



Cancer in Minnesota, 1988-2019

REPORT TO THE MINNESOTA LEGISLATURE: FISCAL YEAR 2023

March 2023

Cancer in Minnesota, 1988-2019

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Protecting, Maintaining and Improving the Health of All Minnesotans

March 27, 2023

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To the Honorable Chairs:

The Minnesota Department of Health (MDH) is pleased to release the seventeenth biennial report of the Minnesota Cancer Reporting System (MCRS) on the occurrence of cancer in Minnesota in accordance with Minnesota Statute 144.672, Subdivision 2.

The report consists of a summary of results accompanied by a new online interactive web page and a supplement citing publications in public health and research that used MCRS data. The new interactive webpage enables readers to actively explore the data and examine online maps of county-level rates for newly diagnosed cancers and cancer deaths. We encourage readers to explore each interactive dashboard individually. The report also includes links to other sources of MCRS and cancer data.

In this report, we describe the patterns and trends of new cancer diagnoses (incidence) and cancer deaths (mortality) from 1988 to 2019. The report shows that four cancer sites were the most common new cancers diagnosed in Minnesotans in 2019: prostate (males), breast (females), lung and bronchus, and melanomas of the skin. These four cancers accounted for more than half of all new cancers diagnosed in Minnesotans in 2019. Analyses of short-term trends from 2015 to 2019 shows the incidence rates for melanomas and breast cancers (females) were increasing, whereas the rate for prostate cancer (males) was stable and the rate for colon and rectum (colorectal) cancers was stable among males but decreasing among females. Because these cancers are strongly linked to

modifiable lifestyle risk factors (e.g., smoking, diet, physical activity), there are opportunities for cancer prevention and control.

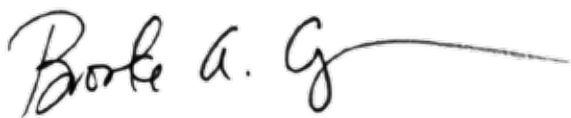
Minnesota's American Indian and Black populations continue to have the highest rates of both new cancers diagnosed and cancer deaths in the state. The Sage Screening Program and the Eliminating Health Disparities Initiative at MDH are dedicated to reducing the burden of cancer in populations that have experienced long-standing racism, inequities, and trauma. During the COVID-19 pandemic, these root causes of health disparities also led to disproportionately high COVID-19 morbidity and mortality rates among communities of color in Minnesota, underscoring the importance of addressing social determinants to ensure that all communities can thrive.

MDH cancer programs continue to monitor the indirect effects of the COVID-19 pandemic on the burden of cancer in Minnesota. Early in the pandemic there was a precipitous drop in the rates of cancer screening, diagnosis, and treatment. Unfortunately, breast and cervical cancer screening rates appear to remain below pre-pandemic levels in Minnesota according to a new report released in January 2023 from Community Measurement. The delayed detection and treatment of cancer could increase the number of individuals diagnosed with late-stage cancer and lead to an increase in cancer-related morbidity and mortality.

Our programs in collaboration with stakeholders and community partners have redoubled efforts to increase screening for breast, cervical and colorectal cancers. Strategies for increasing screening are based, in part, on data from programs like MCRS that can help identify where the need for cancer prevention is greatest.

Our work to control cancer and reduce its impact in Minnesota requires the engagement and collaboration of communities, health systems, public health, nonprofit organizations like the American Cancer Society, as well as local and state government. MCRS will be a critical resource in efforts to monitor changes in baseline cancer rates in Minnesota, identify disparities in the burden of cancer, accurately target resources, educate citizens and professionals about cancer, and support research into the causes and prevention of cancer. We encourage all organizations and individuals to join with us to reduce the cancer burden for all Minnesotans.

Sincerely,

A handwritten signature in black ink that reads "Brooke A. G" followed by a long horizontal flourish.

Brooke Cunningham, MD, PhD
Commissioner
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Introduction

Cancer is an umbrella term for more than 100 different diseases, each with different causes, treatments, and short- and long-term outcomes. Nevertheless, a hallmark of any cancer is uncontrolled cell growth and spread to distant sites in the body. A diagnosis of cancer can have serious, life-changing repercussions for cancer patients and their families.

The 1987 Minnesota Legislature established the Minnesota Cancer Reporting System (MCRS) to assure that accurate, complete, and timely data on cancer would be available to cancer prevention and control programs. High quality data were needed to better understand and quantify the burden of cancer in Minnesota, help inform planning and decision-making, and to support research into the causes of different cancers.

The statewide registry program has been in operation since 1988 and has been a member of the CDC's National Program of Central Cancer Registries since 1995. MCRS collects cancer and demographic data on Minnesotans with incident cancers from hospitals, clinics, and pathology laboratories in accordance with Minnesota statutes and rules including those for data protection and privacy. Enabling legislation also requires a biennial report (Minnesota Statute 144.672, Subdivision 2) to describe cancer incidence and discuss the public health significance of cancer in Minnesota.

The report describes the burden from all cancers combined in Minnesota and fulfills the statutory requirement above. We describe patterns and trends in cancer incidence and mortality rates for all cancer sites combined overall, and by sex and race/ethnicity. We show the most common new cancers diagnosed and the most common cancer causes of death for males and females overall and by race/ethnicity. We provide links to additional sources for MCRS and other cancer data available online. There also is a written supplement to this report that summarizes MCRS data use in research studies and other publications.

The report embeds findings into a new interactive webpage to enable readers to actively explore the data and examine online maps of county-level rates for newly diagnosed cancers and cancer deaths. We encourage readers to explore each interactive dashboard individually. The data for each dashboard can be downloaded; the csv file option is accessible. The new interactive dashboard can be found online at [Cancer in Minnesota \(www.health.state.mn.us/data/mcrs/legrpt23\)](http://www.health.state.mn.us/data/mcrs/legrpt23).

The need for data-informed programs and policy takes on added importance as the number of cancer diagnoses continues to increase over time because of population growth and the aging of the baby boom generation. Cancer prevention, intervention, and control programs carried out now promise to reduce the anticipated future increase in the number of Minnesotans with cancer. MCRS data is critically important to help guide planning and resource allocation in response to the current and future cancer burden, as well as to reduce the persistent racial and ethnic health disparities in Minnesota.

Key findings

The big picture

In 2019, 33,708 Minnesotans were diagnosed with a new cancer and 10,036 Minnesotans died with cancer as the underlying cause of death. This means that on average, every day in 2019, about 93 Minnesota residents were diagnosed with a new cancer and 28 died from cancer.

- The number of males diagnosed with a new cancer was 17,352 and the number of females diagnosed with a new cancer was 16,356.
- The number of males who died from cancer was 5,369 and the number of females who died from cancer was 4,667.

Long-term (32-year) trends in cancer incidence and mortality for all cancers are slightly different for males and females in Minnesota. For detailed graphs and data, visit [Cancer in Minnesota \(www.health.state.mn.us/data/mcrs/legprpt23.html#longterm\)](http://www.health.state.mn.us/data/mcrs/legprpt23.html#longterm).

- **Incidence:** For males, the rate of new cancers has fluctuated up and down since 1988. Between 2007 and 2013, incidence decreased 2.5% per year. From 2013-2019 incidence rates increased 1.0% per year. By contrast, for females the rate of new cancers appears to gradually increase. Between 2004 and 2019, the rate for females increased 0.7% per year.
- **Mortality:** The rate of cancer deaths has decreased for both males and females. The declines over the 32-year period appear greater for males than females. More recently, for males, the rate of cancer deaths has decreased 1.9% per year since 2009. The rate of cancer deaths for females has decreased 1.4% per year since 2002.

Top 10 cancers in males and females

In 2019, four cancer sites were the most common new cancers diagnosed in Minnesota: prostate (males), breast (females), lung and bronchus, and melanomas of the skin. Additionally, lung and bronchus, prostate and breast cancers were the two leading causes of cancer death among Minnesota males and females in 2019. These cancers are strongly linked to modifiable lifestyle risk factors (e.g., smoking, diet, physical activity).

For the complete list of top 10 cancers among males and females, visit: [Cancer in Minnesota \(www.health.state.mn.us/data/mcrs/legprpt23.html#top10\)](http://www.health.state.mn.us/data/mcrs/legprpt23.html#top10)

Males

- The leading cancer sites – prostate, lung and bronchus, melanoma of the skin, and colon and rectum – represented just over half (51%) of all new cancers diagnosed in males.

- The top four cancer causes of death among males included lung and bronchus, prostate, colon and rectum, and pancreas. These four cancers accounted for 48% of all cancer deaths in males in 2019.

Females

- The top four cancer sites – breast, lung and bronchus, melanoma of the skin, and colon and rectum – represented over half (56%) of all new cancers diagnosed in females.
- The top four cancer causes of death among females included lung and bronchus, breast, pancreas and colon and rectum accounted for 51% of all cancer deaths in females in 2019.

Short-term trends for the top 10 cancers

The short-term trends in the incidence and mortality rates for individual cancer sites show wide variation, with some rates increasing, some decreasing, and others remaining stable. For more details on short-term trends for leading cancer sites, visit [Cancer in Minnesota \(www.health.state.mn.us/data/mcrs/legrpt23.html#shortterm\)](http://www.health.state.mn.us/data/mcrs/legrpt23.html#shortterm).

Males

- **Incidence:** The rates for melanoma of the skin and cancers of the pancreas, kidney and renal pelvis, oral cavity, and blood (leukemia) increased significantly, ranging from an increase of 0.9% per year for leukemia to an increase of 4.2% per year for melanoma of the skin. The rates for lung and bronchus and urinary bladder showed small but significant decreases.
- **Mortality:** Rates for four of the top 10-cancer sites decreased over the short-term from a decrease of 0.6% per year for kidney and renal pelvis cancers to a decrease of 5.2% per year for lung and bronchus cancers. The liver and bile duct cancer mortality rate increased 2.6% per year between 2015 and 2019.

Females

- **Incidence:** The rates for seven of the top-10 cancers increased over the five years – ranging from an increase of 0.5% per year for lung and bronchus cancers to 7.3% per year for melanomas of the skin. The rate for colorectal 2.5% per year and thyroid cancers decreased 3.1% per year.
- **Mortality:** The rates for seven of the top 10 cancer sites decreased over the short-term – varying from a decrease of 0.8% per year for brain cancers to decrease of 5.9% per year for lung and bronchus cancers. Between 2015 and 2019, the rate of deaths from liver and bile duct cancer increased 2.7% per year and deaths uterine cancers increased 0.6% per year.

Overall cancer incidence and mortality by race/ethnicity

American Indian males and females had both the highest incidence and mortality rates for all cancers combined between 2015 and 2019. These results suggest the need for continued focused, appropriate cancer prevention and control efforts. For more information, including charts and data, visit [Cancer in Minnesota \(www.health.state.mn.us/data/mcrs/leg rpt23.html#overallre\)](http://www.health.state.mn.us/data/mcrs/leg rpt23.html#overallre).

Top 5 cancers by race/ethnicity

The most frequently diagnosed cancers and cancer causes of death are not the exactly the same across Minnesota's racial and ethnic populations. For details on the top 10 cancers by race/ethnicity, visit [Cancer in Minnesota \(www.health.state.mn.us/data/mcrs/leg rpt23.html#top5\)](http://www.health.state.mn.us/data/mcrs/leg rpt23.html#top5).

Males

- **Incidence:** Prostate and lung and bronchus cancers were the two most common newly diagnosed cancers among males except for Hispanic males of all races.
- **Mortality:** Lung and bronchus cancer was the leading cause of cancer death for males who were American Indian, Black, and White, non-Hispanic. Liver and intrahepatic bile duct cancer was the leading cause of cancer death for males who were Asian Pacific Islander and Hispanic of all races.

Females

- **Incidence:** Breast cancer are the most common cancers diagnosed among females of all racial/ethnic populations, except for American Indian females for whom lung and bronchus cancers were the most common cancer.
- **Mortality:** Lung and bronchus cancer was the leading cause of cancer death for all females except females who were Hispanic of all races.

Minnesotans living with cancer

There were an estimated 282,000 Minnesotans diagnosed with cancer in the last 25 years who were alive as of January 1, 2019. This includes people with a new cancer and those who survived a cancer diagnosed during the past 25 years. For a complete list of the number of Minnesotans by cancer site, visit [Cancer in Minnesota \(www.health.state.mn.us/data/mcrs/leg rpt23.html#prev\)](http://www.health.state.mn.us/data/mcrs/leg rpt23.html#prev).

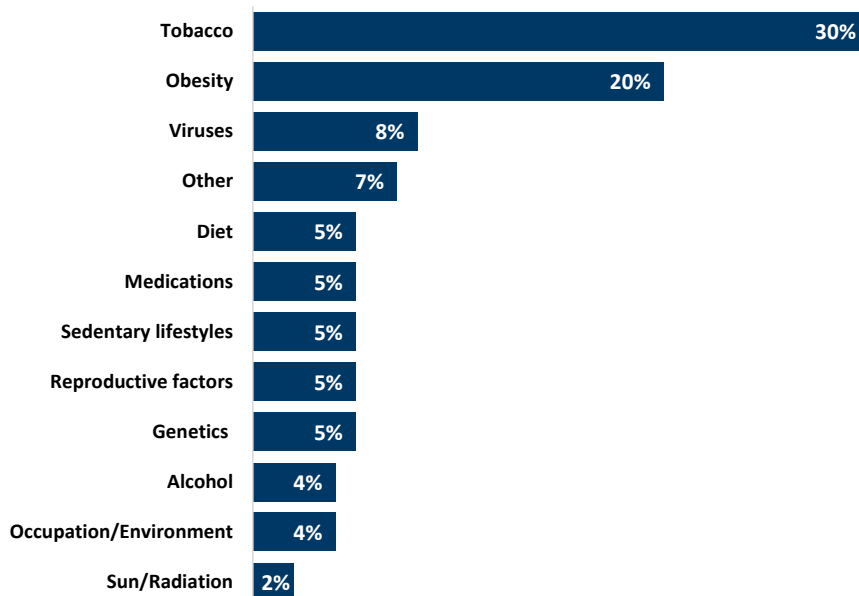
- Survivors of prostate and breast cancers represent 41% of these Minnesotans. By contrast, individuals who survived pancreas cancer represent only 0.6% of Minnesotans who were diagnosed with and survived their cancer between 1993 and 2018.

Risk factors for cancer

Research has shown that age, genetics, obesity, certain exposures, and behaviors increase or decrease the chances of developing cancer. Additionally, inequities in health, social, and environmental factors contribute to a disproportionate cancer burden in people with low incomes, communities of color and indigenous peoples.

- We have no control over some factors that affect cancer (age, genetics, family history). The National Cancer Institute’s interactive online tool [Know Your Chances \(knowyourchances.cancer.gov/\)](https://knowyourchances.cancer.gov/) shows how these non-modifiable factors might affect the risk of cancer and other chronic diseases.
- Researchers have shown that cancer risk is strongly influenced by lifestyle factors (1,2,3,4). Such modifiable lifestyle risk account about 60% of cancer deaths in the U.S.

Estimate of U.S. cancer mortality attributable to various known risk factors



Early detection of cancer

Screening for certain cancers in people who do not already show signs or symptoms of cancer can reduce the risk of dying from those cancers. The goal of screening is to identify and treat specific cancers early in the course of disease when treatment is usually more effective compared to when they have spread to distant sites in the body. If the screening procedure removes an *in situ* cancer or pre-cancerous tissue from the cervix, breast, colon, or rectum, the procedure can prevent the cancer from occurring altogether.

To learn more about which cancers have a screening test and the types of test procedures used, please visit [ACS guidelines for the early detection of cancer \(www.cancer.org/healthy/find-cancer-early/cancer-screening-guidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer.html\)](http://www.cancer.org/healthy/find-cancer-early/cancer-screening-guidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer.html) (5) or [CDC-Screening Tests \(www.cdc.gov/cancer/dcpc/prevention/screening.htm\)](http://www.cdc.gov/cancer/dcpc/prevention/screening.htm) (6).

The Minnesota Department of Health's [Sage Cancer Screening \(www.health.state.mn.us/diseases/cancer/sage/index.html\)](http://www.health.state.mn.us/diseases/cancer/sage/index.html) provides free screening for breast and cervical cancers at participating locations across Minnesota. For age, insurance and income eligibility criteria for the programs' free cancer screening please go to [Sage Cancer Screenings Covered Services and Eligibility \(www.health.state.mn.us/diseases/cancer/sage/services/index.html\)](http://www.health.state.mn.us/diseases/cancer/sage/services/index.html).

Use of MCRS Data

For more than 30-years, MCRS cancer data has been used in research and public health efforts to reduce the burden of cancer and achieve health equity in Minnesota.

Research

Approved academic researchers have used MCRS data to conduct studies into the causes of different types of adult and childhood cancers, as well as the safety of various cancer treatments, racial and ethnic disparities in cancer occurrence, health related quality of life, and cancer survivorship.

Supplement: Publications and Data Use

<https://www.health.state.mn.us/data/mcrs/docs/2023biensup.pdf> includes a bibliography of publications from these studies since 2008.

Resource allocation and health service planning

Health care organizations, facilities, clinicians, and local public health have used MCRS data to inform resource allocation and health services planning. MCRS data provide an important population-based perspective, because these analyses help answer questions about the completeness of local or regional cancer care coverage and services across Minnesota communities.

Inform cancer prevention and control programs

Public health professionals, legislators, coalitions, and non-profit organizations have used MCRS data to inform policy, programs and other activities to reduce Minnesota's cancer burden including health inequities related to cancer. MCRS data used in this work usually take the form of tables of cancer statistics from specialized "data requests" or queries from the [MN Public Health Data Access Portal \(data.web.health.state.mn.us/web/mndata/\)](http://data.web.health.state.mn.us/web/mndata/). Specific examples of how cancer programs use MCRS statistics include:

- Minnesota Cancer Alliance used MCRS statistics to set priorities and specific objectives for cancer plans (see [Cancer Plan Minnesota 2025 \(mncanceralliance.org/cancer-plan/\)](http://mncanceralliance.org/cancer-plan/)).
- The American Cancer Society has routinely used MCRS statistics in trainings and continuing education for volunteers and primary care providers in support of campaigns to promote screening for breast, cervical and colorectal cancers and to increase HPV-vaccination.
- The MDH Sage Cancer Screening Program use MCRS statistics to inform priorities and identify populations for focused, appropriate outreach.

Concerns about cancer

MDH epidemiologists and other professionals have used MCRS data to address the public's concerns about cancer. Cancers are much more common than most people realize, and the rates of cancer increase sharply with age. As the baby boom generation ages, Minnesotans will see increasing numbers of family members, other relatives, neighbors, and friends develop and, unfortunately, die from some type of cancer. MCRS data are used to help people understand the trends in cancer occurrence and the risk factors for different cancers. MCRS data also have been used to investigate perceived excesses of cancer in communities. Many concerns have been addressed successfully since 1988. Published MCRS reports of selected investigations are available on [MCRS Cancer Statistics and Reports \(www.health.state.mn.us/data/mcrs/data/index.html\)](http://www.health.state.mn.us/data/mcrs/data/index.html).

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