

# Idaho Infant Deaths Due to Congenital Anomalies

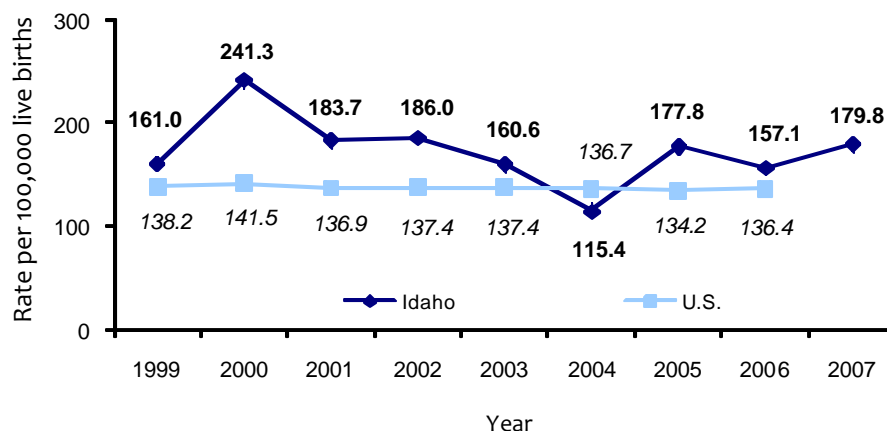
The category of congenital anomalies (birth defects) is the leading cause of death for infants in Idaho and the United States. Birth defects are classified as: Congenital malformations, deformations and chromosomal abnormalities.<sup>5</sup> Infant mortality is used to compare the health and well-being of populations across and within communities. Estimates of birth defect deaths are important in order to plan for health care and education needs of the U.S. population, identify increased occurrences of birth defects in specific geographical regions, serve as a reference point for assessment of state surveillance systems, evaluate national public health interventions, and to compare estimates with other countries.<sup>1</sup> Major structural birth defects are defined as conditions that 1) result from a malformation, deformation, or disruption in one or more parts of the body; 2) are present at birth; and 3) have a serious, adverse effect on health, development, or functional ability.<sup>2</sup>

Vital records (birth and death certificates) provide some valuable information about the incidence of birth defects when they are recorded at the time of birth or as a contributing cause of death. Data collected from infant death certificates functions as a crude indicator of the severity of birth defects. United States death data for 2006, indicated 5,819 (136.4 deaths per 100,000 live births) infants under the age of one died from birth defects in the U.S.<sup>3</sup> In 2007, 45 (179.8 deaths per 100,000 live births) Idaho resident infant deaths were due to birth defects.

Historically, Idaho has had higher birth defect mortality rates than the United States. There was a significant difference for infant birth defect mortality rates between the U.S. and Idaho from 1999 to 2006 and for the U.S. and Idaho for 2000. However there was not a significant difference for any other single year, or for Idaho from year to year, in the past nine years.\*\*

Idaho ranked 7<sup>th</sup> highest in the nation for infant mortality rates due to birth defects in 2005.<sup>8</sup> Rates for Idaho from 1999 to 2007 ranged from a high of 241.3 infant deaths per 100,000 live births in 2000 to a low of 115.4 in 2004.

U.S. and Idaho Infant Mortality Rates Due to Congenital Anomalies, 1999-2007



## Idaho Quick Facts

- In 2007, one in every four Idaho resident infant deaths (27 percent) were due to birth defects.
- The most common birth defect to Idaho resident infants is Congenital malformations of the circulatory system (heart defects).

**Types of Birth defects:** Birth defects are generally grouped into three major categories: Structural/metabolic, congenital infections, and other conditions.

### Structural or metabolic abnormalities include:

- Heart defects and neural tube defects (Spina bifida, for example), where some part of the body, either internal or external, is missing or malformed.<sup>2</sup>
- Recessive genetic diseases (Tay-Sachs disease or Phenylketonuria (PKU)). These diseases result from the inability of cells to produce an enzyme (i.e. a protein) needed to change certain chemicals into others, or to carry substances from one place to another inside the body.<sup>2</sup>

### Congenital infections:

- Rubella, Cytomegalovirus (CMV), and Sexually Transmitted Diseases

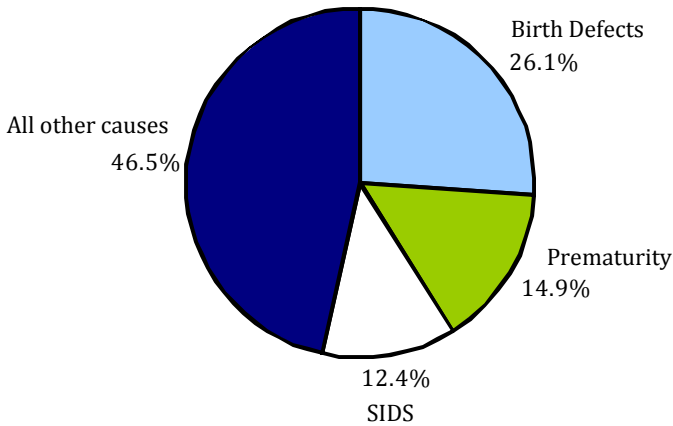
### Other conditions/behaviors:

- Rh disease of the newborn (incompatibility between the mother's blood and the fetus).
- Alcohol and drug use of the mother during pregnancy.<sup>2</sup>

# Leading Causes of Death

The three year aggregate from 2005 to 2007, the top three leading causes of Idaho infant resident deaths were: 1) Congenital malformations, deformations and chromosomal abnormalities (birth defects) (171.6 deaths per 100,000 live births); 2) Disorders related to short gestation and low birth weight (prematurity), not elsewhere classified (98.2 deaths per 100,00 live births); and 3) Sudden infant death syndrome (SIDS); (81.6 deaths per 100,000 live births). All other infant deaths from 2005 to 2007 (305.8 deaths per 100,000 live births); were due to all other causes of death.

**Idaho Resident Infant Death Percentage by Leading Cause, 2005-2007**



Disorders related to short gestation and low birth weight (prematurity), not elsewhere classified is defined as those deaths to infants whose birth weight is very low (999 grams or less), low (1,000-2,499 grams), or who suffered the effects of extreme immaturity where the infant is less than 28 completed weeks (less than 196 completed days) of gestation.<sup>6</sup>

Sudden infant death syndrome (SIDS) is defined as the sudden death of an infant less than one year of age that cannot be explained after a thorough investigation is conducted, including a complete autopsy, examination of the death scene, and review of the clinical history.<sup>7</sup>

From 1999 to 2007, 343 Idaho resident infants died from Congenital anomalies. The number of infant deaths per year ranged from a low of 26 infant deaths in 2004 to a high of 49 infant deaths in 2000.

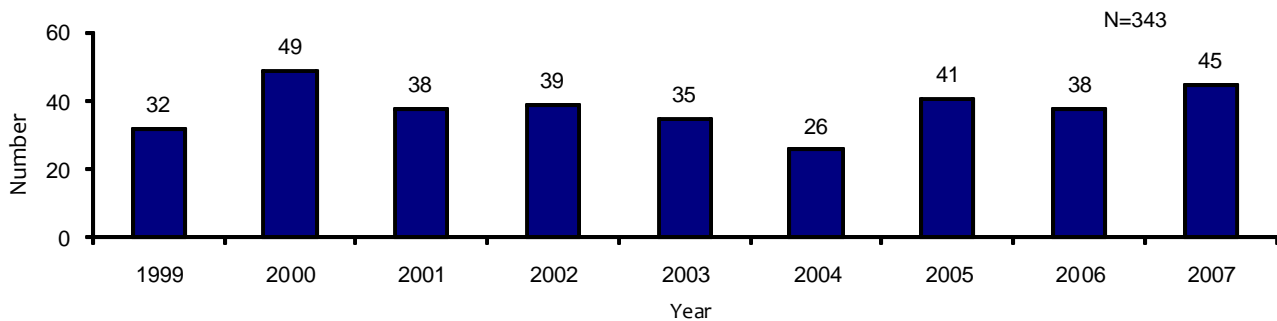
The leading types of death due to birth defects from 2005 to 2007 were congenital malformations of the circulatory system (44.3 deaths per 100,000 live births) followed by chromosomal abnormalities (41.5 infant deaths per 100,000 live births) and congenital malformations of the nervous system (26.3 deaths per 100,000 live births).<sup>10</sup>

**Idaho Resident Infant Deaths Due to Congenital Anomalies Numbers, Rates\* and Percentages, 2005-2007**

Congenital anomaly deaths:	Number	Rate†	Percent
Total	124	171.6	100.0
Circulatory system	32	44.3	25.8
Chromosomal abnormalities	30	41.5	24.2
Nervous system	19	26.3*	15.3
Musculoskeletal system	18	24.9*	14.5
Other Congenital malformations	11	15.2*	8.9
All other congenital anomalies	14	19.4*	11.3

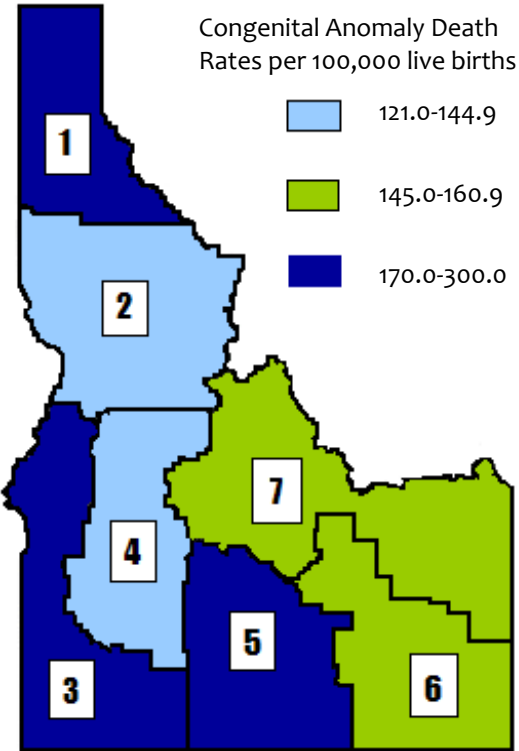
†Rate per 100,00 live births

**Idaho Resident Infant Deaths Due to Congenital Anomalies, 1999-2007**

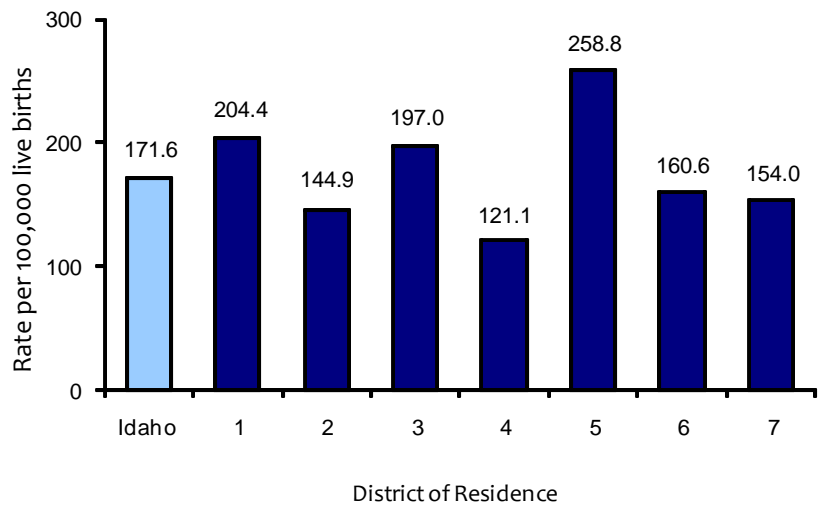


# Residence, Age, and Gender

Overall, Idaho had a rate of 171.6 infant deaths due to congenital anomalies from 2005 to 2007. District 4 had the lowest rate of 121.1 infant deaths due to birth defects per 100,000 live births, and District 5 had the highest rate of 258.8 per 100,000 live births in Idaho from 2005 to 2007. However, there was not a significant difference between death rates by district of residence from 2005 to 2007.



**Idaho Resident Infant Deaths Due to Congenital Anomalies Three-year Rates by District of Residence, 2005-2007**



Slightly more male than female infants died due to Congenital anomalies, from 2005 to 2007. The mortality sex ratio (rate of male deaths divided by the rate of female deaths) was 1.23, compared with 1.19 for all Idaho resident infant deaths from 2005 to 2007.

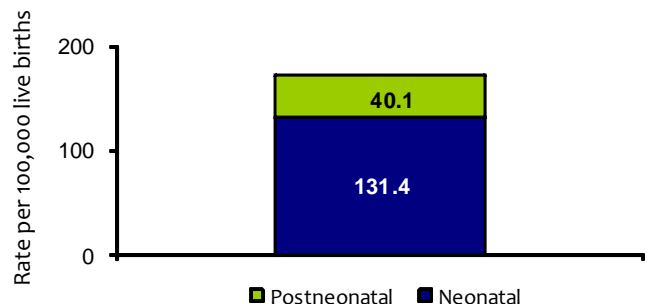
**Idaho Resident Infant Death Rates and Ratios by Gender 2005-2007**

Cause of death	Number		Rate <sup>9</sup>		Ratio
	Male	Female	Male	Female	Male/Female
All causes	264	211	712.7	598.8	1.19
Congenital anomalies	65	59	175.5	143.1	1.23

The definition of infant death is: a death to an infant under one year of age.<sup>5</sup> Congenital anomaly deaths can occur during different time periods of an infants life. Neonatal deaths is a death to an infant within the first 27 days of life.<sup>5</sup> Postneonatal death is the death to an infant aged 28 days to one year.<sup>5</sup> There were 475 infant deaths to Idaho residents from 2005 to 2007, 124 of those deaths were due to birth defects. For the same time period, there were 318 neonatal deaths to Idaho infants, 95 of which were due to birth defects and 157 postneonatal deaths, 29 of which were due to birth defects.

Congenital anomaly deaths were mainly concentrated in the neonatal period. From 2005 to 2007, over three-quarters (76.6 percent) of infant deaths due to birth defects occurred within the first 27 days of life.

**Idaho Resident Infant Deaths Due to Congenital Anomalies Three-year Rates by Age, 2005-2007**



# Ethnicity and Race

Congenital anomaly deaths to Idaho resident infants showed variability by ethnicity during the three year period 2005 to 2007. There were 93 (152.1 infant deaths per 100,000 live births) non-Hispanic infant deaths and 31 (278.4 infant deaths per 100,000 live births) Hispanic deaths. The difference between non-Hispanic and Hispanic rates was statistically significant.\*\*<sup>11</sup> Of the 124 infant deaths due to congenital anomalies, the majority of deaths by race were to white (111) followed by other race (11), black (1), Asian or Pacific Islander (1), and American Indian or Alaskan Native (0) infants.

In the U.S., in 2005 (latest year available), there was a statistically significant difference between the non-Hispanic infant death rate (132.5 per 100,000 live births) and the Hispanic infant death rate (140.2 per 100,000 live births) for deaths due to birth defects.<sup>11</sup> Rates based on Hispanic origin and race were significantly different between non-Hispanic white infants (124.9 per 100,000 live births) and non-Hispanic black infants (176.3 per 100,000 live births). The birth defect mortality rate for Hispanic white infants (142.6 per 100,000 live births) was significantly higher than the rate for Hispanic black infants (85.1 per 100,000 live births).<sup>12</sup>

**U.S. Infant Deaths Due to Congenital Anomalies by Race and Ethnicity, 2005**

Race	Non-Hispanic		Hispanic		Total	
	Number	Rate <sup>11</sup>	Number	Rate <sup>11</sup>	Number	Rate <sup>11</sup>
White	2,848	124.9	1,321	142.6	4,187	129.7
Black	1,029	176.3	39	85.1	1,080	170.6
All races combined	4,139	132.5	1,382	140.2	5,552	134.2

1. National Birth Defect Prevention Network: Guidelines for Conducting Birth Defects Surveillance, <http://www.nbdpn.org>, accessed February 2009.
2. March of Dimes, Birth Defects: Quick References and Fact Sheets, <http://www.marchofdimes.com>, accessed February 2009.
3. "Deaths: Final Data for 2006," [National Vital Statistics Reports](#), National Center for Health Statistics, Vol. 57, No. 14, April 2009.
4. Infant mortality rates are the number of infant deaths per 100,000 live births.
5. "Deaths: Final Data for 2005," [National Vital Statistics Reports](#), National Center for Health Statistics, Vol. 56, No. 10, April 24, 2008.
6. Vital and Health Statistics. (1993). Trends in Infant Mortality by Cause of Death and Other Characteristics, 1960-1988. U.S. Department of Health and Human Services, Public Health Service. Centers for Disease Control and Prevention, National Center for Health Statistics, 1-51.
7. Center for Disease Control and Prevention. <http://www.cdc.gov/SIDS>, accessed March 2009.
8. Center for Disease Control and Prevention. <http://www.wonder.cdc.gov>, accessed February 2009.
9. Rates are the number of infant deaths by gender per 100,000 live births per gender for the corresponding years.
10. ICD-10: International Classification of Diseases, Tenth Revision. World Health Organization, 1999.
11. Infant mortality rate by race/ethnicity is the number of deaths per 100,000 live births in the same race/ethnicity category. Race/ethnicity at death is the infant's race/ethnicity from the death certificate; race/ethnicity at birth is the mother's race/ethnicity from the birth certificate.
12. WISQARS, Leading Causes of Death Report. National Center for Injury Prevention and Control, National Vital Statistics System. <http://www.cdc.gov/injury/wisqars>, accessed April 2009.

The manner of coding the underlying cause of death changed in 1999 from the ninth revision (ICD-9) to the tenth revision of the International Classification of Diseases (ICD-10); data are not comparable between revisions without comparability ratios based on Modified ICD-9 codes. For this reason, data are not shown for years prior to 1999.

ICD-10 ranked causes of death for the ICD-10 list of 130 selected causes of infant death: Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99), Disorders related to short gestation and low birth weight (P07), and Sudden infant death syndrome (SIDS) (R95).

\* Rates based on <20 deaths should be interpreted with caution  
 \*\*Statistical significance is tested at the 95% confidence interval