

# REGION VIII COMMUNITY HEALTH ASSESSMENT 2011

Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, Stark Counties  
Southwestern District Health Unit



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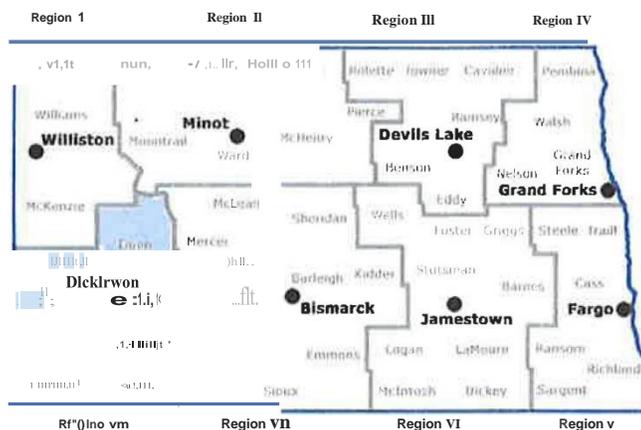


## Executive Summary

The purpose of this 8-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.

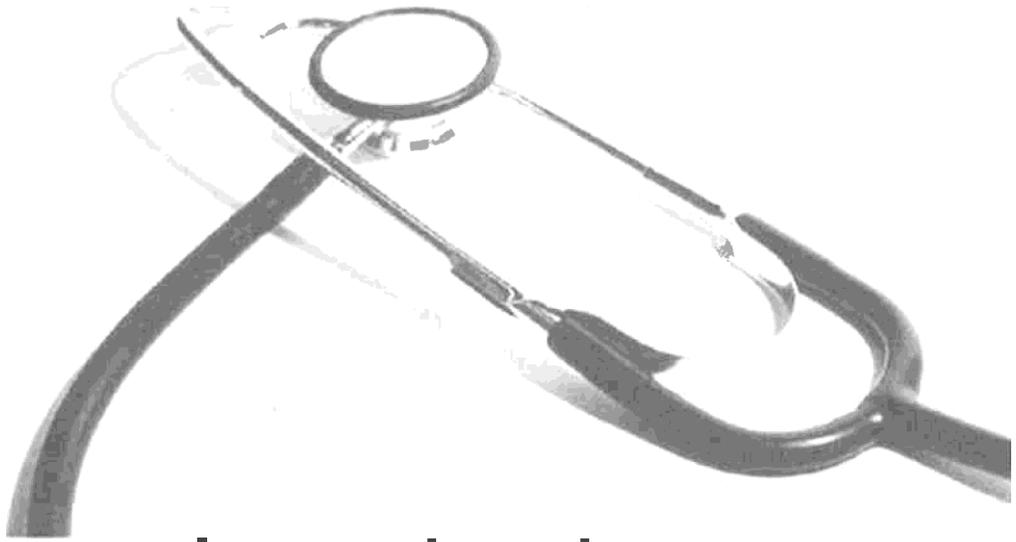
This document discusses the details of an in depth community health assessment for the Southwest Region of North Dakota (Region VIII) including the counties of Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark. This document was created to document various health concerns that affect North Dakotans primarily living in southwestern North Dakota.



The document covers ten sections including: Demographics, Access to Health Care, Preventative Health Care, 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.



# Introduction

## Demographics

Census	Adams	Billings	Bowman	Dunn	Golden Valley	Hettinger	Slope	Stark	Region VIII	N D.
2000	2,593	888	3,242	3,600	1,924	2,715	767	22,636	38,365	642,200
2010	2,332	783	3,151	3,563	1,680	2,477	727	24,199	38,912	672,591
Change	-9.0%	-9.0%	-9.7%	-9.9%	-8.7%	-9.1%	-9.5%	+9.4%	+9.9%	+9.5%

North Dakota 's population grew 9.5% between the years 2000-2010. Stark County and Region VIII saw an increase in population while Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, and Slope Counties all saw population decreases. North Dakota's percentage of 20-24 year olds is high compared to the other age groups at almost 10%.

A large oil boom in recent years has significantly changed the population and landscape of western North Dakota, including the Region VIII counties. As a result, population, housing shortages, homelessness, crime, traffic, and traffic fatalities have all increased. Some other side effects of this oil activity boom include increased sexually transmitted diseases, environmental risks and inspections, and decreases in vaccinations and immunizations.

## 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%. When it comes to actually going to the doctor, 6.2% of North Dakota respondents reported they were unable to do so due to the medical costs. It has been found that those who are most affected in North Dakota are rural residents, young adults, 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, there are still many who do not undergo mammograms and examinations on a regular basis. Statewide, 23.1% of women who are over 40 have not had a mammogram in the last 2 years. As for men's health, prostate cancer is the 2nd 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. Statewide, 45.4% of men have not had a PSA test in the past two years.

## **Communicable Disease**

Though physicians and laboratories are required by law to report certain communicable diseases to their local health department, many go unreported. North Dakota has a long list of diseases that are required to be reported. The top four communicable diseases for all eight counties were as follows: influenza, Chlamydia, Enterococcus, vancomycin-resistant (VRE), and gonorrhea. 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. 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 school age children have ever had sex and of those, 34% were

not using condoms. This is probably the main reason why STDs and teen pregnancies are so high in the age group and continues to rise.

### **Environmental Health**

Region VIII consisting of Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark counties has a ready environmental health staff prepared to handle a variety of environmental situations. There is a fully functioning environmental health program that provides services to all eight Region VIII counties. The environmental health department of the Southwestern District Health Unit conducts inspections of restaurants, schools, tanning booths, swimming pools, spas, and tattoo parlors. 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. There is a licensed water testing lab which tests for bacteria on pools, wells, and water samples. There's also an agreement in place with the North Dakota Department of Health to assist with mobile home, RV park, convenient stores, and other site inspections. These additional inspections are conducted to assist with the growing demand of the oil activity in the state. Coordination with environmental health and the emergency preparedness division to respond to oil spills and chemical releases has also been put in place. An agreement between the NDDOH and SWDHU has been made for school inspections to be done twice a year.

### **Behavioral Risk Factors**

Behavior risk factors are those in which can be changed or eliminated if a person

is willing to do so. The six factors of discussion in this document are: nutrition, physical activity and body weight, tobacco, drug use, alcohol, and intentional/unintentional injury. When it comes to nutrition, the food plate is the guide for providing the proper number of servings required from each food group, but most people don't follow these recommendations.

Not eating right, along with physical inactivity may cause health problems such as 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. This may lead to higher risks of Type II diabetes, high blood pressure, heart disease, stroke, depression, or certain types of cancer.

Smoking may also lead to many health issues as cigarette smoke alone contains 4,800 chemicals, 69 of which are known to cause cancer. Smoking 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.

Consumption of alcohol may also lead to addiction and this addiction can only be changed if those with the addiction are willing. North Dakota is listed at 21.4% for adult binge drinking and is in the top 5 states when it comes to gallons of beer consumed each year. The state is also in the top 10 with the highest rates of drunken driving. Youth alcohol consumption, with over 35,000 youth each year drinking alcohol, accounts for 20% of all alcohol sold in the state. Of North Dakota's middle school age children, 44% have had at least one drink in their life while 73% of high school age students 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 5th leading cause of death in the United States with 2,000 youth dying each year from unintentional 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.

### **Mental Health**

Mental illness affects millions of people each year with roughly 1 in 17 Americans living with some form of mental illness. Four of the 10 leading causes of disability in the United States are due to mental illness. The most common mental illness is depression, which affects at least 19 million people each year in the United States. When left untreated, depression may lead to suicide which is the 11th cause of death in the United States. Approximately, one suicide occurs every 15.2 seconds. For those over 18 years of age in the state, 7-10% have experienced some form of depression. In 2009, there were 89 suicides making it the 9th leading cause of death in the state.

### **Causes of Death**

The top leading causes of death for each county were: heart disease, cancer, stroke, Alzheimer's disease, chronic obstructive pulmonary disease (COPD), unintentional injuries, diabetes mellitus, pneumonia, influenza, cirrhosis of the liver, and suicide. Rates may vary between age groups due to different lifestyles, exposures, behaviors, along with a variety of 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.

## County Rankings

The County Health Rankings system, a tool used to measure the health of a county, is a fairly new system. The goal of the county health ranking system is to educate the community and help motivate involvement in improving the overall health of the community. 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, and health outcomes, which describe how healthy a community actually is, and those with rankings closest to 1 are healthiest. The table below lists the health outcomes and health factors for Region VIII counties.

	Adams	Billings	Bowman	Dunn	Golder, Valley	Hettinger	Slope	Stark
Health Outcomes-	29	*	32	34	*	*	*	13
Health Factors	8	*	6	24	*	*	*	7
Health Behaviors	3	*	4	20	*	*	*	17
Chronic Care	12	*	33	22	*	*	*	17
Social & Economic Factors	19	*	5	25	*	*	*	6
Physical Environment	41	*	33	28	*	*	*	34

\*Not surveyed .



# Demographics

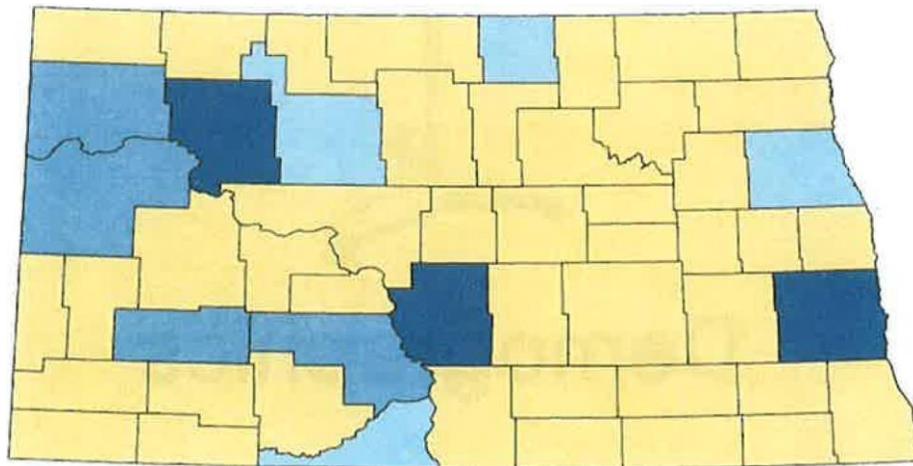
## Demographics

The U.S. Census Bureau reported that the population of North Dakota increased by 0.7% between the years 2000 and 2009. The tables below show the changes in population for the Region VIII counties and that of North Dakota from the years 2000 to 2009 by total population and by gender. (Missouri Census Data center (MCDC), 2010). 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. Figure 1.1 shows the population change by county for the state of North Dakota. Figure 1.2 shows the total persons living in rural and urban areas.

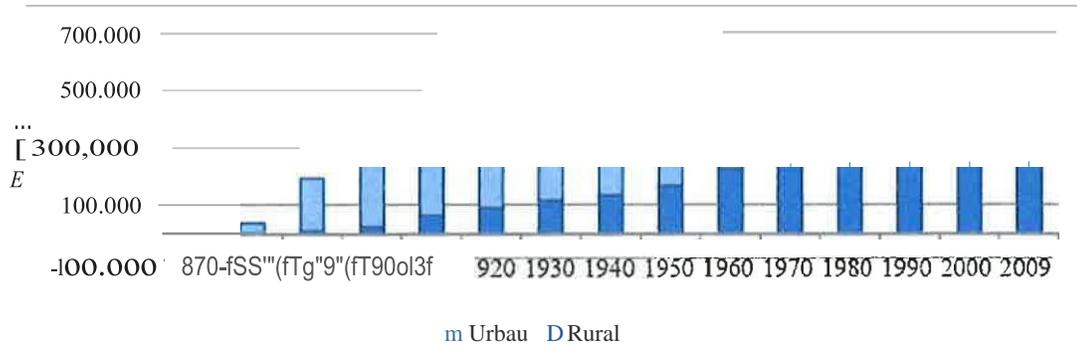
Figure 1.1 Population Change by County

### POPULATION CHANGE BY COUNTY: 2000-2010

0-5% 5-15% 15-20% 20-25% 25-30% 30-35% 35-40% 40-45% 45-50% 50-55% 55-60% 60-65% 65-70% 70-75% 75-80% 80-85% 85-90% 90-95% 95-100% 100-105% 105-110% 110-115% 115-120% 120-125% 125-130% 130-135% 135-140% 140-145% 145-150% 150-155% 155-160% 160-165% 165-170% 170-175% 175-180% 180-185% 185-190% 190-195% 195-200% 200-205% 205-210% 210-215% 215-220% 220-225% 225-230% 230-235% 235-240% 240-245% 245-250% 250-255% 255-260% 260-265% 265-270% 270-275% 275-280% 280-285% 285-290% 290-295% 295-300% 300-305% 305-310% 310-315% 315-320% 320-325% 325-330% 330-335% 335-340% 340-345% 345-350% 350-355% 355-360% 360-365% 365-370% 370-375% 375-380% 380-385% 385-390% 390-395% 395-400% 400-405% 405-410% 410-415% 415-420% 420-425% 425-430% 430-435% 435-440% 440-445% 445-450% 450-455% 455-460% 460-465% 465-470% 470-475% 475-480% 480-485% 485-490% 490-495% 495-500%



Source: United States Census Bureau



The target population of the Pathways to Healthy Lives program includes residents living in the eight counties of Southwestern North Dakota. Rural North Dakota is aging, especially in the southwest region. All of the eight counties have documented a higher rate of residents 65 years old and over compared to the state percentage. In southwestern North Dakota, the median population over 65 is 20.7% with North Dakota at 14.7% (2010 Census). Between 2005 and 2015, the number of North Dakotans ages 65 and older will increase by 23 percent; the number of North Dakotans ages 85 and older will increase by 33 percent. (North Dakota Cancer Control Plan 2011-2016).

Table 1.1 shows the population and the percentage of county population for ages 0-17 and ages 65 and older for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope and Stark counties and for the state of North Dakota.

Table 1.1 Population and Percentage of County Population for Ages 0-17 and 65 and Older, 2005-2007

Population and Percentage of County Population for Ages 0-17 and 65 and Older, 2005-2007										
	Adams		Billings		Bowman		Dunn		Golden Valley	
0-17	601	23.2%	221	24.9%	780	24.1%	986	27.4%	545	28.3%
65+	624	24.1%	142	16.0%	707	21.8%	625	17.4%	410	21.3%
	Hettinger		Slope		Stark		SW District		North Dakota	
0-17	634	23.4%	194	25.3%	5,781	25.5%	9,742	25.4%	143,500	22.5%
65+	683	25.2%	137	17.9%	3,510	15.5%	6,838	17.8%	92,750	14.5%

The population by gender varies slightly among counties but all, including North Dakota, have almost equal amounts of females and males. It is possible to view the racial

makeup of the counties and North Dakota for the year 2010. The below graphics show the changes in population for each of the counties in southwestern North Dakota (US Census Bureau). Table 1.2 compares shows the populations for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope and Stark counties for 2000 and for 2010 and the change in population in that decade. Note that due to the increase in oil activity, the population figures will significantly change over the coming years.

Table 1.2 Populations for 2000 and 2010 and changes in population

Census	Adams	Billings	Bowman	Dunn	Golden Valley	Hettinger	Slope	Stark	Region VIII	N.D.
2000	2,593	888	3,242	3,600	1,924	2,715	767	22,636	38,365	642,200
2010	2,332	783	3,151	3,563	1,680	2,477	727	24,199	38,912	672,591
Change	-9.0%	-9.0%	-9.7%	-9.9%	-8.7%	-9.1%	-9.5%	+9.4%	+9.9%	+9.5%

Summary: subject to change due to oil boom, all dropped except Stark, Region VIII, N.D.

Table 1.3 below lists the median income per household, population density, poverty rate and population for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark counties including North Dakota. A household is that in which consists of all the people living in one housing unit regardless if they are related or not. The average population density of the eight counties is 3.8 people per square mile. All counties are designated as frontier having six or less people per square miles based on federal standards. The average population density for North Dakota is 9.8 people per square mile. In table one, the population of each county is an average of 4,800 people, although both Billings and Slope counties have less than 800 people each. These two counties have less than one person per square mile (Billings 0.7 and Slope 0.6 people per square mile).

**Table 1.3**

County	Population ( 010)	Population density or persons per square mile (2010)	Median household income (2009)	poverty Rate (2009)	Square Miles
<b>Adams,</b>	2,332	2.4	\$39,799	11.5%	987.91
<b>Billings</b>	783	0.7	\$45,844	10.4%	1,151.41
<b>Bowman</b>	3,151	2.7	\$47,247	7.7%	1,162.05
<b>Dunn</b>	3,536	1.8	\$44,681	11.2%	2,009.60
<b>Golden Valley</b>	1,680	1.7	\$35,081	13.3%	1,001.99
<b>Hettinger</b>	2,477	2.2	\$37,123	15.4%	1,132.25
<b>Stutsman</b>	727	0.6	\$32,265	13.1%	1,217.94
<b>Ward</b>	24,199	18.1	\$51,385	9.6%	1,338.16
<b>AVERAGE</b>	4,862	3.8	\$41,678	11.5%	10,001.31
					Total Square Mile
<b>North Dakota</b>	672,591	9.8	\$47,898	11.7%	68,975.93

(Source: <http://quickfacts.census.gov/qfd/states/38/38089.html>)

"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, 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.

**Crime**

Crime in Region VIII has remained below the national average for years but as oil activity increases and the population increases, the region has seen a significant rise in crime including violence, domestic violence, rape, burglary, vandalism and homicide. According to an article published in the Dickinson Press on November 27, 2011, the Dickinson Police Department was investigating more than 600 crime reports in 2010. The increase in crime has resulted in an increase in need for police officers, sheriffs, first responders, fire fighters and other emergency services. Many rural areas are also seeing

an increase in crimes. Table 1.4 shows the crime rates from the year 2008 for Region VIII. Note that these numbers are expected to increase in the coming years due to increasing population and oil activity.

**Table 1.4 Number of Crimes for Region VIII, 2008**

	Adams	Billings	Bowman	Dunn	Golden Valley
<b>Murder</b>	0	*	*	0	*
<b>Rape</b>	2	*	*	0	*
<b>Robbery</b>	0	*	*	0	*
<b>Assault</b>	2	*	*	0	*
<b>Burglary</b>	4	*	*	0	*
<b>Larceny</b>	5	*	*	0	*
<b>Motor Vehicle Theft</b>	0	*	*	0	*
	Hettinger	Slope	Stark	Region VIII	North Dakota
<b>Murder</b>	0	*	0	0	4
<b>Rape</b>	0	*	1	3	222
<b>Robbery</b>	0	*	1	1	71
<b>Assault</b>	0	*	34	36	738
<b>Burglary</b>	1	*	40	45	2,035
<b>Larceny</b>	6	*	304	315	8,926
<b>Motor Vehicle Theft</b>	2	*	51	53	854

\*No Data.

### **Birth Rate and Pregnancies**

"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).

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 1.5 below list the birth rates for Region VIII counties. Stark County saw 83 teenage pregnancies while North Dakota saw 4,097 teenage pregnancies.

Due to the increased population in the state, birth rates are on the rise and are expected to increase over the next several years.

**Table 15 Number of Live Births and Live Birth Rates, 2004-2008**

	<b>Adams</b>	<b>Billings</b>	<b>Bowman</b>	<b>Dunn</b>	<b>Golden Vallev</b>
<b>Number of Live Births</b>	99	30	162	162	74
<b>Live Birth Rate</b>	8	6.8	10	9	7.7
	<b>Hettinger</b>	<b>Slope</b>	<b>Stark</b>	<b>Region VIII</b>	<b>North Dakota</b>
<b>Number of Live Births</b>	91	21	1,402	2,041	42,925
<b>Live Birth Rate</b>	6.7	5.5	12	11	13

### **Oil Impacts**

During the 1980's, western North Dakota experienced an oil boom that resulted in increases in population, infrastructure, housing, and other services. That oil boom slowed down during the 1990's but in recent years, another major oil boom has begun in the region. The area has seen a significant increase in population. Issues with housing, infrastructure, traffic, and increased crime rates are all side effects of such an oil boom. With the limited housing available in the region, many have been living in camper trailers or even in tents. During the winter months in particular, these conditions can prove to be hazardous to one's health. The cost of living for the existing housing units and apartments throughout the region has also increased. Because of the housing shortage and

expensive costs for existing housing, the risk of increased homeless rates is a real threat to many parts of the region (Oil Impacts: City of Dickinson, 2011).

For both rural and urban areas of western North Dakota, the impacts of the oil activity are felt not only in housing but in increased traffic. Highways connecting small towns have seen a dramatic increase in truck activity. The number of traffic related accidents has increased and is expected to increase as the population increases in the years to come. The oil boom of the 1980's lasted only for several years but this particular oil activity is expected to remain a major part of North Dakota's economy for many years and even decades to come (Oil Impacts: City of Dickinson, 2011).

Historically in areas throughout the country, oil exploration and drilling resulted in a wide range of impacts to community health. In Region VIII, the changes have already been seen in the area:

- An increase in sexually transmitted diseases has occurred and an increase in the number of HIV positive people from out of state
- Visits to area hospitals have increased and the severity of the situations hospitals are dealing with have also increased
- There are language barriers between residents with an increase in Spanish language usage
- A decrease in the need for some of the region's public health services has occurred but there has been a marked increase in services like STD testing
- An increase in environmental incidents
- Increase in the number of septic system permit applications

- Decrease in the bike ability and walking ability on streets due to the increased traffic
- Issues with retaining and recruiting staff
- Unlicensed tattoo artists are showing up in some areas
- Increased risky behavior
- Housing shortages and homelessness have increased and emergency planning for these individuals (i.e. vaccinations, tornado and winter shelters) has become increasingly challenging
- Air quality has decreased
- Food pantries are having a more difficult time keeping up with demand
- Substandard housing and older, abandoned houses are now being used
- School health increases in out-of-state students leads to the processing of more vaccination certificates without a reimbursement mechanism
- Increase in people who are not receiving vaccinations
- Increases in violence, domestic violence, rape and child protection meetings
- Decline in mental health
- Schools have also reported increased bullying in schools between new students and resident students
- Increase in foster children
- Increase in non-community water inspections
- Increase in the number of complaint calls to offices for environmental concerns



# Access to Health Care

## Access to **Health** Care

Having access to health care services can have a powerful impact on the use of health care and overall health outcomes. Measuring access to health care is important when trying to evaluate the quality of the nation's health care system. When there are problems with this access, 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)).

Figure 2.1 shows there are three primary health centers in southwestern North Dakota. St. Joseph's Hospital & Health Center in Dickinson, Southwest Healthcare Services in Bowman, and West River Health Services in Hettinger. All three hospitals are critical access with 25 beds. The region has private health care practitioners and community based providers. Dickinson Clinic and Great Plains Clinic, both in Dickinson, are two private health care clinics in Stark County. Other private health care practitioners are St. Joseph's Hospital Rural Health Clinics in Beach (Golden Valley County) and in Killdeer (Dunn County), Southwest Medical Clinic in Bowman County, and West River Health Clinics in Bowman (Bowman County), Hettinger (Adams County), Mott (Hettinger County), New England (Hettinger County), and Scranton (Bowman County). The region's community-based providers are the Badlands Human Service Center (in all eight counties), the Community Action Partnership Family Clinic in Dickinson (Stark County) and Scranton (Bowman County), the Southwestern District Health Unit (all eight counties), Tribal Health, and Twin Buttes Clinic (Dunn County). Twin Buttes Clinic services are intermittent and based on provider availability.

Figure 2.1 Primary Health Centers in Southwest North Dakota

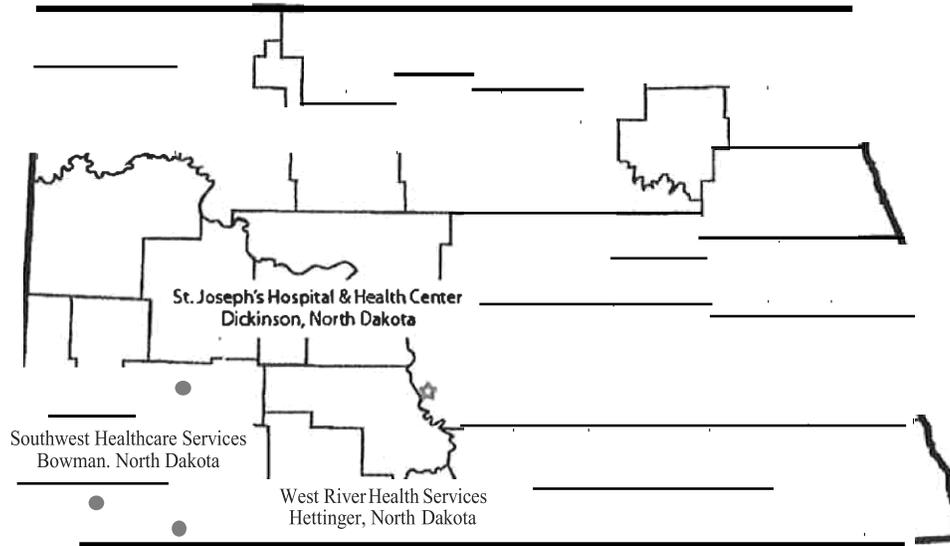


Figure 2.2 shows the statewide access to health care and medically underserved areas and populations. Only a portion of Stark and Adams are considered medically served. The rest of the region is generally underserved and rely on services in other counties (particularly Stark and Adams counties) for services. The eight counties of southwestern North Dakota have significant physical isolation from specialty health care providers. Many people must travel 200 miles round trip to see a physician. The distances to travel with the challenge of harsh climatic conditions have a significant impact on the ability of residents to seek medical services, even further for specialty health care providers. The increase in the price of gasoline, also, may keep people with limited incomes from driving the distance necessary to receive medical attention. The increase of transient population related to recent oil activity has made timely medical appointments and medical access more difficult to obtain.

Figure 2.2 North Dakota Medically Underserved Areas and Populations

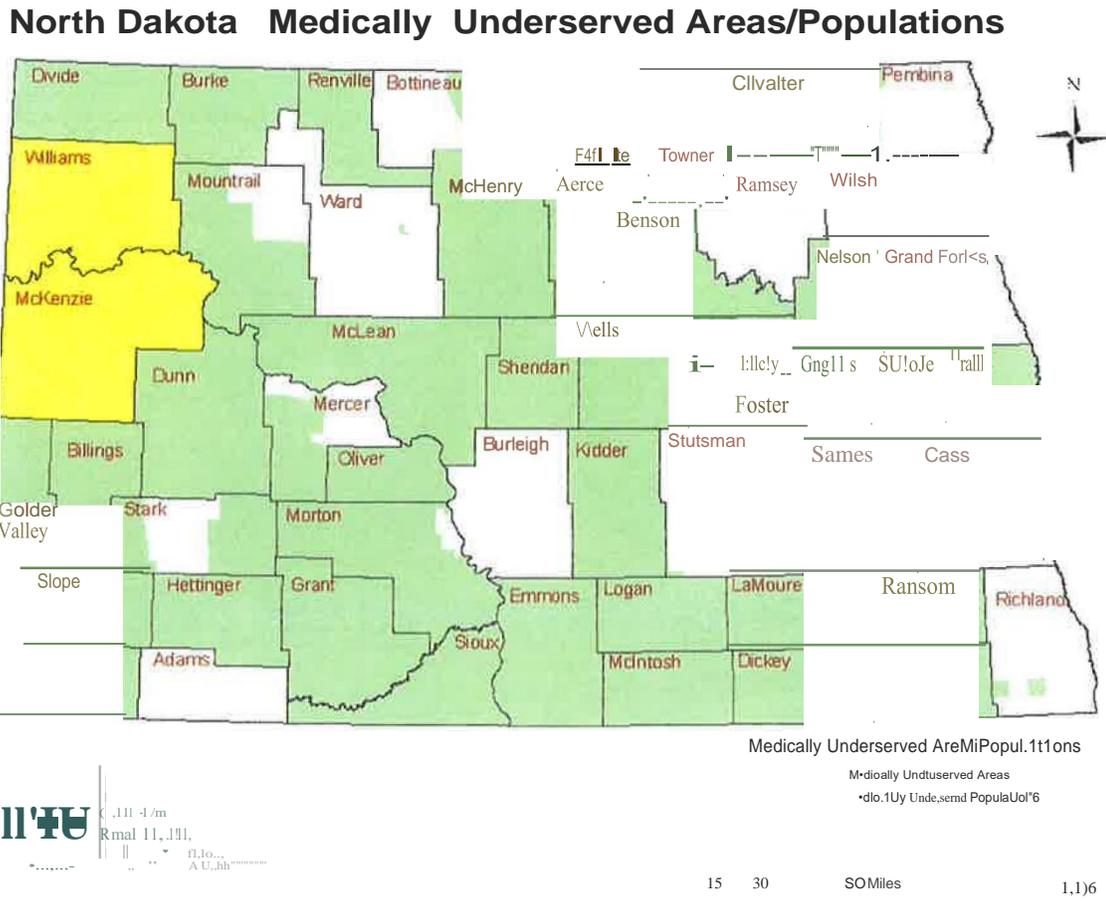
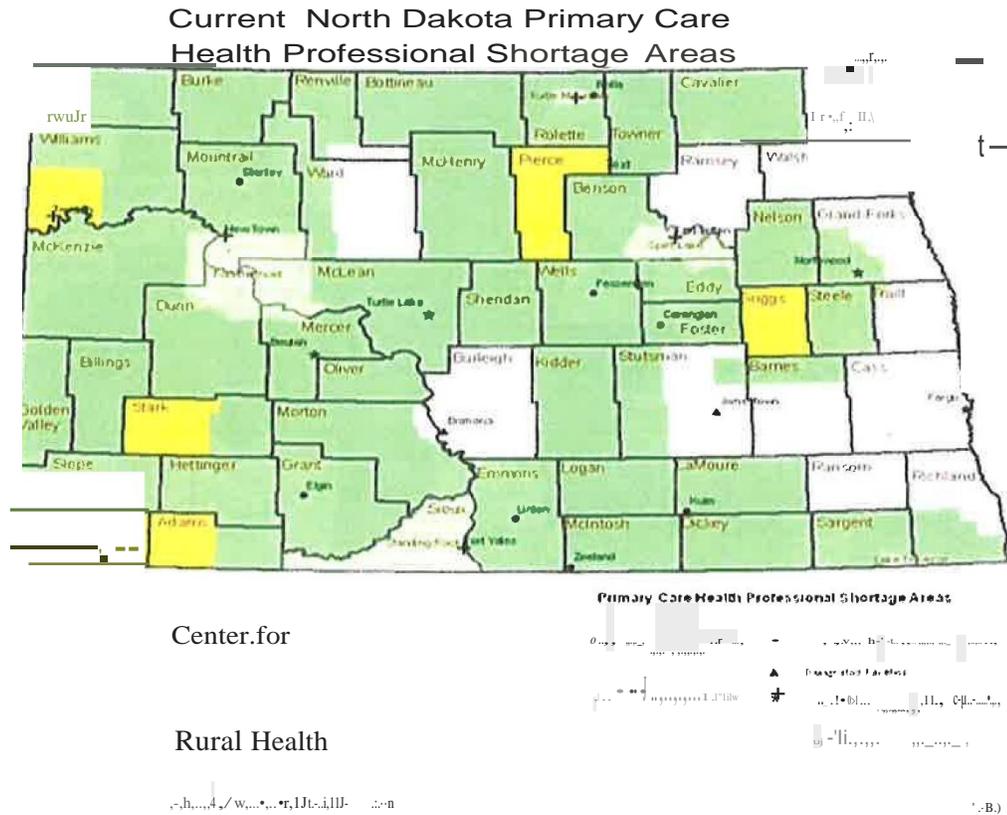


Figure 2.3 below illustrates the statewide primary care health professional shortages.

Figure 2.3 Current North Dakota Primary Care Health Professional Shortage Areas



"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 mostly 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). North Dakota's workforce is also being affected since there's a concern for health care profession shortages. (Wakefield, Volkov, and Opsahl, 2009, slide 22).

In 2005, North Dakota had the 9th highest hospital admission rates in the country at 137 per 1,000 and the 9th 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). As far as health insurance coverage is concerned, sixty-six percent of respondents in North Dakota reported their health coverage was Blue Cross and Blue Shield even though there are many types of health care coverage in the state (NDDOH, 2009a).

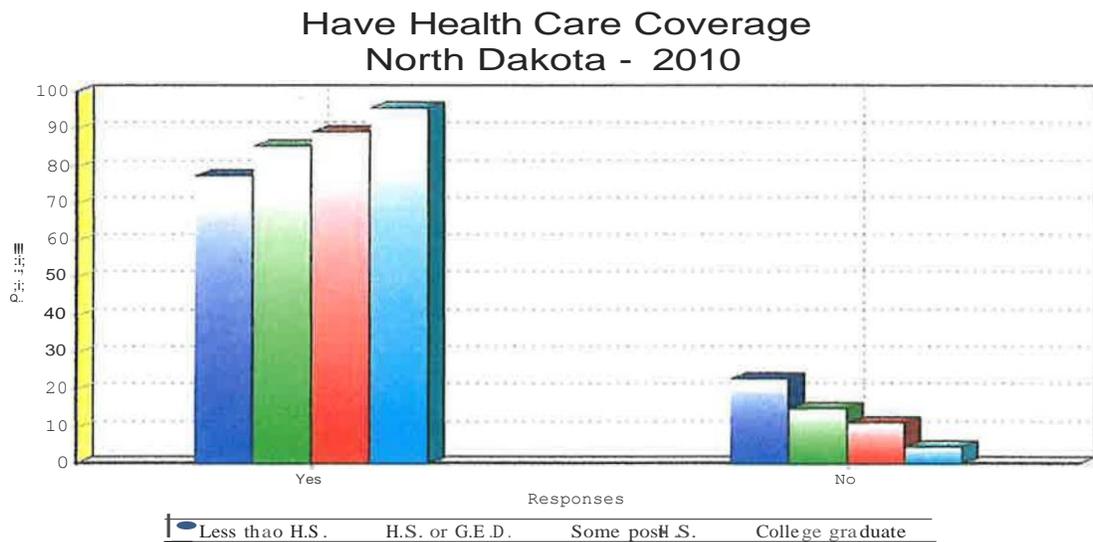
For North Dakota, it can be observed that regardless of income, the majority of residents are covered with some type of health care coverage. Table 2.1 below depicts the percentages of those who do and do not have coverage based on income (CDC, 2009b).

Table 2.1 Percent of population who do and do not have health care coverage based on income

Percent of population who do and do not have health care coverage based on income					
	<\$15,000	\$15,000-24,999	\$25,000-34,999	\$35,000-49,000	> \$50,000
Yes	81.4%	76%	88.1%	93.9%	94.5%
No	18.6%	24%	11.9%	6.1%	5.5%

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

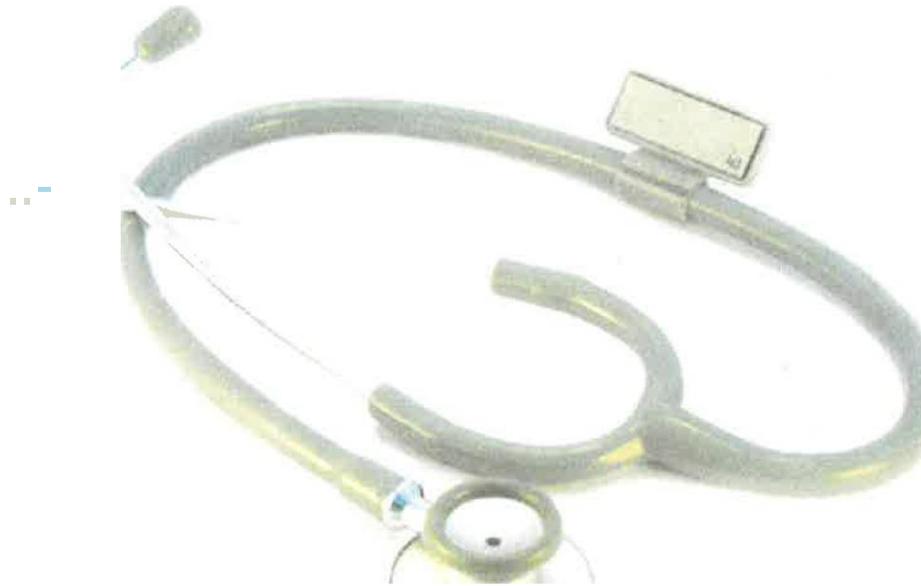
Figure 2.4 Health Care Coverage for North Dakota, 2010



## **Causes of Hospitalization**

St. Joseph's Hospital and Health Center in Dickinson reported that the top diagnosis admissions are primarily for hypertension, injuries related to falls, heart diseases and cardiac complications, diabetes, urinary disorders, headaches, and anemia. The emergency department is capable of treating a variety of illnesses but the primary emergency room diagnoses are falls, accidents (automobile), hypertension, diabetes, URI, headaches, heart and cardiac complications, and back pain.

Emergency room visits in Dickinson were up 10% from 2009 to 2010 and were up 5% more from 2010 to 2011. The first quarter of this current fiscal year saw an increase in visits by 8% compared to last year at this time. The increased oil activity has brought in more residents to the area and, as a result, has led to an increase in hospital services. This trend is expected to continue as the population throughout western North Dakota continues to rise.



# 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

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					✓		✓	✓	

Source: Division of Health Assessment and Promotion, DeKalb County Board of Health

## 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 3.2 shows the percentage of women over 40 who have not had a mammogram in the past two years for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark Counties and North Dakota (NDDOH, 2009a).

Table 3.2 Percentage of Female Respondents 40 and Older Who Reported They Had Not Had a Mammogram in the Past Two Years, 1999-2007

Percentage of Female Respondents 40 and Older Who Reported They Had Not Had a Mammogram in the Past Two Years, 1999-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
9.5 (0.9-18.1)	<i>NIA</i>	<i>NIA</i>	<i>NIA</i>	<i>NIA</i>
Hettinger	Slope	Stark	SWDHU	North Dakota
<i>NIA</i>	<i>NIA</i>	26.0 (19.0-33.0)	26.2 (21.1-31.2)	24.7 (23.4-26.0)

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 3.3 depicts the percentage of women over 18 who have not had a Pap smear test in the last 3 years for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark Counties and North Dakota (NDDOH, 2009a).

Table 3.3 Percentage of Female Respondents 40 and Older Who Reported They Had Not Had a Pap Smear Test in the Past Two Years 1999-2007

Percentage of Female Respondents 40 and Older Who Reported They Had Not Had a Pap Smear Test in the Past Two Years, 1999-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
5.2 (0.0-10.5)	<i>NIA</i>	<i>NIA</i>	<i>NIA</i>	<i>NIA</i>
Hettinger	Slope	Stark	SWDHU	North Dakota
10.2 (0.1-20.3)	<i>NIA</i>	18.5 (12.1-24.8)	17.7 (13.3-22.2)	13.0 (12.1-14.0)

## 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 3.4 shows the percentages of men who have not had a PSA test in the last two years for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark Counties and North Dakota (NDDOH, 2009a).

Table 3.4 Percentage of Male Respondents 40 and Older Who Reported Not Having a Prostate Specific Antigen (PSA) Test in the Past Two Years, 1999-2007

Percentage of Male Respondents 40 and Older Who Reported Not Having a Prostate Specific Antigen (PSA) Test in the Past Two Years, 1999-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
<i>NIA</i>	<i>NIA</i>	<i>NIA</i>	<i>NIA</i>	<i>NIA</i>
Hettinger	Slope	Stark	SWDHU	North Dakota
<i>NIA</i>	<i>NIA</i>	58.8 (48.2-69.5)	57.5 (50.0-65.0)	50.9 (48.8-52.9)

## 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 3.5 describes the percentage of those over 50 who have not had a sigmoidoscopy or colonoscopy for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark Counties and North Dakota (NDDOH, 2009a).

Table 3.5 Percentage of Respondents 50 and Older Who Reported They Have Never Had a Sigmoidoscopy or Colonoscopy, 1999-2007

Percentage of Male Respondents 40 and Older Who Reported Not Having a Prostate Specific Antigen (PSA) Test in the Past Two Years.1999-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
<i>NIA</i>	<i>NIA</i>	<i>NIA</i>	<i>NIA</i>	<i>NIA</i>
Hettinger	Slope	Stark	SWDHU	North Dakota
<i>NIA</i>	<i>NIA</i>	50.1 (40.2-60.0)	48.2 (41.6-54.8)	44.8 (43.0-46.6)

## 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).

## **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).

## **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 3.6 shows the percentage of respondents who reported that they have not seen a dentist in the past two years. Table 3.7 shows the percentage of those who have lost six or more teeth due to oral diseases for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark Counties and North Dakota (NDDOH, 2009a).

Table 3.6 Percentage of Respondents 18 and Older Who Reported They Have Not Seen a Dentist in the Past Two Years., 1999-2007

Percentage of Respondents 18 and Older Who Reported They Have Not Seen a Dentist in the Past Two Years. 1999-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
<i>NIA</i>	<i>NIA</i>	<i>NIA</i>	<i>NIA</i>	<i>NIA</i>
Hettinger	Slope	Stark	SWDHU	North Dakota
<i>NIA</i>	<i>NIA</i>	20.7 (15.9-25.6)	24.0 (20.3-27.7)	19.6 (18.7-20.4)

Table 3.7 Percentage of Respondents 18 and Older Who Reported Having Lost Six or More Permanent Teeth Due to Decay or Gum Disease, 1999-2007

Percentage of Respondents 18 and Older Who Reported Having Lost Six or More Permanent Teeth Due to Decay or Gum Disease, 1999-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
25.9 (14.8-37.1)	<i>NIA</i>	16.1 (6.8-25.4)	10.9 (2.9-19.0)	10.7 (1.8-19.7)
Hettinger	Slope	Stark	SWDHU	North Dakota
13.4 (4.1-22.7)	<i>NIA</i>	19.3 (15.0-23.6)	18.1 (15.0-21.1)	18.4 (17.6-19.2)

## 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.

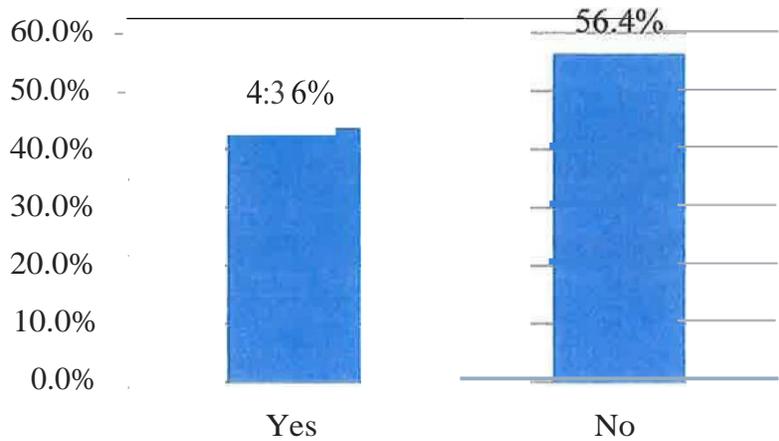
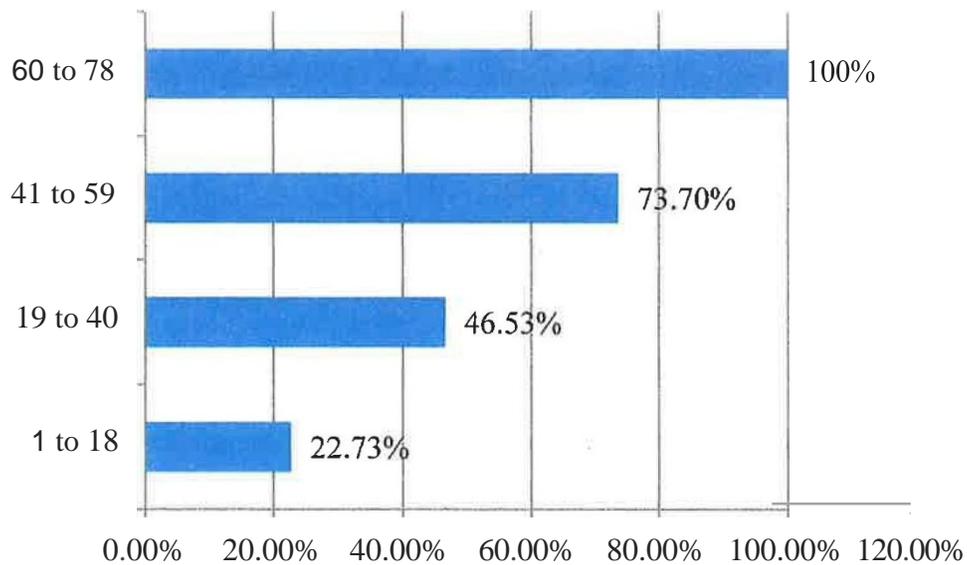


Figure 3.2 Lifetime UV exposure in the United States.





# Communicable Diseases

## Communicable Diseases

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 4.1 lists some of those diseases and how many cases were reported for the state of North Dakota for 2010-2011 (NDDOH, 2007 and NDDOH, 2010a).

	April-June 2011	January- June 2011	April-June 2010	January- June 2010
Camovibacteriosis	52	69	46	54
Chicken pox	8	22	12	30
Chlamydia	545	1099	640	1106
Cryptosporidiosis	12	20	11	17
E. Coli shiga toxin+	8	11	4	7
E. Coli O157:07	0	1	1	1
Enterococcus, vancomycin-resistant (VRE)	61	124	102	177
Giardiasis	19	30	5	12
Gonorrhea	49	107	49	94
Hantavirus	5	9	3	8
Hepatitis A, acute	0	0	1	2
Hepatitis B, acute	0	0	0	0
Hepatitis C, acute	0	0	0	0
HIV/AIDS	8	14	7	14
Influenza	189	2001	7	30
Leishmaniasis	0	1	1	3
Listeriosis	1	1	0	0
Lyme Disease	4	4	7	8
Malaria	0	0	0	0
Measles/Scarlet Disease	2	0	1	1
Mumps	2	5	0	1
Pertussis	10	29	19	22
Q-Fever	0	0	0	0
Rabies (animal)	3	6	4	6
Rocky Mt. Spotted Fever	0	0	1	1
Salmonellosis	18	28	8	18
Shigellosis	0	0	0	0
Staphylococcus aureus (MRSA)	16	43	19	33
Streptococcal pneumonia	0	0	2	2
Syphilis	0	0	0	0
Trichinosis	0	0	0	0
Tuberculosis	5	6	4	7
Tularemia	0	0	0	0
Typhoid Fever	0	0	1	1
West Nile Virus	0	0	1	1

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. (DPI, 2009a). Table 4.2 below shows the sexual behavior of youth in North Dakota, the Region VIII counties, and urban and rural areas.

Table 4.2 2009 YRBS results for 9 <sup>th</sup> -12 <sup>th</sup> Graders for Region VIII (SW North Dakota) and North Dakota regarding sexual behavior				
	North Dakota	Region VIII	Urban Areas	Rural Areas
% students ever having sex	44.8%	39.7%	42.6%	43.2%
% students having sex by age 13	3.7%	2.4%	3.8%	3.7%
% students who believe abstinence is important	47.4%	48.5%	49.0%	46.9%

Table 4.2 2009 YRBS results for 7 <sup>th</sup> and 8 <sup>th</sup> Graders for Region VIII (SW North Dakota) and North Dakota regarding sexual behavior				
	North Dakota	Region VIII	Urban Areas	Rural Areas
% students ever having sex	8.8%	9.9%	10.2%	9.8%
% students having sex by age 13	1.5%	1.9%	2.2%	1.3%
% students who believe abstinence is important	58.1%	58.5%	59.3%	55.6%



# Environmental Health

## Environmental Health

The World Health Organization (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 five 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

The Southwestern District Health Unit conducts inspections on numerous public establishments such as schools, daycares, bars, restaurants, pools, social services, tattoo parlors and sewers. These inspections have generally increased in the last 20 years although there was a slight decrease in 2010. The table below shows the number of inspections conducted over the last 20 years in the region.

Year	Bar/Rest.	Sewer	Complaints	Daycare	School	Institution	Pool
2010	355	46	35	38	55	12	24
2000	334	131	44	43	32	32	10
1990	235	41	40	16	34	11	0

Year	NCP	Body Art	Social Services	San. Requests	Total	Water Collection	Contacts
2010	34	12	3	22	626	336	1113
2000	48	0	0	24	694	301	1185
1990	46	0	5	4	432	N/A	463

### Hunting and Lead in North Dakota

Hunting in North Dakota is a popular past-time and has a major 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, the Centers for Disease Control and Prevention (CDC) studied the risk of lead consumed by wild game due to lead bullets. There was concern that lead levels in humans who ate venison with lead in their systems. 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 2 µg/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).

### **Oil Response**

With the increase in oil production and oil activity, environmental health, working with emergency preparedness, have seen an increase in response to oil incidents. The Southwestern District Health Unit's Environmental Health and Emergency Preparedness divisions work in coordination with the county emergency management as well as the North Dakota Department of Health to respond to incidents. This coordination helps to minimize the incidents. Preparations for various environmental hazards will also be key as the risk for spills and other issues associated with oil drilling will always be possible.

### **Emergency Preparedness**

The Southwestern District Health Unit has been increasing its involvement with the community, county, state, and even federal levels when it comes to emergency

preparedness. Training exercises, points of dispensing (PODS), certifications, and continued work with the communities are just a few of the ways the emergency preparedness department of the Southwestern District Health Unit has been preparing for emergencies. Emergency preparedness is important not only for the handling of potential scenarios like bioterrorism but for disasters like tornadoes, blizzards, floods, and recently, environmental disasters from oil spills.

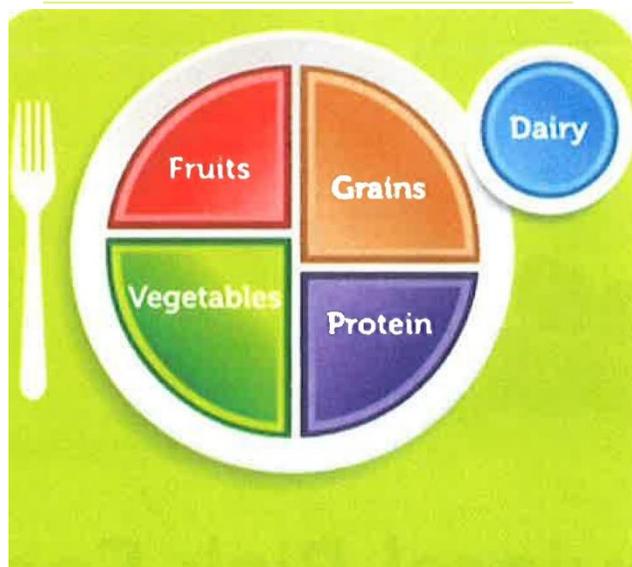


## Behavioral Risk Factors

## 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.

**Figure 6.1 USDA Food Plate.**



### **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). The USDA (2010) said 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).

Similar to fruits, daily vegetable intake is also based on gender, age, and physical activity levels but the USDA states that 1-3 cups of vegetables daily is still a healthy range.

(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). The USDA states that when choosing a dairy product, it 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 to any diet. The daily recommendations for dairy intake 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).

**Protein group**

Any food made from meat, fish, poultry, dry beans, peas, eggs, nuts, and seeds are part of this group (USDA, 2009d). When choosing a protein, such as 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). Daily recommendations for the meat and bean group, again varying by age, gender, and physical activity is anywhere from 2-6 ounces daily (USDA, 2009d).

**Adult nutrition**

The eating habits of those living in Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark counties and North Dakota seem to vary quite a bit from the Food Plate, especially when it comes to fruits and vegetables, as shown in Table 6.1 (NDDOH, 2009a). An average of 76.9% of respondents in Region VIII counties reported they do not eat five servings of fruits and vegetables each day.

<b>Table 6.1 Percentage of Respondents 18 and Older Who Reported They Do Not Eat Each Five Servings of Fruits and Vegetables Daily, 1999-2007</b>				
<b>Adams</b>	<b>Billings</b>	<b>Bowman</b>	<b>Dunn</b>	<b>Golden Valley</b>
74.1 (64.3-84.0)	<i>N/A</i>	78.7 (69.1-88.3)	78.1 (68.9-87.3)	76.8 (64.8-88.9)
<b>Hettinger</b>	<b>Slope</b>	<b>Stark</b>	<b>SWDHU</b>	<b>North Dakota</b>
84.6 (76.8)	<i>N/A</i>	75.6 (71.6-79.6)	76.9 (74.0-79.8)	78.1 (77.4-78.8)

**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. Table 6.2 shows the dietary

intake results for 7th and 8th graders in North Dakota and Region VIII counties, as well as urban and rural areas in the state (DPI, 2009a & DPI, 2009b).

Table 6.2 2009 YRBS results for 7 <sup>th</sup> -8 <sup>th</sup> Graders for Region 8 (SW North Dakota) and North Dakota				
	North Dakota	Region 8	Urban Areas	Rural Areas
% students having >3 glasses of milk per day in the past week	36.9%	36.5%	36.2%	35.6%
% students eating fruit 1 or more times in the past week	93.8%	94.0%	93.6%	92.4%
% students eating vegetables 1 or more times in the past week	91.3%	90.4%	90.4%	91.1%
% students eating breakfast 7 of the last 7 days	48.3%	49.2%	48.3%	45.6%

Table 6.3 below shows the dietary intake for 9<sup>th</sup> through 12<sup>th</sup> graders in North Dakota, Region VIII and in rural and urban areas.

Table 6.2 2009 YRBS results for 9 <sup>th</sup> -12 <sup>th</sup> Graders for Region 8 (SW North Dakota) and North Dakota				
	North Dakota	Region 8	Urban Areas	Rural Areas
% students having >3 glasses of milk per day in the past week	23.4%	20.2%	22.7%	27.1%
% students eating fruit 1 or more times in the past week	90.6%	90.6%	90.5%	91.1%
% students eating vegetables 1 or more times in the past week	82.6%	84.9%	82.4%	84.0%
% students eating breakfast 7 of the last 7 days	38.2%	35.9%	38.3%	36.1%

### 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) lists the American society as "obesogenic" due to the fact that it is an environment that promotes increased food intake, non-healthy 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 and it helps to alleviate pain for arthritis, and helps fight symptoms of anxiety and depression (WAWM, 2002). Without adequate exercise, more visits to the doctor and even hospitalization, which can all be very expensive, tends to be the result. 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, such as dietary choices, weight management, and physical activity (WAWM, 2002). The CDC (2009d) recommends that individuals spend 150 minutes per week or 30 minutes per day doing regular physical activity at a moderate to intense pace as this will not only help to maintain body weight over time and 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 6.4 describes the activity levels for Region VIII counties along with North Dakota. Table 6.5 describes activity limitations within the last 30 days.

Table 6.4 Percentage of Respondents 18 and Older Who Reported Any Activity Limitation, 1999-2007.

Percentage of Respondents 18 and Older Who Reported Any Activity Limitation, 1999-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
20.7 (13.6)	<i>NIA</i>	19.1 (12.0-26.2)	17.7 (10.9-24.5)	13.8 (7.1-20.5)
Hettinger	Slope	Stark	Region VIII	North Dakota
14.1 (8.0-20.2)	<i>NIA</i>	15.9 (13.3-18.4)	16.5 (14.6-18.5)	15.2 (14.7-15.7)

Table 6.5 Percentage of Respondents 18 and Older Who Reported Eight or More Days in the Past 30 Days Which They Had Poor Physical Health, 1999-2007.

Percentage of Respondents 18 and Older Who Reported Eight or More Days in the Past 30 Days Which They Had Poor Physical Health, 1999-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
11.3 (5.6-16.9)	<i>NIA</i>	11.5 (5.5-17.5)	12.7 (7.0-18.3)	13.6 (5.8-21.4)
Hettinger	Slope	Stark	Region VIII	North Dakota
9.8 (4.2-15.3)	<i>NIA</i>	9.3 (13.3-18.4)	16.5 (14.6-18.5)	15.2 (14.7-15.7)

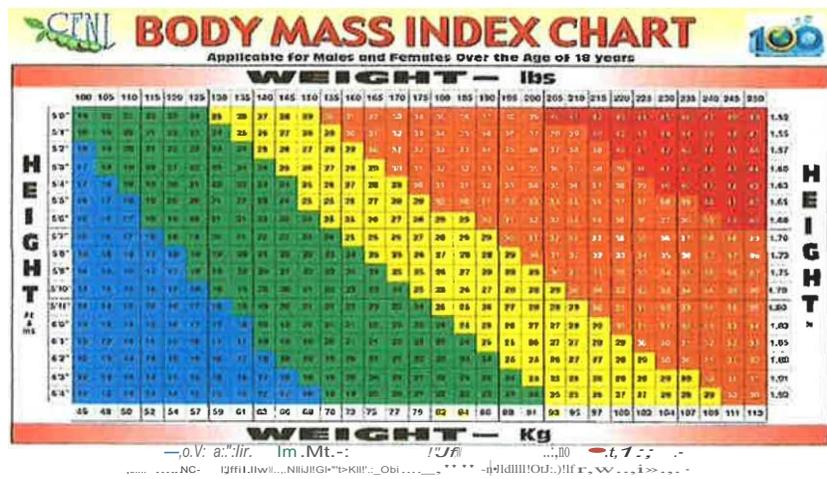
Table 6.6 below shows the physical activity for youths 9th grade to 12th grade in North Dakota, the Southwestern counties and in rural and urban areas. Table 6.7 lists the physical activity for 7th and 8th graders.

Table 6.6 2009 YRBS results for 9th-12th Graders for Region VIII (SW North Dakota) and North Dakota regarding physical activity				
	North Dakota	Region VIII	Urban Areas	Rural Areas
% students who were physically active for at least 60 minutes per day 5 or more days of the last 7	45.7%	50.4%	47.3%	48.8%
% students who spend >30 minutes exercising during PE class	44.1%	45.9%	48.2%	42.4%
% students who watches hours of TV on a school day	24.8%	23.6%	22.6%	25.1%
% students who played video or computer games or used a computer not for homework 3 hours on a school day	25.1%	20.6%	24.7%	24.7%

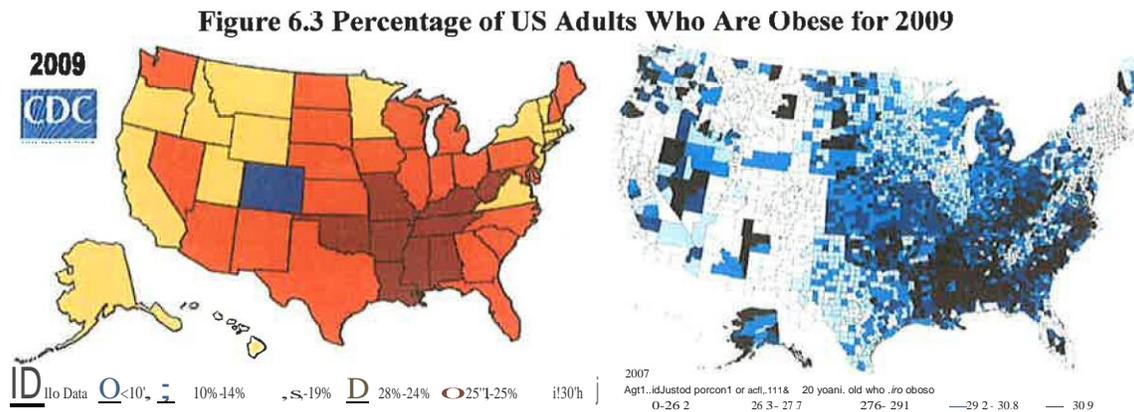
	North Dakota	Region VIII	Urba n Areas	Rural Ares
% students who were physically active for at least 60 min utes per day 5 or more days of the last 7	60.0%	55.6%	60.4%	59.6%
% students who watches :::3 hours of TV on a school day	29.8%	29.3%	27.3%	30.2%
% students who played video or computer games or used a computer not for homework :::3 hours on a school day	29.5%	30.7%	28.6%	30.4%

Body weight is becoming an issue because more and more people in America and worldwide are eating less healthy and not getting enough exercise. The 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. It helps determine if one is below a healthy weight, at a normal weight, overweight, or obese (NHLBI, 2010), see Figure 6.2.

Figure 6.2 Body Mass Index Chart



Putting things into perspective compared to the rest of the nation, Figure 6.3 shows the percent of US adults who are obese for 2009 per state and counties for 2007 (CDC, 2010d).



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 6.8 presents data for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark Counties in regards to body weight, including North Dakota (NDDOH, 2009a).

Table 6.8 Percentage of Respondents 18 and Older Who Are Overweight or Obese by Body Mass Index, 2000-2007

Percentage of Respondents 18 and Older Who Are Overweight or Obese by Body Mass Index, 2000-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
61.1 (51.6-70.7)	N/A	60.1 (50.3-69.8)	64.3 (55.2-73.4)	58.2 (47.0-69.4)
Hettinger	Slope	Stark	Region VIII	North Dakota
67.5 (57.7-77.3)	N/A	61.5 (57.7-65.3)	61.5 (58.6-64.3)	62.9 (62.2-63.6)

Table 6.9 shows the percentage of people in Southwestern North Dakota who are considered overweight according to the Body Mass Index. Table 6.10 shows the percentage that are considered obese according to the Body Mass Index.

Table 6.9 Percentage of Respondents 18 and Older Who Are Overweight by Body Mass Index, 2000-2007

Percentage of Respondents 18 and Older Who Are Overweight by Body Mass Index, 2000-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
37.1 (28.1-46.0)	<i>NIA</i>	41.5 (32.6-50.4)	35.3 (26.6-43.9)	39.5 (28.5-50.5)
Hettinger	Slope	Stark	Region VIII	North Dakota
40.9 (30.9-50.9)	<i>NIA</i>	39.2 (35.5-42.9)	38.6 (35.9-41.3)	38.8 (38.1-39.5)

Table 6.10 Percentage of Respondents 18 and Older Who Are Obese by Body Mass Index, 2000-2007

Percentage of Respondents 18 and Older Who Are Obese by Body Mass Index, 2000-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
27.1 (19.1-35.1)	<i>NIA</i>	18.9 (12.5-25.4)	27.8 (19.1-36.5)	23.5 (14.2-32.8)
Hettinger	Slope	Stark	Region VIII	North Dakota
22.6 (14.6-30.6)	<i>NIA</i>	22.6 (19.4-25.8)	23.0 (20.7-25.3)	23.2 (22.6-23.8)

Becoming overweight or obese affects any age, race, and both genders proving that the obesity epidemic is clearly understood. With more and more people, including the young, facing obesity, 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, which makes it the leading cause of preventable death in the United States. which accounts 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 9.11 describes the percentage of those who smoke or have tried to quit smoking for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark Counties compared to North Dakota (NDDOH, 2009a). According to the table, 18.7% of respondents in the Region VIII counties indicated they are current smokers.

Table 6.11 Percentage of Respondents 18 and Older Who Reported They Were Current Smokers, 1999-2007

Percentage of Respondents 18 and Older Who Reported They Are Current Smokers, 1999-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
16.1 (9.7-22.5)	<i>N/A</i>	16.4 (9.2-23.5)	14.6 (8.2-21.0)	19.1 (10.6-27.7)
Hettinger	Slope	Stark	Region VIII	North Dakota
21.5 (12.9-30.0)	<i>N/A</i>	19.4 (16.5-22.3)	18.7 (16.5-20.8)	21.1 (20.5-21.7)

#### 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 school age children and 7.3% of 7/8th graders smoked cigarettes, a three-fold rate increase between middle school and high school. Of these, 53% of high school age children tried quitting during the previous 12 months (NDDOH, 2010d). Table 6.12 compares smoking habits for middle school and high school for the Region VIII counties, North Dakota and the urban/rural areas (DPI, 2009a & DPI, 2009b).

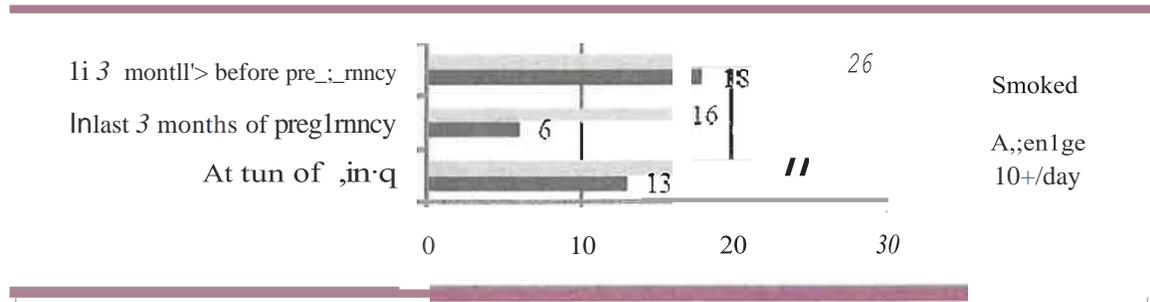
Table 6.12

2009 YRBS results for 7th and 8th Graders for Region VIII (SW North Dakota) and North Dakota				
	North Dakota	Region VIII	Urban Areas	Rural Areas
% students smoking 20 or more of the last 30 days	1.4%	0.0%	1.6%	1.2%
% students who smoked a cigarette for the first time by age 11	3.5%	2.4%	3.8%	4.4%
2009 YRBS results for 9th - 12th Graders for Region VIII and North Dakota regarding smoking:				
% students smoking 20 or more of the last 30 days	8.3%	6.0%	8.7%	7.5%
% students who smoked a cigarette for the first time by age 13	8.6%	9.2%	8.8%	9.4%

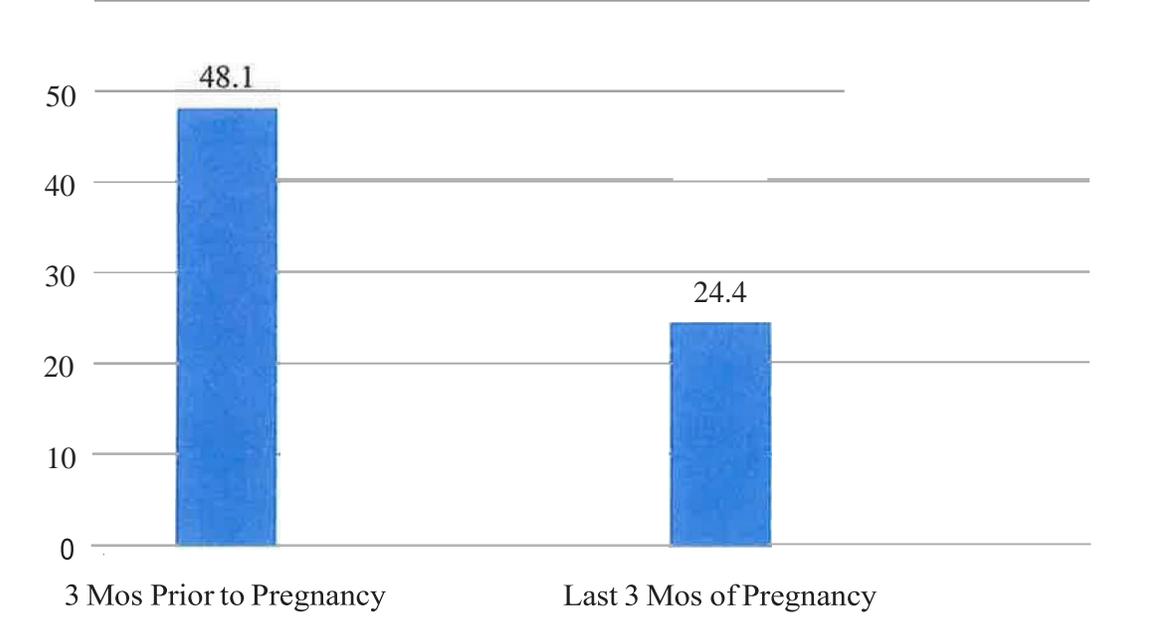
### Smoking during pregnancy.

Studies have shown that women who use tobacco products while pregnant have a higher chance of having unfavorable birth outcomes. These negative outcomes 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 6.4. 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 6.5. 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 6.4 Percentage Women Who Smoked and Who Averaged 10 or More Cigarettes Per Day**



**Figure 6.5 Percent Prevalence of Smoking by Race and Ethnic 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). Regardless of the tobacco product 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 6.13 lists the results for percentage of adult North Dakotans who use smokeless tobacco products and Table 6.14 lists middle and high school percentages who use smokeless tobacco products (NDDOH, 2009b, DPI, 2009a & DPI, 2009b).

Table 6.13 BRFSS Results for Percent of Adult North Dakotans Who Use Smokeless Tobacco for 2007

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 snuffi	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 6.14

2009 YRBS results for 7th and 8th Graders for Region VIII (SW North Dakota) and North Dakota reordin !! smokeless tobacco				
	North Dakota	Region VIII	Urban Areas	Rural Ares
% students using chew, dip, or snuff one or more times in the past 30 days	3.2%	3.0%	2.7%	4.6%
% students using cigars or cigarillos one or more times in the past 30 days	2.7%	1.8%	2.5%	2.9%
2009 YRBS results for 9th through 12th Graders for SWDHU and North Dakota regarding smokeless tobacco				
% students using chew, dip, or snuff one or more times in the past 30 days	13.6%	18.9%	11.5%	17.6%
% students using cigars or cigarillos one or more times in the past 30 days	13.5%	12.3%	13.0%	11.6%

Quitting, treatment, and policies.

In order for tobacco use to be treated, individuals need to be identified. 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).

On 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.

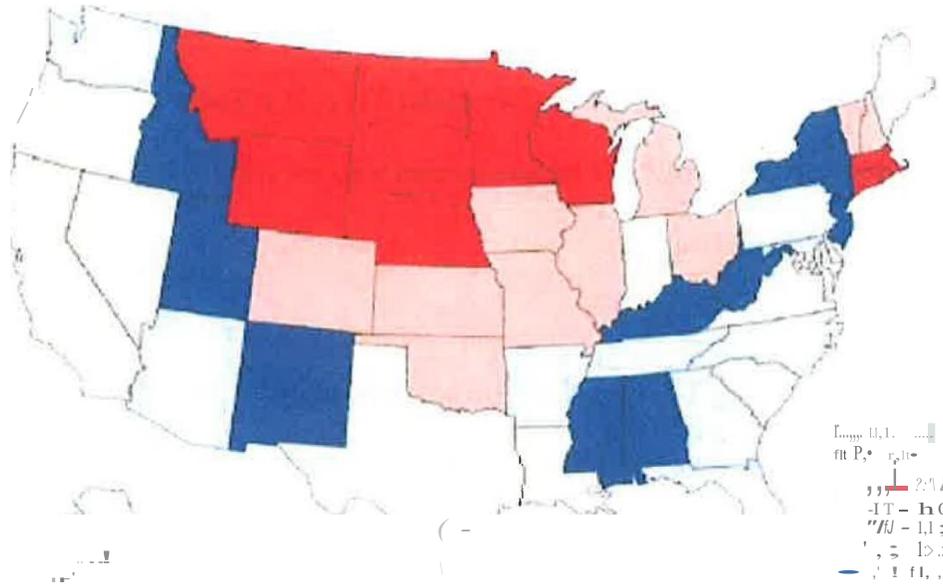
## Alcohol and Other Drug Use

### **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 6.6 (National Survey on Drug Use and Health (NSDUH), 2010).

Figure 6.6 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). Tables 6.15 and 6.16 shows various data on alcohol consumption for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark Counties along with North Dakota (NDDOH, 2009a).

Table 6.15 Percentage of Respondents 18 and Older Who Reported Binge Drinking, 1999-2007

Percentage of Respondents 18 and Older Who Reported Binge Drinking: 1999-2007				
Adams	Billings	Bowman	Dunn	Golden Valley
11.9 (5.0-18.8)	9.4 (0.4-18.5)	18.8 (10.6-27.1)	14.5 (7.5-21.4)	19.3 (9.4-29.3)
Hettinger	Slope	Stark	Region VIII	North Dakota
18.6 (9.9-27.3)	N/A	19.1 (15.8-22.4)	17.6 (15.3-20.0)	21.1 (20.4-21.7)

Table 6.16 Percentage of Respondents 18 and Older Who Reported Heavy Drinking, 1999-2007

Percentage of Respondents 18 and Older Who Reported Heavy Drinking, 1999-2007			
Adams	Billings	Bowman	Dunn
2.0 (0.0-4.4)	5.3 (0.0-12.8)	5.9 (0.9-10.9)	2.6 (0.0-5.3)
Hettinger	Slope	Stark	Region VITI
2.2 (0.0-5.2)	2.9 (0.0-8.6)	6.0 (3.7-8.3)	4.7 (3.3-6.1)
			Golden Valley
			1.9 (0.0-4.6)
			North Dakota
			5.1 (4.7-5.4)

Figures 6.7 and 6.8 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 6.7 Percent North Dakotan Adults 18-25 Who Consume Alcohol Compared to the Nation

18 to 25 Year Old Alcohol Consumption  
(IHOUH, 2008)

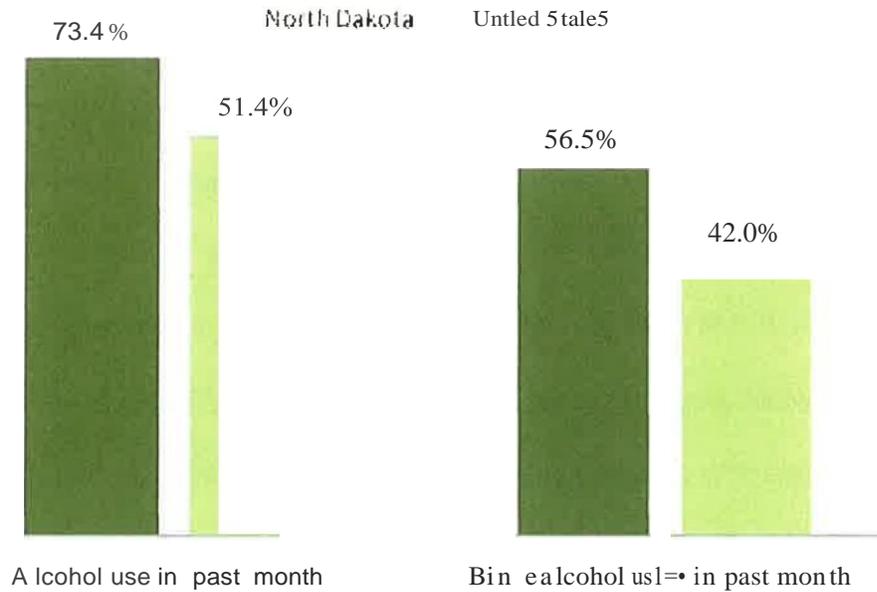
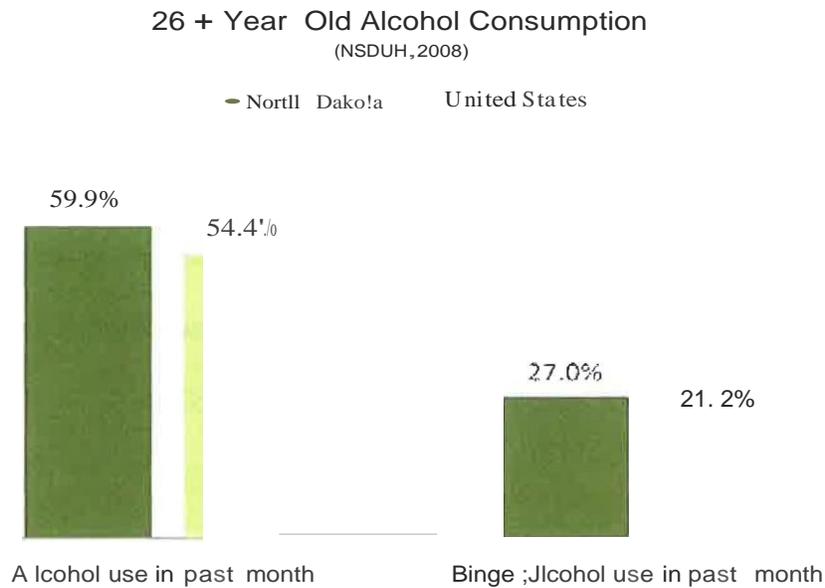


Figure 6.8 Percent North Dakotan Adults 26 and Older Who Consume Alcohol Compared to the Nation



## Youth

Forty-four percent of North Dakota middle school age children have had at least one drink in their life while seventy-three percent of high school age children 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 34th 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 6.17 shows percentages of middle school age children and high school age children that have had alcohol for North Dakota, the Region VIII counties, and the urban and rural areas (DPI, 2009a & DPI 2009b).

Table 6.17

2009 YRBS results for 7th and 8th Graders for Region VIII (SW North Dakota) and North Dakota				
re:ardine: alcohol				
	North Dakota	Ree:ion VIII	Urban Areas	Rural Ares
% students having first drink of alcohol by age 11, not including taking sips	8.3%	11.1%	8.1%	9.8%
% students ever riding in a car with a driver who had been drinkine: alcohol	36.4%	33.3%	32.6%	43.2%
2009 YRB..S results for 9th throue:h 12th Graders for Ree:lon 8 and North Dakota ree:ard in2 alcohol				
% students having first drink of alcohol by age 13,not including taking sips	16.7%	28.2%	15.7%	19.7%
% students having at least one drink one or more times in the past 30 days	38.8%	41.2%	34.2%	41.0%

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, 2010±).

Table 6.17 describes common drug use among North Dakota youth for the state, region, urban areas, and rural areas (DPI, 2009a & bPI, 2009b).

Table 6.17 2009 YRBS results for 9th through 12th Graders for Region VIII (SW North Dakota) and North Dakota				
	North Dakota	Region VIII	Urban Areas	Rural Areas
% students using Marijuana for first time by age 13	6.3%	5.2%	6.8%	6.2%
% students using Marijuana one or more times in the past 30 days	15.3%	10.5%	18.7%	13.1%
% students using over the counter drugs to get high 1 or more times in their life	11.2%	9.6%	13.6%	8.7%
% students taking prescription drugs 1 or more times during their life without doctor's consent	16.2%	14.6%	19.6%	14.6%
% students using any form of cocaine 1 or more times in their life	6.0%	3.7%	7.0%	4.3%
% students using any form of an inhalant to get high 1 or more times in their life	11.6%	8.5%	12.8%	10.3%
2009 YRBS results for 7th-8th Graders for Region VIII and North Dakota				
% students using Marijuana for first time by age 11	2.4%	1.2%	2.1%	2.8%
% students using over the counter drugs to get high	3.5%	3.3%	3.9%	3.5%
% students taking prescriptions without doctor's consent	4.7%	5.1%	4.8%	4.8%
% students using any form of inhalant to get high	7.4%	7.0%	8.7%	8.3%

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 6.18 lists the percentages of self-reported drug use in North Dakota for the years 2005-2006 (OAS, 2008a).

Table 6.18 Percent of North Dakotans Using Illegal Drugs By Age.

Percent of North Dakotans Using Illegal Drugs By Age		
	18-25 Years Old (%)	26 Years Old (%)
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

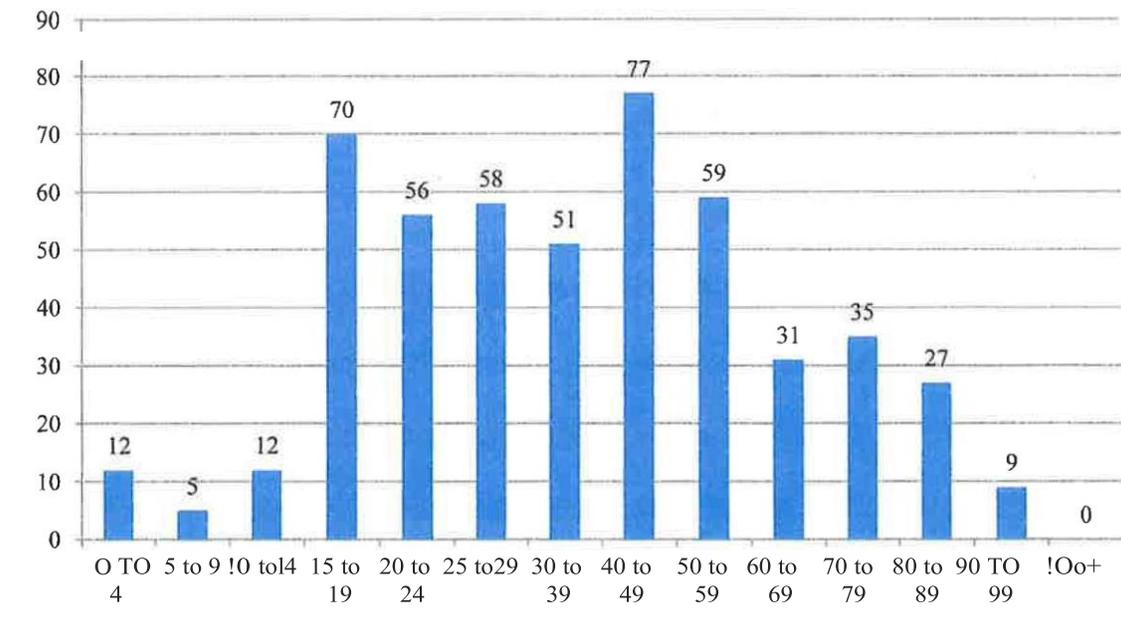
### Intentional and Unintentional Injuries

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 5th 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

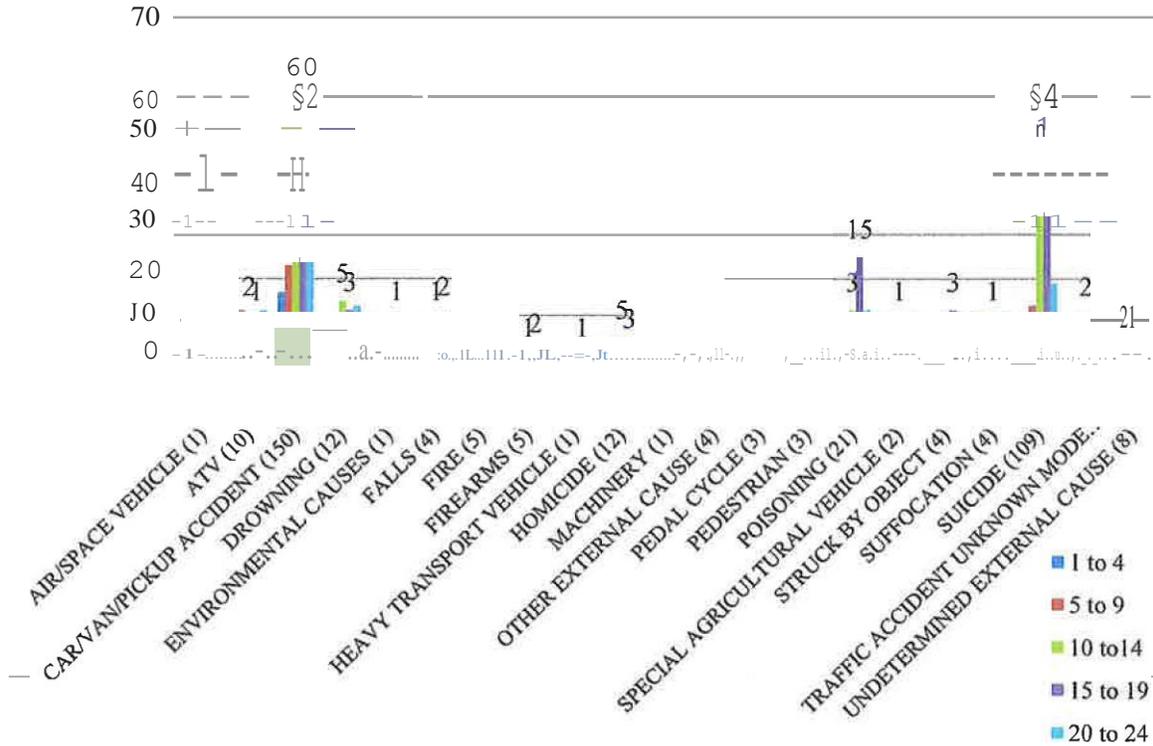
Ambulance Runs, Division of Vital Records and the Department of Transportation (Diana Read, personal communication, January 20, 2011). As a result, this section will focus more on deaths related to injuries. Motor vehicle injuries accounted for 2.3 million emergency room visits in 2009 with it being the leading cause of death for those ages 5-34 (CDC, 2010g). Figure 6.9 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).

Figure 6.9 2004-2008 Statewide Motor Vehicle Crashes by Age Group



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 2,000 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. Figure 6.10 shows statewide injury deaths for children ages 1-24 for the years 2004-2008 (Diana Read, personal communication, January 20, 2011).

Figure 6.10 2004-2008 Statewide 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.

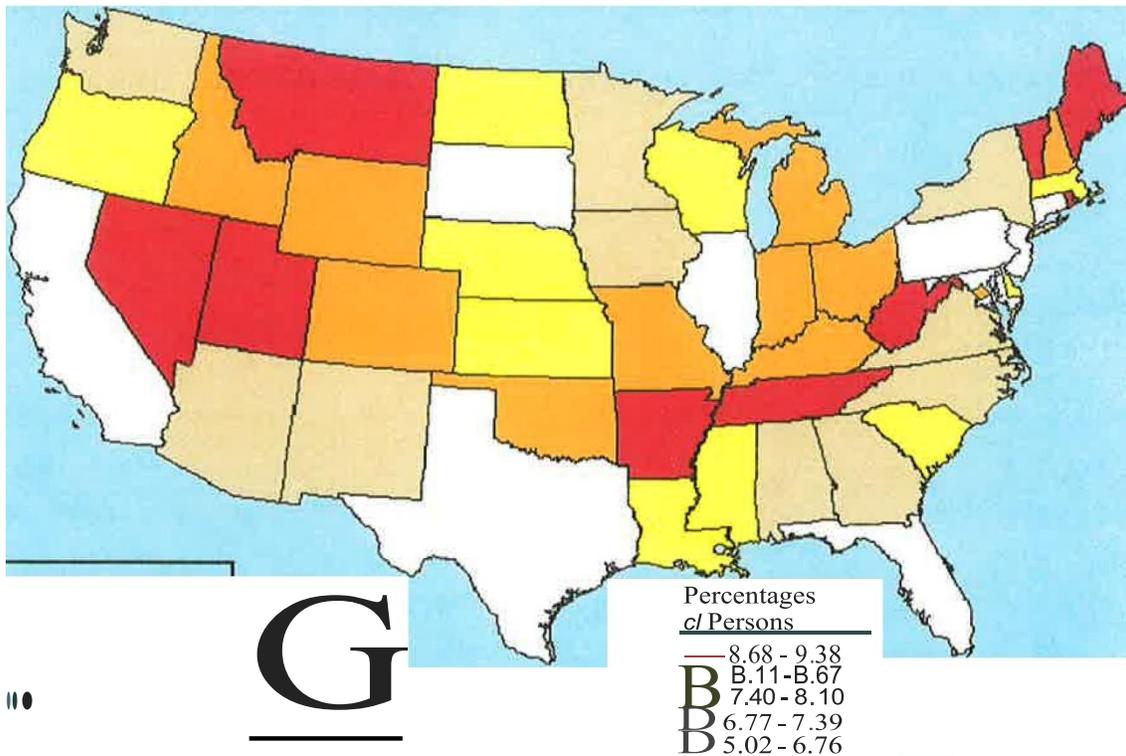
### Depression

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 7.1 shows the percent of adult respondents who feel bad or blue for the Region VIII counties.

Figure 7.1 shows 2005-2006 depression percentages by state for the United States (OAS, 2008b).

Table 7.1 Percent of adult respondents who feel bad or blue for Resdon VIII					
	Adams	Billine:	Bowman	Du nn	Golden Valley
Percent reporting having >8 of the last 30 days where their mental health wasn't 200d	7.3%	<i>NIA</i>	19.1%	17.7%	13.8%
	Hettine:er	Slope	Stark	Ree:ion VIII	North Dakota
Percent reporting having >8 of the last 30 days where their mental health wasn't 200d	14.1%	<i>NIA</i>	9.3%	10.4%	15.2%

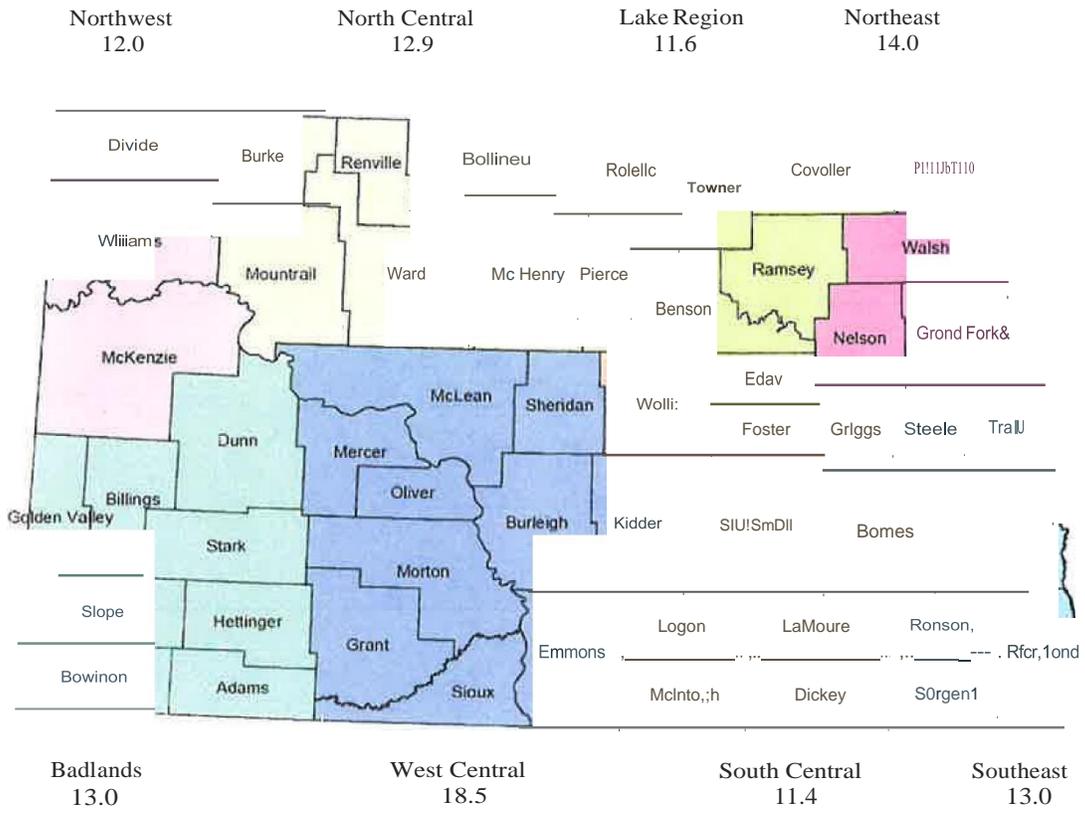
Figure 7.1 Percentage of major depressive episodes among persons 18 and older for 2005 and 2006 by state.

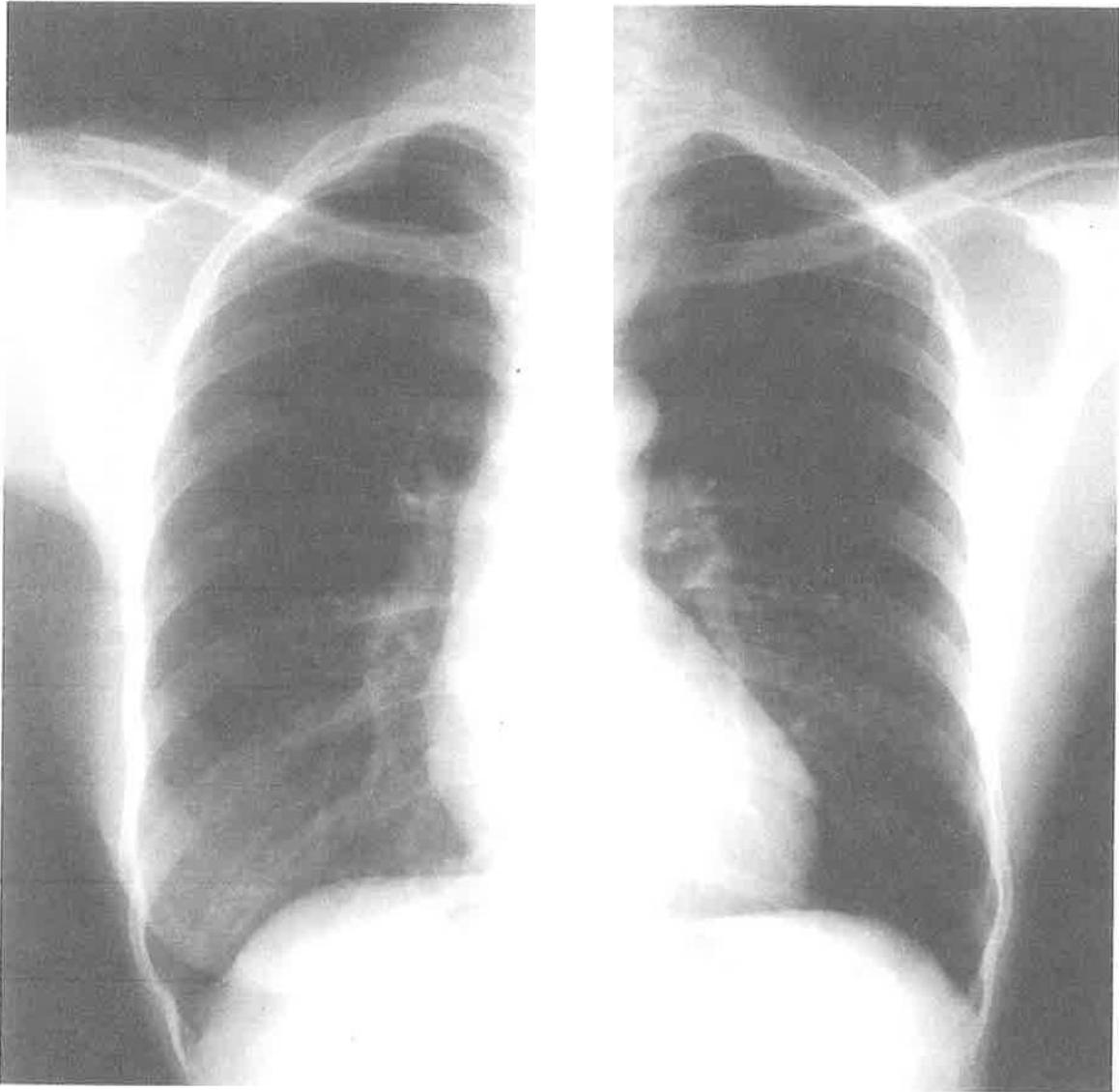


## **Suicide**

Being the 11th 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 9th 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 7.2, below shows the suicide rate for Region VIII of North Dakota and it shows the region saw a rate of 13.0 (NDDOH, 2009c).

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





## Causes of Death

## Causes of Death

The causes of death vary depending on a variety of factors. Age groups, lifestyles, exposures, behavioral factors, and internal processes are all considered. In 2009, North Dakota's leading cause of death was heart disease with over 1,000 deaths. In southwest North Dakota, 2008 statistics show that 128 out of 373 total deaths were heart related. CVD accounted for more deaths than from cancer, diabetes, suicide and Alzheimer's combined. Those who are overweight or obese have a higher chance of developing CVD. In addition, those who are overweight or obese are at an increased risk of high blood pressure, high cholesterol, coronary heart disease, stroke, Type II diabetes and other diseases. 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 were listed after heart disease. Table 8.1 below shows the leading causes of death in Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark Counties as well as Region VIII as a whole and the state of North Dakota.

**Table 8.1 Leading Causes of Death**

<b>Age-Adjusted Death Rate by County and Cause of Death, 2004-2008</b>					
<b>Cause of Death</b>	<b>Number (Rate)</b>				
	<b>Adams</b>	<b>Billings</b>	<b>Bowman</b>	<b>Dunn</b>	<b>Golden Valley</b>
All Causes	176 (744)	16 (323)	204 (737)	175 (728)	77 (510)
Heart Disease	48 (181)	<6 (58)	77 (247)	55 (209)	25 (152)
Cancer	40 (175)	<6 (93)	49 (197)	36 (153)	18 (120)
Stroke	6 (16)	<6 (21)	7 (20)	6 (22)	<6 (17)
Alzheimers Disease	6 (20)	0	8 (25)	<6 (18)	<6 (6)
COPD	8 (30)	<6 (36)	<6 (17)	7 (27)	<6 (47)
Unintentional Injury	13 (85)	<6 (75)	8 (61)	13 (73)	7 (57)
Diabetes	<6 (14)	0	7 (23)	<6 (18)	<6 (11)
Pneumonia and Influenza	6 (21)	0	10 (26)	<6 (11)	<6 (4)
Cirrhosis	2 (9)	0	0	<6 (13)	0
Suicide	<6 (5)	0	<6 (10)	<6 (22)	<6 (8)
Hypertension	<6 (11)	0	0	<6 (12)	<6 (6)
Arteriosclerosis	<6 (8)	0	0	<6 (3)	0
	<b>Hettinger</b>	<b>Slope</b>	<b>Stark</b>	<b>SWDHU</b>	<b>North Dakota</b>
All Causes	159 (626)	23 (555)	1044 (735)	1874 (577)	28494 (739)
Heart Disease	45 (157)	9 (213)	268 (178)	530 (151)	7327 (183)
Cancer	42 (171)	7 (146)	253 (187)	450 (145)	6573 (180)
Stroke	15 (54)	0	74 (49)	111 (31)	1872 (45)
Alzheimers Disease	7 (23)	0	55 (35)	82 (22)	1679 (38)
COPD	12 (45)	0	42 (30)	83 (26)	1449 (37)
Unintentional Injury	7 (55)	7 (196)	49 (40)	107 (43)	1477 (42)
Diabetes	<6 (18)	0	26 (19)	47 (15)	1059 (28)
Pneumonia and Influenza	<6 (9)	0	31 (20)	54 (14)	760 (18)
Cirrhosis	<6 (9)	0	8 (7)	15 (6)	295 (9)
Suicide	0	0	22 (19)	29 (12)	433 (13)
Hypertension	<6	0	10 (7)	20 (5)	307 (7)
Arteriosclerosis	<6 (7)	0	8 (5)	14 (4)	99 (2)

Cancer is one of the leading causes of death in the state. Table 8.2 shows the number of deaths caused by cancer for Region VIII from 1987 to 2009. The leading cause of cancer deaths in the state is lung cancer that accounted for 442 of the regions cancer deaths from 1987 to 2009. Large intestine, prostate, breast and pancreatic cancer were the other main leading causes of cancer deaths in the state.

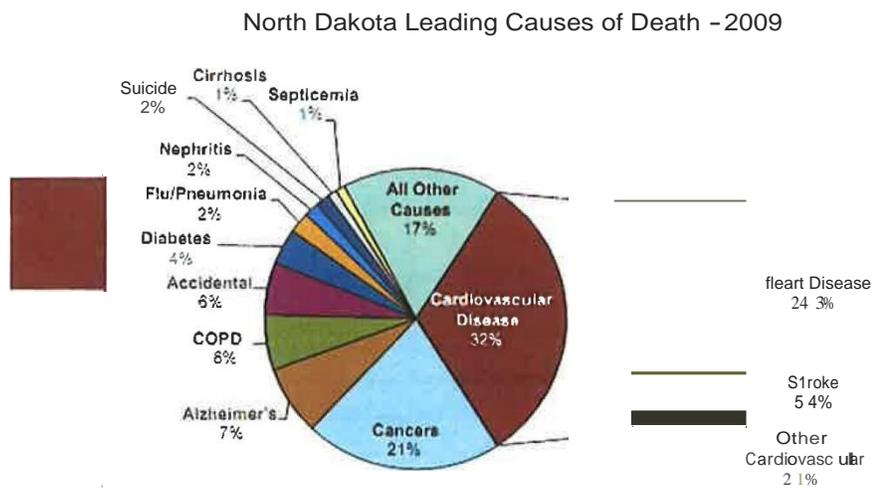
Table 8.2 Deaths Caused by Cancer for Region VDI. 1987-2009

Deaths Caused by Cancer for Region VDI, 1987-2009			
Type of Cancer	Male Deaths	Female Deaths	Total Deaths
Lung	286	156	442
Large Intestine	96	72	168
Prostate	173	0	173
Breast	0	165	165
Pancreas	58	69	127
Other Cancer	59	53	112
Leukemia	56	45	101
Lymphosarcoma	55	44	99
Brain	26	31	57
Liver/Gall Bladder	29	23	52
Stomach	27	23	50
Ovary	0	50	50
Bladder	33	19	52
Kidney	29	21	50
Multiple Myeloma	24	20	44
Colorectal	18	22	40
Uterus	0	32	32
Rectum	13	12	25
Esophagus	21	3	24
Unspecified Site/Cancer	10	15	25
Malignant Melanoma of Skin	14	8	22
Oral	5	9	14
Connective/Soft Tissue	10	4	14
Peritoneum	3	6	9
Cervix	0	9	9
Larynx	8	1	9
Small Intestine	6	2	8
Thyroid	6	2	8
Multiple Primary Sites	2	4	6
Eye	1	4	5
Non-Melanoma of the Skin	4	2	6
Other Female Genital	0	4	4
Bone & Jaw	1	2	3
Nasopharynx	1	2	3
Thymus	2	1	3
Head, Neck & Face	2	0	2
Other Male Genital	2	0	2
Other Respiratory	0	2	2
Salivary Gland	2	0	2
Digestive Organs	0	1	1
Hodgkin's Disease	0	1	1
Ill-Defined	0	1	1
Ill-Defined Digestive System	0	1	1
Lip	1	0	1
Nose/Middle Ear	0	1	1

Waldenstrom's	1	0	1
Unspecified Digestive System	0	1	1
Vagina	0	1	1
Vulva	0	1	1
Total	1,084	945	2,029

Figure 8.1 below shows the leading causes of death for the state of North Dakota for 2009. The leading cause is cardiovascular disease followed by cancer.

Figure 8.12009 North Dakota Leading Causes of Death





## County Rankings

## County Rankings

The purpose of the County Health Rankings system is to determine where improvement is needed within a county's health system. The goal of the rankings is to help guide those involved with community health care towards potential issues and help steer county health officials towards solutions. Two summary measures are used when ranking counties: health factors and health outcomes. Health factors are the things that influence the county's health. Health outcomes describe how healthy a particular county actually is.

Each county receives a rank. The higher the number (i.e. 1 or 2) are considered to be the healthiest and those with lower numbers are considered to have more health concerns. There are four types of health factors: 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 and social support, and community safety. Physical environment includes air quality and built environment (UWPHI, 2010). Table 9.1 shows the health factor rankings for Adams, Billings, Bowman, Dunn, Golden Valley, Hettinger, Slope, and Stark Counties for 2011 (NDDOH, 2009a).

Table 9.1 Health factor rankings for Region VIII for 2011

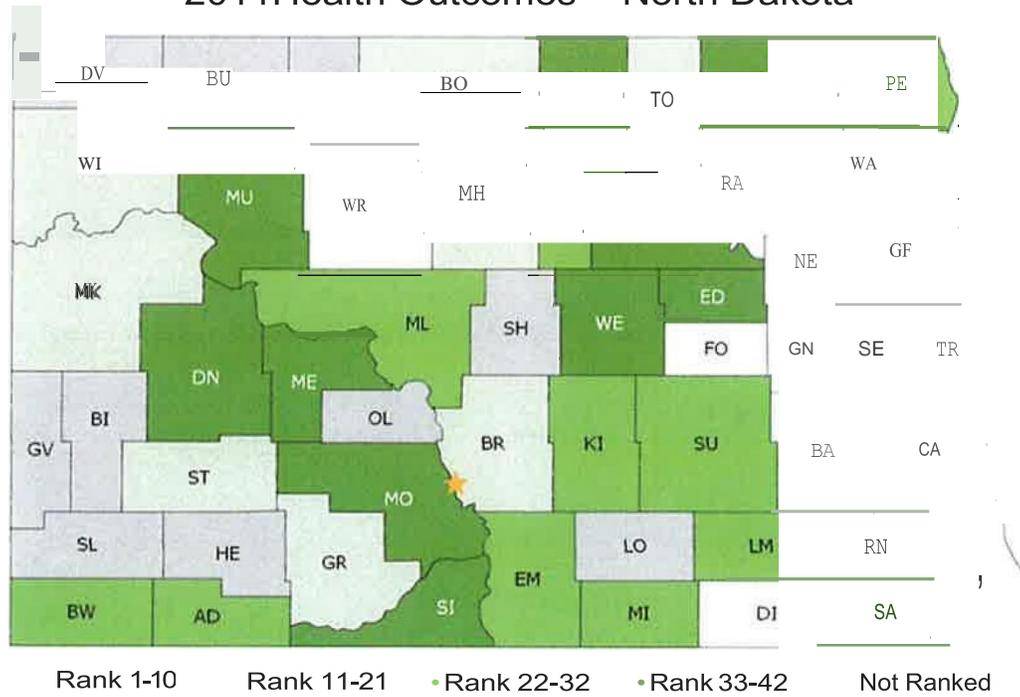
	Adams	Billings	Bowling	Dunn	Colden Valley	Hettinger	Slope	Stark
Health Outcomes	29	*	32	34	*	*	*	13
Behavioral Factors	8	*	6	24	*	*	*	7
Health Behaviors	3	*	4	20	*	*	*	17
Clinical Care	12	*	33	22	*	*	*	17
Social & Economic Factors	19	*	5	25	*	*	*	6
Physical Environment	41	*	33	28	*	*	*	34

\*Not surveyed.

Figure 9.1 shows the statewide health outcomes by county for the entire state of North Dakota for 2011. Figure 9.2 shows the health factors for the state for 2011.

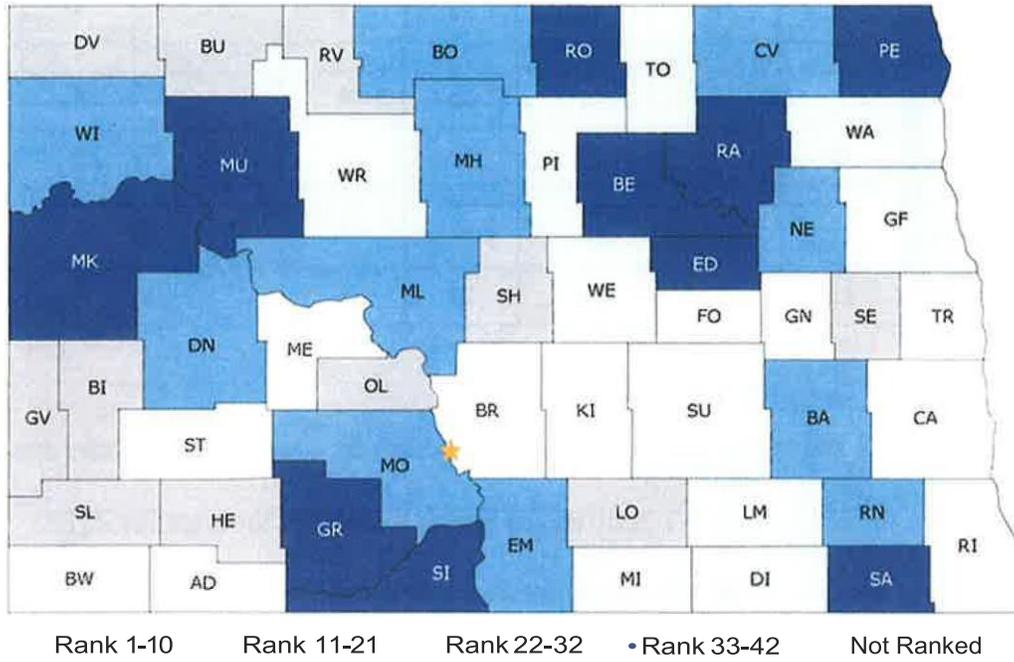
Figure 9.1 2011 Health Outcomes for the state of North Dakota.

### 2011 Health Outcomes - North Dakota



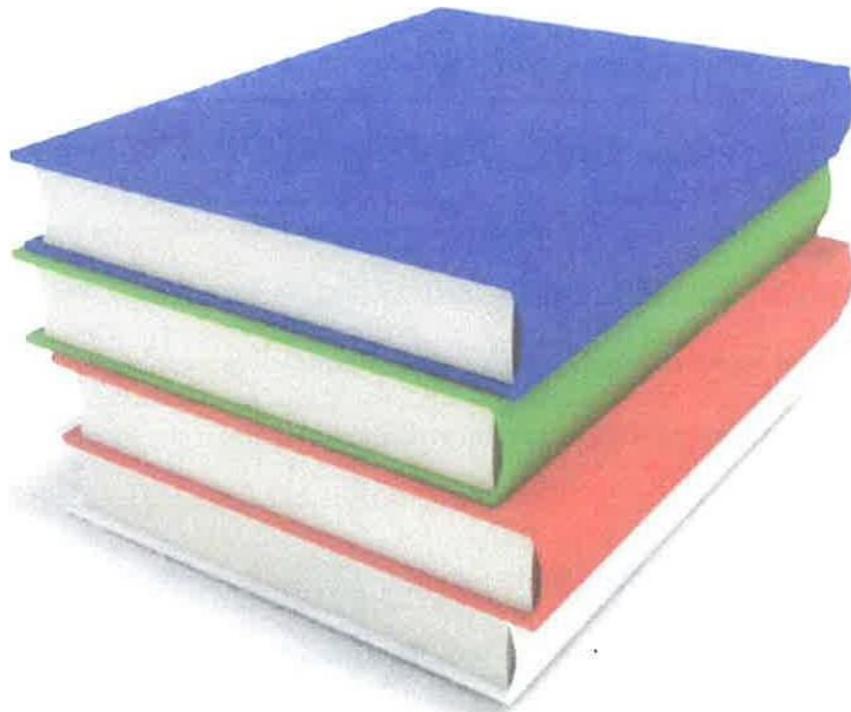
County Health Rankings  
North Dakota State University, Center for Health Systems Research and Analysis

### 2011 Health Factors - North Dakota



County Health Rankings

Source: North Dakota Department of Health



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