

# Infant Mortality

## An Overview: 2015

Infant Deaths	
Number	90
Rate per 1,000 Live Births	7.30
Neonatal Deaths	
Number	59
Rate per 1,000 Live Births	4.79
Postneonatal Death	
Number	31
Rate per 1,000 Live Births	2.52

During 2015, there were 90 South Dakota resident infant deaths reported for an infant mortality rate of 7.30 per 1,000 live births. In comparison, there were 73 infant deaths in 2014, with the infant mortality rate of 5.94 per 1,000 live births.

Caution should be used when comparing these annual rates, because the number of South Dakota resident births creates a relatively small denominator to determine infant mortality rates; a small change in the number of infant deaths can result in a relatively large rate change. Infant mortality rates should be monitored over a period of time.

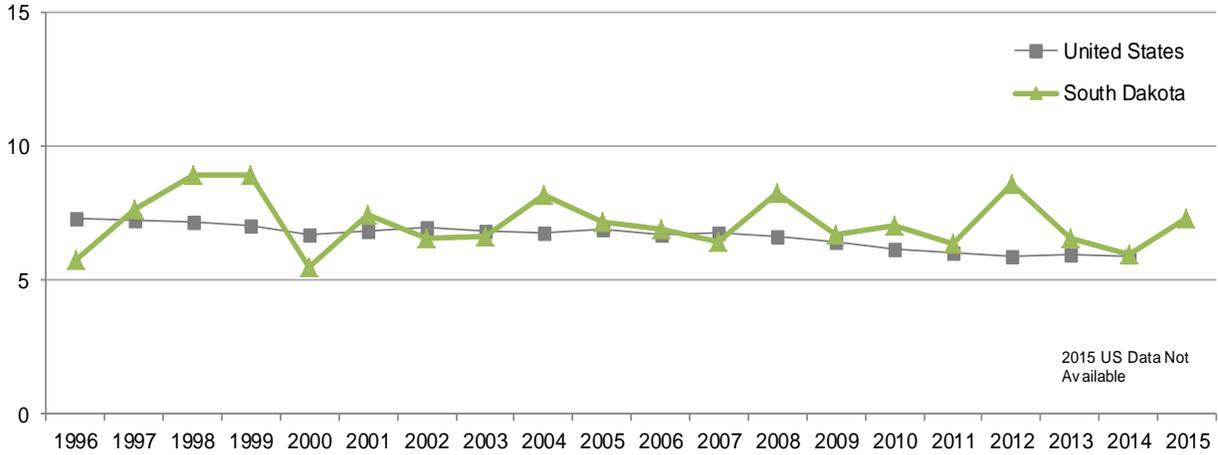
**Table 34**  
**Resident Infant Deaths and Infant Mortality Rates,**  
**South Dakota and United States, 1996-2015**

Year	United States		South Dakota	
	Number	Mortality Rate	Number	Mortality Rate
2015	*NA	*NA	90	7.30
2014	23,215	5.82	73	5.94
2013	23,446	5.96	80	6.53
2012	23,629	5.98	104	8.60
2011	23,985	6.07	75	6.34
2010	24,586	6.15	83	7.04
2009	26,412	6.39	80	6.71
2008	28,059	6.61	100	8.28
2007	29,138	6.75	79	6.45
2006	28,527	6.69	82	6.88
2005	28,440	6.87	82	7.15
2004	27,936	6.79	93	8.20
2003	28,025	6.85	73	6.62
2002	28,034	6.97	70	6.54
2001	27,568	6.85	78	7.45
2000	27,200	6.70	57	5.51
1999	27,937	7.06	94	8.94
1998	28,371	7.20	92	8.95
1997	28,045	7.21	78	7.67
1996	28,487	7.32	60	5.73

Note: \*U.S. 2015 data are not available.  
 Infant mortality rates are per 1,000 live births.

Source: National Center for Health Statistics  
 South Dakota Department of Health, Office of Health Statistics

**Figure 6**  
**Resident Infant Mortality Rates, South Dakota and United States, 1996-2015**



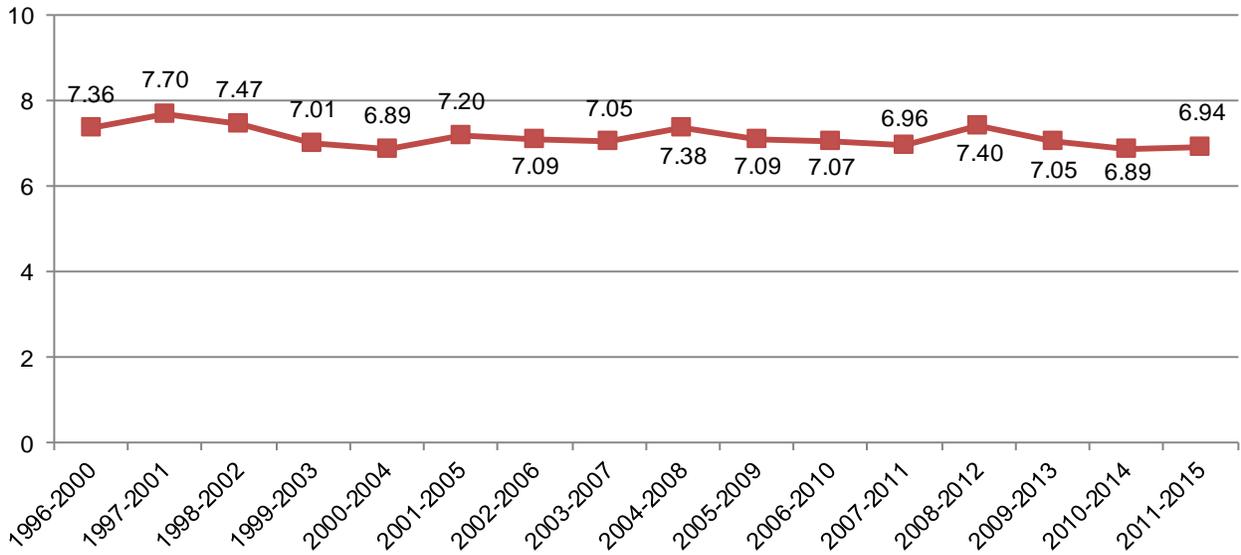
Note: Rate Per 1,000 Live Births. U.S. 2015 data are not available.

Source: National Center for Health Statistics and South Dakota Department of Health, Office of Health Statistics

Figure 7, below, displays South Dakota's infant mortality rate grouped in five year increments. This graph shows that since the early 1990's South Dakota's infant mortality

rate has decreased slightly, but in more recent years, the infant mortality has remained steady.

**Figure 7**  
**Resident Infant Mortality Rates for South Dakota, 1996-2015**



Note: Rate Per 1,000 Live Births.

Source: South Dakota Department of Health, Office of Health Statistics

Table 35, below, lists the overall leading causes of infant death in 2011-2015. The leading causes of infant death in 2015 can be broken down as follows: congenital

malformations, 21.1 percent; extreme immaturity, 12.2 percent; and accidents with 12.2 percent.

**Table 35**  
**South Dakota Resident Leading Causes of Infant Death, 2011-2015**

	Total	2011	2012	2013	2014	2015
<b>Total Deaths</b>	<b>422</b>	<b>75</b>	<b>104</b>	<b>80</b>	<b>73</b>	<b>90</b>
<b>Congenital Malformations, Deformations, &amp; Chromosomal Abnormalities (Q00-Q99)</b>	<b>104</b>	<b>17</b>	<b>29</b>	<b>18</b>	<b>21</b>	<b>19</b>
Chromosomal abnormalities (Q90-Q99)	23	5	3	3	6	6
Edward's syndrome (Q91.0-Q91.3)	13	3	1	2	3	4
Patau's syndrome (Q91.4-Q91.7)	5	2	0	1	1	1
Congenital malformations of the heart (Q20-Q24)	21	6	7	3	3	2
Congenital malformations of the nervous system (Q00-Q07)	17	2	3	3	7	2
Anencephaly (Q00.0)	5	2	1	1	1	0
Congenital malformations and deformations of the musculoskeletal system (Q65-Q79)	12	0	3	4	1	4
Congenital diaphragmatic hernia (Q79.0)	6	0	0	2	1	3
Congenital malformations of the urinary system (Q60-Q64)	7	1	4	2	0	0
<b>Extreme immaturity and other preterm infants (Less than 37 comp wks of gestation) (P07.2-P07.3)</b>	<b>64</b>	<b>13</b>	<b>14</b>	<b>16</b>	<b>10</b>	<b>11</b>
<b>Accidents (V01-X59, Y85-Y86)</b>	<b>40</b>	<b>5</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>11</b>
Accidental suffocation and strangulation in bed (W75)	22	2	4	1	5	10
Unspecified threat to breathing (W84)	9	1	2	4	2	0
<b>Sudden Infant Death Syndrome (R95)</b>	<b>39</b>	<b>8</b>	<b>6</b>	<b>9</b>	<b>5</b>	<b>11</b>
<b>Ill-Defined and Unknown Causes of Mortality (R96-R99)</b>	<b>17</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>7</b>
<b>Influenza and Pneumonia (J09-J18)</b>	<b>9</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>
<b>Newborn affected by other forms of placental separation and hemorrhage (P02.1)</b>	<b>9</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>4</b>
<b>Assault (homicide) (X85-Y09, Y87.1)</b>	<b>8</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>
<b>Primary atelectasis of newborn (P28.0)</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>Newborn affected by chorioamnionitis (P02.7)</b>	<b>8</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>2</b>
<b>Necrotizing enterocolitis of newborn (P77)</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>0</b>
<b>Neonatal cardiac failure (P29.0)</b>	<b>6</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>
<b>Neonatal cardiac dysrhythmia (P29.1)</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>
<b>Newborn affected by incompetent cervix (P01.0)</b>	<b>6</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>Bacterial sepsis of newborn, unspecified (P36.9)</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>
<b>All Other Causes</b>	<b>87</b>	<b>15</b>	<b>28</b>	<b>13</b>	<b>15</b>	<b>16</b>

Source: South Dakota Department of Health, Office of Health Statistics

There were 59 neonatal deaths (deaths occurring to infants from birth through 27 days old) for a rate of 4.79 deaths per 1,000 live births. There were 31 postneonatal deaths (deaths occurring to infants 28 days

to 1 year of age) for a rate of 2.52 deaths per 1,000 live births. In comparison, in 2014 neonatal and postneonatal rates were 3.42 and 2.52 per 1,000 live births, respectively.

## Infant Mortality by Race

Race is assigned based on standards set forth by the National Center for Health Statistics and the US Census Bureau in order for South Dakota's race data to be comparable. All race data in this section are categorized in the following manner:

- Single-race white
- Single-race American Indian
- Single-race black
- Two or more races

The remaining single-race categories (Asian and Pacific Islander) are included in the totals, but are not shown specifically in any tables.

Table 36a, below, indicates that from 2014 to 2015, the number of South Dakota resident infant deaths increased for whites and American Indians. Infant deaths remained the same for black and two or more races. Table 36b, below, displays infant mortality grouped by five-year increments.

**Table 36a**  
**South Dakota Resident Infant Deaths and Mortality Rates by Infant's Race, 2006-2015**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2015	54	5.96	25	12.58	3	11.11	7	15.84	90	7.30
2014	40	4.36	23	12.18	3	10.03	7	16.99	73	5.94
2013	48	5.25	22	11.25	4	14.13	5	13.70	80	6.53
2012	58	6.37	26	13.43	3	10.79	10	25.06	104	8.60
2011	43	4.82	24	12.29	3	12.50	4	11.76	75	6.34
2010	54	5.84	19	10.35	1	4.39	8	24.54	83	7.04
2009	56	6.00	19	10.08	3	16.22	2	5.87	80	6.71
2008	60	6.36	29	14.56	2	10.36	9	29.80	100	8.28
2007	51	5.33	21	10.22	1	5.65	6	21.43	79	6.45
2006	50	5.34	26	13.33	4	30.53	2	7.41	82	6.88

Note: Infant mortality rates are per 1,000 live births. Failure of races to add to the total is due to other and unknown races included in the total.  
Source: South Dakota Department of Health, Office of Health Statistics

**Table 36b**  
**South Dakota Resident Infant Deaths and Mortality Rates by Infant's Race, Five-Year Increments, 2005-2015**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2011-2015	243	5.35	120	12.34	16	11.68	33	16.85	422	6.94
2010-2014	243	5.33	114	11.91	14	10.31	34	18.46	415	6.89
2009-2013	259	5.66	110	11.50	14	11.23	29	16.37	422	7.05
2008-2012	271	5.89	117	12.19	15	13.05	33	19.32	442	7.40
2007-2011	264	5.68	112	11.52	10	9.40	29	18.25	417	6.96
2006-2010	271	5.77	114	11.73	11	10.99	27	17.77	424	7.07
2005-2009	272	5.83	120	12.47	11	12.17	20	11.94	423	7.09

Note: Infant mortality rates are per 1,000 live births. Failure of races to add to the total is due to other and unknown races included in the total.  
Source: South Dakota Department of Health, Office of Health Statistics

When analyzed by race, Table 37a, below, indicates that the South Dakota resident neonatal mortality rate per 1,000 live births increased for whites, American Indians, and blacks from 2014 to 2015. The American Indian neonatal mortality rate has been

consistently higher than white neonatal mortality rates for each year since 2006. In Table 37b, below, the neonatal mortality is grouped in five-year increments. This indicates that the neonatal mortality rate has shown little change since 2005.

**Table 37a**  
**South Dakota Resident Neonatal Deaths and Mortality Rates by Infant's Race, 2006-2015**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Rate	Rate
2015	38	4.19	15	7.55	3	11.11	2	4.52	59	4.79
2014	29	3.16	8	4.24	1	3.34	4	9.71	42	3.42
2013	32	3.50	9	4.60	4	14.13	2	5.48	48	3.92
2012	43	4.72	15	7.75	1	3.60	6	15.04	69	5.71
2011	30	3.36	10	5.12	2	8.33	3	8.82	46	3.89
2010	37	4.00	14	7.63	0	0.00	4	12.27	56	4.75
2009	34	3.64	7	3.71	2	9.17	2	5.87	45	3.77
2008	40	4.24	12	6.02	2	10.81	7	23.18	61	5.05
2007	37	3.87	9	4.38	1	5.18	4	14.29	51	4.16
2006	30	3.20	10	5.13	2	11.30	1	3.70	43	3.61

Note: Neonatal mortality rates are per 1,000 live births. Failure of races to add to the total is due to other and unknown races included in the total.

Source: South Dakota Department of Health, Office of Health Statistics

**Table 37b**  
**South Dakota Resident Neonatal Deaths and Mortality Rates by Infant's Race, Five-Year Increments, 2005-2015**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Rate	Rate
2011-2015	172	3.79	57	5.86	11	8.03	17	8.68	264	4.34
2010-2014	171	3.75	56	5.85	8	6.02	19	10.31	261	4.33
2009-2013	176	3.85	55	5.75	9	7.22	17	9.60	264	4.41
2008-2012	184	4.00	58	6.04	7	6.09	22	12.88	277	4.64
2007-2011	178	3.83	52	5.35	7	6.58	20	12.59	259	4.32
2006-2010	178	3.79	52	5.35	7	6.99	18	11.85	256	4.27
2005-2009	182	3.90	47	4.88	8	8.85	15	8.96	252	4.23

Note: Neonatal mortality rates are per 1,000 live births. Failure of races to add to the total is due to other and unknown races included in the total.

Source: South Dakota Department of Health, Office of Health Statistics

Table 38a, below, indicates that the postneonatal mortality rate per 1,000 live births increased for white infants and infants of two or more races from 2014 to 2015. The American Indian postneonatal mortality rate has been consistently higher than white

postneonatal mortality rates for each year since 2006. When looking at the data in five-year increments as shown in Table 38b, below, the postneonatal mortality has remained steady.

**Table 38a**  
**South Dakota Resident Postneonatal Deaths and Mortality Rates**  
**by Infant's Race, 2006-2015**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2015	16	1.77	10	5.03	0	0.0	5	11.31	31	2.52
2014	11	1.20	15	7.94	2	6.69	3	7.28	31	2.52
2013	16	1.75	13	6.65	0	0.0	3	8.22	32	2.61
2012	15	1.65	11	5.68	2	7.19	4	10.03	35	2.89
2011	13	1.46	14	7.17	1	4.17	1	2.94	29	2.45
2010	17	1.84	5	2.72	1	4.39	4	12.27	27	2.29
2009	22	2.36	12	6.37	1	4.59	0	0.00	35	2.93
2008	20	2.12	17	8.53	0	0.0	2	6.62	39	3.23
2007	14	1.46	12	5.84	0	0.0	2	7.14	28	2.29
2006	20	2.13	16	8.20	2	11.30	1	3.70	39	3.27

Note: Postneonatal mortality rates are per 1,000 live births. Failure of races to add to the total is due to other and unknown races included in the total.

Source: South Dakota Department of Health, Office of Health Statistics

**Table 38b**  
**South Dakota Resident Postneonatal Deaths and Mortality Rates**  
**by Infant's Race, Five-Year Increments, 2005-2015**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Rate	Rate
2011-2015	71	1.56	63	6.48	5	3.65	16	8.17	158	2.60
2010-2014	72	1.58	58	6.06	6	4.52	15	8.14	154	2.56
2009-2013	83	1.81	55	5.75	5	4.01	12	6.78	158	2.64
2008-2012	87	1.89	59	6.15	5	4.35	11	6.44	165	2.76
2007-2011	86	1.85	60	6.17	3	2.82	9	5.66	158	2.64
2006-2010	93	1.98	62	6.38	4	4.00	9	5.92	168	2.80
2005-2009	90	1.93	73	7.59	3	3.32	5	2.99	171	2.87

Note: Postneonatal mortality rates are per 1,000 live births. Failure of races to add to the total is due to other and unknown races included in the total.

Source: South Dakota Department of Health, Office of Health Statistics

Table 39, below, shows the leading causes of infant death from 2011 to 2015. The overall leading cause of infant death for South Dakota residents was congenital malformations, deformations, and chromosomal abnormalities, which accounted for 24.6 percent of all infant deaths in South Dakota from 2011 to 2015. The second leading cause of death was extreme immaturity with 15.2 percent.

When analyzed by race, the leading cause of death for white infants was congenital malformations, deformations, and chromosomal abnormalities with 31.3 percent of all white infant deaths. The leading cause of death for American Indian infants was sudden infant death syndrome with 15.8 percent of all American Indian infant deaths. The leading cause of death for black infants was extreme immaturity with 43.8 percent of all black infant deaths.

**Table 39**  
**South Dakota Resident Infant Deaths by Cause of Death and Race, 2011-2015**

	Total		Race							
			White		American Indian		Black		Two or More Races	
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
<b>Total Deaths</b>	<b>422</b>	<b>6.94</b>	<b>243</b>	<b>5.35</b>	<b>120</b>	<b>12.34</b>	<b>16</b>	<b>11.68</b>	<b>33</b>	<b>16.85</b>
<b>Congenital Malformations, Deformations, &amp; Chromosomal Abnormality (Q00-Q99)</b>	<b>104</b>	<b>1.71</b>	<b>76</b>	<b>1.67</b>	<b>17</b>	<b>1.75</b>	<b>2</b>	<b>1.46</b>	<b>7</b>	<b>3.58</b>
Chromosomal abnormalities (Q90-Q99)	23	0.38	20	0.44	2	0.21	0	0.00	1	0.51
Edward's syndrome (Q91.0-Q91.3)	13	0.21	11	0.24	1	0.10	0	0.00	1	0.51
Patau's syndrome (Q91.4-Q91.7)	5	0.08	5	0.11	0	0.00	0	0.00	0	0.00
Congenital malformations of the heart (Q20-Q24)	21	0.35	12	0.26	5	0.51	2	1.46	1	0.51
Congenital malformations of the nervous system (Q00-Q07)	17	0.28	9	0.20	6	0.62	0	0.00	1	0.51
Anencephaly (Q00.0)	5	0.08	5	0.11	0	0.00	0	0.00	0	0.00
Congenital malformations and deformations of the musculoskeletal system (Q65-Q79)	12	0.20	10	0.22	0	0.00	0	0.00	2	1.02
Congenital diaphragmatic hernia (Q79.0)	6	0.10	5	0.11	0	0.00	0	0.00	1	0.51
Congenital malformations of the urinary system (Q60-Q64)	7	0.12	4	0.09	3	0.31	0	0.00	0	0.00
<b>Extreme immaturity and other preterm infants (Less than 37 comp wks of gestation) (P07.2-P07.3)</b>	<b>64</b>	<b>1.05</b>	<b>31</b>	<b>1.66</b>	<b>16</b>	<b>1.65</b>	<b>7</b>	<b>5.11</b>	<b>5</b>	<b>2.55</b>
<b>Accidents (V01-X59, Y85-Y86)</b>	<b>40</b>	<b>0.66</b>	<b>18</b>	<b>0.40</b>	<b>17</b>	<b>1.75</b>	<b>1</b>	<b>0.73</b>	<b>4</b>	<b>2.04</b>
Accidental suffocation and strangulation in bed (W75)	22	0.36	9	0.20	11	1.13	1	0.73	1	0.51
Unspecified threat to breathing (W84)	9	0.15	5	0.11	2	0.21	0	0.00	2	1.02
<b>Sudden Infant Death Syndrome (R95)</b>	<b>39</b>	<b>0.64</b>	<b>16</b>	<b>0.35</b>	<b>19</b>	<b>1.95</b>	<b>1</b>	<b>0.73</b>	<b>3</b>	<b>1.53</b>
<b>Ill-Defined and Unknown Causes of Mortality (R96-R99)</b>	<b>17</b>	<b>0.28</b>	<b>10</b>	<b>0.22</b>	<b>5</b>	<b>0.51</b>	<b>1</b>	<b>0.73</b>	<b>1</b>	<b>0.51</b>
<b>Influenza and Pneumonia (J09-J18)</b>	<b>9</b>	<b>0.15</b>	<b>4</b>	<b>0.09</b>	<b>4</b>	<b>0.41</b>	<b>0</b>	<b>0.00</b>	<b>1</b>	<b>0.51</b>
<b>Newborn affected by other forms of placental separation and hemorrhage (P02.1)</b>	<b>9</b>	<b>0.15</b>	<b>6</b>	<b>0.13</b>	<b>3</b>	<b>0.31</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>
<b>Assault (homicide) (X85-Y09, Y87.1)</b>	<b>8</b>	<b>0.13</b>	<b>3</b>	<b>0.07</b>	<b>4</b>	<b>0.41</b>	<b>0</b>	<b>0.00</b>	<b>1</b>	<b>0.51</b>
<b>Primary atelectasis of newborn (P28.0)</b>	<b>8</b>	<b>0.13</b>	<b>4</b>	<b>0.09</b>	<b>4</b>	<b>0.41</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>
<b>Newborn affected by chorioamnionitis (P02.7)</b>	<b>8</b>	<b>0.13</b>	<b>5</b>	<b>0.11</b>	<b>2</b>	<b>0.21</b>	<b>1</b>	<b>0.73</b>	<b>0</b>	<b>0.00</b>
<b>Necrotizing enterocolitis of newborn (P77)</b>	<b>6</b>	<b>0.10</b>	<b>5</b>	<b>0.11</b>	<b>1</b>	<b>0.10</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>
<b>Neonatal cardiac failure (P29.0)</b>	<b>6</b>	<b>0.10</b>	<b>2</b>	<b>0.04</b>	<b>2</b>	<b>0.21</b>	<b>0</b>	<b>0.00</b>	<b>1</b>	<b>0.51</b>
<b>Neonatal cardiac dysrhythmia (P29.1)</b>	<b>6</b>	<b>0.10</b>	<b>5</b>	<b>0.11</b>	<b>0</b>	<b>0.00</b>	<b>1</b>	<b>0.73</b>	<b>0</b>	<b>0.00</b>
<b>Newborn affected by incompetent cervix (P01.0)</b>	<b>6</b>	<b>0.10</b>	<b>5</b>	<b>0.11</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>	<b>1</b>	<b>0.51</b>
<b>Bacterial sepsis of newborn, unspecified (P36.9)</b>	<b>5</b>	<b>0.08</b>	<b>3</b>	<b>0.07</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>	<b>2</b>	<b>1.02</b>
<b>All Other Causes</b>	<b>87</b>	<b>1.43</b>	<b>50</b>	<b>1.10</b>	<b>26</b>	<b>2.67</b>	<b>2</b>	<b>1.46</b>	<b>7</b>	<b>3.58</b>

Source: South Dakota Department of Health, Office of Health Statistics

### Infant Mortality and Birth Weight

Table 40, below, displays infant mortality rates by birth weight. The highest mortality rate was for babies born who weighed less than 1,000 grams with an infant mortality rate of 501.59, a neonatal mortality rate of 463.50, and a postneonatal mortality rate of

38.10. The highest rates occurred below 2,500 grams, which is considered low birth weight babies. The lowest infant mortality rate occurred in the 3,500-3,999 gram group with 2.21.

**Table 40**  
**South Dakota Resident Infant Mortality Rates by Birth Weight, 2011-2015**

Birth Weight (in Grams)	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Total</b>	<b>60,773</b>	<b>422</b>	<b>6.94</b>	<b>4.34</b>	<b>2.60</b>
<1,000	315	158	501.59	463.50	38.10
1,000-1,499	339	27	79.65	61.95	17.70
1,500-1,999	731	20	27.36	20.52	6.84
2,000-2,499	2,446	33	13.49	9.40	4.09
2,500-2,999	9,377	52	5.55	1.81	3.73
3,000-3,499	22,803	73	3.20	0.92	2.28
3,500-3,999	18,592	41	2.21	0.75	1.45
4,000-4,499	5,357	12	2.24	0.56	1.68
4,500+	798	3	3.76	1.25	2.51

Note: Infant, neonatal, and postneonatal mortality rates are per 1,000 live births.

Failure of births to add to total is due to not stated birth weights.

Source: South Dakota Department of Health, Office of Health Statistics

### Infant Mortality and Prenatal Care

Table 41, below, displays infant mortality rates by prenatal care. The highest infant mortality rate, 44.08, occurred when mothers did not have prenatal care. This is

true for neonatal and postneonatal mortality rates. In comparison, when mothers received prenatal care in the first trimester the infant mortality rate was only 5.35.

**Table 41**  
**South Dakota Resident Infant Mortality Rates by Prenatal Care, 2011-2015**

Trimester Prenatal Care Began	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Total</b>	<b>60,773</b>	<b>422</b>	<b>6.94</b>	<b>4.34</b>	<b>2.60</b>
First Trimester	42,600	228	5.35	3.33	2.02
Second Trimester	13,427	107	7.97	5.06	2.90
Third Trimester	3,154	28	8.88	4.12	4.76
No Prenatal Care	431	19	44.08	32.48	11.60

Note: Infant mortality rates are per 1,000 live births.

Failure of births and infant deaths to add to the total is due to not stated trimester prenatal care began.

Source: South Dakota Department of Health, Office of Health Statistics

## Infant Mortality and Gestation Period

Table 42, below, displays infant mortality rates by gestation period. The highest infant mortality rate occurred to those with less than 25 weeks gestation with a rate of 786.59.

The highest neonatal mortality rate and postneonatal mortality rate both occurred at less than 25 weeks with a rate of 730.71 and 54.88, respectively.

**Table 42**  
**South Dakota Resident Infant Mortality Rates by Gestation Period, 2011-2015**

Weeks of Gestation	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Total</b>	<b>60,773</b>	<b>422</b>	<b>6.94</b>	<b>4.34</b>	<b>2.60</b>
<25 Weeks	164	129	786.59	730.71	54.88
25-29 Weeks	311	46	147.91	118.97	28.94
30-31 Weeks	252	7	27.78	23.81	3.97
32 Weeks	230	10	43.48	39.13	4.35
33 Weeks	318	11	34.60	25.16	9.43
34 Weeks	651	9	13.82	6.14	7.68
35 Weeks	948	14	14.77	11.60	3.16
36 Weeks	2,090	20	9.57	5.26	4.31
37 Weeks	4,709	38	8.07	3.61	4.46
38 Weeks	9,414	46	4.89	1.38	3.51
39 Weeks	20,988	53	2.53	0.67	1.86
40 Weeks	14,979	25	1.67	0.67	1.00
41 Weeks	5,018	13	2.59	0.80	1.79
42+ Weeks	588	0	0.00	0.00	0.00

Note: Infant mortality rates are per 1,000 live births.

Failure of births and infant deaths to add to the total is due to not stated weeks of gestation.

Source: South Dakota Department of Health, Office of Health Statistics

## Infant Mortality and Tobacco Use

Table 43, below, displays infant mortality rates by tobacco use of the mother. Mothers who reported they used tobacco while pregnant had an infant mortality rate

of 12.20 while mothers who reported they did not use tobacco while pregnant had an infant mortality rate of 5.93.

**Table 43**  
**South Dakota Resident Infant Mortality Rates by Tobacco Use of Mother, 2011-2015**

Tobacco Use of Mother	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Total</b>	<b>60,773</b>	<b>422</b>	<b>6.94</b>	<b>4.34</b>	<b>2.60</b>
Yes	9,345	114	12.20	6.31	5.89
No	51,132	303	5.93	3.95	1.98

Note: Infant mortality rates are per 1,000 births.

Failure of births to add to the total is due to not stated tobacco use of mother.

Source: South Dakota Department of Health, Office of Health Statistics

## Infant Mortality and Mother Demographics

The following tables, 44a-44d, compare infant mortality rates among different demographics of the mother, different previous pregnancy histories, different labor and delivery situations, and different post-delivery conditions. The comparison is done using the Chi-Square test. An explanation of this test is given in the Technical Notes section on page 212.

The rates denoted with an asterisk are the ones found to illustrate an association with the variables listed in the left column. For example, the test indicates that when there is a change in the education of the mother, there is an associated change with the

infant mortality rate as well as the neonatal and post-neonatal mortality rate.

However, it should be noted that this test does not consider relationships among multiple variables at the same time. Therefore, dependencies detected by Chi-square analyses may be unrealistic or non-causal. There may be other unseen factors that make the variables appear to be associated. However, if properly used, this test is a very useful tool for the evaluation of associations and can be used as a preliminary analysis of more complex statistical evaluations.

**Table 44a**  
**South Dakota Resident Infant Mortality Rates by Demographics of Mother, 2011-2015**

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Education</b>					
11 years or less	7,859	83	10.56*	6.62*	3.94*
12+ years	50,424	279	5.53*	3.77*	1.77*
<b>Marital Status</b>					
Single	23,125	198	8.56*	5.15*	3.42*
Married	37,599	195	5.19*	3.70*	1.49*
<b>Mother's WIC Status</b>					
No WIC	38,360	214	5.58*	4.07	1.51*
WIC	21,885	173	7.90*	4.52	3.38*
<b>Age</b>					
<20	4,199	39	9.29*	5.24	4.05*
20-24	14,233	110	7.73*	4.71	3.02*
25-29	20,639	123	5.96*	4.02	1.94*
30-34	15,248	75	4.92*	3.61	1.31*
35+	6,436	46	7.15*	4.82	2.33*
<b>BMI</b>					
Underweight (<18.5)	2,018	13	6.44	3.47*	2.97
Recommended (18.5-24.9)	28,816	151	5.24	3.37*	1.87
Overweight (25.0-29.9)	15,180	114	7.51	5.34*	2.17
Obese (30.0-34.9)	7,761	55	7.09	3.87*	3.22
Very Obese (35.0-39.9)	3,871	30	7.75	5.94*	1.81
Morbidly Obese (40.0+)	2,348	17	7.24	5.54*	1.70
<b>Diabetes</b>					
No Pre-Existing Diabetes	60,148	382	6.35*	4.21	2.14*
Pre-Existing Diabetes	516	10	19.38*	9.69	9.69*
<b>Hepatitis C</b>					
No Hepatitis C	60,538	387	6.39*	4.21*	2.18
Hepatitis C	124	3	24.19*	16.13*	8.06
<b>Chlamydia</b>					
No Chlamydia	59,184	367	6.20*	4.21	1.99*
Chlamydia	1,478	23	15.56*	5.41	10.15*

**Table 44a (continued)**  
**South Dakota Resident Infant Mortality Rates by Demographics of Mother, 2011-2015**

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Payment Source</b>					
Medicaid	20,047	166	8.28*	4.69	3.59*
Private Insurance	34,451	175	5.08*	3.80	1.28*
Self-Pay	1,640	14	8.54*	5.49	3.05*
Indian Health Service	1,901	26	13.68*	7.89	5.79*
Champus/Tricare	1,749	5	2.86*	2.86	0.00*
Other Government	288	2	6.94*	3.47	3.47*
Other	392	1	2.55*	2.55	0.00*

Note: \*The Chi-square statistic is significant at the 0.05 level.  
Source: South Dakota Department of Health, Office of Health Statistics

**Table 44b**  
**South Dakota Resident Infant Mortality Rates by Previous Pregnancy History, 2011-2015**

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Number of Living Children</b>					
0	21,296	137	6.43*	4.70	1.74*
1	18,905	95	5.03*	3.49	1.53*
2	11,294	87	7.70*	4.25	3.45*
3	5,116	37	7.23*	4.69	2.54*
4+	4,127	37	8.97*	4.85	4.12*
<b>Number of Dead Children</b>					
0	59,909	359	5.99*	3.89*	2.10*
1+	821	34	41.41*	30.45*	10.96*
<b>Number of Previous Terminations</b>					
0	44,212	268	6.06	3.87*	2.19
1	11,151	77	6.91	4.57*	2.33
2+	5,350	46	8.60	6.54*	2.06
<b>Number of Previous Pregnancies</b>					
0	17,612	89	5.05*	3.35*	1.70*
1	16,434	106	6.45*	4.75*	1.70*
2	11,611	78	6.72*	4.22*	2.50*
3	6,861	41	5.98*	3.64*	2.33*
4	3,749	30	8.00*	4.00*	4.00*
5+	4,439	47	10.59*	6.98*	3.60*
<b>Previous Pre-Term Infant</b>					
No	58,774	371	6.31*	4.20	2.11*
Yes	1,890	21	11.11*	5.82	5.29*
<b>Other Poor Previous Pregnancy Outcomes</b>					
No	58,109	355	6.11*	3.94*	2.17
Yes	2,465	37	15.01*	11.76*	3.25
<b>Infertility Treatment</b>					
No	59,753	378	6.33*	4.08*	2.24
Yes	911	14	15.37*	15.37*	0.00
<b>Infertility Treatment – Drugs, Insemination</b>					
No	59,974	380	6.34*	4.10*	2.23
Yes	690	12	17.39*	17.39*	0.00
<b>Infertility Treatment – Assisted Reproductive Technology</b>					
No	60,419	388	6.42	4.20*	2.22
Yes	245	4	16.33	16.33*	0.00

Note: \*The Chi-square statistic is significant at the 0.05 level.  
Source: South Dakota Department of Health, Office of Health Statistics

**Table 44c**  
**South Dakota Resident Infant Mortality Rates by Labor and Delivery, 2011-2015**

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Tocolysis</b>					
No	59,776	359	6.01*	3.95*	2.06*
Yes	886	31	34.99*	23.70*	11.29*
<b>Cervical Cerclage</b>					
No	60,472	380	6.28*	4.10*	2.18
Yes	190	10	52.63*	47.37*	5.26
<b>Premature Rupture of Membranes</b>					
No	59,168	334	5.64*	3.52*	2.13*
Yes	1,543	58	37.59*	32.40*	5.18*
<b>Antibiotics Received by the Mother During Labor</b>					
No	43,985	239	5.43*	3.43*	2.00
Yes	16,744	154	9.20*	6.39*	2.81
<b>Precipitous Labor</b>					
No	57,682	360	6.24*	3.97*	2.27
Yes	3,029	32	10.56*	9.57*	0.99
<b>Induction of Labor</b>					
No	44,370	335	7.55*	5.05*	2.50*
Yes	16,359	58	3.55*	2.08*	1.47*
<b>Augmentation of Labor</b>					
No	43,404	340	7.83*	5.32*	2.51*
Yes	17,325	53	3.06*	1.56*	1.50*
<b>Non-Vertex Presentation</b>					
No	58,126	294	5.06*	2.96*	2.10*
Yes	2,514	99	39.38*	34.21*	5.17*
<b>Steroids for Fetal Lung Maturation Received by the Mother Prior to Delivery</b>					
No	59,633	352	5.90*	3.82*	2.08*
Yes	1,096	41	37.41*	27.37*	10.04*
<b>Clinical Chorioamnionitis Diagnosed During Labor – Maternal Temp <math>\geq 38^{\circ}\text{C}</math></b>					
No	60,177	379	6.30*	4.05*	2.24
Yes	552	14	25.36*	25.36*	0.00
<b>Epidural or Spinal Anesthesia During Labor</b>					
No	18,269	182	9.96*	7.61*	2.35
Yes	32,101	105	3.27*	1.50*	1.78
<b>Fetal Presentation</b>					
Cephalic	57,699	280	7.85*	2.79*	2.06*
Breech	2,240	95	42.41*	37.50*	4.91*
<b>Method of Delivery</b>					
Vaginal	43,864	244	5.56*	3.65*	1.92*
Vaginal after previous C-section	1,452	16	11.02*	6.89*	4.13*
Primary C-section	8,475	92	10.86*	7.43*	3.42*
Repeat C-section	6,895	40	5.80*	3.63*	2.18*
<b>Maternal Transfusion</b>					
No	60,481	386	6.38*	4.22	2.17*
Yes	246	6	24.39*	12.20	12.20*
<b>Unplanned Operating Procedure Following Delivery</b>					
No	60,548	379	6.26*	4.05*	2.21
Yes	179	13	72.63*	72.63*	0.00

Note: \*The Chi-square statistic is significant at the 0.05 level.

Source: South Dakota Department of Health, Office of Health Statistics

**Table 44d**  
**South Dakota Resident Infant Mortality Rates by Post Delivery Conditions, 2011-2015**

	<b>Births</b>	<b>Infant Deaths</b>	<b>Infant Mortality Rate</b>	<b>Neonatal Mortality Rate</b>	<b>Postneonatal Mortality Rate</b>
<b>Five Minute APGAR Score</b>					
0-7	2,231	235	105.33*	97.71*	7.62*
8	5,376	37	6.88*	2.98*	3.91*
9	48,838	105	2.15*	0.35*	1.80*
10	4,111	6	1.46*	0.24*	1.22*
<b>Ten Minute APGAR Score</b>					
0-2	154	135	876.62*	876.62*	0.00
3-7	280	38	135.71*	114.29*	21.43
8-10	163	5	30.67*	24.54*	6.13
<b>Plurality</b>					
1	58,887	343	5.82*	3.69*	2.14*
2+	1,868	50	26.77*	21.95*	4.82*
<b>Breastfeeding at the Time of Discharge</b>					
No	13,454	113	8.40*	3.94*	4.46*
Yes	46,873	85	1.81*	0.28*	1.54*
<b>Assisted Ventilation Required Immediately Following Delivery</b>					
No	57,304	278	4.85*	3.00*	1.85*
Yes	3,440	114	33.14*	24.71*	8.43*
<b>Assisted Ventilation for More than Six Hours</b>					
No	59,476	324	5.45*	3.53*	1.92*
Yes	1,268	68	53.63*	37.07*	16.56*
<b>Neonatal Intensive Care Unit Admission</b>					
No	54,954	247	4.49*	3.08*	1.42*
Yes	5,790	145	25.04*	15.20*	9.84*
<b>Newborn Given Surfactant Replacement Therapy</b>					
No	60,310	352	5.84*	3.81*	2.02*
Yes	434	40	92.17*	62.21*	29.95*
<b>Antibiotics Received by the Newborn for Suspected Neonatal Sepsis</b>					
No	57,690	319	5.53*	3.66*	1.87*
Yes	3,054	73	23.90*	15.06*	8.84*

Note: \*The Chi-square statistic is significant at the 0.05 level.

Source: South Dakota Department of Health, Office of Health Statistics

