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Foodborne and Diarrheal Diseases in South Dakota, 2010: Diarrhea, vomiting, cramps, nausea, and much worse

Foodborne illness, or food poisoning, is an ever-present threat to South Dakotan's public health. CDC estimates each year roughly 1 in 6 Americans gets sick with a foodborne illness. In South Dakota this extrapolates to 136,000 South Dakotans becoming ill, 336 hospitalized and 8 people die of foodborne illness. The foodborne and diarrheal diseases have generally increased in South Dakota over the past decade. Large multi-county outbreaks of shigellosis were reported in 2001 and 2006. The table below shows the cases of foodborne and diarrheal diseases that were formally reported and confirmed. Most people with diarrheal diseases, however, just suffer through it and do not seek medical care.

FOODBORNE and DIARRHEAL DISEASES in SOUTH DAKOTA, 2000-2010												
Disease ↓	Year →	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Campylobacteriosis		143	162	196	190	273	241	216	232	264	298	297
Cryptosporidiosis		15	8	42	53	41	30	86	169	88	138	107
E. coli, shiga-toxin producing		69	50	43	33	35	33	50	47	53	71	35
Giardiasis		108	102	84	89	87	115	97	103	139	112	103
Hemolytic uremic syndrome		2	1	0	1	0	3	8	1	3	3	2
Listeriosis		0	0	1	0	1	0	2	2	1	1	3
Salmonellosis		104	149	120	133	153	162	132	174	154	197	186
Shigellosis		10	744	127	18	12	133	388	118	76	4	7

Foodborne illnesses are caused by bacteria, viruses, parasites or toxins that contaminate our foods and beverages. The most common causes of foodborne disease are *Campylobacter*, *Salmonella*, shiga toxin-producing *E. coli* (STEC) and Norovirus. Foodborne diseases produce gastrointestinal symptoms such as diarrhea, vomiting, abdominal cramps, and nausea. These illnesses are usually self-limiting, but occasionally severe complications may develop such as in bloody diarrhea and hemolytic uremic syndrome caused by shiga toxin-producing *E. coli*, or Guillain-Barré syndrome with campylobacteriosis. Pregnant women, the elderly, babies and individuals with diminished immune response are at increased risk of severe disease.

We must improve the prevention of foodborne illnesses in our own homes and restaurants. The best ways to prevent foodborne illnesses include thorough cooking, proper kitchen hygiene, food irradiation, and above all, a safe food supply.

***Escherichia coli*, shiga toxin-producing**

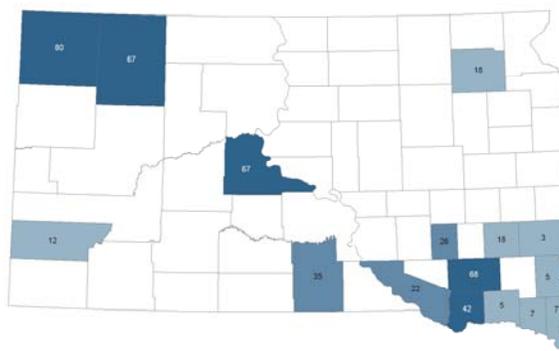
Shiga-toxin producing *E. coli* often causes severe bloody diarrhea and abdominal cramps. The illness usually resolves in 5 to 10 days. In some individuals, however, complications may involve severe hemorrhagic colitis, hemolytic uremic syndrome (HUS), thrombotic thrombocytopenic purpura, and even death.

Escherichia coli O157:H7 infection has been legally reportable in South Dakota since 1996 and all shiga-toxin-producing *E. coli* have been reportable since 2005. During 2010 there were 35 cases of STEC reported, representing a 51% decrease from 2009 and a 30% decrease below the five year median. This was an incidence rate of 8.7 cases per 100,000 population. Fifty-one percent of the cases were in children less than 15 years of age. There were two cases of hemolytic uremic syndrome associated with *E. coli* infection.

E. coli O157:H7 is only one of several shiga toxin-producing serotypes of the bacteria. There were 24 cases of *E. coli* O157:H7, 2 cases of *E. coli* O103, 2 cases of *E. coli* O145, and also 7 cases of other shiga toxin-producing *E. coli* (unknown serotype) reported.

Shiga toxin-producing *E. coli* can be transmitted by meat, water, fresh vegetables or other foods contaminated by the intestinal contents or manure of cattle, sheep, deer, and other animals. Person-to-person transmission can also occur. Human infection can be prevented by proper slaughtering methods, adequate cooking of meats, proper kitchen hygiene, pasteurization of fruit juices and dairy products, and hand-washing after contact with cattle or manure. Individuals with STEC infections are restricted from commercial food handling, child day care, or patient care until two successive negative fecal samples are produced.

STEC Incidence Rates by County, South Dakota, 2010

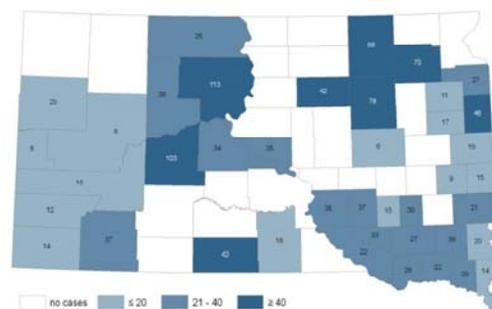


Salmonellosis

There were 186 culture-confirmed cases of salmonellosis reported in South Dakota in 2010, which was an incidence of 22.8 cases per 100,000 population and showed a 16% increase over the five-year median. Twenty-one percent of the *Salmonella* cases were reported among children ages five to fourteen. There was one case of typhoid fever (*Salmonella typhi*) reported in 2010.

There were two notable salmonellosis outbreaks in South Dakota in 2010. The first outbreak was in Minnehaha County and was linked to a community event where the probable cause was smoked sausage. The second outbreak was in a Brown County school with 39 cases including two hospitalizations. The probable cause of this outbreak was raw chicken in a biology class with further secondary spreading to close contacts.

Salmonellosis Incidence Rates by County, South Dakota, 2010



In 2010 there were 7 cases of shigellosis reported which represents a 94% decrease below the five-year median. This was an incidence rate of 0.9 cases per 100,000 population. The table shows the most common shigellosis serotypes in the last ten years in South Dakota. *Shigella sonnei* has been the most common species isolated since 2000 while *S. flexneri* has been the second most common.

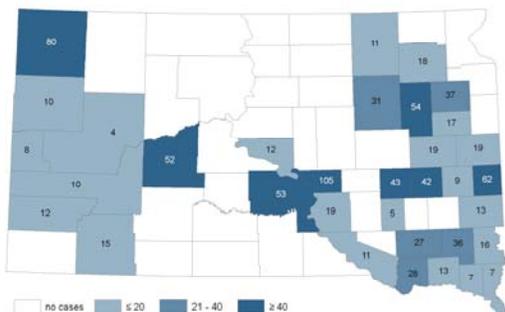
Shigella Serotypes, South Dakota, 2000-2010

Year	S. flexn	S. sonnei	S. boydii	Species Unk	Total
2000	2	2	0	4	8
2001	6	508	1	201	716
2002	5	113	0	39	157
2003	3	9	0	5	17
2004	0	6	4	2	12
2005	1	70	5	55	131
2006	0	268	1	120	389
2007	0	75	0	47	122
2008	1	36	0	38	76
2009	1	2	0	1	4
2010	3	4	0	0	7
Total	22	1093	11	512	1,639
Percent	1%	67%	1%	31%	100%

Shigella is transmitted by the fecal-oral route (human feces), with a very small dose sufficient to cause illness. Following exposure, illness usually follows a one to four day incubation period. Transmission is typically person-to-person within families, child day care centers, and adult

residential living situations. Food may be contaminated by people not washing their hands properly. Shigellosis may also be transmitted by contaminated drinking or recreational water, anal intercourse, houseflies, or by fecally contaminated objects.

Giardiasis Incidence Rates by County, South Dakota, 2010



Giardiasis

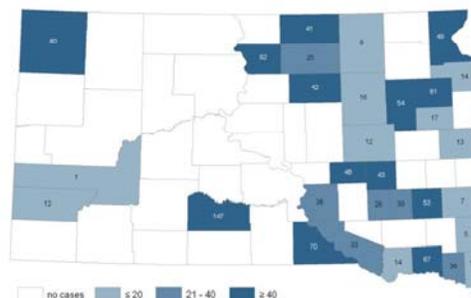
Giardiasis is a gastrointestinal disease caused by a protozoan parasite called *Giardia lamblia* (*G. intestinalis*) which is transmitted person-to-person or by contaminated water. During 2010, 103 cases of giardiasis were reported which is a 13% decrease below the five-year baseline. Forty-two percent of the cases were from children less than 15 years of age.

Cryptosporidiosis

Cryptosporidiosis is a protozoan diarrheal disease transmitted by cattle and human feces, often waterborne. In 2010 there were 107 cases reported representing a 22% increase over the five-year median. Forty-seven percent of the cases were from children less than 15 years of age. Generally, an increase in reported cases has been occurring nationally with outbreaks often traced to outdoor recreational water sources and contaminated swimming pools. Counties with the highest incidence rates (cases per 100,000 population) included Mellette (146), Walworth (92), Codington (81), Harding (80), and Gregory (70). East River counties accounted for 92% of the cases.

By Nick Hill, Lon Kightlinger, Christine Hockett and Elizabeth Dougherty

Cryptosporidiosis Incidence Rates by County, South Dakota, 2010

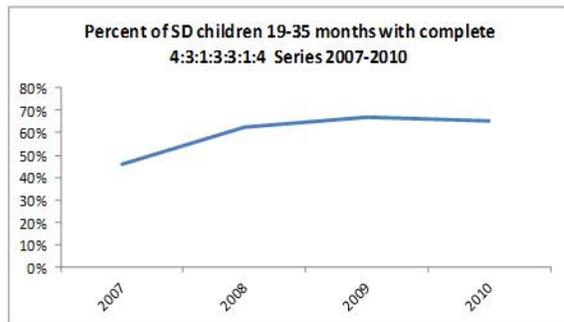
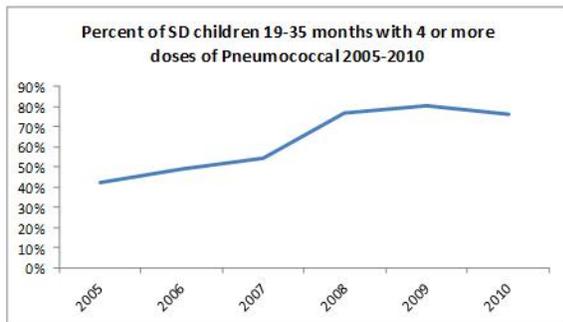
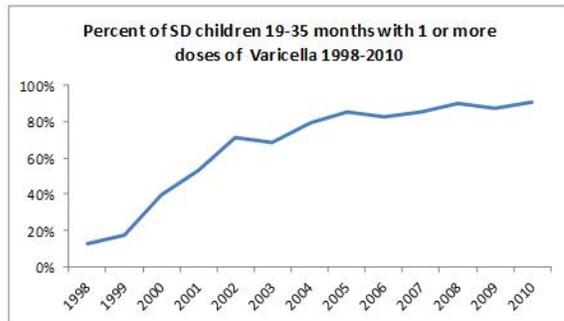
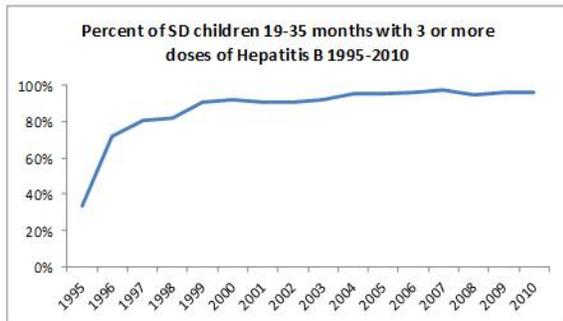
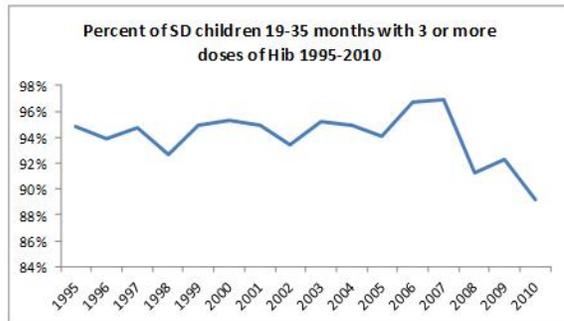
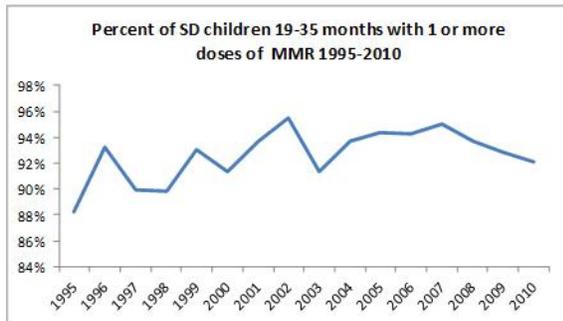
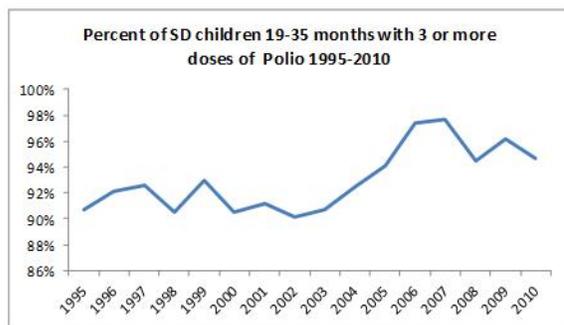
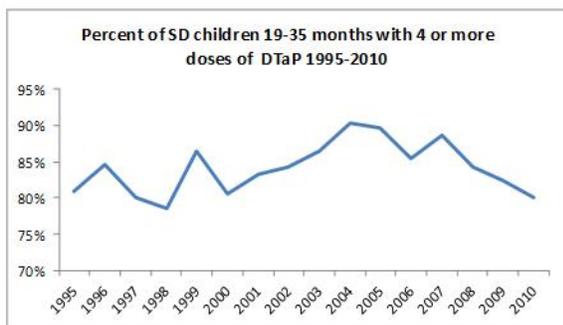


Childhood Immunization Coverage in South Dakota

The following graphs show South Dakota's immunization coverage over time for the ACIP recommended vaccines for children 19 through 35 months of age. The data was derived from the National Immunization Survey. This is a good reminder to review facilities and clinic practices to assure patients are appropriately immunized.

- The Healthy People 2020 goal for each individual vaccine is to achieve a 90% coverage rate. The goal for the 4:3:1:3:3:1:4* series is to achieve a 80% coverage rate.
- Check a patient's vaccination status at every visit and administer all the needed vaccines.
- Mild illnesses such as a low-grade fever or mild diarrhea are not contraindications to receiving vaccines.
- Periodically review the vaccination status of all patients in a clinic and send reminders if a client is found to be behind in vaccination.

*4 or more doses of DTaP, 3 or more doses of Polio, 1 or more doses of MMR, 3 or more doses of Hepatitis B, 3 or more doses of Hib, 1 or more doses of Varicella, and 4 or more doses of Pneumococcal vaccine



HPV and Cancer in South Dakota

Human papillomavirus (HPV) is a widespread virus that can infect males and females. It is the most common sexually transmitted infection. It can cause cancer and genital warts. The primary cancer sites included are anus/rectum, cervix, head/neck/oral, penis, vagina, and vulva. There are more than 100 different types of HPV and more than 40 of those can be sexually transmitted. Most people who are infected with HPV do not know they have it since there are no signs or symptoms. HPV transmission can happen with genital contact – intercourse is not necessary. Vaccinations are available to prevent the infection and the possibility of cancer and genital warts.

HPV vaccination protects against some of the most common cancer-causing types of HPV. Vaccination is recommended for males and females ages 11 to 26 years (minimum age 9 years). Two vaccines, Gardasil and Cervarix, are approved by the Food and Drug Administration and recommended by the Centers for Disease Control and Prevention (CDC). Both are safe and given in a series of three injections over a six month period. The best protection is achieved after all three injections are given. Vaccination prior to the onset of first sexual activity is best. However, vaccination is still recommended for sexually active individuals.

- Gardasil – males and females
- Cervarix – females only

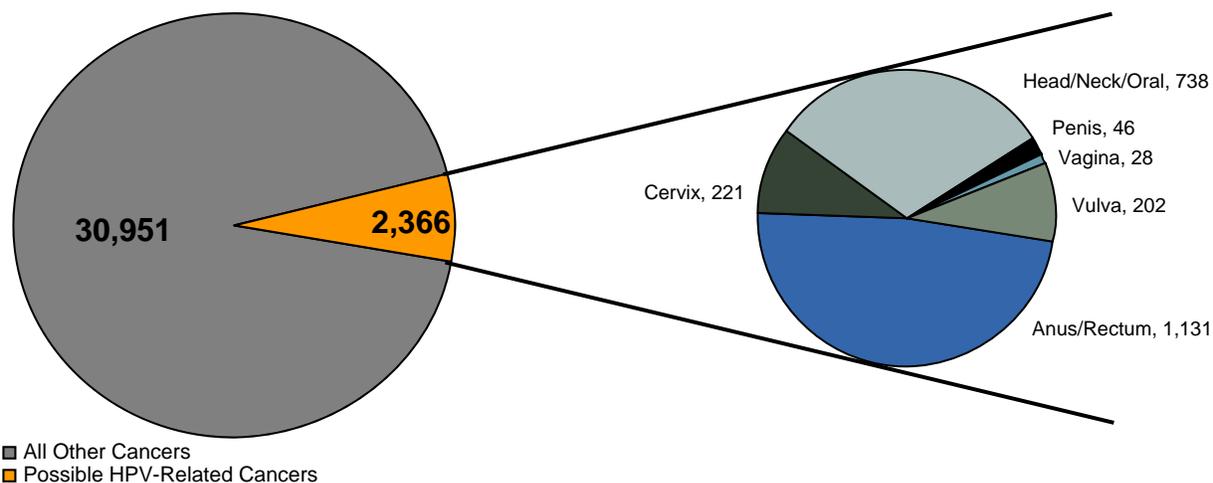
Gardasil is part of the Vaccines for Children program, a federal program that helps to provide free vaccines to children and adolescents 18 years and younger who are uninsured, Medicaid eligible, American Indian or Alaskan Native, or those whose health insurance will not cover.

Data from the South Dakota Cancer Registry shows that about 7% of all cancers diagnosed in South Dakota from 2001 to 2008 were in a primary site that may have been caused by HPV. According to CDC estimates, the following percentages of cancer are caused by HPV in the U.S.

- 93% – Anus/Rectum
- 96% – Cervix
- 63% – Head/Neck/Oral
- 36% – Penis
- 64% – Vagina
- 51% – Vulva

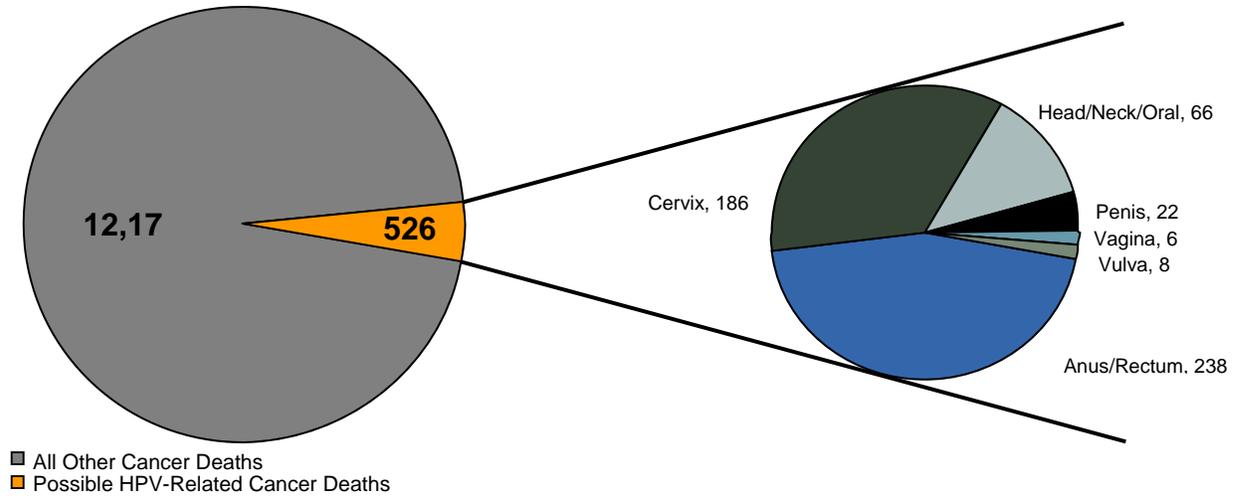
Applying these same percentages to cancers diagnosed in South Dakota shows that if HPV were prevented, significant numbers of cancer diagnoses would be prevented.

Cancer Diagnosed in South Dakota, 2001-2008



Source: South Dakota Department of Health

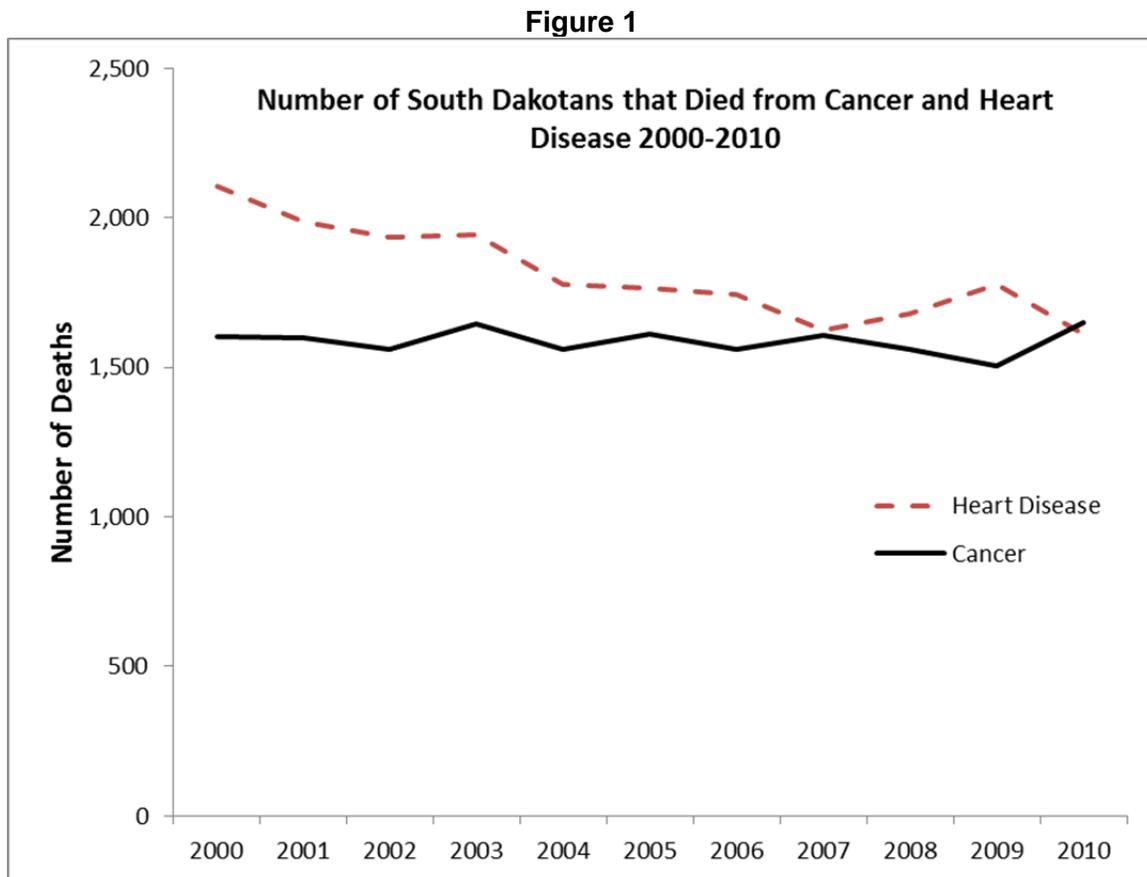
Cancer Deaths in South Dakota, 2001-2008



South Dakota Department of Health

Large Improvements in Heart Disease Mortality Make Cancer the Leading Cause of Death in South Dakota in 2010 for First Time Ever

For the first time in history cancer killed more South Dakotans in 2010 than any other cause of death. Death certificates reported 1,651 South Dakotans died from cancer in 2010 compared to 1,611 from heart disease. Figure 1 shows the numbers of South Dakotans that have died from cancer and heart disease from 2000-2010. For the past 90 years heart disease has been the leading cause of death among U.S. citizens, when prior to 1920 pneumonia, influenza, and tuberculosis were also among the leading causes of death. Today, however, chronic diseases cause many more deaths than infectious diseases. Cancer and heart disease together account for almost half of all deaths in South Dakota and the United States.



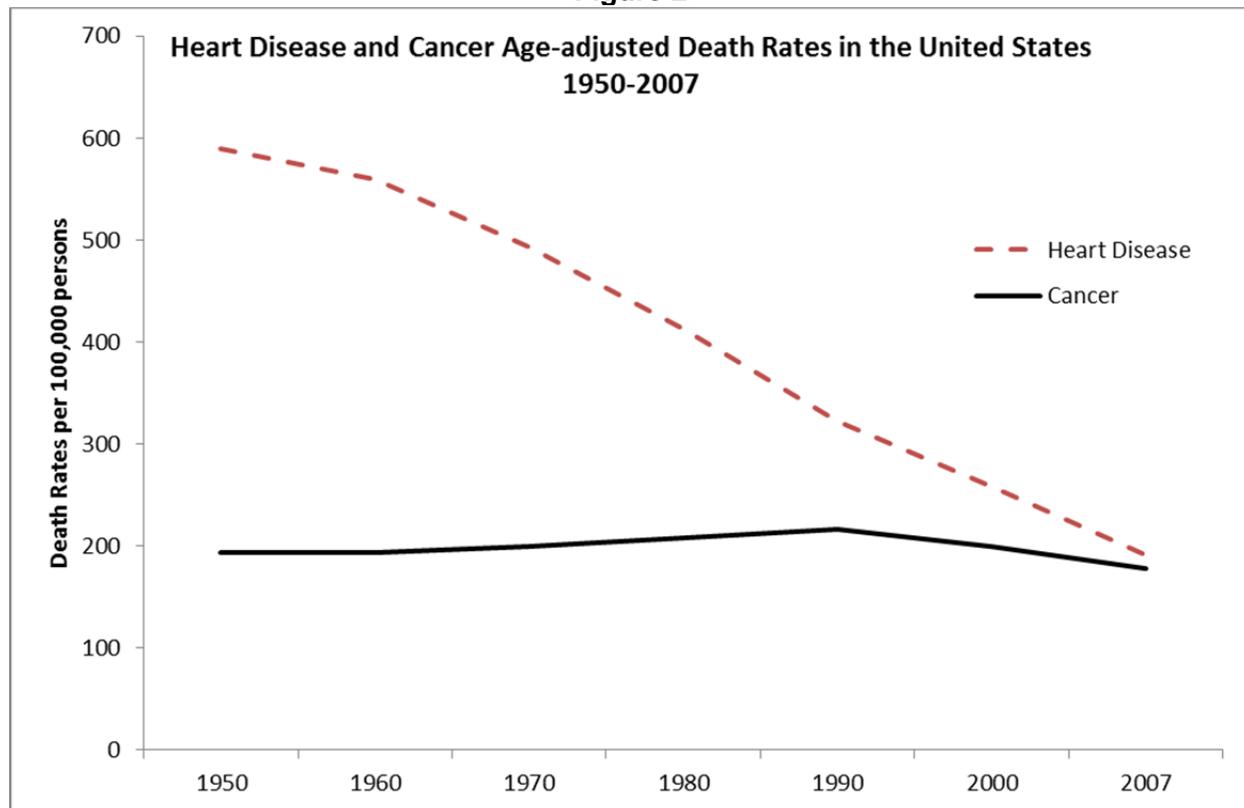
South Dakota Department of Health, Office of Health Statistics

Figure 2 (next page) shows heart disease and cancer mortality trends in the United States from 1950 to 2007. Heart disease caused three times as many deaths as cancer in 1950, and two times as many in 1980. In South Dakota, 2010 was the first year that heart disease mortality fell below cancer mortality. The most recent mortality data for the nation are preliminary estimates for 2009, and they show heart disease is still the leading cause of death nationally. It is recognized, however, that nationally this also expected to change in the near future.

Figures 1 and 2 both show large and consistent declines in heart disease mortality over the years. This progress in public health is due to increased public awareness, improved medical treatments, and better control and prevention of heart disease risk factors. Many people today know that high blood pressure and high cholesterol are key risk factors for heart disease morbidity and death. Many people today know their own blood pressure and cholesterol numbers. They know that “good” blood pressure is below 120 over 80, and that you may need medication to help control high blood pressure if your blood pressure is higher than 140 over 90.

Public awareness of cholesterol is also rising. Many people know that total cholesterol should be below 200, and low-density lipoprotein (LDL) cholesterol should be below 100 and high-density lipoprotein (HDL) cholesterol above 60. “Knowing your numbers” and what they mean has reduced heart disease mortality in South Dakota and the United States.

Figure 2



National Center for Health Statistics. Health, United States, 2010: With Special Feature on Death and Dying. Hyattsville, MD. 2011.

Many people also know that heart disease including high blood pressure and high cholesterol is a chronic condition that can develop relatively slowly over many years beginning early in adulthood, and awareness of “your numbers” is critical to take any needed actions to keep your numbers in the healthy ranges. It is widely understood that controlling high blood pressure and cholesterol will prevent and reduce the risk of early death from heart disease and stroke. Improvements in blood pressure and cholesterol medications along with other medical treatment advances have contributed to fewer heart disease deaths.

Public awareness of lifestyle and behavior-related risk factors for heart disease has also increased. Cigarette smoking produces a chronic inflammatory state, and increases triglycerides while decreasing HDL or good cholesterol. Physical inactivity or a sedentary lifestyle is also a risk factor for heart disease. Regular exercise strengthens the heart and circulatory system while lowering blood pressure and improving circulation. Awareness about reading food labels has also increased. Foods that have high sodium content can raise blood pressure, and many people are starting to become aware of the large amount of salt that is consumed each day in today’s typical American diet.

Compared to the unprecedented declines in U.S. heart disease deaths shown in Figure 2, cancer mortality appears to have changed little in the past 60 years. Cancer is a much different disease than heart disease, however, and from 1990 to 2007 cancer in the United States has seen consistent declines in mortality for men at 22% and women at 14%.¹ The American Cancer Society reported that nearly 900,000 cancer deaths in the U.S. were prevented between 1990 and

2007. In South Dakota also, cancer consistently declined from an age-adjusted rate of 191 to 171 per 100,000 persons from 2000-2010. These declines in cancer mortality are thought to result from improvements in cancer treatments, increases in early detection, and reductions in smoking. In addition, public awareness is increasing about how regular physical activity and healthy eating decreases cancer risk, especially regular consumption of fruits and vegetables.

While cancer was the leading cause of death in 2010 in South Dakota, both cancer and heart disease mortality have been declining. Nonetheless, cancer and heart disease remain the leading causes of death in South Dakota and the United States. The progress in public health needs to continue. Estimates based on recent national data indicate that more than 100,000 adults in South Dakota have uncontrolled hypertension, about 17% of the adult population. Large health inequities exist in South Dakota and the United States. American Indians in South Dakota aged 20-59 years died from heart disease at a rate almost three times higher than same age whites in South Dakota from 2000-2009. Continued work is needed to further increase awareness about the individual need to “know your numbers” and take the actions to control your heart disease risk factors beginning early in adulthood. Smoking prevalence has decreased in South Dakota and the United States. This trend needs to continue to maintain improved public health related to cancer and heart disease. Advances in healthy lifestyles including regular physical activity, and nutritious eating would continue to benefit from improved physical environments that support easy access to healthy choices and actions.

NOTE: The mortality section of the 2010 South Dakota Vital Statistics Report: A State and County Comparison of Leading Health Indicators includes more detailed data and is reprinted in its entirety on the following pages.

¹. Ahmedin Jemal, Ph.D., strategic director, cancer surveillance, American Cancer Society; Iuliana Shapira, M.D., director, Cancer Genetics, Montefiore Cancer Center, North Shore-LIJ Health System, New Hyde Park, N.Y.; American Cancer Society, reports, *Cancer Statistics 2011*, *Cancer Facts & Figures 2011*

Mortality

An Overview: 2010	
Total South Dakota Resident Deaths	7,087
Crude Death Rates per 100,000 Population	
South Dakota	870.4
United States (Provisional)	**N/A
Age-Adjusted Death Rates per 100,000 Population	
South Dakota	713.4
United States	**N/A
Age-Adjusted YPLL Before Age 75 per 100,000 Population	
Whites	5,353
American Indians	18,296

Beginning with the 2010 data, we are now assigning race based on standards set forth by the National Center for Health Statistics and the US Census Bureau in order for our race data to be comparable to other areas. We are no longer allocating race like we had since the 2000 Census started allowing multiple races to be reported. All race data in this section are now categorized in the following manner:

Single-race White
Single-race American Indian

The remaining categories (Single-race Black, Single-race Asian, Single-race Pacific Islander, and Two or more races) are included in the totals, but are not shown specifically in any tables.

Table 1, below, displays the deaths, crude death rates, and age-adjusted death rates for the United States and South Dakota for the past 11 years.

Table 1
Resident Deaths, Crude Death Rates, and Age-Adjusted Death Rates,
South Dakota and United States, 1991-2010

Year	United States			South Dakota		
	Number	Crude Rate	Age-Adjusted Rate	Number	Crude Rate	Age-Adjusted Rate
2010	**	**	**	7,087	870.4	713.4
2009	*2,436,682	*793.7	*741.0	6,913	851.1	688.6
2008	*2,473,018	*813.3	*758.7	7,056	877.0	712.1
2007	2,423,712	803.6	760.2	6,800	853.2	695.1
2006	2,426,264	810.4	776.5	7,038	892.6	732.6
2005	2,448,017	825.9	798.8	7,074	906.8	758.0
2004	2,397,615	816.5	800.8	6,811	879.7	742.3
2003	2,448,288	841.9	832.7	7,109	926.9	787.1
2002	2,443,387	847.3	845.3	6,886	903.5	771.8
2001	2,416,425	848.5	854.5	6,915	911.1	786.2
2000	2,403,351	854.0	869.0	7,014	929.2	804.8

Note: *U.S. 2008 and 2009 data are provisional
 **U.S. data is not available
 Crude death rates are per 100,000 population.
 Age-adjusted rates are computed with the 2000 standard.
 Source: National Center of Health Statistics
 South Dakota Department of Health, Office of Health Statistics

Leading Causes of Death

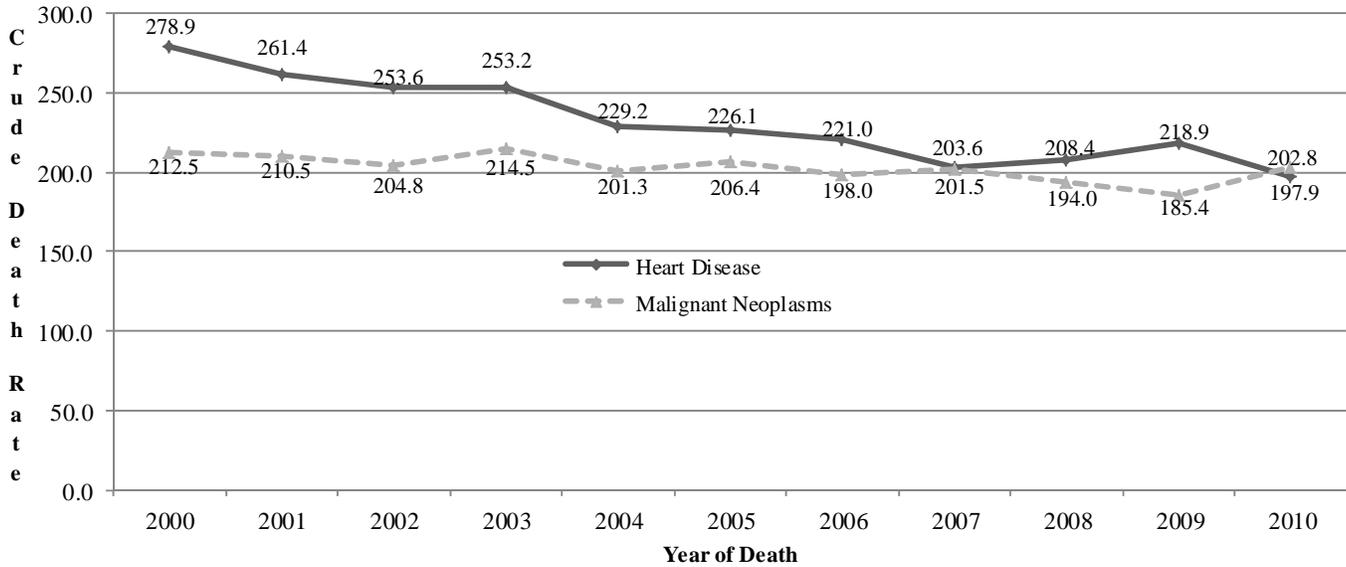
The five leading causes of death in 2010 for South Dakota residents were cancer, heart disease, chronic lower respiratory diseases, cerebrovascular diseases, and Alzheimer’s disease.

Cancer deaths replaced heart disease for the first time as the leading cause of death in South Dakota accounting for 23.3 percent of South Dakota’s 2010 resident deaths. This is an increase of 6.9 percent from 2009. Cancer was the leading cause of death for all South Dakota residents regardless of race. This was also true for males; however females leading cause of death in 2010 remained heart disease.

Trachea, bronchus, and lung cancer were the leading cause of cancer deaths during the year, accounting for 26.3 percent of cancer deaths.

Figure 1, below, compares the crude death rates of South Dakota resident heart disease and cancer since 2000. Over the past eleven years, the crude death rate for heart disease has been decreasing while the crude death rate for cancer has remained fairly steady.

Figure 1
South Dakota Resident Crude Death Rate due to Malignant Neoplasms and Heart Disease by Year of Death, 2000-2010



Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Heart disease was the second leading cause of death for the first time in 2010 and accounted for 22.7 percent of South Dakota resident deaths, an 11.7 percent decrease from 2009.

Chronic lower respiratory disease accounted for 6.4 percent of 2010 South Dakota resident deaths, an increase of 6.7 percent from 2009. Chronic lower respiratory diseases include emphysema, asthma, and bronchitis.

Cerebrovascular diseases accounted for 5.8 percent of 2010 South Dakota resident deaths, a decrease of 9.4 percent from 2009. Stroke, not specified as hemorrhage or infarction, caused the majority of the deaths for this type of disease.

Alzheimer’s disease caused 5.7 percent of all South Dakota resident deaths in 2010. Alzheimer’s was the fifth leading cause of death in 2009.

Table 2, below, displays the breakdown of accidental deaths, which were the sixth leading cause of deaths among South Dakotans. In 2010, 391 or 5.5 percent of deaths were due to accidents.

The highest type of motor vehicle death in 2010 was car occupant with 71 deaths. The highest death in the other causes of accidental death in 2010 was falls with 130 deaths.

**Table 2
South Dakota Resident Leading Causes of Death Due to Accidents, 2006-2010**

	Total	Year of Death				
		2006	2007	2008	2009	2010
Total Deaths	1,911	443	357	372	348	391
Motor Vehicle Accidents	730	186	145	125	133	141
Car Occupant.....(V40-V49)	388	99	68	66	84	71
Occupant of Pick-Up Truck or Van.....(V50-V59)	121	39	26	16	16	24
Pedestrian.....(V01-V09)	64	12	17	15	6	14
Motorcycle Rider.....(V20-V29)	62	12	16	9	12	13
Occupant of Special All-Terrain Vehicle.....(V86)	28	4	7	6	4	7
Occupant of Heavy Transport Vehicle.....(V60-V69)	13	6	2	1	1	3
All Other Motor Vehicle Accidents	54	14	9	12	10	9
Other Causes of Accidental Death	1,181	257	212	247	215	250
Falls.....(W00-W19)	627	141	130	124	102	130
Accidental Poisoning(X40-X49)	155	29	20	41	34	31
Accidental Threats to Breathing (excl. drowning).....(W75-W84)	69	19	9	11	16	14
Exposure to Smoke, Fire, and Flames.....(X00-X09)	56	12	8	16	11	9
Accidental Drowning and Submersion.....(W65-W74, V90, V92)	46	12	7	8	8	11
Exposure to Excessive Natural Cold.....(X31)	42	6	6	9	8	13
Accidental Discharge of Firearms.....(W32-W34)	15	2	2	3	4	4
Air Transport Accidents...(V95.0-V95.3, V95.8-V95.9, & V96-V97)	11	1	3	1	3	3
Contact with Agricultural Machinery.....(W30)	7	3	1	1	0	2
Exposure to Excessive Natural Heat..... (X30)	6	1	4	0	0	1
All Other Causes of Accidents	147	31	22	33	29	32

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

Table 3, on the next page, lists South Dakota resident leading causes of death for the last five years. Heart disease and cancer have been the first and second cause of death for the past four years, however in 2010, cancer took over the first leading cause of death with heart disease falling to second leading cause of death in South Dakota. From 2009 to 2010, the leading causes of death in places three through nine have remained the same.

For the first time in the past five years, essential (primary) hypertension and hypertensive renal disease were the tenth leading cause of death in South Dakota. For the past two years, chronic liver disease and cirrhosis have not been in the top ten causes of death for South Dakota residents.

Table 3
South Dakota Resident Leading Causes of Death, 2006-2010

Cause of Death	Total			2006			2007			2008			2009			2010		
	Rank	Deaths	Percent	Rank	Deaths	Percent	Rank	Deaths	Percent	Rank	Deaths	Percent	Rank	Deaths	Percent	Rank	Deaths	Percent
South Dakota (All Deaths)		34,894	100.0		7,038	100.0		6,800	100.0		7,056	100.0		6,913	100.0		7,087	100.0
Heart Disease(I00-I09, I11, I13, I20-I51)	1	8,432	24.2	1	1,743	24.8	1	1,623	23.9	1	1,677	23.8	1	1,778	25.7	2	1,611	22.7
Malignant Neoplasms (Cancer).....(C00-C97)	2	7,885	22.6	2	1,561	22.2	2	1,606	23.6	2	1,561	22.1	2	1,506	21.8	1	1,651	23.3
Chronic Lower Respiratory Diseases.....(J40-J47)	3	2,210	6.3	5	375	5.3	3	458	6.7	3	486	6.9	3	440	6.0	3	451	6.4
Cerebrovascular Diseases(I60-I69)	4	2,064	5.9	4	437	6.2	4	408	6.0	5	391	5.5	4	417	6.4	4	411	5.8
Accidents(V01-X59, Y85-Y86)	5	1,911	5.5	3	443	6.3	5	357	5.3	6	372	5.3	6	348	5.0	6	391	5.5
Alzheimer's Disease(G30)	6	1,879	5.4	6	330	4.7	6	345	5.1	4	401	5.7	5	402	5.8	5	401	5.7
Diabetes Mellitus(E10-E14)	7	1,164	3.3	7	261	3.7	7	246	3.6	7	216	3.1	7	200	2.9	7	241	3.4
Influenza and Pneumonia(J09-J18)	8	849	2.4	8	173	2.5	8	189	2.8	8	186	2.6	8	135	2.0	8	166	2.3
Intentional Self-Harm (Suicide)(*U03, X60-X84, Y87.0)	9	616	1.8	9	125	1.8	9	101	1.5	9	123	1.7	9	128	1.9	9	139	2.0
Chronic Liver Disease and Cirrhosis.....(K70 & K73-K74)	10	439	1.3	10	83	1.2	10	94	1.4	10	100	1.4	*	*	*	*	*	*
Essential (Primary) Hypertension and Hypertensive Renal Disease(I10 & I12)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	10	93	1.3
Nephritis, Nephrotic Syndrome, and Nephrosis..... ... (N00-N07, N17-N19, N25-N27)	*	*	*	*	*	*	*	*	*	*	*	*	10	99	1.4	*	*	*
All Other Causes					1,507	21.4		1,373	20.2		1,543	21.9		1,460	21.1		1,532	21.6

Note: Letter/number combinations following cause of death are ICD-10 codes.

Due to rounding disease-specific percentages may not sum to 100.

*This cause was not one of the ten leading causes of death for that year.

The asterisks (*) preceding the cause-of-death codes indicate that they are not part of the International Classification of Diseases, Tenth Revision.

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

Race

Table 4, below, presents South Dakota resident leading causes of death by race. In 2010, patterns for the 10 leading causes of death varied by race. Seven of the 10 leading causes were the same for whites and American Indians, but they differed by rank. For example, accidents were the sixth leading cause of death at 4.8 percent for the white population, but the third leading cause of death for the American Indian population at 13.7 percent.

Alzheimer's disease was in the 10 leading causes of death for the white population, but not the American Indian population. Among the 10 leading causes of death for the American Indian population, but not for the white population were chronic liver disease and cirrhosis, nephritis, nephrotic syndrome and nephrosis, and septicemia. Intentional self-harm (suicide) went from being ranked as a fourth leading cause of death in 2009 down to the sixth leading cause of death in 2010 for American Indians.

Table 4
South Dakota Resident Leading Causes of Death by Race, 2010

Cause of Death	All Races			White			American Indian		
	Rank	Deaths	Percent	Rank	Deaths	Percent	Rank	Deaths	Percent
South Dakota (All Deaths)		7,087	100.0		6,471	100.0		534	100.0
Malignant Neoplasms (Cancer)....(C00-C97)	1	1,651	23.3	1	1,553	24.0	1	84	15.7
Heart Disease.....(I00-I09, I11, I13, I20-I51)	2	1,611	22.7	2	1,525	23.6	2	76	14.2
Chronic Lower Respiratory Diseases(J40-J47)	3	451	6.4	3	427	6.6	7	16	3.0
Cerebrovascular Diseases.....(I60-I69)	4	411	5.8	5	394	6.1	9	13	2.4
Alzheimer's Disease.....(G30)	5	401	5.7	4	396	6.1	*	*	*
Accidents..... (V01-X59, Y85-Y86)	6	391	5.5	6	308	4.8	3	73	13.7
Diabetes Mellitus.....(E10-E14)	7	241	3.4	7	188	2.9	4	51	9.6
Influenza and Pneumonia.....(J09-J18)	8	166	2.3	8	154	2.4	*	*	*
Intentional Self-Harm (Suicide)(*U03, X60-X84, Y87.0)	9	139	2.0	9	110	1.7	6	23	4.3
Essential (Primary) Hypertension and Hypertensive Renal Disease.....(I10, I12)	10	93	1.3	10	87	1.3	*	*	*
Chronic Liver Disease and Cirrhosis(K70 & K73-K74)	*	*	*	*	*		5	30	5.6
Septicemia.....(A40-A41)	*	*	*	*	*		8	14	2.6
Nephritis, Nephrotic Syndrome, and Nephrosis...(N00-N07, N17-N19, N25-N27)	*	*	*	*	*		10	12	2.2
All Other Causes	-	1,532	21.6	-	1,329	20.5	-	142	26.6

Note: Letter / number combinations following cause of death are ICD-10 codes.

Due to rounding, disease-specific percentages may not sum to 100.

* This cause was not one of the ten leading causes of death for this race group.

The asterisks (*) preceding the cause-of-death codes indicate that they are not part of the International Classification of Diseases, Tenth Revision.

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

Gender

In 2010, patterns for the 10 leading causes of death also varied by gender in South Dakota (Table 5, on the next page). Eight of the 10 leading causes were the same for South Dakota's men and

women, but they differed in rank. Intentional self-harm (suicide) and chronic liver disease and cirrhosis were among the 10 leading causes of death for South Dakota's men, but not for women.

Likewise, unspecified dementia, and essential (primary) hypertension and hypertensive renal disease were among the 10 leading causes of death for South Dakota's women, but not for South Dakota's men. Men were also more likely to die in accidents than women were, while women were more likely to

die from Alzheimer's disease than men. Overall, cancer moved to the leading cause of death for South Dakota residents in 2010, however, heart disease remained the primary cause of death among women.

Table 5
South Dakota Resident Leading Causes of Death by Gender, 2010

Cause of Death	Total			Male			Female		
	Rank	Deaths	Percent	Rank	Deaths	Percent	Rank	Deaths	Percent
South Dakota (All Deaths)		7,087	100.0		3,552	100.0		3,535	100.0
Malignant Neoplasms (Cancer)....(C00-C97)	1	1,651	23.3	1	886	24.9	2	765	21.6
Heart Disease.....(I00-I09, I11, I13, I20-I51)	2	1,611	22.7	2	817	23.0	1	794	22.5
Chronic Lower Respiratory Diseases(J40-J47)	3	451	6.4	4	255	7.2	5	196	5.5
Cerebrovascular Diseases.....(I60-I69)	4	411	5.8	5	154	4.3	4	257	7.3
Alzheimer's Disease.....(G30)	5	401	5.7	6	117	3.3	3	284	8.0
Accidents..... (V01-X59, Y85-Y86)	6	391	5.5	3	257	7.2	6	134	3.8
Diabetes Mellitus.....(E10-E14)	7	241	3.4	7	117	3.3	7	124	3.5
Influenza and Pneumonia.....(J09-J18)	8	166	2.3	9	73	2.1	8	93	2.6
Intentional Self-Harm (Suicide)(*U03, X60-X84, Y87.0)	9	139	2.0	8	101	2.8	*	*	*
Essential (Primary) Hypertension and Hypertensive Renal Disease.....I10, I12)	10	93	1.3	*	*	*	9	59	1.7
Chronic Liver Disease and Cirrhosis(K70 & K73-K74)	*	*	*	10	51	1.4	*	*	*
Unspecified Dementia.....(F03)	*	*	*	*	*	*	10	56	1.6
All Other Causes	-	1,532	21.6	-	724	20.4	-	773	21.9

Note: Letter / number combinations following cause of death are ICD-10 codes.
 Due to rounding, disease-specific percentages may not sum to 100.
 * This cause was not one of the ten leading causes of death for this gender.
 The asterisks (*) preceding the cause-of-death codes indicate that they are not part of the International Classification of Diseases, Tenth Revision.

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

Age

Table 6, on the next page, lists the five leading causes of death by age group. Excluding infants, accidents were the leading cause of death for South Dakotans through age 44.

The leading cause of death for persons 45-84 was cancer. Heart disease was the leading cause of death for persons aged 85 and older.

Table 6
South Dakota Resident Five Leading Causes of Death by Age Group, 2010

Rank	All Ages	1-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	95 & Over
1	Malignant Neoplasms (Cancer) 1,651	Accidents 48	Accidents 45	Accidents 36	Malignant Neoplasms (Cancer) 117	Malignant Neoplasms (Cancer) 276	Malignant Neoplasms (Cancer) 383	Malignant Neoplasms (Cancer) 493	Heart Disease 582	Heart Disease 181
2	Heart Disease 1,611	Intentional Self-Harm (Suicide) 35	Intentional Self-Harm (Suicide) 22	Intentional Self-Harm (Suicide) 22	Heart Disease 53	Heart Disease 170	Heart Disease 185	Heart Disease 409	Malignant Neoplasms (Cancer) 315	Alzheimer's Disease 77
3	Chronic Lower Respiratory Diseases 451	Heart Disease 6	**	#	Accidents 48	Accidents 38	Chronic Lower Respiratory Diseases 103	Chronic Lower Respiratory Diseases 160	Alzheimer's Disease 205	Malignant Neoplasms (Cancer) 40
4	Cerebrovascular Diseases 411	*	**	#	Intentional Self-Harm (Suicide) 28	Diabetes Mellitus 33	Diabetes Mellitus 50	Cerebrovascular Diseases 123	Cerebrovascular Diseases 171	Cerebrovascular Diseases 39
5	Alzheimer's Disease 401	*	***	Chronic Liver Disease and Cirrhosis 12	Chronic Liver Disease and Cirrhosis 27	^	Cerebrovascular Diseases 36	Alzheimer's Disease 95	Chronic Lower Respiratory Diseases 125	Influenza and Pneumonia 30

* Note: The following causes tied for fourth place with 5 deaths: Congenital Malformations, Deformations, and Chromosomal Abnormalities and Malignant Neoplasms (Cancer)

**The following causes tied for third place with 7 deaths: Assault (Homicide) and Heart Disease

*** The following causes tied for fifth place with 5 deaths: Ill-defined and Unknown Causes of Mortality and Diabetes Mellitus

The following causes tied for third place with 18 deaths: Heart Disease and Malignant Neoplasms (Cancer)

^ The following causes tied for fifth place with 29 deaths: Chronic Lower Respiratory Diseases and Cerebrovascular Diseases

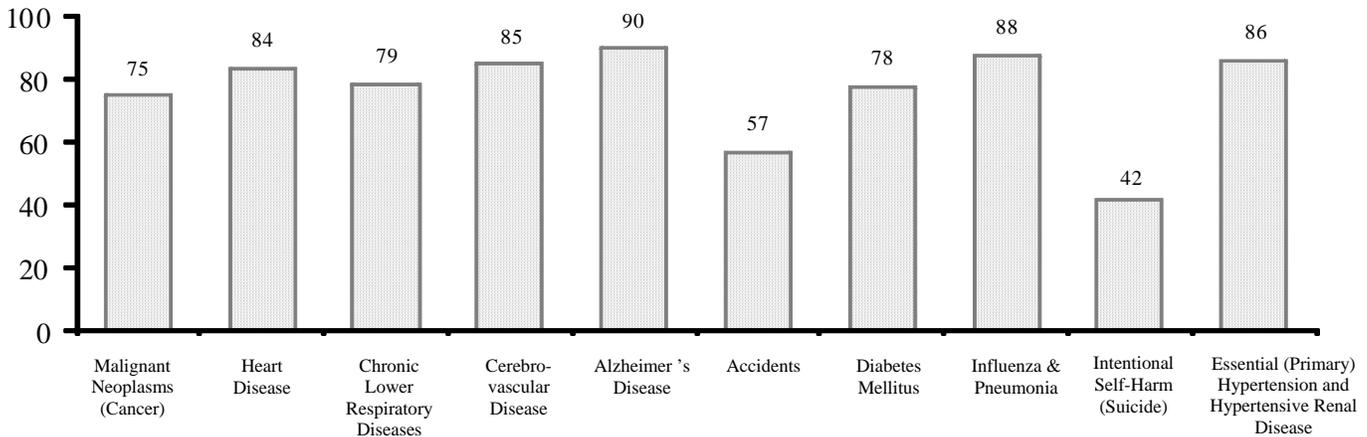
Source: South Dakota Department of Health, Office of Health Statistics

Median Age

Figure 2, below, presents data on the median age at death for the 10 leading causes of death for South Dakota residents in 2010. The median age for

accidents went from 50 in 2009 to 57 in 2010. Intentional self-harm (suicide) went from 34 in 2009 to 42 in 2010.

Figure 2
Median Age at Death for South Dakota Residents for the Leading Causes of Death, 2010



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

Table 7, below, shows the median age at death for South Dakota residents from the leading causes of death by race and gender. In 2010, the median age at death was 80 for all South Dakotans; for white residents the median age was 81, compared to 58 for American Indians. The overall median age at death stayed the same for whites and decreased by one for American Indians when compared to

their overall median age at death in 2009. The median age at death in 2010 for South Dakota resident males and females was 77 and 84, respectively. For both males and females, the median age at death increased by one year from 2009 to 2010.

**Table 7
Median Age at Death for South Dakota Residents for the Leading Causes of Death
by Race and Gender, 2010**

Cause of Death	Median Age at Death in Years				
	All	Race		Gender	
	Total Deaths	White	American Indian	Male	Female
South Dakota (All Deaths)	80	81	58	77	84
Malignant Neoplasms (Cancer) (C00-C97)	75	75	68	74	76
Heart Disease (I00-I09, I11, I13, I20-I51)	84	84	64	80	88
Chronic Lower Respiratory Diseases (J40-J47)	79	80	75	80	79
Cerebrovascular Diseases (I60-I69)	85	85	81	83	87
Alzheimer's Disease (G30)	90	90	*	87	90
Accidents (V01-X59, Y85-Y86)	57	68	37	53	71
Diabetes Mellitus (E10-E14)	78	80	66	74	80
Influenza and Pneumonia (J09-J18)	88	88	*	87	88
Intentional Self-Harm (Suicide) (*U03, X60-X84, Y87.0)	42	46	20	42	*
Essential (Primary) Hypertension and Hypertensive Renal Disease (I10, I12)	86	87	*	*	89
Nephritis, Nephrotic Syndrome, and Nephrosis (N00-N07, N17-N19, N25-N27)	*	*	64	*	*
Chronic Liver Disease and Cirrhosis (K70 & K73-K74)	*	*	48	55	*
Unspecified Dementia (F03)	*	*	*	*	89
Septicemia (A40-A41)	*	*	59	*	*

Note: Letter / number combinations following cause of death are ICD-10 codes.

*This cause was not one of the ten leading causes of death for this race or gender.

The asterisks (*) preceding the cause-of-death codes indicate that they are not part of the International Classification of Diseases, Tenth Revision.

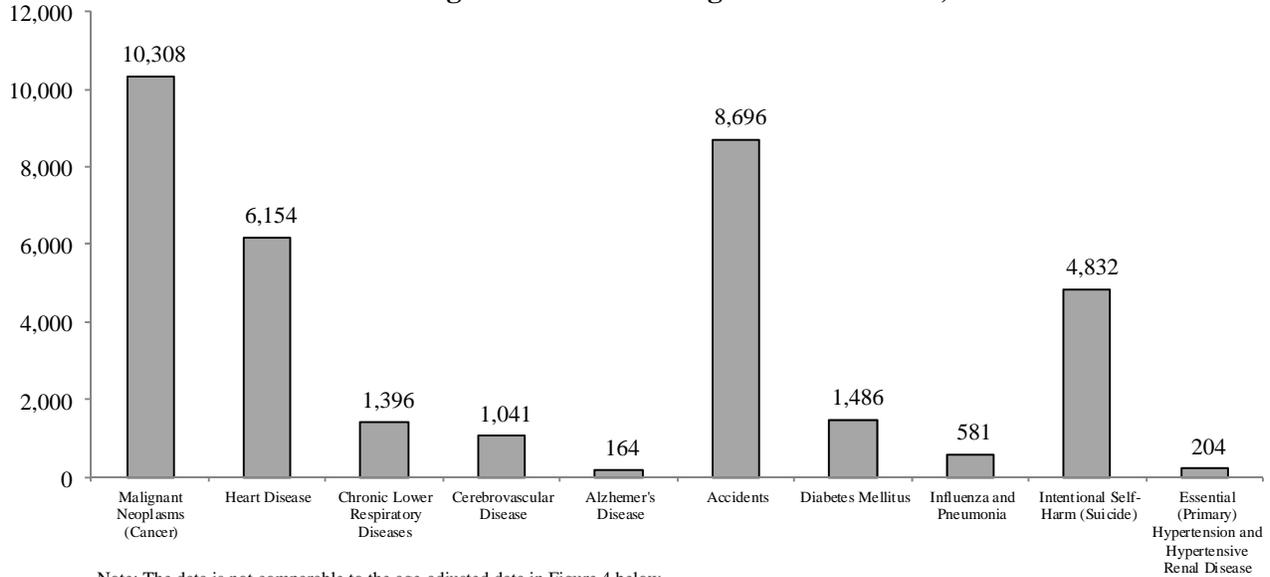
Source: South Dakota Department of Health, Office of Health Statistics

Years of Potential Life Lost

Figure 3, on the next page, depicts the years of potential life lost (YPLL) before age 75 for each of these causes.

Cancer led in YPLL (10,308 years) because many of the decedents were at a relatively young age at the time of death.

Figure 3
South Dakota Resident Years of Potential Life Lost (YPLL) Before Age 75 for the Leading Causes of Death, 2010



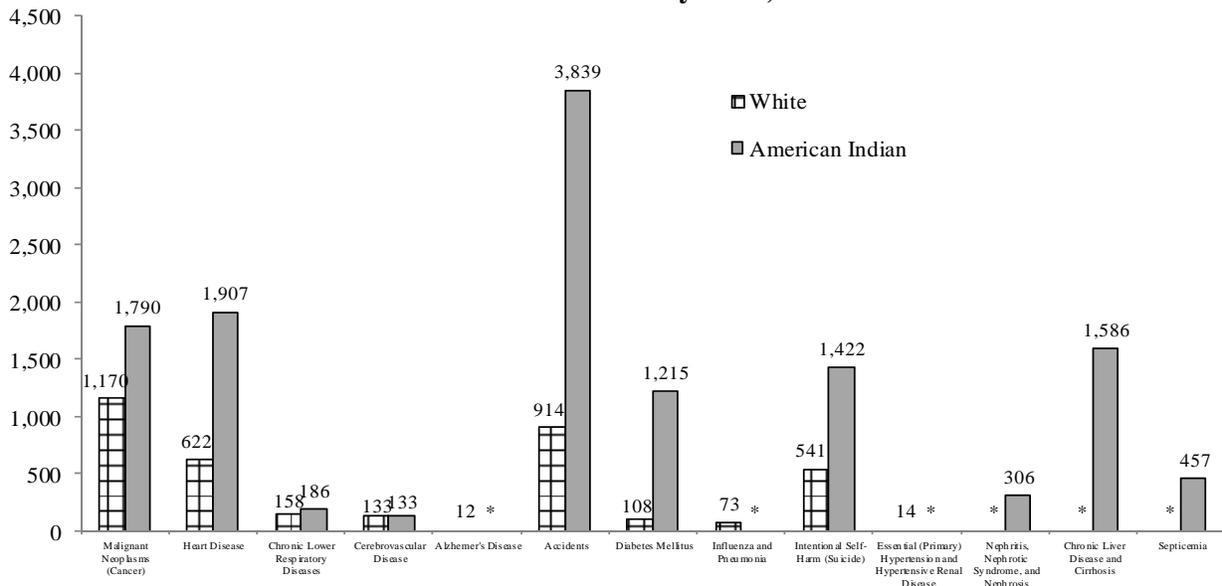
Note: The data is not comparable to the age-adjusted data in Figure 4 below.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 4, below, illustrates the years of potential life lost (YPLL) before the age 75 per 100,000 population for the top 10 causes of death by race. When comparing YPLL by race, American Indians exceeded whites substantially in YPLL for the leading causes of death.

American Indians' largest YPLL was accidents with 3,839 years while whites' largest YPLL was cancer with

1,170 years. Whites' second largest YPLL was accidents with 914 years while American Indians' second largest YPLL was heart disease with 1,907 years. Whites' third largest YPLL was heart disease with 622 years. Suicide was the third largest YPLL for American Indians with 1,790 years, which still exceeded whites' largest YPLL (cancer with 1,170 years).

Figure 4
Age-Adjusted Years of Potential Life Lost (YPLL) Before Age 75 for the Leading Causes of Death by Race, 2010



Note: Years of potential life lost are age-adjusted per 100,000 population.
 *This cause was not one of the ten leading causes of death for this race group.
 Source: South Dakota Department of Health, Office of Health Statistics

Place of Death

Table 8, below, displays the 10 leading causes of death by place where death occurred in 2010. Overall, nursing home, long term

care, and hospice facility had the highest occurrence of deaths with 40.9 percent. Hospital followed closely with 36.2 percent.

Table 8
South Dakota Resident Deaths by Cause of Death and Place of Death, 2010

Cause of Death	Total		Hospital		Nursing Home/Long Term Care/Hospice Facility		Residence		All Other Reported Entries	
	Num	%	Num	%	Num	%	Num	%	Num	%
South Dakota (All Deaths)	7,087	100.0	2,564	36.2	2,898	40.9	1,329	18.8	291	4.1
Malignant Neoplasms (Cancer).....(C00-C97)	1,651	100.0	535	32.4	651	39.4	434	26.3	30	1.8
Heart Disease.....(I00-I09, I11, I13, I20-I51)	1,611	100.0	565	35.1	612	38.0	395	24.5	36	2.2
Chronic Lower Respiratory Diseases.....(J40-J47)	451	100.0	176	39.0	194	43.0	74	16.4	7	1.6
Cerebrovascular Diseases.....(I60-I69)	411	100.0	170	41.4	213	51.8	26	6.3	2	0.5
Alzheimer's Disease.....(G30)	401	100.0	33	8.2	346	86.3	19	4.7	3	0.7
Accidents.....(V01-X59, Y85-Y86)	391	100.0	162	41.4	47	12.0	45	11.5	137	35.0
Diabetes Mellitus.....(E10-E14)	241	100.0	76	31.5	112	46.5	49	20.3	4	1.7
Influenza and Pneumonia(J09-J18)	166	100.0	82	49.4	73	44.0	11	6.6	0	0.0
Intentional Self-Harm (Suicide)(*U03, X60-X84, Y87.0)	139	100.0	21	15.1	0	0.0	85	61.2	33	23.7
Essential (primary) Hypertension and Hypertensive Renal Disease..... (I10 & I12)	93	100.0	24	25.8	51	54.8	17	18.3	1	1.1
All Other Causes	1,532	100.0	720	47.0	599	39.1	174	11.4	38	2.5

Note: The asterisks (*) preceding the cause of death codes indicate they are not part of the International Classification of Diseases, Tenth Revision. The place of death data may not add to the total due to unknown places not being specified, but being included in the total.

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

Tobacco Use

On the death certificate, the certifier was instructed to check “yes” or “probably” if in their opinion, the use of tobacco contributed to death or check “no” if in their clinical judgment tobacco use did not contribute to the death. There was also the option of “unknown” if the certifier was unsure if tobacco use contributed to death. On 1,205

deaths, or 17.0 percent, the certifier indicated “yes” or “probably” that tobacco use contributed to the death. Conversely, on 3,976 deaths, or 56.1 percent, the certifier indicated that tobacco use did not contribute to the death.

In the remaining 1,906 deaths, or 26.9 percent, the certifier was unsure if tobacco use contributed to the death.

Table 9, below, displays the 10 leading causes of death where the certifier said “yes” or “probably” that tobacco use contributed to the death. Tobacco use contributed to death in 73.0 percent, or 317 out of the 434

trachea, bronchus, and lung deaths in 2010. In 65.2 percent, or 294 chronic lower respiratory disease deaths the certifier said “yes” or “probably” that tobacco use contributed to the death.

Table 9
South Dakota Resident Leading Causes of Death as They Relate to Tobacco Use, 2010
(Did Tobacco Use Contribute to Death)

Cause of Death	Yes/Probably		Total Deaths	
	Number	Percent	Number	Percent
Total	1,205	17.0	7,087	100.0
Malignant Neoplasms (cancer).....(C00-C97)	441	26.7	1,651	100.0
Trachea, Bronchus, and Lung.....(C33-C34)	317	73.0	434	100.0
Colon, Rectum, Anus.....(C18-C21)	12	7.1	168	100.0
Lip, Oral Cavity, and Pharynx.....(C00-C14)	12	57.1	21	100.0
Bladder.....(C67)	11	29.7	37	100.0
Esophagus.....(C15)	10	22.2	45	100.0
Chronic Lower Respiratory Diseases.....(J40-J47)	294	65.2	451	100.0
Emphysema.....(J43)	22	68.8	32	100.0
Heart Disease.....(I00-I09, I11, I13, I20-I51)	223	13.8	1,611	100.0
Atherosclerotic Heart Disease.....(I25.1)	94	17.3	544	100.0
Acute Myocardial Infarction.....(I21-I22)	70	13.1	534	100.0
Atherosclerotic Cardiovascular Disease.....(I25.0)	13	28.3	46	100.0
Cerebrovascular Diseases.....(I60-I69)	35	8.5	411	100.0
Diabetes Mellitus.....(E10-E14)	32	13.3	241	100.0
Influenza and Pneumonia.....(J09-J18)	17	10.2	166	100.0
Pneumonia.....(J12-J18)	16	9.8	164	100.0
Chronic Liver Disease and Cirrhosis....(K70 & K73-K74)	17	20.5	83	100.0
Alcoholic Liver Disease.....(K70)	15	27.3	55	100.0
Accidents.....(V01-X59, Y85-Y86)	13	3.3	391	100.0
Alzheimer’s Disease.....(G30)	10	2.5	401	100.0
Other Interstitial Pulmonary Diseases with Fibrosis.....(J84.1)	9	21.4	42	100.0

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

Method of Disposition

Table 10, on the next page, displays the different methods of disposition for the last 10 years. The top disposition in 2010 was burial with 4,548 deaths. The second highest

method of disposition in 2010 was cremation with 2,044 deaths. Since 2001, cremation has increased from 15.9 percent of all dispositions to 28.8 percent in 2010.

Table 10
South Dakota Resident Deaths by Disposition, 2001-2010

Year	Type of Disposition						
	Total Deaths	Burial	Cremation	Removal from State	Donation	Entombment	Other
2010	7,087	4,548	2,044	433	47	10	0
2009	6,913	4,545	1,855	464	34	8	0
2008	7,056	4,857	1,662	485	35	9	0
2007	6,800	4,775	1,474	481	46	18	0
2006	7,038	5,127	1,440	431	30	6	0
2005	7,074	5,373	1,515	151	27	7	0
2004	6,811	5,305	1,348	120	22	12	0
2003	7,109	5,675	1,321	76	26	**	8
2002	6,886	5,627	1,148	72	24	**	11
2001	6,915	5,700	1,102	79	20	**	10

Note: Failure of deaths to add to total is due to the disposition not stated.
 ** Prior to 2004 entombment was included in the other category.
 Sharp increase in removal from state from 2005 to 2006 due to clarification of reporting process.
 Source: South Dakota Department of Health, Office of Health Statistics

Leading Causes and Selected Components

Tables 11a-11c, on pages 12 through 15, display South Dakota resident deaths, the crude death rate, and the age-adjusted death rate for 15 leading causes and selected components from 2000 to 2010.

The crude and age-adjusted rates for all causes in 2010 were 870.4 and 713.4 respectively, which are up from the crude and age-adjusted rates in 2009 of 851.0 and 688.6, respectively.

Table 11a
South Dakota Resident Deaths for 15 Leading Causes and Selected Components, 2000-2010

Cause of Death	Number of Deaths										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
All Causes	7,014	6,915	6,886	7,109	6,811	7,074	7,038	6,800	7,056	6,913	7,087
Malignant Neoplasms (Cancer)	1,604	1,598	1,561	1,645	1,559	1,610	1,561	1,606	1,561	1,506	1,651
Trachea, Bronchus, and Lung	396	414	403	406	423	467	435	425	445	387	434
Colon, Rectum, and Anus	207	179	168	176	151	176	150	165	152	157	168
Female Breast	129	88	109	120	105	117	95	113	118	95	103
Pancreas	82	99	85	95	102	90	89	93	87	110	98
Prostate	101	115	109	106	102	94	103	94	78	84	96
Leukemia	66	72	67	80	71	63	66	76	60	57	82
Heart Disease	2,105	1,984	1,933	1,942	1,775	1,764	1,743	1,623	1,677	1,778	1,611
Chronic Lower Respiratory Diseases	387	360	382	379	393	440	375	458	486	440	451

Table 11a (continued)
South Dakota Resident Deaths for 15 Leading Causes and Selected Components, 2000-2010

Cause of Death	Number of Deaths										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cerebrovascular Diseases	561	491	518	475	463	511	437	408	391	417	411
Alzheimer's Disease	180	159	169	175	255	289	330	345	401	402	401
Accidents	318	382	344	390	407	396	443	357	372	348	391
Motor Vehicle Accidents	177	187	185	215	185	181	186	145	125	133	141
Diabetes Mellitus	179	210	193	201	227	239	261	246	216	200	241
Influenza and Pneumonia	208	186	239	223	180	242	173	189	186	135	166
Intentional Self-Harm (Suicide)	95	108	94	103	114	123	125	101	123	128	139
Essential (Primary) Hypertension and Hypertensive Renal Disease	34	39	27	39	55	83	79	70	65	52	93
Unspecified Dementia	108	113	131	152	85	30	74	70	80	90	91
Parkinson's Disease	56	55	60	56	65	60	75	62	69	65	85
Chronic Liver Disease and Cirrhosis	82	81	77	81	97	83	83	94	100	79	83
Nephritis, Nephrotic Syndrome, and Nephrosis	130	102	128	131	93	54	60	74	90	99	72
Septicemia	50	69	68	69	42	52	65	64	54	63	66

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

Table 11b
South Dakota Resident Crude Death Rates for 15 Leading Causes and Selected Components, 2000-2010

Cause of Death	Crude Death Rates										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
All Causes	929.2	911.1	903.5	926.9	879.7	906.8	892.6	853.2	877.0	851.1	870.4
Malignant Neoplasms (Cancer)	212.5	210.5	204.8	214.5	201.3	206.4	198.0	201.5	194.0	185.4	202.8
Trachea, Bronchus, and Lung	52.5	54.5	52.9	52.9	54.6	59.9	55.2	53.3	55.3	47.6	53.3
Colon, Rectum, and Anus	27.4	23.6	22.0	22.9	19.5	22.6	19.0	20.7	18.9	19.3	20.6
Female Breast	33.9	23.0	28.4	31.2	27.0	29.9	24.0	28.3	29.3	23.4	25.3
Pancreas	10.9	13.0	11.2	12.4	13.2	11.5	11.3	11.7	10.8	13.5	12.0
Prostate	27.0	30.5	28.8	27.8	26.4	24.2	26.2	23.7	19.4	20.7	23.6
Leukemia	8.7	9.5	8.8	10.4	9.2	8.1	8.4	9.5	7.5	7.0	10.1
Heart Disease	278.9	261.4	253.6	253.2	229.2	226.1	221.0	203.6	208.4	218.9	197.9
Chronic Lower Respiratory Diseases	51.3	47.4	50.1	49.4	50.8	56.4	47.6	57.5	60.4	54.2	55.4

Table 11b (continued)
South Dakota Resident Crude Death Rates for 15 Leading Causes and Selected Components, 2000-2010

Cause of Death	Crude Death Rates										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cerebrovascular Diseases	74.3	64.7	68.0	61.9	59.8	65.5	55.4	51.2	48.6	51.3	50.5
Alzheimer's Disease	23.8	20.9	22.2	22.8	32.9	37.0	41.9	43.3	49.8	49.5	49.3
Accidents	42.1	50.3	45.1	50.8	52.6	50.8	56.2	44.8	46.2	42.8	48.0
Motor Vehicle Accidents	23.4	24.6	24.3	28.0	23.9	23.2	23.6	18.2	15.5	16.4	17.3
Diabetes Mellitus	23.7	27.7	25.3	26.2	29.3	30.6	33.1	30.9	26.8	24.6	29.6
Influenza and Pneumonia	27.6	24.5	31.4	29.1	23.2	31.0	21.9	23.7	23.1	16.6	20.4
Intentional Self-Harm (Suicide)	12.6	14.2	12.3	13.4	14.7	15.8	15.9	12.7	15.3	15.8	17.1
Essential (Primary) Hypertension and Hypertensive Renal Disease	4.5	5.1	3.5	5.1	7.1	10.6	10.0	8.8	8.1	6.4	11.4
Unspecified Dementia	14.3	14.9	17.2	19.8	11.0	3.8	9.4	8.8	9.9	11.1	11.2
Parkinson's Disease	7.4	7.2	7.9	7.3	8.4	7.7	9.5	7.8	8.6	8.0	10.4
Chronic Liver Disease and Cirrhosis	10.9	10.7	10.1	10.6	12.5	10.6	10.5	11.8	12.4	9.7	10.2
Nephritis, Nephrotic Syndrome, and Nephrosis	17.2	13.4	16.8	17.1	12.0	6.9	7.6	9.3	11.2	12.2	8.8
Septicemia	6.6	9.1	8.9	9.0	5.4	6.7	8.2	8.0	6.7	7.8	8.1

Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
Source: South Dakota Department of Health, Office of Health Statistics

Table 11c
South Dakota Resident Age-Adjusted Death Rates for 15 Leading Causes and Selected Components, 2000-2010

Cause of Death	Age-Adjusted Death Rates										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
All Causes	804.8	786.2	771.8	787.1	742.3	758.0	732.6	695.1	712.1	688.6	713.4
Malignant Neoplasms (Cancer)	191.4	188.9	182.3	190.0	176.6	180.3	169.6	170.9	164.8	156.5	170.6
Trachea, Bronchus, and Lung	48.0	50.1	48.1	47.6	49.2	52.8	48.0	46.3	47.3	40.7	45.4
Colon, Rectum, and Anus	24.3	20.6	19.0	19.9	16.4	19.4	15.9	17.2	15.9	15.8	17.0
Female Breast	28.1	19.2	24.0	25.9	22.0	23.8	19.2	20.9	23.3	17.6	19.7
Pancreas	9.8	12.0	10.0	10.8	11.6	10.1	9.5	9.8	8.9	11.3	10.2
Prostate	29.3	33.0	31.0	29.6	27.5	24.6	26.7	23.7	19.2	20.3	23.7
Leukemia	7.7	8.4	7.9	9.3	7.8	7.0	7.0	8.1	6.1	6.0	8.6
Heart Disease	234.6	218.9	209.9	207.8	185.8	181.8	175.0	159.5	162.2	168.3	154.9
Chronic Lower Respiratory Diseases	44.1	41.3	42.9	42.5	42.6	47.4	39.3	47.1	49.0	43.9	46.0

Table 11c (continued)
South Dakota Resident Age-Adjusted Death Rates for 15 Leading Causes and Selected Components, 2000-2010

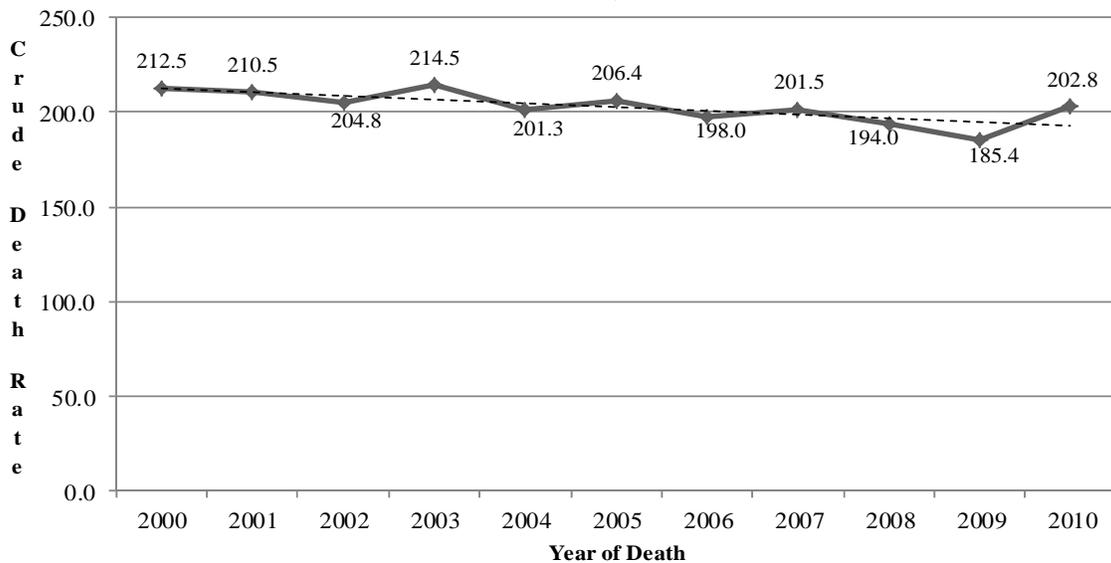
Cause of Death	Age-Adjusted Death Rates										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cerebrovascular Diseases	61.7	52.8	54.4	49.7	47.3	51.6	42.3	38.9	37.6	38.8	39.2
Alzheimer's Disease	18.7	16.2	16.9	17.3	24.5	27.5	30.0	30.7	35.9	35.2	36.2
Accidents	40.8	47.0	42.8	48.4	49.4	47.2	51.5	40.9	41.8	40.0	44.3
Motor Vehicle Accidents	23.2	24.4	23.8	27.8	23.7	23.0	23.2	17.9	15.1	16.6	17.0
Diabetes Mellitus	20.5	24.0	22.4	22.7	24.8	25.6	26.8	25.5	21.8	20.4	24.6
Influenza and Pneumonia	22.3	19.5	25.1	22.5	18.1	23.7	16.5	18.1	17.3	12.6	15.5
Intentional Self-Harm (Suicide)	12.6	14.4	12.2	13.6	15.0	15.5	15.9	12.3	15.4	16.0	17.3
Essential (Primary) Hypertension and Hypertensive Renal Disease	3.5	4.1	2.7	3.8	5.6	7.9	7.3	6.6	6.2	4.8	8.8
Unspecified Dementia	11.1	11.3	12.9	14.6	8.0	2.7	6.5	6.2	6.9	7.9	8.3
Parkinson's Disease	6.2	5.8	6.4	6.0	6.6	6.1	7.5	6.1	6.7	6.2	8.2
Chronic Liver Disease and Cirrhosis	10.9	10.7	10.0	10.2	12.0	10.3	10.2	11.2	11.6	8.7	9.7
Nephritis, Nephrotic Syndrome, and Nephrosis	14.7	11.0	13.7	13.7	9.9	5.5	6.0	7.2	8.9	9.4	7.1
Septicemia	5.9	7.7	7.6	7.6	4.7	5.6	6.8	6.5	5.5	6.4	6.7

Note: The age-adjusted death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
Source: South Dakota Department of Health, Office of Health Statistics

Figure 5, below, displays the crude death rate for cancer from 2000 through 2010. On pages 16 through 17, figures 5a through 5f

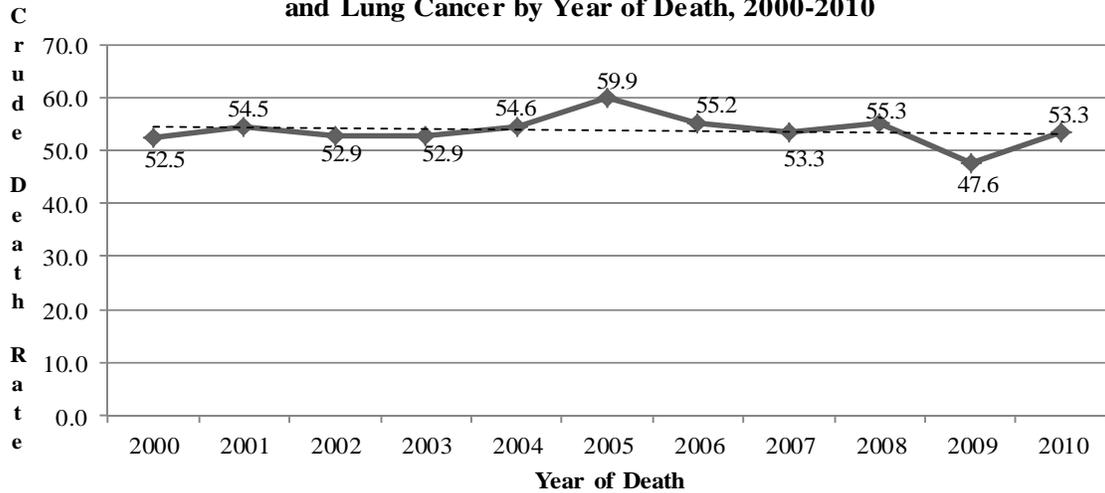
display the crude death rates for the six primary types of cancer deaths to South Dakota residents.

Figure 5
South Dakota Resident Crude Death Rate due to Malignant Neoplasms by Year of Death, 2000-2010



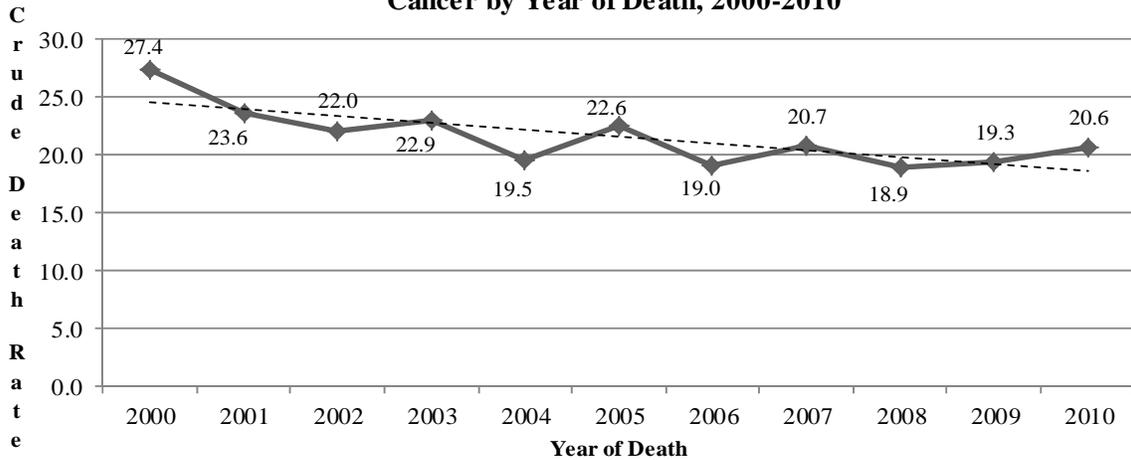
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
Source: South Dakota Department of Health, Office of Health Statistics

Figure 5a
South Dakota Resident Crude Death Rate due to Trachea, Bronchus, and Lung Cancer by Year of Death, 2000-2010



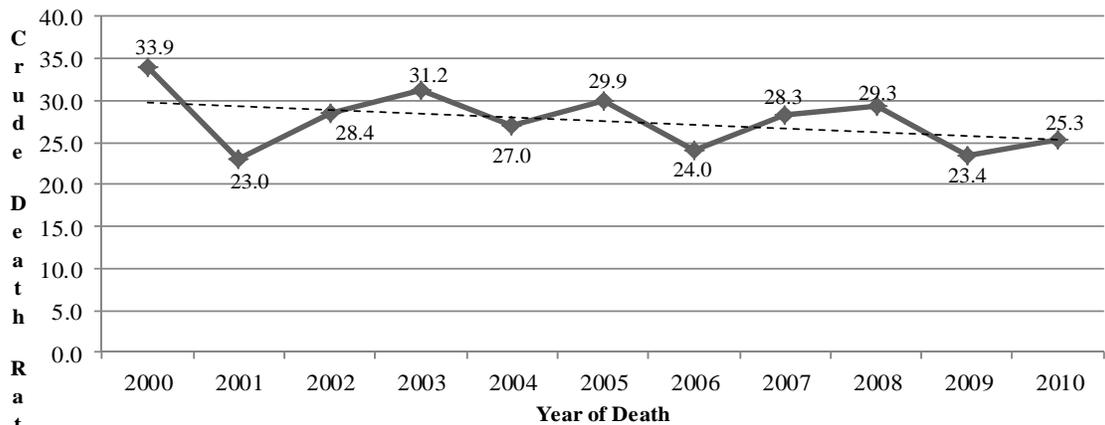
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 5b
South Dakota Resident Crude Death Rate due to Colon, Rectum, and Anus Cancer by Year of Death, 2000-2010



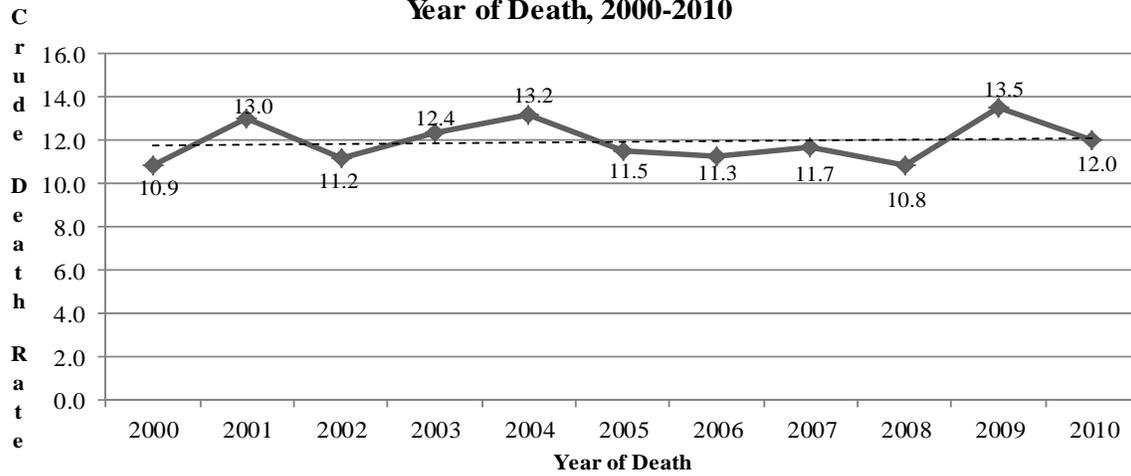
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 5c
South Dakota Resident Crude Death Rate due to Female Breast Cancer by Year of Death, 2000-2010



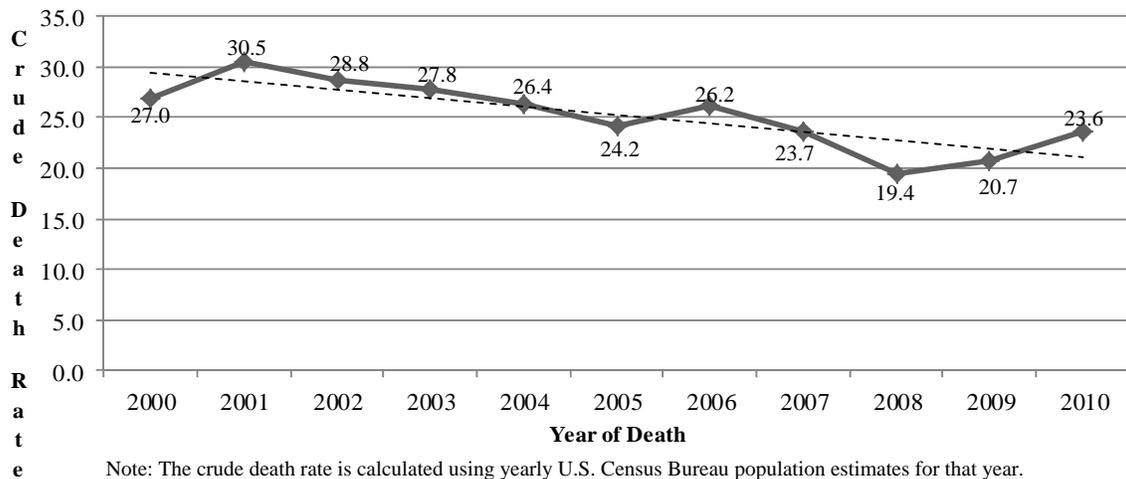
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 5d
South Dakota Resident Crude Death Rate due to Pancreas Cancer by
Year of Death, 2000-2010



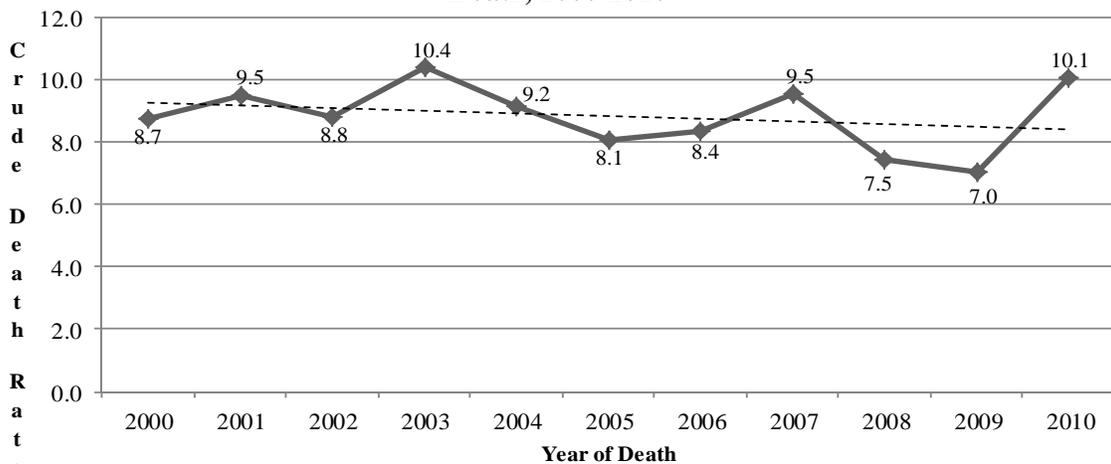
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 5e
South Dakota Resident Crude Death Rate due to Prostate Cancer by
Year of Death, 2000-2010



Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 5f
South Dakota Resident Crude Death Rate due to Leukemia by Year of
Death, 2000-2010

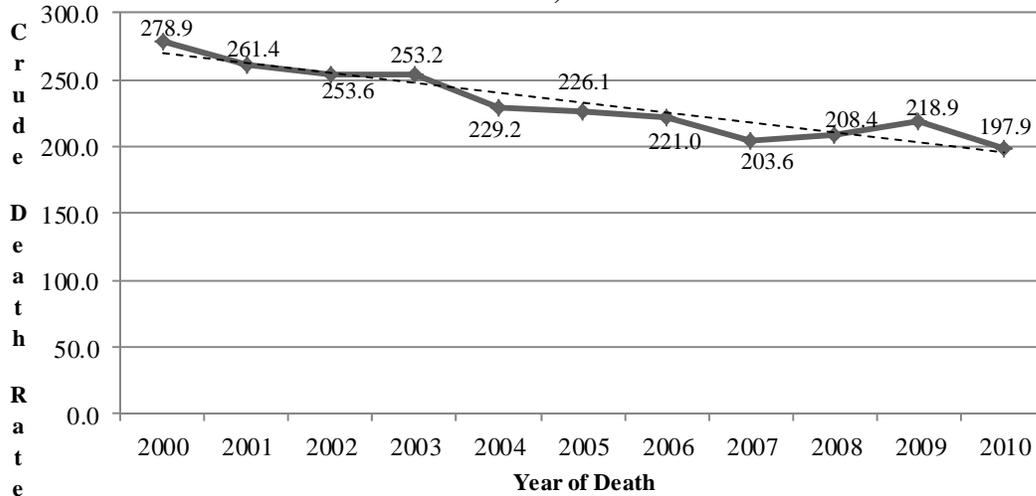


Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figures 6 through 19, on the following pages, display the crude death rates for the

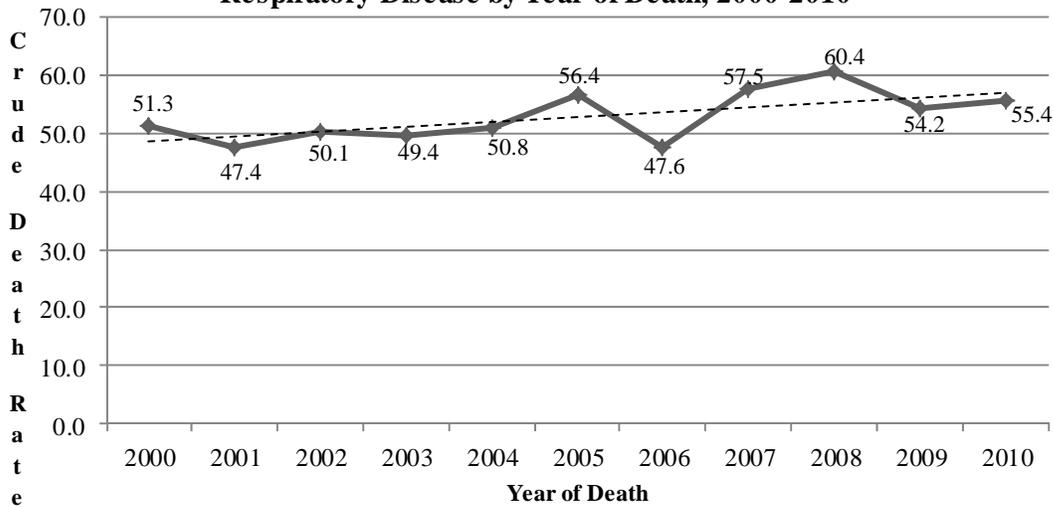
primary leading causes of death to South Dakota residents from 2000 to 2010.

Figure 6
South Dakota Resident Crude Death Rate due to Heart Disease by Year of Death, 2000-2010



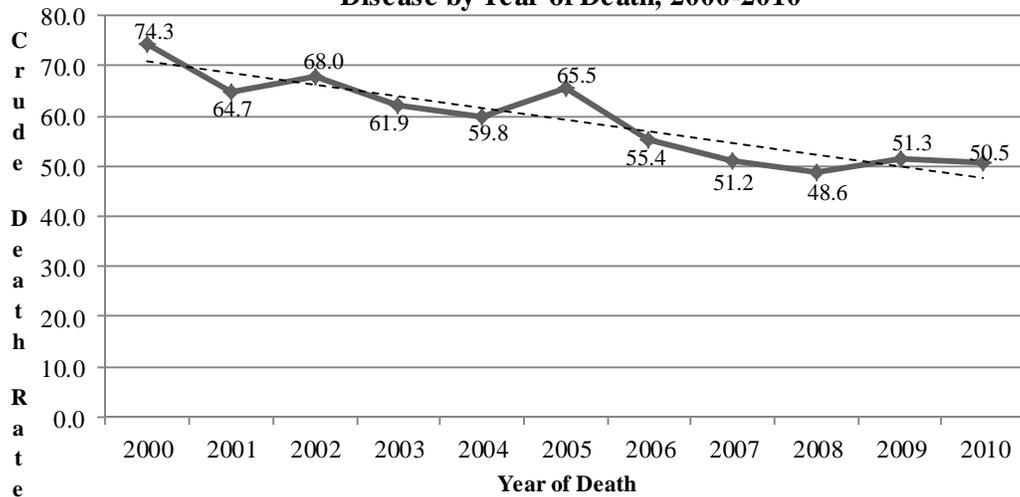
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 7
South Dakota Resident Crude Death Rate due to Chronic Lower Respiratory Disease by Year of Death, 2000-2010



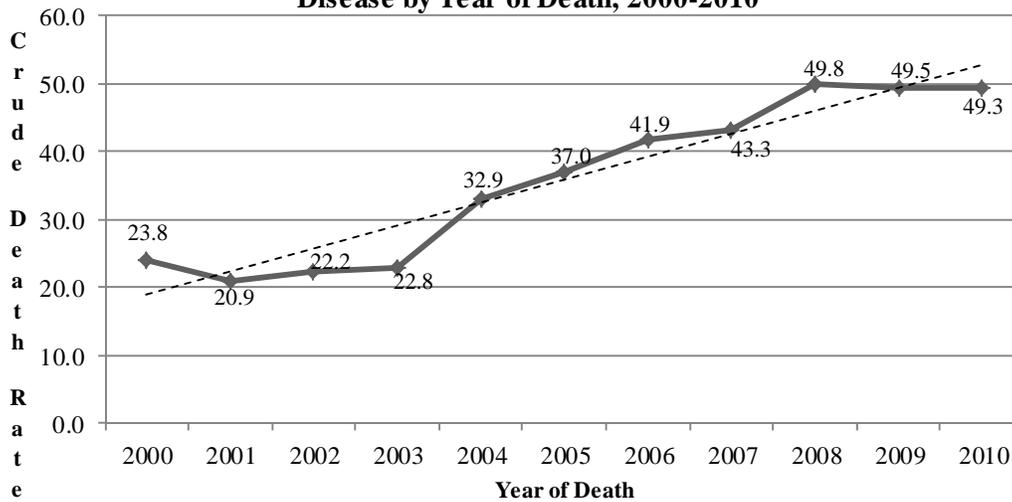
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 8
South Dakota Resident Crude Death Rate due to Cerebrovascular Disease by Year of Death, 2000-2010



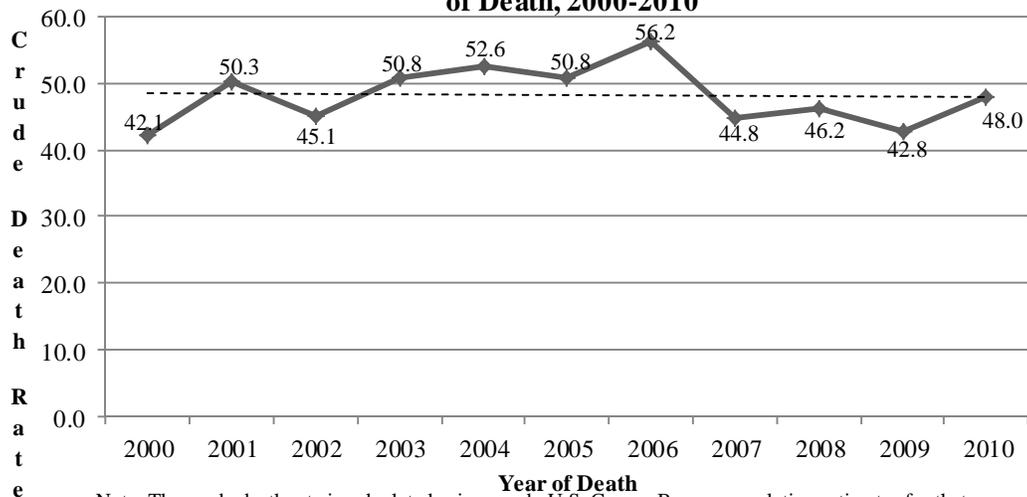
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 9
South Dakota Resident Crude Death Rate due to Alzheimer's Disease by Year of Death, 2000-2010



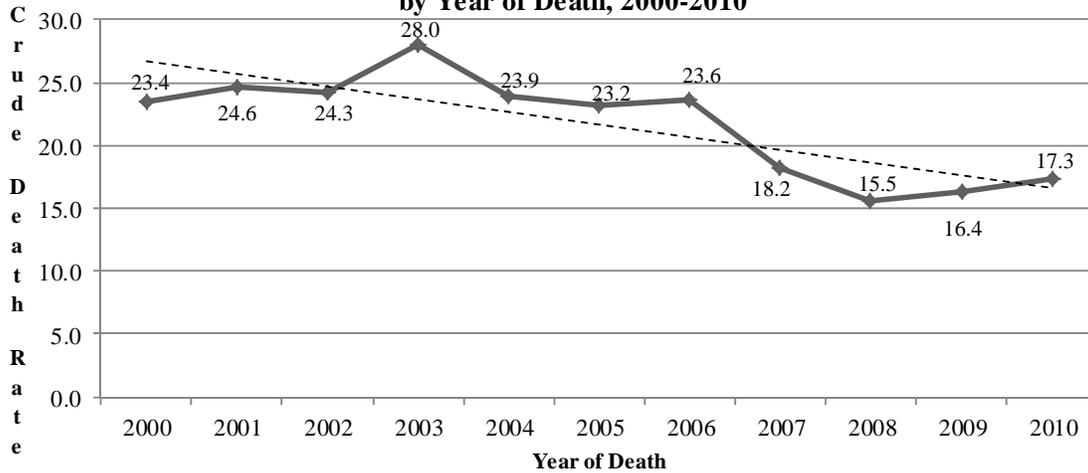
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 10
South Dakota Resident Crude Death Rate due to Accidents by Year of Death, 2000-2010



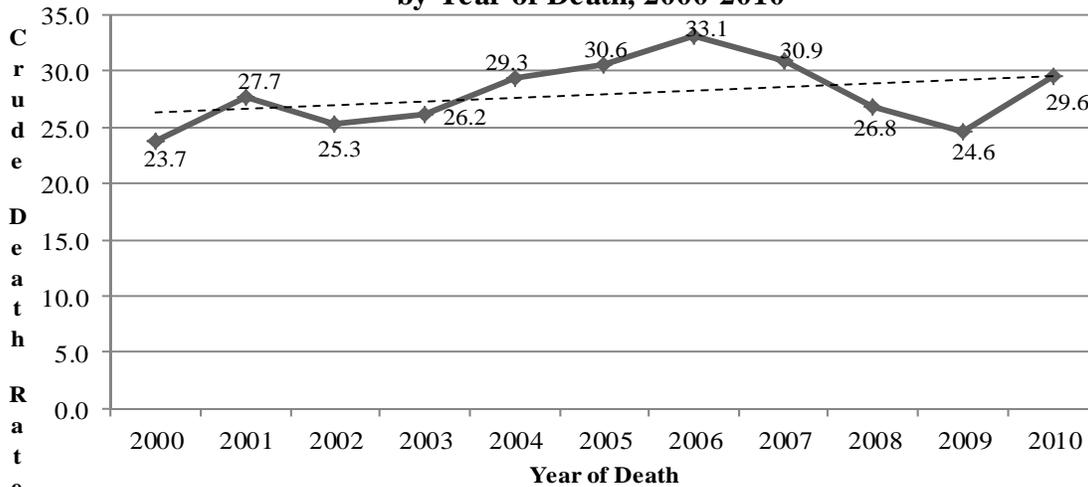
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 10a
South Dakota Resident Crude Death Rate due to Motor Vehicle Accidents
by Year of Death, 2000-2010



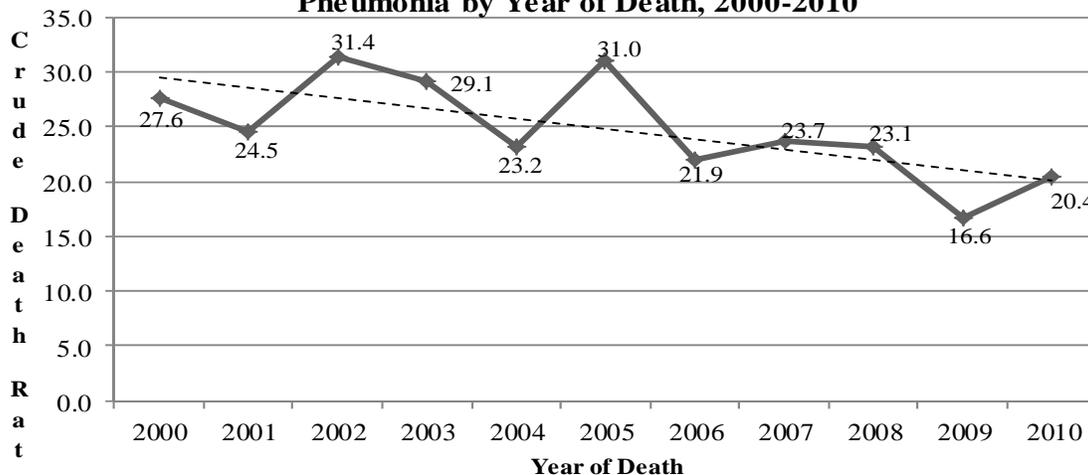
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 11
South Dakota Resident Crude Death Rate due to Diabetes Mellitus
by Year of Death, 2000-2010



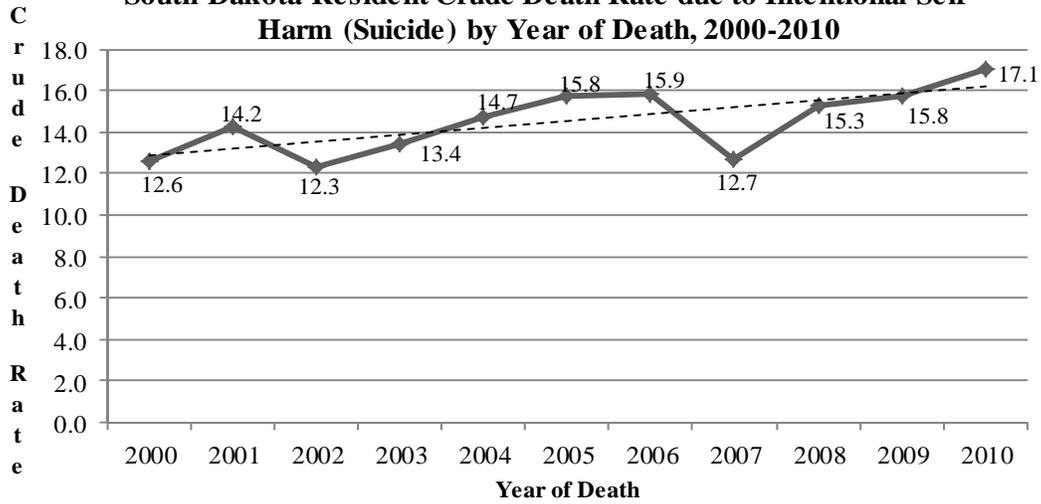
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 12
South Dakota Resident Crude Death Rate due to Influenza and
Pneumonia by Year of Death, 2000-2010



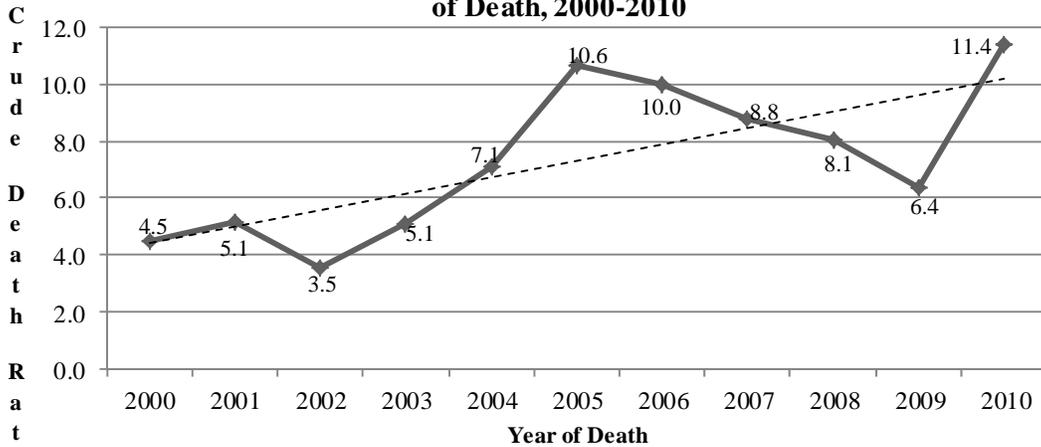
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 13
South Dakota Resident Crude Death Rate due to Intentional Self-Harm (Suicide) by Year of Death, 2000-2010



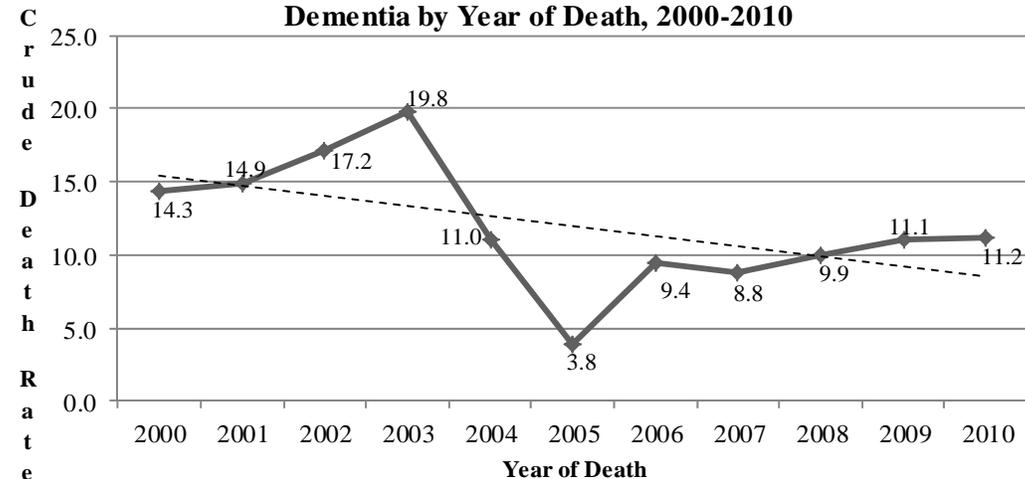
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 14
South Dakota Resident Crude Death Rate due to Essential (Primary) Hypertension and Hypertensive Renal Disease by Year of Death, 2000-2010



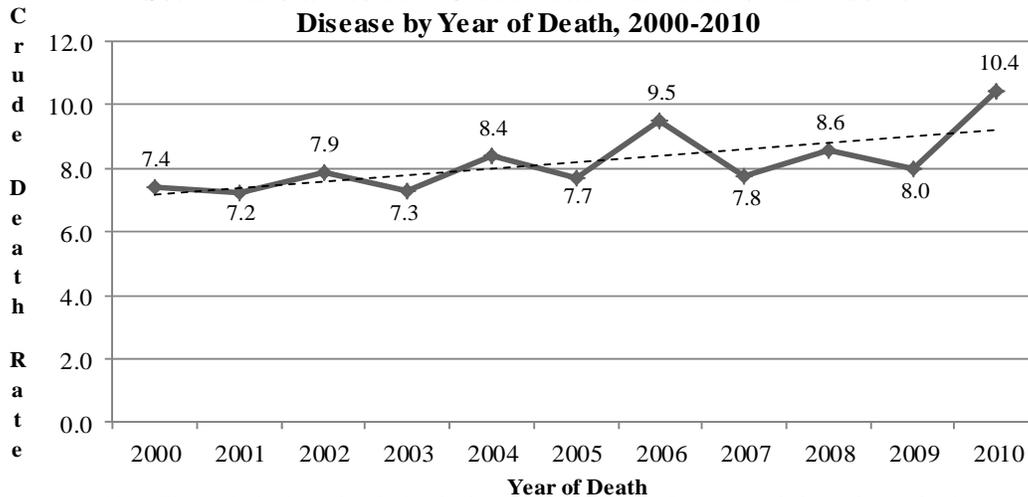
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 15
South Dakota Resident Crude Death Rate due to Unspecified Dementia by Year of Death, 2000-2010



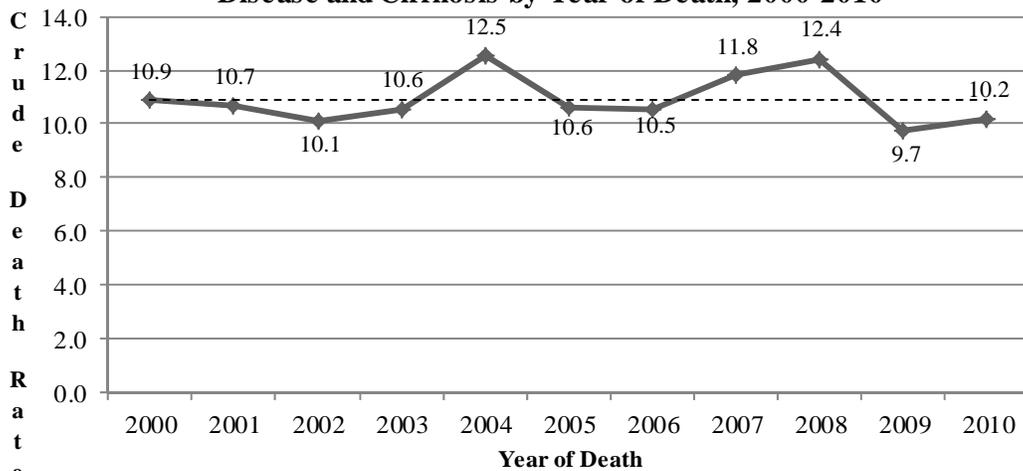
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 16
South Dakota Resident Crude Death Rate due to Parkinson's Disease by Year of Death, 2000-2010



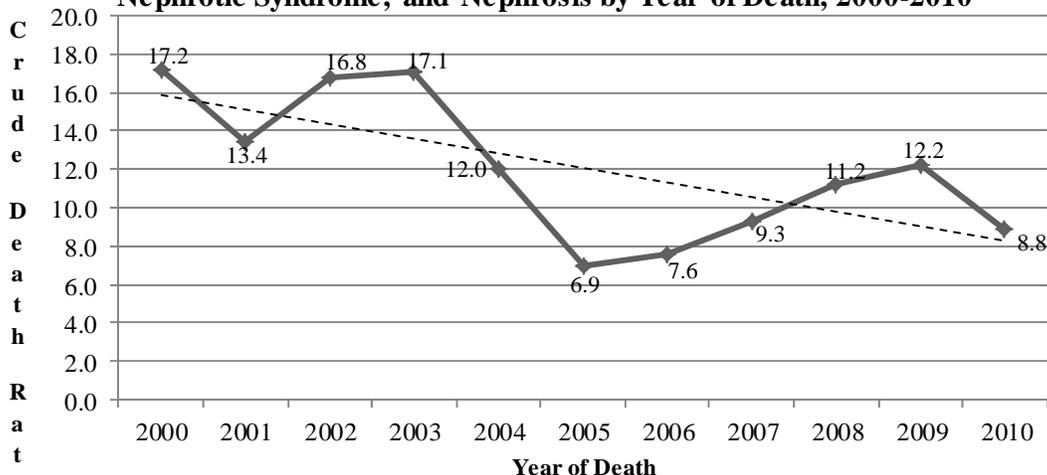
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 17
South Dakota Resident Crude Death Rate due to Chronic Liver Disease and Cirrhosis by Year of Death, 2000-2010



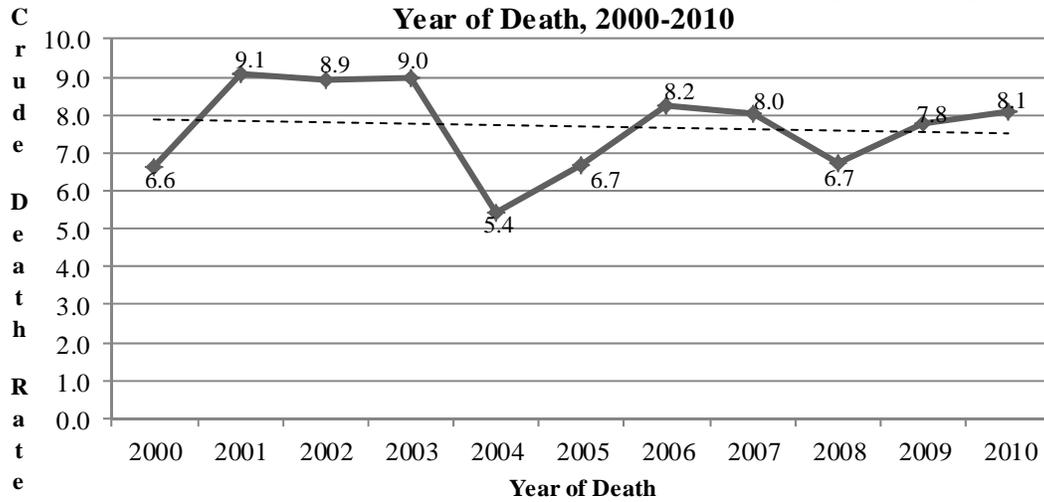
Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 18
South Dakota Resident Crude Death Rate due to Nephritis, Nephrotic Syndrome, and Nephrosis by Year of Death, 2000-2010



Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
 Source: South Dakota Department of Health, Office of Health Statistics

Figure 19
South Dakota Resident Crude Death Rate due to Septicemia by
Year of Death, 2000-2010



Note: The crude death rate is calculated using yearly U.S. Census Bureau population estimates for that year.
Source: South Dakota Department of Health, Office of Health Statistics

South Dakota Department of Health – Infectious Disease Surveillance
Selected Morbidity Report, 1 January – 30 November 2011
(provisional numbers) see <http://doh.sd.gov/ID/site.aspx>

	Disease	2011 year-to-date	5-year median	Percent change
Vaccine-Preventable Diseases	Diphtheria	0	0	n/a
	Tetanus	0	0	n/a
	Pertussis	28	48	-42%
	Poliomyelitis	0	0	n/a
	Measles	0	2	n/a
	Mumps	0	2	n/a
	Rubella	0	0	n/a
	<i>Haemophilus influenzae</i> type b	1	0	n/a
Sexually Transmitted Infections and Blood-borne Diseases	HIV infection	18	27	-33%
	Hepatitis B, acute	1	4	-75%
	Chlamydia	2,898	2,662	+9%
	Gonorrhea	509	335	+52%
	Syphilis, early	0	4	0%
Tuberculosis	Tuberculosis	11	15	-27%
Invasive Bacterial Diseases	Meningococcal, invasive	3	3	0%
	Invasive Group A <i>Streptococcus</i>	22	22	0%
Enteric Diseases	<i>E. coli</i> , Shiga toxin-producing	37	50	-26%
	Campylobacteriosis	286	256	12%
	Salmonellosis	151	155	-3%
	Shigellosis	5	76	-93%
	Giardiasis	103	96	7%
	Cryptosporidiosis	139	105	32%
	Hepatitis A	2	3	-33%
Vector-borne Diseases	Animal Rabies	36	30	20%
	Tularemia	8	7	14%
	Rocky Mountain Spotted Fever	1	2	-50%
	Malaria (imported)	1	0	n/a
	Hantavirus Pulmonary Syndrome	1	0	n/a
	Lyme disease	4	1	0%
	West Nile Virus disease	1	538	-99%
Other Diseases	Legionellosis	2	4	-50%
	<i>Streptococcus pneumoniae</i> , drug-resistant	35	0	n/a
	Additionally, the following were reported: Chicken Pox (53); Ehrlichiosis (3); <i>Haemophilus influenzae</i> (1); Hepatitis B, chronic (34); Hepatitis C, chronic (274); Listeria (1); MRSA, invasive (82), Strep B, invasive (12); Q Fever (1)			

Communicable diseases are obligatorily reportable by physicians, hospitals, laboratories, and institutions.

The **Reportable Diseases List** is found at <http://doh.sd.gov/Disease/report.aspx> or upon request.

Diseases are reportable by telephone, mail, fax, website or courier.

Telephone: 605-773-3737 or 800-592-1861 for communicable disease staff person during normal business hours, or 800-592-1804 confidential answering device. **After hours** Category I diseases, call 605-773-3737 or 800-592-1861. **Fax:** 605-773-5509.

Mail in a sealed envelope addressed to the DOH, Office of Disease Prevention, 615 E. 4th Street, Pierre, SD 57501, marked "Confidential Medical Report". **Secure website:** <http://sd.gov/diseasereport/>.