

Female Breast Cancer

Definition: Cancer of the female breast is characterized by uncontrolled growth of cells developing in a woman's breast with the potential to invade and spread to other sites. Invasive female breast cancer is coded as ICD-9 code 174 and ICD-10 code C50 on the death certificate.

Summary

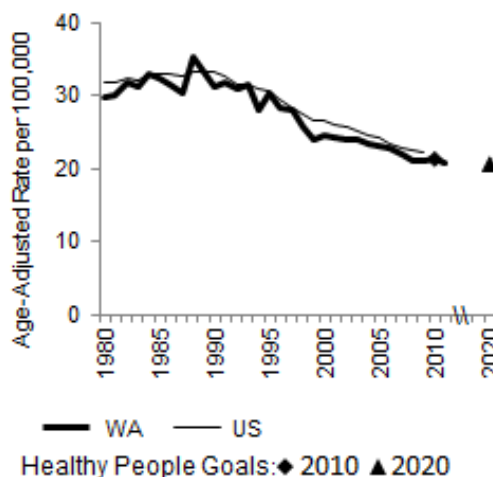
In Washington State in 2011, 824 women died of breast cancer (age-adjusted mortality rate: 21 per 100,000 women). Breast cancer is the second leading cause of cancer death among Washington women. In 2010, there were 6,250 new cases of breast cancer (age-adjusted incidence rate: 166 per 100,000 women). Breast cancer is the most frequently diagnosed cancer among Washington women. Washington's incidence rates are higher than the national average. For all but two years between 1999 and 2009, Washington ranked among the 10 states with the highest rates of newly diagnosed invasive breast cancer.

There are a limited number of risk factors that can be modified to lower the risk of developing breast cancer. Regular screening with mammography to detect breast cancer at its earliest, most treatable stages remains the best strategy to reduce mortality.

Time Trends

Breast cancer death rates among Washington women increased from 1980 to 1988. Since 1988, mortality rates have steadily declined, despite increases in incidence during much of the same period. (See [Incidence](#) section in Other Measures of Burden.) This is similar to the national pattern from 1980 through 2009. This decline is primarily due to mammography screening and advances in treatment.¹ For most of 1980–2009, the female breast cancer mortality rate in Washington was slightly below the U.S. rate.

Female Breast Cancer Mortality
Washington State and US
Death Certificates, 1980–2011



2010 and 2020 Goals

The national *Healthy People 2010* (Midcourse Review) goal was to reduce the [age-adjusted](#) breast cancer mortality rate to 21.3 per 100,000 women. Washington achieved the *Healthy People 2010* objective in 2008 with a mortality rate of 21.2 per 100,000 women.

The national *Healthy People 2020* goal is to reduce the age-adjusted breast cancer mortality rate to 20.6 per 100,000 women. Washington has nearly achieved the *Healthy People 2020* objective with a mortality rate of 20.7 in 2011.

Healthy People 2020 also has a goal to reduce the age-adjusted incidence of late stage female breast cancer to 41 cases per 100,000 women. Washington had 44 cases per 100,000 women in 2010, but since 2001 the rate has been decreasing. If the current rate of decrease continues, Washington will exceed the 2020 goal.

The *Healthy People 2010* screening goal was that at least 70% (age-adjusted) of women ages 40 and older reported having a mammogram within the past two years. Based on Washington Behavioral Risk Factor Surveillance System (BRFSS) data, Washington exceeded this goal starting in 2006 with 75% ($\pm 1\%$) and continued to exceed the goal through 2010.

The *Healthy People 2020* screening goal is that at least 81.1% (age-adjusted) of women ages 50–74 report having received a mammogram in the past two years. Based on BRFSS for 2011, 76% ($\pm 2\%$, age-adjusted) of Washington women ages 50–74 met this goal. Washington BRFSS data for women 50 and older shows that this rate remained level from 1995 to 2010, and so it is unlikely that Washington will meet this goal.

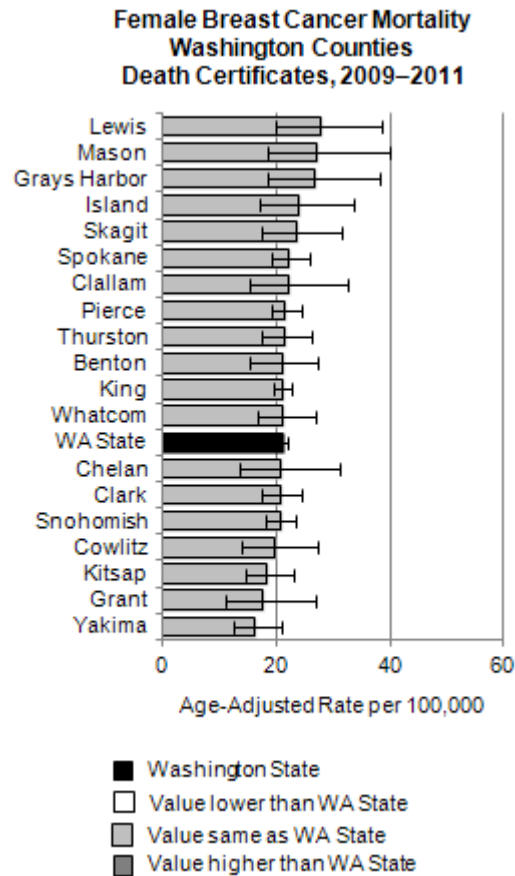
Geographic Variation

In 20 of Washington’s 39 counties, [fewer than 20](#) women died of breast cancer during the three-year period 2009–2011. Rates for these counties can fluctuate widely, making statistics difficult to interpret. Of the remaining 19 counties, none had death rates significantly different from the state overall during the same time period.

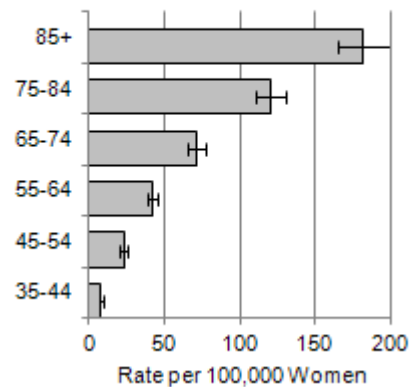
Age

Breast cancer mortality rates in Washington increase as women get older. National data show a similar pattern. Age groups younger than 35 years are not included in the mortality chart below, because there were fewer than 20 deaths among women less than 35 years of age from 2009–2011. The higher mortality rates at older ages are because incidence also increases with age.

While breast cancer is less common at younger ages, younger women tend to have more aggressive forms of breast cancers than do older women.² Thus, for women diagnosed with breast cancer in 2000, about 14% who were 50 years or older at diagnosis had died of the disease within 10 years compared to about 18% of women diagnosed before age 50.³



**Female Breast Cancer Mortality
By Age
Washington State
Death Certificates, 2009–2011**

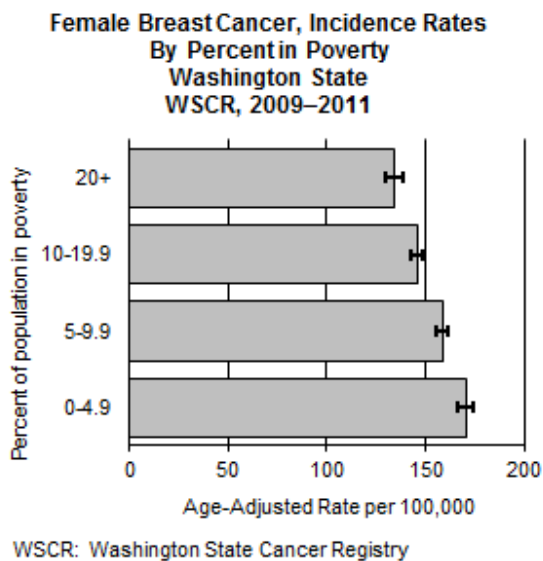


Economic Factors and Education

Socioeconomic position (SEP) is associated with incidence and mortality for many types of cancer and may partly explain racial and ethnic disparities. In contrast to many other types of cancer, women of low SEP—including poorer women, women living in

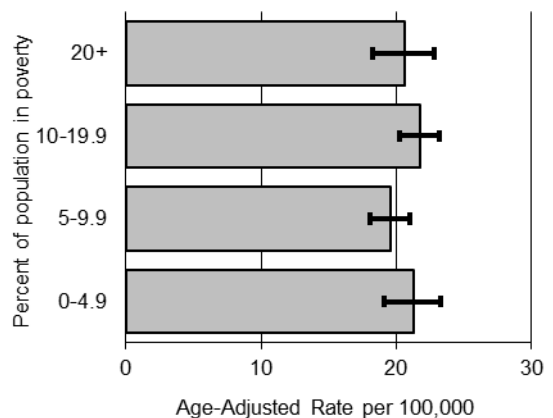
low-income neighborhoods, and women with less education—are less likely to get breast cancer than women of higher SEP. This is in part due to women of low SEP being more likely to have children at younger ages, which is known to reduce breast cancer risk.^{4,5} Once a woman is diagnosed with breast cancer, however, she is more likely to die if she has limited economic resources, lives in a low-income community or has less education.^{4,6,7,8,9} The greater likelihood of dying from breast cancer once diagnosed is largely due to a combination of diagnosis at more advanced stages when the tumor is harder to treat, and barriers to treatment.^{7,8,10,11} Women of low SEP are less likely to have routine screening mammograms, health insurance and access to quality healthcare, which impacts timing of diagnosis and treatment.^{4,5} (See [Screening](#) section in Other Measures of Burden and the chapter on [Access to Primary Healthcare Services](#).)

Washington data from 2009–2011 are consistent with women of higher SEP—measured as living in census tracts with less than 5% of residents living in poverty or with more than 40% of adults ages 25 and older having graduated from college—being more likely to be diagnosed with breast cancer than women of low SEP.



In contrast, mortality rates do not differ by these measures of SEP, indicating consistency with the national finding that once diagnosed women of lower SEP are more likely to die of breast cancer. The following charts illustrate this phenomenon for the percent of the population living in poverty.

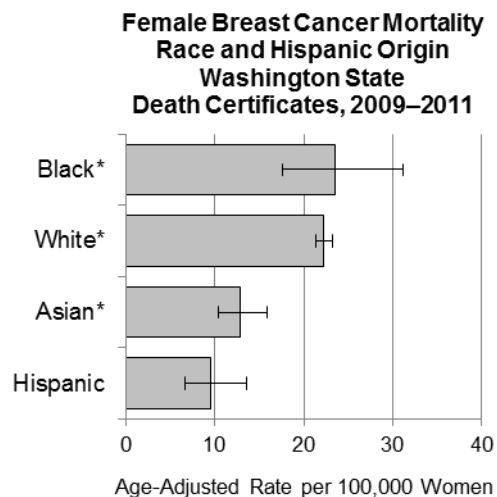
Female Breast Cancer, Mortality Rates By Percent in Poverty Washington State Death Certificates, 2009–2011



Similar patterns are found for percent of the population with a college education or more.

Race and Hispanic Origin

For 2009–2011 combined, age-adjusted death rates from female breast cancer in Washington were lower among non-Hispanic Asians and Hispanics than among non-Hispanic black and white women. The low death rates for Asian and Hispanic women reflect their low rates of developing breast cancer. (See [Incidence](#) section in Other Measures of Burden.) Reliable rates for American Indian and Alaska Native and for Native Hawaiian and other Pacific Islander women are not available due to fewer than 20 deaths from breast cancer from 2009–2011.

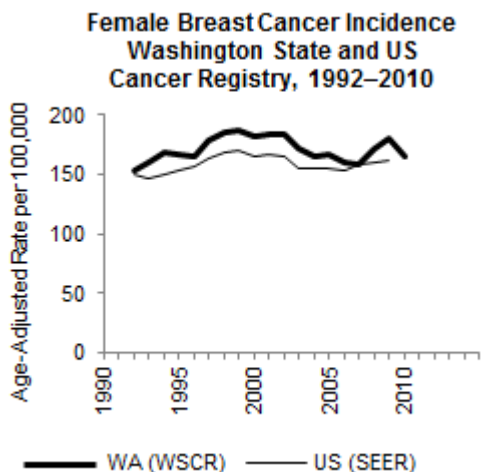


* Non-Hispanic, single race only

As in Washington, national data also show that Hispanics and Asians have relatively low rates of breast cancer mortality.¹² In Washington death rates due to breast cancer were similar for white and black women. This finding has persisted since the mid-2000s and differs from the national pattern which shows black women with higher breast cancer mortality rates than white women.¹² It is not clear why the national pattern is not found in Washington. Black women in Washington report receiving mammograms at the same rates as white women, but they are also more likely than white women to be diagnosed after the cancer has spread to other parts of the body. During 2008–2010 combined, about 30% of diagnoses among black women were regional or distant stage compared to 25% of diagnoses among white women.¹³ (See [Screening](#) and [Stage at diagnosis and survival](#) sections below.)

Other Measures of Impact and Burden

Incidence. In 2010, there were 6,250 new cases of female breast cancer reported in Washington (age-adjusted incidence rate: 166 per 100,000). This rate includes women with *in situ* tumors that do not invade or penetrate surrounding tissue. In Washington, incidence rates for breast cancer increased steadily from about 154 per 100,000 women in 1992 to 187 per 100,000 in 1999. Breast cancer incidence rates in Washington declined from 1999 to 2006. Since 2006 breast cancer incidence has leveled off. This is similar to the national pattern for the period 1992 through 2009.



Washington had the highest incidence in the nation of invasive breast cancer in 2009 with an age-adjusted rate of 139 per 100,000 women. The rate declined from 155 to 133 over the previous 10 years, 1999–2008, with rankings among U.S. states ranging from first to 20th, but mostly staying in the top 10. Since 1992 Washington’s rate of newly diagnosed breast cancer among women has been higher than the national rate. Reasons for Washington’s high rate of breast cancer are not completely known. Some of the high rate might be due to delayed childbearing compared to the United States as a whole and higher levels of chronic heavy drinking—for women, defined as having on average more than one drink per day.¹⁴

During 2008–2010 Hispanic and Asian women in Washington had a lower incidence rate of breast cancer compared to other racial and ethnic groups.

Screening. Mammograms contributed from 28% to 65% of the sharp decrease in national breast cancer deaths from 1990 to 2000.¹ The U.S. Preventive Services Task Force (USPSTF) recommends screening mammography every two years for women ages 50–74.¹⁵ This is a change from the previous 2002 recommendation where screening started at age 40. The American Cancer Society, the American College of Obstetricians and Gynecologists and the National Comprehensive Cancer Network opted to keep the lower age recommendation. Based on Washington BRFSS data from 2011, 95% (±1%) of women ages 50–74 reported having at least one mammogram at some time in their lives, and 76% (±2%) reported having had a mammogram in the last two years. (These percentages were the same with and without age adjustment.)

Mammography is strongly associated with education and income. On the 2011 Washington BRFSS, as education increased so did the percent of women ages 50–74 reporting a mammogram in the past two years. Age-adjusted rates ranged from 70% (±5%) for women with no formal education beyond high school to 82% (±3%) for those with at least four years of college. Similarly, age-adjusted rates ranged from 63% (±6%) for those in households with annual incomes less than \$25,000 to 82% (±3%) for women with household incomes of \$50,000 or more. These relationships persisted when accounting for age, race and Hispanic origin.

The 2011 Washington BRFSS data did not show differences among Asian, black, Hispanic and white women in reporting of mammography in the past two years.

Stage at diagnosis and survival. The earlier the stage at the time of diagnosis, the better the five-year survival rate. In 2010, 22% of breast cancers in Washington were diagnosed at the earliest stage (*in situ* or noninvasive), 49% at the locally invasive stage, 23% with regional spread, and 4% with distant spread or metastasis (2% were unstaged).

During 2008–2010 combined, Washington's black women had a higher incidence rate of distant stage disease than white, American Indians and Alaska Natives, Asian, and Native Hawaiian or other Pacific Islander women. Nationally, African American women are more likely to be diagnosed when the breast cancer is more advanced, have tumor characteristics associated with poor survival and have disease that is more difficult to treat than white women.^{5,16,17,18,19} This partly explains why survival rates are lower for African American women.

The overall 2009 U.S. five-year survival rate for breast cancer is 92%, with a range of survival from 24% for cancer with distant metastasis to nearly 100% for *in situ* cases.

Risk and Protective Factors

Women may have one or more risk factors for breast cancer. Many risk factors are difficult to change. In addition, known risk factors do not explain all breast cancer.⁵ Early detection and appropriate treatment are currently the best ways to reduce mortality.^{5,19} For high-risk groups there currently are medical treatments that help reduce risk and recurrence.^{5,20}

Factors influencing the development of breast cancer. Documented risk factors for developing breast cancer are age greater than 50; a family history of breast cancer, especially among one's mother, sisters or daughters; young age at menarche or late age at menopause, resulting in prolonged exposure to estrogen; having no children or having a first child after age 30; extensive exposure to X-rays; long-term use of postmenopausal hormones, particularly those that combine estrogen and progestin; and some types of benign breast disease called atypical epithelial hyperplasia.^{5,21,22} Breast cancer caused by genetic mutations accounts for about 5%–10% of cases.²³

Nationally there was a sharp decrease in incidence of invasive breast cancer from 2002 to

2003 as a result of decreased use of hormone replacement therapy (HRT). This decrease was not seen among African American women, most likely because they have a lower use of HRT. Within five years of discontinuation of HRT the increased risk of developing breast cancer diminishes.⁵

There is increasing evidence that modifiable behaviors have an impact on breast cancer risk. Increased physical activity is associated with reduced risk for breast cancer, especially for postmenopausal women, overweight and obese women, and women who have had children. Although all types of physical activity are beneficial, recreational and household activity have the strongest effect.^{24,25,26,27,28} Drinking two or more alcoholic beverages a day strongly increases risk of invasive breast cancer.^{29,30} Obesity also is linked to increased risk of breast cancer among postmenopausal women.^{31,32,33}

Barriers to screening. Screening mammography can detect breast cancer at an earlier stage so that treatment is more effective and survival more likely. A number of factors present barriers to women receiving breast cancer screening. These factors include transportation problems; language and cultural barriers; lack of education regarding the benefits of screening; excessive fear of cancer; anxiety about discomfort and embarrassment; not having time; being uninsured or underinsured; lack of funds to pay for screening services; and not having a healthcare provider recommendation.^{34,35,36,37,38,39,40,41,42,43}

Intervention Strategies

Public health tries to reduce breast cancer mortality by increasing mammography, particularly among those who might face extra barriers, such as low-income, older, lesbian, racial minority and Hispanic origin women. *The Guide to Community Preventive Services* reviews evidence for the effectiveness of interventions. The guide found strong evidence that the following interventions increase use of mammography: client reminders; increasing access to screening by reducing structural barriers (i.e. modifying hours, mobile screening sites, simplifying administrative procedures); reducing costs; group and one-to-one education; and distribution of brochures, flyers, newsletters, informational letters or videos.⁴⁴

Recent studies have found the use of patient navigators, lay health workers, and targeted educational media and printed material can also

improve screening rates, especially among minority women.^{45,46,47,48,49}

In 2009 the U.S. Preventive Services Task Force (USPSTF) concluded that there was insufficient evidence to assess the additional benefits and harms of clinical breast examination (CBE) beyond screening mammography in women 40 years or older.¹⁵ Several professional organizations, such as the American Cancer Society, National Comprehensive Cancer Network, and the American College of Obstetricians and Gynecologists support the use of CBE.^{50,51,52} The USPSTF also recommended against teaching breast self-exams (BSE) as the evidence suggested that BSE does not reduce breast cancer mortality.¹⁵

Since 1993 in Washington the Breast, Cervical and Colon Health Program has worked with statewide partners to offer breast cancer screening and diagnostic services to low-income uninsured and underinsured women who meet the program eligibility criteria. For breast services the program is supported by federal, state and private funding. With the implementation of the Affordable Care Act (ACA) most women currently served by this program will now have access to no- or low-cost health insurance that covers breast cancer screening and treatment. From July 2001 through December 2013 Medicaid covered treatment costs for women diagnosed with breast cancer through the program. The program will still continue to screen women not eligible or unable to access options under ACA. For these women treatment options will likely be limited to charity care.

See Related Chapters: [Invasive Cervical Cancer, Access to Primary Healthcare Services](#) and [Dental X-ray and Mammography Safety](#).

Data Sources (For additional detail, see [Appendix B](#)).

Washington State Death Certificate Data: Washington State Department of Health, Vital Registration System Annual Statistical Files, Deaths 1980–2011, released October 2012; data prepared by Washington State Department of Health, Office of Healthy Communities.

Washington State Cancer Incidence: WA: Washington State Department of Health, Washington State Cancer Registry (WSCR), January 2013; data prepared by Washington State Department of Health, Office of Healthy Communities.

Washington State population counts: 2000 and 2010 U.S. Census and 2001–2009 intercensal estimates, Washington State Office of Financial Management, Forecasting Division (OFM), released December, 2011; 1990 U.S. Census and 1991–1999 OFM intercensal estimates, Vista Partnership and Krupski Consulting, released October 2007; 1980 U.S. Census and 1981–1989 OFM intercensal estimates.

National Incidence Data: Surveillance, Epidemiology, and End Results (SEER) Program, SEER*Stat Database: Incidence—SEER 13 Regions Research Data, November 2011 Submission, Vintage 2009 Population (1992–2009) <Katrina/Rita Population Adjustment>, National Cancer Institute, released April 2012; data prepared by Washington State Department of Health, Office of Healthy Communities.

National Cancer Deaths: Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Mortality—All Cause of Death, Vintage 2009 Population (1969–2009) <Katrina/Rita Population Adjustment>, National Cancer Institute, released October 2011. Underlying cause of death data provided by National Center for Health Statistics; data prepared by Washington State Department of Health, Office of Healthy Communities.

Washington State Behavioral Risk Factor Surveillance System (BRFSS) Data: 1987–2011. Olympia, Washington: Washington State Department of Health, under federal cooperative agreement numbers: U58 DP001996 (2009–2010), or U58/SO000047 (2011–2013); data prepared by Washington State Department of Health, Epidemiology Office.

For More Information

Washington State Cancer Registry,
<http://www3.doh.wa.gov/WSCR/>

SEER Program, <http://seer.cancer.gov/>

National Cancer Institute's CancerNet, <http://www.cancer.gov/>

U.S. Preventive Services Task Force (USPSTF),
<http://www.uspreventiveservicestaskforce.org/>

Washington State Department of Health, Breast, Cervical and Colon Health Program (888) 438-2247,
<http://www.doh.wa.gov/bcchp>

Technical Notes

Cancer incidence: We have used ICD-O-3 codes C50.0–C50.9 excluding histology codes 9140, 9050–9055, 9590–9989 for diagnosis years 1992–2009. For diagnosis year 2010 the following histology codes were excluded: 9140, 9050–9055, 9590–9992. This definition includes ductal and lobular carcinoma *in situ*. When we compare Washington and national incidence, we include the *in situ* cases for both Washington and the nation. But many national reports, such as those commonly published by the American Cancer Society and the National Cancer Institute, do not include *in situ* cases. Incidence rates are lower when *in situ* cases are not included.

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Endnotes

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