

The health of individuals and communities is influenced by factors ranging from health-related behavior (accounting for 40% of deaths in the U.S.; IOM, 2009) to the onset of chronic disease commonly associated with aging. The health of a state, community or individual can be assessed using a variety of measures ranging from health-related quality of life to health-condition specific measures to death rates. Measures can focus in a number of different areas ranging from mortality measures (e.g., life expectancy at birth) to prevalence of chronic disease (percentage of adults with cancer). While there are scores of measures that can be selected to build a set reflective of priority areas, there are a few key measures that are common to many health status assessments. *Life expectancy at birth* is a leading indicator of a population's state of general health. In 2000, the nation's life expectancy at birth was at a record high of 76.9 years. North Dakota is tied in rank for the third longest life expectancy, 78.7 years (U.S. Census Bureau, Populations Division, 2005). Another measure used to judge general health is the *age-adjusted death rate* of a population (the rate is adjusted to control for variations in age across populations). In the United States this rate is 776.4 deaths per 100,000 population. North Dakota ranked 17<sup>th</sup> in age adjusted death rate at 726.7 deaths per 100,000 population in 2006 (Heron, Hoyert, Xu, Scott, & Tejada-Vera, 2008). *The percentage of adults reporting fair or poor health* is another important indicator of the health of a population. Overall, North Dakotans report better health status than the national average. On the measure "How is your general health?" 12.5% of North Dakotans answered "fair" or "poor" versus the national average of 14.8%; whereas more North Dakotans (55.7%) reported "excellent" or "very good" versus the national average (54.2%; U.S. Department of Health and Human Services, Centers for Disease Control, Behavioral Risk Factors Surveillance System [CDC, BRFSS], 2008).<sup>1</sup>

## HEALTH-RELATED BEHAVIORS AND OTHER SELECTED TOPIC AREAS

The extent to which North Dakotans engage in health related behaviors such as tobacco use, dietary practices, physical activity, and alcohol consumption is important to consider because of the significant impact they can have on overall health. Dimensions of health-related behaviors are measurable and amenable to interventions ranging from individual responsibility to community efforts to public policy and employment-based programs.

### HEALTH-RELATED BEHAVIORS

**Alcohol and Substance Abuse.** Alcohol and illicit drug use exact a heavy toll on the lives and families of North Dakotans and the economy of the state. Compared to the nation as

a whole and to other states, alcohol use and abuse is the biggest substance-related problem facing North Dakota (U.S. Department of Health and Human Services, Office of Applied Studies [OAS], 2007; CDC, BRFSS, 2008). North Dakota has some of the highest state rates in recent alcohol use and binge drinking, regardless of age group. For example, among North Dakotans aged 12 to 20 years, 38.5% *consumed alcohol in the past 30 days* and 29.5% *engaged in binge alcohol use in the past 30 days* (OAS, 2007). These figures rank North Dakota as second-highest in recent alcohol use and highest in recent binge alcohol behavior among all states. North Dakotans rank near the bottom among the states with persons (33.8%) who perceive great harm associated with consuming five or more drinks at a time once or twice a week (OAS, 2007). Both attitudes and knowledge are contributing factors that could be targeted through pilot projects or evidence-based strategies to alter substance abuse behavior that carries with it significant potential for physical, mental, and societal harm.

In addition to concern regarding alcohol abuse among ND adults, there is also evidence that it extends to younger individuals (North Dakota State Epidemiological Outcomes Workgroup, 2008). Children and young adults are following the pattern of the state's adults who use and abuse alcohol at rates that are high relative to other states. North Dakota children and young adults, who are not of legal drinking age, engage in recent and binge alcohol use at elevated frequency (OAS, 2007). Further, North Dakota students in grades 9–12 are substantially more likely than their U.S. counterparts to *have recently driven a vehicle after consuming alcohol* (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Adolescent and School Health, 2008). Among DUI arrests in the state, persons aged 21–24 are the most frequent offenders and their arrest rate has substantially increased in recent years (Weltz, 2006).

Associated with *illicit drug use*, arrests in North Dakota have increased by 3% from 2,256 in 2006 to 2,323 in 2007. Approximately 76% of drug arrests involved males in 2007, and 12% of arrests involved juveniles under the age of 18. In the past decade, 89% of drug arrests were for possession (versus sale or manufacture) and about three-quarters of drug arrests involved marijuana (Weltz, 2008). Methamphetamines are also a problem in North Dakota, but to a lesser extent. North Dakota's 2004 *meth lab seizure rate per 100,000 population* placed it in the top 20% of all states. In 2005, North Dakota followed the lead of other states by restricting the availability of cold medicines containing pseudoephedrine. The restriction of pseudoephedrine, a key ingredient in manufacturing methamphetamine, is part of

a nationwide movement to cut meth use. In recent years, meth lab incidents have been drastically reduced and meth possession arrests have been somewhat reduced in North Dakota (Weltz, 2008).

**Immunization.** In North Dakota, immunization rates and vaccine preventable outbreaks are monitored by the Immunization Program of the Disease Control Division, North Dakota Department of Health (ND DoH). This program maintains and updates a statewide computerized vaccination database (the North Dakota Immunization Information System [NDIIS]). This system keeps vaccination records for both adults and children in one centralized source that is accessible by providers and school personnel. Unfortunately, at this time, the NDIIS is not linked to medical records and does not have important capacity such as providing reminder notices for upcoming vaccinations (ND DoH, 2008).

Capacity such as this is an important strategy given that North Dakota is now below the national average for immunization rates (National Immunization Survey, 2008). The national average for *children receiving recommended immunizations* in 2007 was 77.4%, while North Dakota's rate was 77.2%. Beginning in 2008, due to the increase in the number of recommended childhood vaccines and the lack of corresponding increase in federal funding, North Dakota's Immunization Program is only supplying free vaccines to providers for children eligible for the Vaccines for Children program. This is a federally funded program that supplies vaccines for children through the age 18 who are either Medicaid eligible, uninsured, underinsured or Indian (American Indian or Alaska Native.) All other vaccines in the state are now required to be ordered and paid for separately by providers and subsequently billed to insurance companies (ND DoH, Division of Disease Control, 2008). It is still unclear whether immunization rates will be influenced by this change. Vaccination rates among ND children should be monitored very closely given recent program changes. New opportunities to strengthen vaccination rates should be considered.

Among adults aged 65 and over, North Dakota ranks above the national average for both influenza and pneumonia vaccinations. North Dakota ranks 25<sup>th</sup> in *adults aged 65 and over that have had influenza vaccines within the past year* (73% of population, compared to the national average of 72%). North Dakota ranks 14<sup>th</sup> in *adults aged 65 and over that have ever had a pneumonia vaccination* (70.5% of population, compared to the national average of 67.3%; CDC, BRFSS, 2008). There is clearly room to increase vaccination rates among North Dakota adults.

**Injury and Violence.** Injuries are often predictable, preventable and carry significant cost. Both intentional injuries (e.g., suicide, homicide, and assaults) and unintentional

injuries (e.g., falls, motor vehicle crashes, and sports injuries) typically result in costly emergency department visits, hospitalizations, loss of productivity, disability and/or death. In North Dakota, unintentional injury is the leading cause of death for ages 1 through 34; the second leading cause of death for ages 35 through 44; and the fifth leading cause of death overall (ND DoH, Division of Injury Prevention and Control, 2005). Among all injuries motor vehicle crashes are the leading cause of injury-related death, followed by suicide, falls, poisoning, and homicide (North Dakota Division of Vital Records, 2008). Significantly more can be learned about the incidence and the impact of non-fatal injuries in North Dakota; however, North Dakota is one of a minority of states that does not collect statewide hospital discharge data. Without this data, state officials, policymakers, and researchers are unable to gain a clearer understanding of how non-fatal injuries affect North Dakota, in spite of the fact that they are a major cause of death in the state. Due to the absence of hospital discharge data, North Dakota is unable to compete for the CDC's Core Injury Grant program which provides funding to states for injury prevention in excess of \$100,000 per project year.

*Motor vehicle related injuries.* Motor vehicle crashes (MVC) remain the leading cause of injury-related death and disability in the state. In 2006, North Dakota had a rate of 1.44 *motor vehicle fatalities per 100 million vehicle miles traveled*, higher than the national average of 1.37. Among surrounding states, Minnesota's rate is lower at .89; and South Dakota's and Montana's rates are higher at 1.7 and 2.4, respectively. Among fatal crashes in 2007, 57% involved alcohol; in 59%, victims were not wearing seat belts; and in 43%, victims were driving at excessive speed (North Dakota Department of Transportation [ND DoT] Drivers License and Traffic Safety Division, 2008). Traffic death totals did decline by six percent in ND from 2007-2008. Contributory factors include increased enforcement of seat belt and drunk driving laws along with decreased road traffic due to high fuel costs and recessionary pressures (Copeland, Unze, Brunno, and Puckett, 2009). MVC fatalities disproportionately affect American Indians in North Dakota. Despite accounting for only 4.9% of the population, American Indians accounted for 17.3% of the MVC fatalities from 1999 to 2003 (Division of Injury Prevention and Control, 2005).

*Seat belt use* in North Dakota is showing a positive trend, steadily rising and reaching an all time high in 2007 of 82.2%, up 4% from the previous year (ND DOT, Drivers License and Traffic Safety Division, 2008). However, even with this increase in seat belt use, the state still ranks below the national average of 82.4%. North Dakota currently has a secondary seat belt law, meaning nonusers can only be cited after being stopped for another reason. Nationally, states with primary seat belt laws (nonusers may be stopped and cited independently of any other traffic behavior) have higher seat belt use percentages (Hedlund, Gilbert, Ledingham, &

Preusser, 2008). Given the direct link between motor-vehicle-crash-related deaths and seat belt use, encouraging this no-cost preventive behavior can save lives

*Suicide.* Suicide is the second leading cause of injury deaths among North Dakotans (North Dakota Division of Vital Records, 2008). For more information on this important topic see Part III of this report on Health Care in North Dakota-mental health.

*Falls.* In 2007, falls were the third leading cause of injury death among North Dakotans (North Dakota Division of Vital Records, 2008). During the period from January 2000 through July 2004, according to the state's trauma registry, falls were the leading cause of trauma admissions (Division of Injury Prevention and Control, 2005). *Fall-related injuries and deaths* are most common among women over the age of 60. Age often complicates recovery from falls and may lead to secondary medical conditions, decreases in strength, and limited mobility. The high proportion of falls among the elderly is a particular concern given the state's aging population (ND DoH, Division of Injury Prevention and Control, 2005). Acute and chronic debilitation in the elderly resulting from falls can carry high costs (e.g., require ongoing rehabilitation or nursing home care) which drives up the costs of public programs like Medicaid and Medicare and ultimately affects health care costs for virtually everyone. Fall prevention education could be extended across North Dakota through senior citizen centers, media campaigns and other venues.

**Nutrition and Physical Activity.** Healthful nutrition and physical activity are key components in preventing obesity and have a positive effect on overall health. Unfortunately, North Dakotans are part of the national trend toward a decrease in healthful eating and an increase in sedentary lifestyles. Tracking measures of physical activity (e.g., *percentage of adults meeting the recommendation for moderate physical activity—at least five days per week for 30 minutes per day of moderate intensity activity*) and health nutrition (e.g., *percentage of adults eating the recommended five or more fruits and vegetables a day*) are important given the association of physical activity and healthful nutrition with decreased risk for diabetes, high blood pressure, depression and colon cancer as well as maintaining healthy bones and joints. Lack of physical activity and poor nutrition are also the major contributors to the rapidly growing problem of obesity, which is associated with many chronic conditions, poor quality of life, and premature death (Office of the Surgeon General, 2008). This is of increasing concern since in 2007, 62.9% of the nation was *overweight or obese* and North Dakota was slightly higher at 64.9% (Calorielab, 2008).

Healthful eating includes a diet rich in fruits, vegetables, and whole grains and decreasing red meat intake and foods high in saturated fats. Among North Dakota adults only 21.9% of ND

adults *eat the recommended five or more fruits and vegetables a day*, less than the national average of 24.4% (CDC, BRFSS, 2008). Even more significant, among ND youth in 9<sup>th</sup> through 12<sup>th</sup> grade, 83.4% reported they do not eat the recommended five or more fruits or vegetables a day, compared with the national average of 78.6 % (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion [NCCDPHP], 2008). On a more positive note related to physical activity, more North Dakota adults (52.7%), even though they comprise just over half the ND adult population, report *moderate physical activity* compared to a national average of 49.5% (NCCDPHP, 2008). And, related to physical activity, fewer ND students (25%) in 9<sup>th</sup> through 12<sup>th</sup> grade report *watching 3 or more hours of television per day* than the national average of 35.4% (Youth Risk Behavioral Survey, 2008).

Healthful nutrition and physical activity can be particularly difficult to engage in given the expense of healthful foods, time demands on individuals, weather during winter months, and lack of wellness facilities in small towns. However, many efforts (e.g., school, workplace) are underway to encourage healthful eating and exercise. Of particular note is the newly formed North Dakota Healthy Eating and Physical Activity Partnership whose mission is to collaborate across the state to prevent and control chronic conditions through healthful eating and physical activity. The Partnership has developed a state action plan creating a framework for improving policies and programs related to healthful food and physical activity. This framework is designed to help communities work together to create environments that support individuals ability to make healthful food choices and increase overall physical activity by increasing access to good nutrition and places for physical activities (D. Askew, personal communication, January 2009).

**Tobacco Use.** The use of tobacco is the number one preventable cause of death and disease in North Dakota. Every year, 874 North Dakotans die from tobacco-related illness. Secondhand smoke exposure contributes to the deaths of 80–140 North Dakotans annually. Smoking costs North Dakota \$375 million annually in direct medical expenditures and lost productivity. North Dakota adults and children smoke cigarettes at rates that are comparable to U.S. rates. However, the percentage of the state's American Indian *adults who smoke cigarettes* is over twice as high as the rate of white adults (48.9% vs. 20.1%; Behavioral Risk Factor Surveillance System, 1997–2006). *Smokeless tobacco use* in North Dakota appears higher than the U.S. rate for both adults (CDC, BRFSS, 2008) and children (NCCDPHP, 2008). Regarding *recent use of any tobacco product*, North Dakota adults' prevalence is equivalent to the U.S. prevalence, and North Dakota children's prevalence is higher than the U.S. children's prevalence (OAS, 2007). *Smoking among students in*

grades 9 through 12 dropped 19.5% between 1999 and 2007; however, *adult smoking* has declined much more slowly, from 23.3% in 2000 to 20.9% in 2007.

Beginning in 2001, the Department of Health received funding for statewide tobacco programs through the Community Health Grant Program, funded by the Master Settlement Agreement (ND DoH, Division of Tobacco, 2008). These statewide efforts have been associated with significantly reducing the number of youth who start using tobacco, providing assistance with quitting for adults and youth, and working to reduce exposure to secondhand smoke. A statewide smoke-free law in 2005 prohibits smoking in all public places and places of employment with some exceptions (ND DoH, Division of Tobacco, 2008). In order to further tobacco control, North Dakotans voted in 2008 to fund tobacco control programs to CDC-recommended levels and established a North Dakota Tobacco Prevention and Control Advisory Committee (N.D. Tobacco Prevention, 2008). A number of important steps have been taken to decrease smoking rates among North Dakotans through legislation, education and other strategies. However, given available information, targeting American Indian populations in particular and adult populations could be priority areas of focus.

## SELECTED TOPIC AREAS

*Children's health is discussed as a separate topic to draw attention to its importance. Other sections in the Environmental Scan provide additional focus to selected children's health issues.*

**Children's Health.** The health of children is a critically important focus for a number of reasons, ranging from the effect of significant childhood illnesses as a stressor for ND families to chronic illness (e.g., diabetes) that can bring a lifetime of health care costs and the need for health care services. On some measures, ND children do extremely well while on others, there are clear opportunities for improvement in their health and well being. In 2008, North Dakota ranked 7<sup>th</sup> in the nation for *child well-being* by the National Kids Count Program. This program uses 10 measures to rate states in children's health. Areas where North Dakota ranks high include ranking 1<sup>st</sup> in the nation in *low percentage of teen drop-outs* and 1<sup>st</sup> in *children living with a parent with full-time employment*. Another indicator used worldwide as a measure of community health is the infant mortality rate. North Dakota ranks 15<sup>th</sup> in the nation for *infant mortality rates*. In 2005, there were 6 infant deaths per 1,000 with a significant decline in deaths since 2001 at 8.8 deaths per 1,000. The ND infant mortality rate is better than the national average of 6.7 infant deaths per 1,000. While the decline in the state's infant mortality rate has tended to mirror a national trend, since 2000, nationwide improvements have stalled (Annie E. Casey Foundation, 2009).

Areas of concern that present improvement opportunities for North Dakota are the child death rate and teen death rate. North Dakota ranks 31<sup>st</sup> in the nation for *child death rate* and 35<sup>th</sup> in the nation for *teen death rate*. Both the child and teen death rates show worsening trends since 2000. The teen death rate has risen by 54% and the child death rate has risen by 21% (North Dakota Kids Count, 2008). In North Dakota, the North Dakota Child Fatality Review Panel (NDCFRP) reviews all deaths of children up to age 18 in order to understand child death causes and provide information for future prevention efforts. According to the NDCFRP, motor vehicle crashes are the leading cause of childhood death in North Dakota. All 27 vehicular childhood deaths in 2006 were determined to be preventable. In 19 of these deaths, safety restraints were not used, 14 deaths involved excessive speed, 7 involved drugs or alcohol, and 7 involved an unlicensed or suspended driver (North Dakota Child Fatality Review Panel, 2008). Given that these are preventable deaths, there are opportunities to strengthen or create strategies ranging from public education campaigns and safety programs to legislative remedies.

**Implications.** Monitoring the extent to which North Dakotans engage in health-influencing behaviors is important in order to reduce future burden caused by negative health behaviors. Behaviors that compromise health come with very high costs, and existing networks of concerned groups that include education, health care, faith-based, public sector, law enforcement, and other stakeholders should examine how they can work collaboratively to build on or realign current programs designed to address these issues. Where they exist, proven strategies should be considered and supported, and where such evidence is lacking, pilot projects should be developed and evaluated. For example, some evidence-based strategies to improve health and prevent disease in communities can be found at <http://www.thecommunityguide.org/index.html> (a website sponsored by the Community Guide Branch, National Center for Health Marketing [NCHM], Centers for Disease Control and Prevention).

## LEADING CAUSES OF DEATH IN NORTH DAKOTA

While the proportion of the population affected differs somewhat, generally speaking, leading causes of death found across the nation are also common in North Dakota. Knowing key characteristics about leading causes of death facilitates targeting efforts (e.g., prevalence, urban or rural, men or women) in order to decrease both loss of life and financial loss. Information regarding trends over time can assist in determining whether new or strengthened efforts are effective. In 2007, the *causes of death* for North Dakota residents included heart disease (26%)<sup>1</sup>, cancer (23%)<sup>1</sup>,

Alzheimer's disease (7%), stroke (6%)<sup>1</sup>, accidental (5%), chronic lung disease (5%), diabetes (4%), influenza/pneumonia (2%), and all other causes (23%); (North Dakota Division of Vital Records [NDDVR], 2008). Heart disease as a cause of death in North Dakota has steadily declined over the past twenty years. In 2006, for the first time, the age-adjusted rate fell below that of cancer. Over the years, cancer death rates have declined but at a much slower rate than heart disease (NDDVR, 2008). This section summarizes key information and trends related to these and other common causes of death in North Dakota.

**Cardiovascular Disease.** Cardiovascular disease affects about one in three Americans (American Heart Association, 2008). Conditions that fit in this category include heart attacks, angina, coronary heart disease, and high blood pressure. Heart attacks levy a heavy toll on the health of Americans, accruing a prevalence of 8.1 million in 2005 and causing 158,000 deaths in 2004 (Ho et al., 2007; American Heart Association, 2008). *The prevalence of heart attacks in North Dakota* has been decreasing (e.g., 4.4% in 2005 and 4% in 2006, 3.9% in 2007) (NCCDPHP, 2008). This compares to a higher national rate of 4.2% of U.S. adults experiencing a heart attack in 2007. In North Dakota, men (5.2%) have a higher prevalence for heart attacks, compared to women (2.6%). *Heart attack prevalence by race* in North Dakota is unknown. *Counties with the highest prevalence of heart attacks* tend to be rural in nature (North Dakota Department of Health [NDDH] 2007). The estimated cost (including direct and indirect) of cardiovascular disease in North Dakota in 2006 was \$920 million (Moum, Mormann, Ehrens & Paxon, 2007).

North Dakota matches the nation in terms of the *percentage of the overall population with coronary heart disease* (4.1% for both); (Moum, Mormann, Ehrens & Paxon, 2007; National Center for Chronic Disease Prevention and Health Promotion, 2008). Men in North Dakota have a higher prevalence (5.2%) of angina/coronary heart disease than women (2.9%). As with heart attacks, angina/coronary heart disease prevalence by race in North Dakota is largely unknown and counties with the highest prevalence of anginal/coronary heart disease tended to be rural (NDDH, 2007). The higher prevalence of cardiovascular disease in rural North Dakota is likely due in part to a higher average age of rural residents, compared to their urban counterparts.

*High blood pressure*, a risk factor for cardiovascular disease, is a highly prevalent condition that contributes to premature death, heart attack, stroke, and renal disease (United States Preventive Services Task Force, 2007; American Heart Association, 2008). In 2007, 26% of North Dakota *adults said they have been told they have high blood pressure*. This figure is lower than the national prevalence of 27.8% (NCCDPHP, 2008). Men and women in the state tend to be equally affected by blood pressure (26% and 25.9%, respectively).

As with coronary heart disease, counties with the highest prevalence of high blood pressure tend to be rural (NDDH, 2007).

*Stroke* contributes substantially to morbidity and mortality among U.S. residents, afflicting 5.8 million Americans in 2005 and accounting for 17% of *cardiovascular disease-related deaths* (AHA, 2008). In 2007, stroke affected 2.3% of North Dakota adults, compared to 2.6% of U.S. adults (Moum, Paxon & Mormann, 2007; NCCDPHP, 2008). Stroke is the third-leading cause of death in both North Dakota (5.5% of deaths in 2007; ND Division of Health, 2008) and the United States (5.9% of deaths; Kung et al., 2008). Women in North Dakota (2.5%) have a higher prevalence of stroke than men (2.0%) and once again rural regions present with higher prevalence of stroke than urban regions (NDDH, 2007).

In North Dakota, stroke prevalence appears to be increasing, which is likely due in part to the state's increasingly aging population. To illustrate, 1.8% of the population had a stroke in 2003, compared to 2.3% in 2007 (NCCDPHP, 2008).

**Cancer.**<sup>2</sup> Cancer is the second leading cause of death in the nation, accounting for one-fourth of all mortality. Each year about 1.43 million persons are diagnosed with cancer and 566,000 persons die of the disease (American Cancer Society [ACS], 2008). Approximately 10.8 million Americans were living with cancer in 2004 (ACS, 2008). Although people of all ages contract cancer, it is primarily an older person's disease. About three-quarters of all cancers are diagnosed in persons 55 years and older. By gender, U.S. males have a 45% chance of developing cancer in their lifetime; for females it is approximately 37% (ACS, 2008). Research indicates that some racial minorities (e.g., Africans and Native Americans) have higher age-adjusted rates of some cancers and cancer-related health risk factors (ACS, 2002; Denny, Holtzman & Cobb, 2003; Kaur, 2005).

Each year in North Dakota approximately 3,500 people are *diagnosed with a new cancer*, and approximately 1,400 state residents *die from cancer*. In 2004, there were approximately 23,370 state residents (3.7%) *living with cancer*. In general, North Dakota males are substantially more likely than North Dakota females to die from cancer (NDDVR, 2008). This trend is true even after accounting for age. Overall cancer diagnoses and deaths rise dramatically after age 54 for both sexes, but particularly males. Four cancer sites—lung, colorectal, breast, and prostate—account for 55% of cancer cases in North Dakota (North Dakota Cancer Coalition, 2008), and these same four cancers account for 49% of cancer deaths in the state (NDDVR, 2008). This pattern of common cancer sites parallels national data. The estimated cost (including direct and indirect) of cancer in North Dakota in 2007 was \$500 million (ACS, 2008).

Cancer survival rates for the United States have steadily increased over the past several decades. This is believed to be the result of a number of factors including higher rates of cancer screening, fewer late-stage diagnoses, and improvements in health care treatment and technology. The survival rates for all cancer types are highest when diagnoses are made at earlier stages of the disease. Late-stage diagnoses occur in the North Dakota population and thus offer an opportunity for improved screening and the potential to increase survival rates. The *highest percentage of late-stage cancer diagnoses* occurs with lung cancer (80%), followed by colorectal (58%), cervical (45%), female breast (30%), prostate (14%), and urinary bladder (11%). Women are more likely than men to be diagnosed at late-stage for colorectal and urinary bladder cancer, and men are slightly more likely than women to be diagnosed at late-stage for lung cancers in North Dakota.

In terms of *cancer screening*, a number of tests are well established in their effectiveness to detect cancer early and participation in these screening tests serve as important measures of health care. Blood stool, colon, prostate and mammogram screening are, generally speaking, widely available in North Dakota. Participation in these screening tests in North Dakota has been either stable (blood stool test, PSA and PAP) or has increased (colonoscopy/sigmoidoscopy and mammography). While North Dakota figures are comparable to national figures, there remains ample opportunity to improve screening participation. It should be noted there is no consensus opinion regarding the recommendation for routine PSA testing (Albertsen, 2006; American Cancer Society, 2008) and higher PSA levels may not necessarily indicate the presence of prostate cancer.

Cancer Testing Prevalence, North Dakota and United States, 2006			
	ND	U.S.	ND Ranking/51
Ever had a colonoscopy/sigmoidoscopy (adults aged 50+)	56.5%	57.1%	31 <sup>st</sup> highest
Fecal occult blood test within past two years (adults aged 50+)	22.2%	24.2%	36 <sup>th</sup> highest
Pap test within the past three years (women aged 18+)	84.5%	84.0%	24 <sup>th</sup> highest
Mammogram within past two years (women aged 40+)	77.2%	76.5%	24 <sup>th</sup> highest
PSA test within past two years (men aged 40+)	52.2%	53.5%	32 <sup>nd</sup> highest
Source: National Center for Chronic Disease Prevention and Health Promotion (2008). North Dakota does have several notable programs that aim to prevent and control cancer. For example, the North Dakota Division of Cancer Prevention and Control administers Women's Way, a program that provides breast and cervical cancer screenings to eligible women in North Dakota; from 1997 through October 2008, this program has provided screenings to 9,579 women.			

**Implications.** Increased efforts/resources are needed to strengthen and expand the state's programs for promoting healthy lifestyles and increasing utilization of cancer screening

tests among residents, particularly American Indians. Additionally, there are gaps in critically important data that if closed could lead to better understanding and targeting efforts to some of the leading causes of death in North Dakota.

Gaps in information related to cardiovascular disease and cancer include:

- Cancer incidence *trends* for American Indians in North Dakota to better track and target resources;
- Cancer incidence rates at regional and local levels to help target screening and other services;
- Impact of travel distance on obtaining cancer care with implications for networking cancer treatment services in a more geographically dispersed manner; and
- Cardiovascular disease prevalence and trends by race and region, along with more information about rurality to inform how best to deploy services targeting this set of serious health problems.

Given the significant disease burden and health services associated with the diseases described in this section, statewide hospital discharge data is very important to inform planning and improve care. As one of a few states without statewide hospital discharge data, state officials, policymakers and researchers are unable to gain information about how North Dakotans with cancer or cardiovascular disease use inpatient and outpatient hospital resources.

### COMMON HEALTH PROBLEMS IN NORTH DAKOTA

There are a number of health care problems affecting North Dakotans that carry significant health and financial burdens. While some health problems are spread across the state's population others disproportionately affect sub-groups (e.g., elderly, Native Americans, rural citizens).

**Diabetes.**<sup>3</sup> In the United States, 7.8% of the population has diabetes, which is associated with shorter life spans and a risk factor for heart disease, limb amputations, blindness, stroke, and renal failure (North Dakota Department of Health, 2008). Among North Dakota adults, 6.3% indicate they *have been told they have diabetes* compared to 8% of U.S. adults (National Center for Chronic Disease Prevention and Health Promotion, 2008). Diabetes is found in comparable numbers of men and women in the state and older North Dakotans have a much higher diabetes prevalence than their younger counterparts (ages 35–44: 2.5%; ages 65 and older: 14.7%). Diabetes is far more common among American Indians (13.9%) than among whites (6.1%; North Dakota, 2004–2006). Other characteristics of people with higher prevalence of

having been told they have diabetes include persons with obesity (13.9%); high blood pressure (18.3%); high cholesterol (14.3%); a disability (12.2%); fair or poor general health (21.9%); and no leisure time physical activity (10.2%; NDDH, 2008). As with many other serious diseases, rural ND counties tend to have a higher prevalence rate than urban counties (NDDH, 2007).

**North Dakota - Percent of Adults with Diagnosed Diabetes, 1994-2005**



Source: Centers for Disease Control and Prevention. Available online at: <http://www.cdc.gov/diabetes/statistics/prev/state/source.htm>. Retrieved [12/30/2008].

\* Crude percentage is the raw percentage/unadjusted estimate.

† Age-Adjusted percentage minimizes the effects of different age distributions.

The prevalence of diabetes in ND children is estimated via health claims data from Blue Cross Blue Shield of North Dakota. In 2007, it was estimated that just over 4 children per 1,000 (aged 18 and under) have diabetes, a rate almost identical to 2006. However, this rate is markedly elevated from previous years when rates ranged from 2.8 in 2003 to 3.1 in 2005. (NDDH, 2008). In addition to a trend line that has been generally rising for ND children, increases can also be found in the percentage of ND adults who report *ever being told they had diabetes*. Between 1994 and 2007, there was a 75% increase in the adult population, from 3.6% to 6.3% (NDDH, 2008). The estimated cost (direct and indirect) of diabetes for North Dakotans in 2006 was \$209 million (American Diabetes Association, 2008).

Given the significant financial and human toll of diabetes and the fact that this disease can be, in many cases, prevented and managed through behavior (e.g., maintaining healthful weight), deploying strategies, measuring their impact, and tracking prevalence trends over time are important, particularly among the state's American Indians and children.

**Asthma.**<sup>4</sup> Asthma, or inflamed airways in the lungs, is a chronic disease that affects about 20 million Americans. In North Dakota, 7.7% of adults have asthma compared to 8.4% of U.S. adults (NCCDPHP, 2008). Women in North Dakota are more likely to have asthma (9.1%) compared to men

(6.2%). Increased age is associated with higher prevalence of asthma. This illness is particularly problematic for the state's American Indian population which has a significantly higher prevalence of asthma (2005: 16.2%; 2006: 20.8%), than Caucasians (2005: 11%; 2006: 9.6%; NDDH). North Dakota counties with the highest asthma prevalence tend to be rural (NDDH, 2007). Generally, the prevalence of asthma in North Dakota is increasing, ranging from 6.8% in 2001 to 7.7% in 2007 (NCCDPHP, 2008). Special attention should be given to American Indian populations in the state related to the prevention and treatment of this disease.

**Arthritis.** Arthritis is the leading cause of disability in the United States, affecting nearly 70 million Americans (one in three adults). While this disease also afflicts children, it is most common in older persons and in women. As the elderly population in the United States increases, the number of individuals with arthritis will increase dramatically (CDC, 2007). In North Dakota, arthritis prevalence is increasing. In 2001, 21% had arthritis compared to 26% in 2005 and 26.9% in 2007 (NCCDPHP, 2008). The 2007 figure is slightly lower than the national prevalence of 27.5% (NCCDPHP, 2008). Arthritis is much more common in women in the state (31.1%) than in men (22.6%). Given the recent trend line of this disease in North Dakota and the projection of increased elderly in the state, information on preventing and treating arthritis can be a valuable contribution to the health status of many citizens while also potentially influencing health care costs associated with this disease. The estimated cost (direct and indirect) of arthritis for North Dakotans in 2003 was \$285 million (Yelin, et al, 2007).

**Disability.** North Dakota had the lowest prevalence of disability among all states (NCCDPH, 2008). Disability is defined by the CDC as a limitation in any activities due to physical, mental or emotional problems. Since 2001, the prevalence of ND adults with a disability has remained relatively stable, ranging from 15%–18% (about one in six persons). Women in North Dakota are more likely than men to report having a disability (17.9% versus 15.5%). By race, American Indians (19%) are more likely than Caucasians (16.7%) and persons of other races (13.8%) to have a disability (Muus, 2008; Behavioral Risk Factor Surveillance System, 2001-06). Currently unknown about individuals with disabilities in North Dakota are their major impairments, associated health problems and obstacles to receiving needed health care. Additionally, there is little information about circumstances of school-age children with disabilities.

**Implications.** Addressing the state's most significant health issues includes investing in prevention-related activity, from education (e.g., proper diet and exercise) to wellness activities, to incentivizing healthful decisions. The sensitivity of chronic illness to healthful behaviors and the interest on the part of the public and opinion leaders in addressing health promotion and disease prevention strategies (See Part IV,

Key Stakeholder Perspectives) speaks to the importance of offering services and benefits that target fitness, encourage more work and community-based wellness programs and incentives, as well as encouraging businesses and insurers to engage in efforts that target wellness. To evaluate effectiveness and encourage efficiency, tracking the impact of specific strategies to address the state's health problems is also important. Currently, the North Dakota Department of Health tracks about 20 categories associated with health status (e.g., decreasing the preventable cancer death rate) and health system factors (e.g., increasing the number of hospitals with trauma center designations). While this health indicator project corresponds with the Healthy North Dakota goal of changing and improving the health of North Dakotans, it was not designed specifically to evaluate the state's Healthy North Dakota initiative. The NDDoH is, however, developing a database designed to contribute to a better understanding of health status and system issues (Personal Communication, S. Pickard, February, 2009).<sup>5</sup> Over time, additional efforts could target and track measurable outcomes associated with Healthy North Dakota as well as other initiatives across the state in order to better assess performance improvement and project impact. While this is a significant undertaking it is useful because it can drive efficiency and improved health status.

Additionally, 46 states currently collect statewide hospital discharge data. North Dakota is not one of them. As one of only four states in the country that doesn't collect this information, state officials, health care payers and providers, researchers and others are challenged to understand how persons with chronic and other diseases are using inpatient and outpatient hospital resources to receive needed health care. Initiating this data collection effort can have multiple benefits for the state. Specifically, it can help address the ever-increasing consumer demand for hospital care information; promote transparency in health care delivery; inform health care planning efforts; facilitate a more equitable distribution of health resources by geographic region; gauge the health burden of various diseases and injuries; allow for measuring and monitoring hospital and emergency department utilization; calculate the cost of hospital care for specific individuals, populations and payers; assess quality of care and access to care for different patient groups (NAHDO, 2007); and support creation of and collaboration among prevention programs and policies (Injury Surveillance Workgroup, 2003).