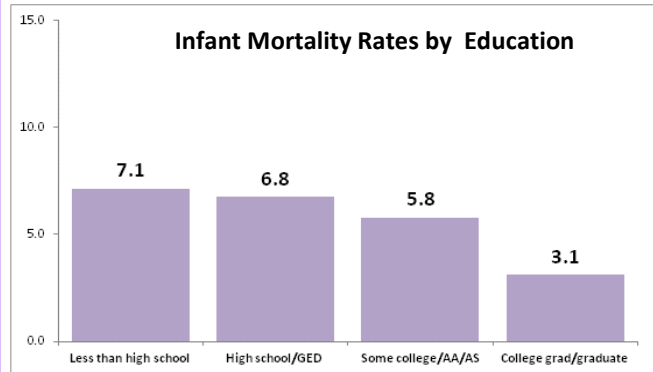
Racial disparity and associated socioeconomic inequality have been identified in the literature as root causes of infant mortality in the United States.⁶

Black infants experience nearly 3 times the mortality rate of White non-Hispanic infants



Infant mortality rates vary by race/ethnicity in Colorado. Infants of color, with the exception of Asian American/Pacific Islander infants, have higher infant mortality rates than White non-Hispanic infants.

Infants of mothers with less education experience higher mortality rates

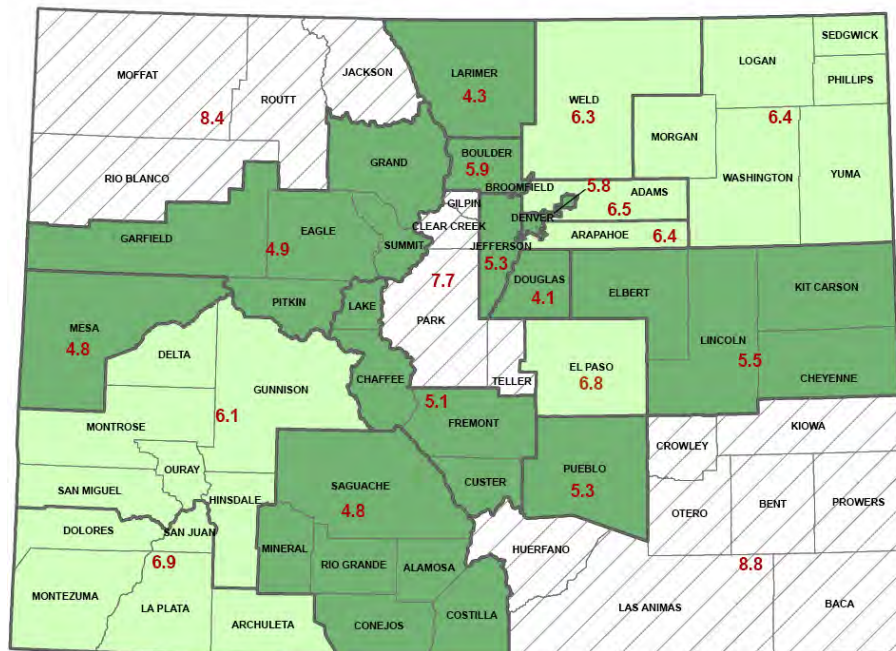


Infants of Colorado mothers with less than a high school education have higher infant mortality rates than infants of mothers with college degrees.

Which infants in Colorado have higher mortality rates?

- Infants born to mothers in minority groups and to those with less education
- Infants born to mothers in northwestern and southeastern Colorado have the highest infant mortality rates in the state

Infant Mortality Rates by Health Statistics Region, 2009-2011²



Legend

- More than 20% higher than HP 2020 target
- Within 20% of HP 2020 target
- Meeting HP 2020 target

The infant mortality rate (deaths per 1,000 births) is shown for each region (outlined in dark gray). The lowest rate is 4.1 in the Douglas County region and the highest rate is 8.8 in the region formed by counties in the southeast. The Healthy People 2020 goal is 6.0 deaths per 1,000 births.

Infant Mortality in Colorado

What are the components of infant mortality?

Infant mortality is divided into neonatal and postneonatal time frames with different causes associated with each period. Neonatal deaths occur before 28 days of life, while postneonatal deaths occur between 28 and 365 days. Serious congenital anomalies (birth defects), prematurity (birth before 37 completed weeks of gestation) and maternal complications of pregnancy are important contributors to neonatal death. SUID and violent death due to suffocation or homicide are contributors to postneonatal death.

Neonatal Mortality²

- Seven out of every ten (71%) Colorado infant deaths occur within 28 days of birth
- Serious congenital anomalies contribute to one out of every four neonatal deaths
- Colorado's neonatal death rate is 4.0 deaths per 1,000 births; the HP 2020 goal is 4.1

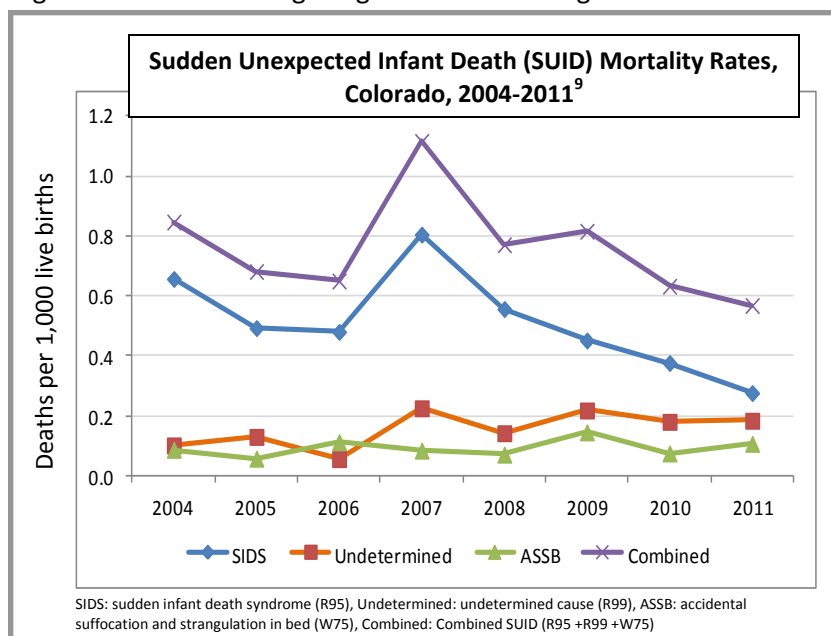
Postneonatal Mortality²

- Three out of every ten (29%) Colorado infant deaths occur between 28 days and one year of age
- One out of every seven postneonatal deaths is caused by unintentional injuries
- Colorado's postneonatal death rate is 1.6 deaths per 1,000 births; the HP 2020 goal is 2.0

Are some types of mortality preventable?

Prematurity and congenital anomalies are major contributors to neonatal mortality, but are complex issues to prevent. Some types of sleep-related infant death, however, may be completely preventable. The drive to reduce SIDS deaths is one example of a national campaign begun in 1994⁷ that reduced SIDS deaths by half in Colorado within six years. Colorado now ranks first among all states for the percentage of infants put to sleep on their backs, with 84 percent put to bed this way in 2010.⁸

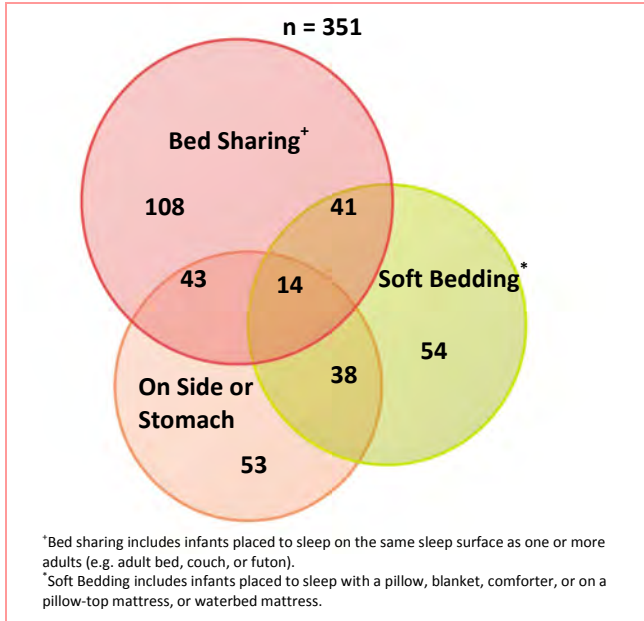
The graph shows infant mortality rates in recent years by type of SUID, a category accounting for 10 percent of all infant deaths. The top line combines deaths due to SIDS, undetermined cause of death, and accidental strangulation or suffocation in bed (ASSB); the combined rate in 2011 is just under 0.6 deaths per 1,000 births. While deaths related to SIDS have decreased, undetermined and ASSB deaths may be increasing slightly due to a shift in how these types of death are classified. A reason for the diagnostic shift may be more thorough death scene investigations, resulting in more deaths being assigned to these categories.



Infant Mortality in Colorado

What circumstances surround deaths that occur while infants sleep?

Number of Sleep Environment Infant Deaths by Known Type of Circumstance, Colorado 2004-2011⁹



The American Academy of Pediatrics recommends that infants sleep alone on their backs on a firm surface in their cribs. In addition, the Academy recommends that infants sleep in the same room as an adult (room sharing), but that they do not share the same bed.¹⁰ Between 2004 and 2011 a total of 474 Colorado infants died in sleep environments. At least 74 percent (351) of these infants were not placed to sleep according to the Academy recommendations regarding bed sharing, soft bedding and sleep position. The diagram shows the identified sleep environment circumstances among these infants.

Bed sharing appears to be an important factor in sleep environment deaths, with 206 infants dying when sharing the bed with another person or persons. Where the circles

overlap, two or more circumstances were present: for example, a total of 43 infants died who were sharing a bed *and* who were put to sleep on their side or stomach. Of the 474 infants who died between 2004 and 2011, only 9 percent (42) met the three major American Academy of Pediatrics recommendations (placed to sleep in a crib or bassinet alone, on their backs, on a firm surface). The sleep environments of 81 infants were unknown.



Maternal and Child Health Program
 Prevention Services Division
 Tel.:303-692-2427
www.mchcolorado.org
 February 2013

References

1. U.S. Dept. of Health and Human Services. Healthy People 2020 topics and objectives. www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=26. Accessed 12-6-12.
2. Colorado Vital Records, Colorado Dept. of Public Health and Environment.
3. Hoyert DL, Xu J. Deaths: preliminary data for 2011. Centers for Disease Control and Prevention. www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_06.pdf. Accessed 12-17-12.
4. Mathews TJ, MacDorman MF. Infant mortality statistics from the 2007 period linked birth/infant death data set. Centers for Disease Control and Prevention. www.cdc.gov/nchs/data/nvsr/nvsr59/nvsr59_06.pdf. Accessed 12-17-12.
5. Central Intelligence Agency. The World Factbook. cia.gov/library/publications/the-world-factbook/rankorder/2091rank.html. Accessed 1-16-13.
6. Singh GK, Yu SM. Infant mortality in the United States: trends, differentials, and projections, 1950 through 2010. *Am J Public Health*. 1995; 85(7): 957-964.
7. SIDS Rate and Back Sleeping (1988-2006), National Institute of Child Health and Human Development, National Institutes of Health, www.nichd.nih.gov/SIDS/Documents/SIDS_rate_back_sleep_2006.pdf. Accessed 12-10-12.
8. D'Angelo D. Pregnancy Risk Assessment Monitoring System (PRAMS): using data to reduce infant deaths. Infant mortality in the US: where we stand. Centers for Disease Control and Prevention. www.cdc.gov/about/grand-rounds/archives/2012/October2012.htm. Accessed 12-6-12.
9. Colo. Child Fatality Prevention System, Colo. Dept. of Public Health and Environment.
10. Task Force on Sudden Infant Death Syndrome. SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment. *Pediatrics*. 2011;128:1030-1039.

