Minnesota Cancer Facts & Figures 2015

MINNESOTA MDH DEPARTMENT OF HEALTH

minnesota cancer alliance
working together to eliminate the burden of cancer

American Cancer Society®

Contents

Acknowledgments

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This report would not have been able to provide information specific to the state without the Minnesota Cancer Surveillance System (MCSS) and the Minnesota Behavioral Risk Factor Surveillance System (BRFSS). We would like to thank the staff of MCSS, cancer registrars, and health care providers throughout the state whose hard work and diligence make cancer surveillance in Minnesota possible. We also thank the thousands of Minnesota residents who took time to participate in the BRFSS, and thereby helped provide us with an invaluable picture of health behaviors in our state.

To All Minnesotans and Cancer Advocates

October 2015

We are pleased to present *Minnesota Cancer Facts & Figures 2015*. The American Cancer Society, the Minnesota Department of Health, and the Minnesota Cancer Alliance have collaborated to produce this summary of cancer in our state. Along with other data sources, *Facts & Figures* provides an overview of cancer incidence and mortality in our state. Cancer patients, health care and public health professionals, policy makers, advocates, news organizations, and the public may find it useful when seeking detailed, easy-to-read information about cancer in Minnesota.

Minnesota has made significant progress in reducing the burden of cancer since 1988, when the state launched its cancer surveillance system. However, we are not reaching all Minnesotans who could benefit from the state's cancer control efforts. Disparities in cancer screening, incidence, and mortality require our continued attention and effort. As we plan new strategies we should consider how they could impact all Minnesotans. We need to customize our messages and strategies in ways that reach all of our residents, regardless of where they live, the income or education they have, or what language they speak at home. While youth smoking rates are down, we need to continue to track the growing use of e-cigarettes. While new laws are helping more Minnesotans learn about the risks associated with radon and tanning bed use, we must work to ensure that people act on this information.

An estimated 282,090 residents of the state are living with a history of cancer. Cancer survival is improving because new treatments are being developed, cancer patients participate in clinical trials to test these treatments, and physicians and other health care providers incorporate improved treatments into their practice. We are committed to ensuring that every Minnesotan diagnosed with cancer has access to the information and support they need throughout their cancer experience.

The Centers for Disease Control and Prevention and the American Cancer Society have joined the National Colorectal Cancer Roundtable's campaign to increase colon cancer screening to 80 percent among adults 50 and older by 2018. Recent Minnesota Roundtables have increased the statewide commitment to implement changes within the health care system that will help save lives by increasing colon cancer screening for all populations across our state.

We ask you to join our efforts to meet or even exceed this challenge, to reduce the burden of cancer for all Minnesotans, and to eliminate the disease as a cause of illness and death. We also encourage you to live a healthy life, volunteer with the American Cancer Society, join the Minnesota Cancer Alliance, support cancer research, and be an activist for cancer control.

Sincerely,

David Benson
EVP and Midwest Division
Operating Officer
American Cancer Society, Inc.

Edward P. Ehlinger, MD, MSPH
Commissioner
Minnesota Department of Health

Warren Larson
Chair
Minnesota Cancer Alliance

Important Resources for Cancer Advocates

Minnesota Public Health Data Access Portal

The Minnesota Public Health Data Access portal is an online system designed to provide the public with easy access to Minnesota data on over 20 health and environment topics. Cancer incidence data on the portal include interactive maps and charts with information that can be downloaded for use in spreadsheets, reports, and presentations. The portal, located at the Minnesota Department of Health (MDH) website at https://apps.health.state.mn.us/mndata, is available to the public. Users can view and search data for about 20 cancers using a data query system. The interactive maps provide county- or regional-level data for all cancer sites combined, as well as breast cancer, lung cancer, melanoma of the skin, mesothelioma, and non-Hodgkin lymphoma. New county health profiles provide a snapshot of data available by county, including information on population characteristics and cancer incidence. The portal is updated and maintained by the Minnesota Environmental Public Health Tracking Program at the MDH through a cooperative agreement with the CDC National Tracking Network.

Minnesota Cancer Alliance

The Minnesota Cancer Alliance is a coalition of organizations and individuals who came together more than a decade ago to address the burden of cancer in the state. By linking existing initiatives, leveraging resources, and forging new partnerships, Alliance members have discovered ways to make advances on multiple fronts. Their work has been guided by two five-year cancer plans that have provided a framework for action to keep partners moving in the same direction.

Like its 2005-2010 predecessor, *Cancer Plan Minnesota 2011-2016* is guided by five overarching goals – each accompanied by specific objectives and strategies for achieving them.

- Prevent cancer from occurring.
- Detect cancer at its earliest stages.
- Treat all cancer patients with the most appropriate and effective therapy.
- Optimize the quality of life of every person affected by cancer.
- Eliminate disparities in the burden of cancer.

The Alliance and its many partners and stakeholders know that these worthy goals can only be achieved through collaborative efforts that have a collective impact.

A Call to Action – www.mncanceralliance.org

Join the Alliance. There are many ways that you or your organization can help achieve the objectives set forth in *Cancer Plan Minnesota*. Most importantly, make sure you're a member of the Alliance. Visit www.mncanceralliance.org to find the application under the Membership tab on the homepage.

Participate in a network. Three networks – the Colon Cancer Network, the Minnesota Cancer Alliance Commission on Cancer Network, and the Cancer Health Equity Network – meet regularly to give members a forum for sharing ideas, coordinating activities, and shaping strategies that reduce the burden of cancer in our state.

Support a project initiative. The Alliance's steering committee works hard to identify where the organization can do the most good as a convener, motivator, and contributor to change. Recent initiatives have focused on licensure for genetic counselors, local efforts to reduce tobacco use, and strategies to increase colon cancer screening rates.

Acronyms/Abbreviations Used Frequently in This Report

BMI: Body mass index

BRFSS: Behavioral Risk Factor Surveillance System

CHSDA: Contract Health Services Delivery Area counties in Minnesota: Aitkin, Becker, Beltrami, Carlton, Cass, Chippewa, Clearwater, Cook, Goodhue, Houston, Hubbard, Itasca, Kanabec, Koochiching, Lake of the Woods, Mahnomen, Marshall, Mille Lacs, Norman, Pennington, Pine, Polk, Redwood, Renville, Roseau, St. Louis, Scott, Traverse, and Yellow Medicine

CDC: Centers for Disease Control and Prevention

MCSS: Minnesota Cancer Surveillance System of the Minnesota Department of Health

MDH: Minnesota Department of Health

NCI: National Cancer Institute

SEER Program: Surveillance, Epidemiology, and End Results Program of the National Cancer Institute

Frequently Asked Questions about Cancer

What is cancer?

Cancer is not a single disease. It is a group of diseases that share in common the uncontrolled growth and spread of abnormal cells. Cancer cells can form a mass, referred to as a tumor, which may compress, invade, and destroy normal tissue. If cells break away from the tumor, they can be carried by the lymph system or the bloodstream to other areas of the body. This spreading, or traveling, of the original tumor is called metastasis. In this new location, the cancerous cells continue to grow. If the spread is not controlled, it can result in death.

Cancer is classified by the part of the body in which it originates, by its appearance under the microscope, and by the results of laboratory tests. Since cancer is not a single disease, each type of cancer will vary in growth and pattern of spread, and will also respond differently to various types of treatment. This makes it very important to treat each cancer and each cancer patient individually.

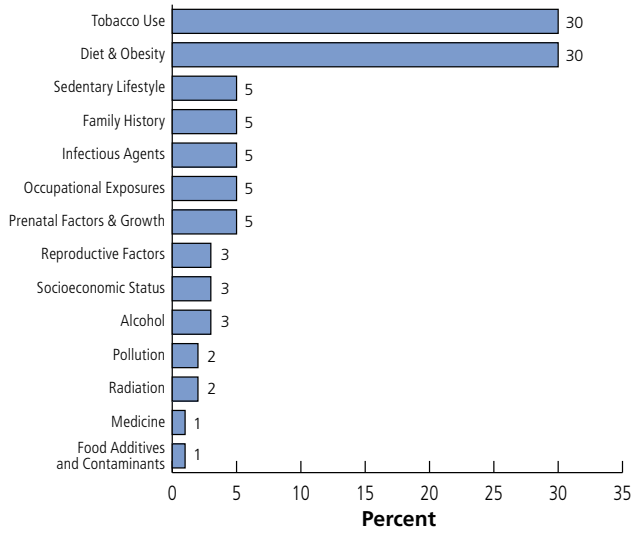
What causes cancer?

Although the cause of a cancer in an individual can only rarely be determined, scientists believe that the first step in developing the disease is damage to a cell. This damage can either directly lead to uncontrolled growth, or more commonly, is part of a sequence of events that ultimately prevents cell repair and growth from functioning normally. The cell can be damaged or inhibited from repairing damage by external or internal factors. Some examples of external factors are tobacco, chemicals, sunlight and other forms of radiation, viruses, and bacteria. Internal factors include hormone levels, inherited conditions, immune function, and mutations that occur from metabolism. Causal factors may act together or in sequence to initiate or promote cancer. Ten or more years often pass between exposure or mutations and detectable cancer.

Who is at risk?

Anyone. Even people who do everything right can develop cancer. Based on current statistics for the state, about half of Minnesotans will have a potentially serious cancer diagnosis during their lifetime, and about 25 percent will die from one of these diseases. Cancer risk increases with age. Approximately 55 percent of cancers in Minnesota are diagnosed among persons age 65 and older, and more than 75 percent of cancer deaths are in this age group. The risk of developing cancer is about 15 percent higher among men than women, although this varies considerably from site to site.

Causes of Cancer Deaths in the US



Source: Harvard Report on Cancer Prevention, 1996.

Leading Sites of New Cancer Cases and Deaths among Males, Minnesota, 2012

	Cases	Deaths
Prostate	24.3%	9.5%
Lung and Bronchus	12.0%	24.8%
Colon and Rectum	8.3%	8.2%
Urinary Bladder	7.3%	3.4%
Melanoma of the Skin	6.6%	**
Non-Hodgkin Lymphoma	5.3%	4.7%
Leukemia	4.6%	5.5%
Kidney and Renal Pelvis	4.4%	**
Oral Cavity and Pharynx	3.4%	**
Pancreas	2.9%	6.4%
Liver and Intrahepatic Bile Duct	~	4.5%
Esophagus	~	4.4%
Brain and Other Nervous System	~	3.4%
All Others	20.8%	25.2%
All Sites Combined	100.0%	100.0%

~ Not one of the 10 most commonly diagnosed cancers among males. ** Not one of the 10 most common sites of cancer death among males.

Source: MCSS (Feb 2015) and Minnesota Center for Health Statistics.

Leading Sites of New Cancer Cases and Deaths among Females, Minnesota, 2012

	Cases	Deaths
Breast	29.7%	13.5%
Lung and Bronchus	11.9%	24.6%
Colon and Rectum	8.2%	8.7%
Corpus and Uterus, NOS	7.1%	3.2%
Melanoma of the Skin	5.7%	**
Non-Hodgkin Lymphoma	4.5%	4.4%
Thyroid	4.1%	**
Leukemia	2.7%	3.7%
Ovary	2.6%	5.4%
Pancreas	2.5%	6.3%
Liver and Intrahepatic Bile Duct	~	2.6%
Kidney and Renal Pelvis	~	1.9%
All Others	21.0%	25.7%
All Sites Combined	100.0%	100.0%

~ Not one of the 10 most commonly diagnosed cancers among females.
** Not one of the 10 most common sites of cancer death among females.
Source: MCSS (Feb 2015) and Minnesota Center for Health Statistics.

Can cancer be prevented?

Tobacco use is responsible for about 30 percent of cancer deaths. If no one used tobacco products, nearly one out of three cancer deaths would be prevented. More and more evidence indicates that poor diet, lack of exercise, and obesity also increase the risk for the disease. It is estimated that a third of deaths from cancer could be prevented if we maintained a healthy weight, ate a healthy diet, and exercised regularly.

Being vaccinated for hepatitis B virus (HBV) and being tested and treated for HBV may prevent many liver cancers. Being treated for *Helicobacter pylori* infections of the stomach can help prevent some stomach cancers. Avoiding exposure to the human papilloma virus (HPV) and the human immunodeficiency virus, both of which are sexually transmitted, can also help eliminate some cervical and other cancers. A vaccine to prevent infection with HPV has been available since 2006, but will not prevent infection with all cancer-causing strains of HPV or eliminate current infections.

Early detection and removal of precancerous growths can help prevent colon and rectum and cervical cancers. If everyone had access to and followed screening recommendations, it could help prevent most of these cancers.

What is meant by "stage at diagnosis"?

Stage at diagnosis describes the extent to which the cancer has spread from the site in which it originated at the time it is discovered. For most cancers, it is one of the best predictors of survival. A number of different staging systems are used to classify tumors. It can be confusing, because some systems use numbers (I, II, etc), some use terms (in situ, localized, etc), and some are only used for specific types of cancers. Some cancers, especially those originating in the blood and the immune system, are not typically staged. Definitions of terms related to stage at diagnosis used in this report are provided in the Glossary on page 46.

Why is the mortality rate a better measure of the effectiveness of screening than the survival rate?

Identifying a cancer through screening before there are any symptoms of disease (that is, during the preclinical stage of tumor development) only benefits a patient if treatment is more effective when begun during the preclinical stage than later on. While it seems, intuitively, that this would always be the case, it hasn't proven to be true for all potential screening methods. In some cases, this occurs because certain tumors, if left undiagnosed, would grow so slowly that they would never become life-threatening, and the person would die of another cause. In other cases, this occurs because treatment is equally effective, or ineffective, whether the tumor is discovered during the preclinical phase or early in the clinical stage. When either of these situations exists, cancers can be diagnosed at an earlier date without actually extending life – a patient would live to the same age with or without screening, but with screening, they would simply have known about the cancer for a longer period of time, called lead time bias.

Survival rates measure the proportion of people with cancer who are alive a certain length of time, usually five years, after diagnosis. Because of lead time bias, five-year survival rates can appear to be higher in a group of people who are screened than in a comparable group who haven't been screened, simply because they found out about their cancer earlier. If increases in survival are meaningful, and not biased by lead time, screened cancer patients will live to an older age, and mortality will be lower than in an unscreened group. Since lead time cannot be measured directly, a decrease in the mortality rate, rather than an increase in the survival rate, is considered the best measure of the effectiveness of a screening method.

Can cancer be cured?

The answer to this question depends very much on the type of cancer and whether it is detected early. The five-year relative survival rate for many common cancers (cancers of the breast, prostate, colon and rectum, cervix, uterus, bladder, and testis, and melanoma of the skin) is greater than 90 percent if found before the cancer has metastasized. Following guidelines for cancer screening increases the likelihood of finding cancer early, and therefore, of survival. Based on data from the Surveillance, Epidemiology, and End Results (SEER) Program, the five-year relative survival rate for cancers diagnosed between 2005 and 2011 was 68 percent.

Cancer in Minnesota

Overview

Cancer is very common. In 2012, 27,310 Minnesotans were diagnosed with a potentially serious cancer, and 9,434 Minnesotans had cancer listed as the underlying cause of death on their death certificate.

The overall cancer mortality rate in Minnesota has declined significantly since cancer registration was implemented in 1988. The overall cancer mortality rate declined gradually by an average of 0.5 percent each year from 1988 to 2000 and then began decreasing more rapidly by 1.4 percent per year from 2000 to 2012. The overall cancer mortality rate in Minnesota was 22 percent lower in 2012 than it was 24 years ago in 1988.

This progress reflects significant declines in mortality among both men and women for four of the five leading causes of cancer death: lung and bronchus, colon and rectum, female breast, and prostate. These four cancers account for 45% of all cancer deaths in the state and therefore have a large impact on the trend in overall cancer mortality. Among the 20 most common cancers, only cancers of the liver and esophagus were significantly increasing in Minnesota at the end of the 24-year period 1988-2012.

Estimated New Cancer Cases and Cancer Deaths in Minnesota, 2015*

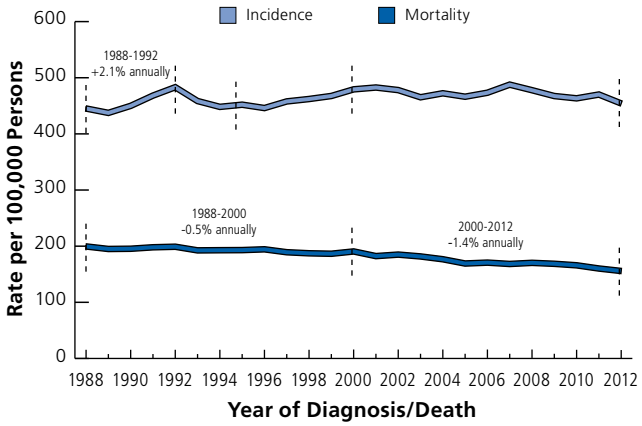
Cause	New Cases	Deaths
All Sites	**29,730**	**9,820**
Brain and Other Nervous System	~	270
Female Breast	3,900	620
Cervix	130	~
Colon and Rectum	2,140	760
Corpus Uteri (Uterus)	990	~
Leukemia	1,120	490
Liver	~	370
Lung and Bronchus	3,250	2,450
Melanoma of the Skin	1,190	~
Non-Hodgkin Lymphoma	1,330	300
Ovary	~	240
Pancreas	~	660
Prostate	3,730	510
Urinary Bladder	1,270	~

*Rounded to the nearest 10. Excludes basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. ~Estimate not published by the American Cancer Society. Note: Estimated new cases are based on 1995-2011 incidence rates reported by the North American Association of Central Cancer Registries (NAACCR). Estimated deaths are based on data from US Mortality Data, 1997 to 2011, National Center for Health Statistics, Centers for Disease Control and Prevention.

Source: American Cancer Society. *Cancer Facts & Figures 2015.*Atlanta: American Cancer Society; 2015

The overall cancer incidence rate in Minnesota increased by an average of 0.3 percent per year from 1988 through 2007, but stabilized starting in 2007. The trends among males and females for all cancer sites combined were not the same; over the past 10 years (2003-2012), the incidence rate among males significantly decreased by 1.3 percent per year on average, while the rate among females increased significantly by 0.5 percent

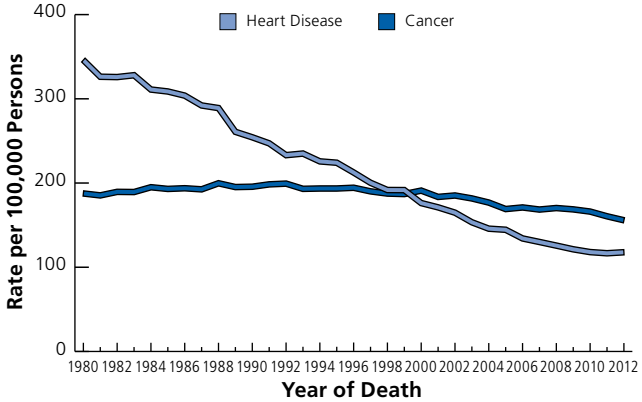
Overall Cancer Trends in Minnesota, 1988-2012



Rates are age-adjusted to the 2000 US population. A hashed bar indicates where the trend significantly changed direction. Only statistically significant trends between hashed bars are shown.

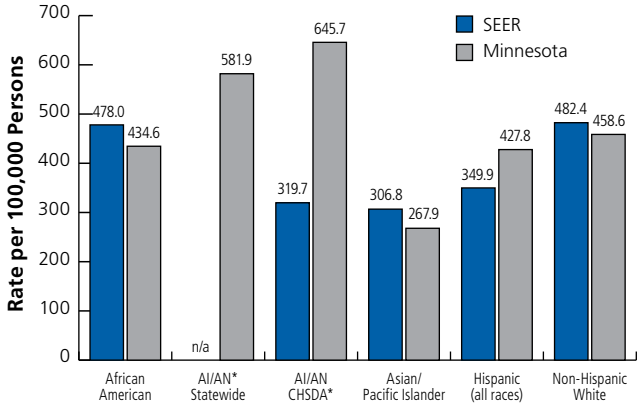
Source: MCSS (Feb 2015) and the Minnesota Center for Health Statistics.

Deaths Due to Heart Disease and Cancer, Minnesota, 1980-2012



Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality – All COD, Aggregated With State, Total U.S. (1969-2012) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, Surveillance Systems Branch, released July 2014. Underlying mortality data provided by NCHS (www.cdc.gov/nchs). Rates were calculated by MCSS and are age-adjusted to the 2000 U.S. population.

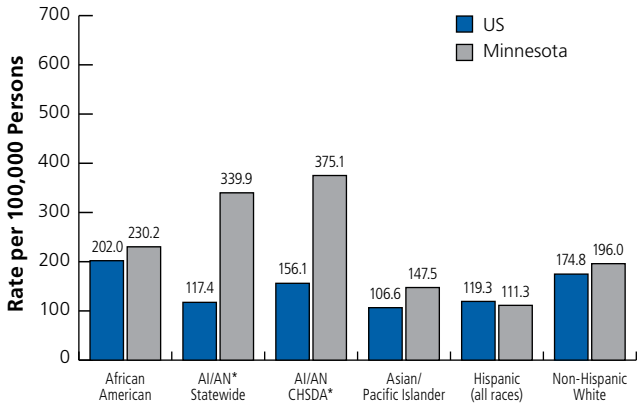
Cancer Incidence by Race/Ethnicity, Minnesota and SEER, 2008-2012



* AI/AN=American Indian/Alaska Native; CHSDA=Contract Health Service Delivery Area; n/a=not available, not published in SEER CSR. Rates are age-adjusted to the 2000 US population. SEER incidence data are from the SEER 18 Areas; rates for Hispanics and non-Hispanic whites exclude cases from the Alaska Native Registry.

Source: MCSS (Feb 2015) and *SEER Cancer Statistics Review, 1975-2012.*

Cancer Mortality by Race/Ethnicity, Minnesota and the US, 2008-2012



* AI/AN=American Indian/Alaska Native; CHSDA=Contract Health Service Delivery Area. Rates are age-adjusted to the 2000 US population. Mortality data are for the entire US; rates for Hispanics and non-Hispanic whites exclude deaths from New Hampshire and Oklahoma.

Source: Minnesota Center for Health Statistics and *SEER Cancer Statistics Review, 1975-2012.*

per year. The overall cancer incidence rate in Minnesota among males was 7 percent lower in 2012 than in 1988, and among females was 1.1 percent higher in 2012 compared to 1988.

Incidence rates are increasing rapidly for thyroid cancer (5.5% per year since 1995), melanoma of the skin (5.3% per year on average over the past 10 years), and liver cancer (4.0% per year since 1988); the rate for each of these cancers has doubled since 1988. Despite these marked increases in incidence, the mortality rate is not increasing for thyroid cancer or melanoma of the skin, but liver cancer mortality is increasing by 3.0% per year. Increasing incidence rates for these and a number of other sites are partially balanced by significant decreases in incidence for colorectal, stomach, and laryngeal cancers for both genders, cervical, and ovarian cancers among females, and among males, lung and oral cancers.

Nearly half of all Minnesotans will be diagnosed with a potentially serious cancer. An estimated 50 percent of men and 42 percent of women in Minnesota will be diagnosed with a potentially serious cancer during their lifetimes. The lifetime risk of developing cancer is somewhat higher in Minnesota than in the white population in the 18 geographic areas participating in the SEER Program (42% for males and 38% for females) despite similar cancer rates because heart disease mortality rates are extremely low and life expectancy is higher in Minnesota, and therefore, more people live to develop cancer.

Cancer became the leading cause of death in Minnesota in 2000. In 2012, 26 percent more Minnesotans died from cancer (9,434 deaths) than from the second leading cause of death, heart disease (7,472 deaths). Cancer became the leading cause of death in Minnesota in part because the heart disease mortality rate decreased much more rapidly and began decreasing earlier than cancer mortality.

While national trends for heart disease and cancer mortality are similar to those in Minnesota, the crossover between cancer and heart disease mortality occurred earlier in Minnesota than in other states primarily because Minnesota consistently has one of the lowest rates of heart disease mortality in the nation, more than 30 percent lower than the national average, while the cancer mortality rate is only slightly lower.

The overall cancer incidence rate in Minnesota is similar to what is reported for the nation. Over the five-year period 2008-2012, the overall cancer incidence rate in Minnesota (471.6 new cases per 100,000 persons) was about 2 percent lower than among the non-Hispanic white population in the SEER 18 areas (482.4).

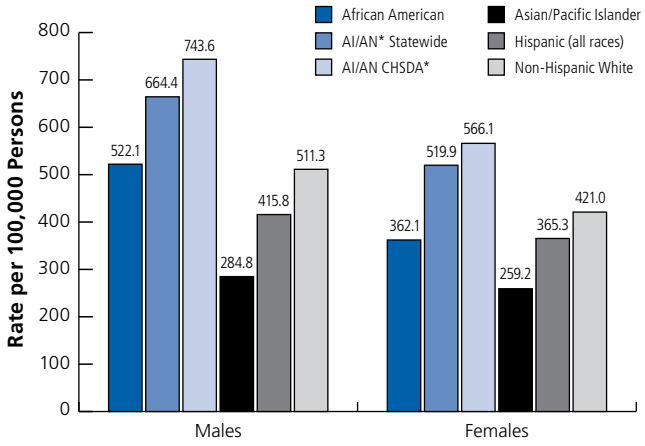
The overall cancer mortality rate in Minnesota is somewhat lower than for the nation. Over the five-year period 2008-2012, the overall cancer mortality rate in Minnesota (164.0 cancer deaths per 100,000 persons) was 6 percent lower than for non-Hispanic whites in the US (174.8).

Cancer Disparities in Minnesota

The risk of being diagnosed with and dying from cancer varies by race and ethnicity and, for some cancers, populations of color experience an excess burden. This is true nationwide, as well as in Minnesota.

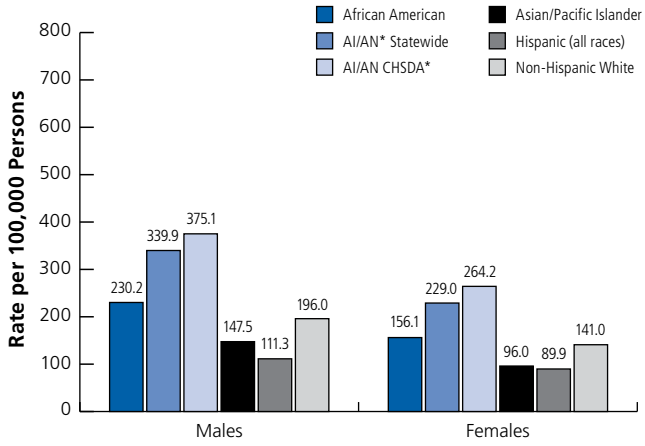
Measuring race/ethnic differences in cancer risk in Minnesota is limited by incomplete and potentially inaccurate reporting of race and ethnicity on the medical record and death certificate, uncertain accuracy of population estimates, and the relatively

Cancer Incidence by Race/Ethnicity and Gender, Minnesota, 2008-2012



* AI/AN=American Indian/Alaska Native; CHSDA=Contract Health Service Delivery Area. Rates are age-adjusted to the 2000 US population.
Source: MCSS (Feb 2015).

Cancer Mortality by Race/Ethnicity and Gender, Minnesota, 2008-2012



* AI/AN=American Indian/Alaska Native; CHSDA=Contract Health Service Delivery Area. Rates are age-adjusted to the 2000 US population.
Source: Minnesota Center for Health Statistics.

small size of populations of color in our state. This report presents American Indian cancer rates for two geographic areas in Minnesota: statewide, and for residents of the 29 counties that are part of the Indian Health Service's Contract Health Services Delivery Area (CHSDA). About half of the American Indian population in the state lives in a CHSDA county, and is included in the American Indian statewide rates. Cancer rates calculated for the CHSDA counties are thought to provide a more accurate picture of cancer rates among American Indians.

African Americans

Over the five-year period 2008-2012, African American men had the third-highest overall cancer incidence rate among males in Minnesota, only 2 percent higher than among non-Hispanic white men. Compared to men from other race/ethnic groups, African Americans had the highest incidence rate for cancers of the prostate (27% higher than among non-Hispanic white men), pancreas (55% higher), larynx (72% higher), and myeloma (33% higher). African American men had the third-highest overall cancer mortality rate among males, 17 percent higher than among non-Hispanic white men.

Over the same period, African American women had the fifth-highest overall cancer incidence rate among women; it was 14 percent lower than among non-Hispanic white women. Compared to women from other race/ethnic groups, African Americans had the highest incidence rate for cancers of the liver (249% higher than among non-Hispanic white women), pancreas (29% higher), esophagus (188% higher), and myeloma (171% higher). African American women had the third-highest overall cancer mortality rate among females, 11 percent higher than among non-Hispanic white women.

The overall cancer incidence rate among African Americans in Minnesota is 9 percent lower than in the SEER 18 areas. The overall cancer mortality rate among African Americans is 14 percent higher in Minnesota than in the US as a whole.

American Indians

Overall cancer incidence and mortality rates are approximately 10 percent higher for American Indians in CHSDA counties compared to American Indians statewide, but this varied somewhat by cancer site. Cancer rates calculated for the CHSDA counties are thought to be more accurate.

Over the five-year period 2008-2012, American Indian men and women living in the CHSDA counties had the highest overall cancer sex-specific incidence rates and the highest overall sex-specific cancer mortality rates in Minnesota compared to other race/ethnic groups; American Indian men and women statewide had the second-highest sex-specific incidence and mortality rates.

The cancer incidence rate among American Indian men living in CHSDA counties in Minnesota was 45 percent higher (30% higher statewide) than for non-Hispanic white men, while their mortality rate was 50 percent higher (35% higher statewide). With the exceptions listed for other race/ethnic groups, American Indian men had the first- and second-highest incidence rates for each cancer site, compared to men from other race/ethnic groups.

The cancer incidence rate among American Indian women living in CHSDA counties in Minnesota was 90 percent higher (75% higher statewide) than for non-Hispanic white women, while their mortality rate was 85 percent higher (60% higher state-

wide). With the exceptions listed for other race/ethnic groups, American Indian women had the first- and second-highest incidence rate for each cancer site compared to women from other race/ethnic groups.

Cancer rates among American Indians in Minnesota are two or more times higher than for the nation as a whole. However, there is evidence that an elevated risk for cancer is found in the Northern Plains tribes in general, and is probably not limited to Minnesota.

Asian/Pacific Islanders

Over the five-year period 2008-2012, Asian/Pacific Islanders had the lowest overall cancer incidence rate in Minnesota, while their cancer mortality rate was somewhat higher than among Hispanics, who had the lowest mortality rate. The overall cancer incidence rate among Asian/Pacific Islander men in Minnesota was 45 percent lower than among non-Hispanic white men, and their mortality rate was 25 percent lower. Similarly, the overall cancer incidence rate among Asian/Pacific Islander women in Minnesota was 38 percent lower than among non-Hispanic white women, and their mortality rate was 32 percent lower.

Asian/Pacific Islanders had the lowest rates for most cancers. Exceptions were cancers of the liver (four times higher than among non-Hispanic whites) and stomach (two times higher than among non-Hispanic whites), and thyroid and cervical cancer among Asian/Pacific Islander women.

Overall cancer incidence among Asian/Pacific Islanders was 12 percent lower in Minnesota than in the SEER 18 areas, while their cancer mortality rate was 9 percent higher than among Asian/Pacific Islanders in the US as a whole.

Hispanics (All Races)

Over the five-year period 2008-2012, Hispanics had the second-lowest overall cancer incidence rate in Minnesota, and the lowest cancer mortality rate. The overall cancer incidence rate among Hispanic men in Minnesota was 19 percent lower than among non-Hispanic white men, and their mortality rate was 43 percent lower. The overall cancer incidence rate among Hispanic women in Minnesota was 13 percent lower than among non-Hispanic white women, and their mortality rate was 36 percent lower.

Although Hispanics had among the lowest rates for most cancers, Hispanic men had the highest rates of cancer of the esophagus, and Hispanic women had the highest rates of leukemia and cancer of the uterus.

Overall cancer incidence among Hispanics was 22 percent higher in Minnesota than in the SEER 18 areas, and their cancer mortality rate was 7 percent lower than Hispanics in the US as a whole.

Non-Hispanic Whites

Among males, non-Hispanic whites had the fourth-highest overall cancer incidence rate over the five-year period 2008-2012, and the fourth highest cancer mortality rate. Among women, non-Hispanic whites had the third-highest overall cancer incidence rate, and the fourth- highest overall cancer mortality rate. Non-Hispanic whites had the highest rates of melanoma of the skin and female breast cancer, and the lowest rates of cancers of the liver, stomach, and cervix.

Much remains to be learned about the causes of race/ethnic differences in cancer incidence and mortality, and the relative importance of cultural, social, economic, and genetic differences is controversial. However, until all Minnesotans have equal access to quality health care, it is likely that disparities will persist.

Lung and Bronchus Cancer in Minnesota

Approximately 85-90 percent of lung cancers are caused by cigarette smoking, and this disease kills more people than any other cancer. Due to the sustained efforts of local and national organizations, health care systems, state and federal policy makers, public health leaders, and countless individuals, the number of Americans who use tobacco has sharply declined over the past five decades. Lung cancer mortality rates among men started declining around 1990, and the rate of decline accelerated in 2005. For the first time, lung cancer mortality among women in Minnesota showed a decline starting in 2002.

However, due to the highly toxic nature of tobacco smoke and the long period of time between exposure and symptomatic disease, as many Minnesotans still die from lung and bronchus cancer as from the next four leading causes of cancer death combined: breast, prostate, colon and rectum, and pancreas. Tobacco use also increases the risk of developing cancers of the nasal passages, mouth, throat, esophagus, stomach, liver, pancreas, kidney, bladder, and cervix, and some forms of leukemia. When heart disease and other types of lung disease caused by tobacco are considered, the CDC estimates that smoking reduces life expectancy by 13.2 years for men and 14.5 years for women. Given that current life expectancy in the US is about 79 years, this means that smoking can basically eliminate your retirement years.

The second-leading cause of lung cancer is exposure to radon. Radon is a radioactive gas that is emitted naturally from rocks and soils containing uranium. Radon can enter homes from the surrounding soil through cracks, joints, and gaps in construction, and without adequate ventilation, can reach rather high levels. When inhaled, particles called radon progeny can damage the lungs and increase the risk of developing lung cancer.

The EPA estimated in 2008 that of the 160,000 lung cancer deaths in the US, 21,000 (13%) were associated with exposure to radon. About 2,900 of these radon-related deaths occurred among people who had never smoked.

The amount of radon in the environment depends in large part on geology and other characteristics of the soil. Radon levels vary widely throughout the US. The upper Midwest has geological formations that can yield higher than average radon levels. The MDH estimates that one in three Minnesota homes has enough radon to pose a significant risk to the occupants' health over many years of exposure. The risk of lung cancer among persons exposed to radon is many times higher for smokers than nonsmokers. The EPA estimates that a lifetime exposure to 4 pCi/L (picocuries per liter) of radon will cause seven lung cancers among 1,000 nonsmokers, but 62 lung cancers among the same number of smokers.

The MDH recommends that all homes and schools in Minnesota be tested for radon every 2-5 years. Testing can be done with a radon test kit available from city and county health departments, many hardware stores, or directly from radon testing laboratories. Remediation is recommended if test results show radon levels above 4 pCi/L. You can obtain more information on radon and options for testing your home from the MDH Indoor Air Unit at www.health.state.mn.us/radon or by calling 651-201-4601 or their toll-free number, 1-800-798-9050, to request the brochure *Radon: Keeping Your Home Safe*.

As of January 1, 2014, the Minnesota Radon Awareness Act requires that people selling their home provide information on radon to potential homebuyers. The seller must provide information on the risk of radon in homes prepared by the Minnesota Department of Health and disclose the results of any radon testing and radon mitigation in the home. The law does not require radon testing or mitigation. However, the MDH strongly recommends that all homebuyers have an indoor radon test performed prior to purchase or taking occupancy, and recommends having the radon levels mitigated if elevated radon concentrations are found.

The third-leading cause of lung cancer is secondhand smoke, estimated to cause 7,000 lung cancer deaths among nonsmokers in 2015 in the US. Breathing in the tobacco smoke of others is also estimated to be responsible for 42,000 deaths in 2015 from heart disease, and to increase the risk among children for low birthweight, sudden infant death syndrome, and asthma. The Minnesota legislature passed the Freedom to Breathe (FTB) provisions in 2007. This expansion of the Minnesota Clean Indoor Air Act went into effect on October 1, 2007. It prohibits smoking in virtually all public indoor places and indoor places of employment. Going "smoke free" in public places is a big step forward in cancer control in our state. Visit www.health.state.mn.us/freedomtobreathe for more information from MDH.

Risk Factors for Lung Cancer

- Tobacco smoking, even low-tar cigarettes
- Breathing in radon, a radioactive gas produced by uranium and present in some homes, especially among smokers
- Breathing in secondhand smoke, whether in the home or workplace
- Exposure to asbestos fibers, especially among smokers
- Occupational exposures to diesel exhaust, gasoline, some organic chemicals, radioactive ores, and dust from chromium, cadmium, and arsenic
- Chronic inflammation of the lungs due to pneumonia, tuberculosis, silicosis, or berylliosis
- Air pollution

The Burden of Lung Cancer in Minnesota

In 2012, 3,271 Minnesotans were diagnosed with lung and bronchus cancer. It was the second-most commonly diagnosed cancer among both men and women. About 69 percent of Minnesotans diagnosed with lung cancer between 2008 and 2012 were 65 years of age or older. The age-adjusted incidence rate for lung cancer in Minnesota in 2012 was 60.7 new cases per 100,000 men per year and 50.3 new cases per 100,000 women. These rates may be underestimated because MCSS only collects information on lung cancers that are microscopically confirmed. In the SEER 18 areas, about 11 percent of lung cancers diagnosed between 2007 and 2011 were not microscopically confirmed.

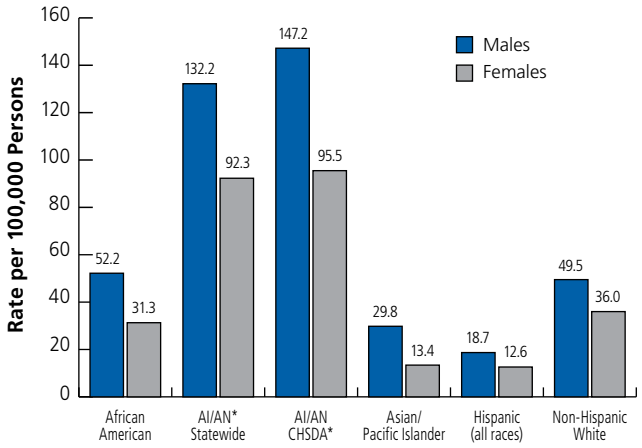
In 2012, 2,332 Minnesotans died of lung cancer. It was the leading cause of cancer death for both men and women, and killed almost as many Minnesotans as prostate, breast, colon and rectum, and pancreas cancer combined. About 74 percent of deaths due to lung cancer between 2008 and 2012 occurred among Minnesotans 65 years of age or older. The age-adjusted mortality rate for lung and bronchus cancer in Minnesota in 2012 was 46.1 deaths per 100,000 men per year and 34.0 deaths per 100,000 women. These rates are based on the underlying cause of death

Five-year Relative Survival from Lung and Bronchus Cancer in the US

Stage	Whites	Blacks
Localized	55.3%	47.3%
Regional	27.5%	24.3%
Distant	4.0%	4.1%
All Stages	17.7%	14.3%

Based on cases diagnosed in 2005-2011 with follow-up into 2012.
Source: *SEER Cancer Statistics Review, 1975-2012.*

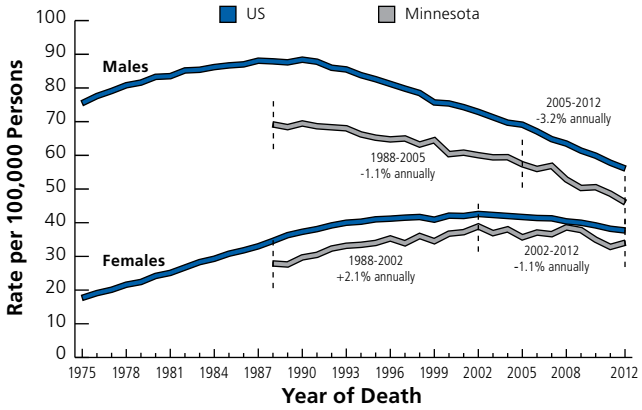
Lung and Bronchus Cancer Mortality by Race/Ethnicity and Gender, Minnesota, 2008-2012



* AI/AN=American Indian/Alaska Native; CHSDA=Contract Health Service Delivery Area. Rates are age-adjusted to the 2000 US population.

Source: Minnesota Center for Health Statistics.

Lung Cancer Mortality Trends by Gender in Minnesota and the US



Rates are age-adjusted to the 2000 US population. National mortality is for the US white population. The results of Joinpoint trend analyses are only shown for Minnesota. A hashed bar indicates where the trend significantly changed direction. Only statistically significant trends between hashed bars are shown.

Source: Minnesota Center for Health Statistics and *SEER Cancer Statistics Review, 1975-2012*.

on the death certificate, whether or not the cancer was microscopically confirmed, and are therefore comparable to mortality rates reported for the US.

Based on data from the SEER Program, the five-year relative survival rate for lung cancer is 18 percent, compared to 66 percent for colon and rectum cancer. Even when diagnosed at the same stage, lung cancer patients have a poorer chance of survival than persons diagnosed with many of the other most common cancers.

Disparities in Lung Cancer

American Indian men and women living in the CHSDA counties have the highest lung cancer mortality rates in Minnesota, and American Indian men and women statewide have the second-highest rates. Their risk of dying of this disease is two to three times higher than among non-Hispanic whites of the same gender. African American men and women have similar lung cancer mortality rates as non-Hispanic whites of the same gender, while Asian/Pacific Islanders and Hispanics have the lowest rates.

Trends in Lung Cancer

Lung cancer mortality rates are now declining among both men and women in our state. Lung cancer trends have been different for men and women, both nationwide and in Minnesota. Among men, lung cancer mortality in Minnesota has been declining steadily and significantly since 1988, and the rate of decline accelerated starting in 2005. Between 1988 and 2012, the lung cancer mortality rate decreased by 33 percent among Minnesota men.

In contrast, lung cancer mortality increased by 40 percent among women in Minnesota from 1988 to 2002, and then began to decline significantly. Between 2002 and 2012, the lung cancer mortality rate decreased by 12 percent among Minnesota women, but is still 20 percent higher than in 1988.

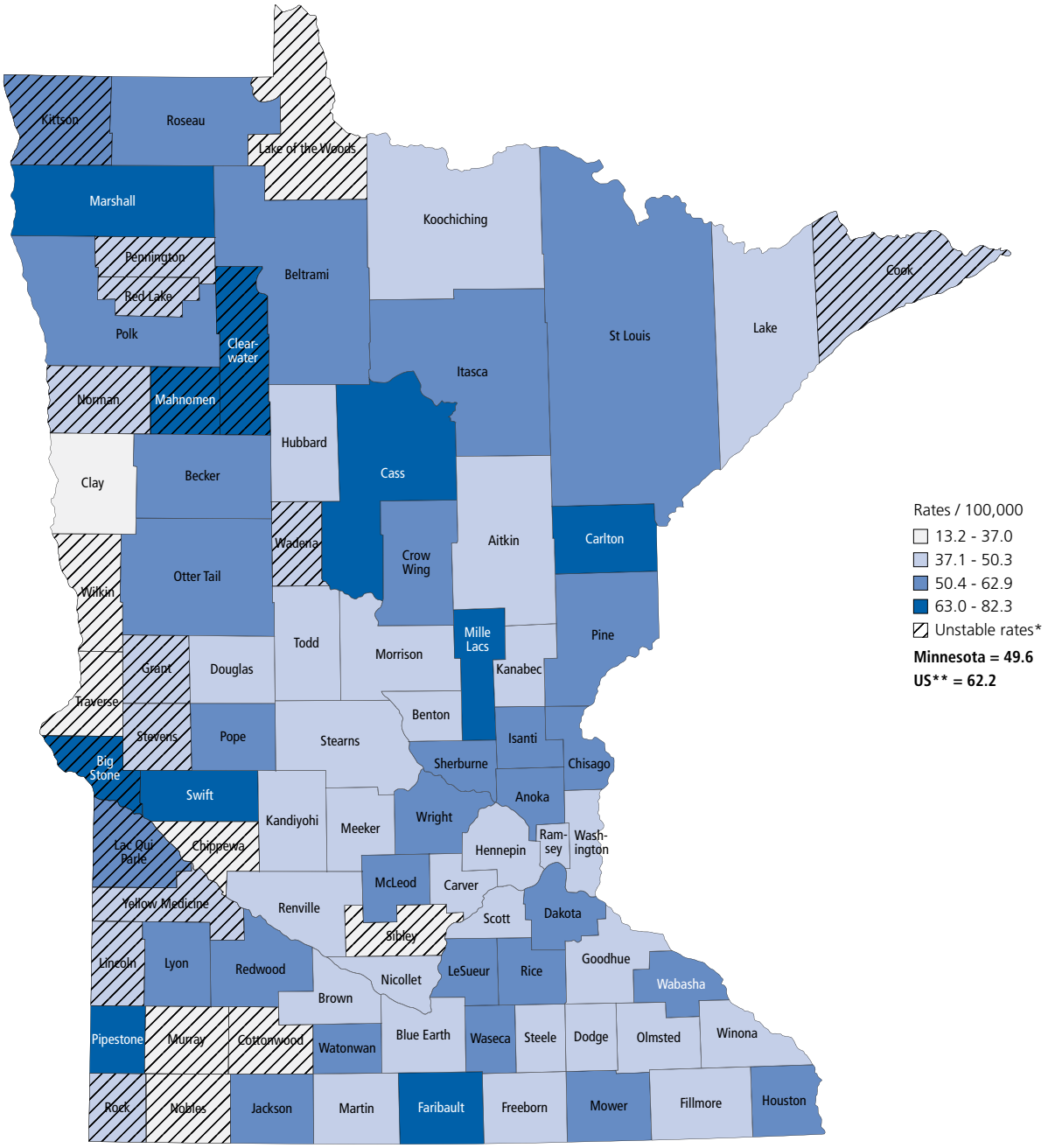
Geographic Differences in Lung Cancer Mortality

Among men: During 2008-2012, the lung cancer mortality rate among men was 20 percent lower in Minnesota than among non-Hispanic white men in the US as a whole. Lung cancer mortality among males was considerably lower in Minnesota than nationwide for each race/ethnic group except American Indians. Lung cancer mortality among American Indian men was three times higher in Minnesota than in the US as a whole.

Among women: During 2008-2012, the lung cancer mortality rate among women was 13 percent lower in Minnesota than among non-Hispanic white women in the US as a whole. As with males, lung cancer mortality among females was considerably lower in Minnesota than nationwide for each race/ethnic except American Indians. Lung cancer mortality among American Indian women was three times higher in Minnesota than in the US.

The average number of lung cancer cases and deaths each year between 2008 and 2012 in Minnesota counties is shown in the Summary Tables.

Lung Cancer Mortality Rates among Males in Minnesota Counties, 2008-2012



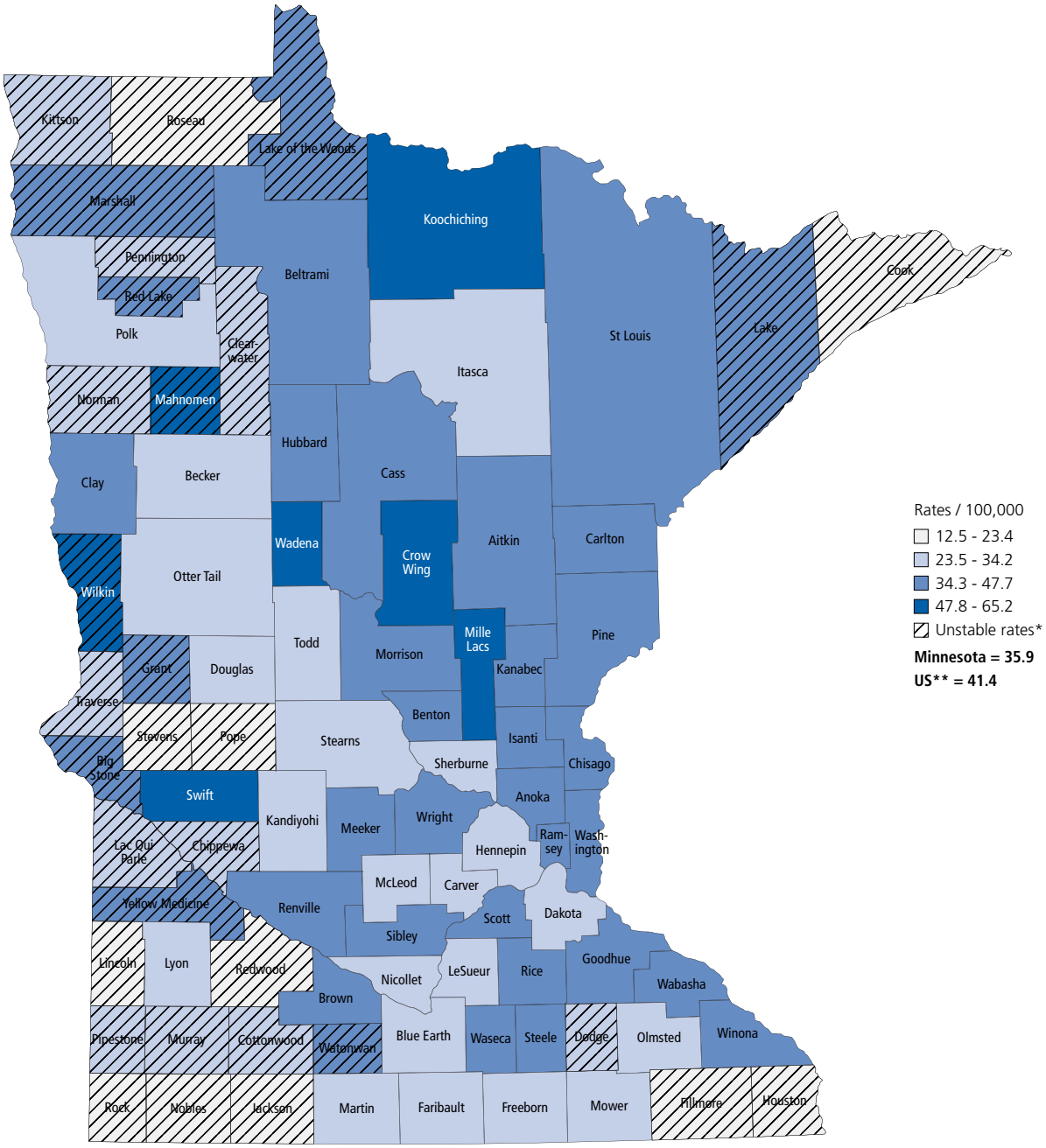
* Rates based on counts < 20 or relative standard error > 30%. **Non-Hispanic whites in the US. Rates are per 100,000 persons, age-adjusted to the 2000 US population. Categories were determined using the Jenks natural breaks classification method.

Source: Minnesota Center for Health Statistics (Feb 2015).

Lung Cancer Screening

In November 2010, the National Lung Screening Trial reported a 16 percent reduction in lung cancer mortality among heavy smokers ages 55 to 74 in good health who were screened with low-dose spiral CT scanning. In 2013, the US Preventive Services Task Force recommended annual screening for lung cancer with low-dose computed tomography (LDCT) in adults ages 55 to 80 who had a 30 pack-year smoking history and currently smoke or have quit within the past 15 years. The American Cancer Society has adopted similar recommendations.

Lung Cancer Mortality Rates among Females in Minnesota Counties, 2008-2012



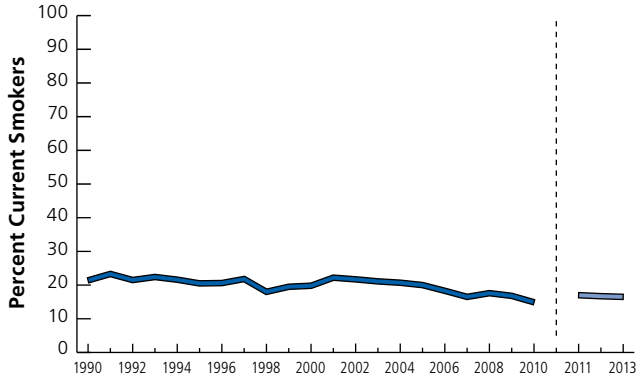
* Rates based on counts < 20 or relative standard error > 30%. **Non-Hispanic whites in the US. Rates are per 100,000 persons, age-adjusted to the 2000 US population. Categories were determined using the Jenks natural breaks classification method.

Source: Minnesota Center for Health Statistics (Feb 2015).

Cigarette Smoking

Considerably lower lung cancer rates in Minnesota than nationwide indicate that two or three decades ago, cigarette smoking was much less common in Minnesota than in the US as a whole, but state-specific smoking rates prior to 1984 are not available to confirm this. Data from the BRFSS indicate that smoking rates in our state have been somewhat lower than in the US as a whole for the past two decades. The smoking prevalence rate among adults in Minnesota decreased slowly but steadily from 21.4 percent in 1990 to 14.9 percent in 2010. To improve the accuracy and representativeness of BRFSS data, the CDC adopted new weighting and sampling methods in 2011. Data collected prior to 2011 are not comparable to more recent data.

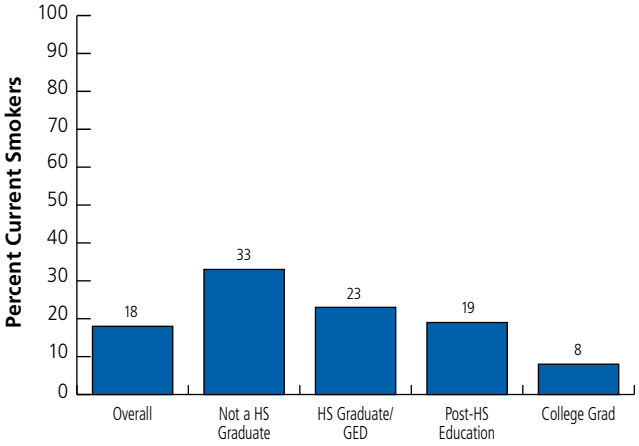
Trends in Adult Smoking, Minnesota, 1990-2010 and 2011-2013



A current smoker is defined as an individual who reports having smoked at least 100 cigarettes in their lifetime and who currently smokes some days or every day. Data for 2011-2013 cannot be compared to prior years because of changes in the design of the survey. See Data Sources for more detail.

Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

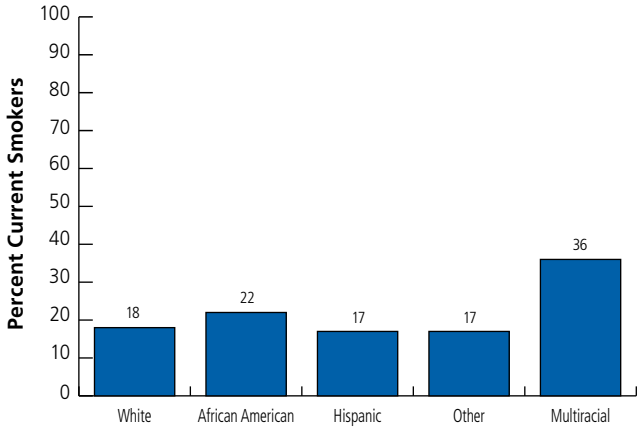
Adult Smoking by Education, Minnesota, 2013



A current smoker is defined as an individual who reports having smoked at least 100 cigarettes in their lifetime and who currently smokes some days or every day. HS is high school; GED is General Education Development test (high school equivalency exam).

Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

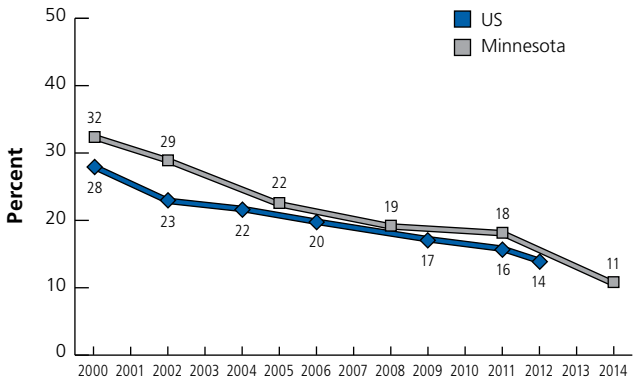
Adult Smoking by Race/Ethnicity, Minnesota, 2013



A current smoker is defined as an individual who reports having smoked at least 100 cigarettes in their lifetime and who currently smokes some days or every day.

Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

Percent of High School Students Smoking Cigarettes in the Past 30 Days, Minnesota and the US



Source: Minnesota Youth Tobacco Survey, 2000-2014 and National Youth Tobacco Survey, 2000-2012.

Using the race/ethnicity categories provided on the CDC website, smoking prevalence in 2013 did not vary significantly by race/ethnicity in Minnesota. However, the number of participants among those other than the white population was limited (African American, 104; Hispanic, 47; Other, 93; Multiracial, 29).

Cigarette smoking is strongly associated with education: among Minnesotans who do not have a high school degree, 33 percent currently smoke, compared to 23 percent of high school graduates, 19 percent of those with some post-secondary education, and 8 percent of college graduates.

Tobacco use among youth has significantly declined in Minnesota over the past decade. The percentage of high school students using cigarettes in the past 30 days dropped sharply from 18.1 percent in 2011 to 10.6 percent in 2014. However, tobacco use is still a problem in some student populations. Tobacco use was 35.6 percent among students who skipped meals or were homeless; 35.2 percent among gay, lesbian, or bisexual students; 29.2 percent among American Indian students; and 23.2 percent in greater Minnesota school districts with fewer than 2,000 students.

Call it Quits Referral Program

The Call it Quits Referral Program enables health care providers to use a single form and fax number to refer patients who use tobacco to quitline support. All Minnesota residents – whether covered by a health plan or not – have access to free support to quit.

This program is supported by Minnesota Tobacco Quitlines, a collaboration among Minnesota's major health plans (Blue Cross and Blue Shield of Minnesota, HealthPartners, Medica, PreferredOne, and UCare) and ClearWay Minnesota (the state-funded quitline for uninsured and underinsured). The goal of this collaboration is to make it easier for providers to connect their patients to appropriate tobacco quitline services.

Visit www.health.mn.gov/callitquits to learn more about the Call it Quits Referral Program.

American Cancer Society Screening Guidelines for Lung Cancer

The American Cancer Society recommends screening for individuals who are at high risk of lung cancer due to cigarette smoking. High-risk individuals meet all of the following criteria:

- 55 to 74 years of age
- In fairly good health
- Have at least a 30 pack-year smoking history AND are either still smoking or have quit smoking within the past 15 years

Colon and Rectum Cancer in Minnesota

More Minnesotans die of colon and rectum cancer than either breast or prostate cancer. Only lung cancer kills more people. Screening tests offer a powerful opportunity for the prevention, early detection, and successful treatment of this disease, but 25 percent of Minnesotans ages 50 and older have never had a screening sigmoidoscopy or colonoscopy. Because screening can help prevent colon and rectum cancer by removing precancerous polyps, not being screened increases the risk for being diagnosed with this disease. Individuals with any of the moderate- to high-risk factors listed above should talk with their doctor about the possibility of initiating screening at an earlier age or being screened more frequently.

Moderate- to High-risk Factors for Cancer of the Colon and Rectum

- A strong family history of colon and rectum cancer or adenomatous polyps
- A known family history of hereditary colon and rectum cancer syndromes
- Personal history of colon and rectum polyps or colon and rectum cancer
- Personal history of inflammatory bowel disease

Other Risk Factors

- Not being screened
- Obesity
- Excessive alcohol use
- Poor diet
- Physical inactivity
- Diabetes
- Cigarette smoking

The Burden of Colon and Rectum Cancer in Minnesota

In 2012, 2,264 Minnesotans were diagnosed with colon and rectum cancer. It was the third most common cancer for men and for women, and the fourth most common for both sexes combined. The age-adjusted incidence rate for colon and rectum cancer in Minnesota in 2012 was 42.3 new cases per 100,000 men and 34.3 new cases per 100,000 women.

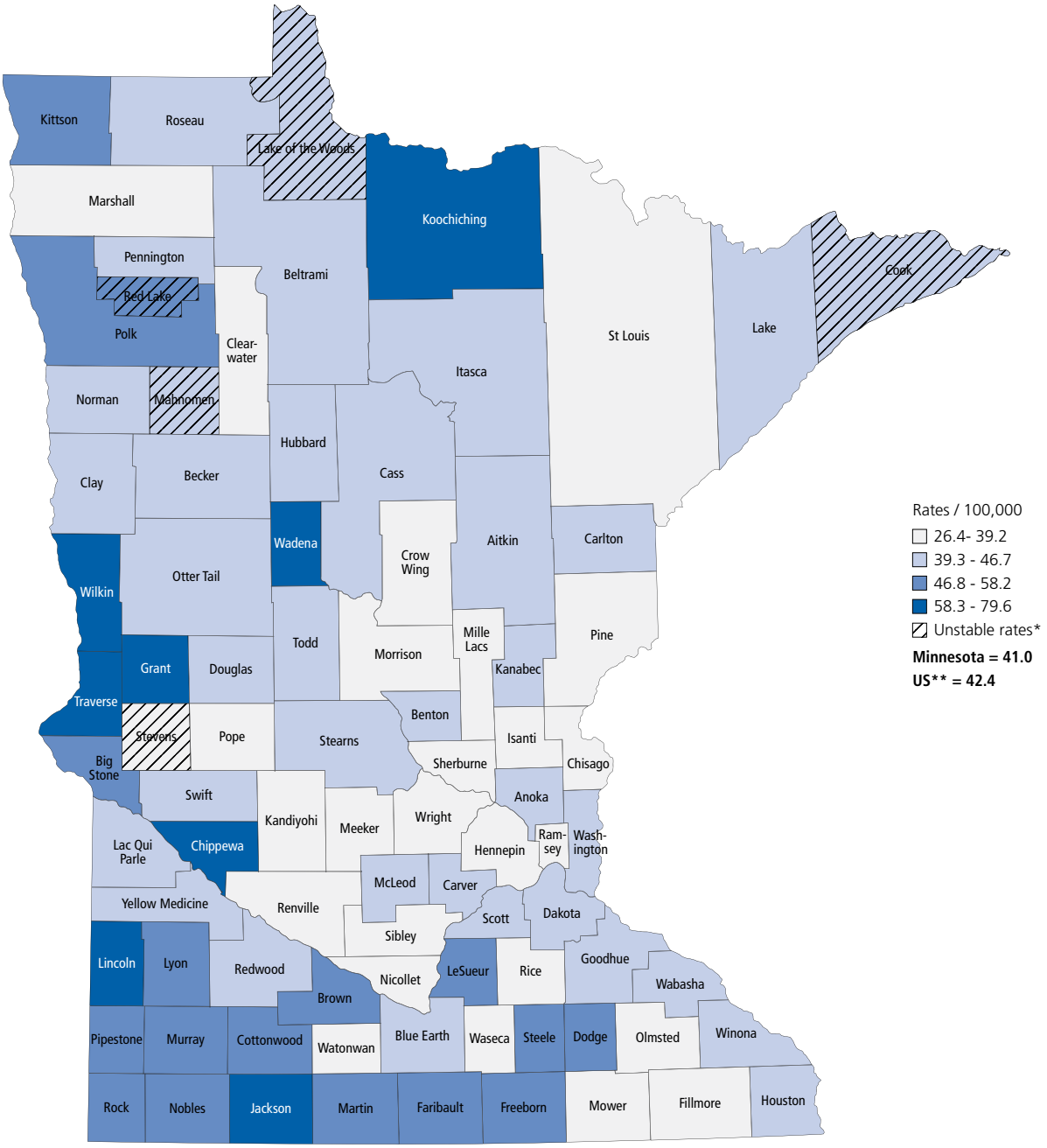
In 2012, 798 Minnesotans died of colon and rectum cancer. Colon and rectum cancer was the third-leading cause of cancer death for men and for women, and the second-leading cause for both sexes combined. The age-adjusted mortality rate for colon and rectum cancer in Minnesota in 2012 was 15.4 deaths per 100,000 men and 11.1 deaths per 100,000 women.

Five-year Relative Survival from Colon and Rectum Cancer in the US

Stage	Whites	Blacks
Localized	90.4%	86.9%
Regional	71.4%	64.7%
Distant	13.7%	9.1%
All Stages	65.6%	58.1%

Based on cases diagnosed in 2005-2011 with follow-up into 2012.
Source: *SEER Cancer Statistics Review, 1975-2012.*

Colorectal Cancer Incidence Rates in Minnesota Counties, 2008-2012



* Rates based on counts < 20 or relative standard error > 30%. **Non-Hispanic whites in the SEER 18 areas. ***Non-Hispanic whites in the US. Rates are per 100,000 persons, age-adjusted to the 2000 US population. Categories were determined using the Jenks natural breaks classification method.

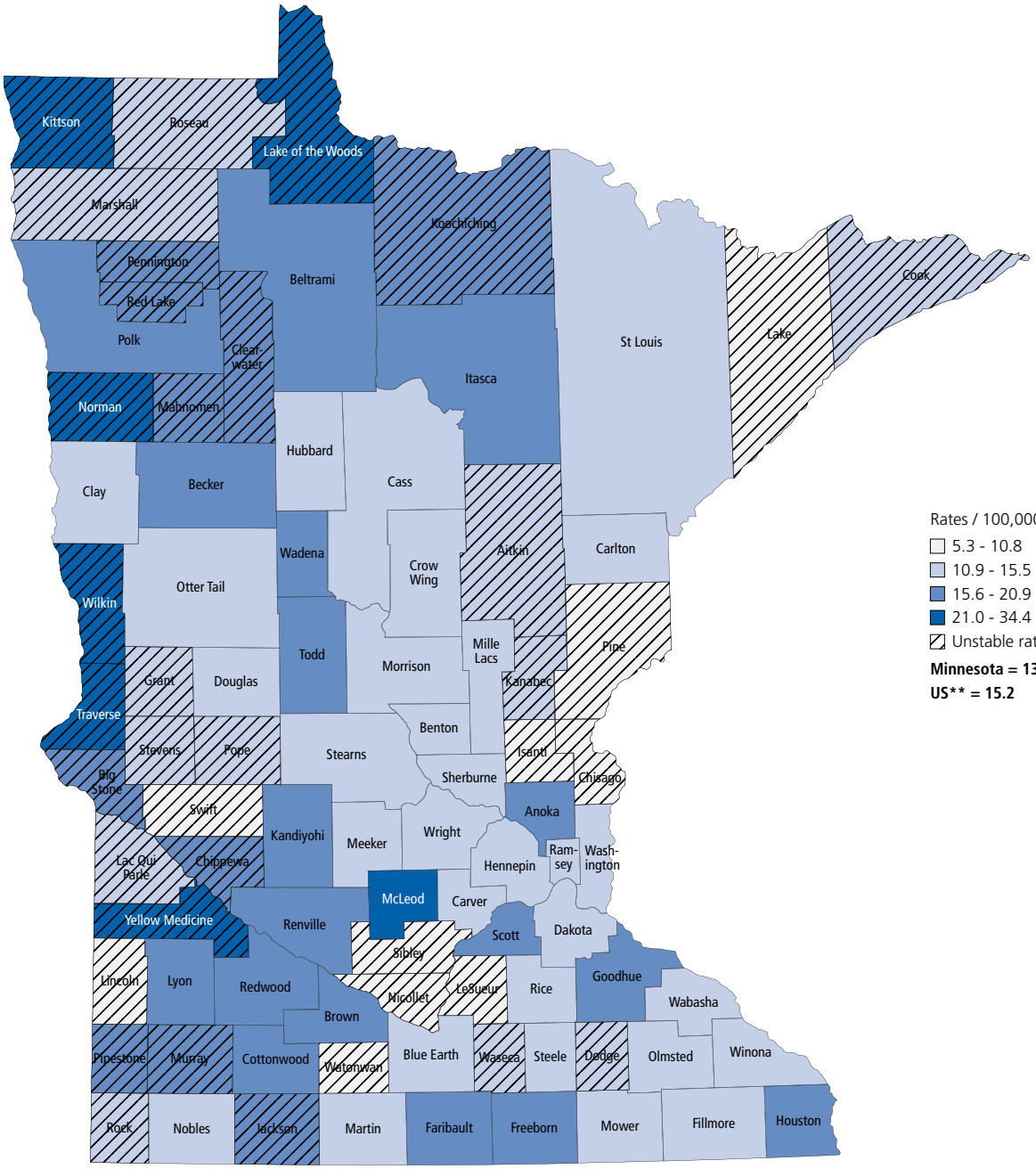
Source: MCSS (Feb 2015) and and Minnesota Center for Health Statistics.

Persons diagnosed with colon and rectum cancer have lower survival rates compared to those diagnosed with breast or prostate cancers, in part because they tend to be diagnosed at a later stage. However, survival is lower for colorectal cancer at each stage compared to breast and prostate cancer.

Disparities in Colon and Rectum Cancer

American Indians living in CHSDA counties have the highest colon and rectum cancer incidence rate in Minnesota. They are 85 percent more likely to be diagnosed with this disease than non-Hispanic whites, and more than twice as likely to die from it. Colon and rectum cancer among American Indians is almost twice as high in Minnesota as in the US as a whole.

Colorectal Cancer Mortality Rates in Minnesota Counties, 2008-2012



* Rates based on counts < 20 or relative standard error > 30%. **Non-Hispanic whites in the SEER 18 areas. ***Non-Hispanic whites in the US. Rates are per 100,000 persons, age-adjusted to the 2000 US population. Categories were determined using the Jenks natural breaks classification method.

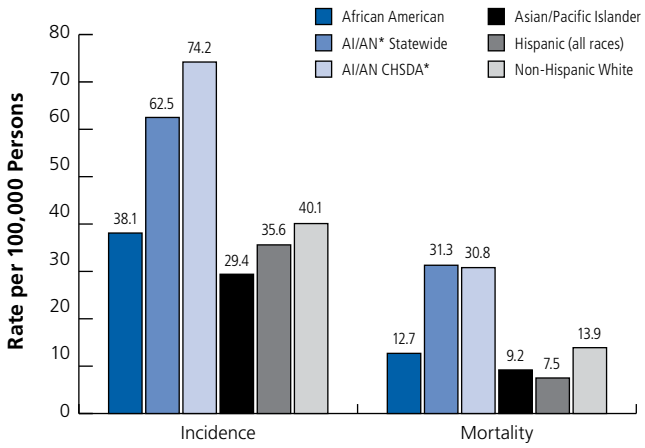
Source: MCSS (Feb 2015) and and Minnesota Center for Health Statistics.

Trends in Colon and Rectum Cancer

Colon and rectum cancer incidence and mortality rates in Minnesota have decreased dramatically since 1988. Between 1988 and 2012, the incidence rate decreased by 62 percent and mortality rate by 54 percent. Trends in Minnesota are similar to those reported by the SEER Program. Steadily decreasing colon and rectum cancer rates are related, at least in part, to increased screening. Other factors such as the decline in the use of tobacco products, the use of hormone replacement therapy among women, and the use of aspirin to prevent heart disease may also be involved.

However, while colon and rectum cancer is declining steadily among those over 50 years of age, the incidence rate among persons under 50 actually increased significantly – by 15 percent

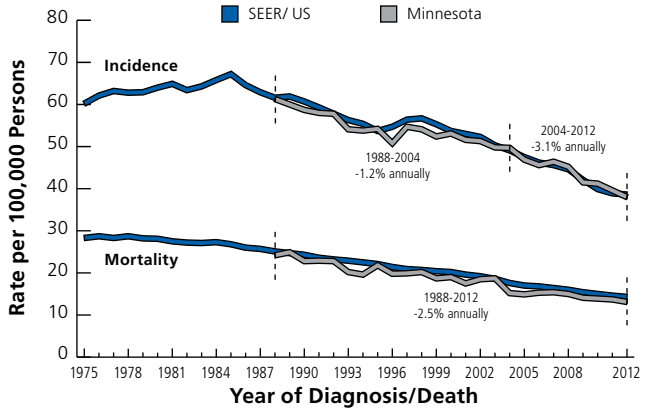
Colorectal Cancer by Race/Ethnicity, Minnesota, 2008-2012



* AI/AN=American Indian/Alaska Native; CHSDA=Contract Health Service Delivery Area. Rates are age-adjusted to the 2000 US population.

Source: MCSS (Feb 2015) and Minnesota Center for Health Statistics.

Colon and Rectum Cancer Trends in Minnesota and the US



Rates are age-adjusted to the 2000 US population. National incidence is for the white population in SEER 9 Regions, delay-adjusted. National mortality is for the US white population. The results of Joinpoint trend analyses are only shown for Minnesota. A hashed bar indicates where the trend significantly changed direction. Only statistically significant trends between hashed bars are shown.

Source: Minnesota Center for Health Statistics and *SEER Cancer Statistics Review, 1975-2012*.

between 1993 and 2012. Similar trends have been reported nationwide. Although colorectal cancer rates are quite low in this age group, the trend and its possible connection to increasing obesity in the US should be followed closely.

The average number of colon and rectum cancer cases and deaths each year between 2008 and 2012 in Minnesota counties is shown in the Summary Tables.

Geographic Differences in Colon and Rectum Cancer Incidence

During 2008-2012, the colon and rectum cancer incidence rate was somewhat lower in Minnesota compared to non-Hispanic whites in the SEER 18 areas. In addition to random variation, geographic differences in colon and rectum cancer incidence may reflect differences in the prevalence of screening, as well as differences in the prevalence of risk factors in the population.

Geographic Differences in Colon and Rectum Cancer Mortality

During 2008-2012, the colon and rectum cancer mortality rate was somewhat lower in Minnesota than among non-Hispanic whites in the US as a whole. As well as random variation, geographic differences in cancer mortality may reflect variations in incidence as well as factors affecting survival, such as stage at diagnosis, treatment, access to health care, and overall health status.

Colorectal Cancer Screening

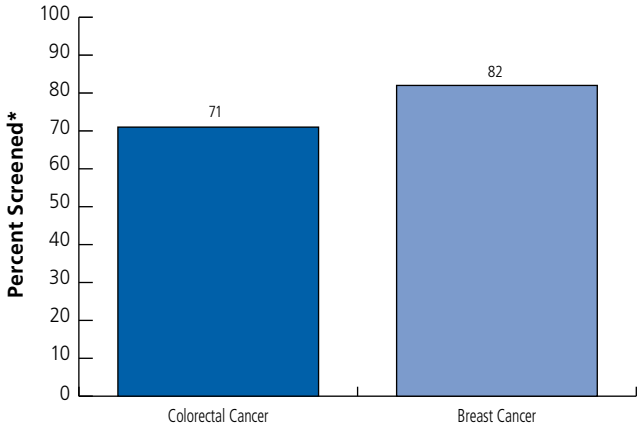
Adults age 50 and older should be screened for colorectal cancer, even if they have no symptoms. A number of effective tests have been developed to screen for this cancer, which differ in how frequently they are recommended to be performed. These tests are divided into those whose effectiveness is limited to finding presymptomatic cancers, and those that can help prevent cancer by finding polyps (as well as finding cancers at a presymptomatic stage). The American Cancer Society recommends the tests that prevent cancer as long as they are available and acceptable.

Finding and removing polyps can help prevent colorectal cancer. These small tissue growths are the precursors of cancer and can be removed on an outpatient basis, thus helping prevent the cancer from forming. In that respect, screening for colorectal cancer is more effective than screening for breast cancer, which is limited to identifying abnormalities that have already become cancerous.

Despite that, screening for colorectal cancer has lagged behind screening for breast cancer, both in Minnesota and nationwide. The proportion of Minnesota adults up-to-date with colorectal cancer screening increased slowly over the past decade. Based on data from the 2012 BRFSS, 71 percent of Minnesotans of screening age were up-to-date on screening.

The Centers for Disease Control and Prevention and the American Cancer Society joined the National Colorectal Roundtable's campaign to help increase colon cancer screening rate to 80 percent in adults 50 and older by 2018. Recent Minnesota Roundtables have increased the statewide commitment to implement changes within the health care system, which will help save lives by increasing colon cancer screening for all populations across our state.

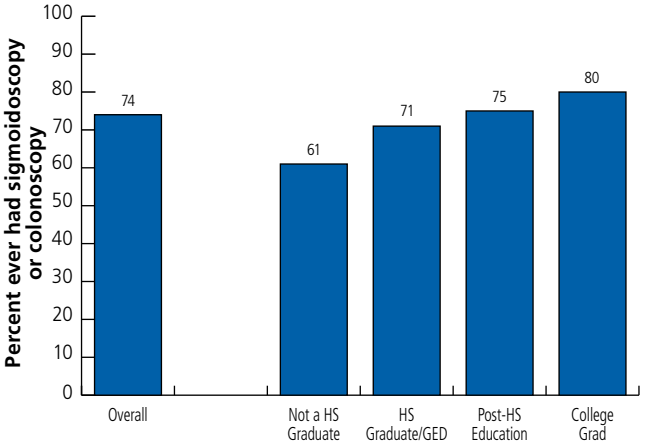
Screening for Colorectal and Female Breast Cancer among Minnesotans Ages 50 and Older, 2012



*Colorectal: Fecal occult blood test (FOBT) within 1 year, or sigmoidoscopy within 5 years with FOBT within 3 years, or colonoscopy within 10 years. Breast: Mammogram within 2 years

Sources: *MMWR*/November 8, 2013/Vol. 62/ No 44: 881-888, BRFSS website (http://www.cdc.gov/brfss/index.html).

Colorectal Cancer Screening among Minnesotans Ages 50 and Older by Education, Minnesota, 2012



HS is high school; GED is General Education Development test (high school equivalency exam).

Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

Based on telephone interviews conducted by the Minnesota BRFSS in 2012, being screened for colorectal cancer increases with education. There were too few interviews among persons of color to present colorectal cancer screening by race/ethnicity.

Sage Scopes Screening Program

Sage Scopes, part of the Sage Screening Programs family, works to help Minnesotans access colorectal cancer screening. Call 1-888-643-2584 if you need help finding a provider in your community.

American Cancer Society Screening Guidelines for Colorectal Cancer

Beginning at age 50, men and women at average risk should follow one of the examination schedules below:

Tests that find polyps and cancer:

- Flexible sigmoidoscopy every 5 years*, or
- Colonoscopy every 10 years, or
- Double-contrast barium enema every 5 years*, or
- CT colonography (virtual colonoscopy) every 5 years*

Tests that primarily find cancer:

- Yearly guaiac-based fecal occult blood test (gFOBT)**, or
- Yearly fecal immunochemical test (FIT)** ,or
- Stool DNA test (sDNA) every 3 years*

* If the test is positive, a colonoscopy should be done.

** Highly sensitive versions of these tests should be used with take-home multiple sample method. A gFOBT or FIT test done by the doctor in the office is not adequate for testing. A colonoscopy should be done if the test is positive.

Breast Cancer in Minnesota

Many of the well-established risk factors for breast cancer are associated with a woman's lifetime exposure to internally produced estrogen, and are therefore not easy to modify. Although many risk factors for breast cancer have been identified, they only explain an estimated 30 to 50 percent of breast cancers. The majority of women diagnosed with this disease do not have a known risk factor.

The Burden of Breast Cancer in Minnesota

In 2012, 4,013 women and 24 men were diagnosed with invasive breast cancer in Minnesota. Breast cancer is the most commonly diagnosed cancer for women, accounting for nearly one out of every three cancers. About 44 percent of Minnesota women diagnosed with breast cancer were 65 years of age or older, and 37 percent were between the ages of 50 and 64. The age-adjusted incidence rate for female breast cancer in Minnesota in 2012 was 128.0 new cases per 100,000 women.

In 2012, 605 women and 4 men died of breast cancer in Minnesota. It is the second-leading cause of cancer deaths for women; in 2012 it accounted for 13 percent of all female cancer deaths. About 60 percent of deaths due to breast cancer in Minnesota occurred among women 65 years of age or older, and 31 percent were among women between the ages of 50 and 64. The age-adjusted mortality rate for female breast cancer in Minnesota in 2012 was 18.0 deaths per 100,000 women.

Compared to many other cancers, survival from breast cancer is quite high. When diagnosed at an early stage, five-year relative survival is 98 percent.

Risk Factors for Female Breast Cancer

- First-degree family history of breast cancer, especially at a young (premenopausal) age
- Personal history of proliferative breast disease
- Personal history of breast cancer
- Personal history of radiation therapy to the chest as treatment for another cancer as a child or young adult
- Onset of menstruation before age 12
- Onset of menopause after age 55
- Delayed childbearing
- Having fewer or no children
- Use of hormone replacement therapy
- Obesity and high-fat diet
- Physical inactivity
- Alcohol consumption
- Higher socioeconomic status
- Inherited mutations in BRCA1 or BRCA2 genes

Five-year Relative Survival from Female Breast Cancer in the US

Stage	Whites	Blacks
Localized	99.2%	94.3%
Regional	86.3%	74.9%
Distant	27.1%	17.1%
All Stages	90.6%	79.6%

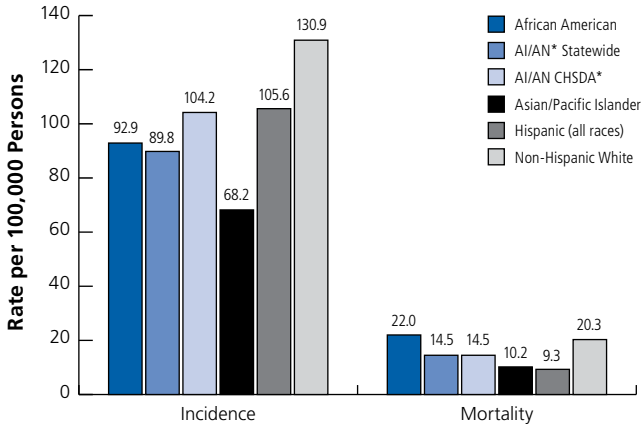
Based on cases diagnosed in 2005-2011 with follow-up into 2012.
Source: *SEER Cancer Statistics Review, 1975-2012.*

Disparities in Breast Cancer

As elsewhere in the US, non-Hispanic white women in Minnesota are at the greatest risk of being diagnosed with breast cancer, but African American women are at the greatest risk of dying of this disease. In Minnesota, the incidence rate among African American women is 30 percent lower than among non-Hispanic white women, but their mortality rate is 8 percent higher. African American and Hispanic women are also more likely to be diagnosed with late-stage disease.

The Annual Report to the Nation on the Status of Cancer, 1975-2011 (http://seer.cancer.gov/report_to_nation/) reported that among four molecular subtypes of breast cancer, the subtype with the best prognosis (HR+/HER2-) was the most common for all race/ethnicities, with the highest rate among non-Hispanic white women. Triple-negative breast cancers, the subtype with the worst prognosis, were highest among non-Hispanic black women.

Female Breast Cancer by Race/Ethnicity, Minnesota, 2008-2012



* AI/AN=American Indian/Alaska Native; CHSDA=Contract Health Service Delivery Area. Rates are age-adjusted to the 2000 US population.
Source: MCSS (Feb 2015) and Minnesota Center for Health Statistics.

Percentage of Female Breast Cancers Diagnosed at Late Stage by Race/Ethnicity, Minnesota, 2008-2012

Race/Ethnicity	Average Number of Cases Diagnosed/Year	Late Stage*
African American	43	50%
American Indian Statewide	8	33%
American Indian CHSDA Residents	5	29%
Asian/Pacific Islander	21	41%
Hispanic (All Races)	30	50%
Non-Hispanic White	1,206	35%

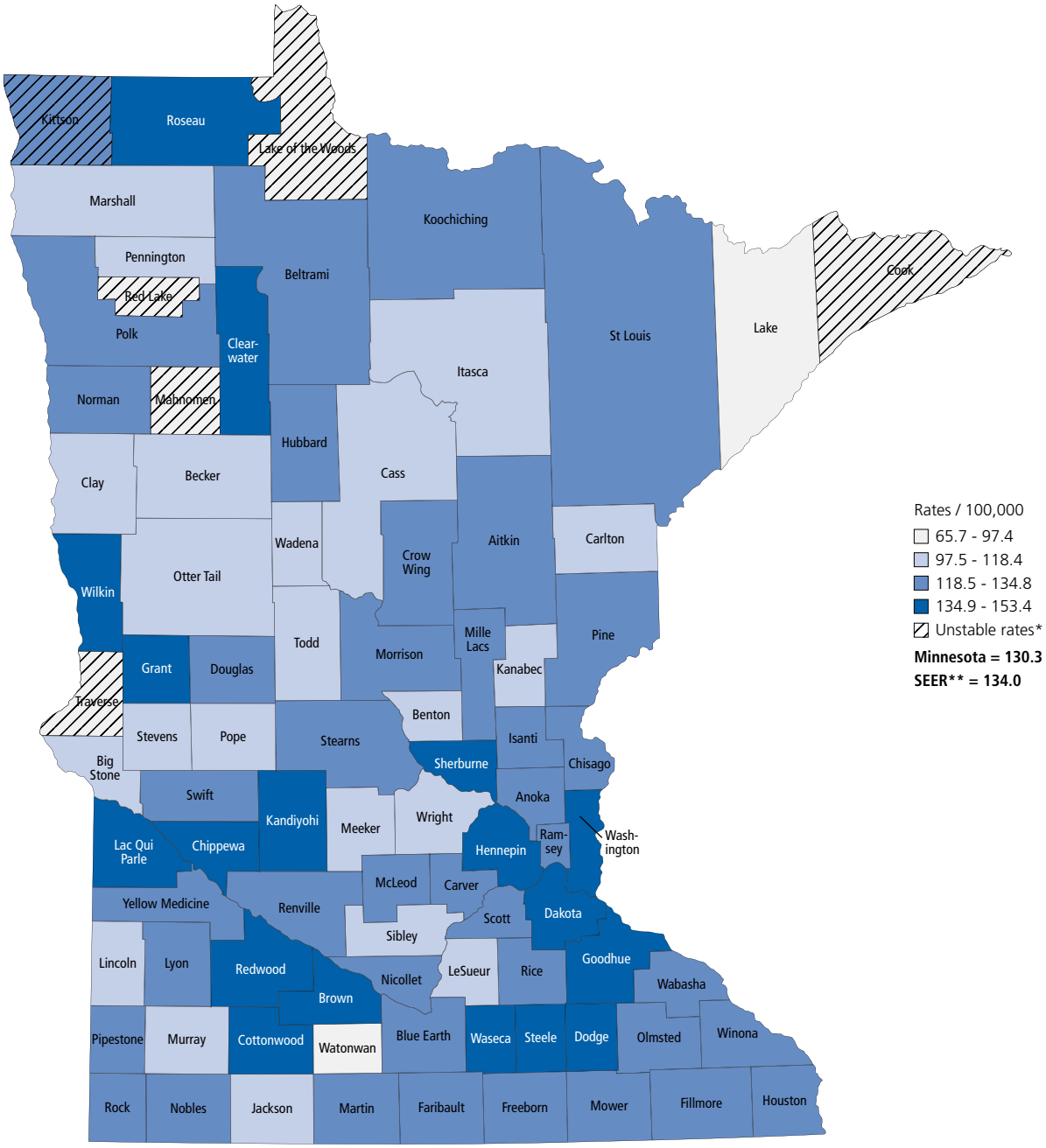
* Late-stage cancers have extended beyond the breast (regional or distant stage) when diagnosed. The denominator is all invasive cancers, including those that were unstaged (2.2%).
Source: MCSS (March 2015).

Trends in Female Breast Cancer

During the 1980s, breast cancer incidence increased sharply in the US. The reasons for this increase are not completely understood, but are thought to be related at least in part to increased use of mammography. During the 1990s, the breast cancer incidence rate continued to increase at a slow but steady pace in Minnesota and in the SEER Program. It is likely that some of this increase was related to the increased use of hormone replacement therapy.

In 2002, the Women's Health Initiative published study results which demonstrated that hormone replacement therapy did not prevent heart disease and increased the risk for breast cancer. From 2001 to 2004 the breast cancer incidence rate in Minnesota

Female Breast Cancer Incidence Rates in Minnesota Counties, 2008-2012



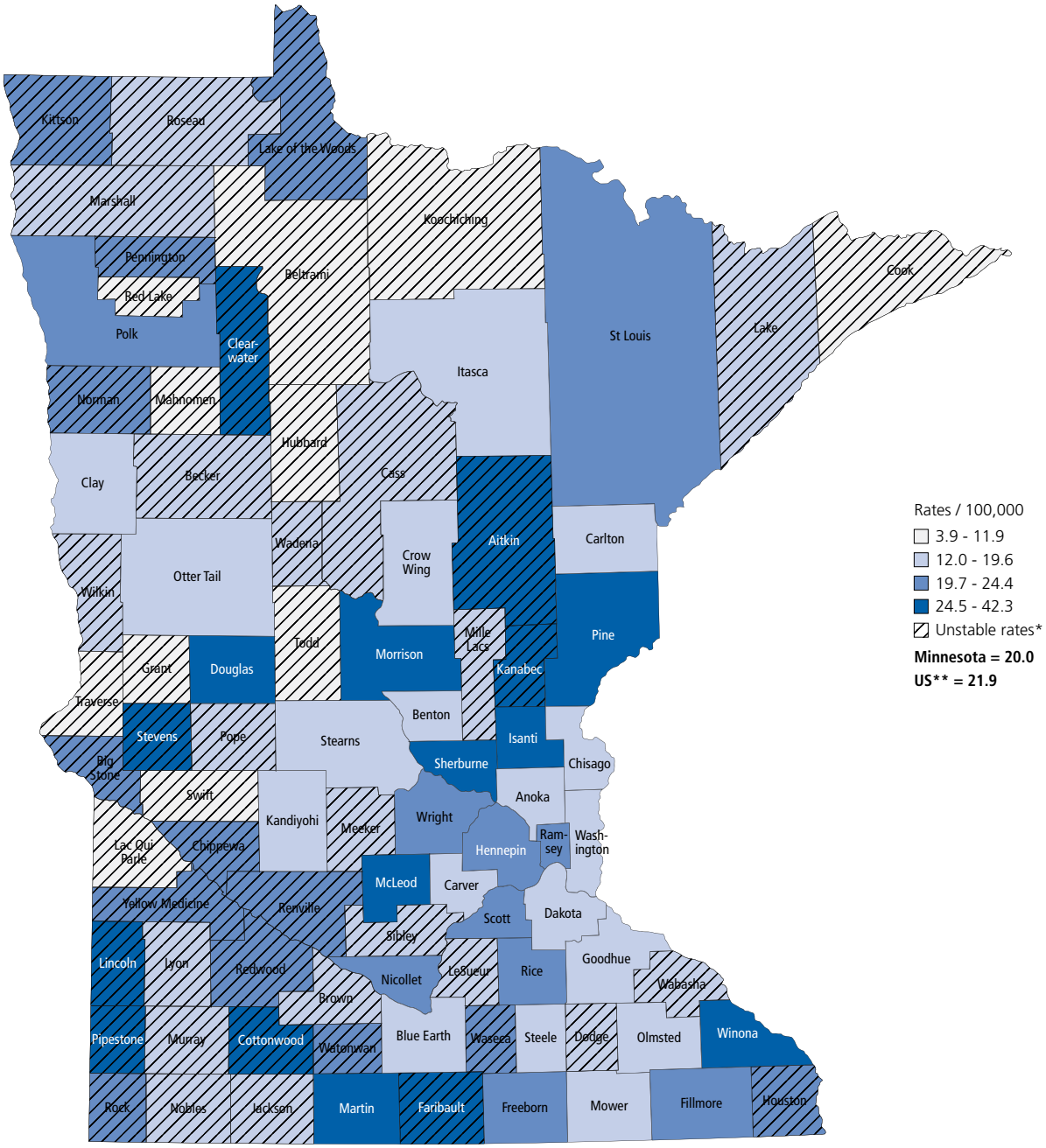
* Rates based on counts < 20 or relative standard error > 30%. **Non-Hispanic whites in the SEER 18 areas. ***Non-Hispanic whites in the US. Rates are per 100,000 persons, age-adjusted to the 2000 US population. Categories were determined using the Jenks natural breaks classification method.

Source: MCSS (Feb 2015) and Minnesota Center for Health Statistics.

decreased, but the decline was not statistically significant. From 2004 to 2012 the rate increased again by 0.8 percent per year. However, the incidence rate in 2012 was 10 percent lower than in 2000, when the rate peaked.

Despite increases in the incidence of female breast cancer for more than two decades, breast cancer mortality has been decreasing significantly and steadily by 2.5 percent annually since 1988, and the female breast cancer mortality rate in Minnesota is about 50 percent lower in 2012 than in 1988. Studies by the National Cancer Institute indicate that decreases in breast cancer mortality are due to more effective breast cancer treatment as well as increased use of mammography.

Female Breast Cancer Mortality Rates in Minnesota Counties, 2008-2012



* Rates based on counts < 20 or relative standard error > 30%. **Non-Hispanic whites in the SEER 18 areas. ***Non-Hispanic whites in the US. Rates are per 100,000 persons, age-adjusted to the 2000 US population. Categories were determined using the Jenks natural breaks classification method.

Source: MCSS (Feb 2015) and Minnesota Center for Health Statistics.

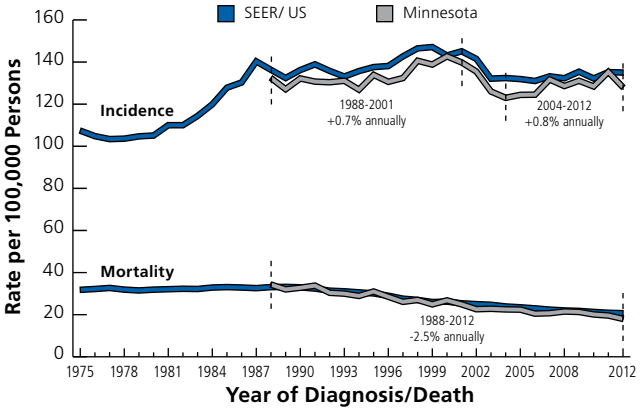
Geographic Differences in Female Breast Cancer Incidence

During 2008-2012, the female breast cancer incidence rate was somewhat lower in Minnesota than among non-Hispanic white women living in the SEER 18 areas.

Geographic Differences in Female Breast Cancer Mortality

During 2008-2012, the female breast cancer mortality rate was somewhat lower in Minnesota than among non-Hispanic white women in the US as a whole.

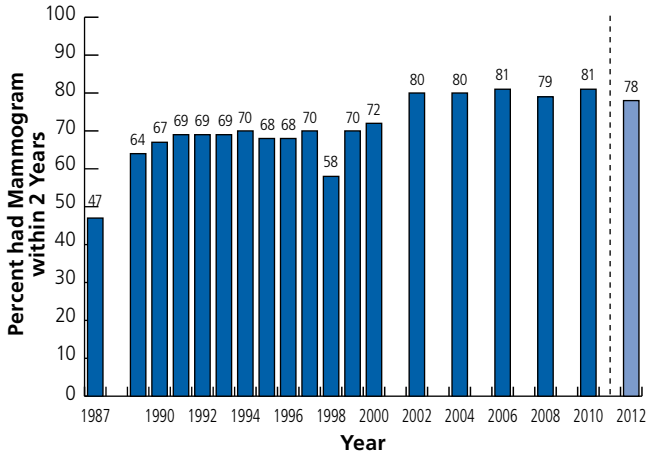
Female Breast Cancer Trends in Minnesota and the US



Rates are age-adjusted to the 2000 US population. National incidence is for the white population in SEER 9 Regions, delay-adjusted. National mortality is for the US white population. The results of Joinpoint trend analyses are only shown for Minnesota. A hashed bar indicates where the trend significantly changed direction. Only statistically significant trends between hashed bars are shown.

Source: MCSS (Feb 2015) and *SEER Cancer Statistics Review, 1975-2012*.

Trends in Mammography Use among Women Ages 40 and Older, Minnesota, 1987-2010 and 2012

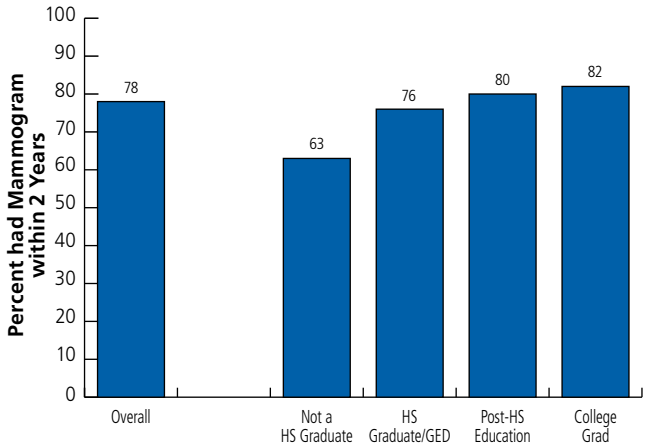


Data for 2012 cannot be compared to prior years because of changes in the design of the survey. See Data Sources for more detail.

Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

The average number of female breast cancer cases and deaths each year between 2008 and 2012 in Minnesota counties is shown in the Summary Tables.

Mammography Use among Women Ages 40 and Older by Education, Minnesota, 2012



HS is high school; GED is General Education Development test (high school equivalency exam).

Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

Breast Cancer Screening

Consensus does not exist on either the age to begin or how frequently to conduct breast cancer screening with mammography. In 2009, the US Preventive Services Task Force (USPSTF) recommended biennial mammography for women ages 50 to 74 years and that "the decision to start regular, biennial screening mammography before the age of 50 years should be an individual one and take patient context into account, including the patient's values regarding specific benefits and harms." The American Cancer Society recommendations (see the next page for the complete guidelines) include annual screening mammograms for women ages 45 to 54. Women age 55 and older should get mammograms every 2 years, or can continue to get them annually.

Even regular screening will not find all breast cancers at an early stage because some breast cancers grow rapidly and spread beyond the breast in the interval between mammograms. Nonetheless, the best available evidence indicates that breast cancer screening can help save lives.

Based on data from the 2012 BRFSS, 78 percent of women age 40 and older in Minnesota reported having a mammogram in the previous two years.

The percentage of women age 40 and older in Minnesota who reported having a mammogram in the previous two years increased with educational level: not a high school graduate, 63%; high school graduate, 76%; some post-secondary education, 80%; college graduate, 82%. There were too few interviews among women of color to present screening rates by race/ethnicity.

Sage Screening Program

The Sage Screening Program provides free Pap tests to women age 21 and older and free mammograms to women age 40 and older who meet specific income guidelines. Uninsured women, and those whose insurance does not fully cover the costs of breast and cervical cancer screening (e.g., they have co-pays or unmet deductibles), can access Sage services at more than 420

clinics statewide. The program provides free treatment services for uninsured women diagnosed with breast or cervical cancer. The Sage Screening Program is primarily funded by the CDC as part of the National Breast and Cervical Cancer Early Detection Program. Sage is also funded with money from the State of Minnesota and from the Susan G. Komen, Twin Cities Affiliate, Inc. (Race for the Cure). Visit http://www.MNSage.com or call 1-888-643-2584 for more information.

The program also works to help Minnesotans access colorectal cancer screening. Call 1-888-643-2584 if you need help finding a provider in your community.

American Cancer Society Screening Guidelines for Breast Cancer

Women at average risk for breast cancer should follow this schedule:

- Women ages 40 to 44 should have the choice to start annual breast cancer screening with mammograms (x-rays of the breast) if they wish to do so.
- Women ages 45 to 54 should get mammograms every year.
- Women 55 and older should switch to mammograms every 2 years, or can continue yearly screening.
- Screening should continue as long as a woman is in good health and is expected to live at least 10 more years.
- All women should be familiar with the known benefits, limitations, and potential harms linked to breast cancer screening. They also should know how their breasts normally look and feel and report any breast changes to a health care provider right away.

Prostate Cancer in Minnesota

Prostate cancer is the most common cancer diagnosed among men in Minnesota and in the US, regardless of race/ethnicity. It is also very common in northwest Europe, Australia, and the Caribbean, but less common in Asia, Africa, Central America, and South America. Autopsy studies indicate that in the US, up to 80 percent of men in their 90s have evidence of prostate cancer.

Despite intensive study, the risk factors for prostate cancer remain unclear. Inherited genetic mutations are thought to account for 5-10 percent of prostate cancers. Men with a family history of prostate cancer (father or brother) have twice the risk of developing prostate cancer. African American men and Caribbean men of African ancestry have the highest rates, but the reasons are not known. Although not all studies are in agreement, obesity, smoking, or having had a vasectomy, sexually transmitted disease or prostatitis are not thought to be linked to a higher risk for developing prostate cancer. Some studies of the role of diet in prostate cancer suggest that red meat might increase prostate cancer risk, but since other dietary factors may also be different in these men (fewer fruits and vegetables), researchers aren't sure which dietary component is important.

Risk Factors for Prostate Cancer

- Family history of prostate cancer (one or more first-degree relatives diagnosed with prostate cancer at an early age)
- Being African American
- Age

The Burden of Prostate Cancer in Minnesota

In 2012, more than 3,355 men were diagnosed with prostate cancer in Minnesota. It was the most common cancer among men, accounting for one out of every three cancers diagnosed. About 55 percent of Minnesotans diagnosed with prostate cancer were 65 years of age or older. In 2012, the age-adjusted incidence rate for prostate cancer in Minnesota was 112.9 new cases per 100,000 males.

In the same year, 471 men died of prostate cancer in Minnesota. Although it was the most commonly diagnosed cancer among men, it was the second-leading cause of cancer death. Lung cancer kills 2½ times more men than prostate cancer. About 90 percent of deaths due to prostate cancer occurred among Minnesotans 65 years of age or older. The age-adjusted mortality rate for prostate cancer in Minnesota in 2012 was 19.0 deaths per 100,000 males.

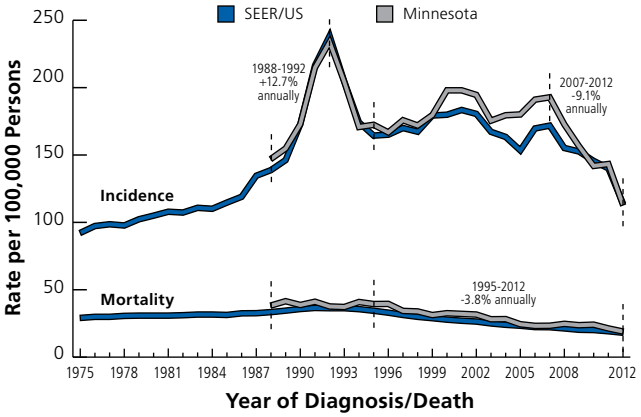
Based on data from the SEER Program, the five-year relative survival rate for prostate cancer is very high compared to most other cancers, even when diagnosed at an advanced stage. The overall five-year relative survival rate for prostate cancer increased substantially from 68 percent among cases diagnosed in 1975-1977 to 99 percent among cases diagnosed in 2005-2011. It is likely that this increase, to some unknown degree, reflects lead time bias associated with the diagnosis of many asymptomatic tumors through PSA screening that may never have become

Five-year Relative Survival from Prostate Cancer in the US

Stage	Whites	Blacks
Localized/Regional	100.0%	100.0%
Distant	27.4%	28.3%
Unstaged	73.0%	66.7%
All Stages	99.2%	96.9%

Based on cases diagnosed in 2005-2011 with follow-up into 2012.
Source: *SEER Cancer Statistics Review, 1975-2012.*

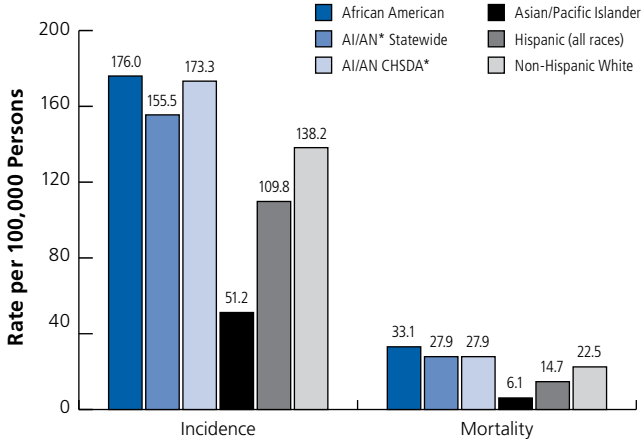
Prostate Cancer Trends in Minnesota and the US



Rates are age adjusted to the 2000 US population. National incidence is for the white population in SEER 9 Regions, delay-adjusted. National mortality is for the US white population. The results of Joinpoint trend analyses are only shown for Minnesota. A hashed bar indicates where the trend significantly changed direction. Only statistically significant trends between hashed bars are shown.

Source: MCSS (Feb 2015), Minnesota Center for Health Statistics, and *SEER Cancer Statistics Review, 1975-2012*.

Prostate Cancer by Race/Ethnicity, Minnesota, 2008-2012



* AI/AN=American Indian/Alaska Native; CHSDA=Contract Health Service Delivery Area. Rates are age-adjusted to the 2000 US population.

Source: MCSS (Feb 2015) and Minnesota Center for Health Statistics.

life-threatening. Please see Frequently Asked Questions about Cancer on page 3 for a fuller discussion of this issue.

Trends in Prostate Cancer

Trends in prostate cancer incidence have been strongly affected by the introduction of the prostate specific antigen (PSA) screening test in the late 1980s, and fluctuations in its use since then. In the US, the prostate cancer incidence rate increased by an unprecedented 70 percent over a five-year period, peaking in 1992. Minnesota followed a very similar pattern. Because prostate cancers tend to grow slowly, many tumors were found in the initial years of PSA screening that may not have caused symptoms until years later or may not have been apparent before the person died from other causes. Once these tumors were found, the prostate cancer rate declined. Since 1995, prostate cancer incidence has varied considerably both in Minnesota and in the SEER Program. From 2007 to 2012, the prostate cancer incidence rate in Minnesota decreased significantly – by an average of 9.1 percent per year. The prostate cancer incidence rate was 40 percent lower in 2012 than in 2007.

Prostate cancer incidence and mortality rates have tended to be higher in Minnesota than in the US. Higher prostate cancer rates in Minnesota were noted several decades ago during the Third National Cancer Survey (1969-1971). It is possible that an increased risk existed during the period of PSA uptake as well, but was masked by lower PSA utilization in Minnesota. Prostate cancer mortality has been declining significantly since 1994 in the US and since 1995 in Minnesota. The mortality rate in Minnesota decreased by 50 percent between 1995 and 2012. Whether this is due to PSA screening is uncertain.

Disparities in Prostate Cancer

African American men have the highest prostate cancer incidence and mortality rates, both in Minnesota and nationwide. In Minnesota, their risk of being diagnosed with this disease is 27 percent higher than among non-Hispanic white men, and their risk of dying of this disease is 50 percent higher. However, the incidence rate among American Indians in Minnesota is nearly as high as among African Americans, and is twice as high as American Indians in the SEER Program.

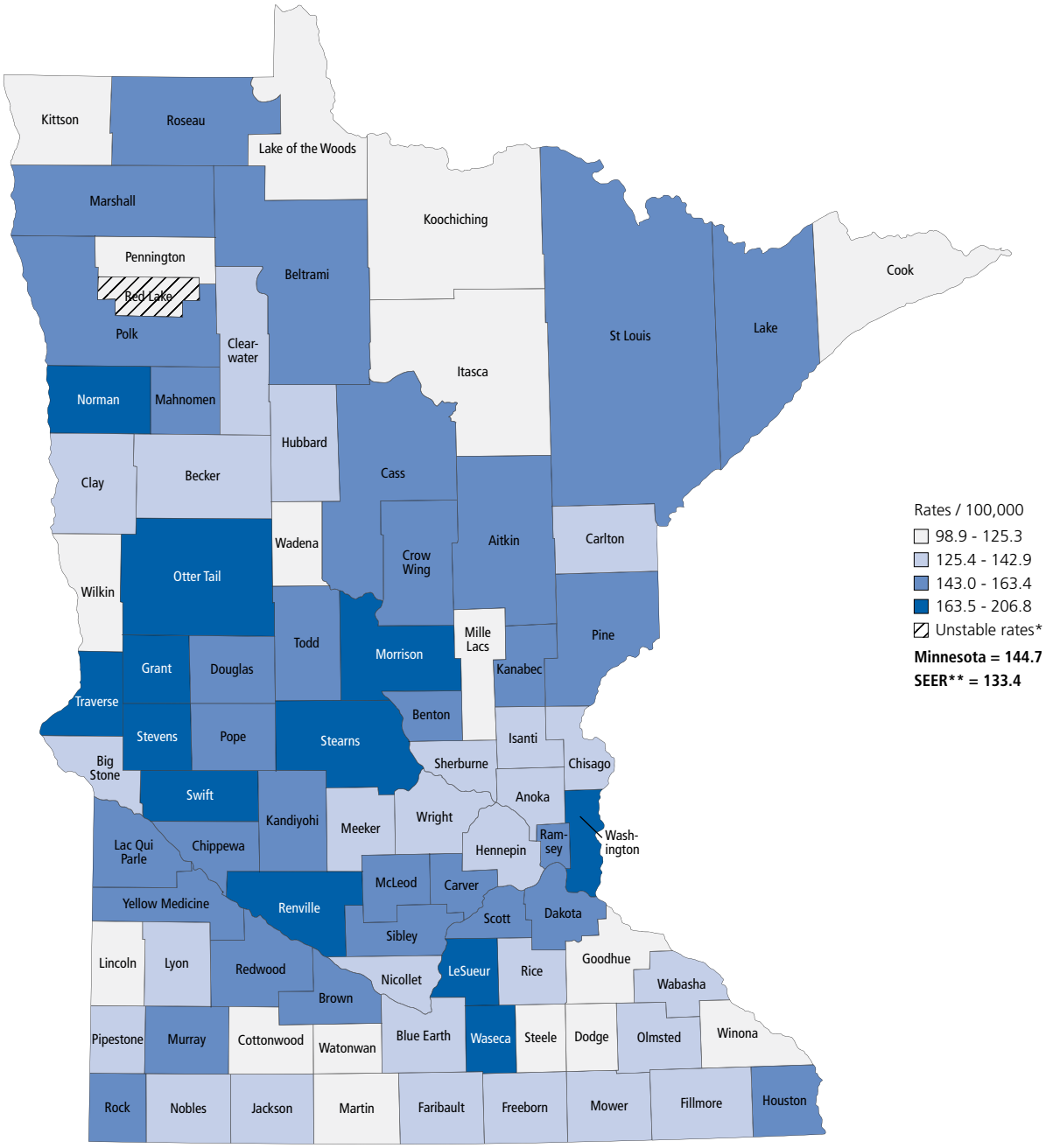
Geographic Differences in Prostate Cancer Incidence

Over the five-year period 2008-2012, the prostate cancer incidence rate was about 8 percent higher in Minnesota than among non-Hispanic white men in SEER 18 areas. Prostate cancer is one of the few cancers for which incidence rates have tended to be higher in Minnesota than in the SEER Program. However, in 2012, the rates in Minnesota and SEER were almost identical.

Because prostate cancer incidence is strongly influenced by PSA screening and so little is understood about its risk factors, it is not known whether geographic differences reflect differences in the use of PSA testing or differences in the underlying risk for developing this disease.

The average number of prostate cancer cases and deaths each year between 2008 and 2012 in Minnesota counties is shown in the Summary Tables.

Prostate Cancer Incidence Rates in Minnesota Counties, 2008-2012



* Rates based on counts < 20 or relative standard error > 30%. **Non-Hispanic whites in the SEER 18 areas. ***Non-Hispanic whites in the US. Rates are per 100,000 persons, age-adjusted to the 2000 US population. Categories were determined using the Jenks natural breaks classification method.

Source: MCSS (Feb 2015) and Minnesota Center for Health Statistics.

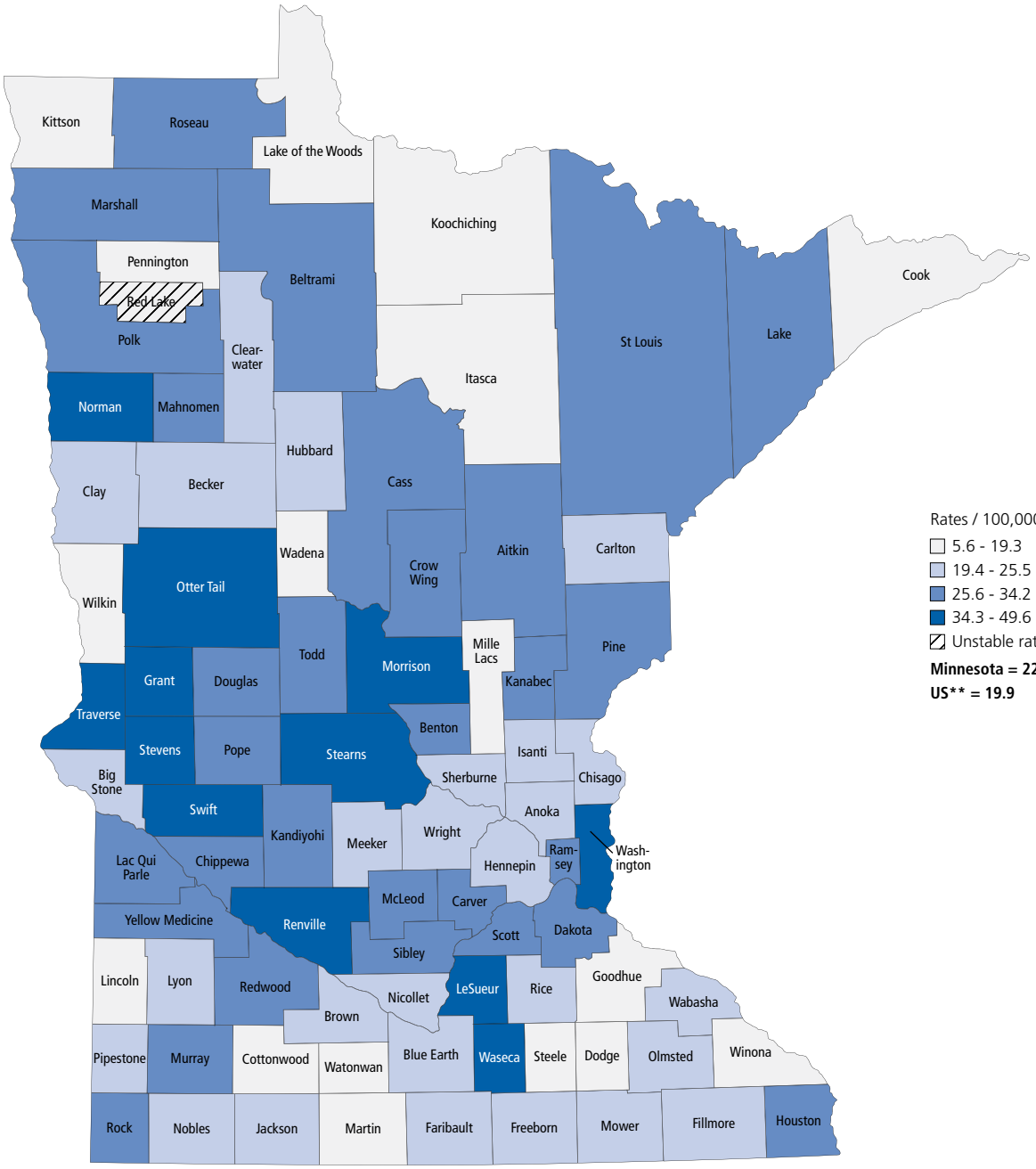
Geographic Differences in Prostate Cancer Mortality

During 2008-2012, the prostate cancer mortality rate was 13 percent higher in Minnesota than among non-Hispanic white men in the US. Prostate cancer is one of the few cancers for which mortality rates have tended to be higher in Minnesota than in the US.

Prostate Cancer Screening

The use of the PSA test to identify prostate cancer early is controversial. The PSA test is very sensitive and can help find tumors before they become symptomatic, but the unsolved challenge is to determine which tumors, once discovered, will go on to become life-threatening. This is important because treating

Prostate Cancer Mortality Rates in Minnesota Counties, 2008-2012



* Rates based on counts < 20 or relative standard error > 30%. **Non-Hispanic whites in the SEER 18 areas. ***Non-Hispanic whites in the US. Rates are per 100,000 persons, age-adjusted to the 2000 US population. Categories were determined using the Jenks natural breaks classification method.

Source: MCSS (Feb 2015) and Minnesota Center for Health Statistics.

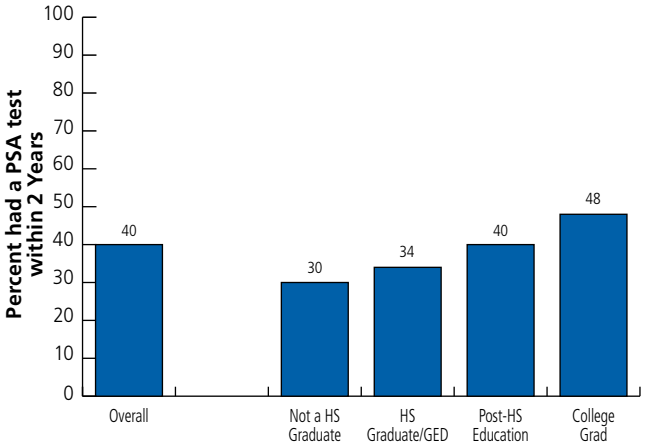
prostate cancer frequently results in incontinence and impotence, decreasing quality of life.

In 2012, the US Preventive Services Task Force reviewed the available evidence and concluded that the benefits did not outweigh the risks. They recommended against using the PSA test to screen asymptomatic men.

The American Cancer Society recommends that men should not be screened unless they have discussed the uncertainties, risks, and potential benefits of prostate cancer screening with their health care provider (see the Society's recommendations below).

Among Minnesota men age 40 and over who participated in the 2012 Minnesota BRFSS, 40 percent reported that they had a PSA

Prostate Cancer Screening among Males Ages 40 and Older by Education, Minnesota, 2012



HS is high school; GED is General Education Development test (high school equivalency exam). PSA is prostate specific antigen.

Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

test in the past two years. This was somewhat lower than the median for the 50 states and the District of Columbia (45%). The percentage of men who had been screened increased with educational level: not a high school graduate, 30%; high school graduate, 34%; some post-secondary education, 40%; college graduate, 48%. There were too few interviews among men of color to present screening rates by race/ethnicity.

American Cancer Society Screening Guidelines for Prostate Cancer

The American Cancer Society recommends that men make an informed decision with their doctor about whether to be tested for prostate cancer. Research has not yet proven that the potential benefits of testing outweigh the harms of testing and treatment. The American Cancer Society believes that men should not be tested without learning about what we know and don't know about the risks and possible benefits of testing and treatment.

Starting at age 50, men should talk to a doctor about the pros and cons of testing so they can decide if testing is the right choice for them. If they are African American or have a father or brother who had prostate cancer before age 65, men should have this talk with a doctor starting at age 45. If men decide to be tested, they should have the PSA blood test with or without a rectal exam. How often they are tested will depend on their PSA level.

Cervical Cancer in Minnesota

Cervical cancer is unique because we know both its primary cause – persistent infection with the human papilloma virus (HPV), the most common sexually transmitted infection – and how to help prevent it – HPV vaccination plus regular Pap tests with prompt treatment of detected abnormalities. Nonetheless, women in Minnesota continue to die from this preventable disease, and women of color are at especially high risk. The HPV vaccine helps protect against the HPV types that cause about 70 percent of cervical cancer in adulthood. The CDC recommends that young girls and boys get the HPV vaccine as part of their preteen health care visit at 11-12 years of age. It's also recommended by the CDC for males and females ages 13-26 who haven't yet been vaccinated. Visit the CDC website at http://www.cdc.gov/std/HPV/STDFact-HPV.htm for more details on HPV and who should be vaccinated.

Risk Factors for Cervical Cancer

- Not being vaccinated with the human papilloma virus (HPV) vaccine
- Not being screened with the Pap test
- Persistent infection with HPV, a common, sexually transmitted disease
- Factors that increase the likelihood of being exposed to HPV (sex at an early age, multiple sexual partners, non-monogamous sexual partners)
- Cigarette smoking
- Infection with the human immunodeficiency virus (HIV) and other immunosuppressed individuals
- Long-term (more than five years) use of oral contraceptives

The Burden of Cervical Cancer in Minnesota

In 2012, 152 women were diagnosed with invasive cervical cancer in Minnesota. About 49 percent of diagnoses were among women under 50 years of age, and the median age at diagnosis was one of the youngest among common cancers. In 2012, the age-adjusted incidence rate for cervical cancer in Minnesota was 5.4 new cases per 100,000 females. In 2012, 39 women died of cervical cancer in the state. About 33 percent of deaths occurred among women under 50 years of age. The age-adjusted mortality rate for cervical cancer in Minnesota in 2012 was 1.3 deaths per 100,000 females.

Disparities in Cervical Cancer

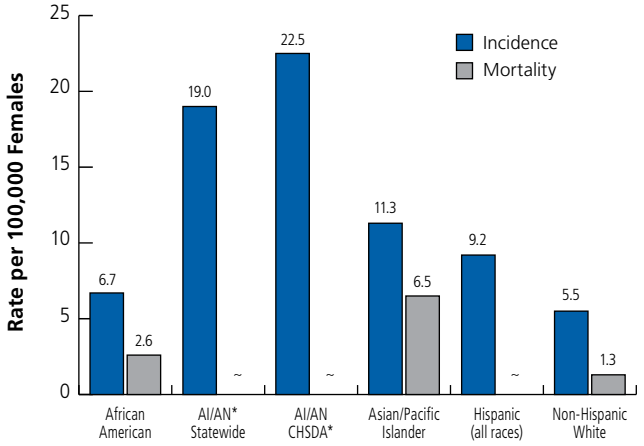
American Indian women are the most likely to develop cervical cancer in Minnesota. During 2008-2012, they were four times more likely to be diagnosed with this cancer than non-Hispanic white women, and Asian/Pacific Islander and Hispanic women

Five-year Relative Survival from Cervical Cancer in the US

Stage	Whites	Blacks
Localized	92.0%	85.2%
Regional	58.2%	51.5%
Distant	18.0%	11.4%
All Stages	69.2%	58.2%

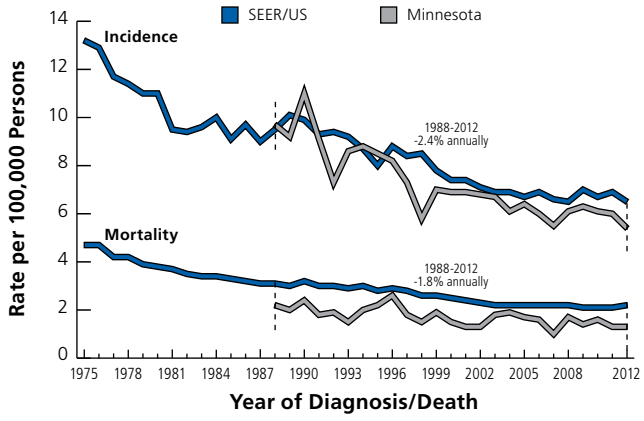
Based on cases diagnosed in 2005-2011 with follow-up into 2012.
Source: *SEER Cancer Statistics Review, 1975-2012.*

Cervical Cancer by Race/Ethnicity, Minnesota, 2008-2012



* AI/AN=American Indian/Alaska Native; CHSDA=Contract Health Service Delivery Area. ~ Rates based on fewer than ten cases or deaths are not presented. Rates are age-adjusted to the 2000 US population.
Source: MCSS (Feb 2015) and Minnesota Center for Health Statistics.

Cervical Cancer Trends in Minnesota and the US



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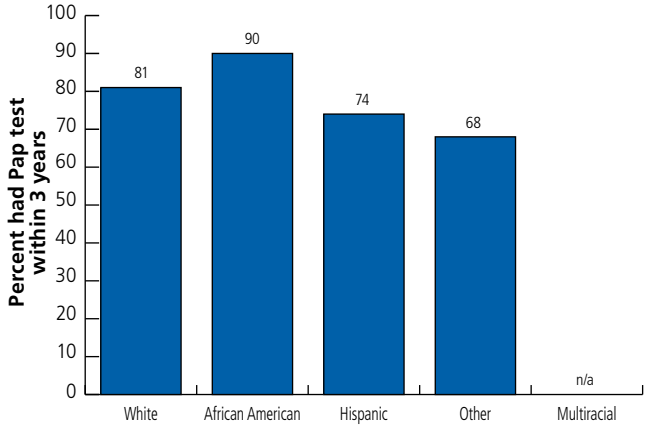
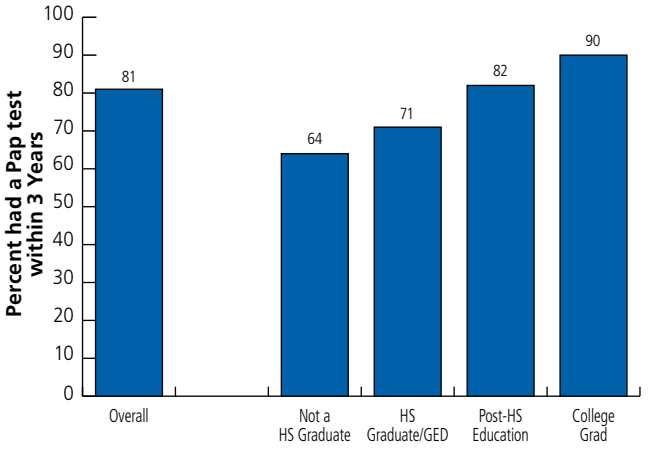
Source: MCSS (Feb 2015), Minnesota Center for Health Statistics, and *SEER Cancer Statistics Review, 1975-2012.*

Cervical Cancer Screening among Females Ages 18 and Older by Race/Ethnicity, Minnesota, 2012



Women who had a hysterectomy were excluded.
Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

Cervical Cancer Screening among Females Ages 18 and Older by Education, Minnesota, 2012

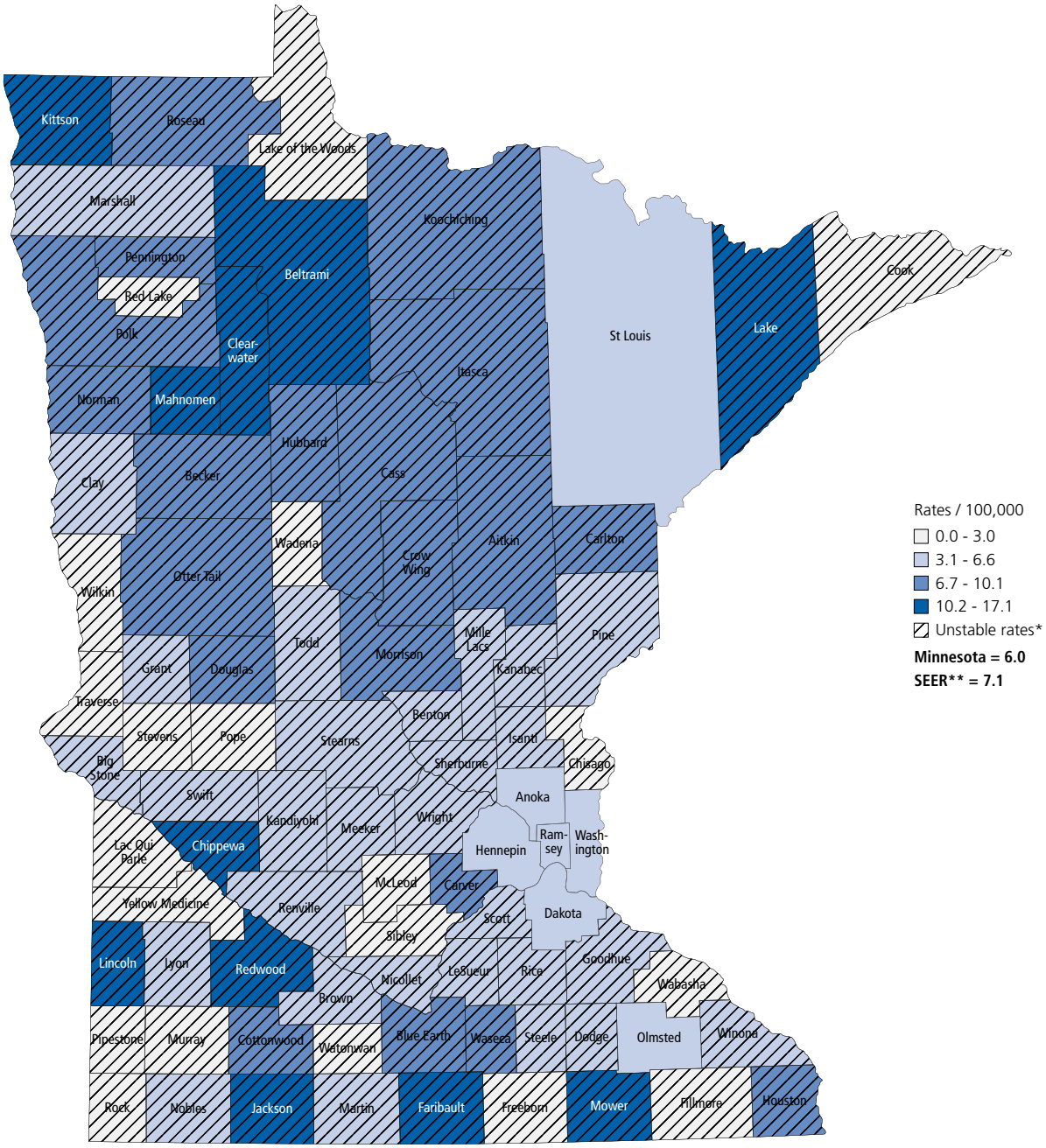


HS is high school; GED is General Education Development test (high school equivalency exam). Women who had a hysterectomy were excluded.
Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

in Minnesota were about two times more likely to be diagnosed with cervical cancer than non-Hispanic white women. Although based on a relatively small number of cases, these disparities have been consistent over time. These marked differences in cervical cancer by race/ethnicity are not identified in the SEER 18 areas.

The average number of cases of cervical cancer diagnosed each year between 2008 and 2012 in Minnesota counties is shown in the Summary Tables.

Cervical Cancer Incidence Rates in Minnesota Counties, 2008-2012



* Rates based on counts < 20 or relative standard error > 30%. **Non-Hispanic whites in the SEER 18 areas. Rates are per 100,000 persons, age-adjusted to the 2000 US population. Categories were determined using the Jenks natural breaks classification method.

Source: MCSS (Feb 2015).

Trends in Cervical Cancer

Incidence and mortality rates for invasive cervical cancer have each significantly decreased by about 50 percent in the US since 1975 and in Minnesota since 1988.

Geographic Differences in Cervical Cancer

Cervical cancer rates have been consistently lower in Minnesota than in the US. During 2008-2012, the cervical cancer incidence rate was 15 percent lower in Minnesota than among non-Hispanic white women in the SEER 18 areas. During the same period, cervical cancer mortality was 27 percent lower in Minnesota than among non-Hispanic white women in the US.

Cervical Cancer Screening

Almost all cervical cancers are caused by persistent infection with the human papilloma virus (HPV). A combination of vaccination with the HPV vaccine and regular Pap tests can help prevent the cancers.

Based on data from the 2012 BRFSS, the percentage of women age 18 and older in Minnesota who reported that they had a Pap test in the previous three years was 81 percent.

Based on the race categories provided by BRFSS, African American women were the most likely to report having been screened in the past three years, followed by white women. Self-reported screening prevalence was lower for Hispanic women and other women. Each of the race groups had at least 99 BRFSS participants.

The likelihood of having a Pap test in the past three years is strongly associated with education. Only 64 percent of women who didn't complete high school reported being screened, 71 percent of those who graduated from high school, 82 percent of those with some post-high school education, and 90 percent of college graduates were screened.

American Cancer Society Screening Guidelines for Cervical Cancer

- Cervical cancer screening (testing) should begin at age 21. Women under age 21 should not be tested.
- Women between ages 21 and 29 should have a Pap test every 3 years. HPV testing should not be used in this age group unless it is needed after an abnormal Pap test result.
- Women between the ages of 30 and 65 should have a Pap test plus an HPV test (called "co-testing") every 5 years. This is the preferred approach, but it is also OK to have a Pap test alone every 3 years.
- Women over age 65 who have had regular cervical cancer testing with normal results should not be tested for cervical cancer. Once testing is stopped, it should not be started again. Women with a history of a serious cervical pre-cancer should continue to be tested for at least 20 years after that diagnosis, even if testing continues past age 65.
- A woman who has had her uterus removed (and also her cervix) for reasons not related to cervical cancer and who has no history of cervical cancer or serious pre-cancer should not be tested. A woman who has had a hysterectomy without the removal of the cervix should continue screening according to these guidelines.
- A woman who has been vaccinated against HPV should still follow the screening recommendations for her age group.
- Some women – because of their health history (HIV infection, organ transplant, or DES exposure, etc.) – may need to have a different screening schedule for cervical cancer. Talk to your doctor or nurse about your history.

Melanoma of the Skin in Minnesota

Over the past 15 years, the rate of melanoma has significantly increased among young non-Hispanic white women ages 20-49, with an average increase of 4% per year. Using a tanning bed before the age of 35 increases your risk of melanoma by 59 percent. In 2013, 34 percent of non-Hispanic white females reported tanning indoors within the past year, and more than half of that group tanned 10 or more times. The increase in melanoma among young women and the prevalence of indoor tanning prompted legislative action on minors' access to indoor tanning facilities in a number of states. Effective July 1, 2015, teens can no longer tan at indoor tanning facilities in Minnesota. Minnesota joins 10 other states and the District of Columbia that prohibit indoor tanning for persons under 18 years of age.

Melanoma of the skin is a more serious form of cancer than the more commonly diagnosed basal and squamous cell skin cancers. If not found early, melanomas can spread to other parts of the body. The best defense against all forms of skin cancer is to limit exposure to the sun. People with risk factors for melanoma should regularly examine their skin and report to their doctor any moles or other skin lesions with ABCD characteristics: Asymmetry, Border irregularity, Color irregularity, or Diameter of greater than a quarter inch (6 mm).

Risk Factors for Melanoma of the Skin

- Excessive exposure to sunlight, especially intense, intermittent exposure
- Fair skin, light eyes, and red or blond hair
- Family or personal history of melanoma
- Having freckles, dysplastic nevi, many moles, or large moles
- Use of tanning booths

The Burden of Melanoma in Minnesota

In 2012, 1,672 Minnesotans were diagnosed with invasive melanoma of the skin. It was the fifth most commonly diagnosed cancer among men and among women in the state. About 23 percent of melanomas were diagnosed among persons under 50 years of age, and it was one of the most common cancers among 20- to 49-year-olds. In 2012, the age-adjusted incidence rate for melanoma of the skin in Minnesota was 28.3 new cases per 100,000 persons.

In 2012, 155 Minnesotans died of melanoma. About 16 percent of deaths occurred among persons under 50 years of age. The age-adjusted mortality rate for melanoma of the skin in Minnesota in 2012 was 2.6 deaths per 100,000 persons.

Five-year Relative Survival from Melanoma of the Skin in the US

Stage	Whites	Blacks
Localized	97.9%	98.8%
Regional	60.5%	67.2%
Distant	15.2%	19.6%
All Stages	89.7%	93.8%

Based on cases diagnosed in 2005-2011 with follow-up into 2012.
Source: *SEER Cancer Statistics Review, 1975-2012.*

Disparities in Melanoma

Melanoma of the skin can occur among persons of color, but the vast majority of cases are diagnosed among whites. During the five-year period 2008-2012, an average of 18 cases occurred among persons of color each year in Minnesota. Melanoma incidence rates are about 30 percent higher among men than women. However, women have considerably higher incidence rates than men until 50 years of age.

Trends in Melanoma

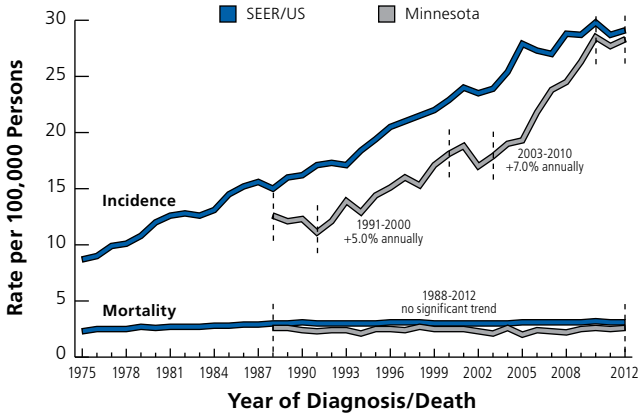
Melanoma of the skin is one of the most rapidly increasing cancers in Minnesota and nationwide. The incidence rate has more than tripled since 1975 among the white population in the US, and in Minnesota, incidence has more than doubled since 1988. Incidence rates are increasing more rapidly in Minnesota than among the white population in the SEER 9 areas.

US mortality rates for melanoma of the skin among whites were increasing by 1.7 percent per year from 1975 to 1988, and are still increasing significantly, but at a much slower rate (0.2 percent per year). Mortality due to melanoma of the skin is not increasing in Minnesota.

The American Cancer Society recommends the following for the prevention of skin cancer:

- Limit or avoid sun exposure during the midday hours (10 a.m. to 4 p.m.).
- Wear a hat that shades the face, neck, and ears, as well as a long-sleeve shirt and long pants.
- Wear sunglasses that block 99% to 100% of UVA and UVB rays.
- Use a broad-spectrum sunscreen with an SPF of 30 or higher, and apply it properly.
- Avoid indoor tanning booths and sunlamps.
- Sunburn protection should be emphasized for children; severe sunburns in childhood greatly increase the risk of melanoma later in life.

Melanoma of the Skin Trends in Minnesota and the US



Rates are age-adjusted to the 2000 US population. National incidence is for the white population in SEER 9 Regions, delay-adjusted. National mortality is for the US white population. The results of Joinpoint trend analyses are only shown for Minnesota. A hashed bar indicates where the trend significantly changed direction. Only statistically significant trends between hashed bars are shown.
Source: MCSS (Feb 2015), Minnesota Center for Health Statistics, and *SEER Cancer Statistics Review, 1975-2012.*

Geographic Differences in Melanoma of the Skin

Until recently, melanoma of the skin was considerably less common in Minnesota than in the SEER Program. However, because the rate of increase is more rapid in Minnesota, incidence in the past three years has been nearly the same in Minnesota as in SEER. The mortality rate tends to be somewhat lower in Minnesota than elsewhere in the US.

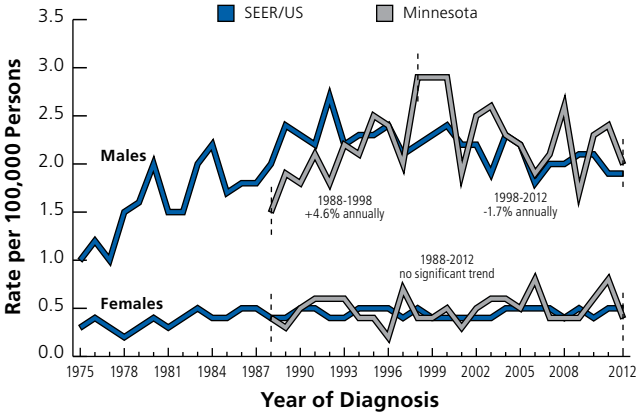
The average number of cases of melanoma of the skin diagnosed each year between 2008 and 2012 in Minnesota counties is shown in the Summary Tables.

Mesothelioma in Minnesota

Mesothelioma is a cancer of the tissues that line the chest and the abdominal cavity and is believed to be caused almost exclusively by the inhalation of asbestos fibers. The delay between exposure to asbestos and diagnosis with mesothelioma is 30 to 50 years. Data from the SEER Program indicate that the five-year relative (period) survival rate is about 9 percent, similar to survival for pancreas and liver cancers. Mesothelioma is challenging to treat, but treatment options have been developing quickly through clinical trials in the past decade.

While asbestos use in the US has been declining since its peak in the early 1970s, many workers remain at risk from past exposures and from asbestos-containing products still present in many homes, buildings, and factories. Mesothelioma is an ongoing concern in Minnesota because rates are over two-fold higher

Mesothelioma Incidence Trends in Minnesota and the US



Rates are age-adjusted to the 2000 US population. National incidence is for the white population in SEER 9 Regions, delay-adjusted. National mortality is for the US white population. The results of Joinpoint trend analyses are only shown for Minnesota. A hashed bar indicates where the trend significantly changed direction. Only statistically significant trends between hashed bars are shown.

Source: MCSS (Feb 2015) and *SEER Cancer Statistics Review, 1975-2012*.

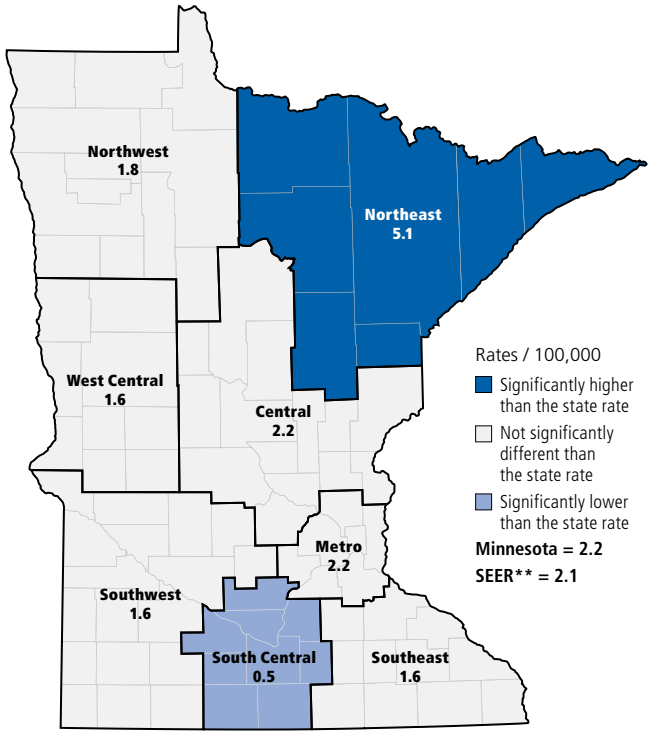
among men in Northeastern Minnesota. The excess has been largely attributed to two large industries unique to that region: the taconite (iron ore) mining industry and a former ceiling tile plant (Conwed) that utilized asbestos. As of January 2015, 101 mesothelioma cases had been identified among 69,000 taconite miners employed prior to 1983, and 39 cases had been identified among 5,200 former Conwed workers employed between 1958 and 1974. All cases have been among males. Visit the MDH Center for Occupational Health and Safety website at http://www.health.state.mn.us/divs/hpcd/cdee/occhealth/indicators/mesothelioma.html for more information. Visit http://taconite-workers.umn.edu/ for findings from a five-year study of taconite worker health by the University of Minnesota School of Public Health.

The Burden of Mesothelioma in Minnesota

In 2012, 53 men and 14 women were diagnosed with mesothelioma in Minnesota. Nearly 80 percent of mesotheliomas were diagnosed among persons 65 years of age and older. This reflects both the long delay between exposure and diagnosis and the fact that asbestos use in the US has dropped by 98 percent since the early 1970s. In 2012, the age-adjusted incidence rate for mesothelioma in Minnesota was 2.0 new cases for every 100,000 men, and 0.4 new cases for every 100,000 women.

In 2012, 50 men and 17 women died of mesothelioma in Minnesota. About 85 percent of mesothelioma deaths occurred among persons 65 years of age and older. In 2012, the age-adjusted mortality rate for mesothelioma in Minnesota was 2.0 deaths per 100,000 men and 0.5 deaths for every 100,000 women.

Mesothelioma Incidence Rates among Males in Minnesota Regions, 2008-2012



* Rates based on counts < 20 or relative standard error > 30%. **Non-Hispanic whites in the SEER 18 areas. Rates are per 100,000 persons, age-adjusted to the 2000 US population. Statistical significance ($p < 0.05$) based on SEER*Stat analysis using the Tewari modification.

Source: MCSS (Feb 2015).

Disparities in Mesothelioma

Mesothelioma is nearly four times more common among men than women both in Minnesota and nationwide, reflecting that most exposures to asbestos occur occupationally in jobs primarily held by men.

Trends in Mesothelioma

The incidence rate of mesothelioma among men in Minnesota increased rapidly by 4.6 percent a year on average from 1988 to 1998. Starting in 1998, the rate began to decline significantly by 1.7% per year, and continues to decline. The incidence rate among women has been stable over the entire 20-year period. A similar pattern has been seen among men in the geographic areas participating in the SEER Program.

Geographic Differences in Mesothelioma

Over the five-year period 2008-2012, mesothelioma incidence rates in Minnesota (2.2 new cases per 100,000 males and 0.6 cases per 100,000 females) were very similar to those reported by SEER for non-Hispanic white men and women (2.1 new cases per 100,000 males and 0.5 cases per 100,000 females).

Over the five-year period 2008-2012, the mesothelioma incidence rate among men was about two times higher in Northeast Minnesota (5.1 new cases per 100,000 males) than the state average for males (2.2 new cases per 100,000 males).

Childhood Cancer in Minnesota

The cancers diagnosed among children under 15 years of age are markedly different from those diagnosed among adults. While breast, prostate, colon and rectum, and lung cancer account for more than half of the cancers diagnosed in adults, children with cancer are more likely to be diagnosed with leukemia (33% of childhood cancers), brain cancer (19%), or lymphoma (9%). Despite active research, the cause of most childhood cancers remains unknown. However, dramatic improvements in treatment over the past few decades mean that the majority of children diagnosed with cancer will survive.

The Burden of Childhood Cancer in Minnesota

Over the five-year period 2008-2012, an average of 160 children under the age of 15 were diagnosed with cancer in Minnesota each year. Based on current rates, it is estimated that one of every 390 children in the state will be diagnosed with cancer before age 15. In 2012, the age-adjusted incidence rate for childhood cancer in Minnesota was 15.2 new cases for every 100,000 children. From 2008 to 2012, an average of 24 children died of cancer in the state each year. Although many more children die of accidents than from cancer, cancer is the leading cause of death from disease among children. The age-adjusted mortality rate for childhood cancer in Minnesota in 2012 was 2.3 deaths for every 100,000 children.

Five-year Relative Survival from Childhood (0-14 years old) Cancer in the US

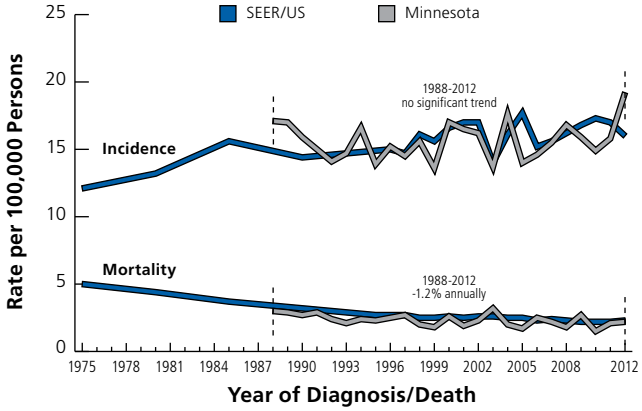
Cancer	
All Sites	83.4%
Brain and Other Nervous System	74.2%
Hodgkin Lymphoma	97.6%
Leukemia	87.2%
Acute Lymphocytic	91.2%
Acute Myeloid	66.5%
Non-Hodgkin Lymphoma	88.2%

Based on cases diagnosed in 2005-2011 with follow-up into 2012.
Source: *SEER Cancer Statistics Review, 1975-2012.*

Disparities in Childhood Cancer

The childhood cancer incidence rate is about 20 percent higher among boys than girls, and boys tend to have higher rates for most of the common childhood cancers.

Childhood (0-14 Years of Age) Cancer Trends in Minnesota and the US



Rates are age-adjusted to the 2000 US population. National incidence is for the white population in SEER 9 Regions, delay-adjusted. National mortality is for the US white population. The results of Joinpoint trend analyses are only shown for Minnesota. A hashed bar indicates where the trend significantly changed direction. Only statistically significant trends between hashed bars are shown.

Source: MCSS (Feb 2015), Minnesota Center for Health Statistics, and *SEER Cancer Statistics Review, 1975-2012.*

During 2008-2012, the overall incidence of childhood cancer in Minnesota was similar for non-Hispanic whites (15.0 new cases per 100,000 children less than 15 years of age), American Indians (11.6), Hispanics (15.8), and Asian/Pacific Islanders (16.7); the rate was significantly lower among African American children (10.1) (data not shown). There were too few cases to report the rate among American Indian children living in the CHSDA counties, or to report race-specific childhood cancer mortality rates. Based on national data, the five-year relative survival rate for cancers diagnosed among children 0-14 years of age during 1999-2006 was 74 percent among African American children and 83 percent among white children.

Trends in Childhood Cancer

Long-term trends from the SEER Program indicate that the incidence of childhood cancer has been increasing steadily by 0.6 percent a year, increasing by a total of 24 percent from 1975 to 2012. The reasons for the increase are not known. Because of the relatively small number of cases, the incidence rate of childhood cancer in Minnesota is fairly unstable without a measureable trend, but appears to be similar to that reported by SEER.

Despite the fact that childhood cancer has become more common, the risk of dying from it has decreased dramatically due to improvements in treatment. Nationwide, the childhood cancer mortality rate decreased by about 53 percent between 1975 and 2012. Because of the relatively small number of deaths, the mortality rate of childhood cancer in Minnesota is fairly unstable without a measureable trend, but appears to be similar to that in the US as a whole.

Geographic Differences in Childhood Cancer

During 2008-2012, the incidence of childhood cancer in Minnesota (16.6 new cases per 100,000 children) was about the same as among white children living in the SEER 18 areas (17.4). The mortality rate in the state (2.5 deaths per 100,000 children) was about the same as among white children in the US (2.2). The rates and types of cancer diagnosed among children in Minnesota are very similar to what is reported nationwide.

There was no statistically significant variation in childhood cancer incidence and mortality rates among the regions and counties examined in Minnesota (data not shown).

Living a Healthy Life

Smoking is the leading cause of preventable deaths and reduces life expectancy by nearly 14 years. One-third of cancer deaths are caused by smoking. Clearly, the healthiest choice is to not use tobacco products.

American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention

Achieve and maintain a healthy weight throughout life.

- Be as lean as possible throughout life without being underweight.
- Avoid excessive weight gain at all ages. For those currently overweight or obese, losing even a small amount of weight has benefits and is a good place to start.
- Engage in regular physical activity and limit consumption of high-calorie foods and beverages as key strategies for maintaining a healthy weight.

Adopt a physically active lifestyle.

- Adults: Engage in at least 150 minutes of moderate-intensity activity or 75 minutes of vigorous-intensity activity each week or an equivalent spread throughout the week.
- Children and adolescents: Engage in at least 60 minutes of moderate or vigorous physical activity each day, with vigorous activity at least three days a week.

Consume a healthy diet, with an emphasis on plant sources.

- Choose foods and beverages in amounts that help achieve and maintain a healthy weight.
- Limit consumption of processed and red meats.
- Eat at least 2½ cups of vegetables and fruits each day.
- Choose whole grains instead of refined-grain products.

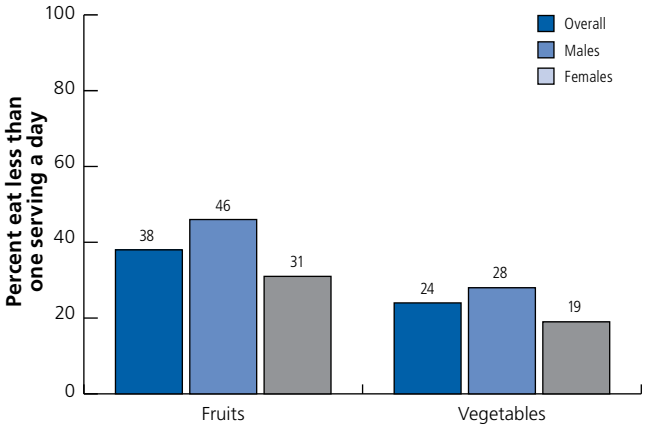
If you drink alcoholic beverages, limit consumption.

- Consume no more than one alcoholic beverage per day for women or two per day for men.

For people who do not use tobacco, dietary choices and physical activity are the most important factors affecting cancer risk that they can change. Poor diet, inactivity, and obesity are related to an estimated one-third of all cancer deaths. Eating a healthy diet, exercising regularly, and maintaining a healthy weight are effective ways that people can reduce their risk of cancer and other serious chronic diseases such as heart disease and diabetes.

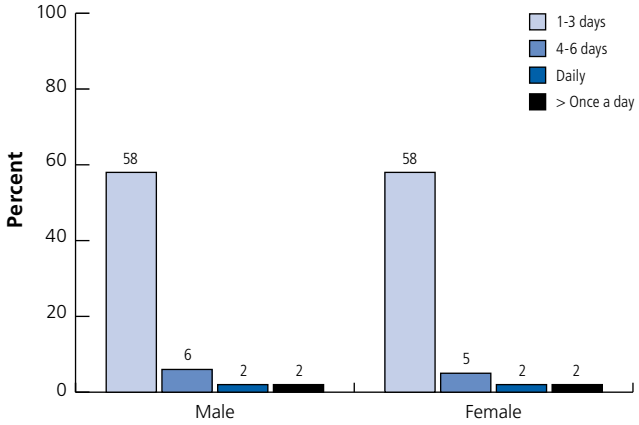
Although Minnesota has a reputation for being a healthy state and heart disease mortality rates in our state are among the lowest in the nation, self-reported behaviors indicate that there is much that could be improved.

Fruit and Vegetable Consumption among Minnesota Adults, 2013



Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

Number of Days Ate Fast Food during the Last 7 Days among Students in the 9th Grade by Gender, Minnesota, 2013



Fast food includes carry-out or delivery.

Source: Minnesota Student Survey: http://www.health.state.mn.us /divs/chs/mss/statewidetables/.

Nutrition in Minnesota

In 2009, just slightly more than one out of five (22%) Minnesota adults reported that they "usually" ate five or more servings of fruits and vegetables a day. This was about the same as the median of the 50 states and the District of Columbia (23%).

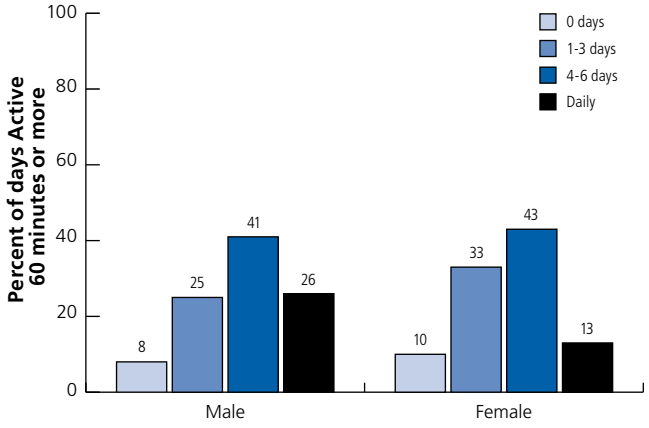
The Minnesota Student Survey indicates that fruit and vegetable consumption among students in Grade 6 did not increase from 1998 to 2010, but increased modestly among ninth- and 12th-graders in 2012 and 2010. The percentage of students reporting they consumed five or more servings "yesterday" tended to be lower than "usual" consumption among adults.

Physical Activity in Minnesota

In 2009, about half (53%) of Minnesota adults participating in the BRFSS reported that they exercised either moderately for at least 30 minutes five or more days a week or vigorously for at least 20 minutes three or more days a week. This figure has been fairly constant over the past decade, and was just slightly higher than the median of the states and the District of Columbia (51%). The percentage of Minnesota adults meeting these exercise recommendations was somewhat higher for men (55%) than women (51%), and decreased from 63 percent among 18- to 24-year-olds to 41 percent among people age 65 and older.

The percentage of students who were physically active for 30 minutes or more at least five days a week has shown modest increases between 1998 and 2010. However, the percentage of high school seniors meeting this definition of physical activity was only 43 percent.

Physical Activity during the Last 7 Days among Students in the 9th Grade by Gender, Minnesota, 2013



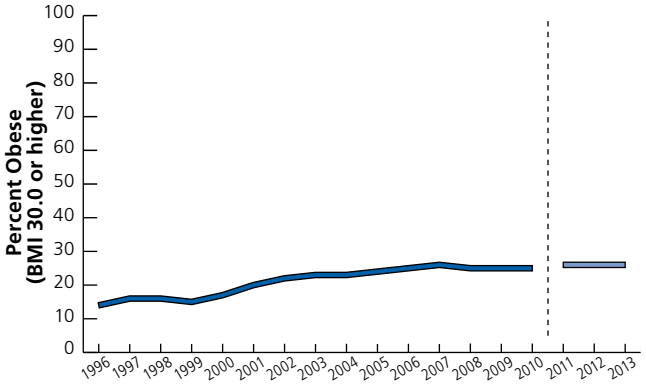
Source: Minnesota Student Survey: http://www.health.state.mn.us/divs/chs/mss/statewidetables/.

Making healthy choices can reduce your cancer risk and add enjoyment and pleasure to your life. Visit cancer.org/healthy to learn how you can make everyday lifestyle changes to reduce your risk of cancer.

Overweight and Obesity in Minnesota

The body mass index (BMI) is a commonly used measure of overweight and obesity, and is calculated from height and weight. The CDC defines a BMI of 25.0 to 29.9 as overweight but not obese, and a BMI of 30.0 or greater as obese.

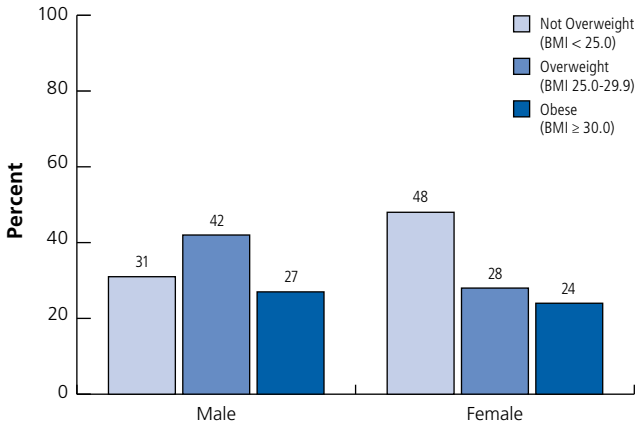
Trends in Adult Obesity, Minnesota, 1996-2010 and 2011-2013



Data for 2011-2013 cannot be compared to prior years because of changes in the design of the survey. See Data Sources for more detail. BMI is body mass index.

Source: BRFSS website (http://www.cdc.gov/brfss/index.html).

Adult Overweight and Obesity by Gender, Minnesota, 2013



BMI is body mass index.

Source: BRFSS website (http://www.cdc.gov/brfss/index.html)

The percentage of Minnesota adults who are either overweight or obese increased from 44 percent in 1988 to 63 percent in 2009. The most dramatic increase was in obesity, which increased from 10 percent of the adult Minnesota population in 1988 to 25 percent in 2009. These trends are similar to those reported by the other states participating in the BRFSS, and are signs of a nationwide epidemic in obesity. In 2009, the percentage of obese adults was only marginally lower in Minnesota (25%) than the median of the 50 states and the District of Columbia (27%).

In Minnesota, women are more likely than men to have a healthy weight, but are just as likely to be obese, which carries the greatest health risks.

Based on interviews conducted over the three-year period 2007-2009, the percentage of Minnesota adults who are obese is highest among American Indian men and women (32% and 48%, respectively) and African American women (35%) (data not shown).

Survivorship

Cancer survival has increased dramatically in the US over the past century. The overall five-year relative survival rate increased from 20 percent in the 1930s, to 33 percent in the 1960s, to 62 percent in 1993-1995, to 66 percent among people diagnosed with cancer in 1999-2006.

The five-year relative survival rate is commonly used to measure progress in treating cancer. Included as survivors are all persons who are living five years after diagnosis, whether disease free, in remission, or under treatment. For some cancers, five years is a good measure of being cured, but for others, it is not.

Five-year relative survival is the proportion of persons who are alive five years after diagnosis after adjusting for expected mortality. For example, a five-year relative survival rate of 80 percent means that 20 percent (100%-80%) fewer persons diagnosed with cancer were alive five years after diagnosis than would have been expected given mortality rates in persons of the same age, gender, and race.

Survival rates depend in part on the type of cancer, as cancer sites vary in the rate of growth, tendency to metastasize, importance of the organ, and likelihood of early detection. For most cancers, survival is more likely if the cancer is detected early. As mentioned in Frequently Asked Questions about Cancer on page 3, the introduction of a new screening test can appear to increase survival due to lead time bias, even if mortality is not improved.

MCSS does not currently have sufficient information to calculate the survival of Minnesotans diagnosed with cancer. The data provided are from the SEER Program.

Five-year Relative Survival for SEER Cases Diagnosed 2005-2011 with Follow-up into 2012

Site	All Stages	Local	Regional	Distant	Unstaged
Brain and Other Nervous System	33.3%	36.3%	21.7%	37.4%	23.3%
Female Breast	89.4%	98.6%	84.9%	25.9%	51.7%
Cervix	67.8%	91.5%	57.4%	16.5%	53.2%
Colon and Rectum	64.9%	90.1%	70.8%	13.1%	34.5%
Corpus Uteri (Uterus)	81.7%	95.3%	68.2%	16.9%	48.5%
Leukemia	61.7%	~	~	~	~
Liver and Intrahepatic Bile Duct	17.2%	30.5%	10.7%	3.1%	6.1%
Lung and Bronchus	6.5%	27.3%	14.7%	2.8%	8.2%
Melanoma of the Skin	91.5%	98.3%	63.0%	16.6%	80.2%
Non-Hodgkin Lymphoma	70.0%	82.0%	73.8%	62.4%	68.6%
Ovary	45.6%	92.1%	73.2%	28.3%	22.9%
Pancreas	7.2%	27.1%	10.7%	2.4%	4.4%
Prostate	98.6%	100.0%	100.0%	28.2%	77.3%
Urinary Bladder	77.4%	69.0%	34.0%	5.4	47.4%

~ The cancer type is not staged.

Source: *SEER Cancer Statistics Review, 1975-2012.*

American Cancer Society Resources for People throughout Their Cancer Experience

For the more than 1.6 million cancer patients are expected to be diagnosed in 2015 and the nearly 14.5 million US cancer survivors, the American Cancer Society is available anytime, day or night, to offer free information, programs, services, and community referrals to patients, survivors, and caregivers to help them make decisions through every step of a cancer experience. These resources are designed to help throughout their cancer experience.

Information, 24 Hours a Day, 7 Days a Week

The American Cancer Society is available 24 hours a day, 7 days a week online at cancer.org and by calling 1-800-227-2345. Callers are connected with a cancer information specialist who can help them locate a hospital, understand cancer and treatment options, learn what to expect and how to plan, address insurance concerns, find financial resources, find a local support group, and more. The Society can also help people who speak languages other than English or Spanish find the assistance they need, offering services in more than 200 languages.

Information on every aspect of the cancer experience, from prevention to survivorship, is also available through cancer.org, the Society's website. The site contains in-depth information on every major cancer type, as well as on treatments, side effects, caregiving, and coping.

The Society also publishes a wide variety of pamphlets and books that cover a multitude of topics, from patient education, quality of life, and caregiving issues to healthy living. Visit cancer.org/bookstore for a complete list of Society books that are available to order.

Day-to-day Help and Emotional Support

The American Cancer Society can help cancer patients and their families find the resources they need to make decisions about the day-to-day challenges that can come from a cancer diagnosis, such as transportation to and from treatment, financial and insurance needs, and lodging when treatment is needed away from home. The Society also connects people with others who have been through similar experiences to offer emotional support.

Help navigating the health care system: Learning how to navigate the cancer experience and the health care system can be overwhelming for anyone, but it is particularly difficult for those who are medically underserved, those who experience language or health literacy barriers, and those with limited resources. The American Cancer Society Patient Navigator Program reaches those most in need. The largest oncology-focused patient navigator program in the country, it has specially trained patient navigators at more than 120 sites across the nation. Patient navigators can help: find transportation to and from cancer-related appointments; assist with medical financial issues, including insurance navigation; identify community resources; and provide information on a patient's cancer diagnosis and treatment process. In 2014, more than 56,000 people relied on the Patient Navigator Program to help them through their diagnosis and treatment. The Society collaborates with a variety of organizations, including the National Cancer Institute's Center to Reduce Cancer Health Disparities, the Center for Medicare and Medicaid Services, numerous cancer treatment centers, and others to implement and evaluate this program.

Transportation to treatment: Having cancer is hard. Finding a ride to treatment shouldn't be. The Road To Recovery® program provides free rides to cancer patients to and from treatments and cancer-related appointments. Trained volunteer drivers donate their time and the use of their personal vehicles to help patients get to the treatments they need. In 2014, the American Cancer Society provided more than 341,000 rides to cancer patients.

Lodging during treatment: The Hope Lodge® program provides free overnight lodging to cancer patients and their caregivers who have to travel away from home for treatment. Not having to worry about where to stay or how to pay for it allows patients to focus on the most important thing: getting well. In 2014, the 31 Hope Lodge locations provided more than 276,000 nights of free lodging to nearly 44,000 patients and caregivers – saving them nearly $36 million in hotel expenses. Through its Hotel Partners Program, the Society also partners with local hotels across the country to provide free or discounted lodging to patients and their caregivers in communities without a Hope Lodge facility.

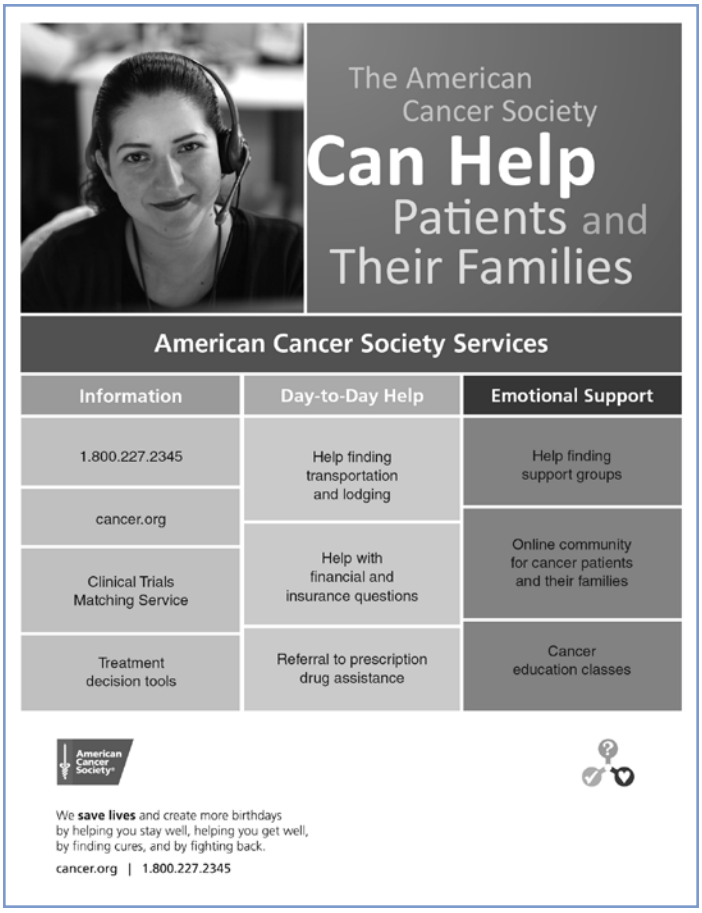
Breast cancer support: The Reach To Recovery® program matches trained volunteer breast cancer survivors to people facing or living with breast cancer. Our volunteers give cancer patients and their family members the opportunity to ask questions, talk about their fears and concerns, and express their feelings. Our Reach To Recovery volunteers have been there, and they offer understanding, support, and hope. In 2014, the program assisted nearly 8,000 patients.

Cancer education classes: American Cancer Society I Can Cope online cancer education classes are a quick and easy way to get the answers you need to help you or a loved one during and after cancer treatment. Classes are free and can be accessed at cancer.org/icancope anytime, day or night.

Hair-loss and mastectomy products: Some women wear wigs, hats, breast forms, and special bras to help cope with the effects of a mastectomy and hair loss. The American Cancer Society *"tlc" Tender Loving Care*® publication offers affordable hair loss and mastectomy products as well as advice on how to use those products. The *"tlc"*™ products and catalogs may be ordered online at tlcdirect.org or by calling 1-800-850-9445. All proceeds from product sales go back into the Society's programs and services for patients and survivors.

Help with appearance-related side effects of treatment: The Look Good Feel Better® program is a collaboration of the American Cancer Society, the Personal Care Products Council Foundation, and the Professional Beauty Association that helps women with cancer manage the appearance-related side effects of treatment. Trained volunteer beauty professionals teach simple techniques on skin care, makeup, and nail care, and give practical tips on hair loss, wigs, and head coverings. Each registered program participant receives a complimentary beauty kit to use during the workshop and to take home. To learn more, visit the Look Good Feel Better website at lookgoodfeelbetter.org or call 1-800-395-LOOK (1-800-395-5665).

Finding hope and inspiration: Cancer patients and their loved don't have to face cancer alone. The Society Cancer Survivors Network® is a free online community created by and for people living with cancer and their families. At csn.cancer.org, they can get and give support, connect with others, find resources, and tell their own story through personal expressions like music and art.



Summary Tables

Cancer Incidence in Minnesota, 2012

	Number of New Cases			Incidence Rate		
	Male	Female	Total	Male	Female	Total
All Sites	13,811	13,499	27,310	494.2	427.1	454.2
Brain and Other Nervous System	256	184	440	9.2	6.3	7.7
Breast	24	4,013	4,037	0.9	128.0	67.4
Cervix Uteri	0	152	152	0.0	5.4	2.7
Colon and Rectum	1,152	1,112	2,264	42.3	34.3	38.0
Corpus and Uterus, NOS	0	957	957	0.0	29.2	15.3
Esophagus	210	72	282	7.2	2.2	4.5
Hodgkin Lymphoma	95	67	162	3.6	2.5	3.1
Kidney and Renal Pelvis	602	324	926	21.5	10.3	15.5
Larynx	148	28	176	5.3	0.9	2.9
Leukemia	635	369	1,004	23.3	11.8	17.0
Liver and Intrahepatic Bile Duct	270	133	403	8.9	4.1	6.4
Lung and Bronchus	1,662	1,609	3,271	60.7	50.3	54.7
Melanoma of the Skin	906	766	1,672	32.5	25.6	28.3
Mesothelioma	53	14	67	2.0	0.4	1.1
Myeloma	227	167	394	8.2	5.0	6.5
Non-Hodgkin Lymphoma	734	611	1,345	26.9	19.0	22.7
Oral Cavity and Pharynx	473	222	695	16.2	6.7	11.2
Ovary	0	346	346	0.0	11.0	5.8
Pancreas	406	333	739	14.9	9.9	12.2
Prostate	3,355	0	3,355	112.9	0.0	52.8
Stomach	241	118	359	8.9	3.6	5.9
Testis	185	0	185	7.0	0.0	3.6
Thyroid	196	552	748	7.1	19.4	13.3
Urinary Bladder	1,011	316	1,327	38.6	9.3	22.2

~ Not available or sex-specific site. In situ cancers except those of the urinary bladder are excluded. Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Source: All cases were microscopically confirmed or identified solely through death certificates, and were reported to MCSS as of February 2015. Deaths are from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis.

Cancer Mortality in Minnesota, 2012

	Number of Deaths			Mortality Rate		
	Male	Female	Total	Male	Female	Total
All Sites	4,937	4,497	9,434	187.3	133.8	155.8
Brain and Other Nervous System	170	103	273	6.2	3.2	4.6
Breast	4	605	609	0.1	18.0	9.9
Cervix Uteri	~	39	39	~	1.3	~
Colon and Rectum	407	391	798	15.4	11.1	13.1
Corpus and Uterus, NOS	~	144	144	~	4.4	~
Esophagus	215	65	280	7.6	2.0	4.5
Hodgkin Lymphoma	12	8	20	0.4	0.3	0.4
Kidney and Renal Pelvis	161	85	246	6.0	2.4	4.0
Larynx	35	8	43	1.3	0.2	0.7
Leukemia	273	166	439	10.8	4.8	7.3
Liver and Intrahepatic Bile Duct	220	119	339	7.6	3.5	5.5
Lung and Bronchus	1,224	1,108	2,332	46.1	34.0	39.1
Melanoma of the Skin	109	46	155	4.1	1.4	2.6
Mesothelioma (all sites)	50	17	67	2.0	0.5	1.1
Myeloma	125	79	204	4.9	2.4	3.5
Non-Hodgkin Lymphoma	230	199	429	8.8	5.7	7.1
Oral Cavity and Pharynx	77	56	133	2.8	1.7	2.2
Ovary	~	244	244	~	7.3	~
Pancreas	318	282	600	11.9	8.1	9.9
Prostate	471	~	471	19.0	~	~
Stomach	82	57	139	3.2	1.7	2.3
Testis	2	~	2	0.1	~	~
Thyroid	14	14	28	0.5	0.4	0.5
Urinary Bladder	167	58	225	6.5	1.7	3.6

~ Not available or sex-specific site. In situ cancers except those of the urinary bladder are excluded. Rates are per 100,000 persons and are age-adjusted to the 2000 US population.

Source: All cases were microscopically confirmed or identified solely through death certificates, and were reported to MCSS as of February 2015. Deaths are from the Minnesota Center for Health Statistics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis.

Average Number of New Cancer Cases Diagnosed Each Year for Selected Cancers by County, Minnesota, 2008-2012

	All Sites	Female Breast	Cervix Uteri	Colon and Rectum	Corpus and Uterus, NOS	Leukemia	Lung and Bronchus	Melanoma of the Skin	Non-Hodgkin Lymphoma	Prostate	Bladder
Aitkin	133	17	1	13	4	4	20	5	5	24	8
Anoka	1,552	220	11	132	55	52	200	91	74	207	76
Becker	198	23	2	19	6	7	27	11	11	30	9
Beltrami	229	30	2	22	8	7	29	11	9	36	11
Benton	171	23	1	16	5	6	20	10	9	29	6
Big Stone	38	5	0	5	1	1	7	1	2	6	2
Blue Earth	263	41	2	25	10	10	30	13	13	38	10
Brown	162	25	1	19	6	5	20	7	6	24	7
Carlton	192	26	1	18	7	5	26	7	9	29	9
Carver	351	54	3	29	12	14	39	26	14	54	12
Cass	219	24	1	18	7	7	34	10	10	39	14
Chippewa	82	13	1	11	3	2	7	4	4	13	4
Chisago	232	37	0	19	6	5	30	10	15	36	11
Clay	274	35	2	27	9	10	32	17	14	36	14
Clearwater	52	8	1	5	1	2	9	2	3	9	3
Cook	30	3	<1	3	1	2	3	1	2	5	1
Cottonwood	75	13	<1	9	3	3	8	4	3	10	4
Crow Wing	399	51	3	33	10	13	56	19	21	66	21
Dakota	1,805	305	13	149	60	63	196	104	84	270	84
Dodge	97	15	<1	10	3	4	11	8	4	10	4
Douglas	230	31	2	23	7	8	25	13	11	38	13
Faribault	101	14	1	11	2	3	12	7	4	15	4
Fillmore	129	18	<1	11	4	5	14	9	7	18	7
Freeborn	203	28	<1	25	7	6	25	14	10	28	9
Goodhue	262	41	1	27	10	8	30	21	12	35	14
Grant	51	7	<1	7	<1	2	6	2	4	8	2
Hennepin	5,421	869	39	452	183	196	595	310	270	755	240
Houston	113	16	1	11	3	2	13	7	4	21	8
Hubbard	147	19	1	13	5	5	21	9	7	23	5
Isanti	194	27	1	12	9	8	27	9	9	28	8
Itasca	290	36	2	29	9	9	37	13	16	38	20
Jackson	68	8	1	13	1	2	8	2	3	10	3
Kanabec	91	12	<1	10	2	2	11	5	3	17	6
Kandiyohi	243	37	1	20	11	8	25	14	12	40	14
Kittson	30	3	<1	4	1	1	5	2	2	4	2
Koochiching	92	12	1	14	3	5	11	4	4	12	4
Lac Qui Parle	55	8	<1	6	3	2	6	2	2	10	5
Lake	76	8	1	7	2	1	9	4	3	15	5
Lake of the Woods	25	3	<1	2	<1	1	4	1	1	4	2
Le Sueur	150	18	1	15	4	6	18	7	5	28	8
Lincoln	42	5	<1	8	1	1	4	1	3	6	3
Lyon	133	19	1	15	4	3	14	7	7	18	10
McLeod	211	29	<1	18	7	8	27	13	11	33	10

In situ cancers except those of the urinary bladder are excluded. NHL is non-Hodgkin lymphoma; lung includes bronchus; < 1 is less than one.

Source: MCSS (Feb 2015). All cases were microscopically confirmed or identified solely through death certificates, and were reported to MCSS as of February 2015.

Average Number of New Cancer Cases Diagnosed Each Year for Selected Cancers by County, Minnesota, 2008-2012 (Continued)

	All Sites	Female Breast	Cervix Uteri	Colon and Rectum	Corpus and Uterus, NOS	Leukemia	Lung and Bronchus	Melanoma of the Skin	Non-Hodgkin Lymphoma	Prostate	Bladder
Mahnomen	38	3	<1	3	2	1	7	1	2	5	1
Marshall	59	7	<1	4	2	3	9	3	3	11	4
Martin	141	17	1	17	5	4	15	11	6	18	6
Meeker	121	16	1	11	3	4	15	6	7	20	5
Mille Lacs	143	21	1	12	4	5	21	6	8	16	9
Morrison	186	25	1	15	5	5	24	6	9	39	10
Mower	229	31	2	19	9	7	28	20	11	30	12
Murray	59	8	<1	8	3	3	5	2	3	11	4
Nicollet	150	22	1	13	7	5	17	11	6	22	7
Nobles	114	15	1	15	4	4	11	4	6	16	7
Norman	42	6	<1	5	2	1	5	2	1	9	1
Olmsted	757	109	4	54	26	24	77	87	37	98	30
Otter Tail	389	46	2	37	13	16	46	19	19	74	22
Pennington	71	10	<1	7	2	1	8	3	4	10	3
Pine	177	22	1	14	5	6	24	7	7	28	9
Pipestone	57	9	0	8	1	2	6	2	3	8	2
Polk	188	26	1	21	5	6	22	6	10	27	11
Pope	76	9	<1	7	2	4	10	3	2	13	5
Ramsey	2,470	370	14	195	87	85	295	124	125	363	121
Red Lake	25	3	<1	3	<1	1	4	1	1	3	2
Redwood	104	15	1	11	4	2	11	6	6	17	5
Renville	101	14	1	8	3	4	10	5	5	20	7
Rice	298	45	1	25	9	11	38	18	18	42	14
Rock	56	8	<1	6	3	2	5	2	2	10	3
Roseau	85	13	1	7	3	2	10	3	4	15	4
St Louis	1,196	160	7	101	36	35	158	58	61	180	68
Scott	491	79	3	41	17	18	56	31	22	71	20
Sherburne	336	57	2	24	9	11	41	18	14	46	18
Sibley	83	11	<1	7	4	3	12	2	4	14	4
Stearns	729	95	3	66	23	23	79	35	38	131	39
Steele	191	33	1	20	7	7	20	10	10	23	10
Stevens	49	6	<1	3	2	1	5	3	2	11	4
Swift	64	9	<1	7	2	2	8	3	3	11	3
Todd	137	16	<1	13	6	3	18	7	6	24	6
Traverse	31	2	<1	5	1	1	2	1	2	6	2
Wabasha	137	19	<1	12	5	4	18	10	6	20	7
Wadena	94	11	<1	13	2	4	12	4	7	12	7
Waseca	104	19	1	8	3	2	12	4	7	18	4
Washington	1,177	191	7	91	38	39	125	76	53	207	53
Watonwan	68	7	<1	6	2	2	11	5	5	9	4
Wilkin	38	6	<1	6	2	1	4	2	3	5	2
Winona	243	35	1	24	7	7	29	14	13	33	10
Wright	487	68	3	38	17	16	62	28	22	74	23
Yellow Medicine	70	10	<1	7	2	2	8	4	3	12	3

In situ cancers except those of the urinary bladder are excluded. NHL is non-Hodgkin lymphoma; lung includes bronchus; < 1 is less than one.

Source: MCSS (Feb 2015). All cases were microscopically confirmed or identified solely through death certificates, and were reported to MCSS as of February 2015.

Average Number of Cancer Deaths Each Year for Selected Cancers by County, Minnesota, 2008-2012

	All Sites	Female Breast	Cervix Uteri	Colon and Rectum	Corpus and Uterus, NOS	Leukemia	Lung and Bronchus	Melanoma of the Skin	Non-Hodgkin Lymphoma	Prostate	Bladder
Aitkin	49	1	4	4	3	1	13	2	1	1	2
Anoka	490	16	29	44	21	19	140	20	12	5	16
Becker	84	3	4	9	3	2	20	5	2	1	5
Beltrami	79	2	1	8	4	2	21	4	2	1	5
Benton	61	2	4	5	2	2	15	4	2	1	3
Big Stone	20	<1	1	2	2	<1	6	2	1	<1	1
Blue Earth	102	2	6	9	6	3	23	5	4	1	7
Brown	64	2	3	8	3	1	16	3	1	1	4
Carlton	80	2	4	7	4	2	24	2	3	1	4
Carver	107	4	8	9	5	3	25	4	3	2	5
Cass	76	2	4	5	2	3	24	2	2	1	4
Chippewa	30	<1	2	4	2	<1	5	2	2	<1	2
Chisago	79	2	5	3	4	2	25	3	2	1	4
Clay	92	3	6	8	5	1	24	4	2	1	3
Clearwater	23	<1	3	2	1	1	6	1	<1	<1	2
Cook	11	1	<1	1	1	<1	3	<1	<1	<1	1
Cottonwood	33	1	3	4	2	1	6	1	1	<1	2
Crow Wing	157	4	7	10	8	4	49	8	3	2	7
Dakota	552	15	40	50	29	21	143	25	14	6	25
Dodge	33	1	2	3	1	1	8	2	1	1	2
Douglas	90	3	8	8	4	2	20	5	3	1	5
Faribault	39	1	3	4	2	1	11	2	1	<1	2
Fillmore	49	1	4	5	3	1	9	2	1	1	4
Freeborn	84	1	5	10	4	2	19	4	2	1	6
Goodhue	107	3	8	11	6	2	26	4	1	1	8
Grant	18	<1	<1	2	1	1	5	1	<1	<1	1
Hennepin	1,870	50	138	153	85	68	430	82	58	24	97
Houston	39	2	3	5	1	1	10	2	2	<1	3
Hubbard	51	1	2	4	4	2	14	2	1	1	4
Isanti	71	1	6	4	3	4	19	3	1	1	3
Itasca	124	2	7	12	6	3	31	4	3	1	8
Jackson	23	1	1	3	1	<1	6	1	1	<1	<1
Kanabec	36	2	3	3	1	1	9	1	1	<1	3
Kandiyohi	86	3	5	10	5	2	20	6	2	1	7
Kittson	14	<1	1	2	<1	<1	3	1	<1	<1	1
Koochiching	38	<1	1	4	3	1	11	1	1	<1	3
Lac Qui Parle	20	<1	1	2	1	1	5	1	1	<1	2
Lake	31	<1	2	1	1	1	8	2	1	1	4
Lake Of The Woods	9	<1	1	2	<1	<1	3	<1	<1	<1	1
Le Sueur	55	1	4	4	2	<1	14	2	1	1	3
Lincoln	18	1	2	1	1	<1	3	1	<1	<1	2
Lyon	50	1	4	6	3	1	12	2	1	<1	3
Mcleod	76	1	7	7	4	2	17	3	1	1	5

Brain includes other nervous system; liver includes intrahepatic bile duct; lung includes bronchus; NHL is non-Hodgkin lymphoma; < 1 is less than one.

Source: Deaths are from the Minnesota Center for Health statitics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis.

Average Number of Cancer Deaths Each Year for Selected Cancers by County, Minnesota, 2008-2012 (Continued)

	All Sites	Female Breast	Cervix Uteri	Colon and Rectum	Corpus and Uterus, NOS	Leukemia	Lung and Bronchus	Melanoma of the Skin	Non-Hodgkin Lymphoma	Prostate	Bladder
Mahnomen	15	<1	<1	1	<1	<1	5	1	1	<1	1
Marshall	23	<1	2	2	1	<1	8	<1	1	1	2
Martin	54	1	5	5	3	1	12	3	2	1	2
Meeker	47	1	3	5	3	1	12	2	2	1	2
Mille Lacs	65	3	3	5	4	2	20	1	2	1	4
Morrison	77	2	7	6	3	2	16	3	2	1	5
Mower	94	1	6	7	5	4	24	3	3	1	5
Murray	22	<1	1	3	1	1	4	2	<1	<1	2
Nicollet	47	1	4	3	3	1	12	2	2	<1	3
Nobles	37	1	3	4	2	2	7	2	1	<1	2
Norman	19	1	1	2	1	<1	4	1	<1	<1	2
Olmsted	225	7	17	18	11	8	52	11	5	3	14
Otter Tail	146	3	8	13	9	3	38	8	3	2	10
Pennington	31	<1	2	3	1	1	6	1	1	<1	2
Pine	64	1	5	3	1	2	18	2	2	1	4
Pipestone	28	1	2	3	2	<1	7	2	1	<1	2
Polk	80	2	6	8	3	2	18	4	2	1	5
Pope	31	1	2	3	2	<1	7	1	1	<1	2
Ramsey	899	26	63	68	44	36	224	38	23	13	42
Red Lake	10	<1	<1	1	1	<1	3	<1	<1	<1	<1
Redwood	45	1	2	5	2	1	9	3	2	<1	4
Renville	45	2	3	4	2	1	10	2	1	<1	5
Rice	110	2	9	10	3	3	32	6	3	1	7
Rock	23	1	2	2	1	<1	5	1	1	<1	3
Roseau	28	<1	1	2	2	1	7	1	<1	<1	2
St Louis	493	10	32	41	22	14	128	23	14	6	29
Scott	149	5	12	14	7	4	40	6	4	2	5
Sherburne	116	6	11	9	5	3	28	4	2	2	6
Sibley	37	1	2	2	2	1	8	3	<1	1	3
Stearns	237	7	15	21	10	7	56	11	4	3	14
Steele	68	4	5	6	3	2	17	2	2	1	3
Stevens	20	1	2	2	1	<1	3	1	<1	<1	1
Swift	28	1	1	2	1	1	9	2	1	<1	4
Todd	50	1	2	6	2	1	13	2	1	1	3
Traverse	13	1	<1	2	<1	<1	2	1	<1	1	1
Wabasha	47	1	2	4	3	1	14	1	1	1	3
Wadena	39	1	2	5	3	1	10	2	1	<1	2
Waseca	40	1	3	3	2	2	10	1	1	1	3
Washington	345	10	24	30	17	11	89	14	8	4	18
Watonwan	25	<1	2	2	2	1	7	1	1	<1	2
Wilkin	13	<1	1	2	1	1	4	1	1	<1	1
Winona	98	2	8	8	5	2	24	4	2	1	6
Wright	170	9	14	14	7	5	44	4	3	3	9
Yellow Medicine	27	<1	2	4	<1	<1	6	1	<1	<1	1

Brain includes other nervous system; liver includes intrahepatic bile duct; lung includes bronchus; NHL is non-Hodgkin lymphoma; < 1 is less than one.

Source: Deaths are from the Minnesota Center for Health statitics, and include all deaths with the specified cancer as the underlying cause of death during the time period, regardless of year of diagnosis.

American Cancer Society Recommendations for the Early Detection of Cancer in Average-risk Asymptomatic People*

Cancer Site	Population	Test or Procedure	Recommendation
Breast	Women, ages 40-54	Mammography	Women should undergo regular screening mammography starting at age 45. Women ages 45 to 54 should be screened annually. Women should have the opportunity to begin annual screening between the ages of 40 and 44.
	Women, ages 55+		Transition to biennial screening, or have the opportunity to continue annual screening, continuing as long as overall health is good and life expectancy is 10+ years.
Cervix	Women, ages 21-29	Pap test	Screening should be done every 3 years with conventional or liquid-based Pap tests.
	Women, ages 30-65	Pap test & HPV DNA test	Screening should be done every 5 years with both the HPV test and the Pap test (preferred), or every 3 years with the Pap test alone (acceptable).
	Women ages 66+	Pap test & HPV DNA test	Women ages 66+ who have had ≥3 consecutive negative Pap tests or ≥2 consecutive negative HPV and Pap tests within the past 10 years, with the most recent test occurring in the past 5 years should stop cervical cancer screening.
	Women who have had a total hysterectomy		Stop cervical cancer screening.
Colorectal†	Men and women, ages 50+	Guaiac-based fecal occult blood test (gFOBT) with at least 50% sensitivity or fecal immunochemical test (FIT) with at least 50% sensitivity, **OR**	Annual testing of spontaneously passed stool specimens. Single stool testing during a clinician office visit is not recommended, nor are "throw in the toilet bowl" tests. In comparison with guaiac-based tests for the detection of occult blood, immunochemical tests are more patient-friendly and are likely to be equal or better in sensitivity and specificity. There is no justification for repeating FOBT in response to an initial positive finding.
		Stool DNA test, **OR**	Every 3 years
		Flexible sigmoidoscopy (FSIG), **OR**	Every 5 years alone, or consideration can be given to combining FSIG performed every 5 years with a highly sensitive gFOBT or FIT performed annually.
		Double-contrast barium enema, **OR**	Every 5 years
		Colonoscopy, **OR**	Every 10 years
		CT colography	Every 5 years
Endometrial	Women at menopause		Women should be informed about symptoms of endometrial cancer and encouraged to report unexpected bleeding to a physician.
Lung	Current or former smokers ages 55-74 in good health with 30+ pack-year history	Low-dose helical CT (LDCT)	Clinicians with access to high-volume, high-quality lung cancer screening and treatment centers should initiate a discussion about annual lung cancer screening with apparently healthy patients ages 55-74 who have at least a 30 pack-year smoking history, and who currently smoke or have quit within the past 15 years. A process of informed and shared decision making with a clinician related to the potential benefits, limitations, and harms associated with screening for lung cancer with LDCT should occur before any decision is made to initiate lung cancer screening. Smoking cessation counseling remains a high priority for clinical attention in discussions with current smokers, who should be informed of their continuing risk of lung cancer. Screening should not be viewed as an alternative to smoking cessation.
Prostate	Men, ages 50+	Prostate-specific antigen test with or without digital rectal examination	Men who have at least a 10-year life expectancy should have an opportunity to make an informed decision with their health care provider about whether to be screened for prostate cancer, after receiving information about the potential benefits, risks, and uncertainties associated with prostate cancer screening. Prostate cancer screening should not occur without an informed decision- making process.

CT=computed tomography. *All individuals should become familiar with the potential benefits, limitations, and harms associated with cancer screening.
†All positive tests (other than colonoscopy) should be followed up with colonoscopy.

Glossary

Age-adjusted cancer rate: The crude rate directly adjusted to an agreed-upon, or "standard" population. Cancer rates that have been age-adjusted to the same standard can be compared without being biased by differences in the age distribution of the populations.

Average annual percent change (APC): The average percentage change in the age-adjusted rate each year over a specific period of time. The APC is a commonly used measure of cancer trends. For example, an APC of +1.8% means that the cancer rate increased, on average, by 1.8 percent per year. Similarly, an APC of -1.8% means that the cancer rate decreased, on average, by 1.8 percent per year. The calculation of the APC assumes that the rate of change has been consistent over time. APCs in this report were calculated using the statistical program SEER*Stat.

Body mass index (BMI): The standard adopted by the World Health Organization for the classification of body weight categories. BMI, which measures a person's weight in relation to their height, is calculated using the formula: BMI = weight / height^2 (kg/m^2).

Cancer control: Reducing the effects of cancer in a population through prevention, early detection, treatment, rehabilitation, and palliation

Cancer incidence: The number of new cases of cancer diagnosed during a specified period of time

Cancer mortality: The number of deaths due to cancer in a specified period of time, regardless of when the disease was diagnosed

Contract Health Services Delivery Area (CHSDA): The geographic area within which health services are provided from public or private medical or hospital facilities at the expense of the Indian Health Service (IHS). Services are provided to members of an identified Indian community who reside in the area. In Minnesota, there are 29 CHSDA counties, and about half of the American Indian population in the state lives in a CHSDA county.

Crude cancer rate: The number of new cases of cancer diagnosed, or the number of cancer deaths, divided by the size of the population in which the cases or deaths occurred, over a specified period of time. Cancer rates are usually expressed as the number of cases or deaths per 100,000 persons per year.

Five-year relative survival: The percentage of persons who were still alive five years after diagnosis, adjusted for (that is, relative to) expected mortality from other causes. A five-year relative survival of 80 percent means that 20 percent fewer persons were alive five years after diagnosis than would have been expected, given non-cancer mortality rates in persons of the same age and sex.

In situ cancer: See stage at diagnosis.

Invasive cancer: A cancer is described as invasive if it has penetrated the basement membrane of the tissue in which it is growing. Cancers staged as localized, regional, distant, and unstaged are invasive. Unless otherwise stated, all cancer incidence rates in this report are for invasive cancers only.

Lifetime risk: The estimated percentage of persons who will be diagnosed with cancer over their entire lifetime, from birth to death, if cancer incidence and mortality and all-cause mortality rates do not change

Metastasis: Spread of cancer from one organ or tissue to another, distant, part of the body

Palliation: Care focused on relieving symptoms rather than curing a disease. Like hospice care, it addresses the physical, emotional, and spiritual needs of a patient and family.

Stage at diagnosis: The extent to which the cancer has spread at the time of diagnosis. In this report, the following terms describing cancer stage are used: **in situ** cancers are the earliest stage, and have not infiltrated the tissue of the organ in which they are growing; **localized** cancers have invaded the tissue of the organ, but have not spread beyond the organ in which the tumor originated; **regional** cancers have spread beyond the organ in which the tumor originated to adjacent lymph nodes or tissues; **distant** cancers are the most advanced, and have spread, or metastasized, to organs in other parts of the body. **Unstaged** tumors have insufficient information recorded in the medical record to determine the extent of the tumor at the time of diagnosis.

Data Sources

American Cancer Society: The expected numbers of cancer cases and deaths in Minnesota in 2010 were obtained from *Cancer Facts & Figures 2010*. Visit cancer.org for a copy of the Society publication.

Behavioral Risk Factor Surveillance System (BRFSS): Information on behaviors related to cancer such as smoking and screening utilization were obtained from the BRFSS, a telephone survey of randomly selected adults age 18 and older. Results for Minnesota were obtained by downloading data from the CDC website and analyzing it in SAS. Prevalence rates were weighted by the age- and sex-specific Minnesota population distribution in 2000. Information on county of residence was obtained directly from the Minnesota Center for Health Statistics, which conducts the Minnesota BRFSS. The denominator represents all survey respondents except those with missing, don't know, or refused answers for the relevant questions. Unless otherwise stated, data for the US as a whole represent the median value for all participating states and the District of Columbia, as reported by the Division of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System Online Prevalence and Trends Data. Visit cdc.gov/brfss for information on the strengths and weaknesses of the BRFSS and additional data.

Minnesota Cancer Surveillance System (MCSS): The numbers and types of cancers diagnosed among Minnesota residents were obtained from MCSS, which was implemented in 1988 to provide information on cancer incidence and mortality among Minnesota residents. MCSS does not include cancers that are solely diagnosed on clinical observations (that is, which have not been microscopically confirmed). Clinical diagnoses represented 5.6 percent of cases reported to the SEER Program during 2001-2005. The numbers of types of cancer deaths among Minnesota residents were obtained from death certificates compiled by the Center for Health Statistics, which is also part of MDH. Visit www.state.mn.us/divs/hpcd/cdee/mcss.htm for a copy of *Cancer in Minnesota 1988-2009*, which includes more information about MCSS and cancer in Minnesota.

Minnesota Public Health Data Access: The Minnesota Public Health Data Access portal is an online system designed to provide the public with easy access to Minnesota data on over 20 health and environment topics. Cancer incidence data on the portal include interactive maps and charts with information that can be downloaded for use in spreadsheets, reports, and presentations. The portal, located on the Minnesota Department of Health (MDH) website at https://apps.health.state.mn.us/mndata, is available to the public. Users can view and search for data on about 20 cancers using a data query system. The interactive maps provide county- or regional-level data for all cancer sites combined, as well as breast cancer, lung cancer, melanoma of the skin, mesothelioma, and non-Hodgkin lymphoma. New county health profiles provide a snapshot of data available by county, including information on population characteristics and cancer incidence. The portal is updated and maintained by the Minnesota Environmental Public Health Tracking Program at the MDH through a cooperative agreement with the CDC National Tracking Network.

Surveillance, Epidemiology, and End Results Program: In this report, cancer rates in Minnesota are compared to those from the SEER Program of the National Cancer Institute. Nine areas of the SEER Program have been collecting population-based cancer data from selected geographic areas in the US since 1973. When long-term trends are presented, data from the white population in these areas are used. When data from 2008-2012 are presented, they are based on non-Hispanic whites in the SEER 18 areas with exclusions used by SEER as noted. Visit http://seer.cancer.gov/ for mortality rates for the entire US as reported in *Cancer Statistics Review, 1975-2012*.

Understanding Cancer Rates

Cancer rates: The number of cases and deaths due to cancer is important. But for many purposes the number by itself isn't enough information; we can only determine if the number is "high" or "low" if we know the size of the population in which the cases or deaths occurred, and the period of time involved.

When comparing geographic areas, different types of people, or time periods, cancer occurrence is usually presented as a rate. The number of events (cases or deaths) during a specified period of time (usually a year) is divided by the number of people in the population that generated the events (for example, the population estimate for Minnesota in that year). Typically, cancer rates are presented as the average number of cases or deaths occurring for every 100,000 persons during a calendar year.

In 2000, 22,925 new cancers were diagnosed among the 4,919,479 people living in Minnesota, and 9,197 Minnesotans died due to cancer. This results in a crude cancer incidence rate of 466 new cases per 100,000 Minnesotans per year, and a crude cancer mortality rate of 187 deaths per 100,000 Minnesotans.

Age-adjusted cancer rates: Because cancer occurs more frequently with increasing age, a population with a larger proportion of elderly individuals will have more cancers occur than a younger population of the same size, even if the risk of developing cancer at each age is exactly the same in the two groups. Therefore, to make meaningful comparisons, the age of the population needs to be taken into consideration.

Direct age-adjustment is a statistical method that accomplishes this. It calculates the rate that would occur if the population had the age distribution of an agreed-upon, or standard, population. If cancer rates are age-adjusted to the same standard population, they will not be biased by differences in age. On the other hand, it is important to remember that an age-adjusted rate is a hypothetical number (the rate that would occur if…), and the value of the rate will vary considerably depending on the choice of standard population.

Choice of Standard population for age-adjustment: By convention, cancer registries in the US currently adjust their rates to the age distribution of the US population in 2000. Until recently, the age distribution of the 1970 US population was used for age-adjusting cancer incidence rates, while cancer mortality rates were often age-adjusted to the 1940 US population. However, international cancer registries usually age-adjust to the world population. This means that when comparing cancer rates, one must be careful that they were age-adjusted to the same standard population.

All rates in this report were age-adjusted to the 2000 US population. The cancer incidence and mortality rates in Minnesota in 2000, age-adjusted to the 2000 US population, were 483 new cases per 100,000 persons and 191 deaths per 100,000 persons. If the same data were age-adjusted to the 1970 US population, Minnesota cancer incidence and mortality rates in 2000 would be reported as 409 new cases per 100,000 persons and 150 deaths per 100,000 persons, respectively.

Relationship between incidence and mortality rates: A frequent misconception when incidence and mortality data are presented together is that the mortality rates are directly related to the cases included in the incidence rates; that is, incidence rates based on 22,925 new cancer diagnoses in 2000 and mortality rates based on 9,197 cancer deaths in the same year, are sometimes misconstrued to mean that 40 percent (9,197/22,925) of the cases diagnosed in 2000 died in the same year. That interpretation is incorrect. Unless specifically stated otherwise, cancer mortality rates include every individual who died during the calendar year with cancer as the underlying cause of death on the death certificate, regardless of year of diagnosis.

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MINNESOTA MDH DEPARTMENT OF HEALTH

Minnesota Cancer Surveillance System
Minnesota Department of Health
85 East Seventh Place, Suite 220
P.O. Box 64882
Saint Paul, MN 55164-0882
Phone: 651-201-5900
Toll-free phone: 1-877-3353-6277
TDD: 651-201-5797
Fax: 651-201-5926
www.health.state.mn.us/divs/hpcd/cdee/mcss/

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Minnesota Cancer Alliance
Health Promotion and Chronic Disease Division
P.O. Box 64882
Saint Paul, MN 55164-0882
Phone: 651-201-3607
www.mncanceralliance.org

American Cancer Society®

American Cancer Society Midwest Division
950 Blue Gentian Road, Suite 100
Eagan, MN 55121
Phone: 1-800-227-2345
Fax: 651-255-8133
www.cancer.org