

2015-2019

CANCER IN TENNESSEE

This document presents cancer incidence and mortality information for the entire state of Tennessee focusing on the five-year period between 2015 and 2019 with comparisons to national rates. 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.

Population Health Assessment
Tennessee Cancer Registry (TCR)
December 2023



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CANCER IN TENNESSEE REPORT

This report contains cancer incidence and mortality data for the entire state of Tennessee from 2015 through 2019, 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.

ACKNOWLEDGEMENTS

The TCR acknowledges the contributions of the following organizations and individuals in making the publication of this report possible:

- 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 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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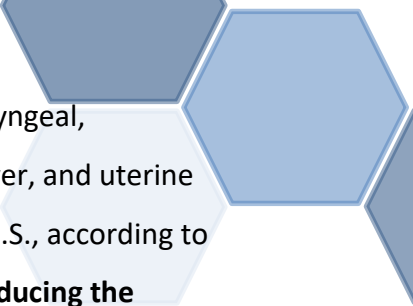
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EXECUTIVE SUMMARY

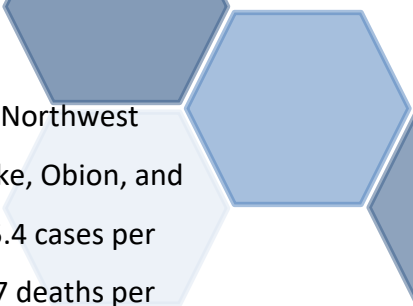
This report contains cancer incidence (i.e., number of newly diagnosed cancer cases) and mortality (i.e., number of deaths) data for the entire state of Tennessee from 2015 through 2019, with occasional comparisons to national rates. Data collected by the Tennessee Cancer Registry (TCR), as well as cancer 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, non-significant impact on the statistics presented.

- From 2015-2019, cancer was the 2nd leading cause of death. There were 193,064 Tennesseans diagnosed with cancer and 71,249 Tennesseans that died from malignant cancers. In Tennessee from 2015 through 2019, the cancer incidence rate decreased 3.2% per year, but this change was not statistically significant. **The cancer mortality rate among Tennesseans decreased on average by 6.3% per year and this change was statistically significant.**
- From 2015-2019, Tennessee experienced the 21st highest cancer incidence rate and the 6th highest cancer mortality rate in the US. **Much of the observed cancer incidence and mortality disparities relative to other states is due to a greater cancer burden among Tennessee men**, who experience respectively the 9th and 5th highest cancer incidence and mortality burden compared to men in all other US states. **Tennessee 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.** This is likely due to the greater prevalence of smoking among Tennesseans compared to the national average. According to the 2019 state Behavioral Risk Factor Surveillance Survey (BRFSS), 19.9% of Tennessee adults 18 years of age and older were current smokers compared to only 16.0% nationally.⁴ 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. Smoking is the most preventable cause of death in the U.S., according to the Centers for Disease Control & Prevention (CDC). **By substantially reducing the prevalence of smoking, Tennessee could prevent considerable numbers of both new cancer cases and cancer deaths.**

- The 10 most common cancer types, based on number of cases diagnosed among Tennessee residents during the 2015-2019 period, in descending numbered order (counts in parentheses), were: lung (31,329 cases), female breast (26,574 cases), prostate (24,269 cases), colorectal (16,151 cases), urinary bladder (8,422 cases), melanoma of the skin (8,293 cases), kidney and renal pelvis (8,215 cases), non-Hodgkin Lymphoma (7,200 cases), corpus and uterus (5,715 cases) and oropharyngeal (5,512 cases).
- The 10 most common cancer types causing death, based on number of deaths among Tennesseans from 2015-2019, in descending numbered order (counts in parentheses), were: lung (20,624 deaths), colorectal (6,059 deaths), female breast (4,815 deaths), pancreas (4,586 deaths), prostate (3,182 deaths), leukemia (2,528 deaths), liver (2,332 deaths), non-Hodgkin Lymphoma (2,318 deaths), brain and other nervous system (1,868 deaths), and urinary bladder (1,727 deaths).
- Cancer also demonstrates geographic disparities in Tennessee, see [Maps](#) and [Appendices](#). For all new cases of cancer (i.e., incidence) combined, the following are the top 10 counties in descending order by age-adjusted rate (rates in parentheses are displayed as cases per 100,000 population): Carroll County (562.6), Maury County (548.3), Benton County (547.5), Hardeman County (543.5), Campbell County (537.0), Rhea County (535.2), Smith County (535.0), Dickson County (530.2), Marshall County (528.6), and Claiborne County (528.4). The following are the top 10 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 (242.6), Scott County (235.5), Perry County (235.0), Grundy County (231.1), Carroll County (229.2), Benton County (228.7), Meigs County (227.2), Houston County (221.0), Lauderdale County



(219.5), and Johnson County (216.7). Regionally in Tennessee, the rural Northwest Region (comprised of Benton, Carroll, Crockett, Dyer, Gibson, Henry, Lake, Obion, and Weakly counties) displays the highest overall cancer incidence rate (505.4 cases per 100,000 population) and the highest overall cancer mortality rate (197.7 deaths per 100,000 population) of all regions in Tennessee.



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.naaccr.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 Tennessee annually.
- Increase general awareness of cancer in Tennessee.
- Promote and assist cancer abstractors in each facility to accurately code cancer abstracts.
- Provide information to the public regarding cancer incidence and mortality in Tennessee.
- 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.



CANCER AND CANCER RISK FACTORS

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 smoking.⁹

IMPACT OF CANCER IN TENNESSEE

EVERY DAY IN TENNESSEE...

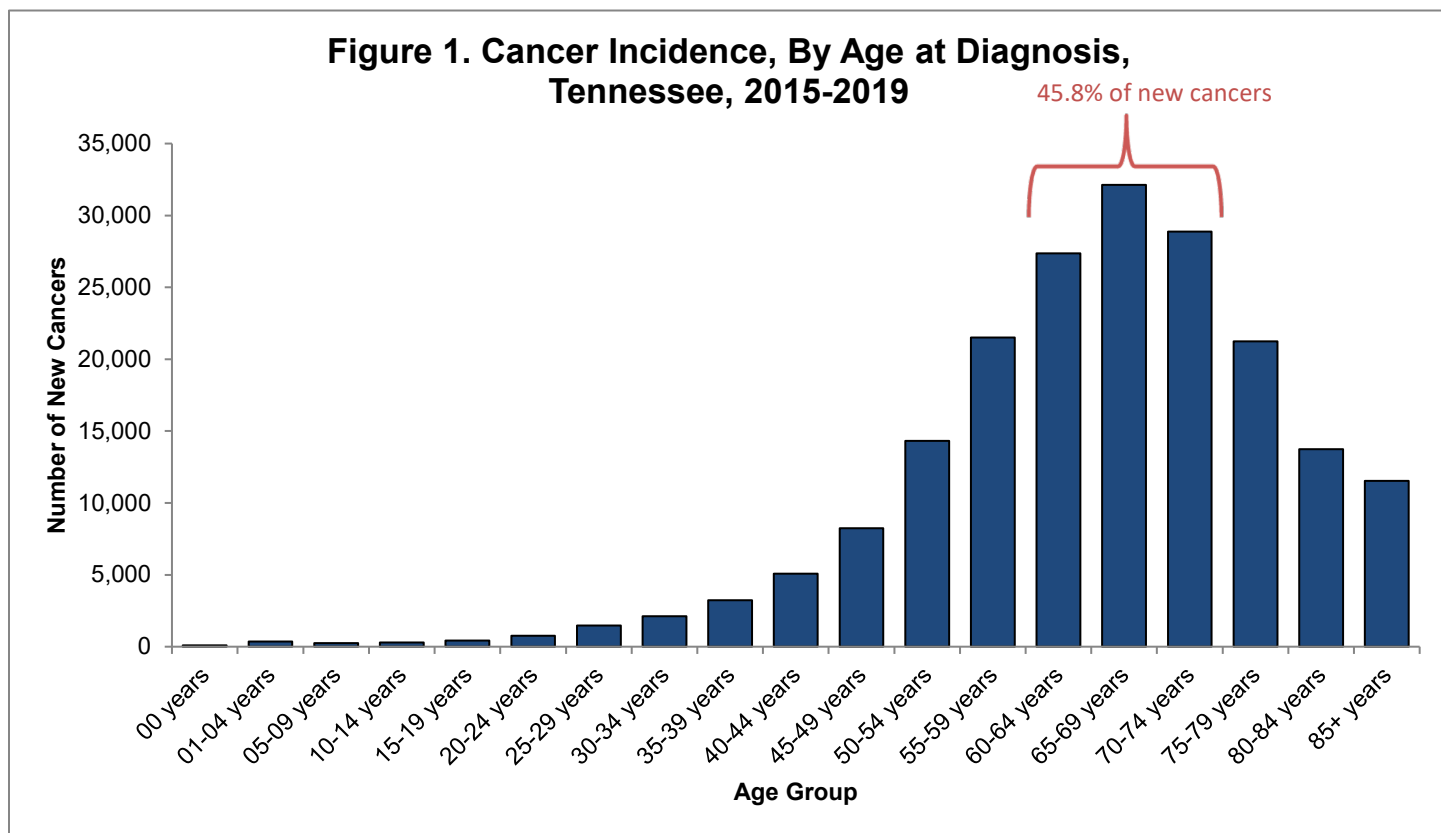
106 Tennesseans are **diagnosed** with cancer:

- ❖ **17** Tennesseans are diagnosed with lung cancer
- ❖ **15** Tennessee women are diagnosed with female breast cancer
- ❖ **13** Tennessee men are diagnosed with prostate cancer
- ❖ **9** Tennesseans are diagnosed with colorectal cancer
- ❖ **5** Tennesseans are diagnosed with melanoma skin cancer
- ❖ **3** Tennesseans are diagnosed with pancreatic cancer

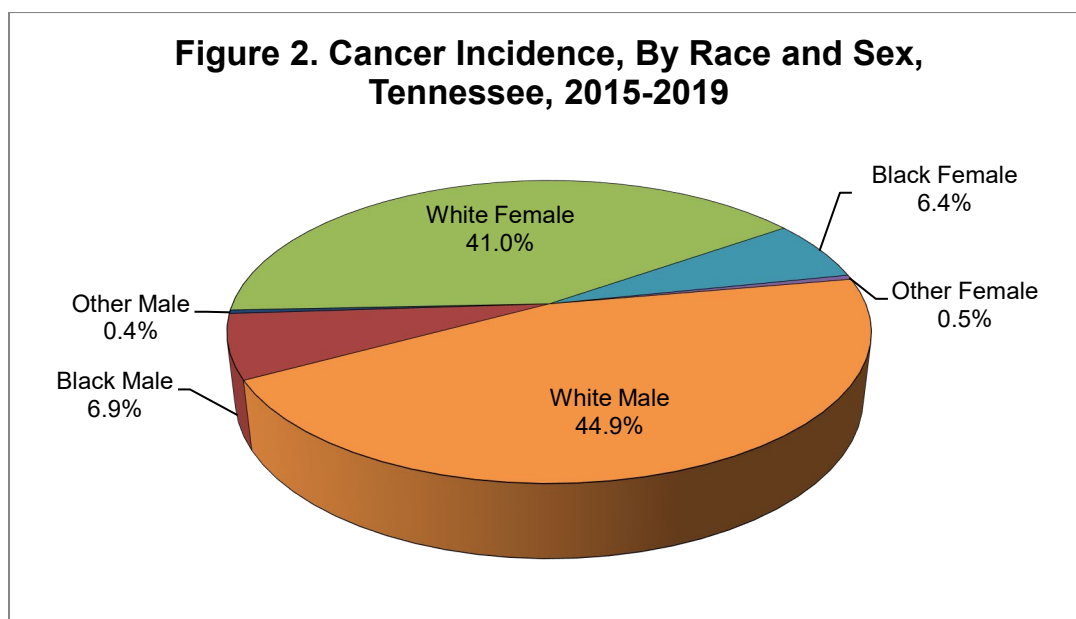
39 Tennesseans **die** from cancer (#2 cause of death in Tennessee):

- ❖ **11** 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

DEMOGRAPHICS OF CANCER PATIENTS IN TENNESSEE, 2015-2019

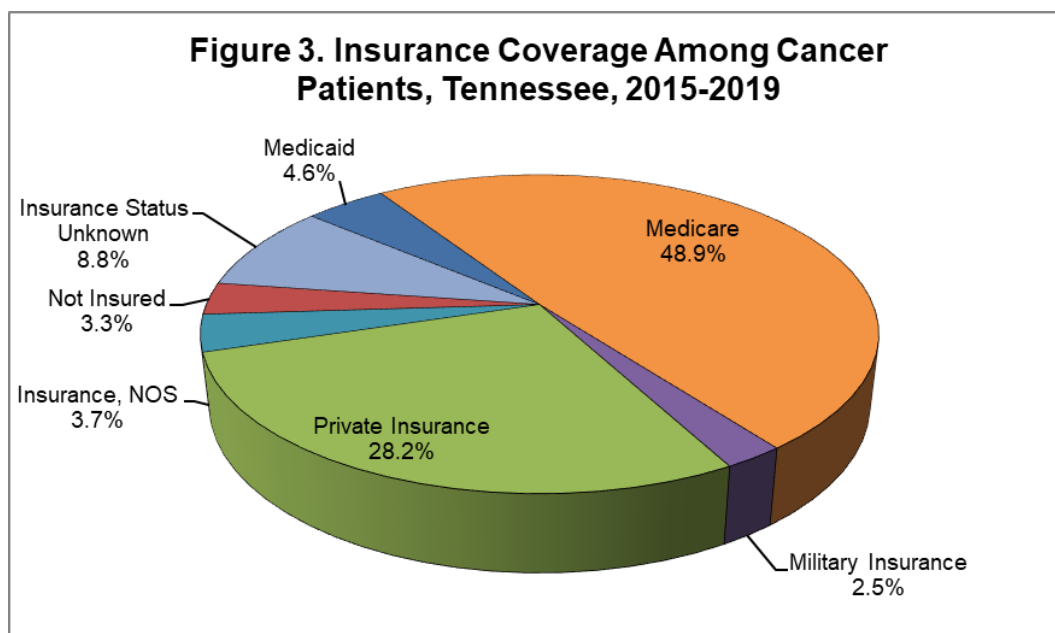


- Aging is the single most important risk factor for developing cancer overall.
- Approximately 45.8% of new cancer cases are diagnosed in Tennesseans aged 60 to 74 years (Figure 1), with the majority occurring in the 65-69 age category.
- Although the risk of most cancer types increases as individuals grow older, there are some cancer types more common in younger people, such as leukemia and lymphoma.



From 2015 to 2019 (Figure 2):

- In Tennessee, 163,847 White individuals and 25,411 Black individuals were diagnosed with cancer.
- White Tennesseans accounted for 84.9% of all new cancer diagnoses, while Black Tennesseans accounted for 13.2% of all new cancer diagnoses.

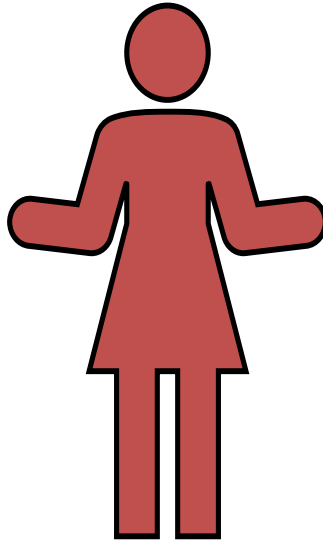


- Among those individuals with known insurance status, 87.4% of Tennesseans had insurance coverage at the time of their initial cancer diagnosis. For 3.7% of the insured, there was no additional information on type of insurance, hence these are labeled, 'Not Otherwise Specified' (Insurance, NOS) (Figure 3).

COMMON CANCERS IN TENNESSEE BY GENDER, 2015-2019

New Cancers in Women

Female Breast
26,574 (28.8%)
Lung and Bronchus
14,460 (15.7%)
Colon and Rectum
7,552 (8.2%)
Corpus and Uterus
5,715 (6.2%)
Melanoma of the Skin
3,330 (3.6%)
Non-Hodgkin Lymphoma
3,209 (3.5%)
Thyroid
3,137 (3.4%)
Kidney and Renal Pelvis
3,039 (3.3%)
Pancreas
2,537 (2.7%)
Leukemia
2,182 (2.4%)
All Sites
92,277 (100%)

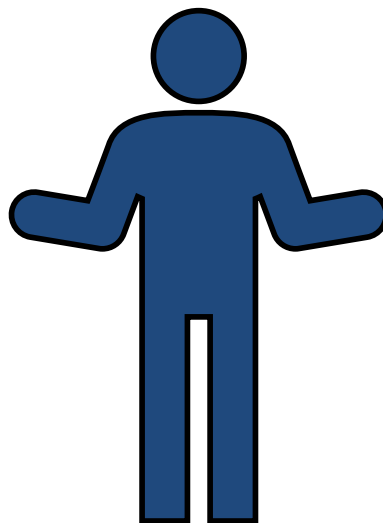


Cancer Deaths in Women

Lung and Bronchus
8,914 (27.2%)
Female Breast
4,815 (14.7%)
Colon and Rectum
2,797 (8.5%)
Pancreas
2,192 (6.7%)
Ovary
1,570 (4.8%)
Leukemia
1,070 (3.3%)
Corpus and Uterus
1,032 (3.1%)
Non-Hodgkin Lymphoma
1,010 (3.1%)
Liver and Intrahepatic Bile Duct
930 (2.8%)
Brain and Other Nervous System
814 (2.5%)
All Sites
32,764 (100%)

New Cancers in Men

Prostate
24,269 (24.1%)
Lung and Bronchus
16,869 (16.7%)
Colon and Rectum
8,599 (8.5%)
Urinary Bladder
6,424 (6.4%)
Kidney and Renal Pelvis
5,176 (5.1%)
Melanoma of the Skin
4,963 (4.9%)
Oral Cavity and Pharynx
4,068 (4.0%)
Non-Hodgkin Lymphoma
3,991 (4.0%)
Leukemia
2,977 (3.0%)
Liver and Intrahepatic Bile Duct
2,733 (2.7%)
All Sites
100,787 (100%)

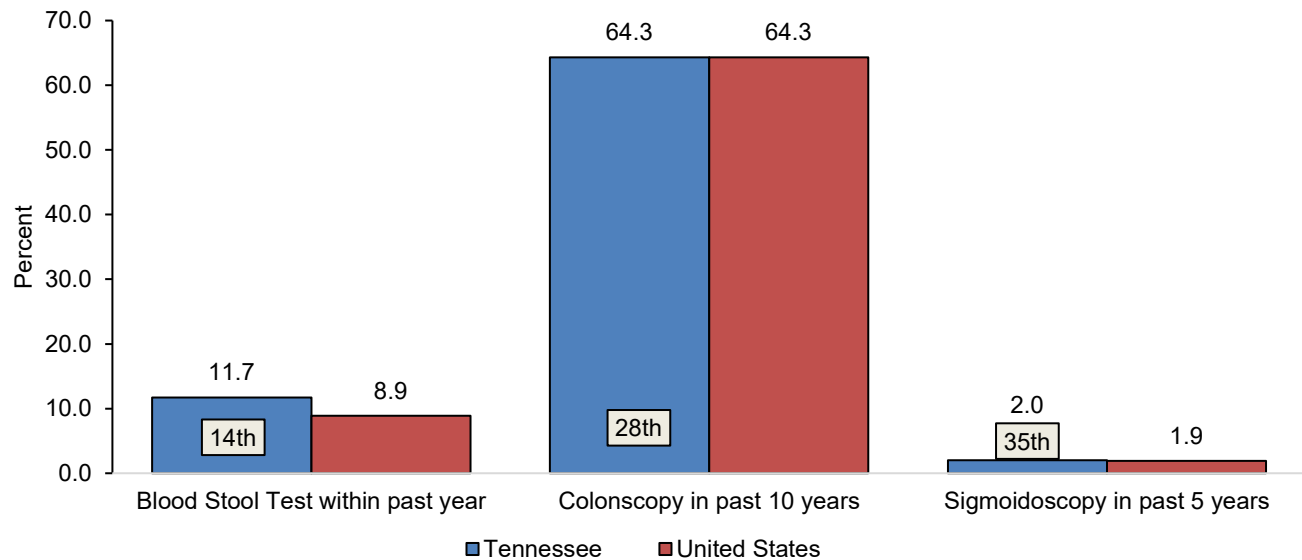


Cancer Deaths in Men

Lung and Bronchus
11,710 (30.4%)
Colon and Rectum
3,262 (8.5%)
Prostate
3,182 (8.3%)
Pancreas
2,394 (6.2%)
Liver and Intrahepatic Bile Duct
2,085 (5.4%)
Leukemia
1,458 (3.8%)
Esophagus
1,425 (3.7%)
Non-Hodgkin Lymphoma
1,308 (3.4%)
Urinary Bladder
1,276 (3.3%)
Kidney and Renal Pelvis
1,066 (2.8%)
All Sites
38,485 (100%)

CANCER SCREENING AND RISK FACTOR PREVALENCE

Figure 4a. Prevalence of Colorectal Cancer Screening, Adults Ages 50-75, Tennessee and the United States, 2018



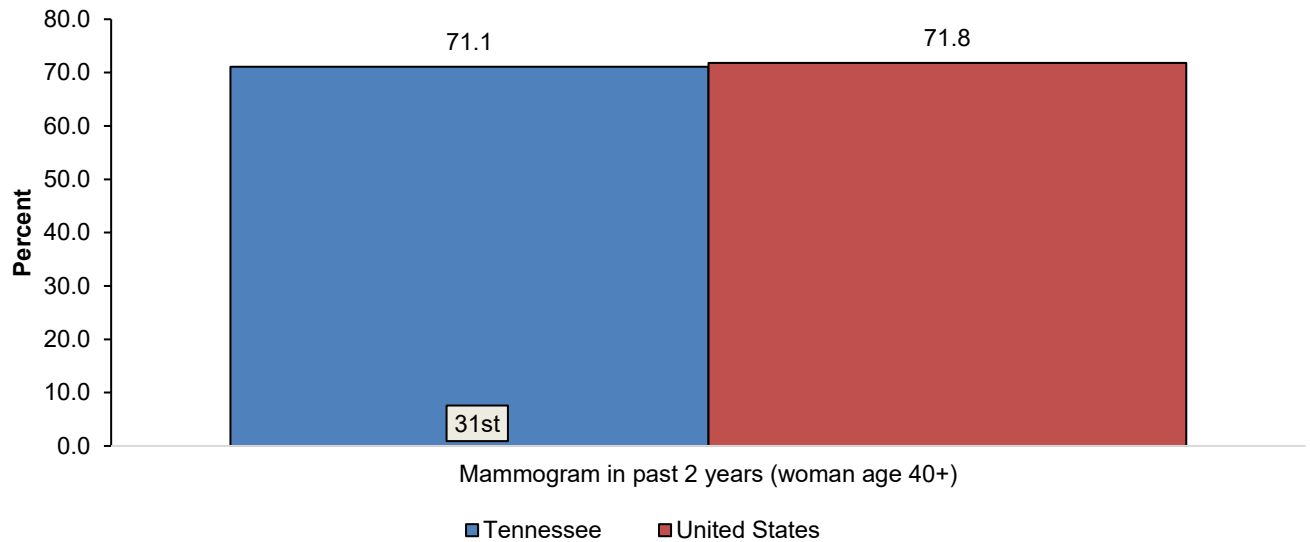
Data Source: Centers for Disease Control and Prevention (2022). Behavioral Risk Factor Surveillance System. Retrieved from <https://www.cdc.gov/brfss/brfssprevalence/>

In 2018, for Tennesseans aged 50 to 75 (Figure 4a):

- 11.7% indicated they received a blood stool test within the past year, which was the 14th highest percentage in the US.
- 64.3% had a colonoscopy in the past ten years, which was the 28th highest percentage in the U.S.
- 2.0% received a sigmoidoscopy in the past 5 years, which was the 35th highest percentage in the US.

CANCER SCREENING AND RISK FACTOR PREVALENCE, CONTINUED

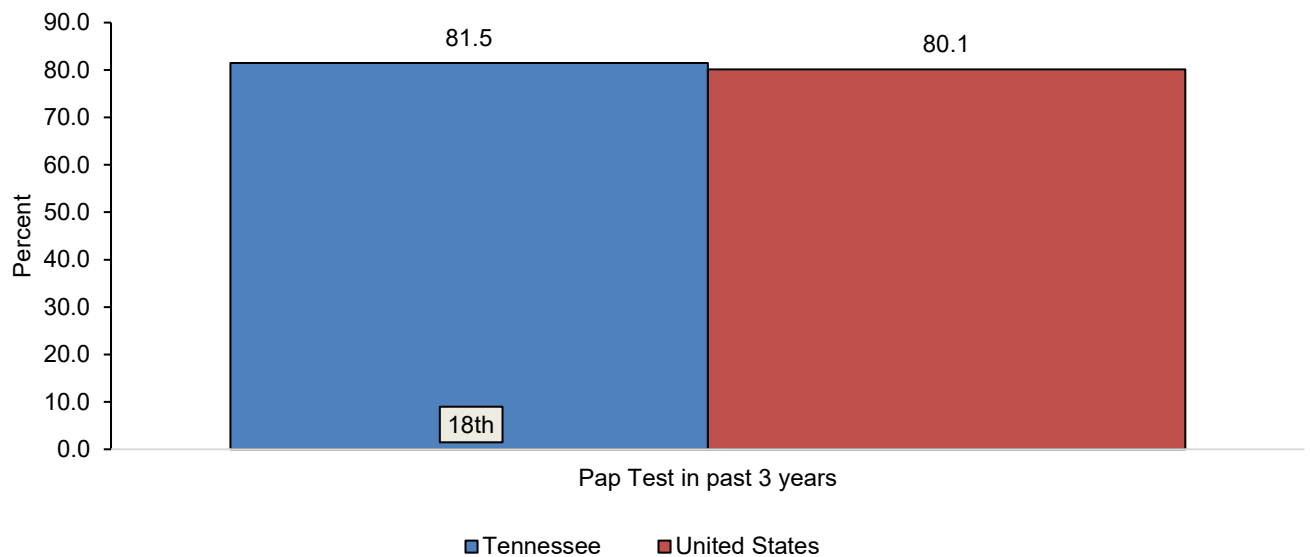
Figure 4b. Prevalence of Breast Cancer Screening, Women Ages 50-74, Tennessee and the United States, 2018



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

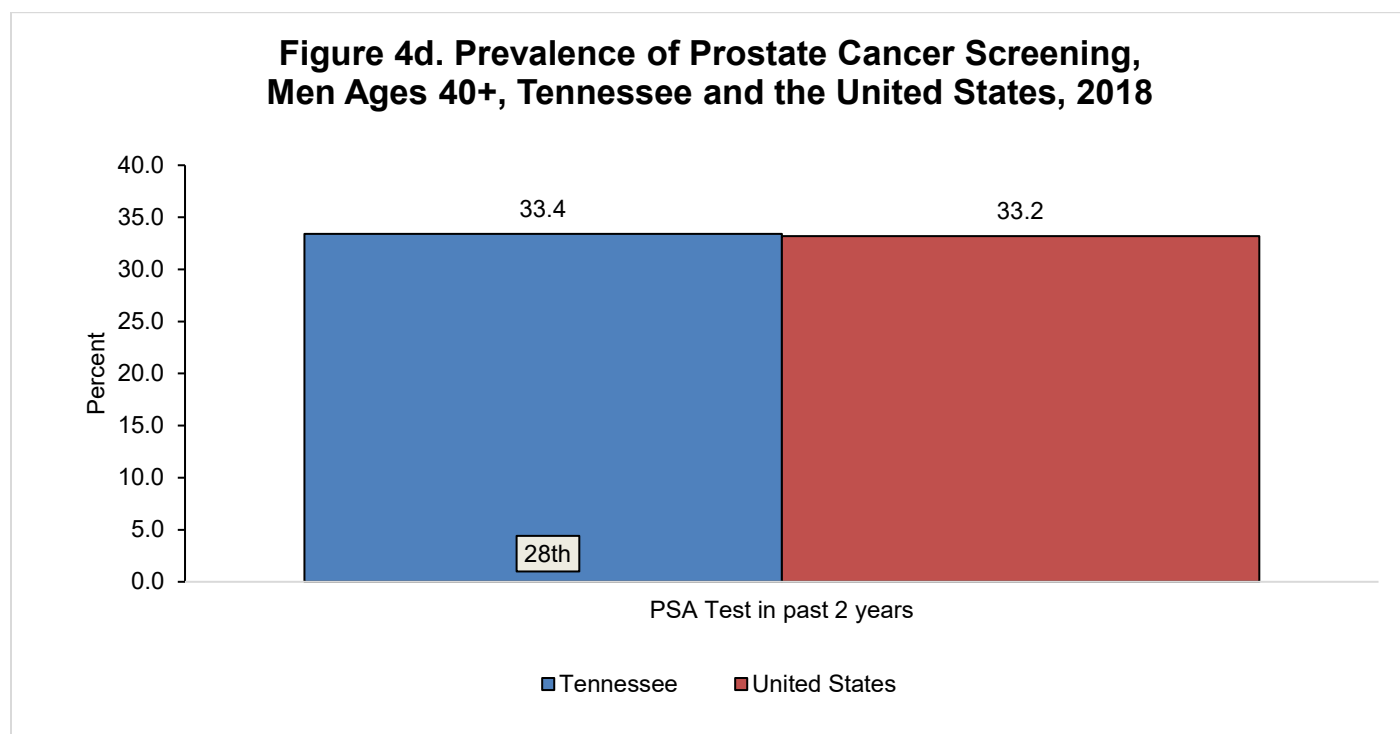
- In 2018 (Figure 4b), 71.1% of Tennessee women aged 40+ had a mammogram within the past two years, which was the 31st highest percentage in the US.

Figure 4c. Prevalence of Cervical Cancer Screening, Women Ages 21-65, Tennessee and the United States, 2018



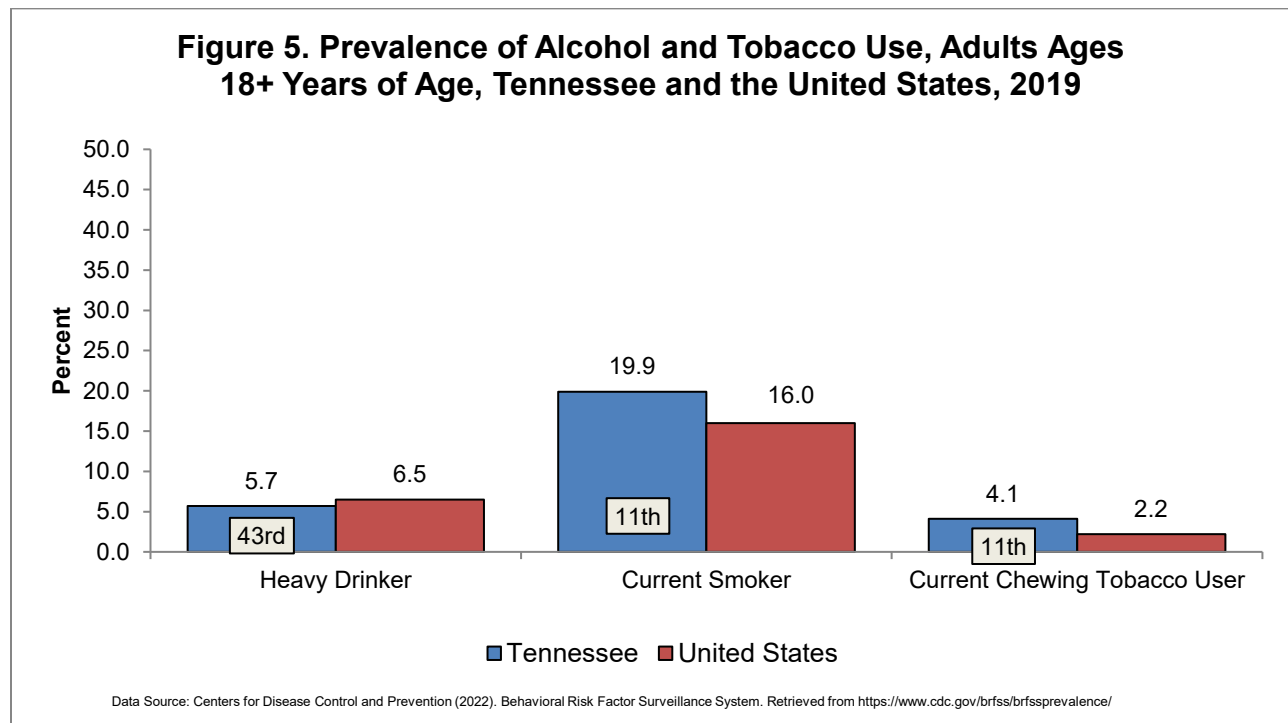
Data Source: Centers for Disease Control and Prevention (2022). Behavioral Risk Factor Surveillance System. Retrieved from <https://www.cdc.gov/brfss/brfssprevalence/>

- In 2018 (Figure 4c), greater than 4 out of 5 (81.5%) Tennessee women between 21 and 65 years of age had a pap test in the past three years, which was the 18th highest percentage in the US.



- In 2018 (Figure 4d), 33.4% of Tennessee men 40 years of age and older received a prostate-specific antigen (PSA) test within the past two years, which was the 28th highest percentage in the US.

CANCER SCREENING AND RISK FACTOR PREVALENCE, CONTINUED

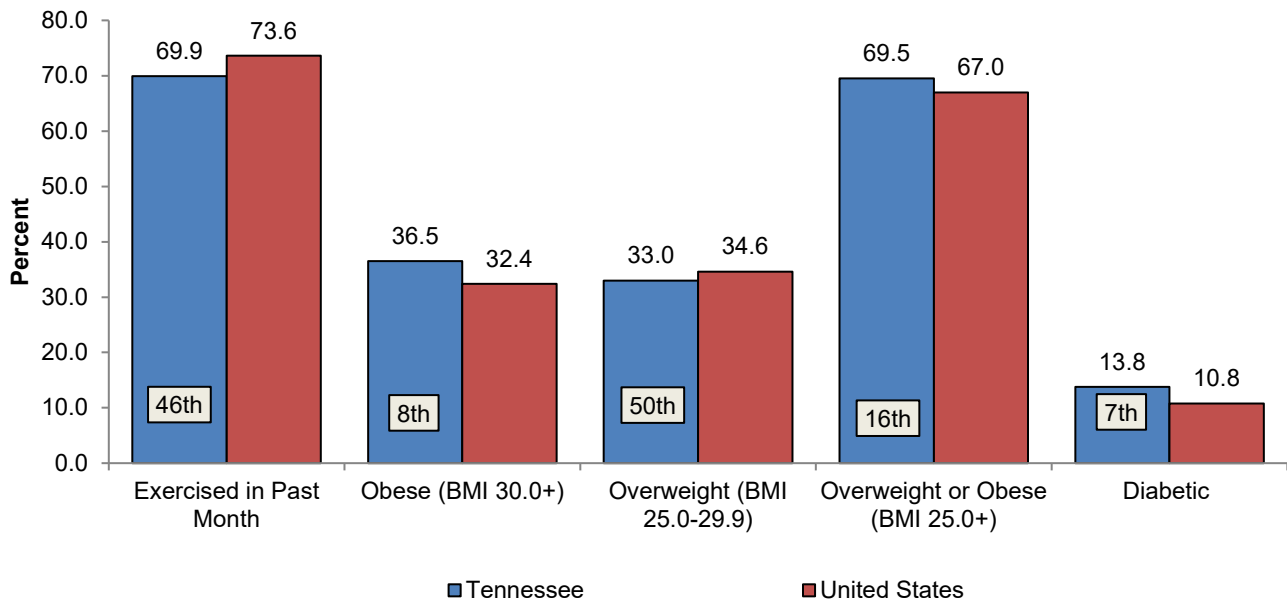


In 2019 (Figure 5):

- 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 43rd highest percentage in the US.
- 19.9% of Tennesseans were current smokers, which is the 11th highest percentage in the US.
- 4.1% of Tennesseans chewed nicotine products everyday, which was the 11th 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, 2019



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

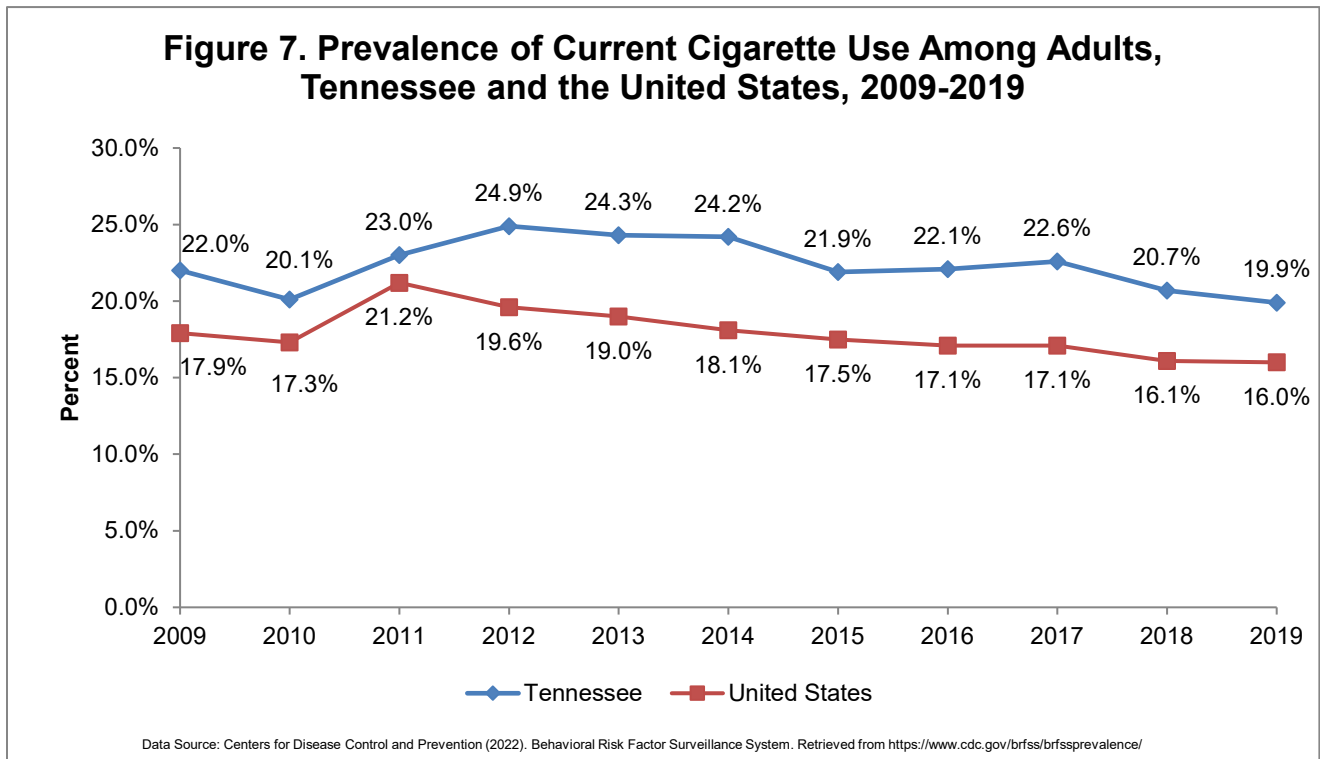
U.S.: Centers for Disease Control and Prevention (2022). Behavioral Risk Factor Surveillance System. Retrieved from <https://www.cdc.gov/brfss/brfssprevalence/>

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

In 2019 (Figure 6):

- About 3 out of every 4 (69.9%) Tennesseans had participated in some form of physical activity, either work-related or during leisure time, in the past month, which was the 46th highest physical activity participation prevalence in comparison to the other states and the District of Columbia (D.C.).
- 36.5% of Tennesseans and 32.4% of people in the US were considered obese with a body mass index (BMI) of 30 or more. The CDC recognizes being overweight or obese is a known risk factor for 13 different cancer types.⁵
- In comparison with other states and D.C. in the US, Tennessee had the 8th largest obese population.
- About 1 out of every 3 Tennesseans was considered overweight.
- **Roughly 2 out of every 3 Tennesseans was considered either overweight or obese.**
- In comparison with the other states and D.C. in the US, Tennessee had the 16th highest percentage of overweight or obese individuals.
- Roughly 1 out of every 7 Tennesseans has diabetes, which is the 7th highest percentage in the US. According to the CDC, diabetes is a known risk factor for liver, pancreas, uterine, colon, breast, and bladder cancer.⁶

CIGARETTE SMOKING PREVALENCE IN TENNESSEE



About 1 out of every 5 Tennesseans (19.9%) identified themselves as current smokers, compared to 16.0% of the US population (Figure 7).⁴ Consequently, Tennessee had the 11th highest population of current smokers in the US. While the overall percentage of current smokers has decreased by 2.0% from 2015 to 2019, Tennessee had the 4th highest lung cancer incidence rate (72.9 cases per 100,000; as reported on the United States Cancer Statistics website) in the US during the same time period.¹⁷ About 7.1% of high school students in Tennessee stated they had smoked cigarettes or cigars on at least 1 day during the 30 days prior to being surveyed. It should be noted among Tennessee 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 Tennessee stated they had used cigarettes daily for the 30 days prior to being surveyed.⁴

Approximately \$292.1 million is spent each year by the nicotine industry in marketing expenditures in Tennessee, which equates to roughly 3.0% of the industry's marketing expenditures nationwide.²¹

SMOKING AND CANCER

WHY ARE CIGARETTES BAD FOR YOUR BODY?

Cigarette 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.¹⁴ Each time an individual smokes, these chemicals damage the body in ways that may lead to disease and death.

HOW IS SMOKING RELATED TO CANCER?

Smoking damages cells and can cause DNA mutations. When this happens, cells 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. Nicotine products can weaken tumor fighters, causing cells to multiply out of control and develop into cancers.

IMPACT OF SMOKING

Smoking can cause cancer almost anywhere in the body. More than a third (35.2%) of cancer deaths were attributable to cigarette smoking in Tennessee in 2019.⁹ People who smoke are 15 to 30 times more likely to get lung cancer or die from lung cancer than people who do not smoke. Even smoking occasionally increases the risk of lung cancer, and the more years a person smokes, the more risk increases. The use of nicotine products accounts for at least 30% of all cancer deaths, causing about 90% of lung cancer deaths.^{2, 20} 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.²⁰ If nobody smoked, 1 out of every 3 cancer deaths in the US may be potentially preventable.²⁰

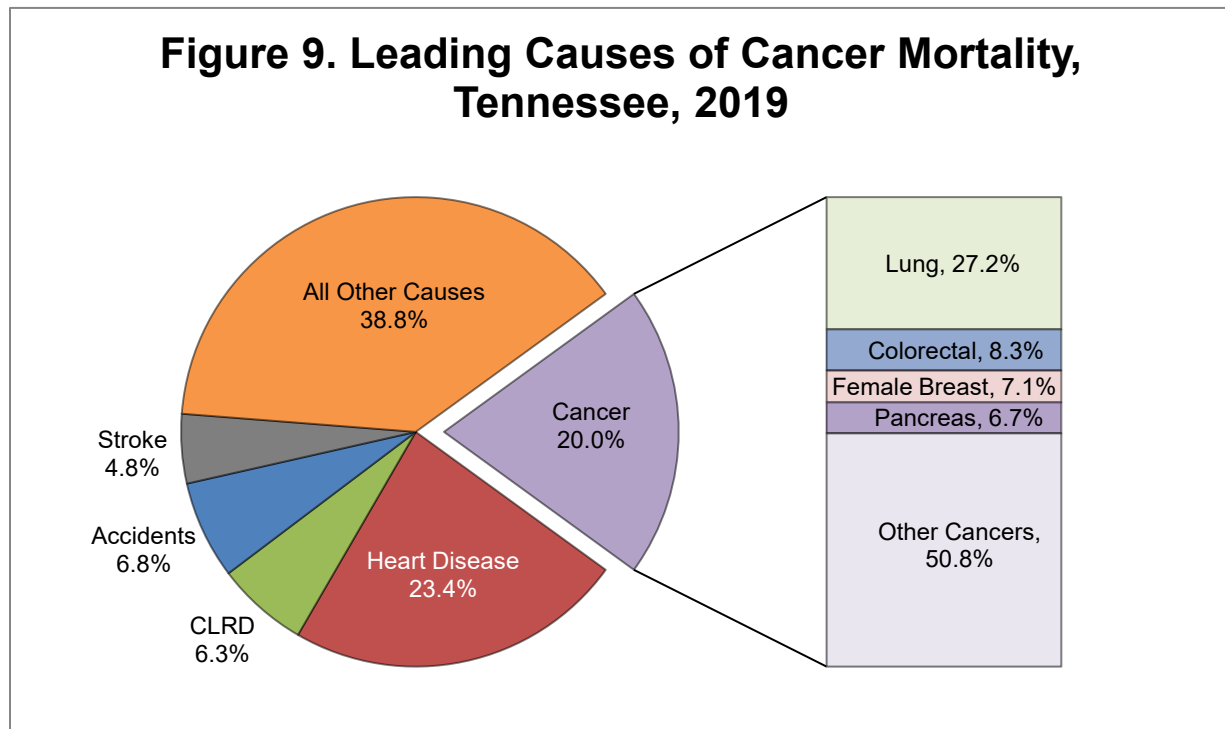
Figure 8. Smoking in TN



Almost **1 in 5** TN adults
currently smoke cigarettes.⁴



More than **1 in 3** cancer deaths in TN
are attributed to cigarette smoking.⁹

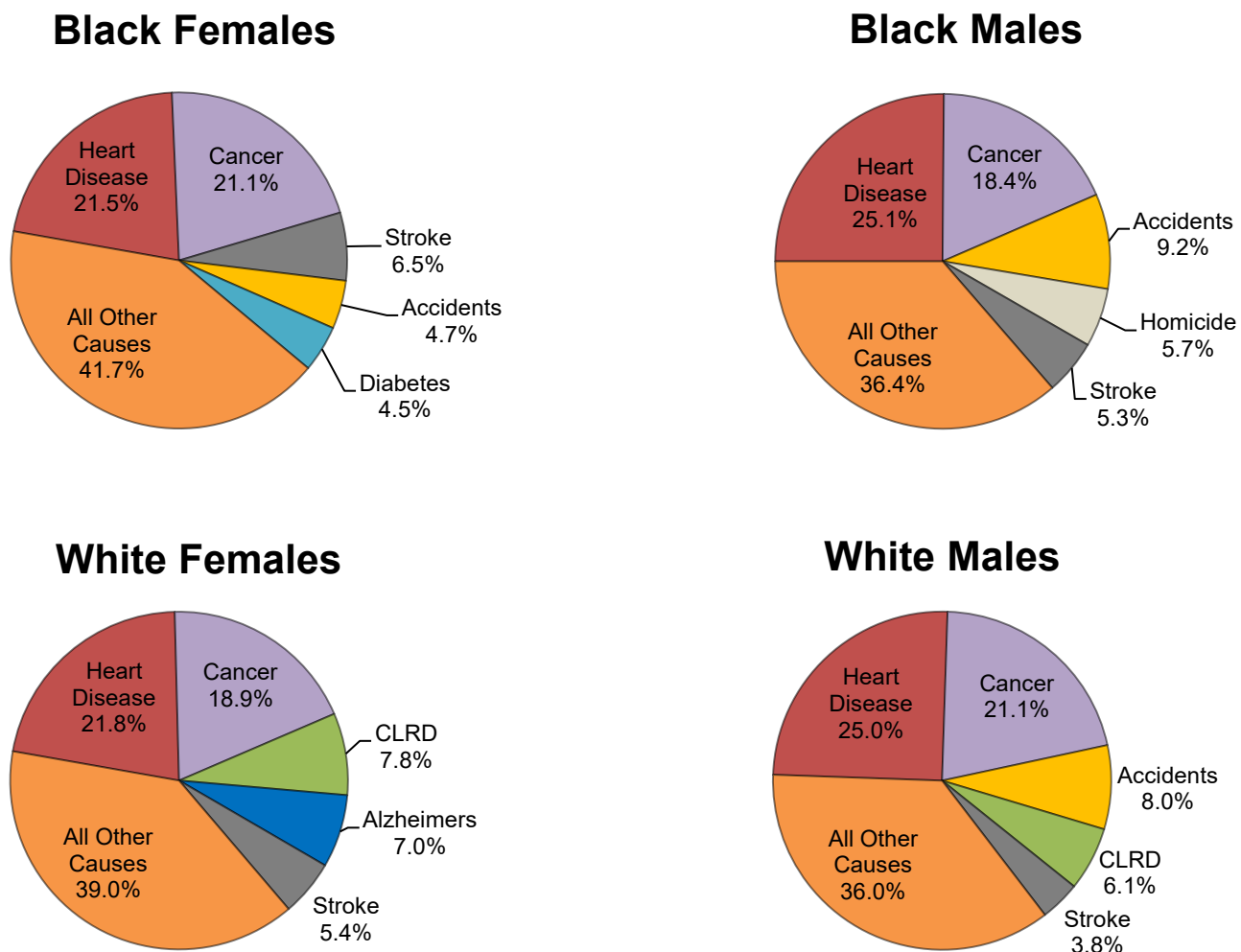


*CLRD represents all Chronic Lower Respiratory Diseases combined.

In 2019 (Figure 9):

- Following heart disease (16,810 deaths), cancer (14,382 deaths) was the 2nd leading cause of death among Tennesseans.
- **Lung cancer (4,051 deaths) was the leading cause of cancer deaths** among Tennesseans **followed by colorectal cancer** (1,258 deaths), female breast cancer (968 deaths), and pancreatic cancer (945 deaths).

Figure 10. Leading Causes of Cancer Mortality, By Race and Sex, Tennessee, 2019



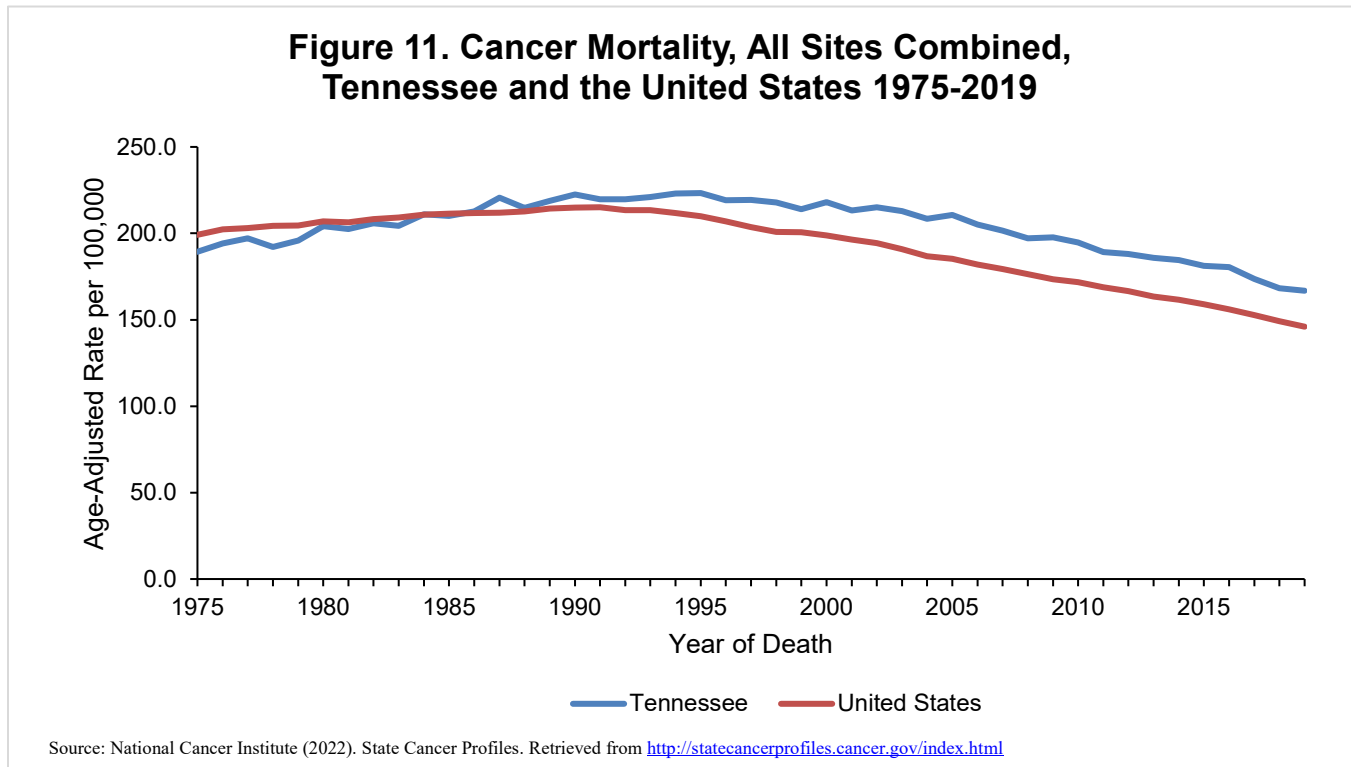
*CLRD represents all Chronic Lower Respiratory Diseases combined.

In 2019 (Figure 10):

- Following heart disease, cancer was the 2nd leading cause of death among all Tennessee cohorts (i.e., Black men, Black women, White men, and White women).

TENNESSEE IN COMPARISON TO THE UNITED STATES

CANCER MORTALITY HISTORICAL TREND, 1975-2019



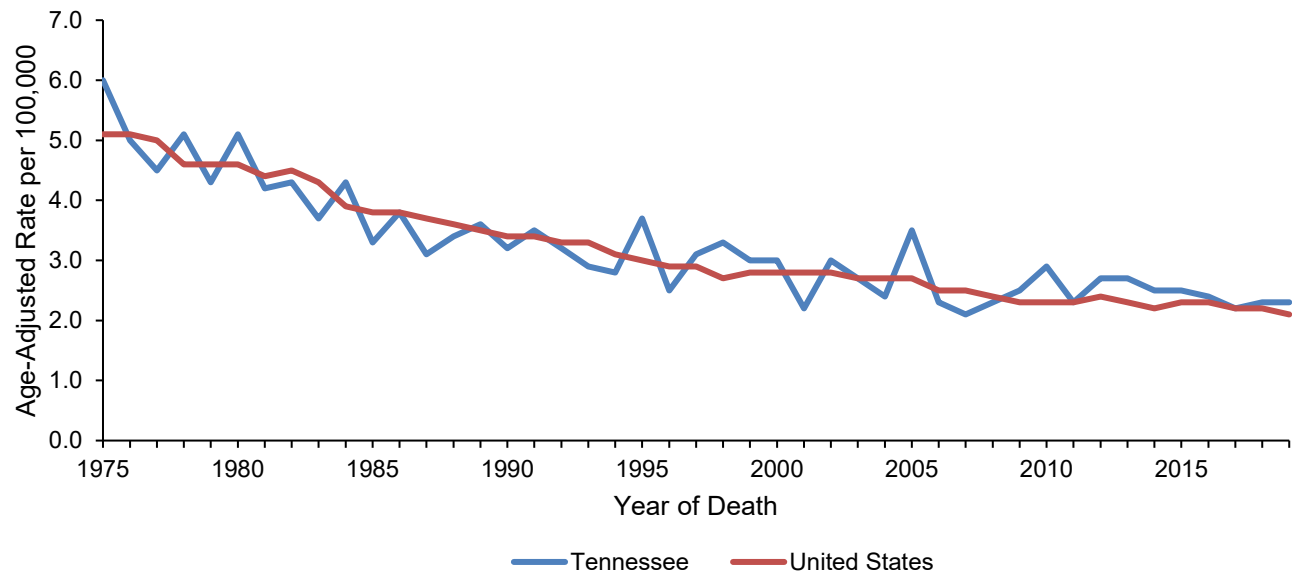
From Figure 11:

- The cancer mortality rate peaked in the US in 1991 at 215.1 deaths per 100,000 in the US and peaked in Tennessee in 1995 at 223.3 deaths per 100,000.
- From 1975 to 2019, the cancer mortality rate among Tennesseans fell by 11.9%, while the cancer mortality rate in the US fell by 26.7%.
- From 2015 to 2019, the cancer mortality rate among Tennesseans fell by 8.6%, whereas the cancer mortality rate in the US fell by 8.2%.

Note: Rates presented in the figures on pages 19-22 were retrieved from State Cancer Profiles and will differ from rates presented elsewhere in this report due to the availability of more current data.

CHILDHOOD CANCER MORTALITY HISTORICAL TREND 1975-2019

Figure 12. Cancer Mortality, Children Ages 0-19 Years, All Sites Combined, Tennessee and the United States 1975-2019



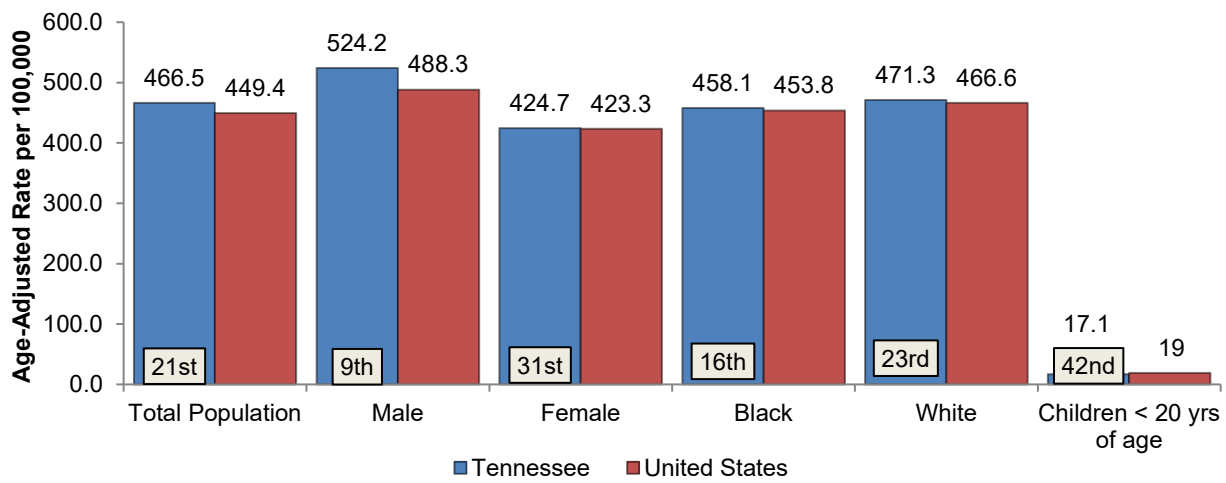
Data Source: National Cancer Institute (2022). State Cancer Profiles. Retrieved from <https://statecancerprofiles.cancer.gov/>
Source: National Cancer Institute (2022). State Cancer Profiles. Retrieved from <http://statecancerprofiles.cancer.gov/index.html>

From Figure 12:

- The childhood cancer mortality rate peaked in Tennessee in 1975 at 6.0 deaths per 1,000,000 and peaked in the US in 1975 at 5.1 deaths per 1,000,000.
- From 1975 to 2019, the childhood cancer mortality rate in Tennessee fell by 61.7%, while the childhood cancer mortality rate in the US fell by 58.8%.
- From 2015 to 2019, the childhood cancer mortality rate in Tennessee fell by 8.0%, whereas the childhood cancer mortality rate in the US fell by 8.7%.

CANCER INCIDENCE AND MORTALITY RANKINGS IN TENNESSEE

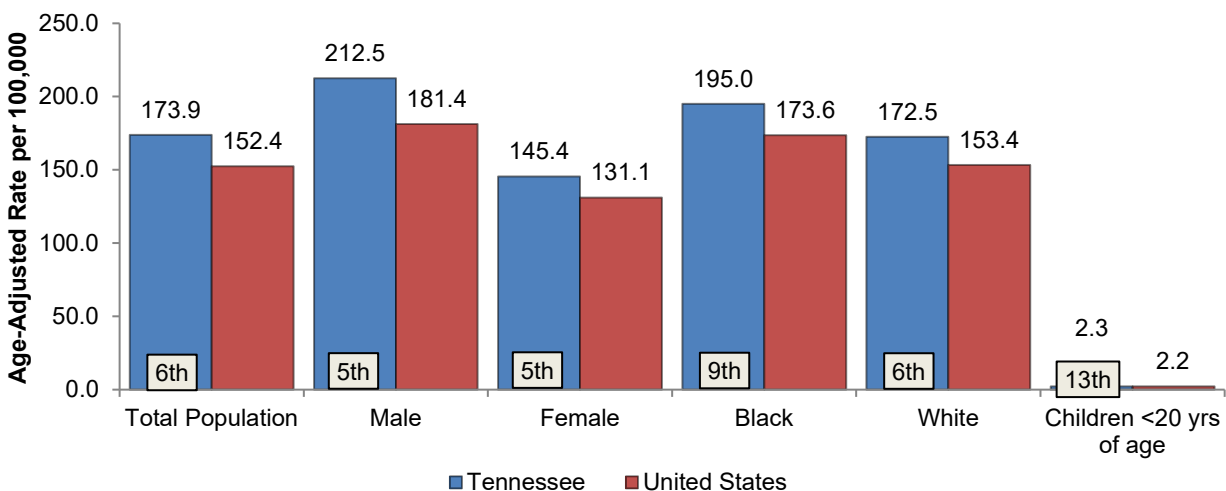
Figure 13. Incidence Rate Rankings, All Sites Combined, Tennessee and United States, 2015-2019



Data Source: National Cancer Institute (2022). State Cancer Profiles. Retrieved from <https://statecancerprofiles.cancer.gov/>

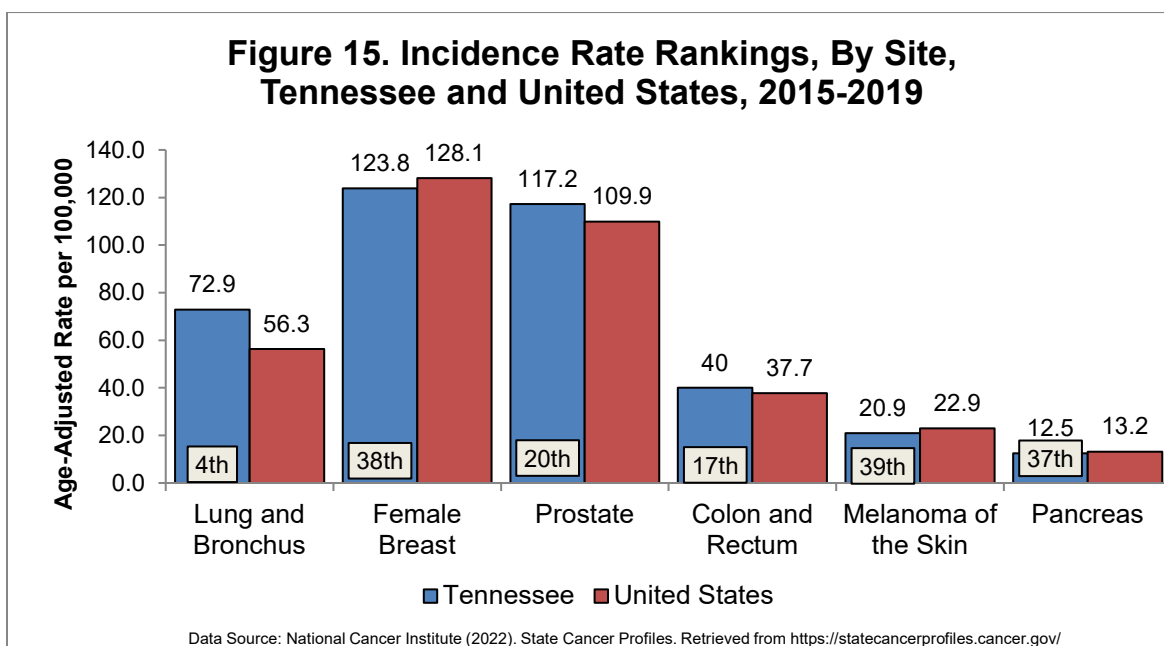
- Tennessee had the 21st highest cancer incidence rate among all US states. Please note that for figures 13-16, all rankings are presented as the rank of Tennessee versus the 50 states and D.C. (See Technical Notes).
- **All Tennesseans, especially Whites and men, experienced statistically significantly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

Figure 14. Mortality Rate Rankings, All Sites Combined, Tennessee and United States, 2015-2019

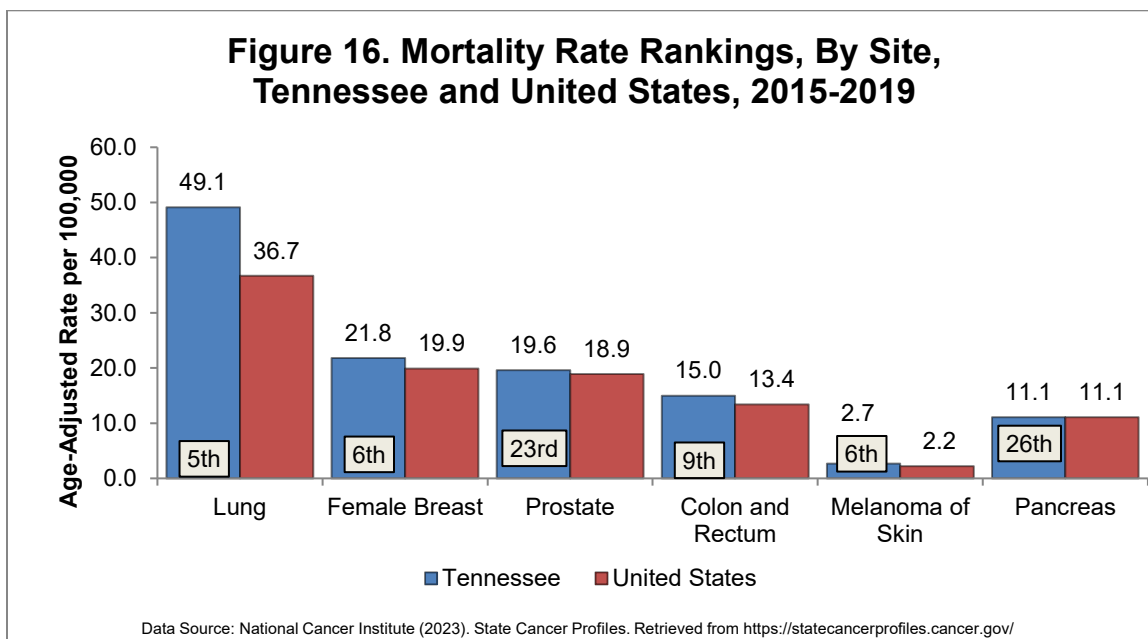


Data Source: National Cancer Institute (2023). State Cancer Profiles. Retrieved from <https://statecancerprofiles.cancer.gov/>

- **Tennessee had the 6th highest cancer mortality rate among all US states.**
- All Tennessee populations experienced statistically significantly higher cancer mortality rates than the corresponding US mortality rates.



- The cancer incidence rates in Tennessee during 2015-2019 for lung cancer, prostate cancer, and colorectal cancer were statistically significantly higher than the US site-specific cancer incidence rates.



- In Tennessee 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, 2015-2019

ALL SITES COMBINED

Incidence

- There were 193,064 new cancer cases diagnosed in Tennessee residents.
- Using population data from the 2017 US Census Bureau:¹⁸
 - Black Tennesseans accounted for 13.2% of all new cancer cases and comprised about 17.9% of the total, single-race Tennessee population. During the same time period, White Tennesseans accounted for 84.9% of all new cancer cases and comprised about 79.6% of the total, single-race Tennessee population.
 - Tennessee men accounted for 52.2% of all new cancer cases and comprised 48.7% of the Tennessee population and Tennessee women accounted for 47.8% of all new cancer cases and comprised 51.3% of the Tennessee population.
 - Tennessee children < 20 years of age accounted for 0.7% of all new cancer cases and comprised 25.6% of the Tennessee population.

Mortality

- Cancer was the 2nd leading cause of death in Tennessee accounting for 71,249 deaths.
- Black Tennesseans accounted for 13.9% of all cancer deaths. During the same time period, White Tennesseans accounted for 84.9% of all cancer deaths.
- Tennessee men accounted for 54.0% of all cancer deaths. During the same time period, Tennessee women accounted for 46.0% of all cancer deaths.

Health Disparities

- Tennessee 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.
- Tennessee men were more likely to be diagnosed with cancer in the late stages than Tennessee women.

CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, CONTINUED

ALL SITES COMBINED CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2015-2019

		Incidence				Mortality				M:I
Gender*	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio†
Both	All Races†	193,064	470.0	467.9	472.2	71,249	173.2	171.9	174.5	0.37
	Black	25,411	459.5	453.6	465.4	9,888	194.3	190.2	198.3	0.42
	White	163,847	470.3	468.0	472.7	60,479	170.7	169.3	172.1	0.36
Female	All Races†	92,277	427.5	424.7	430.4	32,764	144.8	143.2	146.4	0.34
	Black	12,311	397.2	390.0	404.5	4,802	160.9	156.2	165.6	0.41
	White	78,188	432.7	429.6	435.9	27,523	142.5	140.8	144.2	0.33
Male	All Races†	100,787	528.5	525.1	531.9	38,485	211.7	209.6	213.9	0.40
	Black	13,100	554.2	543.9	564.7	5,086	249.6	242.1	257.3	0.45
	White	85,659	522.2	518.7	525.9	32,956	208.1	205.8	210.4	0.40
Age at Diagnosis or Death										
	0-19	1,441	17.2	16.3	18.1	192	2.3	2.0	2.6	0.13
	20-44	12,657	124.8	122.6	127.0	1,784	17.9	17.1	18.8	0.14
	45-64	71,436	736.5	731.0	742.1	20,417	204.8	201.9	207.7	0.28
	65+	107,530	2025.7	2013.4	2038.0	48,856	953.7	945.2	962.3	0.47
Year of Diagnosis or Death										
	2015	37,384	474.8	469.9	479.8	13,974	178.1	175.1	181.1	0.38
	2016	37,880	471.4	466.6	476.3	14,464	180.6	177.6	183.6	0.38
	2017	39,382	479.0	474.2	483.9	14,290	173.4	170.5	176.3	0.36
	2018	39,041	465.8	461.1	470.6	14,139	168.2	165.4	171.0	0.36
	2019	39,377	459.6	454.9	464.3	14,382	166.8	164.0	169.6	0.36

^Statistic not displayed due to fewer than 11 cases.

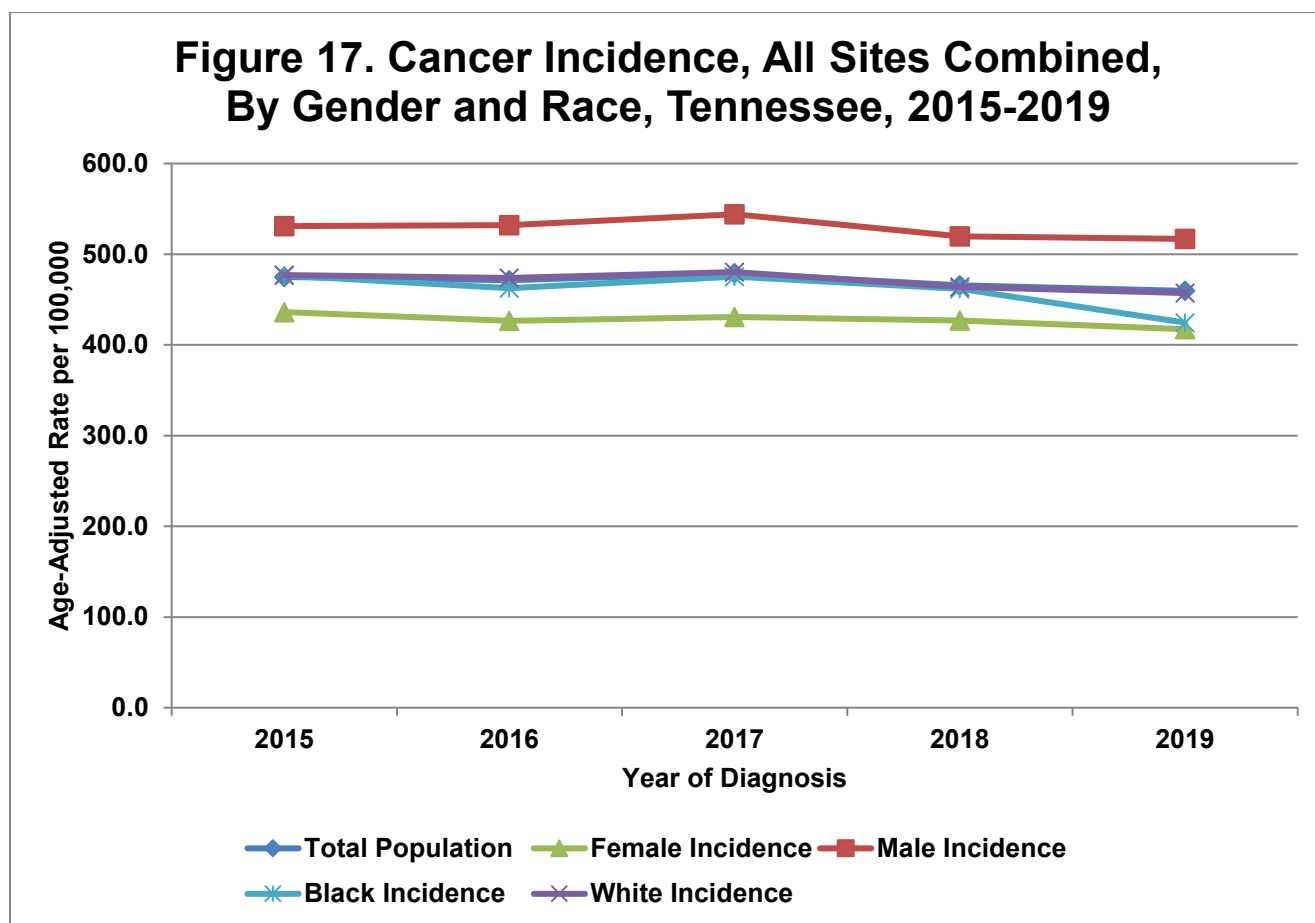
*Excludes those with intersex conditions and transgender individuals.

**Total counts are from 2015 to 2019.

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

†Mortality incidence ratio. See Technical Notes for details.

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

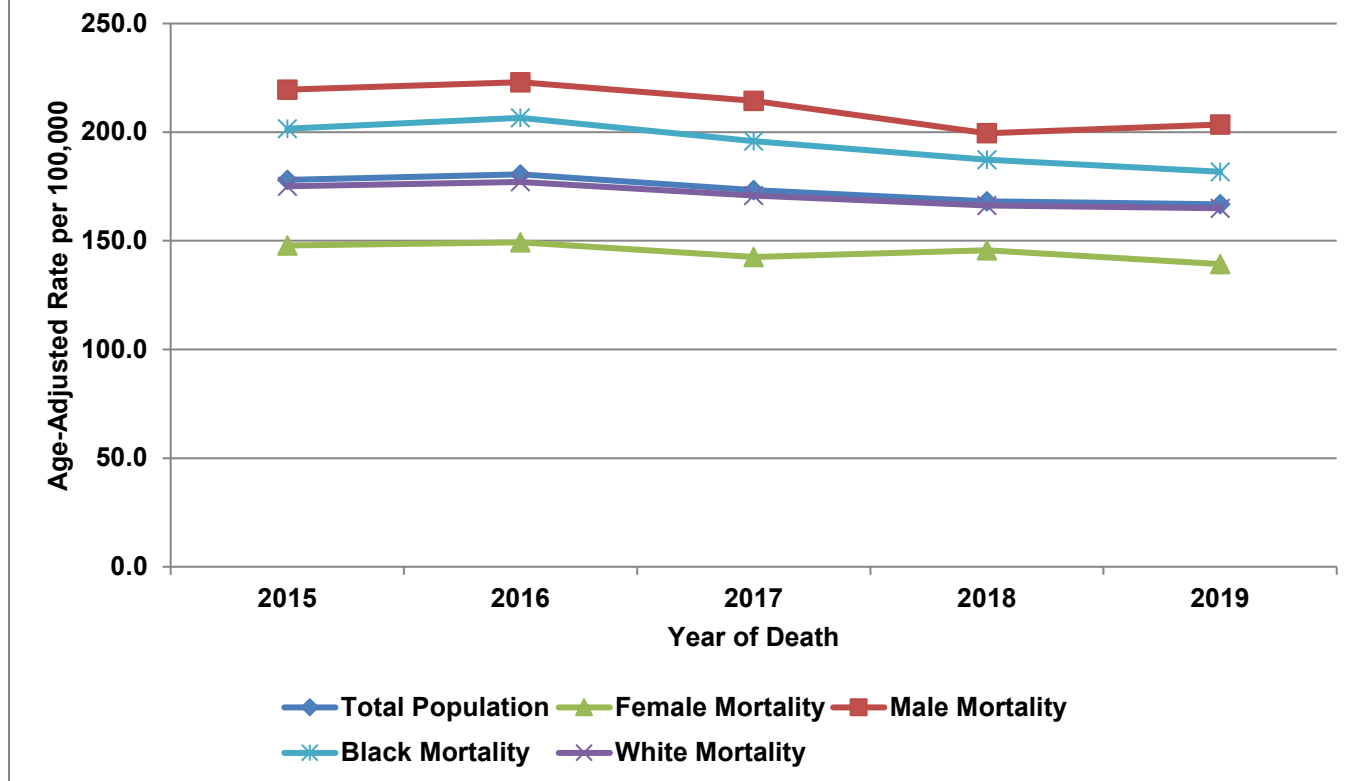


From 2015 to 2019 in Tennessee (Figure 17), the cancer incidence rate:

- *Decreased* by 0.8% per year for all races, both genders combined.
- *Decreased* by 0.8% among men and 0.9% among women per year.
- *Decreased* by 2.3% among Blacks per year and 1.1% among Whites.

*Statistically significant

Figure 18. Cancer Mortality, All Sites Combined, By Gender and Race, Tennessee, 2015-2019

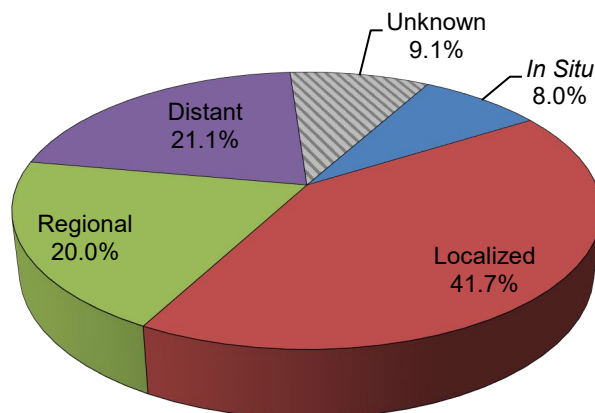


From 2015 to 2019 in Tennessee, the cancer mortality rate (Figure 18):

- *Decreased 2.0% per year** among all races and both sexes combined.
- *Decreased among men by 2.6% per year.*
- *Decreased among Whites by 1.8% per year*.*
- *Decreased among Blacks 3.0% per year*.*
- *Decreased among women 1.4% per year.*

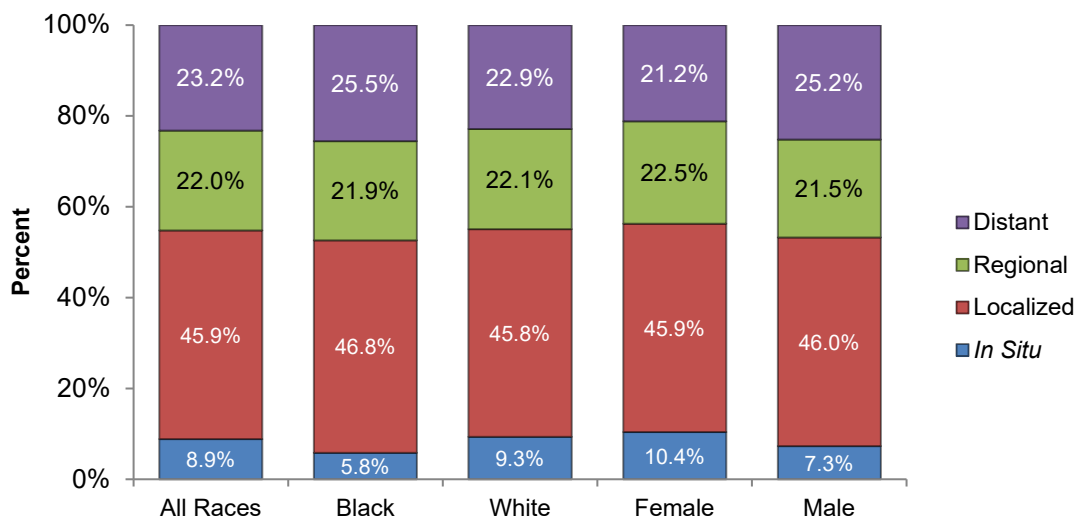
*Statistically significant

Figure 19. Cancer Stage, All Sites Combined, Tennessee, 2015-2019



- Including cancers with unknown stage, 49.7% 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; 20.0% were diagnosed at regional stage; and 21.1% at a distant stage (Figure 19).

Figure 20. Cancer Stage, All Sites Combined, By Race, Tennessee, 2015-2019



Cases with unknown stage were excluded. Numbers may not sum to 100% due to rounding errors.

- Blacks (47.4%) were more likely to be diagnosed with late stages of cancer, regional and distant stage, compared to Whites (45.0%), and this difference was statistically significant, which may partially explain why Blacks have a significantly higher cancer mortality rate compared to Whites.
- In Tennessee, men (46.7%) were more likely to be diagnosed with late stages of cancer compared to women (43.7%), and this difference was statistically significant.

MOST COMMON CANCERS IN TENNESSEE

LUNG CANCER, 2015-2019

Incidence

- **Tennessee had the 4th highest lung cancer incidence rate in the US.¹²**
- **Lung cancer was the leading cause of cancer incidence in Tennessee**, based on age-adjusted incidence rates, **accounting** for 16.2% of all new cancers. During this time period, there were 31,329 cases of lung cancer diagnosed among Tennesseans, resulting in an age-adjusted rate of 73.4 cases per 100,000.
- The lung cancer incidence rate fell by 2.4% per year on average, and this change was statistically significant.
- Using population data from the 2017 US Census Bureau:¹⁸
 - During 2015-2019, Black Tennesseans accounted for 11.3% of all new lung cancer cases and comprised about 17.9% of the total, single-race Tennessee population.
 - During the same time period, White Tennesseans accounted for 87.7% of all new lung cancer cases and comprised about 79.6% of the total, single-race Tennessee population.
 - During 2015-2019, Tennessee men accounted for 53.8% of all new lung cancer cases and comprised 48.7% of the Tennessee population.
 - Tennessee women accounted for 46.2% of all new lung cancer cases and comprised 51.3% of the Tennessee population.

Mortality

- **Tennessee had the 5th highest lung cancer mortality rate in the US.¹²**
- During that period, 20,624 Tennesseans died of lung cancer. The mortality-to-incidence ratio for lung cancer among Tennesseans was 0.67, making it one of the deadliest cancers. The lung cancer mortality rate statistically significantly decreased on average by 4.7% per year from 2015 to 2019.
- Black Tennesseans accounted for 11.8% of all lung cancer deaths, while White Tennesseans accounted for 87.3% of all lung cancer deaths.
- Men accounted for 56.8% of all lung cancer deaths, while women accounted for 43.2% of all lung cancer deaths.

Health Disparities

- Overall, 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 (76.9%) were more likely to be diagnosed with lung cancer in the late stages (i.e., regional and distant) than White Tennesseans (72.8%), and this finding was statistically significant.
- Men (75.1%) were more likely to be diagnosed with lung cancer in the late stages than women (71.1%) and this finding was statistically significant.

LUNG AND BRONCHUS CANCER, CONTINUED

TABLE 2. CANCER INCIDENCE AND MORTALITY, LUNG AND BRONCHUS, TENNESSEE 2015-2019

Gender	Race	Incidence				Mortality				M:I Ratio ‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Both*	All Races†	31,329	73.4	72.6	74.3	20,624	49.0	48.3	49.7	0.67
	Black	3,532	65.7	63.5	68.1	2,427	47.2	45.2	49.2	0.72
	White	27,482	75.0	74.1	76.0	18,014	49.6	48.9	50.4	0.66
Female	All Races†	14,460	62.4	61.4	63.4	8,914	38.5	37.7	39.4	0.62
	Black	1,564	50.3	47.8	53.0	1,003	33.5	31.4	35.7	0.67
	White	12,739	64.8	63.7	66.0	7,822	39.7	38.8	40.6	0.61
Male	All Races†	16,869	87.9	86.5	89.3	11,710	62.5	61.4	63.7	0.71
	Black	1,968	89.0	84.7	93.4	1,424	67.9	64.1	71.9	0.76
	White	14,743	88.3	86.9	89.8	10,192	62.4	61.2	63.6	0.71
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	358	3.7	3.3	4.1	166	1.7	1.5	2.0	0.46
	45-64	10,168	99.7	97.8	101.7	6,014	59.1	57.4	60.5	0.59
	65+	20,796	394.8	389.4	400.3	14,442	278.8	274.2	283.5	0.71
Year of Diagnosis or Death										
	2015	6,322	78.3	76.4	80.3	4,296	53.7	52.0	55.3	0.69
	2016	6,089	73.2	71.3	75.1	4,341	53.4	51.8	55.0	0.73
	2017	6,330	74.4	72.5	76.2	4,001	47.5	46.0	49.0	0.64
	2018	6,276	71.5	69.7	73.3	3,935	45.4	44.0	46.9	0.63
	2019	6,312	70.1	68.4	71.9	4,051	45.6	44.2	47.1	0.65

^Statistic not displayed due to fewer than 11 cases. Other counts are offset so suppressed counts cannot be derived.

* Excludes those with intersex conditions and transgender individuals.

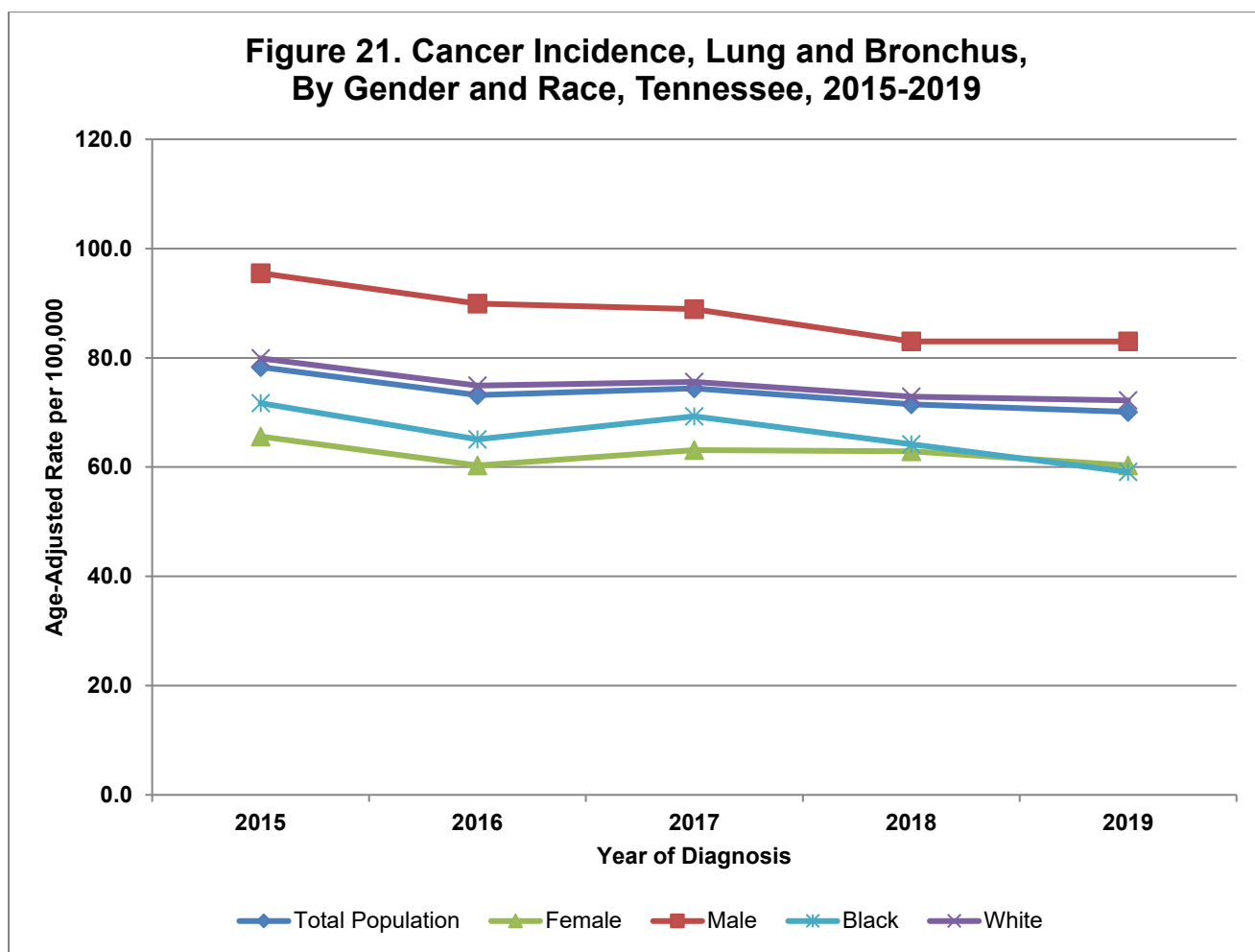
**Total counts are from 2015 to 2019

***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.

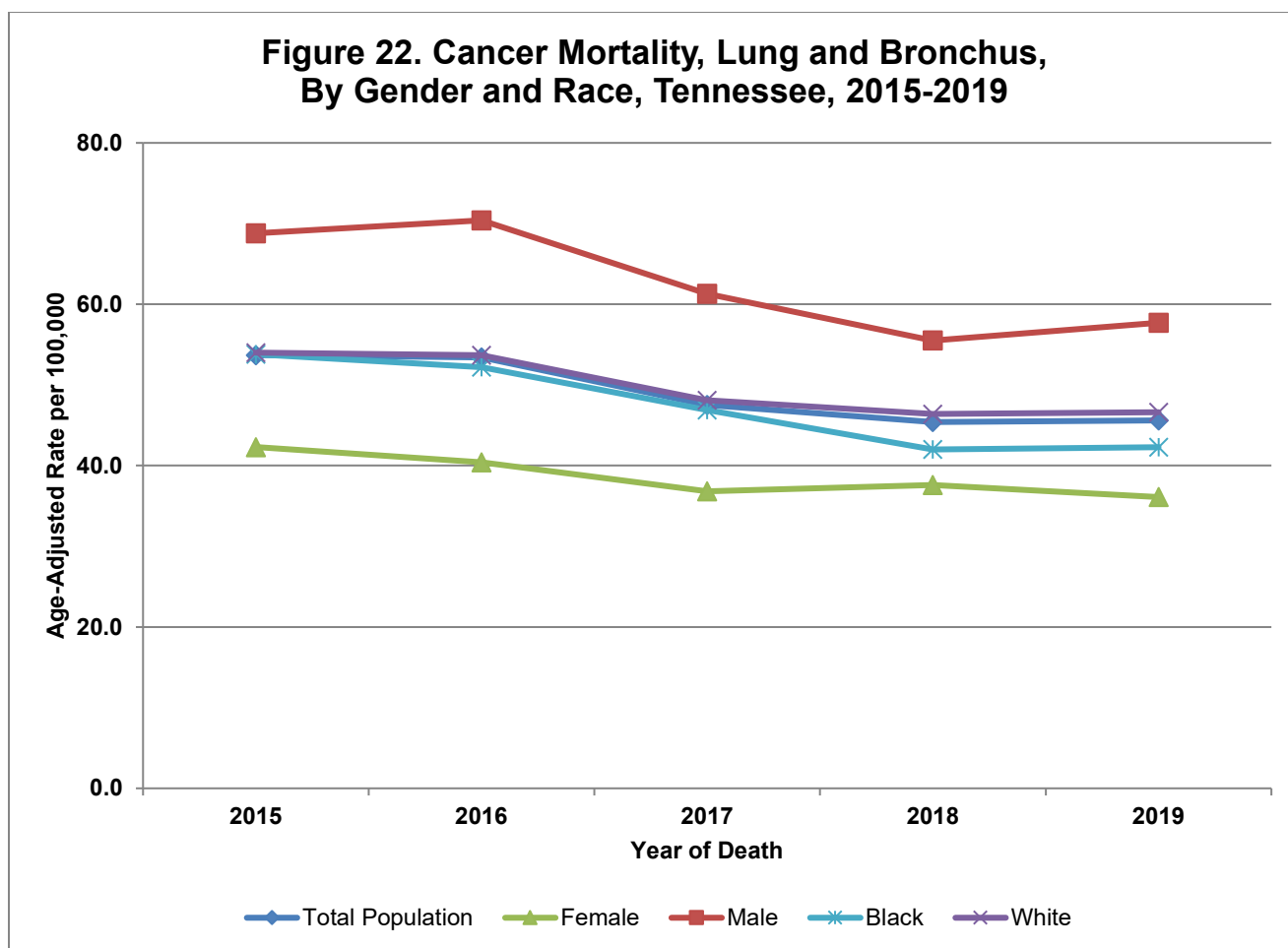
‡Mortality incidence ratio. See Technical Notes for details.



From 2015 to 2019, the lung cancer incidence rate in Tennessee (Figure 21):

- *Decreased* slightly by 2.4% per year* for all lung cancers combined.
- *Decreased* by 3.6% per year* among men, and by 1.3% per year among women.
- *Decreased* by 3.9% per year among Blacks, and by 2.3% per year* among Whites.

*Statistically significant

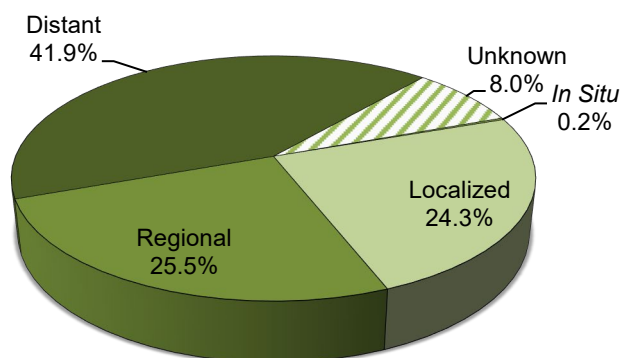


From 2015 to 2019 in Tennessee, the lung cancer mortality rate (Figure 22):

- *Decreased* on average by 4.7% per year* for all lung cancers combined.
- *Decreased* among Blacks on average by 6.8% per year*.
- *Decreased* by 5.7% per year* among men.
- *Decreased* by 3.8% per year* among women.
- *Decreased* by 4.3% per year* among Whites.

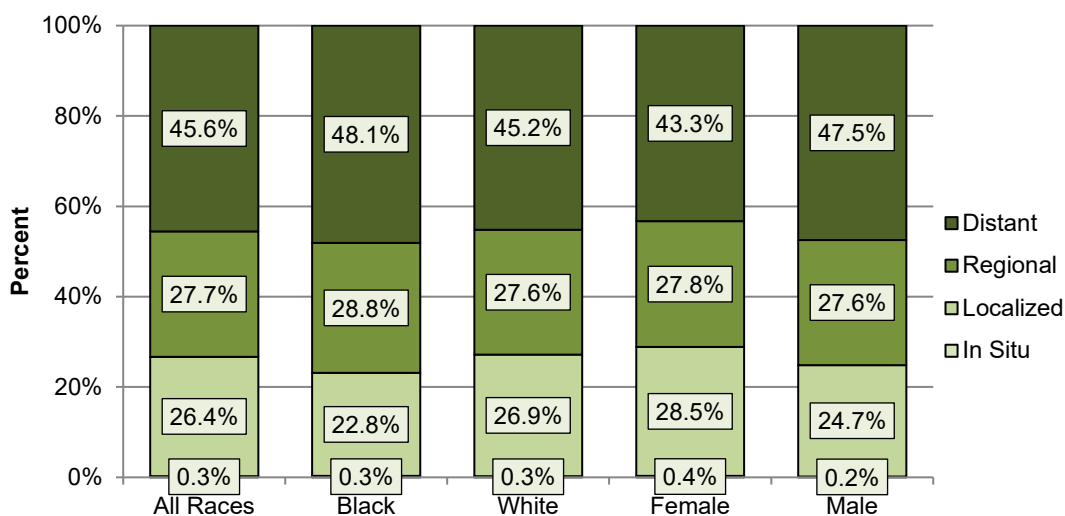
*Statistically significant

Figure 23. Cancer Stage, Lung and Bronchus, Tennessee, 2015-2019



- Of all lung cancer cases, 0.2% were diagnosed at the *in situ* stage.
- Nearly 1 in 4 cases (24.3%) were diagnosed at the localized stage, 1 in 4 cases (25.5%) were diagnosed at the regional stage, and almost half (41.9%) were diagnosed at the distant stage.
- 8.0% of cases had unknown stage information.

Figure 24. Cancer Stage, Lung and Bronchus, By Race, Tennessee, 2015-2019



Cases with unknown stage were excluded. Numbers may not sum to 100% due to rounding errors.

- In Tennessee, Black patients had a higher proportion (76.9%) of cases diagnosed at late stages, regional or distant stage, than White patients (72.8%), and this difference was statistically significant (Figure 24).
- Male patients had a higher proportion (75.1%) of cases diagnosed at late stages than female patients (71.1%), and this difference was statistically significant (Figure 24).

PROSTATE CANCER, 2015-2019

Incidence

- Tennessee had the 20th highest prostate cancer incidence rate in the US.¹²
- Prostate cancer was the leading cause of cancer incidence in Tennessee among men, based on age-adjusted incidence rates, which accounted for 24.1% of all new cancers in men. During this time period, there were 24,269 cases of prostate cancer diagnosed among Tennesseans, resulting in an age-adjusted rate of 118.4 cases per 100,000 Tennessee men.
- The prostate cancer incidence rate increased about 1.6% per year during the time period, but this increase was not statistically significant.
- Using population data from the 2017 US Census Bureau:¹⁸
 - Black Tennesseans accounted for 19.2% of all new prostate cancer cases and comprised about 17.9% of the total, single-race Tennessee population.
 - During the same time period, White Tennesseans accounted for 78.2% of all new prostate cancer cases and comprised about 79.6% of the total, single-race Tennessee population.

Mortality

- Tennessee had the 23rd highest prostate cancer mortality rate in the US.¹²
- During that period, 3,182 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 2015 to 2019, but this decrease was not statistically significant.
- Black Tennesseans accounted for 21.3% of all prostate cancer deaths, while White Tennesseans accounted for 77.7% of all prostate cancer deaths.

Health Disparities

- Overall, Black men had statistically significantly higher prostate cancer incidence and mortality rates than White men.
- White Tennesseans (20.5%) were more likely to be diagnosed with prostate cancer in the late stages (i.e., regional and distant) than Black Tennesseans (17.4%) and this finding was statistically significant.

PROSTATE CANCER, CONTINUED

TABLE 3. CANCER INCIDENCE AND MORTALITY, PROSTATE, TENNESSEE, 2015-2019

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Male	All Races†	24,269	118.4	116.9	119.9	3,182	19.6	18.9	20.3	0.17
	Black	4,656	186.9	181.1	192.8	677	42.4	39.0	46.0	0.23
	White	18,987	107.2	105.6	108.8	2,474	17.3	16.6	18.0	0.16
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	96	2.1	1.7	2.6	^	^	^	^	^
	45-64	9,196	185.4	181.6	189.3	365	7.1	6.4	7.9	0.04
	65+	14,973	604.9	595.0	614.9	2,814	142.4	137.1	147.9	0.24
Year of Diagnosis or Death										
	2015	4,430	113.0	109.6	116.5	583	19.3	17.8	21.0	0.17
	2016	4,631	115.5	112.1	119.0	664	21.0	19.4	22.7	0.18
	2017	5,042	122.9	119.5	126.4	643	20.1	18.5	21.7	0.16
	2018	5,009	119.9	116.5	123.3	607	18.2	16.8	19.8	0.15
	2019	5,157	120.1	116.8	123.5	685	19.5	18.0	21.1	0.16

^Statistic not displayed due to fewer than 11 cases. Other counts are offset so suppressed counts cannot be derived.

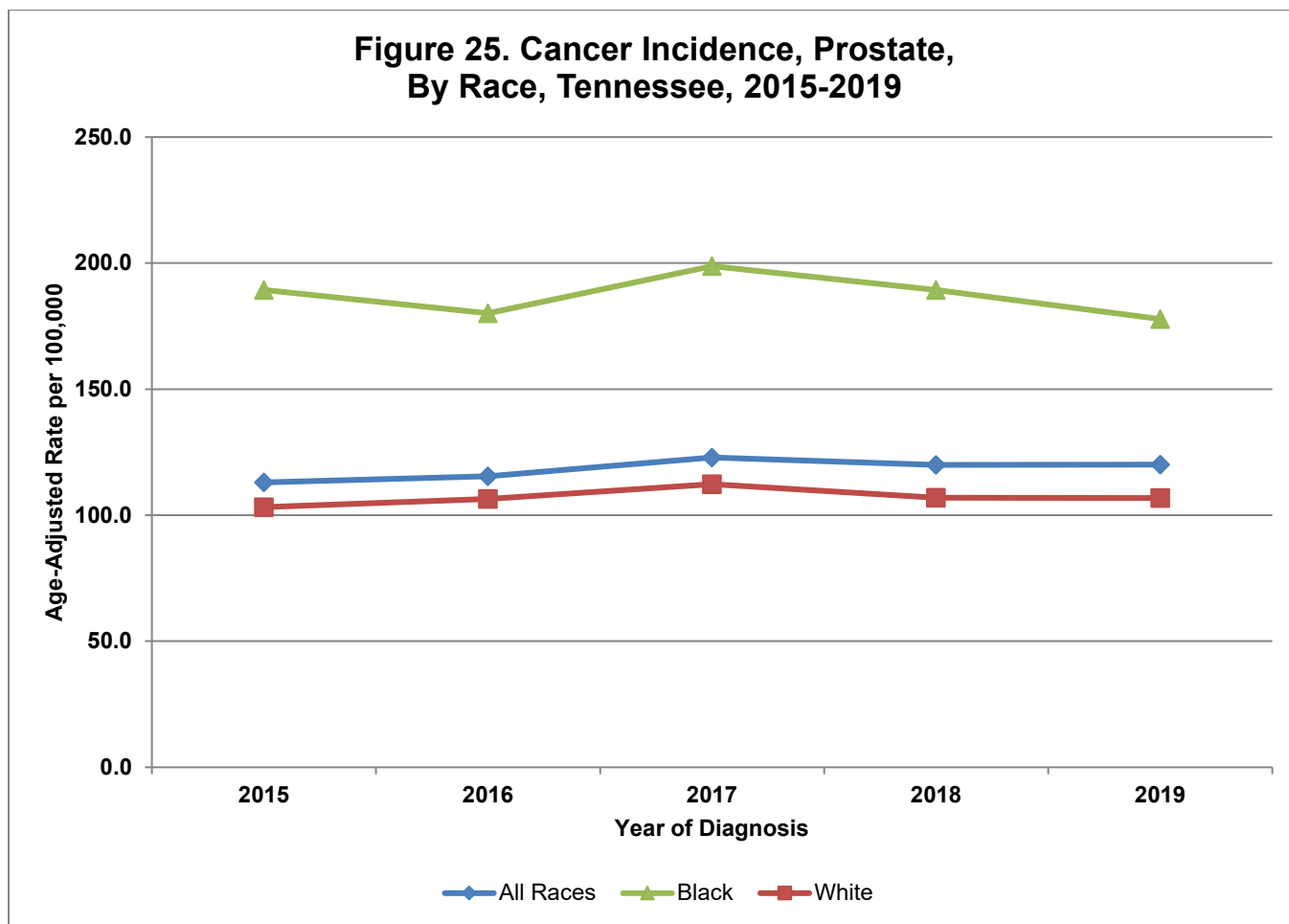
**Total counts are from 2015-2019

***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.

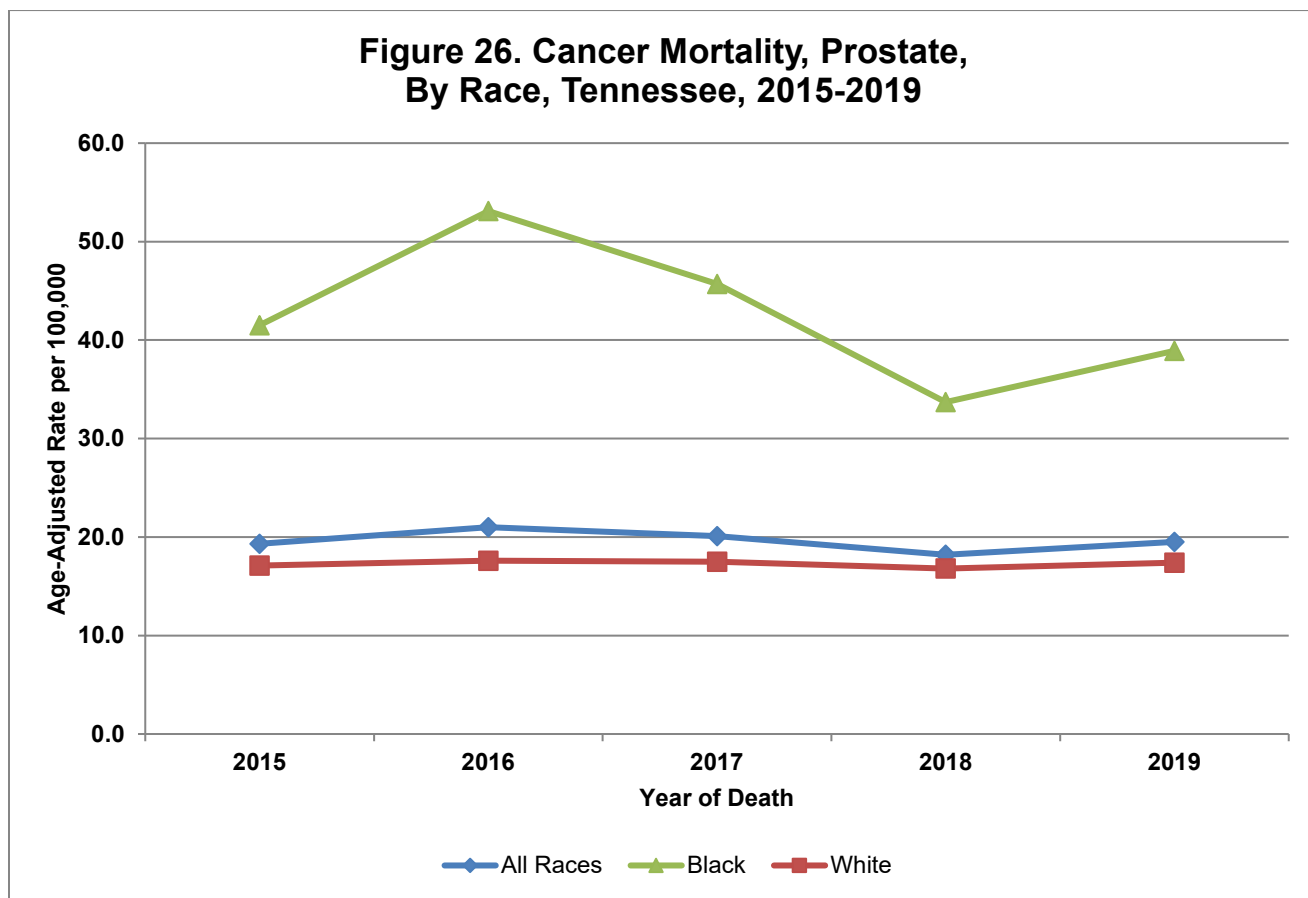
‡Mortality incidence ratio. See Technical Notes for details.



From 2015 to 2019 in Tennessee, the prostate cancer incidence rate (Figure 25):

- *Increased* by 1.6% per year among all men.
- *Decreased* among Blacks by 0.8% per year.
- *Increased* among Whites by 0.7% per year.

*Statistically significant

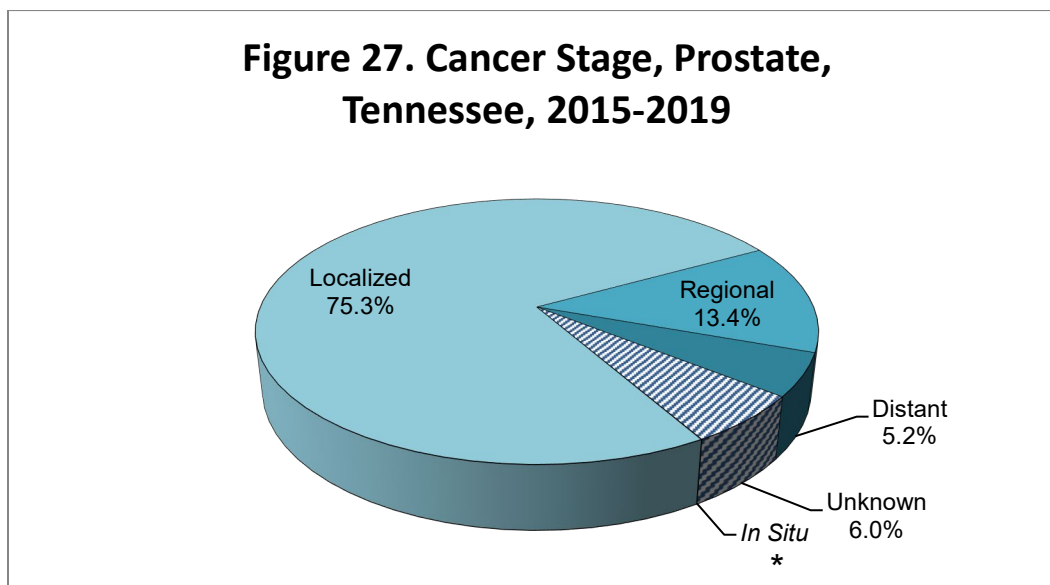


From 2015 to 2019 in Tennessee, the prostate cancer mortality rate (Figure 26):

- *Decreased* by 1.2% per year among all men.
- *Decreased* among Blacks by 6.0% per year.
- *Decreased* among Whites by 0.2% per year.

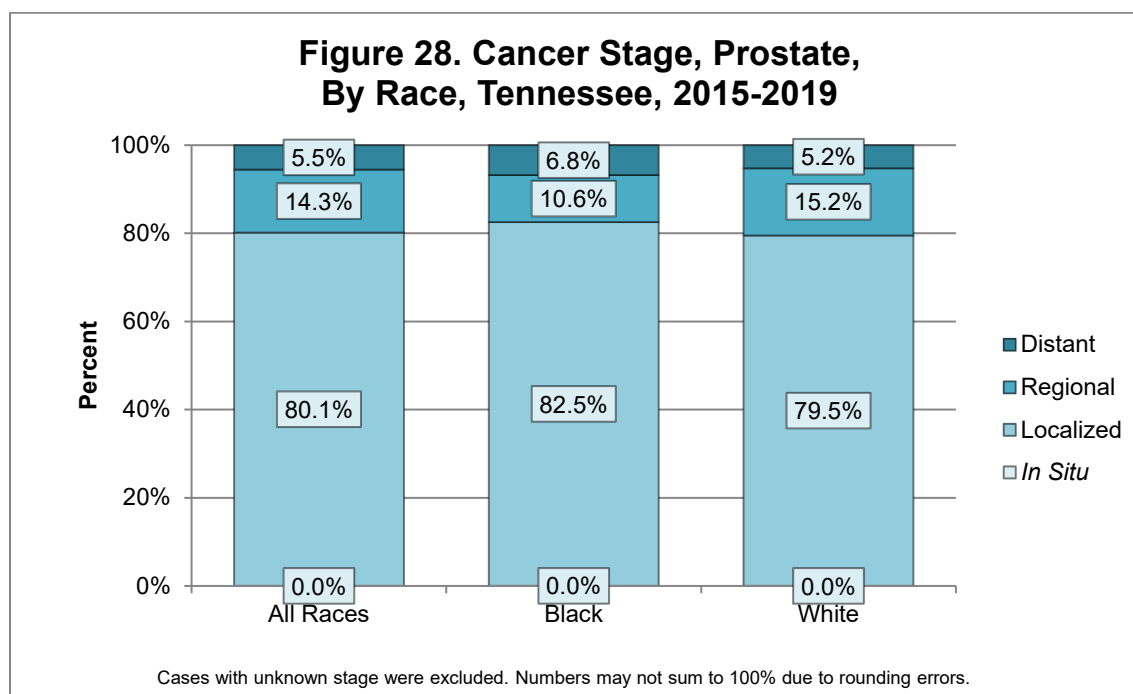
*Statistically significant

Figure 27. Cancer Stage, Prostate, Tennessee, 2015-2019



- Fewer than 11 prostate cancer cases were diagnosed at the *in situ* stage, * data suppressed.
- About 3 out of every 4 cases (75.3%) were diagnosed at the localized stage, 13.4% of cases were diagnosed at the regional stage and 5.2% of cases were diagnosed at the distant stage. About 6.0% of cases had unknown stage.

Figure 28. Cancer Stage, Prostate, By Race, Tennessee, 2015-2019



- Among all races with known stage information, only 19.8% were diagnosed at late stages (i.e., regional or distant stage).
- A higher percentage of White patients were diagnosed at late stages (20.4%) than Black patients (17.4%) and this difference was statistically significant.
- Early diagnosis of prostate cancer may contribute to a low mortality-to-incidence ratio.

FEMALE BREAST CANCER, 2015-2019

Incidence

- Tennessee had the 38th highest female breast cancer incidence rate in the US.¹²
- Female breast cancer was the leading cause of cancer incidence among females in Tennessee, based on age-adjusted incidence rates, which accounted for 28.8% of all new cancers among women. During this time period, there were 26,574 cases of female breast cancer diagnosed among Tennessee women, resulting in an age-adjusted rate of 124.5 cases per 100,000 Tennessee women.
- The female breast cancer incidence rate decreased a non-statistically significant 0.2% per year during the time period, hence the female breast cancer rate remained relatively stable throughout 2015-2019.
- Using population data from the 2017 US Census Bureau:¹⁸
 - Black Tennesseans accounted for 14.3% of all new female breast cancer cases and comprised about 17.9% of the total, single-race Tennessee population.
 - During the same time period, White Tennesseans accounted for 83.9% of all new female breast cancer cases and comprised about 79.6% of the total, single-race Tennessee population.

Mortality

- Tennessee had the 6th highest female breast cancer mortality rate in the US.¹²
- There was a total of 4,815 Tennesseans that died of female breast cancer. The mortality-to-incidence ratio for female breast cancer among Tennessee women was 0.17, making it one of the least deadly cancers in Tennessee. The female breast cancer mortality rate non-statistically significantly decreased on average by 0.4% per year from 2015 to 2019.
- Black Tennesseans accounted for 18.4% of all female breast cancer deaths. During the same time period, White Tennesseans accounted for 80.2% of all female breast cancer deaths.

Health Disparities

- **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 (32.3%) were more likely to be diagnosed with breast cancer in late stages** (i.e., regional and distant) than White Tennessee women (26.0%) and this finding was statistically significant.

FEMALE BREAST CANCER, CONTINUED

TABLE 8. CANCER INCIDENCE AND MORTALITY, FEMALE BREAST, TENNESSEE, 2015-2019

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Female	All Races †	26,574	124.5	122.9	126.0	4,815	21.7	21	22.3	0.17
	Black	3,810	122.0	118.0	126.0	887	29.1	27.2	31.2	0.24
	White	22,294	124.7	123.0	126.4	3,860	20.4	19.7	21	0.16
Age at Diagnosis or Death										
	0-19	^	^	^	^	0	0	0	0	0
	20-44	2,411	48.9	46.9	50.8	219	4.4	3.9	5.1	0.09
	45-64	11,577	240.9	236.4	245.5	1,692	34.5	32.8	36.2	0.14
	65+	12,584	420.3	412.9	427.4	2,904	97.9	94.3	101.5	0.23
Year of Diagnosis or Death										
	2015	5,217	126.3	122.8	129.9	922	21.7	20.2	23.1	0.17
	2016	5,144	122.8	119.3	126.3	959	21.9	20.5	23.4	0.18
	2017	5,322	123.7	120.3	127.1	932	20.9	19.6	22.3	0.17
	2018	5,440	126.4	123.0	130.0	1034	23.3	21.8	24.8	0.18
	2019	5,451	123.0	119.6	126.4	968	20.6	19.3	21.9	0.17

^Statistic not displayed due to fewer than 11 cases. Other counts are offset so suppressed counts cannot be derived.

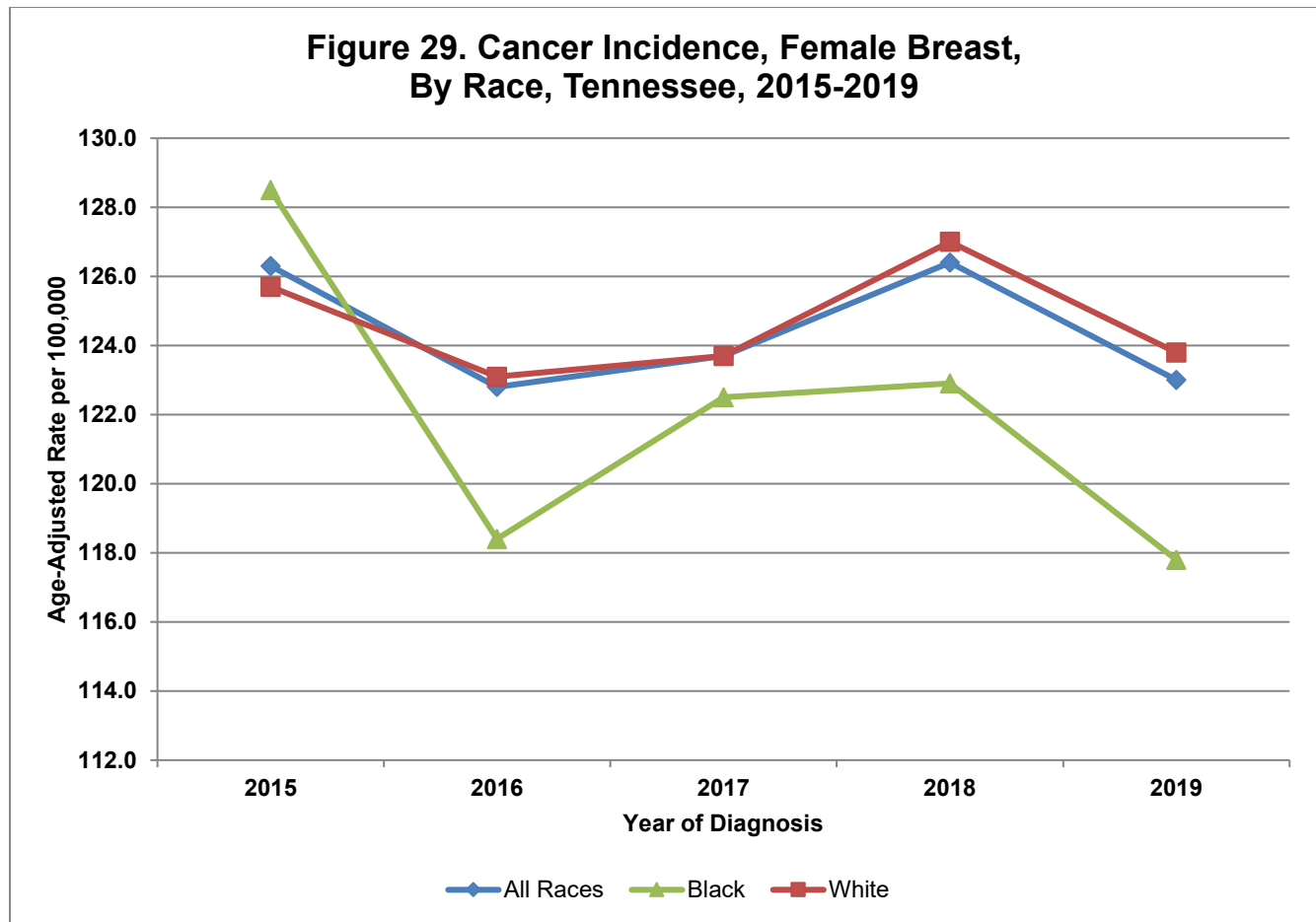
**Total counts are from 2015-2019.

***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.

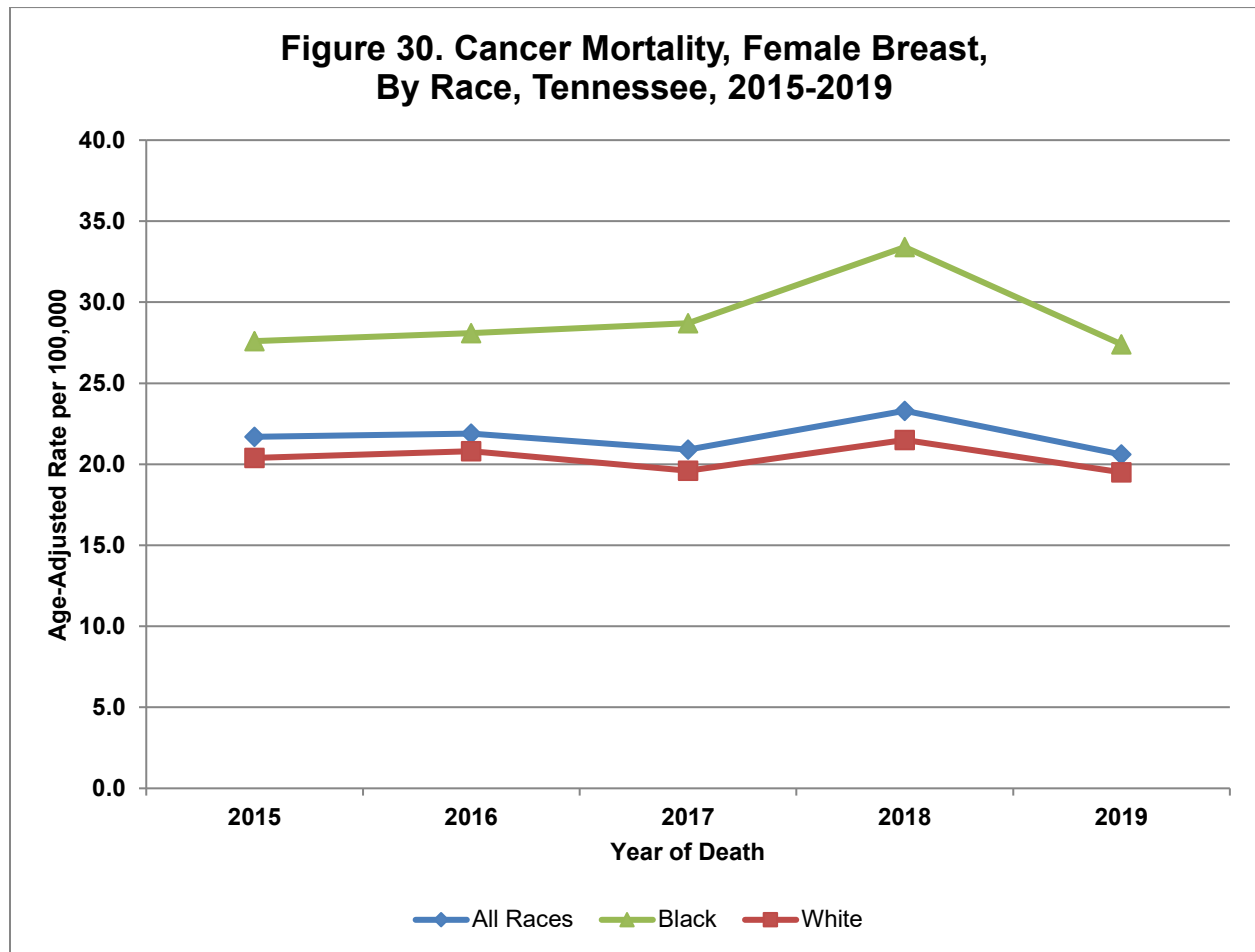
‡Mortality incidence ratio. See Technical Notes for details.



From 2015-2019 in Tennessee, the female breast cancer incidence rate (Figure 29):

- *Decreased* on average 0.2% per year among all women.
- *Decreased* on average by 1.4% per year among Black women.
- *Remained stable* among White women.

*Statistically significant

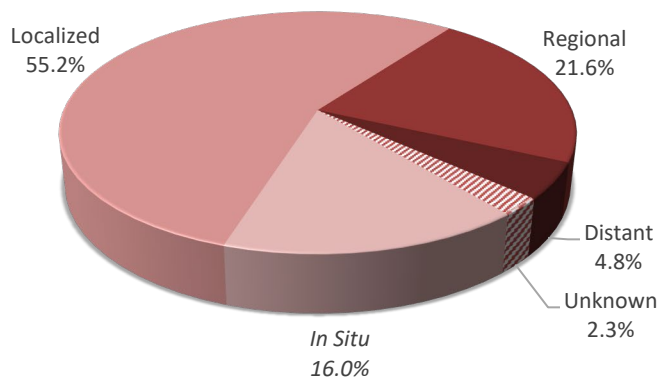


From 2015-2019 in Tennessee, the female breast cancer mortality rate (Figure 30):

- *Decreased* on average by 0.8% per year for all women.
- *Increased* on average 1.8% per year among Black women.
- *Decreased* on average 0.5% per year among White women.

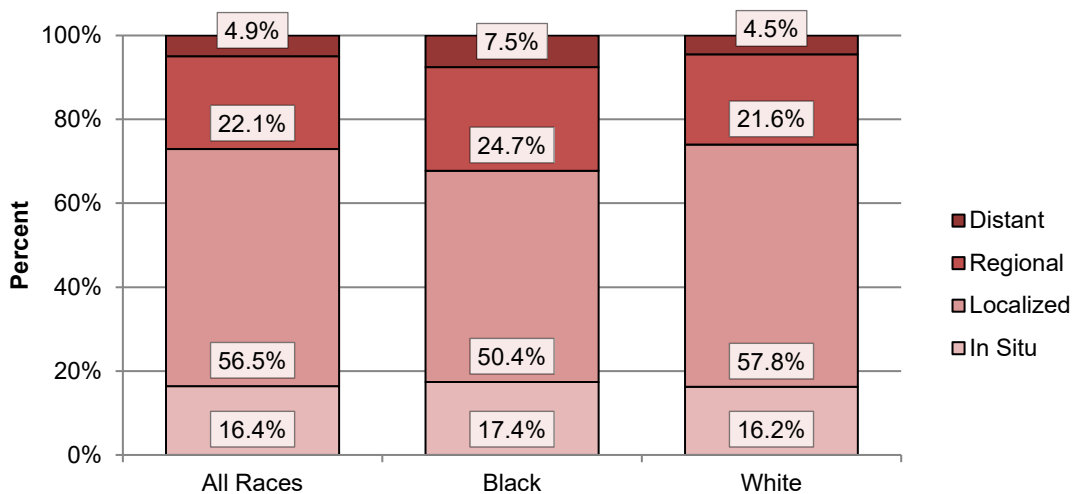
*Statistically significant

Figure 31. Cancer Stage, Female Breast, Tennessee, 2015-2019



- Nearly 1 in 5 (16.0%) female breast cancer cases were diagnosed at the *in situ* stage.
- More than half of cases (55.2%) were diagnosed at the localized stage, 1 in 4 cases (21.6%) at the regional stage and 4.8% in the distant stage.
- Of all the breast cancer cases, 2.3% had unknown stage information.

Figure 32. Cancer Stage, Female Breast, By Race, Tennessee, 2015-2019



Cases with unknown stage were excluded. Numbers may not sum to 100% due to rounding errors.

- For cancer cases with known stage, 27.0% were diagnosed at late stages (i.e., regional or distant stages) among all races.
- Black women had a higher proportion (32.2%) of cases diagnosed at late stages than White women (26.1%) 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 Tennessee.

COLON AND RECTUM CANCER, 2015-2019

Incidence

- Tennessee had the 17th highest colorectal cancer incidence rate in the US.¹²
- Colorectal cancer was the 4th leading cause of cancer incidence in Tennessee, based on age-adjusted incidence rates, which accounted for 8.4% of all new cancers. During this time period, there were 16,151 colorectal cancers diagnosed among Tennesseans, resulting in an age-adjusted rate of 40.1 cases per 100,000 Tennesseans.
- The colorectal cancer incidence rate decreased 1.1% per year on average during 2015-2019, a non-statistically significant decrease.
- Using population data from the 2017 US Census Bureau:¹⁸
 - Black Tennesseans accounted for 15.3% of all new colorectal cancer cases and comprised about 17.9% of the total, single-race Tennessee population. During the same time period, White Tennesseans accounted for 83.0% of all new colorectal cancer cases and comprised about 79.6% of the total, single-race Tennessee population.
 - Tennessee men accounted for 53.2% of all new colorectal cancer cases and comprised 48.7% of the Tennessee population. Tennessee women accounted for 46.8% of all new colorectal cancer cases and comprised 51.3% of the Tennessee population.

Mortality

- Tennessee had the 9th highest colorectal cancer mortality rate in the US.¹²
- During this period, 6,059 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 0.7% per year from 2015 to 2019, which was not statistically significant.
- Black Tennesseans accounted for 17.0% of all colorectal cancer deaths, while White Tennesseans accounted for 81.7% of all colorectal cancer deaths.
- Men accounted for 53.8% of all colorectal cancer deaths, while women accounted for 46.2% of all colorectal cancer deaths.

Health Disparities

- Overall, 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.
- Men in Tennessee (62.5%) were more likely to be diagnosed with colorectal cancer in the late stages than women in Tennessee (63.1%), but this finding was not statistically significant.
- Black Tennesseans (64.8%) were more likely to be diagnosed with colorectal cancer in the late stages (i.e., regional and distant) than White Tennesseans (62.5%), but this finding was not statistically significant.

COLON AND RECTUM CANCER, CONTINUED

TABLE 9. CANCER INCIDENCE AND MORTALITY, COLON AND RECTUM, TENNESSEE, 2015-2019

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio‡
Both*	All Races †	16,151	40.1	39.4	40.7	6,059	14.9	14.6	15.3	0.37
	Black	2,465	45.2	43.4	47.1	1,033	20.4	19.1	21.8	0.45
	White	13,409	39.3	38.6	39.9	4,953	14.2	13.8	14.6	0.36
Female	All Races †	7,552	34.7	33.9	35.5	2,797	12.4	12.0	12.9	0.36
	Black	1,204	39.1	36.8	41.4	484	16.3	14.8	17.8	0.42
	White	6,223	33.9	33.1	34.8	2,286	11.9	11.4	12.4	0.35
Male	All Races †	8,599	46.3	45.3	47.3	3,262	18.0	17.4	18.6	0.39
	Black	1,261	54.3	51.1	57.7	549	27.1	24.6	29.7	0.50
	White	7,186	45.2	44.1	46.3	2,667	17.0	16.3	17.6	0.38
Age at Diagnosis or Death										
	0-19	36	0.4	0.3	0.6	0	0	0	0	0
	20-44	1019	10.3	9.6	10.9	201	2.0	1.8	2.3	0.19
	45-64	6,376	67.9	66.2	69.6	1,923	19.9	19.0	20.8	0.29
	65+	8,720	167.2	163.7	170.8	3,935	77.3	74.8	79.7	0.46
Year of Diagnosis or Death										
	2015	3,162	40.5	39	41.9	1,172	15.1	14.3	16.0	0.37
	2016	3,253	41.1	39.6	42.6	1,206	15.2	14.3	16.1	0.37
	2017	3,248	40.4	38.9	41.8	1,227	14.9	14.1	15.8	0.37
	2018	3,249	39.8	38.4	41.2	1,196	14.5	13.6	15.3	0.36
	2019	3,239	38.8	37.5	40.2	1,258	15.0	14.2	15.9	0.39

^Statistic not displayed due to fewer than 11 cases.

* Excludes those with intersex conditions and transgender individuals.

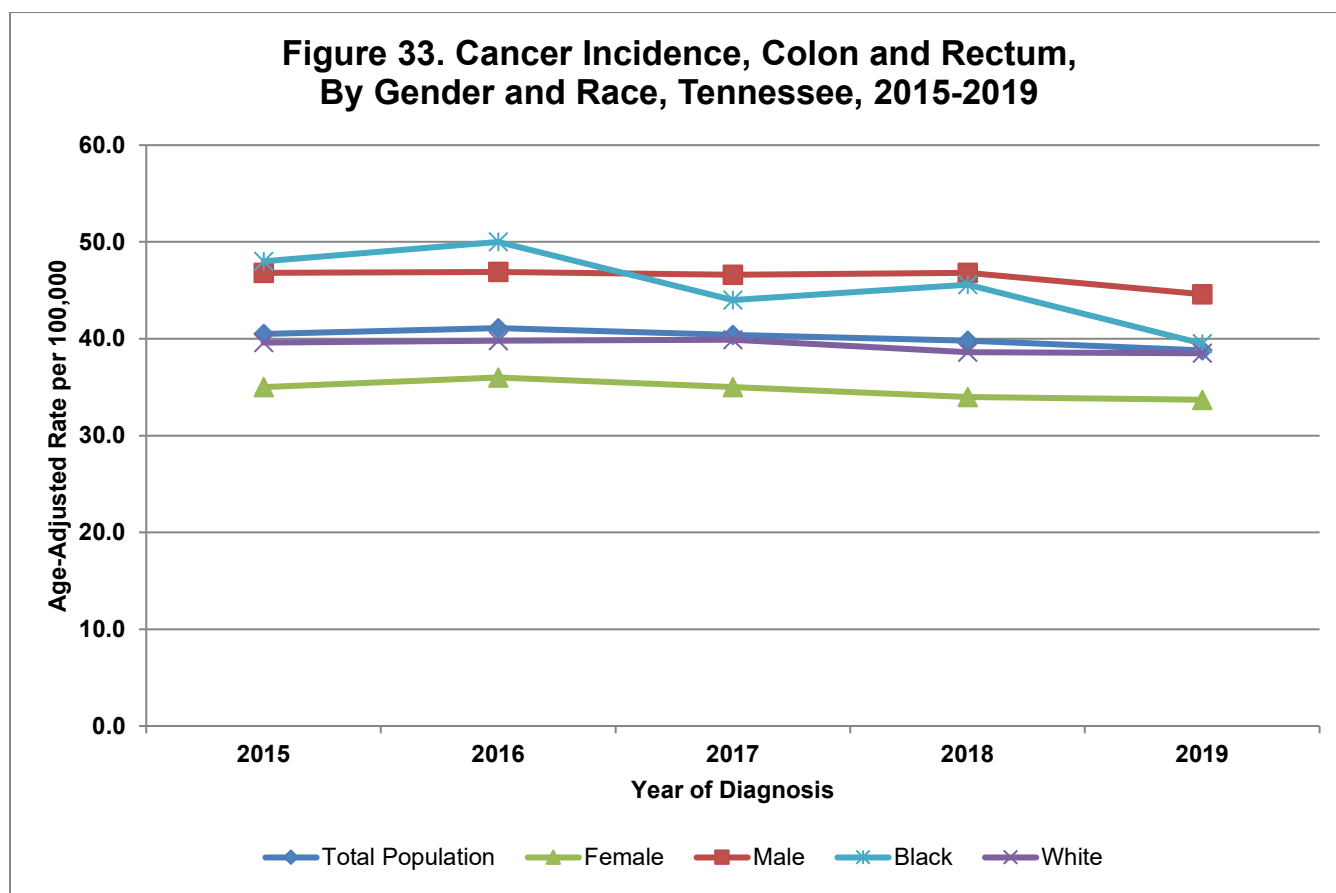
**Total counts are from 2015-2019

***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.

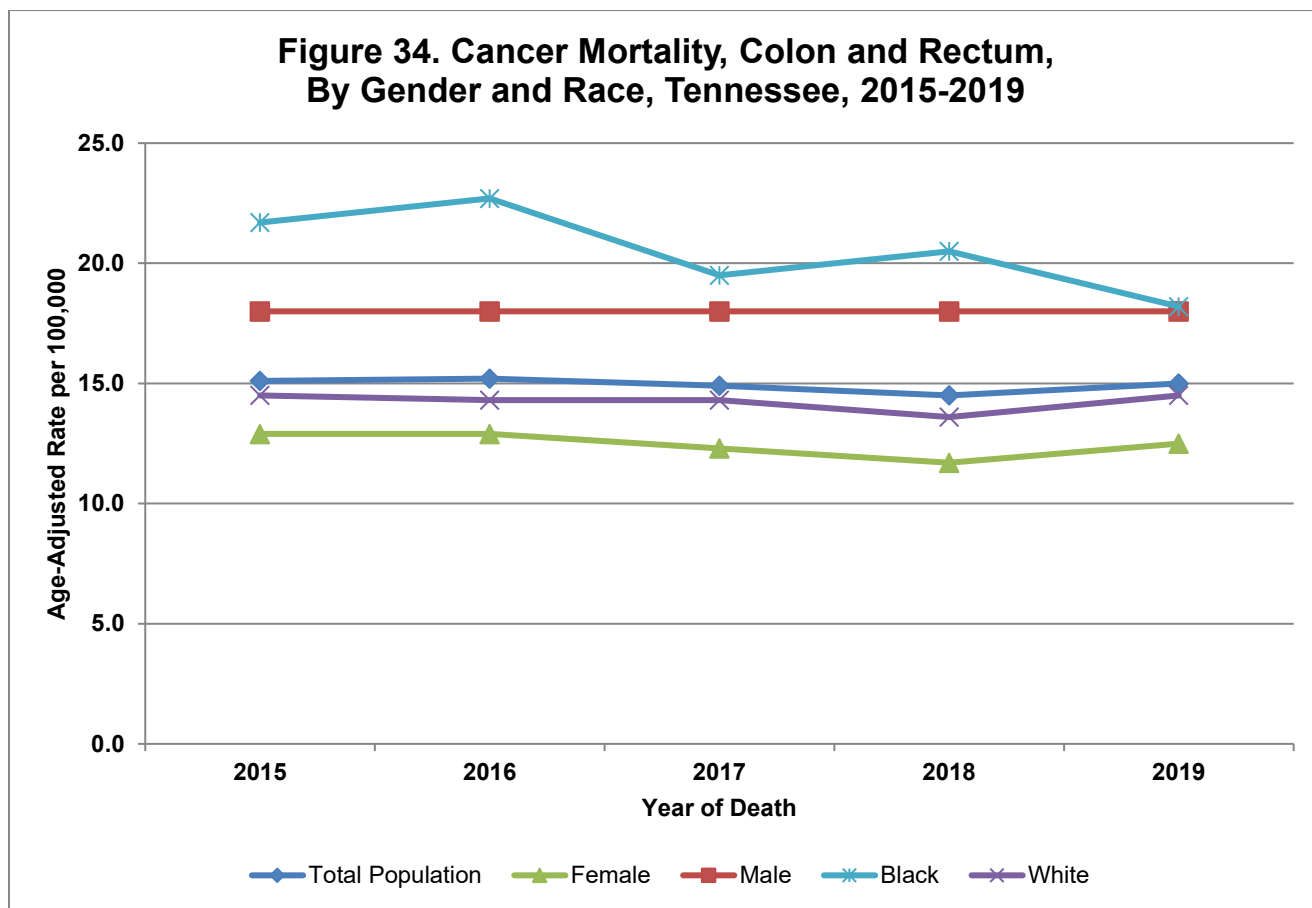
‡Mortality incidence ratio. See Technical Notes for details.



From 2015 to 2019 in Tennessee, the colorectal cancer incidence rate (Figure 33):

- *Decreased* by 1.1% per year among all residents.
- *Decreased* by 1.0% per year among men.
- *Decreased* by 1.3% per year among women.
- *Decreased* by 4.7% per year among Blacks.
- *Decreased* by 0.9% per year among Whites.

*Statistically significant

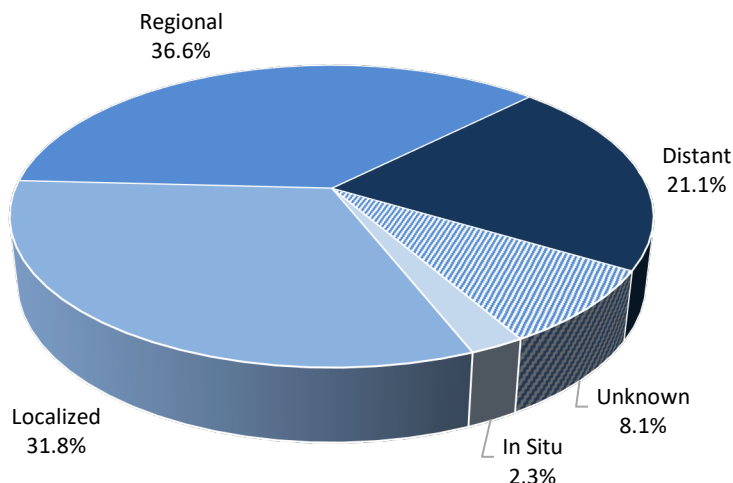


From 2015-2019, the colorectal cancer mortality rate in Tennessee (Figure 34):

- *Decreased* by 0.7% per year among all residents.
- *Decreased* among men by 0.1% per year* and *decreased* among women by 1.5% per year.
- *Decreased* among Blacks by 4.6% per year and *decreased* among Whites by 0.4% per year.

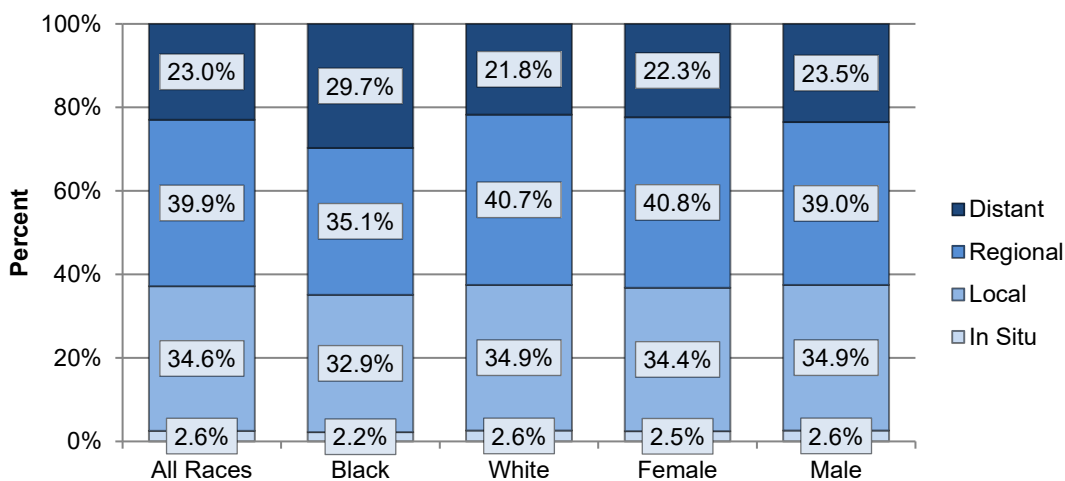
*Statistically significant

Figure 35. Cancer Stage, Colon and Rectum, Tennessee, 2015-2019



- 2.3% of the colorectal cancer incidence cases were diagnosed at the *in situ* stage, 31.8% of new cases were diagnosed at the localized stage, 36.6% at the regional stage and 21.1% at the distant stage.
- 8.1% of new cases had unknown stage information.

Figure 36. Cancer Stage, Colon and Rectum, By Race, Tennessee, 2015-2019



Cases with unknown stage were excluded. Numbers may not sum to 100% due to rounding errors.

- Black Tennesseans (64.8%) had a higher proportion of cases diagnosed at late stages than White Tennesseans (62.5%), and this difference was not statistically significant.
- Male patients had a higher proportion (62.5%) of cases diagnosed at late stages than female patients (63.1%), but this difference was not statistically significant.

MELANOMA OF THE SKIN, 2015-2019

Incidence

- Tennessee had the 39th highest melanoma of the skin incidence rate in the US.¹²
- Melanoma of the skin was the 5th leading cause of cancer incidence in Tennessee, based on age-adjusted incidence rates, which accounted for 4.3% of all new cancers. During this time period, there were 8,293 cases of skin melanomas diagnosed among Tennesseans, with an age-adjusted rate of 21.0 cases per 100,000 Tennesseans.
- The melanoma of the skin incidence rate increased 0.5% per year on average during 2015-2019, a non-statistically significant increase.
- Using population data from the 2017 US Census Bureau:¹⁸
 - Black Tennesseans accounted for 0.4% of all new melanomas of the skin cases and comprised about 17.9% of the total, single-race Tennessee population. White Tennesseans accounted for 95.5% of all new melanomas of the skin cases and comprised about 79.6% of the total, single-race Tennessee population.
 - Men accounted for 59.8% of new melanomas of the skin cases and comprised 48.7% of the Tennessee population. Women accounted for 40.2% of all new melanomas and comprised 51.3% of the Tennessee population.

Mortality

- Tennessee had the 6th highest melanoma of the skin mortality rate in the US.¹²
- There was a total of 1,067 Tennesseans that died of melanoma of the skin during 2015 to 2019. The mortality-to-incidence ratio among Tennesseans was 0.13. The melanoma of the skin mortality rate decreased on average by 3.0% per year from 2015 to 2019 among all Tennesseans, but was not statistically significant.
- Black Tennesseans accounted for 1.8% of all melanoma of the skin deaths. White Tennesseans accounted for 97.8% of all melanoma of the skin deaths.
- Tennessee men accounted for 65.9% of all melanoma of the skin deaths. During the same time period, Tennessee women accounted for 34.1% of all melanoma of the skin deaths.

Health Disparities

- Tennessee has a statistically significantly higher mortality rate of melanoma of the skin than the US rate reported on the CDC Wonder website.¹⁷
- Men had statistically significantly higher melanoma of the skin incidence and mortality rates than women.
- Black Tennesseans (30.0%) were more likely to be diagnosed with melanoma of the skin in the late stages (i.e., regional and distant) than White Tennesseans (11.5%) and this finding was statistically significant.
- Men (11.7%) were more likely to be diagnosed with melanoma of the skin in the late stages than women (11.0%), but this finding was not statistically significant.

MELANOMA OF THE SKIN, CONTINUED

TABLE 10. CANCER INCIDENCE AND MORTALITY, MELANOMA OF THE SKIN, TENNESSEE, 2015-2019

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio‡
Both*	All Races †	8,293	21.0	20.5	21.4	1,067	2.7	2.5	2.8	0.13
	Black	34	0.7	0.5	0.9	19	0.4	0.2	0.6	0.57
	White	7,922	23.8	23.2	24.3	1,044	3.0	2.9	3.2	0.13
Female	All Races †	3,330	16.4	15.8	17.0	364	1.7	1.5	1.9	0.10
	Black	20	0.7	0.4	1.1	10	0.4	0.2	0.7	0.57
	White	3,165	19.0	18.3	19.7	353	2.0	1.7	2.2	0.11
Male	All Races †	4,963	27.2	26.4	28.0	703	3.9	3.6	4.2	0.14
	Black	14	0.6	0.3	1.0	^	^	^	^	^
	White	4,757	30.2	29.3	31.1	691	4.4	4.1	4.8	0.15
Age at Diagnosis or Death										
	0-19	17	0.2	0.1	0.3	^	^	^	^	^
	20-44	906	8.9	8.4	9.5	57	0.6	0.5	0.8	0.07
	45-64	2,989	32.0	30.9	33.2	314	3.2	2.9	3.6	0.10
	65+	4,381	83.3	80.8	85.9	693	13.6	12.6	14.7	0.16
Year of Diagnosis or Death										
	2015	1,703	22.4	21.3	23.5	237	3.0	2.6	3.4	0.13
	2016	1,527	19.6	18.6	20.6	204	2.6	2.3	3.0	0.13
	2017	1,620	20.6	19.6	21.7	213	2.6	2.3	3.0	0.13
	2018	1,557	19.2	18.3	20.2	195	2.4	2.1	2.8	0.13
	2019	1,886	22.9	21.9	24.0	218	2.7	2.3	3.1	0.12

^Statistic not displayed due to fewer than 11 cases. Other counts are offset so suppressed counts cannot be derived.

* Excludes those with intersex conditions and transgender individuals.

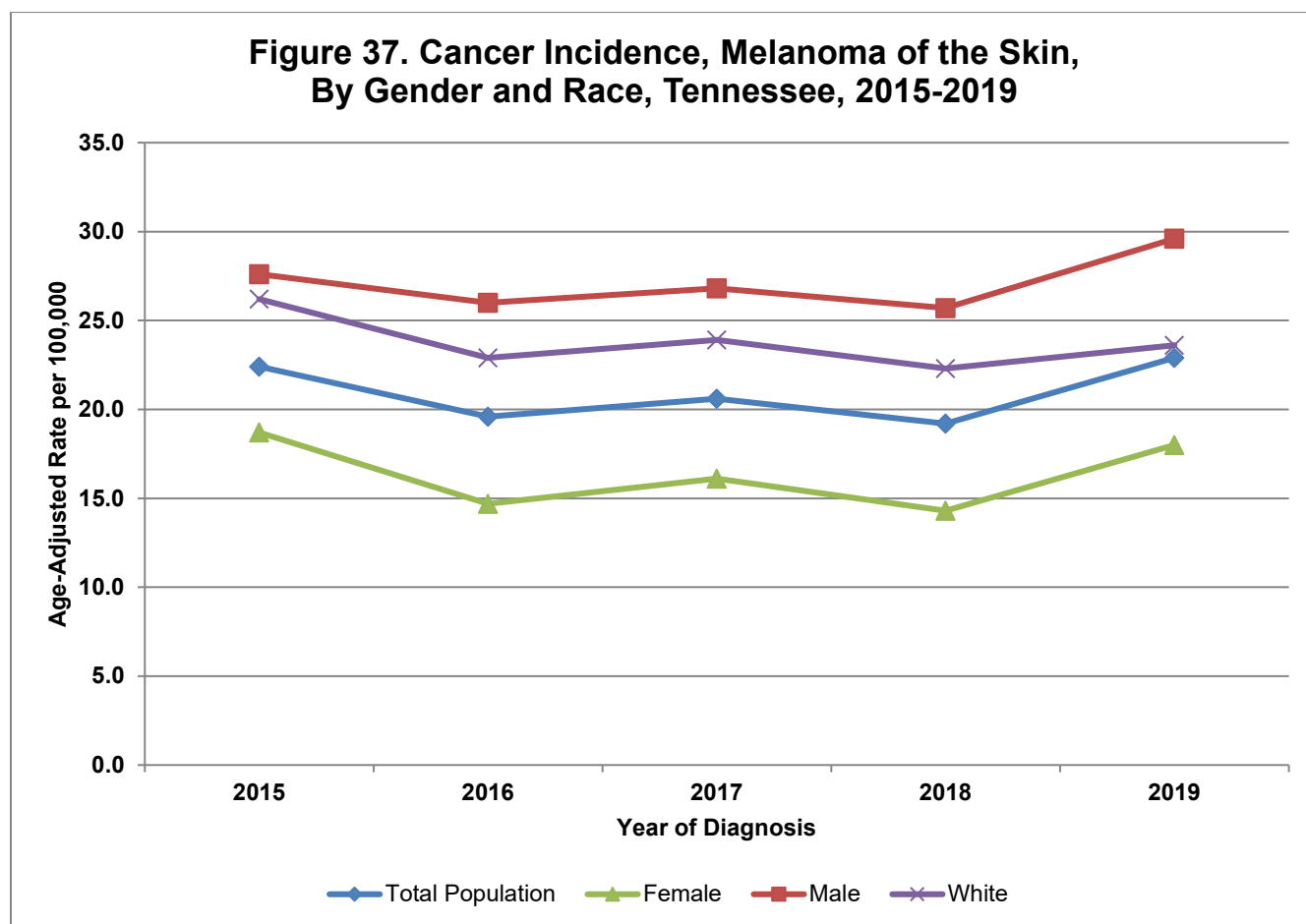
**Total counts are from 2015-2019

***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.

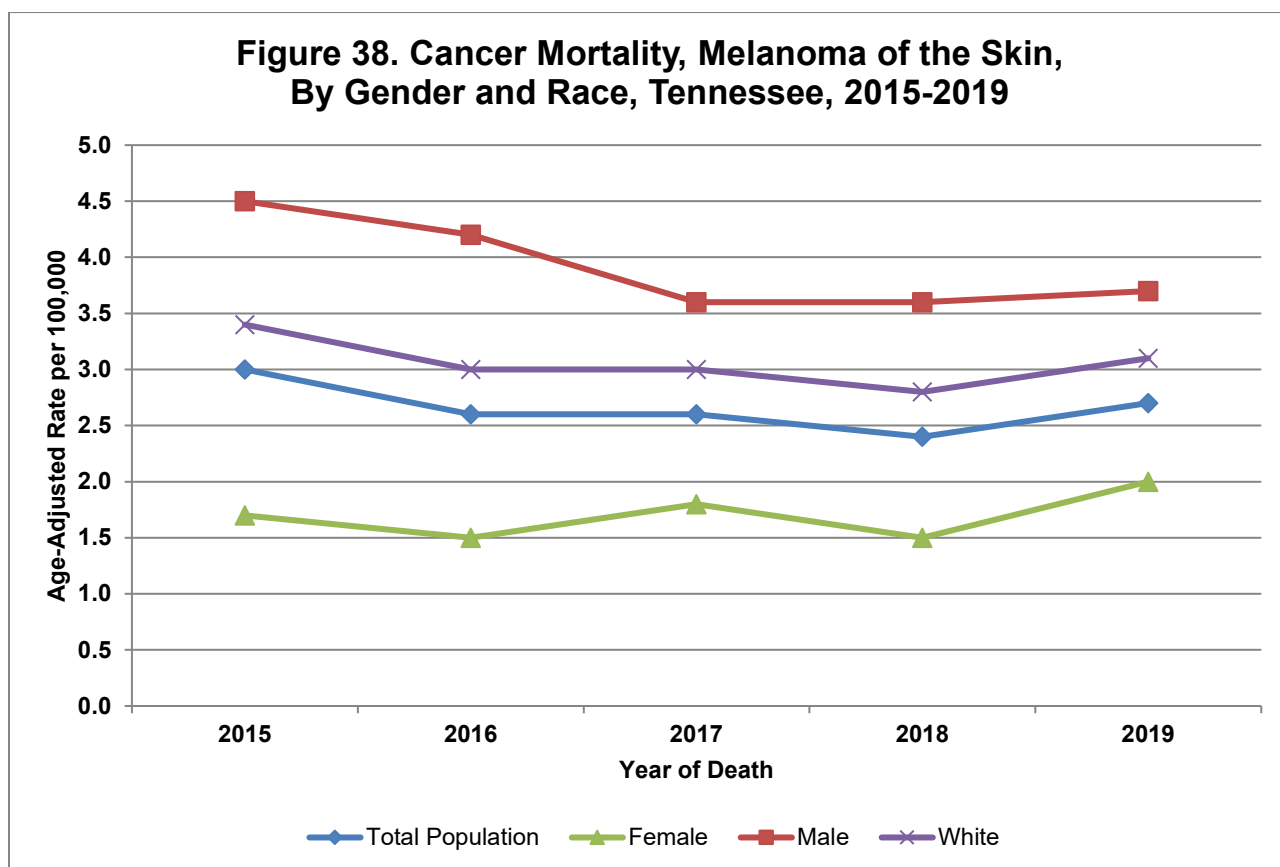
‡Mortality incidence ratio. See Technical Notes for details.



From 2015-2019 in Tennessee, the melanoma of the skin incidence rate (Figure 37):

- *Increased* among all Tennesseans by 0.5% per year.
- *Increased* among men by 1.5% per year and *decreased* among women by 1.0% per year.
- *Decreased* among Whites by 2.4% per year.

*Statistically significant

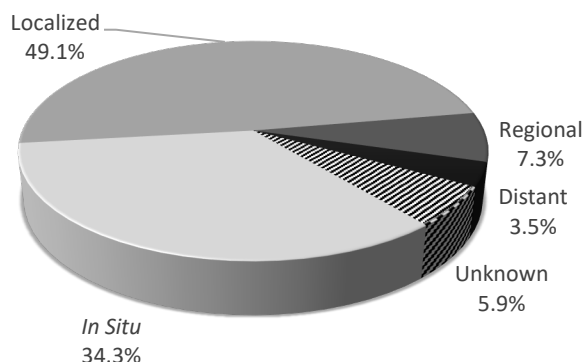


During the period 2015 to 2019 in Tennessee, the melanoma of the skin mortality rate (Figure 38):

- *Decreased* on average by 3.0% per year among all residents.
- *Decreased* among men on average by 5.8% per year*.
- *Decreased* among Whites by 3.0% per year.
- *Increased* among women by 3.5% per year.
- The trend in melanoma of the skin mortality rates among Black Tennesseans was unstable due to the small number of deaths, therefore no trends were calculated.

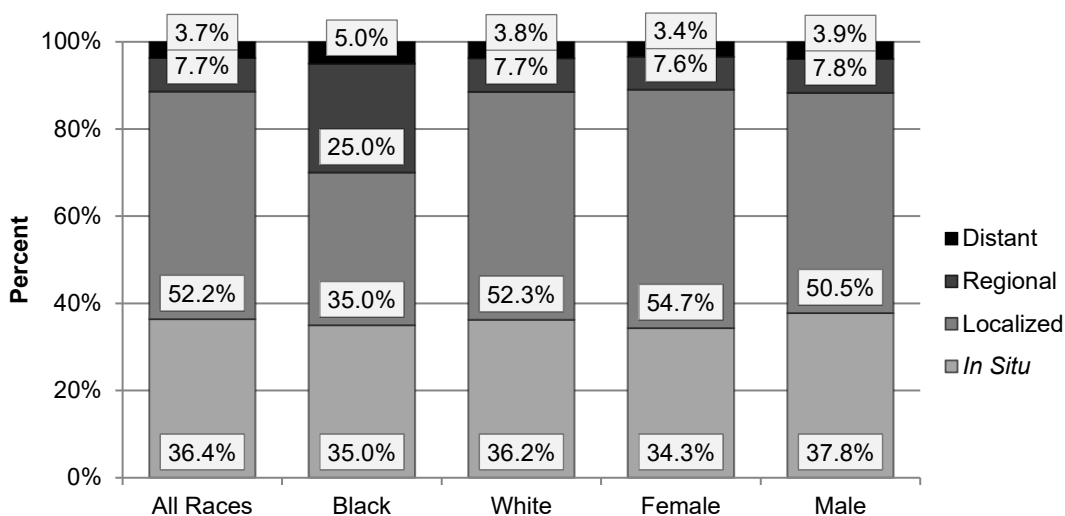
*Statistically significant

Figure 39. Cancer Stage, Melanoma of the Skin, Tennessee, 2015-2019



- About 1 in 3 (34.3%) new melanoma of the skin cases were diagnosed at the *in situ* stage.
- Roughly 1 in 2 cases (49.1%) were diagnosed at the localized stage, 7.3% at the regional stage, 3.5% at the distant stage, and 5.9% of cases had unknown stage information.

Figure 40. Cancer Stage, Melanoma of the Skin, By Race, Tennessee, 2015-2019



Cases with unknown stage were excluded. Numbers may not sum to 100% due to rounding errors.

- Among those cases with known stage, only 1 in 10 (11.4%) 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 (11.7%) had a higher proportion of cases diagnosed at late stages than female patients (11.0%), but this difference was not 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 2015-2019.

PANCREATIC CANCER, 2015-2019

Incidence

- Tennessee had the 37th highest pancreatic cancer incidence rate in the US.¹²
- Pancreatic cancer was the 12th leading cause of cancer incidence in Tennessee, based on age-adjusted incidence rates, which accounted for 2.7% of all new cancers. During this time period, there were 5,253 cases of pancreatic cancer diagnosed among Tennesseans, with an age-adjusted rate of 12.6 cases per 100,000 Tennesseans.
- The pancreatic cancer incidence rate decreased 0.7% per year on average, but this was not statistically significant.
- Using population data from the 2017 US Census Bureau:¹⁸
 - Black Tennesseans accounted for 15.4% of all new pancreatic cancer cases and comprised about 17.9% of the total, single-race Tennessee population. White Tennesseans accounted for 83.1% of all new pancreatic cancer cases and comprised about 79.6% of the total, single-race Tennessee population.
 - Men accounted for 51.7% of new pancreatic cancers and comprised 48.7% of the Tennessee population. Women accounted for 48.3% of all new pancreatic cancer cases and comprised 51.3% of the Tennessee population.

Mortality

- Tennessee had the 26th highest pancreatic cancer mortality rate in the US and was the fourth leading cause of cancer death in Tennesseans, based on age-adjusted mortality rates.¹²
- There was a total of 4,586 Tennesseans that died of pancreatic cancer. The mortality-to-incidence ratio among Tennesseans was 0.87 making pancreatic cancer one of the deadliest cancers affecting Tennesseans. The pancreatic cancer mortality rate increased on average by 0.8% per year from 2015 to 2019 among all Tennesseans but was not statistically significant.
- Black Tennesseans accounted for 15.3% of all pancreatic cancer deaths, while White Tennesseans accounted for 83.4% of all pancreatic cancer deaths.
- Men accounted for 52.2% of all pancreatic cancer deaths, while women accounted for 47.8% of all pancreatic cancer deaths.

Health Disparities

- Men had statistically significantly higher pancreatic cancer incidence and mortality rates than women.
- Men (83.6%) were slightly more likely to be diagnosed with pancreatic cancer in the late stages than women in Tennessee (82.1%), but this finding was not statistically significant.

PANCREATIC CANCER, CONTINUED

TABLE 7. CANCER INCIDENCE AND MORTALITY, PANCREAS, TENNESSEE, 2015-2019

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Both*	All Races †	5,253	12.6	12.3	13.0	4,586	11.0	10.7	11.3	0.87
	Black	807	15.5	14.3	16.6	701	13.8	12.8	15.0	0.89
	White	4,366	12.2	11.9	12.6	3,825	10.7	10.3	11.0	0.88
Female	All Races †	2,537	11.2	10.7	11.6	2,192	9.6	9.2	10.0	0.86
	Black	434	14.5	13.1	15.9	343	11.8	10.6	13.2	0.81
	White	2,062	10.7	10.2	11.1	1,818	9.2	8.8	9.7	0.86
Male	All Races †	2,716	14.3	13.7	14.8	2,394	12.7	12.2	13.2	0.89
	Black	373	16.7	14.9	18.6	358	16.6	14.7	18.6	0.99
	White	2,304	14.0	13.4	14.6	2,007	12.3	11.7	12.8	0.88
Age at Diagnosis or Death										
	0-19	^	^	^	^	0	0	0	0	0
	20-44	126	1.3	1.1	1.5	58	0.6	0.5	0.8	0.46
	45-64	1,702	17.2	16.4	18.0	1,294	12.8	12.1	13.6	0.74
	65+	3,421	65.7	63.5	68.0	3,234	62.9	60.7	65.1	0.96
Year of Diagnosis or Death										
	2015	1,000	12.5	11.8	13.4	856	10.7	10.0	11.4	0.86
	2016	1,047	12.8	12.0	13.6	887	10.9	10.2	11.7	0.85
	2017	1,061	12.8	12.0	13.6	933	11.2	10.4	11.9	0.88
	2018	1,102	12.9	12.1	13.7	965	11.4	10.7	12.2	0.88
	2019	1,043	12.0	11.3	12.8	945	10.9	10.2	11.6	0.91

^Statistic not displayed due to fewer than 11 cases. Other counts are offset so suppressed counts cannot be derived.

* Excludes those with intersex conditions and transgender individuals.

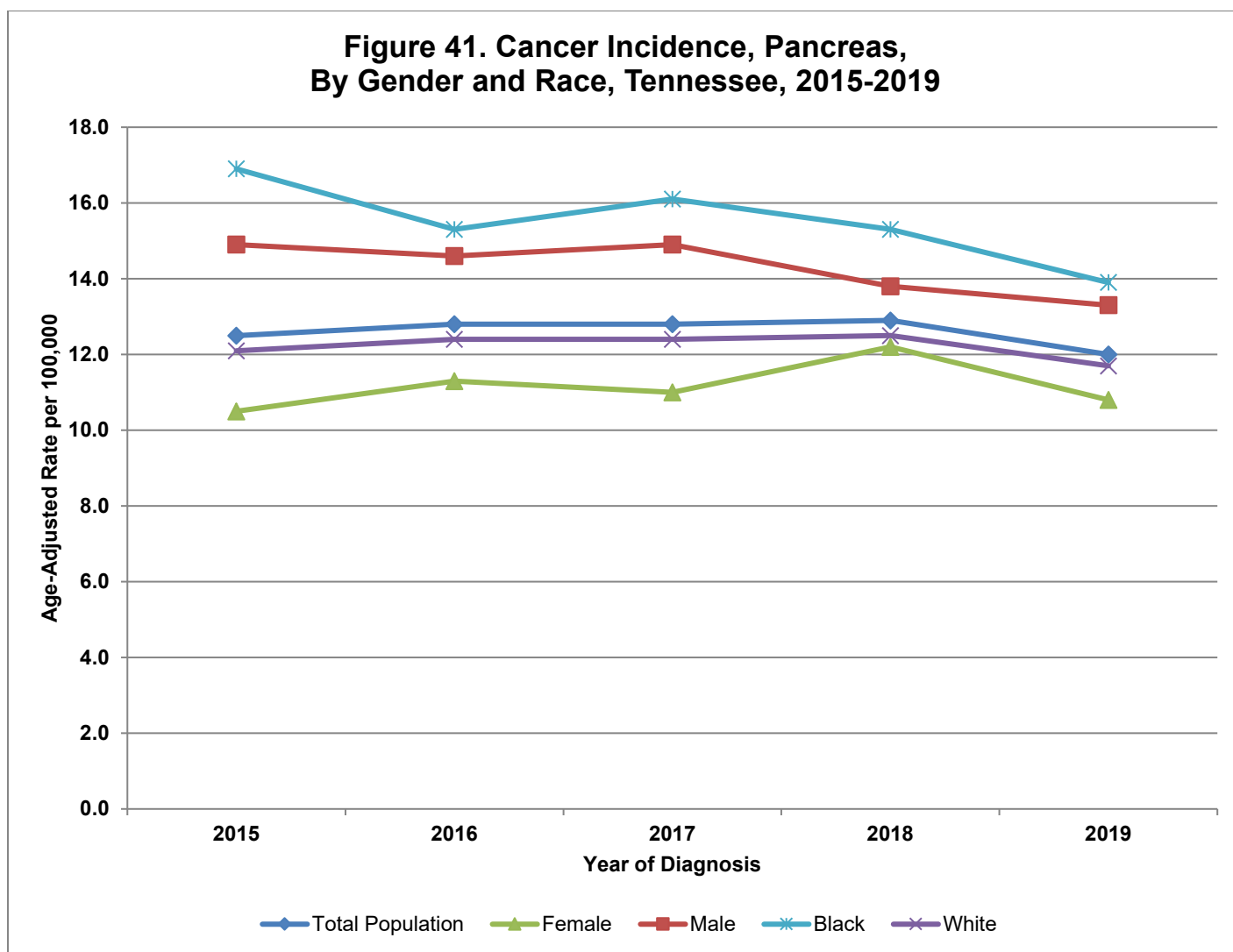
**Total counts are from 2015-2019

***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.

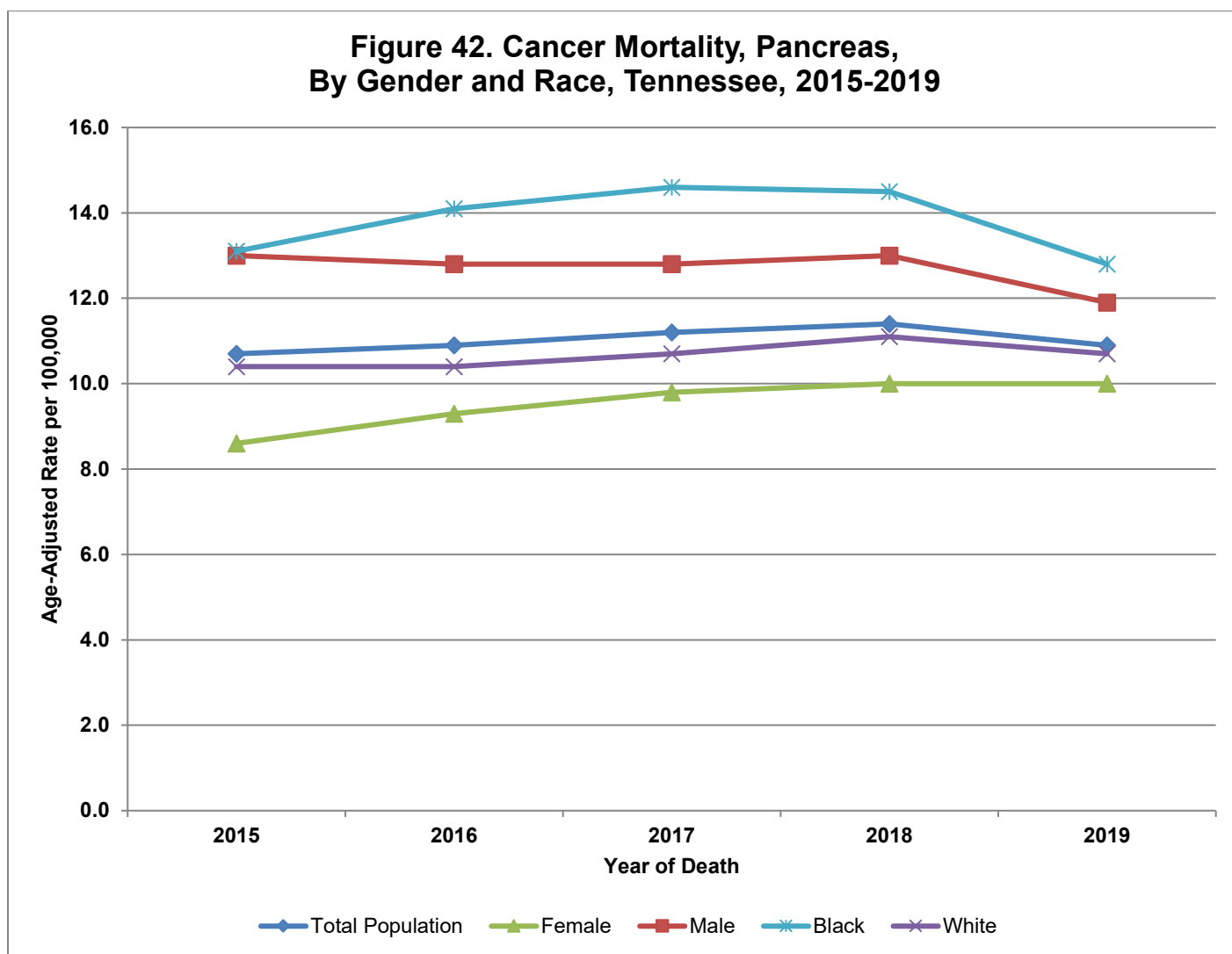
‡Mortality incidence ratio. See Technical Notes for details.



From 2015 to 2019 in Tennessee, the pancreatic cancer incidence rate (Figure 41):

- *Decreased* on average among all residents by 0.7% per year.
- *Decreased* on average among men by 2.7% per year.
- ***Increased* on average among women by 1.3% per year.**
- *Decreased* on average among Blacks by 3.9% per year.
- *Decreased* on average among Whites by 0.5% per year.

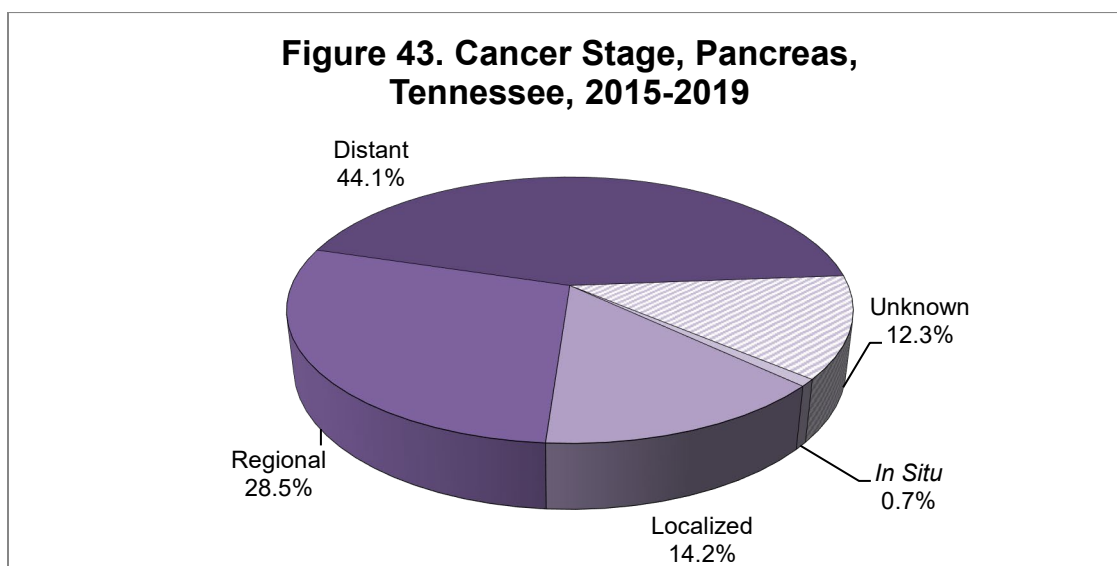
*Statistically significant



From 2015-2019, the pancreatic cancer mortality rate in Tennessee (Figure 42):

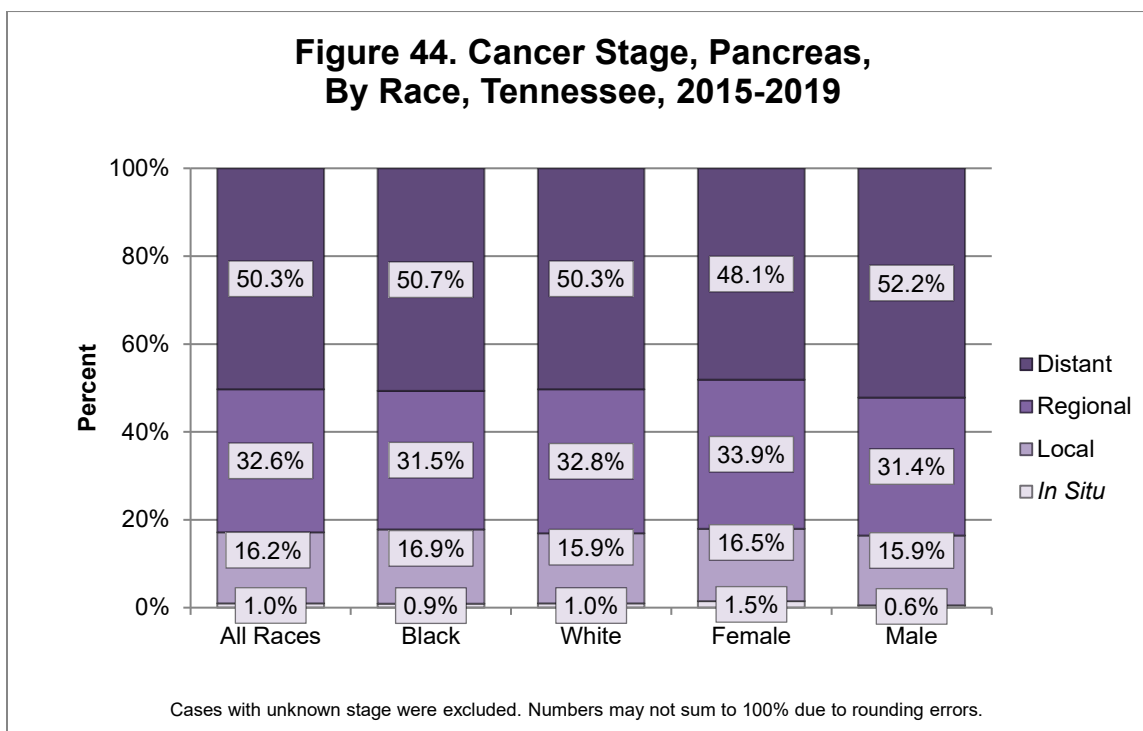
- ***Increased*** among all Tennesseans by 0.8% per year.
- Among men *decreased* on average by 1.6% per year.
- ***Among women increased*** on average by 3.6% per year*.
- Among Blacks *decreased* on average by 0.2% per year.
- ***Among Whites increased*** on average by 1.1% per year.

*Statistically significant



In Tennessee from 2015-2019 (Figure 43):

- A total of 37 pancreatic cancer cases (0.7%) were diagnosed at the *in situ* stage.
- 14.2% of cases were diagnosed at the localized stage, 28.5% at the regional stage, 44.1% at the distant stage and 12.3% of cases had unknown stage information.



- There was no statistically significant difference in percentage of cases diagnosed at late stages between Blacks (82.2%) and Whites (83.1%).
- There was no statistically significant difference in percentage of cases diagnosed at late stages between men (83.6%) and women (82.0%).

CHILDHOOD CANCER, 2015-2019

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.³ 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, Tennessee had the 42nd highest childhood cancer incidence rate in the US, 50 states and D.C.¹²
- There were 1,441 new invasive cancer cases in children less than 20 years of age in Tennessee during 2015-2019 and the age-adjusted incidence rate for childhood cancers was 171.9 per 1,000,000 children.
- The following are the leading causes of cancer incidence among children less than twenty years of age: leukemias, central nervous system, lymphomas, malignant epithelial tumors and melanomas, and soft tissue sarcomas. These 5 causes of cancer incidence represented 75.4% of all childhood cancer cases.
- Less than half of all new childhood cancers with known stage information are diagnosed at early stages.

Mortality

- Tennessee had the 13th highest childhood cancer mortality rate in the US.¹²
- There were 192 deaths due to cancer in children less than 20 years of age in Tennessee and the mortality rate was 22.9 per 1,000,000 children.
- Cancer was the 6th leading cause of death among children in Tennessee from 2015 to 2019, based on data available from CDC Wonder.¹⁷

Health Disparities

- The cancer incidence rate among White children was statistically significantly higher than the rate among Black children. Of the 1,441 new invasive cancer cases in children less than twenty years of age in Tennessee, Black children accounted for roughly one out of every six (15.0%) childhood cancer cases, while White children accounted for roughly three out of every four cancer cases (77.4%).

CHILDHOOD CANCER, CONTINUED

TABLE 8. CANCER INCIDENCE AND MORTALITY, CHILDREN BELOW 20 YEARS OF AGE, TENNESSEE, 2015-2019

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Both*	All Races †	1,441	171.9	163.2	181.0	192	22.9	19.8	26.4	0.13
	Black	216	118.9	103.5	135.8	45	25.0	18.2	33.4	0.21
	White	1,115	176.8	166.5	187.5	128	20.3	16.9	24.1	0.11
Female	All Races †	700	170.6	158.2	183.7	87	21.2	17.0	26.2	0.12
	Black	102	113.5	92.5	137.8	22	24.8	15.5	37.5	0.22
	White	541	175.9	161.4	191.4	55	17.9	13.5	23.3	0.10
Male	All Races †	741	173.2	161.0	186.1	105	24.6	20.1	29.8	0.14
	Black	114	124.1	102.3	149.1	23	25.2	16.0	37.8	0.20
	White	574	177.6	163.4	192.8	73	22.6	17.7	28.4	0.13
Year of Diagnosis or Death										
	2015	288	172.9	153.5	194.1	39	23.5	16.7	32.1	0.14
	2016	316	189.0	168.7	211.0	39	23.4	16.6	32.0	0.12
	2017	311	185.2	165.2	207.0	37	22.1	15.6	30.5	0.12
	2018	250	148.7	130.8	168.3	38	22.5	16.0	31.0	0.15
	2019	276	164.1	145.3	184.7	39	23.2	16.5	31.7	0.14

^Statistic not displayed due to fewer than 11 cases.

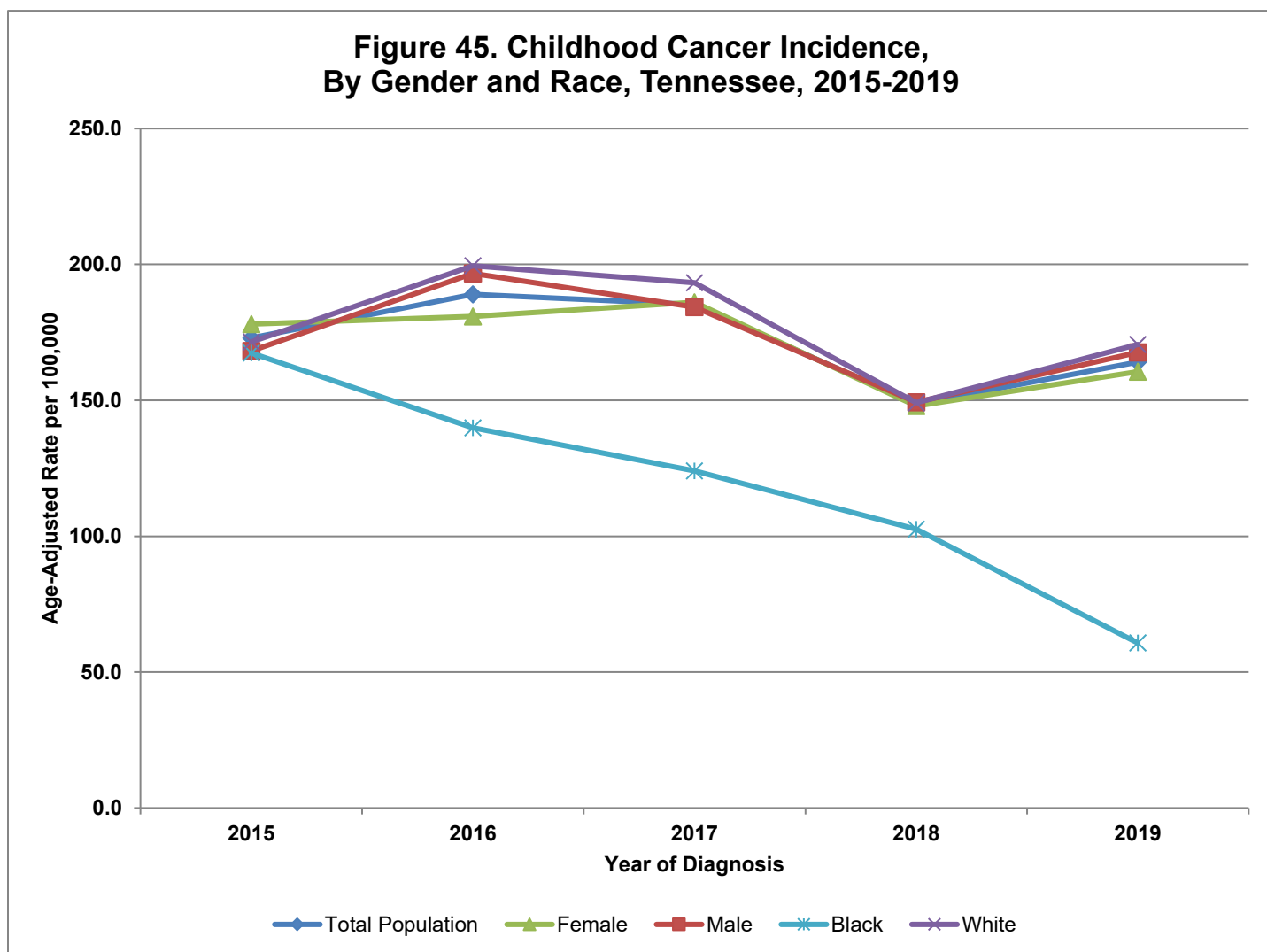
**Total counts are from 2015-2019

***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.

‡Mortality incidence ratio. See Technical Notes for details.

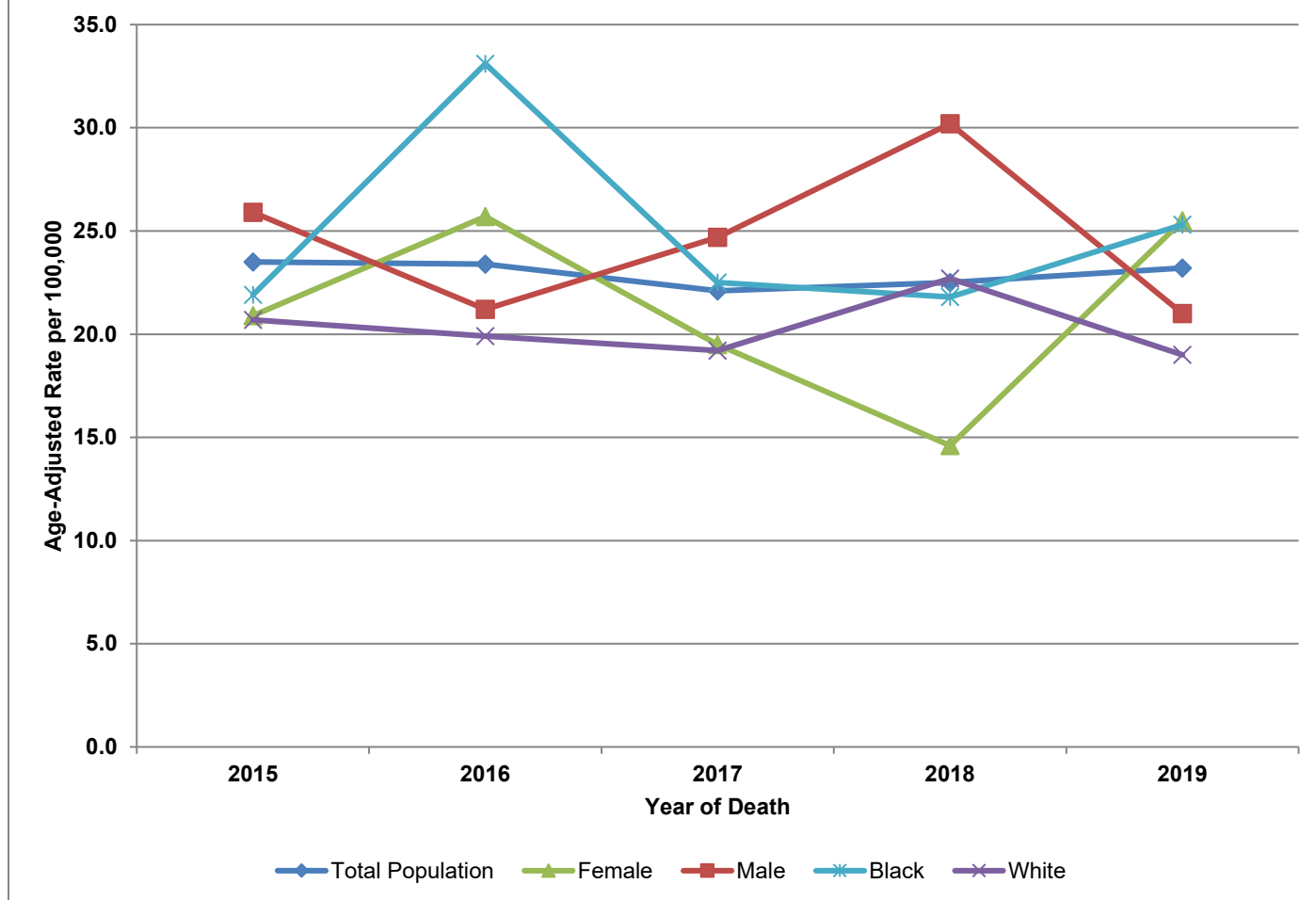


The cancer incidence rate in Tennessee among children less than 20 years of age, from 2015-2019 (Figure 45):

- *Decreased* by 3.3% per year among all children.
- *Decreased* by 2.8% per year among boys and *decreased* by 3.9% per year among girls.
- *Decreased* by 19.1% per year among Black children* and *decreased* 3.0% per year among White children.

*Statistically significant

**Figure 46. Childhood Cancer Mortality,
By Gender and Race, Tennessee, 2015-2019**

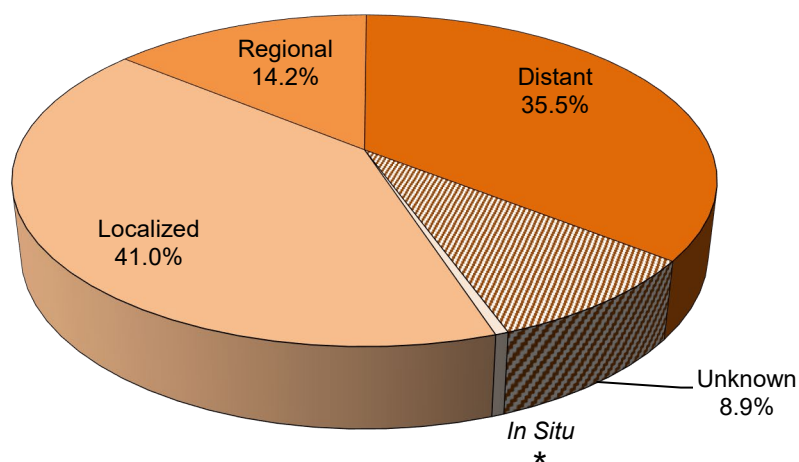


From 2015-2019 in Tennessee (Figure 46), the cancer mortality rate among children less than 20 years of age:

- *Decreased* on average by 0.6% per year among all children.
- *Increased* on average by 0.1% per year among boys and *decreased* by 0.2% per year among girls.
- The annual percent change could not be calculated due to the small numbers among Black children.
- *Decreased* on average by 0.2% per year among White children.

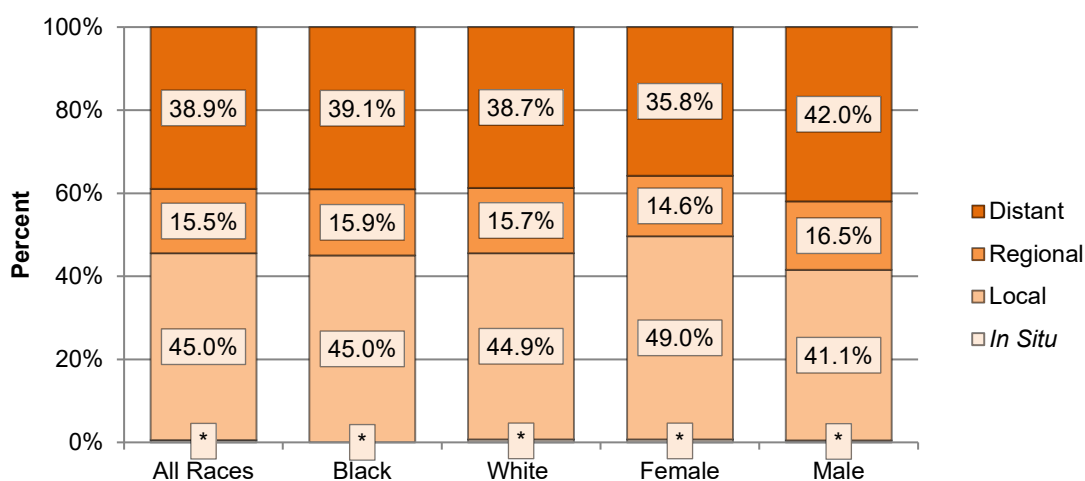
*Statistically significant

Figure 47. Cancer Stage, All Sites Combined, Children 0-19 Years of Age, Tennessee, 2015-2019



- Fewer 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, 14.2% of cases at the regional stage, 35.5% at the distant stage, and 8.9% of cases had unknown stage information.

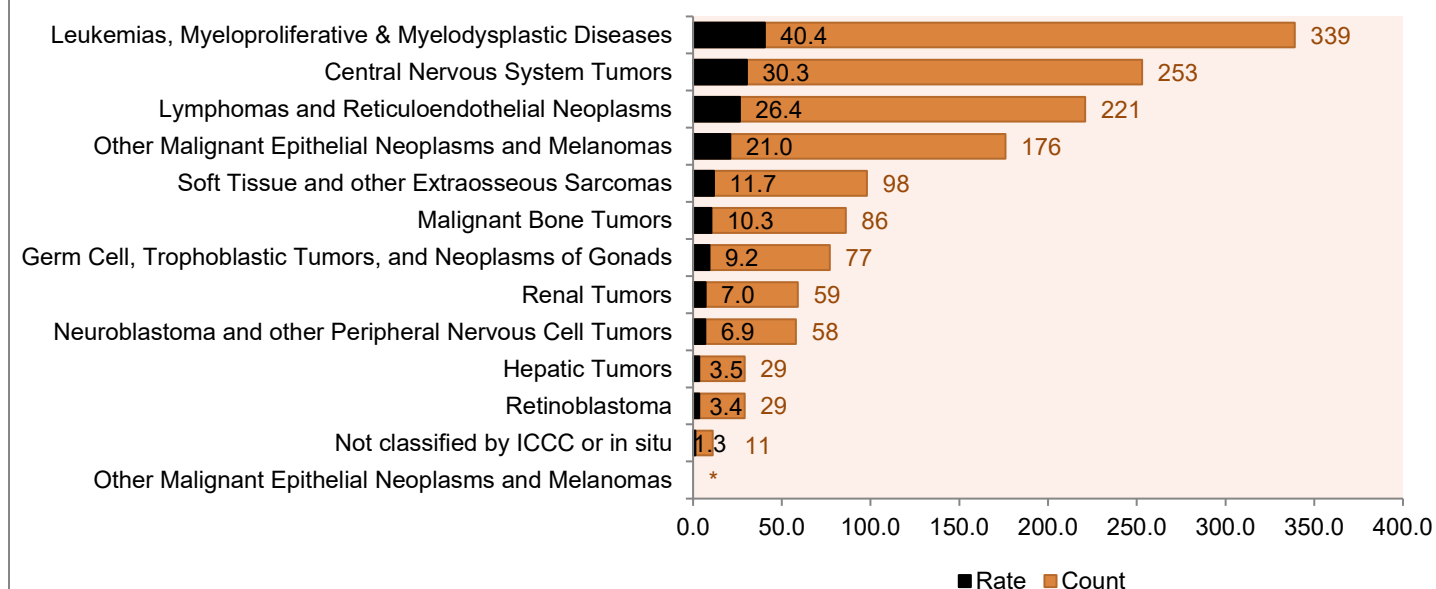
Figure 48. Cancer Stage, All Sites Combined, Children 0-19 Years of Age, Tennessee, 2015-2019



Cases with unknown stage were excluded. Numbers may not sum to 100% due to rounding errors. Data for *in situ* cases was suppressed due to counts <11.

- There were statistically significant differences in the percentage of cases diagnosed at late stages (i.e., regional or distant stage) between Black (55.0%) and White (54.4%) children.
- There were statistically significant differences in the percentage of cases diagnosed at late stages between boys (58.5%) and girls (50.4%).

Figure 49. Leading Causes of Cancer Incidence, Children 0-19 Years of Age, Tennessee, 2015-2019



Note: Rates are per 1,000,000. Excludes 6 cases not classified by the International Classification of Childhood Cancers (ICCC) or in situ.

In Tennessee from 2015 to 2019 (Figure 49):

- Leukemias were the leading cause of cancer incidence among children less than 20 years of age in Tennessee, representing nearly 1 out of every 4 (23.5%) new childhood cancer cases.
- The second leading cause of childhood cancer incidence was central nervous system tumors, followed by lymphomas, other malignant epithelial neoplasms and melanomas, and soft tissue sarcomas.
- The 5 leading causes of cancer, described above, accounted for 75.4% of all new childhood cancer diagnoses between 2015 and 2019.

CANCER SCREENING RECOMMENDATIONS

Lung Cancer 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.¹⁵ Thus, the US Preventive Services Taskforce (USPSTF) 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. Annual screenings may be discontinued after a person has stopped smoking for 15 years or has other health condition that greatly limits life expectancy and the ability to have lung surgery. It should be noted a pack year is defined as smoking an average of 1 pack of cigarettes per day for 1 year.²³

Prostate Cancer Screening

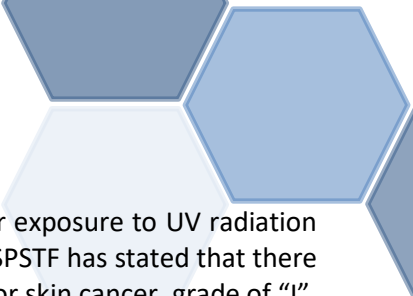
- The US Preventive Services Taskforce (USPSTF) recommends against population-based screening for prostate cancer for men 70 years or older. For individuals aged 55-69, the decision to get a periodic PSA screening for prostate cancer is an individual-level decision. Each clinician and patient can discuss potential benefits, potential harms, and overall interest in getting periodic PSA screenings to help each individual decide.²³
- The USPSTF is currently in the process of updating this recommendation.²³

Female Breast Cancer Screening

- Screening Mammography
 - The US Preventative Services Taskforce (USPSTF) recommends biennial screening mammography for women 40-74 years as there is moderate certainty that the net benefit of screening is moderate to substantial. Women with an average risk level of breast cancer receive the most benefit from mammography screening during the ages of 50 and 74, and women aged 60 to 69 are the most likely to avoid breast cancer death with mammography screening. There is insufficient evidence to assess the positives and negatives of screening mammography for women aged 75 years or older.²³
- Digital Breast Tomosynthesis (DBT)
 - The USPSTF states that there is insufficient evidence to evaluate the balance of benefits and harms of digital breast tomosynthesis (DBT) as the primary screening method for breast cancer.²³
- The USPSTF is currently in the process of updating this recommendation.²³

Colorectal Screening

- The US Preventive Services Taskforce (USPSTF) recommends colorectal cancer screening for individuals aged 50 to 75 with a grade of “A,” meaning there is a high certainty that the net benefit is substantial. However, the USPSTF recommends for adults aged 76 to 85 to consider their overall health, prior screening history, and preference to determine whether to undergo colorectal screening. The USPSTF recently altered its recommendation for screening to include those 45-49 years of age with a grade of “B,” meaning there is evidence of moderate to substantial net benefit.²³



Skin Cancer Screening

- The US Preventative Services Taskforce (USPSTF) advises individuals to minimize their exposure to UV radiation from sun exposure, indoor tanning beds, and other radiation-emitting sources. 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. This recommendation applies to people who do not have a history of skin cancer or concerning moles or spots.²³
- The American Academy of Dermatology (AAD) recommends that all individuals should use a broad-spectrum and water-resistant sunscreen with SPF of 30 or higher, wear protective clothing, and seek shade to protect against the sun’s UV rays. They also recommend that all individuals should perform regular self-exams to evaluate skin. They recommend seeing a board-certified dermatologist if anyone notices a suspicious spot that changes, itches, or bleeds.¹

Pancreatic Cancer Screening

- The US Preventive Services Task Force (USPSTF) recommends against routine screening for pancreatic cancer by any means in asymptomatic adults, grade of “D.”²³

Screening for Childhood Cancers

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

APPENDICES

APPENDICES

APPENDIX I. CANCER INCIDENCE AND MORTALITY, BY SITE

TABLE 9. BY CANCER SITE, TENNESSEE, 2015-2019

Primary Cancer Site	Incidence				Mortality				M:I Ratio †
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
All Sites	193,064	470.0	467.9	472.2	71,249	173.2	171.9	174.5	0.37
Oral Cavity and Pharynx	5,512	13.2	12.8	13.5	1,207	2.9	2.7	3.1	0.22
Lip	156	0.4	0.3	0.5	^	^	^	^	^
Tongue	1,770	4.2	4.0	4.4	293	0.7	0.6	0.8	0.17
Salivary Gland	497	1.3	1.2	1.4	119	0.3	0.2	0.4	0.23
Floor of Mouth	230	0.5	0.5	0.6	^	^	^	^	^
Gum and Other Mouth	752	1.8	1.7	2.0	194	0.5	0.4	0.5	0.28
Nasopharynx	204	0.5	0.4	0.6	81	0.2	0.2	0.2	0.40
Tonsil	1,201	2.9	2.7	3.0	122	0.3	0.2	0.3	0.10
Oropharynx	347	0.8	0.7	0.9	130	0.3	0.3	0.4	0.38
Hypopharynx	256	0.6	0.5	0.7	47	0.1	0.1	0.1	0.17
Other Oral Cavity and Pharynx	99	0.2	0.2	0.3	208	0.5	0.4	0.6	2.50
Digestive System	33,450	81.4	80.5	82.3	17,386	41.9	41.3	42.6	0.51
Esophagus	2,072	4.8	4.6	5.1	1,728	4.1	3.9	4.3	0.85
Stomach	2,304	5.7	5.4	5.9	1,035	2.6	2.4	2.7	0.46
Small Intestine	1,222	3.0	2.8	3.2	181	0.5	0.4	0.5	0.17
Colon and Rectum	16,151	40.1	39.4	40.7	6,059	14.9	14.6	15.3	0.37
Colon excluding Rectum	11,614	28.7	28.2	29.3	4,845	12.0	11.6	12.3	0.42
Cecum	2,454	6.0	5.8	6.3	^	^	^	^	^
Appendix	597	1.6	1.5	1.8	^	^	^	^	^
Ascending Colon	2,227	5.4	5.2	5.7	^	^	^	^	^
Hepatic Flexure	529	1.3	1.2	1.4	^	^	^	^	^
Transverse Colon	1,108	2.7	2.6	2.9	^	^	^	^	^
Splenic Flexure	278	0.7	0.6	0.8	^	^	^	^	^
Descending Colon	683	1.7	1.6	1.8	^	^	^	^	^
Sigmoid Colon	2,832	7.0	6.7	7.2	^	^	^	^	^
Large Intestine, NOS	906	2.2	2.1	2.4	^	^	^	^	^
Rectum and Rectosigmoid Junction	4,537	11.3	11.0	11.7	1,214	3.0	2.8	3.2	0.27
Rectosigmoid Junction	986	2.5	2.3	2.6	^	^	^	^	^
Rectum	3,551	8.9	8.6	9.2	^	^	^	^	^
Anus, Anal Canal and Anorectum	974	2.4	2.2	2.5	160	0.4	0.3	0.5	0.17
Liver and Intrahepatic Bile Duct	3,802	8.7	8.5	9.0	3,015	7.0	6.7	7.2	0.80
Liver	3,248	7.4	7.1	7.7	2,332	5.3	5.1	5.6	0.72
Intrahepatic Bile Duct	554	1.3	1.2	1.5	683	1.6	1.5	1.8	1.23
Gallbladder	363	0.9	0.8	1.0	159	0.4	0.3	0.4	0.44
Other Biliary	611	1.5	1.4	1.6	188	0.5	0.4	0.5	0.33
Pancreas	5,253	12.6	12.3	13.0	4,586	11.0	10.7	11.3	0.87
Retroperitoneum	172	0.4	0.4	0.5	25	0.1	0.0	0.1	0.25
Peritoneum, Omentum and Mesentery	234	0.6	0.5	0.6	98	0.2	0.2	0.3	0.33
Other Digestive Organs	292	0.7	0.6	0.8	152	0.4	0.3	0.4	0.57
Respiratory System	33,487	78.5	77.7	79.4	21,317	50.6	49.9	51.3	0.64
Nose, Nasal Cavity and Middle Ear	308	0.8	0.7	0.9	70	0.2	0.1	0.2	0.25
Larynx	1,777	4.1	3.9	4.3	564	1.3	1.2	1.4	0.32
Lung and Bronchus	31,329	73.4	72.6	74.3	20,624	49.0	48.3	49.7	0.67
Pleura	*	*	*	*	37	0.1	0.1	0.1	^
Trachea, Mediastinum and Other Respiratory Organs	66	0.2	0.1	0.2	22	0.1	0.0	0.1	0.50
Bones and Joints	373	1.0	0.9	1.2	203	0.5	0.5	0.6	0.50
Soft Tissue including Heart	1,278	3.4	3.2	3.6	526	1.4	1.2	1.5	0.41
Skin excluding Basal and Squamous	8,828	22.3	21.9	22.8	*	*	*	*	^
Melanoma of the Skin	8,293	21.0	20.5	21.4	1,067	2.7	2.5	2.8	0.13
Other Non-Epithelial Skin	535	1.4	1.3	1.5	*	*	*	*	^

Female Breast	26,574	124.5	122.9	126.0	4,815	21.7	21.0	22.3	0.17
Female Genital System	10,519	49.6	48.6	50.6	3,434	15.5	14.9	16.0	0.31
Cervix Uteri	1,462	8.1	7.7	8.5	544	2.7	2.5	3.0	0.33
Corpus and Uterus, NOS	5,715	25.8	25.2	26.6	1,032	4.5	4.2	4.7	0.17
Corpus Uteri	5,495	24.8	24.2	25.5	484	2.1	1.9	2.3	0.08
Uterus, NOS	220	1.0	0.9	1.2	548	2.4	2.2	2.6	2.40
Ovary	2,142	10.1	9.7	10.6	1,570	7.0	6.6	7.3	0.69
Vagina	172	0.8	0.7	0.9	63	0.3	0.2	0.4	0.38
Vulva	668	3.1	2.9	3.4	154	0.7	0.6	0.8	0.23
Other Female Genital Organs	360	1.7	1.5	1.8	71	0.3	0.2	0.4	0.18
Male Genital System	25,367	125.2	123.6	126.8	3,270	20.1	19.4	20.8	0.16
Prostate	24,269	118.4	116.9	119.9	3,182	19.6	18.9	20.3	0.17
Testis	883	5.7	5.3	6.0	41	0.3	0.2	0.4	0.05
Penis	180	1.0	0.8	1.1	42	0.2	0.2	0.3	0.20
Other Male Genital Organs	35	0.2	0.1	0.3	A	A	A	A	A
Urinary System	17,054	41.6	41.0	42.3	3,492	8.6	8.3	8.9	0.21
Urinary Bladder	8,422	20.4	19.9	20.8	1,727	4.3	4.1	4.5	0.21
Kidney and Renal Pelvis	8,215	20.3	19.8	20.7	1,658	4.0	3.8	4.2	0.20
Ureter	265	0.6	0.6	0.7	54	0.1	0.1	0.2	0.17
Other Urinary Organs	152	0.4	0.3	0.4	53	0.1	0.1	0.2	0.25
Eye and Orbit	434	1.1	1.0	1.2	40	0.1	0.1	0.1	0.09
Brain and Other Nervous System	2,454	6.5	6.2	6.8	1,868	4.7	4.5	4.9	0.72
Brain	2,323	6.1	5.9	6.4	A	A	A	A	A
Cranial Nerves Other Nervous System	131	0.4	0.3	0.5	A	A	A	A	A
Endocrine System	4,599	12.8	12.4	13.2	298	0.8	0.7	0.9	0.06
Thyroid	4,324	12.0	11.7	12.4	183	0.5	0.4	0.5	0.04
Other Endocrine including Thymus	275	0.7	0.7	0.8	115	0.3	0.3	0.4	0.43
Lymphoma	8,084	20.4	20.0	20.9	2,424	6.0	5.8	6.3	0.29
Hodgkin Lymphoma	884	2.6	2.4	2.8	106	0.3	0.2	0.3	0.12
Hodgkin - Nodal	876	2.6	2.4	2.7	A	A	A	A	A
Hodgkin - Extranodal	*	*	*	*	A	A	A	A	A
Non-Hodgkin Lymphoma	7,200	17.8	17.4	18.3	2,318	5.8	5.5	6.0	0.33
NHL - Nodal	5,101	12.6	12.2	13.0	A	A	A	A	A
NHL - Extranodal	2,099	5.2	5.0	5.5	A	A	A	A	A
Myeloma	2,783	6.7	6.4	7.0	1,446	3.5	3.4	3.7	0.52
Leukemia	5,159	13.2	12.9	13.6	2,528	6.4	6.1	6.6	0.48
Lymphocytic Leukemia	2,276	5.8	5.6	6.1	691	1.8	1.6	1.9	0.31
Acute Lymphocytic Leukemia	491	1.5	1.4	1.7	164	0.4	0.4	0.5	0.27
Chronic Lymphocytic Leukemia	1,640	3.9	3.7	4.1	471	1.2	1.1	1.3	0.31
Other Lymphocytic Leukemia	145	0.4	0.3	0.4	56	0.1	0.1	0.2	0.25
Myeloid and Monocytic Leukemia	2,505	6.5	6.2	6.7	1,381	3.5	3.3	3.6	0.54
Acute Myeloid Leukemia	1,564	4.0	3.8	4.2	1,107	2.7	2.6	2.9	0.68
Acute Monocytic Leukemia	70	0.2	0.1	0.2	12	0.0	0.0	0.1	0.00
Chronic Myeloid Leukemia	808	2.1	2.0	2.3	149	0.4	0.3	0.5	0.19
Other Myeloid/Monocytic Leukemia	63	0.2	0.1	0.2	113	0.3	0.2	0.4	1.50
Other Leukemia	378	0.9	0.8	1.0	456	1.2	1.0	1.3	1.33
Other Acute Leukemia	78	0.2	0.2	0.3	140	0.4	0.3	0.4	2.00
Aleukemic, Subleukemic and NOS	300	0.7	0.7	0.8	316	0.8	0.7	0.9	1.14
Mesothelioma	262	0.6	0.6	0.7	A	A	A	A	A
Kaposi Sarcoma	80	0.2	0.2	0.3	A	A	A	A	A
Miscellaneous	6,516	16.1	15.7	16.5	5,311	13.0	12.6	13.3	0.81

^AStatistic not displayed due to fewer than 11 cases.

* Excludes those with intersex conditions and transgender individuals.

**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 2015-2019.

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Total Population									
Tennessee	193,064	470.0	467.9	472.2	71,249	173.2	171.9	174.5	0.37
East Region	39,578	483.1	478.2	488.1	14,387	172.3	169.5	175.2	0.36
Mid-Cumberland Region	46,942	458.0	453.7	462.2	16,019	163.4	160.8	166.0	0.36
Northeast Region	17,290	472.1	464.8	479.5	6,826	179.5	175.1	183.9	0.38
Northwest Region	8,637	505.4	494.4	516.6	3,511	197.7	191.1	204.5	0.39
South Central Region	12,564	482.7	474.1	491.5	4,831	183.8	178.5	189.1	0.38
Southeast Region	21,257	466.0	459.5	472.5	7,844	168.3	164.5	172.2	0.36
Southwest Region	34,787	461.1	456.1	466.1	13,118	176.4	173.3	179.5	0.38
Upper-Cumberland Region	11,761	470.2	461.4	479.2	4,702	182.5	177.2	188.0	0.39
Female									
Tennessee	92,277	427.5	424.7	430.4	32,764	144.8	143.2	146.4	0.34
East Region	18,869	444.5	437.9	451.2	6,536	144.4	140.8	148.0	0.32
Mid-Cumberland Region	22,944	419.9	414.3	425.4	7,506	137.9	134.8	141.1	0.33
Northeast Region	8,307	442.1	432.1	452.3	3,098	151.2	145.7	156.8	0.34
Northwest Region	4,044	454.4	439.8	469.4	1,594	162.3	154.2	170.8	0.36
South Central Region	5,873	435.2	423.7	446.9	2,142	150.2	143.8	156.9	0.35
Southeast Region	9,978	421.2	412.6	429.9	3,567	139.3	134.6	144.1	0.33
Southwest Region	16,719	410.0	403.6	416.4	6,269	149.2	145.5	153.0	0.36
Upper-Cumberland Region	5,454	426.9	415.0	439.2	2,047	148.4	141.8	155.3	0.35
Male									
Tennessee	100,787	528.5	525.1	531.9	38,485	211.7	209.6	213.9	0.40
East Region	20,709	536.4	528.9	544.0	7,851	209.7	204.9	214.5	0.39
Mid-Cumberland Region	23,998	512.1	505.4	518.9	8,513	198.4	194.0	202.9	0.39
Northeast Region	8,983	514.7	503.8	525.9	3,728	216.7	209.6	224.0	0.42
Northwest Region	4,593	574.0	557.0	591.3	1,917	245.8	234.7	257.4	0.43
South Central Region	6,691	545.4	532.0	559.1	2,689	228.5	219.7	237.7	0.42
Southeast Region	11,279	527.3	517.3	537.4	4,277	207.2	200.9	213.7	0.39
Southwest Region	18,068	532.2	524.2	540.4	6,849	215.6	210.3	220.9	0.41
Upper-Cumberland Region	6,307	526.9	513.5	540.6	2,655	225.4	216.6	234.4	0.43
Black									
Tennessee	25,411	459.5	453.6	465.4	9,888	194.3	190.2	198.3	0.42
East Region	1,345	446.9	422.5	472.3	554	193.9	177.6	211.4	0.43
Mid-Cumberland Region	6,337	449.4	437.7	461.3	2,314	185.7	177.7	194.0	0.41
Northeast Region	232	324.9	282.7	371.5	127	193.5	160.1	231.7	0.60
Northwest Region	862	511.4	476.5	548.1	389	238.7	214.8	264.5	0.47
South Central Region	767	467.6	434.0	503.1	273	177.2	156.1	200.3	0.38
Southeast Region	2,137	465.4	445.1	486.4	781	178.5	165.7	192.0	0.38
Southwest Region	13,463	461.4	453.2	469.6	5,404	200.1	194.5	205.8	0.43
Upper-Cumberland Region	252	760.7	667.2	863.4	44	139.9	100.7	188.9	0.18
White									
Tennessee	163,847	470.3	468.0	472.7	60,479	170.7	169.3	172.1	0.36
East Region	37,674	484.2	479.1	489.3	13,719	172.2	169.3	175.2	0.36
Mid-Cumberland Region	39,120	457.1	452.5	461.8	13,345	160.5	157.8	163.3	0.35
Northeast Region	16,843	473.6	466.1	481.1	6,655	179.5	175.1	184.0	0.38
Northwest Region	7,699	503.5	491.9	515.3	3,105	194.0	187.1	201.2	0.39
South Central Region	11,624	482.1	473.1	491.2	4,522	184.6	179.2	190.2	0.38
Southeast Region	18,764	465.7	458.8	472.6	6,984	167.9	164.0	172.0	0.36
Southwest Region	20,666	460.6	454.1	467.1	7,516	162.5	158.7	166.3	0.35
Upper-Cumberland Region	11,364	464.3	455.5	473.4	4,624	183.5	178.1	189.0	0.40

*Statistic not displayed due to fewer than 11 cases.

* Excludes those with intersex conditions and transgender individuals.

**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, 2015-2019

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	193,064	470.0	468.0	472.0	71,249	173.2	171.9	174.5	0.37
East Region	39,578	483.1	478.2	488.1	14,387	172.3	169.5	175.2	0.36
Anderson County	2,438	452.2	433.6	471.3	912	163.5	152.8	174.9	0.36
Blount County	4,382	479.7	465.0	494.7	1,501	158.9	150.8	167.4	0.33
Campbell County	1,536	537.0	509.4	565.8	597	200.6	184.5	218.0	0.37
Claiborne County	1,183	528.4	497.4	561.0	437	194.0	175.7	213.9	0.37
Cocke County	1,276	484.9	457.3	513.9	506	188.2	171.7	206.1	0.39
Grainger County	858	513.0	477.6	550.6	337	198.9	177.4	222.5	0.39
Hamblen County	1,947	464.3	443.4	486.1	727	167.7	155.6	180.6	0.36
Jefferson County	1,926	509.1	485.7	533.6	652	169.4	156.3	183.5	0.33
Knox County	13,054	479.0	470.6	487.5	4,436	161.8	157.0	166.7	0.34
Loudon County	2,229	513.8	490.8	537.8	725	159.2	147.1	172.3	0.31
Monroe County	1,653	497.2	472.4	523.2	683	205.0	189.3	221.7	0.41
Morgan County	709	495.0	458.2	534.2	271	192.6	169.8	217.8	0.39
Roane County	1,770	421.8	401.2	443.3	769	173.5	161.1	186.8	0.41
Scott County	608	448.6	412.8	486.9	331	235.5	210.4	263.0	0.52
Sevier County	3,453	514.0	496.3	532.3	1,258	187.7	177.1	198.7	0.37
Union County	556	423.1	387.3	461.7	245	189.5	165.8	215.8	0.45
Mid-Cumberland Region	46,942	458.0	453.7	462.2	16,019	163.4	160.8	166.0	0.36
Cheatham County	1,200	500.4	471.1	531.0	487	210.0	191.0	230.6	0.42
Davidson County	15,782	454.0	446.8	461.4	5,448	162.3	157.9	166.8	0.36
Dickson County	1,719	530.2	504.8	556.6	675	211.5	195.5	228.5	0.40
Houston County	302	507.6	449.7	571.6	133	221.0	183.8	264.5	0.44
Humphreys County	675	515.1	475.4	557.5	250	182.2	159.8	207.1	0.35
Montgomery County	3,721	452.6	437.7	467.8	1,400	183.7	173.9	193.9	0.41
Robertson County	1,927	464.1	443.0	485.9	733	184.0	170.6	198.2	0.40
Rutherford County	6,621	454.9	443.7	466.4	2,155	162.2	155.2	169.4	0.36
Stewart County	477	495.8	450.5	544.8	205	209.7	181.3	241.8	0.42
Sumner County	5,185	467.0	454.1	480.3	1,801	164.8	157.2	172.8	0.35
Trousdale County	257	470.6	413.4	533.8	99	189.2	152.9	231.7	0.40
Williamson County	5,481	447.8	435.6	460.2	1,392	121.1	144.6	127.8	0.27
Wilson County	3,595	436.0	421.4	450.9	1,241	157.0	148.1	166.2	0.36
Northeast Region	17,290	472.1	464.8	479.5	6,826	179.5	175.1	183.9	0.38
Carter County	1,526	363.8	344.9	383.6	689	156.6	144.8	169.2	0.43
Greene County	2,528	496.6	476.5	517.4	987	187.2	175.4	199.7	0.38
Hancock County	209	430.8	371.3	498.1	95	193.8	155.3	240.2	0.45
Hawkins County	2,000	483.8	461.9	506.5	802	191.9	178.4	206.2	0.40
Johnson County	596	434.2	398.7	472.5	307	216.7	192.5	243.6	0.50
Sullivan County	5,647	486.3	473.1	499.8	2,167	177.0	169.4	184.8	0.36
Unicoi County	605	449.5	412.1	489.7	286	195.3	172.6	220.8	0.43
Washington County	4,179	499.6	484.1	515.5	1,493	175.0	166.0	184.3	0.35
Northwest Region	8,637	505.4	494.4	516.6	3,511	197.7	191.1	204.5	0.39
Benton County	681	547.5	504.6	593.4	303	228.7	202.7	257.7	0.42
Carroll County	1,102	562.6	528.4	598.5	473	229.2	208.5	251.5	0.41
Crockett County	473	491.9	447.2	540.1	190	194.2	167.0	224.9	0.39
Dyer County	1,149	487.5	458.9	517.4	497	204.4	186.5	223.6	0.42
Gibson County	1,678	522.0	496.8	548.3	658	197.9	182.8	213.9	0.38
Henry County	1,289	503.1	474.6	533.1	505	189.7	173.0	207.8	0.38
Lake County	221	493.4	429.5	564.9	88	198.9	159.0	246.6	0.40
Obion County	1065	487.9	458.0	519.5	408	181.4	163.8	200.6	0.37
Weakley County	979	463.6	433.8	494.9	389	172.8	155.8	191.4	0.37

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

South Central Region	12,564	482.7	474.1	491.5	4,831	183.8	178.5	189.1	0.38
Bedford County	1,309	463.2	437.9	489.6	546	198.4	181.7	216.1	0.43
Coffee County	1,737	492.6	469.2	517.0	676	190.3	176.0	205.5	0.39
Giles County	899	427.3	398.6	457.8	342	160.8	143.7	179.5	0.38
Hickman County	802	499.2	464.3	536.1	303	189.1	168.0	212.3	0.38
Lawrence County	1,430	506.4	479.8	534.1	556	191.6	175.8	208.5	0.38
Lewis County	384	440.4	395.3	489.7	174	193.6	164.8	226.6	0.44
Lincoln County	893	374.7	349.6	401.2	412	168.6	152.4	186.3	0.45
Marshall County	1085	528.6	496.7	562.2	373	182.5	164.0	202.6	0.35
Maury County	3,084	548.3	528.4	568.7	1008	179.4	168.2	191.1	0.33
Moore County	150	314.7	264.0	373.5	69	143.5	110.7	184.5	0.46
Perry County	283	495.6	436.2	561.5	140	235.0	196.5	279.8	0.47
Wayne County	508	437.4	399.2	478.7	232	190.8	166.7	217.8	0.44
Southeast Region	21,257	466.0	459.5	472.5	7,844	168.3	164.5	172.2	0.36
Bledsoe County	364	350.7	314.6	390.3	163	159.1	135.2	186.7	0.45
Bradley County	2,950	445.5	429.2	462.2	1,123	168.0	158.2	178.3	0.38
Franklin County	1,292	444.7	419.7	470.9	504	169.6	154.7	185.7	0.38
Grundy County	498	514.1	468.0	563.8	225	231.1	200.9	265.0	0.45
Hamilton County	10,864	471.8	462.7	481.1	3,673	155.5	150.4	160.7	0.33
McMinn County	1,704	457.2	435.0	480.5	687	179.5	166.0	193.9	0.39
Marion County	974	487.8	456.2	521.1	382	186.0	167.4	206.4	0.38
Meigs County	429	509.1	459.2	563.5	197	227.2	195.2	263.4	0.45
Polk County	580	475.0	435.5	517.5	264	207.8	182.9	235.6	0.44
Rhea County	1,175	535.2	504.1	567.9	455	205.8	186.9	226.1	0.38
Sequatchie County	427	406.7	367.2	449.6	171	158.4	134.7	185.5	0.39
Southwest Region	34,787	461.1	456.1	466.1	13,118	176.4	173.3	179.5	0.38
Chester County	468	443.2	402.8	486.6	199	178.0	153.8	205.3	0.40
Decatur County	438	470.0	424.8	519.3	178	185.2	158.2	216.4	0.39
Fayette County	1,165	387.2	364.0	411.6	447	148.1	134.2	163.3	0.38
Hardeman County	924	543.5	508.1	580.8	345	207.7	185.9	231.6	0.38
Hardin County	839	425.6	395.8	457.3	353	172.3	154.1	192.3	0.40
Haywood County	583	484.8	444.5	528.0	226	187.4	163.0	214.7	0.39
Henderson County	866	464.9	433.6	498.0	373	199.7	179.5	221.7	0.43
Lauderdale County	784	495.3	460.4	532.2	343	219.5	196.4	244.7	0.44
McNairy County	957	518.6	484.8	554.3	374	197.6	177.5	219.5	0.38
Madison County	2,780	452.9	435.7	470.6	1,064	171.6	161.2	182.5	0.38
Shelby County	23,323	461.5	455.4	467.6	8,514	172.8	169.1	176.6	0.37
Tipton County	1,660	466.9	444.1	490.6	702	204.9	189.7	221.1	0.44
Upper-Cumberland Region	11,761	470.2	461.4	479.2	4,702	182.5	177.2	188.0	0.39
Cannon County	449	476.2	431.7	524.4	189	198.5	170.6	230.1	0.42
Clay County	231	364.8	317.0	419.0	102	150.9	122.6	185.4	0.41
Cumberland County	2,390	436.7	417.2	457.1	882	155.2	144.2	167.1	0.36
DeKalb County	601	437.6	402.3	475.5	255	187.8	165.0	213.2	0.43
Fentress County	653	479.9	441.6	520.9	289	211.7	187.0	239.2	0.44
Jackson County	328	351.2	311.6	395.2	167	169.9	144.0	200.1	0.48
Macon County	697	485.4	449.0	524.0	300	206.3	183.2	231.7	0.43
Overton County	734	462.7	428.6	499.0	391	242.6	218.5	269.0	0.52
Pickett County	158	356.3	297.5	425.4	74	156.8	121.4	202.2	0.44
Putnam County	2,395	517.5	496.4	539.2	845	179.0	167.0	191.8	0.35
Smith County	677	535.0	494.1	578.6	225	182.8	159.0	209.2	0.34
Van Buren County	156	332.4	279.6	393.8	97	207.2	166.2	257.0	0.62
Warren County	1,304	492.9	465.8	521.2	507	190.4	173.9	208.2	0.39
White County	988	520.3	487.2	555.3	379	192.3	173.2	213.3	0.37

^aStatistic not displayed due to fewer than 11 cases.

* Excludes those with intersex conditions and transgender individuals.

**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.

Data Source

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

TABLE 12. LUNG AND BRONCHUS CANCER, BY RESIDENT COUNTY, TENNESSEE, 2015-2019

	Incidence				Mortality				M:I
	Count	Rate	Lower CI	Upper CI	Count	Rate	Lower CI	Upper CI	Ratio †
Tennessee	31,329	73.4	72.6	74.3	20,624	49.0	48.3	49.7	0.67
East Region	6,954	79.9	78.0	81.9	4,445	51.7	50.1	53.2	0.65
Anderson County	410	71.9	64.9	79.5	272	47.7	42.1	54.0	0.66
Blount County	780	79.1	73.6	85.0	451	46.3	42.0	50.9	0.59
Campbell County	333	108.1	96.6	120.8	241	79.1	69.2	90.1	0.73
Claiborne County	270	112.8	99.4	127.7	159	68.2	57.8	80.2	0.60
Cocke County	247	87.8	76.9	100.1	177	63.8	54.5	74.5	0.73
Grainger County	183	102.0	87.4	118.9	124	71.3	59.0	85.9	0.70
Hamblen County	354	79.3	71.2	88.2	225	50.8	44.3	58.1	0.64
Jefferson County	356	88.6	79.5	98.7	215	54.6	47.3	62.7	0.62
Knox County	2,008	71.0	67.9	74.3	1,210	43.2	40.8	45.8	0.61
Loudon County	369	78.8	70.6	87.9	215	45.5	39.3	52.5	0.58
Monroe County	356	97.6	87.5	108.8	240	68.6	60.0	78.4	0.70
Morgan County	130	85.2	70.9	101.9	84	56.3	44.7	70.3	0.66
Roane County	318	69.8	62.1	78.4	239	52.3	45.8	59.6	0.75
Scott County	139	96.1	80.5	114.0	118	80.9	66.7	97.4	0.84
Sevier County	568	78.5	72.0	85.5	387	54.7	49.2	60.7	0.70
Union County	133	98.0	81.6	117.1	88	69.1	55.1	85.9	0.71
Mid-Cumberland Region	6,804	66.9	65.3	68.6	4,339	43.7	42.3	45.0	0.65
Cheatham County	206	84.2	72.6	97.2	158	67.1	56.6	79.1	0.80
Davidson County	2,210	64.2	61.5	67.0	1,397	41.3	39.1	43.6	0.64
Dickson County	316	94.2	84.0	105.5	205	62.8	54.3	72.2	0.67
Houston County	68	109.9	84.7	141.2	49	77.9	57.2	104.9	0.71
Humphreys County	117	83.9	69.1	101.3	74	51.5	40.3	65.4	0.61
Montgomery County	585	74.6	68.5	81.1	397	50.5	45.5	55.9	0.68
Robertson County	339	82.0	73.3	91.5	229	56.1	48.9	64.1	0.68
Rutherford County	1011	72.2	67.7	77.0	596	44.9	41.2	48.8	0.62
Stewart County	92	89.2	71.7	110.5	62	61.1	46.6	79.3	0.68
Sumner County	797	70.3	65.4	75.4	504	45.1	41.1	49.3	0.64
Trousdale County	55	102.0	76.3	133.8	37	67.5	47.2	94.0	0.66
Williamson County	451	39.1	35.4	43.0	265	23.7	20.8	26.8	0.61
Wilson County	557	65.7	60.2	71.6	366	45.2	40.5	50.2	0.69
Northeast Region	3,045	77.8	75.0	80.7	2,078	52.9	50.7	55.3	0.68
Carter County	272	60.9	53.8	68.9	199	44.5	38.4	51.4	0.73
Greene County	424	76.6	69.3	84.6	332	60.4	54.0	67.6	0.79
Hancock County	45	90.3	64.6	124.1	35	71.1	48.5	101.8	0.79
Hawkins County	442	99.8	90.5	109.9	275	63.2	55.8	71.5	0.63
Johnson County	113	77.1	63.3	93.7	98	66.2	53.5	81.7	0.86
Sullivan County	971	77.6	72.7	82.8	627	49.9	46.0	54.1	0.64
Unicoi County	94	62.9	50.4	78.1	84	54.8	43.4	68.8	0.87
Washington County	684	78.4	72.6	84.7	428	48.5	43.9	53.4	0.62
Northwest Region	1,629	89.6	85.3	94.2	1,119	61.8	58.2	65.7	0.69
Benton County	144	104.9	88.0	124.8	103	75.8	61.5	93.2	0.72
Carroll County	222	107.5	93.5	123.3	156	74.8	63.3	88.0	0.70
Crockett County	98	96.9	78.4	119.0	52	51.7	38.5	68.6	0.53
Dyer County	234	93.2	81.4	106.3	164	66.2	56.3	77.4	0.71
Gibson County	308	90.6	80.7	101.6	204	60.0	52.0	69.1	0.66
Henry County	209	76.3	66.1	88.0	165	60.2	51.2	70.6	0.79
Lake County	54	119.8	89.5	157.9	25	52.1	33.4	78.7	0.43
Obion County	192	82.0	70.6	95.0	125	54.6	45.3	65.6	0.67
Weakley County	168	74.6	63.5	87.3	125	55.0	45.6	65.9	0.74

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

South Central Region	2,270	83.5	80.0	87.1	1,443	53.6	50.8	56.5	0.64
Bedford County	218	75.1	65.3	86.0	153	54.1	45.7	63.6	0.72
Coffee County	301	83.9	74.5	94.2	177	49.1	42.0	57.1	0.59
Giles County	170	75.6	64.4	88.5	93	42.7	34.3	52.8	0.56
Hickman County	189	111.4	95.8	129.0	105	60.4	49.3	73.6	0.54
Lawrence County	266	90.0	79.4	101.8	177	59.7	51.1	69.4	0.66
Lewis County	72	78.1	60.6	99.8	63	69.6	53.0	90.5	0.89
Lincoln County	169	66.8	56.9	78.2	116	46.2	38.0	55.8	0.69
Marshall County	202	94.2	81.4	108.7	112	53.9	44.2	65.3	0.57
Maury County	509	87.0	79.4	95.2	297	52.3	46.4	58.8	0.60
Moore County	22	42.3	26.3	66.7	23	47.0	29.5	73.0	1.11
Perry County	61	99.5	75.6	129.7	49	82.0	60.2	110.3	0.82
Wayne County	91	75.7	60.7	93.7	78	64.6	50.9	81.4	0.85
Southeast Region	3,525	73.8	71.3	76.3	2,260	47.6	45.7	49.7	0.64
Bledsoe County	69	63.6	49.2	81.6	56	54.8	41.1	72.1	0.86
Bradley County	482	69.8	63.6	76.5	332	48.6	43.5	54.2	0.70
Franklin County	215	70.6	61.3	81.2	150	49.1	41.4	58.1	0.70
Grundy County	94	89.5	72.1	110.5	60	59.4	45.1	77.5	0.66
Hamilton County	1,632	68.4	65.1	71.9	955	40.2	37.6	42.9	0.59
McMinn County	315	79.2	70.5	88.8	226	57.0	49.7	65.2	0.72
Marion County	188	87.4	75.0	101.5	110	49.9	40.9	60.6	0.57
Meigs County	69	78.0	59.9	100.5	52	58.8	43.3	78.7	0.75
Polk County	136	105.9	88.3	126.4	85	66.1	52.5	82.7	0.62
Rhea County	248	108.0	94.8	122.8	171	75.9	64.8	88.6	0.70
Sequatchie County	77	66.3	52.0	83.9	63	56.0	42.8	72.8	0.84
Southwest Region	4,996	64.9	63.0	66.7	3,436	45.3	43.8	46.9	0.70
Chester County	86	76.0	60.6	94.5	56	50.0	37.7	65.5	0.66
Decatur County	103	106.1	86.0	130.3	63	65.9	50.0	86.1	0.62
Fayette County	158	46.1	39.1	54.4	124	37.3	30.9	44.9	0.81
Hardeman County	153	87.8	74.1	103.5	112	66.5	54.5	80.6	0.76
Hardin County	169	79.5	67.7	93.3	121	57.4	47.4	69.4	0.72
Haywood County	92	71.6	57.3	88.8	61	49.6	37.6	64.6	0.69
Henderson County	169	86.2	73.5	100.7	113	58.5	48.1	70.8	0.68
Lauderdale County	157	96.3	81.6	113.1	123	76.6	63.4	91.8	0.80
McNairy County	182	91.4	78.3	106.3	125	62.2	51.6	74.6	0.68
Madison County	432	67.7	61.3	74.6	288	46.1	40.8	51.9	0.68
Shelby County	3,013	59.6	57.5	61.9	2,036	40.8	39.0	42.6	0.68
Tipton County	282	78.5	69.4	88.5	214	61.6	53.4	70.7	0.78
Upper-Cumberland Region	2,097	78.0	74.7	81.5	1,499	56.3	53.5	59.3	0.72
Cannon County	76	76.6	60.2	96.8	51	52.0	38.5	69.1	0.68
Clay County	40	57.9	41.2	81.2	30	42.9	28.8	63.6	0.74
Cumberland County	363	61.0	54.4	68.4	258	44.8	39.1	51.4	0.73
DeKalb County	132	91.8	76.5	109.6	92	66.4	53.2	82.2	0.72
Fentress County	137	95.3	79.4	113.8	105	75.0	60.9	91.9	0.79
Jackson County	81	81.5	64.0	103.2	74	70.4	55.0	90.1	0.86
Macon County	125	80.5	66.7	96.5	109	72.2	59.0	87.6	0.90
Overton County	163	94.9	80.7	111.4	125	72.9	60.5	87.5	0.77
Pickett County	27	51.5	33.7	79.5	33	67.0	45.3	99.0	1.30
Putnam County	397	82.3	74.3	91.0	260	54.6	48.0	61.8	0.66
Smith County	120	90.2	74.4	108.6	66	52.5	40.3	67.5	0.58
Van Buren County	31	63.8	42.2	94.7	28	58.7	38.3	88.3	0.92
Warren County	236	83.8	73.3	95.5	147	52.7	44.4	62.2	0.63
White County	169	83.2	71.0	97.3	121	60.8	50.3	73.1	0.73

*Statistic not displayed due to fewer than 11 cases.

* Excludes those with intersex conditions and transgender individuals.

**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, 2015-2019

	Incidence				Mortality				M:I Ratio †
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Tennessee	24,269	118.4	116.9	119.9	3,182	19.6	18.9	20.3	0.17
East Region	4,621	110.2	107.0	113.5	570	16.8	15.5	18.3	0.15
Anderson County	308	111.4	99.1	125.0	33	13.7	9.3	19.5	0.12
Blount County	454	96.7	87.9	106.4	58	15.3	11.6	19.9	0.16
Campbell County	174	117.5	100.5	136.9	21	16.3	10.0	25.5	0.14
Claiborne County	144	124.4	104.4	147.6	13	13.1	6.8	23.3	0.11
Cocke County	140	97.7	81.7	116.4	23	21.6	13.4	33.2	0.22
Grainger County	97	104.6	84.3	129.2	21	29.8	17.8	47.2	0.28
Hamblen County	248	121.5	106.6	138.0	22	13.6	8.4	20.8	0.11
Jefferson County	198	95.9	82.8	110.8	26	15.8	10.1	23.6	0.16
Knox County	1,569	117.5	111.6	123.6	170	15.7	13.4	18.3	0.13
Loudon County	266	110.7	97.3	125.8	24	11.7	7.4	18.1	0.11
Monroe County	149	82.7	69.5	98.0	25	20.7	13.1	31.1	0.25
Morgan County	105	130.9	106.6	159.8	18	32.1	18.4	51.7	0.25
Roane County	189	84.9	72.9	98.7	30	16.0	10.7	23.3	0.19
Scott County	65	96.2	73.7	123.9	18	30.8	17.8	49.6	0.32
Sevier County	443	127.9	115.9	141.0	59	22.4	16.9	29.2	0.18
Union County	72	96.3	74.7	123.1	^	^	^	^	^
Mid-Cumberland Region	6,192	124.3	121.1	127.6	720	19.7	18.2	21.2	0.16
Cheatham County	160	126.0	106.1	148.8	13	13.7	6.8	24.3	0.11
Davidson County	2,054	127.6	121.9	133.5	260	21.2	18.6	24.0	0.17
Dickson County	182	113.6	97.1	132.1	27	21.2	13.7	31.2	0.19
Houston County	28	89.6	58.8	133.5	^	^	^	^	^
Humphreys County	73	105.3	82.2	133.9	14	22.7	12.2	39.3	0.22
Montgomery County	425	110.6	99.9	122.1	61	21.8	16.5	28.1	0.20
Robertson County	202	96.2	83.0	111.0	31	21.3	14.2	30.4	0.22
Rutherford County	882	123.8	115.4	132.7	95	20.3	16.3	25.0	0.16
Stewart County	45	85.6	62.0	116.9	^	^	^	^	^
Sumner County	697	124.5	115.1	134.4	70	16.6	12.8	21.1	0.13
Trousdale County	32	115.2	77.4	165.3	^	^	^	^	^
Williamson County	934	150.6	140.7	161.1	81	18.2	14.4	22.8	0.12
Wilson County	478	113.3	103.0	124.4	53	18.8	13.8	24.8	0.17
Northeast Region	1,741	92.2	87.8	96.8	284	17.9	15.8	20.2	0.19
Carter County	124	56.8	47.0	68.3	26	13.8	8.9	20.6	0.24
Greene County	278	108.1	95.4	122.1	34	15.6	10.7	22.3	0.14
Hancock County	18	75.6	42.7	126.6	^	^	^	^	^
Hawkins County	175	79.9	68.2	93.4	34	20.0	13.7	28.4	0.25
Johnson County	65	92.5	70.9	119.6	15	23.4	12.9	40.2	0.25
Sullivan County	568	94.9	87.1	103.2	86	16.9	13.5	21.0	0.18
Unicoi County	59	78.3	59.4	102.8	14	21.1	11.4	37.2	0.27
Washington County	454	106.7	96.9	117.3	72	20.8	16.2	26.3	0.19
Northwest Region	1,114	131.0	123.3	139.1	153	21.4	18.0	25.1	0.16
Benton County	78	119.7	93.8	151.9	16	32.1	18.3	53.3	0.27
Carroll County	134	139.6	116.5	166.4	20	23.8	14.3	37.5	0.17
Crockett County	59	128.1	96.9	167.0	^	^	^	^	^
Dyer County	118	103.2	84.9	124.4	24	26.5	16.8	39.8	0.26
Gibson County	218	141.6	123.1	162.2	36	26.3	18.3	36.7	0.19
Henry County	220	169.1	147.0	194.2	19	17.0	10.1	27.6	0.10
Lake County	18	75.6	43.7	123.5	^	^	^	^	^
Obion County	129	117.2	97.4	140.4	15	16.9	9.2	28.7	0.14
Weakley County	140	130.2	109.3	154.4	^	^	^	^	^

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

South Central Region	1,490	112.3	106.5	118.3	195	19.0	16.4	21.9	0.17
Bedford County	170	124.4	105.8	145.5	30	30.6	20.2	44.1	0.25
Coffee County	221	124.1	108.0	142.1	29	19.5	13.0	28.1	0.16
Giles County	94	86.8	69.7	107.3	12	14.4	7.3	25.8	0.17
Hickman County	73	85.8	66.9	109.0	^	^	^	^	^
Lawrence County	160	113.6	96.3	133.2	17	14.4	8.3	23.5	0.13
Lewis County	52	119.8	88.5	159.9	^	^	^	^	^
Lincoln County	83	69.2	54.8	86.7	20	22.0	13.3	34.4	0.32
Marshall County	149	139.5	117.5	164.8	47	18.0	13.1	24.3	0.13
Maury County	378	131.3	117.9	145.9	13	15.9	8.2	28.0	0.12
Moore County	19	68.1	41.0	111.8	^	^	^	^	^
Perry County	27	81.2	53.0	121.8	^	^	^	^	^
Wayne County	64	107.0	81.9	138.1	^	^	^	^	^
Southeast Region	2,613	113.6	109.2	118.2	380	20.0	18.0	22.2	0.18
Bledsoe County	41	74.5	52.7	103.2	^	^	^	^	^
Bradley County	297	89.5	79.4	100.6	53	20.9	15.6	27.5	0.23
Franklin County	169	111.3	94.8	130.2	27	18.8	12.3	28.0	0.17
Grundy County	51	104.9	77.4	140.3	15	35.7	19.5	61.0	0.34
Hamilton County	1,525	135.1	128.3	142.3	205	21.6	18.7	24.9	0.16
McMinn County	162	83.9	71.2	98.4	14	17.3	9.2	29.7	0.21
Marion County	111	106.2	86.7	129.3	^	^	^	^	^
Meigs County	42	96.5	68.1	134.1	^	^	^	^	^
Polk County	46	70.2	50.9	95.7	11	20.4	9.8	38.5	0.3
Rhea County	122	108.1	89.3	130.1	11	11.9	5.8	21.9	0.11
Sequatchie County	47	83.0	60.5	112.5	^	^	^	^	^
Southwest Region	5,175	141.7	137.7	145.8	705	25.1	23.2	27.0	0.18
Chester County	64	119.5	91.6	154.0	^	^	^	^	^
Decatur County	43	90.8	65.3	125.0	^	^	^	^	^
Fayette County	200	123.8	106.7	143.4	24	18.3	11.5	27.9	0.15
Hardeman County	142	166.6	139.7	197.6	17	26.3	15.1	42.4	0.16
Hardin County	103	97.5	79.3	119.6	^	^	^	^	^
Haywood County	87	144.1	114.6	179.9	13	26.4	13.8	46.3	0.18
Henderson County	99	109.2	88.3	134.0	12	15.2	7.7	27.1	0.1
Lauderdale County	87	111.9	89.2	139.0	13	23.5	12.2	40.5	0.21
McNairy County	113	118.9	97.5	144.2	41	19.3	13.6	26.5	0.16
Madison County	406	134.0	120.9	148.2	13	16.8	8.7	29.5	0.13
Shelby County	3,600	150.4	145.3	155.6	525	29.6	27.0	32.3	0.20
Tipton County	231	127.7	111.3	146.1	21	15.6	9.5	24.0	0.12
Upper-Cumberland Region	1,282	98.2	92.8	103.8	175	15.7	13.4	18.3	0.16
Cannon County	50	101.9	75.2	136.2	^	^	^	^	^
Clay County	24	70.9	45.2	110.5	^	^	^	^	^
Cumberland County	323	105.1	93.5	118.2	38	13.3	9.4	19.0	0.13
DeKalb County	58	85.2	64.1	111.7	^	^	^	^	^
Fentress County	73	104.3	80.7	133.7	11	18.7	8.9	35.6	0.18
Jackson County	26	48.3	31.1	74.6	^	^	^	^	^
Macon County	68	94.3	72.5	120.9	27	16.7	10.9	24.7	^
Overton County	63	75.4	57.6	97.9	16	24.2	13.5	40.4	0.32
Pickett County	11	45.3	22.2	92.1	^	^	^	^	^
Putnam County	231	99.2	86.7	113.2	35	17.9	12.4	25.1	0.18
Smith County	83	129.7	102.2	163.0	^	^	^	^	^
Van Buren County	15	58.6	32.0	103.9	^	^	^	^	^
Warren County	133	100.8	84.0	120.2	18	16.2	9.5	25.9	0.16
White County	124	126.3	104.7	151.7	14	17.1	9.2	29.4	0.14

^Statistic not displayed due to fewer than 11 cases.

**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, 2015-2019

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	26,574	124.5	122.9	126.0	4,815	21.7	21.0	22.3	0.17
East Region	5,480	130.5	126.9	134.2	897	20.4	19.0	21.8	0.16
Anderson County	349	125.7	112.1	140.7	80	26.3	20.6	33.2	0.21
Blount County	586	128.2	117.5	139.8	82	18.2	14.3	23.0	0.14
Campbell County	181	119.3	101.7	139.4	35	23.5	16.2	33.4	0.20
Claiborne County	145	130.4	108.7	155.4	30	26.3	17.4	38.6	0.20
Cocke County	174	128.9	109.4	151.4	24	17.3	10.9	26.7	0.13
Grainger County	100	116.9	93.9	144.4	17	20.2	11.1	34.5	0.17
Hamblen County	243	109.7	95.8	125.2	47	19.7	14.3	26.6	0.18
Jefferson County	264	136.7	119.7	155.6	40	19.1	13.5	26.7	0.14
Knox County	1,976	139.0	132.8	145.5	278	18.7	16.5	21.1	0.13
Loudon County	322	144.6	127.7	163.4	44	18.4	13.0	25.8	0.13
Monroe County	193	116.0	99.3	135.0	38	22.9	15.9	32.3	0.20
Morgan County	105	162.4	131.2	199.2	17	26.2	14.7	43.8	0.16
Roane County	236	116.8	101.1	134.4	37	15.1	10.5	21.6	0.13
Scott County	70	99.9	77.3	127.5	26	35.7	23.0	53.3	0.36
Sevier County	471	134.7	122.2	148.2	81	22.6	17.8	28.4	0.17
Union County	65	99.4	75.5	128.9	21	28.4	17.5	44.8	0.29
Mid-Cumberland Region	6,995	127.6	124.6	130.7	1,138	20.7	19.5	21.9	0.16
Cheatham County	177	140.1	119.5	163.4	28	21.5	14.0	31.7	0.15
Davidson County	2,408	128.7	123.5	134.1	435	22.6	20.4	24.8	0.18
Dickson County	228	137.0	119.2	156.7	43	25.5	18.2	34.8	0.19
Houston County	38	130.2	90.1	183.7	^	^	^	^	^
Humphreys County	88	131.9	104.6	164.9	^	^	^	^	^
Montgomery County	524	117.2	107.2	127.8	78	18.4	14.5	23.0	0.16
Robertson County	268	121.8	107.3	137.9	45	20.6	14.9	27.8	0.17
Rutherford County	1012	127.4	119.5	135.6	155	20.5	17.3	24.1	0.16
Stewart County	62	130.6	98.1	171.2	^	^	^	^	^
Sumner County	694	118.5	109.7	128.0	119	19.7	16.3	23.7	0.17
Trousdale County	28	99.5	64.9	147.1	^	^	^	^	^
Williamson County	956	143.8	134.6	153.4	136	20.8	17.4	24.8	0.14
Wilson County	512	117.7	107.5	128.8	78	18.1	14.2	22.7	0.15
Northeast Region	2,200	118.0	112.9	123.4	414	20.7	18.6	22.9	0.18
Carter County	193	88.7	75.9	103.3	40	16.7	11.7	23.5	0.19
Greene County	299	116.2	102.6	131.3	48	17.3	12.6	23.4	0.15
Hancock County	24	92.4	57.3	144.0	^	^	^	^	^
Hawkins County	257	120.3	105.3	137.0	44	19.6	14.1	26.8	0.16
Johnson County	75	114.7	88.2	147.8	12	18.2	8.7	35.3	0.16
Sullivan County	710	119.7	110.5	129.6	151	23.3	19.5	27.6	0.19
Unicoi County	82	122.1	95.4	154.9	23	32.1	19.7	50.8	0.26
Washington County	560	131.6	120.4	143.5	91	20.2	16.2	25.1	0.15
Northwest Region	1,055	121.6	114.0	129.7	219	22.5	19.5	25.9	0.19
Benton County	69	113.4	86.6	146.8	18	23.3	13.7	39.4	0.21
Carroll County	133	132.1	109.6	158.2	25	21.5	13.8	32.7	0.16
Crockett County	54	113.7	83.7	151.2	12	21.1	10.3	39.6	0.19
Dyer County	150	127.7	107.3	150.8	32	24.4	16.4	35.2	0.19
Gibson County	194	118.8	102.0	137.8	41	21.6	15.3	29.8	0.18
Henry County	167	123.1	103.9	145.5	28	19.3	12.5	29.3	0.16
Lake County	20	102.0	60.0	165.5	^	^	^	^	^
Obion County	136	118.1	98.3	141.2	24	21.4	13.4	32.9	0.18
Weakley County	132	118.5	98.1	142.1	35	29.2	20.0	41.5	0.25

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

South Central Region	1,609	119.9	113.9	126.2	296	21.2	18.8	23.8	0.18
Bedford County	170	112.7	96.0	131.6	28	18.4	12.1	27.0	0.16
Coffee County	219	114.6	99.5	131.5	46	24.9	18.0	33.7	0.22
Giles County	113	100.3	81.9	122.1	22	19.6	12.0	31.0	0.20
Hickman County	90	112.9	89.7	140.6	22	26.5	16.4	41.3	0.23
Lawrence County	191	133.8	114.9	155.1	41	25.0	17.8	34.4	0.19
Lewis County	34	71.9	49.0	103.4	^	^	^	^	^
Lincoln County	103	84.6	68.4	103.8	30	23.0	15.3	33.8	0.27
Marshall County	154	149.2	125.8	175.8	25	23.3	14.8	35.1	0.16
Maury County	432	148.5	134.3	163.8	53	17.1	12.7	22.7	0.12
Moore County	22	92.8	56.6	146.9	^	^	^	^	^
Perry County	30	100.6	65.5	149.5	^	^	^	^	^
Wayne County	51	87.1	63.6	117.7	13	21.6	10.9	40.1	0.25
Southeast Region	2,773	118.6	114.0	123.3	516	20.8	19.0	22.7	0.18
Bledsoe County	42	85.6	60.5	119.4	^	^	^	^	^
Bradley County	407	118.4	106.9	131.0	84	24.2	19.1	30.2	0.20
Franklin County	137	89.8	74.5	107.5	27	20.0	12.8	29.9	0.22
Grundy County	61	126.0	94.5	165.5	15	27.0	14.8	47.3	0.21
Hamilton County	1,497	124.7	118.2	131.5	277	21.0	18.6	23.8	0.17
McMinn County	213	110.5	95.5	127.3	34	18.0	12.2	25.8	0.16
Marion County	123	118.9	97.8	143.5	26	23.6	15.1	35.8	0.20
Meigs County	49	116.9	84.7	158.4	^	^	^	^	^
Polk County	64	114.3	86.5	148.6	13	20.0	10.6	36.1	0.17
Rhea County	137	126.7	105.3	151.2	18	16.8	9.8	27.2	0.13
Sequatchie County	43	83.0	58.6	114.9	^	^	^	^	^
Southwest Region	4,950	122.5	119.0	126.1	1,053	25.6	24.0	27.2	0.21
Chester County	45	83.7	60.0	113.8	20	30.2	18.4	47.9	0.36
Decatur County	47	90.8	65.5	124.8	11	20.1	9.3	40.7	0.22
Fayette County	148	100.0	83.3	119.5	27	18.6	12.1	27.9	0.19
Hardeman County	117	140.4	114.7	170.6	22	28.3	17.1	44.7	0.20
Hardin County	84	89.4	69.8	113.1	18	17.6	10.1	29.5	0.20
Haywood County	76	122.5	95.1	155.9	13	19.3	10.0	34.7	0.16
Henderson County	100	104.6	84.2	128.6	26	25.5	16.5	38.3	0.24
Lauderdale County	88	104.8	83.3	130.5	23	27.2	17.0	41.8	0.26
McNairy County	114	122.8	100.0	149.7	22	24.8	15.1	39.0	0.20
Madison County	369	115.4	103.4	128.4	65	19.9	15.2	25.7	0.17
Shelby County	3,560	128.5	124.2	132.9	756	27.1	25.1	29.1	0.21
Tipton County	202	108.5	93.7	125.1	50	27.3	20.1	36.3	0.25
Upper-Cumberland Region	1,504	119.2	112.9	125.8	282	20.8	18.3	23.5	0.17
Cannon County	63	133.6	101.3	173.6	^	^	^	^	^
Clay County	30	103.3	67.4	153.9	^	^	^	^	^
Cumberland County	284	112.8	97.9	129.6	51	19.8	14.0	27.5	0.18
DeKalb County	89	125.5	100.0	156.2	14	17.9	9.7	31.6	0.14
Fentress County	78	108.1	84.1	137.8	13	19.5	9.8	35.6	0.18
Jackson County	37	78.7	53.8	113.0	^	^	^	^	^
Macon County	96	125.0	100.8	153.7	15	20.2	11.2	34.1	0.16
Overton County	82	102.7	80.5	129.7	21	23.8	14.5	37.8	0.23
Pickett County	24	110.7	65.8	179.0	^	^	^	^	^
Putnam County	323	135.7	120.7	152.1	60	22.9	17.3	29.8	0.17
Smith County	79	122.5	96.1	154.3	13	19.4	10.2	34.4	0.16
Van Buren County	17	69.0	39.5	117.7	^	^	^	^	^
Warren County	182	132.6	113.4	154.5	35	23.5	16.2	33.3	0.18
White County	120	123.9	101.5	150.1	26	25.4	16.2	38.7	0.21

^Statistic not displayed due to fewer than 11 cases.

**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, 2015-2019

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	16,151	40.1	39.4	40.7	6,059	14.9	14.6	15.3	0.37
East Region	3,005	37.7	36.3	39.1	1,089	13.2	12.4	14.0	0.35
Anderson County	205	38.0	32.8	43.9	82	14.7	11.6	18.5	0.39
Blount County	291	33.8	29.8	38.1	107	11.3	9.2	13.7	0.33
Campbell County	148	52.7	44.2	62.4	36	13.3	9.2	18.8	0.25
Claiborne County	92	41.3	33.0	51.2	37	16.6	11.6	23.3	0.40
Cocke County	95	35.1	28.2	43.4	29	10.7	7.0	15.9	0.30
Grainger County	68	42.5	32.6	54.8	24	14.6	9.2	22.6	0.34
Hamblen County	166	38.5	32.8	45.0	62	14.1	10.8	18.3	0.37
Jefferson County	158	42.9	36.2	50.6	47	12.2	8.9	16.5	0.28
Knox County	953	36.1	33.8	38.5	327	12.2	10.9	13.6	0.34
Loudon County	144	37.8	31.2	45.4	46	10.5	7.4	14.6	0.28
Monroe County	132	40.3	33.4	48.3	50	14.6	10.7	19.5	0.36
Morgan County	52	37.6	27.9	49.9	19	13.7	8.2	21.9	0.36
Roane County	126	31.1	25.7	37.6	67	15.2	11.7	19.6	0.49
Scott County	51	40.0	29.5	53.0	24	16.9	10.7	25.6	0.42
Sevier County	292	44.7	39.5	50.5	115	17.3	14.2	20.9	0.39
Union County	32	25.1	17.0	36.1	14	11.6	6.2	20.1	0.46
Mid-Cumberland Region	3,890	38.8	37.6	40.1	1,440	14.8	14.1	15.6	0.38
Cheatham County	96	41.6	33.3	51.3	40	17.0	11.9	23.7	0.41
Davidson County	1,309	38.6	36.5	40.8	482	14.8	13.5	16.2	0.38
Dickson County	151	47.5	40.0	56.0	54	17.4	13.0	22.9	0.37
Houston County	38	62.3	43.5	87.5	13	21.2	11.0	38.1	0.34
Humphreys County	75	58.0	45.1	73.8	20	15.4	9.3	24.3	0.27
Montgomery County	370	46.0	41.3	51.0	154	21.0	17.7	24.7	0.46
Robertson County	162	39.3	33.4	46.1	58	14.1	10.6	18.4	0.36
Rutherford County	528	37.2	34.0	40.6	201	15.2	13.1	17.5	0.41
Stewart County	47	48.1	35.0	65.1	23	22.7	14.3	35.0	0.47
Sumner County	446	40.5	36.7	44.5	160	14.6	12.4	17.1	0.36
Trousdale County	30	55.4	37.1	79.8	15	28.7	15.8	48.1	0.52
Williamson County	374	30.8	27.7	34.2	110	9.3	7.6	11.2	0.30
Wilson County	264	33.3	29.3	37.7	110	13.8	11.3	16.8	0.41
Northeast Region	1,329	36.8	34.8	38.9	517	13.7	12.5	15.0	0.37
Carter County	113	25.8	21.1	31.3	55	12.5	9.4	16.6	0.48
Greene County	241	48.8	42.6	55.7	76	14.8	11.6	18.8	0.30
Hancock County	11	25.0	12.4	46.6	^	^	^	^	^
Hawkins County	150	37.7	31.7	44.6	51	12.6	9.3	16.9	0.33
Johnson County	49	37.4	27.2	50.7	19	14.1	8.3	23.0	0.38
Sullivan County	425	37.4	33.8	41.4	158	12.9	10.9	15.3	0.34
Unicoi County	57	42.3	31.5	56.0	25	17.9	11.4	27.5	0.42
Washington County	283	33.9	30.0	38.3	127	14.7	12.2	17.6	0.43
Northwest Region	774	45.1	41.9	48.5	320	18.3	16.3	20.5	0.41
Benton County	62	49.7	37.5	65.3	19	14.6	8.4	24.2	0.29
Carroll County	106	53.3	43.3	65.1	46	22.7	16.5	30.8	0.43
Crockett County	49	49.7	36.5	66.6	25	25.4	16.3	38.2	0.51
Dyer County	101	42.2	34.2	51.6	41	17.1	12.2	23.5	0.41
Gibson County	144	45.0	37.8	53.2	53	15.7	11.7	20.8	0.35
Henry County	112	44.6	36.3	54.5	48	19.0	13.8	25.8	0.43
Lake County	30	67.2	44.9	97.5	^	^	^	^	^
Obion County	94	42.9	34.4	53.0	35	15.2	10.6	21.6	0.35
Weakley County	76	35.4	27.7	44.8	45	20.2	14.6	27.4	0.57

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

South Central Region	1,101	43.0	40.4	45.7	412	15.9	14.4	17.6	0.37
Bedford County	119	42.5	35.1	51.1	53	18.9	14.1	24.9	0.44
Coffee County	158	45.9	38.8	53.9	63	17.6	13.5	22.7	0.38
Giles County	82	39.1	30.8	49.1	31	14.9	10.0	21.7	0.38
Hickman County	58	37.4	28.2	48.9	18	10.9	6.4	17.6	0.29
Lawrence County	122	43.3	35.8	52.0	44	15.5	11.2	21.0	0.36
Lewis County	44	50.0	35.8	68.7	13	14.2	7.3	25.9	0.28
Lincoln County	99	42.0	33.8	51.7	44	18.9	13.6	25.9	0.45
Marshall County	88	42.5	33.8	52.7	27	12.8	8.3	18.9	0.30
Maury County	250	46.3	40.6	52.7	81	15.4	12.1	19.2	0.33
Moore County	13	29.0	14.9	52.5	^	^	^	^	^
Perry County	21	43.5	25.8	68.9	^	^	^	^	^
Wayne County	47	40.5	29.6	54.7	25	21.3	13.6	32.2	0.53
Southeast Region	1,765	39.5	37.6	41.5	632	13.9	12.8	15.1	0.35
Bledsoe County	20	20.0	12.0	31.9	^	^	^	^	^
Bradley County	239	37.0	32.4	42.2	80	12.0	9.5	15.1	0.32
Franklin County	122	42.8	35.2	51.6	31	10.9	7.3	15.9	0.25
Grundy County	56	62.7	46.6	82.9	20	24.4	14.4	39.0	0.39
Hamilton County	863	38.2	35.6	40.9	295	12.7	11.2	14.3	0.33
McMinn County	160	42.9	36.2	50.5	66	17.3	13.3	22.3	0.40
Marion County	96	50.5	40.5	62.4	42	21.6	15.4	29.7	0.43
Meigs County	30	34.9	23.0	51.5	18	21.8	12.6	35.7	0.62
Polk County	56	46.2	34.6	61.0	20	17.8	10.7	28.4	0.39
Rhea County	76	35.1	27.5	44.3	36	17.1	11.9	24.0	0.49
Sequatchie County	47	44.0	32.0	59.5	15	14.4	8.0	24.7	0.33
Southwest Region	3,236	43.6	42.0	45.1	1,255	16.8	15.9	17.8	0.39
Chester County	46	44.7	32.4	60.4	23	20.6	12.9	31.6	0.46
Decatur County	44	49.8	35.3	69.0	12	15.7	7.7	28.9	0.32
Fayette County	91	30.8	24.5	38.4	46	14.5	10.5	19.8	0.47
Hardeman County	88	51.0	40.7	63.3	39	23.4	16.6	32.4	0.46
Hardin County	72	35.7	27.7	45.6	25	11.8	7.6	18.1	0.33
Haywood County	58	47.5	35.6	62.5	26	23.5	15.0	35.3	0.49
Henderson County	95	54.0	43.4	66.4	31	17.9	12.0	25.8	0.33
Lauderdale County	83	53.3	42.2	66.5	39	24.8	17.5	34.4	0.47
McNairy County	81	43.9	34.5	55.3	34	18.1	12.4	25.8	0.41
Madison County	249	41.5	36.4	47.3	88	14.1	11.3	17.6	0.34
Shelby County	2,189	44.0	42.2	46.0	826	16.7	15.5	17.9	0.38
Tipton County	140	38.8	32.4	46.0	66	19.4	14.9	24.9	0.50
Upper-Cumberland Region	1,044	43.0	40.3	45.8	396	16.1	14.5	17.8	0.37
Cannon County	57	61.0	45.8	80.1	19	20.1	12.0	32.2	0.33
Clay County	23	37.8	23.7	58.8	12	19.2	9.8	36.0	0.51
Cumberland County	185	34.8	29.3	41.2	60	11.1	8.1	14.9	0.32
DeKalb County	54	40.5	30.0	53.8	25	18.8	12.1	28.3	0.46
Fentress County	62	47.0	35.4	61.5	26	19.7	12.6	29.8	0.42
Jackson County	38	42.1	28.9	60.0	15	16.5	8.7	29.4	0.39
Macon County	60	41.9	31.8	54.4	25	17.8	11.4	26.6	0.42
Overton County	67	44.5	34.0	57.4	35	23.2	15.8	33.1	0.52
Pickett County	18	49.8	27.0	85.5	^	^	^	^	^
Putnam County	208	46.5	40.2	53.5	68	15.0	11.6	19.1	0.32
Smith County	59	46.5	35.1	60.6	22	18.3	11.3	28.3	0.39
Van Buren County	13	29.7	14.8	55.0	11	21.9	10.6	43.1	0.74
Warren County	119	46.5	38.3	56.1	38	15.0	10.5	20.8	0.32
White County	81	42.7	33.6	53.7	35	18.7	13.0	26.5	0.44

^Statistic not displayed due to fewer than 11 cases.

* Excludes those with intersex conditions and transgender individuals.

**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, BY RESIDENT COUNTY, TENNESSEE, 2015-2019

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	8,293	21.0	20.5	21.4	1,067	2.7	2.5	2.8	0.13
East Region	2,235	28.6	27.4	29.9	232	2.9	2.6	3.4	0.10
Anderson County	113	22.9	18.6	27.8	14	2.7	1.4	4.7	0.12
Blount County	297	34.3	30.4	38.7	31	3.4	2.3	4.9	0.10
Campbell County	51	17.9	13.1	23.9	^	^	^	^	^
Claiborne County	46	21.4	15.4	29.1	^	^	^	^	^
Cocke County	50	20.1	14.6	27.1	^	^	^	^	^
Grainger County	44	29.3	20.7	40.3	^	^	^	^	^
Hamblen County	111	29.6	24.2	35.9	^	^	^	^	^
Jefferson County	118	34.0	27.9	41.2	^	^	^	^	^
Knox County	786	29.5	27.4	31.7	72	2.7	2.1	3.4	0.09
Loudon County	151	33.0	27.5	39.5	23	5.3	3.3	8.5	0.16
Monroe County	94	29.7	23.7	36.9	^	^	^	^	^
Morgan County	28	20.6	13.5	30.3	^	^	^	^	^
Roane County	96	23.7	18.9	29.5	13	3.2	1.7	5.8	0.14
Scott County	25	20.0	12.7	30.1	^	^	^	^	^
Sevier County	194	31.4	26.9	36.4	24	3.9	2.4	5.9	0.12
Union County	31	25.5	16.9	37.0	^	^	^	^	^
Mid-Cumberland Region	1,786	17.9	17.0	18.7	268	2.8	2.5	3.1	0.16
Cheatham County	43	18.6	13.2	25.5	14	6.8	3.6	11.6	0.37
Davidson County	505	14.8	13.5	16.2	69	2.1	1.6	2.7	0.14
Dickson County	68	21.6	16.6	27.6	^	^	^	^	^
Houston County	^	^	^	^	^	^	^	^	^
Humphreys County	22	18.2	11.1	28.6	^	^	^	^	^
Montgomery County	109	13.4	10.9	16.2	15	2.1	1.1	3.4	0.16
Robertson County	77	19.7	15.5	24.8	13	3.5	1.8	6.1	0.18
Rutherford County	237	16.4	14.3	18.7	38	2.8	2.0	3.9	0.17
Stewart County	22	21.7	13.5	34.0	^	^	^	^	^
Sumner County	237	22.9	20.0	26.0	38	3.3	2.3	4.6	0.14
Trousdale County	^	^	^	^	^	^	^	^	^
Williamson County	302	25.0	22.2	28.1	24	2.3	1.4	3.4	0.09
Wilson County	153	19.5	16.4	22.9	37	4.6	3.2	6.4	0.24
Northeast Region	999	28.9	27.0	30.8	95	2.7	2.1	3.3	0.09
Carter County	92	25.3	20.1	31.6	^	^	^	^	^
Greene County	139	29.9	24.8	35.8	15	3.3	1.7	5.7	0.11
Hancock County	^	^	^	^	^	^	^	^	^
Hawkins County	106	27.1	21.9	33.2	^	^	^	^	^
Johnson County	21	16.3	9.9	26.0	^	^	^	^	^
Sullivan County	339	30.3	27.0	33.9	37	3.0	2.1	4.2	0.10
Unicoi County	33	25.2	16.9	36.6	^	^	^	^	^
Washington County	261	32.1	28.2	36.4	19	2.4	1.4	3.9	0.07
Northwest Region	271	16.8	14.8	19.1	51	2.9	2.1	3.8	0.17
Benton County	23	22.2	13.6	34.7	^	^	^	^	^
Carroll County	34	16.2	11.0	23.2	^	^	^	^	^
Crockett County	14	14.8	7.9	25.7	^	^	^	^	^
Dyer County	33	15.0	10.2	21.4	^	^	^	^	^
Gibson County	38	12.7	8.9	17.7	13	4.0	2.1	7.1	0.31
Henry County	46	20.8	14.9	28.4	11	4.0	2.0	7.8	0.19
Lake County	^	^	^	^	^	^	^	^	^
Obion County	33	14.9	10.1	21.5	^	^	^	^	^
Weakley County	43	21.9	15.6	30.1	^	^	^	^	^

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

South Central Region	420	16.7	15.1	18.4	87	3.4	2.7	4.3	0.20
Bedford County	50	18.4	13.6	24.4	^	^	^	^	^
Coffee County	55	16.0	11.9	21.0	14	4.1	2.2	7.0	0.26
Giles County	30	15.2	9.9	22.3	^	^	^	^	^
Hickman County	18	12.7	7.4	20.5	^	^	^	^	^
Lawrence County	54	20.1	14.9	26.5	15	5.9	3.2	9.9	0.29
Lewis County	12	17.4	8.6	31.5	^	^	^	^	^
Lincoln County	43	18.8	13.3	25.9	^	^	^	^	^
Marshall County	32	15.4	10.4	22.2	^	^	^	^	^
Maury County	100	17.7	14.3	21.8	20	3.3	2.0	5.3	0.19
Moore County	^	^	^	^	^	^	^	^	^
Perry County	^	^	^	^	^	^	^	^	^
Wayne County	15	13.4	7.4	23.0	^	^	^	^	^
Southeast Region	1041	23.7	22.2	25.2	120	2.6	2.2	3.2	0.11
Bledsoe County	20	19.9	12.0	31.7	^	^	^	^	^
Bradley County	117	18.4	15.1	22.2	17	2.7	1.6	4.3	0.15
Franklin County	56	18.6	13.9	24.5	11	3.7	1.8	7.1	0.20
Grundy County	15	15.1	8.2	26.3	^	^	^	^	^
Hamilton County	577	26.2	24.0	28.5	47	2.0	1.4	2.7	0.08
McMinn County	90	25.8	20.5	32.1	15	4.1	2.2	7.0	0.16
Marion County	46	22.5	16.2	30.7	^	^	^	^	^
Meigs County	23	25.0	15.6	39.0	^	^	^	^	^
Polk County	22	17.5	10.7	27.6	^	^	^	^	^
Rhea County	56	27.1	20.2	35.7	11	5.3	2.5	9.8	0.20
Sequatchie County	19	20.0	11.6	32.4	^	^	^	^	^
Southwest Region	860	11.9	11.1	12.8	124	1.7	1.4	2.0	0.14
Chester County	18	19.8	11.4	31.8	^	^	^	^	^
Decatur County	^	^	^	^	^	^	^	^	^
Fayette County	55	19.7	14.6	26.3	^	^	^	^	^
Hardeman County	19	11.1	6.6	17.7	^	^	^	^	^
Hardin County	28	14.7	9.5	22.0	^	^	^	^	^
Haywood County	14	12.1	6.4	21.2	^	^	^	^	^
Henderson County	25	14.9	9.4	22.4	^	^	^	^	^
Lauderdale County	16	11.2	6.3	18.4	^	^	^	^	^
McNairy County	23	14.0	8.6	21.6	^	^	^	^	^
Madison County	78	12.9	10.1	16.2	12	2.0	1.0	3.5	0.16
Shelby County	528	10.9	10.0	11.9	61	1.2	0.9	1.6	0.11
Tipton County	47	14.8	10.8	19.8	^	^	^	^	^
Upper-Cumberland Region	568	23.9	21.9	26.1	90	3.6	2.9	4.5	0.15
Cannon County	16	19.2	10.6	32.2	^	^	^	^	^
Clay County	^	^	^	^	^	^	^	^	^
Cumberland County	151	26.6	22.1	32.0	20	3.9	2.1	6.7	0.15
DeKalb County	26	19.9	12.8	29.9	^	^	^	^	^
Fentress County	27	22.1	13.9	33.8	^	^	^	^	^
Jackson County	^	^	^	^	^	^	^	^	^
Macon County	22	18.1	11.2	27.8	^	^	^	^	^
Overton County	31	21.0	14.0	30.6	^	^	^	^	^
Pickett County	^	^	^	^	^	^	^	^	^
Putnam County	129	29.0	24.0	34.7	14	2.7	1.5	4.7	0.09
Smith County	24	19.6	12.4	29.8	^	^	^	^	^
Van Buren County	^	^	^	^	^	^	^	^	^
Warren County	75	30.0	23.4	38.0	14	5.5	3.0	9.4	0.18
White County	41	23.7	16.6	32.9	^	^	^	^	^

^Statistic not displayed due to fewer than 11 cases.

* Excludes those with intersex conditions and transgender individuals.

**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, 2015-2019

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	5,253	12.6	12.3	13.0	4,586	11.0	10.7	11.3	0.87
East Region	1,047	12.3	11.5	13.1	910	10.7	10.0	11.4	0.87
Anderson County	57	9.7	7.3	12.8	51	8.6	6.4	11.5	0.89
Blount County	117	11.7	9.7	14.2	91	9.1	7.3	11.3	0.78
Campbell County	31	10.5	7.0	15.3	28	9.1	6.0	13.6	0.87
Claiborne County	39	18.3	12.8	25.6	26	12.0	7.7	18.2	0.66
Cocke County	32	11.0	7.4	16.1	28	9.6	6.3	14.3	0.87
Grainger County	25	14.1	9.0	21.4	24	13.9	8.8	21.3	0.99
Hamblen County	53	12.6	9.3	16.6	48	11.1	8.2	14.9	0.88
Jefferson County	45	11.6	8.3	15.8	36	8.9	6.2	12.6	0.77
Knox County	356	12.6	11.3	14.0	328	11.8	10.5	13.2	0.94
Loudon County	59	12.7	9.5	16.9	54	11.2	8.3	15.2	0.88
Monroe County	61	18.3	13.8	23.9	53	16.1	12.0	21.4	0.88
Morgan County	14	9.0	4.8	15.7	11	7.1	3.5	13.4	0.8
Roane County	51	11.3	8.3	15.2	37	8.1	5.7	11.6	0.72
Scott County	13	9.6	5.1	16.8	13	9.4	4.9	16.4	0.98
Sevier County	79	11.4	9.0	14.4	61	8.9	6.8	11.6	0.78
Union County	15	11.7	6.4	19.9	21	16.3	10.0	25.7	1.39
Mid-Cumberland Region	1,298	12.9	12.2	13.6	1082	10.9	10.3	11.6	0.84
Cheatham County	28	12.4	8.1	18.3	31	12.5	8.3	18.1	1.01
Davidson County	465	13.7	12.4	15.0	380	11.5	10.4	12.8	0.84
Dickson County	47	14.6	10.7	19.6	42	13.0	9.3	17.8	0.89
Houston County	^	^	^	^	^	^	^	^	^
Humphreys County	17	11.9	6.8	19.9	13	9.1	4.8	16.5	0.76
Montgomery County	113	15.2	12.5	18.4	101	13.7	11.1	16.8	0.90
Robertson County	59	13.9	10.5	18.2	40	10.0	7.1	13.8	0.72
Rutherford County	183	12.6	10.8	14.6	133	9.5	7.9	11.4	0.75
Stewart County	18	17.7	10.3	29.2	14	13.7	7.4	24.1	0.77
Sumner County	138	12.2	10.2	14.5	129	11.5	9.6	13.7	0.94
Trousdale County	^	^	^	^	^	^	^	^	^
Williamson County	133	10.9	9.1	13.0	106	8.7	7.0	10.5	0.80
Wilson County	83	10.2	8.1	12.8	82	10.1	8.0	12.6	0.99
Northeast Region	467	12.2	11.1	13.4	400	10.2	9.2	11.3	0.84
Carter County	47	10.7	7.8	14.5	49	11.0	8.1	14.8	1.03
Greene County	62	11.5	8.7	15.0	50	8.9	6.6	12.0	0.77
Hancock County	^	^	^	^	^	^	^	^	^
Hawkins County	51	11.7	8.6	15.6	47	10.7	7.8	14.5	0.91
Johnson County	27	18.5	12.1	27.8	26	17.9	11.6	27.2	0.97
Sullivan County	147	12.2	10.2	14.4	120	9.7	8.0	11.7	0.80
Unicoi County	12	8.3	4.2	15.5	13	9.2	4.8	16.7	1.11
Washington County	118	13.5	11.1	16.3	91	10.1	8.1	12.5	0.75
Northwest Region	240	14.0	12.3	16.0	228	13.0	11.3	14.9	0.93
Benton County	16	10.9	6.2	18.9	21	14.8	9.0	23.8	1.36
Carroll County	28	14.0	9.1	20.8	28	12.9	8.5	19.2	0.92
Crockett County	15	15.5	8.6	26.4	15	15.8	8.7	26.7	1.02
Dyer County	31	14.2	9.5	20.4	25	10.8	6.9	16.3	0.76
Gibson County	47	15.0	11.0	20.2	41	13.0	9.3	17.9	0.87
Henry County	36	13.3	9.2	18.9	34	12.4	8.5	17.8	0.93
Lake County	^	^	^	^	^	^	^	^	^
Obion County	35	16.1	11.1	22.9	36	16.3	11.3	23.0	1.01
Weakley County	24	11.0	7.0	16.8	21	9.3	5.7	14.5	0.85

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

South Central Region	345	13.0	11.6	14.5	297	11.2	9.9	12.6	0.86
Bedford County	38	13.4	9.4	18.6	35	12.8	8.8	17.9	0.96
Coffee County	54	15.2	11.4	20.0	39	11.2	7.9	15.5	0.74
Giles County	24	12.3	7.7	18.9	22	11.7	7.1	18.2	0.95
Hickman County	25	16.0	10.2	24.1	18	12.0	7.0	19.3	0.75
Lawrence County	46	15.0	11.0	20.3	34	10.9	7.5	15.5	0.73
Lewis County	^	^	^	^	^	^	^	^	^
Lincoln County	22	8.2	5.1	12.8	23	8.9	5.6	13.7	1.09
Marshall County	28	13.8	9.1	20.3	23	11.4	7.1	17.5	0.83
Maury County	79	13.5	10.6	17.0	65	11.0	8.5	14.2	0.81
Moore County	^	^	^	^	^	^	^	^	^
Perry County	^	^	^	^	^	^	^	^	^
Wayne County	^	^	^	^	11	8.6	4.3	16.4	^
Southeast Region	611	12.9	11.9	14.0	542	11.4	10.5	12.5	0.88
Bledsoe County	17	16.1	9.3	26.8	13	12.1	6.4	21.8	0.75
Bradley County	74	10.6	8.3	13.4	63	9.1	7.0	11.7	0.86
Franklin County	42	13.8	9.9	19.0	40	13.6	9.7	18.9	0.99
Grundy County	22	24.6	14.9	38.6	16	16.3	9.2	27.6	0.66
Hamilton County	299	12.6	11.2	14.2	271	11.4	10.0	12.8	0.90
McMinn County	47	11.6	8.5	15.6	41	10.3	7.4	14.1	0.89
Marion County	33	16.5	11.2	23.7	29	14.8	9.8	21.7	0.90
Meigs County	13	14.4	7.4	26.2	11	13.1	6.3	24.8	0.9
Polk County	19	15.2	9.0	24.8	16	12.1	6.8	20.6	0.80
Rhea County	37	16.2	11.3	22.7	32	14.1	9.6	20.2	0.87
Sequatchie County	^	^	^	^	^	^	^	^	^
Southwest Region	934	12.4	11.6	13.3	848	11.4	10.6	12.2	0.92
Chester County	12	11.5	5.8	20.7	^	^	^	^	^
Decatur County	11	11.2	5.6	21.6	11	10.9	5.4	21.1	0.97
Fayette County	28	9.8	6.4	14.7	34	11.4	7.8	16.4	1.16
Hardeman County	24	14.6	9.2	22.1	19	11.5	6.9	18.4	0.79
Hardin County	23	11.3	7.0	17.6	22	10.1	6.3	15.8	0.89
Haywood County	21	16.5	10.0	26.1	16	12.7	7.2	21.4	0.77
Henderson County	18	9.7	5.6	15.8	19	10.3	6.1	16.5	1.06
Lauderdale County	26	16.6	10.7	24.7	20	12.3	7.5	19.4	0.74
McNairy County	36	18.7	13.0	26.4	36	18.9	13.1	26.7	1.01
Madison County	72	12.1	9.4	15.4	75	12.6	9.9	15.9	1.04
Shelby County	630	12.6	11.6	13.6	545	11.0	10.1	12.0	0.87
Tipton County	33	9.7	6.6	13.8	41	12.4	8.8	16.9	1.28
Upper-Cumberland Region	311	12.3	10.9	13.8	279	10.7	9.5	12.1	0.87
Cannon County	11	13.4	6.4	24.8	13	15.7	8.1	27.7	1.17
Clay County	^	^	^	^	^	^	^	^	^
Cumberland County	72	12.5	9.5	16.4	61	10.4	7.7	13.9	0.83
DeKalb County	20	14.7	8.8	23.3	17	13.1	7.5	21.5	0.89
Fentress County	23	16.6	10.3	25.9	20	14.2	8.4	22.9	0.86
Jackson County	^	^	^	^	^	^	^	^	^
Macon County	13	9.5	4.9	16.7	^	^	^	^	^
Overton County	22	14.6	9.0	22.7	17	11.0	6.3	18.2	0.75
Pickett County	^	^	^	^	^	^	^	^	^
Putnam County	70	14.6	11.3	18.6	56	11.8	8.9	15.5	0.81
Smith County	14	11.2	6.0	19.3	18	13.3	7.7	21.6	1.19
Van Buren County	^	^	^	^	^	^	^	^	^
Warren County	34	13.0	8.9	18.3	27	10.0	6.6	14.8	0.77
White County	17	8.8	5.0	14.6	17	8.6	5.0	14.2	0.98

^Statistic not displayed due to fewer than 11 cases.

* Excludes those with intersex conditions and transgender individuals.

**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, 2015-2019

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	1,441	171.9	163.2	181.0	192	22.9	19.8	26.4	0.13
East Region	261	181.7	160.3	205.1	34	23.5	16.3	32.9	0.13
Anderson County	18	203.2	120.4	321.6	^	^	^	^	^
Blount County	33	226.3	155.7	318.2	^	^	^	^	^
Campbell County	^	^	^	^	^	^	^	^	^
Claiborne County	^	^	^	^	^	^	^	^	^
Cocke County	^	^	^	^	^	^	^	^	^
Grainger County	^	^	^	^	^	^	^	^	^
Hamblen County	15	184.6	103.3	304.6	^	^	^	^	^
Jefferson County	^	^	^	^	^	^	^	^	^
Knox County	94	167.6	135.4	205.2	13	23	12.2	39.4	0.14
Loudon County	12	211.9	109.5	370.7	^	^	^	^	^
Monroe County	^	^	^	^	^	^	^	^	^
Morgan County	^	^	^	^	^	^	^	^	^
Roane County	14	251.5	137.2	423.7	^	^	^	^	^
Scott County	^	^	^	^	^	^	^	^	^
Sevier County	20	180.8	110.4	279.3	^	^	^	^	^
Union County	^	^	^	^	^	^	^	^	^
Mid-Cumberland Region	471	182.6	166.4	199.8	66	25.8	19.9	32.8	0.14
Cheatham County	12	244.6	126.3	427.4	^	^	^	^	^
Davidson County	153	182.9	154.9	214.5	21	25.5	15.8	39	0.14
Dickson County	13	194.3	103.4	332.5	^	^	^	^	^
Houston County	^	^	^	^	^	^	^	^	^
Humphreys County	^	^	^	^	^	^	^	^	^
Montgomery County	50	164.8	122.0	217.7	^	^	^	^	^
Robertson County	13	140.7	74.9	240.7	^	^	^	^	^
Rutherford County	75	171.4	134.8	214.9	^	^	^	^	^
Stewart County	^	^	^	^	^	^	^	^	^
Sumner County	49	205.9	152.3	272.4	^	^	^	^	^
Trousdale County	^	^	^	^	^	^	^	^	^
Williamson County	66	200.6	154.8	255.9	^	^	^	^	^
Wilson County	33	186.1	128.1	261.6	^	^	^	^	^
Northeast Region	91	165.7	133.4	203.6	^	^	^	^	^
Carter County	^	^	^	^	^	^	^	^	^
Greene County	^	^	^	^	^	^	^	^	^
Hancock County	^	^	^	^	^	^	^	^	^
Hawkins County	^	^	^	^	^	^	^	^	^
Johnson County	^	^	^	^	^	^	^	^	^
Sullivan County	31	183.4	124.6	260.6	^	^	^	^	^
Unicoi County	^	^	^	^	^	^	^	^	^
Washington County	27	188.5	124.0	274.9	^	^	^	^	^
Northwest Region	46	150.7	110.3	201.1	^	^	^	^	^
Benton County	^	^	^	^	^	^	^	^	^
Carroll County	^	^	^	^	^	^	^	^	^
Crockett County	^	^	^	^	^	^	^	^	^
Dyer County	^	^	^	^	^	^	^	^	^
Gibson County	^	^	^	^	^	^	^	^	^
Henry County	^	^	^	^	^	^	^	^	^
Lake County	^	^	^	^	^	^	^	^	^
Obion County	^	^	^	^	^	^	^	^	^
Weakley County	^	^	^	^	^	^	^	^	^

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

South Central Region	89	175.1	140.6	215.4	^	^	^	^	^
Bedford County	^	^	^	^	^	^	^	^	^
Coffee County	^	^	^	^	^	^	^	^	^
Giles County	^	^	^	^	^	^	^	^	^
Hickman County	^	^	^	^	^	^	^	^	^
Lawrence County	11	184.4	92.0	330.3	^	^	^	^	^
Lewis County	^	^	^	^	^	^	^	^	^
Lincoln County	^	^	^	^	^	^	^	^	^
Marshall County	^	^	^	^	^	^	^	^	^
Maury County	29	247.2	165.3	355.3	^	^	^	^	^
Moore County	^	^	^	^	^	^	^	^	^
Perry County	^	^	^	^	^	^	^	^	^
Wayne County	^	^	^	^	^	^	^	^	^
Southeast Region	143	173.7	146.4	204.7	17	20.4	11.9	32.6	0.12
Bledsoe County	^	^	^	^	^	^	^	^	^
Bradley County	25	187.6	121.3	277.3	^	^	^	^	^
Franklin County	^	^	^	^	^	^	^	^	^
Grundy County	^	^	^	^	^	^	^	^	^
Hamilton County	70	165.0	128.6	208.4	11	25.8	12.9	46.1	0.16
McMinn County	16	259.3	148.1	421.2	^	^	^	^	^
Marion County	^	^	^	^	^	^	^	^	^
Meigs County	^	^	^	^	^	^	^	^	^
Polk County	^	^	^	^	^	^	^	^	^
Rhea County	^	^	^	^	^	^	^	^	^
Sequatchie County	^	^	^	^	^	^	^	^	^
Southwest Region	254	143.9	126.8	162.8	43	24.3	17.6	32.8	0.17
Chester County	^	^	^	^	^	^	^	^	^
Decatur County	^	^	^	^	^	^	^	^	^
Fayette County	^	^	^	^	^	^	^	^	^
Hardeman County	^	^	^	^	^	^	^	^	^
Hardin County	^	^	^	^	^	^	^	^	^
Haywood County	^	^	^	^	^	^	^	^	^
Henderson County	^	^	^	^	^	^	^	^	^
Lauderdale County	^	^	^	^	^	^	^	^	^
McNairy County	^	^	^	^	^	^	^	^	^
Madison County	^	^	^	^	^	^	^	^	^
Shelby County	189	146.1	126.0	168.5	36	27.7	19.4	38.4	0.19
Tipton County	17	210.8	122.6	337.8	^	^	^	^	^
Upper-Cumberland Region	86	207.6	166.0	256.4	^	^	^	^	^
Cannon County	^	^	^	^	^	^	^	^	^
Clay County	^	^	^	^	^	^	^	^	^
Cumberland County	^	^	^	^	^	^	^	^	^
DeKalb County	^	^	^	^	^	^	^	^	^
Fentress County	^	^	^	^	^	^	^	^	^
Jackson County	^	^	^	^	^	^	^	^	^
Macon County	14	436.1	238.2	731.6	^	^	^	^	^
Overton County	^	^	^	^	^	^	^	^	^
Pickett County	^	^	^	^	^	^	^	^	^
Putnam County	23	241.2	152.5	362.7	^	^	^	^	^
Smith County	^	^	^	^	^	^	^	^	^
Van Buren County	^	^	^	^	^	^	^	^	^
Warren County	^	^	^	^	^	^	^	^	^
White County	^	^	^	^	^	^	^	^	^

^Statistic not displayed due to fewer than 11 cases.

**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, 2015-2019

	Year	Incidence				Mortality				M:I
		Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
All Sites	2015-2017	114,646	475.2	472.3	478.0	42,929	178.1	176.4	179.9	0.37
	2016-2018	116,303	472.1	469.3	474.9	42,894	173.9	172.2	175.6	0.37
	2017-2019	117,800	468.0	465.3	470.8	42,813	169.4	167.8	171.0	0.36
Lung and Bronchus	2015-2017	18,741	75.3	74.2	76.4	12,683	51.6	50.7	52.5	0.69
	2016-2018	18,695	73.0	71.9	74.1	12,277	48.7	47.8	49.5	0.67
	2017-2019	18,918	72.0	70.9	73.0	11,988	46.2	45.3	47.0	0.64
Female Breast	2015-2017	15,683	124.2	122.2	126.3	2,827	21.6	20.8	22.4	0.17
	2016-2018	15,906	124.3	122.3	126.3	2,926	22.0	21.2	22.9	0.18
	2017-2019	16,213	124.4	122.4	126.4	2,935	21.6	20.8	22.4	0.17
Prostate	2015-2017	14,103	117.2	115.2	119.2	1,893	20.2	19.2	21.1	0.17
	2016-2018	14,682	119.5	117.5	121.5	1,914	19.7	18.8	20.7	0.16
	2017-2019	15,208	121.0	119.0	123.0	1,935	19.3	18.4	20.2	0.16
Colon and Rectum	2015-2017	9,663	40.6	39.8	41.5	3,626	15.2	14.7	15.7	0.37
	2016-2018	9,750	40.4	39.6	41.2	3,629	14.9	14.4	15.4	0.37
	2017-2019	9,736	39.6	38.8	40.5	3,681	14.8	14.3	15.3	0.37
Melanoma of the Skin	2015-2017	4,850	20.9	20.3	21.5	662	2.8	2.6	3.0	0.13
	2016-2018	4,704	19.8	19.2	20.4	612	2.6	2.4	2.8	0.13
	2017-2019	5,063	20.9	20.4	21.6	626	2.6	2.4	2.8	0.12
Pancreas	2015-2017	3,108	12.7	12.3	13.2	2,694	11.0	10.6	11.4	0.87
	2016-2018	3,210	12.8	12.4	13.3	2,785	11.2	10.7	11.6	0.88
	2017-2019	3,206	12.6	12.1	13.0	2,843	11.2	10.7	11.6	0.89

^aStatistic not displayed due to fewer than 11 cases.

* Excludes those with intersex conditions and transgender individuals.

**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.

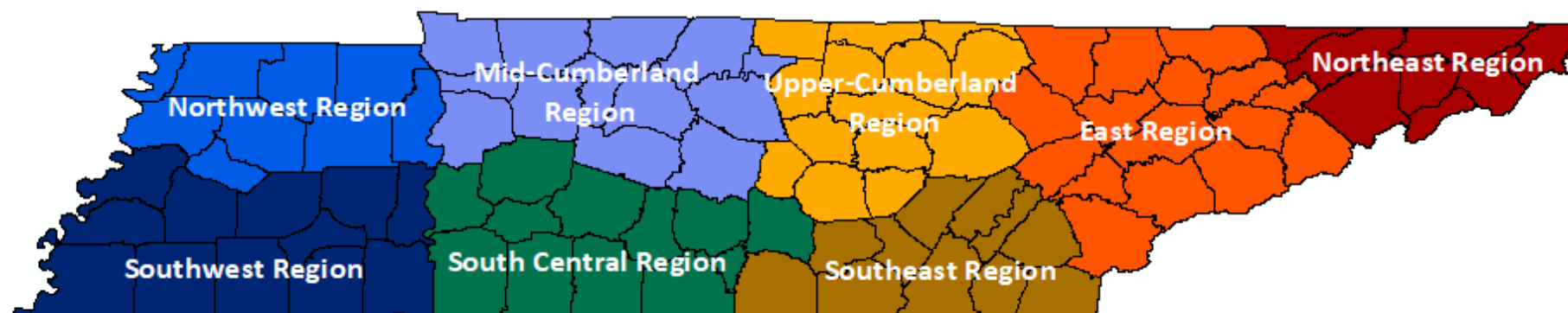
Confidence intervals (Tiwari mod) are 95% for rates.

†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

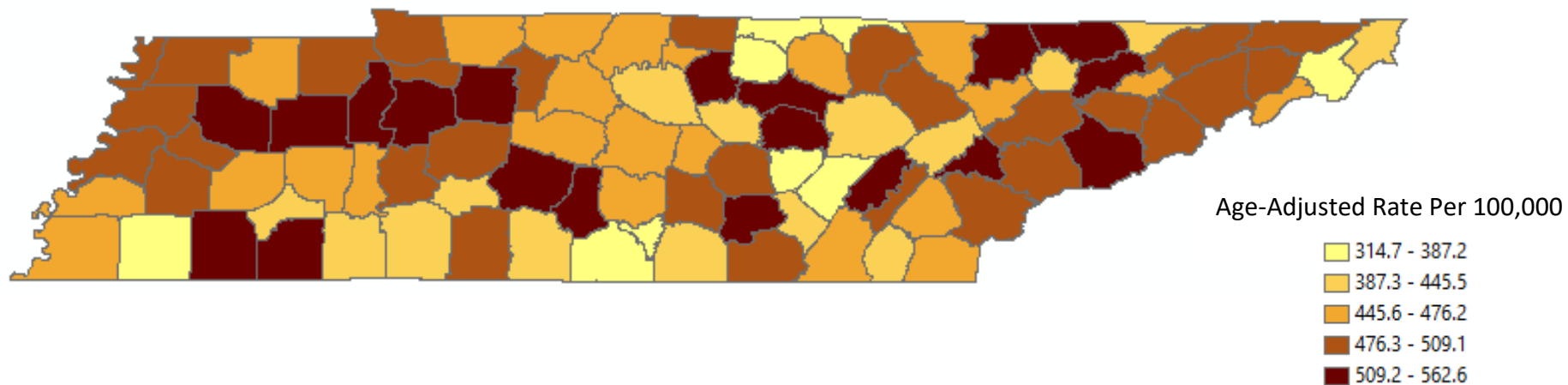
1. TENNESSEE COUNTIES AND REGIONAL GROUPINGS



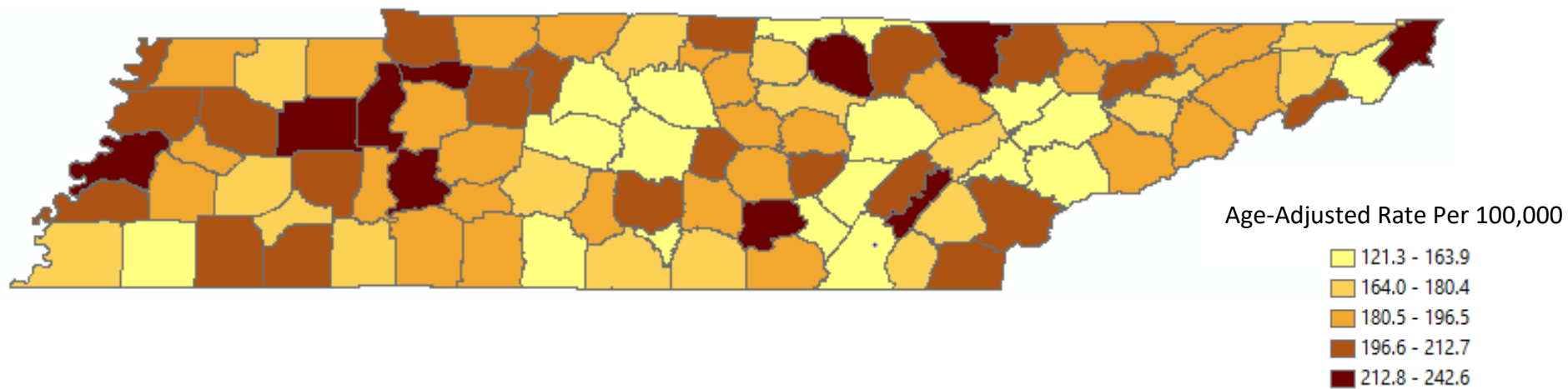
<u>Southwest</u>	<u>Northwest</u>	<u>Mid-Cumberland</u>	<u>South Central</u>	<u>Upper-Cumberland</u>	<u>Southeast</u>	<u>East</u>	<u>Northeast</u>
Chester	Benton	Cheatham	Bedford	Cannon	Bledsoe	Anderson	Carter
Decatur	Carroll	Davidson	Coffee	Clay	Bradley	Blount	Greene
Fayette	Crockett	Dickson	Giles	Cumberland	Franklin	Campbell	Hancock
Hardeman	Dyer	Houston	Hickman	DeKalb	Grundy	Claiborne	Hawkins
Hardin	Gibson	Humphreys	Lawrence	Fentress	Hamilton	Cocke	Johnson
Haywood	Henry	Montgomery	Lewis	Jackson	McMinn	Grainger	Sullivan
Henderson	Lake	Robertson	Lincoln	Macon	Marion	Hamblen	Unicoi
Lauderdale	Obion	Rutherford	Marshall	Overton	Meigs	Jefferson	Washington
McNairy	Weakley	Stewart	Maury	Pickett	Polk	Knox	
Madison		Sumner	Moore	Putnam	Rhea	Loudon	
Shelby		Trousdale	Perry	Smith	Sequatchie	Monroe	
Tipson		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, 2015-2019

Incidence

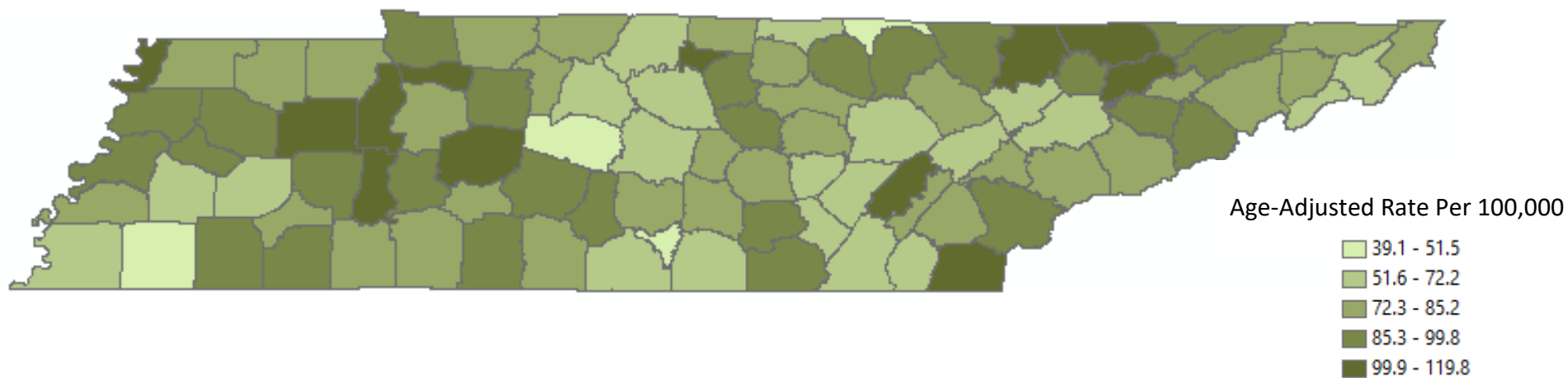


Mortality

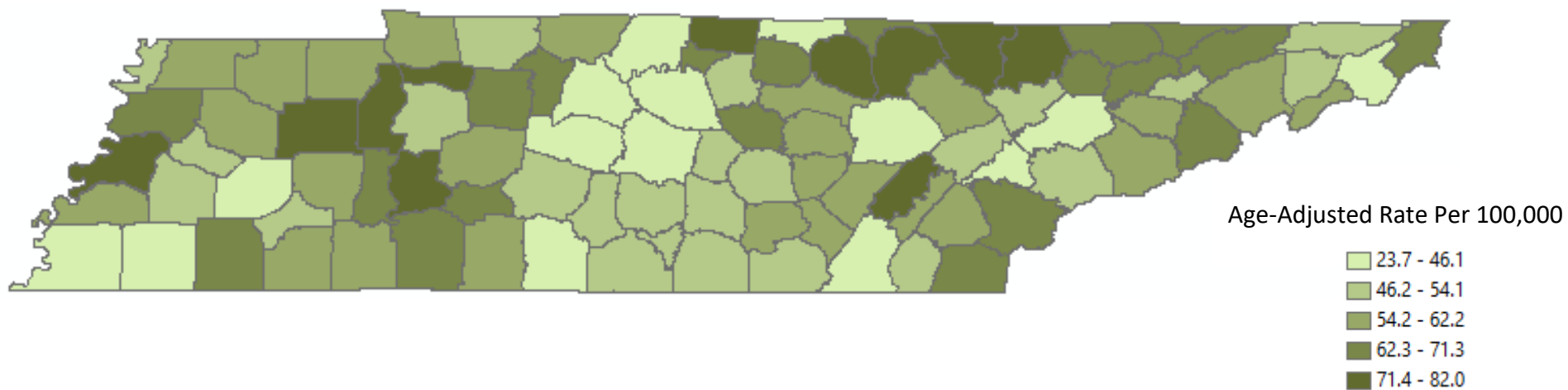


3. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, LUNG, TENNESSEE, 2015-2019

Incidence

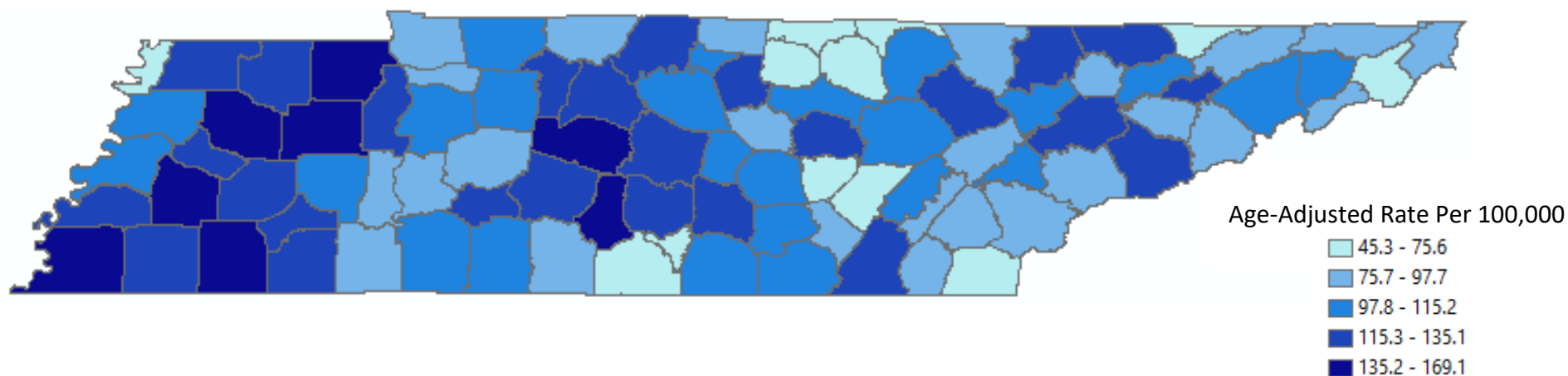


Mortality

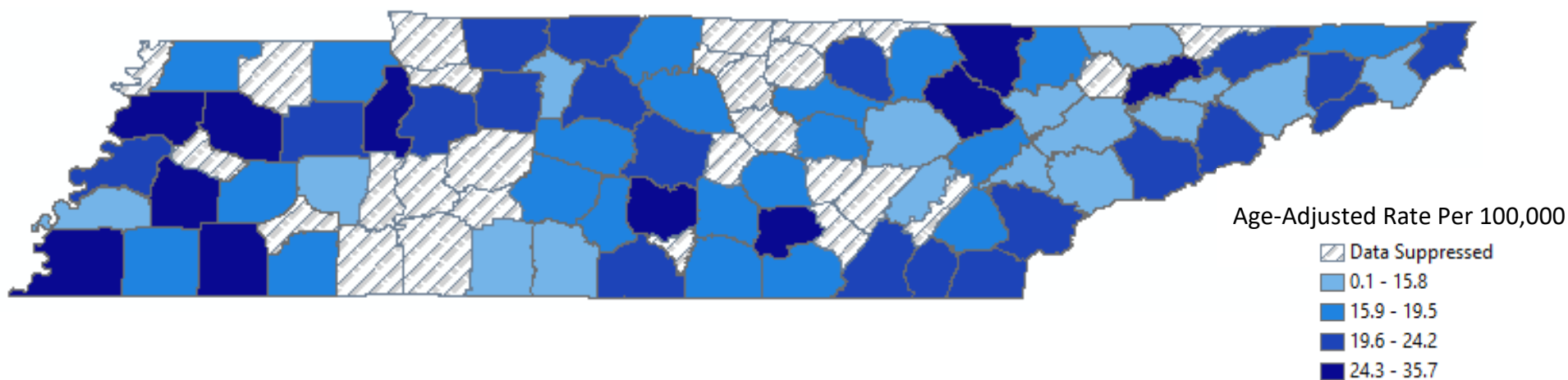


4. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, PROSTATE, TENNESSEE, 2015-2019

Incidence

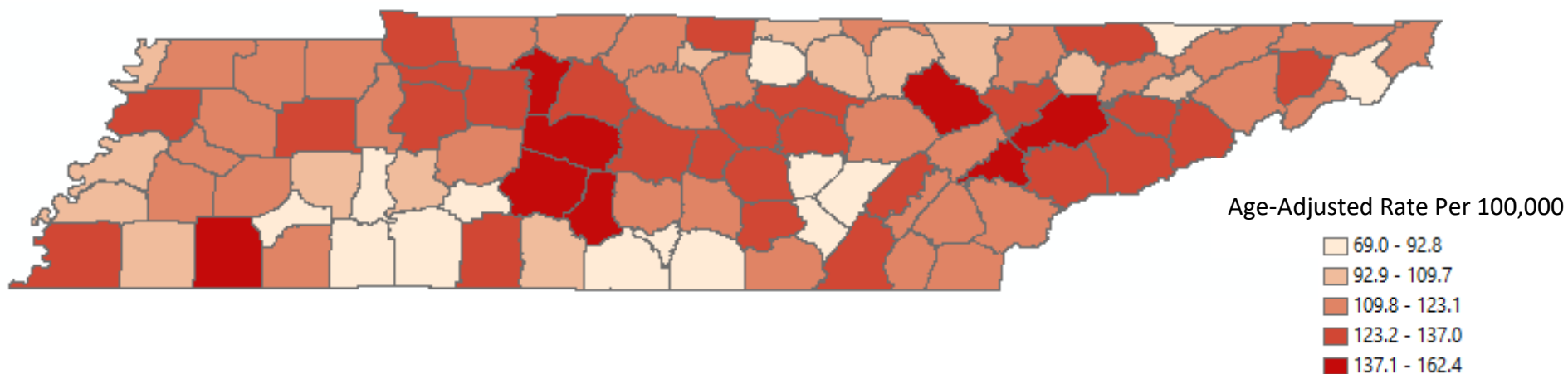


Mortality

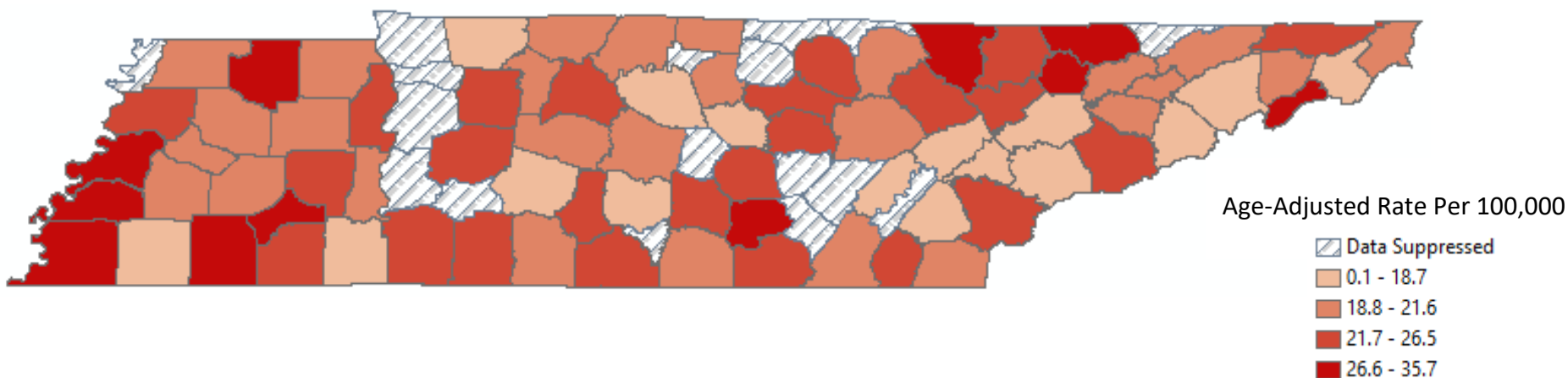


5. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, FEMALE BREAST, TENNESSEE, 2015-2019

Incidence

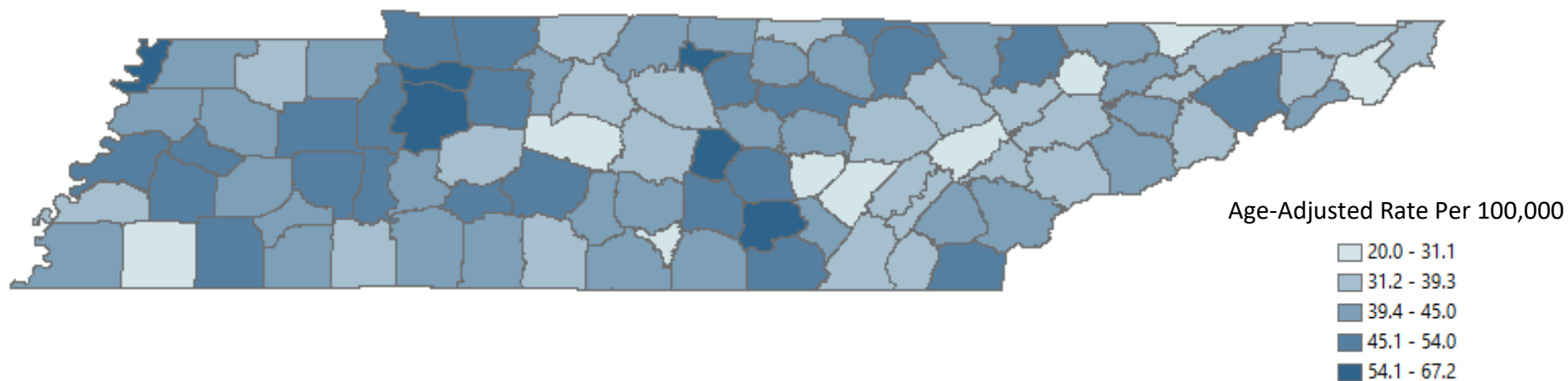


Mortality

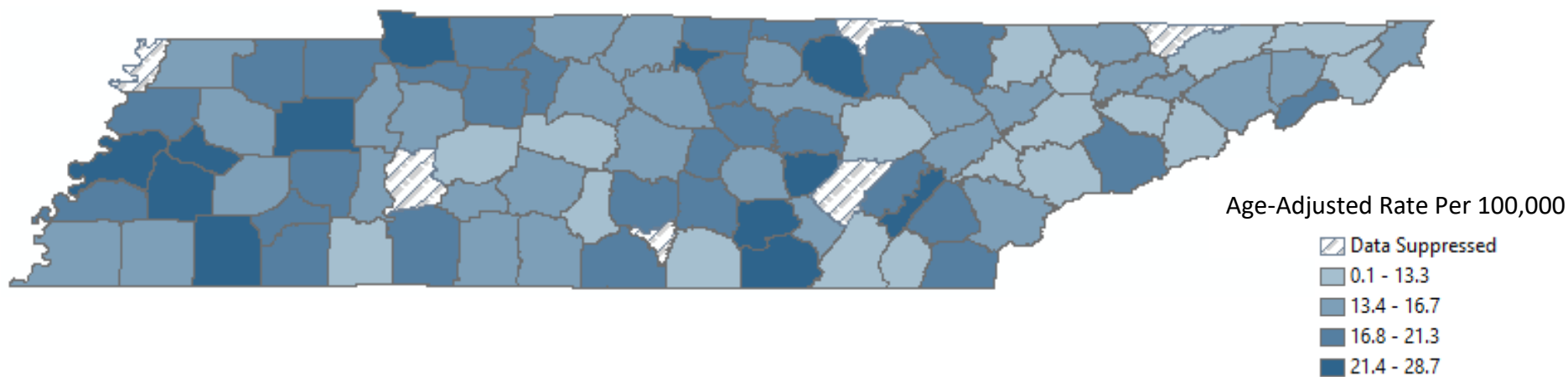


6. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, COLON AND RECTUM, TENNESSEE, 2015-2019

Incidence

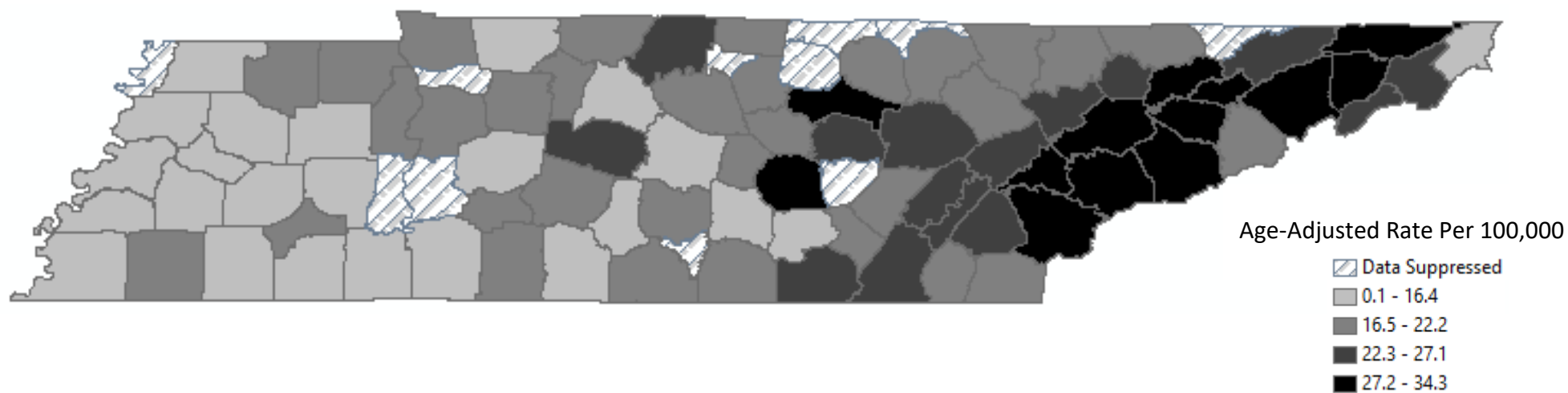


Mortality

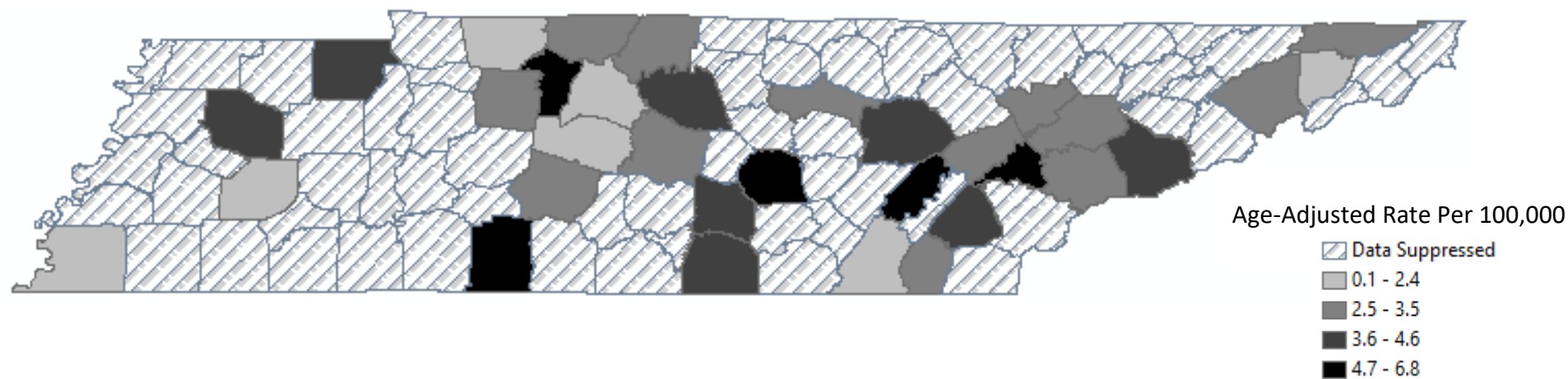


7. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, MELANOMA OF THE SKIN, TENNESSEE, 2015-2019

Incidence

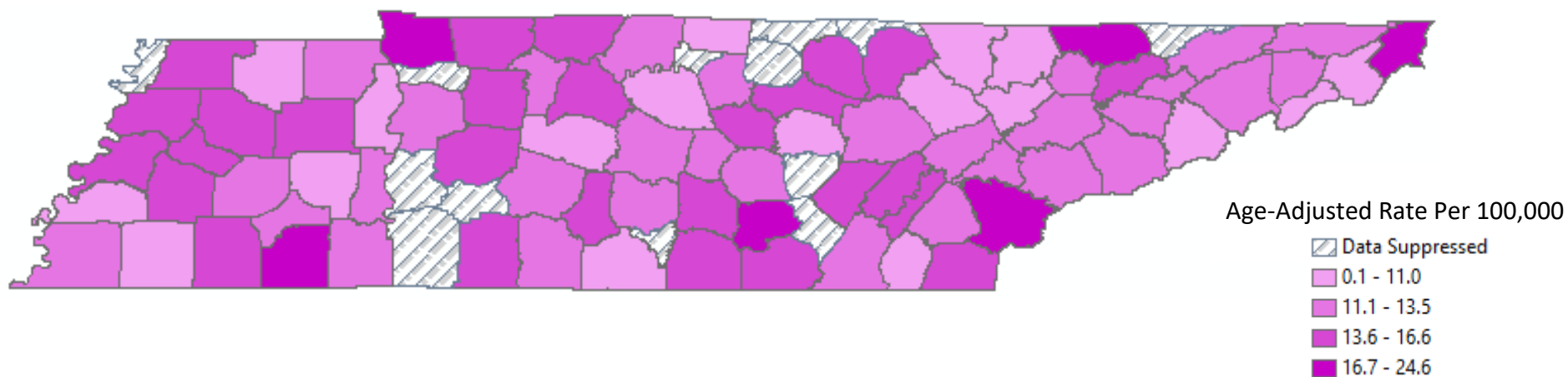


Mortality

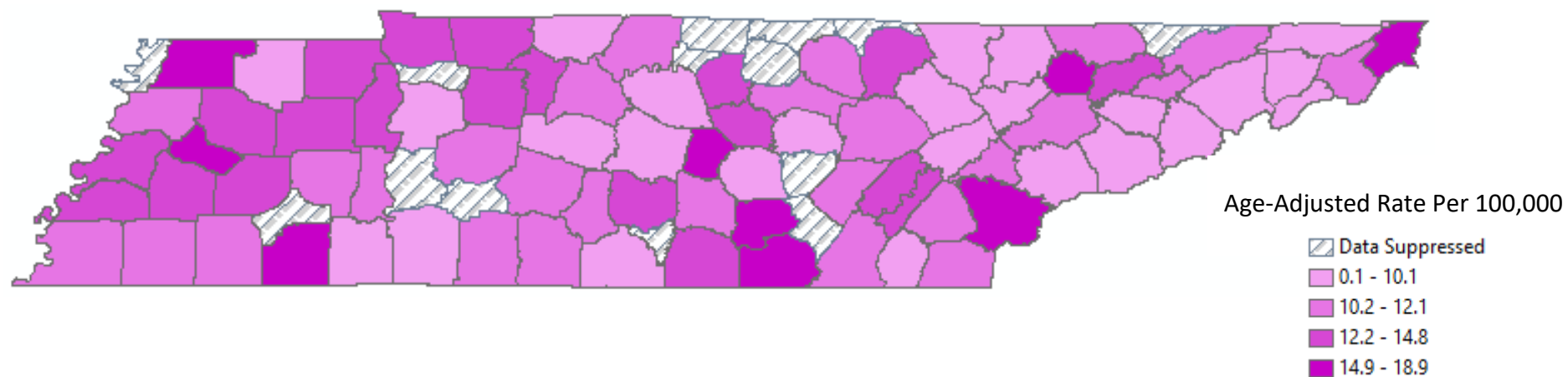


8. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, PANCREAS, TENNESSEE, 2015-2019

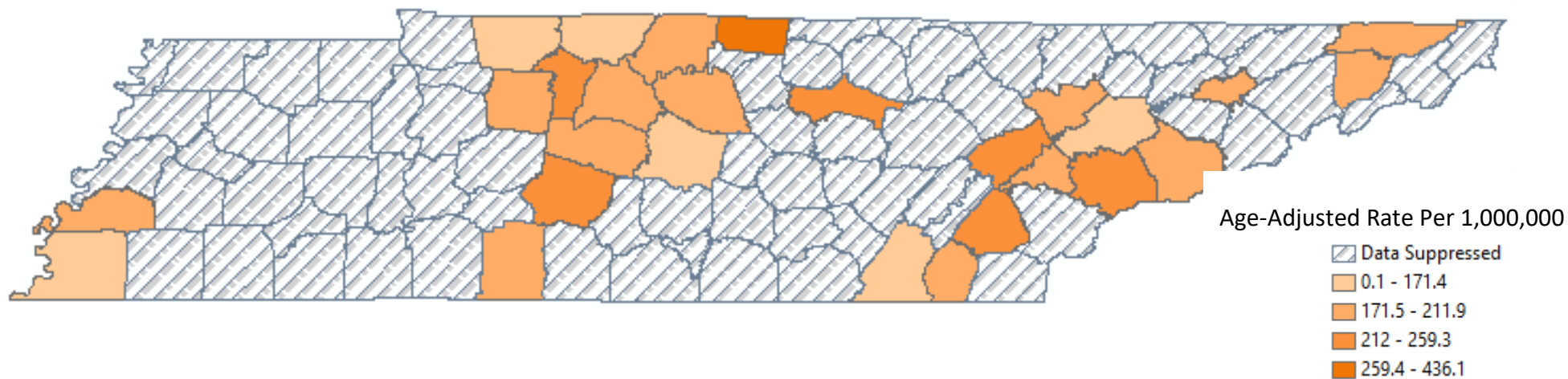
Incidence



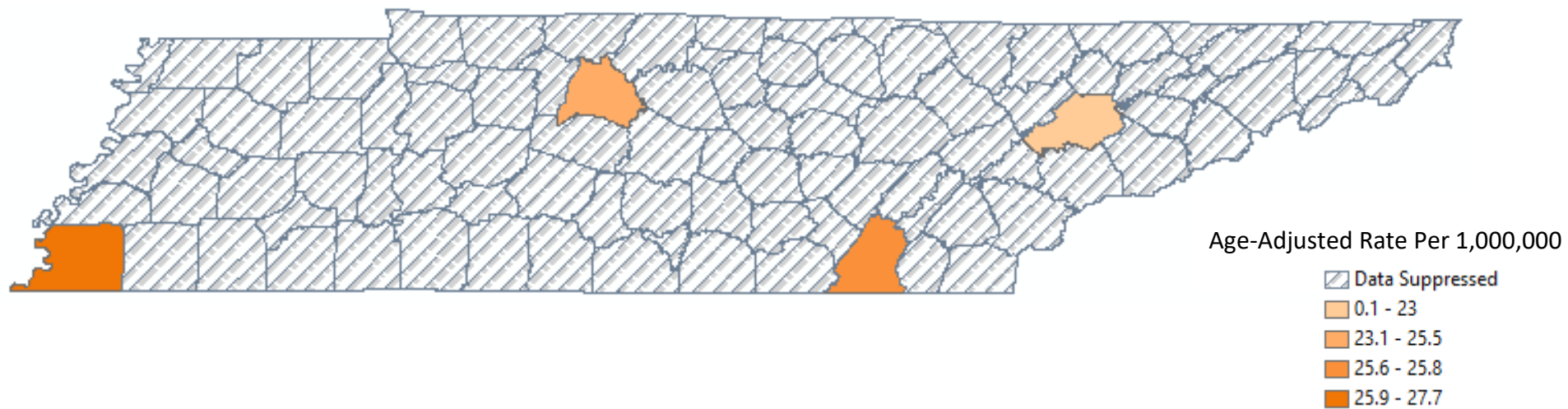
Mortality



Incidence



Mortality



TECHNICAL NOTES

STATISTICAL METHODS

SEER*Prep 3.0.1 was used to prepare cancer incidence and mortality data. SEER*Stat 8.4.1 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 (such as blacks vs. whites or 2015 vs. 2019) 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 statistical methods using hypothesis testing.

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 8.4.1 (2023). Surveillance Research Program, National Cancer Institute.
(<http://seer.cancer.gov/seerstat>)

Tennessee Resident County Maps:

Environmental Systems Research Institute (ESRI) (2023). ArcGIS Desktop: Release 10.8.2. Redlands, CA: ESRI.

EXPLANATION OF 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.

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 (whether it is 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.

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.

Cancer 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 during 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.

Cancer 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,

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

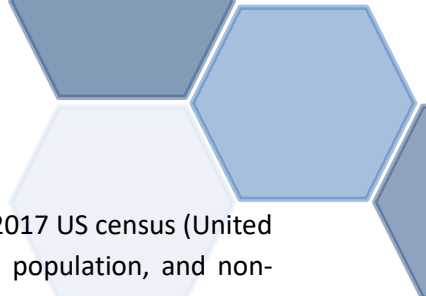
Mortality-to-Incidence Ratio (M:I Ratio)

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, such as 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, usually at a specified point in time.



Race and Ethnicity

Cancer incidence and mortality can vary greatly by race and ethnicity. According to the 2017 US census (United States Census Bureau, 2017), non-Hispanic Whites account for 79.6% of Tennessee's population, and non-Hispanic Blacks represent 17.9% of Tennessee's population.¹⁸ Given Tennessee's small minority population, displaying detailed information by racial/ethnic group leads to some cell counts that are too small to display publicly and rates may be unstable.

Resident County

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

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.¹⁷
- 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.

Suppression of Rates and Counts

Due to concerns regarding statistical reliability and patient confidentiality, 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 8 regions. Metropolitan counties are grouped into the regions where they are located (See Maps).

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, 2015 and December 31, 2019 and were reported to the TCR as of January 26, 2022. A total of 39 cases with gender reported having intersex conditions or identified as transgender, and 4 cases with unknown gender were not included in this report. Cases with race other than white or black (1,632 cases) and unknown race (2,174 cases) were included in the “Total Population” category. 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 248 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:

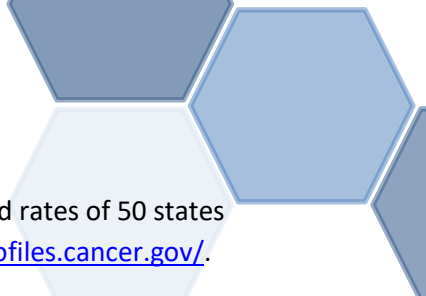
Cancer mortality data contains records of all mortalities among Tennessee residents. The record-level mortality data were obtained from the Vital Records Information System Management (VRISM) provided by the Office of Vital Records and Statistics, Tennessee Department of Health. There were 25 mortality 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 behaviors, 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/>.

US Population Data:

The US Census Bureau publishes US population estimates and demographic information annually, accounting for components of change, such as births, deaths, life expectancy, and migration. The data can be broken down into characteristics such as age, sex, race, and geographic locations. For the purposes of this report, population estimates from 2017 were used, which is the midpoint of the time period this report covers (2015-2019). Visit the following website for more information: <https://www.census.gov/about/what/census-at-a-glance>.

ADDITIONAL RESOURCES

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

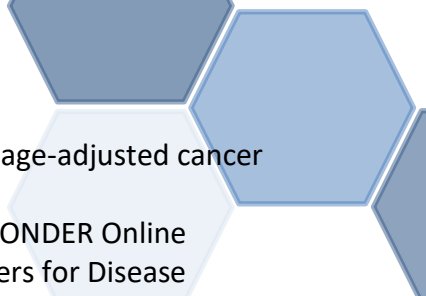
SPECIFIC CANCER SITE	WEBSITE
Lung Cancer	http://www.cancer.org/cancer/lungcancer/
Prostate Cancer	http://www.cancer.org/cancer/prostatecancer/
Breast Cancer	http://www.cancer.org/cancer/breastcancer/
Colorectal Cancer	http://www.cancer.org/cancer/colonandrectumcancer/
Melanoma Skin Cancer	http://www.cancer.org/cancer/skincancer-melanoma/
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 Academy of Dermatology	https://www.aad.org/
American Cancer Society (ACS)	http://www.cancer.org/
American College of Obstetricians and Gynecologists (ACOG)	https://www.acog.org/
American College of Physicians (ACP)	https://www.acponline.org/
American College of Surgeons	https://www.facs.org/
American Lung Association	https://www.lung.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/dcpc/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/
US Preventive Services Taskforce (USPSTF)	https://www.uspreventiveservicestaskforce.org/uspstf/

REFERENCES

1. American Academy of Dermatology (AAD). (2018). American Academy of Dermatology issues new guidelines for treatment of nonmelanoma skin cancer. Retrieved from <https://www.aad.org/news/guidelines-to-treat-nonmelanoma-skin-cancer>
2. American Cancer Society. (2015). Health Risks of Smoking Tobacco. Retrieved from <https://www.cancer.org/cancer/cancer-causes/tobacco-and-cancer>
3. American Cancer Society. (2017). What are the Differences Between Cancers in Adults and Children? Retrieved from <http://www.cancer.org/cancer/cancerinchildren/detailedguide/cancer-in-children-differences-adults-children>
4. Centers for Disease Control and Prevention (CDC). (2020). Behavioral Risk Factor Surveillance System (BRFSS): Prevalence and Trends Data. Retrieved from <https://www.cdc.gov/brfss/brfssprevalence/>
5. Centers for Disease Control and Prevention (CDC). (Reviewed 2023). Cancer. Obesity and Cancer. Retrieved from <https://www.cdc.gov/cancer/obesity/index.htm>
6. Centers for Disease Control and Prevention (CDC). (2020). US Diabetes Surveillance System. Retrieved from <https://www.cdc.gov/diabetes/data>
7. Everhart J, Wright D. (1995). Diabetes mellitus as a risk factor for pancreatic cancer. A meta-analysis. JAMA.273:1605–1609.
8. Howlader N, Noone AM, Krapcho M, Miller D, Brest A, Yu M, Ruhl J, Tatalovich Z, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds) (2020). SEER Cancer Statistics Review, 1975-2016, National Cancer Institute. Bethesda, MD, based on November 2018 SEER data submission, posted to the SEER web site, April 2020. Retrieved from https://seer.cancer.gov/csr/1975_2017/
9. Islami, F, Marlow, EC, Zhao, J, et al. Person-years of life lost and lost earnings from cigarette smoking-attributable cancer deaths, United States, 2019. Int J Cancer. 2022; 151(12): 2095-2106. doi:10.1002/ijc.342171 Retrieved from [Person-years of life lost and lost earnings from cigarette smoking-attributable cancer deaths, United States, 2019 - Islami - 2022 - International Journal of Cancer - Wiley Online Library](#)
10. Mariotto, A. B., Yabroff, K. R., Shao, Y., Feuer, E. J., & Brown, M. L. (2011). Projections of the Cost of Cancer Care in the United States 2010-2020. Journal of the National Cancer Institute, 103(2), 117-128.
11. Mariotto, A. B., Enewold, L., Zhao, J., Zeruto, C. A., & Yabroff, K. R. (2020). Medical Care Costs Associated with Cancer Survivorship in the United States. Cancer Epidemiology, Biomarkers & Prevention. Volume 29, Issue 7 1304-1312.
12. National Cancer Institute (NCI) (2019). State Cancer Profiles. Retrieved from <https://statecancerprofiles.cancer.gov/index.html>
13. National Cancer Institute (NCI). (2013). Cancer Prevalence and Cost of Care Projections. Retrieved from <http://costprojections.cancer.gov>
14. National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). (2017). Quitting Smoking. Retrieved from https://www.cdc.gov/tobacco/data_statistics/fact_sheets/cessation/quitting/index.htm
15. National Lung Screening Trial Research Team (NLSTRT). (2011). The National Lung Screening Trial: overview and study design. Radiology, 258(1), 243-253.

- 
16. Tiwari, R. C., Clegg, L. X., & Zou, Z. (2006). Efficient interval estimation for age-adjusted cancer rates. *Statistical Methods in Medical Research*, 15, 547-569
 17. United States Cancer Statistics – Incidence and Mortality: 1999 - 2020, WONDER Online Database. United States Department of Health and Human Services, Centers for Disease Control and Prevention; 2023. Retrieved from <https://wonder.cdc.gov/cancer.HTML>
 18. U.S. Census Bureau. (2017). Tennessee 2017 Demographic Population Estimate Data: Age and Sex. Retrieved from <https://www.data.census.gov>
 19. U.S. Department of Health and Human Services. (2010). *A Report of the Surgeon General: How Tobacco Smoke Causes Disease: What It Means to You*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office of Smoking and Health.
 20. U.S. Department of Health and Human Services. (2014). *The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.
 21. U.S. Federal Trade Commission. (2019). Estimated Annual Tobacco Industry Marketing Expenditures in Each State (in millions of dollars) [Table]. Retrieved from https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-cigarette-report-2017-federal-trade-commission-smokeless-tobacco-report/ftc_cigarette_report_2017.pdf
 22. U.S. Federal Trade Commission (FTC). (2017). *Cigarette Report for 2017*. Washington, D.C.: Federal Trade Commission.
 23. U.S. Preventive Services Task Force (USPSTF). (2019). Published Recommendations. Rockville, MD: U.S. Preventive Services Task Force. Retrieved from <https://www.uspreventiveservicestaskforce.org/BrowseRec/Index/browse-recommendations>