

Female Breast Cancer in Texas

Prepared by the Texas Cancer Registry
Texas Department of State Health Services

June 2019

Index of Select Slides

- [Breast Cancer Overview](#)
 - [Breast Cancer Screening](#)
 - [Breast Cancer Screening Prevalence](#)
 - [Breast Cancer Screening in Texas](#)
- [Overview of Breast Cancer Incidence](#)
- [Overview of Breast Cancer Mortality and Survival](#)
- [Breast Cancer Incidence in Texas](#)
 - [Incidence Rates by Age at Diagnosis](#)
 - [Incidence Rates by Race/Ethnicity](#)
 - [Incidence Rates by Age and Race/Ethnicity](#)
 - [Incidence by Age and Stage at Diagnosis](#)
 - [Incidence by Race/Ethnicity and Stage at Diagnosis](#)
 - [Incidence Rates by Molecular Subtype](#)
 - [Incidence Rates by Urban-Rural Classification](#)
 - [Incidence Rate Trends by Age at Diagnosis](#)
 - [Incidence Rate Trends by Race/Ethnicity](#)
 - [Incidence Rate Trends by Metro/Non-metro](#)
 - [Incidence Rate Trends by Race/Ethnicity and Age](#)
 - [Incidence Rates by Health Service Region](#)
- [Breast Cancer Mortality in Texas](#)
 - [Mortality Rates by Age](#)
 - [Mortality Rates by Race/Ethnicity](#)
 - [Mortality Rates by Urban Rural Classification](#)
 - [Mortality Rate Trends by Age](#)
 - [Mortality Rate Trends by Race/Ethnicity](#)
 - [Mortality Rate Trends by Metro/Non-metro](#)
 - [Mortality Rate Trends by Race/Ethnicity and Age](#)
 - [Mortality Rate Trends by Race/Ethnicity and Age](#)
 - [Disparities in Breast Cancer Mortality Rates](#)
 - [Mortality Rates by Health Service Region](#)
- [Breast Cancer Survival in Texas](#)
 - [Cause-Specific Survival by Race/Ethnicity](#)
 - [Relative Survival by Age and Stage at Diagnosis](#)

Background

- Breast cancer is one of three age-based cancer screenings currently recommended for all women by the U.S. Preventive Services Task Force.¹ Colorectal and cervical cancer screenings are the other two recommended.
- This statistical report describes breast cancer screening rates and the burden of female breast cancer in Texas.

Implications for Public Health Practice

- The burden of female breast cancer can be reduced by screening a large percentage of the population at risk and by encouraging healthy lifestyles that reduce modifiable risk factors.
- Identifying any health disparities in breast cancer incidence, mortality, and survival can also help to identify ways to reduce the cancer burden.

¹ Breast Cancer: Screening. United States Preventive Services Task Force. <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-screening1>

Breast Cancer Overview

- Breast cancer is cancer that begins in the breast tissue.
- The breast consists of different types of tissue, including ducts, lobes, fat, and other connective tissue.
- Most breast cancers are ductal carcinomas that start in the ducts.
- Breast cancer can also be lobular carcinoma, which starts in lobes. These lobes are made up of smaller lobules (milk glands).
- Breast cancer mostly occurs in women, but men can also develop it. Male breast cancer accounts for one percent of breast cancer cases in the US.

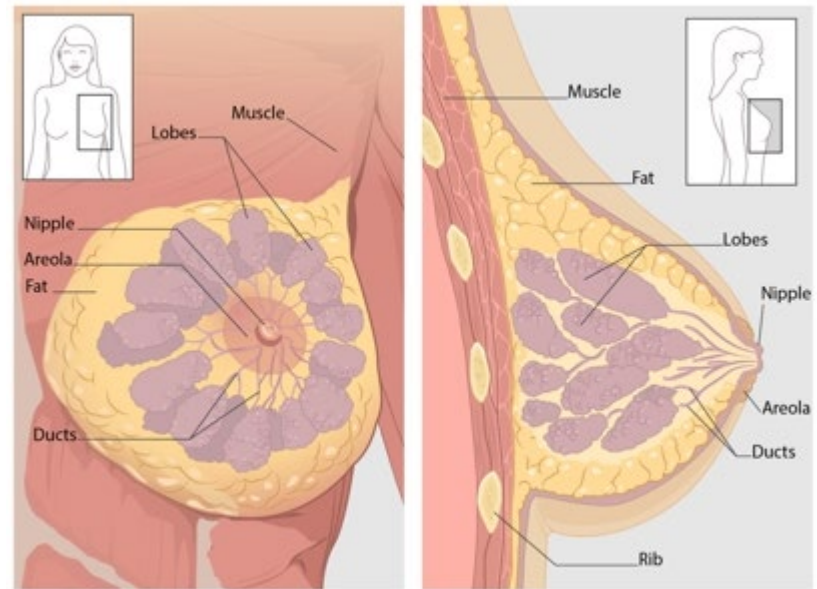


Image Source: What Is Breast Cancer? Centers for Disease Control and Prevention. https://www.cdc.gov/cancer/breast/basic_info/what-is-breast-cancer.htm

Breast Cancer Symptoms

- The most common symptom is a new lump or mass in the breast or underarm (armpit).
 - A painless, hard lump with irregular edges is more likely to be cancer, but breast cancers can also be tender, soft or rounded.¹
 - Most breast lumps are not cancer and are caused by other medical conditions.²
- Other symptoms of breast cancer include:
 - Thickening or swelling of the breast
 - Irritation or dimpling of the breast skin
 - Redness of flaky skin in the nipple area or the breast
 - Pulling in of the nipple or pain in the nipple area
 - Nipple discharge other than breast milk, including blood
 - Any change in the size or shape of the breast
 - Pain in any area of the breast²

¹ Breast Cancer Signs and Symptoms. American Cancer Society. <https://www.cancer.org/cancer/breast-cancer/about/breast-cancer-signs-and-symptoms.html>

² What Are the Symptoms of Breast Cancer? Centers for Disease Control and Prevention. https://www.cdc.gov/cancer/breast/basic_info/symptoms.htm

Breast Cancer–Modifiable Risk Factors

A recent study estimated that almost 1 in 3 breast cancer cases are attributable to three modifiable lifestyle factors:

- Excess body weight
- Physical inactivity
- Alcohol consumption¹

Other modifiable risk factors include:

- Taking hormones
 - Some forms of hormone replacement therapy
 - Certain oral contraceptives (birth control pills)
- Reproductive history
 - Having the first child after age 30
 - Not breastfeeding
 - Never having a full-term pregnancy²

¹ Islami F, Goding Sauer A, Miller KD, et al. (2018). Proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors in the United States. *CA: A Cancer Journal for Clinicians*, 68(1), 31-54.

² What Are the Risk Factors for Breast Cancer? Centers for Disease Control and Prevention. https://www.cdc.gov/cancer/breast/basic_info/risk_factors.htm

Breast Cancer–Unmodifiable Risk Factors

Risk factors for breast cancer that you cannot change include:

- Getting older
- Genetic mutations (e.g., BRCA1 and BRCA2)
- Early menstrual periods (before age 12)
- Late menopause (after age 55)
- Dense breasts
- Personal history of breast cancer or certain non-cancerous breast diseases (e.g., atypical hyperplasia or lobular carcinoma in situ)
- Family history of breast cancer
- Previous treatment using radiation therapy to the chest or breasts
- Exposure to DES (diethylstilbestrol), a drug given to some pregnant women from 1940 to 1971 to prevent miscarriage¹

¹ What Are the Risk Factors for Breast Cancer? Centers for Disease Control and Prevention. https://www.cdc.gov/cancer/breast/basic_info/risk_factors.htm

Breast Cancer Risk

- The current prediction is that 1 in 8 women born today will be diagnosed with breast cancer at some point in life.¹
- The average risk of being diagnosed with breast cancer in the next 10 years increases with age.¹

Age	Average Risk
30 years	0.44% (1 in 227)
40 years	1.47% (1 in 68)
50 years	2.38% (1 in 42)
60 years	3.56% (1 in 28)
70 years	3.82% (1 in 26)

- Each woman's risk varies depending on her exposure to modifiable and unmodifiable risk factors.

¹ Breast Cancer Risk in American Women. National Cancer Institute. <https://www.cancer.gov/types/breast/risk-fact-sheet>

Breast Cancer Screening

- Screening is a check for cancer or abnormal cells that may become cancer in people who have no symptoms.
- Screening helps find breast cancer at an early stage when it is more easily treated.
- Mammography, an x-ray of the breast, is the most common screening test for breast cancer. Magnetic resonance imaging (MRI) may be used to screen women who have a high risk of breast cancer.¹
- The U.S. Preventive Service Task Force (USPSTF) currently recommends a screening mammogram every other year for women ages 50-74 years who are at average risk.²
- The USPSTF advises women in their 40s to discuss their individual risk as well as the benefits and harms of screening with their doctor.
- Some other groups, such as the American Cancer Society³, recommend different screening guidelines.

¹ Breast Cancer Screening (PDQ®)–Patient Version. National Cancer Institute. <https://www.cancer.gov/types/breast/patient/breast-screening-pdq>

² Breast Cancer: Screening. United States Preventive Services Task Force. <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-screening1>

³ American Cancer Society Recommendations for the Early Detection of Breast Cancer. American Cancer Society. <https://www.cancer.org/cancer/breast-cancer/screening-tests-and-early-detection/american-cancer-society-recommendations-for-the-early-detection-of-breast-cancer.html>

Breast Cancer Screening Prevalence, 2016

In 2016, 73% of Texas women ages 50-75 years self-reported they had received a mammogram in the past two years. This was less than the self-reported screening rate for the US (78%).

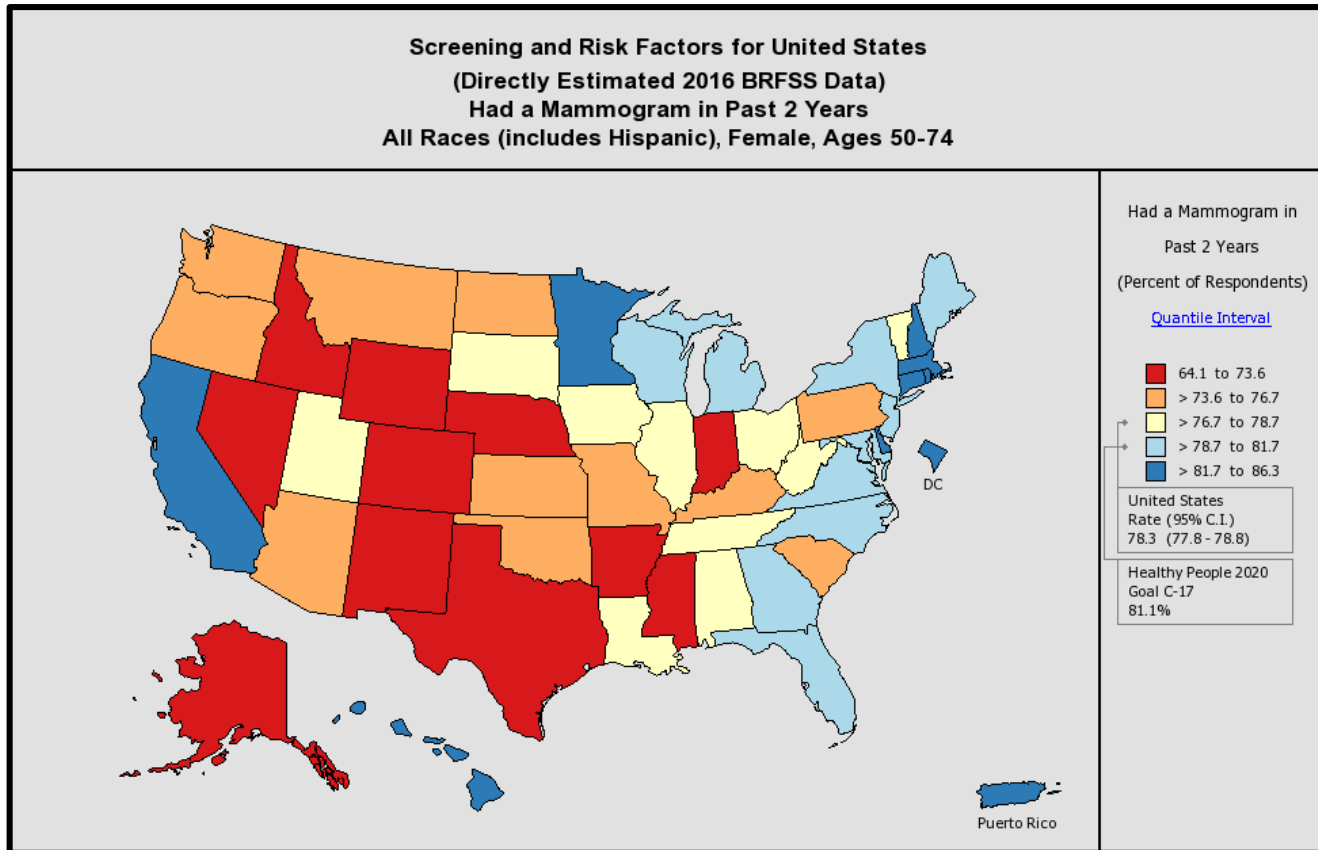
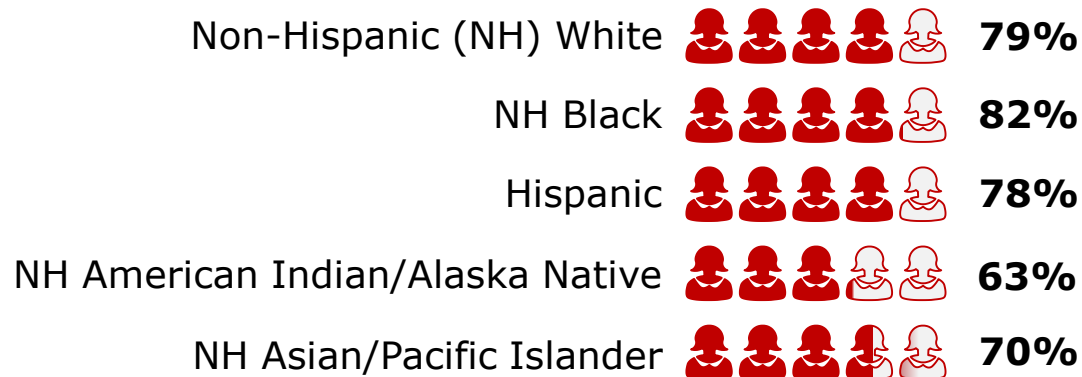


Image source: State Cancer Profiles. National Cancer Institute. <https://statecancerprofiles.cancer.gov/quick-profiles/index.php?statername=texas#t=1>

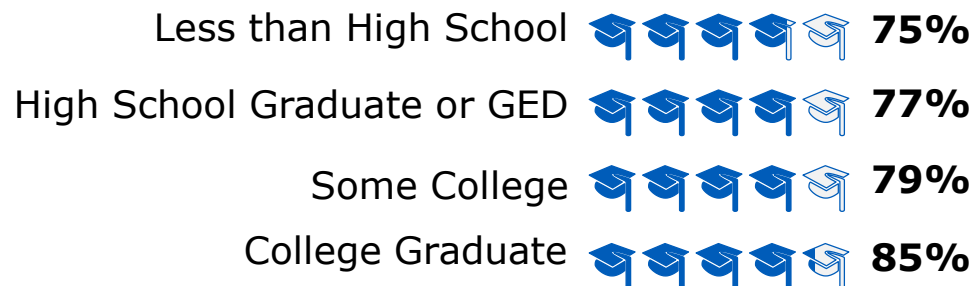
Breast Cancer Screening in Texas, by Race/Ethnicity and Education, 2012-2016

From 2012-2016, 79% of 9,110 Texas women aged 50-74 years self-reported that they had received a mammogram in the past two years.¹

Screening Rate by Race/Ethnicity



Screening Rate by Education

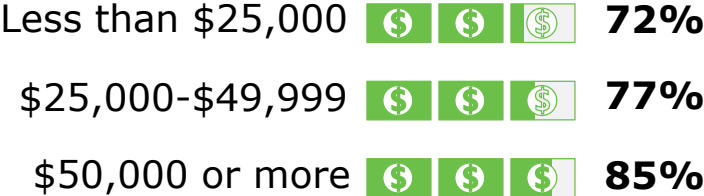


¹ Texas Health Data - Community Survey - Texas Behavioral Risk Factor Survey. Texas Center for Health Statistics. Rates are averaged across surveys conducted in 2012, 2014, and 2016. <http://healthdata.dshs.texas.gov/CommunitySurveys/BRFSS>

Breast Cancer Screening in Texas by Income, Age, and Insurance Status, 2012-2016

From 2012-2016, 79% of 9,110 Texas women aged 50-74 years self-reported that they had received a mammogram in the past two years.¹

Screening Rate by Income Level



Screening Rate by Age



Screening Rate by Insurance Status



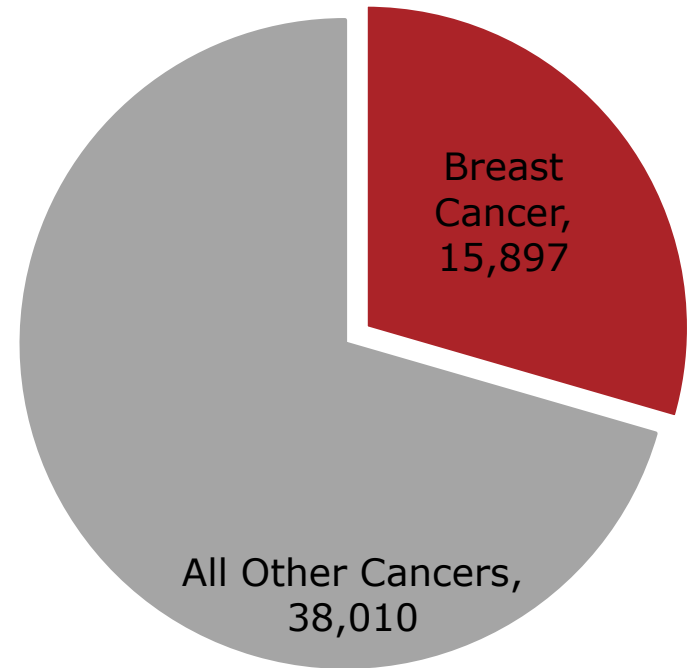
¹ Texas Health Data - Community Survey - Texas Behavioral Risk Factor Survey. Texas Center for Health Statistics. Rates are averaged across surveys conducted in 2012, 2014, and 2016. <http://healthdata.dshs.texas.gov/CommunitySurveys/BRFSS>

Overview of Breast Cancer Incidence in Texas

Incidence (New Cases)

- In 2016, breast cancer was the leading cancer diagnosis in Texas women, representing 29.5% of all new malignant cancers diagnosed in women.
- During 2012-2016, the breast cancer incidence rate was 111.9 cases per 100,000 women.
- In 2019, it is estimated that 17,921 new cases of female breast cancer will be diagnosed.

New Cancer Cases, 2016



Overview of Breast Cancer Mortality and Survival in Texas

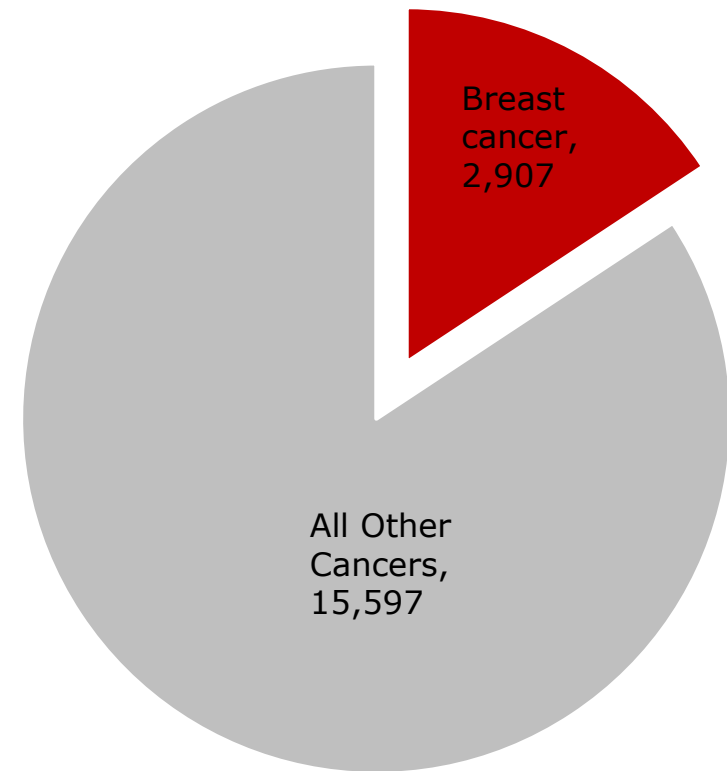
Mortality (Deaths)

- In 2016, breast cancer was the 2nd leading cause of cancer death in Texas women, representing 16% of all cancer deaths in women. Most are from cases that were diagnosed years before.
- During 2012-2016, the mortality rate was 20.0 deaths per 100,000 women.
- In 2019, an estimated 3,213 Texas women will die of this disease.

Survival (Prevalence)

- There are 178,334 female breast cancer survivors in Texas. This is the number of women who were diagnosed with malignant breast cancer between 1995-2015 and are alive as of January 1, 2016.

Cancer Deaths, 2016



Definitions and abbreviations

- **Age-adjusted incidence rate:** number of new cancer cases diagnosed per 100,000 people per year. Numbers are age-adjusted to allow for comparison between populations with different age compositions.
- **Age-adjusted mortality rate:** number of cancer deaths per 100,000 people per year. Numbers are age-adjusted to allow for comparison between populations with different age compositions.
- **Annual percent change (APC):** measures the trend in rates over time, such as how quickly (or slowly) a cancer has increased in incidence over a given time period. For example, an APC of -2.0% over 10 years means that there was a 2% decrease in incidence rate per year. It is calculated by fitting a least squares regression line to the natural logarithm of the age-adjusted rates. The slope is tested for a significant difference from 0. If the slope changes over the assessed time period, the trend is considered to have a 'joinpoint'.
- **Race/ethnicity group acronyms:** Non-Hispanic (NH), Asian/Pacific Islander (A/PI), American Indian/Alaska Native (AI/AN).
- **Note on confidence intervals (CIs):** 95% confidence intervals are shown and provide a range of values that have a specified probability of containing the true rate. It can be stated that 95% of the time the true rate will lie within these limits. Rates with large confidence intervals should be interpreted with caution. A 95% confidence interval around a rate that is at least as large as the rate itself is generally considered unstable. When there is no overlap in confidence intervals, rates can be considered to be significantly different. If confidence intervals partially overlap, further testing may be required to determine whether there is a statistically significant difference.
- Since both malignant and in situ breast cancers are reportable in Texas, statistics in this report are often presented by behavior.

Female Breast Cancer Incidence in Texas

Breast Cancer Incidence Rates, 2012-2016

From 2012 to 2016, Texas ranked 49th out of all US states and DC in female breast cancer incidence. The breast cancer incidence rate in Texas was 111.9 cases per 100,000 women. The US rate was 125.2.

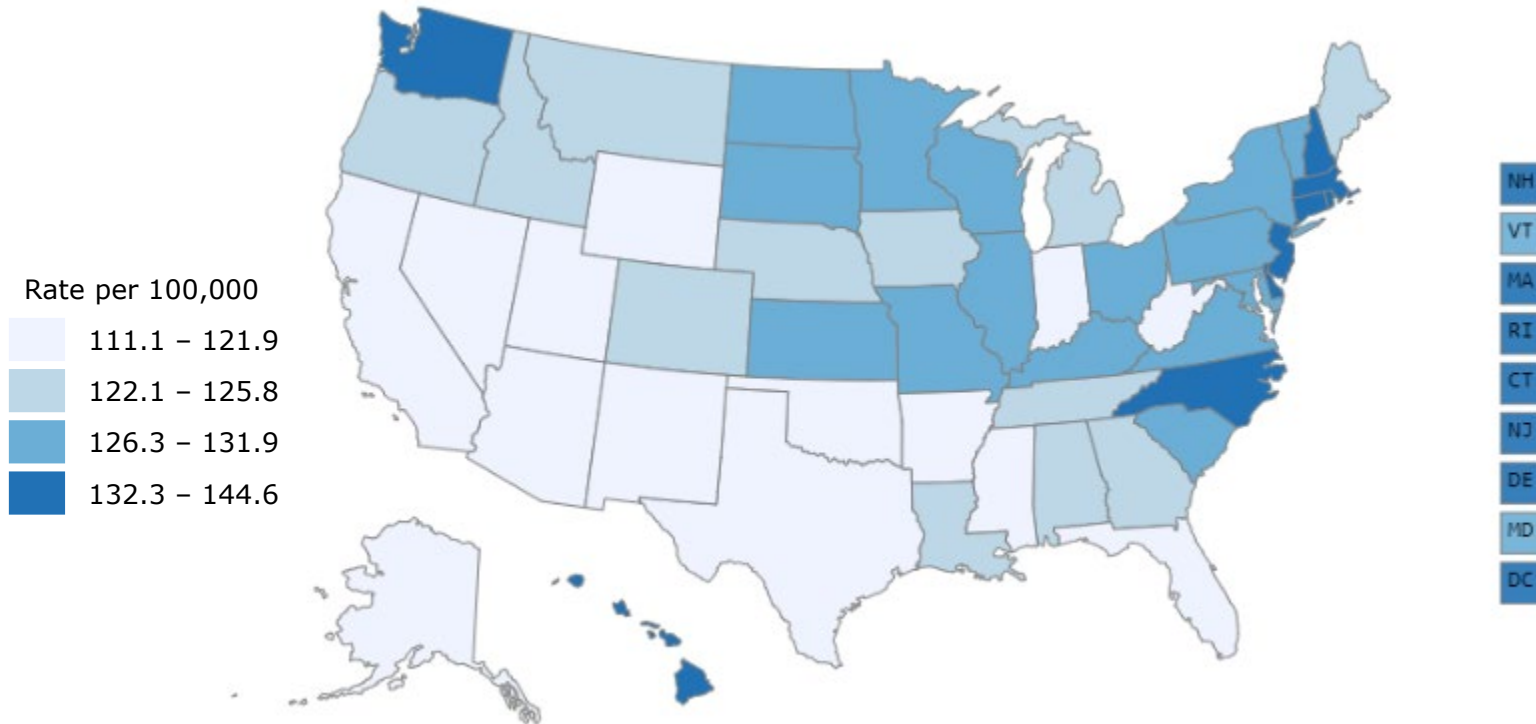
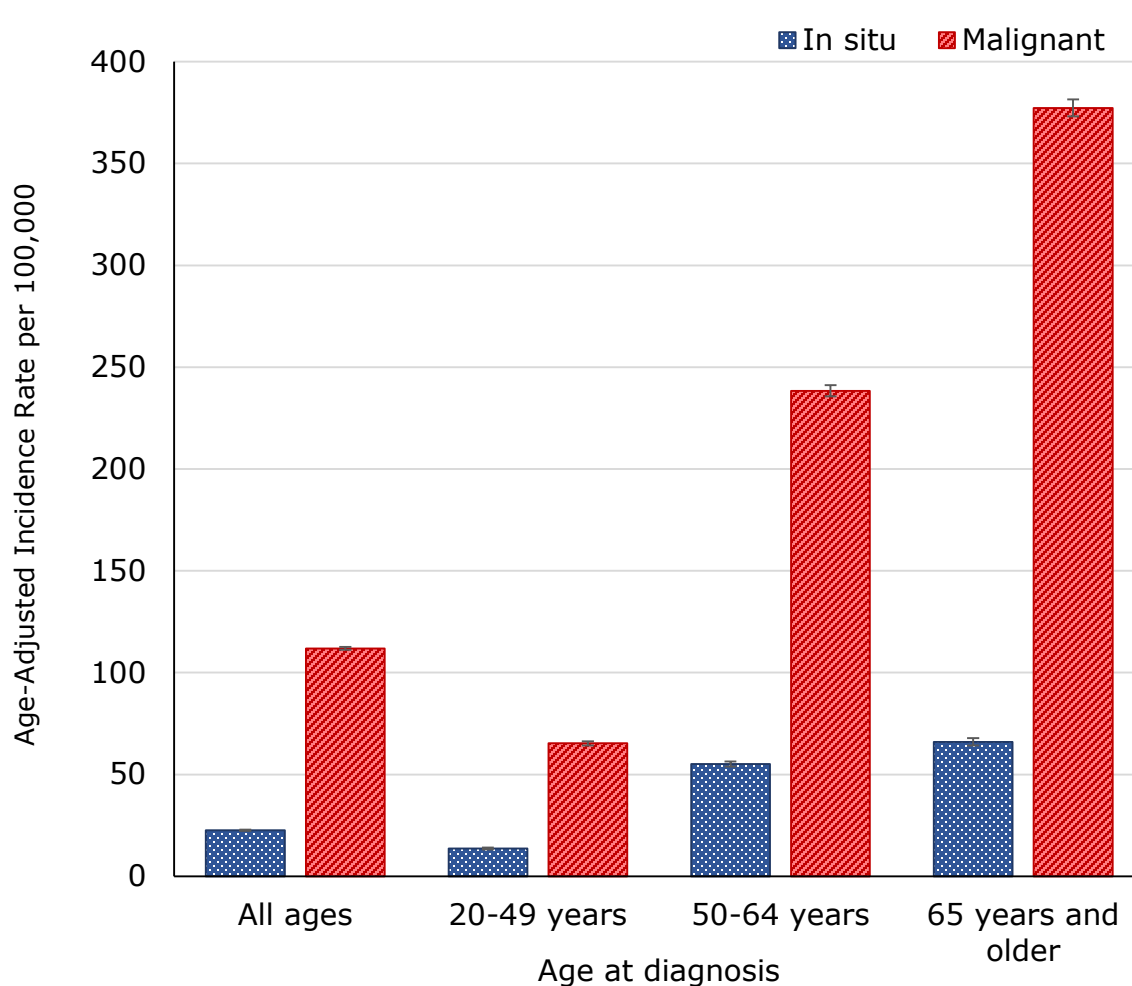


Image Source: United States Cancer Statistics: Data Visualizations. Centers for Disease Control and Prevention. <https://gis.cdc.gov/Cancer/USCS/DataViz.html>

Breast Cancer Incidence Rates by Age at Diagnosis, 2012-2016



In Situ

The incidence rate of in situ breast cancer increased with age, from 13.6 per 100,000 women at ages 20-49 years to 66.0 at ages 65 years and older.

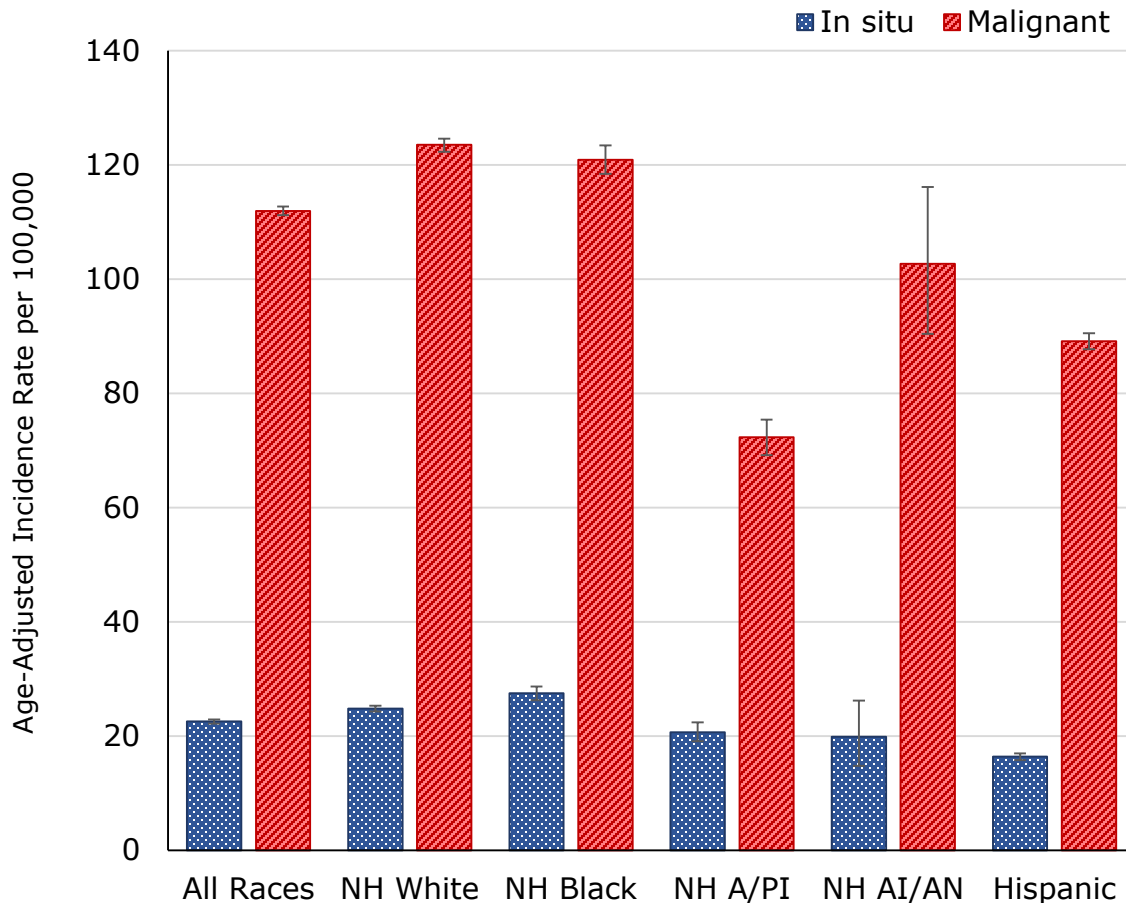
Malignant

The incidence rate of malignant breast cancer also increased with age, from 65.3 at ages 20-49 years to 377.3 at ages 65 years and older.

The black bars indicate the 95% confidence intervals. 95% of the time the true rate will lie within these limits. A wider bar indicates uncertainty or instability in the incidence rate.

In situ breast cancers are non-invasive or pre-invasive. Malignant breast cancers are invasive or infiltrating cancers that have spread into the surrounding breast tissue.

Breast Cancer Incidence Rates by Race/Ethnicity, 2012-2016



In Situ

- The incidence rate of in situ breast cancer was highest in non-Hispanic (NH) black women (27.5 per 100,000), followed by NH white women (24.8).
- The incidence rate was lowest in Hispanics (16.4).

Malignant

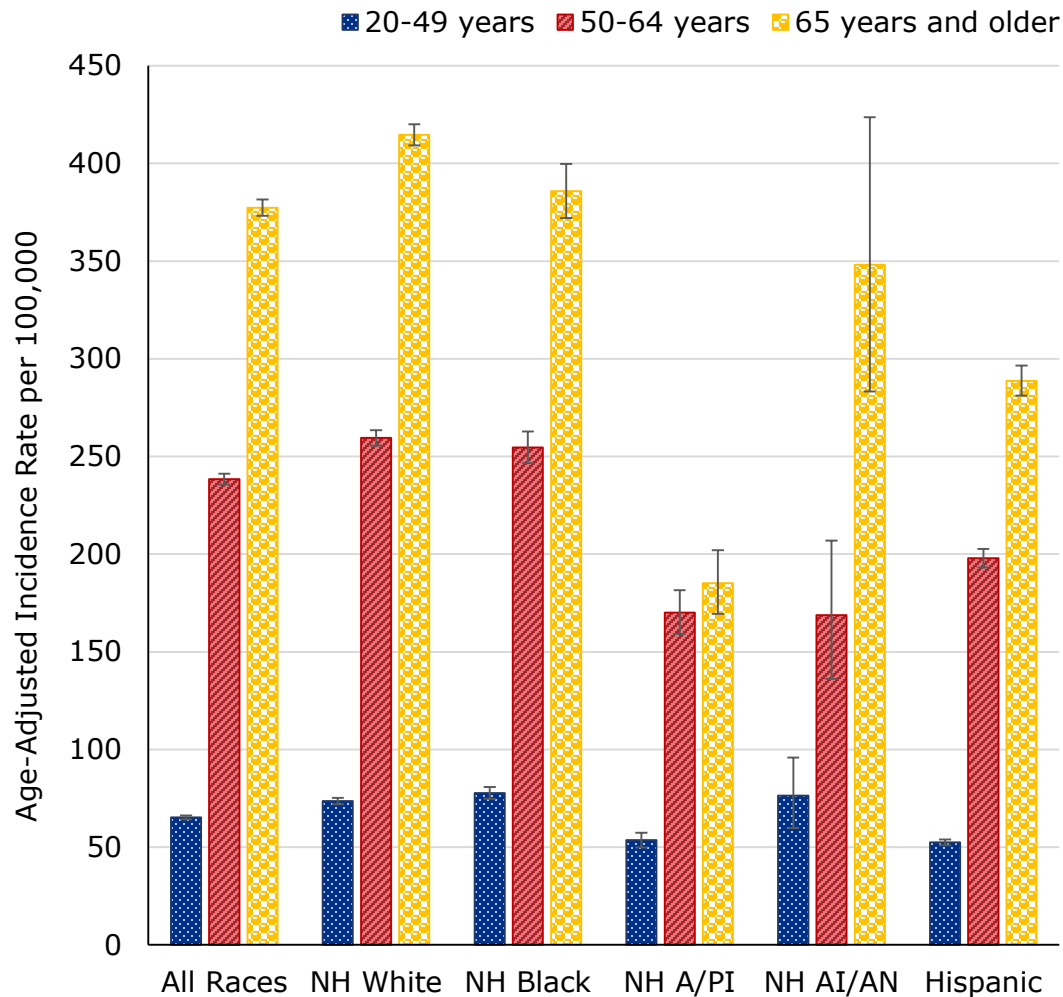
- The incidence rate of malignant breast cancer was highest in NH white women (123.5), followed by NH black women (120.9).
- The incidence rate was lowest in NH Asian/Pacific Islanders (A/PI) (72.3).

AI/AN = American Indian/Alaska Native

The black bars indicate the 95% confidence intervals. 95% of the time the true rate will lie within these limits. A wider bar indicates uncertainty or instability in the incidence rate.

In situ breast cancers are non-invasive or pre-invasive. Malignant breast cancers are invasive or infiltrating cancers that have spread into the surrounding breast tissue.

Breast Cancer Incidence Rates by Age and Race/Ethnicity, 2012-2016



Malignant cases only

The black bars indicate the 95% confidence intervals. 95% of the time the true rate will lie within these limits. A wider bar indicates uncertainty or instability in the incidence rate.

20-49 Years

- Incidence rates were highest in non-Hispanic (NH) blacks (77.7 per 100,000), followed by NH American Indian/Alaska Natives (AI/AN) (76.4) and NH whites (73.6).
- Rates were lowest in Hispanics (52.5).

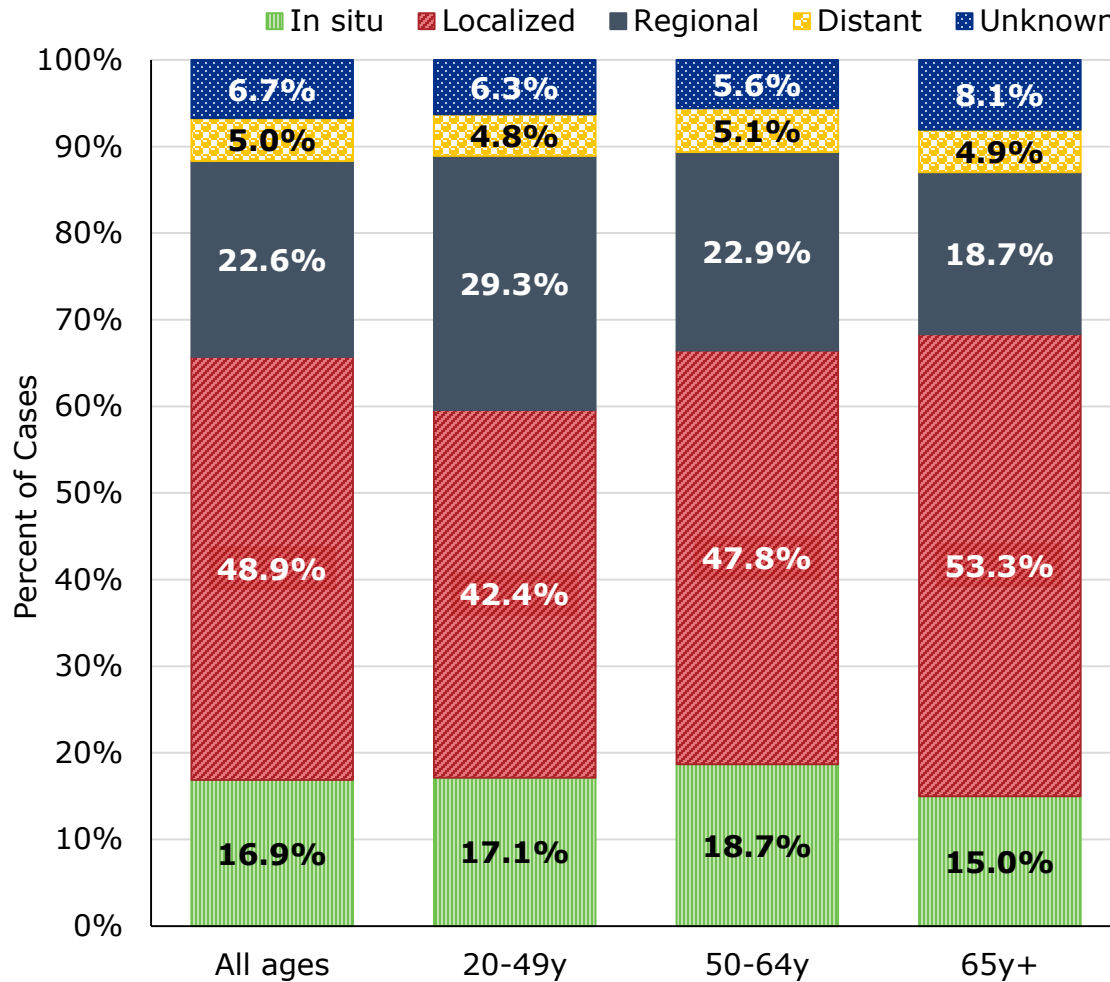
50-64 Years

- Incidence rates were highest in NH whites (259.5), followed by NH blacks (254.6).
- Rates were lowest in NH AI/AN (168.8).

65 Years and Older

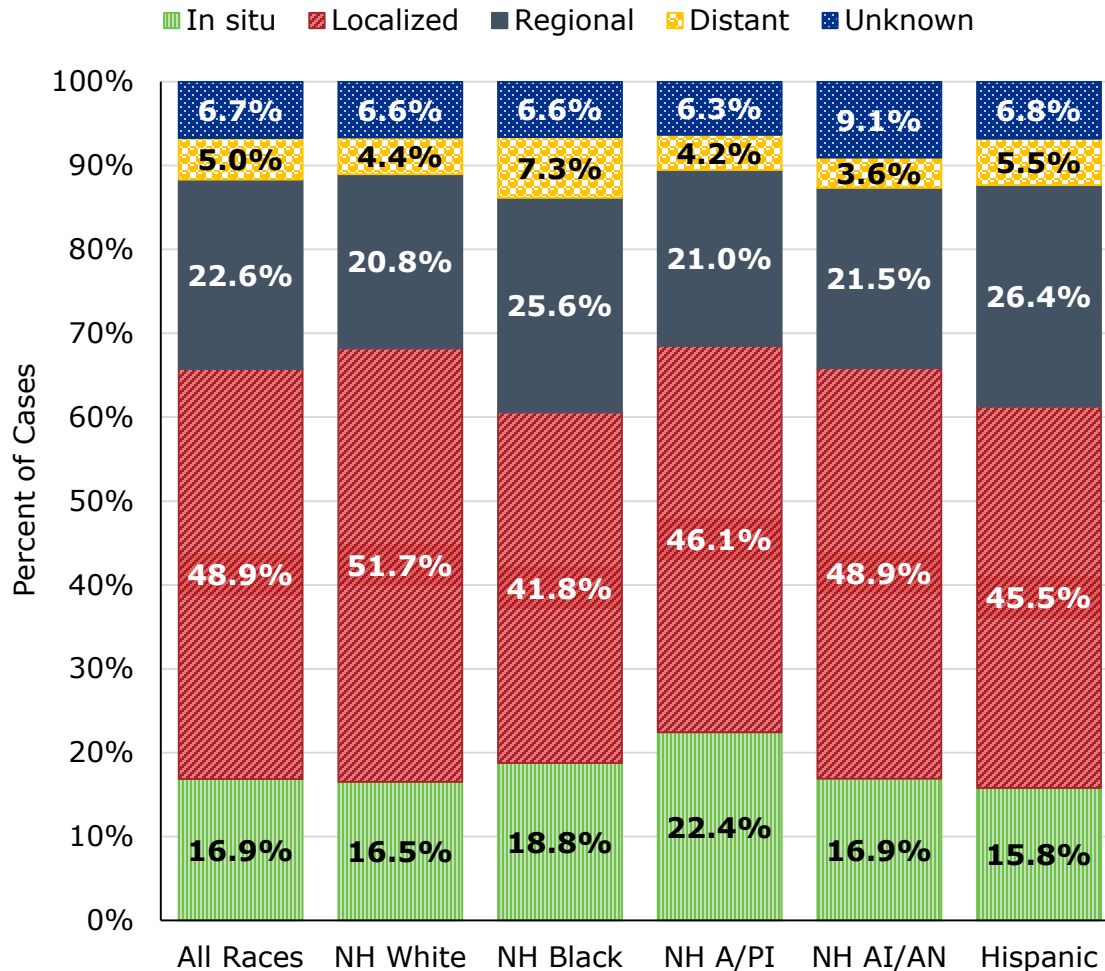
- Incidence rates were highest in NH whites (414.6) followed by NH blacks (385.8).
- Rates were lowest among NH Asian/Pacific Islander (A/PI) (185.1).

Breast Cancer Incidence by Age and Stage at Diagnosis, 2012-2016



- A smaller proportion of cases were diagnosed in situ or at the localized stage for ages 20-49 years (59.5%) compared to the older age groups (66.5% at ages 50-64 years and 68.3% at ages 65 years and older).
- A slightly larger proportion of cases were diagnosed in situ for ages 50-64 years (18.7%) compared to the other age groups.

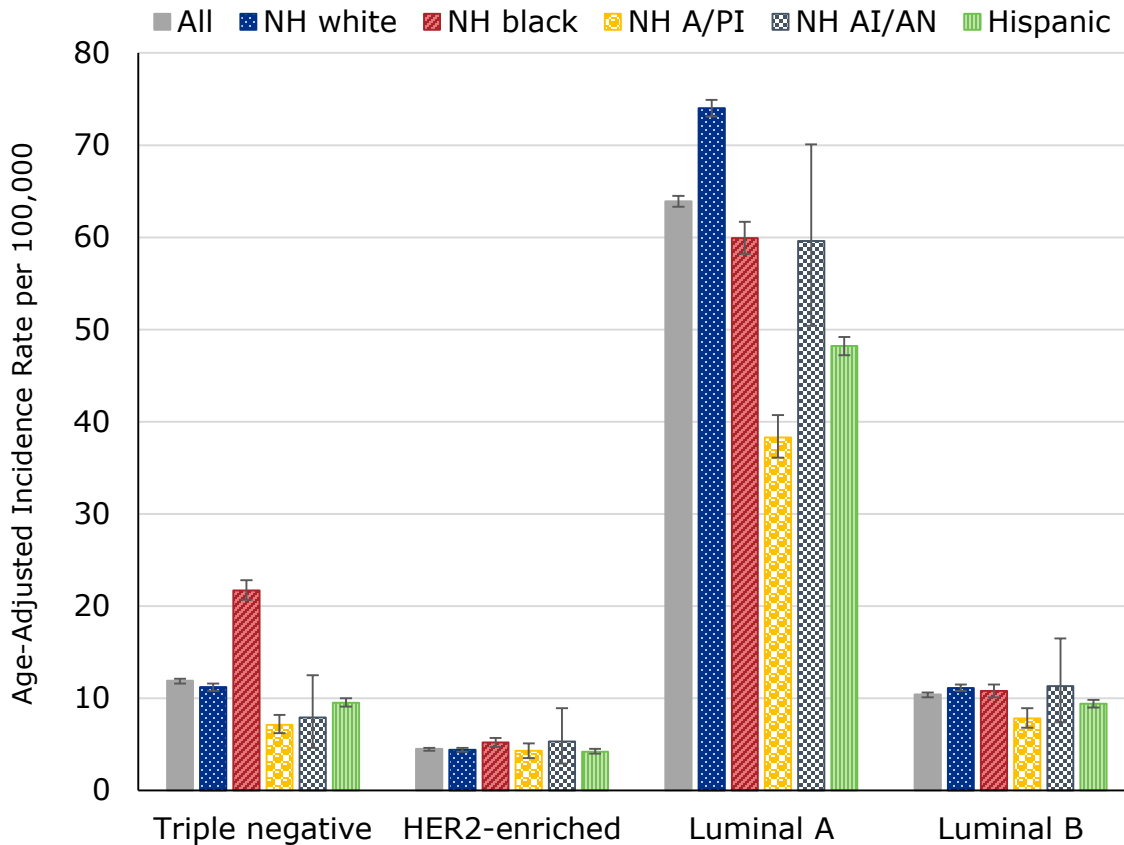
Breast Cancer Incidence by Race/Ethnicity and Stage at Diagnosis, 2012-2016



- The proportion of cases that were diagnosed either in situ or at the localized stage was highest in non-Hispanic (NH) whites and NH Asian/Pacific Islanders (A/PI), and lowest in NH blacks followed by Hispanics.
- The proportion of cases that were diagnosed at the distant stage was highest in NH blacks.

AI/AN = American Indian/Alaska Native

Malignant Breast Cancer Incidence Rates by Molecular Subtype, 2012-2016



- Breast cancer can be defined by molecular subtype based on the presence or absence of hormone receptors (HR) and on the amplification or overexpression of Human Epidermal Growth Factor Receptor 2 (HER2).
- Luminal A (HR-positive/HER2-negative) is the most common subtype, with the highest incidence rate in NH whites.
- Triple negative (HR-negative/HER2-negative) is the second most common subtype overall, and is more common in NH black women.

Subtypes were defined using Howlader et al. (2014). US incidence of breast cancer subtypes defined by joint hormone receptor and HER2 status. Journal of the National Cancer Institute. 106(5).

Luminal A = HR+/HER2-; luminal B = HR+/HER2+; HER2 enriched = HR-/HER2+; triple negative = HR-/HER2-

HR+ cases were defined as those where either estrogen or progesterone receptors were present. HR- cases were defined as those where neither estrogen or progesterone receptors were positive. Cases where one or more markers were unknown or borderline are not shown (19% of cases overall from 2012-2016).

The black bars indicate the 95% confidence intervals. 95% of the time the true rate will lie within these limits. A wider bar indicates uncertainty or instability in the incidence rate.

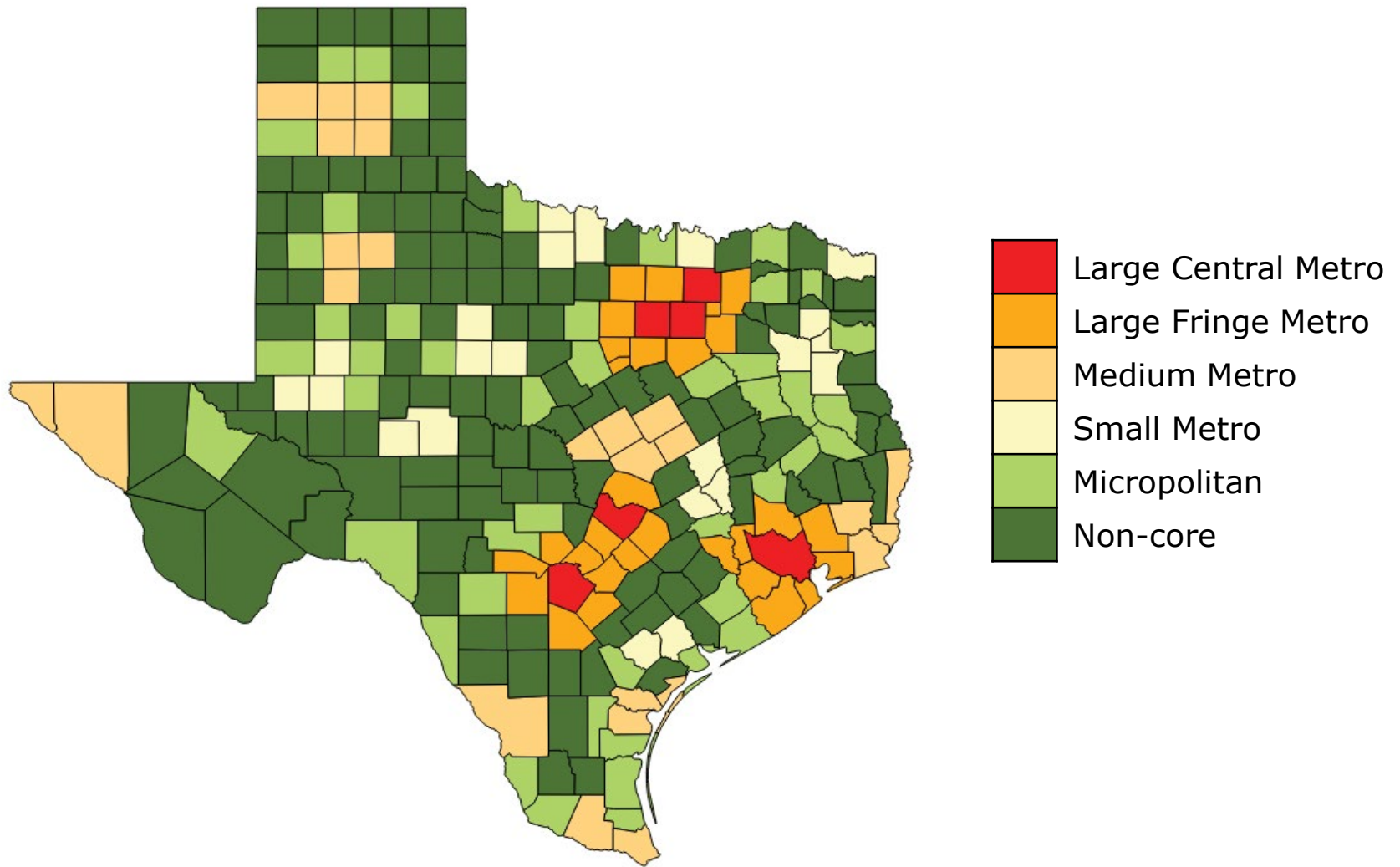
Urban-Rural Classifications

The Texas Cancer Registry uses the National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties¹ to classify population areas across the state.

Category	Definition
Metropolitan	
Large central metro	Counties in metropolitan statistical areas (MSA) with populations of 1 million or more that contain entire populations in the largest principal city, have entire populations contained in largest principal city, or contain at least 250,000 inhabitants of any principal city.
Large fringe metro	Counties in MSAs with populations of 1 million or more that do not qualify as large central metro counties.
Medium metro	Counties in MSAs of populations between 250,000 – 999,999.
Small metro	Counties in MSAs of populations less than 250,000.
Nonmetropolitan	
Micropolitan	Counties with an urban cluster population of 10,000-49,999.
Noncore	Nonmetro counties that do not qualify as micropolitan.

¹NCHS Urban-Rural Classification Scheme for Counties, NCHS/CDC, Updated June 2017.

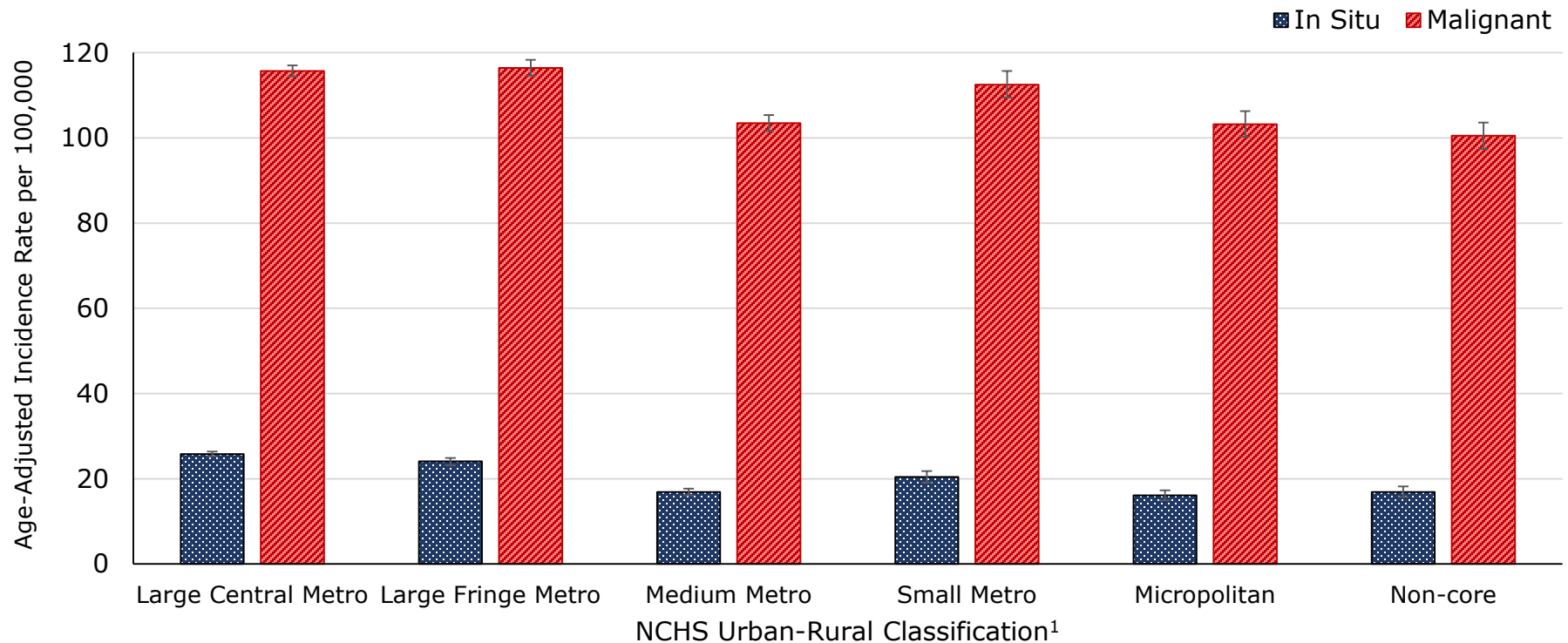
Urban-Rural Classification of Texas Counties



Source: NCHS Urban-Rural Classification Scheme for Counties, NCHS/CDC, Updated June 2017.

Breast Cancer Incidence Rates by Urban-Rural Classification, 2012-2016

- Both in situ and malignant breast cancer incidence rates were highest in large central metro and large fringe metro areas.
- In situ rates were lowest in micropolitan counties, while malignant rates were lowest in non-core areas.



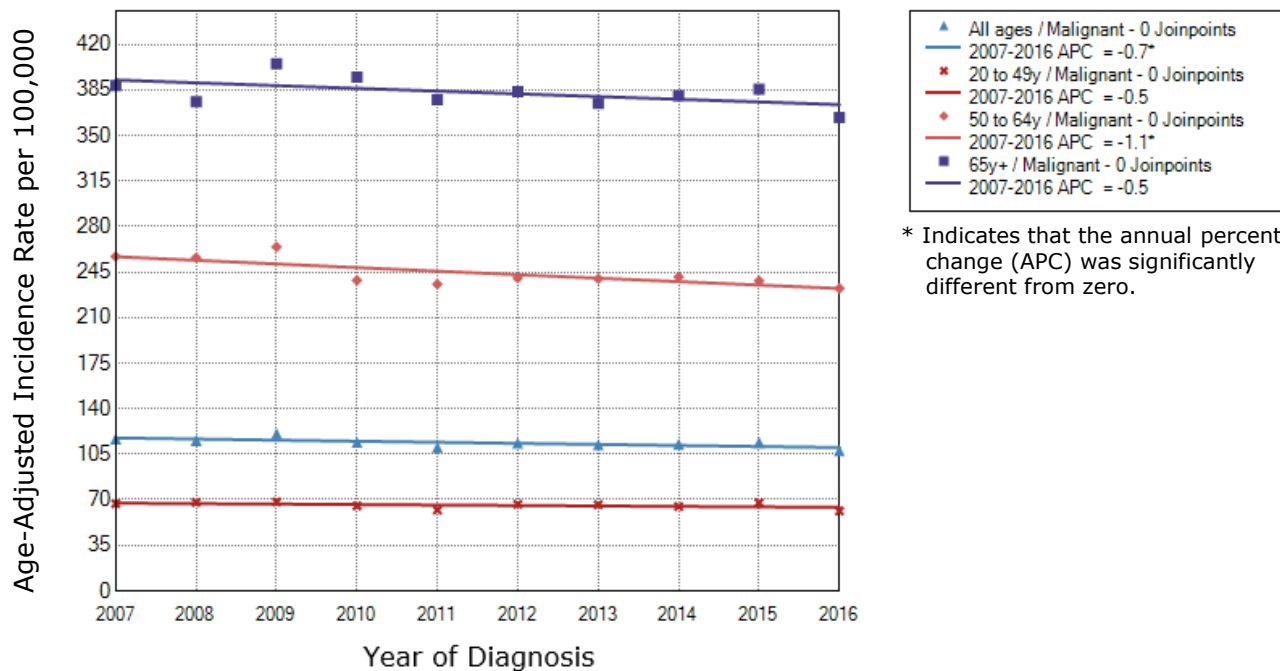
¹ 2013 NCHS Urban-Rural Classification Scheme for Counties. Centers for Disease Control and Prevention. https://www.cdc.gov/nchs/data_access/urban_rural.htm

The black bars indicate the 95% confidence intervals. 95% of the time the true rate will lie within these limits. A wider bar indicates uncertainty or instability in the incidence rate.

In situ breast cancers are non-invasive or pre-invasive. Malignant breast cancers are invasive or infiltrating cancers that have spread into the surrounding breast tissue.

Breast Cancer Incidence Rate Trends by Age at Diagnosis, 2007-2016

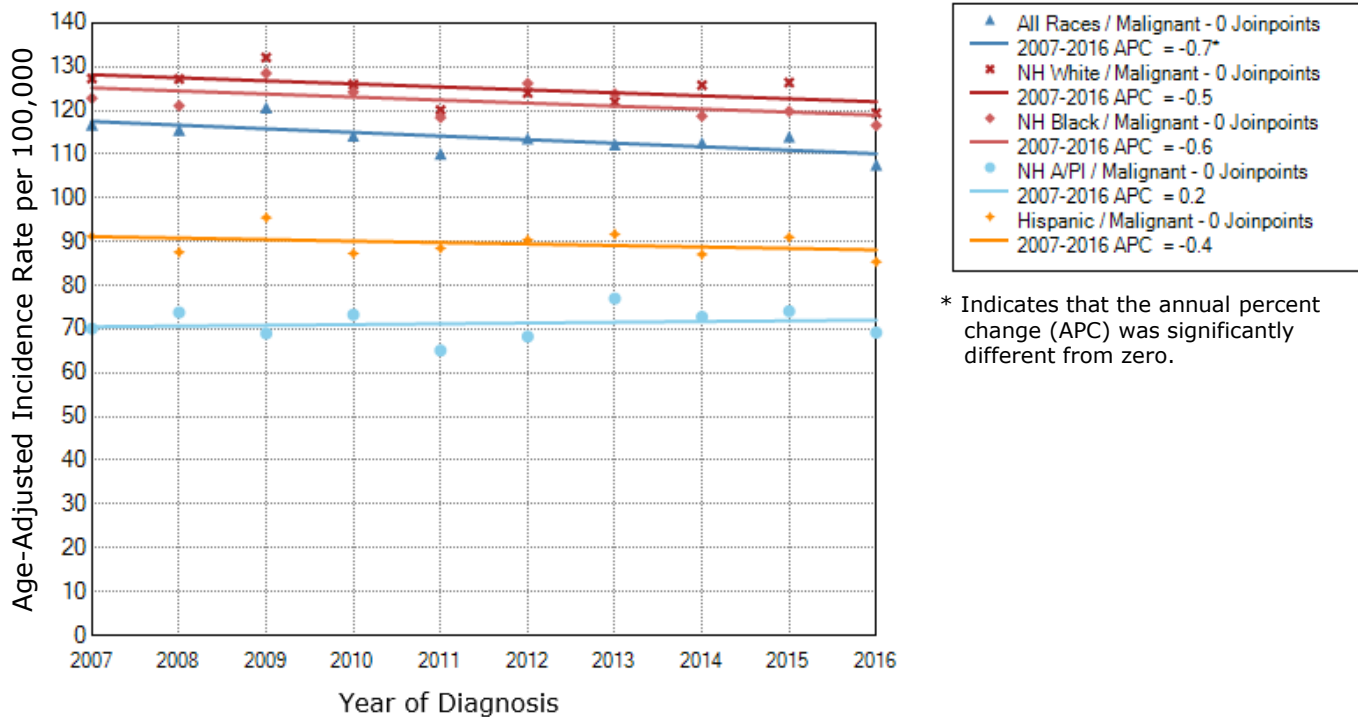
- Overall, the breast cancer incidence rate declined by 0.7% per year from 2007 to 2016.
- By age, the only significant change was an annual decrease of 1.1% per year for ages 50-64 years.
- Rates tended to decline in the other age groups but these changes were not significantly different from zero.



Malignant cases only

Breast Cancer Incidence Rate Trends by Race/Ethnicity, 2007-2016

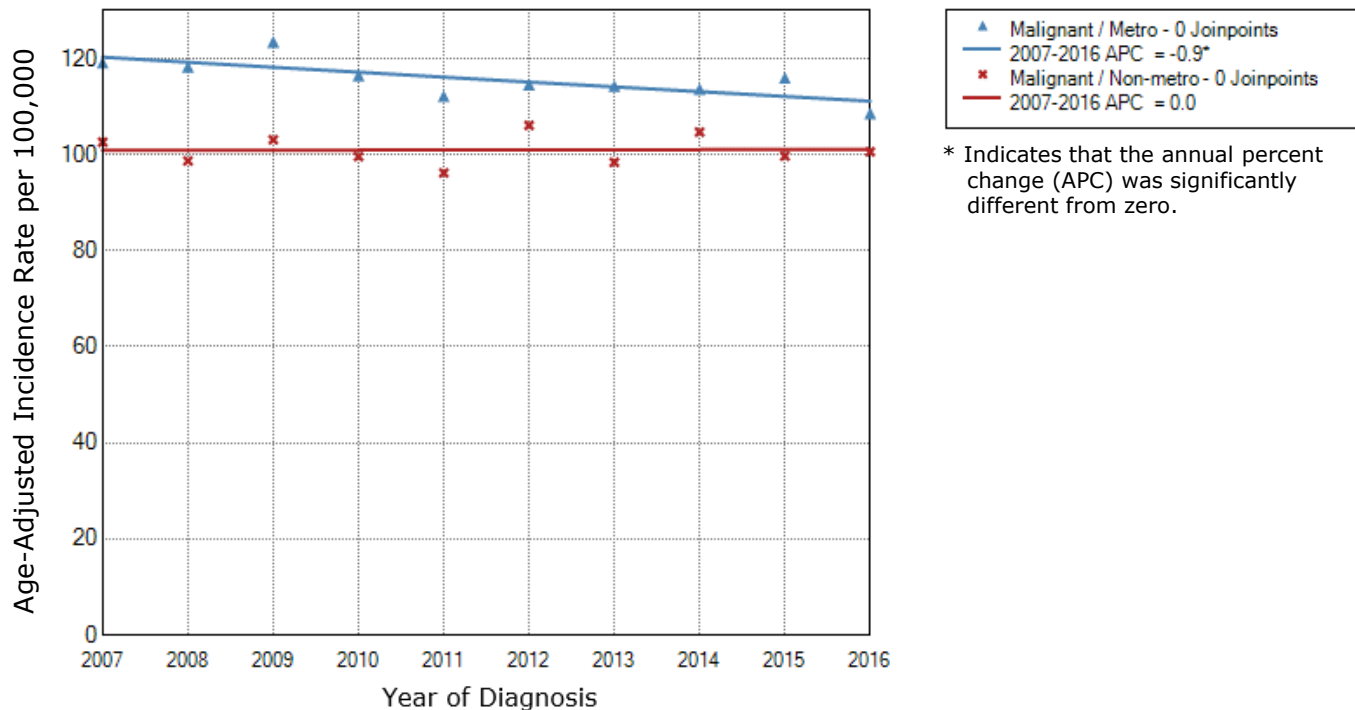
- Overall, the breast cancer incidence rate significantly declined by 0.7% per year from 2007 to 2016.
- Within each race/ethnicity group, rates tended to decline, except for non-Hispanic (NH) Asian/Pacific Islanders (A/PI), who also had the lowest rate. However, these trends were not significantly different from zero.



Malignant cases only

Breast Cancer Incidence Rate Trends by Metro/Non-Metro, 2007-2016

- The incidence rate of breast cancer decreased significantly from 2007 to 2016 in metro areas (APC=-0.9%) but not in non-metro areas (APC=0%).
- The incidence rate was significantly higher in metropolitan counties than in non-metropolitan counties in all years, however this difference declined from 2007 to 2016.



Malignant cases only

Breast Cancer Rate Trends by Race/Ethnicity and Age, 2007-2016

Race/ethnicity	Age	Average Annual Percent Change 2007-2016	95% Confidence Interval	
			Lower	Upper
NH White	20-49y	-0.1	-1.1	1.0
NH White	50-64y	-1.0*	-1.9	-0.1
NH White	65y+	-0.5	-1.2	0.2
NH Black	20-49y	0.2	-1.0	1.5
NH Black	50-64y	-1.2*	-1.9	-0.5
NH Black	65y+	-0.6	-2.0	0.8
NH A/PI	20-49y	0.7	-1.2	2.7
NH A/PI	50-64y	-0.4	-2.8	2.0
NH A/PI	65y+	0.4	-2.1	2.9
Hispanic	20-49y	-1.3*	-2.0	-0.5
Hispanic	50-64y	-0.6	-1.7	0.5
Hispanic	65y+	0.3	-0.8	1.4

Non-Hispanic (NH) White

A significant decrease occurred for ages 50-64 years only.

NH Black

A significant decrease occurred for ages 50-64 years only.

NH Asian/Pacific Islander (A/PI)

There were no significant changes in incidence rate by age.

Hispanic

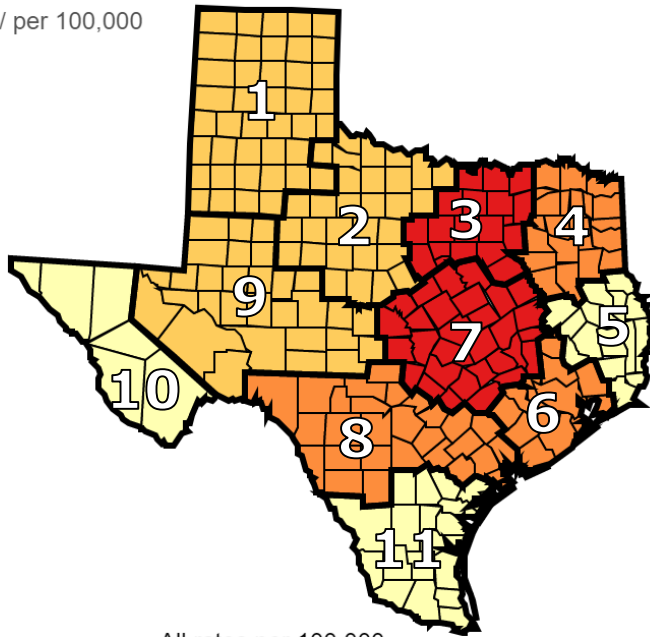
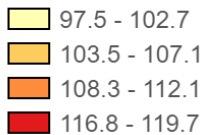
There was a significant decrease for ages 20-49 years only.

NH AI/AN not shown due to low counts.
 * Average APC was significantly different from 0.
 Malignant cases only.

Breast Cancer Incidence Rates by Health Service Region, 2012-2016

Age-Adjusted Invasive Cancer Incidence Rates in Texas
Breast, Female, 2012 - 2016
By Health Service Region
Age-Adjusted to the 2000 U.S. Standard Population

Texas Rate: 112.0 / per 100,000



All rates per 100,000.
Data accessed June 11, 2019. Cancer Incidence File, Jan 2019.
© 2019 Texas Cancer Registry.

From 2012-2016, 78,441 new cases of breast cancer were diagnosed in Texas. The incidence rate was 112.0 per 100,000 population.

Health Service Region	Number of Cases	Incidence Rate
HSR 1	2,357	103.5
HSR 2	1,774	104.4
HSR 3	22,416	119.7
HSR 4	3,937	110.0
HSR 5	2,430	102.7
HSR 6	18,516	112.1
HSR 7	9,459	116.8
HSR 8	8,352	108.3
HSR 9	1,675	107.1
HSR 10	2,237	101.8
HSR 11	5,279	97.5

Female Breast Cancer Mortality in Texas

Breast Cancer Mortality Rates, 2012-2016

From 2012 to 2016, Texas ranked 29th out of all US states and DC in breast cancer mortality. The breast cancer mortality rate in Texas was 20 cases per 100,000. The US rate was 20.6.

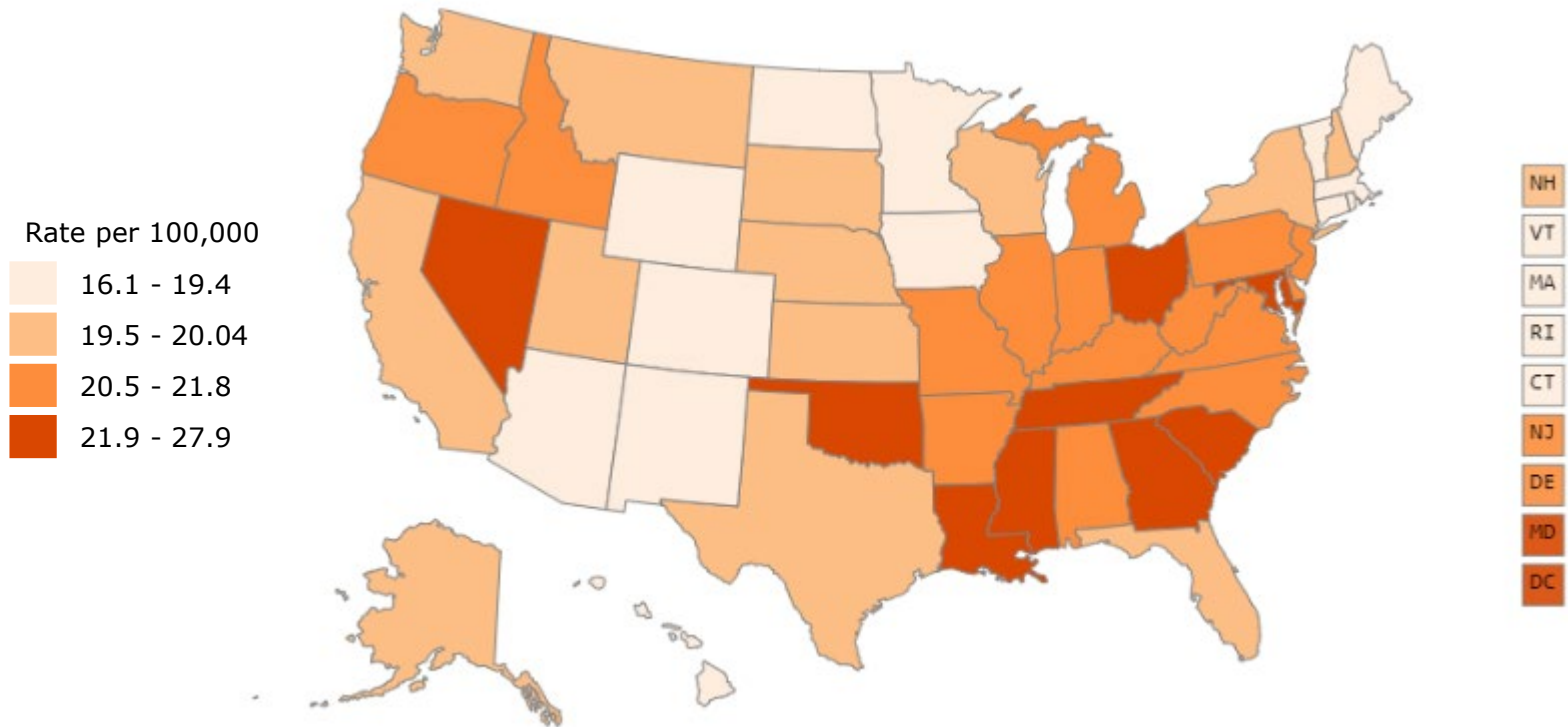
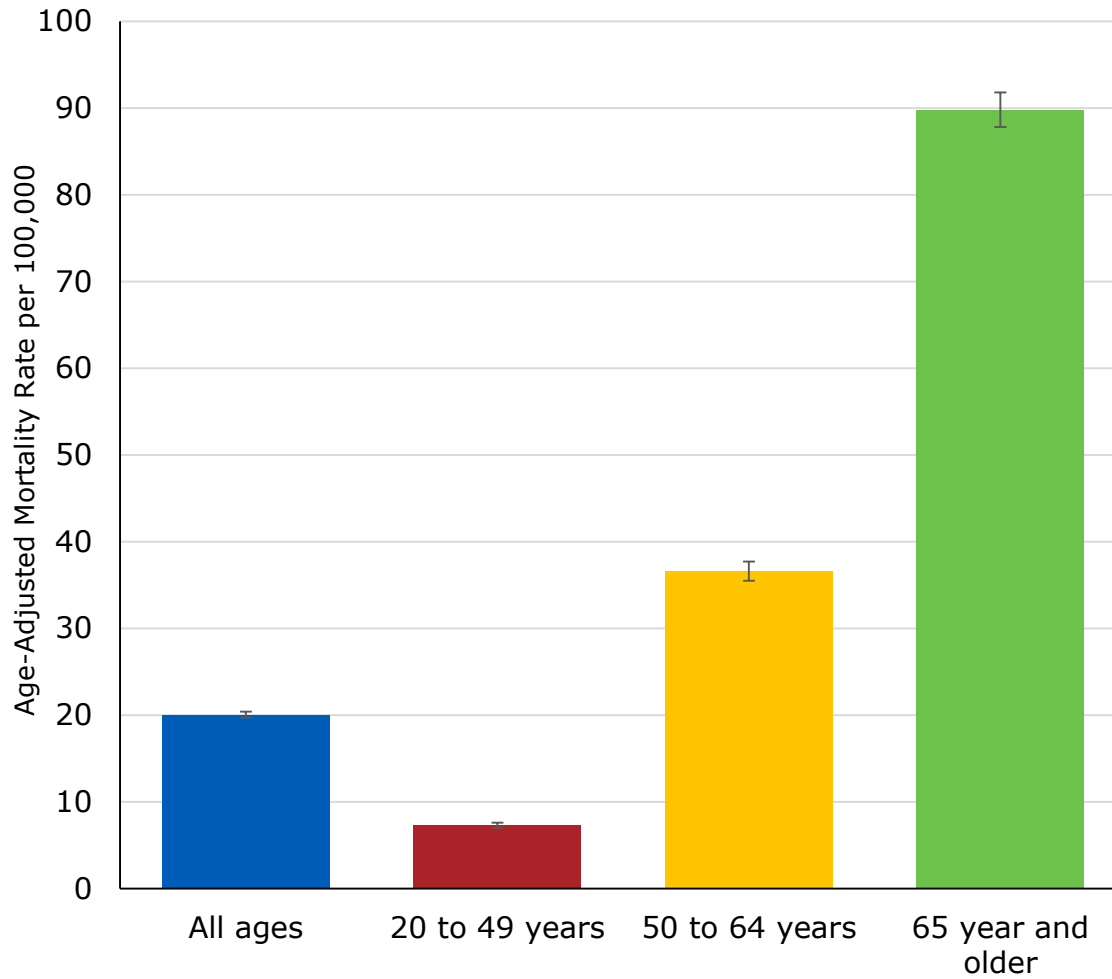


Image Source: United States Cancer Statistics: Data Visualizations. Centers for Disease Control and Prevention. <https://gis.cdc.gov/Cancer/USCS/DataViz.html>

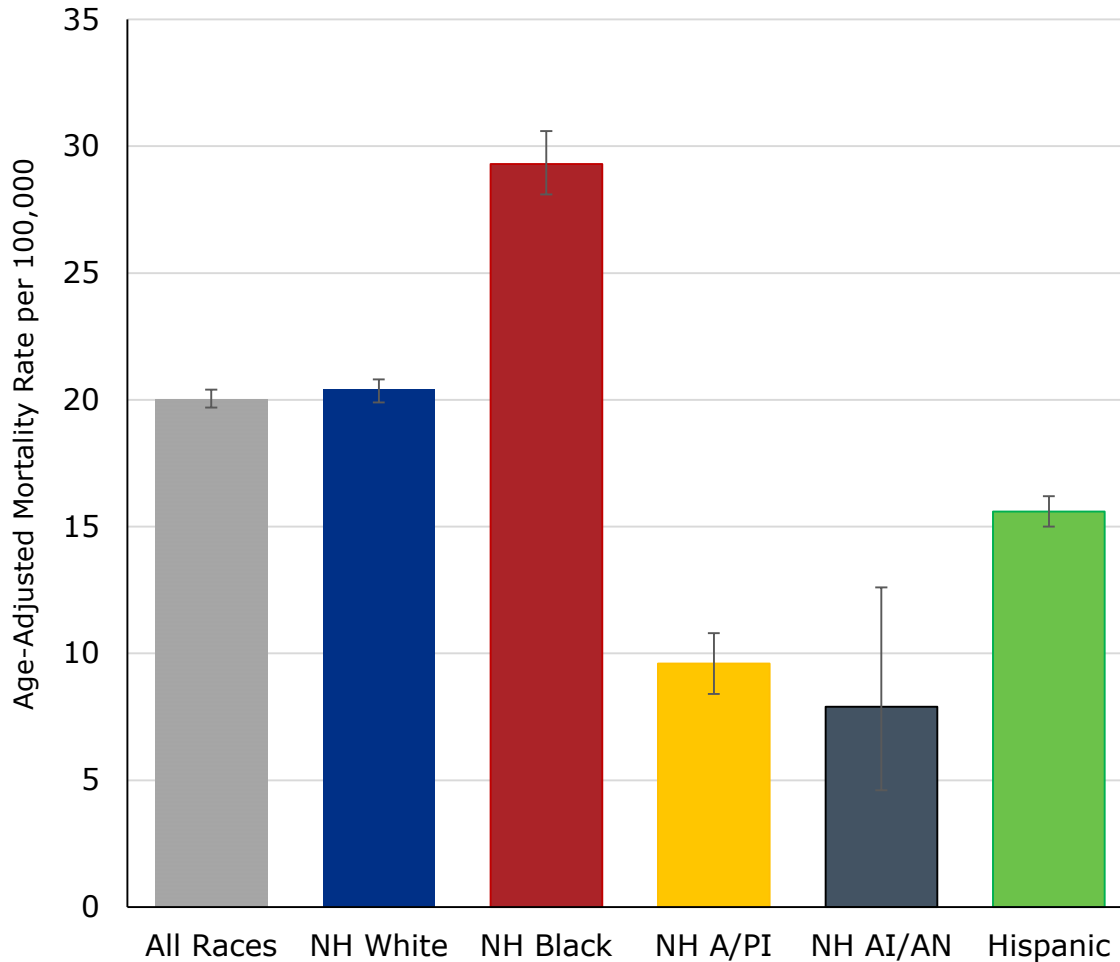
Breast Cancer Mortality Rates by Age at Death, 2012-2016



Breast cancer mortality rates increased with age, from 7.3 deaths per 100,000 for ages 20-49 years to 36.6 for ages 50-64 years, and 89.8 for ages 65 years and older.

The black bars indicate the 95% confidence intervals. 95% of the time the true rate will lie within these limits. A wider bar indicates uncertainty or instability in the mortality rate.

Breast Cancer Mortality Rates by Race/Ethnicity, 2012-2016

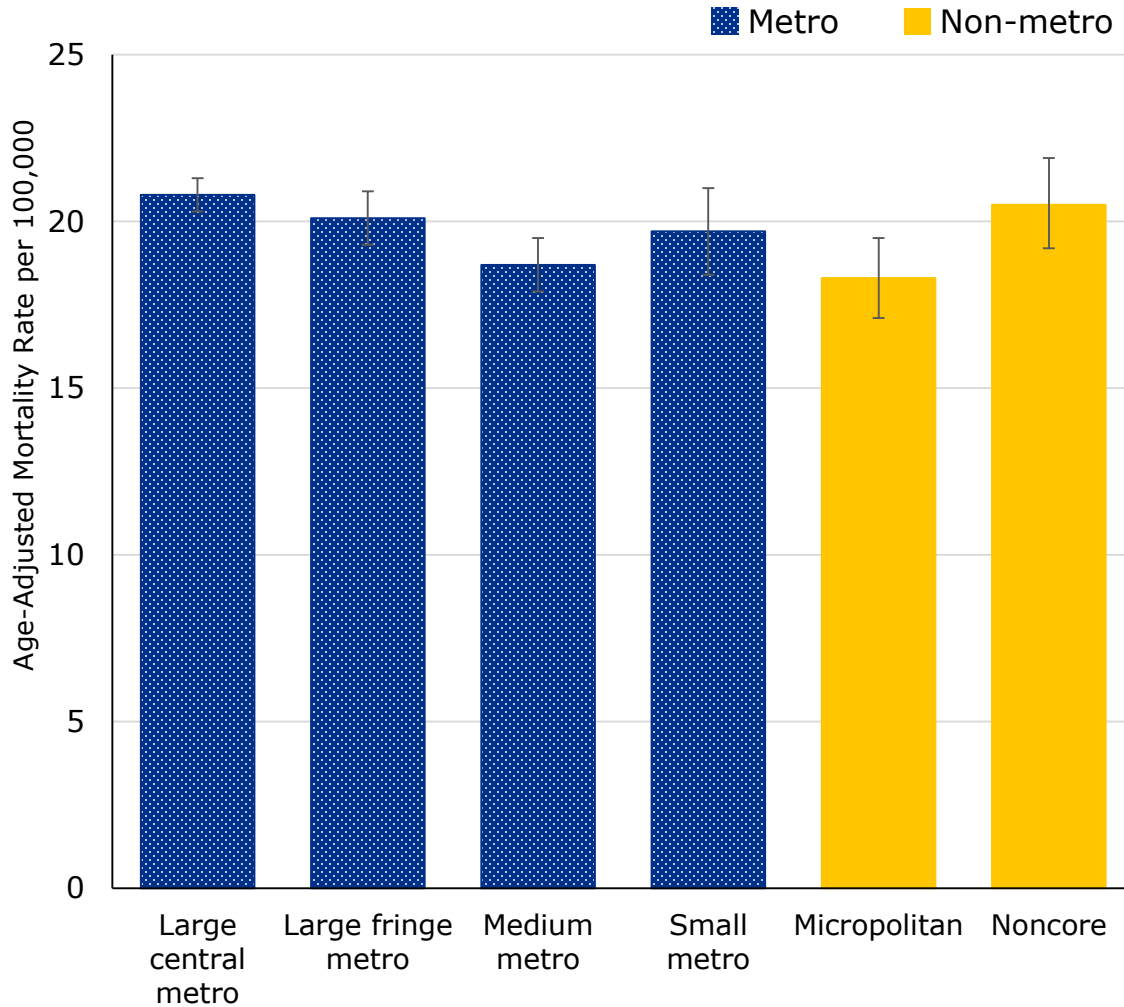


- Breast cancer mortality rates were significantly higher in non-Hispanic (NH) blacks (29.3 per 100,000) than in any other race/ethnicity group.
- The breast cancer mortality rate in NH blacks was 44% higher than in NH whites, and 88% higher than in Hispanics.
- Breast cancer mortality rates were also higher in NH whites (20.4) compared to Hispanics (15.6).

A/PI = Asian/Pacific Islander; AI/AN = American Indian/Alaska Native

The black bars indicate the 95% confidence intervals. 95% of the time the true rate will lie within these limits. A wider bar indicates uncertainty or instability in the mortality rate.

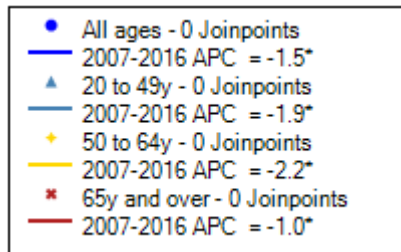
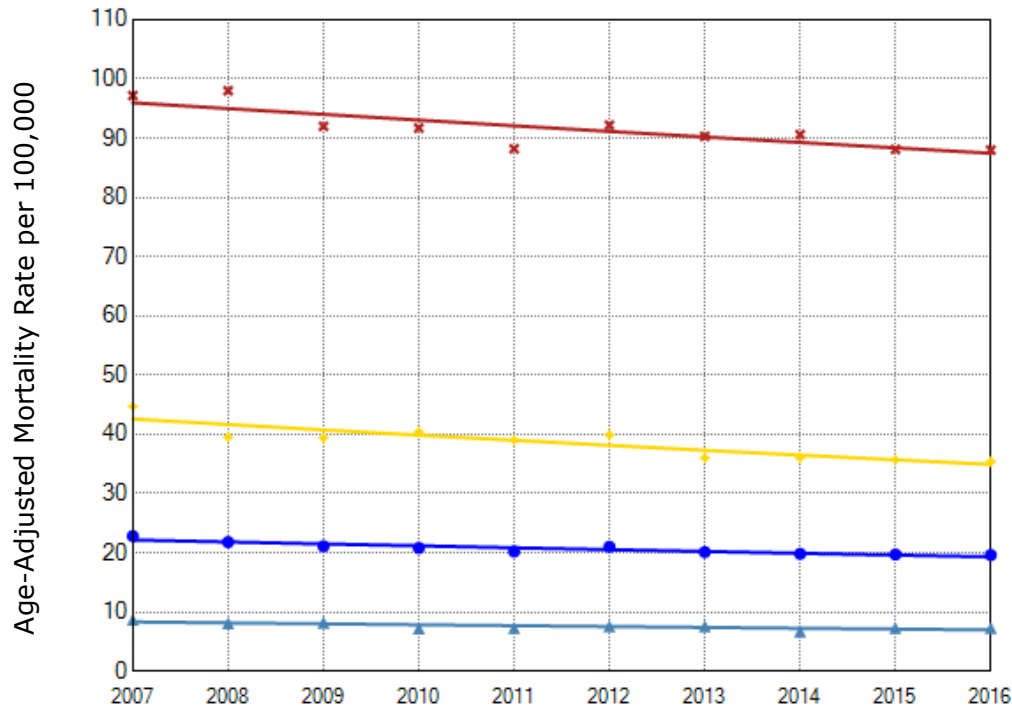
Breast Cancer Mortality Rates by Urban-Rural Classification, 2012-2016



- Breast cancer mortality rates were highest in large central metro counties (20.8 per 100,000) and non-core counties (20.5).
- Mortality rates were lowest in micropolitan (18.2) and medium metro counties (18.7).

The black bars indicate the 95% confidence intervals. 95% of the time the true rate will lie within these limits. A wider bar indicates uncertainty or instability in the mortality rate.

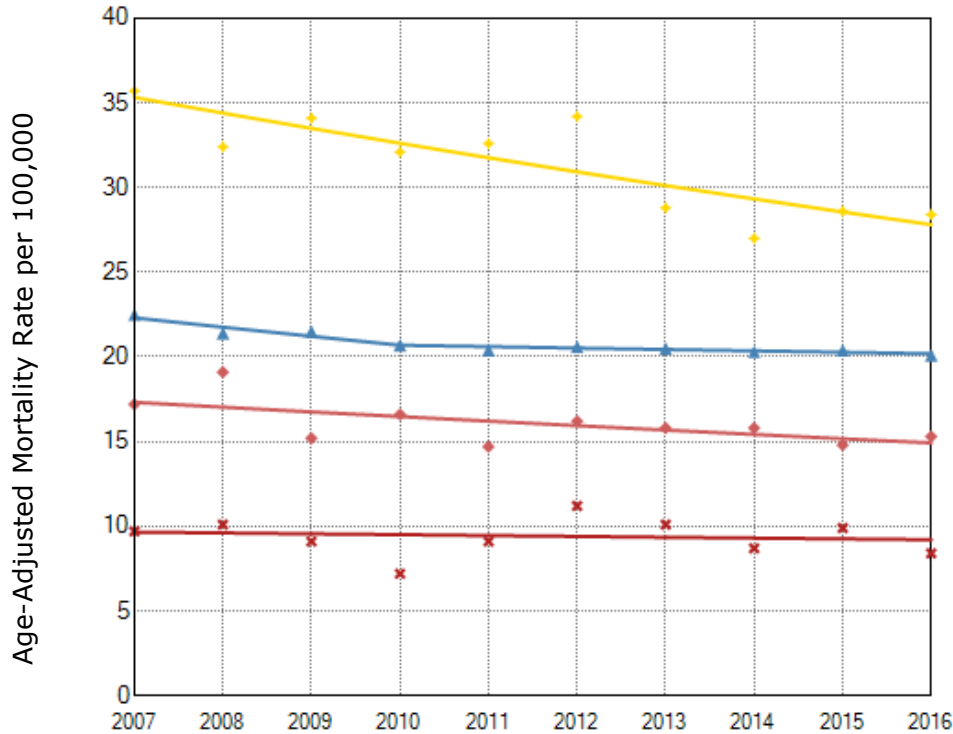
Breast Cancer Mortality Rate Trends by Age at Death, 2007-2016



* Indicates that the annual percent change (APC) was significantly different from zero.

- There was a significant average decrease in breast cancer mortality rates overall and in all three age groups.
- Average annual decreases were larger for ages 20-49 years (-1.9%) and 50-64 years (-2.2%) than for ages 65 years and older (-1.0%).

Breast Cancer Mortality Rate Trends by Race/Ethnicity, 2007-2016



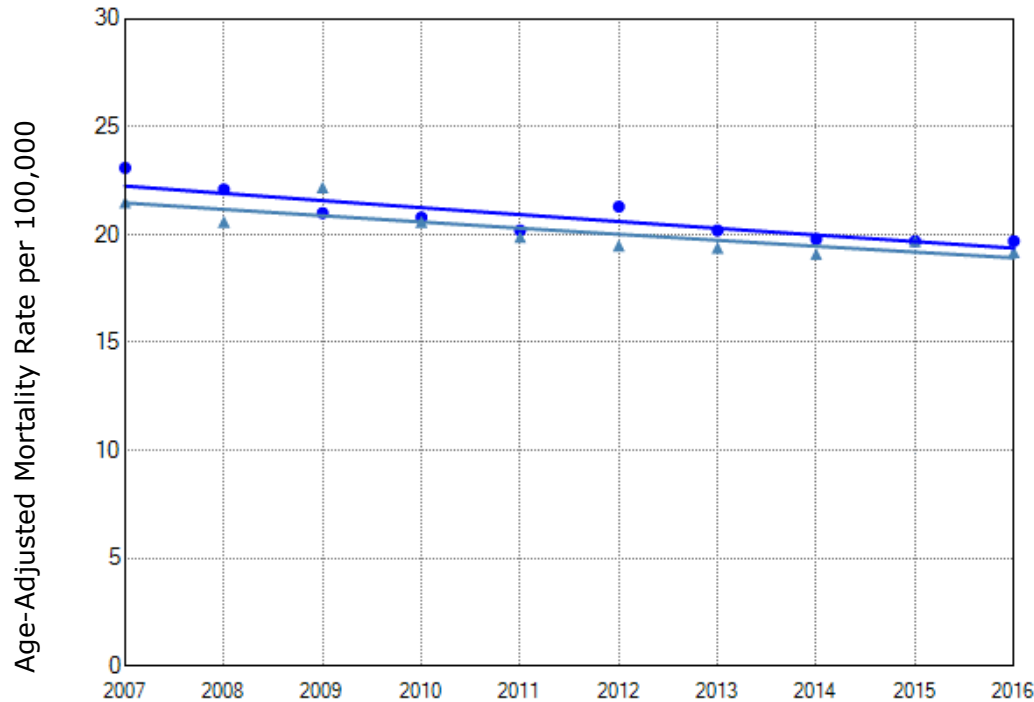
- There was a significant overall decrease in mortality rates from 2007 to 2016 in non-Hispanic (NH) whites (-1.1%), NH blacks (-2.6%), and Hispanics (-1.6%).
- A significant decrease in NH whites occurred during 2007-2010 but not from 2010-2016.
- The trends in NH Asian/Pacific Islanders (A/PI) was not significantly different from 0.



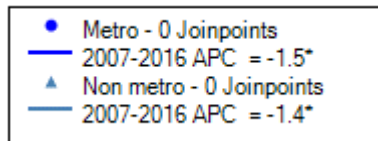
* Indicates that the annual percent change (APC) was significantly different from zero.

Trends for NH American Indian/Native Alaska are not shown due to low counts.

Breast Cancer Mortality Rate Trends by Metro/Non-metro, 2007-2016



Breast cancer mortality rates significantly declined at a similar rate in metropolitan and non-metropolitan counties.



* Indicates that the annual percent change (APC) was significantly different from zero.

Breast Cancer Mortality Rate Trends by Race/Ethnicity and Age at Death, 2007-2016

Race/ethnicity	Age	Average Annual Percent Change 2007-2016	95% Confidence Interval	
			Lower	Upper
NH white	20-49y	-0.7	-2.6	1.2
NH white	50-64y	-2.0*	-2.9	-1.2
NH white	65y+	-0.6*	-1.1	-0.1
NH black	20-49y	-2.1	-5.6	1.7
NH black	50-64y	-3.6*	-5.7	-1.5
NH black	65y+	-2.3*	-3.7	-0.8
Hispanic	20-49y	-3.8*	-5.7	-1.9
Hispanic	50-64y	-1.5	-4.1	1.1
Hispanic	65y+	-1.0	-3.0	1.1

Non-Hispanic (NH) whites

Mortality rates significantly decreased for ages 50-64 years and ages 65 years and over.

NH blacks

- Mortality rates significantly decreased for ages 50-64 years, and 65 years and older.
- There was also a tendency for rates to decrease for ages 20-49 years but this change was not significantly different from 0.

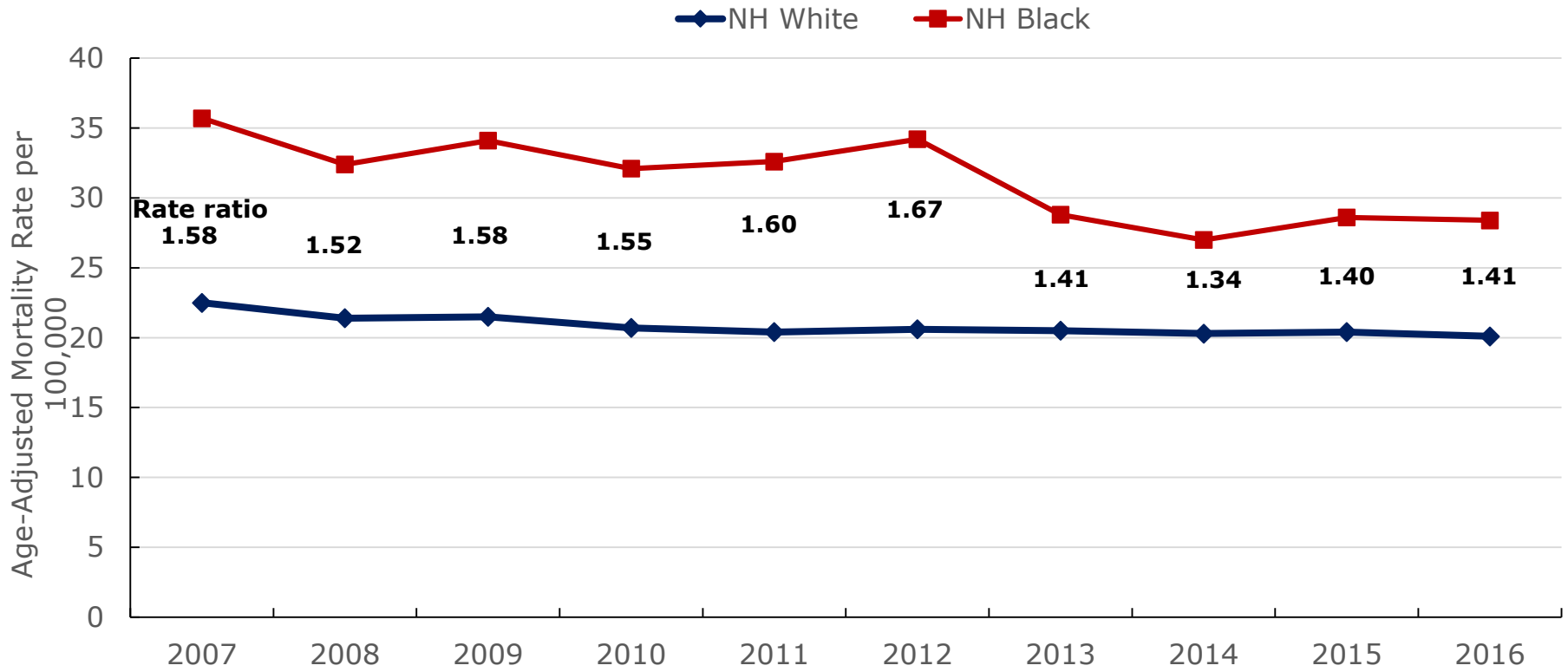
Hispanics

Mortality rates significantly decreased for 20-49 years only.

Trends were not assessed for NH A/PI and NH AI/AN due to low counts.

Disparities in Breast Cancer Mortality Rates

- In 2016, the breast cancer mortality rate was 41% higher in non-Hispanic (NH) black women than in NH white women.
- The breast cancer mortality rate ratio between NH black women and NH white women has decreased from 2007 to 2016, indicating that the difference in mortality rates is lessening.



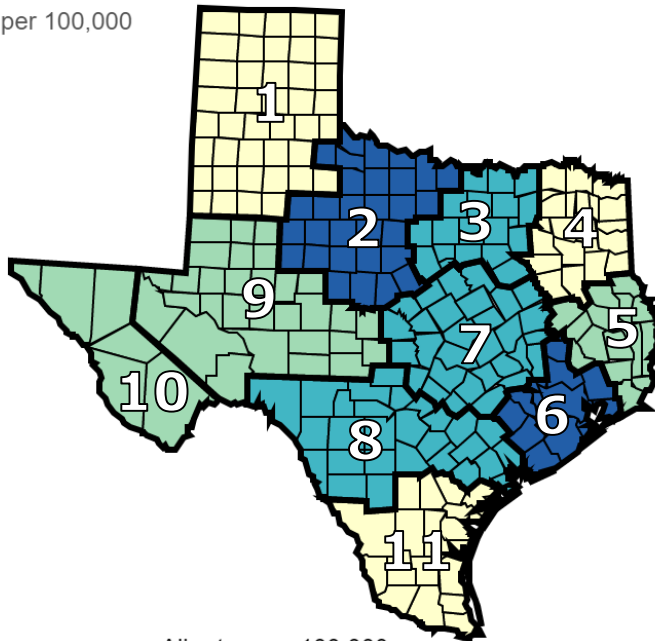
Rate ratios were calculated using SEER*Stat.

Breast Cancer Mortality Rates by Health Service Region, 2012-2016

Age-Adjusted Cancer Mortality Rates in Texas
Breast, Female, 2012 - 2016
By Health Service Region
Age-Adjusted to the 2000 U.S. Standard Population

Texas Rate: 20.0 / per 100,000

- 18.0 - 18.6
- 19.0 - 19.3
- 19.7 - 20.2
- 21.0 - 21.6



All rates per 100,000.
Data accessed July 25, 2019. Cancer Mortality File, Jan 2019.
© 2019 Texas Cancer Registry.

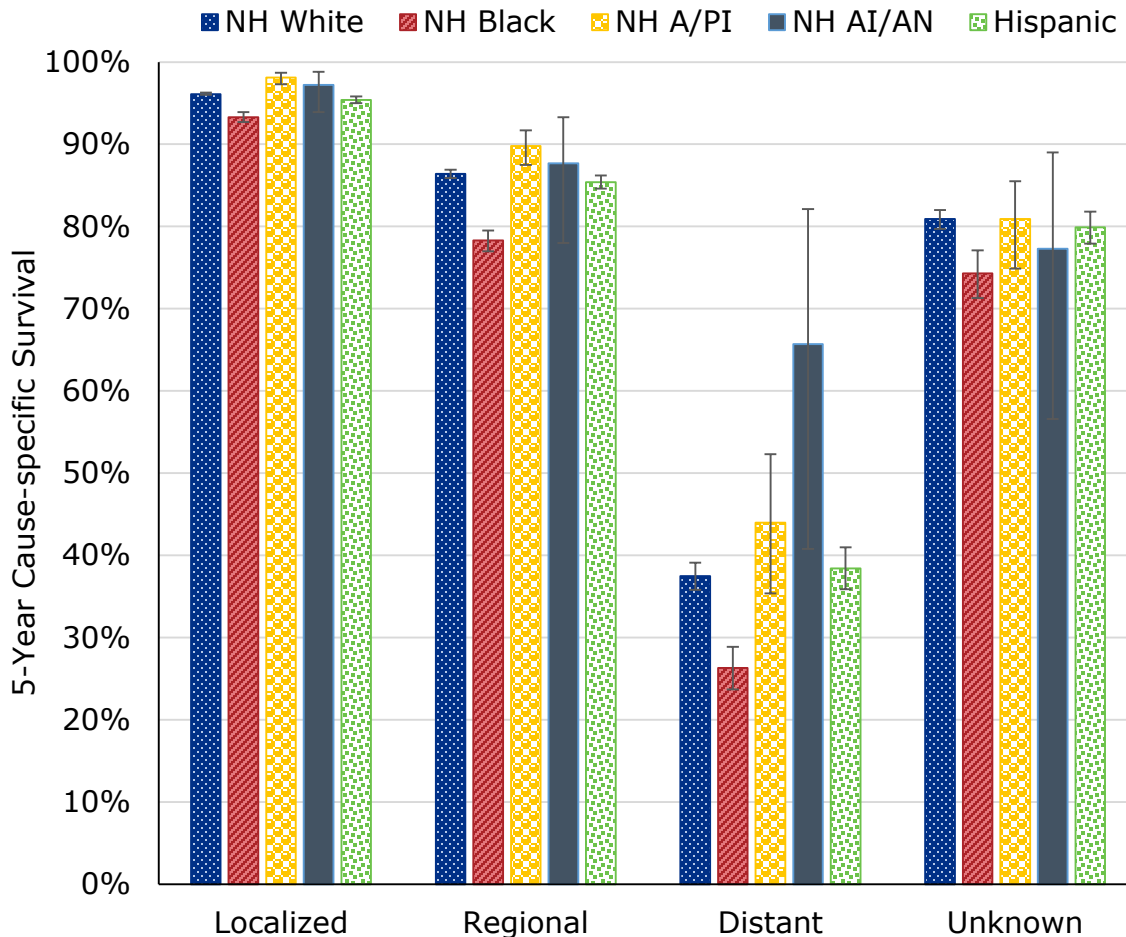
From 2012-2016, 14,083 Texans died of breast cancer. The mortality rate was 20.0 per 100,000 population.

Health Service Region	Number of Cases	Mortality Rate
HSR 1	451	18.6
HSR 2	388	21.0
HSR 3	3,715	20.2
HSR 4	687	18.0
HSR 5	479	19.0
HSR 6	3,434	21.6
HSR 7	1,605	19.7
HSR 8	1,577	20.0
HSR 9	322	19.3
HSR 10	429	19.1
HSR 11	996	18.2

Image Source: Web Query Tool. Texas Cancer Registry. <https://www.cancer-rates.info/tx/>

Female Breast Cancer Survival In Texas

Breast Cancer 5-year Cause-Specific Survival by Race/Ethnicity and Diagnosis Stage



Localized stage

Survival was highest for non-Hispanic (NH) Asian/Pacific Islander (A/PI) and lowest for NH blacks.

Regional stage

Survival was highest for NH A/PI and significantly lower for NH blacks.

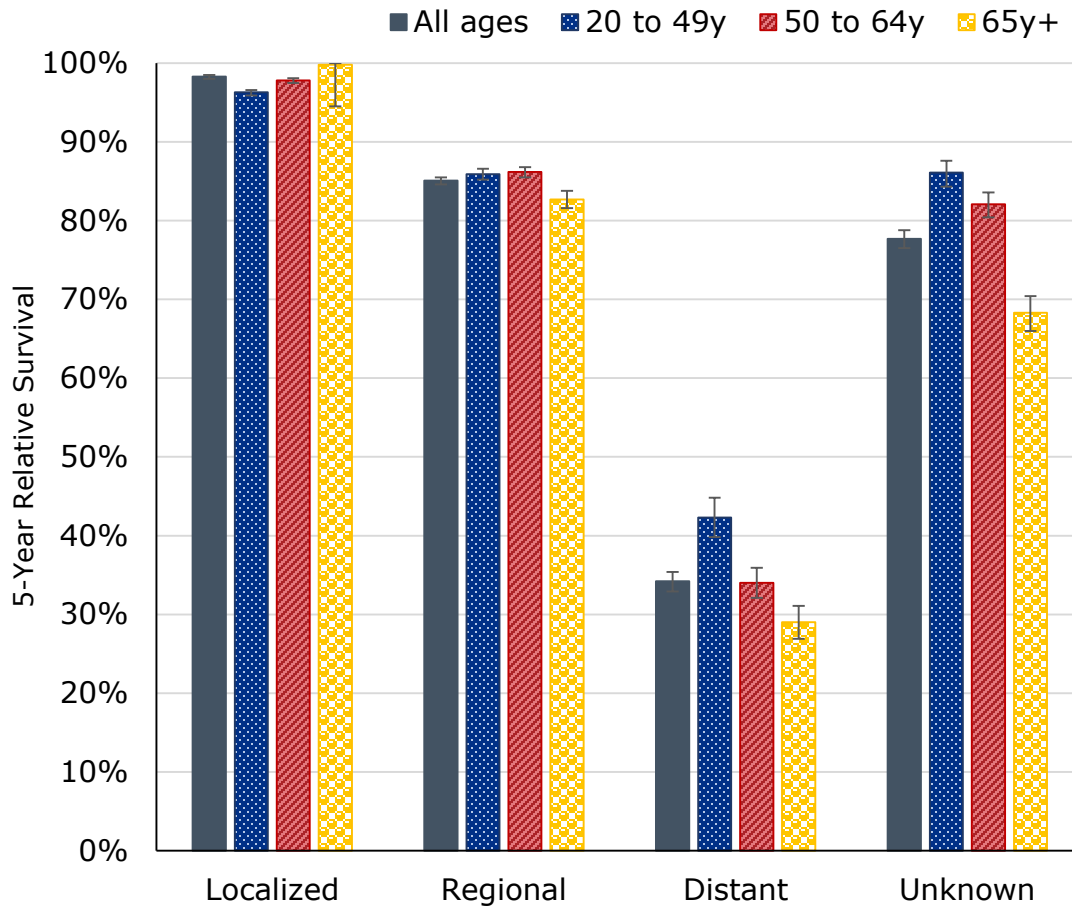
Distant stage

Survival was highest for NH American Indian/Alaska Natives (AI/AN), although confidence intervals were large due to small sample size. The lowest was for NH blacks.

* Cause-specific survival estimated the percentage of patients diagnosed between 2007 and 2016 that did not die from breast cancer within 5-year after diagnosis. Individuals who died of other causes are censored.

The black bars indicate the 95% confidence intervals. 95% of the time the true survival percentage will lie within these limits. A wider bar indicates uncertainty or instability in the survival percentage.

Breast Cancer 5-Year Relative Survival by Age and Stage at Diagnosis



Localized stage

For patients diagnosed at the localized stage, 5-year relative survival was highest for ages 65 years and older.

Regional stage

For patients diagnosed at the regional stage, 5-year relative survival was similar for ages 20-49 years and 50-64 years. Survival was lower for ages 65 years and older.

Distant stage

For patients diagnosed at the distant stage, 5-year relative survival was highest for patients diagnosed at age 20-49 years and lowest for ages 65 years and older.

* Relative survival measures cancer survival in the absence of other causes of death and uses expected life tables to compare the ratio of observed cancer survivors to the expected survival of the wider (cancer free) population (of similar race, sex, and age). Tumors diagnosed between 2007 and 2016 were included, with survival follow-up through December 2017.

The black bars indicate the 95% confidence intervals. 95% of the time the true survival percentage will lie within these limits. A wider bar indicates uncertainty or instability in the survival percentage.

Technical Notes

- Data Source: Texas Cancer Registry (www.dshs.state.tx.us/tcr) SEER*Stat Database, Incidence - Texas, 1995-2016, statewide, Texas Department of State Health Services, created February 2019, based on NPCR-CSS Submission, cut-off 11/09/18.
- Data Source: Texas Cancer Registry (www.dshs.texas.gov/tcr) SEER*Stat Database, Mortality - Texas, 1990-2016, statewide, Texas Department of State Health Services (created June 2019).
- Incidence and mortality rates are age-adjusted to the 2000 US Standard population in 2000 (19 Ages Groups – Census P25-1130).
- The annual percentage change (APC) was calculated using Joinpoint by fitting a least squares regression line to the natural logarithm of the age-adjusted rates, with calendar year as the regressor variable. This method allows more than one APC to describe the trend over a time period. An average APC is the weighted average of the APCs from the joinpoint model, and can be used to summarize a trend even when there were changes in trends over the assessed time period.
- Error bars represent 95% confidence intervals around rates and were calculated using the Tiwari et al. modification in SEER*Stat.
- The CDC's National Center for Health Statistics (NCHS) Urban-Rural Classification Scheme for Counties was used in this report. This scheme is a six-level urban-rural classification scheme for US counties. The most urban category consists of central counties in large metropolitan areas; the most rural category consists of nonmetropolitan "noncore" counties. (Source: NCHS Urban-Rural Classification Scheme for Counties, NCHS/CDC, Updated June 2017. Accessed April 2018. https://www.cdc.gov/nchs/data_access/urban_rural.htm).

Useful Links

- Centers for Disease Control and Prevention: <https://www.cdc.gov/cancer/nbccedp/index.htm>
- National Cancer Institute: <https://www.cancer.gov/types/breast>
- American Cancer Society: <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/breast-cancer-facts-and-figures/breast-cancer-facts-and-figures-2017-2018.pdf>
- Texas Breast and Cervical Cancer Services: <https://hhs.texas.gov/doing-business-hhs/provider-portals/health-services-providers/womens-health-services/breast-cervical-cancer-services>

Acknowledgment

The Texas Cancer Registry (TCR) recognizes the following whose financial support is essential to accomplishing the Registry's mission for our State.

Federal Grant Funding

- We acknowledge the Centers for Disease Control and Prevention (CDC) for its financial support under Cooperative Agreement #1NU58DP006308.

State Agency Funding

- Texas Department of State Health Services
- Texas Health and Human Services Commission
- Cancer Prevention and Research Institute of Texas

The TCR also wants to thank all cancer reporters for their hard work and collaboration. Cancer reporters help us meet national high quality and timeliness standards, and enable us to serve as the primary source of cancer data in Texas.