CANCER INCIDENCE AND MORTALITY IN DELAWARE, 2010-2014

DELAWARE DEPARTMENT OF HEALTH AND SOCIAL SERVICES
DIVISION OF PUBLIC HEALTH
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DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health
Comprehensive Cancer Control Program

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CHAPTER 1: EXECUTIVE SUMMARY

This report presents the 2010-2014 cancer incidence and mortality data and statistics in Delaware. The Division of Public Health (DPH), in conjunction with the Delaware Cancer Consortium (DCC), publishes this report as a source of information for Delawareans on cancer incidence and mortality in the state. It is also used by DPH and other stakeholders to inform decisions on outreach and program strategies to combat cancer incidence and mortality in Delaware.

Cancer incidence (the number of new cases of cancer in a population over a time period)[1] and mortality (the number of deaths from cancer in a population over a time period)[2] rates and other analysis are performed by the Delaware Comprehensive Cancer Control Program staff. Incidence data is obtained from the Delaware Cancer Registry (DCR) and mortality data is obtained from the Delaware Health Statistics Center.

This report includes cancer statistics for all cancer sites combined (all-site cancer), as well as 23 site-specific cancer types. These cancer statistics reflect incidence and mortality data for 2010-2014. DPH compares Delaware's cancer incidence and mortality trends for 2010-2014 to those of the U.S. over the same time period. DPH also summarizes how Delaware and U.S. cancer rates have changed from the five-year periods starting with 2000-2004 to the current 2010-2014 five-year time period.

Despite fluctuations in all-site cancer incidence between the 2000-2004 to 2010-2014 time periods, Delaware's 2010-2014 all-site cancer incidence rate was unchanged from 2000-2004. During the same time period, the comparable U.S. all-site cancer incidence rate fell 8%. While progress continues to be made, Delaware's 2010-2014 all-site cancer incidence rate (506.4 per 100,000) remains 14% higher than the comparable U.S. rate (442.7 per 100,000).

From 2000-2004 to 2010-2014, all-site cancer incidence decreased by 5% among Delaware males but rose 5% among Delaware females. During the same time period, the all-site cancer incidence rate in non-Hispanic Caucasian Delawareans increased by 2% and decreased by 9% in non-Hispanic African American Delawareans. Hispanics in Delaware saw a 12% decrease in the all-site cancer incidence rate for the same time period.

Delaware's 2010-2014 all-site cancer mortality rate of 178.2 per 100,000 was 7% higher than the U.S. rate of 166.1 per 100,000 and the difference in all-site cancer mortality rates was statistically significant.

Although Delaware's all-site cancer mortality rate has historically been higher than the U.S. rate, the gap has narrowed over the last decade as the state continues to make excellent strides in reducing the cancer mortality rate through cancer screening and early detection. **Delaware's ranking of 16 among the states for highest all-site cancer mortality is unchanged from the ranking in last year's report which looked at the 2009-2013 time period, and represents considerable continued progress since the 1990s, when the state ranked second. From 2000-2004 to 2010-2014, Delaware's cancer death rate decreased 12%, impressive, though slightly less than the decline seen nationally (14%).**

The all-site cancer mortality rate among non-Hispanic African American Delawareans declined 21%, compared to a decline of 14% among non-Hispanic Caucasian Delawareans and a decline of 2% among Hispanic Delawareans. Male Delawareans experienced a slightly greater rate of decline in cancer mortality (15%) than females (9%) from 2000-2004 to 2010-2014.

Many factors contribute to Delaware's progress in reducing its cancer burden. Below is a brief summary of key factors, broken down by cancer type, that impact cancer in Delaware.

[1] https://seer.cancer.gov/statistics/types/incidence.html
[2] https://seer.cancer.gov/statistics/types/mortality.html

BREAST CANCER

- The 2010-2014 breast cancer incidence rate for Delaware (133.5 per 100,000) was statistically significantly higher than the U.S. rate (124.9 per 100,000). Delaware was ranked 7th nationally in 2010-2014 compared to 12th nationally in 2009-2013.
- From 2000-2004 to 2010-2014, Delaware's breast cancer incidence rate increased by 7% while the comparable U.S. rate fell 5%. During this time period, the breast cancer incidence rate increased by 7% among non-Hispanic African American females and increased by 4% among non-Hispanic Caucasian females. In contrast, the breast cancer incidence rate decreased by 9% among Hispanic females.
- The proportion of breast cancer cases diagnosed in the earliest, most treatable stage has greatly improved in Delaware over the past three decades. The proportion of Delaware breast cancers diagnosed at the local stage increased from 42% in 1980-1984 to 67% in 2010-2014.
- Although Delaware's 2010-2014 breast cancer mortality rate (22.4 per 100,000) was nearly identical to the U.S. rate (21.2 per 100,000), non-Hispanic African American females in Delaware had a lower mortality rate (25.7 per 100,000) than non-Hispanic African American females in the U.S. (30.0 per 100,000). These differences were not statistically significant.
- **From 2000-2004 to 2010-2014, Delaware's decline in breast cancer mortality (15%) was less than the decline seen nationally (17%).** Delaware's breast cancer mortality rate was ranked 20th nationally in 2010-2014 compared to 22nd nationally in 2009-2013.
- **Delaware's decline in breast cancer mortality rates was especially pronounced among Hispanics.** From 2000-2004 to 2010-2014, Delaware's female breast cancer mortality rate decreased 38% among Hispanics, 23% among non-Hispanic African Americans, and 15% among non-Hispanic Caucasians.
- It is highly likely that improvements in the early detection of breast cancer contributed to Delaware's progress in reduced breast cancer mortality. Data from the 2016 Behavioral Risk Factor Survey (BRFS) showed that Delaware females ranked fourth highest nationally in the prevalence of females 40 years of age and older who have had a mammogram within the past two years (72%).

COLORECTAL CANCER

- From 2000-2004 to 2010-2014, Delaware's colorectal cancer incidence rate decreased 31% while the comparable U.S. rate fell 23%. For both males and females, Delaware's colorectal cancer incidence rates declined more than the U.S. rates. Among males, Delaware's incidence rate declined 34% while the U.S. incidence rate declined 25%. Among females, Delaware's incidence rate declined 29% while the U.S. incidence rate declined 22%.
- From 2000-2004 to 2010-2014, Delaware's greatest improvements in colorectal cancer incidence rates were observed among non-Hispanic African Americans; incidence rates for non-Hispanic African American males and females declined by 32% each.
- **For 2010-2014, the colorectal cancer incidence rate among non-Hispanic African Americans in Delaware (41.8 per 100,000) was statistically significantly lower than the U.S. (49.8 per 100,000).**
- For the 2010-2014 time period, 57% of all colorectal cancer cases diagnosed in Delaware were detected in the regional or distant stages (i.e. after the cancer had spread from its original location). This reflects an 11% decline since 2000-2004 in the percentage of regional and distant stage colorectal cancer diagnoses.
- **Historically, Delaware's colorectal cancer mortality rate has been higher than the U.S. rate. However, for 2010-2014, Delaware's colorectal cancer mortality rate (13.9 per 100,000) was lower than that of the U.S. (14.8 per 100,000) but this difference was not statistically significant.**

- From 2000-2004 to 2010-2014, Delaware's colorectal cancer mortality rate decreased 29% while the national rate decreased 24%. Delaware ranked 41st nationally in 2010-2014 compared to 38th nationally in 2009-2013.
- **The reduction in colorectal cancer mortality rates is especially noteworthy among non-Hispanic African American Delawareans.** From 2000-2004 to 2010-2014, Delaware's colorectal cancer mortality rates declined 50% among non-Hispanic African American males, compared to 28% among non-Hispanic Caucasian males. During the same time period, colorectal cancer mortality declined 55% among non-Hispanic African American females, compared to 31% among non-Hispanic Caucasian females.
- Improvements in the number of colorectal cancer cases diagnosed in the earliest, most treatable stages contributed to Delaware's reduction in colorectal cancer mortality rates. Data from the 2016 BRFS showed that **Delaware ranked 12th highest in prevalence in the U.S. for meeting the US Preventive Services Task Force (USPSTF) recommendations for colorectal screening.** Nearly 72% of Delawareans age 50-74 years reported meeting the USPSTF recommendations for colorectal screening. The U.S. national median for meeting these recommendations was 68%.

LUNG CANCER

- **Lung cancer continues to account for an enormous share of Delaware's overall cancer burden**. From 2010-2014, lung cancer accounted for 14% of all newly-diagnosed cancer cases and 30% of all cancer deaths in Delaware.
- **According to the U.S. Department of Health and Human Services, an estimated 85% to 90% of all lung cancer cases are caused by tobacco use.** Delaware has reaped the benefits of statewide reductions in tobacco use that began decades ago. According to the 2016 Delaware BRFS, there is no statistically significant difference in current smoking prevalence between males and females.
- Prior to January 2013, there were no early lung cancer screening recommendations endorsed by the American Cancer Society. Unfortunately, the majority of lung cancer cases continue to be diagnosed in the distant stage (i.e., when the cancer has spread from the primary site to distant tissues or organs or to distant lymph nodes). From 2010-2014, Delaware and the U.S. had a similar proportion of lung cancers diagnosed at the distant stage (53%). Additionally, treatment options that are effective for some other forms of cancer are not as effective for lung cancer.
- Beginning in 2015, DPH's Screening for Life Program covers lung cancer screenings for qualified Delawareans. The screening – known as a low-dose CT scan – aims to catch lung cancer early, when it is most treatable. The screening is available to current and former smokers deemed at high risk for lung cancer.
- Delaware ranked 10th in the nation for lung cancer incidence, the same ranking as in 2009-2013. From 2000-2004 to 2010-2014, lung cancer incidence rates declined 16% for Delaware males, compared to 18% for U.S. males. **The lung cancer incidence rate for Delaware females increased 1% during the same time period, compared to a 7% decline in the U.S. female rate.**
- Historically, Delaware's lung cancer mortality rates have been higher than U.S. rates; however, the gap in rates has narrowed among males. Delaware's male lung cancer mortality rate for 1980-1984 was 19% greater than the U.S. rate, compared to 2010-2014, when the rate was 14% higher than the U.S. rate.
- **For the 2010-2014 time period, Delaware females ranked 10th highest in the nation in lung cancer mortality while Delaware males ranked 16th.**
- Between 2000-2004 and 2010-2014, Delaware's lung cancer mortality rate fell 14% while the U.S. rate dropped 18%.

- **Delaware's lung cancer mortality rates have declined noticeably among non-Hispanic African Americans.** From 2000-2004 to 2010-2014, Delaware's lung cancer mortality rates declined 32% among non-Hispanic African American males and 25% among non-Hispanic African American females.
- Among non-Hispanic Caucasian Delawareans, males experienced greater reductions in lung cancer mortality compared to females. From 2000-2004 to 2010-2014, Delaware's lung cancer mortality rate decreased 20% among non-Hispanic Caucasian males and decreased 7% among non-Hispanic Caucasian females.

PROSTATE CANCER

- From 2000-2004 to 2010-2014, Delaware's prostate cancer incidence rate decreased 18% while the U.S. rate fell 32%. Delaware's 2010-2014 prostate cancer incidence rate (142.4 per 100,000) was statistically significantly higher than the U.S. (119.8 per 100,000). These trends most likely reflect a greater prevalence of prostate cancer screening in Delaware compared to the U.S.
- **Results from the 2016 BRFS show that Delaware ranked sixth in the nation in the prevalence of males 40 years of age and older who have had a PSA (protein-specific antigen) test within the past two years.**
- In 2010-2014, Delawareans ranked 3rd in the nation for prostate cancer incidence, unchanged from its ranking in 2009-2013.
- The proportion of prostate cancer cases detected in the local stage has increased dramatically during the past 30 years in Delaware. From 1980-1984 through 2010-2014, Delaware's percentage of prostate cancer cases diagnosed in the local stage increased substantially, from 50% to 79%.
- **The prostate cancer incidence rate among non-Hispanic African American Delawareans continues to be statistically significantly higher than the comparable prostate cancer incidence rate for non-Hispanic Caucasians and Hispanics. Delaware's 2010-2014 prostate cancer incidence rate was 217.9 per 100,000 for non-Hispanic African Americans, compared to 129.1 per 100,000 for non-Hispanic Caucasians, and 139.1 per 100,000 for Hispanics. This same trend is observed in the U.S.**
- Delaware's mortality rate for prostate cancer was ranked 42nd in 2010-2014, compared to 35th in 2009-2013.
- Although the prostate cancer mortality rate for non-Hispanic African American Delawareans remains nearly double the comparable rate for non-Hispanic Caucasians, Delaware has made progress in reducing this health disparity. From 2000-2004 to 2010-2014, prostate cancer mortality declined 30% among non-Hispanic African American Delawareans, compared to 35% among non-Hispanic Caucasian Delawareans.
- **As of 2010-2014, the non-Hispanic African American (2000-2004: 50.4 per 100,000; 2010-2014: 35.5 per 100,000) and non-Hispanic Caucasian (2000-2004: 26.1 per 100,000; 2010-2014: 17.0 per 100,000) prostate cancer mortality rates were the most similar since cancer data surveillance efforts began in 1980.**

TRENDS IN CANCER INCIDENCE

For 2010-2014, Delaware's all-site cancer incidence was statistically significantly higher than the U.S. Delaware's incidence rates were also statistically significantly higher than the U.S. for female breast, Hodgkin Lymphoma, kidney, larynx, lung, melanoma, multiple myeloma, oral, pancreas, prostate, thyroid, urinary bladder, and uterine cancers.

Delaware's all-site cancer incidence rate did not change from 2000-2004 to 2010-2014; however, during the same time period, incidence rates for several cancer sites experienced more substantial fluctuations.

Table 1-1 summarizes 2010-2014 age-adjusted incidence rates and 95% confidence intervals for Delaware and

the U.S. for all-site cancer and the 23 individual cancer sites included in this report. Included in the table is the percentage change in rates (both for Delaware and the U.S.) from 2000-2004 to 2010-2014.

TABLE 1-1: AVERAGE ANNUAL AGE-ADJUSTED CANCER INCIDENCE RATES WITH 95% CONFIDENCE INTERVALS; DELAWARE VS. U.S., 2010-2014

Cancer Site	DE Incidence Rate 2010-2014	U.S. Incidence Rate 2010-2014	DE % Change: 00-04 to 10-14	U.S. % Change: 00-04 to 10-14
All-Site*	506.4 (500.3, 512.5)	442.7 (442.1, 443.3)	0	-8
Brain	6.4 (5.7, 7.2)	6.4 (6.3, 6.4)	-3	-4
Female breast*	133.5 (129.2, 137.9)	124.9 (124.5, 125.4)	+7	-5
Cervical	8.3 (7.2, 9.5)	7.4 (7.3, 7.5)	-3	-1
Colorectal	37.8 (36.1, 39.4)	40.1 (39.9, 40.2)	-31	-23
Esophagus	4.8 (4.3, 5.5)	4.2 (4.1, 4.3)	-20	-13
Hodgkin Lymphoma*	3.3 (2.8, 3.9)	2.6 (2.5, 2.6)	0	-7
Kidney*	17.6 (16.5, 18.8)	15.6 (15.5, 15.7)	+17	+20
Larynx*	3.9 (3.4, 4.5)	3.1 (3.0, 3.1)	-20	-14
Leukemia	14.5 (13.5, 15.6)	13.7 (13.6, 13.8)	+38	+1
Liver	8.7 (8.0, 9.5)	8.6 (8.5, 8.7)	+89	+62
Lung/bronchus*	70.9 (68.7, 73.2)	55.8 (55.6, 56.0)	-8	-12
Melanoma*	30.2 (28.8, 31.8)	22.3 (22.2, 22.5)	+63	+14
Multiple Myeloma*	7.4 (6.7, 8.2)	6.6 (6.5, 6.6)	+57	+12
Non-Hodgkin Lymphoma	20.8 (19.6, 22.1)	19.5 (19.3, 19.6)	+4	-4
Oral*	12.6 (11.7, 13.6)	11.2 (11.1, 11.3)	+9	+4
Ovary	11.2 (10.0, 12.5)	11.7 (11.5, 11.8)	-24	-16
Pancreas*	13.8 (12.8, 14.8)	12.5 (12.4, 12.6)	+34	+8
Prostate*	142.4 (137.8, 147.0)	119.8 (119.4, 120.3)	-18	-32
Stomach	6.5 (5.8, 7.2)	7.3 (7.2, 7.4)	-6	-8
Testis	5.4 (4.5, 6.5)	5.7 (5.6, 5.8)	+15	+2
Thyroid*	15.6 (14.5, 16.8)	14.2 (14.0, 14.3)	+51	+60
Urinary Bladder*	24.3 (23.0, 25.6)	19.8 (19.7, 20.0)	+5	-8
Uterine*	29.1 (27.2, 31.2)	25.7 (25.5, 25.9)	+10	+6

***** = Delaware incidence rate is statistically significantly higher than the U.S. rate at the 95% confidence level
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source (Delaware): Delaware Cancer Registry, Delaware Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

TRENDS IN CANCER MORTALITY

Although Delaware's 2010-2014 all-site cancer mortality rate was significantly greater than the U.S., Delaware's rate for the 2000-2004 to 2010-2014 time period declined 12%, compared to 14% for the U.S. From 2000-2004 to 2010-2014, Delaware has made great strides in reducing its cancer mortality burden for several cancer types (especially female breast, colorectal, and prostate cancer).

TABLE 1-2: AVERAGE ANNUAL AGE-ADJUSTED CANCER MORTALITY RATES WITH 95% CONFIDENCE INTERVALS; DELAWARE VS. U.S., 2010-2014

Cancer Site	DE Mortality Rate 2010-2014	U.S. Mortality Rate 2010-2014	DE % Change: 00-04 to 10-14	U.S. % Change: 00-04 to 10-14
All-Site*	178.2 (174.6, 181.9)	166.1 (165.9, 166.3)	-12	-14
Brain	4.1 (3.6, 4.7)	4.3 (4.3, 4.4)	-9	-2
Female breast	22.4 (20.7, 24.3)	21.2 (21.1, 21.3)	-15	-17
Cervical	3.0 (2.3, 3.8)	2.3 (2.3, 2.3)	+3	-12
Colorectal	13.9 (12.9, 15.0)	14.8 (14.7, 14.8)	-29	-24
Esophagus	4.3 (3.8, 4.9)	4.1 (4.1, 4.1)	-17	-7
Hodgkin Lymphoma	---	---	---	---
Kidney	4.0 (3.5, 4.6)	3.9 (3.8, 3.9)	+3	-7
Larynx	1.2 (0.9, 1.5)	1.0 (1.0, 1.0)	-25	-23
Leukemia	6.9 (6.2, 7.7)	6.8 (6.8, 6.8)	-17	-9
Liver	6.7 (6.0, 7.4)	6.3 (6.2, 6.3)	+63	+29
Lung/bronchus*	52.2 (50.2, 54.1)	44.7 (44.6, 44.8)	-14	-18
Melanoma	2.9 (2.5, 3.4)	2.7 (2.6, 2.7)	-6	0
Multiple Myeloma	3.5 (3.0, 4.0)	3.3 (3.3, 3.4)	0	-11
Non-Hodgkin Lymphoma	6.1 (5.5, 6.8)	5.9 (5.8, 5.9)	-24	-22
Oral	2.9 (2.5, 3.4)	2.5 (2.4, 2.5)	+21	-7
Ovary	11.2 (10.0, 12.5)	11.7 (11.5, 11.8)	-20	-17
Pancreas	11.8 (10.9, 12.8)	10.9 (10.9, 11.0)	+13	+3
Prostate	19.4 (17.6, 21.4)	20.1 (20.0, 20.2)	-31	-29
Stomach	3.6 (3.1, 4.1)	3.2 (3.2, 3.3)	-12	-26
Testis	---	---	---	---
Thyroid	0.6 (0.4, 0.8)	0.5 (0.5, 0.5)	---	---
Urinary Bladder	4.7 (4.1, 5.3)	4.4 (4.4, 4.4)	-10	+2
Uterine	5.3 (4.5, 6.2)	4.6 (4.5, 4.6)	+15	+12

***** = Delaware mortality rate is statistically significantly higher than the U.S. rate at the 95% confidence level
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source (Delaware): Delaware Health Statistics Center, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

CENSUS TRACT ANALYSES

This report also includes cancer incidence rates for each of Delaware's census tracts as required by Title 16, Chapter 292 of the Delaware Code (Appendix E). Census tract analyses were conducted for 2010-2014. Census tracts were determined by the Census 2010 designations since they were in effect at the time of analysis. The Census 2010 subdivided Delaware into 214 census tracts rather than the 197 census tracts in the Census 2000.

Results for 2010-2014 show that:

- In 16 of Delaware's 214 census tracts, the all-site cancer incidence rate was statistically significantly higher than Delaware's average 2010-2014 incidence rate (506.5 per 100,000)[3].
- In 11 of Delaware's 214 census tracts, the all-site cancer incidence rate was statistically significantly lower than Delaware's average 2010-2014 incidence rate (506.5 per 100,000).

[3] 506.5 is average 2010-2014 Delaware incidence rate calculated in SEER*Stat using the individual census tracts compared to the overall incidence rate of (506.4).

- All-site cancer incidence rates for the remaining 187 census tracts were not significantly different from the state's average rate for the 2010-2014 time period.
- Age-adjusted five-year cancer incidence rates for 2010-2014 by census tract with 95% confidence intervals are presented in Appendix H. Census tract maps color-coded by rate quintiles are located in Appendix I. Census tract maps that indicate tracts with significantly high or significantly low incidence rates are located in Appendix J.

There is an inherent instability in calculating cancer incidence rates at the census tract level. In a small group, such as a census tract, the snapshot changes considerably from year to year. If one case of cancer is diagnosed in a census tract one year, and three cases of cancer are diagnosed in the same census tract the next year, the cancer rate for that census tract will change dramatically from one year to the next. These large fluctuations do not typically occur in larger populations. If we compare the cancer rate for a census tract to the cancer rate for the whole state of Delaware for a given time period, it would not be unusual to find the comparison different (perhaps even reversed) in the following time period.

When assessing cancer incidence data by census tract, the occurrence of cancer may differ across census tracts for a variety of reasons. For example, lifestyle behaviors may cluster in a homogeneous community. In addition, the presence or absence of exposure to environmental or occupational carcinogen(s) is often limited to a defined geographic area. In addition, residents in certain geographic areas may be more impoverished than other residents, which will affect their availability of health insurance coverage as well as their level of access to health care, particularly cancer screening services. Finally, chance or random variation can play a role, since approximately 5% of all comparisons would be significantly different due to chance alone.

CHAPTER 2: INTRODUCTION

DELAWARE CANCER REGISTRY

The Delaware Cancer Registry (DCR) is managed by the Division of Public Health (DPH) and serves as the state's central cancer information center. The DCR was founded in 1972 and was legally established in 1980 under the Delaware Cancer Control Act[4]. The act stipulated that all hospitals, clinical laboratories, and cancer treatment centers in the state report all new cancer cases to the DCR. In 1996, the Delaware Cancer Control Act was amended to require any health care practitioner who diagnoses or provides treatment to report cancer cases to the DCR. Further enhancements of the Delaware Cancer Control Act took effect in 2002 with the passage of Senate Bill 372 that requires physicians to provide additional information to the DCR, including patients' duration of residence in Delaware and their occupational history. Senate Bill 372 also extended the reporting deadline to 180 days from initial diagnosis or treatment.

Today, Delaware is one of 45 states whose central cancer registry is supported by the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention (CDC).[5] The DCR ensures accurate, timely, and routine surveillance of cancer trends among Delawareans.

REPORTING FACILITIES

There are eight Delaware hospitals currently reporting cancer cases to the DCR. Forty-nine non-hospital offices submit data to the DCR: 13 diagnostic laboratories, 15 physician offices, and 14 free-standing ambulatory surgery centers. Additionally, the DCR has reciprocal data exchange agreements with Alaska, Arkansas, California, Colorado, Florida, Idaho, Louisiana, Maryland, Massachusetts, Michigan, Montana, Nebraska, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, Virginia, Washington, Wisconsin, Wyoming, and the District of Columbia. Interstate data exchange agreements assist in identifying Delaware residents whose cancer was diagnosed and/or treated in another state.

DATA CONFIDENTIALITY

The DCR maintains patient confidentiality using a combination of techniques. Reporting facilities submit cancer data using computerized data encryption techniques. Published reports and data releases are limited to aggregate data. DCR datasets are released only after all personal identifiers are removed. Researchers who use DCR data must comply with regulations stated in DPH data use agreements and obtain clearance from Delaware's Human Subjects Review Board.

DATA QUALITY

Internal quality control procedures were implemented at the DCR to verify the consistency of cancer data. Data consistency standards are set by the North American Association of Central Cancer Registries (NAACCR). The DCR also conducts record consolidation using a computerized matching program to identify multiple reports on the same individual. This scenario often arises when a patient is diagnosed and treated in two or more facilities and each facility submits a cancer case reporting form to the DCR.

NAACCR CERTIFICATION AND NPCR STANDARD STATUS

In 1997, the NAACCR instituted a program to independently and annually review data from member registries for their completeness, accuracy, and timeliness. The registry certification metrics are pre-determined and

[4] http://delcode.delaware.gov/title16/c032/index.shtml
[5] https://nccd.cdc.gov/dcpc_Programs/index.aspx#/3

established by NAACCR[6]. Gold or Silver Standard certifications are awarded following an evaluation of data quality, completeness, and timeliness of reporting. The DCR received Gold Standard certification for diagnosis years 1999, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014 (the most recent year for which complete data are currently available). The DCR received Silver Standard certification in 1998 and 2002.

Additionally, the NPCR provides an annual Standard Status Report to state cancer registries supported by the CDC. Delaware's data submissions for diagnosis years 2000 through 2014 surpassed all standard levels for quality, completeness, and timeliness.

USES OF DATA

DPH uses DCR data to support various programs and initiatives, including the Screening for Life program and the Delaware Cancer Treatment Program. DPH also uses DCR data to investigate citizen inquiries and provide up-to-date cancer statistics to Delaware residents, hospitals, health care providers, community organizations, federal agencies, research institutions, and academic institutions. Committees associated with the Delaware Cancer Consortium (DCC) rely heavily on DCR data to monitor cancer trends across the state, promote research, and guide policy planning.

ORGANIZATION OF THIS REPORT

This report includes cancer statistics for all cancer sites combined (all-site cancer), as well as 23 site-specific cancer types. These cancer statistics reflect incidence and mortality data for 2010-2014. We compare Delaware's cancer incidence and mortality trends for 2010-2014 to those of the U.S. over the same time period. We also summarize how Delaware and U.S. cancer rates have changed from 2000-2004 to 2010-2014. In addition to incidence and mortality, stage at diagnosis and age-specific statistics are evaluated for each cancer type. In many cases, these statistics are also calculated separately by sex, race, county of residence, and age group.

Additional behavioral risk factor data relevant to adult Delawareans are presented throughout the report and Appendix D.

Delaware's 2010-2014 cancer incidence and mortality rankings among all 50 U.S. states are provided for each cancer site included in the report. State rankings for cancer incidence and mortality were obtained from the U.S. Cancer Statistics Working Group[7].

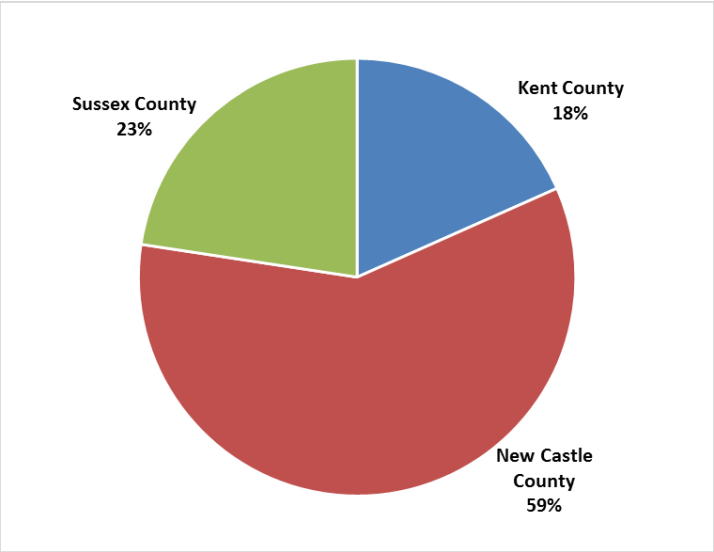
DELAWARE'S POPULATION

In 2016, census data estimated Delaware's total population at 934,695. The majority of Delawareans – 59% – reside in New Castle County. Kent and Sussex Counties are home to 18% and 23% of Delawareans, respectively (Figure 2-1).

[6] https://www.naaccr.org/certification-criteria/

[7] U.S. Cancer Statistics Working Group. United States Cancer Statistics: 1999-2012 Incidence and Mortality Web-based Report. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2015. www.cdc.gov/uscs.

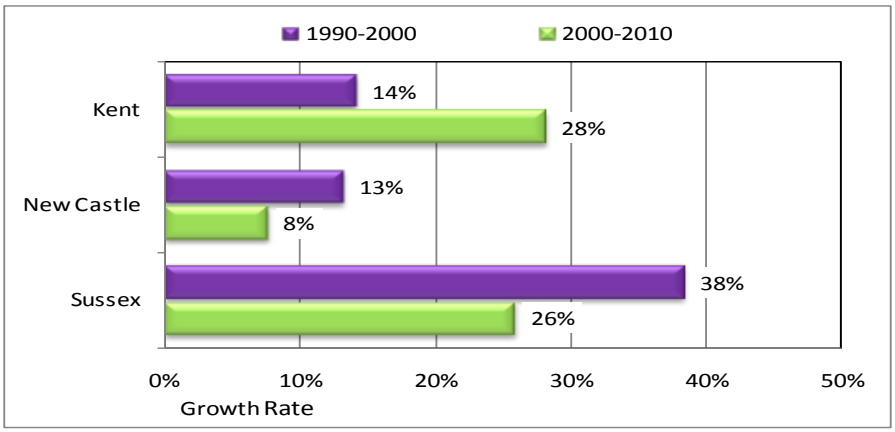
FIGURE 2-1: DELAWARE POPULATION BY COUNTY, 2010



Source: U.S. Census Bureau, American FactFinder http://factfinder2.census.gov/

Since 1990, population growth rates have varied across Delaware counties (Figure 2-2). New Castle County – the most populated of Delaware's three counties – demonstrated the smallest population growth, increasing its total population by 13% from 1990-2000 and just 8% from 2000-2010. Kent County grew in total population by 14% from 1990-2000, and by 28% from 2000-2010. Sussex County – Delaware's southernmost county – experienced the largest population growth from 1990-2000 with an increase in total population of nearly 40%. Population growth slowed slightly in Sussex County from 2000-2010, as total population increased by 26%.

FIGURE 2-2: DELAWARE POPULATION GROWTH RATE BY COUNTY AND DECADE: 1990-2000 AND 2000-2010



Source: U.S. Census Bureau 2010, American FactFinder http://factfinder2.census.gov/

The most recently available census data (Table 2-1) show that 64% of all Delawareans are non-Hispanic Caucasian. Non-Hispanic Caucasians are a majority of the population in all three Delaware counties: 63% in Kent County, 59% in New Castle County, and 75% in Sussex County. Non-Hispanic African Americans comprise 21% of Delaware's population. The distribution varies by county: 24% each in Kent and New Castle counties, and 12% in Sussex County. Four percent of Delawareans are Asians. Another 2% of Delawareans are considered "other" race, which is defined as: (a) any other race group that was too small to enumerate separately; (b) unknown race; or (c) mixed race (i.e., two or more races). Regardless of race, persons of Hispanic ethnicity make up just over 9% of Delaware's population.

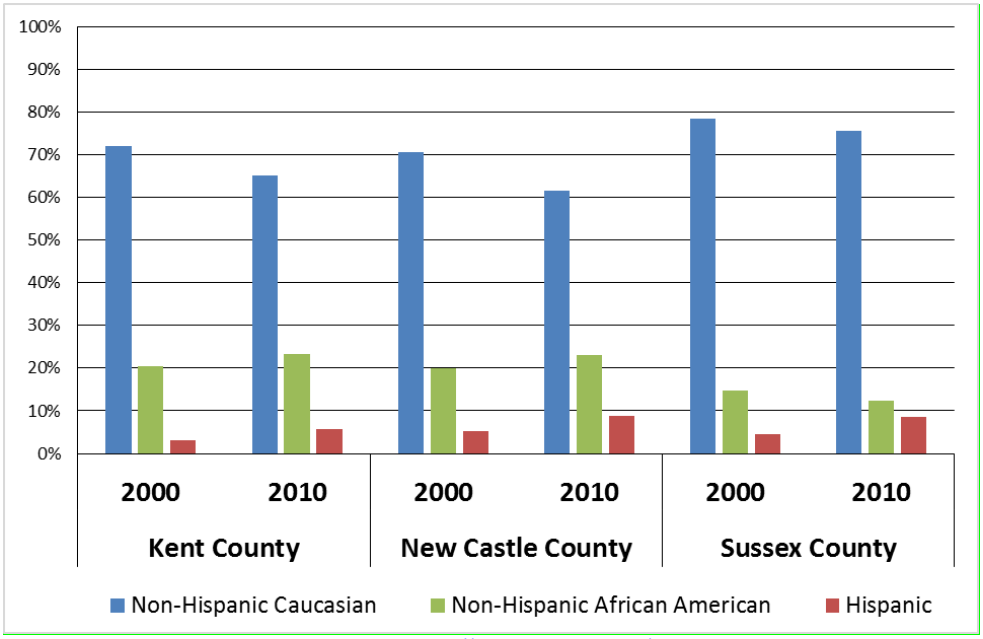
TABLE 2-1: DELAWARE POPULATION PERCENTAGE BY RACE/ETHNICITY AND COUNTY, 2016

Race/Ethnicity	Delaware	Kent	New Castle	Sussex
Not Hispanic or Latino				
Caucasian	64	63	59	75
African American	21	24	24	12
American Indian and Alaska Native	0	1	0	0
Asian	4	2	5	1
Native Hawaiian and Other Pacific Islander	0	0	0	0
Other race	0	0	0	0
Two or more races	2	4	2	2
Hispanic or Latino	9	7	9	9

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates, American FactFinder http://factfinder2.census.gov/

Since 2000, racial diversity has expanded at different rates across Delaware's counties. Both Kent and New Castle Counties experienced substantial increases in the proportion of non-Hispanic African American and Hispanic residents (and concurrent decreases in the proportion of non-Hispanic Caucasian residents) from 2000 to 2010 (Figure 2-3). An opposite trend was observed in Sussex County, where the non-Hispanic African American population decreased from 15% in 2000 to 12% in 2010; the non-Hispanic Caucasian population in Sussex County declined from 78% to 76%; and the Hispanic population increased from 4% to 9%.

FIGURE 2-3: PROPORTIONS OF CAUCASIAN AND AFRICAN AMERICAN RESIDENTS IN DELAWARE, BY COUNTY: 2000 AND 2010



Source: U.S. Census Bureau 2010, American FactFinder http://factfinder2.census.gov/

GUIDELINES FOR INTERPRETATION OF INCIDENCE AND MORTALITY RATES

Incidence and mortality rates for Delaware are expressed per 100,000 Delawareans and rates for the U.S. are expressed per 100,000 U.S. residents. Due to Delaware's small population base, cancer rates were calculated using five-year calendar year groupings for both cancer incidence and mortality.

Cancer incidence and mortality rates were adjusted by age to enable comparisons between populations that may have different age distributions (e.g., Delaware vs. the U.S.). Thus, age-adjusted cancer rates can be compared without any concern about how differences in age distribution of the populations would affect

cancer rates. The standard population used to adjust for age is the 2000 U.S. population.

Ninety-five percent confidence intervals were computed for each cancer rate. Confidence intervals represent the range of values in which the cancer rate could reasonably fall 95% of the time. They are used to determine whether the amount by which two cancer rates differ is statistically significant. If the confidence interval for one rate does not overlap with the confidence interval for another rate, the two rates are significantly different. When one rate is significantly different from another rate, we assume that the difference between the rates is larger than would be expected by chance alone, meaning it is statistically significant. If the confidence interval for one rate overlaps with the confidence interval for another rate, the two rates are not statistically significantly different and this is commonly referred to as "no meaningful difference" between rates.

For this report, cancer frequencies and rates were suppressed according to the DPH's Policy Memorandum 49 (Data and Data Release Standards):

- Incidence and mortality frequencies of fewer than six were not shown to protect patient privacy and confidentiality. In some instances, additional cells were suppressed so that one cannot deduce the actual count in the initially-suppressed cell. Suppressing incidence and mortality statistics based on a small number of cancer cases or deaths helps protect patient privacy and confidentiality[8,9].
- Age-adjusted incidence and mortality rates based on fewer than 25 cases or deaths were suppressed as they are inherently unstable and cannot be reliably interpreted.

[8] Coughlin SS, Clutter GG, Hutton M. Ethics in Cancer Registries. *Journal of Cancer Registry Management, 2:* 5-10, 1999.
[9] McLaughlin CC. Confidentiality protection in publicly released central registry data. *Journal of Cancer Registry Management, 2:* 84-88, 2002.

CHAPTER 3: ALL-SITE CANCER

INCIDENCE

For 2010-2014, Delaware ranked 2nd in the U.S. for all-site cancer incidence (2nd in 2009-2013); males ranked 3rd (3rd in 2009-2013) and females ranked 6th (8th in 2009-2013)[10].

2010-2014 DATA

TABLE 3-1: NUMBER OF ALL-SITE CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	27,861	14,440	13,421	22,031	11,497	10,534	4,544	2,349	2,195	560	288	272
Kent	5,107	2,616	2,491	3,933	2,000	1,933	974	517	457	99	57	42
New Castle	14,666	7,457	7,209	10,970	5,628	5,342	2,928	1,471	1,457	370	186	184
Sussex	8,088	4,367	3,721	7,128	3,869	3,259	642	361	281	91	45	46

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- In 2010-2014, there were 27,861 new all-site cancer cases diagnosed in Delaware: an average of 5,572 per year.
- Males accounted for 52% of all-site cancer cases.
- Non-Hispanic Caucasians accounted for 79% of all-site cancer cases.

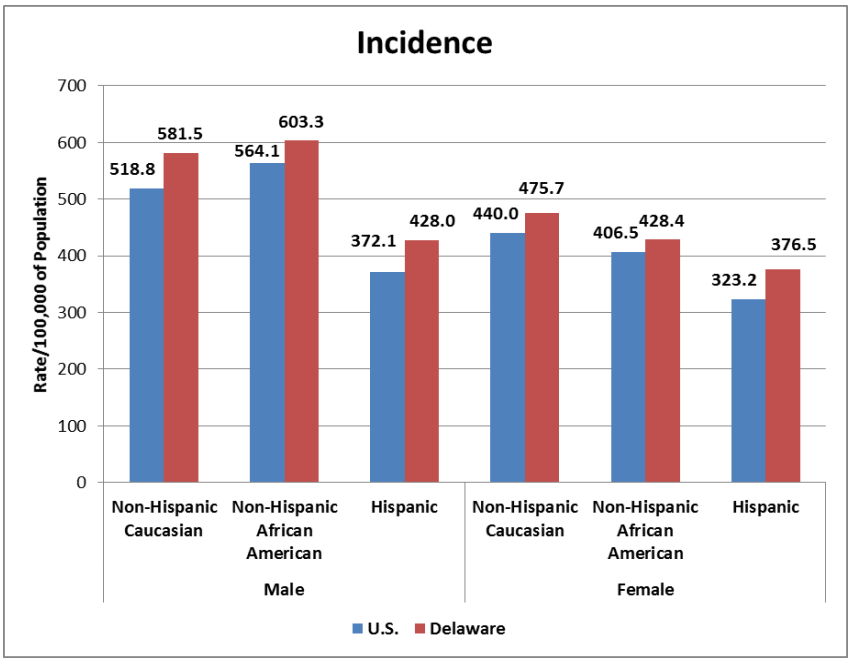
TABLE 3-2: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	442.7	492.4	408.7
Delaware	506.4	573.2	458.0
Kent	538.9	604.0	490.5
New Castle	491.1	557.6	445.5
Sussex	515.3	584.0	462.0

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

[10] U.S. Cancer Statistics Working Group. *United States Cancer Statistics: 1999–2012* Incidence And Mortality Web-Based Report. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2015. Available at: www.cdc.gov/uscs.

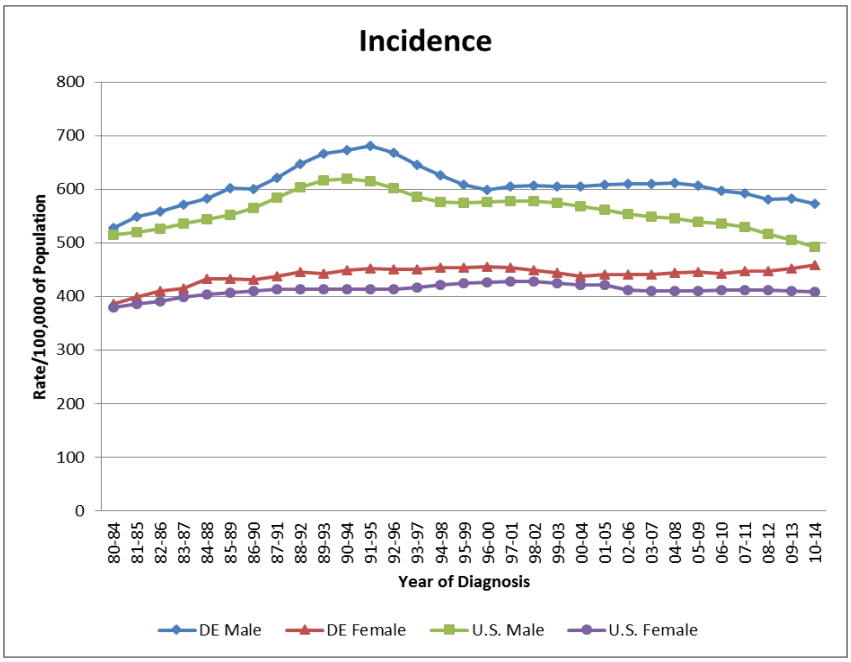
FIGURE 3-1: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (573.2 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to females (458.0 per 100,000).
  - The difference in all-site cancer incidence rates between non-Hispanic Caucasians (520.1 per 100,000) and non-Hispanic African Americans (499.3 per 100,000) was not statistically significant.
  - Hispanics (397.7 per 100,000) had a statistically significantly lower all-site cancer incidence rate compared to both non-Hispanic Caucasians (520.1 per 100,000) and non-Hispanic African Americans (499.3 per 100,000).
- Comparing Delaware and the U.S.
  - Delaware (506.4 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to the U.S. (442.7 per 100,000).
  - Delaware males (573.2 per 100,000) had a statistically significantly higher all-site cancer incidence rates compared to U.S. males (492.4 per 100,000).
  - Delaware females (458.0 per 100,000) had a statistically significantly higher all-site cancer incidence rates compared to U.S. females (408.7 per 100,000).
  - Non-Hispanic Caucasians in Delaware (520.1 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to non-Hispanic Caucasians in the U.S. (472.0 per 100,000).
  - Non-Hispanic African Americans in Delaware (499.3 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to non-Hispanic African Americans in the U.S. (470.5 per 100,000).
  - Hispanics in Delaware (397.7 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to Hispanics in the U.S. (340.6 per 100,000).

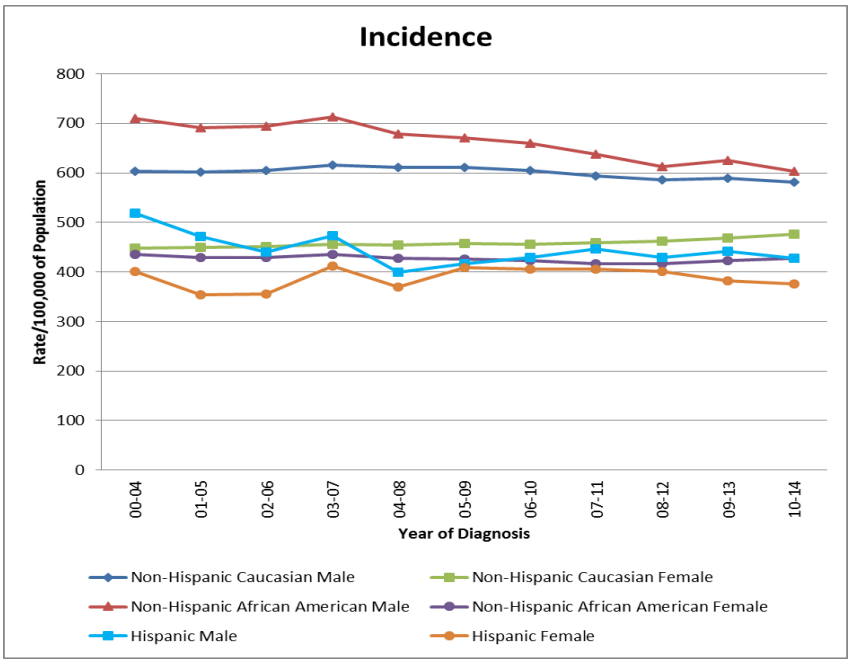
FIGURE 3-2: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for all-site cancer did not change in Delaware and decreased 8% in the U.S.
  - Incidence rates for all-site cancer decreased 5% in Delaware males and decreased 13% in U.S. males.
  - Incidence rates for all-site cancer increased 5% in Delaware females and decreased 3% in U.S. females.

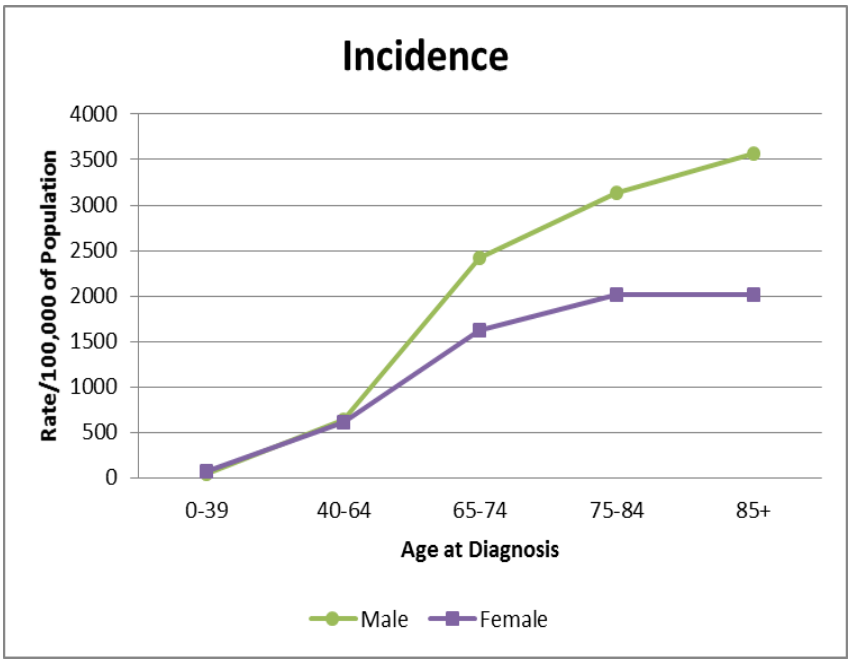
FIGURE 3-3: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for all-site cancer decreased 4% in non-Hispanic Caucasian males and increased 6% in non-Hispanic Caucasian females.
  - Incidence rates for all-site cancer decreased 15% in non-Hispanic African American males and decreased 1% in non-Hispanic African American females.
  - Incidence rates for all-site cancer decreased 17% in Hispanic males and decreased 6% in Hispanic females.

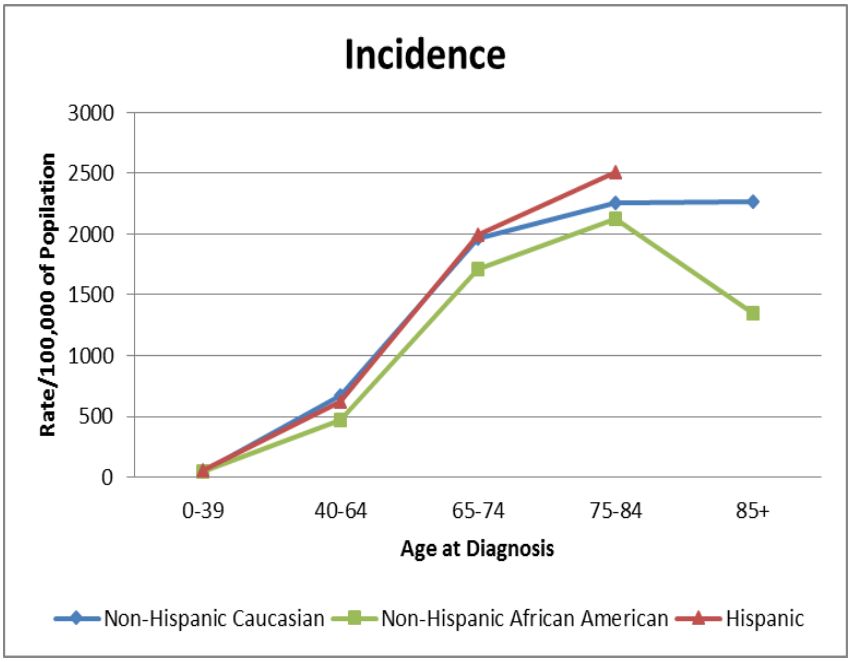
FIGURE 3-4: AGE-SPECIFIC ALL-SITE CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age for all-site cancer incidence in Delaware is 85 years of age and older.

FIGURE 3-5: AGE-SPECIFIC ALL-SITE CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- Non-Hispanic Caucasians have a peak age range for all-site cancer incidence at 85 years of age and older; non-Hispanic African American have a peak age range for all-site cancer incidence at 75-84 years of age; and Hispanics have a peak age range for all-site cancer incidence at 75-84 years of age.

TABLE 3-3: AGE-SPECIFIC ALL-SITE CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	33.5	35.3	42.8	63.0	55.8	72.1
40-64	773.4	443.6	633.8	595.9	499.4	617.7
65-74	2,579.0	2,108.5	2,425.3	1,493.3	1,380.4	1,627.2
75-84	2,812.6	2,395.2	3,133.1	1,906.7	1,883.2	2,018.1
85+	3,398.1	1,700.7	---	1,761.0	1,119.8	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasian males have a peak age range for all-site cancer incidence at 85 years of age and older; non-Hispanic African American males have a peak age range for all-site cancer incidence at 75-84 years of age; and Hispanic males have a peak age range for all-site cancer incidence at 75-84 years of age.
- Non-Hispanic Caucasian females have a peak age range for all-site cancer incidence at 75-84 years of age; non-Hispanic African American females have a peak age range for all-site cancer incidence at 75-84 years of age; and Hispanic females have a peak age range for all-site cancer incidence at 75-84 years of age.

MORTALITY

For 2010-2014, Delaware ranked 16th in the U.S. for all-site cancer mortality (16th in 2009-2013); males ranked 21st (19th in 2009-2013) and females ranked 13th (16th in 2009-2013)[11].

2010-2014 DATA

TABLE 3-4: NUMBER OF ALL-SITE CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	9,602	4,984	4,618	7,685	4,014	3,671	1,597	798	799	171	100	71
Kent	1,769	907	862	1,393	709	684	306	165	141	32	19	13
New Castle	5,128	2,621	2,507	3,894	2,010	1,884	1,040	505	535	117	65	52
Sussex	2,705	1,456	1,249	2,398	1,295	1,103	251	128	123	22	16	6

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017

- In 2010-2014, there were 9,602 deaths from cancer in Delaware, an average of 1,920 per year.
- Males accounted for 52% of all-site cancer deaths.
- Non-Hispanic Caucasians accounted for 80% of all-site cancer deaths.

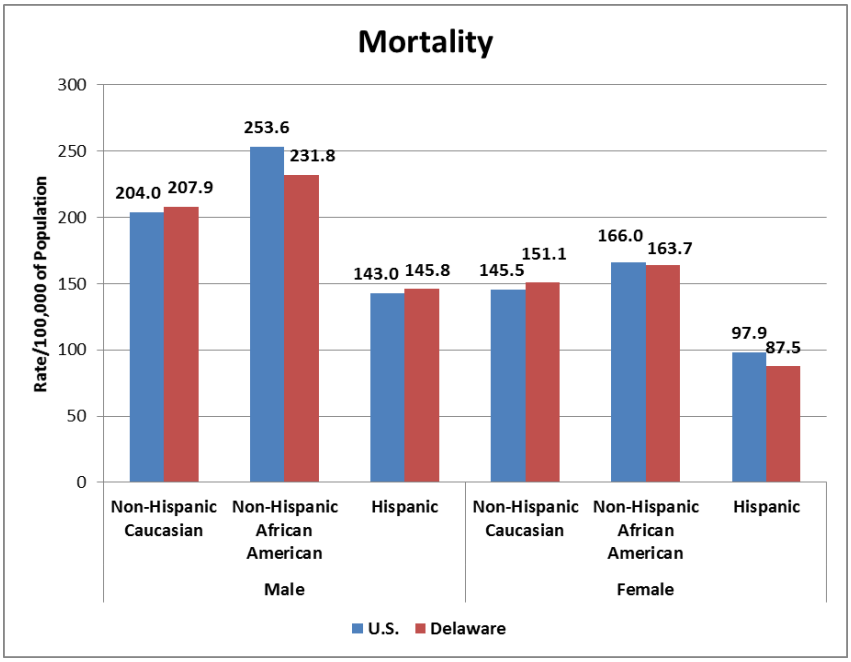
[11] Howlader N, Noone AM, Krapcho M, Garshell J, Miller D, Altekruse SF, Kosary CL, Yu M, Ruhl J, Tatalovich Z, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds). SEER Cancer Statistics Review, 1975-2012, National Cancer Institute. Bethesda, MD, http://seer.cancer.gov/csr/1975_2012/, based on November 2014 SEER data submission, posted to the SEER web site, April 2015.

TABLE 3-5: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	166.1	200.5	141.5
Delaware	178.2	212.2	153.9
Kent	192.1	224.4	169.6
New Castle	179.0	215.4	153.8
Sussex	168.9	201.4	144.1

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 3-6: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



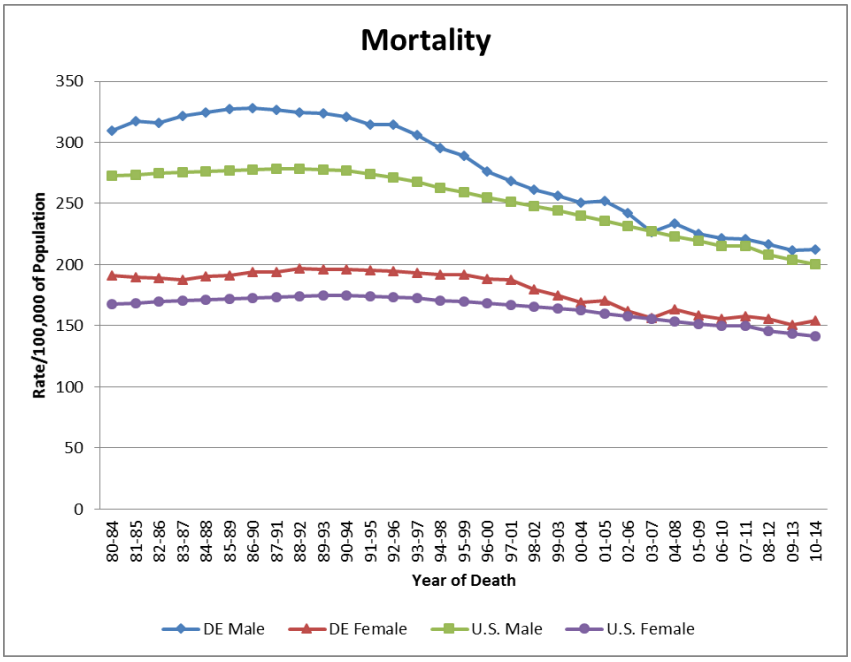
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (212.2 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to females (153.9 per 100,000).
  - Non-Hispanic African Americans (190.8 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to both non-Hispanic Caucasians (174.9 per 100,000) and Hispanics (114.3 per 100,000).
  - Non-Hispanic Caucasians (174.9 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to Hispanics (114.3 per 100,000).
- Comparing Delaware and the U.S.
  - Delaware (178.2 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to the U.S. (166.1 per 100,000).

- Delaware males (212.2 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to U.S. males (200.5 per 100,000).
- Delaware females (153.9 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to U.S. females (141.5 per 100,000).
- Non-Hispanic Caucasians in Delaware (174.9 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to non-Hispanic Caucasians in the U.S (170.2 per 100,000).
- The difference in all-site cancer mortality rates between non-Hispanic African Americans in Delaware (190.8 per 100,000) and the U.S. (199.1 per 100,000) was not statistically significant.
- The difference in all-site cancer mortality rates between Hispanics in Delaware (114.3 per 100,000) and the U.S. (116.5 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

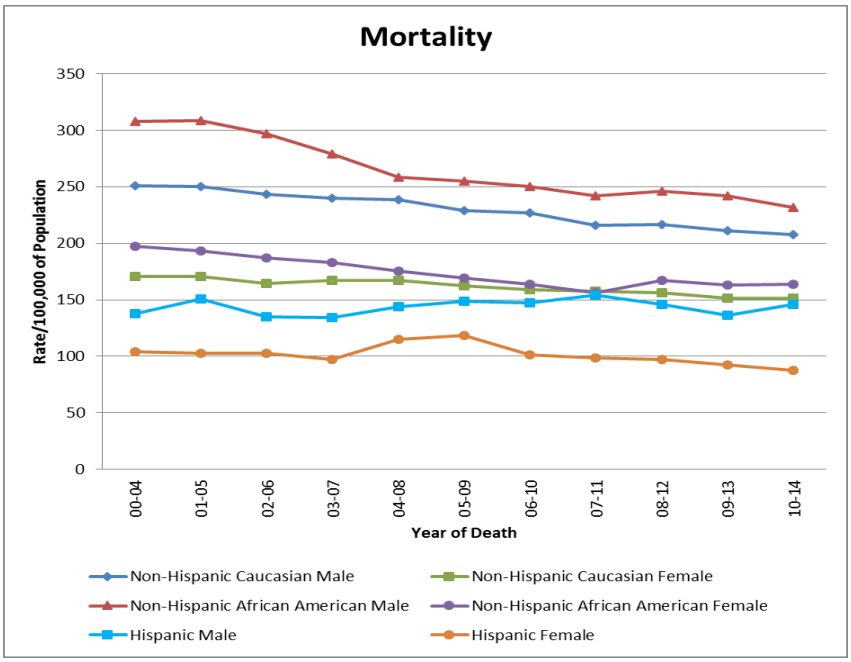
FIGURE 3-7: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for all-site cancer decreased 12% in Delaware and decreased 14% in the U.S.
  - Mortality rates for all-site cancer decreased 15% in Delaware males and decreased 16% in U.S. males.
  - Mortality rates for all-site cancer decreased 9% in Delaware females and decreased 13% in U.S. females.

FIGURE 3-8: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for all-site cancer decreased 17% in non-Hispanic Caucasian males and decreased 12% in non-Hispanic Caucasian females.
  - Mortality rates for all-site cancer decreased 25% in non-Hispanic African American males and decreased 17% in non-Hispanic African American females.
  - Mortality rates for all-site cancer increased 6% in Hispanic males and decreased 16% in Hispanic females.

FIGURE 3-9: AGE-SPECIFIC ALL-SITE CANCER MORTALITY RATES BY SEX; DELAWARE, 2010-2014

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age for all-site cancer mortality is 85 years of age and older.
- Males and females have a peak age range for all-site cancer mortality at 85 years of age and older; it is the same for non-Hispanic Caucasians and non-Hispanic African Americans.

TABLE 3-6: AGE-SPECIFIC ALL-SITE CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	5.6	---	---	7.0	---	---
40-64	163.2	207.6	118.7	142.5	174.2	80.4
65-74	741.3	882.2	---	573.9	545.1	---
75-84	1,483.6	1,680.1	---	983.3	1,076.4	---
85+	2,554.0	2,045.8	---	1,408.0	1,430.8	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasians males have a peak age range for mortality at 85 years of age and older; non-Hispanic African American males have a peak age range for mortality at 85 years of age and older.
- Non-Hispanic Caucasians females have a peak age range for mortality at 85 years of age and older; non-Hispanic African American females have a peak age range for mortality at 85 years of age and older.

CHAPTER 4: BRAIN AND OTHER CENTRAL NERVOUS SYSTEM CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting brain cancer:

- Ingestion of aspartame (a sugar substitute)
- Cell phone use (there is limited evidence on the effects of long-term use)

The following are *environmental and medically-related* causes of brain cancer:

- Exposure to radiation (usually radiation therapy)
- Workplace exposures including vinyl chloride (used to manufacture plastics), petroleum products, and certain other chemicals
- Exposure to electromagnetic fields from power lines and transformers
- Infection with certain viruses

The following are *non-modifiable* risk factors (these cannot be changed) of getting brain cancer:

- Family history (there is genetic predisposition in about 4% of cases)

While there are no known lifestyle risk factors to protect against brain cancer, managing lifestyle risk factors such as eating a healthy diet (high in fruits, vegetables, and whole grains), avoiding tobacco use, limiting alcohol use (two drinks per day for males and one drink a day for females) , and increasing physical activity will help promote better overall health.

EARLY DETECTION

There are currently no tests recommended for the screening of brain tumors. For people who have certain inherited syndromes which may put them at higher risk for brain tumors, health care professionals may recommend frequent physical exams and other tests starting when they are young.

INCIDENCE

For 2010-2014, Delaware ranked 41st in the U.S. for brain cancer incidence (31st in 2009-2013); males ranked 48th (46thin 2009-2013) and females ranked 2nd (9th in 2009-2013)[10].

2010-2014 DATA

TABLE 4-1: NUMBER OF BRAIN CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	323	150	173	271	129	142	38	17	21	10	---	---
Kent	50	22	28	42	18	24	---	---	---	---	---	---
New Castle	188	84	104	149	69	80	30	13	17	7	---	---
Sussex	85	44	41	80	42	38	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

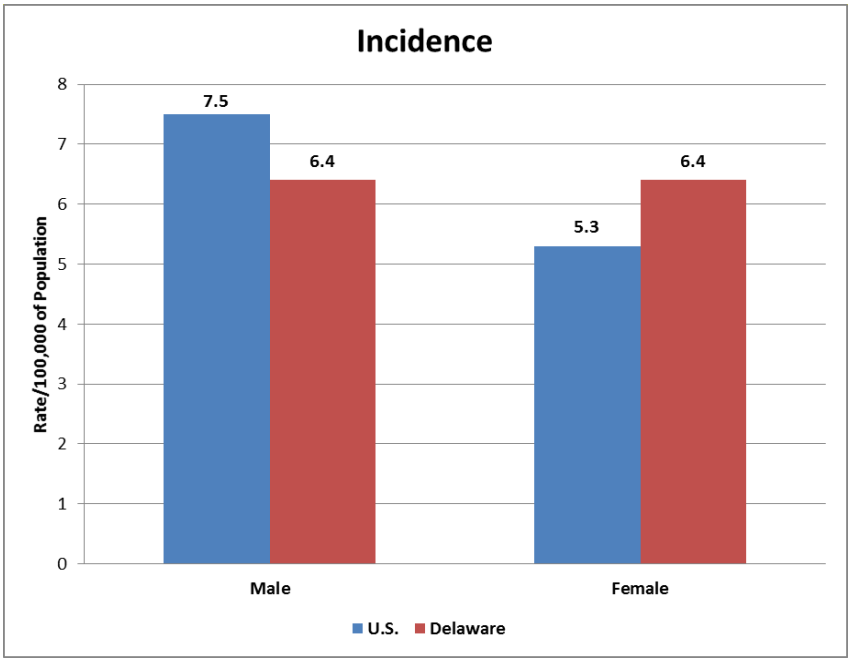
- In 2010-2014, there were 323 brain cancer cases (1% of all cancer cases) diagnosed in Delaware.
- Females accounted for 54% of brain cancer cases.
- Non-Hispanic Caucasians accounted for 84% of brain cancer cases.

TABLE 4-2: FIVE-YEAR AVERAGE AGE-ADJUSTED BRAIN CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	6.4	7.5	5.3
Delaware	6.4	6.4	6.4
Kent	5.6	---	5.9
New Castle	6.6	6.7	6.7
Sussex	6.5	6.8	6.3

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 4-1: FIVE-YEAR AVERAGE AGE-ADJUSTED BRAIN CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 2010-2014



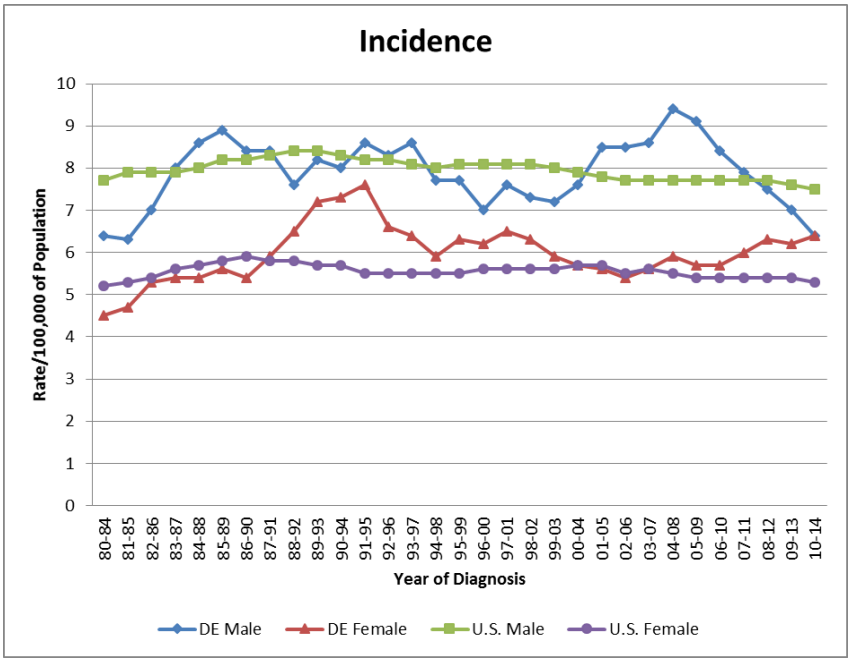
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in brain cancer incidence rates between males (6.4 per 100,000) and females (6.4 per 100,000) was not statistically significant.
  - Non-Hispanic Caucasians (7.7 per 100,000) had a statistically significantly higher brain cancer incidence rate compared to non-Hispanic African Americans (3.9 per 100,000).
  - Brain cancer incidence rates for Hispanics could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S.
  - There was no difference in brain cancer incidence rates between Delaware (6.4 per 100,000) and the U.S. (6.4 per 100,000).

- The difference in brain cancer incidence rates between males in Delaware (6.4 per 100,000) and the U.S. (7.5 per 100,000) was not statistically significant.
- Delaware females (6.4 per 100,000) had a statistically significantly higher brain cancer incidence rate compared to U.S. females (5.3 per 100,000).
- The difference in brain cancer incidence rates between non-Hispanic Caucasians in Delaware (7.7 per 100,000) and the U.S. (7.6 per 100,000) was not statistically significant.
- The difference in the brain cancer incidence rates between non-Hispanic African Americans in Delaware (3.9 per 100,000) and the U.S. (4.2 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

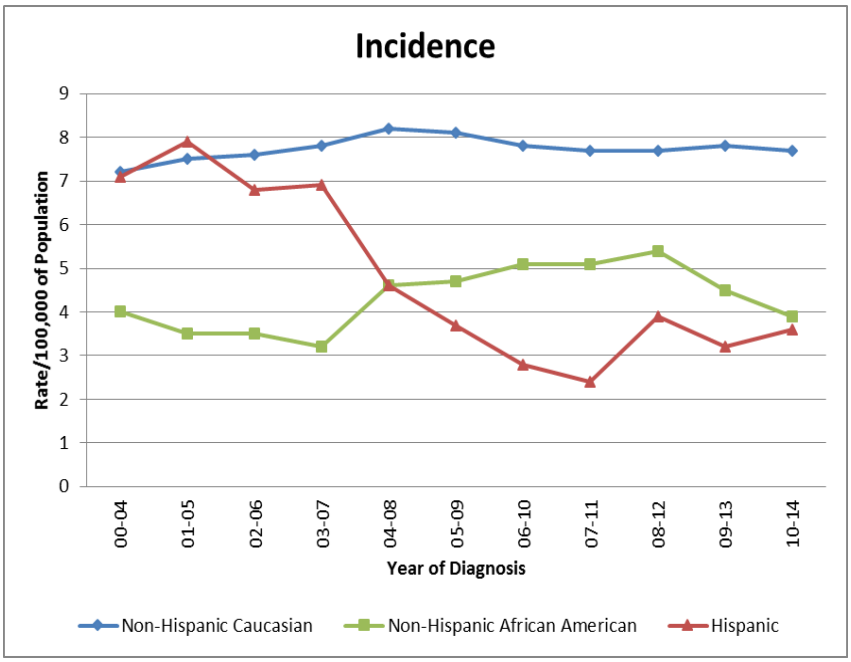
FIGURE 4-2: FIVE-YEAR AVERAGE AGE-ADJUSTED BRAIN CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for brain cancer decreased 3% in Delaware and decreased 4% in the U.S.
  - Incidence rates for brain cancer decreased 16% in Delaware males and decreased 5% in U.S. males.
  - Incidence rates for brain cancer increased 12% in Delaware females and decreased 7% in U.S. females.

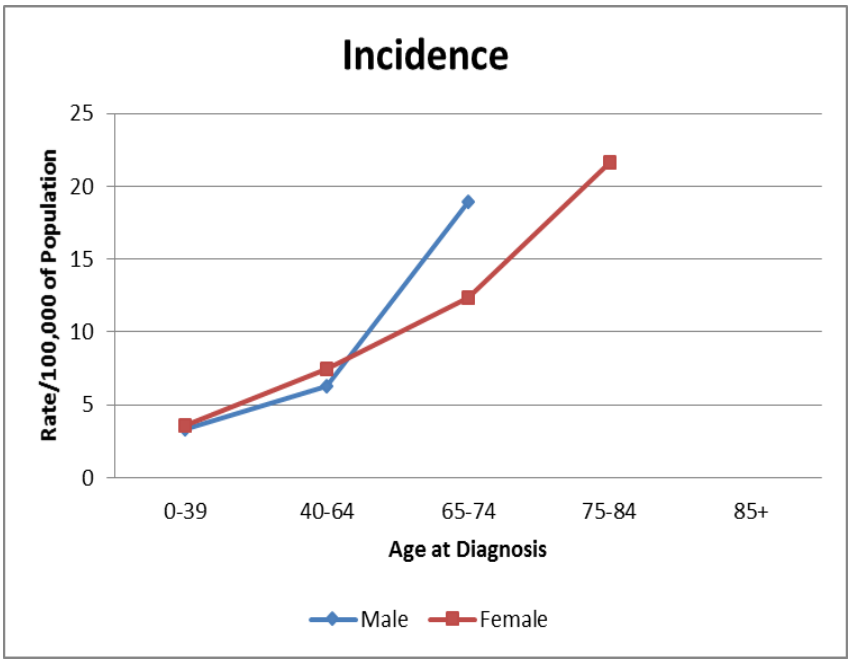
FIGURE 4-3: FIVE-YEAR AVERAGE AGE-ADJUSTED BRAIN CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for brain cancer increased 7% in non-Hispanic Caucasians.
  - Incidence rates for brain cancer decreased 3% in non-Hispanic African Americans.
  - Incidence rates for brain cancer decreased 49% in Hispanics.

FIGURE 4-4: AGE-SPECIFIC BRAIN CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for brain cancer incidence is 65-74 years of age for males and 75-84 years of age for females. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 4-3: AGE-SPECIFIC BRAIN CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	4.7	---	---	4.7	---	---
40-64	7.2	---	---	8.9	---	---
65-74	21.9	---	---	14.4	---	---
75-84	---	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasians, both males and females, had a peak age range for brain cancer incidence at 65-74 years of age.

STAGE OF DIAGNOSIS - DELAWARE

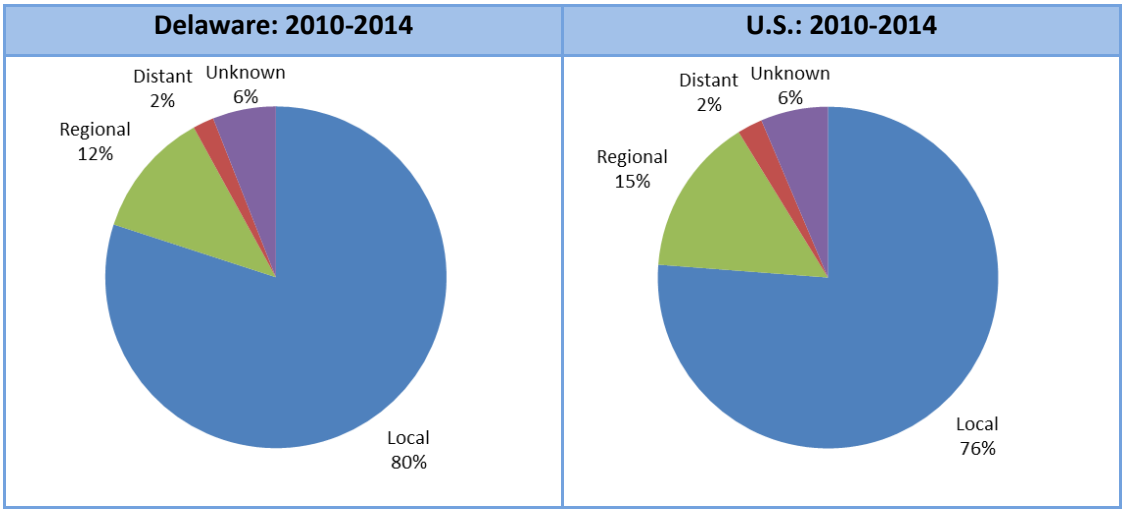
TABLE 4-4: BRAIN CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	259 (80)	117 (78)	142 (82)	223 (82)	104 (81)	119 (84)	23 (61)	10 (59)	13 (62)	9 (90)	---	---
Regional	38 (12)	21 (14)	17 (10)	27 (10)	15 (12)	12 (9)	10 (26)	---	---	---	---	---
Distant	6 (2)	---	---	---	---	---	---	---	---	---	---	---
Unknown	20 (6)	---	---	---	---	---	---	---	---	---	---	---
Total	323	150	173	271	129	142	38	17	21	10	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 259 (80%) brain cancers diagnosed at the local stage; 38 (12%) at the regional stage; 6 (2%) at the distant stage; and 20 (6%) had an unknown stage.
- Hispanics (90%) had a higher proportion of brain cancers diagnosed at the local stage compared to both non-Hispanic Caucasians (82%) and non-Hispanic African Americans (61%).
- Females (82%) had a higher proportion of brain cancers diagnosed at the local stage compared to males (78%).
- Non-Hispanic Caucasian females (84%) had the highest proportion of brain cancers diagnosed at the local stage, compared to non-Hispanic African American females (62%).

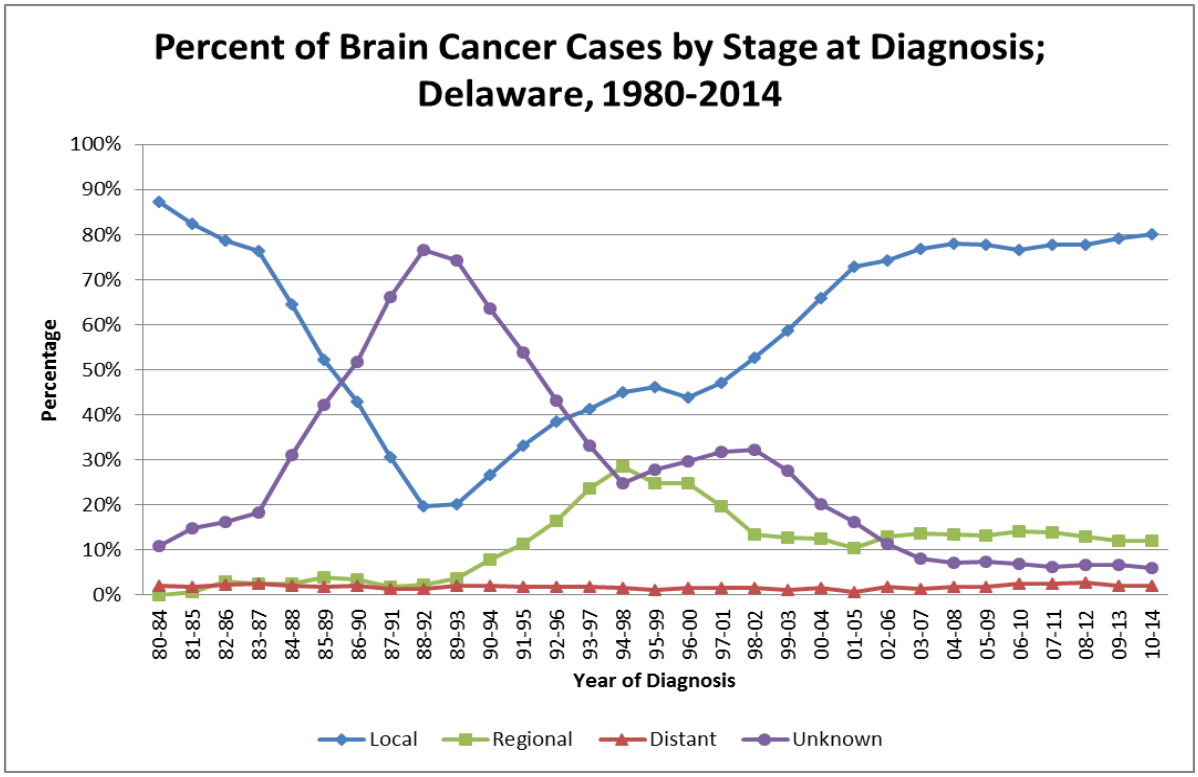
FIGURE 4-5: DISTRIBUTION OF BRAIN CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware brain cancer data, Delaware (80%) had a higher proportion of brain cancer diagnosed at the local stage compared to the U.S. (76%); Delaware (12%) had a lower proportion of brain cancer diagnosed at the regional stage compared to the U.S. (15%).

FIGURE 4-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR BRAIN CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of brain cancer cases diagnosed at the local stage decreased from 87% to 80%.
  - Brain cancer cases diagnosed at the distant stage remained the same at 2%.

MORTALITY

For 2010-2014, Delaware ranked 45th in the U.S. for brain cancer mortality (38th in 2009-2013); males ranked 48th (45th in 2009-2013) and females ranked 20th (17th in 2009-2013)[11].

2010-2014 DATA

TABLE 4-5: NUMBER OF BRAIN CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	215	107	108	189	93	96	18	10	8	---	---	---
Kent	29	10	19	24	8	16	---	---	---	---	---	---
New Castle	126	63	63	111	55	56	13	6	7			
Sussex	60	34	26	54	30	24	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

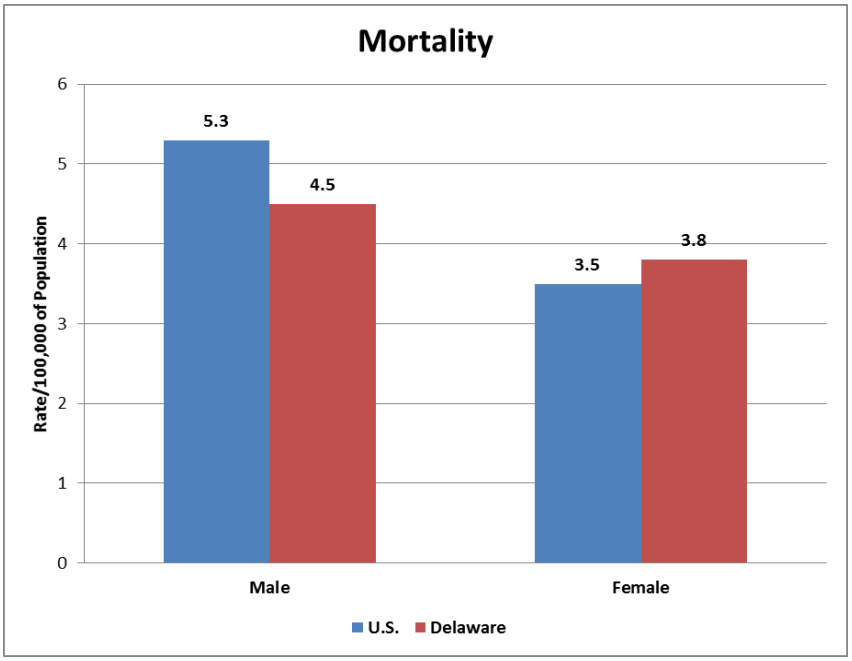
- In 2010-2014, there were 215 deaths (2% of all cancer deaths) from brain cancer in Delaware.
- Males accounted for 50% of brain cancer deaths.
- Non-Hispanic Caucasians accounted for 88% of brain cancer deaths.

TABLE 4-6: FIVE-YEAR AVERAGE AGE-ADJUSTED BRAIN CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	4.3	5.3	3.5
Delaware	4.1	4.5	3.8
Kent	3.2	---	---
New Castle	4.5	5.1	4.0
Sussex	3.8	4.5	3.3

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 4-7: FIVE-YEAR AVERAGE AGE-ADJUSTED BRAIN CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 2010-2014



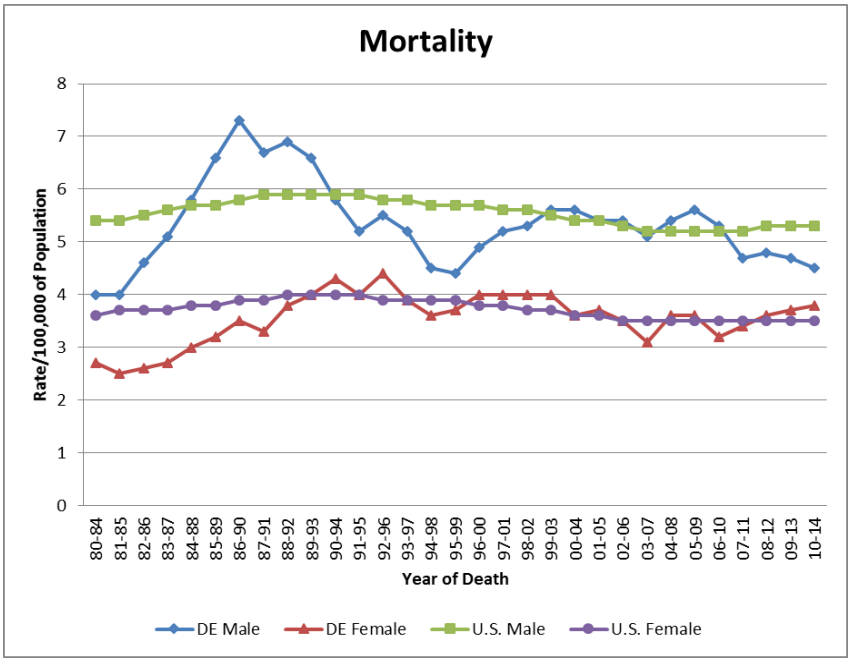
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in brain cancer mortality rates between males (4.5 per 100,000) and females (3.8 per 100,000) was not statistically significant.
  - Brain cancer mortality rates for non-Hispanic African Americans and Hispanics could not be calculated due to the low number of deaths.
- Comparing Delaware and the U.S.
  - The difference in brain cancer mortality rates between Delaware (4.1 per 100,000) and the U.S. (4.3 per 100,000) was not statistically significant.

- The difference in brain cancer mortality rates between males in Delaware (4.5 per 100,000) and the U.S. (5.3 per 100,000) was not statistically significant.
- The difference in brain cancer mortality rates between females in Delaware (3.8 per 100,000) and the U.S. (3.5 per 100,000) was not statistically significant.
- The difference in brain cancer mortality rates between non-Hispanic Caucasians in Delaware (4.6 per 100,000) and the U.S (4.9 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 4-8: FIVE-YEAR AVERAGE AGE-ADJUSTED BRAIN CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014

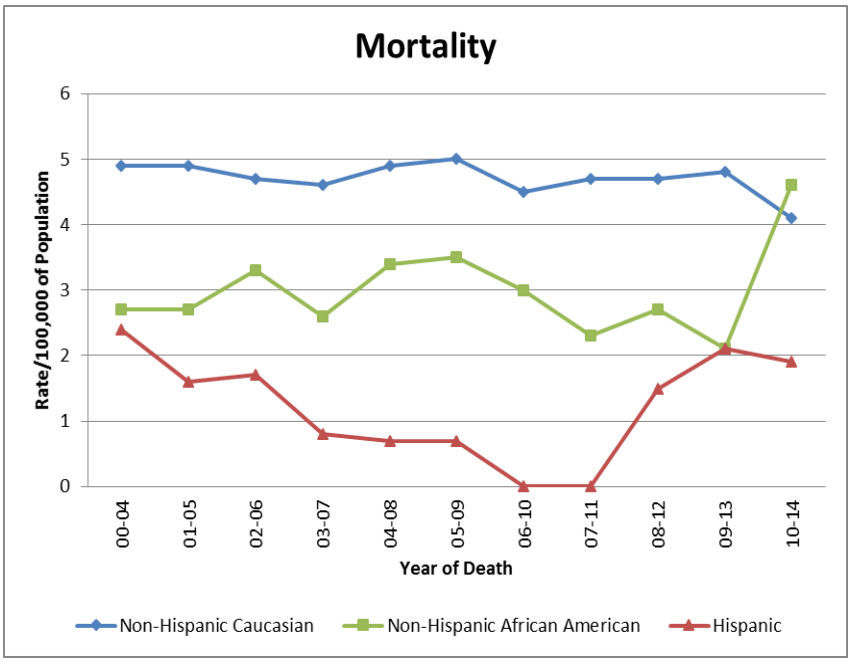


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for brain cancer decreased 9% in Delaware and decreased 2% in the U.S.
  - Mortality rates for brain cancer decreased 20% in Delaware males and decreased 2% in U.S. males.
  - Mortality rates for brain cancer increased 6% in Delaware females and decreased 3% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 4-9: FIVE-YEAR AVERAGE AGE-ADJUSTED BRAIN CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for brain cancer decreased 16% in non-Hispanic Caucasians.
  - Mortality rates for brain cancer increased 70% in non-Hispanic African Americans.
  - Mortality rates for brain cancer decreased 21% in Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 4-7: AGE-SPECIFIC BRAIN CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	5.6	---	---	5.6	---	---
65-74	---	---	---	---	---	---
75-84	---	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for brain cancer mortality is 75-84 years of age. Due to low numbers, mortality rates could not be calculated for some groups.

CHAPTER 5: BREAST CANCER (FEMALE)

RISK FACTORS

Most females who have one or more breast cancer risk factors never develop the disease. Some females who develop breast cancer have no apparent risk factors other than being a female and growing older. Even when a woman with one or more risk factors develops breast cancer, it is difficult to know how much these factors might have contributed to the development of the disease.

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting female breast cancer:

- Alcohol use (two to five drinks daily)
- Obesity or overweight status, especially after menopause
- Reproductive history (breast cancer risk increases among females who have never had children or who had their first child after 30 years of age)
- High-fat diet, low intake of fruits and vegetables
- Smoking and exposure to secondhand smoke

The following are *environmental and medically-related* causes of female breast cancer:

- Birth control use in the past 10 years
- Combined hormone therapy (estrogen and progesterone) for two or more years after menopause – risk returns to normal five years following discontinued use
- History of high-dose radiation therapy to the chest area as a child or young adult
- Exposure to chemical compounds in the environment which may have estrogen-like properties (pesticides like Dichlorodiphenyldichloroethylene (DDE) , polychlorinated biphenyls (PCBs), and substances found in some plastics, cosmetics, and personal care products

The following are *non-modifiable* risk factors (these cannot be changed) of getting female breast cancer:

- Gender – Breast cancer is 100 times more common in females than in males.
- Increasing age – Only one out of eight invasive breast cancers are diagnosed in females under 45 years of age; two-thirds of invasive cancers are in females 55 years of age and older.
- Family history – Having one first degree relative (mother, sister, or daughter) with breast cancer doubles a woman's risk of developing breast cancer; having two first degree relatives triples the risk.
- Gene defects or mutations – Five to 10 percent of breast cancer cases may result from gene defects or mutations inherited from a parent; the most common inherited mutation is the BRCA1 or BRCA2 gene found mostly in Jewish females of eastern European origin.
- Personal history of breast cancer – This triples the risk of developing a new cancer in another part of the body, another part of the previously affected breast, or the other breast.
- Race – Non-Hispanic Caucasian females 45 years of age and older are more likely to develop breast cancer when compared to non-Hispanic African American females. Non-Hispanic African American females are more likely to be diagnosed at a younger age and more likely to die from breast cancer when compared to non-Hispanic Caucasian females.
- Dense breast tissue is thought to increase risk because it is more difficult to detect potential problems on mammograms.
- Personal history of benign breast conditions
- Early age at menarche (before 12 years of age) and/or later age at menopause (55 years of age and older)

To protect against breast cancer, individuals should maintain a healthy weight; consume a diet high in fruits, vegetables, and whole grains; limit calcium intake; and engage in regular physical activity.

EARLY DETECTION

A screening mammogram (x-ray of the breast) is used to detect breast disease in females who appear to have no breast problems. For early breast cancer detection in females without breast symptoms, the DCC recommends that:[12]

- Females 40 years of age and older should get a mammogram and clinical breast exam annually.
- Females 18-39 years of age should get a clinical breast exam annually.

Also, females should know how their breasts normally look and feel, and report any breast change promptly to their health care provider. Breast self-exam is encouraged for females starting in their 20s[12]. Females at increased risk for breast cancer should discuss with their health care provider the benefits and limitations of beginning mammograms when they are younger, having additional tests, and/or having more frequent exams.

FEMALE BREAST CANCER SCREENING IN DELAWARE

The BRFS has collected yearly mammogram use data through 2000; after 2000, mammogram use data are collected biennially. The BRFS asks a female respondent's mammogram use during the previous two years (as opposed to the annual mammogram screening schedule recommended by the DCC) to account for minor variations in scheduling that may cause a woman to miss the one-year threshold (e.g., two mammogram screening appointments 14 months apart).

Data from the 2016 BRFS provides information on breast cancer screening among Delaware females:

- Of Delaware females 40 years of age and older, 78% reported having a mammogram within the previous two years, compared to a national median of 72%. Delaware females ranked third highest nationally for this response.
- In Delaware, the percentage of non-Hispanic Caucasian females 40 years of age and older who reported having a mammogram in the past two years was lower compared to non-Hispanic African American females, but the difference was significantly different (77% vs. 87%, respectively).
- Females 40 years of age and older in the three highest income categories had the highest percentages of mammography use (79% for females with an annual income of $50,000-$74,999 and 86% for females with an annual income of $75,000 and over).
- Delaware females (40 years of age and older) who were college graduates had a higher prevalence of having had a mammogram in the past two years, compared to Delaware females who had less than a high school diploma; this difference was statistically significant.

[12] American Cancer Society recommendations for early breast cancer detection in women without breast symptoms. Accessed March 15, 2016. http://www.cancer.org/Cancer/BreastCancer/MoreInformation/BreastCancerEarlyDetection/breast-cancer-early-detection-acs-recs

For 2010-2014, Delaware ranked 7th in the U.S. for female breast cancer incidence (12th in 2009-2013)[10].

2010-2014 DATA

TABLE 5-1: NUMBER OF FEMALE BREAST CANCER CASES, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	3,895	3,006	695	69
Kent	704	536	142	15
New Castle	2,153	1,567	467	42
Sussex	1,038	903	86	12

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

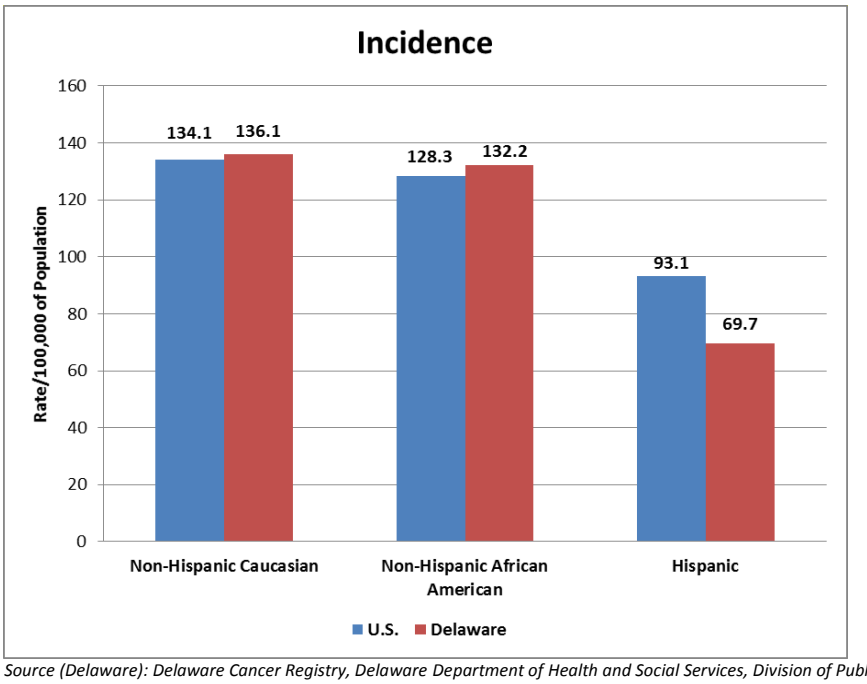
- Female breast cancer is the most commonly diagnosed cancer among females in the U.S. and Delaware.
- There were a total of 27 breast cancers diagnosed in males; 81% were in non-Hispanic Caucasian males. While these data are collected, only breast cancer in females will be addressed in this section.
- In 2010-2014, there were 3,895 female breast cancer cases (29% of all female cancers) diagnosed in Delaware.
- Non-Hispanic Caucasians accounted for 77% of female breast cancer cases.

TABLE 5-2: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	124.9	134.1	128.3	93.1
Delaware	133.5	136.1	132.2	69.7
Kent	138.9	144.1	135.2	---
New Castle	133.3	137.5	133.6	57.5
Sussex	129.2	128.5	123.9	---

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

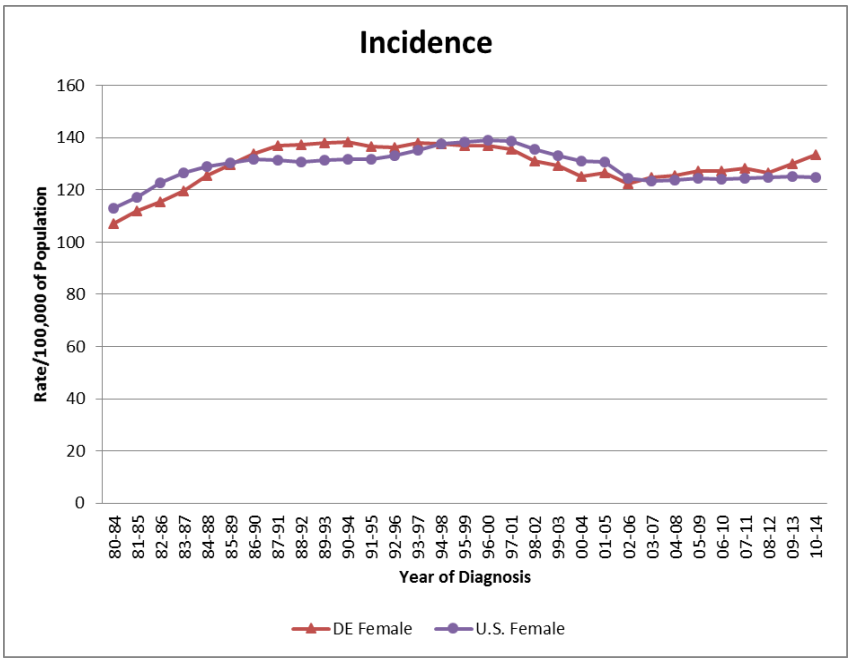
FIGURE 5-1: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in female breast cancer incidence rates between non-Hispanic Caucasians (136.1 per 100,000) and non-Hispanic African Americans (132.2 per 100,000) was not statistically significant.
  - Hispanics (69.7 per 100,000) had a statistically significantly lower female breast cancer incidence rate compared to both non-Hispanic Caucasians (136.1 per 100,000) and non-Hispanic African Americans (132.2 per 100,000).
- Comparing Delaware and the U.S.
  - Delaware (133.5 per 100,000) had a statistically significantly higher female breast cancer incidence rate compared to the U.S. (124.9 per 100,000).
  - The difference in female breast cancer incidence rates between non-Hispanic Caucasians in Delaware (136.1 per 100,000) and the U.S. (134.1 per 100,000) was not statistically significant.
  - The difference in female breast cancer incidence rates between non-Hispanic African Americans in Delaware (132.2 per 100,000) and the U.S. (128.3 per 100,000) was not statistically significant.
  - Hispanics in Delaware (69.7 per 100,000) had a statistically significantly lower female breast cancer incidence rate compared to the Hispanics in the U.S. (93.1 per 100,000).

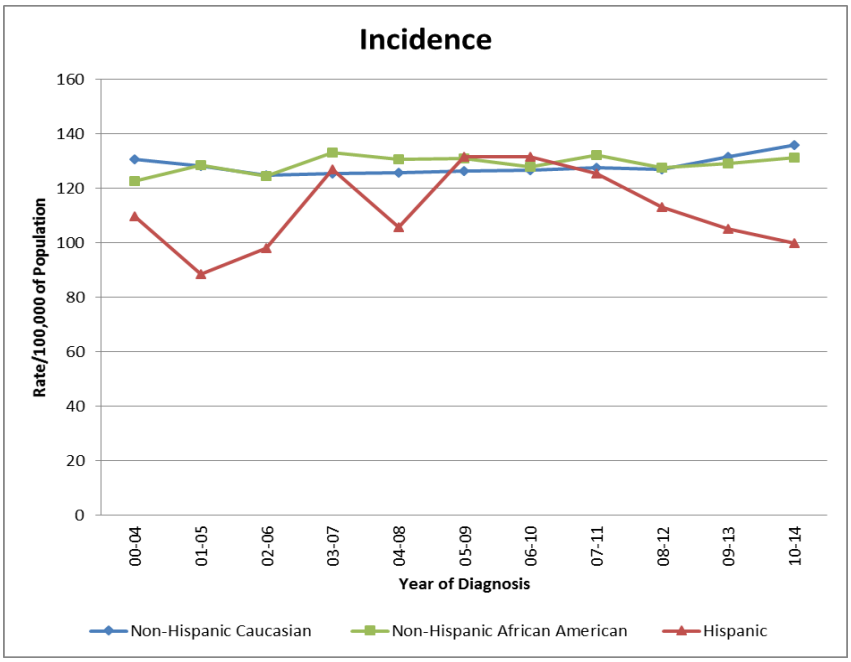
FIGURE 5-2: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER INCIDENCE RATES; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for female breast cancer increased 7% in Delaware and decreased 5% in the U.S.

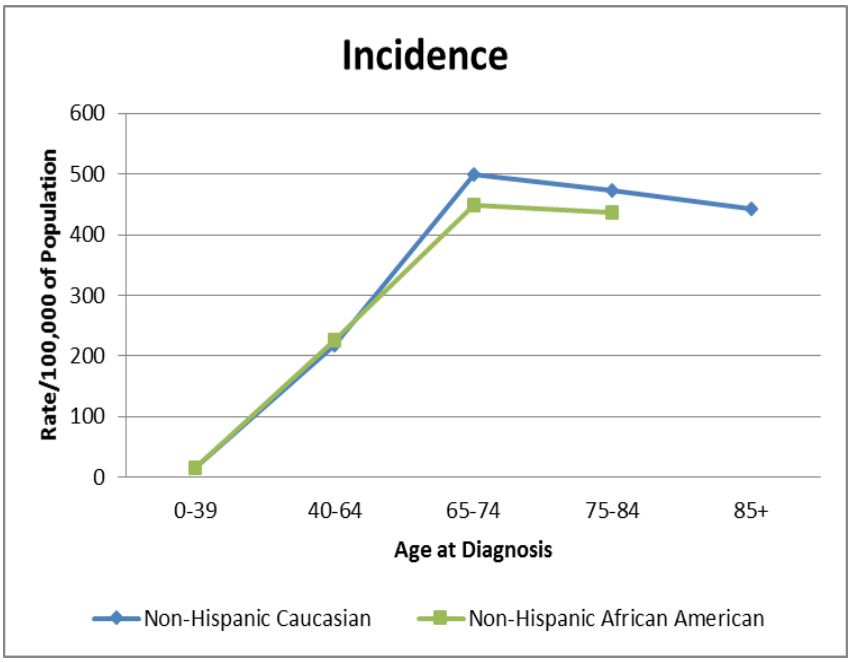
FIGURE 5-3: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for female breast cancer increased 4% in non-Hispanic Caucasians.
  - Incidence rates for female breast cancer increased 7% in non-Hispanic African Americans.
  - Incidence rates for female breast cancer decreased 9% in Hispanics.

FIGURE 5-4: AGE-SPECIFIC FEMALE BREAST CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for female breast cancer incidence is 65-74 years of age for both non-Hispanic Caucasians and non-Hispanic African Americans. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 5-3: AGE-SPECIFIC FEMALE BREAST CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	15.2	15.7	15.9	---
40-64	215.3	217.5	226.8	101.4
65-74	482.3	498.7	448.3	---
75-84	466.2	473.6	435.6	---
85+	426.3	443.5	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

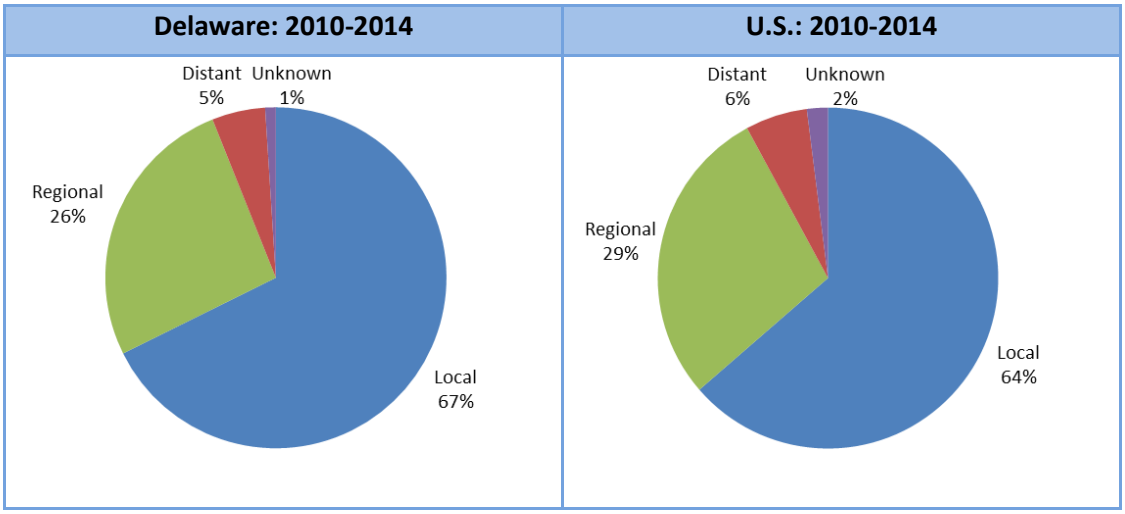
TABLE 5-4: FEMALE BREAST CANCER CASES BY STAGE AT DIAGNOSIS BY RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Local	2,611 (67)	2,080 (69)	412 (59)	38 (55)
Regional	1,030 (26)	733 (24)	234 (38)	27 (39)
Distant	200 (5)	151 (5)	---	---
Unknown	54 (1)	42 (1)	---	---
Total	3,895	3,006	695	69

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 2,611 (67%) female breast cancers diagnosed at the local stage; 1,030 (26%) at the regional stage; 200 (5%) at the distant stage; and 54 (1%) had an unknown stage.
- Non-Hispanic Caucasians (69%) had a higher proportion of female breast cancer diagnosed at local stage compared to both non-Hispanic African Americans (59%) and Hispanics (55%).

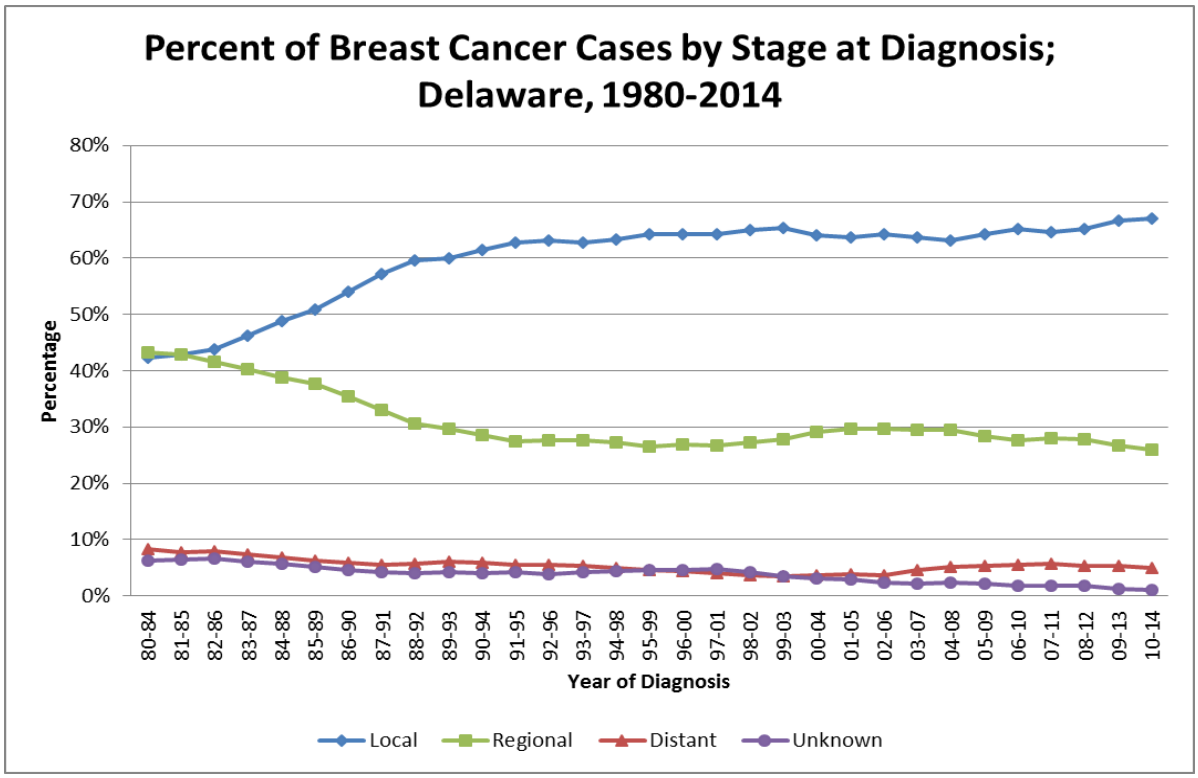
FIGURE 5-5: DISTRIBUTION OF FEMALE BREAST CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware breast cancer data, the proportion of female breast cancer diagnosed at each of the stages is similar.

FIGURE 5-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR FEMALE BREAST CANCER CASES; DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of female breast cancer cases diagnosed at the local stage increased from 42% to 67%.
  - Cases diagnosed at the distant stage decreased from 8% to 5%.

MORTALITY

For 2010-2014, Delaware ranked 20th in the U.S. for female breast cancer mortality (22nd in 2009-2013)[11].

2010-2014 DATA

TABLE 5-5: NUMBER OF FEMALE BREAST CANCER DEATHS, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	657	505	133	10
Kent	121	84	30	---
New Castle	353	257	86	6
Sussex	183	164	17	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- Female breast cancer is the second most common cause of cancer death among females in the U.S. and Delaware.

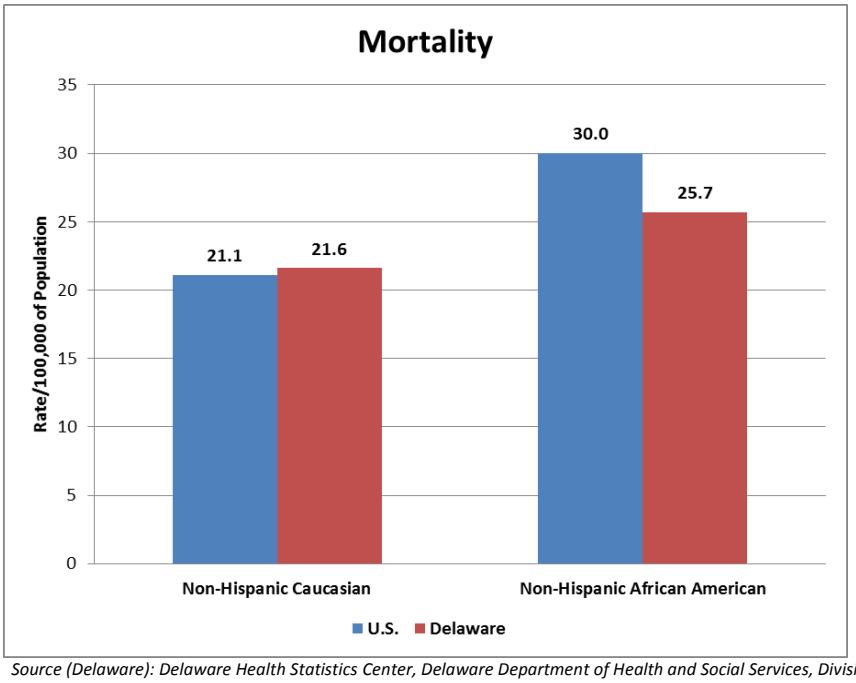
- Five males died from breast cancer from 2010 through 2014. Male deaths due to breast cancer are not included in this section.
- In 2010-2014, there were 657 female deaths (14% of all female cancer deaths) from breast cancer in Delaware.
- Non-Hispanic Caucasian females accounted for 77% of breast cancer deaths.

TABLE 5-6: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	21.2	21.1	30.0	14.5
Delaware	22.4	21.6	25.7	---
Kent	24.8	22.6	28.7	---
New Castle	21.5	20.5	25.5	---
Sussex	22.3	22.5	---	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 5-7: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



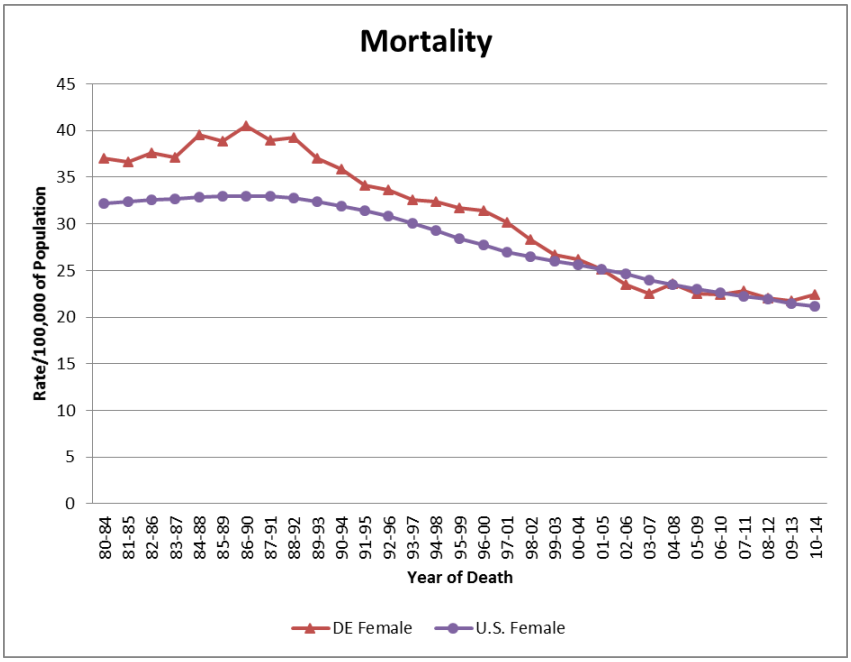
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017.
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in female breast cancer mortality rates between non-Hispanic Caucasians (21.6 per 100,000) and non-Hispanic African Americans (25.7 per 100,000) was not statistically significant.
  - Female breast cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in female breast cancer mortality rates between Delaware (22.4 per 100,000) and the U.S. (21.2 per 100,000) was not statistically significant.
  - The difference in female breast cancer mortality rates between non-Hispanic Caucasians in Delaware (21.6 per 100,000) and the U.S (21.1 per 100,000) was not statistically significant.
  - The difference in female breast cancer mortality rates between non-Hispanic African Americans in Delaware (25.7 per 100,000) and the U.S. (30.0 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 5-8: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER MORTALITY RATES; U.S. AND DELAWARE, 1980-2014

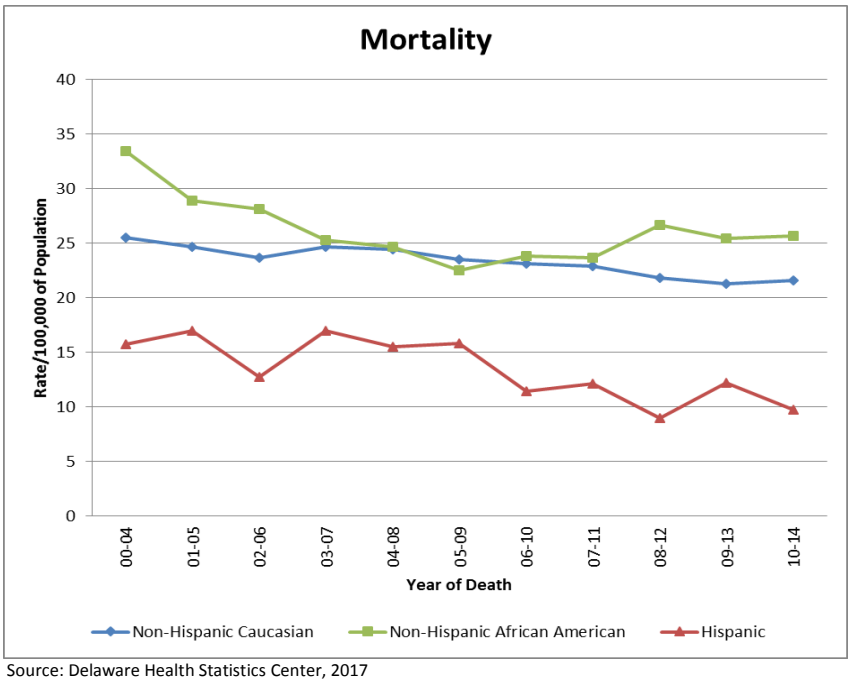


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for female breast cancer decreased 15% in Delaware and decreased 17% in the U.S.

TRENDS OVER TIME - DELAWARE

FIGURE 5-9: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for female breast cancer decreased 15% in non-Hispanic Caucasians.
  - Mortality rates for female breast cancer decreased 23% in non-Hispanic African Americans.
  - Mortality rates for female breast cancer decreased 38% in Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 5-7: AGE-SPECIFIC FEMALE BREAST CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---
40-64	30.4	26.7	41.7	---
65-74	63.5	65.5	---	---
75-84	118.7	118.4	---	---
85+	179.2	177.8	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasian females had a peak age range for mortality at 85 years of age and older. Due to low numbers, mortality rates could not be calculated for some groups.

CHAPTER 6: CERVICAL CANCER

RISK FACTORS

The most important risk factor for cervical cancer is infection from the human papilloma virus (HPV). HPV is a group of more than 100 related viruses. About two-thirds of all cervical cancers are caused by HPV 16 and 18.

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting cervical cancer:

- Obesity or overweight (increases the risk of adenocarcinoma of the cervix)
- Cigarette smoking (doubles the risk)
- Diet low in fruits and vegetables
- Infection with the human immunodeficiency virus (HIV), the virus that causes AIDS, damages the body's immune system and places women at higher risk for HPV infection.
- Infection from Chlamydia, a relatively common bacteria that can infect the reproductive system
- Certain sexual practices can increase risk of getting cervical cancer:
  - sexual intercourse at a young age
  - multiple partners
  - a partner who has had many sexual partners
  - intercourse with uncircumcised males
- Long-term use (five or more years) of oral contraceptives can increase the risk of cervical cancer
- Three or more full-term pregnancies can increase the risk of cervical cancer
- Having the first full-term pregnancy before 17 years of age doubles the risk of cervical cancer later in life, compared to a woman whose first pregnancy was at 25 years of age or older

The following are *environmental and medically-related* causes of female cervical cancer:

- Having a mother who took diethylstilbestrol (DES) during pregnancy to prevent miscarriage (1940 through 1971) increases the risk of clear cell adenocarcinoma of the cervix.

The following are *non-modifiable* risk factors (these cannot be changed) of getting cervical cancer:

- Family history – Having a mother or sister with cervical cancer increases the risk two- to three-fold
- Race/ethnicity – Non-Hispanic African American, American Indian, and Hispanic females are more likely to get cervical cancer

To protect against cervical cancer, individuals should consume a diet high in fruits, vegetables, and whole grains; increase physical activity; stop smoking; and utilize safe sexual practices. The Food and Drug Administration (FDA) has approved two HPV vaccines for use to protect against cervical cancer for the following groups:

- Routine vaccinations for girls and boys starting at 11 or 12 years of age (the vaccination series can be started as early as nine years of age).
- Females 13-26 years of age and males 13-21 years of age who have not started the vaccines or who have started but not completed the series. Males 22-26 years of age can also be vaccinated. It is important to note that vaccination at older ages is less effective in lowering cancer risk.
- Men who have sex with men (through 26 years of age).
- People with weakened immune systems, including those with HIV infection, if they have not been previously vaccinated.

EARLY DETECTION

The Pap test detects changes in cells in the cervix that are caused by HPV infection. HPV tests look for HPV infections by finding genes from HPV in the cervical cells. In March 2012, the American Cancer Society (ACS), the American Society for Colposcopy and Cervical Pathology, and the American Society for Clinical Pathology jointly released new cervical cancer screening guidelines that extend the time interval between screening tests for most women. The DCC also endorses these guidelines:

TABLE 6-1: CERVICAL CANCER SCREENING GUIDELINES

Population	Recommended Screening	Comments
Under 21 years	No screening	HPV testing should not be used for screening or management of ACS–US^ in this age group.
21 – 29 years	Cytology alone every 3 years	
30 – 65 years	HPV and cytology 'co-testing' every 5 years (preferred)	Screening by HPV testing alone is not recommended for most clinical settings
	Cytology alone every 3 years (acceptable)	
Older than 65 years	No screening following adequate negative prior screening	Women with a history of CIN2 or a more severe diagnosis should continue routine screening for at least 20 years
After hysterectomy	No screening	Applies to women without a cervix and without a history of CIN2^^ or a more severe diagnosis in the past 20 years or cervical cancer ever.
HPV vaccinated	Follow age-specific recommendations (same as unvaccinated women)	

Source: https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/cervical-cancer-screening#consider
^ASC–US: atypical squamous cells of undetermined significance
^^CIN2: cervical intraepithelial neoplasia grade 2

CERVICAL CANCER SCREENING IN DELAWARE

The BRFS has collected data on cervical cancer screening in Delaware annually from 1995 to 2000 and biannually since then. In 2016. the BRFS showed that:

- Seventy-nine percent of Delaware women 21-65 years of age reported that they had had a Pap test within the previous three years. By comparison, the nation median was 80% of women 21-65 years of age who reported having had a Pap test within the previous three years.
- In Delaware, the prevalence of receiving a Pap test in the past three years was slightly lower for non-Hispanic Caucasians compared to non-Hispanic African Americans (78% vs. 82%, respectively). However, this difference was not statistically significant.
- There was no statistically significant difference in prevalence of receiving a Pap test in the past three years among all ages for Delaware women.
- In 2016, Delaware ranked 33rd (79%) for women 21-65 years of age receiving a Pap test in the past three years.
- In Delaware, women 21-65 years of age with an annual household income of $25,000-34,999 had the lowest prevalence of receiving a Pap test within the past three years. However, this difference was not statistically significant.
- There were no statistically significant differences for receiving a Pap test within the past three years among Delaware women 21-65 years of age of different educational levels.

For 2010-2014, Delaware ranked 12th in the U.S. for cervical cancer incidence (13th in 2009-2013)[10].

2010-2014 DATA

TABLE 6-2: NUMBER OF CERVICAL CANCER CASES, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	211	148	52	10
Kent	38	29	---	---
New Castle	127	84	36	7
Sussex	46	35	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

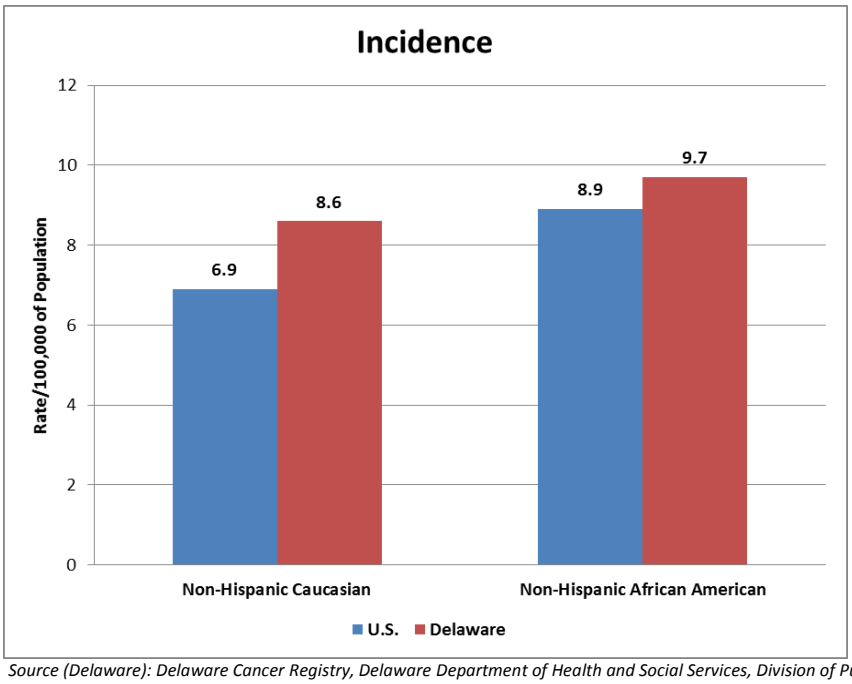
- In 2010-2014, there were 211 cervical cancer cases (1% of all female cancer cases) diagnosed in Delaware.
- Non-Hispanic Caucasians accounted for 70% of cervical cancer cases.

TABLE 6-3: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	7.4	6.9	8.9	9.1
Delaware	8.3	8.6	9.7	---
Kent	8.4	9.5	---	---
New Castle	8.6	9.1	10.4	---
Sussex	7.9	7.8	---	---

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

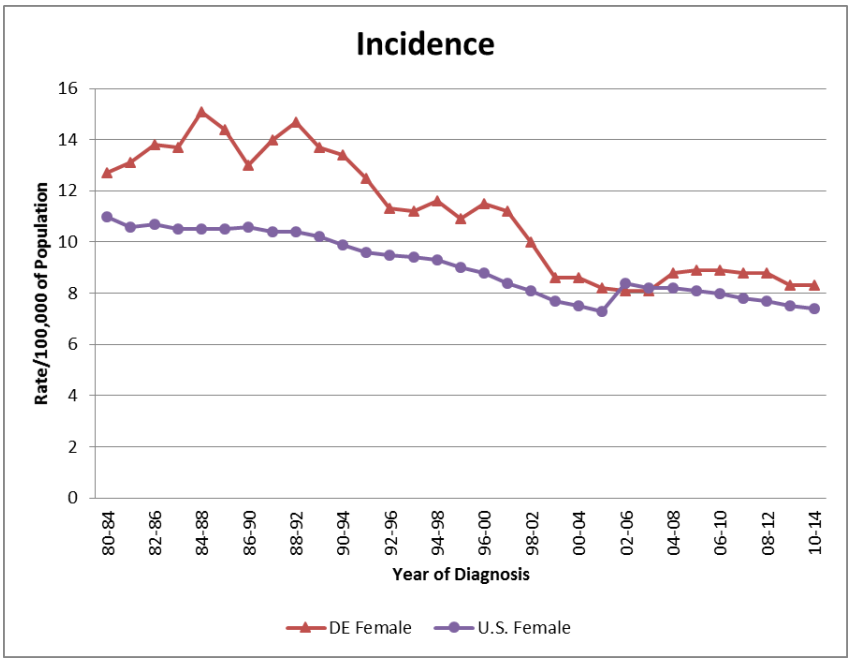
FIGURE 6-1: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in cervical cancer incidence rates between non-Hispanic Caucasians (8.6 per 100,000) and non-Hispanic African Americans (9.7 per 100,000) was not statistically significant.
  - Cervical cancer incidence rates for Hispanics could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S.
  - The difference in cervical cancer incidence rates between Delaware (8.3 per 100,000) and the U.S. (7.4 per 100,000) was not statistically significant.
  - Non-Hispanic Caucasians in Delaware (8.6 per 100,000) had a statistically significantly higher cervical cancer incidence rate compared to non-Hispanic Caucasians in the U.S. (6.9 per 100,000).
  - The difference in cervical cancer incidence rates between non-Hispanic African Americans in Delaware (9.7 per 100,000) and the U.S. (8.9 per 100,000) was not statistically significant.

FIGURE 6-2: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER INCIDENCE RATES; U.S. AND DELAWARE, 1980-2014

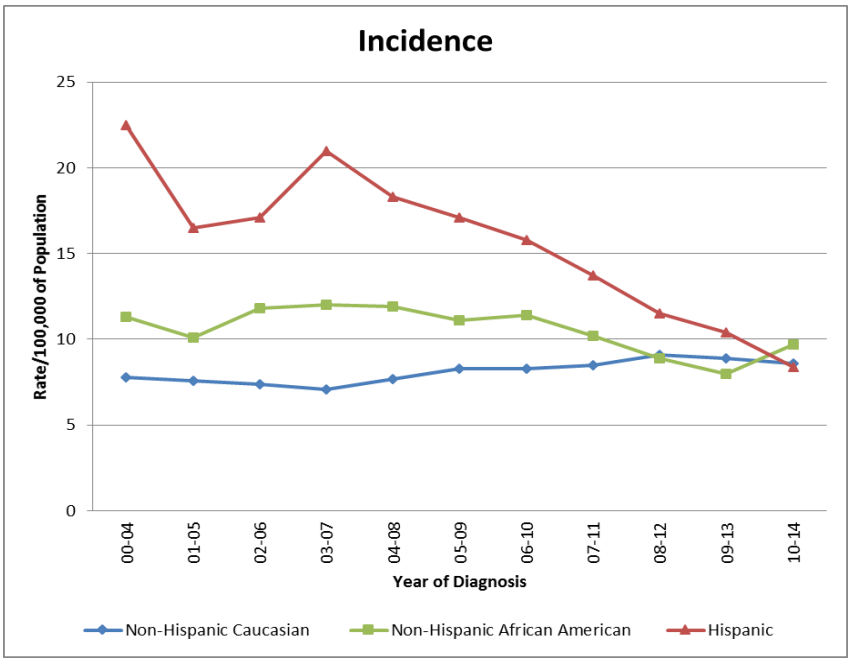


Source (Delaware): Delaware Cancer Registry, Delaware Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for cervical cancer decreased 3% in Delaware and decreased 1% in the U.S.

TRENDS OVER TIME - DELAWARE

FIGURE 6-3: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for cervical cancer increased 10% in non-Hispanic Caucasians.
  - Incidence rates for cervical cancer decreased 14% in non-Hispanic African Americans.
  - Incidence rates for cervical cancer decreased 63% in Hispanics.

AGE-SPECIFIC INCIDENCE RATES - DELAWARE

TABLE 6-4: AGE-SPECIFIC CERVICAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	4.0	5.5	---	---
40-64	14.2	13.5	18.0	---
65-74	16.9	15.1	---	---
75-84	---	---	---	---
85+	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for cervical cancer incidence is 65-74 years of age.
- Due to low numbers, incidence rates could not be calculated for some groups.

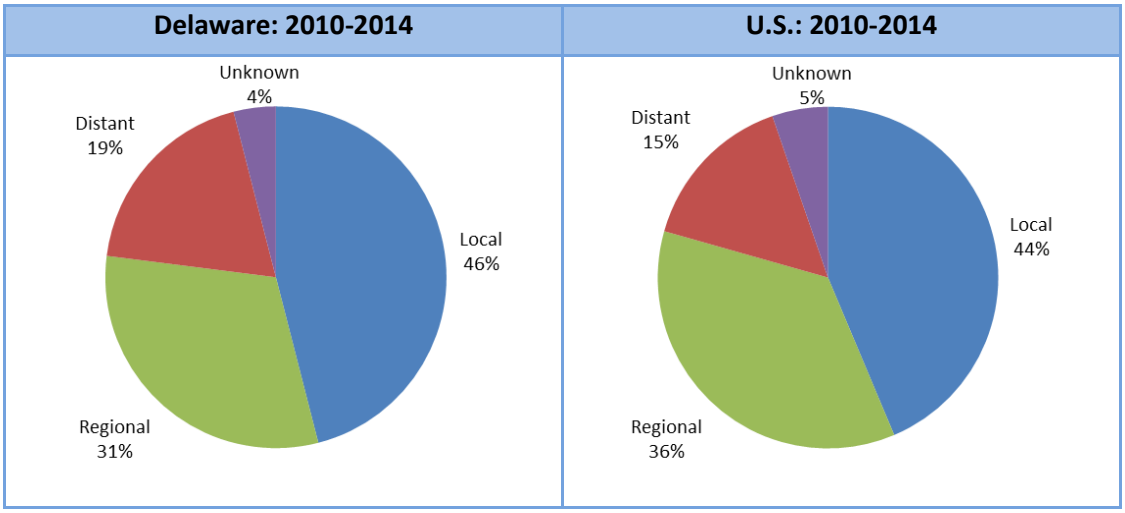
TABLE 6-5: CERVICAL CANCER CASES BY STAGE AT DIAGNOSIS BY RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Local	98 (46)	74 (50)	20 (39)	---
Regional	65 (31)	45 (30)	14 (27)	6 (60)
Distant	40 (19)	---	---	---
Unknown	8 (4)	---	---	---
Total	211	148	52	10

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 98 (46%) cervical cancers diagnosed at the local stage; 65 (31%) at the regional stage; 40 (19%) at the distant stage; and eight (4%) had an unknown stage.
- Non-Hispanic Caucasians (50%) had a higher proportion of cervical cancer diagnosed at the local stage compared to non-Hispanic African Americans (39%).
- Due to low numbers, cervical cancer stage at diagnosis could not be calculated for Hispanics.

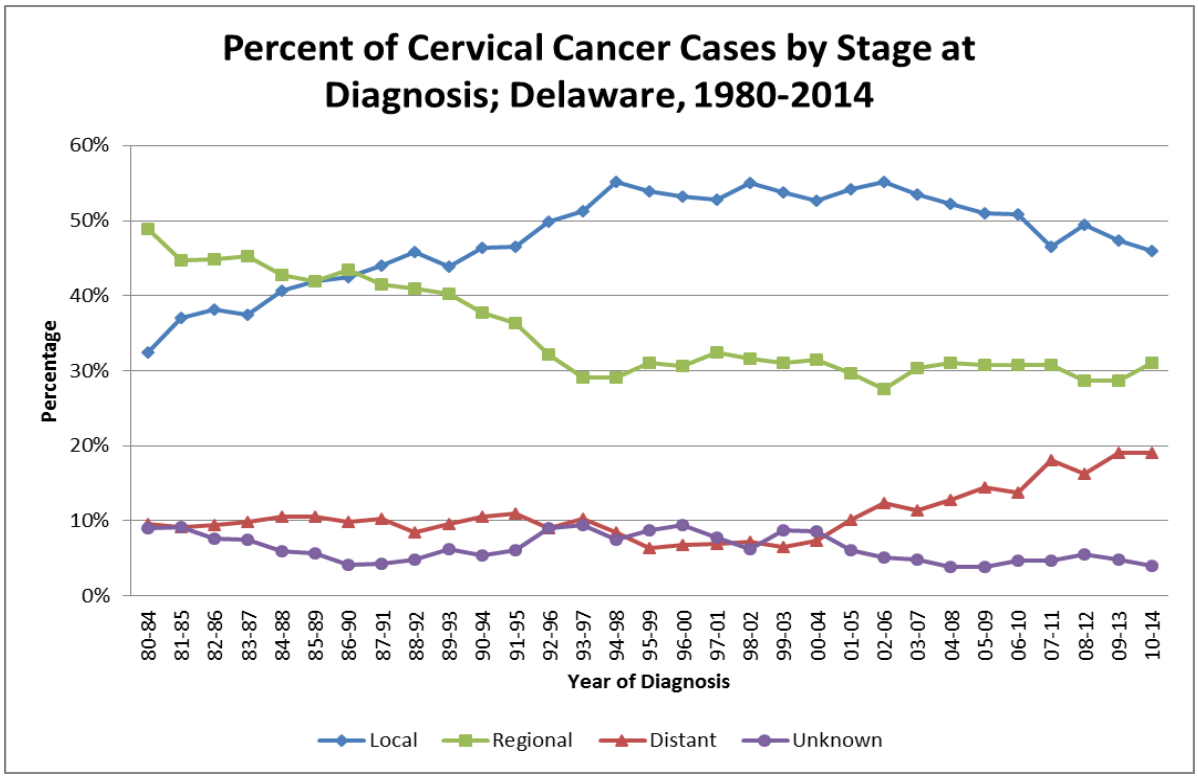
FIGURE 6-4: DISTRIBUTION OF CERVICAL CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware cervical cancer data, the proportion of cervical cancers diagnosed at the regional stage is lower in Delaware (31%) compared to the U.S. (36%).

FIGURE 6-5: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR CERVICAL CANCER CASES; DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of cervical cancer cases diagnosed at the local stage increased from 32% to 46%.
  - Cases diagnosed at the distant stage increased from 10% to 19%.

MORTALITY

For 2010-2014, Delaware ranked 6th in the U.S. for cervical cancer mortality (15th in 2009-2013)[11].

2010-2014 DATA

TABLE 6-6: NUMBER OF CERVICAL CANCER DEATHS, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	78	53	21	---
Kent	17	9	---	---
New Castle	42	30	9	---
Sussex	19	14	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 78 female deaths (2% of all female cancer deaths) from cervical cancer in Delaware.
- Non-Hispanic Caucasian females accounted for 68% of cervical cancer deaths.

TABLE 6-7: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

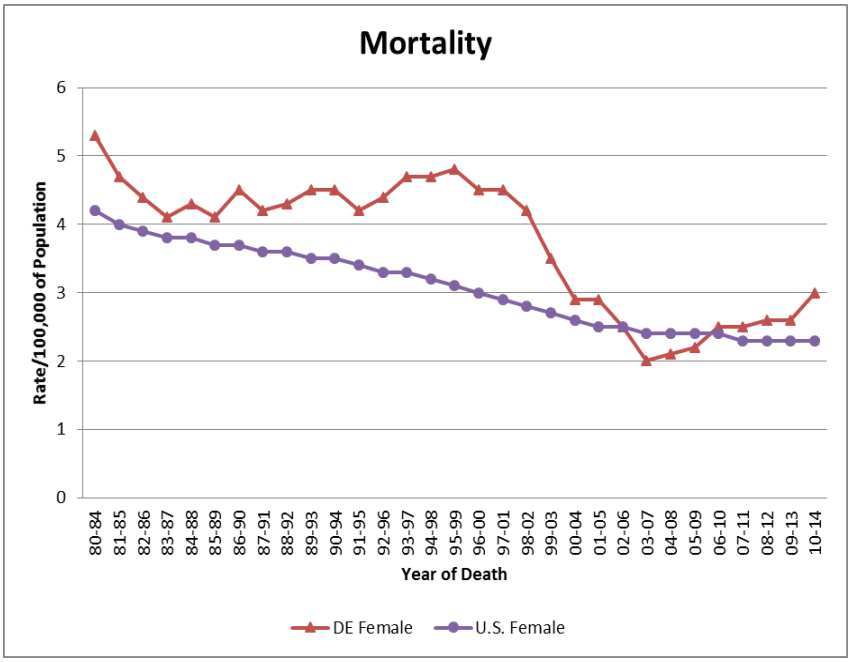
	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	2.3	2.1	3.9	2.6
Delaware	3.0	2.6	---	---
Kent	---	---	---	---
New Castle	2.8	2.7	---	---
Sussex	---	---	---	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Comparing Delaware and the U.S.
  - The difference in cervical cancer mortality rates between Delaware (3.0 per 100,000) and the U.S. (2.3 per 100,000) was not statistically significant.
  - The difference in cervical cancer mortality rates between non-Hispanic Caucasians in Delaware (2.6 per 100,000) and the U.S (2.1 per 100,000) was not statistically significant.
  - Cervical cancer mortality rates for non-Hispanic African American and Hispanics could not be calculated due to the low number of deaths.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 6-6: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER MORTALITY RATES; U.S. AND DELAWARE, 1980-2014

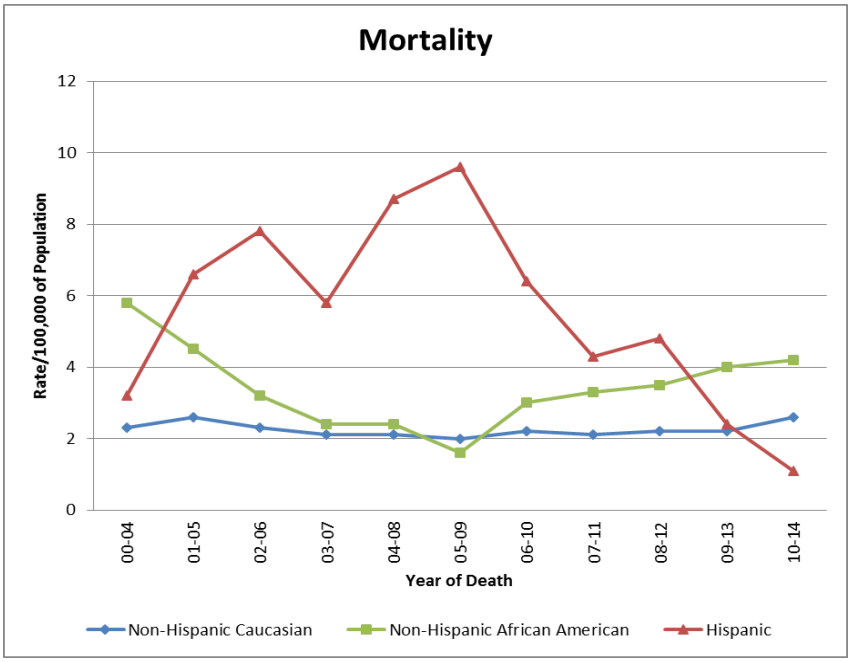


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for cervical cancer increased 3% in Delaware and decreased 12% in the U.S.

TRENDS OVER TIME - DELAWARE

FIGURE 6-7: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for cervical cancer increased 13% in non-Hispanic Caucasians.
  - Mortality rates for cervical cancer decreased 28% in non-Hispanic African Americans.
  - Mortality rates for cervical cancer decreased 66% in Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 6-8: AGE-SPECIFIC CERVICAL CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---
40-64	4.4	4.2	---	---
65-74	---	---	---	---
75-84	---	---	---	---
85+	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Due to low numbers, cervical cancer age-specific mortality rates could not be calculated.

CHAPTER 7: COLORECTAL CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting colorectal cancer:

- A diet high in red and processed meats
- Heavy alcohol consumption
- Lack of physical activity/obesity
- Long-term tobacco use
- Type 2 diabetes

The following are *environmental and medically-related* causes of colorectal cancer:

- Personal history of testicular cancer (possibly due to testicular cancer treatment strategies)
- History of radiation treatment for prostate cancer
- Night-shift work may increase risk among females (limited data on this factor)

The following are *non-modifiable* risk factors (these cannot be changed) of getting colorectal cancer:

- Age (risk increases after 50 years of age)
- Race (non-Hispanic African Americans are at greater risk compared to non-Hispanic Caucasians)
- Ethnicity (Jewish males and females of Eastern European descent are at greater risk)
- Personal history of colorectal adenomatous polyps or previous history of colorectal cancer
- History of Inflammatory Bowel Disease, Ulcerative Colitis, or Crohn's disease
- Familial adenomatous polyposis (FAP) is responsible for 1% of colorectal cancers
- Family history of colorectal cancer or adenomatous polyps in one or more first-degree relatives

To protect against colorectal cancer, individuals should get regular screenings because the early removal of colorectal polyps can prevent colorectal cancer from developing. People should also manage lifestyle risk factors (eat a healthy diet, limit alcohol use (two drinks a day for males and one drink a day for females), increase physical activity) and take a daily multivitamin (studies have shown that a multivitamin containing folic acid, vitamin D and/or magnesium could decrease colorectal cancer risk).

People who use aspirin and other anti-inflammatory drugs (i.e. ibuprofen) show a lower risk of colorectal cancer but long-term use may lead to other side effects. Combined hormone replacement therapy (including both estrogen and progesterone) may reduce a woman's postmenopausal risk of colorectal cancer.

EARLY DETECTION

The ACS and DCC colorectal cancer screening guidelines recommend that at 50 years of age, males and females at average risk of developing colorectal cancer should use one of the following screening options[13]:

a. Fecal occult blood tests (FOBT) every year
b. Fecal immunochemical test (FIT) every year
c. Flexible sigmoidoscopy every five years
d. Double-contrast barium enema every five years
e. CT colonography (virtual colonoscopy) every five years
f. Colonoscopy every 10 years

[13] Detailed screening guidelines for colorectal cancer: http://www.cancer.org/Cancer/ColonandRectumCancer/MoreInformation/ColonandRectumCancerEarlyDetection/colorectal-cancer-early-detection-acs-recommendations

For options a-e, a follow-up colonoscopy should be performed if results from an initial screening test are positive. ACS and DCC screening guidelines offer suggested screening schedules for individuals with an elevated risk of developing colorectal cancer.

COLORECTAL CANCER SCREENING IN DELAWARE

Data from the 2016 BRFS provides information on colorectal cancer screening patterns among Delawareans.

- Delaware ranked 12th highest in the prevalence (77%) of adults 50-74 years of age who reported meeting the USPSTF recommendations for colorectal screening. The U.S. national median for meeting the USPSTF recommendation for colorectal cancer screening was 68%.
- The percentage of Delawareans who met the USPSTF recommendation for colorectal cancer screening increased by age group. Significantly more Delawareans 60-64 years of age and 65 years of age and older (75% and 82%, respectively) reported meeting the recommendation, compared to those 50-59 years of age (62%).
- The prevalence of non-Hispanic Caucasians 50-74 years of age in Delaware who met the USPSTF recommendation for colorectal cancer screening (74%) was higher compared to that for non-Hispanic African Americans in Delaware (65%). However, this difference was not statistically significant.
- In Delaware, the prevalence of adults 50-74 years of age who met the USPSTF colorectal cancer screening increased by education level.
- As income increases, so does the prevalence of meeting the USPSTF recommendation for colorectal cancer screening. The difference in the lowest income category (less than $15,000 annual household income) and the highest income category ($50,000 or more) was significant (57% vs. 78%, respectively).

INCIDENCE

For 2010-2014, Delaware ranked 35th in the U.S. for colorectal cancer incidence (37th in 2009-2013); males ranked 33rd (34th in 2009-2013) and females ranked 40th (41st in 2009-2013)[10].

2010-2014 DATA

TABLE 7-1: NUMBER OF COLORECTAL CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	2,063	1,072	991	1,618	843	775	365	183	182	50	29	21
Kent	393	200	193	299	152	147	79	40	39	9	---	---
New Castle	1,068	544	524	781	400	381	231	111	120	35	20	15
Sussex	602	328	274	538	291	247	55	32	23	6	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

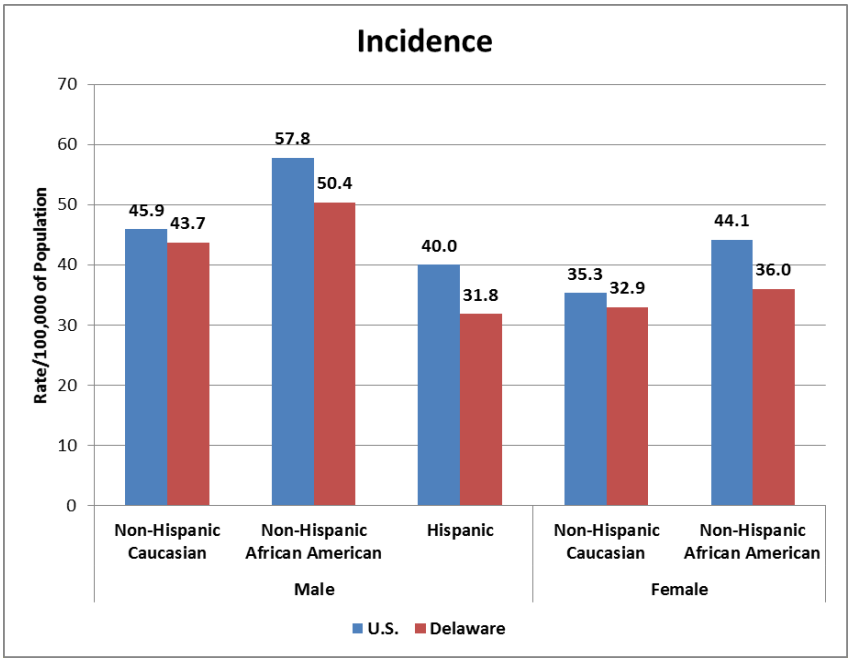
- Colorectal cancer is the third most commonly diagnosed cancer in the U.S. and Delaware.
- In 2010-2014, there were 2,063 colorectal cancer cases (7% of all cancer cases) diagnosed in Delaware.
- Males accounted for 52% of colorectal cancer cases.
- Non-Hispanic Caucasians accounted for 78% of colorectal cancer cases.

TABLE 7-2: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	40.1	46.0	35.1
Delaware	37.8	43.6	33.0
Kent	42.4	47.5	38.3
New Castle	36.0	41.6	31.9
Sussex	38.3	45.9	31.4

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 7-1: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



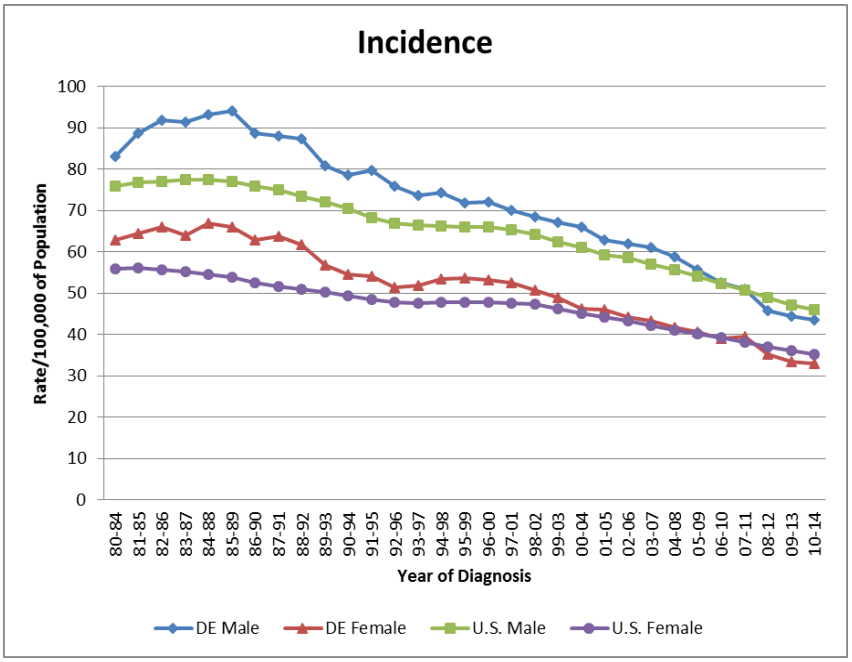
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (43.6 per 100,000) had a statistically significantly higher colorectal cancer incidence rate compared to females (33.0 per 100,000).
  - The difference in colorectal cancer incidence rates between non-Hispanic Caucasians (37.9 per 100,000), non-Hispanic African Americans (41.8 per 100,000), and Hispanics (29.7 per 100,000) was not statistically significant.
- Comparing Delaware and the U.S.
  - Delaware (37.8 per 100,000) had a statistically significantly lower colorectal cancer incidence rate compared to the U.S. (40.1 per 100,000).
  - The difference in colorectal cancer incidence rates between males in Delaware (43.6 per 100,000) and the U.S. (46.0 per 100,000) was not statistically significant.

- The difference in colorectal cancer incidence rates between females in Delaware (33.0 per 100,000) and the U.S. (35.1 per 100,000) was not statistically significant.
- The difference in colorectal cancer incidence rates between for non-Hispanic Caucasians in Delaware (37.9 per 100,000) and the U.S. (40.2 per 100,000) was not statistically significant.
- Non-Hispanic African Americans in Delaware (41.8 per 100,000) had a statistically significantly lower colorectal cancer incidence rate compared to non-Hispanic African Americans in the U.S. (49.8 per 100,000).
- The difference in colorectal cancer incidence rates between for Hispanics in Delaware (29.7 per 100,000) and the U.S. (33.9 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

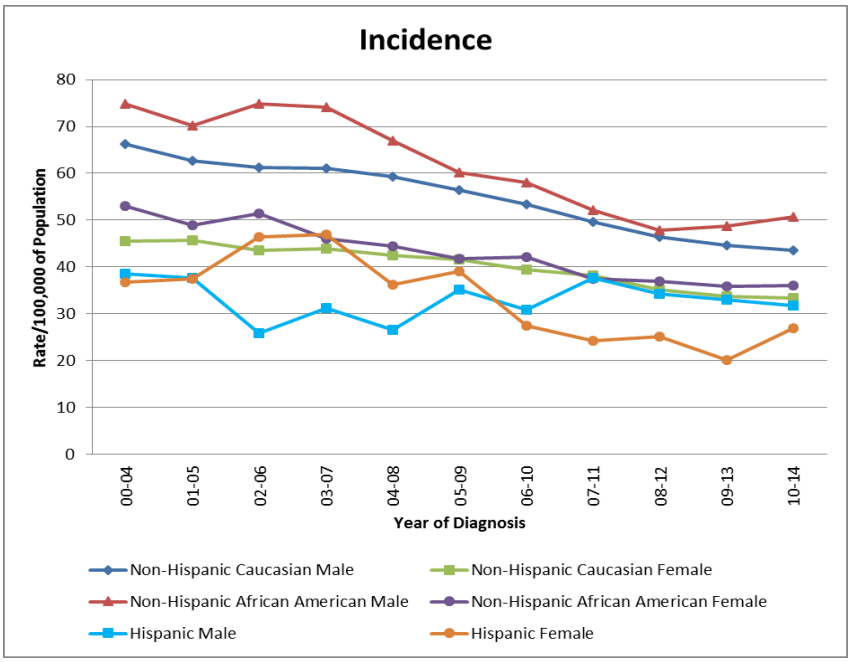
FIGURE 7-2: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for colorectal cancer decreased 31% in Delaware and decreased 23% in the U.S.
  - Incidence rates for colorectal cancer decreased 34% in Delaware males and decreased 25% in U.S. males.
  - Incidence rates for colorectal cancer decreased 29% in Delaware females and decreased 22% in U.S. females.

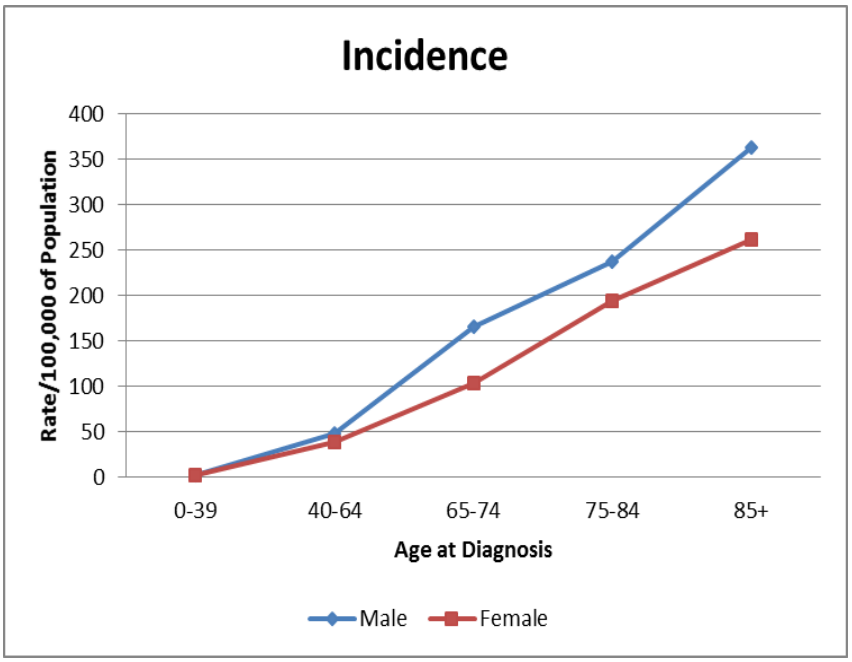
FIGURE 7-3: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for colorectal cancer decreased 34% in non-Hispanic Caucasian males and decreased 27% in non-Hispanic Caucasian females.
  - Incidence rates for colorectal cancer decreased 32% in non-Hispanic African American males and decreased 32% in non-Hispanic Caucasian females.
  - Incidence rates for colorectal cancer decreased 17% in Hispanic males and decreased 27% in Hispanic females.

FIGURE 7-4: AGE-SPECIFIC COLORECTAL CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for colorectal cancer incidence is 85 years of age and older for both males and females. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 7-3: AGE-SPECIFIC COLORECTAL CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	49.8	55.9	---	38.5	48.5	---
65-74	168.3	162.4	---	100.4	108.2	---
75-84	233.5	324.8	---	194.9	189.9	---
85+	367.2	---	---	269.9	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Both non-Hispanic Caucasian males and females have a peak age range for colorectal cancer incidence at 85 years of age and older. Due to low numbers, incidence rates could not be calculated for some groups.

STAGE OF DIAGNOSIS - DELAWARE

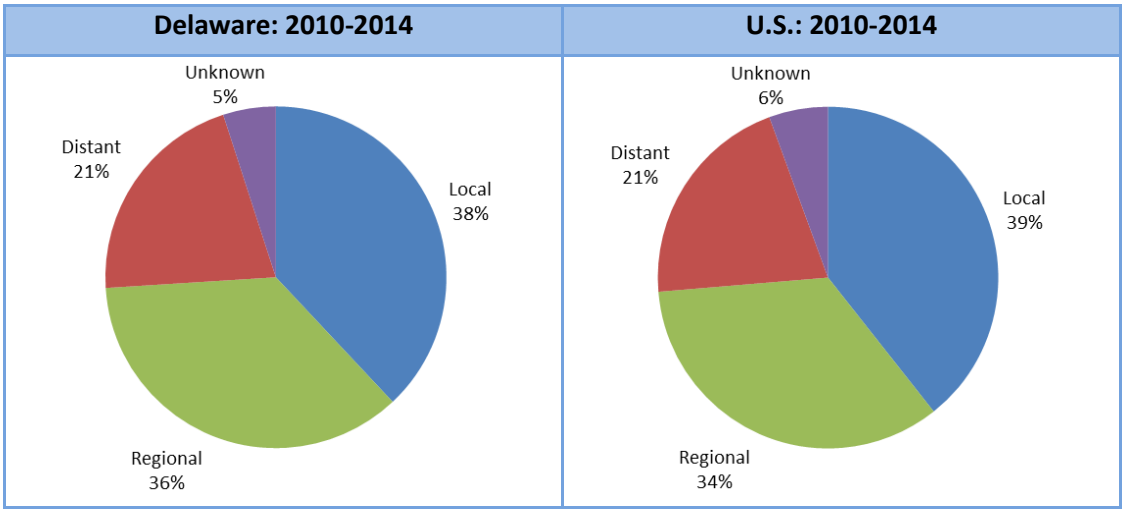
TABLE 7-4: COLORECTAL CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	790 (38)	419 (39)	371 (37)	620 (38)	322 (38)	298 (39)	137 (38)	75 (41)	62 (34)	20 (40)	---	---
Regional	740 (36)	379 (35)	361 (36)	592 (37)	302 (36)	290 (37)	121 (33)	65 (36)	56 (31)	18 (36)	9 (31)	9 (43)
Distant	438 (21)	239 (22)	199 (20)	329 (20)	187 (22)	142 (18)	92 (25)	---	---	---	---	---
Unknown	95 (5)	35 (3)	60 (6)	77 (5)	32 (4)	45 (6)	15 (4)	---	---	---	---	---
Total	2,063	1,072	991	1,618	843	775	365	183	182	50	29	21

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 790 (38%) colorectal cancers diagnosed at the local stage; 740 (36%) at the regional stage; 438 (21%) at the distant stage; and 95 (5%) had an unknown stage.
- Hispanics (40%) had a higher proportion of colorectal cancers diagnosed at the local stage compared to both non-Hispanic Caucasians (38%) and non-Hispanic African Americans (38%).
- Males (39%) had a higher proportion of colorectal cancers diagnosed at the local stage compared to females (37%).

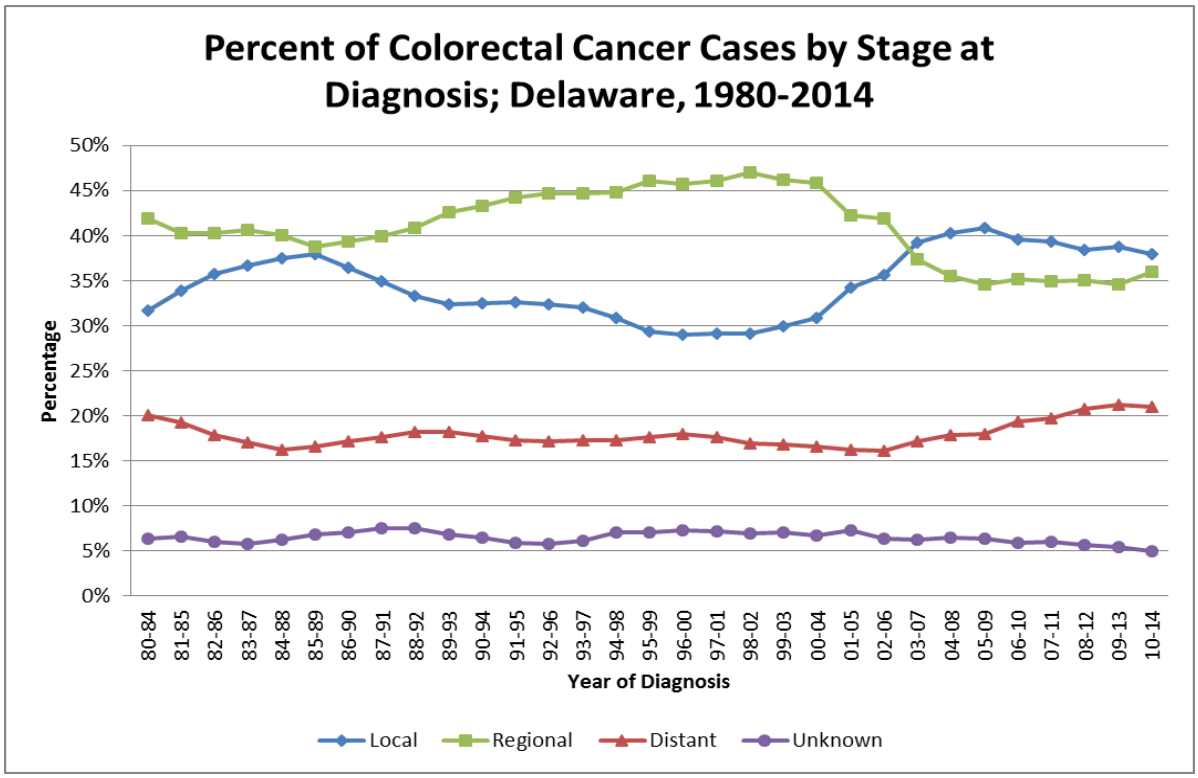
FIGURE 7-5: DISTRIBUTION OF COLORECTAL CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware colorectal cancer data, percentages showing the stage of colorectal cancer at diagnosis are similar.

FIGURE 7-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR COLORECTAL CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of colorectal cancer cases diagnosed at the local stage increased from 32% to 38%.
  - Colorectal cancer cases diagnosed at the distant stage increased slightly, from 20% to 21%.

MORTALITY

For 2010-2014, Delaware ranked 41st in the U.S. for colorectal cancer mortality (38th in 2009-2013); males ranked 32nd (28th in 2009-2013) and females ranked 47th (48th in 2009-2013)[11].

2010-2014 DATA

TABLE 7-5: NUMBER OF COLORECTAL CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	741	402	339	583	319	264	127	59	68	20	---	---
Kent	138	79	59	102	58	44	28	16	12	---	---	---
New Castle	406	208	198	305	158	147	83	35	48	10	---	---
Sussex	197	115	82	176	103	73	16	8	8	---	---	---

Source: Delaware Health Statistics Center, 2017
Counts less than 6 are not shown to protect patient privacy

- Colorectal cancer is the third most common cause of cancer death in the U.S. and Delaware.
- In 2010-2014, there were 741 deaths (8% of all cancer deaths) from colorectal cancer in Delaware.

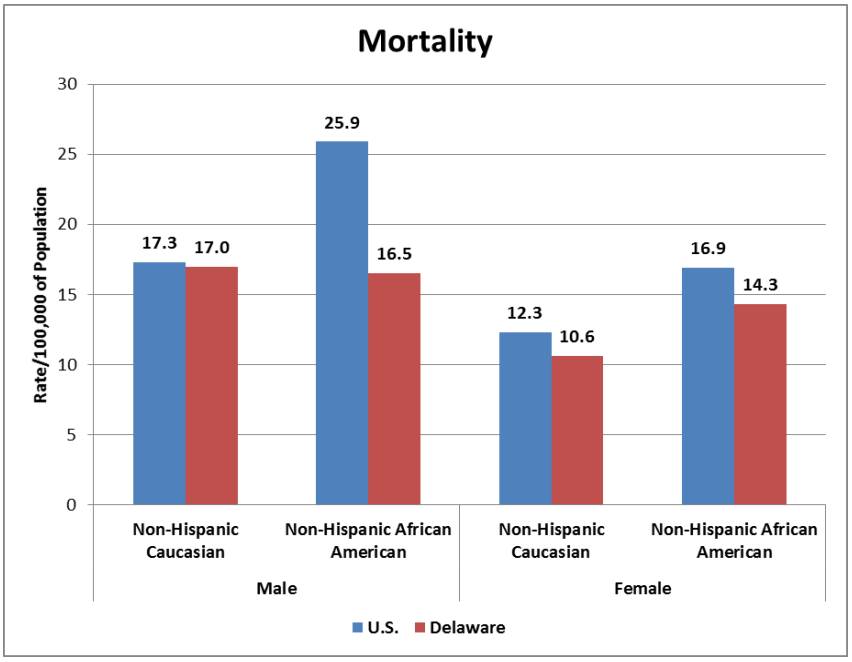
- Males accounted for 54% of colorectal cancer deaths.
- Non-Hispanic Caucasians accounted for 79% of colorectal cancer deaths.

TABLE 7-6: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	14.8	17.7	12.4
Delaware	13.9	17.4	11.1
Kent	15.1	19.9	11.4
New Castle	14.2	17.2	12.0
Sussex	12.9	16.8	9.3

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 7-7: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



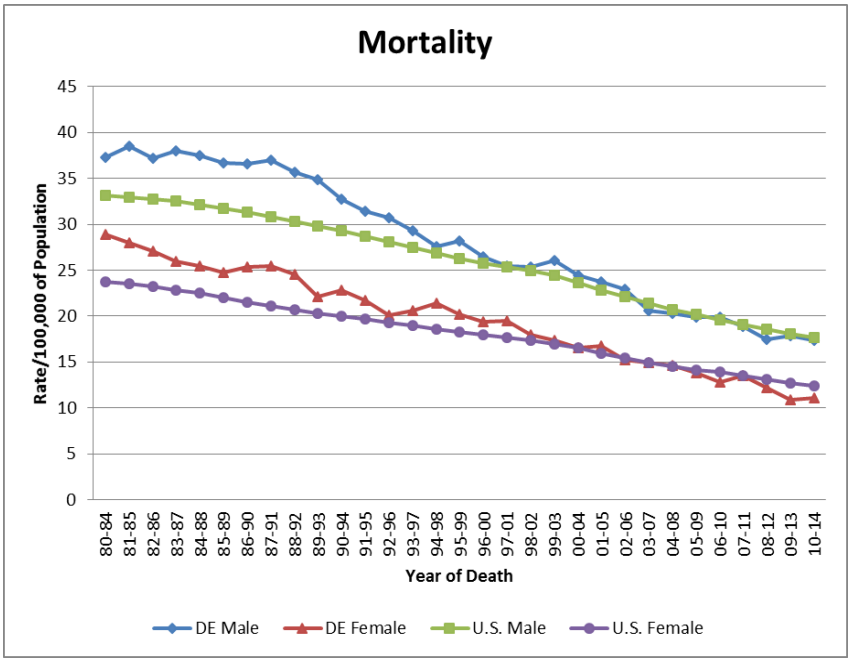
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (17.4 per 100,000) had a statistically significantly higher colorectal cancer mortality rate compared to females (11.1 per 100,000).
  - The difference in colorectal cancer mortality rates between non-Hispanic Caucasians (13.5 per 100,000) and non-Hispanic African Americans (15.3 per 100,000) was not statistically significant.
  - Colorectal cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in colorectal cancer mortality rates between Delaware (13.9 per 100,000) and the U.S. (14.8 per 100,000) was not statistically significant.
  - The difference in colorectal cancer mortality rates between males in Delaware (17.4 per 100,000) and the U.S. (17.7 per 100,000) was not statistically significant.
  - The difference in colorectal cancer mortality rates between females in Delaware (11.1 per 100,000) and the U.S. (12.4 per 100,000) was not statistically significant.
  - The difference in colorectal cancer mortality rates between non-Hispanic Caucasians in Delaware (13.5 per 100,000) and the U.S (14.6 per 100,000) was not statistically significant.
  - Non-Hispanic African Americans in Delaware (15.3 per 100,000) had a statistically significantly lower colorectal cancer mortality rate compared to non-Hispanic African Americans in the U.S. (20.5 per 100,000).

TRENDS OVER TIME - DELAWARE AND U.S.

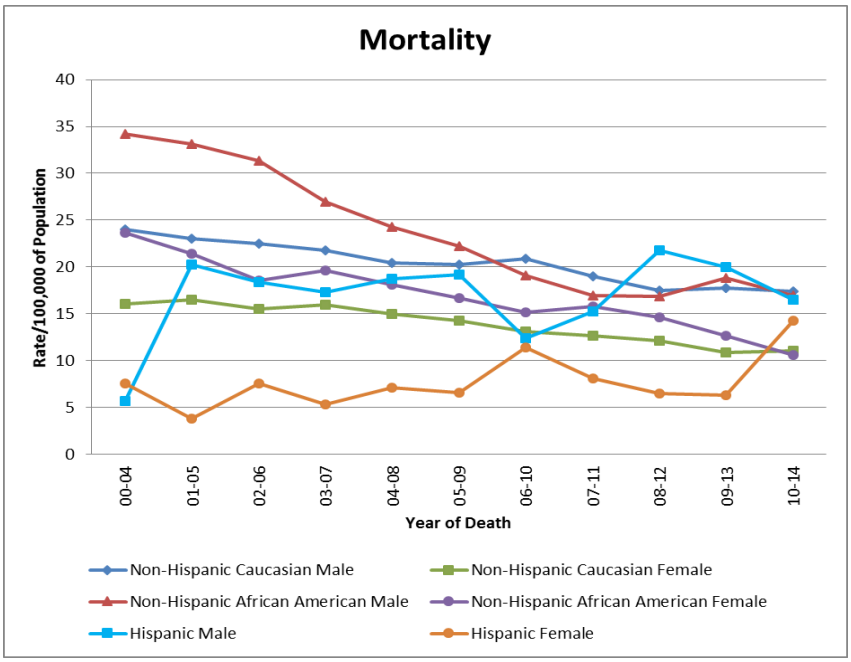
FIGURE 7-8: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for colorectal cancer decreased 29% in Delaware and decreased 24% in the U.S.
  - Mortality rates for colorectal cancer decreased 29% in Delaware males and decreased 25% in U.S. males.
  - Mortality rates for colorectal cancer decreased 33% in Delaware females and decreased 25% U.S. females.

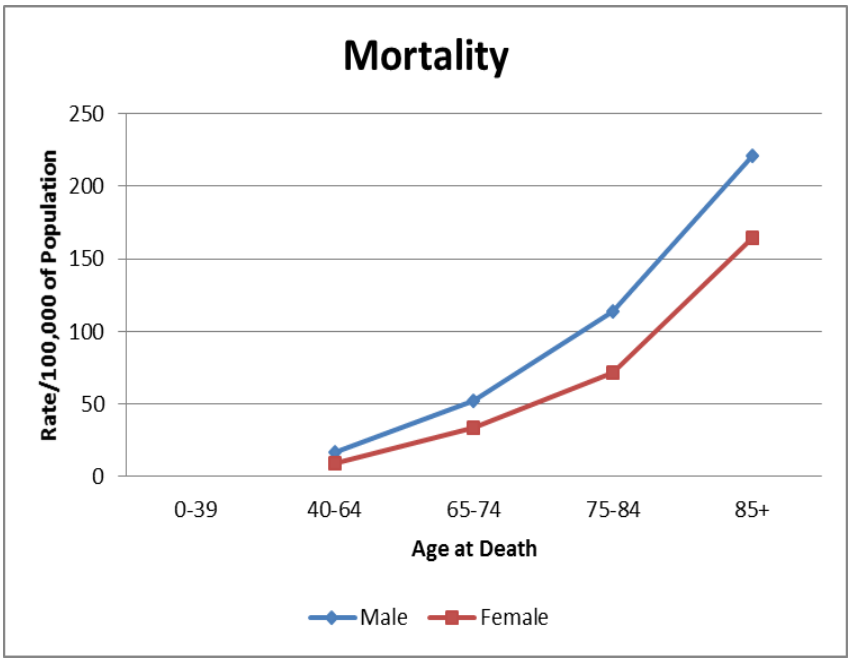
FIGURE 7-9: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for colorectal cancer decreased 28% in non-Hispanic Caucasian males and decreased 31% in non-Hispanic Caucasian females.
  - Mortality rates for colorectal cancer decreased 50% in non-Hispanic African American males and decreased 55% in non-Hispanic African American females.
  - Mortality rates for colorectal cancer increased 189% in Hispanic males and increased 88% in Hispanic females.

FIGURE 7-10: AGE-SPECIFIC COLORECTAL CANCER MORTALITY RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for colorectal cancer mortality is 85 years of age and older for both males and females. Due to low numbers, mortality rates could not be calculated for some groups.

TABLE 7-7: AGE-SPECIFIC COLORECTAL CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	16.5	17.3	---	9.2	---	---
65-74	50.9	---	---	30.0	---	---
75-84	110.3	---	---	66.6	---	---
85+	224.4	---	---	171.6	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasian males and females in Delaware have a peak age range for colorectal cancer mortality at 85 years of age and older.

CHAPTER 8: ESOPHAGEAL CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting esophageal cancer:

- Smoking cigarettes, cigars, pipes, or chewing tobacco increase risk as the length of use increases
- Excessive alcohol consumption
- The combination of smoking and drinking alcohol raise risk much more that either factor alone
- Being overweight or obese

The following are *environmental and medically-related* causes of esophageal cancer:

- Workplace exposures to dry cleaning solvents or other chemical fumes
- Injury to the esophagus by mistakenly drinking lye increases risk about 40 years later

The following are *non-modifiable* risk factors (these cannot be changed) of getting esophageal cancer:

- Age – 85% of cases are in people 55 years of age and older
- Males are three times more likely to develop esophageal cancer compared to females
- Tylosis, a rare inherited disease, increases the risk of squamous cell cancer of the esophagus
- Achalasia, a condition at the lower end of the esophagus
- Gastroesophageal reflux diseases (GERD) is linked to 30% of esophageal cancer cases
- Barrett's esophagus, a condition where the cells lining the esophagus are changed through a history of reflux or GERD

To protect against esophageal cancer, individuals should manage lifestyle risk factors such as eating a healthy diet (high in fruits, vegetables, and whole grains), avoid tobacco, limit alcohol use (two drinks a day in males and one drink a day in females), and increase physical activity.

EARLY DETECTION

Experts recommend that people with a high risk of esophageal cancer, like those with Barrett's esophagus, regularly have an upper endoscopy.

INCIDENCE

For 2010-2014, Delaware ranked 22nd in the U.S. for esophageal cancer incidence (29th in 2009-2013); males ranked 19th (39thin 2009-2013) and females ranked 23rd (9th in 2009-2013)[10].

2010-2014 DATA

TABLE 8-1: NUMBER OF ESOPHAGEAL CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	272	216	56	235	190	45	31	22	9	---	---	---
Kent	40	32	8	34	27	7	---	---	---	---	---	---
New Castle	144	112	32	121	97	24	19	12	7	---	---	---
Sussex	88	72	16	80	66	14	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

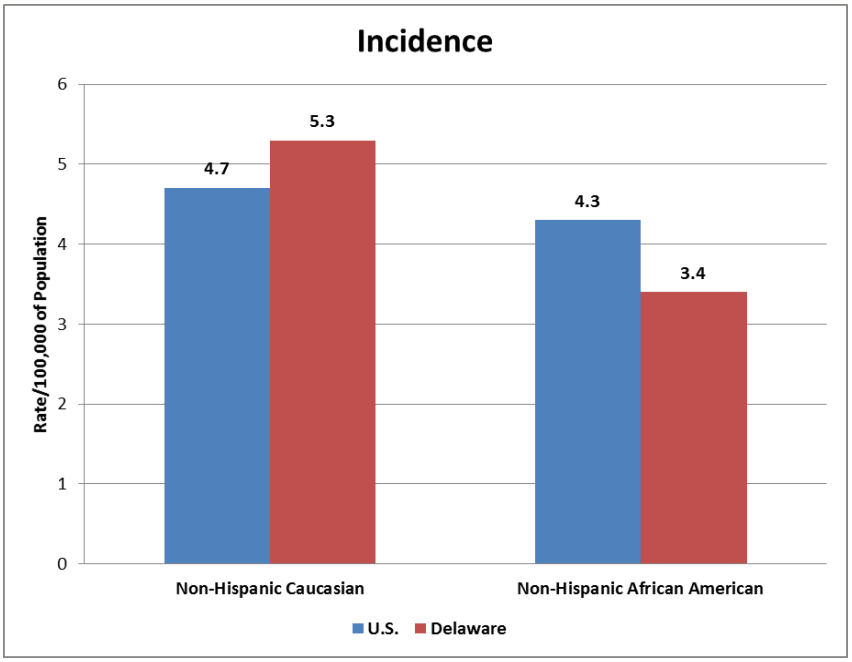
- In 2010-2014, there were 272 esophageal cancer cases (1% of all cancer cases) diagnosed in Delaware.
- Males accounted for 79% of esophageal cancer cases.
- Non-Hispanic Caucasians accounted for 86% of esophageal cancer cases.

TABLE 8-2: FIVE-YEAR AVERAGE AGE-ADJUSTED ESOPHAGEAL CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	4.2	7.3	1.7
Delaware	4.8	8.4	1.8
Kent	4.1	7.1	---
New Castle	4.8	8.3	1.9
Sussex	5.3	9.6	---

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 8-1: FIVE-YEAR AVERAGE AGE-ADJUSTED ESOPHAGEAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

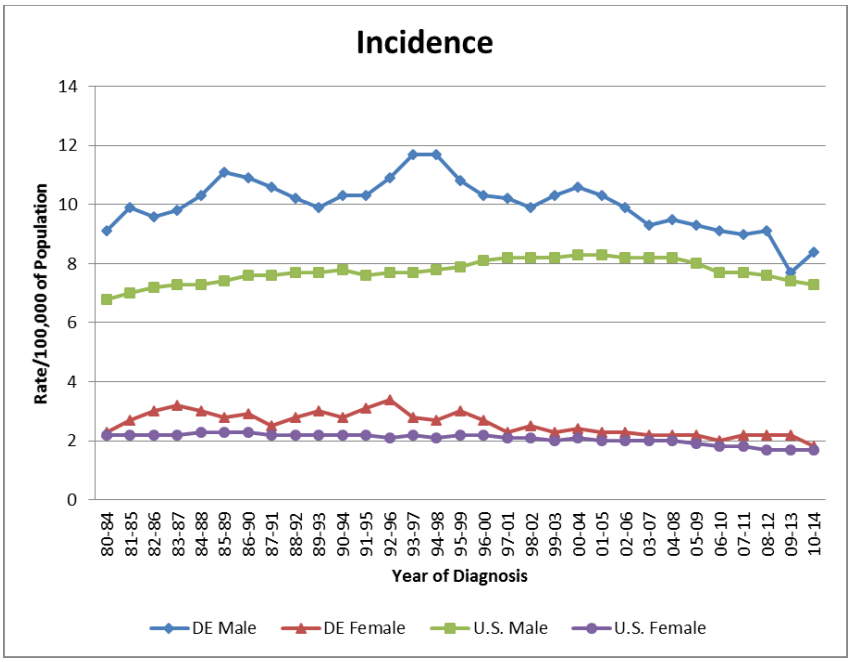
- In Delaware
  - Males (8.4 per 100,000) had a statistically significantly higher esophageal cancer incidence rate compared to females (1.8 per 100,000).
  - The difference in esophageal cancer incidence rates between non-Hispanic Caucasians (5.3 per 100,000) and non-Hispanic African Americans (3.4 per 100,000) was not statistically significant.
  - Esophageal cancer incidence rates for Hispanics could not be calculated due to an insufficient number of cases.

Comparing Delaware and the U.S.

- The difference in esophageal cancer incidence rates between Delaware (4.8 per 100,000) and the U.S. (4.2 per 100,000) was not statistically significant.
- The difference in esophageal cancer incidence rates between males in Delaware (8.4 per 100,000) and the U.S. (7.3 per 100,000) was not statistically significant.
- The difference in esophageal cancer incidence rates between females in Delaware (1.8 per 100,000) and the U.S. (1.7 per 100,000) was not statistically significant.
- The difference in esophageal cancer incidence rates between non-Hispanic Caucasians in Delaware (5.3 per 100,000) and the U.S. (4.7 per 100,000) was not statistically significant.
- The difference in the esophageal cancer incidence rates between non-Hispanic African Americans in Delaware (3.4 per 100,000) and the U.S. (4.3 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 8-2: FIVE-YEAR AVERAGE AGE-ADJUSTED ESOPHAGEAL CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014

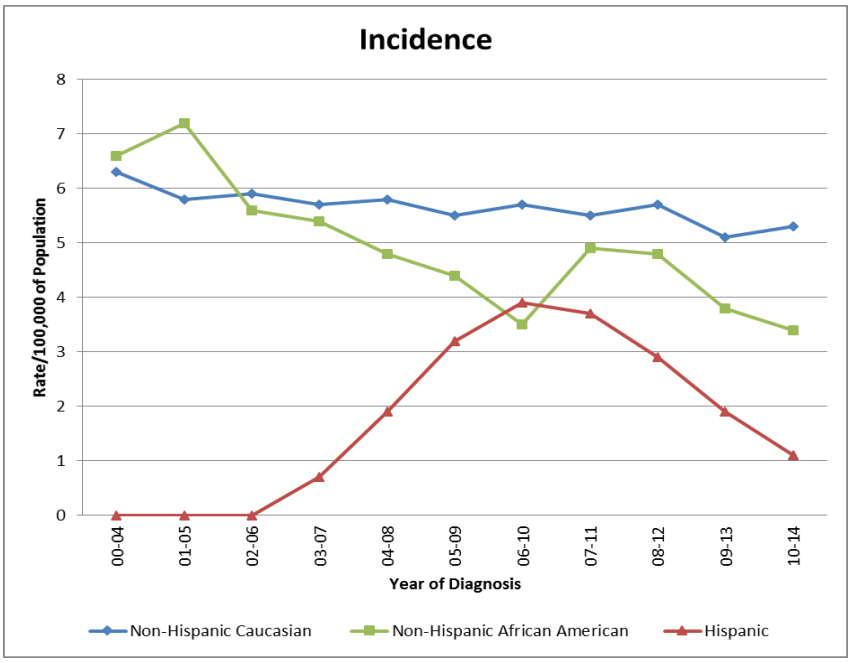


Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for esophageal cancer decreased 20% in Delaware and decreased 13% in the U.S.
  - Incidence rates for esophageal cancer decreased 21% in Delaware males and decreased 12% in U.S. males.
  - Incidence rates for esophageal cancer decreased 25% in Delaware females and decreased 19% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 8-3: FIVE-YEAR AVERAGE AGE-ADJUSTED ESOPHAGEAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for esophageal cancer decreased 16% in non-Hispanic Caucasians.
  - Incidence rates for esophageal cancer decreased 48% in non-Hispanic African Americans.
  - Esophageal cancer incidence rate differences could not be calculated for Hispanics.

AGE-SPECIFIC INCIDENCE RATES - DELAWARE

TABLE 8-3: AGE-SPECIFIC ESOPHAGEAL CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	10.5	---	---	---	---	---
65-74	42.5	---	---	---	---	---
75-84	61.5	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for esophageal cancer incidence is 75-84 years of age. Due to low numbers, incidence rates could not be calculated for some groups.
- Non-Hispanic Caucasians had a peak age range for esophageal cancer incidence at 75-84 years of age.

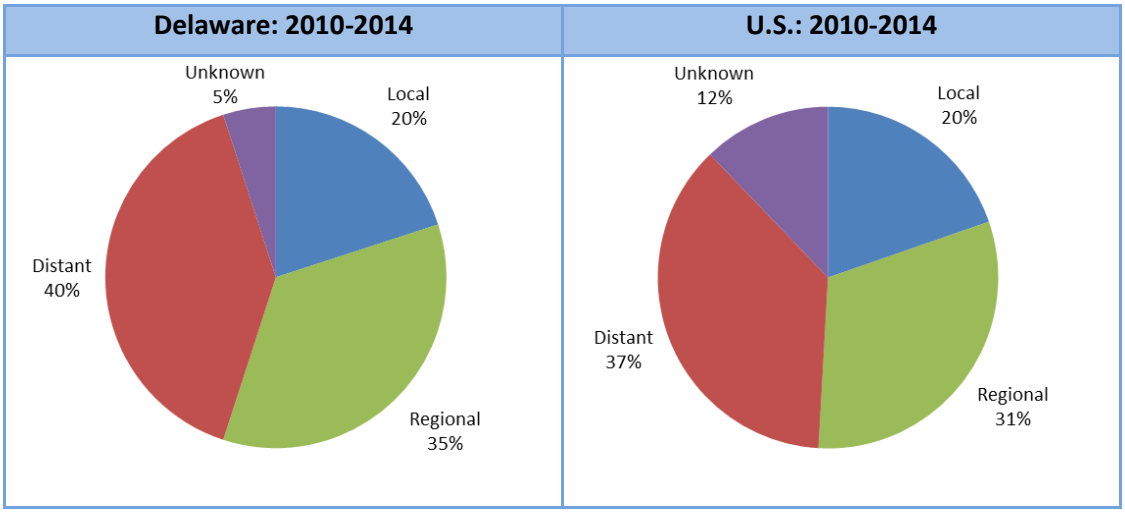
TABLE 8-4: ESOPHAGEAL CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	55 (20)	44 (20)	11 (20)	49 (21)	---	---	---	---	---	---	---	---
Regional	96 (35)	79 (37)	17 (30)	82 (35)	70 (37)	12 (27)	12 (37)	---	---	---	---	---
Distant	108 (40)	87 (40)	21 (38)	94 (40)	77 (41)	17 (38)	12 (37)	---	---	---	---	---
Unknown	13 (5)	6 (3)	7 (13)	10 (4)	---	---	---	---	---	---	---	---
Total	272	216	56	235	190	45	31	22	9	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 55 (20%) esophageal cancers diagnosed at the local stage; 96 (35%) at the regional stage; 108 (40%) at the distant stage; and 13 (5%) had an unknown stage.
- Non-Hispanic Caucasians had a lower proportion of esophageal cancers (35%) diagnosed at the regional stage compared to non-Hispanic African Americans (37%).
- Females (38%) had a lower proportion of esophageal cancers diagnosed at the distant stage compared to males (40%).
- Due to low numbers, esophageal cancer stage at diagnosis could not be calculated for Hispanics.

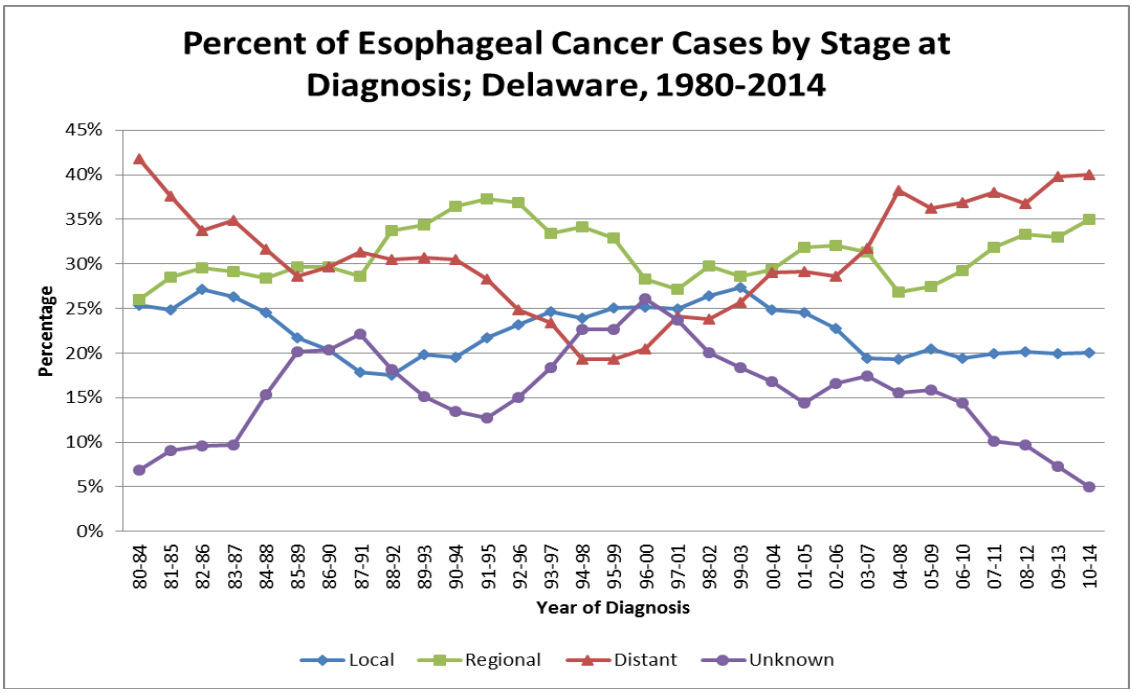
FIGURE 8-4: DISTRIBUTION OF ESOPHAGEAL CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware esophageal cancer data, Delaware (35%) had a higher proportion of esophageal cancer diagnosed at regional stage compared to the U.S. (31%). In addition, Delaware (40%) had a higher proportion of esophageal cancer diagnosed at distant stage compared to the U.S. (37%).

FIGURE 8-5: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR ESOPHAGEAL CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of esophageal cancer cases diagnosed at the local stage decreased from 25% to 20%.
  - Esophageal cancer cases diagnosed at the regional stage increased from 26% to 35%.
  - Esophageal cancer cases diagnosed at the distant stage decreased from 42% to 40%.

MORTALITY

For 2010-2014, Delaware ranked 30th in the U.S. for esophageal cancer mortality (27th in 2009-2013); males ranked 36th (33rd in 2009-2013) and females ranked 5th (6th in 2009-2013)[11].

2010-2014 DATA

TABLE 8-5: NUMBER OF ESOPHAGEAL CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	239	181	58	202	156	46	30	21	9	---	---	---
Kent	36	24	12	30	19	11	6	---	---	---	---	---
New Castle	124	88	36	105	79	26	16	8	8	---	---	---
Sussex	79	69	10	67	58	9	8	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 239 deaths (2% of all cancer deaths) from esophageal cancer in Delaware.
- Males accounted for 76% of esophageal cancer deaths.

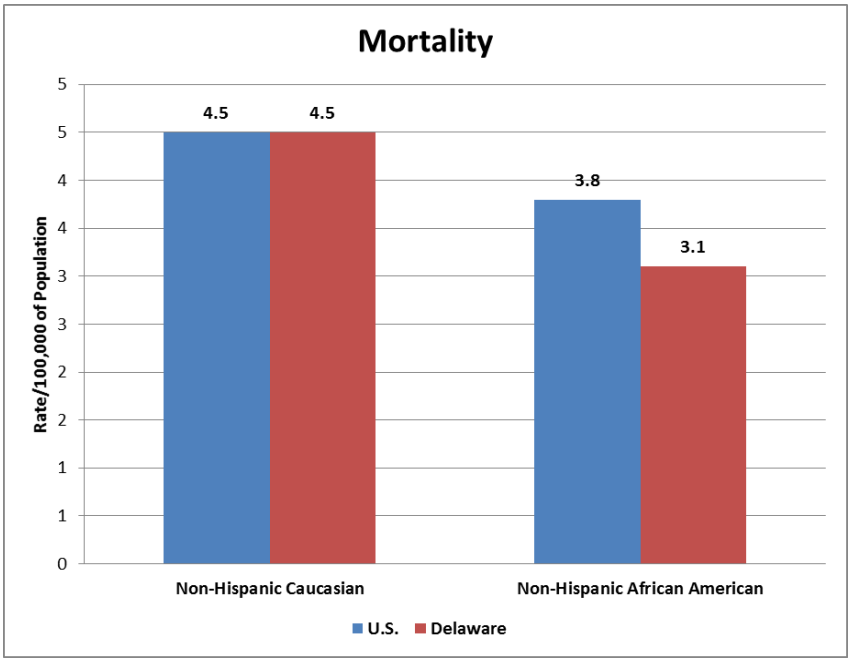
- Non-Hispanic Caucasians accounted for 85% of esophageal cancer deaths.

TABLE 8-6: FIVE-YEAR AVERAGE AGE-ADJUSTED ESOPHAGEAL CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	4.1	7.3	1.5
Delaware	4.3	7.2	1.9
Kent	3.9	---	---
New Castle	4.2	6.8	2.2
Sussex	4.8	9.0	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 8-6: FIVE-YEAR AVERAGE AGE-ADJUSTED ESOPHAGEAL CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



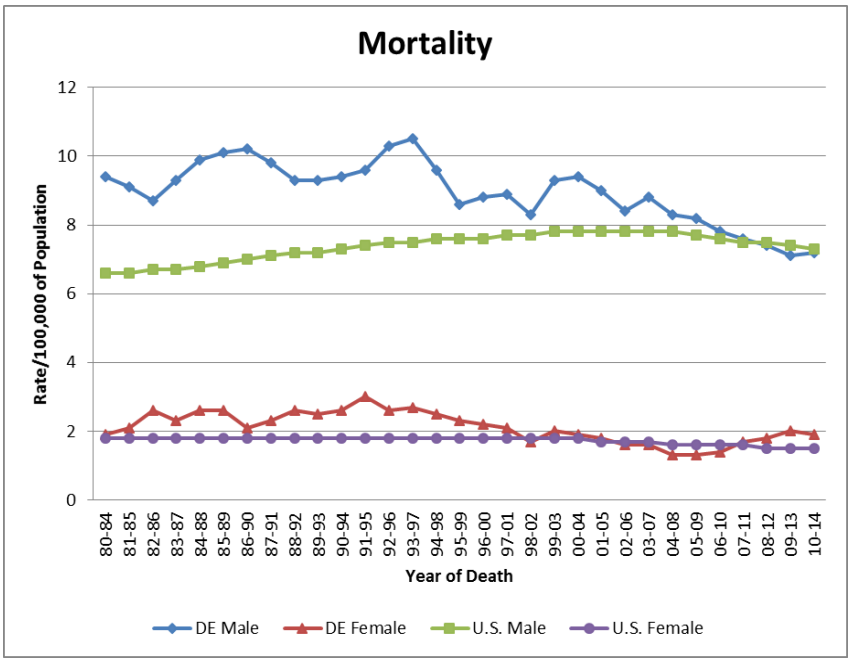
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (7.2 per 100,000) had a statistically significantly higher esophageal cancer mortality rate compared to females (1.9 per 100,000).
  - The difference in esophageal cancer mortality rates between non-Hispanic Caucasians (4.5 per 100,000) and non-Hispanic African Americans (3.1 per 100,000) was not statistically significant.
  - Esophageal cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in esophageal cancer mortality rates between Delaware (4.3 per 100,000) and the U.S. (4.1 per 100,000) was not statistically significant.
  - The difference in esophageal cancer mortality rates between males in Delaware (7.2 per 100,000) and the U.S. (7.3 per 100,000) was not statistically significant.
  - The difference in esophageal cancer mortality rates between females in Delaware (1.9 per 100,000) and the U.S. (1.5 per 100,000) was not statistically significant.
  - There was no difference in esophageal cancer mortality rates between non-Hispanic Caucasians in Delaware (4.5 per 100,000) and non-Hispanic Caucasians in the U.S (4.5 per 100,000).
  - The difference in esophageal cancer mortality rates between non-Hispanic African Americans in Delaware (3.1 per 100,000) and the U.S. (3.8 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 8-7: FIVE-YEAR AVERAGE AGE-ADJUSTED ESOPHAGEAL CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014

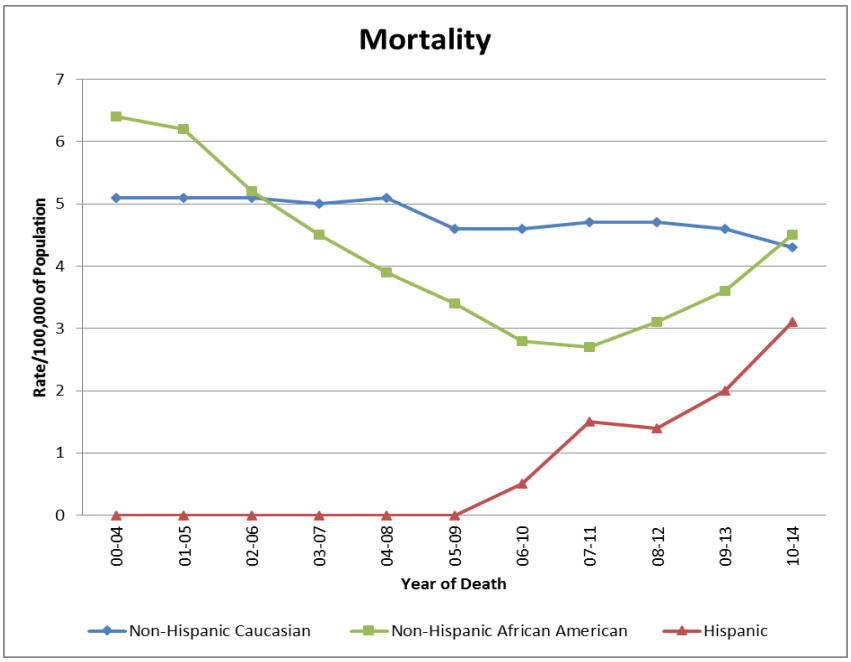


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for esophageal cancer decreased 17% in Delaware and decreased 7% in the U.S.
  - Mortality rates for esophageal cancer decreased 23% in Delaware males and decreased 6% in U.S. males.
  - Mortality rates for esophageal cancer did not change in Delaware females and decreased 17% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 8-8: FIVE-YEAR AVERAGE AGE-ADJUSTED ESOPHAGEAL CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for esophageal cancer decreased 16% in non-Hispanic Caucasians.
  - Mortality rates for esophageal cancer decreased 30% in non-Hispanic African Americans.
  - Esophageal cancer mortality rate differences could not be calculated for Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 8-7: AGE-SPECIFIC ESOPHAGEAL CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	8.3	---	---	---	---	---
65-74	35.8	---	---	---	---	---
75-84	48.6	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for esophageal cancer mortality is 75-84 years of age. Due to low numbers, mortality rates could not be calculated for some groups.

CHAPTER 9: HODGKIN LYMPHOMA

RISK FACTORS

The following are *environmental and medically-related* causes of Hodgkin Lymphoma:

- Higher socioeconomic status
- Exposure to low-level solvent and metal mixtures

The following are *non-modifiable* risk factors (these cannot be changed) of getting Hodgkin Lymphoma:

- Most cases of Hodgkin Lymphoma are in those 15 to 35 years of age and those 55 years of age and older
- Having siblings with Hodgkin Lymphoma
- Risk is higher in males compared to females
- Risk is higher in non-Hispanic Caucasians compared to non-Hispanic African Americans
- A personal history of Epstein-Bar virus (EBV) or mononucleosis
- A weakened immune system

There is no known way to prevent Hodgkin Lymphoma since most of the known risk factors cannot be avoided.

EARLY DETECTION

There are currently no tests recommended for the screening of Hodgkin Lymphoma.

INCIDENCE

For 2010-2014, Delaware ranked 5th in the U.S. for Hodgkin Lymphoma incidence (6th in 2009-2013); males ranked 2nd (4thin 2009-2013) and females ranked 10th (10th in 2009-2013)[10].

2010-2014 DATA

TABLE 9-1: NUMBER OF HODGKIN LYMPHOMA CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	150	90	60	101	63	38	37	19	18	9	---	---
Kent	38	24	14	28	20	8	---	---	---	---	---	---
New Castle	88	51	37	51	29	22	28	16	12	---	---	---
Sussex	24	15	9	22	14	8	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

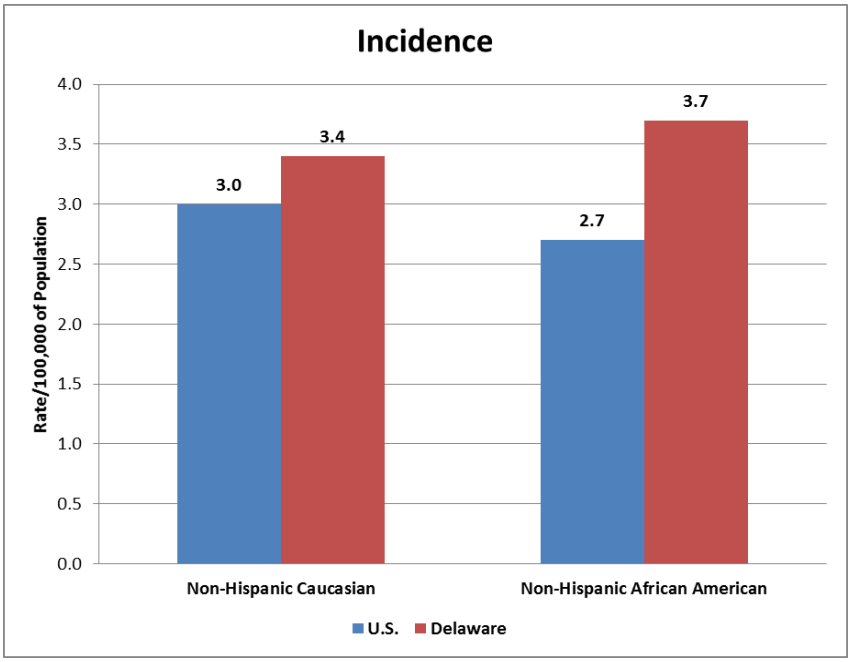
- In 2010-2014, there were 150 Hodgkin Lymphoma cases (1% of all cancer cases) diagnosed in Delaware.
- Males accounted for 60% of Hodgkin Lymphoma cases.
- Non-Hispanic Caucasians accounted for 67% of Hodgkin Lymphoma cases.

TABLE 9-2: FIVE-YEAR AVERAGE AGE-ADJUSTED HODGKIN LYMPHOMA INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	2.6	2.9	2.3
Delaware	3.3	4.0	2.7
Kent	4.8	---	---
New Castle	3.1	3.7	2.7
Sussex	---	---	---

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 9-1: FIVE-YEAR AVERAGE AGE-ADJUSTED HODGKIN LYMPHOMA INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



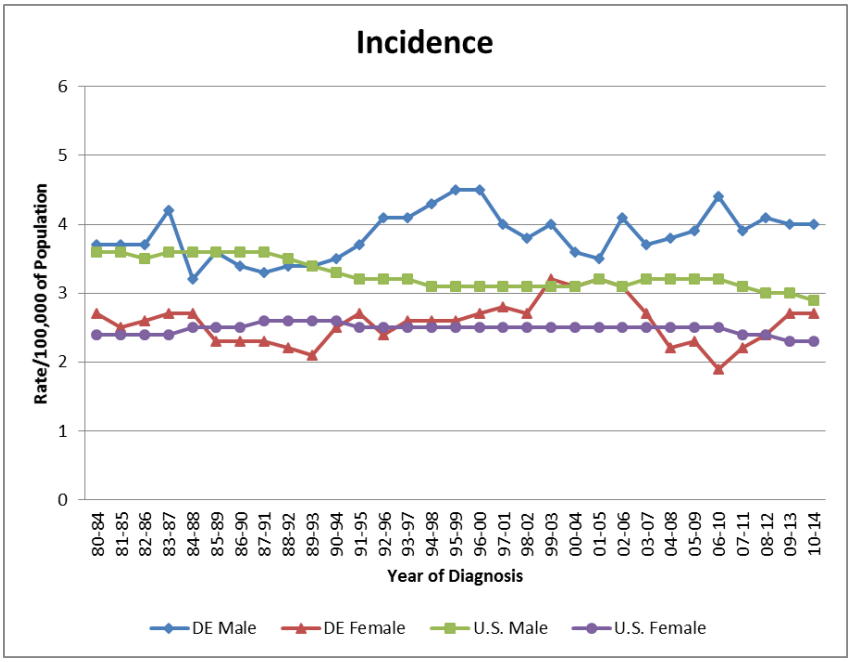
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in Hodgkin Lymphoma incidence rates between males (4.0 per 100,000) and females (2.7 per 100,000) was not statistically significant.
  - The difference in Hodgkin Lymphoma incidence rates between non-Hispanic Caucasians (3.4 per 100,000) and non-Hispanic African Americans (3.7 per 100,000) was not statistically significant.
  - Hodgkin Lymphoma incidence rates for Hispanics could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S.
  - Delaware (3.3 per 100,000) had a statistically significantly higher Hodgkin Lymphoma incidence rate compared to the U.S. (2.6 per 100,000).

- Delaware males (4.0 per 100,000) had a statistically significantly higher Hodgkin Lymphoma incidence rate compared to U.S. males (2.9 per 100,000).
- The difference in Hodgkin Lymphoma incidence rates between females in Delaware (2.7 per 100,000) and the U.S. (2.3 per 100,000) was not statistically significant.
- The difference in Hodgkin Lymphoma incidence rates between non-Hispanic Caucasians in Delaware (3.4 per 100,000) and the U.S. (3.0 per 100,000) was not statistically significant.
- The difference in the Hodgkin Lymphoma incidence rates between non-Hispanic African Americans in Delaware (3.7 per 100,000) and the U.S. (2.7 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 9-2: FIVE-YEAR AVERAGE AGE-ADJUSTED HODGKIN LYMPHOMA INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014

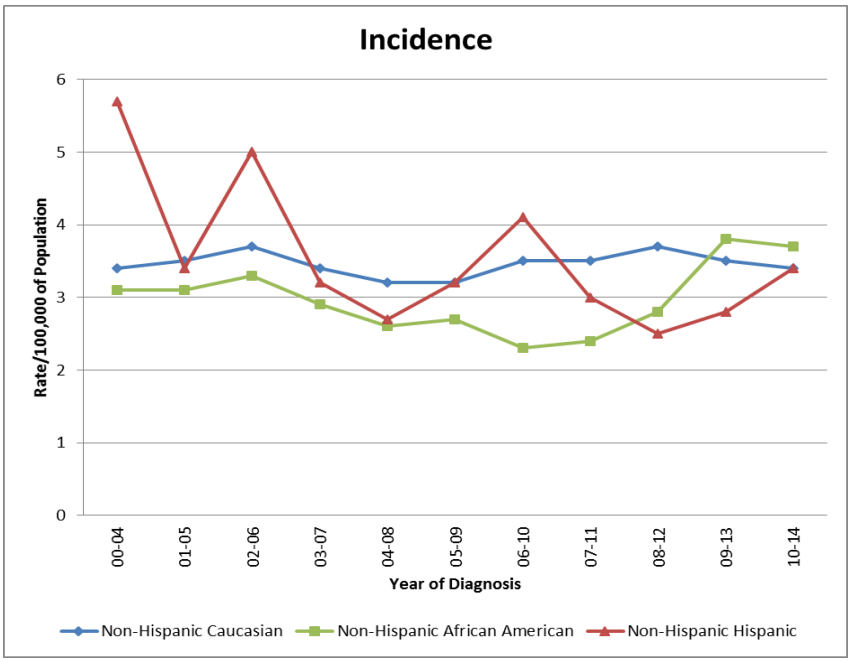


Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for Hodgkin Lymphoma remained the same in Delaware and decreased 7% in the U.S.
  - Incidence rates for Hodgkin Lymphoma increased 11% in Delaware males and decreased in 6% in U.S. males.
  - Incidence rates for Hodgkin Lymphoma decreased 13% in Delaware females and decreased 8% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 9-3: FIVE-YEAR AVERAGE AGE-ADJUSTED HODGKIN LYMPHOMA INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for Hodgkin Lymphoma remained the same in non-Hispanic Caucasians.
  - Incidence rates for Hodgkin Lymphoma increased 19% in non-Hispanic African Americans.
  - Incidence rates for Hodgkin Lymphoma decreased 40% in Hispanics.

AGE-SPECIFIC INCIDENCE RATES - DELAWARE

TABLE 9-3: AGE-SPECIFIC HODGKIN LYMPHOMA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	3.7	---	---	---	---	---
40-64	---	---	---	---	---	---
65-74	---	---	---	---	---	---
75-84	---	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for Hodgkin Lymphoma incidence is 40-64 years of age. Due to low numbers, incidence rates could not be calculated for some groups.

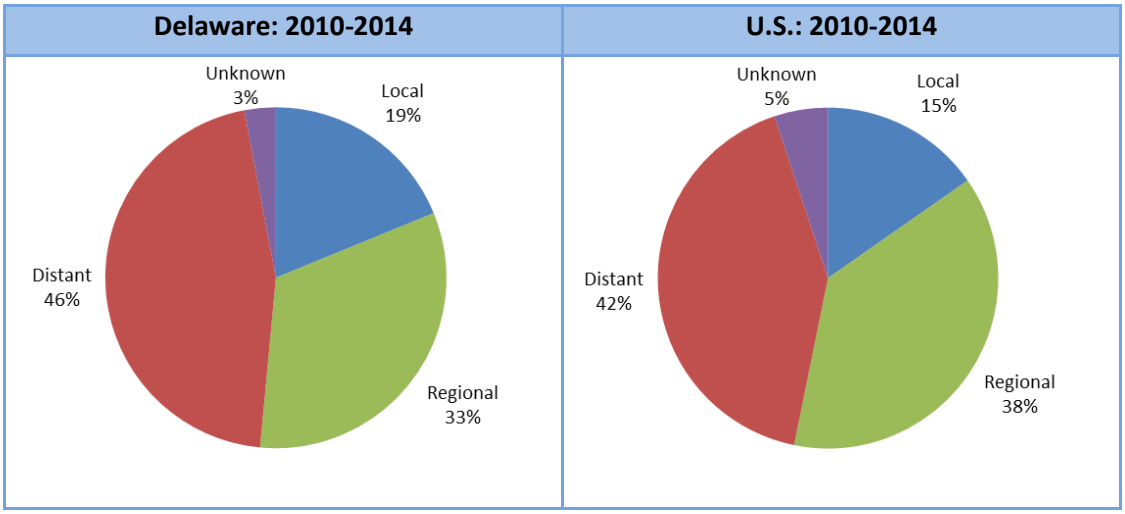
TABLE 9-4: HODGKIN LYMPHOMA CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	---	---	---	---	---	---	---	---	---	---	---	---
Regional	49 (33)	25 (28)	24 (40)	33 (33)	16 (25)	17 (45)	13 (35)	7 (37)	6 (33)	---	---	---
Distant	69 (46)	45 (50)	24 (40)	47 (47)	33 (52)	14 (37)	17 (46)	9 (47)	8 (44)	---	---	---
Unknown	---	---	---	---	---	---	---	---	---	---	---	---
Total	150	90	60	101	63	38	37	19	18	9	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 49 (33%) Hodgkin Lymphomas diagnosed at the regional stage and 69 (46%) at the distant stage.
- Non-Hispanic African Americans (35%) had a higher proportion of Hodgkin Lymphomas diagnosed at the regional stage compared to non-Hispanic Caucasians (33%).
- Females (40%) had a higher proportion of Hodgkin Lymphomas diagnosed at the regional stage compared to males (28%).
- Due to low numbers, Hodgkin Lymphoma stage at diagnosis could not be calculated for Hispanics.

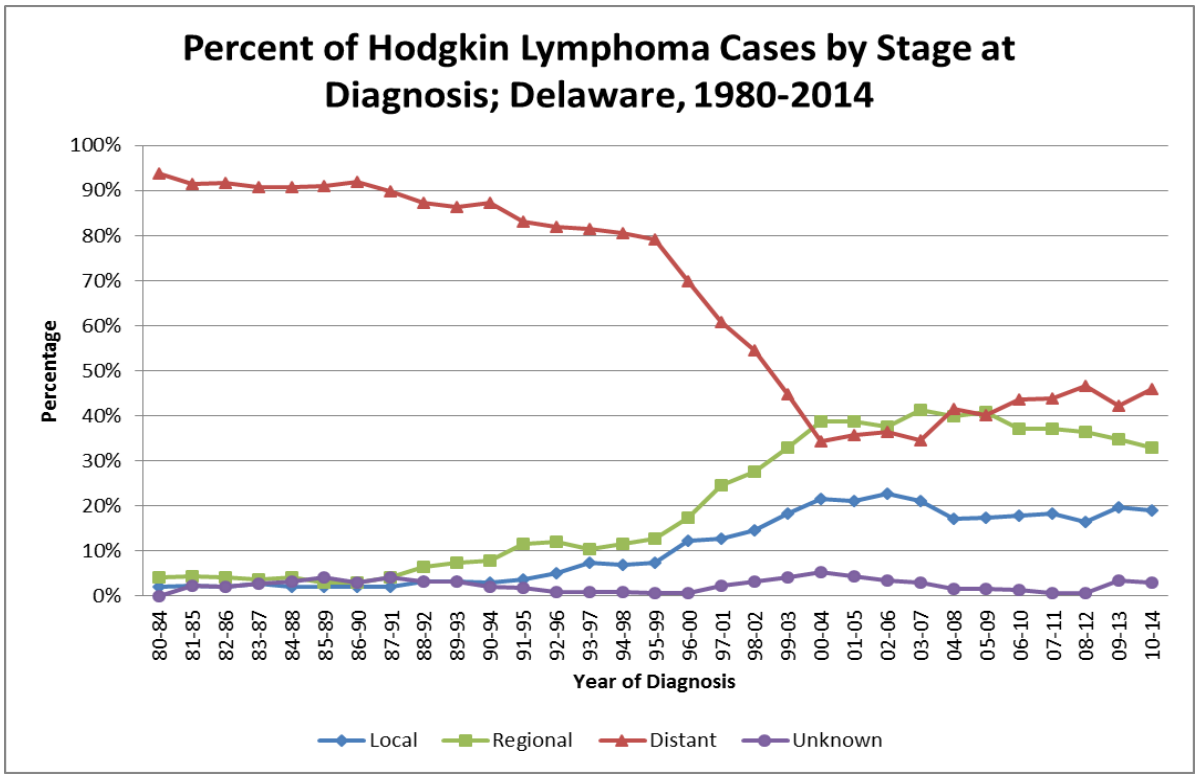
FIGURE 9-4: DISTRIBUTION OF HODGKIN LYMPHOMA CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware Hodgkin Lymphoma data, Delaware (19%) had a higher proportion of Hodgkin Lymphoma diagnosed at the local stage compared to the U.S. (15%). Delaware (46%) had a higher proportion of Hodgkin Lymphoma diagnosed at the distant stage compared to the U.S. (42%).

FIGURE 9-5: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR HODGKIN LYMPHOMA CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of Hodgkin Lymphoma cases diagnosed at the local stage increased from 2% to 19%.
  - Hodgkin Lymphoma cases diagnosed at the distant stage decreased from 94% to 46%.

MORTALITY

2010-2014 DATA

In 2010-2014, there were 15 deaths from Hodgkin Lymphoma in Delaware. Due to the low number of deaths, mortality patterns in Delaware are not presented.

CHAPTER 10: KIDNEY AND RENAL PELVIS CANCER[14]

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting kidney cancer:

- Smoking
- Overweight and obesity
- High blood pressure

The following are *environmental and medically-related* causes of kidney cancer:

- Occupational exposures to chemicals like asbestos, cadmium, benzene, some herbicides, and organic solvents (particularly trichloroethylene)

The following are *non-modifiable* risk factors (these cannot be changed) of getting kidney cancer:

- Males are twice as likely to develop kidney cancer compared to females
- Non-Hispanic African Americans have a slightly higher chance to develop kidney cancer compared to non-Hispanic Caucasians
- A family history of kidney cancer
    - Inherited conditions can increase risk (Von Hippel-Lindau (VHL) syndrome, papillary renal cell carcinoma, leiomyoma-renal cell carcinoma, Birt-Hogg-Dube syndrome, Renal oncocytoma)

To protect against kidney cancer, individuals should manage lifestyle risk factors such as eating a healthy diet (high in fruits, vegetables, and whole grains), avoid tobacco, limit alcohol use (two drinks a day in males and one drink a day in females, and increase physical activity.

EARLY DETECTION

There are currently no recommended screening tests for kidney cancer. Individuals at increased risk should discuss screening options with their health care provider.

INCIDENCE

For 2010-2014, Delaware ranked 10th in the U.S. for kidney cancer incidence (8th in 2009-2013); males ranked 4th (4th in 2009-2013) and females ranked 24th (25th in 2009-2013)[10].

2010-2014 DATA

TABLE 10-1: NUMBER OF KIDNEY CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	955	621	334	734	479	255	190	123	67	22	12	10
Kent	187	117	70	146	89	57	36	25	11	---	---	---
New Castle	504	323	181	353	229	124	129	80	49	17	10	7
Sussex	264	181	83	235	161	74	25	18	7	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

[14] "Kidney cancer" is used instead of "kidney and renal pelvis cancer" throughout this section.

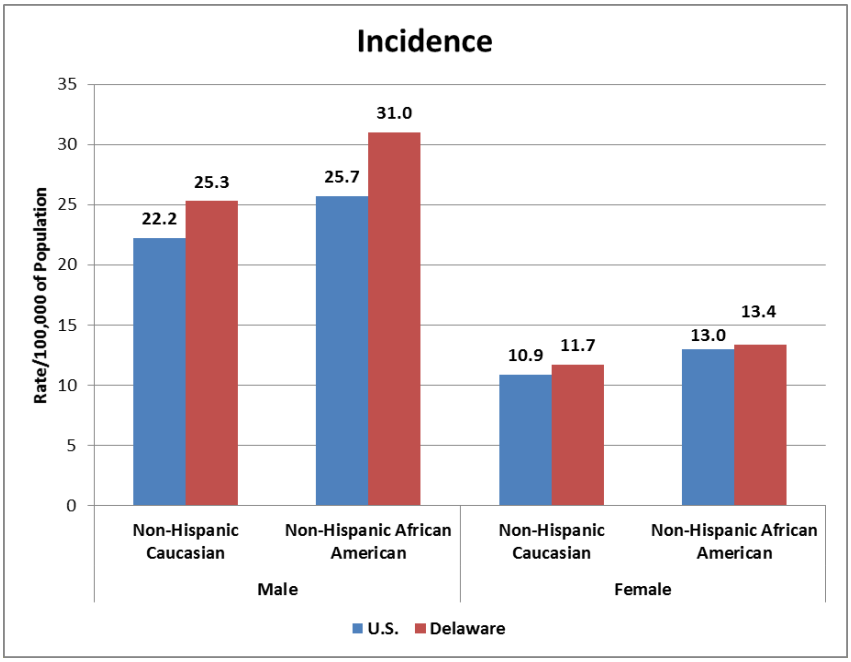
- In 2010-2014, there were 955 kidney cancer cases (3% of all cancer cases) diagnosed in Delaware.
- Males accounted for 65% of kidney cancer cases.
- Non-Hispanic Caucasians accounted for 77% of kidney cancer cases.

TABLE 10-2: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	15.6	21.4	10.7
Delaware	17.6	25.0	11.4
Kent	20.0	27.8	13.8
New Castle	17.0	23.7	11.3
Sussex	17.5	25.9	10.2

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 10-1: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



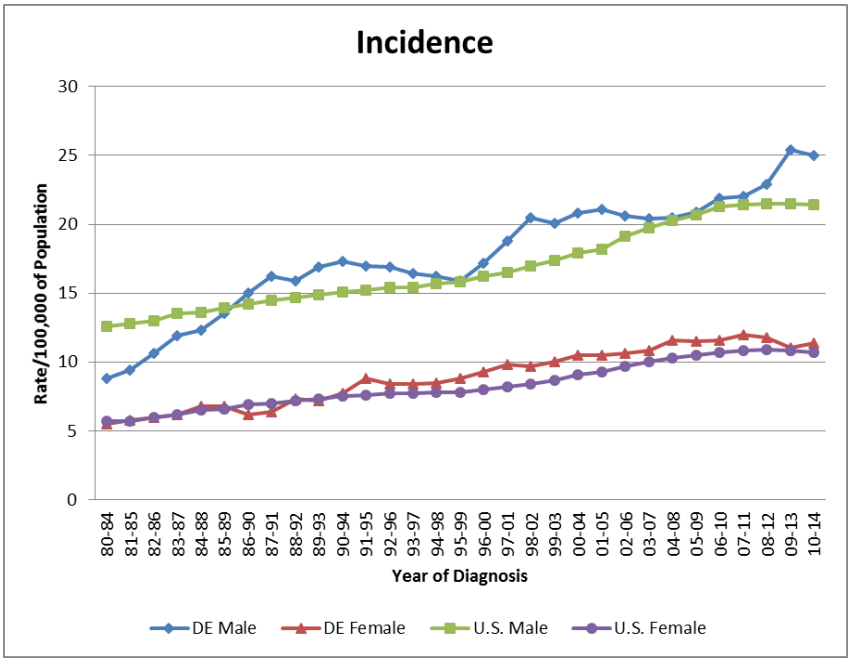
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (25.0 per 100,000) had a statistically significantly higher kidney cancer incidence rate compared to females (11.4 per 100,000).
  - The difference in kidney cancer incidence rates between non-Hispanic Caucasians (18.0 per 100,000) and non-Hispanic African Americans (20.8 per 100,000) was not statistically significant.
  - Kidney cancer incidence rates for Hispanics could not be calculated due to an insufficient number of cases.

- Comparing Delaware and the U.S.
  - Delaware (17.6 per 100,000) had a statistically significantly higher kidney cancer incidence rate compared to the U.S. (15.6 per 100,000).
  - Delaware males (25.0 per 100,000) had a statistically significantly higher kidney cancer incidence rate compared to U.S. males (21.4 per 100,000).
  - The difference in kidney cancer incidence rates between Delaware females (11.4 per 100,000) and U.S. females (10.7 per 100,000) was not statistically significant.
  - Non-Hispanic Caucasians in Delaware (18.0 per 100,000) had a statistically significantly higher kidney cancer incidence rate compared to non-Hispanic Caucasians in the U.S. (16.2 per 100,000).
  - The difference in the kidney cancer incidence rates between non-Hispanic African Americans in Delaware (20.8 per 100,000) and the U.S. (18.5 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

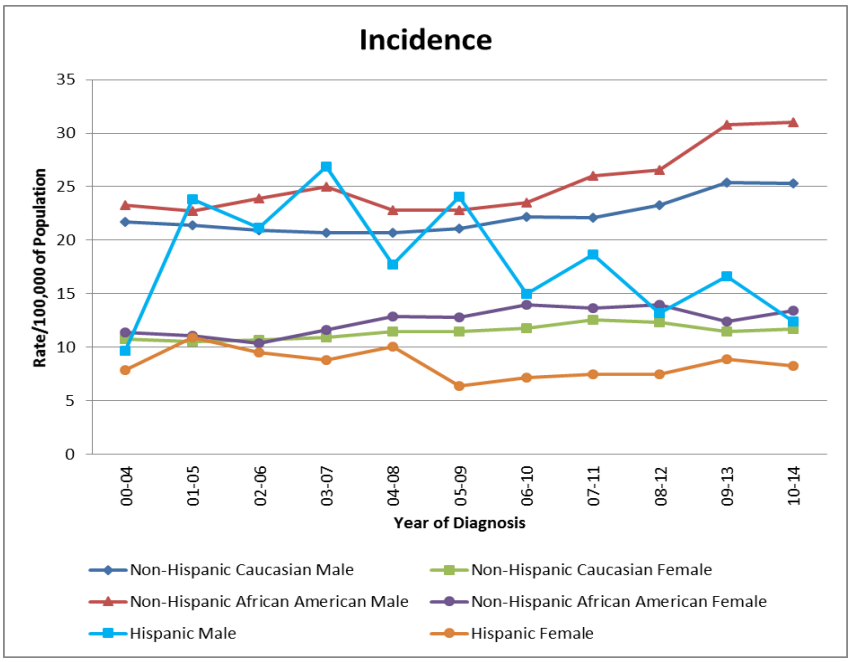
FIGURE 10-2: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for kidney cancer increased 17% in Delaware and increased 20% in the U.S.
  - Incidence rates for kidney cancer increased 20% in Delaware males and increased 20% in U.S. males.
  - Incidence rates for kidney cancer increased 9% in Delaware females and increased 18% in U.S. females.

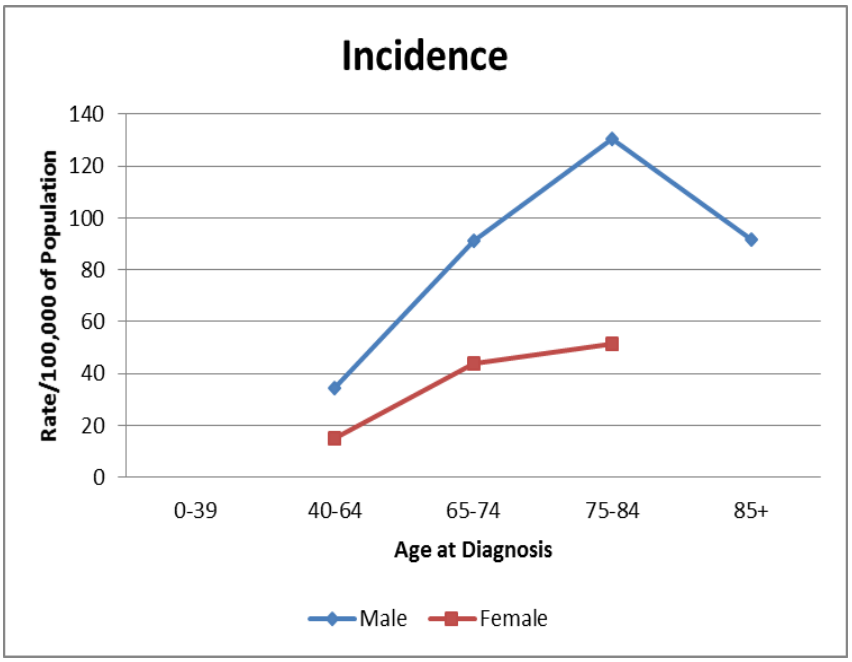
FIGURE 10-3: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for kidney cancer increased 17% in non-Hispanic Caucasian males and increased 8% in non-Hispanic Caucasian females.
  - Incidence rates for kidney cancer increased 33% in non-Hispanic African American males and increased 18% in non-Hispanic African American females.
  - Incidence rates for kidney cancer increased 28% in Hispanic males and increased 5% in Hispanic females.

FIGURE 10-4: AGE-SPECIFIC KIDNEY CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for kidney cancer incidence is 75-84 years of age for both males and females. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 10-3: AGE-SPECIFIC KIDNEY CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	33.9	47.1	---	16.1	---	---
65-74	90.4	108.6	---	37.0	87.9	---
75-84	129.7	---	---	53.2	---	---
85+	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Both non-Hispanic Caucasians and non-Hispanic African Americans had peak kidney cancer incidence between 75-84 years of age.

STAGE OF DIAGNOSIS - DELAWARE

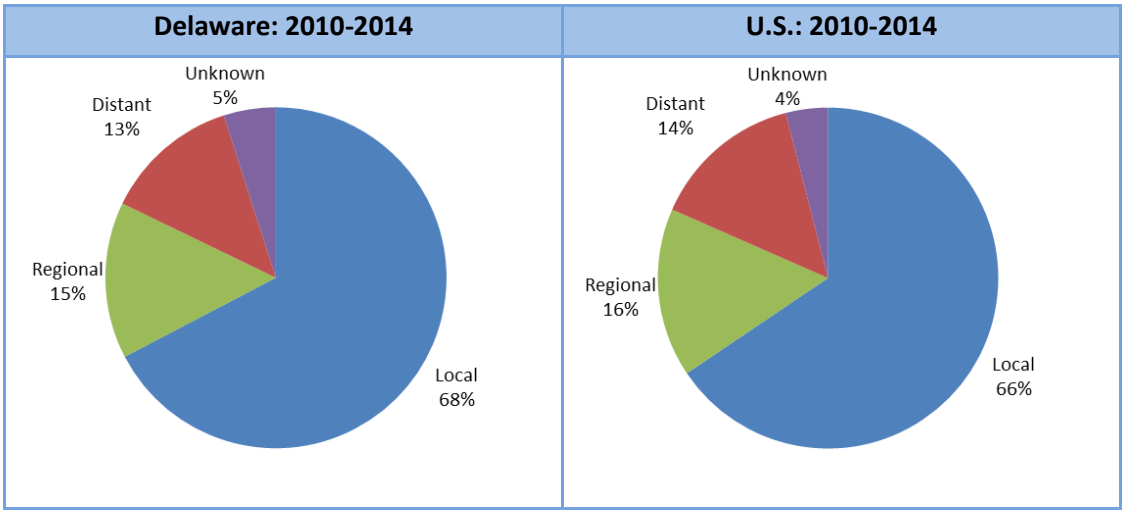
TABLE 10-4: KIDNEY CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	647 (68)	410 (66)	237 (71)	486 (66)	307 (64)	179 (70)	137 (72)	89 (72)	48 (72)	17 (77)	9 (75)	8 (80)
Regional	139 (15)	92 (15)	47 (14)	107 (15)	72 (15)	35 (14)	27 (14)	17 (14)	10 (15)	---	---	---
Distant	121 (13)	82 (13)	39 (12)	99 (14)	67 (14)	32 (13)	20 (11)	---	---	---	---	---
Unknown	48 (5)	37 (6)	11 (3)	42 (6)	33 (7)	9 (4)	6 (3)	---	---	---	---	---
Total	955	621	334	734	479	255	190	123	67	22	12	10

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 647 (68%) kidney cancers diagnosed at the local stage; 139 (15%) at the regional stage; 121 (13%) at the distant stage; and 48 (5%) had an unknown stage.
- Hispanics (77%) had a higher proportion of kidney cancers diagnosed at the local stage compared to both non-Hispanic African Americans (72%) and non-Hispanic Caucasians (66%).
- Females (71%) had a higher proportion of kidney cancers diagnosed at the local stage compared to males (66%).

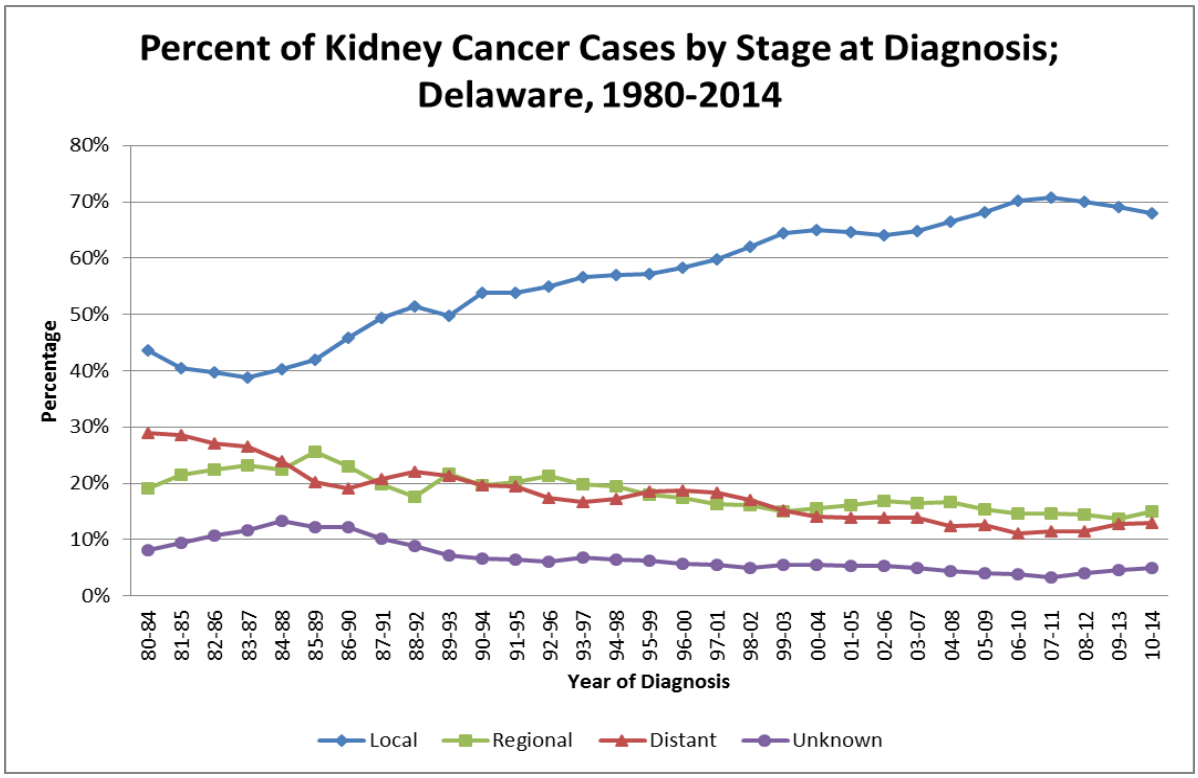
FIGURE 10-5: DISTRIBUTION OF KIDNEY CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware kidney cancer data, percentages for the stage of kidney cancer at diagnosis are similar.

FIGURE 10-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR KIDNEY CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of kidney cancer cases diagnosed at the local stage decreased from 44% to 68%.
  - Kidney cancer cases diagnosed at the distant stage decreased from 29% to 13%.

MORTALITY

For 2010-2014, Delaware ranked 27th in the U.S. for kidney cancer mortality (33rd in 2009-2013); males ranked 28th (40th in 2009-2013) and females ranked 24th (14th in 2009-2013)[11].

2010-2014 DATA

TABLE 10-5: NUMBER OF KIDNEY CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	216	137	79	188	121	67	25	14	11	---	---	---
Kent	43	27	16	41	25	16	---	---	---	---	---	---
New Castle	117	71	46	95	58	37	19	11	8	---	---	---
Sussex	56	39	17	52	38	14	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 216 deaths (2% of all cancer deaths) from kidney cancer in Delaware.

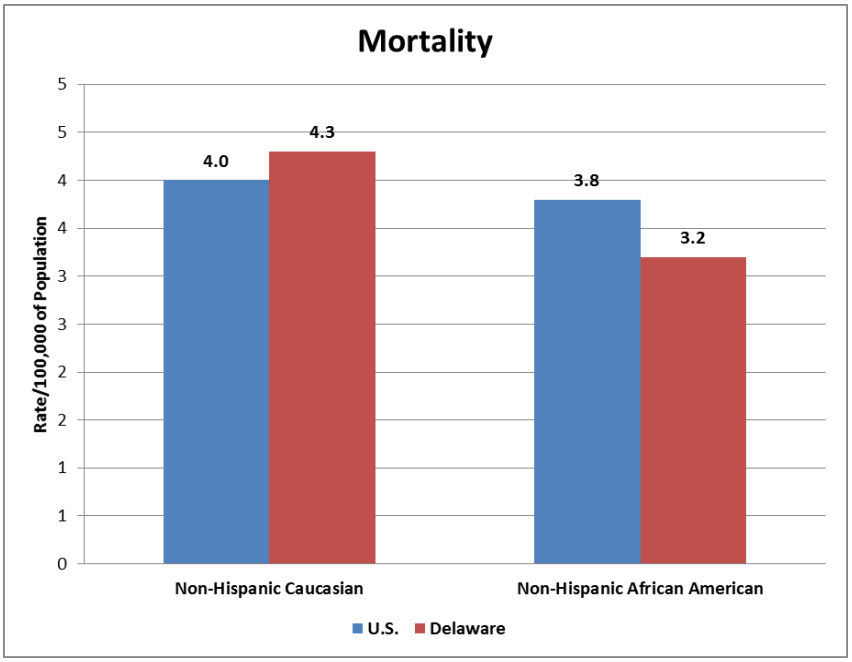
- Males accounted for 63% of kidney cancer deaths.
- Non-Hispanic Caucasians accounted for 87% of kidney cancer deaths.

TABLE 10-6: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	3.9	5.6	2.4
Delaware	4.0	5.9	2.6
Kent	4.5	6.4	---
New Castle	4.1	5.8	2.9
Sussex	3.7	5.7	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 10-7: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



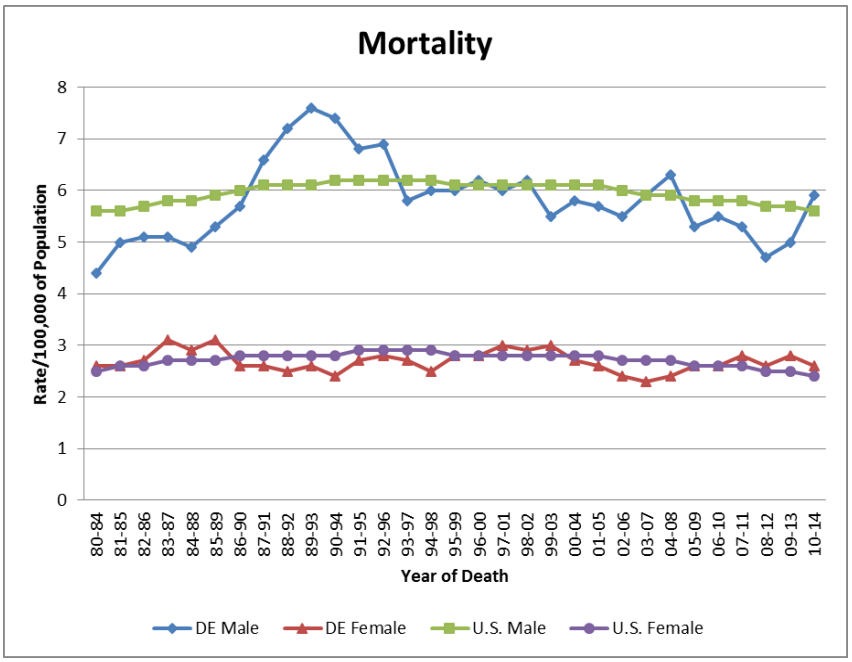
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (5.9 per 100,000) had a statistically significantly higher kidney cancer mortality rates compared to females (2.6 per 100,000).
  - The difference in kidney cancer mortality rates between non-Hispanic Caucasians (4.3 per 100,000) and non-Hispanic African Americans (3.2 per 100,000) was not statistically significant.
  - Kidney cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in kidney cancer mortality rates between Delaware (4.0 per 100,000) and the U.S. (3.9 per 100,000) was not statistically significant.
  - The difference in kidney cancer mortality rates between males in Delaware (5.9 per 100,000) and the U.S. (5.6 per 100,000) was not statistically significant.
  - The difference in kidney cancer mortality rates between females in Delaware (2.6 per 100,000) and the U.S. (2.4 per 100,000) was not statistically significant.
  - The difference in kidney cancer mortality rates between non-Hispanic Caucasians in Delaware (4.3 per 100,000) and the U.S (4.0 per 100,000) was not statistically significant.
  - The difference in kidney cancer mortality rates between non-Hispanic African Americans in Delaware (3.2 per 100,000) and the U.S (3.8 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 10-8: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014

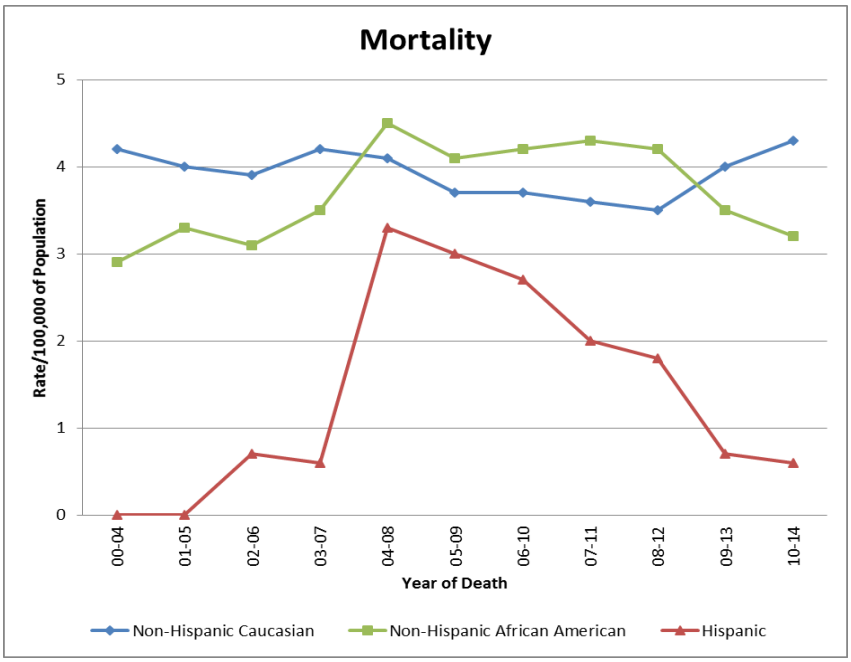


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for kidney cancer increased 3% in Delaware and decreased 7% in the U.S.
  - Mortality rates for kidney cancer increased 2% in Delaware males and decreased 8% in U.S males.
  - Mortality rates for kidney cancer decreased 4% in Delaware females and decreased 14% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 10-9: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for kidney cancer increased 2% in non-Hispanic Caucasians.
  - Mortality rates for kidney cancer increased 10% in non-Hispanic African Americans.
  - Kidney cancer mortality rate differences could not be calculated for Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 10-7: AGE-SPECIFIC KIDNEY CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	6.1	---	---	---	---	---
65-74	20.5	---	---	---	---	---
75-84	35.4	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for kidney cancer mortality is 85 years of age and older. Due to low numbers, mortality rates could not be calculated for some groups.

CHAPTER 11: LARYNGEAL CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting laryngeal cancer:

- Tobacco use (smoking cigarettes, pipes, and cigars)
- Heavy alcohol use
- Poor nutrition

The following are *environmental and medically-related* causes of laryngeal cancer:

- Long and intense exposures to wood dust, paint fumes, and certain chemicals used in metalworking, petroleum, plastics, and textiles industries

The following are *non-modifiable* risk factors (these cannot be changed) of getting laryngeal cancer:

- Some genetic syndromes (Fanconi anemia and Dyskeratosis congenital)
- Males are at increased risk of laryngeal cancer compared to females
- Older age (over half are diagnosed in those 65 years of age and older)
- Non-Hispanic African Americans and non-Hispanic Caucasians are at higher risk compared to other racial/ethnic groups

To protect against laryngeal cancer, individuals should manage lifestyle risk factors such as eating a healthy diet (high in fruits, vegetables, and whole grains), avoiding tobacco, and limit alcohol use (two drinks a day in males and one drink a day in females).

EARLY DETECTION

There are currently no recommended screening tests for laryngeal cancer. Individuals at increased risk should discuss screening options with their health care provider.

INCIDENCE

For 2010-2014, Delaware ranked 17th in the U.S. for laryngeal cancer incidence (13th in 2009-2013); males ranked 18th (21st in 2009-2013) and females ranked 16th (5th in 2009-2013)[10].

2010-2014 DATA

TABLE 11-1: NUMBER OF LARYNGEAL CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	223	172	51	176	136	40	39	29	10	6	---	---
Kent	35	29	6	24	---	---	10	---	---	---	---	---
New Castle	106	81	25	78	59	19	23	17	6	---	---	---
Sussex	82	62	20	74	---	---	6	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 223 laryngeal cancer cases (1% of all cancer cases) diagnosed in Delaware.
- Males accounted for 77% of laryngeal cancer cases.

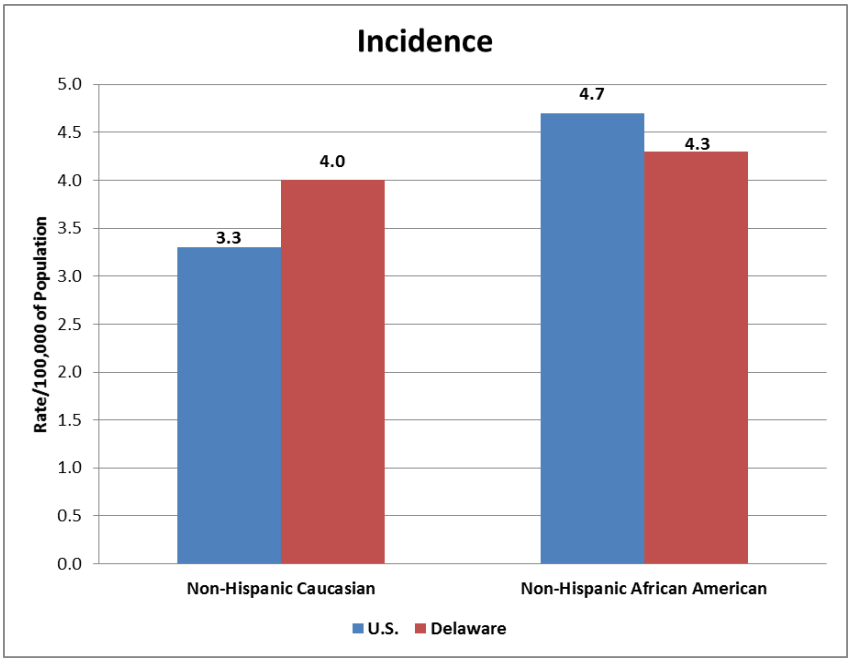
- Non-Hispanic Caucasians accounted for 79% of laryngeal cancer cases.

TABLE 11-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LARYNGEAL CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	3.1	5.4	1.1
Delaware	3.9	6.6	1.6
Kent	3.5	6.5	---
New Castle	3.5	5.9	1.4
Sussex	5.0	8.2	---

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 11-1: FIVE-YEAR AVERAGE AGE-ADJUSTED LARYNGEAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



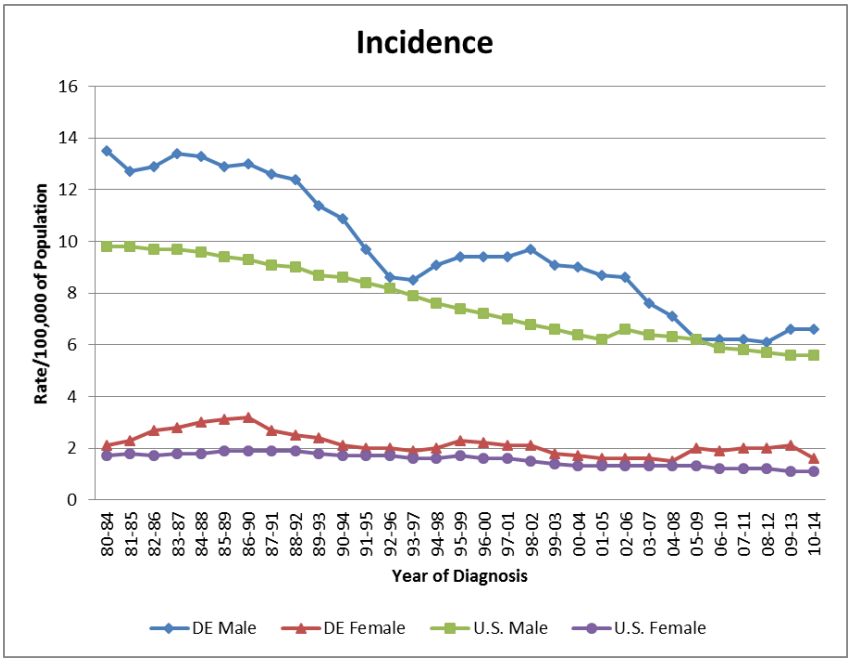
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (6.6 per 100,000) had a statistically significantly higher laryngeal cancer incidence rate compared to non-Hispanic African Americans (1.6 per 100,000).
  - The difference in laryngeal cancer incidence rates between non-Hispanic Caucasians (4.0 per 100,000) and non-Hispanic African Americans (4.3 per 100,000) was not statistically significant.
  - Laryngeal cancer incidence rates for Hispanics could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S.
  - Delaware (3.9 per 100,000) had a statistically significantly higher laryngeal cancer incidence rate compared to the U.S. (3.1 per 100,000).

- Delaware males (6.6 per 100,000) had a statistically significantly higher laryngeal cancer incidence rate compared to U.S. males (5.4 per 100,000).
- The difference in laryngeal cancer incidence rates between females in Delaware (1.6 per 100,000) and the U.S. (1.1 per 100,000) was not statistically significant.
- The difference in laryngeal cancer incidence rates between non-Hispanic Caucasians in Delaware (4.0 per 100,000) and the U.S. (3.3 per 100,000) was not statistically significant.
- The difference in the laryngeal cancer incidence rates between non-Hispanic African Americans in Delaware (4.3 per 100,000) and the U.S. (4.7 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 11-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LARYNGEAL CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014

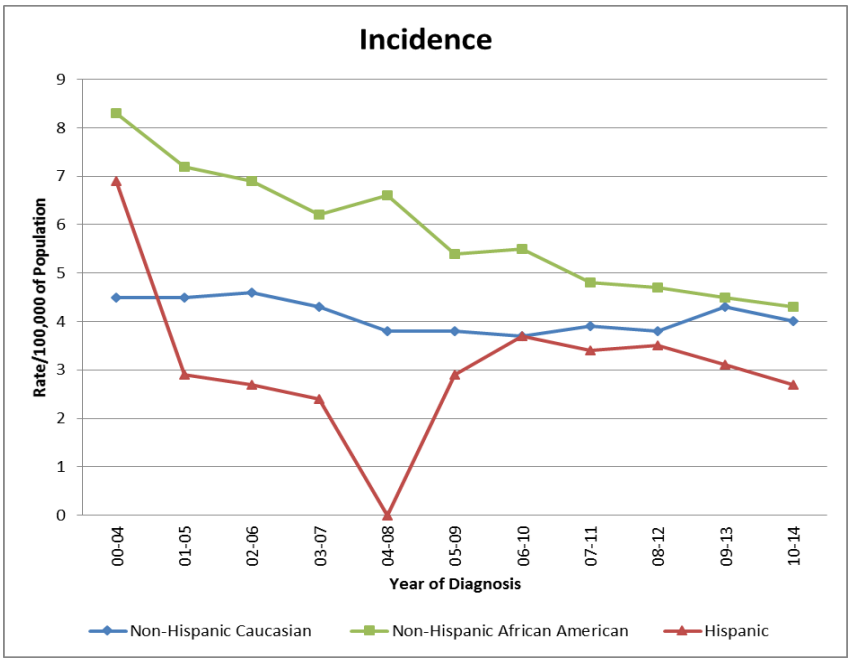


Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for laryngeal cancer decreased 20% in Delaware and decreased 14% in the U.S.
  - Incidence rates for laryngeal cancer decreased 27% in Delaware males and decreased 13% in U.S. males.
  - Incidence rates for laryngeal cancer decreased 6% in Delaware females and decreased 15% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 11-3: FIVE-YEAR AVERAGE AGE-ADJUSTED LARYNGEAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for laryngeal cancer decreased 11% in non-Hispanic Caucasians.
  - Incidence rates for laryngeal cancer decreased 48% in non-Hispanic African Americans.
  - Incidence rates for laryngeal cancer decreased 61% in Hispanics.

AGE-SPECIFIC INCIDENCE RATES - DELAWARE

TABLE 11-3: AGE-SPECIFIC LARYNGEAL CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	11.5	---	---	---	---	---
65-74	18.1	---	---	---	---	---
75-84	38.9	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for laryngeal cancer incidence is between 75-84 years of age. Due to low numbers, incidence rates could not be calculated for some groups.
- Non-Hispanic Caucasians had peak laryngeal cancer incidence at 75-84 years of age.

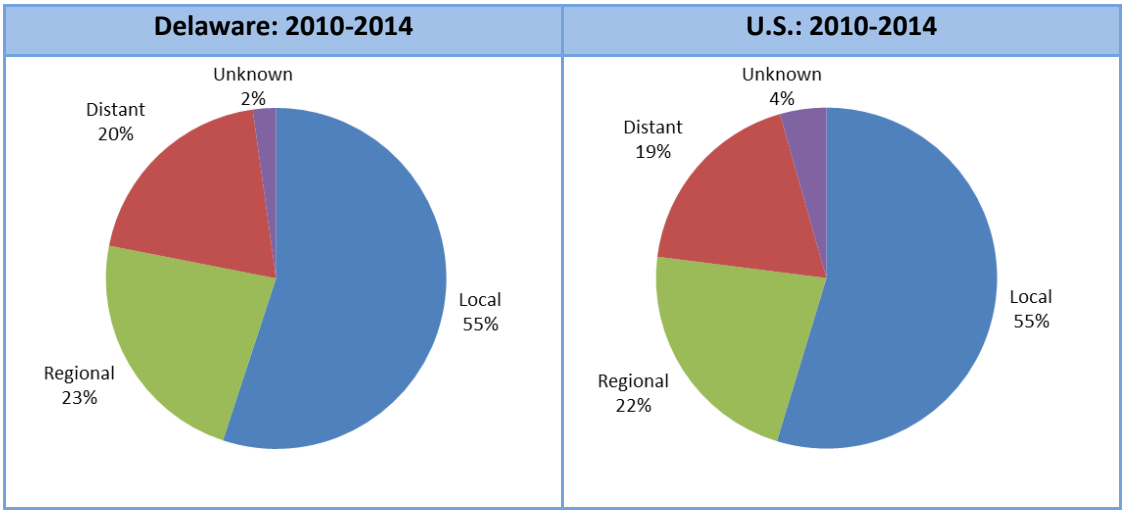
TABLE 11-4: LARYNGEAL CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	122 (55)	101 (59)	21 (41)	103 (59)	87 (64)	16 (39)	15 (39)	---	---	---	---	---
Regional	52 (23)	35 (20)	17 (33)	38 (22)	25 (18)	13 (33)	13 (33)	---	---	---	---	---
Distant	---	---	---	---	---	---	---	---	---	---	---	---
Unknown	---	---	---	---	---	---	---	---	---	---	---	---
Total	223	172	51	176	136	40	39	29	10	6	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 122 (55%) laryngeal cancers diagnosed at the local stage and 52 (23%) at the regional stage.
- Non-Hispanic Caucasians (59%) had a higher proportion of laryngeal cancers diagnosed at the local stage compared to non-Hispanic African Americans (39%).
- Males (59%) had a higher proportion of laryngeal cancers diagnosed at the local stage compared to females (41%).
- Due to low numbers, laryngeal cancer stage at diagnosis could not be calculated for Hispanics.

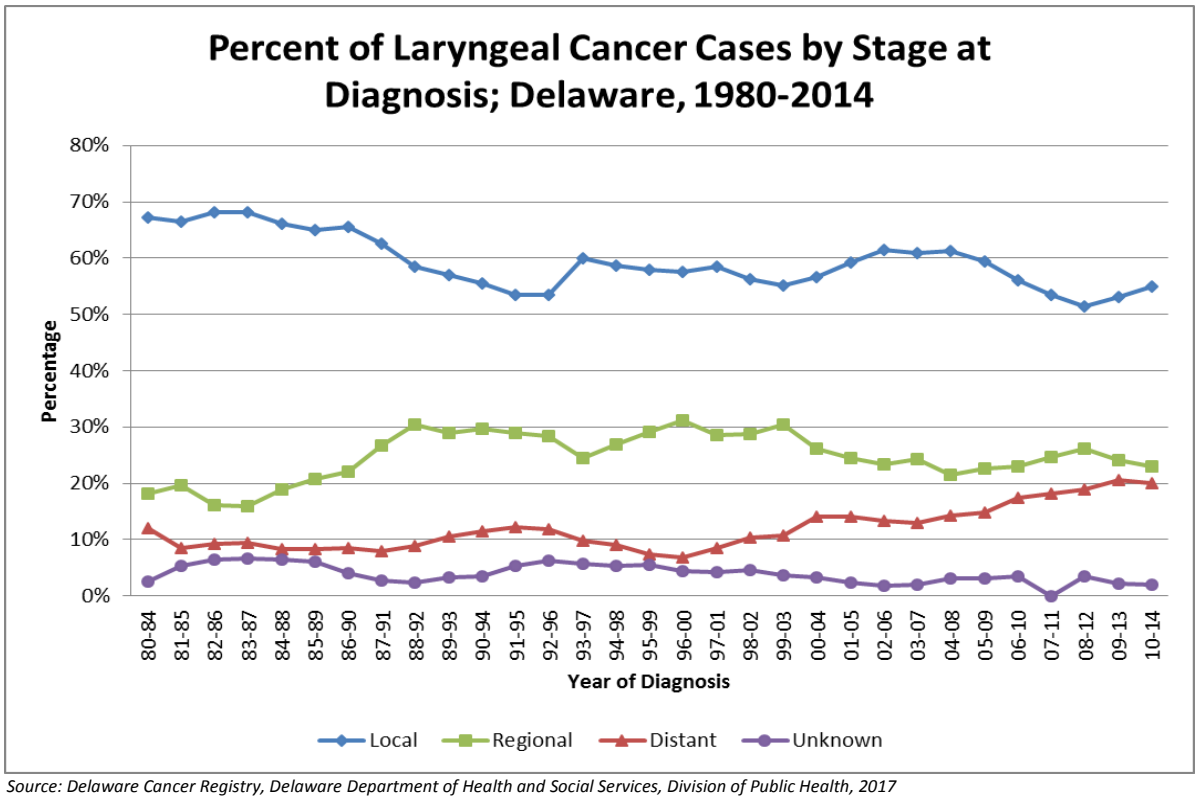
FIGURE 11-4: DISTRIBUTION OF LARYNGEAL CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware laryngeal cancer data, the percentages of stage of disease at diagnosis is similar.

FIGURE 11-5: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR LARYNGEAL CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of laryngeal cancer cases diagnosed at the local stage decreased from 67% to 55%.
  - Laryngeal cancer cases diagnosed at the distant stage increased from 12% to 20%.

MORTALITY

For 2010-2014, Delaware ranked 14th in the U.S. for laryngeal cancer mortality (26th in 2009-2013); males ranked 27th (30th in 2009-2013) and females ranked 3rd (4th in 2009-2013)[11].

2010-2014 DATA

TABLE 11-5: NUMBER OF LARYNGEAL CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	68	48	20	45	32	13	19	---	---	---	---	---
Kent	12	11	1	9	---	---	---	---	---	---	---	---
New Castle	38	25	13	21	14	7	14		---	---	---	---
Sussex	18	12	6	15	---	---	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 68 deaths (1% of all cancer deaths) from laryngeal cancer in Delaware.
- Males accounted for 71% of laryngeal cancer deaths.
- Non-Hispanic Caucasians accounted for 66% of laryngeal cancer deaths.

TABLE 11-6: FIVE-YEAR AVERAGE AGE-ADJUSTED LARYNGEAL CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

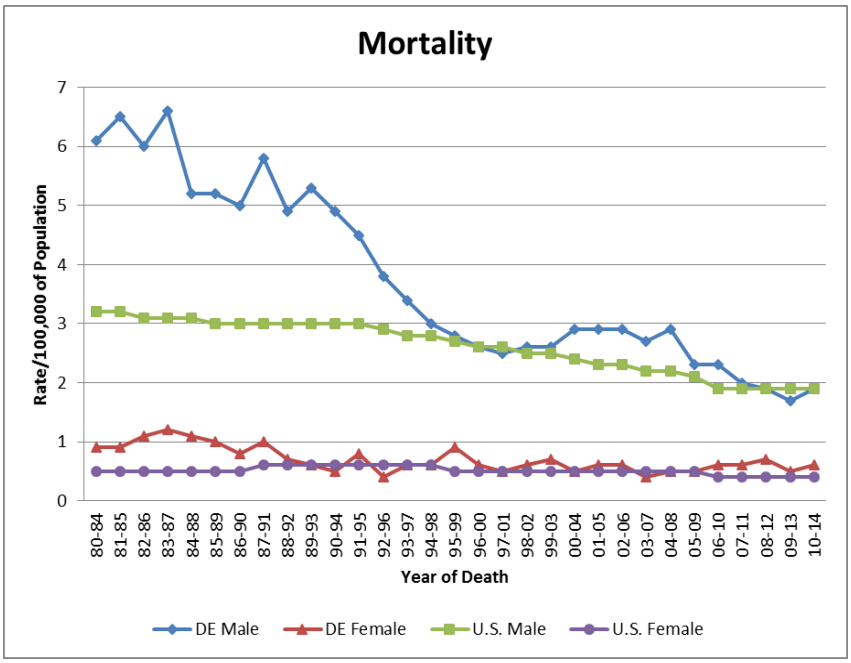
	Overall	Male	Female
U.S.	1.0	1.9	0.4
Delaware	1.2	1.9	---
Kent	---	---	---
New Castle	1.3	1.9	---
Sussex	---	---	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Due to limited data, comparisons could not be within Delaware or between Delaware and the U.S.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 11-6: FIVE-YEAR AVERAGE AGE-ADJUSTED LARYNGEAL CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014



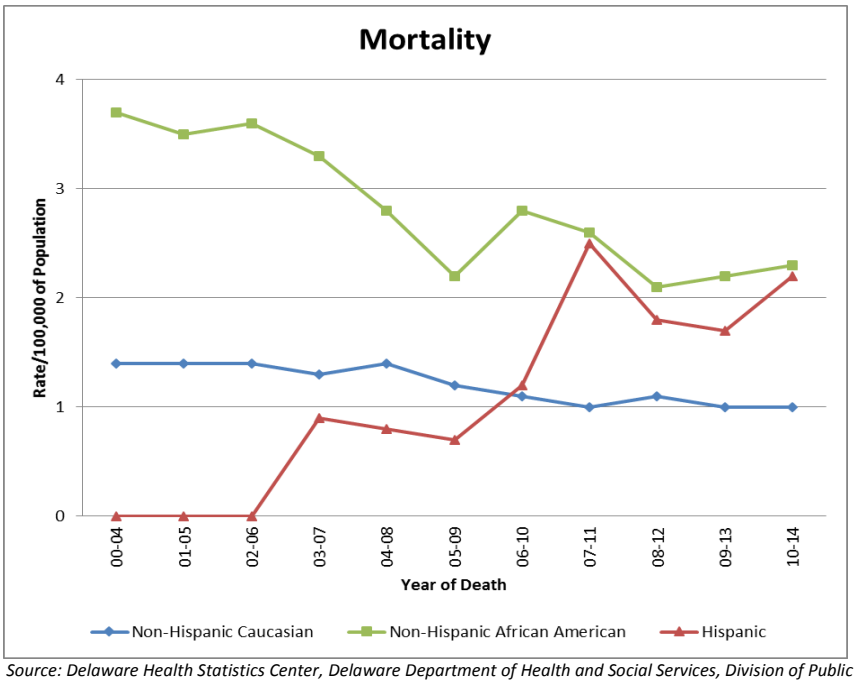
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for laryngeal cancer decreased 25% in Delaware and decreased 23% in the U.S.
  - Mortality rates for laryngeal cancer decreased 34% in Delaware males and decreased 21% in U.S. males.

- Mortality rates for laryngeal cancer increased 20% in Delaware females and decreased 20% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 11-7: FIVE-YEAR AVERAGE AGE-ADJUSTED LARYNGEAL CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for laryngeal cancer decreased 29% in non-Hispanic Caucasians.
  - Mortality rates for laryngeal cancer decreased 38% in non-Hispanic African Americans.
  - Laryngeal cancer mortality rate differences could not be calculated for Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

- Due to low numbers, age-specific laryngeal cancer mortality rates were not calculated.

CHAPTER 12: LEUKEMIA

RISK FACTORS

Leukemias are grouped based on how quickly the disease develops: chronic or acute. Leukemias are also grouped based on the types of white blood cells that are affected: lymphoid cells (lymphoid, lymphocytic, or lymphoblastic leukemia) or myeloid cells (myelogenous or myeloblastic leukemia).

The four common types of leukemia are:

- Chronic lymphocytic leukemia (CLL): affects the lymphoid cells and usually grows slowly. CLL occurs most often in people 40 years of age and older and almost never affects children.
- Chronic myeloid leukemia (CML): affects myeloid cells and usually grows slowly at first. CML mainly affects adults.
- Acute lymphocytic (lymphoblastic) leukemia (ALL): affects lymphoid cells and grows quickly. ALL is the most common type of leukemia in young children and it also affects adults.
- Acute myeloid leukemia (AML): affects myeloid cells and grows quickly. AML occurs in both children and adults.

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting leukemia:

- Cigarette smoking (AML)

The following are *environmental and medically-related* causes of leukemia:

- Very high levels of exposure to ionizing radiation from diagnostic X-rays, radiation therapy, or atomic bomb explosions (AML, CML, ALL)
- Exposure to benzene in the workplace from cigarette smoke or gasoline (AML, CML, ALL)
- Chemotherapy, especially alkylating agents (AML, ALL)

The following are *non-modifiable* risk factors (these cannot be changed) of getting leukemia:

- Downs syndrome and other genetic conditions (acute leukemia)

To protect against leukemia, individuals should avoid tobacco.

EARLY DETECTION

There are currently no tests recommended for the screening of leukemia. Individuals at increased risk should discuss screening options with their health care provider.

INCIDENCE

For 2010-2014, Delaware ranked 18th in the U.S. for leukemia incidence (19th in 2009-2013); males ranked 14th (14th in 2009-2013) and females ranked 31st (34th in 2009-2013)[10].

2010-2014 DATA

TABLE 12-1: NUMBER OF LEUKEMIA CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	768	460	308	613	372	241	101	56	45	36	23	13
Kent	129	86	43	100	68	32	19	---	---	---	---	---
New Castle	393	221	172	298	171	127	62	30	32	20	13	7
Sussex	246	153	93	215	133	82	20	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

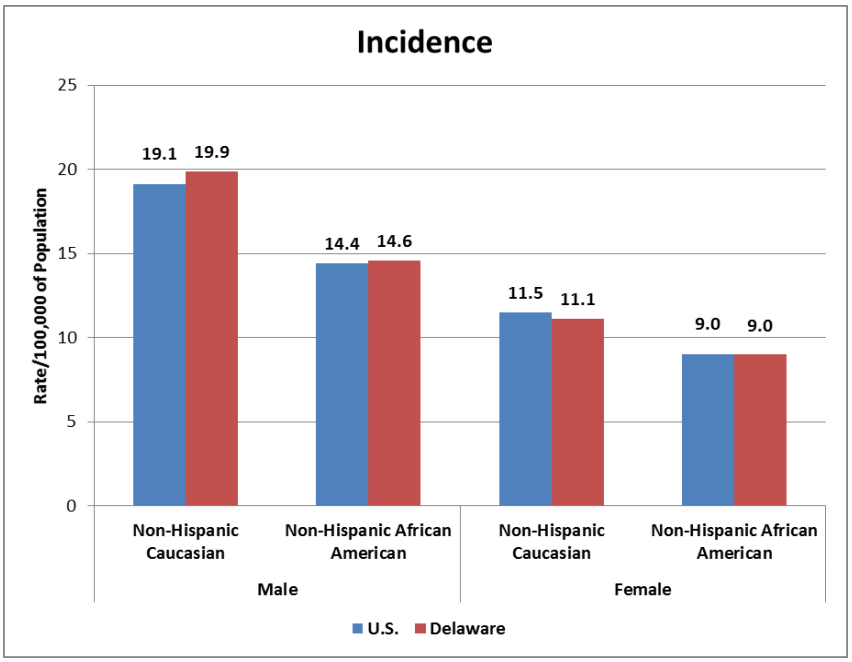
- In 2010-2014, there were 768 leukemia cases (3% of all cancer cases) diagnosed in Delaware.
- Males accounted for 60% of leukemia cases.
- Non-Hispanic Caucasians accounted for 80% of leukemia cases.

TABLE 12-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	13.7	17.6	10.7
Delaware	14.5	19.4	10.7
Kent	14.0	20.8	8.6
New Castle	13.6	17.5	10.6
Sussex	16.6	21.5	12.6

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

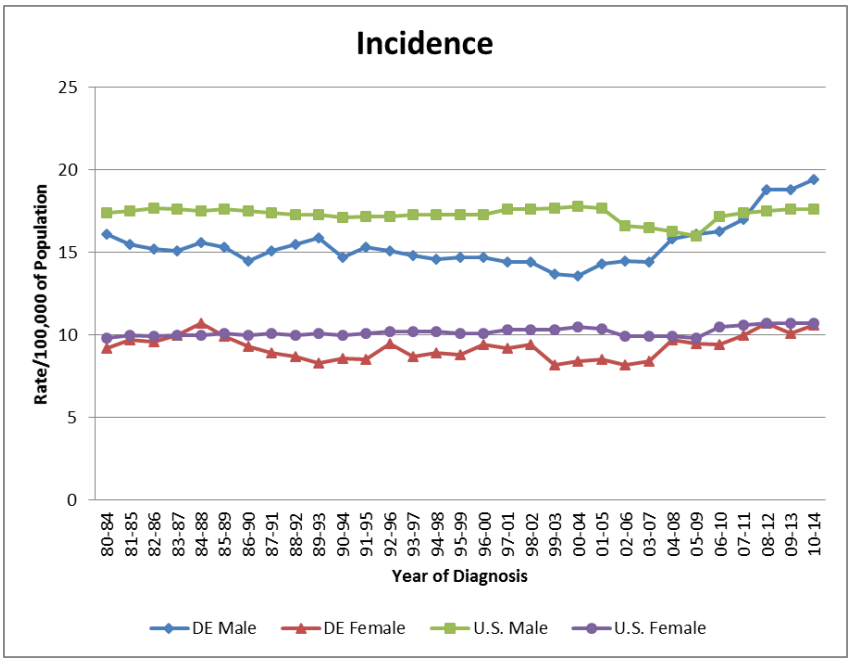
FIGURE 12-1: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (19.4 per 100,000) had a statistically significantly higher leukemia incidence rate compared to females (10.7 per 100,000).
  - The difference in leukemia incidence rates between non-Hispanic Caucasians (15.0 per 100,000), non-Hispanic African Americans (11.5 per 100,000), and Hispanics (12.3 per 100,000) was not statistically significant.
- Comparing Delaware and the U.S.
  - The difference in leukemia incidence rates between Delaware (14.5 per 100,000) and the U.S. (13.7 per 100,000) was not statistically significant.
  - The difference in leukemia incidence rates between males in Delaware (19.4 per 100,000) and the U.S. (17.6 per 100,000) was not statistically significant.
  - There was no difference in leukemia incidence rates between females in Delaware (10.7 per 100,000) and females in the U.S. (10.7 per 100,000).
  - The difference in leukemia incidence rates between non-Hispanic Caucasians in Delaware (15.0 per 100,000) and the U.S. (14.9 per 100,000) was not statistically significant.
  - The difference in leukemia incidence rates between non-Hispanic African Americans in Delaware (11.5 per 100,000) and the U.S. (11.2 per 100,000) was not statistically significant.
  - The difference in leukemia incidence rates between Hispanics in Delaware (12.3 per 100,000) and the U.S. (10.6 per 100,000) was not statistically significant.

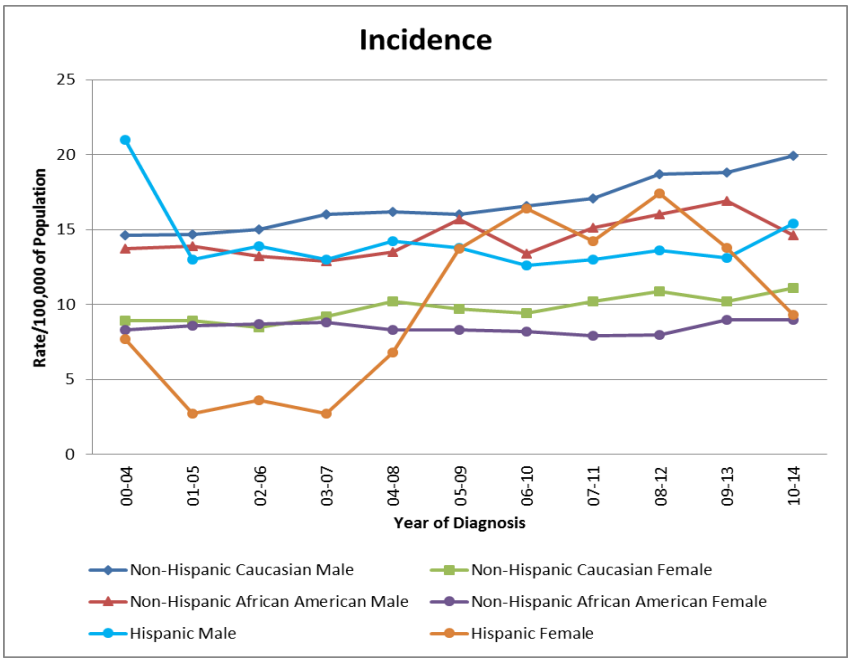
FIGURE 12-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for leukemia increased 38% in Delaware and increased 1% in the U.S.
  - Incidence rates for leukemia increased 43% in Delaware males and decreased 1% in U.S. males.
  - Incidence rates for leukemia increased 27% in Delaware females and increased 2% in U.S. females.

FIGURE 12-3: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014

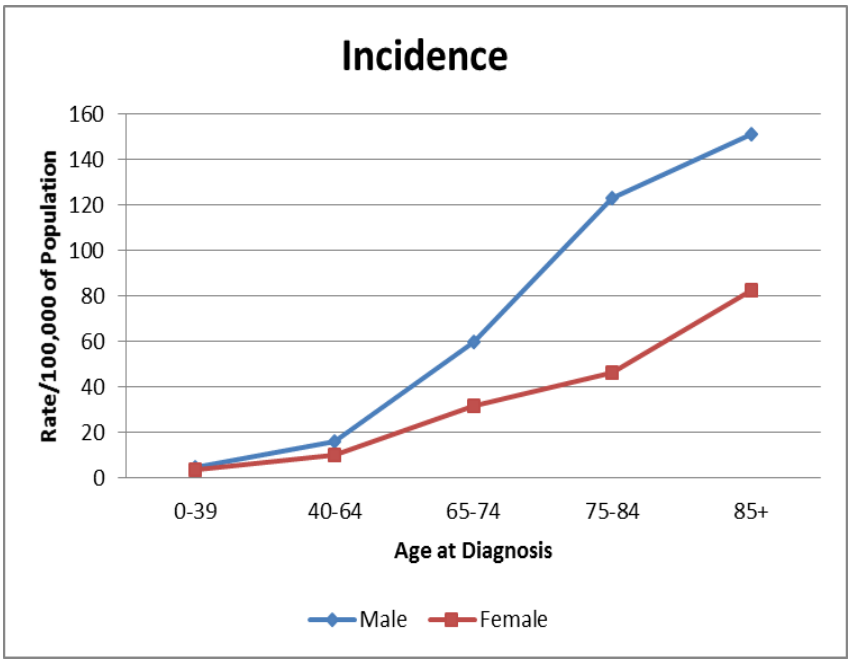


Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for leukemia increased 36% in non-Hispanic Caucasian males and increased 25% in non-Hispanic Caucasian females.
  - Incidence rates for leukemia increased 7% in non-Hispanic African Americans males and increased 8% in non-Hispanic African American females.
  - Incidence rates for leukemia decreased 27% in Hispanic males and increased 21% in Hispanic females.

AGE-SPECIFIC INCIDENCE RATES - DELAWARE

FIGURE 12-4: AGE-SPECIFIC LEUKEMIA INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for leukemia incidence is 85 years of age and older for males and females. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 12-3: AGE-SPECIFIC LEUKEMIA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	17.8	---	---	11.3	---	---
65-74	63.3	---	---	35.3	---	---
75-84	127.6	---	---	46.0	---	---
85+	167.3	---	---	83.7	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasians had a peak age range for leukemia incidence at 85 years of age and older.

STAGE OF DIAGNOSIS - DELAWARE

Since 98% of leukemias are diagnosed at the distant stage, stage of diagnosis information is not presented.

MORTALITY

For 2010-2014, Delaware ranked 24th in the U.S. for leukemia mortality (24th in 2009-2013); males ranked 19th (16th in 2009-2013) and females ranked 44th (45th in 2009-2013)[11].

2010-2014 DATA

TABLE 12-4: NUMBER OF LEUKEMIA DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	363	215	148	297	178	119	53	30	23	7	---	---
Kent	60	37	23	51	30	21	7	---	---	---	---	---
New Castle	193	108	85	151	88	63	34	17	17	---	---	---
Sussex	110	70	40	95	60	35	12	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

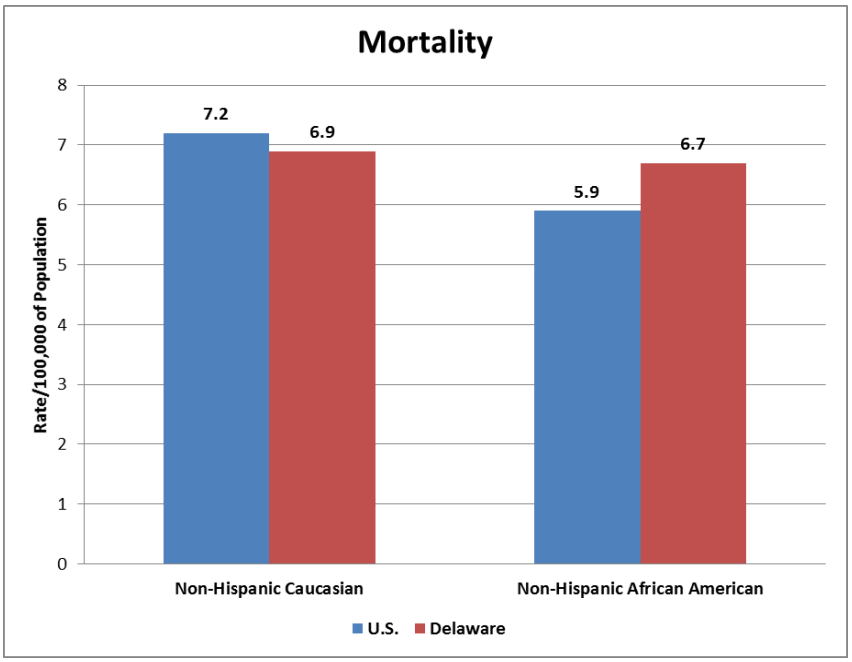
- In 2010-2014, there were 363 deaths (4% of all cancer deaths) from leukemia in Delaware.
- Males accounted for 59% of leukemia deaths.
- Non-Hispanic Caucasians accounted for 82% of leukemia deaths.

TABLE 12-5: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	6.8	9.1	5.1
Delaware	6.9	9.6	4.9
Kent	6.6	9.1	---
New Castle	6.9	9.4	5.1
Sussex	7.2	10.3	4.3

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

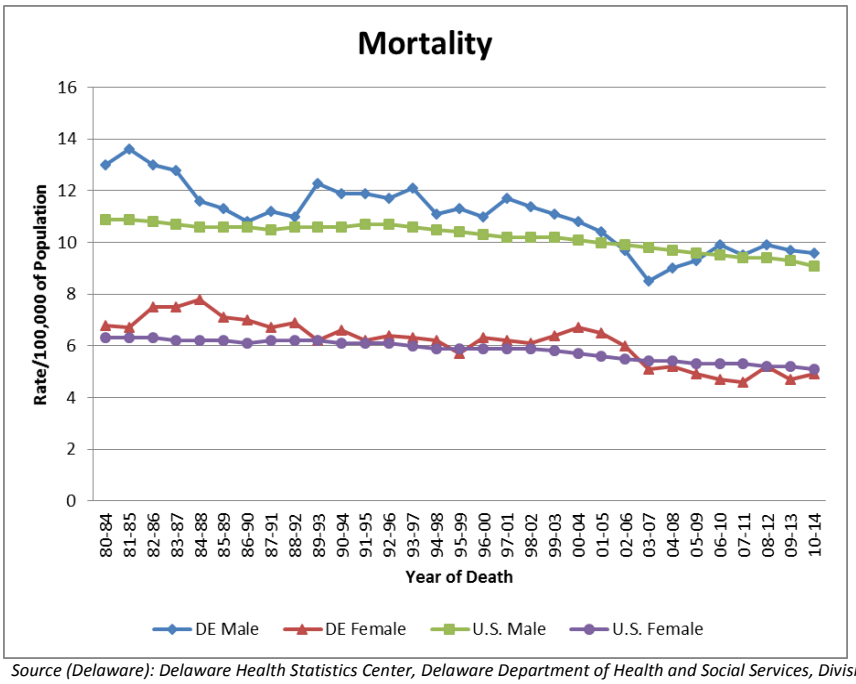
FIGURE 12-5: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (9.6 per 100,000) had a statistically significantly higher leukemia mortality rate compared to females (4.9 per 100,000).
  - The difference in leukemia mortality rates between non-Hispanic Caucasians (6.9 per 100,000) and non-Hispanic African Americans (6.7 per 100,000) was not statistically significant.
  - Leukemia mortality rates for Hispanics could not be calculated due the low number of deaths.
- Comparing Delaware and the U.S.
  - The difference in leukemia mortality rates between Delaware (6.9 per 100,000) and the U.S. (6.8 per 100,000) was not statistically significant.
  - The difference in leukemia mortality rates between males in Delaware (9.6 per 100,000) and the U.S. (9.1 per 100,000) was not statistically significant.
  - The difference in leukemia mortality rates between females in Delaware (4.9 per 100,000) and the U.S. (5.1 per 100,000) was not statistically significant.
  - The difference in leukemia mortality rates between non-Hispanic Caucasians in Delaware (6.9 per 100,000) and the U.S (7.2 per 100,000) was not statistically significant.
  - The difference in leukemia mortality rates between non-Hispanic African Americans in Delaware (6.7 per 100,000) and the U.S (5.9 per 100,000) was not statistically significant.

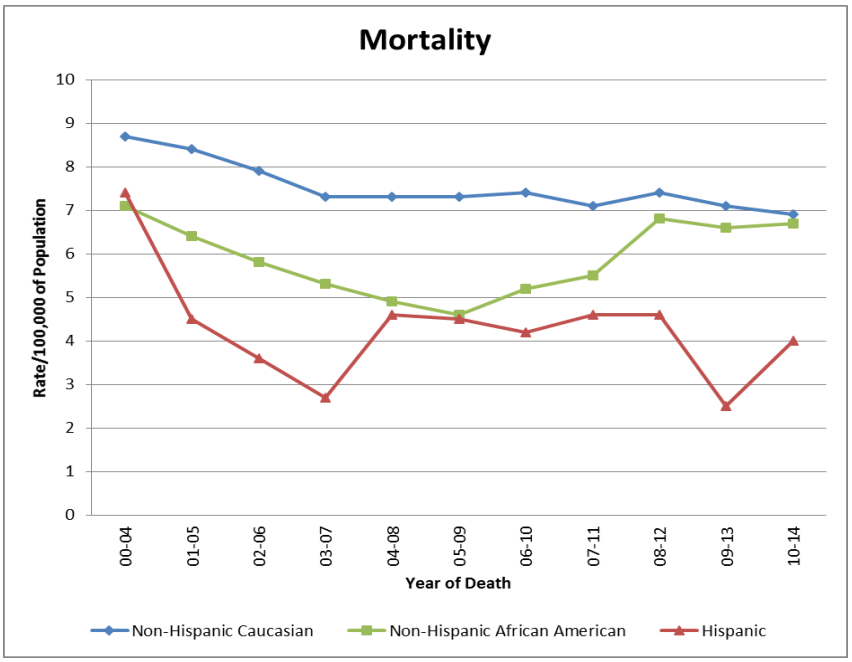
FIGURE 12-6: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for leukemia decreased 17% in Delaware (17%) and decreased 9% in the U.S.
  - Mortality rates for leukemia decreased 11% in Delaware males and decreased 10% in U.S. males.
  - Mortality rates for leukemia decreased 27% in Delaware females and decreased 11% in U.S. females.

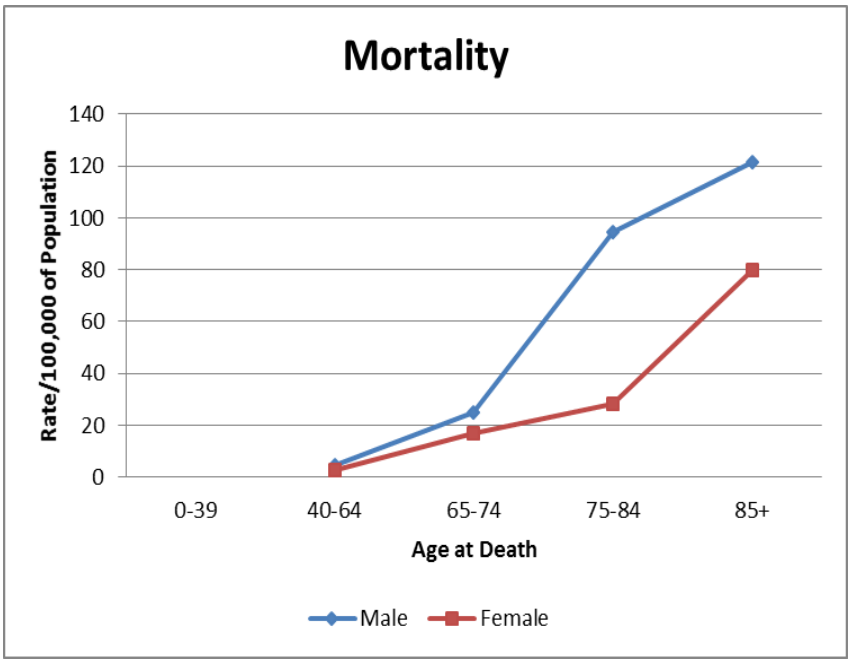
FIGURE 12-7: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for leukemia decreased 21% in non-Hispanic Caucasians.
  - Mortality rates for leukemia decreased 6% in non-Hispanic African Americans.
  - Mortality rates for leukemia decreased 46% in Hispanics.

FIGURE 12-8: AGE-SPECIFIC LEUKEMIA MORTALITY RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for leukemia mortality is 85 years of age and older for both males and females.

TABLE 12-6: AGE-SPECIFIC LEUKEMIA MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	4.4	---	---	---	---	---
65-74	24.1	---	---	17.5	---	---
75-84	94.6	---	---	27.4	---	---
85+	130.6	---	---	81.6	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Due to low numbers, mortality rates could not be calculated for some groups.

CHAPTER 13: LIVER AND INTRAHEPATIC BILE DUCT CANCER[15]

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting liver cancer:

- Alcohol abuse leads to cirrhosis of the liver, which increases the risk of liver cancer.
- Overweight and obesity
- Tobacco use

The following are *environmental and medically-related* causes of liver cancer:

- Long-term exposure to aflatoxins (fungus that contaminates peanuts, wheat, soybeans, ground nuts, corn, and rice)
- Exposure to vinyl chloride and thorium dioxide
- Long-term anabolic steroid use
- Exposure to naturally occurring arsenic
- Infection with the parasite that causes schistosomiasis can cause liver damage leading to liver cancer.

The following are *non-modifiable* risk factors (these cannot be changed) of getting liver cancer:

- The risk of liver cancer is higher in males compared to females
- Asian Americans and Pacific Islanders are at increased risk compared to other racial/ethnic groups
- Chronic viral hepatitis (hepatitis B or hepatitis C)
- Cirrhosis of the liver
- Type 2 diabetes is linked with increased liver cancer risk, particularly in individuals with other risk factors (heavy alcohol use, chronic viral hepatitis)
- Certain rare diseases (Tyrosinemia, Wilson disease, Alpha1-antitrypsin deficiency, Porphyria citanea tards, Glycogen storage diseases)

To protect against liver cancer individuals should eat a healthy diet (high in fruits, vegetables and whole grains), avoid tobacco, limit alcohol use (two drinks a day for males and one drink a day for females), be physically active, practice proper storage of grains (especially in warm climates), receive vaccinations for hepatitis B, and receive drug treatment for hepatitis B and hepatitis C.

EARLY DETECTION

Individuals at increased risk (those with cirrhosis and chronic hepatitis infections) should be screened by their health care providers.

[15] "Liver cancer" is used instead of "liver and intrahepatic bile duct cancer" throughout this chapter.

INCIDENCE

For 2010-2014, Delaware ranked 6th in the U.S. for liver cancer incidence (6th in 2009-2013); males ranked 6th (6thin 2009-2013) and females ranked 19th (15th in 2009-2013)[10].

2010-2014 DATA

TABLE 13-1: NUMBER OF LIVER CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	503	382	121	345	265	80	119	85	34	23	---	---
Kent	94	69	25	69	50	19	17	---	---	---	---	---
New Castle	271	209	62	161	127	34	85	60	25	14	---	---
Sussex	138	104	34	115	88	27	17	---	--	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

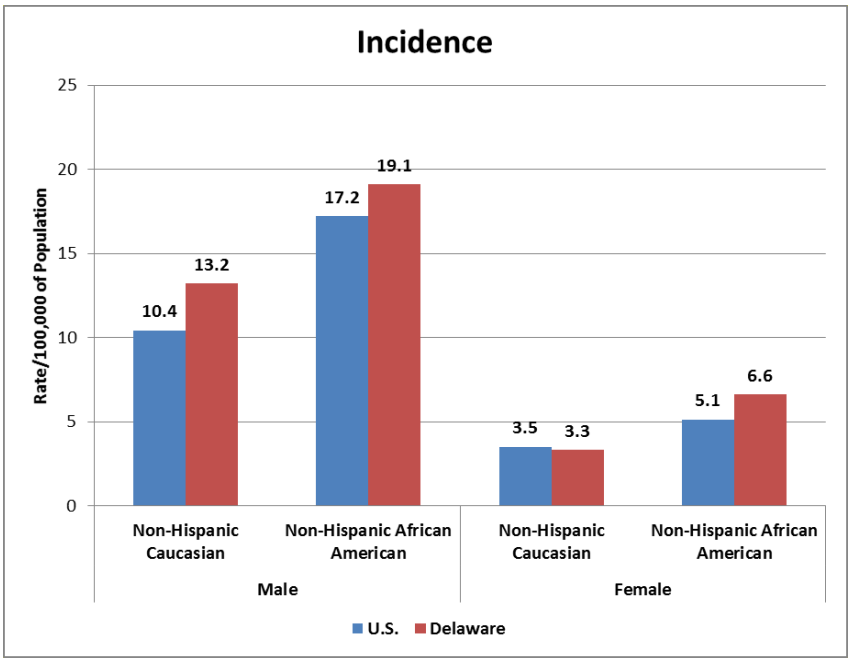
- In 2010-2014, there were 503 liver cancer cases (2% of all cancer cases) diagnosed in Delaware.
- Males accounted for 76% of liver cancer cases.
- Non-Hispanic Caucasians accounted for 69% of liver cancer cases.

TABLE 13-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LIVER CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	8.6	13.3	4.6
Delaware	8.7	14.4	3.9
Kent	9.6	15.1	4.8
New Castle	8.5	14.4	3.6
Sussex	8.8	14.0	4.3

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

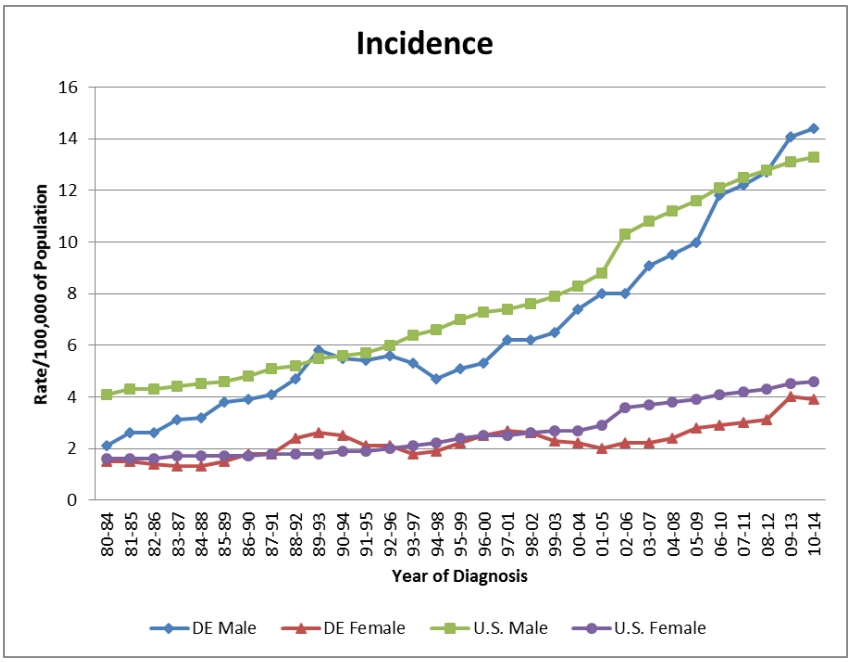
FIGURE 13-1: FIVE-YEAR AVERAGE AGE-ADJUSTED LIVER CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (14.4 per 100,000) had a statistically significantly higher liver cancer incidence rate compared to females (3.9 per 100,000).
  - Non-Hispanic Caucasians (7.9 per 100,000) had a statistically significantly lower liver cancer incidence rate compared to non-Hispanic African Americans (12.0 per 100,000).
  - Liver cancer incidence rates for Hispanics could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S.
  - The difference in liver cancer incidence rates between Delaware (8.7 per 100,000) and the U.S. (8.6 per 100,000) was not statistically significant.
  - The difference in liver cancer incidence rates between males in Delaware (14.4 per 100,000) and the U.S. (13.3 per 100,000) was not statistically significant.
  - The difference in liver cancer incidence rates between females in Delaware (3.9 per 100,000) and the U.S. (4.6 per 100,000) was not statistically significant.
  - Non-Hispanic Caucasians in Delaware (7.9 per 100,000) had a statistically significantly higher liver cancer incidence rate compared to non-Hispanic Caucasians in the U.S. (6.8 per 100,000).
  - The difference in the liver cancer incidence rates between non-Hispanic African Americans in Delaware (12.0 per 100,000) and the U.S. (10.4 per 100,000) was not statistically significant.

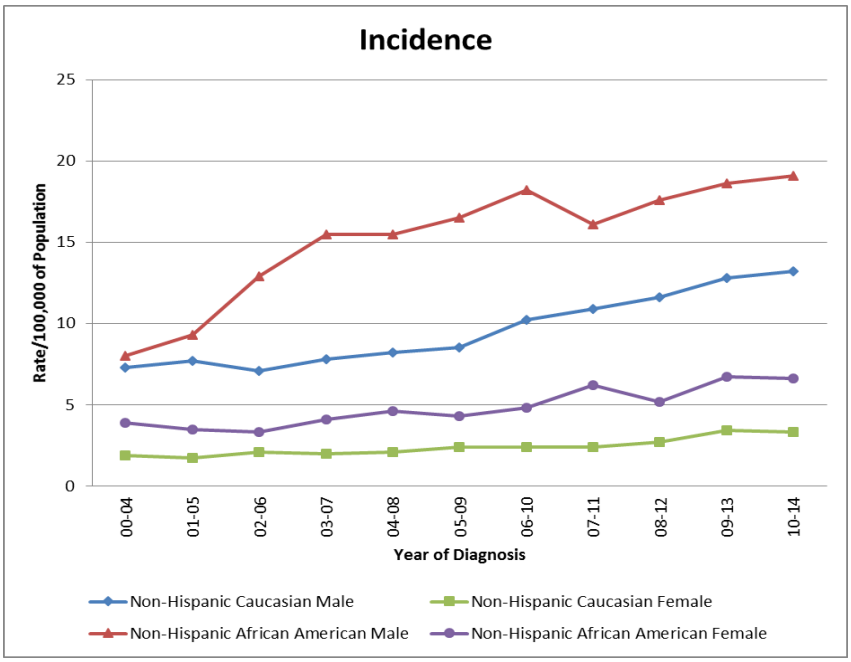
FIGURE 13-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LIVER CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for liver cancer increased 89% in Delaware (89%) and increased 62% in the U.S.
  - Incidence rates for liver cancer increased 95% in Delaware males and increased 60% in U.S. males.
  - Incidence rates for liver cancer increased 77% in Delaware females and increased 70% in U.S. females.

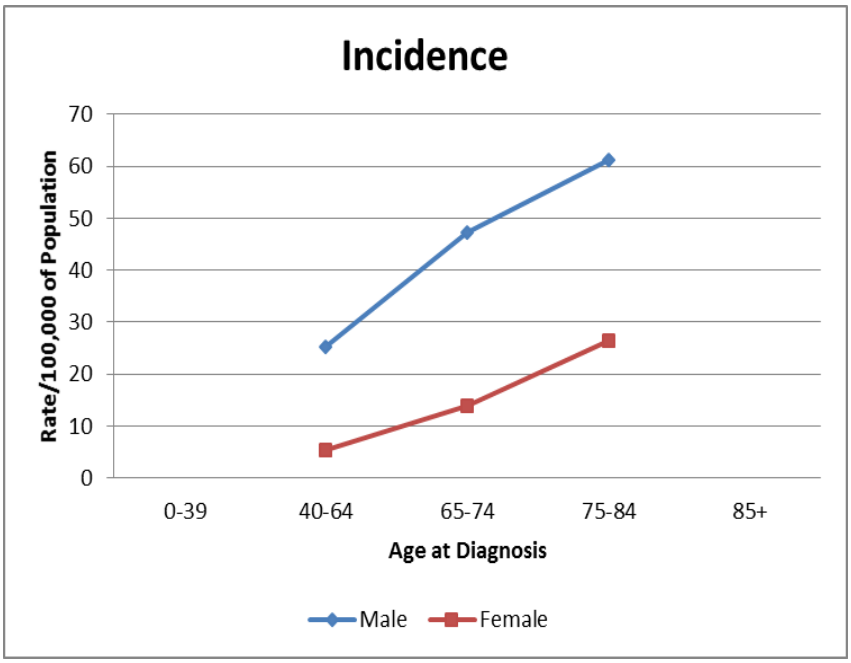
FIGURE 13-3: FIVE-YEAR AVERAGE AGE-ADJUSTED LIVER CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for liver cancer increased 81% in non-Hispanic Caucasian males and increased 74% in non-Hispanic Caucasian females.
  - Incidence rates for liver cancer increased 139% in non-Hispanic African American males and increased 69% in non-Hispanic African American females.

FIGURE 13-4: AGE-SPECIFIC LIVER CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for liver cancer incidence is 75-84 years of age for females and 65-74 years of age for males. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 13-3: AGE-SPECIFIC LIVER CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	22.8	38.2	---	4.8	---	---
65-74	39.3	---	---	---	---	---
75-84	60.8	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasians had peak age range for liver cancer incidence between 75-84 years of age.

STAGE OF DIAGNOSIS - DELAWARE

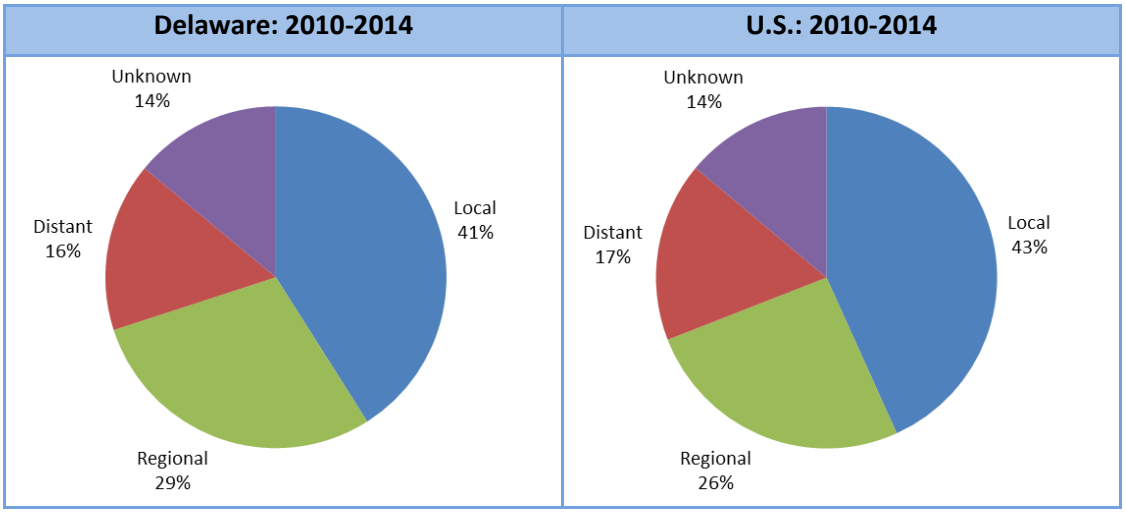
TABLE 13-4: LIVER CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	207 (41)	154 (40)	53 (44)	150 (43)	113 (43)	37 (46)	38 (32)	26 (31)	12 (35)	11 (48)	---	---
Regional	147 (29)	118 (31)	29 (24)	99 (29)	81 (31)	18 (23)	36 (30)	26 (31)	10 (29)	7 (30)	---	---
Distant	78 (16)	58 (15)	20 (17)	54 (16)	40 (15)	14 (18)	21 (18)	---	---	---	---	---
Unknown	71 (14)	52 (14)	19 (16)	42 (12)	31 (12)	11 (14)	24 (20)	---	---	---	---	---
Total	503	382	121	345	265	80	119	85	34	23	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- In 2010-2014, there were 207 (41%) liver cancers diagnosed at the local stage; 147 (29%) at the regional stage; 78 (16%) at the distant stage; and 71 (14%) had an unknown stage.
- Hispanics (48%) had a higher proportion of liver cancers diagnosed at the local stage compared to both non-Hispanic Caucasians (43%) and non-Hispanic African Americans (32%).
- Females (44%) had a higher proportion of liver cancers diagnosed at the local stage compared to males (40%).

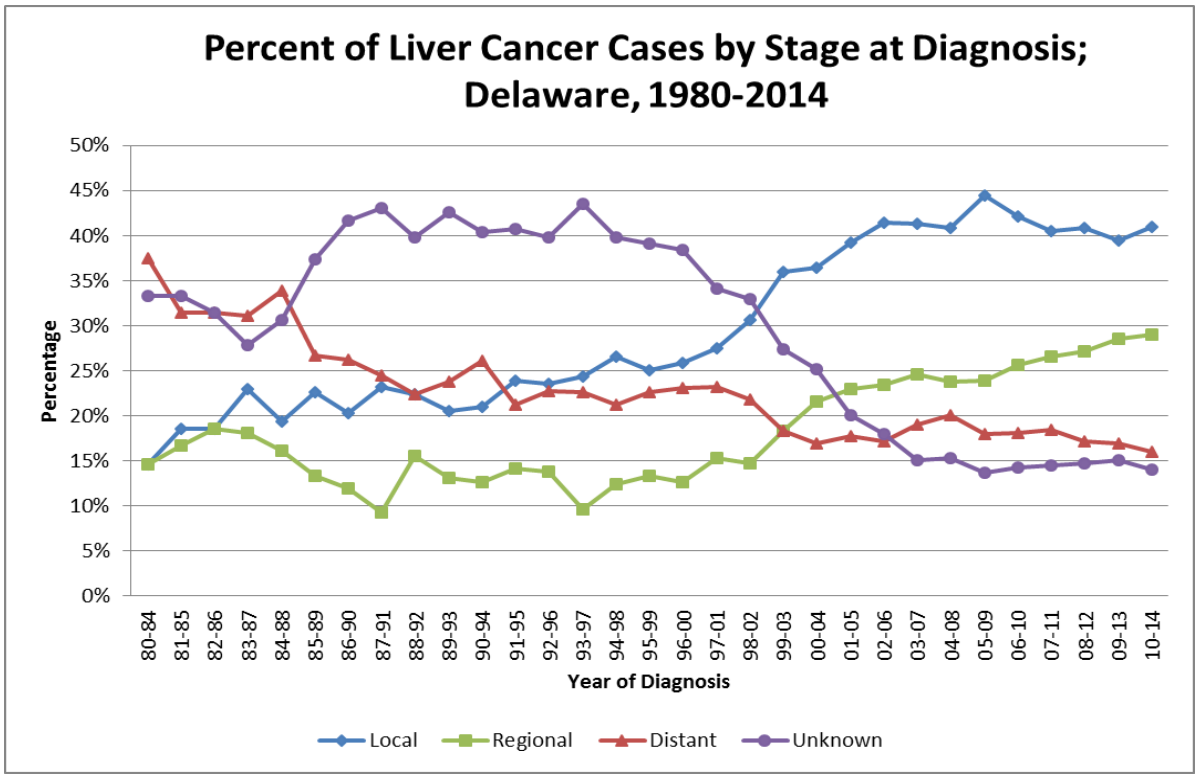
FIGURE 13-5: DISTRIBUTION OF LIVER CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware liver cancer data, Delaware (29%) had a higher proportion of liver cancer diagnosed at the regional stage compared to the U.S. (26%).

FIGURE 13-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR LIVER CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of liver cancer cases diagnosed at the local stage increased from 15% to 41%.
  - Liver cancer cases diagnosed at the distant stage decreased from 38% to 16%.

MORTALITY

For 2010-2014, Delaware ranked 11th in the U.S. for liver cancer mortality (9th in 2009-2013); males ranked 10th (9th in 2009-2013) and females ranked 17th (12th in 2009-2013)[11].

2010-2014 DATA

TABLE 13-5: NUMBER OF LIVER CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	368	257	111	259	182	77	86	56	30	14	---	---
Kent	68	39	29	49	28	21	14	---	---	---	---	---
New Castle	212	155	57	132	98	34	63	41	22	11	---	---
Sussex	88	63	25	78	56	22	9	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

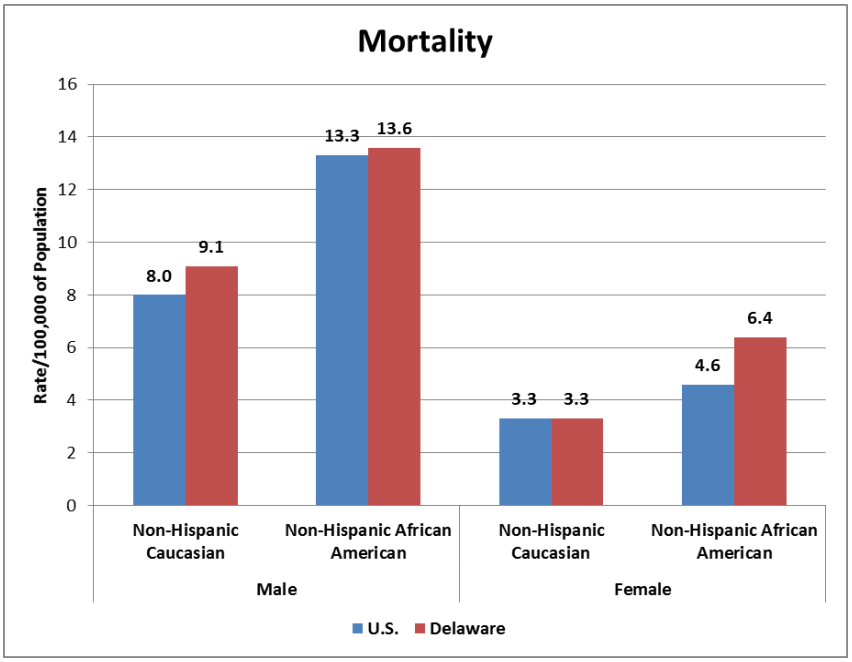
- In 2010-2014, there were 368 deaths (4% of all cancer deaths) from liver cancer in Delaware.
- Males accounted for 70% of liver cancer deaths.
- Non-Hispanic Caucasians accounted for 70% of liver cancer deaths.

TABLE 13-6: FIVE-YEAR AVERAGE AGE-ADJUSTED LIVER CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	6.3	9.3	3.7
Delaware	6.7	10.2	3.7
Kent	7.3	9.3	5.7
New Castle	7.2	11.7	3.5
Sussex	5.6	8.5	3.1

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 13-7: FIVE-YEAR AVERAGE AGE-ADJUSTED LIVER CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



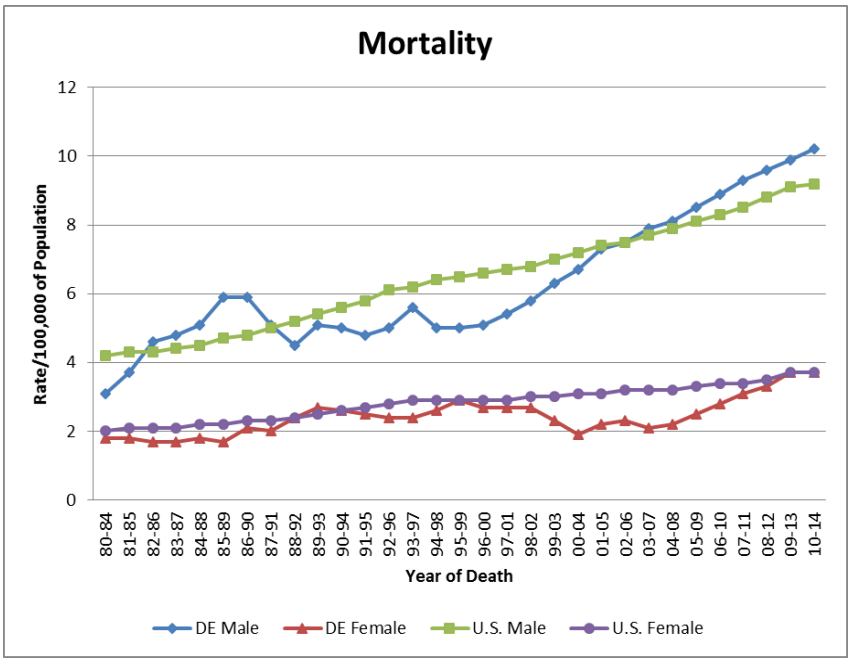
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (10.2 per 100,000) had a statistically significantly higher liver cancer mortality rate compared to females (3.7 per 100,000).
  - Non-Hispanic Caucasians (5.9 per 100,000) had a statistically significantly lower liver cancer mortality rate compared to non-Hispanic African Americans (9.5 per 100,000).
  - Liver cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in liver cancer mortality rates between Delaware (6.7 per 100,000) and the U.S. (6.3 per 100,000) was not statistically significant.
  - The difference in liver cancer mortality rates between males in Delaware (10.2 per 100,000) and the U.S. (9.3 per 100,000) was not statistically significant.
  - There was no difference in liver cancer mortality rates between females in Delaware (3.7 per 100,000) and females in the U.S. (3.7 per 100,000).
  - The difference in liver cancer mortality rates between non-Hispanic Caucasians in Delaware (5.9 per 100,000) and the U.S (5.5 per 100,000) was not statistically significant.
  - The difference in liver cancer mortality rates between non-Hispanic African Americans in Delaware (9.5 per 100,000) and the U.S (8.4 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

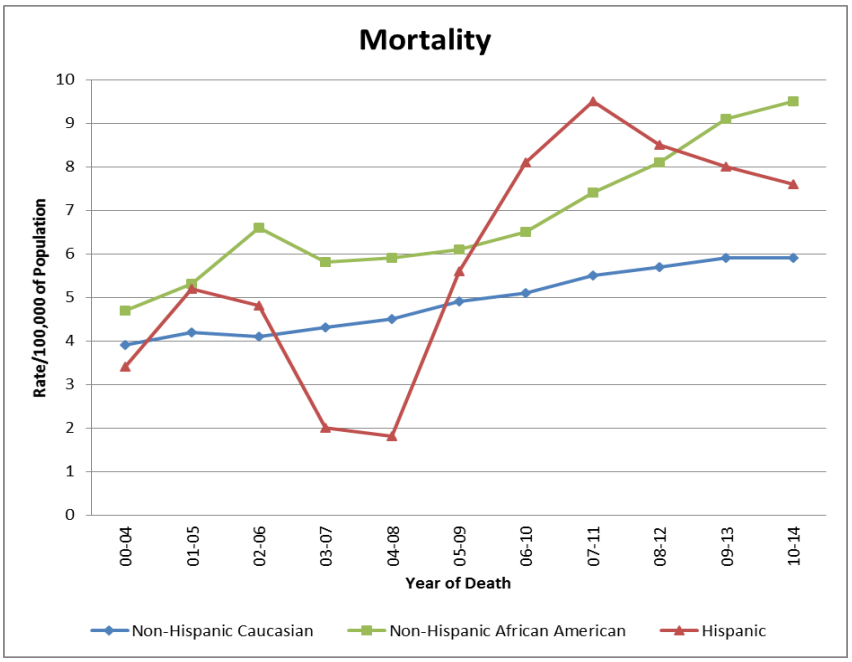
FIGURE 13-8: FIVE-YEAR AVERAGE AGE-ADJUSTED LIVER CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for liver cancer increased 63% in Delaware and increased 29% in the U.S.
  - Mortality rates for liver cancer increased 52% in Delaware males and increased 28% in U.S. males.
  - Mortality rates for liver cancer increased 95% in Delaware females and increased 19% in U.S. females.

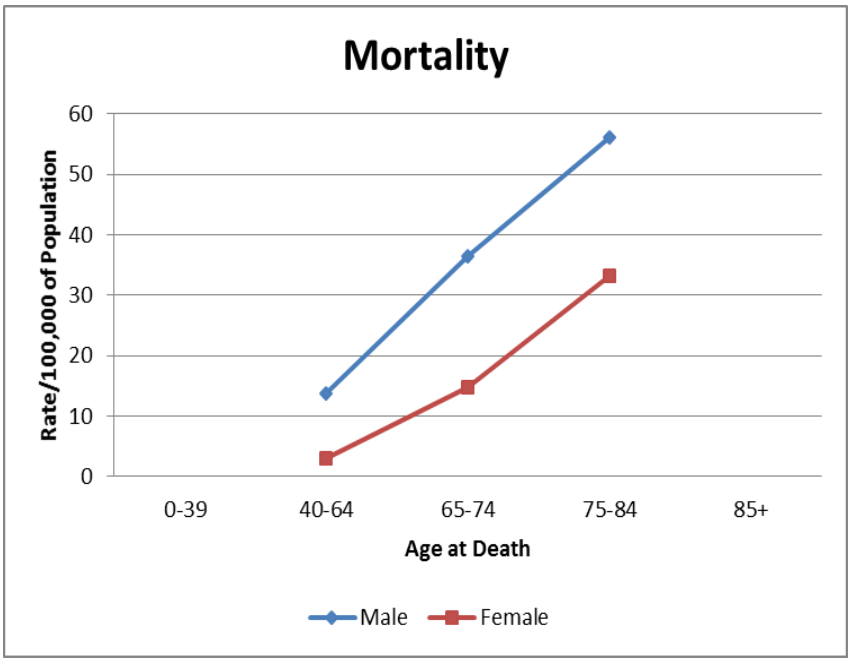
FIGURE 13-9: FIVE-YEAR AVERAGE AGE-ADJUSTED LIVER CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for liver cancer increased 51% in non-Hispanic Caucasians.
  - Mortality rates for liver cancer increased 102% in non-Hispanic African Americans.
  - Mortality rates for liver cancer increased 124% in Hispanics.

FIGURE 13-10: AGE-SPECIFIC LIVER CANCER MORTALITY RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for liver cancer mortality is 75-84 years of age. Due to low numbers, mortality rates could not be calculated for some groups.

TABLE 13-7: AGE-SPECIFIC LIVER CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	11.6	20.6	---	---	---	---
65-74	32.4	---	---	---	---	---
75-84	52.5	---	---	27.5	---	---
85+	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

CHAPTER 14: LUNG AND BRONCHUS CANCER[16]

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting lung cancer:

- The use of tobacco products. An estimated 85 to 90 percent of all lung cancer cases are caused by tobacco use, according to the U.S. Department of Health and Human Services.
- Exposure to secondhand smoke. When a person breathes in secondhand smoke, it is like he or she is smoking.
- Other suspected lifestyle risk factors include: a diet low in fruits and vegetables, a diet high in cholesterol, heavy alcohol use, and smoking marijuana.

The following are *environmental and medically-related* causes of lung cancer:

- Occupational exposures: asbestos, mustard gas, radioactive ores, metals (chromium, cadmium, arsenic), certain organic chemicals, paint
- Environmental exposures: radon gas released from soil or building materials, asbestos (among smokers), air pollution, high levels of arsenic in drinking water
- Radiation therapy to the chest (especially for people who smoke)

The following are *non-modifiable* risk factors (these cannot be changed) of getting lung cancer:

- Family history of lung cancer
- Personal history of tuberculosis

To protect against lung cancer, individuals should avoid tobacco and secondhand smoke, consume a diet rich in fruits and vegetables, engage in recommended levels of physical activity, and maintain a healthy weight.

EARLY DETECTION

In January 2013, ACS published new lung cancer screening guidelines[17] recommending that doctors discuss screening options with patients who meet certain criteria for high risk of developing the disease. High-risk patients are defined as those who:

- Are 55 to 74 years of age and in fairly good health
- Have a smoking history equivalent to a pack a day for 30 years or longer
- Currently smoke or have quit within the past 15 years

If a high-risk individual decides to be screened for lung cancer, the ACS recommends that the testing be performed using a low-dose computed tomography (CT) scan and take place at a facility with experience in lung cancer screening. The guidelines emphasize that screening is not a substitute for quitting smoking.

CURRENT TRENDS IN SMOKING IN DELAWARE

The BRFS collects data annually on tobacco use among the Delaware population. Current smoking trends may be predictive of cancer rates in the 2030s. In the 1980s (i.e., the time period relevant to current lung cancer rates in terms of tobacco use behaviors), Delaware's smoking prevalence rates were among the highest in the country. Historical BRFS data show that in 1982, 30% of adult Delawareans smoked cigarettes. By the 1990s, Delaware's smoking rate among adults had declined to approximately 25%.

[16] "Lung cancer" is used instead of "lung and bronchus cancer" throughout this section.

[17] Wender R, et al. American Cancer Society Lung Cancer Screening Guidelines. Published early online January 11, 2013 in *CA:A Cancer Journal for Clinicians*

In recent years, tobacco use prevalence has leveled off among adult Delawareans, while continuing to decline among high school students. In 2016, 18% of adult Delawareans smoked cigarettes regularly. The following are some highlights of smoking trends in Delaware:

- The prevalence rate for current smokers in Delaware (18%) is close to the 2016 U.S. median prevalence of 17%.
- There is no statistically significant difference in current smoking prevalence between males and females.
- Non-Hispanic Caucasians in Delaware had a higher prevalence rate of current smokers (19%) compared to non-Hispanic African Americans (16%). However, this difference is not statistically significant.
- When smoking prevalence rates were stratified by age group, Delawareans 25-34 years of age reported the highest prevalence of current smoking (23%). This prevalence was statistically significantly higher compared to that for Delawareans 65 years of age and older.
- Current smoking prevalence decreased with education level. In Delaware, 29% of residents who did not complete their high school education said they were current smokers. As education level increased, smoking prevalence decreased. Of adults who reported currently smoking, 22% had a high school diploma or equivalent, 17% for adults had some post-high school education, and 9% had completed college.
- Current smoking prevalence also decreased with income level. In Delaware, 33% of those earning less than $15,000 were current smokers. The lowest smoking prevalence was among those who earned $75,000 or more per year (13%).

INCIDENCE

For 2010-2014, Delaware ranked 10th in the U.S. for lung cancer incidence (10th in 2009-2013); males ranked 16th (16th in 2009-2013) and females ranked 7th (7th in 2009-2013)[10].

2010-2014 DATA

TABLE 14-1: NUMBER OF LUNG CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	3,965	2,027	1,938	3,278	1,672	1,606	572	295	277	58	28	30
Kent	754	371	383	613	305	308	116	54	62	12	---	---
New Castle	1,978	1,010	968	1,556	791	765	362	186	176	36	17	19
Sussex	1,233	646	587	1,109	576	533	94	55	39	10	---	---

Source: Delaware Cancer Registry, Delaware Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

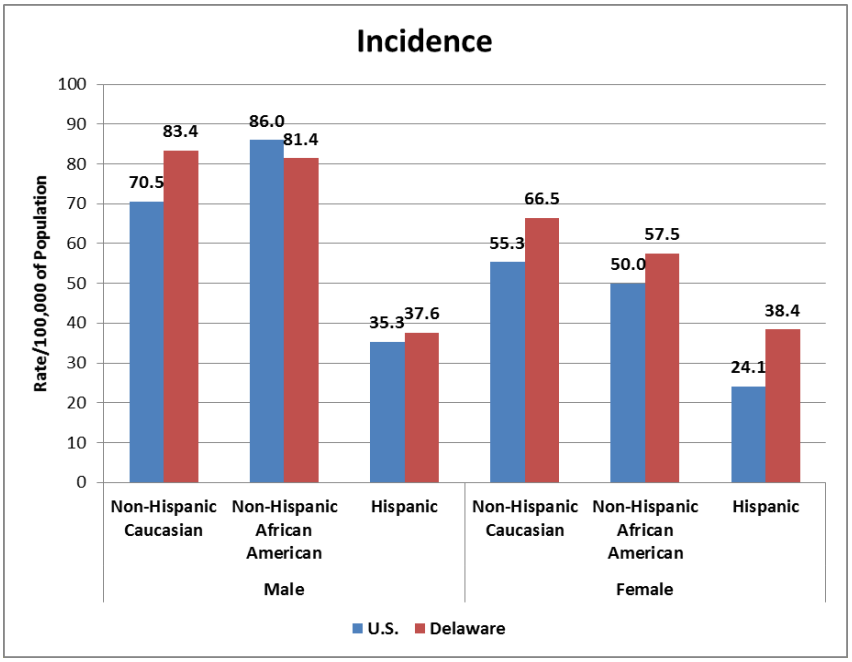
- Lung cancer is the most frequently diagnosed cancer in the U.S. and Delaware.
- In 2010-2014, there were 3,965 lung cancer cases (14% of all cancer cases) diagnosed in Delaware.
- Males accounted for 51% of lung cancer cases.
- Non-Hispanic Caucasians accounted for 83% of lung cancer cases.

TABLE 14-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	55.8	65.7	48.4
Delaware	70.9	81.4	63.2
Kent	78.4	87.6	72.2
New Castle	67.1	78.2	59.0
Sussex	73.9	84.1	66.2

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 14-1: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



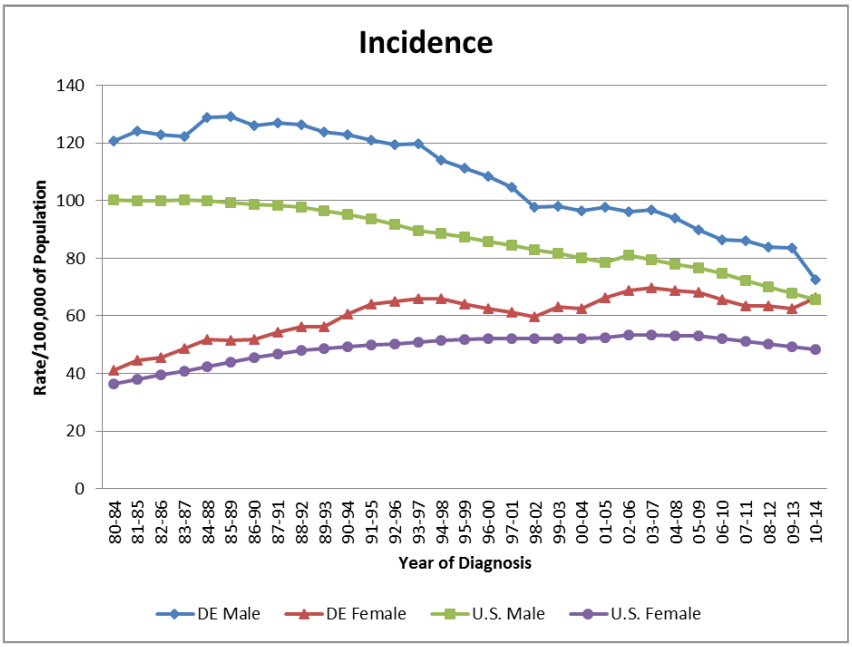
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (81.4 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to females (63.1 per 100,000).
  - Hispanics (38.1 per 100,000) had a statistically significantly lower lung cancer incidence rate compared to both non-Hispanic Caucasians (73.6 per 100,000) and non-Hispanic African Americans (67.3 per 100,000).
  - The difference in lung cancer incidence rates between non-Hispanic Caucasians (73.6 per 100,000) and non-Hispanic African Americans (67.3 per 100,000) was not statistically significant.
- Comparing Delaware and the U.S.
  - Delaware (70.9 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to the U.S. (55.8 per 100,000).

- Delaware males (81.4 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to U.S. males (65.7 per 100,000).
- Delaware females (63.2 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to U.S. females (48.4 per 100,000).
- Non-Hispanic Caucasians in Delaware (73.6 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to non-Hispanic Caucasians in the U.S. (61.8 per 100,000).
- The difference in lung cancer incidence rates between non-Hispanic African Americans in Delaware (67.3 per 100,000) and the U.S. (64.5 per 100,000) was not statistically significant.
- The difference in lung cancer incidence rates between Hispanics in Delaware (38.1 per 100,000) and the U.S. (28.8 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

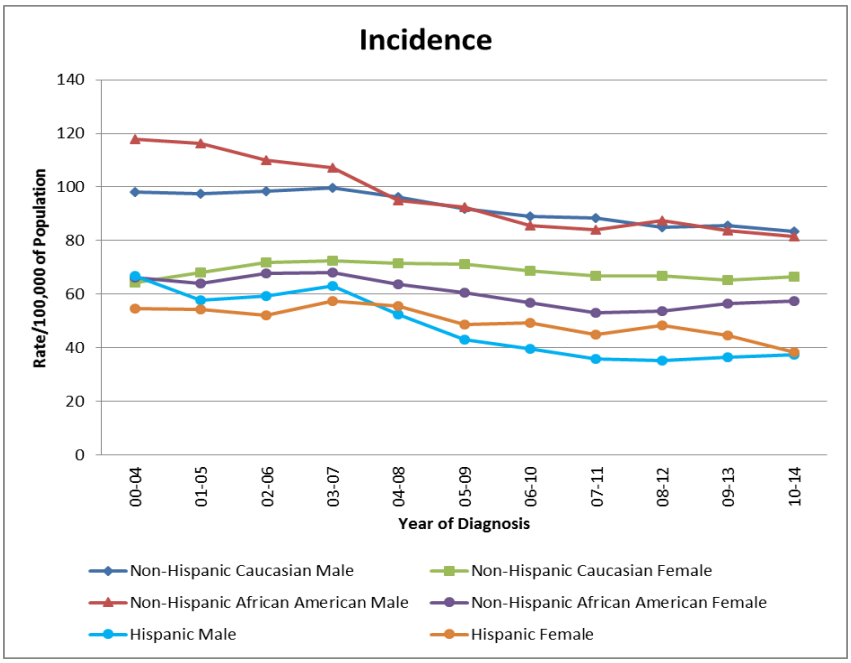
FIGURE 14-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for lung cancer decreased 8% in Delaware and decreased 12% in the U.S.
  - Incidence rates for lung cancer decreased 16% in Delaware males and decreased 18% in U.S. males.
  - Incidence rates for lung cancer increased 1% in Delaware females and decreased 7% in U.S. females.

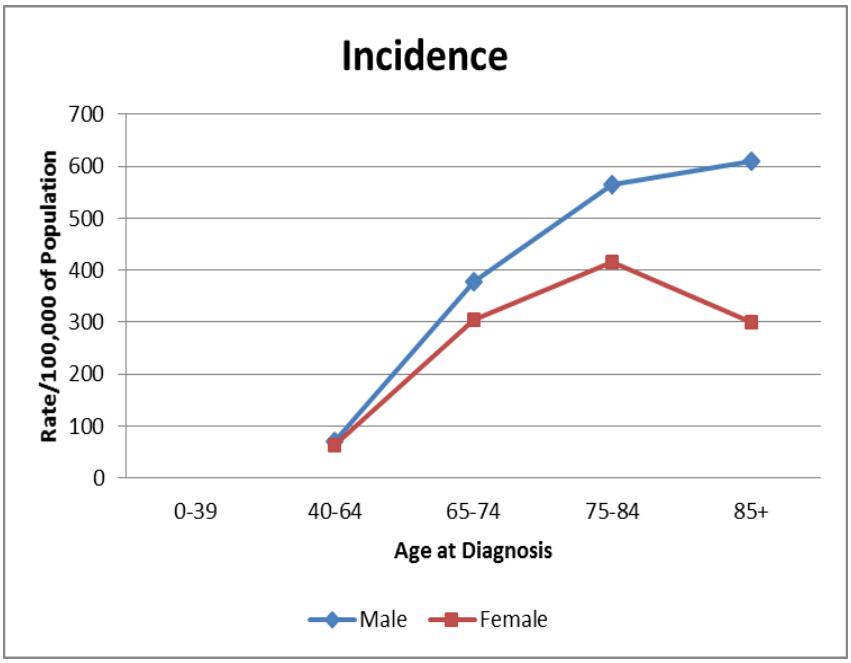
FIGURE 14-3: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for lung cancer decreased 15% in non-Hispanic Caucasian males and increased 3% in non-Hispanic Caucasian females.
  - Incidence rates for lung cancer decreased 31% in non-Hispanic African American males and decreased 13% in non-Hispanic African American females.
  - Incidence rates for lung cancer decreased 44% in Hispanic males and decreased 30% in Hispanic females.

FIGURE 14-4: AGE-SPECIFIC LUNG CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for lung cancer incidence is 85 years of age and older for males and 75-84 years of age for females. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 14-3: AGE-SPECIFIC LUNG CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	70.5	81.0	---	67.7	57.1	---
65-74	388.1	381.6	---	328	233.7	---
75-84	586.3	503.5	---	426.3	423.1	---
85+	620.1	---	---	303.4	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic African American males have a peak age range for lung cancer incidence at 75-84 years of age and non-Hispanic Caucasian males have a peak age range for lung cancer incidence at age 85 and older.
- Non-Hispanic Caucasian and non-Hispanic African American females have a peak age range for lung cancer incidence at 75-84 years of age.

STAGE OF DIAGNOSIS - DELAWARE

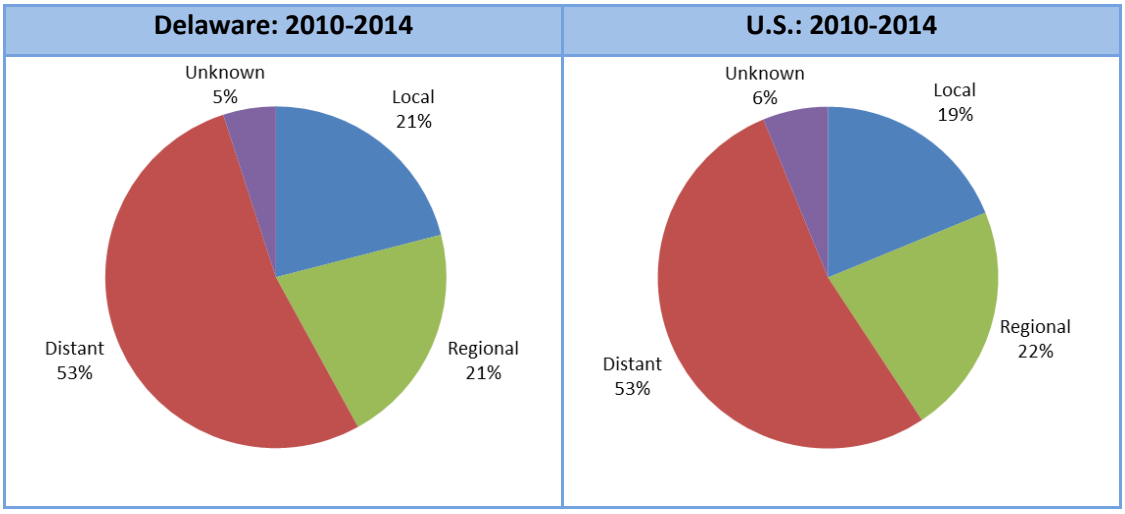
TABLE 14-4: LUNG CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	847 (21)	385 (19)	462 (24)	702 (21)	310 (19)	392 (24)	110 (19)	55 (19)	55 (20)	---	---	---
Regional	841 (21)	408 (20)	433 (22)	691 (21)	341 (20)	350 (22)	126 (22)	56 (19)	70 (25)	14 (24)	---	---
Distant	2,083 (53)	1,124 (56)	959 (50)	1,729 (53)	935 (56)	794 (49)	308 (54)	165 (56)	143 (52)	27 (47)	---	---
Unknown	194 (5)	110 (5)	84 (4)	156 (5)	86 (5)	70 (4)	28 (5)	19 (6)	9 (3)	---	---	---
Total	3,965	2,027	1,938	3,278	1,672	1,606	572	295	277	58	28	30

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 847 (21%) lung cancers diagnosed at the local stage; 841 (21%) at the regional stage; 2,083 (53%) at the distant stage; and 194 (5%) had an unknown stage.
- Non-Hispanic African Americans (54%) had a higher proportion diagnosed at the distant stage compared to both non-Hispanic Caucasians (53%) and Hispanics (47%).
- Males (56%) had a higher proportion of diagnosed at the distant stage compared to females (50%).

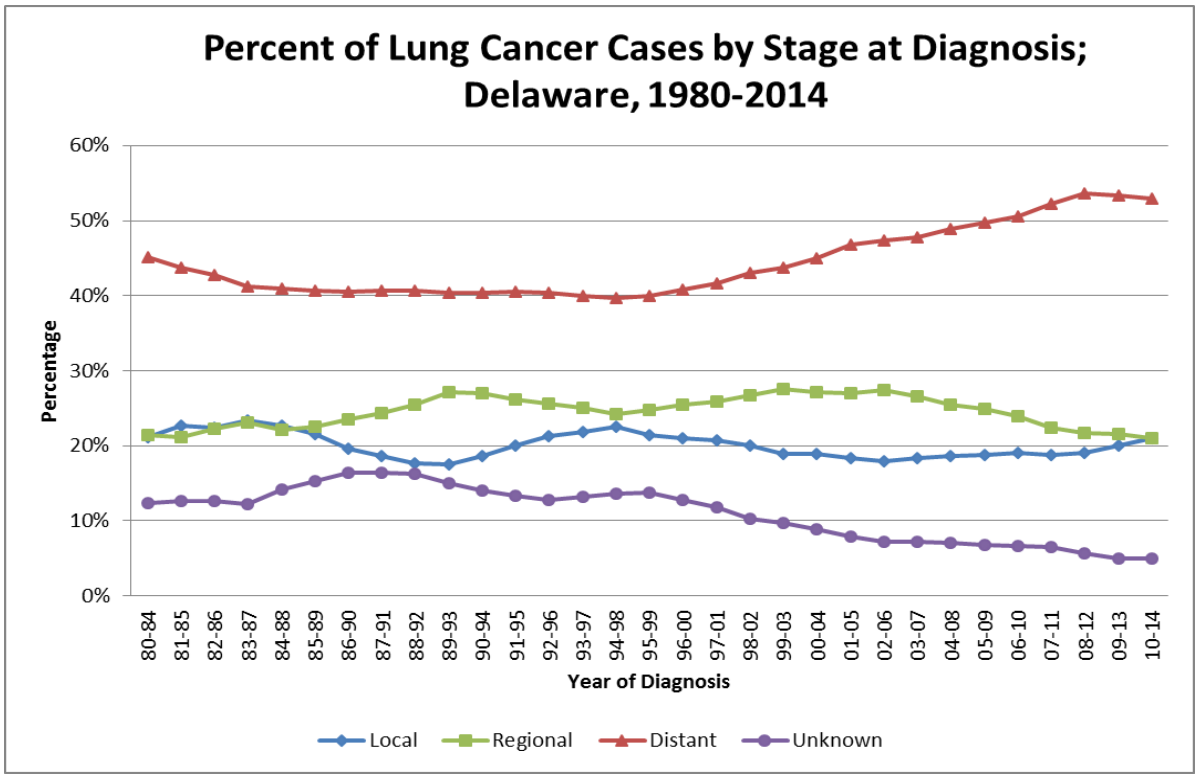
FIGURE 14-5: DISTRIBUTION OF LUNG CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware lung cancer data, percentages of the stage at diagnosis for lung cancer are similar.

FIGURE 14-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR LUNG CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of lung cancer cases diagnosed at the local stage remained the same at 21%.
  - Lung cancer cases diagnosed at the distant stage increased from 45% to 53%.

MORTALITY

For 2010-2014, Delaware ranked 13th in the U.S. for lung cancer mortality (13th in 2009-2013); males ranked 16th (16th in 2009-2013) and females ranked 10th (11th in 2009-2013)[11].

2010-2014 DATA

TABLE 14-5: NUMBER OF LUNG CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	2,839	1,522	1,317	2,376	1,270	1,106	394	221	173	32	18	14
Kent	531	282	249	436	231	205	77	43	34	---	---	---
New Castle	1,437	754	683	1,156	603	553	245	135	110	24	12	12
Sussex	871	486	385	784	436	348	72	43	29	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- Lung cancer is the most common cause of cancer death in the U.S. and Delaware.

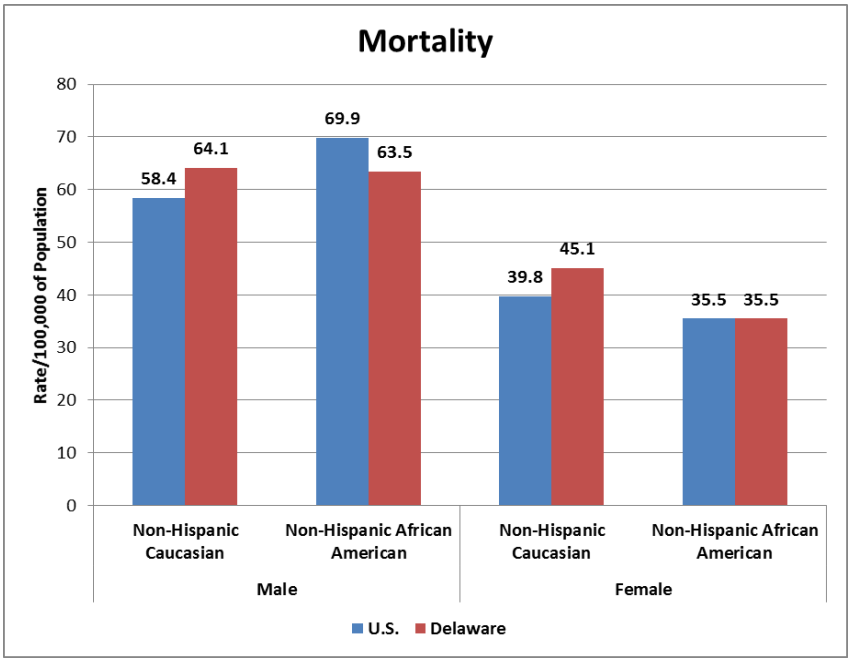
- In 2010-2014, there were 2,839 deaths (30% of all cancer deaths) from lung cancer in Delaware.
- Males accounted for 54% of lung cancer deaths.
- Non-Hispanic Caucasians accounted for 84% of lung cancer deaths.

TABLE 14-6: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	44.7	55.9	36.3
Delaware	52.2	63.6	43.6
Kent	56.9	68.6	48.3
New Castle	50.4	61.4	42.5
Sussex	52.3	63.8	43.0

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 14-7: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



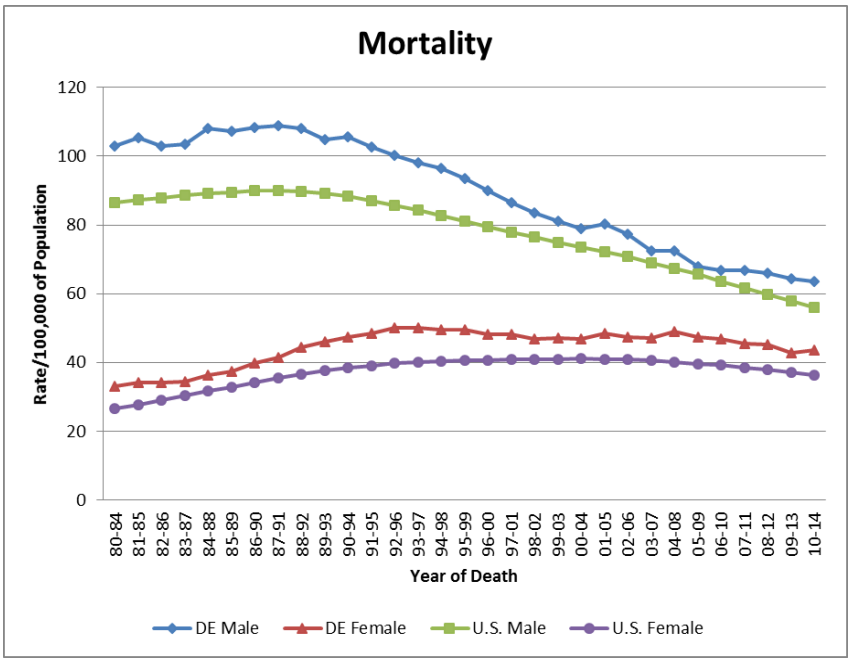
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (63.6 per 100,000) had a statistically significantly higher lung cancer mortality rate compared to females (43.6 per 100,000).
  - Hispanics (22.6 per 100,000) had a statistically significantly lower lung cancer mortality rate compared to both non-Hispanic Caucasians (53.2 per 100,000) and non-Hispanic African Americans (46.9 per 100,000).
  - The difference in lung cancer mortality rates between non-Hispanic Caucasians (53.2 per 100,000) and non-Hispanic African Americans (46.9 per 100,000) was not statistically significant.

- Comparing Delaware and the U.S.
  - Delaware (52.2 per 100,000) had a statistically significantly higher lung cancer mortality rate compared to the U.S. (44.7 per 100,000).
  - Delaware males (63.6 per 100,000) had a statistically significantly higher lung cancer mortality rate compared to U.S. males (55.9 per 100,000).
  - Delaware females (43.6 per 100,000) had a statistically significantly higher lung cancer mortality rate compared to U.S. females (36.3 per 100,000).
  - Non-Hispanic Caucasians in Delaware (53.2 per 100,000) had a statistically significantly higher lung cancer mortality rate compared to non-Hispanic Caucasians in the U.S (47.9 per 100,000).
  - The difference in lung cancer mortality rates between non-Hispanic African Americans in Delaware (46.9 per 100,000) and the U.S. (49.3 per 100,000) was not statistically significant.
  - The difference in lung cancer mortality rates between Hispanics in Delaware (22.6 per 100,000) and the U.S. (19.4 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

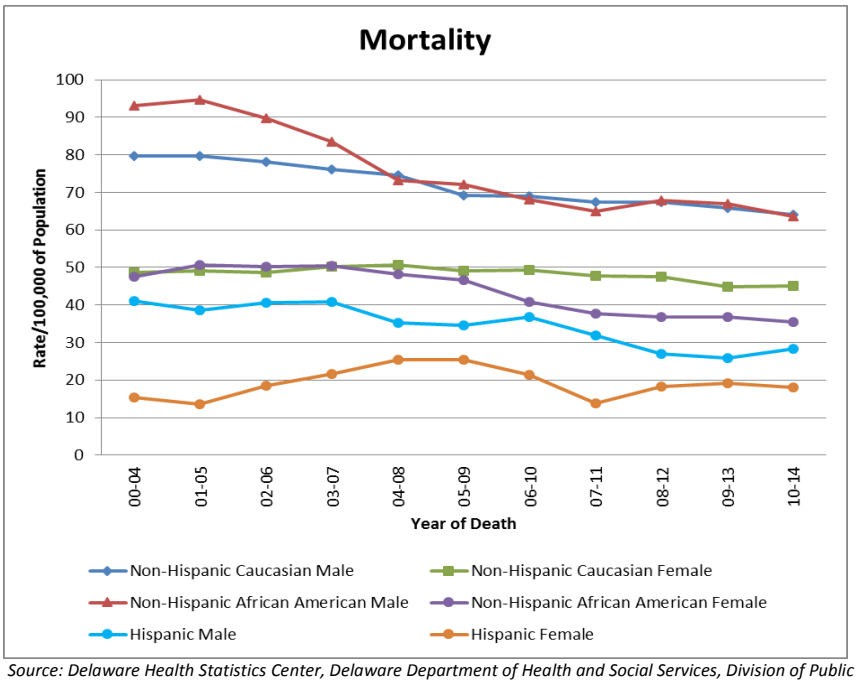
FIGURE 14-8: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for lung cancer decreased 14% in Delaware and decreased 18% in the U.S.
  - Mortality rates for lung cancer decreased 19% in Delaware males and decreased 24% in U.S. males.
  - Mortality rates for lung cancer decreased 7% in Delaware females and decreased 12% in U.S. females.

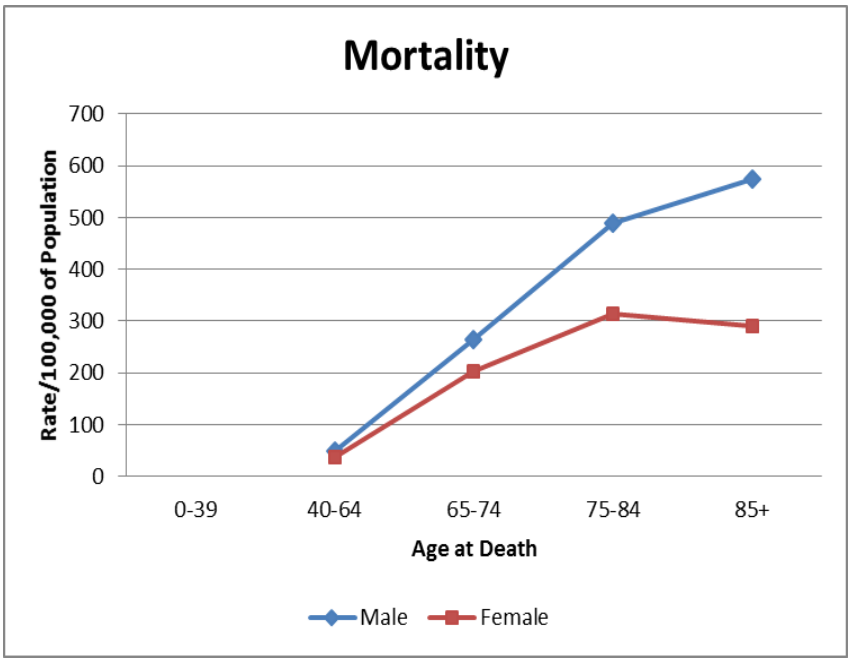
FIGURE 14-9: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for lung cancer decreased 20% in non-Hispanic Caucasian males and decreased 7% in non-Hispanic Caucasian females.
  - Mortality rates for lung cancer decreased 32% in non-Hispanic African American males and decreased 25% in non-Hispanic African American females.
  - Mortality rates for lung cancer decreased 31% in Hispanic males and increased 17% in Hispanic females.

FIGURE 14-10: AGE-SPECIFIC LUNG CANCER MORTALITY RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for lung cancer mortality is 85 years of age and older for males and 75-84 years of age for females. Due to low numbers, mortality rates could not be calculated for some groups.

TABLE 14-7: AGE-SPECIFIC LUNG CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	49.5	59.0	---	38.3	37.0	---
65-74	266.1	274.1	---	218.2	126.1	---
75-84	491.6	467.9	---	321.6	270.1	---
85+	595.7	---	---	290.8	---	---

*Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017*Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasian males had a peak lung cancer mortality age range of 85 years of age and older while non-Hispanic African American males have a peak lung cancer mortality age range of 75-84 years of age. Non-Hispanic Caucasian and non-Hispanic African American females have a peak lung cancer mortality age range of 75-84 years of age.

CHAPTER 15: MELANOMA OF THE SKIN

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting malignant melanoma:

- Excessive ultraviolet (UV) light from the sun, tanning lamps, or tanning beds
- History of frequent sunburns, especially before 20 years of age

The following are *environmental and medically-related* causes of malignant melanoma:

- A weakened immune system (e.g. organ transplant patients)

The following are *non-modifiable* risk factors (these cannot be changed) of getting malignant melanoma:

- Having many moles, especially abnormal moles[18]
- Light-colored skin, freckles, light hair, and/or blue/green eyes
- Non-Hispanic Caucasians are 10 times more likely to get melanoma compared to non-Hispanic African Americans
- A family or personal history of melanoma
- Increasing age
- Females have a higher risk of melanoma before 40 years of age and males have a higher risk after 40 years of age
- Having Xeroderma pigmentosum (a rare, inherited condition)

To protect against malignant melanoma, individuals should limit exposure to the sun, avoid tanning beds and sun lamps, protect children from exposure to the sun, and remove any abnormal moles.

EARLY DETECTION

Early detection for malignant melanoma includes monthly self-examination of the skin. High-risk individuals should have their skin thoroughly examined by a health care professional.

INCIDENCE

For 2010-2014, Delaware ranked 3rd in the U.S. for malignant melanoma incidence (3rd in 2009-2013); males ranked 3rd (2nd in 2009-2013) and females ranked 6th (5th in 2009-2013)[10].

2010-2014 DATA

TABLE 15-1: NUMBER OF MALIGNANT MELANOMA CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	1,628	969	659	1,580	948	632	14	---	---	19	12	7
Kent	244	139	105	236	136	100	---	---	---	---	---	---
New Castle	813	475	338	789	466	323	9	---	---	9	---	---
Sussex	571	355	216	555	346	209	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

[18] More information on abnormal moles can be found at https://www.cancer.org/cancer/skin-cancer/prevention-and-early-detection/what-to-look-for.html

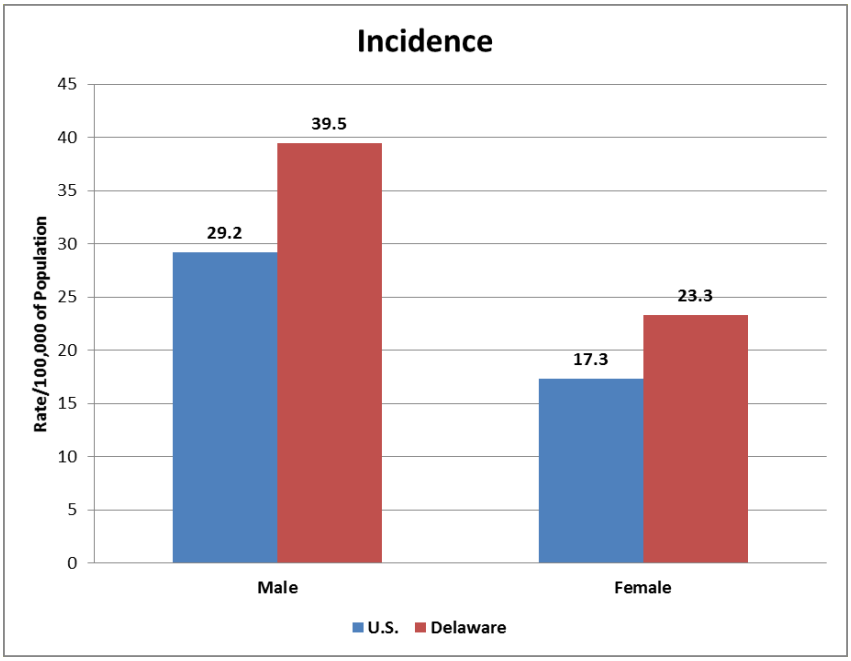
- In 2010-2014, there were 1,628 malignant melanoma cases (6% of all cancer cases) diagnosed in Delaware.
- Males accounted for 60% of malignant melanoma cases.
- Non-Hispanic Caucasians accounted for 97% of malignant melanoma cases.

TABLE 15-2: FIVE-YEAR AVERAGE AGE-ADJUSTED MALIGNANT MELANOMA INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	22.3	29.2	17.3
Delaware	30.2	39.5	23.3
Kent	26.4	32.4	21.5
New Castle	27.4	36.4	21.1
Sussex	38.3	49.4	29.5

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 15-1: FIVE-YEAR AVERAGE AGE-ADJUSTED MALIGNANT MELANOMA INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 2010-2014



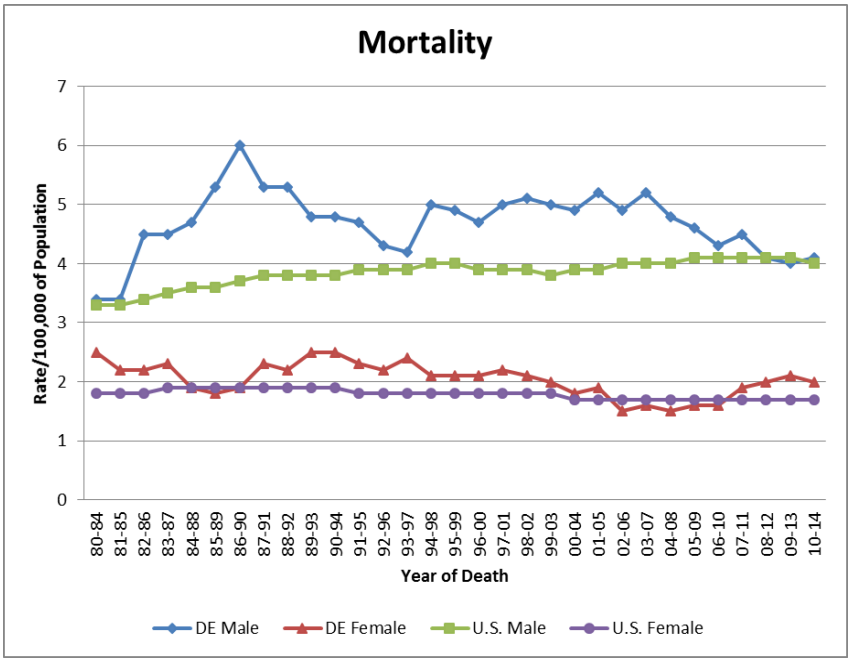
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (39.5 per 100,000) had a statistically significantly higher malignant melanoma incidence rate compared to females (23.3 per 100,000).
  - Malignant melanoma incidence rates for non-Hispanic African Americans and Hispanics could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S.
  - Delaware (30.2 per 100,000) had a statistically significantly higher malignant melanoma incidence rate compared to the U.S. (22.3 per 100,000).

- Delaware males (39.5 per 100,000) had a statistically significantly higher malignant melanoma incidence rate compared to U.S. males (29.2 per 100,000).
- Delaware females (23.3 per 100,000) had a statistically significantly higher malignant melanoma incidence rate compared to U.S. females (17.3 per 100,000).
- Non-Hispanic Caucasians in Delaware (39.2 per 100,000) had a statistically significantly higher malignant melanoma incidence rate compared to non-Hispanic Caucasians in the U.S. (31.6 per 100,000).

TRENDS OVER TIME - DELAWARE AND U.S.

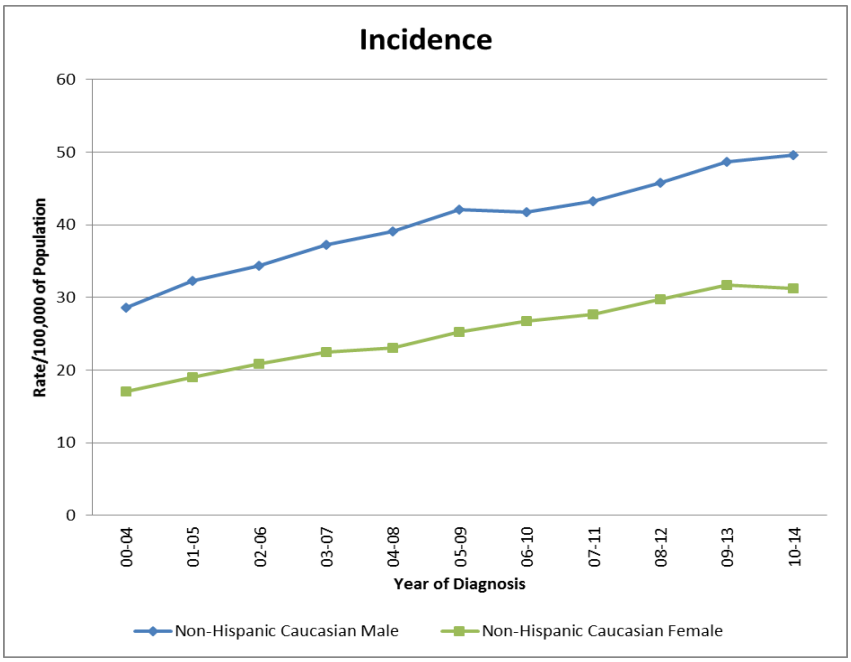
FIGURE 15-2: FIVE-YEAR AVERAGE AGE-ADJUSTED MALIGNANT MELANOMA INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for malignant melanoma increased 63% in Delaware and increased 14% in the U.S.
  - Incidence rates for malignant melanoma increased 61% in Delaware males and increased 20% in U.S. males.
  - Incidence rates for malignant melanoma increased 63% in Delaware females and increased 7% in U.S. females.

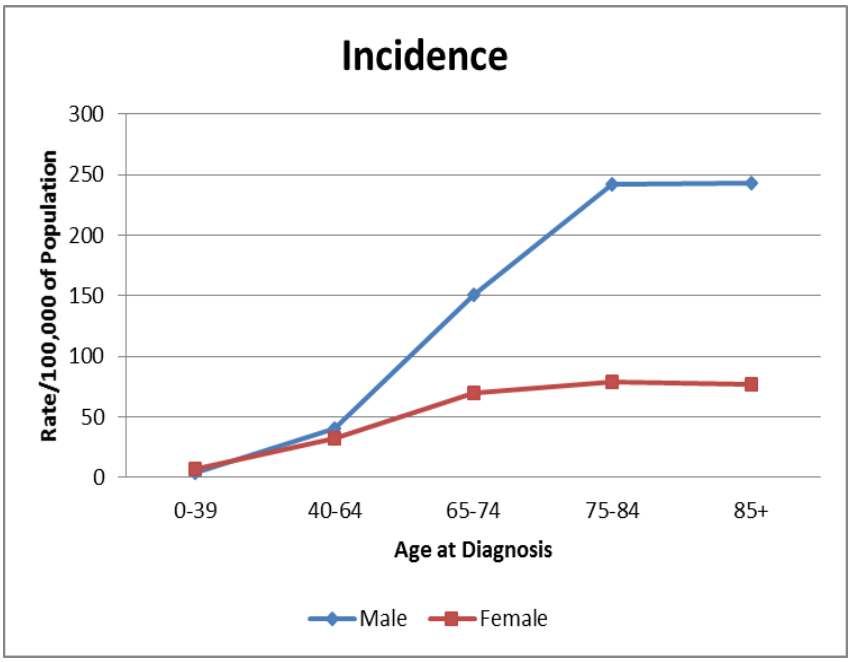
FIGURE 15-3: FIVE-YEAR AVERAGE AGE-ADJUSTED MALIGNANT MELANOMA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for malignant melanoma increased 73% in non-Hispanic Caucasian males and increased 82% in non-Hispanic Caucasian females.

FIGURE 15-4: AGE-SPECIFIC MALIGNANT MELANOMA INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for malignant melanoma incidence is 85 years of age and older for males and 75-84 years of age for females.

TABLE 15-3: AGE-SPECIFIC MALIGNANT MELANOMA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	7.5	---	---	11.7	---	---
40-64	54.2	---	---	44.6	---	---
65-74	181.2	---	---	84.9	---	---
75-84	280.3	---	---	91.3	---	---
85+	277.4	---	---	85.8	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasian males and females have a peak age range for malignant melanoma incidence at 75-84 years of age. Due to low numbers, incidence rates could not be calculated for some groups.

STAGE OF DIAGNOSIS - DELAWARE

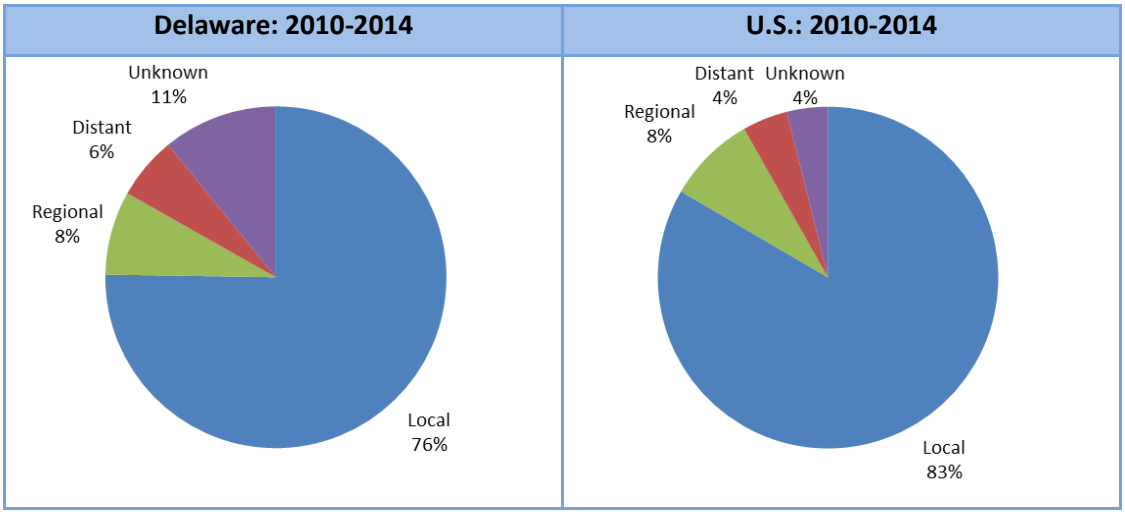
TABLE 15-4: MALIGNANT MELANOMA CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	1,236 (76)	722 (75)	514 (78)	1,205 (76)	708 (75)	497 (79)	8 (57)	---	---	12 (63)	---	---
Regional	123 (8)	88 (9)	35 (5)	119 (8)	85 (9)	34 (5)	---	---	---	---	---	---
Distant	95 (6)	58 (6)	37 (6)	88 (6)	56 (6)	32 (5)	---	---	---	---	---	---
Unknown	174 (11)	101 (10)	73 (11)	168 (11)	99 (10)	69 (11)	---	---	---	---	---	---
Total	1,628	969	659	1,580	948	632	14	---	---	19	12	7

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 1,236 (76%) malignant melanomas diagnosed at the local stage; 123 (8%) at the regional stage; 95 (6%) at the distant stage; and 174 (11%) had an unknown stage.
- Non-Hispanic Caucasians (76%) had a higher proportion diagnosed at the local stage compared to both non-Hispanic African Americans (57%) and Hispanics (63%).
- Males (75%) had fewer diagnosed at the local stage compared to females (78%).

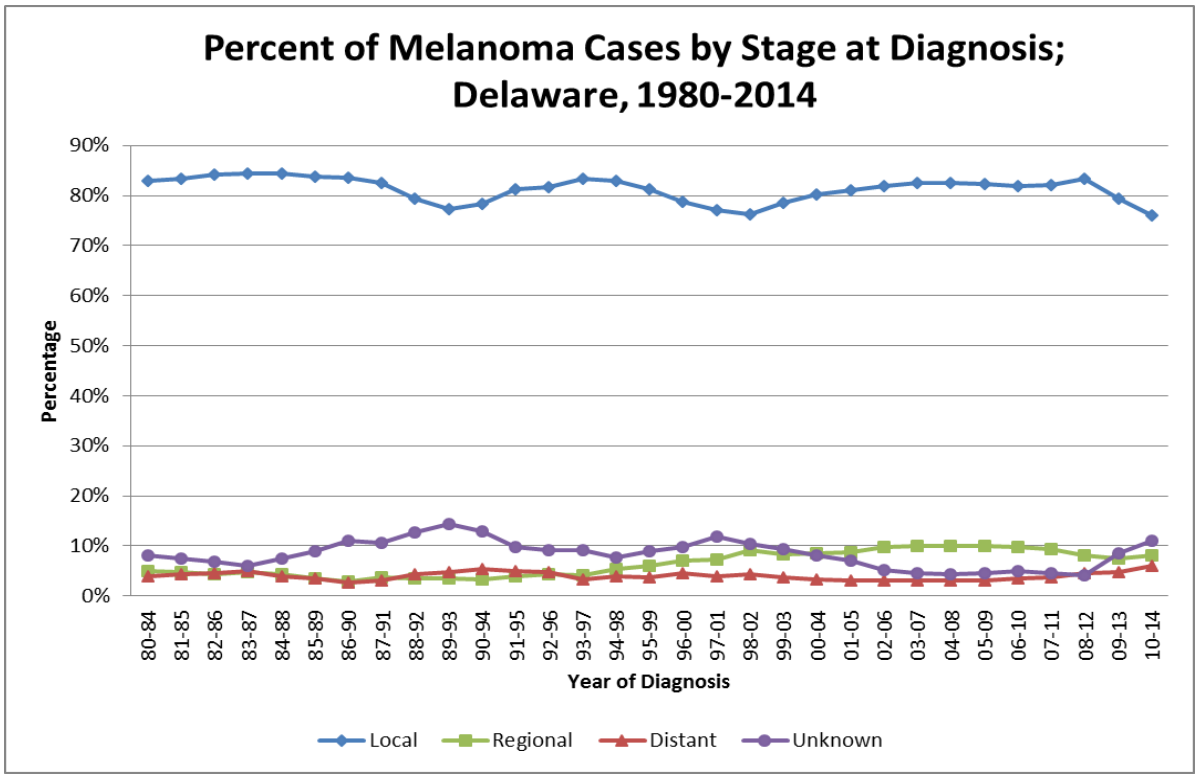
FIGURE 15-5: DISTRIBUTION OF MALIGNANT MELANOMA CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware malignant melanoma data, the U.S. (83%) has more malignant melanoma diagnosed at the local stage compared to Delaware (76%).

FIGURE 15-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR MALIGNANT MELANOMA CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of malignant melanoma cases diagnosed at the local stage decreased from 83% to 76%.
  - Malignant melanoma cases diagnosed at the distant stage increased slightly from 4% to 6%.

MORTALITY

For 2010-2014, Delaware ranked 24th in the U.S. for malignant melanoma mortality (24th in 2009-2013); males ranked 29th (33rd in 2009-2013) and females ranked 6th (8th in 2009-2013)[11].

2010-2014 DATA

TABLE 15-5: NUMBER OF MALIGNANT MELANOMA DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	155	97	58	149	95	54	---	---	---	---	---	---
Kent	29	18	11	27	17	10	---	---	---	---	---	---
New Castle	84	53	31	82	53	29	---	---	---	---	---	---
Sussex	42	26	16	40	25	15	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 155 deaths (2% of all cancer deaths) from malignant melanoma in Delaware.
- Males accounted for 63% of malignant melanoma deaths.

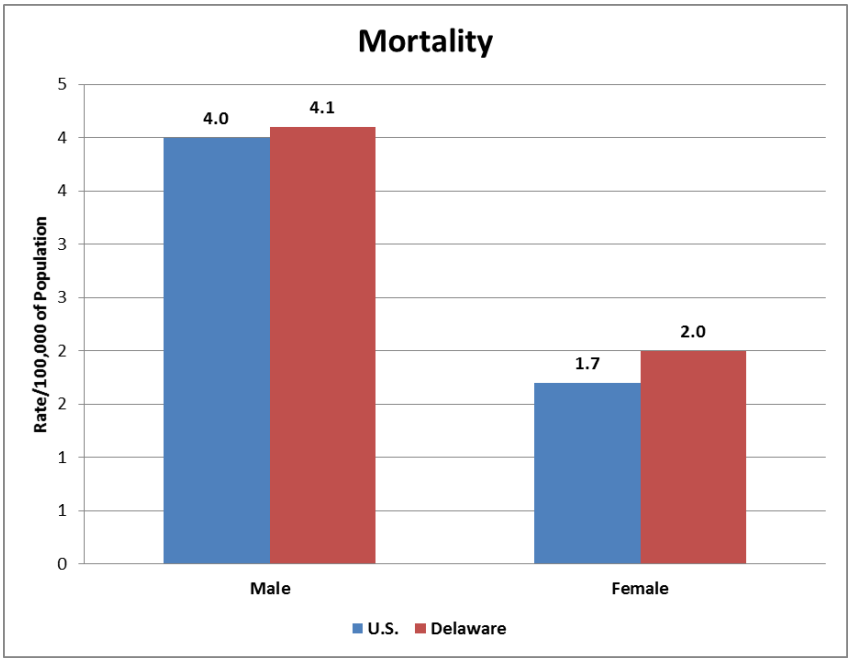
- Non-Hispanic Caucasians accounted for 96% of malignant melanoma deaths.

TABLE 15-6: FIVE-YEAR AVERAGE AGE-ADJUSTED MALIGNANT MELANOMA MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	2.7	4.0	1.7
Delaware	2.9	4.1	2.0
Kent	3.1	---	---
New Castle	3.0	4.3	2.1
Sussex	2.7	3.4	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 15-7: FIVE-YEAR AVERAGE AGE-ADJUSTED MALIGNANT MELANOMA MORTALITY RATES BY SEX; U.S. AND DELAWARE, 2010-2014



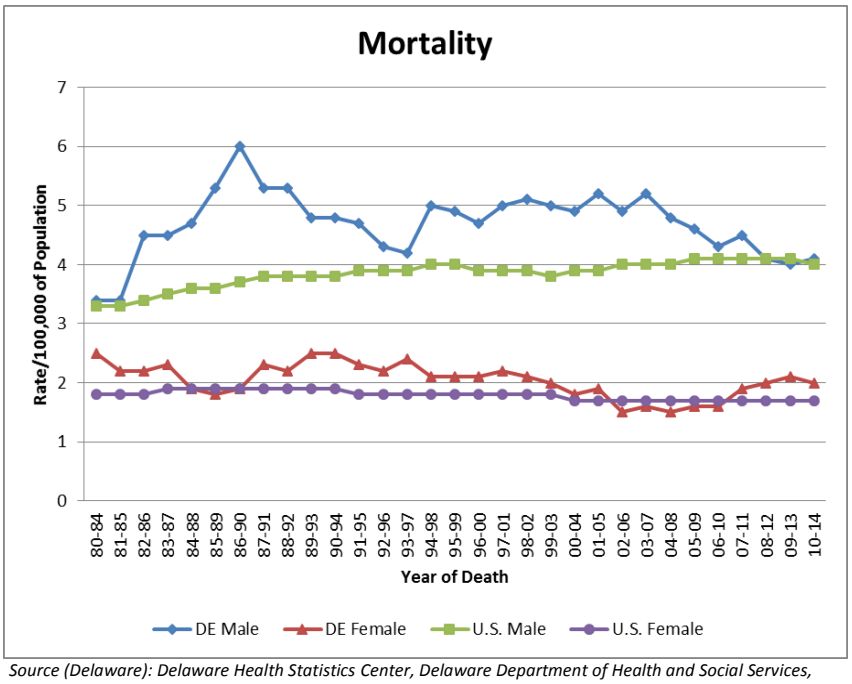
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (4.1 per 100,000) had a statistically significantly higher malignant melanoma mortality rate compared to females (2.0 per 100,000).
  - Malignant melanoma mortality rates for non-Hispanic African Americans and Hispanics could not be calculated due to the low number of deaths.
- Comparing Delaware and the U.S.
  - The difference in melanoma mortality rates between Delaware (2.9 per 100,000) and the U.S. (2.7 per 100,000) was not statistically significant.

- The difference in melanoma mortality rates between males in Delaware (4.1 per 100,000) and the U.S. (4.0 per 100,000) was not statistically significant.
- The difference in melanoma mortality rates between females in Delaware (2.0 per 100,000) and the U.S. (1.7 per 100,000) was not statistically significant.
- The difference in melanoma mortality rates between non-Hispanic Caucasians in Delaware (3.5 per 100,000) and the U.S. (3.0 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 15-8: FIVE-YEAR AVERAGE AGE-ADJUSTED MALIGNANT MELANOMA MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014

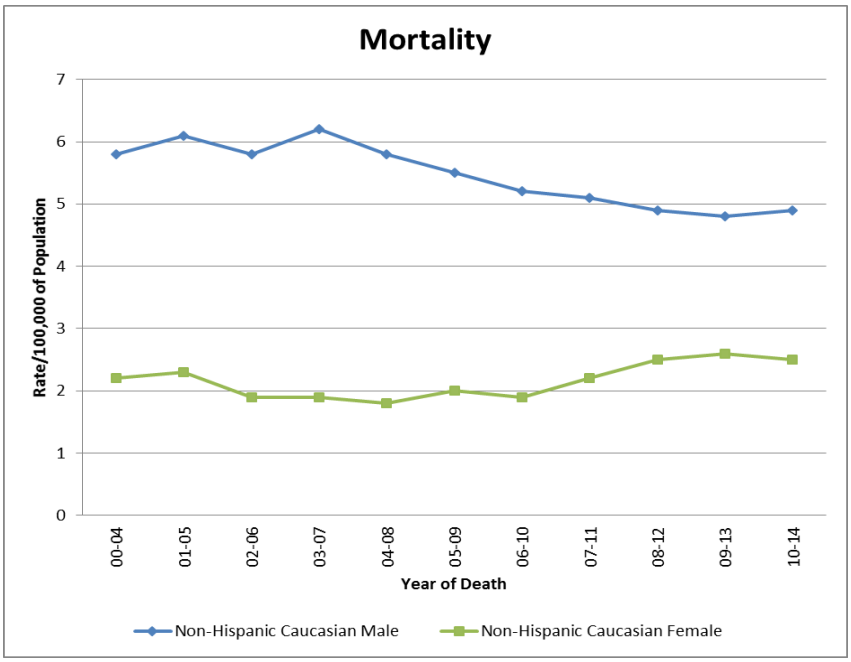


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for malignant melanoma decreased 6% in Delaware and remained the same in the U.S.
  - Mortality rates for malignant melanoma decreased 16% in Delaware males and increased 3% in U.S. males.
  - Mortality rates for malignant melanoma increased 11% in Delaware females and remained the same in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 15-9: FIVE-YEAR AVERAGE AGE-ADJUSTED MALIGNANT MELANOMA MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for malignant melanoma decreased 16% in non-Hispanic Caucasian males and increased 14% in non-Hispanic Caucasian females.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 15-7: AGE-SPECIFIC MALIGNANT MELANOMA MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	4.4	---	---	---	---	---
65-74	19.5	---	---	---	---	---
75-84	32.3	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for malignant melanoma mortality in males is 75-84 years of age. Due to low numbers, mortality rates could not be calculated for some groups.
- Non-Hispanic Caucasian males had a peak age range for malignant melanoma mortality at 75-84 years of age.

CHAPTER 16: MULTIPLE MYELOMA

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting multiple myeloma:

- Overweight and obesity

The following are *environmental and medically-related* causes of multiple myeloma:

- Occupational exposures to certain chemicals (e.g. benzene, agricultural solvents)
- Exposure to non-medical radiation

The following are *non-modifiable* risk factors (these cannot be changed) of getting multiple myeloma:

- Family history of multiple myeloma
- Non-Hispanic African Americans are at higher risk that other racial/ethnic groups.
- Most multiple myeloma cases are diagnosed in those 65 years of age and older.
- Males are at slightly higher risk compared to females.
- Having monoclonal gammopathy (this is a non-malignant disorder involving plasma cells)

To protect against multiple myeloma, individuals should manage lifestyle risk factors such as eat a healthy diet diet (high in fruits, vegetables and whole grains), avoid tobacco, limit alcohol use (two drinks a day for males and one drink a day for females), and increase physical activity. For individuals with other plasma cell diseases, there is no known way to prevent multiple myeloma.

EARLY DETECTION

There are currently no tests recommended for the screening of multiple myeloma.

INCIDENCE

For 2010-2014, Delaware ranked 8th in the U.S. for multiple myeloma incidence (5th in 2009-2013); males ranked 10th (7th in 2009-2013) and females ranked 6th (5h in 2009-2013)[10].

2010-2014 DATA

TABLE 16-1: NUMBER OF MULTIPLE MYELOMA CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	409	221	188	252	133	119	128	72	56	16	---	---
Kent	101	59	42	61	38	23	36	18	18	---	---	---
New Castle	201	104	97	106	52	54	75	43	32	10	---	---
Sussex	107	58	49	85	43	42	17	11	6	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

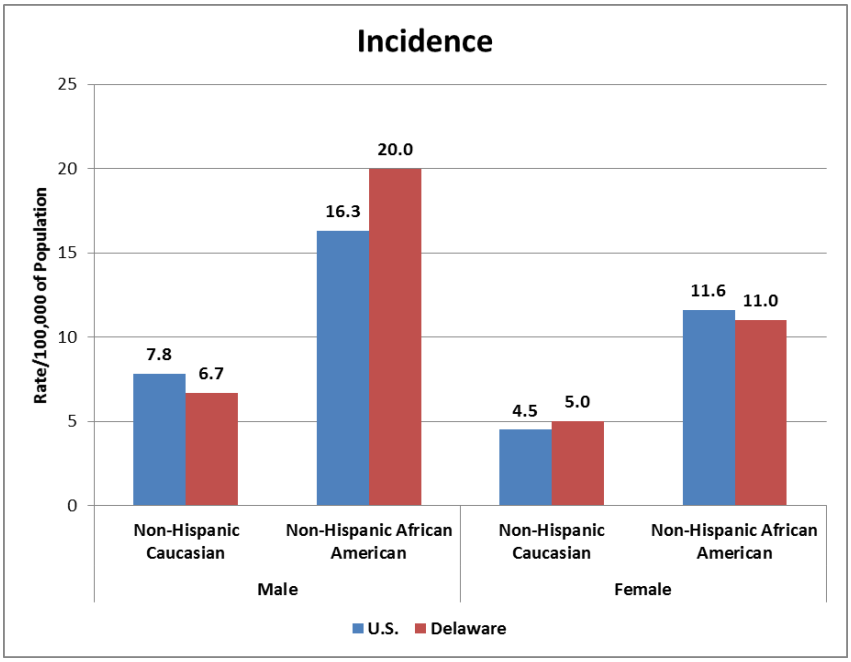
- In 2010-2014, there were 409 multiple myeloma cases (1% of all cancer cases) diagnosed in Delaware.
- Males accounted for 54% of multiple myeloma cases.
- Non-Hispanic Caucasians accounted for 62% of multiple myeloma cases.

TABLE 16-2: FIVE-YEAR AVERAGE AGE-ADJUSTED MULTIPLE MYELOMA INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	6.6	8.3	5.2
Delaware	7.4	8.8	6.2
Kent	10.8	14.0	8.3
New Castle	6.7	8.0	5.7
Sussex	6.7	7.7	5.9

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 16-1: FIVE-YEAR AVERAGE AGE-ADJUSTED MULTIPLE MYELOMA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



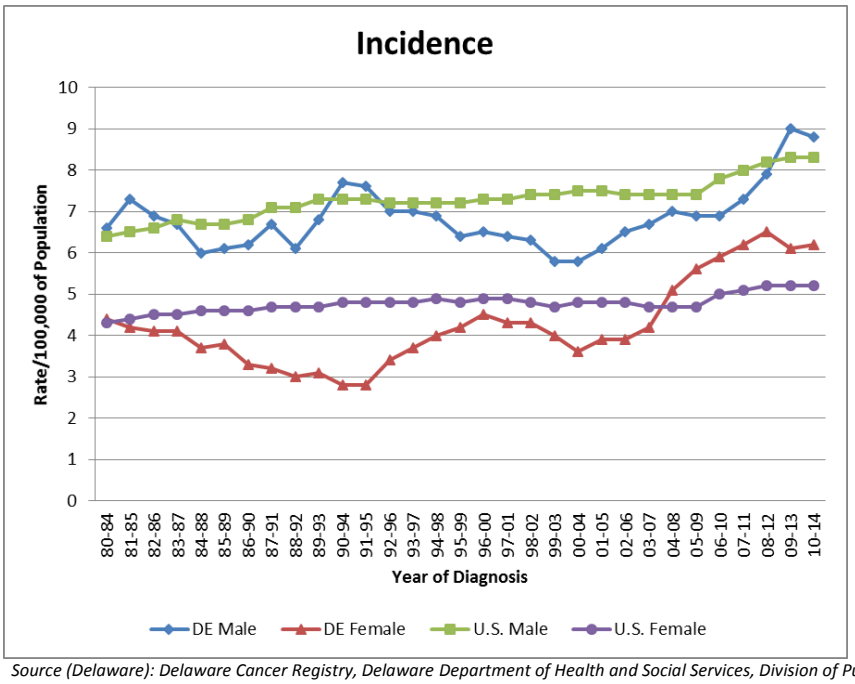
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (8.8 per 100,000) had a statistically significantly higher multiple myeloma incidence rate compared to females (6.2 per 100,000).
  - Non-Hispanic Caucasians (5.8 per 100,000) had a statistically significantly lower multiple myeloma incidence rate compared to non-Hispanic African Americans (14.5 per 100,000).
  - Multiple myeloma cancer incidence rates for Hispanics could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S.
  - Delaware (7.4 per 100,000) had a statistically significantly higher multiple myeloma incidence rate compared to the U.S. (6.6 per 100,000).
  - The difference in multiple myeloma incidence rates for males in Delaware (8.8 per 100,000) and the U.S. (8.3 per 100,000) was not statistically significant.

- Females in Delaware (6.2 per 100,000) had a statistically significantly higher multiple myeloma incidence rate compared to females in the U.S. (5.2 per 100,000).
- The difference in multiple myeloma incidence rates between non-Hispanic Caucasians in Delaware (5.8 per 100,000) and the U.S. (6.0 per 100,000) was not statistically significant.
- The difference in the multiple myeloma incidence rates between non-Hispanic African Americans in Delaware (14.6 per 100,000) and the U.S. (13.5 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

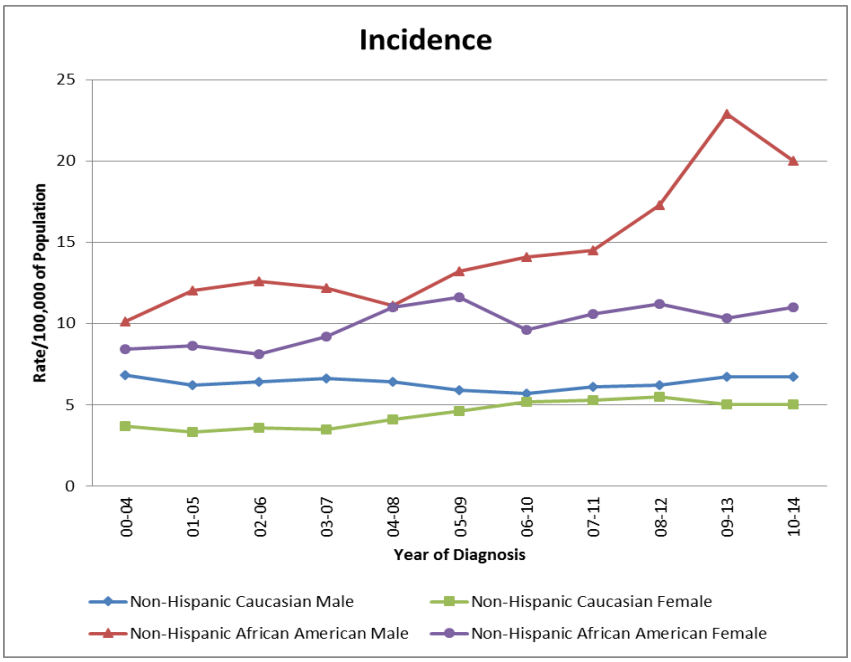
FIGURE 16-2: FIVE-YEAR AVERAGE AGE-ADJUSTED MULTIPLE MYELOMA INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for multiple myeloma increased 57% in Delaware and increased 12% in the U.S.
  - Incidence rates for multiple myeloma increased 52% in Delaware males and increased 11% in U.S. males.
  - Incidence rates for multiple myeloma increased 72% in Delaware females and increased 8% in U.S. females.

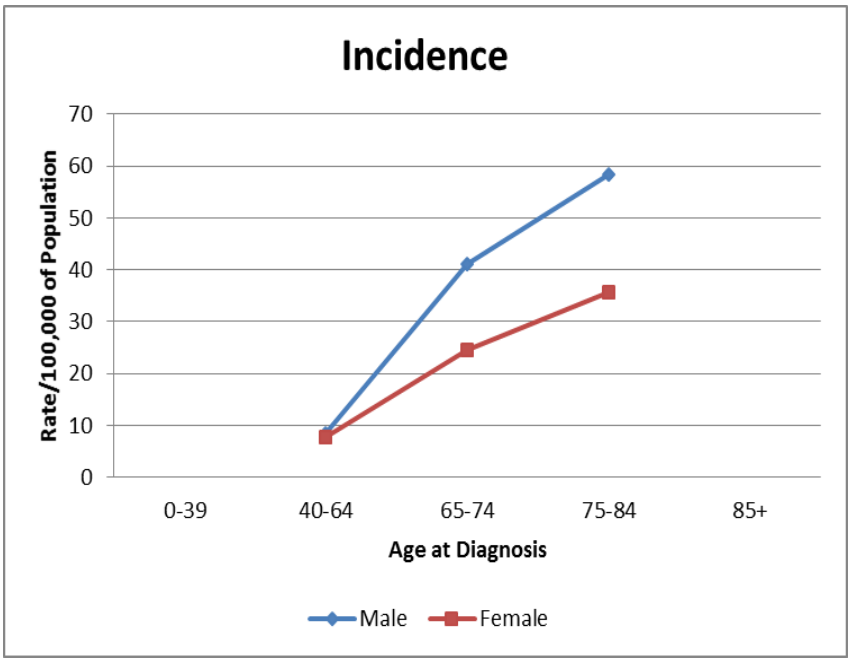
FIGURE 16-3: FIVE-YEAR AVERAGE AGE-ADJUSTED MULTIPLE MYELOMA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for multiple myeloma decreased 1% in non-Hispanic Caucasian males and increased 35% in non-Hispanic Caucasian females.
  - Incidence rates for multiple myeloma increased 98% in non-Hispanic African American males and increased 31% in non-Hispanic African American females.

FIGURE 16-4: AGE-SPECIFIC MULTIPLE MYELOMA INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for multiple myeloma incidence is 75-84 years of age for males and females. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 16-3: AGE-SPECIFIC MULTIPLE MYELOMA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	6.1	19.7	---	5.4	15.3	---
65-74	27.7	107.4	---	20.0	---	---
75-84	51.3	---	---	30.6	---	---
85+	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasians had peak age range for multiple myeloma incidence at 75-84 years of age.

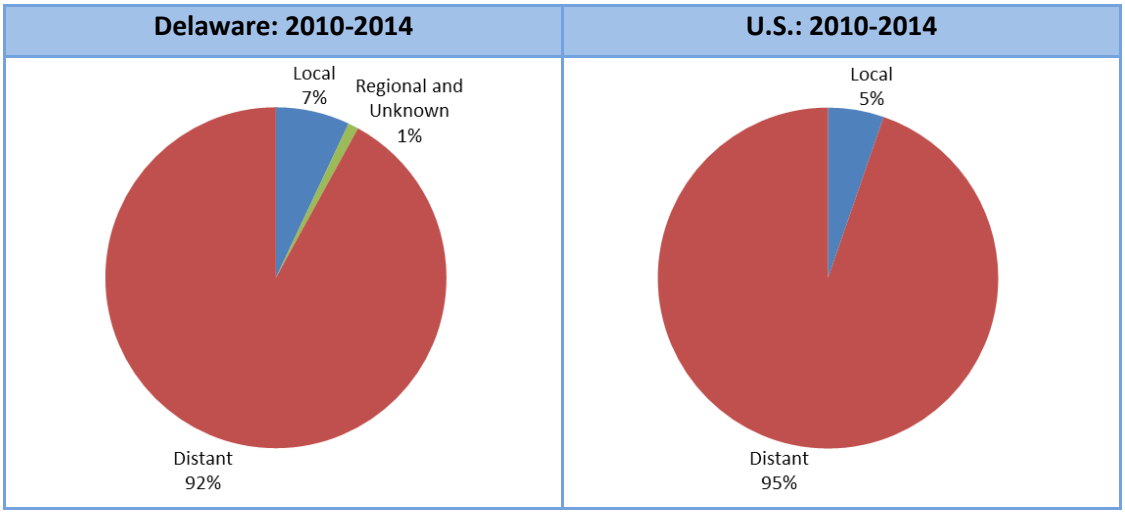
TABLE 16-4: MULTIPLE MYELOMA CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	28 (7)	15 (7)	13 (7)	22 (9)	14 (11)	8 (7)	---	---	---	---	---	---
Regional	---	---	---	---	---	---	---	---	---	---	---	---
Distant	378 (92)	205 (93)	173 (92)	227 (90)	118 (89)	109 (92)	124 (97)	71 (99)	53 (95)	15 (94)	---	---
Unknown	---	---	---	---	---	---	---	---	---	---	---	---
Total	409	221	188	252	133	119	128	72	56	16	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 28 (7%) multiple myelomas diagnosed at the local stage and 378 (92%) at the distant stage.
- Non-Hispanic Caucasians (90%) had a lower proportion of multiple myelomas diagnosed at the distant stage compared to non-Hispanic African Americans (97%) and Hispanics (94%).

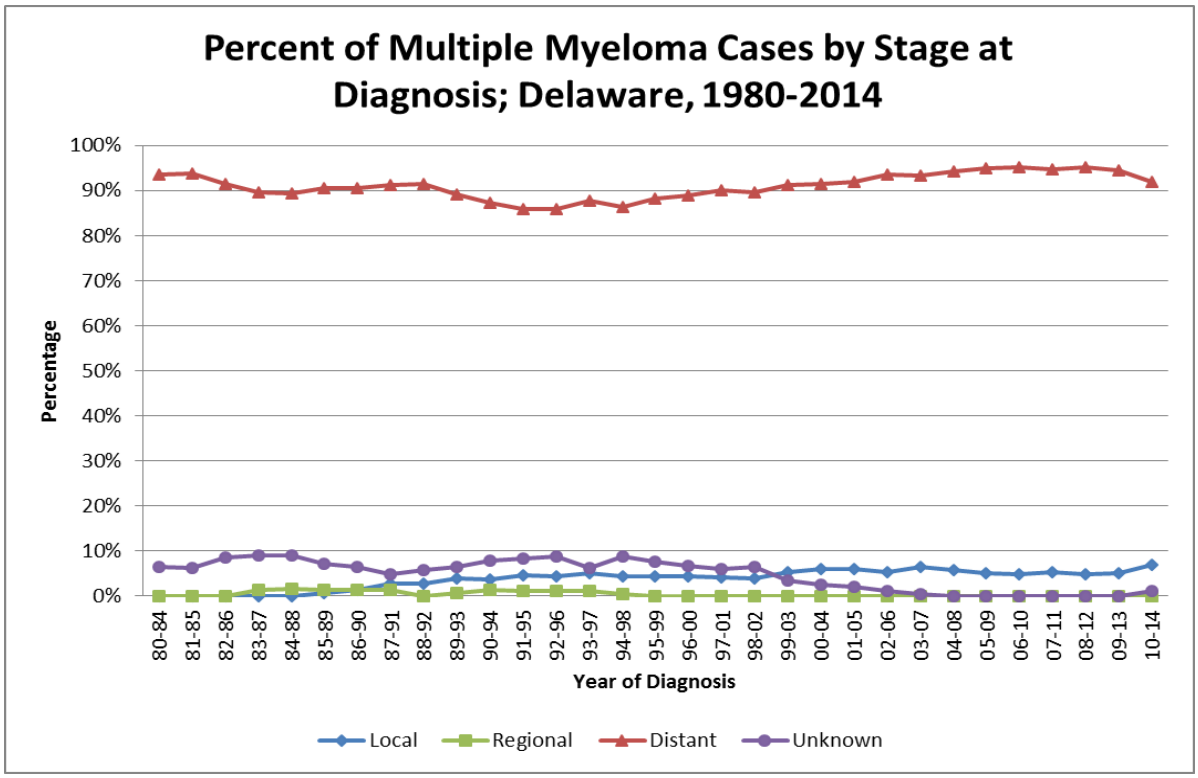
FIGURE 16-5: DISTRIBUTION OF MULTIPLE MYELOMA CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware multiple myeloma data, the U.S. (95%) had a higher proportion of multiple myeloma diagnosed at the distant stage compared to Delaware (92%).

FIGURE 16-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR MULTIPLE MYELOMA CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of multiple myeloma cases diagnosed at the local stage increased from 0% to 7%.
  - Multiple myeloma cases diagnosed at the distant stage decreased from 94% to 92%.

MORTALITY

For 2010-2014, Delaware ranked 24th in the U.S. for multiple myeloma mortality (20th in 2009-2013); males ranked 29th (23rd in 2009-2013) and females ranked 15th (17th in 2009-2013)[11].

2010-2014 DATA

TABLE 16-5: NUMBER OF MULTIPLE MYELOMA DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	194	105	89	141	73	68	52	31	21	---	---	---
Kent	39	21	18	29	16	13	10	---	---	---	---	---
New Castle	113	64	49	76	40	36	36	23	13	---	---	---
Sussex	42	20	22	36	17	19	6	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

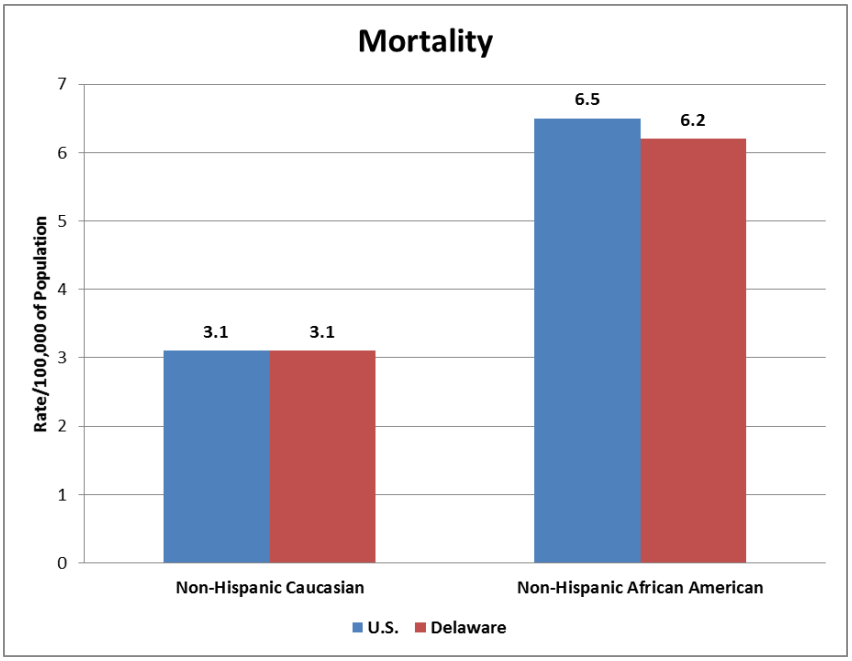
- In 2010-2014, there were 194 deaths (2% of all cancer deaths) from multiple myeloma in Delaware.
- Males accounted for 54% of multiple myeloma deaths.
- Non-Hispanic Caucasians accounted for 73% of multiple myeloma deaths.

TABLE 16-6: FIVE-YEAR AVERAGE AGE-ADJUSTED MULTIPLE MYELOMA MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	3.3	4.2	2.7
Delaware	3.5	4.3	2.9
Kent	4.1	---	---
New Castle	3.8	5.1	2.8
Sussex	2.5	---	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 16-7: FIVE-YEAR AVERAGE AGE-ADJUSTED MULTIPLE MYELOMA MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



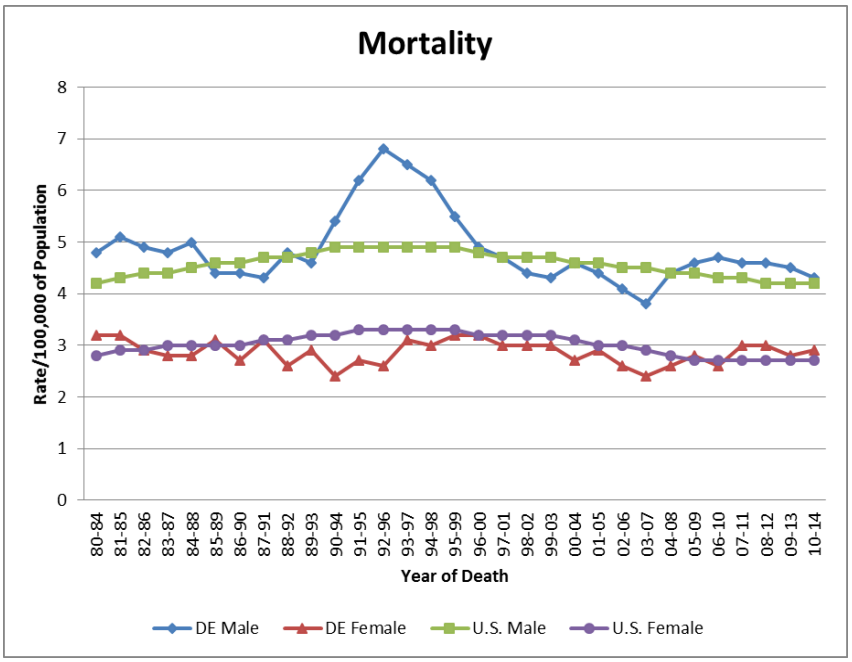
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in the multiple myeloma mortality rates between males (4.3 per 100,000) and females (2.9 per 100,000) was not statistically significant.
  - Non-Hispanic Caucasians (3.1 per 100,000) had a statistically significantly lower myeloma mortality rate compared to non-Hispanic African Americans (6.2 per 100,000).
  - Multiple myeloma mortality rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in multiple myeloma mortality rates between Delaware (3.5 per 100,000) and the U.S. (3.3 per 100,000) was not statistically significant.
  - The difference in multiple myeloma mortality rates between males in Delaware (4.3 per 100,000) and the U.S. (4.2 per 100,000) was not statistically significant.
  - The difference in multiple myeloma mortality rates between females in Delaware (2.9 per 100,000) and the U.S. (2.7 per 100,000) was not statistically significant.
  - There was no difference in multiple myeloma mortality rates between non-Hispanic Caucasians in Delaware (3.1 per 100,000) and non-Hispanic Caucasians in the U.S (3.1 per 100,000).
  - The difference in multiple myeloma mortality rates between non-Hispanic African Americans in Delaware (6.2 per 100,000) and the U.S (6.5 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 16-8: FIVE-YEAR AVERAGE AGE-ADJUSTED MULTIPLE MYELOMA MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014

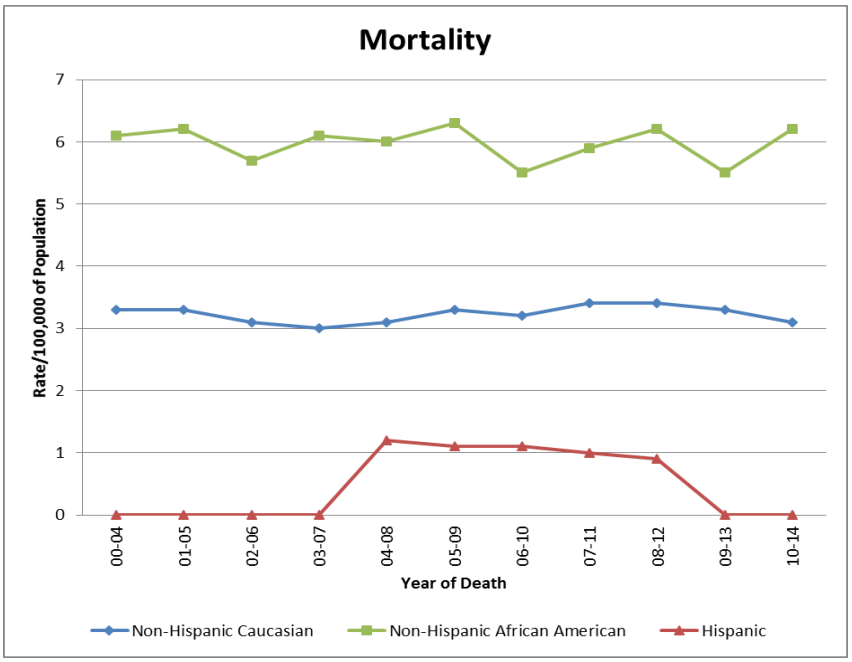


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for multiple myeloma remained the same in Delaware and decreased in the U.S. (11%).
  - Mortality rates for multiple myeloma decreased 7% in Delaware males and decreased 9% in U.S. males.
  - Mortality rates for multiple myeloma increased 7% in Delaware females and decreased 13% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 16-9: FIVE-YEAR AVERAGE AGE-ADJUSTED MULTIPLE MYELOMA MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for multiple myeloma decreased 6% in non-Hispanic Caucasians.
  - Mortality rates for multiple myeloma increased 2% in non-Hispanic African Americans.
  - Multiple myeloma mortality rate differences could not be calculated for Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

- Due to low numbers, age-specific multiple myeloma mortality rates were not calculated.

CHAPTER 17: NON-HODGKIN LYMPHOMA

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting non-Hodgkin Lymphoma:

- Diet high in meat and fats
- Overweight or obesity
- Smoking

The following are *environmental and medically-related* causes of non-Hodgkin Lymphoma:

- Exposure to benzene, ethylene oxide, environmental or medical radiation, electromagnetic fields, and certain weed or insect killers
- Chemotherapy (alkylating agents)

The following are *non-modifiable* risk factors (these cannot be changed) of getting non-Hodgkin Lymphoma:

- Increasing age – most cases occur at 60 years of age or older (although some types are common in young people)
- The risk is higher in males compared to females, although some types are more common in females.
- Non-Hispanic Caucasians are at higher risk compared to non-Hispanic African Americans.
- A weakened immune system (due to organ transplants, HIV infection); autoimmune diseases
- Infection with *Helicobacter pylori*
- History of other infections (e.g. human T-cell leukemia virus, Epstein-Barr virus, hepatitis C virus)

To protect against non-Hodgkin Lymphoma, individuals should maintain a healthy weight, eat a healthy diet, avoid behaviors that may spread HIV infection, and get treatment for HIV infection and *Helicobacter pylori*.

EARLY DETECTION

There are currently no tests recommended for the screening of non-Hodgkin Lymphoma in the general population. Individuals with known risk factors should have regular check-ups.

INCIDENCE

For 2010-2014, Delaware ranked 11th in the U.S. for Non-Hodgkin Lymphoma incidence (13th in 2009-2013); males ranked 10th (12th in 2009-2013) and females ranked 12th (14h in 2009-2013)[10].

2010-2014 DATA

TABLE 17-1: NUMBER OF NON-HODGKIN LYMPHOMA CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	1,124	613	511	937	511	426	137	77	60	28	13	15
Kent	201	102	99	179	91	88	15	---	---	---	---	---
New Castle	577	327	250	438	250	188	104	56	48	22	13	9
Sussex	346	184	162	320	170	150	18	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

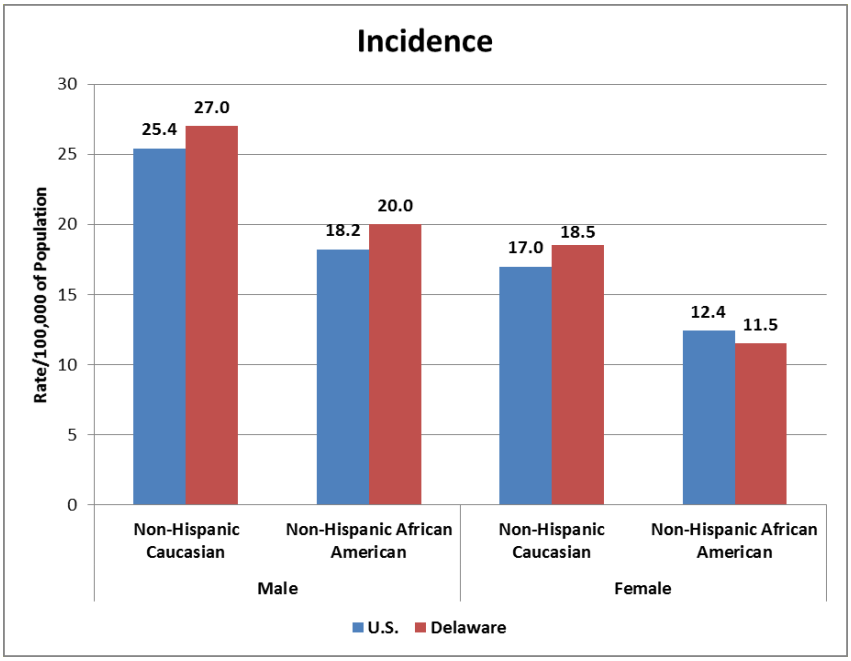
- In 2010-2014, there were 1,124 non-Hodgkin Lymphoma cases (4% of all cancer cases) diagnosed in Delaware.
- Males accounted for 55% of non-Hodgkin Lymphoma cases.
- Non-Hispanic Caucasians accounted for 83% of non-Hodgkin Lymphoma cases.

TABLE 17-2: FIVE-YEAR AVERAGE AGE-ADJUSTED NON-HODGKIN LYMPHOMA INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	19.5	23.7	16.0
Delaware	20.8	25.4	17.3
Kent	21.6	24.4	19.5
New Castle	19.6	25.4	15.3
Sussex	22.1	25.5	19.3

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 17-1: FIVE-YEAR AVERAGE AGE-ADJUSTED NON-HODGKIN LYMPHOMA BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

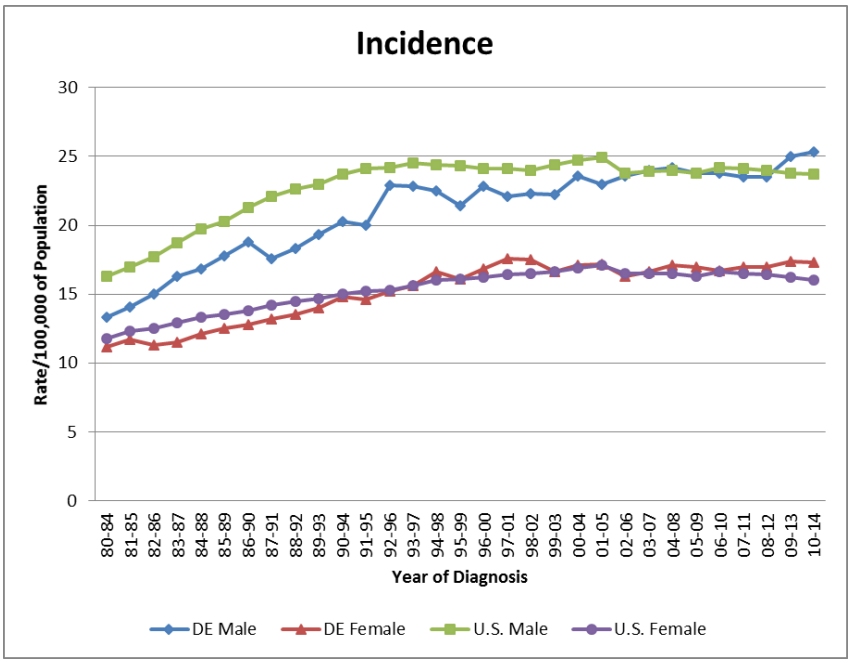
- In Delaware
  - Males (25.4 per 100,000) had a statistically significantly higher non-Hodgkin Lymphoma incidence rate compared to females (17.3 per 100,000).
  - The difference in non-Hodgkin Lymphoma incidence rates between non-Hispanic Caucasians (22.2 per 100,000) and Hispanics (15.5 per 100,000) was not statistically significant.
  - The difference in non-Hodgkin Lymphoma incidence rates between non-Hispanic African Americans (15.1 per 100,000) and Hispanics (15.5 per 100,000) was not statistically significant.

- Non-Hispanic Caucasians (22.2 per 100,000) had a statistically significantly higher non-Hodgkin Lymphoma incidence rate compared to non-Hispanic African Americans (15.1 per 100,000).

- Comparing Delaware and the U.S.
  - The difference in non-Hodgkin Lymphoma incidence rates between Delaware (20.8 per 100,000) and the U.S. (19.5 per 100,000) was not statistically significant.
  - The difference in non-Hodgkin Lymphoma incidence rates between males in Delaware (25.4 per 100,000) and the U.S. (23.7 per 100,000) was not statistically significant.
  - The difference in non-Hodgkin Lymphoma incidence rates between females in Delaware (17.3 per 100,000) and the U.S. (16.0 per 100,000) was not statistically significant.
  - The difference in non-Hodgkin Lymphoma incidence rates between non-Hispanic Caucasians in Delaware (22.2 per 100,000) and the U.S. (20.8 per 100,000) was not statistically significant.
  - The difference in non-Hodgkin Lymphoma incidence rates between non-Hispanic African Americans in Delaware (15.1 per 100,000) and the U.S. (15.0 per 100,000) was not statistically significant.
  - The difference in non-Hodgkin Lymphoma incidence rates between Hispanics in Delaware (15.5 per 100,000) and the U.S. (17.8 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 17-2: FIVE-YEAR AVERAGE AGE-ADJUSTED NON-HODGKIN LYMPHOMA INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Health and Social Services, Division of Public Health, 2017 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

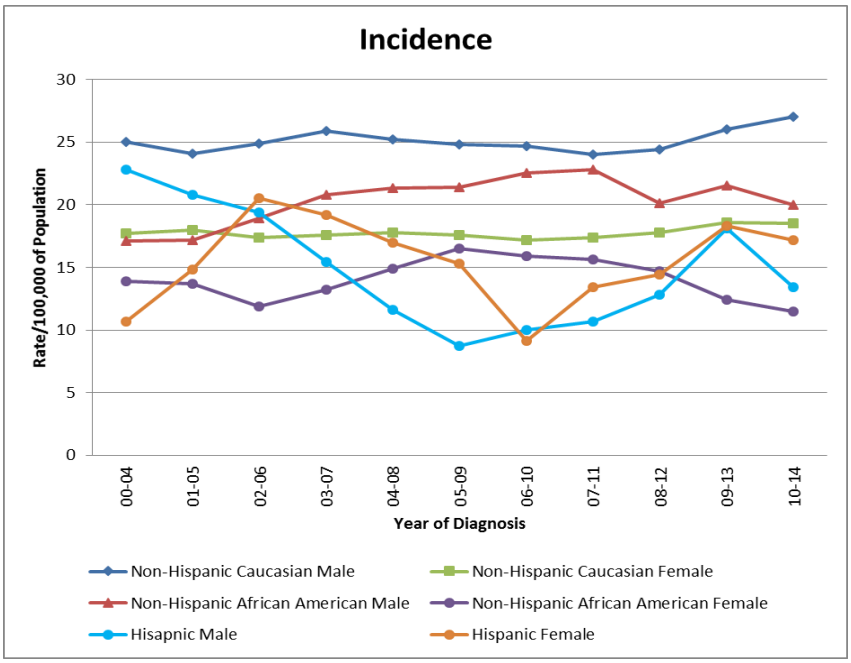
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for non-Hodgkin Lymphoma increased 4% in Delaware and decreased 4% in the U.S.
  - Incidence rates for non-Hodgkin Lymphoma increased 8% in Delaware males and decreased 4% in U.S. males.

- Incidence rates for non-Hodgkin Lymphoma increased 1% in Delaware females and decreased 5% in U.S. females.

TRENDS OVER TIME - DELAWARE

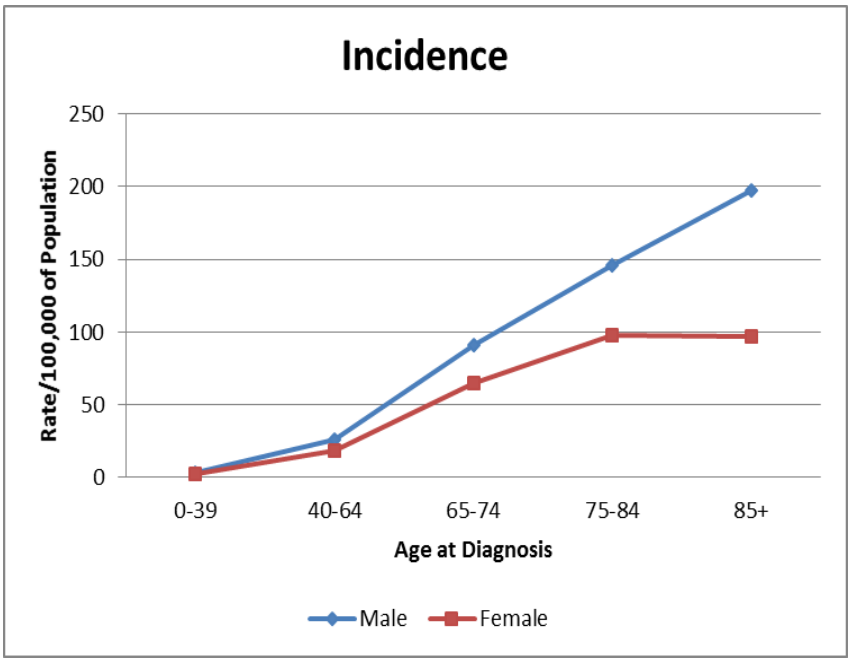
FIGURE 17-3: FIVE-YEAR AVERAGE AGE-ADJUSTED NON-HODGKIN LYMPHOMA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for non-Hodgkin Lymphoma increased 8% in non-Hispanic Caucasian males and increased 5% in non-Hispanic Caucasian females.
  - Incidence rates for non-Hodgkin Lymphoma increased 17% in non-Hispanic African American males and decreased 17% in non-Hispanic African American females.
  - Incidence rates for non-Hodgkin Lymphoma decreased 41% in Hispanic males and increased 61% in Hispanic females.

FIGURE 17-4: AGE-SPECIFIC NON-HODGKIN LYMPHOMA INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for non-Hodgkin Lymphoma incidence is 85 years of age and older for males and 75-84 years of age for females.

TABLE 17-3: AGE-SPECIFIC NON-HODGKIN LYMPHOMA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	27.9	24.4	---	19.8	15.3	---
65-74	96.4	---	---	73.0	---	---
75-84	153.6	---	---	108.3	---	---
85+	212.1	---	---	106.7	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasians have a peak age range for non-Hodgkin Lymphoma incidence at 85 years of age and older. Due to low numbers, incidence rates could not be calculated for some groups.

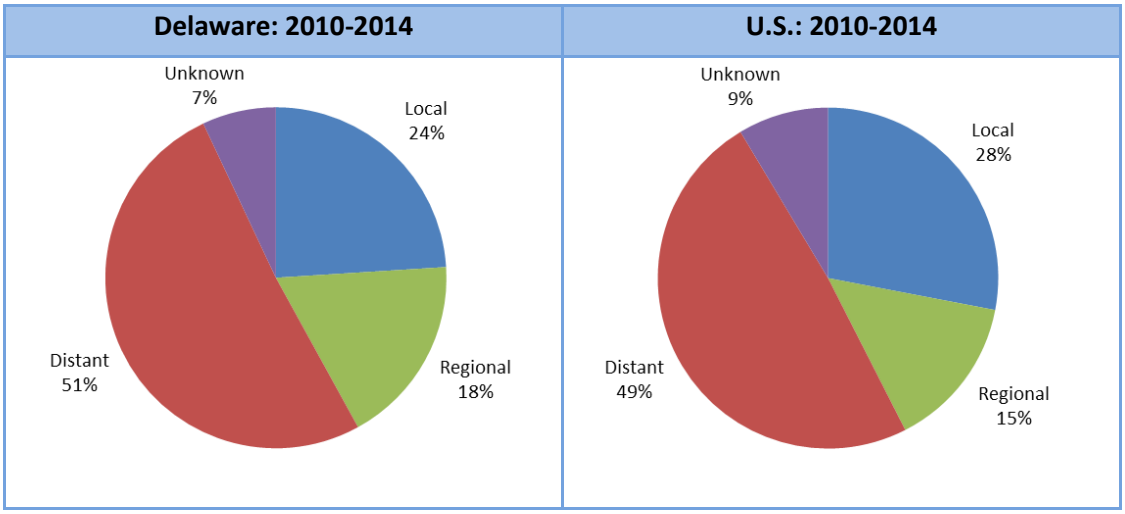
TABLE 17-4: NON-HODGKIN LYMPHOMA CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	271 (24)	135 (22)	136 (27)	230 (25)	114 (22)	116 (27)	27 (20)	13 (17)	14 (23)	---	---	---
Regional	200 (18)	110 (18)	90 (18)	166 (18)	92 (18)	74 (17)	21 (15)	---	---	9 (32)	---	---
Distant	576 (51)	322 (53)	254 (50)	477 (51)	266 (52)	211 (50)	79 (58)	46 (60)	33 (55)	11 (39)	---	---
Unknown	77 (7)	46 (8)	61 (6)	64 (7)	39 (8)	25 (6)	10 (7)	---	---	---	---	---
Total	1,124	613	511	937	511	426	137	77	60	28	13	15

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 271 (24%) non-Hodgkin Lymphomas diagnosed at the local stage; 200 (18%) at the regional stage; 576 (51%) at the distant stage; and 77 (7%) had an unknown stage.
- Non-Hispanic Caucasians (25%) had a higher proportion of non-Hodgkin Lymphoma diagnosed at the local stage compared to non-Hispanic African Americans (20%).
- Males (22%) had a lower proportion non-Hodgkin Lymphomas diagnosed at the local stage compared to females (27%).

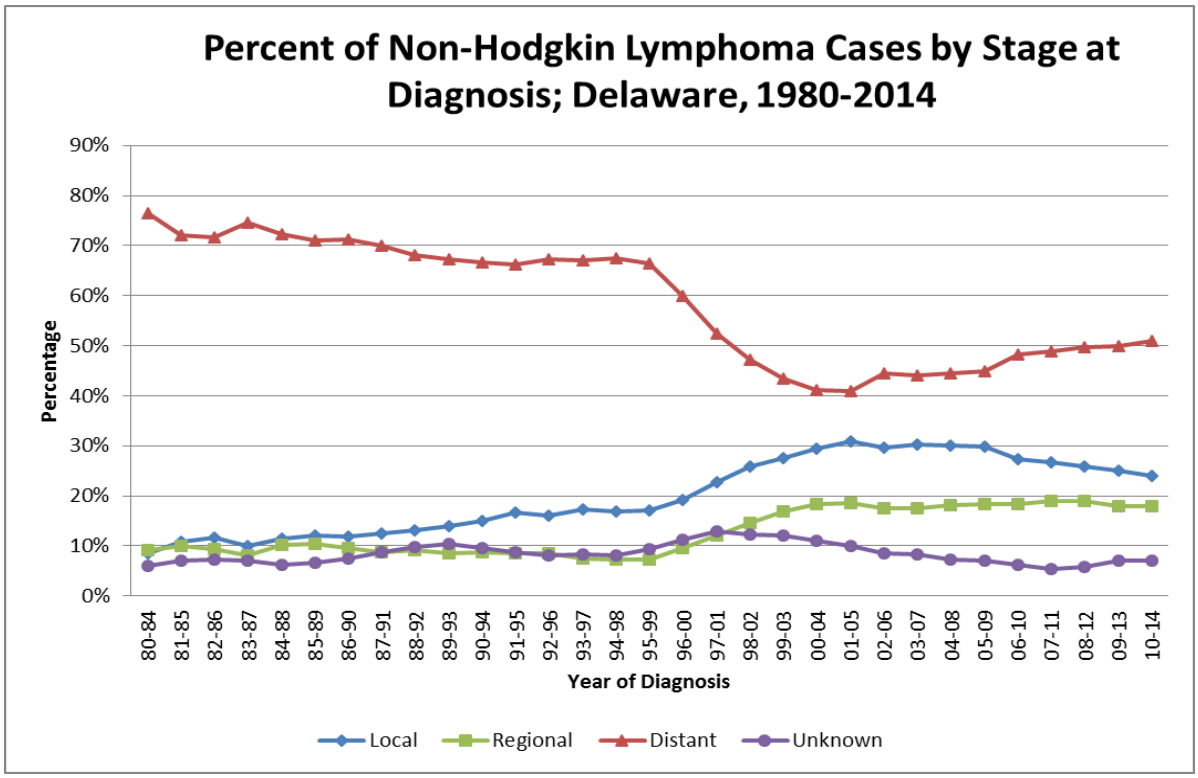
FIGURE 17-5: DISTRIBUTION OF NON-HODGKIN LYMPHOMA CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware non-Hodgkin Lymphoma data, more non-Hodgkin Lymphoma cases are diagnosed at the local stage in the U.S. (28%) compared to Delaware (24%).

FIGURE 17-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR NON-HODGKIN LYMPHOMA CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of non-Hodgkin Lymphoma cases diagnosed at the local stage increased from 8% to 24%.
  - Non-Hodgkin Lymphoma cases diagnosed at the distant stage decreased from 77% to 51%.

MORTALITY

For 2010-2014, Delaware ranked 20th in the U.S. for non-Hodgkin Lymphoma mortality (23rd in 2009-2013); males ranked 18th (28th in 2009-2013) and females ranked 24th (17th in 2009-2013)[11].

2010-2014 DATA

TABLE 17-5: NUMBER OF NON-HODGKIN LYMPHOMA DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	323	183	140	263	144	119	48	31	17	6	---	---
Kent	52	34	18	43	26	17	---	---	---	---	---	---
New Castle	178	101	77	132	73	59	37	22	15	---	---	---
Sussex	93	48	45	88	45	43	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 323 deaths (3% of all cancer deaths) from non-Hodgkin Lymphoma in Delaware.
- Males accounted for 57% of non-Hodgkin Lymphoma deaths.

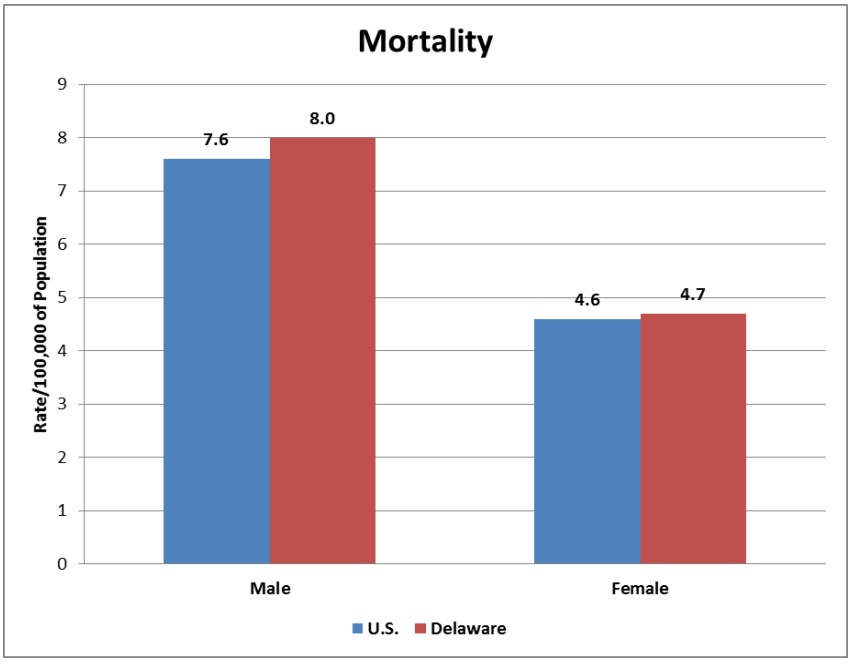
- Non-Hispanic Caucasians accounted for 81% of non-Hodgkin Lymphoma deaths.

TABLE 17-6: FIVE-YEAR AVERAGE AGE-ADJUSTED NON-HODGKIN LYMPHOMA MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	5.9	7.6	4.6
Delaware	6.1	8.0	4.7
Kent	5.9	9.0	---
New Castle	6.3	8.2	4.7
Sussex	6.1	7.1	5.3

Source (Delaware): Delaware Health Statistics Center, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 17-7: FIVE-YEAR AVERAGE AGE-ADJUSTED NON-HODGKIN LYMPHOMA MORTALITY RATES BY SEX; U.S. AND DELAWARE, 2010-2014



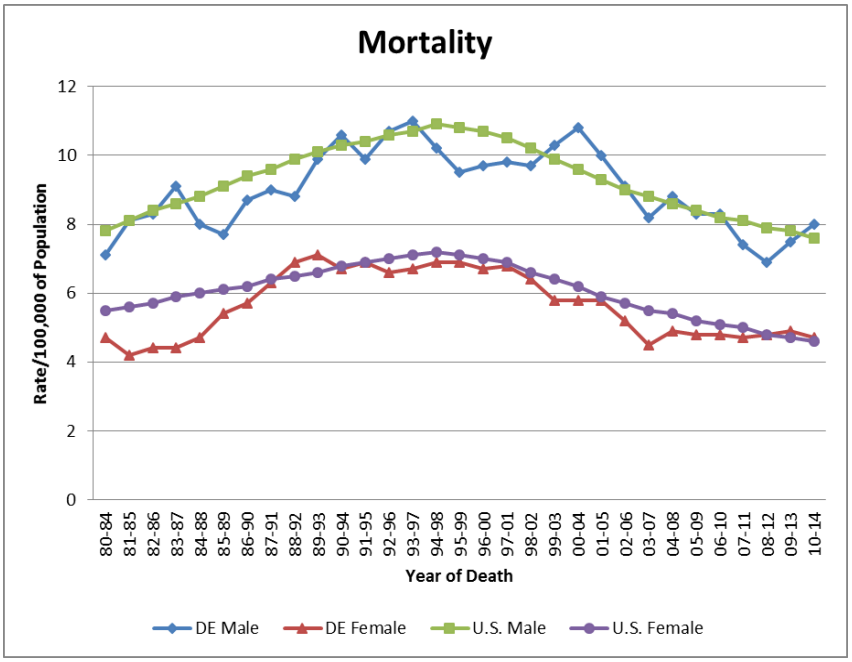
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (8.0 per 100,000) had a statistically significantly higher non-Hodgkin Lymphoma mortality rate compared to females (4.7 per 100,000).
  - The difference in non-Hodgkin Lymphoma mortality rates between non-Hispanic Caucasians (6.1 per 100,000) and non-Hispanic African Americans (5.5 per 100,000) was not statistically significant.
  - Non-Hodgkin Lymphoma mortality rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in non-Hodgkin Lymphoma mortality rates between Delaware (6.1 per 100,000) and the U.S. (5.9 per 100,000) was not statistically significant.
  - The difference in non-Hodgkin Lymphoma mortality rates between males in Delaware (8.0 per 100,000) and the U.S. (7.6 per 100,000) was not statistically significant.
  - The difference in non-Hodgkin Lymphoma mortality rates between females in Delaware (4.7 per 100,000) and the U.S. (4.6 per 100,000) was not statistically significant.
  - The difference in non-Hodgkin Lymphoma mortality rates between non-Hispanic Caucasians in Delaware (6.1 per 100,000) and the U.S. (6.2 per 100,000) was not statistically significant.
  - The difference in non-Hodgkin Lymphoma mortality rates between non-Hispanic African Americans in Delaware (5.5 per 100,000) and the U.S. (4.4 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 17-8: FIVE-YEAR AVERAGE AGE-ADJUSTED NON-HODGKIN LYMPHOMA MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014

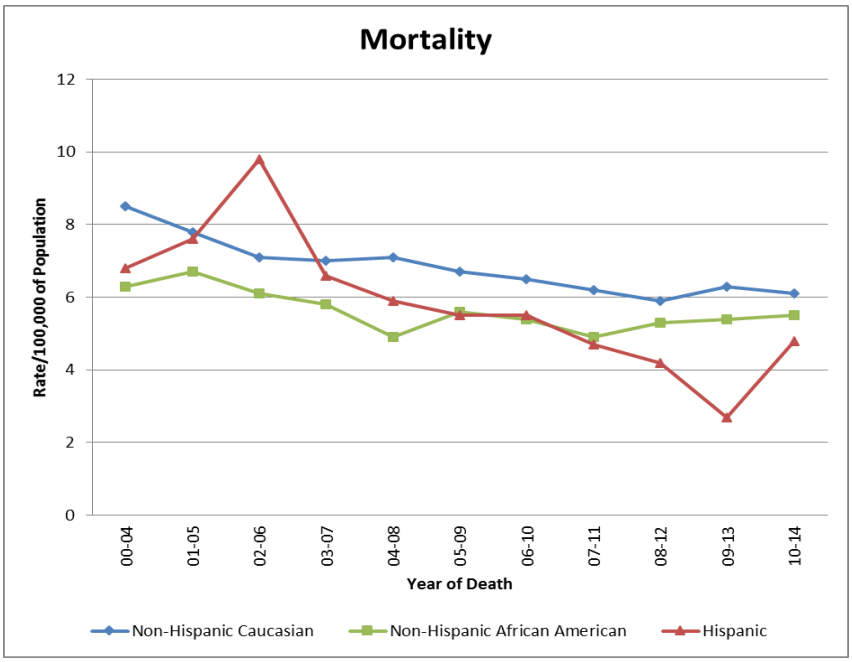


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for non-Hodgkin Lymphoma decreased 24% in Delaware and decreased 22% in the U.S.
  - Mortality rates for non-Hodgkin Lymphoma decreased 26% in Delaware males and decreased 21% in U.S. males.
  - Mortality rates for non-Hodgkin Lymphoma decreased 19% in Delaware females and decreased 26% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 17-9: FIVE-YEAR AVERAGE AGE-ADJUSTED NON-HODGKIN LYMPHOMA MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for non-Hodgkin Lymphoma decreased 28% in non-Hispanic Caucasians.
  - Mortality rates for non-Hodgkin Lymphoma decreased 13% in non-Hispanic African Americans.
  - Mortality rates for non-Hodgkin Lymphoma decreased 29% in Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 17-7: AGE-SPECIFIC NON-HODGKIN LYMPHOMA MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	4.1	---	---	---	---	---
65-74	28.0	---	---	---	---	---
75-84	52.5	---	---	49.4	---	---
85+	122.4	---	---	79.5	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for non-Hodgkin Lymphoma mortality is 85 years of age and older. Due to low numbers, mortality rates could not be calculated for some groups.

CHAPTER 18: ORAL CAVITY AND PHARYNX CANCER[19]

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting oral cancer:

- Smoking cigarettes, cigars, or pipes
- Use of snuff or chewing tobacco
- Alcohol abuse – 70% of people with oral cancer abuse alcohol
- Heavy drinking and smoking – the risk may be as much as 100 times greater compared to those who do not drink or smoke
- Chewing betel quid and gutka (mostly in South and southeast Asia)
- Infection with human papillomavirus (HPV). HPV DNA (particularly HPV 16) is found in about two-thirds of oral cancers.
- Exposure to ultraviolet light (cancer of the lip)
- Diet low in fruits and vegetables
- Use of mouthwash (suspected risk factor)

The following are *environmental and medically-related* causes of oral cancer:

- Improperly fitted dentures (suspected)

The following are *non-modifiable* risk factors (these cannot be changed) of getting oral cancer:

- Oral cancer is twice as common in males compared to females.
- Most oral cancers occur at 55 years of age and older.
- Genetic syndromes – Fanconi anemia, Dyskeratosis congenita
- Having a weakened immune system

To protect against oral cancer, individuals should avoid tobacco, limit alcohol use (two drinks per day for males and one drink per day for females), limit exposure to ultraviolet light, consume a diet rich in fruits and vegetables, and have precancerous growths treated.

EARLY DETECTION

Most pre-cancers of the oral cavity and pharynx can be found early during routine screening exams by a dentist, doctor, dental hygienist, or by self-exam.

[19] "Oral cancer" is used instead of "oral cavity and pharynx cancer" throughout this section.

INCIDENCE

For 2010-2014, Delaware ranked 11th in the U.S. for oral cancer incidence (14th in 2009-2013); males ranked 9th (12th in 2009-2013) and females ranked 29th (19th in 2009-2013)[10].

2010-2014 DATA

TABLE 18-1: NUMBER OF ORAL CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	700	506	194	585	427	158	78	55	23	17	---	---
Kent	116	85	31	101	76	25	14	---	---	---	---	---
New Castle	385	275	110	302	218	84	49	36	13	14	---	---
Sussex	199	146	53	182	133	49	15	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

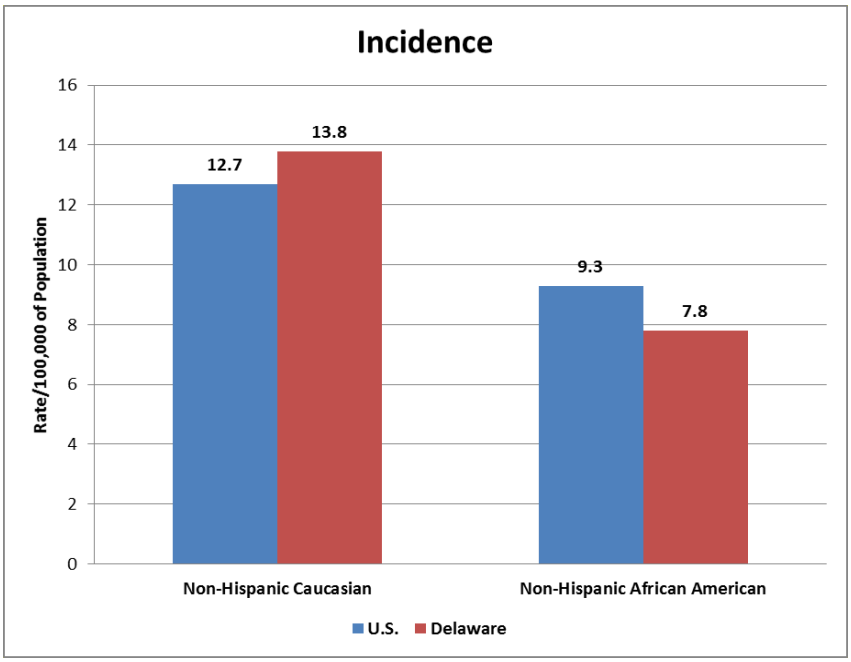
- In 2010-2014, there were 700 oral cancer cases (3% of all cancer cases) diagnosed in Delaware.
- Males accounted for 72% of oral cancer cases.
- Non-Hispanic Caucasians accounted for 84% of oral cancer cases.

TABLE 18-2: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	11.2	16.9	6.2
Delaware	12.6	19.7	6.5
Kent	11.9	18.8	6.0
New Castle	12.6	19.7	6.7
Sussex	12.8	20.0	6.4

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

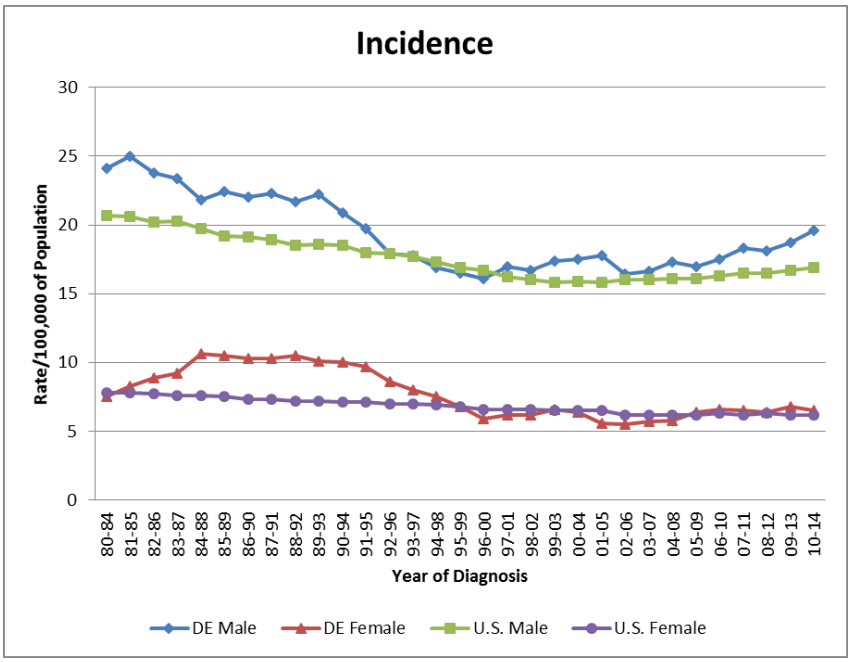
FIGURE 18-1: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (19.7 per 100,000) had a statistically significantly higher oral cancer incidence rate compared to females (6.5 per 100,000).
  - Non-Hispanic Caucasians (13.8 per 100,000) had a statistically significantly higher oral cancer incidence rate compared to non-Hispanic African Americans (7.8 per 100,000).
  - Oral cancer incidence rates for Hispanics could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S.
  - Delaware (12.6 per 100,000) had a statistically significantly higher oral cancer incidence rate compared to the U.S. (11.2 per 100,000).
  - Delaware males (19.7 per 100,000) had a statistically significantly higher oral cancer incidence rate compared to U.S. males (16.9 per 100,000).
  - The difference in oral cancer incidence rates between females in Delaware (6.5 per 100,000) and females in the U.S. (6.2 per 100,000) was not statistically significant.
  - The difference in oral cancer incidence rates between non-Hispanic Caucasians in Delaware (13.8 per 100,000) and in the U.S. (12.7 per 100,000) was not statistically significant.
  - The difference in oral cancer incidence between non-Hispanic African Americans in Delaware (7.8 per 100,000) and the U.S. (9.3 per 100,000) was not statistically significant.

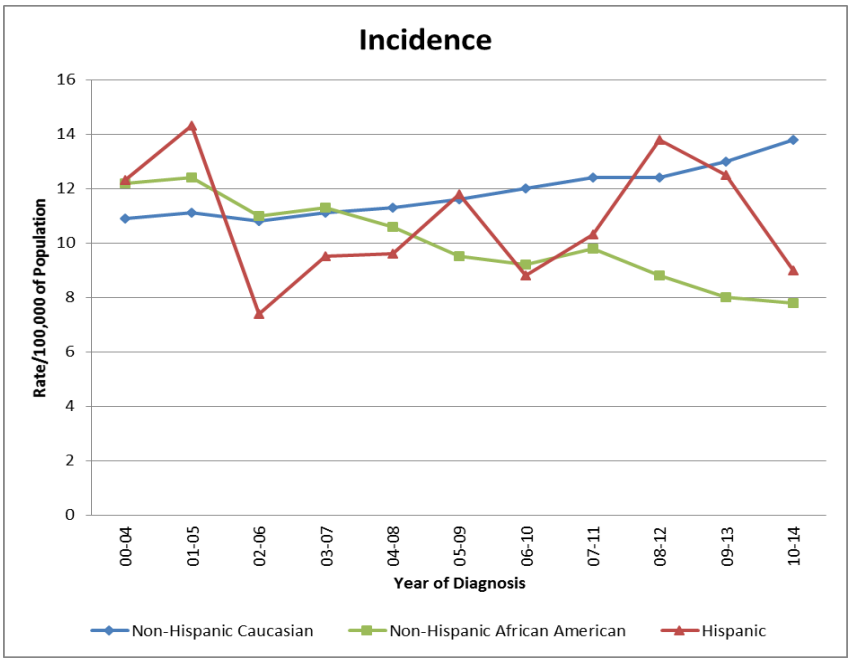
FIGURE 18-2: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for oral cancer increased 9% in Delaware and increased 4% in the U.S.
  - Incidence rates for oral cancer increased 13% in Delaware males and increased 6% in U.S. males.
  - Incidence rates for oral cancer increased 2% in Delaware females and decreased 5% in U.S. females.

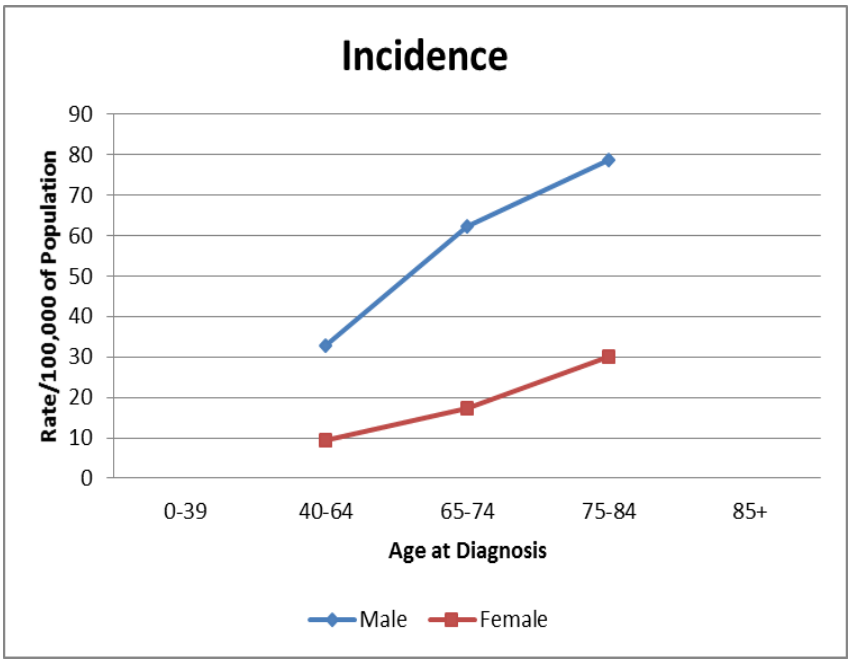
FIGURE 18-3: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for oral cancer increased 27% in non-Hispanic Caucasians.
  - Incidence rates for oral cancer decreased 36% in non-Hispanic African Americans.
  - Incidence rates for oral cancer decreased 27% in Hispanics.

FIGURE 18-4: AGE-SPECIFIC ORAL CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for oral cancer incidence is 75-84 years of age for both males and females. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 18-3: AGE-SPECIFIC ORAL CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	36.3	24.3	---	9.9	---	---
65-74	68.4	---	---	19.5	---	---
75-84	88.1	---	---	32.3	---	---
85+	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasians have a peak age range for oral cancer incidence at 75-84 years of age.

STAGE OF DIAGNOSIS - DELAWARE

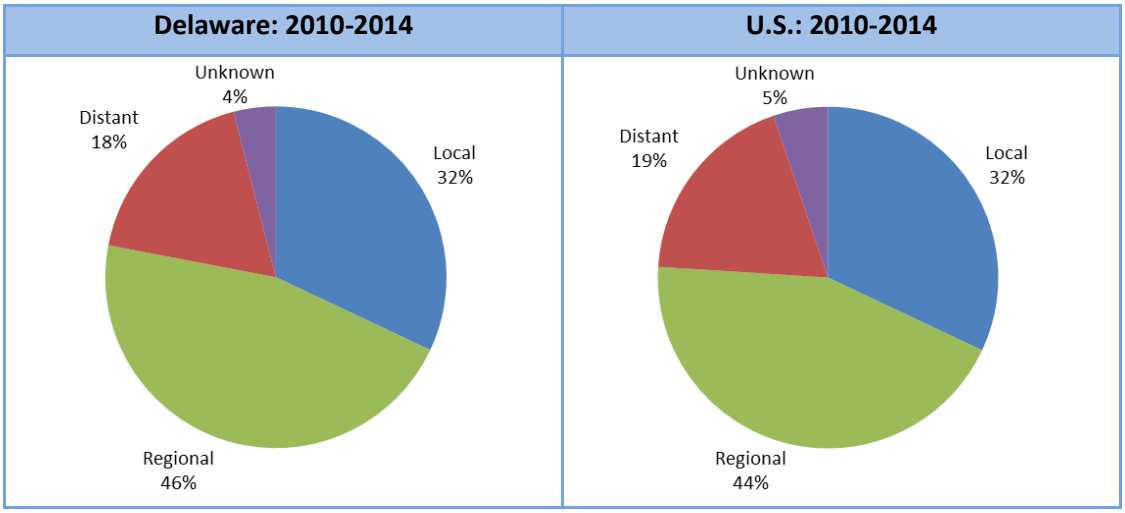
TABLE 18-4: ORAL CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	226 (32)	142 (28)	84 (43)	198 (34)	125 (29)	73 (46)	---	---	---	---	---	---
Regional	319 (46)	254 (50)	65 (34)	268 (46)	219 (51)	49 (31)	35 (45)	25 (46)	10 (44)	9 (53)	---	---
Distant	128 (18)	95 (19)	33 (17)	95 (16)	70 (16)	25 (16)	24 (31)	17 (31)	7 (30)	---	---	---
Unknown	27 (4)	15 (3)	12 (6)	24 (4)	13 (3)	11 (7)	---	---	---	---	---	---
Total	700	506	194	585	427	158	78	55	23	17	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 226 (32%) oral cancers diagnosed at the local stage; 319 (46%) at the regional stage; 128 (18%) at the distant stage; and 27 (4%) had an unknown stage.
- Hispanics (53%) had a higher proportion of oral cancers diagnosed at the regional stage compared to both non-Hispanic Caucasians (46%) and non-Hispanic African Americans (45%).
- Males (28%) had a lower proportion of oral cancers diagnosed at the local stage compared to females (44%).

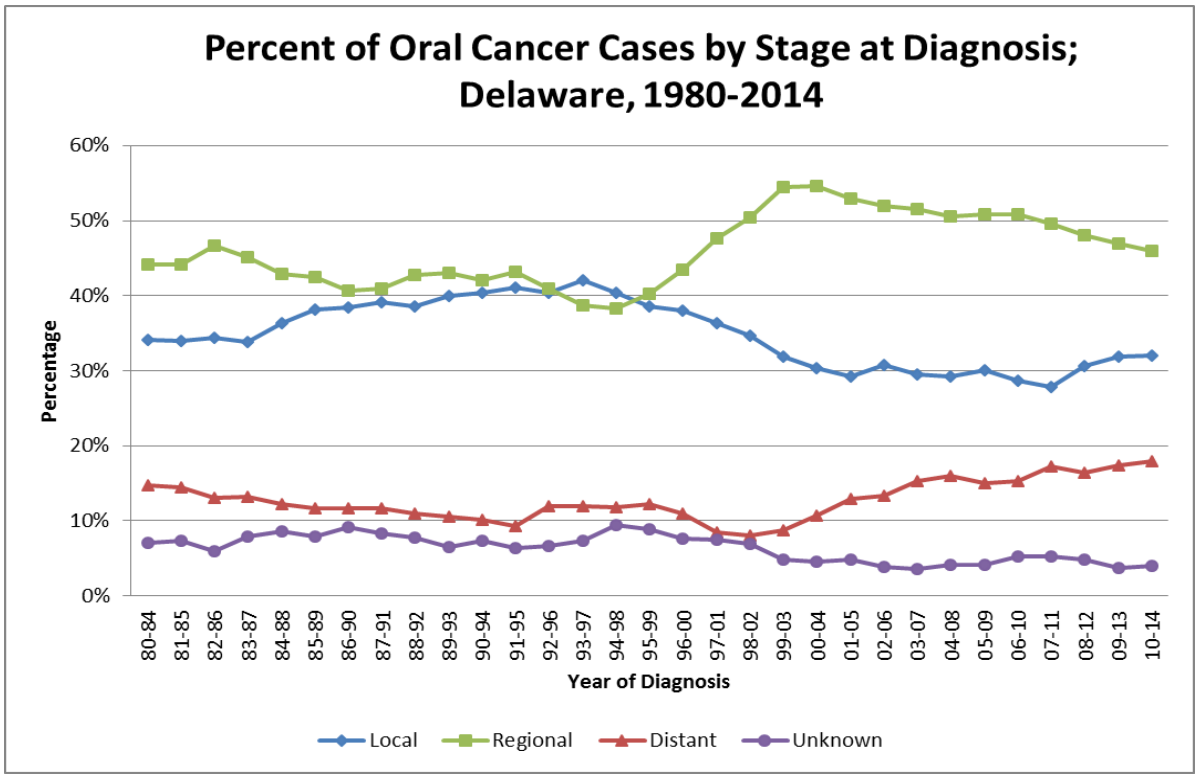
FIGURE 18-5: DISTRIBUTION OF ORAL CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware oral cancer data, more oral cancer was diagnosed at the regional stage in Delaware (46%) compared to the U.S. (44%).

FIGURE 18-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR ORAL CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of oral cancer cases diagnosed at the local stage decreased from 34% to 32%.
  - Oral cancer cases diagnosed at the distant stage increased from 15% to 18%.

MORTALITY

For 2010-2014, Delaware ranked 11th in the U.S. for oral cancer mortality (14th in 2009-2013); males ranked 10th (10th in 2009-2013) and females ranked 11th (38th in 2009-2013)[11].

2010-2014 DATA

TABLE 18-5: NUMBER OF ORAL CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	158	112	46	117	79	38	32	---	---	---	---	---
Kent	40	29	11	28	19	9	---	---	---	---	---	---
New Castle	75	49	26	51	31	20	18	---	---	---	---	---
Sussex	43	34	9	38	29	9	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

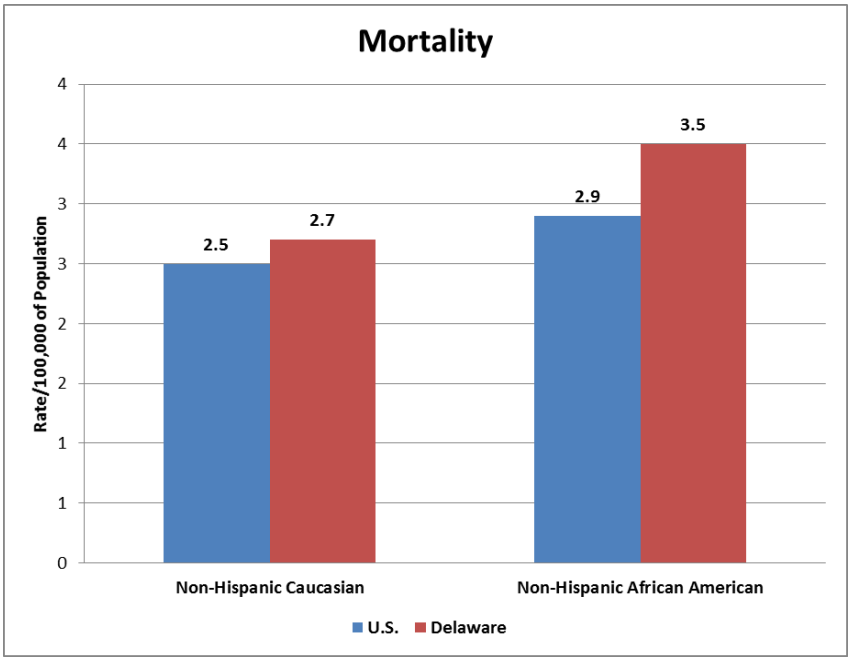
- In 2010-2014, there were 158 deaths (2% of all cancer deaths) from oral cancer in Delaware.
- Males accounted for 71% of oral cancer deaths.
- Non-Hispanic Caucasians accounted for 74% of oral cancer deaths.

TABLE 18-6: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	2.5	3.8	1.3
Delaware	2.9	4.6	1.5
Kent	4.1	6.6	---
New Castle	2.6	3.9	1.6
Sussex	2.8	5.0	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 18-7: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



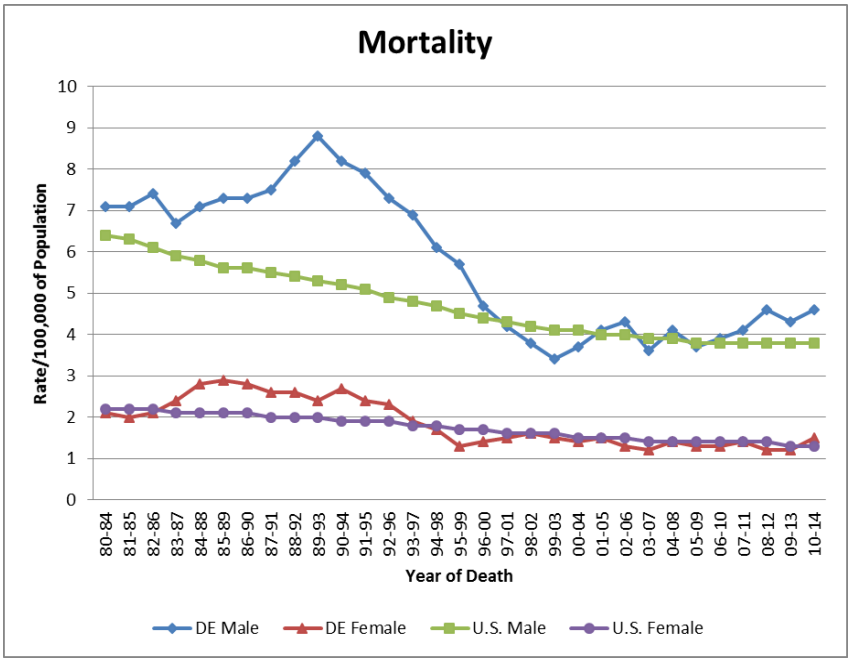
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (4.6 per 100,000) had a statistically significantly higher oral cancer mortality rate compared to females (1.5 per 100,000).
  - The difference in oral cancer mortality rates between non-Hispanic Caucasians (2.7 per 100,000) and non-Hispanic African Americans (3.5 per 100,000) was not statistically significant.
  - Oral cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in oral cancer mortality rates between Delaware (2.9 per 100,000) and the U.S. (2.5 per 100,000) was not statistically significant.
  - The difference in oral cancer mortality rates between males in Delaware (4.6 per 100,000) and the U.S. (3.8 per 100,000) was not statistically significant.
  - The difference in oral cancer mortality rates between females in Delaware (1.5 per 100,000) and the U.S. (1.3 per 100,000) was not statistically significant.
  - The difference in oral cancer mortality rates between non-Hispanic Caucasians in Delaware (2.7 per 100,000) and the U.S (2.5 per 100,000) was not statistically significant.
  - The difference in oral cancer mortality rates between non-Hispanic African Americans in Delaware (3.5 per 100,000) and the U.S. (2.9 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 18-8: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014

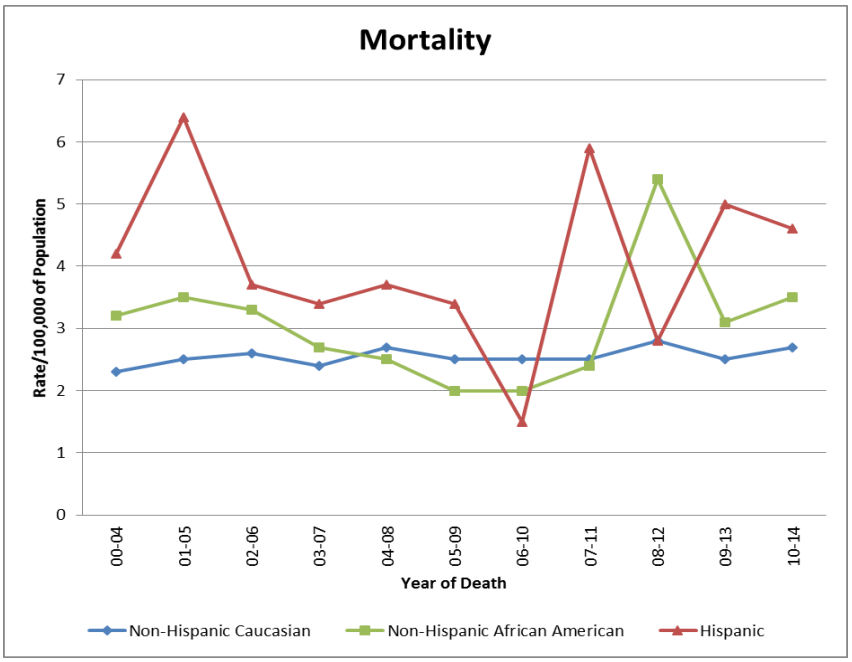


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for oral cancer increased 21% in Delaware and decreased 7% in the U.S.
  - Mortality rates for oral cancer increased 24% in Delaware males and decreased 7% in U.S. males.
  - Mortality rates for oral cancer increased 7% in Delaware females and decreased 13% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 18-9: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for oral cancer increased 17% in non-Hispanic Caucasians.
  - Mortality rates for oral cancer increased 9% in non-Hispanic African Americans.
  - Mortality rates for oral cancer increased 10% in Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

- Due to low numbers, age-specific oral cancer mortality rates were not calculated.

CHAPTER 19: OVARIAN CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting ovarian cancer:

- Obesity
- Never giving birth (risk decreases as number of children increases)
- High-fat diet
- Smoking and alcohol use
- Exposure to talcum powder

The following are *environmental and medically-related* causes of ovarian cancer:

- Estrogen therapy after menopause (risk is higher for females who took estrogen alone for at least five or 10 years)

The following are *non-modifiable* risk factors (these cannot be changed) of getting ovarian cancer:

- Older females are at higher risk (half are found in females 63 years of age and older)
- Family history of ovarian, breast, or colorectal cancer
- Personal history of breast cancer
- Inherited mutation of BRCA1 or BRCA2 genes
- Other genetic changes or syndromes
- Early menses or late menopause
- Polycystic ovary syndrome (PCOS)

Factors that are protective against ovarian cancer include having a hysterectomy or tubal ligation, low-fat diet for a long period of time, taking birth control pills for five or more years, and genetic counseling. Genetic counseling (and subsequent genetic testing) should be considered for females who have a first degree relative with the disease, family members with more than one type of cancer, or multiple generations of close family with any cancer. If it is determined that a woman has a genetic predisposition of ovarian cancer, the following should be considered:

- More frequent ovarian cancer screenings
- Surgery to reduce risk
- Medications to reduce risk

EARLY DETECTION

There is currently no screening test that is reliable enough to screen for ovarian cancer in the general population. Females at high risk can be screened with ultrasound and blood tests.

INCIDENCE

For 2010-2014, Delaware ranked 31st in the U.S. for ovarian cancer incidence (26th in 2009-2013)[10].

2010-2014 DATA

TABLE 19-1: NUMBER OF OVARIAN CANCER CASES, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	330	265	45	10
Kent	62	48	12	---
New Castle	153	115	24	---
Sussex	115	102	9	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- Ovarian cancer is the fifth most commonly diagnosed cancer among females[20].
- In 2010-2014, there were 330 ovarian cancer cases (2% of all female cancer cases) diagnosed in Delaware.
- Non-Hispanic Caucasians accounted for 80% of ovarian cancer cases.

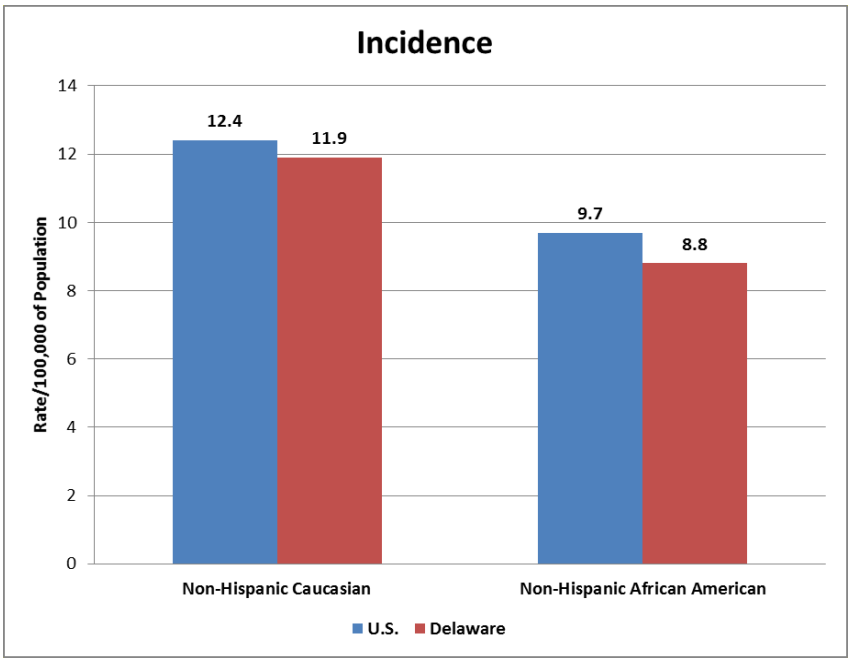
TABLE 19-2: FIVE-YEAR AVERAGE AGE-ADJUSTED OVARIAN CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	11.7	12.4	9.7	10.6
Delaware	11.2	11.9	8.8	---
Kent	11.7	12.1	---	---
New Castle	9.4	10.0	---	---
Sussex	15.1	16.1	---	---

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

[20] American Cancer Society, March 12, 2015. Available at http://www.cancer.org/cancer/ovariancancer/detailedguide/ovarian-cancer-key-statistics

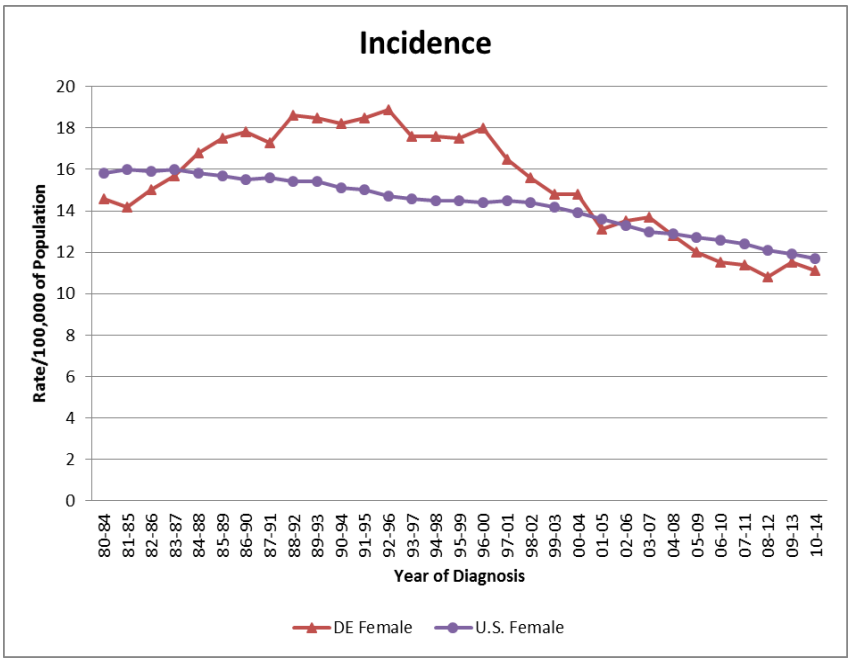
FIGURE 19-1: FIVE-YEAR AVERAGE AGE-ADJUSTED OVARIAN CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in ovarian cancer incidence rates between non-Hispanic Caucasians (11.9 per 100,000) and non-Hispanic African Americans (8.8 per 100,000) was not statistically significant.
  - Ovarian cancer incidence rates for Hispanics could not be calculated due to the low number of deaths.
- Comparing Delaware and the U.S.
  - The difference in ovarian cancer incidence rates between Delaware (11.2 per 100,000) and the U.S. (11.7 per 100,000) was not statistically significant.
  - The difference in ovarian cancer incidence rates between non-Hispanic Caucasians in Delaware (11.9 per 100,000) and the U.S. (12.4 per 100,000) was not statistically significant.
  - The difference in ovarian cancer incidence rates between non-Hispanic African Americans in Delaware (8.8 per 100,000) and the U.S. (9.7 per 100,000) was not statistically significant.

FIGURE 19-2: FIVE-YEAR AVERAGE AGE-ADJUSTED OVARIAN CANCER INCIDENCE RATES; U.S. AND DELAWARE, 1980-2014

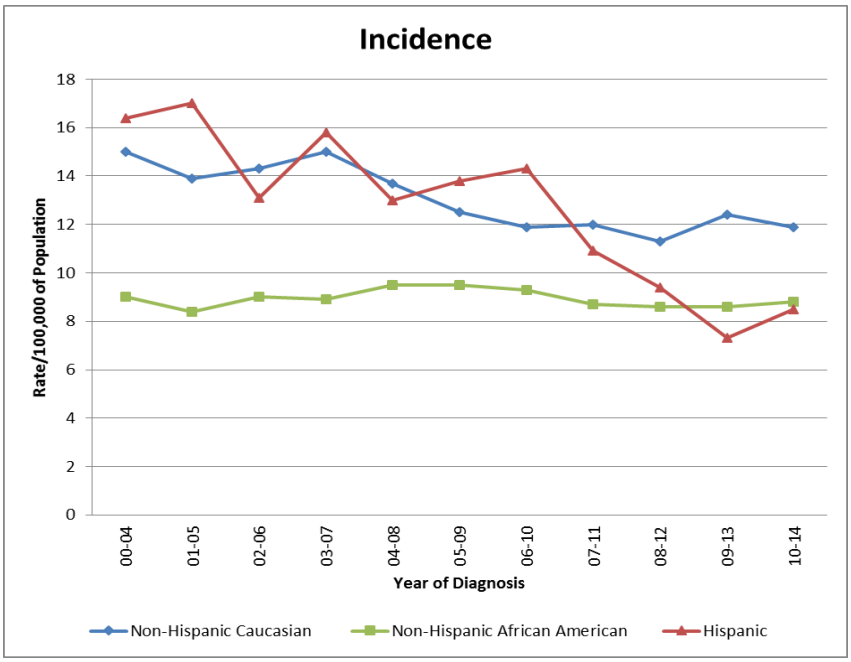


Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- For the time period of 2000-2004 to 2010-2014
  - Incidence rates for ovarian cancer decreased 24% in Delaware and decreased 16% in the U.S.

TRENDS OVER TIME - DELAWARE

FIGURE 19-3: FIVE-YEAR AVERAGE AGE-ADJUSTED OVARIAN CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for ovarian cancer decreased 21% in non-Hispanic Caucasians.
  - Incidence rates for ovarian cancer decreased 2% in non-Hispanic African Americans.
  - Incidence rates for ovarian cancer decreased 48% in Hispanics.

AGE-SPECIFIC INCIDENCE RATES - DELAWARE

TABLE 19-3: AGE-SPECIFIC OVARIAN CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---
40-64	16.5	18.7	---	---
65-74	39.5	39.8	---	---
75-84	44.8	48.4	---	---
85+	48.4	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for ovarian cancer incidence is 85 years of age and older. Due to low numbers, incidence rates could not be calculated for some groups.

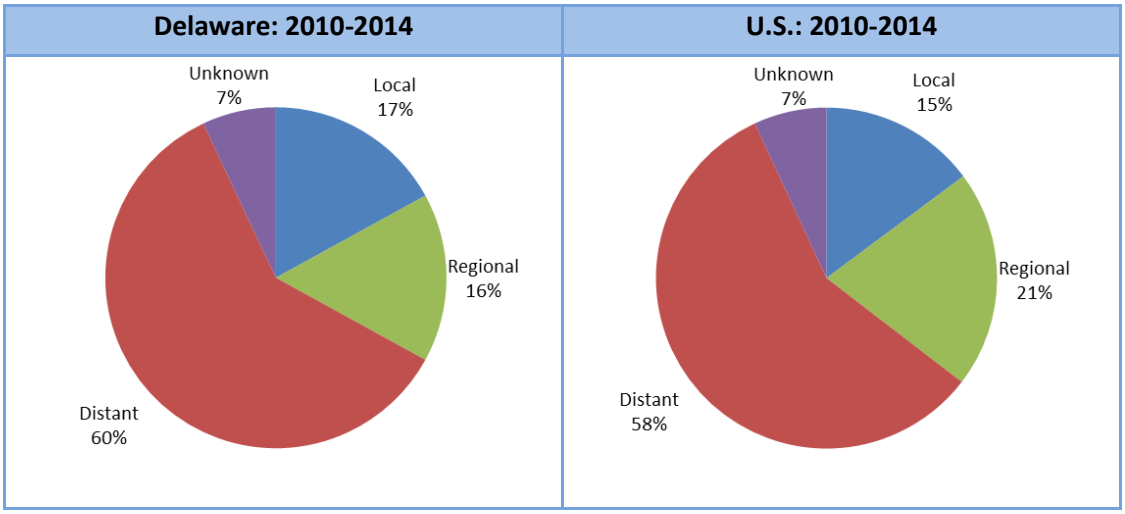
TABLE 19-4: OVARIAN CANCER CASES BY STAGE AT DIAGNOSIS BY RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Local	57 (17)	45 (17)	---	---
Regional	51 (16)	38 (14)	9 (20)	---
Distant	197 (60)	162 (61)	24 (53)	7 (70)
Unknown	25 (8)	20 (8)	---	---
Total	330	265	45	10

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 57 (17%) ovarian cancers diagnosed at the local stage; 51 (16%) at the regional stage; 197 (60%) at the distant stage; and 25 (8%) had an unknown stage.
- Hispanics (70%) had a higher proportion of ovarian cancers diagnosed at the distant stage compared to both non-Hispanic Caucasians (61%) and non-Hispanic African Americans (53%).

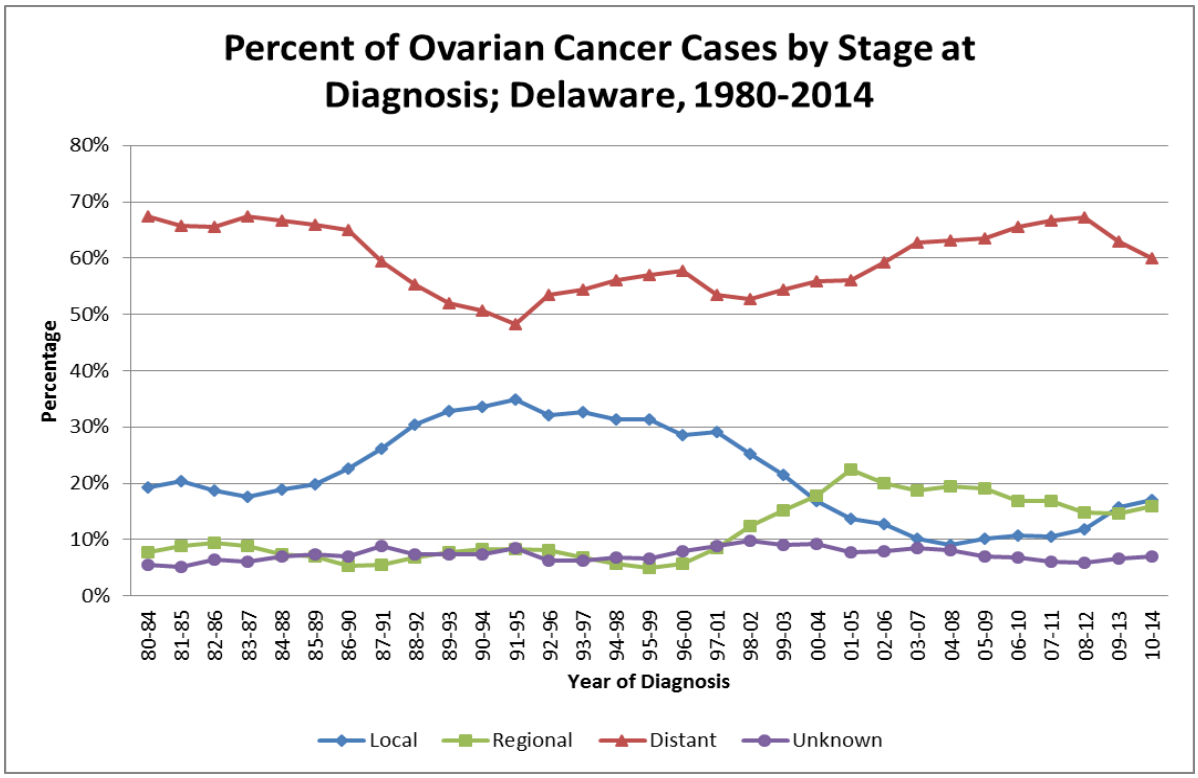
FIGURE 19-4: DISTRIBUTION OF OVARIAN CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware ovarian cancer data, more ovarian cancer is diagnosed at the distant stage in Delaware (60%) compared to the U.S. (58%).

FIGURE 19-5: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR OVARIAN CANCER CASES; DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of ovarian cancer cases diagnosed at the local stage decreased from 19% to 17%.
  - Ovarian cancer cases diagnosed at the distant stage decreased from 67% to 60%.

MORTALITY

For 2010-2014, Delaware ranked 37th in the U.S. for ovarian cancer mortality (28th in 2009-2013)[11].

2010-2014 DATA

TABLE 19-5: NUMBER OF OVARIAN CANCER DEATHS, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	226	184	36	---
Kent	43	36	---	---
New Castle	115	86	24	---
Sussex	68	62	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

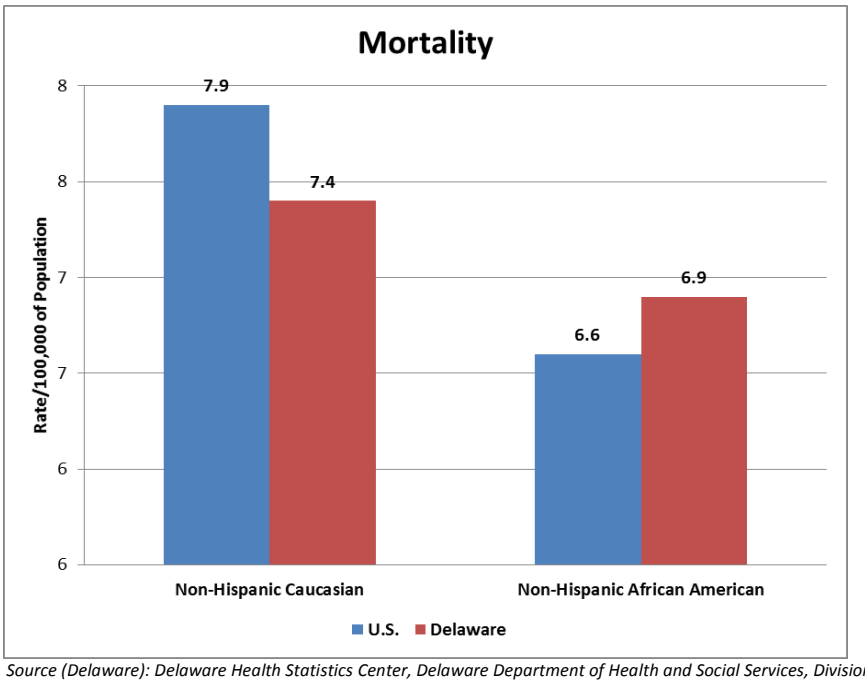
- In 2010-2014, there were 226 deaths (5% of all female cancer deaths) from ovarian cancer in Delaware.
- Non-Hispanic Caucasians accounted for 81% of ovarian cancer deaths.

TABLE 19-6: FIVE-YEAR AVERAGE AGE-ADJUSTED OVARIAN CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	7.4	7.9	6.6	5.4
Delaware	7.3	7.4	6.9	---
Kent	8.2	9.0	---	---
New Castle	6.8	6.6	---	---
Sussex	7.6	7.7	---	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health,, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

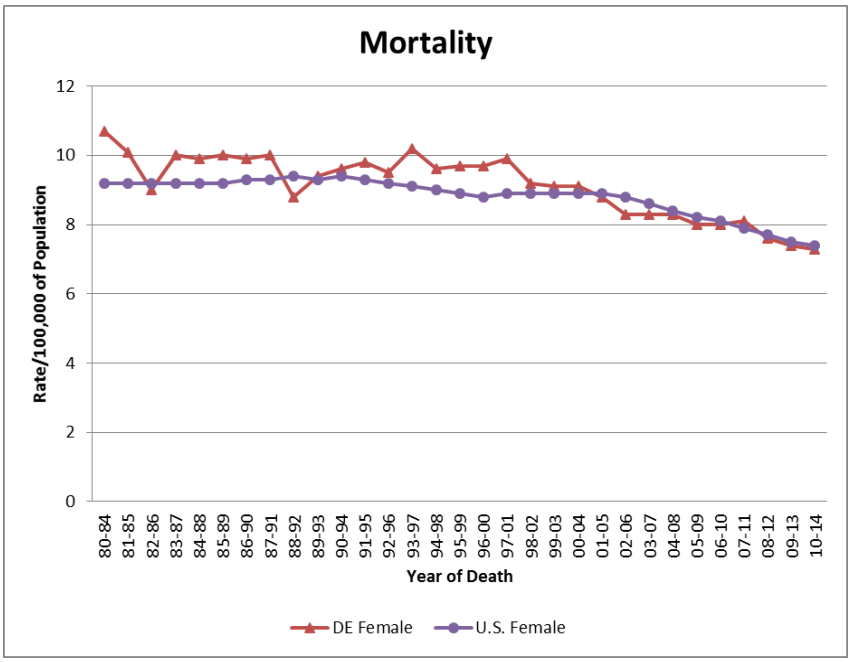
FIGURE 19-6: FIVE-YEAR AVERAGE AGE-ADJUSTED OVARIAN CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in ovarian cancer mortality rates between non-Hispanic Caucasians (7.4 per 100,000) and non-Hispanic African Americans (6.9 per 100,000) was not statistically significant.
  - Ovarian cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.
- Comparing Delaware and the U.S.
  - The difference in ovarian cancer mortality rates between Delaware (7.3 per 100,000) and the U.S. (7.4 per 100,000) was not statistically significant.
  - The difference in ovarian cancer mortality rates between non-Hispanic Caucasians in Delaware (7.4 per 100,000) and the U.S. (7.9 per 100,000) was not statistically significant.
  - The difference in ovarian cancer mortality rates between non-Hispanic African Americans in Delaware (6.9 per 100,000) and the U.S. (6.6 per 100,000) was not statistically significant.

FIGURE 19-7: FIVE-YEAR AVERAGE AGE-ADJUSTED OVARIAN CANCER MORTALITY RATES; U.S. AND DELAWARE, 1980-2014

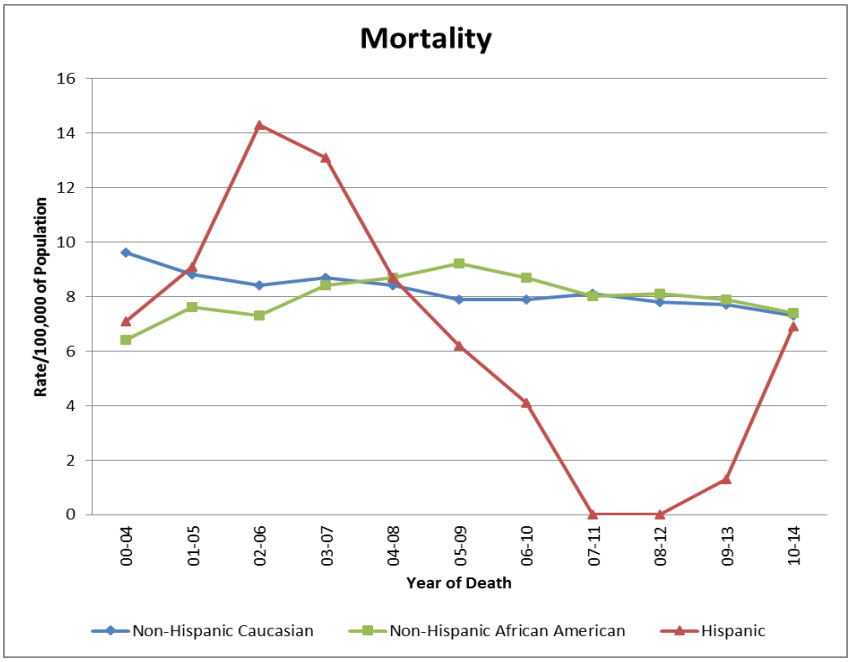


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for ovarian cancer decreased 20% in Delaware and decreased 17% in the U.S.

TRENDS OVER TIME - DELAWARE

FIGURE 19-8: FIVE-YEAR AVERAGE AGE-ADJUSTED OVARIAN CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for ovarian cancer decreased 24% in non-Hispanic Caucasians.
  - Mortality rates for ovarian cancer increased 16% in non-Hispanic African Americans.
  - Mortality rates for ovarian cancer decreased 3% in Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 19-7: AGE-SPECIFIC OVARIAN CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---
40-64	9.7	10.0	---	---
65-74	25.1	24.0	---	---
75-84	39.3	39.7	---	---
85+	57.9	62.8	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for ovarian cancer mortality is 85 years of age and older. Due to low numbers, mortality rates could not be calculated for some groups.

CHAPTER 20: PANCREATIC CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting pancreatic cancer:

- Smoking increases risk two to three times more than not smoking.
- Overweight or obesity

The following are *environmental and medically-related* causes of pancreatic cancer:

- Workplace exposures to chemicals used in the dry cleaning and metal working industries

The following are *non-modifiable* risk factors (these cannot be changed) of getting pancreatic cancer:

- Risk of developing pancreatic cancer increases with age (two-thirds are at least 65 years of age).
- Males are more likely to develop pancreatic cancer.
- Non-Hispanic African Americans are more likely to develop pancreatic cancer compared to non-Hispanic Caucasians.
- Certain hereditary conditions (familial pancreatitis, Lynch syndrome, hereditary breast and ovarian cancer syndrome)
- Type 2 diabetes

To protect against pancreatic cancer individuals should manage lifestyle risk factors such as eating a healthy diet (high in fruits, vegetables and whole grains), avoid tobacco, limit alcohol use (two drinks a day for males and one drink a day for females), and increase physical activity.

EARLY DETECTION

There are currently no screening tests recommended for pancreatic cancer. Individuals with a strong family history may want to consider genetic counseling.

INCIDENCE

For 2010-2014, Delaware ranked 6th in the U.S. for pancreatic cancer incidence (4th in 2009-2013); males ranked 4th (2nd in 2009-2013) and females ranked 8th (10th in 2009-2013)[10].

2010-2014 DATA

TABLE 20-1: NUMBER OF PANCREATIC CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	777	405	372	598	329	269	137	57	80	27	12	15
Kent	125	71	54	97	61	36	22	8	14	---	---	---
New Castle	412	199	213	297	152	145	92	39	53	13	---	---
Sussex	240	135	105	204	116	88	23	10	13	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 777 pancreatic cancer cases (3% of all cancer cases) diagnosed in Delaware.
- Males accounted for 52% of pancreatic cancer cases.

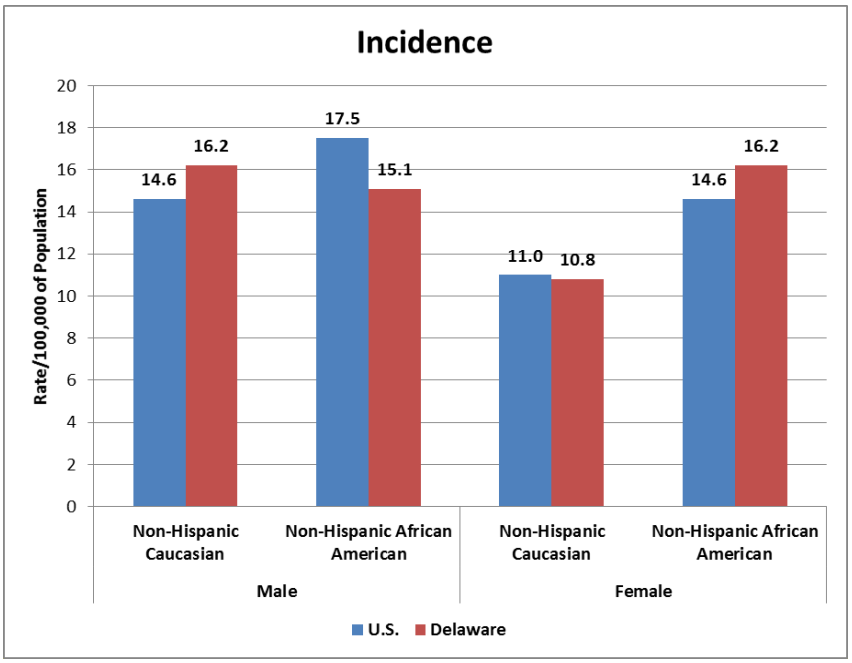
- Non-Hispanic Caucasians accounted for 77% of pancreatic cancer cases.

TABLE 20-2: FIVE-YEAR AVERAGE AGE-ADJUSTED PANCREATIC CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	12.5	14.2	11.1
Delaware	13.8	16.0	12.0
Kent	13.0	16.1	10.2
New Castle	13.7	14.8	12.8
Sussex	14.7	18.0	11.8

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 20-1: FIVE-YEAR AVERAGE AGE-ADJUSTED PANCREATIC CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



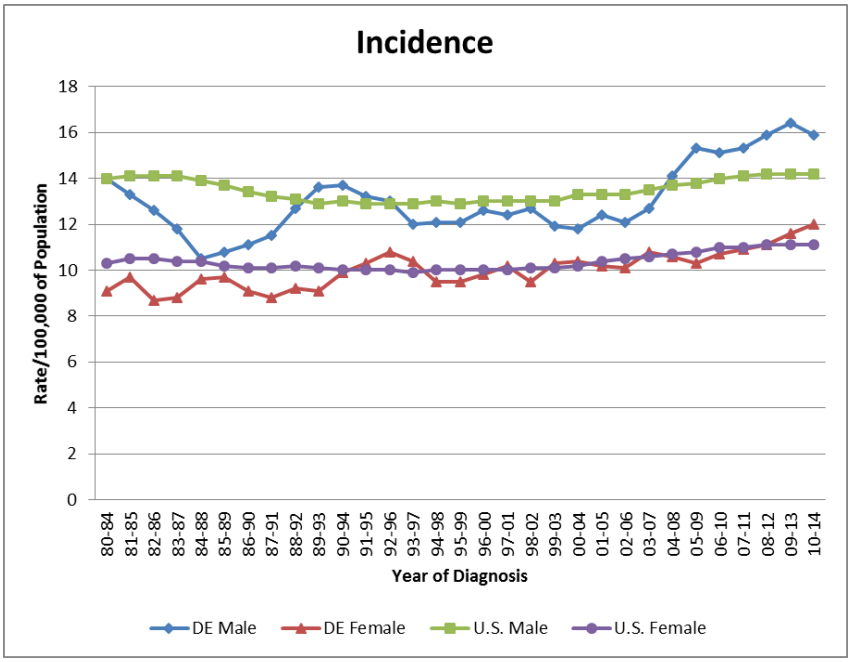
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (16.0 per 100,000) had a statistically significantly higher pancreatic cancer incidence rate compared to females (12.0 per 100,000).
  - The difference in pancreatic cancer incidence rates between non-Hispanic Caucasians (13.3 per 100,000), non-Hispanic African Americans (15.7 per 100,000), and Hispanics (15.9 per 100,000) was not statistically significant.
- Comparing Delaware and the U.S.
  - Delaware (13.8 per 100,000) had a statistically significantly higher pancreatic cancer incidence rate compared to the U.S. (12.5 per 100,000).
  - The difference in pancreatic cancer incidence rates between males in Delaware (16.0 per 100,000) and the U.S. (14.2 per 100,000) was not statistically significant.

- The difference in pancreatic cancer incidence rates between females in Delaware (12.0 per 100,000) and the U.S. (11.1 per 100,000) was not statistically significant.
- The difference in pancreatic cancer incidence rates between non-Hispanic Caucasians in Delaware (13.3 per 100,000) and the U.S. (12.7 per 100,000) was not statistically significant.
- The difference in the pancreatic cancer incidence rates between non-Hispanic African Americans in Delaware (15.7 per 100,000) and the U.S. (15.9 per 100,000) was not statistically significant.
- The difference in the pancreatic cancer incidence rates between Hispanics in Delaware (15.9 per 100,000) and the U.S. (11.1 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

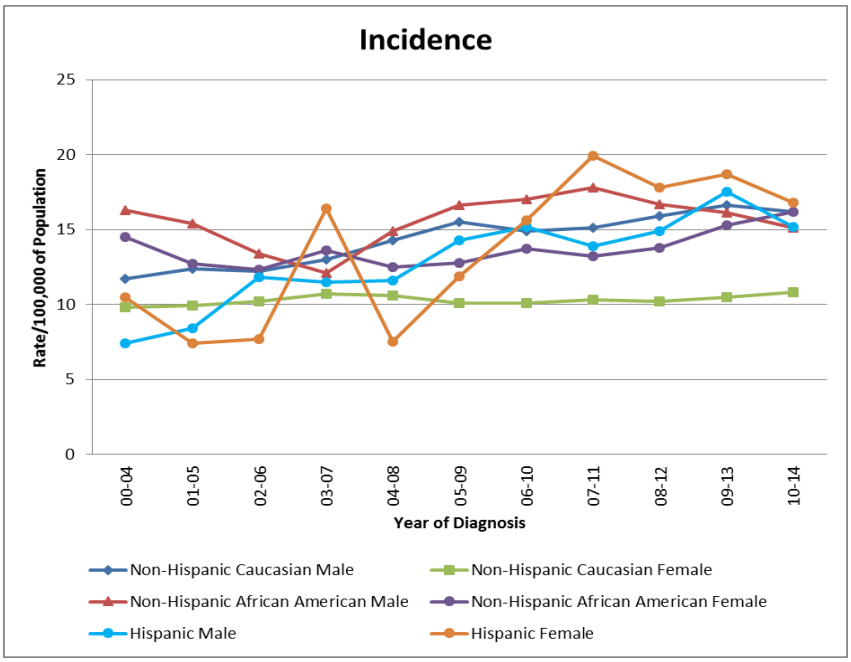
FIGURE 20-2: FIVE-YEAR AVERAGE AGE-ADJUSTED PANCREATIC CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for pancreatic cancer increased 34% in Delaware and increased 8% in the U.S.
  - Incidence rates for pancreatic cancer increased 35% in Delaware males and increased 7% in U.S. males.
  - Incidence rates for pancreatic cancer increased 15% in Delaware females and increased 9% in U.S. females.

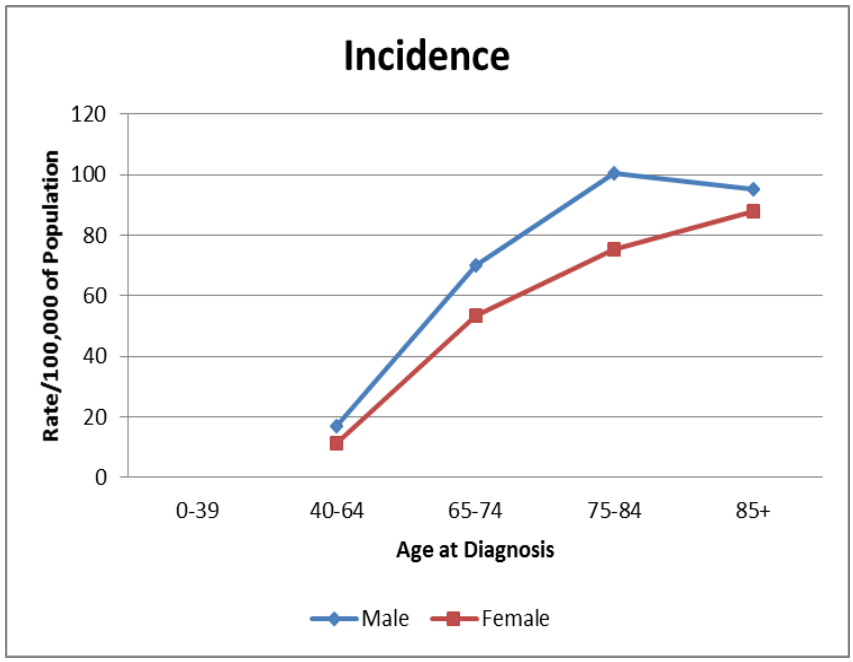
FIGURE 20-3: FIVE-YEAR AVERAGE AGE-ADJUSTED PANCREATIC CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for pancreatic cancer increased 38% in non-Hispanic Caucasian males and increased 10% in non-Hispanic Caucasian females.
  - Incidence rates for pancreatic cancer decreased 7% in non-Hispanic African American males and increased 12% in non-Hispanic African American females.
  - Incidence rates for pancreatic cancer increased 105% in Hispanic males and increased 60% in Hispanic females.

FIGURE 20-4: AGE-SPECIFIC PANCREATIC CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for pancreatic cancer incidence is 75-84 years of age for males and 85 years of age and older for females. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 20-3: AGE-SPECIFIC PANCREATIC CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	16.5	17.9	---	9.7	17.2	---
65-74	71.2	---	---	52.9	---	---
75-84	106.4	---	---	69.5	---	---
85+	---	---	---	81.6	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasians had a peak age range for pancreatic cancer incidence at 75-84 years of age.

STAGE OF DIAGNOSIS - DELAWARE

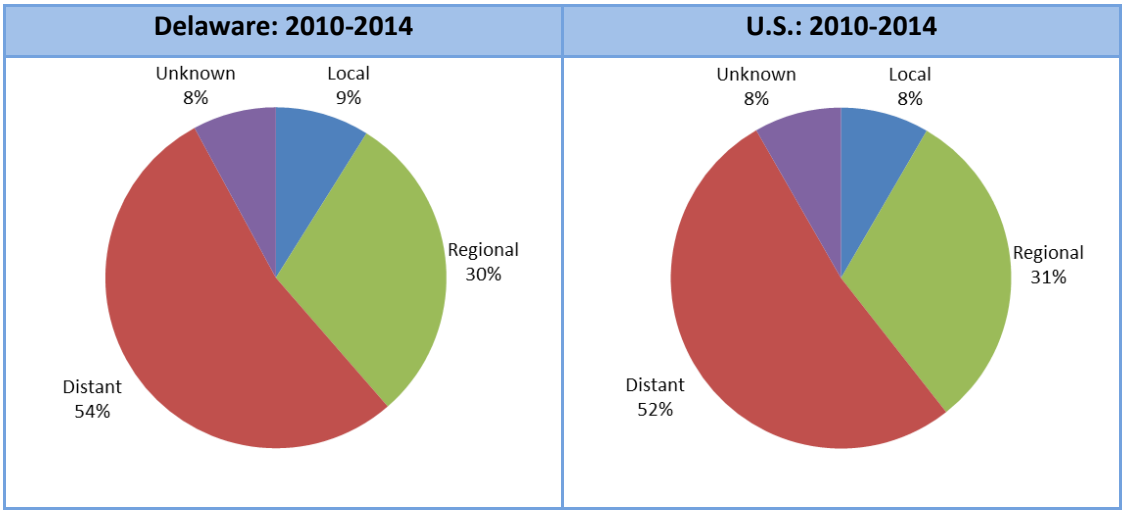
TABLE 20-4: PANCREATIC CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	68 (9)	39 (10)	29 (8)	50 (8)	30 (9)	20 (7)	13 (10)	---	---	---	---	---
Regional	229 (30)	112 (28)	117 (32)	175 (29)	89 (27)	86 (32)	41 (30)	18 (32)	23 (29)	6 (22)	---	---
Distant	417 (54)	225 (56)	192 (52)	325 (54)	184 (56)	141 (52)	75 (55)	31 (54)	44 (55)	14 (52)	8 (67)	6 (40)
Unknown	63 (8)	29 (7)	34 (9)	48 (8)	26 (8)	22 (8)	8 (6)	---	---	---	---	---
Total	777	405	372	598	329	269	137	57	80	27	12	15

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 68 (9%) pancreatic cancers diagnosed at the local stage; 229 (30%) at the regional stage; 417 (54%) at the distant stage; and 63 (8%) had an unknown stage.
- Non-Hispanic African American (55%) had a higher proportion of pancreatic cancers diagnosed at the distant stage compared to both non-Hispanic Caucasians (54%) and Hispanics (52%).
- Males (55%) had a higher proportion of pancreatic cancers diagnosed at the distant stage compared to females (52%).

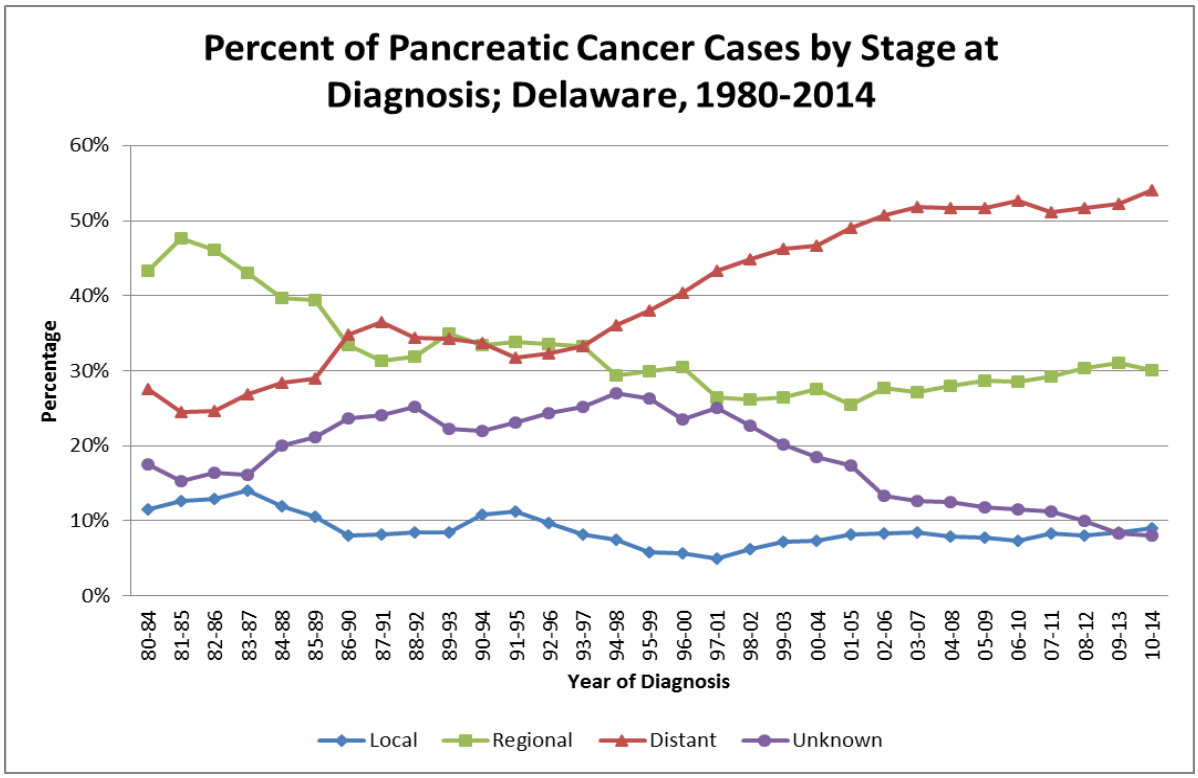
FIGURE 20-5: DISTRIBUTION OF PANCREATIC CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware pancreatic cancer data, Delaware (54%) had a higher proportion of pancreatic cancer diagnosed at the distant stage compared to the U.S. (52%).

FIGURE 20-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR PANCREATIC CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of pancreatic cancer cases diagnosed at the local stage decreased from 11% to 9%.
  - Pancreatic cancer cases diagnosed at the distant stage increased from 28% to 54%.

MORTALITY

For 2010-2014, Delaware ranked 6th in the U.S. for pancreatic cancer mortality (16th in 2009-2013); males ranked 4th (6th in 2009-2013) and females ranked 26th (27th in 2009-2013)[11].

2010-2014 DATA

TABLE 20-5: NUMBER OF PANCREATIC CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	642	345	297	508	286	222	109	47	62	17	9	8
Kent	115	64	51	87	51	36	23	11	12	---	---	---
New Castle	331	168	163	250	132	118	67	29	38	8	---	---
Sussex	196	113	83	171	103	68	19	7	12	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 642 deaths (7% of all cancer deaths) from pancreatic cancer in Delaware.

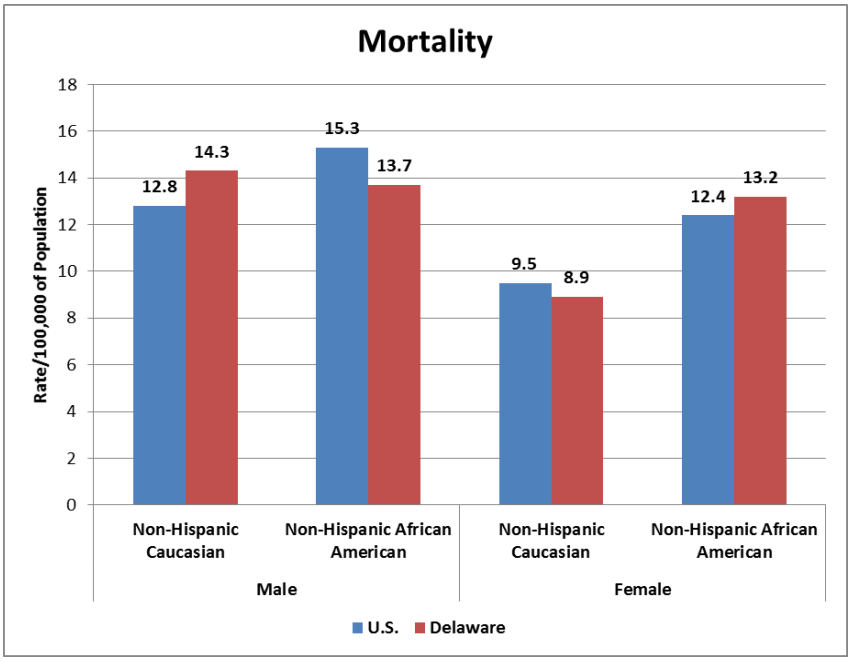
- Males accounted for 54% of pancreatic cancer deaths.
- Non-Hispanic Caucasians accounted for 79% of pancreatic cancer deaths.

TABLE 20-6: FIVE-YEAR AVERAGE AGE-ADJUSTED PANCREATIC CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	10.9	12.6	9.5
Delaware	11.8	14.3	9.8
Kent	12.5	15.5	9.9
New Castle	11.5	13.5	10.1
Sussex	11.9	15.1	9.2

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 20-7: FIVE-YEAR AVERAGE AGE-ADJUSTED PANCREATIC CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



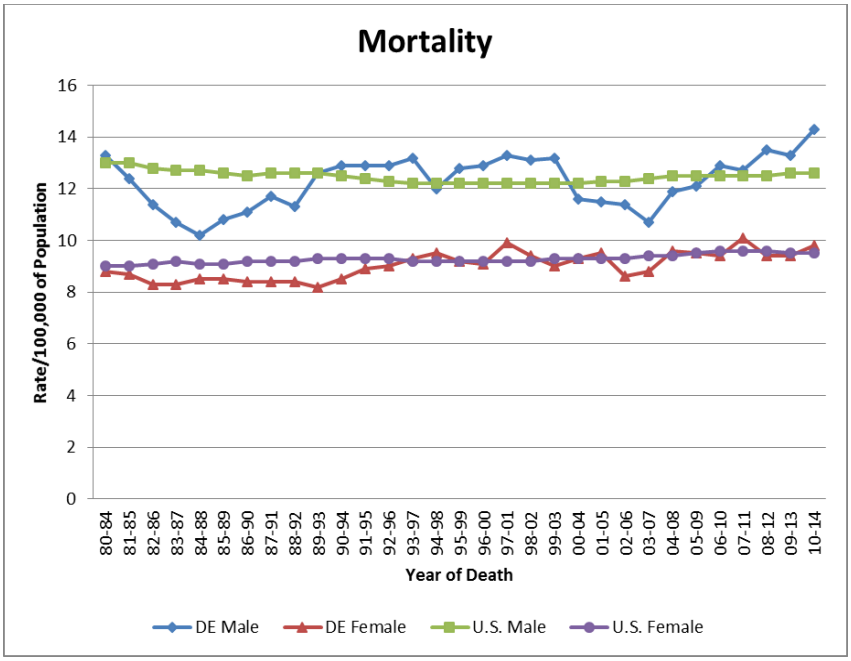
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (14.3 per 100,000) had a statistically significantly higher pancreatic cancer mortality rate compared to females (9.8 per 100,000).
  - The difference in pancreatic cancer mortality rates between non-Hispanic Caucasians (11.3 per 100,000) and non-Hispanic African Americans (13.3 per 100,000) was not statistically significant.
  - Pancreatic cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in pancreatic cancer mortality rates between Delaware (11.8 per 100,000) and the U.S. (10.9 per 100,000) was not statistically significant.
  - Males in Delaware (14.3 per 100,000) had a statistically significantly higher pancreatic cancer mortality rate compared to males in the U.S. (12.6 per 100,000).
  - The difference in pancreatic cancer mortality rates between females in Delaware (9.8 per 100,000) and the U.S. (9.5 per 100,000) was not statistically significant.
  - The difference in pancreatic cancer mortality rates between non-Hispanic Caucasians in Delaware (11.3 per 100,000) and the U.S (11.0 per 100,000) was not statistically significant.
  - The difference in pancreatic cancer mortality rates between non-Hispanic African Americans in Delaware (13.3 per 100,000) and the U.S (13.7 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

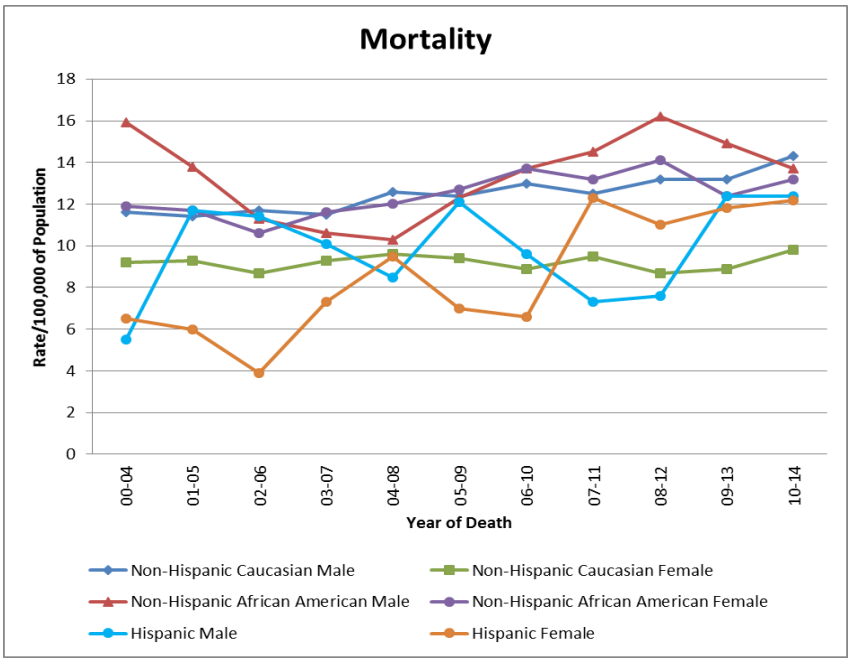
FIGURE 20-8: FIVE-YEAR AVERAGE AGE-ADJUSTED PANCREATIC CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for pancreatic cancer increased 13% in Delaware and increased 3% in the U.S.
  - Mortality rates for pancreatic cancer increased 23% in Delaware males and increased 3% in U.S males.
  - Mortality rates for pancreatic cancer increased 5% in Delaware females and increased 2% in U.S females.

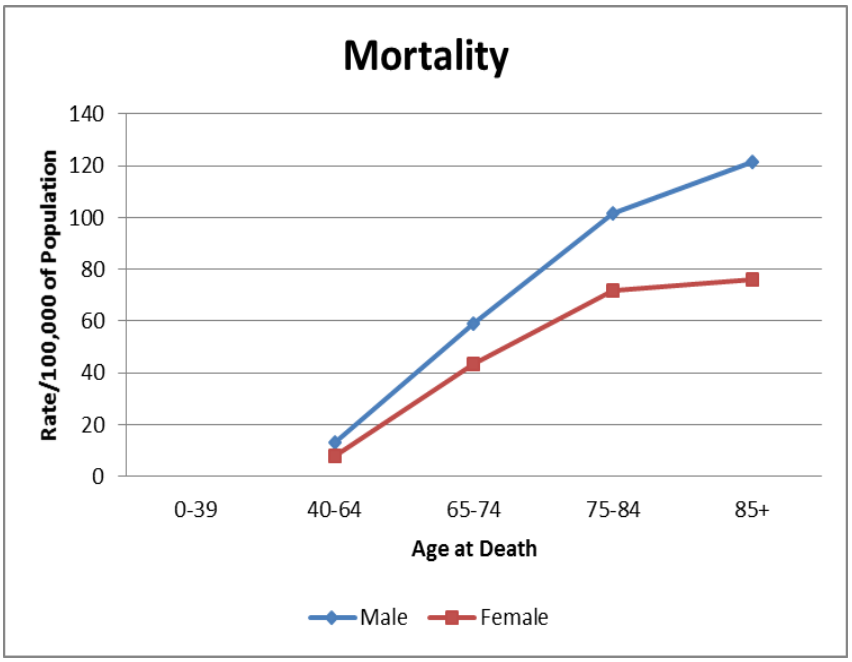
FIGURE 20-9: FIVE-YEAR AVERAGE AGE-ADJUSTED PANCREATIC CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for pancreatic cancer increased 23% in non-Hispanic Caucasian males and increased 7% in non-Hispanic Caucasian females.
  - Mortality rates for pancreatic cancer decreased 14% in non-Hispanic African American males and increased 11% in non-Hispanic African American females.
  - Mortality rates for pancreatic cancer increased 125% in Hispanic males and increased 88% in Hispanic females.

FIGURE 20-10: AGE-SPECIFIC PANCREATIC CANCER MORTALITY RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for pancreatic cancer mortality is 85 years of age and older for both males and females.

TABLE 20-7: AGE-SPECIFIC PANCREATIC CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	12.7	---	---	7.3	---	---
65-74	60.3	---	---	40.1	---	---
75-84	103.9	---	---	66.9	---	---
85+	114.2	---	---	69.0	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasian males and females had a peak age range for pancreatic cancer mortality at 85 years of age and older. Due to low numbers, mortality rates could not be calculated for some groups.

CHAPTER 21: PROSTATE CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting prostate cancer:

- A diet high in red meat and/or high-fat dairy products
- A diet low in fruits and vegetables
- Obesity
- Tobacco and heavy alcohol use

The following are *environmental and medically-related* causes of prostate cancer:

- Employment involving following industries: welding, battery manufacturers, rubber (being a worker), and workers exposed to cadmium

The following are *non-modifiable* risk factors (these cannot be changed) of getting prostate cancer:

- Age (risk increases after 50 years of age)
- Race (non-Hispanic African Americans are at higher risk) and ethnicity (Hispanics are at lower risk)
- Nationality (higher risk in males from North America and northwestern Europe)
- Family history of prostate cancer or inherited DNA changes (heredity prostate cancer gene 1)
- Gene mutations that occur during a man's life
- Higher levels of certain male hormones, e.g. testosterone
- Infection and inflammation of the prostate gland (prostatitis)
- Certain genes like the BRCA1 and BRCA2 genes

To protect against prostate cancer, individuals should maintain a healthy weight, consume a diet high in fruits, vegetables, and whole grains; limit calcium intake, and engage in regular physical activity.

EARLY DETECTION

The ACS recommends that males make an informed decision with their health care provider about whether to be screened for prostate cancer. Males should receive information from their doctors about the risks and possible benefits of prostate cancer screening. Males should not be screened unless they receive this information[21].

The DCC recommends the following prostate cancer screening guidelines for Delaware males:

- No mass prostate cancer screening efforts
- Promote education for informed prostate cancer screening decision-making
- Screening in males older than 75 years of age is less desirable; however, screening decisions should be made on an individual basis.
- Screening is not recommended for males with a life expectancy of less than 10 years
- Offer screening for individuals considered to be at average risk for the disease beginning at 50 years of age, using an informed decision-making process
- High-risk individuals should be encouraged to be screened at 40 years of age if they:
  - Have first degree relatives with prostate cancer
  - Are non-Hispanic African American males
  - Have family or personal history of BRCA1 or BRCA2 gene.

[21] American Cancer Society; Prostate Cancer: Early Detection.
http://www.cancer.org/cancer/prostatecancer/moreinformation/prostatecancerearlydetection/prostate-cancer-early-detection-acs-recommendations

- Screening at one-to-two year intervals via prostate specific antigen (PSA) test, with or without digital rectal exam (DRE)

PROSTATE CANCER SCREENING IN DELAWARE

Data from the 2016 BRFS provides information on the prevalence of prostate cancer screening among Delaware males:

- 45% of Delaware males 40 years of age and older reported having had a PSA blood test in the past two years, compared to the national median prevalence of 39%.
- The prevalence of Delaware males who received a PSA test within the past two years increased with age: 44% of males 50-59 years of age were tested compared to 65% of males 65 years of age and older. This difference was statistically significant.
- In Delaware, there was no statistically significant difference in the prevalence of having a PSA test within the past two years between non-Hispanic Caucasian males (47%) and non-Hispanic African American males (46%).
- As the level of education increased, the prevalence of Delaware males who had had a PSA test within the past two years increased. Only 28% of Delaware males with less than high school education reported having a PSA test within the past two years, compared to 53% of Delaware males who graduated from college. This difference was statistically significant.
- According to the 2015 BRFS report, 28% of Delaware males reported making the decision together with their health care provider to have the PSA test done.

INCIDENCE

For 2010-2014, Delaware ranked 3rd in the U.S. for prostate cancer incidence (3rd in 2009-2013)[10].

2010-2014 DATA

TABLE 21-1: NUMBER OF PROSTATE CANCER CASES, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	3,854	2,769	919	103
Kent	727	464	228	22
New Castle	2,057	1,386	572	68
Sussex	1,070	919	119	13

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

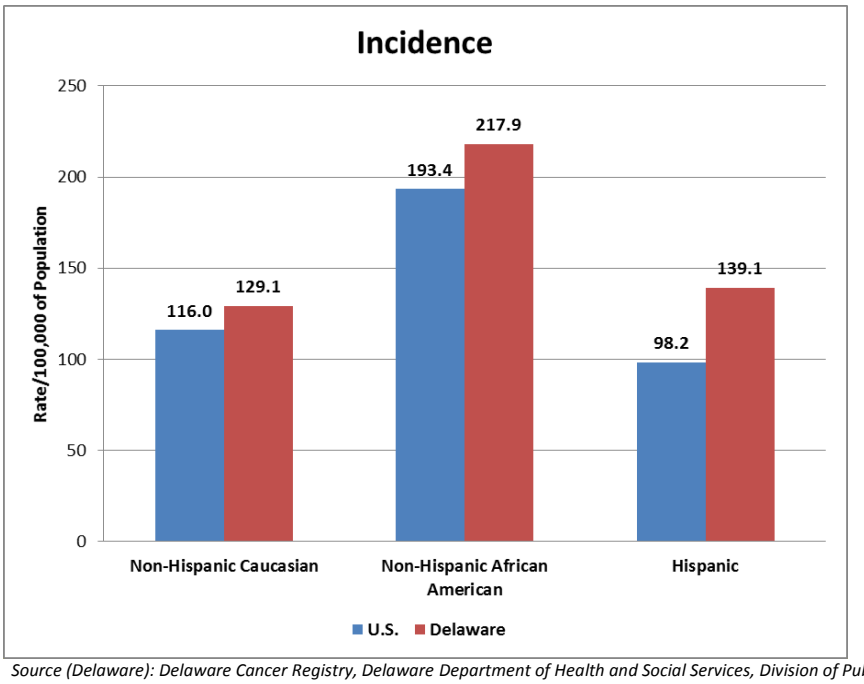
- Prostate cancer is the most commonly diagnosed cancer among males in the U.S. and Delaware.
- In 2010-2014, there were 3,854 prostate cancer cases (27% of all male cancer cases) diagnosed in Delaware.
- Non-Hispanic Caucasians accounted for 72% of prostate cancer cases.

TABLE 21-2: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	119.8	116.0	193.4	98.2
Delaware	142.4	129.1	217.9	139.1
Kent	157.2	131.5	257.3	---
New Castle	143.7	131.0	211.7	144.1
Sussex	130.6	124.3	188.5	---

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 21-1: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



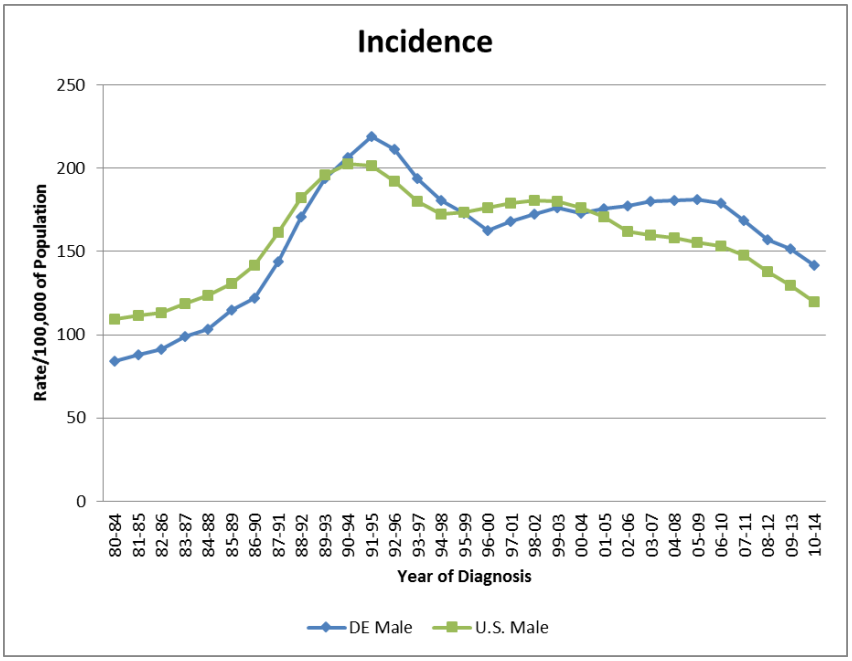
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Non-Hispanic African Americans (217.9 per 100,000) had a statistically significantly higher prostate cancer incidence rate compared to both non-Hispanic Caucasians (129.1 per 100,000) and Hispanics (139.1 per 100,000).
  - The difference in prostate cancer incidence rates between non-Hispanic Caucasians (129.1 per 100,000) and Hispanics (139.1 per 100,000) was not statistically significant.
- Comparing Delaware and the U.S.
  - Delaware (142.4 per 100,000) had a statistically significantly higher prostate cancer incidence rate compared to the U.S. (119.8 per 100,000).
  - Non-Hispanic Caucasians in Delaware (129.1 per 100,000) had a statistically significantly higher prostate cancer incidence rate compared to non-Hispanic Caucasians in the U.S. (116.0 per 100,000).

- Non-Hispanic African Americans in Delaware (217.9 per 100,000) had a statistically significantly higher prostate cancer incidence rate compared to non-Hispanic African Americans in the U.S. (193.4 per 100,000).
- Hispanics in Delaware (139.1 per 100,000) had a statistically significantly higher prostate cancer incidence rate compared to Hispanics in the U.S. (98.2 per 100,000).

TRENDS OVER TIME - DELAWARE AND U.S.

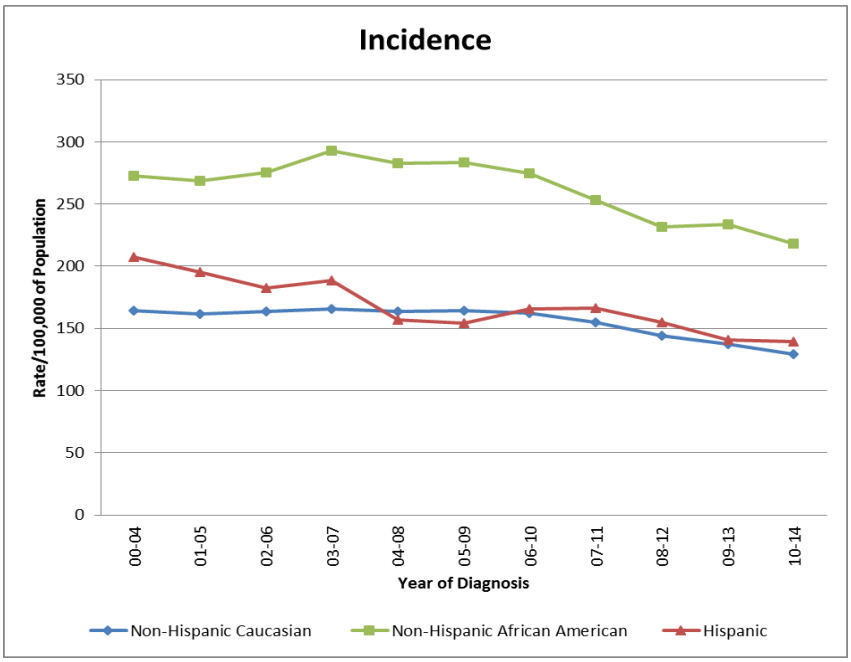
FIGURE 21-2: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER INCIDENCE RATES; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for prostate cancer decreased 18% in Delaware and decreased 32% in the U.S.

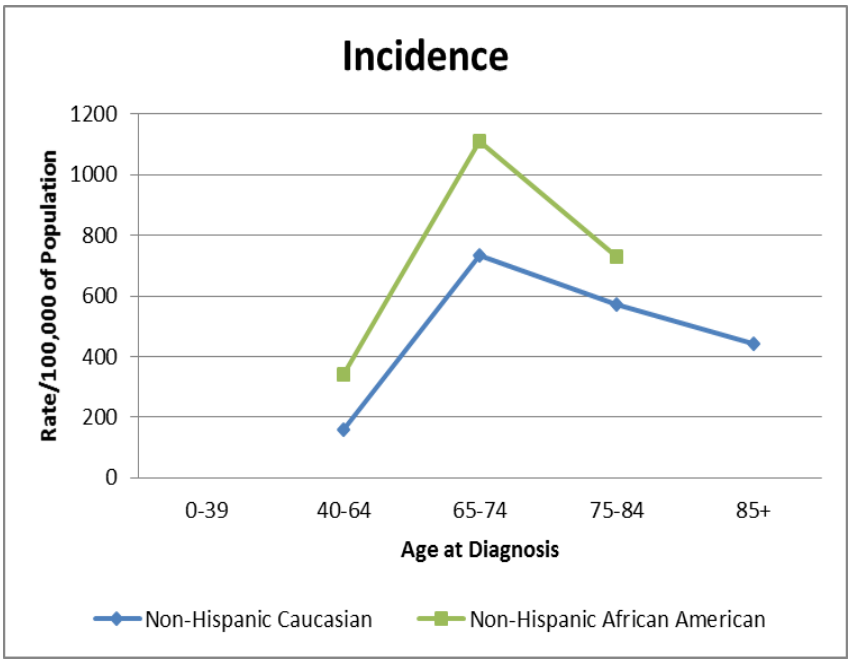
FIGURE 21-3: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for prostate cancer decreased 22% in non-Hispanic Caucasians.
  - Incidence rates for prostate cancer decreased 20% in non-Hispanic African Americans.
  - Incidence rates for prostate cancer decreased 33% in Hispanics.

FIGURE 21-4: AGE-SPECIFIC PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for prostate cancer incidence is 65-74 years of age for both non-Hispanic Caucasians and non-Hispanic African Americans. Due to low numbers, incidence rates could not be calculated for some groups.

TABLE 21-3: AGE-SPECIFIC PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---
40-64	187.9	157.8	340.4	154.7
65-74	781.2	734.8	1,112.6	762.9
75-84	591.4	572.2	728.3	---
85+	454.3	440.6	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

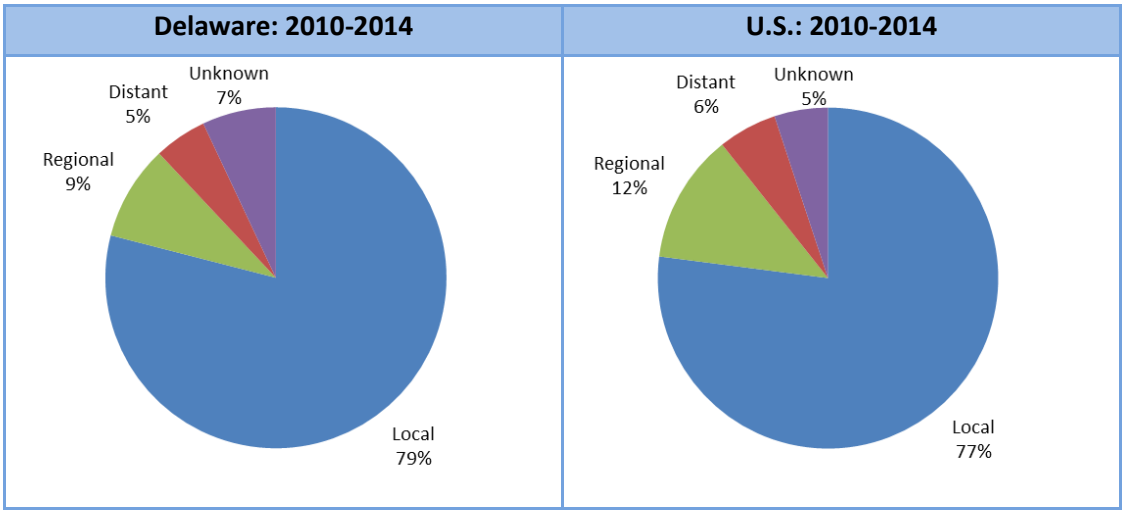
TABLE 21-4: PROSTATE CANCER CASES BY STAGE AT DIAGNOSIS BY RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Local	3,030 (79)	2,174 (79)	735 (80)	75 (73)
Regional	347 (9)	257 (9)	74 (8)	10 (10)
Distant	207 (5)	149 (5)	44 (5)	11 (11)
Unknown	270 (7)	189 (7)	66 (7)	7 (7)
Total	3,854	2,769	919	103

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- In 2010-2014, there were 3,030 (79%) prostate cancers diagnosed at the local stage; 347 (9%) at the regional stage; 207 (5%) at the distant stage; and 270 (7%) had an unknown stage.
- Non-Hispanic African Americans (80%) had a higher proportion of prostate cancers diagnosed at the local stage compared to both non-Hispanic Caucasians (79%) and Hispanics (73%).

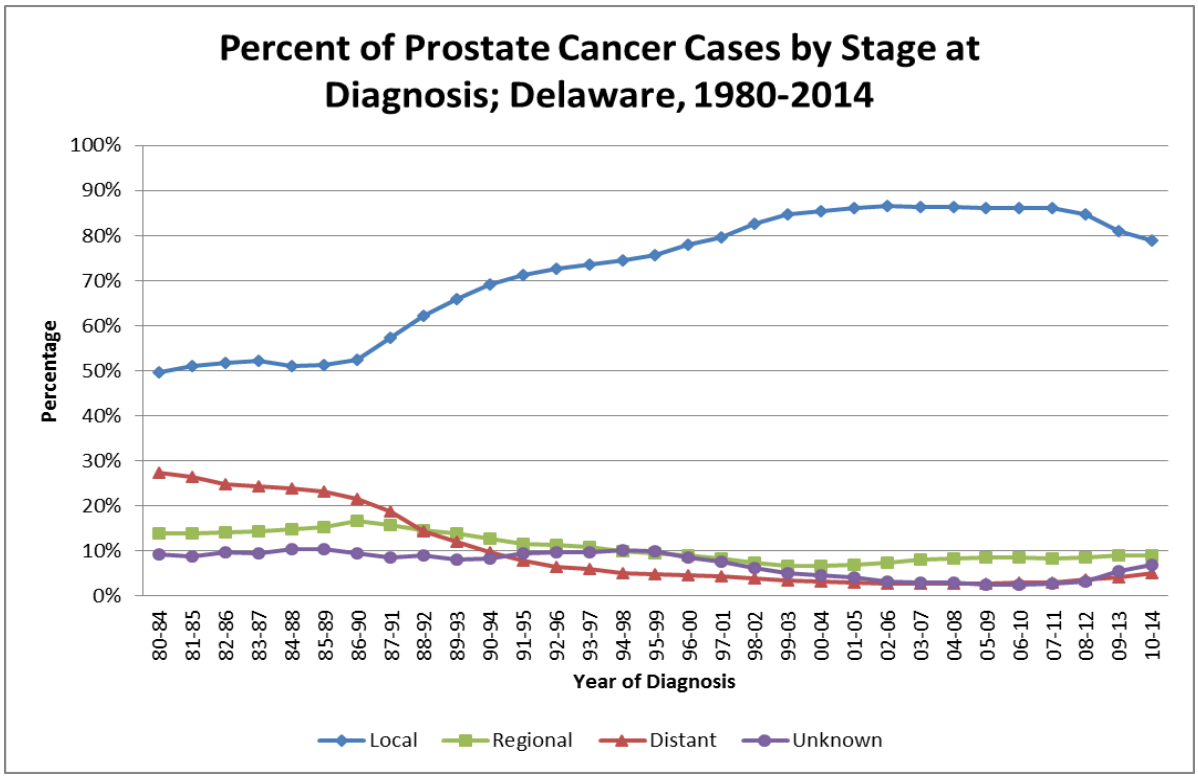
FIGURE 21-5: DISTRIBUTION OF PROSTATE CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware prostate cancer data, the proportion of prostate cancer diagnosed at the local stage is higher in Delaware (79%) compared to the U.S. (77%).

FIGURE 21-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR PROSTATE CANCER CASES; DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of prostate cancer cases diagnosed at the local stage increased from 50% to 79%.
  - Cases diagnosed at the distant stage decreased from 27% to 5%.

MORTALITY

For 2010-2014, Delaware ranked 42nd in the U.S. for prostate cancer mortality (35th in 2009-2013)[11].

2010-2014 DATA

TABLE 21-5: NUMBER OF PROSTATE CANCER DEATHS, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	423	309	102	8
Kent	70	44	23	---
New Castle	236	163	65	6
Sussex	117	102	14	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- Prostate cancer is the second most common cause of cancer deaths among males in the U.S. and Delaware.

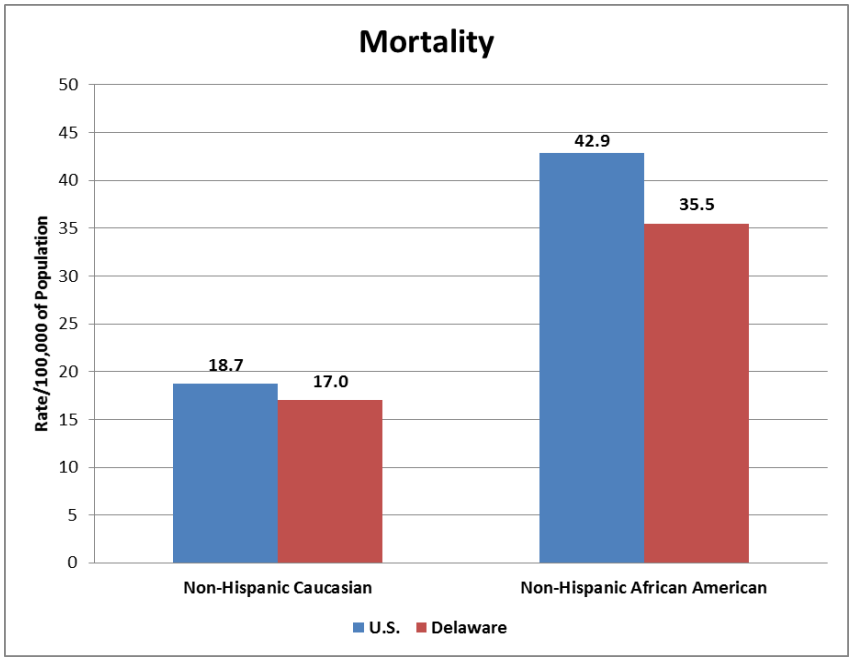
- In 2010-2014, there were 423 male deaths (8% of all male cancer deaths) from prostate cancer in Delaware.
- Non-Hispanic Caucasian males accounted for 73% of prostate cancer deaths.

TABLE 21-6: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	20.1	18.7	42.9	16.6
Delaware	19.4	17.0	35.5	---
Kent	18.7	14.8	---	---
New Castle	20.7	17.5	34.6	---
Sussex	18.3	17.4	---	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 21-7: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



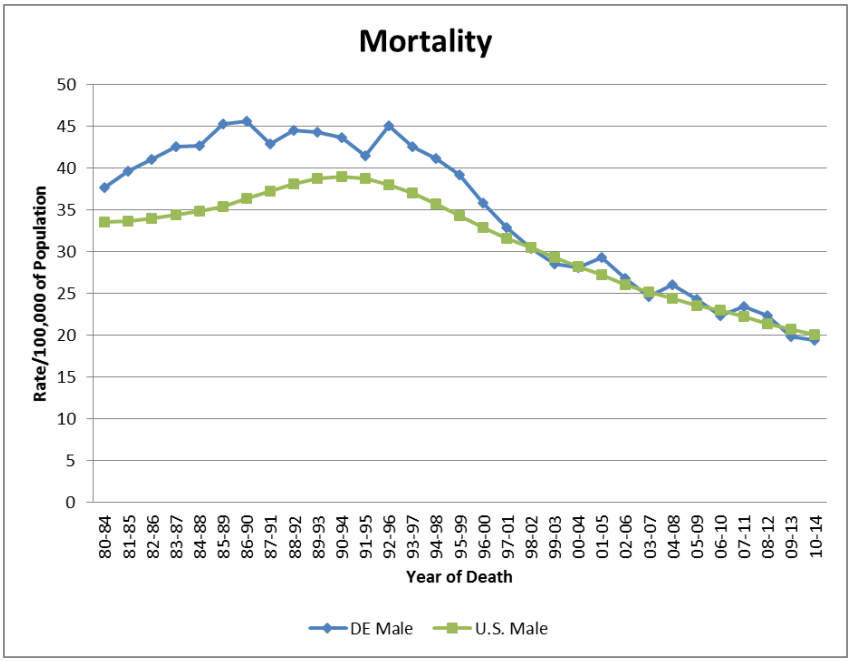
Source (Delaware): Delaware Health Statistics Center, , Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Non-Hispanic African Americans (35.5 per 100,000) had a statistically significantly higher prostate cancer mortality rate compared to non-Hispanic Caucasians (17.0 per 100,000).
  - Prostate cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in the prostate cancer mortality rates between Delaware (19.4 per 100,000) and the U.S. (20.1 per 100,000) was not statistically significant.
  - The difference in prostate cancer mortality rates between non-Hispanic Caucasians in Delaware (17.0 per 100,000) and the U.S (18.7 per 100,000) was not statistically significant.
  - The difference in prostate cancer mortality rates between non-Hispanic African Americans in Delaware (35.5 per 100,000) and the U.S (42.9 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 21-8: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER MORTALITY RATES; U.S. AND DELAWARE, 1980-2014

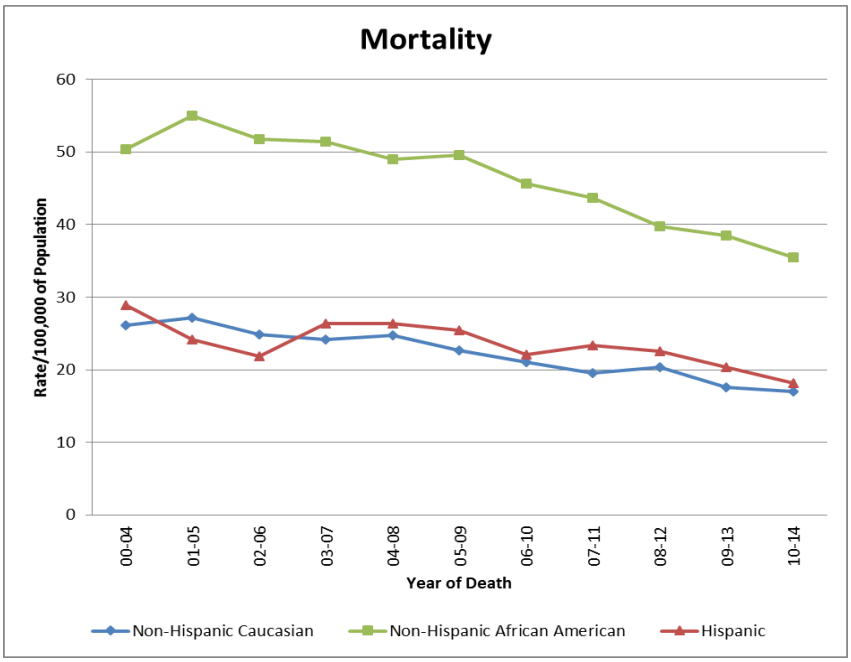


Source (Delaware): Delaware Health Statistics Center, , Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for prostate cancer decreased 31% in Delaware and decreased 29% in the U.S.

TRENDS OVER TIME - DELAWARE

FIGURE 21-9: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for prostate cancer decreased 35% in non-Hispanic Caucasians.
  - Mortality rates for prostate cancer decreased 30% in non-Hispanic African Americans.
  - Mortality rates for prostate cancer decreased 37% in Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 21-7: AGE-SPECIFIC PROSTATE CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---
40-64	6.4	4.6	---	---
65-74	51.1	43.2	---	---
75-84	159.5	123.5	---	---
85+	445.8	456.9	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for prostate cancer mortality is 85 years of age and older. Due to low numbers, prostate cancer mortality rates were not calculated for some groups.

CHAPTER 22: STOMACH CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting stomach cancer:

- Diet high in smoked foods, pickled vegetables, and salted fish and meats
- Low intake of fresh fruits and vegetables
- Tobacco use (This doubles the risk of stomach cancer.)
- Obesity
- Heterocyclic amines and polycystic aromatic hydrocarbons in grilled, charred, or fried meats and fish

The following are *environmental and medically-related* causes of getting stomach cancer:

- Living in Japan, China, Southern and Eastern Europe, and South and Central America
- Epstein-Barr virus
- Workplace exposures in the coal, metal, and rubber industry

The following are *non-modifiable* risk factors (these cannot be changed) of getting stomach cancer of getting stomach cancer:

- Infection with certain bacteria (e.g. *Helicobacter pylori*)
- Males are at higher risk compared to females
- Increasing age especially after 50 years of age
- People of Hispanic ethnicity are at increased risk; people of non-Hispanic African American or Asian/Pacific Islander race are at increased risk
- Family history of stomach cancer; personal history of stomach lymphoma
- Pernicious anemia (leads to a shortage of red blood cells)
- Type A blood

To protect against stomach cancer, individuals should avoid tobacco, consume a diet rich in fruits and vegetables, engage in recommended levels of physical activity, and maintain a healthy weight.

EARLY DETECTION

There are currently no tests recommended for the screening of stomach cancer in the general population. Some tests can be used to diagnose stomach cancer in individuals with known risks.

INCIDENCE

For 2010-2014, Delaware ranked 21st in the U.S. for stomach cancer incidence (19th in 2009-2013); males ranked 22nd (16th in 2009-2013) and females ranked 20th (17th in 2009-2013)[10].

2010-2014 DATA

TABLE 22-1: NUMBER OF STOMACH CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	362	227	135	242	156	86	86	55	31	18	7	11
Kent	58	32	26	37	21	16	17	---	---	---	---	---
New Castle	209	125	84	126	78	48	59	36	23	14	---	---
Sussex	95	70	25	79	57	22	10	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

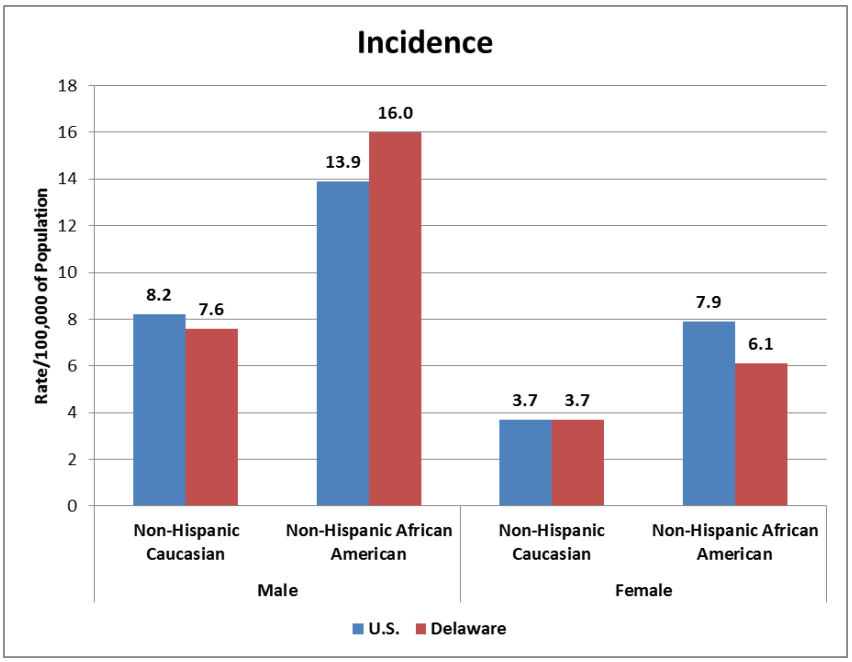
- In 2010-2014, there were 362 stomach cancer cases (1% of all cancer cases) diagnosed in Delaware.
- Delaware males accounted for 63% of stomach cancer cases.
- Non-Hispanic Caucasians accounted for 67% of stomach cancer cases.

TABLE 22-2: FIVE-YEAR AVERAGE AGE-ADJUSTED STOMACH CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	7.3	9.9	5.2
Delaware	6.5	9.0	4.5
Kent	6.1	7.3	5.0
New Castle	7.1	9.8	5.1
Sussex	5.7	8.8	3.1

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

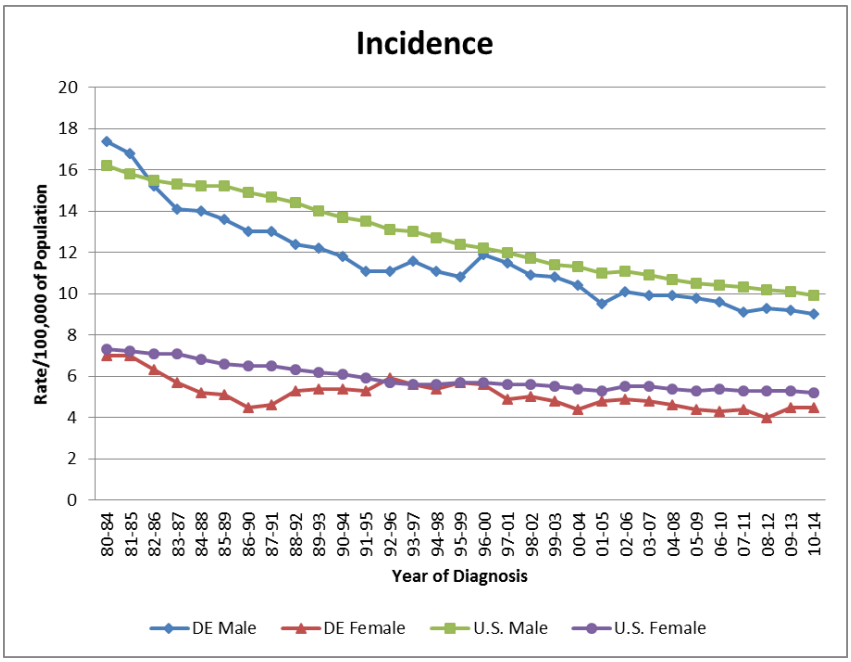
FIGURE 22-1: FIVE-YEAR AVERAGE AGE-ADJUSTED STOMACH CANCER INCIDENCE RATES FOR BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (9.0 per 100,000) had a statistically significantly higher stomach cancer incidence compared to females (4.5 per 100,000).
  - Non-Hispanic Caucasians (5.5 per 100,000) had a statistically significantly lower stomach cancer incidence compared to non-Hispanic African Americans (10.1 per 100,000).
  - Stomach cancer incidence rates for Hispanics could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S.
  - The difference in stomach cancer incidence rates between Delaware (6.5 per 100,000) and the U.S. (7.3 per 100,000) was not statistically significant.
  - The difference in stomach cancer incidence rates between males in Delaware (9.0 per 100,000) and the U.S. (9.9 per 100,000) was not statistically significant.
  - The difference in stomach cancer incidence rates between females in Delaware (4.5 per 100,000) and the U.S. (5.2 per 100,000) was not statistically significant.
  - The difference in stomach cancer incidence rates between non-Hispanic Caucasians in Delaware (5.5 per 100,000) and the U.S. (5.7 per 100,000) was not statistically significant.
  - The difference in stomach cancer incidence rates between non-Hispanic African Americans in Delaware (10.1 per 100,000) and the U.S. (10.4 per 100,000) was not statistically significant.

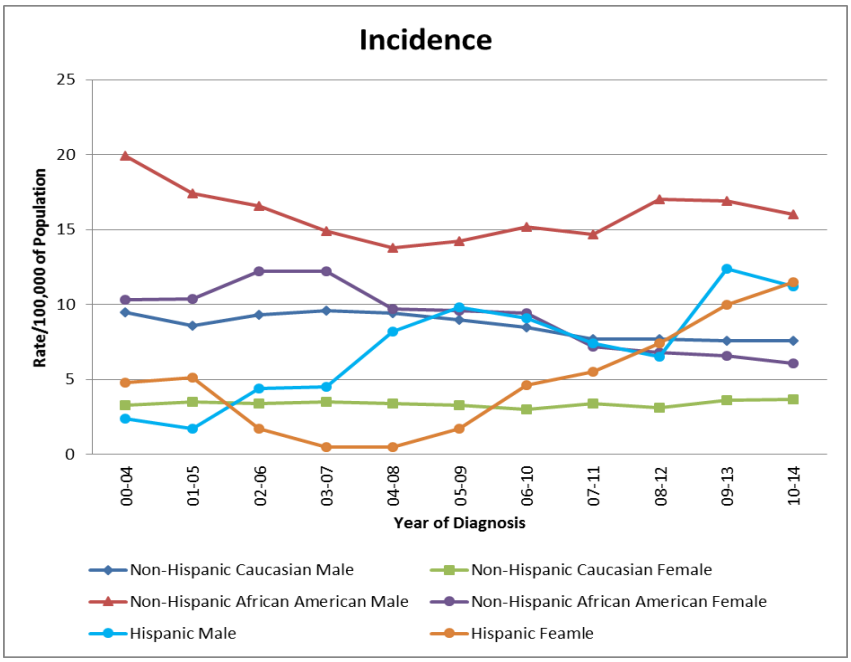
FIGURE 22-2: FIVE-YEAR AVERAGE AGE-ADJUSTED STOMACH CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for stomach cancer decreased 6% in Delaware and decreased 8% in the U.S.
  - Incidence rates for stomach cancer decreased 13% in Delaware males and decreased 12% in U.S. males.
  - Incidence rates for stomach cancer increased 2% in Delaware females and decreased 4% in U.S. females.

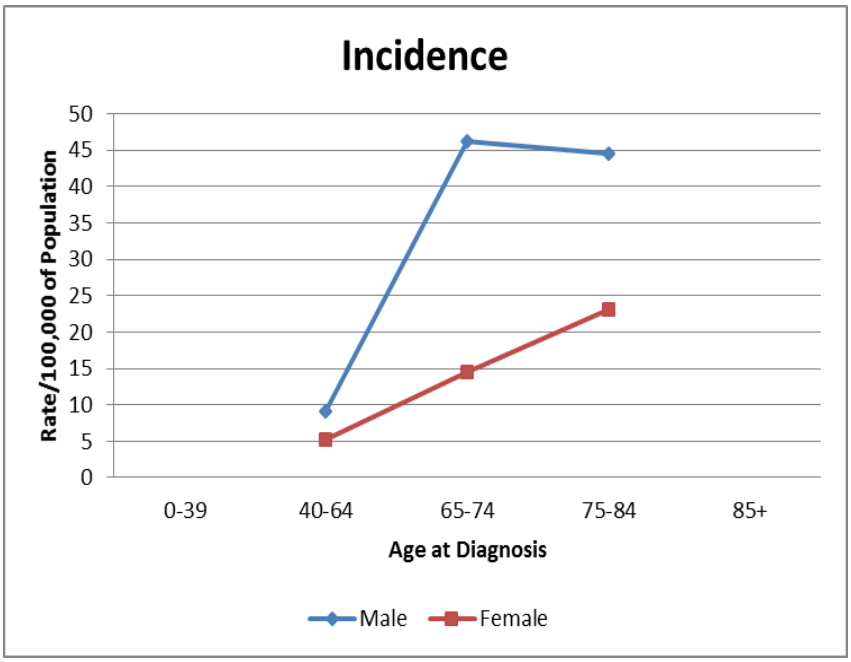
FIGURE 22-3: FIVE-YEAR AVERAGE AGE-ADJUSTED STOMACH CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for stomach cancer decreased 20% in non-Hispanic Caucasian males and increased 12% in non-Hispanic Caucasian females.
  - Incidence rates for stomach cancer decreased 20% in non-Hispanic African American males and decreased 41% in non-Hispanic African American females.
  - Incidence rates for stomach cancer increased 367% in Hispanic males and increased 140% in Hispanic females.

FIGURE 22-4: AGE-SPECIFIC STOMACH CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for stomach cancer incidence is 65-74 years of age for males and 75-84 years of age for females. Due to low numbers, incidence rates were not calculated for some groups.

TABLE 22-3: AGE-SPECIFIC STOMACH CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	7.4	---	---	4.1	---	---
65-74	42.0	---	---	---	---	---
75-84	40.9	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasian males have a peak age range for stomach cancer incidence at 75-84 years of age.

STAGE OF DIAGNOSIS - DELAWARE

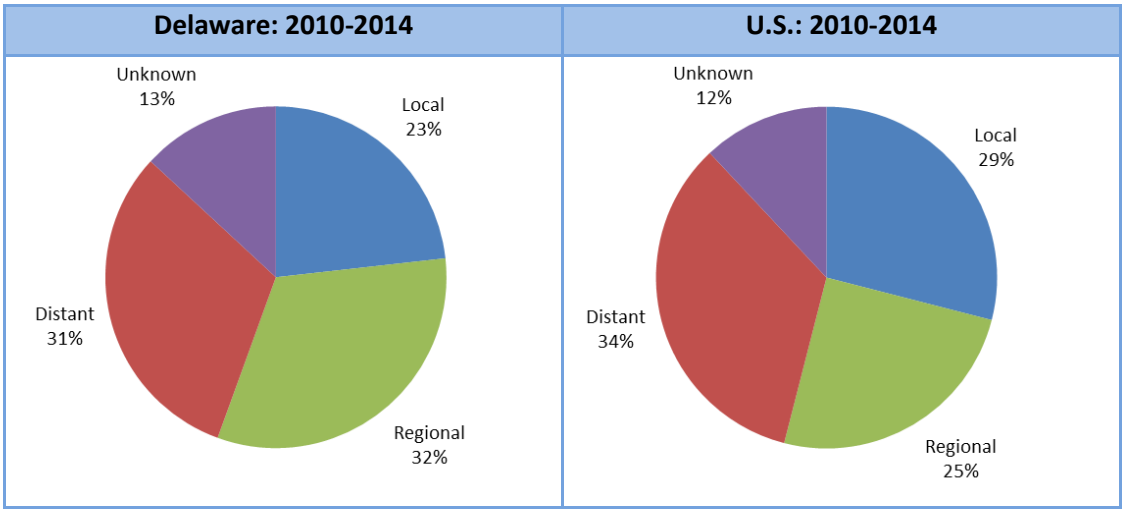
TABLE 22-4: STOMACH CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	84 (23)	53 (23)	31 (23)	66 (27)	43 (28)	23 (27)	15 (17)	---	---	---	---	---
Regional	117 (32)	76 (34)	41 (30)	76 (31)	51 (33)	25 (29)	32 (37)	20 (36)	12 (39)	---	---	---
Distant	113 (31)	72 (32)	41 (30)	72 (30)	48 (31)	24 (28)	29 (34)	20 (36)	9 (29)	9 (50)	---	---
Unknown	48 (13)	26 (12)	22 (16)	28 (12)	14 (10)	14 (16)	10 (12)	---	---	---	---	---
Total	362	227	135	242	156	86	86	55	31	18	7	11

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 84 (23%) stomach cancers diagnosed at the local stage; 117 (32%) at the regional stage; 113 (31%) at the distant stage; and 48 (13%) had an unknown stage.
- Hispanics (50%) had a higher proportion of stomach cancers diagnosed at the distant stage compared to both non-Hispanic Caucasians (30%) and non-Hispanic African Americans (34%).
- Males (32%) had a higher proportion of stomach cancers diagnosed at the distant stage compared to females (30%).

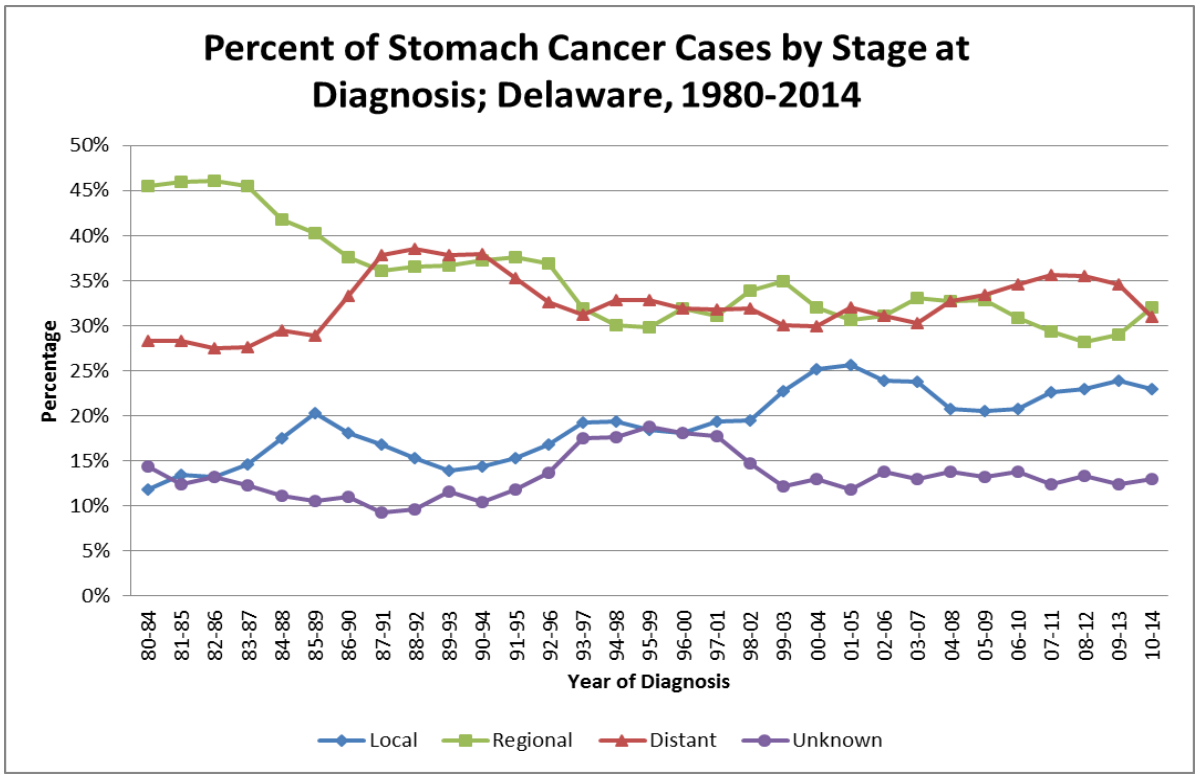
FIGURE 22-5: DISTRIBUTION OF STOMACH CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware stomach cancer data, the U.S. (29%) had a higher proportion diagnosed at the local stage compared to Delaware (23%).

FIGURE 22-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR STOMACH CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of stomach cancer cases diagnosed at the local stage increased from 12% to 23%.
  - Cases of stomach cancer diagnosed at distant stage increased from 28% to 31%.

MORTALITY

For 2010-2014, Delaware ranked 14th in the U.S. for stomach cancer mortality (14th in 2009-2013); males ranked 16th (12th in 2009-2013) and females ranked 13th (20th in 2009-2013)[11].

2010-2014 DATA

TABLE 22-5: NUMBER OF STOMACH CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	187	109	78	121	68	53	46	30	16	10	---	---
Kent	36	22	14	24	14	10	8	---	---	---	---	---
New Castle	115	63	52	70	36	34	32	20	12	8	---	---
Sussex	36	24	12	27	18	9	6	---	---	---	---	---

Source: Delaware Health Statistics Center, Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 187 deaths (2% of all cancer deaths) from stomach cancer in Delaware.

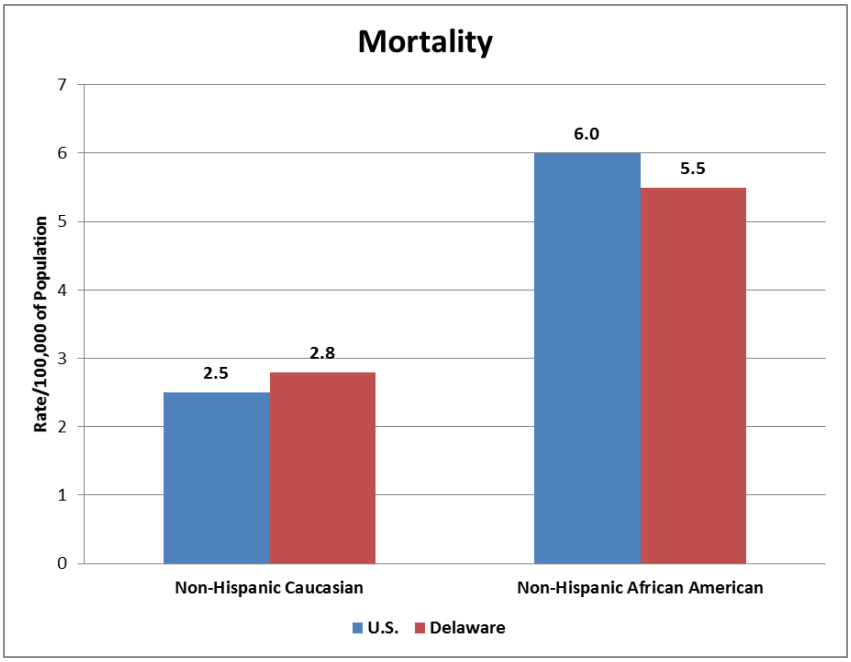
- Males accounted for 58% of stomach cancer deaths.
- Non-Hispanic Caucasians accounted for 65% of stomach cancer deaths.

TABLE 22-6: FIVE-YEAR AVERAGE AGE-ADJUSTED STOMACH CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	3.2	4.4	2.3
Delaware	3.6	4.7	2.6
Kent	3.9	---	---
New Castle	4.1	5.3	3.2
Sussex	2.4	---	---

Source (Delaware): Delaware Health Statistics Center, Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 22-7: FIVE-YEAR AVERAGE AGE-ADJUSTED STOMACH CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



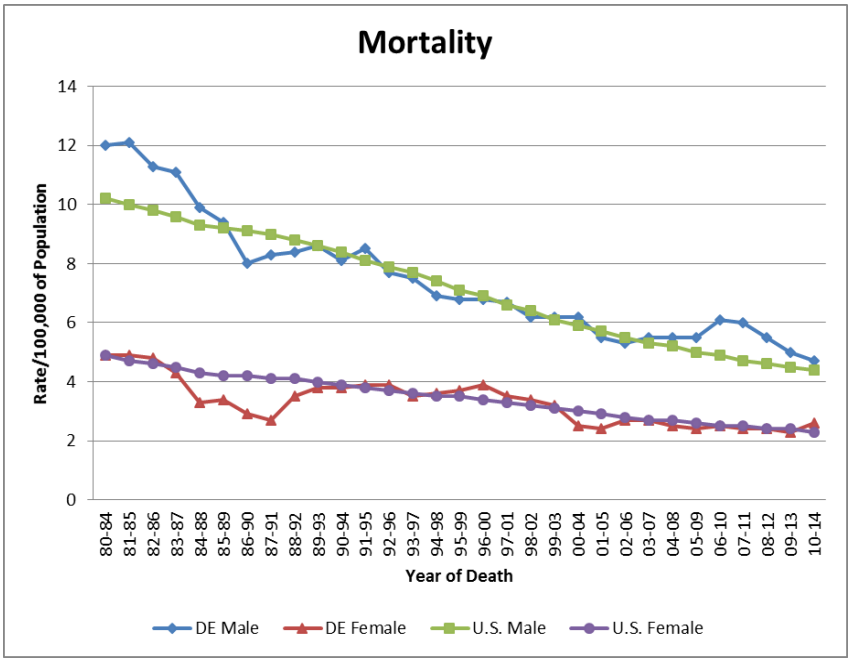
Source: Delaware Health Statistics Center, Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (4.7 per 100,000) had a statistically significantly higher stomach cancer mortality rate compared to females (2.6 per 100,000).
  - Non-Hispanic Caucasians (2.8 per 100,000) had a statistically significantly lower stomach cancer mortality rate compared to non-Hispanic African Americans (5.5 per 100,000).
  - Stomach cancer incidence rates for Hispanics could not be calculated due to the low number of deaths.

- Comparing Delaware and the U.S.
  - The difference in stomach cancer mortality rates between Delaware (3.6 per 100,000) and the U.S. (3.2 per 100,000) was not statistically significant.
  - The difference in stomach cancer mortality rates between males in Delaware (4.7 per 100,000) and the U.S. (4.4 per 100,000) was not statistically significant.
  - The difference in stomach cancer mortality rates between females in Delaware (2.6 per 100,000) and the U.S. (2.3 per 100,000) was not statistically significant.
  - The difference in stomach cancer mortality rates between non-Hispanic Caucasians in Delaware (2.8 per 100,000) and the U.S. (2.5 per 100,000) was not statistically significant.
  - The difference in stomach cancer mortality rates between non-Hispanic African Americans in Delaware (5.5 per 100,000) and the U.S. (6.0 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 22-8: FIVE-YEAR AVERAGE AGE-ADJUSTED STOMACH CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014

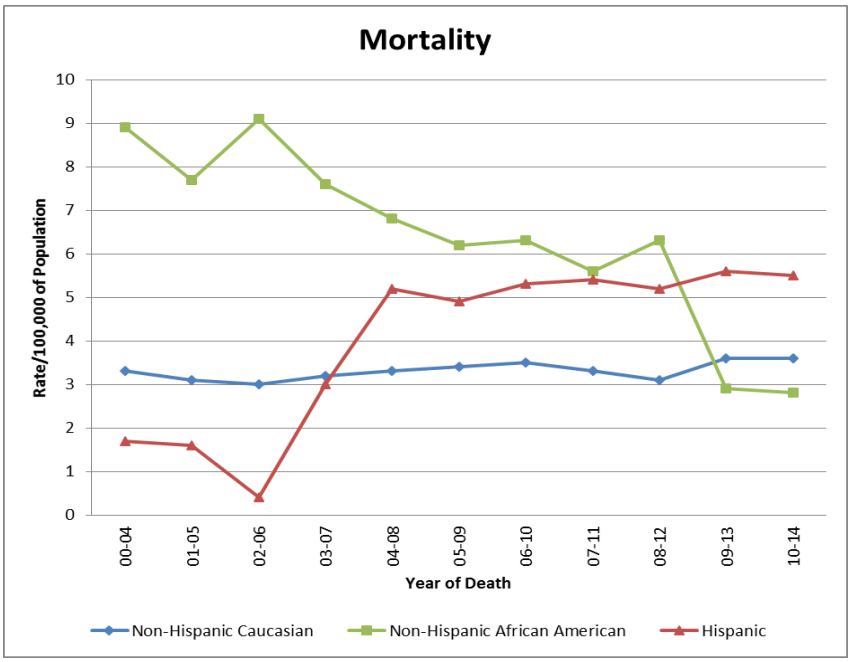


Source (Delaware): Delaware Health Statistics Center, Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for stomach cancer decreased 12% in Delaware and decreased 26% in the U.S.
  - Mortality rates for stomach cancer decreased 24% in Delaware males and decreased 25% in U.S. males.
  - Mortality rates for stomach cancer increased 4% in Delaware females and decreased 23% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 22-9: FIVE-YEAR AVERAGE AGE-ADJUSTED STOMACH CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for stomach cancer increased 9% in non-Hispanic Caucasians.
  - Mortality rates for stomach cancer decreased 69% in non-Hispanic African Americans.
  - Mortality rates for stomach cancer increased 224% in Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

- Due to low numbers, age-specific oral cancer mortality rates were not calculated.

CHAPTER 23: TESTICULAR CANCER

RISK FACTORS

The following are *non-modifiable* risk factors (these cannot be changed) of getting testicular cancer:

- Non-Hispanic Caucasians have a five times higher risk of testicular cancer compared to non-Hispanic African Americans.
- Family or personal history of testicular cancer
- Younger males are at higher risk; half of all testicular cancers are diagnosed in males 20-34 years of age.
- Having cryptorchidisim (undescended testicle) increased the risk of testicular cancer.

To protect against developing testicular cancer, males at increased risk should perform testicular self-exams.

EARLY DETECTION

Males at increased risk should perform testicular self-exams.

INCIDENCE

For 2010-2014, Delaware ranked 33rd in the U.S. for testicular cancer incidence (28th in 2009-2013) [10].

2010-2014 DATA

TABLE 23-1: NUMBER OF TESTICULAR CANCER CASES, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	114	98	---	11
Kent	24	23	---	---
New Castle	64	55	---	6
Sussex	26	20	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 114 testicular cancer cases (1% of all male cancer cases) diagnosed in Delaware.
- Non-Hispanic Caucasians accounted for 86% of testicular cancer cases.

TABLE 23-2: FIVE-YEAR AVERAGE AGE-ADJUSTED TESTICULAR CANCER INCIDENCE RATES OVERALL AND BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

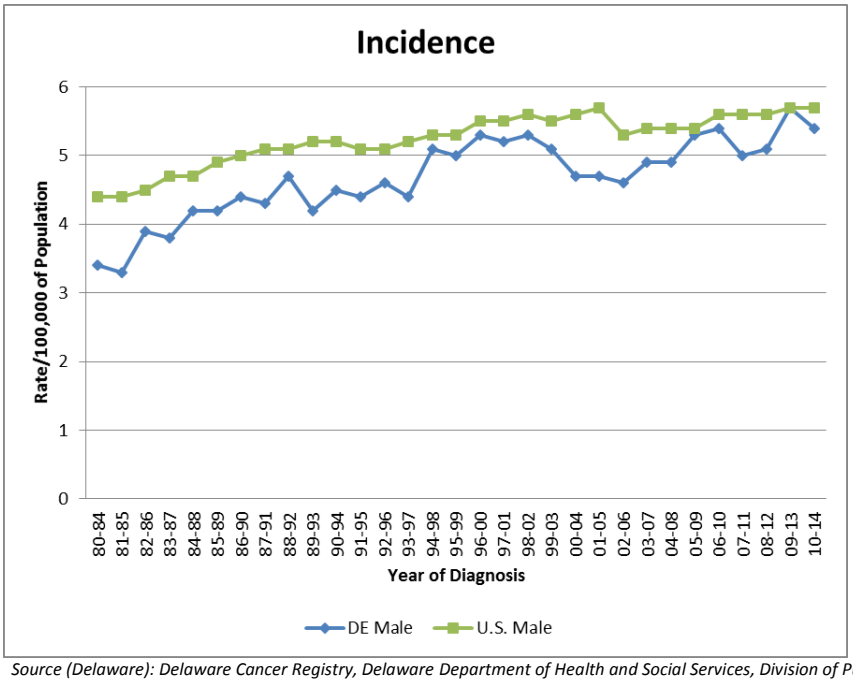
	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	5.7	7.3	1.6	5.1
Delaware	5.4	7.5	---	---
Kent	---	---	---	---
New Castle	5.0	7.3	---	---
Sussex	6.1	---	---	---

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Comparing Delaware and the U.S.
  - The difference in testicular cancer incidence rates between Delaware (5.4 per 100,000) and the U.S. (5.7 per 100,000) was not statistically significant.
  - The difference in testicular cancer incidence rates between non-Hispanic Caucasians in Delaware (7.5 per 100,000) and the U.S. (7.3 per 100,000) was not statistically significant.
  - Testicular cancer incidence rates for non-Hispanic African Americans and Hispanics could not be calculated due to an insufficient number of cases.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 23-1: FIVE-YEAR AVERAGE AGE-ADJUSTED TESTICULAR CANCER INCIDENCE RATES; U.S. AND DELAWARE, 1980-2014

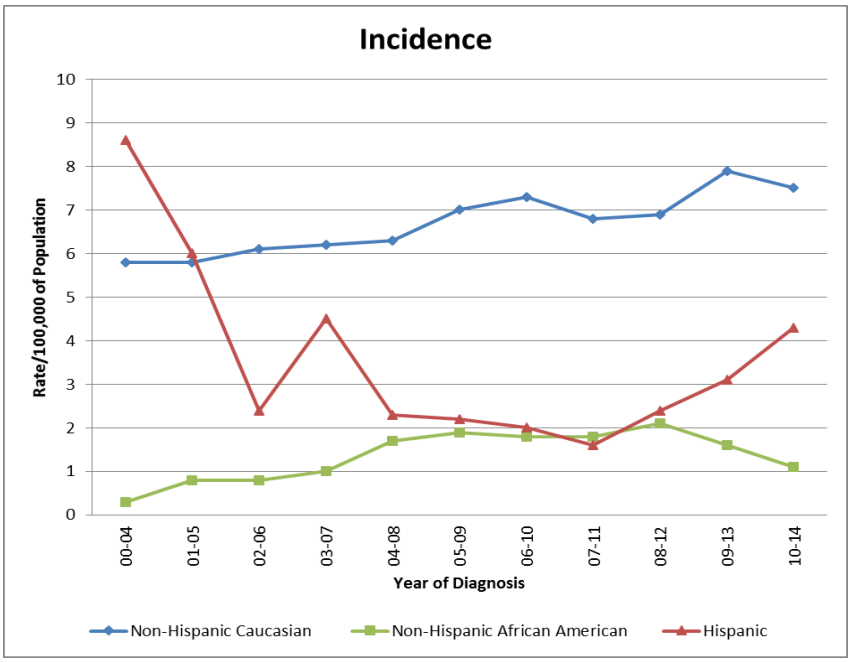


Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for testicular cancer increased 15% in Delaware and increased 2% in the U.S.

TRENDS OVER TIME - DELAWARE

FIGURE 23-2: FIVE-YEAR AVERAGE AGE-ADJUSTED TESTICULAR CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for testicular cancer increased 29% in non-Hispanic Caucasians.
  - Incidence rates for testicular cancer increased 267% in non-Hispanic African Americans.
  - Incidence rates for testicular cancer decreased 50% in Hispanics.

AGE-SPECIFIC INCIDENCE RATES - DELAWARE

TABLE 23-3: AGE-SPECIFIC TESTICULAR CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	6.4	9.0	---	---
40-64	5.1	7.0	---	---
65-74	---	---	---	---
75-84	---	---	---	---
85+	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for testicular cancer incidence is 0-39 years of age. Due to low numbers, incidence rates were not calculated for some groups.

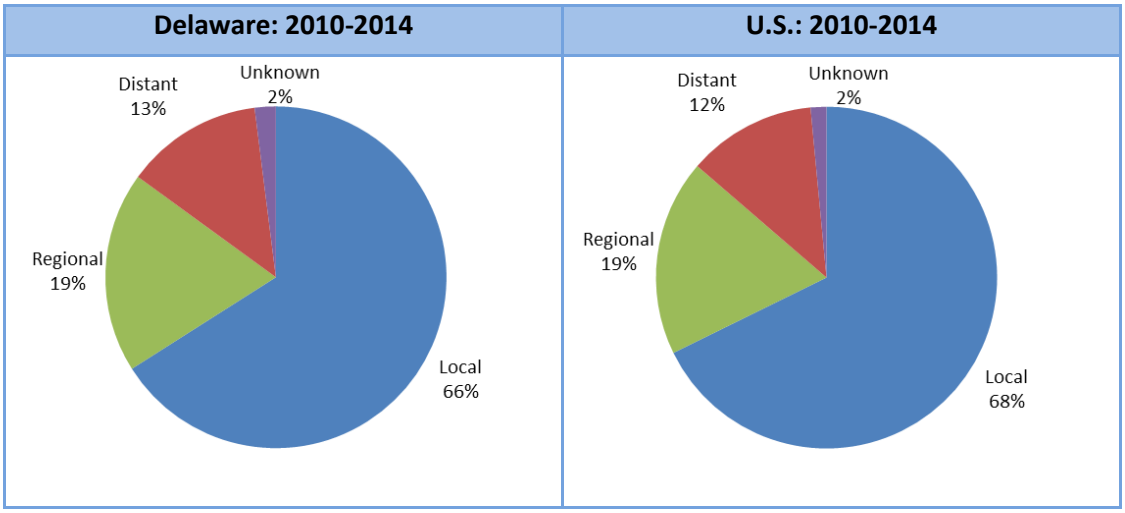
TABLE 23-4: TESTICULAR CANCER CASES BY STAGE AT DIAGNOSIS BY RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Local	75 (66)	65 (66)	---	6 (55)
Regional	22 (19)	17 (17)	---	---
Distant	---	---	---	---
Unknown	---	---	---	---
Total	114	98	---	11

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 75 (66%) testicular cancers diagnosed at the local stage and 22 (19%) at the regional stage.
- Due to an insufficient number of cases, testicular cancer stage of disease could be calculated for non-Hispanic African Americans or Hispanics.

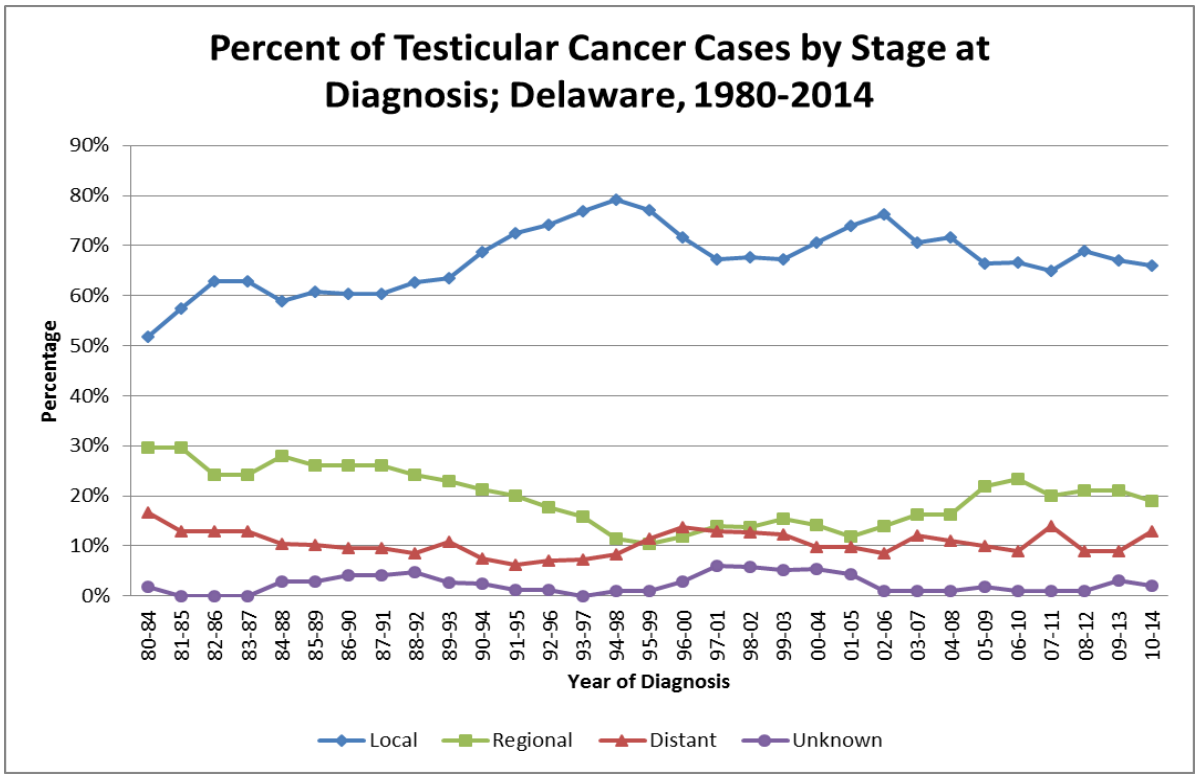
FIGURE 23-3: DISTRIBUTION OF TESTICULAR CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware testicular cancer data, Delaware (66%) had a lower proportion of testicular cancer diagnosed at the local stage compared to the U.S. (68%).

FIGURE 23-4: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR TESTICULAR CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of testicular cancer cases diagnosed at the local stage increased from 52% to 66%.
  - Testicular cancer cases diagnosed at the distant stage decreased from 17% to 13%.

MORTALITY

2010-2014 DATA

In 2010-2014, there were seven deaths from testicular cancer in Delaware. Due to the low number of deaths, mortality patterns in Delaware are not presented.

CHAPTER 24: THYROID CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting thyroid cancer:

- A diet low in iodine increases the risk for thyroid cancer.

The following are *environmental and medically-related* causes of thyroid cancer:

- Radiation fallout from power plants or nuclear weapons
- Exposure to radiation (particularly in childhood and radiation targeting the head and neck area)

The following are *non-modifiable* risk factors (these cannot be changed) of getting thyroid cancer:

- Thyroid cancer is three times more likely to develop in females compared to males.
- Females have higher risk at younger ages (40's and 50's), whereas males have higher risk at older ages (60's and 70's).
- Non-Hispanic Caucasians are more likely to develop thyroid cancer compared to other racial/ethnic groups.
- Some thyroid cancers are linked to hereditary conditions (familial medullary thyroid carcinoma (FMTC), familial adenomatous polyposis (FAP), Cowden disease, Carney complex type 1, familial nonmedullary thyroid carcinoma).
- Having a first degree relative with thyroid cancer

To protect against thyroid cancer, individuals should avoid unnecessary x-rays, have genetic counseling if they have a family history, and for children, removal of the thyroid gland should be considered if they have an abnormal gene.

EARLY DETECTION

There are currently no tests recommended for the screening of thyroid cancer. Individuals at increased risk should have routine checkups by a health care provider and do self-checks of their neck to detect any abnormal lumps. Diagnostic tests can also be performed.

INCIDENCE

For 2010-2014, Delaware ranked 15th in the U.S. for thyroid cancer incidence (18th in 2009-2013); males ranked 24th (24thin 2009-2013) and females ranked 13th (19th in 2009-2013)[10].

2010-2014 DATA

TABLE 24-1: NUMBER OF THYROID CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	752	171	581	552	136	416	116	21	95	46	6	40
Kent	143	46	97	110	37	73	20	---	---	---	---	---
New Castle	466	92	374	320	67	253	82	15	67	34	---	---
Sussex	143	33	110	122	32	90	14	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

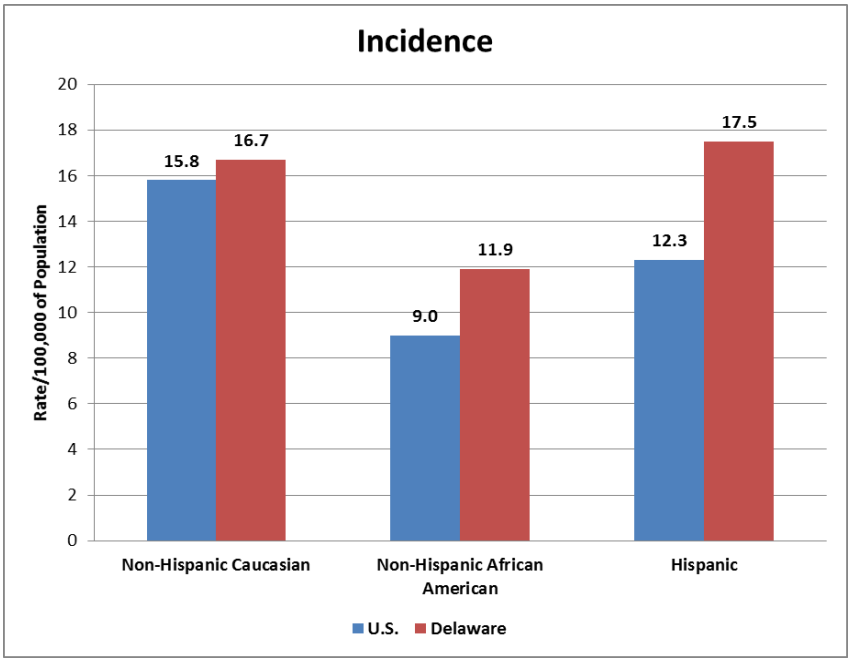
- In 2010-2014, there were 752 thyroid cancer cases (3% of all cancer cases) diagnosed in Delaware.
- Females accounted for 77% of thyroid cancer cases.
- Non-Hispanic Caucasians accounted for 73% of thyroid cancer cases.

TABLE 24-2: FIVE-YEAR AVERAGE AGE-ADJUSTED THYROID CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	14.2	7.1	21.0
Delaware	15.6	7.1	23.7
Kent	17.2	11.4	22.5
New Castle	16.5	6.6	25.8
Sussex	12.2	5.1	19.0

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 24-1: FIVE-YEAR AVERAGE AGE-ADJUSTED THYROID CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

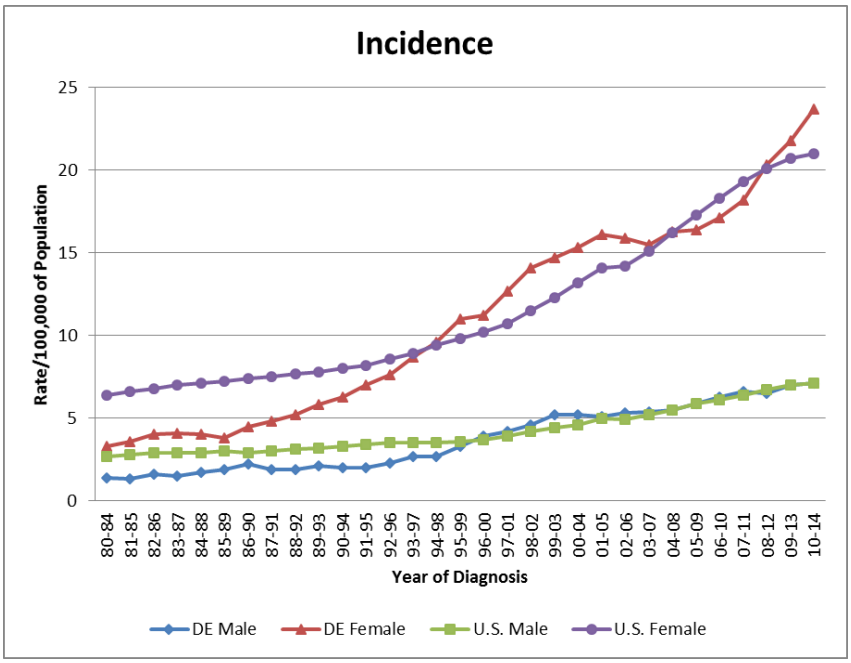
- In Delaware
  - Males (7.1 per 100,000) had a statistically significantly lower thyroid cancer incidence rate compared to females (23.7 per 100,000).
  - Non-Hispanic Caucasians (16.7 per 100,000) had a statistically significantly higher thyroid cancer incidence rate compared to non-Hispanic African Americans (11.9 per 100,000).
  - The difference in thyroid cancer incidence rates between non-Hispanic Caucasians (16.7 per 100,000) and Hispanics (17.5 per 100,000) was not statistically significant.

- The difference in thyroid cancer incidence rates between non-Hispanic African Americans (11.9 per 100,000) and Hispanics (17.5 per 100,000) was not statistically significant.

- Comparing Delaware and the U.S.
  - Delaware (15.6 per 100,000) had a statistically significantly higher thyroid cancer incidence rate compared to the U.S. (14.2 per 100,000).
  - There was no difference in thyroid cancer incidence rates between males in Delaware (7.1 per 100,000) and males in the U.S. (7.1 per 100,000).
  - Delaware females (23.7 per 100,000) had a statistically significantly higher thyroid cancer incidence rate compared to U.S. females (21.0 per 100,000).
  - The difference in thyroid cancer incidence rates between non-Hispanic Caucasians in Delaware (16.3 per 100,000) and the U.S. (15.8 per 100,000) was not statistically significant.
  - Non-Hispanic African Americans in Delaware (11.9 per 100,000) had a statistically significantly higher thyroid cancer incidence rate compared to non-Hispanic African Americans in the U.S. (9.0 per 100,000).
  - The difference in thyroid cancer incidence rates between Hispanics in Delaware (17.5 per 100,000) and the U.S. (12.3 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 24-2: FIVE-YEAR AVERAGE AGE-ADJUSTED THYROID CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



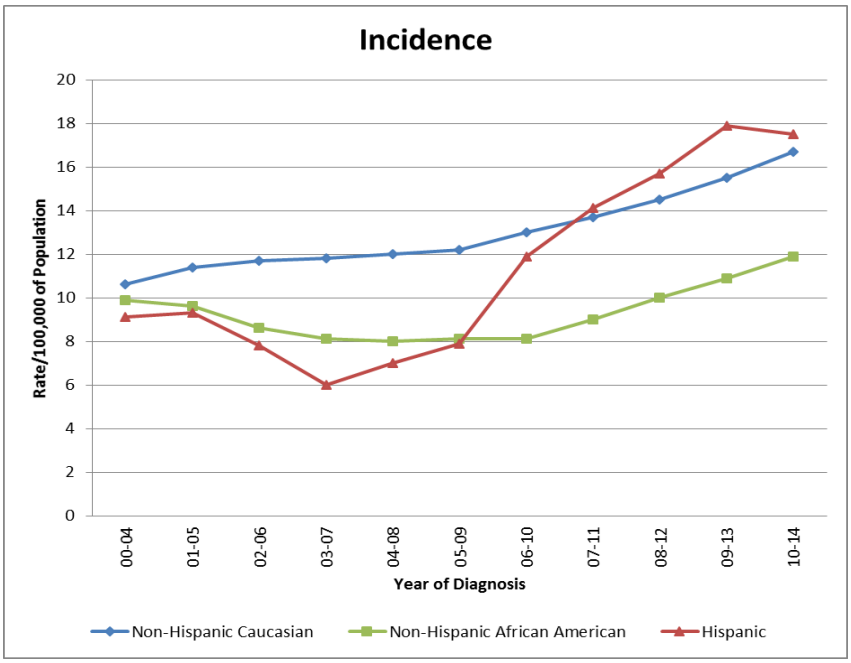
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for thyroid cancer increased 51% in Delaware and increased 60% in the U.S.
  - Incidence rates for thyroid cancer increased 37% in Delaware males and increased 54% in U.S. males.

- Incidence rates for thyroid cancer increased 55% in Delaware females and increased 59% in U.S. females.

TRENDS OVER TIME - DELAWARE

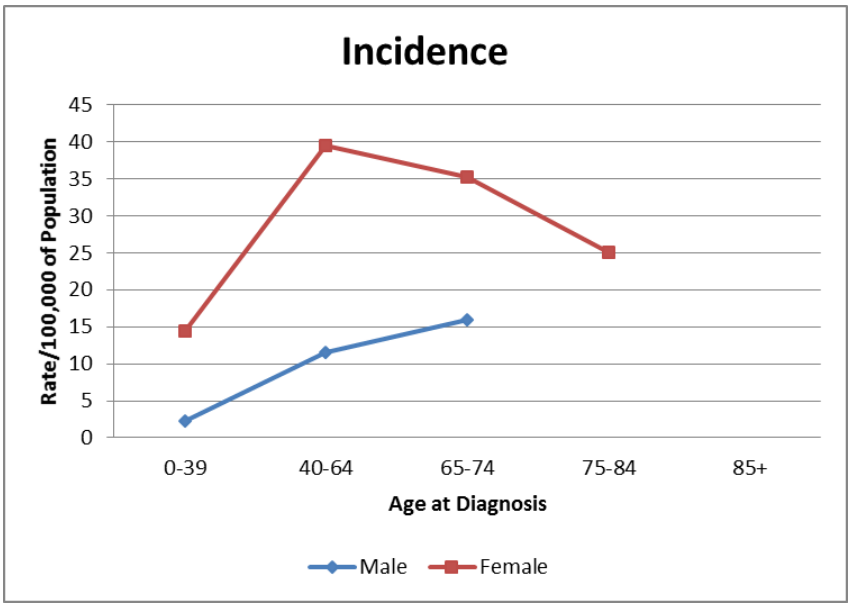
FIGURE 24-3: FIVE-YEAR AVERAGE AGE-ADJUSTED THYROID CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for thyroid cancer increased 58% in non-Hispanic Caucasians.
  - Incidence rates for thyroid cancer increased 20% in non-Hispanic African Americans.
  - Incidence rates for thyroid cancer increased 92% in Hispanics.

FIGURE 24-4: AGE-SPECIFIC THYROID CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for thyroid cancer incidence is 40-64 years of age for females and 65-74 years of age for males. Due to low numbers, incidence rates were not calculated for some groups.

TABLE 24-3: AGE-SPECIFIC THYROID CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	17.3	---	---
40-64	13.0	---	---	39.6	34.0	63.2
65-74	---	---	---	34.7	---	---
75-84	---	---	---	---	---	---
85+	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasians had a peak age range for thyroid cancer incidence at 40-64 years of age.

STAGE OF DIAGNOSIS - DELAWARE

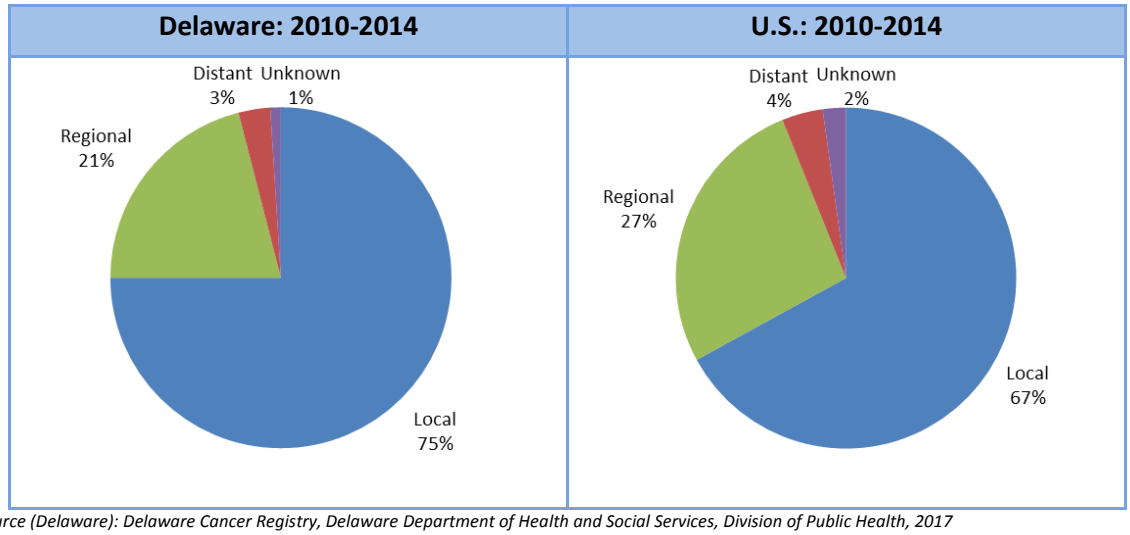
TABLE 24-4: THYROID CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Local	566 (75)	115 (67)	451 (78)	411 (75)	89 (65)	322 (77)	93 (80)	16 (76)	77 (81)	36 (78)	---	---
Regional	157 (21)	45 (26)	112 (19)	123 (22)	38 (28)	85 (20)	17 (15)	---	----	8 (17)	---	---
Distant	23 (3)	---	---	---	---	---	---	---	---	---	---	---
Unknown	6 (1)	---	---	---	---	---	---	---	---	---	---	---
Total	752	171	581	552	136	416	116	21	95	46	6	40

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 566 (75%) thyroid cancers diagnosed at the local stage; 157 (21%) at the regional stage; 23 (3%) at the distant stage; and six (1%) had an unknown stage.
- Non-Hispanic African Americans (80%) had a higher proportion of thyroid cancers diagnosed at the local stage compared to both non-Hispanic Caucasians (75%) and Hispanics (78%).
- Females (78%) had a higher proportion of thyroid cancers diagnosed at the local stage compared to males (67%).

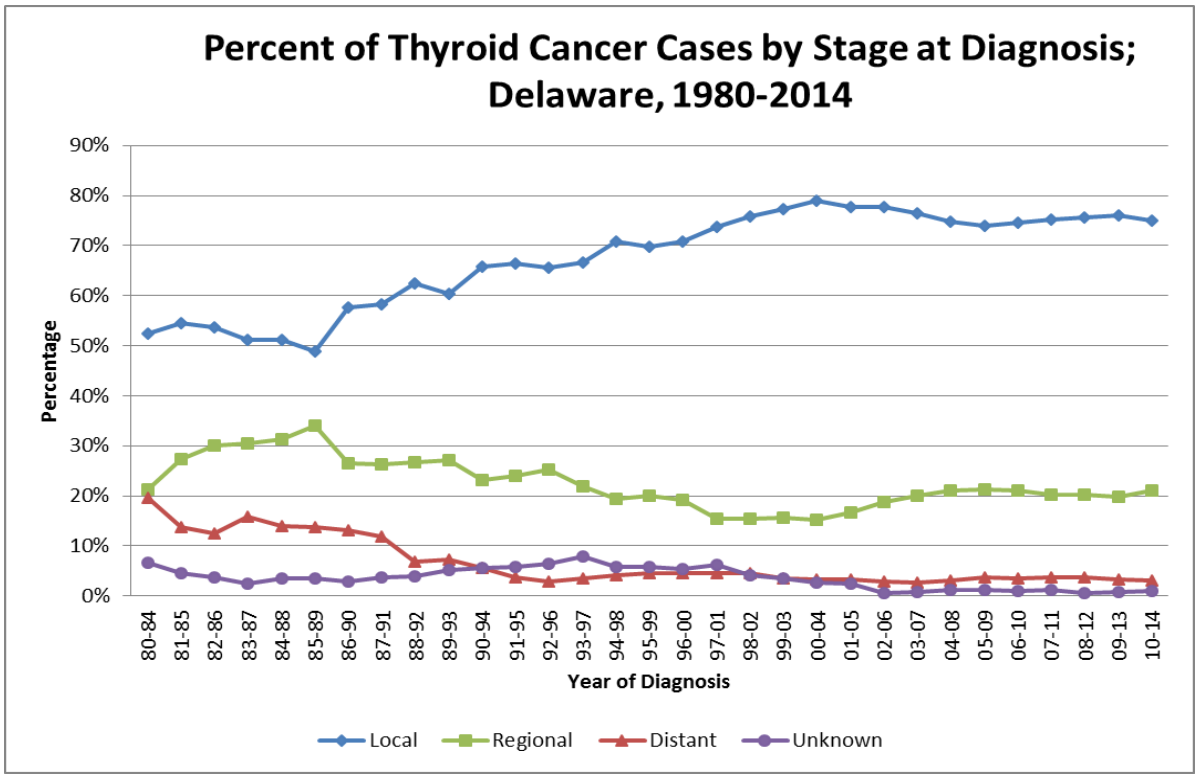
FIGURE 24-5: DISTRIBUTION OF THYROID CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware thyroid cancer data, Delaware (75%) had a higher proportion of thyroid cancer diagnosed at the local stage compared to the U.S. (67%).

FIGURE 24-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR THYROID CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of thyroid cancer cases diagnosed at the local stage increased from 52% to 75%.
  - Thyroid cancer cases diagnosed at the distant stage decreased from 20% to 3%.

MORTALITY

2010-2014 DATA

In 2010-2014, there were 30 deaths from thyroid cancer in Delaware. Due to the low number of deaths, mortality patterns in Delaware are not presented.

CHAPTER 25: URINARY BLADDER CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting urinary bladder cancer:

- Smoking cigarettes
- Low fluid consumption
- Excessive use of certain pain medications (e.g. phenacetin)

The following are *environmental and medically-related* causes of urinary bladder cancer:

- Workplace exposures to aromatic amines used in the dye industry (e.g. benzidine, beta-naphthylamine)
- Employment in rubber or leather industries
- Arsenic in drinking water
- Treatment with alkylating agent chemotherapy drugs like Cytoxan
- Radiation therapy to the bladder
- Exposure to combustion gases and soot from coal

The following are *non-modifiable* risk factors (these cannot be changed) of getting urinary bladder cancer:

- Non-Hispanic Caucasians are twice as likely as non-Hispanic African Americans to have urinary bladder cancer; Asians and American Indians are also at higher risk.
- Hispanics are at higher risk.
- Most cases are present in those 55 years of age and older (90% of cases).
- More common in males compared to in females
- Personal and family history of bladder cancer
- Certain gene syndromes

To protect against urinary bladder cancer, individuals should avoid tobacco.

EARLY DETECTION

There are currently no tests recommended for the screening of urinary bladder cancer in the general population. Screening is recommended for people at very high risk (history of work-related exposures).

INCIDENCE

For 2010-2014, Delaware ranked 6th in the U.S. for urinary bladder cancer incidence (7th in 2009-2013); males ranked 6th (6th in 2009-2013) and females ranked 7th (6th in 2009-2013)[10].

2010-2014 DATA

TABLE 25-1: NUMBER OF URINARY BLADDER CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	1,352	1,020	332	1,200	914	286	121	84	37	21	15	6
Kent	251	181	70	209	149	60	32	---	---	---	---	---
New Castle	701	535	166	611	477	134	72	45	27	11	---	---
Sussex	400	304	96	380	288	92	17	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

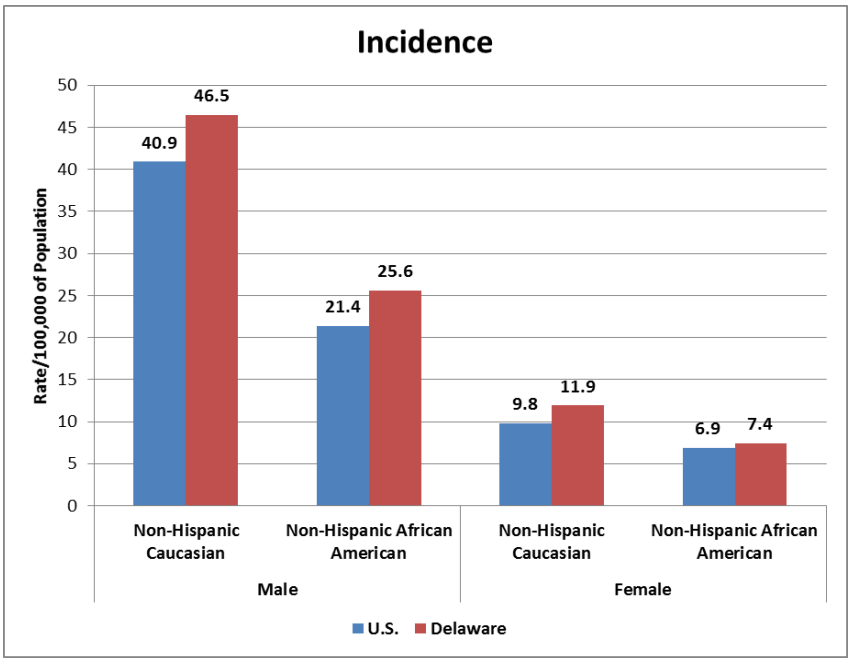
- In 2010-2014, there were 1,352 urinary bladder cancer cases (5% of all cancer cases) diagnosed in Delaware.
- Males accounted for 75% of urinary bladder cancer cases.
- Non-Hispanic Caucasians accounted for 89% of urinary bladder cancer cases.

TABLE 25-2: FIVE-YEAR AVERAGE AGE-ADJUSTED URINARY BLADDER CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	19.8	34.9	8.4
Delaware	24.3	42.4	10.9
Kent	26.4	44.1	13.3
New Castle	23.8	43.3	10.0
Sussex	24.1	40.1	11.5

Source (Delaware): Delaware Cancer Registry, Delaware Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

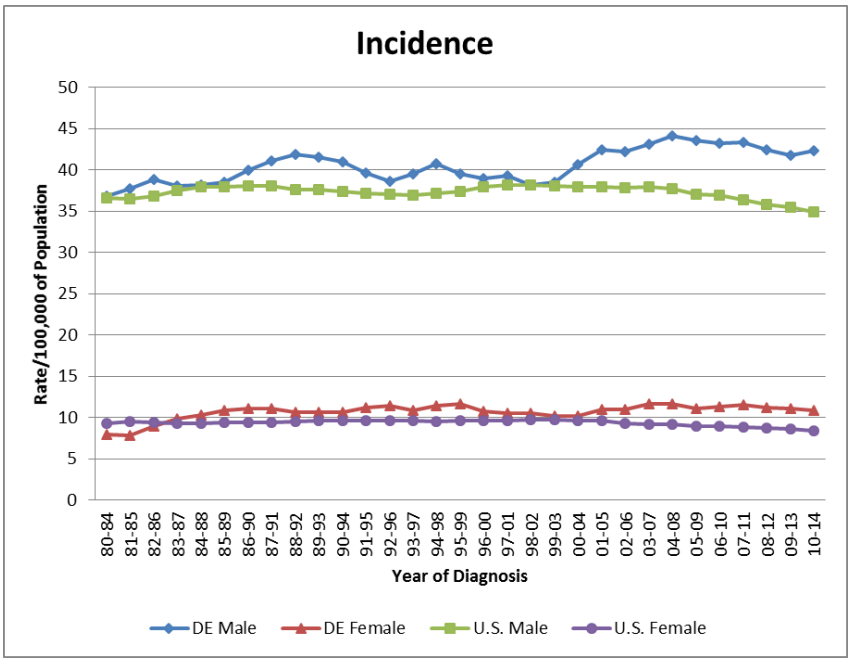
FIGURE 25-1: FIVE-YEAR AVERAGE AGE-ADJUSTED URINARY BLADDER CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Males (42.4 per 100,000) had a statistically significantly higher urinary bladder cancer incidence rate compared to females (10.9 per 100,000).
  - Non-Hispanic Caucasians (26.9 per 100,000) had a statistically significantly higher urinary bladder cancer incidence rate compared to non-Hispanic African Americans (14.4 per 100,000).
  - Urinary bladder cancer incidence rates for Hispanics could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S.
  - Delaware (24.3 per 100,000) had a statistically significantly higher urinary bladder cancer incidence rate compared to the U.S. (19.8 per 100,000).
  - Delaware males (42.4 per 100,000) had a statistically significantly higher urinary bladder cancer incidence rate compared to U.S. males (34.9 per 100,000).
  - Delaware females (10.9 per 100,000) had a statistically significantly higher urinary bladder cancer incidence rate compared to U.S. females (8.4 per 100,000).
  - Non-Hispanic Caucasians in Delaware (26.9 per 100,000) had a statistically significantly higher urinary bladder cancer incidence rate compared to non-Hispanic Caucasians in the U.S. (23.4 per 100,000).
  - The difference in urinary bladder cancer incidence rates between non-Hispanic African Americans in Delaware (14.4 per 100,000) and the U.S. (12.7 per 100,000) was not statistically significant.

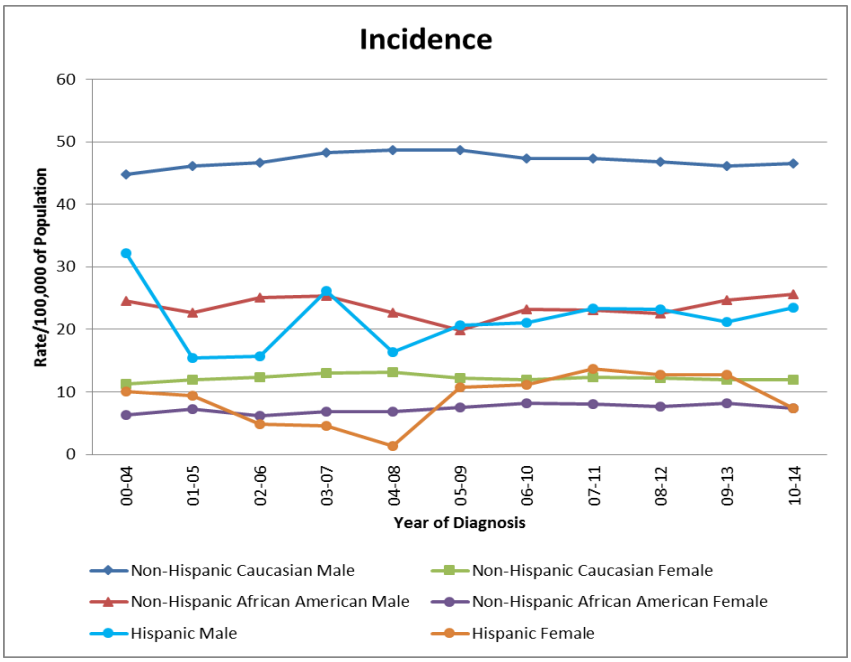
FIGURE 25-2: FIVE-YEAR AVERAGE AGE-ADJUSTED URINARY BLADDER CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for urinary bladder cancer increased 5% in Delaware and decreased 8% in the U.S.
  - Incidence rates for urinary bladder cancer increased 4% in Delaware males and decreased 8% in U.S. males.
  - Incidence rates for urinary bladder cancer increased 7% in Delaware females and decreased 13% in U.S. females.

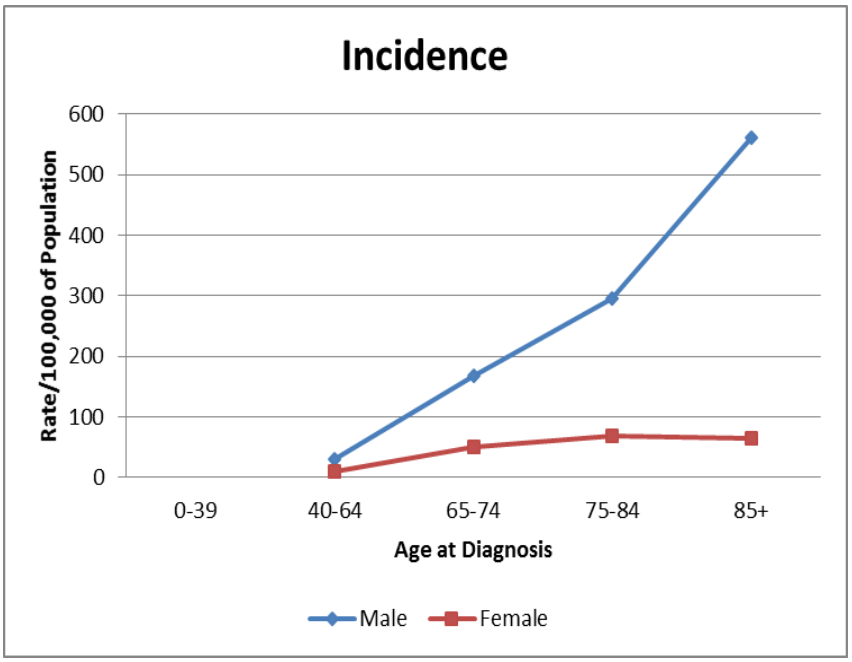
FIGURE 25-3: FIVE-YEAR AVERAGE AGE-ADJUSTED URINARY BLADDER CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates for urinary bladder cancer increased 4% in non-Hispanic Caucasian males and increased 5% in non-Hispanic Caucasian females.
  - Incidence rates for urinary bladder cancer increased 4% in non-Hispanic African American males and increased 17% in non-Hispanic African American females.
  - Incidence rates for urinary bladder cancer decreased 27% in Hispanic males and decreased 27% in Hispanic females.

FIGURE 25-4: AGE-SPECIFIC URINARY BLADDER CANCER INCIDENCE RATES BY SEX; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The peak age range for urinary bladder cancer incidence is 85 years of age and older for males and 75-84 years of age for females. Due to low numbers, urinary bladder cancer incidence rates were not calculated for some groups.

TABLE 25-3: AGE-SPECIFIC URINARY BLADDER CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	33.6	19.5	---	11.7	---	---
65-74	187.7	104.0	---	56.2	---	---
75-84	322.8	---	---	73.2	---	---
85+	599.7	---	---	73.2	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Non-Hispanic Caucasian males have a peak age range for urinary bladder cancer incidence at 85 years of age and older; non-Hispanic Caucasian females have peak incidence between 75-84 years of age.

STAGE OF DIAGNOSIS - DELAWARE

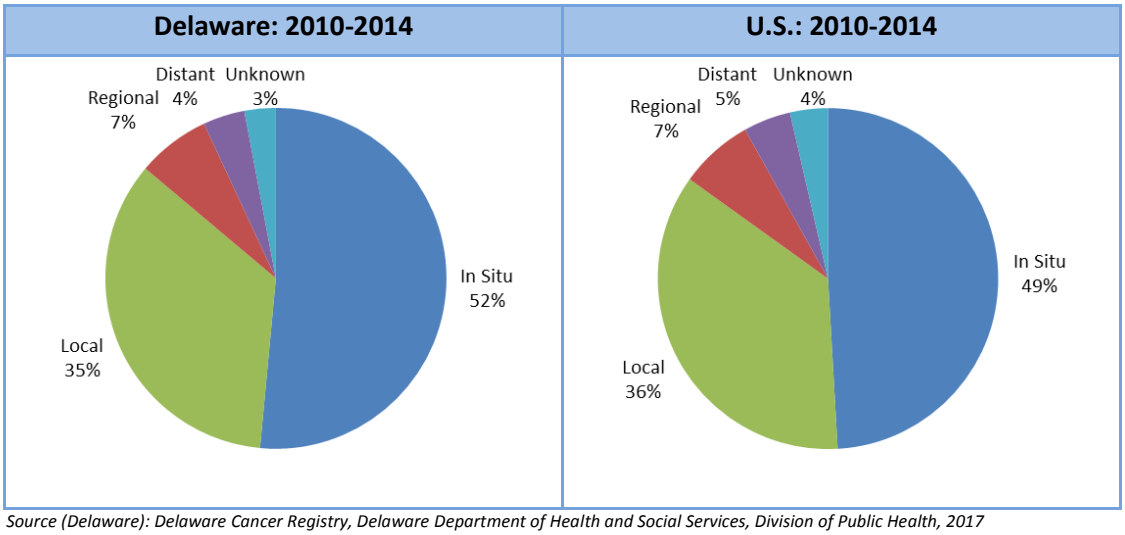
TABLE 25-4: URINARY BLADDER CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
In Situ	700 (52)	531 (52)	169 (51)	637 (53)	485 (53)	152 (53)	46 (38)	33 (39)	13 (35)	12 (57)	---	---
Local	468 (35)	358 (35)	110 (33)	405 (34)	317 (35)	88 (31)	51 (42)	34 (41)	17 (46)	8 (38)	---	---
Regional	90 (7)	59 (6)	31 (9)	81 (7)	53 (6)	28 (10)	8 (7)	---	---	---	---	---
Distant	51 (4)	40 (4)	11 (3)	44 (4)	34 (4)	10 (4)	7 (6)	---	---	---	---	---
Unknown	43 (2)	32 (3)	11 (3)	33 (3)	25 (3)	8 (3)	9 (7)	---	---	---	---	---
Total	1,352	1,020	332	1,200	914	286	121	84	37	21	15	6

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- *In situ* urinary bladder cancer cases are included because, based on language used by pathologists, it is difficult to distinguish them from malignant cancers.
- In 2010-2014, there were 700 (52%) urinary bladder cancers diagnosed at the *in situ* stage; 468 (35%) at the local stage; 90 (7%) at the regional stage; 51 (4%) at the distant stage; and 41 (3%) had an unknown stage.
- Non-Hispanic African Americans (38%) had a lower proportion of urinary bladder cancers diagnosed at the *in situ* stage compared to both non-Hispanic Caucasians (53%) and Hispanics (57%).
- Males (52%) had a higher proportion of urinary bladder cancers diagnosed at the *in situ* stage compared to females (51%).

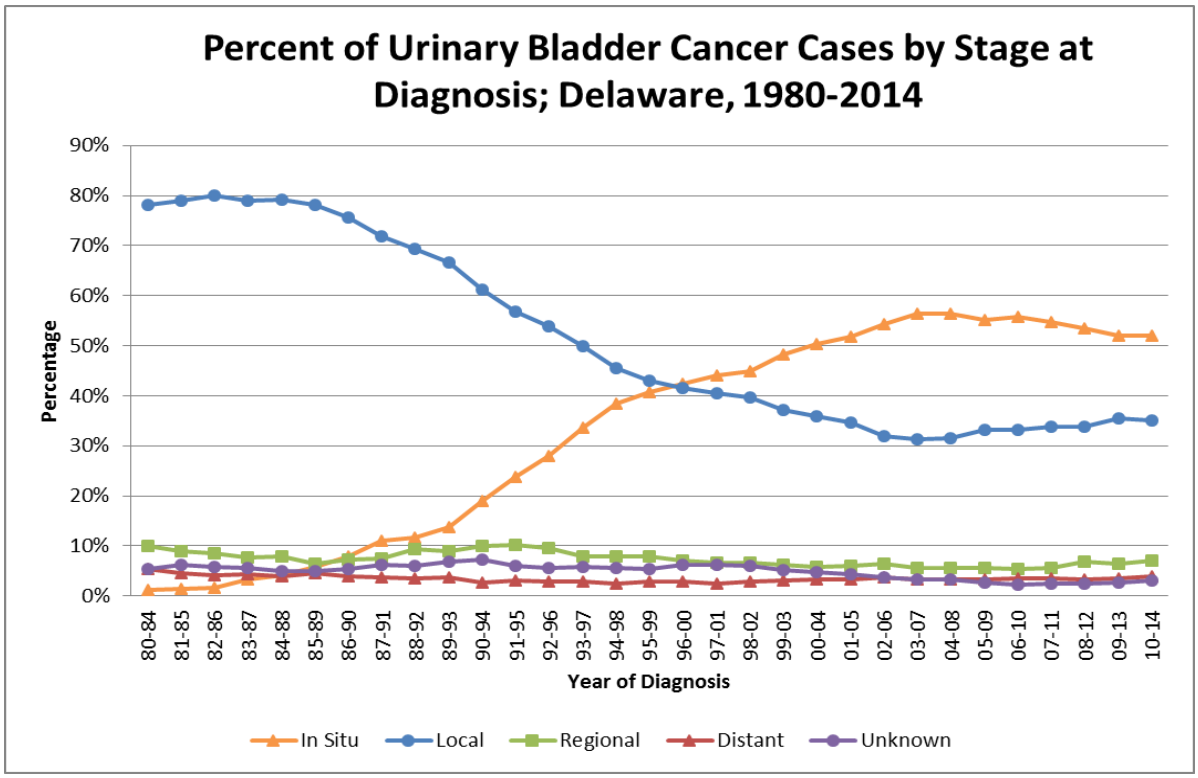
FIGURE 25-5: DISTRIBUTION OF URINARY BLADDER CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware urinary bladder cancer data, Delaware (52%) has a higher proportion of urinary bladder cancer diagnosed at the *in situ* stage compared to the U.S. (49%).

FIGURE 25-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR URINARY BLADDER CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of urinary bladder cancer cases diagnosed at the *in situ* stage increased from 1% to 52%.

MORTALITY

For 2010-2014, Delaware ranked 20th in the U.S. for urinary bladder cancer mortality (20th in 2009-2013); males ranked 32nd (35th in 2009-2013) and females ranked 3rd (2nd in 2009-2013)[11].

2010-2014 DATA

TABLE 25-5: NUMBER OF URINARY BLADDER CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	252	163	89	219	143	76	29	16	13	---	---	---
Kent	47	26	21	45	24	21	---	---	---	---	---	---
New Castle	143	99	44	118	86	32	22	10	12	---	---	---
Sussex	62	38	24	56	33	23	---	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 252 deaths (3% of all cancer deaths) from urinary bladder cancer in Delaware.

- Males accounted for 65% of urinary bladder cancer deaths.
- Non-Hispanic Caucasians accounted for 87% of urinary bladder cancer deaths.

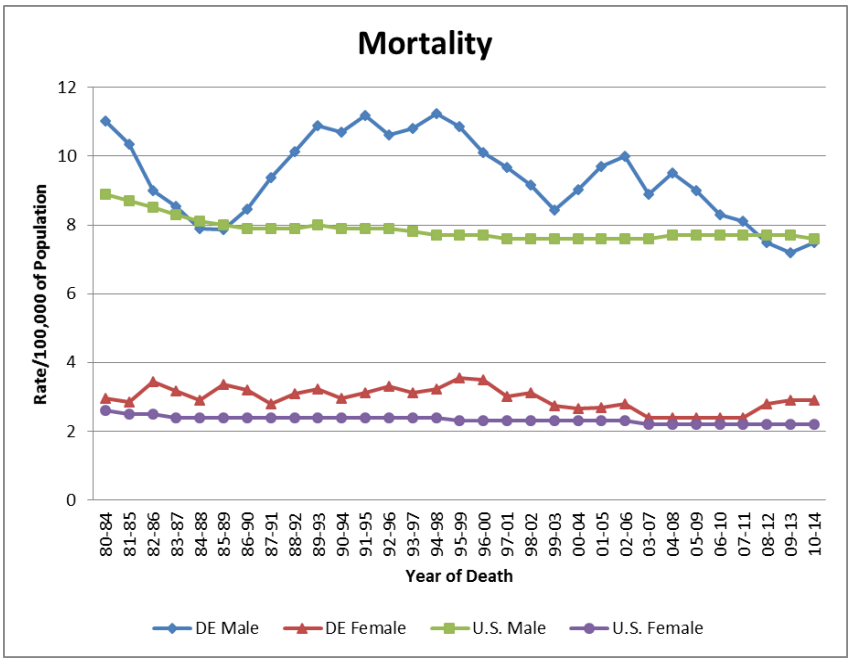
TABLE 25-6: FIVE-YEAR AVERAGE AGE-ADJUSTED URINARY BLADDER CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	4.4	7.6	2.2
Delaware	4.7	7.5	2.9
Kent	5.3	7.0	---
New Castle	5.1	8.9	2.6
Sussex	3.8	5.3	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- In Delaware
  - Males (7.5 per 100,000) had a statistically significantly higher urinary bladder cancer mortality rate compared to females (2.9 per 100,000).
  - The difference in urinary bladder cancer mortality rates between non-Hispanic Caucasians (4.9 per 100,000) and non-Hispanic African Americans (3.9 per 100,000) was not statistically significant.
  - Urinary bladder cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.
- Comparing Delaware and the U.S.
  - The difference in urinary bladder cancer mortality rates between Delaware (4.7 per 100,000) and the U.S. (4.4 per 100,000) was not statistically significant.
  - The difference in urinary bladder cancer mortality rates between males in Delaware (7.5 per 100,000) and the U.S. (7.6 per 100,000) was not statistically significant.
  - Delaware females (2.9 per 100,000) had a statistically significantly higher urinary bladder cancer mortality rate compared to U.S. females (2.2 per 100,000).
  - The difference in urinary bladder cancer mortality rates between non-Hispanic Caucasians in Delaware (4.9 per 100,000) and the U.S. (4.8 per 100,000) was not statistically significant.
  - The difference in urinary bladder cancer mortality rates between non-Hispanic African Americans in Delaware (3.9 per 100,000) and the U.S. (3.7 per 100,000) was not statistically significant.

FIGURE 25-7: FIVE-YEAR AVERAGE AGE-ADJUSTED URINARY BLADDER CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 1980-2014

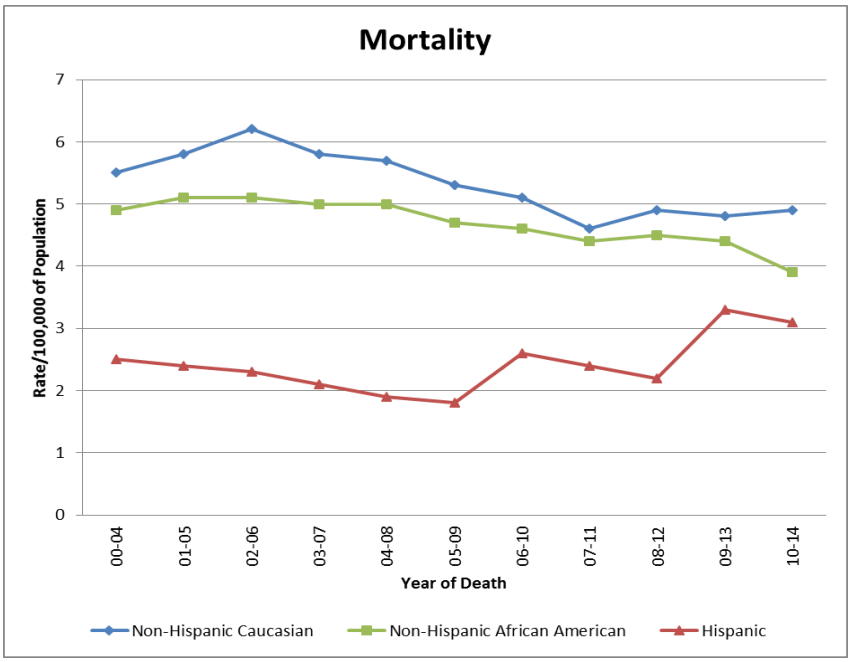


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for urinary bladder cancer decreased 10% in Delaware and increased 2% in the U.S.
  - Mortality rates for urinary bladder cancer decreased 17% in Delaware males and remained the same in the U.S. males.
  - Mortality rates for urinary bladder cancer increased 9% in Delaware females and decreased 4% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 25-8: FIVE-YEAR AVERAGE AGE-ADJUSTED URINARY BLADDER CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center,, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for urinary bladder cancer decreased 11% in non-Hispanic Caucasians.
  - Mortality rates for urinary bladder cancer decreased 20% -in non-Hispanic African Americans.
  - Mortality rates for urinary bladder cancer increased 24% in Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 25-7: AGE-SPECIFIC URINARY BLADDER CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---	---	---
40-64	---	---	---	---	---	---
65-74	20.7	---	---	---	---	---
75-84	53.8	---	---	24.8	---	---
85+	187.7	---	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for urinary bladder cancer mortality is 85 years of age and older. Due to low numbers, mortality rates were not calculated for some groups.

CHAPTER 26: UTERINE CANCER

RISK FACTORS

The following are *lifestyle risk factors* which a person can modify to reduce their risk of getting uterine cancer:

- Overweight or obesity
- A diet high in animal fat

The following are *environmental and medically-related* causes of uterine cancer:

- Treatment with the drug Tamoxifen
- Never having children, especially due to fertility issues
- High levels of estrogen (either occurring naturally or via hormone therapy)

The following are *non-modifiable* risk factors (these cannot be changed) of getting uterine cancer:

- Risk of uterine cancer increases with age.
- Personal history of any of the following: diabetes, breast cancer, ovarian cancer, benign ovarian tumors, granulosa-theca cell ovarian tumors, polycystic ovarian syndrome (PCOS), atypical endometrial hyperplasia
- Family history of endometrial and colorectal cancers (Lynch syndrome or hereditary nonpolyposis colorectal cancer)
- Having a higher number of menstrual cycles throughout a female's life

Factors known to protect against uterine cancer include having multiple pregnancies, use of oral contraceptives, use of an intrauterine device that does not contain hormones, use of combination hormone therapy, and a complete hysterectomy. In addition, to protect against uterine cancer, females should consume a diet rich in fruits and vegetables, engage in recommended levels of physical activity, and maintain a healthy weight.

EARLY DETECTION

There are currently no tests recommended for the screening of uterine cancer.

INCIDENCE

For 2010-2014, Delaware ranked 15th in the U.S. for uterine cancer incidence (14th in 2009-2013)[10].

2010-2014 DATA

TABLE 26-1: NUMBER OF UTERINE CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	892	693	158	28
Kent	181	134	41	---
New Castle	483	362	91	20
Sussex	228	197	26	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 892 uterine cancer cases (7% of all female cancer cases) diagnosed in Delaware.

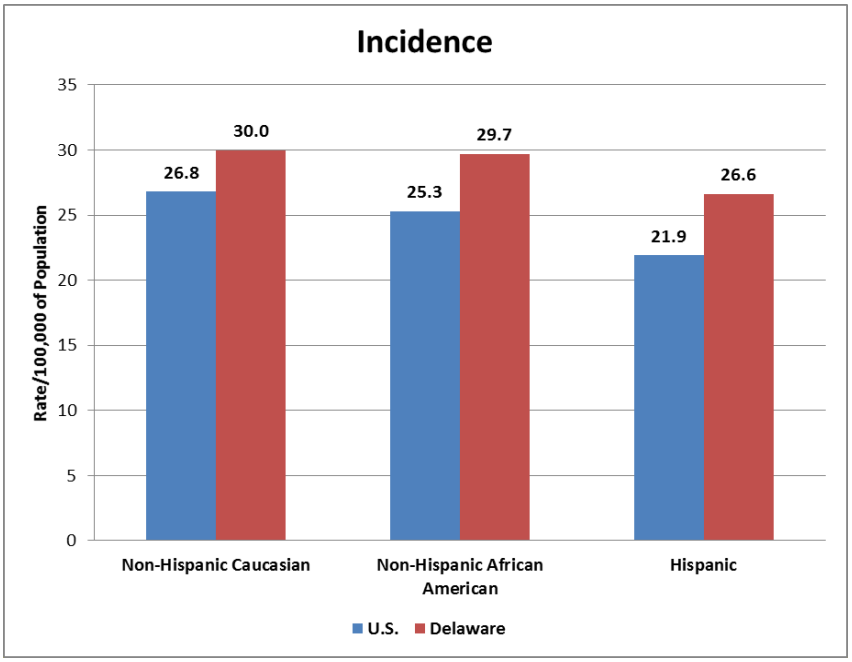
- Non-Hispanic Caucasians accounted for 78% of uterine cancer cases.

TABLE 26-2: FIVE-YEAR AVERAGE AGE-ADJUSTED UTERINE CANCER INCIDENCE RATES OVERALL AND BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	25.7	26.8	25.3	21.9
Delaware	29.1	30.0	29.7	26.6
Kent	34.1	37.8	37.8	---
New Castle	28.8	26.6	26.1	---
Sussex	26.5	34.9	34.9	---

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 26-1: FIVE-YEAR AVERAGE AGE-ADJUSTED UTERINE CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



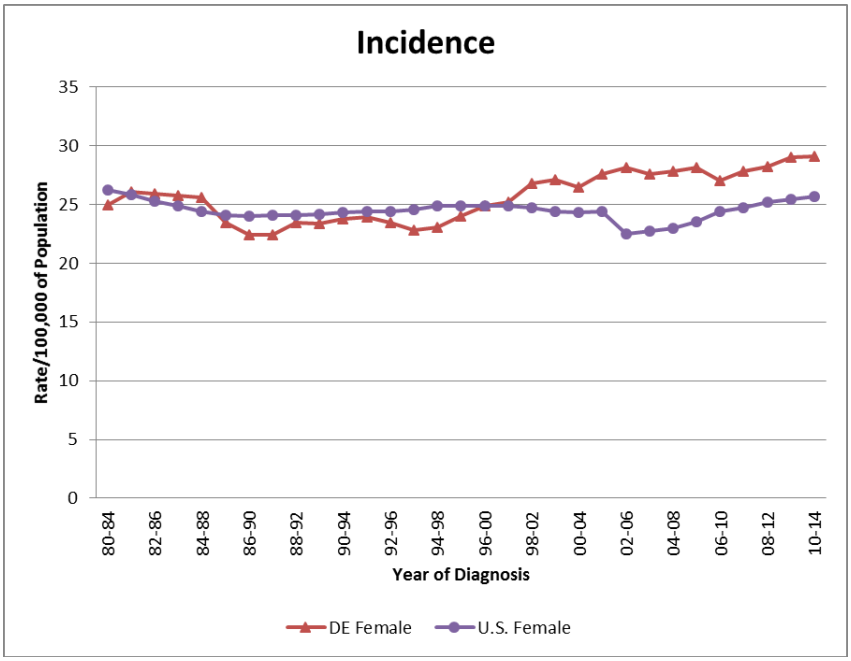
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in uterine cancer incidence rates between non-Hispanic Caucasians (30.0 per 100,000), non-Hispanic African Americans (29.7 per 100,000), and Hispanics (26.6 per 100,000) was not statistically significant.
- Comparing Delaware and the U.S.
  - Delaware (29.1 per 100,000) had a statistically significantly higher uterine cancer incidence rate compared to the U.S. (25.7 per 100,000).
  - The difference in uterine cancer incidence rates between non-Hispanic Caucasians in Delaware (30.0 per 100,000) and the U.S. (26.8 per 100,000) was not statistically significant.

- The difference in uterine cancer incidence rates between non-Hispanic African Americans in Delaware (29.7 per 100,000) and the U.S. (25.3 per 100,000) was not statistically significant.
- The difference in uterine cancer incidence rates between Hispanics in Delaware (26.6 per 100,000) and the U.S. (21.9 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 26-2: FIVE-YEAR AVERAGE AGE-ADJUSTED UTERINE CANCER INCIDENCE RATES; U.S. AND DELAWARE, 1980-2014

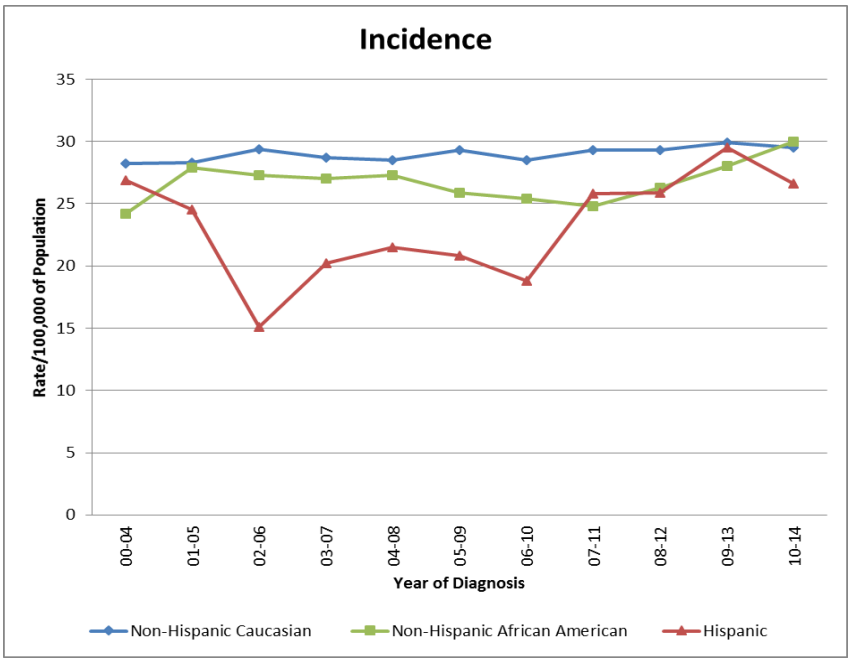


Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for uterine cancer increased 10% in Delaware and increased 6% in the U.S.

TRENDS OVER TIME - DELAWARE

FIGURE 26-3: FIVE-YEAR AVERAGE AGE-ADJUSTED UTERINE CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates for uterine cancer increased 5% in non-Hispanic Caucasians.
  - Incidence rates for uterine cancer increased 24% in non-Hispanic African Americans.
  - Incidence rates for uterine cancer decreased 1% in Hispanics.

AGE-SPECIFIC INCIDENCE RATES - DELAWARE

TABLE 26-3: AGE-SPECIFIC UTERINE CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	3.1	---	---	---
40-64	49.7	53.5	41.9	---
65-74	111.8	112.0	135.0	---
75-84	86.7	83.3	---	---
85+	64.5	62.8	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for uterine cancer incidence is 65-74 years of age. Due to low numbers, incidence rates were not calculated for some groups.

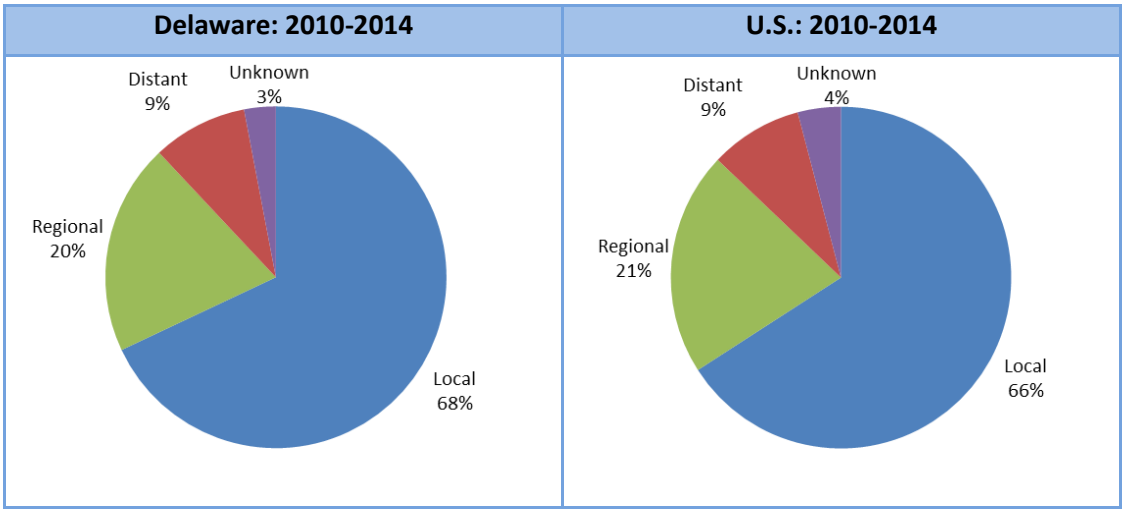
TABLE 26-4: UTERINE CANCER CASES BY STAGE AT DIAGNOSIS BY RACE/ETHNICITY; DELAWARE, 2010-2014

Stage at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Local	608 (68)	485 (70)	94 (60)	20 (71)
Regional	179 (20)	138 (20)	33 (21)	6 (21)
Distant	81 (9)	55 (8)	24 (15)	---
Unknown	24 (3)	15 (2)	7 (4)	---
Total	892	693	158	28

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 608 (68%) uterine cancers diagnosed at the local stage; 179 (20%) at the regional stage; 81 (9%) at the distant stage; and 24 (3%) had an unknown stage.
- Hispanics (71%) had a higher proportion of uterine cancers diagnosed at the local stage compared to both non-Hispanic Caucasians (70%) and non-Hispanic African Americans (60%).

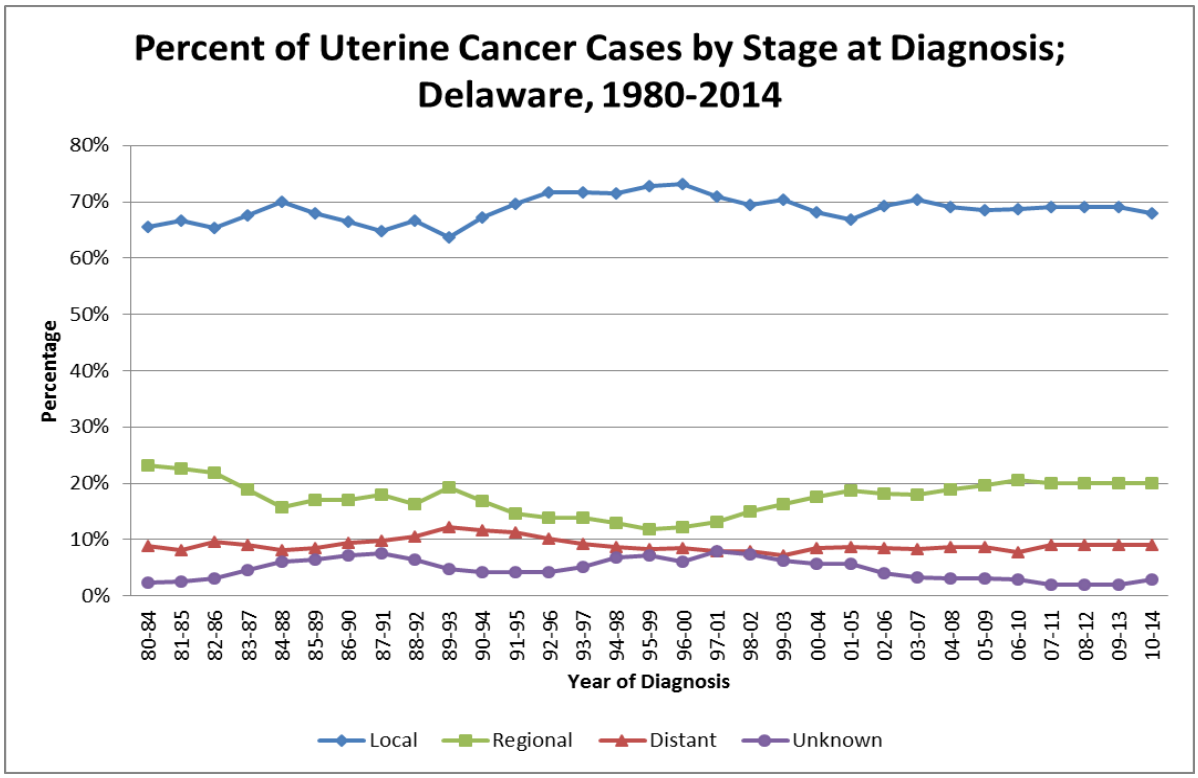
FIGURE 26-4: DISTRIBUTION OF UTERINE CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2010-2014



Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017

- In comparing U.S. and Delaware uterine cancer data, Delaware (68%) had a higher proportion of uterine cancer diagnosed at the local stage compared to the U.S. (66%).

FIGURE 26-5: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR UTERINE CANCER CASES; DELAWARE, 1980-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- From 1980-1984 to 2010-2014 in Delaware
  - The percent of uterine cancer cases diagnosed at the local stage increased from 66% to 68%.
  - Uterine cancer cases diagnosed at the distant stage remained the same at 9%.

MORTALITY

For 2010-2014, Delaware ranked 9th in the U.S. for uterine cancer mortality (10th in 2009-2013)[11].

2010-2014 DATA

TABLE 26-5: NUMBER OF UTERINE CANCER DEATHS, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Delaware	160	111	41	---
Kent	28	20	7	---
New Castle	93	64	24	---
Sussex	39	27	10	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

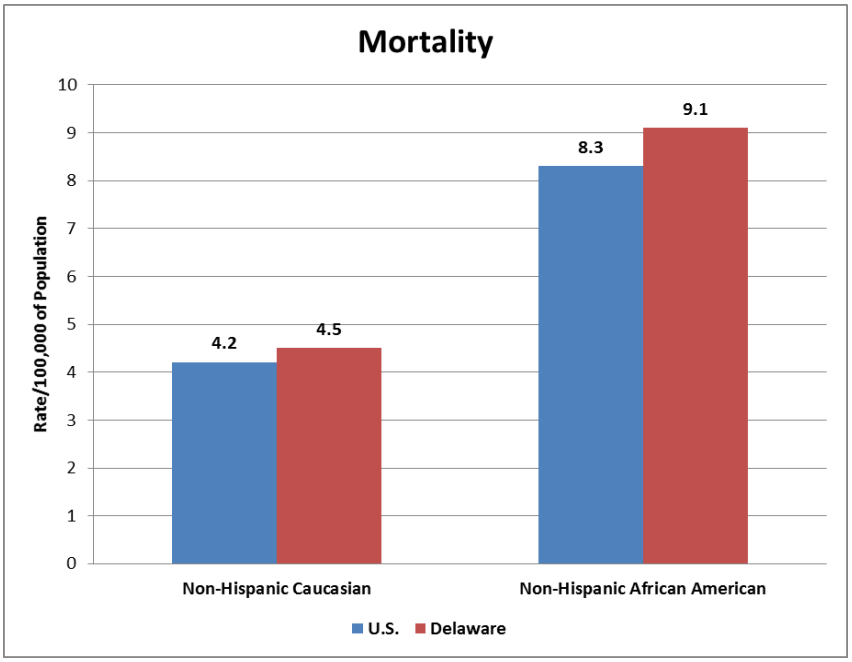
- In 2010-2014, there were 160 deaths (3% of all female cancer deaths) from uterine cancer in Delaware.
- Non-Hispanic Caucasians accounted for 69% of uterine cancer deaths.

TABLE 26-6: FIVE-YEAR AVERAGE AGE-ADJUSTED UTERINE CANCER MORTALITY RATES OVERALL AND BY RACE/ETHNICITY; U.S., DELAWARE AND COUNTIES, 2010-2014

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
U.S.	4.6	4.2	8.3	3.6
Delaware	5.3	4.5	9.1	---
Kent	5.4	---	---	---
New Castle	5.7	5.0	---	---
Sussex	4.5	3.4	---	---

Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 26-6: FIVE-YEAR AVERAGE AGE-ADJUSTED UTERINE CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



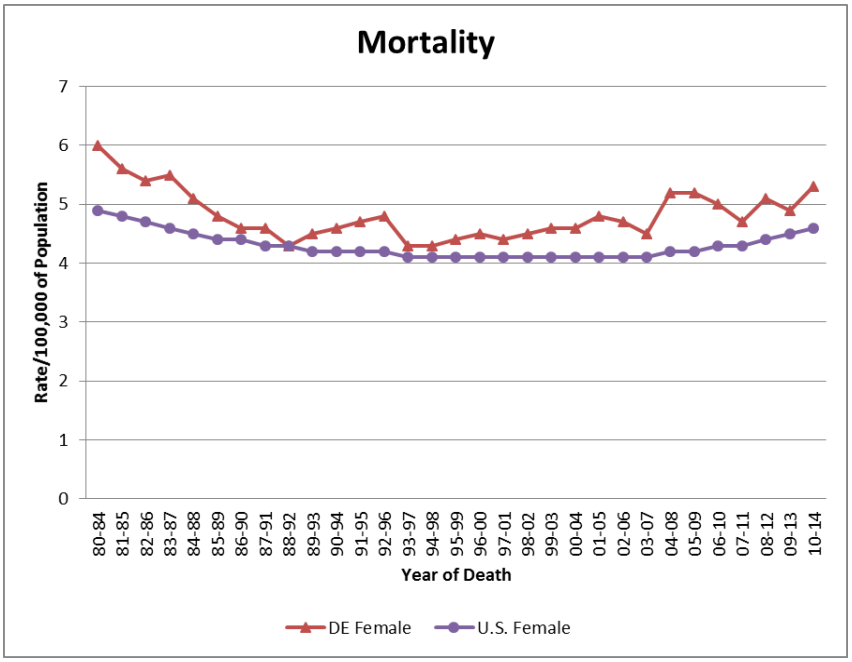
Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - Non-Hispanic Caucasians (4.5 per 100,000) had a statistically significantly lower mortality rate for uterine cancer compared to non-Hispanic African Americans (9.1 per 100,000).
  - Uterine cancer mortality rates for Hispanics could not be calculated due to the low number of deaths.
- Comparing Delaware and the U.S.
  - The difference in uterine cancer mortality rates between Delaware (5.3 per 100,000) and the U.S. (4.6 per 100,000) was not statistically significant.
  - The difference in uterine cancer mortality rates between non-Hispanic Caucasians in Delaware (4.5 per 100,000) and the U.S (4.2 per 100,000) was not statistically significant.

- The difference in uterine cancer mortality rates between non-Hispanic African Americans in Delaware (9.1 per 100,000) and the U.S (8.3 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 26-7: FIVE-YEAR AVERAGE AGE-ADJUSTED UTERINE CANCER MORTALITY RATES; U.S. AND DELAWARE, 1980-2014

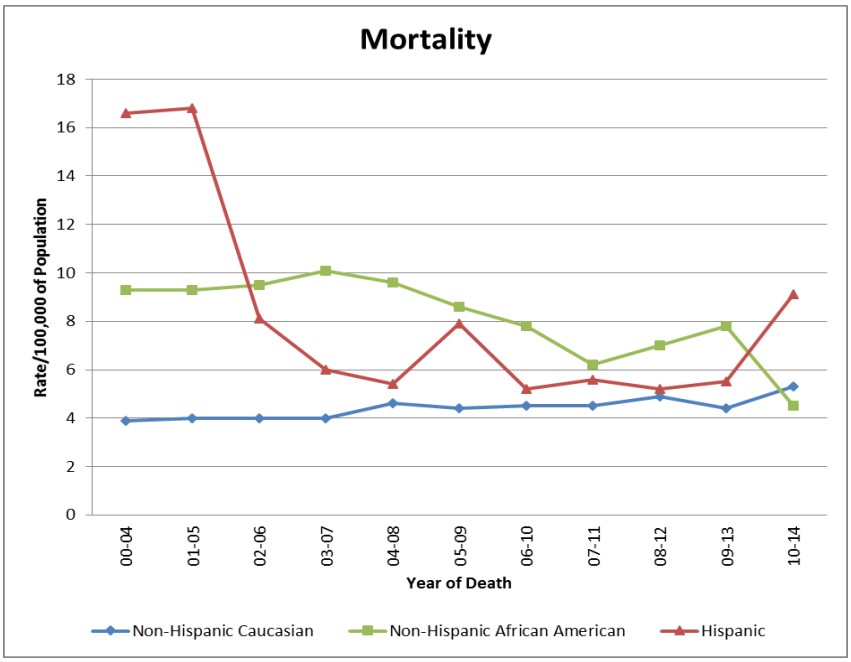


Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates for uterine cancer increased 15% in Delaware and increased 12% in the U.S.

TRENDS OVER TIME - DELAWARE

FIGURE 26-8: FIVE-YEAR AVERAGE AGE-ADJUSTED UTERINE CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Mortality rates for uterine cancer increased 36% in non-Hispanic Caucasians.
  - Mortality rates for uterine cancer decreased 52% in non-Hispanic African Americans.
  - Mortality rates for uterine cancer decreased 45% in Hispanics.

AGE-SPECIFIC MORTALITY RATES - DELAWARE

TABLE 26-7: AGE-SPECIFIC UTERINE CANCER MORTALITY RATES BY RACE; DELAWARE, 2010-2014

Age at Death	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---
40-64	5.3	5.0	---	---
65-74	23.6	18.9	---	---
75-84	35.5	27.3	---	---
85+	---	---	---	---

Source: Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for uterine cancer mortality is 75-84 years of age. Due to low numbers, mortality rates were not calculated for some groups.

CHAPTER 27: CANCER AMONG CHILDREN AND ADOLESCENTS

According to the ACS, childhood cancers are less than 1% of all cancers diagnosed annually[22]. The ACS estimates that 10,270 children in the United States under 15 years of age will be diagnosed with cancer in 2017[22].

RISK FACTORS

The risk factors for childhood cancers are largely unknown.

The following are *risk factors that account for a small percentage* of childhood cancers:

- Clinical conditions like Downs Syndrome
- Specific chromosomal and genetic abnormalities
- Ionizing radiation exposure

The following are *suspected environmental and medically-related* causes of childhood cancer:

- Early-life exposures to infectious agents
- Parental, fetal, or childhood exposures to environmental toxins such as pesticides, solvents, or other household chemicals
- Parental occupational exposures to radiation or chemicals

The following are *other possible risk factors* of childhood cancer:

- Parental medical conditions during pregnancy or before conception
- Maternal diet during pregnancy
- Early postnatal feeding patterns and diet
- Maternal reproductive history
- Maternal exposures to oral contraceptives, fertility drugs, and other medications
- Familial and genetic susceptibility
- Exposure to the human immunodeficiency virus (HIV)

CANCER INCIDENCE AMONG CHILDREN AND ADOLESCENTS

Cancer is relatively rare among children and adolescents. Although persons younger than 20 comprised 18% of Delaware's population during 2010-2014, cancers in this age group accounted for less than 1 percent (0.8%) of the total case count for Delaware in 2010-2014.

TABLE 27-1: NUMBER OF CANCER CASES AMONG CHILDREN AND ADOLESCENTS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	214	103	111	122	58	64	50	25	25	33	16	17
Kent	38	19	19	26	12	14	---	---	---	---	---	---
New Castle	132	65	67	69	37	32	37	17	20	19	8	11
Sussex	44	19	25	27	9	18	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 214 new cancers diagnosed among Delaware children and adolescents.

[22] https://www.cancer.org/cancer/cancer-in-children/key-statistics.html

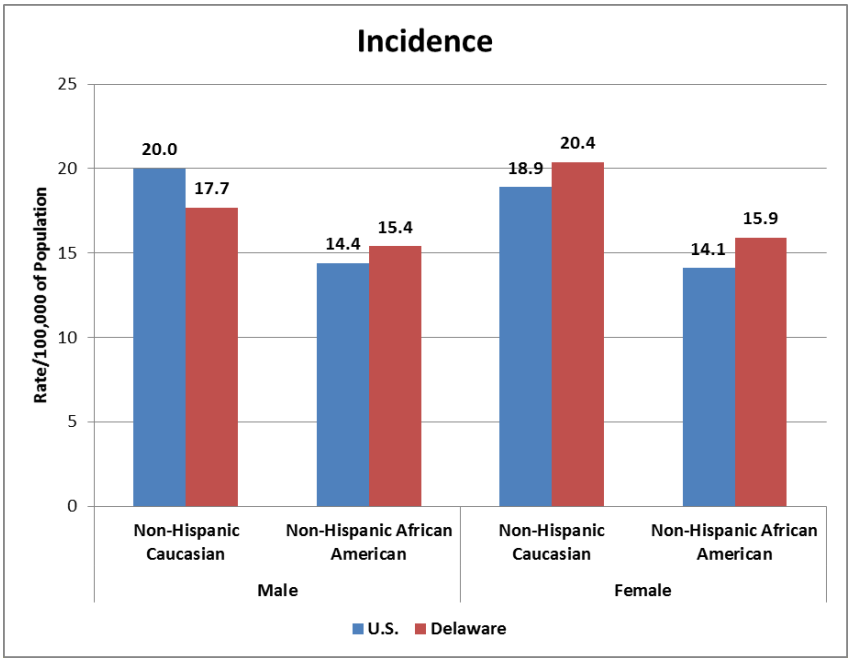
- Females accounted for 52% of new cancer cases among children and adolescents
- Non-Hispanic Caucasians accounted for 57% of new cancer cases among children and adolescents.

TABLE 27-2: FIVE-YEAR AVERAGE AGE-ADJUSTED CANCER INCIDENCE RATES AMONG CHILDREN AND ADOLESCENTS, OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2010-2014

	Overall	Male	Female
U.S.	17.8	18.5	17.0
Delaware	18.4	17.4	19.4
Kent	16.5	---	---
New Castle	18.5	17.8	19.2
Sussex	19.5	---	22.8

Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

FIGURE 27-1: FIVE-YEAR AVERAGE AGE-ADJUSTED CANCER INCIDENCE RATES AMONG CHILDREN AND ADOLESCENTS BY RACE/ETHNICITY; U.S. AND DELAWARE, 2010-2014



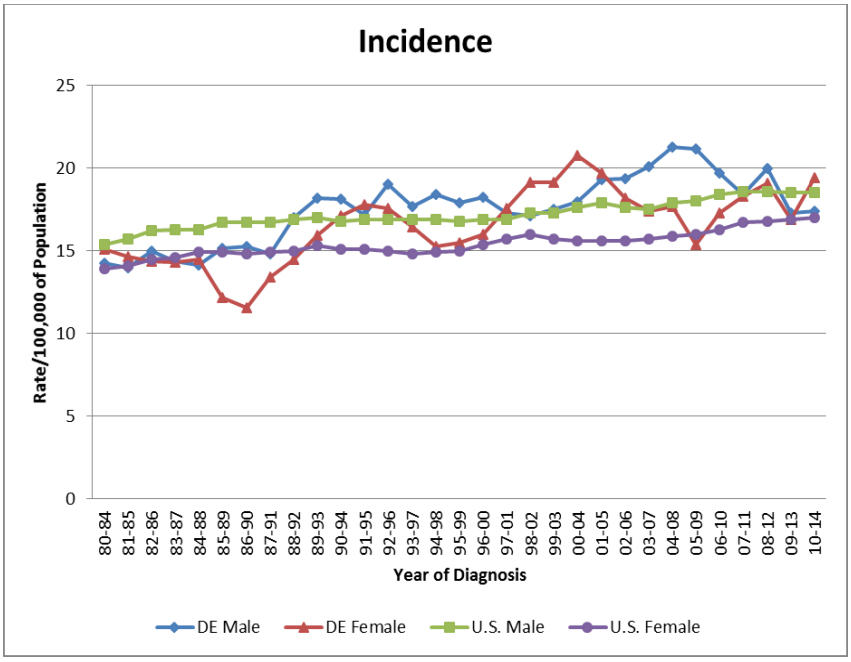
Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware
  - The difference in cancer incidence rates in children and adolescents between males (17.4 per 100,000) and females (19.4 per 100,000) was not statistically significant.
  - The difference in cancer incidence rates in children and adolescents between non-Hispanic Caucasians (19.0 per 100,000), non-Hispanic African Americans (15.7 per 100,000), and Hispanics (20.5 per 100,000) was not statistically significant.
- Comparing Delaware and the U.S.
  - The difference in cancer incidence rates in children and adolescents between Delaware (18.4 per 100,000) and the U.S. (17.8 per 100,000) was not statistically significant.

- The difference in cancer incidence rates in children and adolescents between males in Delaware (17.4 per 100,000) and the U.S. (18.5 per 100,000) was not statistically significant.
- The difference in cancer incidence rates in children and adolescents between females in Delaware (19.4 per 100,000) and the U.S. (17.0 per 100,000) was not statistically significant.
- The difference in cancer incidence rates in children and adolescents between non-Hispanic Caucasians in Delaware (19.0 per 100,000) and the U.S. (19.5 per 100,000) was not statistically significant.
- The difference in cancer incidence rates in children and adolescents between non-Hispanic African Americans in Delaware (15.7 per 100,000) and the U.S. (14.2 per 100,000) was not statistically significant.
- The difference in cancer incidence rates in children and adolescents between Hispanics in Delaware (20.5 per 100,000) and the U.S. (16.9 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 27-2: FIVE-YEAR AVERAGE AGE-ADJUSTED CANCER INCIDENCE RATES AMONG CHILDREN AND ADOLESCENTS BY RACE/ETHNICITY; U.S. AND DELAWARE, 1980-2014

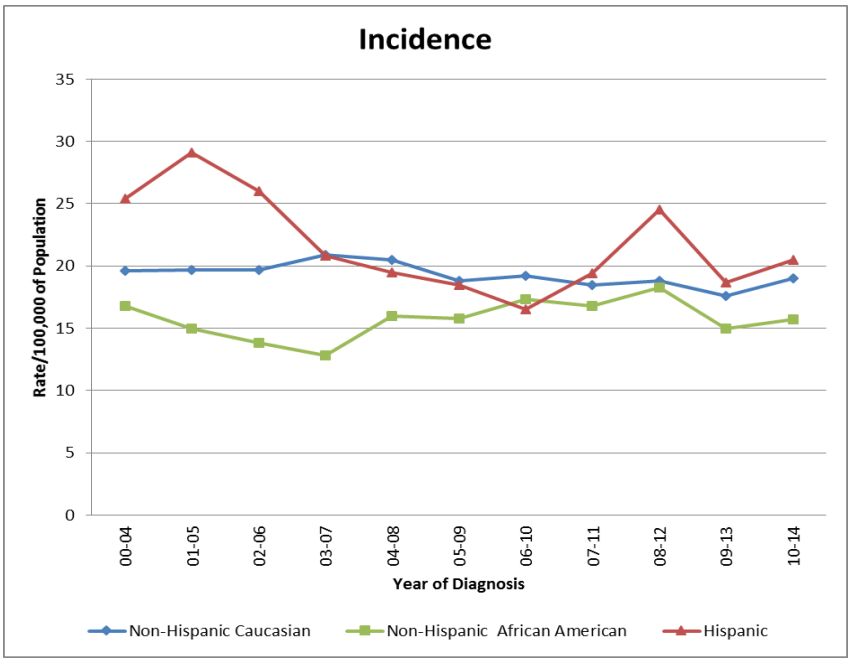


Source (Delaware): Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Incidence rates in children and adolescents increased 11% in Delaware and decreased 6% in the U.S.
  - Incidence rates in children and adolescents decreased 3% in Delaware males and increased 5% in U.S. males.
  - Incidence rates in children and adolescents decreased 7% in Delaware females and increased 9% in U.S. females.

TRENDS OVER TIME - DELAWARE

FIGURE 27-3: FIVE-YEAR AVERAGE AGE-ADJUSTED CANCER INCIDENCE RATES AMONG CHILDREN AND ADOLESCENTS BY RACE/ETHNICITY; DELAWARE, 2000-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates in children and adolescents decreased 3% in non-Hispanic Caucasians.
  - Incidence rates in children and adolescents decreased 7% in non-Hispanic African Americans.
  - Incidence rates in children and adolescents decreased 19% in Hispanics.

AGE-SPECIFIC INCIDENCE RATES - DELAWARE

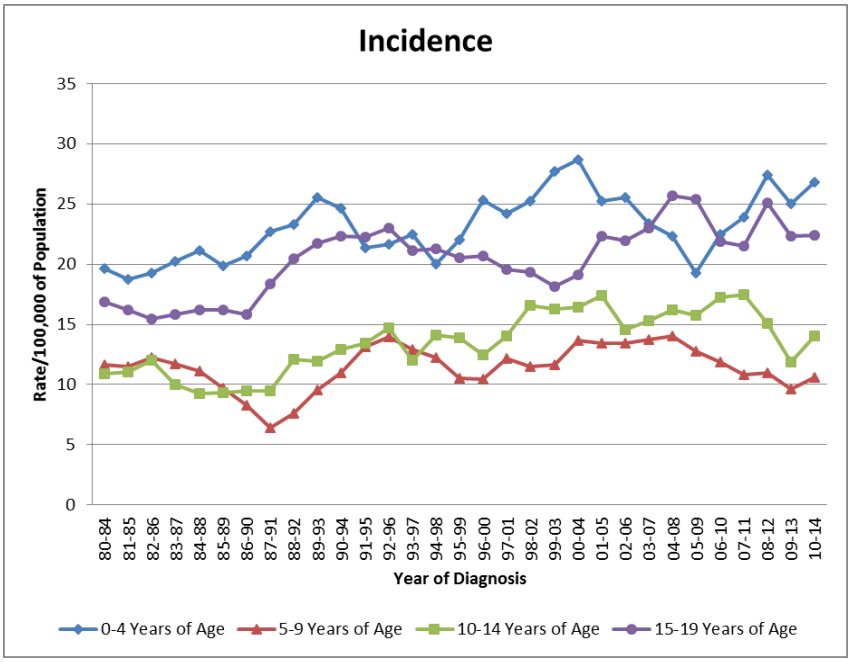
TABLE 27-3: AGE-SPECIFIC CANCER INCIDENCE RATES AMONG CHILDREN AND ADOLESCENTS BY RACE/ETHNICITY; DELAWARE, 2010-2014

Age at Diagnosis	All Children and Adolescents	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-4	26.8	27.5	---	---
5-9	10.6	---	---	---
10-14	14.0	---	---	---
15-19	22.4	25.1	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- The peak age range for cancer incidence in children and adolescents is 0-4 years of age. Due to low numbers, incidence rates were not able to be calculated for some groups.

FIGURE 27-4: FIVE-YEAR AVERAGE AGE-SPECIFIC CANCER INCIDENCE RATES AMONG CHILDREN AND ADOLESCENTS BY AGE GROUP; DELAWARE, 1980-2014

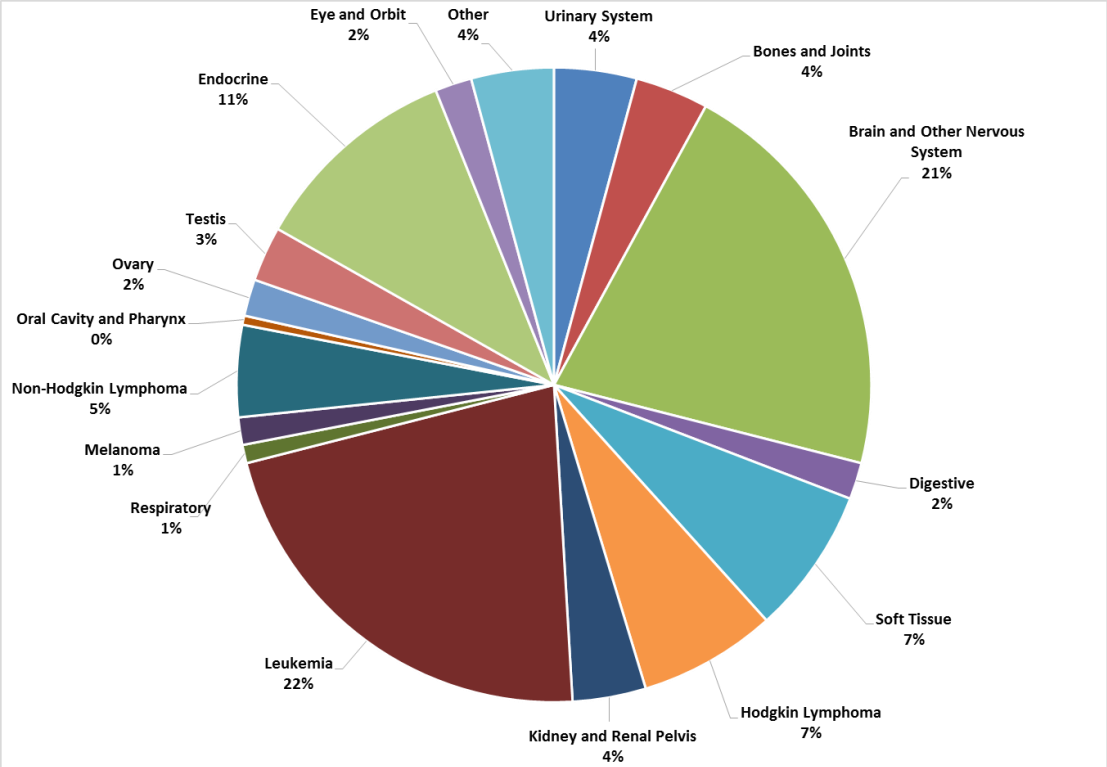


Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014 in Delaware
  - Incidence rates in children and adolescents decreased 7% in those 0-4 years of age.
  - Incidence rates in children and adolescents decreased 22% in those 5-9 years of age.
  - Incidence rates in children and adolescents decreased 15% in those 10-14 years of age.
  - Incidence rates in children and adolescents increased 7% in those 15-19 years of age.

DISTRIBUTION OF CANCER CASES AMONG CHILDREN AND ADOLESCENTS BY ANATOMIC SITE

FIGURE 27-5: DISTRIBUTION OF CANCER CASES AMONG CHILDREN AND ADOLESCENTS BY ANATOMIC SITE; DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

- The most commonly diagnosed cancer in children and adolescents was leukemia (21%) followed by brain and other nervous system (21%), endocrine cancers (11%), and Non-Hodgkin Lymphoma (5%).

TABLE 27-4: FIVE-YEAR AVERAGE AGE-ADJUSTED CANCER INCIDENCE RATES AMONG CHILDREN AND ADOLESCENTS FOR SELECTED CANCERS; U.S. AND DELAWARE, 2010-2014

Cancer Site	Number of Cases	Delaware Age-Adjusted Incidence Rate	U.S. Age-Adjusted Incidence Rate
Leukemia	47	4.1 (3.0, 5.4)	4.7 (4.6, 4.9)
Brain and other CNS	45	3.9 (2.8, 5.2)	3.1 (3.0, 3.2)
Hodgkin Lymphoma	15	---	1.2 (1.1, 1.2)
Thyroid	13	---	1.0 (0.9, 1.0)
Non-Hodgkin Lymphoma	10	---	1.3 (1.2, 1.3)
Bones and Joints	8	---	0.9 (0.9, 1.0)
Kidney and Renal Pelvis	8	---	0.7 (0.7, 0.8)
Testis	6	---	0.6 (0.6, 0.6)

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Rates based on less than 25 cases are not shown

- Due to low numbers, incidence rates could only be calculated for leukemia (4.1 per 100,000) and brain and other central nervous system (CNS) cancers (3.9 per 100,000) in children and adolescents. There was no statistically significant difference in the incidence rates between Delaware and the U.S.

CANCER MORTALITY AMONG CHILDREN AND ADOLESCENTS

From 2010-2014, the five most common causes of death in children, adolescents, and young adults in Delaware were[23]:

1. Accidents (37%)
2. Homicide (15%)
3. Suicide (13%)
4. Cancer (6%)
5. Diseases of the heart (4%)

TABLE 27-5: NUMBER OF DEATHS FROM CANCER AMONG CHILDREN AND ADOLESCENTS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2010-2014

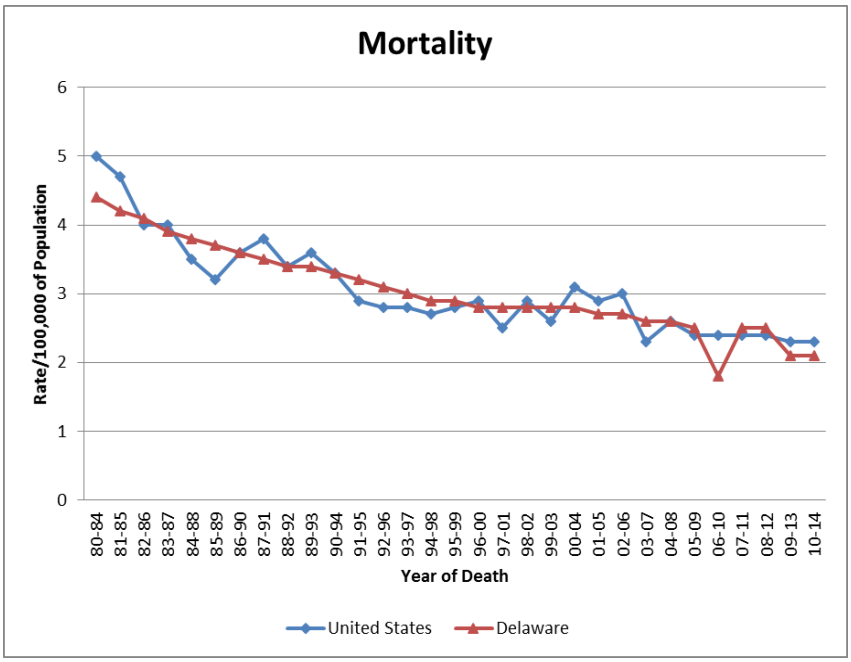
	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Delaware	24	12	12	9	---	---	8	---	---	6	---	---
Kent	---	---	---	---	---	---	---	---	---	---	---	---
New Castle	17	8	9	7	---	---	---	---	---	---	---	---
Sussex	---	---	---	---	---	---	---	---	---	---	---	---

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017
Counts less than 6 are not shown to protect patient privacy

- In 2010-2014, there were 24 deaths from cancer (less than 1% of all cancer deaths) among Delaware children and adolescents.
- Non-Hispanic Caucasians accounted for 38% of cancer deaths among children and adolescents.
- Due to the low number of deaths, age-adjusted rates and comparisons to the U.S. are not presented.

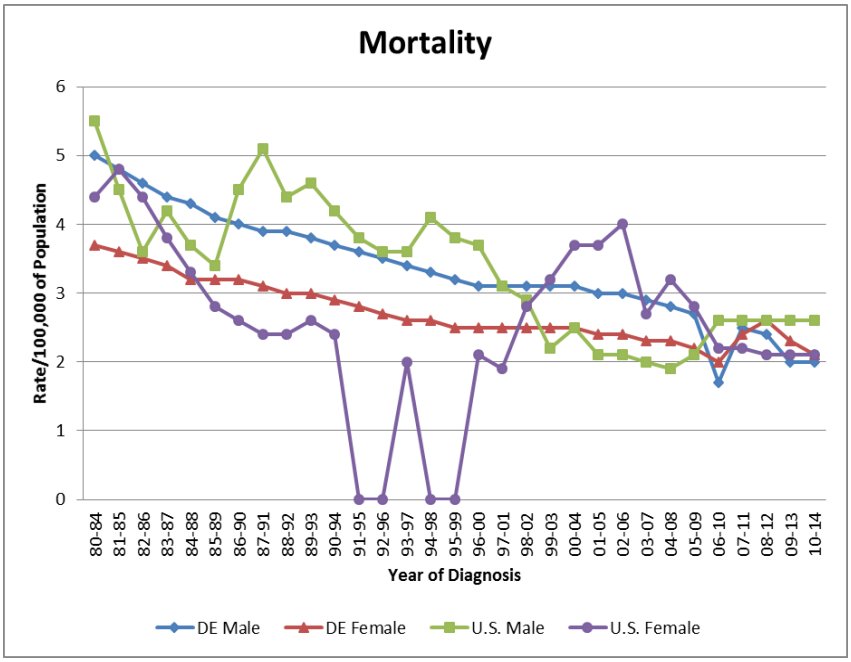
[23] Delaware Health Statistics Center. *Delaware Vital Statistics Annual Report, 2014*. Delaware Department of Health and Social Services, Division of Public Health, 2017.

FIGURE 27-6: FIVE-YEAR AVERAGE AGE-ADJUSTED CANCER MORTALITY RATES AMONG CHILDREN AND ADOLESCENTS; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

FIGURE 27-7: FIVE-YEAR AVERAGE AGE-ADJUSTED CANCER MORTALITY RATES AMONG CHILDREN AND ADOLESCENTS BY SEX; U.S. AND DELAWARE, 1980-2014



Source (Delaware): Delaware Health Statistics Center, Delaware Department of Health and Social Services, Division of Public Health, 2017
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, 2017
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2000-2004 to 2010-2014
  - Mortality rates in children and adolescents decreased 25% in Delaware and decreased 26% in the U.S.
  - Mortality rates in children and adolescents decreased35% in Delaware males and increased 4% in U.S. males.
  - Mortality rates in children and adolescents decreased 16% in Delaware females and decreased 43% in U.S. females.

CHAPTER 28: CANCER INCIDENCE BY CENSUS TRACT

BACKGROUND

As required by Title 16, Chapter 292 of the *Delaware Code* (Appendix E), the Delaware Department of Health and Social Services, Division of Public Health (DPH) publishes cancer rates by census tract annually. Specifically:

> *"The agency [DPH] shall create a detailed map of each county in Delaware that graphically illustrates the overall incidence of cancer in each census tract. The census tracts will be identified on the maps and shall be color-coded to designate the degree of cancer incidence in each tract. These maps shall be created within 90 days of the agency receiving the cancer incidence data. The agency shall post the maps created … on their website in a format that can be easily accessed and read by the public."*

METHODS

Census tract analysis methods are described in detail in Appendix F.

As of the 2010 Census, Delaware is divided into 214 census tracts.

- For 2010-2014, the least populated census tract (511.01 in Sussex County) had an annual average of 689 residents. The most populous census tract (402.02 in Kent County) had an annual average population of 13,152 residents. The average annual number of residents per census tract was 4,285.
- For 2010-2014 census tract analyses, 27,861 Delaware cancer cases diagnosed during the time period were included in the analyses.

RESULTS OF CENSUS TRACT ANALYSES

Cancer incidence rates by census tract (with confidence intervals) are shown in Appendix H for the 2010-2014 time period. Census tracts shaded in yellow have statistically significantly higher incidence rates and those shaded in blue have statistically significantly lower incidence rates (when compared to the overall state incidence rate).

Results for 2010-2014 show that:

- In 16 of Delaware's 214 census tracts, the all-site cancer incidence rate was statistically significantly higher than Delaware's average 2010-2014 incidence rate (506.5 per 100,000)[24].
- In 20 of Delaware's 214 census tracts, the all-site cancer incidence rate was statistically significantly lower than Delaware's average 2010-2014 incidence rate (506.5 per 100,000).
- All-site cancer incidence rates for the remaining 187 census tracts were not significantly different from the state's average rate for the 2010-2014 time period.

Appendix I shows maps of Delaware census tracts grouped by 2010-2014 all-site cancer incidence quintile. Appendix J shows maps of Delaware census tracts in which census tracts with 2010-2014 all-site cancer incidence rates are significantly different from the state average. These are shaded for ease of identification.

DISCUSSION OF RESULTS OF CENSUS TRACT ANALYSES

When assessing cancer incidence data by census tract, the occurrence of cancer may differ across census tracts for a variety of reasons. For example, lifestyle behaviors may cluster in a homogeneous community. In addition, the presence of exposure to environmental or occupational carcinogens is often limited to a defined geographic area. Also, residents in certain geographic areas may be more impoverished than other residents,

[24] 507.5 is average 2009-2013 Delaware incidence rate calculated by Excel rather than SEER*Stat (507.3).

which will affect their availability of health insurance coverage as well as their level of access to health care, particularly cancer screening services. Finally, chance or random variation can play a role, since approximately 5% of all comparisons will be significantly different due to chance alone.

Additional caution is needed when comparing results from the 2010-2014 census tract analysis to results for 2003-2007 and earlier time periods. Because of the change in the configuration of census tracts in Delaware (i.e., shifting from 197 census tracts defined by the 2000 Census to 214 census tracts defined by the 2010 Census), results derived using the two different census tract configurations would be expected to differ due to various reasons. Despite population growth in the intervening decade, the average population size of each census tract decreased when census tracts were redrawn for the 2010 Census. Using the 2000 Census configuration of 197 census tracts, each census tract had an average of 4,257 residents. Using the 2010 Census configuration of 214 census tracts, each census tract had an average of 4,118 residents.

Furthermore, there is an inherent instability in calculating cancer incidence rates at the census tract level. In a small group, such as a census tract, the relative number of cancer diagnoses can change considerably from year to year. If one case of cancer is diagnosed in a census tract one year, and three cases of cancer are diagnosed in the same census tract the next year, the cancer rate for that census tract will change dramatically from one year to the next. These relatively large fluctuations do not typically occur in larger populations. If a census tract has an all-site cancer incidence rate that is significantly different from the state rate for one time period, it is not unusual to find a non-significant difference in rates for the following time period (and vice versa).

The all-site cancer incidence fluctuations in census tract 513.02 illustrate this key point. During 2003-2007, 134 all-site cancer cases were diagnosed in census tract 513.02 and its all-site cancer incidence rate (823.3 per 100,000) was significantly elevated, compared to the all-site cancer incidence rate for Delaware (510.6 per 100,000). In 2004-2008, 123 all-site cancer cases were diagnosed in census tract 513.02 – 11 fewer than the previous time period. However, despite the decrease in the number of cases, the all-site cancer incidence rate (649.2 per 100,000) for 2004-2008 remained significantly elevated, compared to the all-site cancer incidence rate for Delaware (515.1 per 100,000). For the most recent time period, 2010-2014, 106 all-site cancer cases were diagnosed in census tract 513.02, yielding an all-site cancer incidence rate (500.8 per 100,000) which was not statistically significantly different from the all-site cancer incidence rate for Delaware (506.5 per 100,000).

Inaccurate data on the population at risk in small geographic areas continues to complicate epidemiologic studies in community settings. Census data are known to be less accurate for cities or counties than for states. In addition: *"The uncertainty is greatest for demographic subgroups of the population during the 10-year interval between national census counts"*[25]. Because population estimates for census tracts in analyses during the three initial time periods (2001-2005, 2002-2006, and 2003-2007) relied solely on 2000 Census population data, there was the potential for major fluctuations in the rate when comparing that data with data using the 2010 Census population projections. A further complication is that before 2004-2008, geocoding was not yet available, further reducing the accuracy of geographic data.

[25] Thun M. Sinks T. Understanding Cancer Clusters. Cancer: A Cancer Journal for Clinicians, 54(5), 273-280 (2004)

APPENDIX A: DATA SOURCES AND METHODOLOGY

CANCER INCIDENCE DATA

DELAWARE CANCER REGISTRY

This report covers data on cancer cases diagnosed among Delawareans from January 1, 2010 to December 31, 2014 and that were reported to the DCR by May 2016. Trends in incidence rates are based on cancers diagnosed from January 1, 1980 to December 31, 2014.

During 2010-2014, there were 27,861 cancer cases diagnosed among Delawareans, which includes individuals with cancers diagnosed at more than one site (known as multiple primaries). With the exception of urinary bladder cancer, only malignant tumors are included in the analyses. *In situ* urinary bladder cancer cases are included because, based on language used by pathologists, it is difficult to distinguish them from malignant cancers.

The International Classification of Diseases for Oncology, Second Edition (ICD-O-2), describes the topography (primary anatomic site) and morphology (histology) for cancers reported from 1988 through 2000. Cancers diagnosed from 2001 through the present are coded using the International Classification of Diseases for Oncology, Third Edition (ICD-O-3)[26]. Relevant codes for this report are in Appendix B. The topography code defines both the site of the tumor and the type of cancer. The first four digits of the morphology code define the histology of the cancer and the fifth digit indicates whether or not the cancer is malignant, benign, *in situ*, or uncertain. Consistent with publication of the Centers for Disease Control and Prevention's (CDC) *U.S. Cancer Statistics*, Kaposi's sarcoma and mesothelioma are considered separate sites based on distinct histology codes.

SEER PROGRAM OF THE NATIONAL CANCER INSTITUTE

U.S. incidence and mortality data obtained from the Surveillance, Epidemiology and End Results (SEER) program of the National Cancer Institute (NCI) were used as the comparison for Delaware's cancer incidence and mortality rates. These data were accessed using SEER*Stat. Since 1973, the SEER program collects, analyzes, and disseminates cancer incidence data for cancer control, diagnosis, treatment, and research from population-based registries throughout the United States. The initial SEER reporting areas were Connecticut, Iowa, New Mexico, Utah, and Hawaii; the metropolitan areas of Detroit, Michigan, and San Francisco-Oakland, California; and the Commonwealth of Puerto Rico (through 1989). Additional geographic areas were selected for inclusion in the SEER Program based on their ability to operate and maintain a high quality population-based cancer reporting system and for their epidemiologically-relevant population subgroups[27].

Historically, Delaware's cancer incidence rates have been compared to cancer incidence rates calculated using data from the original nine registries (SEER-9) that provided data to SEER beginning in 1974-1975. In 2009, DPH and the DCC elected to begin using cancer incidence rates based on 17 population-based registries as a comparison for Delaware's cancer incidence rates. Currently SEER incidence rates are based on data from 18 population-based registries (SEER-18) that represent 28% of the U.S. population. The primary benefit of using U.S. comparison rates derived from SEER-18 is that these rates are based on a larger and more representative sub-sample of the U.S. population. Also, comparing Delaware's incidence rates with rates derived from the SEER-18 registries provides a comparison of cancer surveillance statistics that is consistent with those of other population-based registries throughout the U.S.

[26] Fritz A, Jack A, Parkin DM, Percy C, Shanmugarathan, Sobin L, Whelan S (eds). International Classification of Diseases for Oncology, Third Edition (ICD-O-3). World Health Organization, Geneva.

[27] Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute. http://seer.cancer.gov/about/

CANCER MORTALITY DATA

DELAWARE HEALTH STATISTICS CENTER

Mortality data are provided by the Delaware Health Statistics Center for all death certificates filed in Delaware from 2010 through 2014. Five-year average annual age-adjusted cancer mortality rates are based on deaths that occurred in the five-year time period from January 1, 2010 to December 31, 2014. Trends in cancer mortality are presented for deaths that occurred from 1980 through 2014.

Underlying cause-of-death codes are based on the International Classification of Diseases, Ninth Edition (ICD-9) for deaths that occurred between 1980 and 1998. For deaths that occurred from 1999 to the present, the International Classification of Diseases, Tenth Edition (ICD-10) is used to code cause of death. To determine the underlying cause of death, the sequence of events leading to the individual's death are recorded on the death certificate and run through the Automated Classification of Medical Entities (ACME) software used by the National Center for Health Statistics (NCHS). This program uses a series of rules and hierarchies of events to select the most appropriate underlying cause of death.

NATIONAL CENTER FOR HEALTH STATISTICS

U.S. mortality data were obtained from the NCHS. U.S. mortality data are compiled from all death certificates filed in the 50 states and the District of Columbia from 1980 through 2014. Cause of death was coded by NCHS in accordance with World Health Organization regulations that stipulate that cancer deaths be coded using the most current revision of the International Classification of Diseases. As in Delaware, deaths that occurred prior to 1999 in the U.S. are coded using ICD-9 and beginning with 1999 deaths are coded using ICD-10. These U.S. mortality data were accessed through SEER*Stat[28].

POPULATION ESTIMATES, 2010-2014

Cancer incidence and mortality rates for the U.S. are calculated using population totals estimated by the U.S. Census. Delaware rates are based on population estimates released by the U.S. Census Bureau.

RISK FACTORS AND EARLY DETECTION

Data on known and suspected cancer risk factors, prevention options, and screening recommendations are located at the beginning of each site-specific chapter of this report. Primary resources for this information are: (1) ACS (www.cancer.org) and (2) NCI (www.cancer.gov).

The BRFS provides estimates of the prevalence of risk factors across Delaware and nationally. The most recently available risk factor data from BRFS are from 2016. Risk factor data are included in appropriate chapters for site-specific cancers. Supplemental data on cervical cancer screening, overweight and obesity, physical inactivity, and nutrition are presented in Appendix D.

STATISTICAL METHODOLOGY AND TECHNICAL TERMS

AGE-ADJUSTMENT OF INCIDENCE AND MORTALITY RATES

The age distribution of a population is an important determinant of the burden of cancer. Because cancer incidence and mortality increase with age, crude rates cannot be used for comparisons of cancer statistics between sexes, racial or ethnic groups, or geographic entities across different time spans.

Age adjustment is useful when comparing two or more populations with different age distributions at one

[28] SEER*Stat Software, Surveillance, Epidemiology and End Results (SEER) program, National Cancer Institute. http://seer.cancer.gov/seerstat/index.html

point in time or one population at two or more points in time[29]. To calculate an age-adjusted incidence rate, the crude incidence rate for each of 18 five-year age groups is multiplied by a fixed population weight for that specific age group using the appropriate 2000 U.S. Standard Population (Table A-1)[30]. Individual age-specific rates are then summed to obtain the overall age-adjusted rate.

TABLE A-1: U.S. STANDARD YEAR 2000 POPULATION WEIGHTS, BY AGE GROUP

Age Group	Population Weight	Age Group	Population Weight
0-4	0.0691	**45-49**	0.0721
5-9	0.0725	**50-54**	0.0627
10-14	0.0730	**55-59**	0.0485
15-19	0.0722	**60-64**	0.0388
20-24	0.0665	**65-69**	0.0343
25-29	0.0645	**70-74**	0.0318
30-34	0.0710	**75-79**	0.0270
35-39	0.0808	**80-84**	0.0178
40-44	0.0819	**85+**	0.0155

Source: http://seer.cancer.gov/stdpopulations/19ages.proportions.html

The formula for an age-adjusted rate can be presented as follows:

$$\textit{Age-Adjusted Rate} = \textit{sum}\ (w_i \times ((c_i/n_i) \times 100{,}000))$$

- c_i is the number of new cases or deaths in the *i* age group
- n_i is the population estimate for the *i* age group
- w_i is the proportion of the standard population in the *i* age group

All rates are expressed per 100,000 of the population.

RACE/ETHNICITY- AND SEX-SPECIFIC INCIDENCE AND MORTALITY RATES

Race/ethnicity- and sex-specific incidence and mortality rates are calculated to assess how cancer patterns differed across subgroups within the state. These rates are calculated by dividing the number of cases or deaths that occurred in each race/ethnic and/or sex group by the total population in the corresponding race/ethnic and/or sex group over the same time period. As with other rates, these rates were adjusted to the 2000 U.S. standard population and expressed per 100,000 of the population.

CONFIDENCE INTERVALS

Age-adjusted incidence and mortality rates are subject to chance variation, particularly when they are based on a small number of cancer cases or deaths occurring over a limited time period or in a limited geographic area. Aggregating several years of data provides more reliable estimates of incidence and mortality in these situations. The level of uncertainty associated with incidence and mortality rates is estimated by the 95% confidence interval.

[29] Anderson RN, Rosenberg HM. Report of the second workshop on age adjustment. National Center for Health Statistics. Vital Health Stat 4(30). 1998.
[30] Klein RJ, Schoenborn CA. Age Adjustment Using the 2000 Projected U.S. Population. Healthy People statistical notes, no. 20. http://www.cdc.gov/nchs/data/statnt/statnt20.pdf

When incidence rates are based on more than 100 cases, lower and upper limits of the 95% confidence intervals for an age-adjusted (AA) incidence or mortality rate are calculated using SEER*Stat[31] by methodology shown here:[32]

$$\text{Lower Confidence Limit} = \text{AA Rate} - 1.96\left[\frac{\text{AA Rate}}{\sqrt{\#\text{ Cases}}}\right]$$

$$\text{Upper Confidence Limit} = \text{AA Rate} + 1.96\left[\frac{\text{AA Rate}}{\sqrt{\#\text{ Cases}}}\right]$$

where AA Rate is the age-adjusted incidence or mortality rate.

When an incidence or mortality rate is based on fewer than 100 cases or deaths, the 95% confidence intervals are calculated using the following formulas:

$$\text{Lower Confidence Limit (LCL)} = \text{AA Rate} \times L$$

$$\text{Upper Confidence Limit (LCL)} = \text{AA Rate} \times U$$

where L and U are values published by the National Center for Health Statistics for the specific purpose of calculating 95% confidence intervals for rates based on fewer than 100 cases[33].

STAGE AT DIAGNOSIS

Stage at diagnosis describes the extent to which a cancer has spread from the site of origin at the time of diagnosis. SEER summary staging is used to define the stage at diagnosis for all incident cancer cases. Cancer cases diagnosed between 1980 and 2000 are coded according to Summary Stage 1977. Cases diagnosed from 2001 through 2003 are coded according to Summary Stage 2000. Beginning in 2004, SEER Summary Stage 2000, derived using the Collaborative Staging Algorithm, is used.

Three categories define the stage at diagnosis for a particular cancer site:

1. **Local -** Tumor is invasive but confined to the organ of origin.
2. **Regional -** Tumor has extended beyond limits of the organ of origin with no evidence of distant metastasis.
3. **Distant -** Cancer cells have detached from the tumor at the primary site and are growing at a new site in the body.

DATA RELEASE STANDARDS

For this report, cancer frequencies and rates are released according to DPH Policy Memorandum 49 (Data and Data Release Standards). Incidence and mortality frequencies of fewer than six are not presented and age-adjusted incidence and mortality rates based on fewer than 25 cases or deaths are not calculated. This DPH policy helps protect patient privacy and confidentiality[34,35]. Furthermore, a cancer rate based on a very small number of cases is inherently unstable and cannot be reliably interpreted.

[31] Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute. SEER*Stat Software, Latest Release: Version 7.1.0 - July 17, 2012. http://seer.cancer.gov/seerstat/index.html

[32] Tiwari RC, Clegg LX, Zou Z. Efficient interval estimation for age-adjusted cancer rates. Stat Methods Med Res 2006;15(6):547-69.

[33] Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM, Sutton PD. Births: Final data for 2001. National vital statistics reports; vol. 51 no. 2. Hyattsville, Maryland: National Center for Health Statistics, 2002.

[34] Coughlin SS, Clutter GG, Hutton M. Ethics in Cancer Registries. *Journal of Cancer Registry Management, 2:* 5-10, 1999.

[35] McLaughlin CC. Confidentiality protection in publicly released central registry data. *Journal of Cancer Registry Management, 2:* 84-88, 2002.

DEFINITION OF RACE/ETHNICITY

In this report, the race/ethnicity category is defined as follows:

1. **Non-Hispanic Caucasian** – cases who are reported to have Caucasian race and not of Hispanic/Latino ethnicity.
2. **Non-Hispanic African American** – cases who are reported to have African American race and not of Hispanic/Latino ethnicity.
3. **Hispanic** – cases who are reported to be of Hispanic/Latino ethnicity regardless of race.

APPENDIX B: PRIMARY CANCER SITE DEFINITIONS

TABLE B-1: PRIMARY CANCER SITE DEFINITIONS

Cancer Site Group	ICD-O-3 Site (Topography)	ICD-O-3 Histology (Morphology)
All malignant cancers	C000–C809	
Brain and Other Nervous System	C710–C719	excludes 9050-9055, 9140, 9530-9539, 9590-9992
Female Breast	C500–C509	excludes 9050–9055, 9140 and 9590–9992
Cervix	C530–C539	excludes 9050–9055, 9140 and 9590–9989
Colon and Rectum	C180–C189, C260, C199, C209	excludes 9050–9055, 9140 and 9590–9992
Esophagus	C150–C159	excludes 9050–9055, 9140 and 9590–9989
Hodgkin lymphoma	C024, C098–C099, C111, C142, C379, C422, C770-C779	9650-9667
Kidney and renal pelvis	C649, C659	excludes 9050–9055, 9140 and 9590–9989
Larynx	C320-C329	excludes 9050–9055, 9140 and 9590–9989
Leukemia	C420, C421, C424	9733, 9742, 9800, 9801, 9805, 9831, 9820, 9823, 9826-9827, 9832-9837, 9840, 9851, 9855, 9860, 9863, 9870-9876, 9891, 9895-9897, 9910, 9920, 9931, 9945-9946, 9948, 9963-9964
Liver, intrahepatic bile ducts and other biliary	C220, C221, C239, C240-C249	excludes 9050–9055, 9140 and 9590–9989
Lung and Bronchus	C340–C349	excludes 9050–9055, 9140 and 9590–9992
Malignant melanoma of the Skin	C440-C449	8720-8790
Myeloma		9731-9732, 9734
Non-Hodgkin lymphoma	C000–C809	9590-9596, 9670-9671, 9673, 9675, 9678-9680, 9684, 9687, 9689-9691, 9695, 9698-9702, 9705, 9708-9709, 9714-9719, 9727-9729, 9823, 9827
Oral Cavity and Pharynx	C000-C009, C019-C029, C030-C039, C040-C049, C050-C059, C060-C069, C079-C089, C090-C099, C100-C109, C110-C119, C129, C130-C139, C140, C142, C148	excludes 9050-9055, 9140, 9590-9992
Ovary	C569	excludes 9050–9055, 9140 and 9590–9989
Pancreas	C250–C259	excludes 9050–9055, 9140 and 9590–9989
Prostate	C619	excludes 9050–9055, 9140 and 9590–9992
Stomach	C160-C169	excludes 9050–9055, 9140 and 9590–9989
Testis	C620-C629	excludes 9050–9055, 9140 and 9590–9989
Thyroid	C739	excludes 9050–9055, 9140 and 9590–9989
Urinary bladder*	C670–C679	excludes 9050–9055, 9140 and 9590–9989
Uterus	C540–C549, C559	excludes 9050–9055, 9140 and 9590–9989

*Includes *in situ* urinary bladder cancers

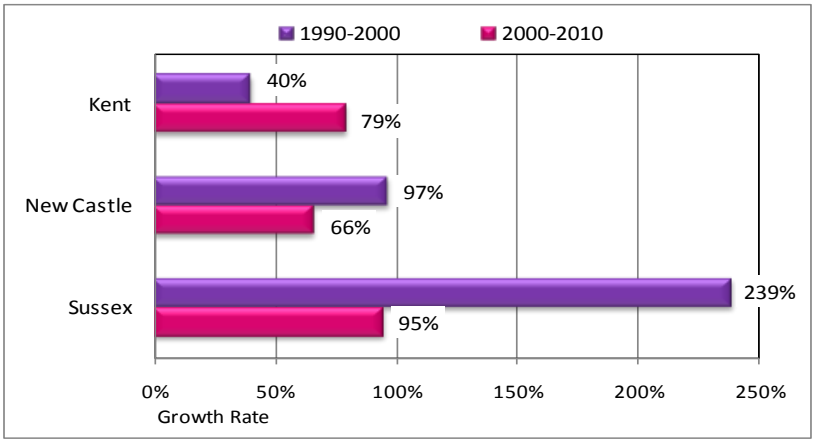
Source: Site Recode ICD-O-3/WHO 2008 Definition http://seer.cancer.gov/siterecode/icdo3_dwhoheme/index.html

APPENDIX C: HISPANIC ETHNICITY

The Census Bureau defines "Hispanic or Latino" as "a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race."[36] According to the Census Bureau, in 1990, persons of Hispanic ethnicity comprised 2% of Delaware's population. By 2000, Delaware's Hispanic population increased to 5%. As of the 2010 U.S. Census, persons of Hispanic origin comprise 8% of Delaware's population.

The largest growth in the Hispanic population occurred in Sussex County, where the Hispanic prevalence grew from 1% in 1990 to 4% in 2000, and again to 9% in 2010. Historically, since 1990 when Hispanic prevalence data began to be collected, New Castle County had the largest percentage of persons of Hispanic ethnicity. The Hispanic population in New Castle County grew from 3% in 1990, to 5% in 2000, and to 9% in 2010. Among Kent County residents, the Hispanic population grew from 2% in 1990, to 3% in 2000, and to 6% in 2010.

FIGURE C-1: CHANGES IN DELAWARE'S HISPANIC POPULATION BY COUNTY AND DECADE, 1990-2000 AND 2000-2010



Source: U.S. Census Bureau 2010, American FactFinder http://factfinder2.census.gov/

Specific issues that suggest that Hispanic cancer rates would be subject to misinterpretation are discussed below:

- **Uncertain estimate of Delaware's Hispanic population —** Estimates of Delaware's population are derived from the census performed every 10 years by the U.S. Census Bureau and a final adjustment based on projections from the U.S. Census Bureau as to the overall rate of growth for the Hispanic population in both the state and the nation.
- **Inaccurate recording of Hispanic ethnicity on death certificates —** Race and Hispanic origin are treated as distinct categories and reported separately on death certificates and to the DCR, in accordance with guidelines from the federal Office of Management and Budget. However, it is possible that Hispanic race is under-reported both in the cancer registry and on death certificates.
- **Hispanic identification in the Delaware Cancer Registry data —** NAACCR convened an expert panel in 2001 to develop a best practices approach to Hispanic identification. In the resulting approach to enhance Hispanic identification, the NAACCR Hispanic Identification Algorithm (NHIA) was computerized and released for use by central cancer registries in 2003. In this report, NHIA is used to identify Delawareans of Hispanic origin. To minimize misclassification, the expert panel continues to evaluate the NHIA while considering the possibility of the under- or over-estimation of Hispanic cancer incidence.

[36] Grieco, EM, Cassidy RC. (2001-03). "Overview of Race and Hispanic Origin: Census 2000 Brief" U.S. Census Bureau. Accessed May 26, 2011.

- **Small number of cases or deaths and small population sizes —** An incidence or mortality rate is an estimate, and the reliability of estimates can be measured by calculating a confidence interval. A narrow confidence interval suggests that the rate is a good estimate; a wide confidence interval suggests that the rate should be interpreted with caution. If the confidence intervals of two rates do not overlap, the rates are considered to be statistically different. Both the size of the numerator (the number of cases or deaths) and the size of the denominator (the population) determine the width of the confidence interval. Typically, researchers report 95% confidence intervals. When constructed properly, a 95% confidence interval includes the true cancer rate 95% of the time.

APPENDIX D: BEHAVIORAL RISK FACTORS

The BRFS is the world's largest ongoing telephone health survey tracking health conditions and risk behaviors in the United States yearly since 1984. Currently, data are collected in all 50 states and four territories. The survey was developed to monitor the statewide prevalence of behavioral risk factors influencing premature morbidity and mortality. The BRFS includes a core set of questions developed by the CDC and is administered to adults 18 years of age and older. Delaware's BRFS is a collaborative effort between DPH and the CDC. BRFS questions target lifestyle behaviors (including tobacco use, fruit and vegetable consumption, exercise, and weight control); cancer screening practices; health status; and health care access and use[37].

Technological and cultural changes are posing challenges to survey research. One of the most significant challenges has been the rapid increase in households where telephone service is provided primarily or only via cell phone service. These "cell phone" households are, at least currently, more common among young adults and minority populations.

Originally, the BRFS survey was administered by a random-digit-dial telephone survey. Starting with reporting 2011 data, the BRFS became a "multi-mode survey," using several modes of data collection—including landline telephone interviews, cell phone interviews, and online follow-up surveys for some respondents who did not want to respond by phone. Also, the BRFS uses a new method for weighting data, called "raking," which more accurately reflects the actual population of each state[38].

Because cell phones are quickly replacing landline phones, it was difficult to obtain a true representative sample of some population subgroups during the late 2000s. The response rate problems likely resulted in less accurate prevalence estimates for some behaviors or conditions more prevalent in populations who primarily use cell phones. For example, the prevalence of cigarette smoking, known to be more prevalent among young adults, may have been under-estimated for several years.

The data below relate to cancer screening and risk factor prevalence among Delawareans. Data on breast, cervical, colorectal, and prostate cancer screening patterns among Delawareans are provided in relevant cancer site chapters earlier in this document. Data on overweight and obesity, physical activity, and consumption of dietary fruits and vegetables are provided below[39].

OVERWEIGHT/OBESITY

Being overweight or obese is a risk factor for numerous cancers, including female breast, colorectal, kidney, and uterine cancers. In addition, being overweight or obese is a major risk factor for other chronic diseases, including coronary heart disease, type 2 diabetes, and stroke.

The CDC defines overweight as a body mass index (BMI) from 25 to less than 30; and obese as a BMI equal to or greater than 30. BMI is calculated using an individual's height and weight[40]. The following data are specific to the 2016 Delaware BRFS:

- In Delaware, 68% of adults 18 years of age and older were overweight or obese in 2016, compared to the national median of 65%.
- In 2016, the prevalence of being overweight in Delaware differed significantly by sex: 43% of males and 31% of females were overweight.

[37] Behavioral Risk Factor Surveillance System http://www.cdc.gov/BRFS/
[38] Behavioral Risk Factor Surveillance System (BRFS) Fact Sheet: Raking– Changing Weighting Methodology http://www.dhss.delaware.gov/dph/dpc/files/rakingweights_info.pdf
[39] Delaware Behavioral Risk Factor Survey – Measuring Behaviors that Affect Health. http://www.dhss.delaware.gov/dph/dpc/brfsurveys.html
[40] About BMI for Adults http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html

- The prevalence of obesity among adult Delawareans did not differ by sex: 31% of males and 31% of females were obese in 2016.
- The prevalence of being overweight did not differ significantly between non-Hispanic Caucasians (39%) and non-Hispanic African American (35%) Delawareans.
- In Delaware, significantly more non-Hispanic African Americans (39%) than non-Hispanic Caucasians (29%) were obese. More non-Hispanic African Americans females were obese (42%), compared to 35% of non-Hispanic African-American males.
- The prevalence of being overweight was highest among Delaware college graduates (42%) and was significantly higher than Delaware adults with less than a high school diploma (27%).
- The prevalence of obesity was statistically significantly higher among Delaware adults with less than a high school diploma (41%) than among college graduates (24%).
- There were no statistically significant differences in the prevalence of being overweight among different household income levels.
- Among Delawareans, the prevalence of obesity was highest among those 35-54 years of age (37%).
- Delaware adults 18-24 years of age had the lowest prevalence of obesity, a statistically significant difference compared to all other age groups.

PHYSICAL ACTIVITY

Lack of physical activity is a substantiated risk factor for colorectal cancer and a suspected risk factor for other cancers (e.g., prostate cancer). The benefits of regular, sustained physical activity also include reduction in risk for other chronic diseases, including coronary heart disease, stroke, type 2 diabetes, and improved overall well-being.

Respondents in the 2015 Delaware BRFS survey answer a series of questions to determine what percentage of respondents met aerobic guidelines, strengthening guidelines, both, or neither[41].

- In Delaware, 42% of adults 18 years of age and older did not meet either aerobic or strengthening guidelines, similar to the national median of 39%.
- In Delaware, the prevalence of adults who reported they did not meet aerobic or strengthening guidelines was statistically significantly higher among females (45%) than males (38%).
- African American Delawareans (44%) were less likely to meet aerobic or strengthening guidelines than Caucasians (40%). This difference was not statistically significant.
- Delawareans 55-64 years of age (43%) were less likely to meet either aerobic or strengthening guidelines. However, this was not statistically significant compared to any other age group.
- Delawareans in lower income categories reported statistically significantly lower prevalence of levels of physical activity which meet recommended guidelines (56% of those earning less than $15,000 did not meet the guidelines; 49% of those earning $15,000-$24,999 did not meet the guidelines). This compares to Delawareans in the highest income category, where 36% of those earning $50,000 or more per year did not meet the guidelines.
- Delawareans in lower education levels reported statistically significantly lower prevalence of meeting the physical activity guidelines. In Delaware, 62% of adults with less than a high school diploma and 47% of

[41]U.S. Department of Health and Human Services. 2008 Physical Activity Guidelines for Americans. Hyattsville, MD: U.S. Department of Health and Human Services;2008. https://health.gov/paguidelines/

adults with a high school education or GED did not meet the physical activity guidelines compared to 38% of adults with some post high school education, or 30% of adults who were college graduates.

DIETARY FRUITS AND VEGETABLES

A diet high in fruits and vegetables is a protective factor against numerous cancers, including cancers of the breast, cervix, colon/rectum, uterus, esophagus, oral cavity, ovary, pancreas, prostate, and stomach.

The following data are from the 2015 Delaware BRFS:

- In Delaware, 15% of adults consumed five or more servings of fruits and/or vegetables a day, compared to the national median of 16% of adults.
- Significantly fewer Delaware males (10%) consumed five or more servings of fruits and vegetables daily than females (15%).
- In Delaware, 13% of non-Hispanic Caucasians, 14% of non-Hispanic African Americans, and 12% of Hispanics consumed five or more servings of fruits and vegetables daily. This difference was not statistically significant.

APPENDIX E: TITLE 16, CHAPTER 20 OF THE DELAWARE CODE (76 DEL. LAWS., C 292 §1)

CHAPTER 292 FORMERLY
SENATE BILL NO. 235
AS AMENDED BY
SENATE AMENDMENT NO. 2
AND
HOUSE AMENDMENT NO. 1

AN ACT TO AMEND TITLE 16 OF THE DELAWARE CODE RELATING TO UNIFORM HEALTH DATA REPORTING.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF DELAWARE:

WHEREAS, the State of Delaware traditionally has one of the highest rates of cancer incidence and mortality in the United States;

WHEREAS, identification of clusters of certain types of cancers in specific locations can help public health agencies develop intervention strategies leading to early detection when cancer is more easily cured;

WHEREAS, providing such data to medical researchers outside state government may assist in the process of both identifying cancer clusters and developing intervention strategies;

WHEREAS, the public good is served by allowing citizens to know of potential hazards in their communities so they can take actions to preserve their health;

WHEREAS, it is equally important to preserve the privacy and dignity of people afflicted with cancer, and

WHEREAS, the Department of Health and Social Services, Division of Public Health has opted to err on the side of cancer patient privacy by withholding even generic data on cancer clusters from other researchers and the public;

NOW THEREFORE:

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF DELAWARE:

Section 1. Amend Chapter 20, Title 16 of the Delaware Code by renumbering §2005 through 2008 as §2006 through 2009, respectively.

Section 2. Amend Chapter 20, Title 16 of the Delaware Code by inserting a new §2005 to read as follows:

"§2005(a). Cancer incidence data.

Notwithstanding any provisions in this Title to the contrary, the agency shall make available as public records cancer incidence by census tract and by type of cancer. Such released data shall be assigned consensus tract geography from the most recent decennial census. If release of such information by census tract will explicitly or implicitly identify any individual, the agency may combine data among contiguous census tracts, but only insofar as is necessary to protect patient confidentiality.

(b) The agency shall create a detailed map of each county in Delaware that graphically illustrates the overall incidence of cancer in each census tract. The census tracts will be identified on the maps and shall be color-coded to designate the degree of cancer incidence in each tract. These maps shall be created within 90 days of the agency receiving the cancer incidence data.

(c) The agency shall post the maps created under the subsection above on their website in a format that can be easily accessed and read by the public."

Section 3. Amend §1232(d) Title 16 of the Delaware Code by deleting the word "or" at the end of paragraph (6) and by inserting the word "or" at the end of paragraph 7 and by adding a new paragraph "(8)" to read as follows:

"(8) Pursuant to Title 16 §2005."

Section 4. Amend Subchapter III of Chapter 12 of Title 16 of the Delaware Code by inserting a new section §1233 to read as follows:

"§1233. Regulations.

The Department of Health and Social Services shall enforce this subchapter and shall from time to time promulgate any additional forms and regulations that are necessary for this purpose."

Approved July 3, 2008

APPENDIX F: CANCER INCIDENCE BY CENSUS TRACT

GEOCODING VALIDATION PROCESS

Accurate census tract assignment is necessary for valid rate calculation at the census tract level. The accuracy of census tract assignment is entirely dependent on the accuracy and quality of patient address data. To assure accuracy and quality, cancer cases submitted to the DCR undergo quality assurance review of the data fields for each patient's address. The case-level quality review of street address data includes correction of misspellings, incomplete addresses, and address formats. Accurint®, a Lexis Nexis® service, is used to assign a valid physical street address to post office box addresses where possible. DCR staff also use Accurint® to assign a valid physical street address to rural addresses where possible.

Geocoding software is then used to assign cases to a census tract based on the patient's address at time of diagnosis. Some cases may not be coded to the street address level in this step, due to recently created streets that are not yet embedded within the geocoding software. For these cases, further manual review and census tract assignment is conducted using the American Factfinder® and Google Maps® online databases.

PRELIMINARY ANALYSES

Cancer case files created for DPH by the DCR include all eligible[42] cancer cases diagnosed among Delawareans from January 1, 2010 through December 31, 2014. Within this time period, 100% of the cases were successfully geocoded (all but two cases); i.e. the residential census tract of the individual was identified. The table below shows the percentage level of certainty of the census tract assignments. The level of certainty shown in the table below indicates the basis of the assignment of census tract for each individual. More than 99% of cases were assigned a census tract based on a complete and valid address of residence.

TABLE F-1: CENSUS TRACT CERTAINTY FOR DELAWARE CANCER INCIDENCE DATA, 2010-2014

Census Tract Based on Level of Certainty	2010-2014
Complete & valid street address of residence	27,721 (99.5)
Residence ZIP + 4	5 (0.02)
Residence ZIP + 2	45 (0.16)
Residence ZIP code only	55 (0.20)
ZIP code of P.O. Box	33 (0.12)
Address missing	2 (0.01)
Total Number of Cases	**27,861**

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

FIVE-YEAR POPULATION ESTIMATES BY CENSUS TRACT

As of the 2000 U.S. Census, Delaware was comprised of 197 census tracts. Census tract analyses through 2003-2007 used the 2000 Census tract designations. As of the 2010 Census, however, Delaware was realigned into 214 census tracts. These new census tract subdivisions became available beginning with the 2004-2008 analyses. Approximately half of the 2010 Census tracts remained the same as in the 2000 Census and the rest have either combined with others or split into two or more new census tracts.

Note that census tracts do not follow a consecutive numbering scheme. New Castle County contains 129 census tracts numbered 2.00 through 169.04. Kent County is comprised of 32 tracts numbered 401.00 through 434.00. Sussex County includes 53 tracts numbered 501.01 through 519.00.

[42] Excludes benign tumors, non-urinary bladder in situ tumors, and basal and squamous cell cancers per reporting guidelines mandated by the Surveillance, Epidemiology, and End Results Program of the National Cancer Institute.

Census tract populations for 2010-2014 were calculated using estimates from the U.S. Census. Population data specific for each five-year age category and census tract were provided from the SEER Program from the National Cancer Institute.

Five-year population estimates for the 2010-2014 study period range from 3,446 for census tract 511.01 in Sussex County to 65,762 for census tract 402.02 in Kent County.

AGE-ADJUSTED AND CRUDE INCIDENCE RATES, BY CENSUS TRACT

For each census tract, cross-tabulations (age group x census tract) were created to determine the number of cancer cases diagnosed by census tract and age group. These frequencies were used to calculate crude incidence rates at the census tract level.

Crude incidence rates represent the total number of new cancer diagnoses divided by the total population at risk, without consideration of any age-related characteristics of the population. To calculate a crude incidence rate by census tract, the number of cancer cases diagnosed in each age group is divided by the population size for that specific age group. These values were then multiplied by 100,000 (Equation F-1).

EQUATION F-1: 2008-2012 CRUDE ALL-SITE CANCER INCIDENCE RATE, 45-49 YEAR OLDS, DELAWARE CENSUS TRACT 999.99

$$\frac{\text{Number of cancer cases (2010-2014) among 45-49 year olds in CT999.99}}{\text{2010-2014 population of 45-49 year olds in CT999.99}} \text{ X } 100{,}000$$

= number of cancer cases in 45-49 year olds per 100,000

Age-adjusted incidence rates were then calculated to take into account the different age distributions for the populations at risk. To calculate age-adjusted incidence rates, crude incidence rates for each age group were multiplied by the appropriate 2000 U.S. Standard Population weight for that age group (Appendix A). Age-adjusted incidence rates for each of the 18 age groups were then summed to yield the age-adjusted incidence rate for an entire census tract.

95% CONFIDENCE INTERVALS

Confidence intervals represent the range of values in which the cancer rate could reasonably fall. Our best estimate of the cancer rate in a particular census tract is the incidence rate itself. However, the rate could reasonably lie anywhere between the lower confidence limit (LCL) and the upper confidence limit (UCL). Because of this, a confidence interval is sometimes called the "margin of error."

When incidence rates are based on more than 100 cases, 95% confidence intervals are calculated using equation F-2.

EQUATION F-2: CONFIDENCE LIMIT EQUATIONS FOR 100 OR MORE CASES

$$\text{Lower Confidence Limit} = \text{AA Rate} - 1.96\left[\frac{\text{AA Rate}}{\sqrt{\text{\# Cases}}}\right]$$

$$\text{Upper Confidence Limit} = \text{AA Rate} + 1.96\left[\frac{\text{AA Rate}}{\sqrt{\text{\# Cases}}}\right]$$

where AA Rate is the age-adjusted incidence rate for a particular census tract.

When incidence rates are based on fewer than 100 cases, 95% confidence intervals are calculated using equation F-3.

EQUATION F-3: CONFIDENCE LIMIT EQUATIONS FOR FEWER THAN 100 CASES

Lower Confidence Limit (LCL) = AA Rate x L

Upper Confidence Limit (LCL) = AA Rate x U

Where:

- AA Rate is the age-adjusted incidence rate for a particular census tract, and
- L and U are values published by the National Center for Health Statistics for the specific purpose of calculating 95% confidence intervals for rates based on fewer than 100 cases[43].

COMPARING CENSUS TRACT RATES TO THE STATE RATE

The level of uncertainty associated with an incidence rate is reflected in the width of its confidence interval. Very wide confidence intervals mean that the incidence rate is estimated with a small degree of certainty. Smaller intervals indicate an incidence rate estimate with a greater level of certainty.

The width of a confidence interval is influenced by two factors: (a) the number of cancer cases in the population and (b) the size of the population under consideration. When a cancer rate is calculated for a small population in which only a handful of cases were diagnosed, we would expect the confidence interval for the rate to be very wide. On the other hand, when a cancer rate is calculated for a large population in which many cases were diagnosed, we expect the confidence interval for the rate to be narrower.

The width of a confidence interval is important because it is used to determine if the amount by which two incidence rates differ is statistically significant. If the confidence interval for an incidence rate in one area overlaps with the confidence interval for a rate in another area, the rates are said to be "not statistically significantly different from one another." Even though the two rates may look very different, if the cancer rate for one area is NOT statistically significantly different from the cancer rate for another area, researchers cannot say that one rate is truly different from the other rate.

On the other hand, if the confidence interval for the incidence rate in one area does NOT overlap with the confidence interval for an incidence rate in another area, the two rates are statistically significantly different. When the rate for one area is significantly different from the rate for another area, the difference between the rates is greater than would be expected by chance alone.

For each census tract, the all-site cancer incidence rate is compared to the all-site cancer incidence rate for the state. This allows DPH to identify census tracts with cancer incidence rates that are statistically significantly higher or lower than the incidence rate for Delaware. If the confidence interval for an incidence rate overlaps with the confidence interval for the state incidence rate, the census tract rate is not statistically significantly different from the state rate. If the confidence interval for a census tract rate does not overlap with the confidence interval for the state rate, the census tract rate is said to be statistically significantly different from the state rate. Census tracts with statistically significantly higher or lower cancer rates compared to the state are denoted in the rate table in Appendix H and in all color-coded maps in Appendices I and J.

SUPPLEMENTAL INFORMATION

For 2010-2014, two census tracts had fewer than 25 cancer cases: census tracts 145.01 and 411.00 (denoted by the symbol "*" in Appendix H). When incidence rates are computed for an entire geographic area based on a very small number of cases, rates are estimated with a larger degree of uncertainty. This uncertainty is represented by a wide confidence interval that is more likely to overlap with the confidence intervals of incidence rates from other areas. This means that it is more difficult to establish a significant difference

[43] Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM, Sutton PD. Births: Final data for 2001. National vital statistics reports; vol 51 no. 2. Hyattsville, Maryland: National Center for Health Statistics. 2002.

between incidence rates. For this reason, rates based on fewer than 25 cases should be interpreted with caution; they are denoted in both the rate table and color-coded maps.

APPENDIX G: CANCER INCIDENCE RATES BY CENSUS TRACT – INTERPRETATION

In brief:

- A cancer rate in a census tract will change year to year because of the relatively small population in each of the census tracts. For this reason, the incidence rates are uncertain, subject to wide variation, and difficult to interpret.
- To help understand how much confidence we should have in a cancer rate for a census tract, we calculated a confidence interval. A confidence interval represents the range of values in which the cancer incidence rate could reasonably fall. It is sometimes referred to as the "margin of error."
- If the confidence interval of a cancer incidence rate in a census tract does not overlap with the confidence interval for the state, we say that there is enough confidence to call the incidence rate in the census tract "significantly different" from the state rate.
- Appendix H shows the confidence intervals for the cancer rates in each census tract and for the state. These data will help you determine if the incidence rate in a particular census tract is significantly different from the state rate.

Analysis of disease rates for small areas, such as census tracts, is difficult to interpret and can be misleading if not considered carefully. To understand cancer in Delaware, researchers need to track the number of all newly diagnosed cancer cases each year. Researchers use different types of information to calculate cancer rates. This information includes estimates of the number of people living in Delaware and data on the cancer cases diagnosed in our state.

Even though researchers calculate cancer rates using the best possible information, cancer rates have some uncertainty. The rate of any disease in a population provides a snapshot of the impact of that disease for a specific time period. Because Delaware is a small state, researchers must interpret this snapshot carefully.

In a small group, such as a census tract, the snapshot changes much from year to year. If one case of cancer is diagnosed in a census tract one year, and three cases of cancer are diagnosed in the same census tract the next year, the cancer rate for that census tract will change dramatically from one year to the next. These big fluctuations do not typically occur in larger populations. If we compare the cancer rate for a census tract to the cancer rate for the whole state of Delaware for a given time period, it would not be unusual to find the comparison different (perhaps even reversed) the following year. DPH publishes five-year cancer incidence rates to better understand cancer patterns among small populations. Cancer rates for five-year time periods are less vulnerable to yearly fluctuations of cancer cases diagnosed in small populations.

DPH can tell how much uncertainty there is in a cancer rate by studying its confidence interval. A confidence interval is a range of values that shows where the cancer rate could reasonably be. This means that the cancer rate could be anywhere between the lower confidence limit and the upper confidence limit.

If the difference between the upper confidence limit and the lower confidence limit is wide, there is greater uncertainty in the reliability of the cancer incidence rate. If the difference between the upper confidence limit and the lower confidence limit is very narrow, there is much less uncertainty in the cancer rate.

The width of a confidence interval depends on two things: (a) the number of people living in that area and (b) the number of cancer cases diagnosed in that area.

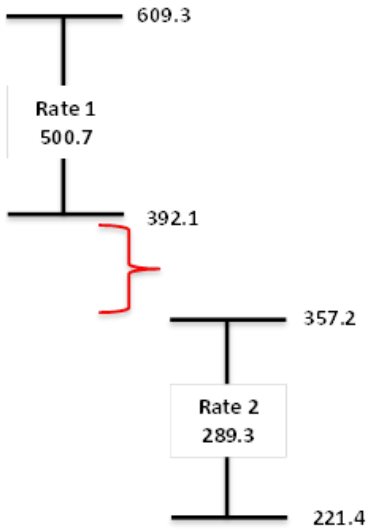
When a cancer rate is calculated for a small area (like a census tract or a neighborhood block), usually a small number of people live in that area. A much smaller number of people in that area will have been diagnosed with cancer. When a cancer rate is calculated for a small area, the cancer rate has a lot of uncertainty because

researchers do not have very much information. Cancer rates based on small numbers of cases or deaths will typically have very wide confidence intervals.

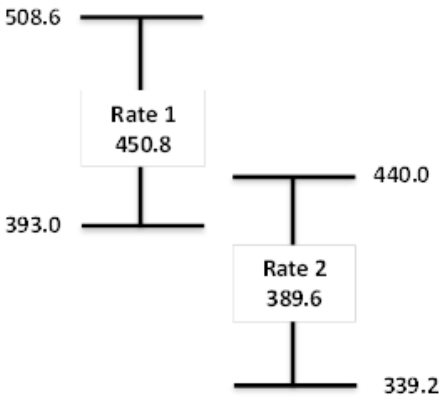
On the other hand, when a cancer rate is calculated for a large area (like a state or a country) with a large population, the odds are that more people will have been diagnosed with cancer compared to a smaller area. When a cancer rate is calculated based on a large number of cases or deaths, researchers are more certain of the level of cancer in that area. This means that cancer rates for large areas will usually have narrow confidence intervals.

Confidence intervals are important for another reason, too. They help researchers determine if differences in cancer rates for two different areas are statistically significant. If the confidence interval for the incidence rate in one area does NOT overlap with the confidence interval for an incidence rate in another area, the two rates are significantly different. The figure below shows what non-overlapping confidence intervals look like.

If "Rate 1" is statistically significantly higher than "Rate 2," the lower confidence limit for "Rate 1" is greater than the upper confidence limit for "Rate 2." When one rate is significantly different from another rate, the difference between the two rates is larger than we would expect by chance alone.



If the confidence interval for the incidence rate in one area overlaps with the confidence interval for an incidence rate in another area, the two rates are NOT significantly different. The figure below shows how the confidence intervals look when the cancer rates for two areas are NOT significantly different from one another.



If “Rate 1” is NOT significantly greater than “Rate 2”, the lower confidence limit for “Rate 1” is less than the upper confidence limit for “Rate 2.” Even though the numbers may look very different, if the cancer rate for one area is not significantly different from the cancer rate for another area, researchers cannot say that one rate is truly different from the other rate.

DPH compared cancer incidence rates for each census tract to the cancer rate for the state to tell if any census tracts had a statistically significantly higher-than-expected or lower-than-expected overall cancer rate compared to the whole state.

When interpreting the cancer rates for any census tract, review the maps, plus the table in Appendix H that lists the actual rate and the confidence intervals for both the state and for each census tract. When viewing the cancer rate in a census tract, it is important to look at the confidence interval. If a cancer rate has a relatively wide confidence interval, the cancer rate has a lot of uncertainty. When cancer rates have a lot of uncertainty, conclusions should be drawn cautiously. Even our best guess may overestimate or underestimate the actual rate of cancer in a census tract.

APPENDIX H: FIVE-YEAR AGE-ADJUSTED 2010-2014 ALL-SITE CANCER INCIDENCE RATES BY CENSUS TRACT, DELAWARE

TABLE H-1: FIVE-YEAR AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES BY CENSUS TRACT; DELAWARE, 2010-2014

Blue = Incidence rate is statistically significantly lower than the state rate.
Yellow = Incidence rate is statistically significantly higher than the state rate.

2010 Census Tract ID	Delaware: 506.5 (500.4, 512.6) Age-Adjusted Rate (95% confidence Interval)
2.00	483.9 (405.0, 573.8)
3.00	482.9 (379.0, 606.8)
4.00	533.8 (435.6, 649.5)
5.00	448.9 (351.7, 565.2)
6.01	509.3 (394.0, 647.4)
6.02	546.9 (433.2, 682.3)
9.00	563.8 (413.7, 748.7)
11.00	421.2 (341.9, 534.2)
12.00	636.3 (460.4, 867.7)
13.00	453.5 (374.0, 548.0)
14.00	390.1 (288.8, 517.9)
15.00	455.8 (347.1, 588.9)
16.00	473.8 (353.7, 622.0)
19.02	600.1 (388.6, 875.5)
21.00	521.4 (378.2, 700.1)
22.00	481.3 (357.0, 632.5)
23.00	528.6 (406.1, 674.6)
24.00	477.2 (391.8, 575.6)
25.00	544.2 (428.8, 680.7)
26.00	494.7 (391.2, 616.3)
27.00	654.3 (449.3, 911.8)
28.00	404.7 (256.0, 606.1)
29.00	667.8 (546.1, 808.2)
30.02	490.0 (307.0, 731.6)
101.01	508.2 (417.7, 612.1)
101.04	517.3 (411.7, 641.6)
102.00	533.8 (404.5, 693.6)
103.00	485.0 (381.7, 608.3)
104.00	526.0 (441.9, 622.3)
105.02	486.0 (411.0, 571.3)
107.02	411.4 (336.0, 498.9)
108.00	430.2 (363.5, 507.6)
109.00	483.5 (395.7, 589.4)
110.00	437.2 (354.8, 535.7)
111.00	417.7 (334.1, 520.6)
112.01	512.0 (386.3, 666.1)
112.02	503.2 (418.6, 601.9)
112.03	507.5 (422.6, 605.0)
112.04	463.3 (382.5, 559.1)
112.05	418.8 (316.3, 548.8)
112.06	392.3 (325.2, 471.7)
113.00	395.8 (300.0, 516.0)
114.00	435.7 (358.5, 528.4)
115.00	531.0 (433.2, 646.6)
116.00	374.4 (295.3, 469.8)
117.00	455.9 (369.9, 559.1)
118.00	463.4 (386.9, 553.0)
119.00	503.6 (416.2, 607.9)
120.00	461.0 (384.6, 549.2)
121.00	465.7 (372.3, 576.4)
122.00	465.8 (381.2, 563.8)
123.00	599.7 (470.9, 752.6)
124.00	511.9 (423.3, 613.5)
125.00	584.3 (499.7, 679.3)
126.00	514.9 (409.5, 640.5)
127.00	538.9 (458.9, 630.1)
129.00	490.3 (404.5, 588.8)
130.00	473.6 (353.6, 623.3)
131.00	454.4 (351.1, 579.4)
132.00	412.1 (314.0, 531.8)
133.00	417.0 (313.3, 548.4)
134.00	596.8 (491.3, 721.8)
135.01	427.4 (366.6, 497.0)
135.03	458.9 (395.6, 530.2)

* Age-adjusted incidence rate is based on fewer than 25 cases
Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population
Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

TABLE H-1: FIVE-YEAR AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES BY CENSUS TRACT; DELAWARE, 2010-2014 (CONTINUED)

Blue = Incidence rate is statistically significantly lower than the state rate.
Yellow = Incidence rate is statistically significantly higher than the state rate.

2010 Census Tract ID	Delaware: 506.5 (500.4, 512.6) Age-Adjusted Rate (95% confidence Interval)
135.05	540.1 (429.4, 672.6)
135.06	573.3 (472.5, 690.7)
136.04	535.4 (449.4, 634.2)
136.07	393.9 (331.3, 465.7)
136.08	581.4 (444.2, 748.6)
136.10	439.0 (366.5, 521.9)
136.11	435.4 (358.2, 524.4)
136.12	399.7 (336.3, 472.5)
136.13	473.3 (398.7, 558.3)
136.14	506.9 (402.6, 629.9)
136.15	565.9 (478.9, 667.2)
137.00	551.0 (443.3, 676.2)
138.00	468.2 (392.7, 554.5)
139.01	485.5 (374.6, 619.2)
139.03	573.8 (441.6, 730.0)
139.04	503.5 (421.9, 595.6)
140.00	476.9 (396.2, 569.2)
141.00	612.7 (511.7, 727.3)
142.00	673.8 (520.3, 862.3)
143.00	391.4 (322.4, 474.7)
144.02	369.3 (276.4, 486.2)
144.03	379.1 (293.0, 482.9)
144.04	514.0 (419.7, 624.5)
145.01*	364.2 (207.2, 682.7)
145.02	652.9 (414.3, 981.8)
147.02	495.0 (374.4, 644.3)
147.03	497.9 (418.7, 588.5)
147.05	543.7 (462.1, 635.7)
147.06	520.2 (373.6, 702.7)
148.03	487.3 (404.2, 583.8)
148.05	588.9 (501.2, 686.7)
148.07	489.4 (406.1, 583.6)

2010 Census Tract ID	Delaware: 506.5 (500.4, 512.6) Age-Adjusted Rate (95% confidence Interval)
148.08	581.8 (463.7, 718.0)
148.09	565.3 (484.6, 655.3)
148.10	523.0 (436.7, 620.8)
149.03	651.1 (521.3, 800.2)
149.04	603.2 (498.4, 722.7)
149.06	458.5 (337.9, 605.4)
149.07	544.4 (447.0, 656.4)
149.08	519.7 (381.6, 689.5)
149.09	483.3 (387.4, 594.0)
150.00	565.7 (479.2, 663.7)
151.00	507.5 (422.0, 607.1)
152.00	454.7 (379.1, 541.0)
154.00	462.7 (370.7, 571.5)
155.02	576.2 (461.2, 711.8)
156.00	492.7 (379.5, 630.4)
158.02	561.9 (428.2, 723.5)
159.00	569.4 (468.6, 686.5)
160.00	477.6 (372.7, 603.9)
161.00	490.9 (381.6, 627.9)
162.00	482.4 (379.2, 606.6)
163.01	609.5 (517.4, 713.6)
163.02	528.3 (447.1, 619.5)
163.05	542.7 (459.6, 635.9)
164.01	584.3 (485.3, 697.0)
164.04	605.9 (494.3, 736.4)
166.01	535.6 (477.6, 598.9)
166.02	581.4 (483.6, 692.5)
166.04	598.6 (522.4, 682.2)
166.08	589.4 (484.5, 710.6)
168.01	534.8 (445.5, 636.3)
168.04	584.5 (489.4, 692.2)
169.01	661.3 (524.2, 824.6)

* Age-adjusted incidence rate is based on fewer than 25 cases
Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population
Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

TABLE H-1: FIVE-YEAR AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES BY CENSUS TRACT; DELAWARE, 2010-2014 (CONTINUED)

Blue = Incidence rate is statistically significantly lower than the state rate.

Yellow = Incidence rate is statistically significantly higher than the state rate.

2010 Census Tract ID	Delaware: 506.5 (500.4, 512.6) Age-Adjusted Rate (95% confidence Interval)
169.04	479.9 (365.4, 625.2)
401.00	684.0 (596.1, 781.3)
402.01	551.8 (455.2, 662.1)
402.02	510.0 (459.4, 564.8)
402.03	608.5 (514.8, 714.4)
405.01	436.8 (360.8, 524.5)
405.02	560.0 (442.3, 703.8)
407.00	463.9 (391.1, 547.2)
409.00	564.2 (438.6, 718.5)
410.00	464.4 (390.8, 547.8)
411.00*	706.7 (252.1, 1483.0)
412.00	528.6 (439.3, 631.2)
413.00	526.2 (394.8, 687.1)
414.00	452.3 (360.5, 560.4)
415.00	579.2 (483.9, 688.5)
416.00	455.5 (361.6, 573.5)
417.01	601.8 (524.5, 688.1)
417.02	520.8 (436.1, 618.5)
418.01	623.7 (557.1, 696.3)
418.02	495.0 (406.8, 596.4)
419.00	557.6 (474.5, 651.6)
420.00	553.3 (449.7, 674.7)
421.00	533.8 (442.7, 639.4)
422.01	528.8 (459.7, 605.0)
422.02	634.3 (562.8, 712.6)
425.00	505.5 (406.3, 621.6)
428.00	586.2 (512.9, 667.4)
429.00	534.9 (453.2, 628.2)
430.00	627.5 (541.4, 723.9)
431.00	520.2 (408.0, 655.0)
432.02	573.1 (478.7, 681.8)

2010 Census Tract ID	Delaware: 506.5 (500.4, 512.6) Age-Adjusted Rate (95% confidence Interval)
433.00	508.1 (417.3, 613.0)
434.00	549.2 (463.3, 647.6)
501.01	512.5 (427.6, 610.9)
501.03	575.7 (489.8, 673.9)
501.04	526.0 (439.6, 624.9)
501.05	563.7 (476.3, 662.4)
502.00	526.0 (422.7, 647.6)
503.01	575.1 (506.7, 650.8)
503.02	552.8 (463.0, 654.9)
504.01	479.8 (393.5, 580.5)
504.03	453.5 (362.7, 561.1)
504.05	570.0 (478.5, 675.1)
504.06	350.6 (285.0, 427.2)
504.07	507.8 (429.8, 597.1)
504.08	640.9 (547.7, 746.2)
505.01	576.4 (478.6, 689.4)
505.03	530.4 (432.0, 643.4)
505.04	431.4 (362.3, 510.1)
506.01	545.6 (462.7, 639.7)
506.02	492.1 (420.0, 573.6)
507.01	547.2 (464.8, 642.9)
507.03	454.8 (349.0, 588.1)
507.04	650.7 (555.1, 760.9)
507.05	535.6 (459.7, 624.2)
507.06	441.1 (327.9, 601.7)
508.01	539.3 (445.4, 648.2)
508.02	582.6 (498.7, 677.6)
508.03	607.3 (537.5, 685.4)
509.01	459.0 (365.6, 575.1)
509.02	512.1 (438.4, 599.6)
510.03	464.1 (394.8, 544.1)

* Age-adjusted incidence rate is based on fewer than 25 cases

Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

TABLE H-1: FIVE-YEAR AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES BY CENSUS TRACT; DELAWARE, 2010-2014 (CONTINUED)

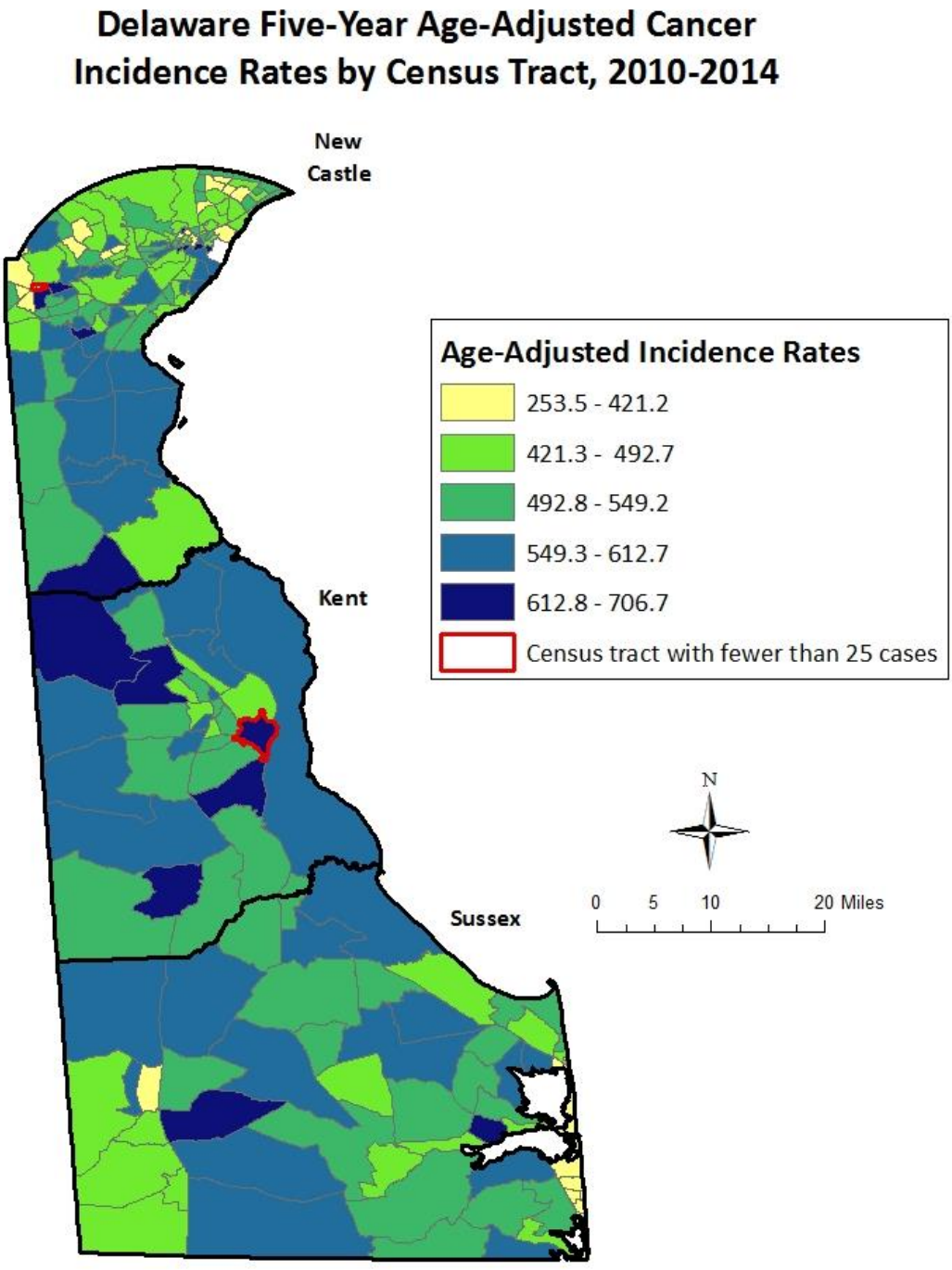
Blue = Incidence rate is statistically significantly lower than the state rate.
Yellow = Incidence rate is statistically significantly higher than the state rate.

2010 Census Tract ID	Delaware: 506.5 (500.4, 512.6) Age-Adjusted Rate (95% confidence Interval)
510.04	516.0 (439.0, 605.9)
510.05	545.1 (469.5, 633.1)
510.06	583.6 (482.3, 707.3)
510.07	561.0 (480.3, 655.0)
511.01	494.5 (348.8, 821.9)
511.02	459.9 (327.7, 668.0)
511.03	400.0 (272.0, 607.6)
512.01	348.2 (250.3, 509.8)
512.02	319.6 (195.8, 599.9)
512.03	253.5 (155.9, 477.8)
512.04	405.3 (290.5, 840.5)
512.05	365.8 (166.7, 771.8)

2010 Census Tract ID	Delaware: 506.5 (500.4, 512.6) Age-Adjusted Rate (95% confidence Interval)
513.01	552.2 (480.8, 634.6)
513.02	500.8 (400.8, 620.8)
513.03	522.3 (448.0, 608.7)
513.05	555.8 (465.8, 665.9)
513.06	475.1 (376.8, 604.6)
514.00	531.0 (439.6, 636.9)
515.00	504.6 (430.7, 588.6)
517.01	575.6 (483.0, 681.8)
517.02	587.0 (507.2, 676.4)
518.01	490.9 (412.3, 580.7)
518.02	466.1 (382.9, 562.4)
519.00	486.3 (407.8, 576.3)

* Age-adjusted incidence rate is based on fewer than 25 cases
Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population
Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

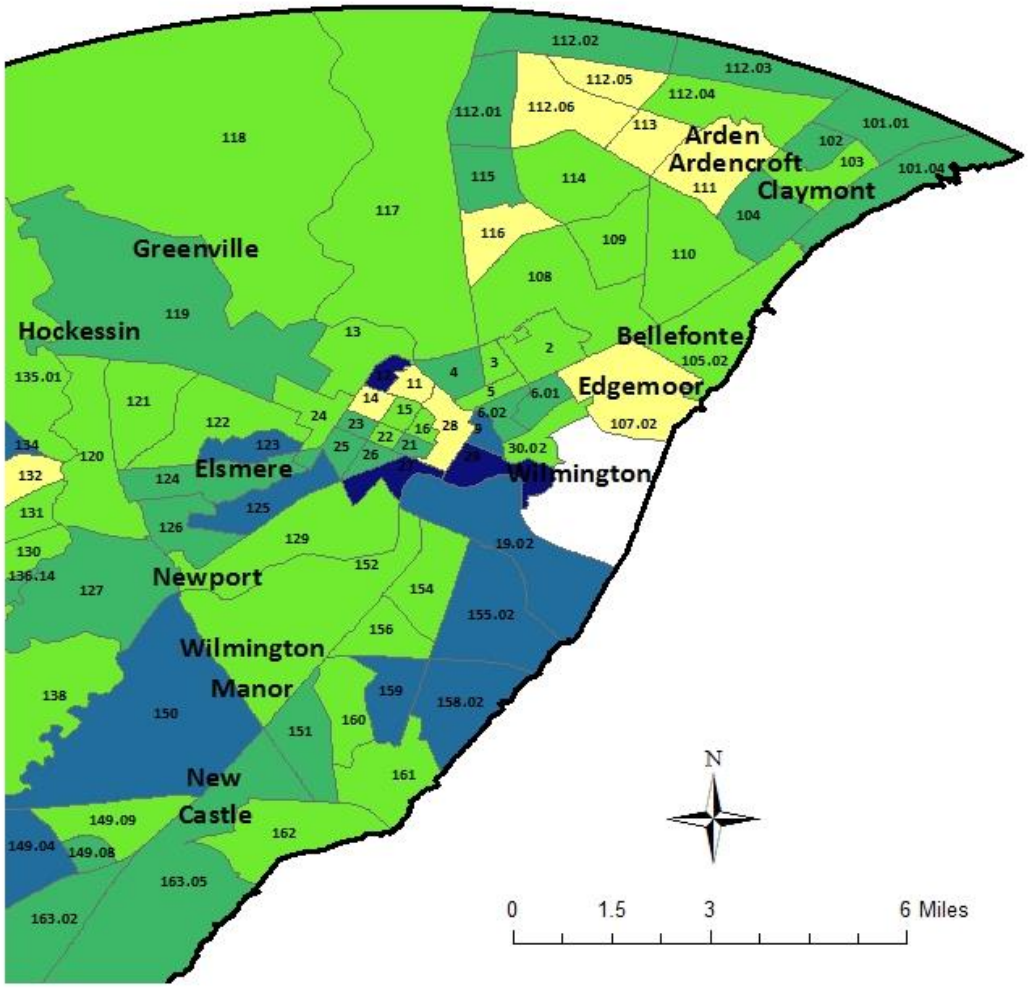
APPENDIX I: MAPS OF CANCER INCIDENDE RATES QUINTILES BY CENSUS TRACTS, DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

Wilmington and Northeastern New Castle County



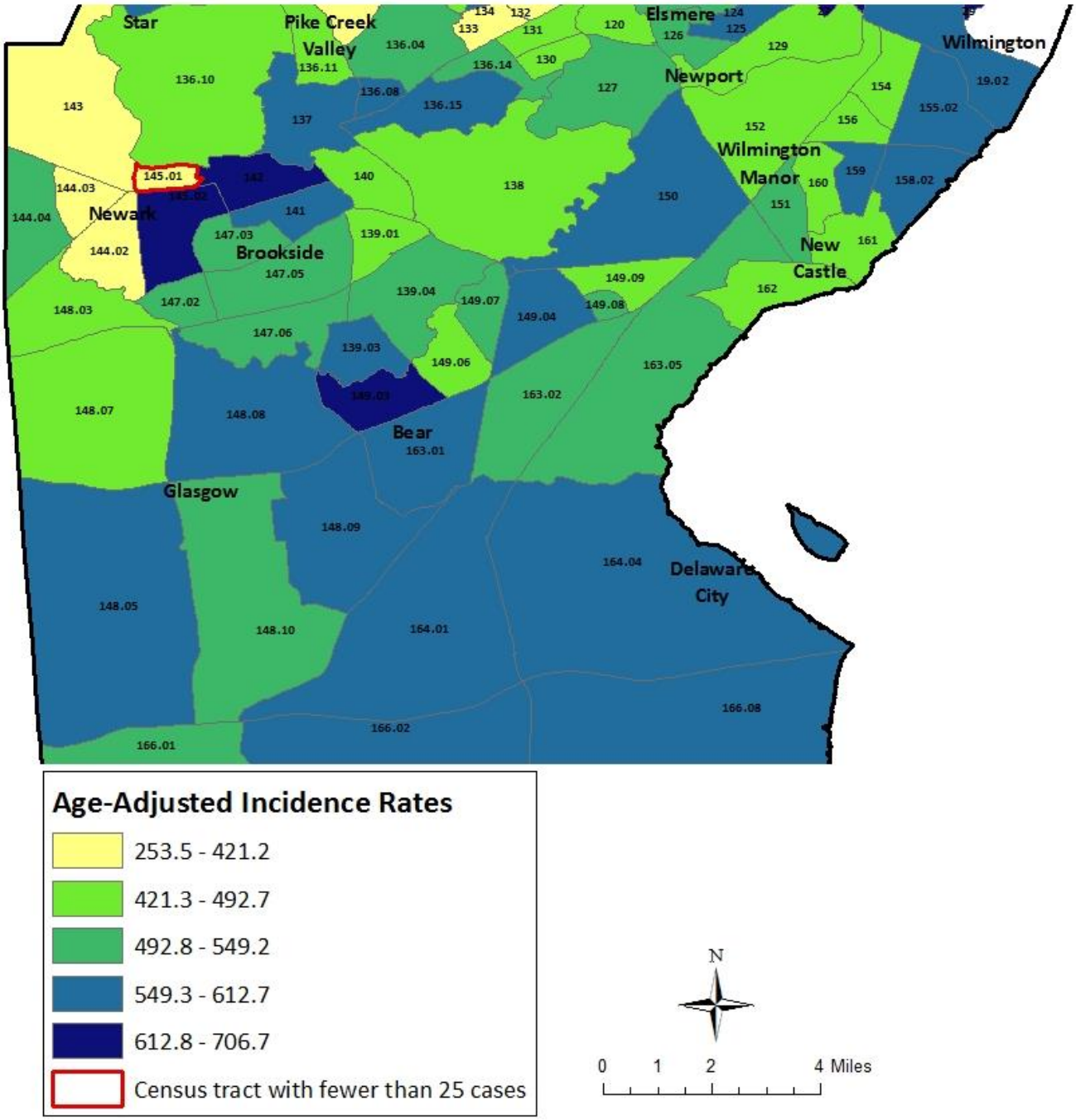
Age-Adjusted Incidence Rates

- 253.5 - 421.2
- 421.3 - 492.7
- 492.8 - 549.2
- 549.3 - 612.7
- 612.8 - 706.7

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

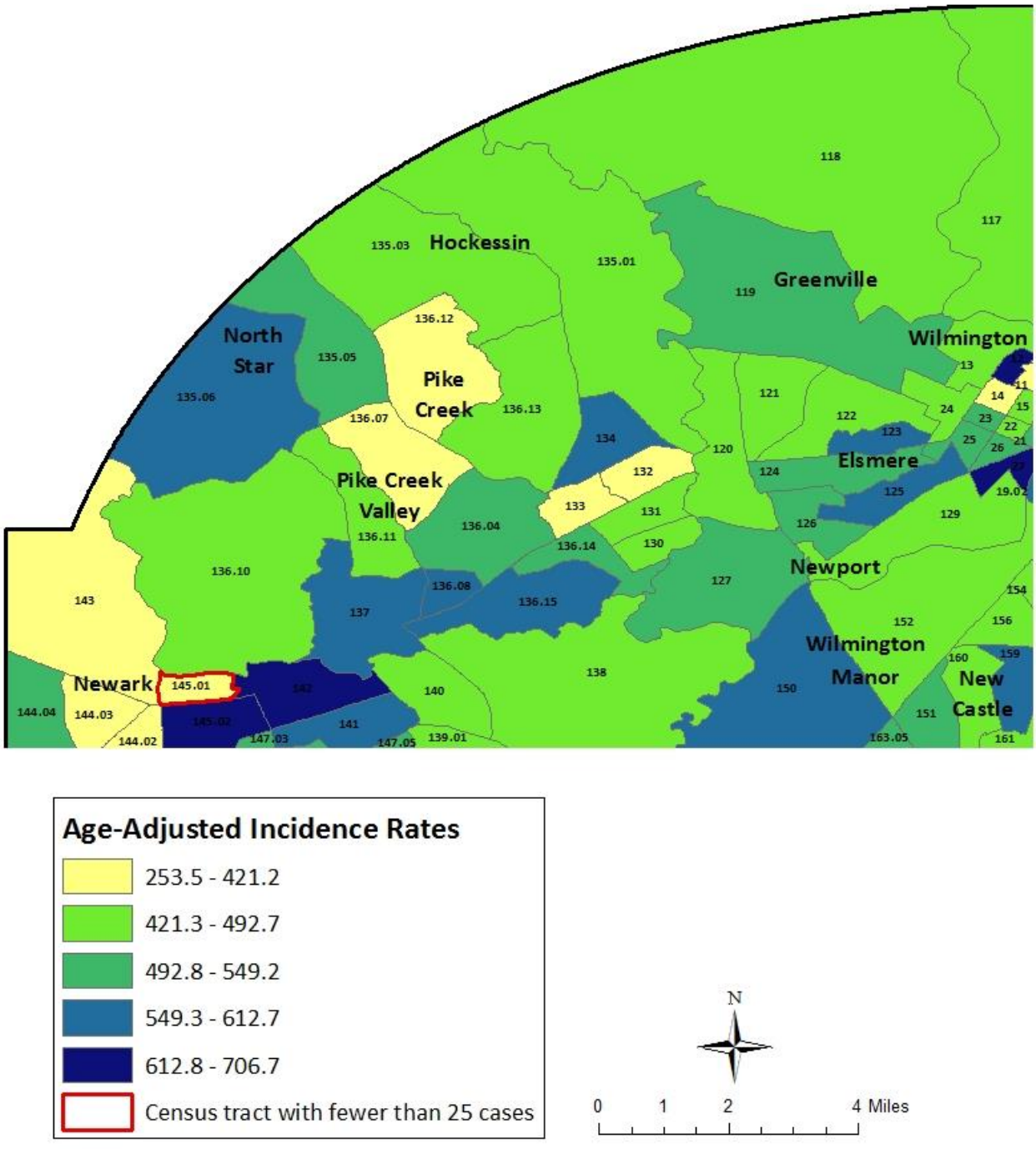
Newark, New Castle, and Central New Castle County



Source: Delaware Cancer Registry Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

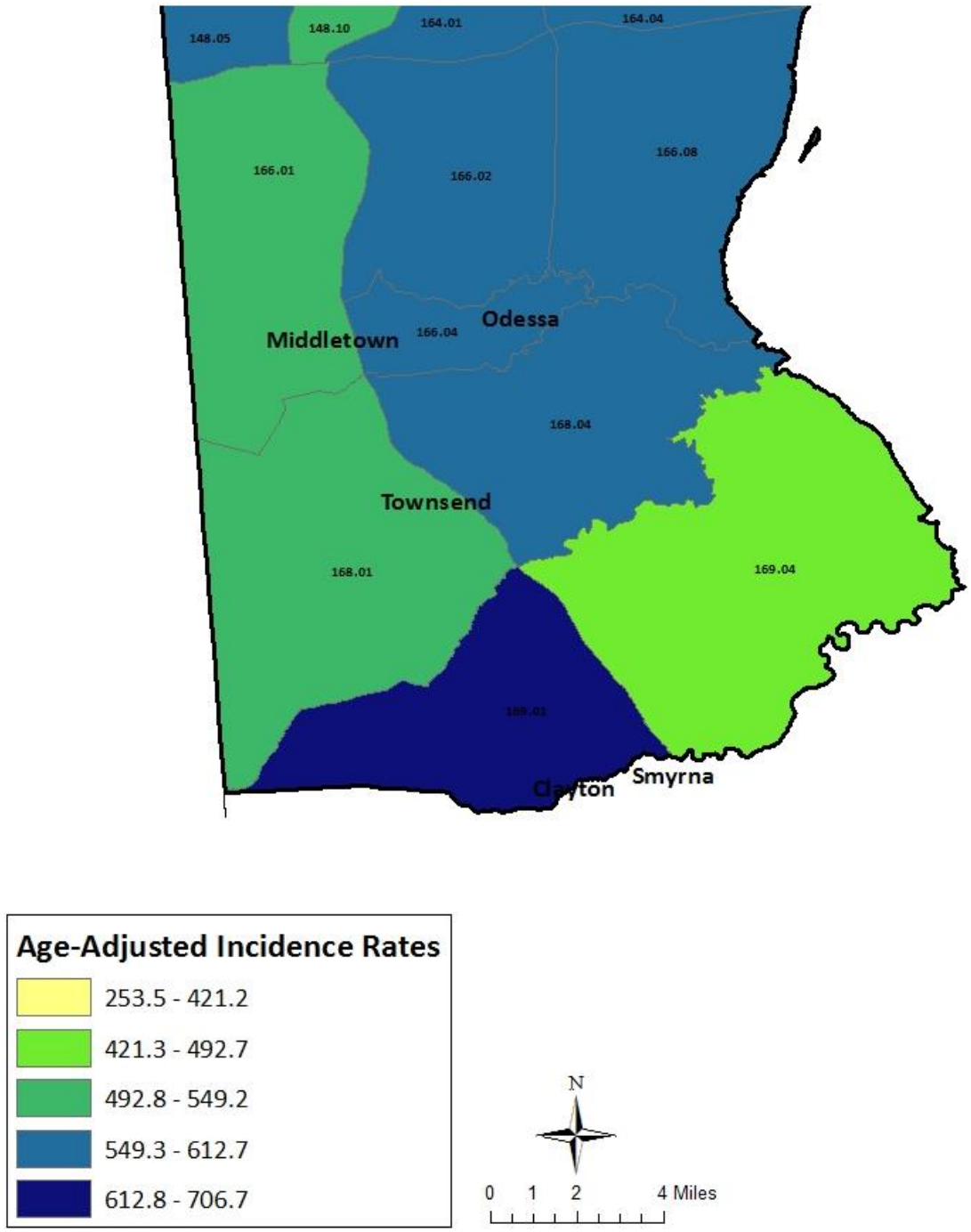
Hockessin and Northwestern New Castle County



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

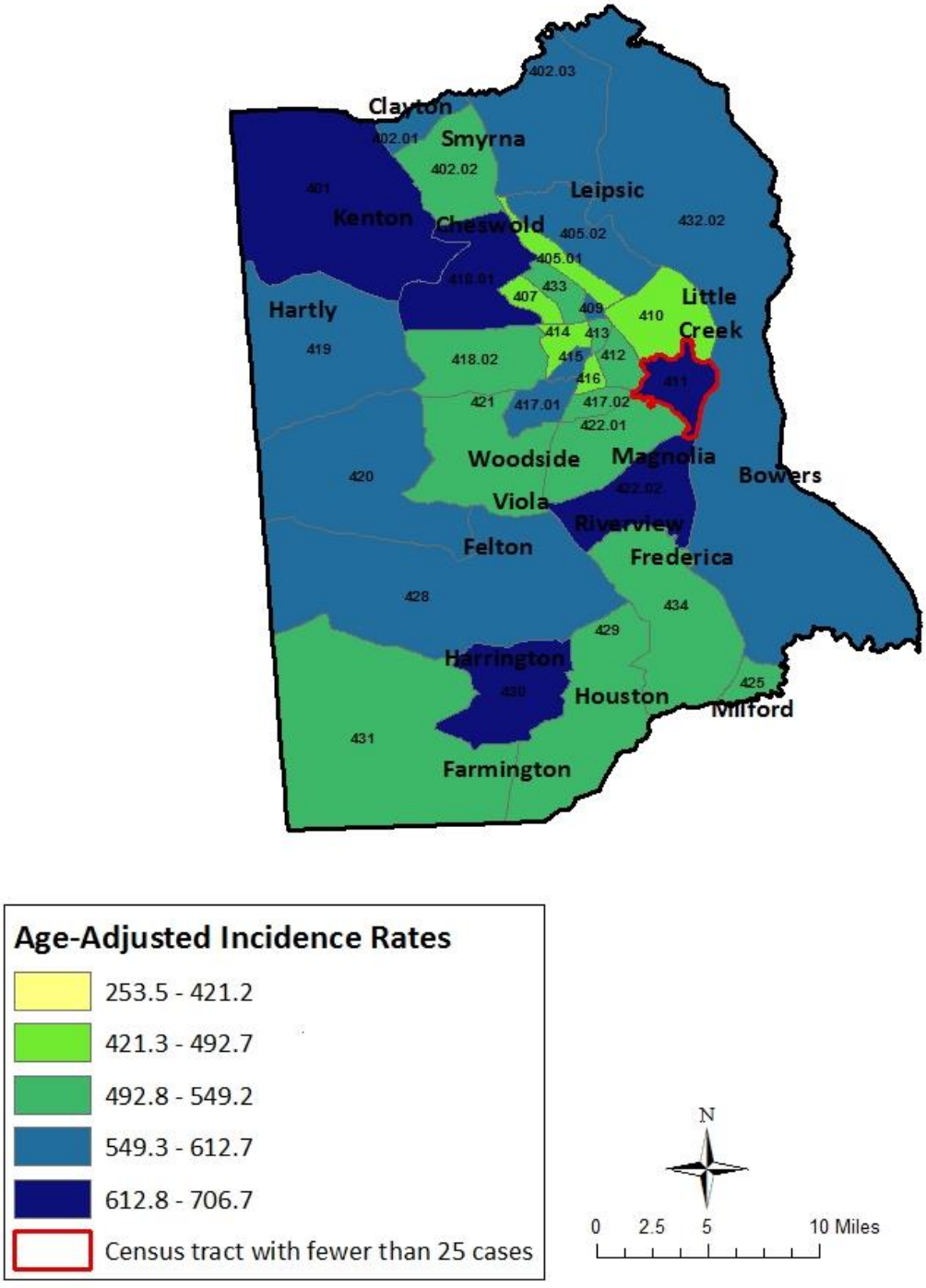
Southern New Castle County



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

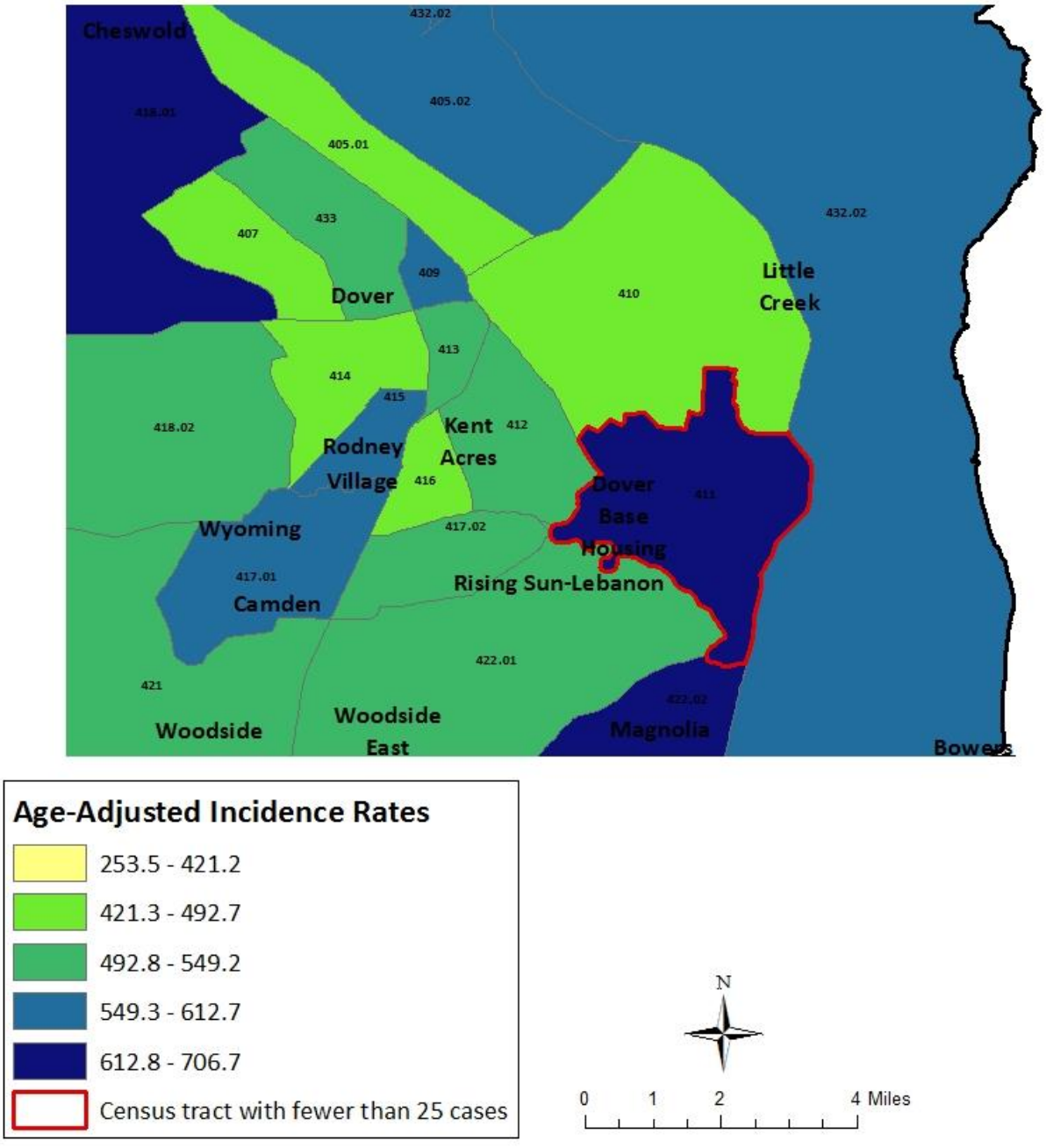
Kent County



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

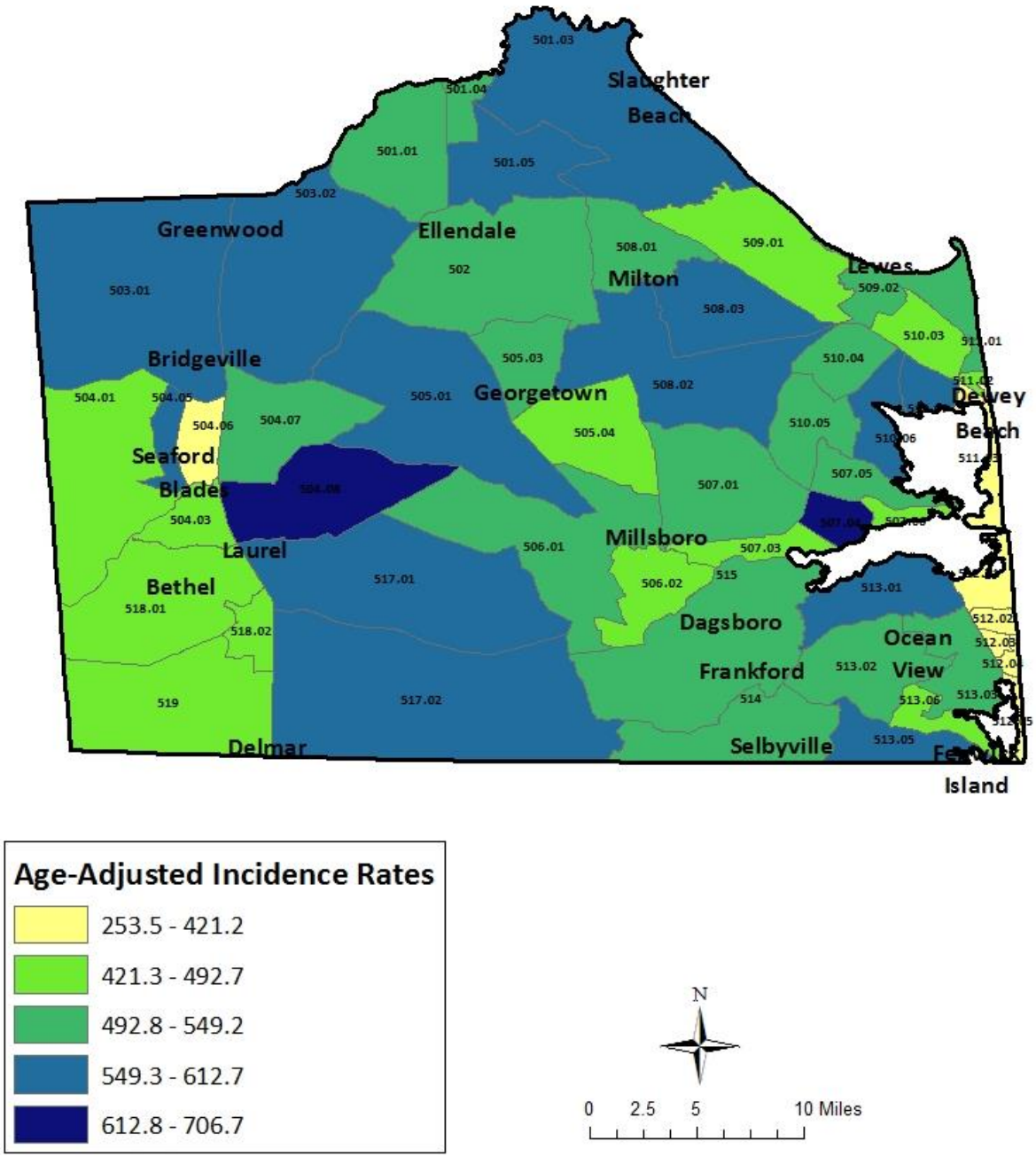
Greater Dover



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

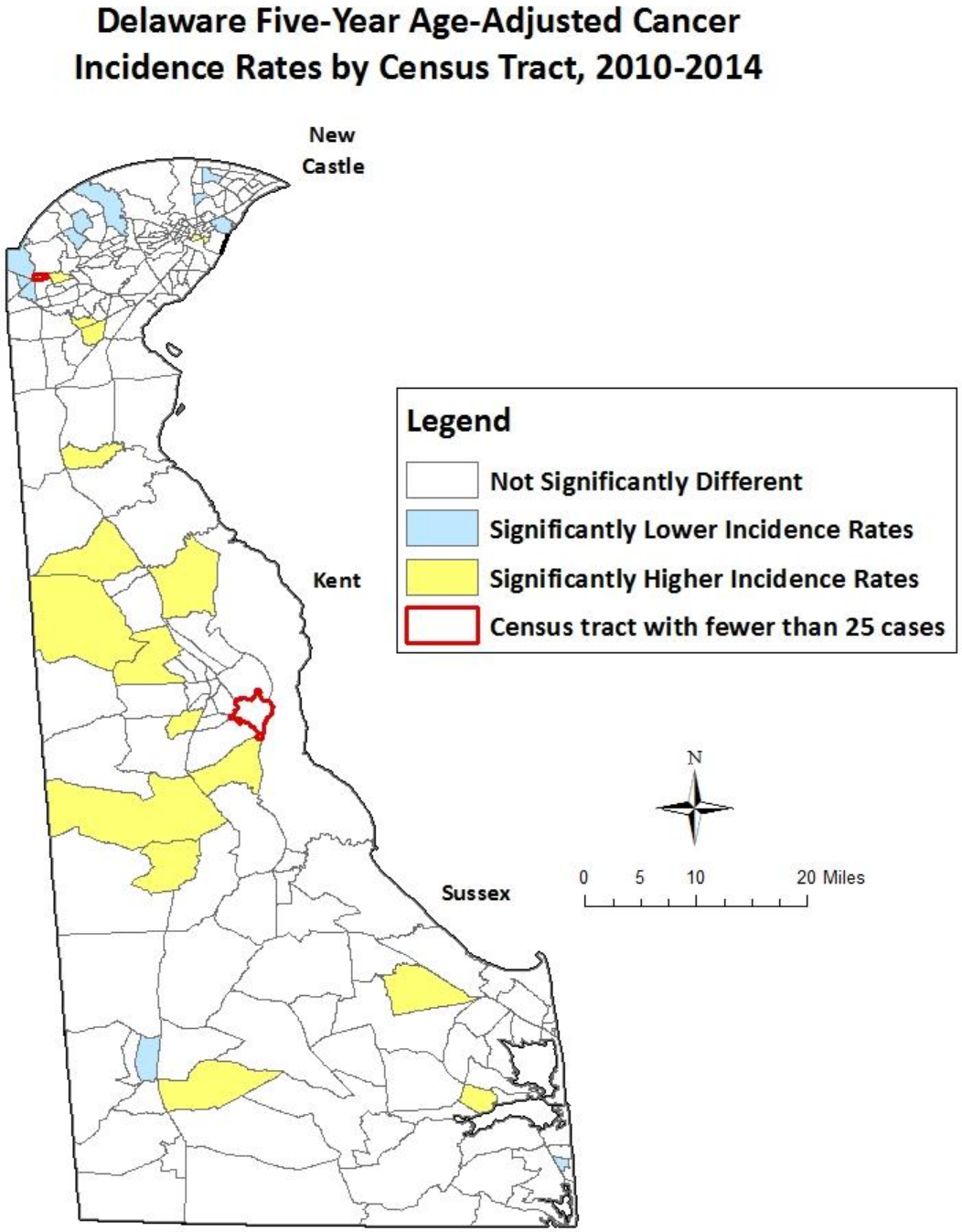
Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

Sussex County



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

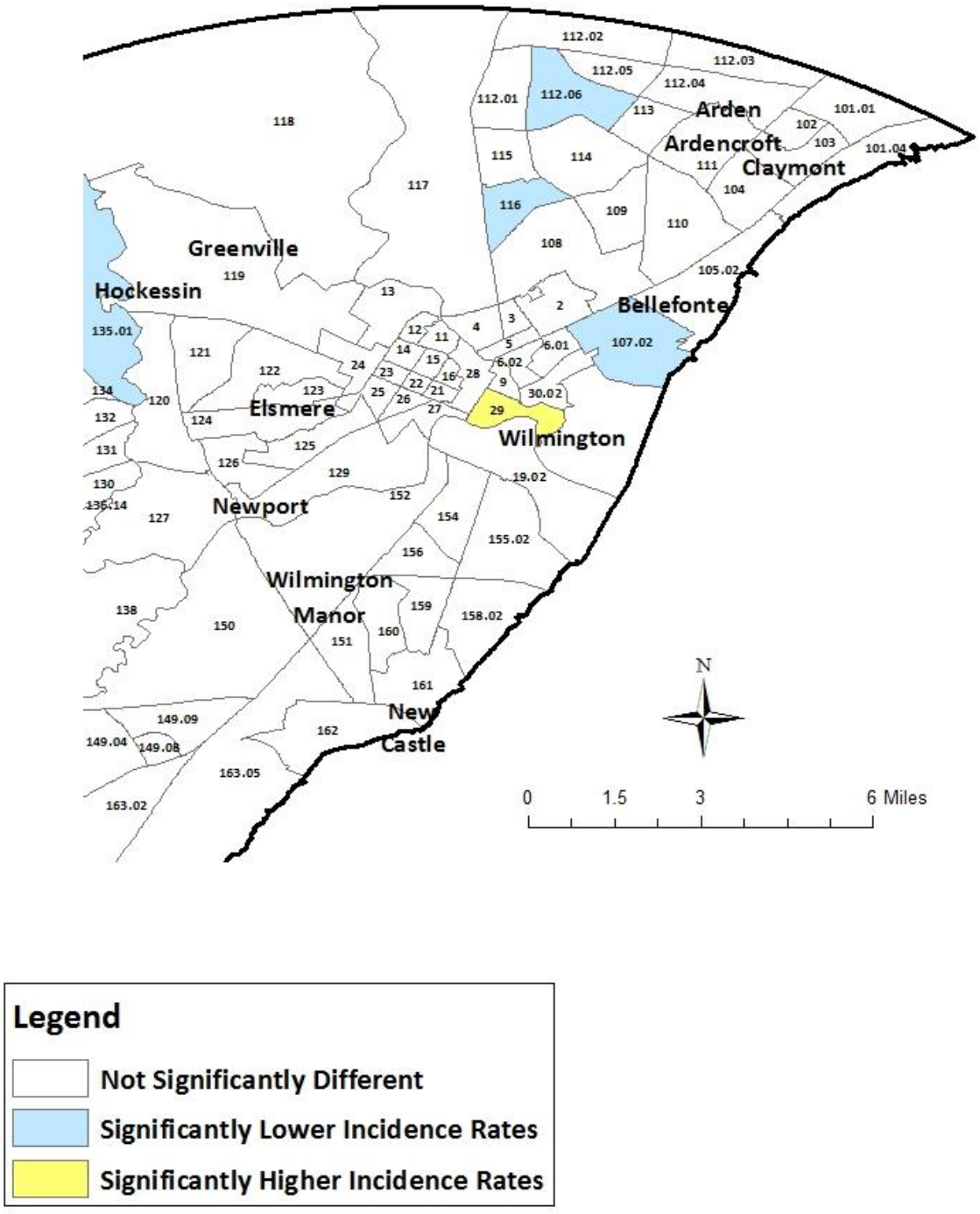
APPENDIX J: MAPS OF HI/LOW CANCER INCIDENCE RATES BY CENSUS TRACTS, DELAWARE, 2010-2014



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

Wilmington and Northeastern New Castle County



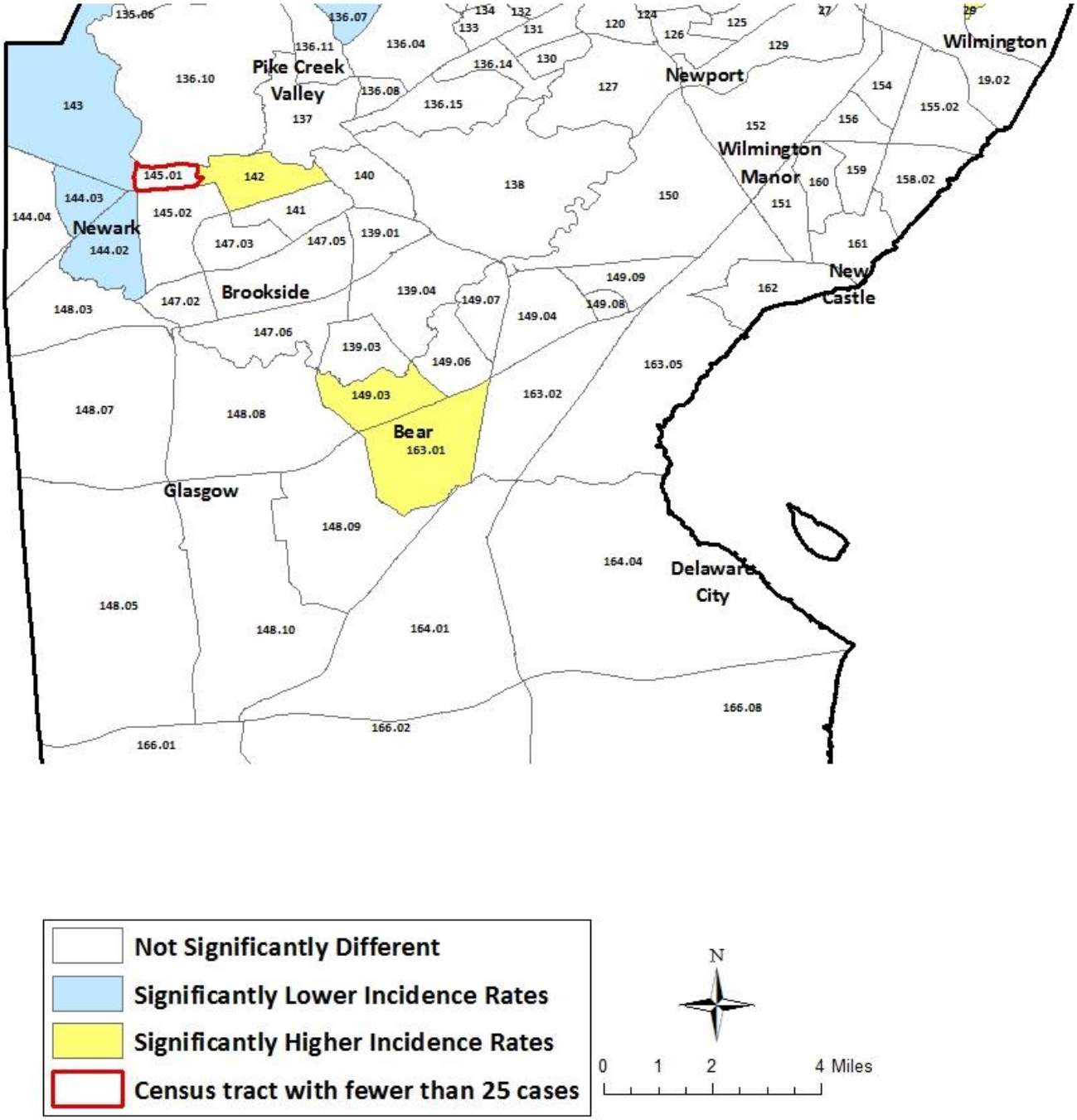
Legend

- Not Significantly Different
- Significantly Lower Incidence Rates
- Significantly Higher Incidence Rates

Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

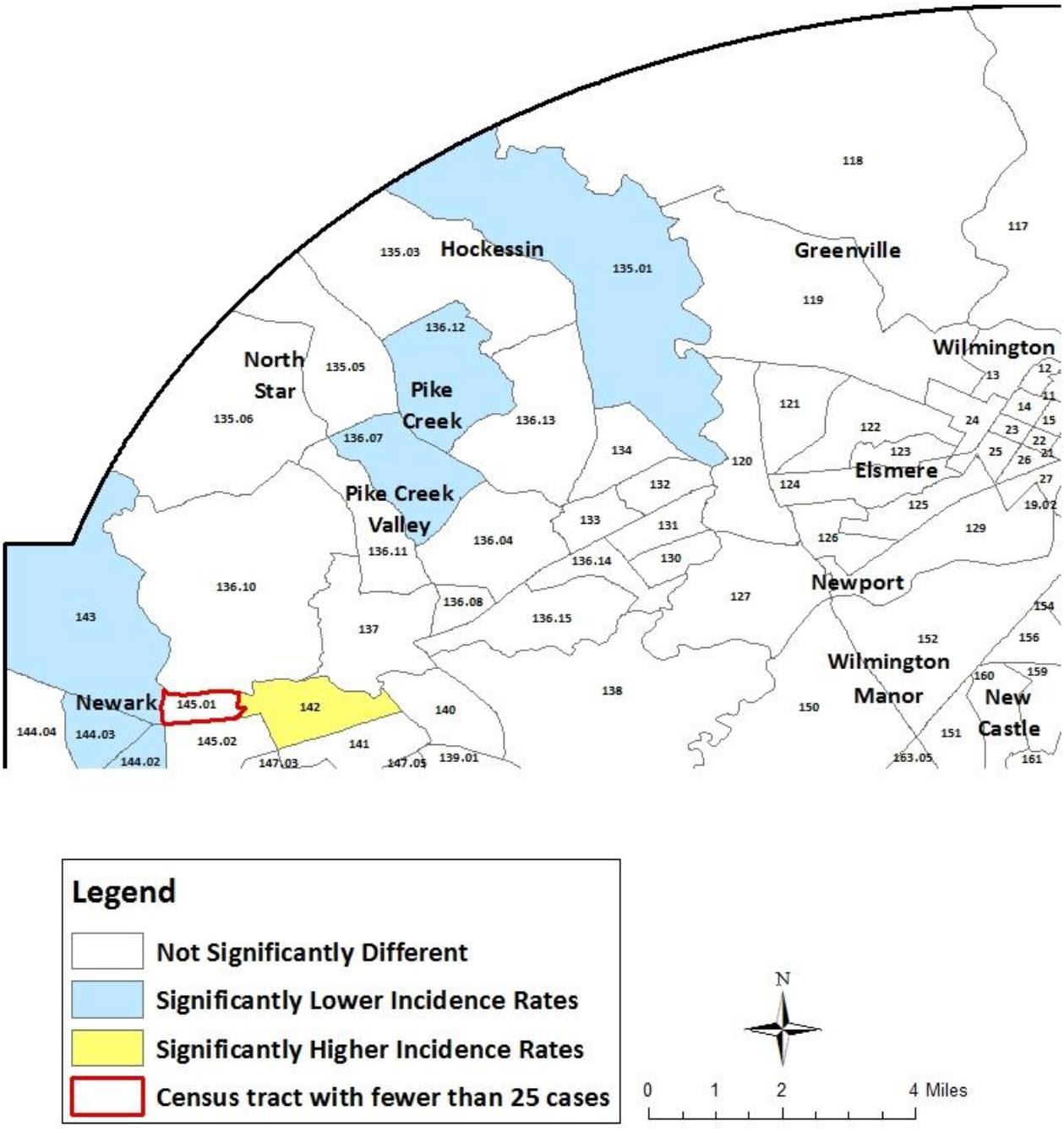
Newark, New Castle, and Central New Castle County



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

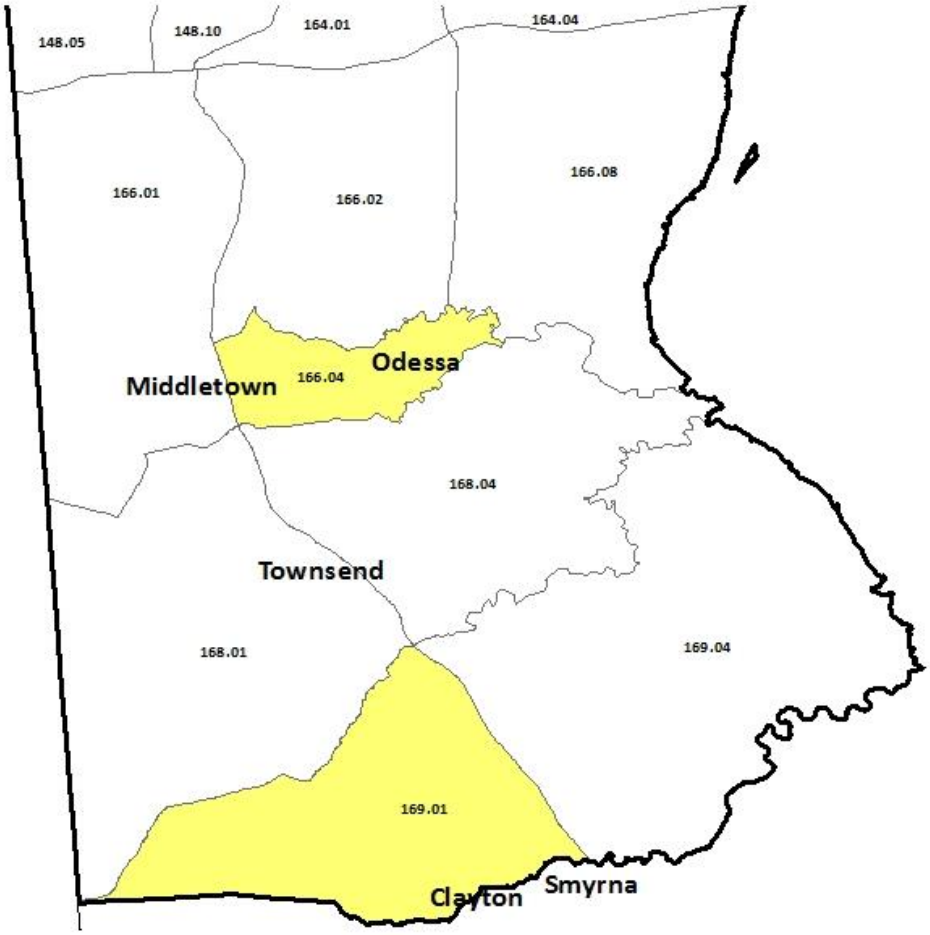
Hockessin and Northwestern New Castle County



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

Southern New Castle County



Legend

- Not Significantly Different
- Significantly Higher Incidence Rates

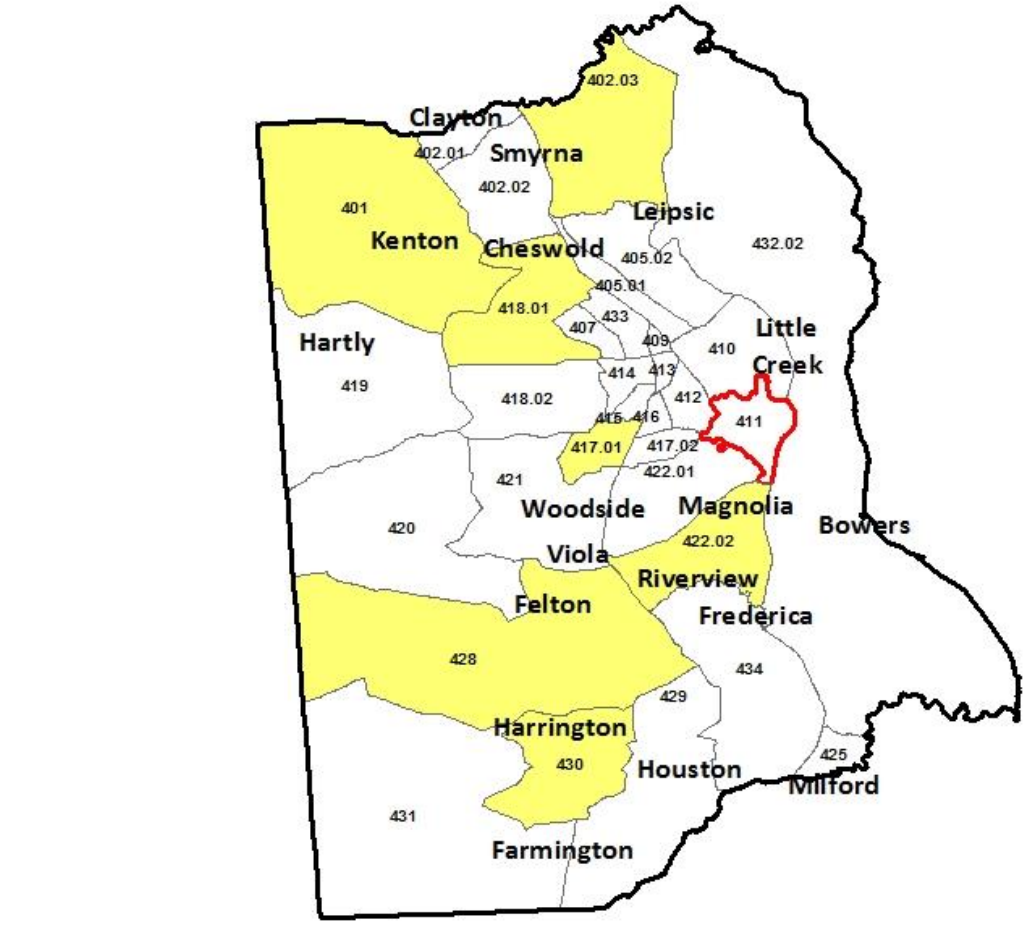
N

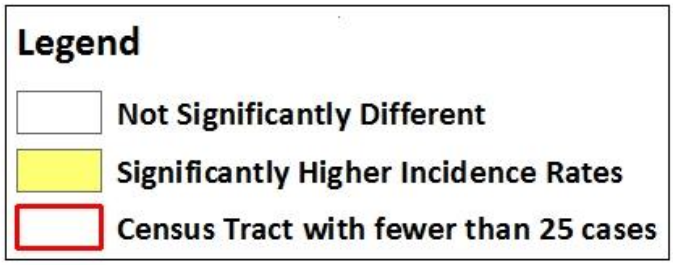
0 1 2 4 Miles

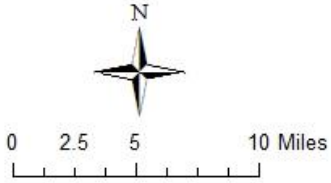
Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

Kent County



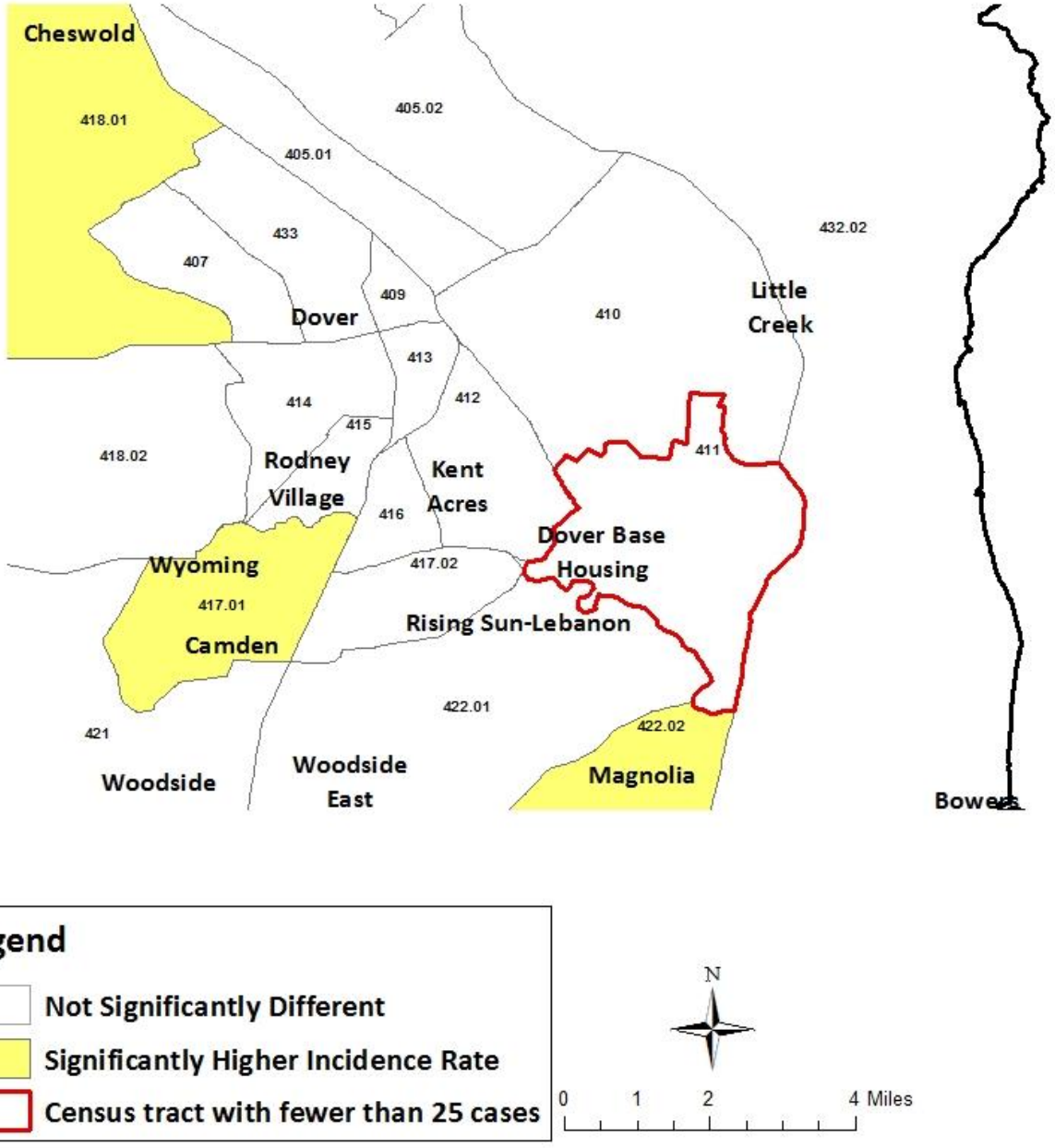




Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

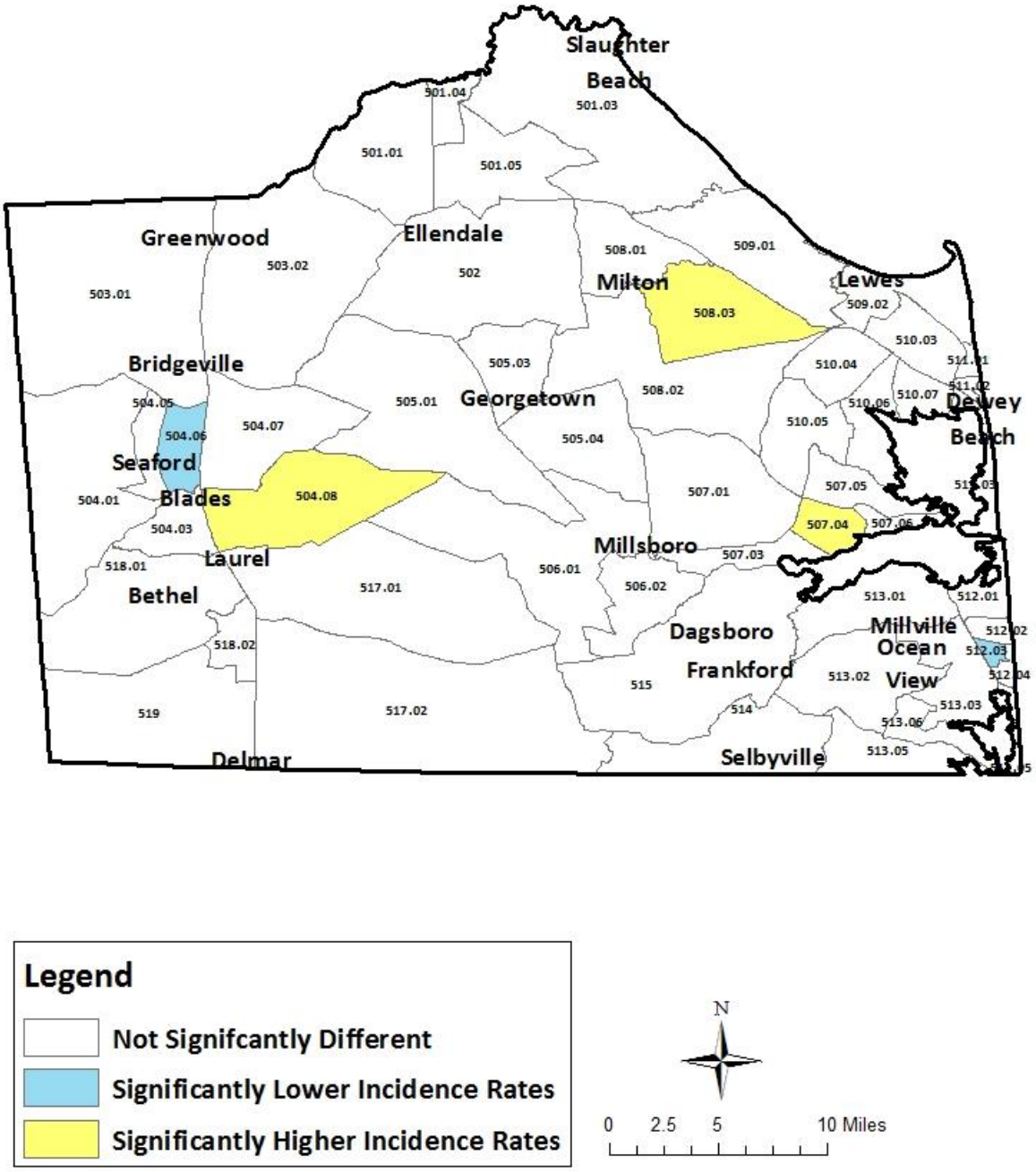
Greater Dover



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017

Delaware Five-Year Age-Adjusted Cancer Incidence Rates by Census Tract, 2010-2014

Sussex County



Source: Delaware Cancer Registry, Delaware Department of Health and Social Services, Division of Public Health, 2017