# Snapshot of Health in Rural Minnesota



#### Snapshot of Health in Rural Minnesota 2017

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## Summary

DEMOGRAPHICS & SOCIAL DETERMINANTS OF HEALTH

- Twenty percent of rural Minnesota is over 65.
- Rural Minnesota is older than urban.
- Educational attainment is lower in rural areas than urban.
- Poverty rates vary by county and age group.
- State uninsurance rates decreased from 2013 to 2015.
- There are fewer primary care providers per population in rural than urban areas.

## HEALTH INDICATORS & HEALTH BEHAVIORS

- Rates of perceived fair & poor health are greater in rural communities.
- Median obesity rates are higher in rural than urban areas.
- Many rural communities are food deserts, but rural residents eat more fruit and vegetables per day than urban.
- Median smoking rate in rural areas is lower than in small towns but higher than urban areas.

## MORTALITY & DISEASE

- Mortality rates are greater in rural Minnesota.
- Cancer is the leading cause of death in MN & in rural MN.
- Death from chronic diseases is higher in rural areas than in urban areas.

## Introduction

This is the third in a series of rural health status reports and directly follows "The Health Status of Rural Minnesotans," published by the Minnesota Department of Health's Office of Rural Health and Primary Care in 2011. This 2016 Health Status of Rural Minnesotans provides an overview of key health indicators, behaviors and social determinants of health that are important in understanding rural communities and addressing health disparities.

The following information summarizes health indicators for Minnesotans in order to provide a brief snapshot of some of the key measures used to inform population health activities. This report identifies common health indicators and outcomes that can be used for further investigation into the reasons behind health trends in rural Minnesota. Continuing to monitor emerging factors, determinants and outcomes that affect rural health is an important goal of the Office of Rural Health and Primary Care.

## Potential uses for this guide:

- 1. Generate knowledge about health in rural Minnesota
- 2. Identify disparities that exist between rural and urban communities
- 3. Ask questions for a deeper understanding and to generate ideas that will drive future work
- 4. Develop a plans to increase health equity for rural Minnesotans

## Methods

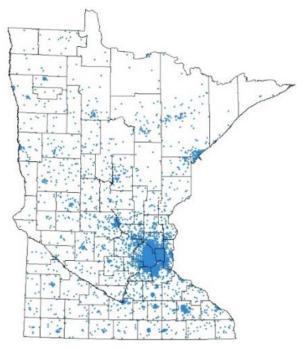
The measures included in this report were chosen based on the availability of data and to provide a clear and concise baseline of information, rather than a comprehensive report on one condition or illness. They do not describe all health determinants and conditions. There are not statistical relationships such as correlation between measures.

Statistical significance tests appropriate to the nature of the data presented include:

- Overlapping Confidence Intervals: A difference is "statistically significant" when the 95 percent confidence intervals do not overlap. The bars on each chart (where confidence intervals were calculated) indicate the appropriate interval for each data. Confidence interval calculations are a more conservative method to visualize statistically significant differences than other methods such as a t-test.
- Kruskal-Wallis test: This test identifies statistically significant differences between medians. This test was conducted at the p<0.05 significance level. Statistical differences between urban and town, urban and rural, town and rural are specified for each figure.

## Minnesota: What is Rural?

Minnesota has 87 counties across 22,454,358 square miles with a population of 5,489,594 (Map 1).<sup>1</sup> There are seven Anishinaabe (Chippewa, Ojibwe) and four Dakota (Sioux) tribal communities.



### Map 1. Population Density in Minnesota

Source: USDA, Rural Urban Commuting Areas, 2010

There are many ways to categorize Minnesota into urban (metropolitan) and rural (nonmetropolitan) areas. This report will use two definitions of urbanization/rurality:

- <u>National Center for Health Statistics Urban-Rural Classification Scheme</u>
- <u>Rural Urban Commuting Areas (RUCAs)</u>.
- The National Center for Health Statistics has six county classifications of rurality. The National Center for Health Statistics categorizes rurality based on <u>county status</u>, population size and location of the largest city populations. Urban = Large Central Metropolitan + Large Fringe Metropolitan
- Town = Medium Metropolitan + Small Metropolitan
- Rural = Micropolitan + Noncore

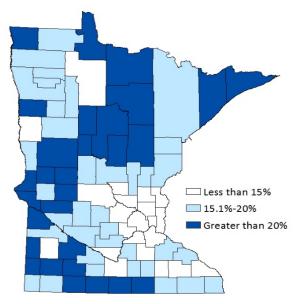
More details about the classifications, including illustrations, are available in the Appendix.

<sup>&</sup>lt;sup>1</sup> American Fact Finder. ACS Demographic and Housing Estimates: 2010-2014 American Community Survey 5-Year Estimates, DP05, Minnesota.

## Demographics

In 2016, The Minnesota Demographic Center Report, <u>Greater Minnesota Refined and Revisited</u> took a detailed look at the demographics of rural and urban Minnesota. In addition to the information provided below, their report has more details of age, race and ethnicity, employment by sector and earnings across rural, town and urban regions.

Population change can happen naturally through births and deaths or from patterns of immigration, migration between states or communities in Minnesota. The Demographic Center found that nearly 25% of Minnesotans currently live outside of an urban area Rural Minnesota is facing a steady population decline from both natural changes (fewer births compared to deaths) and from migration out of rural areas to other parts of Minnesota or other states.<sup>2</sup> Residents in non-urban communities are more likely to be older, with 44% of rural residents over the age of 50 (compared to only 32% in urban). According to the Minnesota State Demographic Center, "the number of Minnesotans turning 65 in this decade (about 285,000) will be greater than the past four decades combined."

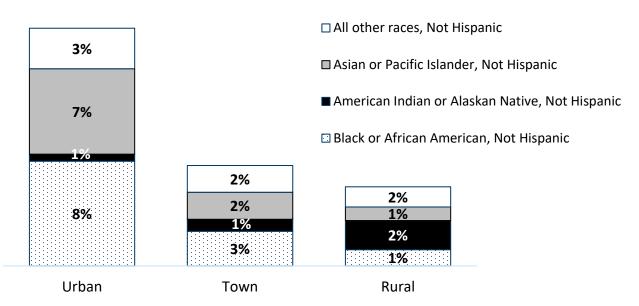


Map 3. Percent of the Population over age 65 (2015) by County

Source: American Community Survey 2011-2015. Margins of error are at the 90 percent confidence level, available in the Tables.

<sup>&</sup>lt;sup>2</sup> Minnesota Demographic Center. 2016. <u>Greater Minnesota Refined and Revisited</u>.

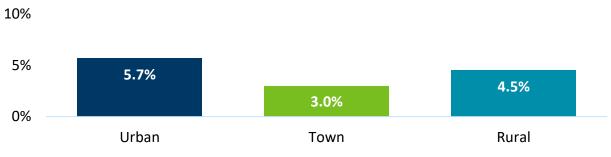
In addition to being older, the majority of residents in rural Minnesota are white (>90% percent) and were born in Minnesota.<sup>3</sup> Minnesota residents who self-identify as Black or African American and Asian or Pacific Islander most likely live in urban areas; however, the majority of Minnesotans who identify as American Indian live in rural communities (Figure 1).



### Figure 1. Race and Ethnicity by NCHS Region\*

Source: American Community Survey 2011-2015. \*The percent of the population that self identifies as non-white, non-Hispanic is 81 percent in urban, 92 percent in town and 94 percent in rural.

### Figure 2. Percent of the population that is Hispanic, by NCHS Region

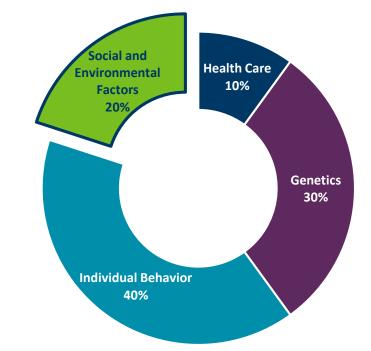


Source: American Community Survey 2011-2015.

<sup>&</sup>lt;sup>3</sup> Minnesota Demographic Center. 2016. <u>Greater Minnesota Refined and Revisited</u>.

## Social Determinants of Health

Health is a state of complete physical, social, and mental well-being and not merely the absence of disease or infirmity.<sup>4</sup> Social, economic and environmental factors as well as individual behaviors and biology work together to create health (Figure 3). When groups face social, economic and environmental disadvantages, such as structural racism and a widespread lack of economic and educational opportunities, health inequities are the result.<sup>5</sup>



#### **Figure 3. Determinants of Health**

Source: Schroeder, 2007 reproduced by Kaiser Family Foundation, 2015. <u>Beyond Health Care: The Role of Social Determinants in</u> <u>Promoting Health and Health Equity</u>.

## These social, economic and environmental factors are often referred to as social determinants of health. <u>Healthy People 2020</u> defines social determinants of health as:

"...the conditions in which we live, learn, work, play, worship and age that affect a wide range of health, functioning and quality of life measures."<sup>6</sup>

The Minnesota Department of Health states that "socially-determined" conditions are:

<sup>&</sup>lt;sup>4</sup> Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York on June 19-22, 1946; signed on July 22, 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on April 7.

<sup>&</sup>lt;sup>5</sup> Minnesota Department of Health, 2014. <u>Advancing Health Equity: report to the legislature</u>

<sup>&</sup>lt;sup>6</sup> Healthy People 2020. Social Determinants of Health. November 2016.

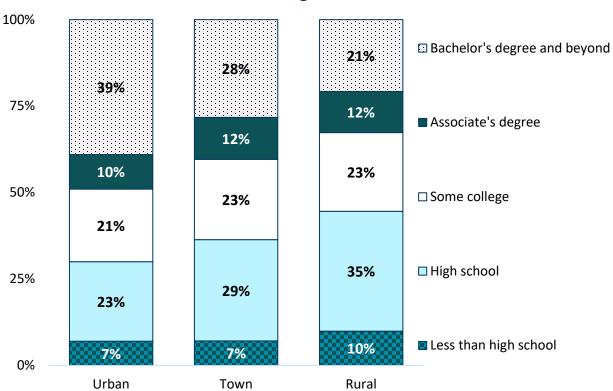
"...created by decisions that affect community or society at-large and are influenced by a variety of factors including both positive and negative social forces." <sup>7</sup>

Social determinants of health – such as poverty or wealth, education or access to affordable healthy food, etc. – can have a stronger impact on certain health outcomes than genetics or individual behaviors. <u>Advancing Health Equity: Report to the Legislature</u> reveals disparities and health inequities in Minnesota. It also identifies a number of recommendations for how Minnesota can address these disparities, improve health outcomes and eliminate health inequities.<sup>6</sup>

<sup>&</sup>lt;sup>7</sup> Minnesota Department of Health, 2014. <u>Advancing Health Equity: Report to the Legislature</u>.

## Education

Educational attainment can influence an individual's profession, career advancement and salary. It is a frequent measure of socio-economic status, which is associated with health outcomes, health behaviors and access to health care. The levels of education attainment vary across regions. The more rural, the less educated the population.





Source: USDA Rural Atlas with data from the 2010-2014 American Community Survey 5-Year Estimates, Minnesota.

## Employment

Employment influences a wide variety of health conditions, including whether people have a sufficient salary to cover living expenses, health insurance, access to paid sick leave, and flexibility to meet health care needs. There are many reasons a person may not be an active member of the labor force, including being a full-time student, being retired, having a health issue or disability that prevents participation, etc. People who do not have a job and who are looking for a job are considered unemployed.<sup>8</sup> The unemployment rate is highest in rural parts of the state (Figure 4).

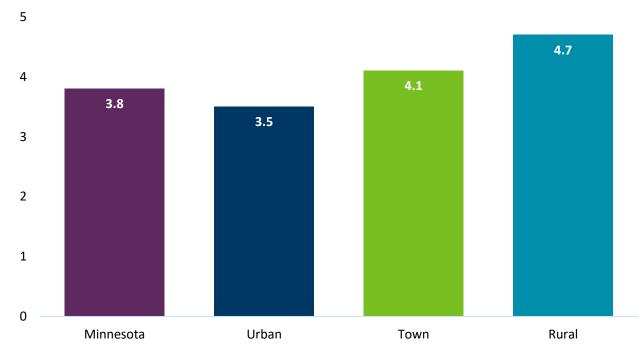


Figure 5. Unemployment Rate (percent)\*, 2016 by NCHS Region

Source: Bureau of Labor Statistics <u>Local Area Unemployment Statistics</u>, 2016 Annual Averages</u>, \*Unemployment rates for urban, town and rural regions were calculated using the total number of unemployed people per region divided by total labor force participation in that region.

The MN Demographic Center measured employment using labor force participation. This is a combination of employed and unemployed individuals but does not take into account individuals who are not actively seeking a job. In their analysis, the MN Demographic Center did not find there to be a large difference<sup>9</sup> between the unemployment rates in rural, town, and urban areas.<sup>10,11</sup>

<sup>&</sup>lt;sup>8</sup> How the Government Measures Unemployment, Bureau of Labor Statistics

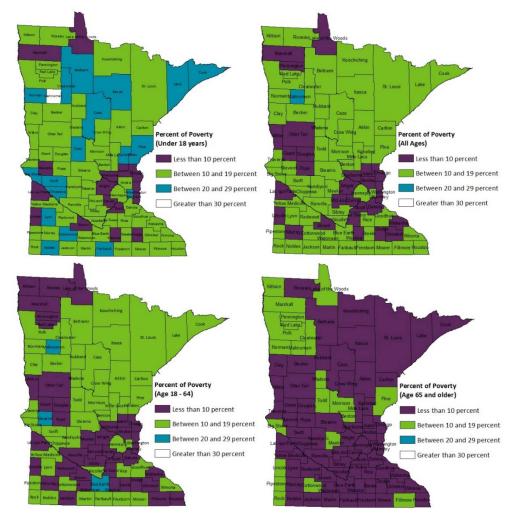
<sup>&</sup>lt;sup>9</sup> The Minnesota Demographic Center states, "Readers are cautioned that margins of error around data exist, but are not shown." The margins of error for each <u>county</u> are available in the tables section.

 $<sup>^{\</sup>rm 10}$  This report defines rural, town, and urban using Rural Urban Commuting Areas.

<sup>&</sup>lt;sup>11</sup> Minnesota Demographic Center. 2016. <u>Greater Minnesota Refined and Revisited</u>.

Poverty

Poverty is an important determinant of health status at both a county and individual level. The wealth of a community can influence the type and amount of services that are available to residents. Individual economic status plays a central role in <u>health outcomes</u>. Minnesota has a lower proportion of people living in poverty compared to other states but there are still a large number of people affected by poverty. Childhood poverty is more prevalent in rural counties than the seven-county metro area. Children living in poverty experience lifelong health problems related to environment, socioeconomic status, family health behaviors and access to quality medical care.<sup>12, 13</sup>





Source: American Community Survey 2011-2015. Margins of error are at the 90 percent level and available in the Tables Section. The <u>American Community Survey uses a poverty threshold</u> for a family of four having a household income of about \$24,000.

<sup>&</sup>lt;sup>12</sup> United States Department of Agriculture, <u>Rural Poverty & Well-Being: Child Poverty</u>.

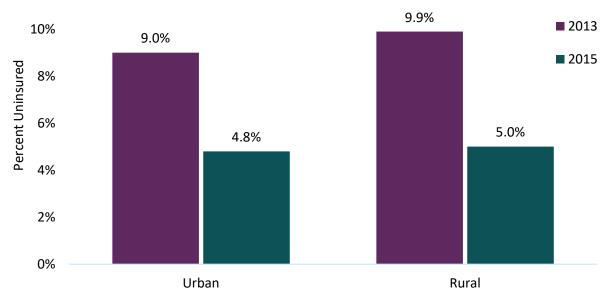
<sup>&</sup>lt;sup>13</sup> National Advisory Committee on Rural Health and Human Services, 2015. <u>Child Poverty in Rural America.</u>

## Access to Quality Care

## **Health Insurance Coverage**

Health insurance is one important factor that determines access to healthcare services. Uninsured individuals are more likely to go without necessary health and dental care services and to suffer health and economic consequences.<sup>14</sup>

- Findings from the Minnesota Health Access Survey<sup>15</sup> indicate the statewide uninsurance rate significantly decreased from 2013 to 2015 (Figure 6)
- The percentage of people without dental insurance also decreased in both rural and urban areas.



## Figure 6. Uninsurance in Minnesota by RUCA^\*

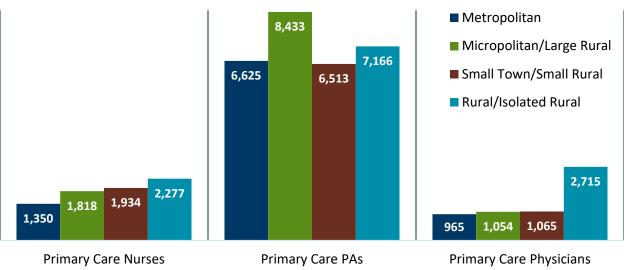
Source: Minnesota Department of Health, <u>Health Economics Program</u> and State Health Access Data Assistance Center at the University of Minnesota School of Public Health, <u>Minnesota Health Access Survey</u>. 2013 and 2015. ^Differences are statistically significant and significance tests were performed at the 95 percent level. \*Excludes the population age of 65 and older. This data uses Rural Urban Commuting Areas to define rural and urban.

 <sup>&</sup>lt;sup>14</sup> Institute of Medicine. Coverage matters: Insurance and health care. Washington, DC: National Academy Press; 2011.
<sup>15</sup> Minnesota Department of Health, <u>Health Economics Program and State Health Access Data Assistance Center at the University of Minnesota School of Public Health, Minnesota Health Access Survey</u>, 2013 and 2015

## **Health Care Workforce**

Ensuring that there is a sufficient workforce to address health and health care needs in a community is critical to ensuring timely access to health care services. Overall, the ratio of all types of physicians per <u>population is eight times higher</u> in rural Minnesota than in urban areas. There are 3,593 licensed primary care nurses (2016), 777 licensed primary care physician's assistants (PAs) (2016) and 5,113-licensed primary care physicians (2015) in Minnesota.

- Primary Care Physicians: While the population to primary care physician ratios in metropolitan, large rural, and small rural areas are similar, there are 2,715 people for every one primary care physician in isolated rural areas, compared to 965 people to every one physician in metropolitan areas.
- **Primary Care Nurses:** There are 2,277 people for every one primary care nurse in isolated rural areas, compared to 1,350 people to nurse in the metropolitan areas.
- Primary Care Physician Assistants: Large rural areas have a greater number of people per physician's assistant (PA) than isolated rural areas. There are 7,166 people per PA in isolated rural areas and 8,433 people per PA in large rural areas. The ratio of licensed primary care Pas to population is higher than nurses and physicians because there are fewer primary care PAs licensed in Minnesota than nurses and physicians.



### Figure 7. Population to Primary Care Provider Ratio by RUCA, 2016

Source: MDH, Workforce Analysis Unit; Data from Board of Nursing, Sept 2016; Board of Medical Practice, Physician Assistant's License Data, July 2016; Board of Medical Practice, Physician License Data, November 2015. This data uses Rural Urban Commuting Areas to define rural and urban. Urban/rural significance tests are not necessary because these charts include a census of Minnesota's primary care providers.

## Health Indicators and Health Behaviors

Individual behaviors, community and environmental factors all influence health outcomes. The behavior of groups and individuals can have direct and indirect effects on population health. Understanding these differences between populations can help to identify social determinants of health that create health disparities. The inequitable distribution of social determinants of health within a community – such as safe housing, places to purchase affordable food or reliable transportation – can determine health behaviors and indicators like obesity, fruit and vegetable consumption or smoking habits.

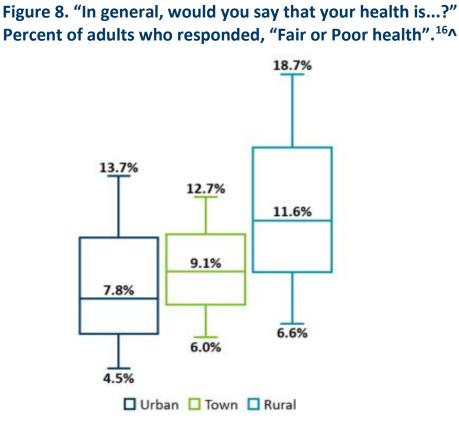
Data on health behaviors come from county-level mail surveys administered between 2013 and 2016 by the local public health agencies in Minnesota with technical support from the Minnesota Department of Health. Some counties conducted their own surveys while others participated in groups of multiple counties. All local surveys in Minnesota used a standard set of questions in addition to questions that were unique to each survey. The standard set of questions is comparable and the results from this set of questions are available in this report. The values displayed are the median percentage for the specific classification of urban/rural. Reported differences between medians are statistically significant at the 0.05 level according to the Kruskal-Wallis test.

Some health indicators or behaviors include:

- Perceived Health
- Obesity
- Fruit and Vegetable consumption
- Smoking status

## **Perceived Health Status**

Perceived health status is a survey measure collected by local health surveys administered around the state. Individuals living in rural communities are more likely to rate their health as fair or poor than people living in urban communities.

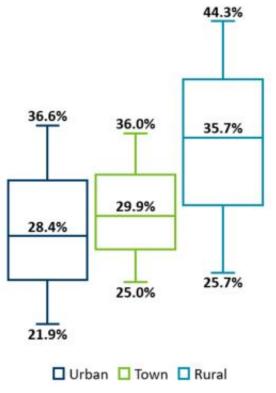


Source: Calculated by the Minnesota Center for Health Statistics, 2016 with results from local public health surveys. Percentages shown are median values; minimum to maximum ranges are also shown. ^Differences in median values for this measure are statistically significant at 0.05 level for urban compared to town and for town compared to rural, according to the Kruskal-Wallis test. Eighty-seven counties included this survey question. Counties are grouped by NCHS regions.

<sup>&</sup>lt;sup>16</sup> Question: "In general, would you say that your health is... excellent, very good, good fair or poor?"

## Obesity

Obesity is a major contributor to chronic disease and leads to increased health care costs. Obesity is the result of complex interactions between behavior, epigenetics, structural environments (availability of opportunities for healthy choices) and social contexts such as housing insecurity and food insecurity, among others. Obesity is measured using a calculation of body mass index (BMI), which is a ratio of weight (kg), divided by height (m<sup>2</sup>). A BMI of 30.0 or greater indicates obesity. Median obesity rates are higher in rural than urban areas.



## Figure 9. Percent of adults who are obese according to BMI<sup>17</sup>

Source: Calculated by the Minnesota Center for Health Statistics, 2016 with results from local public health surveys. Percentages shown are median values; minimum to maximum ranges are also shown. ^Differences in median values for this measure are statistically significant at 0.05 level for urban compared to town and for town compared to rural, according to the Kruskal-Wallis test. Eighty-seven counties included this survey question. Counties are grouped by NCHS regions.

<sup>&</sup>lt;sup>17</sup> Question: "How tall are you without shoes?" and "How much do you weigh without shoes?"

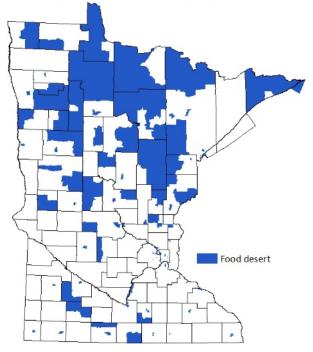
## Healthy Eating: Fruit and Vegetable Consumption

Good food is important to health; however, access to healthy food is not equally distributed across Minnesota. The built environment can influence diet and food choice based on geographically accessible retail food locations.<sup>18</sup> Food prices and individual socioeconomic status are also key influencers of food purchases.<sup>19</sup> Many rural communities are food deserts but rural residents eat more fruit and vegetables per day than urban residents do.

### Map 7. Food Deserts in Minnesota by Census Tract<sup>20</sup>

 A food desert is an area where community members have limited access to sources of healthy and affordable food such as supermarkets or properly stocked corner stores.<sup>21</sup>

## Figure 11. Percent of adults who responded, "Five or more servings of fruit or vegetables."^<sup>22</sup>



Source: USDA Food Access Research Atlas, 2015.

Source: Calculated by the Minnesota Center for Health Statistics, 2016 with results from local public health surveys. Percentages shown are median values; minimum to maximum ranges are also shown. ^Differences in median values for this measure are statistically significant at 0.05 level for urban compared to town and for urban compared to rural, according to the Kruskal-Wallis test. Eighty-seven

<sup>&</sup>lt;sup>18</sup> The relationship between food access and eating habits was not tested for correlation.

<sup>&</sup>lt;sup>19</sup> Healthy Food Access - Landscape in Minnesota and Lessons Learned from Healthy Food Financing Initiatives

<sup>&</sup>lt;sup>20</sup> Food desert is defined by low-income and low-access per the <u>USDA Food Access Research Atlas</u>. These measurements are determined by census tract.

<sup>&</sup>lt;sup>21</sup> USDA. Food Access Research Atlas. For more information see: About the Atlas

<sup>&</sup>lt;sup>22</sup> Questions: 1." A serving of fruit is one medium-sized piece of fruit or a half cup chopped, cut, or canned fruit. How many servings of fruit did you have yesterday?" (Do NOT include fruit juice.) 2. "A serving of 100% fruit juice is 6 ounces. How many 6-ounce servings of 100% fruit juice

## Smoking

Smoking rates in Minnesota vary by age, gender, race/ethnicity and educational attainment.<sup>23</sup> Smoking rates also vary by geography.<sup>24</sup> The results of the <u>2014 Minnesota Adult Tobacco</u> <u>Survey</u> show that smoking rates are higher among adults who live in northern Minnesota and lower among adults who live in southern Minnesota.<sup>25</sup> The median smoking rate in rural counties is slightly lower than in small town counties but both town and rural have higher smoking rates than urban counties. Rural counties also show a much larger range in smoking rates. Many rural counties have a very high percentage of individuals who currently smoke.

### Figure 12. Percent of adults who are current smokers<sup>26</sup>

Source: Calculated by the Minnesota Center for Health Statistics, 2016 with results from local public health surveys. Percentages shown are median values; minimum to maximum ranges are also shown. ^Differences in median values for this measure are statistically significant at 0.05 level, urban compared to town and for urban compared to rural, according to the Kruskal-Wallis test. Eighty-seven counties included this survey question. Counties are grouped by NCHS regions.

did you have yesterday?" 3. "A serving of vegetables - not including french fries - is one cup of salad greens or a half cup of any other vegetables. How many servings of vegetables did you have yesterday?"

 <sup>&</sup>lt;sup>23</sup> <u>Smoking Facts and Figures</u>, Minnesota Department of Health
<sup>24</sup> <u>Health Status of Rural Minnesotans</u>. 2011. Minnesota

Department of Health.

 <sup>&</sup>lt;sup>25</sup> <u>Tobacco Use in Minnesota.</u> 2014. Minnesota Adult Tobacco Survey. Differences shown were not statistically significant.
<sup>26</sup> Questions: "Have you smoked at least 100 cigarettes in your entire life? (100 cigarettes = 5 packs)." and "Do you now smoke cigarettes every day, some days or not at all?"

## Mortality and Diseases

## **Infant Mortality**

<u>Infant mortality rates</u> are a measure often used to determine the overall health status of a community.<sup>27</sup> Compared to similar <u>national results</u>, Minnesota's infant mortality rate is lower than national rates and while not statistically significant, rural infant mortality is higher than urban. The health inequities evident in infant mortality rates reflect a complex combination of factors. More details about <u>infant mortality among different races/ethnicities</u> in Minnesota are available through the Center for Health Statistics and on the <u>Infant Mortality in Minnesota</u> webpage.

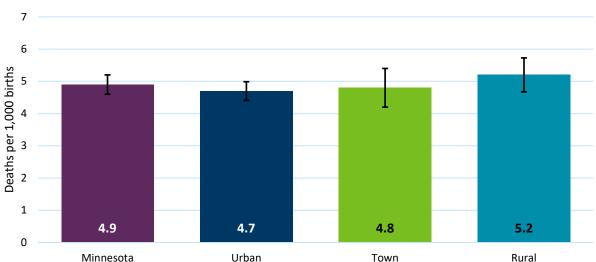


Figure 14. Infant Mortality Rates by NCHS region (2010-2014)\*^

Source: Calculated by the Minnesota Center for Health Statistics with information from the Vital Records System. \*Rates are calculated with the 2010-2014 birth cohort. ^A difference is "statistically significant" when the 95 percent confidence intervals <u>do</u> not overlap.

<sup>&</sup>lt;sup>27</sup> Centers for Disease Control and Prevention. Infant Mortality. More information is available online about Infant Mortality (CDC).

## **Overall Mortality**

As state mortality rates and those in the urban areas of Minnesota have decreased over time, rural mortality rates have shown very little change and they remain slightly higher than urban rates. The combined age-adjusted mortality rate for years 2011-2015 for rural Minnesota was 677.6 per 100,000\*. The combined age-adjusted mortality rate for years 2011-2015 for urban Minnesota was 645.1 per 100,000\*.

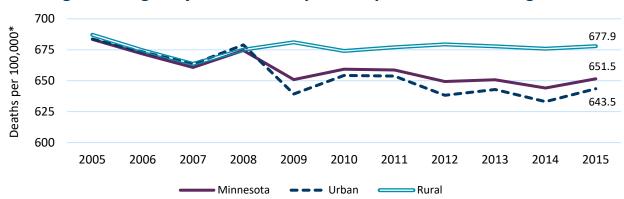
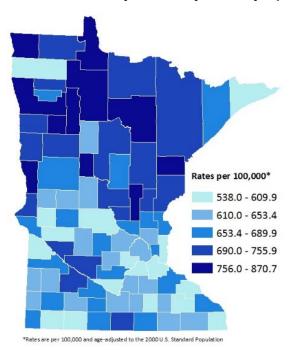


Figure 15. Age-Adjusted Mortality Rates by Year and NCHS Region\*

Source: MN Center for Health Statistics, Vital Statistics Interactive Query Data System. Description in <u>Table 33</u>. \*Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population



#### Map 4. All-Cause Mortality Rates by County\* (2011-2015)

Source: MN Center for Health Statistics, Vital Statistics Interactive Query System. Description in <u>Table 35</u>. \*Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population.

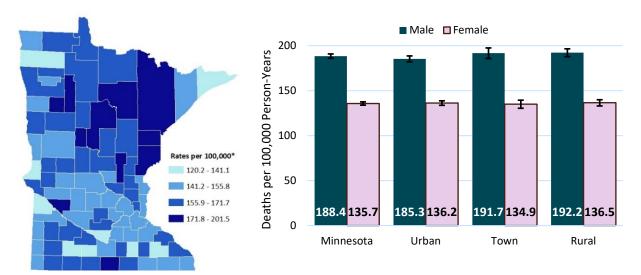
## Leading Causes of Death in Minnesota

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

The Minnesota Department of Health maintains the <u>Public Health Data Access Portal</u>, which contains more data and information about health in Minnesota.

The five leading causes of death in Minnesota and in rural areas are:

- 1. Cancer
- 2. Heart Disease
- 3. Unintentional Injury
- 4. Chronic Lower Respiratory Disease
- 5. Stroke



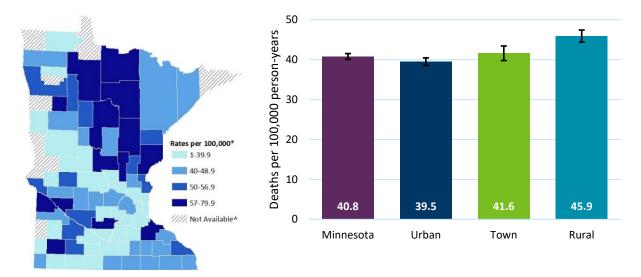
#### 1. All types of Cancer: Age-Adjusted Mortality Rates (2011-2015)<sup>^\*+</sup>

Source: Minnesota Center for Health Statistics Interactive Data Query System and the Minnesota Cancer Surveillance System. ^A difference is "statistically significant" when the 95 percent confidence intervals <u>do not overlap</u>. \*Rates are per 100,000 and ageadjusted to the 2000 U.S. Standard Population. +Rates for counties with less than 20 cases are not available. Cancer mortality rates include all cancers.

#### 140 Deaths per 100,000 person-years т 120 100 80 60 Rates per 100,000\* 97.8 - 117.8 40 117.9 - 140.2 40.3 - 172.0 20 172.1 - 206.7 103.2 130.6 134.1 117.1 0 Minnesota Urban Town Rural

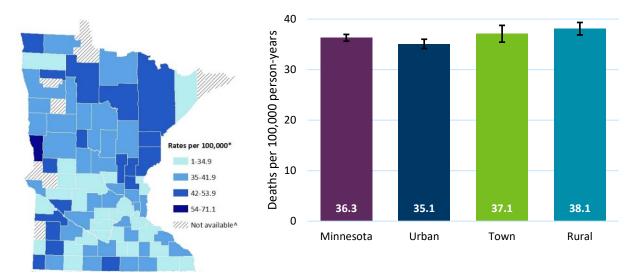
#### 2. Heart Disease: Age-Adjusted Mortality Rates (2011-2015)<sup>^\*+</sup>

Source: Minnesota Center for Health Statistics Interactive Data Query System. ^A difference is "statistically significant" when the 95 percent confidence intervals <u>do not overlap.</u> \*Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population. +Rates for counties with less than 20 cases are not available.



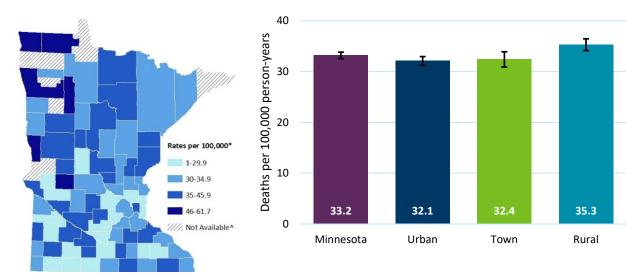
### 3. Unintentional Injury: Age-Adjusted Mortality Rates (2011-2015) ^\*+

Source: Minnesota Center for Health Statistics Interactive Data Query System. ^A difference is "statistically significant" when the 95 percent confidence intervals <u>do not overlap</u>. \*Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population. +Rates for counties with less than 20 cases are not available.



### 4. Chronic Lower Respiratory Disease: Age-Adjusted Mortality Rates (2011-2015) ^\*+

Source: Minnesota Center for Health Statistics Interactive Data Query System. ^A difference is "statistically significant" when the 95 percent confidence intervals <u>do not overlap</u>. \*Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population. +Rates for counties with less than 20 cases are not available.

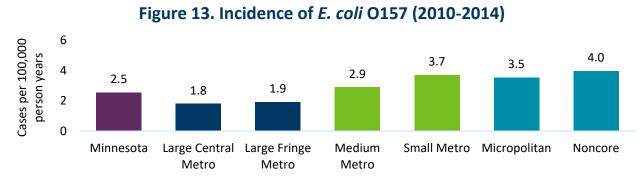


### 5. Stroke: Age-Adjusted Mortality Rates (2011-2015) ^\*+

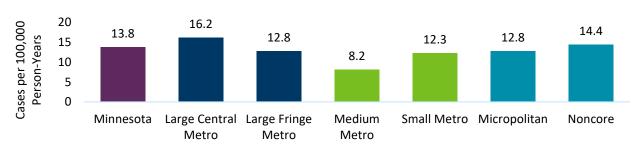
Source: Minnesota Center for Health Statistics Interactive Data Query System. ^A difference is "statistically significant" when the 95 percent confidence intervals <u>do not overlap</u>. \*Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population. +Rates for counties with less than 20 cases are not available.

## **Foodborne Illnesses**

*E. coli, Salmonella* and *Campylobacter* are pathogens transmitted through food. These pathogens can also have animal reservoirs, or hosts. There is often a higher incidence rate in rural areas because of more animal agriculture than in metropolitan/urban communities and that is reflected in Minnesota's rates.

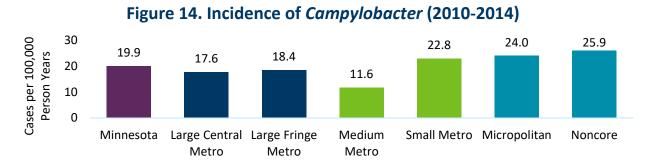


Source: Calculated by Minnesota Department of Health, Foodborne Disease Unit. 2016. For further documentation, see Table 55.



### Figure 14. Incidence of Salmonella (2010-2014)

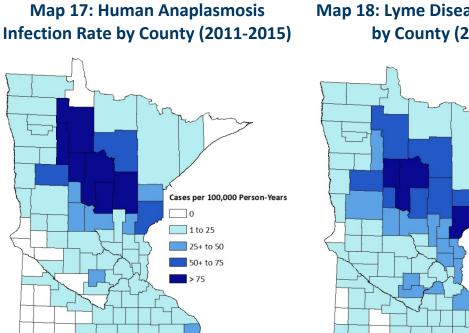
Source: Calculated by Minnesota Department of Health, Foodborne Disease Unit. 2016. For further documentation, see <u>Table 55</u>.



Source: Calculated by Minnesota Department of Health, Foodborne Disease Unit. 2016. For further documentation, see Table 55.

## **Tickborne Illness**

Tickborne diseases such as Lyme disease and human anaplasmosis are caused by bites from infected black-legged ticks, commonly known as deer ticks. These are found in wooded and brushy areas of the northcentral, eastern and southeastern parts of the state. Tickborne diseases are reported to the Minnesota Department of Health by county of residence; however, the county of residence does not always indicate the area of tick exposure. Minnesotans with Lyme disease or human anaplasmosis have either lived or traveled to areas with deer ticks.



## Map 18: Lyme Disease Infection Rate by County (2011-2015)

Cases per 100,000 Person-Years

0 cases

1 to 25

> 75

25+ to 50

50+ to 75

Source: Calculated by the Minnesota Department of Health, Infectious Disease Prevention, Epidemiology, Prevention, and Control Division. 2016. Population data obtained from CDC Wonder.

## Conclusion

The goal of this report is to generate knowledge, identify disparities, and ask questions in order to develop plans to increase health equity for rural Minnesotans. Rural Minnesota is a collection of unique communities with unique problems and assets. These data show combinations of measures that represent large groups of people combined into urban, town and rural categories. Broad categories such as these can mask finer, community-level variations. For more information about the measures included in this report or alternative sources of health information, the <u>Minnesota Department of Health houses a wide range of publicly available data</u>.

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## Appendices

## Acknowledgements

This document is a collaborative effort from across the Minnesota Department of Health. Thank you to all who contributed data and expertise.

- Minnesota Center for Health Statistics
- Minnesota Cancer Surveillance System
- Health Promotion and Chronic Disease Division
- Infectious Disease Epidemiology Prevention and Control
- Health Economics Program
- Health Workforce Unit

## **Data Sources**

### National Center for Health Statistics Scheme (NCHS)

The National Center for Health Statistics categorizes rurality based on <u>county status</u> population size and location of the largest city populations.<sup>28</sup> It has six categories<sup>29</sup> combined into three groups (Map 2):

- Metropolitan (Urban): Large Central and Large Fringe Metropolitan
- Small Town: Medium and Small Metropolitan
- Non-Metropolitan (Rural): Micropolitan and Noncore

#### National Center for Health Statistics Scheme (NCHS):

- Metropolitan/Urban Areas
  - <u>Large Central Metropolitan</u>: counties in a metropolitan statistical area (MSA) of 1 million or more populations that (1) contain the entire population of the largest principle city of the MSA, or (2) have their entire population contained in the largest principal city of the MSA, or (3) contain at least 250,000 inhabitants of any principle city of the MSA.
  - <u>Large Fringe Metropolitan</u>: counties in MSAs of 1 million or more population that did not qualify as large central metro counties.
  - <u>Medium Metropolitan</u>: counties in MSAs of populations of 250,000 to 999,999.
  - <u>Small Metropolitan</u>: counties in MSAs of populations less than 250,000.
- Non-Metropolitan/Rural Areas
  - Micropolitan: counties in micropolitan statistical areas.

<sup>&</sup>lt;sup>28</sup> Ingram DD, Franco SJ. 2013. <u>NCHS urban-rural classification scheme for counties</u>. National Center for Health Statistics. Vital Health Stat 2(166). 2014.

<sup>&</sup>lt;sup>29</sup> See <u>Table 1</u> for complete definitions of each NCHS Category

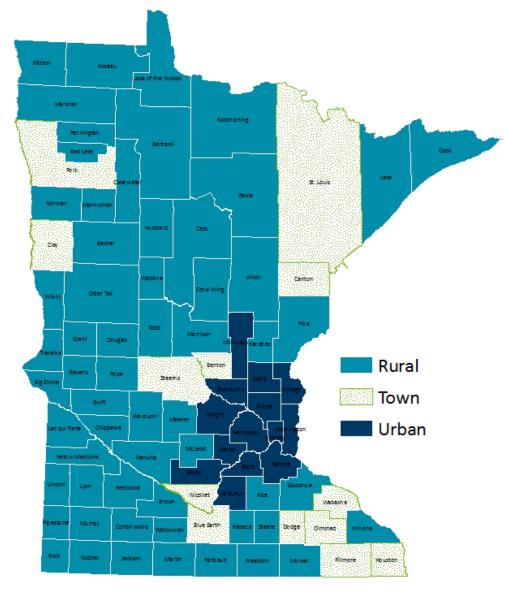
• <u>Noncore</u>: nonmetropolitan counties that did not quality as micropolitan.

For the purposes of this paper these six categories were condensed into three groups:

- Metropolitan (Urban): Large Central Metro and Large Fringe Metro
- Small Town: Medium and Small Metro
- Non-metropolitan (Rural): Micropolitan/Noncore

According to this classification system and 2010 census data, 76% percent of Minnesotans live in a metropolitan/urban area and 23 percent live in a rural area.

#### National Center for Health Statistics Urban-Rural Classification



Source: NCHS Urban Rural Classification Scheme for Counties

## Rural Urban Commuting Area (RUCA)

A <u>Rural Urban Commuting Areas (RUCAs)</u> categorizes rurality of an area based on the <u>measures</u> <u>of urbanization, population density, and daily commuting</u>. RUCAs are often grouped into four categories: Metropolitan, Large Rural, Small Rural, Isolated Rural. RUCAs do not rely on county boundaries and can breaks a county into multiple categories of rurality. (Map 3):<sup>30</sup>

There are 10 Primary RUCA Codes:

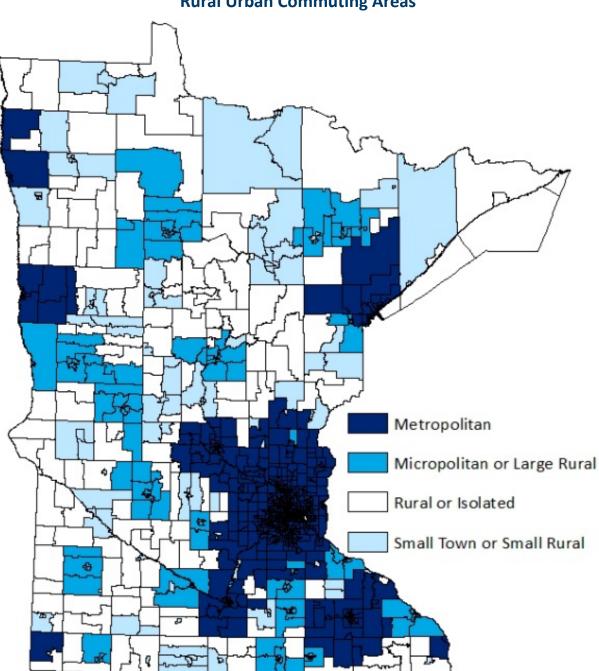
- 1. Metropolitan area core: primary flow within an urbanized area (UA)
- 2. Metropolitan area high commuting: primary flow 30 percent or more to a UA
- 3. Metropolitan area low commuting: primary flow 10 percent to 30 percent to a UA
- 4. Micropolitan area core: primary flow within an urban cluster of 10,000 to 49,999 (large UC)
- 5. Micropolitan high commuting: primary flow 30 percent or more to a large UC
- 6. Micropolitan low commuting: primary flow 10 percent to 30 percent to a large UC
- 7. Small town core: primary flow within an urban cluster of 2,500 to 9,999 (small UC)
- 8. Small town high commuting: primary flow 30 percent or more to a small UC
- 9. Small town low commuting: primary flow 10 percent to 30 percent to a small UC
- 10. Rural areas: primary flow to a tract outside a UA or UC

These are typically combined into four groups:

- Metropolitan (Codes 1-3)
- Micropolitan/Large Rural (Codes 4-6)
- Small Town/Small Rural (Codes 7-9)
- Rural/Isolated Rural (10).

According to RUCAs and 2010 census data, 73 percent of Minnesotans live in a metropolitan or large rural area while 27 percent live in a small rural or isolated rural area.

 $<sup>^{\</sup>rm 30}$  See <u>Table 2</u> for more information on RUCA Categories.



### **Rural Urban Commuting Areas**

Source: USDA. Rural Urban Commuting Areas, 2010

More information on rural and urban classification systems as well as detailed descriptions of each classification is available in the **Definitions** section of the Appendix. Continued reading on the differences in rural classification systems is available here: WI Divided Six Ways: A Review of **Rural-Urban Classification Systems** 

### Demographics

Minnesota Demographic Center, 2016. Greater Minnesota Refined and Revisited

U.S. Bureau of the Census, American Community Survey 5-year Estimates 2010-2014

USDA ERS Atlas of Rural and Small Town American, 2014. Minnesota

Minnesota Department of Education, 2016. Graduation Indicators

### **Health Insurance Coverage**

Minnesota Department of Health, Health Economics Program, Minnesota Health Access Survey

### Workforce

Nurses, Board of Nursing, Sept 2016 License Data. Includes Nurse Practitioners with a mailing address in MN and at least one of the following population foci: "Adult-Gerontology, Family/Individual Health, Pediatric, & Women's Health/Gender-Related.

Physician's Assistants, Board of Medical Practice, July 2016. Includes all physician assistants who reported on the MDH survey that they had a specialty focus in family medicine, internal medicine, or pediatrics. Note that providers with an out-of-state address or no address could not be included in the totals above.

Physicians, Board of Medical Practice, November 2015. Includes all physicians with a general certification in family medicine, internal medicine, or pediatrics. Note that providers with out of state addresses and/or no addresses could not be included in the totals above.

### **Health Indicators and Health Behaviors**

Minnesota Department of Health, Center for Health Statistics

The behavior of groups and individuals can have direct and indirect effects on population health. Understanding these differences can help to identify social determinants of health that create health disparities.

Data on health behaviors come from surveys administered by the local public health agencies in Minnesota with technical support from the Minnesota Department of Health. Some counties conducted their own surveys while others participated in groups of multiple counties. Counties and county groups conducted their surveys at varying times over a three-year period.

With the help of the Minnesota Center for Health Statistics, survey results are organized in Urban, Town and Rural categories using the National Center for Health Statistics Urban-Rural Classification Scheme. Results are displayed using the range and the median percent for each category. Results are statistically significant according to the Kruskal-Wallis Test.

More on health behaviors is available from the Centers for Disease Control and Prevention: <u>Health-Related Behaviors by Urban-Rural County Classification.</u>

### Mortality

Minnesota Department of Health, Center for Health Statistics

- Infant Mortality Rate: Infant Mortality is the number of deaths of infants under one-yearold per 1,000 live births.
- Age Adjusted Rate: Age-adjusting a rate is a way to make fairer comparisons between groups with different age distributions. Age adjustment allows researchers to make comparisons between groups. For example, a county having a higher percentage of elderly people may have a higher rate of death than a county with a younger population, merely because the elderly are more likely to die. Age adjustment is used for both incidence and death rates. The age-adjusted rates are rates that would have existed if the population under study had the same age ranges as the "standard" population. Therefore, they are rates adjusted for differences in age distributions. Per the recommendations of the National Center for Health Statistics, the year 2000 population is used as the standard population of adjustment for all death rates.
- Crude death rate is the number of deaths per population within a specific time frame per 100,000 population. The crude death rate is used to look at causes of death or to compare rates over time for a specific community. A death rate should be age-adjusted when comparisons are being made between communities with different age distributions, such as between different regions of rurality.
- **Incidence Rate:** An incidence rate is the number of new cases or new diagnosis of a disease or condition in the population of interest per population.
- For more information: <u>CDC, US Cancer Statistics. Incidence and Death Rates</u>

#### Cancer

Minnesota Department of Health, Minnesota Cancer Surveillance System

#### **Foodborne Illness and Tickborne Disease**

Minnesota Department of Health, Infection Disease Epidemiology, Prevention and Control