

CANCER IN TENNESSEE

2014-2018

July 2022



Division of Population Health Assessment
Tennessee Cancer Registry (TCR)

This document presents cancer incidence and mortality information for the entire state of Tennessee focusing on the five-year period between 2014 and 2018, and comparisons to national rates are presented. The report is made possible through data collected by many cancer registrars around the nation, but particularly in Tennessee. The TCR is dedicated to the collection and use of quality data for the purpose of decreasing the incidence and mortality of cancer in Tennessee.

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All information obtained on patients is confidential. Absolutely no personal or identifying information, such as name or social security number, can be released to researchers unless Institutional Review Board (IRB) approval is obtained. All information shall be used solely for statistical, scientific and medical research purposes and shall be held strictly confidential.

CANCER IN TENNESSEE REPORT

This report contains cancer incidence and mortality data for the entire state of Tennessee from 2014 through 2018, with some comparisons to national rates. Data collected by the Tennessee Cancer Registry (TCR) as well as cancer registries nationwide made the creation of this report possible. This report published by the TCR is meant to serve as a reference for researchers and the general public. For additional information and publications, we encourage you to visit our website at <https://www.tn.gov/health/health-program-areas/statistics.html>

It is important to note that cancer data in this report is dynamic and it is possible that even after the standard reporting delay, cases may still be reported to the TCR, which may have a minor, non-significant statistical impact on the most recent year of diagnosis.

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- TCR staff
- Cancer registrars from healthcare facilities, not only throughout the state of Tennessee, but also in other US states, who completed the large majority of cancer abstracts available in the TCR database
- The staff of the Office of Vital Statistics, Division of Vital Records and Statistics, Tennessee Department of Health (TDH), for providing mortality data.

These dedicated individuals labored tirelessly ensuring the quality and completeness of TDH and TCR data.

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The mission of the Tennessee Department of Health is to protect, promote and improve the health and prosperity of people in Tennessee.

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The Tennessee Cancer Registry is dedicated to the collection and use of quality data for the purpose of decreasing the incidence and mortality of cancer in Tennessee.

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TENNESSEE CANCER REGISTRY

WHO WE ARE

The Tennessee Cancer Registry (TCR) was established in 1983 by the Tennessee General Assembly with the passage of [Tennessee Code Annotated \(T.C.A.\) § 68-1-1001](#) and is responsible for collecting information on all reportable cancer diagnoses in Tennessee, including non-residents diagnosed and/or treated in Tennessee (TN). Every year beginning with the 2005 diagnosis year, TCR has achieved “Gold Certification,” the highest level of certification by the North American Association of Central Cancer Registries (NAACCR). More information on NAACCR certification criteria and levels may be found at <https://www.naacr.org/certification-criteria/>.



WHAT WE DO

In collaboration with health care facilities located across the state and their cancer registrars, TCR staff identify new cases of cancer through routine, systematic review of medical records, pathology reports, radiation therapy records, hospital discharge lists, state vital records, and other source documents. Information regarding patient characteristics, cancer diagnosis, and first-course treatment is ascertained primarily from specific statements in the medical record and other sources such as death certificates and physician reports.

OUR PURPOSE

The purpose of the TCR is to:

- Collect accurate information on cancer cases diagnosed and/or treated in TN annually.
- Increase general awareness of cancer in TN.
- Promote and assist cancer abstractors in each facility to accurately code cancer abstracts.
- Provide information to the public regarding cancer incidence and mortality in TN.
- Serve as a data repository for those requesting information on cancer, its effects, treatment, risk factors, and prevention.
- Support epidemiological research into the causes, distribution, prevention, and treatment of cancer.

WHAT IS CANCER?

Cancer is a group of more than 100 diseases characterized by uncontrolled growth and spread of abnormal cells. An individual can be diagnosed with cancer at any time in their life, but individuals 55 years of age and older are at a higher risk of developing of cancer. About 40-50% of all cancers might be potentially preventable with better lifestyle choices, such as increasing physical activity, incorporating better nutrition, and abstaining from tobacco products (Islami et al., 2018.)

WHAT IS CANCER INCIDENCE?

Cancer incidence is defined as the number of new cancers diagnosed in the population at risk. The **cancer incidence rate** is the number of new cases of cancer diagnosed in a specified population during a specified time period, usually expressed as the number of new cases per 100,000 persons at risk. That is,

$$\text{Cancer Incidence Rate} = \left(\frac{\text{Number of New Cases of Cancer}}{\text{Population at Risk}} \right) * 100,000$$

The numerator of the incidence rate is the number of newly diagnosed cancer cases, and the denominator of the incidence rate is the size of the population at risk. The number of new cancers may include multiple primary cancers occurring in one patient. The primary site reported is the site of origin and not the metastatic site (the distant site to which the cancer has spread). In general, the incidence rate does not include recurrences and can be computed for a given cancer primary site or for all cancers combined.

WHAT IS CANCER MORTALITY?

Cancer mortality is defined as the number of deaths from cancer in the population at risk. The **cancer mortality rate** is defined as the number of deaths due to cancer as the underlying cause of death in a specified at-risk population during a given time period, usually expressed as the number of deaths due to cancer per 100,000 persons at risk. That is,

$$\text{Cancer Mortality Rate} = \left(\frac{\text{Number of Cancer Deaths}}{\text{Population at Risk}} \right) * 100,000$$

The numerator of the mortality rate is the number of cancer deaths, and the denominator is the size of the population at risk. The mortality rate can be computed for a given cancer site or for all cancers combined.

OTHER IMPORTANT TERMS

Age-adjustment: Age is the most important risk factor for the incidence of most cancers, so it is challenging to compare cancer rates in populations with different age distributions. Age-adjustment is a statistical technique that allows for the comparison of rates among populations with different age distributions, by weighting the age-specific rates in each population to one standard population, usually the 2000 US Standard Population, obtained during the 2000 US Census.

Stage at diagnosis: Cancer stage is the extent to which a cancer has spread from the organ of origin at the time of diagnosis. The stage information used in this report is based on the SEER Summary Stage Guidelines:

- ***In situ:*** Cancerous cells have not invaded the tissue basement membrane and there is no stromal invasion, therefore, these cancers are not invasive. For the sake of this report, all incidence rates presented do NOT include *in situ* cancers, with the exception of *in situ* bladder cancers, which is the national norm when presenting incidence rates on such national sources such as the United States Cancer Statistics website.
- **Local:** The tumor has invaded locally, but is still confined to the organ of origin.
- **Regional:** The tumor has spread to adjacent tissues outside of the organ of origin; regional lymph nodes may also be involved.
- **Distant:** The tumor has spread beyond the adjacent organs or tissues; distant lymph nodes, organs, and/or tissues may also be involved.

EXECUTIVE SUMMARY

This report contains cancer incidence (i.e., number of newly diagnosed cancer cases) and mortality (i.e., number of deaths) data for the entire state of Tennessee from 2014 through 2018, with occasional comparisons to national rates. Data collected by the Tennessee Cancer Registry (TCR), as well as cancer registries nationwide, made the creation of this report possible. This report published by the TCR is meant to serve as a reference for researchers and the general public. For additional information and publications from the TCR, we encourage you to visit our website at <https://www.tn.gov/health/health-program-areas/statistics.html>. It is important to note that cancer data in this report is dynamic and it is possible that even after the completion of this report, a few cases may be reported, which may have a minor impact on the statistics presented.

- From 2014-2018, 188,602 Tennesseans were diagnosed with cancer and 71,221 Tennesseans died from malignant cancers. Cancer was the second leading cause of death. In Tennessee (TN) from 2014 through 2018, the cancer incidence rate increased on average by 0.4% per year, but this change was not statistically significant. The cancer mortality rate among Tennesseans decreased on average by 2.2% per year and this change was statistically significant.
- From 2014-2018, TN experienced the 21st highest cancer incidence rate. From 2015-2019, TN experienced the 6th highest cancer mortality rate in the United States (US). Much of TN's observed cancer incidence and mortality disparities relative to other states is due to a greater cancer burden among TN men, who experience respectively the 10th and 5th highest cancer incidence and mortality burden compared to men in all other US states. TN women experience the 31st highest cancer incidence burden and the 5th highest cancer mortality burden in the US.
- Lung cancer was the most frequently diagnosed cancer and the most common cause of cancer deaths among Tennesseans. The fact that lung cancer is the leading type of newly diagnosed cancer in TN could be largely due to the greater prevalence of smoking among Tennesseans compared to the national average. According to the 2020 TN Behavioral Risk Factor Surveillance Survey (BRFSS), 19.5% of TN adults 18 years of age and older were current smokers compared to only 15.5% nationally. Smoking is the major cause of at least 80% of all lung cancers in the US, but is also a known cause for many other cancer types including: oropharyngeal, laryngeal, colorectal, esophageal, stomach, urinary bladder, kidney, pancreatic, liver, and uterine cervix cancers. Overall, tobacco use is the most important, preventable cause of death in the U.S., according the Centers for Disease Control & Prevention (CDC). Note that several cancers caused by smoking are in the top 10 of all cancers impacting Tennesseans as newly diagnosed cases and/or cancer deaths. Through substantially reducing the prevalence of smoking, TN could potentially prevent considerable numbers of both new cancer cases and cancer deaths.

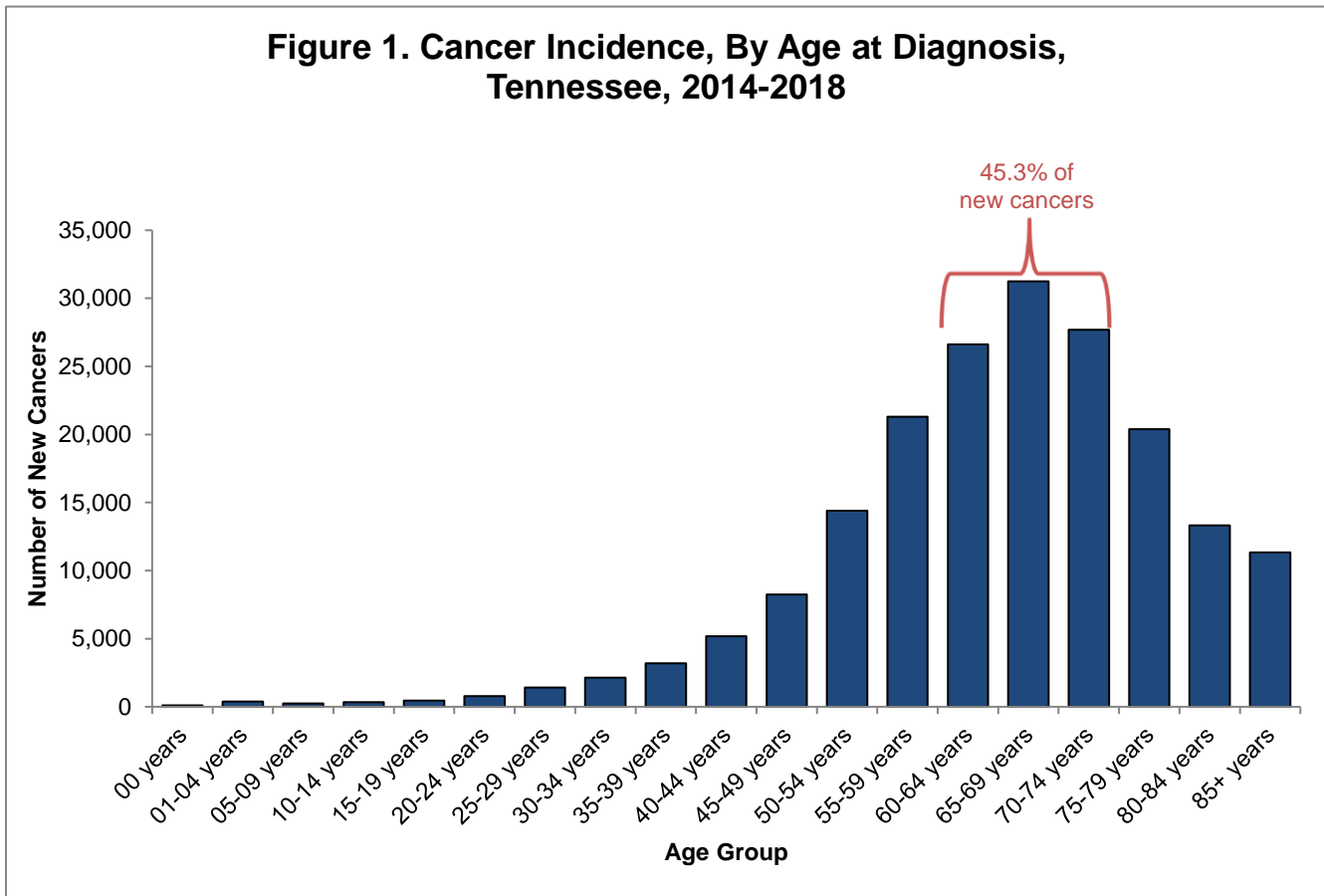
- The ten most common cancer types diagnosed among TN residents during the 2014-2018 period, in descending numbered order (counts in parentheses), were: lung (30,887 cases), female breast (25,944 cases), prostate (22,991 cases), colorectal (16,064 cases), urinary bladder (8,117 cases), melanoma of the skin (7,870 cases), kidney and renal pelvis (7,832 cases), non-Hodgkin Lymphoma (7,084 cases), corpus and uterus (5,529 cases) and oropharyngeal (5,416 cases).
- The ten most common cancer types principally leading to death among Tennesseans from 2014 to 2018, in descending numbered order (counts in parentheses), were: lung (21,047 deaths), colorectal (5,971 deaths), female breast (4,767 deaths), pancreas (4,576 deaths), prostate (3,080 deaths), leukemia (2,558 deaths), non-Hodgkin Lymphoma (2,347 deaths), liver (2,299 deaths), brain and other nervous system (1,850 deaths), and urinary bladder (1,698 deaths).
- Cancer also demonstrates geographic disparities in TN, see [Maps](#) and [Appendices](#). For all new cases of cancer (i.e., incidence) combined, the following are the top 10 TN counties in descending order by age-adjusted rate (rates in parentheses are displayed as cases per 100,000 population): Carroll County (561.3), Maury County (549.4), Hardeman County (546.5), Claiborne County (545.9), Rhea County (543.2), Benton County (541.6), Meigs County (540.8), Dickson County (527.3), McNairy County (525.3), and Marshall County (522.8). The following are the top 10 TN counties in descending order for overall cancer mortality by age-adjusted rate (rates in parentheses are displayed as deaths per 100,000 population): Overton County (241.9), Benton County (239.2), Carroll County (238.0), Scott County (236.8), Perry County (236.5), Grundy County (236.0), Trousdale County (226.4), Houston County (223.6), Hancock County (222.1), and Macon County (222.0). Regionally in TN, the rural Northwest Region (comprised of Benton, Carroll, Crockett, Dyer, Gibson, Henry, Lake, Obion, and Weakly counties) displays the highest overall cancer incidence rate (501.7 cases per 100,000 population) and the highest overall cancer mortality rate (200.0 deaths per 100,000 population) of all regions in TN.

EVERY DAY IN TENNESSEE...

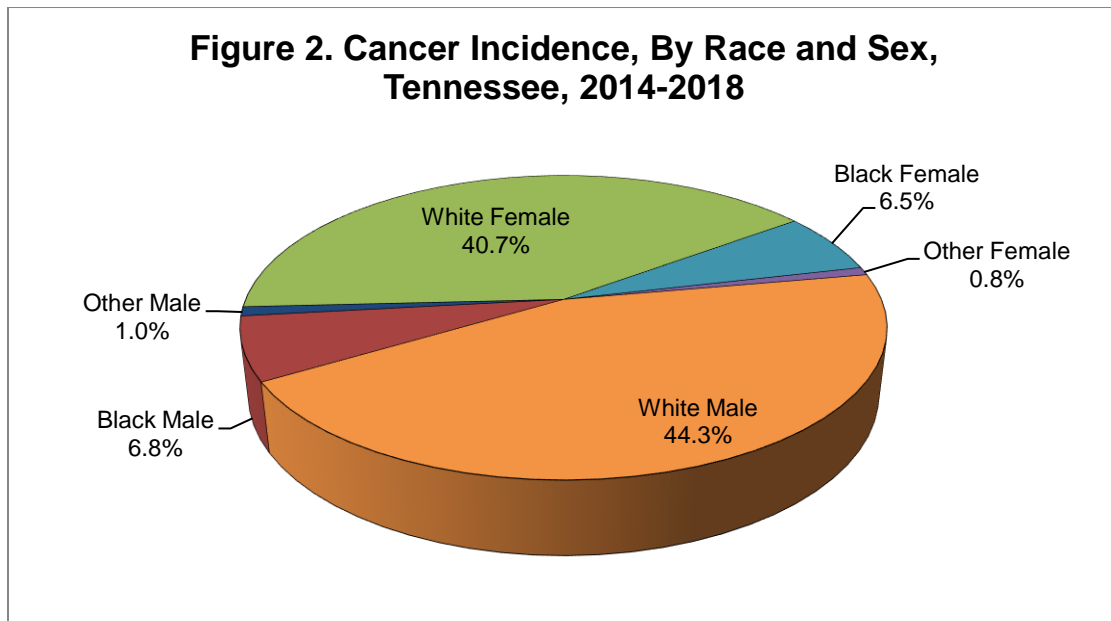
- ❖ **103** Tennesseans are diagnosed with cancer
- ❖ **17** Tennesseans are diagnosed with lung cancer
- ❖ **9** Tennesseans are diagnosed with colorectal cancer
- ❖ **4** Tennesseans are diagnosed with melanoma skin cancer
- ❖ **3** Tennesseans are diagnosed with pancreatic cancer
- ❖ **14** Tennessee women are diagnosed with breast cancer
- ❖ **13** Tennessee men are diagnosed with prostate cancer
- ❖ **39** Tennesseans die from cancer (#2 cause of death in Tennessee)
- ❖ **12** Tennesseans die from lung cancer
- ❖ **3** Tennesseans die from colorectal cancer
- ❖ **3** Tennesseans die from pancreatic cancer
- ❖ **3** Tennessee women die from breast cancer
- ❖ **2** Tennessee men die from prostate cancer
- ❖ **46** Tennesseans die from heart disease (#1 cause of death in Tennessee)
- ❖ **13** Tennesseans die from accidents (#3 cause of death in Tennessee)

DEMOGRAPHICS OF CANCER PATIENTS IN TENNESSEE, 2014-2018

Figure 1. Cancer Incidence, By Age at Diagnosis, Tennessee, 2014-2018

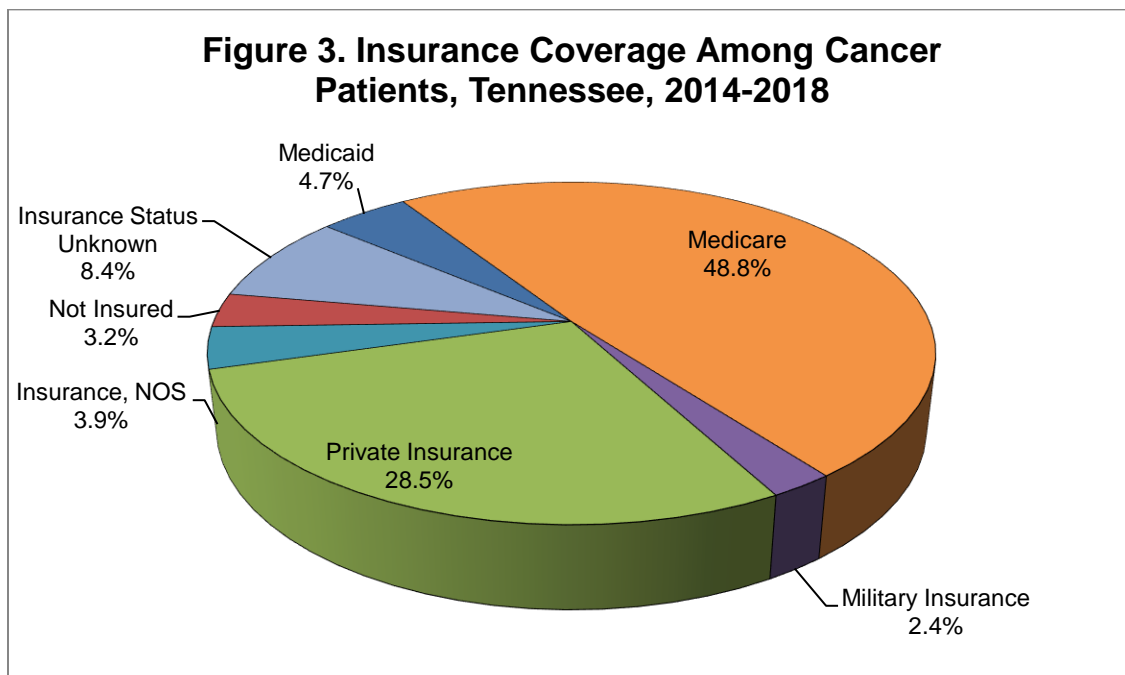


- Aging is the single most important risk factor for developing cancer overall, as well as for many individual cancer primary sites.
- Most cancer diagnoses in TN occur in the 65-69 age category.
- Approximately 45.3% of new cancer cases are diagnosed in Tennesseans aged 60 to 74 years (Figure 1).
- Although the risk of most cancer types increases as individuals grow older, there are some cancer types more common in younger people, e.g. leukemia and lymphoma.



From 2014 to 2018 (Figure 2):

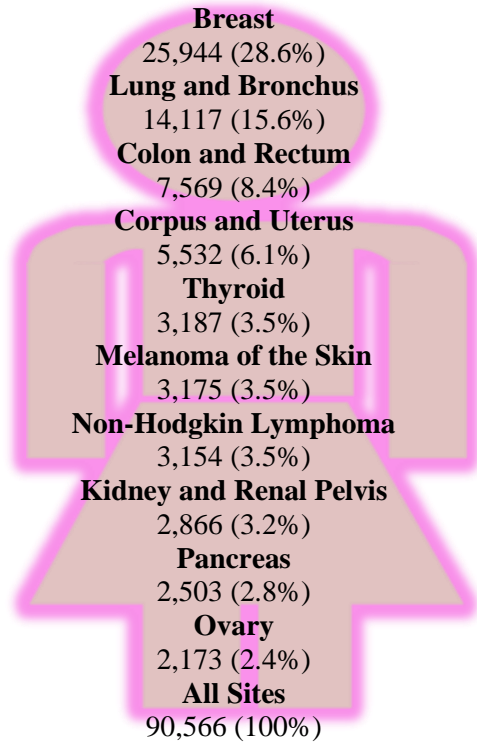
- 160,323 White individuals and 24,924 Black individuals were diagnosed with cancer in TN.
- White Tennesseans accounted for 85.0% of all new cancer diagnoses, while Black Tennesseans accounted for 13.3% of all new cancer diagnoses.



- Among those individuals with known insurance status, 88.4% of Tennesseans had insurance coverage at the time of their initial cancer diagnosis. For 3.9% of the insured, there was no additional information on type of insurance, hence these are labeled, Not Otherwise Specified (Insurance, NOS) (Figure 3).

COMMON CANCERS IN TENNESSEE BY GENDER, 2014-2018

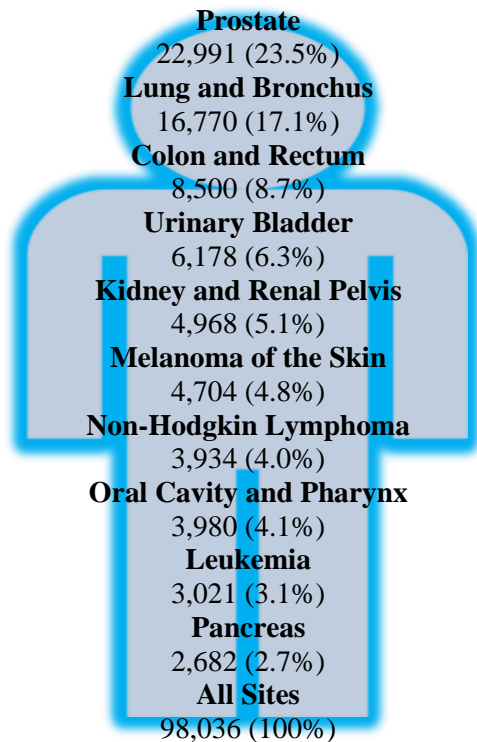
New Cancers in Women



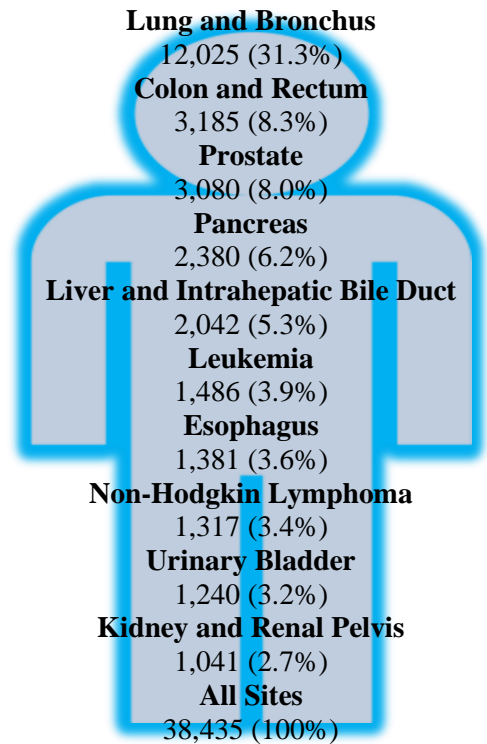
Cancer Deaths in Women



New Cancers in Men

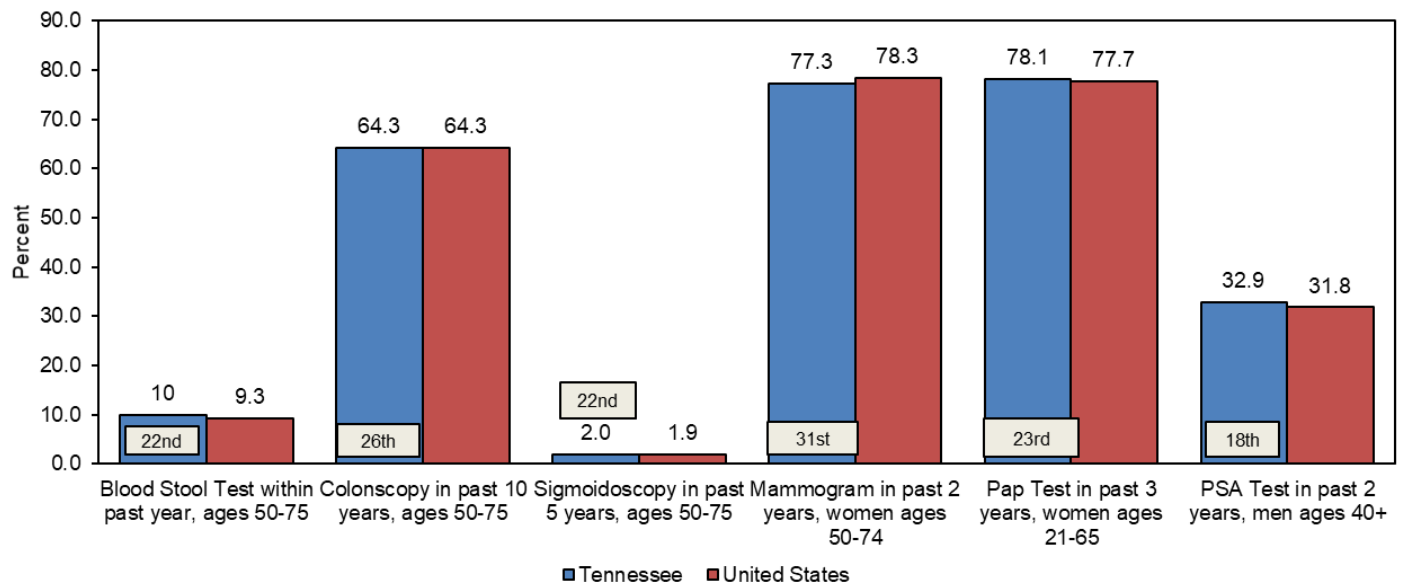


Cancer Deaths in Men



CANCER SCREENING AND RISK FACTOR PREVALENCE

Figure 4. Prevalence of Screening, Adults 18+ Years of Age, Tennessee and the United States

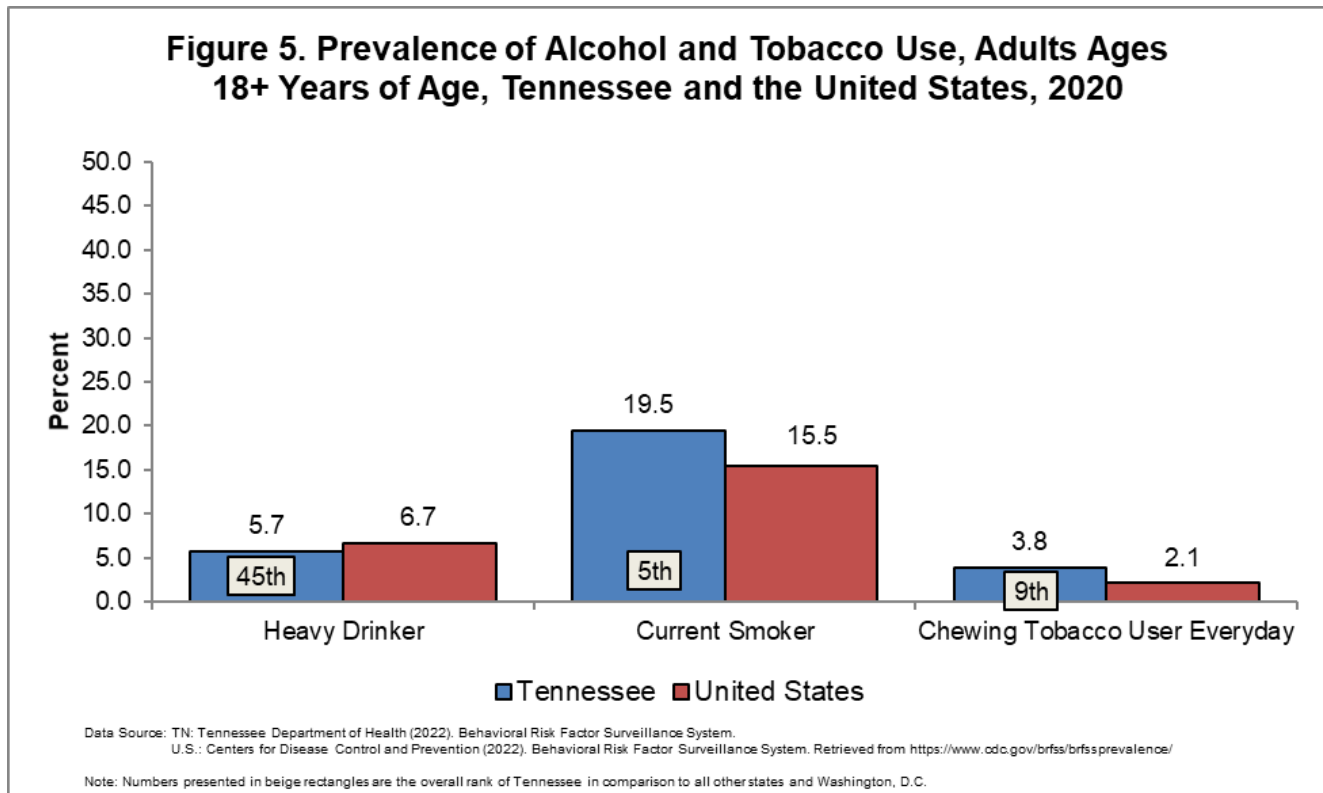


Note: Numbers presented in beige rectangles are the overall rank of Tennessee in comparison to all other states and Washington, D.C.

Source: Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, 2022. United States statistics include all US states and District of Columbia.

- For the data in the bar chart above, colonoscopy and sigmoidoscopy data were updated to the 2018 survey year; however, all other data presented was updated for the 2020 survey year.
- 10% of the TN population, 50 to 75 years of age, indicated they received a blood stool test within the past year when surveyed in 2020, which was the 22nd highest percentage in the US.
- 64.3% of Tennesseans between 50 and 75 years of age had a colonoscopy in the past ten years, which was the twenty-sixth highest percentage (tied with Louisiana).
- 2.0% of Tennesseans between 50 and 75 years of age received a sigmoidoscopy in the past 5 years, which was the twenty-second highest percentage in the US (tied with Oregon).
- Nearly 80% (77.3%) of TN women between 50 and 74 years of age had a mammogram within the past two years, which was the thirty-first highest percentage in the US.
- Roughly four out of five (78.1%) TN women between 21 and 65 years of age had a pap test in the past three years, which was the twenty-third highest percentage in the US.
- 32.9% of TN men 40 years of age and older received a prostate-specific antigen (PSA) test within the past two years, which was the eighteenth highest percentage in the US.

CANCER SCREENING AND RISK FACTOR PREVALENCE, CONTINUED

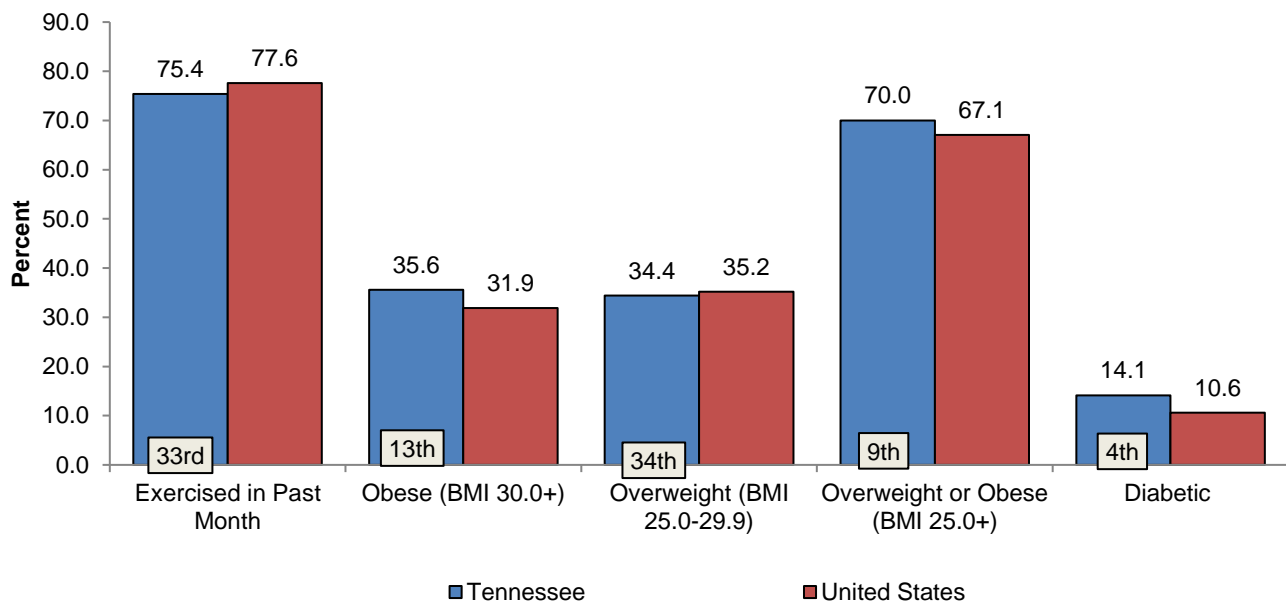


In 2020 (Figure 5):

- 5.7% of Tennesseans identified themselves as heavy drinkers (i.e., men having more than 14 alcoholic drinks per week and women having more than 7 drinks per week), which is the forty-fifth highest percentage (tied with Virginia) in the US.
- 19.5% of Tennesseans were current smokers, which is the fifth highest percentage in the US.
- 3.8% of Tennesseans chewed tobacco everyday, which was the ninth highest percentage nationally.

CANCER SCREENING AND RISK FACTOR PREVALENCE, CONTINUED

Figure 6. Prevalence of Risk Factors, Adults 18+ Years of Age, Tennessee and the United States, 2020



Data Source: TN: Tennessee Department of Health (2022). Behavioral Risk Factor Surveillance System.

U.S.: Centers for Disease Control and Prevention (2022). Behavioral Risk Factor Surveillance System. Retrieved from <https://www.cdc.gov/brfss/brfssprevalence/>

Note: Numbers presented in beige rectangles are the overall rank of Tennessee in comparison to all other states and Washington, D.C.

Source: Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, 2020.

In 2020 (Figure 6):

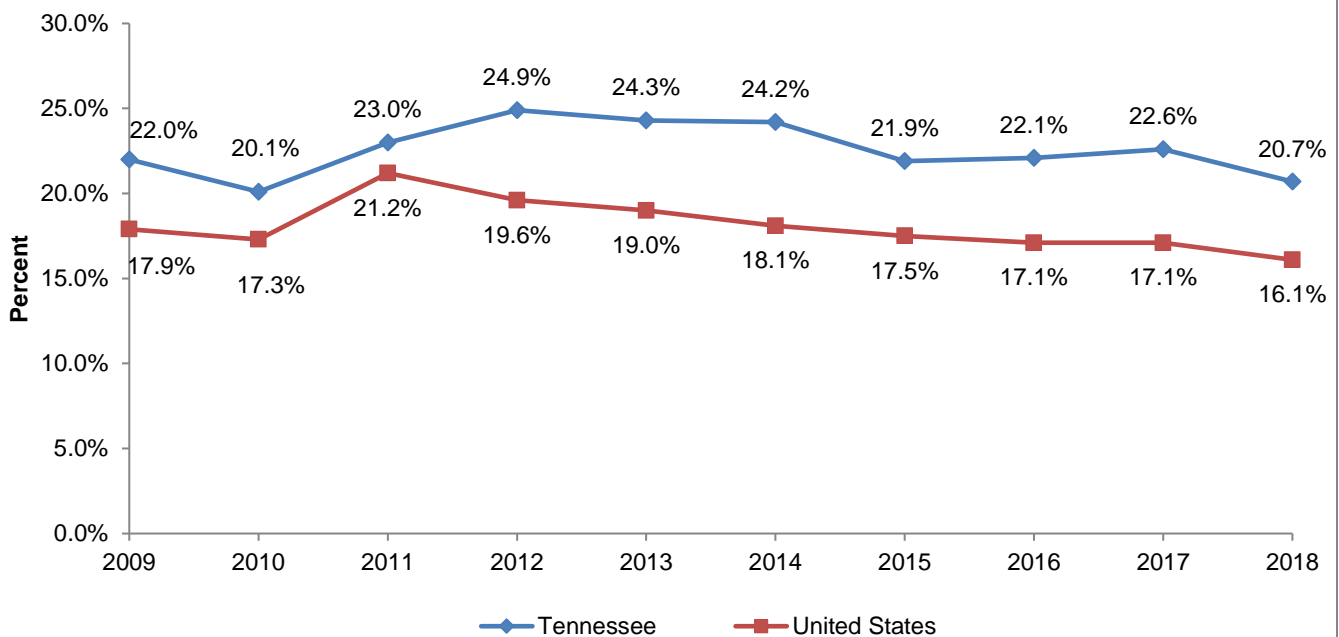
- About 3 out of every 4 (75.4%) Tennesseans had participated in some form of physical activity, either work-related or during leisure time, in the past month, which was the thirty-third highest physical activity participation prevalence in comparison to the other states and the District of Columbia (D.C.).
- 35.6% of Tennesseans and 31.9% of Americans were considered obese with a body mass index (BMI) of 30 or more.
- In comparison with other states and D.C. in the US, TN had the thirteenth largest obese population.
- About one out of every three Tennesseans was considered overweight.
- Roughly two out of every three Tennesseans was considered either overweight or obese.
- In comparison with the other states and D.C. in the US, TN had the ninth highest percentage of overweight or obese individuals.
- Roughly one out of every seven Tennesseans has diabetes, which is the fourth highest percentage in the US.

CIGARETTE SMOKING PREVALENCE IN TENNESSEE

According to the TN and US BRFSS, in 2018, about 1 out of every 5 Tennesseans (20.7%) identified themselves as current smokers while 16.1% of the US population identified themselves as current smokers (Figure 7). Consequently, the state of TN had the fifth highest population of current smokers in the US. While the overall percentage of current smokers in TN has decreased by 14.5% from 2014 to 2018, the state of TN had the fifth highest lung cancer incidence rate (74.0 cases per 100,000; as reported on the United States Cancer Statistics website) in the US during the same time period.

Smoking can cause cancer almost anywhere in the body. Nearly a third (32.9%) of cancer deaths were attributable to cigarette smoking in Tennessee in 2014 (Lortet-Tieulent, 2016). Approximately \$292.1 million is spent each year by the tobacco industry in marketing expenditures in Tennessee, which equates to roughly 3.0% of the annual tobacco industry’s marketing expenditures nationwide (U.S. Federal Trade Commission, 2019). According to the 2019 Tennessee Youth Risk Behavior Survey (the most recent data available), among TN high school students 6.0% of girls and 8.1% of boys indicated they had smoked cigarettes or cigars on at least 1 day during the 30 days prior to being surveyed. Furthermore, 1.5% of all high school students in TN stated they had used cigarettes on a daily basis for the 30 days prior to being surveyed. Unfortunately, the use of electronic vaping products among TN high school students is even more common than tobacco-based products, with 22.4% of males and 21.7% of females indicating they had used an electronic vaping product on at least 1 day during the 30 days prior to being surveyed. Among TN high school students, 6.1% of males and 4.9% of females indicated they had used an electronic vaping product on a daily basis for the 30 days prior to being surveyed.

Figure 7. Prevalence of Current Cigarette Use Among Adults, Tennessee and the United States, 2009-2018



Data Source: TN: Tennessee Department of Health (2022). Behavioral Risk Factor Surveillance System.
U.S.: Centers for Disease Control and Prevention (2022). Behavioral Risk Factor Surveillance System. Retrieved from <https://www.cdc.gov/brfss/brfssprevalence/>

SMOKING AND CANCER

WHY ARE CIGARETTES BAD FOR YOUR BODY?

Tobacco smoke is made up of over 7,000 chemicals and at least 250 of those chemicals are harmful to the body. Furthermore, about 70 of the chemicals found in cigarette smoke are linked to cancer development (NCCDPHP, 2017). Each time an individual smokes, these chemicals damage the body in ways that may lead to disease and death.

Figure 8. Smoking Risks



Almost **ONE** in 6 American adults currently smoke cigarettes.



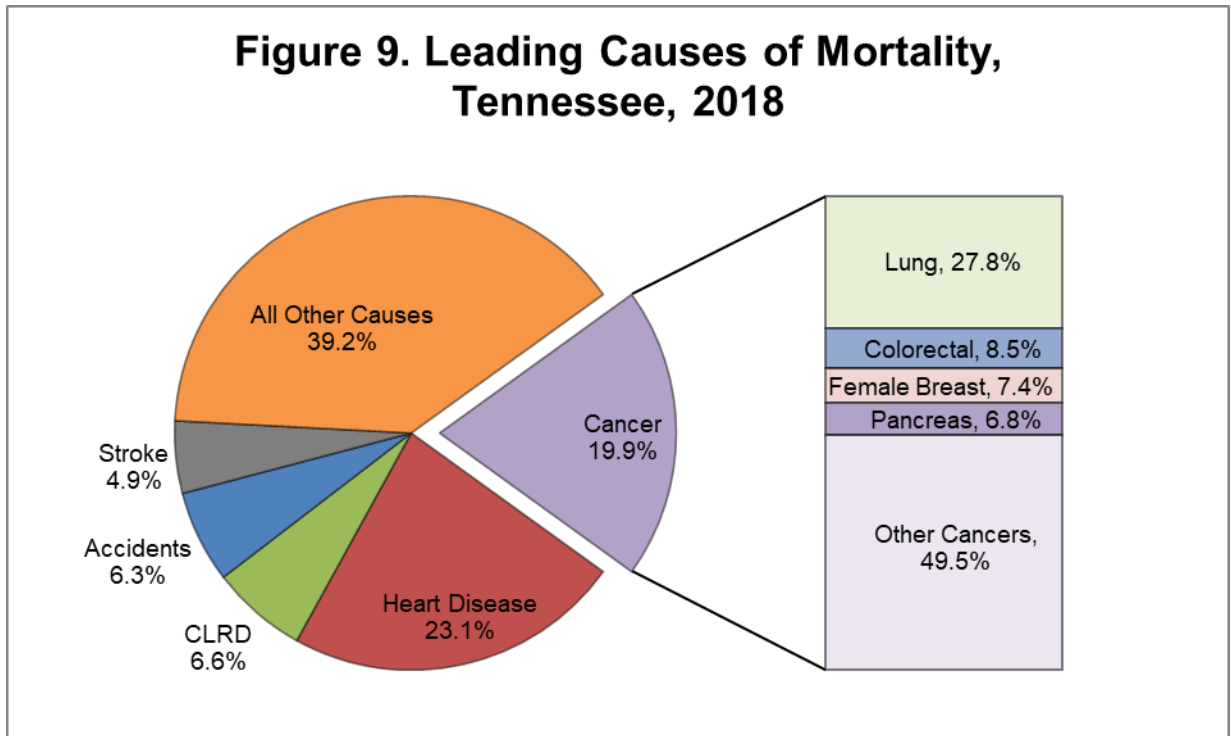
Nearly **ONE** in 5 deaths are attributed to cigarette smoking

HOW IS SMOKING RELATED TO CANCER?

Once tobacco smoke has damaged cells, they may grow uncontrollably and become cancer. Since cells are tiny, it may be years before a lump or tumor is discovered. DNA is the cell's "instruction manual" and controls a cell's normal operations. Poisons in cigarette smoke weaken tumor fighters, causing cells to multiply out of control and develop into cancers. Therefore, smoking not only causes cancer, but blocks your body's ability to fight it (U.S. Department of Health & Human Services, 2010).

IMPACT OF SMOKING

People who smoke cigarettes are 15 to 30 times more likely to get lung cancer or die from lung cancer than people who do not smoke. Even smoking a few cigarettes a day or smoking occasionally increases the risk of lung cancer, and the more years a person smokes and the more cigarettes smoked each day, the more risk increases. Tobacco use accounts for at least 30% of all cancer deaths, causing 87% of lung cancer deaths in men, and 70% of lung cancer deaths in women (American Cancer Society, 2015). Smokers are also more likely than nonsmokers to develop heart disease and stroke. Estimates show smoking increases coronary heart disease risk by 2 to 4 times and for stroke 2 to 4 times. Men are 25 times more likely and women are 25.7 times more likely to develop lung cancer (U.S. Department of Health and Human Services, 2014). If nobody smoked, one out of every three cancer deaths in the US may be potentially preventable (U.S. Department of Health and Human Services, 2010).

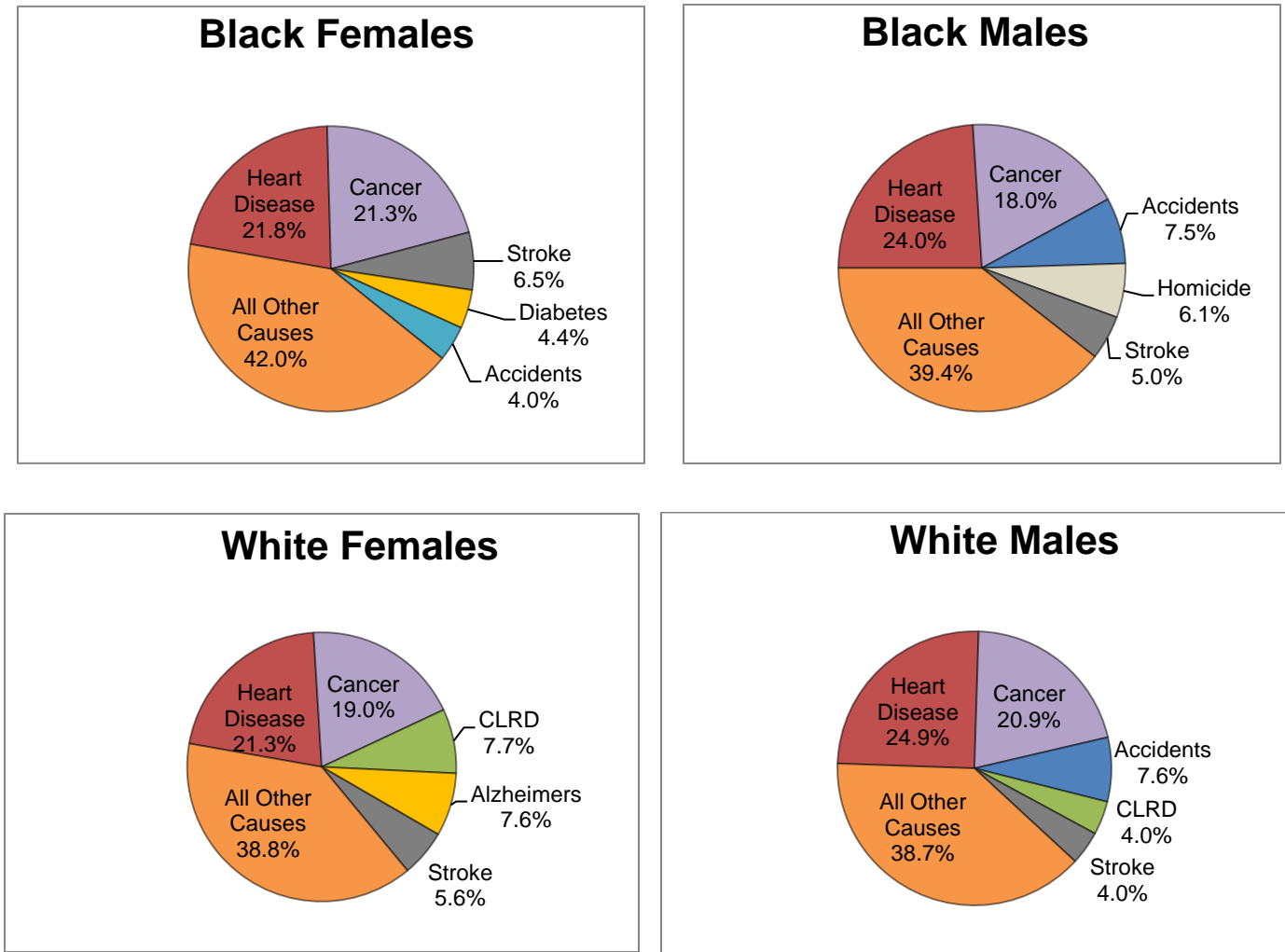


*CLRD represents all Chronic Lower Respiratory Diseases combined.

In 2018 (Figure 9):

- Following heart disease (16,417 deaths), cancer (14,141 deaths) was the second leading cause of death among Tennesseans.
- Lung cancer (3,935 deaths) was the leading cause of cancer deaths among Tennesseans followed by colorectal cancer (1,196 deaths), female breast cancer (1,049 deaths), and pancreatic cancer (965 deaths).

Figure 10. Leading Causes of Cancer Mortality, By Race and Sex, Tennessee, 2018



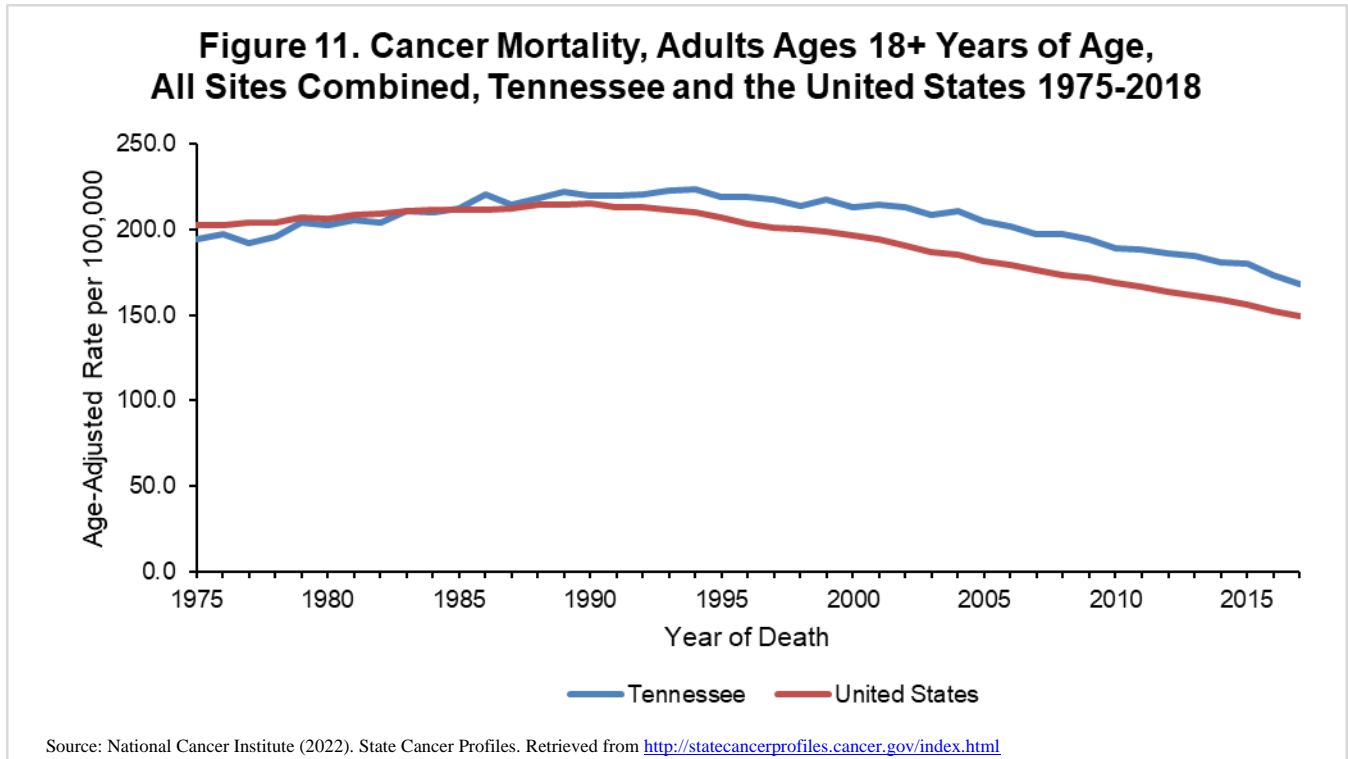
*CLRD represents all Chronic Lower Respiratory Diseases combined.

In 2018 (Figure 10):

- Following heart disease, cancer was the second leading cause of death among all TN cohorts (i.e., Black men, Black women, White men, and White women).

TENNESSEE IN COMPARISON TO THE UNITED STATES

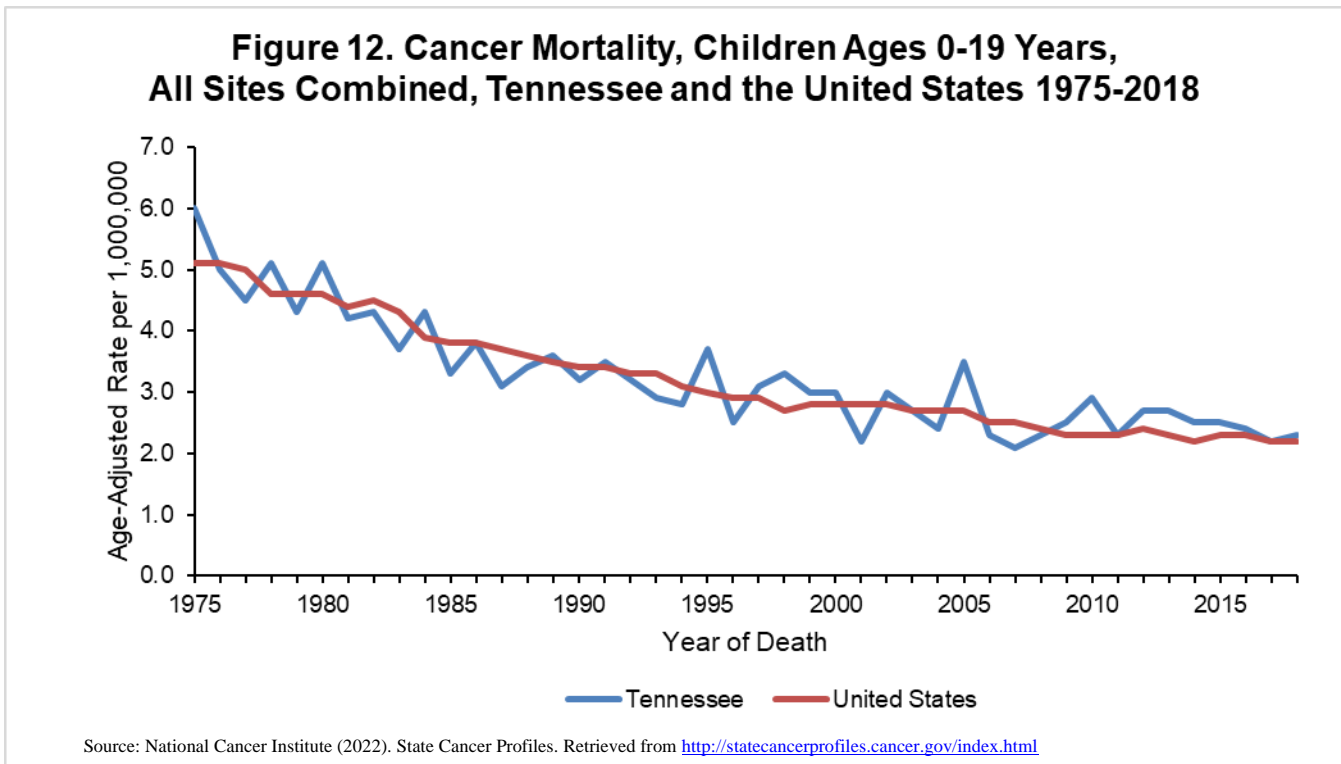
CANCER MORTALITY HISTORICAL TREND, 1975-2018



From Figure 11:

- In 1975, the cancer mortality rate in the US was 5.2% higher than the TN rate, and in 2018, the cancer mortality rate in TN was 12.7% higher than the US rate.
- The cancer mortality rate peaked in the US in 1991 at 215.1 deaths per 100,000 Americans and peaked in TN in 1995 at 223.3 deaths per 100,000.
- From 1975 to 2018, the cancer mortality rate among Tennesseans fell by 11.1%, while the cancer mortality rate among Americans fell by 25.1%.
- From 2014 to 2018, the cancer mortality rate among Tennesseans fell by 8.9%, whereas the cancer mortality rate among Americans fell by 7.6%.

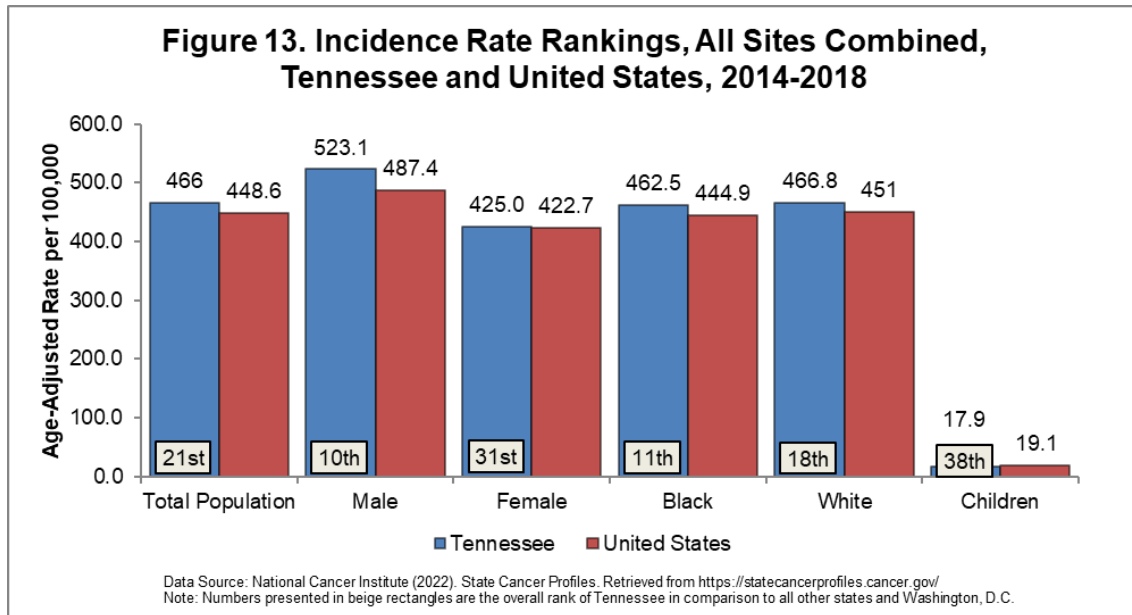
Note: Rates presented in the figures on pages 25-30 were retrieved from State Cancer Profiles and will differ from rates presented elsewhere in this report due to the availability of more current data.



From Figure 12:

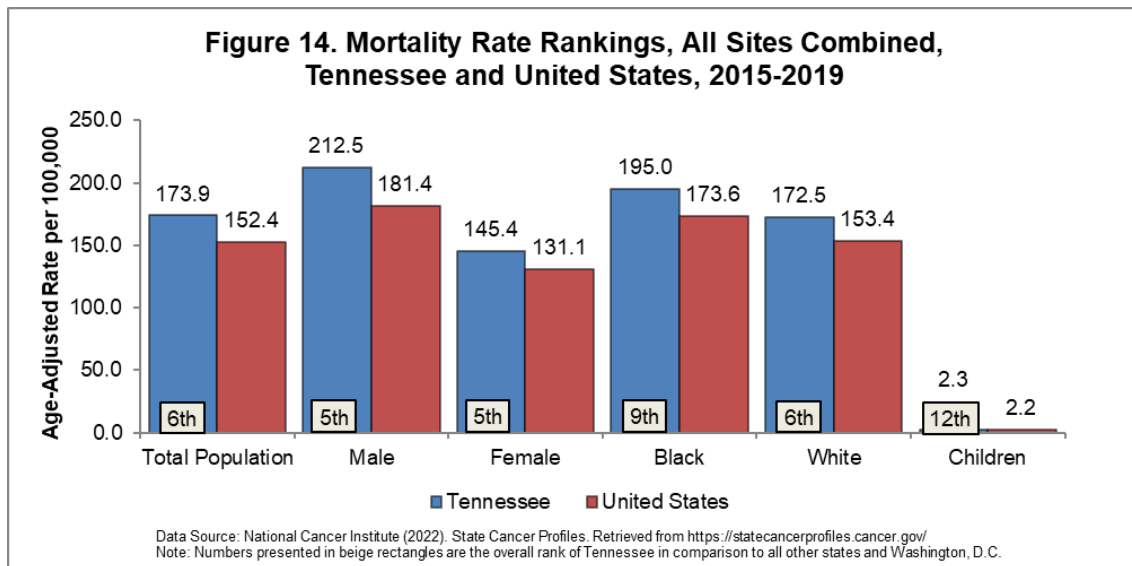
- In 1975, the cancer mortality rate in the TN was 17.6% higher than the US rate and in 2018, the cancer mortality rates for TN and the US were very comparable.
- The cancer mortality rate peaked in the US in 1975 at 5.1 deaths per 1,000,000 children, and peaked in TN in 1975 at 6.0 deaths per 1,000,000 children.
- From 1975 to 2017, the cancer mortality rate among TN children fell by 61.7%, while the cancer mortality rate among Americans fell by 56.9%.
- From 2014 to 2018, the cancer mortality rate among TN children fell by 8.0%, whereas the cancer mortality rate among American children did not fall at all.

CANCER INCIDENCE AND MORTALITY RANKINGS IN TENNESSEE



From 2014 to 2018 (Figure 13):

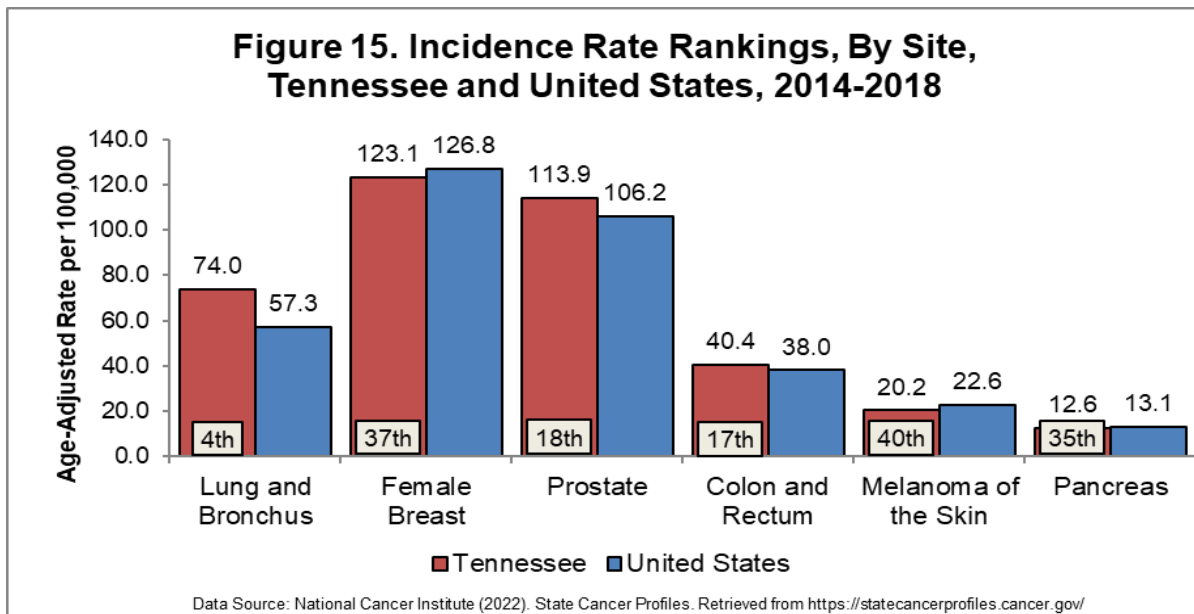
- TN had the 21st highest cancer incidence rate among all US states. Please note that for figures 13-16, all rankings are presented as the rank of TN versus the 50 states and D.C. (See Technical Notes)
- All Tennesseans, TN blacks, TN whites, and men experienced statistically significantly higher cancer incidence rates than the corresponding US incidence rates.



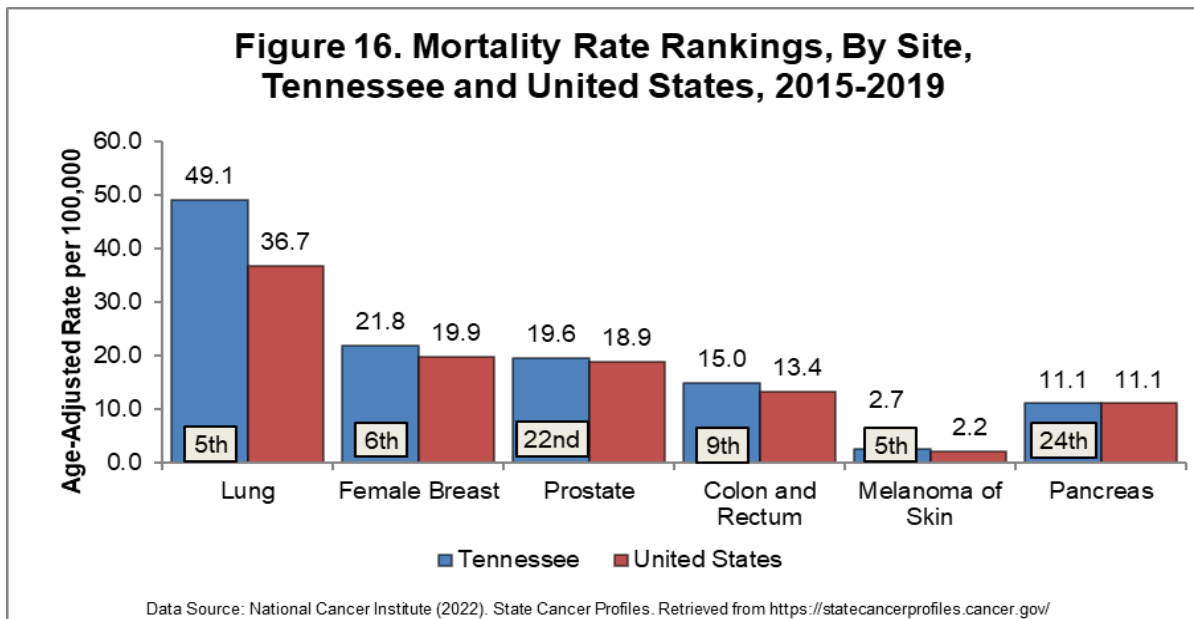
From 2015 to 2019 (Figure 14):

- TN had the sixth highest cancer mortality rate among all US states.
- All Tennesseans, Whites, Blacks, men, and women experienced statistically significantly higher cancer mortality rates than the corresponding US mortality rates.

CANCER INCIDENCE AND MORTALITY RANKINGS IN TENNESSEE, 2014-2018, CONTINUED



- The cancer incidence rates in TN during 2014-2018 for lung cancer, prostate cancer, and colorectal cancer were statistically significantly higher than the US site-specific cancer incidence rates.



- In TN during 2015-2019, the cancer mortality rates for lung cancer, female breast cancer, colorectal cancer, and melanoma of the skin cancer were statistically significantly higher than the US site-specific cancer mortality rates.

CANCER INCIDENCE AND MORTALITY IN TENNESSEE, 2014-2018

ALL SITES COMBINED

Incidence

During 2014-2018:

- There were 188,602 new cancer cases diagnosed in TN residents.
- Black Tennesseans accounted for 13.2% of all new cancer cases and comprised about 17.1% of the total, single-race TN population (2016 American Community Survey). During the same time period, white Tennesseans accounted for 85.0% of all new cancer cases and comprised about 79.5% of the total, single-race TN population (2016 American Community Survey).
- TN men accounted for 52.0% of all new cancer cases and comprised 48.8% of the TN population (2016 American Community Survey). TN women accounted for 48.0% of all new cancer cases and comprised 51.2% of the TN population (2016 American Community Survey).
- TN children < 20 years of age accounted for 0.8% of all new cancer cases and comprised 25.2% of the TN population (2016 American Community Survey).

Mortality

From 2014-2018:

- Cancer was the second leading cause of death in TN accounting for 71,221 deaths.
- Black Tennesseans accounted for 14.0% of all cancer deaths. During the same time period, White Tennesseans accounted for 85.0% of all cancer deaths.
- TN men accounted for 54.0% of all cancer deaths. During the same time period, TN women accounted for 46.0% of all cancer deaths.

Health Disparities

- TN men had statistically significantly higher cancer incidence and mortality rates than women. Black Tennesseans had statistically significantly higher cancer mortality rates than White Tennesseans.
- Black Tennesseans were more likely to be diagnosed with cancer in the late stages (i.e., regional and distant stages) than White Tennesseans.
- TN men were more likely to be diagnosed with cancer in the late stages than TN women.

CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, CONTINUED

TABLE 1. ALL SITES COMBINED CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2014-2018

		Incidence				Mortality				M:I
Gender*	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio‡
Both	All Races†	188,602	475.6	473.4	477.8	71,221	179.4	178.0	180.7	0.38
	Black	24,924	465.0	459.0	471.1	9,950	201.6	197.5	205.8	0.43
	White	160,323	469.3	466.9	471.6	60,450	174.5	173.1	176.0	0.37
Female	All Races†	90,566	434.4	431.5	437.3	32,786	150.0	148.3	151.6	0.35
	Black	12,191	404.2	396.8	411.6	4,835	166.6	161.8	171.5	0.41
	White	76,804	432.6	429.4	435.8	27,544	145.7	143.9	147.4	0.34
Male	All Races†	98,036	533.1	529.6	536.5	38,435	219.6	217.3	221.9	0.41
	Black	12,733	559.2	548.5	569.9	5,115	260.2	252.3	268.2	0.47
	White	83,519	520.6	517.0	524.3	32,906	213.1	210.8	215.5	0.41
Age at Diagnosis or Death										
	0-19	1,502	18.4	17.5	19.4	196	2.4	2.1	2.8	0.13
	20-44	12,694	129.4	127.1	131.7	1,850	19.2	18.3	20.1	0.15
	45-64	70,506	744.1	738.5	749.8	20,766	213.5	210.6	216.5	0.29
	65+	103,900	2040.3	2027.7	2052.9	48,409	983.3	974.4	992.2	0.48
Year of Diagnosis or Death										
	2014	35,361	464.3	459.4	469.3	14,153	186.3	183.2	189.5	0.40
	2015	37,310	480.4	475.5	485.5	14,174	182.7	179.7	185.8	0.38
	2016	37,789	477.1	472.2	482.1	14,464	182.8	179.7	185.8	0.38
	2017	39,249	484.6	479.7	489.6	14,291	175.6	172.6	178.5	0.36
	2018	38,893	471.2	466.4	476.1	14,139	170.4	167.5	173.3	0.36

^Statistic not displayed due to fewer than 11 cases.

*Excludes hermaphrodites and transsexuals.

**Total counts are from 2014 to 2018.

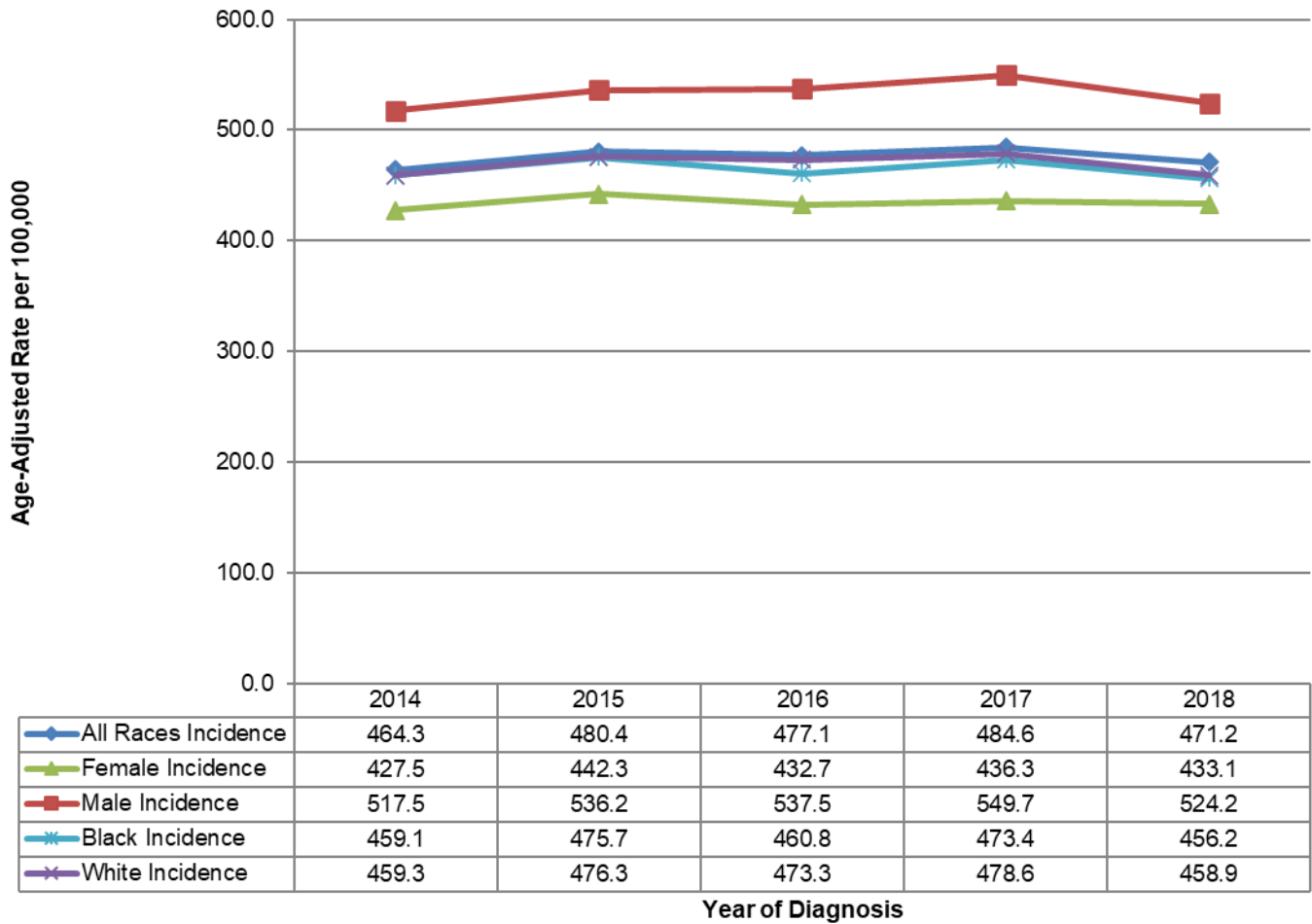
***Rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84,85+).

Rates are for invasive cancer only (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

†Includes Blacks, Whites, other races, and those missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

Figure 17. Cancer Incidence, All Sites Combined, By Gender and Race, Tennessee, 2014-2018

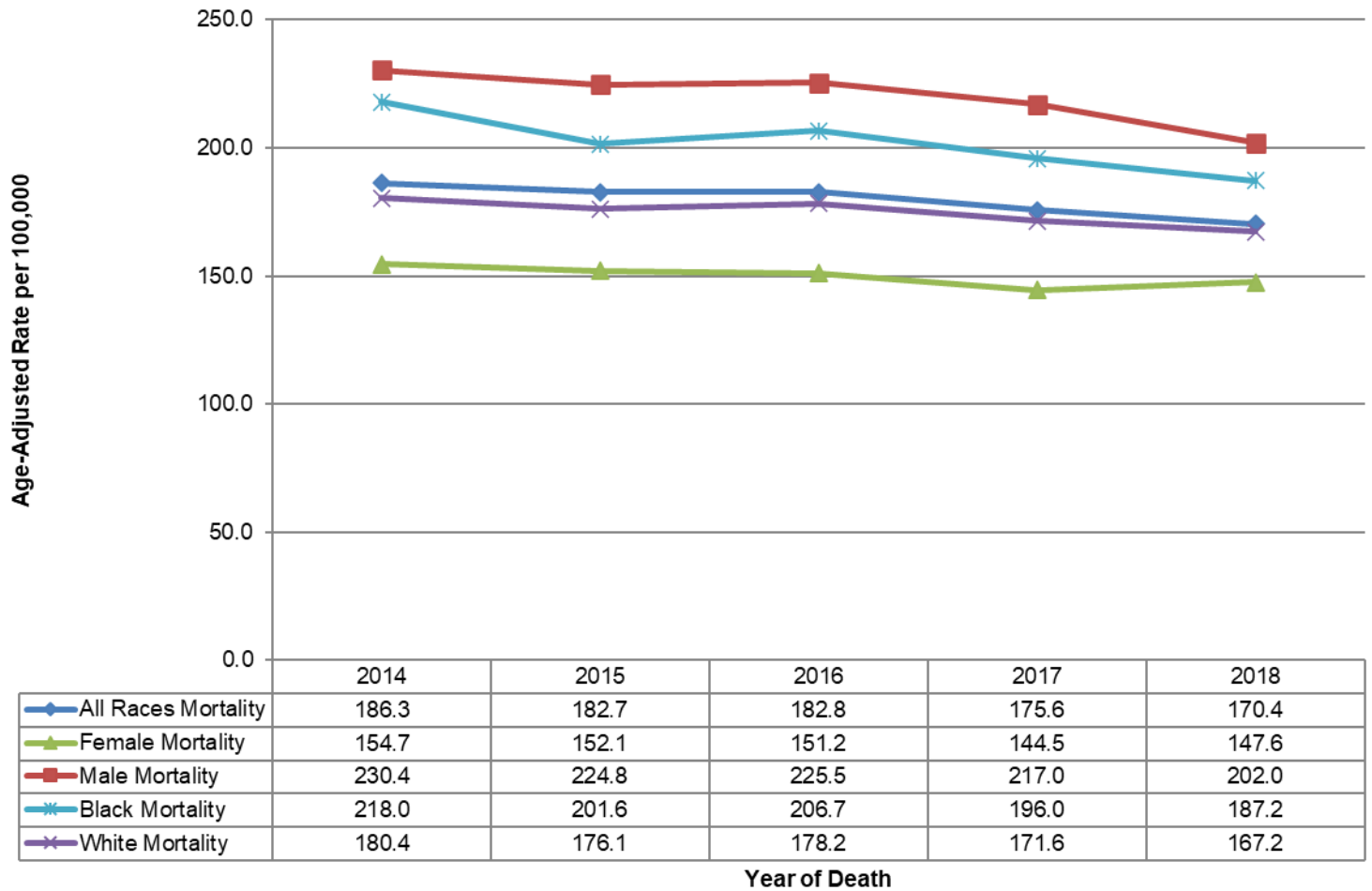


From 2014 to 2018 in TN (Figure 17), the cancer incidence rate:

- *Increased* by 0.4% per year.
- *Increased* by 0.5% among men and 0.1% among women per year.
- *Decreased* by 0.2% among Blacks per year and there was no change among Whites.

*Statistically significant

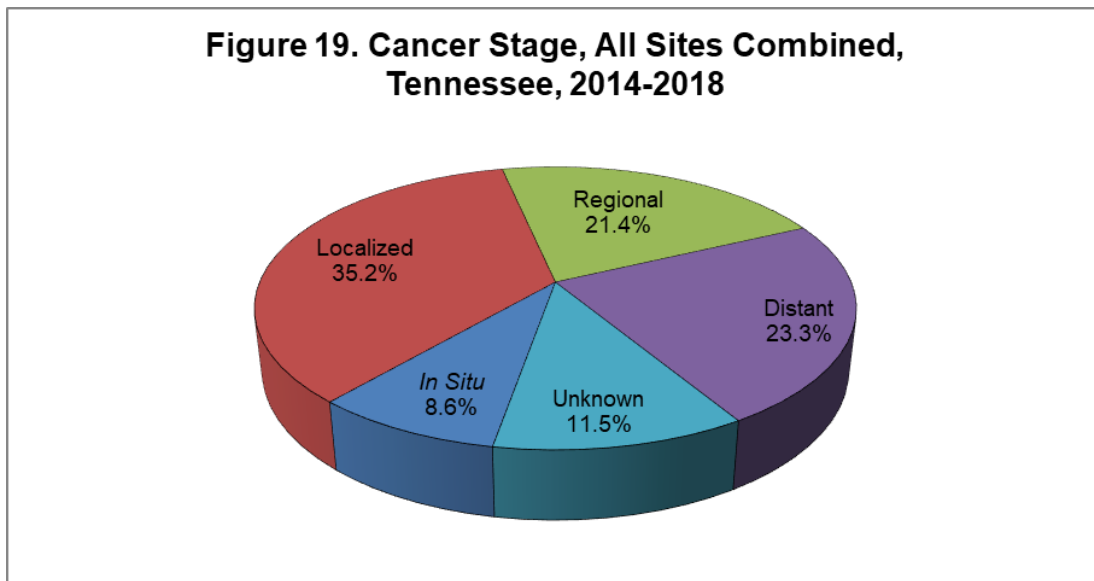
Figure 18. Cancer Mortality, All Sites Combined, By Gender and Race, Tennessee, 2014-2018



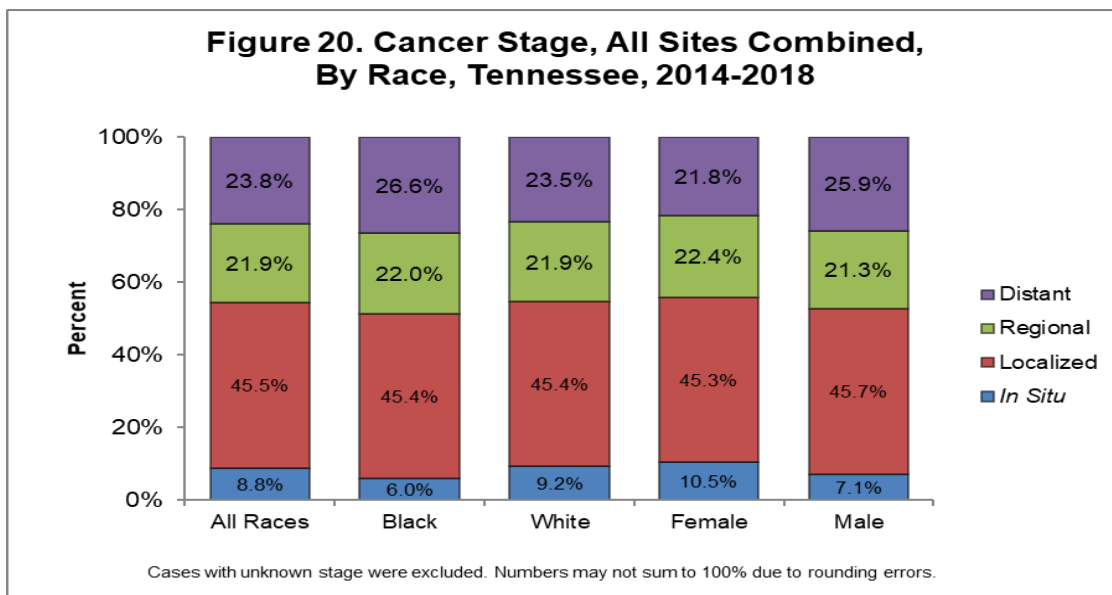
From 2014 to 2018 in TN, the cancer mortality rate (Figure 18):

- *Decreased 2.2% per year** among all races and both sexes combined.
- *Decreased* among men by 2.9% per year*.
- *Decreased* among Whites by 1.8% per year*.
- *Decreased* among Blacks 3.3% per year*.
- *Decreased* among women 1.4% per year.

*Statistically significant



- Including cancers with unknown stage, 43.8% of all new cancer cases were confined to the organ of origin, otherwise known as *in situ* or localized stage, when treatment is usually much more effective; 21.4% were diagnosed at regional stage; and 23.3% at a distant stage (Figure 19).



From 2014 to 2018 (Figure 20):

- Blacks (48.6%) were more likely to be diagnosed with late stages of cancer, regional and distant stage, compared to Whites (45.4%), and this difference was statistically significant, which may partially explain why Blacks have a significantly higher cancer mortality rate compared to Whites.
- In TN, men (47.2%) were more likely to be diagnosed with late stages of cancer compared to women (44.2%) and this difference was statistically significant, which may partially explain why men have a significantly higher cancer mortality rate compared to women.

MOST COMMON CANCERS IN TENNESSEE, 2014-2018

LUNG CANCER

Incidence

- During 2014-2018, TN had the 4th highest lung cancer incidence rate in the US, tied with Mississippi based on data from the State Cancer Profiles website.
- From 2014 through 2018, lung cancer was the leading cause of cancer incidence in TN, which accounted for 16.4% of all new cancers. During this time period, there were 30,887 cases of lung cancer diagnosed among Tennesseans, resulting in an age-adjusted rate of 75.2 cases per 100,000 Tennesseans.
- The lung cancer incidence rate remained relatively stable during the time period despite a non-statistically significant increase from 2014 to 2015.
- During 2014-2018, Black Tennesseans accounted for 11.3% of all new lung cancer cases and comprised about 17.1% of the total, single-race TN population (2016 American Community Survey). During the same time period, White Tennesseans accounted for 87.7% of all new lung cancer cases and comprised about 79.5% of the total, single-race TN population (2016 American Community Survey).
- During 2014-2018, TN men accounted for 54.3% of all new lung cancer cases and comprised 48.8% of the TN population (2016 American Community Survey). TN women accounted for 45.7% of all new lung cancer cases and comprised 51.2% of the TN population (2016 American Community Survey).

Mortality

- From 2014 to 2018, TN had the 5th highest lung cancer mortality rate in the US during 2014-2018.
- From 2014 to 2018, 21,047 Tennesseans died of lung cancer. The mortality-to-incidence ratio for lung cancer among Tennesseans was 0.69, making it one of the deadliest cancers in TN. The lung cancer mortality rate statistically significantly decreased on average by 5.5% per year from 2014 to 2018.
- From 2014-2018, Black Tennesseans accounted for 11.9% of all lung cancer deaths. During the same time period, White Tennesseans accounted for 87.2% of all lung cancer deaths.
- From 2014 to 2018, TN men accounted for 54.3% of all lung cancer deaths. During the same time period, TN women accounted for 45.7% of all lung cancer deaths.

Health Disparities

- Overall, in TN, men had statistically significantly higher lung cancer incidence and mortality rates than women. Whites had statistically significantly higher lung cancer incidence rates than Blacks.
- Black Tennesseans (77.8%) were more likely to be diagnosed with lung cancer in the late stages (i.e., regional and distant) than White Tennesseans (74.0%), and this finding was statistically significant.
- Men in TN (76.5%) were more likely to be diagnosed with lung cancer in the late stages than women in TN (72.1%) and this finding was statistically significant.

Screening

- In recent years, the National Lung Screening Trial has illustrated a lung cancer screening test may help lower the risk of dying from this disease in certain individuals (NLSTRT, 2011). Thus, the US Preventive Services Taskforce has given low-dose computed tomography screening for lung cancer a grade of “B” for certain individuals: adults aged 50-80 years with a 20 pack-year history of smoking and who currently smoke or quit smoking within the past 15 years. It should be noted a pack year is defined as smoking an average of 1 pack of cigarettes per day for 1 year.

LUNG AND BRONCHUS CANCER, CONTINUED

TABLE 2. CANCER INCIDENCE AND MORTALITY, LUNG AND BRONCHUS, TENNESSEE 2014-2018

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Both*	All Races†	30,887	75.2	74.4	76.1	21,047	51.9	51.2	52.6	0.69
	Black	3,493	67.5	65.2	69.9	2,500	50.4	48.3	52.5	0.75
	White	27,099	75.8	74.9	76.7	18,352	51.8	51.0	52.6	0.68
Female	All Races†	14,117	63.3	62.2	64.4	9,022	40.5	39.7	41.4	0.64
	Black	1,524	50.7	48.1	53.4	1,037	35.9	33.6	38.2	0.71
	White	12,438	64.7	63.6	65.9	7,889	41.0	40.1	41.9	0.63
Male	All Races†	16,770	90.9	89.5	92.3	12,025	66.7	65.5	68.0	0.73
	Black	1,969	93.0	88.6	97.7	1,463	72.9	68.9	77.2	0.78
	White	14,661	90.2	88.7	91.7	10,463	65.7	64.4	67.0	0.73
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	375	4.0	3.6	4.4	187	2.0	1.7	2.3	0.50
	45-64	10,163	102.8	100.7	104.8	6,243	62.9	61.3	64.5	0.61
	65+	20,343	403.0	397.4	408.6	14,614	293.9	289.1	298.8	0.73
Year of Diagnosis or Death										
	2014	5,910	75.8	73.8	77.8	4,429	57.2	55.5	59.0	0.75
	2015	6,320	79.2	77.3	81.2	4,341	54.8	53.2	56.5	0.69
	2016	6,085	74.0	72.2	76.0	4,341	54.0	52.4	55.6	0.73
	2017	6,319	75.2	73.3	77.1	4,001	48.0	46.5	49.6	0.64
	2018	6,253	72.1	70.3	74.0	3,935	46.0	44.5	47.5	0.64

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude hermaphrodites, transsexuals, and cases missing county at diagnosis or county at death.

**Total counts are from 2014 to 2018.

***Rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84,85+).

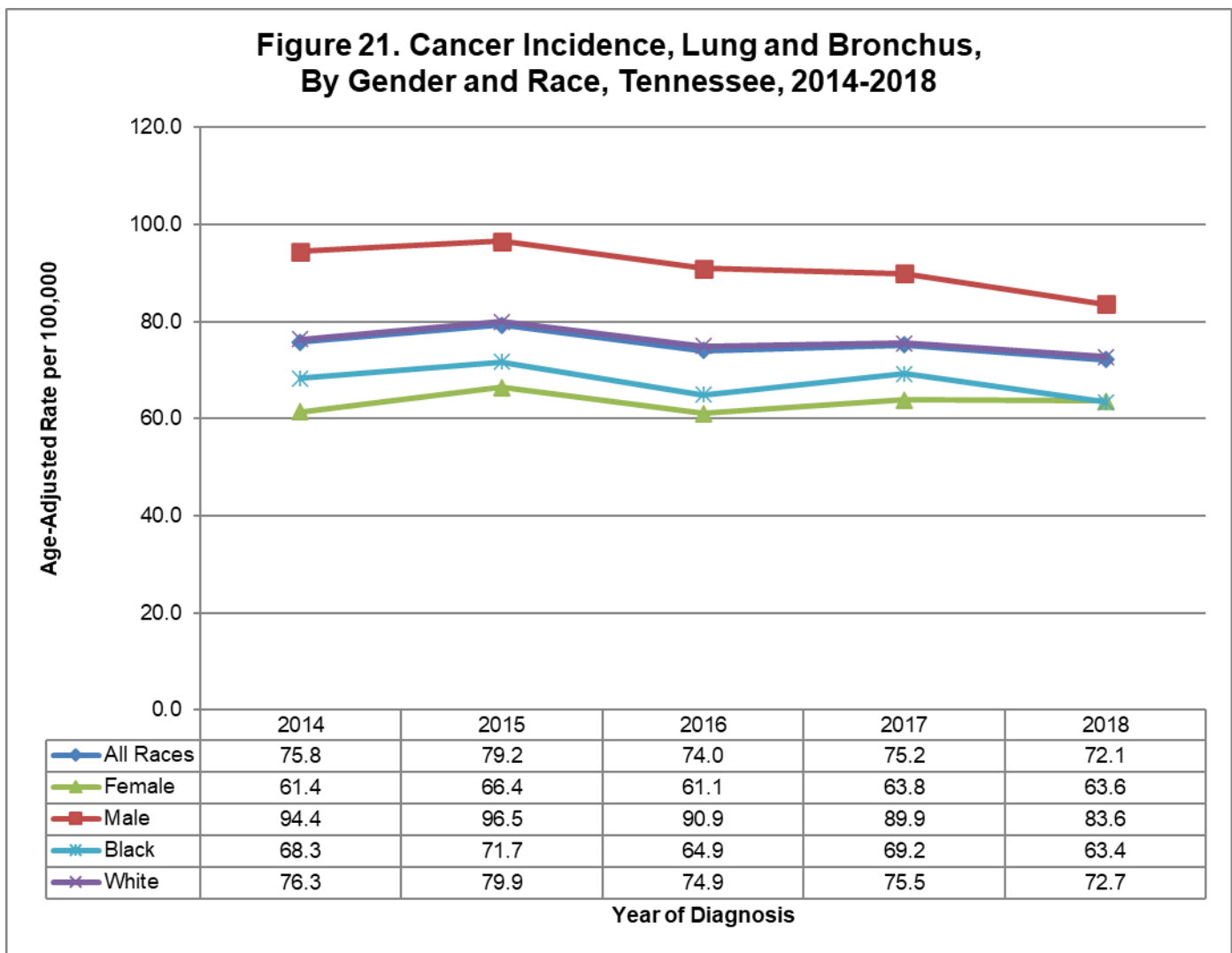
Rates are cases per 100,000 population per year.

Rates are for invasive cancer only (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

†Includes Blacks, Whites, other races, and those missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

Figure 21. Cancer Incidence, Lung and Bronchus, By Gender and Race, Tennessee, 2014-2018

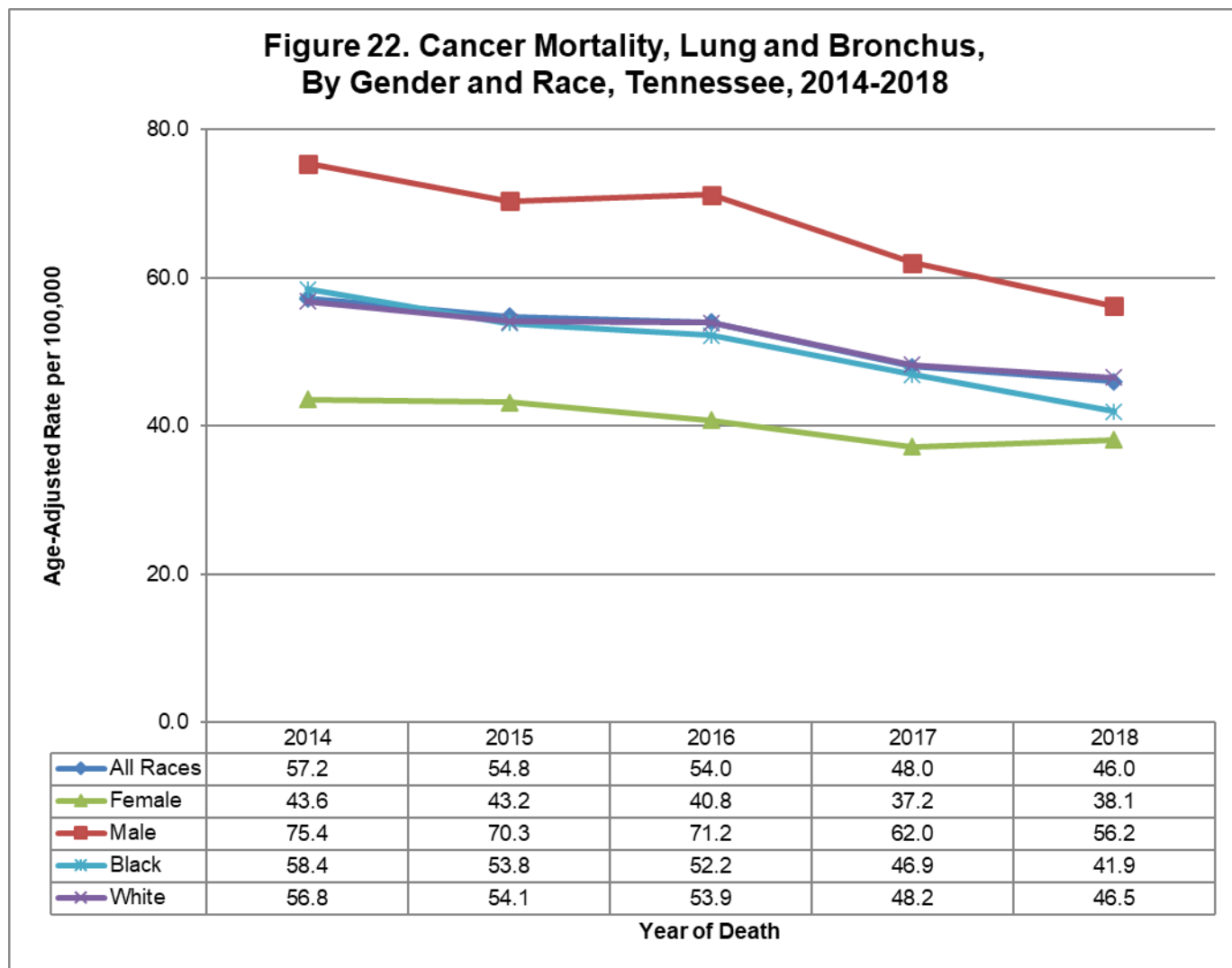


From 2014-2018, the lung cancer incidence rate in TN (Figure 21):

- *Decreased* slightly by 1.5% per year for all cancers combined.
- *Decreased* by 3.1% per year among men*, but *increased* by 0.3% per year among women.
- *Decreased* by 1.8% per year among Blacks, and by 1.6% per year among Whites.

*Statistically significant

LUNG AND BRONCHUS CANCER, CONTINUED

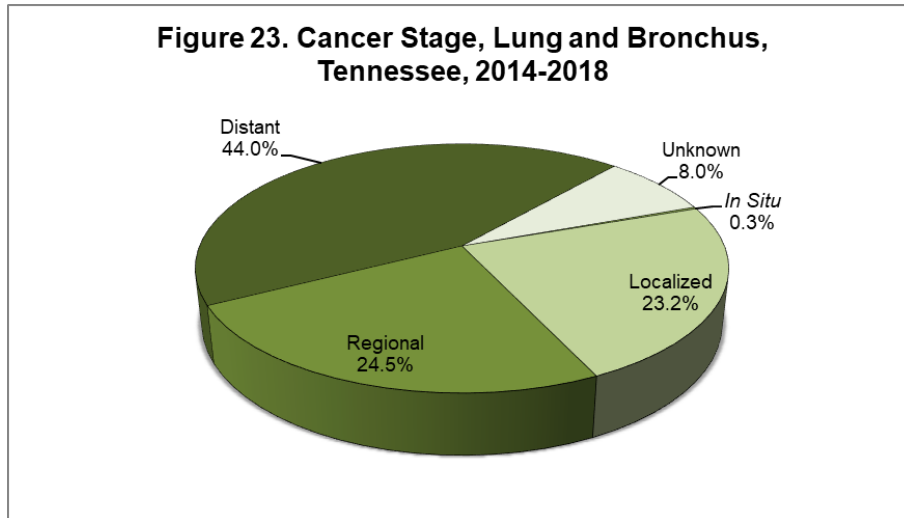


From 2014 to 2018 in TN, the lung cancer mortality rate (Figure 22):

- *Decreased* on average by 5.5% per year for all cancers combined*.
- *Decreased* among Blacks on average by 7.7% per year*.
- *Decreased* by 6.8% per year among men*.
- *Decreased* by 4.1% per year among women*.
- *Decreased* by 5.0% per year among Whites*.

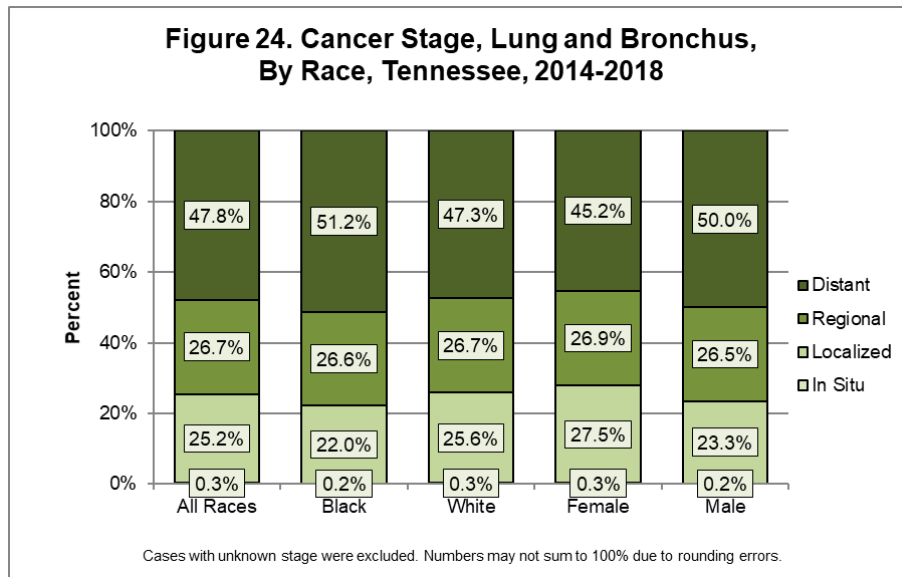
*Statistically significant

LUNG AND BRONCHUS CANCER, CONTINUED



In TN from 2014 to 2018 (Figure 23):

- 0.3% of all lung cancer cases were diagnosed at the *in situ* stage.
- 1 in 4 cases (23.2%) were diagnosed at the localized stage, one in four cases (24.5%) were diagnosed at the regional stage and almost half (44.0%) were diagnosed at the distant stage.
- 8.0% of cases had unknown stage information.



- In TN, Black patients had a higher proportion (77.8%) of cases diagnosed at late stages, regional or distant stage, than White patients (74.0%), and this difference was statistically significant (Figure 24).
- Male patients had a higher proportion (76.5%) of cases diagnosed at late stages than female patients (72.1%), and this difference was statistically significant (Figure 24).

PROSTATE CANCER

Incidence

- During 2014-2018, TN had the 18th highest prostate cancer incidence rate in the US, based on data from the State Cancer Profiles website.
- From 2014 through 2018, prostate cancer was the leading cause of cancer incidence in TN among men, which accounted for 23.5% of all new cancers in men. During this time period, there were 22,991 cases of prostate cancer diagnosed among Tennesseans, resulting in an age-adjusted rate of 116.1 cases per 100,000 Tennessee men.
- The prostate cancer incidence rate increased about 3.8% per year during the time period, and this increase was statistically significant.
- During 2014-2018, Black Tennesseans accounted for 19.0% of all new prostate cancer cases and comprised about 17.1% of the total, single-race TN population (2016 American Community Survey). During the same time period, White Tennesseans accounted for 78.4% of all new prostate cancer cases and comprised about 79.5% of the total, single-race TN population (2016 American Community Survey).

Mortality

- From 2014 to 2018, TN had the 22nd highest prostate cancer mortality rate in the US, tied with Vermont.
- From 2014 to 2018, 3,080 Tennessee men died of prostate cancer. The mortality-to-incidence ratio for prostate cancer among Tennessee men was 0.17. The prostate cancer mortality rate decreased on average by 1.2% per year from 2014 to 2018, but was not statistically significant.
- From 2014-2018, Black Tennesseans accounted for 21.2% of all prostate cancer deaths. During the same time period, White Tennesseans accounted for 78.0% of all prostate cancer deaths.

Health Disparities

- Overall, in TN, Black men had statistically significantly higher prostate cancer incidence and mortality rates than White men.
- White Tennesseans (20.7%) were more likely to be diagnosed with prostate cancer in the late stages (i.e., regional and distant) than Black Tennesseans (19.3%) and this finding was statistically significant.

Screening

- The US Preventive Services Taskforce (USPSTF) does not recommend population-based screening for prostate cancer for men 70 years or older. The USPSTF provides a “C” grade for Prostate Specific Antigen (PSA) screening among men, who are 55-69 years of age. According to the 2020 Behavioral Risk Factor Surveillance Survey, 32.9% of TN men over 40 years of age had a PSA screening during the past two years.

PROSTATE CANCER, CONTINUED

TABLE 3. CANCER INCIDENCE AND MORTALITY, PROSTATE, TENNESSEE, 2014-2018

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Male	All Races†	22,991	116.1	114.6	117.7	3,080	19.8	19.1	20.6	0.17
	Black	4,366	182.3	176.4	188.3	653	43.2	39.7	46.9	0.24
	White	18,015	104.0	102.4	105.6	2,402	17.3	16.6	18.1	0.17
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	108	2.4	2.0	2.9	^	^	^	^	^
	45-64	8,879	183.3	179.5	187.2	362	7.2	6.5	8.0	0.04
	65+	14,003	589.7	579.7	599.8	2,716	144.2	138.7	149.9	0.24
Year of Diagnosis or Death										
	2014	3,947	104.3	101.0	107.7	580	19.9	18.2	21.6	0.19
	2015	4,412	113.8	110.3	117.3	586	19.6	18.0	21.3	0.17
	2016	4,615	116.4	113.0	119.9	664	21.2	19.5	22.9	0.18
	2017	5,019	123.9	120.4	127.4	643	20.3	18.7	21.9	0.16
	2018	4,998	121.1	117.7	124.6	607	18.4	16.9	20.0	0.15

^Statistic not displayed due to fewer than 11 cases.

*Excludes hermaphrodites and transsexuals.

**Total counts are from 2014 to 2018.

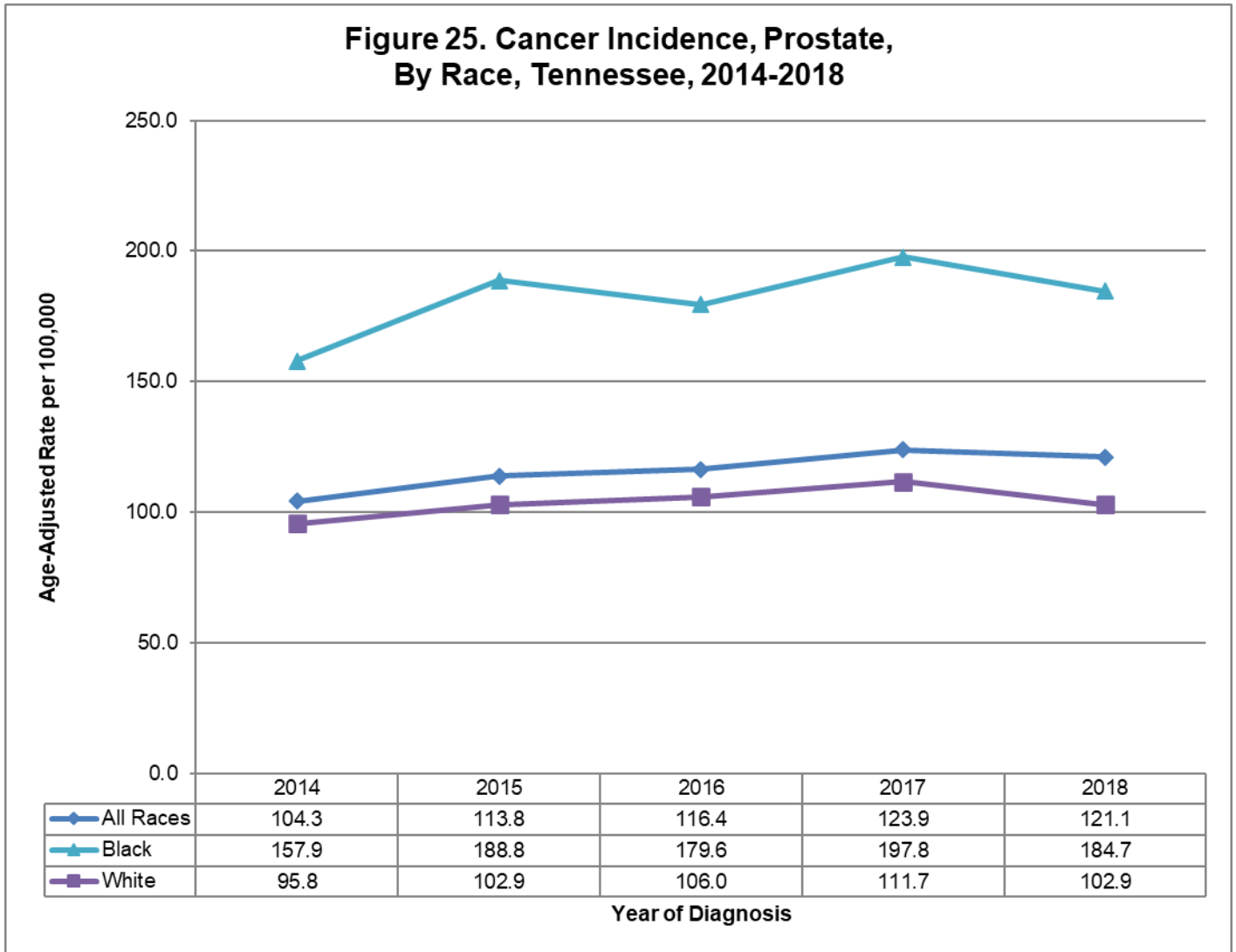
***Rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84,85+).

Rates are cases per 100,000 population per year.

Rates are for invasive cancer only (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

†Includes Blacks, Whites, other races, and those missing race information.

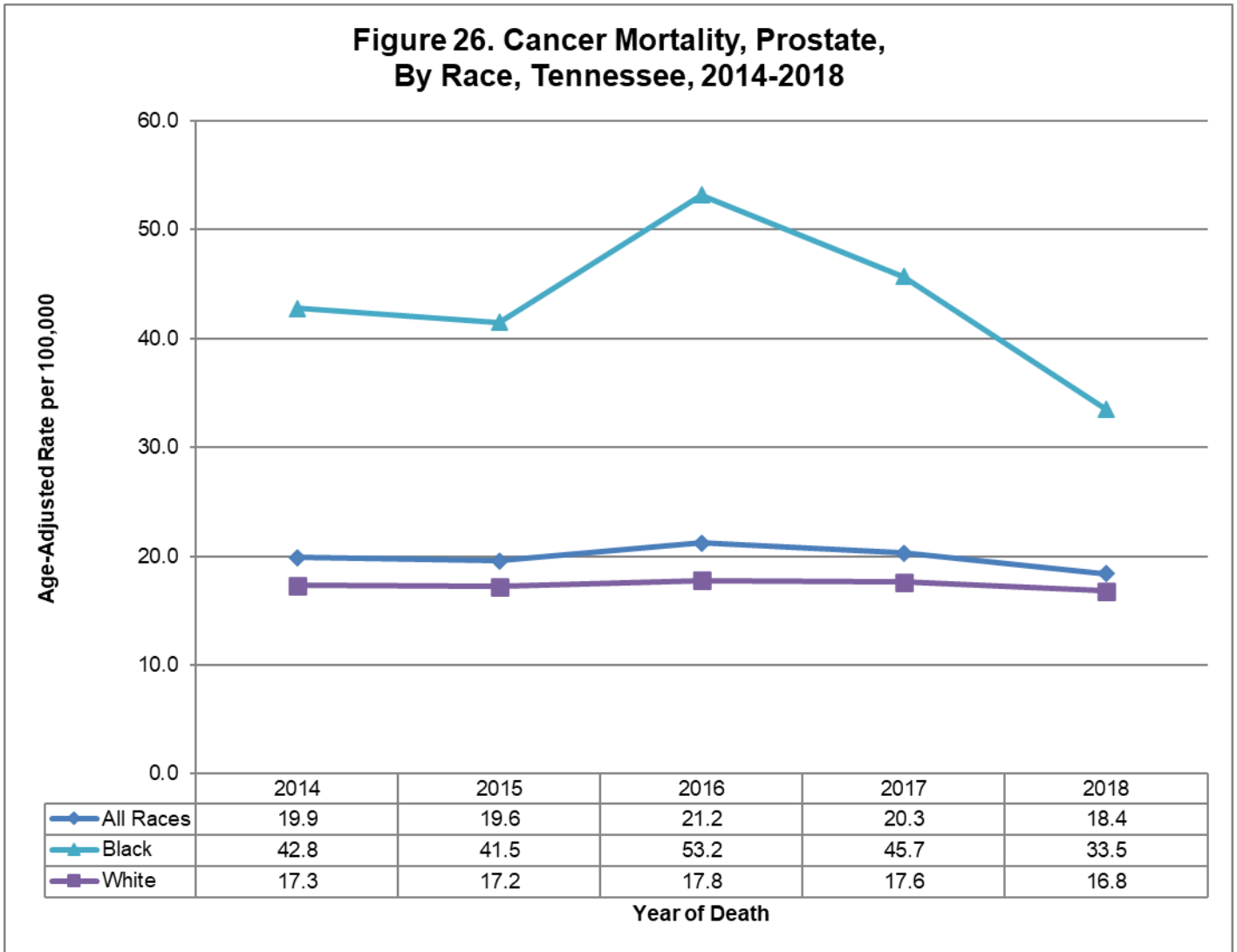
‡Mortality incidence ratio. See Technical Notes for details.



From 2014 to 2018 in TN, the prostate cancer incidence rate (Figure 25):

- *Increased* by 3.8% per year among all men*.
- *Increased* among Blacks by 3.3% per year.
- *Increased* among Whites by 2.2% per year.

*Statistically significant

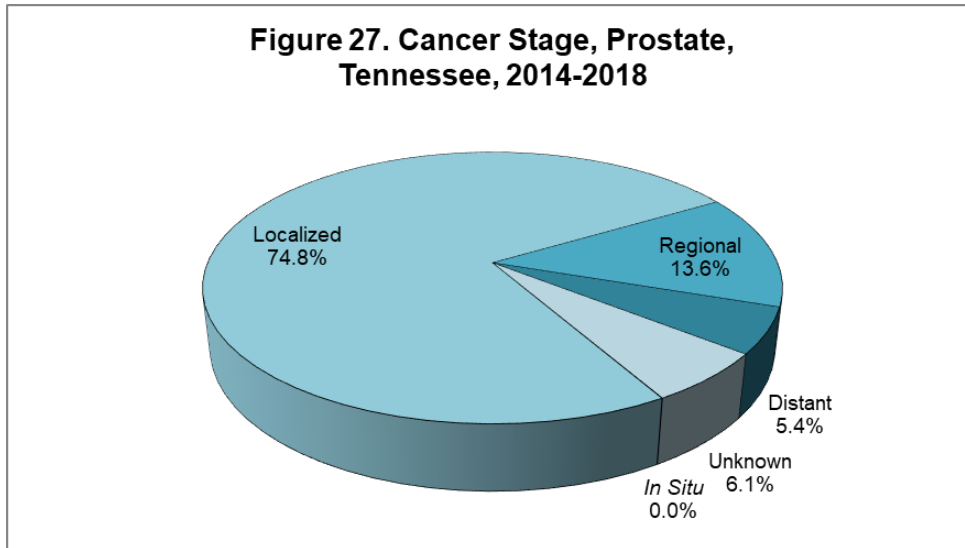


From 2014 to 2018 in TN, the prostate cancer mortality rate (Figure 26):

- *Decreased* by 1.2% per year among all men.
- *Decreased* among Blacks by 3.4% per year.
- *Decreased* among Whites by 0.3% per year.

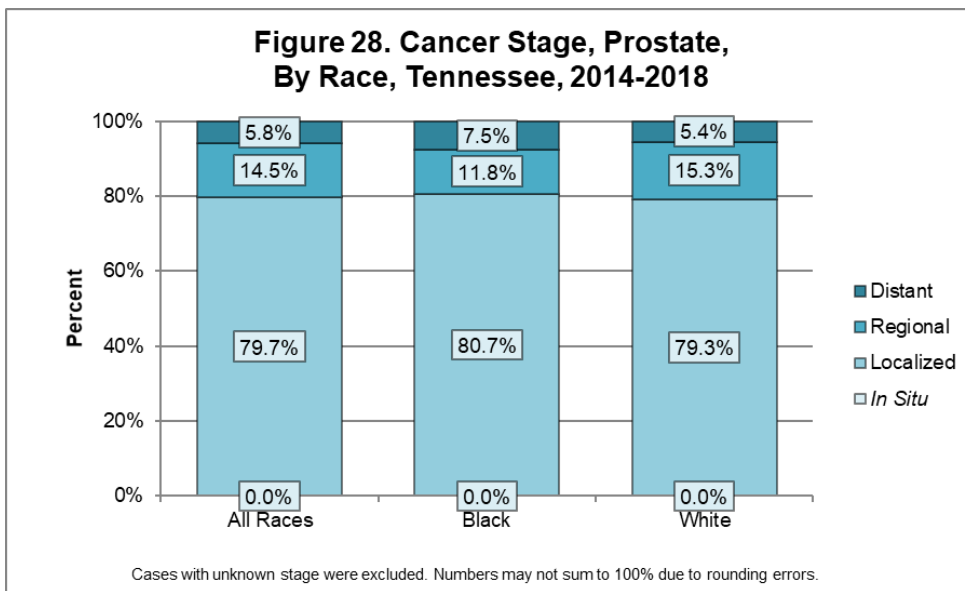
*Statistically significant

PROSTATE CANCER, CONTINUED



In TN from 2014-2018 (Figure 27):

- Less than 11 prostate cancer cases were diagnosed at the *in situ* stage.
- About three out of every four cases (74.8%) were diagnosed at the localized stage, 13.6% of cases were diagnosed at the regional stage and 5.4% of cases were diagnosed at the distant stage. About 6.1% of cases had unknown stage.



From 2014 to 2018 (Figure 28):

- Among all races with known stage information, only 20.3% were diagnosed at late stages (i.e., regional or distant stage).
- A higher percentage of White patients were diagnosed at late stages (20.7%) than Black patients (19.3%) and this difference was statistically significant.
- Early diagnosis of prostate cancer may contribute to a low mortality-to-incidence ratio.

FEMALE BREAST CANCER

Incidence

- During 2014-2018, TN had the 37th highest female breast cancer incidence rate in the US, tied with Michigan based on data from the State Cancer Profiles website.
- From 2014 through 2018, female breast cancer was the leading cause of cancer incidence among females in TN, which accounted for 28.6% of all new cancers among women. During this time period, there were 25,944 cases of female breast cancer diagnosed among Tennessee women, resulting in an age-adjusted rate of 125.8 cases per 100,000 Tennessee women.
- The female breast cancer incidence rate increased a non-statistically significant 0.7% per year during the time period, hence the female breast cancer rate remained relatively stable throughout 2014-2018.
- During 2014-2018, Black Tennesseans accounted for 14.6% of all new female breast cancer cases and comprised about 17.1% of the total, single-race TN population (2016 American Community Survey). During the same time period, White Tennesseans accounted for 83.7% of all new female breast cancer cases and comprised about 79.5% of the total, single-race TN population (2016 American Community Survey).

Mortality

- From 2014 to 2018, TN had the 6th highest female breast cancer mortality rate in the US.
- From 2014 to 2018, 4,767 Tennesseans died of female breast cancer. The mortality-to-incidence ratio for female breast cancer among Tennessee women was 0.18, making it one of the least deadliest cancers in TN. The female breast cancer mortality rate non-statistically significantly decreased on average by 1.3% per year from 2014 to 2018.
- From 2014-2018, Black Tennesseans accounted for 18.9% of all female breast cancer deaths. During the same time period, White Tennesseans accounted for 79.8% of all female breast cancer deaths.

Health Disparities

- Overall, in TN, Black women had statistically significantly higher female breast cancer mortality rates compared to White women. Female breast cancer incidence rates were similar among blacks and whites.
- Black Tennessee women (33.1%) were more likely to be diagnosed with breast cancer in late stages (i.e., regional and distant) than White Tennessee women (26.1%) and this finding was statistically significant.

Screening

- The US Preventative Services Taskforce (USPSTF) recommends biennial screening mammography for women 50-74 years as there is moderate certainty that the net benefit of screening is moderate to substantial. However, the decision to start regular, biennial screening mammography before the age of 50 years should be an individual one and take patient context into account, including the patient's perceived value regarding specific benefits and harms. Of all the age groups, women aged 60 to 69 years are most likely to avoid breast cancer death through mammography screening (USPSTF, 2016). The USPSTF is currently in the process of updating this recommendation.

FEMALE BREAST CANCER, CONTINUED

TABLE 4. CANCER INCIDENCE AND MORTALITY, FEMALE BREAST, TENNESSEE, 2014-2018

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Female	All Races †	25,944	125.8	124.2	127.4	4,767	22.2	21.6	22.9	0.18
	Black	3,776	124.1	120.0	128.2	902	30.1	28.1	32.2	0.24
	White	21,709	123.5	121.8	125.3	3,805	20.6	19.9	21.2	0.17
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	2,462	51.6	49.6	53.7	233	4.9	4.3	5.6	0.09
	45-64	11,379	242.3	237.7	246.9	1,684	35.2	33.5	37	0.15
	65+	12,101	420.8	413.2	428.4	2,850	99.8	96.2	103.6	0.24
Year of Diagnosis or Death										
	2014	4,885	122.8	119.3	126.4	906	21.7	20.3	23.2	0.18
	2015	5,207	128.1	124.6	131.8	935	22.3	20.8	23.8	0.17
	2016	5,127	124.4	120.9	128.0	959	22.2	20.8	23.7	0.18
	2017	5,296	125.2	121.7	128.7	933	21.2	19.9	22.7	0.17
	2018	5,429	128.5	125.0	132.1	1034	23.6	22.2	25.2	0.18

^Statistic not displayed due to fewer than 11 cases.

*Excludes hermaphrodites and transsexuals.

**Total counts are from 2014 to 2018.

***Rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84,85+).

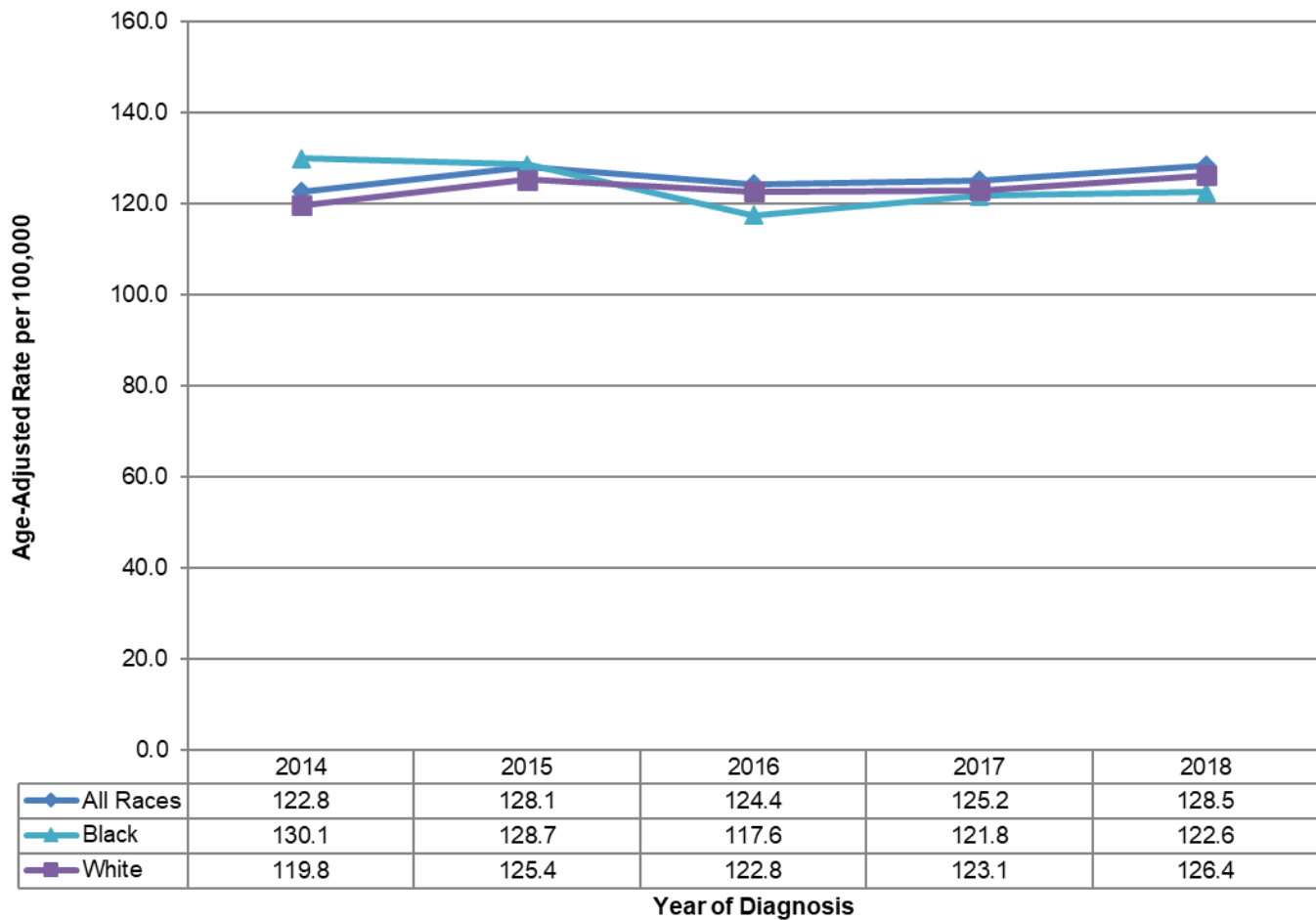
Rates are cases per 100,000 population per year.

Rates are for invasive cancer only (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

†Includes Blacks, Whites, other races, and those missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

Figure 29. Cancer Incidence, Female Breast, By Race, Tennessee, 2014-2018

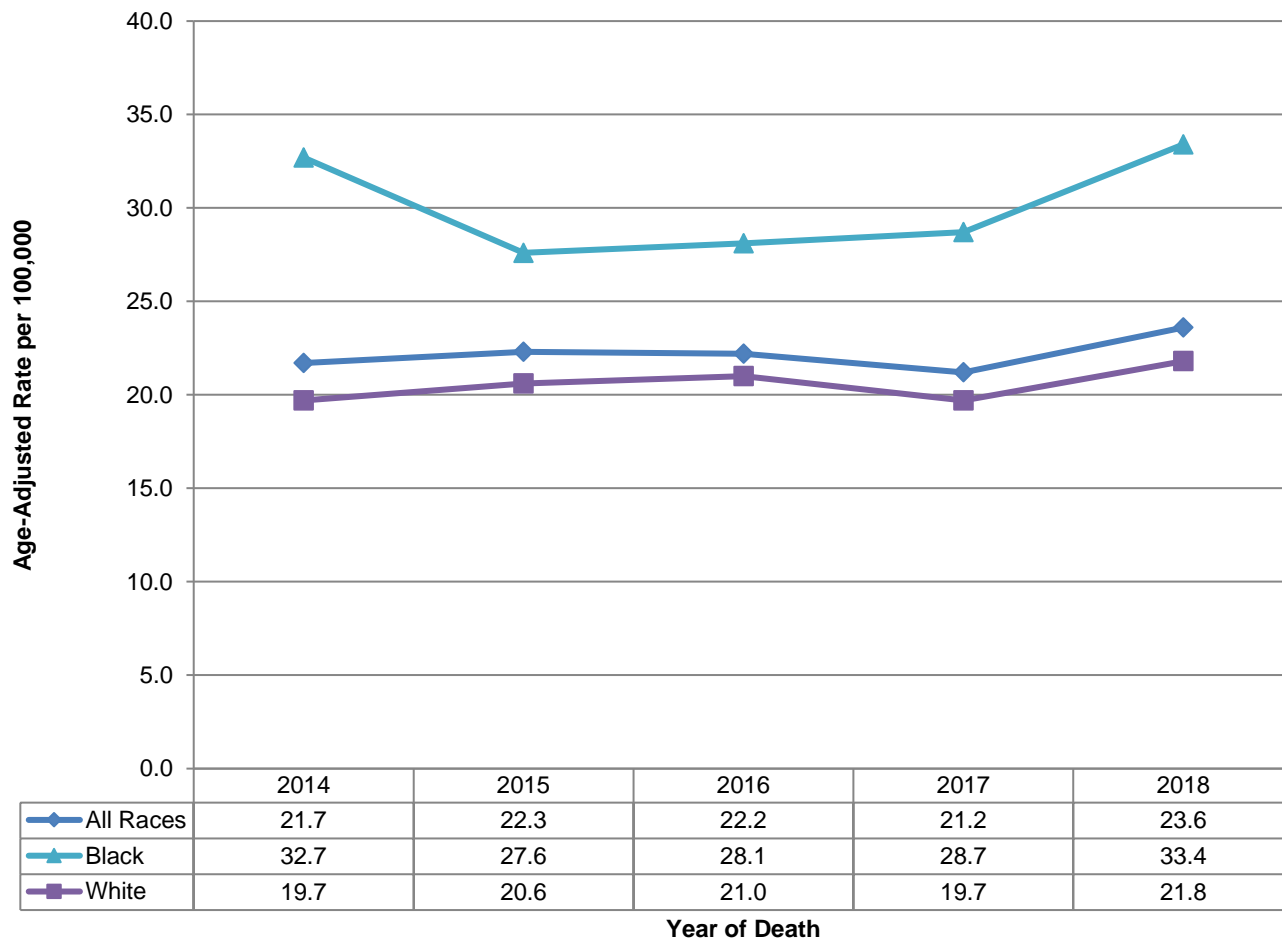


From 2014-2018 in TN, the female breast cancer incidence rate (Figure 29):

- *Increased* on average 0.7% per year among all women.
- *Decreased* on average by 1.7% per year among Black women.
- *Increased* on average by 0.9% per year among White women.

*Statistically significant

Figure 30. Cancer Mortality, Female Breast, By Race, Tennessee, 2014-2018

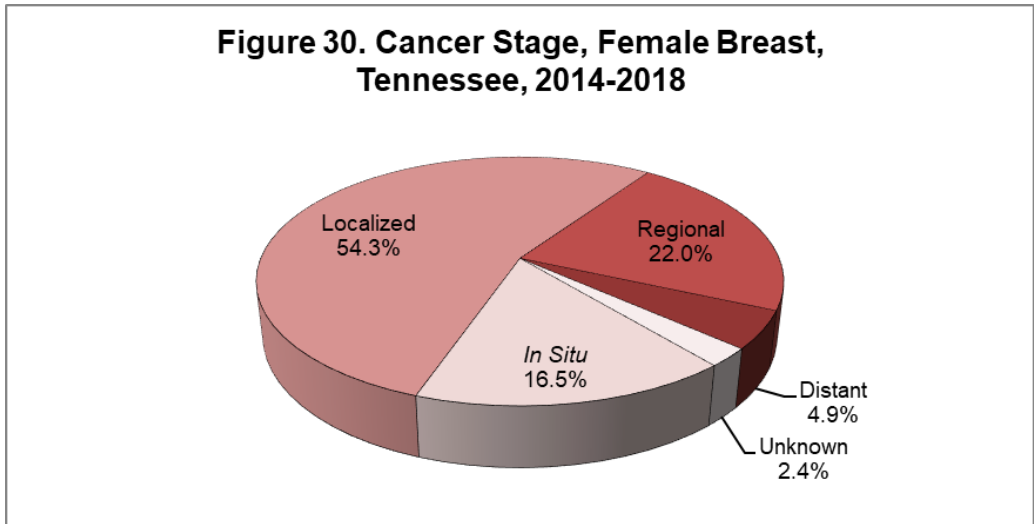


From 2014-2018 in TN, the female breast cancer mortality rate (Figure 30):

- *Increased* on average by 1.3% per year for all women.
- *Increased* on average 1.0% per year among Black women.
- *Increased* on average 1.6% per year among White women.

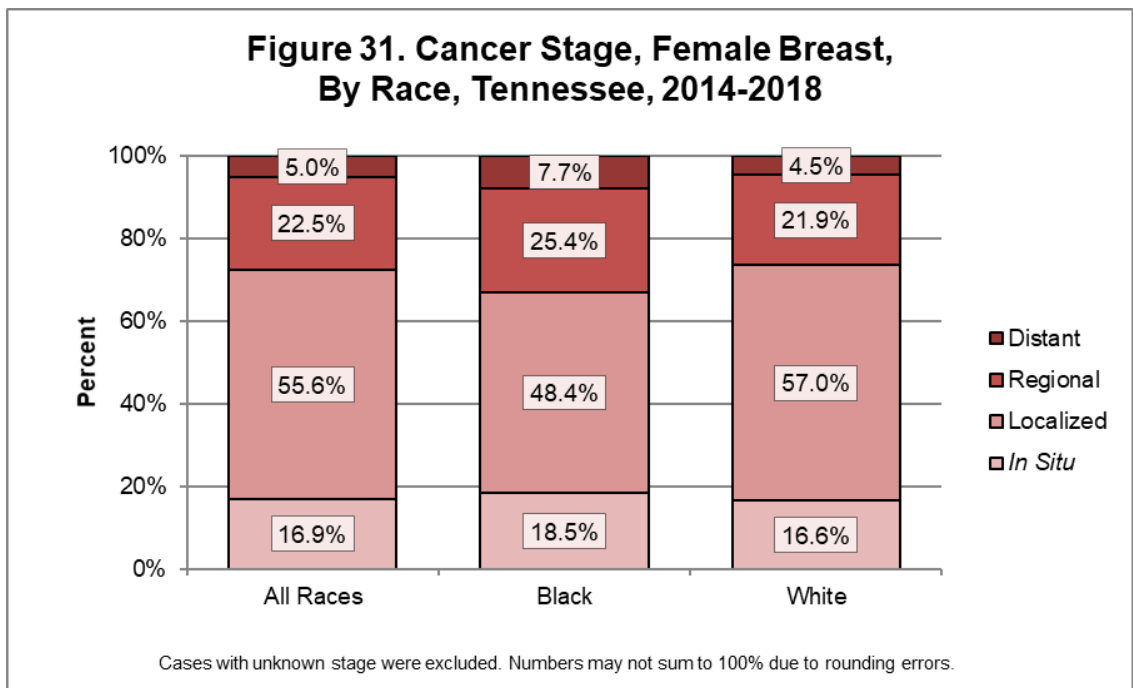
*Statistically significant

FEMALE BREAST CANCER, CONTINUED



In TN from 2014-2018 (Figure 30):

- Nearly one in five (16.5%) female breast cancer cases were diagnosed at the *in situ* stage.
- More than half of cases (54.3%) were diagnosed at the localized stage, one in four cases (22.0%) at the regional stage and 4.9% in the distant stage.
- 2.4% of cases had unknown stage information.



From 2014 to 2018 (Figure 31):

- For cancer cases with known stage, 27.5% were diagnosed at late stages (i.e., regional or distant stages) among all races.
- Black women had a higher proportion (33.1%) of cases diagnosed at late stages than White women (26.4%) and this difference was statistically significant, which may partially explain the significantly higher breast cancer mortality rate among Black women compared to White women in TN.

COLON AND RECTUM CANCER

Incidence

- During 2014-2018, TN had the 17th highest colorectal cancer incidence rate in the US.
- From 2014 through 2018, colorectal cancer was the fourth leading cause of cancer incidence in TN, which accounted for 8.5% of all new cancers. During this time period, there were 16,069 colorectal cancers diagnosed among Tennesseans, resulting in an age-adjusted rate of 41.2 cases per 100,000 Tennesseans.
- The colorectal cancer incidence rate decreased 0.8% per year on average during 2014-2018, a non-statistically significant decrease.
- During 2014-2018, Black Tennesseans accounted for 15.3% of all new colorectal cancer cases and comprised about 17.1% of the total, single-race TN population (2016 American Community Survey). During the same time period, White Tennesseans accounted for 83.1% of all new colorectal cancer cases and comprised about 79.5% of the total, single-race TN population (2016 American Community Survey).
- During 2014-2018, TN men accounted for 52.9% of all new colorectal cancer cases and comprised 48.8% of the TN population (2016 American Community Survey). TN women accounted for 47.1% of all new colorectal cancer cases and comprised 51.2% of the TN population (2016 American Community Survey).

Mortality

- From 2014 to 2018, TN had the 9th highest colorectal cancer mortality rate in the US during 2014-2018.
- From 2014 to 2018, 5,971 Tennesseans died of colorectal cancer. The mortality-to-incidence ratio for colorectal cancer among Tennesseans was 0.37. The colorectal cancer mortality rate decreased on average by 1.3% per year from 2014 to 2018, which was not statistically significant.
- From 2014-2018, Black Tennesseans accounted for 17.3% of all colorectal cancer deaths. During the same time period, White Tennesseans accounted for 81.6% of all colorectal cancer deaths.
- From 2014 to 2018, TN men accounted for 53.3% of all colorectal cancer deaths. During the same time period, TN women accounted for 46.7% of all colorectal cancer deaths.

Health Disparities

- Overall, in TN, men had statistically significantly higher colorectal cancer incidence and mortality rates than women. Blacks had statistically significantly higher colorectal cancer incidence and mortality rates than whites.
- Black Tennesseans (65.1%) were more likely to be diagnosed with colorectal cancer in the late stages (i.e., regional and distant) than White Tennesseans (61.8%) and this finding was statistically significant.
- Men in TN (62.6%) were more likely to be diagnosed with colorectal cancer in the late stages than women in TN (61.7%), but this finding was not statistically significant.

Screening

- The screening methodology recommended by most healthcare professionals is the colonoscopy.
- The US Preventive Services Taskforce (USPSTF) recommends colorectal cancer screening using fecal occult blood testing, sigmoidoscopy, or colonoscopy from 50 to 75 years of age. However, the USPSTF has recommended adults over the age of 75 take into account their overall health and prior screening history to determine whether to undergo colorectal screening. The USPSTF recently altered its recommendation for screening to include those 45-49 years of age, suggesting a moderate to substantial benefit that was not as strong as for those 50-75 years of age.

COLON AND RECTUM CANCER, CONTINUED

TABLE 5. CANCER INCIDENCE AND MORTALITY, COLON AND RECTUM, TENNESSEE, 2014-2018

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio‡
Both*	All Races †	16,064	41.2	40.5	41.9	5,971	15.2	14.8	15.6	0.37
	Black	2,455	46.7	44.8	48.7	1,031	21.2	19.8	22.6	0.45
	White	13,357	39.7	39.0	40.4	4,872	14.3	13.9	14.7	0.36
Female	All Races †	7,569	35.9	35.1	36.8	2,786	12.8	12.3	13.3	0.36
	Black	1,208	40.6	38.3	43.0	485	17.2	15.6	18.8	0.42
	White	6,244	34.6	33.7	35.5	2,270	12.0	11.5	12.5	0.35
Male	All Races †	8,500	47.3	46.3	48.4	3,185	18.2	17.5	18.9	0.38
	Black	1,247	55.7	52.4	59.2	546	27.6	25.1	30.2	0.50
	White	7,113	45.6	44.5	46.7	2,602	16.9	16.3	17.6	0.37
Age at Diagnosis or Death										
	0-19	35	0.4	0.3	0.6	^	^	^	^	^
	20-44	1032	10.7	10.0	11.4	200	2.1	1.8	2.4	0.20
	45-64	6,261	67.9	66.2	69.6	1,868	19.8	18.9	20.7	0.29
	65+	8,741	174.9	171.2	178.6	3,903	79.6	77.1	82.2	0.46
Year of Diagnosis or Death										
	2014	3,163	42.2	40.7	43.7	1,149	15.4	14.5	16.3	0.36
	2015	3,159	41.0	39.5	42.5	1,193	15.6	14.7	16.5	0.38
	2016	3,250	41.6	40.2	43.1	1,206	15.4	14.5	16.3	0.37
	2017	3,242	40.9	39.5	42.4	1,227	15.1	14.3	16.0	0.37
	2018	3,255	40.5	39.1	42.0	1,196	14.7	13.8	15.5	0.36

^Statistic not displayed due to fewer than 11 cases.

*Excludes hermaphrodites and transsexuals.

**Total counts are from 2014 to 2018.

***Rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84,85+).

Rates are cases per 100,000 population per year.

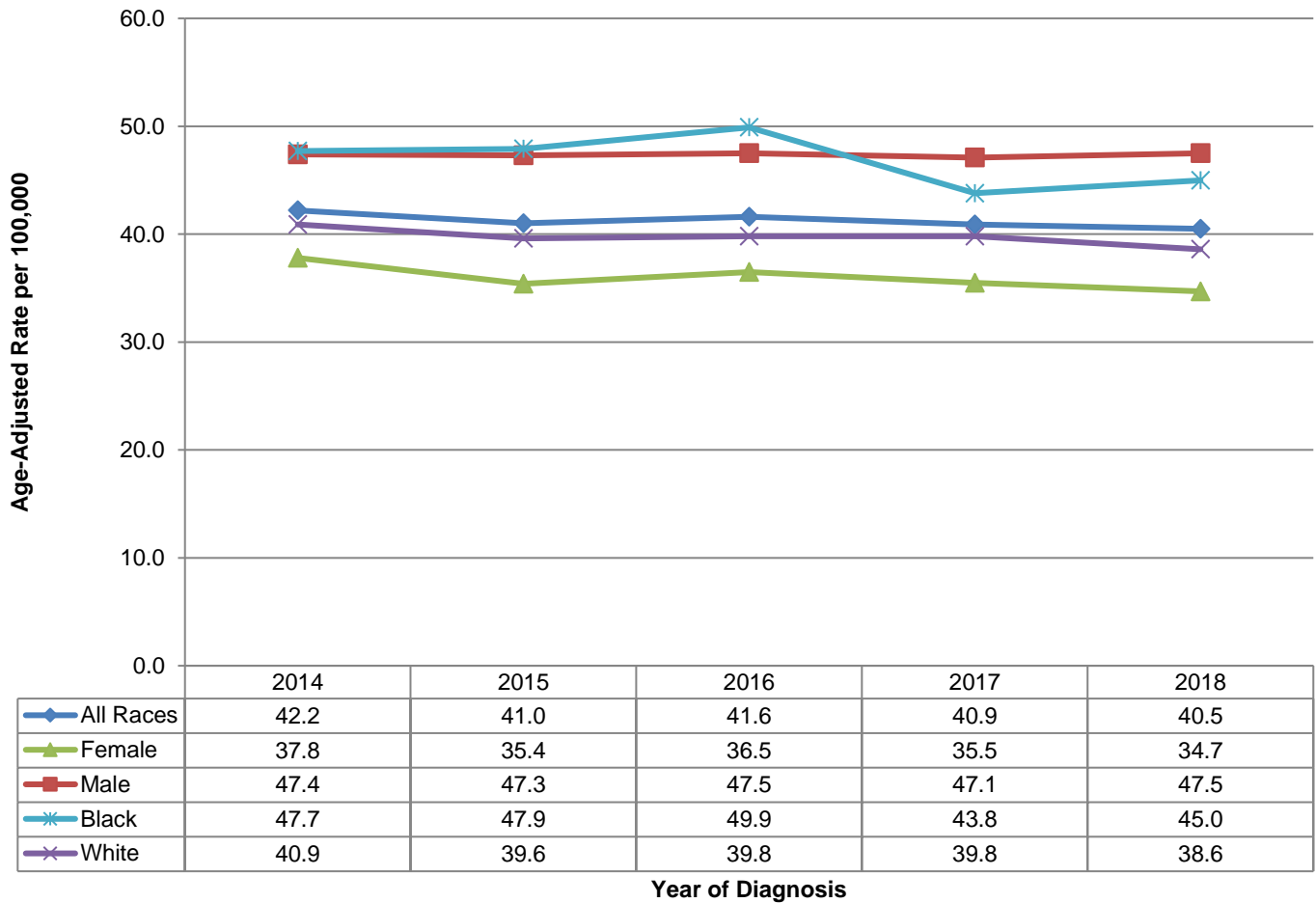
Rates are for invasive cancer only (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

†Includes Blacks, Whites, other races, and those missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

COLON AND RECTUM CANCER, CONTINUED

Figure 32. Cancer Incidence, Colon and Rectum, By Gender and Race, Tennessee, 2014-2018

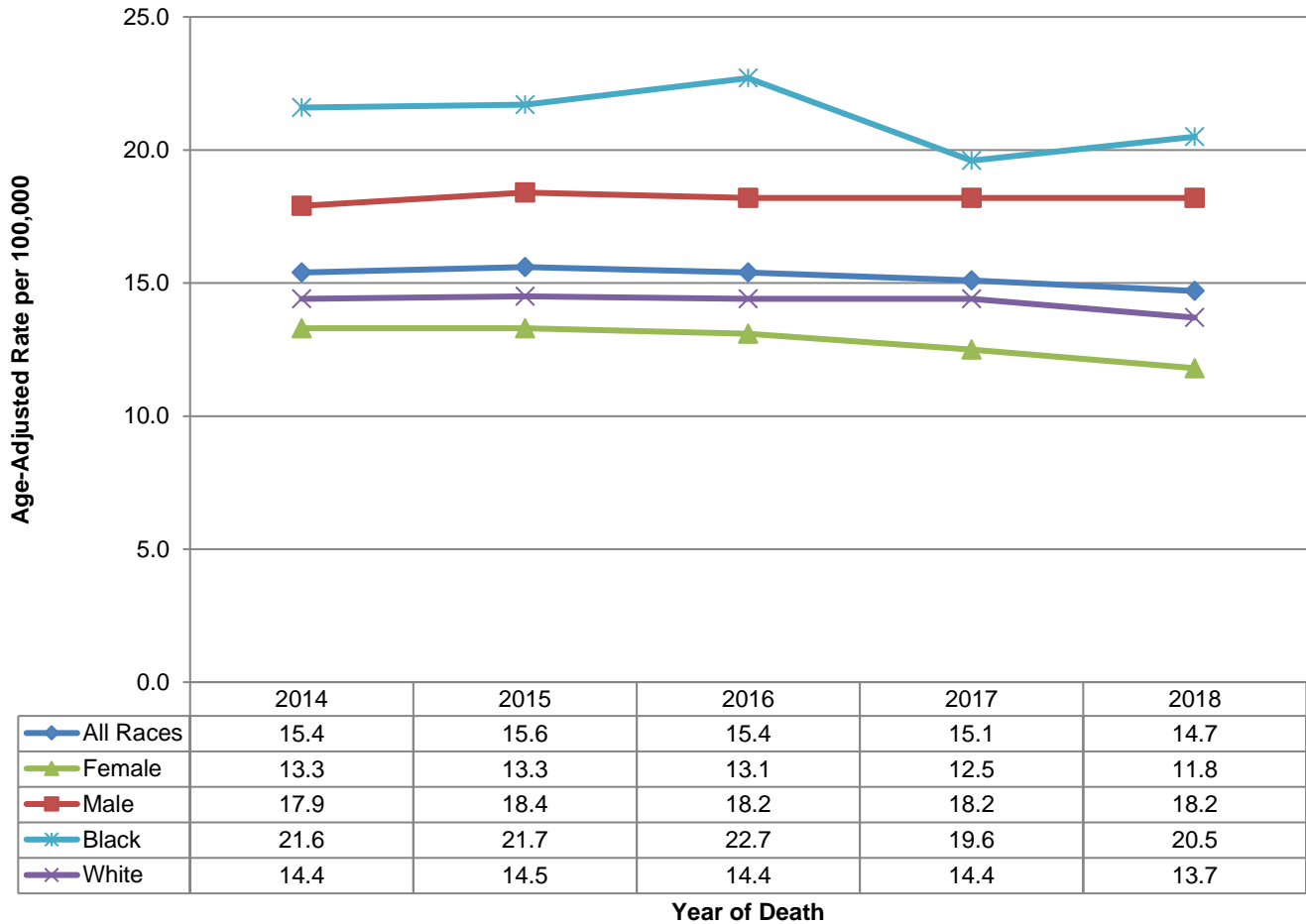


From 2014 to 2018 in TN, the colorectal cancer incidence rate (Figure 32):

- *Decreased* by 0.8% per year among all residents.
- *Decreased* by 0.1% per year among men.
- *Decreased* by 1.8% per year among women.
- *Decreased* by 2.1% per year among Blacks.
- *Decreased* by 1.1% per year among Whites.

*Statistically significant

Figure 33. Cancer Mortality, Colon and Rectum, By Gender and Race, Tennessee, 2014-2018

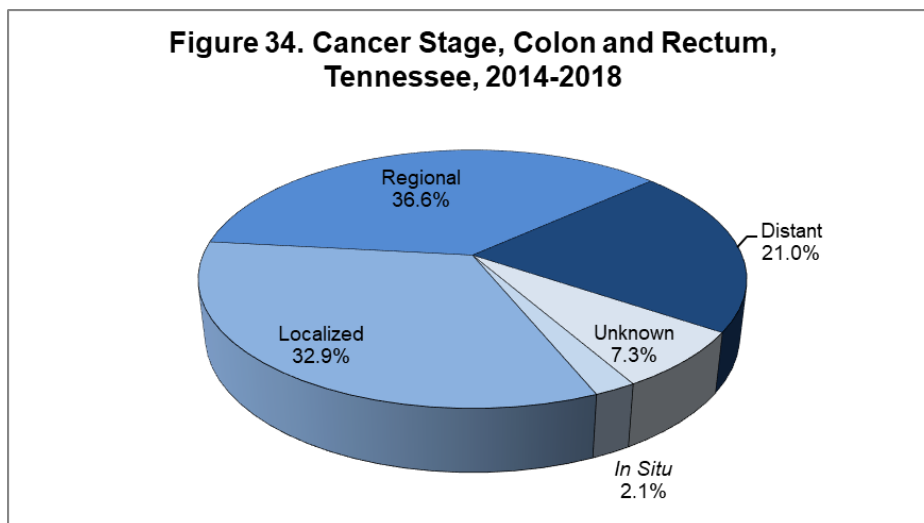


From 2014-2018, the colorectal cancer mortality rate in TN (Figure 33):

- *Decreased* by 1.3% per year among all residents.
- *Increased* among men by 0.2% per year and *decreased* among women by 3.0% per year*.
- *Decreased* among Blacks by 2.1% per year and *decreased* among Whites by 1.0% per year.

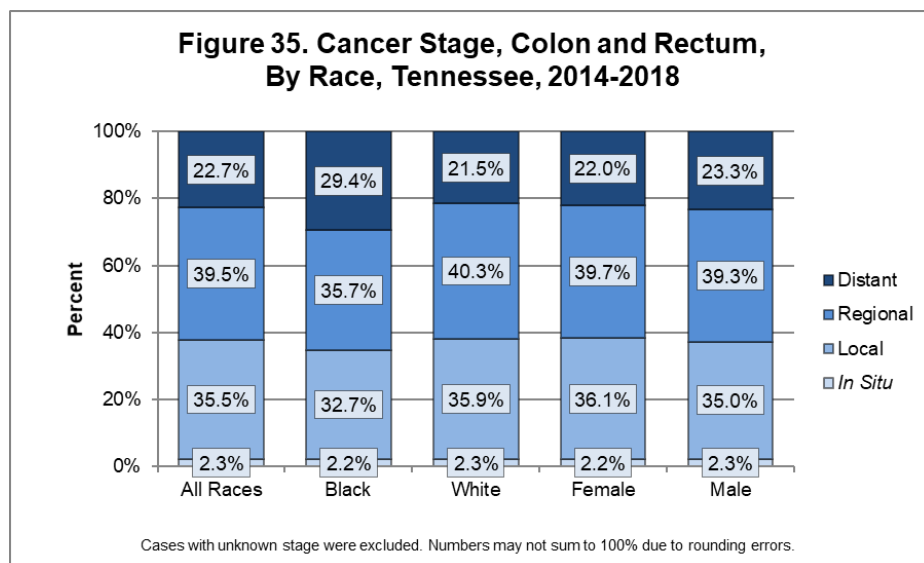
*Statistically significant

COLON AND RECTUM, CONTINUED



In TN from 2014-2018 (Figure 34):

- 2.1% of the colorectal cancer incidence cases were diagnosed at the *in situ* stage, 32.9% of new cases were diagnosed at the localized stage, 36.6% at the regional stage and 21.0% at the distant stage.
- 7.3% of new cases had unknown stage information.



From 2014 to 2018 (Figure 35):

- Black Tennesseans (65.1%) had a higher proportion of cases diagnosed at late stages than White Tennesseans (61.8%), and this difference was statistically significant.
- Male patients had a higher proportion (62.6%) of cases diagnosed at late stages than female patients (61.7%), but this difference was not statistically significant.

MELANOMA OF THE SKIN CANCER

Incidence

- During 2014-2018, TN had the 40th highest melanoma of the skin cancer incidence rate in the US, tied with Virginia based on data provided by State Cancer Profiles.
- From 2014 through 2018, melanoma of the skin cancer was the sixth leading cause of cancer incidence in TN, which accounted for 4.2% of all new cancers. During this time period, there were 7,879 cases of cancer diagnosed among Tennesseans, with an age-adjusted rate of 20.6 cases per 100,000 Tennesseans.
- The melanoma of the skin cancer incidence rate decreased 0.8% per year on average during 2014-2018, a non-statistically significant decrease.
- During 2014-2018, Black Tennesseans accounted for 0.4% of all new melanoma of the skin cancer cases and comprised about 17.1% of the total, single-race TN population (2016 American Community Survey). White Tennesseans accounted for 97.8% of all new melanoma of the skin cancer cases and comprised about 79.5% of the total, single-race TN population (2016 American Community Survey).
- During 2014-2018, TN men accounted for 59.7% of new melanoma of the skin cancers and comprised 48.8% of the TN population (2016 American Community Survey). TN women accounted for 40.3% of all new cancer cases and comprised 51.2% of the TN population (2016 American Community Survey).

Mortality

- From 2014 to 2018, TN had the 5th highest melanoma of the skin cancer mortality rate in the US, tied with Delaware, New Hampshire, and Kentucky.
- From 2014 to 2018, 1072 Tennesseans died of melanoma of the skin cancer. The mortality-to-incidence ratio among Tennesseans was 0.14. The melanoma of the skin cancer mortality rate decreased on average by 5.1% per year from 2014 to 2018 among all Tennesseans, but was not statistically significant.
- From 2014-2018, Black Tennesseans accounted for 2.0% of all melanoma of the skin cancer deaths. White Tennesseans accounted for 96.9% of all melanoma of the skin cancer deaths.
- From 2014 to 2018, TN men accounted for 67.4% of all melanoma of the skin cancer deaths. During the same time period, TN women accounted for 32.6% of all melanoma of the skin cancer deaths.

Health Disparities

- Overall, TN men had statistically significantly higher melanoma of the skin cancer incidence and mortality rates than women.
- Black Tennesseans (35.9%) were more likely to be diagnosed with melanoma of the skin cancer in the late stages (i.e., regional and distant) than White Tennesseans (11.6%) and this finding was statistically significant.
- Men in TN (12.0%) were more likely to be diagnosed with melanoma of the skin cancer in the late stages than women in TN (10.7%), and this finding was statistically significant.

Screening

- The US Preventive Services Taskforce (USPSTF) recommends advising people ages 10 to 24 years about minimizing their exposure to ultraviolet radiation to reduce risk for skin cancer. However, the USPSTF has stated that there is currently insufficient evidence to recommend general population-based screening for skin cancer, grade of “I”, which means the Taskforce considers there is insufficient evidence to assess the balance of benefits and harms of visual skin examination.

MELANOMA OF THE SKIN CANCER, CONTINUED

TABLE 6. CANCER INCIDENCE AND MORTALITY, MELANOMA OF THE SKIN, TENNESSEE, 2014-2018

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio‡
Both*	All Races †	7,870	20.6	20.1	21.1	1,072	2.8	2.6	3.0	0.14
	Black	31	0.6	0.4	0.9	21	0.4	0.3	0.7	0.67
	White	7,706	23.5	23.0	24.1	1,039	3.1	2.9	3.3	0.13
Female	All Races †	3,175	16.2	15.6	16.8	350	1.7	1.5	1.9	0.10
	Black	21	0.7	0.4	1.1	11	0.4	0.2	0.7	0.57
	White	3,089	18.8	18.2	19.6	335	1.9	1.7	2.1	0.10
Male	All Races †	4,704	26.7	25.9	27.5	722	4.2	3.9	4.5	0.16
	Black	^	^	^	^	^	^	^	^	^
	White	4,617	29.9	29.0	30.8	704	4.6	4.3	5.0	0.15
Age at Diagnosis or Death										
	0-19	18	0.2	0.1	0.3	^	^	^	^	^
	20-44	900	9.2	8.6	9.8	61	0.6	0.5	0.8	0.07
	45-64	2,884	31.6	30.4	32.8	326	3.4	3.1	3.8	0.11
	65+	4,077	80.6	78.1	83.2	684	14.0	13.0	15.1	0.17
Year of Diagnosis or Death										
	2014	1,452	19.7	18.7	20.8	215	3.0	2.6	3.4	0.15
	2015	1,699	22.7	21.6	23.8	245	3.1	2.7	3.6	0.14
	2016	1,526	19.9	18.9	20.9	204	2.7	2.3	3.1	0.14
	2017	1,617	20.9	19.9	22.0	213	2.7	2.3	3.1	0.13
	2018	1,585	19.8	18.9	20.9	195	2.5	2.1	2.8	0.13

^Statistic not displayed due to fewer than 11 cases.

*Excludes hermaphrodites and transsexuals.

**Total counts are from 2014 to 2018.

***Rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84,85+).

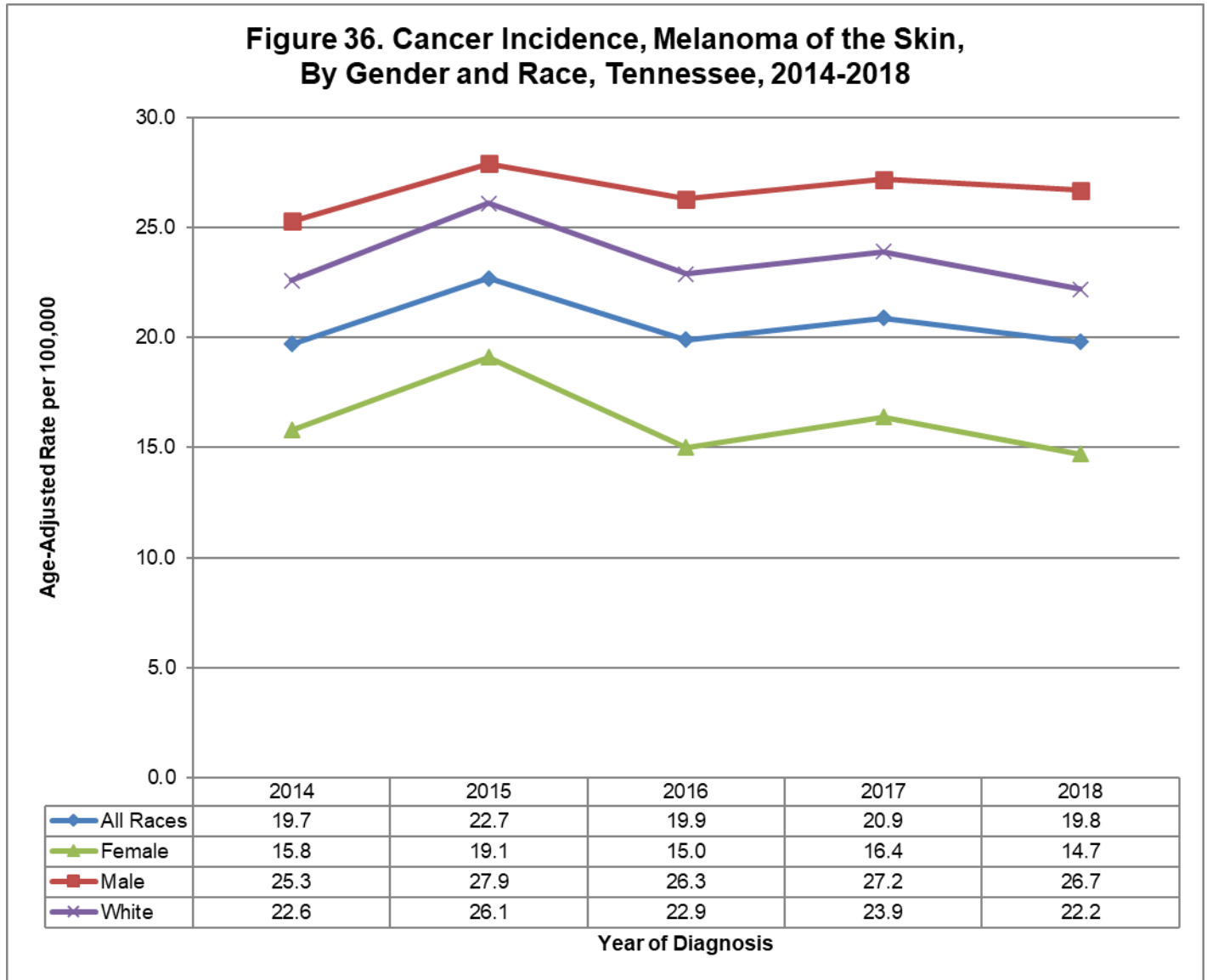
Rates are cases per 100,000 population per year.

Rates are for invasive cancer only (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

†Includes Blacks, Whites, other races, and those missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

MELANOMA OF THE SKIN CANCER, CONTINUED

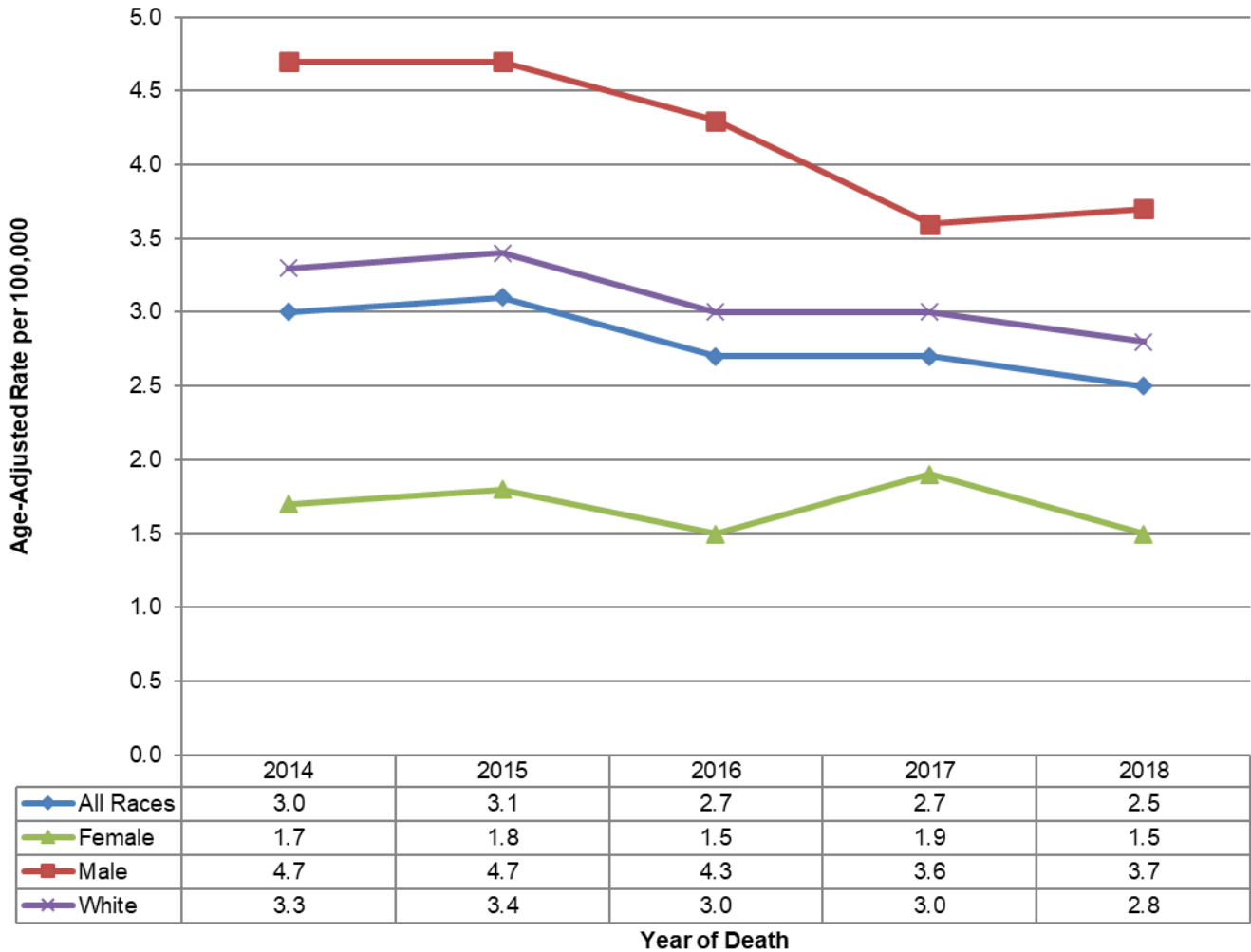


From 2014-2018 in TN, the melanoma of the skin incidence rate (Figure 36):

- *Decreased* among all Tennesseans by 0.8% per year.
- *Increased* among men by 0.7% per year and *decreased* among women by 3.2% per year.
- *Decreased* among Whites by 1.4% per year.

*Statistically significant

Figure 37. Cancer Mortality, Melanoma of the Skin, By Gender and Race, Tennessee, 2014-2018

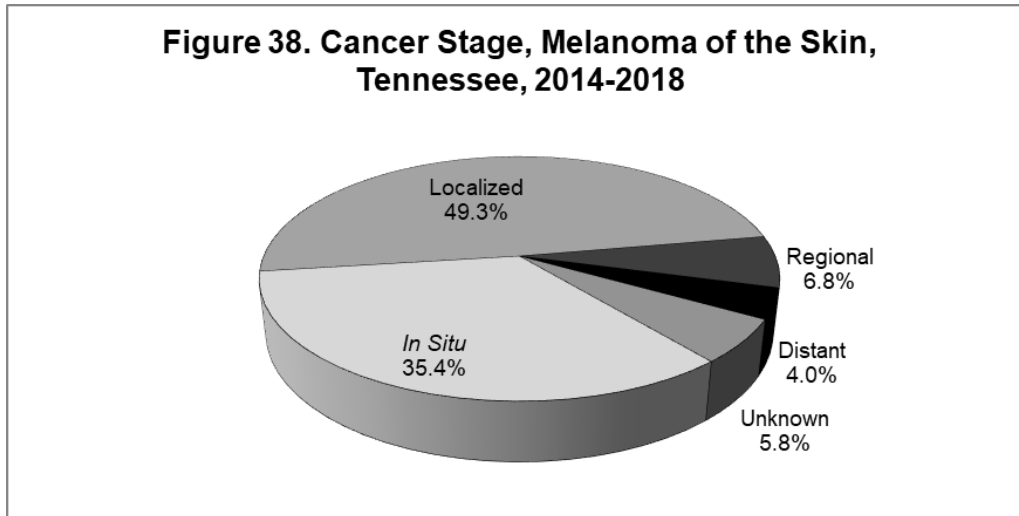


During the period 2014 to 2018 in TN, the melanoma skin cancer mortality rate (Figure 37):

- Decreased on average by 5.1% per year among all residents.
- Decreased among men on average by 7.3% per year*.
- *Decreased* among Whites by 4.6% per year*.
- *Decreased* among women by 1.9% per year.
- The trend in melanoma skin cancer mortality rates among Black Tennesseans was unstable due to the small number of deaths, therefore no trends were calculated.

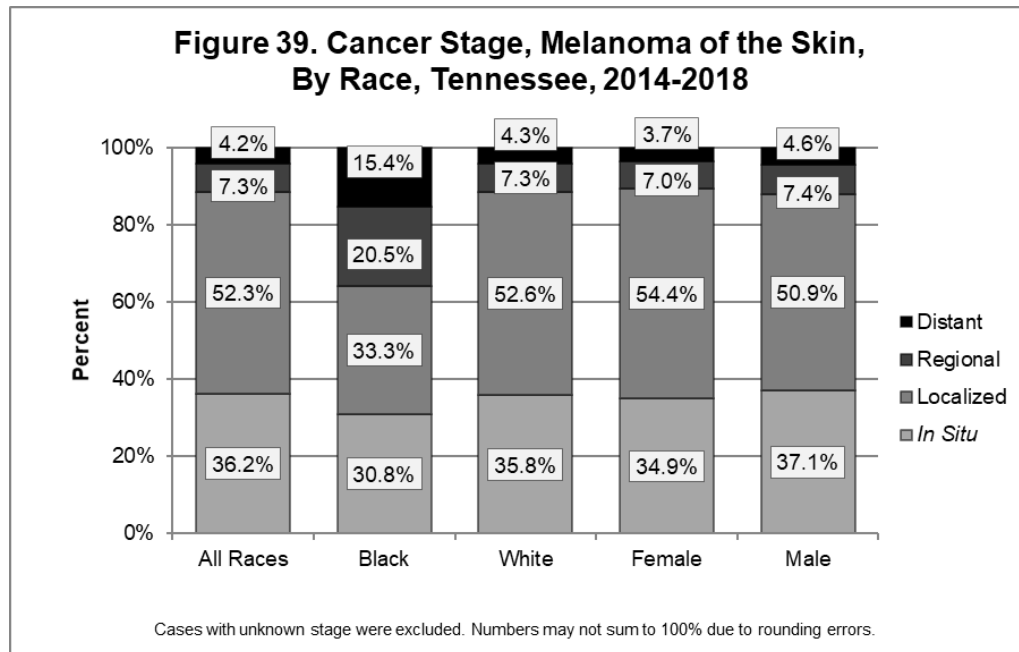
*Statistically significant

MELANOMA OF THE SKIN CANCER, CONTINUED



In TN from 2014-2018 (Figure 38):

- About a third (35.4%) of new melanoma of skin cancer cases were diagnosed at the *in situ* stage.
- Roughly one half of cases (49.3%) were diagnosed at the localized stage, 6.8% at the regional stage, 4.0% at the distant stage, and 5.8% of cases had unknown stage information.



In TN, from 2014 to 2018 (Figure 39):

- Among those cases with known stage, only 1 in 10 (11.5%) was diagnosed at the regional or distant stage (i.e., late stages), which may partially explain why melanoma was not as deadly as other cancers.
- Male patients (12.0%) had a higher proportion of cases diagnosed at late stages than female patients (10.7%) and this difference was statistically significant.
- Please note the difference between Blacks and Whites diagnosed with melanoma is statistically unstable since there were less than fifty Black Tennesseans diagnosed during 2014-2018.

PANCREATIC CANCER

Incidence

- During 2014-2018, TN had the 35th highest pancreatic cancer incidence rate in the US, tied with New Hampshire and Arkansas based on data provided by State Cancer Profiles.
- From 2014 through 2018, pancreatic cancer was the 11th leading cause of cancer incidence in TN, which accounted for 2.7% of all new cancers. During this time period, there were 5185 cases of pancreatic cancer diagnosed among Tennesseans, with an age-adjusted rate of 12.8 cases per 100,000 Tennesseans.
- The pancreatic cancer incidence rate increased 1.0% per year on average during 2014-2018, a statistically significant increase.
- During 2014-2018, Black Tennesseans accounted for 15.5% of all new pancreatic cancer cases and comprised about 17.1% of the total, single-race TN population (2016 American Community Survey). White Tennesseans accounted for 83.2% of all new pancreatic cancer cases and comprised about 79.5% of the total, single-race TN population (2016 American Community Survey).
- During 2014-2018, TN men accounted for 51.7% of new pancreatic cancers and comprised 48.8% of the TN population (2016 American Community Survey). TN women accounted for 48.3% of all new pancreatic cancer cases and comprised 51.2% of the TN population (2016 American Community Survey).

Mortality

- From 2014 to 2018, TN had the 24th highest pancreatic cancer mortality rate in the US, tied with Kansas and Oklahoma, and was the fourth leading cause of cancer death in Tennesseans.
- From 2014 to 2018, 4,576 Tennesseans died of pancreatic cancer. The mortality-to-incidence ratio among Tennesseans was 0.89 making pancreatic cancer one of the deadliest cancers affecting Tennesseans. The pancreatic cancer mortality rate decreased on average by 0.3% per year from 2014 to 2018 among all Tennesseans, but was not statistically significant.
- From 2014-2018, Black Tennesseans accounted for 15.4% of all pancreatic cancer deaths. White Tennesseans accounted for 83.3% of all pancreatic cancer deaths.
- From 2014 to 2018, TN men accounted for 52.0% of all pancreatic cancer deaths. During the same time period, TN women accounted for 48.0% of all pancreatic cancer deaths.

Health Disparities

- Overall, TN men had statistically significantly higher pancreatic cancer incidence and mortality rates than women.
- Black Tennesseans (82.7%) were as likely to be diagnosed with pancreatic cancer in the late stages (i.e., regional and distant) as White Tennesseans (82.9%).
- Men in TN (83.7%) were slightly more likely to be diagnosed with pancreatic cancer in the late stages than women in TN (81.9%), but this finding was not statistically significant.

Screening

- The US Preventive Services Task Force recommends against routine screening for pancreatic cancer by any means in asymptomatic adults, grade of “D.”

PANCREATIC CANCER, CONTINUED

TABLE 7. CANCER INCIDENCE AND MORTALITY, PANCREAS, TENNESSEE, 2014-2018

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Both*	All Races †	5,185	12.8	12.5	13.2	4,576	11.4	11.0	11.7	0.89
	Black	805	15.8	14.7	17.0	703	14.2	13.2	15.4	0.90
	White	4,315	12.3	11.9	12.7	3,814	10.9	10.5	11.2	0.89
Female	All Races †	2,503	11.4	10.9	11.8	2,196	9.9	9.5	10.3	0.87
	Black	437	15.0	13.6	16.6	346	12.3	11.0	13.7	0.82
	White	2,038	10.7	10.2	11.2	1,823	9.5	9.0	9.9	0.89
Male	All Races †	2,682	14.6	14.0	15.2	2,380	13.1	12.5	13.6	0.90
	Black	368	16.8	15.0	18.8	357	17.1	15.2	19.2	1.02
	White	2,277	14.1	13.5	14.7	1,991	12.5	11.9	13.0	0.89
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	128	1.3	1.1	1.6	58	0.6	0.5	0.8	0.46
	45-64	1,705	17.5	16.7	18.4	1,344	13.6	12.9	14.4	0.78
	65+	3,348	66.9	64.6	69.2	3,173	64.1	61.9	66.4	0.96
Year of Diagnosis or Death										
	2014	980	12.6	11.8	13.4	917	11.8	11.1	12.6	0.94
	2015	1,000	12.7	11.9	13.5	874	11.0	10.3	11.8	0.87
	2016	1,046	12.9	12.2	13.8	887	11.0	10.3	11.8	0.85
	2017	1,059	12.9	12.2	13.8	933	11.3	10.6	12.1	0.88
	2018	1,100	13.1	12.3	13.9	965	11.5	10.8	12.3	0.88

^Statistic not displayed due to fewer than 11 cases.

*Excludes hermaphrodites and transsexuals.

**Total counts are from 2014 to 2018.

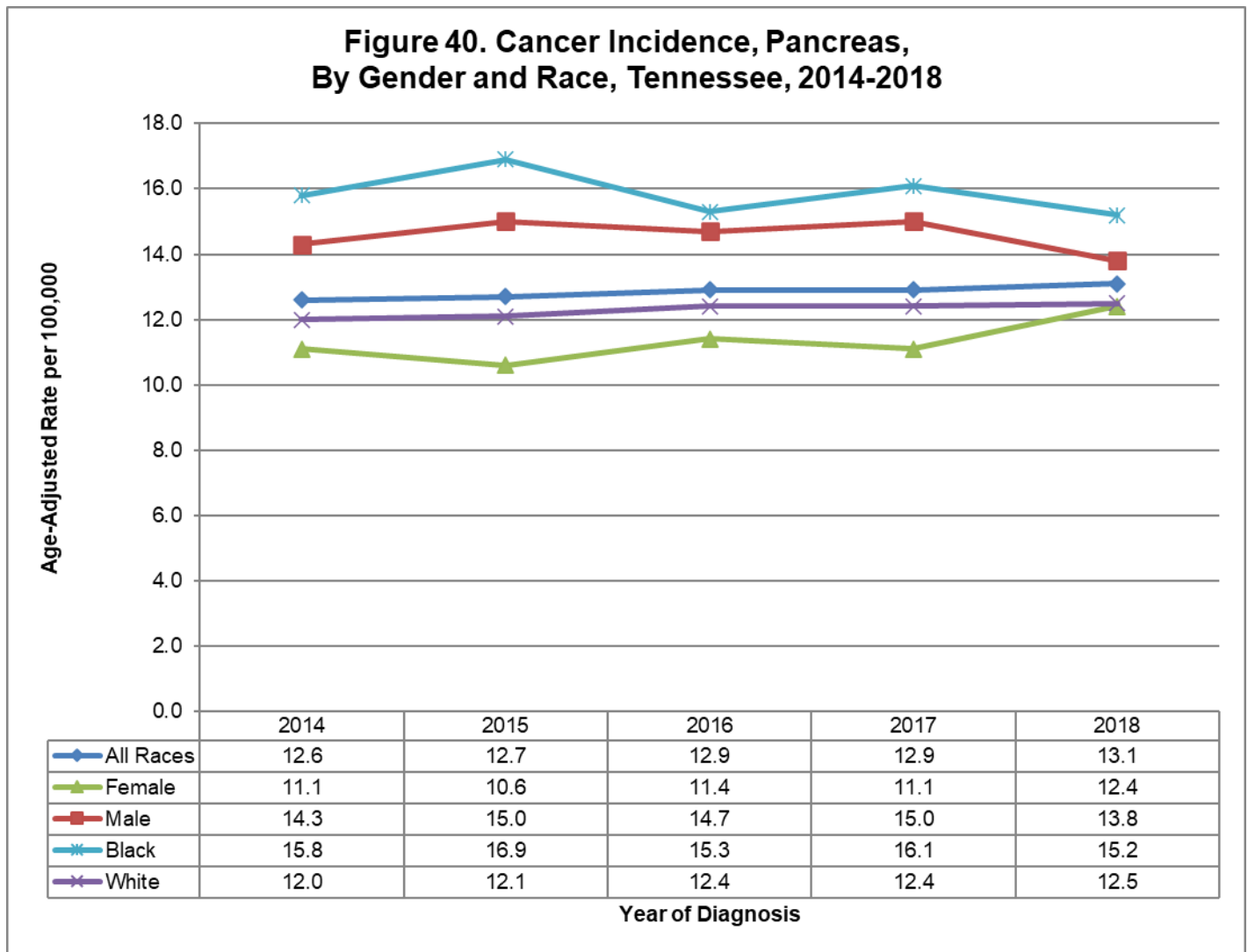
***Rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+).

Rates are cases per 100,000 population per year.

Rates are for invasive cancer only (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

†Includes Blacks, Whites, other races, and those missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

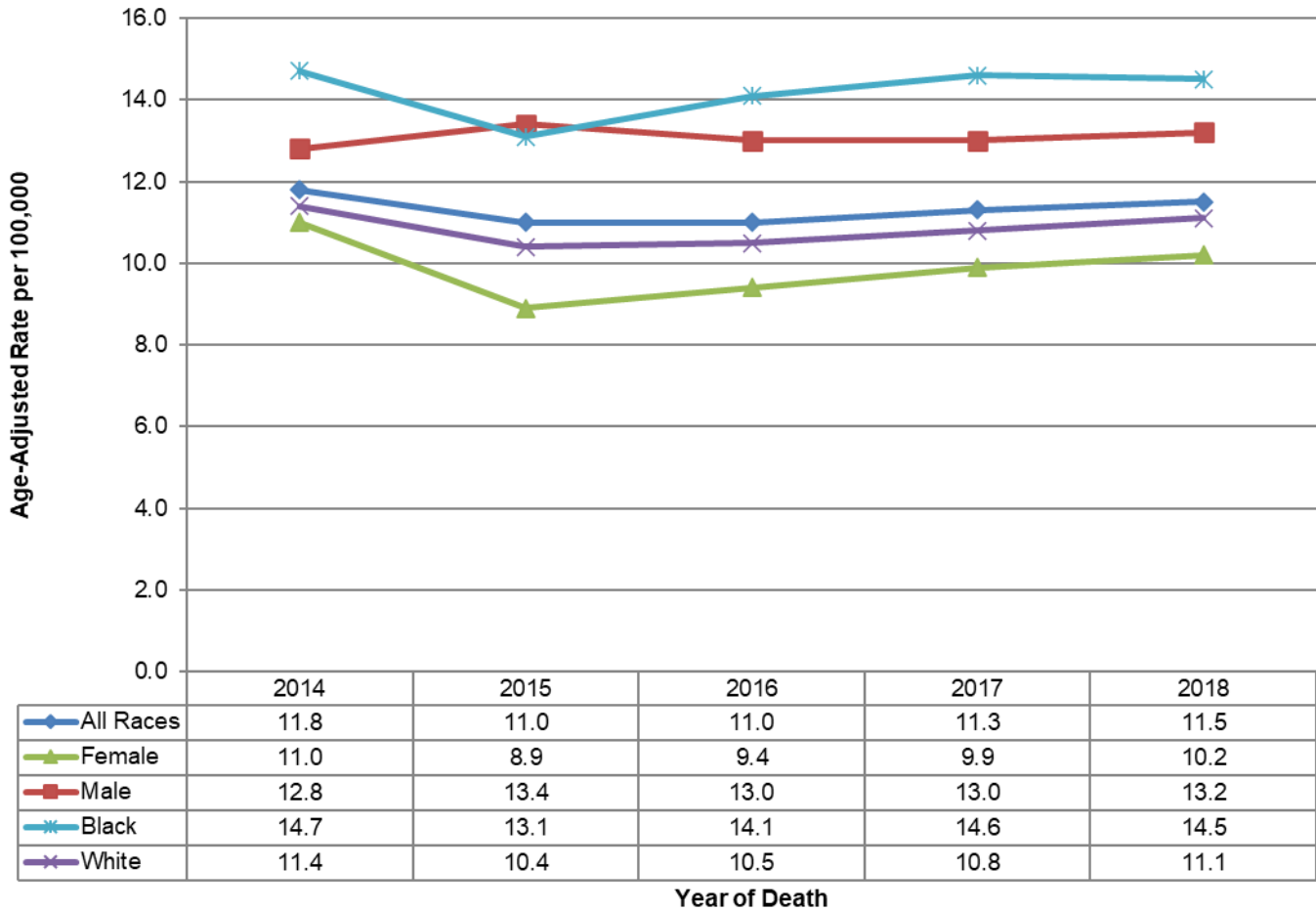


From 2014 to 2018 in TN, the pancreatic cancer incidence rate (Figure 40):

- *Increased* on average among all residents by 1.0% per year*.
- *Decreased* on average among men by 0.8% per year*.
- *Increased* on average among women by 2.6% per year.
- *Decreased* on average among Blacks by 1.4% per year.
- *Increased* on average among Whites by 1.1% per year*.

*Statistically significant

Figure 41. Cancer Mortality, Pancreas, By Gender and Race, Tennessee, 2014-2018

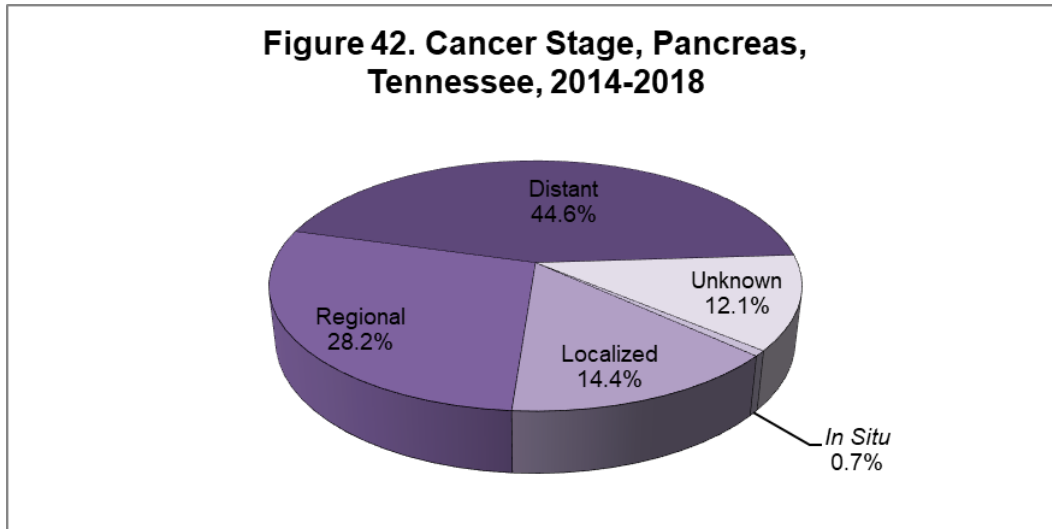


From 2014-2018, the pancreatic cancer mortality rate in TN (Figure 41):

- *Decreased* among all Tennesseans by 0.3% per year.
- Among men *increased* on average by 0.3% per year.
- Among women *decreased* on average by 0.8% per year.
- Among Blacks *increased* on average by 0.7% per year.
- Among Whites *decreased* on average by 0.2% per year.

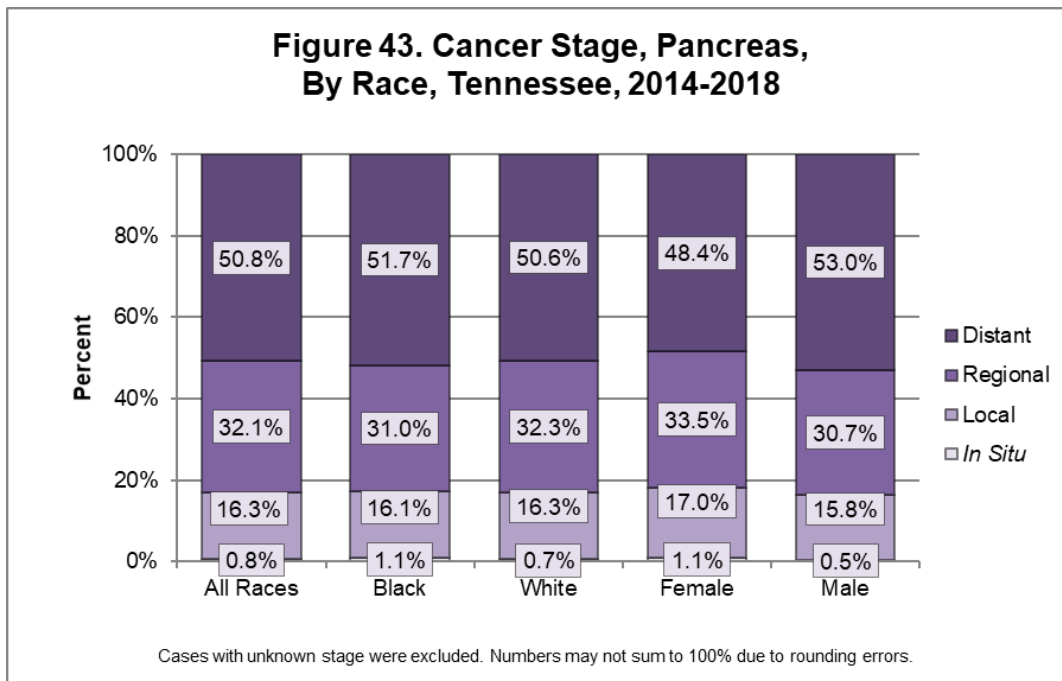
*Statistically significant

PANCREATIC CANCER, CONTINUED



In TN from 2014-2018 (Figure 42):

- A total of 37 pancreatic cancer cases (0.7%) were diagnosed at the *in situ* stage.
- 14.4% of cases were diagnosed at the localized stage, 28.2% at the regional stage, 44.6% at the distant stage and 12.1% of cases had unknown stage information.



- There was no statistically significant difference in percentage of cases diagnosed at late stages between Blacks (82.7%) and Whites (82.9%).
- There was no statistically significant difference in percentage of cases diagnosed at late stages between men (83.7%) and women (81.9%).

CHILDHOOD CANCER

The distributions of cancers that develop in children are often quite different compared to the distribution of cancers in adults. Childhood cancers are the result of DNA changes in cells that take place very early in life, including before birth. Unlike many cancers in adults, childhood cancers are not strongly linked to lifestyle or environmental risk factors (American Cancer Society, 2017). The early diagnosis of childhood cancer has often been hampered by nonspecific symptoms that are similar to those of more common childhood diseases.

Incidence

- Among children less than 20 years of age, TN had the 38th highest, tied with Arkansas, childhood cancer incidence rate in the US, 50 states and D.C., from 2014 to 2018.
- There were 1,502 new invasive cancer cases in children less than 20 years of age in TN during 2014-2018 and the age-adjusted incidence rate for childhood cancers was 184.1 per 1,000,000 children.
- The leading cause of cancer incidence among children less than twenty years of age in TN was leukemia, followed by central nervous system tumors, lymphomas, melanomas, and soft tissue sarcomas. These five causes of cancer incidence represented 75.2% of all childhood cancer cases from 2014 to 2018.
- Less than half of all new childhood cancers with known stage information are diagnosed at early stages.

Mortality

- TN had the 12th highest childhood cancer mortality rate (tied with Alabama, Idaho, Maryland, Iowa, and New York) in the US from 2014 to 2018.
- There were 196 deaths due to cancer in children less than 20 years of age in TN and the mortality rate was 24.1 per 1,000,000 children.
- Cancer was the sixth leading cause of death among children in TN from 2014 to 2018, based on data available from CDC Wonder.

Health Disparities

- The cancer incidence rate among White children was statistically significantly higher than the rate among Black children. Of the 1,502 new invasive cancer cases in children less than twenty years of age in TN from 2014 to 2018, Black children accounted for roughly one out of every six (16.1%) childhood cancer cases, while White children accounted for roughly three out of every four cancer cases (77.4%).

Screening

- No effective screening methods for childhood-related cancers have been discovered.

CHILDHOOD CANCER, CONTINUED

TABLE 8. CANCER INCIDENCE AND MORTALITY, CHILDREN BELOW 20 YEARS OF AGE, TENNESSEE, 2014-2018

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Both*	All Races †	1,502	184.1	174.9	193.6	196	24.1	20.8	27.7	0.13
	Black	242	133.3	117.1	151.2	43	23.8	17.3	32.1	0.18
	White	1,162	184.5	174.0	195.4	145	23.0	19.4	27.1	0.12
Female	All Races †	728	182.4	169.4	196.2	86	21.6	17.3	26.7	0.12
	Black	116	129.5	107.0	155.3	23	25.9	16.4	38.9	0.20
	White	562	183.0	168.2	198.8	62	20.2	15.5	25.9	0.11
Male	All Races †	774	185.6	172.8	199.2	110	26.4	21.7	31.8	0.14
	Black	126	137.0	114.1	163.2	20	21.8	13.3	33.7	0.16
	White	600	185.9	171.3	201.3	83	25.7	20.5	31.9	0.14
Year of Diagnosis or Death										
	2014	341	210.1	188.4	233.6	41	25.3	18.1	34.3	0.12
	2015	287	176.4	156.6	198.0	40	24.6	17.6	33.5	0.14
	2016	315	193.0	172.3	215.5	40	24.6	17.5	33.5	0.13
	2017	312	190.4	169.9	212.8	37	22.7	16.0	31.3	0.12
	2018	247	150.7	132.5	170.7	38	23.1	16.4	31.7	0.15

^Statistic not displayed due to fewer than 11 cases.

*Excludes hermaphrodites and transsexuals.

**Total counts are from 2014 to 2018.

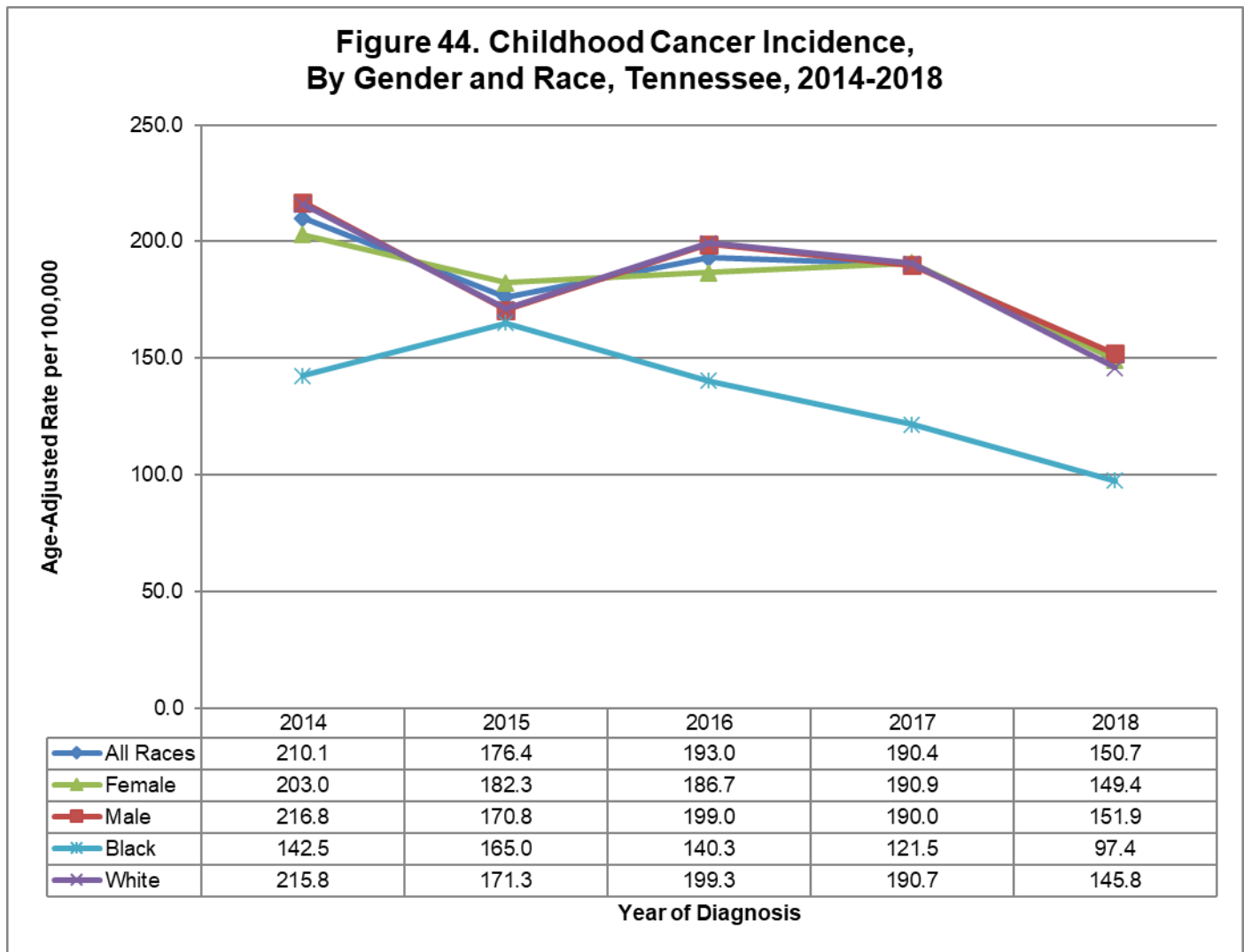
***Rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+).

Rates are cases per 1,000,000 population per year.

Rates are for invasive cancer only (except for bladder cancer which is invasive or in situ) or unless otherwise specified.

†Includes Blacks, Whites, other races, and those missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

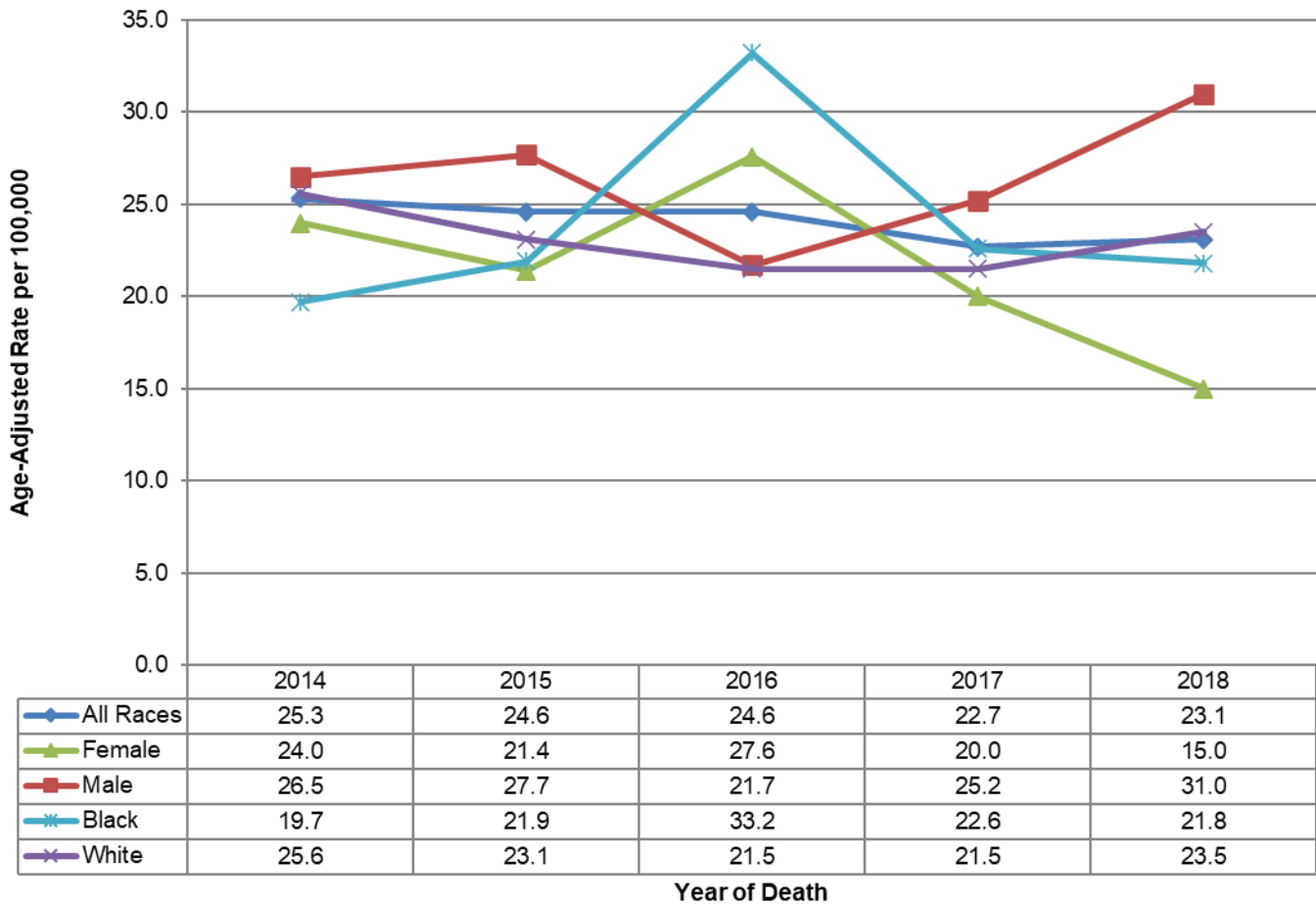


The cancer incidence rate in TN among children less than 20 years of age, from 2014-2018 (Figure 44):

- *Decreased* by 5.5% per year among all children.
- *Decreased* by 5.8% per year among boys and *decreased* by 5.2% per year among girls.
- *Decreased* by 9.7% per year among Black children and *decreased* 6.3% per year among White children.

*Statistically significant

Figure 45. Childhood Cancer Mortality, By Gender and Race, Tennessee, 2014-2018

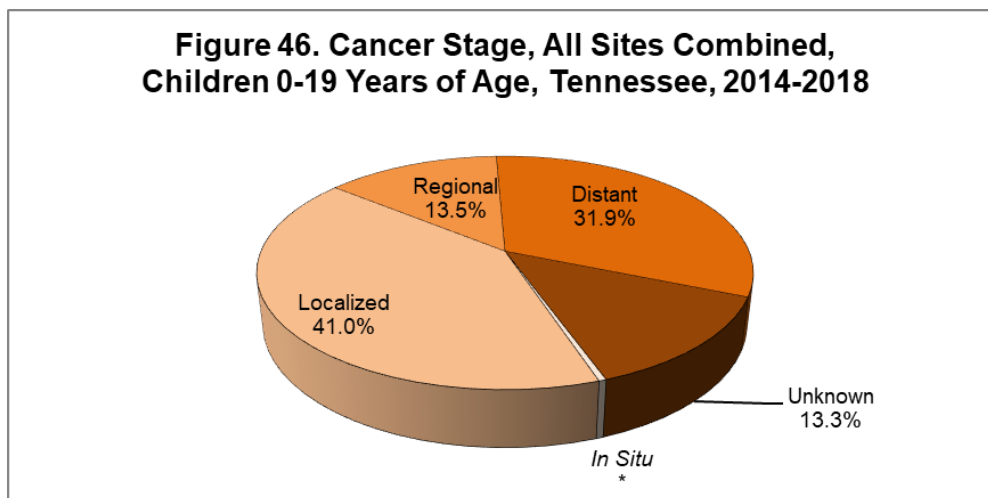


From 2014-2018 in TN (Figure 45), the cancer mortality rate among children less than 20 years of age:

- *Decreased* on average by 2.5% per year among all children*.
- *Increased* on average by 2.6% per year among boys and *decreased* by 8.4% per year among girls.
- The annual percent change could not be calculated due to the small numbers among Black children.
- *Decreased* on average by 2.4% per year among White children.

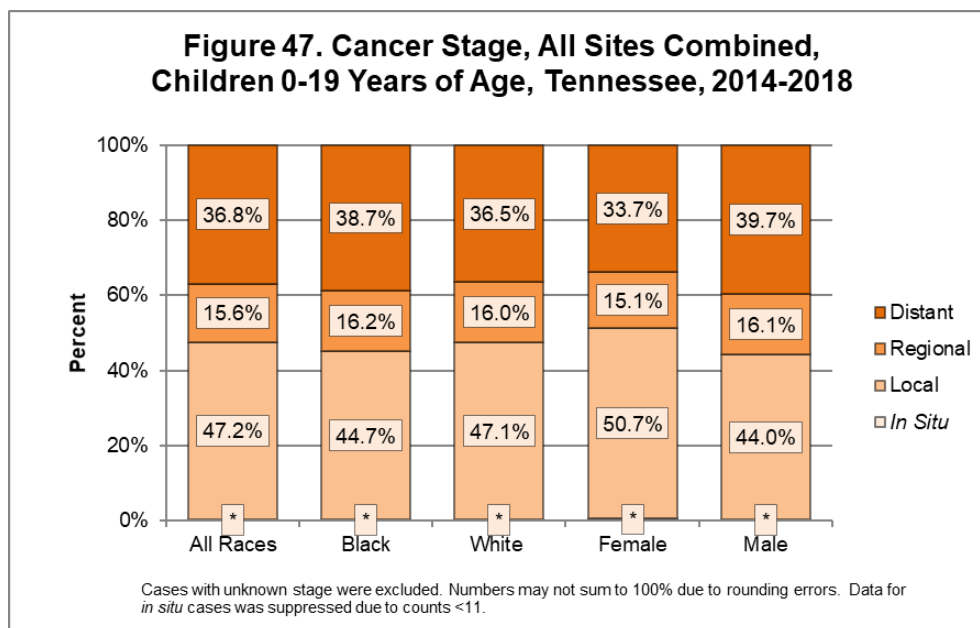
*Statistically significant

CHILDHOOD CANCER, CONTINUED



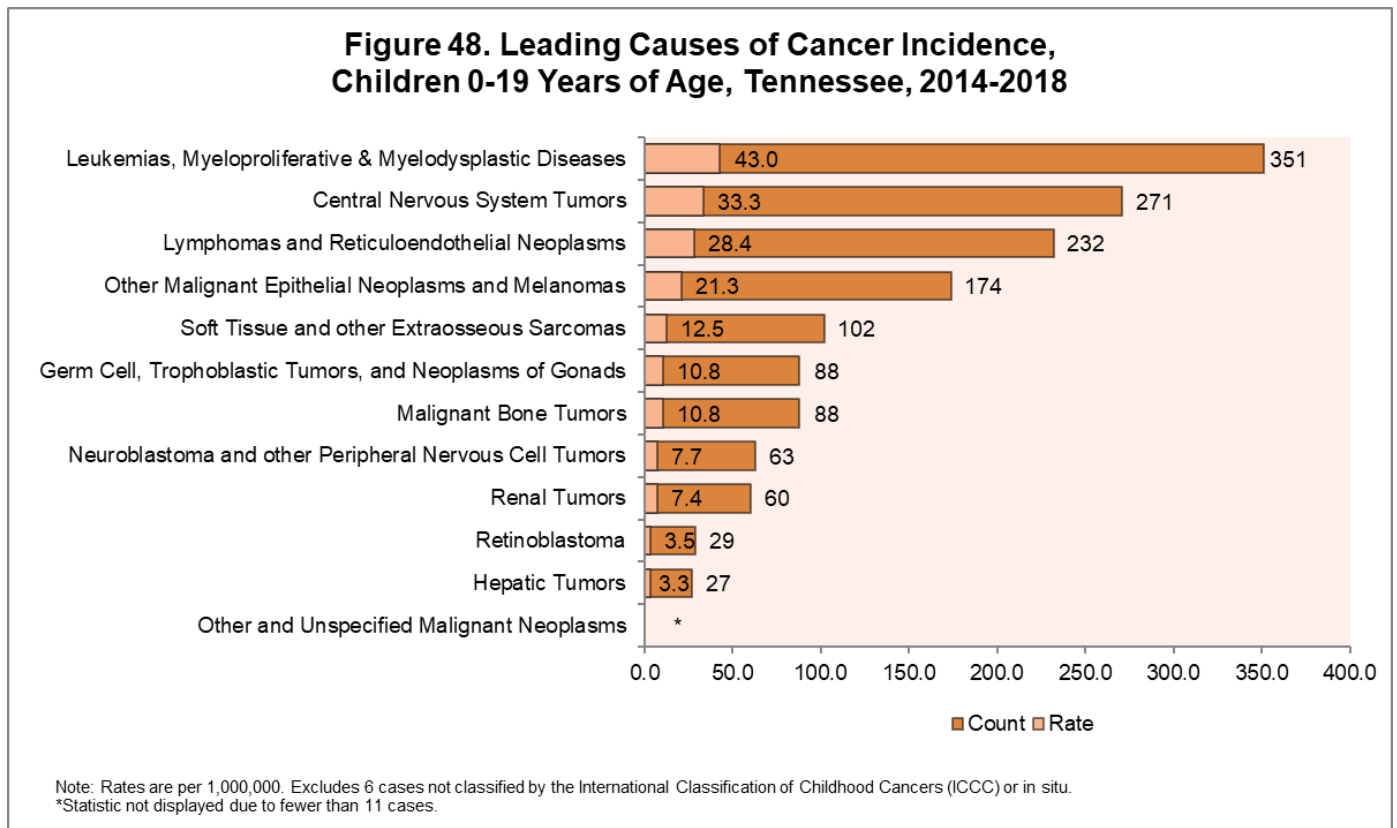
In TN from 2014-2018 (Figure 46):

- Less than 11 cases of all childhood cancers were diagnosed at the *in situ* stage; data suppressed in the figure above.
- 41.0% of cases were diagnosed at the localized stage, 13.5% of cases at the regional stage, 31.9% at the distant stage, and 13.3% of cases had unknown stage information.



In TN, from 2014 to 2018 (Figure 47):

- There were statistically significant differences in the percentage of cases diagnosed at late stages (i.e., regional or distant stage) between Black (54.9%) and White (52.5%) children.
- There were statistically significant differences in the percentage of cases diagnosed at late stages between boys (55.8%) and girls (48.8%).



In TN from 2014 to 2018 (Figure 48):

- Leukemia was the leading cause of cancer incidence among children less than 20 years of age in Tennessee, representing nearly one out of every four (23.4%) new childhood cancer cases.
- The second leading cause of childhood cancer incidence was cancer of the central nervous system, followed by lymphomas, other malignant epithelial neoplasms and melanomas, and soft tissue sarcomas.
- The five leading causes of cancer, described above, accounted for 75.2% of all new childhood cancer diagnoses between 2014 and 2018.

APPENDICES

APPENDICES

APPENDIX I. CANCER INCIDENCE AND MORTALITY, BY SITE

TABLE 9. BY CANCER SITE, TENNESSEE, 2014-2018

Primary Cancer Site	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
All Sites	188,600	475.6	473.4	477.8	71,221	179.4	178.0	180.7	0.38
Oral Cavity and Pharynx	5,416	13.4	13.0	13.8	1,190	2.9	2.8	3.1	0.22
Lip	171	0.4	0.4	0.5	^	^	^	^	^
Tongue	1,743	4.2	4.0	4.5	305	0.8	0.7	0.9	0.19
Salivary Gland	488	1.3	1.2	1.4	111	0.3	0.2	0.4	0.23
Floor of Mouth	231	0.6	0.5	0.6	^	^	^	^	^
Gum and Other Mouth	759	1.9	1.8	2.1	175	0.4	0.4	0.5	0.21
Nasopharynx	215	0.6	0.5	0.6	80	0.2	0.2	0.3	0.33
Tonsil	1,132	2.8	2.6	2.9	120	0.3	0.2	0.3	0.11
Oropharynx	317	0.8	0.7	0.9	124	0.3	0.3	0.4	0.38
Hypopharynx	257	0.6	0.5	0.7	48	0.1	0.1	0.2	0.17
Other Oral Cavity and Pharynx	103	0.3	0.2	0.3	210	0.5	0.5	0.6	1.67
Digestive System	32,971	82.9	82.0	83.8	17,105	42.7	42.0	43.3	0.52
Esophagus	1,973	4.8	4.6	5.0	1,670	4.1	3.9	4.3	0.85
Stomach	2,255	5.7	5.5	6.0	1,050	2.7	2.5	2.9	0.47
Small Intestine	1,178	3.0	2.8	3.2	159	0.4	0.4	0.5	0.13
Colon and Rectum	16,064	41.2	40.5	41.8	5,971	15.2	14.8	15.6	0.37
Colon excluding Rectum	11,581	29.7	29.1	30.2	4,851	12.4	12.0	12.7	0.42
Cecum	2,494	6.4	6.1	6.6	^	^	^	^	^
Appendix	563	1.6	1.5	1.7	^	^	^	^	^
Ascending Colon	2,221	5.6	5.4	5.9	^	^	^	^	^
Hepatic Flexure	526	1.3	1.2	1.4	^	^	^	^	^
Transverse Colon	1,120	2.8	2.7	3.0	^	^	^	^	^
Splenic Flexure	281	0.7	0.7	0.8	^	^	^	^	^
Descending Colon	716	1.8	1.7	2.0	^	^	^	^	^
Sigmoid Colon	2,788	7.1	6.8	7.4	^	^	^	^	^
Large Intestine, NOS	872	2.2	2.1	2.4	^	^	^	^	^
Rectum and Rectosigmoid Junction	4,483	11.5	11.2	11.9	1,120	2.8	2.7	3.0	0.24
Rectosigmoid Junction	982	2.5	2.4	2.7	^	^	^	^	^
Rectum	3,501	9.0	8.7	9.3	^	^	^	^	^
Anus, Anal Canal and Anorectum	967	2.4	2.3	2.6	142	0.4	0.3	0.4	0.17
Liver and Intrahepatic Bile Duct	3,707	8.8	8.5	9.1	2,937	7.0	6.8	7.3	0.80
Liver	3,211	7.6	7.3	7.8	2,299	5.4	5.2	5.7	0.71
Intrahepatic Bile Duct	496	1.2	1.1	1.3	638	1.6	1.5	1.7	1.33
Gallbladder	361	0.9	0.8	1.0	162	0.4	0.3	0.5	0.44
Other Biliary	609	1.5	1.4	1.7	170	0.4	0.4	0.5	0.27
Pancreas	5,185	12.8	12.5	13.2	4,576	11.4	11.0	11.7	0.89
Retroperitoneum	158	0.4	0.3	0.5	20	0.1	0.0	0.1	0.25
Peritoneum, Omentum and Mesentery	222	0.6	0.5	0.6	80	0.2	0.2	0.3	0.33
Other Digestive Organs	292	0.7	0.6	0.8	168	0.4	0.4	0.5	0.57
Respiratory System	32,992	80.4	79.5	81.3	21,688	53.4	52.7	54.1	0.66
Nose, Nasal Cavity and Middle Ear	285	0.7	0.7	0.8	71	0.2	0.1	0.2	0.29
Larynx	1,746	4.2	4.0	4.4	541	1.3	1.2	1.4	0.31
Lung and Bronchus	30,887	75.2	74.4	76.1	21,047	51.9	51.2	52.6	0.69
Pleura	^	^	^	^	^	^	^	^	^
Trachea, Mediastinum and Other Respiratory Organs	66	0.2	0.1	0.2	23	0.1	0.0	0.1	0.50
Bones and Joints	351	1.0	0.9	1.1	184	0.5	0.4	0.6	0.50
Soft Tissue including Heart	1,244	3.4	3.2	3.6	535	1.4	1.3	1.6	0.41
Skin excluding Basal and Squamous	8,401	22.0	21.5	22.5	1617	4.2	4.0	4.4	0.19
Melanoma of the Skin	7,870	20.6	20.1	21.1	1,072	2.8	2.6	3.0	0.14
Other Non-Epithelial Skin	531	1.4	1.3	1.5	545	1.4	1.3	1.5	1.00

APPENDIX I. CANCER INCIDENCE AND MORTALITY, BY SITE, TENNESSEE, CONTINUED

Female Breast	25,944	125.8	124.2	127.4	4,767	22.2	21.6	22.9	0.18
Female Genital System	10,380	50.6	49.6	51.6	3,422	15.9	15.4	16.5	0.31
Cervix Uteri	1,516	8.7	8.2	9.1	541	2.8	2.5	3.0	0.32
Corpus and Uterus, NOS	5,529	25.8	25.1	26.5	993	4.4	4.2	4.7	0.17
Corpus Uteri	5,312	24.8	24.1	25.5	431	1.9	1.7	2.1	0.08
Uterus, NOS	217	1.0	0.9	1.2	562	2.5	2.3	2.7	2.50
Ovary	2,172	10.5	10.1	11.0	1,609	7.4	7.0	7.8	0.70
Vagina	162	0.8	0.6	0.9	58	0.3	0.2	0.4	0.38
Vulva	681	3.3	3.1	3.6	153	0.7	0.6	0.8	0.21
Other Female Genital Organs	320	1.5	1.3	1.7	68	0.3	0.2	0.4	0.20
Male Genital System	24,070	123.0	121.4	124.6	3,171	20.4	19.7	21.1	0.17
Prostate	22,991	116.1	114.6	117.7	3,080	19.8	19.1	20.6	0.17
Testis	861	5.7	5.3	6.1	44	0.3	0.2	0.4	0.05
Penis	186	1.0	0.9	1.2	42	0.2	0.2	0.3	0.20
Other Male Genital Organs	32	0.2	0.1	0.2	^	^	^	^	^
Urinary System	16,341	41.2	40.5	41.8	3,447	8.8	8.5	9.1	0.21
Urinary Bladder	8,117	20.3	19.9	20.8	1,698	4.4	4.2	4.6	0.22
Kidney and Renal Pelvis	7,832	19.9	19.4	20.3	1,648	4.1	3.9	4.3	0.21
Ureter	251	0.6	0.6	0.7	49	0.1	0.1	0.2	0.17
Other Urinary Organs	141	0.4	0.3	0.4	52	0.1	0.1	0.2	0.25
Eye and Orbit	423	1.1	1.0	1.2	43	0.1	0.1	0.2	0.09
Brain and Other Nervous System	2,427	6.7	6.4	7.0	1,850	4.8	4.6	5.0	0.72
Brain	2,296	6.3	6.0	6.5	^	^	^	^	^
Cranial Nerves Other Nervous System	131	0.4	0.3	0.5	^	^	^	^	^
Endocrine System	4,606	13.3	12.9	13.7	270	0.7	0.6	0.8	0.05
Thyroid	4,347	12.6	12.2	12.9	168	0.4	0.4	0.5	0.03
Other Endocrine including Thymus	259	0.7	0.6	0.8	102	0.3	0.2	0.3	0.43
Lymphoma	7,944	20.7	20.3	21.2	2,463	6.4	6.1	6.6	0.31
Hodgkin Lymphoma	860	2.6	2.4	2.8	116	0.3	0.2	0.4	0.12
Hodgkin - Nodal	851	2.6	2.4	2.7	^	^	^	^	^
Hodgkin - Extranodal	^	^	^	^	^	^	^	^	^
Non-Hodgkin Lymphoma	7,084	18.2	17.7	18.6	2,347	6.1	5.8	6.3	0.34
NHL - Nodal	5,024	12.8	12.5	13.2	^	^	^	^	^
NHL - Extranodal	2,060	5.3	5.1	5.5	^	^	^	^	^
Myeloma	2,710	6.8	6.5	7.1	1,443	3.7	3.5	3.9	0.54
Leukemia	5,192	13.8	13.4	14.1	2,558	6.7	6.4	7.0	0.49
Lymphocytic Leukemia	2,349	6.2	5.9	6.4	699	1.9	1.7	2.0	0.31
Acute Lymphocytic Leukemia	496	1.6	1.4	1.7	149	0.4	0.4	0.5	0.25
Chronic Lymphocytic Leukemia	1,718	4.3	4.1	4.5	501	1.3	1.2	1.4	0.30
Other Lymphocytic Leukemia	135	0.3	0.3	0.4	49	0.1	0.1	0.2	0.33
Myeloid and Monocytic Leukemia	2,492	6.7	6.4	6.9	1,395	3.6	3.4	3.8	0.54
Acute Myeloid Leukemia	1,579	4.2	4.0	4.4	1,127	2.9	2.7	3.1	0.69
Acute Monocytic Leukemia	77	0.2	0.2	0.3	^	^	^	^	^
Chronic Myeloid Leukemia	771	2.1	2.0	2.3	154	0.4	0.4	0.5	0.19
Other Myeloid/Monocytic Leukemia	65	0.2	0.1	0.2	105	0.3	0.2	0.3	1.50
Other Leukemia	351	0.9	0.8	1.0	464	1.2	1.1	1.3	1.33
Other Acute Leukemia	78	0.2	0.2	0.3	143	0.4	0.3	0.5	2.00
Aleukemic, Subleukemic and NOS	273	0.7	0.6	0.8	321	0.8	0.7	0.9	1.14
Mesothelioma	270	0.7	0.6	0.8	224	0.6	0.5	0.6	0.86
Kaposi Sarcoma	80	0.3	0.2	0.3	^	^	^	^	^
Miscellaneous	6,603	17.0	16.5	17.4	5,167	13.1	12.7	13.4	0.77

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude hermaphrodites, transsexuals, and cases missing county at diagnosis or county at death.

**Rates are per 100,000 and age-adjusted to the 2000 Std Population (19 ages groups: <1, 1-4,5-9, ...,80-84, 85+)

Confidence intervals (Tiwari mod) are 95% for rates.

Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

†Mortality incidence ratio. See Technical Notes for details.

APPENDIX II. CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, BY GENDER, RACE AND RESIDENT REGION

TABLE 10. ALL SITES COMBINED, BY GENDER, RACE, AND RESIDENT REGION, TENNESSEE 2014-2018.

	Incidence				Mortality				M:I Ratio †
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Total Population									
Tennessee	188,600	475.6	473.4	477.8	71,221	179.4	178.0	180.7	0.38
East Region	38,558	485.5	480.5	490.6	14,395	178.1	175.2	181.1	0.37
Mid-Cumberland Region	45,510	468.7	464.3	473.1	15,935	170.9	168.2	173.7	0.36
Northeast Region	17,091	477.7	470.3	485.3	6,739	181.3	176.9	185.8	0.38
Northwest Region	8,486	501.7	490.7	512.9	3,503	200.0	193.3	206.9	0.40
South Central Region	12,190	482.0	473.2	490.9	4,827	189.3	183.9	194.9	0.39
Southeast Region	20,939	473.4	466.8	480.1	7,891	174.8	170.9	178.8	0.37
Southwest Region	34,567	473.6	468.5	478.8	13,256	184.3	181.1	187.5	0.39
Upper-Cumberland Region	11,259	461.7	452.9	470.7	4,669	187.0	181.6	192.7	0.41
Female									
Tennessee	90,566	427.7	424.8	430.6	32,786	150.0	148.3	151.6	0.35
East Region	18,394	441.6	435.0	448.3	6,546	149.2	145.6	153.0	0.34
Mid-Cumberland Region	22,320	420.5	414.9	426.2	7,430	143.8	140.5	147.1	0.34
Northeast Region	8,206	443.8	433.7	454.1	3,070	153.1	147.5	158.8	0.34
Northwest Region	3,981	450.5	435.9	465.5	1,588	164.3	156.1	173.0	0.36
South Central Region	5,769	436.1	424.5	447.9	2,166	156.4	149.7	163.3	0.36
Southeast Region	9,889	423.9	415.2	432.7	3,602	145.0	140.2	150.0	0.34
Southwest Region	16,790	417.1	410.6	423.6	6,329	155.3	151.4	159.3	0.37
Upper-Cumberland Region	5,217	416.5	404.6	428.7	2,054	153.4	146.6	160.5	0.37
Male									
Tennessee	98,034	526.6	523.2	530.0	38,435	219.6	217.3	221.9	0.42
East Region	20,164	535.0	527.4	542.6	7,849	217.1	212.2	222.1	0.41
Mid-Cumberland Region	23,190	511.8	504.9	518.7	8,505	208.5	203.9	213.2	0.41
Northeast Region	8,885	519.1	508.0	530.4	3,669	218.8	211.6	226.2	0.42
Northwest Region	4,505	568.6	551.6	585.9	1,915	249.1	237.8	260.9	0.44
South Central Region	6,421	537.3	523.8	551.0	2,661	233.9	224.9	243.3	0.44
Southeast Region	11,050	528.1	518.1	538.4	4,289	215.2	208.6	221.9	0.41
Southwest Region	17,777	533.5	525.4	541.8	6,927	226.1	220.5	231.7	0.42
Upper-Cumberland Region	6,042	515.5	502.1	529.1	2,615	230.0	221.0	239.3	0.45
Black									
Tennessee	24,924	465.0	459.0	471.1	9,950	201.6	197.5	205.8	0.43
East Region	1,333	451.7	427.0	477.5	558	201.2	184.3	219.2	0.45
Mid-Cumberland Region	6,047	447.9	435.9	460.1	2,281	191.3	183.0	199.9	0.43
Northeast Region	237	338.7	295.3	386.7	121	184.0	151.4	221.3	0.54
Northwest Region	860	512.8	477.9	549.7	372	229.5	206.1	254.9	0.45
South Central Region	751	469.6	435.5	505.6	298	198.1	175.5	222.7	0.42
Southeast Region	2,074	464.5	443.9	485.8	781	184.4	171.2	198.3	0.40
Southwest Region	13,468	475.1	466.7	483.6	5,489	208.9	203.1	214.9	0.44
Upper-Cumberland Region	154	500.5	422.5	588.4	49	166.8	122.1	221.7	0.33
White									
Tennessee	160,321	469.3	466.9	471.6	60,450	174.5	173.1	176.0	0.37
East Region	36,742	482.1	477.0	487.3	13,709	176.3	173.3	179.3	0.37
Mid-Cumberland Region	38,060	457.5	452.8	462.3	13,373	165.4	162.6	168.3	0.36
Northeast Region	16,690	477.2	469.7	484.8	6,559	180.2	175.8	184.7	0.38
Northwest Region	7,549	496.6	485.0	508.4	3,104	196.0	189.0	203.2	0.39
South Central Region	11,277	478.1	469.0	487.3	4,484	187.7	182.2	193.4	0.39
Southeast Region	18,541	468.3	461.3	475.3	7,021	172.3	168.3	176.5	0.37
Southwest Region	20,483	460.4	453.9	466.9	7,604	166.9	163.1	170.8	0.36
Upper-Cumberland Region	10,979	457.7	448.8	466.7	4,591	187.0	181.5	192.6	0.41

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude hermaphrodites, transsexuals, and cases missing county at diagnosis or county at death.

**Rates are per 100,000 population per year and age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+).

Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

Confidence intervals (Tiwarei mod) are 95% for rates.

†Mortality incidence ratio. See Technical Notes for details.

Note the case totals for each region may not sum to the state total due to records missing resident county information.

APPENDIX III. CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, BY RESIDENT COUNTY

TABLE 11. ALL SITES COMBINED, BY RESIDENT COUNTY, TENNESSEE, 2014-2018

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	188,600	475.6	473.4	477.8	71,221	179.4	178.0	180.7	0.38
East Region	38,558	485.5	480.5	490.6	14,395	178.1	175.2	181.1	0.37
Anderson County	2,423	460.2	441.2	479.7	897	164.2	153.3	175.7	0.36
Blount County	4,296	488.5	473.5	504.0	1,480	162.8	154.4	171.5	0.33
Campbell County	1,481	518.1	491.1	546.3	606	205.7	189.3	223.3	0.40
Claiborne County	1,183	545.9	513.9	579.6	469	214.5	194.9	235.6	0.39
Cocke County	1,218	477.6	449.8	506.9	499	191.3	174.4	209.7	0.40
Grainger County	797	489.9	454.9	527.2	345	209.7	187.3	234.2	0.43
Hamblen County	1,888	460.5	439.4	482.4	743	174.6	162.1	187.9	0.38
Jefferson County	1,844	505.5	481.7	530.3	637	171.3	158.0	185.7	0.34
Knox County	12,690	483.4	474.9	492.1	4,503	170.7	165.7	175.9	0.35
Loudon County	2,145	509.6	486.3	533.8	724	163.4	151.1	176.7	0.32
Monroe County	1,588	489.8	464.9	515.9	669	208.0	192.0	225.2	0.42
Morgan County	682	484.8	448.1	524.0	256	184.5	162.0	209.3	0.38
Roane County	1,770	433.0	411.9	455.1	772	177.7	165.0	191.2	0.41
Scott County	637	476.5	439.3	516.2	326	236.8	211.3	264.8	0.50
Sevier County	3,358	515.0	497.0	533.5	1,224	188.7	178.0	200.0	0.37
Union County	558	438.5	401.4	478.4	245	197.7	172.9	225.2	0.45
Mid-Cumberland Region	45,510	468.7	464.3	473.1	15,935	170.9	168.2	173.7	0.36
Cheatham County	1,170	498.2	468.8	529.1	458	204.9	185.7	225.6	0.41
Davidson County	15,459	467.9	460.3	475.5	5,593	174.2	169.5	178.9	0.37
Dickson County	1,666	527.3	501.7	554.0	663	214.5	198.2	231.9	0.41
Houston County	296	513.0	453.6	578.7	129	223.6	185.3	268.2	0.44
Humphreys County	663	508.1	468.7	550.2	250	183.0	160.6	208.0	0.36
Montgomery County	3,643	475.2	459.4	491.3	1,379	193.2	182.8	204.0	0.41
Robertson County	1,889	468.3	446.8	490.5	725	186.9	173.2	201.5	0.40
Rutherford County	6,348	468.0	456.2	480.1	2,107	170.0	162.5	177.7	0.36
Stewart County	466	496.4	450.7	546.0	203	213.4	184.4	246.2	0.43
Sumner County	4,985	470.8	457.6	484.4	1,764	168.5	160.6	176.7	0.36
Trousdale County	254	478.3	419.7	542.9	113	226.4	185.6	273.7	0.47
Williamson County	5,172	455.0	442.3	468.1	1,359	126.8	119.9	134.0	0.28
Wilson County	3,499	447.2	432.0	462.7	1,192	158.3	149.2	167.9	0.35
Northeast Region	17,091	477.7	470.3	485.3	6,739	181.3	176.9	185.8	0.38
Carter County	1,570	379.6	360.3	399.8	688	159.9	147.9	172.7	0.42
Greene County	2,446	492.5	472.3	513.4	941	183.0	171.2	195.5	0.37
Hancock County	236	497.7	432.9	570.4	104	222.1	179.7	272.4	0.45
Hawkins County	1,974	491.2	468.9	514.5	786	193.6	179.9	208.1	0.39
Johnson County	595	443.4	407.1	482.4	295	216.4	191.8	243.8	0.49
Sullivan County	5,559	487.0	473.7	500.6	2,155	178.2	170.6	186.2	0.37
Unicoi County	638	468.1	430.4	508.6	293	202.0	178.7	227.9	0.43
Washington County	4,073	505.3	489.5	521.6	1,477	178.9	169.7	188.5	0.35
Northwest Region	8,486	501.7	490.7	512.9	3,503	200.0	193.3	206.9	0.40
Benton County	676	541.6	499.2	587.1	315	239.2	212.5	268.8	0.44
Carroll County	1,097	561.3	527.3	597.2	487	238.0	216.9	260.9	0.42
Crockett County	454	479.4	435.0	527.4	174	178.0	152.1	207.4	0.37
Dyer County	1,113	478.7	450.2	508.6	476	198.3	180.5	217.4	0.41
Gibson County	1,618	507.4	482.4	533.4	638	193.2	178.2	209.1	0.38
Henry County	1,258	497.4	468.9	527.4	517	197.7	180.6	216.3	0.40
Lake County	201	449.8	388.9	518.4	85	188.1	149.8	234.1	0.42
Obion County	1081	504.5	473.8	536.9	426	193.6	175.2	213.6	0.38
Weakley County	988	469.9	440.0	501.5	385	176.9	159.3	196.1	0.38

APPENDIX III. ALL SITES COMBINED CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY,
CONTINUED

South Central Region	12,190	482.0	473.2	490.9	4,827	189.3	183.9	194.9	0.39
Bedford County	1,281	469.6	443.7	496.6	522	197.9	181.0	216.0	0.42
Coffee County	1,698	494.9	471.1	519.7	666	192.2	177.7	207.7	0.39
Giles County	895	432.5	403.4	463.3	352	169.3	151.6	188.7	0.39
Hickman County	752	477.6	443.2	514.1	300	191.0	169.5	214.5	0.40
Lawrence County	1,351	485.6	459.4	512.9	589	206.5	189.9	224.2	0.43
Lewis County	379	447.4	401.3	497.9	164	185.8	157.4	218.3	0.42
Lincoln County	881	379.7	354.1	406.8	435	183.8	166.6	202.6	0.48
Marshall County	1039	522.8	490.6	556.7	357	182.7	163.8	203.2	0.35
Maury County	2,952	549.4	529.1	570.3	1001	186.1	174.4	198.4	0.34
Moore County	162	346.9	293.1	408.8	64	132.3	101.0	171.9	0.38
Perry County	286	512.4	451.2	580.3	139	236.5	197.8	281.5	0.46
Wayne County	514	447.3	408.4	489.2	238	199.8	174.9	227.7	0.45
Southeast Region	20,939	473.4	466.8	480.1	7,891	174.8	170.9	178.8	0.37
Bledsoe County	375	371.4	333.7	412.7	161	160.3	135.9	188.2	0.43
Bradley County	2,902	453.3	436.6	470.5	1,127	174.5	164.4	185.2	0.38
Franklin County	1,316	462.2	436.5	489.1	521	180.0	164.4	196.8	0.39
Grundy County	471	490.2	445.1	539.0	224	236.0	205.1	270.6	0.48
Hamilton County	10,637	479.7	470.3	489.2	3,685	161.9	156.6	167.3	0.34
McMinn County	1,647	452.0	429.6	475.3	691	184.5	170.7	199.2	0.41
Marion County	946	479.3	447.9	512.5	415	205.8	185.9	227.4	0.43
Meigs County	450	540.8	489.0	597.0	183	214.3	183.0	249.9	0.40
Polk County	574	482.6	442.2	525.9	251	200.5	175.9	228.0	0.42
Rhea County	1,167	543.2	511.5	576.5	459	210.0	190.9	230.7	0.39
Sequatchie County	454	442.5	400.9	487.6	174	169.1	144.1	197.7	0.38
Southwest Region	34,567	473.6	468.5	478.8	13,256	184.3	181.1	187.5	0.39
Chester County	476	459.8	418.4	504.5	191	176.1	151.6	203.7	0.38
Decatur County	434	474.0	428.3	524.0	190	198.8	170.7	231.0	0.42
Fayette County	1,184	407.4	383.2	432.8	436	149.3	135.1	164.8	0.37
Hardeman County	914	546.5	510.8	584.3	339	208.4	186.3	232.5	0.38
Hardin County	834	425.1	395.3	456.9	382	189.2	170.0	210.3	0.45
Haywood County	561	475.2	435.0	518.4	230	192.3	167.5	220.0	0.40
Henderson County	813	444.2	413.3	476.9	377	204.8	184.2	227.2	0.46
Lauderdale County	773	496.9	461.6	534.2	339	219.5	196.3	244.9	0.44
McNairy County	967	525.3	491.4	561.2	391	206.7	186.2	229.1	0.39
Madison County	2,752	460.6	443.0	478.7	1,074	178.4	167.7	189.7	0.39
Shelby County	23,189	476.7	470.4	483.0	8,603	181.5	177.6	185.5	0.38
Tipton County	1,670	487.0	463.3	511.6	704	212.8	197.0	229.6	0.44
Upper-Cumberland Region	11,259	461.7	452.9	470.7	4,669	187.0	181.6	192.7	0.41
Cannon County	398	430.6	387.9	477.1	182	192.1	164.7	223.2	0.45
Clay County	237	385.4	335.3	442.0	102	153.3	124.7	188.2	0.40
Cumberland County	2,339	447.4	427.2	468.3	877	159.4	148.2	171.5	0.36
DeKalb County	550	411.8	377.0	449.1	230	172.9	150.7	197.6	0.42
Fentress County	633	477.8	439.2	519.2	284	214.9	189.6	243.0	0.45
Jackson County	343	369.3	328.9	414.2	165	173.4	146.9	204.2	0.47
Macon County	675	476.3	440.1	514.8	315	222.0	197.7	248.6	0.47
Overton County	756	485.0	449.8	522.4	375	241.9	217.3	268.7	0.50
Pickett County	161	374.4	313.2	446.0	79	174.1	135.7	222.5	0.47
Putnam County	2,265	503.2	482.1	524.9	874	191.9	179.2	205.4	0.38
Smith County	545	439.5	402.2	479.5	213	175.1	151.8	201.2	0.40
Van Buren County	169	380.2	321.4	447.9	82	184.6	144.8	233.5	0.49
Warren County	1,246	483.0	455.9	511.4	497	191.3	174.6	209.4	0.40
White County	942	510.7	477.4	545.8	394	205.7	185.5	227.7	0.40

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude hermaphrodites, transsexuals, and cases missing county at diagnosis or county at death.

**Rates (cases per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+). Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

Confidence intervals (Tiwari mod) are 95% for rates.

†Mortality incidence ratio. See Technical Notes for details.

Note the case totals for each region may not sum up to the state total due to records missing resident county information.

APPENDIX IV. LUNG CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY

TABLE 12. LUNG AND BRONCHUS CANCER, BY RESIDENT COUNTY, TENNESSEE, 2014-2018

	Incidence				Mortality				M:I
	Count	Rate	Lower CI	Upper CI	Count	Rate	Lower CI	Upper CI	Ratio †
Tennessee	30,887	75.2	74.4	76.1	21,047	51.9	51.2	52.6	0.69
East Region	6,795	80.9	78.9	82.9	4,498	54.1	52.5	55.7	0.67
Anderson County	408	73.6	66.5	81.4	259	46.7	41.1	53.0	0.63
Blount County	760	80.4	74.7	86.5	454	48.8	44.3	53.6	0.61
Campbell County	343	112.2	100.4	125.1	237	78.8	69.0	89.9	0.70
Claiborne County	274	117.9	104.1	133.3	173	76.5	65.3	89.2	0.65
Cocke County	235	86.9	75.9	99.4	177	66.0	56.4	77.0	0.76
Grainger County	169	97.1	82.6	113.8	121	71.1	58.6	85.8	0.73
Hamblen County	351	81.3	72.9	90.5	233	53.8	47.0	61.4	0.66
Jefferson County	313	80.9	72.0	90.8	211	55.2	47.8	63.4	0.68
Knox County	1,932	71.2	68.0	74.5	1,246	46.4	43.8	49.1	0.65
Loudon County	359	80.1	71.6	89.5	211	45.7	39.5	52.8	0.57
Monroe County	331	93.3	83.2	104.3	239	71.0	62.0	81.1	0.76
Morgan County	135	89.3	74.6	106.4	81	54.5	43.1	68.4	0.61
Roane County	331	74.5	66.5	83.4	246	55.0	48.2	62.6	0.74
Scott County	142	100.3	84.2	118.8	121	84.4	69.8	101.3	0.84
Sevier County	574	82.2	75.5	89.5	399	58.1	52.4	64.3	0.71
Union County	138	106.1	88.6	126.4	90	72.6	58.0	90.1	0.68
Mid-Cumberland Region	6,706	69.7	68.0	71.5	4,470	47.5	46.0	48.9	0.68
Cheatham County	212	88.6	76.6	102.1	151	66.4	55.8	78.6	0.75
Davidson County	2,226	68.4	65.5	71.4	1,504	46.6	44.2	49.1	0.68
Dickson County	304	93.9	83.4	105.3	196	60.8	52.5	70.2	0.65
Houston County	60	98.1	74.3	128.1	44	72.6	52.3	99.2	0.74
Humphreys County	125	89.8	74.4	107.8	75	52.9	41.4	67.0	0.59
Montgomery County	574	77.4	71.0	84.2	412	56.3	50.8	62.1	0.73
Robertson County	333	82.4	73.5	92.0	238	60.1	52.5	68.4	0.73
Rutherford County	977	75.0	70.2	80.0	618	50.0	46.0	54.2	0.67
Stewart County	86	85.9	68.4	107.1	60	61.2	46.5	79.8	0.71
Sumner County	788	73.0	67.9	78.4	512	48.2	44.0	52.7	0.66
Trousdale County	55	104.9	78.4	137.8	40	77.2	54.7	106.3	0.74
Williamson County	440	40.9	37.1	45.1	267	25.7	22.6	29.0	0.63
Wilson County	526	65.8	60.1	71.9	353	46.2	41.3	51.4	0.70
Northeast Region	3,028	79.5	76.6	82.4	2,088	54.7	52.4	57.2	0.69
Carter County	271	61.7	54.4	69.8	198	44.9	38.8	51.9	0.73
Greene County	417	78.0	70.5	86.2	329	61.5	54.9	68.8	0.79
Hancock County	49	104.2	75.6	141.2	35	74.1	50.5	106.1	0.71
Hawkins County	436	101.1	91.6	111.4	268	63.9	56.4	72.4	0.63
Johnson County	114	78.7	64.7	95.6	92	65.8	52.7	81.9	0.84
Sullivan County	969	79.3	74.3	84.6	640	51.8	47.8	56.1	0.65
Unicoi County	90	60.3	48.2	75.2	80	54.0	42.5	68.4	0.90
Washington County	682	80.9	74.8	87.4	446	52.5	47.7	57.8	0.65
Northwest Region	1,606	89.4	85.0	93.9	1,135	63.4	59.7	67.3	0.71
Benton County	138	100.2	83.8	119.5	112	82.1	67.2	99.9	0.82
Carroll County	235	114.7	100.2	131.0	165	81.0	68.9	94.9	0.71
Crockett County	91	90.9	72.9	112.5	48	47.9	35.2	64.2	0.53
Dyer County	224	90.2	78.6	103.2	158	64.0	54.3	75.1	0.71
Gibson County	290	86.2	76.5	97.0	194	57.1	49.3	65.9	0.66
Henry County	210	76.8	66.6	88.4	173	64.7	55.3	75.6	0.84
Lake County	47	100.9	73.7	135.9	27	54.8	35.9	81.5	0.54
Obion County	202	88.7	76.6	102.4	134	60.4	50.4	72.1	0.68
Weakley County	169	76.1	64.8	88.9	124	55.0	45.6	65.9	0.72

APPENDIX IV. LUNG CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, CONTINUED

South Central Region	2,181	82.7	79.2	86.3	1,485	56.8	53.9	59.8	0.69
Bedford County	222	78.6	68.4	89.9	143	52.7	44.3	62.3	0.67
Coffee County	265	76.0	66.9	85.9	179	50.6	43.4	58.7	0.67
Giles County	165	75.8	64.5	88.9	107	50.6	41.3	61.6	0.67
Hickman County	172	104.1	88.8	121.4	114	66.9	55.0	80.8	0.64
Lawrence County	266	91.5	80.7	103.5	188	63.7	54.8	73.7	0.70
Lewis County	70	78.9	61.0	101.0	54	61.7	45.9	81.9	0.78
Lincoln County	154	62.5	52.8	73.6	126	51.4	42.7	61.6	0.82
Marshall County	188	90.5	77.8	104.9	109	54.4	44.4	66.1	0.60
Maury County	486	87.9	80.1	96.4	313	58.4	51.9	65.4	0.66
Moore County	23	45.7	28.8	71.2	19	39.3	23.4	63.9	0.86
Perry County	66	106.2	81.7	136.9	50	82.1	60.6	109.9	0.77
Wayne County	104	86.5	70.5	105.6	83	69.4	55.1	86.7	0.80
Southeast Region	3,556	77.1	74.6	79.8	2,340	50.8	48.8	53.0	0.66
Bledsoe County	73	69.7	54.3	88.6	58	57.7	43.5	75.6	0.83
Bradley County	495	74.3	67.8	81.3	325	49.2	44.0	55.0	0.66
Franklin County	232	78.2	68.2	89.4	158	53.4	45.2	62.8	0.68
Grundy County	87	84.1	67.1	104.7	62	60.7	46.4	78.8	0.72
Hamilton County	1,641	71.8	68.3	75.5	1,001	43.7	41.0	46.6	0.61
McMinn County	301	77.1	68.5	86.6	240	61.4	53.8	69.9	0.80
Marion County	185	86.9	74.5	100.9	124	57.1	47.3	68.5	0.66
Meigs County	82	96.4	75.8	121.5	57	63.9	47.7	84.5	0.66
Polk County	137	108.8	90.8	129.8	80	63.0	49.7	79.3	0.58
Rhea County	247	108.8	95.4	123.7	174	78.6	67.2	91.5	0.72
Sequatchie County	76	70.6	55.2	89.4	61	56.4	42.8	73.5	0.80
Southwest Region	4,982	67.1	65.2	69.1	3,511	48.1	46.5	49.8	0.72
Chester County	80	71.6	56.6	89.8	61	55.0	41.9	71.2	0.77
Decatur County	97	102.7	82.5	127.1	69	73.0	56.2	94.1	0.71
Fayette County	165	50.4	42.8	59.1	127	39.8	33.0	47.9	0.79
Hardeman County	166	98.5	83.7	115.3	108	65.3	53.3	79.4	0.66
Hardin County	166	79.2	67.2	93.0	129	60.9	50.6	73.0	0.77
Haywood County	81	64.8	51.0	81.5	53	43.1	32.0	57.3	0.67
Henderson County	158	81.9	69.4	96.2	116	60.9	50.2	73.5	0.74
Lauderdale County	157	98.0	83.0	115.1	124	79.1	65.5	94.8	0.81
McNairy County	194	97.3	83.8	112.6	133	66.1	55.2	78.9	0.68
Madison County	447	72.5	65.8	79.7	294	48.4	43.0	54.5	0.67
Shelby County	3,003	62.0	59.7	64.3	2,084	43.8	41.9	45.8	0.71
Tipton County	268	77.2	68.1	87.3	213	63.1	54.7	72.4	0.82
Upper-Cumberland Region	2,033	78.1	74.6	81.6	1,519	59.1	56.1	62.2	0.76
Cannon County	59	61.3	46.4	80.0	45	45.2	32.9	61.3	0.74
Clay County	38	56.0	39.4	79.1	33	48.6	33.3	70.5	0.87
Cumberland County	375	66.6	59.5	74.5	264	47.6	41.6	54.4	0.71
DeKalb County	109	79.2	64.7	96.4	88	65.6	52.3	81.6	0.83
Fentress County	139	99.1	82.8	118.2	105	76.4	62.0	93.5	0.77
Jackson County	84	84.1	66.6	105.9	70	70.0	54.1	90.3	0.83
Macon County	122	80.5	66.6	96.8	101	68.5	55.5	83.7	0.85
Overton County	173	102.9	87.9	120.1	123	74.6	61.8	89.6	0.72
Pickett County	31	60.9	41.0	90.9	37	80.8	55.4	116.8	1.33
Putnam County	397	84.5	76.3	93.5	284	61.5	54.5	69.3	0.73
Smith County	89	70.2	56.1	87.2	68	55.0	42.4	70.4	0.78
Van Buren County	32	68.3	45.5	100.4	21	47.6	28.8	76.1	0.70
Warren County	223	81.9	71.4	93.7	156	58.0	49.1	68.1	0.71
White County	162	82.4	70.0	96.7	124	64.4	53.4	77.2	0.78

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude hermaphrodites, transsexuals, and cases missing county at diagnosis or county at death.

**Rates (cases per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+). Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

Confidence intervals (Tiwari mod) are 95% for rates.

†Mortality incidence ratio. See Technical Notes for details.

Note the case totals for each region may not sum up to the state total due to records missing resident county information.

APPENDIX V. PROSTATE CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY

TABLE 13. PROSTATE CANCER, BY RESIDENT COUNTY, TENNESSEE, 2014-2018

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	22,991	116.1	114.6	117.7	3,080	19.8	19.1	20.6	0.17
East Region	4,416	108.3	105.1	111.6	572	17.6	16.1	19.1	0.16
Anderson County	306	112.1	99.7	125.9	33	13.8	9.4	19.7	0.12
Blount County	447	98.6	89.5	108.5	54	15.0	11.2	19.7	0.15
Campbell County	161	109.4	93.0	128.4	25	19.5	12.5	29.4	0.18
Claiborne County	125	111.7	92.3	134.4	11	11.7	5.6	21.9	0.10
Cocke County	131	95.4	79.3	114.4	22	21.6	13.3	33.5	0.23
Grainger County	86	96.0	76.3	120.2	14	20.0	10.5	35.0	0.21
Hamblen County	235	116.6	101.9	132.9	28	17.1	11.2	25.0	0.15
Jefferson County	196	97.4	84.0	112.6	24	15.0	9.5	22.8	0.15
Knox County	1,511	117.2	111.2	123.4	168	16.0	13.6	18.7	0.14
Loudon County	253	108.2	94.8	123.3	28	14.4	9.4	21.5	0.13
Monroe County	151	85.6	71.9	101.4	32	27.6	18.5	39.5	0.32
Morgan County	99	127.8	103.1	157.1	18	33.8	19.4	54.4	0.26
Roane County	177	82.2	70.2	96.2	29	16.5	11.0	24.1	0.20
Scott County	76	112.3	87.8	142.0	21	33.7	20.5	52.6	0.30
Sevier County	399	119.4	107.7	132.3	57	22.4	16.8	29.3	0.19
Union County	63	86.9	66.1	113.1	^	^	^	^	^
Mid-Cumberland Region	5,802	122.9	119.6	126.2	663	19.2	17.7	20.7	0.16
Cheatham County	157	127.2	106.9	150.5	13	14.4	7.0	25.6	0.11
Davidson County	1,917	125.1	119.3	131.1	246	21.2	18.6	24.1	0.17
Dickson County	169	107.6	91.4	125.9	28	21.8	14.3	32.0	0.20
Houston County	26	86.3	55.6	130.4	^	^	^	^	^
Humphreys County	75	111.9	87.6	141.8	14	23.2	12.5	40.2	0.21
Montgomery County	415	114.2	103.0	126.2	52	19.7	14.6	25.9	0.17
Robertson County	193	96.8	83.1	112.2	28	20.1	13.1	29.2	0.21
Rutherford County	818	123.7	115.0	132.9	78	18.6	14.6	23.4	0.15
Stewart County	45	86.0	62.4	117.3	^	^	^	^	^
Sumner County	637	120.1	110.7	130.2	64	16.0	12.2	20.5	0.13
Trousdale County	28	100.1	65.4	147.6	^	^	^	^	^
Williamson County	871	151.2	140.8	162.2	78	18.7	14.6	23.5	0.12
Wilson County	451	111.0	100.6	122.3	46	16.8	12.1	22.7	0.15
Northeast Region	1,741	94.4	89.9	99.1	291	18.9	16.8	21.3	0.20
Carter County	139	64.8	54.3	77.1	25	13.9	8.9	20.9	0.21
Greene County	271	107.8	95.0	122.0	34	15.9	10.9	22.7	0.15
Hancock County	20	78.9	45.8	129.7	^	^	^	^	^
Hawkins County	177	81.3	69.5	94.9	32	19.2	12.9	27.6	0.24
Johnson County	61	88.2	67.1	115.0	17	27.3	15.6	45.2	0.31
Sullivan County	569	97.3	89.3	105.9	95	19.0	15.3	23.4	0.20
Unicoi County	67	93.0	71.8	119.9	15	24.0	13.3	41.1	0.26
Washington County	437	105.9	96.0	116.7	69	21.0	16.3	26.7	0.20
Northwest Region	1,093	130.0	122.2	138.1	151	21.6	18.2	25.4	0.17
Benton County	79	122.7	96.3	155.4	17	34.1	19.8	55.8	0.28
Carroll County	135	140.0	116.9	166.7	20	23.6	14.3	37.2	0.17
Crockett County	52	118.0	87.4	156.6	^	^	^	^	^
Dyer County	110	98.1	80.2	119.2	25	28.4	18.2	42.2	0.29
Gibson County	207	133.8	115.9	153.9	32	23.1	15.7	33.0	0.17
Henry County	218	168.6	146.5	193.7	20	18.7	11.2	29.8	0.11
Lake County	18	75.4	43.6	123.1	^	^	^	^	^
Obion County	132	122.9	102.3	147.0	14	16.8	8.9	29.0	0.14
Weakley County	142	136.0	114.2	161.1	12	12.5	6.4	22.4	0.09

APPENDIX V. PROSTATE CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY,
CONTINUED

South Central Region	1,389	107.2	101.5	113.1	193	19.7	17.0	22.8	0.18
Bedford County	153	114.4	96.5	134.7	24	25.9	16.3	38.9	0.23
Coffee County	211	122.4	106.2	140.6	32	22.6	15.4	32.0	0.18
Giles County	94	87.3	70.1	108.0	^	^	^	^	^
Hickman County	61	72.4	55.0	93.9	^	^	^	^	^
Lawrence County	143	101.6	85.4	120.4	19	16.7	9.9	26.4	0.16
Lewis County	43	102.6	73.3	141.0	^	^	^	^	^
Lincoln County	82	70.3	55.5	88.2	24	27.1	17.1	40.7	0.39
Marshall County	143	138.9	116.5	164.8	12	16.1	8.1	28.5	0.12
Maury County	352	127.8	114.2	142.6	42	21.3	15.1	29.1	0.17
Moore County	18	64.8	38.4	107.9	^	^	^	^	^
Perry County	28	85.5	56.3	127.5	^	^	^	^	^
Wayne County	61	100.8	76.7	131.0	^	^	^	^	^
Southeast Region	2,506	112.5	108.0	117.1	360	19.9	17.9	22.2	0.18
Bledsoe County	44	79.4	56.9	108.9	^	^	^	^	^
Bradley County	276	86.6	76.5	97.7	51	20.8	15.4	27.5	0.24
Franklin County	153	103.5	87.4	122.0	23	16.7	10.4	25.7	0.16
Grundy County	47	94.3	68.7	127.7	14	35.5	19.0	61.3	0.38
Hamilton County	1,470	135.7	128.6	143.0	193	21.8	18.8	25.1	0.16
McMinn County	156	82.6	69.9	97.2	27	17.0	11.1	25.1	0.21
Marion County	117	114.6	94.1	138.9	14	18.2	9.7	31.4	0.16
Meigs County	39	92.9	64.6	130.6	^	^	^	^	^
Polk County	41	64.0	45.3	89.1	^	^	^	^	^
Rhea County	113	101.8	83.4	123.5	12	13.4	6.8	23.9	0.13
Sequatchie County	50	88.7	65.2	119.3	^	^	^	^	^
Southwest Region	4,857	138.2	134.2	142.3	678	25.2	23.3	27.3	0.18
Chester County	61	115.7	88.0	150.0	^	^	^	^	^
Decatur County	36	77.1	53.6	109.4	^	^	^	^	^
Fayette County	183	117.3	100.3	136.8	19	15.6	9.2	25.0	0.13
Hardeman County	138	165.7	138.5	197.1	20	32.1	19.3	49.9	0.19
Hardin County	99	95.1	76.9	117.2	^	^	^	^	^
Haywood County	80	136.7	107.5	172.2	14	27.7	14.8	47.9	0.20
Henderson County	85	97.3	77.2	121.4	^	^	^	^	^
Lauderdale County	76	99.7	77.9	125.9	11	20.7	10.0	37.1	0.21
McNairy County	106	111.9	91.1	136.6	13	17.3	9.0	30.5	0.15
Madison County	390	132.5	119.3	146.8	49	19.6	14.3	26.1	0.15
Shelby County	3,384	147.7	142.5	153.0	501	29.7	27.1	32.6	0.20
Tipton County	219	127.3	110.4	146.2	20	16.4	9.8	25.4	0.13
Upper-Cumberland Region	1,187	93.3	87.9	98.9	172	16.2	13.8	18.9	0.17
Cannon County	46	94.7	68.9	128.2	^	^	^	^	^
Clay County	24	73.2	46.6	113.8	^	^	^	^	^
Cumberland County	302	103.8	91.9	117.3	41	14.5	10.3	20.4	0.14
DeKalb County	55	78.9	58.8	104.3	^	^	^	^	^
Fentress County	68	100.3	76.8	129.7	14	27.2	14.3	47.3	0.27
Jackson County	23	44.0	27.4	69.9	^	^	^	^	^
Macon County	59	84.5	63.6	110.5	11	21.5	10.4	38.8	0.25
Overton County	67	81.1	62.4	104.4	12	18.4	9.2	33.4	0.23
Pickett County	^	^	^	^	^	^	^	^	^
Putnam County	204	90.8	78.6	104.6	37	19.3	13.5	26.8	0.21
Smith County	71	112.8	87.1	144.5	^	^	^	^	^
Van Buren County	19	72.3	42.7	120.3	^	^	^	^	^
Warren County	134	102.8	85.8	122.5	12	11.2	5.7	19.8	0.11
White County	106	110.7	90.3	135.0	17	21.8	12.6	35.6	0.20

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude females, hermaphrodites, transsexuals, and cases missing county at diagnosis or county at death.

**Rates are per 100,000 population and age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+).

Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

Confidence intervals (Tiwari mod) are 95% for rates.

†Mortality incidence ratio. See Technical Notes for details.

Note the case totals for each region may not sum up to the state total due to records missing resident county information.

APPENDIX VI. FEMALE BREAST CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY

TABLE 14. FEMALE BREAST CANCER, BY RESIDENT COUNTY, TENNESSEE, 2014-2018

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	25,944	125.8	124.2	127.4	4,767	22.2	21.6	22.9	0.18
East Region	5,283	129.6	125.9	133.3	865	20.2	18.9	21.7	0.16
Anderson County	343	126.4	112.5	141.6	77	25.2	19.7	32.0	0.20
Blount County	560	125.9	115.2	137.5	74	16.6	12.9	21.2	0.13
Campbell County	172	116.2	98.7	136.2	31	21.8	14.6	31.8	0.19
Claiborne County	150	140.9	118.0	167.3	35	31.8	21.8	45.1	0.23
Cocke County	167	126.4	106.9	148.8	26	20.2	13.0	30.5	0.16
Grainger County	95	111.1	88.9	138.0	17	21.6	11.8	36.7	0.19
Hamblen County	237	108.4	94.5	123.8	42	18.1	12.9	24.9	0.17
Jefferson County	259	137.9	120.7	157.1	31	15.9	10.6	23.1	0.12
Knox County	1,888	137.6	131.3	144.2	297	20.7	18.3	23.3	0.15
Loudon County	289	135.0	118.4	153.7	44	18.6	13.2	26.0	0.14
Monroe County	189	114.6	98.1	133.5	31	18.7	12.5	27.3	0.16
Morgan County	101	159.1	128.1	195.7	^	^	^	^	^
Roane County	245	125.7	109.2	144.2	41	17.7	12.5	24.8	0.14
Scott County	75	113.3	88.5	143.2	21	28.5	17.5	44.6	0.25
Sevier County	455	133.9	121.3	147.6	72	20.5	16.0	26.1	0.15
Union County	58	88.8	66.5	116.9	16	22.2	12.6	37.4	0.25
Mid-Cumberland Region	6,754	130.4	127.2	133.6	1,142	21.9	20.6	23.2	0.17
Cheatham County	171	138.9	118.2	162.3	23	17.2	10.7	26.5	0.12
Davidson County	2,357	132.7	127.3	138.4	446	24.2	21.9	26.6	0.18
Dickson County	215	132.1	114.5	151.7	47	28.8	20.9	38.7	0.22
Houston County	39	134.5	93.8	188.4	^	^	^	^	^
Humphreys County	75	112.0	87.0	142.7	12	17.8	8.8	33.0	0.16
Montgomery County	521	127.1	116.2	138.6	88	22.4	17.9	27.7	0.18
Robertson County	253	118.2	103.7	134.2	47	22.3	16.3	29.9	0.19
Rutherford County	961	130.4	122.2	139.1	147	20.8	17.5	24.5	0.16
Stewart County	56	119.2	88.3	158.3	^	^	^	^	^
Sumner County	678	122.2	112.9	132.0	111	19.7	16.1	23.9	0.16
Trousdale County	23	83.5	52.2	128.1	^	^	^	^	^
Williamson County	903	146.5	136.9	156.7	128	20.9	17.4	25.0	0.14
Wilson County	502	122.7	111.9	134.3	81	19.4	15.3	24.3	0.16
Northeast Region	2,178	119.6	114.4	125.1	405	20.5	18.5	22.7	0.17
Carter County	201	91.5	78.6	106.1	41	17.4	12.3	24.3	0.19
Greene County	305	122.7	108.5	138.5	48	17.1	12.5	23.2	0.14
Hancock County	28	109.0	70.8	163.5	^	^	^	^	^
Hawkins County	236	113.8	99.1	130.3	46	20.9	15.2	28.4	0.18
Johnson County	68	109.3	82.6	142.8	14	21.9	11.3	39.8	0.20
Sullivan County	736	126.1	116.6	136.3	140	21.5	18.0	25.7	0.17
Unicoi County	88	128.9	101.7	162.2	22	30.7	18.6	49.0	0.24
Washington County	516	126.7	115.5	138.8	88	20.3	16.1	25.3	0.16
Northwest Region	1,048	122.0	114.4	130.1	215	22.5	19.5	25.9	0.18
Benton County	72	118.9	91.6	152.8	17	22.9	13.1	39.3	0.19
Carroll County	121	121.8	100.1	147.3	24	21.8	13.8	33.5	0.18
Crockett County	55	108.0	80.2	143.1	11	18.7	9.2	35.6	0.17
Dyer County	149	129.8	109.1	153.4	34	26.3	17.9	37.5	0.20
Gibson County	199	123.1	105.9	142.5	40	21.5	15.2	29.8	0.17
Henry County	146	107.4	89.6	128.2	27	17.3	11.3	26.2	0.16
Lake County	24	118.4	73.7	183.9	^	^	^	^	^
Obion County	148	133.2	111.6	158.0	27	25.2	16.3	37.7	0.19
Weakley County	134	118.5	98.3	141.9	30	25.4	16.8	37.3	0.21

APPENDIX VI. FEMALE BREAST CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, CONTINUED

South Central Region	1,574	120.6	114.5	127.0	287	21.3	18.9	24.1	0.18
Bedford County	164	112.9	95.9	132.3	29	19.3	12.8	28.1	0.17
Coffee County	225	122.0	106.1	139.8	40	22.6	15.9	31.3	0.19
Giles County	112	101.7	82.9	124.0	21	19.9	11.8	31.8	0.20
Hickman County	88	111.4	88.4	139.1	23	29.0	18.0	44.7	0.26
Lawrence County	172	121.3	103.2	141.7	37	23.3	16.3	32.7	0.19
Lewis County	34	77.3	52.2	111.4	^	^	^	^	^
Lincoln County	110	92.4	75.2	112.7	34	28.0	19.0	40.1	0.30
Marshall County	144	142.5	119.5	168.9	20	19.1	11.5	30.2	0.13
Maury County	411	147.5	133.0	163.1	55	18.8	14.1	24.8	0.13
Moore County	31	136.0	90.4	199.7	^	^	^	^	^
Perry County	28	100.9	64.4	152.1	^	^	^	^	^
Wayne County	55	97.1	71.8	129.6	13	21.9	11.1	40.5	0.23
Southeast Region	2,706	118.7	114.0	123.4	504	21.1	19.2	23.1	0.18
Bledsoe County	40	90.3	63.0	126.8	^	^	^	^	^
Bradley County	386	115.0	103.5	127.5	82	25.0	19.7	31.2	0.22
Franklin County	144	96.2	80.4	114.6	28	21.2	13.7	31.7	0.22
Grundy County	61	124.7	93.6	163.8	14	28.3	14.8	50.5	0.23
Hamilton County	1,446	124.2	117.6	131.1	273	21.6	19.0	24.4	0.17
McMinn County	213	112.0	96.8	129.1	30	15.9	10.5	23.3	0.14
Marion County	116	114.1	93.3	138.6	27	25.8	16.6	38.9	0.23
Meigs County	54	127.5	93.8	170.5	^	^	^	^	^
Polk County	57	105.8	79.0	139.4	^	^	^	^	^
Rhea County	138	132.7	110.4	158.4	19	16.2	9.7	26.0	0.12
Sequatchie County	51	95.0	69.4	128.0	^	^	^	^	^
Southwest Region	4,961	126.9	123.3	130.6	1,073	26.8	25.2	28.5	0.21
Chester County	46	87.9	63.3	119.2	17	26.6	15.4	44.0	0.30
Decatur County	46	94.5	67.7	130.2	^	^	^	^	^
Fayette County	147	103.6	86.4	123.5	31	21.9	14.7	31.8	0.21
Hardeman County	115	139.2	113.6	169.3	20	24.5	14.4	39.7	0.18
Hardin County	77	82.1	63.5	105.0	16	15.6	8.6	27.0	0.19
Haywood County	76	124.6	96.8	158.5	16	24.0	13.5	40.5	0.19
Henderson County	99	106.3	85.6	130.9	32	31.7	21.5	45.6	0.30
Lauderdale County	94	115.5	92.5	142.8	24	28.7	18.1	43.7	0.25
McNairy County	116	122.4	100.0	148.7	25	29.0	18.2	44.2	0.24
Madison County	352	113.1	101.1	126.2	70	22.1	17.1	28.2	0.20
Shelby County	3,600	134.8	130.3	139.4	766	28.1	26.1	30.3	0.21
Tipton County	193	109.3	94.1	126.4	47	26.9	19.7	36.1	0.25
Upper-Cumberland Region	1,440	116.9	110.6	123.5	276	21.1	18.6	23.9	0.18
Cannon County	49	105.3	76.5	141.9	^	^	^	^	^
Clay County	32	108.6	71.8	159.9	^	^	^	^	^
Cumberland County	301	125.7	109.7	143.6	49	17.4	12.6	24.0	0.14
DeKalb County	77	108.0	84.6	136.7	12	16.2	8.3	29.7	0.15
Fentress County	76	108.4	84.2	138.4	13	20.3	10.3	36.7	0.19
Jackson County	46	95.9	69.0	131.9	^	^	^	^	^
Macon County	88	118.0	94.0	146.6	18	24.7	14.5	39.7	0.21
Overton County	81	100.1	78.5	126.3	21	26.0	15.7	41.4	0.26
Pickett County	26	128.4	78.5	202.0	^	^	^	^	^
Putnam County	309	133.7	118.6	150.3	54	22.0	16.4	29.2	0.16
Smith County	63	96.9	73.9	125.4	12	17.9	9.2	32.4	0.18
Van Buren County	21	89.0	54.2	143.1	^	^	^	^	^
Warren County	167	124.2	105.4	145.6	33	22.8	15.6	32.7	0.18
White County	104	112.9	91.0	138.8	29	30.0	19.5	44.5	0.27

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude males, hermaphrodites, transsexuals, and cases missing county at diagnosis or county at death.

**Rates (cases per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+). Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

Confidence intervals (Tiwari mod) are 95% for rates.

†Mortality incidence ratio. See Technical Notes for details.

Note the case totals for each region may not sum up to the state total due to records missing resident county information.

APPENDIX VII. COLORECTAL CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY

TABLE 15. COLON AND RECTUM CANCER, BY RESIDENT COUNTY, TENNESSEE, 2014-2018

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	16,064	41.2	40.5	41.8	5,971	15.2	14.8	15.6	0.37
East Region	3,018	38.9	37.5	40.4	1,105	13.8	13.0	14.7	0.35
Anderson County	213	40.3	34.9	46.4	82	15.2	11.9	19.0	0.38
Blount County	291	35.3	31.2	39.8	109	12.0	9.8	14.6	0.34
Campbell County	132	47.8	39.7	57.1	40	14.3	10.1	19.9	0.30
Claiborne County	96	45.3	36.3	56.0	35	15.5	10.7	22.1	0.34
Cocke County	97	37.1	29.9	45.8	33	12.7	8.6	18.4	0.34
Grainger County	61	38.6	29.1	50.4	30	18.9	12.4	27.8	0.49
Hamblen County	172	41.1	35.1	48.0	60	13.8	10.5	17.9	0.34
Jefferson County	167	46.1	39.2	54.1	48	12.9	9.5	17.3	0.28
Knox County	956	37.4	35.0	39.9	359	13.7	12.3	15.3	0.37
Loudon County	139	37.1	30.6	44.7	43	9.4	6.7	13.0	0.25
Monroe County	132	41.3	34.3	49.6	39	11.7	8.2	16.3	0.28
Morgan County	56	41.4	31.1	54.3	19	14.3	8.5	22.8	0.35
Roane County	134	33.7	28.0	40.5	57	13.2	9.9	17.4	0.39
Scott County	53	40.5	30.1	53.5	24	17.0	10.8	25.8	0.42
Sevier County	286	44.4	39.2	50.1	109	17.1	14.0	20.8	0.39
Union County	33	27.6	18.8	39.5	18	15.9	9.3	25.6	0.58
Mid-Cumberland Region	3,804	40.0	38.7	41.3	1,394	15.1	14.3	16.0	0.38
Cheatham County	81	34.8	27.3	43.8	33	13.9	9.4	20.0	0.40
Davidson County	1,305	40.1	37.9	42.4	477	15.2	13.9	16.7	0.38
Dickson County	151	48.6	41.0	57.3	52	18.1	13.4	23.8	0.37
Houston County	37	65.7	45.2	93.0	^	^	^	^	^
Humphreys County	67	52.1	39.9	67.2	21	16.1	9.9	25.3	0.31
Montgomery County	352	47.3	42.4	52.7	148	21.6	18.2	25.4	0.46
Robertson County	168	42.4	36.0	49.5	58	14.5	10.9	19.0	0.34
Rutherford County	511	38.5	35.2	42.1	195	15.9	13.7	18.3	0.41
Stewart County	47	50.8	36.9	68.7	23	23.2	14.6	35.8	0.46
Sumner County	430	40.7	36.9	44.8	158	15.0	12.7	17.5	0.37
Trousdale County	30	56.1	37.5	81.1	12	25.5	13.0	45.0	0.45
Williamson County	362	32.3	29.0	36.0	99	9.0	7.3	11.1	0.28
Wilson County	263	34.7	30.5	39.3	108	14.3	11.7	17.4	0.41
Northeast Region	1,355	38.2	36.1	40.3	512	13.7	12.5	15.0	0.36
Carter County	136	32.0	26.7	38.2	54	12.7	9.5	16.9	0.40
Greene County	228	47.0	40.9	53.9	75	14.9	11.6	18.9	0.32
Hancock County	14	33.7	18.0	58.5	^	^	^	^	^
Hawkins County	153	39.6	33.4	46.8	50	12.6	9.3	16.9	0.32
Johnson County	55	42.6	31.6	56.6	20	14.9	9.0	23.9	0.35
Sullivan County	412	36.5	32.9	40.4	164	13.3	11.3	15.5	0.36
Unicoi County	60	43.9	33.1	57.8	23	15.9	10.0	24.9	0.36
Washington County	297	36.5	32.4	41.1	119	14.2	11.7	17.1	0.39
Northwest Region	794	46.5	43.3	50.0	290	16.8	14.9	19.0	0.36
Benton County	64	50.3	38.1	65.9	16	11.5	6.6	19.8	0.23
Carroll County	105	53.7	43.6	65.7	41	20.4	14.5	28.2	0.38
Crockett County	49	50.3	36.9	67.4	18	18.2	10.7	29.6	0.36
Dyer County	116	49.2	40.5	59.4	40	17.1	12.1	23.5	0.35
Gibson County	143	44.6	37.4	52.8	52	15.6	11.6	20.7	0.35
Henry County	112	46.2	37.6	56.5	44	17.7	12.7	24.4	0.38
Lake County	25	55.6	35.7	83.6	^	^	^	^	^
Obion County	100	45.5	36.8	55.9	32	13.8	9.4	19.9	0.30
Weakley County	80	36.2	28.5	45.5	41	19.6	13.9	27.1	0.54

APPENDIX VII. COLORECTAL CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY,

CONTINUED

South Central Region	1,069	43.0	40.4	45.7	390	15.6	14.0	17.2	0.36
Bedford County	117	43.1	35.5	51.9	53	20.2	15.1	26.7	0.47
Coffee County	148	43.3	36.5	51.1	60	17.2	13.0	22.4	0.40
Giles County	84	42.2	33.3	53.0	29	14.5	9.6	21.3	0.34
Hickman County	51	33.8	25.0	45.0	17	10.8	6.3	17.7	0.32
Lawrence County	111	39.9	32.7	48.3	39	13.9	9.8	19.3	0.35
Lewis County	43	47.9	34.2	66.0	12	13.8	6.8	25.6	0.29
Lincoln County	108	47.7	38.8	58.2	47	21.4	15.5	28.9	0.45
Marshall County	85	43.1	34.2	53.7	26	12.7	8.2	19.0	0.29
Maury County	242	47.5	41.6	54.1	72	13.8	10.7	17.6	0.29
Moore County	14	28.5	15.4	50.7	^	^	^	^	^
Perry County	25	50.4	31.3	77.1	^	^	^	^	^
Wayne County	41	36.0	25.7	49.7	22	19.0	11.8	29.6	0.53
Southeast Region	1,774	41.0	39.1	43.0	624	14.2	13.1	15.4	0.35
Bledsoe County	26	26.6	17.2	40.0	^	^	^	^	^
Bradley County	267	42.3	37.3	47.8	97	15.0	12.2	18.4	0.35
Franklin County	126	45.2	37.4	54.4	32	11.4	7.7	16.5	0.25
Grundy County	55	63.7	47.2	84.5	25	31.6	19.9	47.9	0.50
Hamilton County	837	38.4	35.8	41.2	271	12.1	10.7	13.7	0.32
McMinn County	157	43.5	36.7	51.3	64	16.9	12.9	21.8	0.39
Marion County	82	43.7	34.4	54.9	47	24.8	18.0	33.6	0.57
Meigs County	34	41.8	28.3	60.1	14	17.3	9.1	30.4	0.41
Polk County	47	41.7	30.2	56.4	17	15.9	9.1	26.3	0.38
Rhea County	92	43.9	35.2	54.2	34	16.1	11.1	22.8	0.37
Sequatchie County	51	48.0	35.5	64.1	14	14.1	7.6	24.4	0.29
Southwest Region	3,240	45.0	43.4	46.6	1,269	17.7	16.7	18.7	0.39
Chester County	51	50.2	37.0	66.8	18	17.0	9.8	27.6	0.34
Decatur County	45	50.8	36.1	70.1	11	12.5	6.0	24.0	0.25
Fayette County	103	35.3	28.5	43.3	39	12.5	8.8	17.6	0.35
Hardeman County	85	51.4	40.9	64.0	39	24.4	17.3	33.8	0.47
Hardin County	74	36.6	28.6	46.6	28	13.5	8.9	20.2	0.37
Haywood County	63	51.5	39.2	66.9	27	24.9	16.1	37.0	0.48
Henderson County	86	49.4	39.3	61.5	30	17.5	11.6	25.5	0.35
Lauderdale County	87	56.7	45.1	70.4	38	24.3	17.1	33.8	0.43
McNairy County	92	50.8	40.5	63.1	35	18.8	13.0	26.7	0.37
Madison County	250	42.3	37.1	48.1	99	16.5	13.3	20.2	0.39
Shelby County	2,157	45.0	43.1	47.0	837	17.6	16.4	18.9	0.39
Tipton County	147	41.9	35.2	49.5	68	20.8	16.0	26.5	0.50
Upper-Cumberland Region	1,010	42.2	39.5	45.0	386	16.2	14.5	18.0	0.38
Cannon County	47	51.6	37.4	69.6	18	19.1	11.2	31.0	0.37
Clay County	25	42.3	27.0	64.8	^	^	^	^	^
Cumberland County	171	33.3	27.9	39.6	65	12.8	9.5	16.9	0.38
DeKalb County	52	38.8	28.7	51.8	23	17.4	11.0	26.8	0.45
Fentress County	56	43.4	32.2	57.6	22	17.3	10.6	27.2	0.40
Jackson County	34	37.5	25.3	54.5	17	19.7	11.0	33.4	0.53
Macon County	59	42.8	32.3	55.6	22	15.9	9.8	24.4	0.37
Overton County	78	52.2	40.8	66.0	35	24.5	16.7	34.9	0.47
Pickett County	23	60.9	36.1	98.0	^	^	^	^	^
Putnam County	202	45.5	39.3	52.5	69	15.8	12.2	20.1	0.35
Smith County	53	41.6	30.9	55.0	20	17.1	10.3	27.0	0.41
Van Buren County	13	30.6	15.2	56.5	13	28.5	14.6	52.5	0.93
Warren County	115	46.1	37.9	55.8	36	14.5	10.1	20.4	0.31
White County	82	44.9	35.4	56.3	33	17.6	12.1	25.2	0.39

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude hermaphrodites, transexuals, and cases missing county at diagnosis or county at death.

**Rates (cases per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+).

Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

Confidence intervals (Tiwari mod) are 95% for rates.

†Mortality incidence ratio. See Technical Notes for details.

Note the case totals for each region may not sum up to the state total due to records missing resident county information.

APPENDIX VIII. MELANOMA OF THE SKIN INCIDENCE AND MORTALITY, BY RESIDENT COUNTY

TABLE 16. MELANOMA OF THE SKIN CANCER, BY RESIDENT COUNTY, TENNESSEE, 2014-2018

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	7,870	20.6	20.1	21.1	1,072	2.8	2.6	3.0	0.14
East Region	2,116	27.9	26.7	29.1	243	3.2	2.8	3.6	0.11
Anderson County	121	24.6	20.2	29.7	16	3.3	1.9	5.5	0.13
Blount County	272	32.6	28.6	36.9	27	3.1	2.0	4.6	0.10
Campbell County	47	16.8	12.2	22.8	^	^	^	^	^
Claiborne County	45	21.6	15.5	29.4	^	^	^	^	^
Cocke County	55	22.5	16.7	29.9	^	^	^	^	^
Grainger County	40	26.6	18.6	37.1	^	^	^	^	^
Hamblen County	111	29.6	24.2	35.9	^	^	^	^	^
Jefferson County	115	33.7	27.6	40.9	^	^	^	^	^
Knox County	740	28.9	26.8	31.2	71	2.8	2.2	3.5	0.10
Loudon County	137	30.5	25.2	36.8	21	4.8	2.9	7.8	0.16
Monroe County	81	26.6	20.9	33.6	^	^	^	^	^
Morgan County	23	17.1	10.7	26.2	^	^	^	^	^
Roane County	83	21.0	16.5	26.5	17	4.4	2.5	7.3	0.21
Scott County	26	20.8	13.4	31.0	^	^	^	^	^
Sevier County	185	29.7	25.4	34.6	21	3.7	2.3	5.8	0.12
Union County	35	31.4	21.5	44.5	^	^	^	^	^
Mid-Cumberland Region	1,718	18.1	17.3	19.0	260	2.8	2.5	3.2	0.15
Cheatham County	44	19.1	13.6	26.1	11	5.4	2.6	9.9	0.28
Davidson County	476	14.6	13.3	16.0	69	2.2	1.7	2.8	0.15
Dickson County	58	18.9	14.2	24.7	^	^	^	^	^
Houston County	^	^	^	^	^	^	^	^	^
Humphreys County	22	17.8	10.9	27.8	^	^	^	^	^
Montgomery County	115	15.0	12.3	18.0	19	2.7	1.6	4.2	0.18
Robertson County	80	20.8	16.4	26.0	16	4.3	2.4	7.1	0.21
Rutherford County	231	17.1	14.9	19.6	31	2.5	1.7	3.6	0.15
Stewart County	17	17.2	9.9	28.7	^	^	^	^	^
Sumner County	229	23.2	20.2	26.4	44	4.0	2.9	5.5	0.17
Trousdale County	^	^	^	^	^	^	^	^	^
Williamson County	273	24.8	21.9	28.1	27	2.8	1.8	4.1	0.11
Wilson County	161	21.7	18.4	25.5	26	3.3	2.1	4.9	0.15
Northeast Region	966	28.7	26.9	30.7	93	2.6	2.1	3.3	0.09
Carter County	90	24.7	19.6	30.8	^	^	^	^	^
Greene County	123	27.5	22.5	33.2	15	3.1	1.7	5.4	0.11
Hancock County	12	26.2	12.9	48.5	^	^	^	^	^
Hawkins County	105	27.6	22.3	33.8	^	^	^	^	^
Johnson County	25	19.7	12.6	30.0	^	^	^	^	^
Sullivan County	330	30.5	27.1	34.2	35	3.0	2.0	4.2	0.10
Unicoi County	36	26.9	18.4	38.5	^	^	^	^	^
Washington County	245	31.4	27.5	35.8	17	2.1	1.2	3.4	0.07
Northwest Region	259	16.4	14.4	18.7	54	3.1	2.3	4.2	0.19
Benton County	19	18.9	10.9	30.8	^	^	^	^	^
Carroll County	31	15.7	10.5	22.9	^	^	^	^	^
Crockett County	16	17.1	9.5	28.6	^	^	^	^	^
Dyer County	27	12.6	8.2	18.6	^	^	^	^	^
Gibson County	39	12.9	9.1	17.9	14	4.2	2.3	7.3	0.33
Henry County	44	19.1	13.6	26.3	^	^	^	^	^
Lake County	^	^	^	^	^	^	^	^	^
Obion County	34	16.9	11.5	24.2	^	^	^	^	^
Weakley County	43	22.5	15.9	31.0	^	^	^	^	^

APPENDIX VIII. MELANOMA OF THE SKIN INCIDENCE AND MORTALITY, BY RESIDENT COUNTY,
CONTINUED

South Central Region	425	17.5	15.8	19.3	86	3.5	2.8	4.3	0.20
Bedford County	49	18.8	13.8	25.0	^	^	^	^	^
Coffee County	63	19.3	14.7	24.9	12	3.4	1.8	6.1	0.18
Giles County	29	15.1	9.9	22.3	^	^	^	^	^
Hickman County	21	14.9	9.1	23.3	^	^	^	^	^
Lawrence County	52	20.0	14.8	26.5	16	6.2	3.5	10.3	0.31
Lewis County	12	16.4	8.1	29.8	^	^	^	^	^
Lincoln County	43	18.8	13.3	25.9	^	^	^	^	^
Marshall County	30	15.0	10.0	21.9	^	^	^	^	^
Maury County	104	19.2	15.6	23.5	18	3.2	1.8	5.1	0.17
Moore County	^	^	^	^	^	^	^	^	^
Perry County	^	^	^	^	^	^	^	^	^
Wayne County	11	9.4	4.7	17.7	^	^	^	^	^
Southeast Region	1022	24.1	22.5	25.6	123	2.8	2.3	3.3	0.12
Bledsoe County	16	17.3	9.8	28.9	^	^	^	^	^
Bradley County	119	18.9	15.6	22.7	20	3.2	2.0	5.0	0.17
Franklin County	62	21.0	15.9	27.3	^	^	^	^	^
Grundy County	12	12.4	6.1	22.9	^	^	^	^	^
Hamilton County	574	27.1	24.8	29.5	47	2.0	1.5	2.7	0.07
McMinn County	76	22.3	17.4	28.3	15	4.1	2.3	7.1	0.18
Marion County	42	21.5	15.2	29.7	^	^	^	^	^
Meigs County	22	24.6	15.0	38.9	^	^	^	^	^
Polk County	23	18.3	11.3	28.7	^	^	^	^	^
Rhea County	56	27.4	20.4	36.1	^	^	^	^	^
Sequatchie County	20	23.7	14.0	37.6	^	^	^	^	^
Southwest Region	832	11.8	11.0	12.7	127	1.8	1.5	2.2	0.15
Chester County	16	17.5	9.8	28.9	^	^	^	^	^
Decatur County	15	16.6	8.9	29.2	^	^	^	^	^
Fayette County	48	17.8	12.8	24.2	^	^	^	^	^
Hardeman County	19	11.7	7.0	18.6	^	^	^	^	^
Hardin County	28	14.4	9.3	21.6	^	^	^	^	^
Haywood County	13	10.3	5.4	18.3	^	^	^	^	^
Henderson County	19	11.1	6.5	17.7	^	^	^	^	^
Lauderdale County	16	11.0	6.2	18.2	^	^	^	^	^
McNairy County	23	14.2	8.7	22.0	^	^	^	^	^
Madison County	77	13.2	10.4	16.7	^	^	^	^	^
Shelby County	513	10.9	10.0	11.9	67	1.4	1.1	1.8	0.13
Tipton County	45	14.2	10.2	19.1	^	^	^	^	^
Upper-Cumberland Region	532	22.9	20.9	25.1	86	3.6	2.8	4.4	0.16
Cannon County	19	22.8	13.3	36.5	^	^	^	^	^
Clay County	^	^	^	^	^	^	^	^	^
Cumberland County	143	26.4	21.8	31.8	17	3.0	1.6	5.5	0.11
DeKalb County	25	20.2	12.8	30.6	^	^	^	^	^
Fentress County	23	20.5	12.4	32.2	^	^	^	^	^
Jackson County	11	12.2	5.9	23.5	^	^	^	^	^
Macon County	23	19.0	11.9	28.8	^	^	^	^	^
Overton County	28	18.6	12.1	27.7	^	^	^	^	^
Pickett County	^	^	^	^	^	^	^	^	^
Putnam County	113	25.8	21.1	31.3	13	2.7	1.4	4.8	0.10
Smith County	21	17.5	10.7	27.3	^	^	^	^	^
Van Buren County	^	^	^	^	^	^	^	^	^
Warren County	69	28.7	22.1	36.7	13	5.2	2.7	9.1	0.18
White County	42	24.1	17.0	33.3	^	^	^	^	^

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude hermaphrodites, transexuals, and cases missing county at diagnosis or county at death.

**Rates (cases per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+).

Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

Confidence intervals (Tiwari mod) are 95% for rates.

†Mortality incidence ratio. See Technical Notes for details.

Note the case totals for each region may not sum up to the state total due to records missing resident county information.

APPENDIX IX. PANCREATIC CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY

TABLE 17. PANCREATIC CANCER, BY RESIDENT COUNTY, TENNESSEE, 2014-2018

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	5,185	12.8	12.5	13.2	4,576	11.4	11.0	11.7	0.89
East Region	1,056	12.9	12.1	13.7	930	11.3	10.5	12.0	0.88
Anderson County	55	9.8	7.3	12.9	46	7.9	5.8	10.8	0.81
Blount County	117	12.4	10.2	14.9	93	9.7	7.8	12.0	0.78
Campbell County	28	9.4	6.2	14.0	28	9.4	6.2	13.9	1.00
Claiborne County	36	17.8	12.3	25.2	25	12.1	7.7	18.4	0.68
Cocke County	31	11.2	7.5	16.4	34	12.1	8.3	17.4	1.08
Grainger County	23	13.9	8.7	21.4	25	15.2	9.7	23.1	1.09
Hamblen County	55	13.2	9.9	17.4	47	11.0	8.1	14.8	0.83
Jefferson County	39	10.8	7.6	15.1	40	10.4	7.4	14.4	0.96
Knox County	364	13.4	12.0	14.9	332	12.4	11.0	13.8	0.93
Loudon County	66	14.6	11.1	19.1	52	10.9	8.1	14.7	0.75
Monroe County	65	20.4	15.6	26.4	58	18.0	13.6	23.6	0.88
Morgan County	11	7.4	3.6	13.8	^	^	^	^	^
Roane County	47	11.1	8.1	15.1	46	10.5	7.6	14.3	0.95
Scott County	16	12.2	6.9	20.2	13	9.7	5.1	17.0	0.80
Sevier County	84	12.4	9.8	15.5	62	9.3	7.0	12.0	0.75
Union County	19	15.9	9.3	25.5	20	17.0	10.2	27.0	1.07
Mid-Cumberland Region	1,246	13.0	12.3	13.8	1060	11.2	10.6	12.0	0.86
Cheatham County	28	12.4	8.0	18.3	31	13.5	9.0	19.6	1.09
Davidson County	424	13.2	11.9	14.5	382	12.0	10.8	13.3	0.91
Dickson County	48	15.6	11.4	20.8	42	13.4	9.6	18.3	0.86
Houston County	^	^	^	^	^	^	^	^	^
Humphreys County	15	10.6	5.8	18.4	11	7.9	3.9	15.1	0.75
Montgomery County	108	15.2	12.4	18.4	97	14.1	11.3	17.2	0.93
Robertson County	56	13.7	10.2	17.9	41	10.6	7.5	14.5	0.77
Rutherford County	163	12.1	10.3	14.2	124	9.6	7.9	11.5	0.79
Stewart County	23	24.3	15.2	37.6	16	16.8	9.5	28.4	0.69
Sumner County	141	12.9	10.9	15.3	114	10.2	8.4	12.4	0.79
Trousdale County	^	^	^	^	^	^	^	^	^
Williamson County	135	11.8	9.8	14.1	102	9.0	7.3	11.1	0.76
Wilson County	86	10.9	8.7	13.6	84	10.8	8.6	13.5	0.99
Northeast Region	475	12.7	11.6	14.0	414	10.9	9.9	12.1	0.86
Carter County	45	10.5	7.6	14.3	46	10.6	7.7	14.4	1.01
Greene County	58	10.9	8.2	14.4	48	9.0	6.6	12.1	0.83
Hancock County	^	^	^	^	^	^	^	^	^
Hawkins County	56	13.1	9.8	17.4	52	12.2	9.1	16.3	0.93
Johnson County	26	18.7	12.1	28.3	21	15.1	9.3	24.0	0.81
Sullivan County	146	12.4	10.4	14.7	119	9.7	8.0	11.7	0.78
Unicoi County	16	10.8	6.1	18.6	18	12.4	7.2	20.6	1.15
Washington County	124	14.7	12.2	17.7	107	12.6	10.3	15.4	0.86
Northwest Region	234	13.6	11.8	15.5	228	12.9	11.2	14.7	0.95
Benton County	16	11.5	6.5	19.8	19	14.1	8.3	23.1	1.23
Carroll County	31	15.2	10.2	22.2	32	14.8	10.1	21.4	0.97
Crockett County	11	11.0	5.4	20.4	12	12.3	6.3	22.2	1.12
Dyer County	25	11.3	7.2	17.0	24	10.3	6.5	15.6	0.91
Gibson County	50	15.7	11.6	21.0	42	12.9	9.2	17.7	0.82
Henry County	35	13.0	9.0	18.6	35	12.7	8.8	18.3	0.98
Lake County	^	^	^	^	^	^	^	^	^
Obion County	38	17.7	12.4	24.7	37	16.7	11.7	23.5	0.94
Weakley County	20	9.4	5.7	14.8	21	9.4	5.8	14.7	1.00

APPENDIX IX. PANCREATIC CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, CONTINUED

South Central Region	326	12.5	11.1	13.9	283	10.9	9.6	12.3	0.87
Bedford County	36	13.1	9.1	18.3	30	11.5	7.7	16.5	0.88
Coffee County	50	14.5	10.7	19.3	39	11.3	8.0	15.6	0.78
Giles County	23	11.1	6.9	17.2	22	10.9	6.6	17.0	0.98
Hickman County	22	13.8	8.6	21.4	17	10.9	6.3	17.9	0.79
Lawrence County	35	11.4	7.9	16.0	28	9.3	6.1	13.6	0.82
Lewis County	11	12.8	6.2	24.2	13	14.5	7.5	26.2	1.13
Lincoln County	24	9.6	6.1	14.7	25	10.0	6.5	15.2	1.04
Marshall County	25	12.6	8.0	18.9	20	10.5	6.3	16.6	0.83
Maury County	78	13.9	10.9	17.5	64	11.5	8.8	14.8	0.83
Moore County	^	^	^	^	^	^	^	^	^
Perry County	^	^	^	^	^	^	^	^	^
Wayne County	^	^	^	^	11	8.8	4.4	16.6	^
Southeast Region	603	13.1	12.0	14.2	535	11.6	10.7	12.7	0.89
Bledsoe County	18	16.7	9.8	27.6	12	10.9	5.5	20.3	0.65
Bradley County	74	10.8	8.5	13.6	66	9.9	7.6	12.6	0.92
Franklin County	39	13.1	9.2	18.2	36	12.5	8.7	17.7	0.95
Grundy County	17	17.5	10.0	29.1	13	14.4	7.5	25.6	0.82
Hamilton County	295	12.9	11.5	14.5	266	11.5	10.2	13.1	0.89
McMinn County	48	12.4	9.1	16.7	42	11.0	7.9	15.0	0.89
Marion County	37	17.9	12.4	25.3	37	18.2	12.7	25.6	1.02
Meigs County	14	16.0	8.5	28.4	^	^	^	^	^
Polk County	19	14.8	8.8	24.1	17	13.5	7.7	22.5	0.91
Rhea County	36	16.1	11.2	22.6	28	12.1	8.0	17.8	0.75
Sequatchie County	^	^	^	^	^	^	^	^	^
Southwest Region	941	12.9	12.0	13.7	854	11.8	11.0	12.7	0.91
Chester County	14	13.8	7.4	23.9	^	^	^	^	^
Decatur County	11	11.1	5.5	21.5	11	11.0	5.5	21.3	0.99
Fayette County	26	9.4	6.0	14.1	30	10.2	6.8	15.1	1.09
Hardeman County	19	11.5	6.8	18.3	13	7.4	3.9	13.2	0.64
Hardin County	24	12.7	7.9	19.7	26	13.2	8.4	20.0	1.04
Haywood County	23	18.3	11.4	28.3	20	15.8	9.5	25.0	0.86
Henderson County	13	6.9	3.6	12.3	18	10.0	5.8	16.2	1.45
Lauderdale County	26	16.2	10.5	24.1	22	13.6	8.5	21.0	0.84
McNairy County	33	16.7	11.5	24.0	35	18.5	12.7	26.3	1.11
Madison County	71	12.4	9.6	15.8	70	11.9	9.3	15.2	0.96
Shelby County	641	13.2	12.2	14.3	558	11.7	10.8	12.8	0.89
Tipton County	40	11.8	8.3	16.2	42	12.8	9.2	17.5	1.08
Upper-Cumberland Region	304	12.3	10.9	13.8	272	10.8	9.5	12.2	0.88
Cannon County	12	14.7	7.3	26.5	12	15.0	7.5	27.0	1.02
Clay County	^	^	^	^	^	^	^	^	^
Cumberland County	68	12.4	9.4	16.4	57	9.8	7.2	13.3	0.79
DeKalb County	18	12.6	7.4	20.7	15	10.8	5.9	18.5	0.86
Fentress County	20	15.7	9.4	25.2	18	13.4	7.8	22.3	0.85
Jackson County	^	^	^	^	^	^	^	^	^
Macon County	15	11.1	6.1	18.6	16	11.5	6.6	19.0	1.04
Overton County	20	13.2	7.9	21.0	20	13.3	8.0	21.1	1.01
Pickett County	^	^	^	^	^	^	^	^	^
Putnam County	62	13.4	10.2	17.2	49	10.8	8.0	14.4	0.81
Smith County	15	11.9	6.5	20.3	18	13.7	8.0	22.3	1.15
Van Buren County	^	^	^	^	^	^	^	^	^
Warren County	40	15.6	11.1	21.5	27	10.4	6.8	15.4	0.67
White County	17	9.2	5.3	15.3	19	9.9	5.9	15.9	1.08

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude hermaphrodites, transsexuals, and cases missing county at diagnosis or county at death.

**Rates (cases per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+).

Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

Confidence intervals (Tiwari mod) are 95% for rates.

†Mortality incidence ratio. See Technical Notes for details.

Note the case totals for each region may not sum up to the state total due to records missing resident county information.

APPENDIX X. CHILDHOOD CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY

TABLE 18. CHILDHOOD CANCER, BY RESIDENT COUNTY, TENNESSEE, 2014-2018

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	1,502	184.1	174.9	193.6	196	24.1	20.8	27.7	0.13
East Region	271	192.7	170.4	217.0	32	22.6	15.5	32	0.12
Anderson County	15	172.6	96.6	285.3	^	^	^	^	^
Blount County	34	237.0	164.0	331.5	^	^	^	^	^
Campbell County	^	^	^	^	^	^	^	^	^
Claiborne County	^	^	^	^	^	^	^	^	^
Cocke County	^	^	^	^	^	^	^	^	^
Grainger County	^	^	^	^	^	^	^	^	^
Hamblen County	19	239.8	144.3	374.6	^	^	^	^	^
Jefferson County	14	225.5	122.8	380.8	^	^	^	^	^
Knox County	94	174.4	140.9	213.4	13	23.8	12.7	40.8	0.14
Loudon County	14	253.5	138.6	425.7	^	^	^	^	^
Monroe County	^	^	^	^	^	^	^	^	^
Morgan County	^	^	^	^	^	^	^	^	^
Roane County	13	235.8	125.2	404.9	^	^	^	^	^
Scott County	^	^	^	^	^	^	^	^	^
Sevier County	19	175.3	105.5	273.8	^	^	^	^	^
Union County	^	^	^	^	^	^	^	^	^
Mid-Cumberland Region	463	188.3	171.6	206.3	58	23.8	18.1	30.7	0.13
Cheatham County	11	225.5	112.5	403.6	^	^	^	^	^
Davidson County	148	185.3	156.5	217.9	17	21.7	12.6	34.8	0.12
Dickson County	15	228.7	128.0	377.4	^	^	^	^	^
Houston County	^	^	^	^	^	^	^	^	^
Humphreys County	^	^	^	^	^	^	^	^	^
Montgomery County	52	182.5	135.9	239.8	^	^	^	^	^
Robertson County	16	175.6	100.4	285.3	^	^	^	^	^
Rutherford County	72	175.0	136.9	220.4	^	^	^	^	^
Stewart County	^	^	^	^	^	^	^	^	^
Sumner County	46	200.5	146.8	267.6	^	^	^	^	^
Trousdale County	^	^	^	^	^	^	^	^	^
Williamson County	62	209.5	160.2	269.3	^	^	^	^	^
Wilson County	32	188.2	128.6	265.9	^	^	^	^	^
Northeast Region	102	185.8	151.5	225.7	12	22.3	11.5	39	0.12
Carter County	^	^	^	^	^	^	^	^	^
Greene County	13	173.3	92.0	297.4	^	^	^	^	^
Hancock County	^	^	^	^	^	^	^	^	^
Hawkins County	14	219.5	119.9	369.6	^	^	^	^	^
Johnson County	^	^	^	^	^	^	^	^	^
Sullivan County	35	206.1	143.5	286.8	^	^	^	^	^
Unicoi County	^	^	^	^	^	^	^	^	^
Washington County	31	223.5	151.7	317.6	^	^	^	^	^
Northwest Region	52	170.5	127.3	223.7	^	^	^	^	^
Benton County	^	^	^	^	^	^	^	^	^
Carroll County	^	^	^	^	^	^	^	^	^
Crockett County	^	^	^	^	^	^	^	^	^
Dyer County	11	224.0	111.8	401.3	^	^	^	^	^
Gibson County	^	^	^	^	^	^	^	^	^
Henry County	^	^	^	^	^	^	^	^	^
Lake County	^	^	^	^	^	^	^	^	^
Obion County	^	^	^	^	^	^	^	^	^
Weakley County	^	^	^	^	^	^	^	^	^

APPENDIX X. CHILDHOOD CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, CONTINUED

South Central Region	90	181.1	145.6	222.6	^	^	^	^	^
Bedford County	^	^	^	^	^	^	^	^	^
Coffee County	^	^	^	^	^	^	^	^	^
Giles County	^	^	^	^	^	^	^	^	^
Hickman County	^	^	^	^	^	^	^	^	^
Lawrence County	14	238.3	130.2	400.2	^	^	^	^	^
Lewis County	^	^	^	^	^	^	^	^	^
Lincoln County	^	^	^	^	^	^	^	^	^
Marshall County	^	^	^	^	^	^	^	^	^
Maury County	24	212.1	135.7	315.8	^	^	^	^	^
Moore County	^	^	^	^	^	^	^	^	^
Perry County	^	^	^	^	^	^	^	^	^
Wayne County	^	^	^	^	^	^	^	^	^
Southeast Region	144	178.8	150.8	210.5	20	24.7	15.1	38.1	0.14
Bledsoe County	^	^	^	^	^	^	^	^	^
Bradley County	27	204.9	134.9	298.6	^	^	^	^	^
Franklin County	^	^	^	^	^	^	^	^	^
Grundy County	^	^	^	^	^	^	^	^	^
Hamilton County	71	173.2	135.2	218.4	^	^	^	^	^
McMinn County	16	259.2	148.0	421.4	^	^	^	^	^
Marion County	^	^	^	^	^	^	^	^	^
Meigs County	^	^	^	^	^	^	^	^	^
Polk County	^	^	^	^	^	^	^	^	^
Rhea County	^	^	^	^	^	^	^	^	^
Sequatchie County	^	^	^	^	^	^	^	^	^
Southwest Region	291	167.5	148.8	187.9	48	27.6	20.4	36.6	0.16
Chester County	^	^	^	^	^	^	^	^	^
Decatur County	^	^	^	^	^	^	^	^	^
Fayette County	^	^	^	^	^	^	^	^	^
Hardeman County	^	^	^	^	^	^	^	^	^
Hardin County	^	^	^	^	^	^	^	^	^
Haywood County	^	^	^	^	^	^	^	^	^
Henderson County	^	^	^	^	^	^	^	^	^
Lauderdale County	^	^	^	^	^	^	^	^	^
McNairy County	^	^	^	^	^	^	^	^	^
Madison County	12	94.1	48.6	164.7	^	^	^	^	^
Shelby County	216	170.3	148.3	194.6	38	29.8	21.1	41	0.17
Tipton County	17	209.3	121.7	335.4	^	^	^	^	^
Upper-Cumberland Region	89	218.0	175.0	268.3	12	29.2	15.1	51.1	0.13
Cannon County	^	^	^	^	^	^	^	^	^
Clay County	^	^	^	^	^	^	^	^	^
Cumberland County	^	^	^	^	^	^	^	^	^
DeKalb County	^	^	^	^	^	^	^	^	^
Fentress County	^	^	^	^	^	^	^	^	^
Jackson County	^	^	^	^	^	^	^	^	^
Macon County	14	439.2	239.9	737.6	^	^	^	^	^
Overton County	^	^	^	^	^	^	^	^	^
Pickett County	^	^	^	^	^	^	^	^	^
Putnam County	20	216.3	131.7	334.7	^	^	^	^	^
Smith County	^	^	^	^	^	^	^	^	^
Van Buren County	^	^	^	^	^	^	^	^	^
Warren County	^	^	^	^	^	^	^	^	^
White County	^	^	^	^	^	^	^	^	^

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude hermaphrodites, transexuals, and cases missing county at diagnosis or county at death.

**Rates (cases per 1,000,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+ Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

Confidence intervals (Tiwari mod) are 95% for rates.

†Mortality incidence ratio. See Technical Notes for details.

Note the case totals for each region may not sum up to the state total due to records missing resident county information.

APPENDIX XI. CANCER INCIDENCE AND MORTALITY OF COMMON CANCERS, THREE-YEAR MOVING AVERAGE

TABLE 19. COMMON CANCERS, THREE-YEAR MOVING AVERAGE, TENNESSEE, 2014-2018

	Year	Incidence				Mortality				M:I
		Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
All Sites	2014-2016	110,460	474.0	471.2	476.9	42,791	183.9	182.2	185.7	0.39
	2015-2017	114,348	480.8	477.9	483.6	42,929	180.3	178.6	182.0	0.38
	2016-2018	115,931	477.6	474.8	480.4	42,894	176.1	174.4	177.8	0.37
Lung and Bronchus	2014-2016	18,315	76.4	75.2	77.5	13,111	55.3	54.4	56.3	0.72
	2015-2017	18,724	76.1	75.0	77.2	12,683	52.2	51.3	53.2	0.69
	2016-2018	18,657	73.8	72.7	74.9	12,277	49.3	48.4	50.1	0.67
Female Breast	2014-2016	15,219	125.1	123.1	127.2	2,800	22.1	21.2	22.9	0.18
	2015-2017	15,630	125.9	123.9	128.0	2,827	21.9	21.1	22.7	0.17
	2016-2018	15,852	126.1	124.0	128.1	2,926	22.4	21.5	23.2	0.18
Prostate	2014-2016	12,974	111.6	109.6	113.6	1,830	20.2	19.3	21.2	0.18
	2015-2017	14,046	118.1	116.1	120.1	1,893	20.3	19.4	21.3	0.17
	2016-2018	14,632	120.5	118.5	122.5	1,914	19.9	19.0	20.9	0.17
Colon and Rectum	2014-2016	9,572	41.6	40.7	42.4	3,548	15.5	14.9	16.0	0.37
	2015-2017	9,651	41.2	40.3	42.0	3,626	15.4	14.9	15.9	0.37
	2016-2018	9,747	41.0	40.2	41.8	3,629	15.1	14.6	15.6	0.37
Melanoma of the Skin	2014-2016	4,677	20.8	20.2	21.4	664	2.9	2.7	3.2	0.14
	2015-2017	4,842	21.2	20.5	21.8	662	2.8	2.6	3.1	0.13
	2016-2018	4,728	20.2	19.6	20.8	612	2.6	2.4	2.8	0.13
Pancreas	2014-2016	3,026	12.7	12.3	13.2	2,678	11.3	10.9	11.7	0.89
	2015-2017	3,105	12.9	12.4	13.3	2,694	11.1	10.7	11.6	0.86
	2016-2018	3,205	13.0	12.5	13.4	2,785	11.3	10.9	11.7	0.87

^Statistic not displayed due to fewer than 11 cases.

*Total counts exclude hermaphrodites and transsexuals.

**Rates (cases per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ..., 80-84, 85+).

Rates are for invasive cancer (except for bladder cancer which is invasive and in situ) or unless otherwise specified.

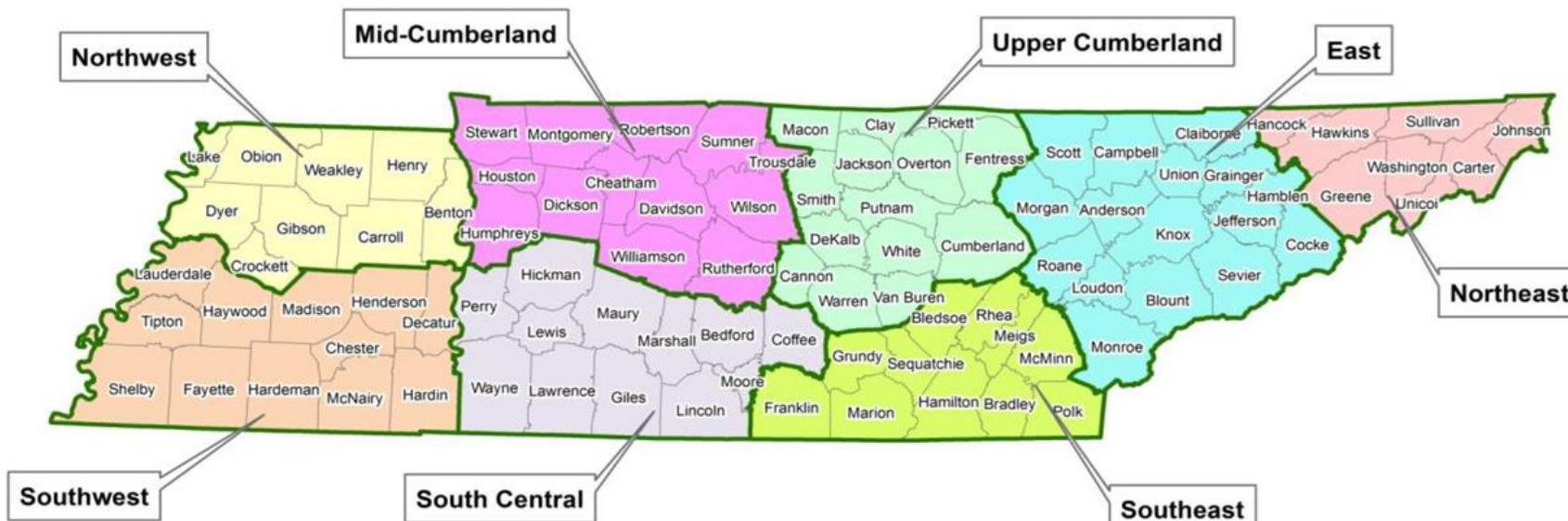
Confidence intervals (Tiwari mod) are 95% for rates.

†Mortality incidence ratio. See Technical Notes for details.

MAPS

APPENDIX XII. COUNTY MAPS OF INCIDENCE AND MORTALITY RATES OF ALL CANCER SITES COMBINED AND COMMON CANCERS

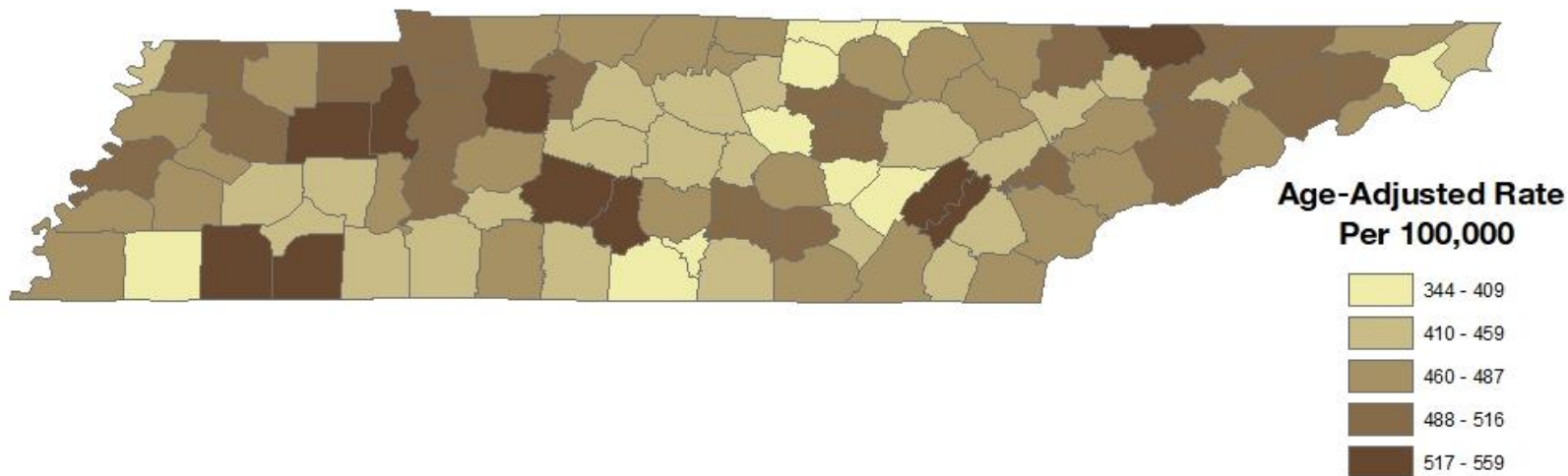
1. TENNESSEE COUNTIES AND REGIONAL GROUPINGS



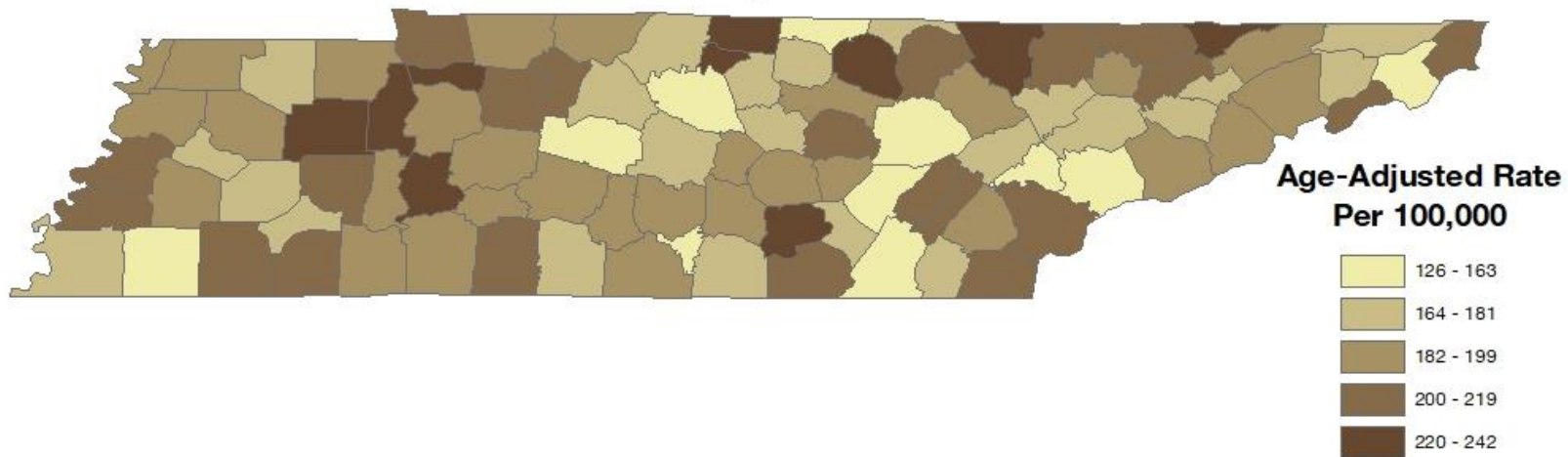
Northwest	Southwest	Mid-Cumberland	South Central	Upper-Cumberland	Southeast	East	Northeast
Benton	Chester	Cheatham	Bedford	Cannon	Bledsoe	Anderson	Carter
Carroll	Decatur	Davidson	Coffee	Clay	Bradley	Blount	Greene
Crockett	Fayette	Dickson	Giles	Cumberland	Franklin	Campbell	Hancock
Dyer	Hardeman	Houston	Hickman	DeKalb	Grundy	Claiborne	Hawkins
Gibson	Hardin	Humphreys	Lawrence	Fentress	Hamilton	Cocke	Johnson
Henry	Haywood	Montgomery	Lewis	Jackson	McMinn	Grainger	Sullivan
Lake	Henderson	Robertson	Lincoln	Macon	Marion	Hamblen	Unicoi
Obion	Lauderdale	Rutherford	Marshall	Overton	Meigs	Jefferson	Washington
Weakley	McNairy	Stewart	Maury	Pickett	Polk	Knox	
	Madison	Summer	Moore	Putnam	Rhea	Loudon	
	Shelby	Trousdale	Perry	Smith	Sequatchie	Monroe	
	Tipton	Williamson	Wayne	Van Buren		Morgan	
		Wilson		Warren		Roane	
				White		Scott	
						Sevier	
						Union	

2. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, ALL SITES COMBINED, TENNESSEE, 2014-2018

Incidence

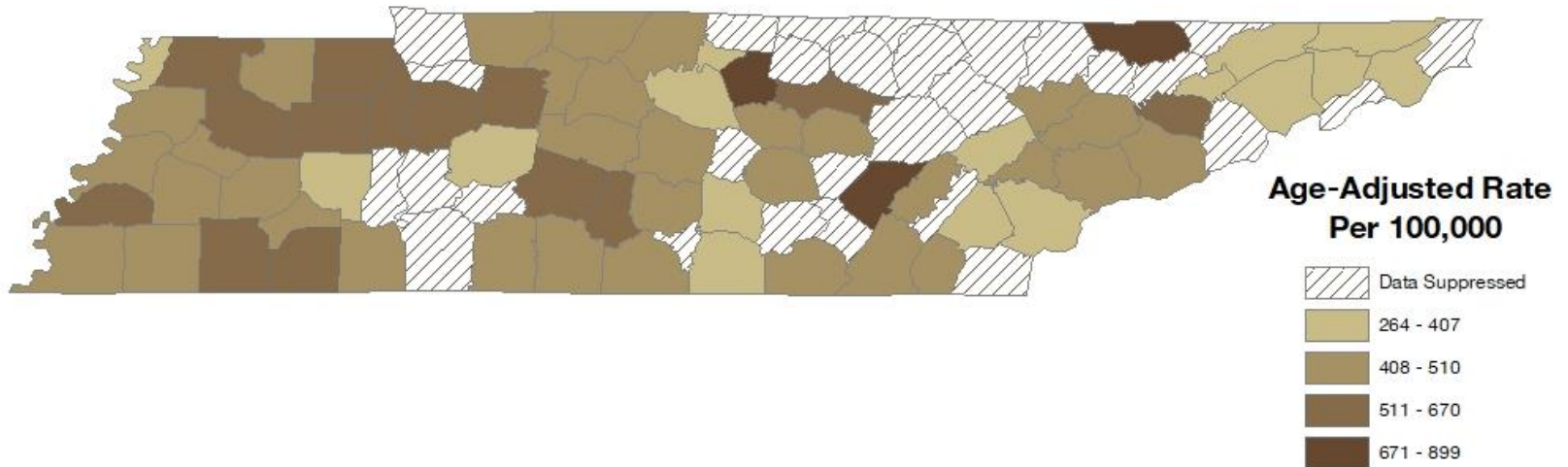


Mortality

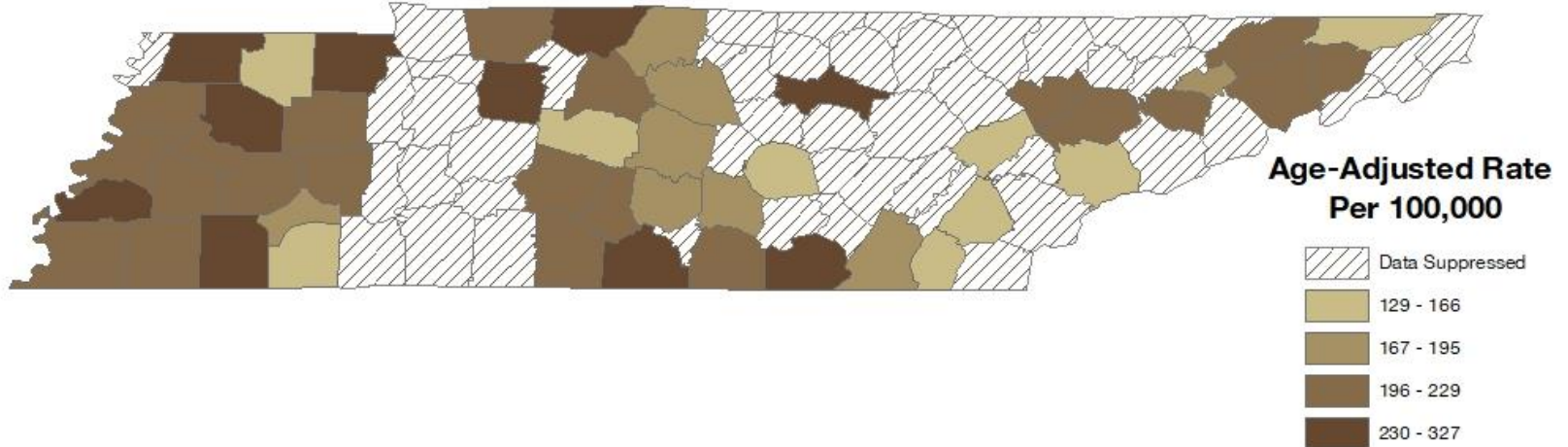


3. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, ALL SITES COMBINED, BLACK TENNESSEANS 2014-2018

Incidence

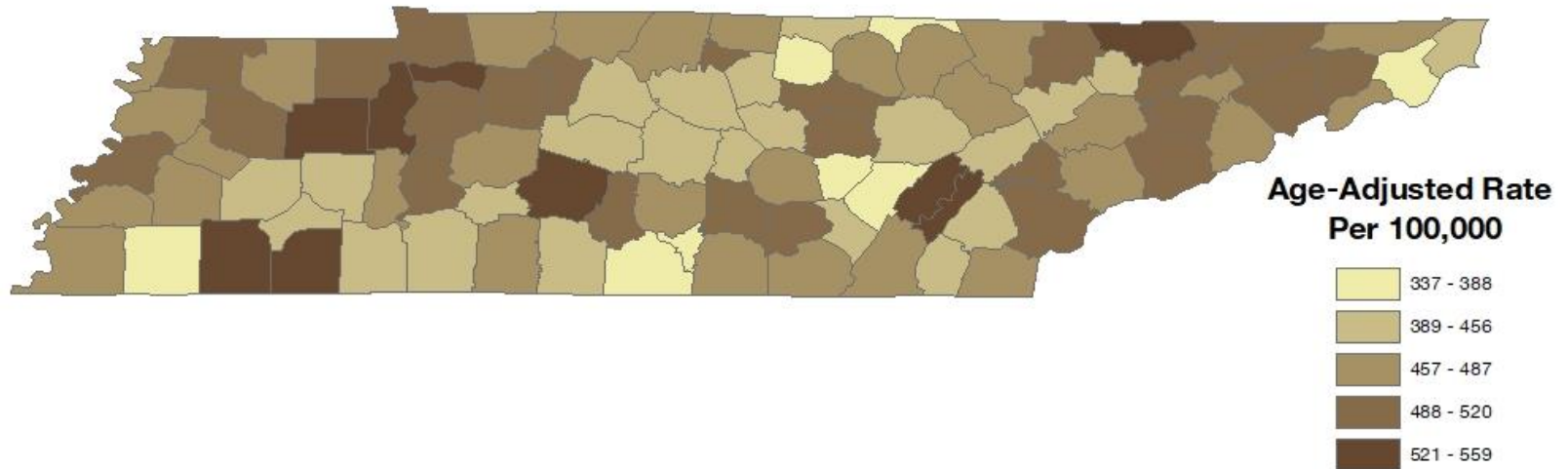


Mortality

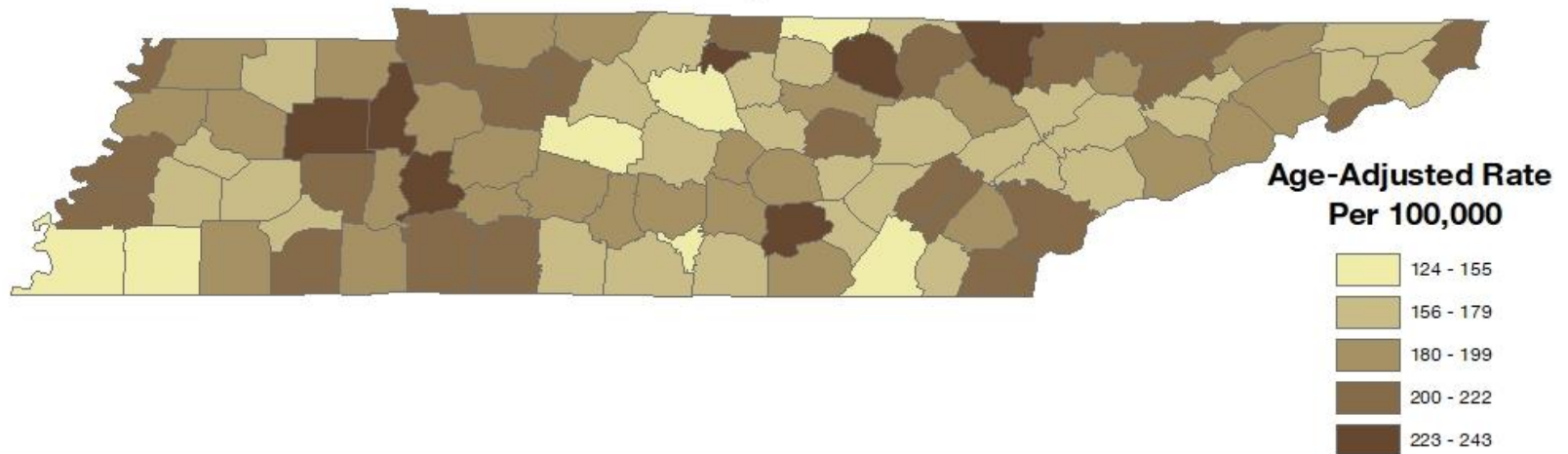


4. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, ALL SITES COMBINED, WHITE TENNESSEANS 2014-2018

Incidence

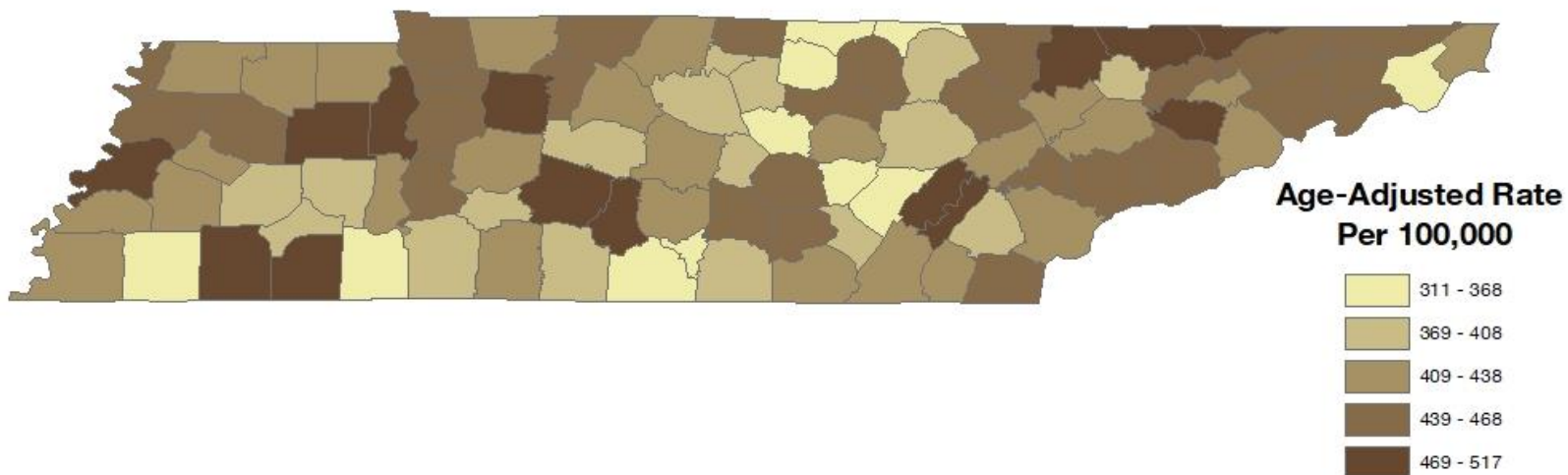


Mortality

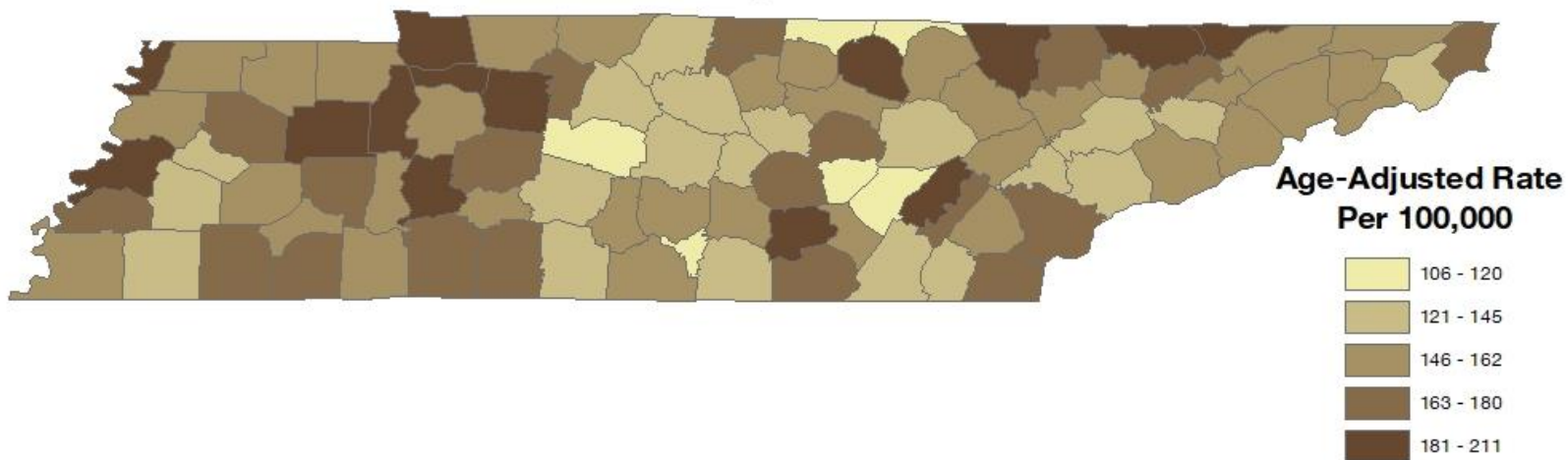


5. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, ALL SITES COMBINED, FEMALE TENNESSEANS, 2014-2018

Incidence

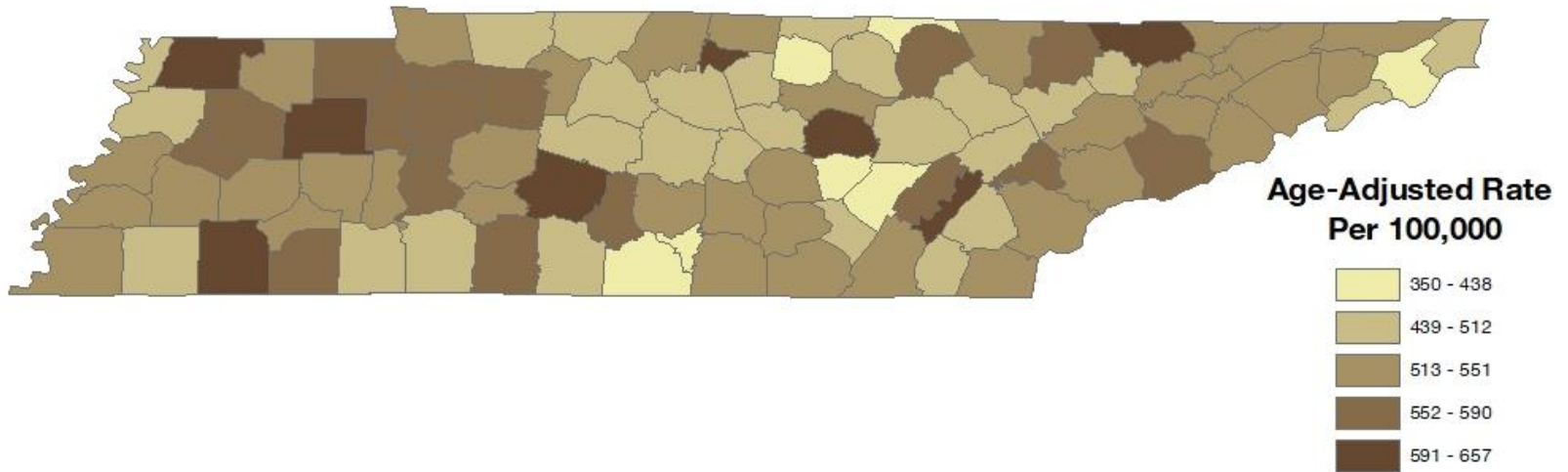


Mortality

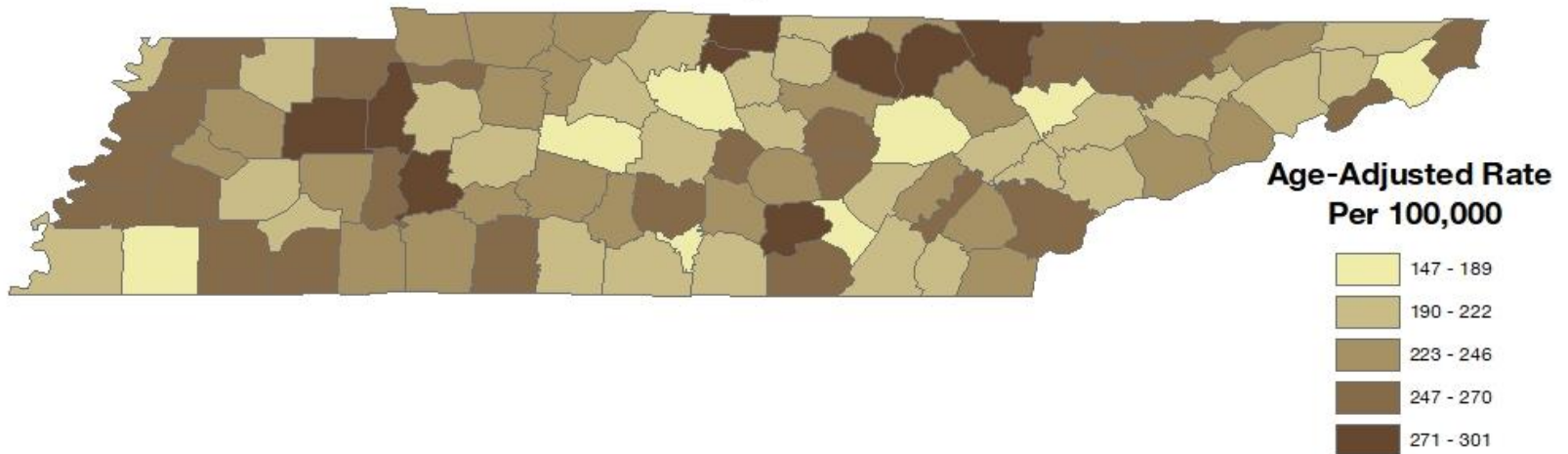


6. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, ALL SITES COMBINED, MALE TENNESSEANS, 2014-2018

Incidence

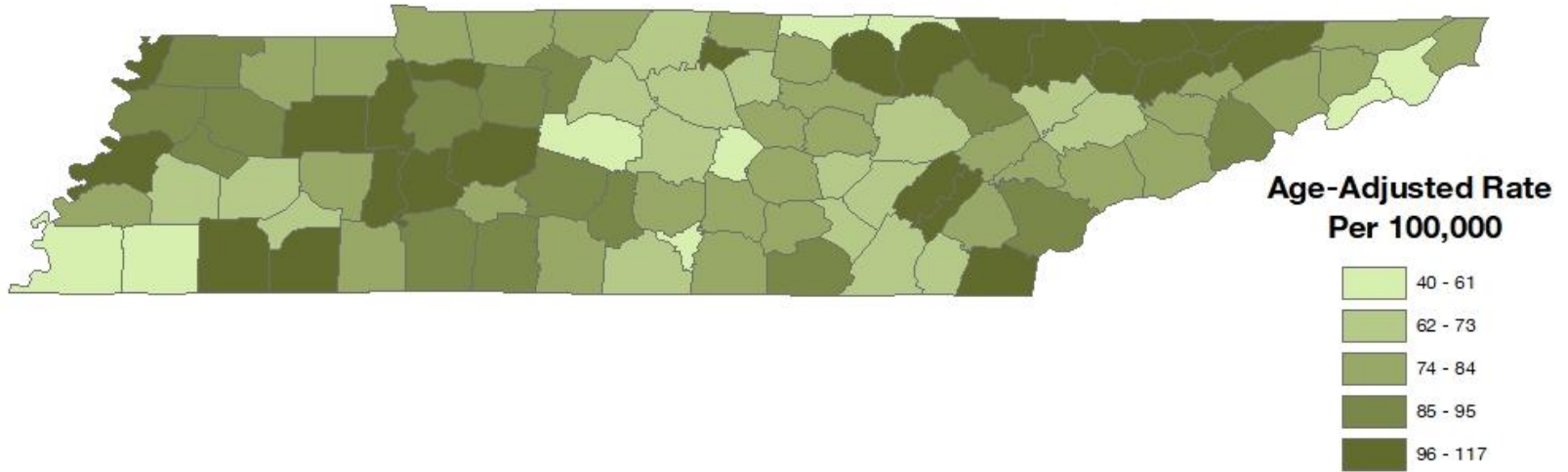


Mortality

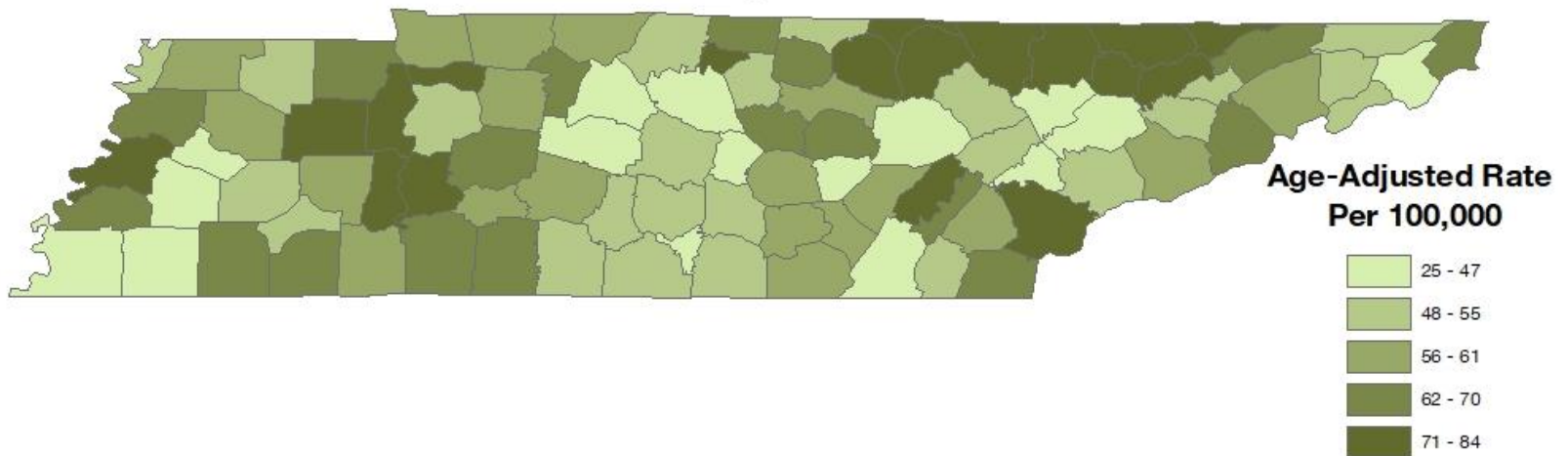


7. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, LUNG, TENNESSEE, 2014-2018

Incidence

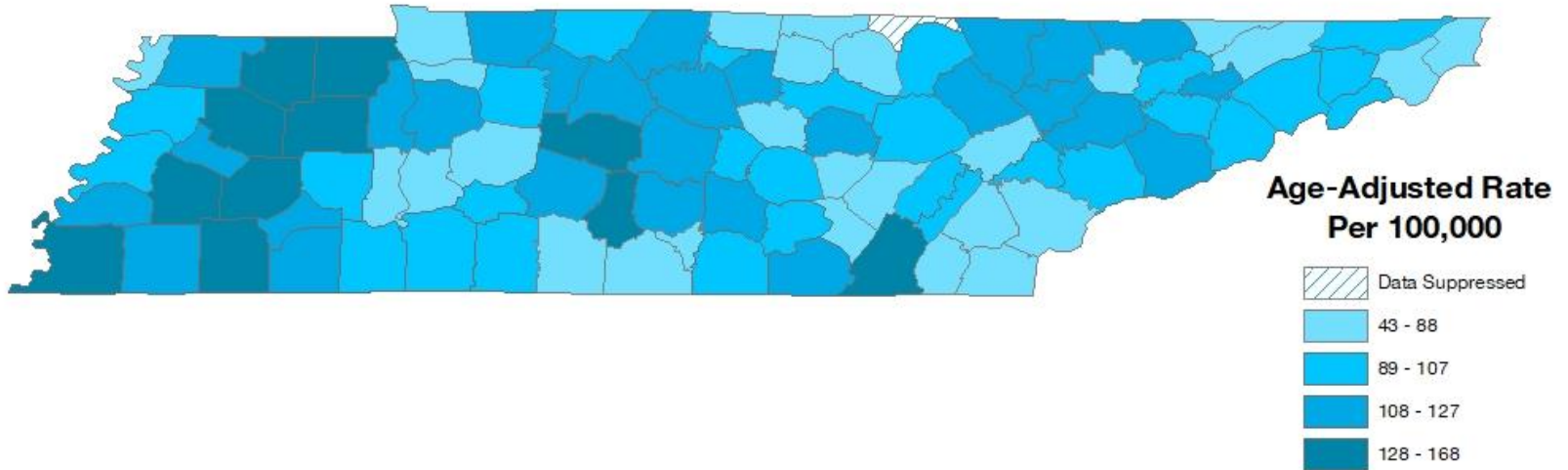


Mortality

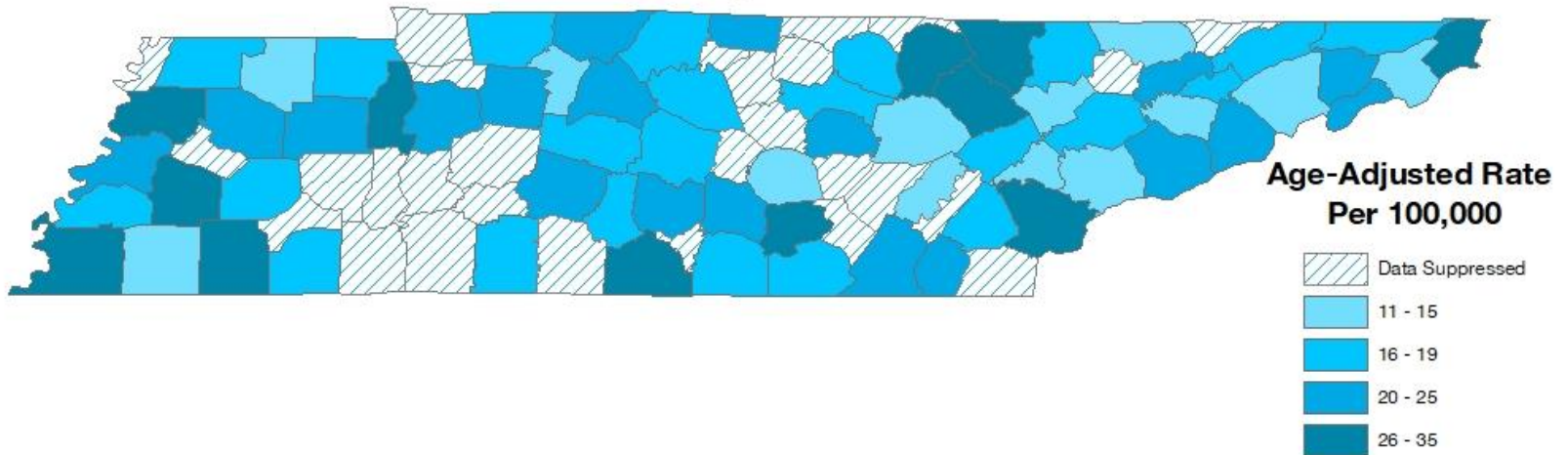


8. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, PROSTATE, TENNESSEE, 2014-2018

Incidence

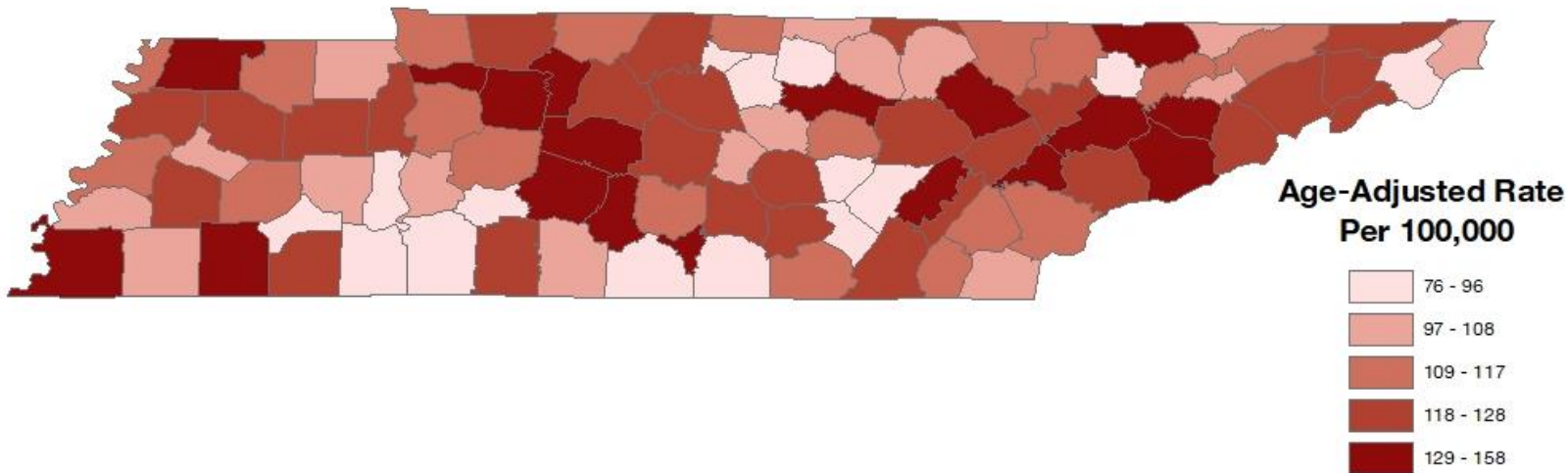


Mortality

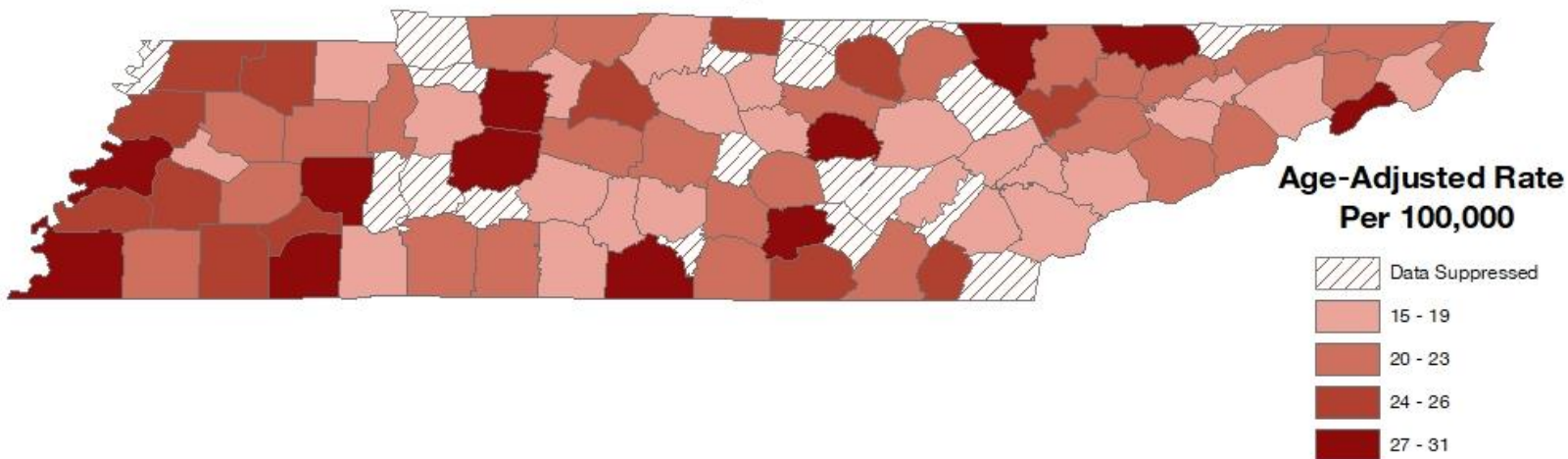


9. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, FEMALE BREAST, TENNESSEE, 2014-2018

Incidence

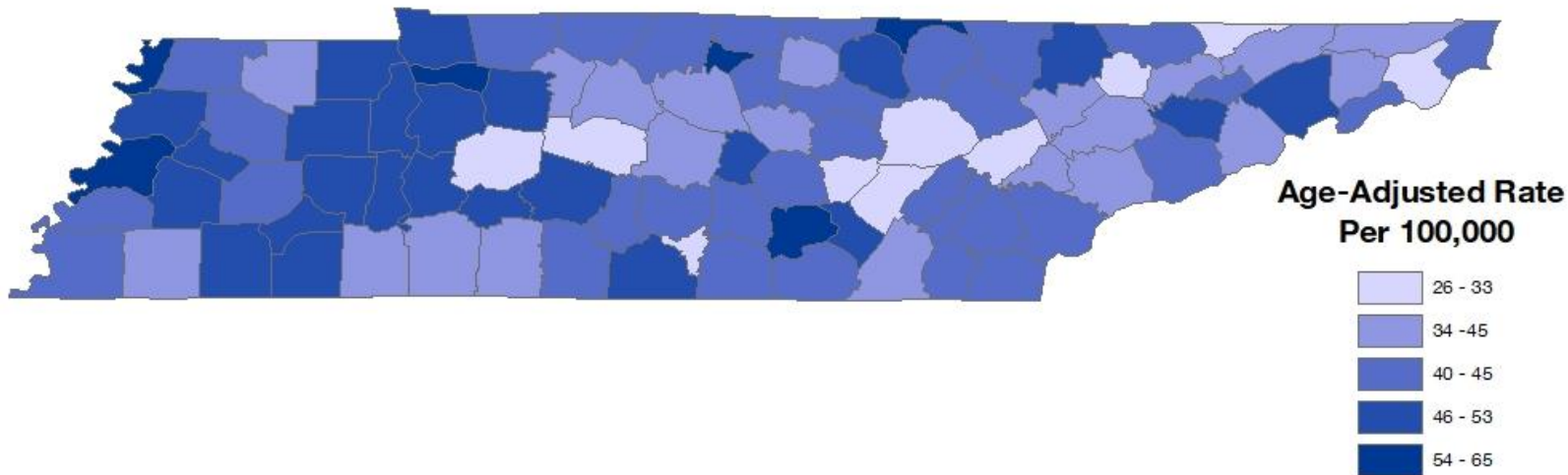


Mortality

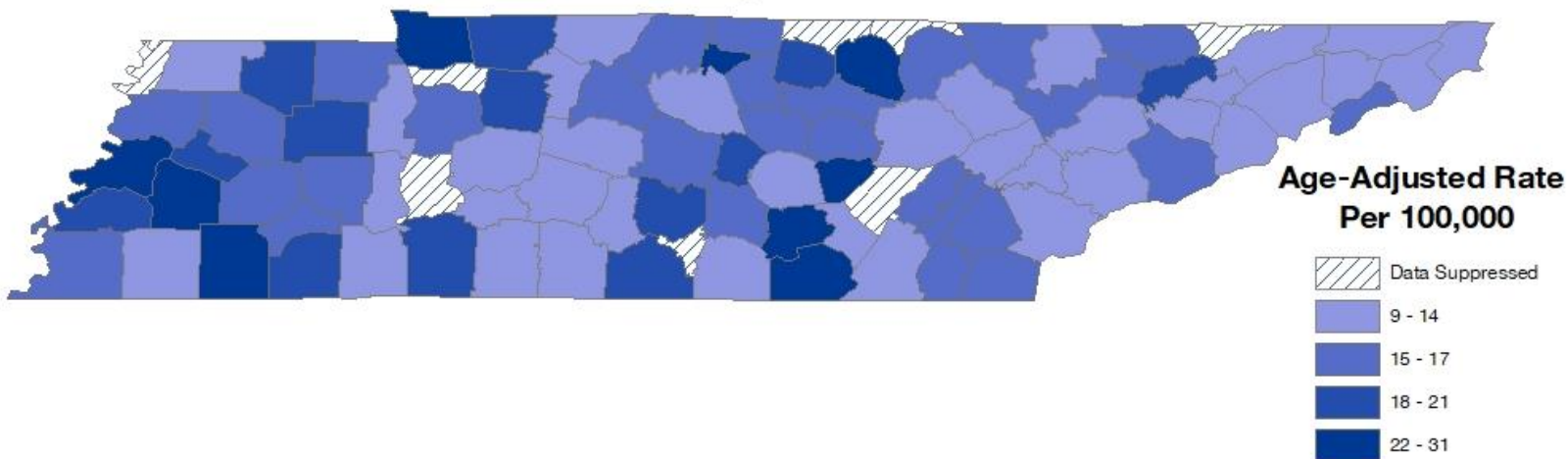


10. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, COLON AND RECTUM, TENNESSEE, 2014-2018

Incidence

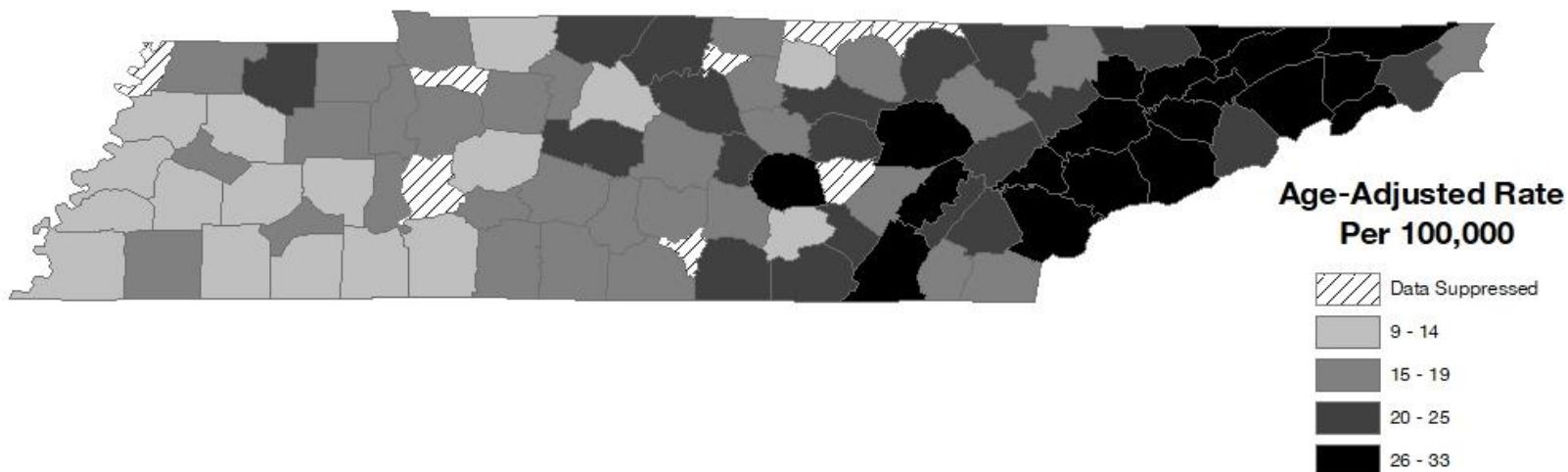


Mortality

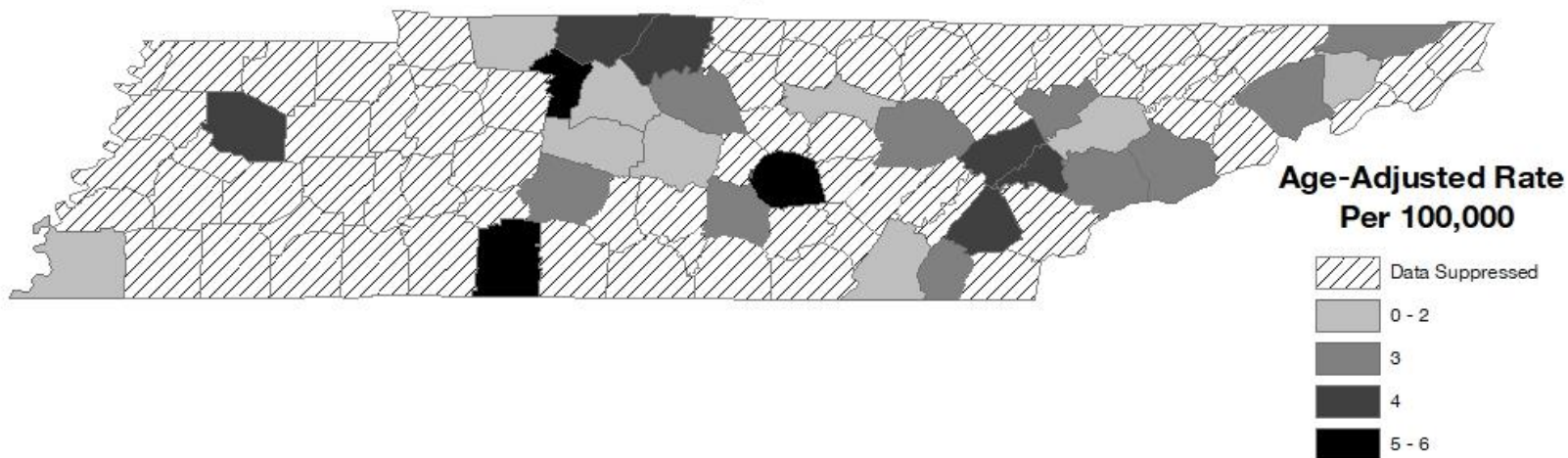


11. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, MELANOMA OF THE SKIN, TENNESSEE, 2014-2018

Incidence

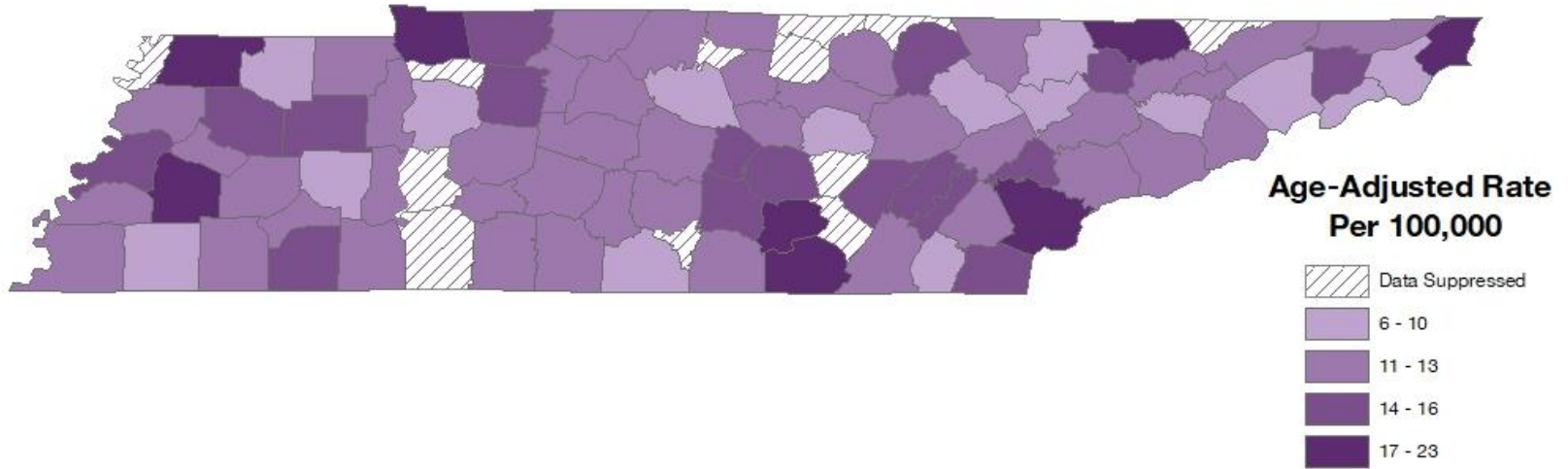


Mortality

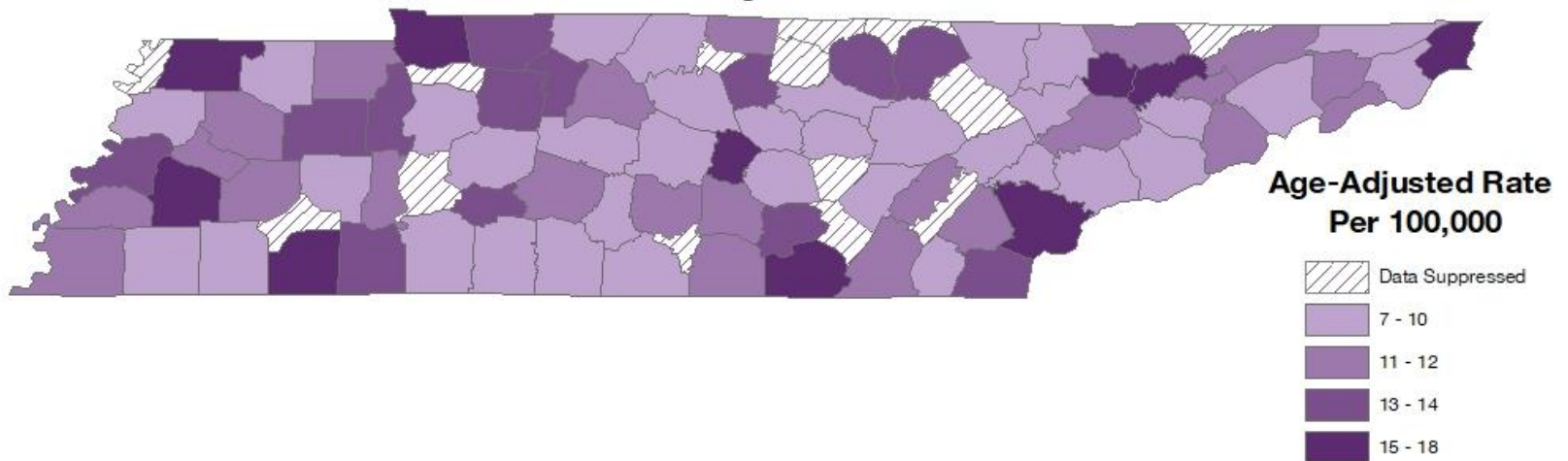


12. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, PANCREAS, TENNESSEE, 2014-2018

Incidence

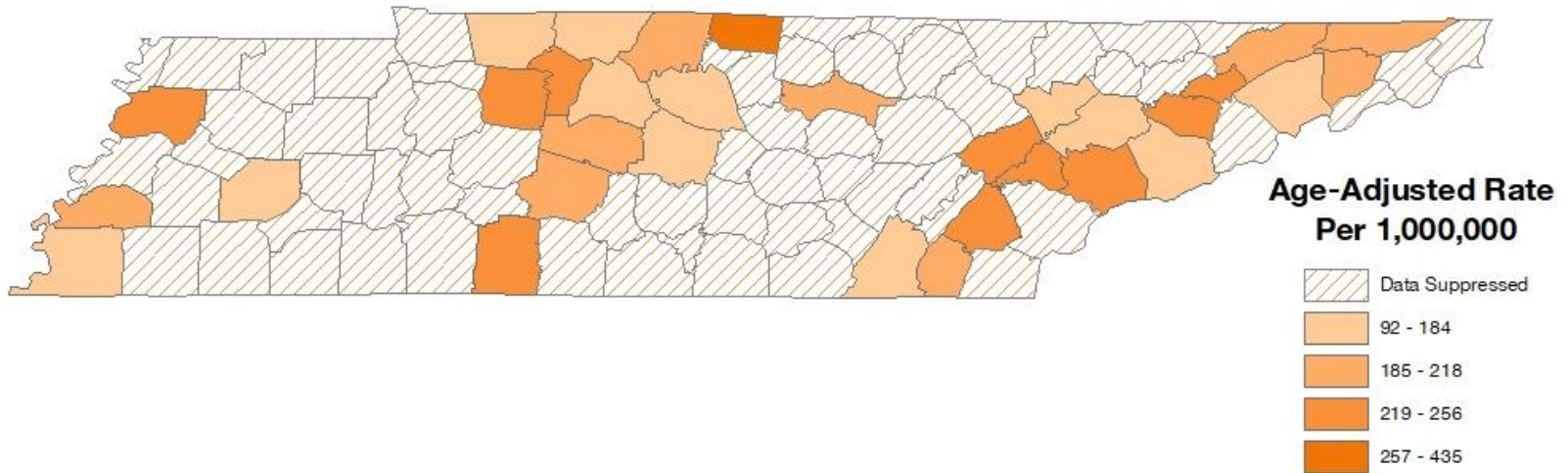


Mortality

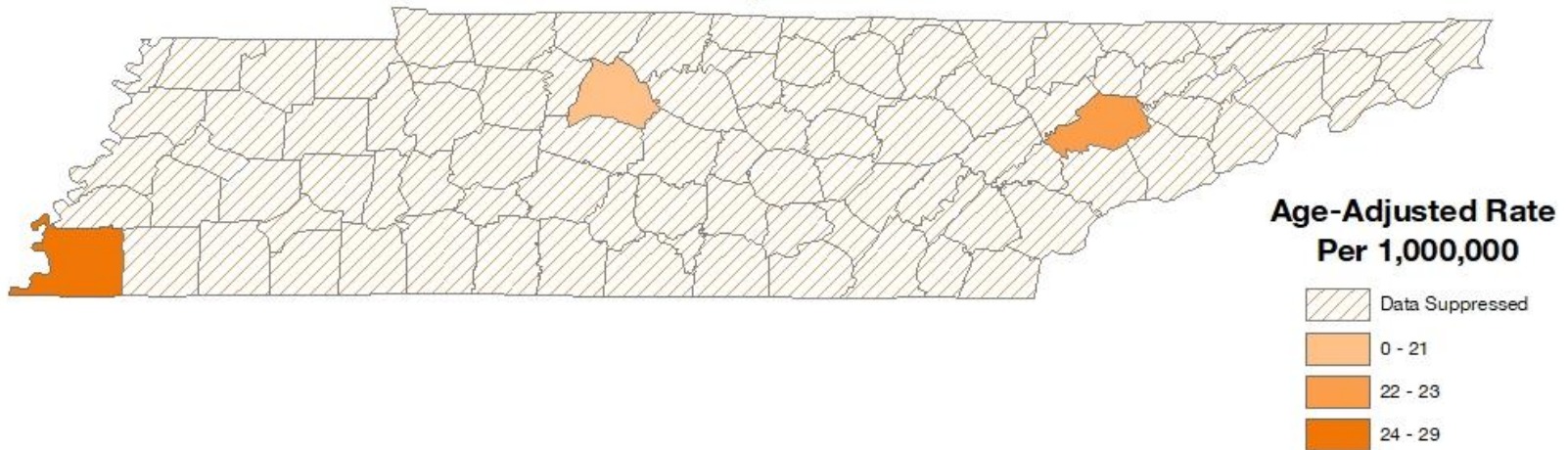


13. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, CHILDHOOD CANCER (0-19 YEARS OF AGE), TENNESSEE, 2014-2018

Incidence



Mortality



TECHNICAL NOTES

STATISTICAL METHODS

SEER*Prep 2.6.0 was used to prepare cancer incidence and mortality data. SEER*Stat 8.4.0 was used for counting numbers of new cancer diagnoses and deaths due to cancer as well as calculating age-adjusted rates, confidence intervals, and average annual percent changes.

Confidence intervals were used to test if the difference in incidence or mortality rates between two groups or two years (e.g. blacks vs. whites or 2014 vs. 2018) was statistically significant. If the 95% confidence intervals did not overlap, the difference was determined to be statistically significant. Therefore, this is a conservative test of significance and there is a greater probability of finding non-significant differences than traditional tests of significance.

Pearson's chi-squared test was used to test the differences in cancer diagnosed in the late stages (i.e., regional and distant) versus early stages (i.e., *in situ* and localized) between black and white Tennesseans.

Consumers of this data must use caution when interpreting the data in this report and consider that data published in this report is dynamic. It is possible even after the standard reporting delay, some new cases may be reported, which could influence cancer rates. Caution should also be used when interpreting rates based on only a small number of cases. In order to protect patient confidentiality and ensure the integrity of the data, statistics based on counts smaller than eleven (11) have been suppressed. Additionally, the confidence intervals associated with some cancers are very large and caution should be used when interpreting the data.

SOFTWARE USED FOR CALCULATION

The following software was used to develop this report:

Age-Adjusted Rates and Confidence Intervals:

SEER*Stat Software Version 8.4.0 (2022). Surveillance Research Program, National Cancer Institute.
(<http://seer.cancer.gov/seerstat>)

Tennessee Resident County Maps:

Environmental Systems Research Institute (ESRI) (2022). ArcGIS Desktop: Release 10.8. Redlands, CA: ESRI.

EXPLANATION OF TERMS

Age-adjusted Rate

An age-adjusted incidence or mortality rate is a weighted average of the age-specific incidence or mortality rates, where the weights are the counts of persons in the corresponding age groups of a standard million population. Aging is an important risk factor for the development of cancer, so, if one population has a significantly greater proportion of older people than another, one would expect a larger number of cancers in the older population. Therefore, rates need to be age-adjusted to remove the confounding effect of age before comparisons are made between populations with different age distributions. In this report, incidence and mortality rates are age-adjusted to the 2000 US Standard Population with 19 age groups.

Cancer Coding

The Tennessee Cancer Registry uses the International Classification of Diseases for Oncology, 3rd Edition (ICD-O-3) to code site (topography), histology (morphology), and behavior (e.g. whether malignant or not) of incident cases. Cases are categorized according to the 2003 revised recodes of the Surveillance, Epidemiology and End Results (SEER) program of the National Cancer Institute (NCI). These recodes define standard groupings of primary cancer sites. Following CDC's National Program of Cancer Registries (NPCR) and SEER cancer registries' guidelines, the TCR considers as reportable all incident cases with a behavior code of 2 (*in situ*, noninvasive) or 3 (invasive, primary site only) in ICD-O-3 terminology with the exception of *in situ* cancer of the cervix. Benign brain tumors are also reportable but not included in this report. When reporting childhood cancers, the International Classification of Childhood Cancer, 3rd Edition (ICCC-3) is used. For cancer mortality data, the International Classification of Diseases, 10th Revision (ICD-10), is used.

Cancer Staging

Stage provides a measure of disease progression, detailing the degree to which the cancer has advanced. The SEER summary stage method is used in this report, which describes cancers in five stages:

1. *In situ**: Abnormal cells are present only in the layer of cells in which they originated.
2. *Localized*: Cancer is limited to the organ in which it began, without evidence of spread.
3. *Regional*: Cancer has spread beyond the primary site to nearby lymph nodes or organs and tissues.
4. *Distant*: Cancer has spread from the primary site to distant organs or distant lymph nodes.
5. *Unknown*: There is not enough information to determine the stage.

*Although *in situ* cancers are included in analyses of stage at diagnosis, these cancers (with the exception of *in situ* bladder cancer) are not included in incidence counts and rates to be consistent with national reporting.

Confidence Interval

A confidence interval is a range of values that has a specified probability of containing the true rate of interest in the population. The width of a confidence interval reflects the amount of variability in the estimated rate. In this report, 95% confidence intervals were calculated using a gamma distribution method developed by Fay and Feuer and modified by Tiwari, Clegg, and Zou.

Incidence

Incidence is defined as the number of new cancers diagnosed in the population at risk in the reference year. The population considered at risk for cancer in this report is the entire resident population of Tennessee in the reference year.

Incidence Rate

The cancer incidence rate is the number of new cases of cancer diagnosed in a specified population during a specified time period, usually expressed as the number of new cases per 100,000 persons at risk. That is,

$$\text{Incidence Rate} = \left(\frac{\text{Number of New Cases}}{\text{Population at Risk}} \right) * 100,000$$

The numerator of the incidence rate is the number of newly diagnosed cancer cases; the denominator of the incidence rate is the size of the population at risk. The number of new cancers may include multiple primary cancers occurring in one patient. The primary site reported is the site of origin and not the metastatic site, the distant site to which the cancer has spread. In general, the incidence rate does not include recurrences. The incidence rate can be computed for a given type of cancer or for all cancers combined. Incidence rates presented in this report are for invasive cancers and both invasive and *in situ* bladder cancer only, unless otherwise specified. When cancer stage was considered, cases diagnosed at any stage, including the *in situ* stage, were included in the analyses.

Median

The median is the middle value of an ordered set of numbers: half the values are greater than the median and half are less than the median. The median is less sensitive than the mean to extreme values, and is a better measure of central tendency for data with skewed distributions.

Mortality

Mortality is defined as the number of deaths from cancer in the population at risk in for the reference year. A cancer death is defined as a death for which cancer is determined to be the underlying cause of death based on the death certificate.

Mortality Rate

The cancer mortality rate is the number of deaths with cancer as the underlying cause of death in a specified at-risk population in a given time period, usually expressed as the number of deaths due to cancer per 100,000 persons at risk. That is,

$$\text{Mortality Rate} = \left(\frac{\text{Number of Cancer Deaths}}{\text{Population at Risk}} \right) * 100,000$$

Mortality-to-Incidence Ratio (M:I Ratio)

In this report, mortality-to-incidence ratio was calculated as the ratio of age-adjusted mortality and incidence rates. In a general sense, the higher the ratio, the higher fatality for the cancer or the lower the survival. However, for some cancers with very high fatality, e.g. pancreatic cancer, the M:I ratio may exceed 1 because the incidence and mortality cohorts are not exactly the same. In addition, the age-adjustment process may also make this possible because the age of a patient at death is likely greater than that at diagnosis; therefore, the patient may be accounted for at one age group for incidence and at an older age group for mortality.

$$\text{M: I Ratio} = \frac{\text{Mortality Rate}}{\text{Incidence Rate}}$$

Prevalence

Current cigarette use and cancer screening prevalence data from the Tennessee BRFSS are presented in this report (See [Cancer Screening and Risk Factor Prevalence](#) & [Cigarette Smoking Prevalence](#)). Prevalence is defined as the percentage of people exhibiting the behavior out of the total number in the defined population.

Race and Ethnicity

Cancer incidence and mortality can vary greatly by race and ethnicity. According to the 2010 US census (United States Census Bureau, 2010), non-Hispanic Whites account for 78.4 of Tennessee’s population, and non-Hispanic Blacks represent 16.7% of Tennessee’s population. Given Tennessee’s small minority population, displaying detailed information by racial/ethnic group leads to some cell counts that are too small to display publically and rates may be unstable.

Resident County

The resident county is the geographical variable that illustrates the county of residence at diagnosis.

Suppression of Rates and Counts

Due to concerns regarding statistical reliability, statistics were suppressed when there were less than 11 reported cases for any given cohort or cancer site. Counts or rates that were suppressed in this report are denoted by “^”.

Tennessee counties and regions

In this report, Tennessee’s 95 counties are grouped into eight regions. Metropolitan counties are grouped into the regions where they are located.

Trends

Trend data should be interpreted with caution. Increases and decreases in rates over time may reflect changes in diagnostic methods or case reporting rather than genuine changes in cancer occurrence.

DATA SOURCES

Tennessee Cancer Registry (TCR) Incidence Data:

The cancer incidence data contains records of primary cancer cases first diagnosed among Tennessee residents between January 1, 2009 and December 31, 2018 and were reported to the TCR as of January 26, 2022. A total of 50 cases with gender reported as hermaphrodite or transsexual were not included in this report and 6 cases with unknown gender. Cases with race other than white or black (2,990 cases) and unknown race (3,258 cases) were included in the “Total Population” category. A total of 4 cases with unknown age of diagnosis were excluded from all analyses except the calculation of the leading causes of cancer incidence and cancer by stage. A total of 7 cases could not be converted into a site recode value using the International Classification of Diseases for Oncology 3rd Edition (ICD-O-3) and World Health Organization (WHO) 2008 Definition and were included in the calculation of statistics concerning all cancer incidence primary sites combined. A total of 211 cases did not have enough information regarding resident county at diagnosis and were excluded in the geographic analyses. These cases were included in the state level statistics, but excluded from county level statistics. Thus, regional figures for the “Total Population” category will not sum to the overall Tennessee figure for the “Total Population” category.

Mortality Data:

Cancer mortality data contains records of all mortalities among Tennessee residents. The record-level mortality data were obtained from the Vital Records Information System Management (VRISM) provided by the Office of Vital Records and Statistics, Tennessee Department of Health. There were 25 mortality records missing gender information and 35 records contained invalid or unknown age at death values. These records were excluded from all analyses in this report except the calculation of the leading causes of cancer mortality. It should also be noted 2,800 deaths were of race other than white or black and 2,934 mortality records contained insufficient or unknown race information. These deaths were included in the “Total Population” category. A total of 36 cases did not have enough information regarding resident county at death and were excluded in the geographic analyses. These cases were included in the state level statistics, but excluded from county level statistics. Thus, the regional figures for the “Total Population” category will not sum to the overall Tennessee figure for the “Total Population” category.

Behavioral Risk Factor Surveillance System (BRFSS) Data:

BRFSS is a CDC-funded, state-administered, random-digit-dialed telephone survey of the US non-institutionalized population, 18 years of age and older that collects information on health risk behavior, preventive health practices, and health care access primarily related to chronic disease and injury. BRFSS was established in 1984 by the CDC, and current data are collected monthly in all 50 states, the District of Columbia, Puerto Rico, the US Virgin Islands, and Guam. Nationwide BRFSS data were the median for 50 states and Washington D.C.

State Cancer Profiles:

State Cancer Profiles is a web-based, comprehensive, and interactive data query system provided by the National Cancer Institute (NCI) and the CDC. Tennessee and United States cancer mortality trend data and Tennessee cancer rankings in cancer incidence and mortality were based on age-adjusted rates of 50 states and Washington D.C. obtained online from the following website: <https://statecancerprofiles.cancer.gov/>.

ADDITIONAL RESOURCES

More information can be found about the cancers discussed in this report at the American Cancer Society:

SPECIFIC CANCER SITE	WEBSITE
Lung Cancer	http://www.cancer.org/cancer/lungcancer/
Prostate Cancer	http://www.cancer.org/cancer/prostatecancer/
Breast Cancer	http://www.cancer.org/cancer/breastcancer/
Colorectal Cancer	http://www.cancer.org/cancer/colonandrectumcancer/
Melanoma Skin Cancer	http://www.cancer.org/cancer/skincancer-melanoma/
Pancreatic Cancer	http://www.cancer.org/cancer/pancreaticcancer/
Childhood Cancer	http://www.cancer.org/cancer/cancerinchildren/index

If interested, other sources of information and support from national cancer organizations include:

ORGANIZATION	WEBSITE
American Association for Cancer Research (AACR)	http://www.aacr.org/Pages/Home.aspx
American Cancer Society (ACS)	http://www.cancer.org/
American Society of Clinical Oncology (ASCO)	http://www.asco.org/
Cancer Research Network (CRN)	http://crn.cancer.gov/
Center for Cancer Research (CCR)	https://ccr.cancer.gov/
Centers for Disease Control & Prevention (CDC)	http://www.cdc.gov/cancer/dpcp/data/index.htm
Commission on Cancer (CoC)	https://www.facs.org/quality-programs/cancer/coc
Conquer Cancer Foundation	https://www.conquercancerfoundation.org/
International Agency for Research on Cancer	http://www.iarc.fr/
Journal of Clinical Oncology	http://jco.ascopubs.org/
National Cancer Informatics Program (NCIP)	http://cbit.nci.nih.gov/ncip
National Cancer Institute (NCI)	http://www.cancer.gov/
National Comprehensive Cancer Network (NCCN)	http://www.nccn.org/
National Program of Cancer Registries (NPCR)	http://www.cdc.gov/cancer/npcr/
North American Association of Central Cancer Registries (NAACCR)	http://www.naacr.org/

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