

Infant Mortality

An Overview: 2018

Infant Deaths	
Number	70
Rate per 1,000 Live Births	5.89
Neonatal Deaths	
Number	36
Rate per 1,000 Live Births	3.03
Postneonatal Death	
Number	34
Rate per 1,000 Live Births	2.86

During 2018, there were 70 South Dakota resident infant deaths reported for an infant mortality rate of 5.89 per 1,000 live births. In comparison, there were 94 infant deaths in 2017, with the infant mortality rate of 7.75 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.

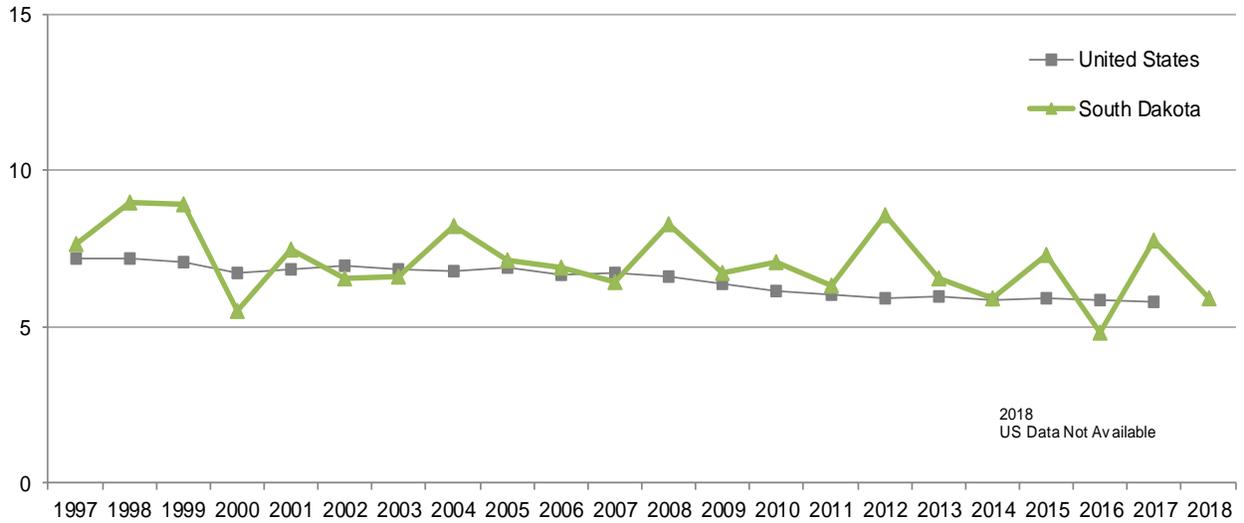
Table 34
Resident Infant Deaths and Infant Mortality Rates,
South Dakota and United States, 1997-2018

Year	United States		South Dakota	
	Number	Mortality Rate	Number	Mortality Rate
2018	*NA	*NA	70	5.89
2017	22,341	5.79	94	7.75
2016	23,161	5.87	59	4.81
2015	23,455	5.90	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

Note: *U.S. 2018 data was 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, 1997-2018

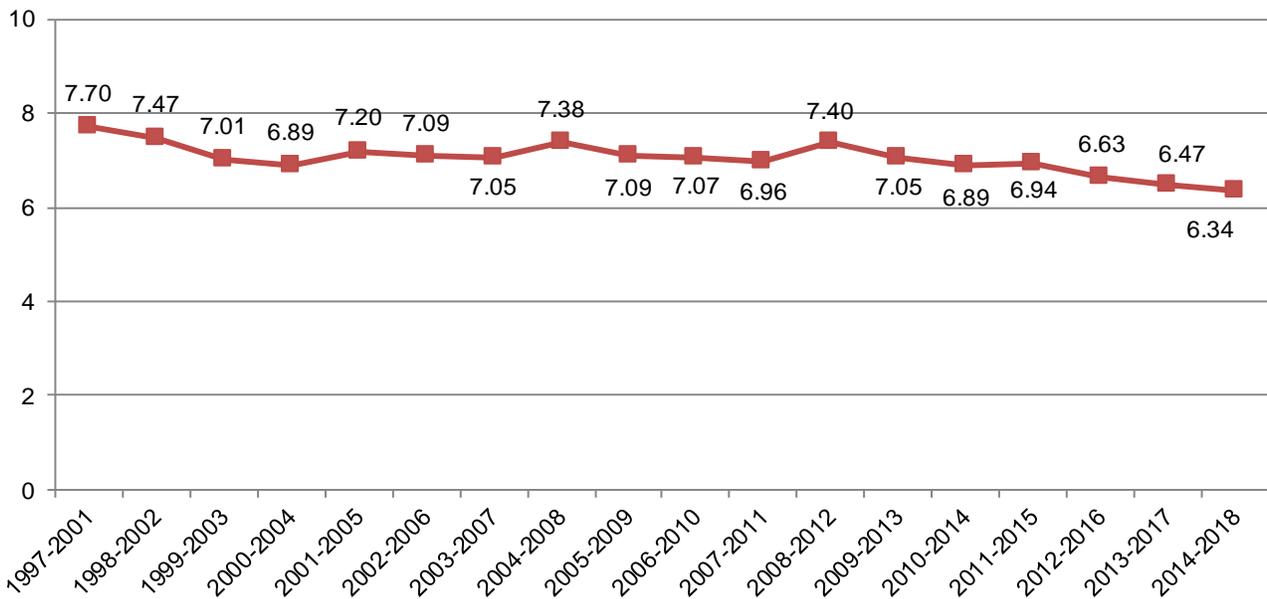


Note: Rate Per 1,000 Live Births. U.S. 2018 data is not available.
 Source: National Center for Health Statistics and South Dakota Department of Health, Office of Health Statistics

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

the past 21 years, South Dakota's infant mortality rate has been slowly decreasing.

Figure 7
Resident Infant Mortality Rates for South Dakota, 1997-2018



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 2014-2018. The leading causes of infant death in 2018 can be broken down as follows: congenital

malformations, 27.1 percent, accidents with 11.4 percent and sudden infant death syndrome with 10.0 percent.

Table 35
South Dakota Resident Leading Causes of Infant Death, 2014-2018

	Total	2014	2015	2016	2017	2018
Total Deaths	386	73	90	59	94	70
Congenital Malformations, Deformations, & Chromosomal Abnormalities (Q00-Q99)	97	21	19	13	25	19
Chromosomal abnormalities (Q90-Q99)	29	6	6	5	7	5
Edward's syndrome (Q91.0-Q91.3)	16	3	4	2	4	3
Congenital malformations of the nervous system (Q00-Q07)	20	7	2	3	4	4
Other reduction deformities of brain (Q04.3)	5	2	1	1	0	1
Congenital malformations of the heart (Q20-Q24)	15	3	2	3	2	5
Congenital malformations and deformations of the musculoskeletal system (Q65-Q79)	11	1	4	1	3	2
Congenital diaphragmatic hernia (Q79.0)	6	1	3	0	2	0
Congenital malformations of the urinary system (Q60-Q64)	5	0	0	0	3	2
Multiple congenital anomalies (Q89.7)	5	2	1	0	2	0
Extreme immaturity and other preterm infants (Less than 37 comp wks of gestation) (P07.2-P07.3)	50	10	11	7	19	3
Accidents (V01-X59, Y85-Y86)	44	7	11	8	10	8
Accidental suffocation and strangulation in bed (W75)	34	5	10	6	7	6
Unspecified threat to breathing (W84)	6	2	0	1	2	1
Sudden Infant Death Syndrome (R95)	32	5	11	6	3	7
III-Defined and Unknown Causes of Mortality (R96-R99)	24	4	7	5	3	5
Assault (homicide) (X85-Y09, Y87.1)	10	2	2	2	2	2
Newborn affected by other forms of placental separation and hemorrhage (P02.1)	10	2	4	0	2	2
Primary atelectasis of newborn (P28.0)	7	2	2	0	3	0
Neonatal cardiac dysrhythmia (P29.1)	7	1	3	2	1	0
Respiratory distress of newborn, unspecified (P22.9)	6	0	0	1	3	2
Influenza and Pneumonia (J09-J18)	6	2	1	0	2	1
Newborn affected by premature rupture of membranes (P01.1)	5	0	1	2	1	1
All Other Causes	88	16	19	16	23	14

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

There were 36 neonatal deaths (deaths occurring to infants from birth through 27 days old) for a rate of 3.03 deaths per 1,000 live births. There were 34 postneonatal deaths (deaths occurring to infants 28 days

to 1 year of age) for a rate of 2.86 deaths per 1,000 live births. In comparison, in 2017 neonatal and postneonatal rates were 5.52 and 2.23 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 to other areas. All race data in this section are categorized in the following manner:

white, non-Hispanic
 American Indian, non-Hispanic
 black, non-Hispanic
 multi-racial, non-Hispanic
 Hispanic

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

Table 36a, below, indicates that from 2017 to 2018, the number of South Dakota resident infant deaths decreased for all race groups and increased for Hispanics. 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, 2009-2018

Year	Race of Infant										Total	
	White, non-Hispanic		American Indian, non-Hispanic		Black, non-Hispanic		Hispanic		Multi-racial, non-Hispanic			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2018	44	5.19	14	8.52	2	4.88	4	6.07	5	11.68	70	5.89
2017	61	7.08	15	8.31	7	17.59	3	4.81	6	14.42	94	7.75
2016	33	3.74	21	11.78	3	8.33	1	1.58	1	2.72	59	4.81
2015	52	5.90	24	12.49	3	11.28	3	5.37	7	16.59	90	7.30
2014	36	4.05	23	12.69	3	10.17	4	6.64	7	18.28	73	5.94
2013	46	5.17	22	11.57	4	14.44	2	3.77	4	11.90	80	6.53
2012	53	6.01	24	12.95	3	11.11	9	16.30	10	26.18	104	8.60
2011	42	4.85	24	12.79	3	12.77	0	0.00	4	12.50	75	6.34
2010	52	5.90	19	10.66	1	4.41	3	5.92	7	23.65	83	7.04
2009	54	6.03	19	10.42	3	13.95	2	4.22	2	6.51	80	6.71

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, 2005-2018

Year	Race of Infant										Total	
	White, non-Hispanic		American Indian, non-Hispanic		Black, non-Hispanic		Hispanic		Multi-racial, non-Hispanic			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2014-2018	226	5.18	97	10.82	18	10.41	15	4.87	26	12.89	386	6.34
2013-2017	228	5.17	105	11.38	20	12.53	13	4.41	25	12.99	396	6.47
2012-2016	220	4.97	114	12.30	16	10.90	19	6.60	29	15.34	406	6.63
2011-2015	229	5.19	117	12.49	16	11.91	18	6.54	32	17.36	422	6.94
2010-2014	229	5.19	112	12.14	14	10.74	18	6.67	32	18.64	415	6.89
2009-2013	247	5.59	108	11.69	14	11.44	16	6.22	27	16.45	422	7.05
2008-2012	256	5.78	115	12.38	12	10.62	20	7.99	30	18.86	442	7.40
2007-2011	251	5.62	111	11.80	10	9.53	16	6.61	25	17.05	417	6.96
2006-2010	257	5.70	112	11.86	11	11.12	19	8.23	23	16.50	424	7.07
2005-2009	259	5.76	117	12.50	11	12.35	18	8.20	17	11.05	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 all races and increased for Hispanics from 2017 to 2018. The American Indian, non-Hispanic neonatal mortality rate has consistently been higher than white,

non-Hispanic neonatal mortality rates for each year since 2009. In Table 37b, below, neonatal mortality is grouped in five-year increments. The neonatal mortality rate has dropped to its lowest since 2005.

Table 37a
South Dakota Resident Neonatal Deaths and Mortality Rates by Infant's Race, 2009-2018

Year	Race of Infant										Total	
	White, non-Hispanic		American Indian, non-Hispanic		Black, non-Hispanic		Hispanic		Multi-racial, non-Hispanic			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2018	24	2.83	7	4.26	1	2.44	3	4.55	1	2.34	36	3.03
2017	46	5.34	10	5.54	6	15.08	2	3.21	2	4.81	67	5.52
2016	22	2.49	8	4.49	0	0.00	0	0.00	1	2.72	31	2.53
2015	36	4.08	15	7.81	3	11.28	2	3.58	2	4.74	59	4.79
2014	25	2.81	8	4.42	1	3.39	4	6.64	4	10.44	42	3.42
2013	31	3.48	9	4.73	4	14.44	1	1.89	2	5.95	48	3.92
2012	39	4.42	14	7.56	1	3.70	6	10.87	6	15.71	69	5.71
2011	29	3.35	10	5.33	2	8.51	0	0.00	3	9.38	46	3.89
2010	35	3.97	14	7.85	0	0.00	3	5.92	3	10.14	56	4.75
2009	32	3.57	7	3.84	2	9.30	2	4.22	2	6.51	45	3.77

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, 2005-2018

Year	Race of Infant										Total	
	White, non-Hispanic		American Indian, non-Hispanic		Black, non-Hispanic		Hispanic		Multi-racial, non-Hispanic			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2014-2018	153	3.51	48	5.35	11	6.36	11	3.57	10	4.96	235	3.86
2013-2017	160	3.63	50	5.42	14	8.77	9	3.05	11	5.71	247	4.03
2012-2016	153	3.46	54	5.83	9	6.13	13	4.52	15	7.93	249	4.07
2011-2015	160	3.63	56	5.98	11	8.19	13	4.72	17	9.22	264	4.34
2010-2014	159	3.61	55	5.96	8	6.13	14	5.19	18	10.48	261	4.33
2009-2013	166	3.76	54	5.85	9	7.35	12	4.67	16	9.75	264	4.41
2008-2012	170	3.84	57	6.14	7	6.19	16	6.39	20	12.57	277	4.64
2007-2011	165	3.69	51	5.42	7	6.67	15	6.20	17	11.60	259	4.32
2006-2010	165	3.66	51	5.40	7	7.08	16	6.93	15	10.76	256	4.27
2005-2009	170	3.78	46	4.92	8	8.98	14	6.38	13	8.45	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, non-Hispanic infants and American Indian, non-Hispanic infants from 2017 to 2018. The American Indian, non-Hispanic postneonatal mortality

rate has been consistently higher than the white, non-Hispanic rate for each year since 2009. When looking at the data in five-year increments as shown in Table 38b, below, the total postneonatal mortality has remained steady.

Table 38a
South Dakota Resident Postneonatal Deaths and Mortality Rates by Infant's Race, 2009-2018

Year	Race of Infant										Total	
	White, non-Hispanic		American Indian, non-Hispanic		Black, non-Hispanic		Hispanic		Multi-racial, non-Hispanic			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2018	20	2.36	7	4.26	1	2.44	1	1.52	4	9.35	34	2.86
2017	15	1.74	5	2.77	1	2.51	1	1.60	4	9.62	27	2.23
2016	11	1.25	13	7.30	3	8.33	1	1.58	0	0.00	28	2.28
2015	16	1.81	9	4.69	0	0.00	1	1.79	5	11.85	31	2.52
2014	11	1.24	15	8.28	2	6.78	0	0.00	3	7.83	31	2.52
2013	15	1.68	13	6.83	0	0.00	1	1.89	2	5.95	32	2.61
2012	14	1.59	10	5.40	2	7.41	3	5.43	4	10.47	35	2.89
2011	13	1.50	14	7.46	1	4.26	0	0.00	1	3.13	29	2.45
2010	17	1.93	5	2.80	1	4.41	0	0.00	4	13.51	27	2.29
2009	22	2.46	12	6.58	1	4.65	0	0.00	0	0.00	35	2.93

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, 2005-2018

Year	Race of Infant										Total	
	White, non-Hispanic		American Indian, non-Hispanic		Black, non-Hispanic		Hispanic		Multi-racial, non-Hispanic			
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
2014-2018	73	1.67	49	5.47	7	4.05	4	1.30	16	7.93	151	2.48
2013-2017	68	1.54	55	5.96	6	3.76	4	1.36	14	7.27	149	2.43
2012-2016	67	1.51	60	6.47	7	4.77	6	2.09	14	7.40	157	2.56
2011-2015	69	1.56	61	6.51	5	3.72	5	1.82	15	8.14	158	2.60
2010-2014	70	1.59	57	6.18	6	4.60	4	1.48	14	8.15	154	2.56
2009-2013	81	1.83	54	5.85	5	4.08	4	1.56	11	6.70	158	2.64
2008-2012	86	1.94	58	6.25	5	4.42	4	1.60	10	6.29	165	2.76
2007-2011	86	1.92	60	6.38	3	2.86	1	0.41	8	5.46	158	2.64
2006-2010	92	2.04	61	6.46	4	4.04	3	1.30	8	5.74	168	2.80
2005-2009	89	1.98	71	7.59	3	3.37	4	1.82	4	2.60	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 2014 to 2018. The overall leading cause of infant death for South Dakota residents was congenital malformations, deformations, and chromosomal abnormalities, which accounted for 25.1 percent of all infant deaths in South Dakota from 2014 to 2018. The second leading cause of death was extreme immaturity with 13.0 percent.

When analyzed by race, the leading cause of death for white, non-Hispanic infants was congenital malformations, deformations, and chromosomal abnormalities with 31.0 percent of all white, non-Hispanic infant deaths. The leading cause of death for American Indian, non-Hispanic infants was accidents with 17.5 percent. The leading cause of death for black, non-Hispanic infants was extreme immaturity with 27.8 percent.

Table 39
South Dakota Resident Infant Deaths by Cause of Death and Race, 2014-2018

	Total		Race									
			White, non-Hispanic		American Indian, non-Hispanic		Black, non-Hispanic		Hispanic		Multi-racial, non-Hispanic	
	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate	Num	Rate
Total Deaths	386	6.34	226	5.18	97	10.82	18	10.41	15	4.87	26	12.89
Congenital Malformations, Deformations, & Chromosomal Abnormality (Q00-Q99)	97	1.59	70	1.60	13	1.45	4	2.31	5	1.62	3	1.49
Chromosomal abnormalities (Q90-Q99)	29	0.48	23	0.53	1	0.11	1	0.58	2	0.65	1	0.50
Edward's syndrome (Q91.0-Q91.3)	16	0.26	14	0.32	0	0.00	1	0.58	0	0.00	1	0.50
Congenital malformations of the nervous system (Q00-Q07)	20	0.33	12	0.28	6	0.67	1	0.58	0	0.00	1	0.50
Other reduction deformities of brain (Q04.3)	5	0.08	2	0.05	2	0.22	1	0.58	0	0.00	0	0.00
Congenital malformations of the heart (Q20-Q24)	15	0.25	10	0.23	2	0.22	1	0.58	1	0.32	0	0.00
Congenital malformations and deformations of the musculoskeletal system (Q65-Q79)	11	0.18	9	0.21	0	0.00	0	0.00	1	0.32	1	0.50
Congenital diaphragmatic hernia (Q79.0)	6	0.10	5	0.11	0	0.00	0	0.00	0	0.00	1	0.50
Congenital malformations of the urinary system (Q60-Q64)	5	0.08	4	0.09	1	0.11	0	0.00	0	0.00	0	0.00
Multiple congenital malformations (Q89.7)	5	0.08	5	0.11	0	0.00	0	0.00	0	0.00	0	0.00
Extreme immaturity and other preterm infants (Less than 37 comp wks of gestation) (P07.2-P07.3)	50	0.82	30	0.69	8	0.89	5	2.89	3	0.97	3	1.49
Accidents (V01-X59, Y85-Y86)	44	0.72	21	0.48	17	1.90	0	0.00	0	0.00	6	2.97
Accidental suffocation and strangulation in bed (W75)	34	0.56	17	0.39	14	1.56	0	0.00	0	0.00	3	1.49
Unspecified threat to breathing (W84)	6	0.10	4	0.09	1	0.11	0	0.00	0	0.00	1	0.50
Sudden Infant Death Syndrome (R95)	32	0.53	16	0.37	11	1.23	1	0.58	1	0.32	3	1.49
Ill-Defined and Unknown Causes of Mortality (R96-R99)	24	0.39	12	0.28	10	1.12	0	0.00	1	0.32	1	0.50
Assault (homicide) (X85-Y09, Y87.1)	10	0.16	3	0.07	4	0.45	0	0.00	1	0.32	2	0.99
Newborn affected by other forms of placental separation and hemorrhage (P02.1)	10	0.16	4	0.09	6	0.67	0	0.00	0	0.00	0	0.00
Primary atelectasis of newborn (P28.0)	7	0.11	3	0.07	4	0.45	0	0.00	0	0.00	0	0.00
Neonatal cardiac dysrhythmia (P29.1)	7	0.11	5	0.11	1	0.11	1	0.58	0	0.00	0	0.00
Respiratory distress of newborn, unspecified (P22.9)	6	0.10	3	0.07	1	0.11	1	0.58	1	0.32	0	0.00
Influenza and Pneumonia (J09-J18)	6	0.10	2	0.05	1	0.11	1	0.58	0	0.00	2	0.99
Newborn affected by premature rupture of membranes (P01.1)	5	0.08	1	0.02	1	0.11	1	0.58	1	0.32	1	0.50
All Other Causes	88	1.45	56	1.28	20	2.23	4	2.31	2	0.65	5	2.48

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 445.99, a neonatal mortality rate of 421.60, and a postneonatal mortality rate of

24.39. 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 1.33.

Table 40
South Dakota Resident Infant Mortality Rates by Birth Weight, 2014-2018

Birth Weight (in Grams)	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Total	60,892	386	6.34	3.86	2.48
<1,000	287	128	445.99	421.60	24.39
1,000-1,499	352	25	71.02	62.50	8.52
1,500-1,999	794	27	34.01	26.45	7.56
2,000-2,499	2,594	31	11.95	5.78	6.17
2,500-2,999	9,673	53	5.48	1.76	3.72
3,000-3,499	22,672	73	3.22	1.06	2.16
3,500-3,999	18,456	36	1.95	0.65	1.30
4,000-4,499	5,269	7	1.33	0.19	1.14
4,500+	788	3	3.81	0.00	3.81

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, 16.33, 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 4.88.

Table 41
South Dakota Resident Infant Mortality Rates by Prenatal Care, 2014-2018

Trimester Prenatal Care Began	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Total	60,892	386	6.34	3.86	2.48
First Trimester	45,094	220	4.88	3.13	1.75
Second Trimester	11,348	112	9.87	5.29	4.58
Third Trimester	3,037	24	7.90	3.62	4.28
No Prenatal Care	551	9	16.33	14.52	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 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 761.19.

The highest neonatal mortality rate and postneonatal mortality rate both occurred at less than 25 weeks with a rate of 731.34 and 29.85, respectively.

Table 42
South Dakota Resident Infant Mortality Rates by Gestation Period, 2014-2018

Weeks of Gestation	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Total	60,892	386	6.34	3.86	2.48
<25 Weeks	134	102	761.19	731.34	29.85
25-29 Weeks	321	40	124.61	112.15	12.46
30-31 Weeks	278	11	39.57	32.37	7.19
32 Weeks	241	9	37.34	33.20	4.15
33 Weeks	327	9	27.52	21.41	6.12
34 Weeks	741	10	13.50	6.75	6.75
35 Weeks	1,059	11	10.39	7.55	2.83
36 Weeks	2,329	23	9.88	3.86	6.01
37 Weeks	5,271	36	6.83	2.66	4.17
38 Weeks	9,715	44	4.53	1.44	3.09
39 Weeks	21,733	56	2.58	0.87	1.70
40 Weeks	13,744	22	1.60	0.44	1.16
41 Weeks	4,495	10	2.22	0.22	2.00
42+ Weeks	411	2	4.87	2.43	2.43

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 Cigarette Use

Table 43, below, displays infant mortality rates by cigarette use of the mother. Mothers who reported they smoked cigarettes while pregnant had an infant

mortality rate of 11.37, while mothers who reported they did not smoke cigarettes while pregnant had an infant mortality rate of 5.50.

Table 43
South Dakota Resident Infant Mortality Rates
by Cigarette Use of Mother During Pregnancy, 2014-2018

Cigarette Use of Mother	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Total	60,892	386	6.34	3.86	2.48
Yes	8,095	92	11.37	5.44	5.93
No	52,537	289	5.50	3.56	1.94

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

Failure of births to add to the total is due to 'not stated' cigarette use of the 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 at the end of the report.

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, 2014-2018

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Education					
11 years or less	7,779	73	9.38*	4.76	4.63*
12+ years	51,102	287	5.62*	3.66	1.96*
Marital Status					
Single	22,504	202	8.98*	5.11*	3.87*
Married	38,355	175	4.56*	3.10*	1.46*
Mother's WIC Status					
No WIC	41,482	217	5.23*	3.64	1.59*
WIC	18,971	157	8.28*	4.22	4.06*
Age					
<20	3,347	20	6.57*	3.59	2.39*
20-24	12,961	108	8.33*	4.71	3.63*
25-29	20,536	117	5.70*	3.55	2.14*
30-34	16,726	90	5.38*	3.71	1.67*
35+	7,315	43	5.88*	3.69	2.19*
BMI					
Underweight (<18.5)	1,914	16	8.36*	5.75*	2.61*
Recommended (18.5-24.9)	27,864	141	5.06*	3.19*	1.87*
Overweight (25.0-29.9)	15,487	83	5.36*	3.49*	1.87*
Obese (30.0-34.9)	8,181	54	6.60*	3.42*	3.18*
Very Obese (35.0-39.9)	4,135	44	10.64*	6.77*	3.87*
Morbidly Obese (40.0+)	2,700	32	11.85*	7.04*	4.81*
Diabetes					
No Pre-Existing Diabetes	60,188	366	6.08*	3.82	2.26*
Pre-Existing Diabetes	595	10	16.81*	5.04	11.76*
Hepatitis C					
No Hepatitis C	60,592	370	6.11*	3.80*	2.31*
Hepatitis C	202	6	29.70*	14.85*	14.85*
Chlamydia					
No Chlamydia	59,286	357	6.02*	3.78	2.24*
Chlamydia	1,508	19	12.60*	5.97	6.63*

Table 44a (continued)
South Dakota Resident Infant Mortality Rates by Demographics of Mother, 2014-2018

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Payment Source					
Medicaid	18,921	172	9.09*	4.65*	4.44*
Private Insurance	36,004	163	4.53*	3.28*	1.25*
Self-Pay	1,840	17	9.24*	6.52*	2.72*
Indian Health Service	1,555	15	9.65*	5.79*	3.86*
Champus/Tricare	1,874	4	2.13*	1.07*	1.07*
Other Government	232	1	4.31*	4.31*	0.00*
Other	224	2	8.93*	8.93*	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, 2014-2018

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Number of Living Children					
0	20,203	114	5.64	4.06	1.58*
1	18,852	106	5.62	3.77	1.86*
2	11,770	74	6.29	3.14	3.14*
3	5,507	46	8.35	4.72	3.63*
4+	4,537	37	8.16	3.97	4.19*
Number of Dead Children					
0	60,027	357	5.95*	3.60*	2.35
1+	829	20	24.13*	21.71*	2.41
Number of Previous Terminations					
0	43,374	232	5.35*	3.27*	2.07*
1	11,780	81	6.88*	4.58*	2.92*
2+	5,688	63	11.08*	6.68*	4.40*
Number of Previous Pregnancies					
0	16,574	79	4.77*	2.96	1.81*
1	16,129	91	5.64*	4.15	1.49*
2	11,890	68	5.72*	3.62	2.10*
3	7,257	58	7.99*	4.69	3.31*
4	4,034	31	7.68*	3.97	2.13*
5+	4,949	49	9.90*	5.05	4.85*
Previous Pre-Term Infant					
No	58,847	352	5.98*	3.74*	2.24*
Yes	1,936	24	12.40*	6.71*	5.68*
Other Poor Previous Pregnancy Outcomes					
No	57,793	336	5.81*	3.48*	2.34
Yes	2,661	40	15.03*	12.03*	3.01
Infertility Treatment – Assisted Reproductive Technology					
No	60,489	371	6.13*	3.79*	2.35
Yes	294	5	17.01*	13.61*	3.40

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, 2014-2018

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Tocolysis					
No	60,152	356	5.92*	3.61*	2.31*
Yes	660	20	30.30*	24.24*	6.06*
Cervical Cerclage					
No	60,629	368	6.07*	3.71*	2.36
Yes	183	8	43.72*	43.72*	0.00
Premature Rupture of Membranes					
No	58,923	312	5.30*	2.99*	2.31
Yes	1,918	65	33.89*	30.24*	3.65
Antibiotics Received by the Mother During Labor					
No	44,019	215	4.88*	3.07*	1.82*
Yes	16,827	163	9.69*	5.97*	3.74*
Induction of Labor					
No	43,388	303	6.98*	4.54*	2.44
Yes	17,458	75	4.30*	2.18*	2.12
Augmentation of Labor					
No	42,030	310	7.38*	4.95*	2.43
Yes	18,816	68	3.61*	1.43*	2.18
Non-Vertex Presentation					
No	57,867	302	5.22*	2.83*	2.38
Yes	2,654	76	28.64*	26.75*	1.88
Steroids for Fetal Lung Maturation Received by the Mother Prior to Delivery					
No	57,986	316	5.45*	3.36*	2.09*
Yes	2,860	62	21.68*	13.99*	7.69*
Clinical Chorioamnionitis Diagnosed During Labor – Maternal Temp $\geq 38^{\circ}\text{C}$					
No	60,127	366	6.09*	3.71*	2.38
Yes	719	12	16.69*	16.69*	0.00
Fetal Intolerance					
No	57,473	364	6.33	3.88	2.45*
Yes	3,044	14	4.60	3.94	0.66*
Epidural or Spinal Anesthesia During Labor					
No	17,065	151	8.85*	6.68*	2.17
Yes	33,305	128	3.84*	1.74*	2.10
Fetal Presentation					
Cephalic	57,774	288	4.98*	2.67*	2.32
Breech	2,364	74	31.30*	29.61*	1.69
Method of Delivery					
Vaginal	43,900	241	5.49*	3.33*	2.16
Vaginal after previous C-section	1,708	17	9.95*	7.03*	2.93
Primary C-section	8,291	78	9.41*	6.51*	2.89
Repeat C-section	6,907	40	5.79*	3.04*	2.75
Maternal Transfusion					
No	60,613	372	6.14*	3.79*	2.34
Yes	247	6	24.29*	20.24*	4.05
Unplanned Operating Procedure Following Delivery					
No	60,650	368	6.07*	3.73*	2.34
Yes	210	10	47.62*	42.86*	4.76

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, 2014-2018

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Five Minute APGAR Score					
0-7	2,459	211	85.81*	76.86*	8.95*
8	5,630	38	6.75*	2.66*	4.09*
9	49,196	113	2.30*	0.45*	1.85*
10	3,359	7	2.08*	0.30*	1.79*
Ten Minute APGAR Score					
0-2	121	105	867.77*	867.77*	0.00
3-7	335	35	104.48*	98.51*	5.97
8-10	223	6	26.91*	17.94*	8.97
Plurality					
1	58,779	344	5.85*	3.52*	2.33
2+	2,106	34	16.14*	13.30*	2.85
Breastfeeding at the Time of Discharge					
No	11,932	94	7.88*	3.60*	4.27*
Yes	48,532	112	2.31*	0.45*	1.85*
Assisted Ventilation Required Immediately Following Delivery					
No	56,980	254	4.46*	2.51*	1.95*
Yes	3,893	123	31.60*	23.38*	8.22*
Assisted Ventilation for More than Six Hours					
No	59,443	303	5.10*	3.11*	1.99*
Yes	1,430	74	51.75*	34.27*	17.48*
Neonatal Intensive Care Unit Admission					
No	54,755	241	4.40*	2.78*	1.63*
Yes	6,118	136	22.23*	13.40*	8.83*
Newborn Given Surfactant Replacement Therapy					
No	60,451	331	5.48*	3.26*	2.22*
Yes	422	46	109.00*	87.68*	21.33*
Antibiotics Received by the Newborn for Suspected Neonatal Sepsis					
No	57,954	312	5.38*	3.28*	2.11*
Yes	2,919	65	22.27*	15.07*	7.19*

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

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

