

# Infant Mortality

## An Overview: 2016

Infant Deaths	
Number	59
Rate per 1,000 Live Births	4.81
Neonatal Deaths	
Number	31
Rate per 1,000 Live Births	2.53
Postneonatal Death	
Number	28
Rate per 1,000 Live Births	2.28

During 2016, there were 59 South Dakota resident infant deaths reported for an infant mortality rate of 4.81 per 1,000 live births. In comparison, there were 90 infant deaths in 2015, with the infant mortality rate of 7.30 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.

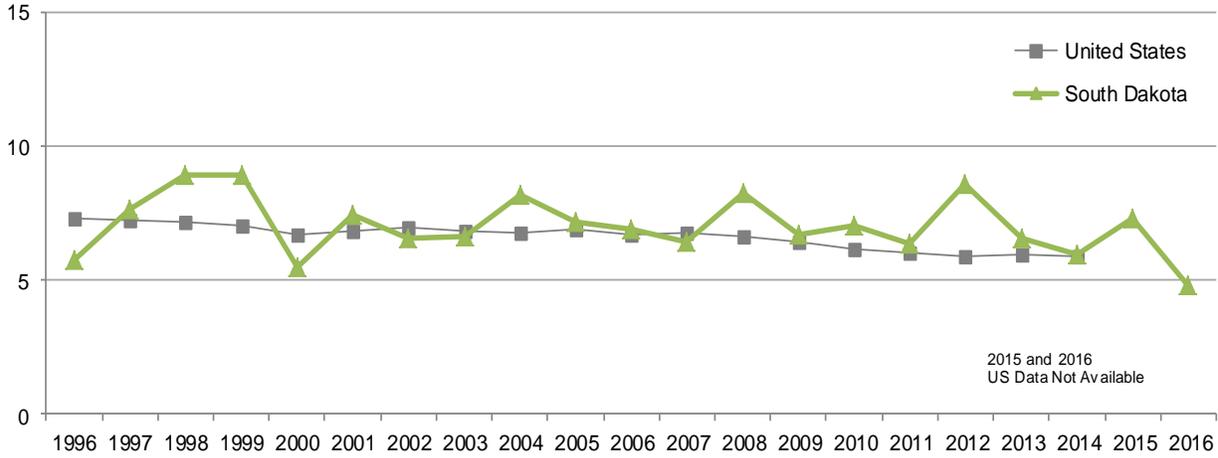
**Table 34**  
**Resident Infant Deaths and Infant Mortality Rates,**  
**South Dakota and United States, 1996-2016**

Year	United States		South Dakota	
	Number	Mortality Rate	Number	Mortality Rate
2016	*NA	*NA	59	4.81
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 and 2016 data were not available at time of publication.  
 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, 1996-2016**

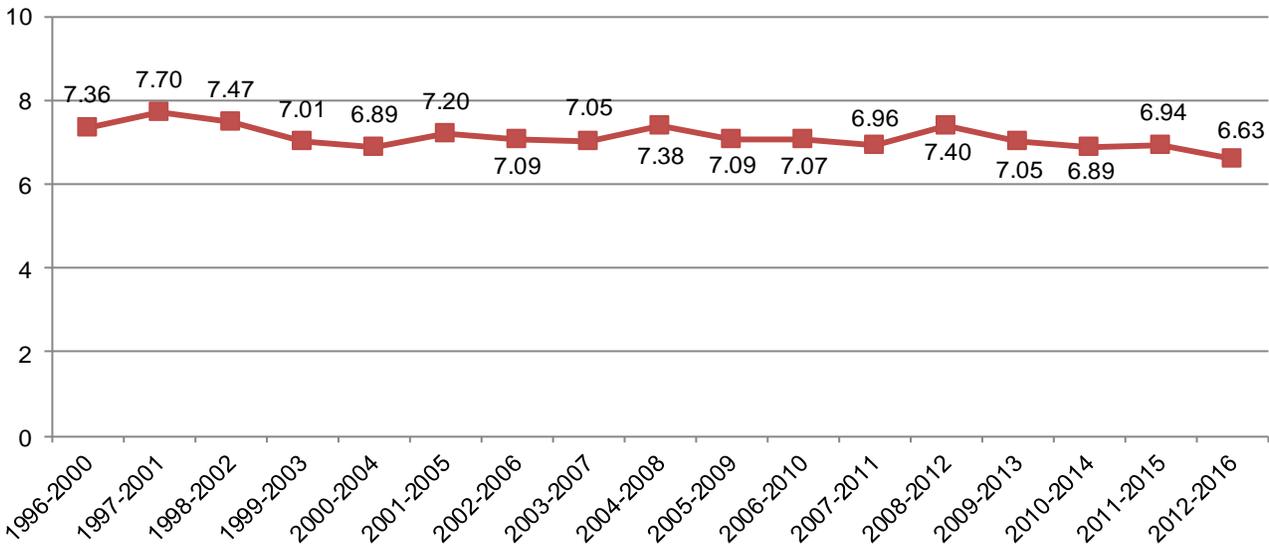


Note: Rate Per 1,000 Live Births. U.S. 2015 and 2016 data are not available.  
 Source: National Center for Health Statistics and South Dakota Department of Health, Office of Health Statistics

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

the past 20 years, South Dakota's infant mortality rate has been slowly decreasing.

**Figure 7**  
**Resident Infant Mortality Rates for South Dakota, 1996-2016**



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 2012-2016. The leading causes of infant death in 2016 can be broken down as follows: congenital

malformations, 22.0 percent; accidents with 13.6 percent, and extreme immaturity with 11.9 percent.

**Table 35**  
**South Dakota Resident Leading Causes of Infant Death, 2012-2016**

	Total	2012	2013	2014	2015	2016
<b>Total Deaths</b>	<b>406</b>	<b>104</b>	<b>80</b>	<b>73</b>	<b>90</b>	<b>59</b>
<b>Congenital Malformations, Deformations, &amp; Chromosomal Abnormalities (Q00-Q99)</b>	<b>100</b>	<b>29</b>	<b>18</b>	<b>21</b>	<b>19</b>	<b>13</b>
Chromosomal abnormalities (Q90-Q99)	23	3	3	6	6	5
Edward's syndrome (Q91.0-Q91.3)	12	1	2	3	4	2
Congenital malformations of the heart (Q20-Q24)	18	7	3	3	2	3
Congenital malformations of the nervous system (Q00-Q07)	18	3	3	7	2	3
Congenital malformations and deformations of the musculoskeletal system (Q65-Q79)	13	3	4	1	4	1
Congenital diaphragmatic hernia (Q79.0)	6	0	2	1	3	0
Congenital malformations of the urinary system (Q60-Q64)	6	4	2	0	0	0
<b>Extreme immaturity and other preterm infants (Less than 37 comp wks of gestation) (P07.2-P07.3)</b>	<b>58</b>	<b>14</b>	<b>16</b>	<b>10</b>	<b>11</b>	<b>7</b>
<b>Accidents (V01-X59, Y85-Y86)</b>	<b>43</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>11</b>	<b>8</b>
Accidental suffocation and strangulation in bed (W75)	26	4	1	5	10	6
Unspecified threat to breathing (W84)	9	2	4	2	0	1
<b>Sudden Infant Death Syndrome (R95)</b>	<b>37</b>	<b>6</b>	<b>9</b>	<b>5</b>	<b>11</b>	<b>6</b>
<b>Ill-Defined and Unknown Causes of Mortality (R96-R99)</b>	<b>20</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>7</b>	<b>5</b>
<b>Newborn affected by other forms of placental separation and hemorrhage (P02.1)</b>	<b>9</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>0</b>
<b>Assault (homicide) (X85-Y09, Y87.1)</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>Neonatal cardiac dysrhythmia (P29.1)</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>
<b>Primary atelectasis of newborn (P28.0)</b>	<b>7</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>0</b>
<b>Influenza and Pneumonia (J09-J18)</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>0</b>
<b>Newborn affected by chorioamnionitis (P02.7)</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>
<b>Hydrops Fetalis not due to hemolytic disease (P83.2)</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>
<b>Neonatal cardiac failure (P29.0)</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Newborn affected by premature rupture of membranes (P01.1)</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>
<b>All Other Causes</b>	<b>89</b>	<b>27</b>	<b>18</b>	<b>16</b>	<b>16</b>	<b>12</b>

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

There were 31 neonatal deaths (deaths occurring to infants from birth through 27 days old) for a rate of 2.53 deaths per 1,000 live births. There were 28 postneonatal deaths (deaths occurring to infants 28 days

to 1 year of age) for a rate of 2.28 deaths per 1,000 live births. In comparison, in 2015 neonatal and postneonatal rates were 4.79 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 2015 to 2016, the number of South Dakota resident infant deaths decreased for all 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, 2007-2016**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2016	33	3.58	21	11.38	3	8.15	2	5.03	59	4.81
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

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, 2005-2016**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2012-2016	233	5.10	117	12.17	16	10.68	31	15.38	406	6.63
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 decreased for whites, American Indians, and blacks from 2015 to 2016. The American Indian neonatal mortality rate

has consistently been higher than white neonatal mortality rates for each year since 2007. In Table 37b, below, neonatal mortality is grouped in five-year increments. The neonatal mortality rate has shown little change since 2005.

**Table 37a**  
**South Dakota Resident Neonatal Deaths and Mortality Rates by Infant's Race, 2007-2016**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Rate	Rate
2016	22	2.38	8	4.33	0	0.00	1	2.51	31	2.53
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

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, 2005-2016**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Rate	Rate
2012-2016	164	3.59	55	5.72	9	6.01	15	7.44	249	4.07
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 decreased for white infants and infants of two or more races from 2015 to 2016. The black and American Indian postneonatal mortality rate increased from 2015 to 2016. The American Indian

postneonatal mortality rate has been consistently higher than white for each year since 2007. 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, 2007-2016**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2016	11	1.19	13	7.04	3	8.15	1	2.51	28	2.28
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

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, 2005-2016**

Year	Race of Infant								Total	
	White		American Indian		Black		Two or more races			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Rate	Rate
2012-2016	69	1.51	62	6.45	7	4.67	16	7.94	157	2.56
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 2012 to 2016. 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 2012 to 2016. The second leading cause of death was extreme immaturity with 14.3 percent.

When analyzed by race, the leading cause of death for white infants was congenital malformations, deformations, and chromosomal abnormalities with 31.8 percent of all white infant deaths. The leading cause of death for American Indian infants was accidents with 16.2 percent of all American Indian infant deaths. The leading cause of death for black infants was extreme immaturity with 31.3 percent of all black infant deaths.

**Table 39**  
**South Dakota Resident Infant Deaths by Cause of Death and Race, 2012-2016**

	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>406</b>	<b>6.63</b>	<b>233</b>	<b>5.10</b>	<b>117</b>	<b>12.17</b>	<b>16</b>	<b>10.68</b>	<b>31</b>	<b>15.38</b>
<b>Congenital Malformations, Deformations, &amp; Chromosomal Abnormality (Q00-Q99)</b>	<b>100</b>	<b>1.63</b>	<b>74</b>	<b>1.62</b>	<b>15</b>	<b>1.56</b>	<b>3</b>	<b>2.00</b>	<b>6</b>	<b>2.98</b>
Chromosomal abnormalities (Q90-Q99)	23	0.38	19	0.42	2	0.21	1	0.67	1	0.50
Edward's syndrome (Q91.0-Q91.3)	12	0.20	9	0.20	1	0.10	1	0.67	1	0.50
Congenital malformations of the heart (Q20-Q24)	18	0.29	14	0.31	2	0.21	1	0.67	0	0.00
Congenital malformations of the nervous system (Q00-Q07)	18	0.29	8	0.17	7	0.73	1	0.67	0	0.00
Congenital malformations and deformations of the musculoskeletal system (Q65-Q79)	13	0.21	11	0.24	0	0.00	0	0.00	2	0.99
Congenital diaphragmatic hernia (Q79.0)	6	0.10	5	0.11	0	0.00	0	0.00	1	0.50
Congenital malformations of the urinary system (Q60-Q64)	6	0.10	3	0.07	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>58</b>	<b>0.95</b>	<b>32</b>	<b>0.70</b>	<b>13</b>	<b>1.35</b>	<b>5</b>	<b>3.34</b>	<b>4</b>	<b>1.98</b>
<b>Accidents (V01-X59, Y85-Y86)</b>	<b>43</b>	<b>0.70</b>	<b>19</b>	<b>0.42</b>	<b>19</b>	<b>1.98</b>	<b>1</b>	<b>0.67</b>	<b>4</b>	<b>1.98</b>
Accidental suffocation and strangulation in bed (W75)	26	0.42	11	0.24	13	1.35	1	0.67	1	0.50
Unspecified threat to breathing (W84)	9	0.15	6	0.13	1	0.10	0	0.00	2	0.99
<b>Sudden Infant Death Syndrome (R95)</b>	<b>37</b>	<b>0.60</b>	<b>15</b>	<b>0.33</b>	<b>18</b>	<b>1.87</b>	<b>2</b>	<b>1.34</b>	<b>2</b>	<b>0.99</b>
<b>Ill-Defined and Unknown Causes of Mortality (R96-R99)</b>	<b>20</b>	<b>0.33</b>	<b>10</b>	<b>0.22</b>	<b>7</b>	<b>0.73</b>	<b>1</b>	<b>0.67</b>	<b>2</b>	<b>0.99</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>Neonatal cardiac dysrhythmia (P29.1)</b>	<b>8</b>	<b>0.13</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>0.42</b>	<b>0</b>	<b>0.00</b>	<b>1</b>	<b>0.50</b>
<b>Primary atelectasis of newborn (P28.0)</b>	<b>7</b>	<b>0.11</b>	<b>3</b>	<b>0.07</b>	<b>4</b>	<b>0.42</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>
<b>Influenza and Pneumonia (J09-J18)</b>	<b>6</b>	<b>0.10</b>	<b>2</b>	<b>0.04</b>	<b>3</b>	<b>0.31</b>	<b>0</b>	<b>0.00</b>	<b>1</b>	<b>0.50</b>
<b>Newborn affected by chorioamnionitis (P02.7)</b>	<b>6</b>	<b>0.10</b>	<b>4</b>	<b>0.09</b>	<b>1</b>	<b>0.10</b>	<b>1</b>	<b>0.67</b>	<b>0</b>	<b>0.00</b>
<b>Newborn affected by premature rupture of membranes (P01.1)</b>	<b>5</b>	<b>0.08</b>	<b>3</b>	<b>0.07</b>	<b>2</b>	<b>0.21</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>
<b>Neonatal cardiac failure (P29.0)</b>	<b>5</b>	<b>0.08</b>	<b>1</b>	<b>0.02</b>	<b>2</b>	<b>0.21</b>	<b>0</b>	<b>0.00</b>	<b>1</b>	<b>0.50</b>
<b>Hydrops fetalis not due to hemolytic disease (P83.2)</b>	<b>5</b>	<b>0.08</b>	<b>3</b>	<b>0.07</b>	<b>2</b>	<b>0.21</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>
<b>All Other Causes</b>	<b>89</b>	<b>1.45</b>	<b>52</b>	<b>1.14</b>	<b>21</b>	<b>2.18</b>	<b>3</b>	<b>2.00</b>	<b>10</b>	<b>4.96</b>

Source: South Dakota Department of Health, Office of Health Statistics  
Note: Failure of races to add to the total is due to other and unknown races included in the total.

### 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 476.35, a neonatal mortality rate of 449.32, and a postneonatal mortality rate of

27.03. The highest rates occurred below 2,500 grams, which is considered low birth weight babies. The lowest infant mortality rate occurred in the 4,000-4,499 gram group with 1.65.

**Table 40**  
**South Dakota Resident Infant Mortality Rates by Birth Weight, 2012-2016**

Birth Weight (in Grams)	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Total</b>	<b>61,209</b>	<b>406</b>	<b>6.63</b>	<b>4.07</b>	<b>2.56</b>
<1,000	296	141	476.35	449.32	27.03
1,000-1,499	348	23	66.09	51.72	14.37
1,500-1,999	760	24	31.58	23.68	7.89
2,000-2,499	2,511	39	15.53	9.16	6.37
2,500-2,999	9,535	49	5.14	1.78	3.36
3,000-3,499	22,733	71	3.12	0.84	2.29
3,500-3,999	18,765	43	2.29	0.75	1.55
4,000-4,499	5,451	9	1.65	0.55	1.10
4,500+	799	3	3.75	1.25	2.50

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, 39.65, 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 5.08.

**Table 41**  
**South Dakota Resident Infant Mortality Rates by Prenatal Care, 2012-2016**

Trimester Prenatal Care Began	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Total</b>	<b>61,209</b>	<b>406</b>	<b>6.63</b>	<b>4.07</b>	<b>2.56</b>
First Trimester	43,327	220	5.08	3.21	1.87
Second Trimester	13,188	111	8.42	4.93	3.49
Third Trimester	3,169	25	7.89	3.79	4.10
No Prenatal Care	454	18	39.65	28.63	11.01

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 756.58.

The highest neonatal mortality rate and postneonatal mortality rate both occurred at less than 25 weeks with a rate of 717.11 and 39.47, respectively.

**Table 42**  
**South Dakota Resident Infant Mortality Rates by Gestation Period, 2012-2016**

<b>Weeks of Gestation</b>	<b>Births</b>	<b>Infant Deaths</b>	<b>Infant Mortality Rate</b>	<b>Neonatal Mortality Rate</b>	<b>Postneonatal Mortality Rate</b>
<b>Total</b>	<b>61,209</b>	<b>406</b>	<b>6.63</b>	<b>4.07</b>	<b>2.56</b>
<25 Weeks	152	115	756.58	717.11	39.47
25-29 Weeks	312	42	134.62	112.18	22.44
30-31 Weeks	261	8	30.65	26.82	3.83
32 Weeks	237	11	46.41	42.19	4.22
33 Weeks	309	12	38.83	25.89	12.94
34 Weeks	675	10	14.81	8.89	5.93
35 Weeks	1,012	13	12.85	8.89	3.95
36 Weeks	2,164	21	9.70	5.08	4.62
37 Weeks	4,805	34	7.08	2.91	4.16
38 Weeks	9,563	44	4.60	1.15	3.45
39 Weeks	21,379	53	2.48	0.80	1.68
40 Weeks	14,730	27	1.83	0.54	1.29
41 Weeks	4,949	13	2.63	0.81	1.82
42+ Weeks	551	1	1.81	0.00	1.81

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 11.64 while mothers who reported they did not use tobacco while pregnant had an infant mortality rate of 5.68.

**Table 43**  
**South Dakota Resident Infant Mortality Rates by Tobacco Use of Mother, 2012-2016**

<b>Tobacco Use of Mother</b>	<b>Births</b>	<b>Infant Deaths</b>	<b>Infant Mortality Rate</b>	<b>Neonatal Mortality Rate</b>	<b>Postneonatal Mortality Rate</b>
<b>Total</b>	<b>61,209</b>	<b>406</b>	<b>6.63</b>	<b>4.07</b>	<b>2.56</b>
Yes	9,021	105	11.64	6.43	5.21
No	51,908	295	5.68	3.62	2.06

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 228.

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, 2012-2016**

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Education</b>					
11 years or less	7,796	81	10.39*	6.41*	3.98*
12+ years	51,095	260	5.09*	3.52*	1.57*
<b>Marital Status</b>					
Single	23,049	186	8.07*	5.03*	3.04*
Married	38,114	180	4.72*	3.36*	1.36*
<b>Mother's WIC Status</b>					
No WIC	39,646	209	5.27*	3.76	1.51*
WIC	21,077	151	7.16*	4.32	2.85*
<b>Age</b>					
<20	3,914	30	7.66*	4.85	2.81*
20-24	13,974	107	7.66*	4.73	2.93*
25-29	20,783	123	5.92*	3.99	1.92*
30-34	15,820	71	4.49*	3.29	1.20*
35+	6,705	36	9.72*	3.73	1.64*
<b>BMI</b>					
Underweight (<18.5)	1,945	13	6.68*	4.63*	2.06
Recommended (18.5-24.9)	28,817	139	4.82*	3.12*	1.70
Overweight (25.0-29.9)	15,404	108	7.01*	5.06*	1.95
Obese (30.0-34.9)	7,908	51	6.45*	3.41*	3.03
Very Obese (35.0-39.9)	3,955	32	8.09*	5.82*	2.28
Morbidly Obese (40.0+)	2,483	15	6.04*	5.24*	0.81
<b>Diabetes</b>					
No Pre-Existing Diabetes	60,553	355	5.86*	3.96	1.90*
Pre-Existing Diabetes	541	10	18.48*	7.39	11.09*
<b>Hepatitis C</b>					
No Hepatitis C	60,972	361	5.92*	3.95*	1.97
Hepatitis C	135	3	22.22*	22.22*	0.00
<b>Chlamydia</b>					
No Chlamydia	59,597	344	5.77*	3.93	1.85*
Chlamydia	1,510	20	13.25*	6.62	6.62*

**Table 44a (continued)**  
**South Dakota Resident Infant Mortality Rates by Demographics of Mother, 2012-2016**

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Payment Source</b>					
Medicaid	19,690	157	7.97*	4.67	3.30*
Private Insurance	35,293	164	4.65*	3.46	1.19*
Self-Pay	1,732	12	6.93*	4.04	2.89*
Indian Health Service	1,769	21	11.87*	7.35	4.52*
Champus/Tricare	1,808	6	3.32*	2.77	0.55*
Other Government	302	2	6.62*	3.31	3.31*
Other	352	2	5.68*	5.68	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, 2012-2016**

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
<b>Number of Living Children</b>					
0	21,070	126	5.98*	4.37	1.61*
1	19,076	90	4.72*	3.36	1.36*
2	11,584	79	6.82*	4.06	2.76*
3	5,194	38	7.32*	4.81	2.50*
4+	4,260	34	7.98*	3.99	3.99*
<b>Number of Dead Children</b>					
0	60,347	339	5.62*	3.66*	1.96
1+	827	28	33.86*	29.02*	4.84
<b>Number of Previous Terminations</b>					
0	44,252	243	5.49*	3.53*	1.97
1	11,474	75	6.54*	4.53*	2.00
2+	5,435	47	8.65*	6.62*	2.02
<b>Number of Previous Pregnancies</b>					
0	17,368	82	4.72*	3.06	1.67
1	16,520	96	5.81*	4.42	1.39
2	11,832	70	5.92*	3.80	2.11
3	6,987	45	6.44*	4.01	2.43
4	3,878	31	7.99*	4.90	3.09
5+	4,567	41	8.98*	5.69	3.28
<b>Previous Pre-Term Infant</b>					
No	59,240	345	5.82*	3.87*	1.96
Yes	1,854	20	10.79*	8.09*	2.70
<b>Other Poor Previous Pregnancy Outcomes</b>					
No	58,431	329	5.63*	3.65*	1.99
Yes	2,507	36	14.36*	12.37*	1.99
<b>Infertility Treatment</b>					
No	60,104	351	5.84*	3.83*	2.01
Yes	990	14	14.14*	14.14*	0.00
<b>Infertility Treatment – Drugs, Insemination</b>					
No	60,331	353	5.85*	3.85*	2.01
Yes	763	12	15.73*	15.73*	0.00
<b>Infertility Treatment – Assisted Reproductive Technology</b>					
No	60,839	361	5.93*	3.94*	1.99
Yes	255	4	15.69*	15.69*	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, 2012-2016**

	<b>Births</b>	<b>Infant Deaths</b>	<b>Infant Mortality Rate</b>	<b>Neonatal Mortality Rate</b>	<b>Postneonatal Mortality Rate</b>
<b>Tocolysis</b>					
No	60,325	341	5.65*	3.78*	1.87*
Yes	787	23	29.22*	20.33*	8.89*
<b>Cervical Cerclage</b>					
No	60,925	355	5.83*	3.86*	1.97
Yes	187	9	48.13*	48.13*	0.00
<b>Premature Rupture of Membranes</b>					
No	59,502	310	5.21*	3.28*	1.93
Yes	1,656	55	33.21*	29.59*	3.62
<b>Antibiotics Received by the Mother During Labor</b>					
No	44,319	222	5.01*	3.25*	1.76*
Yes	16,840	145	8.61*	6.00*	2.61*
<b>Precipitous Labor</b>					
No	57,962	334	5.76*	3.73*	2.04
Yes	3,196	31	11.50*	12.36*	0.94
<b>Induction of Labor</b>					
No	44,764	300	6.70*	4.67*	2.03
Yes	16,395	67	4.09*	2.20*	1.89
<b>Augmentation of Labor</b>					
No	43,320	316	7.29*	5.22*	2.08
Yes	17,839	51	2.86*	1.07*	1.79
<b>Non-Vertex Presentation</b>					
No	58,398	284	4.86*	2.91*	1.95
Yes	2,607	83	31.84*	28.77*	3.07
<b>Steroids for Fetal Lung Maturation Received by the Mother Prior to Delivery</b>					
No	59,572	326	5.47*	3.61*	1.86*
Yes	1,587	41	25.83*	18.90*	6.93*
<b>Clinical Chorioamnionitis Diagnosed During Labor – Maternal Temp <math>\geq 38^{\circ}\text{C}</math></b>					
No	60,519	354	5.85*	3.83*	2.02
Yes	640	13	20.31*	20.31*	0.00
<b>Epidural or Spinal Anesthesia During Labor</b>					
No	17,943	164	9.14*	7.25*	1.89
Yes	32,760	106	3.24*	1.43*	1.80
<b>Fetal Presentation</b>					
Cephalic	58,011	270	4.65*	2.74*	1.91
Breech	2,336	80	34.25*	31.25*	3.00
<b>Method of Delivery</b>					
Vaginal	44,104	229	5.19*	3.38*	1.81
Vaginal after previous C-section	1,521	16	10.52*	7.23*	3.29
Primary C-section	8,518	83	9.74*	7.04*	2.70
Repeat C-section	6,976	37	5.30*	3.44*	1.86
<b>Maternal Transfusion</b>					
No	60,929	361	5.92*	3.99	1.94*
Yes	241	5	20.75*	8.30	12.45*
<b>Unplanned Operating Procedure Following Delivery</b>					
No	60,981	354	5.81*	3.82*	1.98
Yes	189	12	63.49*	63.49*	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, 2012-2016**

	<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	2,381	219	91.98*	86.52*	5.46*
8	5,521	37	6.70*	2.90*	3.80*
9	49,191	99	2.01*	0.35*	1.67*
10	3,899	4	1.03*	0.26*	0.77*
<b>Ten Minute APGAR Score</b>					
0-2	141	120	851.06*	851.06*	0.00
3-7	332	41	123.49*	108.43*	15.06
8-10	187	5	26.74*	21.39*	5.35
<b>Plurality</b>					
1	59,221	325	5.49*	3.51*	1.98
2+	1,975	42	21.27*	18.73*	2.53
<b>Breastfeeding at the Time of Discharge</b>					
No	12,909	100	7.75*	3.80*	3.95*
Yes	47,896	84	1.75*	0.31*	1.44*
<b>Assisted Ventilation Required Immediately Following Delivery</b>					
No	57,420	251	4.37*	2.66*	1.71*
Yes	3,767	115	30.53*	24.16*	6.37*
<b>Assisted Ventilation for More than Six Hours</b>					
No	59,824	305	5.10*	3.31*	1.79*
Yes	1,363	61	44.75*	33.75*	11.01*
<b>Neonatal Intensive Care Unit Admission</b>					
No	55,162	228	4.13*	2.83*	1.31*
Yes	6,025	138	22.90*	14.61*	8.30*
<b>Newborn Given Surfactant Replacement Therapy</b>					
No	60,741	330	5.43*	3.57*	1.86*
Yes	446	36	80.72*	60.54*	20.18*
<b>Antibiotics Received by the Newborn for Suspected Neonatal Sepsis</b>					
No	58,061	298	5.13*	3.43*	1.71*
Yes	3,126	68	21.75*	14.40*	7.36*

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

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

