

University of Minnesota Morris Digital Well University of Minnesota Morris Digital Well

Center for Small Towns

8-16-2013

Kandiyohi and Renville County Public Health - Health Data Compilation

Kelly Asche

Center for Small Towns (UMM)

Jordan Wentz

University of Minnesota - Morris

Follow this and additional works at: <http://digitalcommons.morris.umn.edu/cst>

Recommended Citation

Asche, Kelly and Wentz, Jordan, "Kandiyohi and Renville County Public Health - Health Data Compilation" (2013). *Center for Small Towns*. Book 70.

<http://digitalcommons.morris.umn.edu/cst/70>

This Book is brought to you for free and open access by University of Minnesota Morris Digital Well. It has been accepted for inclusion in Center for Small Towns by an authorized administrator of University of Minnesota Morris Digital Well. For more information, please contact skulann@morris.umn.edu.

UNIVERSITY OF MINNESOTA MORRIS



*"Believing in a bright,
prosperous future
for small communities."*

The Health of Kandiyohi & Renville Counties: Part One

August 16, 2013

Prepared for Kandiyohi-Renville Public Health

Prepared by the Center for Small Towns
University of Minnesota, Morris

Jordan Wentz – Report
Kelly Asche – Staff Lead

Contents

- Introduction 1
 - A Framework for Assessing Health 2
 - General Health Status 3
 - Health Disparities and Health Equity 4
- People and Place 6
 - Population Change 6
 - Immigration and Growing Diversity 6
 - Aging and Retirement 9
- The Opportunity for Health 12
 - Education 12
 - Employment 13
 - Income and Poverty 14
 - Outdoor and Indoor Environments 16
 - Social Connectedness 16
 - Community and Personal Safety 18
 - Access to Health Care 19
- Healthy Living in Minnesota 21
 - A Healthy Start for Children 21
 - Physical Activity and Eating Habits 28
 - Use of Alcohol, Tobacco, and Prescription Drugs 30
 - Preventing Disease and Injury 33
 - Preventing Sexually Transmitted Infections 34
 - Safety Belts and Booster Seats 35
 - Promoting Mental Health 36
- Conclusion 39
 - References and Resources 39
- Appendix - Multivariate Analysis 41
- From the Text: Endnotes 44

Introduction

Minnesota is a great place to live, and Minnesotans are on average among the healthiest people in the nation. Businesses and industries thrive here and the lakes, fields, forests and rivers in the state provide a beautiful backdrop for everyday activities. Many individuals and organizations throughout the state share the mission of protecting, maintaining and improving these conditions and the health of Minnesotans.

This document presents an assessment of health in Kandiyohi and Renville Counties, in the broadest sense. Health is defined by the World Health Organization as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.”¹ This kind of health is not just about individuals, but includes families, communities and systems, as is a result of the interaction of complex networks of conditions and factors. This kind of health starts long before illness is manifest: it begins in homes and schools, in jobs, and workplaces, and in communities. Ultimately, it reflects the 188 Institute of Medicine mission of public health, “fulfill(ing) society’s interest in *assuring the conditions* in which people can be healthy [emphasis added].”²

To reflect this understanding of health, **The Health of Kandiyohi and Renville** discusses a wide array of indicators and information about the conditions and factors affecting health, as well as indicators of health status. The assessment is represented in two parts: **Part One** provides information about physical, social, and behavioral *factors* for health in Kandiyohi and Renville; **Part Two** presents data on health *outcomes* related to disease and injury.

The Center for Small Towns and the Kandiyohi-Renville Community Health Board

The Kandiyohi-Renville Health Assessment was prepared under a partnership between the Center for Small Towns at the University of Minnesota, Morris and the Kandiyohi-Renville Community Health Board. The Partnership is charged with presenting and analyzing key health trends among Kandiyohi and Renville counties. The Partnership hopes that assessing and addressing a broad array of health – related conditions and factors will change the conversation around health, energize the public, private and nonprofit sectors, and create a groundswell of community efforts to improve health in every community.

This report follows the same framework as the statewide health assessment report developed by the Minnesota Department Health.³ In order to include accurate health related context to the many topics covered in this document, some of the wording has been copied verbatim from that report. The wording from the statewide health report included in this assessment is not cited. However, all other sources are cited.

Limitations

While this health assessment presents many important issues and topics, it does not present every possible health-related issue. The issues and indicators chosen are intended to reveal the scope and

complexity of population health, but space does not allow for each of them to be thoroughly documented. Therefore, the assessment should not be considered a formal study or research document investigating the causes of each issue raised or providing a detailed analysis of the data. Volumes have been written on many of these issues, and references are provided throughout to enable access to additional information

In some cases, the kinds of information that could greatly inform a statewide health assessment are simply not available. This may be because data are not available at the county level, or data are not stratified by race/ethnicity, income, sexual orientation, etc. When race/ethnicity data are gathered, analysis may be further limited due to a lack of data stratification by more specific racial categories, such as U.S.-born vs. African-born for the African-American population, or the many ethnicities and cultures represented in the category of Asian-Pacific Islander.⁴

Data on small communities is often compromised. Modern sampling and data gathering techniques are not always reliable. For example, data from the US Census Bureau’s American Community Survey for small towns lacks a sufficient number of observations, and often contains a very large margin of error. This means that the data can vary greatly: this variation is so great, that the data is often unusable. This makes it difficult to conduct robust statistical analysis of data.

The assessment also does not include the many programs, services, and strategies that are or have been implemented in Kandiyohi and Renville Counties. The goal of this report is to present demographic and economic data and trends, and health factors, and then to demonstrate various health outcomes.

A Framework for Assessing Health

Health is the result of innumerable variables. With greater access to data, there is a rapidly expanding interest in researching how living conditions and socioeconomic opportunity determine health outcomes.⁵

It is very difficult to comprehend the broad factors that shape health outcomes. Dahlgren and Whitehead⁶ propose the model at right, in which the individual with unique biological characteristics is surrounded by community, place, and system-based conditions and factors. A similar model, called the ecological or social ecology model, is used in a variety of academic and practice fields in order to better understand the larger forces that impact individuals.⁷



The current health movement shifts focus from the individual to the community as a whole. Such change of scope is evident in the debut of *Healthy People*, the national health agenda drafted by the U.S. Department of Health and Human Services.

Healthy People 2020 Overarching Goals

- Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death
- Achieve health equity, eliminate disparities, and improve the health of all groups
- Create social and physical environments that promote good health for all
- Promote quality of life, healthy development and healthy behaviors for all life stages⁸

The U.S. Department of Disease Control and Prevention describes similar factors that influence the development of a healthy community:

“[A healthy community is] one that continuously creates and improves both its physical and social environments, helping people to support one another in aspects of daily life and to develop to their fullest potential. Healthy places are those designed and built to improve the quality of life for all people who live, work, worship, learn, and play within their borders—where every person is free to make choices amid a variety of healthy, available, accessible, and affordable options.”⁹

We are able to identify a number of intricate and yet simple interrelationships between factors and conditions that directly affect health. For example, the personal level of education is strongly associated with the probability that a particular person smokes, and thus a higher risk of cancer is associated with smoking. Of course, many other factors may influence whether a particular person’s probability of becoming and staying a smoker. The level of family income influences level of education, which influences occupation; occupation in turn influences stress-levels, and increased stress levels can influence someone to smoke. Often, factors as such can circle around in this manner, influencing one’s health.

Childhood experiences seem to particularly influence a person’s health in the immediate and distant future. Beneficial and harmful events in those early years, especially positive or negative interactions with adults, affect the biology of the body, and a person’s entire life.¹⁰

Better health opportunities at an early age and thus continuing through life, bring about an overall healthier living, which leads to better lifetime health. It is difficult to assess the general health of two entire counties without examining the relationship among so many variables. Though a proper understanding of such relationships is key to developing effective policy, such analysis is time-consuming and hard to measure.

General Health Status

Minnesota is one of the healthiest states in the country. The United Health Foundation has ranked the states’ health status since 1990; for the first 18 years, Minnesota ranked in the top five. However, in the last three years, Minnesota has fallen to sixth.

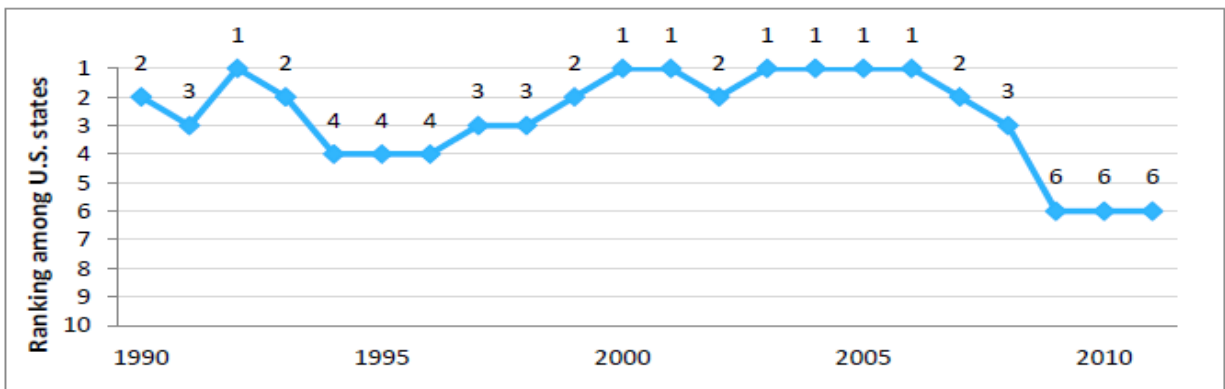
According to the 2011 *America's Health Rankings* report, Minnesota's strengths include:

- Low rate of death related to cardiovascular disease (Rank: 1)
- Low rate of uninsured (Rank: 3)
- High rate of high school graduation (Rank: 3)

Challenges identified by the report include:

- Low rate of public health funding per capita (Rank: 46)
- High prevalence of binge drinking (Rank: 44)

Minnesota's overall health ranking in the United States: 1990-2011



Source: *United Health Foundation*¹¹

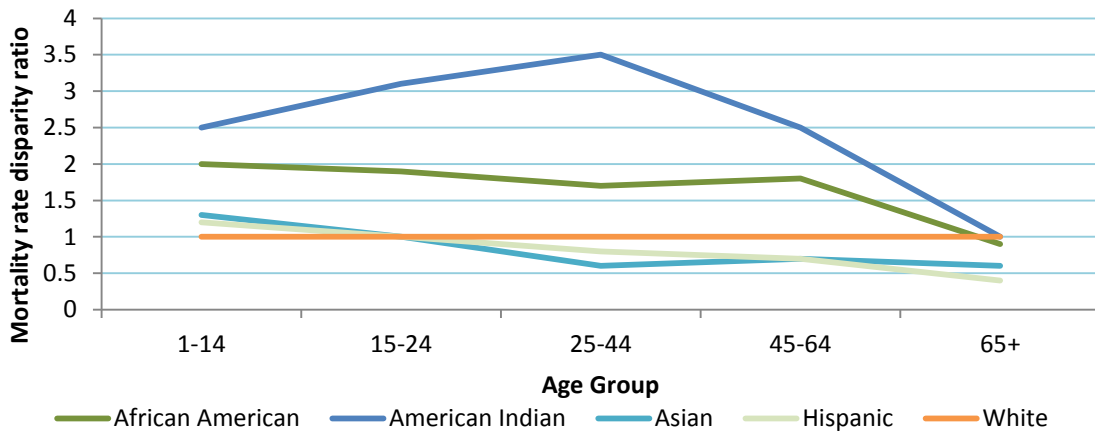
The 2011 report discovered that Minnesota ranks lower on certain health factors. It is feared that Minnesota's overall health will continue to decline as these factors negatively influence health outcomes.

Health Disparities and Health Equity

Concerning health, Minnesotan counties are far from equal. Minority groups such as Blacks and American Indians are far more likely to experience chronic disease, infectious disease, and premature death.

Health is not just the lack of disease. Rather, it is the state of "well-being." Health covers all aspects of life—homes, schools, workplaces, place of worship, and within social relationships. With this perspective, it is clear that such minority groups are highly disadvantaged. Data clearly reveal how historic and institutional oppression have contributed immensely to health inequalities.

Disparities* in mortality in Minnesota: 2006-2010



Age and Ratio:	1-14	15-24	25-44	45-64	65+
African American	2	1.9	1.7	1.8	0.9
American Indian	2.5	3.1	3.5	2.5	1
Asian	1.3	1	0.6	0.7	0.6
Hispanic	1.2	1	0.8	0.7	0.4
White	1	1	1	1	1

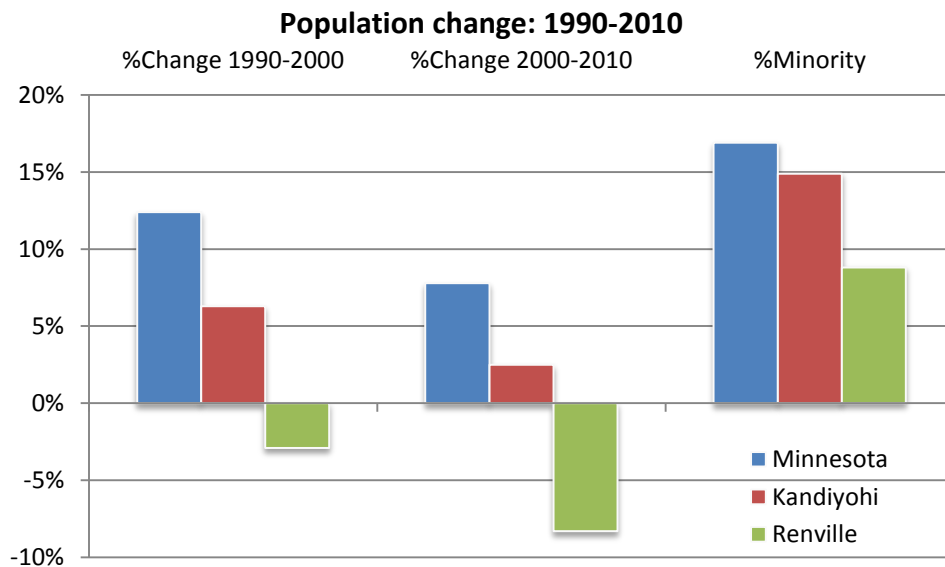
*Disparity ratios are calculated by dividing the rate for a given population (African-American, American Indian, Asian or Hispanic) by another rate (white) for a selected health indicator to determine how much more likely a particular event is to occur in one population compared to another.

Source: Minnesota Department of Health, Minnesota Center for Health Statistics¹².

People and Place

Population Change

Minnesota is rapidly changing. Once completely homogenous, Minnesota’s racial and ethnic diversity is increasing. Residents all over the state are developing a new sense of what it means to be Minnesotan. As new immigrants enter the state, and as the base population ages, Minnesota will face new challenges, but will encounter unique opportunities.



Source: US Census Bureau Decennial Census: 1990, 2000, 2010

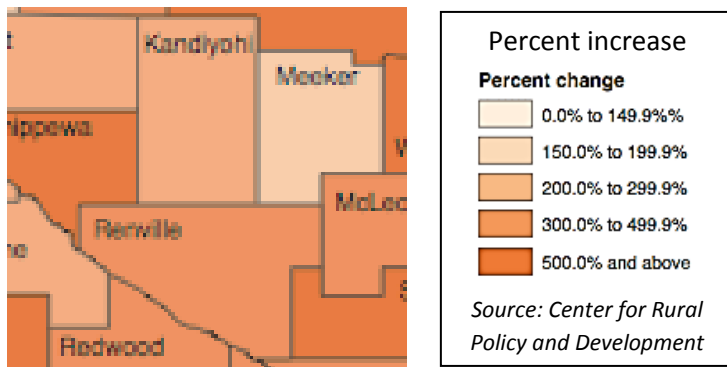
Minnesota’s population grew by 7.8 percent between 2000 and 2010 (at about the same rate as South Dakota, but faster than North Dakota, Wisconsin, or Iowa).

Renville’s population has decreased significantly since 1990; however, it has experienced positive growth rates in minority populations. Kandiyohi has experienced positive population growth since 1990, while also seeing large percentage increases in minority populations.

Immigration and Growing Diversity

In 1990, populations of color and American Indians in Minnesota represented just over 6 percent of the total population. In 2010 that had grown to 15 percent. The Hispanic population grew by 364 percent during that time, and the African-American population grew by 189 percent.

Change in the distribution of people of color in Minnesota: 1990-2010

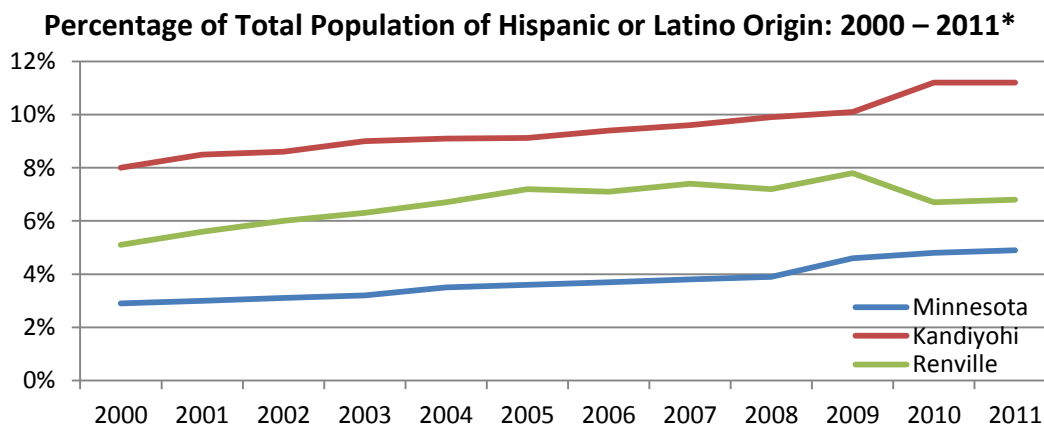


Populations of color as a proportion of Minnesota's total population: 2010

	Minnesota	Kandiyohi	Renville
White	87%	94%	96%
Black or African American	6%	2%	0%
American Indian or Alaska Native	1%	0%	1%
Asian	4%	0%	0%
Native Hawaiian and Pacific Islander	0%	0%	0%
Some Other Race	2%	3%	2%

(a) Includes persons reporting only one race.

(b) Hispanics may be of any race, so also are included in applicable race categories.

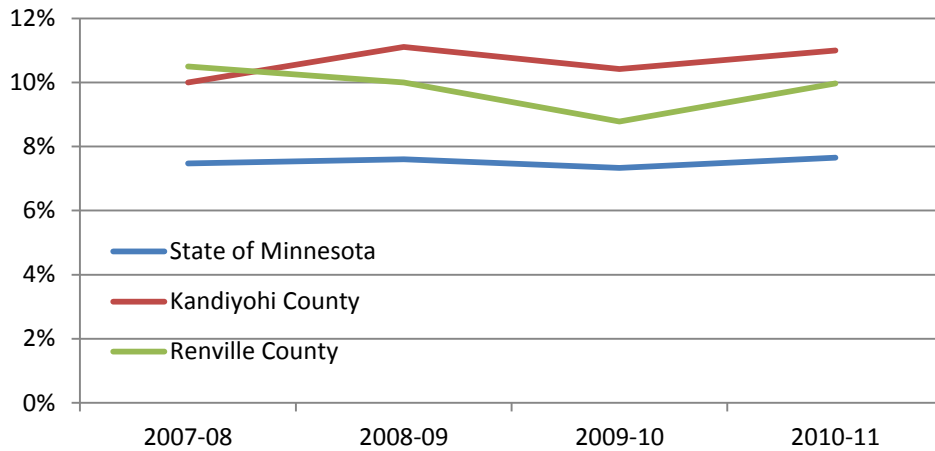


Source: US Census Bureau 2000, 2010, and Population Estimates (2001-2009)

*Includes 2011 ACS estimate from 2011

Kandiyohi and Renville have both shown increases in the percent of Hispanic or Latino residents since 2000. Both counties have had and continue to have a noticeably higher percentage of these minorities than Minnesota as a whole, with Kandiyohi maintaining more than twice the percent of Hispanics or Latinos than Minnesota at any given time.

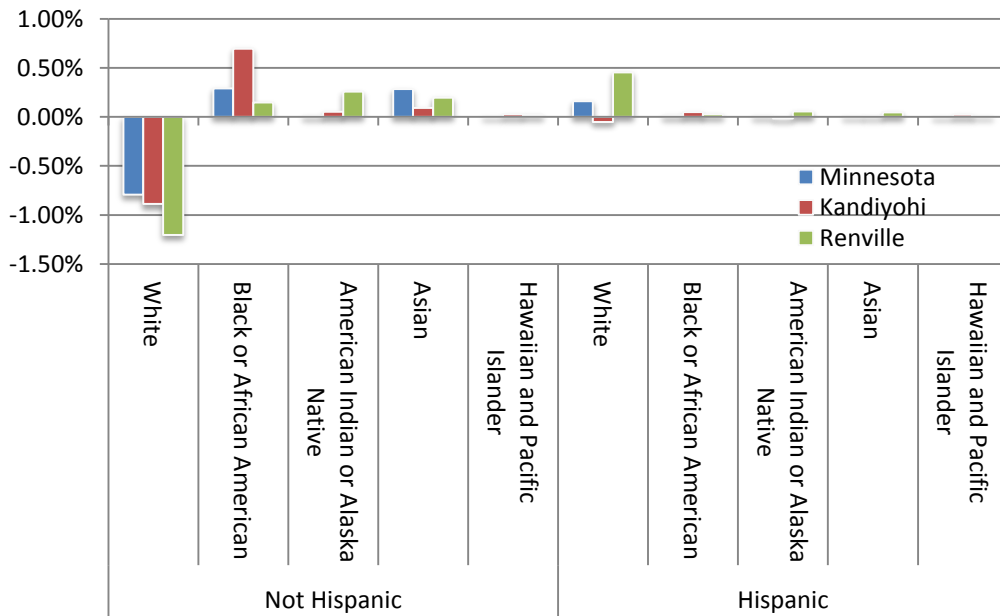
Students with Limited English Proficiency – Percent, by School year



Source: Minnesota Department of Health, County Vital Statistics Trend Report

For both Kandiyohi and Renville, the percentage of students with limited English proficiency has remained fairly constant and above state average. Since 2009, rates have increased slightly, corresponding to increased minority and immigrant populations.

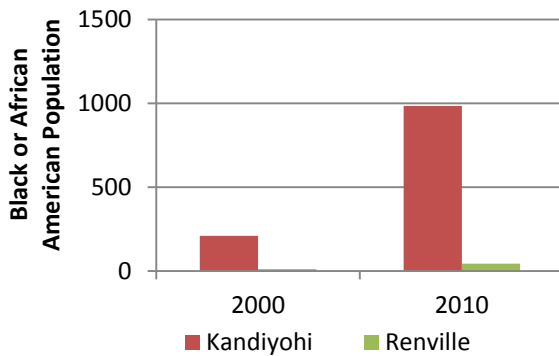
Estimated Change in Percent of Population by Race and Ethnicity: 2000 – 2010



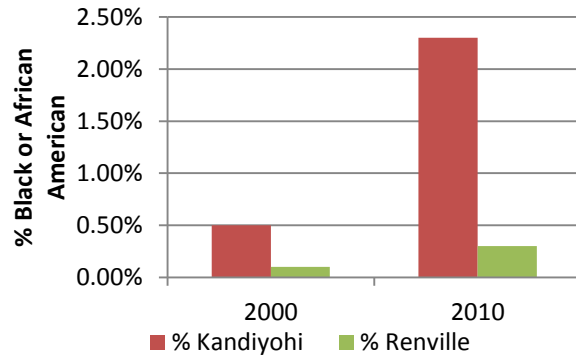
Source: US Census Bureau 2000, 2010

With these increases in minority populations, the percent of non-Hispanic white residents is consistently dropping. Since 2010, estimates indicate that Renville shows the most drastic increase in white Hispanics and non-Hispanic American Indians, though there were also increases in non-Hispanic Asians and African Americans. Almost all of Kandiyohi’s population change is attributed to an increase in non-Hispanic African Americans, with a minor increase in non-Hispanic Asians as well.

Black or African American: 2000, 2010



% Black or African American: 2000, 2010



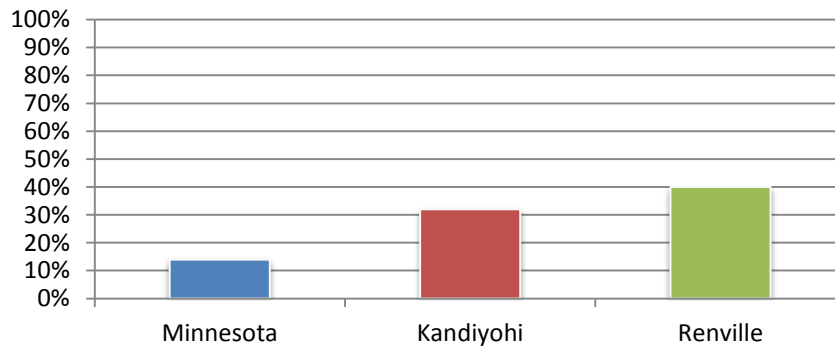
Source: US Census Bureau 2000, 2010

Kandiyohi has seen large increases in its black or African American population. In 2000, there were 209 people who referred to themselves as Black or African American. In 2010, it increased to 984.

Aging and Retirement

Both Minnesota and the U.S. have aging populations. From 2000 to 2010, the proportion of Minnesotans under the age of 45 decreased by 2 percent while the proportion of persons 45 and over increased by 27 percent; the proportion of the state’s population over 65 will increase as the baby boomer generation continues to move toward retirement age. The largest increases in Minnesota’s population from 2000 to 2010 were to age groups 50 years and older.

Projected % of Residents 60+ in 2035



Source: Minnesota State Demographic Center

As displayed above, the age cohorts 60 years and older are expected to comprise about 14% of the total projected population of Minnesota, in 2035. In Kandiyohi, 60+ cohorts are expected to comprise 32% of the total projected population; for Renville, these cohorts are expected to comprise over 40%. This will put considerable stress on the area and familial resources.

Age Distribution

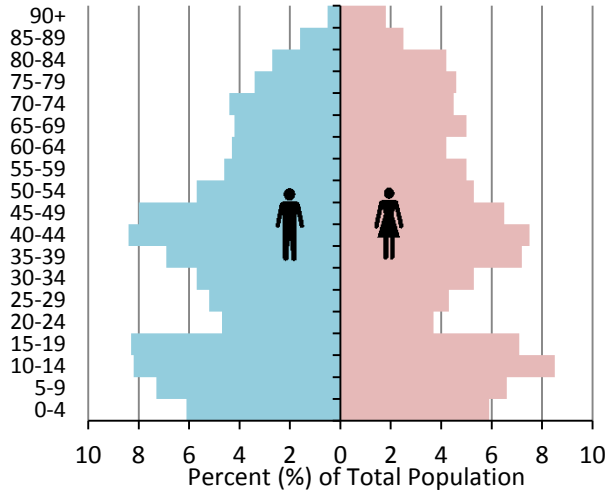
The charts on the next page show the age distribution for Kandiyohi, Renville and the state of Minnesota. A typical distribution will look similar to a pyramid, with a wide foundation at the lower ages

and proceeds to get narrower as the age groups get higher. However, the baby boomer generation is clearly shown in each of the regions with an identifiable bump through the ages 45-59 (2010 data). The difference between rural areas and urban areas, however, is the percentage of 18-30 years. Typically, in rural counties, that age group will make up less of the population due to their outmigration for education and economic opportunities. This lower percentage can be seen in both counties, although more so in Renville County. Renville's age groups of 20-30 year olds make up less than 4% of the population (each age group). Kandiyohi has a little higher with just over 6% of the population for each age group. This more closely resembles the state percentage.

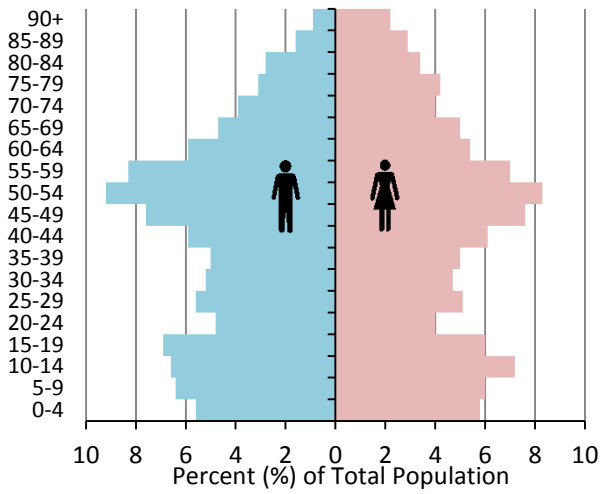
Age Distribution charts on next page.

Population Distribution by Sex - Source: US Census Bureau 2000, 2010

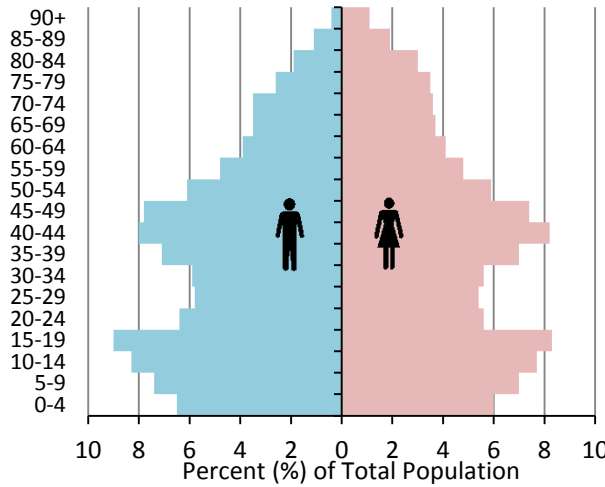
Renville: 2000



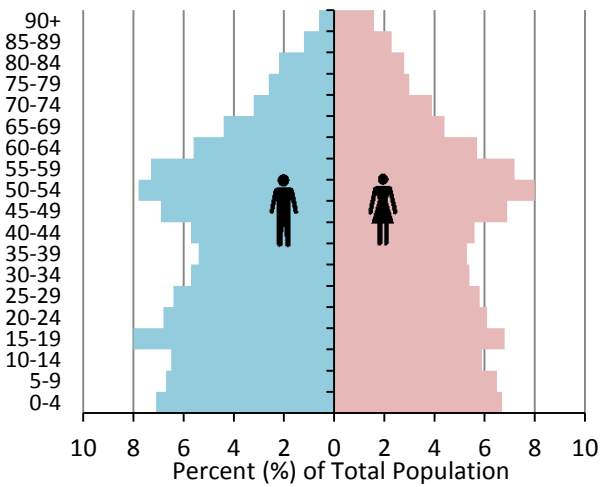
Renville: 2010



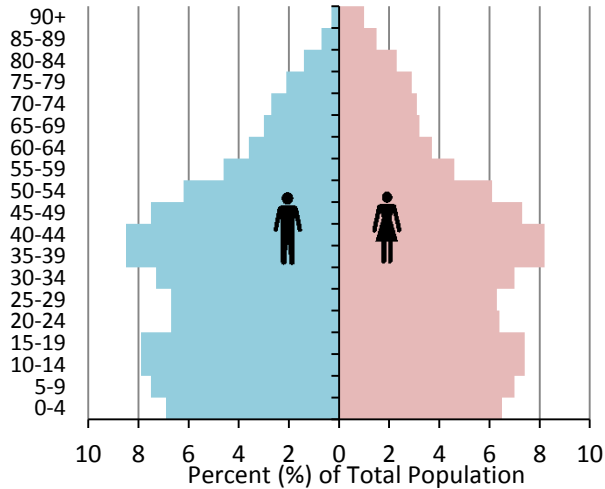
Kandiyohi: 2000



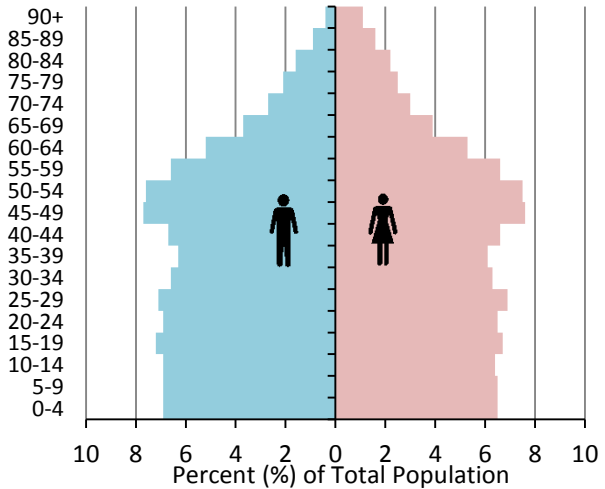
Kandiyohi: 2010



Minnesota: 2000



Minnesota: 2010



The Opportunity for Health

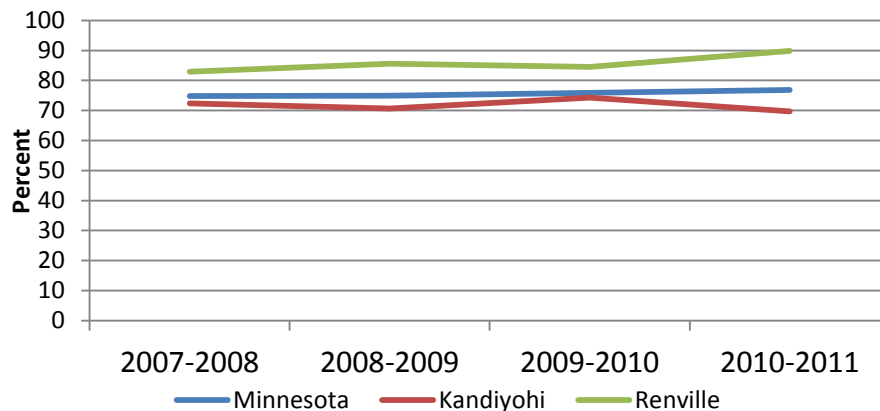
Education

Health and learning are closely connected. Education is an important predictor of health because it both shapes and reflects multiple factors that affect people’s life chances. Investing in education can be “the single most effective intervention we can make to improve health outcomes and tackle inequities”.¹³

Health affects learning at all ages, from early childhood through adolescence, to adulthood. Early reading and literacy stimulate brain development in young learners, help develop their analytical and communication skills, and influence their intellect and behavioral patterns. These in turn shape future opportunities and achievement.

Certain health behaviors are also strongly associated with education. For example, 33 percent of Minnesotans who do not have a high school degree smoke, compared with 25 percent of high school graduates, 21 percent of those with some post-secondary education and 9 percent of college graduates¹⁴.

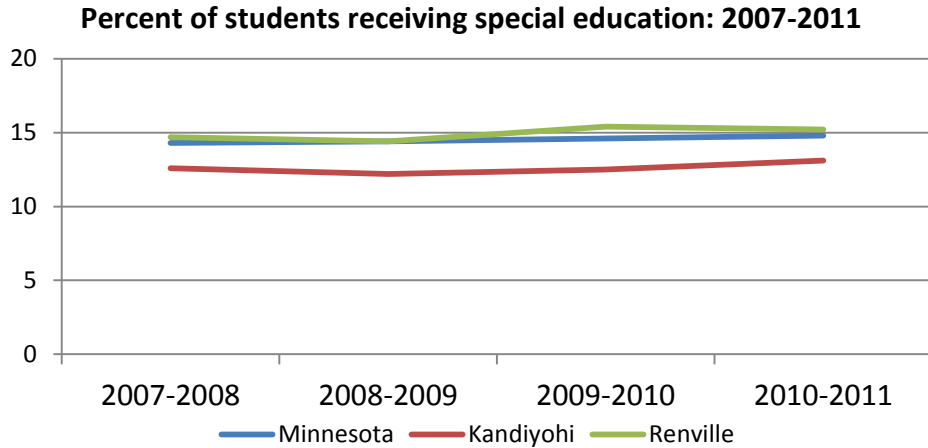
Percent of Minnesota high school students graduating on time: 2007-2011



Source: Minnesota Department of Health, Center for Health Statistics

As of 2011, about 90% of Renville students graduate on time which is slightly higher than the state average. About 70% of Kandiyohi students graduate on time which is just slightly below the state average.

Definition of *graduating on time*: Data in this measure reflect the four-year on-time graduation rate as described in the National Center for Education Statistics Exclusion-Adjusted Cohort Graduation Indicator and reiterated in the USDE guidance No Child Left Behind – High School Graduation Rate. This rate considers first time ninth grade students in the cohort, adds students transferring into the cohort, subtracts students transferring out of the cohort, and computes how many graduate “on-time” (within four years).

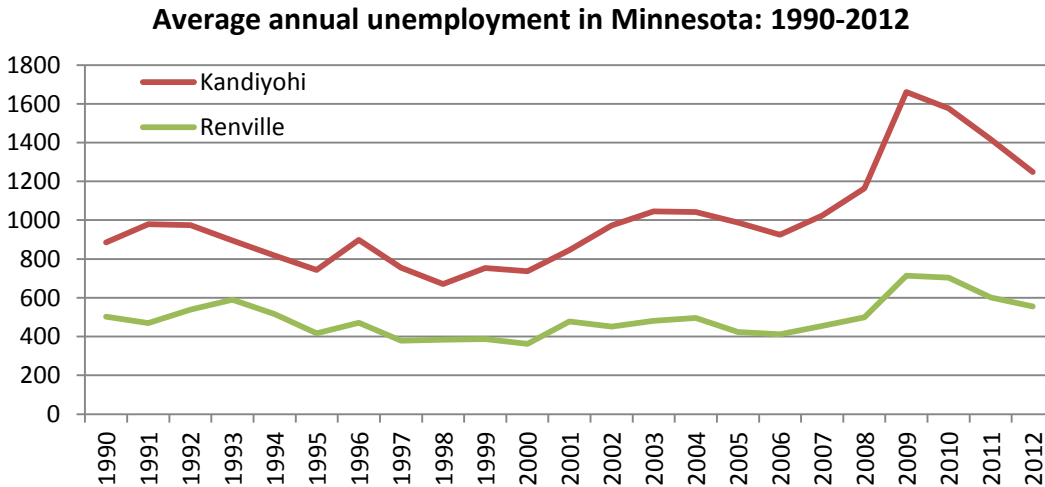


Source: Minnesota Department of Health, Center for Health Statistics

A larger percentage of students in Renville receive special education than students in Kandiyohi County. Though, Renville is only slightly higher than the state average. It is important to note school districts may use different methodologies for managing and gauging their special education programs. Different State definitions and legal classifications can also cause data variance.

Employment

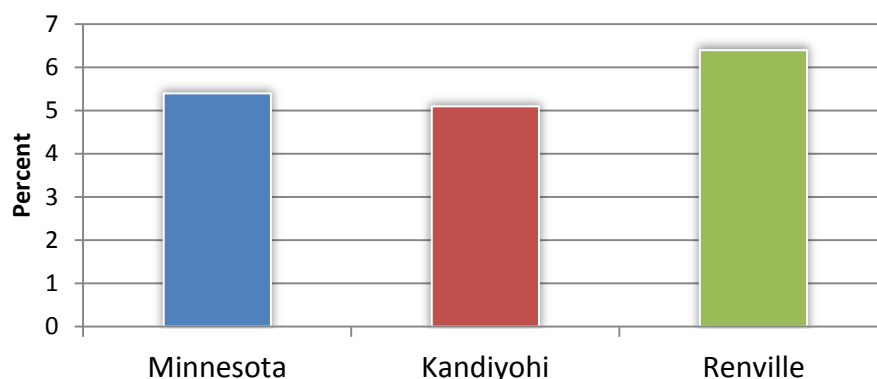
Stable and secure employment influences health not only by being a source of income, but by providing access to health insurance. Minnesota is a great place to work: Minnesota typically ranks in the top ten, in terms of states with the lowest unemployment rate.



Source: Bureau of Labor Statistics

It is easy to see the impacts of the recession from 2008. Both counties experienced large increases in the number unemployed and are just beginning to see recovery.

Percent of Unemployed Adults: May 2013



Source: Bureau of Labor Statistics

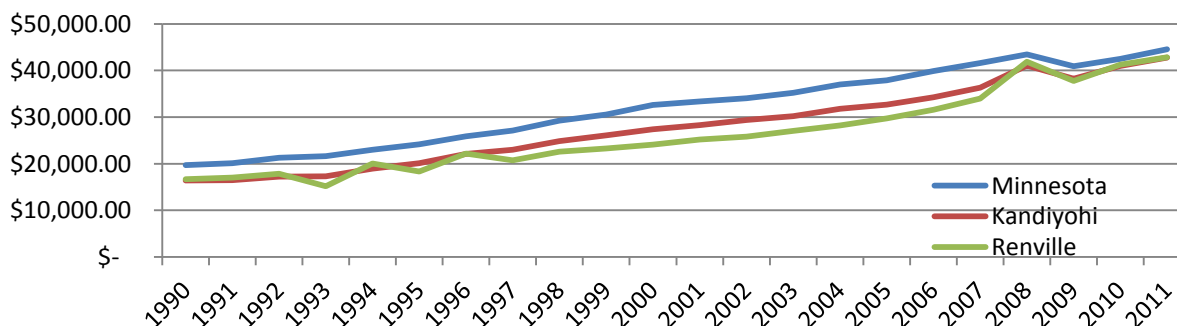
In terms of unemployment, Kandiyohi has remained below the Minnesotan average. Renville has experienced above average unemployment. In December of 2012, the estimated unemployment rate for Renville was 6.4%. In Kandiyohi, it was 5.1%.

Income and Poverty

Income

Employment is important, yet income involves more than money earned from a job. It also includes assets (like a bank account or equity in an owned home) and access to a variety of economic resources. Income influences the opportunity people have to choose where to live, to purchase nutritious food, to participate in a wide variety of physical activities, especially those that require fees or special equipment, and to have leisure time. Jobs and job-related income, however, remains a steady marker of one aspect of a household's wealth. In Minnesota, African-American and American Indian populations have household incomes that are almost half that of Asian and white populations.

Per capita income in Minnesota



Source: US Department of Commerce, Bureau of Economic Analysis

Per capita incomes in Kandiyohi and Renville are slightly below the state average. Though, it should be noted that metro incomes skew state averages; it is common for rural counties to be below the state average in terms of mean or per capita income. Nonetheless, incomes have come to converge as time

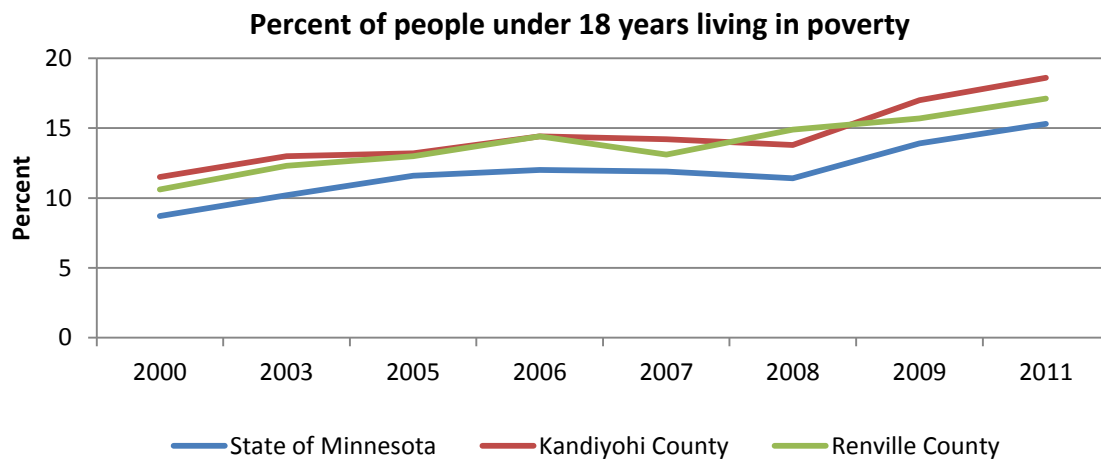
progresses. In 2007, per capita income surpassed Kandiyohi briefly. Per capita incomes are much closer now than they were in 2005.

Poverty

Poverty, often resulting from limited income or a lack of income, is linked to health in many ways. Poverty limits choices: in education, in employment, and in living conditions, among others. Poverty limits access to safe places to live, work, and play, and places to buy healthy food. Poverty can foster obesity by forcing people and families to rely on cheap sources of food, which tend to be plentiful but high in calories and low in nutritional value.

Poverty in rural Minnesota is a complex issue. Our small communities allow us to know everyone by face, but this level of intimacy can pressure those in poverty to avoid public recognition of said poverty. There is a cultural stigma about asking for help. The recent recession and financial crisis has certainly affected rural Minnesota, including Kandiyohi and Renville. Poverty rates have steadily increased after 2008.

A growing body of research is demonstrating that children who are raised in families experiencing chronic stress created by long-term poverty (<100% of the Federal Poverty Level) are at much greater risk of significant and long-term deficits in health.¹⁵ Poverty among Minnesota’s children is not evenly distributed. The percent of children under poverty for both Kandiyohi and Renville counties has consistently remained above average. This is concerning as children who grow up in poverty are far more likely to remain in poverty as adults.



Source: US Department of Commerce, Bureau of Economic Analysis

Poverty in both counties and the state has increased since 2000. However, increases have been more dramatic since 2008 after a slight decline 2005-2007. Both Renville and Kandiyohi’s poverty rates for people under 18 years is above the state rate.

Outdoor and Indoor Environments

Natural and man-made (or built) environments contribute to health in a variety of ways. For example, everyone needs clean water to drink and air that is safe to breathe, but people also need schools, workplaces, and homes that do not expose them to physical or chemical hazards and places to walk and play outdoors that are clean and free of debris.

In some communities, the built environment can be overtly hazardous, such as living near a toxic waste dump. Because income affects housing choice and more polluted areas are less desirable, families with lower income may have no choice but to live in housing with indoor hazards like foundation cracks allowing radon seepage, lead paint, and asbestos in the building materials. Outdoor hazards affecting health can include dilapidated sidewalks or no sidewalks at all, which is often the case in rural areas, making it difficult and dangerous for residents to walk or children to ride bikes. Many areas do not have ready access to public transportation; air pollution can pose a hazard near major roadways and thoroughfares; and a lack of parks and playgrounds will prevent children from playing safely and instead encourage sedentary activities indoors.

Housing built before 1940: As of 2011

Area	Percent
Minnesota	18.1%
Renville County	34.9%
Kandiyohi County	17.4%

Source: US Census Bureau, ACS 2005-2011

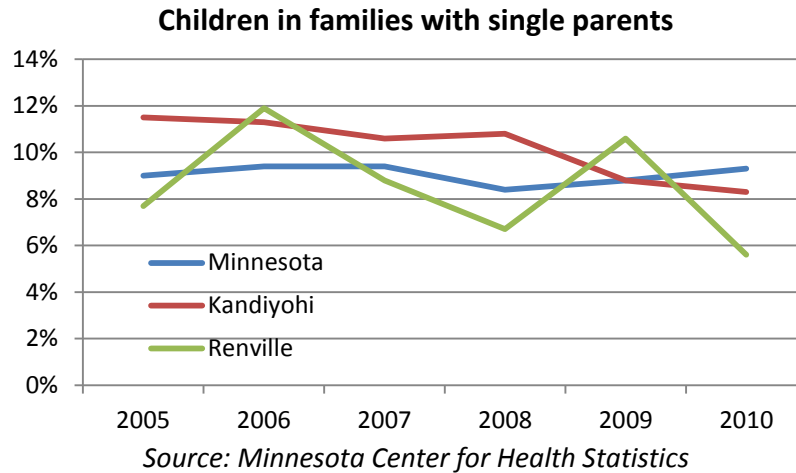
A good measure of the quality of indoor environments is the percentage of houses built before 1940, wherein lead based paints and other hazardous materials were removed from the home-building process. 34.9% of homes in Renville are built before 1940; this is considerably higher than Kandiyohi County (17.4%) and Minnesota (18.1%).

Social Connectedness

People at all stages of life need social connection for optimum health. Those who have strong social connectedness and healthy relationships with family, friends, and neighborhoods, and with their culture and heritage have higher quality lives and contribute to better functioning, more vibrant communities. Healthy social environments promote individual as well as environmental health, as communities come together to protect and enhance the quality of their surroundings. Likewise, a healthy physical environment supports the development of strong social connections.¹⁶

Single-Parent Families

Both adults and children in households with a single parent are at greater risk for adverse health outcomes and unhealthy behaviors. These households are especially susceptible to chronic stress, often due to economic factors, social isolation, and stigma related to being part of a single-parent family.¹⁷

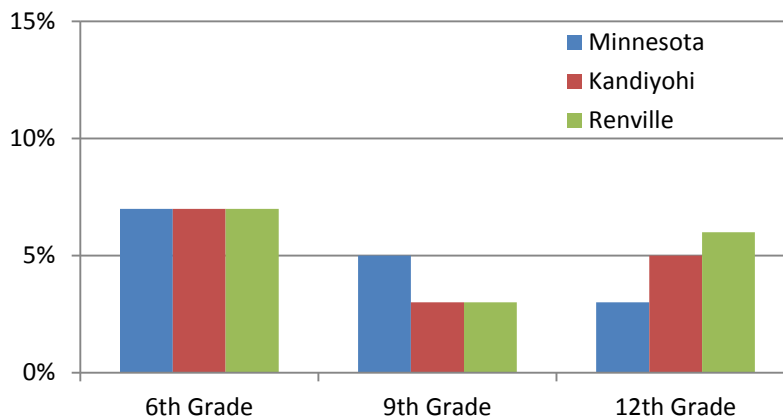


Though the percentage of single parent families in Minnesota has risen since 2005, Kandiyohi and Renville have experienced substantial decreases. Kandiyohi County has steadily decreased to about 8%; Renville has experienced greater fluctuation, now at 6%.

School Mobility

How often students change schools is a good indicator of job instability among parents and social disconnect among children. The common trend in Minnesota is for younger children to switch schools. Parents are entering mid-career jobs through promotions or necessary change and this sometimes requires moving.

Percent of sixth, ninth, and twelfth-graders and changing schools: 2010



Source: Minnesota Student Survey (2011)

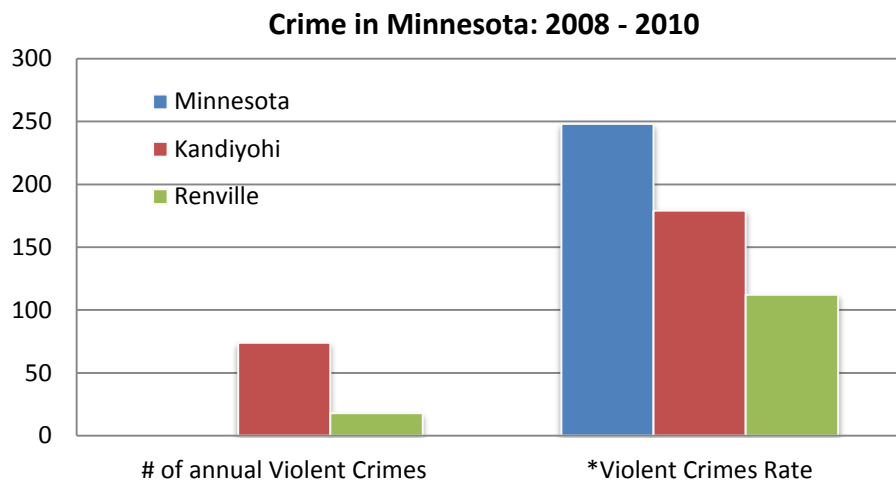
6.1% of twelfth graders in Renville have switched schools. This is nearly twice the state average, of 3.4%. In addition, over 7% of sixth graders in Renville switched schools. However, it should be noted that Buffalo Lake-Hector school district consolidated with McLeod West school district in 2009.

Community and Personal Safety

The same factors that influence where people live and the opportunity they have to be healthy— income, employment, education—also are linked to the experience of violence. Violence is not randomly distributed; some groups of Minnesotans are more likely to be affected by violence than others.

Violence and Crime

Violence and crime affect health in multiple ways. High-crime neighborhoods keep people isolated from one another by keeping them indoors, limiting opportunities both for interaction with neighbors and for physical activity.¹⁸ Individuals who experience crime, as well as those who witness or hear about it, experience a range of effects from a delay in cognitive development (for children) to poor mental health.



Source: US County Health Rankings

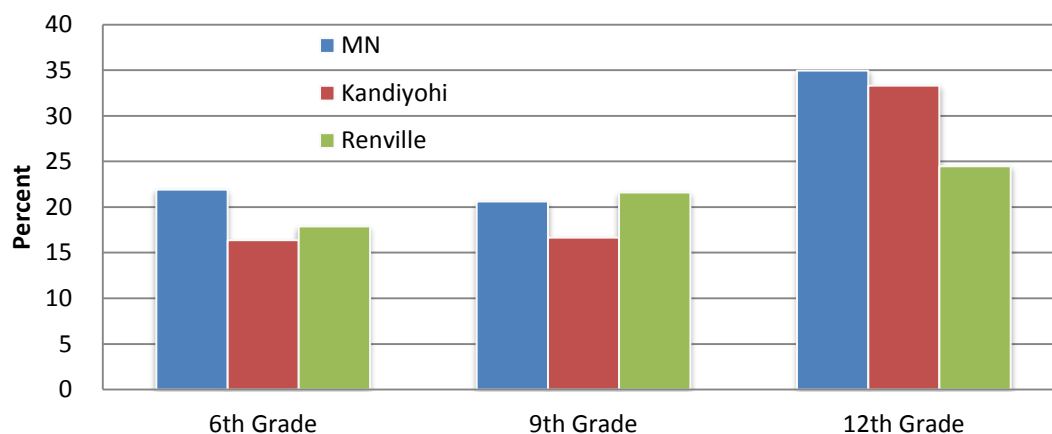
*The violent crime rate is defined as the number of violent crimes per 100,000 inhabitants. Violent crime includes murder, rape and sexual assault, robbery, and assault.

Kandiyohi experiences a considerably higher violent crime rate than Renville. Regardless, the violent crime rate for the entire state of Minnesota is 248; both counties are considerably lower than the state's rate.

Violence in Schools

Violence in schools can affect the learning environment and contribute to absenteeism. In Minnesota, between 3 and 10 percent of students missed one or more days of school because they felt unsafe at school or on their way to or from school. Students of color and American Indian students were more likely to report feeling unsafe than white students. In addition, witnessing or participating in violence makes youth less likely to engage in healthy behaviors like walking to school or participating in school athletics.

Percent of sixth, ninth and twelfth-graders missing school, due to feeling unsafe: 2010



Source: Minnesota Student Survey (2011)

Both Kandiyohi and Renville are below state average regarding students feeling unsafe at school. Twelfth graders miss more school due to unsafe feelings. In Kandiyohi, about twice as many twelfth graders reported missing school due to unsafe feelings, compared to sixth and ninth graders.

Access to Health Care

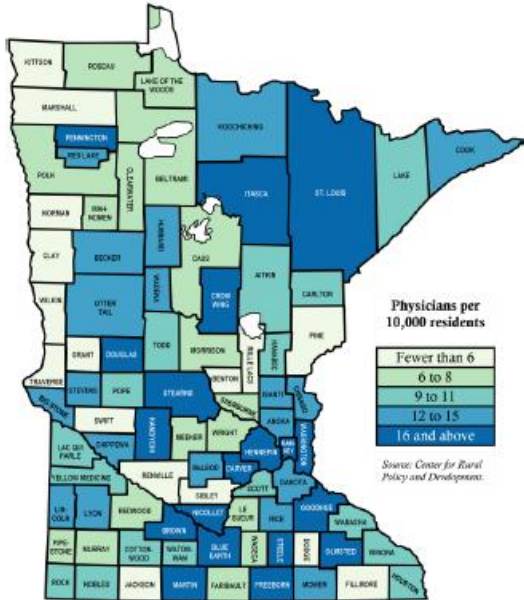
A number of the factors that shape the opportunity for health in Minnesota—education, employment, and transportation, for instance—also affect access to health care. In addition the health care workforce and the ability to acquire health care insurance also have an effect on the ability to receive health care.

Health Care Workforce

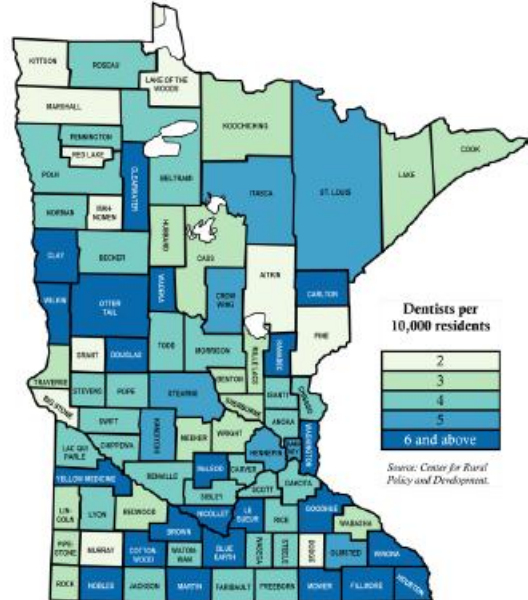
The health care workforce in Minnesota that carries out most routine and preventive care primarily consists of nurse practitioners, primary care physicians, and dentists. Regionally, some Minnesotans have greater or lesser access to primary care—for example, southeast Minnesota (where the Mayo Health System largely resides) employs a relatively high proportion of providers for its population when compared with the rest of the state, while northwest Minnesota has access to a relatively smaller pool of providers.

Over one-third of Minnesota’s counties have fewer than eight physicians per 10,000 residents, especially in the most rural areas of the state. Over 25 counties in Minnesota have fewer than four dentists per 10,000 residents.

Physicians in Minnesota: 2011



Dentists in Minnesota: 2011



Source: County Health Rankings, Center for Rural Policy and Development

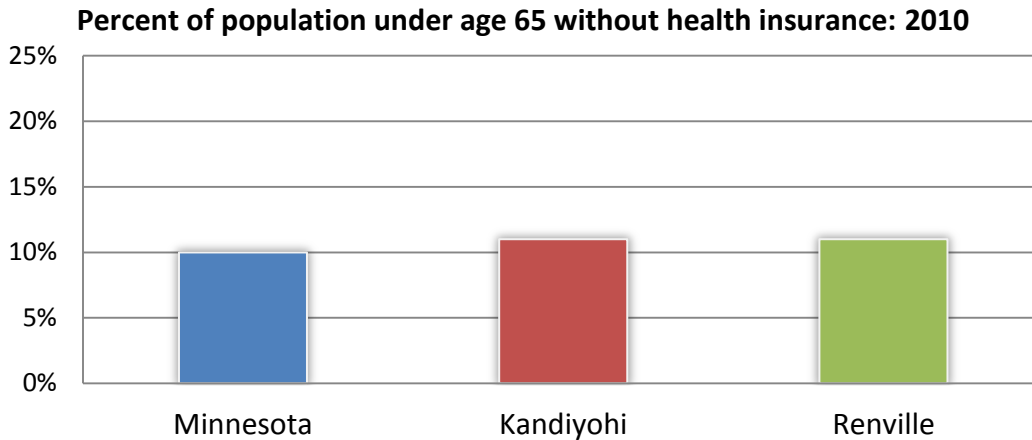
Kandiyohi’s ratio of population to primary care physicians (PCP ratio 861:1) is considerably better than Renville’s, a ratio of 2,243:1. In terms of the PCP ratio, Kandiyohi is ranked 3rd in the state in terms of its PCP ratio. Renville is ranked 66th in the state. In terms of doctors per population, Renville’s ratio is much higher.

Kandiyohi’s ratio of population to dentists is 1,547:1 and again is considerably better than Renville’s ratio of 2,673:1. When compared to the rest of the state, Kandiyohi is ranked 11th, whereas Renville is ranked 51st (out of 87) in the state.

These differences are typical when comparing counties with large economic centers, such as Willmar, against counties with smaller economic centers, such as the city of Olivia. It is common that much of the health service providers are centered in larger communities where they have access to more patients and able to recruit more health professionals to work.

Insurance Coverage

People who are uninsured or underinsured (that is, their insurance does not cover all necessary procedures) receive less medical care than their insured counterparts. When they do receive care, it has often been significantly delayed (often due to concerns about cost), and their condition and final outcome is frequently worse than if they had received care right away. In this way, the lack of health insurance creates a financial risk and a burden when care is received. Hospital-based charity care helps uninsured and underinsured Minnesotans, but does not compensate for gaps in health insurance coverage.



Source: County Health Rankings

In 2010, Kandiyohi and Renville were just slightly above the state average in terms of percent of population under age 65 without health insurance. Note: this data does not take into account under-insured.

Healthy Living in Minnesota

The issues described in this section include not only what are typically considered healthy behaviors for an individual (such as engaging in physical activity, having healthy eating habits, and appropriate use of alcohol, tobacco and prescription drugs), but also ways in which people protect and promote health for others: assuring a healthy start for children; preventing and managing chronic conditions; preventing disease and injury; and promoting mental health.

A Healthy Start for Children

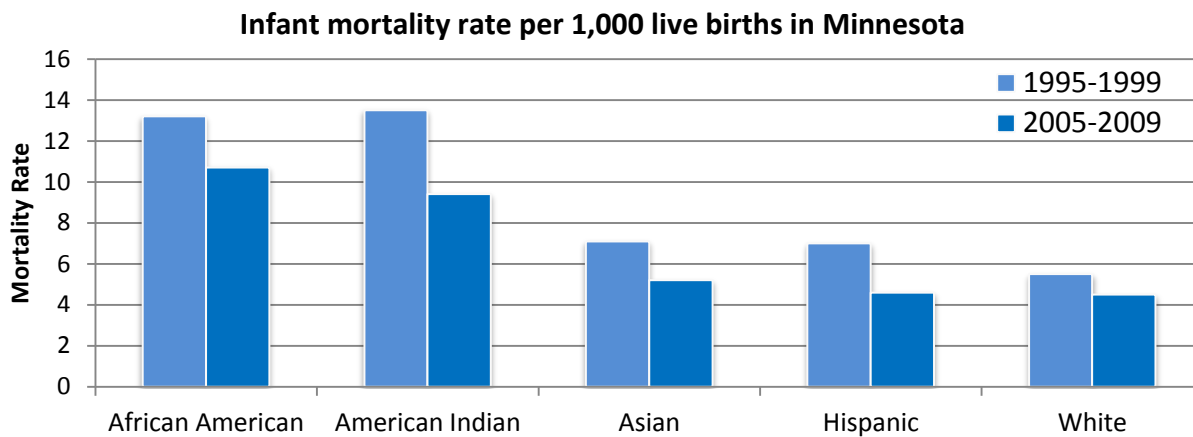
Prenatal Care and Healthy Pregnancies

Women who access prenatal care receive some of the most important components of care to assure a healthy pregnancy, and prevent prematurity or low birth weight, both of which are significant contributors to infant mortality and high costs of care. Prenatal care encompasses a multitude of measures, including discussing a mother’s healthy choices and body changes; prenatal testing and counseling; treating medical complications like gestational hypertension, diabetes, and anemia; promoting optimal weight gain; testing for sexually transmitted infections; oral health assessment and treatment; and maternal mental health and substance abuse screening.

Lower rates of prenatal care in some Minnesota populations can be correlated with disparities in infant mortality rates among those same populations. The death of an infant has a profound impact on families and communities, and is an important indicator of population health.

Minnesota consistently ranks among the states with the lowest infant mortality rates. In fact, infant mortality rates have declined for all racial and ethnic populations in Minnesota over the last 20 years.

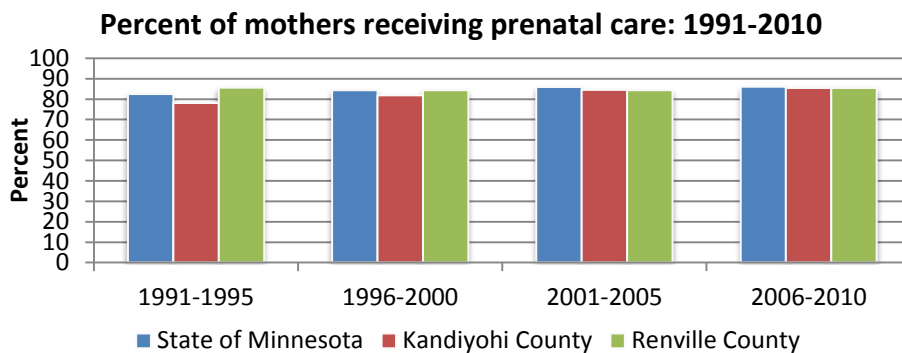
Nonetheless, significant disparities persist in the mortality rates of African-American and American Indian infants, compared to all other population groups.



Source: Minnesota Department of Health, Minnesota Center for Health Statistics (2011)

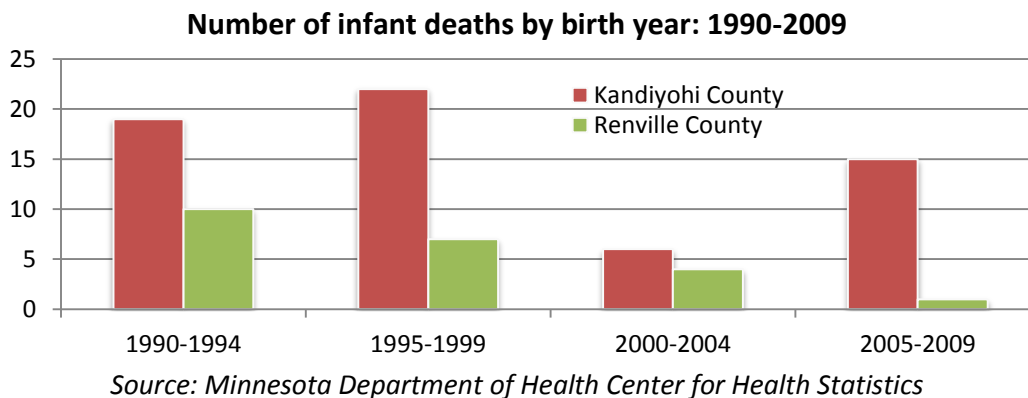
Clearly, Blacks and Native Americans are at a disadvantage concerning infant mortality. Major advances with pre and post-natal care have generally decreased the mortality rate universally. However, despite these advances, long standing economic and racial disparities continue to exist and harm the general state of health.

The causes of infant mortality vary by population: sleep-related causes, such as SIDS (sudden infant death syndrome), are a primary source of infant deaths in the American Indian community, while prematurity is the leading cause of death among African-Americans. Birth defects are the main source of infant deaths in the Asian, Hispanic, and white populations. Chronic stress, poverty, substance abuse, a lack of prenatal care, and lack of access to health care all contribute to infant mortality.



Source: Minnesota Department of Health, Center for Health Statistics

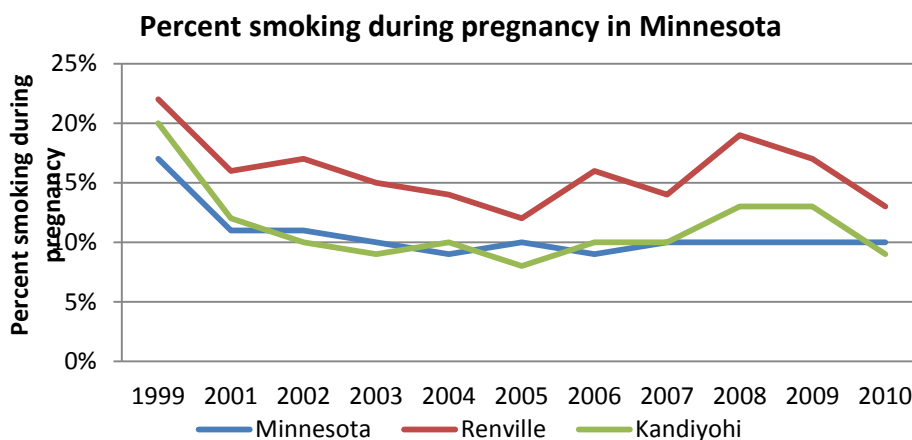
Kandiyohi and Renville are currently at the state average concerning mothers receiving prenatal care. Renville has consistently remained at the state average, around 85%. Kandiyohi, however, has experienced gradual increases in prenatal care.



Notably, Renville has reduced its infant deaths from 10 in 1990-1994, to just 1 in the period of 2005-2009. Kandiyohi’s infant deaths have remained slightly higher, and has fluctuated; with a low of 6 deaths 2000-2004 to a high of 22 in 1995-1999.

Smoking and Alcohol Use during Pregnancy

Smoking during pregnancy is the single most preventable cause of maternal and infant illness and death. Smoking during pregnancy increases the risk of stillbirth, low birth weight, sudden infant death syndrome (SIDS), preterm birth, cognitive and behavioral problems, and respiratory problems in both mother and child. Children exposed to tobacco in utero are more than twice as likely to become regular smokers themselves later in life, compared with children not exposed to tobacco in utero. However, women who quit smoking before pregnancy or early in pregnancy significantly reduce their risk for these results, and also avoid delays in conception (and infertility), premature membrane rupture, placental abruption, and placenta previa.¹⁹



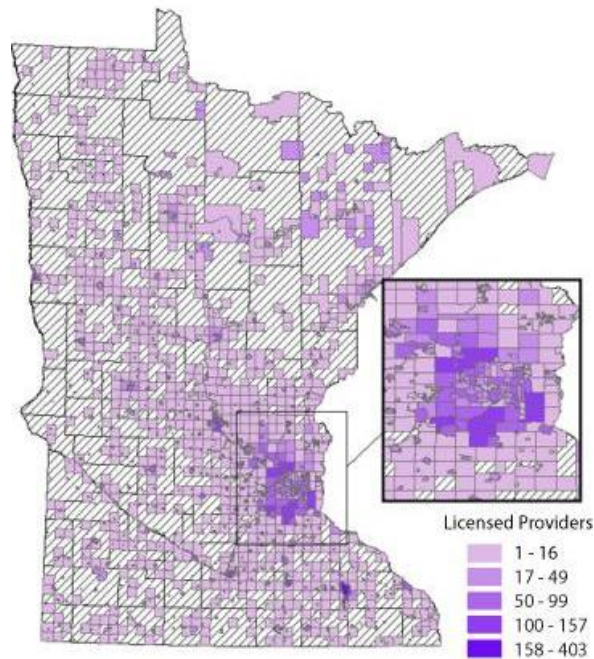
Source: Minnesota Department of Health: Minnesota Pregnancy Risk Assessment Monitoring System (PRAMS)

Smoking during pregnancy has decreased in the state as well as Kandiyohi and Renville counties since 1999. Minnesota dropped from 17% to 10%; Kandiyohi dropped from 22% to 13%; and Renville dropped from 20% to 9%.

Childcare Access

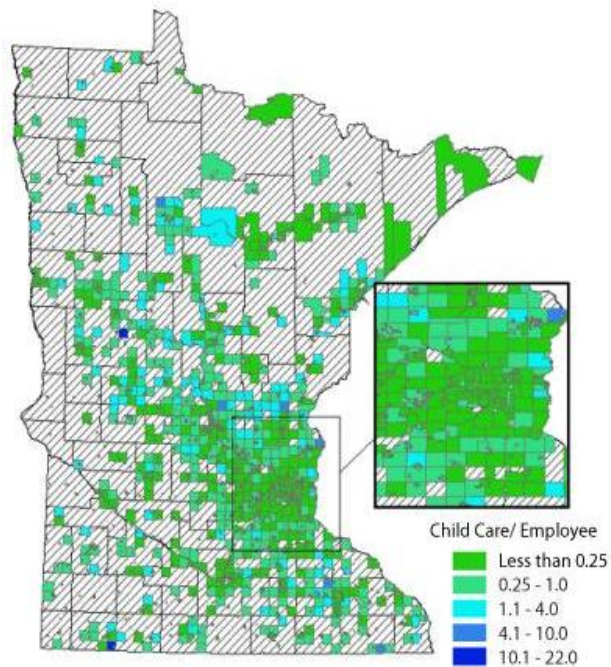
Childcare access can be difficult in rural areas due to low population density and business models that make it unfeasible. However, except for the Boundary Waters, there is at least one licensed care giver in every county, and within 5 miles of nearly any community. The greatest number of childcare facilities is within affluent suburban areas.

Number of Child Care Providers Licensed for Children Under 5 by Community, 2010



Source: Minnesota Child Care Resource and Referral Network, Licensed Daycare Providers 2010

Number of Licensed Child Care Spots Per Employee, 2009



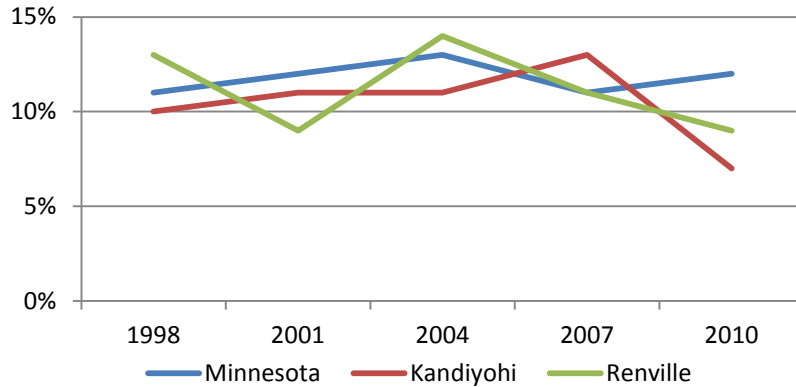
Source: Minnesota Child Care Resource and Referral Network, Licensed Daycare Providers 2010 and Quarterly Census of Employment and Wages, 2009 Annual Average

The charts above show Renville and Kandiyohi Counties are on the edge of increasing access (closer to the metro). It is evident that the closer you get to Willmar, access to child care increases. Residents in the Southeastern/Central portion of Renville County have less access.

Violence against Children and Teens

In 2009, nearly five thousand Minnesota children were abused or neglected. Of those, 44 children suffered life-threatening injuries and 21 died from maltreatment. The median age of abuse victims was six years old. Three-fourths of all alleged abusers are the victims' birth parents. Some children were victims of more than one offender, and some suffered more than one form of abuse and neglect.

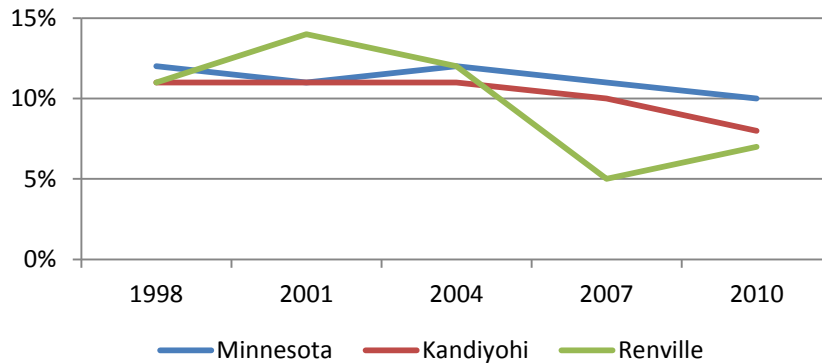
Percent of 6th graders who report an adult in their household has ever hit them so hard or so often that they had marks or were afraid of that person



Source: Minnesota Student Survey (2011)

The number of Kandiyohi and Renville 6th graders reporting such physical abuse is on the decline. However, the Minnesota state rate has been stable over the past decade.

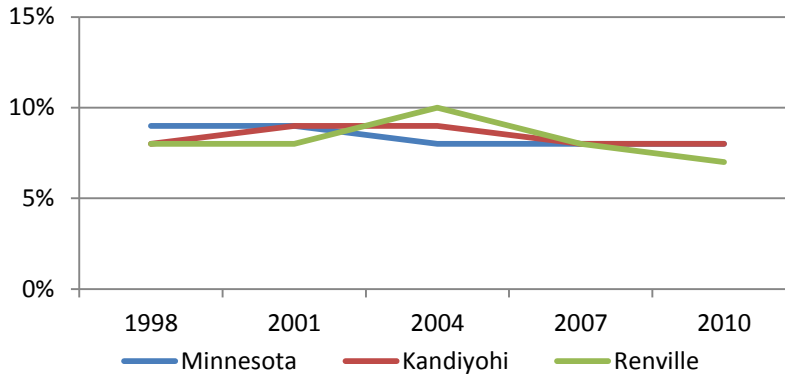
Percent of 9th graders who report that someone they were going out with has ever hit, hurt, threatened or forced them to have sex: 2010



Source: Minnesota Student Survey (2011)

Concerning 9th graders, Kandiyohi and the state of Minnesota are experiencing a gradual decline. Renville, however, experienced a sharp decline in the percentage of abuse reports, from nearly 12% in 2001, to about 7% in 2010.

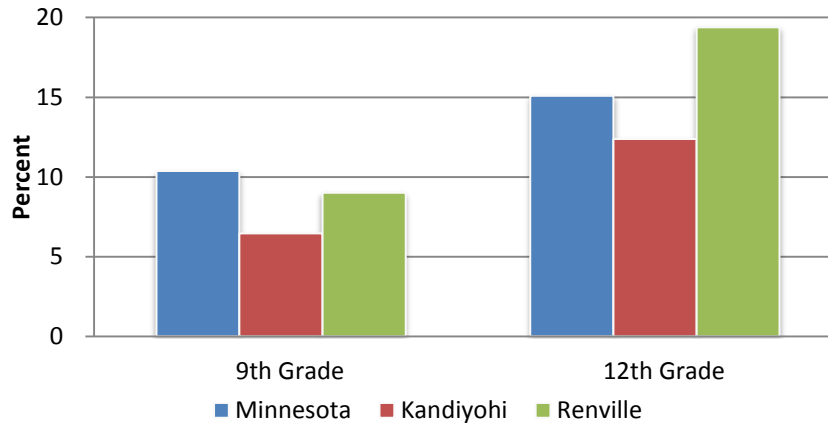
Percent of 12th graders who report an adult in their household has ever hit them so hard or so often that they had marks or were afraid of that person



Source: Minnesota Student Survey (2011)

12th graders have the lowest percentage out of all the grades reported in the survey. The state and counties all report between 6% and 10% of 12th graders who report an adult in their household has ever hit them so hard or so often that they had marks or were afraid of that person.

Percent of students who report that someone they were going out with has ever hit, hurt, threatened or forced them to have sex: 2010

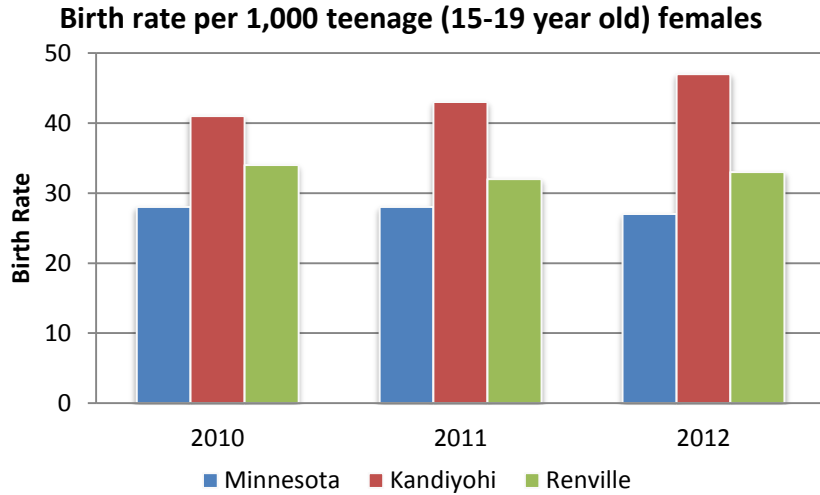


Source: Minnesota Student Survey

As of 2010, Kandiyohi is below the state average for both years while Renville is lower than the state for 9th graders while a larger percentage of 12th graders report this abuse.

Teen Parenting

Teen pregnancies are often correlated with many socioeconomic ramifications. Children born to teen mothers are often disadvantaged in many aspects of life. Most teens are simply not ready to mother children. The fathers of teen pregnancies are much less likely to play an active role in the raising of the child.



Source: Minnesota Department of Health, Center for Health Statistics

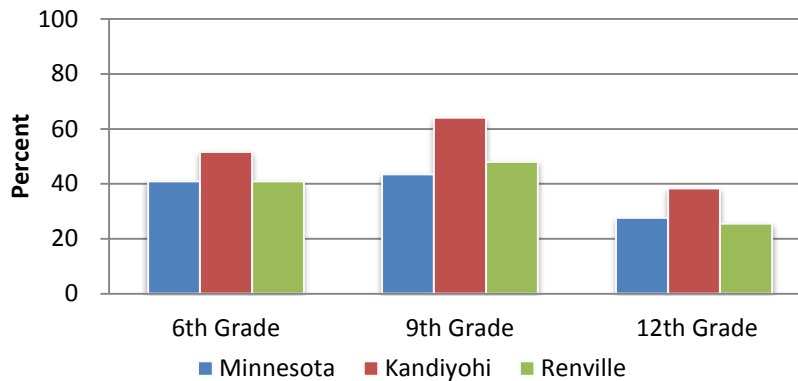
Kandiyohi and Renville’s teen birth rate has consistently remained above state average. Furthermore, Kandiyohi’s rate is increasing slightly.

Youth-Community Involvement

Civic engagement and community involvement are important for individual, family, and community health. Research on adolescent brain development also supports the need for youth to learn how to become part of the broader community, and to explore their unique contributions within that community. Positive experiences in the community, under the guidance of caring adults, provide youth with social learning experiences and help them develop a healthy social identity.

Religious participation is an indicator of community experience for Minnesota adolescents. White students in Minnesota report participating in religious activities more frequently than other racial and ethnic populations, especially among ninth-graders. Participation declines across all races and ethnic groups by 12th grade.

Percent of sixth, ninth and twelfth-graders who participate in religious activities one or more times per week: 2010



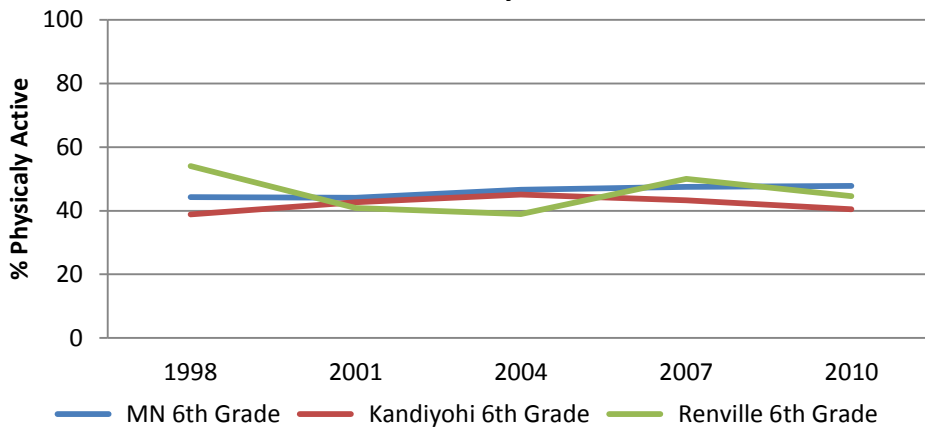
Source: Minnesota Department of Health, Center for Health Statistics

Physical Activity and Eating Habits

Regular physical activity helps improve overall health and wellness, reduces risk for obesity, and lessens the likelihood of developing many chronic diseases like cancer and heart disease.†† The national physical activity guidelines recommend that children engage in at least 60 minutes of physical activity each day, including aerobic, muscle strengthening, and bone strengthening activity. Adults need at least two hours of moderate to vigorous-level activity every week, and muscle-strengthening activities on two or more days a week.²⁰

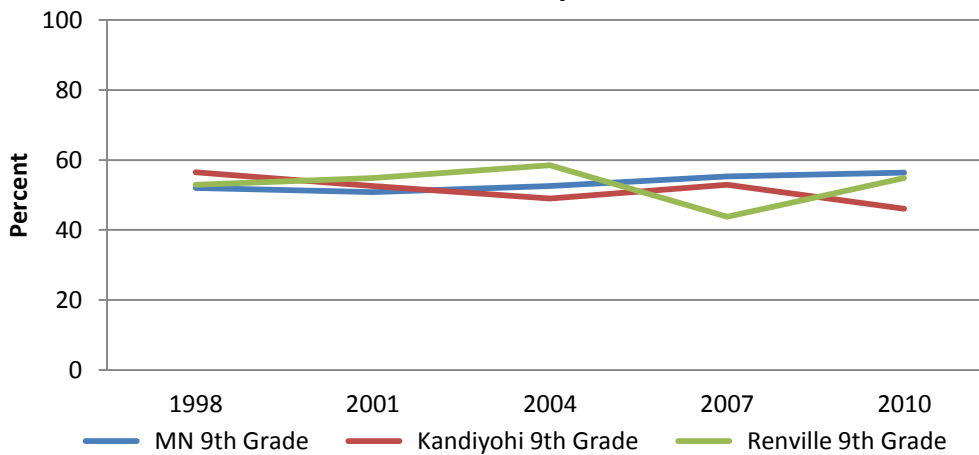
Physical Activity

Percent of 6th graders who were physically active for at least 30 minutes on at least 5 of the last 7 days



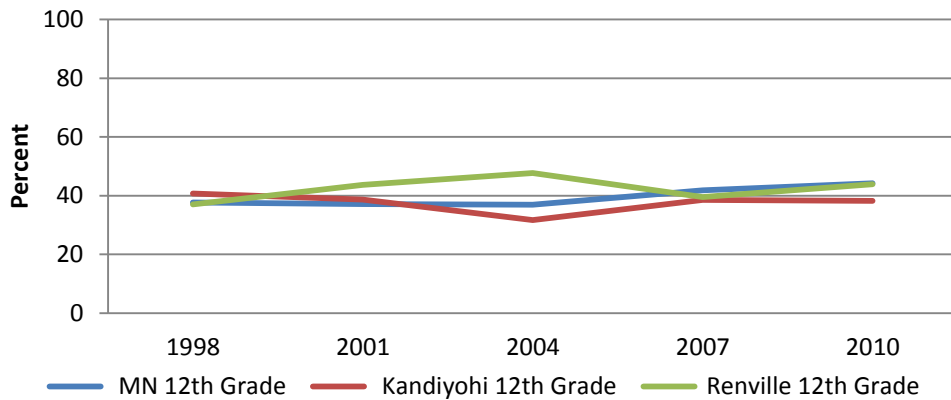
Source: Minnesota Student Survey

Percent of 9th graders who were physically active for at least 30 minutes on at least 5 of the last 7 days



Source: Minnesota Student Survey

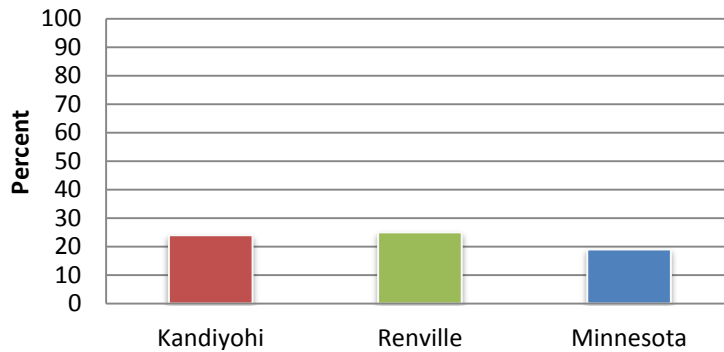
Percent of 12th graders who were physically active for at least 30 minutes on at least 5 of the last 7 days



Source: Minnesota Student Survey

Adolescents in both Kandiyohi and Renville are relatively close to the state average concerning physical activity. Renville’s 9th graders are considerably more active than 9th graders in Kandiyohi or the average of 9th graders in Minnesota. 9th graders typically report more physical activity than 6th graders and 12th graders.

Percent of adults who report no physical activity: 2009



Source: County Health Rankings

Physical inactivity is a leading, albeit more indirect, cause of many diseases ranging from obesity to heart disease. In term of inactivity, both Kandiyohi and Renville are above average. Rather, they are less active than the average Minnesotan.

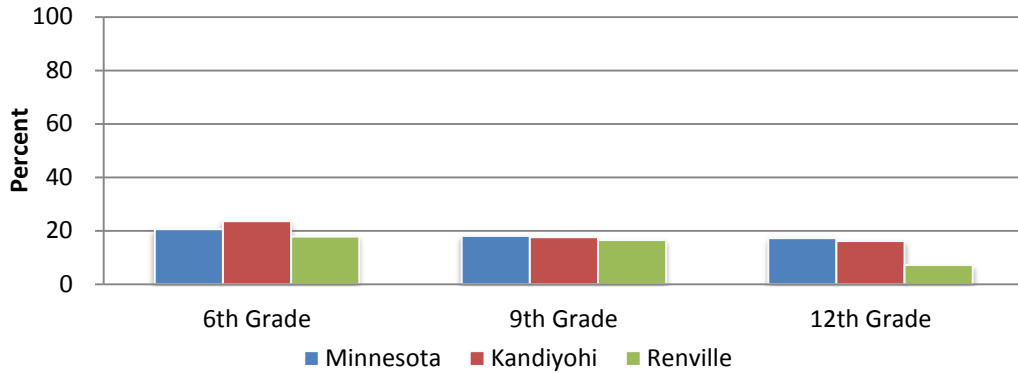
Eating Habits

Food and diet has a very direct effect on health, growth, and well-being. A balanced diet is essential to living a healthful life. Despite a common knowledge of the importance of a balanced diet, about three-fourths of Minnesotans do not eat the recommended amounts of fruits and vegetables.

Poor eating habits at any stage of life, especially those that result in too many calories, too much saturated fat and sodium, and too few nutrients (e.g., sugary drinks and a lack of whole grains) increase

the risk for disease and disability. The mal-effects of poor nutrition include obesity, diabetes, heart disease, stroke, tooth decay, and some cancers.

Percent of sixth, ninth and twelfth-graders who consumed five or more servings of fruits, fruit juice, or vegetables in the previous day: 2010



Source: Minnesota Student Survey (2011)

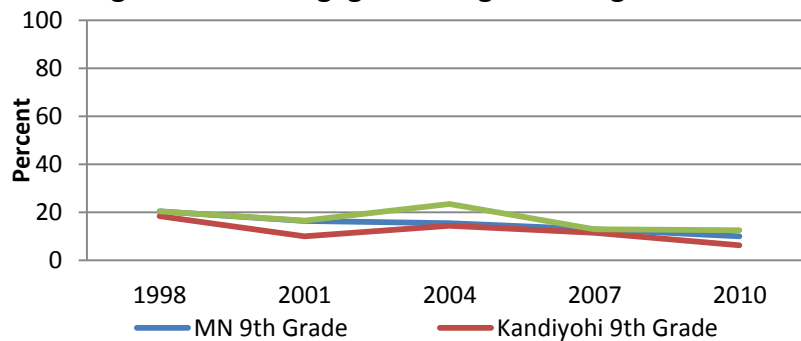
Students in Kandiyohi generally follow the state average in terms of healthy eating. Students in Renville are slightly below Minnesota and Kandiyohi: most notable are the eating habits among 12th graders in Renville County.

Use of Alcohol, Tobacco, and Prescription Drugs

Alcohol Use

Alcohol can be consumed appropriately and responsibly, as can prescription medications. Problems occur when these substances are over-consumed, used inappropriately, or combined with other substances or with risky activities (like driving while impaired or engaging in unsafe sexual activity).

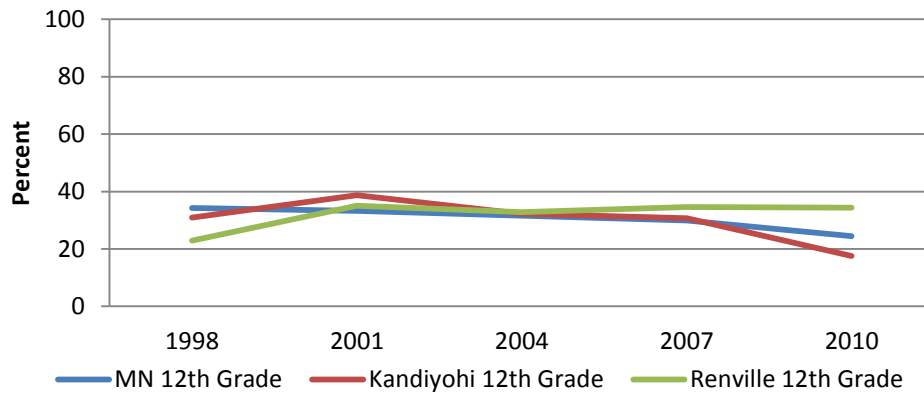
Percent of 9th graders who engaged in binge drinking in the last two weeks



Source: Minnesota Student Survey (2011)

For Kandiyohi, Renville, and Minnesota, binge drinking among 9th graders is on the decline. Indeed, teens today do not drink as much as they did in previous years and decades. Though rates for both Kandiyohi and Renville have fluctuated, they have maintained a steady rate of decline.

Percent of 12th graders who engaged in binge drinking in the last two weeks



Source: Minnesota Student Survey (2011)

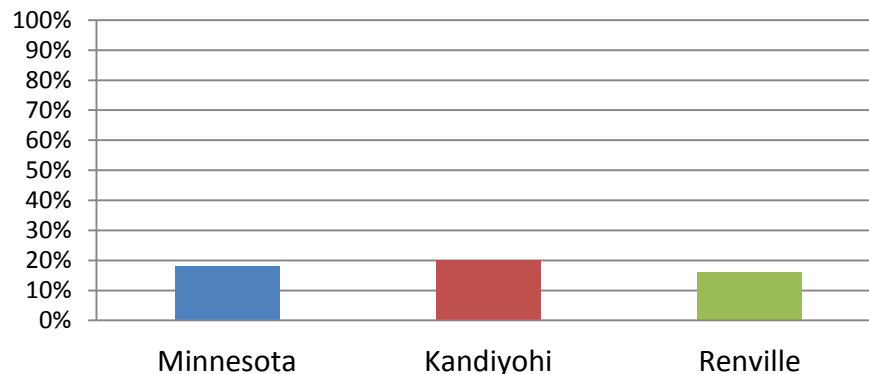
Concerning 12th graders, Minnesota and Kandiyohi have experienced decreases in binge drinking. From 1998 to 2010, Minnesota and Kandiyohi decreased from 34% and 30% to 24% and 17%, respectively. Renville, however, has increased from 22% in 1998 to 34% in 2010.

Tobacco Use and Exposure to Secondhand Smoke

Smoking cigarettes and/or using alternative tobacco products have long been linked to numerous health risks and diseases, such as cancer and heart disease. Smoking occasionally, such as during religious practices, does not necessarily correlate with health risks.

Smoking in Minnesota has largely decreased in recent history. Long-term smokers also now consume fewer cigarettes per day. The percentage of adult heavy smokers in Minnesota (consuming 25 or more cigarettes per day) has shrunk from 10% in 2007 to about 6% in 2010.²¹

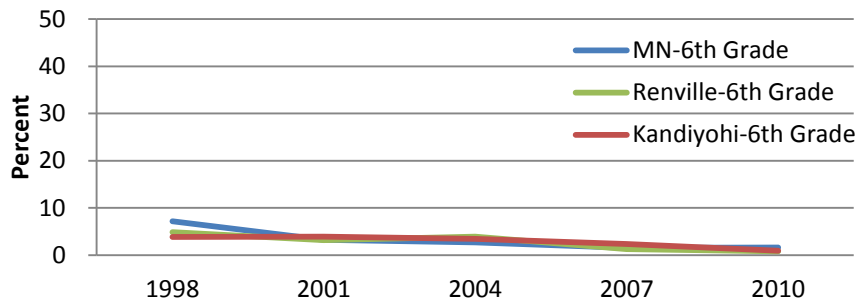
Percent of adults that are current smokers: 2012



Source: Minnesota Department of Health, Center for Health Statistics

Currently, Kandiyohi and Renville are following this state-wide trend. There are fewer smokers now than in recent history. Kandiyohi is slightly above the state average, at 20%. Renville is slightly below the state average at 16%.

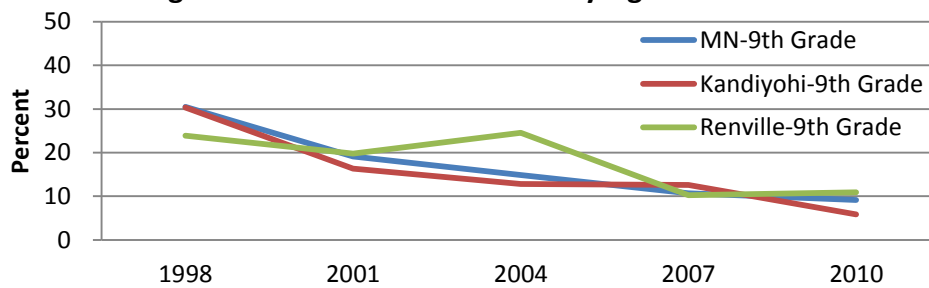
Percent of 6th grade students who smoked any cigarettes in the last 30 days



Source: Minnesota Student Survey (2011)

The percentage of 6th grade students reporting smoking is largely on the decline. As of 2010, less than 2% of 6th graders in Minnesota, Kandiyohi, and Renville reported smoking in the last 30 days.

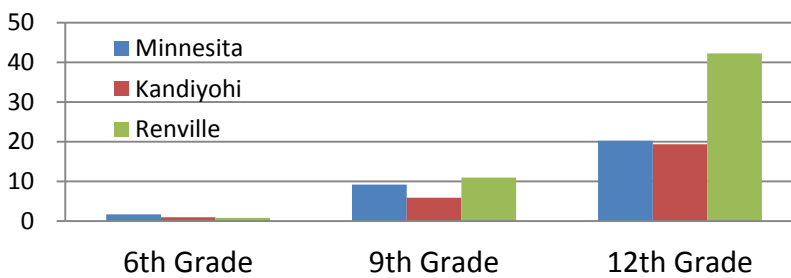
Percent of 9th grade students who smoked any cigarettes in the last 30 days



Source: Minnesota Student Survey (2011)

Students across Minnesota are smoking less. Smoking has consistently decreased from 1998 to 2010. Students in Renville have experienced a slower decline in smoking. Currently, Renville 9th graders are smoking more than Kandiyohi 9th graders. Nonetheless, this trend is favorable for both Kandiyohi and Renville Counties.

Percent of sixth, ninth and twelfth-grade students who smoked any cigarettes in the last 30 days: 2010



Source: Minnesota Student Survey (2011)

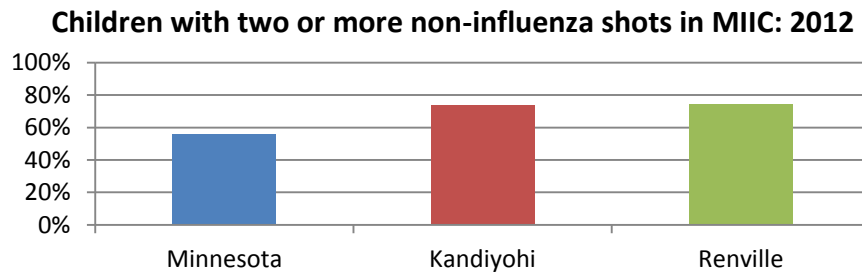
Despite the decline in smoking among younger students, a surprisingly large percentage of 12th graders in Renville reported smoking in 2010. Proportionally, nearly twice as many Renville 12th graders smoke than the state and Kandiyohi. About 42% of Renville 12th graders smoked cigarettes in the last 30 days.

Preventing Disease and Injury

Immunizations

Immunization protects the health of entire communities. Immunization is particularly important in protecting those who cannot be immunized, such as children who are too young and those who cannot be vaccinated due to medical conditions.

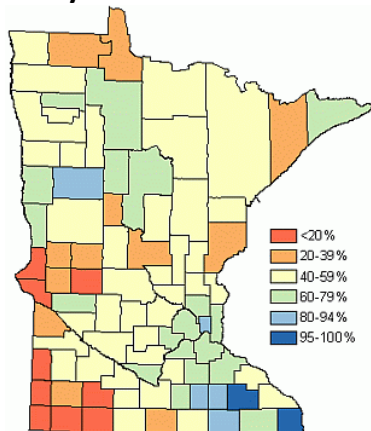
Immunization is among the best methods of eradicating a disease. It is important to vaccinate children and adults alike. About 50% of Minnesotan counties, less than 60% of children are up-to-date. Statewide, about 58% of children have received the entire recommended series of vaccines.²²



Source: Minnesota Department of Health, MIIC Saturation

In 2012, both Kandiyohi and Renville vaccinated about 74% of children. This is considerably higher than the state average of 56%.

Percent of county residents age 65+ years with 2+ non-influenza shots in MIIC, January 2013



Source: Minnesota Department of Health, MIIC Saturation

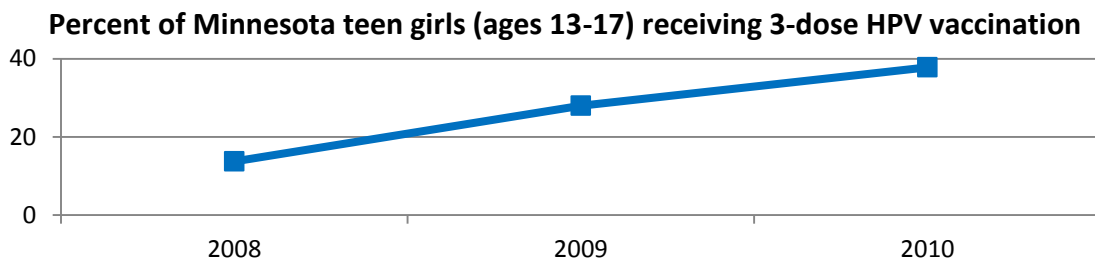
In both Kandiyohi and Renville, about 40-59% of age 65+ residents are vaccinated with 2 or more non-influenza shots.

Preventing Sexually Transmitted Infections

One effective way to prevent the transmission of sexually transmitted infections (or STIs, which are also known as sexually transmitted diseases) among youth is to delay the onset of sexual activity. Minnesota's ninth-graders report lower rates of sexual activity than in the mid-1990s, although this rate has leveled off in recent years.

Vaccination

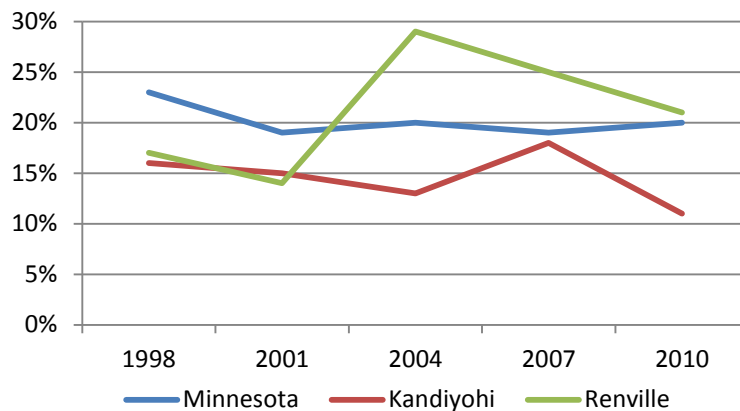
Each year in the U.S., about 12,000 women get cervical cancer. Almost all of these cancers are associated with the genital human papillomavirus (also called HPV) virus, the most common sexually transmitted infection. Approximately 20 million Americans are currently infected with HPV. Another 6 million people become newly infected each year. HPV is so common that at least 50 percent of sexually active men and women get it at some point in their lives.



Source: Center for Disease Control and Prevention, Minnesota Student Survey

HPV Vaccinations among Minnesota teen girls (ages 13-17) has increased dramatically from 2008 to 2010. 12% of teen girls were receiving the vaccination in 2008 and in 2010, nearly 40%.

Percent of ninth-graders who have ever had sexual intercourse



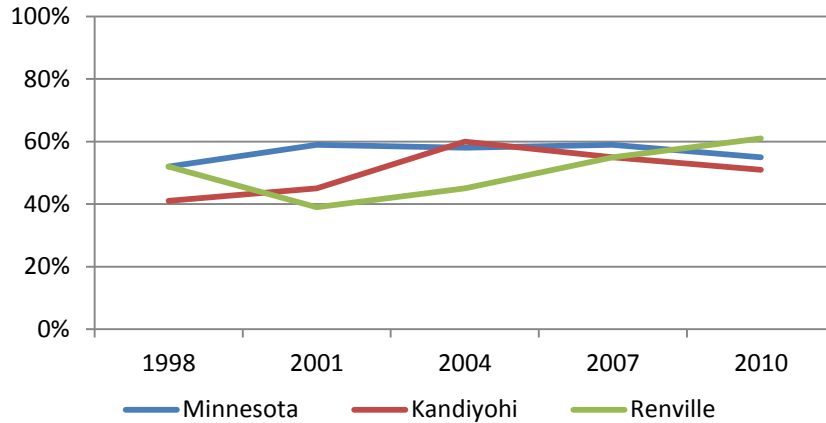
Source: Minnesota Student Survey (2011)

Condom Use

Consistent condom use is an effective means of preventing STIs and pregnancies. Among sexually active 9th graders in Minnesota, African American students are most likely to report always using a condom;

Asian students are the least likely to report using consistent condom use. Of course, it is possible that those reporting inconsistent condom use are using other forms of birth control.

Percent of sexually active ninth-grade students who always use a condom as birth control



Source: Minnesota Student Survey (2011)

Kandiyohi and Renville students are using condoms more frequently. In 2010, among sexually active 9th graders, 61 percent of them reported always using a condom. Among Kandiyohi 9th graders, 52 percent reported always using a condom. Renville has seen steady growth in condom use since 2001.

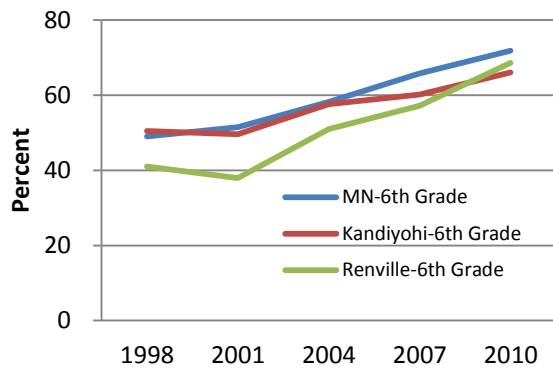
Safety Belts and Booster Seats

Safety belts and booster seats are highly effective in reducing injury and death from motor vehicle crashes. Minnesota reached a statewide seatbelt use rate of 93 percent in 2011, the highest in the state's history. Rates of use had been steadily increasing since 2003, and increased even more with passage of the state's Primary Seat Belt Law in 2009.²³ The lowest rates of safety belt use can be found among young people, particularly males driving pickup trucks.²⁴

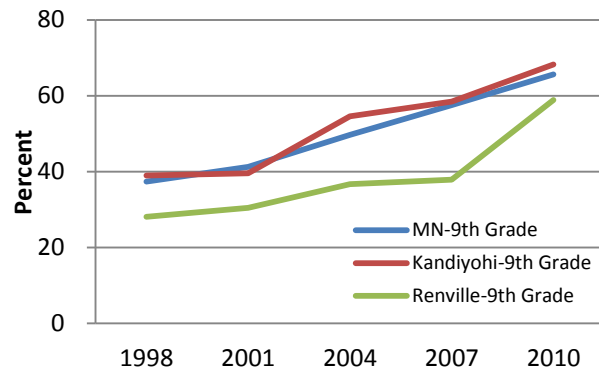
Booster seats are also required by law in Minnesota, for children who have outgrown a forward-facing harnessed restraint but who are still too small to correctly fit into an adult safety belt (usually around age four, and for those who weigh between 40 and 60 pounds). In a 2011 survey,

- Two-thirds of children were found to be properly restrained in a booster seat
- Female caregivers were more likely than males to put children in boosters
- Only half of young caregivers (ages 16-29) used booster seats
- If the driver was not wearing a seatbelt, then only 27 percent of the children were in a booster seat²⁵

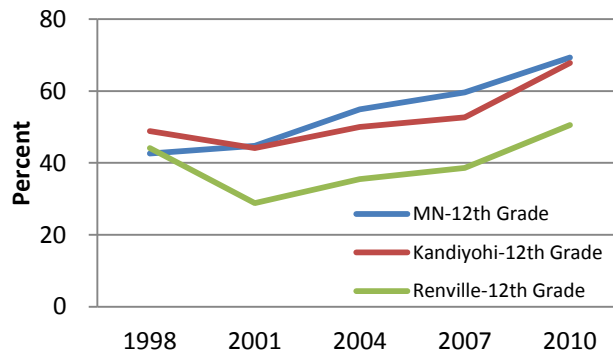
Percent of 6th grade students who always wear a seatbelt when riding in a car



Percent of 9th grade students who always wear a seatbelt when riding in a car



Percent of 12th grade students who always wear a seatbelt when riding in a car



Source: Minnesota Student Survey (2011)

Minnesotan students are using seatbelts more frequently. Kandiyohi students are at state average concerning seatbelt usage. Renville students consistently wear seatbelts less than Kandiyohi and Minnesotan students. In 2010, 68 Percent of both Kandiyohi and Minnesota (average) 12th graders reported always using a seatbelt. Only 51 percent of Renville 12th graders reported always wearing a seatbelt.

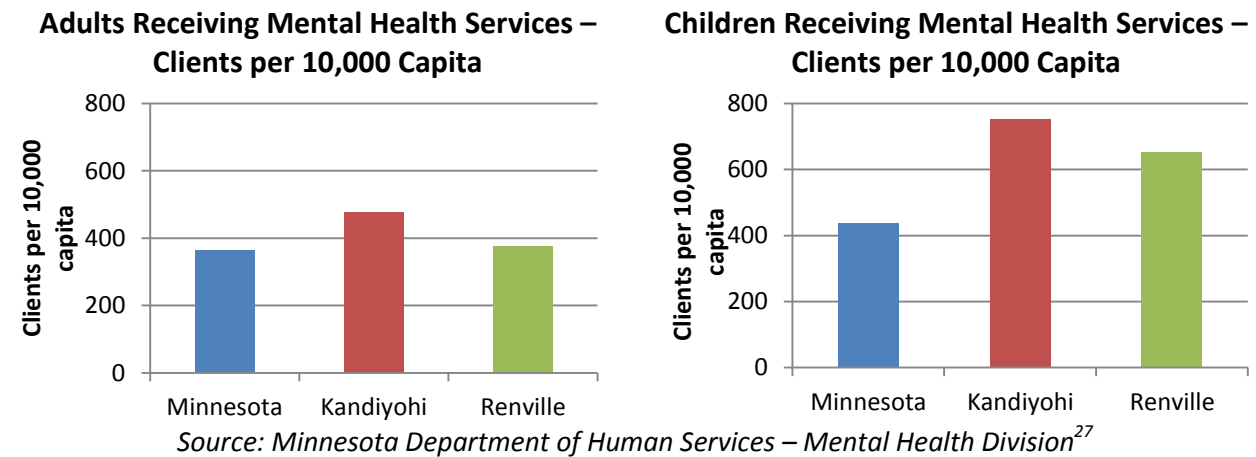
Promoting Mental Health

When a person experiences mental or emotional health issues, it can affect his or her everyday functioning. Mental and emotional health struggles can place significant strains on relationships, affect the ability to work, and lead to self-harm. Depression and anxiety can affect a person's ability to participate in health-promoting activities, such as physical activity, and can also disrupt connections to helpful social supports.

Physical or medical conditions can also lead to mental health struggles. Physical pain and depression are strongly associated: More than 65 percent of adults with a mental disorder reported also having at least one general medical disorder. The connections between mental and physical health are complex and

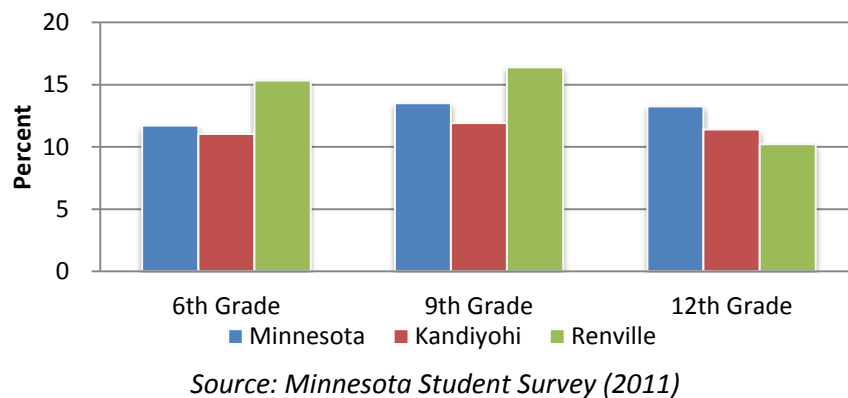
move in both directions. Socioeconomic factors, such as low income and poor educational attainment, are associated with both mental disorders and medical conditions.²⁶

When adolescents experience emotional distress, it can affect their ability to develop, to learn, and to make sound decisions about their behavior. This distress can also lead to immediate physical dangers in adolescents, like cutting and other forms of self-harm, as well as suicide and attempts at suicide. Minnesota’s American Indian and Hispanic students report experiencing higher levels of stress than their peers, and female students report higher rates of emotional stress than males across all races and ethnic groups.



Both Kandiyohi and Renville have higher adult and children clients per 10,000 capita than the state as a whole. Kandiyohi has 476 adults receiving mental health services per 10,000 people, while Renville has 374 and Minnesota has 364. Kandiyohi also has the highest children clients per 10,000 capita with 753, while Renville has 653 and Minnesota has 437.

Percent of sixth, ninth, and twelfth-grade students who felt nervous, worried or upset all or most of the time in the last 30 days: 2010



Concerning students reporting anxiety, Kandiyohi County is universally below the state average. Renville County, however, is slightly above average. In 2010, 15% of Renville 6th graders and 16% of 9th graders

report prolonged anxiety in 2010. Concerning 12th graders, Kandiyohi and Renville stand slightly below average.

Sixth-graders who feel that people care about them "very much" or "quite a bit": 2010			
<i>"How much do you feel ___ care about you"</i>	Minnesota	Kandiyohi	Renville
Parents	91	90	92
Friends	76	74	65
Teachers/Adults at school	67	66	58
Religious/Spiritual Leaders	59	64	56
Adults in the community	56	55	52
Other adults Relatives	92	95	96

Ninth-graders who feel that people care about them "very much" or "quite a bit": 2010			
<i>"How much do you feel ___ care about you"</i>	Minnesota	Kandiyohi	Renville
Parents	78	81	77
Friends	76	77	64
Teachers/Adults at school	45	54	38
Religious/Spiritual Leaders	55	67	47
Adults in the community	42	45	41
Other adults Relatives	86	88	84

Twelfth-graders who feel that people care about them "very much" or "quite a bit": 2010			
<i>"How much do you feel ___ care about you"</i>	Minnesota	Kandiyohi	Renville
Parents	77	77	80
Friends	76	68	81
Teachers/Adults at school	47	52	46
Religious/Spiritual Leaders	46	54	53
Adults in the community	40	44	38
Other adults Relatives	83	82	90

Source: Minnesota Student Survey 2011

Concerning students' reported feelings of care from others, both Kandiyohi and Renville generally follow the state average. If we average all the percentages across rows and grades, Minnesota has an average score of 66, Kandiyohi has a score of 68.5, and Renville has an average score of 64.

Conclusion

Meeting Challenges with Strengths

This assessment of Kandiyohi and Renville identifies many concerns for health. However, these issues reveal that Kandiyohi and Renville have ample opportunity to improve health.

An assessment of Kandiyohi and Renville would not be complete without a description of the state's strengths and assets. In the context of a statewide health assessment, the concept of "strengths and assets" refers to the many types of human, social, economic, and organizational resources that stakeholders can leverage to improve the health of all, and ensure a healthy future for the state. Kandiyohi and Renville citizens can make progress not by focusing on problems, but by generating energy and harnessing resources for change.²⁸

Two main points are worth mentioning relating to the changes the state and counties are experiencing;

- The children of Minnesota, Kandiyohi County, and Renville County remain the future of the state,
- Growing racial, ethnic, and cultural diversity brings significant economic contributions and a richness of perspectives, skills, experience, and innovative ideas to the state.

References and Resources

Minnesota Center for Health Statistics (<http://www.health.state.mn.us/divs/chs/>)

The Minnesota Center for Health Statistics coordinates, collects and analyses a wide range of Minnesota health-related data, including data from the U.S. Census Bureau, the Centers for Disease Control and Prevention (CDC), the Minnesota Student Survey, and other programs within the Minnesota Department of Health.

Minnesota Student Survey (<http://www.health.state.mn.us/divs/chs/mss/>)

The Minnesota Student Survey is the result of collaboration between Minnesota schools and the Minnesota Departments of Education, Employment and Economic Development, Health, Human Services and Public Safety. The survey is administered every three years to sixth, ninth, and 12th-grade students.

Physical Activity and Eating Habits

Blue Cross and Blue Shield of Minnesota & Minnesota Department of Health. (2010). *Physical activity and healthy eating in Minnesota: Addressing the root causes of obesity*. Retrieved from:

<http://www.health.state.mn.us/divs/hpcd/chp/cdrr/obesity/pdfdocs/ReportBCBSaddressrootcausesobesity.pdf>

Minnesota Department of Health. (2010). *Social connectedness: Evaluating the Healthy People 2020 framework: The Minnesota project.* Retrieved from:

<http://www.health.state.mn.us/divs/cfh/ophp/resources/docs/socialconnectedness.pdf>

Appendix - Multivariate Analysis

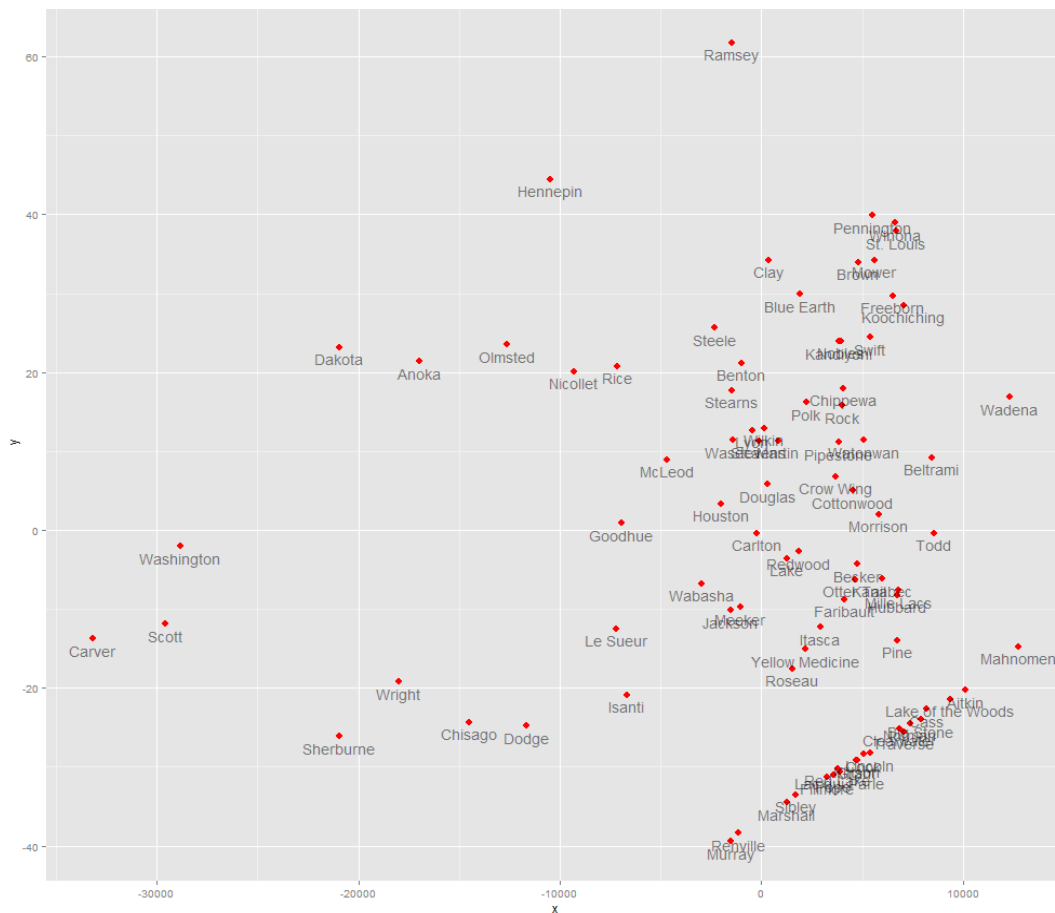
Multidimensional Scaling (MDS)

Goal: To group similar counties together based on multiple health and economic factors.

Methodology

To compute this MDS study, we utilized 6 variables: Median Income, 65 and over, percent population under 18, percent population over 65, % not proficient in English, percent population living in rural areas, and percent of elementary students eating free lunch.

We wish see to see which counties are most similar based on key economic variables. I chose these key economic and demographic data as to identify key groupings based on statistical similarity. To better compare health systems, it is important to know where Kandiyohi and Renville stand, concerning key economic and sociological factors. By creating a better comparison group, we can better compare health factors.



The six variables chosen are condensed into a 2D plot, as shown above.

There are clearly 3 major curvilinear groupings. The first wave, to the far left, represents the urban and suburban counties. Carver, Scott, and Washington are one group, for example, that extends to Ramsey in the top right. The center section represents the “standard” industrial yet agrarian economies of rural Minnesota. The bottom right clustering appears to group sparsely populated counties with lower median incomes. This bottom grouping represents counties that are most different and farthest from the wealthier urban and suburban counties to the northwest of the plot.

Renville County happens to fit in that bottom left clustering whereas Kandiyohi fits in the center clustering. This indicates that Kandiyohi and Renville fit into very different groupings when taking all these variables into account. The model suggests that concerning socioeconomic profile, Kandiyohi and Renville Counties differ greatly. Though health outcomes may be similar now, Renville and Kandiyohi are experiencing economic and demographic changes that could affect health outcomes in years to come. Simply put, the Counties are not the same, and when analyzing health data in the future, these differences will need to be taken into account.

To determine the goodness of fit of the model (how well the model describes the data), we can look at the stress value. A lower stress value, below 5%, indicates a good fit. We compute a stress value .0006929, thus indicating an excellent fit.

Regression Studies

Factors contributing to uninsured status

To investigate how certain economic and demographic variables might influence the status of insurance. The Center for Small Towns conducted a multivariate analysis. Using data from numerous sources, presented by the National County Health Rankings, we examine how the variables median income in 2011, percentage Hispanic, percentage African American, percentage Native American, percentage Asian, percentage Islander, percentage rural, percentage of population over 65, percentage of population under 18, percentage of students receiving free lunch, percent not proficient in English, and the unemployment rate in 2011.

Methodology

We used a standard Ordinary Least Squares (OLS) regression model. The y variable, or dependent variable, that we would like to predict is the percentage of uninsured citizens within the county. We use data from 75 Minnesotan counties.

The formula then is:

$$\text{Percentage of uninsured} = B1 * \text{Rural} + B2 * \text{Unemployment rate in 2011} + B3 * \text{Percentage of Citizens over 65 years} + B4 * \text{Median Income} + B5 * \text{Percent Hispanic} + B6 * \text{Percent Native American} + B7 * \text{percent not proficient in English}$$

The output is as follows:

Variable	Coefficients	Std. Error	T-Value	P-Value
(Intercept)	74.1694	11.1973	6.624	3.88e-09
Rural	.029718	.005439	5.464	5.26e-07
Unemployment(2011)	.272568	.074861	3.641	.000483
% over 65 years	-.020445	.040542	*.504	.615464
Log median income	-6.082527	.973740	-6.247	1.98e-08
% Hispanic	-.023613	.053597	-.441	.660735
% Native American	.067677	.024617	2.749	.007401
% Not proficient in English	.388164	.086208	4.503	2.29e-05

Residual Standard Error: 0.8528 on 79 degrees of freedom

Multiple R-Squared: 0.8091, Adjusted R-Squared: 0.7922

F-Statistic: 47.83 on 7 and 79 degrees of Freedom, p-value: < 2.2e-16

From the regression, we have clear statistical evidence supporting certain key factors that contribute to rates of uninsurance. Income is clearly the most influential factor that determines uninsurance, based on the size of the coefficient and its negative sign. To clarify, a negative sign on the estimated coefficient indicates that as the factor increases, it reduces uninsurance rates, thereby increasing insurance coverage. Intuitively, as income increases, uninsurance decreases.

Counties with high unemployment and high populations of citizens not proficient in English are likely to have higher uninsurance rates. Though, again, these effects are small. A 1 percent increase in the unemployment rate equates to a .27 percent increase in the uninsurance rate. However, the negative effects of a lay-off are more likely to manifest themselves within a year or more; thus, a more temporal approach is needed.

Also, counties with higher populations of Native Americans are more likely to have high rates of uninsurance. This is not surprising by any means; Native Americans have historically been at a disadvantage concerning socioeconomic and health issues.

Many Minnesotans are still unable to receive access to quality health care due to cost. Simply put, rural locations with high unemployment and low median incomes are most likely to experience high rates of insurance. In Minnesota, many different factors affect health outcomes. However, it is important to acknowledge that many of the most significant factors revolve around income and wealth.

From the Text: Endnotes

-
- ¹ World Health Organization. (1946; Revised 2006). *Constitution of the World Health Organization: Preamble*. Retrieved August 6 2012 from http://www.who.int/governance/eb/who_constitution_en.pdf
- ² Institute of Medicine. (1988). *The future of public health*. Washington, DC: National Academy Press.
- ³ Minnesota Department of Health. (2012), Retrieved September 1, 2012 from <http://www.health.state.mn.us/statewidehealthassessment/>
- ⁴ Minnesota Department of Health, Minnesota Department of Human Services. (2011). *Collection of racial/ethnic health data by the Minnesota Departments of Health and Human Services*. Retrieved August 6 2013 from <http://www.health.state.mn.us/omh/publications/raciaethnicdata2011.pdf>
- ⁵ World Health Organization. *Social determinants of health*. Retrieved April 2 2012 from http://www.who.int/social_determinants/en/ and Centers for Disease Control and Prevention. *Social determinants of health*.
- ⁶ Dahlgren, G., & Whitehead M. (1991). *Policies and strategies to promote social equity in health*. Stockholm, Sweden: Institute of Futures Studies.
- ⁷ Heise, L.L. (1998). Violence against women: An integrated, ecological framework. *Violence Against Women* 4(3), 262-290.
- ⁸ U.S. Department of Health and Human Services. (Updated 2011). *HealthyPeople.gov: About Healthy People*. Retrieved August 6 2013 from <http://www.healthypeople.gov/2020/about/default.aspx>
- ⁹ Centers for Disease Control and Prevention. (Updated 2010). *Healthy Places: About Healthy Places*. Retrieved August 6 2013 from <http://www.cdc.gov/healthyplaces/about.htm>
- ¹⁰ Shonkoff, J.P. & Phillips, D.A. (Eds.). (2000). *From neurons to neighborhoods: The science of early childhood development*. Washington, D.C.: National Academy Press. Retrieved from http://www.nap.edu/openbook.php?record_id=9824
- ¹¹ United Health Foundation. (2011). *America's Health Rankings: 2011 rankings* [Data]. Retrieved January 1 2012 from <http://www.americashealthrankings.org/MN>
- ¹² Minnesota Department of Health, Minnesota Center for Health Statistics. (2011).
- ¹³ Robert Wood Johnson Foundation. (2011). *Exploring the social determinants of health: Education matters for health*. Retrieved from <http://www.rwjf.org/files/research/sdohseries2011education.pdf>
- ¹⁴ American Cancer Society, Midwest Division. (2011). *Minnesota cancer facts and figures: 2011*. Retrieved from <http://www.health.state.mn.us/divs/hpcd/cdee/mcss/documents/mncancerfactsfigures2011033011.pdf>
- ¹⁵ Robert Wood Johnson Foundation. (2011). *Exploring the social determinants of health: How social factors shape health: The role of stress*. Retrieved from <http://www.rwjf.org/files/research/sdohstressandhealthissuebrief20110324.pdf>
- ¹⁶ Minnesota Department of Health, Office of Public Health Practice. (2010). *Social connectedness: Evaluating the Healthy People 2020 framework: The Minnesota project*. Retrieved from <http://www.health.state.mn.us/divs/cfh/ophp/resources/docs/socialconnectedness.pdf>
- ¹⁷ Robert Wood Johnson Foundation & University of Wisconsin Population Health Institute. *County Health Rankings: Family and social support*. Retrieved August 7 2013 from <http://www.countyhealthrankings.org/health-factors/family-and-social-support>
- ¹⁸ Minnesota Department of Health, Office of Public Health Practice. (2010). *Social connectedness: Evaluating the Healthy People 2020 framework: The Minnesota project*. Retrieved from <http://www.health.state.mn.us/divs/cfh/ophp/resources/docs/socialconnectedness.pdf>
- ¹⁹ Centers for Disease Control and Prevention & U.S. Department of Health and Human Services. (2007). *Preventing smoking and exposure to secondhand smoke before, during, and after pregnancy*. Retrieved from <http://www.health.state.mn.us/divs/fh/mch/mortality/documents/CDCsmokingPGfactsheet.pdf>
- ²⁰ US Department of Health and Human Services. (2008). *2008 physical activity guidelines for Americans*. Retrieved from <http://www.health.gov/paguidelines/>
- ²¹ ClearWay Minnesota & Minnesota Department of Health. (2010). *Minnesota Adult Tobacco Survey*. Retrieved January 1 2012 from <http://www.mnadulttobaccosurvey.org/>.

-
- ²² Minnesota Department of Health, Minnesota Immunization Information Connection (MIIC). (2011). *Childhood immunization coverage in Minnesota*. Retrieved August 1, 2013 from <http://www.health.state.mn.us/divs/idepc/immunize/stats/coverdata.html>
- ²³ Minnesota Department of Public Safety, Office of Traffic Safety. *Seat belt law*. Retrieved January 22 2012 from <https://dps.mn.gov/divisions/ots/laws/Pages/seat-belts.aspx>
- ²⁴ Eby, D.W., Vivoda, J.M., & Cavanagh, J. (2011). *Minnesota safety belt and motorcycle helmet use*. Minnesota Department of Public Safety, Office of Traffic Safety. Retrieved January 1 2012 from <https://dps.mn.gov/divisions/ots/reports-statistics/>
- ²⁵ Minnesota Department of Public Safety
- ²⁶ Druss, B.G. & Reisinger, W.E. (2011). Mental disorders and medical comorbidity. *The Synthesis Project 21*. Retrieved from <http://www.rwjf.org/pr/product.jsp?id=71883>
- ²⁷ Minnesota Department of Human Services Mental Health Divisions, *Mental Health Management Report*, Retrieved August 8 2013 from http://www.dhs.state.mn.us/main/idcplg?IdcService=GET_FILE&RevisionSelectionMethod=LatestReleased&Render=Primary&allowInterrupt=1&noSaveAs=1&dDocName=dhs16_164112
- ²⁸ The Asset-Based Community Development Institute. Retrieved August 1, 2013 from <http://abcdinstitute.org/>

University of Minnesota, Morris Center for Small Towns

The mission of the Center for Small towns is to focus the University's attention and marshal it's resources toward assisting Minnesota's small towns with locally identified issues by creating applied learning opportunities for faculty and students. For more information about the Center for Small towns and its other programs, please give us a call or visit our Web page.

Center for Small Towns
University of Minnesota, Morris
600 East Fourth Street
Morris, MN 56267
320-589-6451
ummcst@morris.umn.edu
centerforsmalltowns.org



UNIVERSITY OF MINNESOTA
MORRIS