

Breast Cancer in Minnesota Women

INCIDENCE, MORTALITY AND TRENDS

10/21/2020

Breast Cancer in Minnesota Women

Minnesota Department of Health
Minnesota Cancer Reporting System
PO Box 64882
St. Paul, MN 55164-0822
651-201-5900
health.mcrs@state.mn.us
www.health.state.mn.us

The collection of Minnesota Cancer data was supported by Cooperative Agreement Number, 1NU58DP006337 from the Centers for Disease Control and Prevention (CDC) The contents of this work are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.

To obtain this information in a different format, call: 651-201-5900.

Contents

Breast Cancer in Minnesota Women	1
Introduction	2
Breast cancer	3
30-year incidence and mortality trends	4
Incidence has gradually increased since 2004	4
Mortality has decreased since 1988	5
Breast cancer burden in 2017	6
Variations by age group, race/ethnicity and stage at diagnosis	7
Breast cancer incidence and mortality increase with age	7
Breast cancer incidence and mortality by race/ethnicity	7
Breast cancer molecular subtypes	10
Surviving breast cancer	12
Regional variations in Minnesota	14
Risk and protective factors	16
Screening for breast cancer	16
References	17
Data sources and methods	19
Data sources	19
Minnesota cancer incidence data	19
Minnesota cancer mortality data	19
Surveillance, Epidemiology, and End Results (SEER) 9 Registries	19
U.S. Mortality Data	19
Population data	19
Methods for data analyses	20
Analytic software	20
Defining cancer statistics	20
Age-adjusted rate	20
Unstable rate	20
Standard population	20
Minnesota geographic divisions	20

BREAST CANCER IN MINNESOTA WOMEN

Collecting and processing cancer incidence and mortality data 20

 MCRS authority and data protection 20

 Registry methods and standards 21

Glossary of terms 21

Cancer prevention resources 21

 Comprehensive Cancer Control Program 21

 Minnesota Cancer Alliance 21

 Sage Screening Programs..... 21

 Healthy Minnesota Partnership..... 21

 Center for Health Equity 22

 Statewide Health Improvement Partnership..... 22

Appendix 23

 Table A1. 30-year breast cancer incidence and mortality rate (per 100,000) trend data, 1988-2017 23

 Table A2. Minnesota breast cancer incidence and mortality rates (per 100,000) by 5-year age-groups, 2013-2017 24

 Table A3. Minnesota breast cancer incidence and mortality rates (per 100,000) by race/ethnicity, 2013-2017 25

 Table A4. Minnesota breast cancer incidence rates (per 100,000) by stage at diagnosis and race/ethnicity, 2013-2017 25

 Table A5. Minnesota breast cancer incidence rates (per 100,000) by race/ethnicity, 2013-2017 26

 Table A6. Minnesota five-year relative breast cancer survival (percent) by stage at diagnosis, 2010-2016 26

 Table A7. Minnesota five-year relative breast cancer survival (percent) by race/ethnicity, 2010-2016 26

 Table A8. Minnesota five-year relative breast cancer survival (percent) by subtype, 2010-2016 27

 Table A9: Minnesota breast cancer incidence and mortality rate (per 100,000) trend data – Twin Cities 7-County Metropolitan and non-Metropolitan counties, 1988-2017 27

 Table A10. Minnesota state and county-level female breast cancer for incidence, mortality, and prevalence, 2013-2017 29

Introduction

The Minnesota Department of Health (MDH) is pleased to release *Breast Cancer in Minnesota: Incidence, Mortality and Trends*. In Minnesota, breast cancer is the most common invasive cancer diagnosed in women. It is also one of the top five cancer causes of death among Minnesota women regardless of race or ethnicity. Breast cancers are easier to treat and outcomes are often better when they are detected and treated early. Breast cancer screening can identify cancers early and is a vital approach in the control of this cancer.

This report will serve as a timely and valuable resource to professionals throughout Minnesota who are planning, developing or evaluating screening programs, patient navigation services, or policy to prevent and control this cancer. MDH developed this report to support breast cancer prevention and control efforts throughout Minnesota, including the Sage Program. For information about these programs, see the [Cancer Prevention Resources Section](#).

We present Minnesota's long-term trends in breast cancer incidence and mortality against the backdrop of long-term U.S. trends based on data from the National Cancer Institute's [Surveillance, Epidemiology, and End Results \(SEER\) Program \(seer.cancer.gov/data\)](http://seer.cancer.gov/data) and the [National Center for Health Statistics \(www.cdc.gov/nchs/index.htm\)](http://www.cdc.gov/nchs/index.htm). We display patterns in breast cancer incidence by age at diagnosis, race/ethnicity, stage at first diagnosis, and highlight the state's progress in meeting national Healthy People 2020 population targets for breast cancer [1]. New to this report, we present Minnesota-specific statistics for five-year relative survival and the incidence of breast cancer subtypes.

All charts and graphs are supported with detailed data tables in the Appendix. The Appendix also includes a data table summarizing the [burden of breast cancer at the state and county-levels](#). Interested readers can seek additional state and county incidence statistics from the Minnesota Data Portal Data Query [2]. This query allows users to generate county-level breast cancer incidence rates for women by age groups (less than 50 and at least 50 years of age) as well as for user-specified combinations of Minnesota counties.

Breast cancer

Breast cancer is the most common invasive cancer diagnosed in women across every racial and ethnic group in Minnesota. It represents 30 percent of all new invasive cancers diagnosed in women but it is a rare cancer in men. Invasive breast cancers spread beyond the cells where they started and into surrounding tissue. Most breast cancers begin when abnormal epithelial cells (or cells that line surfaces) in the breast grow out of control and form a tumor. Cancers that arise in epithelial cells are called carcinomas. Lobular carcinomas start in the glands (lobules) that make milk and ductal carcinomas start in the ducts that carry milk to the nipple.

There are at least four different breast cancer molecular subtypes that differ in their tendency to grow, spread, and respond to treatment [3]. Knowledge of these subtypes informs decisions about the therapies a woman will receive for her breast cancer [4], [5].

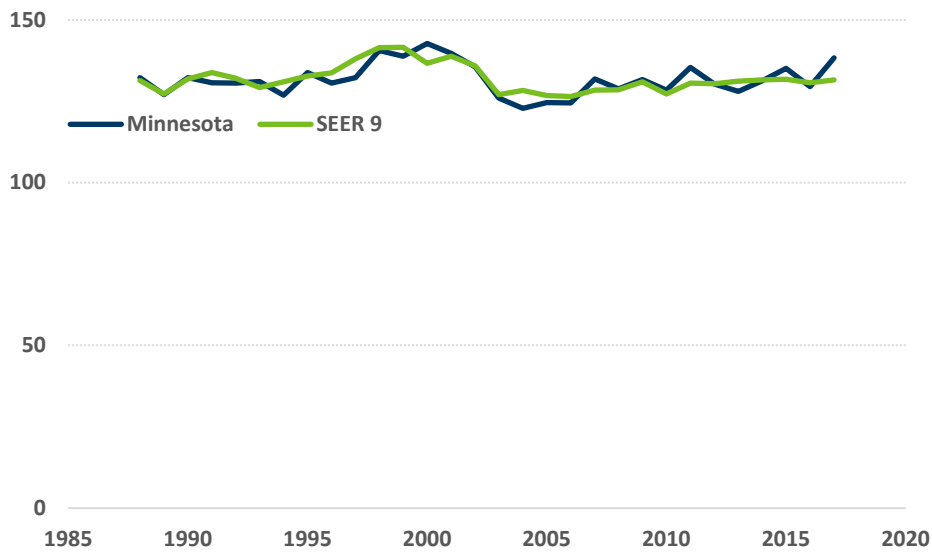
Outcomes are best when breast cancer is detected and treated early in the course of the disease. Researchers are actively working to translate scientific advances about breast cancer into new targeted therapies to improve outcomes for specific subtypes and for cancers that have spread into distant sites beyond the breast (metastatic breast cancer) [3], [6], [7]. For more information about breast cancer, go to [American Cancer Society About Breast Cancer \(www.cancer.org/cancer/breast-cancer/about.html\)](http://www.cancer.org/cancer/breast-cancer/about.html) [8].

30-year incidence and mortality trends

Incidence has gradually increased since 2004

As seen below (Figure 1, Appendix Table A1), incidence rates fluctuated in both Minnesota and the Surveillance, Epidemiology, and End Results (SEER 9) region, with increases from between 1988 and 2000 and decreases from 2000 and 2004. Since 2004, breast cancer incidence rates have been gradually increasing.

Figure 1. Breast cancer incidence has increased slightly since 2004

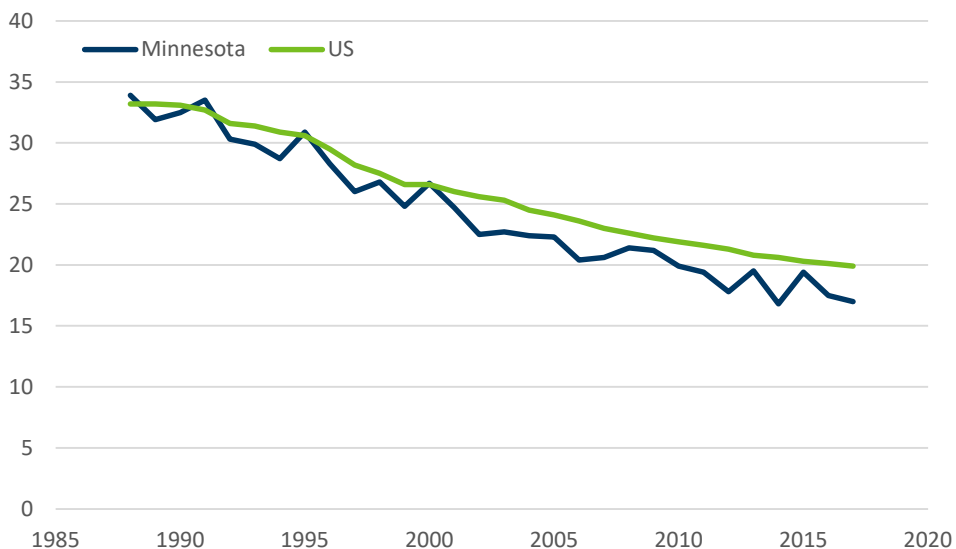


Source: Minnesota Cancer Reporting System (1988-2017 Minnesota breast cancer age-standardized incidence rates). Surveillance, Epidemiology and End Results (1988-2017 SEER 9 registries age-standardized breast cancer incidence rates for Connecticut, Detroit, Atlanta, San Francisco-Oakland, Hawaii, Iowa, New Mexico, Seattle-Puget Sound, Utah). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Mortality has decreased since 1988

Over the past 30 years, mortality from breast cancer declined an average of 2.4 percent per year in Minnesota and 1.8 percent per year in the U.S. With few exceptions, mortality rates for breast cancer among women have been consistently lower for Minnesota than for the US (Figure 2, Appendix Table A1).

Figure 2. Breast cancer mortality rates have declined in Minnesota and the U.S.



Source: Minnesota Department of Health Office of Vital Records (1988-2017 Minnesota age-standardized mortality rates). National Center for Health Statistics (1988-2017 U.S. age-standardized mortality rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Breast cancer burden in 2017

In 2017, there were more than seven times as many new breast cancer diagnoses (4,643) as deaths from breast cancer (627) for Minnesota women. About one in three of these newly diagnosed breast cancers were late stage at the time of diagnosis. The age-standardized breast cancer incidence rate in 2017 was 138.4 per 100,000 Minnesota women (131.6 per 100,000 in the SEER 9 region). The mortality rate was 17.0 per 100,000 women (19.9 per 100,000 for the U.S.) – below the Healthy People 2020 recommended target of 20.7 deaths per 100,000.

On January 1, 2017, an estimated 61,650 (or about 2.2%) women in Minnesota were living with a prevalent breast cancer. Women with prevalent breast cancer include those who were newly diagnosed with a breast cancer as well as women who were previously diagnosed and survived their cancer.

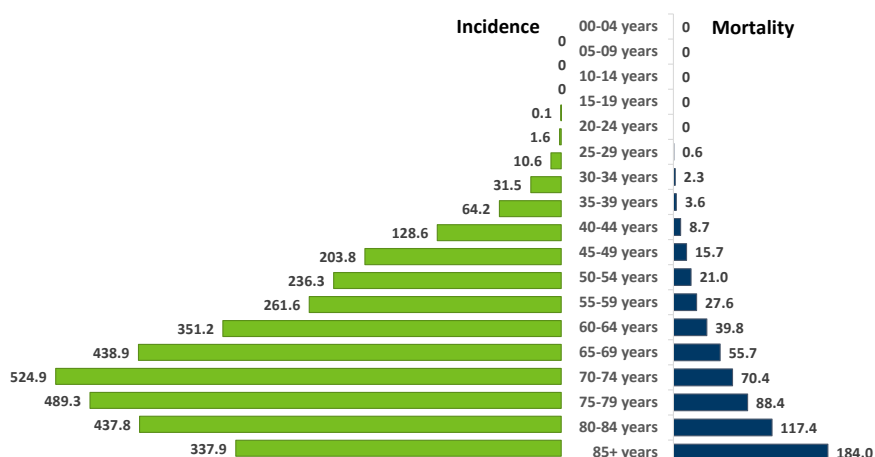
The number of women with prevalent breast cancers in Minnesota provides important information for those working to assure the health and well-being of those who survived their breast cancer. Cancer survivors can experience a variety of acute [9], [10] and chronic [11] health conditions due to their cancer and its treatment. Some serious chronic conditions among breast cancer survivors include heart damage, osteoporosis, a second cancer, and others.

Variations by age group, race/ethnicity and stage at diagnosis

Breast cancer incidence and mortality increase with age

Breast cancer incidence and mortality vary by age-group, race/ethnicity, and stage at first diagnosis. Figure 3 (Appendix Table A2) shows that breast cancer incidence is much greater than mortality at every age group. Incidence rates increase sharply after age 25, peak among women ages 70-74 years, and then decrease among women ages 85 or more years. On the other hand, breast cancer mortality rates increase slowly after age 40 years and continue to increase with age.

Figure 3. Breast cancer incidence and mortality rates increase with age



Source: Minnesota Cancer Reporting System (2013-2017 Minnesota breast cancer incidence rates). Minnesota Department of Health Office of Vital Records (2013-2017 Minnesota mortality rates). Rates are per 100,000 population.

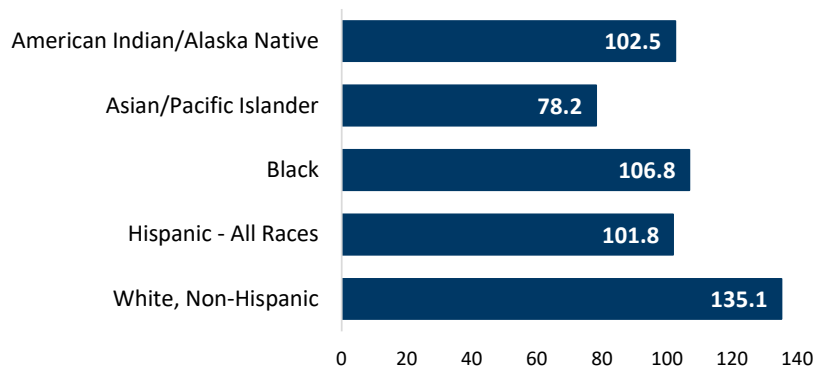
Breast cancer incidence and mortality by race/ethnicity

Compared to women of other races and ethnicities, White women have higher breast cancer incidence rates but lower mortality rates. American Indian and Black women have the highest mortality rates, followed by White women (Figure 4, Appendix Table A3). Asian/Pacific Islander women have both the lowest breast cancer incidence and mortality rates in Minnesota. The mortality rates for all of Minnesota’s racial and ethnic populations have reached the Healthy People 2020 target of 20.7 deaths from breast cancer per 100,000.

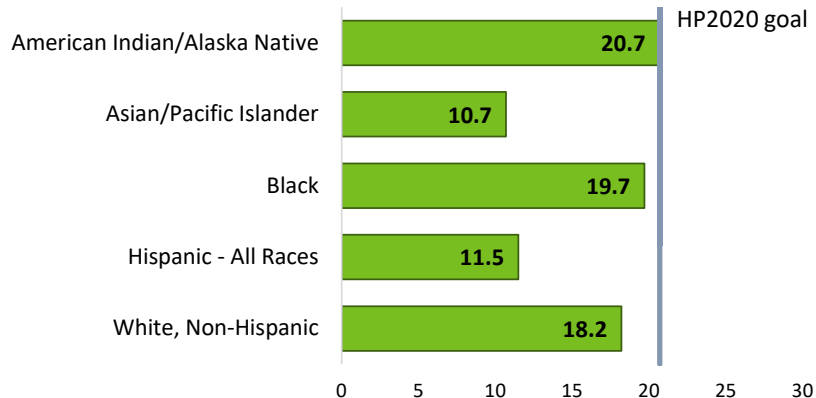
There is wide variation in the incidence of early versus late stage breast cancer by race/ethnicity (Figures 5 and 6, Appendix Table A4). Of note, the incidence of late stage breast cancer for Black women remains greater than the Healthy People 2020 target of 42.4 late stage breast cancers per 100,000.

Figure 4. Breast cancer incidence and mortality rates differ by race/ethnicity

Incidence rates



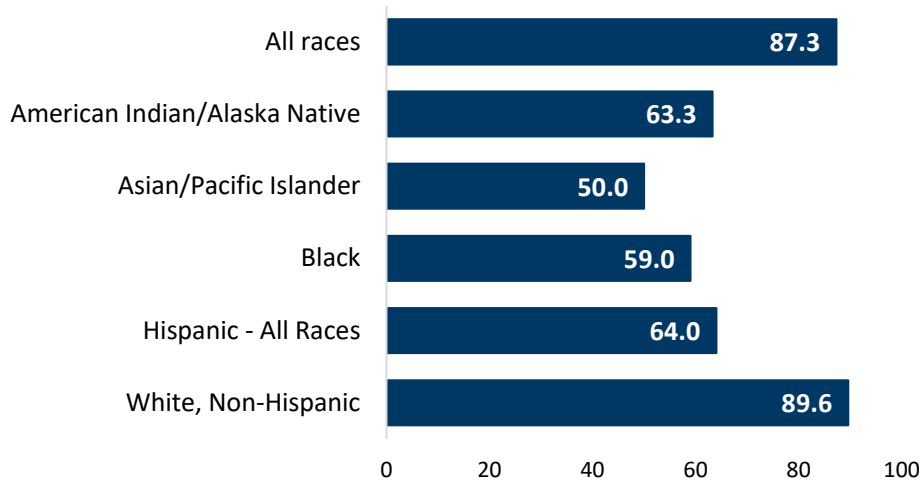
Mortality rates



**Healthy People 2020 female breast cancer mortality rate target:
20.7 deaths/100,000**

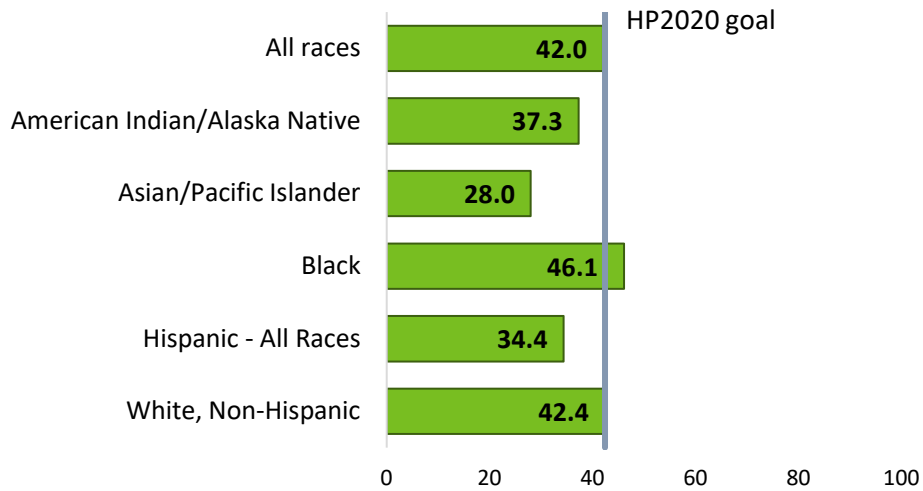
Source: Minnesota Cancer Reporting System (2013-2017 Minnesota breast cancer incidence rates). Minnesota Department of Health Office of Vital Records (2013-2017 Minnesota mortality rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Figure 5. Incidence rates for early stage breast cancer by race/ethnicity
Early stage rates



Source: Minnesota Cancer Reporting System (2013-2017 Minnesota breast cancer incidence rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Figure 6. Incidence rates for late stage breast cancer by race/ethnicity
Late stage rates



**Healthy People 2020 late stage breast cancer incidence rate target:
42.4 cancers/100,000 women**

Source: Minnesota Cancer Reporting System (2013-2017 Minnesota breast cancer incidence rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Breast cancer molecular subtypes

Complex molecular and genetic information in cancer cells define different breast cancer molecular subtypes. This information includes the presence or absence of receptors for certain hormones (estrogen and progesterone) and for a factor that influences the growth of cells (human epidermal growth factor receptor 2) [12]. Cancer cells can be hormone receptor positive (HR+) or negative (HR-) as well as human epidermal growth factor receptor 2 positive (HER2+) or negative (HER2-). The combination of a cancer's HR and HER2 status determines, in part, how fast a breast cancer will grow and how well it responds to therapy [13].

Cancer registries are currently able to collect information on four molecular subtypes of breast cancer in populations [14]. Data at the population level can help inform planning for health care services as well as research into the causes of breast cancer.

Table 1 below displays the age-standardized incidence rates for breast cancer subtypes in Minnesota. Three of every four breast cancers with a known subtype in Minnesota are luminal A (HR+, HER2-). This subtype responds well to hormonal therapies and has the best prognosis [13, 14]. Compared to luminal A breast cancers, luminal B (HR+, HER2+) cancers grow and spread more rapidly resulting in somewhat lower survival rates.

The triple negative subtype (HR-, HER2-) represents ten percent of newly diagnosed cancers in Minnesota. This subtype is more common in Black and premenopausal women, and historically has had poor prognosis [15]. Recent scientific advances show promise for improving outcomes in women with triple negative breast cancer [3].

As seen in Table 1, less than one in twenty incident breast cancers are HER2-enriched (HR-, HER2+). This subtype expresses growth promoting signals, resulting in aggressive growth, and has shown a somewhat poorer prognosis compared to luminal A breast cancers.

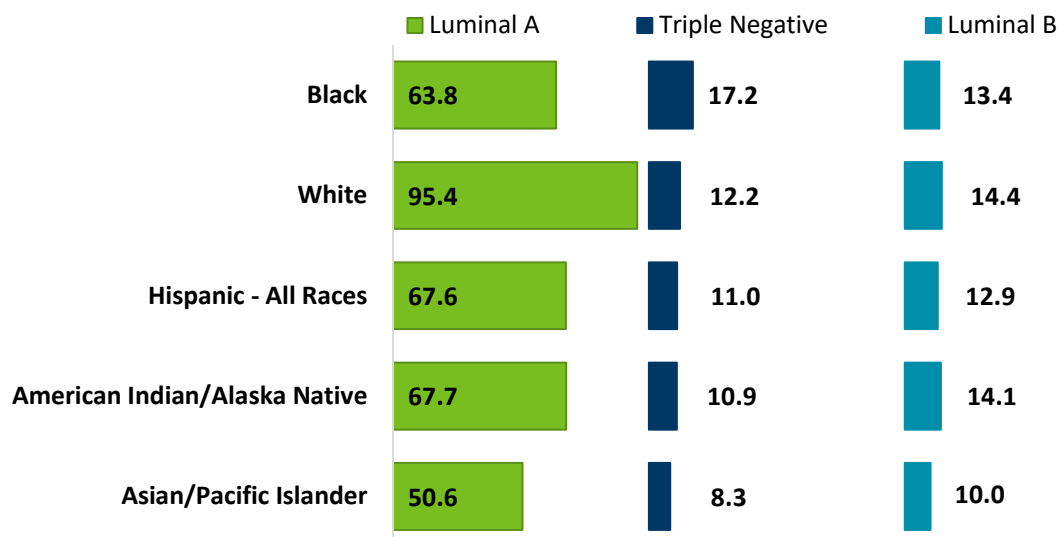
Figure 7 (Appendix Table A5) displays Minnesota's age-standardized incidence rates for the luminal (A and B) and triple negative subtypes by race/ethnicity. The incidence of luminal A is much greater than the incidence of the other two subtypes across every racial and ethnic group. The incidence rate for triple negative breast cancer is at least 1.5 times greater for Black women than for women of other race/ethnicities. Rates for the luminal B subtype do not vary substantially across Minnesota's racial and ethnic populations.

Table 1. Breast cancer subtypes in Minnesota, 2013-2017

Subtype	Count	Percent	Incidence Rate/100,000
Luminal A (HR+, HER2-)	15,243	76%	92.8
Triple Negative (HR-, HER2-)	1,939	10%	12.4
Luminal B (HR+, HER2+)	2,169	11%	14.1
HER2-enriched (HR-, HER2+)	818	4%	5.2
Subtype unknown	1,399	NA	NA

Source: Minnesota Cancer Reporting System (2013-2017 Minnesota breast cancer incidence rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130). Percentages do not include breast cancers with unknown subtypes (N=1,399). NA indicates percentages not calculated.

Figure 7. Luminal A (HR+, HER2-), Triple Negative (HR-, HER2-), and Luminal B (HR+, HER2+) incidence rates by race/ethnicity, 2013-2017



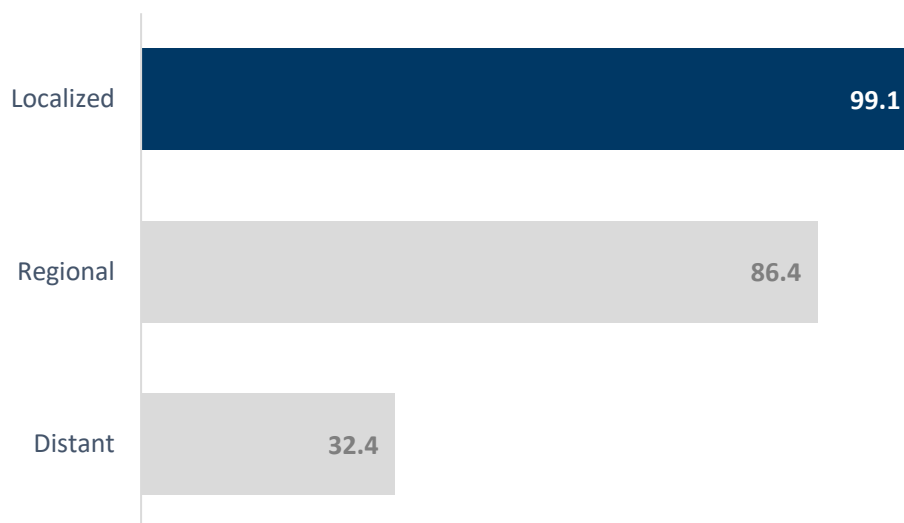
Source: Minnesota Cancer Reporting System (2013-2017 incidence rates for subtypes by race/ethnicity). Incidence rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Surviving breast cancer

The 5-year relative survival for women in Minnesota is high, nearly 93 percent. Relative survival estimates the chance that women diagnosed with breast cancer survive at least five years compared to women who do not have breast cancer. As in the U.S. overall, relative survival for Minnesota women decreases as breast cancer spreads in the body, reaching a low point when the disease has spread to distant sites away from the breast (Figure 8, Appendix Table A6). Five-year relative survival is lower for Black women than it is for White women (Figure 9, Appendix Table A7).

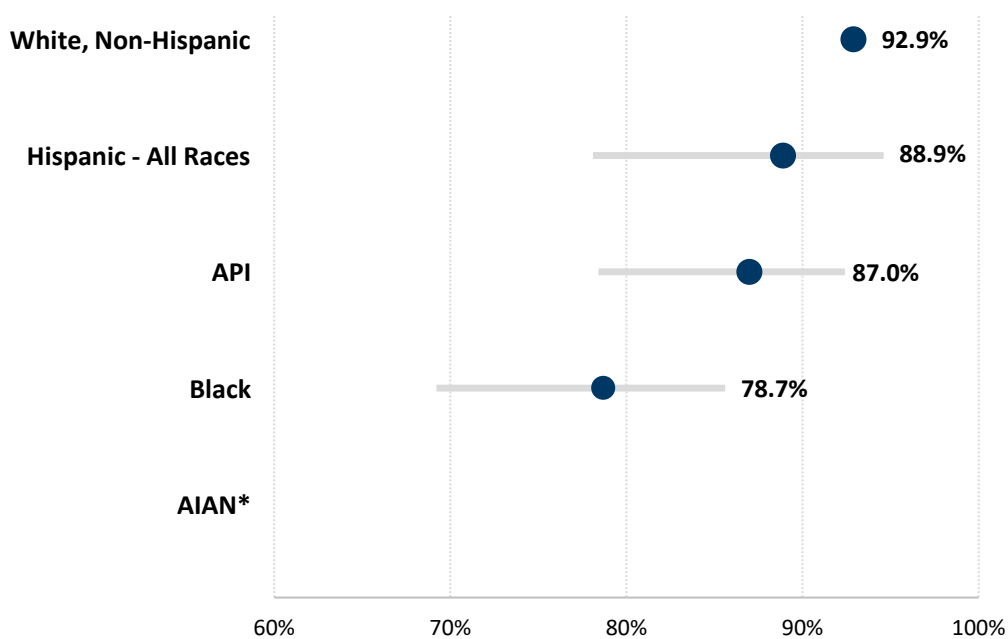
Survival also varies by molecular subtype. Women with the most common type of breast cancer (luminal A) have a greater chance of surviving at least five years after diagnosis compared to women with the triple negative subtype (Figure 10, Appendix Table A8).

Figure 8. Five-year relative survival (percent) is highest when diagnosed early



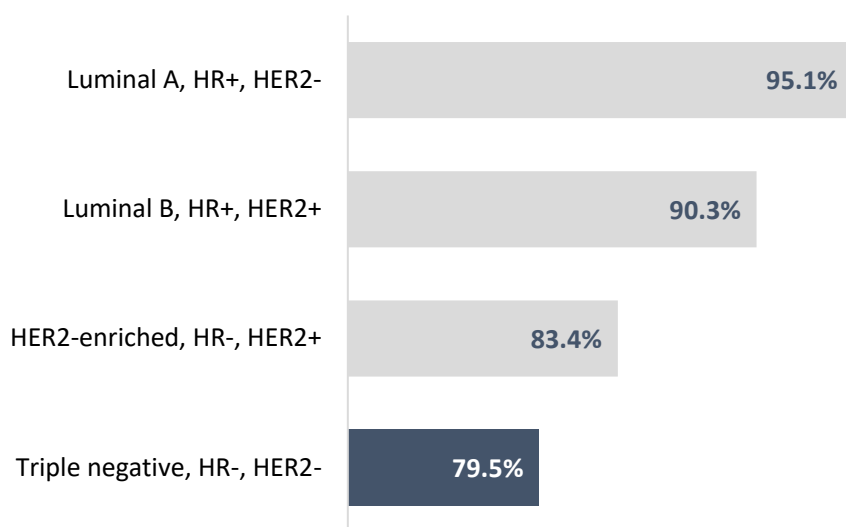
Source: Minnesota Cancer Reporting System, 2010-2017 with vital status follow-up in 2017. Age standardized to the International Cancer Survival Standard 1 – Ages 15+.

Figure 9. Breast cancer relative survival (percent) by race/ethnicity



Source: Minnesota Cancer Reporting System, 2010-2016 with vital status follow-up in 2017. Age standardized to the International Cancer Survival Standard 1 – Ages 15+. AIAN* indicates that relative survival could not be estimated for American Indian/Alaska Native women based on data available for this analysis. Grey bars represent 95 percent confidence intervals.

Figure 10. Triple negative breast cancers have the lowest relative survival



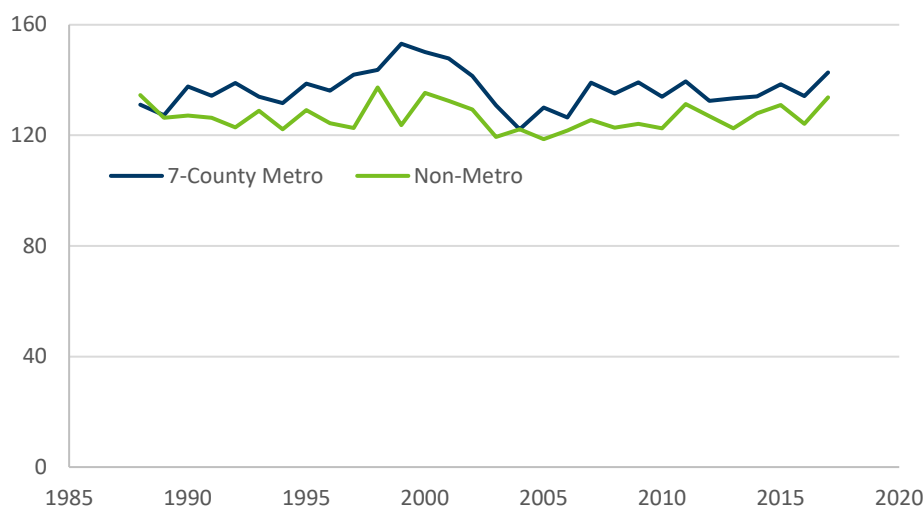
Source: Minnesota Cancer Reporting System, 2010-2016 with vital status follow-up in 2017. Age standardized to the International Cancer Survival Standard 1 – Ages 15+.

Regional variations in Minnesota

The long-term annual average trends in incidence and mortality rates for both the Twin Cities 7-County Metro and non-Metro regions of the state are similar to the trends for Minnesota between 1988 and 2017. During this period, breast cancer incidence per 100,000 women was consistently higher in the 7-County Twin Cities Metro compared to the non-Metro region (Figure 11, Appendix Table A9). Mortality rates for both regions over the past 30 years are similar but rates for the non-Metro show more variability (Figure 12, Appendix Table A9).

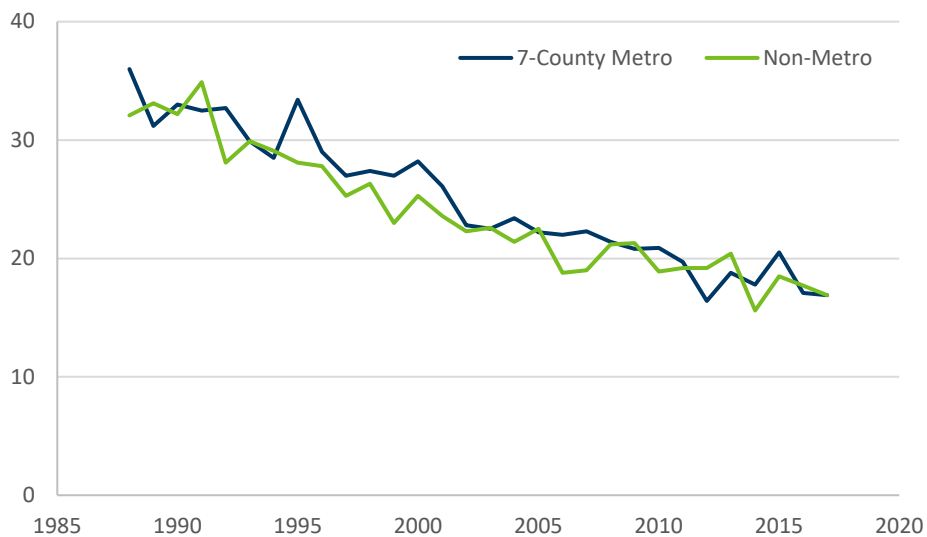
There are long-standing differences in population demographics, and availability and access to health care systems between the Metropolitan and non-Metropolitan regions of the state [16]. Compared to the Metropolitan areas, residents of the non-Metropolitan areas are older on average, have longer distances to travel for health care, and face barriers to receiving care from medical specialists, who are concentrated in the Metropolitan areas of the state. As such, state and local cancer prevention and control efforts need to take into account these and other challenges non-Metropolitan area residents experience in seeking health care services.

Figure 11. Breast cancer incidence rates have been historically lower in the non-Metro than in the Twin Cities 7-County Metro



Source: Minnesota Cancer Reporting System 1988-2017 (Minnesota breast cancer age-standardized incidence rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Figure 12. Breast cancer mortality rates have been decreasing in Twin Cities 7-County Metro and non-Metro regions since 1988



Source: Minnesota Department of Health Office of Vital Records (1988-2017 Minnesota age-standardized mortality rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Risk and protective factors

A variety of factors affect a woman's risk of developing breast cancer. Risk factors increase the risk of breast cancer while protective factors decrease the risk of this cancer. Some factors are internal to a person like age or genetics, while other factors are external to a person, like exposure to radiation or alcohol consumption.

Women have control over some risk and protective factors and this offers women opportunities to try to reduce their risk of developing breast cancer. Maintaining a healthy weight, minimizing alcohol consumption, and being physically active are protective factors that can lower a woman's risk of some breast cancers. However, breast cancer is not completely understood. Some women diagnosed with breast cancer do not have any known risk factors for the disease.

Few cancers have a single cause. Instead there are multiple risk and protective factors that interact over time to cause cells to grow abnormally [17]. Emerging research suggests that the effect of known risk factors on breast cancer risk is different by subtype [18]. Research is ongoing to better understand the causes of breast cancer.

- Age is one of the strongest risk factors for breast cancer. The risk of developing breast cancer increases with age.
- Certain genetic alterations and a family history of breast cancer increase the risk of breast cancer.
- Lifetime exposure to estrogen increases the risk of breast cancer. A woman's lifetime estrogen level is largely determined by her reproductive and menstrual history, and long-term use of menopausal hormone replacement therapy.
- Certain exposures including chest radiation therapy for a previous cancer and the use of diethylstilbesterol (DES) during pregnancy increase risk.
- Individual factors that increase a woman's risk of breast cancer include a personal history of breast cancer and breast density.
- Modifiable lifestyle factors that increase risk include increased body weight, lack of physical activity, and alcohol consumption.

Screening for breast cancer

The goal of screening for breast cancer is to detect the disease before symptoms develop and treat it early, when cancers respond better to treatment. Screening guideline recommendations depend on age, family history and individual risk [19]. Women should talk with their health care providers about breast cancer screening tests and when to have them.

Women who do not have health insurance, or have insurance that does not fully cover breast cancer screening costs, may be eligible to receive free screening in Minnesota through MDH's Sage Program [20] or the American Indian Cancer Foundation's Screen Our Circle Program [21]. Women screened through the Sage or Screen Our Circle programs who need follow-up treatment may qualify for Medical Assistance for Breast or Cervical Cancer (MA-BC) [22]. This program covers treatment and other MA-covered service costs until treatment ends.

References

1. U.S. Department of Health and Human Services. Office of Disease Prevention and Health Promotion. *Healthy People 2020 Topics & Objectives: Cancer*. [Accessed August 17, 2020]; Available from: <https://www.healthypeople.gov/2020/topics-objectives/topic/cancer/objectives>.
2. Minnesota Department of Health. MN Public Health Data Access Portal. *Cancer in Minnesota, Cancer Query*. May 2020 [Accessed August 12, 2020]; Available from: https://data.web.health.state.mn.us/cancer_query.
3. Al-Mahmood, S., et al., *Metastatic and triple-negative breast cancer: challenges and treatment options*. Drug Deliv Transl Res, 2018. **8**(5): p. 1483-1507.
4. National Cancer Institute. *Breast Cancer Treatment (Adult) (PDQ R) - Patient Version*. [Accessed August 11, 2020]; Available from: <https://www.cancer.gov/types/breast/patient/breast-treatment-pdq>.
5. American Society of Clinical Oncology. *Breast Cancer Research & Guidelines*. [Accessed: August 11, 2020]; Available from: <https://www.asco.org/research-guidelines/quality-guidelines/guidelines/breast-cancer>.
6. Krasniqi, E., et al., *Immunotherapy in HER2-positive breast cancer: state of the art and future perspectives*. J Hematol Oncol, 2019. **12**(1): p. 111.
7. Marra, A., G. Viale, and G. Curigliano, *Recent advances in triple negative breast cancer: the immunotherapy era*. BMC Med, 2019. **17**(1): p. 90.
8. American Cancer Society. *About Breast Cancer*. Available from: <https://www.cancer.org/cancer/breast-cancer/about.html>.
9. National Cancer Institute. *Side Effects of Cancer Treatment*. [Accessed August 12, 2020]; Available from: <https://www.cancer.gov/about-cancer/treatment/side-effects>.
10. American Cancer Society, *Cancer Treatment & Survivorship Facts & Figures 2019-2021*. 2019, American Cancer Society, Inc.: Atlanta, GA.
11. Gegechkori, N., L. Haines, and J.J. Lin, *Long-Term and Latent Side Effects of Specific Cancer Types*. Med Clin North Am, 2017. **101**(6): p. 1053-1073.
12. National Cancer Institute. *Female Breast Cancer Subtypes*. [Accessed September 1, 2020]; Available from: <https://seer.cancer.gov/statfacts/html/breast-subtypes.html>.
13. Dai, X., et al., *Breast cancer intrinsic subtype classification, clinical use and future trends*. Am J Cancer Res, 2015. **5**(10): p. 2929-43.
14. Kohler, B.A., et al., *Annual Report to the Nation on the Status of Cancer, 1975-2011, Featuring Incidence of Breast Cancer Subtypes by Race/Ethnicity, Poverty, and State*. J Natl Cancer Inst, 2015. **107**(6): p. djv048.
15. American Cancer Society, *Breast Cancer Facts & Figures 2019-2020*. 2019, American Cancer Society, Inc.: Atlanta, GA.
16. Minnesota Department of Health. Office of Rural Health and Primary Care, *Rural Health Care in Minnesota: Data Highlights Chartbook*. 2019: St. Paul, MN.

BREAST CANCER IN MINNESOTA WOMEN

17. American Cancer Society. *Breast Cancer Risk and Prevention*. [Accessed: August 20, 2020]; Available from: <https://www.cancer.org/cancer/breast-cancer/risk-and-prevention.html>.
18. Gaudet, M.M., et al., *Pooled Analysis of Nine Cohorts Reveals Breast Cancer Risk Factors by Tumor Molecular Subtype*. *Cancer Res*, 2018. **78**(20): p. 6011-6021.
19. Centers for Disease Control and Prevention. Division of Cancer Prevention and Control. *What is Breast Cancer Screening? 2020* [Accessed August 21, 2020]; Available from: https://www.cdc.gov/cancer/breast/basic_info/screening.htm.
20. Minnesota Department of Health. *Sage Screening Programs*. [Accessed August 21, 2020]; Available from: <https://www.health.state.mn.us/diseases/cancer/sage/about/index.html>.
21. American Indian Cancer Foundation. *About Screen Our Circle*. Available from: <https://www.americanindiancancer.org/screen-our-circle/>.
22. Minnesota Department of Human Services. *Medical Assistance for Breast or Cervical Cancer (MA-BC)*. Available from: <https://mn.gov/dhs/people-we-serve/adults/health-care/health-care-programs/programs-and-services/breast-cervical-cancer.jsp>.

Data sources and methods

Data sources

Minnesota cancer incidence data

Cancer incidence data for this report were drawn from the MCRC database on January 2020. The database contains information on nearly all microscopically confirmed malignant and in situ cancers diagnosed in Minnesota residents between 1988 and 2017. After a rule change, both clinical and microscopically confirmed cancers were reported to the state's cancer registry, starting in 2012. Cancers excluded from reporting include the most common forms of skin cancer (basal and squamous cell carcinomas) and in situ carcinomas of the cervix. These exclusions are consistent with guidelines for cancer registration practice in the U.S. (See Registry Methods and Standards below.) For detailed information about cancer reporting in Minnesota, cancer statistics and reports, legislative authority, and archived reports and publications, please visit [Minnesota Cancer Reporting System \(https://www.health.state.mn.us/data/mcrs/index.html\)](https://www.health.state.mn.us/data/mcrs/index.html).

Minnesota cancer mortality data

Gathering data on Minnesotans with cancer from death certificates is necessary to completely describe the cancer burden, as well as to evaluate the progress made in treating and controlling cancer in Minnesota. Mortality data are obtained from electronic death certificates on Minnesota residents. Only the underlying cause of death is used in calculating cancer mortality rates. To learn more about the Office of Vital Records and death certificates, in particular, please visit [Minnesota Center for Health Statistics, Office of Vital Records \(https://www.health.state.mn.us/people/vitalrecords/about.html\)](https://www.health.state.mn.us/people/vitalrecords/about.html).

Surveillance, Epidemiology, and End Results (SEER) 9 Registries

Data from the SEER 9 Program registries provides data for long-term trend analyses covering approximately 9.4% of the U.S. population residing in San Francisco-Oakland, Connecticut, Metropolitan Detroit, Hawaii, Iowa, New Mexico, Seattle (Puget Sound), Utah, Metropolitan Atlanta. For more information see [SEER*Stat Databases: November 2019 submission \(https://seer.cancer.gov/data-software/documentation/seerstat/nov2019/\)](https://seer.cancer.gov/data-software/documentation/seerstat/nov2019/)

U.S. Mortality Data

The National Center for Health Statistics (NCHS) collects and maintains U.S. mortality data. For more information on the data used in this report, go to [U.S. Mortality Data, 1969-2018 \(https://seer.cancer.gov/mortality/\)](https://seer.cancer.gov/mortality/)

Population data

The NCI's website contains population data used in generating statistics for this report. The U.S. Census Bureau develops annual population estimates. Census population estimation methods and the population estimates used in the calculations. See the [National Cancer Institute \(NCI\) – U.S. Population Data – 1969-2017 \(https://seer.cancer.gov/popdata/\)](https://seer.cancer.gov/popdata/) page for more information.

Methods for data analyses

Analytic software

Incidence and mortality counts and age-adjusted rates for this report were generated using NCI's SEER*Stat software. Trend statistics and average annual percent change estimates were generated using NCI's Joinpoint software.

Defining cancer statistics

For more information about statistics used to assess the impact of cancer in the general population, go to [NCI Defining Cancer Statistics page \(https://seer.cancer.gov/statistics/types.html\)](https://seer.cancer.gov/statistics/types.html).

Age-adjusted rate

To learn what an age-adjusted rate is and how it is calculated, please see the NCI [Tutorial to Calculate Age-Adjusted Rates \(https://seer.cancer.gov/seerstat/tutorials/aarates/definition.html\)](https://seer.cancer.gov/seerstat/tutorials/aarates/definition.html).

Unstable rate

An unstable rate is defined as one with a cancer count less than 20, or a relative standard error ($100 \times SE/Rate$) > 30%. If a rate was unstable only counts were included in a table. Unstable rates in the tables are denoted with NA.

Standard population

To learn more about the 2000 U.S. standard population used in calculating age-adjusted rates, go to [NCI-2000 US Standard Population \(https://seer.cancer.gov/stdpopulations/single_age.html\)](https://seer.cancer.gov/stdpopulations/single_age.html).

Minnesota geographic divisions

Metropolitan areas of the state were defined as the Twin Cities 7-County Metropolitan area including the counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington. In 2015, this area exceeded 3 million residents. The non-Metro area include the other 80 Minnesota counties.

Collecting and processing cancer incidence and mortality data

MCRS authority and data protection

For information on the history, statutory authority, and objectives of the Minnesota Department of Health's statewide cancer registry please visit [Legislative Authority for MCRS \(https://www.health.state.mn.us/communities/practice/schsac/index.html\)](https://www.health.state.mn.us/communities/practice/schsac/index.html).

For information on the Minnesota Government Data Practices Act please visit [Minnesota Government Data Privacy Act \(https://www.health.state.mn.us/communities/practice/resources/chsadmin/data-mgdpa.html\)](https://www.health.state.mn.us/communities/practice/resources/chsadmin/data-mgdpa.html).

Registry methods and standards

The North American Association of Central Cancer Registries (NAACCR) provides the data dictionary and standards governing data collection, coding, and processing used in member central cancer registries to develop high quality cancer data needed to address the cancer burden in North America, including Minnesota. For more information about NAACCR please visit the section “Central Registry Standards” on the [North American Association of Central Cancer Registries \(NAACCR\)](https://www.naacr.org/) (<https://www.naacr.org/>) page.

Glossary of terms

To look up unfamiliar terms please visit [NCI Glossary of Statistical Terms](https://seer.cancer.gov/cgi-bin/glossary/glossary.pl) (<https://seer.cancer.gov/cgi-bin/glossary/glossary.pl>) page.

Cancer prevention resources

Comprehensive Cancer Control Program

The [Comprehensive Cancer Control Program](https://www.health.state.mn.us/diseases/cancer/compcancer/index.html) (<https://www.health.state.mn.us/diseases/cancer/compcancer/index.html>) at the Minnesota Department of Health is a CDC funded initiative to strengthen efforts across Minnesota to decrease the impacts of cancer. To achieve this objective, program staff collaborated with the Minnesota Cancer Alliance (below) to develop the [Cancer Plan Minnesota 2025: A Framework for Action](https://mncanceralliance.org/cancer-plan/). (<https://mncanceralliance.org/cancer-plan/>).

Minnesota Cancer Alliance

The Minnesota Cancer Alliance is a coalition of more than 100 organizations from diverse backgrounds and disciplines dedicated toward reducing the burden of cancer in Minnesota. Members are actively working to achieve the objectives of the *Cancer Plan Minnesota 2025*. For more information, go to [Minnesota Cancer Alliance](https://mncanceralliance.org/) (<https://mncanceralliance.org/>).

Sage Screening Programs

The Minnesota Department of Health’s Sage Screening Programs provide free screening for breast and cervical cancer at participating locations across Minnesota. The program has a wide network of partners working together to reduce the burden of cancer by providing access to and promoting breast and cervical cancer screening services for Minnesota’s uninsured and underinsured populations. For more information, go to [MDH Sage Screening Programs](https://www.health.state.mn.us/diseases/cancer/sage/about/index.html/) (<https://www.health.state.mn.us/diseases/cancer/sage/about/index.html/>).

Healthy Minnesota Partnership

The Healthy Minnesota Partnership is a collaboration between community partners and the Minnesota Department of Health to improve the health and quality of life for individuals, families and communities in the state. The Healthy Minnesota 2020 Framework identifies and acts on strategic opportunities to improve health and well-being for all people in Minnesota. The most recent progress report was produced as a collaboration between the Minnesota Department of Health and the Healthy Minnesota Partnership. To access the report, go to

[Healthy Minnesota 2020 Update](https://www.health.state.mn.us/communities/practice/healthymnpartnership/docs/annualreport2017.pdf/)

(<https://www.health.state.mn.us/communities/practice/healthymnpartnership/docs/annualreport2017.pdf/>).

Center for Health Equity

The Center for Health Equity (CHE) was created in 2013 to advance health equity as a practice or approach within the Minnesota Department of Health and across the state. Under CHE's leadership, Minnesota's approach addresses health disparities as part of a broad spectrum of public investments in housing, transportation, education, economic opportunity and criminal justice. CHE also carries out specific initiatives and projects, including state funding available to Tribal Nations to support Eliminating Health Disparities Initiative (EHDI) activities (Minnesota Statute 145.928, subdivision 10). EHDI funding is for various activities in health areas including decreasing morbidity and mortality rates from breast and cervical cancer, diabetes, HIV/AIDS and other health conditions. For more information, go to [MDH Center for Health Equity](https://www.health.state.mn.us/communities/equity/about/index.html/) (<https://www.health.state.mn.us/communities/equity/about/index.html/>).

Statewide Health Improvement Partnership

SHIP works to create healthier communities across Minnesota by expanding opportunities for active living, healthy eating and tobacco-free living. At its core, SHIP is a locally driven effort, with community partnerships formed to create better health together across Minnesota. Communities choose strategies that are based on the latest science and focused on making long-term, sustainable changes in schools and child care facilities, communities, workplaces and health care settings. SHIP has been instrumental in helping Minnesota keep obesity rates relatively flat, and reducing commercial tobacco use and secondhand smoke exposure. These factors contribute to chronic diseases, rising health care costs, disability and death. For more information about SHIP, go to [Statewide Health Improvement Partnership](https://www.health.state.mn.us/communities/ship/) (<https://www.health.state.mn.us/communities/ship/>).

Appendix

Table A1. 30-year breast cancer incidence and mortality rate (per 100,000) trend data, 1988-2017

Year	Minnesota Incidence Rate	Minnesota incidence Count	SEER 9 incidence Rate	SEER 9 Incidence Count	Minnesota Mortality Rate	Minnesota Mortality Count	U.S. Mortality Rate	U.S. Mortality Count
1988	132.3	2,854	131.4	14,902	33.9	765	33.2	42,169
1989	127.1	2,768	127.3	14,645	31.9	716	33.2	42,836
1990	132.3	2,905	131.9	15,410	32.5	746	33.1	43,389
1991	130.7	2,921	133.9	15,905	33.5	786	32.7	43,582
1992	130.6	2,947	132.1	16,043	30.3	726	31.6	43,063
1993	131.1	3,017	129.2	15,977	29.9	732	31.4	43,554
1994	126.9	2,973	131.0	16,444	28.7	708	30.9	43,644
1995	133.9	3,170	132.8	16,977	30.9	773	30.6	43,843
1996	130.6	3,155	133.8	17,360	28.3	725	29.5	43,090
1997	132.3	3,240	138.1	18,282	26.0	678	28.2	41,943
1998	140.6	3,510	141.5	19,062	26.8	720	27.5	41,736
1999	138.9	3,499	141.6	19,352	24.8	669	26.6	41,144
2000	142.8	3,662	136.7	18,975	26.7	729	26.6	41,872
2001	139.8	3,646	138.9	19,589	24.7	685	26.0	41,394
2002	135.6	3,608	135.9	19,461	22.5	640	25.6	41,514
2003	126.0	3,403	127.1	18,488	22.7	639	25.3	41,619
2004	122.9	3,379	128.4	18,962	22.4	655	24.5	40,954
2005	124.6	3,486	126.8	19,048	22.3	656	24.1	41,116
2006	124.5	3,537	126.5	19,370	20.4	609	23.6	40,820
2007	131.9	3,809	128.5	19,979	20.6	636	23.0	40,598
2008	128.9	3,790	128.6	20,329	21.4	673	22.6	40,589
2009	131.7	3,943	131.0	21,137	21.2	684	22.2	40,676
2010	128.5	3,865	127.3	20,878	19.9	648	21.9	40,996
2011	135.4	4,140	130.6	21,773	19.4	637	21.6	40,931
2012	130.3	4,077	130.4	22,191	17.8	605	21.3	41,150
2013	128.1	4,022	131.2	22,596	19.5	665	20.8	40,860
2014	131.3	4,223	131.6	23,094	16.8	588	20.6	41,211
2015	135.1	4,377	131.8	23,550	19.4	686	20.3	41,523

BREAST CANCER IN MINNESOTA WOMEN

Year	Minnesota Incidence Rate	Minnesota incidence Count	SEER 9 incidence Rate	SEER 9 Incidence Count	Minnesota Mortality Rate	Minnesota Mortality Count	U.S. Mortality Rate	U.S. Mortality Count
2016	129.5	4,303	130.7	23,729	17.5	615	20.1	41,487
2017	138.4	4,643	131.6	24,236	17.0	627	19.9	42,000

Source: Minnesota Cancer Reporting System 1988-2017 (Minnesota breast cancer age-standardized incidence rates). Surveillance, Epidemiology and End Results, 1988-2017 SEER 9 registries (age-standardized breast cancer incidence rates for Connecticut, Detroit, Atlanta, San Francisco-Oakland, Hawaii, Iowa, New Mexico, Seattle-Puget Sound, Utah). Minnesota Department of Health Office of Vital Records (1988-2017 Minnesota age-standardized mortality rates). National Center for Health Statistics (1988-2017 U.S. age-standardized mortality rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Table A2. Minnesota breast cancer incidence and mortality rates (per 100,000) by 5-year age-groups, 2013-2017

Year	Incidence Rate	Incidence Count	Mortality Rate	Mortality Count
0-4	0	0	0	0
5-9	0	0	0	0
10-14	0	0	0	0
15-19	0.1	1	0	0
20-24	1.6	14	0	0
25-29	10.6	95	0.6	5
30-34	31.5	297	2.3	22
35-39	64.2	551	3.6	31
40-44	128.6	1,039	8.7	70
45-49	203.8	1,775	15.7	137
50-54	236.3	2,313	21.0	206
55-59	261.6	2,560	27.6	270
60-64	351.2	2,975	39.8	337
65-69	438.9	2,977	55.7	378
70-74	524.9	2,594	70.4	348
75-79	489.3	1,809	88.4	327
80-84	437.8	1,260	117.4	338
85+	337.9	1,308	184.0	712

Source: Minnesota Cancer Reporting System 2013-2017 (age-specific incidence rates). Minnesota Department of Health Office of Vital Records (2013-2017 Minnesota age-specific mortality rates).

Table A3. Minnesota breast cancer incidence and mortality rates (per 100,000) by race/ethnicity, 2013-2017

Race/Ethnicity	Incidence Rate	Incidence Count	Mortality Rate	Mortality Count
White, Non-Hispanic	135.1	19,928	18.2	2,978
Black	106.8	619	19.7	100
American Indian/Alaska Native	102.5	158	20.7	27
Asian/Pacific Islander	78.2	410	10.7	50
Hispanic - All Races	101.8	355	11.5	32
All Races	132.5	21,568	18.0	3,181

**Healthy People 2020 breast cancer mortality target:
20.7 deaths/100,000 women**

Source: Minnesota Cancer Reporting System 2013-2017 (age-standardized incidence rates). Minnesota Department of Health Office of Vital Records (2013-2017 Minnesota age-standardized mortality rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Table A4. Minnesota breast cancer incidence rates (per 100,000) by stage at diagnosis and race/ethnicity, 2013-2017

Race/ethnicity	Stage	Incidence Rate	Count
American Indian/Alaska Native	Early	63.3	97
American Indian/Alaska Native	Late	37.3	59
Asian/Pacific Islander	Early	50.0	258
Asian/Pacific Islander	Late	28.0	151
Black	Early	59.0	338
Black	Late	46.1	274
Hispanic – All Races	Early	64.0	211
Hispanic – All Races	Late	34.4	137
White, Non-Hispanic	Early	89.6	13,420
White, Non-Hispanic	Late	42.4	5,981
All Races Combined	Early	87.3	14,367
All Races Combined	Late	42.0	6,619

**Healthy People 2020 female late stage breast cancer target:
42.4 new cancers/100,000**

Source: Minnesota Cancer Reporting System 2013-2017 (age-standardized incidence rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Table A5. Minnesota breast cancer incidence rates (per 100,000) by race/ethnicity, 2013-2017

Race/Ethnicity	Luminal A Rate	Triple Negative Rate	Luminal B Rate
White, Non-Hispanic	95.4	12.2	14.4
Black	63.8	17.2	13.4
American Indian/Alaska Native	67.7	10.9	14.1
Asian/Pacific Islander	50.6	8.3	10.0
Hispanic - All Races	67.6	11.0	12.9

Source: Minnesota Cancer Reporting System 2013-2017 (age-standardized incidence rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Table A6. Minnesota five-year relative breast cancer survival (percent) by stage at diagnosis, 2010-2016

Stage at Diagnosis	Count	Relative Survival Percent	Lower 95% Confidence Interval	Upper 95% Confidence Interval
Localized	18,577	99.1%	98.0%	99.6%
Regional	7,812	86.4%	84.9%	88.0%
Distant	1,370	32.4%	29.2%	36.1%
Unstaged/Unknown	397	76.7%	68.6%	82.9%

Source: Minnesota Cancer Reporting System, 2010-2016 with vital status follow-up in 2017. Age standardized to the International Cancer Survival Standard 1 – Ages 15.

Table A7. Minnesota five-year relative breast cancer survival (percent) by race/ethnicity, 2010-2016

Race/ethnicity	Count	Relative Survival Percent	Lower 95% Confidence Interval	Upper 95% Confidence Interval
White, Non-Hispanic	25,816	92.9%	92.2%	93.6%
Black	737	78.7%	69.2%	85.6%
American Indian/Alaska Native	218	NA	NA	NA
Asian/Pacific Islander	461	87.0%	78.4%	92.4%
Hispanic - All Races	454	88.9%	78.1%	94.6%
All Races	27,822	92.7%	92.0%	93.4%

Source: Minnesota Cancer Reporting System, 2010-2016 with vital status follow-up in 2017. Age standardized to the International Cancer Survival Standard 1 – Ages 15+. NA indicates that relative survival could not be estimated for American Indian/Alaska Native women based on data available for this analysis.

Table A8. Minnesota five-year relative breast cancer survival (percent) by subtype, 2010-2016

Subtype	Relative survival	95% Lower Confidence Interval	95% Upper Confidence Interval
Luminal A, HR+, HER2-	95.1%	94.3%	95.9%
Luminal B, HR+, HER2+	90.3%	87.3%	92.6%
HER2-enriched, HR-, HER2+	83.4%	78.4%	87.3%
Triple Negative, HR-, HER2-	75.9%	76.7%	82.0%
Unknown	84.0%	80.8%	86.70%

Source: Minnesota Cancer Reporting System, 2010-2016 with vital status follow-up in 2017. Age standardized to the International Cancer Survival Standard 1 – Ages 15+.

Table A9: Minnesota breast cancer incidence and mortality rate (per 100,000) trend data – Twin Cities 7-County Metropolitan and non-Metropolitan counties, 1988-2017

Year	Metro Incidence Rate	Metro Incidence Count	Non-Metro Incidence Rate	Non-Metro Incidence Count	Metro Mortality Rate	Metro Mortality Count	Non-Metro Mortality Rate	Non-Metro Mortality Count
1988	131.1	1,320	134.5	1,534	36.0	370	32.1	395
1989	127.3	1,293	126.3	1,475	31.2	323	33.1	393
1990	137.7	1,426	127.2	1,479	33.0	348	32.2	398
1991	134.3	1,421	126.3	1,500	32.5	351	34.9	435
1992	138.9	1,497	122.9	1,450	32.7	362	28.1	364
1993	133.9	1,472	128.9	1,545	29.9	334	29.9	398
1994	131.7	1,489	122.2	1,484	28.5	328	29.1	380
1995	138.7	1,591	129.1	1,579	33.4	390	28.1	383
1996	136.1	1,596	124.4	1,559	29.0	348	27.8	377
1997	141.9	1,690	122.6	1,550	27.0	330	25.3	348
1998	143.6	1,755	137.3	1,755	27.4	344	26.3	376
1999	153.1	1,892	123.7	1,607	27.0	342	23.0	327
2000	150.1	1,900	135.4	1,762	28.2	368	25.3	361
2001	147.8	1,900	132.4	1,746	26.1	338	23.6	347
2002	141.5	1,863	129.3	1,745	22.8	309	22.3	331
2003	130.8	1,776	119.4	1,627	22.5	304	22.6	335
2004	122.2	1,682	122.2	1,697	23.4	323	21.4	332

BREAST CANCER IN MINNESOTA WOMEN

Year	Metro Incidence Rate	Metro Incidence Count	Non-Metro Incidence Rate	Non-Metro Incidence Count	Metro Mortality Rate	Metro Mortality Count	Non-Metro Mortality Rate	Non-Metro Mortality Count
2005	130.0	1,813	118.6	1,673	22.2	313	22.5	343
2006	126.5	1,806	121.7	1,731	22.0	316	18.8	293
2007	139.0	2,008	125.5	1,801	22.3	324	19.0	312
2008	135.1	2,013	122.8	1,777	21.4	326	21.2	347
2009	139.2	2,123	124.1	1,820	20.8	320	21.3	364
2010	134.0	2,051	122.5	1,814	20.9	326	18.9	322
2011	139.5	2,181	131.3	1,959	19.7	320	19.2	317
2012	132.4	2,131	126.9	1,946	16.4	273	19.2	332
2013	133.4	2,174	122.5	1,848	18.8	320	20.4	345
2014	134.1	2,260	127.9	1,963	17.8	310	15.6	277
2015	138.5	2,354	130.9	2,023	20.5	367	18.5	319
2016	134.2	2,333	124.2	1,970	17.1	300	17.7	312
2017	142.7	2,531	133.7	2,112	16.9	312	16.9	313

Source: Minnesota Cancer Reporting System 1988-2017 (Minnesota breast cancer age-standardized incidence rates). Minnesota Department of Health Office of Vital Records (1988-2017 Minnesota age-standardized mortality rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).

Table A10. Minnesota state and county-level female breast cancer for incidence, mortality, and prevalence, 2013-2017

Region	Average Annual Cancers	5-year Incidence Rate	Incidence Rate Unstable (Yes or blank)	Late Stage Incidence Rate	Late Stage Incidence Rate Unstable (Yes or blank)	Incident Percent Late Stage	Average annual deaths	5-year Mortality Rate	Mortality Rate Unstable (Yes or blank)	Cancer Prevalence	Cancer Prevalence Percent
Minnesota	4314	132.5		42.0		32	635	18.0		61650	2.2
Aitkin	16	109.6		32.2	Yes	23	2	13.5	Yes	240	3.0
Anoka	261	130.8		45.2		35	35	18.0		3610	2.0
Becker	29	124.2		37.8		29	3	12.1	Yes	430	2.5
Beltrami	35	138.6		51.3		35	6	21.6		550	2.3
Benton	24	113.5		40.9		35	6	24.1		340	1.7
Big Stone	4	106.1		15.7	Yes	22	2	22.7	Yes	50	2.0
Blue Earth	42	130.3		44.8		35	6	16.7		650	1.9
Brown	27	147.4		53.1		32	4	19.9		370	2.8
Carlton	28	131.7		43.4		35	5	21.5		440	2.5
Carver	74	143.0		42.9		30	9	17.1		940	1.8
Cass	30	122.7		33.9		29	6	24.4		510	3.5
Chippewa	10	108.3		38.1	Yes	35	2	23.8	Yes	160	2.5
Chisago	44	135.9		48.7		36	5	16.3		600	2.2
Clay	40	126.4		36.2		28	5	13.0		560	1.7
Clearwater	5	94.4		25.7	Yes	26	2	20.5	Yes	60	1.4
Cook	7	171.2		43.8	Yes	22	2	34.6	Yes	110	4.0
Cottonwood	11	141.3		43.1	Yes	23	2	24.1	Yes	220	3.7

BREAST CANCER IN MINNESOTA WOMEN

Region	Average Annual Cancers	5-year Incidence Rate	Incidence Rate Unstable (Yes or blank)	Late Stage Incidence Rate	Late Stage Incidence Rate Unstable (Yes or blank)	Incident Percent Late Stage	Average annual deaths	5-year Mortality Rate	Mortality Rate Unstable (Yes or blank)	Cancer Prevalence	Cancer Prevalence Percent
Crow Wing	57	122.3		42.6		33	6	12.3		940	2.8
Dakota	341	141.2		45.4		32	41	17.1		4660	2.1
Dodge	13	106.6		30.2	Yes	29	3	20.7	Yes	160	1.5
Douglas	38	140.6		39.2		26	6	18.5		590	3.0
Faribault	12	119.4		34.8	Yes	35	2	14.2	Yes	180	2.5
Fillmore	16	109.9		42.8		37	2	9.0	Yes	220	2.0
Freeborn	29	125.5		32.2		38	5	19.3		450	2.8
Goodhue	41	135.8		32.2		30	7	17.9		620	2.6
Grant	5	125.9		68.4	Yes	46	1	35.7	Yes	90	3.0
Hennepin	947	137.4		42.6		31	138	18.8		13120	2.0
Houston	16	119.6		36.2		31	1	8.3	Yes	240	2.5
Hubbard	17	116.8		49.5		38	3	16.1	Yes	300	2.8
Isanti	32	142.2		53.0		37	6	23.2		450	2.3
Itasca	44	129.5		31.3		22	6	14.7		620	2.7
Jackson	10	141.1		63.7	Yes	41	2	21.8	Yes	160	3.1
Kanabec	18	149.4		57.0		40	2	14.1	Yes	260	3.2
Kandiyohi	40	149.0		52.8		33	8	26.5		630	2.9
Kittson	5	128.5		47.1	Yes	41	1	35.8	Yes	60	2.7
Koochiching	9	94.6		25.7	Yes	28	3	23.9	Yes	150	2.3
Lac qui Parle	6	139.8		89.3	Yes	59	2	23.3	Yes	100	2.8

BREAST CANCER IN MINNESOTA WOMEN

Region	Average Annual Cancers	5-year Incidence Rate	Incidence Rate Unstable (Yes or blank)	Late Stage Incidence Rate	Late Stage Incidence Rate Unstable (Yes or blank)	Incident Percent Late Stage	Average annual deaths	5-year Mortality Rate	Mortality Rate Unstable (Yes or blank)	Cancer Prevalence	Cancer Prevalence Percent
Lake	11	126.1		46.9	Yes	33	2	21.8	Yes	150	2.9
Lake of the Woods	4	137.1	Yes	51.0	Yes	42	1	38.2	Yes	60	3.3
Le Sueur	24	139.5		41.4		30	2	10.7	Yes	340	2.4
Lincoln	6	135.7		48.4	Yes	32	1	24.6	Yes	100	3.3
Lyon	19	121.2		33.1		25	3	16.8	Yes	290	2.1
McLeod	26	112.1		44.2		38	5	21.7		420	2.3
Mahnomen	4	104.4	Yes	38.9	Yes	39	1	14.1	Yes	50	1.9
Marshall	9	137.7		33.2	Yes	18	1	11.6	Yes	130	2.6
Martin	20	142.5		42.9		31	4	20.7	Yes	300	2.8
Meeker	17	100.8		48.2		49	4	26.1		290	2.4
Mille Lacs	23	136.2		51.6		36	5	30.0		310	2.3
Morrison	24	113.9		35.0		31	3	11.5	Yes	360	2.1
Mower	32	124.2		27.0		30	5	15.5		460	2.2
Murray	9	142.8		45.8	Yes	34	2	23.1	Yes	130	2.9
Nicollet	29	151.8		36.7		24	2	8.6	Yes	400	2.3
Nobles	16	130.6		36.6		26	3	22.7	Yes	240	2.1
Norman	5	102.7		39.5	Yes	40	1	17.5	Yes	80	2.5
Olmsted	123	137.6		39.3		29	15	15.0		1740	2.1
Otter Tail	57	129.1		45.8		34	8	16.3		840	2.8
Pennington	7	88.1		29.9	Yes	30	2	17.5	Yes	110	1.5

BREAST CANCER IN MINNESOTA WOMEN

Region	Average Annual Cancers	5-year Incidence Rate	Incidence Rate Unstable (Yes or blank)	Late Stage Incidence Rate	Late Stage Incidence Rate Unstable (Yes or blank)	Incident Percent Late Stage	Average annual deaths	5-year Mortality Rate	Mortality Rate Unstable (Yes or blank)	Cancer Prevalence	Cancer Prevalence Percent
Pine	21	108.5		42.8		40	4	19.0		310	2.3
Pipestone	8	117.9		49.0	Yes	41	2	21.2	Yes	130	2.7
Polk	28	145.9		65.6		43	3	14.4	Yes	410	2.5
Pope	11	121.6		31.1	Yes	22	2	24.1	Yes	170	3.0
Ramsey	406	132.2		39.2		29	58	17.4		5820	2.0
Red Lake	4	132.4	Yes	22.5	Yes	24	0	14.9	Yes	60	2.8
Redwood	12	115.8		38.0	Yes	29	4	29.0	Yes	180	2.3
Renville	10	112.1		36.4	Yes	30	2	17.5	Yes	140	1.8
Rice	52	138.8		37.0		27	9	21.9		750	2.3
Rock	8	126.8		28.1	Yes	20	2	24.7	Yes	150	3.0
Roseau	12	131.8		51.0		36	2	22.5	Yes	190	2.4
St. Louis	147	111.9		37.7		32	23	15.2		2250	2.2
Scott	96	136.1		38.0		29	13	19.7		1280	1.7
Sherburne	58	126.0		37.2		31	9	19.2		770	1.7
Sibley	12	128.1		45.1		39	2	17.8	Yes	170	2.2
Stearns	108	128.0		40.9		31	14	16.3		1440	1.8
Steele	36	168.4		45.5		33	5	19.0		520	2.7
Stevens	6	127.7		43.9	Yes	31	1	10.2	Yes	110	2.1
Swift	8	98.9		26.4	Yes	21	1	20.6	Yes	140	2.8
Todd	19	113.5		34.8		29	2	10.1	Yes	280	2.3

BREAST CANCER IN MINNESOTA WOMEN

Region	Average Annual Cancers	5-year Incidence Rate	Incidence Rate Unstable (Yes or blank)	Late Stage Incidence Rate	Late Stage Incidence Rate Unstable (Yes or blank)	Incident Percent Late Stage	Average annual deaths	5-year Mortality Rate	Mortality Rate Unstable (Yes or blank)	Cancer Prevalence	Cancer Prevalence Percent
Traverse	6	230.0		142.7	Yes	54	1	22.8	Yes	60	3.6
Wabasha	23	145.2		44.6		31	3	14.2	Yes	340	3.1
Wadena	12	119.6		57.0		47	3	29.5	Yes	210	2.9
Waseca	14	105.5		35.6		38	3	24.5	Yes	230	2.3
Washington	206	140.4		45.5		32	29	19.1		2740	2.1
Watonwan	7	94.7		28.5	Yes	31	1	9.9	Yes	110	1.9
Wilkin	6	134.3		34.5	Yes	26	2	49.4	Yes	70	2.4
Winona	41	140.5		52.6		38	5	16.5		630	2.4
Wright	88	128.3		41.8		33	12	17.2		1180	1.8
Yellow Medicine	8	101.3		28.9	Yes	24	1	23.5	Yes	140	2.6

Source: Minnesota Cancer Reporting System 1988-2017 (Minnesota breast cancer age-standardized incidence rates). Minnesota Department of Health Office of Vital Records (1988-2017 Minnesota age-standardized mortality rates). Rates are per 100,000 population and age-standardized to the 2000 U.S. Standard Population (19 age groups – Census P25-1130).