

Infant Mortality

An Overview: 2009

Infant Deaths	
Number	80
Rate per 1,000 Live Births	6.71
Neonatal Deaths	
Number	45
Rate per 1,000 Live Births	3.77
Postneonatal Death	
Number	35
Rate per 1,000 Live Births	2.93
Fetal Deaths	
Number	66
Rate per 1,000 Live Births + Fetal Deaths	5.50

During 2009, there were 80 South Dakota resident infant deaths reported for an infant mortality rate of 6.71 per 1,000 live births.

In comparison, there were 100 infant deaths in 2008, with the infant mortality rate of 8.28 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. For example, as Table 41, below, displays and Figure 10, page 44, illustrates, large downward spikes occurred in 1996 and 2000. Decreases of 39 infants from 1995 to 1996 and 37 infants from 1999 to 2000 caused large downward spikes in infant mortality rates. Therefore, infant mortality rates should be monitored over a period of time.

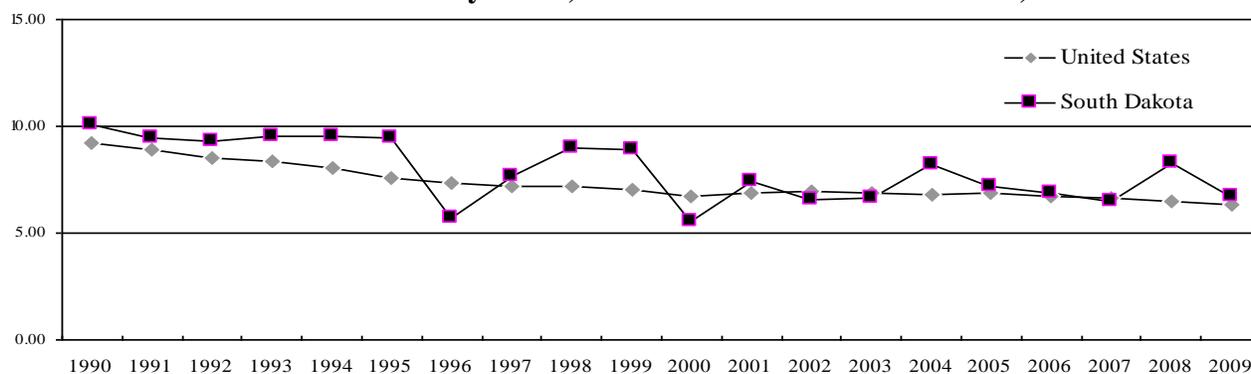
Table 41
Resident Infant Deaths and Infant Mortality Rates,
South Dakota and United States, 1990-2009

Year	United States		South Dakota	
	Number	Mortality Rate	Number	Mortality Rate
2009	*26,200	*6.30	80	6.71
2008	*28,033	*6.59	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
1995	29,583	7.59	99	9.46
1994	31,710	8.02	100	9.52
1993	33,466	8.37	102	9.52
1992	34,628	8.52	102	9.27
1991	36,766	8.94	103	9.42
1990	38,351	9.22	111	10.10

Note: * U.S. 2008 and 2009 data are provisional.
 Infant mortality rates are per 1,000 live births.

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

Figure 10
Resident Infant Mortality Rates, South Dakota and United States, 1990-2009



Note: Rate Per 1,000 Live Births. U.S. 2008 and 2009 data are provisional.
Source: National Center for Health Statistics and South Dakota Department of Health, Office of Data, Statistics, and Vital Records

Table 42 lists the overall leading causes of infant death in 2005-2009. The leading causes of infant death in 2009 can be broken down as follows: certain conditions in

perinatal period, 40.0 percent; congenital malformations, 22.5 percent; sudden infant death syndrome, 16.3 percent; and accidents with 7.5 percent.

Table 42
South Dakota Resident Leading Causes of Infant Death, 2005-2009

	Total	2009	2008	2007	2006	2005
Total Deaths	423	80	100	79	82	82
Certain Conditions in the Perinatal Period (P00-P96)	156	32	34	33	21	36
Extreme immaturity (Less than 28 comp wks of gestation)(P07.2)	38	11	10	4	4	9
Primary atelectasis of newborn(P28.0)	14	2	0	2	1	9
Neonatal cardiac failure(P29.0)	12	6	1	3	1	1
Other preterm infants (28 comp wks or more but less than 37 comp wks of gestations)(P07.3)	9	3	3	1	1	1
Newborn affected by premature rupture of membranes.....(P01.1)	6	0	0	1	3	2
Newborn affected by other forms of placental separation and hemorrhage(P02.1)	6	1	0	3	1	1
Newborn affected by chorioamnionitis.....(P02.7)	5	0	2	2	1	0
Unspecified intraventricular (nontraumatic) hemorrhage(P52.3)	5	0	2	1	0	2
Hydrops fetalis not due to hemolytic disease(P83.2)	5	1	1	0	2	1
Respiratory distress syndrome of newborn(P22.0)	5	1	1	2	0	1
All other conditions originating in perinatal period	51	7	16	15	7	11
Congenital Malformations, Deformations, & Chromosomal Abnormalities (Q00-Q99)	115	18	24	24	28	21
Chromosomal abnormalities (Q90-Q99)	24	2	7	5	6	4
Patau's syndrome.....(Q91.4-Q91.7)	10	1	3	2	2	2
Edward's syndrome(Q91.0-Q91.3)	9	0	3	2	3	1
Congenital malformations of the nervous system (Q00-Q07)	24	6	5	4	5	4
Anencephaly(Q00.0)	14	3	5	0	3	3
Congenital malformations of the heart.....(Q20-Q24)	23	5	3	5	3	7
Congenital malformations and deformations of the musculoskeletal system (Q65-Q79)	14	2	3	3	3	3
Congenital malformations of the urinary system (Q60-Q64)	12	1	1	4	5	1
Renal agenesis(Q60.0-Q60.2)	5	0	1	1	2	1
All other congenital anomalies	18	2	5	1	5	2
Sudden Infant Death Syndrome (R95)	52	13	12	8	12	7
Accidents (V01-X59, Y85-Y86)	28	6	7	4	7	4
Accidental suffocation and strangulation in bed(W75)	11	4	5	1	1	0
Motor vehicle accidents	5	0	1	1	1	2
Unspecified threat to breathing(W84)	5	2	1	0	2	0
All other accidents	7	0	0	2	3	2
Symptoms, Signs, and Abnormal Clinical and Lab Findings.....(R00-R94)	18	2	8	4	2	2
Ill-Defined and Unknown Causes of Mortality(R96-R99)	17	1	6	2	2	6
All Other Causes	37	8	9	4	10	6

Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records

There were 45 neonatal deaths (deaths occurring to infants from birth through 27 days old) for a rate of 3.77 deaths per 1,000 live births. There were 35 postneonatal deaths (deaths occurring to infants 28 days to 1 year of age) for a rate of 2.93 deaths per 1,000 live births. In comparison, 2008 neonatal and postneonatal rates were 5.05 and 3.23 per 1,000 live births, respectively. The number of fetal deaths increased from 61 in 2008 to 66 in 2009, with a corresponding increase in the fetal mortality rate from 5.03 (per 1,000 live births plus fetal deaths) in 2008 to 5.50 in 2009.

Infant Mortality by Race

Table 43, below, indicates that from 2008 to 2009, the number of South Dakota resident infant deaths decreased for both whites and American Indians. American Indian infant mortality rates were significantly higher than whites for the 20 year total.

**Table 43
South Dakota Resident Infant Deaths and Mortality Rates by
Infant's Race, 1990-2009**

Year	Race of Infant				Total	
	White		American Indian		Num	Rate
	Num	Rate	Num	Rate		
2009	56	6.00	20	9.31	80	6.71
2008	60	6.36	36	16.20	100	8.28
2007	51	5.33	23	10.06	79	6.45
2006	50	5.34	26	12.04	82	6.88
2005	55	6.13	25	11.60	82	7.15
2004	62	6.95	28	13.33	93	8.20
2003	43	4.98	27	12.91	73	6.62
2002	41	4.74	26	14.40	70	6.54
2001	52	6.14	25	14.12	78	7.45
2000	36	4.28	19	11.30	57	5.51
1999	66	7.62	24	14.41	94	8.94
1998	61	7.28	29	16.90	92	8.95
1997	45	5.35	30	19.51	78	7.67
1996	39	4.51	20	12.25	60	5.73
1995	69	7.95	30	19.18	99	9.46
1994	66	7.52	33	21.53	100	9.52
1993	67	7.59	35	20.35	102	9.52
1992	69	7.59	32	18.40	102	9.27
1991	73	8.05	25	15.02	103	9.42
1990	77	8.40	33	19.78	111	10.10
1990-2009	1,138	6.41	546	14.81	1,735	7.90

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

Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records

When analyzed by race, Table 44, below, indicates that the South Dakota resident neonatal mortality rate per 1,000 live births decreased for both whites and American

Indians from 2008 to 2009. The American Indian neonatal mortality rate was still significantly higher than whites for the 20 year total.

Table 44
South Dakota Resident Neonatal Deaths and Mortality Rates
by Infant's Race, 1990-2009

Year	Race of Infant				Total	
	White		American Indian		Num	Rate
	Num	Rate	Num	Rate		
2009	34	3.64	8	3.72	45	3.77
2008	40	4.24	17	7.65	61	5.05
2007	37	3.87	11	4.81	51	4.16
2006	30	3.20	10	4.63	43	3.61
2005	41	4.57	9	4.18	52	4.54
2004	44	4.93	12	5.71	57	5.03
2003	22	2.55	11	5.26	35	3.18
2002	24	2.78	12	6.65	38	3.55
2001	27	3.19	9	5.08	37	3.53
2000	24	2.85	7	4.16	32	3.09
1999	43	4.97	10	6.01	57	5.42
1998	34	4.06	11	6.41	46	4.47
1997	28	3.33	10	6.50	40	3.93
1996	20	2.31	11	6.74	31	2.87
1995	40	4.61	14	8.95	54	5.16
1994	37	4.22	20	13.05	57	5.43
1993	37	4.19	16	9.30	53	4.94
1992	44	4.84	12	6.90	56	5.09
1991	43	4.74	13	7.81	59	5.40
1990	43	4.69	15	8.99	58	5.28
1990-2009	692	3.90	238	6.46	962	4.38

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

Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records

Table 45, below, indicates that the postneonatal mortality rate per 1,000 live births increased for white infants and decreased for American Indian infants from

2008 to 2009. The American Indian postneonatal mortality rate was significantly higher than whites for the 20 year total.

Table 45
South Dakota Resident Postneonatal Deaths and Mortality
Rates by Infant's Race, 1990-2009

Year	Race of Infant				Total	
	White		American Indian			
	Num	Rate	Num	Rate	Num	Rate
2009	22	2.36	12	5.58	35	2.93
2008	20	2.12	19	8.55	39	3.23
2007	14	1.46	12	5.25	28	2.29
2006	20	2.13	16	7.41	39	3.27
2005	14	1.56	16	7.42	30	2.62
2004	18	1.59	16	7.62	36	3.17
2003	21	2.43	16	7.65	38	3.45
2002	17	1.97	14	7.76	32	2.99
2001	25	2.95	16	9.04	41	3.91
2000	12	1.43	12	7.13	25	2.42
1999	23	2.66	14	8.41	37	3.52
1998	27	3.22	18	10.49	46	4.47
1997	17	2.02	20	13.00	38	3.74
1996	19	2.20	9	5.51	29	2.77
1995	29	3.34	16	10.23	45	4.30
1994	29	3.31	13	8.48	43	4.09
1993	30	3.40	19	11.05	49	4.57
1992	25	2.75	20	11.50	46	4.18
1991	30	3.31	12	7.21	44	4.03
1990	34	3.71	18	10.80	53	4.82
1990-2009	446	2.51	316	8.57	773	3.52

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

Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records

Table 46, below, shows the leading causes of infant death from 2005 to 2009. The overall leading cause of infant death for South Dakota residents from 2005 to 2009 was certain conditions in perinatal period. Certain conditions in perinatal period accounted for 36.9 percent of all infant deaths in South Dakota from 2005 to 2009.

When analyzed by race, the leading cause of death for white infants was certain conditions in perinatal period with 113 white infant deaths or 41.5 percent of all white infant deaths. The leading cause of death for American Indian infants was certain conditions in the perinatal period with 35 American Indian infant deaths or 26.9 percent of all American Indian infant deaths.

Table 46
South Dakota Resident Infant Deaths by Cause of Death and Race, 2005-2009

	Total	Race	
		White	American Indian
Total Deaths	423	272	130
Certain Conditions in the Perinatal Period (P00-P96)	156	113	35
Extreme immaturity (Less than 28 comp wks of gestation)..... (P07.2)	38	26	10
Primary atelectasis of newborn (P28.0)	14	12	1
Neonatal cardiac failure..... (P29.0)	12	9	3
Other preterm infants (28 comp wks or more but less than 37 comp wks of gestations) (P07.3)	9	7	2
Newborn affected by other forms of placental separation and hemorrhage (P02.1)	6	5	1
Newborn affected by premature rupture of membranes (P01.1)	6	5	1
Hydrops fetalis not due to hemolytic disease (P83.2)	5	5	0
Newborn affected by chorioamnionitis (P02.7)	5	1	3
Respiratory distress syndrome of newborn (P22.0)	5	4	0
Unspecified intraventricular (nontraumatic) hemorrhage of newborn (P52.3)	5	4	1
All other conditions originating in perinatal period	51	35	15
Congenital Malformations, Deformations, & Chromosomal Abnormality .. (Q00-Q99)	115	84	25
Chromosomal abnormalities (Q90-Q99)	24	19	3
Patau's syndrome(Q91.4-Q91.7)	10	8	1
Edward's syndrome(Q91.0-Q91.3)	9	7	1
Congenital malformations of the nervous system (Q00-Q07)	24	18	5
Anencephaly(Q00.0)	14	12	2
Congenital malformations of the heart (Q20-Q24)	23	18	4
Congenital malformations and deformations of the musculoskeletal system..... (Q65-Q79)	14	9	4
Congenital malformations of the urinary system (Q60-Q64)	12	10	1
Renal agenesis(Q60.0-Q60.2)	5	4	0
All other congenital anomalies	18	10	8
Sudden Infant Death Syndrome..... (R95)	52	25	26
Accidents (V01-X59, Y85-Y86)	28	12	16
Accidental suffocation and strangulation in bed (W75)	11	5	6
Motor vehicle accidents	5	0	5
Unspecified threat to breathing.....(W84)	5	2	3
All other accidents	7	5	2
Symptoms, Signs, and Abnormal Clinical and Lab Findings (R00-R94)	18	10	6
Ill-Defined and Unknown Causes of Mortality (R96-R99)	17	7	10
All Other Causes	37	21	12

Note: Failure of the races to add to the total is due to other and unknown races.

Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records

Infant Mortality and Birth Weight

Table 47, 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 478.96, a neonatal mortality rate of

440.13, and a postneonatal mortality rate of 38.83. The highest rates occurred below 2,500 grams which is considered low birth weight babies.

**Table 47
South Dakota Resident Infant Mortality Rates by Birth Weight, 2005-2009**

Birth Weight (in Grams)	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Total	59,637	423	7.09	4.23	2.87
<1,000	309	148	478.96	440.13	38.83
1,000-1,499	343	22	64.14	43.73	20.41
1,500-1,999	763	31	40.63	32.77	7.86
2,000-2,499	2,517	33	13.11	7.95	5.16
2,500-2,999	9,692	59	6.09	2.79	3.30
3,000-3,499	23,235	76	3.27	0.77	2.50
3,500-3,999	17,452	38	2.18	0.29	1.89
4,000-4,499	4,589	9	1.96	0.44	1.53
4,500+	709	3	4.23	1.41	2.82

Note: Infant, neonatal, and postneonatal mortality rates are per 1,000 live births.
Failure of births to add to total is due to unknown birth weights.

Source: South Dakota Department of Health, Office of Data Statistics, and Vital Records

Infant Mortality and Prenatal Care

Table 48, below, displays infant mortality rates by prenatal care. The highest infant mortality rate, 42.79, 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 5.81.

**Table 48
South Dakota Resident Infant Mortality Rates by Prenatal Care, 2005-2009**

Trimester Prenatal Care Began	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Total	59, 637	423	7.09	4.23	2.87
First Trimester	41,808	243	5.81	3.47	2.34
Second Trimester	13,581	105	7.73	4.42	3.31
Third Trimester	2,876	28	9.74	4.87	4.87
No Prenatal Care	444	19	42.79	27.03	15.77

Note: Infant mortality rates are per 1,000 live births.
For purposes of calculating infant mortality rates by prenatal care, multiple births and deaths (twins, triplets, etc) are counted only as a single birth and death.
Failure of births and infant deaths to add to the total is due to unknown trimester prenatal care began.

Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records

Infant Mortality and Gestation Period

Table 49, below, displays infant mortality rates by gestation period. The highest infant mortality rate occurred to those with less than 25 weeks with a rate of 771.81. The highest neonatal mortality rate occurred at

less than 25 weeks with a rate of 758.39. The highest postneonatal mortality rate occurred during 25 to 29 weeks with a rate of 36.92.

Table 49
South Dakota Resident Infant Mortality Rates by Gestation Period, 2005-2009

Weeks of Gestation	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Total	59,637	423	7.09	4.23	2.87
<25 Weeks	149	115	771.81	758.39	13.42
25-29 Weeks	325	41	126.15	89.23	36.92
30-31 Weeks	249	19	76.31	60.24	16.06
32 Weeks	264	10	37.88	30.30	7.58
33 Weeks	362	8	22.10	13.81	8.29
34 Weeks	588	16	27.21	13.61	13.61
35 Weeks	1,018	13	12.77	8.84	3.93
36 Weeks	2,294	16	6.97	3.49	3.49
37 Weeks	5,143	21	4.08	1.56	2.53
38 Weeks	10,652	46	4.32	0.84	3.47
39 Weeks	17,823	52	2.92	1.07	1.85
40 Weeks	15,282	39	2.55	0.65	1.90
41 Weeks	4,787	18	3.76	1.04	2.72
42+ Weeks	544	5	9.19	3.68	5.51

Note: Infant mortality rates are per 1,000 live births.
Failure of births and infant deaths to add to the total is due to unknown weeks of gestation.
Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records

Infant Mortality and Tobacco Use

Table 50, below, displays infant mortality rates by tobacco use of the mother. Mothers who reported they did use tobacco while pregnant had an infant mortality rate

of 10.24, while mothers who reported they did not use tobacco while pregnant had an infant mortality rate of 6.33.

Table 50
South Dakota Resident Infant Mortality Rates by Tobacco Use of Mother, 2005-2009

Tobacco Use of Mother	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Total	59,637	423	7.09	4.23	2.87
Yes	11,039	113	10.24	5.07	5.16
No	48,018	304	6.33	4.04	2.29

Note: Infant mortality rates are per 1,000 live births.
Failure of births to add to the total is due to unknown tobacco use of the mother.
Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records

Infant Mortality and Mother Demographics

The following tables, 51a-51d, 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 233.

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 51a
South Dakota Resident Infant Mortality Rates by Demographics of Mother, 2006-2009

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Education					
11 years or less	5,877	68	11.57*	6.30*	5.27*
12+ years	39,529	218	5.51*	3.57*	1.92*
Marital Status					
Single	18,318	162	8.84*	5.08*	3.77*
Married	29,803	159	5.34*	3.59*	1.71*
Mother's WIC Status					
No WIC	28,398	156	5.49*	3.94	1.51*
WIC	18,629	145	7.78*	3.86	3.92*
Age					
<20	4,560	48	10.53*	6.14	4.39*
20-24	12,991	93	7.16*	3.69	3.46*
25-29	15,864	98	6.18*	4.03	2.14*
30-34	10,039	55	5.48*	4.08	1.29*
35+	4,704	27	5.74*	4.04	1.70*
BMI					
Underweight (< 18.5)	1,671	9	5.39*	1.80*	3.59
Recommended (18.5-24.9)	23,481	131	5.58*	3.45*	2.09
Overweight (25.0-29.9)	11,794	69	5.85*	3.22*	2.63
Obese (30.0-34.9)	5,883	56	9.52*	6.46*	3.06
Very Obese (35.0-39.9)	2,656	19	7.15*	5.27*	1.88
Morbidly Obese (40.0+)	1,579	18	11.40*	8.23*	3.17
Diabetes					
No Pre-Existing Diabetes	47,537	310	6.52*	4.02*	2.48
Pre-Existing Diabetes	337	9	26.71*	20.77*	5.93
Payment Source					
Medicaid	16,721	144	8.61*	4.60	4.01*
Private Insurance	25,868	132	5.10*	3.71	1.35*
Self-Pay	1,177	11	9.35*	4.25	5.10*
Indian Health Service	1,280	17	13.28*	5.47	7.81*
Champus/Tricare	1,224	4	3.27*	3.27	0.00*
Other Government	409	2	4.89*	2.44	2.44*
Other	687	2	2.91*	2.91	0.00*

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

Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records

Table 51b
South Dakota Resident Infant Mortality Rates by Previous Pregnancy History, 2006-2009

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Number of Living Children					
0	17,708	111	6.27*	4.52*	1.75*
1	15,190	92	6.06*	3.23*	2.83*
2	8,700	59	6.78*	4.37*	2.41*
3	3,783	25	6.61*	2.91*	3.44*
4+	2,747	33	12.01*	7.64*	4.37*
Number of Dead Children					
0	47,398	295	6.22*	3.88*	2.32*
1+	715	24	33.57*	20.98*	12.59*
Previous Pre-Term Infant					
No	46,129	301	6.53	3.99*	2.51
Yes	1,745	18	10.32	8.02*	2.29
Number of Previous Pregnancies					
0	14,641	89	6.08*	4.37*	1.71*
1	13,389	84	6.27*	3.29*	2.99*
2	9,254	51	5.51*	3.46*	2.05*
3	5,148	30	5.83*	4.08*	1.75*
4	2,614	28	10.71*	5.74*	4.97*
5+	3,025	36	11.90*	7.60*	3.97*
Other Poor Previous Pregnancy Outcomes					
No	46,505	296	6.36*	3.89*	2.45
Yes	1,369	23	16.80*	12.42*	4.38
Infertility Treatment					
No	47,341	308	6.51*	3.95*	2.53
Yes	533	11	20.64*	20.64*	0.00
Infertility Treatment – Drugs, Insemination					
No	47,500	311	6.55*	4.00*	2.53
Yes	374	8	21.39*	21.39*	0.00
Infertility Treatment – Assisted Reproductive Technology					
No	47,744	317	6.64	4.11*	2.51
Yes	130	2	15.38	15.38*	0.00
Number of Previous C-Sections					
0	42,295	273	6.45*	4.00	2.46
1	4,060	28	6.90*	4.43	2.22
2+	1,771	20	11.29*	7.34	3.95

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

Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records

Table 51c
South Dakota Resident Infant Mortality Rates by Labor and Delivery, 2006-2009

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Tocolysis					
No	46,754	296	6.33*	3.89*	2.42*
Yes	1,054	23	21.82*	15.18*	6.64*
Cervical Cerclage					
No	47,650	315	6.61*	4.07*	2.52
Yes	158	4	25.32*	25.32*	0.00
Premature Rupture of Membranes					
No	45,419	276	6.08*	3.61*	2.44
Yes	2,411	43	17.83*	14.10*	3.73
Antibiotics Received by the Mother During Labor					
No	37,591	238	6.33	3.80*	2.50
Yes	10,381	80	7.71	5.20*	2.50
Precipitous Labor					
No	45,807	290	6.33*	3.82*	2.49
Yes	2,023	29	14.34*	11.37*	2.97
Induction of Labor					
No	32,994	243	7.36*	4.49	2.85*
Yes	14,978	75	5.01*	3.27	1.74*
Augmentation of Labor					
No	35,876	270	7.53*	4.82*	2.68
Yes	12,096	48	3.97*	1.98*	1.98
Non-Vertex Presentation					
No	46,665	288	6.17*	3.64*	2.51
Yes	1,307	30	22.95*	20.66*	2.30
Steroids for Fetal Lung Maturation Received by the Mother Prior to Delivery					
No	47,245	300	6.35*	3.96*	2.37*
Yes	727	18	24.76*	13.76*	11.00*
Clinical Chorioamnionitis Diagnosed During Labor – Maternal Temp >=38°C					
No	47,705	308	6.46*	3.96*	2.47
Yes	267	10	37.45*	29.96*	7.49
Fetal Intolerance of Labor Requiring In-Utero Resuscitative Measures, Further Fetal Assessment or Operative Delivery					
No	44,815	281	6.27*	3.79*	2.45
Yes	3,157	37	11.72*	8.55*	3.17
Epidural or Spinal Anesthesia During Labor					
No	15,495	119	7.68*	4.90*	2.78
Yes	23,842	103	4.32*	2.43*	1.89
Fetal Presentation					
Cephalic	45,737	261	5.71*	3.19*	2.49
Breech	1,805	52	28.81*	26.04*	2.77
Method of Delivery					
Vaginal	34,340	189	5.50*	3.29*	2.21
Vaginal after previous C-section	845	9	10.65*	8.28*	2.37
Primary C-section	7,762	83	10.69*	7.09*	3.61
Repeat C-section	5,017	39	7.77*	4.78*	2.79
Vaginal – unknown previous types of delivery	153	1	6.54*	6.54*	0.00
C-section – unknown previous types of delivery	39	0	0.00*	0.00*	0.00
Not Stated	3	0	0.00*	0.00*	0.00

Table 51c (continued)
South Dakota Resident Infant Mortality Rates by Labor and Delivery, 2006-2009

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Maternal Transfusion					
No	47,598	313	6.58*	4.03*	2.52
Yes	206	5	24.27*	24.27*	0.00
Unplanned Operating Procedure Following Delivery					
No	47,640	311	6.53*	4.01*	2.50
Yes	164	7	42.68*	36.59*	6.10

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

Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records.

Table 51d
South Dakota Resident Infant Mortality Rates by Post Delivery Conditions, 2006-2009

	Births	Infant Deaths	Infant Mortality Rate	Neonatal Mortality Rate	Postneonatal Mortality Rate
Five Minute APGAR Score					
0-7	2,376	189	79.55*	70.29*	8.84*
8	6,724	32	4.76*	1.19*	3.57*
9	35,862	84	2.34*	0.50*	1.84*
10	3,059	7	2.29*	0.33*	1.96*
Ten Minute APGAR Score					
0-2	124	105	846.77*	838.71*	8.06
3-6	104	18	173.08*	163.46*	9.62
7	106	7	66.04*	66.04*	0.00
8	109	4	36.70*	36.70*	0.00
9-10	120	1	8.33*	0.00*	8.33
Plurality					
1	46,662	294	6.30*	3.81*	2.46
2+	1,497	27	18.04*	14.70*	3.34
Breastfeeding at the Time of Discharge					
No	12,229	71	5.81*	2.21*	3.60*
Yes	34,906	96	2.75*	0.66*	2.06*
Assisted Ventilation Required Immediately Following Delivery					
No	45,253	241	5.33*	3.09*	2.21*
Yes	2,610	75	28.74*	21.07*	7.66*
Assisted Ventilation for More than Six Hours					
No	46,758	265	5.67*	3.40*	2.25*
Yes	1,105	51	46.15*	32.58*	13.57*
Neonatal Intensive Care Unit Admission					
No	43,739	224	5.12*	3.04*	2.08*
Yes	4,124	92	22.31*	15.03*	7.03*
Newborn Given Surfactant Replacement Therapy					
No	47,525	288	6.06*	3.72*	2.31*
Yes	338	28	82.84*	53.25*	29.59*
Antibiotics Received by the Newborn for Suspected Neonatal Sepsis					
No	45,560	271	5.95*	3.71*	2.22*
Yes	2,303	45	19.54*	11.29*	8.25*

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

Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records