HEALTH STATUS OF RURAL MINNESOTANS
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Executive Summary

This chart book provides a snapshot of the health of rural Minnesotans by summarizing key health indicators, health behaviors, and other social and environmental health determinants. It is a follow-up to “Health and Well-being of Rural Minnesotans: A Minnesota Rural Health Status Report.” The 2005 Minnesota Department of Health publication highlighted key health indicators in both the seven-county metropolitan area (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington counties) and Greater Minnesota (all non-metropolitan counties).

In order to identify “rural” Minnesota, this 2011 report adopts a regional health approach, dividing the state into six pre-identified, distinct regions, and determining the percent of residents of each region living in small rural or isolated rural areas as measured by Rural Urban Commuting Areas (RUCAs). The six regions are Central, Metro, Northeast, Northwest, Southeast and Southwest.

Key Findings

Some clear differences exist in rural regions compared to urban regions:

- Fewer people with at least some college
- More people reported “fair” or “poor” health
- More people reported being current smokers
- More people were identified as obese
- Fewer people reported exercising in the previous month
- More people were uninsured
- Lower rates of chlamydia, gonorrhea and HIV/AIDS infection
- Higher mortality rates due to pneumonia and influenza, especially in the older population
- Higher diabetes, stroke and heart disease mortality rates
- Lower homicide rates
- Higher suicide rates
- Lower unintentional injury mortality rates
- Higher mortality due to motor vehicle injury.

This report is intended to generate awareness among policymakers, primary and rural health care providers, public health officials and concerned community members about the importance of examining rural and regional disparities.
Introduction

This chart book provides a snapshot of the health of rural Minnesotans by summarizing key health indicators, health behaviors, and other social and environmental health determinants. It is a follow-up to “Health and Well-being of Rural Minnesotans: A Minnesota Rural Health Status Report.” The 2005 Minnesota Department of Health publication highlighted key health indicators in both the seven-county metropolitan area (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington counties) and Greater Minnesota (all non-metropolitan counties).

Although the following information summarizes health indicators of all Minnesotans, it focuses on key health issues for rural Minnesotans. This is not meant to be a comprehensive report on any one condition or illness, nor is it designed to identify the causes or contributing factors of health conditions. Instead, this report identifies regional disparities and other health issues that require further attention and research. The intended audience for this chart book includes policymakers, primary and rural health care providers, public health officials and concerned community members.
What is Rural?

The term “rural” has many definitions and can be interpreted in many different ways depending on the context or discipline in which it is being used.iii Historically, Greater Minnesota has been used as a surrogate measure of rural Minnesota, and indeed much of the land area outside the seven-county metro area is farmland, prairie or woodland that is isolated from the resources available in urban areas. Despite this wealth of open space, many of the people in Greater Minnesota are concentrated in close proximity to urban centers outside of the twin cities, including Duluth, MN/Superior, WI; Moorhead, MN/Fargo, ND; Rochester, MN; and St. Cloud, MN.

Another method of defining rural that is particularly useful in public health research is to use Rural-Urban Commuting Areas (RUCAs). RUCAs are used to categorize the rurality of an area based on the measures of urbanization, population density and daily commuting.iv In this report, RUCAs are divided into four categories: Urban, Large Rural, Small Rural and Isolated Rural.

According to RUCAs and data from the 2000 census, 62 percent of the population of Greater Minnesota lived in Urban or Large Rural areas (Figure 1). This means that despite being classified as “rural” in many reports and publications, most Greater Minnesotans actually live in or near cities or large towns.
Because RUCAs are defined according to census tract or zip code level data, they are not easily linked to most population health data. This prohibits their consistent use in describing a wide variety of health data, and for this reason they are not the primary unit of rurality in this report. Instead, this report adopts a regional health approach, dividing the state into six pre-identified, distinct regions (Central, Metro, Northeast, Northwest, Southeast, Southwest), and determining the percent of residents of each region living in small rural or isolated rural RUCAs. Data from the Behavioral Risk Factor Surveillance Survey (BRFSS) was not available at the regional level, therefore traditional Metro/Greater Minnesota regions were used in this report for some behavioral health risk factors.
Regional Profiles

The Minnesota Department of Employment and Economic Development (DEED) Planning Areas are referred to as regions for the purposes of this report. DEED and other state agencies use these planning areas in regional reporting of economic information. These regions are made up of counties, and are defined as follows:

**Central Region:** Benton, Chisago, Isanti, Kanabec, Kandiyohi, McLeod, Meeker, Mille Lacs, Pine, Renville, Sherburne, Stearns, Wright.

**Seven-County Metropolitan Region (Metro):** Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, Washington.

**Northeast Region:** Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, St. Louis.

**Northwest Region:** Becker, Beltrami, Cass, Clay, Clearwater, Crow Wing, Douglas, Grant, Hubbard, Kittson, Lake of the Woods, Mahnomen, Marshall, Morrison, Norman, Otter Tail, Pennington, Polk, Pope, Red Lake, Roseau, Stevens, Todd, Traverse, Wadena, Wilkin.

**Southeast Region:** Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, Winona.

**Southwest Region:** Big Stone, Blue Earth, Brown, Chippewa, Cottonwood, Faribault, Jackson, Lac qui Parle, Le Sueur, Lincoln, Lyon, Martin, Murray, Nicollet, Nobles, Pipestone, Redwood, Rock, Sibley, Swift, Waseca, Watonwan, Yellow Medicine.
The western regions had the highest percentage of the population living in small or isolated rural areas.

Figure 2 illustrates the percent of the population in each region who resided in a Small or Isolated Rural RUCA. In 2000, all residents of the Metro region were living in an urban RUCA. In this chart book, the colors of the bars representing each region are shaded according to the relative rurality of that region, with the most rural region shaded the lightest and the least rural region shaded the darkest.
Almost half of Minnesota’s population lived outside the seven-county metropolitan area.

Figure 3 illustrates the population of each of the six regions. In 2009, the Metro region had a population of approximately 2.8 million, which represents 54 percent of the total population of Minnesota. The Central region was the next most populous, with 13 percent of the population. The Northeast was the least populated region at only 6 percent of the state population. Although the Northeast region had the smallest population, only 31 percent of the residents lived in small rural or isolated rural RUCAs (Figure 2).
Rural residents were predominately White.

In 2009, an estimated 88.6 percent of Minnesotans self-identified as White. In the non-metro regions, over 90 percent considered themselves White, while 83.42 percent of Minnesotans in the Metro region self-identified as White (Figure 4).
Notable Hispanic populations were recorded throughout southern Minnesota.

Figure 5 illustrates the population of each race/ethnicity by region. These populations were self-identified and not mutually exclusive, meaning that one person could self-identify as more than one race/ethnicity (e.g., White, Asian/Pacific Islander and Hispanic/Latino). In the Metro region, 7.7 percent of people identified themselves as Black/African American, 6 percent of people identified as Asian/Pacific Islander, and 5.4 percent as Hispanic/Latino. In all regions except for the Northeast, 2 percent or more of the population self-identified as Hispanic/Latino. In the Northeast and Northwest regions, over 2 percent of the population identified as American Indian/Alaskan Native. While minority populations in Minnesota, particularly in non-Metro regions, were relatively small, there were differences in the makeup of those populations. Although these differences may not appear to have immediate health implications, it is important to identify regional differences in racial/ethnic distributions since different cultural and ethnic groups may have different health challenges.
The Northwest, Southwest and Northeast regions had highest percentages of older Minnesotans.

Population health challenges and needs also differ depending on the age makeup of the population. For example, populations with younger adults may have lower incidence of diseases associated with aging such as heart disease and diabetes, but they may have increased incidence of sexually transmitted infections such as HIV, chlamydia or gonorrhea. Figure 6 illustrates the age distribution of each region in Minnesota. Combining the 65-74 and 75+ age groups, the Northeast, Northwest and Southwest have the largest populations over 65, all at 17 percent, while the Metro and Central Regions have the lowest, at 11 percent and 12 percent respectively. Consequently, we may expect to see more health problems related to aging in the Northwest, Southwest and Northeast regions. It is also notable that these regions, particularly the Northwest and Southwest have more residents living in small rural and isolated rural areas (Figure 2).
A lower percentage of Minnesotans in rural regions had at least some college.

Education is frequently used as a measure of socio-economic status (SES), which is associated with many different health outcomes, health behaviors, and access to health care. The Northwest, Southwest and Central regions had a significantly lower percentage of residents with some college education than the overall state level of 67 percent.
Overall Health Status

This section of the chart book presents three commonly used measures of population health: overall mortality, infant mortality and self-reported health status. The overall mortality rate is the total number of deaths occurring over a specific time period, divided by the population. It has been adjusted to account for regional differences in age. The infant mortality rate is the total number of infant deaths divided by the number of live births.

Self-reported health status is an established predictor of mortality, with higher rates of mortality among persons reporting worse health\textsuperscript{iv}. This report draws self-reported health status from the 2009 Minnesota Health Access Survey. Survey respondents were asked to rate their health according to the following five categories: Excellent, Very Good, Good, Fair or Poor.

Taken together, these health indicators can help identify disparities in overall health between more and less rural regions of the state. Additional information on health behaviors and specific diseases can help to provide a more detailed picture of the reasons for overall differences in health between regions.
Overall Mortality

The overall mortality rate was highest in the Northeast.

Figure 8

- Between 2004 and 2008, there were 186,986 deaths in Minnesota, a rate of 678 per 100,000 person-years.
- The Northwest, Central and Northeast regions had overall mortality rates higher than the Metro region.
Infant Mortality

The infant mortality rate was highest in the Northwest

Figure 9

- Minnesota consistently ranks among the states with the lowest infant mortality rates. An average infant mortality rate of 5.1 per 1,000 live births was recorded from 2006 to 2009.
- All regions in Minnesota had infant mortality rates lower than the national average of 6.7 per 1,000 births.
- The Northwest had the highest infant mortality rate in the state in 2009, at 6.1 deaths per 1,000 births, which is higher than the four-year state average of 5.1 deaths per 1,000 births.
Perceived Health

The percentage of Minnesotans in 2009 reporting “Fair” or “Poor” health was significantly lower in the Metro region than the statewide percentage.

Figure 10

- The Southwest and Northeast had a higher percentage of people reporting Fair or Poor health than other regions, although this difference was not significantly different from the statewide percentage (11 percent).
Health Access

This section of the chart book highlights disparities in access to three fundamental types of health care: primary care, dental care and health insurance. Taken together with an understanding of key health indicators, this information paints a more complete picture of disparities in Minnesota.

Regular primary care and dental care are central to maintaining population health and preventing poor health outcomes. While lack of access to health care does not cause disease directly, the availability of health care, and utilization of primary care services is related to health outcomes. People with no health insurance have worse health outcomes than people who do, in part because lack of health insurance leads to poor utilization of primary care and dental care.

Adult behavioral health information comes from the Behavioral Risk Factor Surveillance System (BRFSS), a state-based, nationwide survey that collects information on health behaviors from a random sample of adult residents (18 years and older). The Minnesota Department of Health has been collecting BRFSS data since 1984 and receives an average annual response rate of approximately 60 percent.

Primary and Dental Care

Throughout Minnesota, more women than men utilized primary and dental care.

Figure 11

- In both years, a higher percentage of women than men in all regions reported having a personal doctor.

Source: Minnesota Center for Health Statistics-Behavioral Health Risk Factor Surveillance System
For both years, a slightly lower percentage of men and women in Greater Minnesota reported a dental visit in the previous year than those in the Metro region.

The percentage of women in the Metro region who reported a dental visit in the previous year decreased approximately 5.5 percent from 2004 to 2008.
Health Insurance Coverage

The Northwest region had the highest percentage of people with no health insurance.

- Nine percent of all Minnesotans surveyed did not have health insurance in 2009.
- The Northwest had a significantly higher percentage of people with no health insurance than the statewide average of 9 percent, while the Metro had a significantly lower percentage.
- More information: [https://pqc.health.state.mn.us/mnha/Welcome.action](https://pqc.health.state.mn.us/mnha/Welcome.action).

Source: MDH Health Economics Program and University of Minnesota School of Public Health, 2009 Minnesota Health Access Surveys.
*Indicates a statistically significant difference from statewide rate within year at the 95 percent level.
Behavioral Health

The behavior of groups and individuals can have direct and indirect effects on population health. For example, when individuals smoke it poses individual risks to their health, and if many people in their community smoke it may make it more difficult to quit. Measuring health behaviors at a population level can help highlight urban and rural differences, as well as more specific regional differences. Understanding these differences can help target resources and interventions and prevent more serious diseases such as heart disease and cancer from developing. This type of disease prevention not only saves lives, but increases productivity, and decreases health care costs, resulting in healthier, more vibrant communities.

Adult behavioral health information comes from the Behavioral Risk Factor Surveillance System (BRFSS). Additional data on Driving While Intoxicated (DWI) violations comes from the Minnesota Department of Public Safety.

Smoking

A higher percentage of adults in Greater Minnesota reported current smoking than Metro residents.

Figure 13

Percentage of People who Reported Current Smoking

- In both survey years, more men smoked than women in both the Metro and Greater Minnesota.
- While the overall percentage of people who reported smoking decreased from 2004 to 2009, more Greater Minnesotans than Metro residents reported smoking in both years.

Source: Minnesota Center for Health Statistics-Behavioral Health Risk Factor Surveillance System
Driving While Intoxicated

The rate of DWI violations was highest in Northwest and Northeast Minnesota.

Figure 15

- The overall DWI rate for all Minnesota residents was 679 DWIs per 100,000 person-years.
- Only the Southeast and Metro regions had DWI rates lower than the overall DWI rate for Minnesota.
Seatbelt Use

A lower percentage of men reported always wearing a seatbelt.

Source: Minnesota Center for Health Statistics-Behavioral Health Risk Factor Surveillance System
Obesity

A higher percentage of Greater Minnesotans were identified as obese.

Figure 17

- In 2004 and 2009, a higher percentage of the population in Greater Minnesota were identified as obese (Body Mass Index ≥ 30.0) than in the Metro region.
- In 2004, a higher percentage of men than women in Greater Minnesota were identified as obese. This difference decreased in 2009. Approximately equal percentages of men and women in the Metro region were identified as obese in both years.

Source: Minnesota Center for Health Statistics-Behavioral Health Risk Factor Surveillance System
Physical Activity

In 2009, a higher percentage of Greater Minnesotans reported not exercising recently.

Figure 18

- In 2004, the percentage of residents who reported not exercising in the previous month in the Metro region and in Greater Minnesota was approximately equal.
- In 2009, more women in Greater Minnesota reported not exercising in the previous month than men.
Disease

Understanding differences in the distribution of specific diseases between regions is another way to identify potential disparities, and determine where unmet needs may exist. Disease surveillance is critical for improving prevention strategies, as well as planning, implementing and making treatment available.

This section highlights regional disease disparities. Data comes from infectious and reportable disease surveillance, vital statistics records, chronic disease surveillance systems and other sources the Minnesota Department of Health, Center for Health Statistics maintains.

The chart book highlights regional disparities in specific diseases; however, it does not attempt to identify their causes. References to more complete sources of information on specific diseases are provided where available. Where appropriate and possible, disease incidence rates and mortality rates were age-adjusted.
Sexually Transmitted Infections: Chlamydia

The Metro region had the highest chlamydia infection rate.

The Metro region had the highest chlamydia infection rate at 328 per 100,000 person-years, followed by the Northeast at 211 infections per 100,000 person-years. The Northwest had the lowest chlamydia infection rate at 127 cases per 100,000 person-years. In 2009, Minnesota chlamydia rates were lower than the national rate of 409 cases per 100,000 women. The overall chlamydia rate in Minnesota for 2006-2009 was 263 per 100,000 person-years. More information: http://www.health.state.mn.us/divs/idepc/dtopics/stds/stdstatistics.html.
Sexually Transmitted Infections: Gonorrhea

The Metro region had the highest gonorrhea infection rates.

The Metro region had the highest rate of gonorrhea at 85 new infections per 100,000 person-years, followed by the Northeast at 34 new infections per 100,000 person-years.

All regions in Minnesota had gonorrhea rates lower than the national average of 99 per 100,000\textsuperscript{vi}.

Only the Metro had a rate higher than the state average of 58 per 100,000.

Sexually Transmitted Infections: HIV/AIDS

The Metro region had the highest rate of new HIV/AIDS diagnoses.

From 2004-2009, there were 1,941 new HIV/AIDS cases, 1,706 (88 percent) of which were in the Metro region. The Metro region had the highest HIV/AIDS incidence rate at 15 new cases per 100,000 person-years. More information: [http://www.health.state.mn.us/divs/idepc/dtopics/stds/stdstatistics.html](http://www.health.state.mn.us/divs/idepc/dtopics/stds/stdstatistics.html).
Tick-Borne Disease: Lyme Disease

The Northwest and Northeast had higher rates of Lyme disease.

From 2006-2009, Minnesota had 4,267 confirmed cases of Lyme disease (21 cases per 100,000 person-years).

The Northwest and Northeast had the highest rates of Lyme disease at 42 and 37 cases per 100,000 person-years.

Tick-Borne Disease: Human Anaplasmosis

The Northwest and Northeast regions had the highest rate of human anaplasmosis infection.

From 2006-2009, Minnesota had 1,093 confirmed cases of human anaplasmosis (five cases per 100,000 person-years).

The Northwest and Northeast had the highest rates of human anaplasmosis at 22 and 12 cases per 100,000 person-years.

Food-Borne Illness: Salmonellosis

The Northeast had the lowest rate of salmonella infection.

From 2006-2009, Minnesota had 2,770 reported cases of salmonella infection (13 per 100,000 person-years).

The Southwest, Southeast and Metro regions had the highest rate of infection, all at 14 per 100,000 person-years.

Food-Borne Illness: Giardiasis

The Metro region had the highest rate of giardia infection.

From 2006-2009, Minnesota had 3,281 reported cases of giardia infection (16 per 100,000 person-years)

The Metro region had the highest rate of infection at 18 per 100,000 person-years.

The Northwest had the lowest rate at nine per 100,000 person-years.


Source: Minnesota Department of Health, Acute Disease Epidemiology. Obtained from Minnesota Center for Health Statistics, County Health Tables.
**Food-Borne Illness: Campylobacteriosis**

The Southwest and Southeast regions had the highest rates of campylobacter infection.

- From 2006-2009, Minnesota had 1,747 reported cases of campylobacter infection (17 cases per 100,000 population).
- The Southwest had the highest infection rate at 28 per 100,000, followed by the Southeast at 26 per 100,000.
Respiratory Illness: Pneumonia and Influenza Mortality Rate

Pneumonia and influenza mortality rates were higher in non-Metro regions.

Figure 27

Age-Adjusted Pneumonia and Influenza Mortality Rate (2006-2009)

- From 2006-2009, there were 2,564 deaths due to pneumonia and influenza in Minnesota, an age-adjusted rate of 12 deaths per 100,000 person-years.
- The Metro region had a lower pneumonia and influenza mortality rate than the rural regions of the state, at 10 deaths per 100,000 person-years.

Source: Minnesota Center for Health Statistics, Vital Statistics
Respiratory Illness: Asthma

The Northeast and Metro had the highest asthma emergency department visit and hospitalization rates.

From 2007 to 2009, there were 50,643 asthma related emergency department (ED) visits in Minnesota, a rate of 32 per 10,000 person-years.

The Northeast and Metro regions had the highest asthma ED visit rates, at 39 and 38 per 10,000 person-years respectively. Both regions had rates higher than the statewide rate of 32 per 10,000.

The Southwest had the lowest rate at 22 per 10,000 person-years.

From 2007 to 2009, there were 12,838 asthma hospitalizations in Minnesota, or eight per 10,000 person-years. The Central, Northeast, and Metro regions had the highest asthma hospitalization rates, at 9.6, 10.8, and 11.0 per 10,000 person-years respectively. The Northwest, Southwest, and Southeast all had relatively low hospitalization rates with approximately seven per 10,000 person-years. More information: [http://www.health.state.mn.us/divs/hpcd/cdee/asthma/Research.html](http://www.health.state.mn.us/divs/hpcd/cdee/asthma/Research.html).
Cancer: Breast

The incidence of breast cancer in women is higher in more urban regions, but mortality is approximately equal in all regions of the state.

Figure 30

- Between 2004 and 2008, there were 17,913 new cases of breast cancer identified in Minnesota, a rate of 126 per 100,000 person-years (among women only).
- The Metro and Southeast regions had the highest incidence rates, at approximately 130 cases per 100,000 person-years. This may reflect an increased likelihood of cancer screening in residents of regions with abundant health care resources such as the Metro and Southeast regions.
- The Northwest had the lowest incidence rate at 115 per 100,000 person-years.
Between 2004 and 2008, there were 3,229 deaths resulting from breast cancer in Minnesota, a rate of 21.5 per 100,000 person-years (among women only).

All regions of the state had breast cancer mortality rates close to the state average.
Cancer: Prostate

The Central and Northwest regions had the highest incidence of prostate cancer among men.

Figure 32

- Between 2004 and 2008, there were 22,113 new cases of prostate cancer identified in Minnesota, a rate of 184 per 100,000 person-years (among men only).
- The Central region had the highest prostate cancer incident rate, approximately 196 per 100,000 person-years, followed by the Northwest at approximately 190 per 100,000 person-years (among men only).
- The Southeast had the lowest incidence rate at approximately 172 per 100,000 person-years (among men only).
The Northeast had the highest prostate cancer mortality rate among men.

- Between 2004 and 2008, there were 2,577 deaths resulting from prostate cancer in Minnesota, a rate of 25 per 100,000 person-years.
- The Northeast had the highest mortality rate at 30 deaths per 100,000 person-years (among men only).

Source: Minnesota Center for Health Statistics, Vital Statistics, rates calculated by Minnesota Cancer Surveillance System staff
Cancer: Lung

The incidence and mortality of lung cancer was higher among men than women in all regions of the state.

Between 2004 and 2008, there were 14,805 new cases of lung cancer (including bronchus cancer) identified in Minnesota. More men were diagnosed with lung cancer than women in all regions of Minnesota. The statewide lung cancer incidence rate was 68 per 100,000 person-years for men, and 50 per 100,000 person-years for women. The Central, Northeast and Northwest regions had the highest rates among men. The Metro, Northeast and Central regions had the highest rates among women.
The Northeast had the highest lung cancer mortality rates among men and women.

From 2004 through 2008, there were 11,830 deaths resulting from lung cancer in Minnesota.

- The statewide lung cancer mortality rate was 57 per 100,000 person-years for men, and 37 per 100,000 person-years for women.
- The Southwest region had the lowest lung cancer mortality rate for men and women.

Source: Minnesota Center for Health Statistics, Vital Statistics, rates calculated by Minnesota Cancer Surveillance System staff
Cancer: Colon and Rectal

The colon and rectal cancer incident rate was highest in the Southwest region.

From 2004 through 2008, there were 12,403 new cases of colon and rectal cancer identified in Minnesota.

More men had colon and rectal cancer than women in all regions of Minnesota. The statewide colon and rectal cancer incidence rate was 54 per 100,000 person-years for men, and 41 per 100,000 person-years for women.

The Southwest had the highest incidence rate among men and women, at 61 per 100,000 person-years among men, and 48 per 100,000 person-years among women.
From 2004 through 2008, there were 4,110 deaths resulting from colon and rectal cancer in Minnesota.
The statewide colon and rectal cancer mortality rate was 18 per 100,000 person-years for men, and 13 per 100,000 person-years for women.
The Northeast had the highest mortality rate among men, followed by the Northwest. Colon and rectal cancer mortality rates were all approximately equal across regions for women.
All Cancers

Incidence rates of all cancers were approximately equal across regions

Figure 38

Source: Minnesota Cancer Surveillance System (MCSS)

- Between 2004 and 2008 in Minnesota, 125,539 new cases of cancer were diagnosed, a rate of 476 per 100,000 person-years.
- More men were diagnosed with cancer than women in Minnesota, with 561 new cancer cases per 100,000 person-years for men, and 414 new cancer cases per 100,000 person-years for women.
The Northeast had the highest cancer mortality rate.

- Cancer is the leading cause of death in Minnesota.
- Between 2004 and 2008 in Minnesota, 45,584 deaths resulted from malignant cancer, a rate of 171 per 100,000 person-years.
- More men died from cancer than women in all regions of Minnesota. The statewide all-cancer mortality rate was 208.7 per 100,000 person-years for men, and 147.5 per 100,000 person-years for women.
- The Northeast had the highest cancer mortality rates, with 230.9 per 100,000 person-years for men and 161.2 per 100,000 person-years for women.
**Chronic Disease: Cirrhosis**

The Northeast region had a cirrhosis mortality rate almost double the state average.

**Figure 40**

**Age-Adjusted Cirrhosis Mortality Rate (2006-2009)**

- From 2006 to 2009, there were 1,483 deaths due to cirrhosis in Minnesota, a rate of 7 per 100,000 person-years.
- The Northeast region had almost double the statewide rate, at 12 deaths per 100,000 person-years.

Source: Minnesota Center for Health Statistics, Vital Statistics
Chronic Disease: Diabetes

The more rural regions of the state had higher rates of mortality due to diabetes.

Figure 41

- From 2006 to 2009, there were 4,344 deaths due to diabetes in Minnesota, a rate of 21 per 100,000 person-years.
- The Southeast and Metro had lower diabetes mortality rates than the other regions.
Chronic Disease: Heart Disease

The Metro had a substantially lower heart disease mortality rate.

Figure 42

Source: Minnesota Center for Health Statistics, Vital Statistics

- Heart disease was the second leading cause of death in Minnesota from 2006-2009.
- From 2006 to 2009, there were 29,753 deaths due to heart disease in Minnesota, a rate of 139 per 100,000 person-years.
- The Northeast had the highest rate of heart disease deaths at 181 per 100,000, followed by the Southwest and Northwest.
- The Metro region had the lowest rate at 116 deaths per 100,000 person-years.
Chronic Disease: Stroke

The Southeast had the lowest mortality rate due to stroke.

Stroke was the third leading cause of death in Minnesota from 2006 to 2009. From 2006 to 2009 in Minnesota, 8,406 deaths were due to stroke, a rate of 40 per 100,000 person-years. The Southeast had a lower stroke mortality rate than the rest of the state, at 35 deaths per 100,000 person-years. The four most rural regions of the state had higher mortality rates than the more urban Southeast and Metro regions. More information: http://www.health.state.mn.us/divs/hpcd/chp/cvh/Data.htm.
Injury

Injuries have a variety of causes, and can be classified in many different ways. Fatal injuries are often categorized into three major groups according to intent:

1. Unintentional injury - unintentional fatal or non-fatal injury resulting from a variety of causes
2. Suicide - intentional fatal injury caused by the victim
3. Homicide - intentional fatal injury caused by another person.

In 2009, unintentional injuries, suicide and homicide were the fifth, 10th and 15th leading causes of death in the United States respectively\(^\text{vii}\). In 2007, there were 182,497 deaths, 2,855,000 hospitalizations, and 29,757,000 people treated in emergency departments for nonfatal injuries\(^\text{viii,ix}\). In 2005, injuries cost approximately $406 billion in medical and work loss costs\(^\text{x}\). In Minnesota, unintentional injuries are the leading cause of death among 1- to 34-year-olds. Suicide is the second leading cause of death among 15- to 34-year-olds, and homicide is the third leading cause of death among 15- to 24-year-olds\(^\text{xii}\).

Significant progress has been made in the area of injury prevention, largely through policy measures aimed at the use of safety equipment such as seatbelts, bicycle helmets, gun safety locks and child safety seats. Ongoing measures are in place to reduce the number of motor vehicle injuries associated with drunk driving, and new attention is being placed on distracted driving in Minnesota, including a new law prohibiting texting while driving that took effect in 2008. This section of the chart book presents data on unintentional injuries, suicides and homicides in Minnesota, with specific attention paid to two types of unintentional injury: falls and motor vehicle injuries. Rural Minnesota had a higher mortality rate resulting from motor vehicle injuries. The Southeast, Northeast, and to some extent the Metro region had higher mortality rates resulting from falls.

Homicide

The Metro had the highest homicide rate.

From 2006 to 2009, there were 466 homicides in Minnesota, a rate of two per 100,000 person-years.

The Metro region had the most homicides with 325, a rate of three per 100,000 person-years.
Suicide

The Northeast and Northwest had the highest suicide rates.

Figure 45

- From 2006 to 2009, suicide was the 10th leading cause of death in Minnesota.
- From 2006 to 2009, there were 2,302 suicides in Minnesota, a rate of 11 per 100,000 person-years.
- The Northeast region had the highest age-adjusted suicide rate, at 15 per 100,000 person-years, followed by the Northwest.
- The Metro region had the lowest suicide rate, at 10 per 100,000 person-years.

Source: Minnesota Center for Health Statistics, Vital Statistics
Unintentional Injury

The Northeast and Northwest had the highest mortality rate due to unintentional injury.

From 2006 to 2009, unintentional injury was the fourth leading cause of death in Minnesota.

From 2006 to 2009, there were 8,008 deaths due to unintentional injury in Minnesota, a rate of 38 per 100,000 person-years.

The Northeast had the highest rate, at 46 deaths per 100,000 person-years followed by the Northwest at 45 deaths per 100,000 person-years.

The Metro had the lowest rate at 36 per 100,000 person-years.

Together, falls and motor vehicle injuries made up 60 percent of deaths due to unintentional injury. Deaths resulting from falls are concentrated in urban regions, while deaths due to motor vehicle injuries are concentrated in rural regions (see Figures 47 and 48).

Source: Minnesota Center for Health Statistics, Vital Statistics
Deaths due to Falls

The more urban regions had higher mortality rates due to falls.

Figure 47

Fall Injury Deaths by Region (2006-2009)

- From 2006 to 2009, there were 2,723 injury deaths resulting from falls in Minnesota, a rate of 13 per 100,000 people.
- The Southeast had the highest rate of injury deaths due to falls, with 15 per 100,000 people.
- The Southwest had the lowest rate of injury deaths due to falls, with 11 per 100,000 people.
Motor Vehicle Deaths

The more rural regions had higher rates of motor vehicle injury deaths.

Figure 48

Motor Vehicle Injury Deaths by Region (2006-2009)

- From 2006-2009 in Minnesota, 2,062 deaths were due to motor vehicle injuries, a rate of 10 per 100,000 person-years.
- The Southwest had the highest rate at 18 per 100,000 person-years, followed by the Northwest at 16 per 100,000 person-years.
- The Metro had the lowest rate at six per 100,000 person-years.

Source: Minnesota Center for Health Statistics, County Health Tables. These rates could not be age-adjusted due to lack of age specific data.
Traumatic Brain Injury (TBI)

The TBI rate was lower in the rural Northwest and Southwest.

From 2006 to 2009, there were 19,651 TBIs in Minnesota, a rate of 94 per 100,000 person-years. TBI injury rates were highest in the Northeast and Southeast. The Northwest and Southwest had the lowest TBI rates. More information: [http://www.health.state.mn.us/injury/index.cfm](http://www.health.state.mn.us/injury/index.cfm).
Aging Populations

As Minnesota’s baby boom generation ages, health issues associated with aging will become increasingly prevalent. Identifying where older Minnesotans live, and where health problems associated with aging occur may provide opportunities for planning and allocating resources. Older populations have been defined in many different ways, but perhaps most frequently they include people 65 years of age or older. This report uses two definitions: Minnesotans 65 and older and Minnesotans 85 and older. Charts in this section include age-specific rates and denominators include only people in the age cohort represented in each individual chart.

Age 65 and Over Population

In 2009, the largest populations of 65-year-olds and over were in the Northwest, Southwest and Northeast.

The Metro and Central regions had the lowest percent of the population 65 and over.

Source: Minnesota Center for Health Statistics-US Census 2009 estimates
Age 85 and Over Population

In 2009, the largest populations of 85-year-olds and over were in the Northwest, Southwest and Northeast.

The Metro and Central regions had the lowest percent of the population 85 and over.
Aging Populations: Alzheimer’s Disease

Alzheimer’s mortality rates were highest in the Northeast and Northwest.

Between 2006 and 2009 in Minnesota, 5,127 deaths were due to Alzheimer’s disease among people 65 and over, a rate of 198 per 100,000 person-years.

The Northeast region had the highest mortality rate due to Alzheimer’s among people 65 and over, at 287 per 100,000 person-years. This was almost two times greater than the statewide average.

The Northwest had the next highest rate, at 231 per 100,000 person-years.
Between 2006 and 2009 in Minnesota, 3,516 deaths were due to Alzheimer’s disease among people 85 and over, a rate of 838 per 100,000 person-years.

The Northeast had the highest mortality rate due to Alzheimer’s among people 85 and over, at 1,178 per 100,000 person-years, followed by the Northwest with a rate of 975 per 100,000 person-years.

Southeast and Southwest rates were much lower than the state average, at 630 and 678 per 100,000 person-years respectively.
Aging Populations: Cancer

The Northeast had the highest all-cancer mortality rates in both the 65+ and 85+ age groups.

- Between 2006 and 2009 in Minnesota, 26,278 deaths were due to all types of cancer among people 65 and over, a rate of 1,033 per 100,000 person-years.
- The Northeast region had the highest all-cancer mortality rate among people 65 and over, at 1,139 per 100,000 person-years.
- The Southwest and Northeast regions had rates higher than the state average.
Between 2006 and 2009 in Minnesota, 7,078 deaths were due to all types of cancer among people 85 and over, a rate of 1,687 per 100,000 people.

The Northeast region had the highest all-cancer mortality rate among people 85 and over, at 1,863 per 100,000 person-years.
Aging Populations: Diabetes

Older Minnesotans in the more rural regions had higher diabetes mortality rates.

Figure 56

Between 2006 and 2009 in Minnesota, 3,383 deaths were due to diabetes among people 65 and over, a rate of 130 per 100,000 person-years.

The Southwest had the highest diabetes mortality rate among people 65 and over, at 158 per 100,000 person-years, followed by the Northeast at 155 per 100,000 person-years.

- Between 2006 and 2009 in Minnesota, 3,383 deaths were due to diabetes among people 65 and over, a rate of 130 per 100,000 person-years.
- The Southwest had the highest diabetes mortality rate among people 65 and over, at 158 per 100,000 person-years, followed by the Northeast at 155 per 100,000 person-years.

Source: Minnesota Center for Health Statistics, Vital Statistics
Between 2006 and 2009 in Minnesota, 1,346 deaths were due to diabetes among people 85 and over, a rate of 321 per 100,000 people.

The Central region had the highest diabetes mortality rate among people 85 and over, at 396 per 100,000 person-years. The Southeast and Metro regions had diabetes rates substantially lower than the other regions.
Aging Populations: Heart Disease

Older Minnesotans in the more rural regions had higher heart disease mortality rates.

Between 2006 and 2009 in Minnesota, 24,853 deaths were due to heart disease among people 65 and over, a rate of 961 per 100,000 person-years.

The Northeast had the highest heart disease mortality rate among people 65 and over, at 1,257 per 100,000 person-years, followed by the Southwest at 1,229 per 100,000 person-years.

The Metro region had a much lower rate than the other regions, at 775 per 100,000 person-years.
Between 2006 and 2009 in Minnesota, 13,711 deaths were due to heart disease among people 85 and over, a rate of 3,268 per 100,000 people.

The Northeast had the highest heart disease mortality rate among people 85 and over, at 3,930 per 100,000 person-years, followed by the Southwest at 3,671 per 100,000 person-years.

The Metro region had a much lower rate than the non-Metro regions, at 2,801 per 100,000 person-years.
Aging Populations: Pneumonia and Influenza

Older Minnesotans in the more rural regions had higher mortality due to pneumonia and influenza.

Figure 60

- Between 2006 and 2009 in Minnesota, 2,290 deaths were due to pneumonia and influenza among people 65 and over, a rate of 89 per 100,000 person-years.
- The Southwest had the highest rate, 107 per 100,000 person-years, followed by the Central region at 105 per 100,000 person-years.
- The Metro region had a much lower rate than the non-Metro regions, at 71 per 100,000 person-years.

Source: Minnesota Center for Health Statistics, Vital Statistics
Between 2006 and 2009 in Minnesota, 1,516 deaths were due to pneumonia and influenza among people 85 and over, a rate of 361 per 100,000 person-years.

The Central region had the highest rate, 455 per 100,000 person-years.

The Metro region had a much lower rate than the non-Metro regions, at 297 per 100,000 person-years.
Aging Populations: Stroke

The Southwest region had the highest rate of stroke mortality among the 65+ age group.

Figure 62

Between 2006 and 2009 in Minnesota, 7,509 deaths were due to stroke among people 65 and over, a rate of 290 per 100,000 person-years.

- The Southwest region had the highest rate, 348 per 100,000 person-years.
- Stroke mortality rates among people 65 and over were higher in the more rural regions.
Between 2006 and 2009 in Minnesota, 4,238 deaths were due to stroke among people 85 and over, a rate of 1,010 per 100,000 person-years. The Central region had the highest rate, 1,127 per 100,000 person-years. Stroke mortality rates among people 85 and over were higher in the more rural regions, except the Northeast, which had rates somewhat lower than the Metro.
Aging Populations: Unintentional Injury

The Metro, Southeast and Central regions had higher unintentional injury mortality rates among the 65+ age group and the 85+ age group, with a larger difference in the 85+ age group.

Figure 64

- Between 2006 and 2009 in Minnesota, 3,773 deaths were due to unintentional injury among people 65 and over, a rate of 146 per 100,000 person-years.
- The Metro had the highest rate, 155 per 100,000 person-years, followed by the Southeast at 153 per 100,000 person-years.
- The Northwest had the lowest rate at 128 per 100,000 person-years.

Source: Minnesota Center for Health Statistics, Vital Statistics
Between 2006 and 2009 in Minnesota, 2,041 deaths were due to unintentional injury among people 85 and over, a rate of 486 per 100,000 person-years.

The Metro had the highest rate, 564 per 100,000 person-years, followed by the Central region at 516 per 100,000 person-years.

The Southwest had the lowest rate at 349 per 100,000 person-years.
Regional Summaries

In order to generate this chart book, a large amount of data was compiled from many different sources. Each of the charts conveyed specific information about demographics, health behaviors, and diseases. All these pieces of information converge to provide a general picture of regional health status, but they are not necessarily causally related to each other. Summaries of the data for each of the six regions follow.

Northwest

- Mostly small rural or isolated rural population
- Highest percentage American Indian/Alaskan Native population
- Fewer people with at least some college than the state average
- High percent of population over 65
- Highest infant mortality rate in state (still lower than national average)
- Highest percentage of people without health insurance
- High unintentional injury mortality rate
- High rate of mortality due to motor vehicle injuries
- Lowest traumatic brain injury rate
- Low unintentional injury mortality in 85+ populations
- High Alzheimer’s disease mortality rate
Southwest

- Mostly small rural or isolated rural population
- Relatively large Hispanic/Latino community
- Lowest percentage of people with at least some college
- High percent of population over 65
- Highest percentage of people reporting “fair” or “poor” health
- Low percentage of people without health insurance
- High rates of foodborne illness
- Relatively high rates of diabetes mortality
- Relatively high rates of heart disease mortality
- Highest rate of motor vehicle injury deaths
- Relatively low traumatic brain injury rates
- Low Alzheimer’s Disease mortality rate
- Low unintentional injury mortality rate in 85+ population
- High diabetes, heart disease and stroke mortality rates in 65+ population
Central

- Fewer people with at least some college than the state average
- Highest asthma hospitalization and emergency department visit rate
- Highest rate of pneumonia and influenza mortality
- Highest prostate cancer incidence rate
- Highest diabetes and stroke mortality rates in 85+ population
- Highest pneumonia and influenza mortality rate in 85+ population
- High unintentional injury rate in 85+ population
Northeast

- High percent of population over 65
- Relatively high percentage of people reporting “fair” or “poor” health
- Highest overall mortality rate
- Low rates of foodborne illness
- High asthma hospitalization and emergency department visit rate
- High rate of cancer mortality
- Highest rate of cirrhosis mortality
- Highest rates of diabetes and heart disease mortality
- Highest suicide rate
- Highest unintentional injury mortality rate
- High mortality due to falls
- High traumatic brain injury rates
- High mortality rates from Alzheimer’s disease, cancer and heart disease among older population
Southeast

- Mostly urban or large rural population
- Low mortality rates due to cancer
- High rate of campylobacter infection
- Low incidence of prostate cancer
- Low diabetes and stroke mortality rates
- High mortality due to falls
- High traumatic brain injury rate
- Low mortality rates from Alzheimer’s disease, diabetes and stroke among older population
Metro

- All urban population
- Larger minority population than other regions
- More people with at least some college than the state average
- Fewer people report “fair” or “poor” health than other regions
- Fewer people uninsured than in other regions
- High rate of chlamydia, gonorrhea and HIV/AIDS infection
- Low pneumonia and influenza mortality rate
- High asthma hospitalization and emergency department visit rate
- Low rates of heart disease mortality
- High homicide rate
- Low suicide rate
- High mortality due to falls
- Low mortality due to motor vehicle injuries
- Low heart disease and diabetes mortality rates in older population
- High unintentional injury mortality rate in 85+ population
- Lower percentage of residents obese than in other regions
Key Findings

Some clear differences exist in rural regions compared to urban regions:

- Fewer people with at least some college
- More people reported “fair” or “poor” health
- More people reported being current smokers
- More people were identified as obese
- Fewer people reported exercising in the previous month
- More people were uninsured
- Lower rates of chlamydia, gonorrhea and HIV/AIDS infection
- Higher mortality rates due to pneumonia and influenza, especially in the older population
- Higher diabetes, stroke and heart disease mortality rates
- Lower homicide rates
- Higher suicide rates
- Lower unintentional injury mortality rates
- Higher mortality due to motor vehicle injury.
Conclusion

This report is intended to generate awareness among policymakers, primary and rural health care providers, public health officials and concerned community members about the importance of examining rural and regional disparities. Many presentations of rural health data focus on measuring the scarcity of health care services in rural areas. Data on health care resources has been very important in developing policies that improve rural health care delivery; however, policies and practice around allocating health care resources can be better understood in light of a complete picture of population health. This picture includes information about disparities in the health status of specific populations within Minnesota. Identifying and documenting these disparities in health status provides important information about how best to evaluate state and local health promotion and disease prevention activities.

Minnesota is frequently ranked as one of the healthiest states in the nation, despite considerable differences in the health of Minnesotans in distinct regions of the state. These disparities may exist for a variety of reasons, including the rurality of the region. Regardless of their causes, the first step in eliminating disparities and improving population health is identifying where they exist.

This chart book provides a snapshot of regional health in Minnesota. Caution should be used in interpreting the meaning of these data, and no assumptions based on this report alone should be made as to the causes of potential health disparities. Rather, regional health differences should raise questions and prompt further inquiry to determine the nature and scope of the problem, and then policies and actions can be directed more effectively to provide a solution.
Glossary

**Age-Adjusted Rate** – A summary measure that helps to control for age differences among populations. A weighted average, called the “direct method,” is used to adjust for age in this analysis. The U.S. 2000 standard population is used as the basis for weight calculations. Age-adjusted rates are useful when comparing the rates of two population groups that have different age distributions.

**Campylobacteriosis** – An infection caused by bacteria of the genus *Campylobacter*. These bacteria live in the intestines of healthy birds. Most raw poultry meat commonly has *Campylobacter*. *Campylobacter* is one of the most common bacterial causes of diarrheal illness in the United States and is the most commonly reported bacterial enteric pathogen in Minnesota.

**Chlamydia** – The most commonly reported sexually transmitted bacterial infection in Minnesota and the United States. It is caused by *Chlamydia trachomatis*, a bacterium that can infect the penis, vagina, cervix, anus and urethra. It can also infect the eyes or lungs of children at the time of birth. Chlamydia is curable with antibiotics.

**Giardiasis** – A diarrheal illness caused by *Giardia intestinalis* (also known as *Giardia lamblia*), a one-celled, microscopic protozoan parasite that lives in the intestines of people and animals. During the past two decades, *Giardia* has become recognized as one of the most common causes of waterborne disease (drinking and recreational) in humans in the United States.

**Gonorrhea** – Caused by the bacteria *Neisseria gonorrhoeae*, which can infect the soft skin covering the urethra, vagina, cervix, anus and throat. Gonorrhea can be cured with antibiotics.

**Human Anaplasmosis** – A bacterial disease transmitted to humans by *Ixodes scapularis* (blacklegged tick or deer tick), the same tick that transmits Lyme disease. The tick must be attached at least 12-24 hours to transmit the bacteria. Not all ticks carry these bacteria.

**Person-Years** – A unit of a denominator indicating one person at risk for a particular disease or outcome for one year. For rates spanning multiple years, one person may contribute more than one person-year to the denominator. For example, the overall mortality rate for Minnesota from 2004-2008 was 678 deaths per 100,000 person-years, or put another way, 678 deaths per 100,000 persons per year. A person who lived in Minnesota from 2004 through 2008 would have contributed five person-years to the denominator. If a person moved away from Minnesota at the end of 2005 and a new person moved into Minnesota at the beginning of 2006 through 2008, the former person would have contributed two person-years and the latter person would have contributed three person-years for a total of five person years.

**Salmonellosis** – An infection with a bacteria called *Salmonella*. *Salmonella* live in the intestinal tracts of animals, including birds. *Salmonella* are usually transmitted when humans eat foods contaminated with animal feces.
Works Cited


