



# PUBLIC HEALTH BULLETIN

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## 2009 South Dakota tuberculosis morbidity

by Kristin Rounds, Tuberculosis Control Coordinator

Office of Disease Prevention, South Dakota Department of Health

During the last 10 years, South Dakota averaged 15 cases of tuberculosis (TB) per year. During 2009, there were 18 cases of TB reported to the South Dakota Department of Health, an increase of 2 cases from 2008. Figure 1 describes the 10-year trend of TB cases reported in South Dakota.

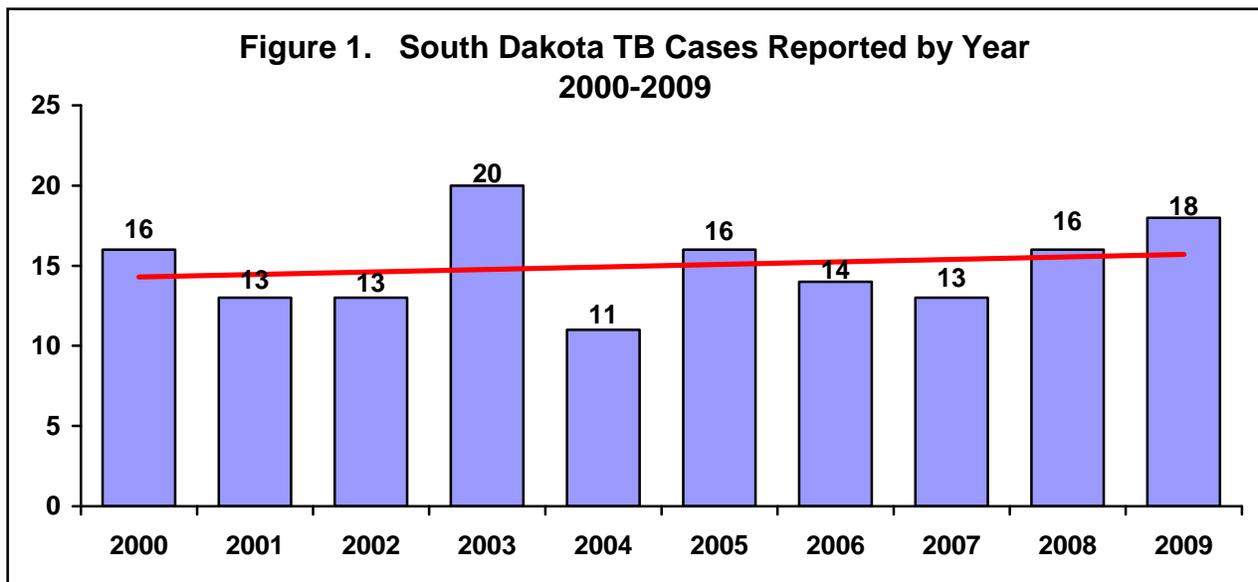
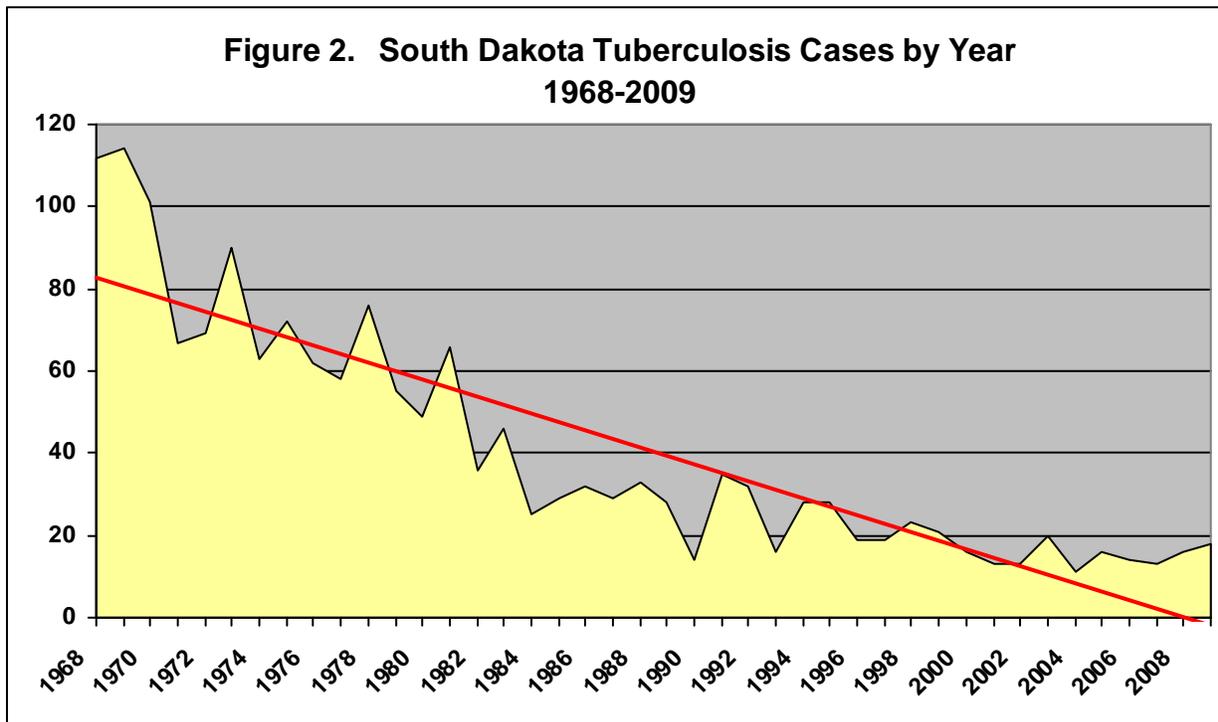


Figure 2 illustrates the historical decreasing trend of reported tuberculosis cases in South Dakota since 1968. This dramatic decrease is a result of mandatory reporting of suspected TB cases to

the Department of Health along with case management, treatment and comprehensive contact investigations to ensure those exposed to tuberculosis receive prompt and appropriate intervention efforts.



The most recent data available nationally and regionally is from calendar year 2008. Figure 3 provides a comparison of the TB case rate per 100,000 population for the United States as well as a regional comparison of South Dakota and its border states of North Dakota, Minnesota, Iowa, Nebraska, Wyoming and Montana. Please note that South Dakota has the second highest TB case rate behind Minnesota when comparing these 7 states.

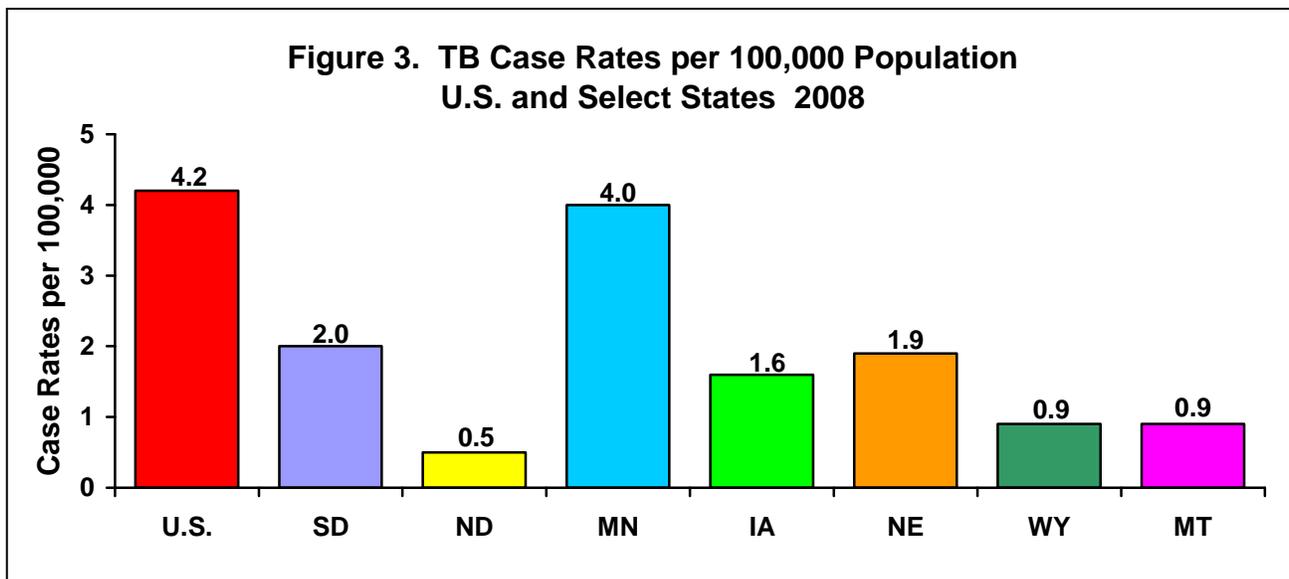
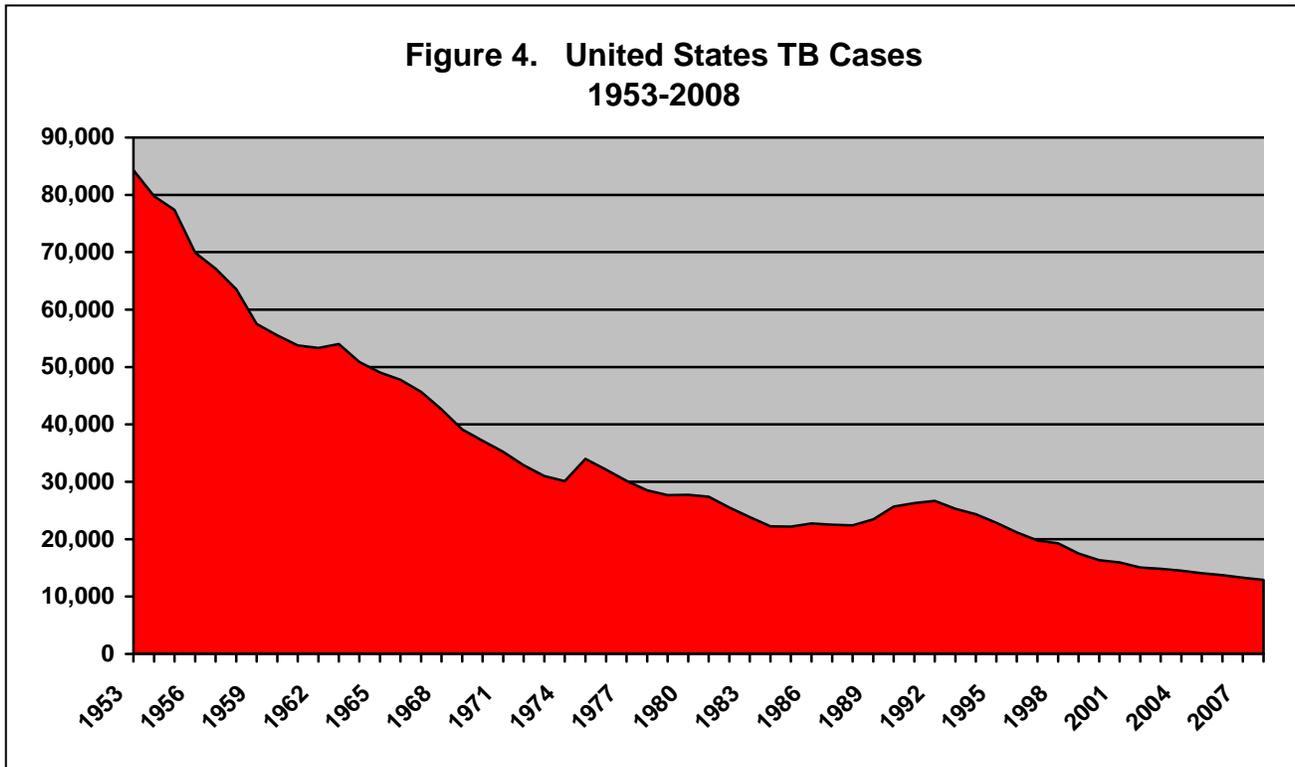


Figure 4 illustrates the historical trend of decreasing TB cases reported in the United States. In 2008 there were 12,904 TB cases reported in the US which was the lowest year on record, representing a 2.9% decrease from 2007. During 2008, 18 states reported increased case counts

from 2007. The 4 states of California, Texas, New York and Florida accounted for 49% of the national case total. During 2008, 1.0% of the reported cases had primary multi-drug resistance compared to 1.1% in 2007 which is defined as no previous history of TB disease and resistance to the tuberculosis medications of at least isoniazid and rifampin.

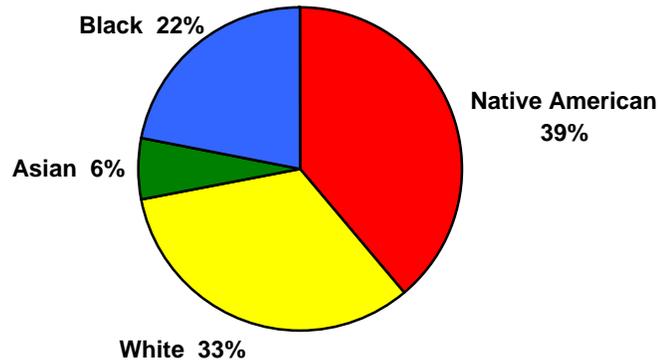


Native Americans have historically represented the highest percentage of TB cases by race. This trend continued in 2009 with Native Americans contributing 39% of the total TB cases reported. Table 1 and Figure 5 provide information on TB cases by race in 2009.

**Table 1. TB Cases Reported By Sex And Race, South Dakota 2009**

Race	Male	Female	Total	% of Cases
Native American	3	4	7	39%
White	5	1	6	33%
Black	3	1	4	22%
Asian	0	1	1	6%
<b>Total</b>	<b>11</b>	<b>7</b>	<b>18</b>	<b>100%</b>

**Figure 5. TB Cases by Race  
South Dakota 2009**



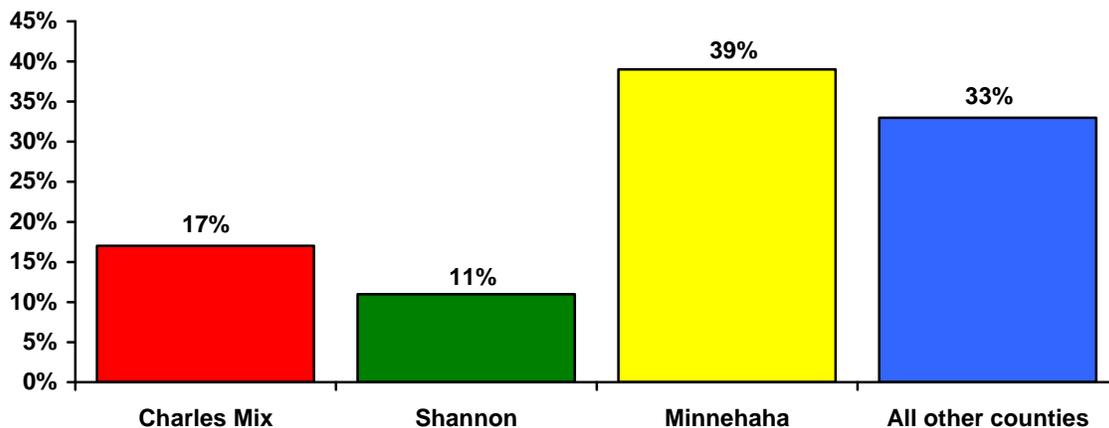
The TB incidence rate, which measures the number of TB cases per 100,000 population, is the best measure for determining the progress towards the elimination of TB in South Dakota. Historically, Native American TB case rates have dropped considerably while white cases have consistently remained low. The Black, Asian and other races mainly represent TB cases born outside of the United States who were diagnosed in South Dakota. Table 2 provides additional information on TB case rates for the last 6 years.

**Table 2. TB Morbidity Incidence Rates Per 100,000 By Race & Year, SD 2004-2009**

Race	2004	2005	2006	2007	2008	2009
US Case Rate (All Races)	5.0	4.8	4.6	4.4	4.2	Not available*
SD All Races	1.5	2.1	1.8	1.7	2.1	2.2
SD Native American	7.3	8.8	8.8	10.3	5.9	10.3
SD White	0.6	0.6	0.1	0.4	0.1	0.9
SD Black	0.0	48.4	64.5	32.3	161.3	64.5
SD Asian	0.0	52.1	52.1	17.4	17.4	17.4
All Other SD Races	41.3	0.0	0.0	0.0	0.0	0.0

\*2009 US case rate data is not yet available.

**Figure 6. TB Cases Reported by County of Residence  
South Dakota 2009**

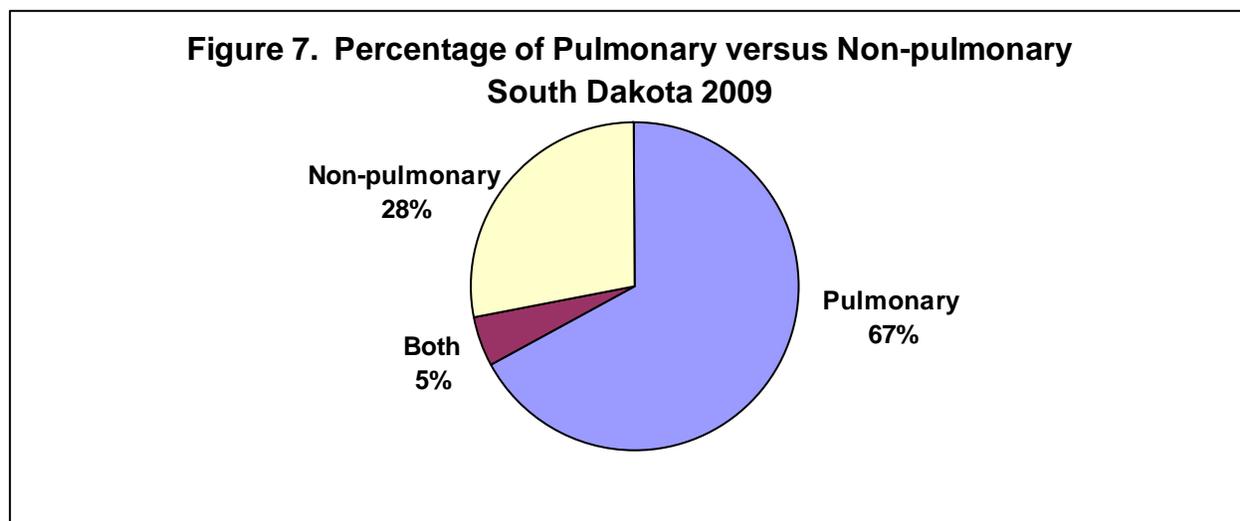


Tuberculosis cases in South Dakota have historically been located in a few geographic locations that consistently report the majority of TB cases. These include Minnehaha County which reports the highest number of foreign-born TB cases and Shannon, Todd and Pennington counties which report the highest number of Native American TB cases. Figure 6 and Table 3 provide additional information on the counties of residence of the TB cases in 2009.

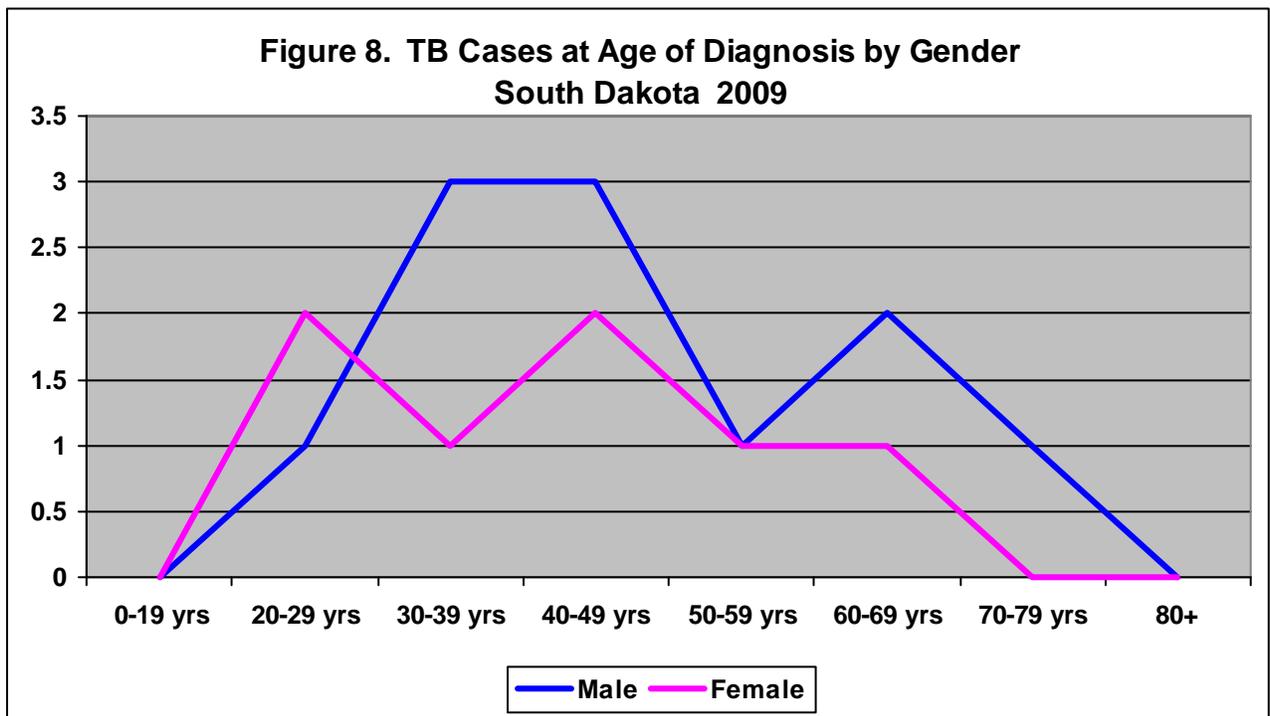
**Table 3. TB Cases Reported By County Of Residence, SD 2009**

County	# of TB Cases	County	# of TB Cases
Butte	1	Roberts	1
Charles Mix	3	Shannon	2
Davison	1	Spink	1
Jerauld	1	Todd	1
Minnehaha	7		

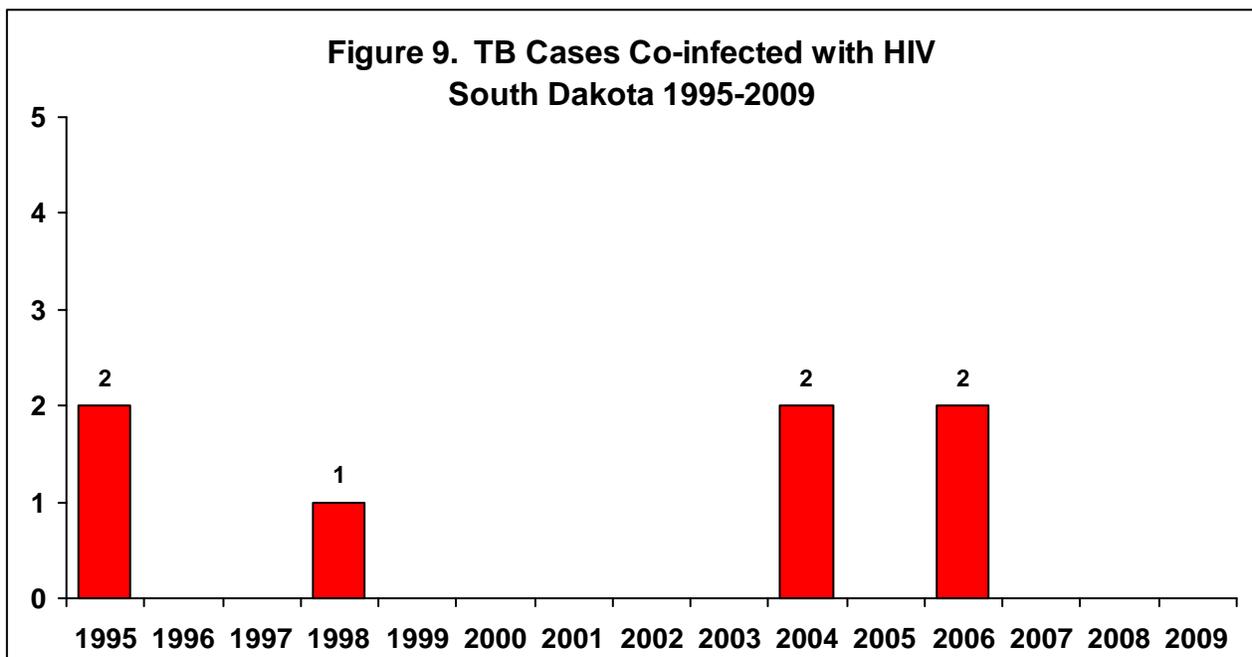
Tuberculosis remains primarily a pulmonary disease with approximately 85% of cases nationally are reported as pulmonary disease and 15% as non-pulmonary disease. South Dakota has historically reported a higher percentage of non-pulmonary TB disease. In 2009 this trend continued with 5 cases (28%) reported as non-pulmonary disease as described in Figure 7. The non-pulmonary sites of disease in 2009 included TB reported in pleural fluid, lymph nodes, uterine tissue, spinal tissue and peritoneal tissue.



The average age of the TB case in 2009 was 45 years of age. This is a shift to older patients as compared to 2008 when the average age was 22 years of age. There were no children less than 10 years of age during this time period. Figure 8 illustrates the age at diagnosis by gender for tuberculosis cases reported in 2009.

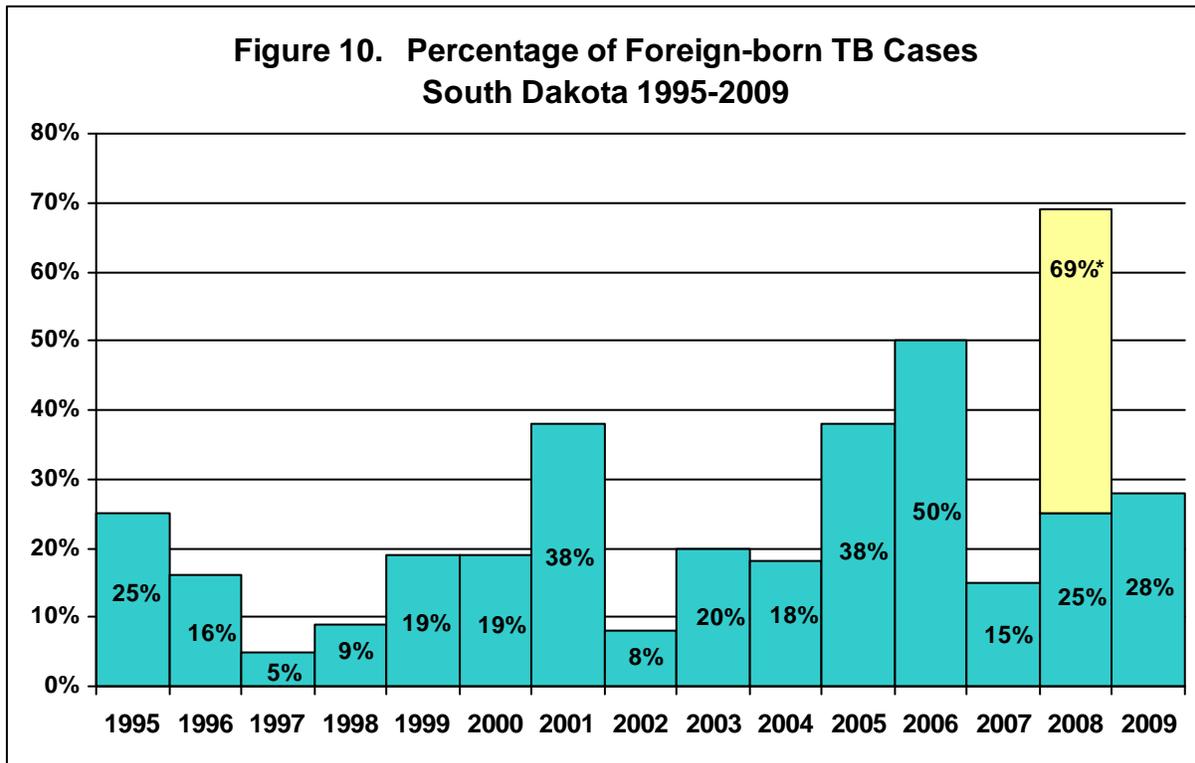


Co-infection with HIV is an important risk factor for the development of active TB. Because of this, all TB cases diagnosed in South Dakota aged 25-44 years of age are offered HIV testing. Co-infected TB cases require more monitoring for toxicity and are frequently treated with second line TB medications. Figure 9 describes the number of TB cases co-infected with HIV since 1995 documenting that these HIV co-infected TB cases remain uncommon.



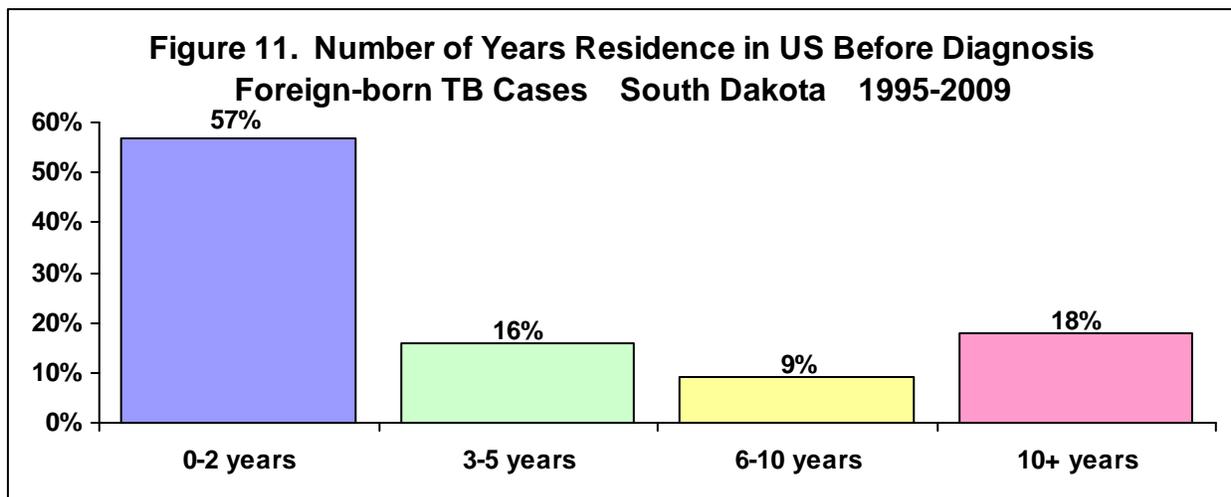
Tuberculosis cases who were born outside the United States continue to represent an important risk group in the United States as well as in South Dakota, however during 2009 this group decreased to 28% of the total cases reported. Figure 10 describes the percentage of foreign-born TB cases in South Dakota. US-born TB cases born to foreign-born parents is a relatively new

TB risk factor which has been identified nationally. TB cases were first reported in this new risk group in 2008 and are represented in Figure 10.

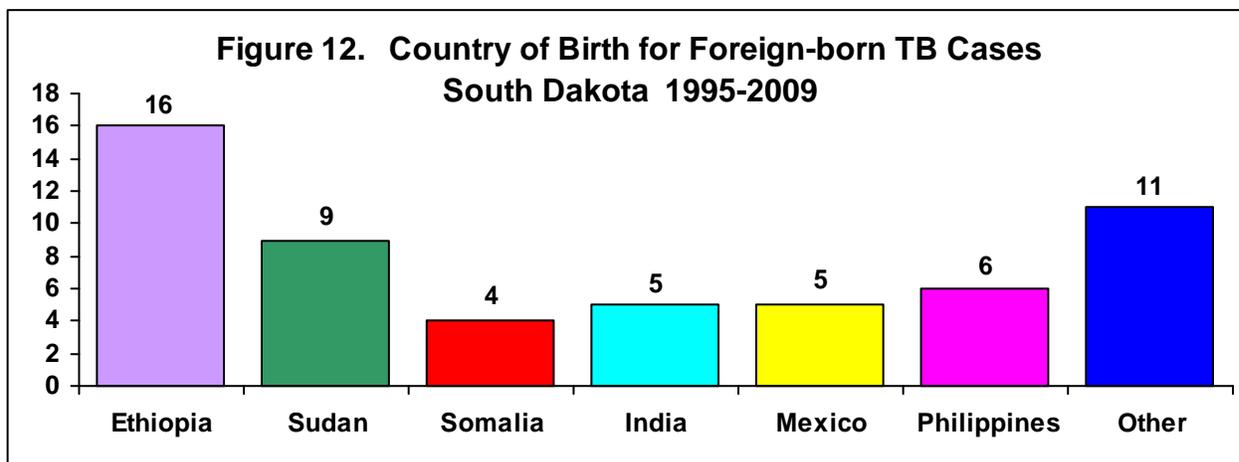


\* In 2008, the 69% includes both foreign-born TB cases as well as US-born TB cases born to foreign-born parents.

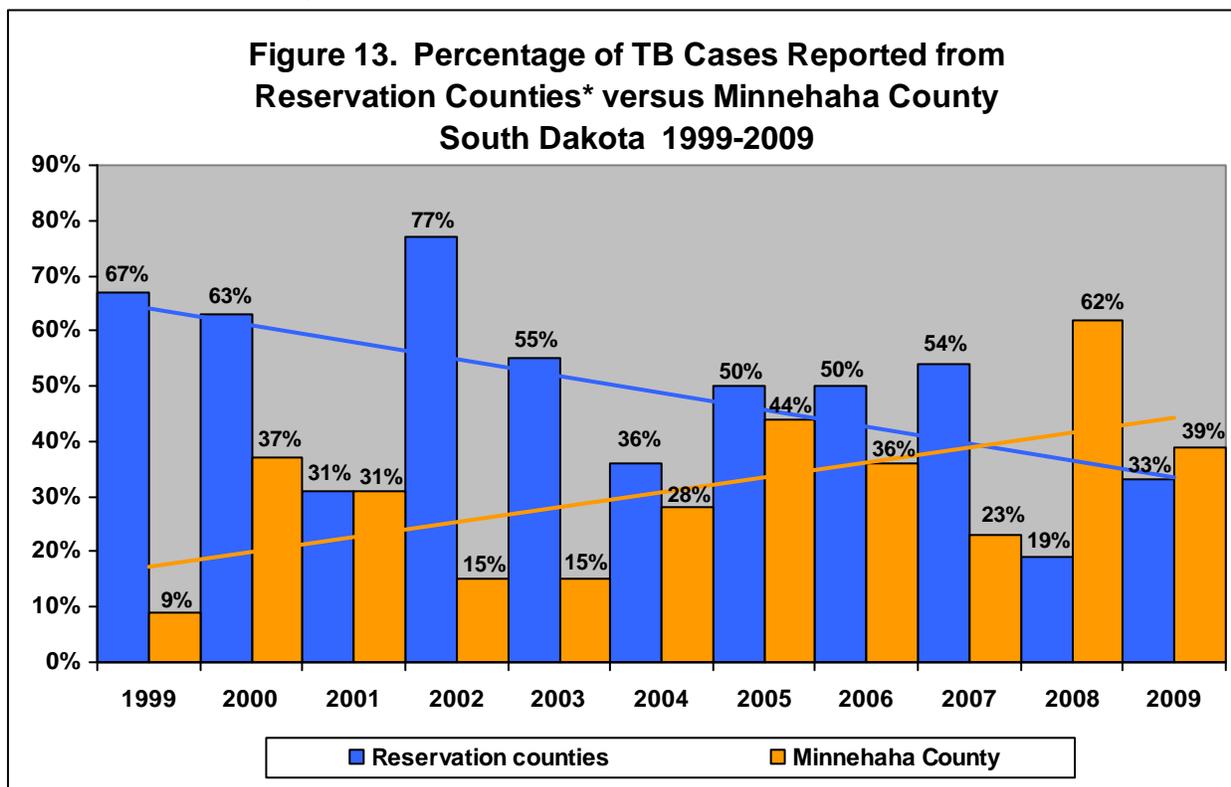
Most foreign-born persons who develop active TB usually do so within the first 2 years after arrival in the United States. Figure 11 describes that 57% of foreign-born TB cases since 1995 developed active TB within the first 2 years of their arrival. Because of this increased risk, these individuals are targeted for preventive TB program activities including targeted TB skin testing and preventive treatment programs.



Foreign-born TB cases continue to come from many areas of the world however the majority of the TB cases reported in South Dakota are of African descent. Figure 12 describes the country of birth for the foreign-born TB cases reported in South Dakota since 1995. Countries of birth for the “other” category include Afghanistan, China, El Salvador, Indonesia, Romania, Russia, South Africa and Vietnam.

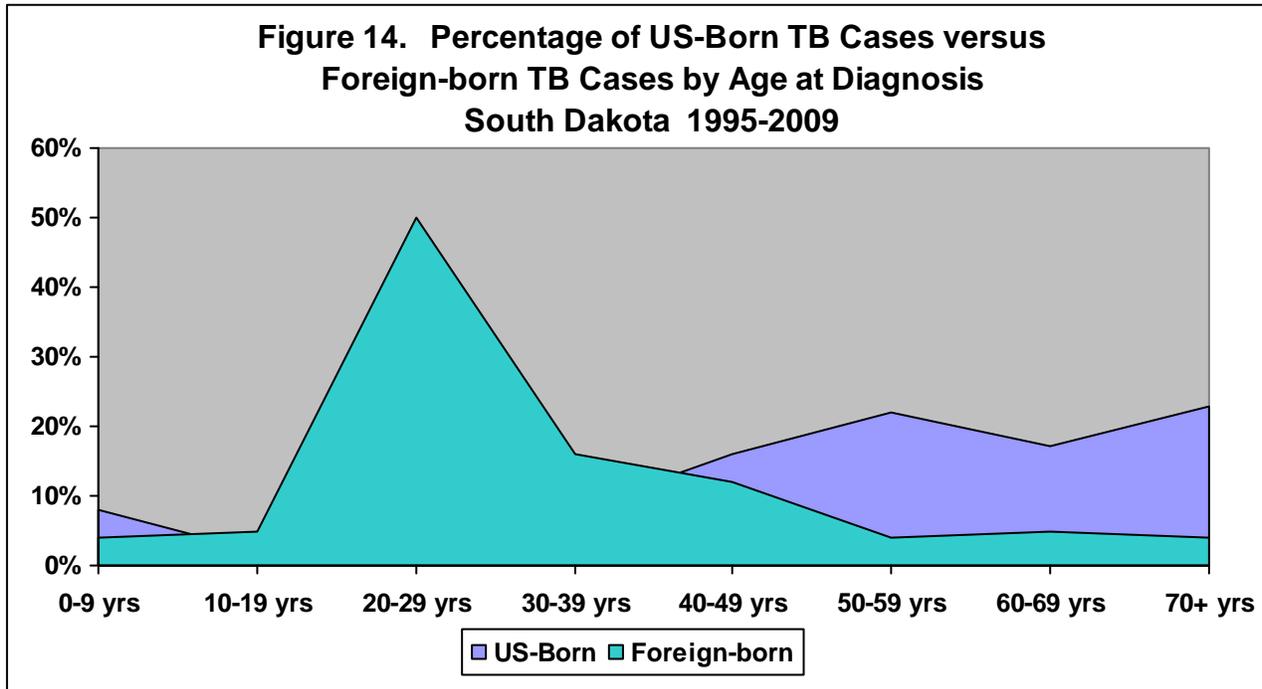


Another aspect to the increase of foreign-born TB cases in South Dakota is the change in geography where TB cases are reported. Historically, the highest percentage of TB cases were reported from counties that included and bordered American Indian Reservations. As Native American TB cases have decreased and foreign-born TB cases have increased, there has been a geographic shift of TB cases from reservation counties to Minnehaha County as illustrated in Figure 13. This is due to the fact that most foreign-born persons who resettle in South Dakota do so in Minnehaha County.

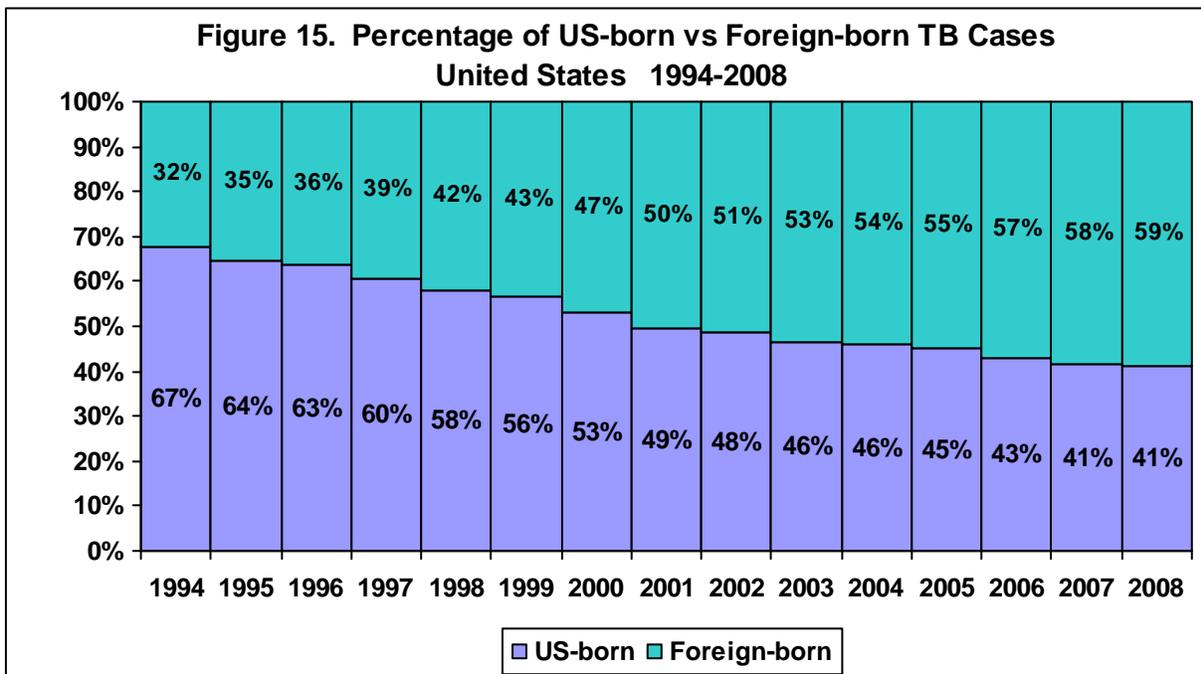


\* Reservation counties include Bennett, Brule, Buffalo, Charles Mix, Corson, Dewey, Jackson, Mellette, Pennington, Shannon, Todd, Tripp, Walworth and Ziebach counties.

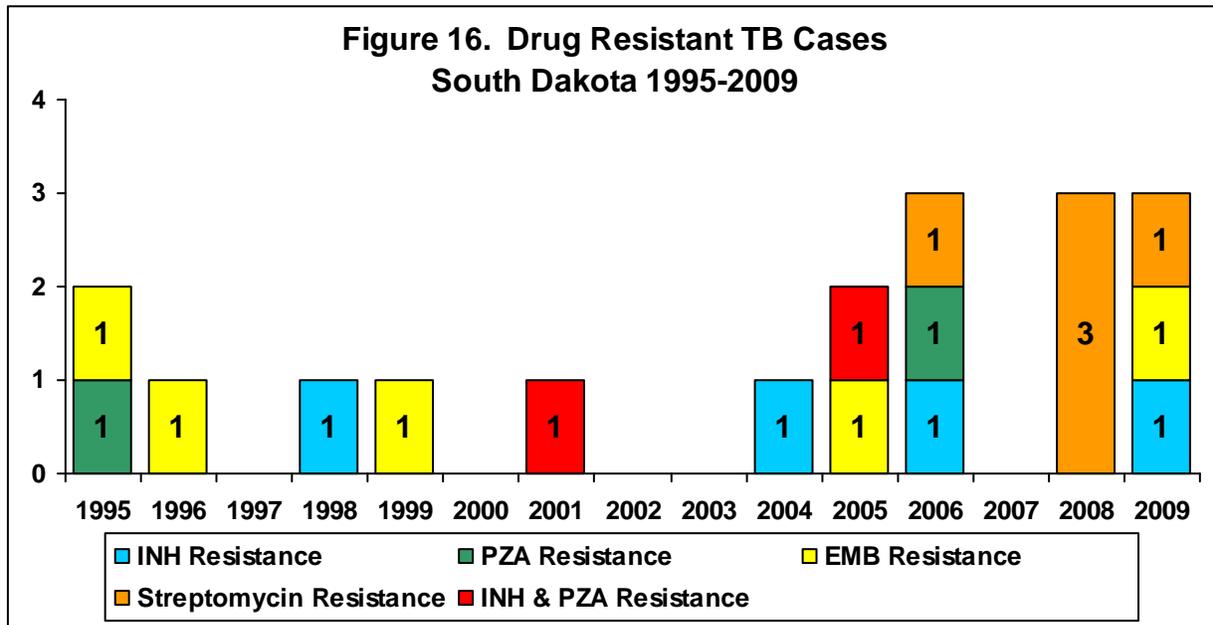
Foreign-born TB cases consistently are reported in younger persons as compared to US born patients in South Dakota. This presents additional TB control issues as these TB cases more commonly have young children who have been exposed in the home and typically are employed which may require an investigation at their worksite to those exposed. Figure 14 illustrates that the majority of foreign-born TB cases are diagnosed while young adults.



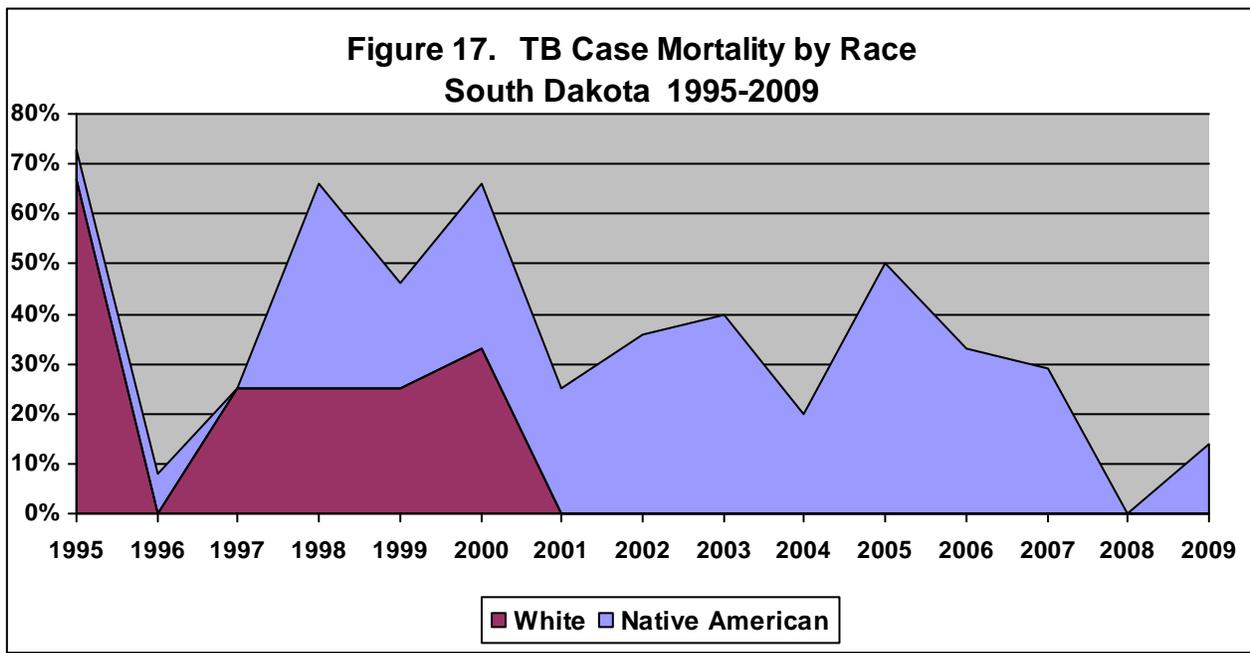
Foreign-born TB cases represent a unique challenge to the South Dakota TB Control Program because of cultural issues, language barriers and a greater likelihood of drug resistance. As these cases continue to increase in South Dakota, additional time and resources will need to be dedicated to address these unique issues. Figure 15 describes the ever increasing trend of the percentage of foreign-born TB in the United States since 1994.



All culture positive TB cases are tested for drug resistance to first-line TB medications including isoniazid, rifampin, pyrazinamide, ethambutol and streptomycin. Patients with single drug resistance can usually be successfully treated for their TB disease. Multi-drug resistant TB (defined by CDC as resistance to at least INH and RIF) is a significant public health problem because of the difficulty in achieving a successful treatment outcome. Figure 16 describes the drug resistant TB cases since 1995 illustrating that South Dakota has most often had single drug resistant cases reported. No multi-drug resistant TB cases have ever been reported in South Dakota although the Department of Health has managed several MDR-TB case reported in other states that have moved to South Dakota.



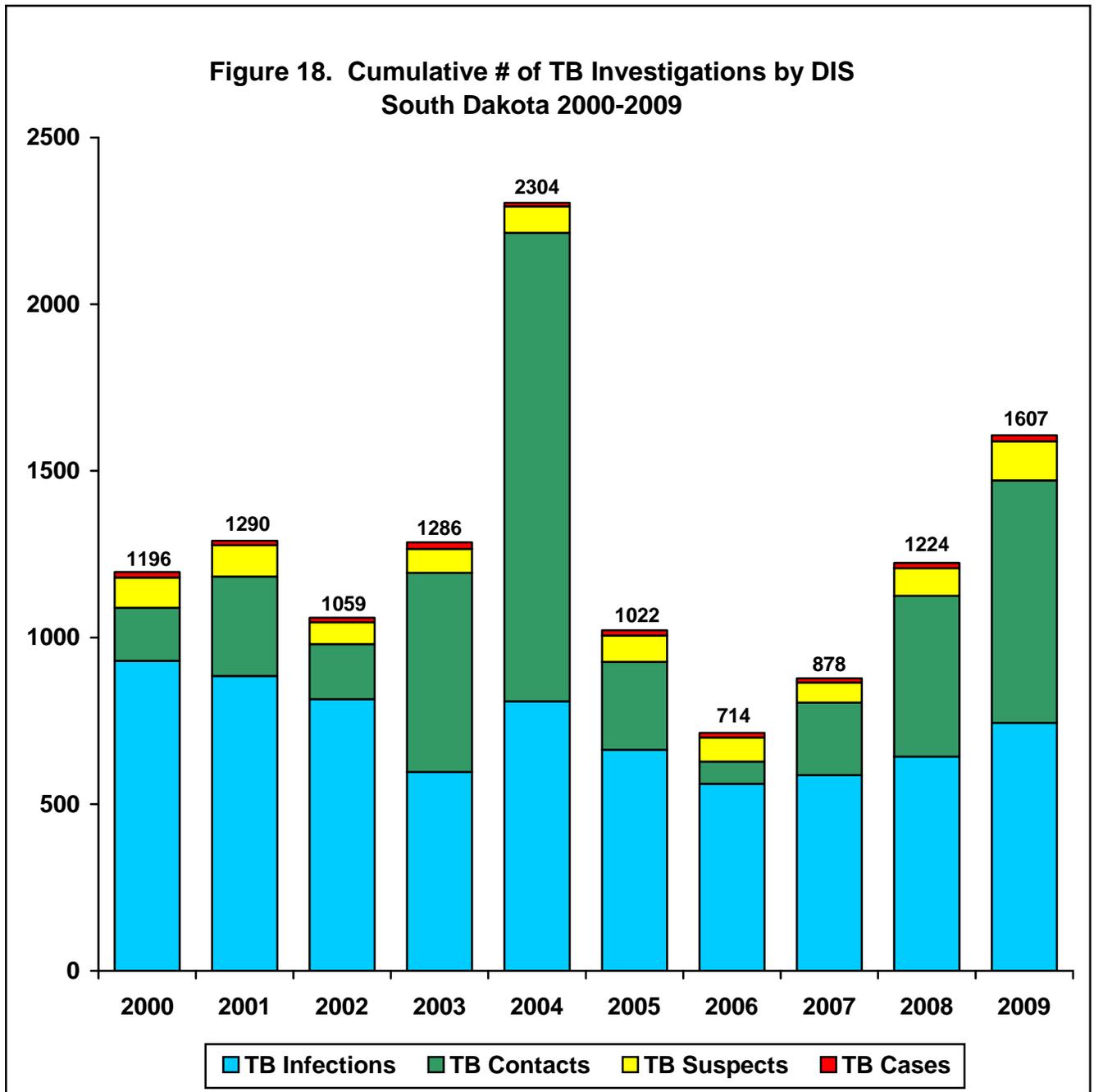
South Dakota reported a higher than expected mortality rate during certain years, especially among Native American patients. Figure 17 describes the mortality rates by race since 1995 showing the higher trend among Native American cases since 1998. Mortality rates are calculated by the percentage of TB cases by race that die during the year of their diagnosis.



The workload in the TB Control Program includes four categories of patients:

- 1) **TB cases** (persons diagnosed with active TB)
- 2) **TB suspects** (persons suspected of active TB with a pending diagnosis)
- 3) **TB contacts** (persons confirmed to have been exposed to an infectious TB case)
- 4) **Latent TB infection** (persons reported with a positive TB skin test)

All of these conditions are reportable to the TB Control Program and are initiated for investigation. Disease Intervention Specialist (DIS) staff are responsible for ensuring appropriate investigation, treatment and follow-up of these individuals statewide. Figure 18 describes this cumulative caseload which is divided among 19 DIS staff illustrating that the active TB cases and suspect TB cases represent the smallest number of patients reported. TB contacts and patients with latent TB infection make up the greatest percentage of assigned workload for DIS staff within the TB Control Program.



Providing for appropriate treatment and follow-up of active TB cases and suspects is the highest priority of the Tuberculosis Control Program. However, in order to achieve TB elimination in South Dakota, an emphasis must be made on preventing future cases of TB. This is accomplished by follow-up of persons infected with latent TB infection. These individuals are infected with the TB bacteria (*Mycobacterium tuberculosis*) but have not yet developed an active

form of the disease. By finding and treating these individuals, future TB cases can be prevented and therefore the TB Control Program dedicates time and resources to this preventive strategy.

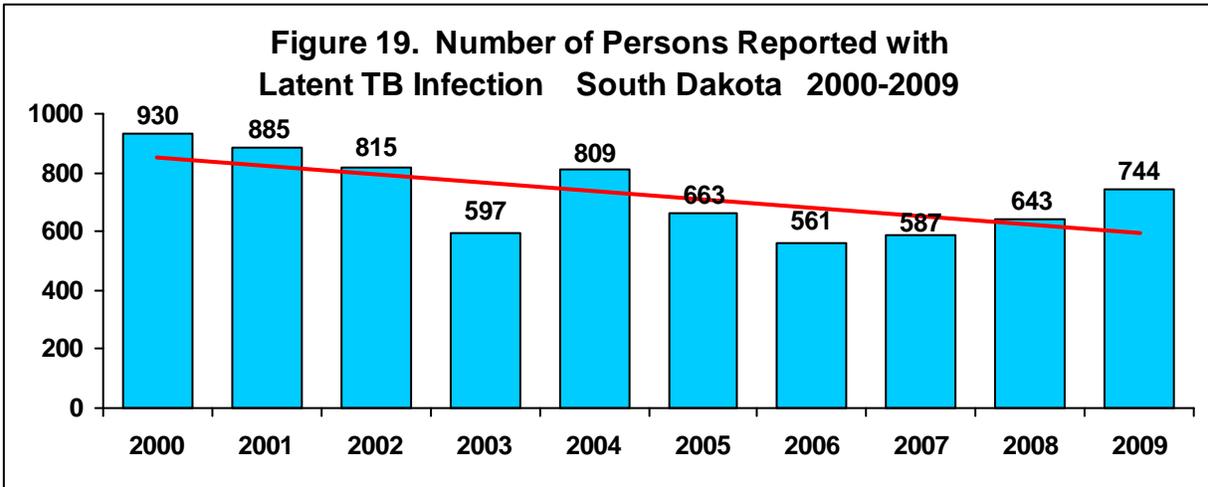


Figure 19 presents the number of patients reported with latent TB infection (positive TB skin tests) over the last 10 years. All of these individuals have the potential to develop active TB disease and potentially be infectious to others.

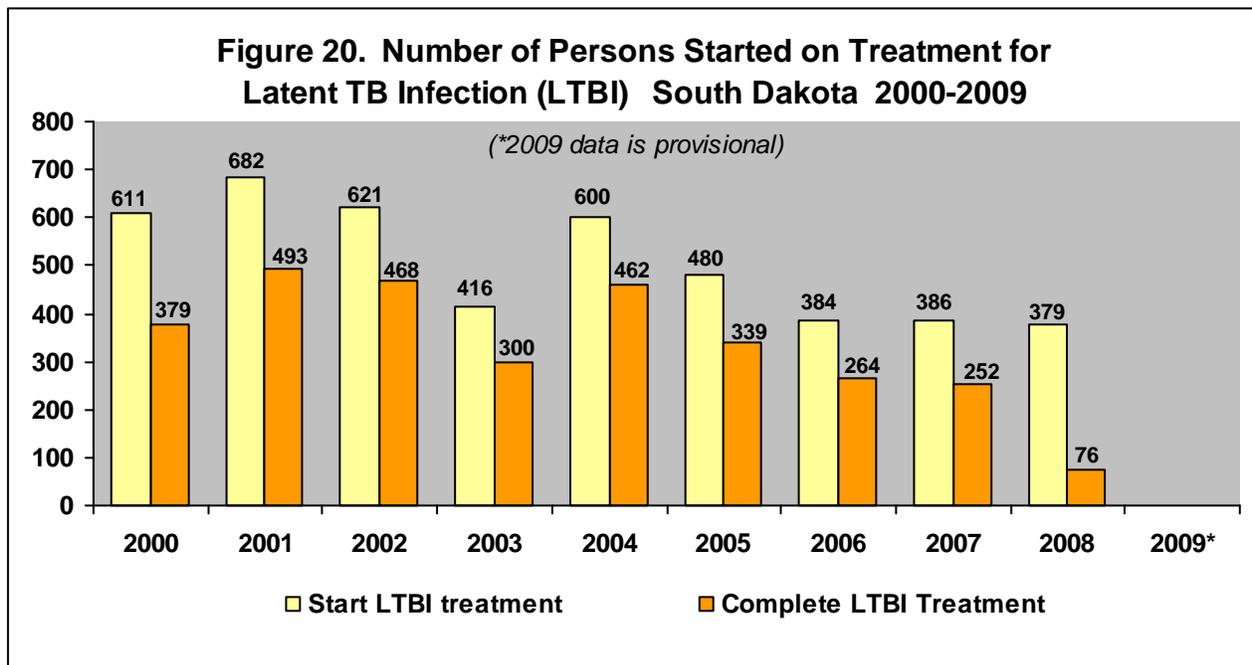
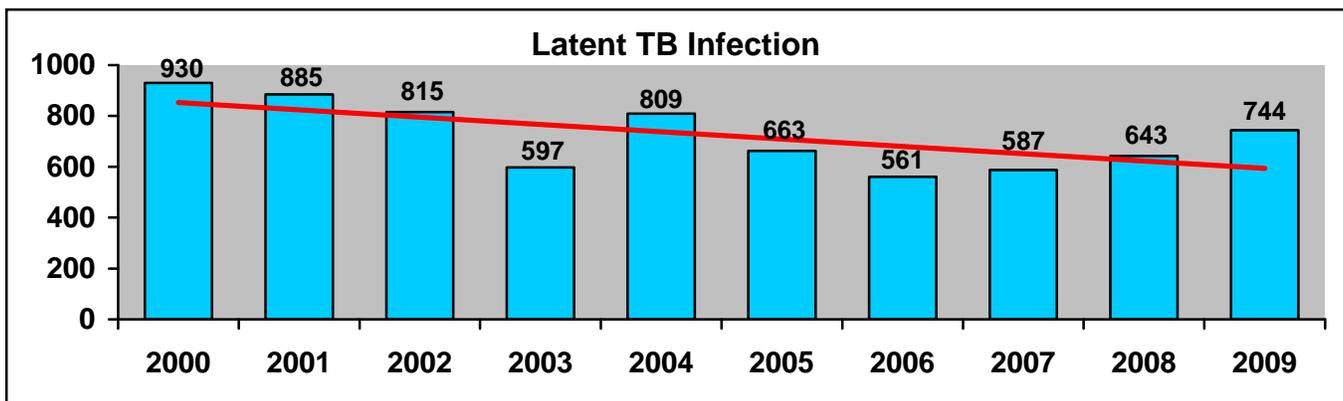
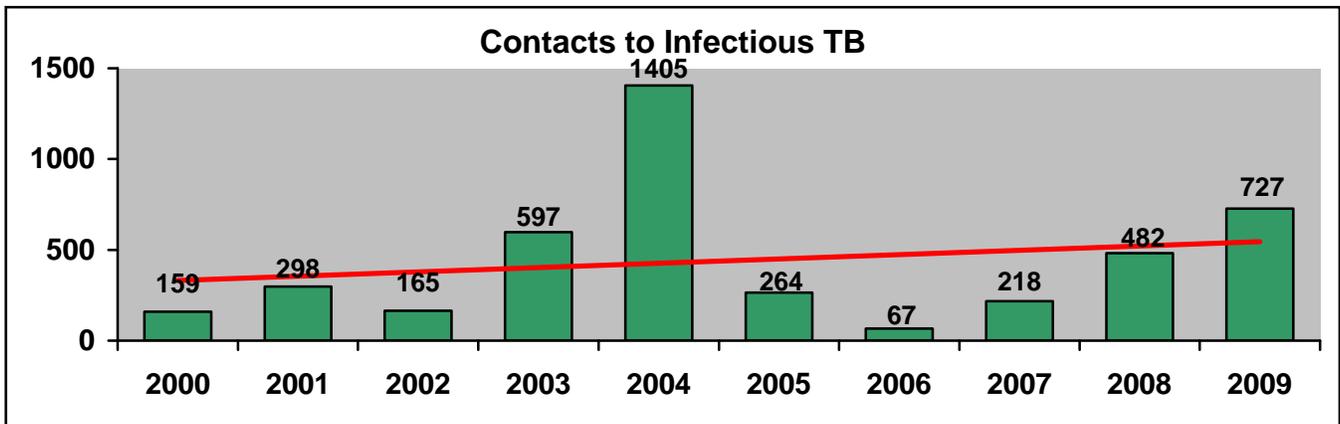
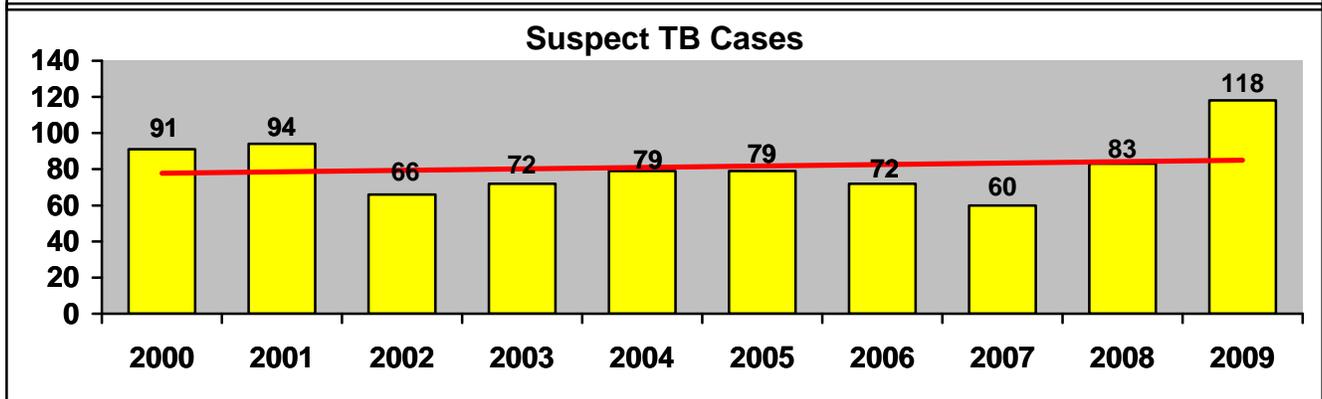
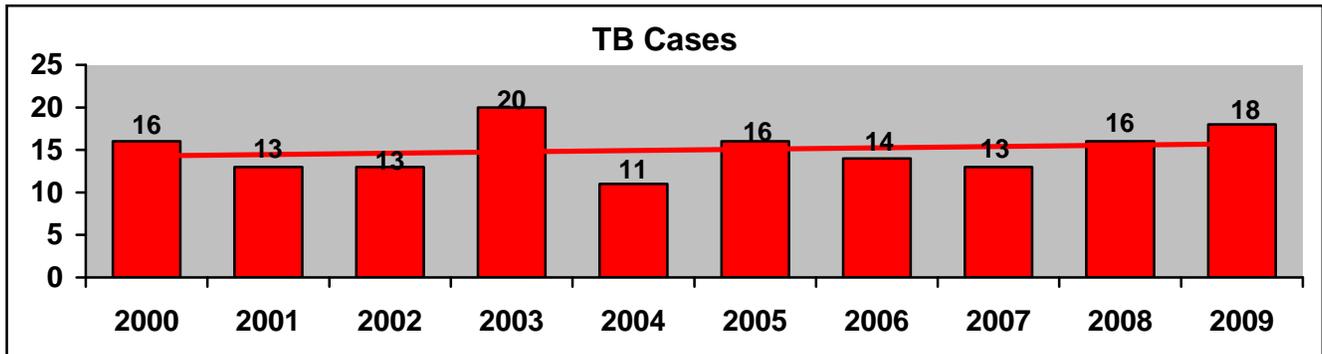


Figure 20 presents the number of patients with latent TB infection that started on a course of preventive treatment as well as the number who ultimately completed this treatment. The treatment is usually done with Isoniazid (INH) which is provided free of charge to patients statewide by the TB Control Program.

## Summary of TB Control Program Caseload South Dakota 2000-2009



## Female breast cancer in South Dakota, 2006

By the South Dakota Cancer Registry, South Dakota Department of Health

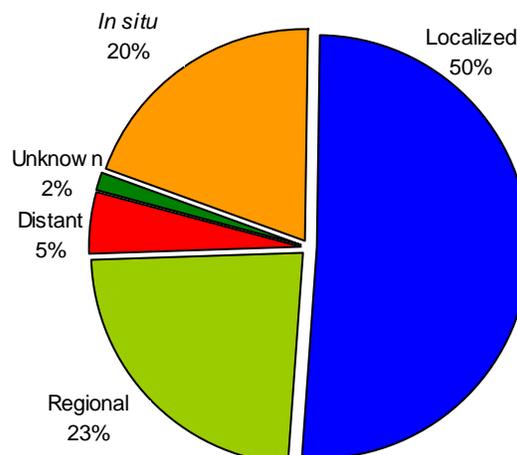
The South Dakota Cancer Registry has released the 2006 female breast cancer data. For 2002-2006, the average number of new female cancer cases per year was 531 and the average number of annual deaths due to female breast cancer was 109.

Incidence 2006		Mortality 2006	
Number of cases		Number of deaths	
Total	473	Total	95
White	443	White	90
American Indian	24	American Indian	5
Median age at diagnosis	63 yrs	Median age at death	71 yrs
Mode	58 yrs	Mode	75 yrs
Age range at diagnosis	25-102 yrs	Age range at death	28-99 yrs
SD age-adjusted incidence rate	115.0	SD age-adjusted death rate	21.2
US SEER age-adjusted incidence rate	120.8	US SEER age-adjusted death rate	23.4

Rates per 100,000 U.S. 2000 standard population  
Source: South Dakota Department of Health

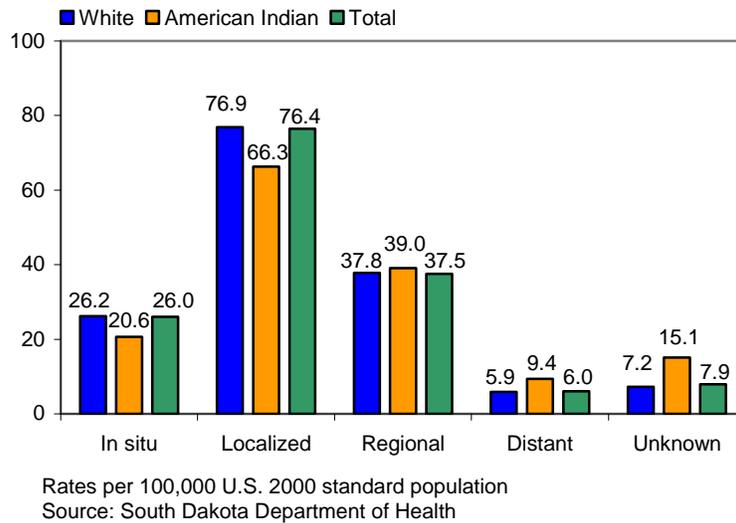
The circle graph at the right displays the SEER Summary Stage at diagnosis for 2006 female breast cancer cases in South Dakota. If diagnosed at an early stage, the five-year survival rate is 98%.

South Dakota women have help to cover the cost of breast and cervical cancer screening. Mammograms, Pap smears and related exams are available at no cost to eligible women. The All Women Count! Program is the Breast and Cervical Cancer Control Program for South Dakota women. It serves women age 30-64 for Pap smears and 40-64 for mammograms. If a cancer diagnosis is made, help is also available for treatment. For eligibility guidelines, please call toll-free 1-800-738-2301 or see the website at <http://doh.sd.gov/AllWomenCount>.

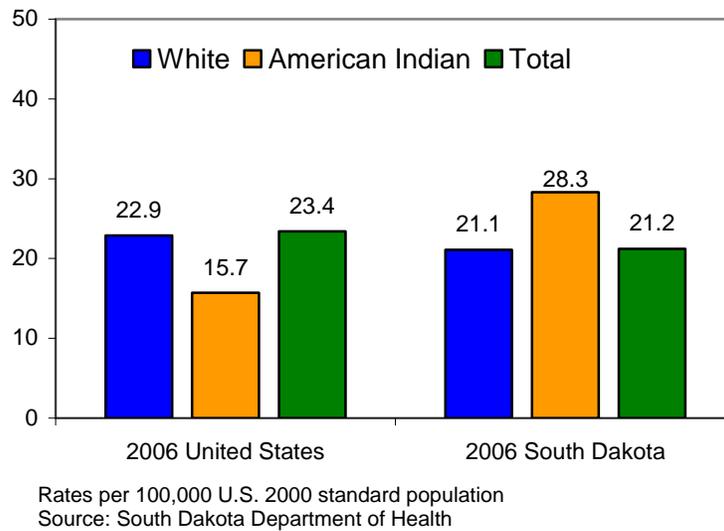


Source: South Dakota Department of Health

See the following graph for the 2002-2006 age-adjusted female breast cancer incidence rates for South Dakota by race and stage at diagnosis. As shown, the rates are higher for American Indian women diagnosed at the more advanced stages. Treatment is more effective when the cancer is diagnosed at an early stage.



The 2006 age-adjusted female breast cancer death rates by race in South Dakota and the United States are illustrated below. The death rate of American Indian women in South Dakota reflects the late stage diagnosis in American Indian women shown above.



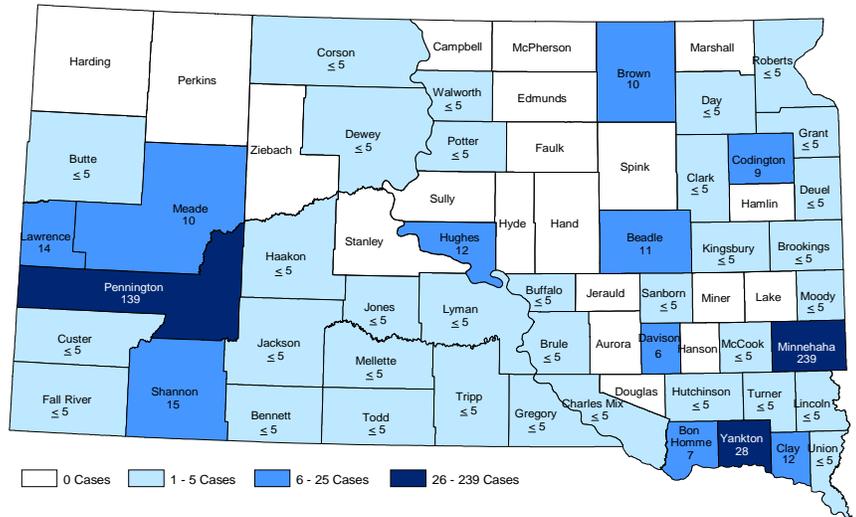
For additional information, please contact Kay Dosch, SD Cancer Registry Coordinator, at 605-773-6345 or 800-592-1861 or see the website at <http://doh.sd.gov/SDCR/> for the entire female breast cancer monograph.

## South Dakota HIV/AIDS Surveillance Report January 2010

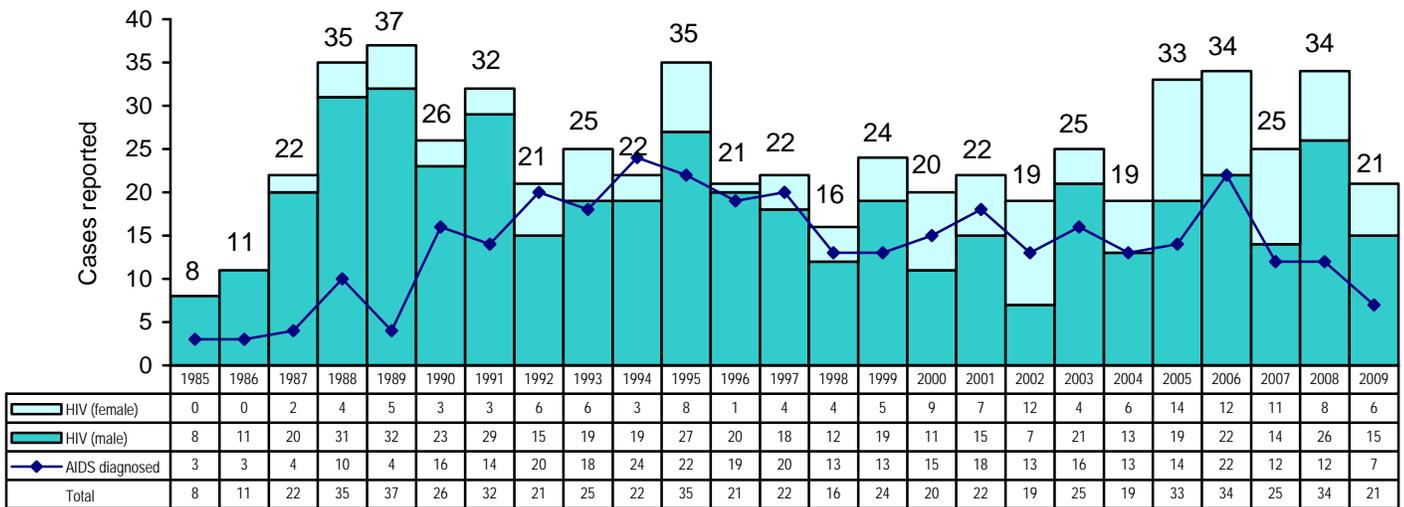
Six-hundred and nine cumulative cases of HIV/AIDS were reported to the South Dakota Department of Health from 1985 through December 2009. Twenty-one new HIV/AIDS cases were reported in 2009. Fifteen of these cases were male and 6 cases were female.

There are an estimated 372 people living with HIV/AIDS in South Dakota, 71% male and 29% female. Blacks and American Indians are disproportionately affected by HIV/AIDS with Blacks comprising 22 of the living cases and American Indians 16%, when they comprise <1% and 9% of the population, respectively.

South Dakota Residents Reported Infected with HIV/AIDS:  
Cumulative Cases by County, 1985 - 2009



**South Dakota Residents Diagnosed by Gender with HIV and AIDS, 1985-2009**



At the end of 2009, 609 SD residents had been reported as infected with HIV (466 male, 143 female) and 345 of those had also been diagnosed with AIDS. Some cases may have been reported as an HIV case in a different year than they were diagnosed with AIDS.

## Characteristics of South Dakota HIV/AIDS Infected Persons as of December 31, 2009



	Total HIV/AIDS Diagnoses <i>Total number of persons diagnosed with HIV or AIDS</i>		Persons Living with HIV/AIDS <i>Minimum estimate of persons living with HIV or AIDS</i>		Department of Health Confidential HIV Testing Centers <i>or call Toll Free 1-800-592-1861</i>
	Cases	Percent	Cases	Percent	
<b>TOTAL</b>	609	100%	372	100%	<b>Aberdeen</b> 402 S. Main St. Aberdeen, SD 57401 605-626-2373 1-866-805-1007
<b>Sex</b>					<b>Rapid City</b> 909 E. St. Patrick Rapid City, SD 57701 605-394-2289 1-866-474-8221
Male	466	77%	264	71%	<b>Watertown</b> 2001 9th Avenue SW Suite 500 605-882-5096
Female	143	23%	108	29%	Watertown, SD 57201 1-866-817-4090
<b>Ethnicity</b>					<b>Sioux Falls</b> 1200 N. West Ave. Sioux Falls, SD 57104 605-367-5365 1-866-315-9214
American Indian	106	17%	59	16%	<b>Pierre</b> 302 E Dakota Pierre, SD 57501 605-773-5348 1-866-229-4927
Black	91	15%	83	22%	<b>Dupree</b> Ziebach County Court House Dupree, SD 57623 605-365-5164 1-866-778-5157
Hispanic and Other **	23	4%	15	4%	<b>CDC HOTLINE</b> <b>1-800-232-4636</b>
White	389	64%	215	58%	The South Dakota Department of Health is authorized by SDCL 34-22-12 and ARSD 44:20 to collect and process mandatory reports of communicable diseases.
<b>Country of Origin</b>					<b>How to report:</b> Secure Website: <a href="http://www.state.sd.us/doh/diseasereport">www.state.sd.us/doh/diseasereport</a> Telephone: 1-800-592-1804 (Confidential answering device) or 1-800-592-1861 or 605-773-3737
United States	539	89%	306	82%	
Other	70	11%	66	18%	
<b>Age Group</b>	(Age at HIV Diagnosis)		(Age December 31, 2009)		
< 2 years	9	1%	2	1%	
2-12 years	7	1%	3	1%	
13-24 years	82	13%	13	3%	
25-44 years	398	65%	176	47%	
45-65 years	110	18%	167	45%	
>65	3	1%	11	3%	
<b>Exposure Category</b>					
Heterosexual	126	21%	98	26%	
IDU	89	15%	55	15%	
MSM	258	42%	136	37%	
MSM & IDU	26	4%	12	3%	
Perinatal/Pediatric	12	2%	9	2%	
Transfusion/Hemophilia	20	3%	10	3%	
Unspecified	78	13%	52	14%	
<b>HIV Planning Region</b>					
American Indian	33	5%	20	5%	
Black Hills	179	29%	104	28%	
Central	26	4%	12	3%	
Northeast	49	8%	24	6%	
Southeast	312	51%	212	57%	
Unknown/Other***	10	2%	0	0%	

Percentages may not add up to 100% due to rounding.

\*\*Hispanic and Other denotes cases that are Asian, Hispanic, or Multi-race.

\*\*\*Unknown/Other denotes cases in which the HIV/AIDS county is unknown or in a state other than South Dakota.

Questions regarding the surveillance report may be directed to Christine Olson 605-773-3737.

## **Institute of Medicine report reviews evidence related to secondhand smoke and cardiovascular health**

*by Derrick Haskins; Program Coordinator, South Dakota Tobacco Control Program  
Pamela Schochenmaier; Director, Heart Disease and Stroke Prevention Program*

The 2006 U.S. Surgeon General's report, *The Health Consequences of Involuntary Exposure to Tobacco Smoke*, concluded that exposure to secondhand smoke causes heart disease and indicated that smoke-free policies are the most economical and effective way to reduce exposure.

Recently, the Centers for Disease Control and Prevention, Office on Smoking and Health, asked the Institute of Medicine to bring together an expert committee to review the current science on the relationship between long and short-term secondhand smoke exposure and heart attacks.

The science is consistent, according to the Institute of Medicine (IOM). In the new report, *Secondhand Smoke Exposure and Cardiovascular Effects: Making Sense of the Evidence*, the IOM draws clear links between secondhand smoke and heart disease and heart attacks<sup>1</sup>. After an extensive review of scientific studies, the report documents the effects of secondhand smoke, including the following:

- Secondhand smoke can cause a heart attack.
- It is possible that even brief exposure to secondhand smoke could trigger a heart attack.
- Smoke-free air laws result in fewer heart attacks.

The IOM committee conducted a comprehensive review of published and unpublished data and testimony on the relationship between secondhand smoke and short-term and long-term heart problems. Eleven key studies that evaluated the effects of smoking bans on heart attack rates informed the committee's conclusions about the positive effects of smoke-free policies. The studies calculated that reductions in the incidence of heart attacks range from 6 percent to 47 percent. Given the variations in how the studies were conducted and what they measured, the committee could not determine more precisely how great the effect is. Only two of the studies distinguished between reductions in heart attacks suffered by smokers versus nonsmokers. However, the repeated finding of decreased heart attack rates overall after bans were implemented conclusively demonstrates that smoke-free policies help protect people from the cardiovascular effects of tobacco smoke, the committee said.

The report also provides a detailed discussion of the evidence from animal research and epidemiological studies showing a cause-and-effect relationship between secondhand smoke exposure and heart problems. The committee was not able to determine the exact magnitude of the increased risk presented by breathing environmental tobacco smoke, but noted that studies consistently indicate it increases the risks by 25 percent to 30 percent.

Although there is no direct evidence that a relatively brief exposure to secondhand smoke could precipitate a heart attack, the committee found the indirect evidence compelling. Data on particulate matter in smoke from other pollution sources suggest that a relatively brief exposure to such substances can initiate a heart attack, and particulate matter is a major component of secondhand smoke.

For more information about the report visit: [www.cdc.gov/tobacco](http://www.cdc.gov/tobacco) and to find places to live, work, and play tobacco-free in South Dakota visit: [www.BeFreeSD.com](http://www.BeFreeSD.com).

<sup>1</sup> Institute of Medicine. *Secondhand Smoke Exposure and Cardiovascular Effects: Making Sense of the Evidence*. Washington, D.C.: National Academies Press; 2009.

**South Dakota Department of Health – Infectious Disease Surveillance**

**Morbidity Report, 1 January – 31 December 2009**

(provisional numbers) see <http://doh.sd.gov/ID/site.aspx>

	<b>Disease</b>	<b>2009 year-to-date</b>	<b>5-year median</b>	<b>Percent change</b>
<b>Vaccine-Preventable Diseases</b>	Diphtheria	0	0	n/a
	Tetanus	0	0	n/a
	Pertussis	57	66	-14%
	Poliomyelitis	0	0	n/a
	Measles	0	0	n/a
	Mumps	2	0	n/a
	Rubella	0	0	n/a
	<i>Haemophilus influenzae</i> type b	0	0	n/a
<b>Sexually Transmitted Infections and Blood-borne Diseases</b>	HIV infection	21	33	-36%
	Hepatitis B, acute	2	0	0%
	Chlamydia	3010	2633	+14%
	Gonorrhea	353	351	+1%
	Syphilis, early	3	2	+50%
<b>Tuberculosis</b>	Tuberculosis	18	14	+29%
<b>Invasive Bacterial Diseases</b>	<i>Neisseria meningitidis</i>	4	4	0%
	Invasive Group A <i>Streptococcus</i>	29	21	+38%
<b>Enteric Diseases</b>	<i>E. coli</i> , Shiga toxin-producing	82	47	+74%
	Campylobacteriosis	307	244	+26%
	Salmonellosis	266	154	+73%
	Shigellosis	4	116	-97%
	Giardiasis	112	102	+10%
	Cryptosporidiosis	136	86	+58%
	Hepatitis A	3	2	50%
<b>Vector-borne Diseases</b>	Animal Rabies	53	37	+43%
	Tularemia	5	7	-29%
	Rocky Mountain Spotted Fever	0	3	-100%
	Malaria (imported)	1	0	n/a
	Hantavirus Pulmonary Syndrome	0	0	0%
	Lyme disease	1	1	0%
	West Nile Virus disease	21	51	-59%
<b>Other Diseases</b>	Legionellosis	2	5	-60%
	<i>Streptococcus pneumoniae</i> , drug-resistant	3	5	-40%
	Additionally, the following were reported: Group B <i>Strep.</i> invasive (26); Hepatitis B, chronic (24); Hepatitis C, chronic (354); HUS (3); Listeriosis (1), MRSA, invasive (93); Typh Fever (2); Q-Fever (9); Varicella (23)			

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.

**Secure website:** [www.state.sd.us/doh/diseasereport.htm](http://www.state.sd.us/doh/diseasereport.htm).

**Telephones:** 24 hour answering device 1-800-592-1804; for a live person at any time call 1-800-592-1861; after hours emergency 605-280-4810. **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".

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