

CANCER IN TENNESSEE

2010-2014

December 2017



Division of Policy, Planning, and Assessment
Office of Cancer Surveillance

This document presents cancer incidence and mortality information for the entire state of Tennessee focusing on the five-year period between 2010 and 2014, with comparisons to national rates. The report is made possible through data collected by the Tennessee Cancer Registry (TCR) as well as cancer registries nationwide. The TCR is dedicated to the collection and use of quality data for the purpose of decreasing the incidence and mortality of cancer in Tennessee.

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CANCER IN TENNESSEE REPORT

This report contains cancer incidence and mortality data for the entire state of Tennessee from 2010 through 2014, 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 statistical impact on the most recent year of diagnosis.

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

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

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TENNESSEE CANCER REGISTRY (TCR)

WHO WE ARE

The TCR was established in 1983 by the Tennessee General Assembly with the passage of TCA 68-1-1001 and is responsible for collecting information on all reportable cancer diagnoses in Tennessee, including non-residents diagnosed and/or treated in TN. The TCR has achieved “Gold Certification,” the highest level of certification by the North American Association of Central Cancer Registries (NAACCR) since the 2005 diagnosis year. More information on NAACCR standards can be found at <https://www.naaccr.org/certification-criteria/>.



WHAT WE DO

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

OUR PURPOSE

The purpose of the TCR is:

- To collect accurate information on cancer cases diagnosed and/or treated in TN annually.
- To increase awareness of cancer in TN.
- To promote and assist hospital cancer registries in each facility to accurately code cancer abstracts.
- To provide information to the public regarding cancer incidence and mortality in TN.
- To serve as a data repository for those requesting information on cancer, its effects, treatment, risk factors, and prevention.
- To support epidemiological research into the causes, distribution, prevention, and treatment of cancer.

WHAT IS CANCER?

Cancer is a group of more than 100 diseases characterized by uncontrolled growth and spread of abnormal cells. Anyone can develop cancer at any time in their life, but individuals 55 years of age and older are at a higher risk of developing cancer. About two-thirds of all cancer cases could potentially be prevented with better lifestyle choices (e.g. increasing physical activity, incorporating better nutrition, and abstaining from tobacco products).

WHAT IS CANCER INCIDENCE?

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

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

The numerator of the incidence rate is the number of newly diagnosed cancer cases; 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.

WHAT IS CANCER MORTALITY?

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

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

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

ADDITIONAL RESOURCES

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

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

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

ORGANIZATION	WEBSITE
American Association for Cancer Research (AACR)	http://www.aacr.org/Pages/Home.aspx
American Cancer Society (ACS)	http://www.cancer.org/
American Society of Clinical Oncology (ASCO)	http://www.asco.org/
Cancer Research Network (CRN)	http://crn.cancer.gov/
Center for Cancer Research (CCR)	https://ccr.cancer.gov/
Centers for Disease Control & Prevention (CDC)	http://www.cdc.gov/cancer/dcpc/data/index.htm
Commission on Cancer (CoC)	https://www.facs.org/quality-programs/cancer/coc
Conquer Cancer Foundation	https://www.conquercancerfoundation.org/
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/
International Agency for Research on Cancer	http://www.iarc.fr/

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 2010 through 2014, with some comparisons to national rates. **Incidence rates presented in this report are for invasive cancers and both invasive and in situ bladder cancer only, unless otherwise specified.** Data collected by the Tennessee Cancer Registry (TCR) as well as cancer registries nationwide made the creation of this report possible. The 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 the following website: <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, a few cases may be reported, which may have a minor impact on the most recent year of diagnosis.

From 2010-2014, 172,136 Tennesseans were diagnosed with cancer and 68,698 Tennesseans died from cancer. Cancer is the second leading cause of death and resulted in over 577,000 years of potential life lost in Tennesseans during the 5-year period covered by this report. From 2010-2014, Tennessee experienced the 18th highest cancer incidence rate and the 6th highest cancer mortality rate in the United States. Much of Tennessee's observed cancer incidence and mortality disparities relative to other states is due to a greater cancer burden among Tennessee's male population, who experience respectively the 10th and 6th highest cancer incidence and mortality burden compared to males in all other US states, whereas Tennessee females experience respectively the 28th highest cancer incidence burden and the 8th highest cancer mortality burden in the US.

Lung cancer is the most common type of cancer diagnosis and the most common cause of death in Tennesseans, whereas nationally lung cancer is only the most common cause of death. The fact that lung cancer is the leading type of newly diagnosed cancer in Tennesseans is largely due to the greater prevalence of smoking in Tennesseans compared to the national average. In 2014, 24.2% of Tennessee adults, 18 years of age and older, were current smokers compared to only 18.1% nationally. Smoking is the major cause of at least 85% of all lung cancers in the US, but is also a known cause for many other types of cancer: oropharyngeal, laryngeal, colorectal, esophageal, stomach, urinary bladder, kidney, pancreatic, liver and uterine cervix cancers. Note that most of these additional cancers caused by smoking are in the top 10 of all cancers affecting Tennesseans as newly diagnosed cases and/or cancer deaths! Through substantially reducing the prevalence of smoking, Tennessee could potentially prevent considerable numbers of both new cancer cases and cancer deaths.

The following are the 10 most common types of cancers newly diagnosed in Tennessee residents during 2014 in descending order by count of cases: lung, female breast, prostate, colorectal, urinary bladder, melanoma skin, kidney, non-Hodgkin lymphoma (NHL), uterine and oropharyngeal cancer. The following are the 10 most common types of cancers principally leading to death in Tennesseans during 2014: lung, colorectal, pancreas, female breast, prostate, liver, leukemia, NHL, brain and esophagus.

Cancer also demonstrates geographic disparities in Tennessee, see [Maps](#) and [Appendices](#). For all new cases of cancer (incidence) combined, the following are the top 5 Tennessee counties in descending order: Hancock County, Humphreys County, Scott County, Union County and Cheatham County. The following are the top 5 Tennessee counties in descending order for overall cancer mortality: Trousdale County, Hancock County, Benton County, Scott County and Cheatham County. Regionally in Tennessee, the East region displays the highest overall cancer incidence rate of all regions in Tennessee, whereas the Northwest region displays the highest overall cancer mortality rate.

EVERY DAY IN TENNESSEE DURING 2010-2014...

- ❖ **95** people were diagnosed with cancer
- ❖ **16** people were diagnosed with lung cancer
- ❖ **13** women were diagnosed with breast cancer
- ❖ **10** men were diagnosed with prostate cancer
- ❖ **9** people were diagnosed with colorectal cancer
- ❖ **39** people died from cancer
- ❖ **12** people died from lung cancer
- ❖ **2** women died from breast cancer
- ❖ **2** men died from prostate cancer
- ❖ **3** people died from colorectal cancer

IMPACT OF CANCER

On average, two out of every five individuals (about 38.5% lifetime risk) in the United States (US) will contract some type of cancer, *in situ* or invasive, in their lifetime. In the US, men have a 39.7% probability of developing either *in situ* or invasive cancer in their lifetime, while women have a 37.7% probability of developing either *in situ* or invasive cancer in their lifetime (Howlander et. al., 2017). In the US, one in four men (22.0%) and one out of five women (18.8%) are at risk of dying from cancer in their lifetime. The following table lists lifetime risks of developing and dying from certain cancers for males in the US from 2012 to 2014 in decreasing order:

Male Site	Risk of developing		Risk of dying from	
	%	1 in	%	1 in
Lung and bronchus	7	14	6	17
Prostate	11.6	9	2.5	40
Colon and rectum	4.5	22	1.9	53
Pancreas	1.6	62	1.4	71
Leukemia	1.8	56	1.0	100

Note. Adapted from the [SEER Cancer Statistics Review](#), by the National Cancer Institute, 2017.

The following table lists lifetime risks of developing and dying from certain cancers for females in the US from 2012 to 2014 in decreasing order:

Female Site	Risk of developing		Risk of dying from	
	%	1 in	%	1 in
Lung and bronchus	6	17	4.7	21
Breast	12.4	8	2.6	38
Colon and rectum	4.2	24	1.7	59
Pancreas	1.5	67	1.4	71
Ovary	1.3	77	0.9	111

Note. Adapted from the [SEER Cancer Statistics Review](#), by the National Cancer Institute, 2017.

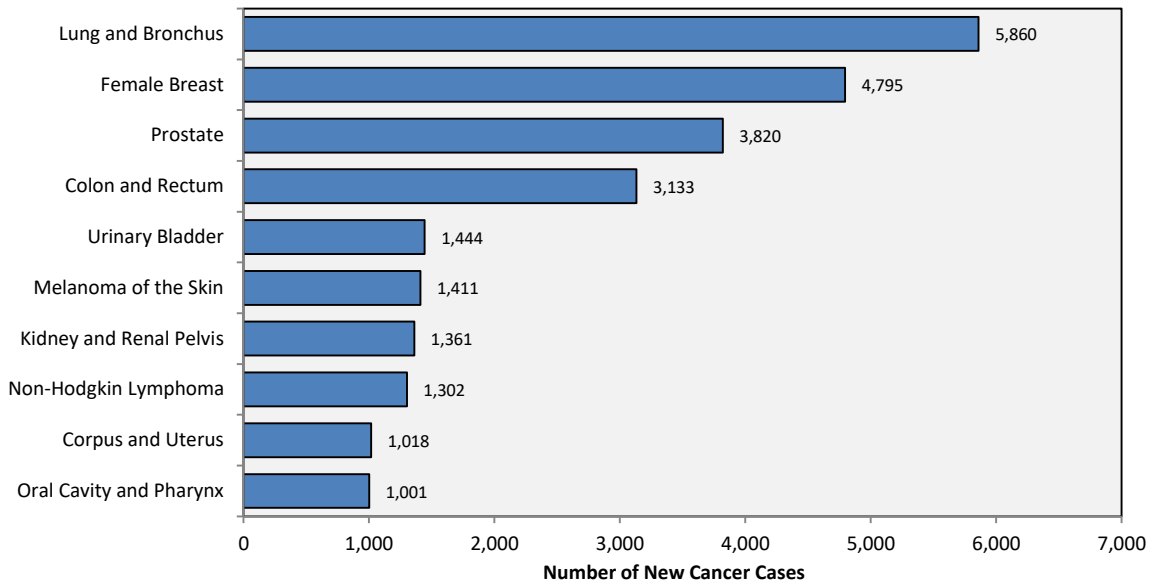
More than half (53.7%) of all new cancer cases diagnosed in Tennessee (TN) from 2010 to 2014 with known stage information were diagnosed at early stages (i.e., *in situ* and localized) when treatment is usually more effective. Approximately 577,203 years of potential life were lost by TN residents due to premature cancer deaths during the current five-year reporting period; therefore, on average, each person who died of cancer during 2010-2014 died 8.4 years earlier than the average lifespan (i.e., 75 years of age as used in this report). From 2010 through 2014, 22,232 black Tennesseans and 147,658 white Tennesseans contracted cancer and during the same time period 9,722 black Tennesseans and 58,425 white Tennesseans died due to cancer.

The direct medical cost, which is the total of all health care expenditures, for cancer in the US in 2010 was \$124.6 billion, or about \$80,136 per cancer diagnosis. By 2020, overall cancer costs could reach \$157.8 billion (in 2010 dollars), based only on increases in population; however, if costs of cancer care also increase annually by 2%, the total cost for cancer care in 2020 could reach as high as \$186.7 billion. The cancer sites with the highest costs in 2010 dollars are: breast cancer (\$16.5 billion), followed by

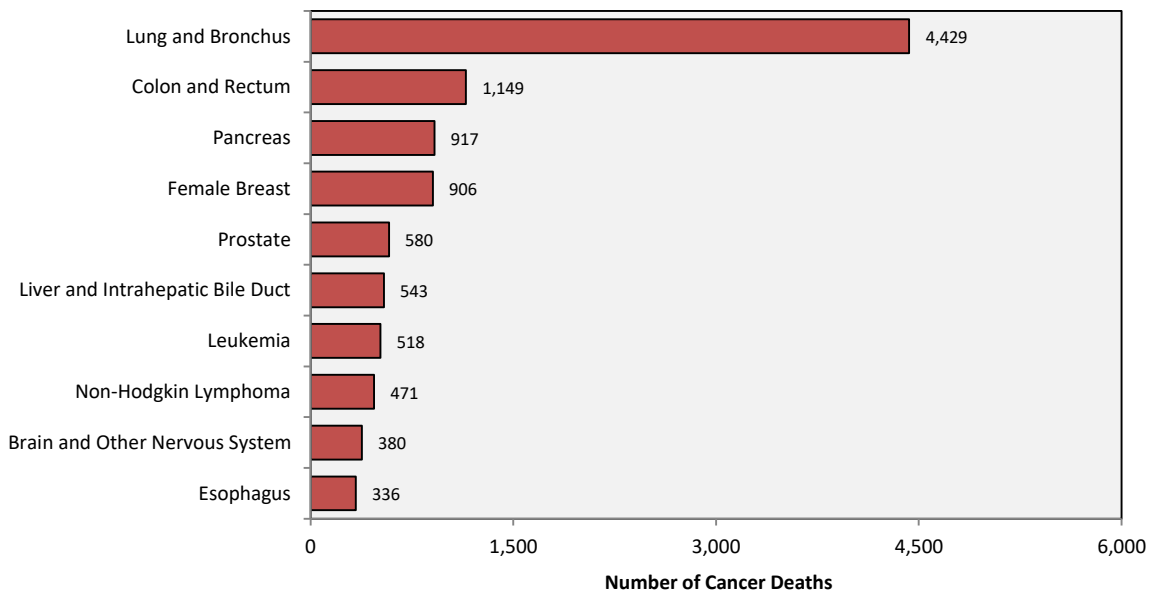
colorectal cancer (\$14.1 billion), lymphoma (\$12.1 billion), lung cancer (\$12.1 billion), and prostate cancer (\$11.9 billion) (Mariotto, 2011).

COMMON CANCERS IN TENNESSEE BY CANCER SITE, 2014

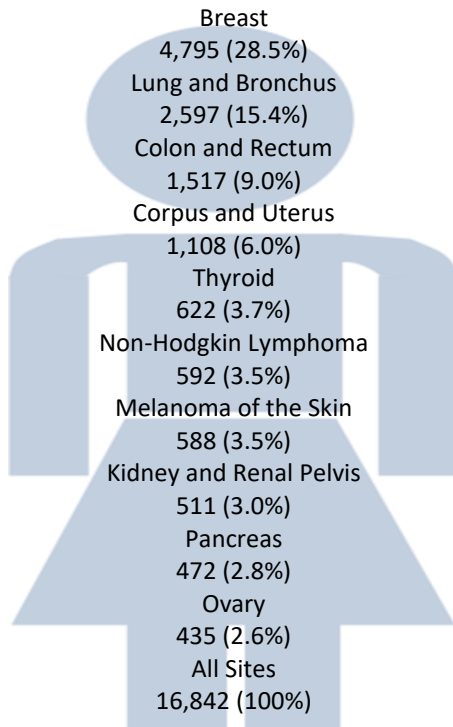
Number of New Cancer Cases in Tennessee, 2014



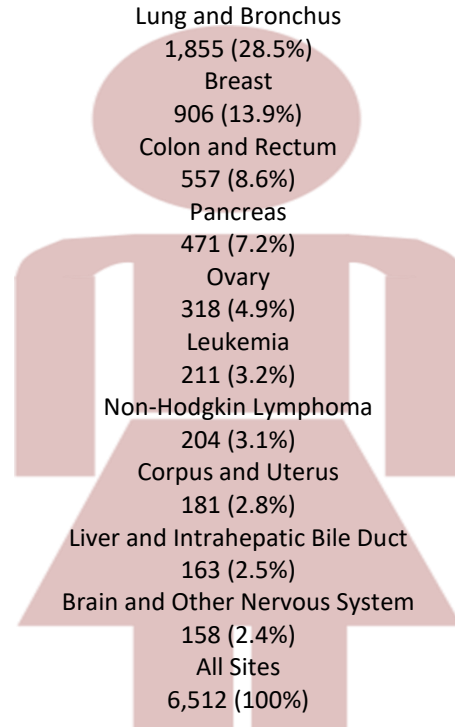
Cancer Deaths in Tennessee by Primary Site, 2014



New Cancers in Women



Cancer Deaths in Women



New Cancers in Men

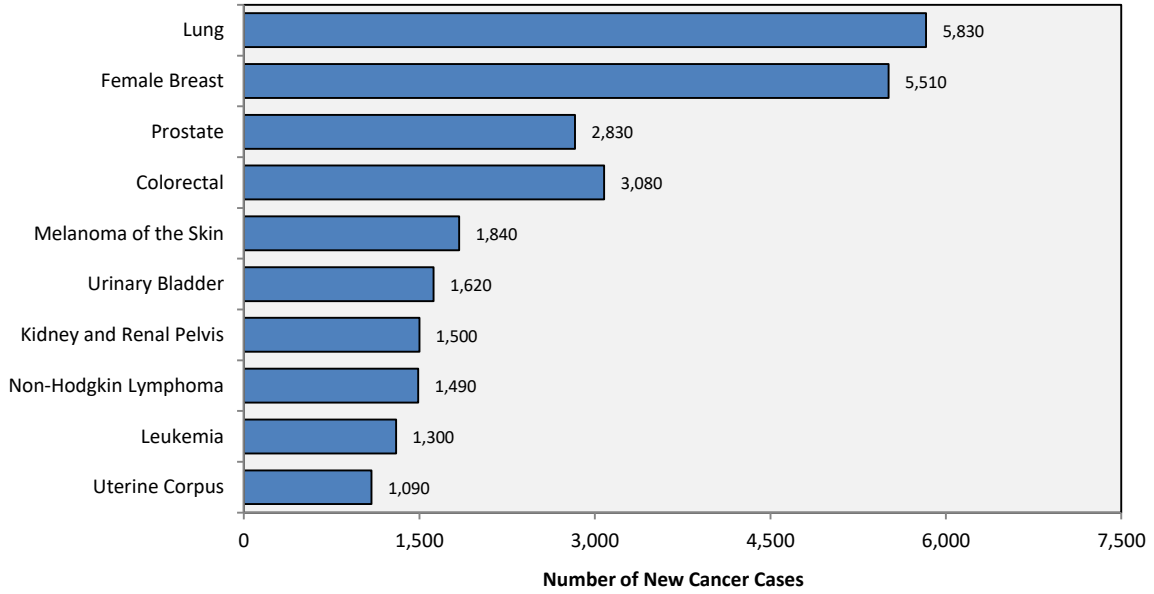


Cancer Deaths in Men



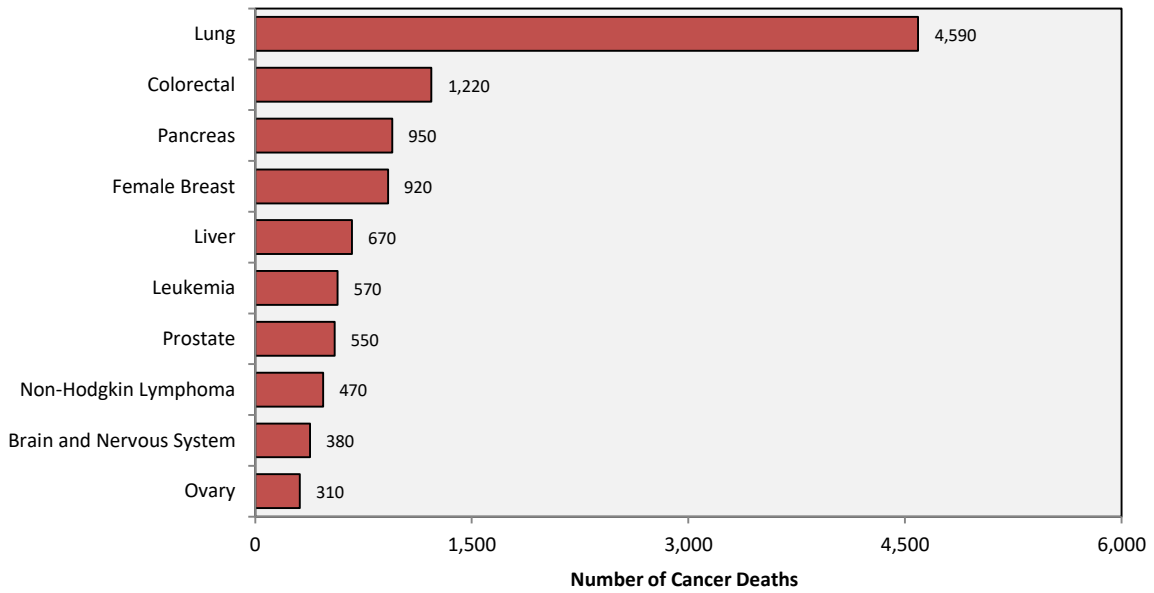
[Data Source](#)

Estimated New Cancer Cases in Tennessee, 2017



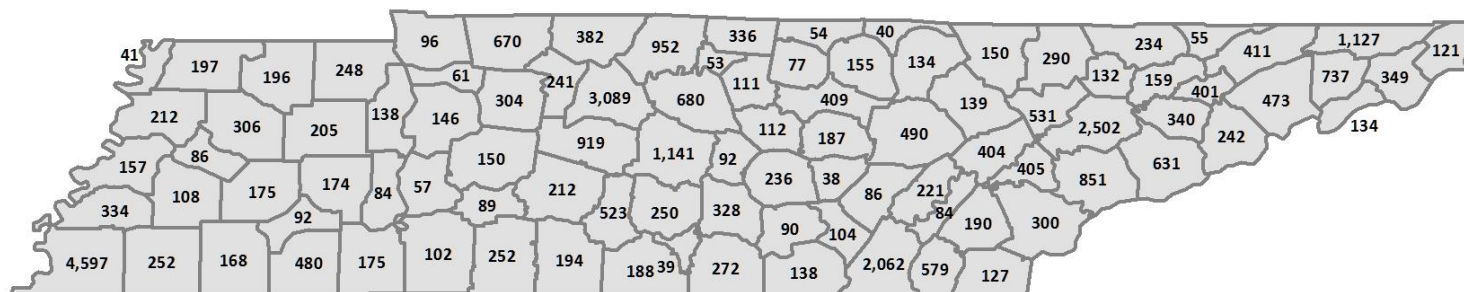
Note. Adapted from the [2017 Estimates](#) by the American Cancer Society, 2017.

Estimated Cancer Deaths in Tennessee, 2017



Note. Adapted from the [2017 Estimates](#) by the American Cancer Society, 2017.

Estimated Number of New Cancers in Tennessee for 2017

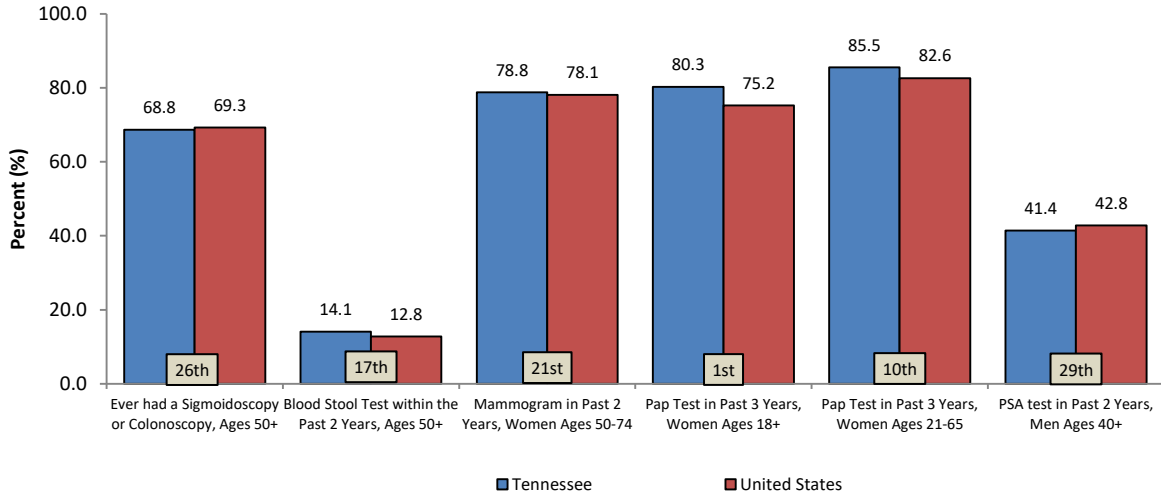


Estimated Number of Cancer Deaths in Tennessee for 2017



CANCER SCREENING AND RISK FACTOR PREVALENCE, 2014

Prevalence of Screening, Tennessee and the United States, 2014

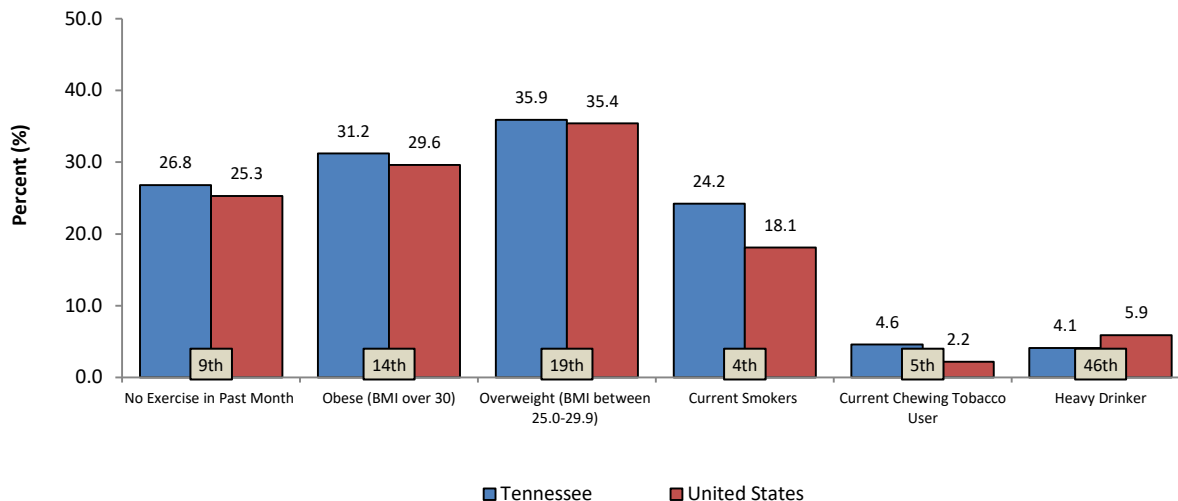


Source: Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, 2016.

- The ranking for TN appears in the box at the base of each bar combination in the chart above.
- Nearly 70% (68.8%) of the TN population, 50 years of age and older, received a sigmoidoscopy or colonoscopy in 2014.
- In 2014, over 14% (14.1%) of Tennesseans and 12.8% of Americans 50 years of age and older received a blood stool test within the past two years.
- In 2014, roughly 8.9% of Tennesseans between 50 and 75 years of age indicated they had received a blood stool test within the past two years (data not shown in bar chart above).
- In 2014, almost four out of five women (77.0%) 50 years of age and older in Tennessee indicated they received a mammogram within the past two years (data not shown in bar chart above).
- In 2014, 78.8% of TN women between 50 and 74 years of age indicated they received a mammogram within the past two years.
- In 2014, 80.3% of TN women aged 18 years of age and older had received a Pap test within the past three years.
- In 2014, 85.5% of TN women between 21 and 65 years of age had received a Pap test within the past three years while only 82.6% of American women had received a Pap test during the same time period.
- In 2014, 41.4% of TN men 40 years of age and older received a prostate-specific antigen (PSA) test within the past two years.

CANCER SCREENING AND RISK FACTOR PREVALENCE, 2014, CONTINUED

Prevalence of Risk Factors Adults 18+ Years of Age, Tennessee and the United States, 2014



Source: Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, 2016.

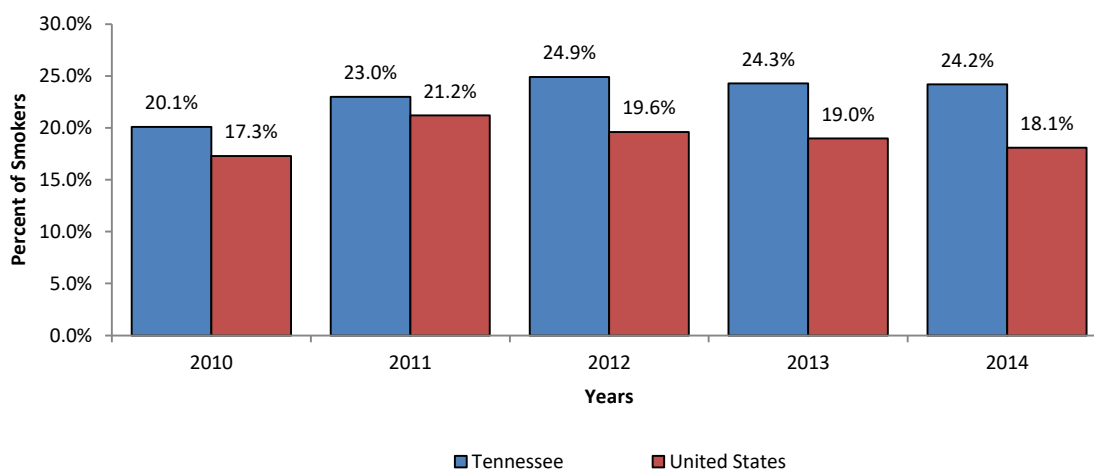
- The ranking for TN appears in the box at the base of each bar combination in the chart above.
- In 2014, over a quarter (26.8%) of Tennesseans had not exercised in the past month.
- In comparison with the US, TN had the ninth lowest exercise participation rate in 2014.
- In 2014, 31.2% of Tennesseans and 29.6% of Americans were considered obese with a body mass index (BMI) of 30 or more.
- In comparison with the US, TN had the fourteenth most obese population in 2014.
- In 2014, roughly one out of every three Tennesseans was considered overweight (i.e., BMI between 25.0 and 29.9).
- Approximately two out of every three Tennesseans in 2014 were considered either overweight or obese.
- Roughly a quarter (24.2%) of Tennesseans identified themselves as current smokers in 2014.
- In comparison with all other states in the US, TN had the fourth largest current smoker population in 2014.
- In 2014, 4.6% of Tennesseans and 2.2% of Americans identified themselves as a current chewing tobacco user.
- In 2014, 4.1% of Tennesseans identified themselves as heavy drinkers (i.e., adult men having more than two drinks per day and adult women having more than one drink per day).

CIGARETTE SMOKING PREVALENCE IN TENNESSEE

In 2014, nearly a quarter (24.2%) of Tennesseans identified themselves as current smokers while 18.1% of the US population identified themselves as current smokers. The state of TN had the fourth highest population of current smokers and fifth highest lung cancer incidence rate in the US in 2014. In TN, white women had higher lung cancer incidence and mortality rates than black women during the period 2010 through 2014. Conversely, black men had significantly higher lung cancer incidence and mortality rates than white men in TN during the same time period. From 2010 to 2014, the overall percentage of current smokers in TN increased by 4.1%. It is important to note that one in thirteen Tennesseans will be diagnosed with lung cancer in their lifetime.

Smoking can cause cancer almost anywhere in the body. In Tennessee nearly a third (32.9%) of cancer deaths are attributable to cigarette smoking (Lortet-Tieulent, 2016). Approximately \$276.9 million is spent each year by the tobacco industry in marketing expenditures in Tennessee, which equates to roughly 3.0% of the annual tobacco industry's marketing expenditures nationwide (U.S. Federal Trade Commission, 2016). According to the 2013 National Youth Risk Behavior Survey, about 28.1% of high school students stated that they had used cigarettes, cigars or smokeless tobacco on at least 1 day during the 30 days prior to being surveyed. Of these, 4.7% of high school students stated that they had used cigarettes on a daily basis for the 30 days prior to being surveyed.

**Prevalence of Current Cigarette Use Among Adults,
Tennessee and United States, 2010-2014**



Source: Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, 2016.

[Data Source](#)

WHY ARE CIGARETTES BAD FOR YOUR BODY?

Tobacco smoke is made up of over 7,000 chemicals and at least 250 of those chemicals are harmful to the body. Furthermore, about 70 of the chemicals found in cigarette smoke are linked to cancer development (NCCDPPH, 2017). Each time you smoke, these chemicals get into your body and cause damage. Over time, the damage caused by smoking may lead to disease and death.

SMOKING RISKS



Nearly **ONE** in six American adults currently smokes cigarettes.



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

.....

HOW IS SMOKING RELATED TO CANCER?

Once tobacco smoke has damaged cells, they may grow uncontrollably and become cancer. Because cells are tiny, years sometimes pass before you find a lump or your doctor sees a tumor on a scan.

DNA is the cell's "instruction manual." It controls a cell's normal growth and function. When DNA is damaged, a cell can begin growing out of control and create a cancerous tumor. This happens because poisons in tobacco smoke can destroy or change the cell's instructions. The next cigarette you smoke might damage your DNA in a way that leads to cancer.

Normally, your immune system helps to protect you from cancer. It sends out tumor fighters to attack and kill cancer cells. However, new research shows that the poisons in cigarette smoke weaken the tumor fighters. When this happens, cells keep growing without being stopped. For this reason, smoking can cause cancer and then block your body from fighting it (U.S. Department of Health and Human Services, 2010).

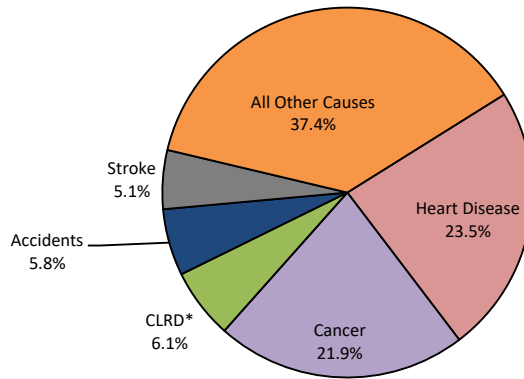
IMPACT OF SMOKING

People who smoke cigarettes are 15 to 30 times more likely to get lung cancer or die from lung cancer than people who do not smoke. Even smoking a few cigarettes a day or smoking occasionally increases the risk of lung cancer. The more years a person smokes and the more cigarettes smoked each day, the more risk goes up. Tobacco use accounts for at least 30% of all cancer deaths, causing 87% of lung cancer deaths in men, and 70% of lung cancer deaths in women (American Cancer Society, 2016).

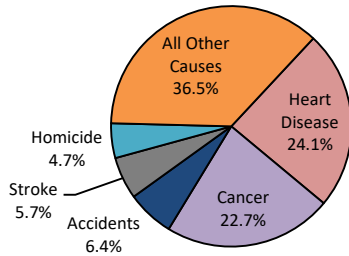
Between 2009 and 2012 smoking-attributable economic costs were between \$289 and \$332.5 billion each year in the US, including \$132.5 to 175.9 billion for direct medical care of adults (U.S. Department of Health and Human Services, 2014). The annual cost of tobacco use in Tennessee is estimated to be in excess of \$2.67 billion for direct health care costs (does not include lost productivity), with approximately \$823.6 million covered by Medicaid. It should also be noted that smoking-caused workplace productivity losses in Tennessee were estimated to be \$3.59 billion (CDC, 2014).

LEADING CAUSES OF DEATH IN TENNESSEE, 2014

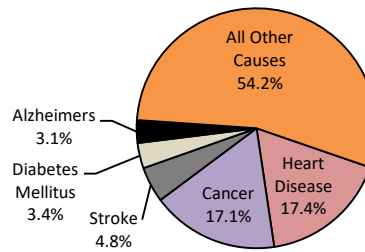
Total Population



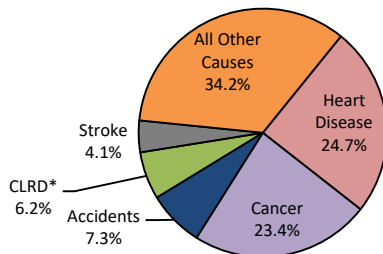
Black Males



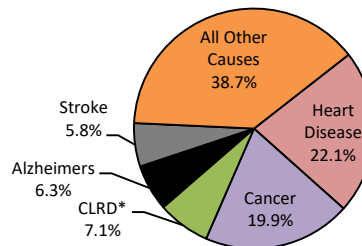
Black Females



White Males



White Females



- Heart disease was the leading cause of death for all Tennesseans in 2014, claiming 15,197 lives.
- Cancer was the second leading cause of death for all Tennesseans, claiming 14,153 lives in 2014.
- Accidents were the third leading cause of death among white and black men.
- Alzheimer's disease was the fourth leading cause of death among white women and the fifth leading cause of death among black women.

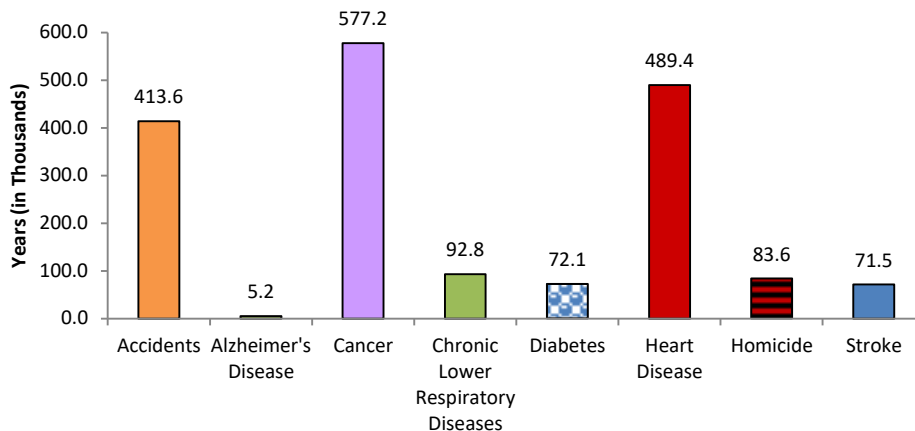
*CLRD represents chronic lower respiratory diseases.

Note: Numbers may not sum to 100% due to rounding errors.

YEARS OF POTENTIAL LIFE LOST TO CANCER, TENNESSEE, 2010-2014

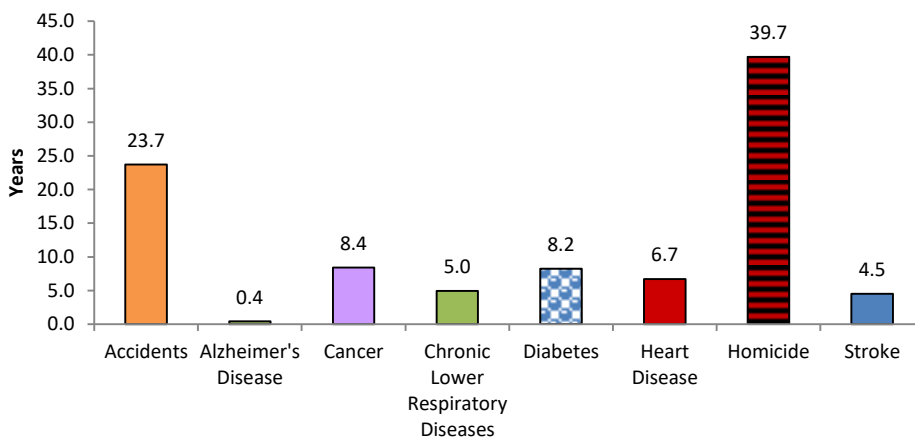
Years of potential life lost (YPLL) is an estimate of premature mortality, which measures the average time a person would have lived had he or she not died prematurely. Statistics which include all mortalities are dominated by deaths of the elderly, while YPLL emphasizes deaths of younger persons that could be prevented. In this report, YPLL was calculated for each individual by subtracting the age at death in years from the assumed life expectancy. For this report the average life expectancy was 75 years of age. The first chart below illustrates the leading causes of YPLL among TN residents, while the second chart below illustrates the **average years of potential life lost (AYPLL)**. From 2010 to 2014, approximately 2,733,930 YPLL were lost among TN residents.

**Total Years of Potential Life Lost,
By Cause of Death, Tennessee, 2010-2014**



- Cancer (577,203 YPLL) accounted for over a fifth (21.1%) of all YPLL in TN between 2010 and 2014.

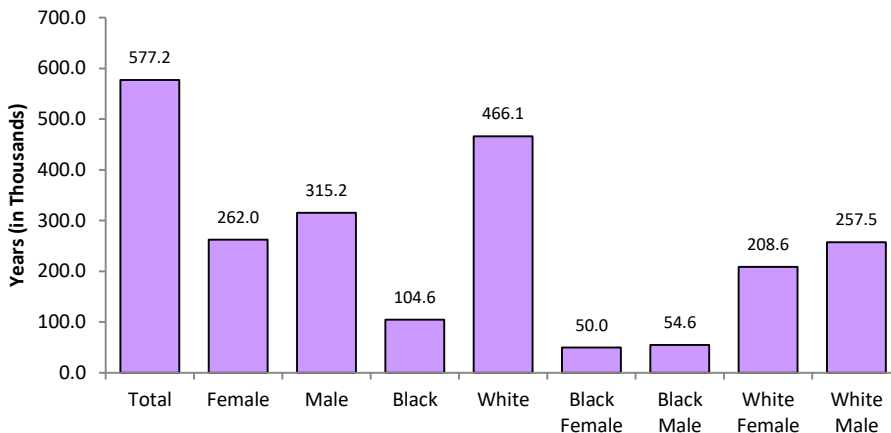
**Average Years of Potential Life Lost,
By Cause of Death, Tennessee, 2010-2014**



- The causes of death with the highest AYPLL were homicides (39.7 AYPLL), accidents (23.7 AYPLL), and cancer (8.4 AYPLL).
- The high AYPLL concerning homicides can be partially explained by the fact roughly two out of five homicides occurred between fifteen and forty-four years of age.

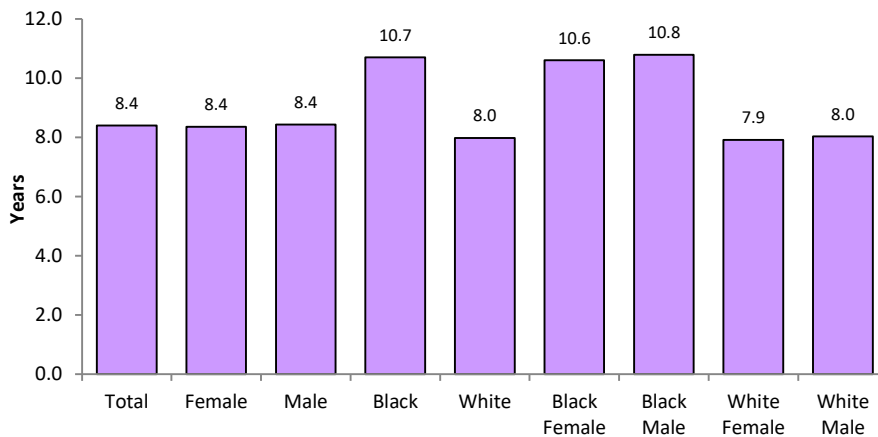
[Data Source](#)

Total Years of Potential Life Lost to Cancer, By Gender and Race, Tennessee, 2010-2014



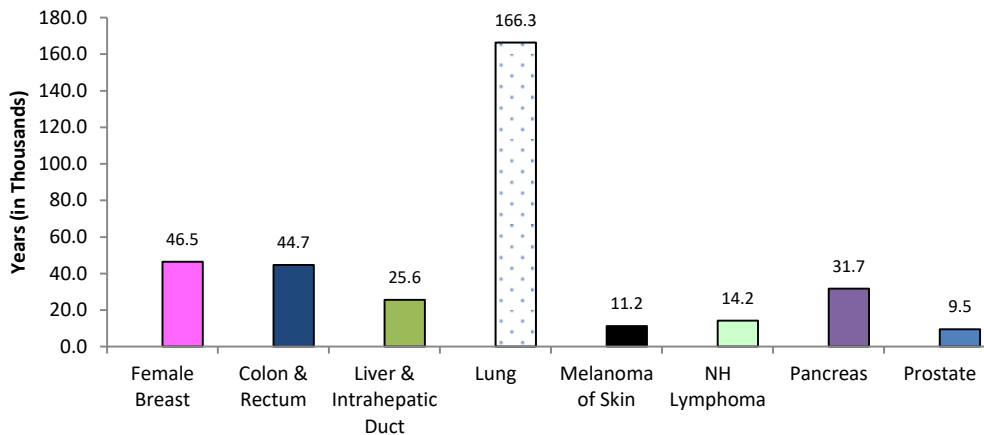
- In the five-year period from 2010-2014, a total of 577,203 years of potential life lost (YPLL) were lost due to premature cancer deaths (deaths before 75 years of age) for the total population.
- From 2010 to 2014, TN women lost 262,004 YPLL and TN men lost 315,196 YPLL in total.
- Black Tennesseans lost 104,567 YPLL and white Tennesseans lost 466,069 YPLL in total from 2010 to 2014.

Average Years of Potential Life Lost to Cancer, By Gender and Race, Tennessee, 2010-2014



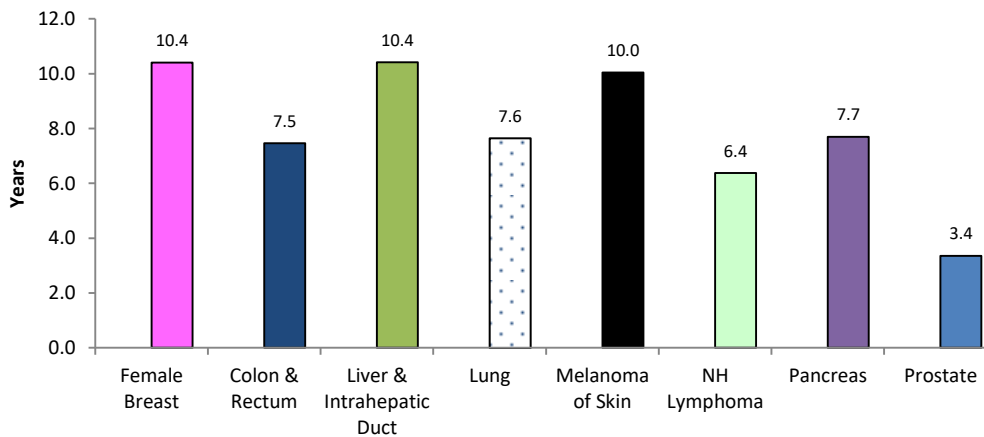
- On average, each black Tennessean who died from cancer during this period lost an estimated 10.7 years of life and each white Tennessean who died from cancer lost an estimated 8.0 years of life.

Total Years of Potential Life Lost to Cancer, By Common Cancer Site, Tennessee, 2010-2014



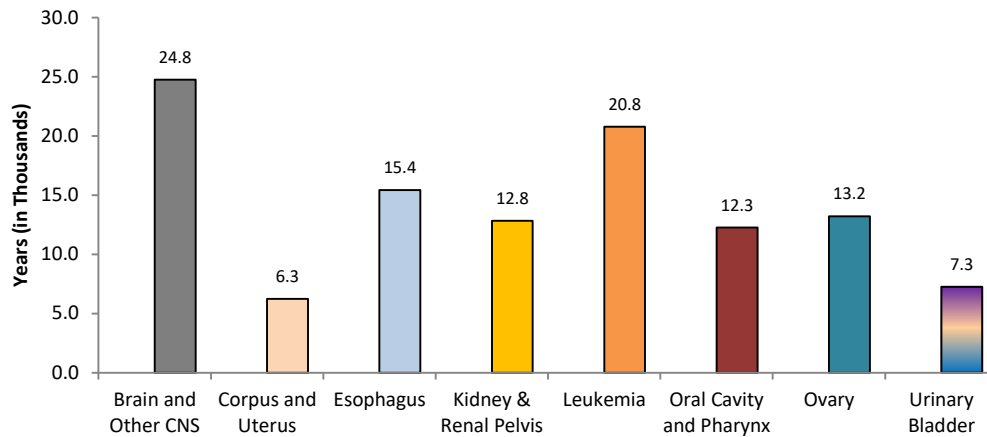
- During the 2010-2014 time period, lung cancer (166,315 YPLL) accounted for the most years of potential life lost due to a specific cancer site followed by female breast cancer (46,450 YPLL), colorectal cancer (44,664 YPLL), pancreatic cancer (31,676 YPLL), liver & intrahepatic bile duct cancer (25,582 YPLL), Non-Hodgkin (NH) lymphoma (14,216 YPLL), melanoma of the skin (11,232 YPLL) and prostate cancer (9,527 YPLL).
- The eight most common causes of cancer death represented 12.8% of the total YPLL in TN and 60.6% of the total YPLL due to cancer from 2010 to 2014.

Average Years of Potential Life Lost to Cancer, By Common Cancer Site, Tennessee, 2010-2014



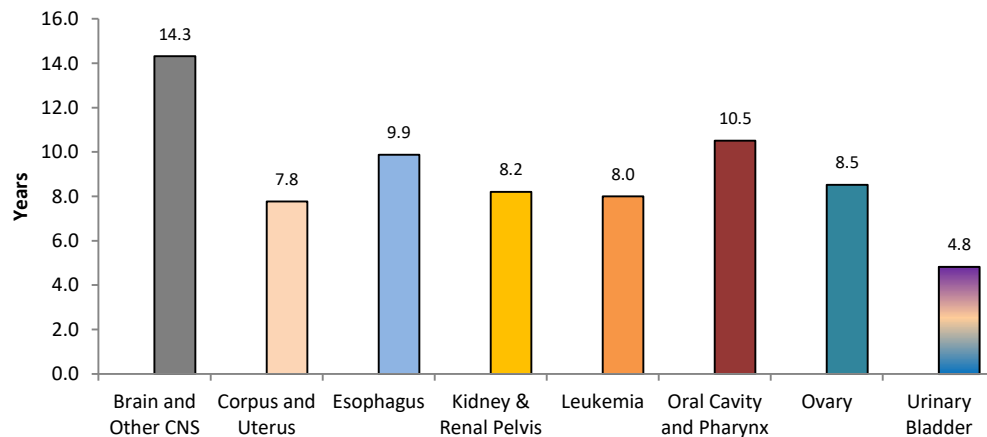
- From 2010-2014, breast cancer, liver cancer, and melanoma skin cancer represented the highest AYPLL of the most common causes of cancer death.
- Roughly one out of every two Tennesseans who died of breast cancer, liver cancer, or melanoma skin cancer died between sixty and eighty-four years of age.

Total Years of Potential Life Lost to Cancer, By Cancer Site, Tennessee, 2010-2014



- Outside of the most common cancers, presented on the previous page, brain and other central nervous system (CNS) cancers (24,752 YPLL) accounted for the most years of potential life lost due to a specific cancer site followed by leukemia (20,786 YPLL), esophageal cancer (15,442 YPLL), ovarian cancer (13,223 YPLL), kidney cancer (12,825 YPLL), oral cavity and pharynx cancer (12,268 years YPLL), urinary bladder cancer (7,251 YPLL), and corpus and uterus cancer (6,250 YPLL) during 2010-2014.
- From 2010-2014, the eight cancers above accounted for 4.1% of the total YPLL in TN.

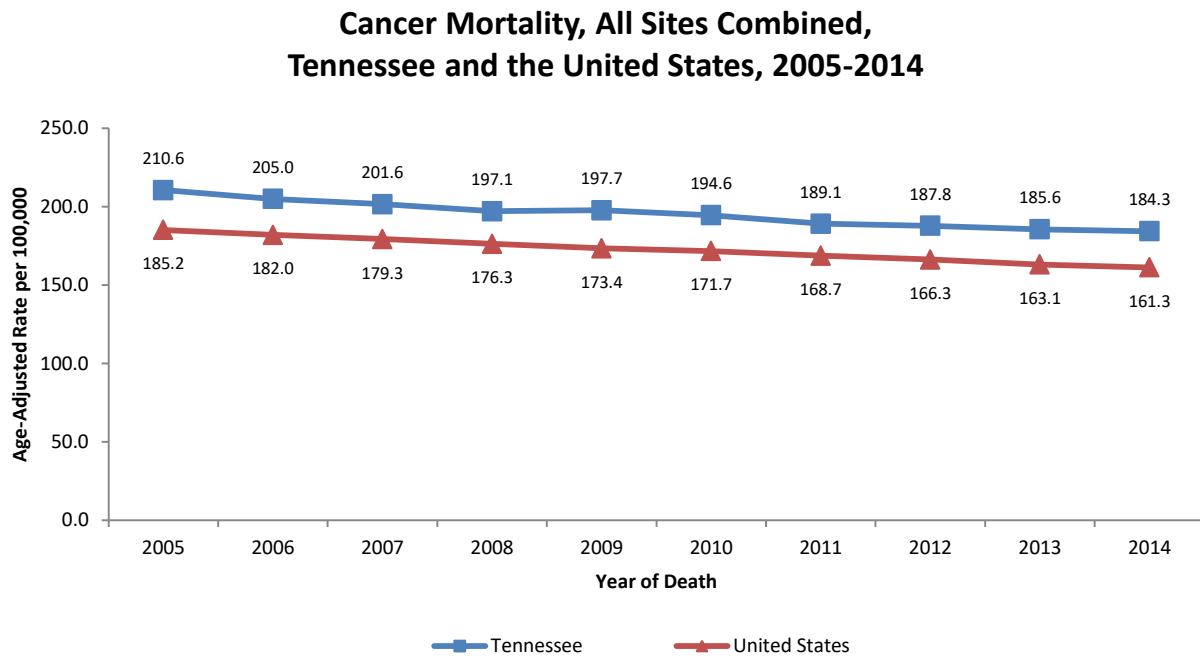
Average Years of Potential Life Lost to Cancer, By Cancer Site, Tennessee, 2010-2014



- Outside of the most common cancers during 2010-2014, brain and other CNS cancers represented the highest AYPLL due to cancer followed by cancer of the oral cavity and pharynx, as well as esophageal cancer.

TENNESSEE IN COMPARISON TO THE UNITED STATES

CANCER MORTALITY TREND, 2005-2014

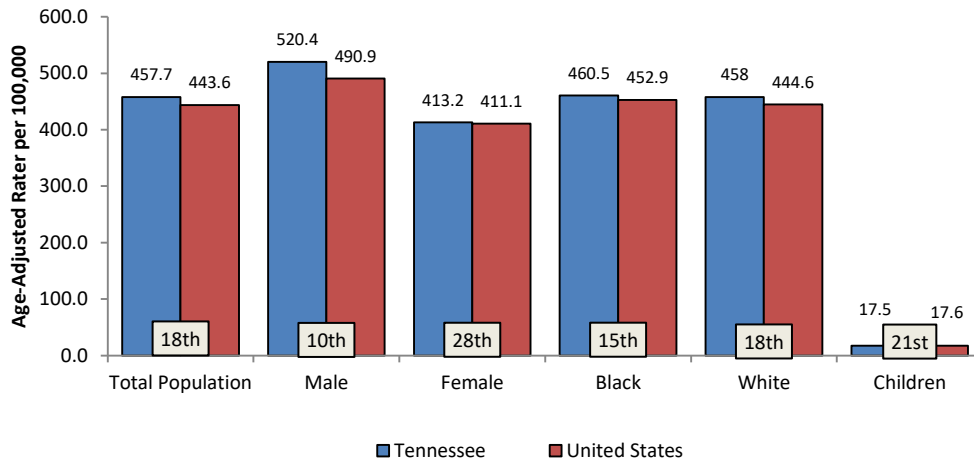


U.S. Data Source: National Cancer Institute (2017). State Cancer Profiles. Retrieved from <http://statecancerprofiles.cancer.gov/index.html>

- In TN and the US, cancer was the second leading cause of death during 2005 to 2014.
- The age-adjusted cancer mortality rate in TN decreased by 12.5% from 2005 to 2014.
- The age-adjusted cancer mortality rate in the US decreased by 12.9% from 2005 to 2014.
- In 2005, the TN cancer mortality rate was 13.7% higher than the US rate.
- In 2014, the TN cancer mortality rate was 14.3% higher than the US rate.
- From 2010 to 2014, the cancer mortality rate in TN fell 5.3%, whereas the US cancer mortality rate fell 6.1%.

[Data Source](#)

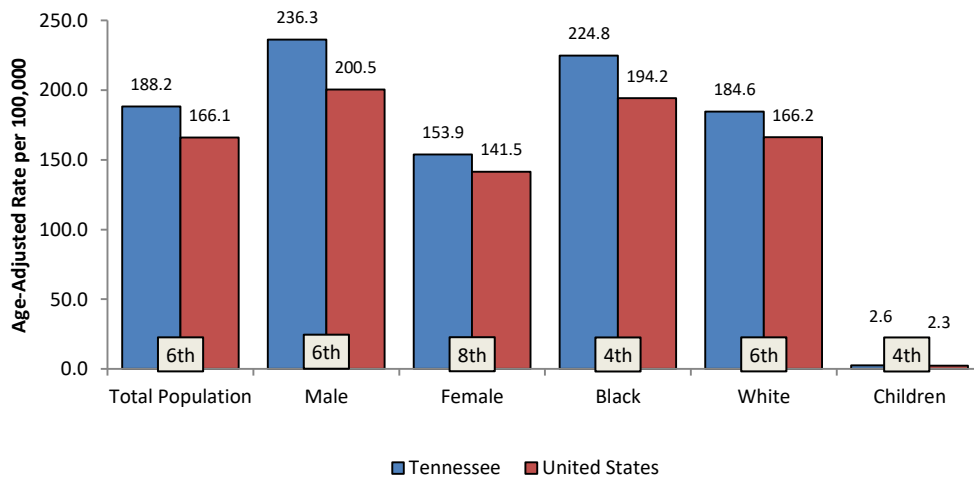
Incidence Rates, All Sites Combined, Tennessee and United States, 2010-2014



Source: National Cancer Institute (2017). State Cancer Profiles. Retrieved from <http://statecancerprofiles.cancer.gov/index.html>

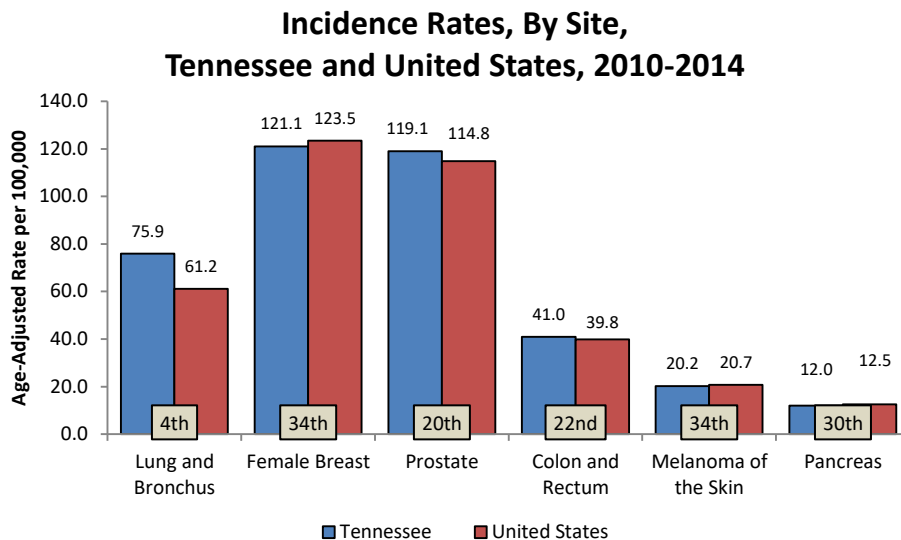
- The ranking for TN appears in the box at the base of each bar combination in the chart above.
- All Tennesseans, including whites, blacks, men and women had statistically significantly higher cancer incidence rates than the US incidence rates presented.
- Among all states in the US, seventeen states had overall, total population cancer rates higher than TN from 2010 to 2014.

Mortality Rates, All Sites Combined, Tennessee and United States, 2010-2014



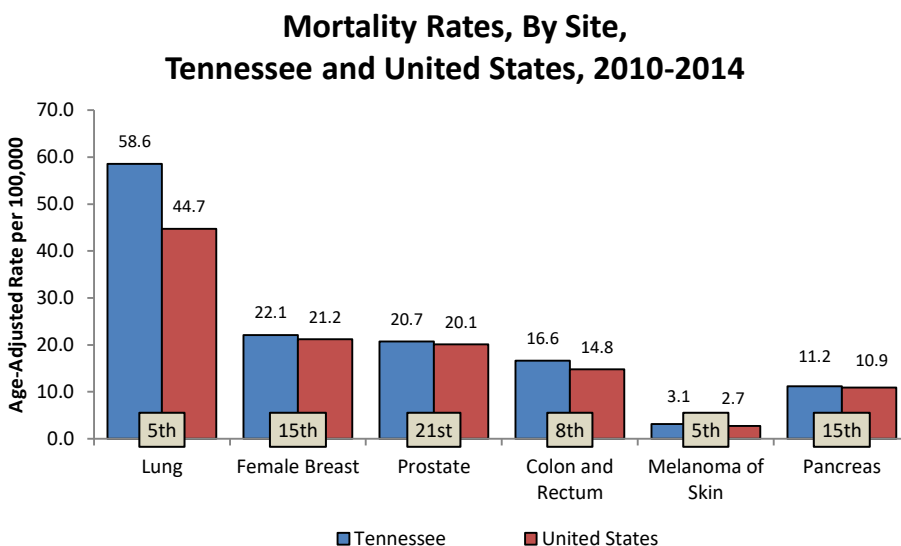
Source: National Cancer Institute (2017). State Cancer Profiles. Retrieved from <http://statecancerprofiles.cancer.gov/index.html>

- The ranking for TN appears in the box at the base of each bar combination in the chart above.
- All Tennesseans, including whites, blacks, men, and women all experienced statistically significantly higher cancer mortality rates than the US mortality rates, except for children.



Source: National Cancer Institute (2017). State Cancer Profiles. Retrieved from <http://statecancerprofiles.cancer.gov/index.html>

- The ranking for TN appears in the box at the base of each bar combination in the chart above.
- In TN, lung, prostate and colorectal cancer were the only cancers where the cancer incidence rate was statistically significantly higher compared to the reported US rate.



Source: National Cancer Institute (2017). State Cancer Profiles. Retrieved from <http://statecancerprofiles.cancer.gov/index.html>

- The ranking for TN appears in the box at the base of each bar combination in the chart above.
- In TN during 2010-2014, cancer mortality rates for lung, female breast, colorectal, and melanoma of the skin cancer were statistically significantly higher than the corresponding US site-specific cancer mortality rates.

Note: Rates presented on pages 19 & 20 were retrieved from State Cancer Profiles and will differ from rates presented elsewhere in this report due to the availability of more current data.

CANCER INCIDENCE AND MORTALITY IN TENNESSEE, 2010-2014

CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, 2010-2014

ALL SITES COMBINED CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2010-2014

Gender*	Race	Incidence				Mortality				M:I Ratio‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Both	All Races†	172,136	464.0	461.7	466.2	68,698	187.2	185.8	188.6	0.40
	Black	22,232	467.1	460.6	473.6	9,772	223.6	218.9	228.3	0.48
	White	147,658	464.3	461.9	466.7	58,425	183.3	181.8	184.8	0.39
Female	All Races†	82,730	418.0	415.1	420.9	31,340	153.1	151.4	154.8	0.37
	Black	10,988	404.0	396.3	411.8	4,712	182.0	176.7	187.5	0.45
	White	70,642	422.0	418.8	425.2	26,371	149.5	147.6	151.3	0.35
Male	All Races†	89,406	528.6	525.1	532.2	37,358	235.2	232.8	237.7	0.44
	Black	11,244	565.8	554.3	577.4	5,060	293.4	284.5	302.5	0.52
	White	77,016	523.9	520.1	527.8	32,054	229.9	227.3	232.5	0.44
Age at Diagnosis or Death										
	0-19	1,275	15.3	14.5	16.1	212	2.5	2.2	2.9	0.16
	20-44	12,110	120.2	118.1	122.4	1,909	19.2	18.3	20.1	0.16
	45-64	67,194	720.8	715.2	726.3	21,114	221.9	218.9	225.0	0.31
	65+	91,557	2,022.8	2,009.6	2,036.1	45,463	1,030.3	1,020.7	1,039.9	0.51
Year of Diagnosis or Death										
	2010	33,903	477.1	472.0	482.3	13,514	193.5	190.2	196.8	0.41
	2011	34,459	473.8	468.7	478.9	13,461	187.6	184.4	190.9	0.40
	2012	34,529	465.6	460.6	470.6	13,632	186.0	182.8	189.2	0.40
	2013	34,733	458.7	453.8	463.6	13,938	185.4	182.3	188.5	0.40
	2014	34,512	446.4	441.6	451.3	14,153	184.1	181.0	187.2	0.41

*Excludes individuals with disorders of sex development and transsexuals.

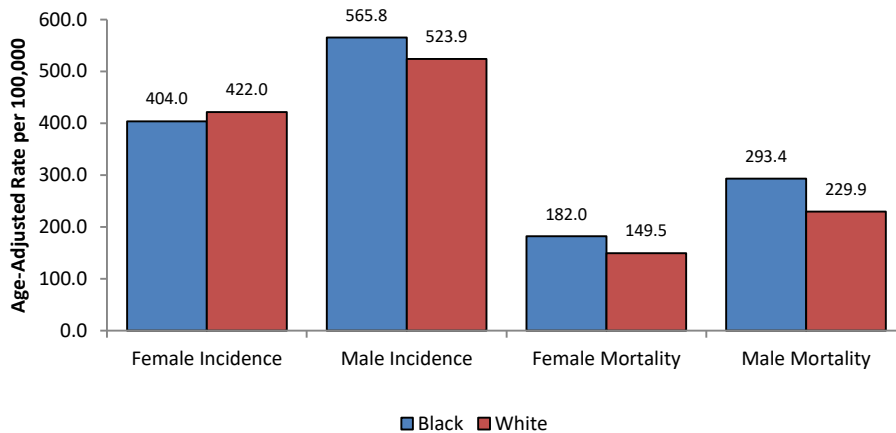
**Total counts are from 2010 to 2014.

***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population

†Includes whites, blacks, and other races and those missing race information.

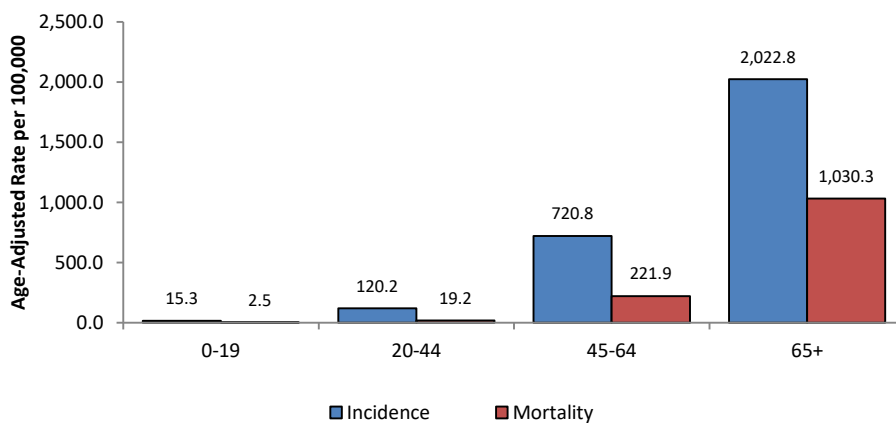
‡Mortality incidence ratio. See Technical Notes for details.

Cancer Incidence and Mortality, All Sites Combined, by Gender and Race, Tennessee, 2010-2014



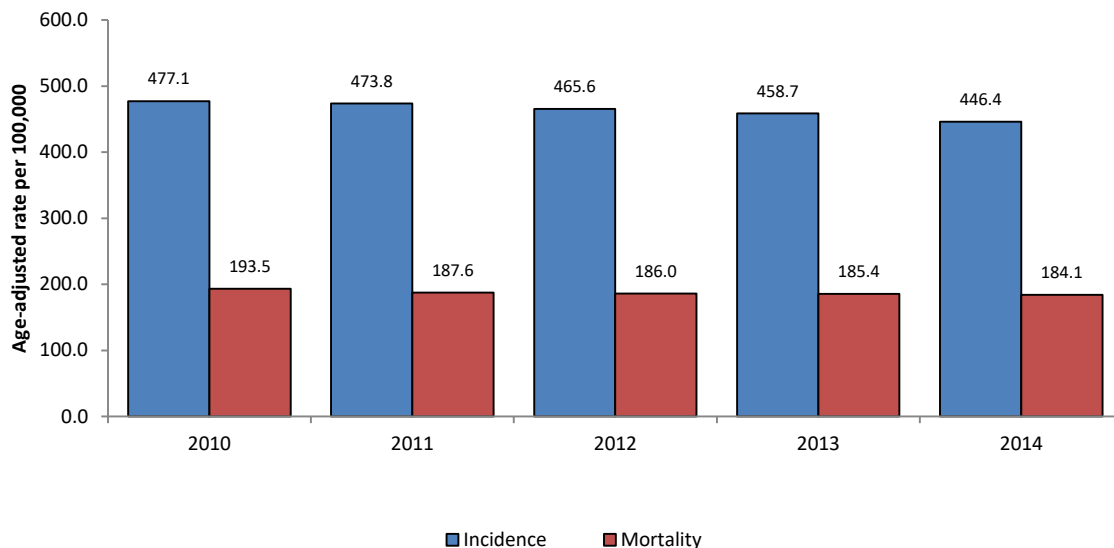
- From 2010 to 2014, a total of 172,136 Tennesseans were diagnosed with cancer, an average of 34,427 new cancer diagnoses per year or roughly one new cancer diagnosis every 15 minutes.
- During the same time period, 68,698 Tennesseans died from cancer, an average of 13,740 cancer deaths per year or roughly one cancer death every 38 minutes.

Cancer Incidence and Mortality, All Sites Combined, by Age Group, Tennessee, 2010-2014



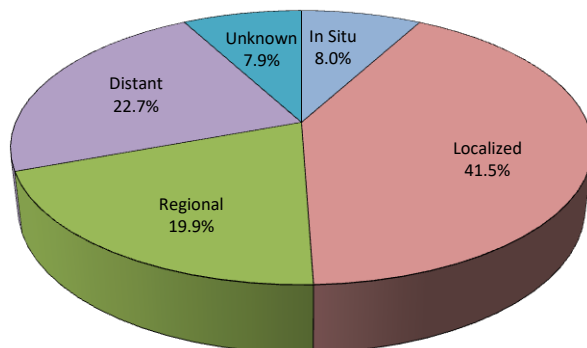
- Both cancer incidence and mortality rates increased with age, with the highest rates among Tennesseans 65 years and older.

Cancer Incidence and Mortality Time Trends, All Sites Combined, Tennessee, 2010-2014



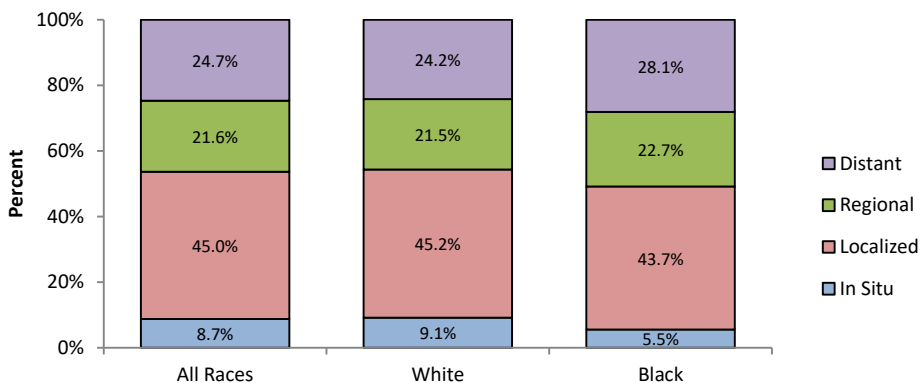
- The cancer incidence rate in Tennessee fell by 6.4% from 2010 to 2014 and this decrease was statistically significant.
- The cancer mortality rate in Tennessee fell by 4.9% from 2010 to 2014 and this decrease was statistically significant.
- From 2011 to 2014, the number of cancer deaths has increased each consecutive year; however, note the cancer mortality rates continued to drop from 2013 to 2014. Therefore, the increased numbers of cancer deaths observed is likely due to population increase in Tennessee.

Cancer Stage, All Sites Combined, Tennessee, 2010-2014



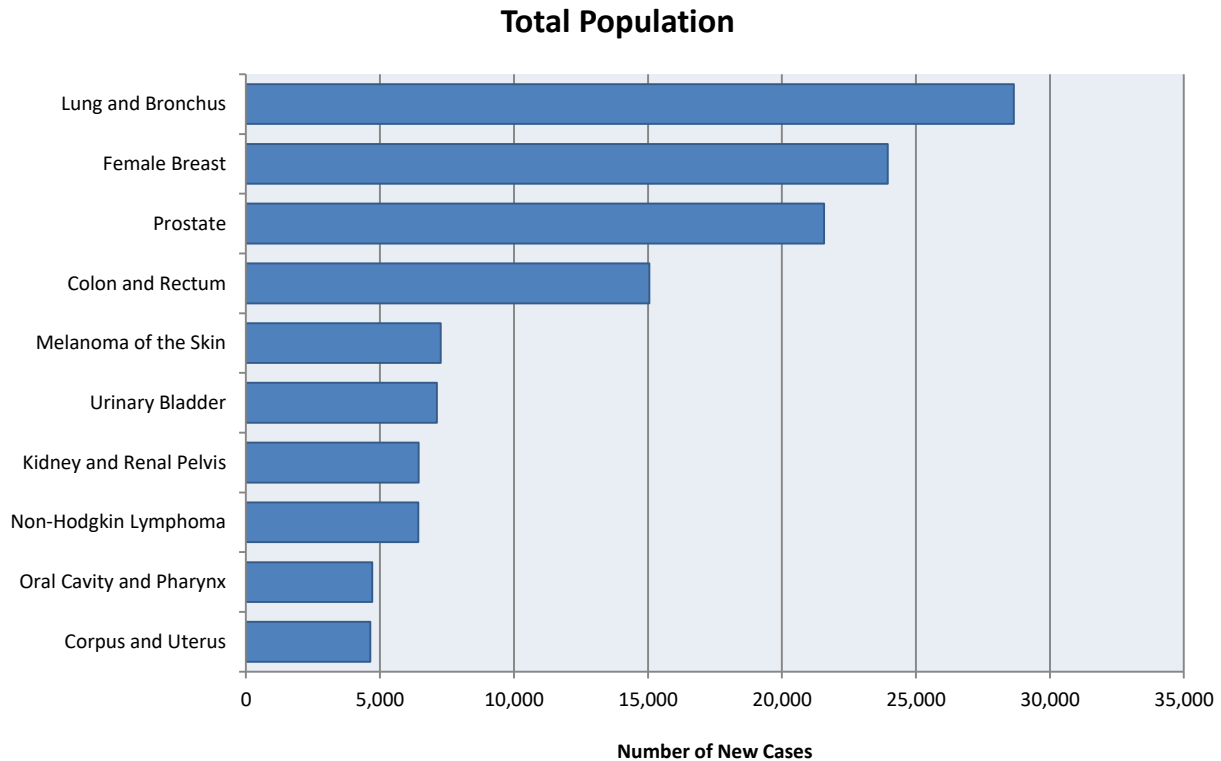
- Including cancers with unknown stage, 8.0% of new cancer cases were diagnosed at an in situ stage; 41.5% at localized stage; 19.9% at regional stage; and 22.7% at a distant stage.

Cancer Stage, All Sites Combined, By Race, Tennessee, 2010-2014



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

- Among all races with known stage information, 8.7%, 45.0%, 21.6%, and 24.7% were diagnosed at the in situ, localized, regional, and distant stage, respectively. Cancer staging is defined in the section “Explanation of Terms” that begins on page 87.
- 50.8% of blacks were diagnosed at late stages (i.e., at the regional or distant stage) compared to 45.7% of whites diagnosed in the same stages and this difference was statistically significant, which may partially explain why blacks have a higher mortality rate compared to whites.

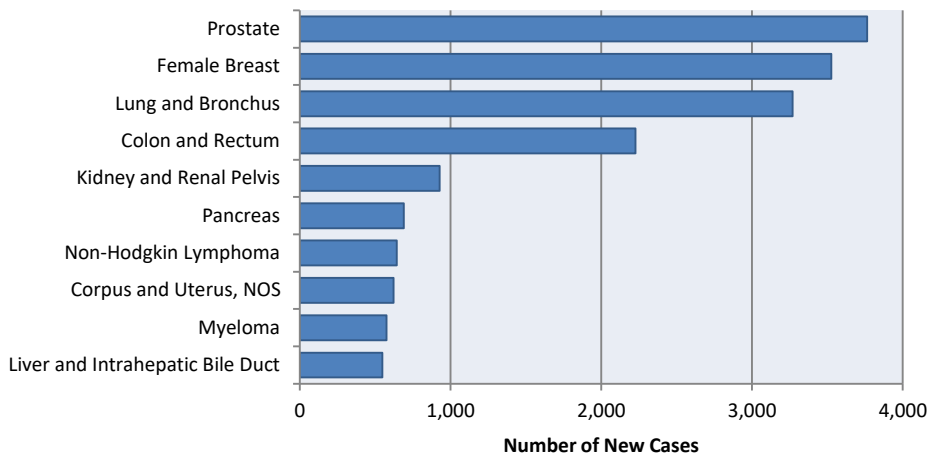


The figure above presents the Leading Causes of Cancer Incidence in TN from 2010 to 2014.

- During this period there were 172,136 new cancer cases among Tennesseans.
- Lung cancer (28,655 cases) accounted for the most cancer incidence cases followed by female breast cancer (23,946 cases), prostate cancer (21,574 cases), colorectal cancer (15,050 cases), melanoma of the skin (7,271 cases), urinary bladder cancer (7,120 cases), kidney and renal pelvis cancer (6,447 cases), non-Hodgkin lymphoma (6,429 cases), oral cavity and pharynx cancer (4,713 cases), and uterine cancer (4,640 cases).
- The ten most common cancers in TN accounted for almost three quarters (73.1%) of all new cancer cases in TN from 2010 to 2014.
- One in thirteen Tennesseans will be diagnosed with lung cancer in their lifetime.
- One in eight TN men will develop prostate cancer in their lifetime.
- One in eight TN women will develop breast cancer in their lifetime.
- One in twenty-four Tennesseans will develop colorectal cancer in their lifetime.
- One in thirty-four Tennesseans will develop melanoma of the skin cancer in their lifetime.
- One in seventy-eight Tennesseans will develop pancreatic cancer in their lifetime.

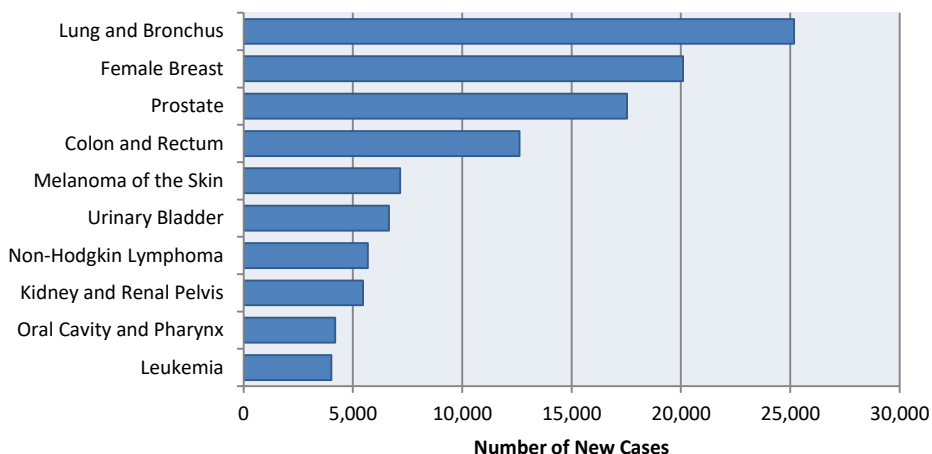
LEADING CAUSES OF CANCER INCIDENCE, 2010-2014, CONTINUED

Black



- According to the 2010 US Census, black Tennesseans accounted for 16.7% of the total population in TN.
- Prostate cancer was the leading cause of cancer incidence during the 2010-2014 period, accounting for 16.9% of total new cancer cases among black Tennesseans.
- There were 22,232 new cancers diagnosed among black Tennesseans from 2010-2014, which represented 12.9% of all new cancers in TN.

White

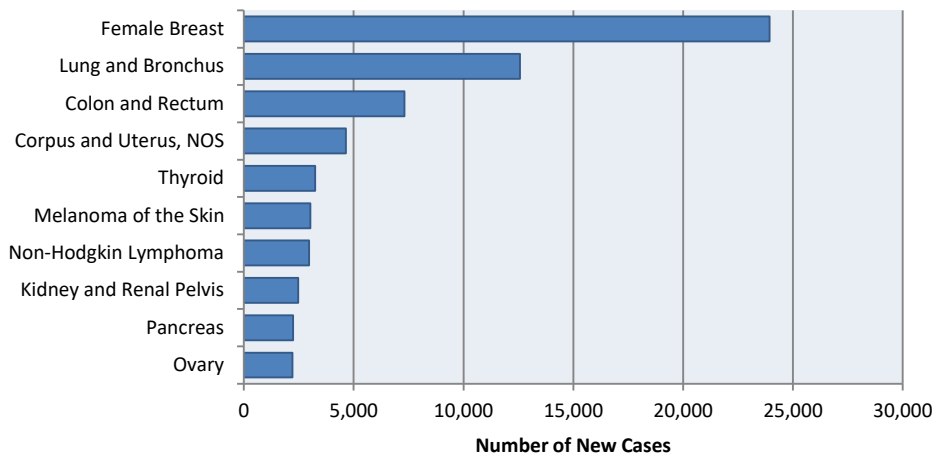


- According to the 2010 US Census, white Tennesseans accounted for 77.6% of the total population in TN.
- Lung cancer was the leading cause of cancer incidence accounting for 17.0% of all cancer cases among whites.
- There were 147,658 new cancers diagnosed among white Tennesseans from 2010-2014, which represented 85.8% of all new cancers in TN.

[Data Source](#)

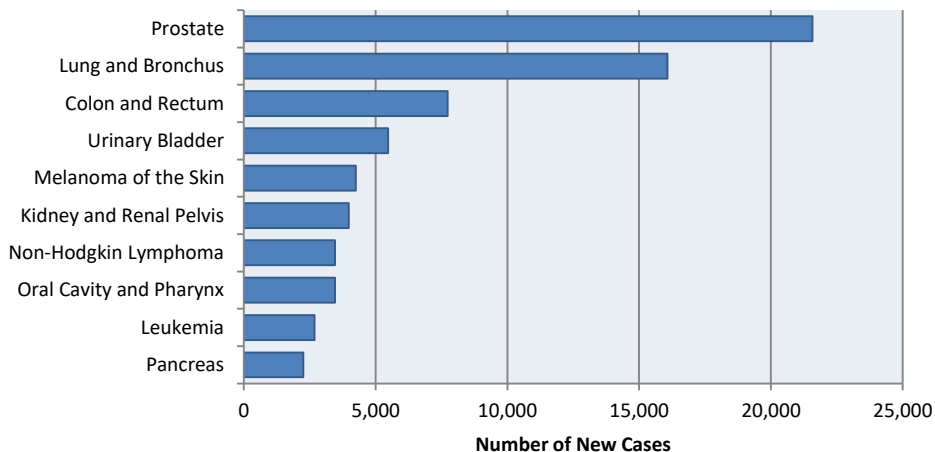
LEADING CAUSES OF CANCER INCIDENCE, 2010-2014, CONTINUED

Female

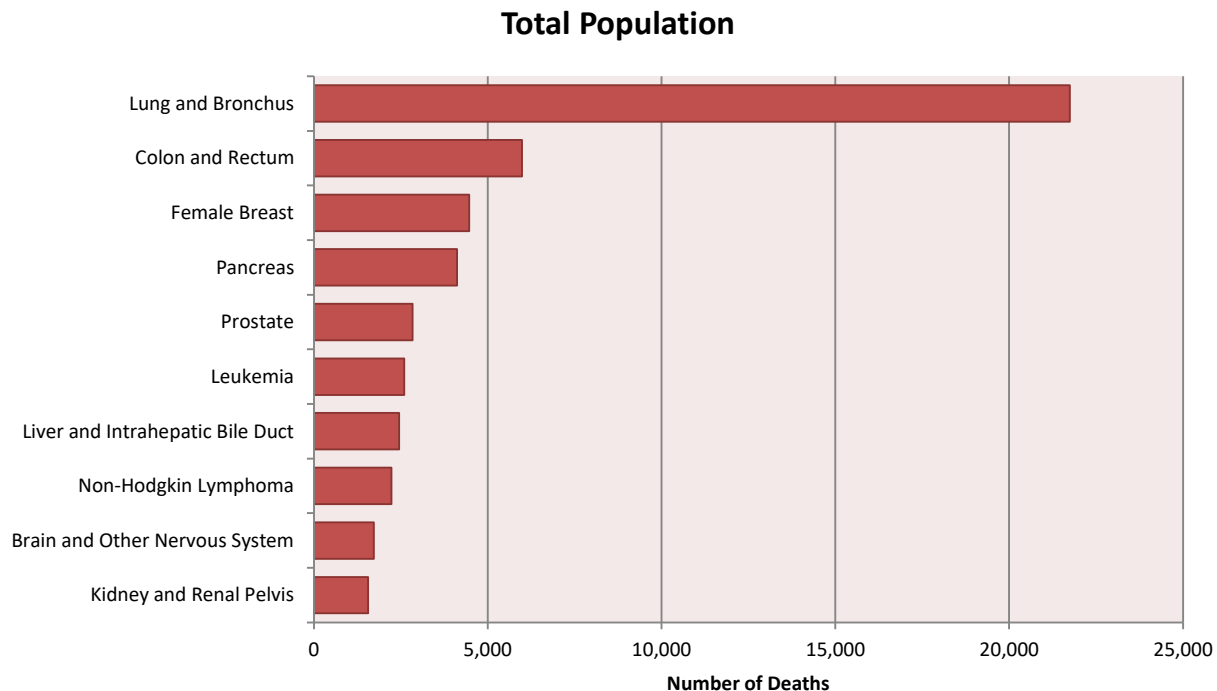


- According to the 2010 US Census, women represented 51.3% of the total population in TN.
- Breast cancer was the leading cause of cancer incidence among TN women in 2010-2014, accounting for 28.9% of total cancer cases among women.
- There were 82,730 new cancer diagnosed among TN women from 2010-2014, accounting for 48.1% of all new cancers in TN.

Male



- According to the 2010 US Census, men represented 48.7% of the total population in TN.
- Prostate cancer was the leading cause of cancer among TN men in 2010-2014, accounting for 24.1% of total cancer cases among men.
- There were 89,406 new cancers diagnosed among TN men from 2010-2014, accounting for 51.9% of all new cancers in TN.

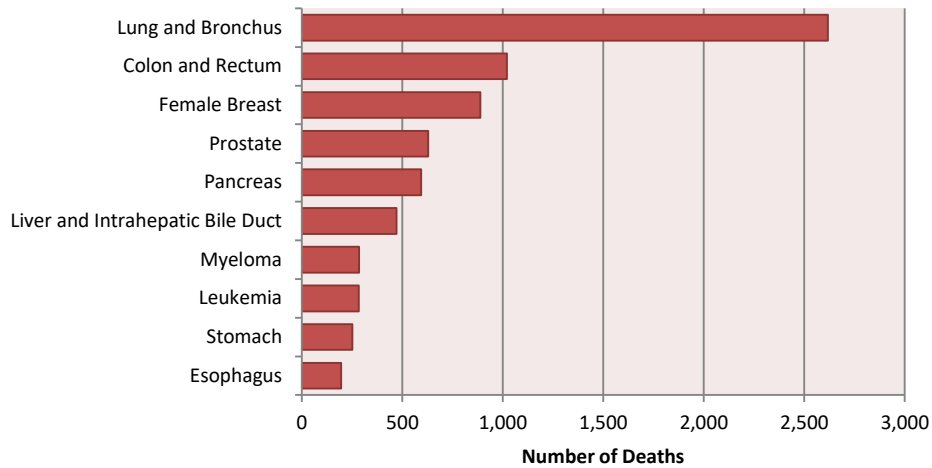


This figure represents the Leading Causes of Cancer Mortality in TN from 2010 to 2014.

- Lung cancer was the leading cause of cancer mortality in TN during this 5-year period and accounted for 31.7% of all cancer deaths (68,698 deaths).
- The top ten causes of cancer death were as follows: lung cancer (21,747 deaths); colorectal cancer (5,985 deaths); female breast cancer (4,467 deaths); pancreatic cancer (4,118 deaths); prostate cancer (2,840 deaths); leukemia (2,596 deaths); liver cancer (2,457 deaths); non-Hodgkin lymphoma (2,231 deaths); brain cancer (1,729 deaths) and kidney cancer (1,564 deaths).
- The ten most common cancers shown above accounted for almost three quarters (72.4%) of all cancer deaths in TN from 2010 to 2014.

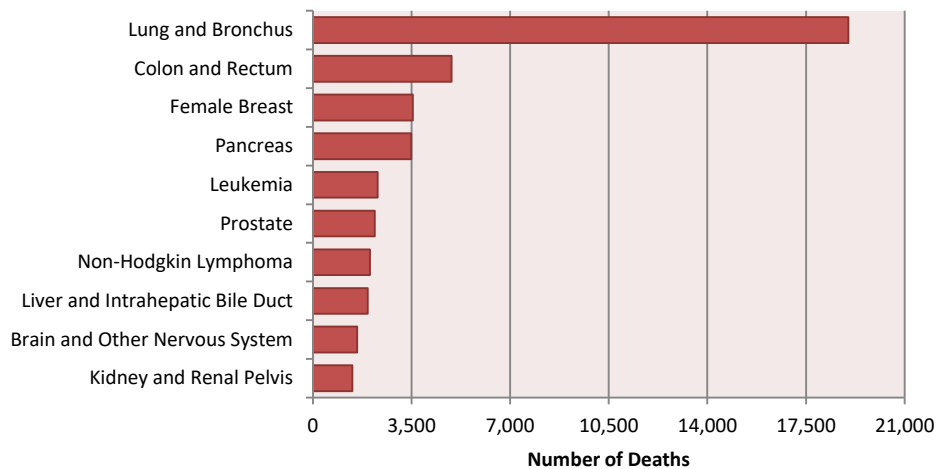
LEADING CAUSES OF CANCER MORTALITY, 2010-2014, CONTINUED

Black



- There were 9,772 cancer deaths among black Tennesseans from 2010-2014, accounting for 14.2% of all cancer deaths in TN.
- Lung cancer was the leading cause of cancer mortality accounting for 26.8% of cancer deaths among black Tennesseans.

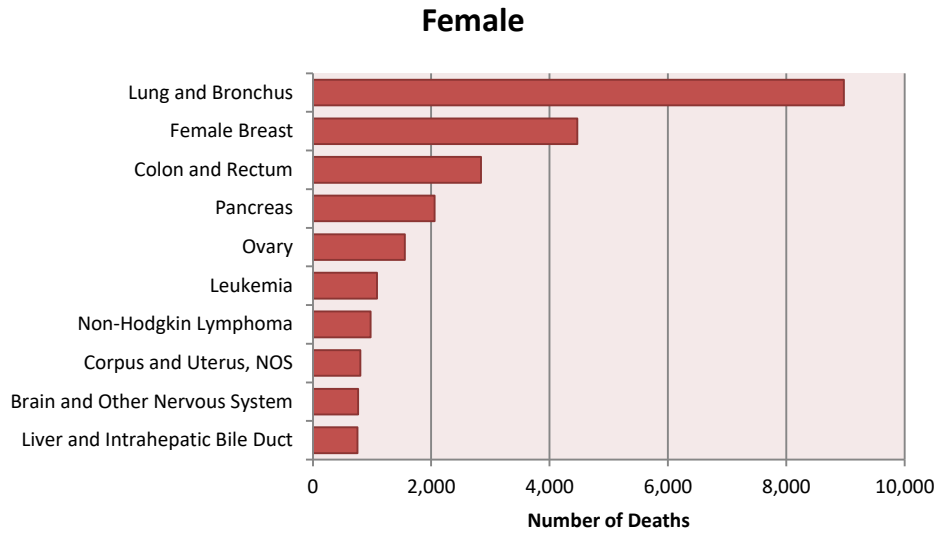
White



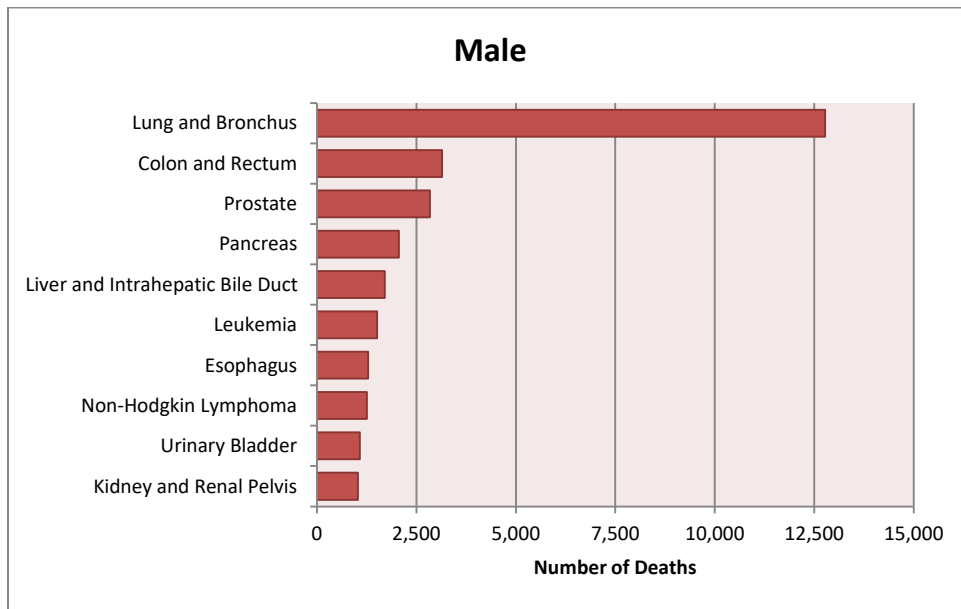
- There were 58,425 cancer deaths among white Tennesseans accounting for 85.0% of all cancer deaths in TN from 2010 to 2014.
- Lung cancer was the leading cause of cancer mortality accounting for 32.5% of cancer deaths among white Tennesseans.

[Data Source](#)

LEADING CAUSES OF CANCER MORTALITY, 2010-2014, CONTINUED



- There were 31,340 cancer deaths among TN women accounting for 45.6% of all cancer deaths in TN from 2010 to 2014.
- Lung cancer was the leading cause of cancer mortality, accounting for 28.6% of all cancer deaths among TN women.



- There were 37,358 cancer deaths among Tennessee men accounting for 54.4% of all cancer deaths in TN from 2010 to 2014.
- Lung cancer was the leading cause of cancer mortality, representing 34.2% of all cancer deaths among TN men.

MOST COMMON CANCERS IN TENNESSEE, 2010-2014

LUNG CANCER

From 2010 through 2014, lung cancer accounted for 16.6% of all new cancer cases and almost a third (31.7%) of all cancer mortalities. The lung cancer incidence rate decreased by 5.6% from 2010 to 2014 and this change was statistically significant. Additionally, the lung cancer mortality rate decreased by 9.1% from 2010-2014 and this change was statistically significant. TN had the fourth highest incidence rate and the fifth highest mortality rate in the US during 2010-2014. It should also be noted Tennesseans who died of lung cancer died on average 7.6 years earlier than expected.

Lung cancer is the leading cause of cancer incidence (28,655 cases) and mortality (21,747 deaths) in TN. Only 20.6% of lung cancer cases with known stage information were diagnosed in early stages (i.e., in situ or local stages). Overall, men had higher lung incidence and mortality rates than women. White women had higher incidence and mortality rates than black women and black men had higher incidence and mortality rates than white men. The mortality-to-incidence ratio (see Technical Notes, page 89) for lung cancer, all races and both sexes combined, was 0.77, making it the second deadliest cancer in TN. In recent years, the National Lung Screening Trial has illustrated that a lung cancer screening test can help lower the risk of dying from this disease in certain individuals (NLSTRT, 2011). Thus the US Preventive Services Taskforce recently gave low-dose computed tomography screening for lung cancer a grade of “B” for certain individuals: adults aged 55-80 with a 30-pack year history of smoking and who currently smoked or quit within the past 15 years.

LUNG CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2010-2014

		Incidence				Mortality				M:I
Gender	Race	Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Both*	All Races†	28,655	76.1	75.2	77.0	21,747	58.3	57.5	59.1	0.77
	Black	3,270	72.6	70.0	75.2	2,617	60.1	57.7	62.5	0.83
	White	25,172	77.0	76.1	78.0	19,001	58.5	57.7	59.4	0.76
Female	All Races†	12,576	61.1	60.0	62.2	8,972	43.4	42.5	44.4	0.71
	Black	1,363	52.2	49.4	55.1	1,061	41.9	39.3	44.6	0.80
	White	11,115	62.9	61.7	64.1	7,845	44.0	43.0	45.0	0.70
Male	All Races†	16,079	96.0	94.5	97.5	12,775	78.2	76.8	79.6	0.81
	Black	1,907	103.7	98.6	108.9	1,556	88.4	83.6	93.4	0.85
	White	14,057	95.6	93.9	97.2	11,156	77.6	76.1	79.1	0.81
Age at Diagnosis or Death										
	0-19	9	0.1	0.0	0.2	^	^	^	^	^
	20-44	405	4.1	3.7	4.6	239	2.5	2.2	2.8	0.61
	45-64	9,819	102.7	100.6	104.7	6,758	70.1	68.4	71.8	0.68
	65+	18,422	409.6	403.6	415.6	14,749	331.2	325.8	336.6	0.81
Year of Diagnosis or Death										
	2010	5,634	78.6	76.6	80.7	4,400	62.2	60.3	64.0	0.79
	2011	5,597	76.3	74.2	78.3	4,289	58.9	57.1	60.7	0.77
	2012	5,744	76.1	74.1	78.1	4,327	58.2	56.4	60.0	0.76
	2013	5,820	75.6	73.6	77.6	4,302	56.2	54.6	58.0	0.74
	2014	5,860	74.2	72.3	76.2	4,429	56.5	54.8	58.2	0.76

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

**Total counts are from 2010 to 2014.

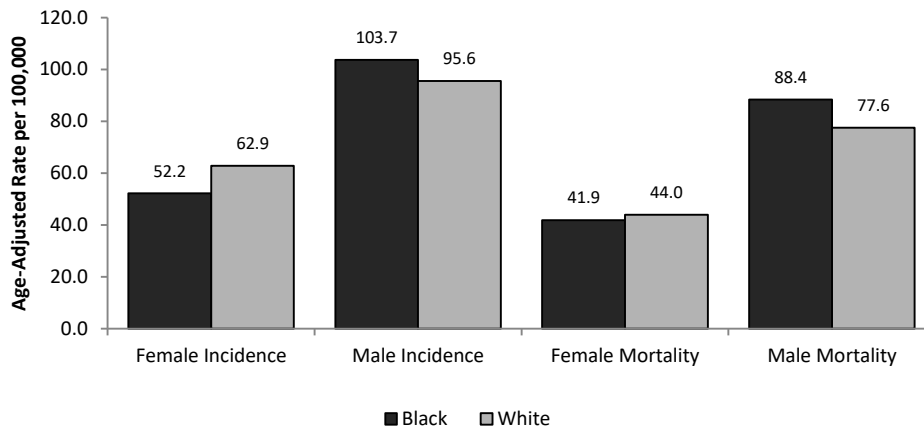
***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Includes whites, blacks, other races, and those missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

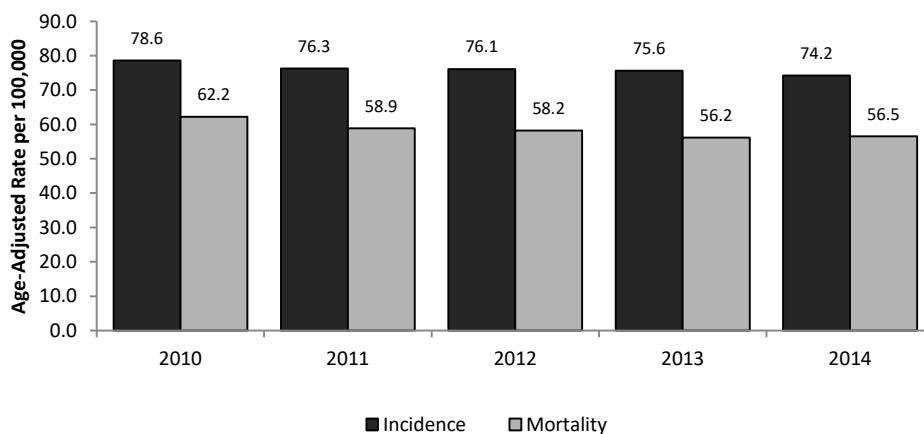
[Data Source](#)

Cancer Incidence and Mortality, Lung and Bronchus, By Gender and Race, Tennessee, 2010-2014



- There were 28,655 cases of newly diagnosed lung cancer in 2010-2014 among Tennesseans, resulting in an age-adjusted incidence rate of 76.1 per 100,000.
- During the same time period, 21,747 Tennesseans died from lung cancer, resulting in an age-adjusted mortality rate of 58.3 per 100,000.
- TN men had higher incidence and mortality rates than women regardless of race.
- White women had higher incidence and mortality rates than black women, but black men had higher incidence and mortality rates than white men.

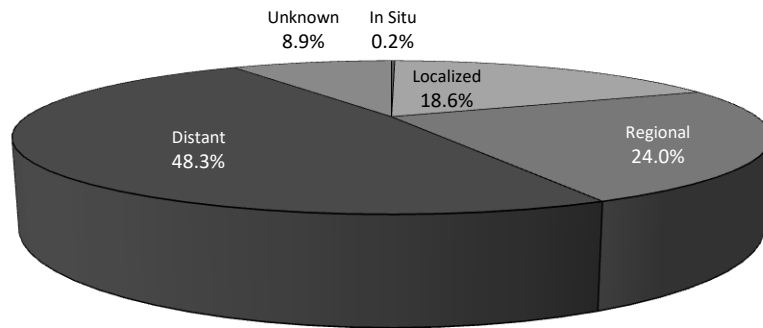
Cancer Incidence and Mortality, Lung and Bronchus, By Year, Tennessee 2010-2014



- From 2010 to 2014, lung cancer incidence decreased by 5.6% and lung cancer mortality rates declined by 9.1% and both changes were statistically significant.
- Lung cancer alone accounted for 6.1% of the total YPLL in TN between 2010 and 2014. The large proportion of YPLL lost to lung cancer can be partially attributable to the number of current cigarette smokers in TN, given cigarette smoking is linked to about 80% to 90% of lung cancers (U.S. Department of Health and Human Services, 2004).

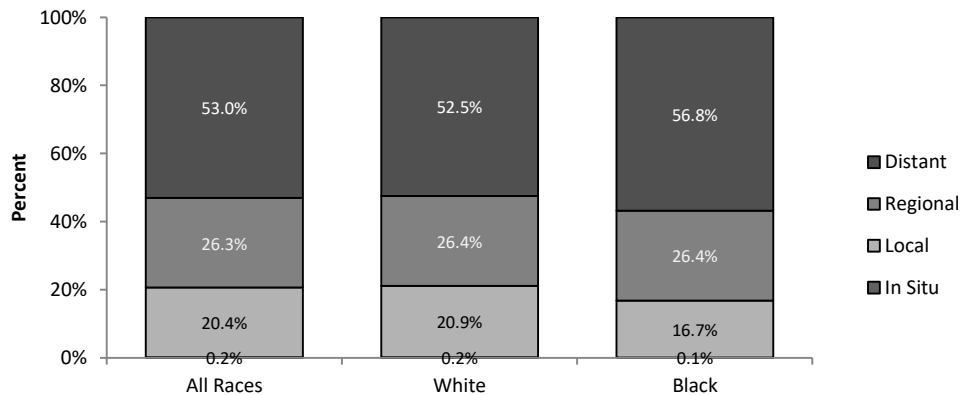
[Data Source](#)

Cancer Stage, Lung and Bronchus, Tennessee, 2010-2014



- 0.2% of lung cancer cases were diagnosed at the in situ stage. Cancer staging is defined in the section “Explanation of Terms” that begins on page 87.
- One in five cases (18.6%) was diagnosed at the localized stage.
- About one in four (24.0%) was diagnosed at the regional stage.
- Almost half of new cases (48.3%) were diagnosed at the distant stage.
- 8.9% of cases had unknown stage information.

Cancer Stage, Lung and Bronchus, By Race, Tennessee 2010-2014



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

- Among cases with known stage information, four out of five (79.3%) were diagnosed at either the regional or distant stage (i.e. late stages).
- Black patients had a higher proportion (83.2%) of cases diagnosed at late stages than white patients (78.9%), and this difference was statistically significant.

PROSTATE CANCER

During 2010-2014, prostate cancer accounted for nearly a quarter (24.1%) of new cancer cases and 7.6% of deaths due to cancer among TN men. Prostate cancer incidence rates decreased from 2010 to 2014 by 26.7% and this change was statistically significant. Mortality rates also decreased from 2010 to 2014 by 17.3% and this was statistically significant. TN had the twentieth highest incidence rate and the twenty-first highest mortality rate in the US from 2010-2014. It should also be noted that TN men who died of prostate cancer died on average 3.4 years earlier than expected.

Prostate cancer is the leading cause of cancer incidence (21,574 cases) and the third leading cause of cancer mortality (2,840 cases) in TN men. Roughly four out of five (82.7%) cases with known stage information are diagnosed at early stages, which is perhaps partially attributable to prostate cancer screening methods and the slow progressive course prostate cancer typically displays compared to most other cancers. Black men are disproportionately affected by this disease compared to white men; black men experience a mortality rate that is roughly two and a half times higher compared to white men. The mortality-to-incidence ratio of prostate cancer was found to be 0.17, which may partially be attributed to screening methods and steadily improving treatment options. Currently, the US Preventive Services Taskforce does not recommend population-based screening for prostate cancer. The panel provided a grade of “D” to the procedure. It should be noted that the Taskforce is currently in the process of updating this recommendation. The proposed update would provide a “C” grade for PSA screening among men who are 55-69 years of age; the taskforce provides a “D” grade for PSA screening among men who are 70 years of age and older.

PROSTATE CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2010-2014

Gender	Race	Incidence				Mortality				M:I Ratio ‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Male	All Races†	21,574	119.5	117.8	121.1	2,840	20.6	19.9	21.4	0.17
	Black	3,765	183.2	176.8	189.7	629	47.2	43.3	51.3	0.26
	White	17,528	111	109.4	112.8	2,194	18	17.2	18.7	0.16
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	127	2.6	2.2	3.1	5	0.1	0	0.2	0.04
	45-64	9,053	192	188	196.0	382	7.8	7.1	8.7	0.04
	65+	12,392	600.3	589.5	611.2	2,453	149.2	143.2	155.3	0.24
Year of Diagnosis or Death										
	2010	4,594	136	132	140.1	600	23.7	21.8	25.8	0.17
	2011	4,851	138.7	134.7	142.7	574	21.7	19.9	23.6	0.16
	2012	4,232	117.0	113.4	120.7	545	19.9	18.2	21.7	0.17
	2013	4,077	109.2	105.8	112.8	541	18.6	17	20.3	0.17
	2014	3,820	99.6	96.4	102.9	580	19.6	18.0	21.3	0.20

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

**Total counts are from 2010 to 2014.

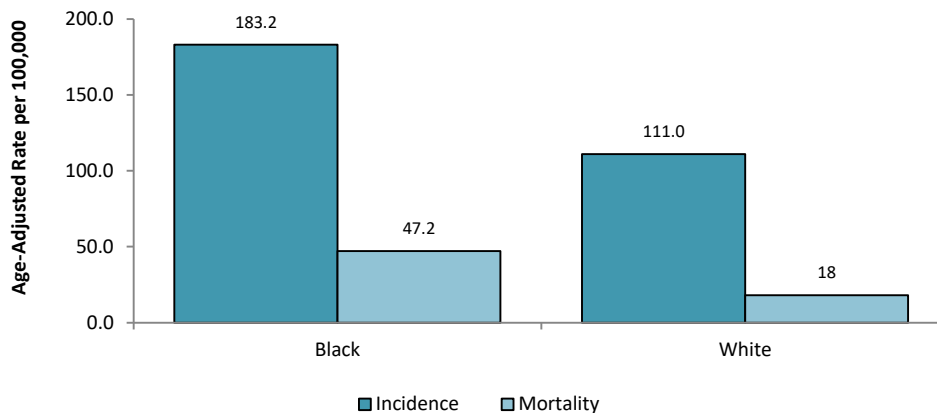
***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Includes whites, blacks, other races, and those missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

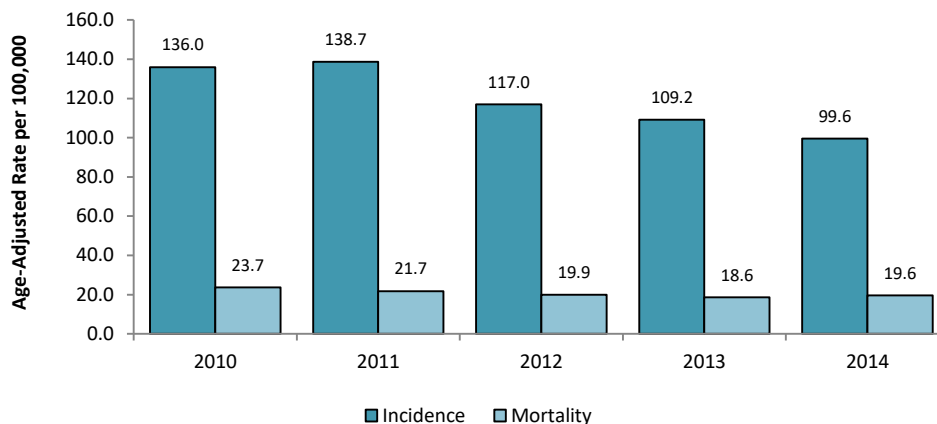
[Data Source](#)

Cancer Incidence and Mortality, Prostate, By Race, Tennessee, 2010-2014



- A total of 21,574 newly diagnosed prostate cancer cases were reported among TN men from 2010 to 2014, resulting in an age-adjusted incidence rate of 119.5 per 100,000.
- During the same time period, 2,840 prostate cancer deaths were reported, giving an age-adjusted mortality rate of 20.6 per 100,000.
- The mortality-to-incidence ratio for prostate cancer was 0.17, making it one of least deadly cancers among the most common cancers in TN.

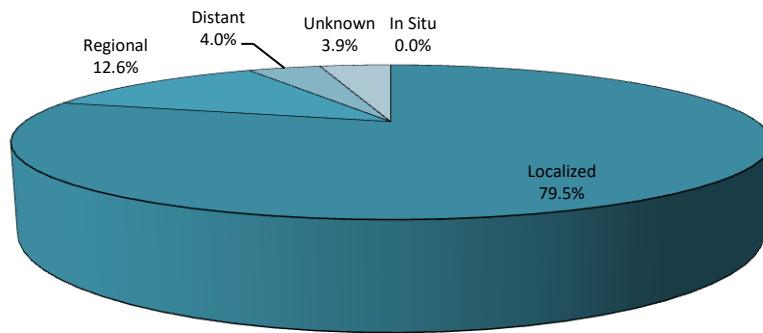
Cancer Incidence and Mortality, Prostate, By Race, Tennessee, 2010-2014



- The prostate cancer incidence and mortality rates decreased by 26.7% and 17.3%, respectively, from 2010 to 2014, and both changes were statistically significant.
- It should be noted in 2012 roughly half (51.2%) of TN men 40 years of age or greater had a prostate-specific antigen (PSA) test in the past two years; however, in 2014 only 41.4% of TN men 40 years of age or greater had a PSA test in the past two years. Thus, fewer men undergoing prostate cancer screening may mean that fewer men will be diagnosed with prostate cancer in the short term.

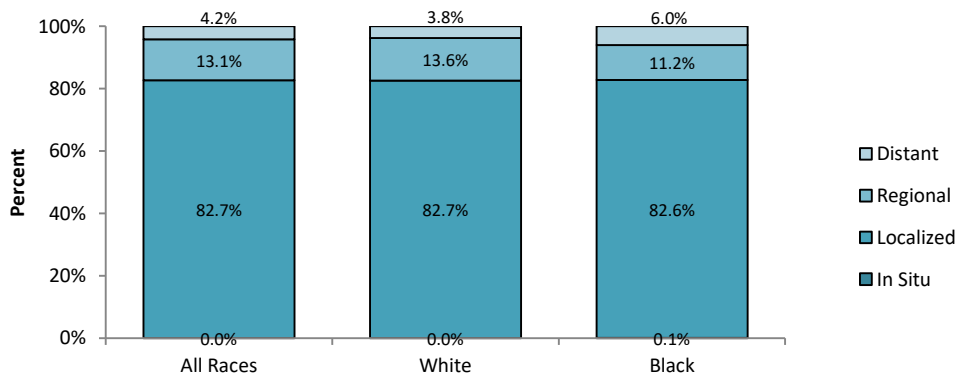
[Data Source](#)

Cancer Stage, Prostate, Tennessee, 2010-2014



- Less than 10 cases of prostate cancer were diagnosed at the in situ stage. Cancer staging is defined in the section “Explanation of Terms” that begins on page 87.
- About four out of every five cases (79.4%) were diagnosed at the localized stage.
- Another 12.6% of cases were diagnosed at the regional stage.
- Approximately 4.0% of cases were diagnosed at the distant stage.
- 3.9% of cases had unknown stage information.

Cancer Stage, Prostate, By Race, Tennessee, 2010-2014



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

- Among cases with known stage information, only 17.3% were diagnosed at late stages (i.e., regional or distant stage).
- A slightly higher percentage of white patients were diagnosed at late stages (17.4%) than black patients (17.2%), but this difference was not statistically significant.
- Early diagnosis of prostate cancer is believed to contribute to a low mortality-to-incidence ratio.

FEMALE BREAST CANCER

From 2010 through 2014, breast cancer represented 28.9% of new female cancer cases and 14.3% of female cancer deaths. Female breast cancer incidence rates remained relatively stable over the 5-year period covered by this report. It appears that both breast cancer incidence and mortality may have reached a plateau during 2013 and counts may be starting to decrease though additional years of decreasing counts will be needed before confirming this potential decreasing trend. TN women experienced the thirty-fourth highest breast cancer incidence rate and the fifteenth highest breast cancer mortality rate in the US during 2010-2014. It should be noted in 2014, nearly four out of five TN women (78.8%), 50-74 years of age, had received a mammogram in the past two years, which ranks TN as the twenty-first highest breast cancer screening rate in the US. Tennessee women who died of breast cancer died 10.4 years earlier than expected.

Breast cancer is the leading cause of cancer incidence (23,946 cases) and the second leading cause of cancer mortality (4,467 cases) in TN women. Over 70% (70.7%) of new cases with known stage information are diagnosed at early stages when treatment is more effective; the high percentage of early stage breast cancer can be attributable to effective screening methods. Breast cancer incidence and mortality rates of black women were higher than white women in TN, especially mortality rates that were highly statistically significantly higher in black women compared to white women. Furthermore, it is important to note that black women are more likely than white women to be diagnosed with breast cancer in the late stages (i.e., regional and distant). Early detection and effective treatment options contributed to the low mortality-to-incidence ratio of breast cancer (0.18). The US Preventive Services Taskforce recommends biennial screening mammography for women beginning at the age of 50 and continuing to the age of 74, "B" grade. The Taskforce provided a grade of "C" for screening mammography for women 40-49 years of age.

FEMALE BREAST CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2010-2014

Gender	Race	Incidence				Mortality				M:I Ratio ‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Female	All Races †	23,946	121.3	119.8	122.9	4,467	22.0	21.3	22.6	0.18
	Black	3,526	126.1	121.8	130.4	889	32.5	30.4	34.8	0.26
	White	20,094	120.5	118.8	122.3	3,548	20.4	19.7	21.1	0.17
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	2,310	46.7	44.8	48.6	269	5.4	4.8	6.1	0.12
	45-64	11,078	236.9	232.4	241.4	1,644	34.2	32.5	35.9	0.14
	65+	10,557	409.2	401.3	417.1	2,554	98.0	94.3	102.0	0.24
Year of Diagnosis or Death										
	2010	4,561	119.1	115.6	122.7	870	22.3	20.8	23.9	0.19
	2011	4,710	120.8	117.3	124.4	862	21.5	20.1	23.0	0.18
	2012	4,816	122.3	118.8	125.9	905	22.4	20.9	24.0	0.18
	2013	5,064	126.0	122.4	129.6	924	22.2	20.8	23.7	0.18
	2014	4,795	118.4	115.0	121.9	906	21.5	20.0	22.9	0.18

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

**Total counts are from 2010 to 2014.

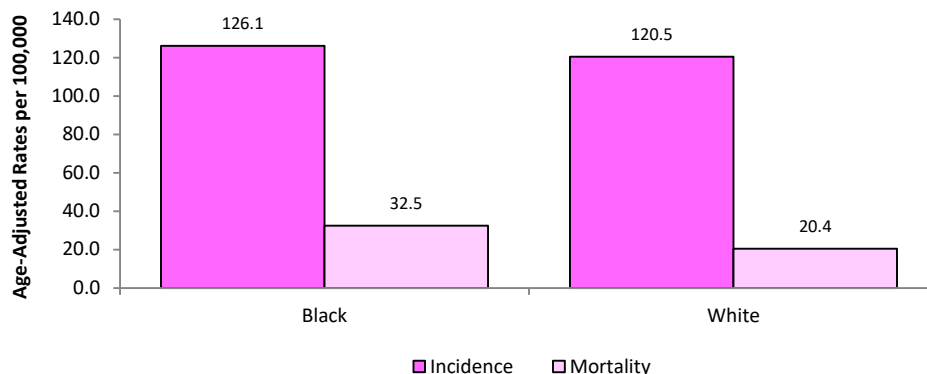
***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Includes whites, blacks, other races, and those missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

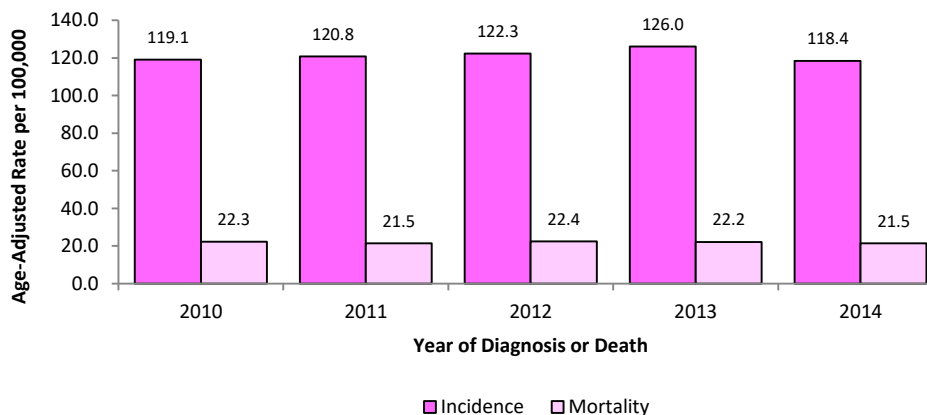
[Data Source](#)

Cancer Incidence and Mortality, Female Breast, By Race, Tennessee, 2010-2014



- A total of 23,946 new breast cancer cases were diagnosed among TN women from 2010 to 2014, and the age-adjusted incidence rate was 121.3 per 100,000.
- During the same time period, 4,467 Tennessee women died from breast cancer, giving an age-adjusted mortality rate of 22.0 per 100,000.
- Black women had statistically significantly higher breast cancer mortality rates than white women; however, note that incidence rates between the two races are not statistically significantly different. This mortality disparity among black women compared to white women is not necessarily explained by less access to screening since black women report a similar prevalence of mammography screening compared to white women, according to the 2014 BRFSS survey.
- Female breast cancer had a mortality-to-incidence ratio of 0.18, making it one of the least deadly cancer forms.

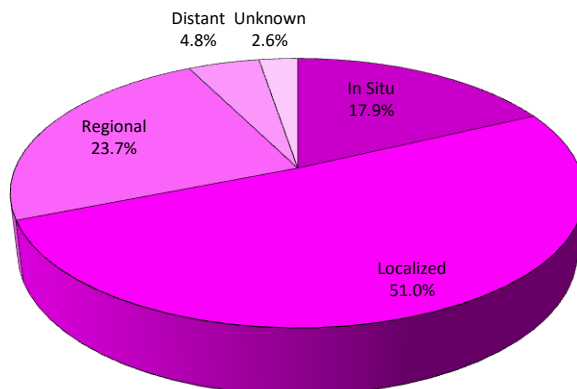
Cancer Incidence and Mortality, Female Breast By Year, Tennessee, 2010-2014



- Female breast cancer incidence rates were relatively stable from 2010 to 2014.
- From 2010 to 2014, the female breast cancer mortality rate in TN declined by 3.8%, but this trend was not statistically significant.

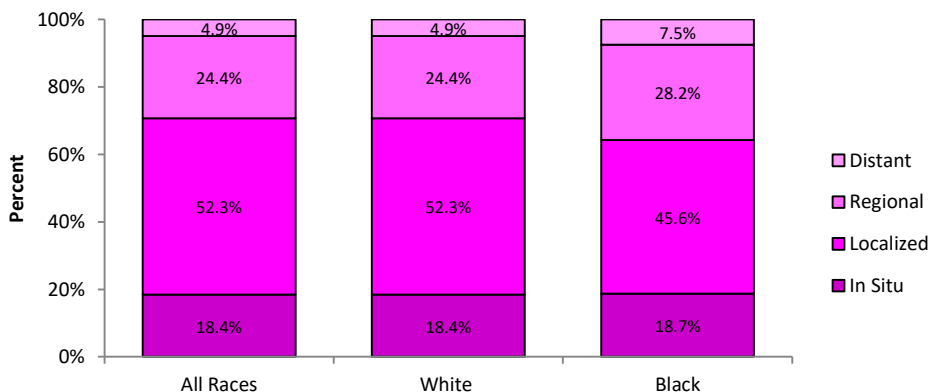
[Data Source](#)

Cancer Stage, Female Breast, Tennessee, 2010-2014



- Almost one in five (17.9%) female breast cancer cases was diagnosed at the in situ stage. Cancer staging is defined in the section “Explanation of Terms” that begins on page 87.
- Almost half of cases (51.0%) were diagnosed at the localized stage.
- One in four cases (23.7%) was diagnosed at the regional stage.
- 4.8% of cases were diagnosed at the distant stage.
- 2.6% of cases had unknown stage information.

Cancer Stage, Female Breast, By Race, Tennessee, 2010-2014



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

- Among those cancer cases with known stage, about one-third (29.3%) were diagnosed at late stages (i.e., regional or distant stages).
- Black women had a higher proportion (35.7%) of cases diagnosed at late stages than white women (28.0%) and this difference was statistically significant. This may partially explain the significantly higher breast cancer mortality rate among black women compared to white women in TN.

COLON AND RECTUM CANCER

During 2010-2014 colon and rectum cancer, also known as colorectal cancer, accounted for 8.7% of all new cancer cases and 8.7% of all cancer deaths. The colorectal cancer incidence rate decreased by 5.3% from 2010 to 2014 and this change was not statistically significant. During the same time period, the colorectal cancer mortality rate declined by 11.9%, and this decrease was statistically significant. TN experienced the twenty-second highest incidence rate and the eighth highest mortality rate in the US for colorectal cancer during 2010-2014. It should be noted a little over two thirds (68.8%) of Tennesseans 50 years of age or older had a colorectal endoscopy in 2014, resulting in TN having the twenty-sixth highest colorectal screening rate in the United States. It should also be noted Tennesseans who died of colorectal cancer died on average 7.5 years earlier than expected.

Colorectal cancer is the fourth leading cause of cancer incidence (15,050 cases) and the second leading cause of cancer mortality (5,985 cases) in TN. A little less than half (42.0%) of the cases with known stage information are diagnosed at early stages in TN. Black men and women experience statistically significantly greater incidence and mortality rates for colorectal cancer compared to white men and women. A slightly higher percentage of black patients (59.7%) were diagnosed at late stages than white patients (57.9%), but this difference was not statistically significant. Regular colorectal cancer screening can identify lesions before they become cancer and find colorectal cancer early, when it is highly curable. The screening methodology for colorectal cancer recommended by most healthcare professionals is the colonoscopy and sigmoidoscopy. The US Preventive Services Taskforce recommends colorectal cancer screening to begin at age 50 and continue until 75 years of age, grade of "A". Various screening methods are suggested by the Taskforce guidelines, e.g. colonoscopy every 10 years or sigmoidoscopy every 5 years.

COLON AND RECTUM CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2010-2014

Gender	Race	Incidence				Mortality				M:I Ratio ‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Both*	All Races †	15,050	41.1	40.4	41.8	5,985	16.5	16.1	16.9	0.40
	Black	2,226	48.8	46.7	51.0	1,020	23.9	22.3	25.4	0.49
	White	12,616	40.0	39.3	40.7	4,920	15.6	15.2	16.1	0.39
Female	All Races †	7,315	36.4	35.6	37.3	2,840	13.8	13.3	14.4	0.38
	Black	1,128	42.6	40.1	45.3	494	19.7	17.9	21.5	0.46
	White	6,094	35.5	34.6	36.4	2,320	13.1	12.5	13.6	0.37
Male	All Races †	7,735	46.9	45.8	48.0	3,145	20.0	19.2	20.7	0.43
	Black	1,098	58.0	54.3	61.9	526	30.5	27.6	33.5	0.53
	White	6,522	45.5	44.4	46.7	2,600	18.9	18.1	19.7	0.42
Age at Diagnosis or Death										
	0-19	10	0.1	0.1	0.2	^	^	^	^	^
	20-44	927	9.4	8.8	10.0	222	2.3	2.0	2.6	0.24
	45-64	5,542	60.2	58.6	61.8	1,819	19.3	18.4	20.2	0.32
	65+	8,571	192.1	188.0	196.3	3,943	90.2	87.3	93.0	0.47
Year of Diagnosis or Death										
	2010	3,057	43.5	42.0	45.1	1,201	17.2	16.3	18.3	0.40
	2011	2,920	40.8	39.3	42.3	1,242	17.5	16.5	18.5	0.43
	2012	3,043	41.5	40.1	43.1	1,181	16.3	15.4	17.3	0.39
	2013	2,897	38.7	37.3	40.2	1,212	16.3	15.4	17.3	0.42
	2014	3,133	41.2	39.7	42.7	1,149	15.2	14.3	16.1	0.37

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

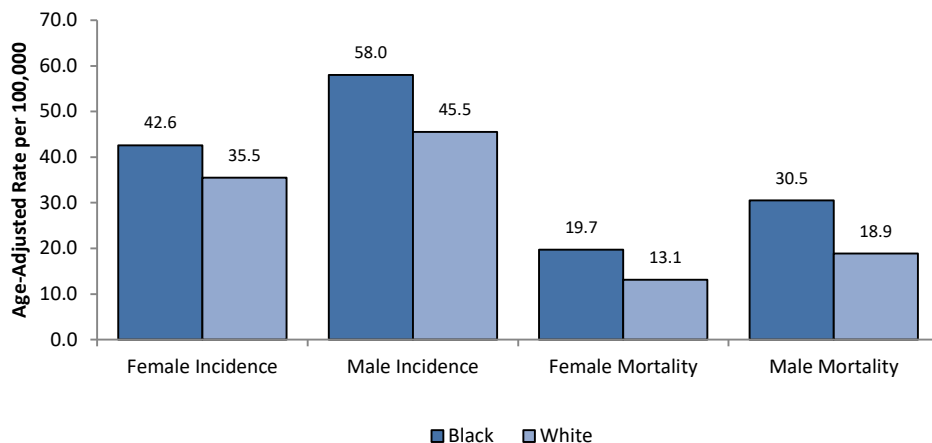
**Total counts are from 2010 to 2014.

***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Includes whites, blacks, other races, and those missing race information.

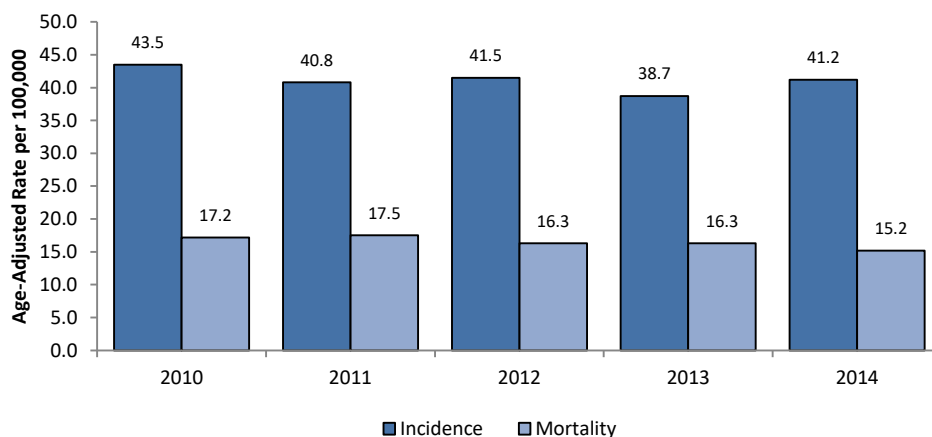
‡Mortality incidence ratio. See Technical Notes for details.

Cancer Incidence and Mortality, Colon and Rectum, By Gender and Race, Tennessee, 2010-2014



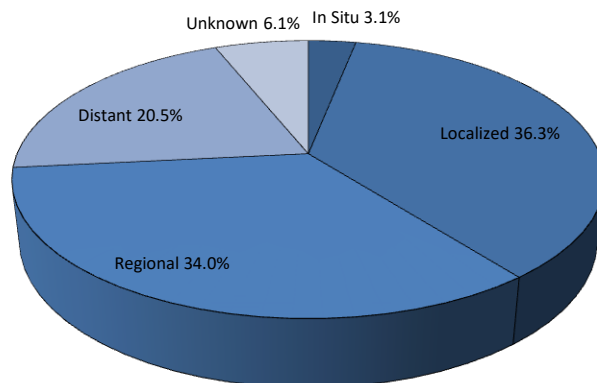
- A total of 15,050 new cases of colorectal cancer were reported among Tennesseans from 2010-2014, and the age-adjusted incidence rate was 41.1 per 100,000.
- During the same time period, 5,985 Tennesseans died of colorectal cancer, resulting in an age-adjusted mortality rate of 16.5 per 100,000.

Cancer Incidence and Mortality, Colon and Rectum, By Year, Tennessee, 2010-2014



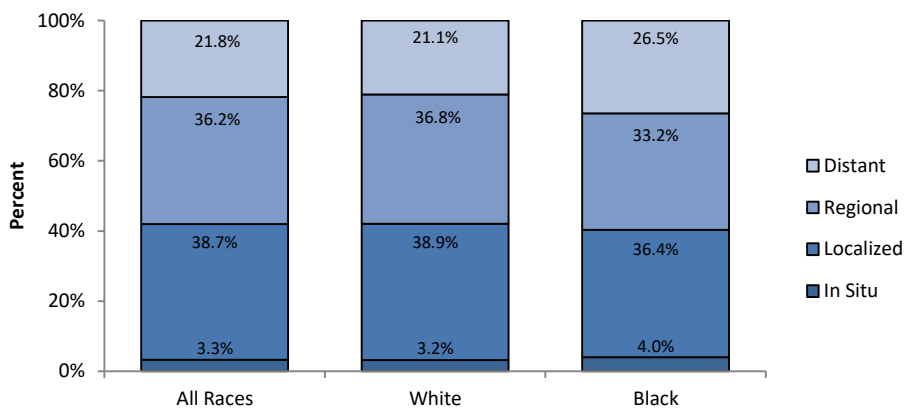
- The colorectal cancer incidence rate fell by 5.3% from 2010 to 2014, but this change was not statistically significant.
- The colorectal cancer mortality rate fell by 11.9% from 2010 to 2014 and this change was statistically significant.
- The decrease in the colorectal cancer mortality may be partially explained by the increase in colorectal screening over the past 15 years.

Cancer Stage, Colon and Rectum, Tennessee, 2010-2014



- 3.1% of the colorectal cancer incidence cases were diagnosed at the in situ stage. Cancer staging is defined in the section “Explanation of Terms” that begins on page 87.
- 36.3% were diagnosed at the localized stage.
- 34.0% were diagnosed at the regional stage.
- 20.5% were diagnosed at the distant stage.
- 6.1% of cases had unknown stage information.

Cancer Stage, Colon and Rectum, By Race, Tennessee, 2010-2014



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

- Among those cases in TN with known stage, 58.0% were diagnosed at either the regional or distant stage (i.e., late stages).
- Black Tennesseans (59.7%) had a higher proportion of cases diagnosed at late stages than white Tennesseans (57.9%), but this difference was not statistically significant.

MELANOMA SKIN CANCER

From 2010 through 2014, melanoma skin cancer represented 4.2% of all new cancer cases and 1.6% of all cancer deaths. From 2010 to 2014, melanoma incidence rates fell by 13.1% and melanoma mortality rates fell by 8.9%, but these changes were not statistically significant. Melanoma is the fifth leading cause of cancer incidence (7,271 cases) in TN; however, the total number of deaths from melanoma of the skin are low (1,118 cases). TN experienced the thirty-fourth highest incidence rate and the fifth highest mortality rate in the US from 2010-2014. It should be noted Tennesseans, who died of melanoma skin cancer, died on average 10 years earlier than expected.

The US Preventive Services Taskforce 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 to be insufficient available evidence to assess the balance of benefits and harms of visual skin examination by a clinician to screen for skin cancer in adults. In TN, during 2010-2014, 89.9% of all new melanoma cases were diagnosed at early stages. During the same time period, white Tennesseans experienced incidence rates that are about twenty-six times higher than black individuals. However, black individuals experience a much higher mortality-incidence ratio for this disease, i.e. black individuals survive for a much shorter time than white individuals. This is at least partially attributable to the fact that black individuals are almost three times more likely than white individuals to be diagnosed at late stages and this was statistically significant.

MELANOMA OF THE SKIN CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2010-2014

Gender	Race	Incidence				Mortality				M:I Ratio ‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Both*	All Races †	7,271	20.3	19.8	20.7	1,118	3.1	2.9	3.3	0.15
	Black	42	0.9	0.7	1.3	21	0.5	0.3	0.7	0.56
	White	7,160	23.5	23.0	24.1	1,092	3.5	3.3	3.7	0.15
Female	All Races †	3,025	16.1	15.5	16.7	336	1.7	1.5	1.9	0.11
	Black	22	0.8	0.5	1.3	11	0.4	0.2	0.8	0.50
	White	2,978	19.2	18.5	19.9	324	2.0	1.7	2.2	0.10
Male	All Races †	4,246	26.1	25.3	26.9	782	5.0	4.7	5.4	0.19
	Black	20	1.1	0.6	1.7	10	0.5	0.2	1.0	0.45
	White	4,182	29.5	28.6	30.5	768	5.6	5.2	6.0	0.19
Age at Diagnosis or Death										
	0-19	31	0.4	0.3	0.5	^	^	^	^	^
	20-44	1,050	10.4	9.7	11	78	0.8	0.6	1.0	0.08
	45-64	2,787	30.6	29.5	31.8	373	4.0	3.6	4.4	0.13
	65+	3,405	75.8	73.2	78.4	667	15.3	14.1	16.5	0.20
Year of Diagnosis or Death										
	2010	1,499	21.7	20.6	22.8	224	3.2	2.8	3.7	0.15
	2011	1,444	20.6	19.5	21.7	221	3.2	2.8	3.6	0.16
	2012	1,415	19.8	18.8	20.9	213	2.9	2.6	3.4	0.15
	2013	1,502	20.5	19.4	21.5	245	3.3	2.9	3.8	0.16
	2014	1,411	18.8	17.8	19.9	215	2.9	2.5	3.3	0.15

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

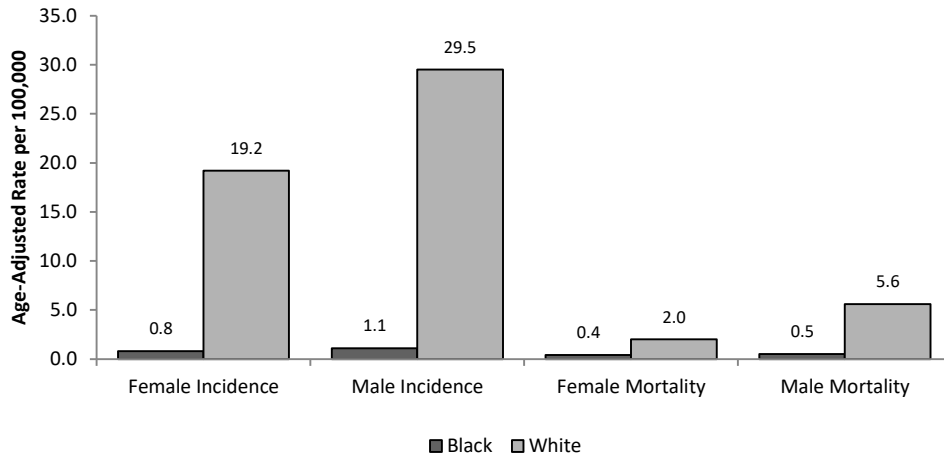
**Total counts are from 2010 to 2014.

***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Includes whites, blacks, other races, and those missing race information.

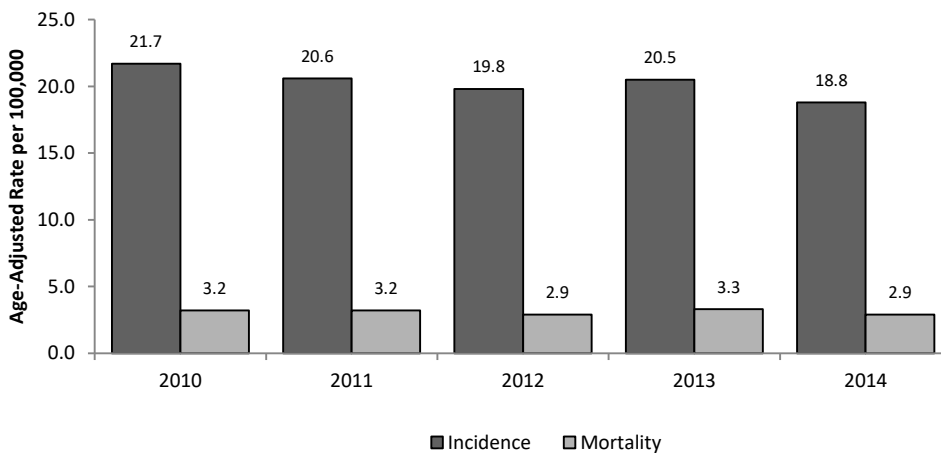
‡Mortality incidence ratio. See Technical Notes for details.

Cancer Incidence and Mortality, Melanoma of the Skin, By Gender and Race, Tennessee, 2010-2014



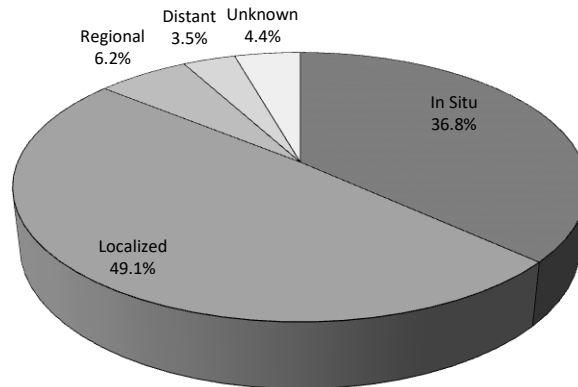
- There were 7,271 newly diagnosed melanoma skin cancer cases among Tennesseans from 2010-2014, and the age-adjusted incidence rate was 20.3 per 100,000.
- During the same time period, 1,118 melanoma skin cancer patients died, resulting in an age-adjusted mortality rate of 3.1 per 100,000.
- The mortality-to-incidence ratio for melanoma skin cancer was 0.15 for the total population.
- White Tennesseans had significantly higher melanoma skin cancer incidence and mortality rates than blacks regardless of gender.

Cancer Incidence and Mortality, Melanoma of the Skin, By Year, Tennessee, 2010-2014



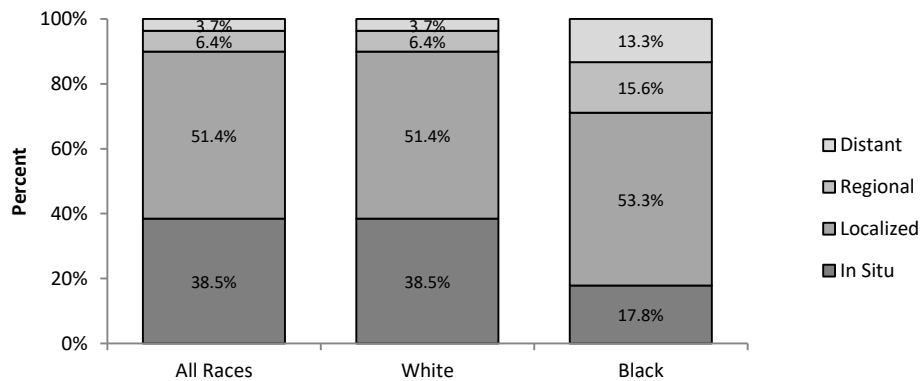
- From 2010 to 2014, the melanoma of the skin incidence rate decreased by 13.1%, but this change was not statistically significant.
- The melanoma of the skin mortality rate decreased by 8.9%, but this difference was not significant.

Cancer Stage, Melanoma of the Skin, Tennessee, 2010-2014



- About one-third (36.8%) of melanoma skin cancer incident cases were diagnosed at the in situ stage. Cancer staging is defined in the section “Explanation of Terms” that begins on page 87.
- Less than one-half of cases (49.1%) were diagnosed at the localized stage.
- 6.2% of cases were diagnosed at the regional stage.
- 3.5% of cases were diagnosed at distant stage.
- 4.4% of cases had unknown stage information.

Cancer Stage, Melanoma of the Skin, By Race, Tennessee, 2010-2014



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

- Among those with known stage, only one in ten (10.1%) was diagnosed at the regional or distant stage (i.e., late stages), which may partially explain why melanoma skin cancer was not as deadly compared to other common cancers.
- Black Tennesseans (28.9%) had a higher proportion of cases diagnosed at late stages than white Tennesseans (10.1%) and this difference was statistically significant. However, please note this comparison may be statistically unstable since there were less than fifty black Tennesseans diagnosed with melanoma skin cancer between 2010 and 2014.

PANCREATIC CANCER

From 2010-2014, pancreatic cancer accounted for 4,490 cases or 2.6% of all new cancer cases. During the same period, pancreatic cancer was responsible for 4,118 deaths or 6.0% of all cancer deaths in TN. During 2010-2014, pancreatic cancer was the twelfth leading cause of cancer incidence and the fourth leading cause of cancer mortality in TN. From 2010 to 2014, pancreatic cancer incidence and mortality rates slightly increased, but these changes were not statistically significant. TN experienced the thirtieth highest pancreatic cancer incidence rate (Virginia, Nebraska, and Texas shared the same rate) and the fifteenth highest pancreatic cancer mortality rate (Vermont, South Carolina, Maine, Idaho, and Indiana shared the same rate) in the US during 2010-2014. Pancreatic cancer occurs with increased frequency among persons with long-standing (i.e., over 5 years) diabetes (Everhart, 1995). Furthermore, it should be noted Tennessee had the second largest population of individuals with diabetes in 2014, which could partially explain the high mortality rate of pancreatic cancer in TN compared to the US. The relationship between blood sugar levels and pancreatic cancer is a complex one. While some patients with long-standing diabetes may be at elevated risk for the development of pancreatic cancer, many individuals may develop diabetes during the pre-clinical stages of pancreatic cancer before it is diagnosed in the clinical setting.

It should be noted Tennesseans who died of pancreatic cancer died on average 7.7 years earlier than expected. Pancreatic cancer is the deadliest form of cancer in TN with a mortality-to-incidence ratio of 0.93 and currently there is no effective screening method. The pancreas is so deep inside the body that early tumors are difficult to detect through imaging and cannot be readily palpated (i.e., felt using the hands) by health care professionals during routine physical exams. Thus, only 14.6% of cases with known stage information are diagnosed at early stages in TN. Black men display statistically significantly higher pancreatic cancer incidence and mortality rates compared to white men. Likewise, black women display statistically significantly higher pancreatic cancer incidence and mortality than white women.

PANCREATIC CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2010-2014

Gender	Race	Incidence				Mortality				M:I Ratio ‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Both*	All Races †	4,490	12.0	11.7	12.4	4,118	11.1	10.8	11.5	0.93
	Black	689	15.6	14.4	16.8	594	13.8	12.7	15.0	0.88
	White	3,747	11.6	11.2	11.9	3,493	10.8	10.5	11.2	0.93
Female	All Races †	2,232	10.8	10.4	11.3	2,057	9.9	9.5	10.4	0.92
	Black	363	14.3	12.8	15.9	308	12.1	10.8	13.6	0.85
	White	1,839	10.4	9.9	10.9	1,728	9.7	9.2	10.1	0.93
Male	All Races †	2,258	13.4	12.9	14.0	2,061	12.6	12.0	13.1	0.94
	Black	326	17.3	15.3	19.5	286	16.4	14.3	18.6	0.95
	White	1,908	13.0	12.4	13.6	1,765	12.2	11.7	12.8	0.94
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	126	1.3	1.1	1.5	60	0.6	0.5	0.8	0.46
	45-64	1,581	16.6	15.8	17.4	1,306	13.6	12.8	14.3	0.82
	65+	2,781	62.2	59.9	64.6	2,750	62.2	59.9	64.6	1.00
Year of Diagnosis or Death										
	2010	840	11.8	11.0	12.7	779	11.2	10.4	12.0	0.95
	2011	863	11.7	11.0	12.6	783	10.8	10.0	11.6	0.92
	2012	874	11.7	11.0	12.6	786	10.5	9.8	11.3	0.90
	2013	943	12.4	11.6	13.3	853	11.3	10.6	12.1	0.91
	2014	970	12.3	11.5	13.1	917	11.7	10.9	12.5	0.95

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

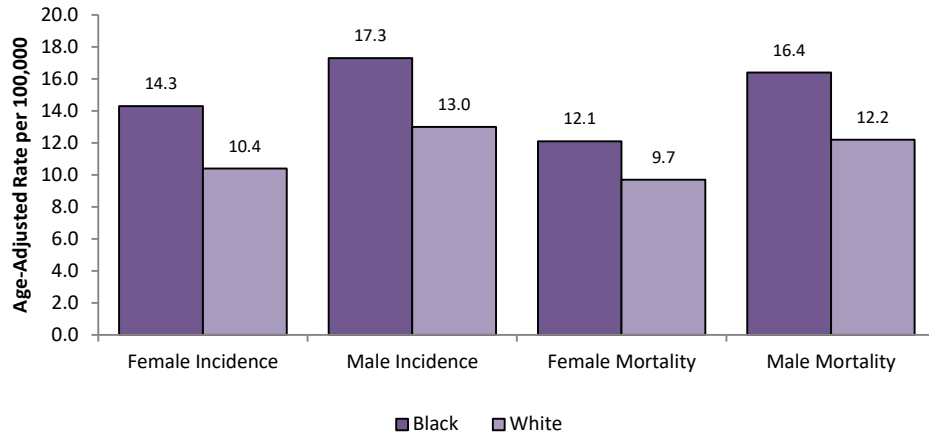
**Total counts are from 2010 to 2014.

***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Includes whites, blacks, other races, and those missing race information.

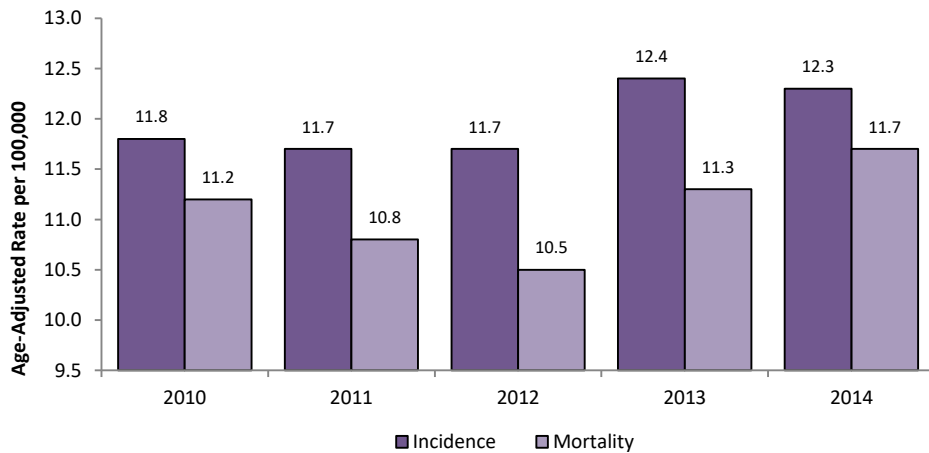
‡Mortality incidence ratio. See Technical Notes for details.

Cancer Incidence and Mortality, Pancreas, By Gender and Race, Tennessee, 2010-2014



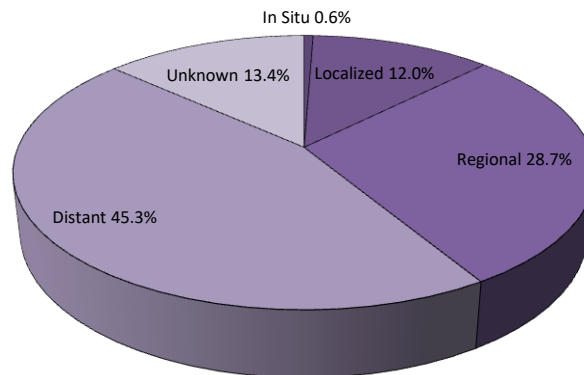
- From 2010-2014, there were 4,490 new pancreatic cancer cases among Tennesseans and the age-adjusted incidence rate was 12.0 per 100,000.
- During the same time period, 4,118 deaths were reported, giving an age-adjusted mortality rate of 11.1 per 100,000.
- The mortality-to-incidence ratio for pancreatic cancer was 0.93, making pancreatic cancer the deadliest among the most common cancers in Tennessee.

Cancer Incidence and Mortality, Pancreas, By Year, Tennessee, 2010-2014



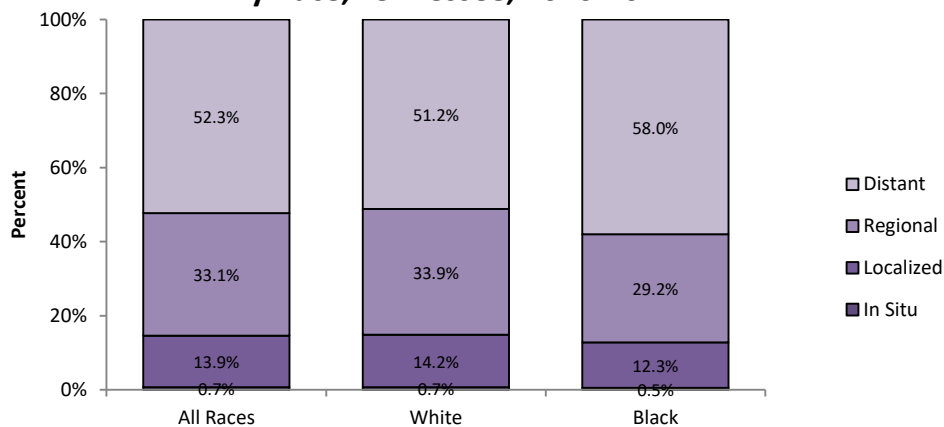
- From 2010-2014, the pancreatic cancer incidence and mortality rate increased by 3.7% and 4.9%, respectively; however, these changes were not significant. Some of this rise may be partially attributed to the increased prevalence of obesity and diabetes in TN over the past ten years.

Cancer Stage, Pancreas, Tennessee, 2010-2014



- Less than 50 cases of pancreatic cancer cases (0.6%) were diagnosed at the in situ stage. Cancer staging is defined in the section “Explanation of Terms” that begins on page 87.
- 12.0% were diagnosed at the localized stage.
- 28.7% were diagnosed at the regional stage.
- 45.3% were diagnosed at the distant stage.
- 13.4% of cases had unknown stage information.

Cancer Stage, Pancreas, By Race, Tennessee, 2010-2014



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

- Among cases with known stage, 85.4% of Tennesseans were diagnosed at late stages (i.e., regional or distant stage).
- There was no statistically significant difference in percentage of cases diagnosed at late stages between blacks and whites.

CHILDHOOD CANCER (0-19 YEARS OF AGE)

The distribution of cancers that develop in children is often quite different compared to the distribution of types that occur in adults. Childhood cancers are the result of DNA changes in cells that take place very early in life, sometimes even before birth. Unlike many cancers in adults, childhood cancers are not strongly linked to lifestyle or environmental risk factors (American Cancer Society, 2015).

There were 1,525 new cancer cases and 212 deaths due to cancer in children less than 20 years of age in TN during 2010-2014. TN experienced the twenty-first highest childhood cancer incidence rate and the fourth highest childhood cancer mortality rate in the US during the same time period. Only 42.2% of all new cases with known stage information are diagnosed at early stages of the disease. Of the 1,525 new cancer cases in children less than twenty years of age in TN from 2010 to 2014, black children accounted for about one out of every five (17.3%) childhood cancer cases. White children accounted for almost four out of every five childhood cancer cases (78.1%). The leading cause of cancer incidence in children less than twenty years of age was leukemia, followed by central nervous system tumors, lymphomas, melanomas, and soft tissue sarcomas. These five causes of cancer incidence represented 76.7% of all childhood cancer cases.

The early diagnosis of childhood cancer is often hampered by nonspecific symptoms that are similar to those of more common childhood diseases. There are currently no effective screening methods for childhood-related cancers. In general, white children tend to have a higher cancer incidence and mortality rates compared to black children. The difference in cancer incidence rates between black children and white children was statistically significant; however, the difference in cancer mortality rates between black children and white children is not statistically significant. Over this five-year period, the age adjusted incidence rate for childhood cancers was 182.9 per 1,000,000 and the mortality rate was 25.4 per 1,000,000.

CHILDHOOD (0-19 YEARS OF AGE) CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2010-2014

Gender	Race	Incidence				Mortality				M:I Ratio ‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Both*	All Races †	1,525	182.9	173.8	192.3	212	25.4	22.1	29.1	0.14
	Black	264	144.0	127.1	162.5	39	21.7	15.4	29.6	0.15
	White	1,191	189.7	179.1	200.8	167	26.6	22.7	30.9	0.14
Female	All Races †	710	174.0	161.4	187.3	93	22.8	18.4	28.0	0.13
	Black	129	141.7	118.3	168.4	17	19.1	11.1	30.6	0.13
	White	552	180.3	165.6	196.0	75	24.5	19.2	30.7	0.14
Male	All Races †	815	191.5	178.5	205.1	119	27.9	23.1	33.4	0.15
	Black	135	146.0	122.4	172.9	22	24.2	15.1	36.6	0.17
	White	639	198.7	183.6	214.7	92	28.5	23.0	35.0	0.14
Age at Diagnosis or Death										
	0-19	1,525	182.9	173.8	192.3	212	25.4	22.1	29.1	0.14
Year of Diagnosis or Death										
	2010	278	165.2	146.3	18.6	48	28.6	21.1	37.9	0.17
	2011	326	194.9	174.4	21.7	38	22.8	16.1	31.3	0.12
	2012	303	181.9	162.0	20.4	44	26.4	19.2	35.4	0.15
	2013	286	172.4	153.0	19.4	41	24.7	17.7	33.5	0.14
	2014	332	200.0	179.1	22.3	41	24.7	17.7	33.5	0.12

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

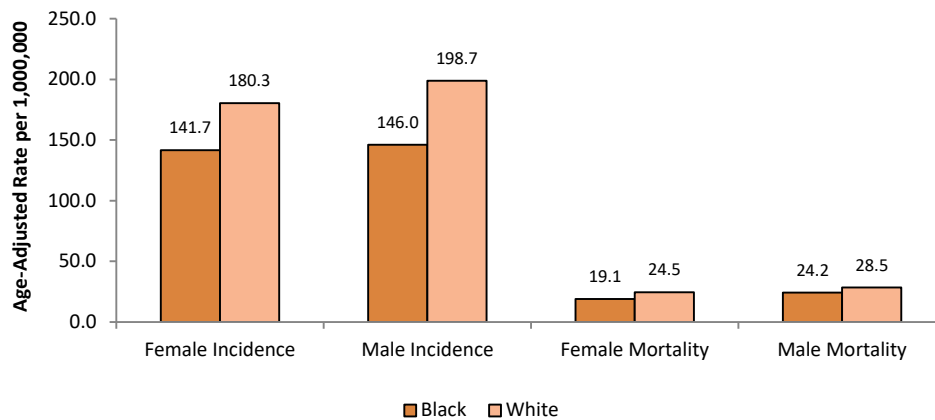
**Total counts are from 2010 to 2014.

***Rates are per 1,000,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Includes whites, blacks, other races, and those missing race information.

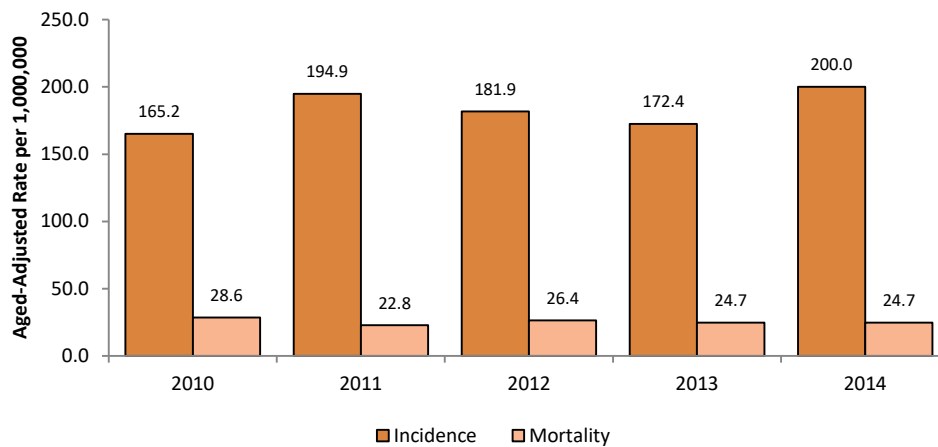
‡Mortality incidence ratio. See Technical Notes for details.

Cancer Incidence and Mortality, Children 0-19 Years of Age, Tennessee, 2010-2014



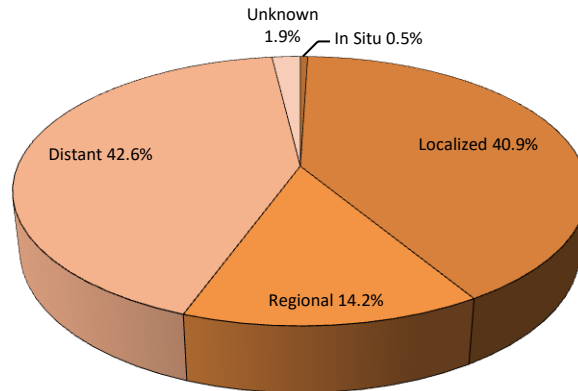
- A total of 1,525 new cancer cases in Tennessee were reported among children 19 years and younger from 2010 to 2014, and the age-adjusted incidence rate during this period was 182.9 per 1,000,000.
- A total of 212 children 19 years and younger died of cancer during that same five-year period, resulting in an age-adjusted mortality rate of 25.4 per 1,000,000.
- From 2010 to 2014, childhood cancers had a mortality-to-incidence ratio of 0.14.

Cancer Incidence and Mortality, Children 0-19 Years of Age, By Year, Tennessee, 2010-2014



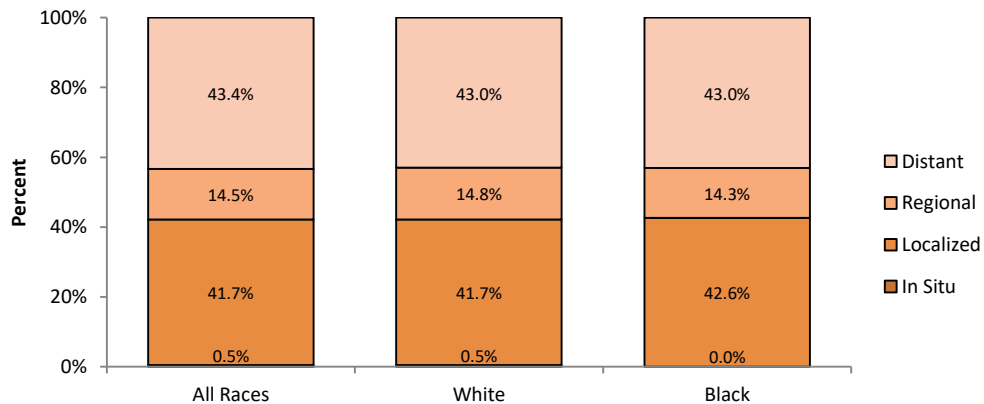
- The childhood cancer incidence rate increased by 21.1% from 2010 to 2014, but this change was not statistically significant.
- From 2010 to 2014, the childhood cancer mortality rate decreased by 13.6%, but this change was not statistically significant.

Cancer Stage, All Sites Combined, Children 0-19 Years of Age, Tennessee, 2010-2014



- Less than 50 cases (0.5%) of all childhood cancer cases were diagnosed at the in situ stage. Cancer staging is defined in the section “Explanation of Terms” that begins on page 87.
- 40.9% of cases were diagnosed at the localized stage.
- 14.2% of cases were diagnosed at the regional stage.
- 42.6% of cases were diagnosed at the distant stage.
- 1.9% of cases had unknown stage information.

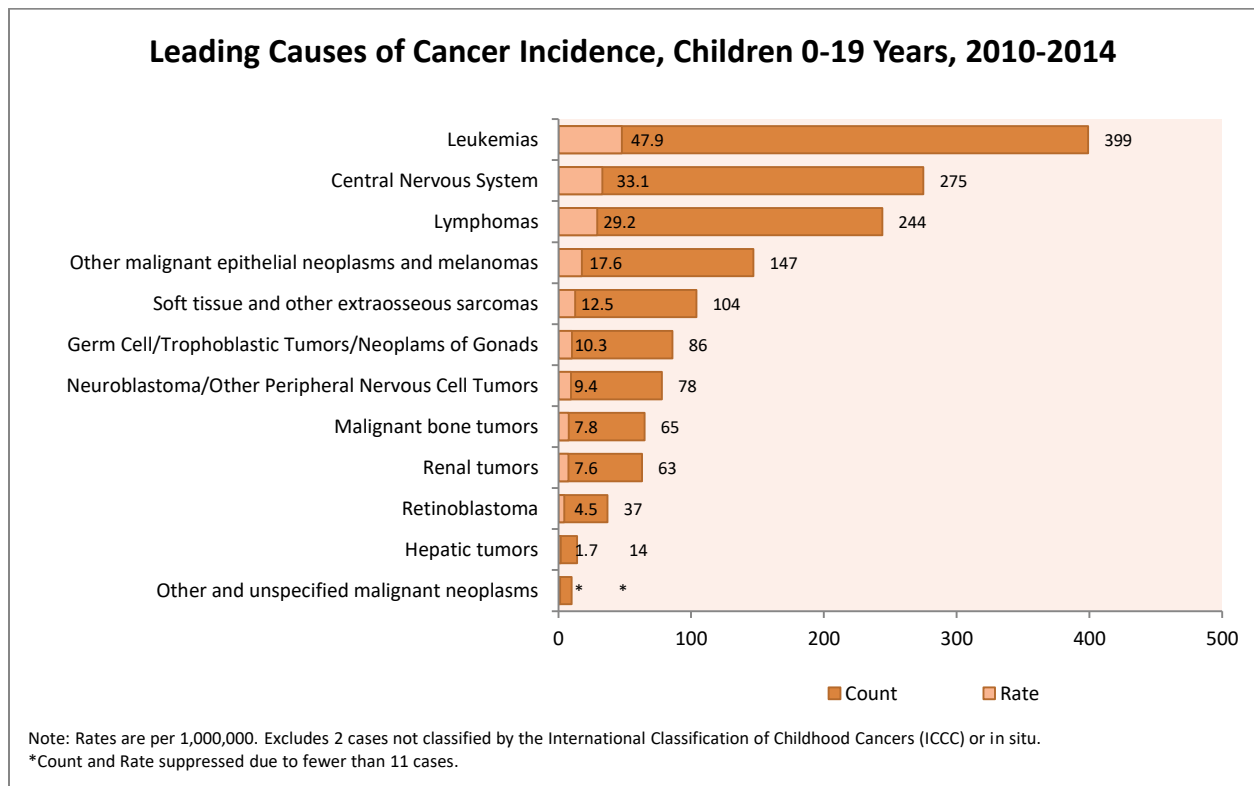
Cancer Stage, All Sites Combined, Children 0-19 Years of Age, Tennessee, 2010-2014



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

- There was no statistically significant difference in the percentage of cases diagnosed at late stages (i.e., regional or distant stage) between blacks and whites.
- Among cases with known stage, 57.9% were diagnosed at late stages.

CHILDHOOD CANCER (0-19 YEARS OF AGE), CONTINUED



- Leukemia was the leading cause of cancer incidence among children less than 20 years of age in Tennessee, representing over a quarter (26.2%) of the childhood cancer cases in Tennessee.
- The second leading cause of childhood cancer incidence was cancer of the central nervous system, followed by lymphomas, other malignant epithelial neoplasms and melanomas, and soft tissue sarcomas.

APPENDICES

APPENDICES

APPENDIX I. CANCER INCIDENCE AND MORTALITY, BY SITE, TENNESSEE, 2010-2014

Primary Cancer Site	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
All Sites	172,136	464	461.7	466.2	68,698	187.2	185.8	188.6	0.40
Oral Cavity and Pharynx	4,713	12.4	12.1	12.8	1,167	3.1	2.9	3.3	0.25
Lip	234	0.6	0.6	0.7	13	0.0	0.0	0.1	0.00
Tongue	1,459	3.8	3.6	4.0	278	0.7	0.7	0.8	0.18
Salivary Gland	479	1.3	1.2	1.5	101	0.3	0.2	0.3	0.23
Floor of Mouth	214	0.6	0.5	0.6	16	0.0	0.0	0.1	0.00
Gum and Other Mouth	663	1.8	1.7	2.0	170	0.5	0.4	0.5	0.28
Nasopharynx	201	0.6	0.5	0.6	82	0.2	0.2	0.3	0.33
Tonsil	944	2.4	2.3	2.6	119	0.3	0.3	0.4	0.13
Oropharynx	193	0.5	0.4	0.6	100	0.3	0.2	0.3	0.60
Hypopharynx	235	0.6	0.5	0.7	43	0.1	0.1	0.1	0.17
Other Oral Cavity and Pharynx	91	0.2	0.2	0.3	245	0.6	0.6	0.7	3.00
Digestive System	29,472	79.5	78.5	80.4	16,038	43.4	42.8	44.1	0.55
Esophagus	1,775	4.7	4.4	4.9	1,564	4.1	3.9	4.3	0.87
Stomach	2,166	5.9	5.7	6.2	1,094	3.0	2.8	3.2	0.51
Small Intestine	920	2.5	2.3	2.7	149	0.4	0.3	0.5	0.16
Colon and Rectum	15,050	41.1	40.4	41.8	5,985	16.5	16.1	16.9	0.40
Colon excluding Rectum	10,952	30.0	29.5	30.6	4,900	13.5	13.2	13.9	0.45
Cecum	2,476	6.8	6.5	7.1	^	^	^	^	^
Appendix	351	1.0	0.9	1.1	^	^	^	^	^
Ascending Colon	2,094	5.8	5.5	6.0	^	^	^	^	^
Hepatic Flexure	515	1.4	1.3	1.5	^	^	^	^	^
Transverse Colon	1,065	2.9	2.7	3.1	^	^	^	^	^
Splenic Flexure	322	0.9	0.8	1.0	^	^	^	^	^
Descending Colon	665	1.8	1.7	1.9	^	^	^	^	^
Sigmoid Colon	2,633	7.2	6.9	7.4	^	^	^	^	^
Large Intestine, NOS	831	2.3	2.1	2.5	^	^	^	^	^
Rectum and Rectosigmoid Junction	4,098	11.1	10.7	11.4	1,085	3.0	2.8	3.1	0.27
Rectosigmoid Junction	979	2.7	2.5	2.8	^	^	^	^	^
Rectum	3,119	8.4	8.1	8.7	^	^	^	^	^
Anus, Anal Canal and Anorectum	806	2.1	2.0	2.3	113	0.3	0.3	0.4	0.14
Liver and Intrahepatic Bile Duct	2,877	7.3	7.1	7.6	2,457	6.4	6.2	6.7	0.88
Liver	2,579	6.5	6.3	6.8	1,932	5.0	4.8	5.2	0.77
Intrahepatic Bile Duct	298	0.8	0.7	0.9	525	1.4	1.3	1.6	1.75
Gallbladder	284	0.8	0.7	0.9	145	0.4	0.3	0.5	0.50
Other Biliary	601	1.6	1.5	1.8	164	0.5	0.4	0.5	0.31
Pancreas	4,490	12.0	11.7	12.4	4,118	11.1	10.8	11.5	0.93
Retroperitoneum	115	0.3	0.3	0.4	15	0.0	0.0	0.1	0.00
Peritoneum, Omentum and Mesentery	240	0.6	0.6	0.7	97	0.3	0.2	0.3	0.50
Other Digestive Organs	148	0.4	0.3	0.5	137	0.4	0.3	0.5	1.00

APPENDIX I. CANCER INCIDENCE AND MORTALITY, BY SITE, TENNESSEE, 2010-2014, CONTINUED

Respiratory System	30,952	82.1	81.2	83.1	22,368	60.0	59.2	60.8	0.73
Nose, Nasal Cavity and Middle Ear	255	0.7	0.6	0.8	57	0.2	0.1	0.2	0.29
Larynx	1,779	4.6	4.4	4.8	504	1.3	1.2	1.4	0.28
Lung and Bronchus	28,655	76.1	75.2	77	21,747	58.3	57.5	59.1	0.77
Pleura	208	0.6	0.5	0.6	29	0.1	0.1	0.1	0.17
Trachea, Mediastinum and Other Respiratory Org	55	0.2	0.1	0.2	31	0.1	0.1	0.1	0.50
Bones and Joints	296	0.9	0.8	1	120	0.3	0.3	0.4	0.33
Soft Tissue including Heart	1,102	3.2	3	3.4	477	1.3	1.2	1.5	0.41
Skin excluding Basal and Squamous	7,791	21.8	21.3	22.2	^	^	^	^	^
Melanoma of the Skin	7,271	20.3	19.8	20.7	1,118	3.1	2.9	3.3	0.15
Other Non-Epithelial Skin	520	1.5	1.4	1.6	^	^	^	^	^
Female Breast	23,946	121.3	119.8	122.9	4,467	20.2	19.6	20.8	0.17
Female Genital System	9,202	47.1	46.1	48.1	3,087	15.3	14.7	15.8	0.32
Cervix Uteri	1,463	8.5	8.1	9	506	2.7	2.4	2.9	0.32
Corpus and Uterus, NOS	4,640	12.1	11.8	12.5	805	3.9	3.6	4.2	0.32
Corpus Uteri	4,467	11.7	11.3	12	293	1.4	1.3	1.6	0.12
Uterus, NOS	173	0.5	0.4	0.5	512	2.5	2.3	2.7	5.00
Ovary	2,215	11.3	10.8	11.8	1,553	7.6	7.2	8	0.67
Vagina	146	0.4	0.3	0.5	53	0.3	0.2	0.3	0.75
Vulva	596	1.7	1.5	1.8	116	0.6	0.5	0.7	0.35
Other Female Genital Organs	142	0.4	0.3	0.5	54	0.3	0.2	0.3	0.75
Male Genital System	22,546	57.3	56.6	58.1	2,912	21.1	20.3	21.9	0.37
Prostate	21,574	119.5	117.8	121.1	2,840	20.6	19.9	21.4	0.17
Testis	779	5.2	4.8	5.5	29	0.2	0.1	0.3	0.04
Penis	163	1	0.8	1.2	36	0.2	0.2	0.3	0.20
Other Male Genital Organs	30	0.1	0.1	0.1	7	0.0	0.0	0.1	0
Urinary System	13,893	37.5	36.9	38.2	3,138	8.7	8.4	9.0	0.23
Urinary Bladder	7,120	19.3	18.9	19.8	1,502	4.2	4.0	4.5	0.22
Kidney and Renal Pelvis	6,447	17.3	16.8	17.7	1,564	4.3	4.0	4.5	0.25
Ureter	214	0.6	0.5	0.7	30	0.1	0.1	0.1	0.17
Other Urinary Organs	112	0.3	0.3	0.4	42	0.1	0.1	0.2	0.33
Eye and Orbit	332	0.9	0.8	1	50	0.1	0.1	0.2	0.11
Brain and Other Nervous System	2,275	6.5	6.2	6.8	1,729	4.8	4.5	5	0.74
Brain	2,153	6.1	5.9	6.4	^	^	^	^	^
Cranial Nerves Other Nervous System	122	0.4	0.3	0.4	^	^	^	^	^
Endocrine System	4,634	13.6	13.2	14	252	0.7	0.6	0.8	0.05
Thyroid	4,398	12.9	12.5	13.3	146	0.4	0.3	0.5	0.03
Other Endocrine including Thymus	236	0.7	0.6	0.8	106	0.3	0.3	0.4	0.43
Lymphoma	7,301	20.3	19.8	20.8	2,367	6.6	6.4	6.9	0.33
Hodgkin Lymphoma	872	2.7	2.5	2.9	136	0.4	0.3	0.5	0.15
Hodgkin - Nodal	862	2.6	2.5	2.8	^	^	^	^	^
Hodgkin - Extranodal	10	0	0	0.1	^	^	^	^	^
Non-Hodgkin Lymphoma	6,429	17.6	17.2	18.1	2,231	6.2	6.0	6.5	0.35
NHL - Nodal	4,536	12.4	12.1	12.8	^	^	^	^	^
NHL - Extranodal	1,893	5.2	5	5.5	^	^	^	^	^
Myeloma	2,333	6.2	6	6.5	1,323	3.6	3.4	3.8	0.58

APPENDIX I. CANCER INCIDENCE AND MORTALITY, BY SITE, TENNESSEE, 2010-2014, CONTINUED

Leukemia	4,574	12.7	12.4	13.1	2,596	7.3	7.0	7.6	0.57
Lymphocytic Leukemia	2,123	5.8	5.6	6.1	738	2.1	2.0	2.3	0.36
Acute Lymphocytic Leukemia	120	0.4	0.3	0.5	134	0.4	0.3	0.5	1.00
Chronic Lymphocytic Leukemia	1,870	5.1	4.8	5.3	562	1.6	1.5	1.7	0.31
Other Lymphocytic Leukemia	133	0.4	0.3	0.4	42	0.1	0.1	0.2	0.25
Myeloid and Monocytic Leukemia	2,214	6.3	6	6.5	1,308	3.6	3.4	3.8	0.57
Acute Myeloid Leukemia	1,458	4.1	3.9	4.3	1,086	3.0	2.8	3.2	0.73
Acute Monocytic Leukemia	75	0.2	0.2	0.3	5	0.0	0.0	0.1	0.00
Chronic Myeloid Leukemia	597	1.7	1.6	1.8	137	0.4	0.3	0.5	0.24
Other Myeloid/Monocytic Leukemia	84	0.2	0.2	0.3	80	0.2	0.2	0.3	1.00
Other Leukemia	237	0.7	0.6	0.8	550	1.6	1.4	1.7	2.29
Other Acute Leukemia	74	0.2	0.2	0.3	199	0.6	0.5	0.6	3.00
Aleukemic, Subleukemic and NOS	163	0.5	0.4	0.5	351	1.0	0.9	1.1	2.00
Miscellaneous	6,516	18	17.6	18.5	4,941	13.6	13.2	13.9	0.76

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

**Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Mortality incidence ratio. See Technical Notes for details.

~Corresponding disease categories not available in mortality data.

APPENDIX II. CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, BY GENDER, RACE AND RESIDENT REGION, TENNESSEE, 2010-2014

	Incidence				Mortality				M:I Ratio †
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Total Population									
Tennessee	172,133	463.9	461.7	466.2	68,698	187.2	185.8	188.6	0.40
East Region	35,795	479.7	474.6	484.8	14,062	188.1	184.9	191.3	0.39
Mid-Cumberland Region	40,486	461.9	457.3	466.5	14,831	178.2	175.2	181.1	0.39
Northeast Region	15,815	464.1	456.6	471.6	6,592	188.4	183.8	193.1	0.41
Northwest Region	7,563	457.4	446.9	468.2	3,435	203.6	196.7	210.6	0.45
South Central Region	10,735	455.7	446.9	464.6	4,510	190.7	185.1	196.4	0.42
Southeast Region	19,370	465.5	458.8	472.2	7,610	181.4	177.3	185.6	0.39
Southwest Region	31,723	457.8	452.7	463.0	13,143	195.5	192.1	199.0	0.43
Upper-Cumberland Region	10,540	460.1	451.0	469.2	4,515	193.5	187.8	199.3	0.42
Female									
Tennessee	89,405	528.6	525.1	532.2	31,340	153.1	151.4	154.8	0.29
East Region	18,859	545.5	537.5	553.6	6,362	153.7	149.9	157.6	0.28
Mid-Cumberland Region	20,717	527.8	520.2	535.4	6,852	146.6	143.1	150.1	0.28
Northeast Region	8,116	508.5	497.1	520.0	3,031	157.8	152.1	163.7	0.31
Northwest Region	4,024	527.8	511.2	544.9	1,538	164.0	155.7	172.7	0.31
South Central Region	5,587	513.5	499.7	527.6	1,994	153.3	146.6	160.4	0.30
Southeast Region	10,127	530.4	519.8	541.2	3,437	147.7	142.7	152.8	0.28
Southwest Region	16,189	530.4	521.9	539.0	6,177	160.5	156.4	164.6	0.30
Upper-Cumberland Region	5,727	528.8	514.8	543.2	1,949	154.6	147.7	161.9	0.29
Male									
Tennessee	82,728	418.0	415.1	420.9	37,358	235.2	232.8	237.7	0.56
East Region	16,936	431.5	424.8	438.2	7,700	234.3	228.9	239.8	0.54
Mid-Cumberland Region	19,769	416.4	410.5	422.3	7,979	223.6	218.4	228.8	0.54
Northeast Region	7,699	432.9	422.9	443.1	3,561	230.6	222.8	238.5	0.53
Northwest Region	3,539	406.6	392.8	420.8	1,897	260.0	248.1	272.3	0.64
South Central Region	5,148	415.9	404.3	427.8	2,516	242.7	233.0	252.8	0.58
Southeast Region	9,243	418.9	410.2	427.8	4,173	229.9	222.8	237.3	0.55
Southwest Region	15,534	408.7	402.2	415.3	6,966	247.3	241.3	253.5	0.61
Upper-Cumberland Region	4,813	406.8	394.9	419.0	2,566	244.5	234.9	254.5	0.60
Black									
Tennessee	22,231	467.0	460.6	473.5	9,772	223.6	218.9	228.3	0.48
East Region	1,201	446.7	421.0	473.5	530	212.9	194.7	232.4	0.48
Mid-Cumberland Region	5,263	460.4	447.2	473.8	2,216	215.9	206.4	225.6	0.47
Northeast Region	210	342.5	296.2	393.9	101	167.2	135.1	204.4	0.49
Northwest Region	763	480.8	446.3	517.1	327	217.3	193.8	242.7	0.45
South Central Region	531	361.0	330.2	393.9	286	207.0	183.2	233.1	0.57
Southeast Region	1,893	466.2	444.8	488.5	740	193.8	179.6	208.7	0.42
Southwest Region	12,212	480.5	471.5	489.6	5,524	237.1	230.5	243.8	0.49
Upper-Cumberland Region	147	538.7	453.3	635.0	48	183.9	134.4	244.9	0.34
White									
Tennessee	147,656	464.3	461.9	466.7	58,425	183.3	181.8	184.8	0.39
East Region	34,255	481.7	476.5	487.0	13,441	187.8	184.6	191.1	0.39
Mid-Cumberland Region	34,446	464.5	459.5	469.5	12,409	174.1	171.0	177.2	0.37
Northeast Region	15,524	467.5	459.9	475.1	6,466	189.1	184.5	193.9	0.40
Northwest Region	6,720	452.6	441.6	463.9	3,097	202.8	195.6	210.3	0.45
South Central Region	10,134	462.2	453.0	471.5	4,204	190.2	184.4	196.2	0.41
Southeast Region	17,245	466.0	458.9	473.2	6,836	181.7	177.3	186.1	0.39
Southwest Region	18,969	443.6	437.1	450.1	7,521	175.0	171.0	179.0	0.39
Upper-Cumberland Region	10,301	458.6	449.5	467.9	4,451	194.3	188.5	200.2	0.42

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals; excludes 3 cases with invalid county at diagnosis information.

**Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Mortality Incidence ratio. See Technical Notes for details.

Note that the number of cases by region may not sum up to the state total due to records missing resident county information.

APPENDIX III. CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, BY RESIDENT COUNTY, TENNESSEE, 2010-2014

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	172,133	463.9	461.7	466.2	68,698	187.2	185.8	188.6	0.40
East Region	35,795	479.7	474.6	484.8	14,062	188.1	184.9	191.3	0.39
TN: Anderson County	2,464	484	464.5	504.2	1,006	188.5	176.8	200.9	0.39
TN: Blount County	3,948	486.4	471	502.3	1,406	172	163	181.5	0.35
TN: Campbell County	1,347	488.7	462.1	516.4	593	214.1	196.8	232.6	0.44
TN: Claiborne County	1,088	522.1	490.5	555.3	463	224.7	204.2	246.8	0.43
TN: Cocke County	1,120	466.3	438.4	495.8	534	218.5	199.8	238.6	0.47
TN: Grainger County	740	492.3	456.1	530.8	311	214.7	190.7	241.1	0.44
TN: Hamblen County	1,865	474.8	453	497.3	784	195.3	181.7	209.7	0.41
TN: Jefferson County	1,579	461.6	438.4	485.8	608	175.8	161.8	190.8	0.38
TN: Knox County	11,608	470.1	461.5	478.9	4,425	180.6	175.3	186.1	0.38
TN: Loudon County	1,884	488	464.6	512.3	696	174.3	161.1	188.4	0.36
TN: Monroe County	1,394	462.7	437.8	488.7	598	201.2	184.9	218.6	0.43
TN: Morgan County	645	479.3	442.1	518.9	226	174.3	151.8	199.4	0.36
TN: Roane County	1,874	477.5	455.3	500.7	791	196.3	182.6	211	0.41
TN: Scott County	694	535.3	495.4	577.7	306	241	214.3	270.3	0.45
TN: Sevier County	2,932	494.3	476.1	513.2	1,065	182.8	171.7	194.5	0.37
TN: Union County	613	534.5	491.5	580.3	250	223.9	196.2	254.6	0.42
Mid-Cumberland Region	40,486	461.9	457.3	466.5	14,831	178.2	175.2	181.1	0.39
TN: Cheatham County	1,117	530.9	498.8	564.5	438	225.5	203.9	248.8	0.42
TN: Davidson County	14,315	460.5	452.8	468.2	5,645	187.8	182.8	192.9	0.41
TN: Dickson County	1,408	486.1	460.6	512.6	565	199.3	183	216.8	0.41
TN: Houston County	282	509.6	449.6	575.9	125	217.4	180.3	260.7	0.43
TN: Humphreys County	677	539.8	498.7	583.6	276	220.1	194.3	248.7	0.41
TN: Montgomery County	3,101	442.4	426.5	458.8	1,234	194.3	183.3	205.8	0.44
TN: Robertson County	1,771	488.4	465.4	512.3	656	186.8	172.4	202.1	0.38
TN: Rutherford County	5,295	452.1	439.5	464.9	1,875	175.5	167.3	183.9	0.39
TN: Stewart County	447	498.2	451.7	548.7	196	221.2	190.6	255.7	0.44
TN: Sumner County	4,416	469.1	455	483.4	1,429	156.1	148	164.6	0.33
TN: Trousdale County	245	524.3	459.1	596.5	111	250.1	204.8	302.7	0.48
TN: Williamson County	4,259	439.8	426.1	453.8	1,175	133.2	125.4	141.3	0.30
TN: Wilson County	3,153	466.3	449.7	483.4	1,106	172.8	162.4	183.6	0.37
Northeast Region	15,815	464.1	456.6	471.6	6,592	188.4	183.8	193.1	0.41
TN: Carter County	1,619	421	400.1	442.8	736	182.9	169.7	197	0.43
TN: Greene County	2,199	468.4	448.4	489.2	919	191.5	179.1	204.7	0.41
TN: Hancock County	252	545	476.9	620.9	111	243.1	198.4	295.7	0.45
TN: Hawkins County	1,908	508.4	485.1	532.6	788	209.2	194.5	224.8	0.41
TN: Johnson County	563	446.2	408.9	486.5	252	202.1	177.4	229.5	0.45
TN: Sullivan County	5,231	472.1	458.9	485.5	2,137	185.1	177.2	193.3	0.39
TN: Unicoi County	623	462.8	425.8	502.5	270	187.1	165.1	211.8	0.40
TN: Washington County	3,420	450.3	435	466	1,379	178.9	169.5	188.8	0.40
Northwest Region	7,563	457.4	446.9	468.2	3,435	203.6	196.7	210.6	0.45
TN: Benton County	640	527.5	485.6	572.5	300	242.2	214.6	272.7	0.46
TN: Carroll County	948	489.8	458.1	523.2	413	209.3	189.2	231.1	0.43
TN: Crockett County	402	441.5	398.4	488.1	158	167.2	141.8	196.1	0.38
TN: Dyer County	981	429.4	402.5	457.8	416	180.7	163.5	199.3	0.42
TN: Gibson County	1,423	452.5	428.9	477.2	672	208	192.4	224.7	0.46
TN: Henry County	1,151	482.6	454	512.8	523	213.4	195.1	233.3	0.44
TN: Lake County	192	435.2	375	502.9	97	219.1	177.2	268.5	0.50
TN: Obion County	916	434.4	406	464.4	449	211.1	191.7	232.1	0.49
TN: Weakley County	910	437	408.3	467.3	407	191.3	172.8	211.4	0.44

APPENDIX III. ALL SITES COMBINED CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014,

CONTINUED

South Central Region	10,735	455.7	446.9	464.6	4,510	190.7	185.1	196.4	0.42
TN: Bedford County	1,157	457.6	431.1	485.3	448	182.3	165.5	200.3	0.40
TN: Coffee County	1,510	462.8	439.3	487.3	629	188.5	173.9	204.1	0.41
TN: Giles County	903	460.7	430.1	493	397	200.2	180.6	221.6	0.43
TN: Hickman County	695	477.5	441.9	515.2	294	201.6	178.7	226.6	0.42
TN: Lawrence County	1,170	442.8	417.2	469.5	516	192.1	175.7	209.8	0.43
TN: Lewis County	411	528.2	476.4	584.5	169	213.6	181.8	249.8	0.40
TN: Lincoln County	871	392.9	366.5	420.9	427	189.5	171.7	208.8	0.48
TN: Marshall County	880	485.8	453.4	520	376	210.3	189.1	233.4	0.43
TN: Maury County	2,222	464.1	444.5	484.3	871	183.7	171.5	196.6	0.40
TN: Moore County	180	402	343.6	468.5	62	130.9	100	169.9	0.33
TN: Perry County	260	477.9	418.8	543.7	112	196.5	160.9	238.6	0.41
TN: Wayne County	476	432.3	393.6	474.1	209	188	163.1	216	0.43
Southeast Region	19,370	465.5	458.8	472.2	7,610	181.4	177.3	185.6	0.39
TN: Bledsoe County	400	465.1	419.3	515	137	160.6	134.1	191.3	0.35
TN: Bradley County	2,687	452.9	435.7	470.7	1,085	184.3	173.4	195.8	0.41
TN: Franklin County	1,262	465.8	439.7	493.3	505	178.6	163.1	195.4	0.38
TN: Grundy County	421	467.7	422.4	516.8	207	223.1	192.9	257.1	0.48
TN: Hamilton County	9,565	457.7	448.3	467.1	3,582	169.4	163.8	175.2	0.37
TN: McMinn County	1,564	447.6	425.1	471.1	685	193.6	179.1	209.1	0.43
TN: Marion County	980	524.7	491.2	560	405	215.7	194.6	238.6	0.41
TN: Meigs County	393	487.9	438.3	541.9	169	218.2	184.8	256.3	0.45
TN: Polk County	591	516.8	474.6	562	255	218.2	191.6	247.8	0.42
TN: Rhea County	1,025	506.4	475	539.4	381	186.3	167.7	206.6	0.37
TN: Sequatchie County	482	512.9	466.4	563	199	216	186.2	249.6	0.42
Southwest Region	31,723	457.8	452.7	463	13,143	195.5	192.1	199	0.43
TN: Chester County	430	427.7	387.4	471.2	194	189.6	163.5	218.8	0.44
TN: Decatur County	391	444	399.1	493	190	207.2	177.9	240.7	0.47
TN: Fayette County	1,173	452.8	426.2	480.8	412	162.2	146.4	179.4	0.36
TN: Hardeman County	778	478.2	444.5	513.9	329	206.1	184.1	230.2	0.43
TN: Hardin County	811	439.5	408.5	472.4	352	183.1	164	204.1	0.42
TN: Haywood County	500	451.1	411.3	493.9	218	191.6	166.4	219.7	0.42
TN: Henderson County	807	473.9	441	508.7	349	202.8	181.7	225.8	0.43
TN: Lauderdale County	727	486.4	451	523.8	310	211.2	188	236.6	0.43
TN: McNairy County	814	460.9	428.7	495	392	217.2	195.8	240.4	0.47
TN: Madison County	2,425	432.3	414.9	450.2	1,004	179.5	168.4	191.2	0.42
TN: Shelby County	21,319	460.6	454.3	467	8,753	197.5	193.3	201.8	0.43
TN: Tipton County	1,548	482.7	458.4	508	640	208.8	192.5	226.1	0.43
Upper-Cumberland Region	10,540	460.1	451	469.2	4,515	193.5	187.8	199.3	0.42
TN: Cannon County	427	471.6	427	520	185	202.4	173.9	234.6	0.43
TN: Clay County	249	427.8	373.8	488.4	122	196.1	162.1	236.4	0.46
TN: Cumberland County	2,278	467	446.2	488.6	903	176.7	164.7	189.5	0.38
TN: DeKalb County	520	428.1	391.1	467.9	226	185.9	161.9	212.6	0.43
TN: Fentress County	621	513.9	472.4	558.4	254	212.7	186.5	241.9	0.41
TN: Jackson County	356	431.8	385.8	482.3	154	180.9	152.4	213.8	0.42
TN: Macon County	640	479.3	442.1	518.9	286	215	190.4	242.1	0.45
TN: Overton County	716	480.1	444.5	518.1	320	211.4	188.3	236.7	0.44
TN: Pickett County	183	459.4	390.2	539.1	71	160.3	124	206.6	0.35
TN: Putnam County	1,898	444.4	424.2	465.3	821	191.5	178.5	205.3	0.43
TN: Smith County	516	450.1	411.1	492	225	206.1	179.4	235.8	0.46
TN: Van Buren County	176	443.8	376.7	520.5	67	162.8	124.5	210.7	0.37
TN: Warren County	1,094	451.9	425	480.1	506	205.5	187.8	224.6	0.45
TN: White County	866	492.3	459.1	527.4	375	206.8	186	229.5	0.42

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals; excludes 3 cases with invalid county at diagnosis information.

**Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Mortality Incidence ratio. See Technical Notes for details.

Note that the number of cases by region may not sum up to the state total due to records missing resident county information.

APPENDIX IV. LUNG CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014

	Incidence				Mortality				M:I
	Count	Rate	Lower CI	Upper CI	Count	Rate	Lower CI	Upper CI	Ratio †
Tennessee	28,655	76.1	75.2	77.0	21,747	58.3	57.5	59.1	0.77
East Region	6,206	80.4	78.4	82.5	4,730	62.0	60.2	63.8	0.77
TN: Anderson County	377	70.5	63.5	78.2	322	59.7	53.2	66.8	0.85
TN: Blount County	659	78.0	72.1	84.3	478	57.4	52.3	62.9	0.74
TN: Campbell County	308	105.8	94.1	118.7	224	78.0	67.9	89.4	0.74
TN: Claiborne County	250	115.0	100.9	130.7	180	83.8	71.8	97.5	0.73
TN: Cocke County	252	97.8	85.8	111.1	201	79.6	68.8	92.0	0.81
TN: Grainger County	135	83.5	69.6	99.6	114	72.3	59.4	87.5	0.87
TN: Hamblen County	331	80.6	72.0	90.0	279	68.2	60.3	76.9	0.85
TN: Jefferson County	244	67.8	59.4	77.2	177	48.3	41.3	56.3	0.71
TN: Knox County	1,759	71.0	67.6	74.4	1,355	55.2	52.2	58.2	0.78
TN: Loudon County	306	73.3	65.0	82.6	229	56.5	49.2	64.8	0.77
TN: Monroe County	303	97.6	86.6	109.7	223	72.1	62.7	82.7	0.74
TN: Morgan County	137	96.5	80.7	114.8	89	65.0	51.9	80.7	0.67
TN: Roane County	372	90.3	81.2	100.3	288	70.0	62.0	78.8	0.78
TN: Scott County	145	107.5	90.4	127.0	111	83.8	68.7	101.5	0.78
TN: Sevier County	507	82.5	75.3	90.2	366	61.0	54.7	67.8	0.74
TN: Union County	121	100.6	83.0	121.0	94	79.4	63.8	98.0	0.79
Mid-Cumberland Region	6,098	71.6	69.8	73.5	4,485	53.7	52.1	55.4	0.75
TN: Cheatham County	193	91.4	78.4	106.0	156	76.5	64.4	90.3	0.84
TN: Davidson County	2,189	72.8	69.7	76.0	1,656	55.5	52.8	58.4	0.76
TN: Dickson County	250	86.0	75.5	97.6	196	66.6	57.5	76.9	0.77
TN: Houston County	55	92.6	69.4	122.0	43	72.1	51.9	98.5	0.78
TN: Humphreys County	141	104.8	88.0	124.3	101	76.0	61.7	93.0	0.73
TN: Montgomery County	544	82.5	75.5	89.9	374	59.4	53.3	65.8	0.72
TN: Robertson County	310	84.3	75.0	94.5	232	64.9	56.7	74.1	0.77
TN: Rutherford County	766	69.6	64.5	74.8	549	51.8	47.4	56.4	0.74
TN: Stewart County	85	88.2	70.2	110.1	55	59.1	44.3	77.9	0.67
TN: Sumner County	641	67.5	62.2	73.0	456	49.2	44.7	54.0	0.73
TN: Trousdale County	51	109.2	80.8	144.8	30	66.1	44.3	95.5	0.61
TN: Williamson County	387	44.3	39.8	49.1	295	33.3	29.5	37.5	0.75
TN: Wilson County	486	72.1	65.6	79.0	342	52.5	46.9	58.6	0.73
Northeast Region	2,898	81.0	78.1	84.1	2,226	62.3	59.7	65.0	0.77
TN: Carter County	304	74.1	65.9	83.2	241	58.6	51.3	66.7	0.79
TN: Greene County	470	94.6	86.1	103.9	343	68.9	61.6	76.8	0.73
TN: Hancock County	49	97.1	71.2	130.7	37	75.2	52.4	105.8	0.77
TN: Hawkins County	401	102.2	92.2	113.0	287	73.8	65.3	83.1	0.72
TN: Johnson County	117	86.8	71.5	105.0	82	65.0	51.4	81.4	0.75
TN: Sullivan County	882	75.8	70.8	81.1	696	59.4	55.0	64.1	0.78
TN: Unicoi County	115	79.1	65.0	95.9	97	67.2	54.3	82.8	0.85
TN: Washington County	560	71.7	65.8	78.0	443	56.8	51.5	62.4	0.79
Northwest Region	1,389	80.9	76.6	85.3	1,143	66.5	62.6	70.5	0.82
TN: Benton County	132	103.4	86.1	123.7	121	94.5	78.0	114.1	0.91
TN: Carroll County	180	88.9	76.2	103.4	132	65.1	54.3	77.6	0.73
TN: Crockett County	63	67.7	51.8	87.3	49	51.2	37.7	68.2	0.76
TN: Dyer County	179	75.4	64.6	87.6	155	65.4	55.4	76.9	0.87
TN: Gibson County	251	76.8	67.5	87.2	196	60.1	51.9	69.3	0.78
TN: Henry County	216	83.9	72.9	96.3	190	75.6	65.1	87.6	0.90
TN: Lake County	40	88.9	63.2	122.3	38	82.8	58.3	114.9	0.93
TN: Obion County	166	78.1	66.5	91.4	148	69.7	58.8	82.3	0.89
TN: Weakley County	162	74.8	63.5	87.6	114	51.9	42.6	62.7	0.69

APPENDIX IV. LUNG CANCER AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014, CONTINUED

South Central Region	1,938	79.2	75.7	82.9	1,493	61.5	58.4	64.7	0.78
TN: Bedford County	197	75.3	65	86.8	134	52.3	43.7	62.2	0.69
TN: Coffee County	268	78.5	69.3	88.6	197	57.2	49.5	66	0.73
TN: Giles County	155	76.3	64.6	89.8	116	57	46.9	68.7	0.75
TN: Hickman County	140	91.4	76.7	108.4	111	73	59.8	88.4	0.80
TN: Lawrence County	230	82.6	72.2	94.3	197	71.7	61.9	82.6	0.87
TN: Lewis County	91	109.0	87.3	135	64	77.2	59	99.7	0.71
TN: Lincoln County	139	58.5	49.1	69.4	125	53.2	44.2	63.7	0.91
TN: Marshall County	164	88.2	74.9	103.3	126	66.8	55.4	80.1	0.76
TN: Maury County	368	77.2	69.4	85.7	278	58.7	51.9	66.2	0.76
TN: Moore County	31	66.9	45.2	97.2	15	30.1	16.7	52.3	0.45
TN: Perry County	56	90.8	68.3	119.6	49	80.1	59.1	107.6	0.88
TN: Wayne County	99	85.0	68.9	104.2	81	71.2	56.4	89.2	0.84
Southeast Region	3,376	78.7	76	81.4	2,454	57.3	55	59.6	0.73
TN: Bledsoe County	80	91.7	72.2	115.3	50	56.3	41.4	75.4	0.61
TN: Bradley County	488	79.7	72.7	87.2	338	55.5	49.7	61.9	0.70
TN: Franklin County	214	73.7	64	84.5	152	52.8	44.7	62.2	0.72
TN: Grundy County	93	96.5	77.5	119.3	77	79.8	62.7	100.7	0.83
TN: Hamilton County	1,487	69.8	66.3	73.6	1,059	49.8	46.8	52.9	0.71
TN: McMinn County	297	81.4	72.3	91.4	251	69.1	60.7	78.4	0.85
TN: Marion County	190	96.6	83	112	139	69.3	58	82.4	0.72
TN: Meigs County	82	95.9	75.5	120.9	57	65.9	49.3	87.1	0.69
TN: Polk County	136	112.4	94	133.9	109	90.3	73.9	109.8	0.80
TN: Rhea County	210	100.0	86.7	114.9	142	68.4	57.3	81	0.68
TN: Sequatchie County	99	101.4	81.9	124.7	80	82.5	65	103.8	0.81
Southwest Region	4,803	70.3	68.2	72.3	3,698	54.9	53.1	56.8	0.78
TN: Chester County	84	78.3	62.3	97.5	58	56.4	42.6	73.5	0.72
TN: Decatur County	85	93.2	73.8	116.9	70	74.9	58	95.9	0.80
TN: Fayette County	157	57.8	48.8	68	109	41.5	33.8	50.5	0.72
TN: Hardeman County	156	94.1	79.7	110.5	106	63.1	51.4	76.7	0.67
TN: Hardin County	169	85.2	72.5	99.8	128	63.9	53.1	76.5	0.75
TN: Haywood County	83	73.7	58.4	92.1	59	52.2	39.5	67.9	0.71
TN: Henderson County	162	93.1	79.1	109.1	118	67	55.3	80.6	0.72
TN: Lauderdale County	138	89.7	75.1	106.4	114	76.7	63.1	92.5	0.86
TN: McNairy County	175	92.6	79.2	107.9	150	80.1	67.6	94.4	0.87
TN: Madison County	415	73.3	66.3	80.9	304	54.2	48.2	60.8	0.74
TN: Shelby County	2,879	64.6	62.2	67.1	2,251	51.4	49.2	53.6	0.80
TN: Tipton County	300	90.6	80.4	101.8	231	73.2	63.9	83.6	0.81
Upper-Cumberland Region	1,938	80.3	76.7	84	1,518	63.2	60	66.6	0.79
TN: Cannon County	56	60.2	45.3	78.9	47	51.5	37.7	69.2	0.86
TN: Clay County	43	69.3	49.6	95.5	39	62.3	43.9	87.2	0.90
TN: Cumberland County	410	78.7	70.8	87.4	306	58.4	51.7	65.8	0.74
TN: DeKalb County	106	86.5	70.5	105.4	87	70.7	56.3	87.9	0.82
TN: Fentress County	119	90.6	74.6	109.6	98	77.1	62.2	94.9	0.85
TN: Jackson County	78	87.4	68.6	110.8	61	70.3	53.2	92	0.80
TN: Macon County	125	91.0	75.5	108.9	97	70.7	57.1	86.6	0.78
TN: Overton County	158	97.7	82.8	114.9	123	78.8	65.2	94.7	0.81
TN: Pickett County	40	93.0	64.8	131.9	33	74.9	50.4	109.9	0.81
TN: Putnam County	315	70.9	63.2	79.3	239	54.3	47.6	61.8	0.77
TN: Smith County	90	78.7	62.8	97.4	78	69.5	54.5	87.5	0.88
TN: Van Buren County	23	52.8	32.8	82.6	18	41.8	24.2	69.6	0.79
TN: Warren County	208	82.7	71.7	95	173	68.3	58.4	79.5	0.83
TN: White County	167	90.7	77.2	106.1	119	66.2	54.6	79.7	0.73

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

**Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Mortality Incidence ratio. See Technical Notes for details.

Note that the number of cases by region may not sum up to the state total due to records missing resident county information.

[Data Source](#)

APPENDIX V. PROSTATE CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014

	Incidence				Mortality				M:I Ratio †
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Tennessee	21,574	119.5	117.8	121.1	2,840	20.6	19.9	21.4	0.17
East Region	4,467	119.4	115.8	123.0	491	17	15.5	18.6	0.14
Anderson	329	130.8	116.7	146.2	33	14.3	9.8	20.3	0.11
Blount	469	112.9	102.7	124.0	33	9.6	6.5	13.7	0.09
Campbell	149	107.2	90.1	127.0	27	23.7	15.2	35.4	0.22
Claiborne	118	111.8	91.7	135.5	16	20.2	11.2	33.5	0.18
Cocke	97	77.9	62.6	96.1	20	22.2	13.1	35.1	0.28
Grainger	92	110.4	88.3	137.1	^	^	^	^	^
Hamblen	193	101.7	87.6	117.5	37	24.8	17.3	34.4	0.24
Jefferson	165	92.2	78.3	108.1	22	15.5	9.5	24.1	0.17
Knox	1,569	133.6	126.9	140.6	160	17.5	14.8	20.4	0.13
Loudon	271	124.2	109.3	140.9	28	16.5	10.8	24.6	0.13
Monroe	162	103.0	87.0	121.3	23	22.5	14	34.1	0.22
Morgan	74	106.4	82.7	135.2	5	8.6	2.7	20.7	0.08
Roane	228	109.5	95.3	125.4	21	12.6	7.7	19.7	0.12
Scott	92	143.3	114.5	177.4	11	19.4	9.1	36.1	0.14
Sevier	381	127.0	114.2	141.1	43	19	13.5	25.9	0.15
Union	78	124.4	97.0	157.7	8	22.5	9.2	44.4	0.18
Mid-Cumberland Region	5,160	124.8	121.3	128.5	583	19.3	17.7	21	0.15
Cheatham	118	116.9	95.0	142.2	13	15.2	7.6	27	0.13
Davidson	1,736	124.6	118.6	130.9	238	21.7	18.9	24.7	0.17
Dickson	187	134.4	115.2	155.9	26	26.3	16.8	38.8	0.20
Houston	28	96.9	63.7	143.4	8	37.5	15.7	75.5	0.39
Humphreys	95	152.8	122.7	188.7	9	15.3	6.9	30.4	0.10
Montgomery	381	119.5	107.3	132.8	44	18.6	13.2	25.3	0.16
Robertson	221	126.3	109.4	145.0	17	14.4	8.2	23.1	0.11
Rutherford	660	119.9	110.4	130.0	83	23.7	18.7	29.6	0.20
Stewart	41	86.8	61.6	120.1	5	11.5	3.6	29.2	0.13
Sumner	595	128.9	118.4	140.2	47	13.9	10.1	18.6	0.11
Trousdale	27	99.8	65.3	148.5	6	32.1	11.1	71.7	0.32
Williamson	663	137.2	126.2	148.8	53	16.6	12.2	21.9	0.12
Wilson	408	116.1	104.7	128.6	34	14	9.4	19.9	0.12
Northeast Region	1,645	95.0	90.3	99.8	272	20.1	17.7	22.7	0.21
Carter	151	76.7	64.7	90.5	33	21.6	14.8	30.6	0.28
Greene	233	98.4	85.7	112.6	53	28.2	20.7	37.4	0.29
Hancock	25	104.3	66.3	159.0	^	^	^	^	^
Hawkins	186	97.1	83.1	112.9	24	18.2	11.5	27.4	0.19
Johnson	46	67.4	48.5	92.1	9	19.2	8.3	37.6	0.28
Sullivan	551	98.9	90.6	107.7	89	19.8	15.8	24.5	0.20
Unicoi	64	96.6	73.9	125.0	11	18.3	9	34.4	0.19
Washington	389	99.9	90.0	110.7	50	16.6	12.2	22	0.17
Northwest Region	993	121.9	114.2	129.9	157	23.7	20.1	27.8	0.19
Benton	100	163.6	131.9	201.6	8	16.3	7	33.4	0.10
Carroll	147	154.7	130.3	182.9	18	23.9	14.1	38.2	0.15
Crockett	50	113.3	83.3	151.2	^	^	^	^	^
Dyer County	109	98.8	80.6	120.2	17	18.7	10.7	30.4	0.19
Gibson	158	104.0	88.3	122.0	39	29.4	20.9	40.4	0.28
Henry	177	145.7	124.4	170.0	22	23.8	14.6	36.7	0.16
Lake	22	92.1	56.8	142.6	5	40.1	12.5	90	0.44
Obion	103	97.6	79.2	119.5	18	21.8	12.6	35.1	0.22
Weakley	127	123.6	102.6	147.8	26	30.3	19.6	44.8	0.25

APPENDIX V. PROSTATE CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014, CONTINUED

South Central Region	1,155	98.6	92.8	104.6	159	17.8	15.1	20.9	0.18
Bedford	126	99.9	82.7	119.6	14	16.4	8.8	27.5	0.16
Coffee	130	80.4	67.0	95.9	33	26.3	18	37.1	0.33
Giles	95	94.5	75.9	116.7	15	16.8	9.2	28.6	0.18
Hickman	74	106.0	82.5	134.2	9	15.9	6.8	30.8	0.15
Lawrence	117	93.1	76.6	112.2	15	13.9	7.7	23.2	0.15
Lewis	38	95.6	66.8	133.9	6	18.9	6.5	42.9	0.20
Lincoln	93	83.6	67.1	103.3	20	25.3	15.2	39.6	0.30
Marshall	106	119.9	97.2	146.5	8	12.8	5.3	25.2	0.11
Mauzy	274	115.5	101.8	130.7	31	18.2	12.2	26.1	0.16
Moore	17	65.7	38.1	110.8	^	^	^	^	^
Perry	33	113.9	76.9	164.6	^	^	^	^	^
Wayne	52	91.3	67.9	120.9	5	10.5	3.3	25.3	0.12
Southeast Region	2,333	113.3	108.6	118.1	327	20.5	18.3	22.9	0.18
Bledsoe	45	98.2	70.6	133.9	^	^	^	^	^
Bradley	282	97.4	86.1	109.9	46	21.7	15.7	29.1	0.22
Franklin	124	90.1	74.7	108.1	30	28.3	18.9	40.8	0.31
Grundy	35	71.2	49.2	101.0	^	^	^	^	^
Hamilton	1,329	132.7	125.5	140.3	169	21.1	18	24.6	0.16
McMinn	180	103.2	88.3	120.2	26	18.9	12.1	28.2	0.18
Marion	97	98.8	79.4	122.0	19	26.4	15.4	42.3	0.27
Meigs	38	85.9	59.5	121.7	5	10.4	3.1	28.8	0.12
Polk	64	102.6	78.3	133.3	10	18.8	8.5	36.8	0.18
Rhea	95	90.5	72.8	111.7	10	10.8	4.9	20.8	0.12
Sequatchie	44	86.5	61.7	119.0	^	^	^	^	^
Southwest Region	4,523	139.9	135.7	144.2	659	27.2	25.1	29.4	0.19
Chester	44	91.8	66.3	124.3	10	25	11.8	46.2	0.27
Decatur	37	82.0	57.1	115.8	14	36	19.4	62.7	0.44
Fayette	190	137.8	118.1	160.1	15	16	8.7	26.9	0.12
Hardeman	100	117.6	94.9	144.3	15	25.7	14.1	42.6	0.22
Hardin	82	88.5	69.9	111.3	12	15.1	7.5	27.7	0.17
Haywood	57	108.7	81.4	142.7	12	28.5	14.3	50.5	0.26
Henderson	75	85.8	67.0	108.8	9	12.3	5.3	24.1	0.14
Lauderdale	88	129.4	102.8	160.8	11	22.4	10.9	40	0.17
McNairy	89	96.9	77.2	120.6	11	16.7	7.9	30.7	0.17
Madison	345	131.2	117.4	146.3	48	22.2	16.2	29.5	0.17
Shelby	3,224	153.5	147.9	159.2	484	31.4	28.5	34.4	0.20
Tipton	192	125.3	107.4	145.4	18	15.5	8.9	24.8	0.12
Upper-Cumberland Region	1,281	109.6	103.6	116.0	192	21	18	24.3	0.19
Cannon	60	129.2	98.0	168.1	9	27.4	12.2	52.4	0.21
Clay	24	76.6	48.5	118.6	9	40.8	18.2	80.2	0.53
Cumberland	365	137.0	122.7	152.9	32	13	8.8	19.1	0.09
DeKalb	63	106.6	80.7	138.5	11	28.5	14	50.9	0.27
Fentress	67	108.4	82.9	140.1	12	27.4	13.3	49.6	0.25
Jackson	36	80.4	55.2	115.0	10	29.7	13.8	56.9	0.37
Macon	67	109.7	83.9	141.1	10	19.1	8.8	35.9	0.17
Overton	71	88.2	68.4	112.7	9	13.2	5.7	26.4	0.15
Pickett	18	75.8	43.8	129.7	^	^	^	^	^
Putnam	186	90.1	77.3	104.4	40	24	17	32.7	0.27
Smith	70	123.7	95.3	158.5	^	^	^	^	^
Van Buren	18	87.3	49.8	146.3	^	^	^	^	^
Warren	141	120.0	100.6	142.3	22	23.9	14.7	36.4	0.20
White	95	104.3	84.0	128.5	20	29.5	17.7	46.1	0.28

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

**Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Mortality Incidence ratio. See Technical Notes for details.

Note that the number of cases by region may not sum up to the state total due to records missing resident county information.

[Data Source](#)

APPENDIX VI. FEMALE BREAST CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014

	Incidence				Mortality				M:I Ratio †
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Tennessee	23,946	121.3	119.8	122.9	4,467	22.0	21.3	22.6	0.18
East Region	4,761	121.1	117.6	124.7	826	20.4	19.0	21.9	0.17
Anderson	350	131.2	117.2	146.5	57	18.8	14.0	24.9	0.14
Blount	514	120.7	110.1	132.1	72	16.0	12.4	20.4	0.13
Campbell	177	123.5	105.3	144.2	23	17.8	11.0	27.4	0.14
Claiborne	132	122.0	101.5	145.8	29	27.0	17.8	39.7	0.22
Cocke	123	99.9	82.3	120.5	33	27.1	18.3	38.9	0.27
Grainger	78	98.0	76.9	123.8	17	24.3	13.7	40.2	0.25
Hamblen	262	121.8	107.1	138.0	43	18.4	13.2	25.1	0.15
Jefferson	195	111.4	95.7	129.2	31	16.9	11.4	24.5	0.15
Knox	1,676	126.0	119.9	132.4	298	21.7	19.2	24.4	0.17
Loudon	254	127.4	111.1	145.9	39	18.8	13.0	26.6	0.15
Monroe	166	106.1	89.9	124.6	31	21.5	14.4	31.0	0.20
Morgan	79	120.0	94.3	151.2	11	17.3	8.4	32.2	0.14
Roane	231	115.6	100.4	132.7	54	25.5	19.0	34.1	0.22
Scott	74	113.3	88.4	143.2	17	25.1	14.5	40.9	0.22
Sevier	380	121.8	109.5	135.3	61	19.6	14.9	25.5	0.16
Union	70	115.0	89.0	146.7	10	16.5	7.8	31.4	0.1
Mid-Cumberland Region	6,044	126.2	123.0	129.4	1,026	21.4	20.1	22.8	0.17
Cheatham	160	139.6	118.2	163.9	22	20.1	12.4	30.9	0.14
Davidson	2,171	127.1	121.7	132.7	401	22.6	20.4	25.0	0.18
Dickson	175	114.6	98.0	133.4	34	21.1	14.5	29.9	0.18
Houston	36	136.8	93.7	193.7	7	20.8	8.3	46.8	0.2
Humphreys	83	135.8	106.9	170.5	19	28.4	16.9	45.6	0.21
Montgomery	418	106.5	96.4	117.4	91	24.8	19.9	30.5	0.23
Robertson	239	121.9	106.7	138.8	50	25.2	18.6	33.5	0.21
Rutherford	796	122.7	114.2	131.7	131	20.7	17.2	24.6	0.17
Stewart	51	119.3	87.6	159.6	11	28.0	13.5	52.1	0.23
Sumner	656	129.5	119.6	140.0	90	17.5	14.0	21.6	0.14
Trousdale	18	74.8	43.4	120.9	8	34.1	14.3	69.6	0.5
Williamson	794	146.8	136.5	157.8	91	17.5	14.0	21.7	0.12
Wilson	447	124.0	112.5	136.4	71	19.7	15.3	25.0	0.16
Northeast Region	2,140	120.6	115.4	126.1	368	19.6	17.6	21.8	0.16
Carter	223	114.6	99.5	131.6	47	21.1	15.4	28.5	0.18
Greene	282	113.4	100.1	128.3	50	19.3	14.3	25.9	0.17
Hancock	29	112.4	73.9	166.8	5	23.4	6.8	59.6	0.2
Hawkins	215	111.3	96.4	128.0	44	21.4	15.4	29.2	0.19
Johnson	72	115.1	88.7	147.8	12	20.1	10.0	37.4	0.17
Sullivan	765	128.4	119.1	138.3	121	19.3	15.9	23.3	0.15
Unicoi	74	110.8	85.8	141.7	10	12.5	6.0	25.2	0.1
Washington	480	123.9	112.7	135.9	79	19.3	15.1	24.2	0.16
Northwest Region	999	115.3	108.0	123.0	202	22.3	19.2	25.8	0.19
Benton	71	114.8	88.4	147.7	15	27.1	14.4	47.3	0.24
Carroll	110	104.1	84.7	127.0	24	21.5	13.4	33.2	0.21
Crockett	61	126.6	95.9	164.5	15	29.1	15.9	49.7	0.23
Dyer	136	110.8	92.5	131.8	23	17.1	10.8	26.2	0.15
Gibson	199	121.1	104.3	140.0	37	21.0	14.6	29.4	0.17
Henry	131	103.6	85.9	124.3	30	22.7	15.0	33.6	0.22
Lake	23	121.7	75.7	187.9	5	22.0	7.1	58.2	0.2
Obion	146	132.2	110.9	156.8	29	25.5	16.8	37.5	0.19
Weakley	122	108.7	89.7	130.7	24	22.4	13.9	34.3	0.21

APPENDIX VI. FEMALE BREAST CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014, CONTINUED

Bedford	156	115.1	97.4	135.1	21	15.1	9.3	23.5	0.13
Coffee	194	114.2	98.3	132.1	24	12.7	8.1	19.3	0.11
Giles	96	89.0	71.5	109.9	21	20.3	12.2	32.2	0.23
Hickman	86	117.5	93.4	146.3	26	34.1	22.0	51.0	0.29
Lawrence	140	100.4	84.0	119.3	20	14.2	8.5	22.6	0.14
Lewis	55	138.9	103.0	183.9	^	^	^	^	^
Lincoln	124	107.0	88.3	128.9	29	24.4	16.1	36.0	0.23
Marshall	115	122.4	100.5	147.8	20	20.5	12.4	32.3	0.17
Maury	294	114.8	101.7	129.2	61	22.5	17.1	29.2	0.20
Moore	29	129.6	84.8	192.0	^	^	^	^	^
Perry	31	123.9	82.2	180.3	7	30.2	11.3	65.7	0.2
Wayne	52	94.6	69.9	126.3	7	13.3	5.1	29.5	0.1
Southeast Region	2,535	115.0	110.5	119.7	498	21.9	20.0	24.0	0.19
Bledsoe	34	84.1	57.3	120.3	5	10.6	3.4	28.1	0.1
Bradley	338	106.0	94.8	118.2	80	25.4	20.1	31.8	0.24
Franklin	161	115.9	97.9	136.5	29	18.4	12.2	27.2	0.16
Grundy	54	111.3	82.2	148.3	17	33.2	18.8	55.7	0.30
Hamilton	1,340	119.3	112.8	126.1	257	22.3	19.6	25.3	0.19
McMinn	186	102.4	87.8	119.0	34	18.2	12.4	26.0	0.18
Marion	134	136.4	113.3	163.2	22	21.8	13.4	34.2	0.16
Meigs	43	105.3	75.1	145.0	8	23.6	9.9	48.3	0.2
Polk	58	104.8	78.7	137.4	17	27.5	15.8	45.6	0.26
Rhea	123	117.9	97.3	141.8	18	15.9	9.3	25.8	0.13
Sequatchie	64	124.5	95.1	161.1	11	22.0	10.6	41.5	0.18
Southwest Region	4,755	125.0	121.4	128.7	1,046	26.9	25.2	28.6	0.22
Chester	49	93.2	68.2	124.8	7	13.2	5.1	28.4	0.1
Decatur	42	97.2	68.5	135.3	8	12.9	5.5	29.9	0.1
Fayette	174	133.5	113.6	156.1	36	27.3	18.8	38.5	0.20
Hardeman	98	123.6	99.3	152.3	24	28.4	18.0	43.2	0.23
Hardin	96	100.2	80.2	124.1	14	12.9	6.9	22.9	0.13
Haywood	84	142.8	112.8	178.5	22	34.3	21.3	53.0	0.24
Henderson	98	106.0	85.6	130.0	32	33.7	22.8	48.3	0.32
Lauderdale	91	116.3	93.0	143.8	18	22.7	13.3	36.6	0.20
McNairy	88	91.7	72.9	114.4	25	28.3	17.8	43.0	0.31
Madison	363	121.6	109.1	135.2	66	20.9	16.1	26.8	0.17
Shelby	3,382	129.7	125.3	134.3	755	28.6	26.5	30.7	0.22
Tipton	190	112.2	96.5	129.6	39	23.2	16.4	31.9	0.21
Upper-Cumberland Region	1,326	112.9	106.6	119.4	258	21.2	18.6	24.1	0.19
Cannon	49	104.3	76.3	140.1	8	14.7	6.3	31.3	0.1
Clay	33	116.8	77.4	170.7	7	23.1	9.1	52.2	0.2
Cumberland	272	117.8	102.6	134.8	49	20.3	14.5	28.0	0.17
DeKalb	72	106.5	82.7	135.7	15	21.1	11.7	36.3	0.20
Fentress	90	140.3	111.5	175.0	14	20.7	11.2	36.5	0.15
Jackson	48	112.9	81.9	153.4	9	18.5	8.4	38.8	0.2
Macon	66	99.7	76.6	127.8	16	23.6	13.3	39.0	0.24
Overton	74	95.9	74.7	121.8	16	21.6	12.2	36.2	0.23
Pickett	22	105.9	62.9	172.1	^	^	^	^	^
Putnam	272	120.5	106.2	136.3	39	16.8	11.8	23.2	0.14
Smith	63	104.3	79.7	134.5	16	29.7	16.7	49.0	0.28
Van Buren	25	112.1	71.6	171.8	7	32.6	12.4	74.8	0.3
Warren	123	98.5	81.3	118.3	32	22.8	15.5	32.7	0.23
White	117	130.6	106.9	158.3	26	28.6	18.3	43.0	0.22

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

**Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Mortality Incidence ratio. See Technical Notes for details.

Note that the number of cases by region may not sum up to the state total due to records missing resident county information.

[Data Source](#)

APPENDIX VII. COLORECTAL CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio ‡
Tennessee	15,050	41.1	40.4	41.8	5,985	16.5	16.1	16.9	0.40
East Region	2,883	39.2	37.7	40.7	1,142	15.5	14.6	16.5	0.40
Anderson	204	40.3	34.8	46.4	86	17.0	13.5	21.2	0.42
Blount	304	38.9	34.5	43.7	122	15.8	13.1	18.9	0.41
Campbell	98	36.6	29.6	45.0	53	19.1	14.2	25.2	0.52
Claiborne	97	48.3	38.9	59.5	33	16.6	11.3	23.7	0.34
Cocke	102	43.2	35.0	52.9	40	15.8	11.2	21.9	0.37
Grainger	74	49.3	38.4	62.6	33	22.8	15.5	32.6	0.46
Hamblen	173	43.9	37.5	51.2	66	16.4	12.6	21.0	0.37
Jefferson	133	39.2	32.6	46.8	43	12.9	9.2	17.6	0.33
Knox	913	37.0	34.6	39.6	357	14.6	13.1	16.2	0.39
Loudon	114	29.8	24.3	36.3	35	8.1	5.6	11.6	0.27
Monroe	97	32.5	26.1	40.0	47	16.3	11.9	22.0	0.50
Morgan	53	41.0	30.5	54.2	23	18.2	11.4	27.7	0.44
Roane	168	43.1	36.6	50.6	48	12.1	8.8	16.3	0.28
Scott	65	51.1	39.2	65.6	32	25.9	17.5	36.9	0.51
Sevier	232	40.2	35.1	46.0	96	16.8	13.5	20.7	0.42
Union	56	52.7	39.4	69.0	28	27.1	17.9	39.6	0.51
Mid-Cumberland Region	3,366	39.2	37.9	40.6	1,290	15.5	14.7	16.4	0.40
Cheatham	94	45.9	36.7	56.7	34	18.6	12.7	26.2	0.41
Davidson	1,188	39.2	36.9	41.5	481	16.1	14.7	17.6	0.41
Dickson	149	52.4	44.2	61.7	62	22.7	17.4	29.3	0.43
Houston	22	42.6	26.0	66.2	13	25.3	13.0	45.0	0.59
Humphreys	48	37.0	27.2	49.7	20	16.4	9.9	26.0	0.44
Montgomery	243	36.2	31.7	41.3	120	19.0	15.6	22.8	0.52
Robertson	164	46.6	39.6	54.6	60	17.2	13.1	22.3	0.37
Rutherford	477	41.6	37.8	45.7	174	16.2	13.8	18.9	0.39
Stewart	47	55.7	40.4	75.2	24	27.2	17.2	41.5	0.49
Sumner	351	37.5	33.6	41.7	105	11.5	9.4	14.0	0.31
Trousdale	33	71.8	48.8	102.2	11	27.0	13.3	48.9	0.38
Williamson	300	31.4	27.8	35.3	99	10.8	8.7	13.3	0.34
Wilson	250	36.9	32.4	42.0	87	13.1	10.4	16.4	0.36
Northeast Region	1,297	38.0	35.9	40.2	565	16.5	15.1	17.9	0.43
Carter	148	38.9	32.7	46.0	59	15.6	11.8	20.4	0.40
Greene	176	37.6	32.1	43.9	74	15.6	12.2	19.8	0.41
Hancock	22	48.5	30.0	75.4	8	18.4	7.4	38.7	0.4
Hawkins	162	42.3	35.9	49.7	61	16.5	12.5	21.5	0.39
Johnson	56	43.3	32.5	57.0	29	23.1	15.4	33.9	0.53
Sullivan	407	36.9	33.3	40.8	186	16.3	14.0	19.0	0.44
Unicoi	49	34.6	25.4	46.7	23	15.0	9.5	23.3	0.43
Washington	277	36.5	32.3	41.2	125	16.4	13.6	19.6	0.45
Northwest Region	727	43.5	40.3	46.9	292	17.0	15.1	19.1	0.39
Benton	59	45.3	34.2	59.5	29	22.6	14.8	33.6	0.50
Carroll	74	37.5	29.2	47.7	41	19.3	13.8	26.6	0.51
Crockett	43	45.3	32.5	61.8	11	11.1	5.5	20.7	0.25
Dyer	97	42.6	34.4	52.2	29	13.0	8.6	18.8	0.31
Gibson	150	46.7	39.5	55.1	58	17.8	13.4	23.2	0.38
Henry	107	46.0	37.4	56.2	46	18.7	13.6	25.3	0.41
Lake	16	36.1	20.5	59.8	6	13.7	5.0	31.1	0.4
Obion	94	43.8	35.2	54.0	34	16.0	11.0	22.7	0.37
Weakley	87	41.4	32.9	51.5	38	17.5	12.3	24.5	0.42

APPENDIX VII. COLORECTAL CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014, CONTINUED

South Central Region	1,036	44.6	41.9	47.4	398	17.0	15.4	18.8	0.38
Bedford	113	45.9	37.7	55.4	45	19.0	13.8	25.5	0.41
Coffee	149	45.2	38.2	53.2	62	18.7	14.3	24.1	0.41
Giles	110	57.9	47.3	70.3	43	22.2	16.0	30.3	0.38
Hickman	59	42.2	31.9	54.8	17	11.9	6.8	19.4	0.28
Lawrence	84	31.9	25.3	39.7	34	12.2	8.4	17.3	0.38
Lewis	31	39.2	26.2	57.0	13	16.2	8.5	28.5	0.41
Lincoln	109	50.2	41.0	61.1	45	20.4	14.8	27.6	0.41
Marshall	83	47.6	37.7	59.4	31	17.5	11.8	25.1	0.37
Maury	201	42.6	36.8	49.1	70	14.8	11.4	18.8	0.35
Moore	22	47.1	29.3	73.4	12	27.2	14.0	49.6	0.58
Perry	29	52.2	34.2	77.3	11	20.1	9.9	37.6	0.39
Wayne	46	41.4	30.2	55.7	15	13.3	7.4	22.6	0.32
Southeast Region	1,698	41.1	39.1	43.1	611	14.8	13.6	16.1	0.36
Bledsoe	36	40.9	28.4	57.5	9	11.1	5.0	22.0	0.3
Bradley	264	44.2	38.9	50.0	102	17.2	14.0	21.0	0.39
Franklin	131	47.6	39.6	56.8	57	20.9	15.7	27.4	0.44
Grundy	51	59.7	43.9	79.7	21	24.5	14.9	38.3	0.41
Hamilton	795	38.3	35.6	41.1	260	12.3	10.8	13.9	0.32
McMinn	135	39.1	32.6	46.6	49	13.9	10.3	18.6	0.36
Marion	84	44.2	35.0	55.3	29	17.7	11.7	25.8	0.40
Meigs	37	49.4	34.3	69.5	15	23.2	12.6	39.3	0.47
Polk	32	31.8	21.4	45.7	16	14.0	7.9	23.5	0.44
Rhea	91	46.5	37.2	57.4	39	20.3	14.3	28.1	0.44
Sequatchie	42	42.8	30.4	58.9	14	15.8	8.5	27.2	0.37
Southwest Region	3,049	44.7	43.1	46.3	1,306	19.6	18.5	20.7	0.44
Chester	39	39.6	27.8	54.8	19	18.4	11.0	29.2	0.46
Decatur	39	43.9	30.9	61.4	16	17.5	9.6	30.2	0.40
Fayette	122	50.3	41.4	60.6	51	20.9	15.5	27.8	0.42
Hardeman	77	47.6	37.4	59.9	27	15.9	10.4	23.6	0.33
Hardin	89	45.7	36.4	56.8	41	21.9	15.6	30.3	0.48
Haywood	57	51.0	38.3	66.8	26	22.1	14.4	32.9	0.43
Henderson	80	45.2	35.6	56.7	25	14.5	9.3	21.8	0.32
Lauderdale	87	59.2	47.2	73.4	32	22.3	15.1	31.7	0.38
McNairy	87	50.0	39.8	62.3	28	16.3	10.7	23.9	0.33
Madison	223	39.0	34.0	44.6	84	15.0	11.9	18.6	0.38
Shelby	1,998	44.0	42.0	46.0	894	20.3	19.0	21.7	0.46
Tipton	151	48.5	40.9	57.1	63	21.2	16.2	27.3	0.44
Upper-Cumberland Region	987	44.0	41.2	46.9	381	16.8	15.1	18.6	0.38
Cannon	35	40.3	27.8	56.9	18	20.5	11.9	33.2	0.51
Clay	29	48.2	31.9	71.3	12	18.1	9.3	34.0	0.38
Cumberland	181	37.9	32.1	44.7	70	14.0	10.8	18.2	0.37
DeKalb	54	47.5	35.4	62.5	22	19.6	12.2	30.1	0.41
Fentress	61	51.5	38.9	67.3	16	13.1	7.3	22.0	0.25
Jackson	36	46.5	31.7	66.4	21	25.8	15.5	41.2	0.55
Macon	57	42.8	32.2	55.9	26	20.6	13.3	30.6	0.48
Overton	79	55.3	43.4	69.6	22	15.4	9.5	23.9	0.28
Pickett	23	56.7	35.4	89.0	7	16.1	6.4	38.1	0.3
Putnam	169	39.7	33.9	46.3	70	16.3	12.7	20.7	0.41
Smith	63	56.9	43.4	73.4	16	16.3	9.2	26.8	0.29
Van Buren	22	55.4	33.6	87.6	8	20.7	8.5	44.3	0.4
Warren	99	42.3	34.2	51.8	40	16.4	11.7	22.5	0.39
White	79	45.9	36.1	57.7	33	17.9	12.3	25.6	0.39

^Statistic not displayed due to fewer than 5 cases.
 *Excludes individuals with disorders of sex development and transsexuals.
 **Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.
 †Mortality Incidence ratio. See Technical Notes for details.
 Note that the number of cases by region may not sum up to the state total due to records missing resident county information.

[Data Source](#)

APPENDIX VIII. MELANOMA OF THE SKIN INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014

Resident County	Incidence				Mortality				M:I Ratio †
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Tennessee	7,271	20.3	19.8	20.7	1,118	3.1	2.9	3.3	0.15
East Region	1,893	26.7	25.5	28.0	246	3.4	3.0	3.8	0.13
Anderson	120	24.8	20.4	29.9	14	2.8	1.5	4.8	0.11
Blount	244	31.3	27.4	35.7	28	3.6	2.3	5.3	0.12
Campbell	41	17.3	12.3	23.7	10	3.6	1.7	6.9	0.2
Claiborne	56	28.3	21.1	37.3	5	2.5	0.8	6.2	0.1
Cocke	67	30.2	23.1	38.9	10	4.5	2.1	8.6	0.1
Grainger	42	29.7	21.2	40.8	6	4.4	1.6	10.1	0.1
Hamblen	117	32.0	26.3	38.5	13	3.6	1.9	6.3	0.11
Jefferson	104	31.9	25.8	39.0	10	2.7	1.3	5.2	0.1
Knox	599	24.9	23.0	27.1	89	3.7	2.9	4.5	0.15
Loudon	116	33.3	27.0	40.8	9	2.2	1.0	4.6	0.1
Monroe	53	18.5	13.7	24.6	6	2.1	0.8	4.9	0.1
Morgan	30	23.4	15.6	33.9	^	^	^	^	^
Roane	86	23.6	18.6	29.6	12	3.0	1.6	5.6	0.13
Scott	24	19.7	12.5	29.7	8	6.3	2.7	12.8	0.3
Sevier	168	29.3	24.9	34.3	18	3.2	1.9	5.2	0.11
Union	26	24.9	16.0	37.2	5	5.1	1.6	12.4	0.2
Mid-Cumberland Region	1,511	17.4	16.5	18.3	269	3.2	2.9	3.7	0.2
Cheatham	32	14.2	9.5	20.4	5	2.6	0.8	6.2	0.2
Davidson	433	14.0	12.7	15.4	92	3.1	2.5	3.8	0.22
Dickson	44	15.5	11.1	20.9	11	4.2	2.1	7.5	0.27
Houston	10	17.7	8.2	34.2	^	^	^	^	^
Humphreys	29	27.6	18.1	40.5	^	^	^	^	^
Montgomery	116	16.4	13.4	19.7	28	4.1	2.7	5.9	0.25
Robertson	62	17.8	13.6	23.0	14	4.2	2.3	7.1	0.24
Rutherford	170	14.0	11.9	16.3	33	3.0	2.0	4.2	0.21
Stewart	15	16.8	9.2	28.8	^	^	^	^	^
Sumner	228	25.5	22.2	29.1	27	3.1	2.1	4.6	0.12
Trousdale	6	13.3	4.7	30.0	^	^	^	^	^
Williamson	238	24.8	21.6	28.3	28	3.3	2.2	4.9	0.13
Wilson	128	20.1	16.7	24.0	22	3.3	2.1	5.1	0.16
Northeast Region	1,012	31.3	29.3	33.4	124	3.6	3.0	4.4	0.1
Carter	87	23.2	18.4	29.0	10	2.7	1.3	5.2	0.1
Greene	110	24.0	19.6	29.2	23	4.7	3.0	7.3	0.20
Hancock	14	37.3	19.4	65.0	^	^	^	^	^
Hawkins	134	37.0	30.8	44.2	20	5.8	3.5	9.2	0.16
Johnson	19	15.4	9.1	25.0	7	5.0	2.0	11.3	0.3
Sullivan	354	33.8	30.2	37.7	40	3.5	2.5	4.9	0.10
Unicoi	42	33.4	23.6	46.3	^	^	^	^	^
Washington	252	35.5	31.2	40.4	18	2.5	1.5	4.0	0.07
Northwest Region	236	15.5	13.5	17.6	48	3.0	2.2	4.0	0.2
Benton	14	16.1	8.5	27.9	^	^	^	^	^
Carroll	28	15.6	10.3	23.0	7	3.7	1.4	8.0	0.2
Crockett	17	17.8	10.3	29.1	^	^	^	^	^
Dyer	32	15.1	10.3	21.5	^	^	^	^	^
Gibson	33	11.3	7.7	16.1	13	4.1	2.1	7.1	0.36
Henry	43	19.7	13.9	27.2	8	3.1	1.3	6.6	0.2
Lake	^	^	^	^	^	^	^	^	^
Obion	34	18.2	12.5	25.9	6	2.8	1.0	6.5	0.2
Weakley	32	16.1	10.8	23.1	7	3.9	1.5	8.2	0.2

APPENDIX VIII. MELANOMA OF THE SKIN INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014, CONTINUED

South Central Region	400	17.5	15.8	19.4	78	3.4	2.7	4.3	0.2
Bedford	41	15.9	11.4	21.8	13	5.4	2.9	9.3	0.34
Coffee	59	19.0	14.4	24.7	12	3.8	1.9	6.8	0.20
Giles	40	20.5	14.4	28.6	8	4.4	1.8	9.2	0.2
Hickman	23	15.9	9.9	24.2	^	^	^	^	^
Lawrence	45	17.7	12.7	24.0	11	4.1	2.0	7.6	0.23
Lewis	15	19.6	10.7	33.5	^	^	^	^	^
Lincoln	29	12.4	8.2	18.1	6	2.7	1.0	6.2	0.2
Marshall	31	17.7	11.9	25.4	5	2.9	0.9	6.9	0.2
Maury	85	18.9	15.0	23.5	11	2.5	1.2	4.5	0.13
Moore	7	16.2	6.4	35.7	^	^	^	^	^
Perry	8	20.4	8.3	41.4	^	^	^	^	^
Wayne	17	15.1	8.7	24.9	^	^	^	^	^
Southeast Region	903	22.8	21.3	24.4	141	3.5	3.0	4.2	0.2
Bledsoe	17	21.0	12.0	34.7	^	^	^	^	^
Bradley	99	17.4	14.1	21.3	23	3.9	2.4	5.9	0.22
Franklin	53	20.7	15.3	27.5	7	2.8	1.1	6.0	0.1
Grundy	13	15.7	8.2	27.7	^	^	^	^	^
Hamilton	519	25.9	23.7	28.3	67	3.3	2.5	4.2	0.13
McMinn	68	21.4	16.5	27.5	11	3.6	1.7	6.6	0.17
Marion	38	22.0	15.3	30.8	7	3.5	1.4	7.7	0.2
Meigs	14	16.7	8.7	29.9	^	^	^	^	^
Polk	19	16.0	9.5	25.9	5	3.9	1.2	10.2	0.2
Rhea	43	22.3	15.9	30.5	7	3.9	1.5	8.3	0.2
Sequatchie	20	24.7	14.8	38.9	^	^	^	^	^
Southwest Region	804	11.8	11.0	12.7	136	2.0	1.7	2.4	0.2
Chester	7	7.8	3.0	16.5	^	^	^	^	^
Decatur	14	16.8	8.7	30.0	^	^	^	^	^
Fayette	37	15.5	10.7	21.9	^	^	^	^	^
Hardeman	15	9.8	5.4	16.4	^	^	^	^	^
Hardin	25	13.7	8.7	20.8	7	3.7	1.4	8.4	0.3
Haywood	12	10.3	5.2	18.6	^	^	^	^	^
Henderson	30	20.3	13.6	29.3	5	2.7	0.9	6.8	0.1
Lauderdale	23	15.7	9.9	23.8	^	^	^	^	^
McNairy	25	14.1	8.9	21.4	5	2.3	0.7	6.1	0.2
Madison	68	13.3	10.2	16.9	15	2.6	1.4	4.3	0.20
Shelby	513	11.1	10.1	12.1	81	1.8	1.4	2.3	0.16
Tipton	35	11.5	8.0	16.1	5	1.6	0.5	3.8	0.1
Upper-Cumberland Region	496	22.9	20.9	25.1	76	3.4	2.6	4.3	0.1
Cannon	20	20.3	12.4	32.2	^	^	^	^	^
Clay	11	18.3	9.0	35.0	^	^	^	^	^
Cumberland	141	30.9	25.4	37.3	18	3.3	1.9	5.6	0.11
DeKalb	15	13.9	7.6	23.6	^	^	^	^	^
Fentress	26	24.1	15.3	36.4	^	^	^	^	^
Jackson	14	20.7	10.9	36.0	^	^	^	^	^
Macon	28	21.4	14.1	31.4	5	4.6	1.4	10.8	0.2
Overton	25	19.0	12.2	28.6	6	4.3	1.5	9.9	0.2
Pickett	7	16.4	6.2	39.1	^	^	^	^	^
Putnam	87	21.3	16.9	26.4	10	2.4	1.1	4.5	0.1
Smith	17	16.7	9.6	27.1	^	^	^	^	^
Van Buren	11	26.8	13.1	51.1	^	^	^	^	^
Warren	50	21.9	16.1	29.1	13	5.6	3.0	9.8	0.26
White	44	25.2	18.2	34.4	7	3.4	1.4	7.7	0.1

^Statistic not displayed due to fewer than 5 cases.
 *Excludes individuals with disorders of sex development and transsexuals.
 **Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.
 †Mortality Incidence ratio. See Technical Notes for details.

Note that the number of cases by region may not sum up to the state total due to records missing resident county information.

[Data Source](#)

APPENDIX IX. PANCREATIC CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014

	Incidence				Mortality				M:I Ratio ‡
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Tennessee	4,490	12.0	11.7	12.4	4,118	11.1	10.8	11.5	0.93
East Region	947	12.4	11.6	13.3	855	11.3	10.5	12.1	0.91
Anderson	49	9.0	6.6	12.0	45	8.2	5.9	11.1	0.91
Blount	93	11.1	8.9	13.7	83	10.0	7.9	12.4	0.90
Campbell	25	8.7	5.6	13.1	20	7.5	4.5	11.8	0.86
Claiborne	21	11.3	6.9	17.5	26	13.5	8.7	20.0	1.19
Cocke	39	15.3	10.8	21.3	35	14.0	9.6	19.8	0.92
Grainger	22	17.1	10.5	26.3	16	12.1	6.7	20.1	0.71
Hamblen	52	12.9	9.6	17.0	37	9.0	6.3	12.6	0.70
Jefferson	40	11.2	8.0	15.5	40	11.5	8.2	15.9	1.03
Knox	326	12.9	11.6	14.5	309	12.4	11.0	13.9	0.96
Loudon	67	15.5	12.0	20.1	60	14.1	10.7	18.5	0.91
Monroe	55	18.3	13.6	24.2	39	13.1	9.2	18.2	0.72
Morgan	8	5.8	2.4	12.0	6	4.6	1.7	10.5	0.79
Roane	42	10.6	7.6	14.7	40	10.1	7.1	14.1	0.95
Scott	14	10.7	5.8	18.3	10	7.2	3.4	13.7	0.67
Sevier	72	11.7	9.1	14.9	73	12.1	9.4	15.3	1.03
Union	22	20.2	12.5	31.1	16	14.6	8.2	24.3	0.72
Mid-Cumberland Region	1,017	11.8	11.1	12.6	897	10.7	10.0	11.5	0.91
Cheatham	34	15.6	10.6	22.3	26	13.0	8.3	19.4	0.83
Davidson	398	13.1	11.8	14.5	362	12.1	10.8	13.4	0.92
Dickson	36	12.2	8.5	17.1	30	10.6	7.1	15.2	0.87
Houston	9	17.2	7.8	33.9	8	14.9	6.4	30.6	0.87
Humphreys	5	3.9	1.3	9.9	11	9.9	4.8	18.4	2.54
Montgomery	79	11.4	8.9	14.3	70	11.0	8.5	14.0	0.96
Robertson	47	13.1	9.5	17.6	44	11.8	8.5	16.0	0.90
Rutherford	111	9.9	8.1	12.0	107	9.8	8.0	12.0	0.99
Stewart	13	13.8	7.2	24.6	9	10.4	4.7	20.7	0.75
Sumner	93	9.7	7.8	12.0	79	8.4	6.6	10.5	0.87
Trousdale	11	24.7	12.1	45.3	9	20.7	9.3	40.1	0.84
Williamson	84	9.0	7.1	11.3	68	7.6	5.9	9.8	0.84
Wilson	97	14.7	11.8	18.1	74	11.9	9.2	15.0	0.81
Northeast Region	412	11.5	10.4	12.7	403	11.3	10.2	12.5	0.98
Carter	41	10.3	7.4	14.2	38	9.4	6.6	13.1	0.91
Greene	44	9.0	6.5	12.3	49	10.3	7.6	13.7	1.14
Hancock	9	17.9	8.0	36.4	13	27.6	14.4	49.4	1.5
Hawkins	56	14.6	11.0	19.2	47	12.3	9.0	16.6	0.84
Johnson	14	10.1	5.5	17.9	12	9.3	4.8	17.1	0.92
Sullivan	130	11.1	9.3	13.3	128	10.9	9.1	13.0	0.98
Unicoi	22	15.3	9.6	24.0	18	12.2	7.2	20.1	0.80
Washington	96	11.9	9.6	14.7	98	12.4	10.1	15.2	1.04
Northwest Region	196	11.5	9.9	13.3	194	11.5	9.9	13.3	1.00
Benton	22	17.6	10.9	27.6	16	13.3	7.4	22.6	0.76
Carroll	18	8.6	5.1	14.0	23	11.2	7.1	17.2	1.30
Crockett	7	7.3	2.9	15.8	8	8.1	3.5	16.6	1.1
Dyer	23	10.1	6.4	15.4	21	9.7	6.0	14.9	0.96
Gibson	41	12.0	8.6	16.5	42	12.4	8.9	16.9	1.03
Henry	25	10.4	6.6	15.9	24	10.3	6.4	15.9	0.99
Lake	6	15.0	5.5	33.4	^	^	^	^	^
Obion	32	15.0	10.2	21.5	34	16.1	11.0	22.8	1.07
Weakley	22	10.7	6.7	16.4	22	10.4	6.5	15.9	0.97

APPENDIX IX. PANCREATIC CANCER INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014, CONTINUED

Bedford	26	10.6	6.8	15.6	28	11.4	7.5	16.6	1.08
Coffee	34	10.3	7.1	14.6	33	10.0	6.8	14.2	0.97
Giles	24	12.5	7.8	19.0	23	11.5	7.2	17.6	0.92
Hickman	23	15.0	9.4	22.9	19	11.9	7.1	19.0	0.79
Lawrence	17	6.2	3.6	10.1	21	7.9	4.9	12.3	1.27
Lewis	5	6.0	1.9	15.2	8	9.4	4.0	19.6	1.6
Lincoln	29	13.4	8.9	19.5	24	10.9	6.9	16.4	0.81
Marshall	22	11.9	7.3	18.3	22	12.1	7.5	18.6	1.02
Maury	53	10.7	8.0	14.2	57	11.6	8.7	15.1	1.08
Moore	5	10.8	3.4	28.2	^	^	^	^	^
Perry	5	8.0	2.5	21.2	^	^	^	^	^
Wayne	13	10.9	5.8	19.4	14	12.4	6.8	21.4	1.14
Southeast Region	477	11.1	10.1	12.2	429	9.9	9.0	10.9	0.89
Bledsoe	13	13.9	7.3	24.9	10	11.9	5.5	23.0	0.9
Bradley	54	8.9	6.6	11.7	49	8.2	6.0	10.9	0.92
Franklin	30	10.9	7.3	15.8	26	8.8	5.7	13.1	0.81
Grundy	8	7.7	3.2	16.4	5	5.4	1.7	13.5	0.7
Hamilton	236	11.0	9.6	12.5	218	10.0	8.7	11.5	0.91
McMinn	50	14.0	10.3	18.7	40	10.7	7.6	14.8	0.76
Marion	37	18.9	13.2	26.5	33	15.9	10.8	22.8	0.84
Meigs	13	14.7	7.5	26.8	9	10.6	4.6	21.8	0.7
Polk	10	9.6	4.5	18.2	12	11.4	5.8	20.5	1.2
Rhea	21	9.4	5.7	14.7	22	11.0	6.8	17.0	1.17
Sequatchie	5	5.4	1.7	13.5	5	5.2	1.6	13.0	1.0
Southwest Region	895	13.1	12.3	14.0	809	12.0	11.2	12.9	0.92
Chester	15	15.5	8.5	26.0	13	13.0	6.8	22.6	0.84
Decatur	8	8.7	3.7	18.6	8	8.8	3.7	18.8	1.0
Fayette	39	14.7	10.4	20.4	28	10.7	7.0	15.8	0.73
Hardeman	25	15.6	10.0	23.5	19	12.8	7.6	20.3	0.82
Hardin	17	9.9	5.6	16.4	19	10.7	6.3	17.3	1.08
Haywood	13	10.9	5.7	19.3	16	13.2	7.5	22.0	1.21
Henderson	19	11.5	6.9	18.3	19	11.9	7.1	18.8	1.03
Lauderdale	16	10.0	5.7	16.5	15	9.7	5.4	16.3	0.97
McNairy	25	13.9	8.9	21.0	24	13.6	8.7	20.7	0.98
Madison	62	11.0	8.4	14.2	50	8.8	6.5	11.6	0.80
Shelby	616	13.8	12.7	14.9	562	12.8	11.7	13.9	0.93
Tipton	40	11.9	8.4	16.4	36	10.8	7.5	15.1	0.91
Upper-Cumberland Region	289	12.3	10.9	13.8	276	11.7	10.4	13.3	0.95
Cannon	10	10.3	4.9	19.9	9	9.2	4.2	18.3	0.9
Clay	9	15.0	6.8	30.7	8	12.5	5.3	27.0	0.8
Cumberland	58	12.2	9.0	16.4	54	10.6	7.8	14.3	0.87
DeKalb	14	10.2	5.5	17.9	10	7.5	3.5	14.5	0.7
Fentress	17	13.6	7.8	22.6	17	14.0	8.0	23.1	1.03
Jackson	^	^	^	^	^	^	^	^	^
Macon	22	16.3	10.2	25.1	23	17.0	10.7	25.8	1.04
Overton	19	12.5	7.4	20.0	18	12.5	7.3	20.3	1.00
Pickett	6	15.2	5.3	37.9	^	^	^	^	^
Putnam	51	11.5	8.5	15.2	50	11.5	8.5	15.2	1.00
Smith	13	10.8	5.7	19.1	11	9.7	4.7	17.8	0.90
Van Buren	^	^	^	^	5	10.1	3.1	28.2	^
Warren	38	16.0	11.3	22.1	42	17.4	12.5	23.8	1.09
White	24	13.7	8.7	20.8	21	11.4	7.0	17.8	0.83

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

**Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Mortality Incidence ratio. See Technical Notes for details.

Note that the number of cases by region may not sum up to the state total due to records missing resident county information.

[Data Source](#)

APPENDIX X. CHILDHOOD CANCER (0-19 YEARS OF AGE) INCIDENCE AND MORTALITY, BY RESIDENT COUNTY, TENNESSEE, 2010-2014

Resident County	Incidence				Mortality				M:I Ratio ‡
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Tennessee	1,525	182.9	173.8	192.3	212	25.4	22.1	29.1	0.14
East Region	272	188.6	166.9	212.5	40	27.7	19.8	37.7	0.1
Anderson	26	292.3	190.9	428.6	5	55.3	18.0	129.9	0.2
Blount	23	158.7	100.5	238.4	6	40.6	14.9	88.8	0.3
Campbell	10	210.8	101.1	388.3	^	^	^	^	^
Claiborne	6	170.3	62.2	371.3	^	^	^	^	^
Cocke	7	170.7	68.6	352.2	^	^	^	^	^
Grainger	5	183.5	59.6	430.9	^	^	^	^	^
Hamblen	19	240.8	144.9	375.8	^	^	^	^	^
Jefferson	11	174.7	86.8	313.9	^	^	^	^	^
Knox	95	172.7	139.7	211.2	14	25.8	14.1	43.3	0.1
Loudon	13	239.2	127.3	408.8	^	^	^	^	^
Monroe	14	254.7	139.2	427.8	^	^	^	^	^
Morgan	^	^	^	^	^	^	^	^	^
Roane	6	100.8	36.8	221.3	^	^	^	^	^
Scott	8	266.7	115.1	526.5	^	^	^	^	^
Sevier	24	216.2	138.5	321.9	^	^	^	^	^
Union	^	^	^	^	^	^	^	^	^
Mid-Cumberland Region	429	176.4	160.1	193.9	57	23.8	18.0	30.8	0.1
Cheatham	10	193.0	92.4	356.2	^	^	^	^	^
Davidson	132	161.3	134.7	191.5	17	22.6	13.1	36.1	0.1
Dickson	13	198.0	105.4	338.8	^	^	^	^	^
Houston	^	^	^	^	^	^	^	^	^
Humphreys	5	219.4	71.2	514.0	^	^	^	^	^
Montgomery	57	203.1	153.4	263.6	11	42.0	20.9	74.9	0.2
Robertson	14	152.6	83.4	256.1	^	^	^	^	^
Rutherford	69	173.2	134.7	219.2	8	20.0	8.6	39.5	0.1
Stewart	6	377.6	137.4	828.1	^	^	^	^	^
Sumner	33	147.5	101.5	207.3	^	^	^	^	^
Trousdale	^	^	^	^	^	^	^	^	^
Williamson	57	200.8	151.5	261.0	^	^	^	^	^
Wilson	26	164.2	107.2	240.8	5	31.9	10.3	74.5	^
Northeast Region	136	236.4	198.3	279.8	16	27.7	15.8	45.1	0.1
Carter	19	309.1	186.0	483.1	^	^	^	^	^
Greene	20	252.9	154.2	391.7	^	^	^	^	^
Hancock	^	^	^	^	^	^	^	^	^
Hawkins	15	227.3	126.9	375.9	^	^	^	^	^
Johnson	5	284.4	92.1	664.7	^	^	^	^	^
Sullivan	41	230.9	165.6	313.6	^	^	^	^	^
Unicoi	^	^	^	^	^	^	^	^	^
Washington	31	211.7	143.6	301.0	^	^	^	^	^
Northwest Region	47	147.9	108.6	196.8	6	18.5	6.8	40.4	0.1
Benton	^	^	^	^	^	^	^	^	^
Carroll	5	135.2	43.7	319.3	^	^	^	^	^
Crockett	^	^	^	^	^	^	^	^	^
Dyer County	12	235.9	121.9	412.0	^	^	^	^	^
Gibson	6	91.6	33.6	199.3	^	^	^	^	^
Henry	9	240.2	109.8	456.3	^	^	^	^	^
Lake	^	^	^	^	^	^	^	^	^
Obion	5	134.2	43.5	312.5	^	^	^	^	^
Weakley	6	159.1	58.3	343.4	^	^	^	^	^

APPENDIX X. CANCER INCIDENCE AND MORTALITY, CHILDREN LESS THAN 20 YEARS OF AGE, BY RESIDENT COUNTY, TENNESSEE, 2010-2014, CONTINUED

South Central Region	108	217.5	178.4	262.6	16	32.3	18.5	52.5	0.15
Bedford	13	198.0	105.4	338.7	^	^	^	^	^
Coffee	13	186.4	99.2	318.9	^	^	^	^	^
Giles	5	146.3	47.5	341.4	^	^	^	^	^
Hickman	^	^	^	^	^	^	^	^	^
Lawrence	18	315.9	187.1	499.3	^	^	^	^	^
Lewis	^	^	^	^	^	^	^	^	^
Lincoln	11	271.3	135.2	485.3	^	^	^	^	^
Marshall	7	169.0	67.9	350.0	^	^	^	^	^
Maury	22	198.9	124.4	301.7	^	^	^	^	^
Moore	^	^	^	^	^	^	^	^	^
Perry County	^	^	^	^	^	^	^	^	^
Wayne	7	385.0	154.1	802.5	^	^	^	^	^
Southeast Region	144	174.8	147.4	205.9	15	18.4	10.3	30.3	0.11
Bledsoe	^	^	^	^	^	^	^	^	^
Bradley	21	161.0	99.6	246.6	^	^	^	^	^
Franklin	9	192.0	87.2	365.2	^	^	^	^	^
Grundy	^	^	^	^	^	^	^	^	^
Hamilton	68	162.0	125.8	205.5	5	12.0	3.9	28.0	0.07
McMinn	10	151.6	72.7	280.1	^	^	^	^	^
Marion	8	246.9	106.5	485.9	^	^	^	^	^
Meigs	^	^	^	^	^	^	^	^	^
Polk	5	246.3	79.6	584.7	^	^	^	^	^
Rhea	10	241.1	115.5	443.8	^	^	^	^	^
Sequatchie	6	329.3	120.7	721.3	^	^	^	^	^
Southwest Region	310	167.8	149.7	187.6	52	28.3	21.1	37.1	0.17
Chester	^	^	^	^	^	^	^	^	^
Decatur	5	377.1	122.4	881.4	^	^	^	^	^
Fayette	14	309.1	168.9	518.3	^	^	^	^	^
Hardeman	6	206.7	75.8	448.7	^	^	^	^	^
Hardin	6	202.2	74.2	440.1	^	^	^	^	^
Haywood	^	^	^	^	^	^	^	^	^
Henderson	6	163.4	60.0	356.8	^	^	^	^	^
Lauderdale	7	206.5	83.0	424.2	^	^	^	^	^
McNairy	^	^	^	^	^	^	^	^	^
Madison	19	139.8	84.1	218.7	^	^	^	^	^
Shelby	225	166.9	145.8	190.2	38	28.4	20.1	39.0	0.17
Tipton	12	140.0	72.2	244.5	^	^	^	^	^
Upper-Cumberland Region	78	188.3	148.9	235.1	10	24.0	11.5	44.2	0.13
Cannon	^	^	^	^	^	^	^	^	^
Clay	^	^	^	^	^	^	^	^	^
Cumberland	6	102.0	37.4	222.3	^	^	^	^	^
DeKalb	^	^	^	^	^	^	^	^	^
Fentress	6	279.6	102.2	609.6	^	^	^	^	^
Jackson	^	^	^	^	^	^	^	^	^
Macon	7	225.4	90.6	464.8	^	^	^	^	^
Overton	7	255.6	102.6	528.0	^	^	^	^	^
Pickett	^	^	^	^	^	^	^	^	^
Putnam	16	173.1	98.6	281.7	^	^	^	^	^
Smith	^	^	^	^	^	^	^	^	^
Van Buren	^	^	^	^	^	^	^	^	^
Warren County	13	251.6	133.8	430.7	^	^	^	^	^
White	7	220.4	88.6	454.5	^	^	^	^	^

^Statistic not displayed due to fewer than 5 cases.

*Excludes individuals with disorders of sex development and transsexuals.

**Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.

†Mortality Incidence ratio. See Technical Notes for details.

Note that the number of cases by 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, TENNESSEE, 2010-2014

Cancer Site	Incidence					Mortality				M:I Ratio †
	Year	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
All Sites	2010-2012	102,891	472.0	469.1	475.0	40,607	189.0	187.1	190.9	0.40
	2011-2013	103,721	465.9	463.0	468.8	41,031	186.3	184.5	188.2	0.40
	2012-2014	103,774	456.8	454.0	459.6	41,723	185.1	183.3	186.9	0.41
Lung and Bronchus	2010-2012	16,975	77.0	75.8	78.1	13,016	59.7	58.7	60.8	0.78
	2011-2013	17,161	76.0	74.8	77.1	12,918	57.7	56.7	58.8	0.76
	2012-2014	17,424	75.3	74.2	76.4	13,058	57.0	56.0	58.0	0.76
Female Breast	2010-2012	14,087	120.8	118.7	122.8	2,637	22.1	21.2	22.9	0.18
	2011-2013	14,590	123.0	121.0	125.1	2,691	22.0	21.2	22.9	0.18
	2012-2014	14,675	122.2	120.2	124.3	2,735	22.0	21.2	22.9	0.18
Prostate	2010-2012	13,677	130.3	128.1	132.6	1,719	21.7	20.7	22.8	0.17
	2011-2013	13,160	121.3	119.2	123.5	1,660	20.0	19.0	21.0	0.16
	2012-2014	12,129	108.5	106.5	110.5	1,666	19.4	18.4	20.4	0.18
Colon & Rectum	2010-2012	9,020	41.9	41.0	42.8	3,624	17.0	16.5	17.6	0.41
	2011-2013	8,860	40.3	39.5	41.2	3,635	16.7	16.2	17.3	0.41
	2012-2014	9,073	40.5	39.6	41.3	3,542	15.9	15.4	16.5	0.39
Melanoma of Skin	2010-2012	4,358	20.7	20.1	21.3	658	3.1	2.9	3.3	0.15
	2011-2013	4,361	20.3	19.7	20.9	679	3.1	2.9	3.4	0.15
	2012-2014	4,328	19.7	19.1	20.3	673	3.1	2.8	3.3	0.16
Pancreas	2010-2012	2,577	11.8	11.3	12.2	2,348	10.8	10.4	11.3	0.92
	2011-2013	2,680	12.0	11.5	12.4	2,422	10.9	10.5	11.3	0.91
	2012-2014	2,787	12.1	11.7	12.6	2,556	11.2	10.8	11.6	0.93

^Statistic not displayed due to fewer than 5 cases.
 Total counts are based on the respective 3-year interval
 **Rates are per 100,000 and age-adjusted to the 2000 US Standard Population Census P25-1130 standard.
 †Mortality Incidence ratio. See Technical Notes for details.

Data Source

APPENDIX XII. NUMBER OF DEATHS AND YEARS OF POTENTIAL LIFE LOST, BY GENDER AND RACE, TENNESSEE, 2010-2014

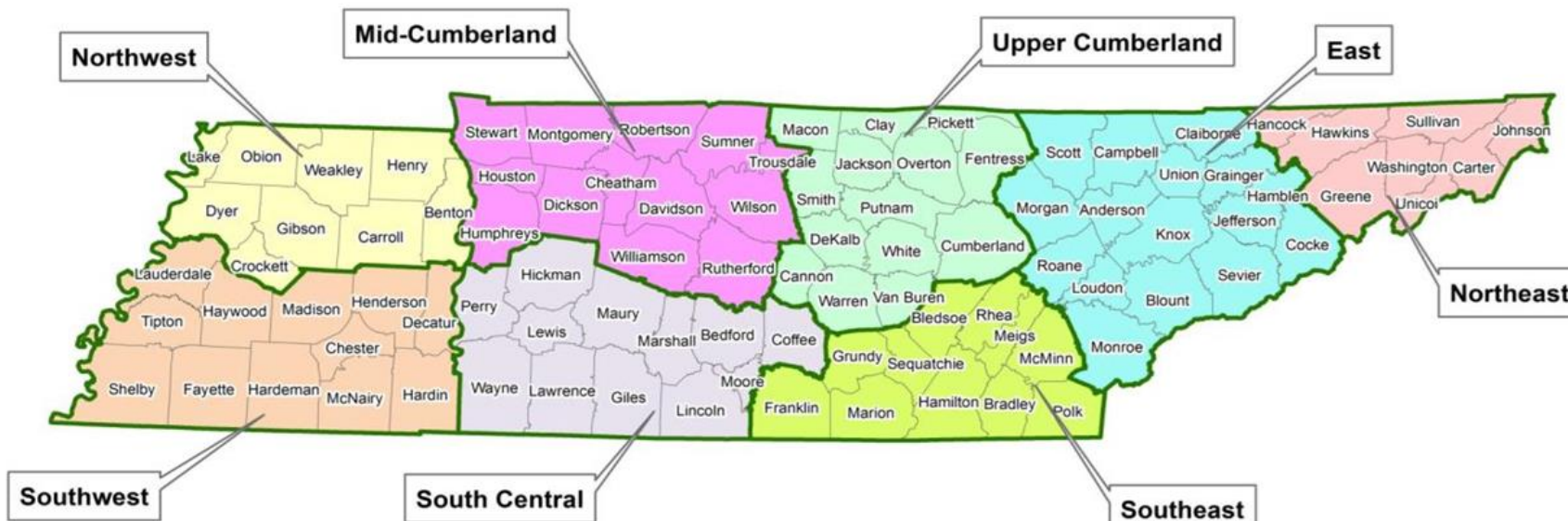
2010-2014 Number of Deaths and Years of Potential Life Lost to Cancer, by Gender and Race								
	2010	2011	2012	2013	2014	2010-2014	YPLL	AYLL
Total Population	13,514	13,461	13,632	13,938	14,153	68,698	577,203	8.4
Black	1,892	1,950	1,935	1,954	2,041	9,772	104,567	10.7
White	11,545	11,430	11,591	11,876	11,983	58,425	466,069	8.0
Female	6,096	6,161	6,219	6,352	6,512	31,340	262,004	8.4
Black Females	908	920	884	980	1,020	4,712	49,967	10.6
White Females	5,146	5,197	5,280	5,313	5,435	26,371	208,589	7.9
Male	7,418	7,300	7,413	7,586	7,641	37,358	315,196	8.4
Black Males	984	1,030	1,051	974	1,021	5,060	54,600	10.8
White Males	6,399	6,233	6,311	6,563	6,548	32,054	257,477	8.0

APPENDIX XIII. NUMBER OF DEATHS AND YEARS OF POTENTIAL LIFE LOST, BY CANCER SITE, TENNESSEE, 2010-2014

2010-2014 Number of Deaths and Years of Potential Life Lost to Cancer, by Cancer Site								
	2010	2011	2012	2013	2014	2010-2014	YPLL	AYLL
Brain & Other CNS	314	320	332	383	380	1,729	24,752	14.3
Female Breast	870	862	905	924	906	4,467	46,450	10.4
Colorectal	1,201	1,242	1,181	1,212	1,149	5,985	44,664	7.5
Corpus and Uterus	130	159	166	169	181	805	6,250	7.8
Esophagus	285	313	307	323	336	1,564	15,442	9.9
Kidney & Renal Pelvis	286	314	289	363	312	1,564	12,825	8.2
Leukemia	529	502	542	505	518	2,596	20,786	8.0
Liver & Intrahepatic Bile Duct	403	480	528	503	543	2,457	25,582	10.4
Lung	4,400	4,289	4,327	4,302	4,429	21,747	166,315	7.6
Melanoma of the Skin	224	221	213	245	215	1,118	11,232	10.0
NH Lymphoma	458	431	430	441	471	2,231	14,216	6.4
Oral Cavity and Pharynx	243	238	210	225	251	1,167	12,268	10.5
Ovary	304	321	316	294	318	1,553	13,223	8.5
Pancreas	779	783	786	853	917	4,118	31,676	7.7
Prostate	600	574	545	541	580	2,840	9,527	3.4
Stomach	214	211	247	220	202	1,094	9,690	8.9
Urinary Bladder	288	267	306	324	317	1,502	7,251	4.8

MAPS

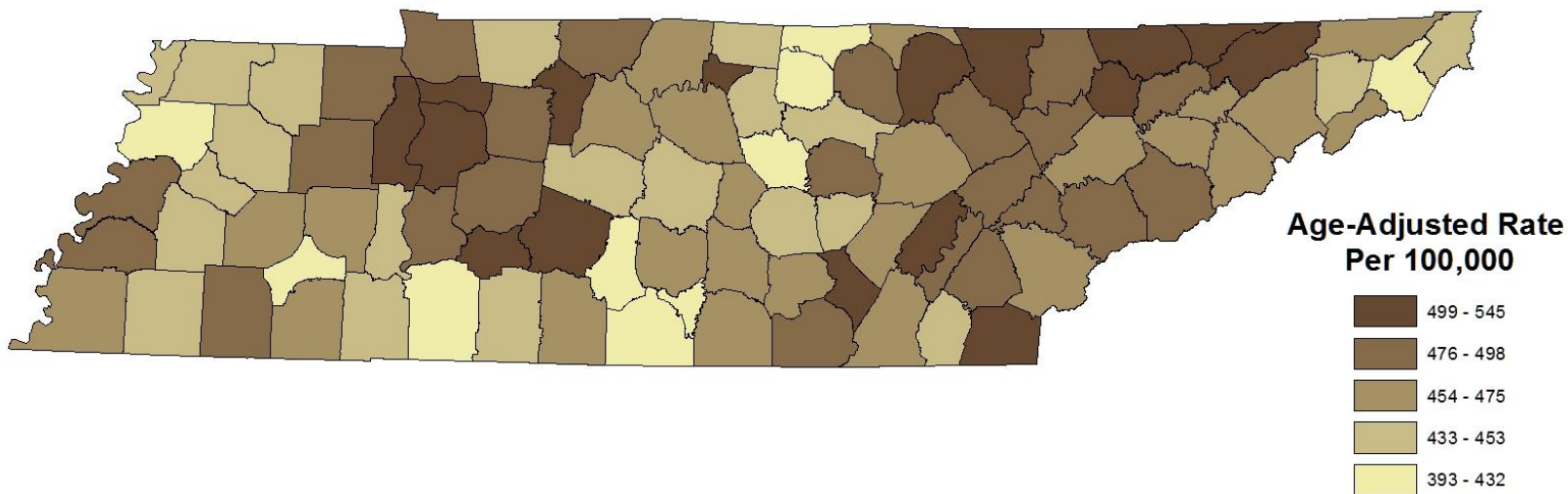
1. TENNESSEE COUNTIES AND REGIONAL GROUPINGS



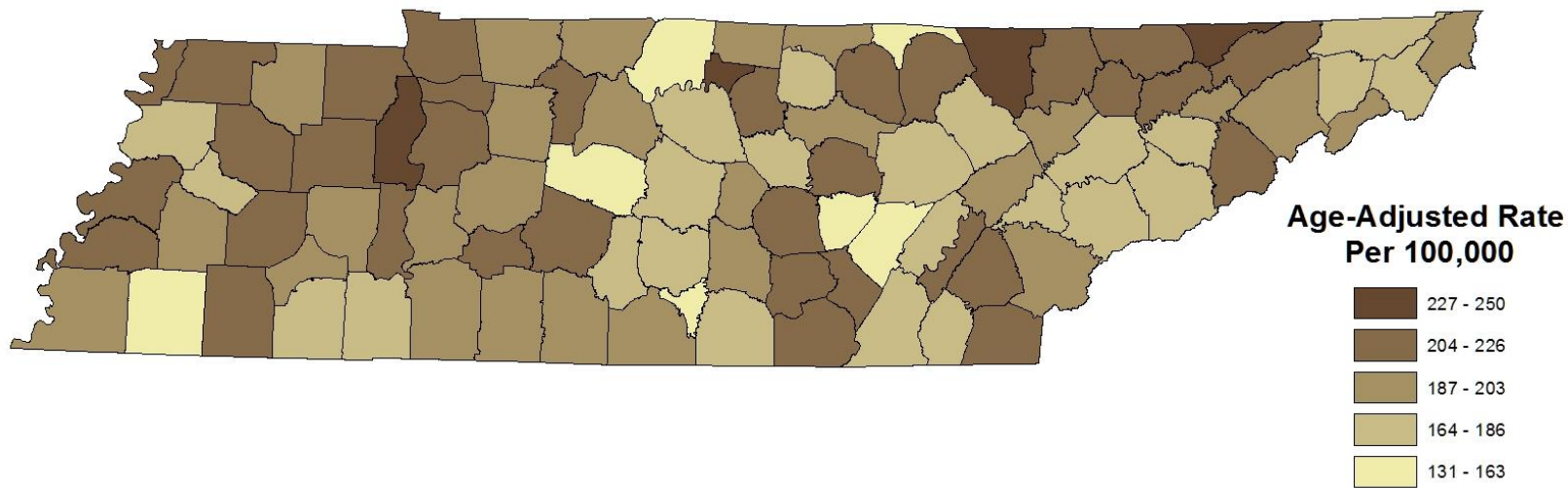
Northwest	Southwest	Mid-Cumberland	South Central	Upper-Cumberland	Southeast	East	Northeast
Benton	Chester	Cheatham	Bedford	Cannon	Bledsoe	Anderson	Carter
Carroll	Decatur	Davidson	Coffee	Clay	Bradley	Blount	Greene
Crockett	Fayette	Dickson	Giles	Cumberland	Franklin	Campbell	Hancock
Dyer	Hardeman	Houston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

2. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, ALL SITES COMBINED, TENNESSEE, 2010-2014

Incidence

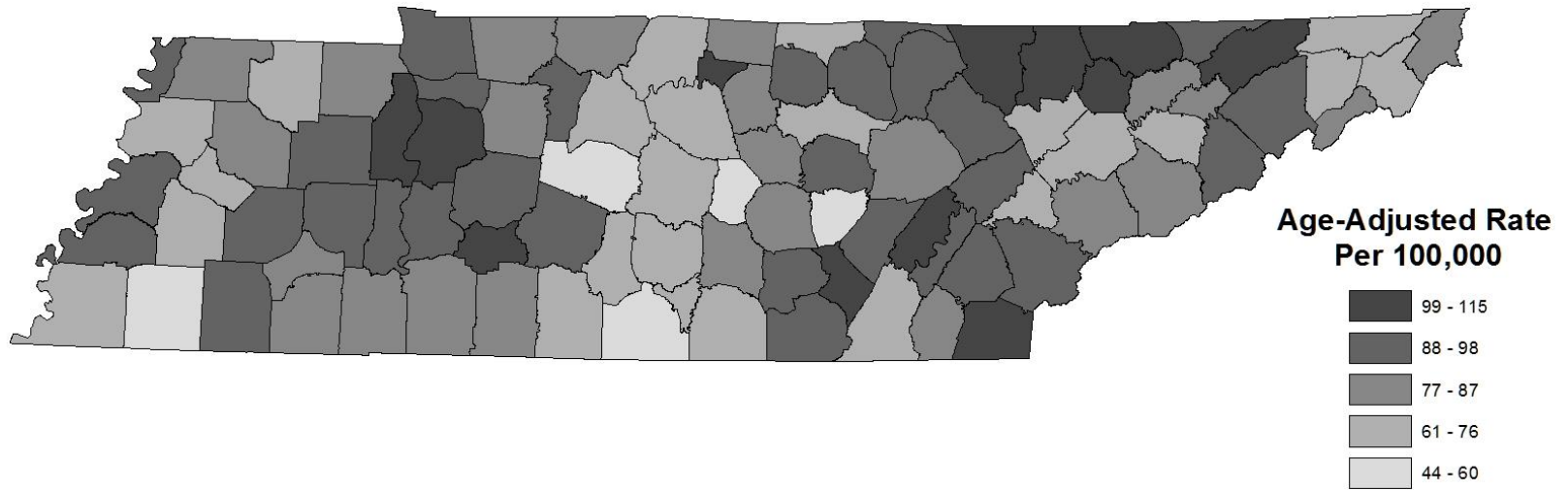


Mortality



3. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, LUNG, TENNESSEE, 2010-2014

Incidence

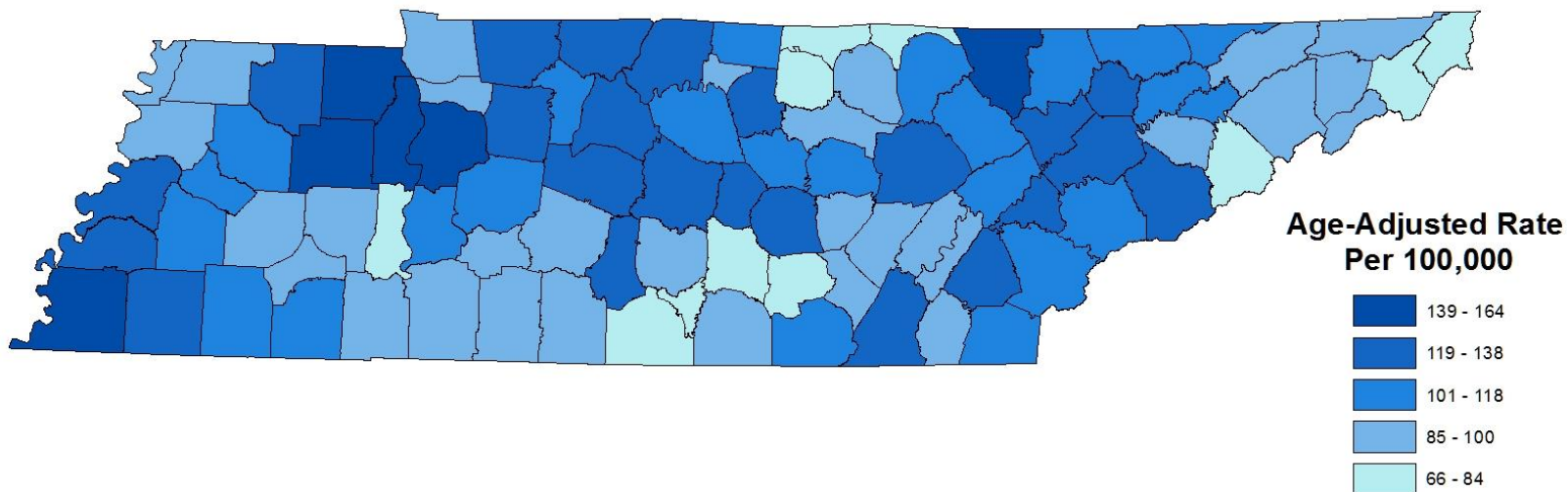


Mortality

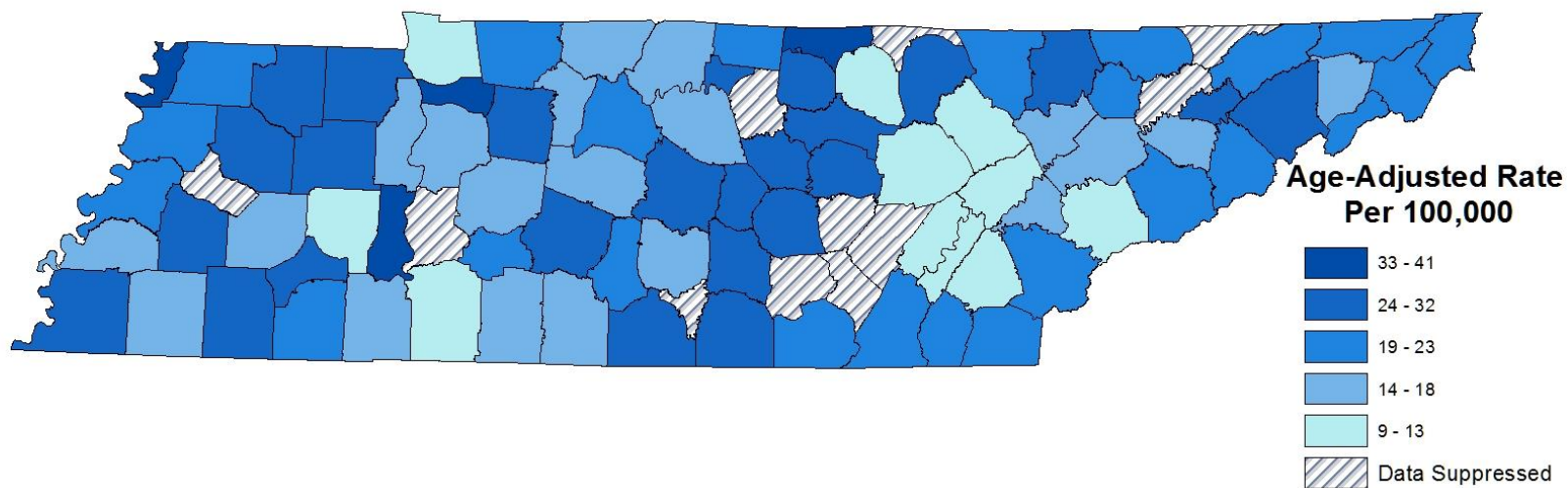


4. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, PROSTATE, TENNESSEE, 2010-2014

Incidence

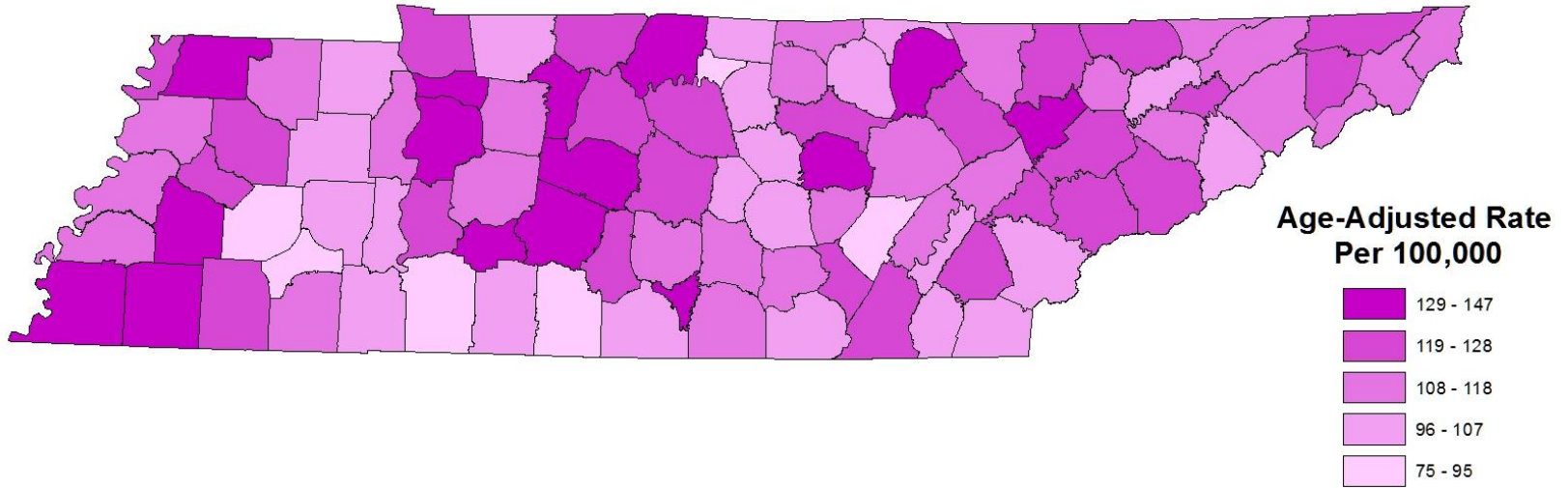


Mortality

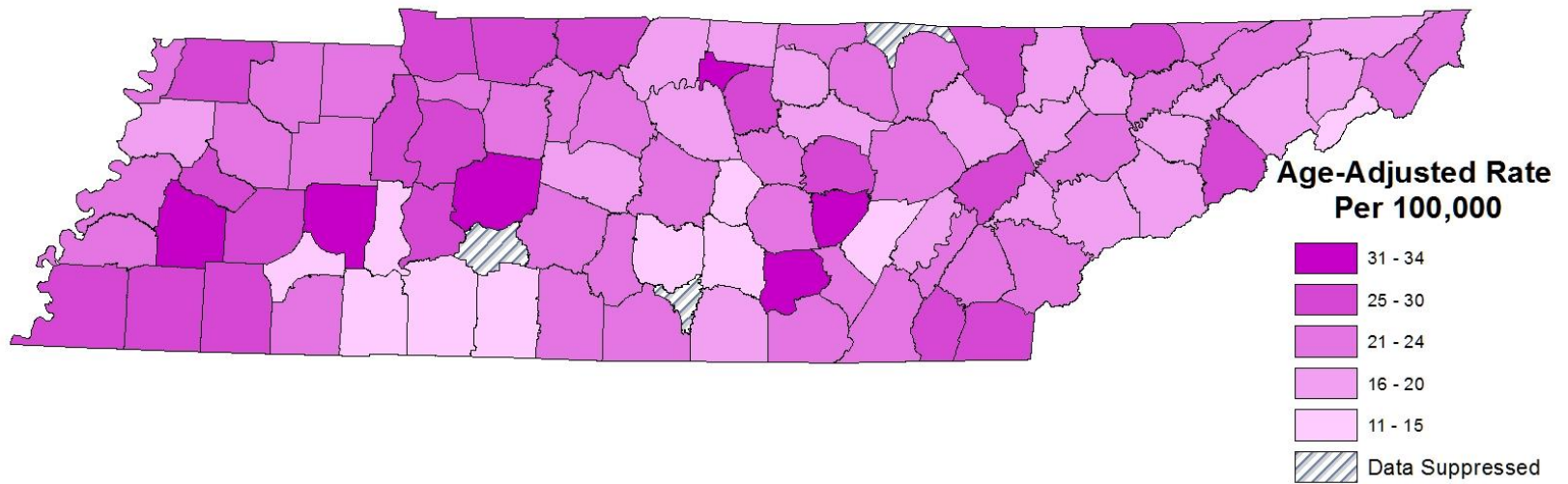


5. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, FEMALE BREAST, TENNESSEE, 2010-2014

Incidence

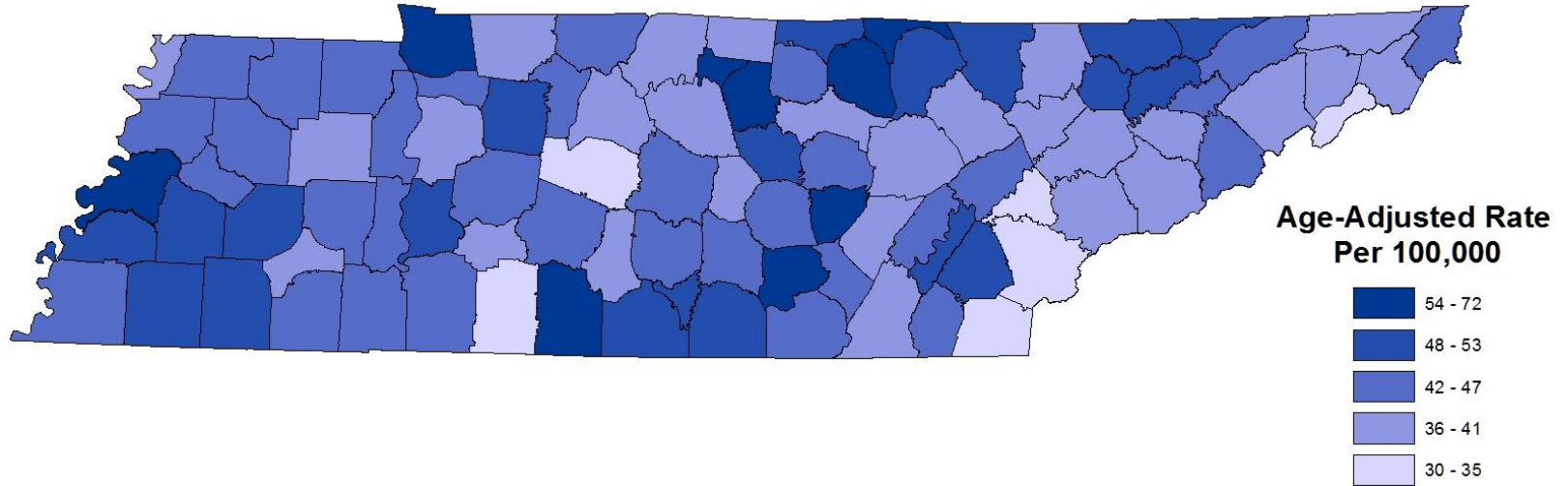


Mortality

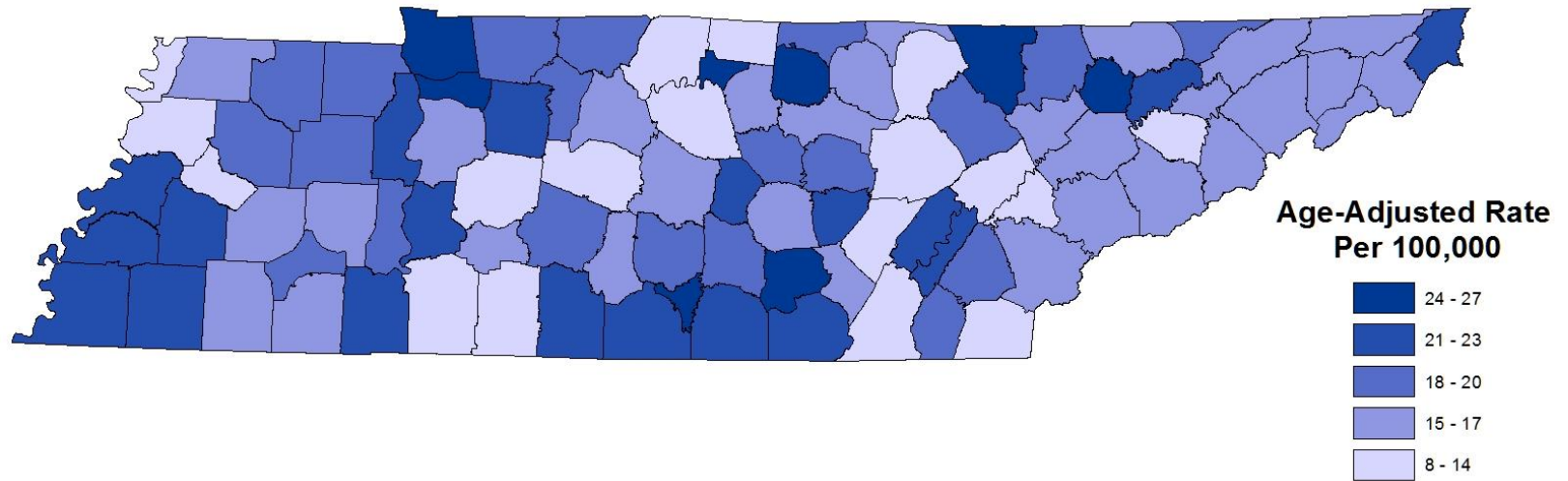


6. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, COLON AND RECTUM, TENNESSEE, 2010-2014

Incidence

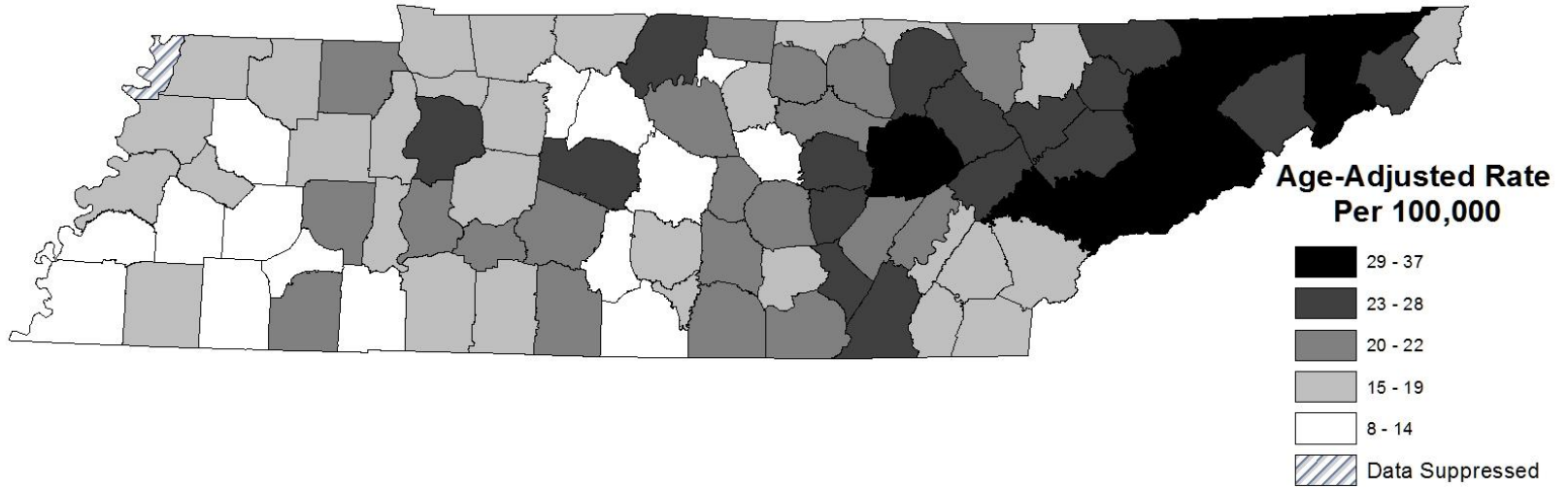


Mortality

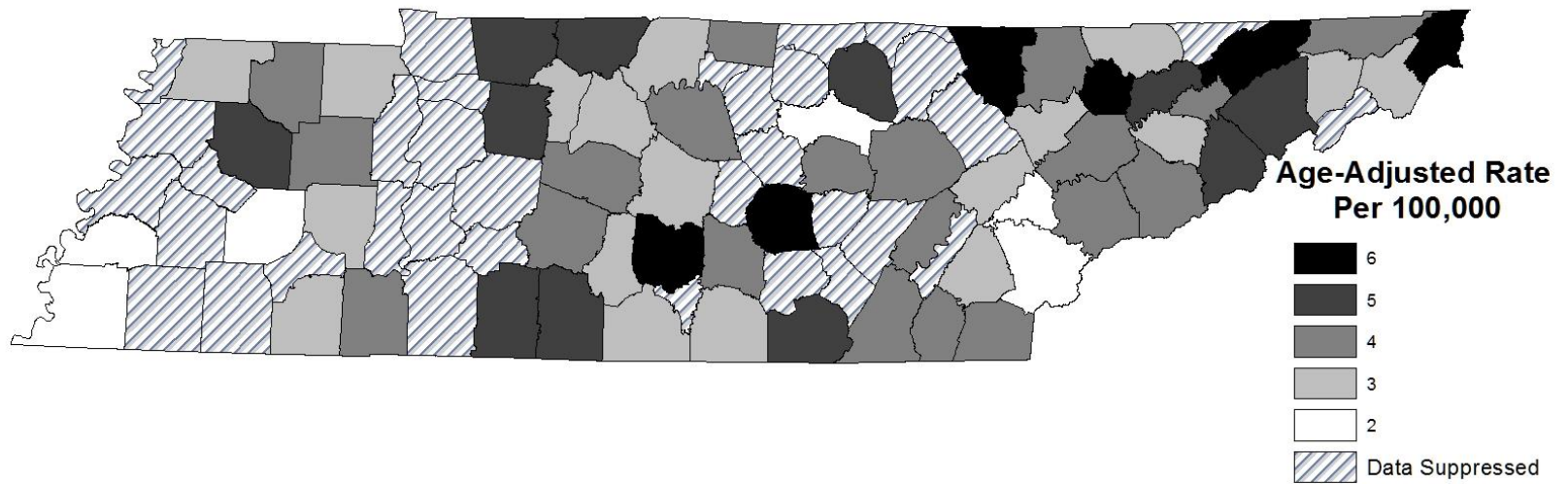


7. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, MELANOMA OF THE SKIN, TENNESSEE, 2010-2014

Incidence

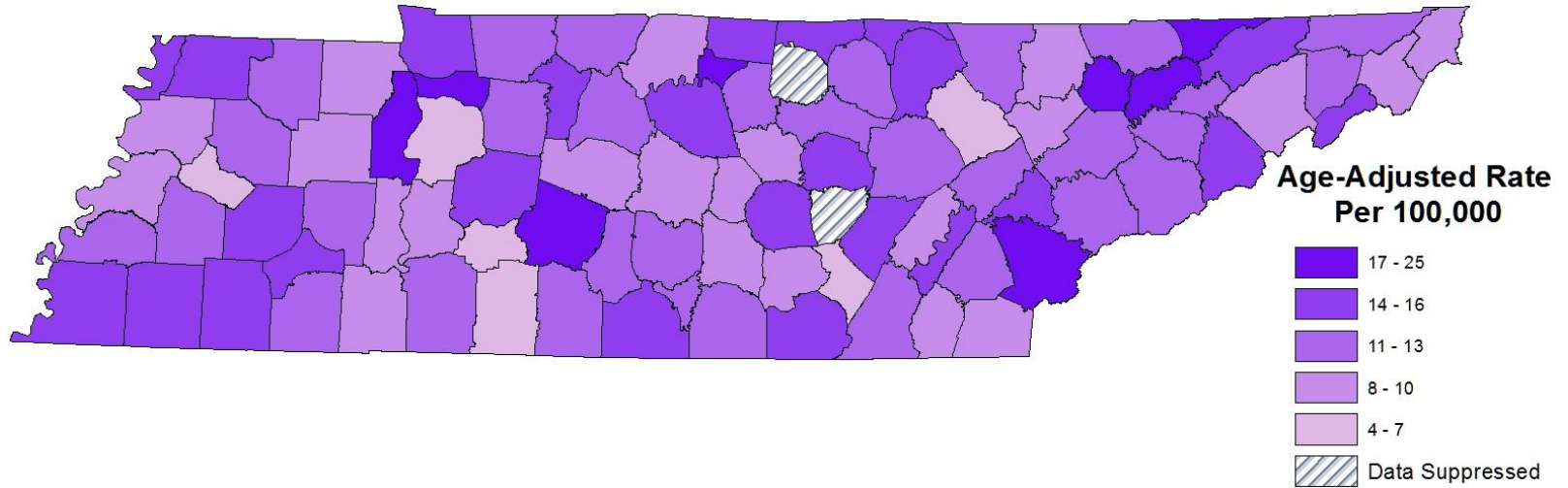


Mortality

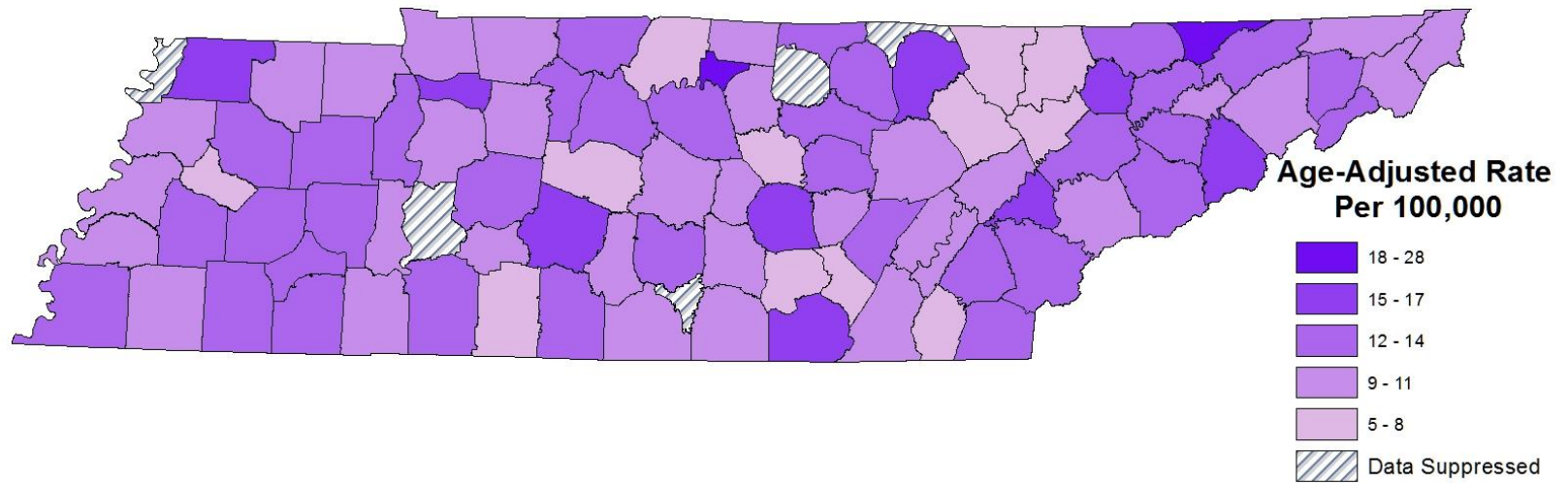


8. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, PANCREAS, TENNESSEE, 2010-2014

Incidence

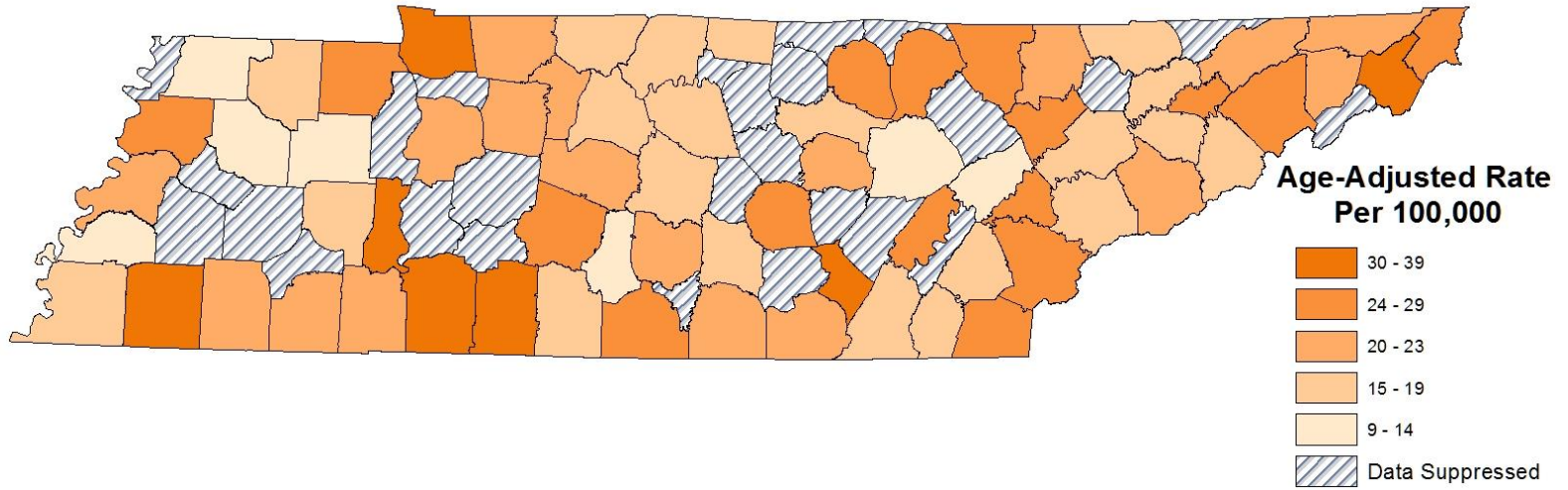


Mortality

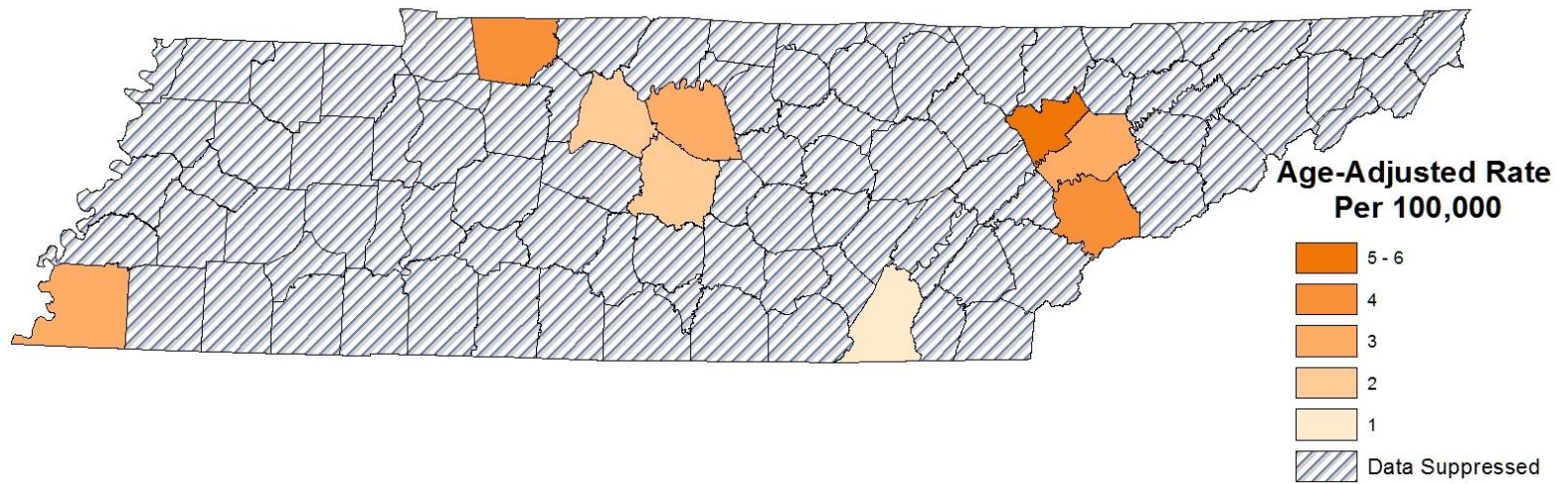


9. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, CHILDHOOD CANCER (0-19 YEARS OF AGE), TENNESSEE, 2010-2014

Incidence



Mortality



TECHNICAL NOTES

STATISTICAL METHODS

SAS 9.4 was used to prepare the incidence and mortality data and SEER*Stat 8.3.4 was used for counting numbers of new cases and deaths due to cancer and calculating age-adjusted rates and confidence intervals.

Confidence intervals were used to test if the difference in incidence or mortality rates between two groups or two years, e.g. blacks vs. whites or 2010 vs. 2014, was statistically significant. If the 95% confidence intervals did not overlap, the difference was determined to be statistically significant. This is a conservative test of significance and there is a greater probability of finding non-significant differences than traditional tests of significance.

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

Consumers of this data must use caution when interpreting the data in this report and consider that data published in this report is dynamic. It is possible even after the standard reporting delay, some new cases may be reported, which could influence cancer rates. Caution should also be used when interpreting rates based on only a small number of cases. In order to protect patient confidentiality and ensure the integrity of the data, data based on counts smaller than five (5) 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:

Surveillance Research Program, National Cancer Institute (2016). SEER*Stat (version 8.3.4) [Computer Software]. Calverton, MD. (<http://seer.cancer.gov/seerstat>)

Probability of Developing or Dying of Cancer:

DevCan: Probability of Developing or Dying of Cancer Software, Version 6.7.5. Statistical Research and Applications Branch, National Cancer Institute, 2017. (<http://surveillance.cancer.gov/devcan>)

Years of Potential Life Lost Calculation:

SAS Institute Inc. (2013). Base SAS® 9.4. Cary, NC: SAS Institute Inc.

Tennessee Resident County Maps:

Environmental Systems Research Institute (ESRI) (2014). ArcGIS Desktop: Release 10.3. Redlands, CA: ESRI.

EXPLANATION OF TERMS

Age-adjusted Rate

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

Average years of potential life lost

Average years of life lost is simply an average derived by dividing Years of Potential Life Lost (YPLL) by the actual number of deaths for each cancer site, over the defined time period. This parameter is interesting because it provides a measure of the burden of cancer to the individual patient, rather than the population as a whole. Effectively it shows, on average, how much a patient's life is likely to be shortened by their cancer.

$$\text{Average Years of Potential Life Lost} = \frac{\text{Years of Potential Life Lost during period}}{\text{Actual Number of Deaths during period}}$$

Cancer Coding

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

Cancer Staging

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

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

*Although *in situ* cancers are included in analyses of stage at diagnosis, these cancers (with the exception of in situ bladder cancer) are not included in incidence counts and rates presented in this report.

Confidence Interval

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

Incidence

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

Incidence Rate

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

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

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

Median

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

Mortality

Mortality is defined as the number of deaths from cancer in the population at risk 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.

Mortality Rate

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

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

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

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

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

Prevalence

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

Race and Ethnicity

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

Resident County

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

Suppression of Rates and Counts

Due to concerns regarding statistical reliability, statistics were suppressed when there were less than 5 reported cases for any given cohort or cancer site. Counts or rates that were suppressed in this report are denoted by “^”.

Tennessee counties and regions

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

Trends

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

Years of potential life lost

Years of potential life lost (YPLL) is another indicator often used to describe disease burden. It is an estimate of the years a person would have lived if he or she had not died prematurely. YPLL highlights the loss to society as a result of deaths in childhood, adolescence and early adulthood and is calculated as the number of years of potential life lost by each death occurring before a predetermined end point, set at age 75 years in this report.

Years of Potential Life Lost

= Predetermined End Point Age

– Age of Decedent Who Died Prior to End Point Age

Tennessee Cancer Registry (TCR) Incidence Data:

The cancer incidence data contains records of primary cancer cases first diagnosed among Tennessee residents between January 1, 2010 and December 31, 2014, and were reported to the TCR as of March 2017. Cases with gender reported as transsexual or having a disorder of sexual development were not included in this report. Cases with race other than white or black (2,440 cases) and unknown race (2,097 cases) were included in the “Total Population” category. A total of 9 cases with unknown age of diagnosis were excluded from all analyses except the calculation of the leading causes of cancer incidence and cancer by stage. A total of 551 cases could not generate a site recode value and were excluded in all analyses in this report. A total of 7 newly diagnosed cases did not have sufficient 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.

Mortality Data:

The cancer mortality data contains records of all mortalities among Tennessee residents. The record-level mortality data were obtained from the Death Statistical System provided by the Healthcare Patient Statistics group, Division of Policy, Planning & Assessment, Tennessee Department of Health. There were 32 deaths missing gender information and 605 deaths did not contain race data. Additionally, there were 63 cases containing invalid or unknown age at death values. These cases were excluded from all analyses except the calculation of the leading causes of cancer mortality. It should also be noted 2,910 deaths were of race other than white or black and 605 deaths contained insufficient race information. These deaths were included in 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 healthcare access primarily related to chronic disease and injury. BRFSS was established in 1984 by the Centers for Disease Control and Prevention (CDC). Currently, data is collected monthly in all 50 states, the District of Columbia, Puerto Rico, the US Virgin Islands, and Guam. Nationwide BRFSS data was 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 Centers for Disease Control and Prevention (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 obtained online from the following website:

<https://statecancerprofiles.cancer.gov/>.

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