



CANCER IN TENNESSEE

2009-2013

January 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 2009 and 2013, 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 registrars from healthcare facilities throughout the State of Tennessee who completed the large majority of cancer abstracts available in the TCR database.
- The staff of the Office of Health Statistics, Tennessee Department of Health (TDH), for providing mortality data.

These dedicated individuals labored tirelessly to ensure the quality and completeness of TCR data.

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CONFIDENTIALITY STATEMENT

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

THE TENNESSEE CANCER REGISTRY

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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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TENNESSEE CANCER REGISTRY

WHO WE ARE

The Tennessee Cancer Registry (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 Tennessee. The TCR has achieved “Gold Certification,” the highest level of cancer data certification by the North American Association of Central Cancer Registries (NAACCR) since the 2005 diagnosis year consecutively through the 2013 diagnosis year; the TCR received silver certification for the 2004 diagnosis year.

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 and other medical records, radiation therapy records, hospital discharge notes and state vital records, among other source documents. Information taken directly from the medical record and other source documents is converted into codes and prepared in abstract form using computer software specifically designed for this task.

OUR PURPOSE

The following are the major goals of the TCR:

- collect accurate information on cancer cases diagnosed and/or treated in Tennessee.
- increase awareness of cancer in Tennessee.
- promote and assist hospital cancer registries in each facility with coding of cancer abstracts.
- serve as a data repository for members of the public requesting information on cancer, its effects, treatment, risk factors, and prevention.
- support epidemiological research both by internal members of the Tennessee Department of Health and external members of various institutions, such as university-based research scientists, into the cause, distribution, prevention, and treatment of cancer.
- serve as a source of information for policy makers, Tennessee Department of Health staff and Tennessee Cancer Coalition volunteers interested in reducing the burden of cancer in Tennessee through the planning of comprehensive cancer prevention and control activities.

CANCER IN TENNESSEE 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 2009 through 2013, 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. 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 our website at <http://tn.gov/health/section/tcr>. 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 2009-2013, 170,699 Tennesseans were diagnosed with cancer and 67,948 Tennesseans died from cancer. Cancer is the second leading cause of death and resulted in over 450,000 years of potential life lost in Tennesseans during the 5-year period covered by this report. In 2013, Tennessee experienced the 19th highest cancer incidence rate and the 7th 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 12th and 6th highest cancer incidence and mortality burden compared to males in all other US states including the District of Columbia, whereas Tennessee females experience the 29th highest cancer incidence burden and the 12th 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 could be largely due to the greater prevalence of smoking in Tennesseans compared to the national average. In 2013, almost 25% of Tennessee adults, 18 years of age and older, were current smokers compared to only 19% 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 2009-2013 in descending number order: lung, female breast, prostate, colorectal, melanoma skin, urinary bladder, non-Hodgkin lymphoma (NHL), kidney, oropharyngeal and leukemia cancer. The 10 most common incident cancers by sex are provided in tables at the end of the Executive Summary. The following are the 10 most common types of cancers principally leading to death in Tennesseans during the period 2009-2013: lung, colorectal, female breast, pancreas, prostate, leukemia, liver, NHL, brain and kidney. The 10 most common causes of cancer death by sex are provided in tables at the end of the Executive Summary.

Cancer also demonstrates geographic disparities in Tennessee, see [Maps](#) and [Tables](#). For all new cases of cancer (incidence) combined, the following are the top 5 Tennessee counties in descending order: Marion County, Cheatham County, Benton County, Humphreys County and Lewis County. The following are the top 5 Tennessee counties in descending order for overall cancer mortality: Scott County, Lake County, Cheatham County, Polk County and Benton County. Regionally in Tennessee (see regional map in Appendix XV), 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...

- ❖ **94** people are diagnosed with cancer
- ❖ **16** people are diagnosed with lung cancer
- ❖ **14** women are diagnosed with breast cancer
- ❖ **11** men are diagnosed with prostate cancer
- ❖ **8** people are diagnosed with colorectal cancer
- ❖ **38** people die from cancer
- ❖ **12** people die from lung cancer
- ❖ **3** people die from colorectal cancer

COMMON CANCERS IN TENNESSEE BY SEX IN 2013

NEW CANCERS IN WOMEN

CANCER SITE	# OF CANCERS	% OF TOTAL
Breast	5,029	30.2%
Lung	2,498	15.0%
Colorectal	1,405	8.4%
Corpus and Uterus	927	5.6%
Melanoma of the Skin	628	3.8%
Thyroid	609	3.7%
Non-Hodgkin Lymphoma	534	3.2%
Kidney and Renal Pelvis	491	3.0%
Pancreas	466	2.8%
Ovary	434	2.6%
All Others	3,608	21.7%
TOTAL	16,629	

CANCER DEATHS IN WOMEN

CANCER SITE	# OF DEATHS	% OF TOTAL
Lung and Bronchus	1,788	28.2%
Breast	924	14.5%
Colorectal	549	8.6%
Pancreas	432	6.8%
Ovary	294	4.6%
Leukemia	197	3.1%
Non-Hodgkin Lymphoma	177	2.8%
Corpus and Uterus	169	2.7%
Brain and Other Nervous System	168	2.6%
Liver and Intrahepatic Bile Duct	161	2.5%
All Others	1,492	23.5%
TOTAL	6,351	

NEW CANCERS IN MEN

CANCER SITE	# OF CANCERS	% OF TOTAL
Prostate	3,987	22.7%
Lung	3,239	18.4%
Colorectal	1,465	8.3%
Urinary Bladder	1,111	6.3%
Melanoma of the Skin	857	4.9%
Kidney and Renal Pelvis	768	4.4%
Oral Cavity and Pharynx	708	4.0%
Non-Hodgkin Lymphoma	700	4.0%
Leukemia	554	3.1%
Pancreas	453	2.6%
All Others	3,754	21.3%
TOTAL	17,596	

CANCER DEATHS IN MEN

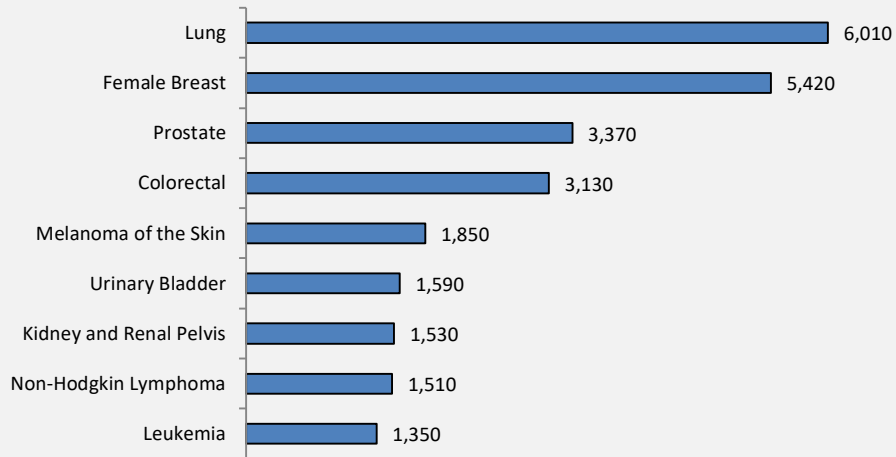
CANCER SITE	# OF DEATHS	% OF TOTAL
Lung and Bronchus	2,514	33.1%
Colorectal	663	8.7%
Prostate	541	7.1%
Pancreas	421	5.6%
Liver and Intrahepatic Bile Duct	342	4.5%
Leukemia	307	4.0%
Esophagus	272	3.6%
Non-Hodgkin Lymphoma	264	3.5%
Kidney and Renal Pelvis	245	3.2%
Urinary Bladder	240	3.2%
All Others	1,776	23.4%
TOTAL	7,585	

Tennesseans can lower their risk of cancer by making healthy choices such as: avoiding tobacco use, protecting your skin, and maintaining a healthy weight through diet and exercise. Getting screening tests regularly may find breast, cervical, and colorectal cancers early, when treatment is likely to work best.

[Data Source](#)

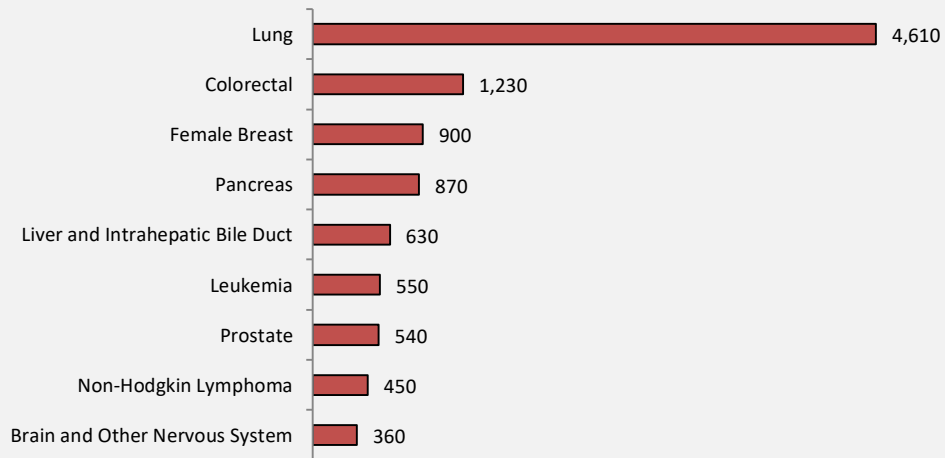
CANCER ESTIMATES IN TENNESSEE, 2016

Estimated New Cancer Cases in Tennessee, 2016



Note. Adapted from the [2016 Estimates](#) by the American Cancer Society, 2016.

Estimated Cancer Deaths in Tennessee, 2016



Note. Adapted from the [2016 Estimates](#) by the American Cancer Society, 2016.

CANCER INCIDENCE AND MORTALITY IN TENNESSEE, 2009-2013

CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, TENNESSEE, 2009-2013

Gender	Race	Incidence				Mortality				M:I Ratio‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Both*	All Races†	170,699	470.1	467.8	472.4	67,948	189.7	188.3	191.2	0.40
	Black	21,954	476.1	469.5	482.7	9,632	228.5	223.8	233.4	0.48
	White	146,550	469.8	467.4	472.3	57,797	185.3	183.8	186.8	0.39
Female	All Races†	81,679	420.4	417.5	423.3	30,934	154.3	152.6	156.1	0.37
	Black	10,816	407.9	400	415.8	4,576	182.3	176.9	187.8	0.45
	White	69,769	423.7	420.5	427	26,088	150.7	148.8	152.6	0.36
Male	All Races†	89,020	540.2	536.6	543.9	37,014	239.9	237.4	242.5	0.44
	Black	11,138	583.7	571.9	595.8	5,056	306.5	297.3	316	0.53
	White	76,781	534.8	530.9	538.7	31,709	233.5	230.9	236.2	0.44
Age at Diagnosis or Death										
	0-19	1,285	15.4	14.5	16.2	209	2.5	2.2	2.9	0.16
	20-44	12,256	121.9	119.8	124.1	1,941	19.5	18.6	20.4	0.16
	45-64	67,074	727.9	722.3	733.5	20,975	223.7	220.6	226.8	0.31
	65+	90,084	2,053.8	2,040.3	2,067.4	44,823	1,046.0	1,036.2	1,055.8	0.51
Year of Diagnosis or Death										
	2009	34,054	490.4	485.1	495.7	13,407	196.6	193.3	200	0.40
	2010	33,786	475.5	470.3	480.7	13,514	193.5	190.2	196.9	0.41
	2011	34,302	471.7	466.6	476.8	13,461	187.6	184.4	190.9	0.40
	2012	34,332	463.1	458.1	468.1	13,630	186	182.9	189.2	0.40
	2013	34,225	451.8	446.9	456.7	13,936	185.2	182.1	188.4	0.41

* Excludes hermaphrodites, transsexuals and 443 cases missing site recode information.

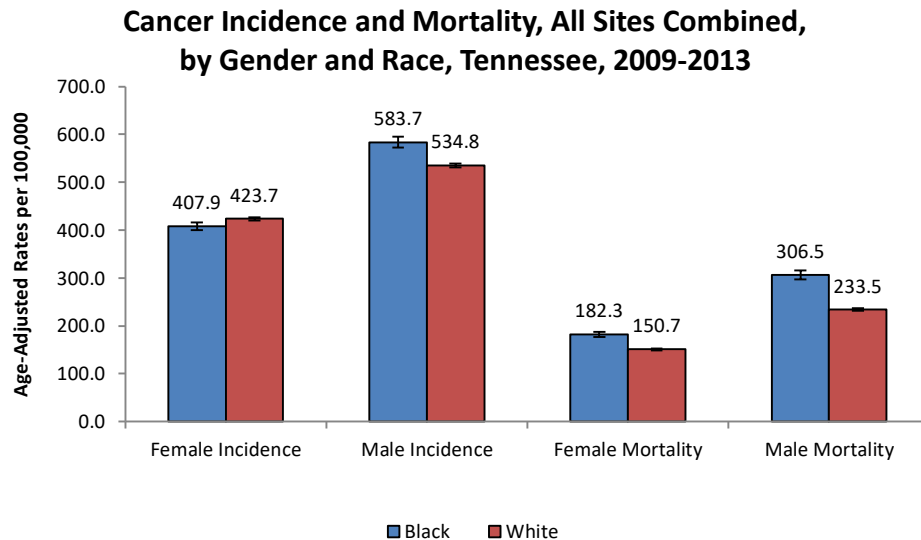
** Total counts are from 2009 to 2013.

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

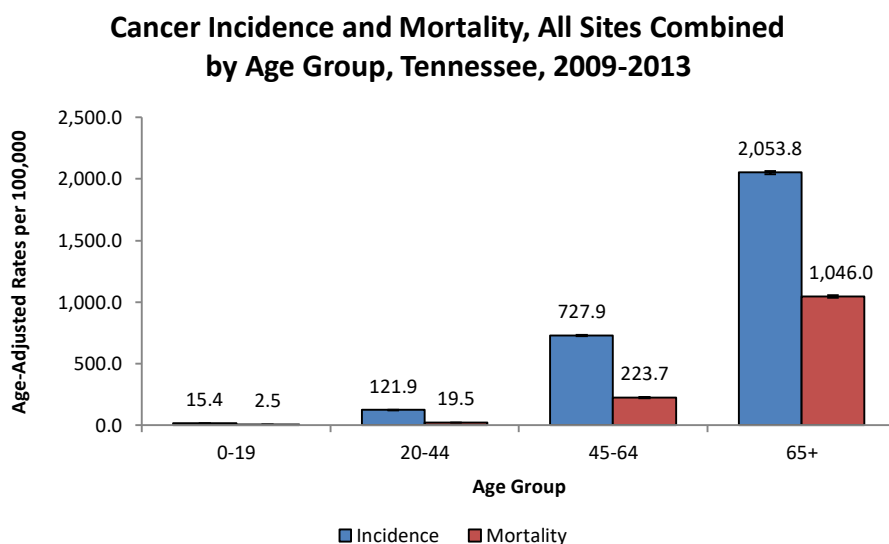
† Includes whites, blacks, and other races and those cases missing race information.

‡ Mortality incidence ratio. See Technical Notes for details.

CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, CONTINUED



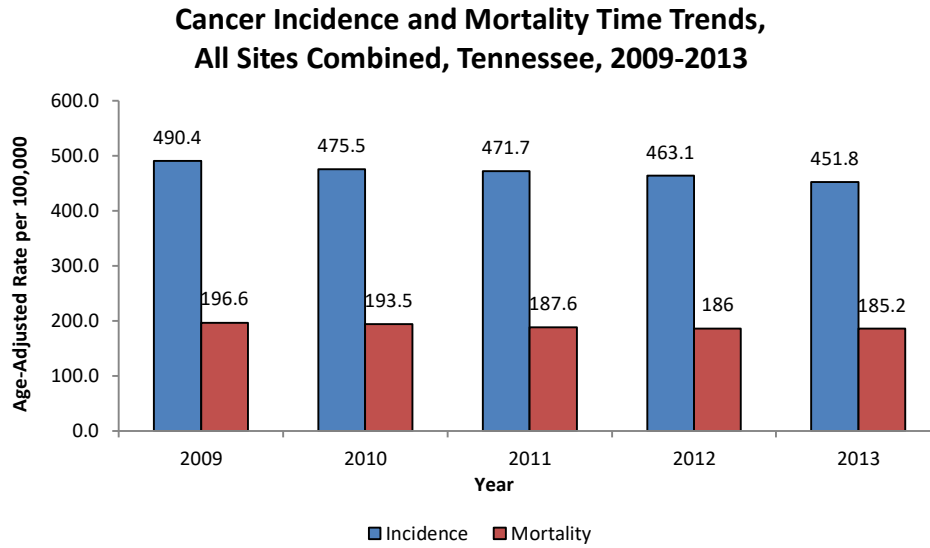
- From 2009 to 2013, a total of 170,699 Tennesseans were newly diagnosed with cancer, an average of 34,140 each year or approximately one case every 15 minutes.
- During the same time period, 67,948 Tennesseans died from cancer, an average of 13,590 each year or approximately one death every 38 minutes.
- Men are more likely to be diagnosed with and die of cancer regardless of race.
- Black females had a lower cancer incidence rate but a higher mortality rate than white females.
- Black males had higher incidence and mortality rates than white males.



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

[Data Source](#)

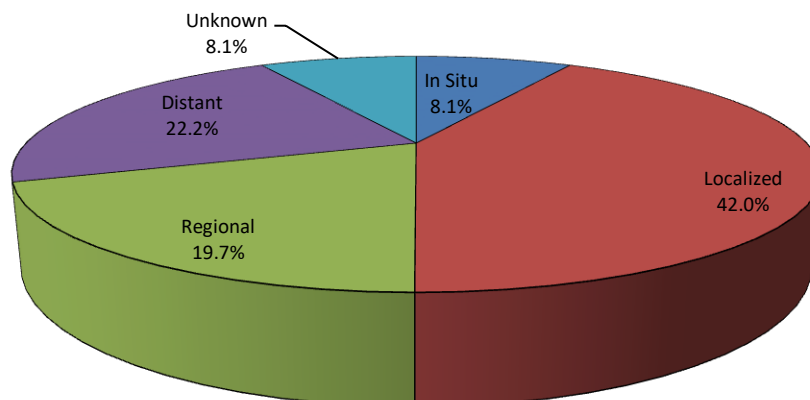
CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, CONTINUED



- The cancer incidence rate in Tennessee fell by 7.9% from 2009 to 2013 and this decrease was statistically significant. Please see [Glossary](#) for explanation of statistical significance.
- The cancer mortality rate in Tennessee fell by 5.8% from 2009 to 2013 and this decrease was statistically significant.

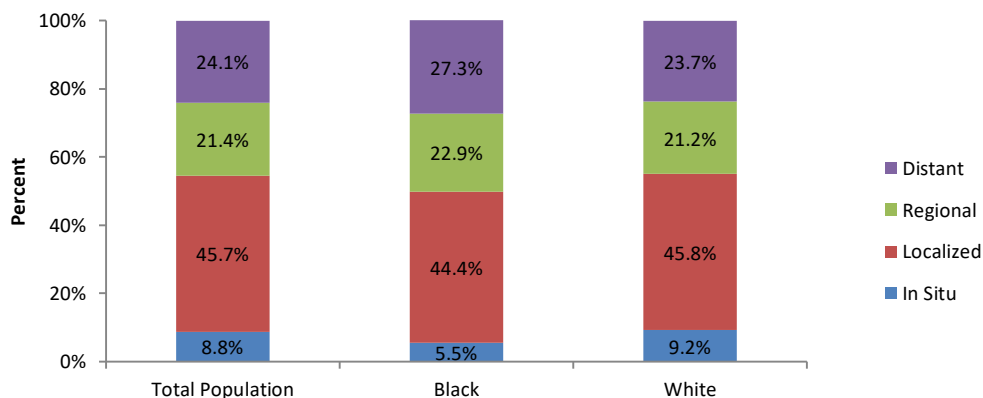
[Data Source](#)

**Cancer Stage, All Sites Combined,
Tennessee, 2009-2013**



- Including cancers with unknown stage, 8.1% of new cancer cases were diagnosed at an in situ stage; 42.0% at localized stage; 19.7% at regional stage; and 22.2% at a distant stage.

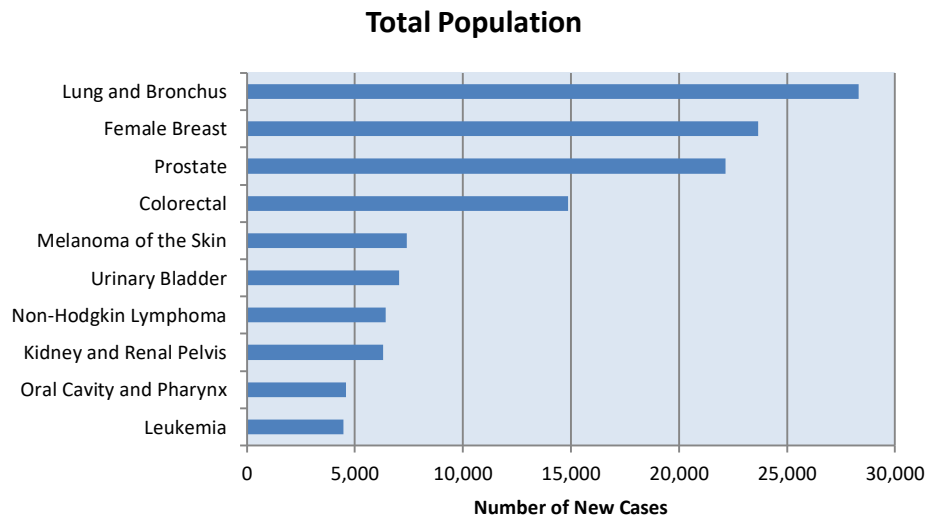
**Cancer Stage, All Sites Combined
By Race, Tennessee, 2009-2013**



- Among those with known stage information, 8.8%, 45.7%, 21.4%, and 24.1% were diagnosed at the in situ, localized, regional, and distant stage, respectively.
- Black patients were more likely to be diagnosed at late stages (i.e., at the regional or distant stage) than whites and this difference was statistically significant.
- 50.2% of blacks were diagnosed at late stages compared to 44.9% of whites diagnosed in the same stages, which may partially explain why blacks have a higher mortality rate compared to whites.

[Data Source](#)

LEADING CAUSES OF CANCER INCIDENCE IN TENNESSEE, 2009-2013



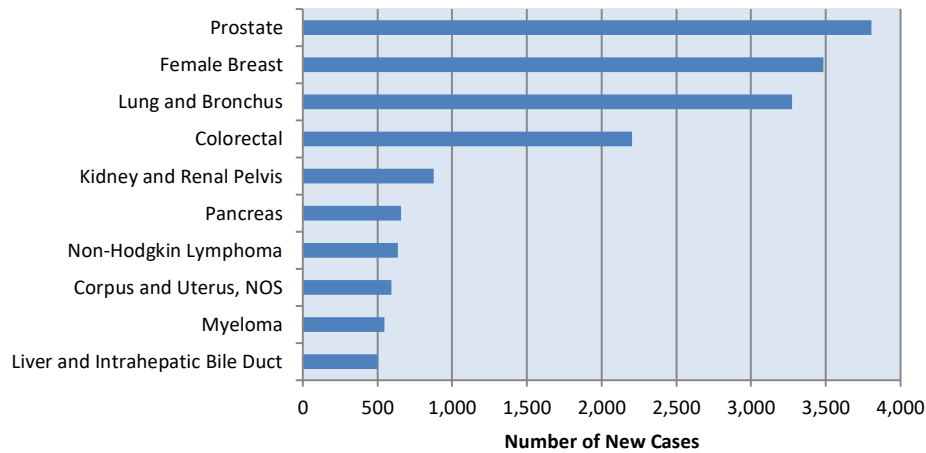
This figure presents the Leading Causes of Cancer Incidence in Tennessee from 2009 to 2013.

- From 2009 to 2013, there were 170,699 new cases of cancer among Tennesseans.
- From 2009-2013, lung cancer (28,332 cases) accounted for the most cancer incidence cases followed by female breast cancer (23,670 cases), prostate cancer (22,154 cases), colorectal cancer (14,882 cases), and melanoma of the skin (7,409 cases), urinary bladder cancer (7,037 cases), non-Hodgkin lymphoma (6,428 cases), kidney and renal pelvis cancer (6,307 cases), oral cavity and pharynx cancer (4,574 cases), and leukemia (4,468 cases).
- The ten most common incident cancers, shown above, accounted for almost three quarters (73.4%) of all new cancer cases in Tennessee from 2009 to 2013.

[Data Source](#)

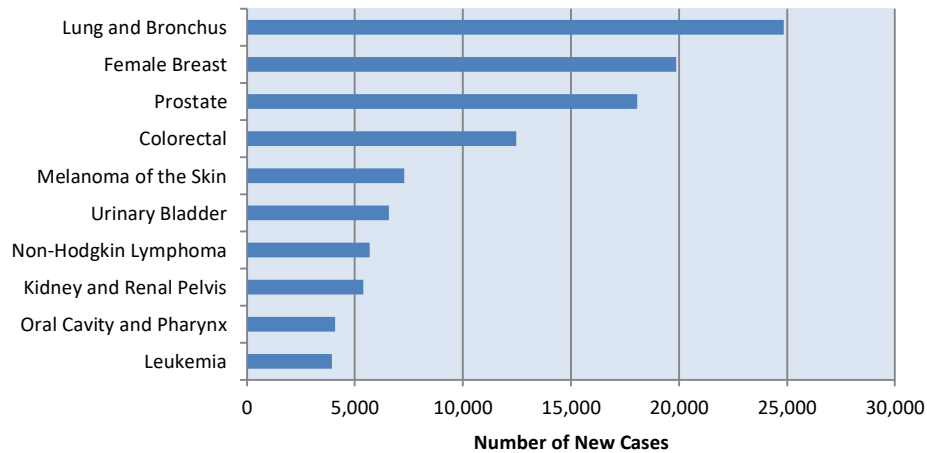
LEADING CAUSES OF CANCER INCIDENCE, 2009-2013, CONTINUED

Black



- Among blacks, prostate cancer was the leading cause of cancer incidence during the 2009-2013 period, accounting for 17.3% of total new cancer cases among blacks.
- Female breast cancer was the second leading cause among the total black population, followed by lung, colon and rectum, and kidney.
- There were 21,954 new cancer cases diagnosed among blacks during 2009-2013; blacks represented 12.9% of all new cancer cases in TN.

White

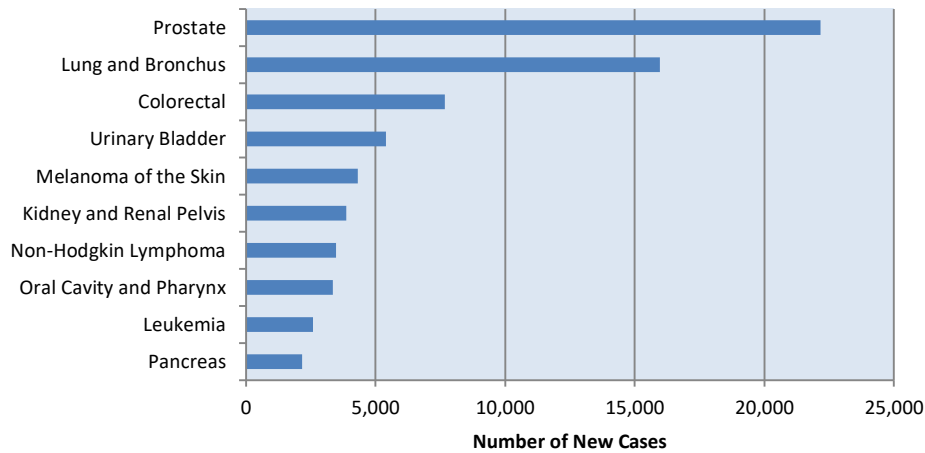


- From 2009 to 2013 among white Tennesseans, lung cancer was the leading cause of cancer incidence, accounting for 17.0% of all cancer cases among whites.
- There were 146,550 new cancer cases diagnosed among whites from 2009-2013; whites represented 85.9% of all new cancer cases in TN.

[Data Source](#)

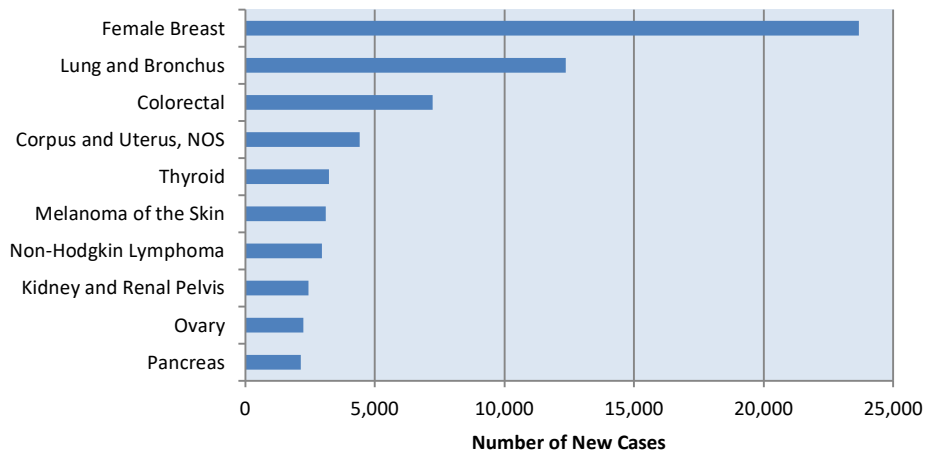
LEADING CAUSES OF CANCER INCIDENCE, 2009-2013, CONTINUED

Male



- There were 89,020 new cancer cases diagnosed among Tennessee males from 2009-2013.
- Prostate cancer was the leading cause of cancer incidence among Tennessee males in 2009-2013, accounting for 24.9% of total cancer cases among men.
- Lung cancer was the second leading cause, followed by colorectal cancer, bladder cancer and melanoma of the skin.

Female

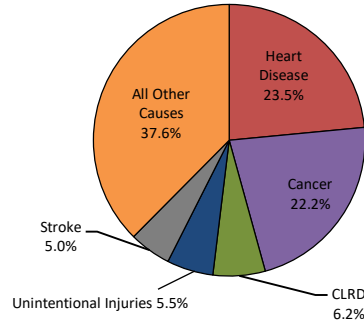


- There were 81,679 new cancer cases diagnosed among Tennessee females in 2009-2013.
- Breast cancer was the leading cause of cancer incidence among Tennessee females in 2009-2013, accounting for 29.0% of total cancer cases among women.
- Lung cancer was the second leading cause, followed by colorectal cancer, uterine cancer, and thyroid cancer.

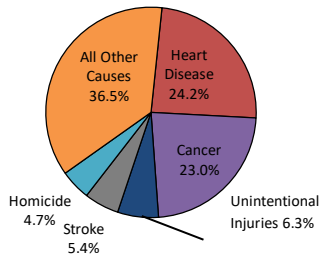
[Data Source](#)

LEADING CAUSES OF MORTALITY IN TENNESSEE, 2013

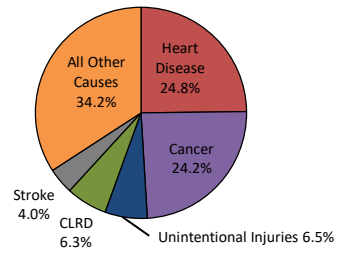
Total Population



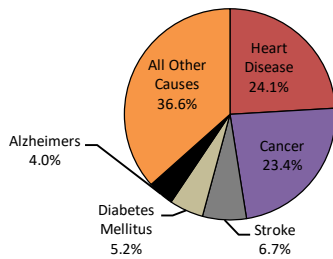
Black Males



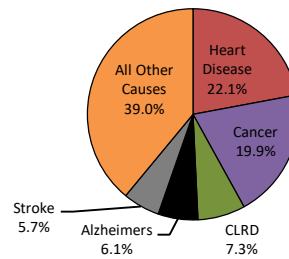
White Males



Black Females



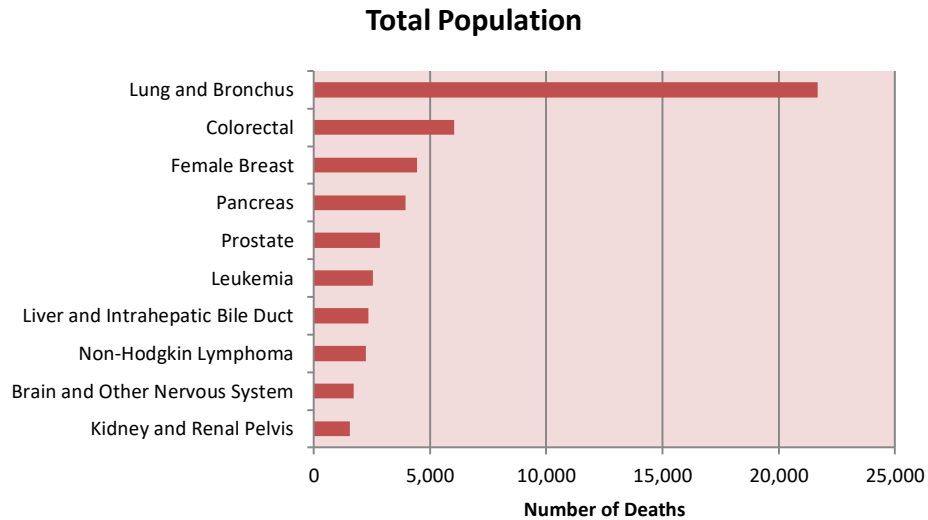
White Females



- Heart disease was the leading cause of death for all Tennesseans in 2013, claiming 14,723 lives.
- Cancer was the second leading cause of death for all Tennesseans, claiming 13,936 lives in 2013.
- Cancer was the second leading cause of death among black males and females, as well as, white males and females.

Note: CLRD stands for chronic lower respiratory diseases.

LEADING CAUSES OF CANCER MORTALITY, 2009-2013

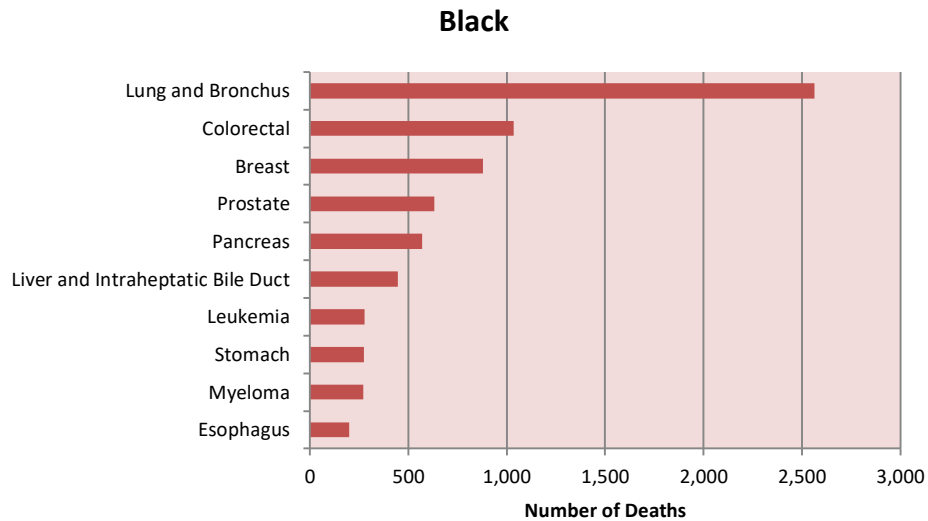


This figure represents the most common cancers recorded as an underlying cause of death for Tennesseans from 2009 to 2013.

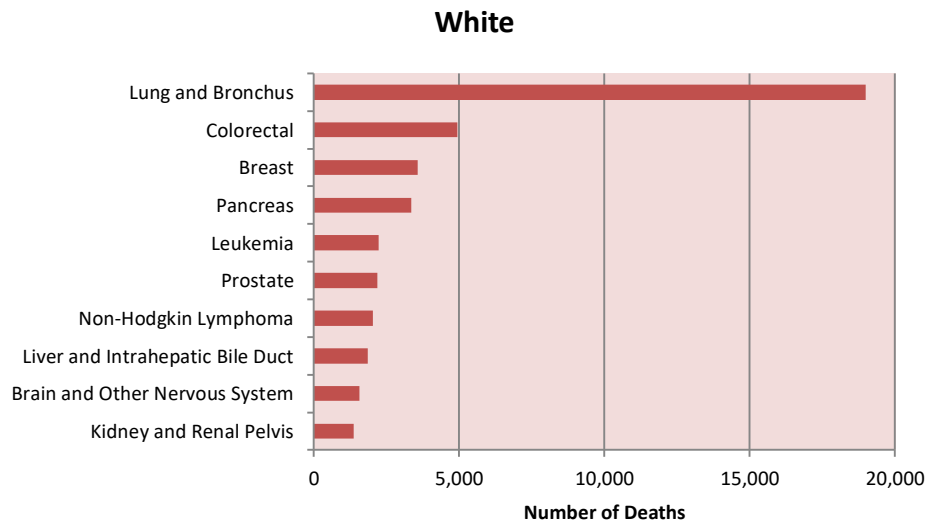
- From 2009-2013, lung cancer (21,682 cases) accounted for the most cancer deaths, 31.9% of all cancer deaths, followed by colorectal cancer (6,025 cases), female breast cancer (4,443 cases), pancreatic cancer (3,951 cases), prostate cancer (2,841 cases), leukemia (2,536 cases), liver and intrahepatic bile duct cancer (2,354 cases), non-Hodgkin lymphoma (2,239 cases), brain and other nervous system cancer (1,718 cases) and kidney cancer (1,541 cases).
- The ten most common cancers associated with mortality, shown above, accounted for 72.6% of all cancer deaths from 2009 to 2013.

[Data Source](#)

LEADING CAUSES OF CANCER MORTALITY, 2009-2013, CONTINUED



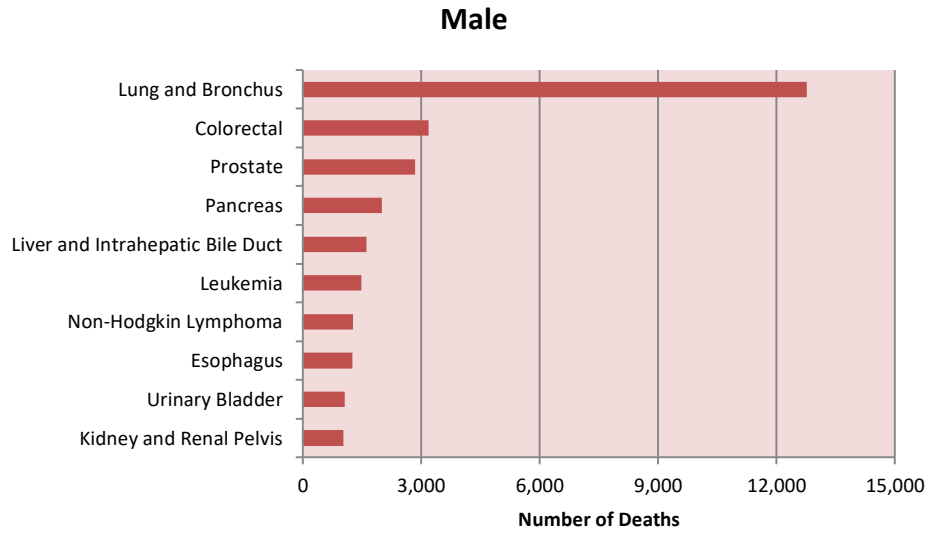
- Among blacks, lung cancer was the leading cause of cancer mortality, accounting for 26.6% of cancer deaths for black Tennesseans.
- Colorectal cancer was the second leading cause of cancer mortality, followed by breast, prostate, and pancreas.
- There were 9,632 deaths due to cancer as the underlying cause of death among black Tennesseans from 2009-2013.



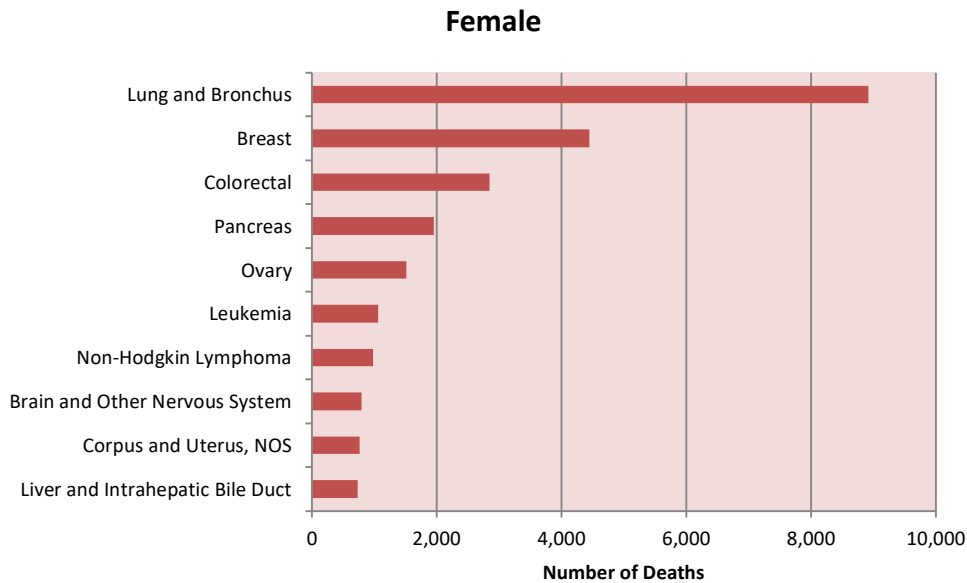
- From 2009-2013, there were 57,797 deaths due to cancer among white Tennesseans and lung cancer accounted for 32.9% of these cancer deaths.
- Colorectal cancer was the second leading cause of cancer mortality, followed by breast, pancreas, and leukemia.

[Data Source](#)

LEADING CAUSES OF CANCER MORTALITY, 2009-2013, CONTINUED



- Lung cancer was the leading cause of cancer death among males and accounted for 34.5% of all male cancer deaths in Tennessee from 2009 to 2013.
- Colorectal cancer was the second leading cause of cancer death, followed by prostate cancer, pancreatic cancer, and liver cancer.



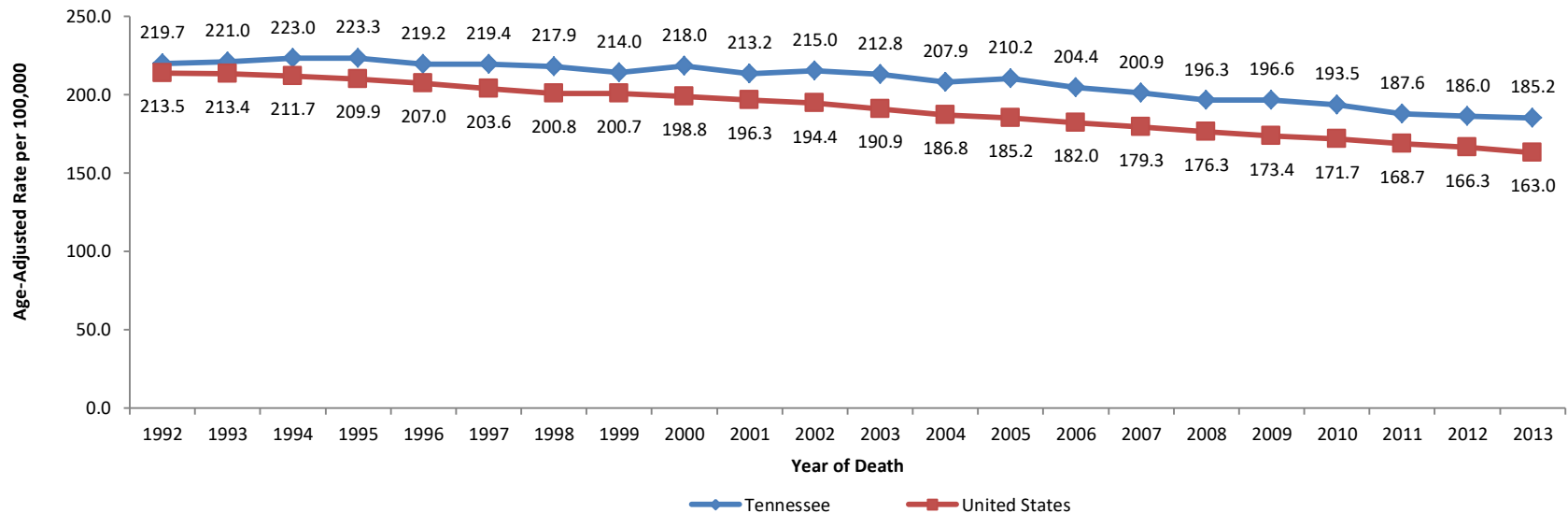
- Lung cancer was the leading cause of cancer death among females and accounted for 28.8% of all female cancer deaths in Tennessee from 2009 to 2013.
- Breast cancer was the second leading cause of death, followed by colorectal cancer, pancreatic cancer, and ovarian cancer.

[Data Source](#)

TENNESSEE IN COMPARISON TO THE UNITED STATES

CANCER MORTALITY TREND, 1992-2013

**Cancer Mortality, All Sites Combined,
Tennessee and the United States, 1992-2013**



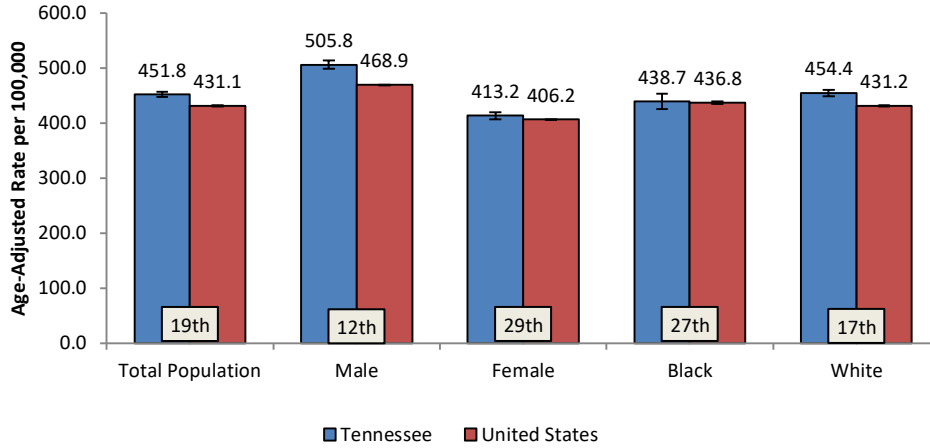
Source: National Cancer Institute (NCI). State Cancer Profiles. Retrieved from <http://statecancerprofiles.cancer.gov/index.html>

- In TN and the US, cancer was the second leading cause of death.
- The age-adjusted cancer mortality rate in TN and the US decreased over time, by 15.7% and 23.7%, respectively, from 1992 to 2013.
- In 1992, the TN cancer mortality rate was 2.9% higher than the US rate.
- In 2013, the TN cancer mortality rate was 13.6% higher than the US rate.
- Since 1995, the cancer mortality rate in TN has dropped by 20.6%.

[Data Source](#)

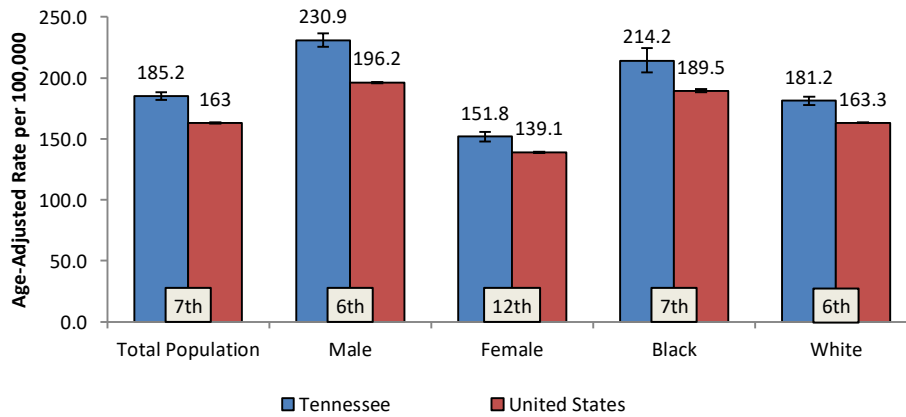
TENNESSEE CANCER INCIDENCE AND MORTALITY RANKINGS, 2013

**Incidence Rates, All Sites Combined,
Tennessee and United States, 2013**



- The overall cancer incidence rates have declined by 7.9% from 2009 to 2013 and this change was statistically significant.

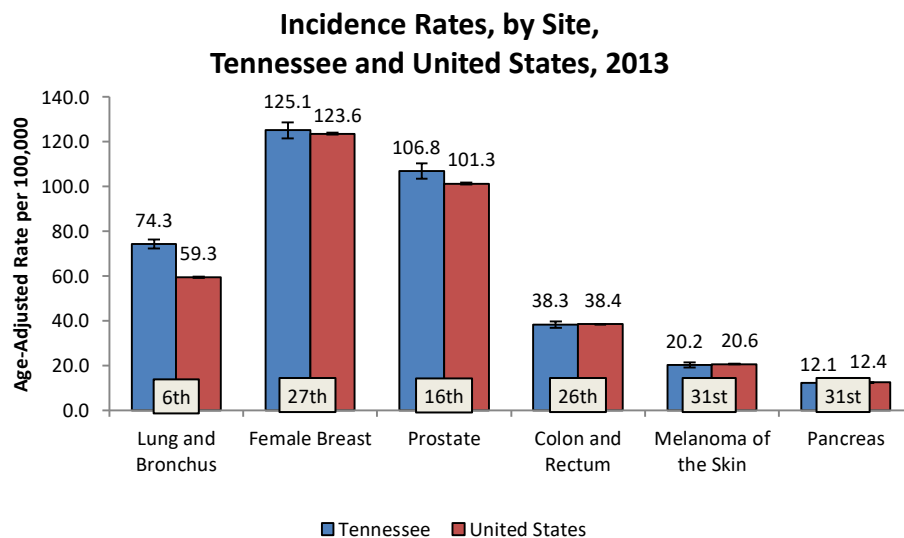
**Mortality Rates, All Sites Combined,
Tennessee and United States, 2013**



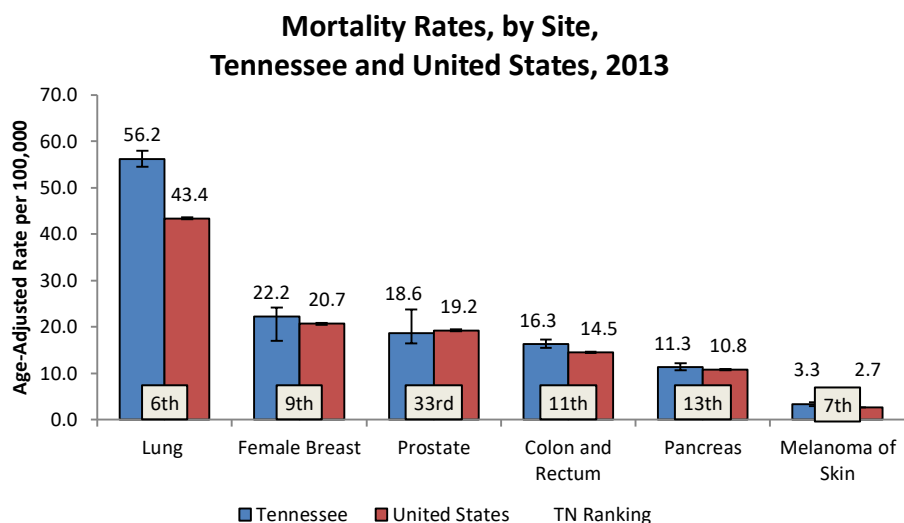
- The overall cancer mortality rate in TN declined by 5.8% from 2009 to 2013 and this change was statistically significant.

[Data Source](#)

TENNESSEE CANCER INCIDENCE AND MORTALITY RANKINGS, ALL SITES, 2013, CONTINUED



- Among the most common cancers in TN, lung cancer and prostate cancer were statistically significantly higher than the U.S. incidence rates.



- Among the most common causes of cancer mortality, TN had statistically significantly higher than the U.S. average mortality rates for lung cancer, colorectal cancer, and melanoma of the skin.

[Data Source](#)

COMMON CANCERS IN TENNESSEE, 2009-2013

LUNG AND BRONCHUS CANCER

From 2009 through 2013, lung cancer accounted for 16.6% of all new cancer cases and almost a third (31.9%) of all cancer deaths. The lung cancer incidence rate decreased by 7.9% from 2009 to 2013 and this change was statistically significant. Additionally, the lung cancer mortality rate decreased by 11.0% from 2009-2013 and this change was statistically significant.

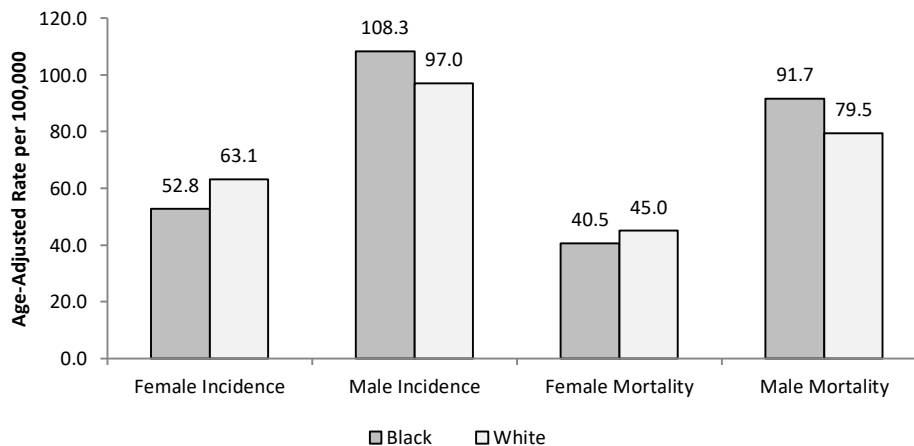
Lung cancer is the leading cause of cancer incidence (28,332 cases) and mortality (21,682 deaths) in TN. Only 21.2% of lung cancer cases with known stage information were diagnosed at either the in situ or localized stages, i.e., early stages. The mortality-to-incidence ratio for lung cancer was 0.77. Among the ten most common causes of cancer death in TN, lung cancer is considered the second deadliest. 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).

LUNG CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2009-2013

Gender	Race	Incidence				Mortality				M:I Ratio ‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Both*	All Races†	28,332	77.0	76.1	77.9	21,682	59.6	58.8	60.5	0.77
	Black	3,277	74.8	72.1	77.5	2,562	60.6	58.2	63.1	0.81
	White	24,861	77.7	76.7	78.7	18,990	59.9	59.0	60.7	0.77
Female	All Races†	12,357	61.3	60.2	62.4	8,916	44.2	43.3	45.1	0.72
	Black	1,340	52.8	49.9	55.8	996	40.5	38.0	43.2	0.77
	White	10,933	63.1	61.9	64.3	7,858	45.0	44.0	46.0	0.71
Male	All Races†	15,975	97.9	96.3	99.5	12,766	80.3	78.9	81.8	0.82
	Black	1,937	108.3	103.1	113.7	1,566	91.7	86.8	96.9	0.85
	White	13,928	97	95.4	98.7	11,132	79.5	78.0	81.0	0.82
Age at Diagnosis or Death										
	0-19	^	^	^	^	0	0	0	0	^
	20-44	431	4.4	4.0	4.8	249	2.6	2.3	2.9	0.59
	45-64	9,829	104.1	102.1	106.3	6,767	71.3	69.6	73.0	0.68
	65+	18,064	413.2	407.2	419.4	14,667	339.3	333.8	344.9	0.82
Year of Diagnosis or Death										
	2009	5,681	80.8	78.6	82.9	4,365	63.2	61.3	65.1	0.78
	2010	5,617	78.4	76.3	80.5	4,400	62.2	60.3	64.1	0.79
	2011	5,582	76.1	74.0	78.1	4,289	58.9	57.1	60.7	0.78
	2012	5,715	75.7	73.7	77.8	4,327	58.2	56.5	60.0	0.77
	2013	5,737	74.4	72.5	76.4	4,302	56.2	54.5	58.0	0.76
^Statistic not displayed due to fewer than 10 cases.										
*Excludes hermaphrodites and transsexuals.										
**Total counts are from 2009 to 2013.										
***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population.										
† Includes whites, blacks, and other races and those cases missing race information.										
‡Mortality incidence ratio. See Technical Notes for details.										

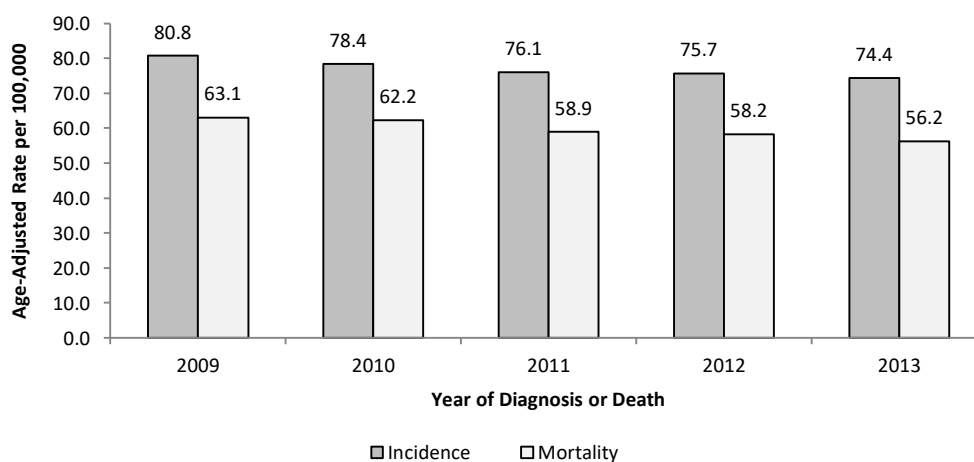
LUNG AND BRONCHUS CANCER, CONTINUED

**Cancer Incidence and Mortality, Lung and Bronchus
By Gender and Race, Tennessee, 2009-2013**



- There were 28,332 cases of newly diagnosed lung cancer in 2009-2013 among Tennesseans, resulting in an age-adjusted incidence rate of 77.0 per 100,000.
- During the same time period, 21,682 Tennesseans died from lung cancer, with an age-adjusted mortality rate of 59.6 per 100,000.
- Males had higher incidence and mortality rates than females regardless of race.
- White females had statistically significantly higher incidence and mortality rates than black females, but black males had higher incidence and mortality rates than white males.

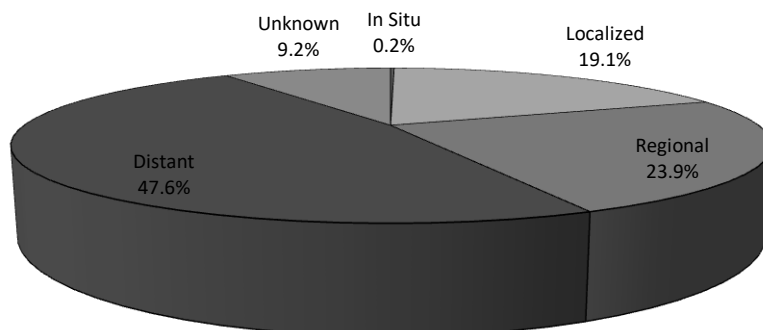
**Cancer Incidence and Mortality, Lung and Bronchus
By Year, 2009-2013**



[Data Source](#)

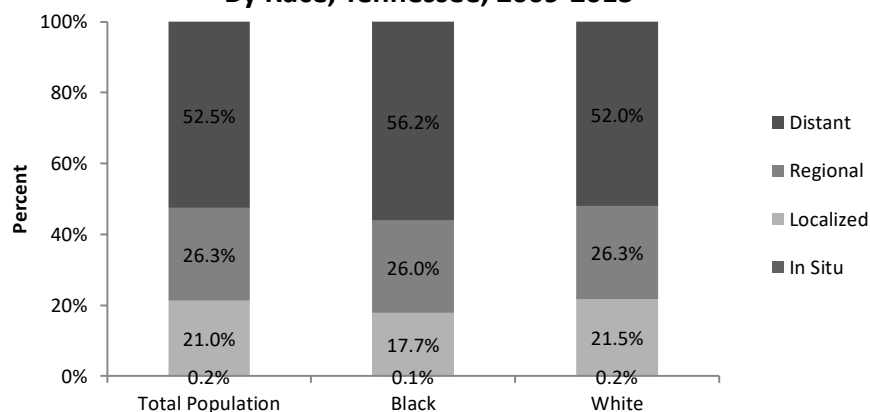
LUNG AND BRONCHUS CANCER, CONTINUED

Cancer Stage, Lung and Bronchus, Tennessee, 2009-2013



- Less than 50 lung cancer cases (0.2%) were diagnosed at the in situ stage.
- One in five cases (19.1%) was diagnosed at the localized stage.
- About one in four cases (23.9%) was diagnosed at the regional stage.
- Almost half of new cases (47.6%) were diagnosed at the distant stage.
- 9.2% of cases had unknown stage information.

Cancer Stage, Lung and Bronchus By Race, Tennessee, 2009-2013



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

- Among cases with known stage information, three out of four (78.8%) were diagnosed at either the regional or distant stage, i.e., late stages.
- Black patients had a higher proportion (82.2%) of cases diagnosed at late stages than white patients (78.3%), and this difference was statistically significant.

[Data Source](#)

PROSTATE CANCER

During 2009-2013, prostate cancer accounted for nearly a quarter (24.9%) of new male cancer cases and 7.7% of male deaths due to cancer. Prostate cancer incidence rates decreased from 2009 to 2013 by 23.0% and this change was statistically significant. Mortality rates decreased from 2009 to 2013 by 20.3% and this was statistically significant.

Prostate cancer is the leading cause of cancer incidence (22,154 cases) and the third leading cause of cancer mortality (2,841 cases) in TN males. Almost 84% (83.6%) of cases with known stage information were 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 males are disproportionately affected by this disease compared to white males. Black men experience a mortality rate that is almost three times as high as that for white men. The mortality-to-incidence ratio of prostate cancer was found to be 0.17 for all races combined, which may partially be attributed to effective screening methods and treatment options.

PROSTATE CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2009-2013

Gender	Race	Incidence				Mortality				M:I Ratio ‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Male	All Races†	22,154	126.6	124.9	128.3	2,841	21.4	20.6	22.2	0.17
	Black	3,807	194.7	188.0	201.5	633	50.2	46.1	54.5	0.26
	White	18,055	117.6	115.9	119.4	2,192	18.5	17.7	19.3	0.16
Age at Diagnosis or Death										
	0-19	^	^	^	^	0	0	0	0.1	^
	20-44	133	2.8	2.3	3.3	6	0.1	0	0.3	0.04
	45-64	9,341	200.9	196.8	205.0	369	7.7	6.9	8.5	0.04
	65+	12,677	640.5	629.1	652.1	2,466	155.1	148.9	161.5	0.24
Year of Diagnosis or Death										
	2009	4,547	138.8	134.7	143.0	581	23.3	21.4	25.3	0.17
	2010	4,580	135.6	131.6	139.7	600	23.7	21.8	25.8	0.17
	2011	4,828	138.0	134.0	142.0	574	21.7	19.9	23.6	0.16
	2012	4,212	116.5	112.9	120.1	545	19.9	18.2	21.7	0.17
	2013	3,987	106.8	103.5	110.3	541	18.6	17.0	20.3	0.17

^Statistic not displayed due to fewer than 10 cases.

*Excludes hermaphrodites and transsexuals.

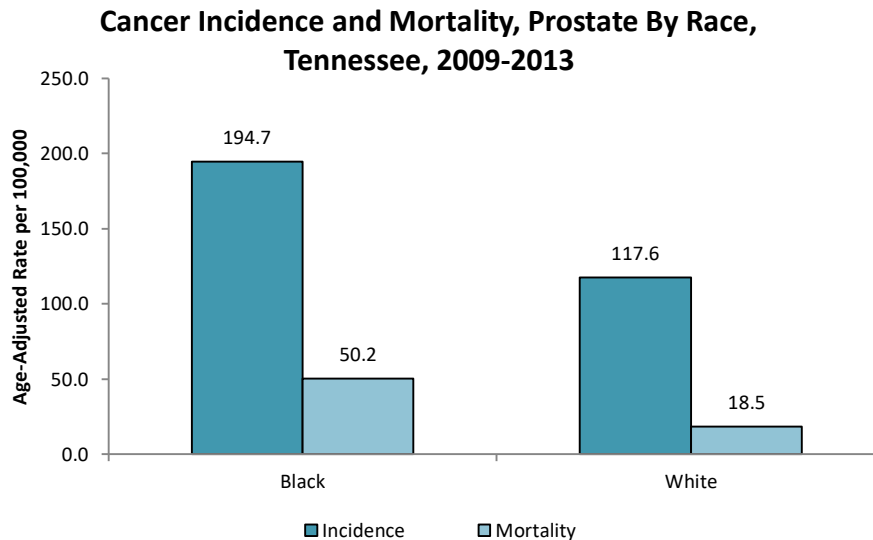
**Total counts are from 2009 to 2013.

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

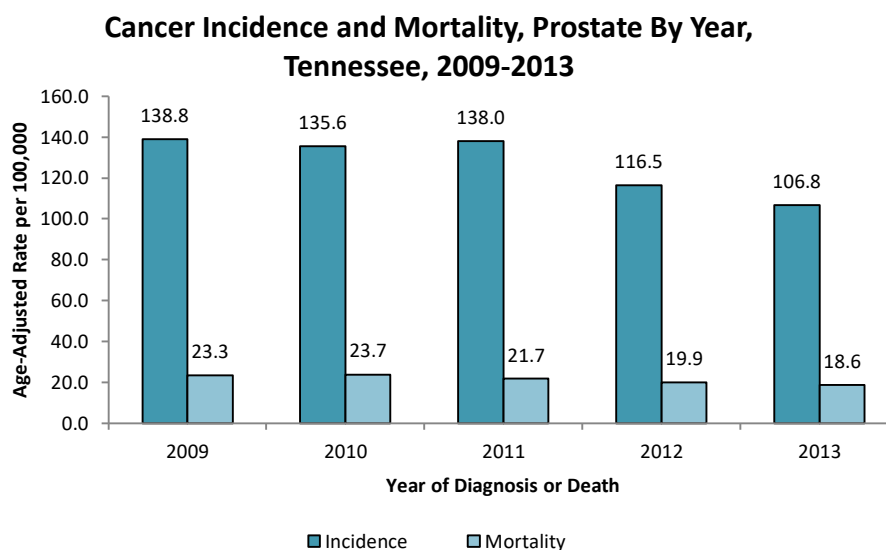
† Includes whites, blacks, and other races and those cases missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

PROSTATE CANCER, CONTINUED

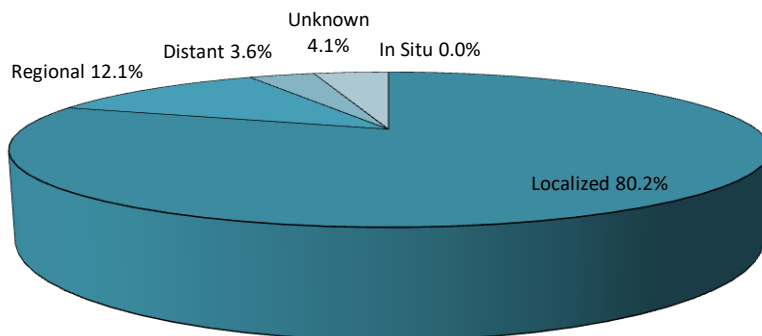


- A total of 22,154 newly diagnosed prostate cancer cases were reported among Tennessee men from 2009 to 2013, resulting in an age-adjusted incidence rate of 126.6 per 100,000.
- During the same time period, 2,841 prostate cancer deaths were reported, giving an age-adjusted mortality rate of 21.4 per 100,000.
- The mortality-to-incidence ratio for prostate cancer was 0.17, (making it the second least deadly cancer, exceeding only melanoma skin cancer, among the ten most common cancers in the Tennessee population).



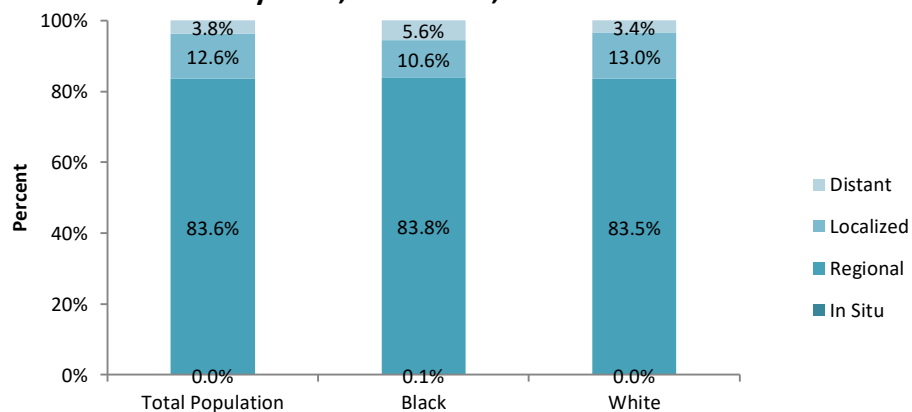
[Data Source](#)

**Cancer Stage, Prostate,
Tennessee, 2009-2013**



- Less than 0.1% of prostate cancer cases were diagnosed at the in situ stage.
- About four out of every five cases (80.2%) were diagnosed at the localized stage.
- Another 12.1% of cases were diagnosed at the regional stage.
- 4.1% of cases had unknown stage information.

**Cancer Stage, Prostate
By Race, Tennessee, 2009-2013**



- Among cases with known stage information in the total TN population, only 16.4% were diagnosed at late stages (i.e. at the regional or distant stage).
- A slightly higher percentage of white patients were diagnosed at late stages (16.4%) than black patients (16.2%), but this difference was not statistically significant.
- Early diagnosis of prostate cancer is believed to contribute to a low mortality-to-incidence ratio.

[Data Source](#)

FEMALE BREAST CANCER

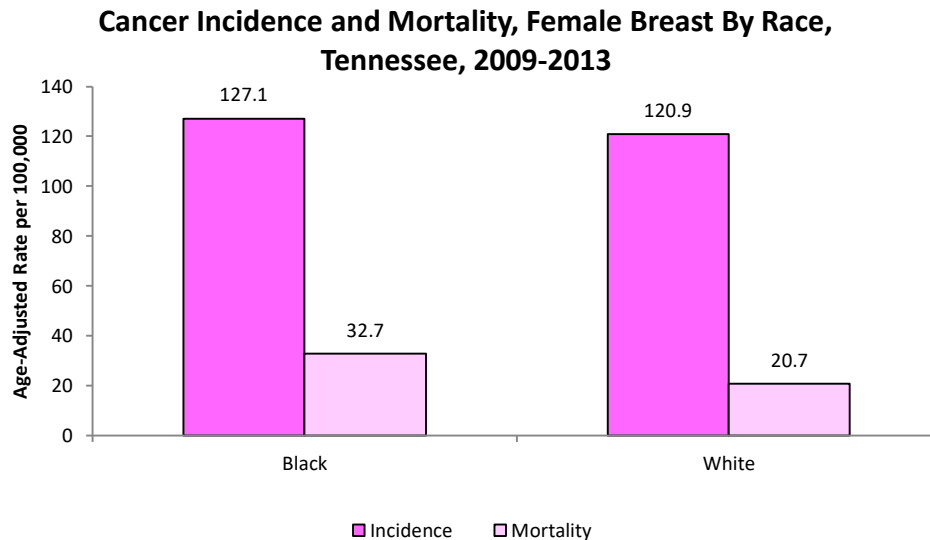
From 2009 through 2013, breast cancer represented 29.0% of new female cancer cases and 14.4% of female cancer deaths. Both female breast cancer incidence and mortality rates remained relatively stable over the 5-year period covered by this report. Breast cancer is the leading cause of cancer incidence (23,670 cases) and the second leading cause of cancer mortality (4,443 cases) in TN females.

Over 70% (70.3%) of new cases with known stage information were diagnosed at early stages when treatment is more effective; the high percentage of early stage breast cancer can be attributed to screening. It is important to note that black females are more likely than white females to be diagnosed with breast cancer in the late stages. Early detection and effective treatment options contributed to the low mortality-to-incidence ratio of breast cancer (0.18) for all races combined.

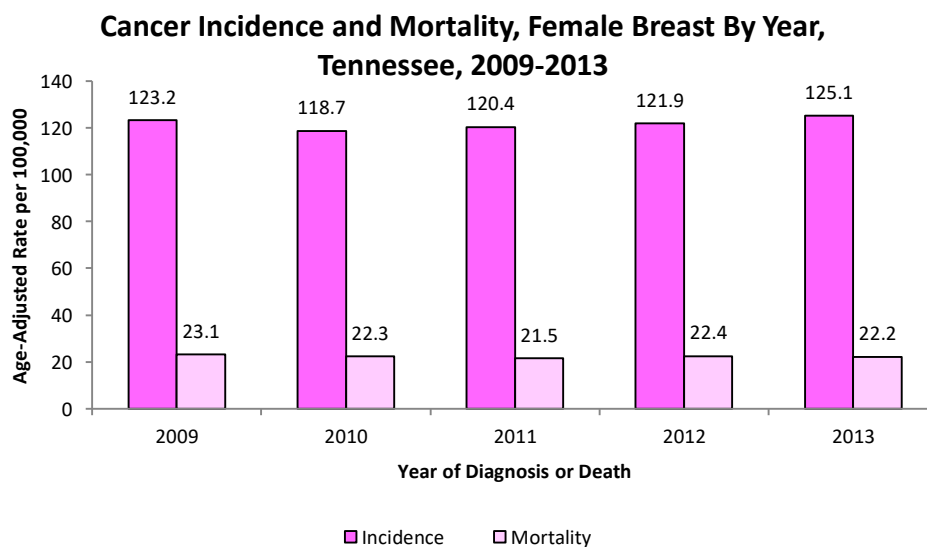
FEMALE BREAST CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2009-2013

Gender	Race	Incidence				Mortality				M:I Ratio ‡
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	
Female	All Races †	23,670	121.9	120.4	123.5	4,443	22.3	21.6	23.0	0.18
	Black	3,483	127.1	122.8	131.5	871	32.7	30.5	35.0	0.26
	White	19,864	120.9	119.2	122.6	3,538	20.7	20.0	21.4	0.17
Age at Diagnosis or Death										
	0-19	^	^	^	^	0	0	0	0.1	^
	20-44	2,322	46.9	45.0	48.9	270	5.5	4.8	6.2	0.12
	45-64	11,060	238.7	234.2	243.2	1,659	35.0	33.3	36.7	0.15
	65+	10,287	410.0	402.1	418.1	2,514	99.2	95.3	103.2	0.24
Year of Diagnosis or Death										
	2009	4,602	123.2	119.6	126.9	882	23.1	21.5	24.7	0.19
	2010	4,548	118.7	115.3	122.3	870	22.3	20.8	23.9	0.19
	2011	4,693	120.4	116.9	124.0	862	21.5	20.1	23.0	0.18
	2012	4,798	121.9	118.4	125.5	905	22.4	21.0	24.0	0.18
	2013	5,029	125.1	121.5	128.7	924	22.2	20.8	23.7	0.18
^Statistic not displayed due to fewer than 10 cases. *Excludes hermaphrodites and transsexuals. **Total counts are from 2009 to 2013. ***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population. † Includes whites, blacks, and other races and those cases missing race information. ‡Mortality incidence ratio. See Technical Notes for details.										

FEMALE BREAST CANCER, CONTINUED



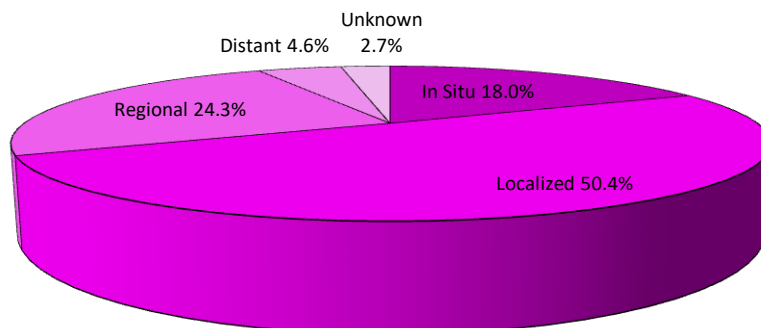
- A total of 23,670 new breast cancer cases were diagnosed among Tennessee women from 2009 to 2013, and the age-adjusted incidence rate was 121.9 per 100,000.
- During the same time period, 4,443 Tennessee women died from breast cancer, resulting in an age-adjusted mortality rate of 22.3 per 100,000.
- Black women had higher incidence and mortality rates than white women and these differences were statistically significant.
- Female breast cancer has a mortality-to-incidence ratio of 0.18, making it one of the least deadly forms of cancer on the ten most common cancers list.



- Female breast cancer incidence and mortality rates were relatively stable from 2009 to 2013.

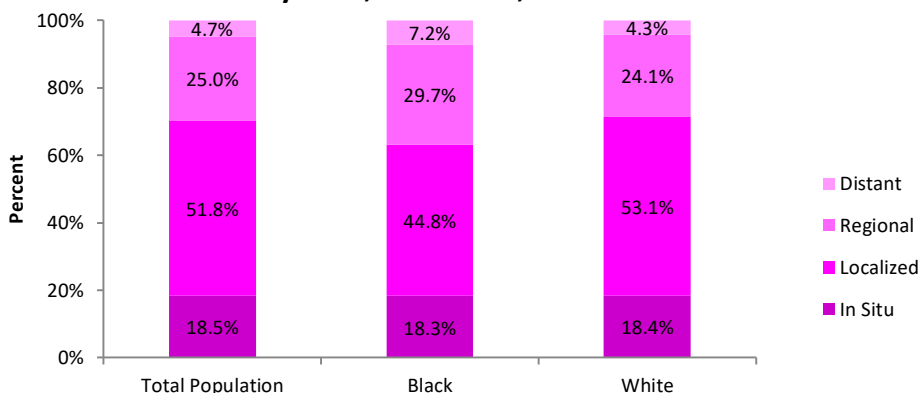
[Data Source](#)

**Cancer Stage, Female Breast,
Tennessee, 2009-2013**



- Almost one in five (18.0%) female breast cancer cases was diagnosed at the in situ stage.
- Almost half of cases (50.4%) were diagnosed at the localized stage.
- One in four cases (24.3%) was diagnosed at the regional stage.
- 4.6% of cases were diagnosed at the distant stage.
- 2.7% of cases had unknown stage information.

**Cancer Stage, Female Breast
By Race, Tennessee, 2009-2013**



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

- Among those with known stage in the total TN population, almost one-third (29.7%) were diagnosed at late stages, either regional or distant.
- Black females had a higher proportion (36.9%) of cases diagnosed at late stages than white females (28.4%) and this difference was statistically significant. This may partially explain the higher breast cancer mortality among black females.

[Data Source](#)

COLORECTAL CANCER

During 2009-2013, colorectal cancer accounted for 8.7% of all new cancer cases and 8.9% of all cancer deaths. Colorectal cancer incidence rate decreased by 12.7% from 2009 to 2013 and this change was statistically significant. During the same time period, the colorectal cancer mortality rate declined by 7.0%, but this change was not statistically significant.

Colorectal cancer is the fourth leading cause of cancer incidence (14,882 cases) and the second leading cause of cancer mortality (6,025 cases) in TN. Less than half (43.6%) of the cases with known stage information are diagnosed at early stages in TN. Black individuals experience statistically significantly greater incidence and mortality rates for this cancer compared to white individuals. Regular colorectal cancer screening can prevent new cases—by detecting precancerous polyps and removing them—and find colorectal cancer early, when it is highly curable. The main screening exams used for colorectal cancer are the colonoscopy and sigmoidoscopy.

COLORECTAL CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2009-2013

Gender	Race	Incidence				Mortality				M:I
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Both*	All Races †	14,882	41.5	40.8	42.2	6,025	17.0	16.6	17.4	0.41
	Black	2,205	49.9	47.7	52.1	1,035	25.2	23.6	26.8	0.51
	White	12,478	40.3	39.6	41	4,948	16.0	15.6	16.5	0.40
Female	All Races †	7,219	36.6	35.7	37.4	2,846	14.1	13.6	14.7	0.39
	Black	1,130	43.6	41	46.3	503	20.5	18.7	22.4	0.47
	White	5,996	35.5	34.5	36.4	2,318	13.3	12.7	13.8	0.37
Male	All Races †	7,663	47.7	46.6	48.8	3,179	20.8	20.0	21.5	0.44
	Black	1,075	59.7	55.8	63.7	532	32.6	29.7	35.8	0.55
	White	6,482	46.3	45.2	47.5	2,630	19.6	18.8	20.4	0.42
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	894	9.1	8.5	9.7	227	2.3	2.0	2.6	0.25
	45-64	5,467	59.9	58.3	61.6	1,847	19.8	18.9	20.7	0.33
	65+	8,515	196.6	192.4	200.8	3,950	92.9	90.0	95.9	0.47
Year of Diagnosis or Death										
	2009	3,014	43.9	42.3	45.5	1,189	17.6	16.6	18.6	0.40
	2010	3,049	43.4	41.9	45	1,201	17.2	16.3	18.3	0.40
	2011	2,915	40.7	39.2	42.2	1,242	17.5	16.5	18.5	0.43
	2012	3,034	41.5	40.0	43.0	1,181	16.3	15.4	17.3	0.39
	2013	2,870	38.3	36.9	39.8	1,212	16.3	15.4	17.3	0.43

^Statistic not displayed due to fewer than 10 cases.

*Excludes hermaphrodites and transsexuals.

**Total counts are from 2009 to 2013.

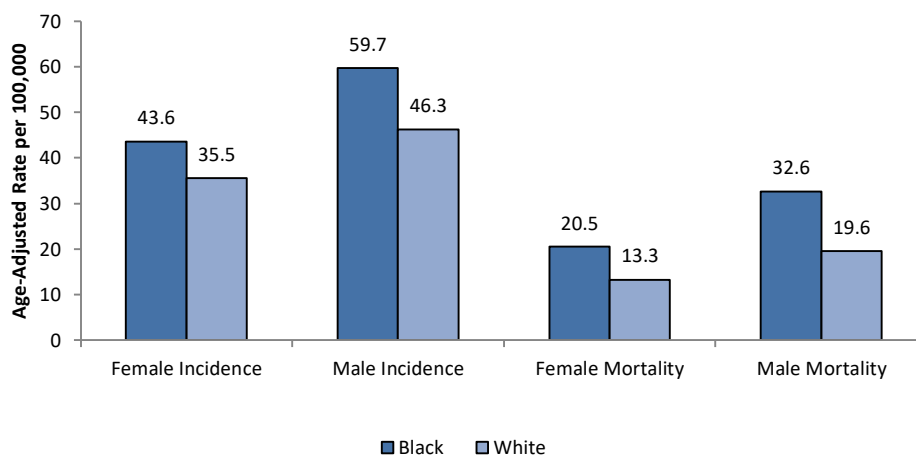
***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population.

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

‡Mortality incidence ratio. See Technical Notes for details.

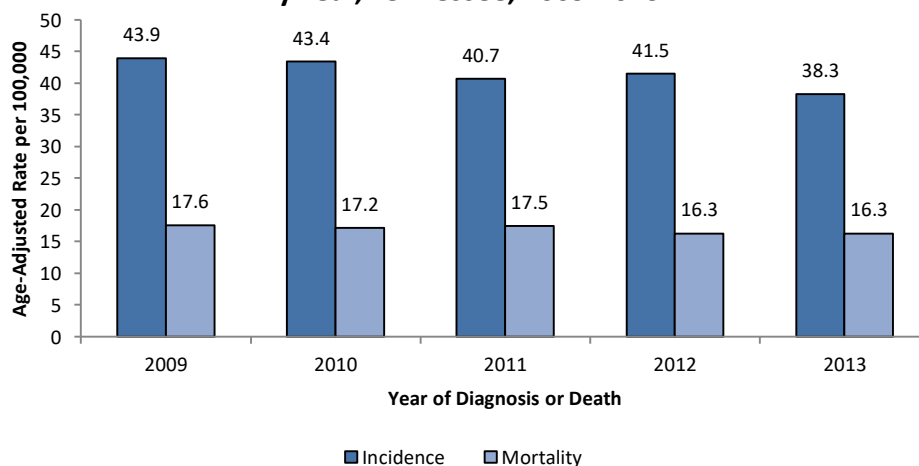
COLORECTAL CANCER, CONTINUED

**Cancer Incidence and Mortality, Colon and Rectum
By Gender and Race, Tennessee, 2009-2013**



- A total of 14,882 new cases of colorectal cancer were reported among Tennesseans from 2009-2013, and the age-adjusted incidence rate was 41.5 per 100,000.
- During the same time period, 6,025 colorectal cancer deaths were reported, resulting in an age-adjusted mortality rate of 17.0 per 100,000.

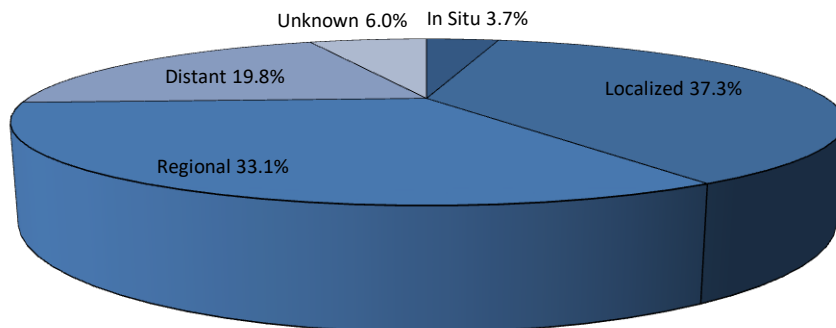
**Cancer Incidence and Mortality, Colon and Rectum
By Year, Tennessee, 2009-2013**



- The colorectal cancer incidence rate dropped by 12.7% from 2009 to 2013 and this change was statistically significant.
- The colorectal cancer mortality rate also decreased by 7.0% from 2009 to 2013 but this change was not statistically significant.

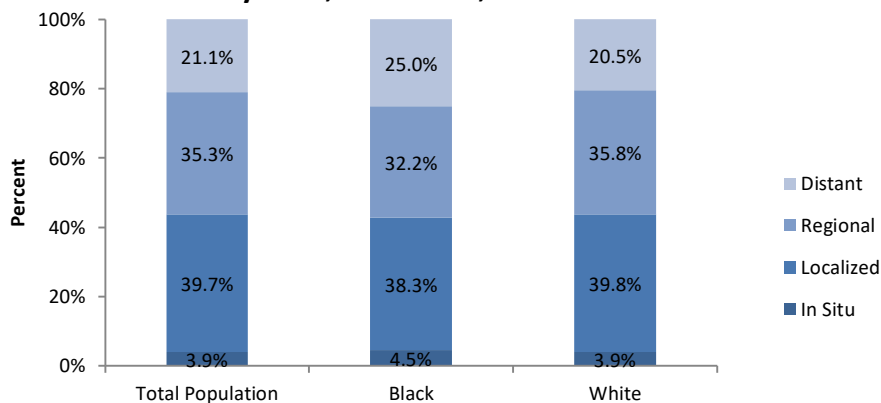
[Data Source](#)

**Cancer Stage, Colon and Rectum,
Tennessee, 2009-2013**



- 3.7% of the colorectal cancer incident cases were diagnosed at the in situ stage.
- 37.3% of the colorectal incident cases were diagnosed at the localized stage.
- 33.1% of colorectal incident cases were diagnosed at the regional stage.
- 19.8% of colorectal incident cases were diagnosed at the distant stage.
- 6.0% of new colorectal incident cases had unknown stage information.

**Cancer Stage, Colon and Rectum,
By Race, Tennessee, 2009-2013**



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

- Among those cases in TN with known stage, 56.4% were diagnosed at either the regional or distant stage, i.e., late stages.
- Black Tennesseans (57.2%) had a higher proportion of cases diagnosed at late stages than white Tennesseans (56.3%), but this difference was not statistically significant.

[Data Source](#)

MELANOMA OF THE SKIN

From 2009 through 2013, melanoma of the skin represented 4.3% of all new cancer cases and a mere 1.6% of all cancer deaths. Melanoma incidence rates fell by 13.5% from 2009 to 2013 and this change was statistically significant. During the same time period, melanoma mortality rates were stable. Melanoma is the fifth leading cause of cancer incidence (7,409 cases) in TN; however, the total number of deaths from melanoma of the skin are low (1,102 cases).

Skin cancer screening may be able to diagnose melanoma in its early stages; however, the United States Preventive Services Taskforce currently does not recommend general population screening for skin cancer. During 2009-2013, 90.2% of all new cases of melanoma of known stage in TN were diagnosed at early stages. Blacks experience a much higher mortality-incidence ratio for this disease, i.e. black patients survive for a much shorter time than white patients. This is at least partially attributable to the fact blacks are almost three times more likely than whites to be diagnosed at late stages for this cancer.

MELANOMA OF THE SKIN CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2009-2013

Gender	Race	Incidence				Mortality				M:I
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Both*	All Races †	7,409	21.1	20.6	21.6	1,102	3.1	2.9	3.3	0.15
	Black	41	1.0	0.7	1.3	19	0.5	0.3	0.7	0.50
	White	7,279	24.4	23.8	24.9	1,079	3.5	3.3	3.8	0.14
Female	All Races †	3,102	16.8	16.2	17.4	336	1.7	1.5	1.9	0.10
	Black	22	0.9	0.5	1.3	11	0.5	0.2	0.8	0.56
	White	3,042	19.9	19.2	20.7	324	2.0	1.7	2.2	0.10
Male	All Races †	4,307	27.0	26.2	27.9	766	5.0	4.7	5.4	0.19
	Black	19	1.1	0.6	1.7	^	^	^	^	^
	White	4,237	30.6	29.6	31.5	755	5.6	5.2	6.1	0.18
Age at Diagnosis or Death										
	0-19	34	0.4	0.3	0.6	0	0	0	0	0.00
	20-44	1,125	11.1	10.5	11.8	79	0.8	0.6	1	0.07
	45-64	2,859	31.7	30.6	32.9	377	4.1	3.7	4.5	0.13
	65+	3,391	77.9	75.2	80.5	646	15.2	14	16.4	0.20
Year of Diagnosis or Death										
	2009	1,585	23.4	22.2	24.6	199	2.9	2.5	3.4	0.12
	2010	1,498	21.7	20.6	22.8	224	3.2	2.8	3.7	0.15
	2011	1,435	20.4	19.4	21.6	221	3.2	2.8	3.6	0.16
	2012	1,406	19.7	18.7	20.8	213	2.9	2.6	3.4	0.15
	2013	1,485	20.2	19.2	21.3	245	3.3	2.9	3.8	0.16

^Statistic not displayed due to fewer than 10 cases.

*Excludes hermaphrodites and transsexuals.

**Total counts are from 2009 to 2013.

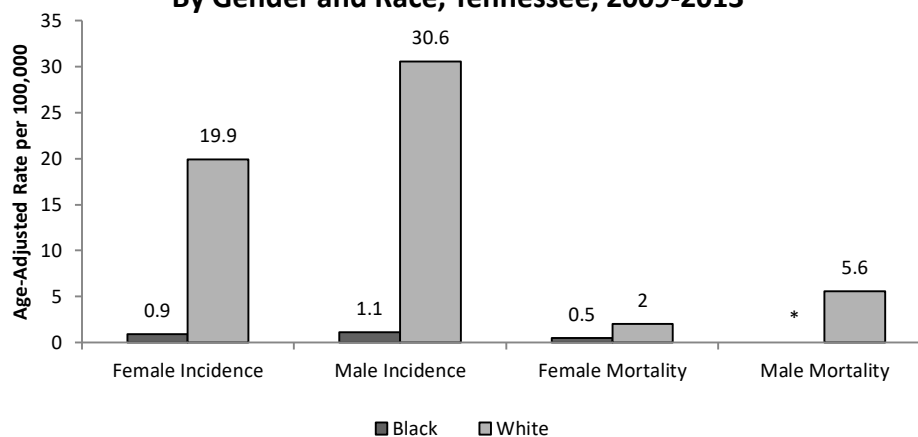
***Rates are per 100,000 and age-adjusted to the 2000 US Standard Population.

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

‡Mortality incidence ratio. See Technical Notes for details.

MELANOMA OF THE SKIN, CONTINUED

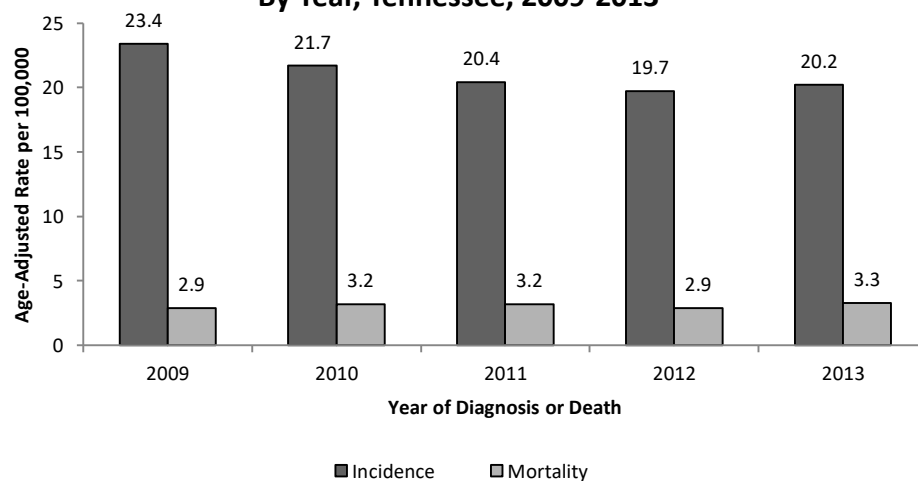
**Cancer Incidence and Mortality, Melanoma of the Skin,
By Gender and Race, Tennessee, 2009-2013**



*Mortality statistics for black males suppressed due to fewer than 10 cases.

- The mortality-to-incidence ratio for melanoma skin cancer was 0.15 for the total population, making it the least deadly among the ten most common cancers.
- Whites had a much higher melanoma skin cancer incidence rate than blacks regardless of gender.

**Cancer Incidence and Mortality, Melanoma of the Skin,
By Year, Tennessee, 2009-2013**

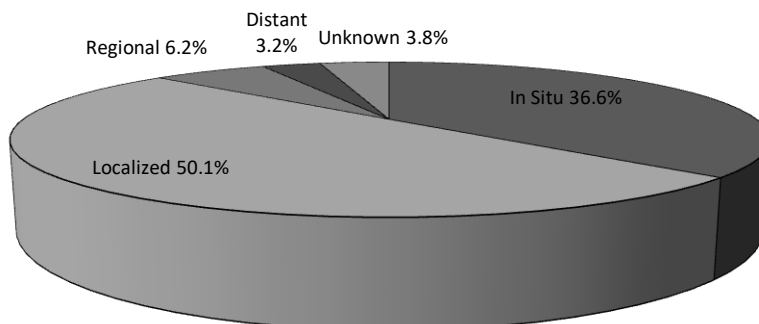


- From 2009 to 2013, the melanoma of the skin incidence rate decreased by 13.5% and this change was statistically significant.
- The melanoma of the skin mortality rate increased by 13.1%, but this difference was not significant.

[Data Source](#)

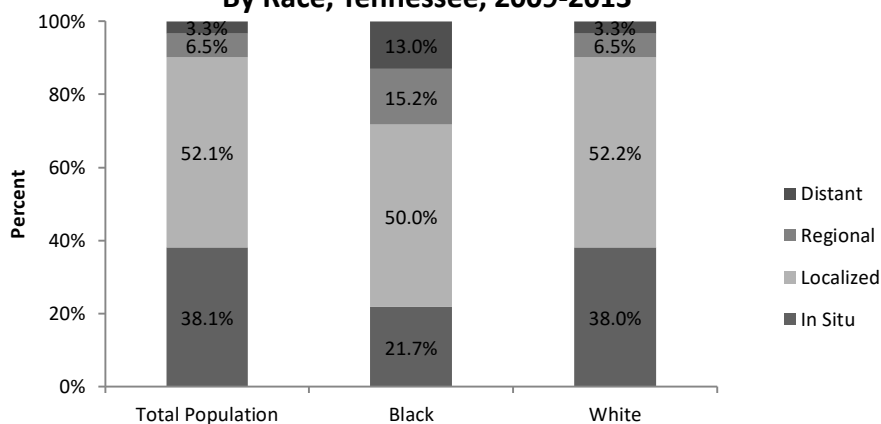
MELANOMA OF THE SKIN, CONTINUED

**Cancer Stage, Melanoma of the Skin,
Tennessee, 2009-2013**



- About one-third (36.6%) of melanoma skin cancer incident cases were diagnosed at the in situ stage.
- Just over one-half of cases (50.1%) were diagnosed at the localized stage.
- 6.2% of cases were diagnosed at the regional stage.
- 3.2% of cases were diagnosed at distant stage.
- 3.8% of cases had unknown stage information.

**Cancer Stage, Melanoma of the Skin,
By Race, Tennessee, 2009-2013**



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

- Black Tennesseans (28.2%) had a higher proportion of cases diagnosed at late stages than white Tennesseans (9.8%) and this difference was statistically significant.

[Data Source](#)

PANCREATIC CANCER

From 2009-2013, pancreatic cancer accounted for 4,302 cases or 2.5% of all new cancer cases in TN. During the same period, pancreatic cancer was responsible for 3,951 deaths or 5.8% of all cancer deaths in TN. Pancreatic cancer is the twelfth leading cause of cancer incidence and the fourth leading cause of cancer mortality in TN. From 2009 to 2013, the cancer incidence and mortality rates remained relatively stable.

Pancreatic cancer is the deadliest form of cancer in TN with a mortality-to-incidence ratio of 0.92 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 can't be readily palpated by health care professionals during routine physical exams. Thus, only 14.7% of cases with known stage information are diagnosed at early stages in TN. Black males display statistically significantly higher pancreatic cancer incidence and mortality rates compared to black females, white females and white males.

PANCREATIC CANCER INCIDENCE AND MORTALITY, TENNESSEE, 2009-2013

Gender	Race	Incidence				Mortality				M:I
		Count**	Rate***	Lower CI	Upper CI	Count**	Rate***	Lower CI	Upper CI	Ratio ‡
Both*	All Races †	4,302	11.9	11.5	12.2	3,951	11.0	10.6	11.3	0.92
	Black	657	15.6	14.4	16.9	569	14.0	12.8	15.2	0.90
	White	3,589	11.4	11.0	11.8	3,348	10.6	10.3	11.0	0.93
Female	All Races †	2,135	10.7	10.2	11.1	1,954	9.7	9.2	10.1	0.91
	Black	350	14.3	12.8	15.9	301	12.3	10.9	13.8	0.86
	White	1,753	10.1	9.7	10.6	1,628	9.3	8.8	9.8	0.92
Male	All Races †	2,167	13.3	12.8	13.9	1,997	12.7	12.1	13.2	0.95
	Black	307	17.5	15.5	19.8	268	16.5	14.4	18.7	0.94
	White	1,836	12.9	12.3	13.5	1,720	12.3	11.7	13	0.95
Age at Diagnosis or Death										
	0-19	^	^	^	^	^	^	^	^	^
	20-44	137	1.4	1.2	1.6	65	0.7	0.5	0.9	0.50
	45-64	1,504	16.0	15.2	16.9	1,214	12.8	12.1	13.6	0.80
	65+	2,660	61.6	59.3	64.0	2,670	62.4	60.0	64.8	1.01
Year of Diagnosis or Death										
	2009	812	11.9	11.1	12.8	750	11.1	10.3	11.9	0.93
	2010	840	11.8	11.0	12.7	779	11.2	10.4	12.0	0.95
	2011	860	11.7	10.9	12.5	783	10.8	10.0	11.6	0.92
	2012	871	11.7	10.9	12.5	786	10.6	9.8	11.3	0.91
	2013	919	12.1	11.3	12.9	853	11.3	10.6	12.1	0.93

^Statistic not displayed due to fewer than 10 cases.

*Excludes hermaphrodites and transsexuals.

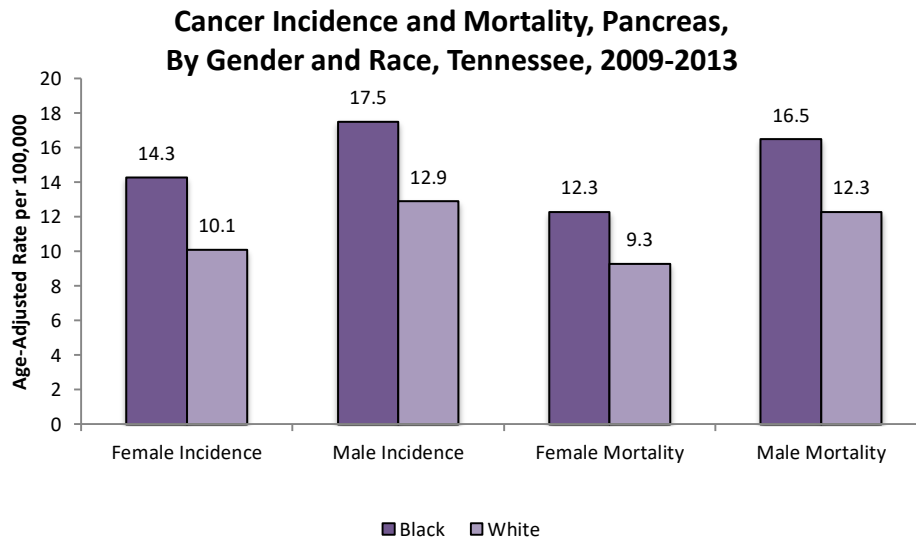
**Total counts are from 2009 to 2013.

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

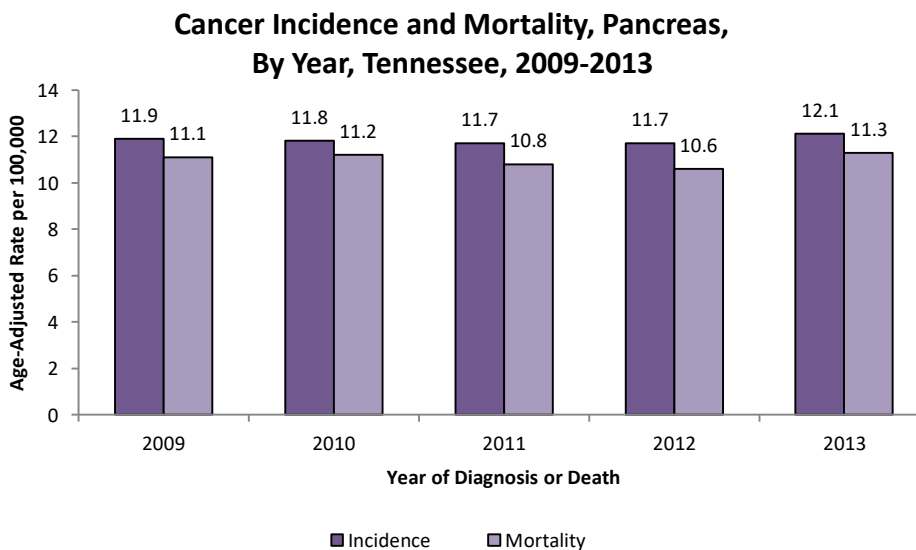
† Includes whites, blacks, and other races and those cases missing race information.

‡Mortality incidence ratio. See Technical Notes for details.

PANCREATIC CANCER, CONTINUED



- From 2009-2013, there were 4,302 new pancreatic cancer cases among Tennesseans and the resulting age-adjusted incidence rate was 11.9 per 100,000.
- During the same time period, 3,951 deaths were reported, giving an age-adjusted mortality rate of 11.0 per 100,000.
- The mortality-to-incidence ratio for pancreatic cancer was 0.92, making pancreatic cancer the most deadly among the ten most common causes of cancer mortality in Tennessee.

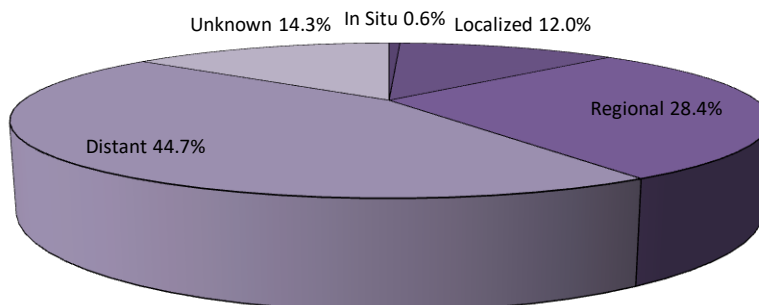


- From 2009-2013, the pancreatic cancer incidence rate increased by 1.3% and the mortality rate increased by 2.1%, but these changes were not statistically significant.

[Data Source](#)

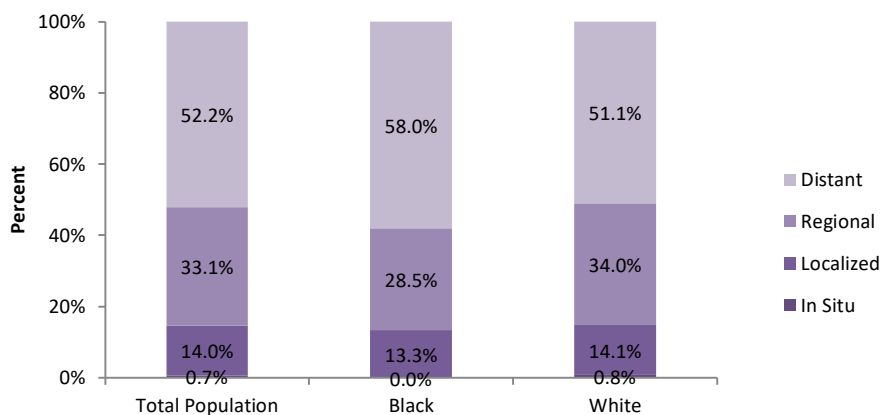
PANCREATIC CANCER, CONTINUED

Cancer Stage, Pancreas, Tennessee, 2009-2013



- Less than 1% of all pancreatic cancer cases were diagnosed at the in situ stage.
- 12.0% of cases were diagnosed at the localized stage.
- 28.4% of cases were diagnosed at the regional stage.
- 44.7% of cases were diagnosed at the distant stage.
- 14.3% of cases had unknown stage information.

Cancer Stage, Pancreas, By Race, Tennessee, 2009-2013



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

- Among cases with known stage, 85.3% of Tennesseans were diagnosed at the regional or distant stage.
- There was no statistically significant difference in percentage of cases diagnosed at the regional or distant stages, i.e., late stages.

[Data Source](#)

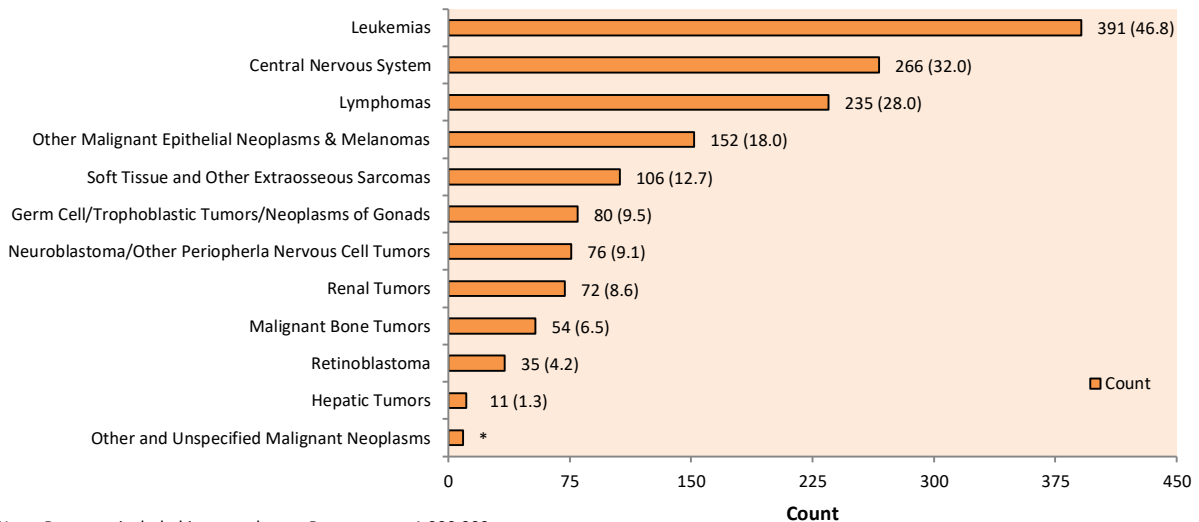
CHILDHOOD CANCER

The distribution of cancers developing 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 1,490 new invasive cancer cases and 209 deaths due to cancer in children less than 20 years of age in TN during 2009 and 2013. TN experienced the twenty-third highest childhood cancer incidence rate and the fourth highest childhood cancer mortality rate in the U.S. from 2009-2013. Only 40.5% of all new cases with known stage information are diagnosed at early stages of the disease. Of the 1,490 new invasive cancer cases in children less than 20 years of age in TN from 2009 to 2013, blacks accounted for about one out of every five (18.3%) childhood cancer cases. Whites accounted for three out of every four childhood cancer cases (77.1%).

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 higher cancer incidence rates compared to black children, but the difference is not statistically significant.

**Leading Causes of Cancer Incidence
Children 0-19 Years Old, Tennessee, 2009-2013**



Note: Rates are included in parentheses. Rates are per 1,000,000.

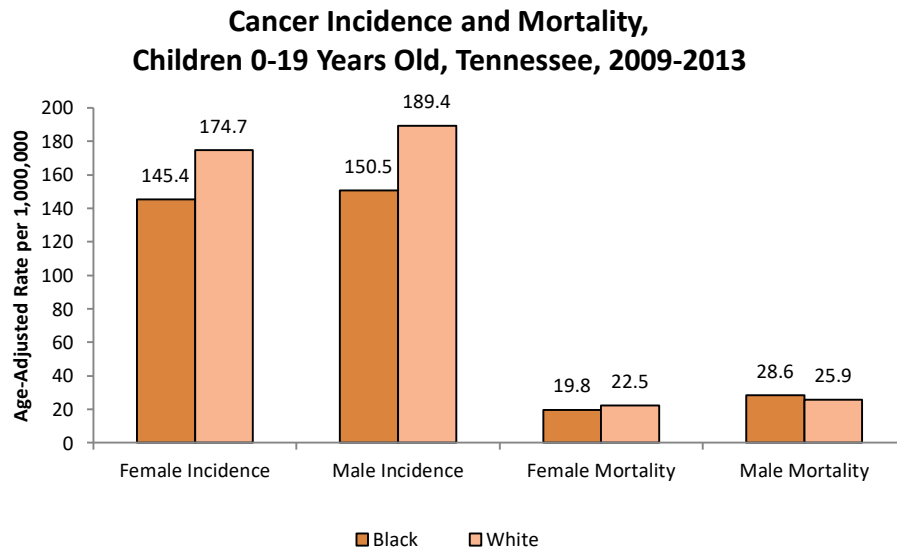
*Count and Rate suppressed due to fewer than 10 cases.

Includes cases with missing demographic information.

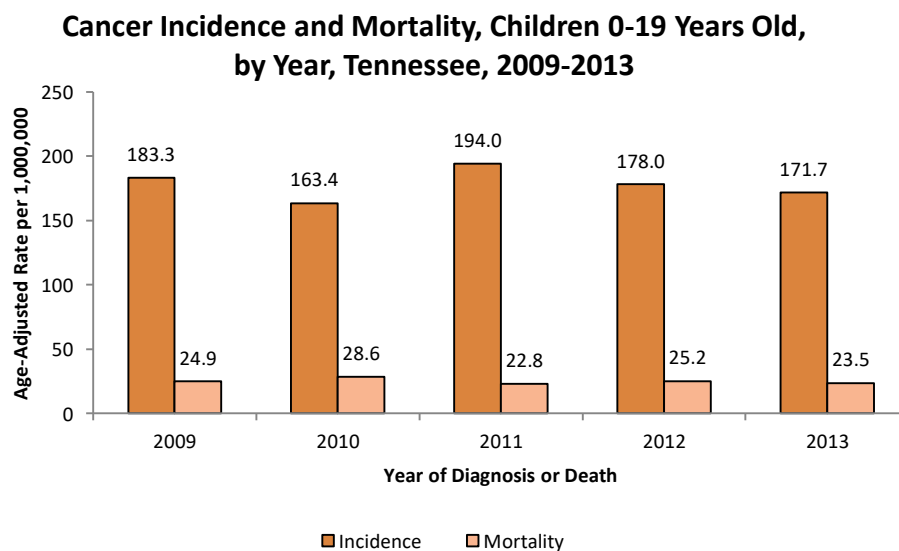
Excludes 3 cases not classified by the International Classification of Childhood Cancers (ICCC) or in situ.

[Data Source](#)

CHILDHOOD CANCER, CONTINUED



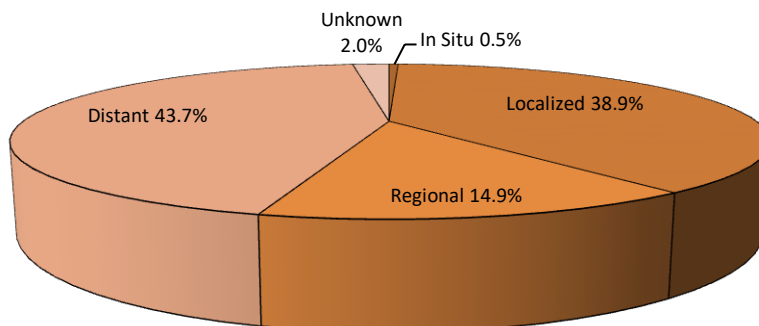
- A total of 1,490 new cancer cases in Tennessee were reported among children 19 years and younger from 2009 to 2013, and the age-adjusted incidence rate during this period was 178.1 per 1,000,000.
- A total of 209 children 19 years and younger died of cancer during that same five-year period, resulting in an age-adjusted mortality rate of 25.0 per 1,000,000.
- There were no statistically significant differences between gender and/or race groups for either incidence or mortality rates.
- From 2009 to 2013, childhood cancers had a mortality-to-incidence ratio of 0.14.



- There were no statistically significant changes in either childhood cancer incidence rates or mortality rates from 2009 to 2013.

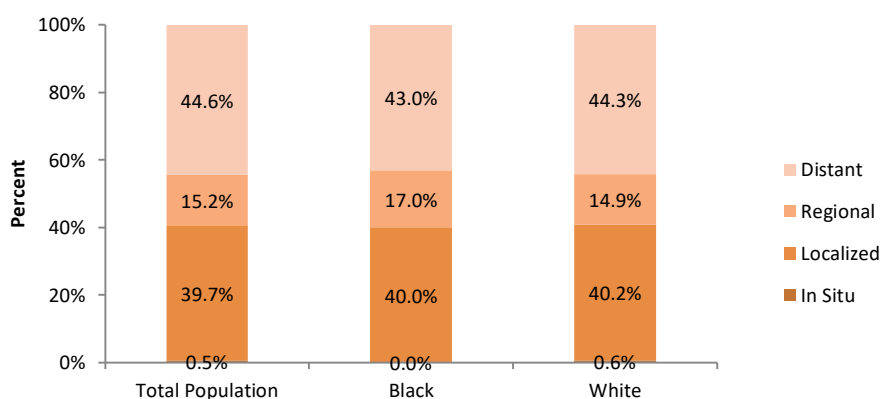
[Data Source](#)

**Cancer Stage, All Sites Combined,
Children Ages 0-19, Tennessee, 2009-2013**



- Less than 1.0% of all childhood cancer cases were diagnosed at the in situ stage.
- 38.9% of childhood cancer cases were diagnosed at the localized stage.
- 14.9% of childhood cancer cases were diagnosed at the regional stage.
- 43.7% of childhood cancer cases were diagnosed at the distant stage.
- 2.0% of childhood cancer cases had unknown stage information.

**Cancer Stage, All Sites Combined,
Children Ages 0-19, Tennessee, 2009-2013**



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., the regional or distant stage) between blacks and whites.
- Among cases with known stage, 59.8% were diagnosed at the late stages.

[Data Source](#)

CANCER SITE SPECIFIC WEBPAGES

More information can be found on the cancers discussed in this report at the American Cancer Society, which include:

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

NATIONAL ORGANIZATIONS AND WEBSITES

If interested, other sources of information and support 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
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/

CANCER IMPACT, RISK FACTORS AND SCREENING PREVALENCE

IMPACT OF CANCER

On average, two out of every five individuals in the U.S. will contract some type of cancer in their lifetime. Males have about a 42% probability of developing cancer in their lifetime, while females have about a 38% probability of developing cancer in their lifetime (Fay, 2004). One in four males (22.6%) and one out of five females (19.1%) 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 U.S. from 2010 to 2012:

Male Site	Risk of developing		Risk of dying from	
	%	1 in	%	1 in
Lung and bronchus	7.2	14	6.3	16
Prostate	14.0	7	2.6	39
Colon and rectum	4.7	21	2.0	50
Pancreas	1.5	65	1.4	73
Leukemia	1.8	57	1.0	97

Note. Adapted from the [Lifetime Risk of Developing or Dying From](#), by The American Cancer Society, 2016.

The following table lists lifetime risks of developing and dying from certain cancers for females in the U.S. from 2010 to 2012:

Female Site	Risk of developing		Risk of dying from	
	%	1 in	%	1 in
Lung and bronchus	6.0	17	4.9	20
Breast	12.3	8	2.7	37
Colon and rectum	4.4	23	1.8	58
Pancreas	1.5	67	1.3	75
Ovary	1.3	76	1.0	103

Note. Adapted from the [Lifetime Risk of Developing or Dying From](#), by The American Cancer Society, 2016.

Over 450,000 years of potential life were lost in TN residents, see figures to follow below, due to premature cancer deaths during the current five-year reporting period; therefore, on average, each person who died of cancer during the five-year period died 6.7 years earlier than the average lifespan (75 years of age as used in this report). From 2009 through 2013, 21,954 black Tennesseans and 146,550 white Tennesseans were diagnosed with cancer and during the same time period 9,632 black Tennesseans and 57,797 white Tennesseans died due to cancer.

The direct medical costs (total of all health care expenditures) for cancer in the U.S. were \$124.5 billion, or almost \$80,072 per cancer diagnosis in 2010. By 2020, 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).

SMOKING AND CANCER

WHY ARE CIGARETTES BAD FOR THE BODY?

Tobacco smoke comprises over 7,000 chemicals; at least 250 of these are harmful to the body and at least 69 are known to cause cancer. Each time an individual smokes, these chemicals cause damage to the body and to the bodies of those around them, such as children. The damage over time induced by smoking may cause disease and death.

HOW IS SMOKING RELATED TO CANCER?

Once tobacco smoke has damaged cells, they may grow uncontrollably and become a cancer. Because cells are tiny, years sometimes pass before a person finds a lump or a 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 become a cancer. This happens because poisons in tobacco smoke can damage or change the cell's instructions. The next cigarette smoked might damage DNA in a way that leads to cancer.

Normally, the immune system helps to protect the body 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 destroyed eventually producing a cancer (U.S. Department of Health and Human Services, 2010).

IMPACT OF SMOKING

Cigarette smoking increases the risk of being diagnosed with or dying from lung cancer by about 15- to 30-fold. An individual who smokes just a few cigarettes a day or smokes occasionally, increases his/her risk of developing lung cancer and the risk goes up based on the number of cigarettes smoked each day and/or the number of years a person smokes. "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). In addition, cigarette smoke is known to cause many other forms of cancer: oropharyngeal, leukemia, pancreatic, kidney, colorectal and other cancers.

Smoking-attributable economic costs were between \$289 and \$332.5 billion each year in the United States, including \$132.5 to \$175.9 billion for direct medical care of adults, during the years 2009-12 (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 workplace productivity losses caused by smoking in Tennessee were estimated to be \$3.59 billion (CDC, 2014).

SMOKING RISKS



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



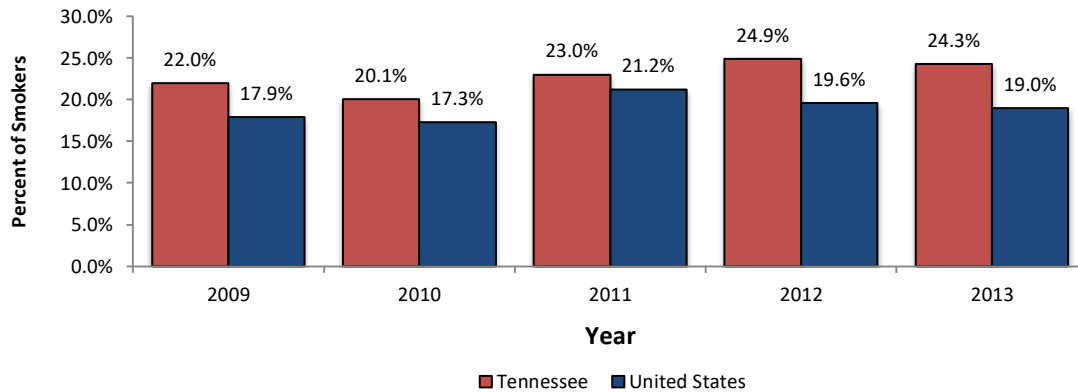
Nearly **ONE** in five deaths are attributed to cigarette smoking.

SMOKING PREVALENCE

SMOKING IN TENNESSEE

In 2013, 19.0% of the United States adult population identified themselves as current cigarette smokers, while nearly a quarter (24.3%) of Tennessee adults identified themselves as current cigarette smokers. White Tennesseans had higher lung cancer incidence rates than black Tennesseans in 2013. As shown in the figure below, Tennesseans have more current adult smokers on average than the United States as a whole. Consequently, the state of Tennessee has the fifth highest percent of adult current smokers in the United States, including all States and the District of Columbia.

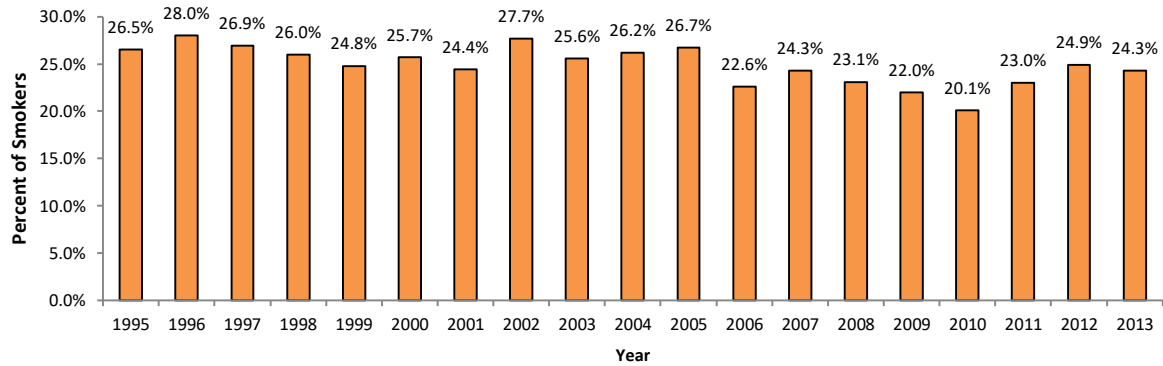
**Prevalence of Current Cigarette Use Among Adults,
Tennessee, 2009-2013**



Source: Centers for Disease Control and Prevention, National Center for Disease Prevention and Health Promotion, Division of Population Health. Behavioral Risk Factor Surveillance System (BRFSS) Prevalence & Trends [online]. 2015.
Note: Methodology changes were applied to the BRFSS data in 2011. Data from 2010 and prior may not be comparable to data collected 2011 and onward; thus, caution should be used in interpreting the above figure.

SMOKING PREVALENCE AMONG ADULTS 18+ YEARS OF AGE, TENNESSEE, 1995-2013

Prevalence of Current Cigarette Use Among Adults, Tennessee, 1995-2013



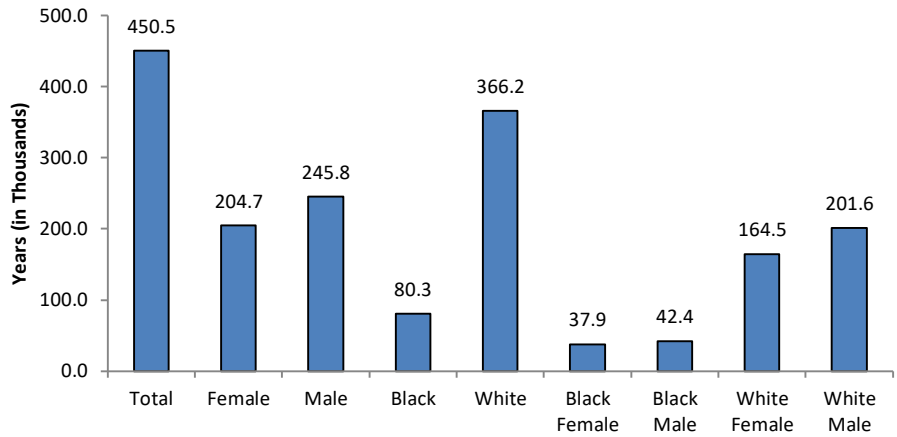
Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

Note: Methodology changes were applied to the BRFSS data in 2011. Data from 2010 and prior may not be comparable to data collected 2011 and onward; thus, caution should be used in interpreting the above figure.

- In 1995, 26.5% of Tennesseans were cigarette smokers.
- In 2013, nearly a quarter (24.3%) of Tennesseans identified themselves as cigarette smokers.
- It is important to note that the state of Tennessee has the sixth highest incidence and mortality rate for lung cancer for the 2013 diagnosis year in the United States.
- Smoking is a well-known risk factor for lung cancer, but it is also a risk factor for several other cancers sites including: mouth, larynx, pharynx, esophagus, kidney, cervix, liver, bladder, pancreas, stomach, colorectal, and myeloid leukemia cancers.

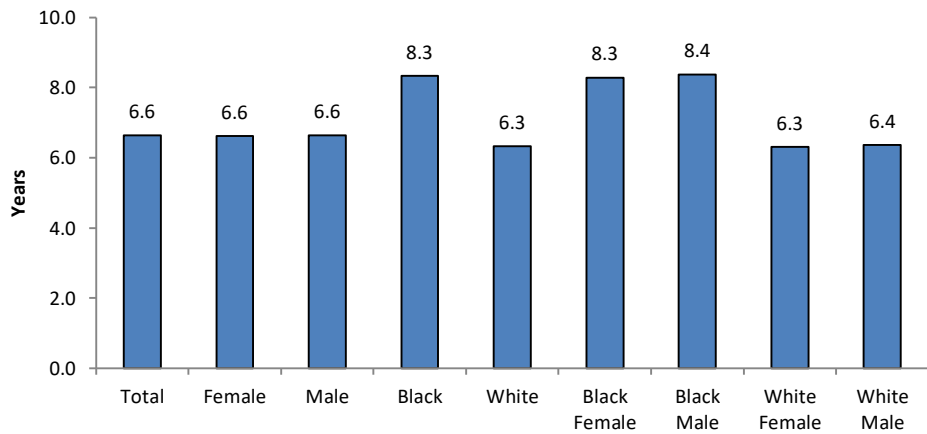
YEARS OF POTENTIAL LIFE LOST TO CANCER, TENNESSEE, 2009-2013

Years of Potential Life Lost (YPLL) to Cancer, By Gender and Race, Tennessee, 2009-2013



- In the five-year period from 2009-2013, a total of 450,457 years of potential life were lost due to premature cancer deaths (deaths before 75 years of age) for the total population.

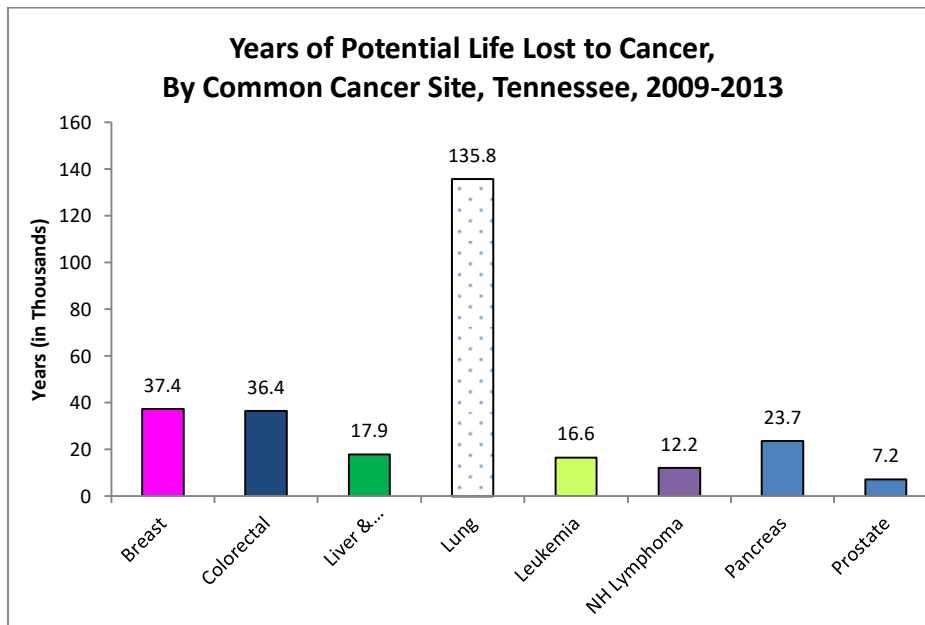
Average Years of Life Lost (AYLL) to Cancer, By Gender and Race, Tennessee, 2009-2013



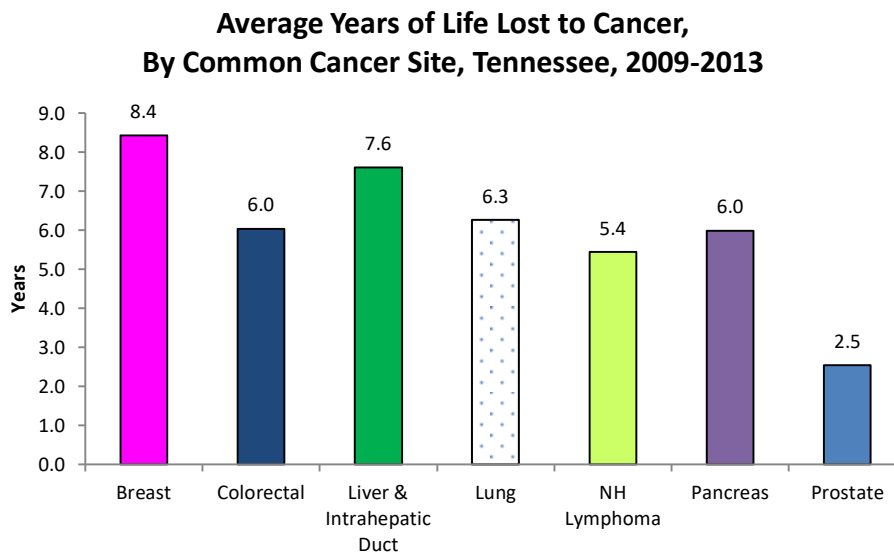
- On average, each female who died from cancer during this 5 year period lost an estimated 6.6 years of life and each male who died from cancer lost an estimated 6.6 years of life.
- On average, each black individual who died from cancer during this period lost an estimated 8.3 years of life and each white individual who died from cancer lost an estimated 6.3 years of life.
- On average, each black female who died from cancer lost an estimated 8.3 years of life and each black male who died from cancer lost an estimated 8.4 years of life.
- On average, each white female who died from cancer lost an estimated 6.3 years of life and each white male who died from cancer lost an estimated 6.4 years of life.

[Data Source](#)

YEARS OF POTENTIAL LIFE LOST TO CANCER, TENNESSEE, 2009-2013, CONTINUED



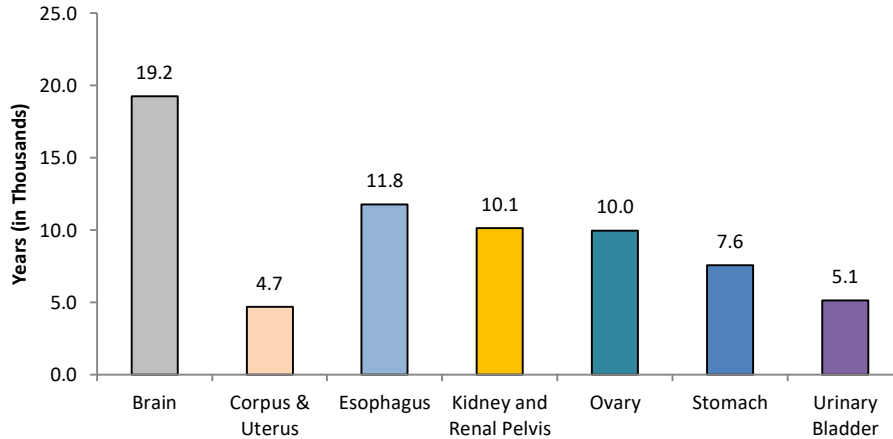
- During 2009-2013, lung cancer (135,764 years lost) accounted for the most years of potential life lost followed by breast cancer (37,416 years lost), colorectal cancer (36,394 years lost), pancreatic cancer (23,656 years lost), liver & intrahepatic bile duct cancer (17,886 years lost), leukemia (16,646 years lost), Non-Hodgkin (NH) lymphoma (12,192 years lost), and prostate cancer (7,224 years lost).
- The seven most common causes of cancer death represented 60.1% of the total YPLL from 2009 to 2013 cancer.



- From 2009-2013, of the most common cancers, breast cancer represented the highest average years of life lost (AYLL) to cancer followed by liver cancer, and lung cancer.

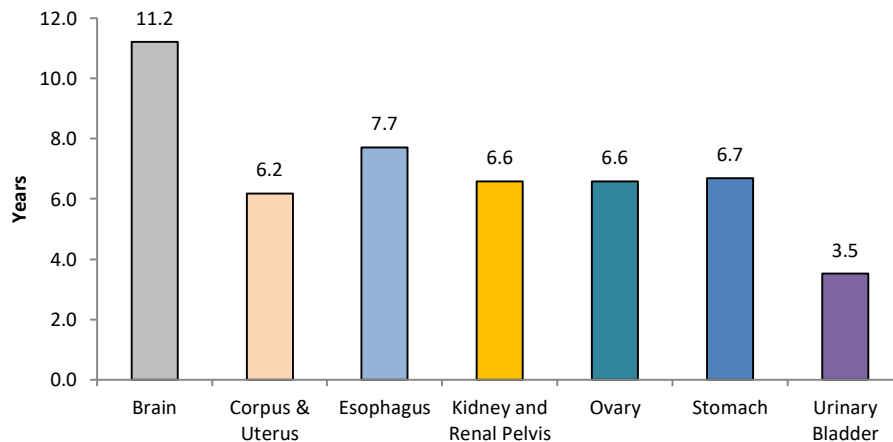
YEARS OF POTENTIAL LIFE LOST TO CANCER, TENNESSEE, 2009-2013, CONTINUED

**Years of Potential Life Lost to Cancer,
By Cancer Site, Tennessee, 2009-2013**



- Outside of the most common cancers during 2009-2013, brain and other Central Nervous System (CNS) cancers (19,249 years lost) accounted for the most YPLL due to a specific cancer site followed by esophageal cancer (11,783 years lost), kidney cancer (10,137 years lost), ovarian cancer (9,957 years lost), stomach cancer (7,565 years lost), bladder cancer (5,125 years lost), and uterine cancer (4,694 years lost).
- From 2009-2013, the seven cancers above accounted for 15.2% of the total YPLL due to cancer.

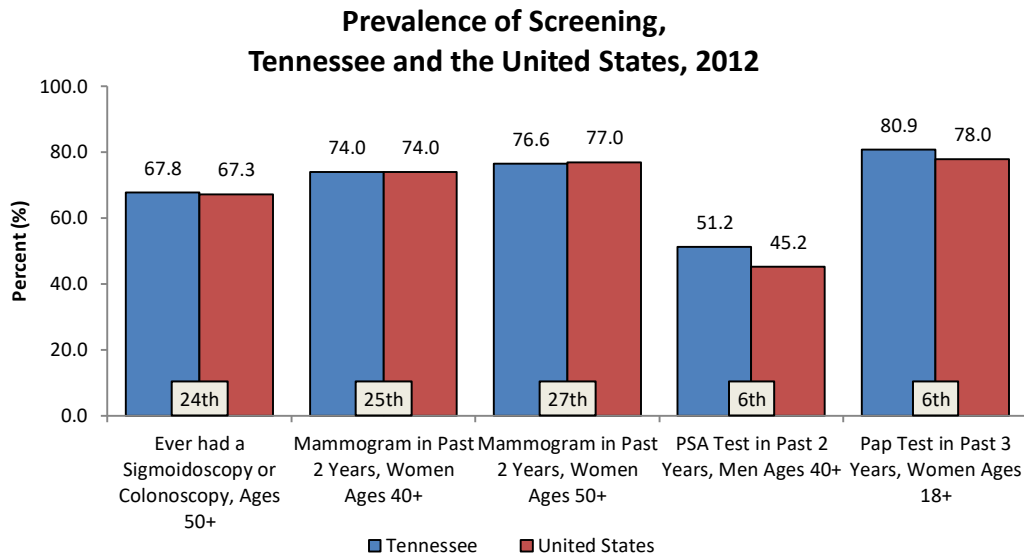
**Average Years of Life Lost to Cancer,
By Cancer Site, Tennessee, 2009-2013**



- Outside of the most common cancers, brain and other CNS cancers represented the highest AYLL due to cancer followed by esophageal cancer, and stomach cancer.

[Data Source](#)

CANCER SCREENING PREVALENCE, TENNESSEE, 2012



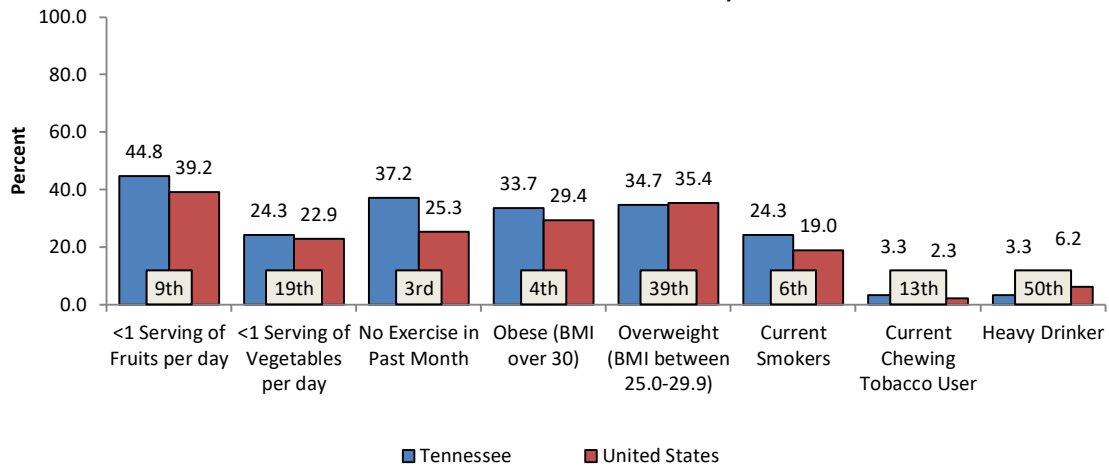
Source: Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, 2015.

- Nearly 68% (67.8%) of the Tennessee population, over 50 years of age, received a sigmoidoscopy or colonoscopy in 2012, 24th highest in the United States.
- In 2012, 74.0% of Tennessee women over 40 years of age received a Mammogram in the past 2 years.
- In 2012, 91.7% of Tennessee women over 18 years of age indicated they had received a Pap test in their lifetime (data not shown in bar graph above) and almost 81% in the prior 3 years, 6th highest prevalence in the United States.
- In 2012, 51.2% of Tennessee men over 40 years of age received a Prostate-Specific Antigen (PSA) Test.

[Data Source](#)

CANCER RISK FACTOR PREVALENCE, TENNESSEE, 2013

Prevalence of Risk Factors Adults 18+ Years of Age Tennessee and the United States, 2013



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, 2015.

- In 2013, over a third of Tennesseans were considered obese (BMI over 30), which ranked as the fourth largest obese population in the United States.
- Another third of Tennesseans were considered overweight (BMI between 25.0 - 29.9) in 2013.
- In 2013, two out of every five Tennesseans had not exercised during the past month.
- In 2013, Tennessee had the sixth highest percentage of cigarette smokers (24.3%) in the United States.
- In 2013, Tennessee had the lowest percentage of heavy drinkers (3.3%) in the United States (i.e., adult men having more than two drinks per day and adult women having more than one drink per day).

[Data Source](#)

APPENDIX I. CANCER INCIDENCE AND MORTALITY, BY SITE, TENNESSEE, 2009-2013

Primary Cancer Site	Incidence				Mortality				M:I
	Count	Rate	Lower CI	Upper CI	Count	Rate	Lower CI	Upper CI	Ratio †
All Sites	170,699	470.1	467.8	472.4	67,948	189.7	188.3	191.2	0.40
Oral Cavity and Pharynx	4,574	12.3	12.0	12.7	1,113	3.0	2.8	3.2	0.24
Lip	229	0.7	0.6	0.7	13	0.0	0.0	0.1	0.00
Tongue	1,394	3.7	3.5	3.9	274	0.7	0.7	0.8	0.19
Salivary Gland	483	1.4	1.2	1.5	105	0.3	0.2	0.4	0.21
Floor of Mouth	218	0.6	0.5	0.7	16	0.0	0.0	0.1	0.00
Gum and Other Mouth	649	1.8	1.7	2.0	162	0.5	0.4	0.5	0.28
Nasopharynx	207	0.6	0.5	0.7	84	0.2	0.2	0.3	0.33
Tonsil	890	2.3	2.2	2.5	106	0.3	0.2	0.3	0.13
Oropharynx	190	0.5	0.4	0.6	88	0.2	0.2	0.3	0.40
Hypopharynx	228	0.6	0.5	0.7	38	0.1	0.1	0.1	0.17
Other Oral Cavity and Pharynx	86	0.2	0.2	0.3	227	0.6	0.5	0.7	3.00
Digestive System	28,705	79.3	78.3	80.2	15,801	43.9	43.2	44.6	0.55
Esophagus	1,752	4.7	4.5	4.9	1,530	4.1	3.9	4.3	0.87
Stomach	2,172	6.1	5.8	6.3	1,131	3.2	3.0	3.4	0.52
Small Intestine	868	2.4	2.3	2.6	155	0.4	0.4	0.5	0.17
Colon and Rectum	14,882	41.5	40.8	42.2	6,025	17.0	16.6	17.4	0.41
Colon excluding Rectum	10,808	30.3	29.7	30.8	4,906	13.9	13.5	14.3	0.46
Cecum	2,399	6.7	6.5	7.0	~	~	~	~	~
Appendix	301	0.9	0.8	1.0	~	~	~	~	~
Ascending Colon	2,090	5.9	5.7	6.2	~	~	~	~	~
Hepatic Flexure	523	1.5	1.3	1.6	~	~	~	~	~
Transverse Colon	1,019	2.8	2.7	3.0	~	~	~	~	~
Splenic Flexure	335	0.9	0.8	1.0	~	~	~	~	~
Descending Colon	651	1.8	1.7	2.0	~	~	~	~	~
Sigmoid Colon	2,653	7.3	7.1	7.6	~	~	~	~	~
Large Intestine, NOS	837	2.4	2.2	2.5	~	~	~	~	~
Rectum and Rectosigmoid Junction	4,074	11.2	10.9	11.6	1,119	3.1	2.9	3.3	0.28
Rectosigmoid Junction	998	2.8	2.6	2.9	~	~	~	~	~
Rectum	3,076	8.5	8.2	8.8	~	~	~	~	~
Anus, Anal Canal and Anorectum	733	2.0	1.9	2.2	117	0.3	0.3	0.4	0.15
Liver and Intrahepatic Bile Duct	2,677	7.0	6.8	7.3	2,354	6.3	6.1	6.6	0.90
Liver	2,407	6.3	6.1	6.6	1,844	4.9	4.7	5.2	0.78
Intrahepatic Bile Duct	270	0.7	0.7	0.8	510	1.4	1.3	1.5	2.00
Gallbladder	281	0.8	0.7	0.9	138	0.4	0.3	0.5	0.50
Other Biliary	570	1.6	1.5	1.7	164	0.5	0.4	0.5	0.31
Pancreas	4,302	11.9	11.5	12.2	3,951	11	10.6	11.3	0.92
Retroperitoneum	109	0.3	0.3	0.4	18	0.1	0.0	0.1	0.33
Peritoneum, Omentum and Mesentery	244	0.7	0.6	0.8	100	0	0.2	0.3	0.43
Other Digestive Organs	115	0.3	0.3	0.4	118	0	0.3	0.4	1.00

APPENDIX I. CONTINUED

Respiratory System	30,642	83.2	82.2	84.1	22,303	61.3	60.5	62.1	0.74
Nose, Nasal Cavity and Middle Ear	273	0.8	0.7	0.9	55	0.2	0.1	0.2	0.25
Larynx	1,787	4.7	4.5	5.0	508	1.4	1.2	1.5	0.30
Lung and Bronchus	28,332	77.0	76.1	77.9	21,682	59.6	58.8	60.5	0.77
Pleura	198	0.6	0.5	0.6	28	0.1	0.1	0.1	0.17
Trachea, Mediastinum and Other Respiratory	52	0.2	0.1	0.2	30	0.1	0.1	0.1	0.50
Bones and Joints	285	0.8	0.8	1.0	119	0.4	0.3	0.4	0.50
Soft Tissue including Heart	1,128	3.3	3.1	3.5	474	1.4	1.2	1.5	0.42
Skin excluding Basal and Squamous	7,949	22.6	22.1	23.2	1,600	4.5	4.3	4.8	0.20
Melanoma of the Skin	7,409	21.1	20.6	21.6	1,102	3.1	2.9	3.3	0.15
Other Non-Epithelial Skin	540	1.6	1.5	1.7	498	1.4	1.3	1.6	0.88
Female Breast	23,670	121.9	120.4	123.5	4,485	12.5	12.2	12.9	0.10
Female Genital System	8,970	46.8	45.8	47.8	2,988	8.4	8.1	8.7	0.18
Cervix Uteri	1,479	8.7	8.3	9.2	493	1.4	1.3	1.6	0.16
Corpus and Uterus, NOS	4,411	11.8	11.5	12.2	760	2.1	2.0	2.3	0.18
Corpus Uteri	4,252	11.4	11.0	11.7	282	0.8	0.7	0.9	0.07
Uterus, NOS	159	0.4	0.4	0.5	478	1.3	1.2	1.4	3.25
Ovary	2,239	11.6	11.1	12.1	1,514	4.2	4.0	4.5	0.36
Vagina	141	0.4	0.3	0.5	59	0.2	0.1	0.2	0.50
Vulva	569	1.6	1.5	1.8	113	0.3	0.3	0.4	0.19
Other Female Genital Organs	131	0.4	0.3	0.4	49	0.1	0.1	0.2	0.25
Male Genital System	23,070	60.2	59.4	61.0	2,918	8.5	8.2	8.8	0.14
Prostate	22,154	126.6	124.9	128.3	2,841	8.3	8.0	8.6	0.07
Testis	746	4.9	4.6	5.3	34	0.1	0.1	0.2	0.02
Penis	143	0.9	0.8	1.1	36	0.1	0.1	0.1	0.11
Other Male Genital Organs	27	0.1	0.0	0.1	^	^	^	^	^
Urinary System	13,633	37.7	37.0	38.3	3,071	8.7	8.4	9.0	0.23
Urinary Bladder	7,037	19.6	19.1	20.1	1,458	4.2	4.0	4.4	0.21
Kidney and Renal Pelvis	6,307	17.3	16.8	17.7	1,541	4.3	4.1	4.5	0.25
Ureter	193	0.5	0.5	0.6	31	0.1	0.1	0.1	0.20
Other Urinary Organs	96	0.3	0.2	0.3	41	0.1	0.1	0.2	0.33
Eye and Orbit	310	0.9	0.8	1.0	55	0.2	0.1	0.2	0.22
Brain and Other Nervous System	2,313	6.7	6.4	7.0	1,718	4.8	4.6	5.1	0.72
Brain	2,187	6.3	6.0	6.6	~	~	~	~	~
Cranial Nerves Other Nervous System	126	0.4	0.3	0.5	~	~	~	~	~
Endocrine System	4,643	13.7	13.3	14.1	265	0.8	0.7	0.9	0.06
Thyroid	4,400	13.0	12.6	13.4	157	0.4	0.4	0.5	0.03
Other Endocrine including Thymus	243	0.7	0.6	0.8	108	0.3	0.3	0.4	0.43
Lymphoma	7,308	20.7	20.3	21.2	2,378	6.8	6.5	7.1	0.33
Hodgkin Lymphoma	880	2.7	2.5	2.9	139	0.4	0.3	0.5	0.15
Hodgkin - Nodal	869	2.7	2.5	2.9	~	~	~	~	~
Hodgkin - Extranodal	11	0.0	0.0	0.1	~	~	~	~	~
Non-Hodgkin Lymphoma	6,428	18.0	17.6	18.5	2,239	6.4	6.1	6.7	0.36
NHL - Nodal	4,517	12.6	12.3	13.0	~	~	~	~	~
NHL - Extranodal	1,911	5.4	5.1	5.6	~	~	~	~	~
Myeloma	2,274	6.2	5.9	6.5	1,290	3.6	3.4	3.8	0.58

APPENDIX I. CONTINUED

Leukemia	4,467	12.7	12.3	13.1	2,536	7.3	7.0	7.6	0.57
Lymphocytic Leukemia	2,091	5.9	5.6	6.1	750	2.2	2.0	2.4	0.37
Acute Lymphocytic Leukemia	179	0.6	0.5	0.7	143	0.4	0.4	0.5	0.67
Chronic Lymphocytic Leukemia	1,773	4.9	4.7	5.1	567	1.7	1.5	1.8	0.35
Other Lymphocytic Leukemia	139	0.4	0.3	0.5	40	0.1	0.1	0.2	0.25
Myeloid and Monocytic Leukemia	2,149	6.2	5.9	6.5	1,233	3.5	3.3	3.7	0.56
Acute Myeloid Leukemia	1,405	4.0	3.8	4.3	1,036	2.9	2.8	3.1	0.73
Acute Monocytic Leukemia	78	0.2	0.2	0.3	^	^	^	^	^
Chronic Myeloid Leukemia	580	1.7	1.5	1.8	124	0.4	0.3	0.4	0.24
Other Myeloid/Monocytic Leukemia	86	0.2	0.2	0.3	64	0.2	0.1	0.2	1.00
Other Leukemia	227	0.7	0.6	0.8	553	1.6	1.5	1.7	2.29
Other Acute Leukemia	79	0.2	0.2	0.3	216	0.6	0.5	0.7	3.00
Aleukemic, Subleukemic and NOS	148	0.4	0.4	0.5	337	1.0	0.9	1.1	2.50
Miscellaneous	6,501	18.4	18.0	18.9	4,834	13.6	13.2	14.0	0.74
^Statistic not displayed due to fewer than 10 cases.									
*Total counts exclude hermaphrodites and transsexuals.									
**Age-adjusted annual rate per 100,000.									
†Mortality incidence ratio. See Technical Notes for details.									
~Corresponding disease categories not available in mortality data.									

[Data Source](#)

APPENDIX II. CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, BY GENDER, RACE AND RESIDENT REGION, TENNESSEE, 2009-2013

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Total Population									
<i>Tennessee</i>	171,142	471.5	469.2	473.7	67,948	189.7	188.3	191.2	0.40
East Region	35,794	489.8	484.6	495.0	13,872	189.8	186.6	193.1	0.39
Mid-Cumberland Region	39,838	469.0	464.3	473.7	14,577	181.3	178.3	184.3	0.39
Northeast Region	15,762	469.0	461.5	476.6	6,511	189.7	185.0	194.4	0.40
Northwest Region	7,488	457.2	446.6	467.9	3,484	208.6	201.7	215.8	0.46
South Central Region	10,712	463.7	454.7	472.7	4,478	193.0	187.3	198.8	0.42
Southeast Region	19,241	471.6	464.8	478.5	7,516	183.5	179.3	187.7	0.39
Southwest Region	31,596	465.1	459.9	470.3	12,989	197.6	194.2	201.1	0.42
Upper-Cumberland Region	10,622	472.2	463.0	481.5	4,521	197.6	191.8	203.6	0.42
Female									
<i>Tennessee</i>	81,872	421.6	418.6	424.5	30,934	154.3	152.6	156.1	0.37
East Region	16,887	437.9	431.1	444.7	6,277	154.7	150.8	158.7	0.35
Mid-Cumberland Region	19,417	420.4	414.4	426.4	6,742	148.7	145.1	152.3	0.35
Northeast Region	7,646	434.8	424.7	445.0	2,977	158.1	152.4	164.0	0.36
Northwest Region	3,455	398.7	385.0	412.8	1,556	167.4	158.9	176.2	0.42
South Central Region	5,073	416.3	404.6	428.2	1,982	154.8	148.0	161.9	0.37
Southeast Region	9,055	417.6	408.8	426.6	3,375	147.5	142.5	152.7	0.35
Southwest Region	15,425	412.4	405.8	419.1	6,087	161.1	157.0	165.3	0.39
Upper-Cumberland Region	4,875	420.0	407.9	432.5	1,938	157.2	150.1	164.6	0.37
Male									
<i>Tennessee</i>	89,269	541.8	538.2	545.5	37,014	239.9	237.4	242.5	0.44
East Region	18,906	560.3	552.1	568.6	7,595	237.3	231.8	242.9	0.42
Mid-Cumberland Region	20,421	539.7	531.9	547.5	7,835	228.9	223.6	234.3	0.42
Northeast Region	8,116	517.7	506.2	529.5	3,534	234.5	226.6	242.7	0.45
Northwest Region	4,033	536.0	519.1	553.2	1,928	266.8	254.8	279.3	0.50
South Central Region	5,639	530.7	516.5	545.3	2,496	246.6	236.6	256.8	0.46
Southeast Region	10,186	547.7	536.8	558.8	4,141	236.4	229.0	243.9	0.43
Southwest Region	16,171	543.7	535.0	552.6	6,902	252.1	245.9	258.4	0.46
Upper-Cumberland Region	5,747	540.8	526.5	555.5	2,583	250.7	240.8	260.9	0.46
Black									
<i>Tennessee</i>	22,005	477.0	470.4	483.6	9,632	228.5	223.8	233.4	0.48
East Region	1,222	472.5	445.6	500.5	513	212.1	193.6	231.8	0.45
Mid-Cumberland Region	5,240	477.2	463.6	491.2	2,172	222.1	212.3	232.2	0.47
Northeast Region	224	382.8	332.6	438.2	106	187.4	152.4	227.8	0.49
Northwest Region	758	489.6	454.5	526.6	343	231.3	207.0	257.6	0.47
South Central Region	512	358.6	327.5	391.8	274	202.6	178.8	228.6	0.56
Southeast Region	1,917	482.8	460.7	505.6	734	197.2	182.7	212.4	0.41
Southwest Region	11,979	484.6	475.5	493.9	5,440	241.7	235.0	248.5	0.50
Upper-Cumberland Region	148	557.5	469.5	656.9	50	205.0	151.1	271.0	0.37
White									
<i>Tennessee</i>	146,922	471.3	468.8	473.7	57,797	185.3	183.8	186.8	0.39
East Region	34,236	491.1	485.8	496.5	13,264	189.5	186.3	192.8	0.39
Mid-Cumberland Region	33,858	470.0	464.9	475.1	12,192	176.5	173.3	179.7	0.38
Northeast Region	15,452	471.5	463.9	479.2	6,383	190.2	185.5	195.0	0.40
Northwest Region	6,663	452.3	441.2	463.6	3,133	207.2	199.9	214.7	0.46
South Central Region	10,129	470.7	461.4	480.2	4,181	192.8	186.9	198.8	0.41
Southeast Region	17,111	471.3	464.1	478.5	6,747	183.5	179.1	188.0	0.39
Southwest Region	19,051	452.2	445.7	458.9	7,445	175.7	171.7	179.8	0.39
Upper-Cumberland Region	10,393	470.8	461.5	480.2	4,452	198.0	192.1	204.1	0.42

*Total counts are from 2009 to 2013 and include 443 cases with invalid site recode information.

**Age-adjusted annual rate per 100,000.

†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 county at diagnosis information.

[Data Source](#)

APPENDIX III. CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, BY RESIDENT COUNTY, TENNESSEE, 2009-2013

	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	171,142	471.5	469.2	473.7	67,948	189.7	188.3	191.2	0.40
East Region	35,794	489.8	484.6	495.0	13,872	189.8	186.6	193.1	0.39
TN: Anderson County	2,527	500.2	480.3	520.7	1,027	194.8	182.8	207.5	0.39
TN: Blount County	3,904	491.4	475.8	507.5	1,379	172.0	162.9	181.5	0.35
TN: Campbell County	1,360	503.0	475.8	531.4	589	217.3	199.7	236.1	0.43
TN: Claiborne County	1,079	519.7	488.2	552.8	444	217.3	197.0	239.1	0.42
TN: Cocke County	1,142	476.3	448.1	506.0	523	219.9	200.9	240.3	0.46
TN: Grainger County	754	512.6	475.3	552.3	294	207.1	183.3	233.3	0.40
TN: Hamblen County	1,853	477.9	456.0	500.6	776	197.6	183.8	212.2	0.41
TN: Jefferson County	1,599	486.9	462.5	512.2	615	188.3	173.3	204.3	0.39
TN: Knox County	11,684	483.7	474.8	492.7	4,353	181.5	176.1	187.1	0.38
TN: Loudon County	1,842	487.8	464.4	512.2	658	170.3	157.1	184.5	0.35
TN: Monroe County	1,380	471.4	445.9	498.0	598	208.3	191.5	226.3	0.44
TN: Morgan County	648	493.5	455.4	534.2	237	188.3	164.6	214.7	0.38
TN: Roane County	1,887	485.2	462.7	508.6	794	198.2	184.4	212.9	0.41
TN: Scott County	675	531.1	491.0	573.7	313	252.4	224.7	282.6	0.48
TN: Sevier County	2,862	499.4	480.7	518.7	1,030	182.0	170.7	193.8	0.36
TN: Union County	598	529.3	486.4	575.1	242	219.1	191.6	249.6	0.41
Mid-Cumberland Region	39,838	469.0	464.3	473.7	14,577	181.3	178.3	184.3	0.39
TN: Cheatham County	1,119	545.9	512.9	580.5	452	239.1	216.4	263.4	0.44
TN: Davidson County	14,311	470.4	462.6	478.4	5,570	189.9	184.9	195.1	0.40
TN: Dickson County	1,391	494.1	468.0	521.2	551	199.3	182.7	217.0	0.40
TN: Houston County	269	481.9	424.4	545.7	125	216.9	179.9	260.1	0.45
TN: Humphreys County	664	541.9	500.3	586.4	271	220.9	194.8	249.8	0.41
TN: Montgomery County	3,068	452.9	436.4	469.7	1,203	195.0	183.8	206.6	0.43
TN: Robertson County	1,760	496.4	473.0	520.8	638	186.9	172.3	202.3	0.38
TN: Rutherford County	5,083	453.4	440.5	466.5	1,815	176.7	168.4	185.3	0.39
TN: Stewart County	436	496.8	449.9	547.7	194	226.9	195.4	262.3	0.46
TN: Sumner County	4,322	474.8	460.4	489.5	1,417	161.9	153.4	170.7	0.34
TN: Trousdale County	220	482.2	419.2	552.4	96	217.6	175.4	267.2	0.45
TN: Williamson County	4,151	448.9	434.8	463.4	1,152	138.1	130.0	146.7	0.31
TN: Wilson County	3,044	470.6	453.6	488.2	1,093	179.3	168.5	190.6	0.38
Northeast Region	15,762	469.0	461.5	476.6	6,511	189.7	185.0	194.4	0.40
TN: Carter County	1,609	424.4	403.3	446.4	754	191.1	177.5	205.6	0.45
TN: Greene County	2,200	474.4	454.1	495.3	907	192.8	180.2	206.1	0.41
TN: Hancock County	222	483.5	419.4	555.4	105	230.5	187.3	281.5	0.48
TN: Hawkins County	1,901	513.3	489.8	537.7	784	211.8	196.9	227.6	0.41
TN: Johnson County	570	455.4	417.6	496.0	254	206.7	181.7	234.6	0.45
TN: Sullivan County	5,221	478.0	464.8	491.6	2,102	185.8	177.8	194.1	0.39
TN: Unicoi County	612	465.6	428.1	505.9	274	193.0	170.4	218.1	0.41
TN: Washington County	3,427	458.3	442.8	474.2	1,331	176.2	166.8	186.1	0.38
Northwest Region	7,488	457.2	446.6	467.9	3,484	208.6	201.7	215.8	0.46
TN: Benton County	650	544.5	501.5	590.5	291	237.7	210.4	268.1	0.44
TN: Carroll County	910	475.2	443.9	508.3	401	206.9	186.7	228.7	0.44
TN: Crockett County	391	434.3	391.5	480.7	170	183.1	156.3	213.5	0.42
TN: Dyer County	960	424.4	397.5	452.8	418	184.9	167.4	203.9	0.44
TN: Gibson County	1,451	466.3	442.2	491.4	689	214.8	198.9	231.8	0.46
TN: Henry County	1,129	478.8	450.3	508.8	525	218.3	199.6	238.6	0.46
TN: Lake County	192	431.8	372.1	498.8	109	246.6	202.0	298.6	0.57
TN: Obion County	910	434.2	405.8	464.3	449	211.8	192.4	232.8	0.49
TN: Weakley County	895	433.0	404.4	463.1	432	204.1	185.0	224.7	0.47

[Data Source](#)

APPENDIX III. CANCER INCIDENCE AND MORTALITY, ALL SITES COMBINED, BY RESIDENT COUNTY, TENNESSEE 2009-2013, CONTINUED

South Central Region	10,712	463.7	454.7	472.7	4,478	193.0	187.3	198.8	0.42
TN: Bedford County	1,149	462.7	435.9	490.8	444	183.8	166.8	202.0	0.40
TN: Coffee County	1,536	477.8	453.8	502.8	634	192.2	177.4	208.0	0.40
TN: Giles County	928	484.4	452.8	517.8	385	195.8	176.4	217.0	0.40
TN: Hickman County	713	498.7	462.0	537.5	302	210.8	187.2	236.7	0.42
TN: Lawrence County	1,157	445.5	419.7	472.5	496	188.0	171.7	205.7	0.42
TN: Lewis County	417	538.6	486.5	595.2	169	216.9	184.8	253.5	0.40
TN: Lincoln County	896	409.0	382.0	437.5	421	191.1	173.0	210.7	0.47
TN: Marshall County	863	493.8	460.6	528.9	378	217.0	195.2	240.7	0.44
TN: Maury County	2,132	456.5	436.9	476.8	861	187.2	174.7	200.4	0.41
TN: Moore County	172	386.1	328.8	451.7	62	136.1	104.0	176.4	0.35
TN: Perry County	267	493.8	433.5	560.8	111	199.2	162.8	242.2	0.40
TN: Wayne County	482	447.8	408.1	490.6	215	197.7	171.8	226.6	0.44
Southeast Region	19,241	471.6	464.8	478.5	7,516	183.5	179.3	187.7	0.39
TN: Bledsoe County	386	470.7	423.4	522.2	136	167.4	139.7	199.5	0.36
TN: Bradley County	2,718	468.5	450.7	486.7	1,051	183.5	172.4	195.1	0.39
TN: Franklin County	1,245	466.1	439.8	493.7	497	178.6	163.0	195.4	0.38
TN: Grundy County	419	465.5	420.5	514.4	198	215.4	185.6	248.9	0.46
TN: Hamilton County	9,551	466.5	457.0	476.2	3,533	171.1	165.4	176.9	0.37
TN: McMinn County	1,533	443.7	421.2	467.1	676	193.8	179.2	209.4	0.44
TN: Marion County	997	546.0	511.4	582.4	401	222.2	200.4	245.8	0.41
TN: Meigs County	368	470.5	421.3	524.4	174	227.6	193.5	266.4	0.48
TN: Polk County	583	512.3	470.3	557.5	274	238.3	210.3	269.4	0.47
TN: Rhea County	1,003	503.7	472.2	536.8	380	191.3	172.1	212.2	0.38
TN: Sequatchie County	438	486.3	440.3	536.0	196	223.1	192.1	257.9	0.46
Southwest Region	31,596	465.1	459.9	470.3	12,989	197.6	194.2	201.1	0.42
TN: Chester County	396	404.1	364.6	446.9	180	179.2	153.7	208.0	0.44
TN: Decatur County	379	435.2	390.6	484.0	190	214.3	183.8	249.0	0.49
TN: Fayette County	1,169	470.3	442.7	499.3	417	172.3	155.6	190.4	0.37
TN: Hardeman County	791	487.9	453.9	523.9	340	214.6	192.1	239.2	0.44
TN: Hardin County	821	455.8	423.9	489.6	343	183.3	163.9	204.5	0.40
TN: Haywood County	494	450.3	410.5	493.1	204	182.8	158.1	210.4	0.41
TN: Henderson County	806	480.5	447.3	515.7	340	201.2	180.0	224.3	0.42
TN: Lauderdale County	722	489.8	454.1	527.7	313	217.9	194.0	243.9	0.44
TN: McNairy County	778	447.3	415.5	481.2	369	209.4	188.2	232.5	0.47
TN: Madison County	2,369	429.8	412.4	447.9	965	176.1	165.0	187.7	0.41
TN: Shelby County	21,312	469.7	463.3	476.2	8,713	201.0	196.7	205.3	0.43
TN: Tipton County	1,559	494.7	469.8	520.6	615	208.3	191.7	226.0	0.42
Upper-Cumberland Region	10,622	472.2	463.0	481.5	4,521	197.6	191.8	203.6	0.42
TN: Cannon County	437	486.7	441.2	535.9	187	210.3	180.8	243.6	0.43
TN: Clay County	242	423.4	369.3	484.0	128	213.7	177.3	256.4	0.50
TN: Cumberland County	2,305	478.3	457.3	500.2	902	179.8	167.6	192.8	0.38
TN: DeKalb County	519	434.4	396.9	474.6	236	201.3	176.0	229.4	0.46
TN: Fentress County	610	514.5	472.8	559.2	277	230.9	203.6	261.1	0.45
TN: Jackson County	368	457.3	409.6	509.5	159	194.6	164.4	229.4	0.43
TN: Macon County	664	509.7	470.8	550.9	274	212.0	187.2	239.2	0.42
TN: Overton County	733	500.0	463.3	539.0	329	219.2	195.7	245.1	0.44
TN: Pickett County	192	481.8	411.5	562.3	67	155.2	119.3	201.1	0.32
TN: Putnam County	1,890	451.1	430.6	472.3	786	187.5	174.5	201.3	0.42
TN: Smith County	545	489.2	448.0	533.3	234	220.5	192.6	251.5	0.45
TN: Van Buren County	167	436.0	369.0	512.9	68	173.4	133.1	223.6	0.40
TN: Warren County	1,097	457.7	430.6	486.2	510	208.9	190.9	228.1	0.46
TN: White County	853	493.6	460.1	529.1	364	205.1	184.2	228.0	0.42

*Total counts are from 2009 to 2013 and includes 443 cases with invalid site recode information.

**Age-adjusted annual rate per 100,000.

^Statistic not displayed due to fewer than 10 cases.

†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 region information.

[Data Source](#)

APPENDIX IV. LUNG CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013

	Incidence				Mortality				M:I
	Count	Rate	Lower CI	Upper CI	Count	Rate	Lower CI	Upper CI	Ratio †
Tennessee	28,332	77.0	76.1	77.9	21,682	59.6	58.8	60.5	0.77
East Region	6,129	81.2	79.2	83.3	4,708	63.1	61.3	64.9	0.78
TN: Anderson County	375	71.0	63.9	78.8	345	64.7	57.9	72.1	0.91
TN: Blount County	649	79.1	73.0	85.5	442	53.9	49.0	59.3	0.68
TN: Campbell County	303	106.1	94.3	119.2	243	86.9	76.1	98.9	0.82
TN: Claiborne County	234	108.1	94.4	123.4	180	83.7	71.6	97.3	0.77
TN: Cocke County	250	96.8	84.9	110.1	205	83.0	71.7	95.6	0.86
TN: Grainger County	131	82.2	68.4	98.3	112	72.0	59.0	87.3	0.88
TN: Hamblen County	318	77.9	69.4	87.1	275	68.7	60.8	77.5	0.88
TN: Jefferson County	246	69.7	61.1	79.4	180	51.7	44.2	60.2	0.74
TN: Knox County	1,788	73.8	70.4	77.4	1,346	56.1	53.1	59.2	0.76
TN: Loudon County	289	69.5	61.5	78.5	210	53.4	46.2	61.6	0.77
TN: Monroe County	298	98.5	87.4	110.9	224	73.8	64.2	84.5	0.75
TN: Morgan County	128	93.4	77.6	111.7	95	71.6	57.7	88.2	0.77
TN: Roane County	362	88.9	79.8	98.9	289	70.5	62.5	79.4	0.79
TN: Scott County	145	109.1	91.7	128.9	119	92.9	76.7	111.7	0.85
TN: Sevier County	494	83.5	76.1	91.4	355	61.0	54.7	68.0	0.73
TN: Union County	119	100.6	82.9	121.1	88	75.4	60.1	93.6	0.75
Mid-Cumberland Region	5,919	72.0	70.1	73.9	4,448	55.3	53.6	57.0	0.77
TN: Cheatham County	188	92.3	79.0	107.3	158	80.6	68.0	95.0	0.87
TN: Davidson County	2,128	72.2	69.1	75.5	1,648	56.9	54.2	59.8	0.79
TN: Dickson County	249	87.9	77.1	99.8	191	67.1	57.8	77.6	0.76
TN: Houston County	57	96.7	72.9	126.8	47	78.9	57.6	106.5	0.82
TN: Humphreys County	131	99.1	82.6	118.3	99	76.3	61.9	93.5	0.77
TN: Montgomery County	534	84.6	77.4	92.3	375	61.2	55.0	67.9	0.72
TN: Robertson County	295	83.2	73.7	93.5	225	64.6	56.3	73.8	0.78
TN: Rutherford County	720	68.7	63.6	74.1	512	50.3	45.9	55.0	0.73
TN: Stewart County	84	90.7	72.1	113.3	61	68.5	52.2	88.9	0.76
TN: Sumner County	608	66.3	61.1	72.0	461	51.7	47.0	56.8	0.78
TN: Trousdale County	47	101.0	73.8	135.5	28	59.5	39.2	87.2	0.59
TN: Williamson County	386	46.7	41.9	51.7	301	36.4	32.3	41.0	0.78
TN: Wilson County	492	76.9	70.0	84.2	342	55.5	49.6	62.0	0.72
Northeast Region	2,890	82.3	79.3	85.4	2,224	63.4	60.7	66.1	0.77
TN: Carter County	314	78.4	69.8	87.8	269	66.9	59.0	75.7	0.85
TN: Greene County	472	97.1	88.4	106.6	349	71.9	64.4	80.1	0.74
TN: Hancock County	42	80.9	58.1	111.2	33	65.5	44.9	93.9	0.81
TN: Hawkins County	397	102.9	92.8	113.9	284	73.8	65.3	83.2	0.72
TN: Johnson County	117	88.9	73.2	107.4	82	64.4	51.0	80.6	0.72
TN: Sullivan County	870	75.8	70.8	81.1	688	59.6	55.2	64.3	0.79
TN: Unicoi County	127	89.3	74.2	107.1	99	68.8	55.8	84.5	0.77
TN: Washington County	551	71.9	66.0	78.3	420	55.2	50.0	60.9	0.77
Northwest Region	1,378	80.8	76.6	85.3	1,150	67.8	63.8	71.9	0.84
TN: Benton County	135	107.1	89.3	127.9	109	87.4	71.3	106.5	0.82
TN: Carroll County	162	80.1	68.1	94.0	123	61.0	50.6	73.2	0.76
TN: Crockett County	60	64.5	49.0	83.6	55	58.2	43.7	76.3	0.90
TN: Dyer County	182	77.5	66.5	89.9	152	65.4	55.2	76.9	0.84
TN: Gibson County	260	80.5	70.9	91.1	201	62.0	53.7	71.4	0.77
TN: Henry County	224	88.4	77.0	101.2	193	77.1	66.4	89.2	0.87
TN: Lake County	43	96.7	69.7	131.4	40	88.7	63.0	121.9	0.92
TN: Obion County	159	73.8	62.6	86.7	149	70.0	59.1	82.6	0.95
TN: Weakley County	153	72.4	61.2	85.2	128	60.7	50.5	72.6	0.84

APPENDIX IV. LUNG CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013, CONTINUED

South Central Region	1,909	79.7	76.1	83.4	1,506	63.5	60.3	66.8	0.80
TN: Bedford County	177	69.4	59.4	80.6	139	56.1	47.0	66.4	0.81
TN: Coffee County	284	84.4	74.8	95.0	211	62.2	54.1	71.4	0.74
TN: Giles County	167	82.6	70.3	96.5	116	58.5	48.2	70.5	0.71
TN: Hickman County	136	91.5	76.5	108.7	106	72.3	59.0	87.9	0.79
TN: Lawrence County	215	78.2	68.0	89.6	185	68.6	59.0	79.5	0.88
TN: Lewis County	96	116.1	93.6	143.0	66	81.6	62.7	104.9	0.70
TN: Lincoln County	149	64.3	54.3	75.8	129	56.3	47.0	67.2	0.88
TN: Marshall County	166	91.6	77.8	107.1	132	71.9	59.9	85.8	0.78
TN: Maury County	343	73.5	65.8	81.9	282	60.8	53.8	68.5	0.83
TN: Moore County	30	63.6	42.6	93.0	17	35.3	20.4	59.1	0.56
TN: Perry County	56	91.8	69.0	120.9	46	77.3	56.3	104.8	0.84
TN: Wayne County	90	80.0	64.1	98.9	77	69.3	54.5	87.2	0.87
Southeast Region	3,296	78.0	75.3	80.7	2,422	57.9	55.6	60.3	0.74
TN: Bledsoe County	73	85.7	66.6	109.0	49	55.8	40.8	75.1	0.65
TN: Bradley County	486	81.1	74.0	88.8	335	56.5	50.5	63.0	0.70
TN: Franklin County	204	70.6	61.1	81.2	153	54.0	45.7	63.5	0.76
TN: Grundy County	94	96.9	78.0	119.7	77	81.0	63.6	102.1	0.84
TN: Hamilton County	1,431	68.4	64.9	72.2	1,020	49.0	46.0	52.2	0.72
TN: McMinn County	296	81.7	72.5	91.8	238	67.1	58.8	76.5	0.82
TN: Marion County	201	103.7	89.5	119.7	135	69.4	57.9	82.7	0.67
TN: Meigs County	75	83.8	65.3	106.7	61	74.0	56.1	96.6	0.88
TN: Polk County	140	117.0	98.1	139.1	120	101.3	83.6	122.0	0.87
TN: Rhea County	204	99.4	86.0	114.5	153	76.0	64.2	89.5	0.76
TN: Sequatchie County	92	96.9	77.6	120.0	81	86.6	68.3	108.7	0.89
Southwest Region	4,836	72.4	70.3	74.5	3,670	55.8	54.0	57.7	0.77
TN: Chester County	80	77.5	61.2	97.0	48	48.5	35.6	64.7	0.63
TN: Decatur County	81	87.4	69.0	110.0	69	75.1	58.0	96.4	0.86
TN: Fayette County	152	58.3	49.1	68.8	120	48.0	39.6	57.9	0.82
TN: Hardeman County	156	94.1	79.7	110.5	107	64.3	52.5	78.1	0.68
TN: Hardin County	168	86.3	73.5	101.0	121	63.1	52.2	76.0	0.73
TN: Haywood County	89	80.4	64.3	99.5	64	57.3	43.9	73.7	0.71
TN: Henderson County	159	93.4	79.2	109.4	114	66.5	54.7	80.2	0.71
TN: Lauderdale County	140	92.6	77.7	109.7	114	77.9	64.0	93.9	0.84
TN: McNairy County	164	89.1	75.8	104.3	142	77.8	65.4	92.2	0.87
TN: Madison County	393	71.0	64.1	78.5	282	51.4	45.5	57.9	0.72
TN: Shelby County	2,952	67.7	65.2	70.2	2,266	52.9	50.7	55.2	0.78
TN: Tipton County	302	94.8	84.1	106.4	223	74.4	64.7	85.1	0.78
Upper-Cumberland Region	1,968	83.1	79.4	87.0	1,554	65.8	62.5	69.2	0.79
TN: Cannon County	56	60.8	45.8	79.7	52	58.8	43.8	77.8	0.97
TN: Clay County	44	74.9	53.7	102.8	40	65.2	46.1	90.7	0.87
TN: Cumberland County	402	79.8	71.7	88.7	322	62.2	55.3	69.9	0.78
TN: DeKalb County	111	92.3	75.6	111.8	85	71.3	56.7	88.7	0.77
TN: Fentress County	120	92.7	76.4	112.0	104	82.0	66.6	100.3	0.88
TN: Jackson County	88	103.1	82.0	128.7	67	78.8	60.5	101.6	0.76
TN: Macon County	137	100.9	84.5	119.9	104	77.5	63.1	94.3	0.77
TN: Overton County	158	98.3	83.3	115.5	130	84.2	70.1	100.7	0.86
TN: Pickett County	40	94.6	66.1	133.7	27	60.0	39.0	91.6	0.63
TN: Putnam County	312	71.7	63.8	80.2	234	54.8	48.0	62.5	0.76
TN: Smith County	105	92.7	75.4	113.0	86	78.6	62.4	97.7	0.85
TN: Van Buren County	22	55.8	34.2	87.8	20	49.3	29.4	79.4	0.88
TN: Warren County	210	84.6	73.4	97.2	163	64.4	54.8	75.3	0.76
TN: White County	163	89.7	76.3	105.1	120	67.1	55.4	80.6	0.75

*Total counts are from 2009 to 2013.

**Age-adjusted annual rate per 100,000.

^Statistic not displayed due to fewer than 10 cases.

†Mortality Incidence ratio. See Technical Notes for details.

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

[Data Source](#)

APPENDIX V. PROSTATE CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013

Resident County	Incidence				Mortality				M:I Ratio †
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Tennessee	22,154	126.6	124.9	128.3	2,841	21.4	20.6	22.2	0.17
East Region	4,642	127.7	123.9	131.5	466	16.7	15.1	18.3	0.13
Anderson	354	144.0	129.1	160.3	31	13.6	9.2	19.6	0.09
Blount	490	122.4	111.5	134.1	35	10.4	7.1	14.6	0.08
Campbell	157	113.6	95.9	134.0	24	22.8	14.2	34.8	0.20
Claiborne	134	124.5	103.6	148.9	13	16.3	8.4	28.4	0.13
Cocke	114	93.2	76.1	113.3	17	18.9	10.5	31.3	0.20
Grainger	98	124.1	99.6	153.5	^	^	^	^	^
Hamblen	188	102.9	88.4	119.2	35	24.1	16.6	33.8	0.23
Jefferson	177	104.0	88.6	121.4	24	18.4	11.3	28.2	0.18
Knox	1,634	143.2	136.2	150.5	159	18.0	15.3	21.1	0.13
Loudon	269	128.5	113.0	145.9	26	16.1	10.3	24.3	0.13
Monroe	160	107.7	90.8	127.0	16	15.2	8.5	25.1	0.14
Morgan	77	111.6	87.5	140.7	^	^	^	^	^
Roane	240	117.7	102.9	134.3	19	11.1	6.6	17.8	0.09
Scott	89	140.5	112.0	174.5	^	^	^	^	^
Sevier	382	131.8	118.4	146.4	41	19.3	13.6	26.5	0.15
Union	79	130.4	101.6	165.4	^	^	^	^	^
Mid-Cumberland Region	5,193	131.3	127.6	135.1	582	20.0	18.3	21.7	0.15
Cheatham	123	124.4	101.8	150.5	11	14.0	6.7	25.3	0.11
Davidson	1,819	136.0	129.6	142.7	244	22.8	19.9	25.9	0.17
Dickson	194	146.6	125.9	169.8	26	26.7	17.1	39.4	0.18
Houston	34	120.4	82.6	171.5	^	^	^	^	^
Humphreys	86	139.9	111.0	174.8	^	^	^	^	^
Montgomery	385	126.4	113.5	140.3	48	20.9	15.1	28.0	0.17
Robertson	222	128.1	111.1	147.1	17	14.2	8.1	22.9	0.11
Rutherford	653	125.9	115.8	136.5	81	23.6	18.5	29.5	0.19
Stewart	48	103.5	75.6	139.6	^	^	^	^	^
Sumner	587	132.5	121.6	144.2	49	14.9	10.8	19.9	0.11
Trousdale	28	117.0	76.4	173.1	^	^	^	^	^
Williamson	639	138.1	126.9	150.0	46	15.1	10.9	20.3	0.11
Wilson	375	112.7	101.1	125.3	36	16.2	11.0	22.8	0.14
Northeast Region	1,718	100.6	95.8	105.6	265	20.2	17.8	22.9	0.20
Carter	151	79.0	66.6	93.2	33	22.5	15.4	31.8	0.28
Greene	235	99.6	86.8	113.9	56	31.2	23.2	41.2	0.31
Hancock	24	107.0	66.7	164.7	^	^	^	^	^
Hawkins	195	105.0	90.2	121.8	28	21.5	14.1	31.4	0.20
Johnson	46	64.7	46.9	88.2	^	^	^	^	^
Sullivan	576	104.7	96.2	113.8	80	18.3	14.4	22.9	0.17
Unicoi	58	85.5	64.5	112.2	^	^	^	^	^
Washington	433	113.8	103.1	125.4	51	17.5	12.9	23.1	0.15
Northwest Region	972	121.7	114.0	129.8	161	24.4	20.7	28.6	0.20
Benton	95	154.9	124.1	192.1	^	^	^	^	^
Carroll	142	152.5	128.0	180.7	18	23.7	13.9	37.7	0.16
Crockett	47	109.2	79.6	147.0	^	^	^	^	^
Dyer County	99	91.0	73.4	111.8	18	20.0	11.6	32.1	0.22
Gibson	161	109.6	93.2	128.3	39	29.7	21.1	40.8	0.27
Henry	177	150.3	128.3	175.4	25	26.7	17.0	40.2	0.18
Lake	23	102.2	63.5	156.6	^	^	^	^	^
Obion	105	101.8	82.8	124.3	17	21.1	12.0	34.5	0.21
Weakley	123	119.9	99.3	143.9	25	29.0	18.5	43.2	0.24

APPENDIX V. PROSTATE CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013, CONTINUED

South Central Region	1,212	107.2	101.0	113.6	157	18.2	15.4	21.3	0.17
Bedford	132	106.8	88.8	127.5	13	16.2	8.5	27.4	0.15
Coffee	146	93.7	78.8	110.6	27	22.1	14.4	32.3	0.24
Giles	91	92.9	74.2	115.3	15	17.4	9.5	29.5	0.19
Hickman	82	119.2	93.9	149.3	11	21.1	10.0	38.4	0.18
Lawrence	128	104.2	86.5	124.6	16	15.2	8.6	25.0	0.15
Lewis	45	115.6	83.5	157.1	^	^	^	^	^
Lincoln	101	94.4	76.4	115.7	16	21.6	12.1	35.4	0.23
Marshall	99	117.8	94.7	144.9	^	^	^	^	^
Maury	274	122.2	107.6	138.2	33	20.1	13.6	28.4	0.16
Moore	16	65.8	37.3	112.3	^	^	^	^	^
Perry County	39	132.2	92.6	185.5	^	^	^	^	^
Wayne	59	110.1	83.4	143.1	^	^	^	^	^
Southeast Region	2,464	123.6	118.6	128.7	349	22.9	20.5	25.5	0.19
Bledsoe	53	126.2	92.8	168.2	^	^	^	^	^
Bradley	310	113.1	100.4	127.0	48	23.8	17.4	31.8	0.21
Franklin	139	102.0	85.4	121.1	32	31.2	21.1	44.5	0.31
Grundy	38	76.5	53.7	107.2	^	^	^	^	^
Hamilton	1,380	142.0	134.4	149.9	175	22.7	19.4	26.4	0.16
McMinn	193	114.2	98.2	132.4	28	21.4	14.0	31.4	0.19
Marion	101	105.5	85.0	130.0	22	33.8	20.6	52.0	0.32
Meigs	42	100.3	70.8	139.5	^	^	^	^	^
Polk	68	110.6	85.0	142.5	11	21.3	10.0	40.2	0.19
Rhea	102	98.8	80.0	121.1	11	12.6	6.0	23.3	0.13
Sequatchie	38	80.1	55.4	112.9	^	^	^	^	^
Southwest Region	4,633	147.9	143.5	152.4	668	28.7	26.5	31.0	0.19
Chester	41	88.6	63.2	121.3	10	26.1	12.3	48.2	0.29
Decatur	40	91.4	64.7	127.3	10	27.0	12.7	51.9	0.30
Fayette	194	151.9	130.3	176.4	20	23.0	13.6	36.0	0.15
Hardeman	104	120.6	97.9	147.2	14	23.0	12.3	39.0	0.19
Hardin	83	92.4	72.9	116.0	16	21.3	11.7	35.9	0.23
Haywood	56	110.2	82.1	145.2	13	34.2	17.7	58.9	0.31
Henderson	73	85.7	66.6	109.0	10	14.7	6.7	27.7	0.17
Lauderdale	94	146.4	116.9	180.8	16	34.0	19.1	55.0	0.23
McNairy	92	99.0	79.4	122.7	11	16.5	7.8	30.4	0.17
Madison	358	140.9	126.3	156.8	45	21.6	15.7	29.0	0.15
Shelby	3,292	162.2	156.4	168.1	484	32.5	29.6	35.6	0.20
Tipton	206	134.5	116.0	155.1	19	17.1	10.0	27.1	0.13
Upper-Cumberland Region	1,305	113.9	107.6	120.4	193	21.6	18.6	25.0	0.19
Cannon	59	127.8	96.9	166.6	^	^	^	^	^
Clay	23	75.9	47.2	118.6	^	^	^	^	^
Cumberland	377	141.2	126.8	157.2	32	13.7	9.3	20.1	0.10
DeKalb	59	104.1	78.2	136.3	12	31.0	15.8	53.9	0.30
Fentress	63	101.2	76.7	131.8	11	24.8	11.1	46.9	0.25
Jackson	37	84.7	58.6	120.4	^	^	^	^	^
Macon	69	115.3	88.5	147.8	11	24.3	11.7	43.7	0.21
Overton	79	100.7	79.1	127.0	11	15.5	7.6	29.0	0.15
Pickett	19	79.3	46.7	133.4	0	0.0	0.0	33.0	0.00
Putnam	199	98.0	84.6	113.0	45	27.3	19.8	36.6	0.28
Smith	72	130.1	100.6	165.9	^	^	^	^	^
Van Buren	14	76.5	39.2	137.0	^	^	^	^	^
Warren County	127	110.1	91.3	131.8	22	24.1	14.8	36.8	0.22
White	108	122.1	99.8	148.5	17	25.4	14.5	41.2	0.21

*Total counts are from 2009 to 2013.

**Age-adjusted annual rate per 100,000.

^Statistic not displayed due to fewer than 10 cases.

†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 with missing region information.

[Data Source](#)

APPENDIX VI. FEMALE BREAST CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013

Resident County	Incidence				Mortality				M:I Ratio †
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Tennessee	23,670	121.9	120.4	123.5	4,443	22.3	21.6	23.0	0.18
East Region	4,722	121.9	118.4	125.5	847	21.2	19.8	22.7	0.17
Anderson	367	135.8	121.8	151.1	59	19.3	14.5	25.4	0.14
Blount	510	121.5	110.8	132.9	72	16.0	12.5	20.4	0.13
Campbell	167	119.1	101.1	139.7	26	19.9	12.7	29.9	0.17
Claiborne	126	116.7	96.7	140.0	25	23.4	14.9	35.5	0.20
Cocke	113	92.6	75.7	112.6	34	28.5	19.4	40.7	0.31
Grainger	80	101.9	80.3	128.3	16	22.6	12.7	37.8	0.22
Hamblen	264	123.2	108.5	139.6	47	20.3	14.9	27.4	0.16
Jefferson	196	117.0	100.6	135.4	37	21.4	14.9	29.9	0.18
Knox	1,671	127.7	121.6	134.1	292	21.7	19.2	24.4	0.17
Loudon	257	133.8	116.8	152.9	35	18.1	12.3	26.2	0.14
Monroe	167	107.4	91.1	126.0	39	26.7	18.8	37.1	0.25
Morgan	75	116.1	90.7	146.9	14	22.8	12.2	39.3	0.20
Roane	236	115.4	100.5	132.0	51	24.0	17.7	32.2	0.21
Scott	68	105.4	81.4	134.5	20	30.1	18.2	47.1	0.29
Sevier	356	117.5	105.3	130.9	65	21.0	16.1	27.0	0.18
Union	69	116.6	90.1	149.0	15	24.0	13.3	40.7	0.21
Mid-Cumberland Region	5,941	127.1	123.8	130.4	977	21.1	19.8	22.5	0.17
Cheatham	148	130.3	109.6	153.9	24	23.5	14.8	35.4	0.18
Davidson	2,197	130.8	125.3	136.5	385	22.3	20.1	24.7	0.17
Dickson	164	109.2	92.9	127.7	29	18.8	12.5	27.3	0.17
Houston	29	104.7	68.7	154.0	^	^	^	^	^
Humphreys	80	136.6	107.1	172.2	16	25.0	14.1	41.8	0.18
Montgomery	420	110.5	100.0	121.8	82	23.1	18.3	28.7	0.21
Robertson	241	125.7	110.1	143.0	44	22.6	16.3	30.6	0.18
Rutherford	737	118.4	109.8	127.4	133	22.0	18.3	26.1	0.19
Stewart	50	123.1	90.2	164.8	10	23.8	11.1	45.5	0.19
Sumner	656	133.0	122.8	143.8	88	17.9	14.3	22.1	0.13
Trousdale	18	78.7	45.7	127.0	^	^	^	^	^
Williamson	762	145.3	134.9	156.4	84	17.4	13.8	21.7	0.12
Wilson	439	125.9	114.1	138.5	67	20.1	15.5	25.6	0.16
Northeast Region	2,069	118.0	112.8	123.4	377	20.6	18.5	22.9	0.17
Carter	213	111.2	96.2	128.0	45	21.1	15.3	28.7	0.19
Greene	280	114.7	101.2	129.8	44	17.5	12.6	23.9	0.15
Hancock	27	105.9	68.5	159.1	^	^	^	^	^
Hawkins	207	107.8	93.2	124.3	54	26.7	19.9	35.3	0.25
Johnson	67	107.1	81.8	138.8	14	25.9	13.8	45.3	0.24
Sullivan	713	121.2	112.2	130.9	124	20.1	16.6	24.2	0.17
Unicoi	71	107.5	82.9	137.9	13	16.4	8.7	30.0	0.15
Washington	491	127.4	116.1	139.6	78	19.9	15.6	25.0	0.16
Northwest Region	953	110.4	103.3	118.0	205	22.8	19.7	26.3	0.21
Benton	63	103.3	78.2	134.9	18	30.8	17.5	51.3	0.30
Carrroll	100	95.0	76.5	117.0	23	22.1	13.5	34.5	0.23
Crockett	60	128.9	97.5	167.5	15	30.6	16.7	52.0	0.24
Dyer County	128	105.2	87.4	125.8	19	14.4	8.6	22.9	0.14
Gibson	198	121.0	104.2	139.9	45	25.3	18.3	34.3	0.21
Henry	128	102.3	84.6	123.0	27	20.8	13.4	31.5	0.20
Lake	19	102.3	60.2	164.6	^	^	^	^	^
Obion	131	116.1	96.6	138.8	28	24.5	16.0	36.3	0.21
Weakley	126	112.8	93.4	135.2	25	22.6	14.2	34.4	0.20

APPENDIX VI. FEMALE BREAST CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013

South Central Region	1,341	110.5	104.6	116.8	247	19.4	17.0	22.1	0.18
Bedford	155	115.5	97.7	135.6	16	12.3	7.0	20.2	0.11
Coffee	186	111.1	95.3	128.9	32	17.5	11.9	25.0	0.16
Giles	101	96.8	78.2	118.9	21	18.4	11.3	29.0	0.19
Hickman	89	124.5	99.4	154.2	22	27.8	17.2	43.2	0.22
Lawrence	136	100.7	84.0	119.8	23	15.6	9.7	24.1	0.15
Lewis	55	135.8	101.1	179.6	^	^	^	^	^
Lincoln	122	105.9	87.3	127.7	26	21.9	14.1	32.9	0.21
Marshall	111	121.7	99.6	147.3	21	21.8	13.3	33.8	0.18
Maury	280	110.6	97.7	124.8	63	24.0	18.3	30.9	0.22
Moore	21	91.6	55.3	145.8	^	^	^	^	^
Perry County	33	126.0	84.8	181.5	^	^	^	^	^
Wayne	52	96.8	71.6	129.2	11	24.1	11.7	44.8	0.25
Southeast Region	2,515	115.9	111.3	120.7	495	22.0	20.1	24.1	0.19
Bledsoe	32	77.1	52.1	111.4	^	^	^	^	^
Bradley	344	110.9	99.3	123.6	76	24.4	19.2	30.7	0.22
Franklin	153	110.1	92.7	130.2	31	20.6	13.7	30.0	0.19
Grundy	53	109.0	80.4	145.4	18	33.4	19.7	54.9	0.31
Hamilton	1,339	121.3	114.7	128.2	252	22.2	19.4	25.2	0.18
McMinn	194	108.2	93.1	125.2	38	20.6	14.4	28.7	0.19
Marion	131	138.5	114.8	166.0	25	24.4	15.6	37.0	0.18
Meigs	36	95.1	65.6	134.3	10	28.3	13.2	54.1	0.30
Polk	62	111.9	85.0	145.5	17	27.5	15.9	45.7	0.25
Rhea	122	112.3	92.7	135.2	16	14.8	8.3	24.6	0.13
Sequatchie	49	100.6	73.7	134.9	^	^	^	^	^
Southwest Region	4,750	126.6	123.0	130.4	1,033	26.9	25.3	28.7	0.21
Chester	43	82.3	59.0	112.1	^	^	^	^	^
Decatur	42	99.2	69.6	138.4	10	20.3	8.9	41.8	0.20
Fayette	188	145.8	125.0	169.4	35	27.3	18.7	38.7	0.19
Hardeman	100	128.4	103.6	157.8	25	30.6	19.6	46.1	0.24
Hardin	110	119.2	96.9	145.5	17	16.5	9.5	27.5	0.14
Haywood	78	132.7	104.1	167.1	18	27.8	16.3	45.1	0.21
Henderson	101	109.5	88.8	133.9	25	27.1	17.4	40.7	0.25
Lauderdale	91	118.1	94.5	145.9	17	21.3	12.3	34.7	0.18
McNairy	85	92.7	73.4	116.0	24	26.8	16.9	41.0	0.29
Madison	365	122.1	109.7	135.7	66	21.2	16.3	27.2	0.17
Shelby	3,355	130.5	126.0	135.1	748	28.7	26.7	30.9	0.22
Tipton	192	114.6	98.7	132.3	39	23.8	16.8	32.7	0.21
Upper-Cumberland Region	1,363	117.8	111.3	124.5	262	22.0	19.3	24.9	0.19
Cannon	47	100.8	73.4	135.9	^	^	^	^	^
Clay	37	131.6	89.6	188.0	^	^	^	^	^
Cumberland	276	119.7	104.5	136.8	50	20.6	14.8	28.2	0.17
DeKalb	74	111.4	86.9	141.3	20	30.5	18.5	48.2	0.27
Fentress	89	143.4	114.0	178.7	14	22.7	12.1	39.6	0.16
Jackson	48	113.6	82.4	154.1	^	^	^	^	^
Macon	85	128.3	101.8	159.7	14	22.2	11.9	37.8	0.17
Overton	74	97.0	75.6	123.1	18	23.3	13.5	38.0	0.24
Pickett	18	80.8	45.5	138.8	^	^	^	^	^
Putnam	269	120.6	106.3	136.5	38	16.3	11.5	22.7	0.14
Smith	66	113.9	87.5	146.1	17	30.9	17.6	50.3	0.27
Van Buren	24	115.2	71.5	179.4	^	^	^	^	^
Warren County	135	109.4	91.2	130.2	36	25.8	18.0	36.2	0.24
White	121	137.0	112.7	165.4	21	23.1	14.0	36.3	0.17

*Total counts are from 2009 to 2013.

**Age-adjusted annual rate per 100,000.

^Statistic not displayed due to fewer than 10 cases.

†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 with missing region information.

[Data Source](#)

APPENDIX VII. COLORECTAL CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013

Resident County	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	14,882	41.5	40.8	42.2	6,025	17.0	16.6	17.4	0.41
East Region	2,808	38.9	37.5	40.4	1,124	15.6	14.7	16.6	0.40
Anderson	206	40.9	35.3	47.1	88	17.4	13.8	21.6	0.43
Blount	304	39.4	35.0	44.2	130	16.7	13.9	19.9	0.42
Campbell	105	39.7	32.3	48.4	53	20.1	15.0	26.5	0.51
Claiborne	90	45.0	35.9	55.7	33	17.7	12.1	25.1	0.39
Cocke	100	41.7	33.7	51.2	41	16.5	11.7	22.8	0.40
Grainger	71	48.5	37.5	61.9	26	18.9	12.2	28.1	0.39
Hamblen	167	43.8	37.3	51.2	65	16.8	12.9	21.5	0.38
Jefferson	122	39.1	32.2	47.0	42	12.8	9.1	17.6	0.33
Knox	904	37.5	35.0	40.0	340	14.2	12.7	15.8	0.38
Loudon	109	28.6	23.2	35.0	41	10.0	7.1	13.9	0.35
Monroe	95	32.5	26.1	40.1	50	18.7	13.7	24.9	0.58
Morgan	46	36.5	26.5	49.1	23	18.2	11.4	27.8	0.50
Roane	153	38.9	32.8	45.9	57	14.5	10.9	19.0	0.37
Scott	63	50.9	38.8	65.6	27	23.7	15.5	34.6	0.47
Sevier	215	38.9	33.8	44.7	84	14.9	11.8	18.6	0.38
Union	58	53.8	40.5	70.2	24	23.6	15.0	35.5	0.44
Mid-Cumberland Region	3,330	40.3	38.9	41.7	1,288	16.1	15.2	17.0	0.40
Cheatham	105	54.3	44.1	66.3	40	22.4	15.7	30.8	0.41
Davidson	1,194	40.5	38.2	42.9	477	16.3	14.9	17.9	0.40
Dickson	152	55.1	46.5	64.7	58	21.4	16.2	27.8	0.39
Houston	28	52.2	34.2	76.9	17	32.4	18.4	53.5	0.62
Humphreys	54	42.6	31.9	56.3	23	18.6	11.7	28.6	0.44
Montgomery	239	36.4	31.8	41.5	121	19.6	16.2	23.6	0.54
Robertson	162	47.1	40.0	55.2	56	16.9	12.7	22.0	0.36
Rutherford	456	41.6	37.7	45.7	165	15.9	13.5	18.6	0.38
Stewart	42	50.0	35.6	68.6	22	26.0	16.0	40.3	0.52
Sumner	326	36.1	32.2	40.3	105	11.9	9.7	14.5	0.33
Trousdale	28	65.0	42.8	95.0	13	33.3	17.6	57.2	0.51
Williamson	296	32.2	28.5	36.3	95	11.2	8.9	13.7	0.35
Wilson	248	38.8	34.0	44.2	96	15.4	12.4	19.0	0.40
Northeast Region	1,291	38.3	36.2	40.6	573	17.1	15.7	18.6	0.45
Carter	132	35.2	29.3	42.0	64	17.4	13.3	22.4	0.49
Greene	182	39.6	33.9	46.1	71	15.3	11.9	19.5	0.39
Hancock	15	31.0	17.2	52.9	10	24.5	11.3	46.9	0.79
Hawkins	172	45.8	39.1	53.5	67	18.4	14.2	23.6	0.40
Johnson	54	43.0	32.2	56.9	27	21.9	14.3	32.6	0.51
Sullivan	411	37.7	34.1	41.7	184	16.6	14.3	19.3	0.44
Unicoi	49	36.1	26.5	48.7	22	14.2	8.9	22.4	0.39
Washington	276	36.9	32.6	41.6	128	17.0	14.1	20.3	0.46
Northwest Region	736	44.4	41.1	47.8	328	19.2	17.1	21.4	0.43
Benton	64	50.2	38.3	65.1	27	21.3	13.7	32.1	0.42
Carroll	75	37.6	29.4	47.7	46	22.6	16.5	30.5	0.60
Crockett	39	41.8	29.5	57.9	13	13.3	7.0	23.4	0.32
Dyer County	91	40.1	32.2	49.5	35	15.7	10.9	22.0	0.39
Gibson	157	49.5	41.9	58.1	66	20.4	15.7	26.1	0.41
Henry	105	45.6	37.0	55.7	48	20.0	14.7	26.9	0.44
Lake	13	28.7	15.2	50.3	^	^	^	^	^
Obion	100	47.9	38.8	58.6	45	21.1	15.3	28.5	0.44
Weakley	92	43.9	35.2	54.1	40	17.8	12.7	24.5	0.41

APPENDIX VII. COLORECTAL CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013, CONTINUED

South Central Region	1,029	44.8	42.1	47.7	401	17.4	15.7	19.2	0.39
Bedford	107	43.6	35.6	52.9	41	17.5	12.5	23.8	0.40
Coffee	152	46.7	39.5	54.8	58	17.7	13.4	23.0	0.38
Giles	109	58.0	47.4	70.4	42	21.8	15.6	29.8	0.38
Hickman	62	44.1	33.7	57.0	19	12.8	7.6	20.3	0.29
Lawrence	92	36.2	29.0	44.6	37	13.8	9.7	19.2	0.38
Lewis	26	34.9	22.3	52.2	12	15.4	7.9	27.7	0.44
Lincoln	116	53.2	43.8	64.3	52	23.7	17.6	31.3	0.45
Marshall	73	42.4	33.0	53.7	33	19.5	13.3	27.7	0.46
Maury	192	41.1	35.4	47.5	65	14.3	10.9	18.3	0.35
Moore	22	47.6	29.6	74.2	11	26.0	12.9	48.5	0.55
Perry County	24	43.7	27.2	67.3	12	21.6	10.9	39.5	0.49
Wayne	54	49.7	37.3	65.4	19	17.2	10.3	27.5	0.35
Southeast Region	1,658	40.8	38.8	42.8	627	15.6	14.3	16.8	0.38
Bledsoe	34	41.2	28.2	58.6	11	14.6	7.2	26.9	0.35
Bradley	243	41.7	36.5	47.4	95	16.5	13.3	20.3	0.40
Franklin	118	42.8	35.2	51.6	52	19.2	14.2	25.4	0.45
Grundy	48	56.7	41.4	76.2	14	16.3	8.7	28.4	0.29
Hamilton	811	39.6	36.9	42.5	293	14.2	12.6	16.0	0.36
McMinn	131	38.6	32.1	46.0	46	13.2	9.6	17.9	0.34
Marion	89	49.8	39.7	61.9	28	17.3	11.4	25.4	0.35
Meigs	33	45.7	31.1	65.4	15	22.5	12.3	38.2	0.49
Polk	37	35.1	24.4	49.2	20	18.1	10.9	28.6	0.52
Rhea	77	40.2	31.6	50.6	38	20.2	14.1	28.0	0.50
Sequatchie	37	41.7	29.0	58.4	15	17.9	9.9	30.2	0.43
Southwest Region	3,020	45.0	43.4	46.6	1,305	20.0	18.9	21.1	0.44
Chester	39	39.7	27.9	54.8	18	17.1	10.1	27.4	0.43
Decatur	37	40.4	28.2	56.9	16	19.1	10.4	32.8	0.47
Fayette	120	52.1	42.9	62.8	50	22.0	16.2	29.3	0.42
Hardeman	76	46.9	36.8	59.0	30	18.2	12.1	26.3	0.39
Hardin	87	46.3	36.7	57.8	39	21.2	15.0	29.5	0.46
Haywood	55	49.8	37.2	65.4	23	19.9	12.5	30.3	0.40
Henderson	78	46.0	36.2	57.8	27	15.4	10.1	22.8	0.33
Lauderdale	80	54.1	42.7	67.7	33	23.7	16.2	33.5	0.44
McNairy	78	44.2	34.7	55.7	29	17.7	11.7	25.8	0.40
Madison	223	40.2	35.0	46.0	84	15.5	12.3	19.3	0.39
Shelby	1,999	44.7	42.7	46.8	898	20.7	19.4	22.2	0.46
Tipton	148	47.9	40.3	56.5	58	20.4	15.4	26.6	0.43
Upper-Cumberland Region	1,006	45.3	42.5	48.3	379	17.0	15.3	18.9	0.38
Cannon	40	44.2	31.4	61.0	19	21.5	12.8	34.5	0.49
Clay	25	41.3	26.4	63.0	15	23.3	12.9	40.6	0.56
Cumberland	187	39.1	33.2	45.8	62	12.4	9.4	16.3	0.32
DeKalb	58	51.1	38.6	66.6	23	20.8	13.1	31.5	0.41
Fentress	67	57.4	44.1	73.9	23	18.7	11.7	28.8	0.33
Jackson	35	44.0	30.0	62.9	18	23.0	13.2	38.1	0.52
Macon	53	41.3	30.7	54.4	30	25.1	16.8	36.1	0.61
Overton	75	53.4	41.7	67.6	21	13.5	8.3	21.3	0.25
Pickett	23	60.7	37.9	94.5	^	^	^	^	^
Putnam	179	42.5	36.4	49.4	61	14.6	11.2	18.9	0.34
Smith	63	58.9	44.9	76.0	16	16.4	9.3	26.8	0.28
Van Buren	23	58.2	35.9	91.0	^	^	^	^	^
Warren County	103	43.3	35.2	52.7	43	18.2	13.1	24.7	0.42
White	75	44.2	34.5	55.9	35	19.8	13.7	27.9	0.45

*Total counts are from 2009 to 2013.

**Age-adjusted annual rate per 100,000.

^Statistic not displayed due to fewer than 10 cases.

†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 recrods with missing region information.

Total counts include cases with unknown demographic information and may differ from previous figures.

[Data Source](#)

APPENDIX VIII. MELANOMA OF THE SKIN INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013

Resident County	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	7,409	21.1	20.6	21.6	1,102	3.1	2.9	3.3	0.15
East Region	1,969	28.2	27.0	29.5	232	3.2	2.8	3.7	0.11
Anderson	126	26.7	22.1	32.1	15	2.8	1.6	4.9	0.10
Blount	251	32.1	28.1	36.5	33	4.2	2.9	6.1	0.13
Campbell	48	20.1	14.7	27.0	^	^	^	^	^
Claiborne	57	29.1	21.8	38.2	^	^	^	^	^
Cocke	61	28.0	21.2	36.5	^	^	^	^	^
Grainger	44	32.3	23.2	44.1	^	^	^	^	^
Hamblen	130	35.5	29.5	42.3	12	3.3	1.7	5.9	0.09
Jefferson	94	29.4	23.5	36.3	^	^	^	^	^
Knox	640	27.3	25.2	29.6	83	3.5	2.8	4.3	0.13
Loudon	118	34.1	27.7	41.6	^	^	^	^	^
Monroe	63	22.1	16.8	28.7	^	^	^	^	^
Morgan	31	23.8	16.0	34.3	^	^	^	^	^
Roane	91	26.1	20.7	32.5	11	2.9	1.4	5.5	0.11
Scott	23	18.8	11.8	28.5	^	^	^	^	^
Sevier	168	30.6	26.0	35.9	15	2.6	1.4	4.4	0.08
Union	24	21.4	13.5	32.5	^	^	^	^	^
Mid-Cumberland Region	1,554	18.4	17.5	19.4	269	3.3	2.9	3.7	0.18
Cheatham	32	14.1	9.6	20.3	^	^	^	^	^
Davidson	459	15.1	13.7	16.6	91	3.1	2.5	3.8	0.21
Dickson	50	17.6	13.0	23.4	13	4.8	2.5	8.4	0.27
Houston	10	17.8	8.3	34.3	^	^	^	^	^
Humphreys	30	28.5	18.9	41.4	^	^	^	^	^
Montgomery	117	17.0	13.9	20.5	27	4.0	2.6	5.8	0.24
Robertson	73	21.3	16.6	26.9	11	3.5	1.7	6.2	0.16
Rutherford	165	14.0	11.9	16.4	38	3.4	2.4	4.8	0.24
Stewart	17	18.7	10.7	31.0	^	^	^	^	^
Sumner	230	26.8	23.4	30.6	25	3.0	1.9	4.5	0.11
Trousdale	^	^	^	^	^	^	^	^	^
Williamson	247	27.5	24.0	31.3	27	3.3	2.1	4.9	0.12
Wilson	117	19.0	15.6	22.9	21	3.4	2.1	5.2	0.18
Northeast Region	1,018	32.1	30.1	34.2	124	3.7	3.1	4.5	0.12
Carter	87	23.3	18.5	29.1	^	^	^	^	^
Greene	111	24.5	20.0	29.7	20	4.0	2.4	6.3	0.16
Hancock	11	30.9	14.6	57.1	^	^	^	^	^
Hawkins	142	40.7	34.1	48.4	21	6.2	3.8	9.7	0.15
Johnson	19	15.5	9.0	25.2	^	^	^	^	^
Sullivan	365	35.6	31.9	39.7	43	4.0	2.8	5.4	0.11
Unicoi	47	39.8	28.8	54.0	^	^	^	^	^
Washington	236	33.6	29.4	38.3	17	2.4	1.4	3.9	0.07
Northwest Region	229	15.0	13.1	17.1	50	3.2	2.3	4.2	0.21
Benton	18	20.0	11.4	32.5	^	^	^	^	^
Carroll	31	17.2	11.5	24.8	^	^	^	^	^
Crockett	15	15.9	8.9	26.7	^	^	^	^	^
Dyer County	27	12.6	8.3	18.5	^	^	^	^	^
Gibson	35	12.2	8.4	17.1	11	3.4	1.7	6.2	0.28
Henry	35	15.8	10.7	22.6	10	4.8	2.2	9.5	0.30
Lake	^	^	^	^	^	^	^	^	^
Obion	37	19.2	13.4	26.9	^	^	^	^	^
Weakley	29	14.9	9.8	21.9	^	^	^	^	^

APPENDIX VIII. MELANOMA OF THE SKIN CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013, CONTINUED

South Central Region	409	18.2	16.4	20.1	80	3.5	2.8	4.4	0.19
Bedford	41	16.2	11.6	22.2	12	5.1	2.6	8.9	0.31
Coffee	50	16.6	12.3	22.1	13	4.2	2.2	7.2	0.25
Giles	43	22.5	16.0	31.0	^	^	^	^	^
Hickman	24	15.6	9.9	23.7	^	^	^	^	^
Lawrence	47	18.8	13.7	25.2	11	4.0	2.0	7.4	0.21
Lewis	16	22.3	12.4	37.3	^	^	^	^	^
Lincoln	35	15.4	10.7	21.7	^	^	^	^	^
Marshall	36	21.2	14.7	29.6	^	^	^	^	^
Maury	82	18.6	14.7	23.2	15	3.3	1.8	5.5	0.18
Moore	^	^	^	^	^	^	^	^	^
Perry County	^	^	^	^	^	^	^	^	^
Wayne	23	20.7	13.0	31.8	^	^	^	^	^
Southeast Region	908	23.4	21.9	25.1	132	3.4	2.8	4.1	0.15
Bledsoe	18	24.0	13.9	39.0	^	^	^	^	^
Bradley	110	19.8	16.2	24.0	18	3.2	1.9	5.1	0.16
Franklin	49	19.1	14.0	25.7	^	^	^	^	^
Grundy	17	20.5	11.7	33.6	^	^	^	^	^
Hamilton	516	26.3	24.1	28.8	64	3.2	2.5	4.1	0.12
McMinn	71	22.3	17.3	28.4	11	3.7	1.8	6.7	0.17
Marion	39	22.8	16.0	31.6	^	^	^	^	^
Meigs	14	18.4	9.6	32.4	^	^	^	^	^
Polk	18	17.0	9.9	27.8	^	^	^	^	^
Rhea	37	19.7	13.7	27.6	^	^	^	^	^
Sequatchie	19	23.0	13.6	36.6	^	^	^	^	^
Southwest Region	820	12.3	11.5	13.2	139	2.1	1.8	2.5	0.17
Chester	^	^	^	^	^	^	^	^	^
Decatur	12	13.9	6.9	25.8	^	^	^	^	^
Fayette	39	16.3	11.4	22.8	^	^	^	^	^
Hardeman	16	10.0	5.6	16.6	^	^	^	^	^
Hardin	27	14.6	9.5	21.8	^	^	^	^	^
Haywood	13	11.4	6.0	20.0	^	^	^	^	^
Henderson	33	22.4	15.3	31.7	^	^	^	^	^
Lauderdale	24	17.1	10.9	25.6	^	^	^	^	^
McNairy	26	15.4	9.9	23.2	^	^	^	^	^
Madison	60	11.8	9.0	15.3	14	2.5	1.4	4.3	0.21
Shelby	524	11.6	10.6	12.6	80	1.8	1.5	2.3	0.16
Tipton	37	12.2	8.5	17.0	^	^	^	^	^
Upper-Cumberland Region	489	23.3	21.2	25.6	76	3.4	2.7	4.3	0.15
Cannon	22	23.5	14.6	36.5	^	^	^	^	^
Clay	10	17.9	8.5	34.8	^	^	^	^	^
Cumberland	135	30.2	24.8	36.5	17	3.2	1.8	5.6	0.11
DeKalb	^	^	^	^	^	^	^	^	^
Fentress	25	22.6	14.2	34.4	^	^	^	^	^
Jackson	11	17.5	8.5	32.2	^	^	^	^	^
Macon	28	21.9	14.4	32.1	^	^	^	^	^
Overton	35	27.7	19.1	39.0	^	^	^	^	^
Pickett	10	24.2	11.1	49.1	^	^	^	^	^
Putnam	86	22.2	17.6	27.5	10	2.4	1.1	4.5	0.11
Smith	21	21.4	13.1	32.9	^	^	^	^	^
Van Buren	11	29.0	14.3	54.6	0	0.0	0.0	14.6	0.00
Warren County	47	20.9	15.2	27.9	12	5.3	2.7	9.3	0.25
White	39	22.7	16.0	31.5	^	^	^	^	^

*Total counts are from 2009 to 2013.

**Age-adjusted annual rate per 100,000.

^Statistic not displayed due to fewer than 10 cases.

†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 with missing region information.

APPENDIX IX. PANCREATIC CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013

Resident County	Incidence				Mortality				M:I Ratio †
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	
Tennessee	4,302	11.9	11.5	12.2	3,951	11.0	10.6	11.3	0.92
East Region	905	12.1	11.3	13.0	823	11.1	10.4	11.9	0.92
Anderson	44	8.0	5.8	10.9	42	7.9	5.6	10.8	0.99
Blount	88	10.8	8.6	13.3	77	9.5	7.5	11.9	0.88
Campbell	22	7.9	4.9	12.2	18	6.9	4.1	11.2	0.87
Claiborne	20	10.5	6.3	16.5	25	12.8	8.2	19.2	1.22
Cocke	36	14.0	9.7	19.8	29	11.9	7.9	17.5	0.85
Grainger	19	14.7	8.7	23.5	13	9.8	5.1	17.2	0.67
Hamblen	49	12.3	9.0	16.4	42	10.6	7.6	14.5	0.86
Jefferson	42	11.8	8.4	16.2	33	9.9	6.7	14.1	0.84
Knox	317	12.9	11.5	14.4	301	12.3	10.9	13.8	0.95
Loudon	63	15.1	11.5	19.7	58	14.2	10.7	18.7	0.94
Monroe	52	17.2	12.7	23.0	40	13.8	9.7	19.1	0.80
Morgan	^	^	^	^	^	^	^	^	^
Roane	45	11.5	8.3	15.8	39	9.9	6.9	13.8	0.86
Scott	12	8.9	4.6	16.0	12	9.1	4.6	16.3	1.02
Sevier	69	11.9	9.2	15.3	71	12.2	9.5	15.5	1.03
Union	20	17.8	10.7	28.0	18	15.3	8.9	24.7	0.86
Mid-Cumberland Region	963	11.6	10.9	12.4	848	10.6	9.8	11.3	0.91
Cheatham	33	16.5	11.1	23.5	26	14.2	9.0	21.1	0.86
Davidson	400	13.5	12.1	14.9	346	11.9	10.7	13.3	0.88
Dickson	36	13.2	9.2	18.4	36	13.4	9.3	18.7	1.02
Houston	^	^	^	^	^	^	^	^	^
Humphreys	^	^	^	^	12	10.6	5.3	19.1	^
Montgomery	82	12.7	10.0	15.8	65	10.5	8.0	13.4	0.83
Robertson	41	11.8	8.4	16.1	34	9.4	6.4	13.3	0.80
Rutherford	116	10.8	8.8	13.0	105	10.2	8.2	12.4	0.94
Stewart	^	^	^	^	^	^	^	^	^
Sumner	75	8.4	6.5	10.5	71	8.2	6.4	10.4	0.98
Trousdale	^	^	^	^	^	^	^	^	^
Williamson	67	7.5	5.7	9.6	68	7.9	6.1	10.1	1.05
Wilson	87	13.7	10.9	17.1	65	10.7	8.2	13.7	0.78
Northeast Region	403	11.4	10.3	12.6	375	10.7	9.6	11.8	0.94
Carter	38	9.7	6.8	13.5	38	9.6	6.8	13.4	0.99
Greene	52	10.9	8.1	14.5	50	10.6	7.8	14.2	0.97
Hancock	^	^	^	^	13	27.7	14.4	49.4	^
Hawkins	46	12.1	8.8	16.4	36	9.4	6.6	13.3	0.78
Johnson	13	9.3	4.9	16.9	11	8.7	4.3	16.4	0.94
Sullivan	144	12.6	10.6	14.9	134	11.5	9.6	13.7	0.91
Unicoi	19	13.8	8.3	22.3	13	9.2	4.9	16.6	0.67
Washington	82	10.3	8.1	12.8	80	10.2	8.0	12.7	0.99
Northwest Region	184	11.0	9.5	12.8	192	11.6	10.0	13.4	1.05
Benton	20	16.1	9.7	25.8	17	13.8	7.8	23.1	0.86
Carroll	16	7.7	4.4	13.0	22	11.1	6.9	17.1	1.44
Crockett	^	^	^	^	^	^	^	^	^
Dyer County	24	10.7	6.8	16.1	22	10.1	6.3	15.5	0.94
Gibson	30	8.9	6.0	12.9	38	11.6	8.2	16.1	1.30
Henry	28	12.5	8.1	18.5	23	10.1	6.3	15.8	0.81
Lake	^	^	^	^	^	^	^	^	^
Obion	29	13.5	9.0	19.7	34	16.4	11.3	23.3	1.21
Weakley	22	10.8	6.7	16.5	21	10.1	6.2	15.7	0.94

APPENDIX IX. PANCREATIC CANCER INCIDENCE AND MORTALITY BY RESIDENT COUNTY, TENNESSEE, 2009-2013, CONTINUED

South Central Region	251	10.8	9.5	12.3	250	10.8	9.5	12.3	1.00
Bedford	32	13.6	9.2	19.3	29	11.9	7.9	17.3	0.88
Coffee	34	10.7	7.3	15.1	34	10.6	7.3	15.0	0.99
Giles	20	11.4	6.8	18.1	19	9.7	5.8	15.5	0.85
Hickman	24	16.3	10.3	24.6	14	9.0	4.8	15.5	0.55
Lawrence	20	7.6	4.6	11.9	23	8.9	5.6	13.5	1.17
Lewis	^	^	^	^	^	^	^	^	^
Lincoln	23	10.3	6.5	15.8	22	9.9	6.2	15.3	0.96
Marshall	25	14.2	9.1	21.3	24	13.3	8.4	20.1	0.94
Maury	49	10.2	7.5	13.6	57	12.2	9.2	15.9	1.20
Moore	^	^	^	^	^	^	^	^	^
Perry County	^	^	^	^	^	^	^	^	^
Wayne	10	8.8	4.2	16.9	15	14.0	7.8	23.6	1.59
Southeast Region	438	10.6	9.6	11.7	408	9.8	8.8	10.8	0.92
Bledsoe	^	^	^	^	^	^	^	^	^
Bradley	52	8.9	6.6	11.8	48	8.3	6.1	11.1	0.93
Franklin	26	9.5	6.2	14.3	22	7.2	4.5	11.3	0.76
Grundy	^	^	^	^	^	^	^	^	^
Hamilton	226	10.9	9.5	12.4	208	9.9	8.6	11.4	0.91
McMinn	45	13.1	9.5	17.7	43	11.8	8.5	16.1	0.90
Marion	30	16.1	10.7	23.3	30	15.2	10.1	22.2	0.94
Meigs	^	^	^	^	^	^	^	^	^
Polk	11	10.7	5.3	19.8	11	10.6	5.2	19.6	0.99
Rhea	18	8.5	5.0	13.7	18	9.6	5.6	15.4	1.13
Sequatchie	^	^	^	^	^	^	^	^	^
Southwest Region	870	13.1	12.3	14.1	791	12.1	11.3	13.0	0.92
Chester	13	13.6	7.1	23.6	12	11.8	6.1	21.1	0.87
Decatur	^	^	^	^	^	^	^	^	^
Fayette	39	15.7	11.1	21.8	29	11.9	7.8	17.4	0.76
Hardeman	23	14.4	9.0	22.0	19	12.8	7.6	20.2	0.89
Hardin	15	8.5	4.7	14.5	15	8.1	4.5	13.8	0.95
Haywood	12	10.6	5.4	19.1	^	^	^	^	^
Henderson	20	12.6	7.7	19.7	17	11.2	6.5	18.1	0.89
Lauderdale	12	7.8	4.0	13.9	16	10.9	6.2	17.9	1.40
McNairy	24	13.6	8.6	20.6	20	11.7	7.1	18.5	0.86
Madison	53	9.6	7.2	12.7	56	9.9	7.5	13.0	1.03
Shelby	612	14.1	13.0	15.3	554	13.0	11.9	14.2	0.92
Tipton	40	12.5	8.9	17.3	36	11.8	8.2	16.5	0.94
Upper-Cumberland Region	287	12.6	11.2	14.2	264	11.7	10.3	13.2	0.93
Cannon	11	11.9	5.9	22.0	^	^	^	^	^
Clay	^	^	^	^	^	^	^	^	^
Cumberland	61	12.7	9.5	16.9	50	10.2	7.5	13.9	0.80
DeKalb	15	12.1	6.6	20.6	^	^	^	^	^
Fentress	19	15.8	9.4	25.5	18	15.4	9.0	25.0	0.97
Jackson	^	^	^	^	^	^	^	^	^
Macon	17	13.2	7.6	21.5	19	14.5	8.6	22.9	1.10
Overton	19	13.0	7.8	20.9	17	12.6	7.2	20.6	0.97
Pickett	^	^	^	^	^	^	^	^	^
Putnam	49	11.3	8.3	15.1	48	11.4	8.3	15.2	1.01
Smith	12	10.2	5.2	18.4	10	9.3	4.4	17.5	0.91
Van Buren	^	^	^	^	^	^	^	^	^
Warren County	34	14.6	10.1	20.6	42	17.6	12.6	24.0	1.21
White	25	15.1	9.7	22.7	22	12.3	7.7	19.1	0.81

*Total counts are from 2009 to 2013.

**Age-adjusted annual rate per 100,000.

^Statistic not displayed due to fewer than 10 cases.

†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 with missing region information.

[Data Source](#)

APPENDIX X. CANCER INCIDENCE AND MORTALITY, CHILDREN 0-19, BY RESIDENT COUNTY, TENNESSEE, 2009-2013

Resident County	Incidence				Mortality				M:I
	Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio †
Tennessee	1,490	178.1	169.2	187.4	209	25.0	21.7	28.6	0.14
East Region	265	182.6	161.3	206.0	35	23.9	16.7	33.3	0.13
Anderson	25	276.4	178.9	408.5	^	^	^	^	^
Blount	23	158.3	100.2	237.6	^	^	^	^	^
Campbell	12	248.8	128.5	435.1	^	^	^	^	^
Claiborne	^	^	^	^	^	^	^	^	^
Cocke	^	^	^	^	0	0.0	0.0	89.3	^
Grainger	^	^	^	^	0	0	0	138.8	^
Hamblen	18	226.3	134.0	357.3	^	^	^	^	^
Jefferson	12	195.9	101.1	342.2	^	^	^	^	^
Knox	93	168.4	135.9	206.4	12	21.7	11.2	38.0	0.1
Loudon	11	200.6	100.1	359.0	^	^	^	^	^
Monroe	14	256.5	140.2	430.6	0	0.0	0.0	67.8	0.0
Morgan	^	^	^	^	^	^	^	^	^
Roane	^	^	^	^	^	^	^	^	^
Scott	^	^	^	^	^	^	^	^	^
Sevier	21	188.9	116.9	289.0	^	^	^	^	^
Union	^	^	^	^	0	0	0	149.8	^
Mid-Cumberland Region	428	177.4	160.9	195.0	57	24.0	18.1	31.0	0.1
Cheatham	11	208.0	103.6	373.7	^	^	^	^	^
Davidson	122	150.2	124.6	179.6	18	23.7	14.0	37.4	0.2
Dickson	13	195.0	103.8	333.7	^	^	^	^	^
Houston	^	^	^	^	0	0.0	0.0	357.9	^
Humphreys	^	^	^	^	^	^	^	^	^
Montgomery	54	193.4	144.9	252.8	^	^	^	^	^
Robertson	15	162.7	91.0	268.3	^	^	^	^	^
Rutherford	70	177.6	138.5	224.5	^	^	^	^	^
Stewart	^	^	^	^	0	0.0	0.0	234.6	^
Sumner	37	166.8	117.4	230.0	^	^	^	^	^
Trousdale	^	^	^	^	^	^	^	^	^
Williamson	61	216.4	165.1	278.8	^	^	^	^	^
Wilson	28	180.3	119.8	260.7	^	^	^	^	^
Northeast Region	126	217.4	181.0	258.9	14	23.6	12.9	39.7	0.1
Carter	23	361.4	229.0	542.7	0	0	0	58.6	0.0
Greene	17	216.5	125.9	347.6	^	^	^	^	^
Hancock	^	^	^	^	^	^	^	^	^
Hawkins	10	151.8	72.6	279.5	^	^	^	^	^
Johnson	^	^	^	^	0	0	0	208	^
Sullivan	38	214.5	151.7	294.7	^	^	^	^	^
Unicoi	^	^	^	^	^	^	^	^	^
Washington	27	182.8	120.2	266.7	^	^	^	^	^
Northwest Region	52	162.5	121.3	213.2	^	^	^	^	^
Benton	^	^	^	^	^	^	^	^	^
Carrroll	^	^	^	^	^	^	^	^	^
Crockett	^	^	^	^	0	0.0	0.0	192	^
Dyer County	^	^	^	^	0	0.0	0.0	71.2	^
Gibson	^	^	^	^	^	^	^	^	^
Henry	12	319.6	165.1	558.4	^	^	^	^	^
Lake	^	^	^	^	0	0.0	0.0	517.7	^
Obion	^	^	^	^	^	^	^	^	^
Weakley	^	^	^	^	^	^	^	^	^

APPENDIX X. CANCER INCIDENCE AND MORTALITY, CHILDREN AGES 0-19, BY RESIDENT COUNTY, TENNESSEE, 2009-2013, CONTINUED

South Central Region	96	191.7	155.2	234.1	19	37.9	22.8	59.2	0.20
Bedford	13	198.7	105.7	339.8	^	^	^	^	^
Coffee	11	155.9	77.8	279.2	^	^	^	^	^
Giles	^	^	^	^	^	^	^	^	^
Hickman	^	^	^	^	^	^	^	^	^
Lawrence	14	245.6	134.2	412.0	^	^	^	^	^
Lewis	^	^	^	^	0	0.0	0.0	250.7	^
Lincoln	10	239.8	114.9	441.3	^	^	^	^	^
Marshall	^	^	^	^	^	^	^	^	^
Maury	18	159.9	94.6	253.4	^	^	^	^	^
Moore	^	^	^	^	0	0.0	0.0	558.6	^
Perry County	^	^	^	^	0	0.0	0.0	384.4	^
Wayne	^	^	^	^	0	0.0	0.0	214.6	^
Southeast Region	158	191.9	163.1	224.3	16	19.6	11.2	31.9	0.10
Bledsoe	^	^	^	^	0	0.0	0.0	265.0	^
Bradley	20	154.2	94.1	238.6	^	^	^	^	^
Franklin	12	237.3	121.8	417.5	^	^	^	^	^
Grundy	^	^	^	^	0	0.0	0.0	221.1	^
Hamilton	79	189.1	149.7	235.7	^	^	^	^	^
McMinn	^	^	^	^	^	^	^	^	^
Marion	11	331.4	165.3	593.5	^	^	^	^	^
Meigs	^	^	^	^	0	0.0	0.0	282.6	^
Polk	^	^	^	^	0	0.0	0.0	194.4	^
Rhea	12	288.1	148.8	503.6	^	^	^	^	^
Sequatchie	^	^	^	^	^	^	^	^	^
Southwest Region	295	158.2	140.7	177.3	52	28.0	20.9	36.8	0.18
Chester	^	^	^	^	0	0.0	0.0	169.7	^
Decatur	^	^	^	^	^	^	^	^	^
Fayette	12	258.6	133.6	451.4	^	^	^	^	^
Hardeman	^	^	^	^	0	0.0	0.0	120.9	^
Hardin	^	^	^	^	^	^	^	^	^
Haywood	^	^	^	^	0	0.0	0.0	149.4	^
Henderson	^	^	^	^	^	^	^	^	^
Lauderdale	^	^	^	^	0	0.0	0.0	102.2	^
McNairy	^	^	^	^	0	0.0	0.0	113.0	^
Madison	16	115.3	65.8	187.8	^	^	^	^	^
Shelby	212	156.2	135.9	178.7	41	30.4	21.8	41.2	0.19
Tipton	12	140.4	72.5	245.0	^	^	^	^	^
Upper-Cumberland Region	69	165.3	128.6	209.2	^	^	^	^	^
Cannon	^	^	^	^	0	0.0	0.0	228.5	^
Clay	^	^	^	^	0	0.0	0.0	414.9	^
Cumberland	^	^	^	^	^	^	^	^	^
DeKalb	0	0.0	0.0	157.4	0	0.0	0.0	157.4	^
Fentress	^	^	^	^	^	^	^	^	^
Jackson	^	^	^	^	0	0.0	0.0	295.5	^
Macon	^	^	^	^	0	0.0	0.0	118.6	^
Overton	^	^	^	^	^	^	^	^	^
Pickett	0	0.0	0.0	734.5	0	0.0	0.0	734.5	^
Putnam	17	179.4	104.0	288.4	^	^	^	^	^
Smith	^	^	^	^	0	0.0	0.0	150.5	^
Van Buren	^	^	^	^	0	0.0	0.0	612.2	^
Warren County	13	251.2	133.6	429.7	0	0.0	0.0	71.0	0.00
White	^	^	^	^	^	^	^	^	^

*Total counts are from 2009 to 2013.

**Age-adjusted annual rate per 100,000.

^Statistic not displayed due to fewer than 10 cases.

†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 with missing region information.

[Data Source](#)

APPENDIX XI. INCIDENCE AND MORTALITY OF COMMON CANCERS, THREE-YEAR MOVING AVERAGE, TENNESSEE, 2009-2013

Cancer Site	Year	Incidence				Mortality				M:I
		Count*	Rate**	Lower CI	Upper CI	Count*	Rate**	Lower CI	Upper CI	Ratio ‡
All Sites	2009-2011	102,145	479.1	476.1	482.1	40,382	192.6	191.0	194.5	0.40
	2010-2012	102,423	469.9	467.0	472.9	40,605	189.0	187.0	190.9	0.40
	2011-2013	102,862	462.0	459.1	464.9	41,027	186.3	184.0	188.1	0.40
Lung and Bronchus	2009-2011	16,880	78.4	77.2	79.6	13,053	61.4	60.0	62.5	0.78
	2010-2012	16,914	76.7	75.5	77.9	13,016	59.7	59.0	60.8	0.78
	2011-2013	17,034	75.4	74.2	76.5	12,918	57.7	57.0	58.8	0.77
Female Breast	2009-2011	13,843	120.8	118.8	122.9	2,614	22.3	21.0	23.2	0.18
	2010-2012	14,039	120.4	118.3	122.4	2,637	22.1	21.0	22.9	0.18
	2011-2013	14,520	122.5	120.5	124.6	2,691	22.0	21.0	22.9	0.18
Prostate	2009-2011	13,955	137.4	135.1	139.8	1,755	22.9	22.0	24.0	0.17
	2010-2012	13,620	129.8	127.5	132.1	1,719	21.7	21.0	22.8	0.17
	2011-2013	13,027	120.1	118.0	122.2	1,660	20.0	19.0	21.0	0.17
Colon & Rectum	2009-2011	8,978	42.6	41.8	43.5	3,632	17.4	17.0	18.0	0.41
	2010-2012	8,998	41.8	41.0	42.7	3,624	17.0	17.0	17.6	0.41
	2011-2013	8,819	40.1	39.3	41.0	3,635	16.7	16.0	17.3	0.42
Melanoma of Skin	2009-2011	4,518	21.8	21.2	22.5	644	3.1	3.0	3.4	0.14
	2010-2012	4,339	20.6	20.0	21.2	658	3.1	3.0	3.3	0.15
	2011-2013	4,326	20.1	19.5	20.8	679	3.1	3.0	3.4	0.15
Pancreas	2009-2011	2,512	11.8	11.4	12.3	2,312	11.0	11.0	11.5	0.93
	2010-2012	2,571	11.7	11.3	12.2	2,348	10.8	10.0	11.3	0.92
	2011-2013	2,650	11.8	11.4	12.3	2,422	10.9	11.0	11.3	0.92

*Total counts in three year intervals and include 443 cases with invalid site recode information.

**Rates are per 100,000 and age-adjusted to the 2000 US Standard Population (19 age groups - Census P25-1130).

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

APPENDIX XII. NUMBER OF DEATHS AND YEARS OF POTENTIAL LIFE LOST, BY GENDER AND RACE, TENNESSEE, 2009-2013

Number of Deaths and Years of Potential Life Lost to Cancer, by Gender and Race									
Year of Death	Total	Female	Male	Black	White	Black Female	Black Male	White Female	White Male
2009	13,407	6,108	7,299	1,905	11,438	885	1,020	5,188	6,250
2010	13,514	6,096	7,418	1,892	11,545	908	984	5,146	6,399
2011	13,461	6,161	7,300	1,950	11,430	920	1,030	5,197	6,233
2012	13,630	6,218	7,412	1,934	11,550	883	1,051	5,264	6,286
2013	13,936	6,351	7,585	1,951	11,834	980	971	5,293	6,541
2009-2013	67,948	30,934	37,014	9,632	57,797	4,576	5,056	26,088	31,709
YPLL	450,457	204,683	245,750	80,283	366,183	37,918	42,350	164,534	201,640
AYLL	6.6	6.6	6.6	8.3	6.3	8.3	8.4	6.3	6.4

APPENDIX XIII. NUMBER OF DEATHS AND YEARS OF POTENTIAL LIFE LOST, BY COMMON CANCER SITE, TENNESSEE, 2009-2013

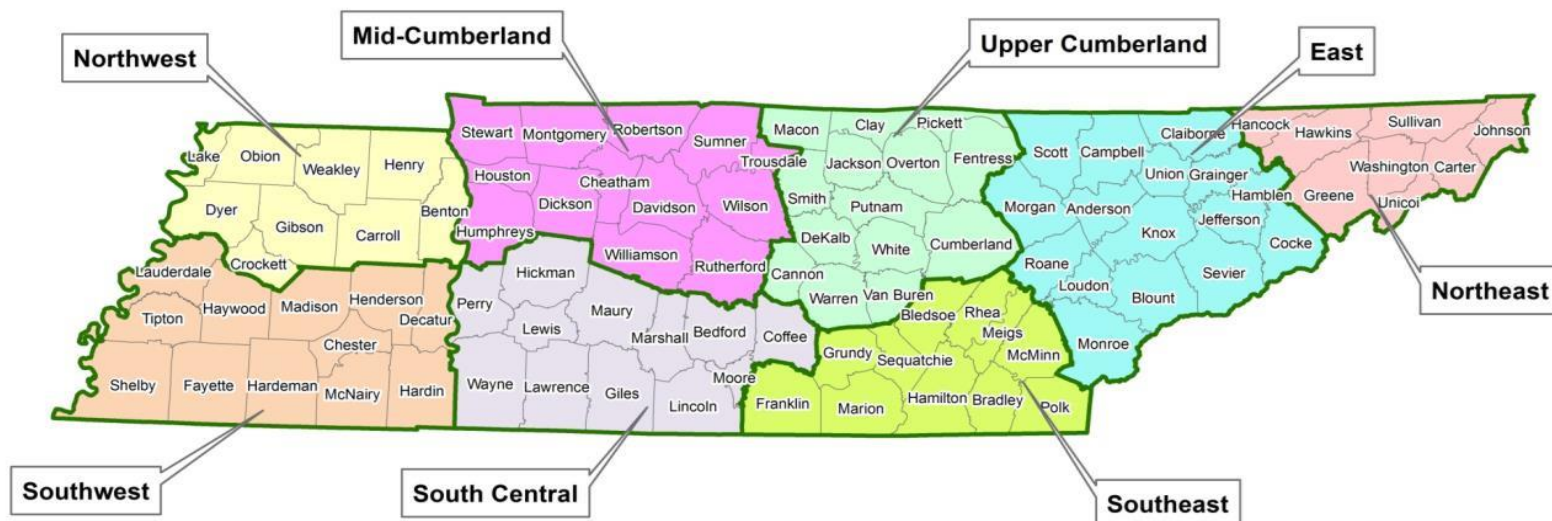
Number of Deaths and Years of Potential Life Lost to Cancer, by Common Cancer Sites							
Year of Death	Breast	Colorectal	Liver & Intrahepatic Bile Duct	Lung	Non-Hodgkin's Lymphoma	Pancreas	Prostate
2009	882	1,189	440	4,364	479	750	581
2010	870	1,201	403	4,400	458	779	600
2011	862	1,242	480	4,289	431	783	574
2012	905	1,181	528	4,327	430	786	545
2013	924	1,212	503	4,302	441	853	541
2009-2013	4,443	6,025	2,354	21,682	2,239	3,951	2,841
YPLL	37,416	36,394	17,886	135,764	12,192	23,656	7,224
AYLL	8.4	6.0	7.6	6.3	5.4	6.0	2.5

APPENDIX XIV. NUMBER OF DEATHS AND YEARS OF POTENTIAL LIFE LOST, BY OTHER COMMON CANCER SITES, TENNESSEE, 2009-2013

Number of Deaths & Years of Potential Life Lost to Cancer, by Other Common Cancer Sites							
Year of Death	Brain & Other CNS	Corpus and Uterus	Esophagus	Kidney & Renal Pelvis	Ovary	Stomach	Urinary Bladder
2009	370	136	302	289	279	239	273
2010	314	130	285	286	304	214	288
2011	320	159	313	314	321	211	267
2012	331	166	307	289	316	247	306
2013	383	169	323	363	294	220	324
2009-2013	1,718	760	1,530	1,541	1,514	1,131	1,458
YPLL	19,249	4,694	11,783	10,137	9,957	7,565	5,125
AYLL	11.2	6.2	7.7	6.6	6.6	6.7	3.5

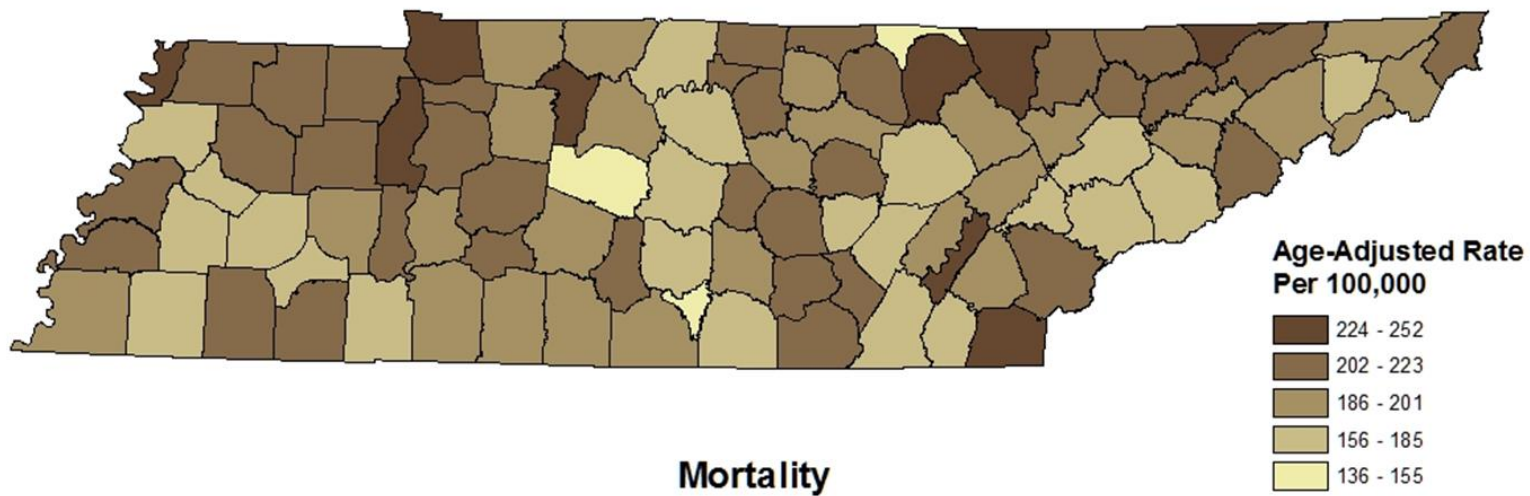
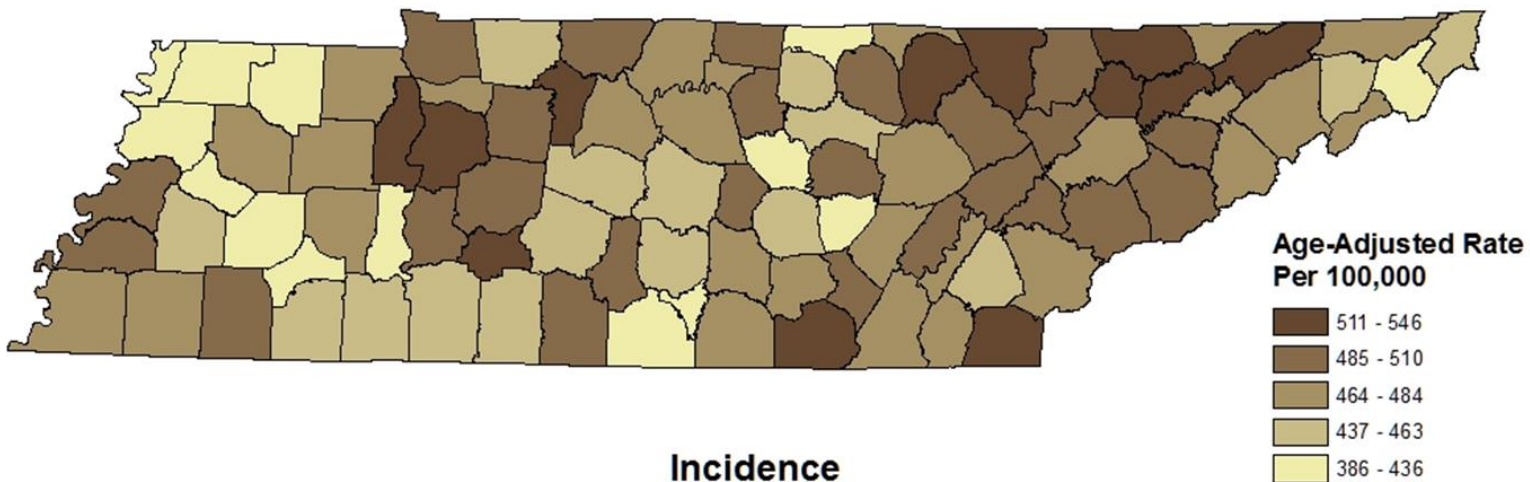
APPENDIX XV. COUNTY MAPS OF INCIDENCE AND MORTALITY RATES OF ALL CANCERS AND COMMON CANCERS

1. TENNESSEE COUNTIES AND REGIONAL GROUPINGS

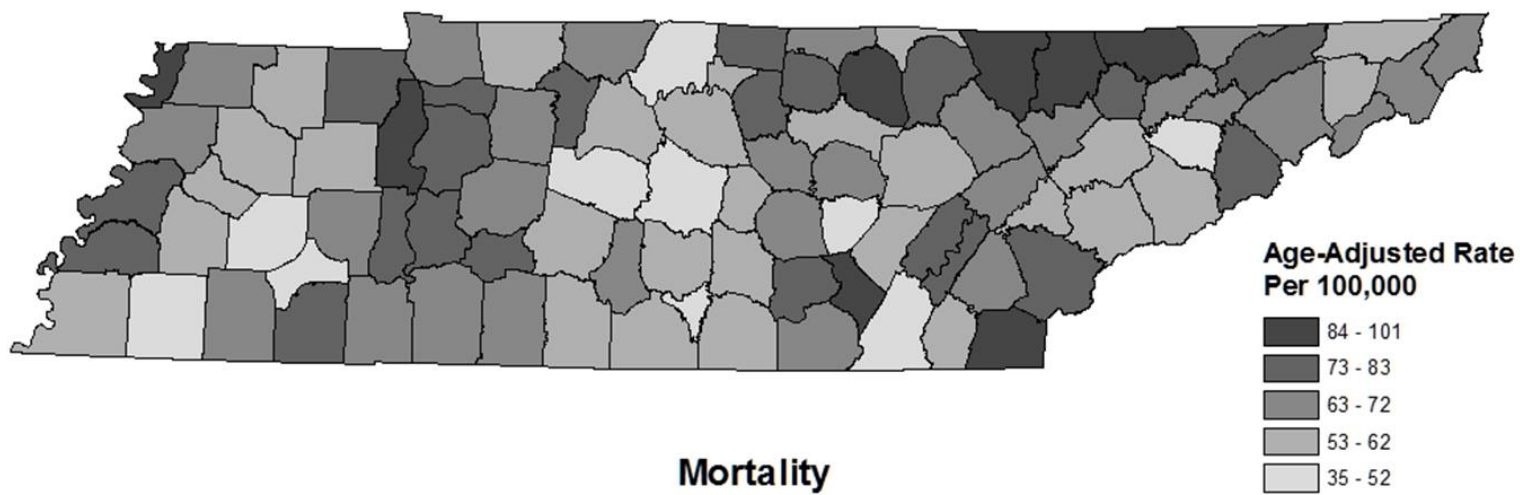
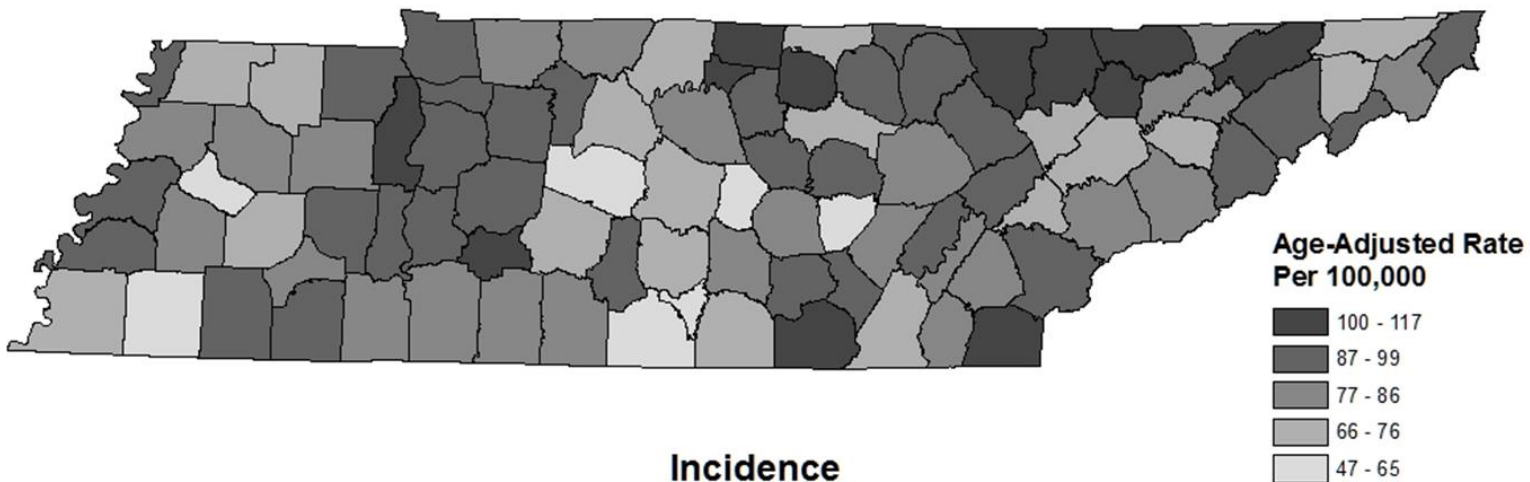


Northwest	Southwest	Mid-Cumberland	South Central	Upper-Cumberland	Southeast	East	Northeast
Benton	Chester	Cheatham	Bedford	Cannon	Bledsoe	Anderson	Carter
Carroll	Decatur	Davidson	Coffee	Clay	Bradley	Blount	Greene
Crockett	Fayette	Dickson	Giles	Cumberland	Franklin	Campbell	Hancock
Dyer	Hardeman	Houston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

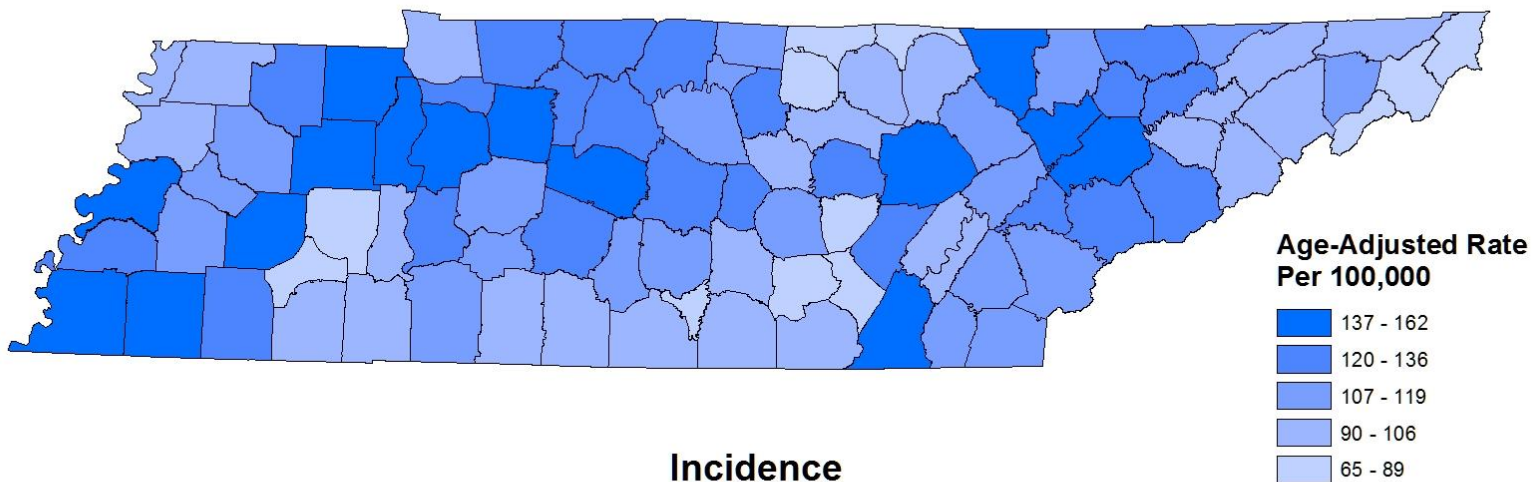
2. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, ALL SITES COMBINED, TENNESSEE, 2009-2013



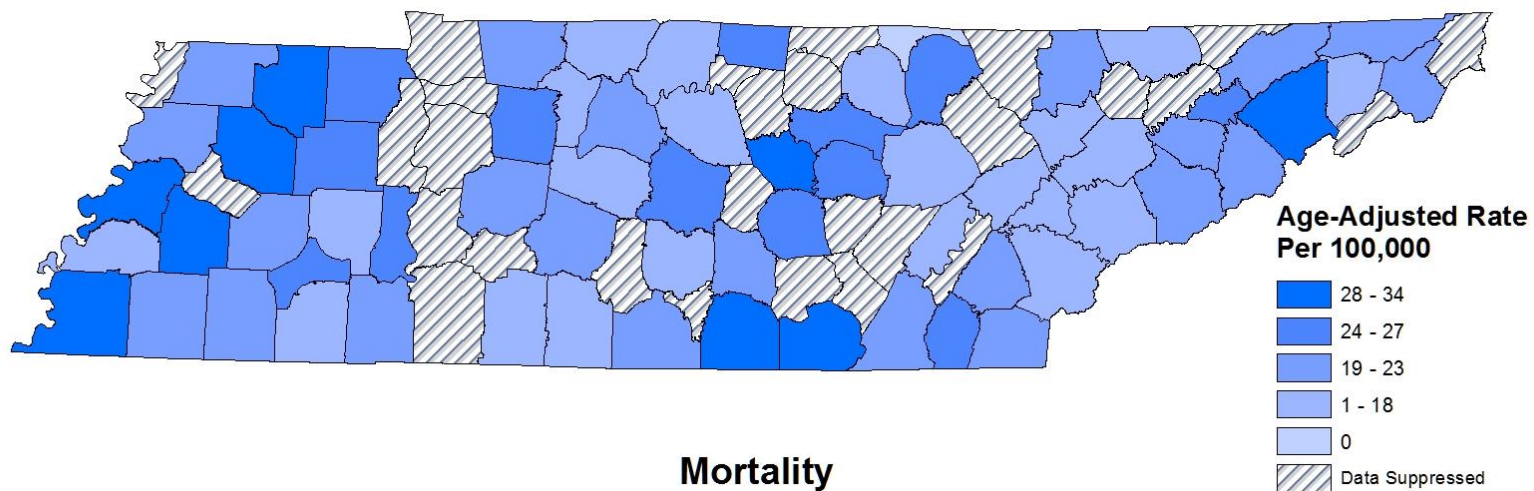
3. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, LUNG, TENNESSEE, 2009-2013



4. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, PROSTATE, TENNESSEE, 2009-2013

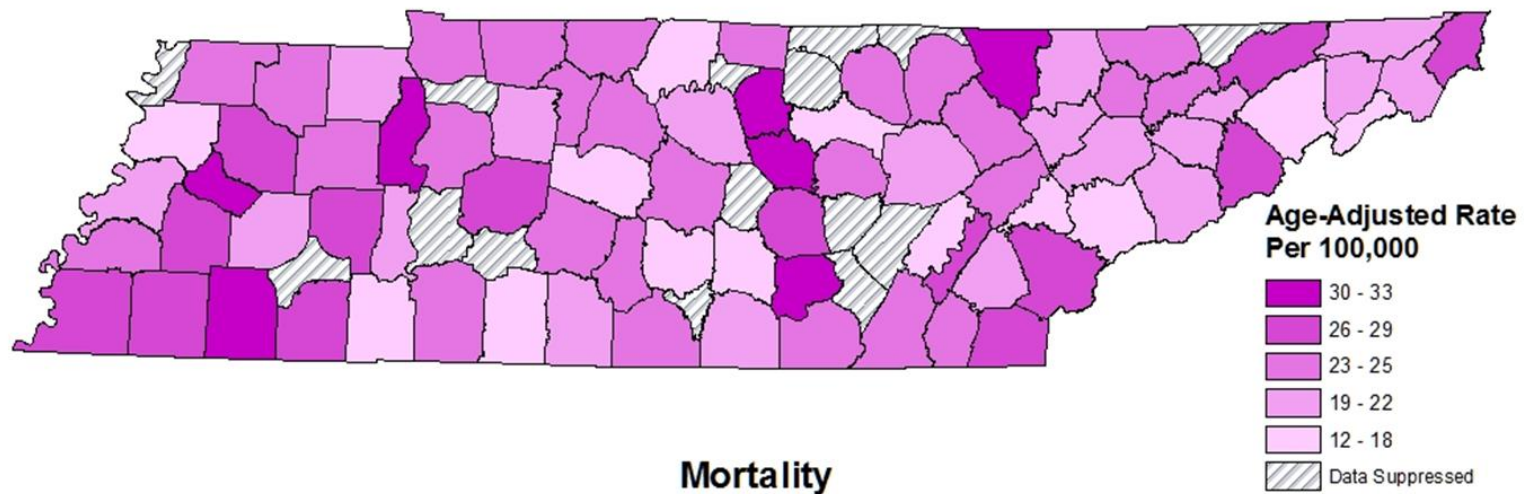
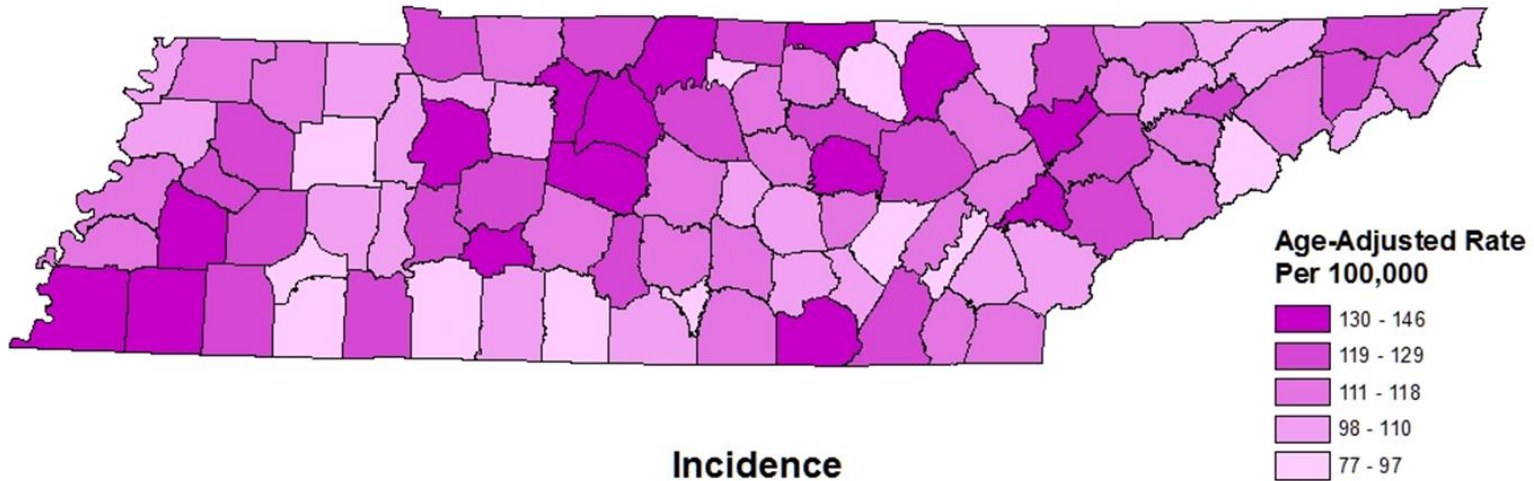


Incidence

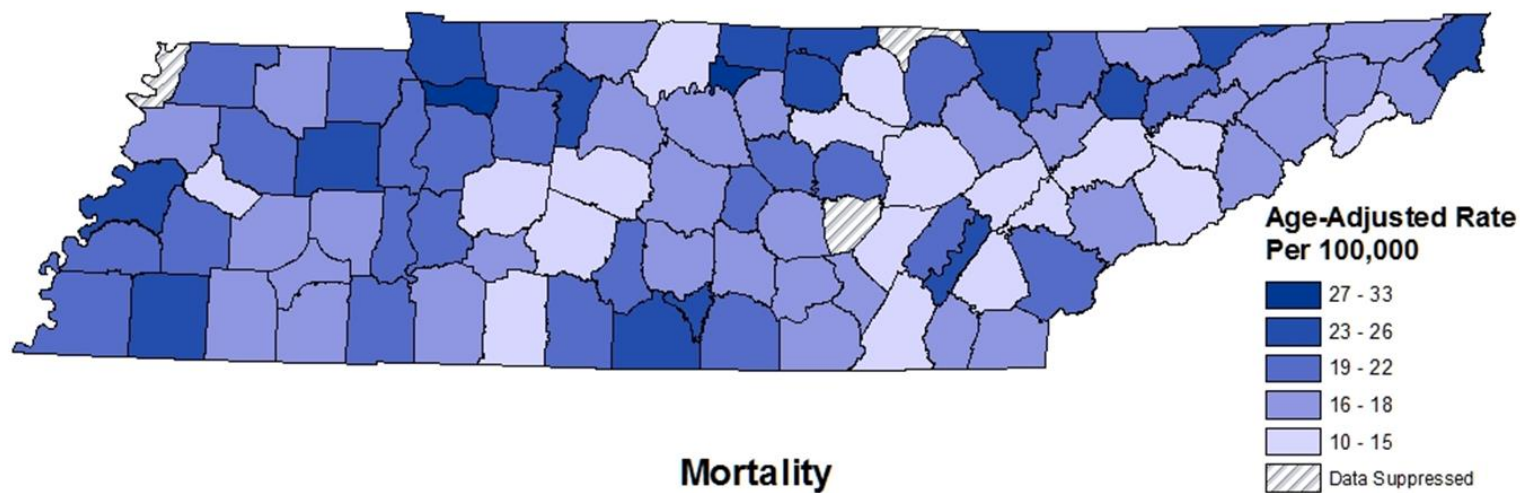
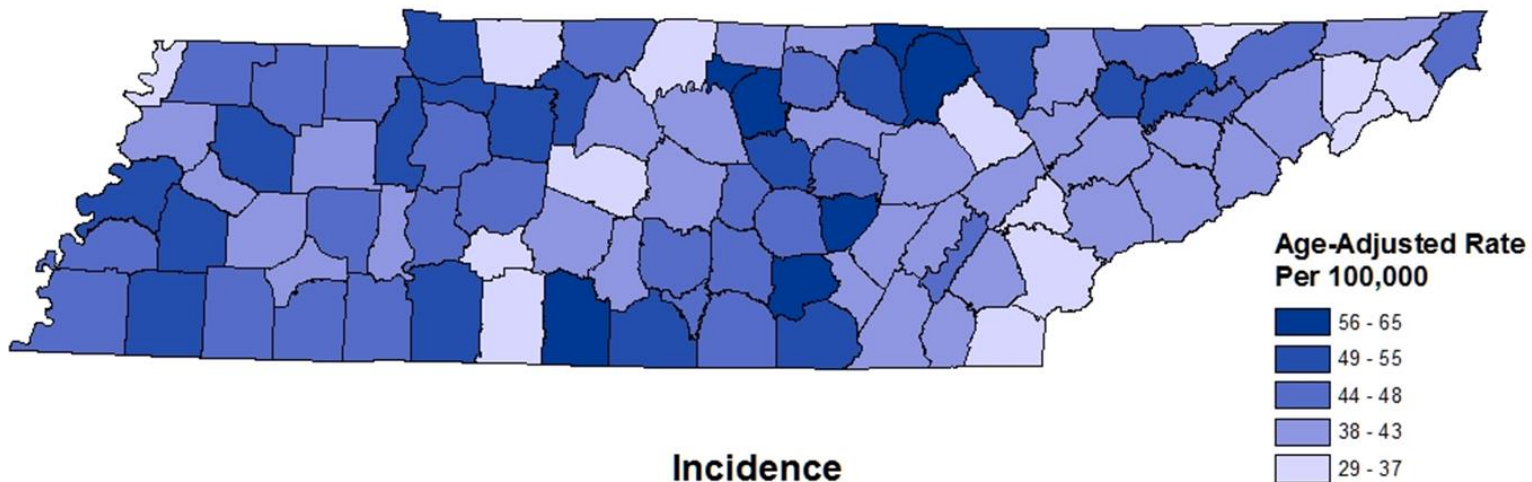


Mortality

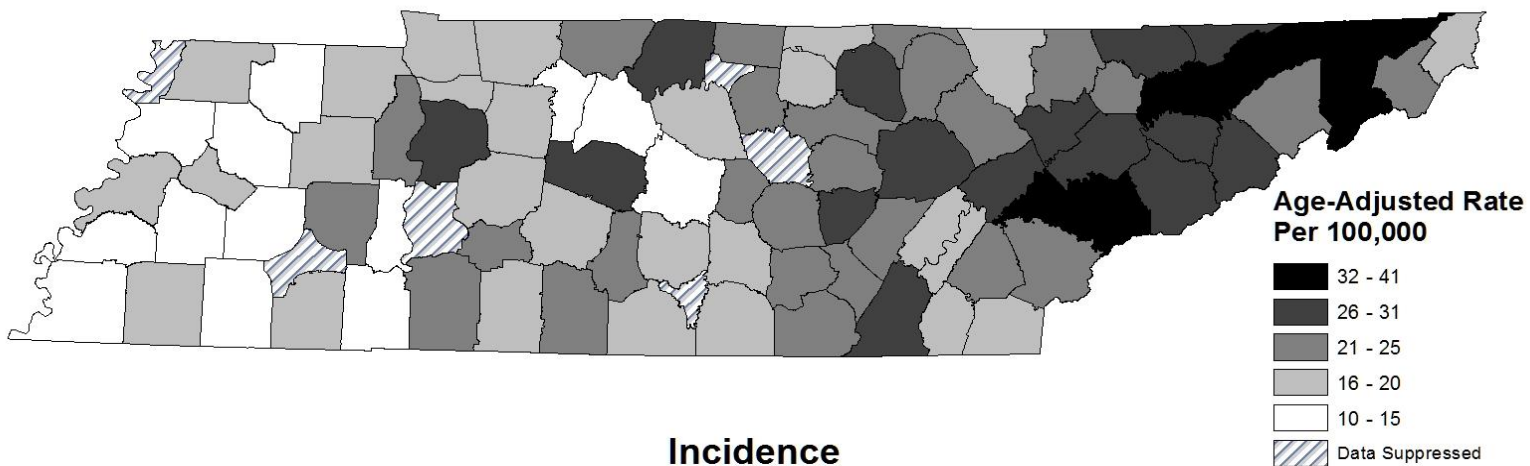
5. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, FEMALE BREAST, TENNESSEE, 2009-2013



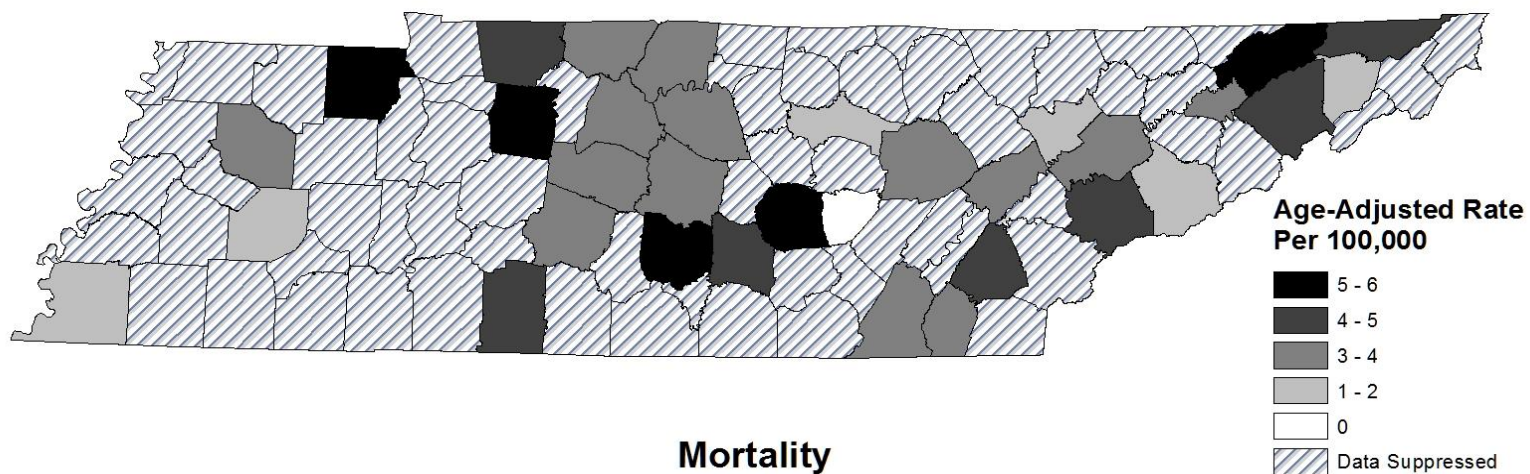
6. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, COLON AND RECTUM, TENNESSEE, 2009-2013



7. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, MELANOMA OF THE SKIN, TENNESSEE, 2009-2013

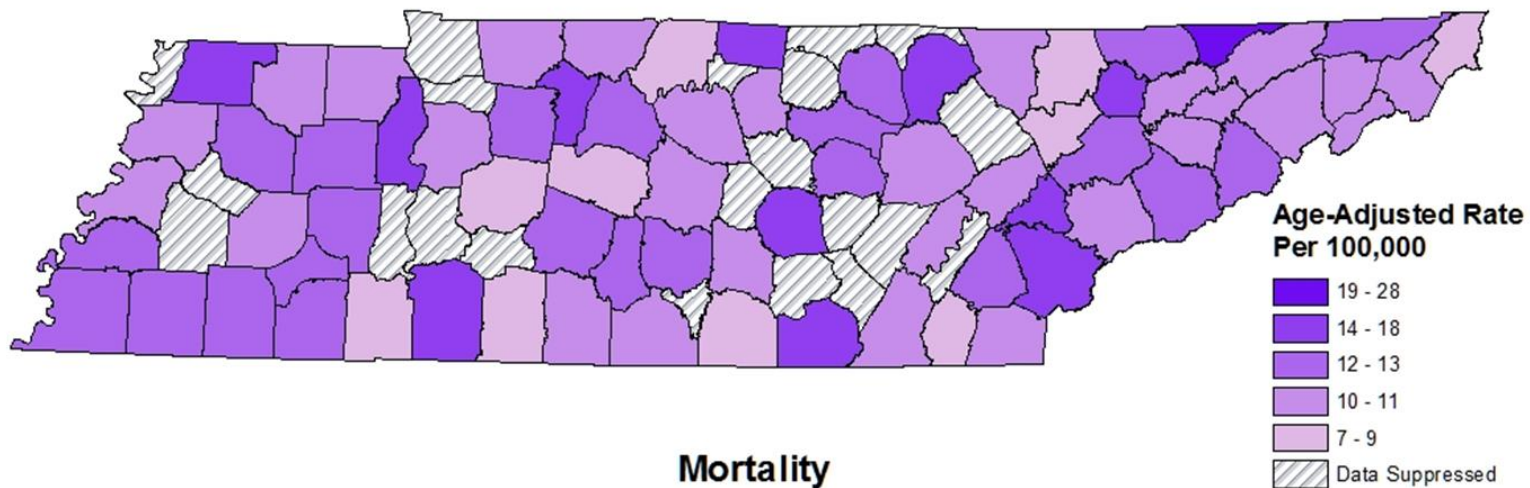
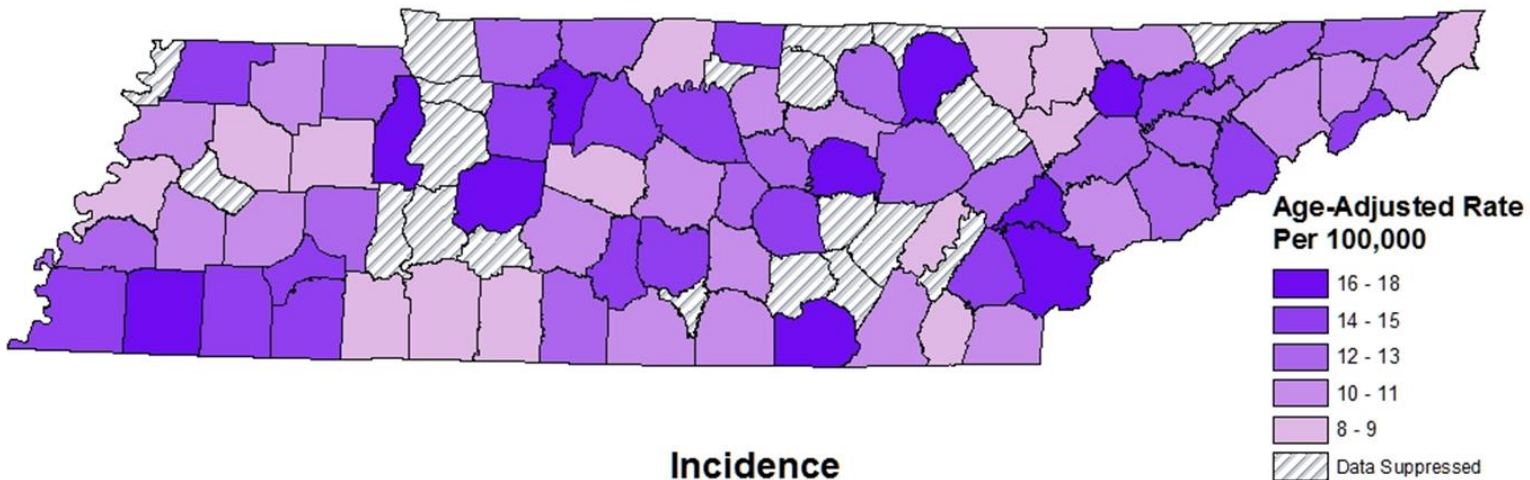


Incidence



Mortality

8. AGE-ADJUSTED CANCER INCIDENCE AND MORTALITY RATES BY RESIDENT COUNTY, PANCREAS, TENNESSEE, 2009-2013



TECHNICAL NOTES

STATISTICAL METHODS

SAS 9.4 was used to prepare the incidence and mortality data and SEER*Stat 8.3.2 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 2009 vs. 2013, was statistically significant. If the 95% confidence intervals did not overlap, the difference was determined to be statistically significant. Therefore, this is a conservative test of significance and there is a greater probability of finding non-significant differences than traditional tests of significance.

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

When interpreting cancer incidence and mortality data it is important to keep in mind multiple factors can impact cancer rates. Consumers of this data must use caution when interpreting the data in this report and consider that the 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 10 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 8.3.2) [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 6.7.2. Statistical Research and Applications Branch, National Cancer Institute, 2014. (<http://surveillance.cancer.gov/devcan>)

Years of Potential Life Lost Calculation:

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

GLOSSARY

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 the most 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 United States Standard Population using 19 age groups.

Average years of life lost (AYLL)

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.

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

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, better nutrition, and not using tobacco products).

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 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.

Cancer Mortality Rate

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

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

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.

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.

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 or potential margin of error 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.

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 or non-normal distributions.

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 more fatal the cancer is deemed to be or the lower the survival. However, for some cancers with very high fatality, e.g. pancreatic cancer, the M:I ratio may exceed one 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 Prevalence in Tennessee](#) & [Cigarette Smoking Prevalence in Tennessee](#)). 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 U.S. 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.

Statistical Significance

In principle, a statistically significant result is a result that is not attributed to chance. More technically, it means that if the null hypothesis is true, there is a low probability of getting a result that large or larger. For more information, please see [Statistical Methods](#).

Suppression of Rates and Counts

Due to concerns regarding statistical reliability, statistics were suppressed when there were 1-9 reported cases. 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

DATA SOURCES

Tennessee Cancer Registry (TCR) Incidence Data:

The cancer incidence data contain records of primary cancer cases first diagnosed among Tennessee residents between January 1, 2009 and December 31, 2013, and were reported to the TCR as of April 2016. Cases with gender reported as hermaphrodite or transsexual were not included in this report. Cases with race other than white or black (1,323 cases) and unknown race (1,178 cases) were included in the “Total Population” category. Two 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 103 newly diagnosed cases did not have information on resident county and region of diagnosis. These cases were included in the state level statistics but excluded from county level statistics.

Cancer Mortality Data:

The cancer mortality data contain records of all mortalities among Tennessee residents. The record-level mortality data were from the Death Statistical System provided by the Office of Health Statistics, Tennessee Department of Health. There were 31 mortality cases missing gender information and 170 cases did not contain race data. These cases were excluded from all analyses except the calculation of the leading causes of cancer mortality. 3,504 deaths were of race other than white or black and were included in the “Total Population” category. A total of 170 deaths attributed to cancer did not contain race information.

Behavioral Risk Factor Surveillance System (BRFSS) Data:

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

State Cancer Profiles:

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

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

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