

Stutsman, Logan, Barnes, LaMoure, & Wells Counties

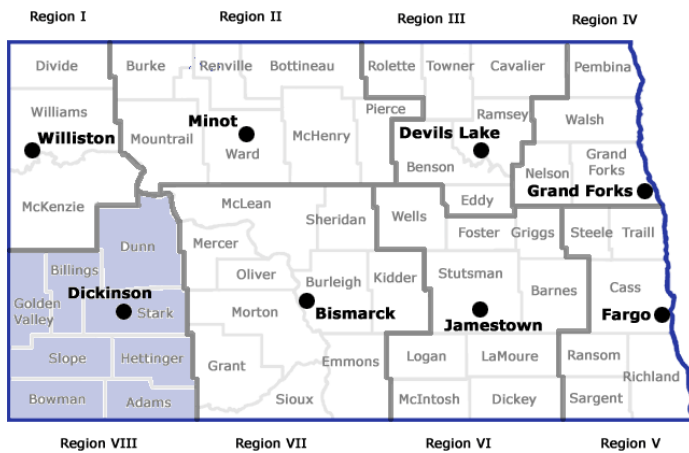
**COMMUNITY  
HEALTH  
ASSESSMENT**

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## Executive Summary

This document discusses the details of an in depth community health assessment for the Southeast Central Region of North Dakota (Region VI) including the counties of Stutsman, Logan, Barnes, LaMoure, and Wells. This document was created to answer the question: What are the health concerns of these counties? Through a six-month process of reviewing data and trends from many different sources along with many personal communications, the document covers eleven sections including: Demographics, Access to Health Care, Preventative Health Care, Maternal Health, Communicable Disease, Environmental Health, Behavioral Risk Factors, Mental Health, Causes of Hospitalization, Causes of Death, and County Rankings. It is hoped that the findings for each section will help to illustrate where the health needs of each county need improvement. The original document was completed in 2010 and continues to be updated as needed.



### Demographics

North Dakota’s population grew 0.7% between the years 2000-2009 while Stutsman, Logan, Barnes, LaMoure, and Wells counties all decreased 6.6%, 18.6%, 8.7%, 16.9%, and 19.8% respectively. North Dakota’s percentage of 20-24 year olds is high compared to the other age groups at almost 10%. As for the counties, there is a lot of variation across the ages but the three groups that stood out the most were the 45-49, 50-54, and 55-59 age groups as they seemed to have the highest percent for all counties, for the most part, except for Stutsman who had a higher 20-24 age group. When dividing the age groups into two ranges, 0-44 and 45-80+ to see where most of each counties population lies, it was found that Stutsman and Barnes had a higher percent in the 0-44 range at 53.5% and 51.4% while the other three counties had a higher percent in the 45-80 range with Logan at 57.5%, LaMoure at 55.9%, and Wells at 60.7%. The average percent of children in poverty for the state is 14.2%. Stutsman, LaMoure, and Wells counties are in the 12-17% range while Barnes is 7.5-12.5% and Logan is well above the average with a 17.6-27.5% range.

### Access to Health Care

Access to health care seems to be a big issue all over the nation. North Dakota's average percent of those without coverage is 11.6% with counties as follows: Stutsman at 8.4%, Logan at 13.3%, Barnes at 11.2%, LaMoure at 14.2%, and Wells at 9.1%. When it comes to actually going to the doctor, 6.2% of North Dakota respondents reported they were unable to due to the medical costs while respondents for the counties reported as follows: Stutsman at 5.3%, Logan at 16.0%, Barnes at 6.1%, LaMoure at 2.9%, and Wells at 4.4%. It has been found that those who are most affected in North Dakota are: the rural residents, young adults, the American Indians, and small company employees. There is a concern that North Dakota's workforce is becoming limited as 81% of the state is designated as a shortage area for primary health care, 90% of the state for mental health, and 28% for oral health.

### **Preventative Health Care**

When it comes to preventative health, experts believe that 50% of diseases or conditions that lead to premature death can be eliminated if proper lifestyle changes are made. When it comes to women's health, breast cancer is the most common health problem faced as 48% of new cases and 50% of deaths occur in women 65 and over. Though it is highly recommended that women get mammograms over the age of 40, not everyone listens. 23.1% of women in the state who are over 40 have not had a mammogram in the last 2 years. Wells County has a high 35.9% of women who haven't had one followed by Barnes at the state average of 21.3%, Stutsman at 18.9%, and Logan at 17.5%. There wasn't any data available for LaMoure County. As for men's health, prostate cancer is the 2<sup>nd</sup> leading cause of cancer death in the US and the most commonly diagnosed form of cancer (other than skin cancer). Most cases occur in men over 65 so it is recommended that men get yearly PSA (prostate specific antigen) tests at the age of 50. 45.4% of North Dakota men have not had a PSA test in the past two years while Stutsman County is at 56.0%, Barnes County is 52.0%, and Wells County at 41.7%. Again, there wasn't data available for Logan and LaMoure counties.

### **Maternal Health**

It is no surprise that the ultimate goal for maternal health care is to have a safe delivery of a healthy infant along with keeping the mother well in the process. Studies have shown that at least half of all complications during pregnancy could be eliminated with better access to health care, better quality care, and better personal and lifestyle choices and habits. Some of the most common risks include: alcohol, tobacco, drugs, age, and access. In North Dakota for the years 2004-2008 there was about 47,350 pregnancies and of these approximately 2,314 belonged to Stutsman, Logan, Barnes, LaMoure, and Wells counties combined. Of the total pregnancies for the state 4,097 of these occurred during the teen years, accounting for 8.7% of the total. In the five counties there were a total of about 211 cases (5.2%) of teen pregnancies. Teen pregnancies are a concern for the community because not only does the risk of complications increase, so does the mortality rate of infant/fetal death, possible disabilities, and also health care costs will be affected if the young mother is not covered under insurance.

### **Communicable Disease**

Though physicians and laboratories are required by law to report certain communicable diseases to their local health department, many go unreported, which could lead to outbreaks for some diseases. North Dakota has a long list of diseases that are required to be reported. The top four communicable diseases for all five counties were as follows: Campylobacteriosis, Enterococcus, MRSA, and West Nile Virus. It is known that risky sexual behaviors increase the chances of getting a sexually transmitted disease, STD, especially having unprotected sex and having many partners. Almost eighty percent of North Dakotan respondents do not use condoms while seventy-seven percent state they only have 1 partner. For North Dakota as a state, Chlamydia, Gonorrhea, and HIV are the top three STDs reported. Each year there are about 19 million new cases of STDs with almost half of them between the ages 15-24. In 2009 it was reported to the CDC that 46% of high schoolers had ever had sex and of those, 34% were not using condoms, which is probably the main reason why STDs and teen pregnancies are so high in the age group and continues to rise.

### **Environmental Health**

Central Valley Health District, CVHD, consisting of Stutsman and Logan counties, provides environmental health services to Barnes, Logan, and Wells counties. Body art inspections are done annually, childcare inspections are done upon request by facility to meet federal requirements or by personal choice, group home inspections are done upon personal request to keep licensing requirements, non-community water supply inspections are done annually except for Wells County as they are not covered under the agreement. An agreement between the NDDOH and CVHD has been made for school inspections to be done twice a year for Barnes, Logan, and Stutsman with Wells and LaMoure inspections starting this year. Sewers are done by request only but for new sewer installations, permits are required and can be received from CVHD or City County Health District, CCHD, in Barnes County and are good in all counties. Tanning facilities are licensed and inspected at least yearly.

### **Behavioral Risk Factors**

Behavior risk factors are those in which can be changed or eliminated if a person is willing to do so. The five factors of discussion in this document are: nutrition, physical activity and body weight, tobacco, alcohol, and intentional/unintentional injury. When it comes to nutrition, we all know the food guide pyramid is the bible for providing the proper number of servings required from each food group, but most people don't follow it like should be done. When it came to getting the proper amounts of fruits/vegetables daily, respondents from the five counties varied quite a bit from the food pyramid as many do not get what they should: 79% for Stutsman County reported not getting the right amount, 80% for Logan County, 72% for Barnes County, 76% for LaMoure County, and 72% for Wells County. Because youth are continually growing, it is important that they get proper nutrients daily. When it came to dairy intake, 39.7% of high schooler-respondents in region VI said they have 3 or more glasses of milk each day in a one week period, slightly above the state average is 37.6% while 25.2% of 7-8 grade respondents said they too drink 3 or more glasses of milk each day in a one week period, again slightly above the state average which is 22.4%. When it came to eating breakfast 7 of the last 7 days, 44.9% of high school respondents said they have, below the state average of 48.2% while 35.6% of 7-8 grade respondents said they have, above the state average of 33.2%.

Not eating right along with physical inactivity can cause many health problems like diabetes and obesity. At least 60% of American adults do not meet the recommended requirements for physical activity while roughly 25% don't engage in physical activity at all, which could lead to higher risks of type II diabetes, high blood pressure, heart disease, stroke, depression, or certain types of cancer. When it came to the five counties, adult respondents responded as follows when it came to not getting the recommended amount of exercise: Stutsman, 39.5%; Logan, no data available; Barnes, 41.1%; LaMoure, 40.2%; and Wells, 43.6%. As for not getting any exercise at all, the adult respondents for the five counties responded as follows: Stutsman, 8.1%; Logan, 10.0%; Barnes, 5.2%; LaMoure, 6.8%; and Wells, 10.7%. As for youth, 45% of high school respondents for the region report getting 60 minutes of physical activity per day 5 of 7 days while 61% of the 7-8 grade respondents for the region claim the same.

Smoking also can lead to many health issues as cigarette smoke alone contains 4,800 chemicals, 69 of which are known to cause cancer. Across the counties, the percentage of adult respondents who smoke varies: Stutsman, 19.7%; Logan, 12.5%; Barnes, 18.9%; LaMoure, 19.1%; and Wells, 14.2%. In 2009 it was reported for the region that 22.4% of high-schoolers and 7.3% of 7-8 graders smoked, an almost 3-fold increase between the two age groups. Though smoking is bad for everyone, doing it during pregnancy is extremely harmful to the fetus as it is developing. Of mothers who gave birth in the state for 2002, 26 % said they smoked three months before pregnancy and 16 % reported smoking during the last three months of pregnancy.

Alcohol consumption is yet another habit that can be changed if people are willing. North Dakota is listed at 21.4% for adult binge drinking (behind Wisconsin at 23.9), is in the top 5 states when it comes to gallons of beer consumed each year which is 41.7, and is in the top 10 with the highest rates of drunken driving. When it came to binge drinking one or more times in a 30 day period, adult respondents for the five counties responded as follows: Stutsman, 18.3%; Logan, 13.3%; Barnes, 20.7%; LaMoure, 14.1%; and Wells, 11.9%. The youth are just as guilty with over 35,000 youth each year drinking alcohol, accounting for 20% of all alcohol sold in the state. 44% of North Dakota middle-schoolers have had at least one drink in their life while 73% of high schoolers have done the same.

Injury data is hard to come by because North Dakota does not have a health care data system to accurately count and report the number of emergency room or hospital discharge data therefore leaving a large gap in the availability of non-death injury related data. Unintentional injuries are the 5<sup>th</sup> leading cause of death in the United States with 2000 youth dying each year because of this. Motor vehicle injuries accounted for 2.3 million emergency room visits in 2009 with it being the leading cause of death for those ages 5-34. For the years 2005-2009 motor vehicle injuries varied across the five counties: Stutsman, 773; Logan, 29; Barnes, 271; LaMoure, 112; and Wells, 93.

## **Mental Health**

Mental illnesses affect millions of people each year with roughly 1 in 17 Americans living with some type of mental illness. 4 of the 10 leading causes of disability in the United States are due to mental illnesses, the most common being depression, which affects at least 19 million people each year in the United States and is caused by negative life experiences. Experiences like these cause the depression and the untreated depression leads to the 11<sup>th</sup> leading cause of death in America, suicide, which is approximately 1 suicide every 15.2 seconds. 7-10% of North Dakota's

population over 18 years of age had some type of depressive episode while in 2009 there were 89 suicides making it the 9<sup>th</sup> leading cause of death in the state. When it came to depression in the five counties, respondents reporting having more than 8 days of the last 30 where they were feeling sad or blue varied: Stutsman, 11.7%; Logan, 9.8%; Barnes, 9.4%; LaMoure, 7.4%; and Wells, 9.7%.

### **Causes of Hospitalization**

In 2005 ND had the 9<sup>th</sup> highest hospital admission rates in the country at 137/1,000. It was also the 9<sup>th</sup> highest in rates of outpatient visits. Longer lengths of stay in the hospital were longer compared to the nation at 8.8 v. 5.7. This could be due to North Dakota's aging population. This section lists the leading causes of hospitalization for the time period of July 2009-June 2010 for the five counties based on total number of discharges and also by costs via claim payment amount summaries. Cardiac, respiratory, and musculoskeletal health issues were the top three reasons for both cause and cost of hospitalization. Stutsman and Barnes have highest health problems for cardiac at 31.9% and 35.1%, respectively; while Logan, LaMoure, and Wells have highest health problems for respiratory at 33.3%, 40.0%, and 57.4%, respectively. When it comes to leading causes of hospitalization by cost, Stutsman and LaMoure had highest costs for cardiac at 40.0% and 48.0%, respectively, while Logan and Barnes had highest costs for musculoskeletal at 30.0% and 36.0%, respectively, and Wells had highest costs for respiratory at 37.0%.

### **Causes of Death**

When it comes to causes of death, there can be many, therefore this section lists the top 10 causes for the five counties in order and also broken down by age group. Rates can vary between age groups due to different lifestyles, exposures, behaviors, and internal processes along with many other factors. For example, older adults may have a higher rate of mortality due to years of smoking or having a high fat diet whereas adolescent rates of mortality may be more associated with high risk behaviors. The ten leading causes of death for each county were: Heart disease, Cancer, Stroke, Alzheimer's disease, COPD, Unintentional injuries, Diabetes mellitus, Pneumonia & influenza, Cirrhosis of the liver, and Suicide. The three leading causes of death by age group for all counties are unintentional injuries, cancer, and heart.

### **County Rankings**

A tool used to measure the health of a county, the County Health Rankings system is fairly new. It is a funded project by the Robert Wood Johnson Foundation and updated yearly by the University Of Wisconsin School Of Public Health. The goals of the county health ranking system is to get the community involved in improving the health of their community along with helping to educate others on issues that may be of importance to them. There are two summary measures that are used when ranking a community: health factors, which are what influences the county's health and health outcomes, which describe how healthy a community actually is, and those with rankings closest to 1 are healthiest. The five counties ranked as following for overall health factors: Stutsman, 15; Logan was not ranked due to small population; Barnes, 16; LaMoure, 17; and Wells, 13. When it came to health outcomes, the five counties ranked overall as follows: Stutsman, 25; Logan was again not ranked due to small population; Barnes, 5; LaMoure, 26; and Wells, 37.

## Introduction

*“Time And health are two precious assets that we don't recognize and appreciate until they have been depleted.”*

Denis Waitley

In 2009 Central Valley Health District (CVHD) was chosen by the Public Health Accreditation Board (PHAB) to be part of a pilot program that would test the new national voluntary public health accreditation program. Out of 145 applicants, CVHD along with 29 others will work through the process and provide important feedback that helps the voluntary program's launch in 2011 (North Dakota Public Health Association (NDPHA), 2009). The large number of applicants for this program demonstrates that health departments realize the need for national standards and with these standards, health departments will be able to show credibility to the public along with funders and other key stakeholders (NDPHA, 2009).

A community health assessment has not previously been done for Stutsman, Logan, (a.k.a Central Valley Health District) Barnes, LaMoure, and Wells counties. A community health assessment is not only a prerequisite for the accreditation program, but will also help to show the health status of the community as far as demographics and basic information on health care and other possible issues of interest.

The purpose of this 5-county health assessment is to provide the communities and associated stakeholders with information about the health of their citizens. This will facilitate aligning resources to make sure steps are being taken towards the overall goal addressing health concerns within communities. The objectives of this assessment are to:

- i. Gather specific data on behavioral and lifestyle habits, prevalence of risk factors, and disease conditions that are significant for each community.

- ii. Compare this data with that of the state.
- iii. Use this assessment as a tool to show what health needs should be addressed and to help create a community improvement plan.

### **Methodology**

Many sources were used in the creation of this document including: BRFSS data, YRBS data, existing databases from the North Dakota Department of Health (NDDOH), North Dakota Department of Public Instruction (DPI), North Dakota Public Health Association (NDPHA), the North Dakota Immunization Information System (NDIIS). These resources were accessed for health data that was specific to Stutsman, Logan, Barnes, LaMoure, and Wells Counties along with North Dakota. Some databases were not able to provide information for all counties in some areas due to the fact that some counties had too few numbers for a reasonable estimate. It should be noted that every attempt was made to compare the data for the above counties and that of North Dakota. During the review and research of the 2009 data, it was observed that there were some errors found, which could lead to less credible data.

Statewide databases cannot alone be used to accurately provide a complete picture of the health of a community. Sometimes information on health practices or health-related behaviors from other sources, including those at the national level, i.e. Center for Disease Control and Prevention (CDC), United States Department of Agriculture (USDA), etc. is needed.

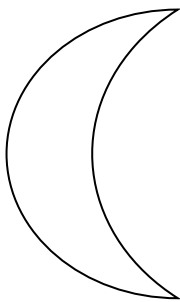
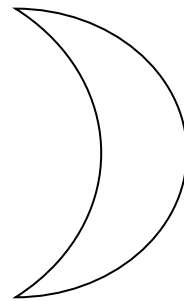
## Acknowledgements

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# DEMOGRAPHICS



## Demographics

According to the US Census Bureau, the population of North Dakota increased by 0.7% between the years 2000 and 2009. During this time period, the populations of Stutsman, Logan, Barnes, LaMoure, and Wells counties all decreased by 6.6%, 18.6%, 8.7%, 16.9%, and 19.8%, respectively. Tables 1.1 and 1.2 illustrate the change in population for the counties and that of North Dakota from the years 2000 to 2009 by total population and by gender (Missouri Census Data center (MCDC), 2010), while Figure 1.1 shows the change in North Dakota's urban and rural population trends for the past 139 years (NDDOH, 2010b). It can be observed in Figure 1.1 that there has been a trend of movement to the urban areas over the years as farming is not the primary source of employment like it has been in the past.

**Table 1.1 Population trends of Stutsman, Logan, Barnes Counties and North Dakota  
2000 to 2009**

	Stutsman County		%	Logan County		%	Barnes County		%
	2000	2009		2000	2009		2000	2009	
<b>Population</b>	21,904	20,463	-7.04	2,316	1,886	-22.8	11,775	10,753	-9.50
<b>Male</b>	10,756	10,294	-4.49	1,147	941	-21.9	5,791	5,332	-8.61
<b>Female</b>	11,148	10,169	-9.63	1,169	945	-23.7	5,984	5,421	-10.4

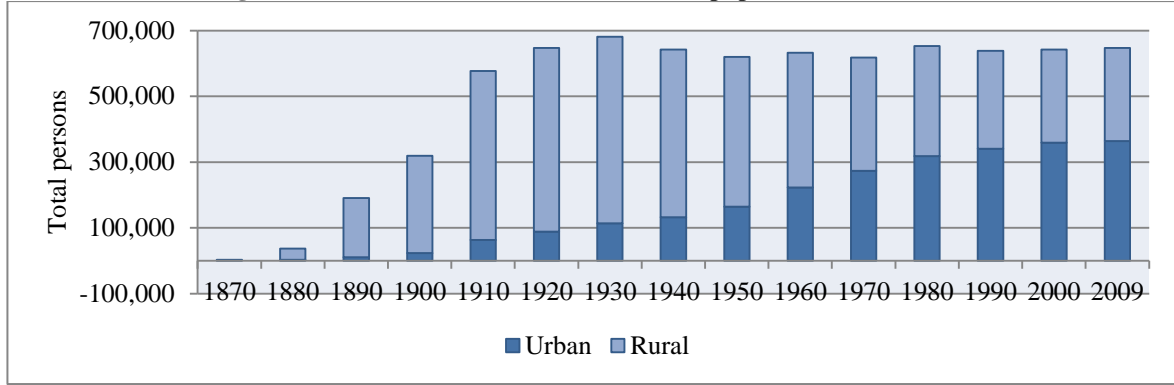
*Note:* The – sign indicates a percent loss in population.

**Table 1.2 Population trends of LaMoure, Wells Counties and North Dakota  
2000 to 2009**

	LaMoure County		%	Wells County		%	North Dakota		%
	2000	2009		2000	2009		2000	2009	
<b>Population</b>	4,701	3,908	-20.3	5,102	4,092	-24.7	642,195	646,844	0.72
<b>Male</b>	2,378	1,961	-21.3	2,507	2,002	-25.2	320,521	325,000	1.38
<b>Female</b>	2,323	1,947	-19.3	2,595	2,090	-24.2	321,674	321,844	0.05

*Note:* The – sign indicates a percent loss in population.

**Figure 1.1 North Dakota’s urban and rural populations since 1870.**



Tables 1.3 and 1.4 show the populations of Stutsman, Logan, Barnes, LaMoure, and Wells counties along with North Dakota by age range in 2009 (MCDC, 2010).

**Table 1.3 Population of Stutsman, Logan, Barnes Counties and North Dakota by age 2009**

	Stutsman County		Logan County		Barnes County		North Dakota	
0 to 4	1,126	5.50%	93	4.93%	563	5.24%	43,401	6.71%
5 to 9	1,053	5.15%	81	4.29%	560	5.21%	37,427	5.79%
10 to 14	1,175	5.74%	128	6.79%	643	5.98%	37,912	5.86%
15 to 19	1,473	7.20%	120	6.36%	793	7.37%	49,126	7.59%
20 to 24	1,625	7.94%	78	4.14%	681	6.33%	64,913	10.04%
25 to 29	1,128	5.51%	46	2.44%	533	4.96%	47,183	7.29%
30 to 34	1,102	5.39%	70	3.71%	548	5.10%	34,552	5.34%
35 to 39	1,056	5.16%	84	4.45%	553	5.14%	35,321	5.46%
40 to 44	1,208	5.90%	102	5.41%	654	6.08%	36,526	5.65%
45 to 49	1,535	7.50%	159	8.43%	777	7.23%	44,685	6.91%
50 to 54	1,708	8.35%	142	7.53%	821	7.64%	46,864	7.25%
55 to 59	1,521	7.43%	131	6.95%	818	7.61%	41,925	6.48%
60 to 64	1,131	5.53%	120	6.36%	663	6.17%	32,139	4.97%
65 to 69	819	4.00%	116	6.15%	533	4.96%	24,084	3.72%
70 to 74	753	3.68%	122	6.47%	488	4.54%	20,284	3.14%
75 to 79	694	3.39%	104	5.51%	377	3.51%	17,829	2.76%
80 to 84	636	3.11%	87	4.61%	346	3.22%	15,313	2.37%
85+	720	3.52%	103	5.46%	402	3.74%	17,360	2.68%
<b>Totals</b>	<b>20,463</b>	<b>100%</b>	<b>1,886</b>	<b>100%</b>	<b>10,753</b>	<b>100%</b>	<b>646,844</b>	<b>100%</b>

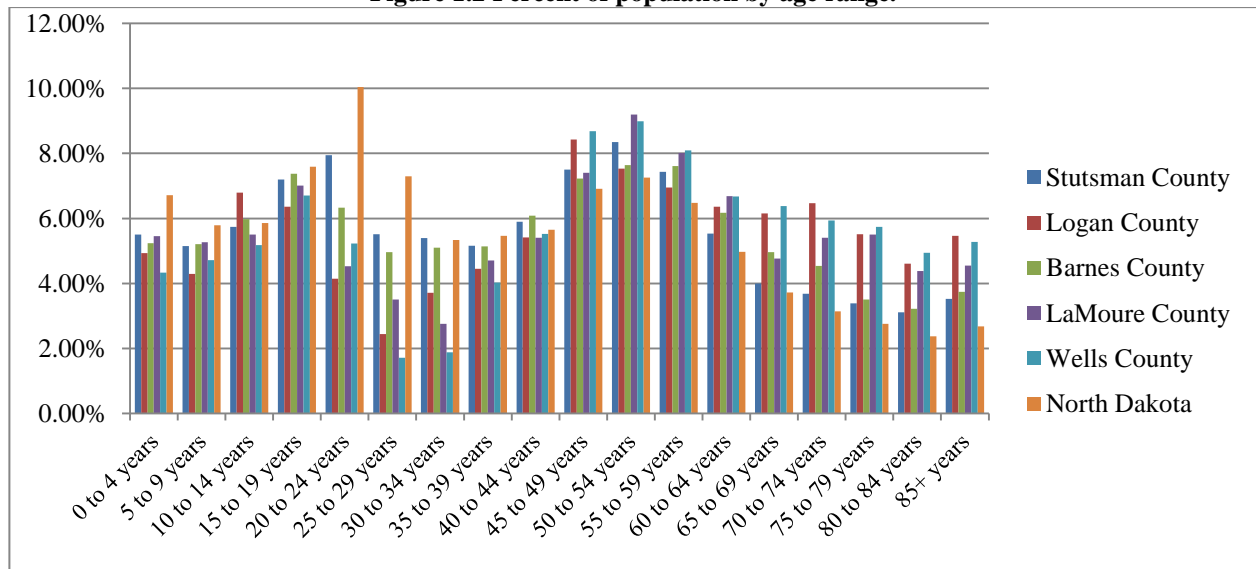
**Table 1.4 Population of LaMoure, Wells Counties and North Dakota by age 2009**

	LaMoure County		Wells County		North Dakota	
0 to 4	213	5.45%	177	4.33%	43,401	6.71%
5 to 9	206	5.27%	193	4.72%	37,427	5.79%
10 to 14	215	5.50%	212	5.18%	37,912	5.86%

15 to 19	274	7.01%	274	6.70%	49,126	7.59%
20 to 24	177	4.53%	214	5.23%	64,913	10.04%
25 to 29	137	3.51%	70	1.71%	47,183	7.29%
30 to 34	108	2.76%	77	1.88%	34,552	5.34%
35 to 39	184	4.71%	165	4.03%	35,321	5.46%
40 to 44	211	5.40%	226	5.52%	36,526	5.65%
45 to 49	289	7.40%	355	8.68%	44,685	6.91%
50 to 54	359	9.19%	368	8.99%	46,864	7.25%
55 to 59	313	8.01%	331	8.09%	41,925	6.48%
60 to 64	261	6.68%	273	6.67%	32,139	4.97%
65 to 69	186	4.76%	261	6.38%	24,084	3.72%
70 to 74	211	5.40%	243	5.94%	20,284	3.14%
75 to 79	215	5.50%	235	5.74%	17,829	2.76%
80 to 84	171	4.38%	202	4.94%	15,313	2.37%
85+	178	4.55%	216	5.28%	17,360	2.68%
<b>Totals</b>	<b>3,908</b>	<b>100%</b>	<b>4,092</b>	<b>100%</b>	<b>646,844</b>	<b>100%</b>

Figure 1.2 shows the comparison of population by age for Stutsman, Logan, Barnes, LaMoure, and Wells counties along with North Dakota. By observation, this figure shows that there is quite a range of ages for each county with LaMoure County having the highest amount of 50-54 year olds and lowest amount of 25-34 year olds (MCDC, 2010).

Figure 1.2 Percent of population by age range.



The population by gender varies slightly among counties but all, including North Dakota, have almost equal amounts of females and males. Table 1.5 highlights these percentages for 2009 (MCDC, 2010).

**Table 1.5 Gender differences between Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota 2009**

	<b>Stutsman</b>	<b>Logan</b>	<b>Barnes</b>	<b>LaMoure</b>	<b>Wells</b>	<b>North Dakota</b>
<b>Male</b>	50.3%	49.9%	49.6%	50.2%	48.9%	50.2%
<b>Female</b>	49.7%	50.1%	50.4%	49.8%	51.1%	49.8%

It is also possible to view the racial makeup of the counties and North Dakota for the year 2009. Table 1.6 illustrates this (MCDC, 2010).

**Table 1.6 Racial makeup for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota 2009**

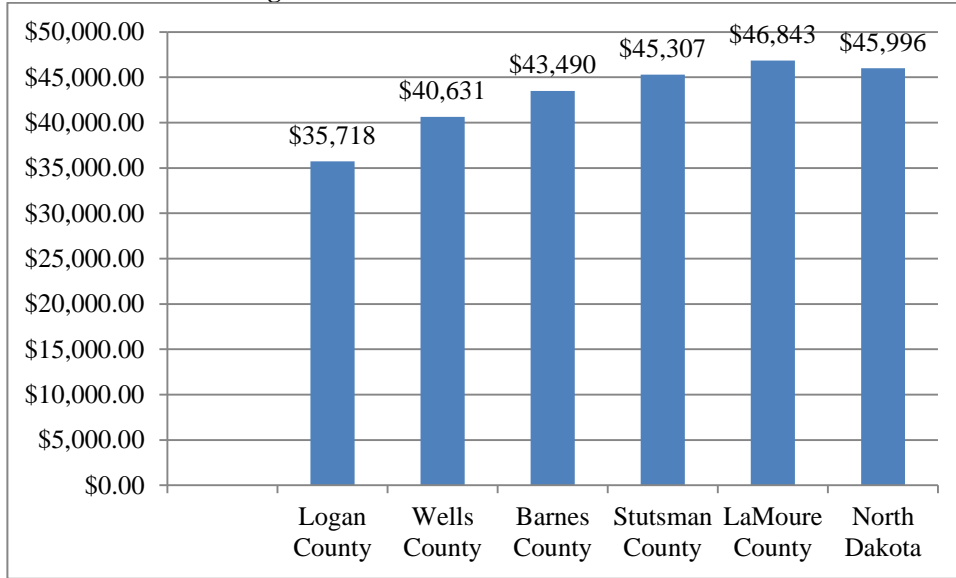
	<b>Stutsman</b>	<b>Logan</b>	<b>Barnes</b>	<b>LaMoure</b>	<b>Wells</b>	<b>North Dakota</b>
<b>White</b>	96.5%	98.8%	96.7%	99.3%	98.5%	91.1%
<b>African American</b>	0.45%	0.11%	1.2%	0.05%	0.17%	1.2%
<b>American Indian and Alaskan</b>	1.6%	0.16%	1.1%	0.23%	0.46%	5.6%
<b>Asian</b>	0.51%	0.21%	0.33%	0.15%	0.56%	0.8%
<b>Native Hawaiian and other Pacific Islanders</b>	0.04%	0.0%	0.0%	0.0%	0.0%	0.05%

A household is that in which consists of all the people living in one housing unit regardless if they are related or not. Table 1.7 lists the median income per household for Stutsman, Logan, Barnes, LaMoure, and Wells counties including North Dakota for the year 2008 (National Association of Counties (NACo), 2010). Figures 1.3 and 1.4 illustrate the comparison of these numbers.

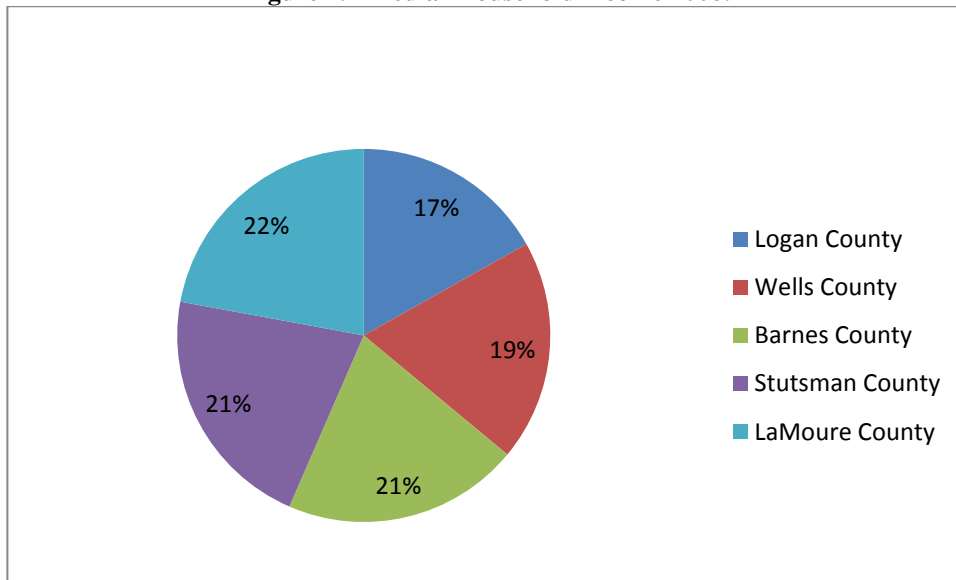
**Table 1.7 Median household income for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota 2008**

	<b>Stutsman</b>	<b>Logan</b>	<b>Barnes</b>	<b>LaMoure</b>	<b>Wells</b>	<b>North Dakota</b>
<b>Median household income</b>	\$45,307	\$35,718	\$43,490	\$46,843	\$40,631	\$45,996

**Figure 1.3 Median household income 2008.**



**Figure 1.4 Median household income 2008.**



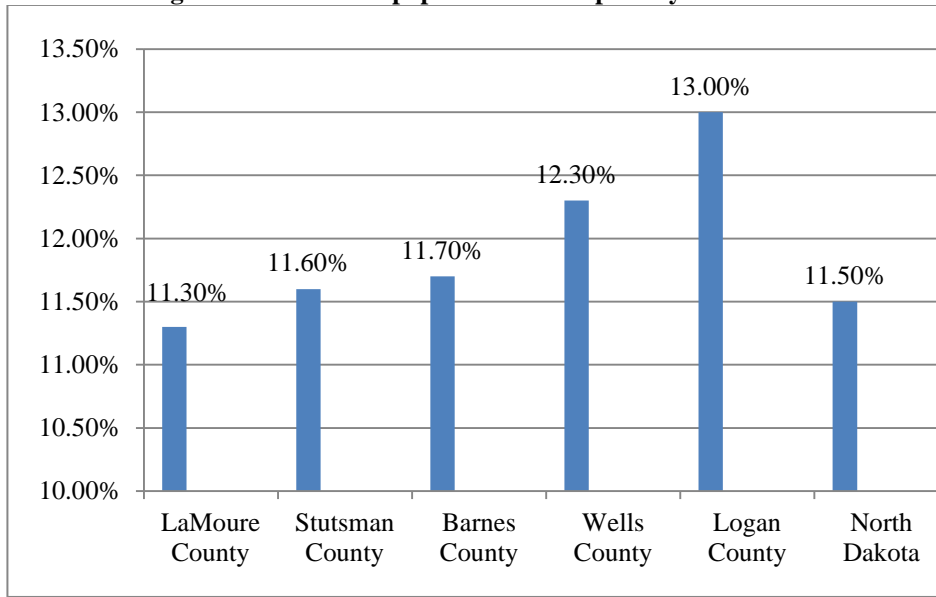
“Poverty refers to a condition in which one is unable to afford basic human needs, such as clean water, nutrition, health care, education, clothing, and shelter” (NDDOH, 2010b). According to the NDDOH (2010b), approximately 12% of North Dakotans live in poverty, which is slightly less than the national average of 13%, while 14% of North Dakota children were impoverished. Table 1.8 shows the percentage of the population below poverty level for Stutsman, Logan, Barnes, LaMoure, and Wells counties including North Dakota for the year 2008 (NACo, 2010).

Figure 1.5 illustrates the comparison of these percentages and Figure 1.6 shows the statewide map for child impoverishment (NDDOH, 2010b).

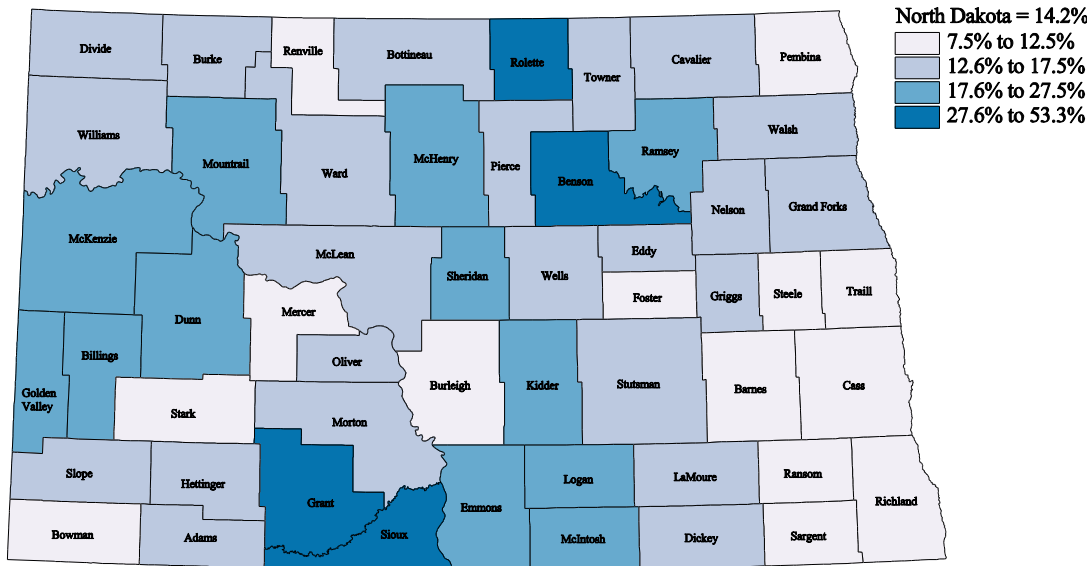
**Table 1.8 Percent of population below poverty level for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota 2008**

	Stutsman	Logan	Barnes	LaMoure	Wells	North Dakota
Percent population below poverty level	11.6%	13.0%	11.7%	11.3%	12.3%	11.5%

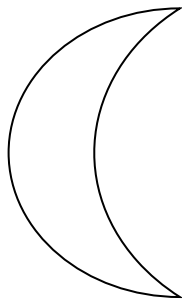
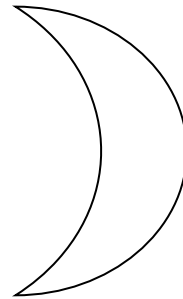
**Figure 1.5 Percent of population below poverty level 2008.**



**Figure 1.6 Percent children 0-17 living in poverty in North Dakota for 2008.**



# ACCESS TO HEALTH CARE



## Access to Health Care

Having access to health care services can strongly sway the use of health care and overall health outcomes. Being able to measure access to health care is important when trying to evaluate the quality of the nation's health care system. When there are boundaries to this access, beyond that of simple issues as shortage of providers or facilities, people may feel put out or that they are not worthy of receiving this access. Even in places where access is readily available, people may not necessarily have a primary source of health care or still may run into barriers to receive it (West Allis-West Milwaukee Community Health Assessment (WAWM), 2002).

Table 2.1 shows the percentages of people who have no health care coverage at all (NDDOH, 2009a).

<b>Table 2.1 Percent of population not having health coverage of any kind for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota</b>						
	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (2006)</b>
<b>Percent population with no health coverage</b>	8.4%	13.3%	11.2%	14.2%	9.1%	11.6%

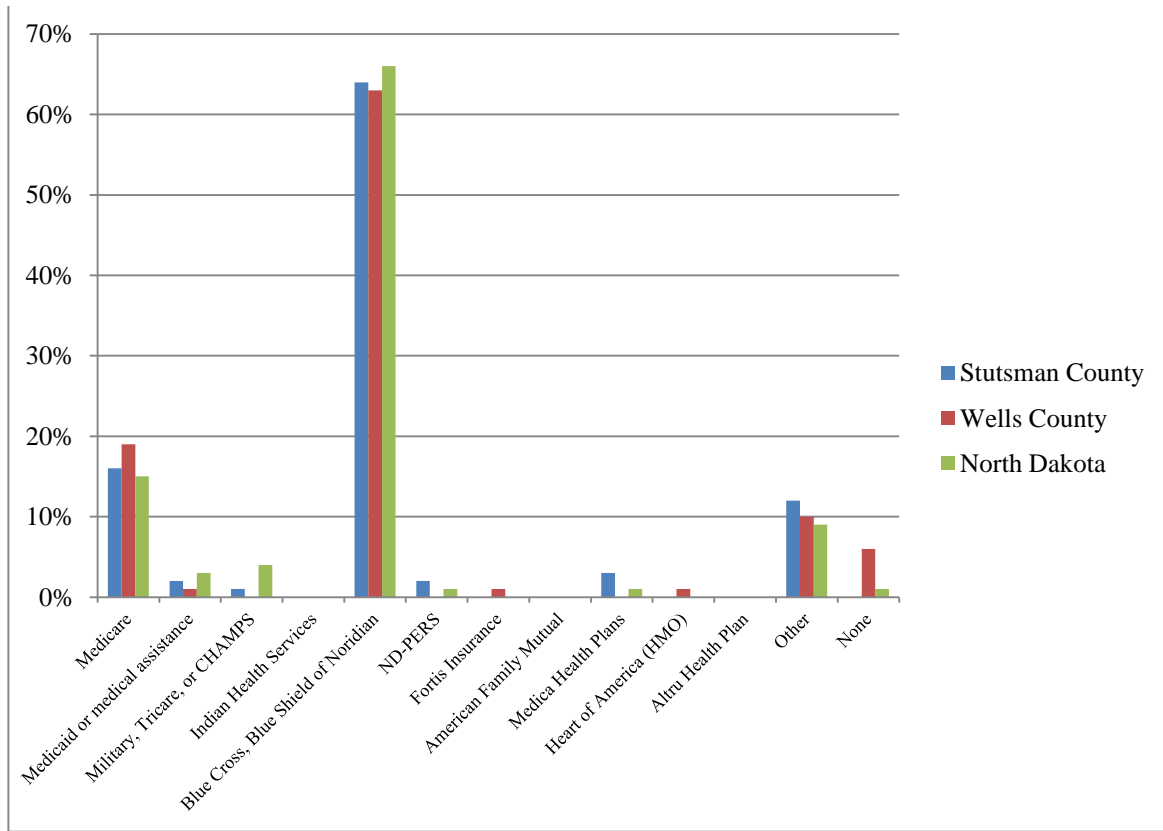
“The lack of health insurance has a profound impact on individuals and the health care system” (Wakefield, Volkov, & Opsahl, 2009, slide 21). Because North Dakota is such a rural state, there is limited access to health services due to geographical distances, shortage of health professionals, lack of adequate coverage, and an imbalance between reimbursement and costs. Those most affected are the rural residents, young adults, American Indians, and people who work for small employers (Wakefield, Volkov, & Opsahl, 2009, slide 21). The workforce of North Dakota is also being affected as there is a concern of certain health profession shortages including: primary care (81%), mental health (90%), and oral health (28%) (Wakefield, Volkov, and Opsahl, 2009, slide 22).

In 2005, North Dakota had the 9<sup>th</sup> highest hospital admission rates in the country at 137 per 1,000 and the 9<sup>th</sup> highest rates of outpatient visits with longer lengths of stay in a hospital compared to the nation, i.e. 8.8 days vs. 5.7 days (Wakefield, Volkov, and Opsahl, 2009, slide 23). Table 2.2 shows the percentage of people who were unable to see a physician due to costs during a 12 month period, which indicates that access to health care is for the most part good (NDDOH, 2009a).

**Table 2.2 Percent of population not able to see a physician due to costs in a 12 month period for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent population unable to see physician</b>	5.3%	16%	6.1%	2.9%	4.4%	6.2%

Though there are many different types of health care coverage in North Dakota, Blue Cross and Blue Shield is by far the most common used. Sixty-six percent of respondents in North Dakota reported their health coverage was Blue Cross/Blue Shield with sixty-four percent for Stutsman County and sixty-three percent for Wells County under the same coverage (NDDOH, 2009a). It should be noted that Barnes, Logan, and LaMoure Counties were not part of the initial survey so there is no data available for types of medical coverage. Figure 2.1 details the percent of various types of health care coverage held by respondents.



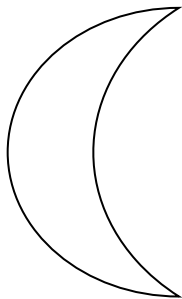
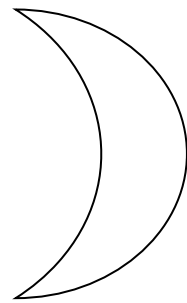
For North Dakota, it can be observed that regardless of income, the majority of residents are covered with some type of health care coverage. Table 2.3 depicts the percentages of those who do and do not have coverage based on income (CDC, 2009b).

	< \$15,000	\$15,000- 24,999	\$25,000- 34,999	\$35,000- 49,999	> \$50,000
<b>Yes</b>	81.4%	76%	88.1%	93.9%	94.5%
<b>No</b>	18.6%	24%	11.9%	6.1%	5.5%

Most North Dakotans regardless of education predominantly have health care coverage/insurance. Table 2.4 shows percentages based on education (CDC, 2009a).

	< H. S.	H.S or G.E.D.	Some post H.S.	College Graduate
<b>Yes</b>	80.1%	83.2%	90.3%	95.9%
<b>No</b>	19.9%	16.8%	9.7%	4.1%

# PREVENTATIVE HEALTH CARE



### Preventative Health Care

“Premature mortality is preventable” (WAWM, 2002 p. 12). Even though screenings and immunizations are extremely important preventable services, it is also important that people take the responsibility to change personal behaviors before clinical diseases develop.

WAWM (2002) explains that experts believe more than 50% of diseases/conditions that lead to premature death can be eliminated. By identifying factors that contribute to disease, it is possible for individuals and communities to make the proper changes needed to help reduce the chances of premature death. Table 3.1 demonstrates the relationship between several risk factors and diseases/conditions (WAWM, 2002).

**Table 3.1 Prevention Opportunities**

```

    graph LR
      A([Community Contributor]) --> B([Risk Factors])
      B --> C([Disease and Injury])
      C --> D([Death])
  
```

Prevention by Risk Reduction	HIV/AIDS	Injuries	Cancer	Homicide	Heart Disease	Suicide	Stroke	Infant Health	Teen Pregnancy
Avoid Alcohol Consumption	√	√	√	√		√		√	√
Avoid Drug Use	√	√	√	√		√		√	√
Regular Exercise					√		√		
Maintain Normal Body Weight					√		√	√	
Healthy Diet			√		√		√	√	
Avoid Tobacco Use		√	√		√		√	√	
Healthy Sexual Activity	√			√	√	√			
Avoid Violence/ Stress		√							
Limit Availability of Guns				√		√			
Breast Self-Exam			√						
Testicular Self-Exam			√						
Avoid Sun Overexposure			√						
Birth Control								√	√
Seatbelts		√							
Car Seats		√							
Blood Pressure Screening					√		√		
Cholesterol Testing					√				
Colorectal Exam			√						
Mammogram			√						
Pap Smear			√						
Pelvic Exam			√						
Prostate Exam			√						
Control Blood Sugar					√		√	√	

### General Health

The general health for Stutsman, Logan, Barnes, LaMoure, and Wells Counties and North Dakota is good according to the percentage of those whose health is poor or fair (Table 3.2) (NDDOH, 2009a).

**Table 3.2 Percent of population who stated their general health was poor or fair for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent population with poor/fair health</b>	16.5%	12.6%	12.1%	14.0%	16.4%	13.4%

### **Women's Health**

“Forty-eight percent of new breast cancer cases and 50% of breast cancer deaths occur in women ages 65 and over” (WAWM, 2002 p. 13). There are many risk factors for breast cancer with those of most importance including: being of the female gender, living in North America or Northern Europe, and being of older age (WAWM, 2002). It is important to note that breast cancer is overwhelmingly female though men do occasionally get it with only about 1 in 100 breast cancer deaths occurring in males (Dr. Stephen Pickard, personal communication, December 1, 2010). The American Cancer Society (ACS) recommends that women over the age of 40 should be having a yearly mammogram and women over the age of 20 should do a breast self-exam monthly (ACS, 2002a). Table 3.3 shows the percentage of women over 40 who have not had a mammogram in the past two years for Stutsman, Logan, Barnes, LaMoure, and Wells Counties and North Dakota (NDDOH, 2009a).

**Table 3.3 Percent of women 40 and older who have not had a mammogram in the past two years for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent women over 40 not having mammogram in the past 2 years</b>	18.9%	17.5%	23.1%	N/A	35.9%	23.1%

*Note:* No data available for LaMoure County.

The ACS (2002a) also recommends that Pap smear tests be administered at age 18 or with the onset of sexual activity, but after the age of 30 if there has been three normal results, it is possible to be tested every 2-3 years. Table 3.4 depicts the percentage of women over 18 who have not had a Pap smear test in the last 3 years for Stutsman, Logan, Barnes, LaMoure, and Wells Counties including North Dakota (NDDOH, 2009a).

**Table 3.4 Percent of women over 18 who have not had a Pap smear in the past three years for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent women over 18 not having a Pap smear in the past 3 years</b>	25.0%	N/A	18.6%	N/A	15.2%	17.2%

*Note:* No data available for Logan and LaMoure Counties.

## Men's Health

“Prostate cancer is the most commonly diagnosed form of cancer (other than skin cancer) and the second leading cause of cancer death among males in the US” (WAWM, 2002 p. 15). Prostate cancer is more commonly found in men over the age 65 but important risk factors for getting this cancer include: being of the male gender, being African-American, or having a brother or father diagnosed with prostate cancer early in life (ACS, 2002b). The ACS (2002b) recommends that men start getting yearly PSA tests starting at age 50 (or 45 if at higher risk).

Table 3.5 shows the percentages of men who have not had a PSA test in the last two years for Stutsman, Logan, Barnes, LaMoure, and Wells Counties including North Dakota (NDDOH, 2009a).

<b>Table 3.5 Percent of men over 40 who have not had a PSA test in the past two years for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota</b>						
	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent men over 40 not having a PSA test in the last 2 years</b>	56.0%	N/A	52.4%	N/A	41.7%	45.4%

*Note:* No data available for Logan and LaMoure Counties.

### **Colorectal Cancer**

Colorectal cancer can occur at any age but usually happens in people over 50. Detection can be found by doing a yearly fecal occult blood test, a sigmoidoscopy every 5 years, a colonoscopy every 10 years, a virtual colonoscopy, a double contrast barium enema every 5 years, a digital rectal exam, or a combination of the fecal occult blood test and sigmoidoscopy every 5 years (NCI, 2008). This type of cancer is the third most common type of non-skin cancer in both women and men and is the second leading cause of cancer death in the US following lung cancer with more than 145,000 new cases diagnosed and 49,000 dying over the past five years (NCI, 2008). Table 3.6 describes the percentage of those over 50 who have not had a sigmoidoscopy or colonoscopy for Stutsman, Logan, Barnes, LaMoure, and Wells Counties including North Dakota (NDDOH, 2009a).

**Table 3.6 Percent population over 50 who have never had a sigmoidoscopy or colonoscopy in the past five years for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2008-2007)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent over 50 not having colorectal screening</b>	64.0%	N/A	51.6%	N/A	76.1%	62.1%

*Note:* No data available for Logan and LaMoure Counties.

**Influenza**

Influenza (the flu) is a contagious respiratory illness caused by viruses that can cause mild to severe sickness and even death. In the United States each year, thousands of people are affected by the flu with those at higher risk being the elderly, the young, pregnant women, and those with underlying medical conditions, i.e. bronchitis, pneumonia, sinus infection, or ear infections (CDC, 2010a). Though the best way to avoid getting the flu is by being vaccinated annually, there are different strains that don’t always have a vaccine because there is a possibility that the virus mutated and there is not a current vaccine to match this altered version in circulation and must be formulated, i.e. the H1N1 flu of 2009 was the first pandemic flu in almost 40 years (CDC, 2010a). Table 3.7 describes those over 65 who have not had an influenza vaccine in the past year from Stutsman, Logan, Barnes, LaMoure, and Wells counties including North Dakota (NDDOH, 2009a).

**Table 3.7 Percent population over 65 who have not had an influenza vaccine in the past 12 months for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2008-2007)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent over 65 not having influenza vaccine</b>	29.8%	N/A	25.7%	N/A	29.7%	28.4%

*Note:* No data available for Logan and LaMoure Counties.

**Pneumococcal Disease**

Globally pneumonia accounts for more deaths than any other infectious disease, with a child dying every 15 seconds somewhere in the world (CDC, 2010b). Though this disease can be devastating, it can be prevented through vaccines and treatments that are available. Pneumonia can affect people of all ages but certain age groups are at higher risk including: children under 5, adults over 65, those ages in between who may have underlying medical conditions, i.e. HIV/AIDS, and those who may smoke or have asthma (CDC, 2010b). Table 3.8 depicts those over 65 who have not had a pneumococcal vaccine in the past year for Stutsman, Logan, Barnes, LaMoure, and Wells Counties including North Dakota (NDDOH, 2009a).

**Table 3.8 Percent population over 65 who have not had an pneumococcal vaccine in the past 12 months for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent over 65 not having pneumococcal vaccine</b>	34.9%	N/A	30.1%	N/A	28.2%	31.6%

*Note:* No data available for Logan and LaMoure Counties.

**Oral Health**

Oral health is an essential part of a person’s everyday life though it is often taken for granted. Oral diseases, which can vary from cavities to oral cancer, cause millions of Americans each year to have pain and even disability (CDC, 2010c). Most of these diseases can be prevented if people are willing to do basic things like brush their teeth, floss often, and use fluorinated water (CDC, 2010c). Table 3.9 shows the percentage of those who have not had a dental visit in the last year along with those who have lost 6 or more teeth due to oral diseases for Stutsman, Logan, Barnes, LaMoure, and Wells Counties along with North Dakota (NDDOH, 2009a).

**Table 3.9 Percent population who have not had a dental visit in the past year and those who have lost 6 or more teeth due to gum disease or decay for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

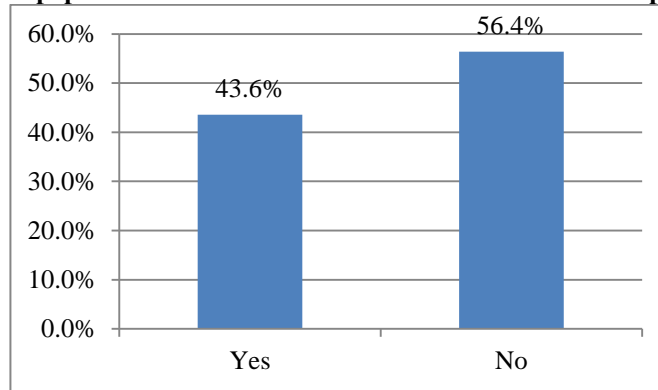
	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent not having dental visit</b>	35.9%	33.1%	34.0%	32.9%	41.7%	25.9%
<b>Percent having lost teeth</b>	27.4%	24.7%	27.2%	21.0%	35.0%	14.9%

**Sun Exposure**

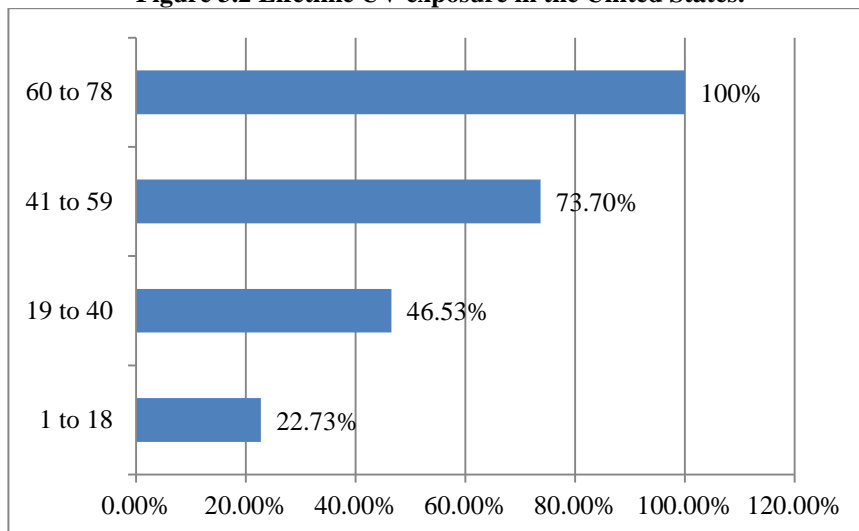
According to the SCF (2010), skin cancer is the most common form of cancer in the United States with approximately 3.5 million new cases diagnosed annually. One in five Americans will develop skin cancer at some point during their life as this type of cancer has a higher incidence of breast, prostate, and lung cancers combined (SCF, 2010). Not only is skin cancer common, it is also very expensive. In 2004 the direct treatment of non-melanoma skin cancers was more than \$1 billion dollars (SCF, 2010). It should be noted that most forms of skin cancer are basal cell and squamous cell cancers in areas exposed to the sun, which normally do not metastasize but can be locally persistent (Dr. Stephen Pickard, personal communication, December 1, 2010).

It is now known that 90% of non-melanoma skin cancers are due to the UV rays given off by the sun as are 90% of the changes commonly associated with aging (SCF, 2010). Many of these skin cancers could be eliminated by limiting exposure to the sun, artificial sources, wearing proper clothing, and using sunscreen with at least an SPF of 15 or higher (SCF, 2010). Figure 3.1 shows respondents who have been sun burnt or not in the past year (NDDOH, 2009b) and figure 3.2 shows the lifetime UV exposure in the United States based on a 78 year lifespan (SCF, 2010).

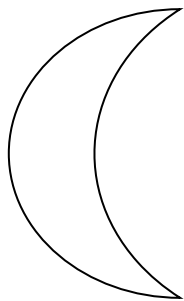
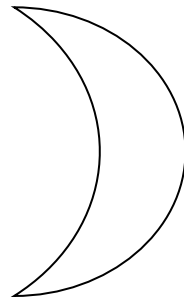
**Figure 3.1 Percentage of population who have had or not had a sunburn in the past 12 months for 2004.**



**Figure 3.2 Lifetime UV exposure in the United States.**



# MATERNAL HEALTH



## Maternal Health

“Approximately 6 million American women become pregnant each year, and more than 10,000 give birth each day” (WAWM, 2002 p. 24). Having a safe pregnancy begins before conception happens; how the woman takes care of herself on a day-to-day basis will affect the outcome. Once pregnant, a safe motherhood will continue with the appropriate prenatal care, the prevention of complications when possible, and by getting early treatment if any complications occur (WAWM, 2002). The ultimate goal is to have a safe delivery of a healthy infant along with keeping the mother well in the process. There have been studies that have shown that at least half of all pregnancy complications could be eliminated with better access to health care, better quality care, and better personal and lifestyle habits, i.e. no drinking, no smoking, etc. (WAWM, 2002). The Mayo Clinic (2010) goes on further to explain that age is also a risk.

In 2008 the United States had 4,251,095 births, which was down 2% from 2007, with 8,931 of these births residing in North Dakota (NDDOH, 2008a). Table 4.1 describes key birth indicators for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for the years 2004-2008 (NDDOH, 2009a).

**Table 4.1 Key birth indicators for Stutsman, Logan, Barnes, LaMoure, and Wells Counties and North Dakota for the years 2004-2008**

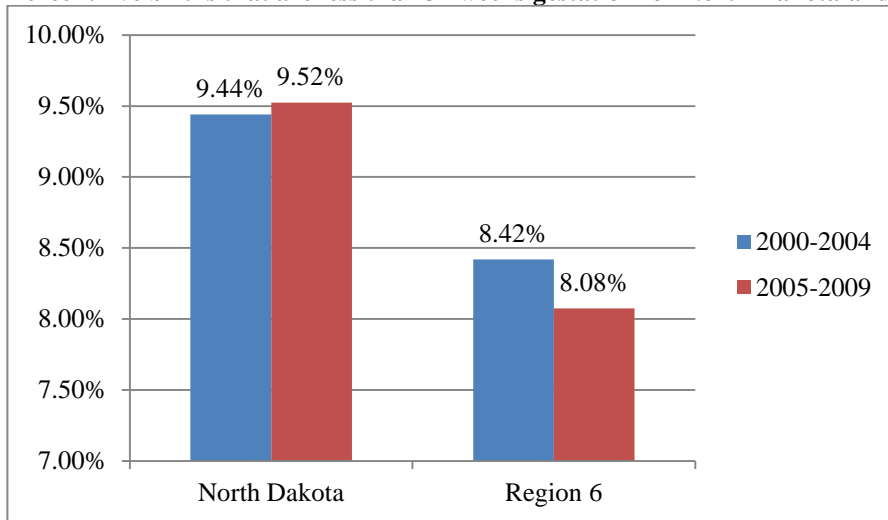
	Stutsman		Logan		Barnes		LaMoure		Wells	
	Number	Ratio	Number	Ratio	Number	Ratio	Number	Ratio	Number	Rate
Live Births	1,115	10	81	7	532	9	225	10	170	6.7
Pregnancies	1,227	11	85	7	580	10	238	10	184	7.2
Teen Births	88	14	0	0	44	12	11	7	19	13
Teen Pregnancies	118	18	0	0	59	16	12	7	22	15
									Number	Ratio
Out of Wedlock Births	354	317	0	0	162	305	39	173	49	288
Out of Wedlock Pregnancies	456	372	0	0	184	317	42	176	53	312
Low Birth Weight	88	79	0	0	7	13	11	49	*	*

North Dakota		
	Number	Rate
Live Births	42,925	13
Pregnancies	47,350	15
Teen Births	3,306	17
Teen Pregnancies	4,097	21
	Number	Ratio
Out of Wedlock Births	13,743	320
Out of Wedlock Pregnancies	16,862	356
Low Birth Weight	2,823	66

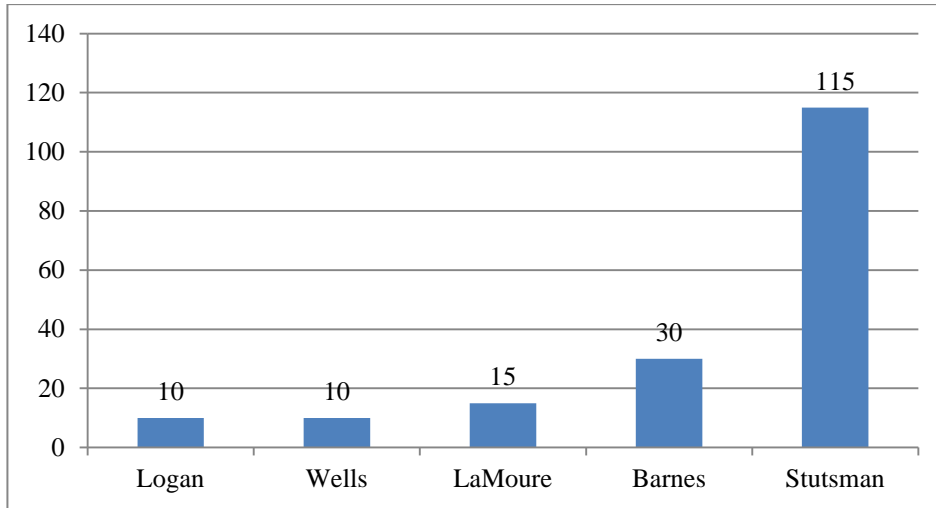
Note: \* denotes fewer than five

Figure 4.1 shows the number of live preterm births (less than 37 weeks gestation) for North Dakota’s regions, including Region VI, consisting of Stutsman, Logan, Barnes, LaMoure, and Wells Counties comparing the years 2000-2004 and 2005-2009 (NDDOH, 2010b). Figure 4.2 further breaks down the number of preterm births (less than 36 weeks gestation) for Region VI: Stutsman, Logan, Barnes, LaMoure, and Wells counties for the years 2005-2009 (NDDOH, 2010b).

**Figure 4.1 Percent live births that are less than 37 weeks gestation for North Dakota and Region VI.**

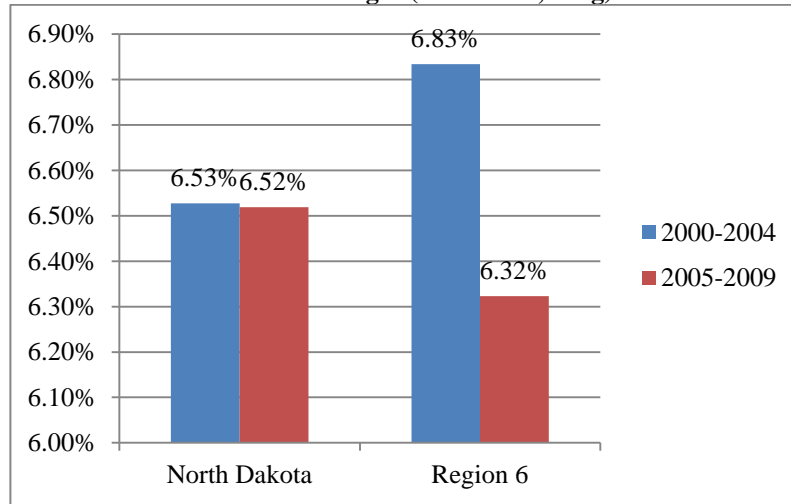


**Figure 4.2 Number preterm births less than 36 weeks for the five counties for years 2005-2009.**

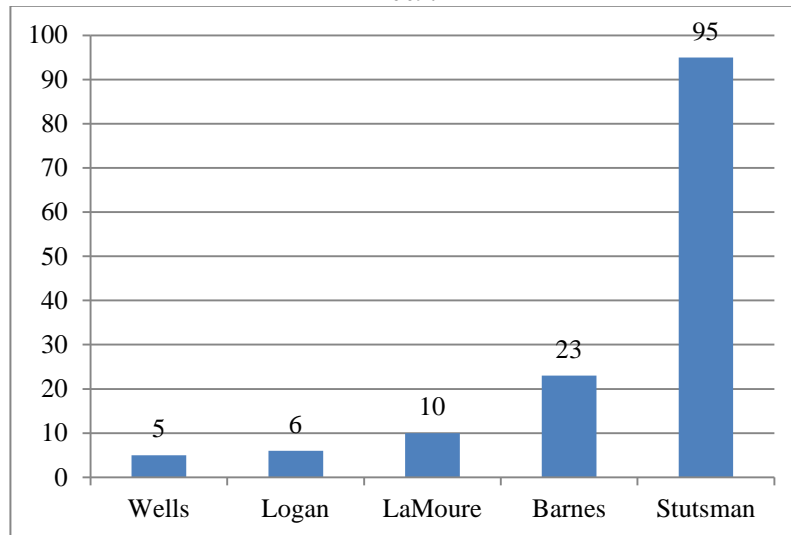


The March of Dimes (MOD) (2010) defines low birth weight as babies who weigh less than 5 pounds 8 ounces, or 2,500 grams. Babies born with a low birth weight have a higher risk for serious health problems as newborns, lasting disabilities and even death (MOD, 2010). Though medical care of premature babies has greatly reduced deaths, 1 in 12 babies in the United States are born at a low birth weight with a small percentage of survivors having mental retardation, learning problems, cerebral palsy, or vision and hearing loss (MOD, 2010). Figure 4.3 shows the number of babies born at a low birth weight (less than 2,500 g) for North Dakota's regions, including Region VI, consisting of Stutsman, Logan, Barnes, LaMoure, and Wells Counties comparing the years 2000-2004 and 2005-2009 (NDDOH, 2010b). Figure 4.4 further breaks down the number of low birth weights for Region VI: Stutsman, Logan, Barnes, LaMoure, and Wells counties for the years 2005-2009 (NDDOH, 2010b).

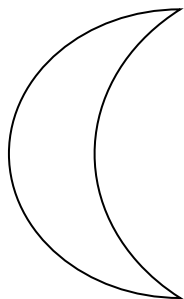
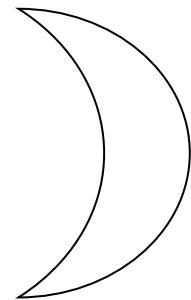
**Figure 4.3 Percent births born at a low birth weight (less than 2,500 g) for North Dakota and Region VI.**



**Figure 4.4 Number births born at a low birth weight (less than 2,500 g) for the five counties for years 2005-2009.**



# COMMUNICABLE DISEASE



## Communicable Disease

Merriam-Webster (2010) describes a communicable disease as being that in which is “transmissible (as from person to person) by direct contact with an affected individual or the individual’s discharges or by indirect means (as by a vector).” Though physicians and laboratories are required by law to report certain communicable diseases to their local or state health department, many go unreported, which could lead to outbreaks for some diseases. Reasons for not reporting a disease could vary from people feeling they don’t have anything out of the ordinary to being afraid they’ll cause a scare when in reality the disease may be nothing at all. Lack of reporting may increase this risk of spreading diseases if it were assumed that an action from public health units would have been indicated had each instance been reported (personal communication, Dr. Stephen Pickard, December 1, 2010).

The goal of a health department is to study the source of where the disease originated so it does not spread to others and cause a serious situation. In North Dakota there are many diseases that should be immediately reported to the state health department, some that can be reported in 7 days, those that may contain bioterrorism agents, and those requiring that an isolate sample be sent to North Dakota Public Health Laboratory. Tables 5.1-5.6 describes some of those diseases and how many cases were reported for each for Stutsman, Logan, Barnes, LaMoure, and Wells Counties including North Dakota (NDDOH, 2007 and NDDOH, 2010a).

	2002	2003	2004	2005	2006	2007	2008	2009	2010*
<b>Campylobacteriosis</b>	1	2	6	5	2	2	3	2	5
<b>Chickenpox</b>	0	0	0	0	0	0	0	3	2
<b>Chlamydia</b>	-	-	-	-	-	-	-	-	-
<b>Cryptosporidiosis</b>	0	0	0	1	0	0	0	2	0
<b>E. Coli shiga toxin+</b>	0	1	0	0	1	0	0	2	0
<b>E. Coli 0157:H7</b>	-	-	-	-	-	-	-	-	-
<b>Enterococcus, vancomycin-resistant (VRE)</b>	0	1	1	0	1	3	3	24	9

Giardiasis	1	2	0	0	0	2	3	2	1
Gonorrhea	-	-	-	-	-	-	-	-	-
Hantavirus	-	-	-	-	-	-	-	-	-
Hepatitis A, acute	0	0	0	0	0	1	0	0	0
Hepatitis B, acute	-	-	-	-	-	-	-	-	-
Hepatitis C, acute	-	-	-	-	-	-	-	-	-
HIV/AIDS	-	-	-	-	-	-	-	-	-
Influenza	-	-	-	-	-	-	-	-	-
Invasive Influenza	0	1	1	0	1	0	0	0	0
Legionellosis	0	0	0	0	0	0	0	0	0
Listeriosis	0	0	0	0	0	0	0	0	0
Lyme Disease	0	0	0	0	0	0	0	1	0
Malaria	-	-	-	-	-	-	-	-	-
Meningitis bacteria	-	-	-	-	-	-	-	-	-
Meningococcal disease	0	0	0	0	0	1	1	0	1
Mumps	0	0	0	0	0	0	0	0	0
Pertussis	1	0	7	1	0	0	0	0	0
Q-fever	0	0	0	0	0	0	0	0	0
Rabies (animal)	5	2	5	2	2	4	2	0	1
Rocky Mt. spotted fever	-	-	-	-	-	-	-	-	-
Salmonellosis	2	3	3	4	1	2	2	0	0
Shigellosis	0	0	0	0	2	0	2	3	0
Staphylococcus aureus (MRSA)	17	53	91	82	127	19	3	5	2
Streptococcal disease	1	0	1	3	1	3	0	0	0
Streptococcal pneumonia	0	3	0	0	0	0	0	0	0
Syphilis	-	-	-	-	-	-	-	-	-
Trichinosis	-	-	-	-	-	-	-	-	-
Tuberculosis	-	-	-	-	-	-	-	-	-
Tularemia	-	-	-	-	-	-	-	-	-
Typhoid fever	-	-	-	-	-	-	-	-	-
West Nile Virus	2	30	0	5	4	21	1	0	1

Note: \* indicates preliminary data, - indicates disease not listed.

Table 5.2 Communicable diseases reported for Logan County years 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010*
Campylobacteriosis	5	0	0	3	1	2	0	8	8
Chickenpox	0	0	0	0	0	0	0	1	0
Chlamydia	-	-	-	-	-	-	-	-	-
Cryptosporidiosis	0	0	0	0	1	1	0	0	0
E. Coli shiga toxin+	0	1	0	0	0	0	0	0	0
E. Coli 0157:H7	-	-	-	-	-	-	-	-	-
Enterococcus, vancomycin-resistant (VRE)	0	0	0	0	0	0	0	6	0
Giardiasis	0	0	1	0	1	7	0	4	3
Gonorrhea	-	-	-	-	-	-	-	-	-

Hantavirus	-	-	-	-	-	-	-	-	-
Hepatitis A, acute	0	0	0	0	0	0	0	0	0
Hepatitis B, acute	-	-	-	-	-	-	-	-	-
Hepatitis C, acute	-	-	-	-	-	-	-	-	-
HIV/AIDS	-	-	-	-	-	-	-	-	-
Influenza	-	-	-	-	-	-	-	-	-
Invasive Influenza	0	0	0	0	0	0	0	0	0
Legionellosis	0	0	0	0	0	0	0	0	0
Listeriosis	0	0	0	0	0	0	0	0	0
Lyme Disease	0	0	0	0	0	0	0	0	0
Malaria	-	-	-	-	-	-	-	-	-
Meningitis bacteria	-	-	-	-	-	-	-	-	-
Meningococcal disease	0	0	0	0	0	0	0	0	0
Mumps	0	0	0	0	0	0	0	0	0
Pertussis	0	0	1	0	0	0	0	2	0
Q-fever	0	0	0	0	0	0	0	0	0
Rabies (animal)	0	1	1	1	1	1	0	2	0
Rocky Mt. spotted fever	-	-	-	-	-	-	-	-	-
Salmonellosis	0	0	0	0	0	1	0	0	0
Shigellosis	0	0	0	0	0	0	0	0	0
Staphylococcus aureus (MRSA)	0	1	8	4	13	3	0	4	1
Streptococcal disease	0	0	0	0	1	0	1	1	0
Streptococcal pneumonia	0	0	0	0	0	0	0	0	0
Syphilis	-	-	-	-	-	-	-	-	-
Trichinosis	-	-	-	-	-	-	-	-	-
Tuberculosis	-	-	-	-	-	-	-	-	-
Tularemia	-	-	-	-	-	-	-	-	-
Typhoid fever	-	-	-	-	-	-	-	-	-
West Nile Virus	0	4	0	0	1	0	0	0	0

Note: \* indicates preliminary data, - indicates disease not listed.

Table 5.3 Communicable diseases reported for Barnes County years 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010*
Campylobacteriosis	0	1	1	0	3	1	0	1	0
Chickenpox	0	0	0	0	0	0	0	0	1
Chlamydia	-	-	-	-	-	-	-	-	-
Cryptosporidiosis	1	0	0	1	0	2	0	2	1
E. Coli shiga toxin+	1	0	0	0	1	1	1	0	0
E. Coli 0157:H7	-	-	-	-	-	-	-	-	-
Enterococcus, vancomycin-resistant (VRE)	0	0	0	0	0	3	2	3	2
Giardiasis	0	0	0	1	2	0	0	1	0
Gonorrhea	-	-	-	-	-	-	-	-	-
Hantavirus	-	-	-	-	-	-	-	-	-
Hepatitis A, acute	0	0	0	0	0	0	0	0	0

Hepatitis B, acute	-	-	-	-	-	-	-	-	-
Hepatitis C, acute	-	-	-	-	-	-	-	-	-
HIV/AIDS	-	-	-	-	-	-	-	-	-
Influenza	-	-	-	-	-	-	-	-	-
Invasive Influenza	0	0	0	0	0	0	0	0	0
Legionellosis	0	0	0	0	0	0	0	0	0
Listeriosis	0	0	0	0	0	0	0	0	0
Lyme Disease	0	0	0	0	0	0	0	1	1
Malaria	-	-	-	-	-	-	-	-	-
Meningitis bacteria	-	-	-	-	-	-	-	-	-
Meningococcal disease	0	0	0	0	0	0	0	0	0
Mumps	0	0	0	0	1	0	0	0	0
Pertussis	0	0	3	1	0	0	0	0	0
Q-fever	0	0	0	0	0	0	0	0	0
Rabies (animal)	1	0	1	0	0	2	2	0	0
Rocky Mt. spotted fever	-	-	-	-	-	-	-	-	-
Salmonellosis	0	0	0	0	0	0	1	0	1
Shigellosis	0	0	1	0	0	0	0	0	0
Staphylococcus aureus (MRSA)	14	20	31	48	28	5	1	2	0
Streptococcal disease	0	1	2	1	0	0	2	1	1
Streptococcal pneumonia	0	0	1	0	0	0	0	0	0
Syphilis	-	-	-	-	-	-	-	-	-
Trichinosis	-	-	-	-	-	-	-	-	-
Tuberculosis	-	-	-	-	-	-	-	-	-
Tularemia	-	-	-	-	-	-	-	-	-
Typhoid fever	-	-	-	-	-	-	-	-	-
West Nile Virus	2	4	0	0	1	3	0	0	0

Note: \* indicates preliminary data, - indicates disease not listed.

Table 5.4 Communicable diseases reported for LaMoure County years 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010*
Campylobacteriosis	2	1	2	0	1	1	2	1	3
Chickenpox	0	0	0	0	0	0	0	0	0
Chlamydia	-	-	-	-	-	-	-	-	-
Cryptosporidiosis	0	0	0	0	0	0	0	0	0
E. Coli shiga toxin+	0	0	0	0	0	0	0	0	0
E. Coli 0157:H7	-	-	-	-	-	-	-	-	-
Enterococcus, vancomycin-resistant (VRE)	0	0	0	0	0	1	0	0	0
Giardiasis	1	0	0	0	0	1	0	0	1
Gonorrhea	-	-	-	-	-	-	-	-	-
Hantavirus	-	-	-	-	-	-	-	-	-
Hepatitis A, acute	0	0	0	0	0	0	0	0	0
Hepatitis B, acute	-	-	-	-	-	-	-	-	-
Hepatitis C, acute	-	-	-	-	-	-	-	-	-

HIV/AIDS	-	-	-	-	-	-	-	-	-
Influenza	-	-	-	-	-	-	-	-	-
Invasive Influenza	0	0	0	1	0	1	0	0	0
Legionellosis	0	0	1	0	0	0	0	0	0
Listeriosis	0	0	0	0	0	0	0	0	0
Lyme Disease	0	0	0	0	0	0	0	0	0
Malaria	-	-	-	-	-	-	-	-	-
Meningitis bacteria	-	-	-	-	-	-	-	-	-
Meningococcal disease	0	0	0	0	0	0	0	0	0
Mumps	0	0	0	0	0	0	0	0	0
Pertussis	0	0	3	0	0	0	0	0	0
Q-fever	0	0	0	0	0	0	0	0	0
Rabies (animal)	4	2	2	0	0	0	0	0	3
Rocky Mt. spotted fever	-	-	-	-	-	-	-	-	-
Salmonellosis	2	1	0	1	0	2	0	0	2
Shigellosis	0	0	0	0	0	0	0	0	0
Staphylococcus aureus (MRSA)	5	10	19	18	8	5	0	3	0
Streptococcal disease	1	0	0	0	1	0	1	0	1
Streptococcal pneumonia	0	0	0	0	0	0	0	0	0
Syphilis	-	-	-	-	-	-	-	-	-
Trichinosis	-	-	-	-	-	-	-	-	-
Tuberculosis	-	-	-	-	-	-	-	-	-
Tularemia	-	-	-	-	-	-	-	-	-
Typhoid fever	-	-	-	-	-	-	-	-	-
West Nile Virus	0	26	0	1	0	5	0	0	0

Note: \* indicates preliminary data, - indicates disease not listed.

Table 5.5 Communicable diseases reported for Wells County years 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010*
Campylobacteriosis	2	0	2	0	1	0	0	1	1
Chickenpox	0	0	0	0	0	0	0	2	0
Chlamydia	-	-	-	-	-	-	-	-	-
Cryptosporidiosis	1	0	0	0	0	0	0	2	0
E. Coli shiga toxin+	1	0	0	0	1	0	0	0	0
E. Coli 0157:H7	-	-	-	-	-	-	-	-	-
Enterococcus, vancomycin-resistant (VRE)	0	0	0	0	2	0	0	4	3
Giardiasis	0	0	0	0	0	0	1	2	0
Gonorrhea	-	-	-	-	-	-	-	-	-
Hantavirus	-	-	-	-	-	-	-	-	-
Hepatitis A, acute	0	0	0	0	0	0	0	0	0
Hepatitis B, acute	-	-	-	-	-	-	-	-	-
Hepatitis C, acute	-	-	-	-	-	-	-	-	-
HIV/AIDS	-	-	-	-	-	-	-	-	-
Influenza	-	-	-	-	-	-	-	-	-

Invasive Influenza	0	0	0	0	0	0	1	0	0
Legionellosis	0	0	0	0	0	0	0	0	0
Listeriosis	0	0	0	0	0	0	0	1	0
Lyme Disease	0	0	0	0	0	0	0	0	0
Malaria	-	-	-	-	-	-	-	-	-
Meningitis bacteria	-	-	-	-	-	-	-	-	-
Meningococcal disease	0	0	0	0	0	0	0	0	0
Mumps	0	0	0	0	0	0	0	0	0
Pertussis	0	0	9	0	1	0	0	0	0
Q-fever	0	1	0	0	0	0	0	0	0
Rabies (animal)	3	2	4	3	1	0	1	0	1
Rocky Mt. spotted fever	-	-	-	-	-	-	-	-	-
Salmonellosis	3	0	0	0	0	0	0	0	1
Shigellosis	0	0	0	0	0	0	1	0	0
Staphylococcus aureus (MRSA)	0	13	15	10	8	2	0	0	0
Streptococcal disease	0	0	2	0	0	1	1	0	0
Streptococcal pneumonia	0	0	0	0	0	0	0	0	0
Syphilis	-	-	-	-	-	-	-	-	-
Trichinosis	-	-	-	-	-	-	-	-	-
Tuberculosis	-	-	-	-	-	-	-	-	-
Tularemia	-	-	-	-	-	-	-	-	-
Typhoid fever	-	-	-	-	-	-	-	-	-
West Nile Virus	0	5	1	0	1	4	1	0	1

Note: \* indicates preliminary data, - indicates disease not listed.

Table 5.6 Communicable diseases reported for North Dakota years 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010*
Campylobacteriosis	83	80	105	96	88	91	91	97	53
Chickenpox	-	-	-	-	-	-	108	84	29
Chlamydia	1,250	1,643	1,835	1,670	1,830	1,810	1,879	1,898	1,043
Cryptosporidiosis	41	15	12	5	20	78	15	29	14
E. Coli shiga toxin+	4	4	7	7	9	18	23	10	6
E. Coli 0157:H7	20	14	15	16	9	13	7	7	1
Enterococcus, vancomycin-resistant (VRE)	1	20	19	29	210	276	257	304	172
Giardiasis	47	50	25	26	38	60	36	33	12
Gonorrhea	74	103	111	128	154	114	142	117	73
Hantavirus	-	-	-	0	2	0	-	-	-
Hepatitis A, acute	4	2	2	3	3	2	2	4	2
Hepatitis B, acute	8	2	4	0	1	2	1	0	0
Hepatitis C, acute	-	-	5	1	0	0	0	2	0
HIV/AIDS	22	22	19	19	25	26	28	39	14
Influenza	-	-	-	-	-	-	3,797	4,977	30
Invasive Influenza	7	8	5	6	11	6	16	8	9
Legionellosis	1	1	2	3	1	2	3	2	3

Listeriosis	-	-	-	-	1	0	0	3	0
Lyme Disease	1	0	0	3	7	12	11	18	2
Malaria	1	1	3	1	2	5	0	1	0
Meningitis bacteria	1	4	9	4	2	2	-	-	-
Meningococcal disease	4	1	2	2	4	2	6	2	1
Mumps	-	0	1	3	14	3	2	0	0
Pertussis	9	7	757	168	43	12	29	29	22
Q-fever	0	1	0	0	0	0	0	0	0
Rabies (animal)	59	57	75	36	33	30	34	11	6
Rocky Mt. spotted fever	-	-	-	-	-	-	1	0	0
Salmonellosis	55	46	43	86	55	81	79	126	18
Shigellosis	22	10	3	6	235	21	42	10	0
Staphylococcus aureus (MRSA)	539	1,342	1,550	-	1,879	412	79	105	34
Streptococcal disease	23	68	72	77	77	77	-	-	-
Streptococcal pneumonia	44	82	58	73	76	76	12	2	40
Syphilis	-	-	-	-	-	-	0	4	0
Trichinosis	-	-	-	-	-	-	0	0	0
Tuberculosis	6	6	4	6	9	7	3	5	7
Tularemia	-	-	-	0	2	0	3	0	0
Typhoid fever	-	-	-	-	-	-	3	0	0
West Nile Virus	17	617	20	86	137	369	37	1	1

Note: \* indicates preliminary data, - indicates disease not listed.

Immunizations protect people against many of these diseases as the coverage needed depends on what is trying to be prevented, the efficacy of the vaccine, and the propensity of the organism to spread. The desire is to have high immunization rates but with constant changing in strains and vaccines, it is hard to achieve them (personal communication, Dr. Stephen Pickard, December 1, 2010). The North Dakota Immunization Program supplies vaccines for children who are eligible, Native American, or non/under-insured at no cost. For those enrolled, public and private providers throughout the state along with consolidating vaccination records of these children from birth providing a single data source statewide available to providers, which can be done for adults as well (NDIIS, 2010).

## Sexual Health

When asked, “During the past 12 months, with how many people have you had sexual intercourse?” 15.1% of respondents reported 0 partners, 77.6% reported 1 partner, 3.9% reported having two partners, and 3.4% reported having 3 partners or more (NDDOH, 2009b).

When it comes to condom use, 78.0% reported not having used one while 22.0% did (NDDOH, 2009b). The NDDOH (2009b) found that of those who did use a condom, reasons for this included: preventing pregnancy (54.9%), to prevent STDs (2.6%), for both of the above reasons (38.2%), and for other reasons not specified (4.3%). Though using a condom is not necessarily needed for every sexual encounter, the above data shows that people are making the choice to use condoms when they feel it is necessary.

A small percent of respondents (3.3%) said they were treated for a STD or venereal disease within the past 5 years whereas the remaining 96.7% have not been (NDDOH, 2009b). **Youth**

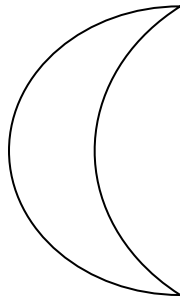
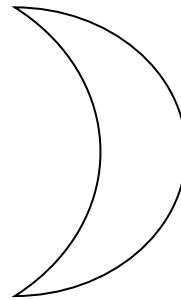
### and Sexual Behavior

Youth sexual behavior seems to be a common activity for teenagers. A Youth Risk Behavioral Survey is conducted every two years of high-school students throughout North Dakota asking a range of questions including those of sexual behavior. Region 6 of North Dakota includes Stutsman, Logan, Barnes, LaMoure, and Wells Counties. Table 5.2 describes the results of some basic questions regarding sexual activity for this age group (DPI, 2009a).

**Table 5.7 2009 YRBS results for 9<sup>th</sup>-12<sup>th</sup> graders for Region VI and North Dakota regarding sexual behavior**

	North Dakota	Region VI	Urban areas	Rural areas
% students ever having sex	44.6%	40.2%	43.5%	43.5%
% students having sex by age 13	3.5%	3.0%	4.5%	3.7%
% student having sex with 1 or more people in past 3 months	33.3%	29.9%	33.8%	31.8%
% students who believe abstinence is important	19.2%	20.7%	21.2%	20.3%

# ENVIRONMENTAL HEALTH



## **Environmental Health**

The WHO (2010) defines environmental health as an area that “addresses all the physical, chemical, and biological factors external to a person” along with the factors that may impact behavior. The North Dakota Department of Health Environmental Health Section consists of 5 primary divisions: Air Quality, Laboratory Sciences, Municipal Facilities, Waste Management, and Water Quality, along with a Food and Lodging division; all of which take part in making sure the environment in the state is monitored and meeting standards (NDDOH, 2005).

### **Local Inspections**

Central Valley Health District (CVHD), which encompasses Stutsman and Logan Counties, also provides Barnes, LaMoure, and Wells Counties with Environmental Health Services. Environmental Health Services encompass many different aspects. However, the below tables take into account only the routinely regulated inspections provided by CVHD Environmental Health Division.

Under CVHD policy, Body Art facilities are licensed and inspected at least annually. Body Art includes tattooing and body piercing. Childcare inspections are done upon request by the facility either to meet a federal requirement or by personal choice, whereas Group Home inspections are done upon agency request to meet licensing requirements. Non-Community Water Supply Inspections are done by CVHD Environmental Health Division yearly under an agreement with the state for Barnes, LaMoure, Logan, and Stutsman. Wells County is not covered by CVHD. The NDDOH has entered into an agreement with Central Valley Health District to provide the following inspections on behalf of the state; school inspections that are done twice a year for Barnes, Logan, and Stutsman with Logan and LaMoure starting in 2011; while tanning facilities are inspected at least yearly (Marcie Bata, personal communication, January 26, 2011).

<b>Table 6.1 Number of inspections done by Central Valley Health District for 2010</b>					
	<b>Stutsman</b>	<b>Logan</b>	<b>Barnes</b>	<b>LaMoure</b>	<b>Wells</b>
<b>Body art inspections</b>	1	0	1	0	0
<b>Childcare inspections</b>	7	1	3	3	1
<b>Group home inspections</b>	6	0	7	0	3
<b>Non-community water supply inspections</b>	8	2	4	1	N/A
<b>School inspections</b>	30	4	16	N/A	N/A
<b>Tanning inspections</b>	9	3	5	3	3

Sewer Permits are issued from both Central Valley Health District and City-County Health District (CCHD), which is Barnes County. These permits are valid in all counties; however these jurisdictions have provisions requiring permits for sewer installation. Sewer inspections are done on a request only basis (Marcie Bata, personal communication, January 26, 2011).

<b>Table 6.2 Number of sewer done by Central Valley Health District for 2010</b>					
	<b>Stutsman</b>	<b>Logan</b>	<b>Barnes</b>	<b>LaMoure</b>	<b>Wells</b>
<b>Total number sewer permits issued</b>	34	N/A	8	N/A	N/A
<b>Total number sewer permits returned</b>	17	1	6	0	0
<b>Sewer inspections</b>	3 passed 6 failed	0	1 passed	1 failed	1 passed

**State Inspections**

State inspections are also done. Tables 6.3 and 6.4 show those food establishments for Stutsman, Logan, Barnes, LaMoure, and Wells Counties in regards to how many were done and how many critical violations were found at each. “Critical means a provision of the Code that, if in noncompliance, is more likely than other violations to contribute to food contamination, illness, or environmental health hazard” (Deb Larson, personal communication, January 28, 2011).

<b>Table 6.3 Number of inspections done for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for 2010 in regards to food</b>					
	<b>Stutsman</b>	<b>Logan</b>	<b>Barnes</b>	<b>LaMoure</b>	<b>Wells</b>
<b>Limited restaurants</b>	29	6	21	11	6
<b>Multiple establishments</b>	24	3	13	6	11
<b>Meat markets</b>	0	0	0	1	0
<b>Restaurants</b>	25	5	16	8	7

<b>Table 6.4 Number of critical and non-critical violations of all food establishments for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for 2010</b>					
	<b>Stutsman</b>	<b>Logan</b>	<b>Barnes</b>	<b>LaMoure</b>	<b>Wells</b>
<b>Critical violations</b>	27	3	26	10	38
<b>Non-critical violations</b>	10	1	39	9	10

**Big Game Hunting and Lead in North Dakota**

Hunting in North Dakota is a popular past-time and has a significant impact on the state’s economy. Throughout the year and during hunting season many people consume wild game, most notably venison, with a large portion of venison (approximately 17,000 pounds) being donated to local food pantries where it provides a good source of protein for those less fortunate (NDDOH, 2008c p. 2).

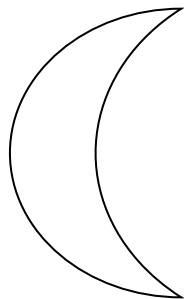
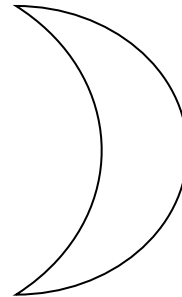
In 2008 a Bismarck physician and hunter, Dr. Cornatzer, contacted the NDDOH with a concern that fragments from lead bullets used in hunting could be potentially contaminating the ground venison that is being consumed and donated to food pantries (NDDOH, 2008c). The Centers for Disease Control and Prevention (CDC) were then contacted to co-conduct a study in North Dakota for measuring the risk, if any, of consuming wild game harvested with lead bullets (NDDOH, 2008c). The study consisted of testing blood lead levels of 680 participants of all ages and comparing those levels of people who ate venison to those who did not. Although many of the participants had lead in their blood, there weren’t any with a level over 10, which is the limit set by the CDC. A level of zero is desired for health reasons but it is common to see lead levels around 2 all over the nation (NDDOH, 2008c). Though the information obtained from this study

doesn't confirm there is an association or risk with eating wild game, it gives a better understanding of the relationship between consuming wild game that has been taken with lead bullets (NDDOH, 2008c). It was statistically concluded that those participants who ate a lot of wild game had higher levels of lead in their blood compared to those who ate little or no wild game (NDDOH, 2008c). Though this study cannot be considered the final answer, it is the best that the state health department has to help guide policy recommendations (NDDOH, 2008c).

Knowing that swallowing lead can be harmful to young children and pregnant women, the NDDOH (2008c) took precautions by recommending the venison at food pantries to be discarded. Studies have shown that neurological effects occur in children due to under-developed blood brain barrier so those under the age of 6 are most susceptible while adults have increased risks of myocardial and stroke mortality with lead levels  $\geq 2$   $\mu\text{g}/\text{dl}$  (NDDOH, 2008c).

Though food pantries are very thankful for the venison donations, the Department of Agriculture sent out letters to all state and federal-inspected meat processing plants informing them about the situation (NDDOH, 2008c). The director of the Department of Agriculture State Meat and Poultry Inspection Program stated that guidelines were developed and are ready for the future hunting season with the hopes of reducing lead exposure in the meat via better cleaning and processing (NDDOH, 2008c). Because lead can harm adults and children, it is recommended that the bullet-damaged meat should be disposed of during the dressing process and if there are questions or concerns about how the meat was processed or cleaned, people should not give it to their children and possibly think twice about eating it themselves (NDDOH, 2008c).

# BEHAVIORAL RISK FACTORS



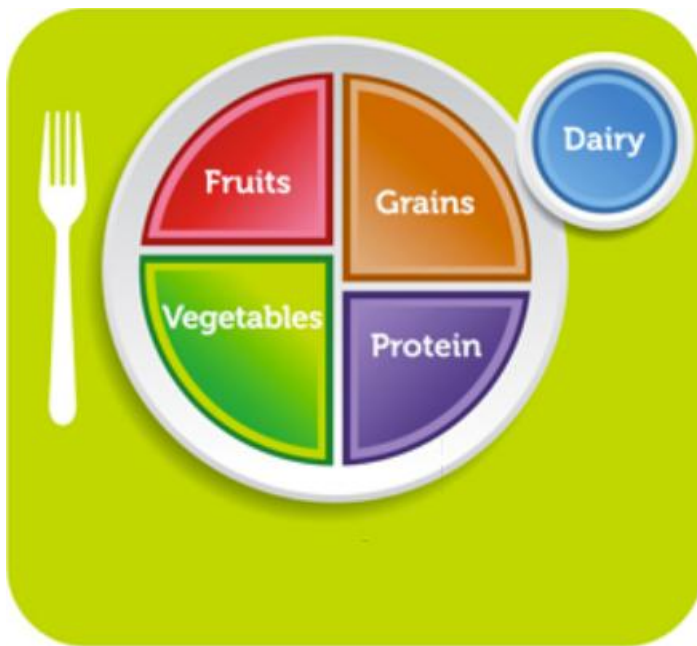
## Nutritional Health

...“Those who think they have no time for healthy eating will sooner or later have to find time for illness.”

Edward Stanley

## Nutritional Health

Eating healthy will help maintain the good health of a person’s body but eating healthy also lowers the risk for chronic diseases. Such diseases include heart disease, stroke, diabetes, osteoporosis, and some types of cancer (WAWM, 2002). The USDA along with the U.S. Department of Health and Human Services created the Food Plate showing what the recommended dietary guidelines are that Americans should follow. Figure 6.1 shows the new “Food Plate” (USDA, 2010). The plate format replaced the long used Food Pyramid because it is simpler and easier to understand.



## **The five food groups**

### ***Fruit group.***

Fruits are good sources of Vitamin A and C, potassium, fiber, other vitamins, minerals, and are low in fat (WAWM, 2002). Some common fruits include: melons, berries, cherries, apples, bananas, and plums to name a few; and can be fresh, canned, frozen, dried, cut-up, whole, or pureed (USDA, 2010). The USDA (2010) states that daily recommendations for fruit range from 1-2 cups per day depending on age, sex, and physical activity.

### ***Vegetable group.***

Any vegetable or 100% vegetable juice fits into this group and can be raw, cooked, fresh, frozen, canned, dried or dehydrated, whole, cut-up, or mashed (USDA, 2009a). Vegetables are classified into five subgroups depending on the nutrients they provide: darks, starchy, orange, dry beans and peas, and others (USDA, 2009a). As with fruits, the daily recommendations for vegetables are also based on age, sex, and physical activity but usually range from 1-3 cups daily (USDA, 2009a).

### ***Dairy group.***

All liquid milk and those products made from milk are all considered part of the dairy group and can be divided into four subgroups: milks, cheeses, yogurts, and milk-based desserts (USDA, 2009b). Choices in this group should be fat-free or low-fat as if milk is sweetened or contains fat, the sugar and fat added will count as part of the discretionary calorie allowance (USDA, 2009b). Milk is a high source of calcium so choices that are able to contribute this calcium content are important in a diet. As mentioned with fruits and vegetables, the daily recommendations for dairy intake vary depending on age, sex, and physical activity but are most commonly 2-3 cups per day (USDA, 2008b).

### ***Grains group.***

The grains group consists of any food that has been made from wheat, rice, oats, cornmeal, barley, or any other cereal grain and can be divided into two subgroups: whole grains and refined grains (USDA, 2009c). The whole grains contain the whole grain kernel, i.e. bran, germ, and endosperm, and include products like oatmeal, brown rice, bulgur, whole-wheat flour, and whole cornmeal (USDA, 2009c). Refined grains, on the other hand, have been milled, which is a process that removes the germ and bran, and includes foods like white flour, white, bread, white rice, and degermed cornmeal (USDA, 2009c). Once again, due to age, sex, and physical activity, daily recommendations for grains range anywhere from 1.5-3 ounces on a daily basis (USDA, 2009c).

***Meats & beans group.***

Any food made from meat, fish, poultry, dry beans, peas, eggs, nuts, and seeds are part of this group (USDA, 2009d). When choosing meat or poultry, they should be lean or low-fat while fish, nuts, and seeds contain “healthy oils” and are better choices compared to meats and poultry (USDA, 2009d). Examples of meat and poultry include: beef, pork, rabbit, bison, lamb, venison, duck, goose, and chicken; examples of nuts and seeds include: peanuts, cashews, peanut butter, sunflower seeds, and walnuts; examples of beans and peas include: kidney beans, black beans, split peas, pinto beans, and tofu; examples of fish include those belonging to the finned fish, shelled fish, or canned fish (USDA, 2009d). Daily recommendations for the meat and bean group, again varying by age, sex, and physical activity is anywhere from 2-6 ounces daily (USDA, 2009d).

***Oils group.***

Oils are considered fats that are liquid at room temperature and come from many different plants and fish including: canola oil, corn oil, sunflower oil, and soybean oil (USDA, 2009e). Foods that are considered as part of this group are mayonnaise, certain salad dressings, and soft margarine with no Trans fats. Oils are usually low in saturated fats and high in monounsaturated

and polyunsaturated fats and those coming from plants contain no cholesterol (USDA, 2009e). Solid fats are those in which are solid at room temperature and include: butter, beef fat, chicken fat, pork fat, sticks of margarine, and shortening. The USDA (2009e) explains that the difference between oils and fats is that solid fats contain more saturated and/or Trans fat while oils consist mostly of the monounsaturated and polyunsaturated fats, all of which contribute to increasing the “bad” LDL cholesterol levels. Though some fat is needed to supply energy, food should be chosen to limit the intake of fat as the USDA (2009e) recommends a daily fat intake of no more than 30% of calories taken in, approximately 3-7 teaspoons, again based on age, sex, and physical activity (USDA, 2009e).

**Adult nutrition.**

The eating habits of those living in Stutsman, Logan, Barnes, LaMoure, and Wells Counties and North Dakota seem to vary quite a bit from the Food Guide Pyramid, especially when it comes to fruits and vegetables, as shown in Table 7.1 (NDDOH, 2009a).

Table 7.1 Percent population for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota regarding daily fruit and vegetable intake						
	Stutsman (2007-2008)	Logan (2007-2008)	Barnes (1999-2007)	LaMoure (2000-2008)	Wells (1999-2007)	North Dakota (1999-2008)
Percent not having 5 servings of fruits/vegetables per day	79.0%	80.3%	72.2 %	75.8%	72.5%	78.1%

**Youth nutrition.**

Because children are continually growing, it is important that they get the required amounts of daily food needed to support their body’s growth. Junior high and high schoolers of Region VI, which includes Stutsman, Logan, Barnes, LaMoure, and Wells Counties, along with the urban and rural areas, are consistent with the state average, but do not meet recommendations when it comes to certain dietary intake, as shown below in Table 7.2 (DPI, 2009a & DPI, 2009b).

**Table 7.2 2009 YRBS results for 7<sup>th</sup>-8<sup>th</sup> graders for Region VI and North Dakota regarding dietary intake**

	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban Areas</b>	<b>Rural Areas</b>
% students having >3 glasses of milk per day in the past week	37.6%	39.7%	36.3%	40.8%
% students eating fruit 1 or more times in the past week	93.3%	92.1%	93.9%	92.3%
% students eating vegetables 1 or more times in the past week	89.9%	90.5%	91.5%	90.7%
% students eating breakfast 7 of the last 7 days	48.2%	44.9%	48.8%	45.7%

**2009 YRBS results for 9<sup>th</sup>-12<sup>th</sup> graders for Region VI and North Dakota regarding dietary intake**

	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban Areas</b>	<b>Rural Areas</b>
% students having >3 glasses of milk per day in the past week	22.4%	25.2%	21.4%	24.5%
% students eating fruit 1 or more times in the past week	88.0%	88.6%	88.6%	87.9%
% students eating vegetables 1 or more times in the past week	81.5%	82.4%	82.0%	82.8%
% students eating breakfast 7 of the last 7 days	33.2%	35.6%	32.3%	33.1%

### **Physical Activity and Body Weight**

“Moderate regular physical activity substantially reduces the risk of dying of coronary heart disease (the nation’s leading cause of death) and decreases the risk for colon cancer, diabetes, and high blood pressure” (WAWM, 2002 p. 52). The CDC (2010d) is describing the American society as “obesogenic” due to the fact that it is an environment that promotes increased food intake, nonhealthful foods, and physical inactivity.

Not only does physical activity help to maintain weight, it also helps the body overall by strengthening bones, muscles, and joints; helps to alleviate pain for arthritis, and helps fight symptoms of anxiety and depression (WAWM, 2002). When one does not exercise adequately,

this can lead to more visits to the doctor and even hospitalization, which can all be very expensive. The CDC (2009c) shows that medical expenses associated with being overweight and obese accounted for 9.1% of the total expenditures in 1998 and could have reached up to \$92.6 billion dollars in 2002, with almost half being paid by Medicare and Medicaid. In North Dakota, 7.7% of Medicare patient expenditures and 11.7% of Medicaid expenditures are related to overweight and obesity (CDC, 2009c).

Approximately 40% of deaths that occur each year are caused by lifestyle behaviors that could be modified, i.e. dietary choices, weight management, and physical activity (WAWM, 2002). The CDC (2009d) recommends that regular physical activity should be done for 150 minutes a week, or 30 minutes a day five days a week at a moderate to intense pace as this will not only help to maintain body weight over time, it will allow a person to feel better and help to reduce health risks that could lead to long term medical problems. At least 60% of American adults do not meet the recommended requirements for physical activity while roughly 25% don't engage in physical activity at all, which could lead to higher risks of type II diabetes, high blood pressure, heart disease, stroke, depression, or certain types of cancer (WAWM, 2002).

Table 7.3 describes the level for Stutsman, Logan, Barnes, LaMoure, and Wells Counties along with North Dakota in regards to physical activity while Table 7.4 describes youth behavior in regards to physical activity for Region VI (CDC, 2011, NDDOH, 2009a, DPI, 2009a, & DPI, 2009b).

**Table 7.3 Percent BRFSS adult population that did not get the recommended amount of physical activity or had any physical activity at all for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent not getting recommended amount of</b>	39.5%	N/A	41.1 %	40.2%	43.6%	37.4%

<b>physical activity</b>						
<b>Percent not participating in any leisurely physical activity</b>	8.1%	10.0%	5.2%	6.8%	10.7%	6.0%
<b>2008 CDC release of county physical inactivity by %</b>	25.2%	28.1%	25.7%	28.4%	23.9%	33.2%

*Note:* No data available for Logan County in response to recommended physical activity

**Table 7.4 2009 YRBS results for 9<sup>th</sup>-12<sup>th</sup> graders for Region VI and North Dakota regarding physical activity**

	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban areas</b>	<b>Rural areas</b>
<b>% students who were physically active for at least 60 minutes per day 5 or more days of the last 7</b>	43.7%	45.8%	43.0%	46.5%
<b>% students who spend &gt;20 minutes exercising during a PE class</b>	59.7%	52.4%	64.9%	52.5%
<b>% students who watches ≥3 hours of TV on a school day</b>	25.6%	24.4%	23.5%	25.8%
<b>% students who played video or computer games or used a computer not for homework ≥3 hours on a school day</b>	18.4%	19.0%	19.6%	20.3%

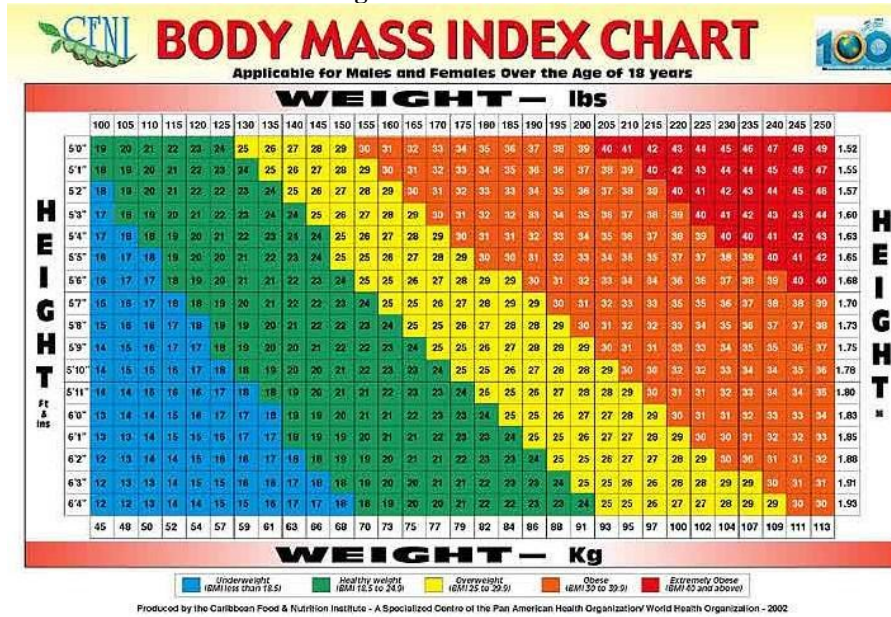
**2009 YRBS results for 7<sup>th</sup>-8<sup>th</sup> graders for Region VI and North Dakota regarding physical activity**

	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban areas</b>	<b>Rural areas</b>
<b>% students who were physically active for at least 60 minutes per day 5 or more days of the last 7</b>	62.0%	61.4%	60.9%	62.8%
<b>% students who watches ≥3 hours of TV on a school day</b>	33.1%	33.8%	31.0%	33.8%
<b>% students who played video or computer games or used a computer not for homework ≥3 hours on a school day</b>	25.0%	29.6%	24.4%	25.0%

Body weight is becoming an issue because more and more people in America and worldwide are eating less healthy and not getting enough exercise. Body mass index (BMI), a commonly used method to determine weight, is a measure of body fat based on height (in meters)

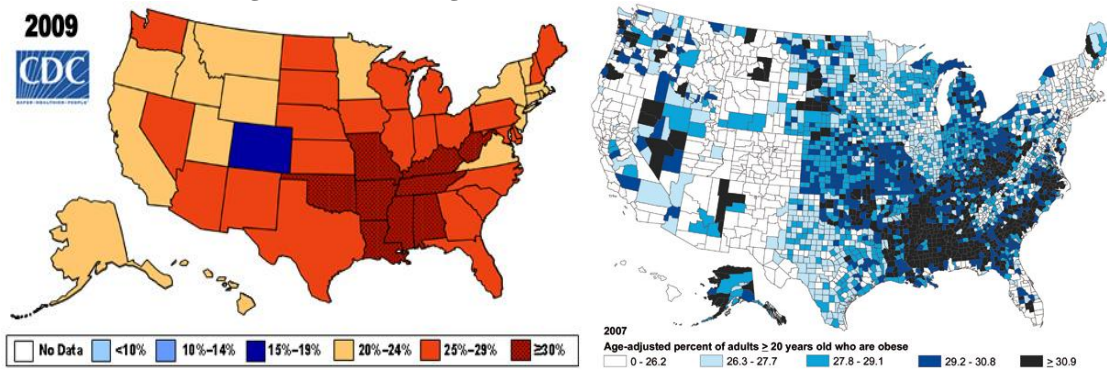
and weight (in kilograms) that applies to adult men and women that helps determine if one is below a healthy weight, at a normal weight, overweight, or obese (NHLBI, 2010), see Figure 7.2.

Figure 7.2 BMI chart.



Putting things into perspective compared to the rest of the nation, Figure 7.3 shows the percent of US adults who are obese for 2009 per state and counties for 2007 (CDC, 2010d).

Figure 7.3 Percentage of US adults who are obese for 2009.



As seen above, North Dakota as a state is in the 25-29 percentiles with a few of its counties being greater than the 30.9 percentile. Table 7.5 presents data for Stutsman, Logan, Barnes, LaMoure, and Wells Counties in regards to body weight, including North Dakota (NDDOH, 2009a).

**Table 7.5 Percent population being overweight or obese for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent with BMI ≥ 25 but &lt; 30</b>	39.0%	N/A	42.2%	42.2%	40.0%	39.6%
<b>Percent with BMI ≥ 30</b>	25.0%	22.8%	28.1%	23.5%	28.1%	27.8%
<b>Percent with BMI ≥ 25</b>	64.1%	72.0%	70.3%	65.7%	68.2%	67.4%

*Note:* No data available for Logan County in response to BMI ≥ 25 but < 30

Becoming overweight or obese affects any age, race, and both genders proving that the obesity epidemic is very clear cut. With more and more people, including the young, facing the battle of the bulge, there is a great concern for future generations as overweight adolescents have a “70% chance of becoming overweight or obese adults” (WAWM, 2002 p. 55).

## **Tobacco Use**

### **Adults.**

According to the CDC (2009e), approximately 46 million (20.6%) American adults (>18) smoke cigarettes; making it the leading cause of preventable death in the United States accounting for more than 443,000 deaths each year. The American Lung Association (ALA) (2010) describes that for an average smoker, the annual cost is about \$4, 260 due to lost productivity and direct health care expenditures. “Cigarette smoke contains over 4,800 chemicals, 69 of which are known to cause cancer. Smoking is directly responsible for approximately 90 percent of lung cancer deaths and approximately 80-90 percent of COPD (emphysema and chronic bronchitis) deaths” (ALA, 2010). In North Dakota, approximately 18.1% of adults smoke while 877 die due to complications from smoking giving a total cost of \$442 million each year due to medical claims and lost productivity (NDDOH, 2010c). Table 7.6 describes the percentage of those who smoke or have tried to quit smoking for Stutsman, Logan, Barnes, LaMoure, and Wells Counties compared to North Dakota (NDDOH, 2009a).

**Table 7.6 Percent adult population who smoke for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent who smoke every day or some days</b>	19.7%	12.5%	18.9%	19.1%	14.2%	18.1%
	<b>Stutsman (2006)</b>	<b>Logan</b>	<b>Barnes (1999-2004)</b>	<b>LaMoure</b>	<b>Wells (2006)</b>	<b>North Dakota (2006)</b>
<b>Percent who have tried quitting at least for one day in the past 12 months</b>	38.5%	N/A	49.6%	N/A	61.1%	49.1%

*Note:* No data available for Logan and LaMoure Counties in regards to quitting smoking

**Youth.**

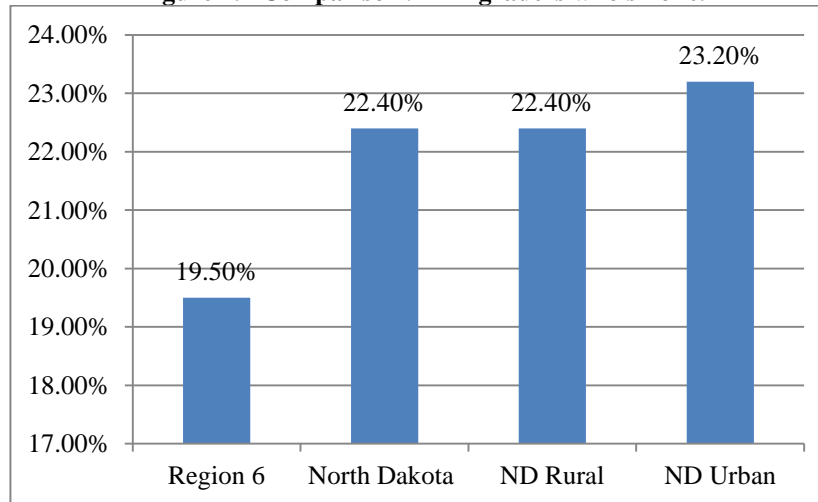
More than “3 billion young people under the age of 18 smoke half a billion cigarettes each year and more than one-half of them consider themselves dependent upon cigarettes” (WAWM, 2002 p. 61). With the decision being made in the teen years, it has been shown that about one-half of them normally continue into their adult years. The NDDOH (2010d) reported in 2009 that for North Dakota youth, 22.4% of high schoolers and 7.3% of 7/8<sup>th</sup> graders smoked cigarettes, a three-fold rate increase between middle school and high school. Of these, 53% of high schoolers tried quitting during the previous 12 months (NDDOH, 2010d). Table 7.8 compares smoking habits for middle school and high school for Region VI, which includes Stutsman, Logan, Barnes, LaMoure, and Wells Counties, North Dakota and the urban/rural areas (DPI, 2009a & DPI, 2009b). Figure 7.4 compares 9-12<sup>th</sup> graders who smoke for the nation, North Dakota, the planning regions for the state (including Region VI), and by urban/rural status (NDDOH, 2010b).

**Table 7.7 2009 YRBS results for 9<sup>th</sup>-12<sup>th</sup> graders for Region VI and North Dakota regarding smoking**

	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban areas</b>	<b>Rural areas</b>
<b>% students smoking 20 or more of the last</b>	9.3%	8.0%	11.3%	8.2%

30 days				
% students who smoked a cigarette for the first time by age 13	12.3%	10.4%	12.3%	12.6%
<b>2009 YRBS results for 7<sup>th</sup>-8<sup>th</sup> graders for Region VI and North Dakota regarding smoking</b>				
	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban areas</b>	<b>Rural areas</b>
% students smoking 20 or more of the last 30 days	1.8%	2.6%	1.7%	1.4%
% students who smoked a cigarette for the first time by age 13	4.3%	4.8%	5.1%	5.7%

**Figure 7.4 Comparison 9-12<sup>th</sup> graders who smoke.**

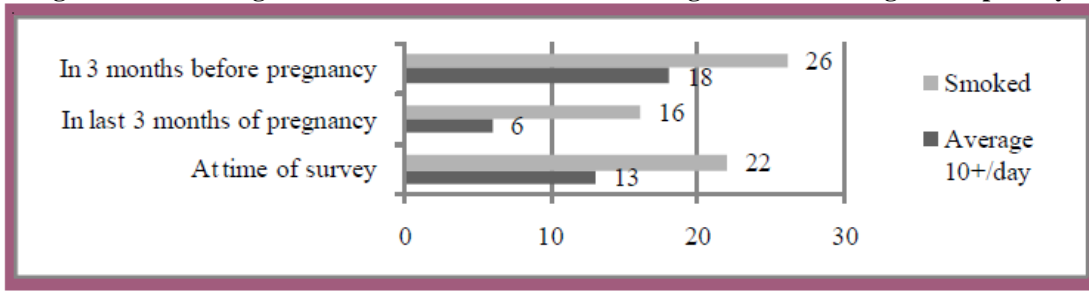


**Smoking during pregnancy.**

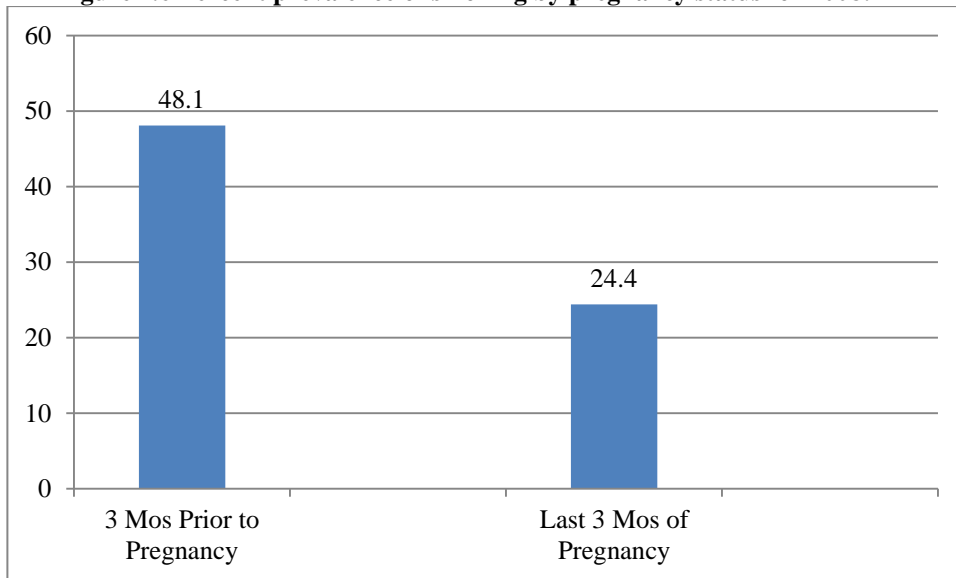
Studies have shown that women who use tobacco products while pregnant have a higher chance of having unfavorable birth outcomes, which may include: babies with low birth weight, premature delivery, possible birth defects, and even Sudden Infant Death Syndrome (WAWM, 2002). The NDDOH (2008b) states that among mothers who gave birth in 2002, 26 percent said they smoked three months before pregnancy and 16 percent reported smoking during the last three months of pregnancy as seen in Figure 7.5. The NDDOH (2010e) goes on to show that by 2008,

the percentage of women smoking three months prior to pregnancy almost doubled while those smoking the last three months increased roughly eight percent, see figure 7.6. It has been shown that nicotine is found in breast milk of those mothers who smoke or are exposed to secondhand smoke (NDDOH, 2008b).

**Figure 7.5 Percentage women who smoked and who averaged 10 or more cigarettes per day.**



**Figure 7.6 Percent prevalence of smoking by pregnancy status for 2008.**



**Environmental tobacco use.**

Research has shown that those who do not smoke are adversely affected by environmental smoke, a.k.a. secondhand smoke, with approximately 88 million nonsmokers being exposed in the United States alone for 2007-2008 (CDC, 2009e). The WAWM (2002) describes that each year because of this exposure, there is an estimated 3,000 nonsmoking Americans who die of lung cancer, 62,000 die from heart disease, and between 8,000 and 26,000 children develop asthma.

### **Smokeless tobacco.**

Since the 1980s the Surgeon General's Office has issued warnings that using smokeless tobacco is not safe and should not be used in place of smoking as it can cause cancer and other noncancerous conditions (WAWM, 2002). Smokeless tobacco is that in which is not burned and includes two major forms: 1) chewing tobacco, which is a piece that is put between the cheek and lower lip that can be chewed or held in place and 2) snuff (snus), which is finely cut or powdered tobacco that is also put between the cheek and gum or behind the upper and lower lip or inhaled through the nose (National Cancer Institute (NCI), 2010).

“The range of risks, including nicotine addiction, from smokeless tobacco products may vary extensively because of differing levels of nicotine, carcinogens, and other toxins in different products” (NCI, 2010). No matter what tobacco product is being used, it has immediate and long-term affects including the staining and wearing of teeth, gum receding, produces mouth sores, causes bad breath, possibility of higher blood pressure, and increased risk of heart disease along with the increased chance of getting cancer of the gum, mouth, and throat (WAWM, 2002).

In North Dakota, 5.2% of adults currently use smokeless tobacco with 3.7% smoking cigars while 15.3 % of North Dakota students in grades 9-12 and 4.7 % of students in grades 7 and 8 were current smokeless tobacco users (NDDOH, 2010e & NDDOH, 2010f). Table 7.8 describes the adult habits in regards to smokeless tobacco use for those who have ever used smokeless tobacco and 7.9 compares smokeless tobacco habits for middle school and high school for Region VI, which includes Stutsman, Logan, Barnes, LaMoure, and Wells Counties, North Dakota and the urban/rural areas (NDDOH, 2009b, DPI, 2009a & DPI, 2009b).

**Table 7.8 BRFSS results for percent of adult North Dakotans who use smokeless tobacco for 2007**

	Yes	No
Have you ever used or tried any smokeless tobacco products such as chewing tobacco or snuff?	23.1%	76.9%
	Every or some days	Not at all
Do you currently use chewing tobacco or snuff every day, some days, or not at all?	22.5%	77.5%

**Table 7.9 2009 YRBS results for 9<sup>th</sup>-12<sup>th</sup> graders for Region VI and North Dakota regarding smokeless tobacco**

	North Dakota	Region VI	Urban areas	Rural areas
% students using chew, dip, or snuff one or more times in the past 30 days	15.3%	16.5%	30.1%	31.5%
% students using cigars or cigarillos one or more times in past 30 days	12.4%	12.1%	14.7%	12.0%
<b>2009 YRBS results for 7<sup>th</sup>-8<sup>th</sup> graders for Region VI and North Dakota regarding smokeless tobacco</b>				
	North Dakota	Region VI	Urban areas	Rural areas
% students using chew, dip, or snuff one or more times in the past 30 days	4.7%	7.6%	2.9%	6.1%
% students using cigars or cigarillos one or more times in past 30 days	2.9%	2.8%	2.7%	3.2%

**Quitting, treatment, and policies.**

In order for tobacco use to be treated, individuals need to be identified as this will open the door for successful interventions (WAWM, 2002). Many people listen to what their doctors say and some claim that motivation from their doctor has helped them in trying to quit smoking, although, nationwide approximately one-third of those currently smoking have never discussed their smoking status with their doctors (WAWM, 2002). In North Dakota for the year 2008, 35% of respondents (who have ever smoked) reported that when visiting a physician or health care provider in the previous 12 months they were never advised to quit smoking while 27.1% were advised on one occasion to quit smoking and 36.9% were advised two or more times to quit (NDDOH, 2009b).

Research has shown that those smokers who stop by age 50 will cut their chances of dying in the next 15 years by half (WAWM, 2002). In 2008 52.2% of North Dakotans said that they have stopped smoking for one day or longer in the previous 12 months in an attempt to quit while 42.2% said they have not tried to quit for one or more day (NDDOH, 2009b). In the fall of 2004, North Dakota launched its Quitline, which is available to those who are trying to quit smoking (NDDOH, 2010g). Training is provided to health care professionals to aid in the counseling of patients along with educational materials that they can pass out to their patients, i.e. posters, brochures, and pocket cards (NDDOH, 2010g).

Having great success, the Quitline has helped thousands of people to stop using tobacco with 5,162 calls alone in 2009 while offering a free 2-month supply of nicotine patch, nicotine gum or nicotine lozenges to callers who enroll in the program and who are not eligible to receive nicotine replacement therapy (NRT) assistance under any other program or through their health insurance (NDDOH, 2010g). “The North Dakota Tobacco Quitline has saved North Dakota citizens more than \$5 million. About \$1,623 in medical expenses is saved annually for every smoker who quits, and 1,772 North Dakotans have quit smoking or chewing tobacco with the Quitline’s help since September 2004” (NDDOH, 2005b).

August 1, 2005 North Dakota put into effect a new smoke-free law banning smoking in all workplaces, excluding free standing bars, separately enclosed bars in restaurants, hotels and bowling centers; and hotel and motel rooms and other lodging establishments across the state as the North Dakota Department of Health felt this was a needed step to help prevent non-smokers from being affected by second-hand smoke (Nancy Thoen, personal communication, November 11, 2010). There is high compliance with the law although there are some establishments who are reluctant to cooperate.

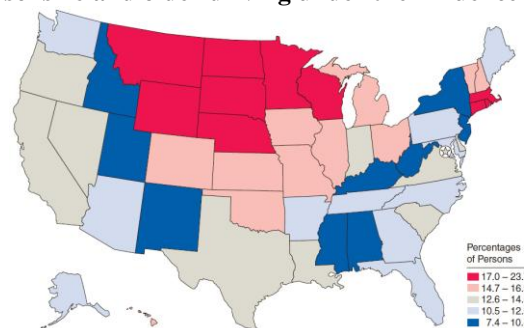
## Alcohol and Other Drug Use

### Alcohol.

According to the CDC (2010e), there are approximately 79,000 deaths in the United States that are attributed to excessive alcohol use, which makes it the third leading lifestyle-related cause of death giving an average of 30 years of life lost for each death. For the United States, the normal alcoholic drink is that in which contains 0.6 ounces of straight alcohol, which can be found in: 12-ounce beer or wine cooler, 8 ounces of a malt liquor, 5 ounces of straight wine, or 1.5 ounces of 80-proof liquor (i.e. vodka) (CDC, 2010e). Not only does excess alcohol use affect a person's lifestyle, it can also affect their health. There is research showing that over time excessive drinking can lead to chronic diseases, neurological impairments, psychiatric problems, cancer, liver disease, gastrointestinal problems, and cardiovascular troubles (CDC, 2010e). It is recommended that women should only have one drink a day while men can have two (United States Department of Health and Human Services (HHS), 2010).

An estimated 30.6 million persons over the age of 16 drove under the influence of alcohol for the years 2006-2009 with North Dakota having some of the highest rates at 22.4% for 2009 alone; see Figure 7.7 (National Survey on Drug Use and Health (NSDUH), 2010).

**Figure 7.7 Percent persons 16 and older driving under the influence of alcohol for the nation.**



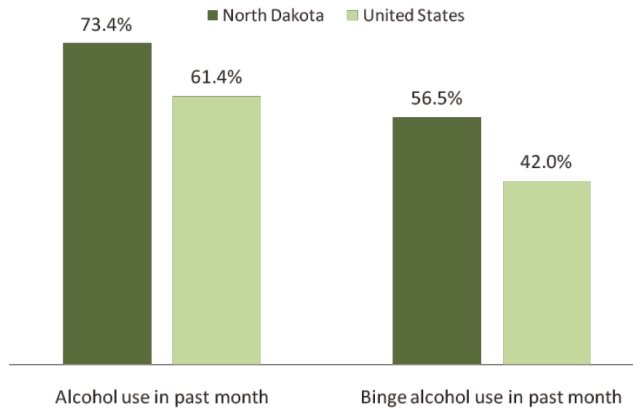
**Adults.**

The CDC (2010) lists North Dakota at 21.4% for adult binge drinking, second to Wisconsin at 23.9% while the Beer Institute (2010) shows North Dakota being in the top 5 states when it comes to gallons of beer consumed each year with an average of 41.7, one of the highest in the nation. North Dakota is also listed in the top 10 states with the highest rates of drunken driving (NSDUH, 2010). Table 7.10 shows various data on alcohol consumption for Stutsman, Logan, Barnes, LaMoure, and Wells Counties along with North Dakota (NDDOH, 2009a).

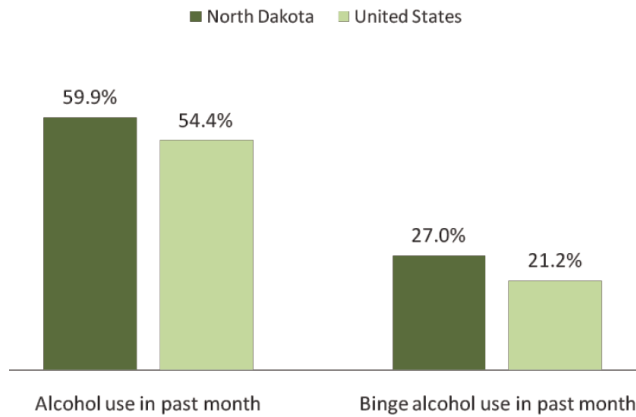
<b>Table 7.10 Percent respondents who consume alcohol for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota</b>						
	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent who reported binge drinking (&gt;5 drinks for men/day and &gt;4 for women) 1 or more time in the past 30 days</b>	18.3%	13.3%	20.7%	14.1%	11.9%	21.6%
<b>Percent who reported heavy drinking (&gt;2 drinks for men/day and &gt;1 for women) during the past 30 days</b>	4.7%	1.4%	4.0%	4.6%	2.2%	5.1%

Figures 7.8 and 7.9 show the comparison of alcohol consumption for that of North Dakota and the United States by age groups 18-25 years old and 26 years and older for 2008 (North Dakota Substance Abuse Prevention (NDSAP), 2010).

**Figure 7.8 Percent North Dakotan adults 18-25 who consume alcohol compared to nation.**  
**18 to 25 Year Old Alcohol Consumption**  
(NSDUH, 2008)



**Figure 7.9 Percent North Dakotan adults 26 years and older who consume alcohol compared to nation.**  
**26 + Year Old Alcohol Consumption**  
(NSDUH, 2008)



***Youth.***

Forty-four percent of North Dakota middle-schoolers have had at least one drink in their life while seventy-three percent of high schoolers have done the same (NDSAP, 2010). The Pacific Institute for Research and Evaluation, PIRE, (2010) reports that approximately 35,000 underage youth drink each year in North Dakota, which is 20.3% of all alcohol sold in the state, providing \$77 million in sales, \$38 million of which is a profit to the alcohol industry. North Dakota is ranked 34<sup>th</sup> in the nation when it comes to cost per youth of underage drinking (PIRE,

2010). In 2007 236 youth ages 12-20 were admitted for alcohol treatment in North Dakota, accounting for 17% of all admitted alcohol treatments (PIRE, 2010). Table 7.11 shows percentages of middle-schoolers and high-schoolers that have had alcohol for North Dakota, Region VI (includes Stutsman, Logan, Barnes, LaMoure, and Wells Counties), and the urban/rural areas (DPI, 2009a & DPI 2009b).

<b>Table 7.11 2009 YRBS results for 9<sup>th</sup>-12<sup>th</sup> graders for Region VI and North Dakota regarding alcohol</b>				
	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban areas</b>	<b>Rural areas</b>
<b>% students having first drink of alcohol by age 13, not including taking sips</b>	19.9%	19.7%	18.5%	21.6%
<b>% students having at least one drink one or more times in the past 30 days</b>	43.3%	42.1%	38.6%	45.9%
<b>2009 YRBS results for 7<sup>th</sup>-8<sup>th</sup> graders for Region VI and North Dakota regarding alcohol</b>				
	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban areas</b>	<b>Rural areas</b>
<b>% students having first drink of alcohol by age 11, not including taking sips</b>	12.1%	15.2%	11.2%	14.0%
<b>% students ever riding in car with a driver who had been drinking alcohol</b>	36.4%	43.1%	32.6%	43.2%

**Other Drug Use.**

**Youth.**

“Marijuana is the most commonly used illicit drug among youth in the United States,” though usage has declined 6% between 1999 and 2009 (CDC, 2010f). Other drugs including cocaine, inhalants, and ecstasy have also declined slightly in the past 10 years whereas heroin use has not changed and hallucinogenic drug use has remained steady from 2007-2009 (CDC, 2010f). While the use of illicit drug use has declined; prescription and over-the-counter drug use is continuously high. In 2009 20% of U.S. high school students admitted to taking a prescription drug without having a doctor’s prescription with the most commonly abused drugs being depressants, pain relievers, stimulants, and tranquilizers (CDC, 2010f). Over-the-counter cough

and cold medicines are often abused by youth as they contain the suppressant dextromethorphan (DXM), which allows them to get high (CDC, 2010f). Because both prescription and over-the-counter drugs are usually easily accessible, cheap, free, and believed to be safer than illicit drugs, they are becoming more and more popular even though in reality misusing either can lead to serious health effects, addiction, and possibly death (CDC, 2010f). Table 7.12 describes common drug use among North Dakota youth for the state, region (VI-Stutsman, Logan, Barnes, LaMoure, and Wells Counties), urban areas, and rural areas (DPI, 2009a & DPI, 2009b).

<b>Table 7.12 2009 YRBS results for 9<sup>th</sup>-12<sup>th</sup> graders for Region VI and North Dakota regarding drug use</b>				
	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban areas</b>	<b>Rural areas</b>
<b>% students using Marijuana for first time by age 13</b>	6.4%	3.2%	6.8%	5.7%
<b>% students using Marijuana one or more times in the past 30 days</b>	16.9%	10.3%	18.9%	13.2%
<b>% students using over the counter drugs to get high 1 or more times in their life</b>	13.3%	11.1%	16.6%	11.8%
<b>% students taking prescription drugs 1 or more times during their life without doctor's consent</b>	15.0%	13.1%	18.9%	14.0%
<b>% students using any form of cocaine 1 or more times in their life</b>	5.1%	5.1%	7.3%	4.7%
<b>% students using any form of an inhalant to get high 1 or more times in their life</b>	11.5%	11.5%	13.8%	12.2%
<b>% students using methamphetamines 1 or more times in their life</b>	3.4%	3.4%	4.3%	3.2%
<b>% students using ecstasy 1 or more times in their life</b>	5.3%	4.3%	8.5%	4.1%
<b>2009 YRBS results for 7<sup>th</sup>-8<sup>th</sup> graders for Region VI and North Dakota regarding drug use</b>				
	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban areas</b>	<b>Rural areas</b>
<b>% students using Marijuana for first time by age 11</b>	2.3%	1.9%	2.3%	2.1%

% students using over the counter drugs to get high	4.6%	3.2%	4.8%	3.9%
% students taking prescriptions without doctor's consent	6.3%	5.8%	6.6%	5.6%
% students using any form of cocaine	2.4%	3.3%	3.3%	2.5%
% students using any form of an inhalant to get high	11.0%	11.5	10.6%	11.0%
% students using methamphetamines	1.7%	1.9%	2.0%	1.4%

**Adults.**

Using illicit drugs can affect the community along with individual as HIV/AIDS and hepatitis B and C infection can be associated with injection drug use along with causing heart problems, convulsions, seizures, strokes, memory failure, cognitive deficits, illness, disability, injury, and even death (WAWM, 2002). Though people seem to keep their use of illegal drugs private, Table 7.13 lists the percentages of self-reported drug use in North Dakota for the years 2005-2006 (OAS, 2008a).

**Table 7.13 Percent North Dakotans using illegal drugs by age**

	18-25 years old (%)	26 years and older (%)
Past month illicit drug use	13.55	3.85
Past year marijuana use	20.67	4.28
Past month marijuana use	11.25	2.89
Past month use of illicit drugs other than marijuana	5.62	1.66
Past year cocaine use	4.39	0.99
Past year nonmedical pain reliever use	9.13	2.90

**Intentional and Unintentional Injuries**

*“If a disease were killing our children at the rate unintentional injuries are, the public would be outraged and demand that this killer be stopped.”*

C. Everett Koop

Intentional injuries are those that were done on purpose to others or oneself and include self-inflictions or acts of violence while unintentional injuries are those that were unplanned and are the 5<sup>th</sup> leading cause of death in the United States (Injury Prevention Program, IPP, 2010a & IPP 2010b). Intentional injuries can be influenced by many factors including: access to firearms, history of violence towards others, alcohol abuse, mental illness, and poverty whereas unintentional injuries usually occur in a short period of time and result mostly from motor vehicle crashes, falls, fires/burns, drowning, poisonings, and aspiration (IPP, 2010a & IPP, 2010b).

North Dakota does not have a health care data system to accurately count and report the number of Emergency Room or Hospital Discharge Data.; therefore there is a large gap in the availability of non-death injury related data. The data that can be collected comes from the North Dakota Trauma Registry, Emergency Medical Services Ambulance Runs, Division of Vital Records and the Department of Transportation (Diana Read, personal communication, January 20, 2011). As a result, this section will focus more on deaths related to injuries.

Motor vehicle injuries accounted for 2.3 million emergency room visits in 2009 with it being the leading cause of death for those ages 5-34 (CDC, 2010g). Table 7.14 shows motor vehicle death and injury data for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for the aggregate years 2005-2009 while Figure 7.10 shows statewide motor vehicle crashes by age for the years 2004-2008 (North Dakota Department of Transportation, personal communication, January 19, 2011 & Diana Read, personal communication, January 20, 2011).

Table 7.14 Motor vehicle related data in regards to total population for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for the years 2005-2009					
	Stutsman	Logan	Barnes	LaMoure	Wells
Total # motor vehicle crash fatalities	14	3	14	4	7
Total # motor vehicle injuries	773	29	271	112	93
Total # motor vehicle crash	8	1	4	2	5

fatalities no seat belt					
Total # motor vehicle crashes alcohol related	133	8	53	23	25
Percent who said they drove after having too much to drink 1 or more times in the past 30 days	1.2%	4.0%	4.2%	0.6%	5.5%

Figure 7.10 2004-2008 state wide motor vehicle crashes by age groups.

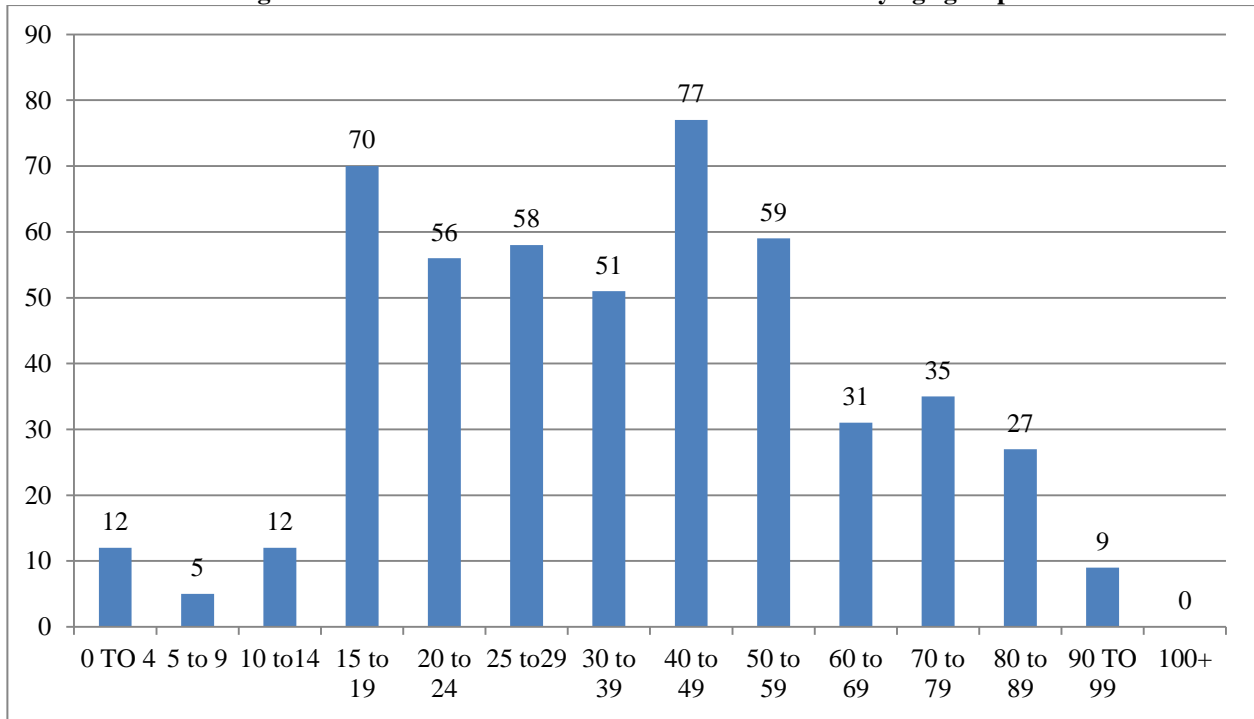


Figure 7.11 shows the number of motor vehicle injuries for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for the years 2005-2009 (North Dakota Department of Transportation, personal communication, January 19, 2011 & Diana Read, personal communication, January 20, 2011).

**Figure 7.11 Number of motor vehicle injuries per county for years 2005-2009.**

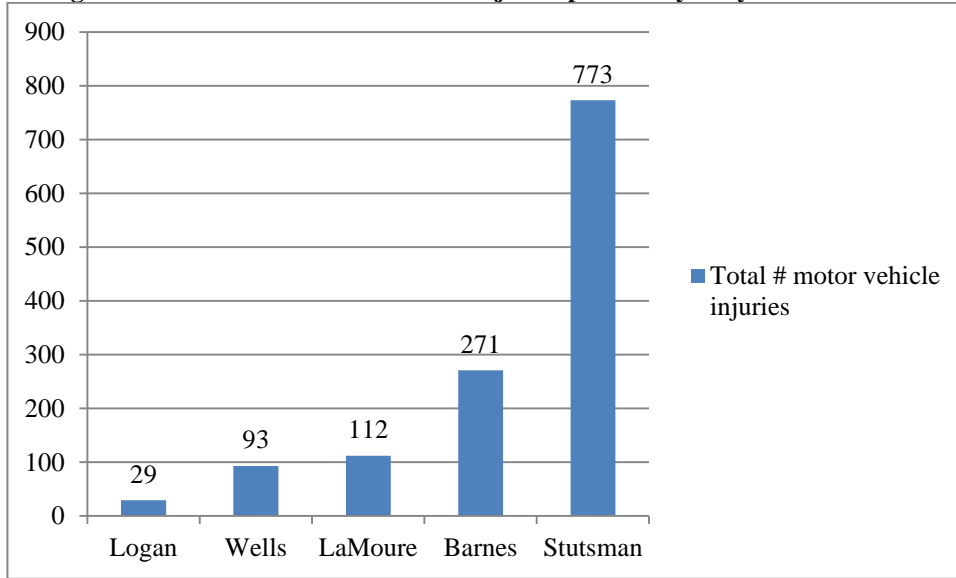


Table 7.15 describe injury and death data in relation to motorcycles and bicycles while table 7.16 shows BRFSS responses to seat belt use and falls for the five counties (North Dakota Department of Transportation, personal communication, January 19, 2011 & NDDOH, 2009a).

**Table 7.15 Bicycle and motorcycle related data in regards to total population for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for the years 2005-2009**

	Stutsman	Logan	Barnes	LaMoure	Wells
Total # bicycle crashes injury and fatal	12	2	0	2	0
Total # motorcycle fatalities	1	1	1	0	2
Total # motorcycle injuries	41	0	9	4	1
Total # motorcycle fatalities no helmet	1	1	1	0	2

**Table 7.16 Percent BRFSS adult respondents in relation to injury for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota**

	<b>Stutsman (2007-2008)</b>	<b>Logan (2007-2008)</b>	<b>Barnes (1999-2007)</b>	<b>LaMoure (2000-2008)</b>	<b>Wells (1999-2007)</b>	<b>North Dakota (1999-2008)</b>
<b>Percent respondents &gt;45 years old who have fallen in the past 3 months</b>	15.5%	4.5%	9.2%	N/A	N/A	13.9%
<b>Percent respondents who reported not always wearing seatbelts</b>	38.8%	N/A	N/A	N/A	N/A	40.8%

*Note:* N/A indicates there is no data available

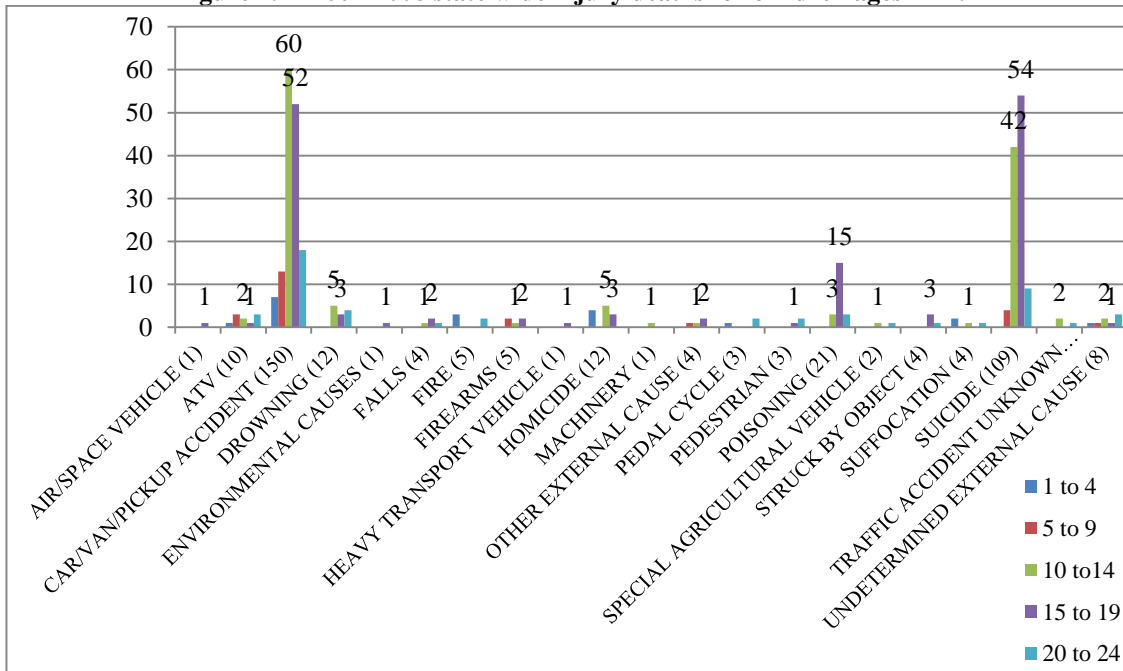
Injury and violence are serious threats to the health and well-being of children and adolescents in the United States putting them at a high risk for many injuries that could lead to death or disability (CDC, 2010g). The WHO (2011) reports that each day more than 2000 children die from an injury that could have been prevented; giving the five leading causes of injury to children as: road traffic injuries, drowning, burns, falls, and poisoning. Table 7.17 depicts youth-related injury for 9<sup>th</sup>-12<sup>th</sup> graders and 7<sup>th</sup>-8<sup>th</sup> graders in Region VI compared to the state and rural/urban areas (DPI, 2009a & DPI, 2009b). Figure 7.13 shows statewide injury deaths for children ages 1-24 for the years 2004-2008 (Diana Read, personal communication, January 20, 2011).

**Table 7.17 2009 YRBS results for 9<sup>th</sup>-12<sup>th</sup> graders for Region VI and North Dakota regarding injury**

	<b>North Dakota</b>	<b>Region VI</b>	<b>Urban areas</b>	<b>Rural areas</b>
<b>% students rarely or never wearing a seatbelt when riding in a car</b>	17.0%	19.7%	14.7%	20.9%
<b>% students who rarely or never wear a seat belt while driving a car</b>	15.7%	18.9%	11.7%	20.1%
<b>% students driving a vehicle while texting or talking on a cell phone 1 or more times in the past 30</b>	66.9%	72.8%	61.7%	68.6%

days				
2009 YRBS results for 7 <sup>th</sup> -8 <sup>th</sup> graders for Region VI and North Dakota regarding injury				
	North Dakota	Region VI	Urban areas	Rural areas
% students who rarely or never wore a helmet while riding a bicycle	83.8%	88.8%	78.3%	92.4%
% students rarely or never wearing a seatbelt when riding in a car	4.6%	3.2%	4.8%	3.9%

Figure 7.12 2004-2008 state wide injury deaths for children ages 1-24.



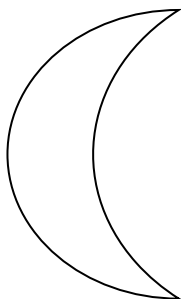
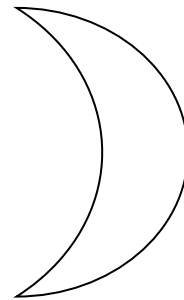
**Personal Safety Issues.**

“Nationally, nearly two-thirds of women who reported being raped, physically assaulted, and/or stalked since age 18 were victimized by a current or former husband, cohabiting partner, boyfriend, or date” (WAWM, 2002 p. 80). Intimate Partner Violence (IPV) is a serious public health problem that can be prevented but affects millions of Americans and can be physical, sexual, or psychological (CDC, 2010h). In North Dakota for 2009 there was a 7% increase in the number of services from crisis intervention centers compared to 2008 with 94% of the victims being women (North Dakota Council on Abuses Women’s Services, NDCAWS, 2010a). 26% of

victims were under the age of 30, 37% of victims were abused by a former spouse or partner, and 75% were physically abused (NDCAWS, 2010a). Children were also affected by domestic violence with at least 5,222 children being impacted by the incidents (NDCAWS, 2010a).

Sexual violence (SV) is defined by the CDC (2009f) as any sexual act that is done against a person's will and encompasses a wide range of acts including: rape, unwanted touching, sexual violence threats, or sexual harassment. In North Dakota for 2009 there were 830 primary victims (those directly affected by a violent act) and 375 secondary victims (those harmed by a violent act for being a witness to the initial violent act towards the primary victim) reported to crisis centers where 46% of primary victims were under the age of 18, 90% of victims were female, 94% of the attackers were male, 2% of attackers were female, and 12% of attackers were strangers to the victims (NDCAWS, 2010b). At least 27% of all cases were incest or indicated a history of incest. In at least 15% of adult sexual assault cases reported, the victim also experienced sexual abuse/incest as a child (NDCAWS, 2010b).

# MENTAL HEALTH



## **Mental Health**

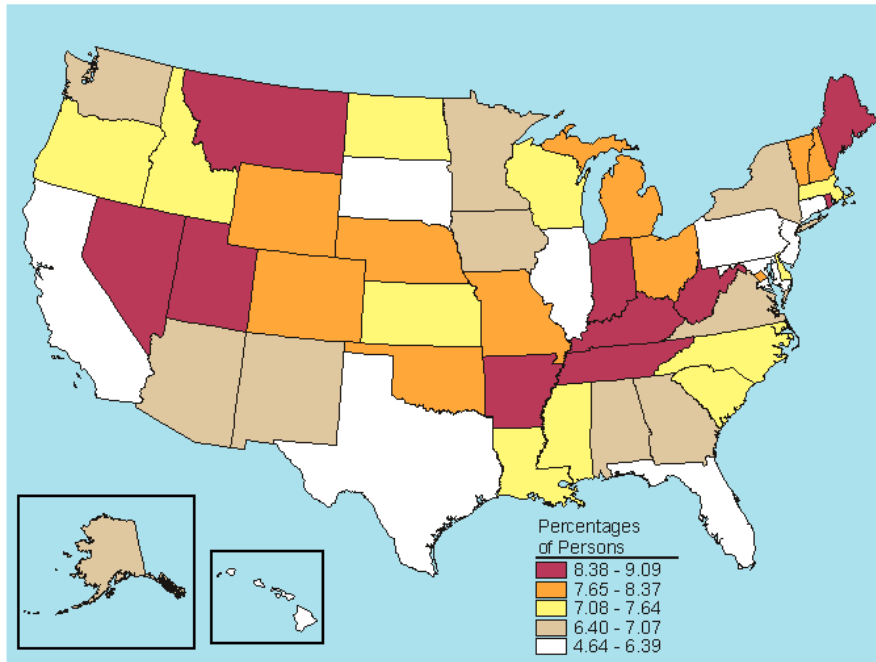
“There is an undeniable relationship between our mental health, our physical health, and personal well-being” (WAWM, 2002 p. 84). Because of this relationship, a person’s view on exercising and eating properly may be skewed. One’s mental health can be described as that in which is absent of a mental disorder as these disorders are characterized by differences in the way one thinks, how their mood may change, or how a person’s behavior may change; all of which can be caused from stress or impaired mental function resulting in human disability, pain, or even death. According to the National Institute of Mental Health (NIMH) (2010), mental disorders affect tens of millions of people each year in the United States with only a small percent receiving some type of treatment.

### **Depression**

Depression, one of the most prevalent mental illnesses, affects roughly 19 million people each year, which can lead to 20-35% of deaths via suicide (Mental Health America North Dakota, MHAND, 2010). Mental Health America (MHA) (2010) explains that depression often occurs when other medical issues arise such as heart disease, cancer, arthritis, Alzheimer’s disease, and Parkinson’s disease and affects roughly 6% of American adults over the age of 65. According to the OAS (2008b), North Dakota had 7.25% of its population 26 years and older who have had at least one depressive episode while 10.12% have had serious psychological distress for the same age group, Table 8.1 shows a closer look at the percentages of people who were feeling sad or blue for Stutsman, Logan, Barnes, LaMoure, and Wells Counties including that of North Dakota (NDDOH, 2009a). Figure 8.1 shows 2005-2006 depression percentages by state for the United States (OAS, 2008b).

Table 8.1 Percent adult respondents who feel bad or blue for Stutsman, Logan, Barnes, LaMoure, Wells Counties and North Dakota						
	Stutsman (2007-2008)	Logan (2007-2008)	Barnes (1999-2007)	LaMoure (2000-2008)	Wells (1999-2007)	North Dakota (1999-2008)
Percent reporting having >8 of the last 30 days where their mental health wasn't good	11.7%	9.8%	9.4%	7.4%	9.7%	8.9%

Figure 8.1 Percentage of major depressive episode among persons 18 and older for 2005 and 2006 by state.

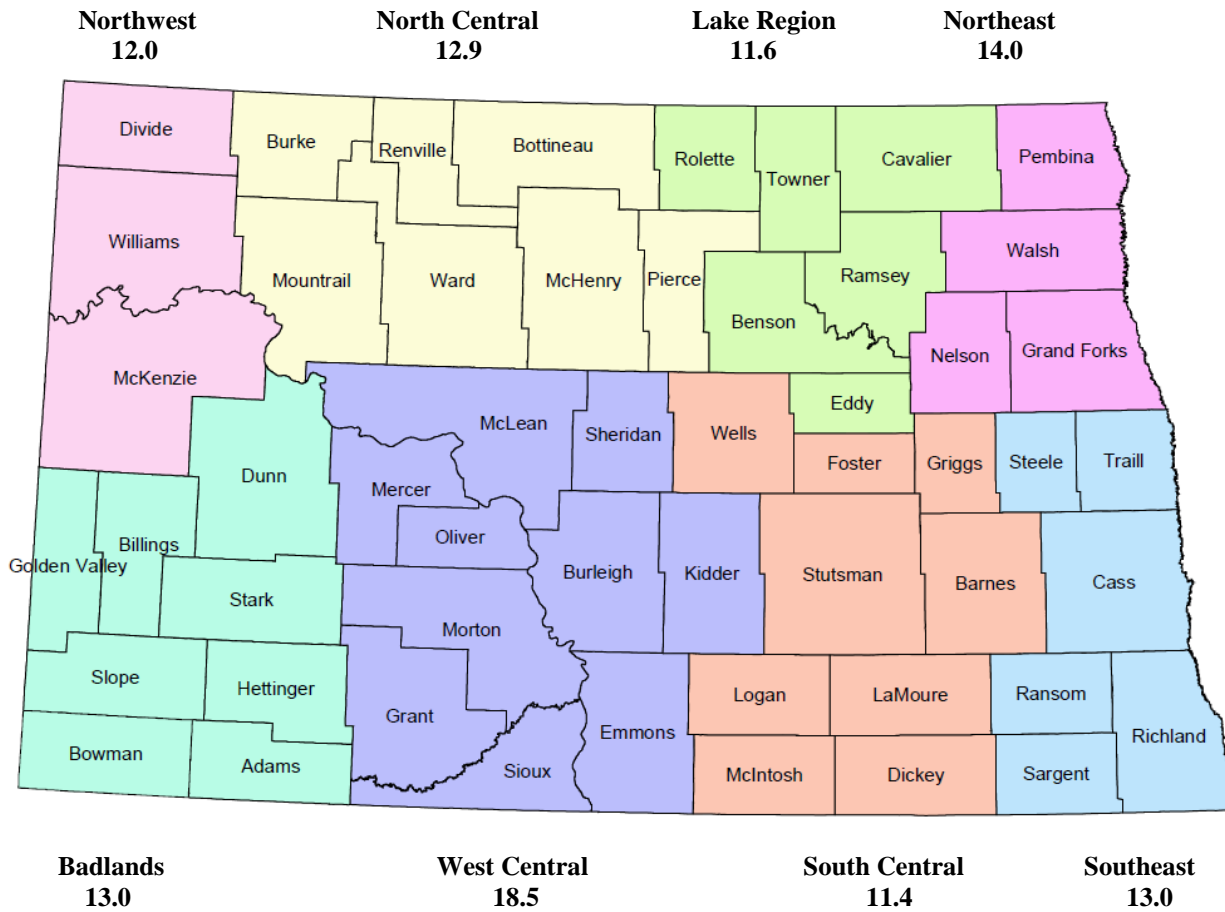


**Suicide**

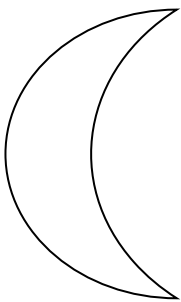
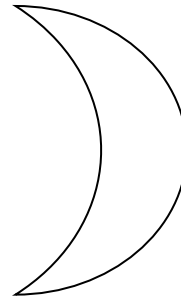
Being the 11<sup>th</sup> leading cause of death in the United States, suicide is usually associated with those who have a mental disorder causing more than 90% of successful suicides (American Association of Suicidology, AAS, 2007). In 2007 there were approximately 34,598 suicides, 1 suicide every 15.2 minutes, with men committing suicide three times more than women though women had three times the attempts of men (AAS, 2007). According to the NDDOH (2009c), in 2009 there were 89 suicides in North Dakota, a slight increase from 2008 where there was 86, giving a rate of 13.3/100,000, making suicide the 9<sup>th</sup> leading cause of death in the state. Those

affected most by suicide were whites accounting for 80 of the 89 deaths, which 76 were males, with the age group 10-24 having the highest rate of 15.2/100,000, again a slight increase from 2008's 10.6/100,000 rate (NDDOH, 2009c). Figure 8.2 shows the suicide rate for the South Central Region of North Dakota, which includes Stutsman, Logan, Barnes, LaMoure, and Wells Counties; compared to the other regions in North Dakota, it can be observed that this region has the lowest rate/100,000 (NDDOH, 2009c).

**Figure 8.2 Regional views of suicide rates for North Dakota for 2007-2009.**



# CAUSES OF HOSPITALIZATION



## Causes of Hospitalization

According to the Agency for Healthcare Research and Quality (AHRQ) (2006) there were approximately 39.5 million discharges in 2006 alone from community hospitals, which include those that are: non-federal, short-term, acute care hospitals. The average cost of hospital stays increased 7.1% annually from 1997-2006 mostly due to inflation (33%), population growth (16%), increased discharges per population (5%), and more services being used while staying in the hospital (47%) giving only a 0.9% increase in hospital stay costs (AHRQ, 2006).

Tables 9.1-9.5 show the leading categories of hospitalization for Stutsman, Logan, Barnes, LaMoure, and Wells Counties, respectively, along with percentage of total discharges for July 2009 through June 2010 while Figure 9.1 shows a graphical view of the composite categories (Barbara Groutt, personal communication, October 23, 2010).

**Table 9.1 Leading causes of hospitalization for Stutsman County for July 2009-June 2010**

Causes of hospitalization	Total Number of Discharges	Percent of Discharges
Cardiac	81	31.89%
Musculoskeletal	56	22.05%
Neurological	18	7.08%
Renal	27	10.63%
Respiratory	72	28.35%
<b>Total</b>	<b>254</b>	<b>100%</b>

**Table 9.2 Leading causes of hospitalization for Logan County for July 2009-June 2010**

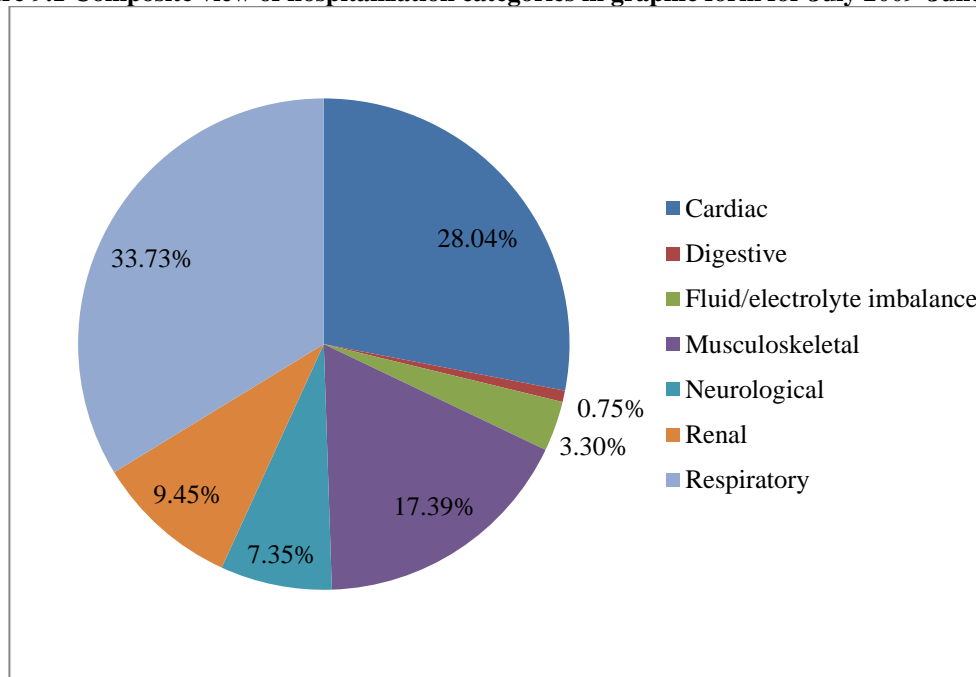
Causes of hospitalization	Total Number of Discharges	Percent of Discharges
Cardiac	4	8.90%
Digestive	5	11.11%
Musculoskeletal	6	13.33%
Neurological	6	13.33%
Renal	9	20.00%
Respiratory	15	33.33%
<b>Total</b>	<b>45</b>	<b>100%</b>

Table 9.3 Leading causes of hospitalization for Banres County for July 2009-June 2010		
Causes of hospitalization	Total Number of Discharges	Percent of Discharges
Cardiac	52	35.14%
Fluid/electrolyte imbalance	8	5.41%
Musculoskeletal	42	28.38%
Neurological	9	6.08%
Renal	14	9.46%
Respiratory	23	15.54%
<b>Total</b>	<b>148</b>	<b>100%</b>

Table 9.4 Leading causes of hospitalization for LaMoure County for July 2009-June 2010		
Causes of hospitalization	Total Number of Discharges	Percent of Discharges
Cardiac	14	21.54%
Musculoskeletal	12	18.46%
Neurological	8	12.31%
Renal	5	7.69%
Respiratory	26	40.00%
<b>Total</b>	<b>65</b>	<b>100%</b>

Table 9.5 Leading causes of hospitalization for Wells County for July 2009-June 2010		
Causes of hospitalization	Total Number of Discharges	Percent of Discharges
Cardiac	36	23.23%
Fluid/electrolyte imbalance	14	9.03%
Neurological	8	5.16%
Renal	8	5.16%
Respiratory	89	57.42%
<b>Total</b>	<b>155</b>	<b>100%</b>

Figure 9.1 Composite view of hospitalization categories in graphic form for July 2009-June 2010.



Tables 9.6-9.10 show the leading categories of hospitalization costs based on claim payment amount summaries while Figure 9.2 shows this information in graphical form as a composite of categories for July 2009-June 2010 (Barbara Groutt, personal communication, October 23, 2010).

**Table 9.6 Leading costs of hospitalization for Stutsman County for July 2009-June 2010**

Causes of hospitalization	Total costs	Percent of total costs
Cardiac	\$753,441.42	40.22%
Hematological	\$118,984.91	6.35%
Musculoskeletal	\$551,522.57	29.44%
Neurological	\$110,174.33	5.88%
Post-operative infection	\$110,113.63	5.88%
Respiratory	\$229,068.72	12.23%
<b>Total</b>	<b>1,873,305.58</b>	<b>100%</b>

**Table 9.7 Leading costs of hospitalization for Logan County for July 2009-June 2010**

Causes of hospitalization	Total costs	Percent of total costs
Digestive	\$39,617.54	11.05%
Hematological	\$60,877.85	17.00%
Musculoskeletal	\$107,022.00	29.86%
Post-operative infection	\$33,400.19	9.32%
Renal	\$31,825.80	8.88%
Respiratory	\$85,631.60	23.89%
<b>Total</b>	<b>\$358,374.98</b>	<b>100%</b>

**Table 9.8 Leading costs of hospitalization for Banres County for July 2009-June 2010**

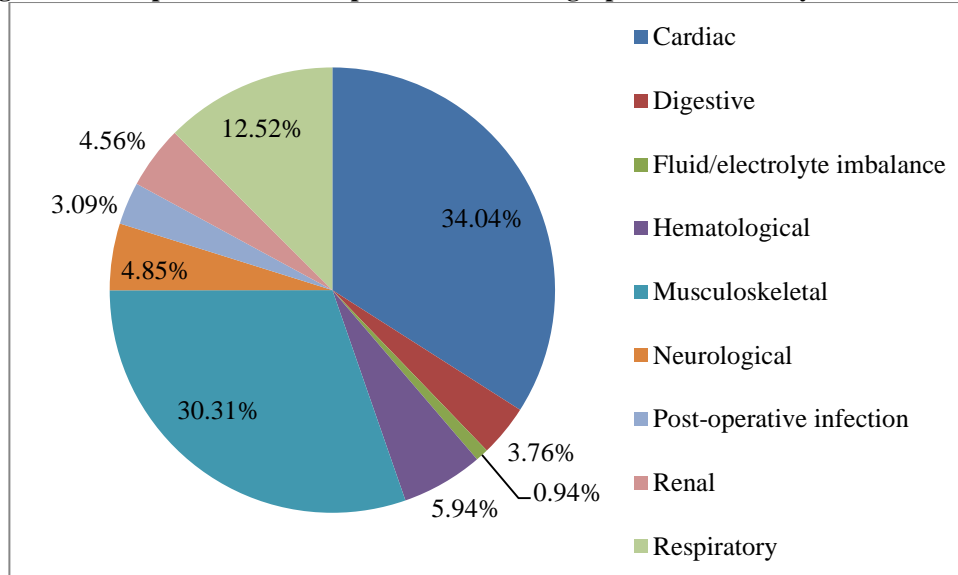
Causes of hospitalization	Total costs	Percent of total costs
Cardiac	\$348,605.31	26.35%
Digestive	\$81,692.47	6.18%
Hematological	\$96,026.21	7.26%
Musculoskeletal	\$485,462.55	36.70%
Neurological	\$84,937.08	6.42%
Renal	\$89,954.09	6.80%
Respiratory	\$136,055.06	10.29%
<b>Total</b>	<b>\$1,322,732.77</b>	<b>100%</b>

**Table 9.9 Leading costs of hospitalization for LaMoure County for July 2009-June 2010**

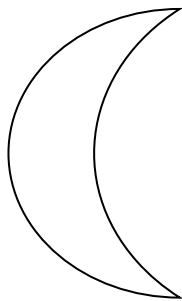
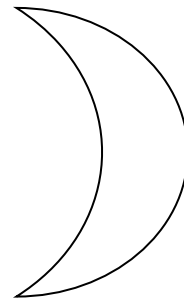
Causes of hospitalization	Total costs	Percent of total costs
Cardiac	\$195,568.28	38.08%
Musculoskeletal	\$156,598.20	30.49%
Neurological	\$30,129.51	5.87%
Respiratory	\$131,319.43	25.56%
<b>Total</b>	<b>\$513,615.42</b>	<b>100%</b>

Table 9.10 Leading costs of hospitalization for Wells County for July 2009-June 2010		
Causes of hospitalization	Total costs	Percent of total costs
Cardiac	\$284,227.35	36.25%
Digestive	\$53,640.51	6.84%
Fluid/electrolyte imbalance	\$43,714.28	5.57%
Musculoskeletal	\$108,094.59	13.79%
Respiratory	\$294,464.46	37.55%
<b>Total</b>	<b>\$784,141.19</b>	<b>100%</b>

Figure 9.2 Composite view of hospitalization costs in graphic form for July 2009-June 2010.



## CAUSES OF DEATH



## Causes of Death

Though there are many causes of death, rates can vary between age groups due to different lifestyles, exposures, behaviors, and internal processes along with many other factors to consider. For example, older adults may have a higher rate of mortality due to years of smoking or a high fat diet while adolescent rates of mortality may be more associated with high risk behaviors. In 2009 North Dakota's leading cause of death was heart disease with over 1,000 deaths followed by all cancers, Alzheimer's disease, chronic lung disease, accidental deaths, strokes, diabetes, influenza/pneumonia, suicide, hypertension, cirrhosis of the liver, blood clots and emulsions, and atherosclerosis (NDDOH, 2009d). The leading causes of death for Stutsman, Logan, Barnes, LaMoure, and Wells Counties are listed below in Table 10.1 (NDDOH, 2009a).

**Table 10.1 Leading causes of death for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for years 2004-2008**

	<b>Stutsman Number (Adj. rate)</b>	<b>Logan Number (Adj. rate)</b>	<b>Barnes Number (Adj. rate)</b>	<b>LaMoure Number (Adj. rate)</b>	<b>Wells Number (Adj. rate)</b>
<b>Heart Disease</b>	277 (177)	38 (152)	170 (1162)	90 (206)	97 (162)
<b>Cancer</b>	257 (181)	40 (172)	162 (179)	73 (177)	66 (146)
<b>Stroke</b>	97 (58)	10 (39)	49 (44)	20 (43)	21 (38)
<b>Alzheimer's Disease</b>	79 (43)	13 (46)	34 (29)	21 (42)	24 (33)
<b>COPD</b>	58 (38)	9 (36)	37 (36)	14 (33)	14 (24)
<b>Unintentional Injury</b>	54 (39)	*	28 (38)	15 (58)	24 (63)
<b>Diabetes Mellitus</b>	48 (33)	12 (48)	25 (24)	12 (28)	14 (24)
<b>Pneumonia &amp; Influenza</b>	28 (17)	*	17 (16)	7 (13)	*
<b>Cirrhosis of the Liver</b>	*	*	6 (8)	*	*
<b>Suicide</b>	13 (12)	*	6 (12)	*	0 (0)

*Note:* Adj. rate = age adjusted rate, \* = fewer than five deaths

When it comes to deaths by age group, the five counties have expected variations, see Figures 10.1-10.4 below (NDDOH, 2009a). It should again be noted that Stutsman and Logan Counties are combined as the Central Valley Health District.

**Figure 10.1 Central Valley Health District’s leading causes of death, 2004-2008.**

Leading Causes of Death by Age Group for CVHD, 2004-2008			
Age	1	2	3
0-4	Unintentional Injury		
5-14	Unintentional Injury		
15-24	Unintentional Injury	Cancer	
25-34	Unintentional Injury	Suicide	
35-44	Unintentional Injury	Cancer	Suicide
45-54	Cancer	Heart	Unintentional Injury
55-64	Cancer	Heart	Unintentional Injury
65-74	10 Cancer	6 Heart	5 COPD
75-84	25 Cancer	19 Heart	20 Stroke
85+	32 Cancer	32 Heart	23 Stroke
	82 Heart	32 Cancer	23 Stroke

**Figure 10.2 Barnes County’s leading causes of death, 2004-2008.**

Leading Causes of Death by Age Group for Barnes County, 2004-2008			
Age	1	2	3
0-4	Prematurity		
5-14			
15-24	Unintentional Injury		
25-34	Unintentional Injury	Suicide	
35-44	Cancer	Heart	Suicide
45-54	Cancer	Heart	Unintentional Injury
55-64	6 Cancer	6 Heart	Unintentional Injury
65-74	17 Cancer	11 Heart	6 COPD
75-84	43 Cancer	16 Heart	16 COPD
85+	49 Cancer	42 Heart	31 Stroke
	93 Heart	44 Cancer	31 Stroke

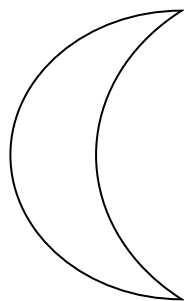
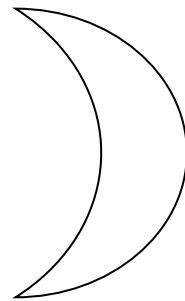
**Figure 10.3 LaMoure County’s leading causes of death, 2004-2008.**

Leading Causes of Death by Age Group for LaMoure County, 2004-2008			
Age	1	2	3
0-4	Anomaly	Pregnancy Comp.	Unintentional Injury
5-14	Unintentional Injury		
15-24	Unintentional Injury		
25-34	Unintentional Injury		
35-44	Heart	Unintentional Injury	
45-54	Cancer	Unintentional Injury	Suicide
55-64	Heart		COPD
65-74	8 Cancer	6 Heart	5 COPD
75-84	20 Cancer	11 Heart	5 DM
85+	21 Cancer	18 Heart	9 Stroke
	49 Heart	21 Cancer	14 Alzheimer's Dz

**Figure 10.4 Wells County's leading causes of death, 2004-2008.**

Leading Causes of Death by Age Group for Wells County, 2004-2008			
Age	1	2	3
0-4	Congenital Anomaly		
5-14	Cancer		
15-24	Unintentional Injury		
25-34	Unintentional Injury		
35-44	Unintentional Injury	Cancer Stroke	
45-54	Heart Disease	Cancer	Unintentional Injury
55-64	Cancer 13	Heart Disease 7	Stroke
65-74	Cancer 14	Heart Disease 6	Stroke
75-84	Cancer 18	Heart Disease 16	Suicide Unintentional Injury
85+	Heart Disease 64	Cancer 16	Alzheimer's Disease 20

# COUNTY RANKINGS



## County Rankings

The County Health Rankings system is a tool that is used to measure a county's health to see where improvement is needed, similar to the America's Health Rankings system that measures a state's overall health (University of Wisconsin Population Health Institute, UWPHI, 2010). The goals of the County Health Rankings is to help get the community and citizens involved in health while helping to educate on issues that may be of importance to their (UWPHI, 2010). With counties and communities working together, health needs can be met through programs and policies.

Two summary measures are used when ranking counties: health factors, which are what influences the county's health and health outcomes, which describe how healthy a community actually is. Counties within a state receive a certain rank for each measure and those having high ranks, i.e. 1 or 2, are considered to be the healthiest, per say (UWPHI, 2010). There are four types of health factors that are considered: health behaviors (30%), clinical care (20%), social and economic factors (40%), and physical environment (10%).

Health behaviors include: tobacco use, diet and exercise, alcohol use, and high risk sexual behavior; Clinical care includes: access to care and quality of care; Socioeconomic factors include: education, employment, income, family/social support, and community safety; and Physical environment includes: air quality and built environment (UWPHI, 2010). Table 11.1 shows the health factor rankings for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for 2010 (UWPHI, 2010).

**Table 11.1 Health factor rankings for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for 2010**

	<b>Stutsman</b>	<b>Logan</b>	<b>Barnes</b>	<b>LaMoure</b>	<b>Wells</b>
<b>Health behaviors</b>	29	*	22	17	1
<b>Clinical care</b>	7	*	6	22	19
<b>Social/economic factors</b>	13	*	15	14	28
<b>Physical environment</b>	34	*	35	26	9
<b>Overall ranking</b>	15	*	16	17	13

*Note:* Logan County was not ranked as it was deemed too small to have reliable measurements.

Health outcomes include mortality and morbidity at 50% each. Mortality represents length of life and is based on premature death while morbidity refers to quality of life and is based on poor/fair health, poor physical health days, poor mental health days, and low birth weight (UWPHI, 2010). Table 11.2 shows the mortality and morbidity for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for 2010 (UWPHI, 2010).

**Table 11.2 Health outcome rankings for Stutsman, Logan, Barnes, LaMoure, and Wells Counties for 2010**

	<b>Stutsman</b>	<b>Logan</b>	<b>Barnes</b>	<b>LaMoure</b>	<b>Wells</b>
<b>Mortality</b>	11	*	12	16	16
<b>Morbidity</b>	31	*	7	18	37
<b>Overall ranking</b>	25	*	5	26	37

*Note:* Logan County was not ranked as it was deemed too small to have reliable measurements.

Figure 12.1 shows the statewide health outcomes by county for the entire state of North Dakota for 2011. Figure 12.2 shows the health factors for the state for 2011.

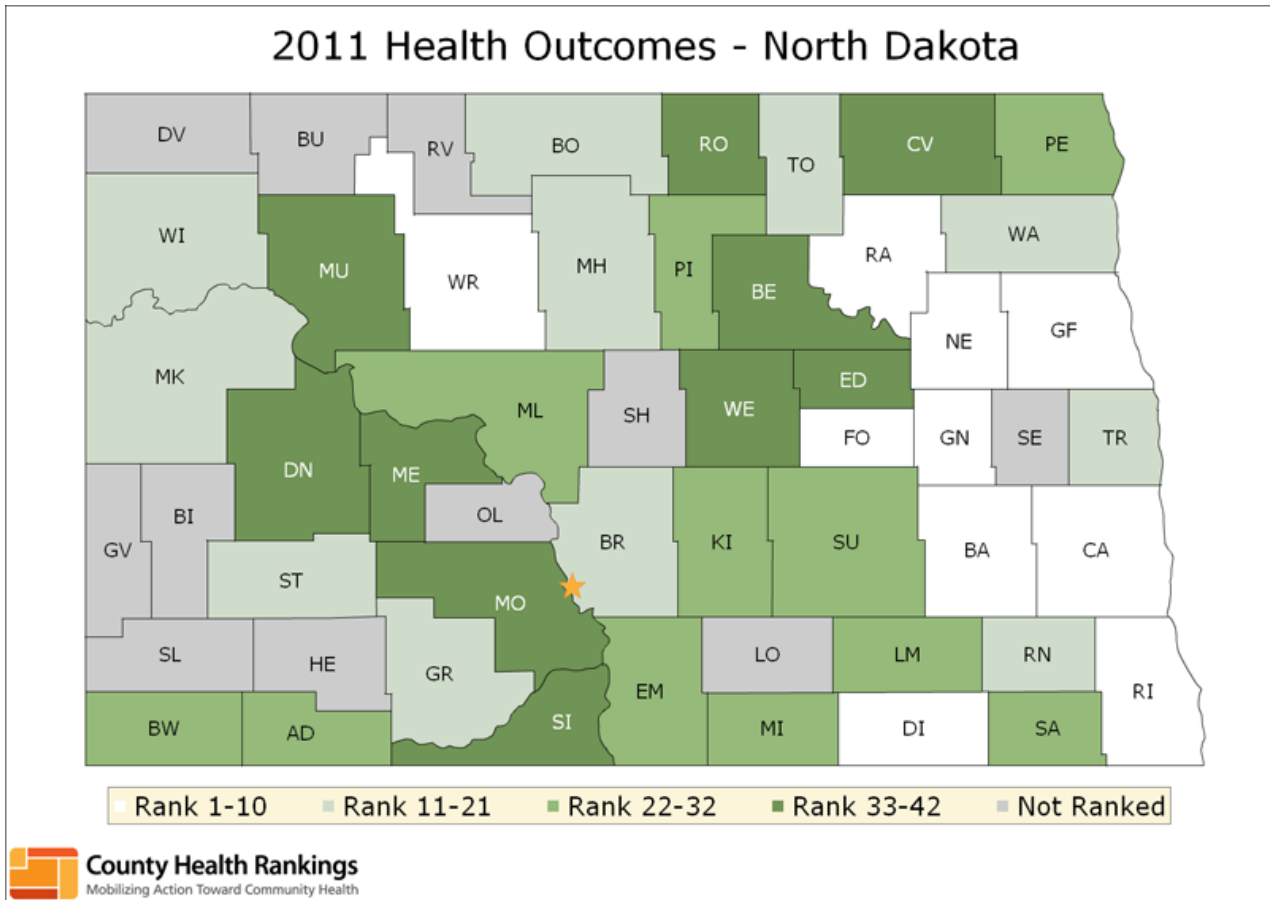
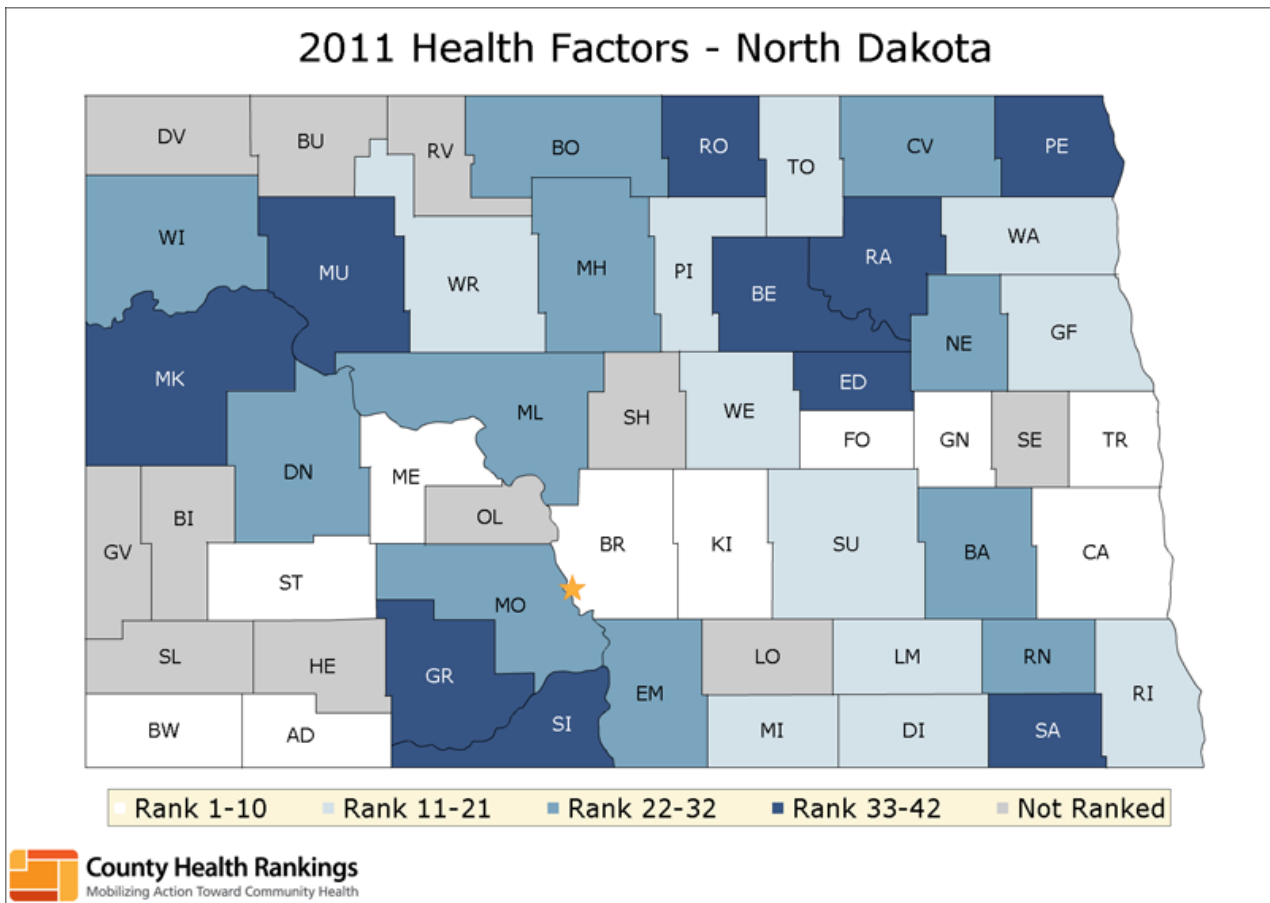


Figure 12.2 2011 Health Factors for the state of North Dakota.



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