

# **CANCER INCIDENCE AND MORTALITY IN DELAWARE, 2013-2017**

DELAWARE DEPARTMENT OF HEALTH AND SOCIAL SERVICES  
DIVISION OF PUBLIC HEALTH  
2021



*DELAWARE HEALTH AND SOCIAL SERVICES*  
Division of Public Health  
Comprehensive Cancer Control Program



This report is made possible with funding from the Delaware Health Fund, with strategic leadership and guidance provided by the Delaware Cancer Consortium.

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<http://www.dhss.delaware.gov/dhss/dph/dpc/cancer.html>

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## CHAPTER 1: EXECUTIVE SUMMARY

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This report presents the 2013-2017 cancer incidence and mortality data and statistics for Delaware. The Delaware Department of Health and Social Services (DHSS), Division of Public Health (DPH), in conjunction with the Delaware Cancer Consortium (DCC), publishes this report as a source of cancer incidence and mortality information. DPH and other stakeholders also use this report 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)<sup>1</sup> and mortality (the number of deaths from cancer in a population over a time period)<sup>2</sup> rates and other analyses are performed by the Delaware Comprehensive Cancer Control Program staff. Incidence data are obtained from the Delaware Cancer Registry (DCR) and mortality data are obtained from the Delaware Health Statistics Center.

This report includes cancer statistics for all cancer sites combined (all-site cancer), as well as eight site-specific cancer types: female breast, colorectal, lung/bronchus, prostate, kidney and renal pelvis, cervical, leukemia, and oral cavity. These cancer statistics reflect incidence and mortality data for 2013-2017. DPH compares Delaware's cancer incidence and mortality trends for 2013-2017 to those of the U.S. over the same period. DPH also summarizes how Delaware and U.S. cancer rates have changed from the five-year periods of 2003-2007 to 2013-2017.

From 2003-2007 to 2013-2017, Delaware's all-site cancer incidence rate decreased 5%. During the same time period, the comparable U.S. all-site cancer incidence rate fell 7%. While progress continues to be made, Delaware's 2013-2017 all-site cancer incidence rate (484.3 per 100,000) remains 11% higher than the comparable U.S. rate (435.0 per 100,000). Delaware's current ranking of 2<sup>nd</sup> among the states for highest all-site cancer incidence has been consistent since 2006-2010.

From 2003-2007 to 2013-2017, the all-site cancer incidence rate decreased by 13% among Delaware males but rose 2% among Delaware females. During the same time period, the all-site cancer incidence rate decreased by 12% in non-Hispanic Caucasian males, decreased by 22% in non-Hispanic African American males, and decreased 12% in Hispanic males in Delaware. **While there was a decrease in all male race groups, the all-site cancer incidence rate increased 3% in non-Hispanic Caucasian females.** The all-site cancer incidence rate increased less than 1% in non-Hispanic African American females and decreased 9% in Hispanic females in Delaware.

Delaware's 2013-2017 all-site cancer mortality rate of 171.0 per 100,000 was 8% higher than the U.S. rate of 158.3 per 100,000. This 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 strides in reducing the cancer mortality rate through cancer screening and early detection. **Delaware's current ranking of 15<sup>th</sup> among the states for highest all-site cancer mortality is the same ranking as in the 2020 report, which examined the 2012-2016 time period. Though the ranking has increased since the 2011-2015 period when Delaware ranked 18th, it still represents considerable continued progress since the 1990s, when the state ranked second. From 2003-2007 to 2013-2017, Delaware's cancer death rate decreased 7%, while the U.S. death rate decreased 14%.**

**From 2003-2007 to 2013-2017, the all-site cancer mortality rate among non-Hispanic African American male Delawareans declined 26%, compared to a 15% decline among non-Hispanic Caucasian male Delawareans. There was a 18% increase in the all-site cancer mortality rate among Hispanic male Delawareans during the**

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<sup>1</sup> <https://seer.cancer.gov/statistics/types/incidence.html>

<sup>2</sup> <https://seer.cancer.gov/statistics/types/mortality.html>

**same time period.** Among female Delawareans, the all-site cancer mortality rate decreased 12% in non-Hispanic African Americans, declined 15% in non-Hispanic Caucasians, and declined 12% in Hispanics.

**Many factors contribute to Delaware's progress in reducing its cancer burden.** Below is a summary of key factors, broken down by the top four cancer types, that impact cancer in Delaware. Each I&M report includes data on all-site cancer, the top four cancer types, and at least four other selected cancer sites that rotate year to year.

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## BREAST CANCER

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- The 2013-2017 breast cancer incidence rate for Delaware (135.4 per 100,000) was statistically significantly higher than the U.S. rate (126.8 per 100,000). **Delaware was ranked eighth nationally in 2013-2017 compared to sixth nationally in 2012-2016.**
- From 2003-2007 to 2013-2017, Delaware's breast cancer incidence rate increased by 8% while the comparable U.S. rate increased 3%. During this time period, the breast cancer incidence rate increased by 3% among non-Hispanic African American females and by 10% among non-Hispanic Caucasian females, but decreased by 17% 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 local stage increased from 42% in 1980-1984 to 68% in 2013-2017.
- The difference between Delaware's 2013-2017 breast cancer mortality rate (22.0 per 100,000) and the U.S. rate (20.3 per 100,000) was not statistically significant. Similarly, the difference between non-Hispanic African American females in Delaware (24.5 per 100,000) and non-Hispanic African American females in the U.S. (28.5 per 100,000), as well as between non-Hispanic Caucasian females in Delaware (21.1 per 100,000) and non-Hispanic Caucasian females in the U.S. (20.3 per 100,000) was not statistically significant.
- From 2003-2007 to 2013-2017, Delaware's decline in breast cancer mortality (2%) was less than the decline seen nationally (15%). Delaware's breast cancer mortality rate was ranked 17<sup>th</sup> nationally in 2013-2017 compared to 20<sup>th</sup> nationally in 2012-2016.
- From 2003-2007 to 2013-2017, Delaware's female breast cancer mortality rate decreased 3% among non-Hispanic African Americans and 15% among non-Hispanic Caucasians. Mortality rates for female breast cancer in Hispanics could not be calculated due to the small number of deaths.
- 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 2018 Behavioral Risk Factor Survey (BRFS) showed that Delaware females ranked third highest nationally in the prevalence of females 40 years of age and older who have had a mammogram within the past two years (79%).

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## COLORECTAL CANCER

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- The 2013-2017 colorectal cancer incidence rate for Delaware (38.1 per 100,000) was not statistically significantly different from the U.S. rate (38.4 per 100,000). **Delaware was ranked 27<sup>th</sup> nationally in 2013-2017 compared to 31<sup>st</sup> nationally in 2012-2016.**
- **From 2003-2007 to 2013-2017, Delaware's colorectal cancer incidence rate decreased 26% while the comparable U.S. rate fell 21%.** 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 27% while the U.S. incidence rate declined 23%. Among females, Delaware's incidence rate declined 24% while the U.S. incidence rate declined 20%.

- From 2003-2007 to 2013-2017, Delaware’s greatest improvements in colorectal cancer incidence rates were observed among non-Hispanic African American males and non-Hispanic Caucasian males; incidence rates for non-Hispanic African American males and non-Hispanic Caucasian males declined by 27% and 28%, respectively.
- For the 2013-2017 time period, 56% 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 a 1% increase since 2003-2007 in the percentage of regional and distant stage colorectal cancer diagnoses (55%).
- **Historically, Delaware’s colorectal cancer mortality rate has been higher than the U.S. rate. However, for 2013-2017, Delaware’s colorectal cancer mortality rate (13.8 per 100,000) was lower than that of the U.S. (13.9 per 100,000) but this difference was not statistically significant.**
- From 2003-2007 to 2013-2017, both the Delaware and national colorectal cancer mortality rates decreased 21%. Delaware ranked 31<sup>st</sup> nationally in 2013-2017, an increase in rank from 35<sup>th</sup> in 2012-2016.
- **The reduction in colorectal cancer mortality rates is especially noteworthy among non-Hispanic African American Delawareans.** From 2003-2007 to 2013-2017, Delaware’s colorectal cancer mortality rates declined 37% among non-Hispanic African American males, compared to 20% among non-Hispanic Caucasian males. During the same time period, colorectal cancer mortality declined 20% among non-Hispanic African American females, compared to 36% 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 2018 BRFS showed that **Delaware ranked 11<sup>th</sup> highest in prevalence in the U.S. for meeting the U.S. Preventive Services Task Force (USPSTF) recommendations for colorectal screening.** Nearly 73% of Delawareans age 50-74 years reported meeting the USPSTF recommendations for colorectal screening. The U.S. national median for meeting these recommendations was 70%.

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## LUNG CANCER

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- In 2013-2017, Delaware (67.4 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to the U.S. (52.6 per 100,000).
- **Lung cancer continues to account for an enormous share of Delaware’s overall cancer burden.** For the 2013-2017 time period, lung cancer accounted for 14% of all newly diagnosed cancer cases and 27% of all cancer deaths in Delaware.
- **According to the U.S. Department of Health and Human Services, tobacco use causes an estimated 85% to 90% of all lung cancer cases.** Delaware has reaped the benefits of statewide reductions in tobacco use that began decades ago. According to the 2019 Delaware BRFS, there is no statistically significant difference in current smoking prevalence between males and females.
- Prior to January 2013, there were no 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). For the 2013-2017 time period, Delaware and the U.S. had a similar proportion of lung cancers diagnosed at distant stage (47% in Delaware and 51% in the U.S.). Additionally, treatment options that are effective for some other forms of cancer are not as effective for lung cancer.
- DPH’s Screening for Life Program began covering lung cancer screenings for qualified Delawareans in 2015. The screening – known as a low-dose Computed Tomography (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 13<sup>th</sup> in the nation for lung cancer incidence, a decrease from 10<sup>th</sup> as seen in 2012-2016. From 2003-2007 to 2013-2017, lung cancer incidence rates declined 22% for Delaware males, compared to 24% for U.S. males. The lung cancer incidence rate for Delaware females decreased 12% during the same time period, compared to a 13% decline in the U.S. female rate.
- In 2013-2017, Delaware (46.2 per 100,000) had a statistically higher lung cancer mortality rate compared to the U.S. (40.2 per 100,000).
- **Delaware ranked 16th in the nation for lung cancer mortality, a decrease from 14th as seen in 2012-2016. For 2013-2017, both Delaware females and Delaware males ranked 16<sup>th</sup> highest in the nation in lung cancer mortality.**
- Between 2003-2007 and 2013-2017, Delaware's lung cancer mortality rate fell 20% while the U.S. rate dropped 23%.
- **Delaware's lung cancer mortality rates have declined noticeably among non-Hispanic African Americans.** From 2003-2007 to 2013-2017, Delaware's lung cancer mortality rates declined 35% among non-Hispanic African American males and 25% among non-Hispanic African American females.
- Among non-Hispanic Caucasian Delawareans, males experienced slightly greater reductions in lung cancer mortality compared to females. From 2003-2007 to 2013-2017, Delaware's lung cancer mortality rate decreased 24% among non-Hispanic Caucasian males and decreased 23% among non-Hispanic Caucasian females.

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## PROSTATE CANCER

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- From 2003-2007 to 2013-2017, Delaware's prostate cancer incidence rate decreased 30% while the U.S. rate fell 33%. Delaware's 2013-2017 prostate cancer incidence rate (125.5 per 100,000) was statistically significantly higher than the U.S. (107.0 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 2018 BRFSS show that Delaware ranked eighth 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. Thirty-eight percent 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 33%.**
- In 2013-2017, Delawareans ranked 7<sup>th</sup> in the nation for prostate cancer incidence, a decrease from its ranking in 2012-2016 (3<sup>rd</sup>).
- 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 2013-2017, Delaware's percentage of prostate cancer cases diagnosed in the local stage increased substantially, from 50% to 75%.
- **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 2013-2017 prostate cancer incidence rate was 205.8 per 100,000 for non-Hispanic African Americans, compared to 110.3 per 100,000 for non-Hispanic Caucasians, and 114.3 per 100,000 for Hispanics. This same trend is observed in the U.S.**
- Delaware's mortality rate for prostate cancer was ranked 49<sup>th</sup> in 2013-2017, compared to 46<sup>th</sup> in 2012-2016.

- The prostate cancer mortality rate for non-Hispanic African American Delawareans remains nearly double the comparable rate for non-Hispanic Caucasians. Delaware's 2013-2017 prostate cancer mortality rate was 34.1 per 100,000 for non-Hispanic African Americans, compared to 14.2 per 100,000 for non-Hispanic Caucasians. Prostate cancer mortality declined by 34% among non-Hispanic African American Delawareans and by 41% among non-Hispanic Caucasian Delawareans between 2003-2007 and 2013-2017. Prostate cancer mortality rates for Hispanics could not be calculated due to the small number of deaths.



## TRENDS IN CANCER INCIDENCE

For 2013-2017, 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, lung, prostate, malignant melanoma of the skin, Non-Hodgkin Lymphoma, uterine, and thyroid cancers among sites included in this report.

Delaware's all-site cancer incidence rate decreased from 2003-2007 to 2013-2017. During the same time period, incidence rates for several cancer sites also experienced fluctuations.

Table 1-1 summarizes 2013-2017 age-adjusted incidence rates and 95% confidence intervals for Delaware and the U.S. for all-site cancer and the eight 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 2003-2007 to 2013-2017.

**TABLE 1-1: AVERAGE ANNUAL AGE-ADJUSTED CANCER INCIDENCE RATES WITH 95% CONFIDENCE INTERVALS; DELAWARE VS. U.S., 2013-2017**

Cancer Site	DE Incidence Rate	U.S. Incidence Rate	DE % Change:	U.S. %
	2013-2017	2013-2017	03-07 to 13-17	Change: 03-07 to 13-17
All-Site*	484.3 (478.5, 490.0)	435.0 (434.4, 435.6)	-7	-14
Female breast*	135.4 (131.1, 139.7)	126.8 (126.4, 127.2)	+8	+3
Colorectal	38.1 (36.5, 39.8)	38.4 (38.2, 38.6)	-26	-21
Lung/bronchus*	67.4 (65.3, 69.5)	52.6 (52.4, 52.8)	-17	-18
Prostate*	125.5 (121.5, 129.7)	107.0 (106.6, 107.5)	-30	-33
Kidney and renal pelvis	17.2 (16.2, 18.4)	16.2 (16.1, 16.4)	+14	+13
Cervical	7.8 (6.7, 9.0)	7.4 (7.3, 7.6)	-4	-10
Leukemia	13.0 (12.0, 14.0)	13.8 (13.7, 13.9)	+19	+8
Oral Cavity*	12.7 (11.7, 13.6)	11.4 (11.3, 11.5)	+18	+7

Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.

\* = 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.

## TRENDS IN CANCER MORTALITY

Although Delaware's 2013-2017 all-site cancer mortality rate was significantly greater than the U.S., Delaware's rate for the 2003-2007 to 2013-2017 time period declined 7%. From 2003-2007 to 2013-2017, Delaware made great strides in reducing its cancer mortality burden for several cancer types (especially colorectal, lung, and prostate).

**TABLE 1-2: AVERAGE ANNUAL AGE-ADJUSTED CANCER MORTALITY RATES WITH 95% CONFIDENCE INTERVALS; DELAWARE VS. U.S., 2013-2017**

Cancer Site	DE Mortality Rate 2013-2017	U.S. Mortality Rate 2013-2017	DE % Change: 03-07 to 13-17	U.S. % Change: 03-07 to 13-17
All-Site*	171.0 (167.6, 174.4)	158.3 (158.2, 158.5)	-7	-14
Female breast	22.0 (20.3, 23.7)	20.3 (20.2, 20.4)	-2	-15
Colorectal	13.8 (12.8, 14.8)	13.9 (13.9, 14.0)	-21	-21
Lung/bronchus*	46.2 (44.4, 48.0)	40.2 (40.1, 40.3)	-20	-23
Prostate ^	16.9 (15.3, 18.7)	19.1 (19.0, 19.2)	-31	-24
Kidney and renal pelvis	4.0 (3.5, 4.6)	3.7 (3.7, 3.7)	+5	-10
Cervical	2.6 (2.0, 3.3)	2.3 (2.2, 2.3)	+30	-4
Leukemia	6.7 (6.0, 7.4)	6.4 (6.4, 6.5)	+5	-11
Oral Cavity	2.6 (2.2, 3.1)	2.5 (2.5, 2.5)	+13	-4

Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2019.

Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released December 2019.

\* = Delaware mortality rate is statistically significantly higher than the U.S. rate at the 95% confidence level.

^ = Delaware mortality rate is statistically significantly lower 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.

## CHAPTER 2: INTRODUCTION

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### DELAWARE CANCER REGISTRY

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The Delaware Cancer Registry (DCR) is managed by the Delaware Department of Health and Social Services (DHSS), 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<sup>3</sup>. 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 46 states whose central cancer registry is supported by the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention (CDC).<sup>4</sup> The DCR ensures accurate, timely, and routine surveillance of cancer trends among Delawareans.

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### REPORTING FACILITIES

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Seven Delaware hospitals currently report cancer cases to the DCR. Non-hospital offices that submit data to the DCR include 14 diagnostic laboratories, 12 freestanding ambulatory surgery centers, and at least 18 physicians. Additionally, the DCR has reciprocal data exchange agreements with Alaska, Arkansas, California, Colorado, Florida, Idaho, Louisiana, Maryland, Massachusetts, Michigan, Montana, Nebraska, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Puerto Rico, Rhode Island, South Carolina, Tennessee, 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.

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### DATA CONFIDENTIALITY

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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.

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### DATA QUALITY

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The DCR implements internal quality control procedures to verify the consistency of cancer data continually throughout the year as data is submitted by reporting facilities. In addition, the DCR strives to meet data consistency standards set by the North American Association of Central Cancer Registries (NAACCR). Data is submitted by DCR to NAACCR annually. 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.

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<sup>3</sup> <http://delcode.delaware.gov/title16/c032/index.shtml>

<sup>4</sup> [https://nccd.cdc.gov/dcpc\\_Programs/index.aspx#3](https://nccd.cdc.gov/dcpc_Programs/index.aspx#3)

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## NAACCR CERTIFICATION AND NPCR STANDARD STATUS

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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 established by NAACCR<sup>5</sup>. 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 in 1999, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, and 2018 (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 2018 surpassed all standard levels for quality, completeness, and timeliness.

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## USES OF DATA

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DPH uses DCR data to support various programs and initiatives, including the Screening for Life (SFL) 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.

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## ORGANIZATION OF THIS REPORT

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This report includes cancer statistics for all cancer sites combined (all-site cancer), as well as eight site-specific cancer types. These cancer statistics reflect incidence and mortality data for 2013-2017. We compare Delaware's cancer incidence and mortality trends for 2013-2017 to those of the U.S. over the same time period. We also summarize how Delaware and U.S. cancer rates have changed from 2003-2007 to 2013-2017. 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 in Appendix D.

Delaware's 2013-2017 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<sup>6</sup>.

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## DELAWARE'S POPULATION

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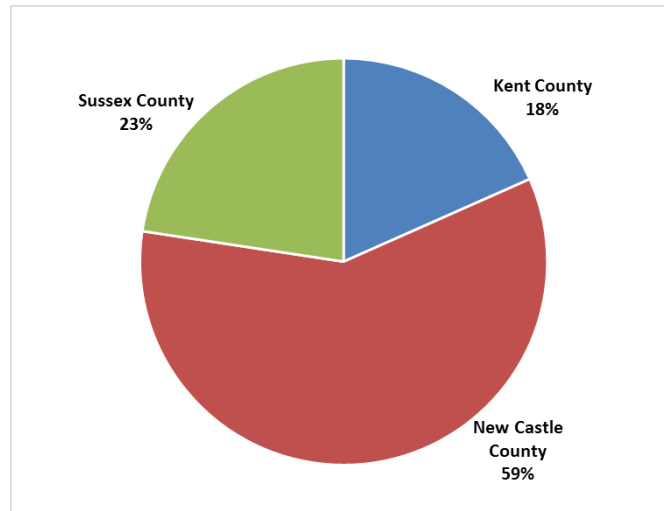
In 2013-2017, census data estimated Delaware's total average population at 943,732. The majority of Delawareans – 59% – reside in New Castle County. Kent and Sussex counties are home to 18% and 23% of Delawareans, respectively (Figure 2-1).

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<sup>5</sup> <https://www.naaccr.org/certification-criteria/>

<sup>6</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

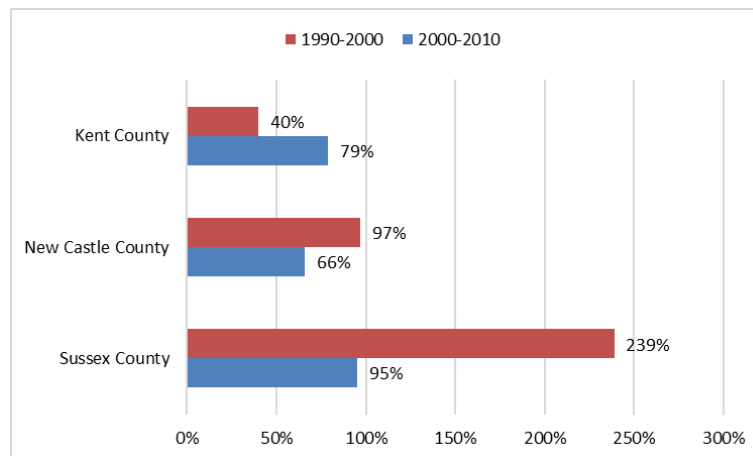
**FIGURE 2-1: PERCENTAGE OF POPULATION BY COUNTY, DELAWARE, 2013-2017**



Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, <https://data.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 of 38% from 1990-2000, a rate that slowed to 26% from 2000-2010.

**FIGURE 2-2: PERCENTAGE OF POPULATION GROWTH BY COUNTY AND DECADE, DELAWARE, 1990-2000 AND 2000-2010**



Source: U.S. Census Bureau 2010, <https://data.census.gov/>

Census data from 2013-2017 show that 63% 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 (Table 2-1). Non-Hispanic African Americans comprise 21% of Delaware’s population. The distribution varies by county: 24% in Kent County, 24% in New Castle County, 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.

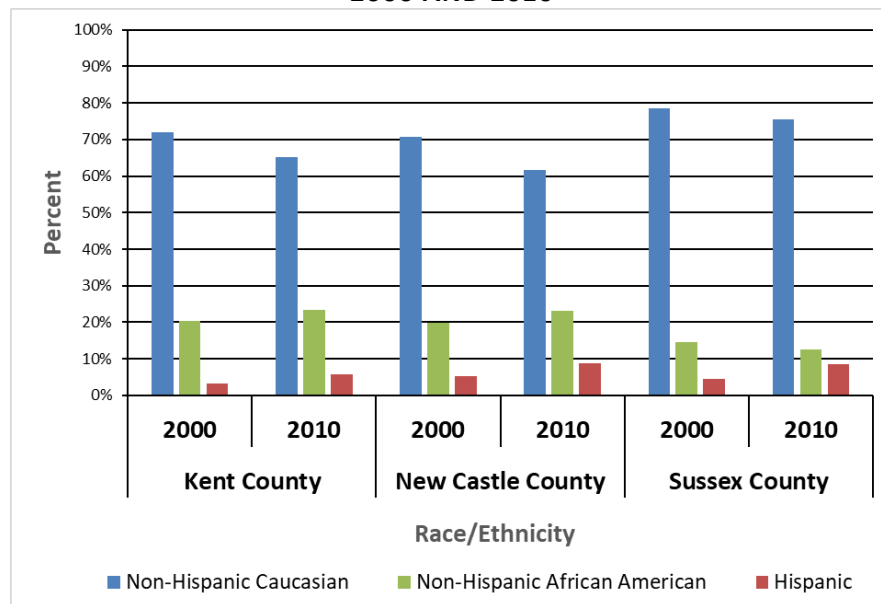
**TABLE 2-1: PERCENTAGE OF POPULATION BY RACE/ETHNICITY AND COUNTY, DELAWARE, 2013-2017**

Race/Ethnicity	Delaware	Kent	New Castle	Sussex
<b>Not Hispanic or Latino</b>				
Caucasian	63%	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%
<b>Hispanic or Latino</b>	9%	7%	10%	9%

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, <https://data.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). In Kent County, the non-Hispanic African American population increased from 20% in 2000 to 23% in 2010; the non-Hispanic Caucasian population declined from 72% to 65%; and the Hispanic population increased from 3% to 6%. In New Castle County, the non-Hispanic African American population increased from 20% in 2000 to 23% in 2010; the non-Hispanic Caucasian population declined from 71% to 62%; and the Hispanic population increased from 5% to 9%. A different trend was observed in Sussex County, where the non-Hispanic African American population decreased from 15% in 2000 to 12% in 2010. However, similar to the trends in the other counties, the non-Hispanic Caucasian population declined from 78% to 76%, and the Hispanic population increased from 4% to 9%.

**FIGURE 2-3: PERCENTAGE OF RESIDENTS BY RACE/ETHNICITY, DELAWARE AND COUNTIES, 2000 AND 2010**



Source: U.S. Census Bureau 2010, <https://data.census.gov/>

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## GUIDELINES FOR INTERPRETATION OF INCIDENCE AND MORTALITY RATES

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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, 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 11 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.<sup>7,8</sup>
- 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.

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<sup>7</sup> Coughlin SS, Clutter GG, Hutton M. Ethics in Cancer Registries. *Journal of Cancer Registry Management*, 2: 5-10, 1999.

<sup>8</sup> 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 2013-2017, Delaware ranked 2<sup>nd</sup> in the U.S. for all-site cancer incidence (2<sup>nd</sup> in 2012-2016); males ranked 4<sup>th</sup> (3<sup>rd</sup> in 2012-2016) and females ranked 9<sup>th</sup> (5<sup>th</sup> in 2012-2016)<sup>9</sup>.

#### 2013-2017 DATA

**TABLE 3-1: NUMBER OF ALL-SITE CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	28,938	14,757	14,181	22,514	11,584	10,930	4,968	2,472	2,496	853	407	446
<b>Kent</b>	5,292	2,712	2,580	3,934	1,982	1,952	1,096	598	498	176	93	83
<b>New Castle</b>	15,290	7,564	7,726	11,131	5,575	5,556	3,212	1,528	1,684	547	266	281
<b>Sussex</b>	8,356	4,481	3,875	7,449	4,027	3,422	660	346	314	130	48	82

*Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*

- In 2013-2017, 28,938 new all-site cancer cases were diagnosed in Delaware, an average of 5,788 per year.
- Males accounted for 51% of all-site cancer cases.
- Non-Hispanic Caucasians accounted for 78% 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, 2013-2017**

	Overall	Male	Female
<b>U.S.</b>	435.0	472.9	410.5
<b>Delaware</b>	484.3	531.5	450.8
<b>Kent</b>	514.0	569.3	472.1
<b>New Castle</b>	481.5	525.7	453.5
<b>Sussex</b>	471.7	522.8	431.4

*Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*

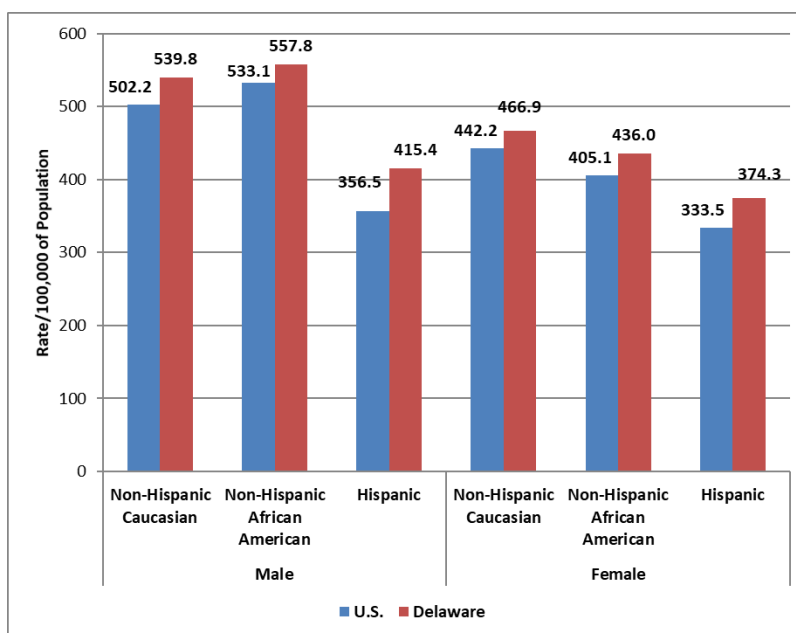
*Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.*

Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

<sup>9</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.



**FIGURE 3-1: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

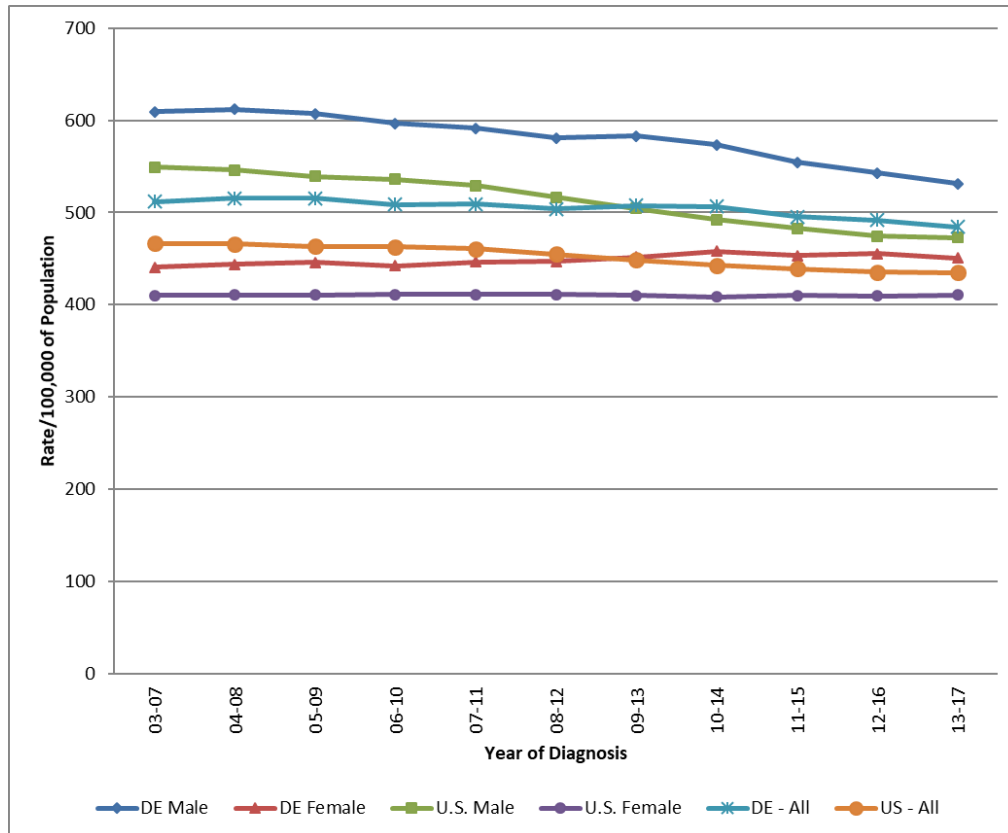


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 Sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - Males (531.5 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to females (450.8 per 100,000).
  - The difference in all-site cancer incidence rates between non-Hispanic Caucasians (496.9 per 100,000) and non-Hispanic African Americans (485.5 per 100,000) was not statistically significant.
  - Hispanics (389.1 per 100,000) had a statistically significantly lower all-site cancer incidence rate compared to both non-Hispanic Caucasians (496.9 per 100,000) and non-Hispanic African Americans (485.5 per 100,000).
- Comparing Delaware and the U.S. from 2013-2017
  - Delaware (484.3 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to the U.S. (435.0 per 100,000).
  - Delaware males (531.5 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to U.S. males (472.9 per 100,000).
  - Delaware females (450.8 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to U.S. females (410.5 per 100,000).
  - Non-Hispanic Caucasians in Delaware (496.9 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to non-Hispanic Caucasians in the U.S. (465.8 per 100,000).
  - Non-Hispanic African Americans in Delaware (485.5 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to non-Hispanic African Americans in the U.S. (456.9 per 100,000).
  - Hispanics in Delaware (389.1 per 100,000) had a statistically significantly higher all-site cancer incidence rate compared to Hispanics in the U.S. (339.2 per 100,000).

## TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 3-2: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017**

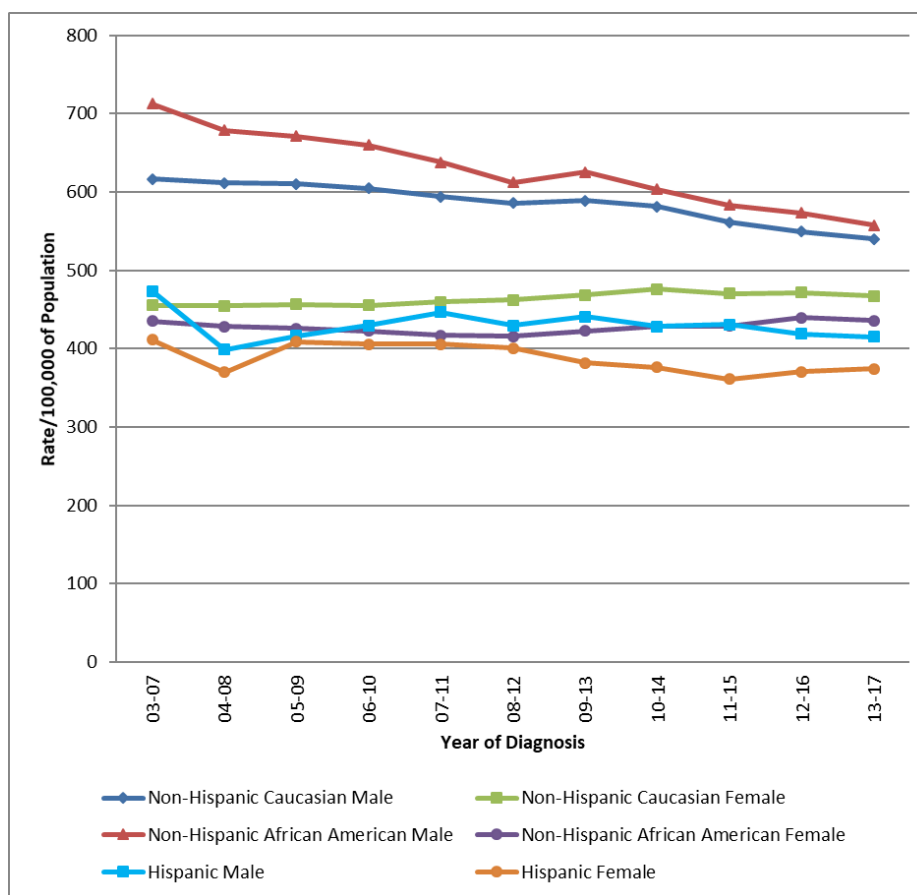


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 Sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Incidence rates for all-site cancer decreased 5% in Delaware (2003-2007 rate: 511.9 per 100,000; 2013-2017 rate: 484.3 per 100,000) and decreased 7% in the U.S. (2003-2007 rate: 466.7 per 100,000; 2013-2017 rate: 435.0 per 100,000).
  - Incidence rates for all-site cancer decreased 13% in Delaware males (2003-2007 rate: 609.2 per 100,000; 2013-2017 rate: 531.5 per 100,000) and decreased 14% in U.S. males. (2003-2007 rate: 549.4 per 100,000; 2013-2017 rate: 472.9 per 100,000).
  - Incidence rates for all-site cancer increased 2% in Delaware females (2003-2007 rate: 440.6 per 100,000; 2013-2017 rate: 450.8 per 100,000) and remained similar in U.S. females (2003-2007 rate: 409.9 per 100,000; 2013-2017 rate: 410.5 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 3-3: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

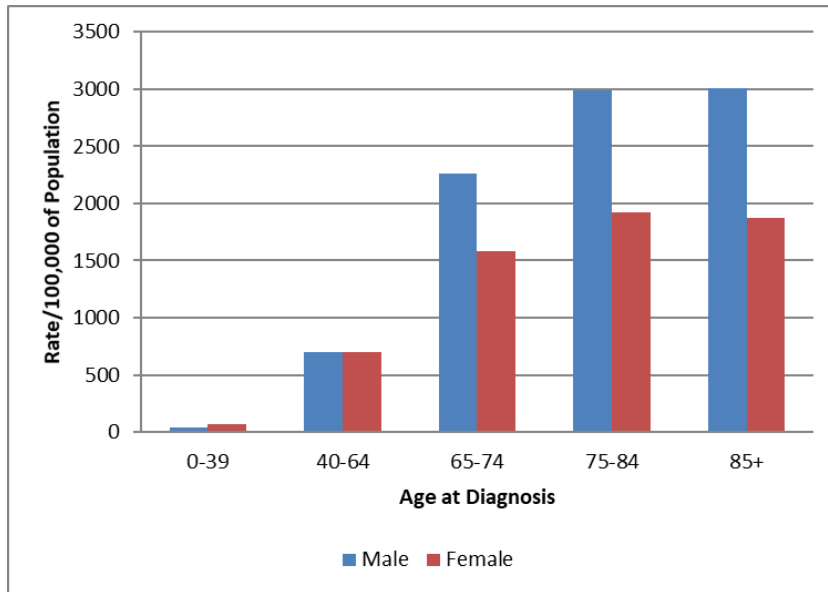


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Incidence rates for all-site cancer decreased 12% in non-Hispanic Caucasian males (2003-2007 rate: 616.3 per 100,000; 2013-2017 rate: 539.8 per 100,000) and increased 3% in non-Hispanic Caucasian females (2003-2007 rate: 455.1 per 100,000; 2013-2017 rate: 466.9 per 100,000).
  - Incidence rates for all-site cancer decreased 22% in non-Hispanic African American males (2003-2007 rate: 712.5 per 100,000; 2013-2017 rate: 557.8 per 100,000) and increased less than 1% in non-Hispanic African American females (2003-2007 rate: 435.3 per 100,000; 2013-2017 rate: 436.0 per 100,000).
  - Incidence rates for all-site cancer decreased 12% in Hispanic males (2003-2007 rate: 473.4 per 100,000; 2013-2017 rate: 415.4 per 100,000) and decreased 9% in Hispanic females (2003-2007 rate: 411.2 per 100,000; 2013-2017 rate: 374.3 per 100,000).

## AGE-SPECIFIC INCIDENCE RATES – DELAWARE

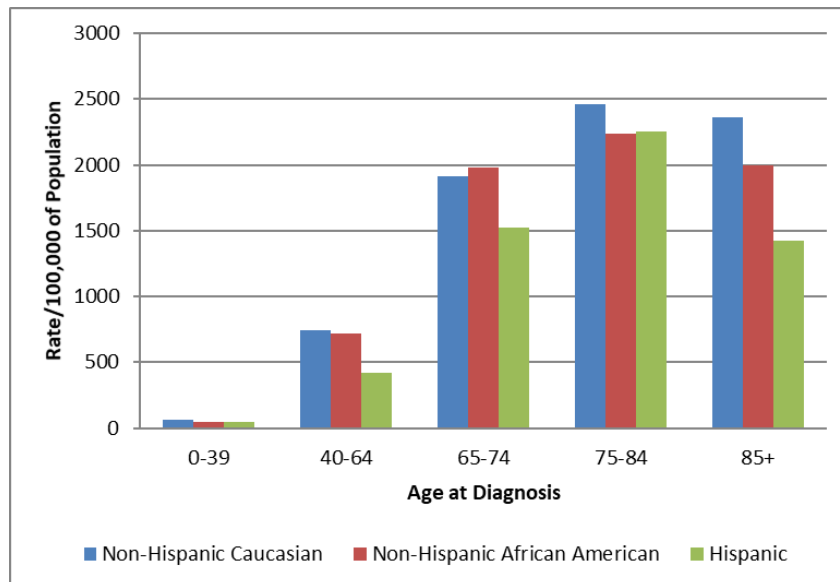
**FIGURE 3-4: AGE-SPECIFIC ALL-SITE CANCER INCIDENCE RATES BY SEX; DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- The all-site cancer incidence rate was highest for males 85 years of age and older and for females between 75 and 84 years of age.

**FIGURE 3-5: AGE-SPECIFIC ALL-SITE CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- The all-site cancer incidence rate was highest for non-Hispanic Caucasians, non-Hispanic African Americans, and Hispanics between 75 and 84 years of age.

**TABLE 3-3: AGE-SPECIFIC ALL-SITE CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY;  
DELAWARE, 2013-2017**

Age at Diagnosis	Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female
<b>0-39</b>	63.4	49.0	78.0	44.7	27.2	61.8	45.0	43.5	46.6
<b>40-64</b>	740.2	739.0	741.4	718.6	771.1	675.4	415.6	323.1	513.6
<b>65-74</b>	1,914.0	2,229.7	1,634.7	1,977.5	2,610.4	1,498.6	1,526.5	1,843.4	1,254.3
<b>75-84</b>	2,464.1	3,061.8	1,979.0	2,234.0	2,857.8	1,812.4	2,254.7	2,733.0	1,858.0
<b>85+</b>	2,360.9	3,142.7	1,919.8	2,000.2	2,348.8	1,836.3	1,423.7	---	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

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 all-site cancer incidence rate was highest for non-Hispanic Caucasian males 85 years of age and older and for non-Hispanic African American and Hispanic males between 75 and 84 years of age.
- The all-site cancer incidence rate was highest for non-Hispanic Caucasian and Hispanic females between 75 and 84 years of age and for non-Hispanic African American females 85 years of age and older.

## MORTALITY

For 2013-2017, Delaware ranked 15<sup>th</sup> in the U.S. for all-site cancer mortality (15<sup>th</sup> in 2012-2016); males ranked 17<sup>th</sup> (18<sup>th</sup> in 2012-2016) and females ranked 17<sup>th</sup> (14<sup>th</sup> in 2012-2016)<sup>10</sup>.

### 2013-2017 DATA

**TABLE 3-4: NUMBER OF ALL-SITE CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	10,096	5,322	4,774	8,033	4,306	3,727	1,697	808	889	217	128	89
<b>Kent</b>	1,854	959	895	1,451	756	695	326	162	164	47	26	21
<b>New Castle</b>	5,254	2,718	2,536	3,881	2,055	1,826	1,136	524	612	146	88	58
<b>Sussex</b>	2,988	1,645	1,343	2,701	1,495	1,206	235	122	113	24	14	---

*Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*

- In 2013-2017, there were 10,096 deaths from cancer in Delaware, an average of 2,019 per year.
- Males accounted for 53% of all-site cancer deaths.
- Non-Hispanic Caucasians accounted for 80% of all-site cancer deaths.

**TABLE 3-5: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE, AND COUNTIES, 2013-2017**

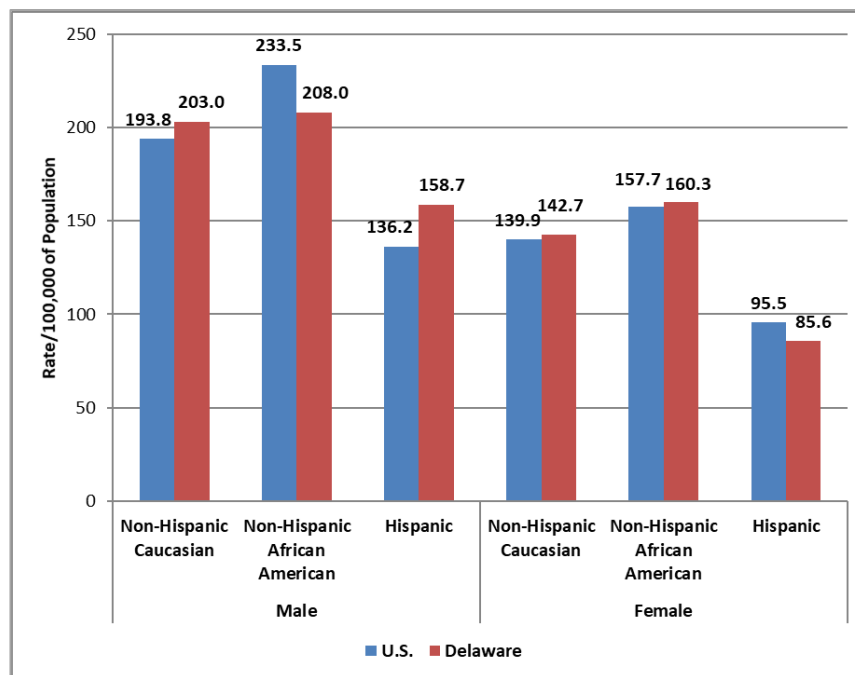
	Overall	Male	Female
<b>U.S.</b>	158.3	189.5	135.7
<b>Delaware</b>	171.0	204.1	146.3
<b>Kent</b>	182.5	213.6	159.4
<b>New Castle</b>	171.8	208.5	146.3
<b>Sussex</b>	163.9	193.4	139.7

*Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*

*Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.*

<sup>10</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2018 submission data (1999-2016): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2019.

**FIGURE 3-6: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

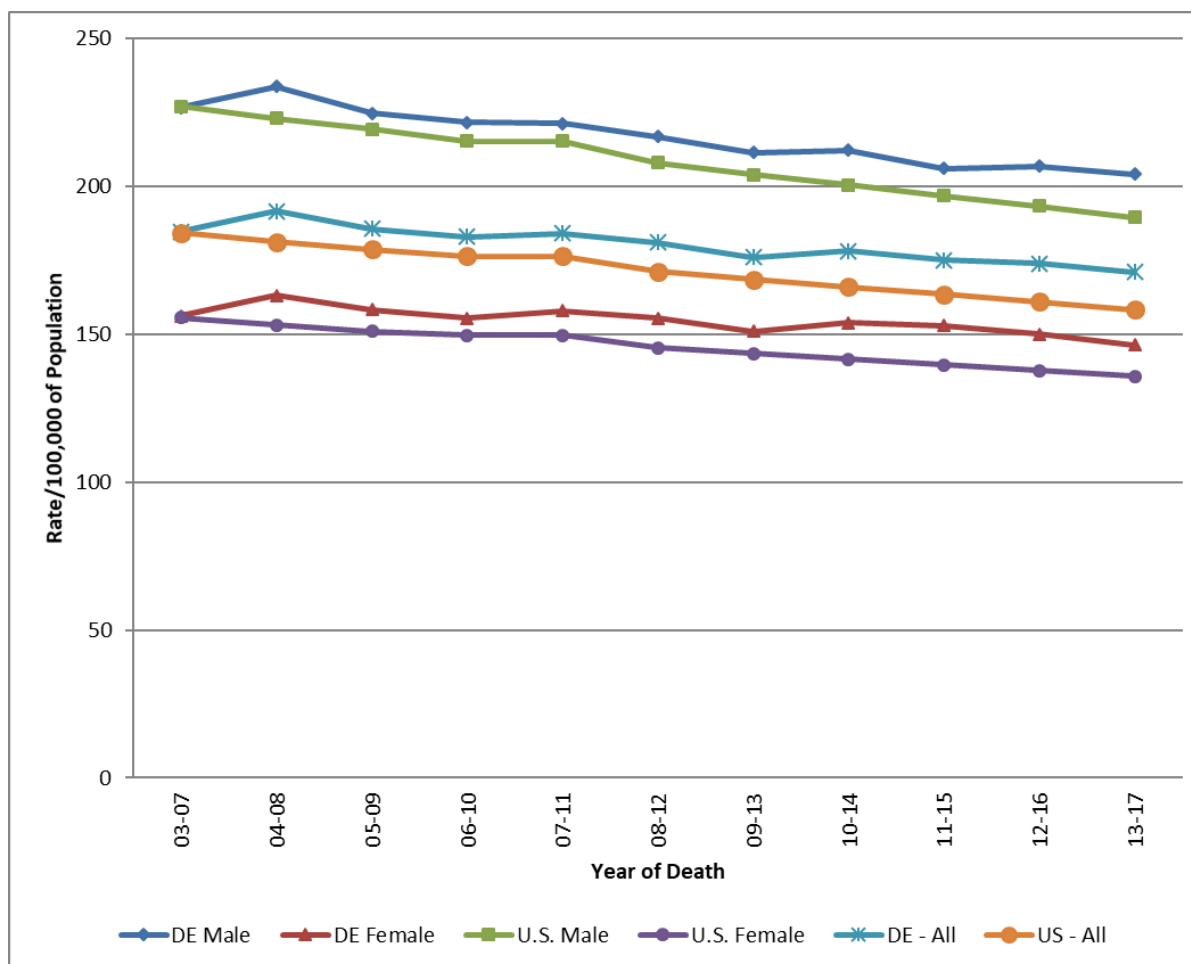


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - Males (204.1 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to females (146.3 per 100,000).
  - Non-Hispanic African Americans (178.5 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to Hispanics (118.8 per 100,000), but they did not significantly differ compared to non-Hispanic Caucasians (168.9 per 100,000).
  - Non-Hispanic Caucasians (168.9 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to Hispanics (118.8 per 100,000).
- Comparing Delaware and the U.S. from 2013-2017
  - Delaware (171.0 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to the U.S. (158.3 per 100,000).
  - Delaware males (204.1 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to the U.S. males (189.5 per 100,000).
  - Delaware females (146.3 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to U.S. females (135.7 per 100,000).
  - Non-Hispanic Caucasians in Delaware (168.9 per 100,000) had a statistically significantly higher all-site cancer mortality rate compared to the non-Hispanic Caucasians in the U.S. (162.9 per 100,000).
  - The difference in all-site cancer mortality rates between non-Hispanic African Americans in Delaware (178.5 per 100,000) and the U.S. (186.7 per 100,000) was not statistically significant.
  - The difference in all-site cancer mortality rates between Hispanics in Delaware (118.8 per 100,000) and the U.S. (112.3 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, 2003-2007 TO 2013-2017**



Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.

Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.

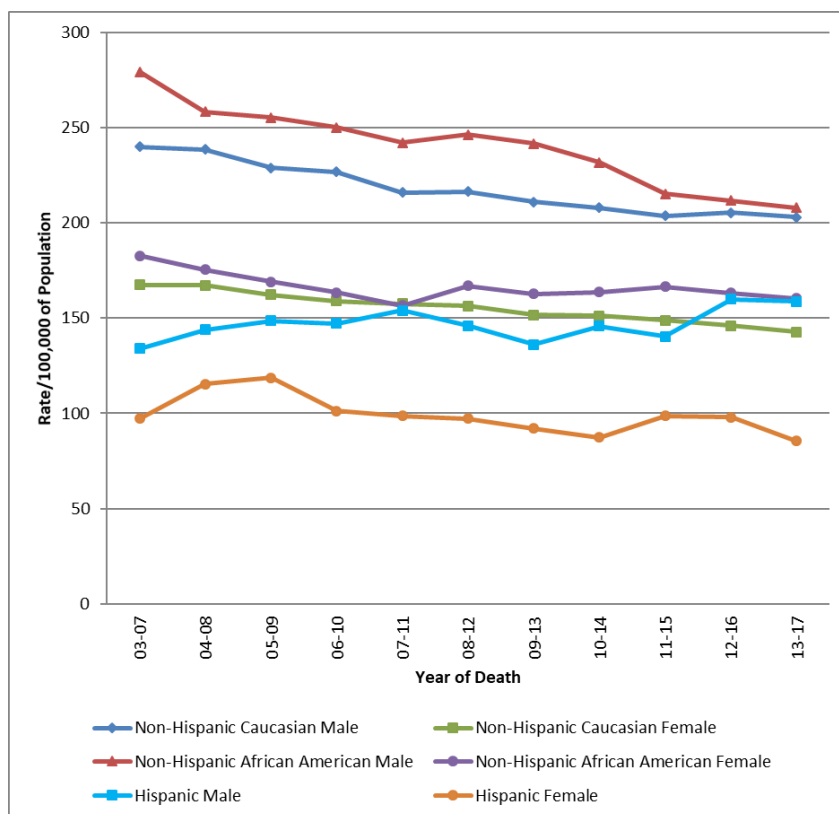
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Mortality rates for all-site cancer decreased 7% in Delaware (2003-2007 rate: 184.7 per 100,000; 2013-2017 rate: 171.0 per 100,000) and 14% in the U.S. (2003-2007 rate: 184.3 per 100,000; 2013-2017 rate: 158.3 per 100,000).
  - Mortality rates for all-site cancer decreased 10% in Delaware males (2003-2007 rate: 226.7 per 100,000; 2013-2017 rate: 204.1 per 100,000) and decreased 17% in U.S. males (2003-2007 rate: 227.0 per 100,000; 2013-2017 rate: 189.5 per 100,000).
  - Mortality rates for all-site cancer decreased 6% in Delaware females (2003-2007 rate: 156.2 per 100,000; 2013-2017 rate: 146.3 per 100,000) and decreased 13% in U.S. females (2003-2007 rate: 155.7 per 100,000; 2013-2017 rate: 135.7 per 100,000).



## TRENDS OVER TIME - DELAWARE

**FIGURE 3-8: FIVE-YEAR AVERAGE AGE-ADJUSTED ALL-SITE CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

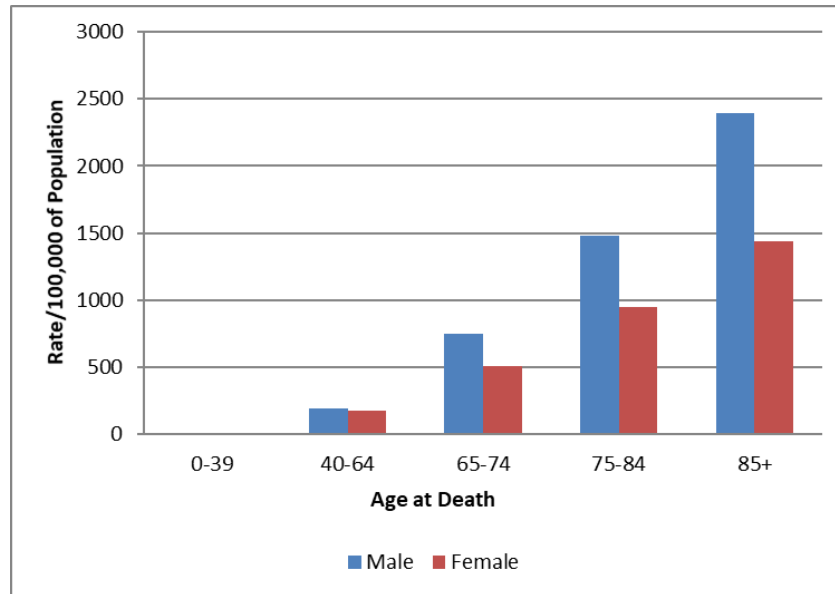


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Mortality rates for all-site cancer decreased 15% in non-Hispanic Caucasian males (2003-2007 rate: 240.0 per 100,000; 2013-2017 rate: 203.0 per 100,000) and decreased 15% in non-Hispanic Caucasian females (2003-2007 rate: 167.4 per 100,000; 2013-2017 rate: 142.7 per 100,000).
  - Mortality rates for all-site cancer decreased 26% in non-Hispanic African American males (2003-2007 rate: 279.3 per 100,000; 2013-2017 rate: 208.0 per 100,000) and decreased 12% in non-Hispanic African American females (2003-2007 rate: 182.7 per 100,000; 2013-2017 rate: 160.3 per 100,000).
  - Mortality rates for all-site cancer increased 18% in Hispanic males (2003-2007 rate: 134.0 per 100,000; 2013-2017 rate: 158.7 per 100,000) and decreased 12% in Hispanic females (2003-2007 rate: 97.4 per 100,000; 2013-2017 rate: 85.6 per 100,000).

## AGE-SPECIFIC MORTALITY RATES – DELAWARE

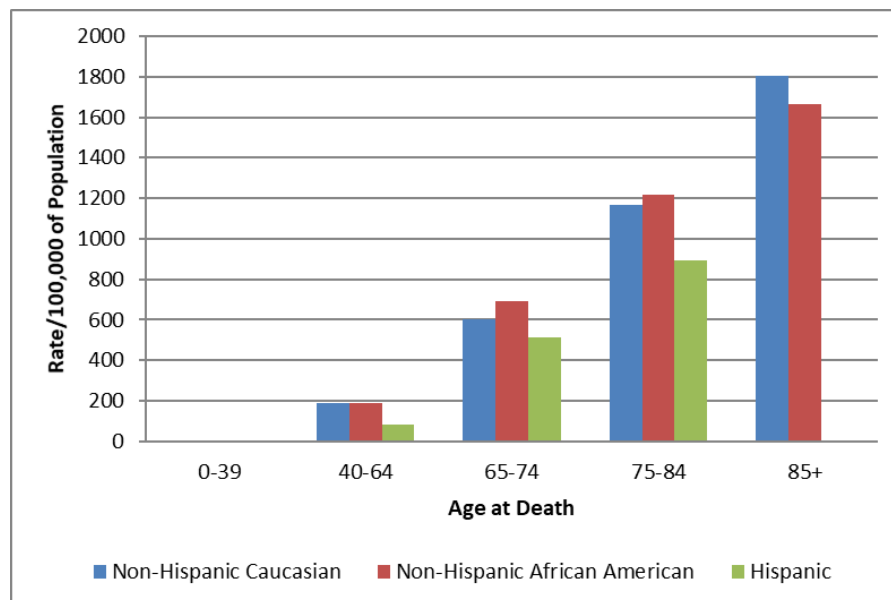
**FIGURE 3-9: AGE-SPECIFIC ALL-SITE CANCER MORTALITY RATES BY SEX; DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- The all-site mortality rate was highest for both males and females 85 years of age and older.

**FIGURE 3-10: AGE-SPECIFIC ALL-SITE CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- The all-site mortality rate was highest for non-Hispanic Caucasians and non-Hispanic African Americans 85 years of age and older and highest for Hispanics 75-84 years of age.

**TABLE 3-6: AGE-SPECIFIC ALL-SITE CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

Age at Death	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>0-39</b>	5.9	---	---	6.0	---	---
<b>40-64</b>	203.8	184.7	85.9	178.2	190.7	75.8
<b>65-74</b>	722.7	867.9	693.6	498.9	555.5	---
<b>75-84</b>	1,470.6	1,428.9	1,344.1	924.0	1,073.4	---
<b>85+</b>	2,409.5	2,290.1	---	1,459.9	1,366.8	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 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 all-site mortality rate was highest for non-Hispanic Caucasians and non-Hispanic African American males 85 years of age and older.
- The all-site mortality rate was highest for non-Hispanic Caucasians and non-Hispanic African American females 85 years of age and older.
- Due to small numbers, mortality rates could not be calculated for certain groups.

## CHAPTER 4: BREAST CANCER (FEMALE)

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### RISK FACTORS

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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.

#### **Lifestyle risk factors for 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 with low intake of fruits and vegetables
- Smoking and exposure to secondhand smoke

#### **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)

#### **Non-modifiable risk factors (these cannot be changed) for 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% 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

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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:<sup>11</sup>

- 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, as females should know how their breasts normally look and feel, they should report any breast change promptly to their health care provider. Breast self-exam is encouraged for females starting in their 20s<sup>11</sup>. 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

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The Behavioral Risk Factor Survey (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 2018 BRFS provides information on breast cancer screening among Delaware females:

- Of Delaware females 40 years of age and older, 79% 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 slightly lower compared to non-Hispanic African American females. The difference was not significantly different (79% vs. 81%, respectively).
- Delaware females 40 years of age and older in the three highest income categories had the highest percentages of mammography use (83% for females with an annual income of \$50,000 to \$74,999 and 83% for females with an annual income of \$75,000 and over).
- Delaware females (40 years of age and older) who were college graduates (80.7%) 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 (65.9%); this difference was statistically significant.

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<sup>11</sup> 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>

## INCIDENCE

For 2013-2017, Delaware ranked 8<sup>th</sup> in the U.S. for female breast cancer incidence (6<sup>th</sup> in 2012-2016)<sup>12</sup>.

### 2013-2017 DATA

**TABLE 4-1: NUMBER OF FEMALE BREAST CANCER CASES, BY RACE/ETHNICITY;  
DELAWARE AND COUNTIES, 2013-2017**

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>Delaware</b>	4,203	3,169	806	123
<b>Kent</b>	734	544	154	24
<b>New Castle</b>	2,365	1,654	554	78
<b>Sussex</b>	1,104	971	98	21

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

- Female breast cancer is the most commonly diagnosed cancer among females in the U.S. and Delaware.
- There was a total of 37 breast cancers diagnosed in males; 68% were in non-Hispanic Caucasian males. While these data are collected, only breast cancer in females will be addressed in this section.
- In 2013-2017, 4,203 female breast cancer cases (30% of all female cancers) were diagnosed in Delaware.
- Non-Hispanic Caucasians accounted for 75% of female breast cancer cases.

**TABLE 4-2: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER INCIDENCE RATES  
BY RACE/ETHNICITY; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>U.S.</b>	126.8	135.5	130.8	97.4
<b>Delaware</b>	135.4	137.6	137.7	105.8
<b>Kent</b>	134.6	139.3	127.0	---
<b>New Castle</b>	140.6	143.8	143.9	103.9
<b>Sussex</b>	124.8	126.6	124.1	---

Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

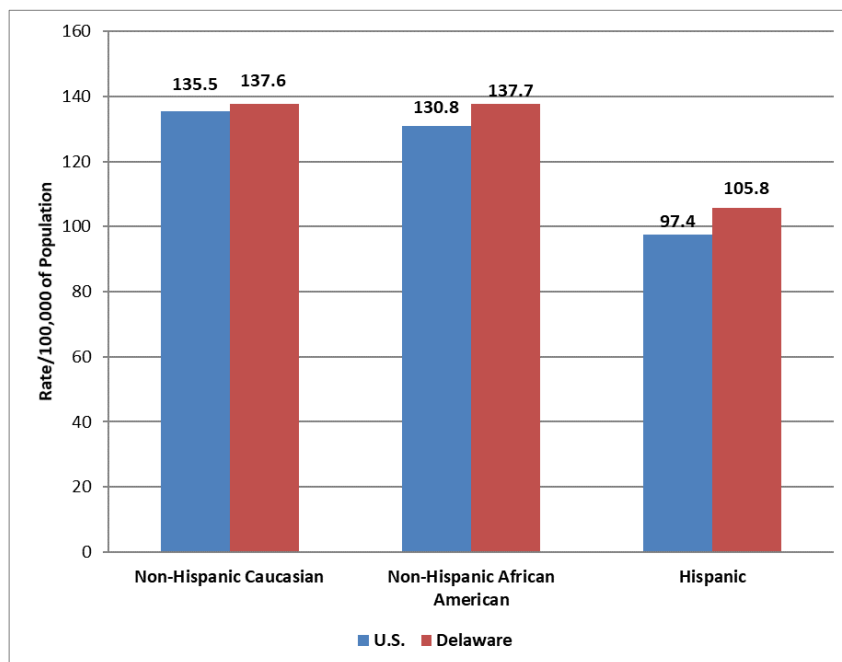
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.

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.

<sup>12</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 4-1: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

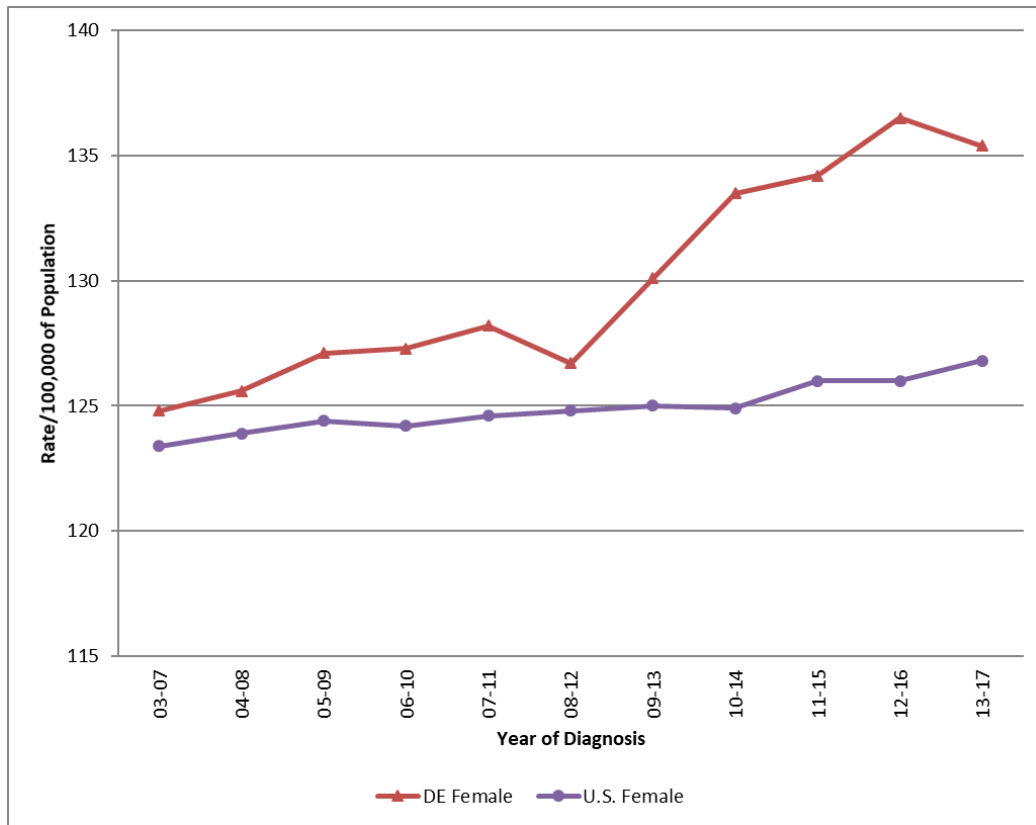


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - The difference in breast cancer incidence rates between non-Hispanic Caucasian females (137.6 per 100,000) and non-Hispanic African American females (137.7 per 100,000) was not statistically significant.
  - Hispanic females (105.8 per 100,000) had a statistically significantly lower female breast cancer incidence rate compared to both non-Hispanic Caucasian and non-Hispanic African American females.
- Comparing Delaware and the U.S. from 2013-2017
  - Delaware (135.4 per 100,000) had a statistically significantly higher female breast cancer incidence rate compared to the U.S. (126.8 per 100,000).
  - The difference in breast cancer incidence rates between non-Hispanic Caucasian females in Delaware (137.6 per 100,000) and the U.S. (135.5 per 100,000) was not statistically significant.
  - The difference breast cancer incidence rates between non-Hispanic African American females in Delaware (137.7 per 100,000) and the U.S. (130.8 per 100,000) was not statistically significant.
  - The difference in breast cancer incidence rates between Hispanic females in Delaware (105.8 per 100,000) and the U.S. (97.4 per 100,000) was not statistically significant.

## TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 4-2: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER INCIDENCE RATES; U.S. AND DELAWARE, 2003-2007 TO 2013-2017**



Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.

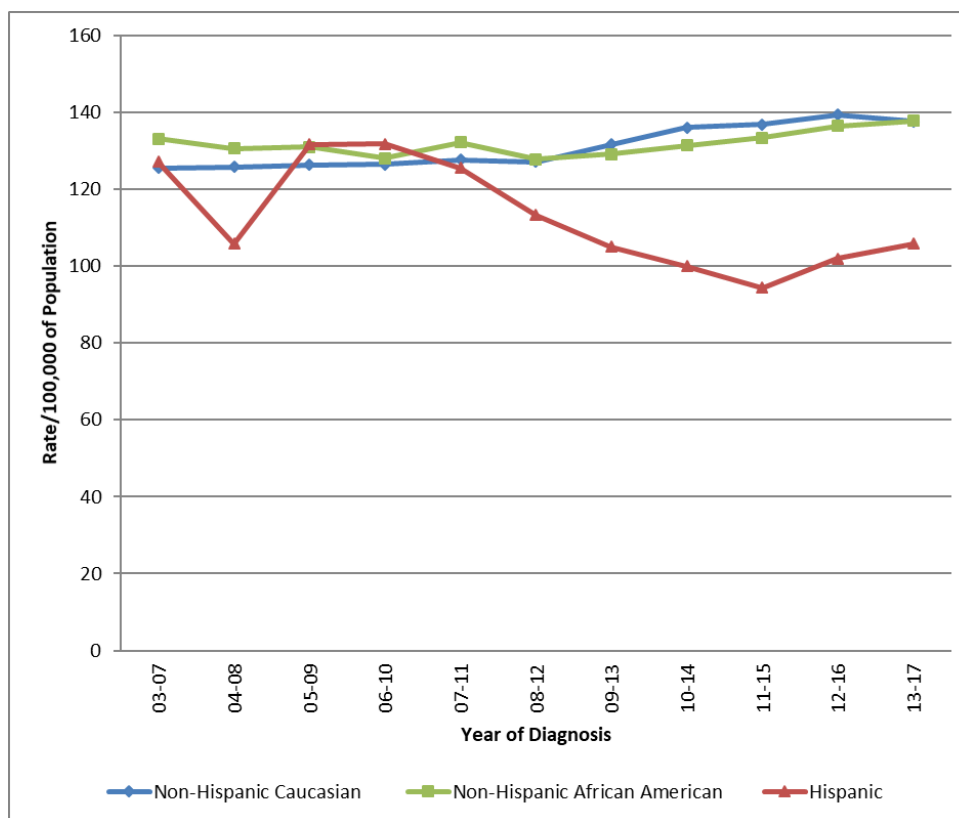
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Incidence rates for female breast cancer increased 8% in Delaware (2003-2007 rate: 124.8 per 100,000; 2013-2017 rate: 135.4 per 100,000) and increased 3% in the U.S. (2003-2007 rate: 123.4 per 100,000; 2013-2017 rate: 126.8 per 100,000).



## TRENDS OVER TIME - DELAWARE

**FIGURE 4-3: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

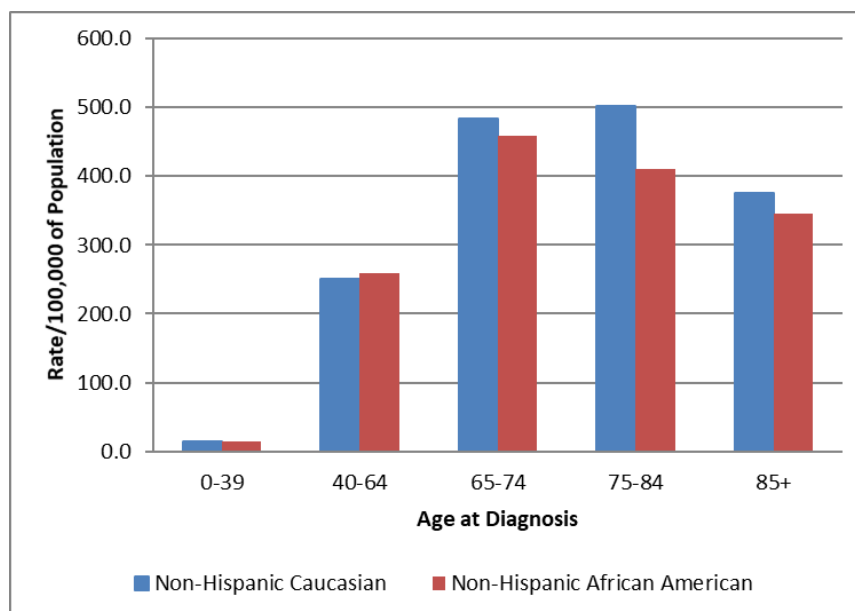


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Incidence rates for breast cancer increased 10% in non-Hispanic Caucasian females (2003-2007 rate: 125.5 per 100,000; 2013-2017 rate: 137.6 per 100,000).
  - Incidence rates for breast cancer increased 3% in non-Hispanic African American females (2003-2007 rate: 133.1 per 100,000; 2013-2017 rate: 137.7 per 100,000).
  - Incidence rates for breast cancer decreased 17% in Hispanic females (2003-2007 rate: 127.1 per 100,000; 2013-2017 rate: 105.8 per 100,000).

## AGE-SPECIFIC INCIDENCE RATES - DELAWARE

**FIGURE 4-4: AGE-SPECIFIC FEMALE BREAST CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- The incidence rate for breast cancer is highest for non-Hispanic Caucasian females 75 to 84 years of age and for non-Hispanic African American females 65-74 years of age. Due to small numbers, incidence rates could not be calculated for Hispanic females.

**TABLE 4-3: AGE-SPECIFIC FEMALE BREAST CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2013-2017**

Age at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	13.4	14.2	15.2	---
40-64	246.3	251.3	259.4	166.9
65-74	469.8	484.0	459.2	---
75-84	483.3	502.3	409.9	---
85+	366.0	375.5	345.2	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
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.

## STAGE OF DIAGNOSIS - DELAWARE

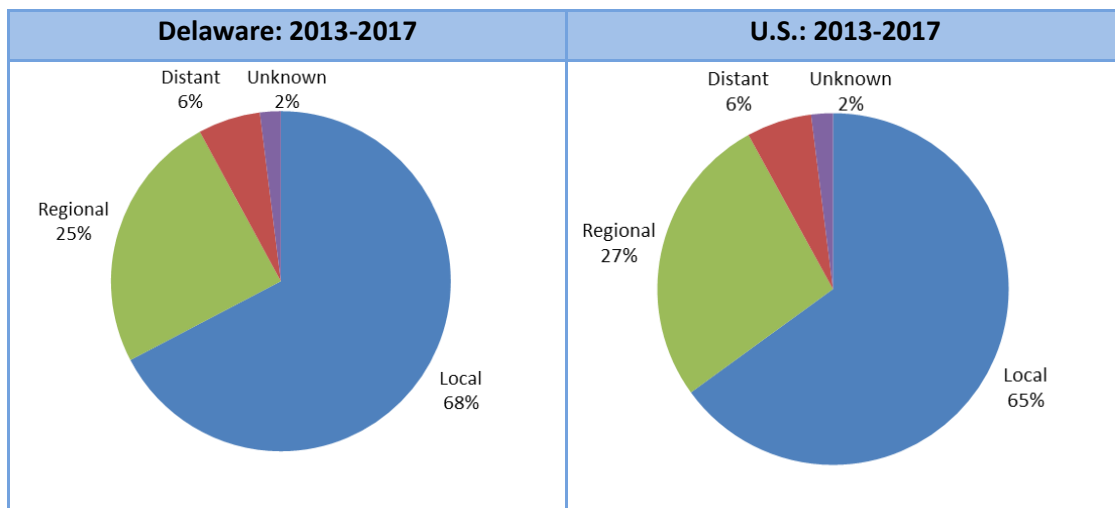
**TABLE 4-4: NUMBER AND PERCENTAGE OF FEMALE BREAST CANCER CASES BY STAGE AT DIAGNOSIS BY RACE/ETHNICITY; DELAWARE, 2013-2017**

Stage at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Local	2,853 (68%)	2,216 (70%)	495 (61%)	74 (60%)
Regional	1,046 (25%)	737 (23%)	245 (30%)	35 (29%)
Distant	237 (6%)	171 (5%)	49 (6%)	---
Unknown	67 (2%)	45 (1%)	17 (2%)	---
<b>Total</b>	<b>4,203</b>	<b>3,169</b>	<b>806</b>	<b>123</b>

*Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*  
 ---Counts less than 11 are not shown to protect patient privacy.

- In 2013-2017, there were 2,853 (68%) female breast cancers diagnosed at the local stage; 1,046 (25%) at the regional stage; 237 (6%) at the distant stage; and 67 (2%) had an unknown stage.
- Non-Hispanic Caucasian females (70%) had a higher proportion of breast cancer diagnosed at the local stage compared to both non-Hispanic African American (61%) and Hispanic (60%) females.

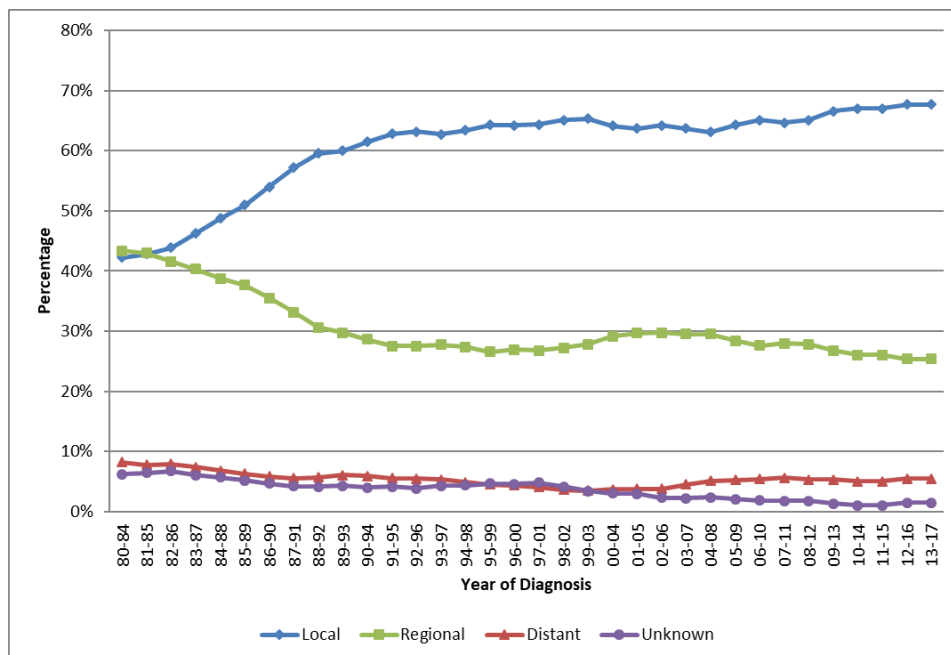
**FIGURE 4-5: PERCENTAGE OF FEMALE BREAST CANCER CASES BY STAGE AT DIAGNOSIS, U.S. AND DELAWARE, 2013-2017**



*Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*  
*Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.*

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

**FIGURE 4-6: FIVE-YEAR PERCENTAGE OF STAGE OF DIAGNOSIS FOR FEMALE BREAST CANCER CASES, DELAWARE, 1980-1984 TO 2013-2017**



Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

- From 1980-1984 to 2013-2017 in Delaware
  - The percent of female breast cancer cases diagnosed at the local stage increased from 42% to 68%.
  - Cases diagnosed at the regional stage decreased from 43% to 25%.
  - Cases diagnosed at the distant stage decreased from 8% to 6%.

## MORTALITY

For 2013-2017, Delaware ranked 17<sup>th</sup> in the U.S. for female breast cancer mortality (20<sup>th</sup> in 2012-2016)<sup>13</sup>.

### 2013-2017 DATA

**TABLE 4-5: NUMBER OF FEMALE BREAST CANCER DEATHS, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>Delaware</b>	700	534	142	18
<b>Kent</b>	133	94	32	---
<b>New Castle</b>	366	258	95	---
<b>Sussex</b>	201	182	15	---

Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.

---Counts less than 11 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.
- Male deaths due to breast cancer are not included in this section, as low counts prevent the calculation of a stable mortality rate.
- In 2013-2017, there were 700 female deaths (15% of all female cancer deaths) from breast cancer in Delaware.
- Non-Hispanic Caucasian females accounted for 76% of breast cancer deaths.

**TABLE 4-6: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>U.S.</b>	20.3	20.3	28.5	14.0
<b>Delaware</b>	22.0	21.1	24.5	---
<b>Kent</b>	24.5	22.9	27.5	---
<b>New Castle</b>	21.1	19.7	25.0	---
<b>Sussex</b>	22.5	22.9	---	---

Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.

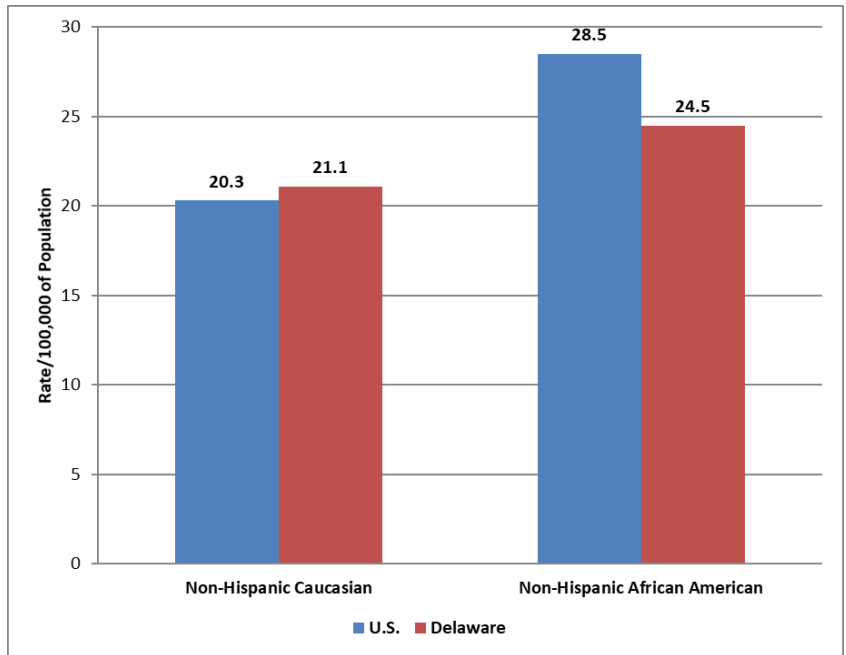
Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.

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.

<sup>13</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 4-7: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

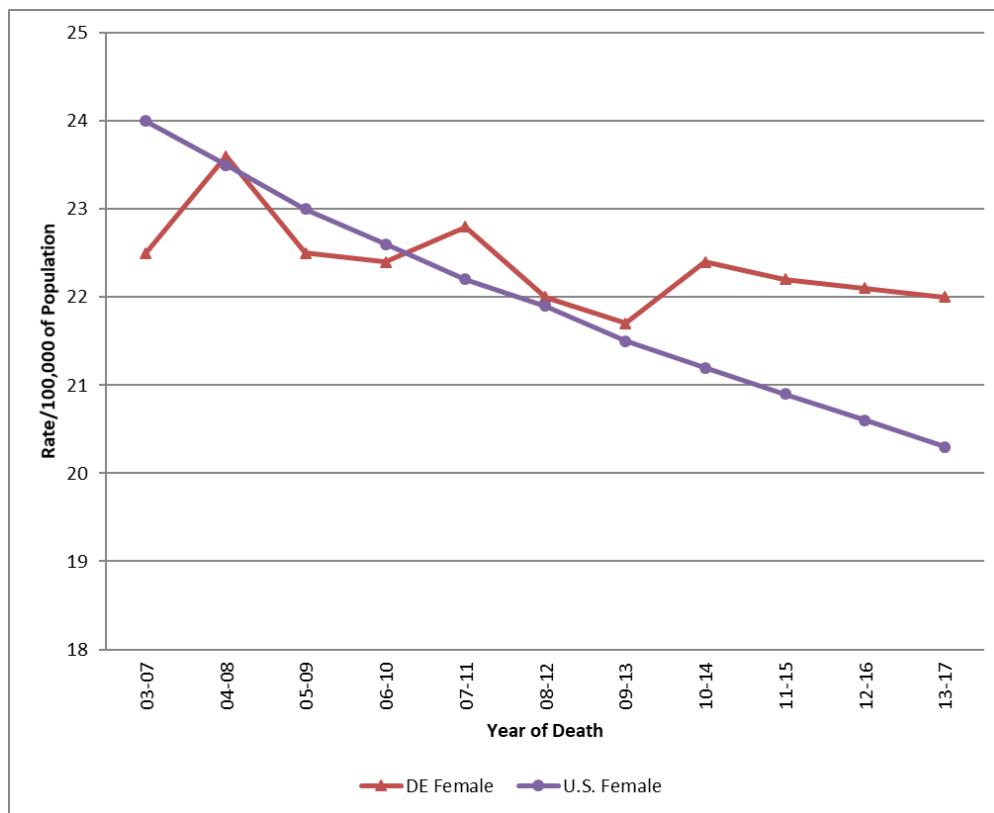


Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - The difference in breast cancer mortality rates between non-Hispanic Caucasian females (21.1 per 100,000) and non-Hispanic African American females (24.5 per 100,000) was not statistically significant.
  - Breast cancer mortality rates for Hispanic females could not be calculated due to the small number of deaths.
- Comparing Delaware and the U.S. from 2013-2017
  - The difference in female breast cancer mortality rates between Delaware (22.0 per 100,000) and the U.S. (20.3 per 100,000) was not statistically significant.
  - The difference in breast cancer mortality rates between non-Hispanic Caucasian females in Delaware (21.1 per 100,000) and the U.S (20.3 per 100,000) was not statistically significant.
  - The difference in breast cancer mortality rates between non-Hispanic African American females in Delaware (24.5 per 100,000) and the U.S. (28.5 per 100,000) was not statistically significant.

## TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 4-8: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER MORTALITY RATES; U.S. AND DELAWARE, 2003-2007 TO 2013-2017**

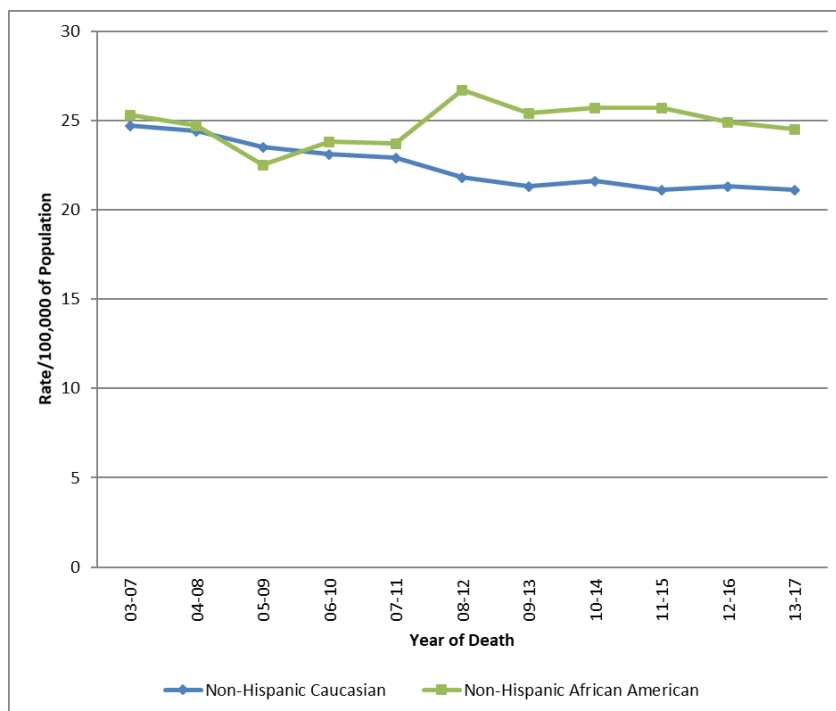


Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Mortality rates for female breast cancer decreased 2% in Delaware (2003-2007 rate: 22.5 per 100,000; 2013-2017 rate: 22.0 per 100,000) and decreased 15% in the U.S. (2003-2007 rate: 24.0 per 100,000; 2013-2017 rate: 20.3 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 4-9: FIVE-YEAR AVERAGE AGE-ADJUSTED FEMALE BREAST CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Mortality rates for breast cancer decreased 15% in non-Hispanic Caucasian females (2003-2007 rate: 24.7 per 100,000; 2013-2017 rate: 21.1 per 100,000).
  - Mortality rates for breast cancer decreased 3% in non-Hispanic African American females (2003-2007 rate: 25.3 per 100,000; 2013-2017 rate: 24.5 per 100,000).
  - Mortality rates for breast cancer in Hispanic females could not be calculated due to the small number of deaths.



## AGE-SPECIFIC MORTALITY RATES - DELAWARE

**TABLE 4-7: AGE-SPECIFIC FEMALE BREAST CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2013-2017**

Age at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>0-39</b>	---	---	---	---
<b>40-64</b>	35.1	34.0	40.1	---
<b>65-74</b>	63.3	60.9	76.5	---
<b>75-84</b>	117.3	117.8	---	---
<b>85+</b>	186.5	192.8	---	---

*Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*  
 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 incidence rate for female breast cancer was highest for non-Hispanic Caucasian females 85 years of age and older. Due to small numbers, mortality rates could not be calculated for Hispanic females or for some non-Hispanic Caucasian and non-Hispanic African American age groups.

## CHAPTER 5: CERVICAL CANCER

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### RISK FACTORS

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The most important risk factor for cervical cancer is infection from the human papillomavirus (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.

#### **Lifestyle risk factors for 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.

#### **Environmental and medically-related causes of 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.

#### **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 practice 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

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The ACS recently updated their recommendations for cervical cancer screening in 2020. Their recommendations are that “individuals with a cervix initiate cervical cancer screening at age 25 y and undergo primary HPV testing every 5 y through age 65 y (preferred). If primary HPV testing is not available, individuals aged 25-65 y should be screened with cotesting (HPV testing in combination with cytology) every 5 y or cytology alone every 3 y (acceptable) (*strong recommendation*)”\*. As well, “The ACS recommends that individuals with a cervix who are older than age 65 y, who have no history of cervical intraepithelial neoplasia grade 2 or a more severe diagnosis within the past 25 y, and who have documented adequate negative prior screening in the 10-y period before age 65 y discontinue cervical cancer screening with any modality (*qualified recommendation*)”\*.<sup>14</sup> A Pap test is conducted as part of cervical cancer screening.<sup>15</sup>

\*“A strong recommendation conveys the consensus that the benefits of adherence to that intervention outweigh the undesirable effects that may result from screening. Qualified recommendations indicate there is clear evidence of benefit of screening but less certainty about the balance of benefits and harms or about patients’ values and preferences, which could lead to different decisions about screening.” The ACS recommends that individuals with a cervix who are older than age 65 y, who have no history of cervical intraepithelial neoplasia grade 2 or a more severe diagnosis within the past 25 y, and who have documented adequate negative prior screening in the 10-y period before age 65 y discontinue cervical cancer screening with any modality (*qualified recommendation*). The ACS recommends that individuals with a cervix who are older than age 65 y, who have no history of cervical intraepithelial neoplasia grade 2 or a more severe diagnosis within the past 25 y, and who have documented adequate negative prior screening in the 10-y period before age 65 y discontinue cervical cancer screening with any modality (*qualified recommendation*).

## CERVICAL CANCER SCREENING IN DELAWARE

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The BRFSS has collected data on cervical cancer screening in Delaware annually from 1995 to 2000 and biannually since then. In 2018 the BRFSS showed that:

- Eighty-three percent of Delaware women 21-65 years of age reported that they had had a Pap test within the previous three years, compared to the nation median of 80% among U.S. women of the same ages.
- In Delaware, the prevalence of receiving a Pap test in the past three years was slightly lower for Hispanic females (80%) compared to non-Hispanic Caucasian females and non-Hispanic African American females (85% vs. 85%, respectively). However, this difference was not statistically significant.
- As age increases, the prevalence increases for receiving a pap smear within the past three years. Delaware women age 21-30 had the lowest prevalence (72%) of receiving a Pap test in the past three years. The prevalence increases to 88% among Delaware women age 51-60. This difference was statistically significant. There were no other statistically significant differences among other age groups.
- In 2016, Delaware ranked 10<sup>th</sup> (83%) 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 to 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.

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<sup>14</sup> Fontham ETH, Wolf AMD, Church TR, Etzioni R, Flowers CR, Herzig A, Guerra CE, Oeffinger KC, Shih YT, Walter LC, Kim JJ, Andrews KS, DeSantis CE, Fedewa SA, Manassaram-Baptiste D, Saslow D, Wender RC, Smith RA. Cervical cancer screening for individuals at average risk: 2020 guideline update from the American Cancer Society. *CA Cancer J Clin.* 2020 Sep;70(5):321-346. doi: 10.3322/caac.21628. Epub 2020 Jul 30. PMID: 32729638. <https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21628>

<sup>15</sup> <https://www.cancer.org/cancer/cervical-cancer/detection-diagnosis-staging/screening-tests/pap-test.html>

## INCIDENCE

For 2013-2017, Delaware ranked 20<sup>th</sup> in the U.S. for cervical cancer incidence (14<sup>th</sup> in 2012-2016)<sup>16</sup>.

### 2013-2017 DATA

**TABLE 5-1: NUMBER OF CERVICAL CANCER CASES, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>Delaware</b>	199	139	48	---
<b>Kent</b>	50	39	---	---
<b>New Castle</b>	110	67	34	---
<b>Sussex</b>	39	33	---	---

Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
---Counts less than 11 are not shown to protect patient privacy

- In 2013-2017, there were 199 cervical cancer cases (1% of all female cancer cases) diagnosed in Delaware.
- Non-Hispanic Caucasian females accounted for 70% of cervical cancer cases.

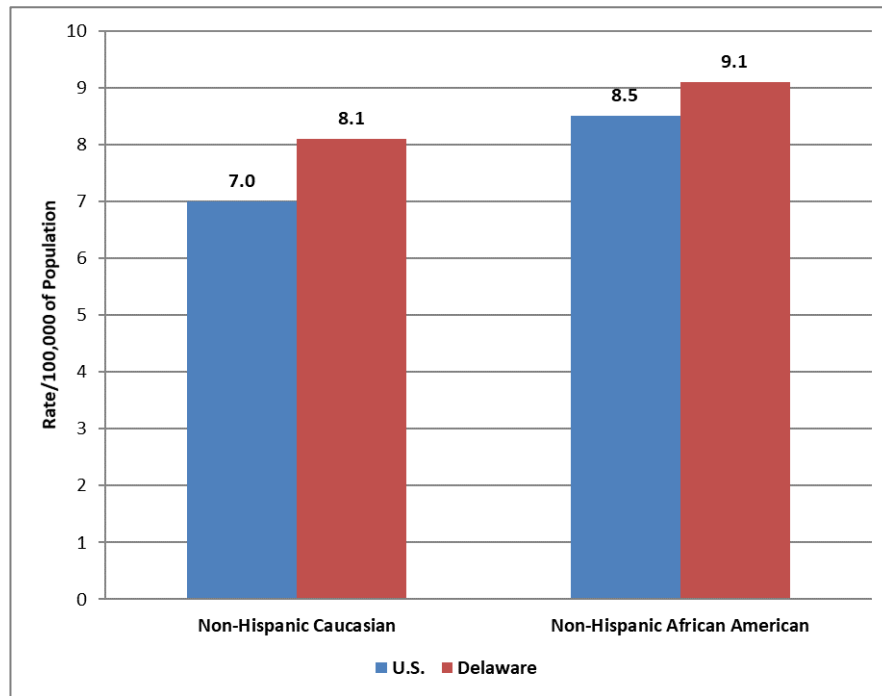
**TABLE 5-2: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>U.S.</b>	7.4	7.0	8.5	9.0
<b>Delaware</b>	7.8	8.1	9.1	---
<b>Kent</b>	10.7	12.0	---	---
<b>New Castle</b>	7.5	7.6	9.4	---
<b>Sussex</b>	6.2	6.5	---	---

Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
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.

<sup>16</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017); U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 5-1: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

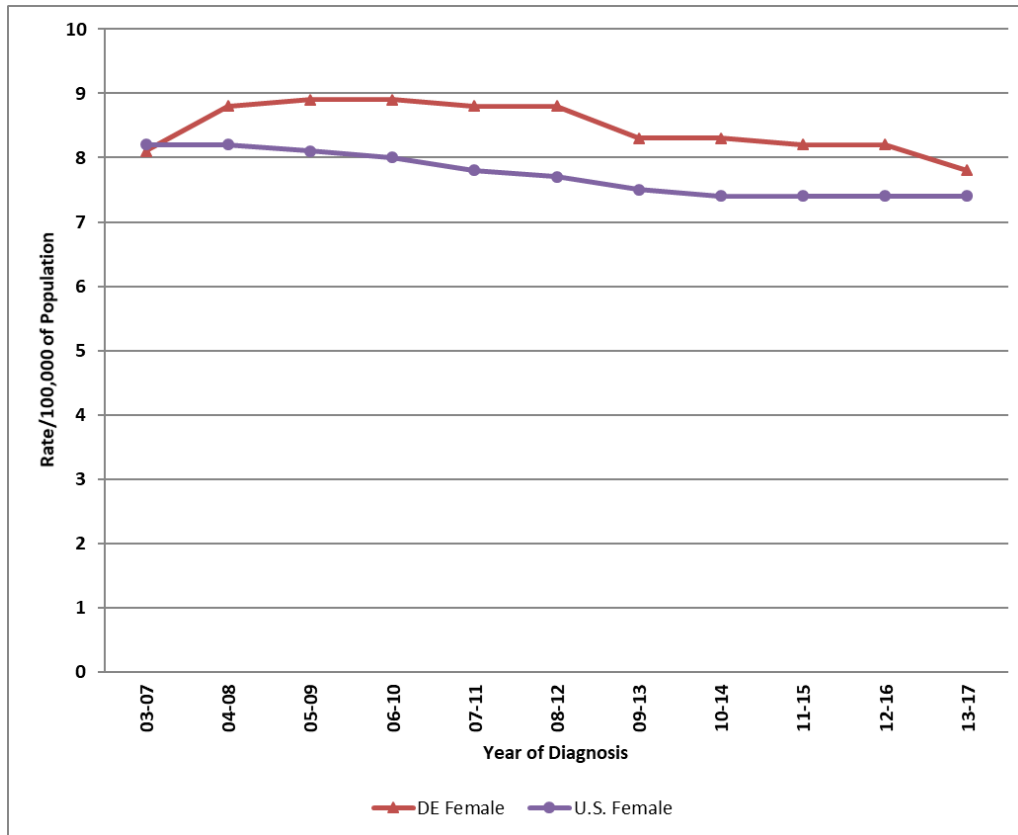


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - The difference in cervical cancer incidence rates between non-Hispanic Caucasian females (8.1 per 100,000) and non-Hispanic African American females (9.1 per 100,000) was not statistically significant.
  - Cervical cancer incidence rates for Hispanic females could not be calculated due to an insufficient number of cases.
- Comparing Delaware and the U.S. from 2013-2017
  - The difference in cervical cancer incidence rates between Delaware (7.8 per 100,000) and the U.S. (7.4 per 100,000) was not statistically significant.
  - The difference in cervical cancer incidence rates between non-Hispanic Caucasian females in Delaware (8.1 per 100,000) and the U.S. (7.0 per 100,000) was not statistically significant.
  - The difference in cervical cancer incidence rates between non-Hispanic African American females in Delaware (9.1 per 100,000) and the U.S. (8.5 per 100,000) was not statistically significant.

## TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 5-2: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER INCIDENCE RATES; U.S. AND DELAWARE, 2003-2017 TO 2013-2017**

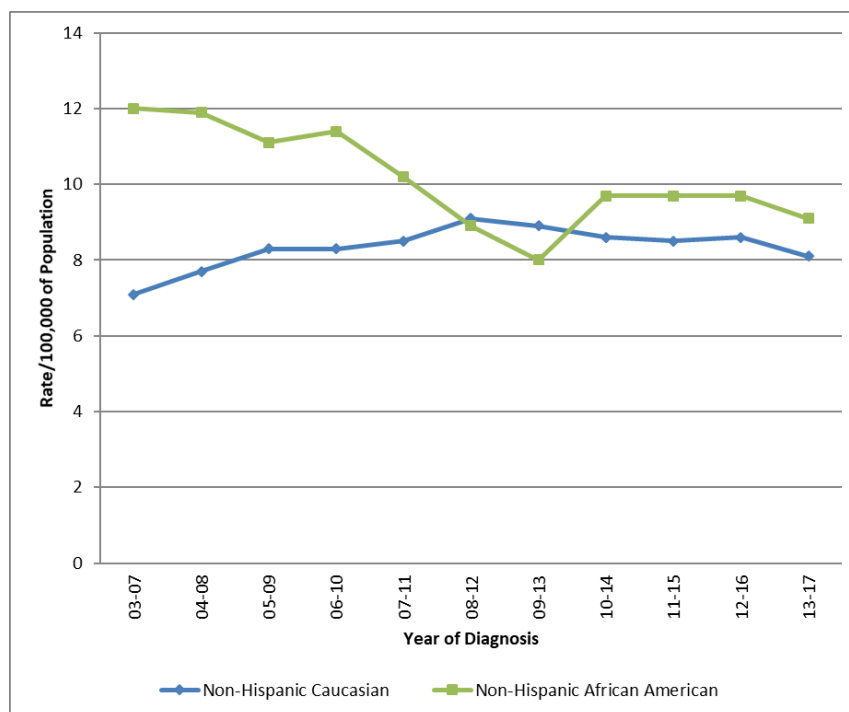


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Incidence rates for cervical cancer decreased 4% in Delaware (2003-2007 rate: 8.1 per 100,000; 2013-2017 rate: 7.8 per 100,000) and decreased 10% in the U.S. (2003-2007 rate: 8.2 per 100,000; 2013-2017 rate: 7.4 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 5-3: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Incidence rates for cervical cancer increased 14% in non-Hispanic Caucasian females (2003-2007 rate: 7.1 per 100,000; 2013-2017 rate: 8.1 per 100,000).
  - Incidence rates for cervical cancer decreased 24% in non-Hispanic African American females (2003-2007 rate: 12.0 per 100,000; 2013-2017 rate: 9.1 per 100,000).

## AGE-SPECIFIC INCIDENCE RATES - DELAWARE

**TABLE 5-3: AGE-SPECIFIC CERVICAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2013-2017**

Age at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	4.6	5.4	---	---
40-64	11.1	11.6	---	---
65-74	14.4	12.4	---	---
75-84	---	---	---	---
85+	---	---	---	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
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 small numbers, incidence rates could not be calculated for some groups.

### STAGE OF DIAGNOSIS - DELAWARE

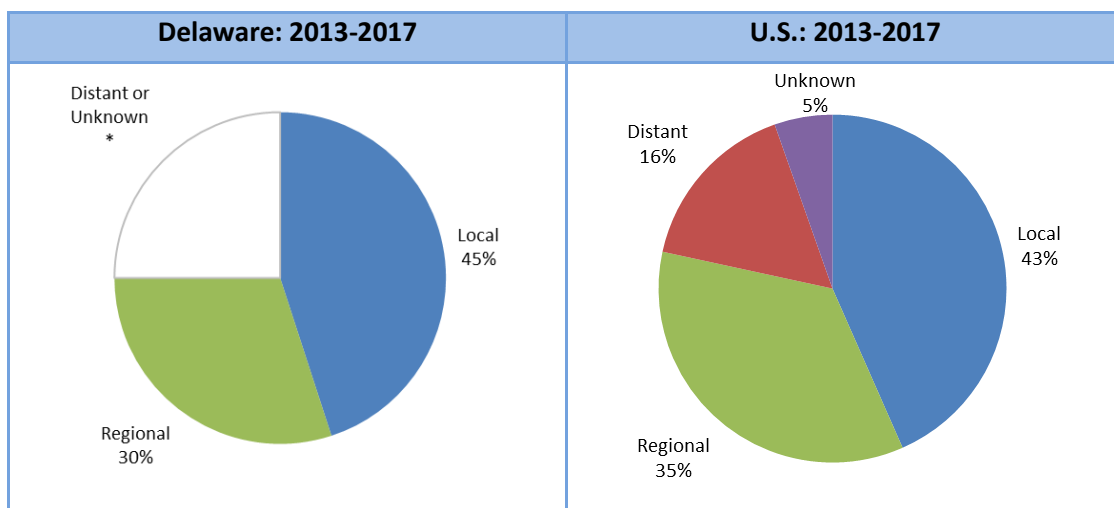
**TABLE 5-4: CERVICAL CANCER CASES BY STAGE AT DIAGNOSIS BY RACE/ETHNICITY; DELAWARE, 2013-2017**

Stage at Diagnosis	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
Local	89 (45%)	67 (48%)	17 (35%)	---
Regional	59 (30%)	40 (29%)	16 (33%)	---
Distant	---	---	---	---
Unknown	---	---	---	---
<b>Total</b>	<b>199</b>	<b>139</b>	<b>48</b>	<b>---</b>

Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 ---Counts less than 11 are not shown to protect patient privacy.

- In 2013-2017, there were 89 (45%) cervical cancers diagnosed at the local stage and 59 (30%) at the regional stage. Due to small numbers, cervical cancer cases cannot be shown for distant and unknown stages.
- Non-Hispanic Caucasian females (48%) had a higher proportion of cervical cancer diagnosed at the local stage compared to non-Hispanic African American females (35%).
- Due to small numbers, cervical cancer stage at diagnosis could not be calculated for Hispanic females.

**FIGURE 5-4: DISTRIBUTION OF CERVICAL CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2013-2017**

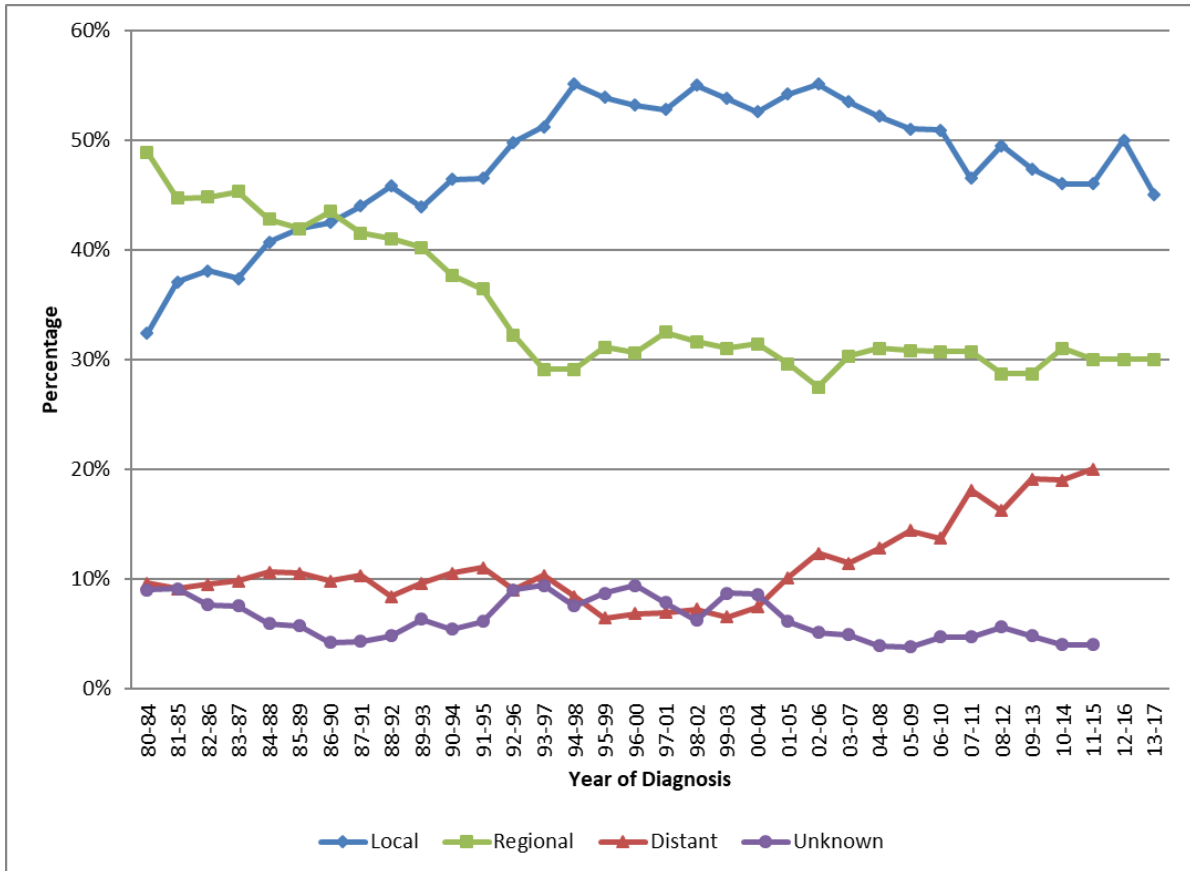


Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 \*Proportions for distant and unknown stage not shown due to suppression to protect patient privacy.



- In comparing U.S. and Delaware cervical cancer data, the percentage of cervical cancers diagnosed at the regional stage is lower in Delaware (30%) compared to the U.S. (35%). The percentage diagnosed at the distant stage and unknown stage are not shown due to small numbers.

**FIGURE 5-5: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR CERVICAL CANCER CASES; DELAWARE, 1980-1984 TO 2013-2017**



Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

- From 1980-1984 to 2013-2017 in Delaware
  - The percent of cervical cancer cases diagnosed at the local stage increased from 32% to 45%.
  - Cases diagnosed at the regional stage decreased from 49% to 30%.

## MORTALITY

For 2013-2017, Delaware ranked 15<sup>th</sup> in the U.S. for cervical cancer mortality (16<sup>th</sup> in 2012-2016)<sup>17</sup>.

### 2013-2017 DATA

**TABLE 5-5: NUMBER OF CERVICAL CANCER DEATHS, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>Delaware</b>	78	58	19	---
<b>Kent</b>	18	14	---	---
<b>New Castle</b>	38	26	12	---
<b>Sussex</b>	22	18	---	---

Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
---Counts less than 11 are not shown to protect patient privacy

- In 2013-2017, there were 78 female deaths (2% of all female cancer deaths) from cervical cancer in Delaware.
- Non-Hispanic Caucasian females accounted for 74% of cervical cancer deaths.

**TABLE 5-6: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>U.S.</b>	2.3	2.1	3.6	2.6
<b>Delaware</b>	2.6	2.7	---	---
<b>Kent</b>	---	---	---	---
<b>New Castle</b>	2.3	2.3	---	---
<b>Sussex</b>	---	---	---	---

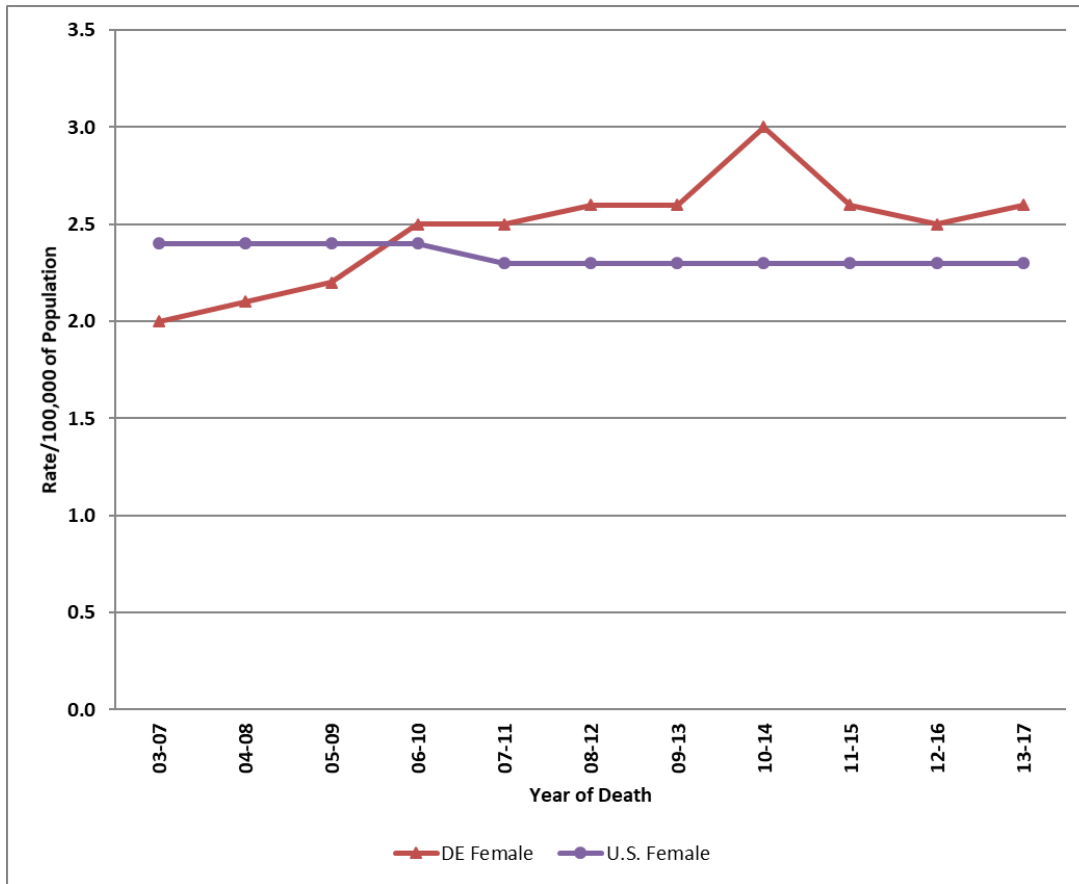
Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.  
---Rates based on less than 25 cases are not shown.

- Comparing Delaware and the U.S. from 2013-2017
  - The difference in cervical cancer mortality rates between Delaware (2.6 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 Caucasian females in Delaware (2.7 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 Hispanic females in Delaware could not be calculated due to the small number of deaths.

<sup>17</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017); U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 5-6: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER MORTALITY RATES; U.S. AND DELAWARE, 2003-2007 TO 2013-2017

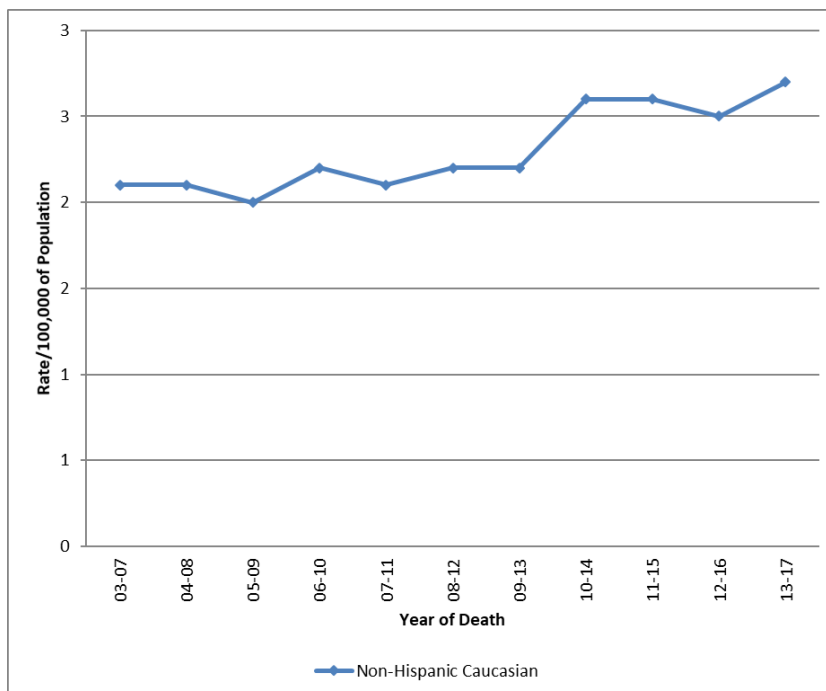


Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Mortality rates for cervical cancer increased 30% in Delaware (2003-2007 rate: 2.0 per 100,000; 2013-2017 rate: 2.6 per 100,000) and decreased 4% in the U.S. (2003-2007 rate: 2.4 per 100,000; 2013-2017 rate: 2.3 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 5-7: FIVE-YEAR AVERAGE AGE-ADJUSTED CERVICAL CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Mortality rates for cervical cancer increased 29% in non-Hispanic Caucasian females.
  - Due to small numbers, cervical cancer mortality rates could not be calculated for non-Hispanic African American or Hispanic females. Rates calculated from counts less than 25 are considered unreliable.

## AGE-SPECIFIC MORTALITY RATES - DELAWARE

**TABLE 5-7: AGE-SPECIFIC CERVICAL CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2013-2017**

Age at Death	All Females	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---
40-64	4.4	4.9	---	---
65-74	---	---	---	---
75-84	---	---	---	---
85+	---	---	---	---

Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
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 small numbers, cervical cancer age-specific mortality rates could not be calculated for most groups.

## CHAPTER 6: COLORECTAL CANCER

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### RISK FACTORS

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#### **Lifestyle risk factors for 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

#### **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)

#### **Non-modifiable risk factors (these cannot be changed) for 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

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The American Cancer Society (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<sup>18</sup>:

- 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. Computed tomography (CT) colonography (virtual colonoscopy) every five years
- f. Colonoscopy every 10 years

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

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Data from the 2018 BRFSS provides information on colorectal cancer screening patterns among Delawareans:

- Delaware ranked 11<sup>th</sup> highest in the prevalence (73%) of adults 50-74 years of age who reported meeting the U.S. Preventive Services Task Force (USPSTF) recommendations for colorectal screening. The U.S. national median for meeting the USPSTF recommendation for colorectal cancer screening was 70%.
- The percentage of Delawareans who met the USPSTF recommendation for colorectal cancer screening increased by age group. Significantly more Delawareans 60-69 years of age and 70 years of age and older (77% and 80%, respectively) reported meeting the recommendation, compared to those 50-59 years of age (66%).
- The prevalence of non-Hispanic Caucasians 50-74 years of age in Delaware who met the USPSTF recommendation for colorectal cancer screening (75%) was higher compared to the prevalence for non-Hispanic African Americans in Delaware (71%). 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. Delawareans who reported having the recommended colorectal cancer screenings differed significantly between income levels: 59% were in the lowest income category (less than \$15,000 annual household income) and 77% were in the highest income category (\$50,000 or more).

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<sup>18</sup> Detailed screening guidelines for colorectal cancer:

<http://www.cancer.org/Cancer/ColonandRectumCancer/MoreInformation/ColonandRectumCancerEarlyDetection/colorectal-cancer-early-detection-acs-recommendations>

## INCIDENCE

For 2013-2017, Delaware ranked 27<sup>th</sup> in the U.S. for colorectal cancer incidence (31<sup>st</sup> in 2012-2016); males ranked 26<sup>th</sup> (27<sup>th</sup> in 2012-2016) and females ranked 30<sup>th</sup> (33<sup>rd</sup> in 2012-2016).<sup>19</sup>

### 2013-2017 DATA

**TABLE 6-1: NUMBER OF COLORECTAL CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	2,235	1,185	1,050	1,671	894	777	442	226	216	84	43	41
<b>Kent</b>	418	225	193	299	158	141	91	52	39	---	---	---
<b>New Castle</b>	1,211	619	592	849	439	410	283	135	148	54	28	26
<b>Sussex</b>	606	341	265	523	297	226	68	39	29	---	---	---

*Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*  
 ---Counts less than 11 are not shown to protect patient privacy.

- Colorectal cancer is the fourth most commonly diagnosed cancer in the U.S. and Delaware.
- In 2013-2017, 2,235 colorectal cancer cases (8% of all cancer cases) were diagnosed in Delaware.
- Males accounted for 53% of colorectal cancer cases.
- Non-Hispanic Caucasians accounted for 75% of colorectal cancer cases.

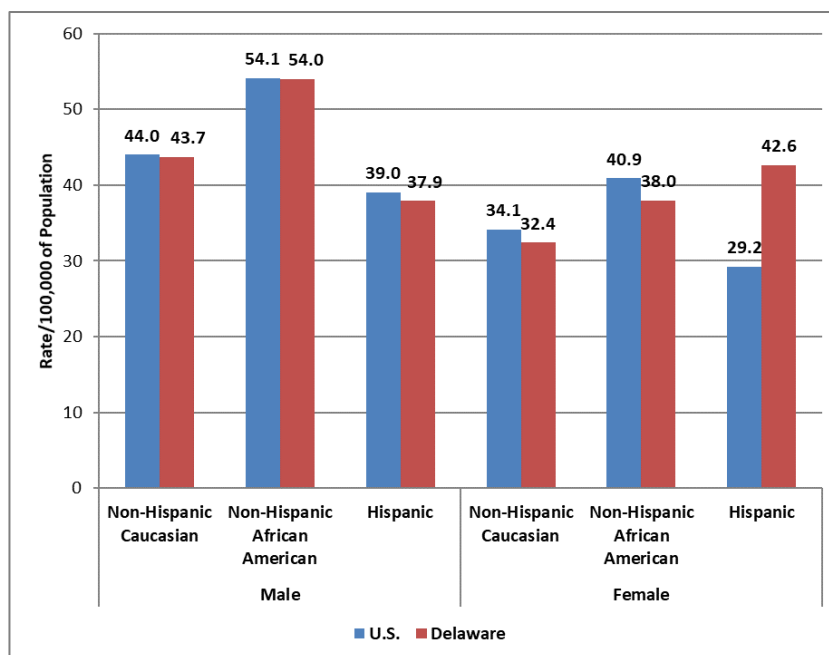
**TABLE 6-2: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	Overall	Male	Female
<b>U.S.</b>	38.4	43.9	33.8
<b>Delaware</b>	38.1	44.3	32.9
<b>Kent</b>	41.6	49.6	34.9
<b>New Castle</b>	38.6	43.6	34.6
<b>Sussex</b>	35.6	43.4	28.7

*Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*  
*Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.*  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

<sup>19</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017); U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 6-1: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**



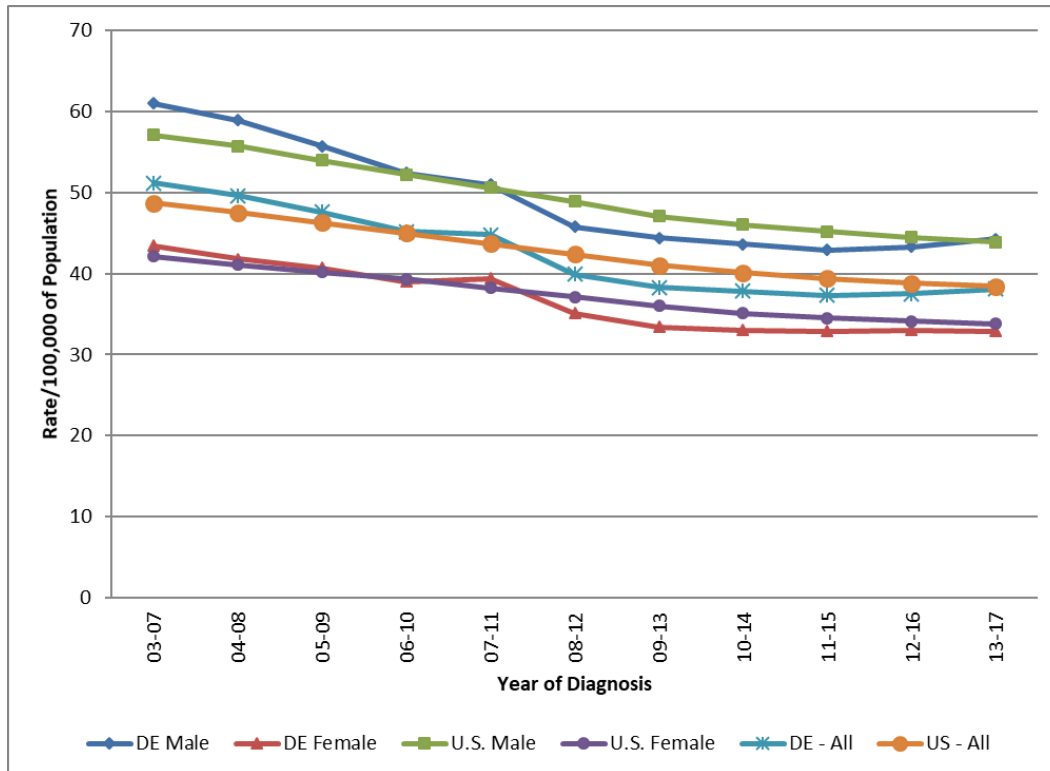
Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - Males (44.3 per 100,000) had a statistically significantly higher colorectal cancer incidence rate compared to females (32.9 per 100,000).
  - The difference in colorectal cancer incidence rates between non-Hispanic Caucasians (37.6 per 100,000) and non-Hispanic African Americans (44.6 per 100,000) was statistically significant, but the rates for both compared to Hispanics (40.7 per 100,000) was not statistically significant.
- Comparing Delaware and the U.S. from 2013-2017
  - The difference in colorectal cancer incidence rates between Delaware (38.1 per 100,000) and the U.S. (38.4 per 100,000) was not statistically significant.
  - The difference in colorectal cancer incidence rates between males in Delaware (44.3 per 100,000) and the U.S. (43.9 per 100,000) was not statistically significant.
  - The difference in colorectal cancer incidence rates between females in Delaware (32.9 per 100,000) and the U.S. (33.8 per 100,000) was not statistically significant.
  - The difference in colorectal cancer incidence rates between non-Hispanic Caucasians in Delaware (37.6 per 100,000) and non-Hispanic Caucasians in the U.S. (38.7 per 100,000) was not statistically significant.
  - The difference in colorectal cancer incidence rates between non-Hispanic African Americans in Delaware (44.6 per 100,000) and non-Hispanic African Americans in the U.S. (46.5 per 100,000) was not statistically significant.
  - The difference in colorectal cancer incidence rates between Hispanics in Delaware (40.7 per 100,000) and the U.S. (33.5 per 100,000) was not statistically significant.



TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 6-2: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017

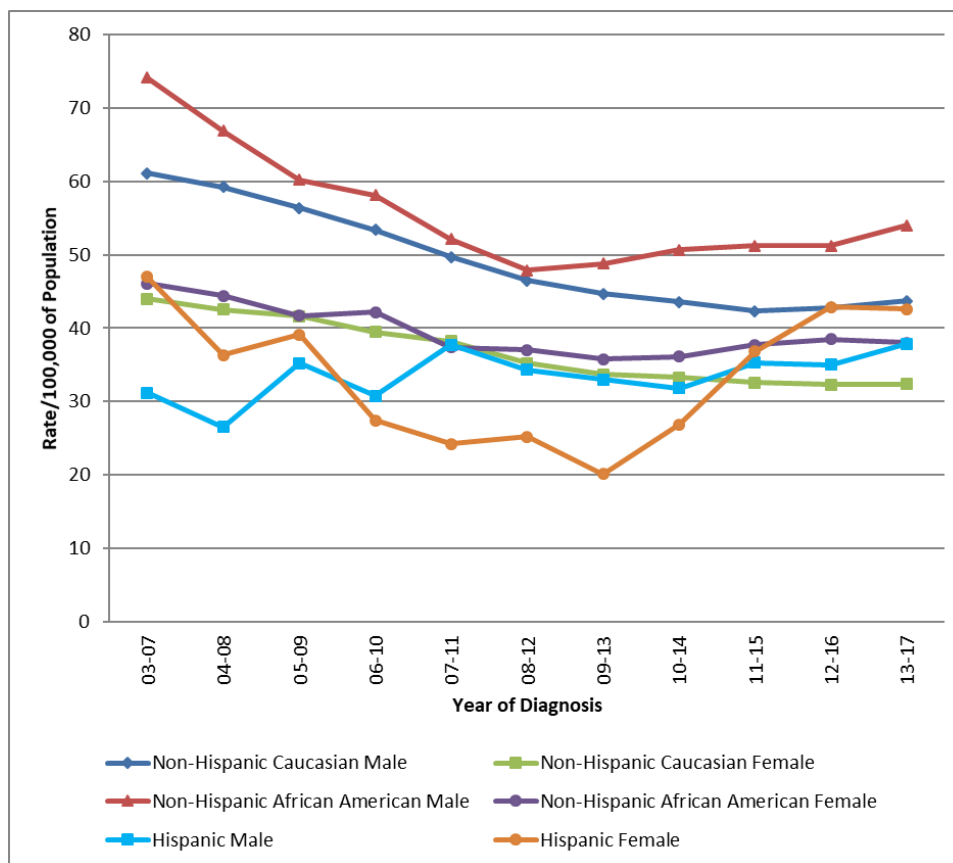


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Incidence rates for colorectal cancer decreased 26% in Delaware (2003-2007 rate: 51.2 per 100,000; 2013-2017 rate: 38.1 per 100,000) and decreased 21% in the U.S. (2003-2007 rate: 48.7 per 100,000; 2013-2017 rate: 38.4 per 100,000).
  - Incidence rates for colorectal cancer decreased 27% in Delaware males (2003-2007 rate: 61.0 per 100,000; 2013-2017 rate: 44.3 per 100,000) and decreased 23% in U.S. males (2003-2007 rate: 57.1 per 100,000; 2013-2017 rate: 43.9 per 100,000).
  - Incidence rates for colorectal cancer decreased 24% in Delaware females (2003-2007 rate: 43.4 per 100,000; 2013-2017 rate: 32.9 per 100,000) and decreased 20% in U.S. females (2003-2007 rate: 42.1 per 100,000; 2013-2017 rate: 33.8 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 6-3: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

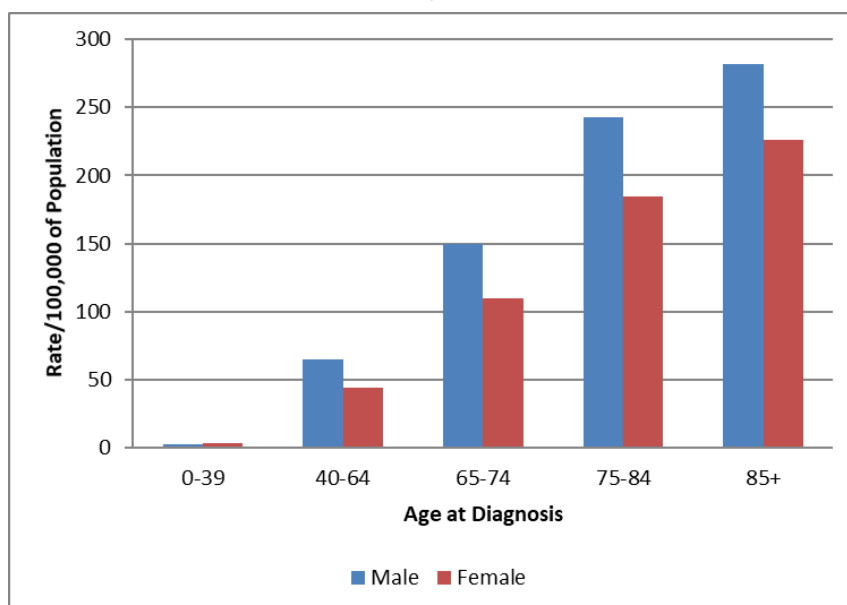


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Incidence rates for colorectal cancer decreased 28% in non-Hispanic Caucasian males (2003-2007 rate: 61.1 per 100,000; 2013-2017 rate: 43.7 per 100,000) and decreased 26% in non-Hispanic Caucasian females (2003-2007 rate: 44.0 per 100,000; 2013-2017 rate: 32.4 per 100,000).
  - Incidence rates for colorectal cancer decreased 27% in non-Hispanic African American males (2003-2007 rate: 74.1 per 100,000; 2013-2017 rate: 54.0 per 100,000) and decreased 18% in non-Hispanic African American females (2003-2007 rate: 46.1 per 100,000; 2013-2017 rate: 38.0 per 100,000).
  - Incidence rates for colorectal cancer increased 21% in Hispanic males (2003-2007 rate: 31.2 per 100,000; 2013-2017 rate: 37.9 per 100,000) and decreased 9% in Hispanic females (2003-2007 rate: 47.0 per 100,000; 2013-2017 rate: 42.6 per 100,000).

## AGE-SPECIFIC INCIDENCE RATES - DELAWARE

**FIGURE 6-4: AGE-SPECIFIC COLORECTAL CANCER INCIDENCE RATES BY SEX; DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- The incidence rate for colorectal cancer was highest for both males and females 85 years of age and older.

**TABLE 6-3: AGE-SPECIFIC COLORECTAL CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	4.3	---	---
40-64	66.8	67.6	51.1	42.2	55.0	---
65-74	137.6	218.6	---	102.4	143.2	---
75-84	241.0	327.3	---	184.2	183.4	---
85+	284.7	---	---	232.9	---	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

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 incidence rate for colorectal cancer was highest for both non-Hispanic Caucasian males and females 85 years of age and older. Due to small numbers, incidence rates could not be calculated for Hispanics or for some combinations of sex and age group for non-Hispanic Caucasians and non-Hispanic African Americans.

## STAGE OF DIAGNOSIS - DELAWARE

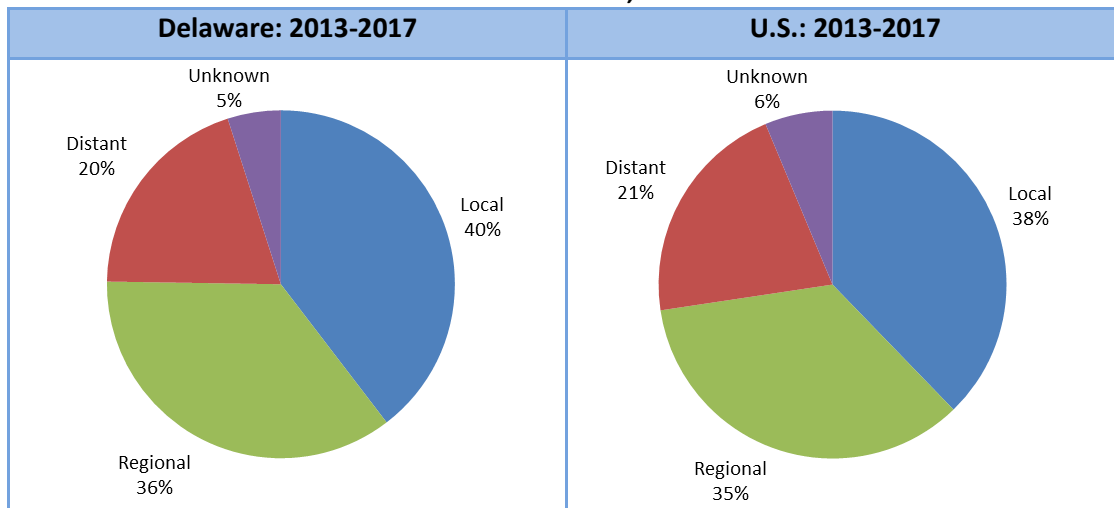
**TABLE 6-4: NUMBER AND PERCENTAGE OF COLORECTAL CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY, DELAWARE, 2013-2017**

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
<b>Local</b>	885 (40%)	435 (37%)	450 (43%)	656 (39%)	325 (36%)	331 (43%)	173 (39%)	82 (36%)	91 (42%)	37 (44%)	18 (42%)	19 (46%)
<b>Regional</b>	793 (36%)	456 (39%)	337 (32%)	602 (36%)	351 (39%)	251 (32%)	144 (33%)	81 (36%)	63 (29%)	35 (42%)	17 (40%)	18 (44%)
<b>Distant</b>	455 (20%)	248 (21%)	207 (20%)	332 (20%)	184 (21%)	148 (19%)	105 (24%)	51 (23%)	---	---	---	---
<b>Unknown</b>	102 (5%)	46 (4%)	56 (5%)	81 (5%)	34 (4%)	47 (6%)	20 (5%)	12 (5%)	---	---	---	---
<b>Total</b>	2,235	1,185	1,050	1,671	894	777	442	226	216	84	43	41

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 ---Counts less than 11 are not shown to protect patient privacy.

- In 2013-2017, there were 885 (40%) colorectal cancers diagnosed at the local stage; 793 (36%) at the regional stage; 455 (20%) at the distant stage; and 102 (5%) had an unknown stage.
- Hispanics (44%) had a higher proportion of colorectal cancers diagnosed at the local stage compared to both non-Hispanic Caucasians (39%) and non-Hispanic African Americans (39%).
- Males (37%) had a lower proportion of colorectal cancers diagnosed at the local stage compared to females (43%).

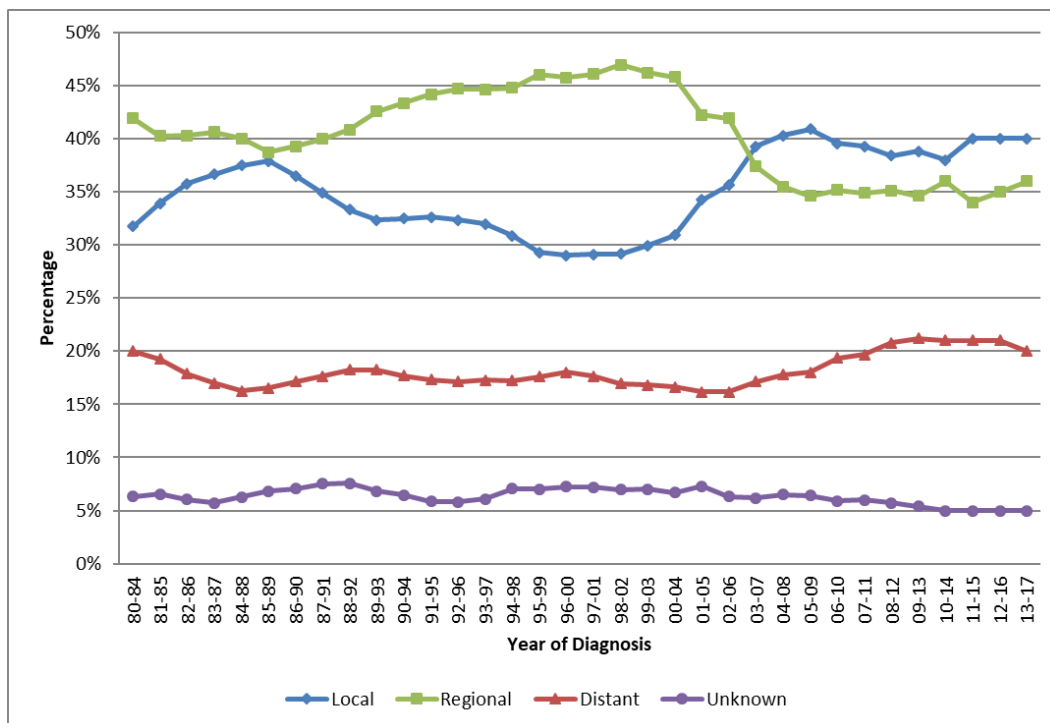
**FIGURE 6-5: PERCENTAGE OF COLORECTAL CANCER CASES BY STAGE AT DIAGNOSIS, U.S. AND DELAWARE, 2013-2017**



Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.

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

**FIGURE 6-6: FIVE-YEAR PERCENTAGE OF STAGE OF DIAGNOSIS FOR COLORECTAL CANCER CASES, DELAWARE, 1980-1984 TO 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

- From 1980-1984 to 2013-2017 in Delaware
  - The percentage of colorectal cancer cases diagnosed at the local stage increased from 32% to 40%.
  - Colorectal cancer cases diagnosed at the regional stage decreased from 42% to 36%.
  - Colorectal cancer cases diagnosed at the distant stage remained the same (20%).

## MORTALITY

For 2013-2017, Delaware ranked 31<sup>st</sup> in the U.S. for colorectal cancer mortality (35th in 2012-2016); males ranked 24<sup>th</sup> (30<sup>th</sup> in 2012-2016) and females ranked 43rd (45th in 2012-2016)<sup>20</sup>.

### 2013-2017 DATA

**TABLE 6-5: NUMBER OF COLORECTAL CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	794	441	353	617	358	259	150	66	84	21	---	---
<b>Kent</b>	162	91	71	117	70	47	37	---	---	---	---	---
<b>New Castle</b>	411	217	194	299	167	132	97	39	58	---	---	---
<b>Sussex</b>	221	133	88	201	121	80	16	---	---	---	---	---

*Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*

---Counts less than 11 are not shown to protect patient privacy.

- Colorectal cancer is the fourth most common cause of cancer death in the U.S. and Delaware.
- In 2013-2017, there were 794 deaths (8% of all cancer deaths) from colorectal cancer in Delaware.
- Males accounted for 56% of colorectal cancer deaths.
- Non-Hispanic Caucasians accounted for 78% of colorectal cancer deaths.

**TABLE 6-6: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE, AND COUNTIES, 2013-2017**

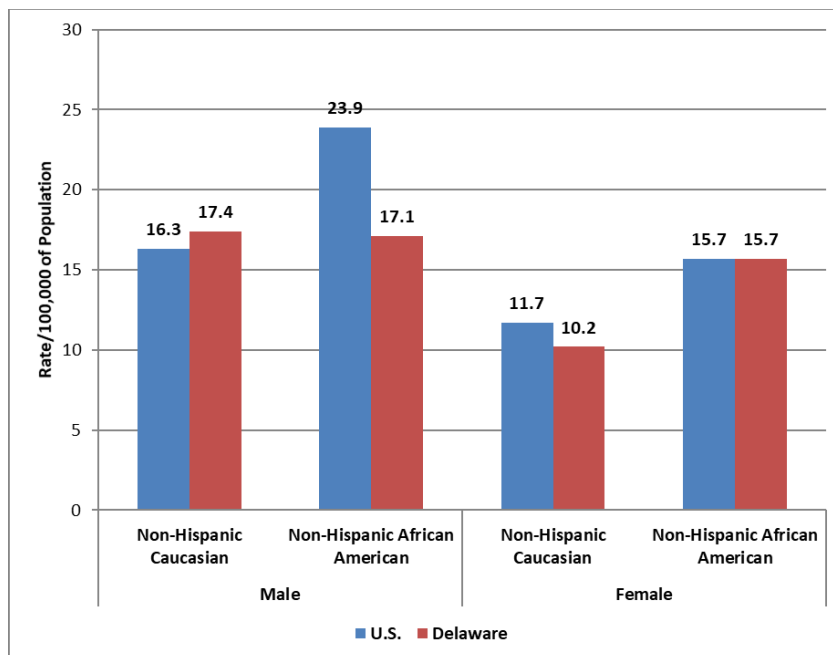
	Overall	Male	Female
<b>U.S.</b>	13.9	16.6	11.8
<b>Delaware</b>	13.8	17.3	11.0
<b>Kent</b>	16.3	21.3	12.5
<b>New Castle</b>	13.6	16.5	11.6
<b>Sussex</b>	12.5	16.6	8.8

*Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*

*Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.*

<sup>20</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017); U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 6-7: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

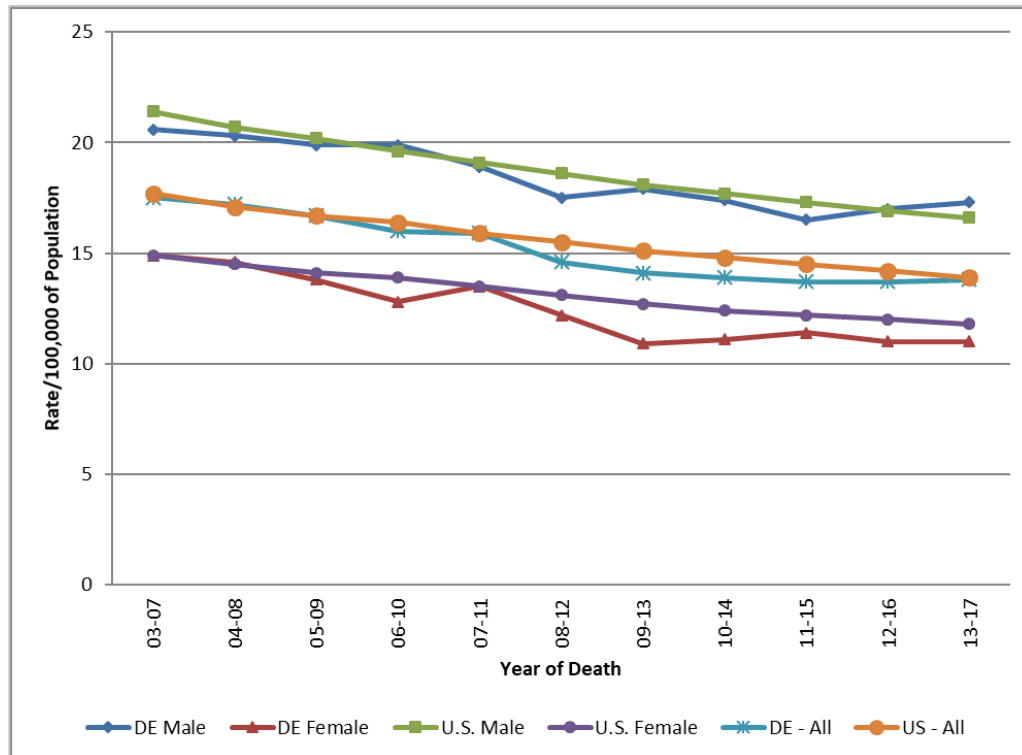


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - Males (17.3 per 100,000) had a statistically significantly higher colorectal cancer mortality rate compared to females (11.0 per 100,000).
  - The difference in colorectal cancer mortality rates between non-Hispanic Caucasians (13.4 per 100,000) and non-Hispanic African Americans (16.3 per 100,000) was not statistically significant.
  - Colorectal cancer mortality rates for Hispanics could not be calculated due to the small number of deaths.
- Comparing Delaware and the U.S. from 2013-2017
  - The difference in colorectal cancer mortality rates between Delaware (13.8 per 100,000) and the U.S. (13.9 per 100,000) was not statistically significant.
  - The difference in colorectal cancer mortality rates between males in Delaware (17.3 per 100,000) and the U.S. (16.6 per 100,000) was not statistically significant.
  - The difference in colorectal cancer mortality rates between females in Delaware (11.0 per 100,000) and the U.S. (11.8 per 100,000) was not statistically significant.
  - The difference in colorectal cancer mortality rates between non-Hispanic Caucasians in Delaware (13.4 per 100,000) and the U.S. (13.8 per 100,000) was not statistically significant.
  - The difference in colorectal cancer mortality rates between non-Hispanic African Americans in Delaware (16.3 per 100,000) and the U.S. (19.0 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 6-8: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017



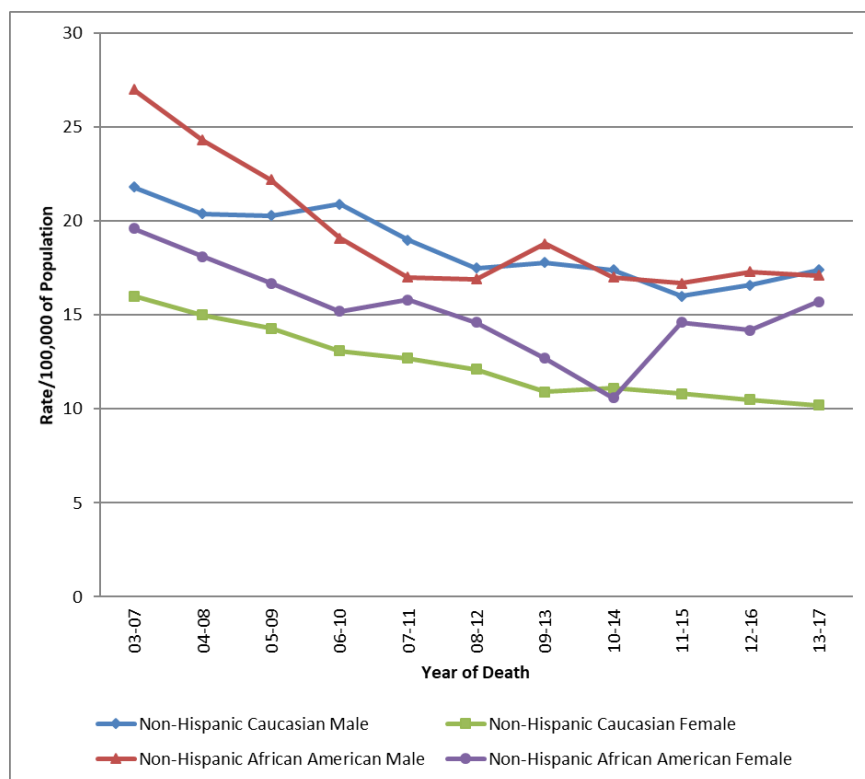
Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Mortality rates for colorectal cancer decreased 21% in both Delaware (2003-2007 rate: 17.5 per 100,000; 2013-2017 rate: 13.8 per 100,000) and in the U.S. (2003-2007 rate: 17.7 per 100,000; 2013-2017 rate: 13.9 per 100,000).
  - Mortality rates for colorectal cancer decreased 16% in Delaware males (2003-2007 rate: 20.6 per 100,000; 2013-2017 rate: 17.3 per 100,000) and decreased 22% in U.S. males (2003-2007 rate: 21.4 per 100,000; 2013-2017 rate: 16.6 per 100,000).
  - Mortality rates for colorectal cancer decreased 26% in Delaware females (2003-2007 rate: 14.9 per 100,000; 2013-2017 rate: 11.0 per 100,000) and decreased 21% in U.S. females (2003-2007 rate: 14.9 per 100,000; 2013-2017 rate: 11.8 per 100,000).



## TRENDS OVER TIME - DELAWARE

**FIGURE 6-9: FIVE-YEAR AVERAGE AGE-ADJUSTED COLORECTAL CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

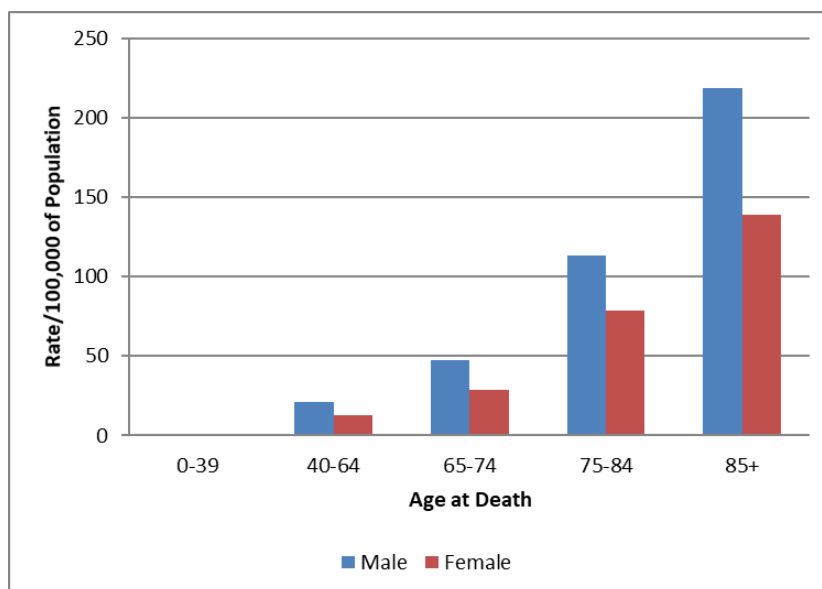


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Mortality rates for colorectal cancer decreased 20% in non-Hispanic Caucasian males (2003-2007 rate: 21.8 per 100,000; 2013-2017 rate: 17.4 per 100,000) and decreased 36% in non-Hispanic Caucasian females (2003-2007 rate: 16.0 per 100,000; 2013-2017 rate: 10.2 per 100,000).
  - Mortality rates for colorectal cancer decreased 37% in non-Hispanic African American males (2003-2007 rate: 27.0 per 100,000; 2013-2017 rate: 17.1 per 100,000) and decreased 20% in non-Hispanic African American females (2003-2007 rate: 19.6 per 100,000; 2013-2017 rate: 15.7 per 100,000).
  - Mortality rates for colorectal cancer in Hispanics could not be calculated due to the small number of deaths.

## AGE-SPECIFIC MORTALITY RATES - DELAWARE

**FIGURE 6-10: AGE-SPECIFIC COLORECTAL CANCER MORTALITY RATES BY SEX; DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- The mortality rate for colorectal cancer is highest for both males and females 85 years of age and older. Due to small numbers, mortality rates could not be calculated by sex for the 0-39 age group.

**TABLE 6-7: AGE-SPECIFIC COLORECTAL CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

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	21.7	20.1	---	12.2	15.9	---
65-74	47.5	---	---	25.2	---	---
75-84	115.8	---	---	72.2	---	---
85+	220.7	---	---	126.5	---	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, Division of Public Health, 2020.

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 mortality rate for colorectal cancer was highest for non-Hispanic Caucasian males and females in Delaware 85 years of age and older. Due to small numbers, mortality rates could not be calculated for Hispanics or for most sex and age combinations for non-Hispanic African Americans.

## CHAPTER 7: KIDNEY AND RENAL PELVIS CANCER<sup>21</sup>

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### RISK FACTORS

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#### **Lifestyle risk factors for getting kidney cancer:**

- Smoking
- Overweight and obesity
- High blood pressure

#### **Environmental and medically-related causes of kidney cancer:**

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

#### **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

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

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<sup>21</sup> “Kidney cancer” is used instead of “kidney and renal pelvis cancer” throughout this section.

## INCIDENCE

For 2013-2017, Delaware ranked 30<sup>th</sup> in the U.S. for kidney cancer incidence (22<sup>nd</sup> in 2012-2016); males ranked 23<sup>rd</sup> (18<sup>th</sup> in 2012-2016) and females ranked 28<sup>th</sup> (26<sup>th</sup> in 2012-2016)<sup>22</sup>.

### 2013-2017 DATA

**TABLE 7-1: NUMBER OF KIDNEY CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	1,023	649	374	771	499	272	205	127	78	31	13	18
<b>Kent</b>	191	120	71	142	92	50	40	---	---	---	---	---
<b>New Castle</b>	528	321	207	359	222	137	137	82	55	23	11	12
<b>Sussex</b>	304	208	96	270	185	85	28	---	---	---	---	---

*Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*  
 ---Counts less than 11 are not shown to protect patient privacy

- In 2013-2017, there were 1,023 kidney cancer cases (4% of all cancer cases) diagnosed in Delaware.
- Males accounted for 63% of kidney cancer cases.
- Non-Hispanic Caucasians accounted for 75% of kidney cancer cases.

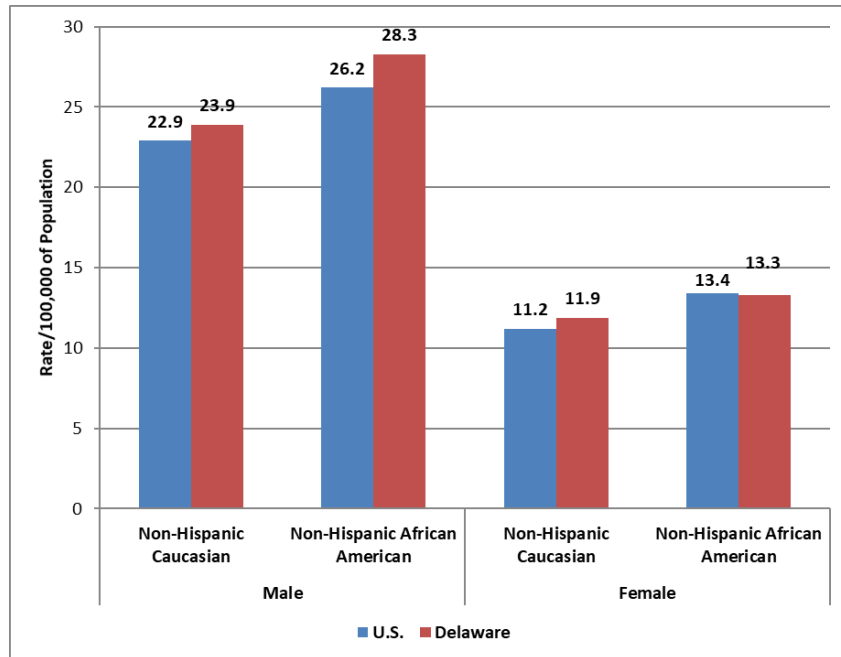
**TABLE 7-2: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	Overall	Male	Female
<b>U.S.</b>	16.2	22.2	11.1
<b>Delaware</b>	17.2	23.6	11.8
<b>Kent</b>	18.6	25.5	12.7
<b>New Castle</b>	16.7	22.1	12.1
<b>Sussex</b>	17.6	24.7	11.5

*Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*  
*Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.*  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

<sup>22</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 7-1: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

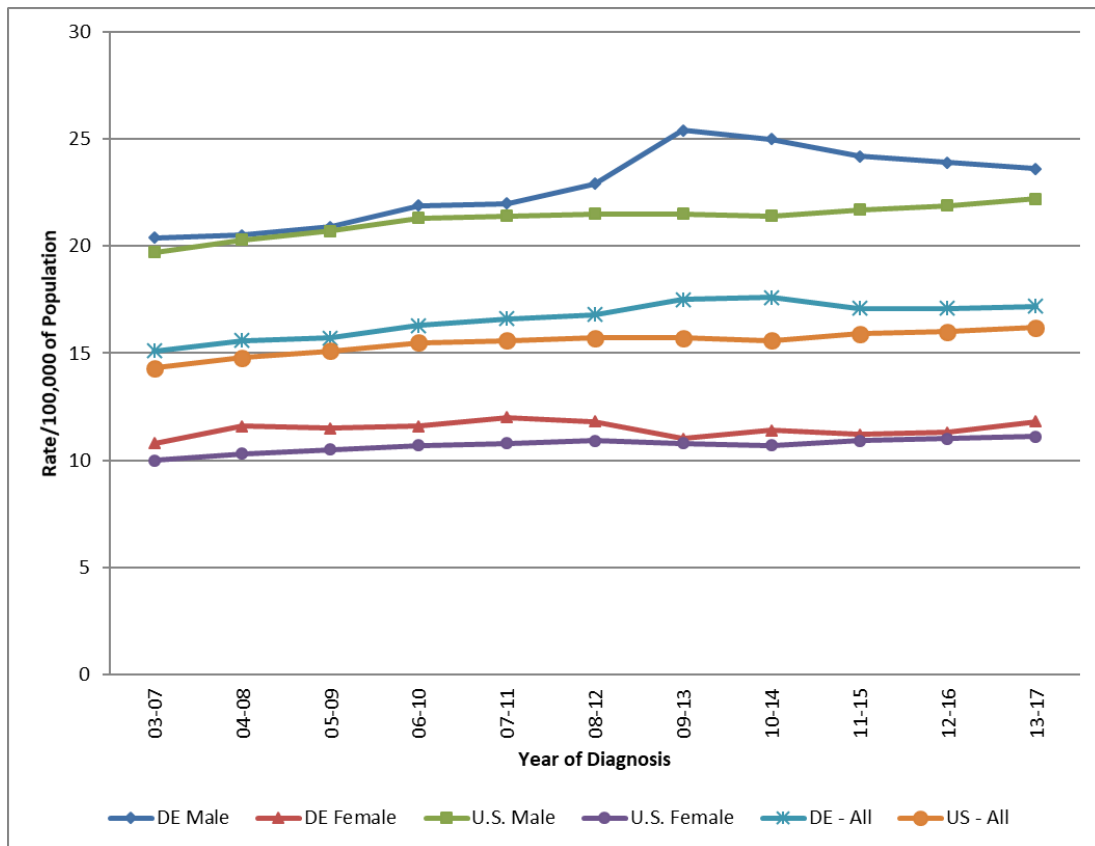


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - Males (23.6 per 100,000) had a statistically significantly higher kidney cancer incidence rate compared to females (11.8 per 100,000).
  - The difference in kidney cancer incidence rates between non-Hispanic Caucasians (17.5 per 100,000), non-Hispanic African Americans (19.8 per 100,000), and Hispanics (14.9 per 100,000) was not statistically significant.
- Comparing Delaware and the U.S. from 2013-2017
  - The difference in kidney cancer incidence rates between Delaware (17.2 per 100,000) and the U.S. (16.2 per 100,000) was not statistically significant.
  - The difference in kidney cancer incidence rates between Delaware males (23.6 per 100,000) and U.S. males (22.2 per 100,000) was not statistically significant.
  - The difference in kidney cancer incidence rates between Delaware females (11.8 per 100,000) and U.S. females (11.1 per 100,000) was not statistically significant.
  - The difference in kidney cancer incidence rates between Non-Hispanic Caucasians in Delaware (17.5 per 100,000) and non-Hispanic Caucasians in the U.S. (16.7 per 100,000) was not statistically significant.
  - The difference in the kidney cancer incidence rates between non-Hispanic African Americans in Delaware (19.8 per 100,000) and the U.S. (19.0 per 100,000) was not statistically significant.
  - The difference in the kidney cancer incidence rates between Hispanics in Delaware (14.9 per 100,000) and the U.S. (16.7 per 100,000) was not statistically significant.

## TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 7-2: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017**

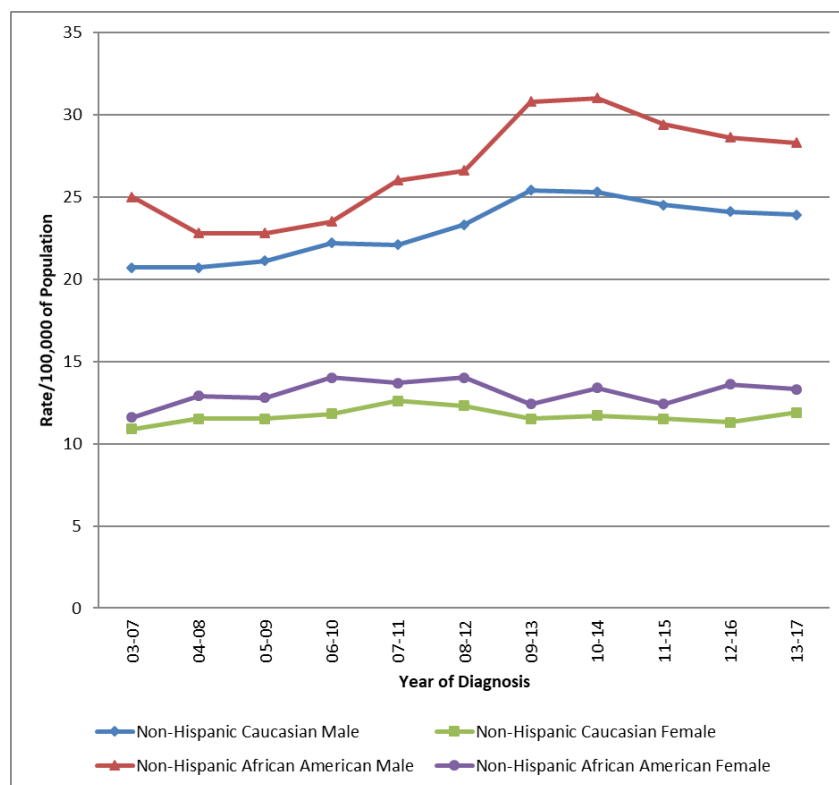


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Incidence rates for kidney cancer increased 14% in Delaware (2003-2007 rate: 15.1 per 100,000; 2013-2017 rate: 17.2 per 100,000) and increased 13% in the U.S. (2003-2007 rate: 14.3 per 100,000; 2013-2017 rate: 16.2 per 100,000).
  - Incidence rates for kidney cancer increased 16% in Delaware males (2003-2007 rate: 20.4 per 100,000; 2013-2017 rate: 23.6 per 100,000) and increased 13% in U.S. males (2003-2007 rate: 19.7 per 100,000; 2013-2017 rate: 22.2 per 100,000).
  - Incidence rates for kidney cancer increased 9% in Delaware females (2003-2007 rate: 10.8 per 100,000; 2013-2017 rate: 11.8 per 100,000) and increased 11% in U.S. females (2003-2007 rate: 10.0 per 100,000; 2013-2017 rate: 11.1 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 7-3: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

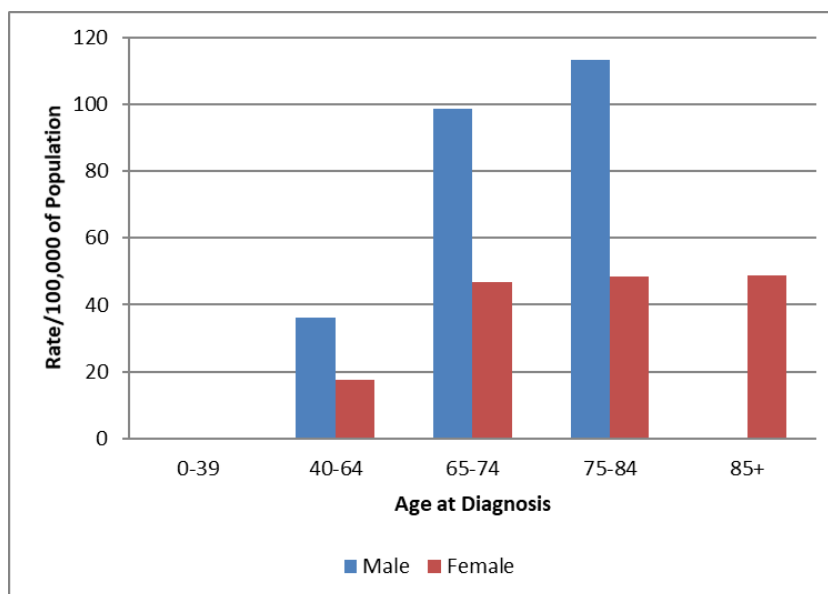


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Incidence rates for kidney cancer increased 15% in non-Hispanic Caucasian males (2003-2007 rate: 20.7 per 100,000; 2013-2017 rate: 23.9 per 100,000) and increased 9% in non-Hispanic Caucasian females (2003-2007 rate: 10.9 per 100,000; 2013-2017 rate: 11.9 per 100,000).
  - Incidence rates for kidney cancer increased 13% in non-Hispanic African American males (2003-2007 rate: 25.0 per 100,000; 2013-2017 rate: 28.3 per 100,000) and increased 15% in non-Hispanic African American females (2003-2007 rate: 11.6 per 100,000; 2013-2017 rate: 13.3 per 100,000).

## AGE-SPECIFIC INCIDENCE RATES - DELAWARE

**FIGURE 7-4: AGE-SPECIFIC KIDNEY CANCER INCIDENCE RATES BY SEX;  
DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. 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 small numbers, incidence rates could not be calculated for some groups.

**TABLE 7-3: AGE-SPECIFIC KIDNEY CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY;  
DELAWARE, 2013-2017**

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	38.2	40.2	---	18.4	17.6	---
65-74	95.7	133.8	---	40.1	74.1	---
75-84	110.0	---	---	47.5	---	---
85+	---	---	---	52.2	---	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. 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 highest age-specific kidney cancer incidence rates were among non-Hispanic Caucasian males 75-84 years of age and non-Hispanic Caucasian females 85 years of age and older. Due to small numbers, incidence rates could not be calculated for some groups.



## STAGE OF DIAGNOSIS - DELAWARE

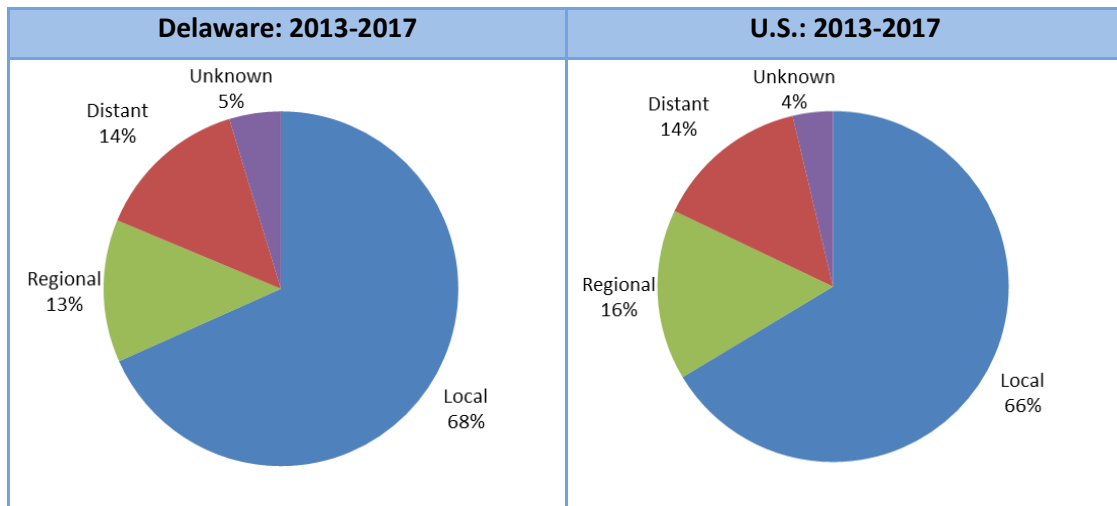
**TABLE 7-4: KIDNEY CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

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
<b>Local</b>	699 (68%)	431 (66%)	268 (72%)	514 (67%)	322 (65%)	192 (71%)	154 (75%)	93 (73%)	61 (78%)	21 (68%)	---	---
<b>Regional</b>	133 (13%)	92 (14%)	41 (11%)	97 (13%)	67 (13%)	30 (11%)	27 (13%)	---	---	---	---	---
<b>Distant</b>	143 (14%)	96 (15%)	47 (13%)	119 (15%)	84 (17%)	35 (13%)	18 (9%)	---	---	---	---	---
<b>Unknown</b>	48 (5%)	30 (5%)	18 (5%)	41 (5%)	26 (5%)	15 (6%)	---	---	---	---	---	---
<b>Total</b>	1,023	649	374	771	499	272	205	127	78	31	13	18

Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 ---Counts less than 11 are not shown to protect patient privacy.

- In 2013-2017, there were 699 (68%) kidney cancers diagnosed at the local stage; 133 (13%) at the regional stage; 143 (14%) at the distant stage; and 48 (5%) had an unknown stage.
- Non-Hispanic African Americans (75%) had a higher proportion of kidney cancers diagnosed at the local stage compared to both and non-Hispanic Caucasians (67%) and Hispanics (68%).
- Females (72%) had a higher proportion of kidney cancers diagnosed at the local stage compared to males (66%).

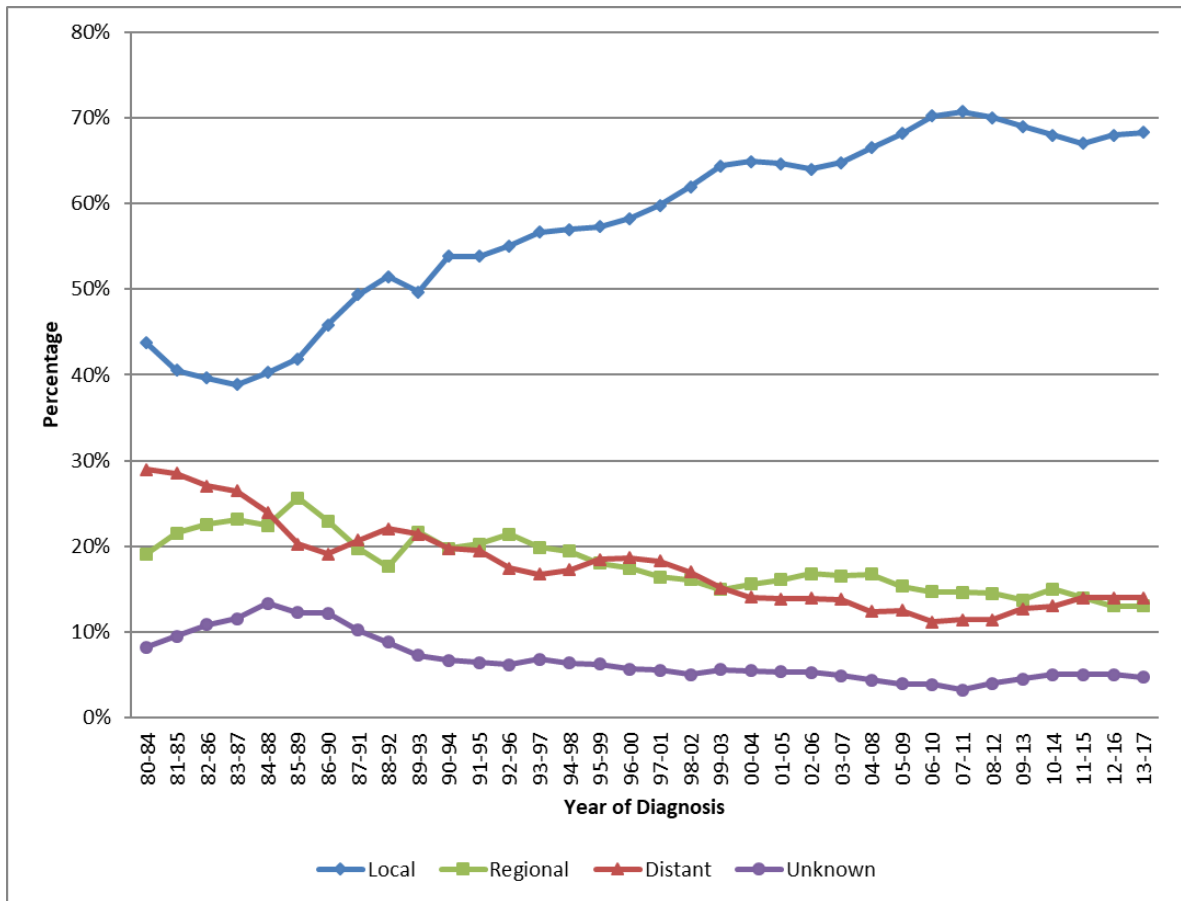
**FIGURE 7-5: DISTRIBUTION OF KIDNEY CANCER CASES BY STAGE AT DIAGNOSIS; U.S. AND DELAWARE, 2013-2017**



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 7-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR KIDNEY CANCER CASES; DELAWARE, 1980-1984 TO 2013-2017**



Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

- From 1980-1984 to 2013-2017 in Delaware
  - The percent of kidney cancer cases diagnosed at the local stage decreased from 44% to 68%.
  - Kidney cancer cases diagnosed at the regional stage decreased from 19% to 13%.
  - Kidney cancer cases diagnosed at the distant stage decreased from 29% to 14%.

## MORTALITY

For 2013-2017, Delaware ranked 21<sup>st</sup> in the U.S. for kidney cancer mortality (23<sup>rd</sup> in 2012-2016); males ranked 27<sup>th</sup> (26<sup>th</sup> in 2012-2016) and females ranked 18<sup>th</sup> (17<sup>th</sup> in 2012-2016)<sup>23</sup>.

### 2013-2017 DATA

**TABLE 7-5: NUMBER OF KIDNEY CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	240	148	92	204	129	75	29	15	14	---	---	---
<b>Kent</b>	53	29	24	46	26	20	---	---	---	---	---	---
<b>New Castle</b>	108	66	42	87	55	32	17	---	---	---	---	---
<b>Sussex</b>	79	53	26	71	48	23	---	---	---	---	---	---

*Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*  
 ---Counts less than 11 are not shown to protect patient privacy

- In 2013-2017, there were 240 deaths (2% of all cancer deaths) from kidney cancer in Delaware.
- Males accounted for 62% of kidney cancer deaths.
- Non-Hispanic Caucasians accounted for 85% of kidney cancer deaths.

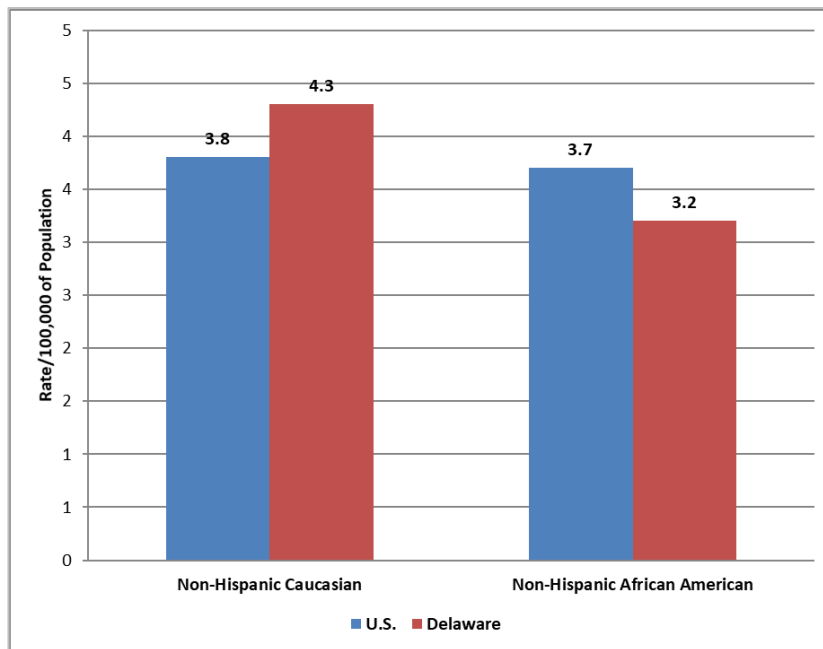
**TABLE 7-6: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	Overall	Male	Female
<b>U.S.</b>	3.7	5.4	2.3
<b>Delaware</b>	4.0	5.7	2.7
<b>Kent</b>	5.1	6.4	---
<b>New Castle</b>	3.5	5.0	2.4
<b>Sussex</b>	4.3	6.3	2.5

*Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*  
*Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.*  
 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.

<sup>23</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017); U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 7-7: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

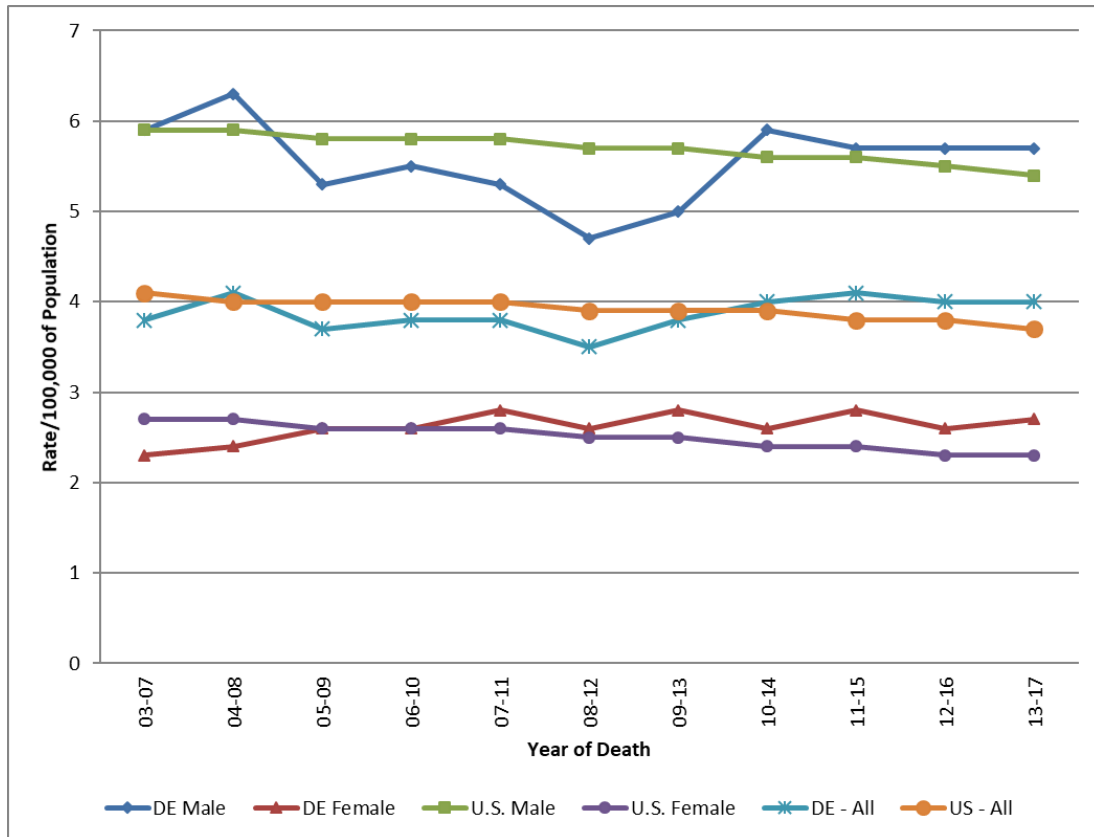


Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - Males (5.7 per 100,000) had a statistically significantly higher kidney cancer mortality rates compared to females (2.7 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 small number of deaths.
- Comparing Delaware and the U.S. from 2013-2017
  - The difference in kidney cancer mortality rates between Delaware (4.0 per 100,000) and the U.S. (3.7 per 100,000) was not statistically significant.
  - The difference in kidney cancer mortality rates between males in Delaware (5.7 per 100,000) and the U.S. (5.4 per 100,000) was not statistically significant.
  - The difference in kidney cancer mortality 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 kidney cancer mortality rates between non-Hispanic Caucasians in Delaware (4.3 per 100,000) and the U.S. (3.8 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. (3.7 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 7-8: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017

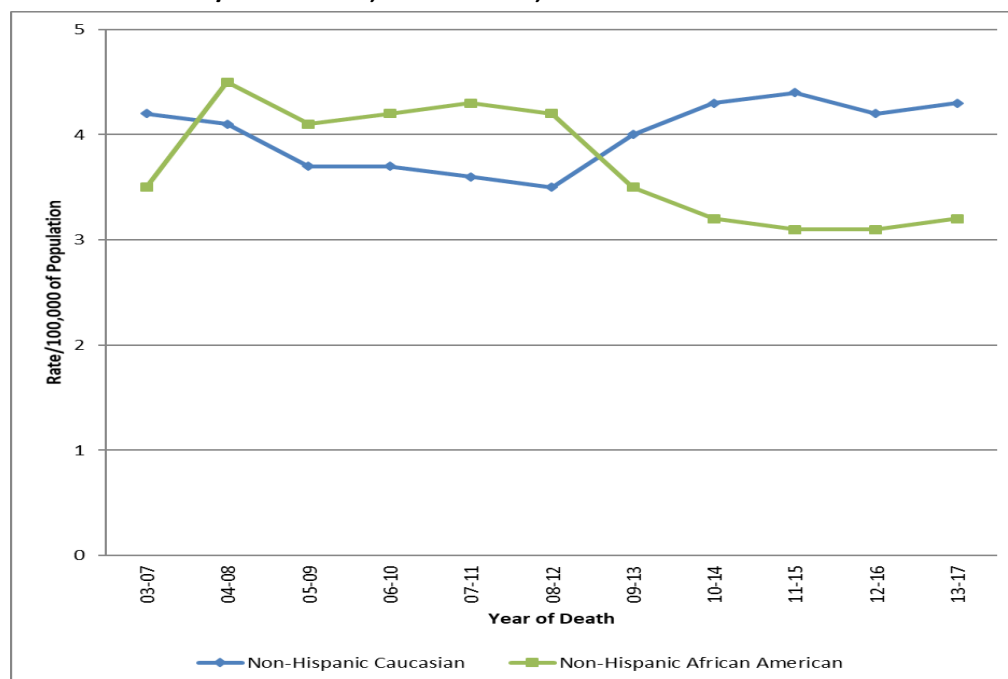


Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Mortality rates for kidney cancer increased 5% in Delaware (2003-2007 rate: 3.8 per 100,000; 2013-2017 rate: 4.0 per 100,000) and decreased 10% in the U.S. (2003-2007 rate: 4.1 per 100,000; 2013-2017 rate: 3.7 per 100,000).
  - Mortality rates for kidney cancer decreased 3% in Delaware males (2003-2007 rate: 5.9 per 100,000; 2013-2017 rate: 5.7 per 100,000) and decreased 8% in U.S. males (2003-2007 rate: 5.9 per 100,000; 2013-2017 rate: 5.4 per 100,000).
  - Mortality rates for kidney cancer increased 17% in Delaware females (2003-2007 rate: 2.3 per 100,000; 2013-2017 rate: 2.7 per 100,000) and decreased 15% in U.S. females (2003-2007 rate: 2.7 per 100,000; 2013-2017 rate: 2.3 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 7-9: FIVE-YEAR AVERAGE AGE-ADJUSTED KIDNEY CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**



*Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020*  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Mortality rates for kidney cancer increased 2% in non-Hispanic Caucasians (2003-2007 rate: 4.2 per 100,000; 2013-2017 rate: 4.3 per 100,000).
  - Mortality rates for kidney cancer decreased 9% in non-Hispanic African Americans (2003-2007 rate: 3.5 per 100,000; 2013-2017 rate: 3.2 per 100,000).

## AGE-SPECIFIC MORTALITY RATES - DELAWARE

**TABLE 7-7: AGE-SPECIFIC KIDNEY CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

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	7.2	---	---	---	---	---
65-74	22.4	---	---	---	---	---
75-84	37.4	---	---	---	---	---
85+	---	---	---	---	---	---

*Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*  
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 in non-Hispanic Caucasian males is 75-84 years of age and older. Due to small numbers, age-specific mortality rates could not be calculated for some groups.

## CHAPTER 8: LEUKEMIA

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### RISK FACTORS

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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.

#### **Lifestyle risk factors for getting leukemia:**

- Cigarette smoking (AML)

#### **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)

#### **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

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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 2013-2017, Delaware ranked 38<sup>th</sup> in the U.S. for leukemia incidence (25<sup>th</sup> in 2012-2016); males ranked 32<sup>nd</sup> (13<sup>th</sup> in 2012-2016) and females ranked 48<sup>th</sup> (40<sup>th</sup> in 2012-2016)<sup>24</sup>.

### 2013-2017 DATA

**TABLE 8-1: NUMBER OF LEUKEMIA CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	744	452	292	581	363	218	101	52	49	44	26	18
<b>Kent</b>	146	85	61	100	61	39	30	---	---	13	---	---
<b>New Castle</b>	359	217	142	267	167	100	56	29	27	27	15	12
<b>Sussex</b>	239	150	89	214	135	79	15	---	---	---	---	---

*Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*

- In 2013-2017, there were 744 leukemia cases (3% of all cancer cases) diagnosed in Delaware.
- Males accounted for 61% of leukemia cases.
- Non-Hispanic Caucasians accounted for 78% of leukemia cases.

**TABLE 8-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	Overall	Male	Female
<b>U.S.</b>	13.8	17.6	10.7
<b>Delaware</b>	13.0	17.3	9.5
<b>Kent</b>	14.7	19.1	11.3
<b>New Castle</b>	11.7	15.9	8.3
<b>Sussex</b>	14.0	18.2	10.5

*Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*

*Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.*

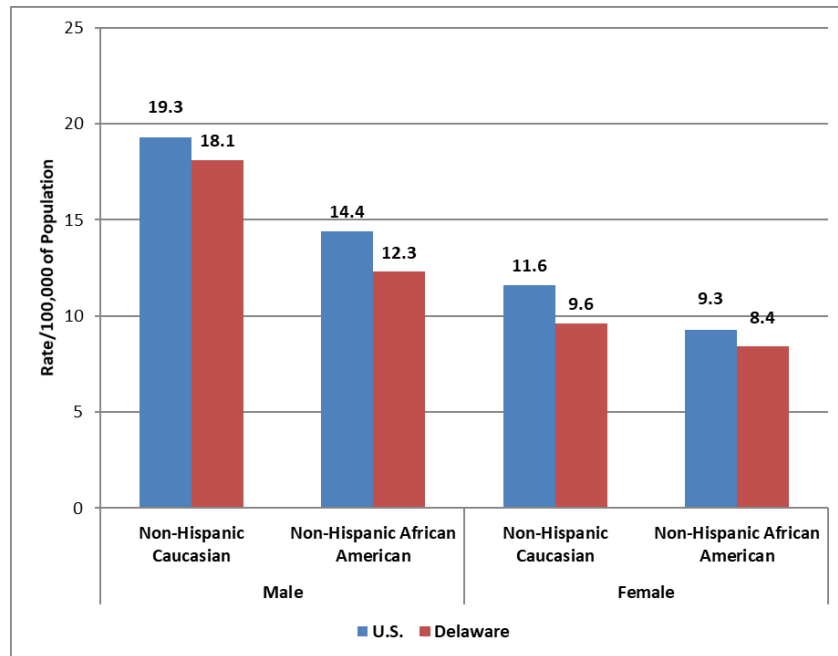
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

---Rates based on less than 25 cases are not shown.

<sup>24</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.



**FIGURE 8-1: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

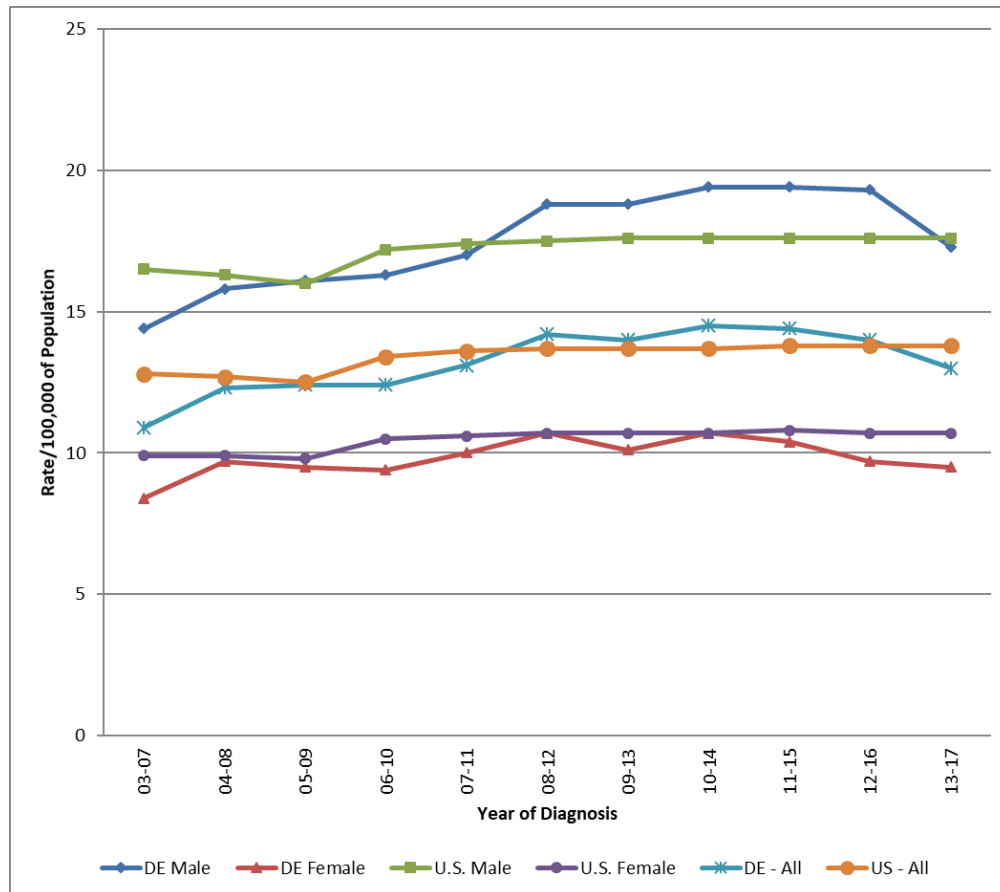


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware from 2013-2017
  - Males (17.3 per 100,000) had a statistically significantly higher leukemia incidence rate compared to females (9.5 per 100,000).
  - The difference in leukemia incidence rates between non-Hispanic Caucasians (13.4 per 100,000), non-Hispanic African Americans (10.0 per 100,000), and Hispanics (15.2 per 100,000) were not statistically significant.
- Comparing Delaware and the U.S. from 2013-2017
  - The difference in leukemia incidence rates between Delaware (13.0 per 100,000) and the U.S. (13.8 per 100,000) was not statistically significant.
  - The difference in leukemia incidence rates between males in Delaware (17.3 per 100,000) and the U.S. (17.6 per 100,000) was not statistically significant.
  - The difference in leukemia incidence rates between females in Delaware (9.5 per 100,000) and females in the U.S. (10.7 per 100,000) was not statistically significant.
  - Non-Hispanic Caucasians in Delaware (13.4 per 100,000) had a statistically significantly lower leukemia incidence rate compared to non-Hispanic Caucasians in the U.S. (15.1 per 100,000).
  - The difference in leukemia incidence rates between non-Hispanic African Americans in Delaware (10.0 per 100,000) and the U.S. (11.4 per 100,000) was not statistically significant.
  - The difference in leukemia incidence rates between Hispanics in Delaware (15.2 per 100,000) and the U.S. (10.7 per 100,000) was not statistically significant.

## TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 8-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017**

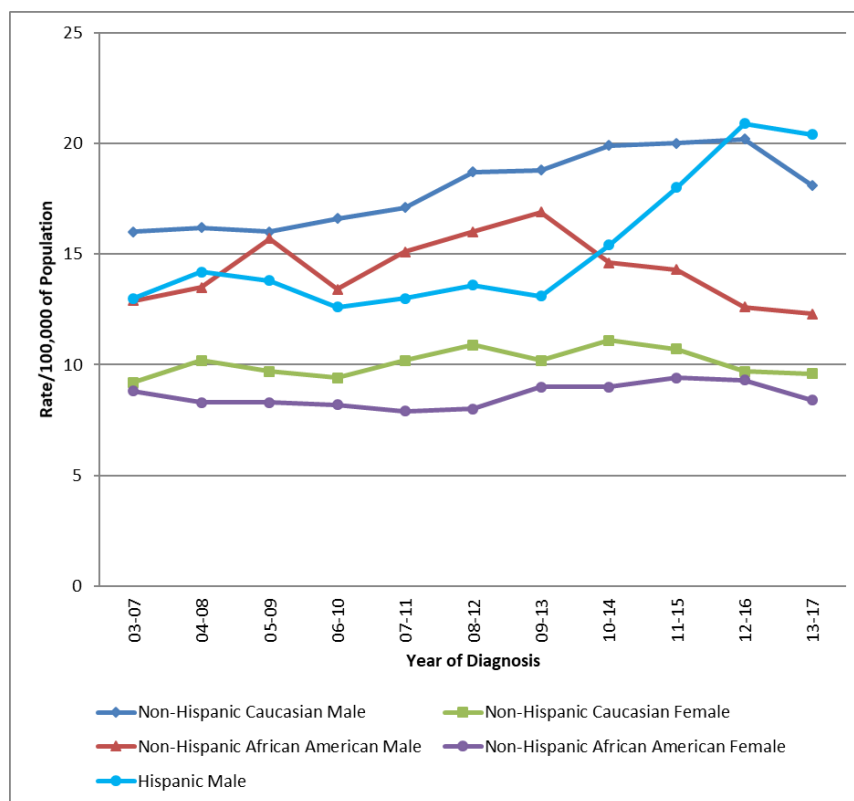


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2003-2007 to 2013-2017
  - Incidence rates for leukemia increased 19% in Delaware (2003-2007 rate: 10.9 per 100,000; 2013-2017 rate: 13.0 per 100,000) and increased 8% in the U.S. (2003-2007 rate: 12.8 per 100,000; 2013-2017 rate: 13.8 per 100,000).
  - Incidence rates for leukemia increased 20% in Delaware males (2003-2007 rate: 14.4 per 100,000; 2013-2017 rate: 17.3 per 100,000) and increased 7% in U.S. males (2003-2007 rate: 16.5 per 100,000; 2013-2017 rate: 17.6 per 100,000).
  - Incidence rates for leukemia increased 13% in Delaware females (2003-2007 rate: 8.4 per 100,000; 2013-2017 rate: 9.5 per 100,000) and increased 8% in U.S. females (2003-2007 rate: 9.9 per 100,000; 2013-2017 rate: 10.7 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 8-3: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

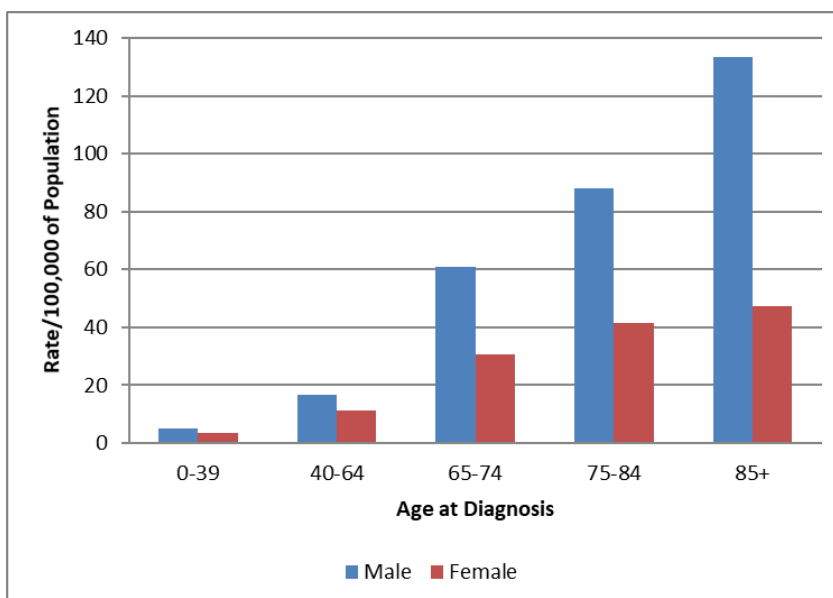


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Incidence rates for leukemia increased 13% in non-Hispanic Caucasian males (2003-2007 rate: 16.0 per 100,000; 2013-2017 rate: 18.1 per 100,000) and increased 4% in non-Hispanic Caucasian females (2003-2007 rate: 9.2 per 100,000; 2013-2017 rate: 9.6 per 100,000).
  - Incidence rates for leukemia decreased 5% in both non-Hispanic African Americans males (2003-2007 rate: 12.9 per 100,000; 2013-2017 rate: 12.3 per 100,000) and non-Hispanic African American females (2003-2007 rate: 8.8 per 100,000; 2013-2017 rate: 8.4 per 100,000).
  - Incidence rates for leukemia increased 57% in Hispanic males (2003-2007 rate: 13.0 per 100,000; 2013-2017 rate: 20.4 per 100,000). Due to small numbers, incidence rates could not be calculated for non-Hispanic females.

## AGE-SPECIFIC INCIDENCE RATES - DELAWARE

**FIGURE 8-4: AGE-SPECIFIC LEUKEMIA INCIDENCE RATES BY SEX; DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. 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.

**TABLE 8-3: AGE-SPECIFIC LEUKEMIA INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

Age at Diagnosis	Males			Females		
	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	4.5	---	---	---	---	---
40-64	19.2	---	---	11.6	---	---
65-74	64.9	---	---	32.2	---	---
75-84	94.8	---	---	43.7	---	---
85+	135.2	---	---	---	---	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

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 incidence rate for leukemia was highest for non-Hispanic Caucasian males 85 years of age and older and for non-Hispanic Caucasian females 75-84 years of age. Due to small numbers, incidence rates could not be calculated for some groups.

## STAGE OF DIAGNOSIS - DELAWARE

Since the majority of leukemias are considered distant stage under SEER Summary Stage 2000 rules, stage of diagnosis information is not presented.

## MORTALITY

For 2013-2017, Delaware ranked 25<sup>th</sup> in the U.S. for leukemia mortality (24<sup>th</sup> in 2012-2016); males ranked 13<sup>th</sup> (5<sup>th</sup> in 2012-2016) and females ranked 45<sup>th</sup> (48<sup>th</sup> in 2012-2016)<sup>25</sup>.

### 2013-2017 DATA

**TABLE 8-4: NUMBER OF LEUKEMIA DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	384	237	147	315	199	116	50	26	24	11	---	---
<b>    Kent</b>	66	40	26	58	36	22	---	---	---	---	---	---
<b>    New Castle</b>	190	115	75	146	91	55	33	18	15	---	---	---
<b>    Sussex</b>	128	82	46	111	72	39	---	---	---	---	---	---

*Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
---Counts less than 11 are not shown to protect patient privacy*

- In 2013-2017, there were 384 deaths (4% of all cancer deaths) from leukemia in Delaware.
- Males accounted for 62% of leukemia deaths.
- Non-Hispanic Caucasians accounted for 82% of leukemia deaths.

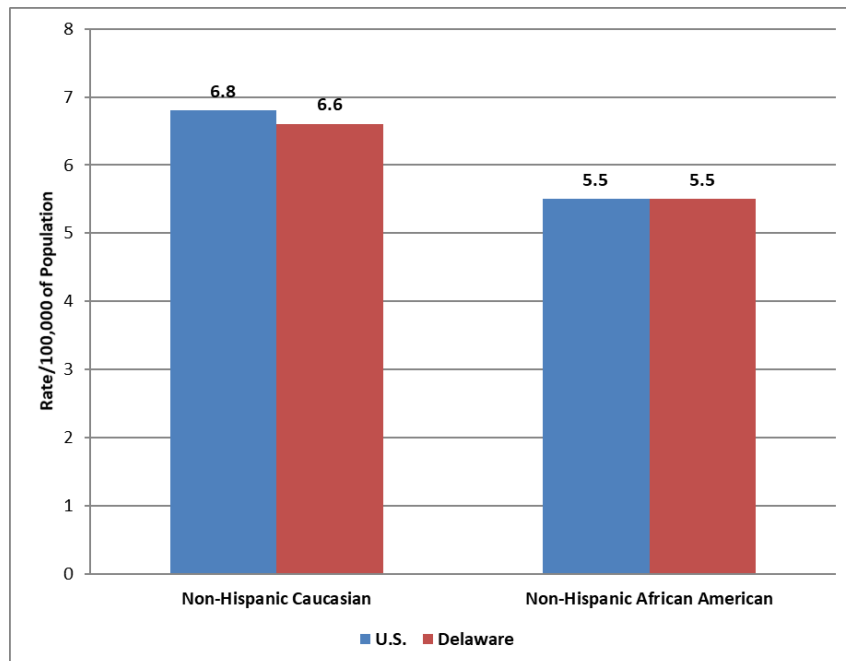
**TABLE 8-5: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	Overall	Male	Female
<b>U.S.</b>	6.4	8.6	4.8
<b>Delaware</b>	6.7	9.5	4.6
<b>    Kent</b>	6.7	9.1	4.8
<b>    New Castle</b>	6.4	9.3	4.4
<b>    Sussex</b>	7.1	10.1	4.5

*Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
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.*

<sup>25</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 8-5: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

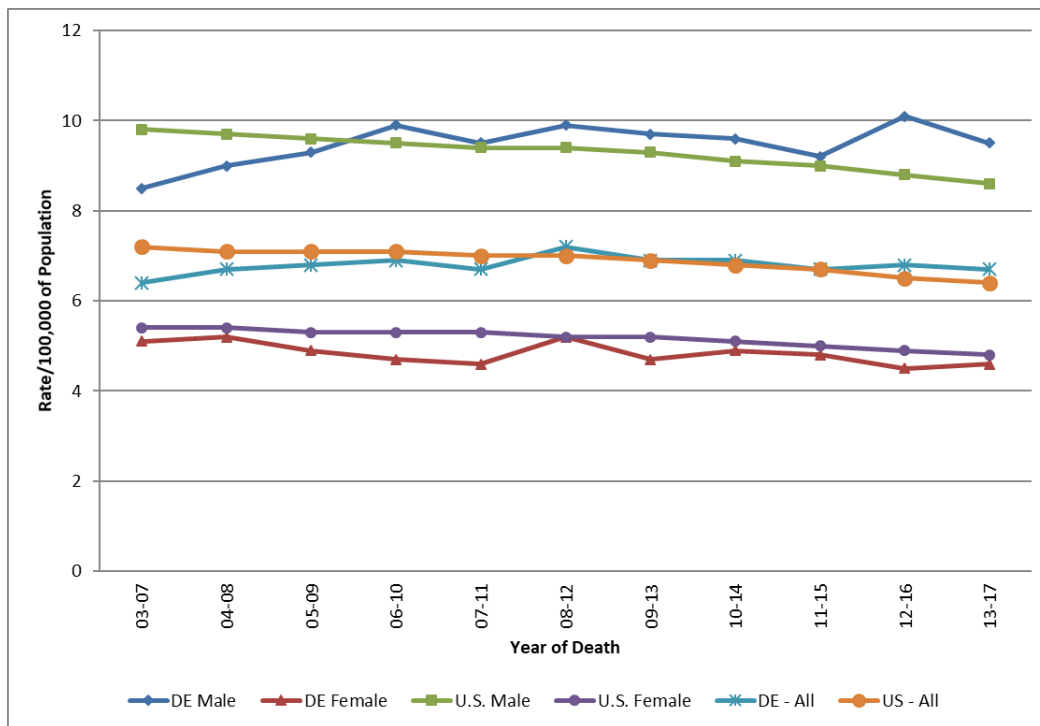


Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware from 2013-2017
  - Males (9.5 per 100,000) had a statistically significantly higher leukemia mortality rate compared to females (4.6 per 100,000).
  - The difference in leukemia mortality rates between non-Hispanic Caucasians (6.6 per 100,000) and non-Hispanic African Americans (5.5 per 100,000) was not statistically significant.
  - Leukemia mortality rates for Hispanics could not be calculated due the small number of deaths.
- Comparing Delaware and the U.S. from 2013-2017
  - The difference in leukemia mortality rates between Delaware (6.7 per 100,000) and the U.S. (6.4 per 100,000) was not statistically significant.
  - The difference in leukemia mortality rates between males in Delaware (9.5 per 100,000) and the U.S. (8.6 per 100,000) was not statistically significant.
  - The difference in leukemia mortality rates between females in Delaware (4.6 per 100,000) and the U.S. (4.8 per 100,000) was not statistically significant.
  - The difference in leukemia mortality rates between non-Hispanic Caucasians in Delaware (6.6 per 100,000) and the U.S. (6.8 per 100,000) was not statistically significant.
  - The difference in leukemia mortality rates between non-Hispanic African Americans in Delaware (5.5 per 100,000) and the U.S. (5.5 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 8-6: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA MORTALITY RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017

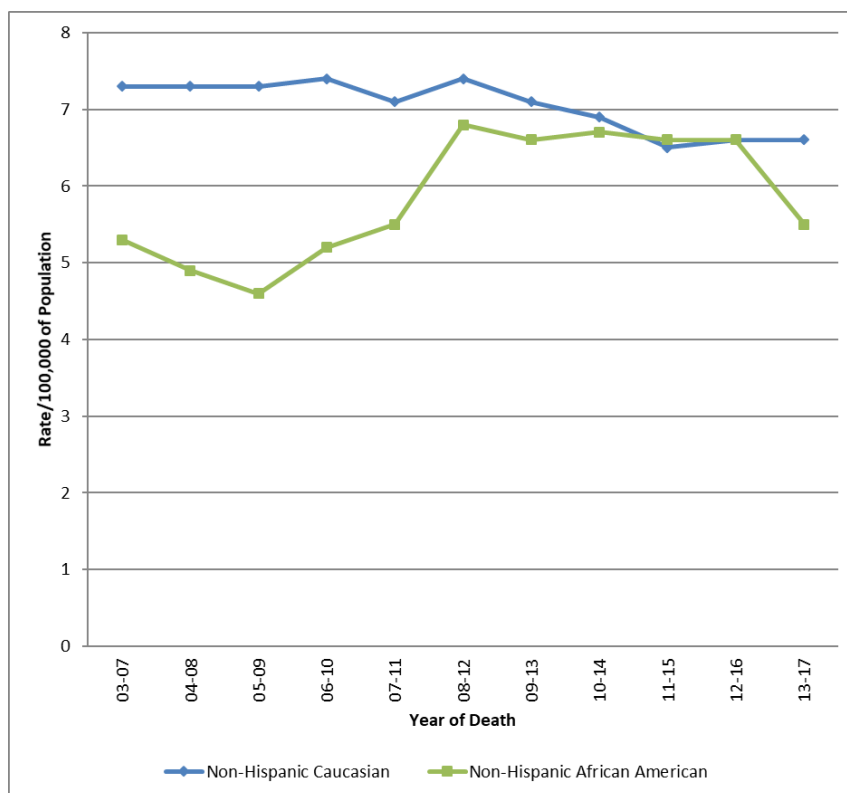


Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2003-2007 to 2013-2017
  - Mortality rates for leukemia increased 5% in Delaware (2003-2007 rate: 6.4 per 100,000; 2013-2017 rate: 6.7 per 100,000) and decreased 11% in the U.S. (2003-2007 rate: 7.2 per 100,000; 2013-2017 rate: 6.4 per 100,000).
  - Mortality rates for leukemia increased 12% in Delaware males (2003-2007 rate: 8.5 per 100,000; 2013-2017 rate: 9.5 per 100,000) and decreased 12% in U.S. males (2003-2007 rate: 9.8 per 100,000; 2013-2017 rate: 8.6 per 100,000).
  - Mortality rates for leukemia decreased 10% in Delaware females (2003-2007 rate: 5.1 per 100,000; 2013-2017 rate: 4.6 per 100,000) and decreased 11% in U.S. females (2003-2007 rate: 5.4 per 100,000; 2013-2017 rate: 4.8 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 8-7: FIVE-YEAR AVERAGE AGE-ADJUSTED LEUKEMIA MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**



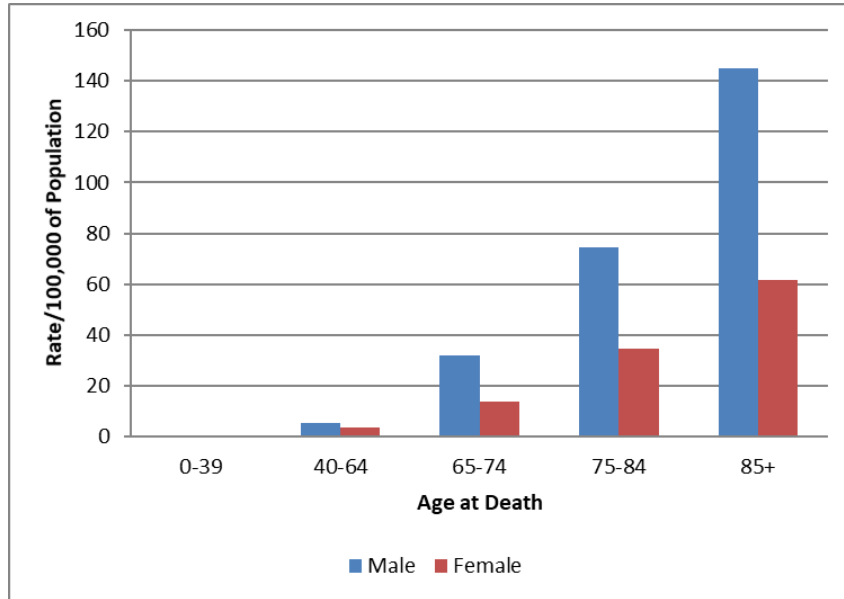
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Mortality rates for leukemia decreased 10% in non-Hispanic Caucasians (2003-2007 rate: 7.3 per 100,000; 2013-2017 rate: 6.6 per 100,000).
  - Mortality rates for leukemia increased 4% in non-Hispanic African Americans (2003-2007 rate: 5.3 per 100,000; 2013-2017 rate: 5.5 per 100,000).

## AGE-SPECIFIC MORTALITY RATES - DELAWARE



**FIGURE 8-8: AGE-SPECIFIC LEUKEMIA MORTALITY RATES BY SEX; DELAWARE, 2013-2017**



Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020. 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 8-6: AGE-SPECIFIC LEUKEMIA MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

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	5.9	---	---	---	---	---
65-74	32.4	---	---	14.8	---	---
75-84	74.9	---	---	33.2	---	---
85+	156.6	---	---	66.3	---	---

Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020. 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 mortality rate for leukemia was highest for non-Hispanic Caucasian males and non-Hispanic Caucasian females 85 years of age and older. Due to small numbers, mortality rates could not be calculated for some groups.

## CHAPTER 9: LUNG AND BRONCHUS CANCER<sup>26</sup>

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### RISK FACTORS

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#### Lifestyle risk factors for lung cancer:

- The use of tobacco products. An estimated 85 to 90% 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.

#### 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)

#### Non-modifiable risk factors (these cannot be changed) for 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

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In January 2013, the American Cancer Society (ACS) published new lung cancer screening guidelines<sup>27</sup> 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 55-74 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 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

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The BRFSS 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 BRFSS 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%.

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<sup>26</sup> "Lung cancer" is used instead of "lung and bronchus cancer" throughout this section.

<sup>27</sup> Wender, R., Fontham, E. T., Barrera, E., Jr, Colditz, G. A., Church, T. R., Ettinger, D. S., ... Smith, R. A. (2013). American Cancer Society lung cancer screening guidelines. *CA: a cancer journal for clinicians*, 63(2), 107–117. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3632634/>

In recent years, tobacco use prevalence has leveled off among adult Delawareans, while continuing to decline among high school students. In 2019, 16% of adult Delawareans smoked cigarettes regularly. The following are some highlights of smoking trends in Delaware in 2019:

- The prevalence rate for current smokers in Delaware (16%) is almost the same as the 2019 U.S. median prevalence of 16%.
- There is no statistically significant difference in current smoking prevalence between males and females.
- There were no differences in current smoking prevalence between non-Hispanic Caucasians and non-Hispanic African Americans.
- When smoking prevalence rates were stratified by age group, Delawareans 25-34 reported the highest prevalence of current smoking (22%). This prevalence was statistically significantly higher compared to that for Delawareans 65 years of age and older.
- Current smoking prevalence changed with education level. In Delaware, 25% 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, 24% had a high school diploma or equivalent, 15% had some post-high school education, and 6% had completed college.
- Current smoking prevalence also decreased with higher income levels. In Delaware, 31% of those earning less than \$15,000 were current smokers. The lowest smoking prevalence was among those who earned \$50,000 or more per year (11%).

## INCIDENCE

**For 2013-2017, Delaware ranked 13<sup>th</sup> in the U.S. for lung cancer incidence (10<sup>th</sup> in 2012-2016); males ranked 17<sup>th</sup> (16<sup>th</sup> in 2012-2016) and females ranked 10<sup>h</sup> (6<sup>th</sup> in 2012-2016).<sup>28</sup>**

### 2013-2017 DATA

**TABLE 9-1: NUMBER OF LUNG CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	4,185	2,092	2,093	3,448	1,734	1,714	629	300	329	54	27	27
<b>Kent</b>	804	404	400	654	325	329	125	66	59	14	---	---
<b>New Castle</b>	2,060	996	1,064	1,592	782	810	412	184	228	28	12	16
<b>Sussex</b>	1,321	692	629	1,202	627	575	92	50	42	12	---	---

Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
---Counts less than 11 are not shown to protect patient privacy.

- Lung cancer is the most frequently diagnosed cancer in the U.S. and Delaware of cancers that affect both men and women.
- In 2013-2017, 4,185 lung cancer cases (14% of all cancer cases) were diagnosed in Delaware.
- Males and females each accounted for 50% of lung cancer cases.
- Non-Hispanic Caucasians accounted for 82% of lung cancer cases.

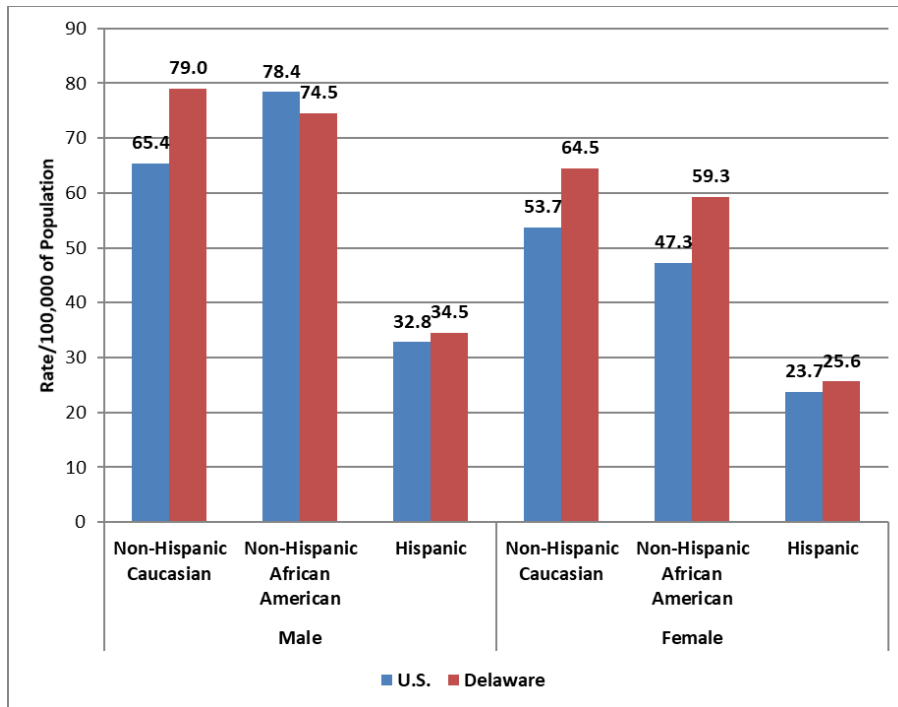
<sup>28</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**TABLE 9-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE AND COUNTIES, 2013-2017**

	Overall	Male	Female
<b>U.S.</b>	52.6	60.6	46.6
<b>Delaware</b>	67.4	75.7	61.3
<b>Kent</b>	74.9	85.6	67.2
<b>New Castle</b>	64.6	71.5	59.9
<b>Sussex</b>	68.6	78.2	60.6

Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

**FIGURE 9-1: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**



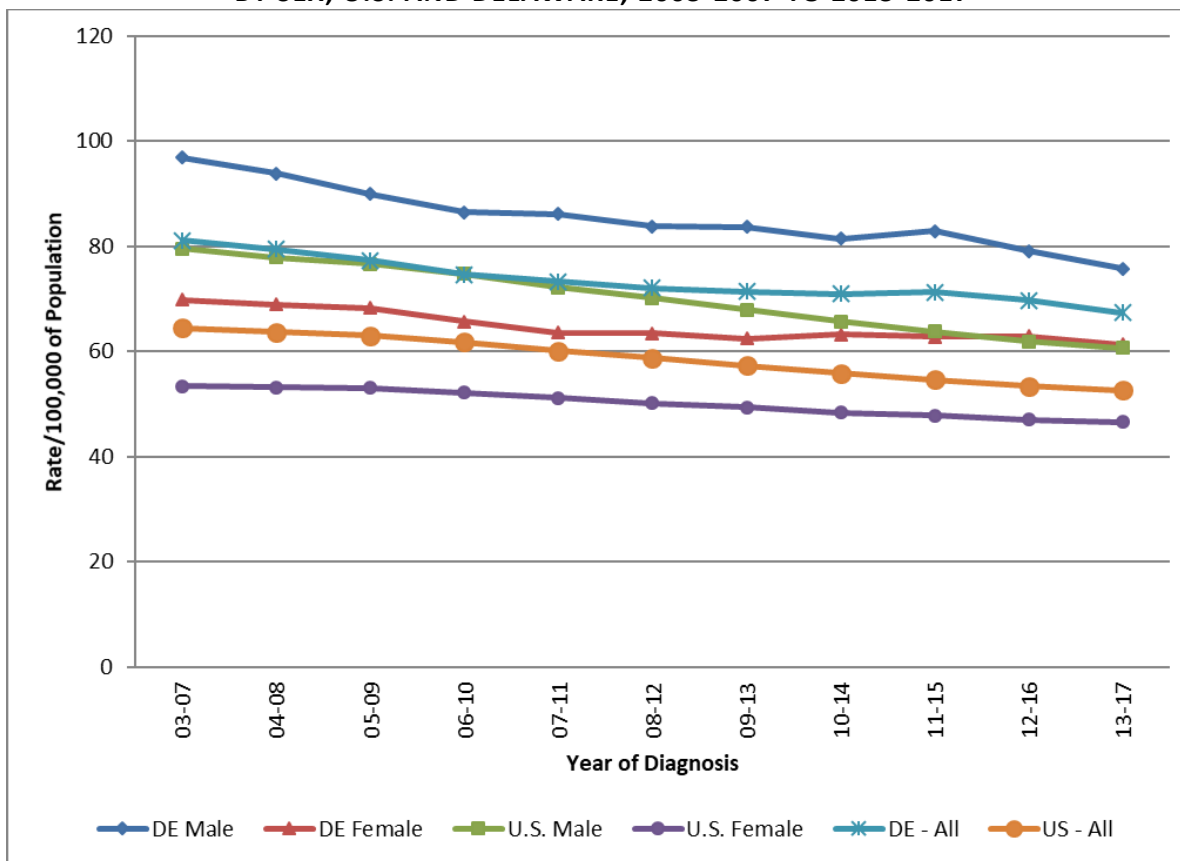
Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - Males (75.7 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to females (61.3 per 100,000).
  - Hispanics (29.1 per 100,000) had a statistically significantly lower lung cancer incidence rate compared to both non-Hispanic Caucasians (70.7 per 100,000) and non-Hispanic African Americans (65.5 per 100,000).
  - The difference in lung cancer incidence rates between non-Hispanic Caucasians (70.7 per 100,000) and non-Hispanic African Americans (65.5 per 100,000) was not statistically significant.
- Comparing Delaware and the U.S. from 2013-2017
  - Delaware (67.4 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to the U.S. (52.6 per 100,000).

- Delaware males (75.7 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to U.S. males (60.6 per 100,000).
- Delaware females (61.3 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to U.S. females (46.6 per 100,000).
- Non-Hispanic Caucasians in Delaware (70.7 per 100,000) had a statistically significantly higher lung cancer incidence rate compared to non-Hispanic Caucasians in the U.S. (58.7 per 100,000).
- The difference in lung cancer incidence rates between non-Hispanic African Americans in Delaware (65.5 per 100,000) and non-Hispanic African Americans in the U.S. (60.0 per 100,000) was not statistically significant.
- The difference in lung cancer incidence rates between Hispanics in Delaware (29.1 per 100,000) and the U.S. (27.4 per 100,000) was not statistically significant.

### TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 9-2: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017**



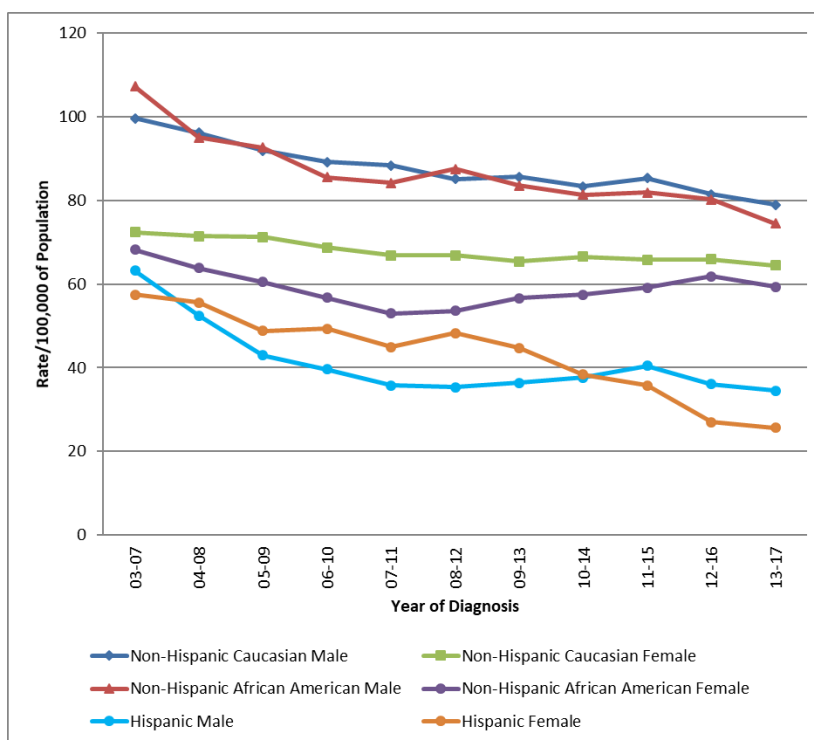
Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Incidence rates for lung cancer decreased 17% in Delaware (2003-2007 rate: 81.1 per 100,000; 2013-2017 rate: 67.4 per 100,000) and decreased 18% in the U.S. (2003-2007 rate: 64.4 per 100,000; 2013-2017 rate: 52.6 per 100,000).

- Incidence rates for lung cancer decreased 22% in Delaware males (2003-2007 rate: 96.9 per 100,000; 2013-2017 rate: 75.7 per 100,000) and decreased 24% in U.S. males (2003-2007 rate: 79.5 per 100,000; 2013-2017 rate: 60.6 per 100,000).
- Incidence rates for lung cancer decreased 12% in Delaware females (2003-2007 rate: 69.8 per 100,000; 2013-2017 rate: 61.3 per 100,000) and decreased 13% in U.S. females (2003-2007 rate: 53.4 per 100,000; 2013-2017 rate: 46.6 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 9-3: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

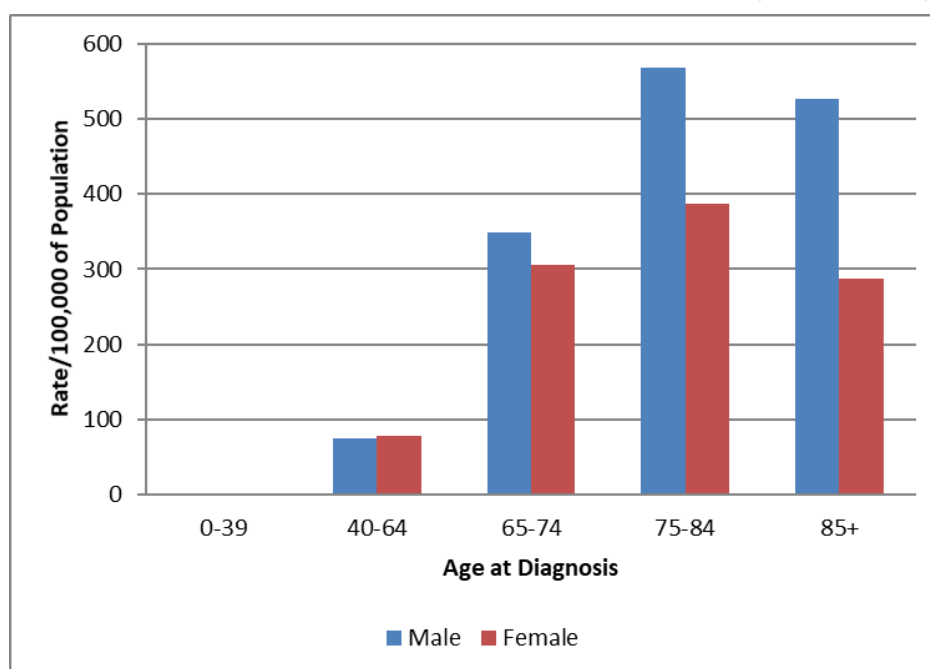


Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Incidence rates for lung cancer decreased 21% in non-Hispanic Caucasian males (2003-2007 rate: 99.6 per 100,000; 2013-2017 rate: 79.0 per 100,000) and decreased 11% in non-Hispanic Caucasian females (2003-2007 rate: 72.4 per 100,000; 2013-2017 rate: 64.5 per 100,000).
  - Incidence rates for lung cancer decreased 31% in non-Hispanic African American males (2003-2007 rate: 107.3 per 100,000; 2013-2017 rate: 74.5 per 100,000) and decreased 13% in non-Hispanic African American females (2003-2007 rate: 68.2 per 100,000; 2013-2017 rate: 59.3 per 100,000).
  - Incidence rates for lung cancer decreased 45% in Hispanic males (2003-2007 rate: 63.2 per 100,000; 2013-2017 rate: 34.5 per 100,000) and decreased 55% in Hispanic females (2003-2007 rate: 57.5 per 100,000; 2013-2017 rate: 25.6 per 100,000).

## AGE-SPECIFIC INCIDENCE RATES - DELAWARE

**FIGURE 9-4: AGE-SPECIFIC LUNG CANCER INCIDENCE RATES BY SEX; DELAWARE, 2013-2017**



Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- The incidence rate for lung cancer was highest for both males and females 75-84 years of age. Due to small numbers, incidence rates could not be calculated by sex for the 0-39 age group.

**TABLE 9-3: AGE-SPECIFIC LUNG CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

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	86.9	62.9	---	87.8	68.1	---
65-74	352.4	388.3	---	331.6	246.9	---
75-84	592.0	550.8	---	398.8	404.6	---
85+	530.3	---	---	277.1	372.8	---

Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
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 incidence rate for lung cancer was highest for both non-Hispanic Caucasian and non-Hispanic African American males 75-84 years of age (based on the rates that could be calculated).
- The incidence rate for lung cancer was highest for non-Hispanic Caucasian and non-Hispanic African American females 75-84 years of age (based on the rates that could be calculated).



## STAGE OF DIAGNOSIS - DELAWARE

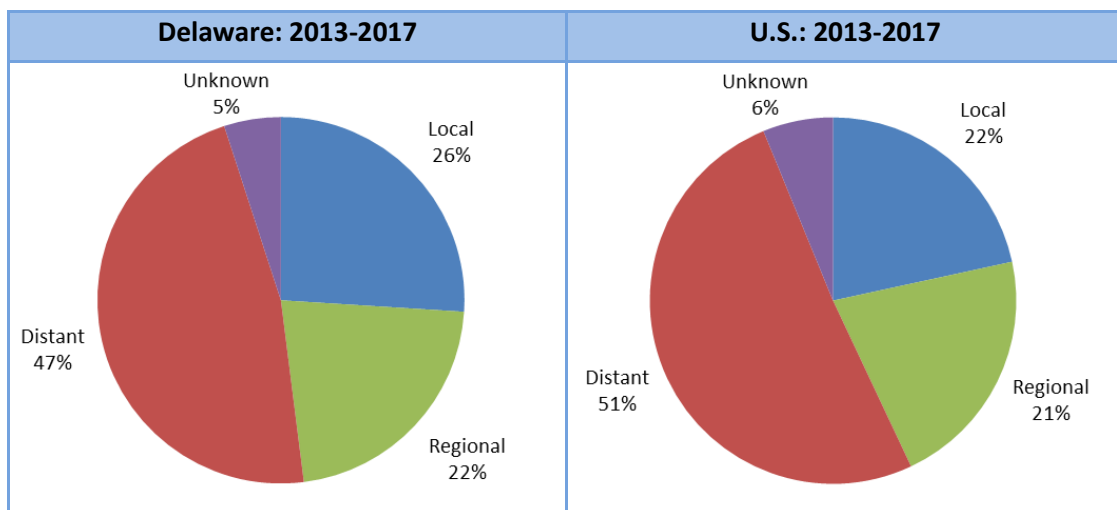
**TABLE 9-4: NUMBER AND PERCENTAGE OF LUNG CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

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
<b>Local</b>	1,078 (26%)	493 (24%)	585 (28%)	891 (26%)	405 (23%)	486 (28%)	154 (25%)	67 (22%)	87 (26%)	19 (35%)	11 (41%)	---
<b>Regional</b>	914 (22%)	470 (23%)	444 (21%)	755 (22%)	388 (22%)	367 (21%)	133 (21%)	68 (23%)	65 (20%)	---	---	---
<b>Distant</b>	1,984 (47%)	1,015 (49%)	969 (46%)	1,629 (47%)	846 (49%)	783 (46%)	315 (50%)	151 (50%)	164 (50%)	19 (35%)	---	11 (41%)
<b>Unknown</b>	209 (5%)	114 (5%)	95 (5%)	173 (5%)	95 (6%)	78 (5%)	27 (4%)	14 (5%)	13 (4%)	---	---	---
<b>Total</b>	4,185	2,092	2,093	3,448	1,734	1,714	629	300	329	54	27	27

Source: Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 ---Counts less than 11 are not shown to protect patient privacy.

- In 2013-2017, there were 1,078 (26%) lung cancers diagnosed at local stage; 914 (22%) at regional stage; 1,984 (47%) at distant stage; and 209 (5%) with an unknown stage.
- Non-Hispanic Caucasians (47%) had a slightly higher proportion of lung cancers diagnosed at distant stage compared to Hispanics (35%). However, non-Hispanic Caucasians (47%) had a slightly lower proportion of lung cancers diagnosed at distant stage compared to non-Hispanic African Americans (50%).
- Males (49%) had a slightly higher proportion of lung cancers diagnosed at distant stage compared to females (46%).

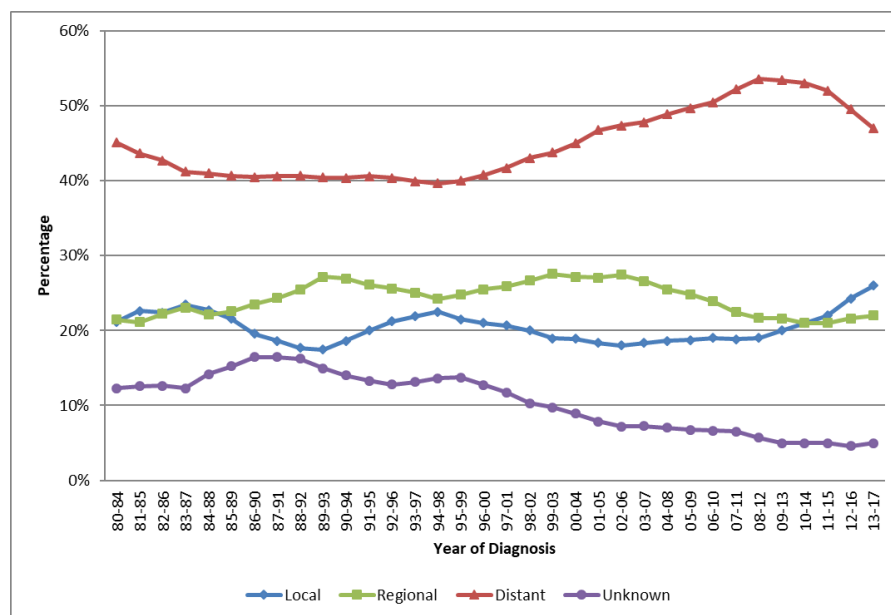
**FIGURE 9-5: PERCENTAGE OF LUNG CANCER CASES BY STAGE AT DIAGNOSIS, U.S. AND DELAWARE, 2013-2017**



Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.

- In comparing U.S. and Delaware lung cancer data, percentages of the stage at diagnosis for lung cancer are similar, with Delaware having slightly more lung cancers diagnosed at local stage.

**FIGURE 9-6: FIVE-YEAR PERCENTAGE OF LUNG CANCER CASES BY STAGE AT DIAGNOSIS, DELAWARE, 1980-1984 TO 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

- From 1980-1984 to 2013-2017 in Delaware
  - The percent of lung cancer cases diagnosed at the local stage increased from 21% to 26%.
  - Lung cancer cases diagnosed at the regional stage slightly increased from 21% to 22%.
  - Lung cancer cases diagnosed at the distant stage increased from 45% to 47%.

## MORTALITY

For 2013-2017, Delaware ranked 16<sup>th</sup> in the U.S. for lung cancer mortality (14<sup>th</sup> in 2012-2016); males ranked 16<sup>th</sup> (16<sup>th</sup> in 2012-2016) and females ranked 16<sup>th</sup> (13<sup>th</sup> in 2012-2016).<sup>29</sup>

### 2013-2017 DATA

**TABLE 9-5: NUMBER OF LUNG CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	2,768	1,496	1,272	2,288	1,250	1,038	413	208	205	36	23	13
<b>Kent</b>	514	276	238	430	233	197	68	32	36	---	---	---
<b>New Castle</b>	1,379	724	655	1,066	573	493	274	132	142	24	12	12
<b>Sussex</b>	875	496	379	792	444	348	71	44	27	---	---	---

*Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*  
 ---Counts less than 11 are not shown to protect patient privacy.

- Lung cancer is the most common cause of cancer death in the U.S. and Delaware.
- In 2013-2017, there were 2,768 deaths (27% of all cancer deaths) from lung cancer in Delaware.
- Males accounted for 54% of lung cancer deaths.
- Non-Hispanic Caucasians accounted for 83% of lung cancer deaths.

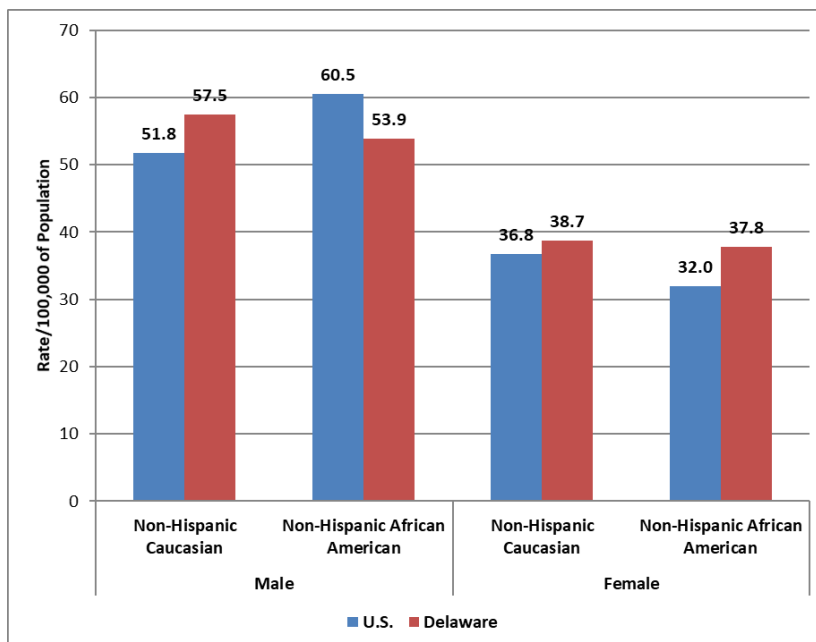
**TABLE 9-6: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	Overall	Male	Female
<b>U.S.</b>	40.2	49.3	33.2
<b>Delaware</b>	46.2	56.5	38.3
<b>Kent</b>	48.9	59.7	40.9
<b>New Castle</b>	45.3	55.4	37.9
<b>Sussex</b>	46.3	56.9	37.5

*Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*  
*Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.*  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

<sup>29</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 9-7: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

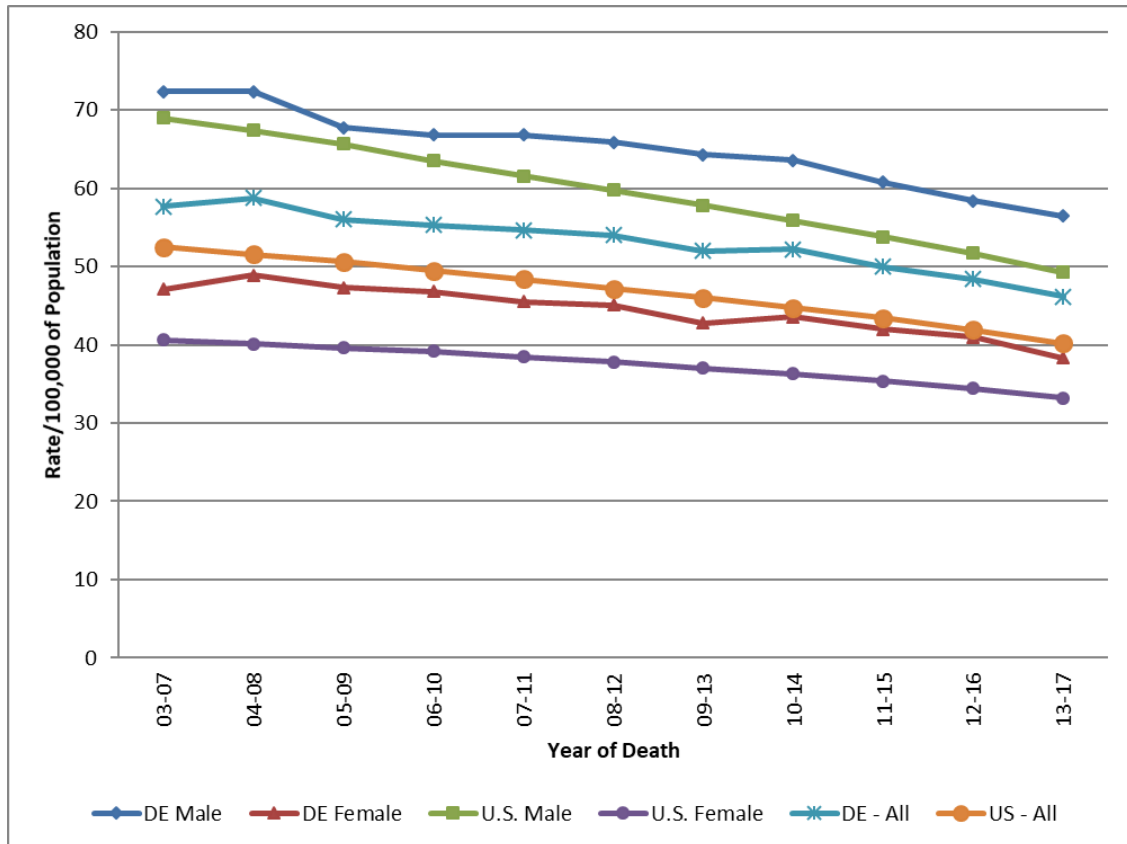


Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - Males (56.5 per 100,000) had a statistically significantly higher lung cancer mortality rate compared to females (38.3 per 100,000).
  - Hispanics (20.6 per 100,000) had a statistically significantly lower lung cancer mortality rate compared to both non-Hispanic Caucasians (47.0 per 100,000) and non-Hispanic African Americans (44.2 per 100,000).
  - The difference in lung cancer mortality rates between non-Hispanic Caucasians and non-Hispanic African Americans was not statistically significant.
- Comparing Delaware and the U.S. from 2013-2017
  - Delaware (46.2 per 100,000) had a statistically higher lung cancer mortality rate compared to the U.S. (40.2 per 100,000).
  - Delaware males (56.5 per 100,000) had a statistically higher lung cancer mortality rate compared to U.S. males (49.3 per 100,000).
  - Delaware females (38.3 per 100,000) had a statistically significantly higher lung cancer mortality rate compared to U.S. females (33.2 per 100,000).
  - Non-Hispanic Caucasians in Delaware (47.0 per 100,000) had a statistically higher lung cancer mortality rate compared to non-Hispanic Caucasians in the U.S. (43.4 per 100,000).
  - The difference in lung cancer mortality rates between non-Hispanic African Americans in Delaware (44.2 per 100,000) and the U.S. (43.5 per 100,000) was not statistically significant.
  - The difference in lung cancer mortality rates between Hispanics in Delaware (20.6 per 100,000) and the U.S. (17.6 per 100,000) was not statistically significant.

TRENDS OVER TIME - DELAWARE AND U.S.

FIGURE 6-8: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017

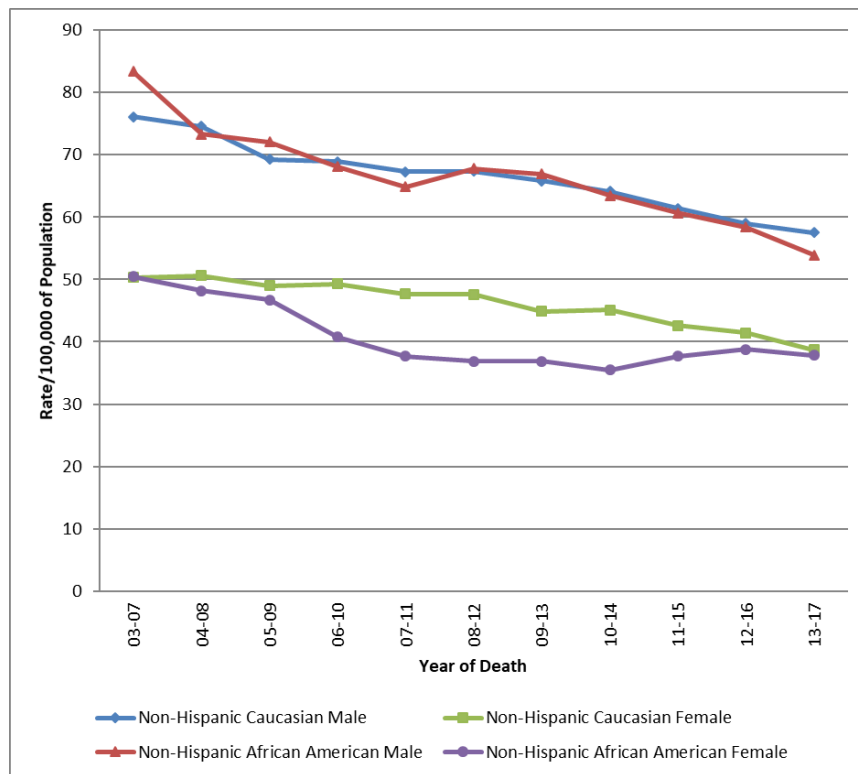


Source (Delaware): Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Mortality rates for lung cancer decreased 20% in Delaware (2003-2007 rate: 57.7 per 100,000; 2013-2017 rate: 46.2 per 100,000) and decreased 23% in the U.S. (2003-2007 rate: 52.5 per 100,000; 2013-2017 rate: 40.2 per 100,000).
  - Mortality rates for lung cancer decreased 22% in Delaware males (2003-2007 rate: 72.4 per 100,000; 2013-2017 rate: 56.5 per 100,000) and decreased 29% in U.S. males (2003-2007 rate: 69.0 per 100,000; 2013-2017 rate: 49.3 per 100,000).
  - Mortality rates for lung cancer decreased 19% in Delaware females (2003-2007 rate: 47.1 per 100,000; 2013-2017 rate: 38.3 per 100,000) and decreased 18% in U.S. females (2003-2007 rate: 40.6 per 100,000; 2013-2017 rate: 33.2 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 9-9: FIVE-YEAR AVERAGE AGE-ADJUSTED LUNG CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

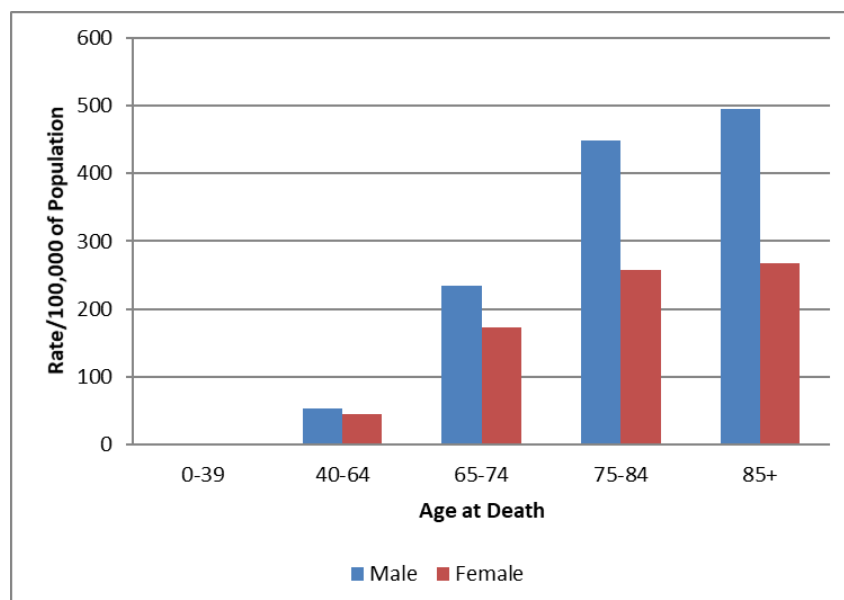


Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2019. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Mortality rates for lung cancer decreased 24% in non-Hispanic Caucasian males (2003-2007 rate: 76.1 per 100,000; 2013-2017 rate: 57.5 per 100,000) and decreased 23% in non-Hispanic Caucasian females (2003-2007 rate: 50.3 per 100,000; 2013-2017 rate: 38.7 per 100,000).
  - Mortality rates for lung cancer decreased 35% in non-Hispanic African American males (2003-2007 rate: 83.4 per 100,000; 2013-2017 rate: 53.9 per 100,000) and decreased 25% in non-Hispanic African American females (2003-2007 rate: 50.5 per 100,000; 2013-2017 rate: 37.8 per 100,000).
  - Mortality rates for lung cancer in Hispanics could not be calculated due to the small number of deaths.

## AGE-SPECIFIC MORTALITY RATES - DELAWARE

**FIGURE 9-10: AGE-SPECIFIC LUNG CANCER MORTALITY RATES BY SEX; DELAWARE, 2013-2017**



Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- The mortality rate for lung cancer was highest in males and females 85 years of age and older. Due to small numbers, mortality rates could not be calculated for the 0-39 age group.

**TABLE 9-7: AGE-SPECIFIC LUNG CANCER MORTALITY RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

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	57.8	46.2	---	49.3	39.6	---
65-74	239.4	228.4	---	181.1	135.8	---
75-84	457.5	407.1	---	256.4	291.3	---
85+	480.5	---	---	261.1	---	---

Source: Delaware Department of Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.

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 mortality rate for lung cancer was highest for non-Hispanic Caucasian males 85 years of age and older and for non-Hispanic African American males 75-84 years of age (based on the rates that could be calculated).
- The mortality rate for lung cancer was highest for non-Hispanic Caucasian females 85 years of age and older and for non-Hispanic African American females 75-84 years of age (based on rates that could be calculated).

## CHAPTER 10: ORAL CAVITY AND PHARYNX CANCER<sup>30</sup>

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### RISK FACTORS

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#### Lifestyle risk factors for oral cavity and pharynx cancer:

- Smoking cigarettes, cigars, or pipes
- Use of snuff or chewing tobacco
- Alcohol abuse – Seventy percent 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)

#### Environmental and medically-related causes of oral cavity and pharynx cancer:

- Improperly fitted dentures (suspected)

#### Non-modifiable risk factors (these cannot be changed) of getting oral cavity and pharynx 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

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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.

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<sup>30</sup> “Oral cancer” is used instead of “oral cavity and pharynx cancer” throughout this section.



## INCIDENCE

For 2013-2017, Delaware ranked 20<sup>th</sup> in the U.S. for oral cancer incidence (13<sup>th</sup> in 2012-2016); males ranked 15<sup>th</sup> (14<sup>th</sup> in 2012-2016) and females ranked 25<sup>th</sup> (13<sup>th</sup> in 2012-2016)<sup>31</sup>.

### 2013-2017 DATA

**TABLE 10-1: NUMBER OF ORAL CANCER CASES, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	761	553	208	638	466	172	77	51	26	18	---	---
<b>Kent</b>	114	81	33	101	72	29	---	---	---	---	---	---
<b>New Castle</b>	433	309	124	336	241	95	57	37	20	16	---	---
<b>Sussex</b>	214	163	51	201	153	48	11	---	---	---	---	---

*Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*  
 ---Counts less than 11 are not shown to protect patient privacy

- In 2013-2017, there were 761 oral cancer cases (3% of all cancer cases) diagnosed in Delaware.
- Males accounted for 73% of oral cancer cases.
- Non-Hispanic Caucasians accounted for 84% of oral cancer cases.

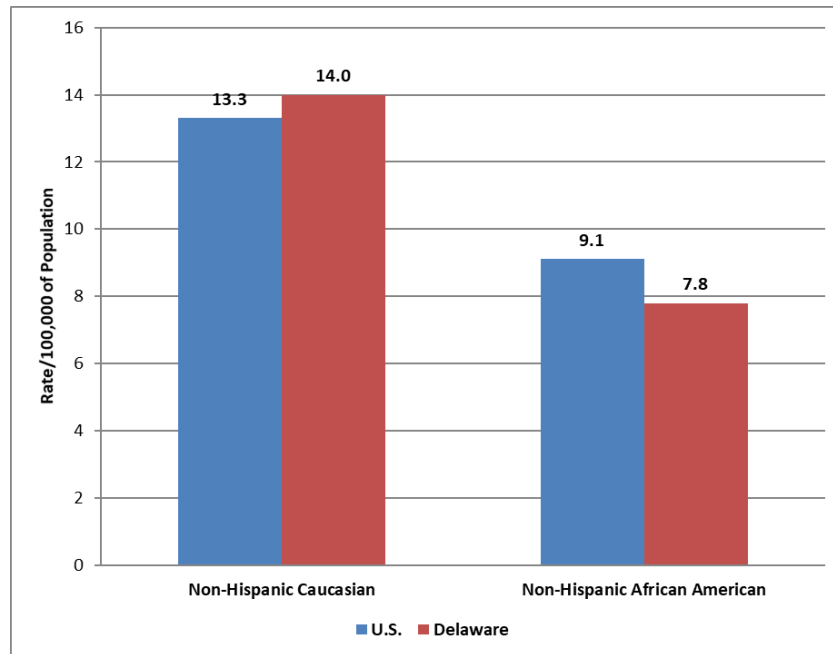
**TABLE 10-2: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER INCIDENCE RATES OVERALL AND BY SEX; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	Overall	Male	Female
<b>U.S.</b>	11.4	17.3	6.3
<b>Delaware</b>	12.7	19.7	6.7
<b>Kent</b>	11.2	16.8	6.4
<b>New Castle</b>	13.3	20.6	7.3
<b>Sussex</b>	12.3	20.3	5.2

*Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*  
*Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.*  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

<sup>31</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 10-1: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

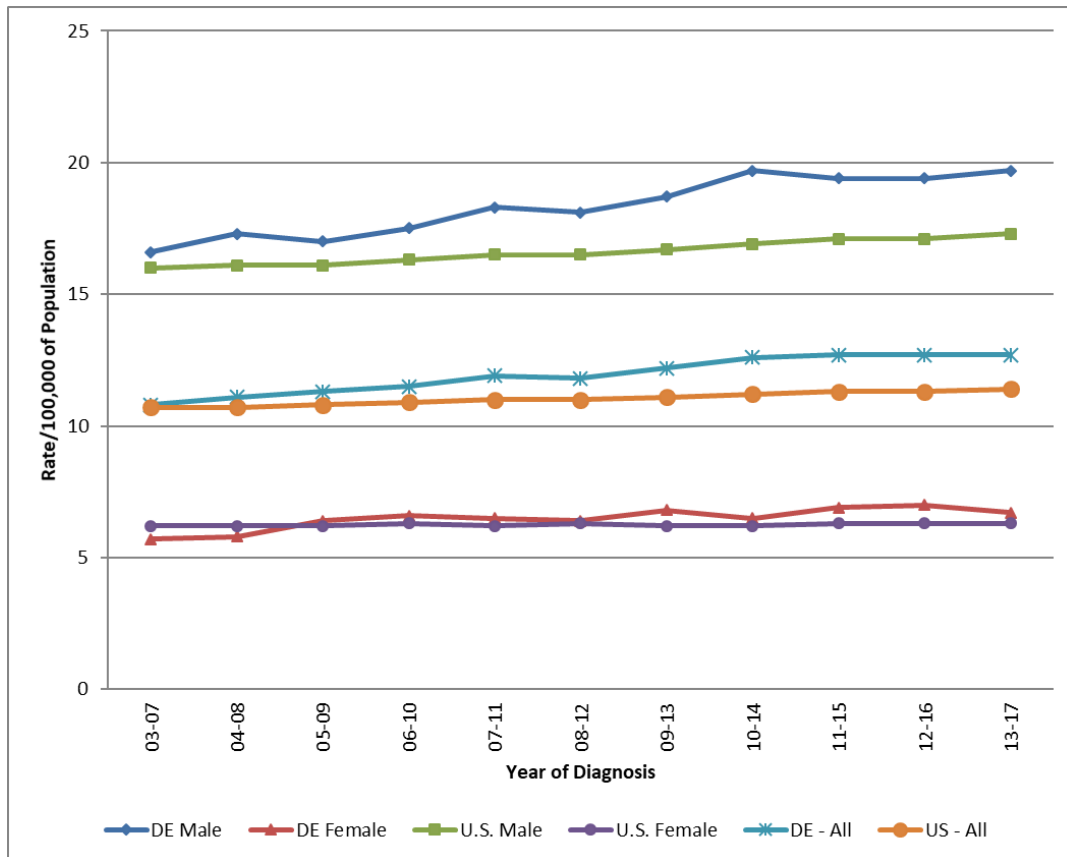


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware from 2013-2017
  - Males (19.7 per 100,000) had a statistically significantly higher oral cancer incidence rate compared to females (6.7 per 100,000).
  - Non-Hispanic Caucasians (14.0 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. from 2013-2017
  - Delaware (12.7 per 100,000) had a statistically significantly higher oral cancer incidence rate compared to the U.S. (11.4 per 100,000).
  - Delaware males (19.7 per 100,000) had a statistically significantly higher oral cancer incidence rate compared to U.S. males (17.3 per 100,000).
  - The difference in oral cancer incidence rates between females in Delaware (6.7 per 100,000) and females in the U.S. (6.3 per 100,000) was not statistically significant.
  - The difference in oral cancer incidence rates between non-Hispanic Caucasians in Delaware (14.0 per 100,000) and in the U.S. (13.3 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. (9.1 per 100,000) was not statistically significant.

## TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 10-2: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER INCIDENCE RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017**

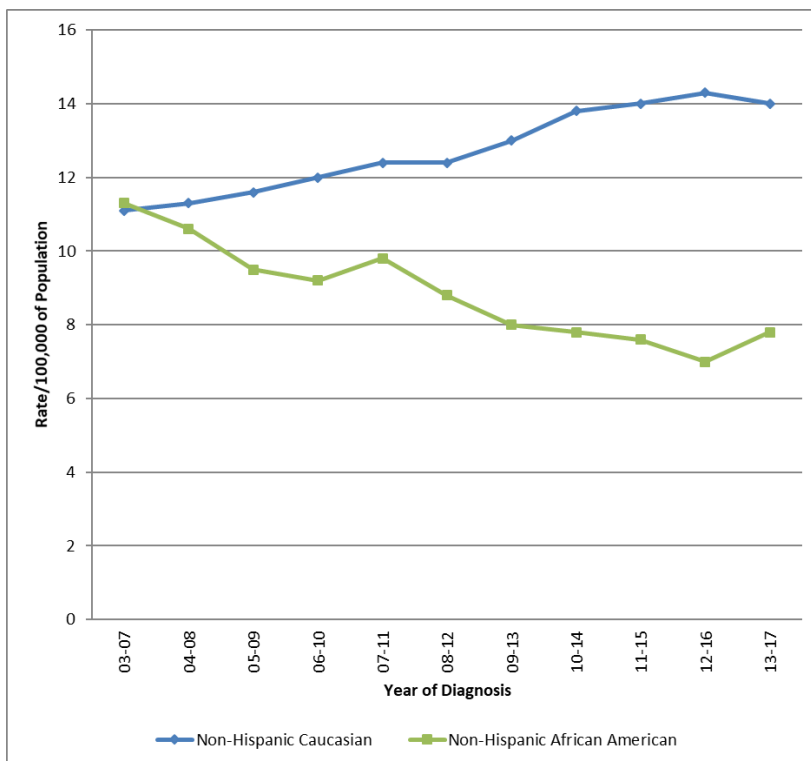


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- From 2003-2007 to 2013-2017
  - Incidence rates for oral cancer increased 18% in Delaware (2003-2007 rate: 10.8 per 100,000; 2013-2017 rate: 12.7 per 100,000) and increased 7% in the U.S. (2003-2007 rate: 10.7 per 100,000; 2013-2017 rate: 11.4 per 100,000).
  - Incidence rates for oral cancer increased 19% in Delaware males (2003-2007 rate: 16.6 per 100,000; 2013-2017 rate: 19.7 per 100,000) and increased 8% in U.S. males (2003-2007 rate: 16.0 per 100,000; 2013-2017 rate: 17.3 per 100,000).
  - Incidence rates for oral cancer increased 18% in Delaware females (2003-2007 rate: 5.7 per 100,000; 2013-2017 rate: 6.7 per 100,000) and increased 2% in U.S. females (2003-2007 rate: 6.2 per 100,000; 2013-2017 rate: 6.3 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 10-3: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

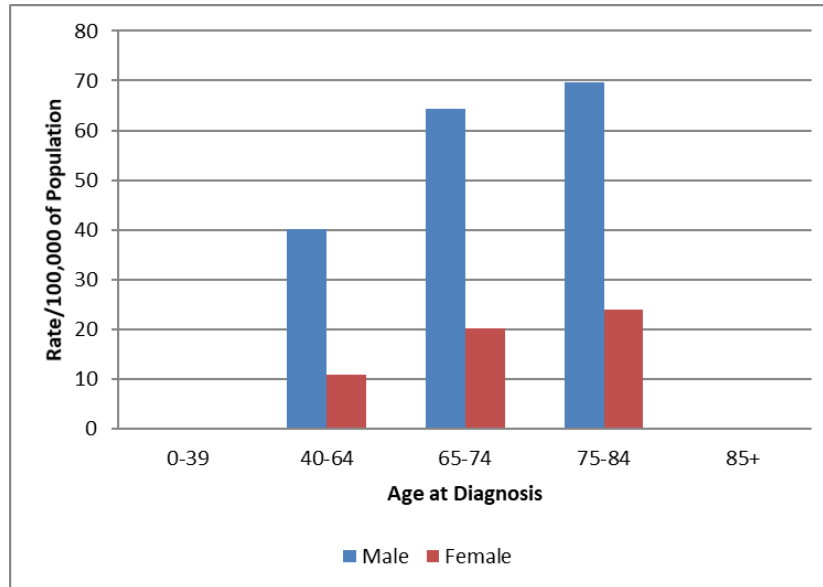


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Incidence rates for oral cancer increased 26% in non-Hispanic Caucasians (2003-2007 rate: 11.1 per 100,000; 2013-2017 rate: 14.0 per 100,000).
  - Incidence rates for oral cancer decreased 31% in non-Hispanic African Americans (2003-2007 rate: 11.3 per 100,000; 2013-2017 rate: 7.8 per 100,000).

## AGE-SPECIFIC INCIDENCE RATES - DELAWARE

**FIGURE 10-4: AGE-SPECIFIC ORAL CANCER INCIDENCE RATES BY SEX; DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. 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 small numbers, incidence rates could not be calculated for some groups.

**TABLE 10-3: AGE-SPECIFIC ORAL CANCER INCIDENCE RATES BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

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	50.3	---	---	12.7	---	---
65-74	66.0	---	---	23.8	---	---
75-84	69.0	---	---	24.7	---	---
85+	---	---	---	---	---	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. 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 incidence rate for oral cancer was highest for non-Hispanic Caucasian males and non-Hispanic Caucasian females 75-84 years of age. Due to small numbers, incidence rates could not be calculated for some groups.

## STAGE OF DIAGNOSIS - DELAWARE

**TABLE 10-4: ORAL CANCER CASES BY STAGE AT DIAGNOSIS BY SEX AND RACE/ETHNICITY; DELAWARE, 2013-2017**

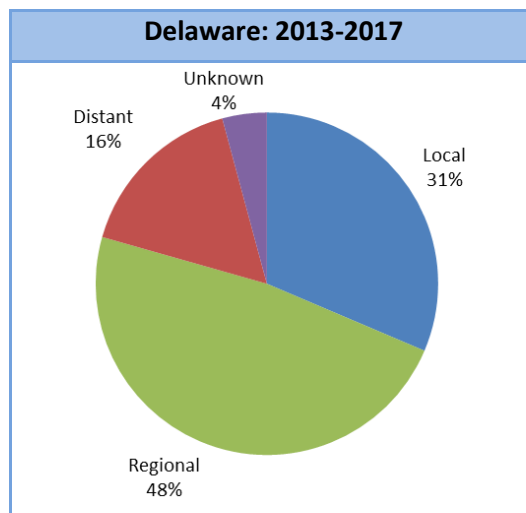
Stage at Diagnosis	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Local</b>	239 (31%)	148 (27%)	91 (44%)	196 (31%)	122 (26%)	74 (43%)	26 (34%)	12 (24%)	14 (54%)	---	---	---
<b>Regional</b>	365 (48%)	290 (52%)	75 (36%)	319 (50%)	255 (55%)	64 (37%)	31 (40%)	23 (45%)	---	---	---	---
<b>Distant</b>	125 (16%)	95 (17%)	30 (14%)	96 (15%)	73 (16%)	23 (13%)	---	---	---	---	---	---
<b>Unknown</b>	32 (4%)	20 (4%)	12 (6%)	27 (4%)	16 (3%)	11 (6%)	---	---	---	---	---	---
<b>Total</b>	761	553	208	638	466	172	77	51	26	18	---	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

---Counts less than 11 are not shown to protect patient privacy.

- In 2013-2017, there were 239 (31%) oral cancers diagnosed at the local stage; 365 (48%) at the regional stage; 125 (16%) at the distant stage; and 32 (4%) had an unknown stage.
- Males (27%) had a lower proportion of oral cancers diagnosed at the local stage compared to females (44%).

**FIGURE 10-5: DISTRIBUTION OF ORAL CANCER CASES BY STAGE AT DIAGNOSIS; DELAWARE, 2013-2017**



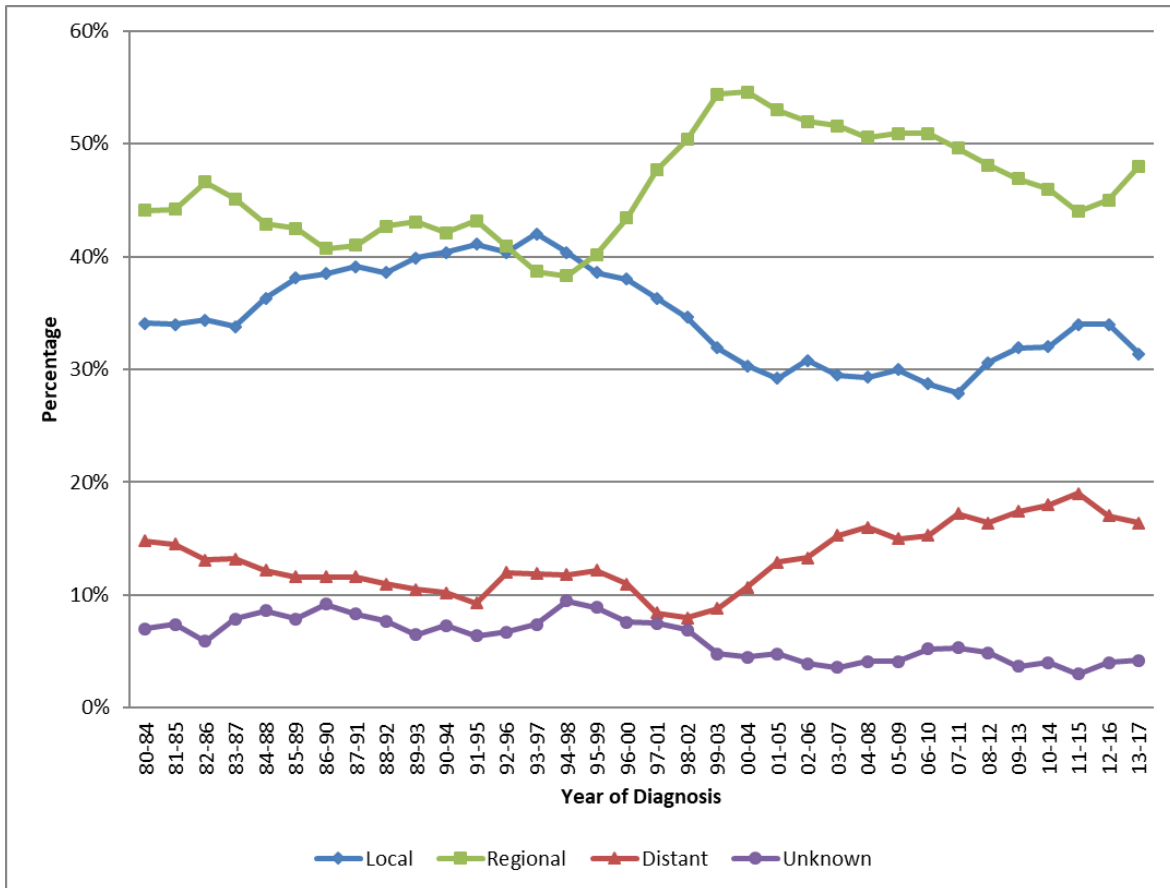
Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.

- The majority of oral cancer cases were diagnosed at the regional stage in Delaware (48%).
- Stage data for the U.S. is not shown because the SEER Program does not consider its localized/regional/distant stage variables to be consistent for certain oral cancers across years where different variables were used.<sup>32</sup> Therefore, a large number of oral cancer cases are coded as blank for stage and the U.S. data is not comparable to Delaware data.

<sup>32</sup> Localized/Regional/Distant Stage Adjustments for 1975-2017 Data (November 2019 Submission). Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute. [Localized/Regional/Distant Stage Adjustments for 1975-2017 Data \(November 2019 Submission\) - SEER Documentation \(cancer.gov\)](#)

**FIGURE 10-6: FIVE-YEAR STAGE OF DIAGNOSIS DISTRIBUTIONS FOR ORAL CANCER CASES; DELAWARE, 1980-1984 TO 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

- From 1980-1984 to 2013-2017 in Delaware
  - The percent of oral cancer cases diagnosed at the local stage decreased from 34% to 31%.
  - Oral cancer cases diagnosed at the regional stage increased 44% to 48%.
  - Oral cancer cases diagnosed at the distant stage increased from 15% to 16%.

## MORTALITY

For 2013-2017, Delaware ranked 29<sup>th</sup> in the U.S. for oral cancer mortality (28<sup>th</sup> in 2012-2016); males ranked 27<sup>th</sup> (34<sup>th</sup> in 2012-2016) and females ranked 25<sup>th</sup> (11<sup>th</sup> in 2012-2016)<sup>33</sup>.

### 2013-2017 DATA

**TABLE 10-5: NUMBER OF ORAL CANCER DEATHS, BY SEX AND RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Races			Non-Hispanic Caucasian			Non-Hispanic African American			Hispanic		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	154	110	44	116	77	39	25	23	---	---	---	---
<b>Kent</b>	29	21	---	19	13	---	---	---	---	---	---	---
<b>New Castle</b>	86	59	27	61	37	24	16	16	---	---	---	---
<b>Sussex</b>	39	30	---	36	27	---	---	---	---	---	---	---

*Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*  
 ---Counts less than 11 are not shown to protect patient privacy.

- In 2013-2017, there were 154 deaths (2% of all cancer deaths) from oral cancer in Delaware.
- Males accounted for 71% of oral cancer deaths.
- Non-Hispanic Caucasians accounted for 75% of oral cancer deaths.

**TABLE 10-6: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER MORTALITY RATES OVERALL AND BY SEX; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	Overall	Male	Female
<b>U.S.</b>	2.5	3.9	1.3
<b>Delaware</b>	2.6	4.0	1.4
<b>Kent</b>	2.8	---	---
<b>New Castle</b>	2.8	4.3	1.6
<b>Sussex</b>	2.3	3.9	---

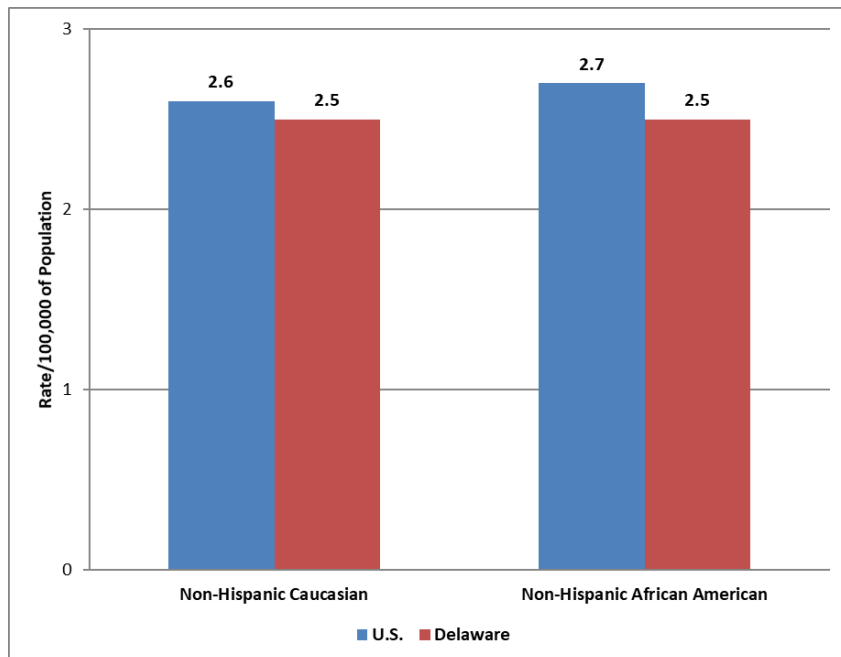
*Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*

*Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.*  
 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

<sup>33</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.



**FIGURE 10-7: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

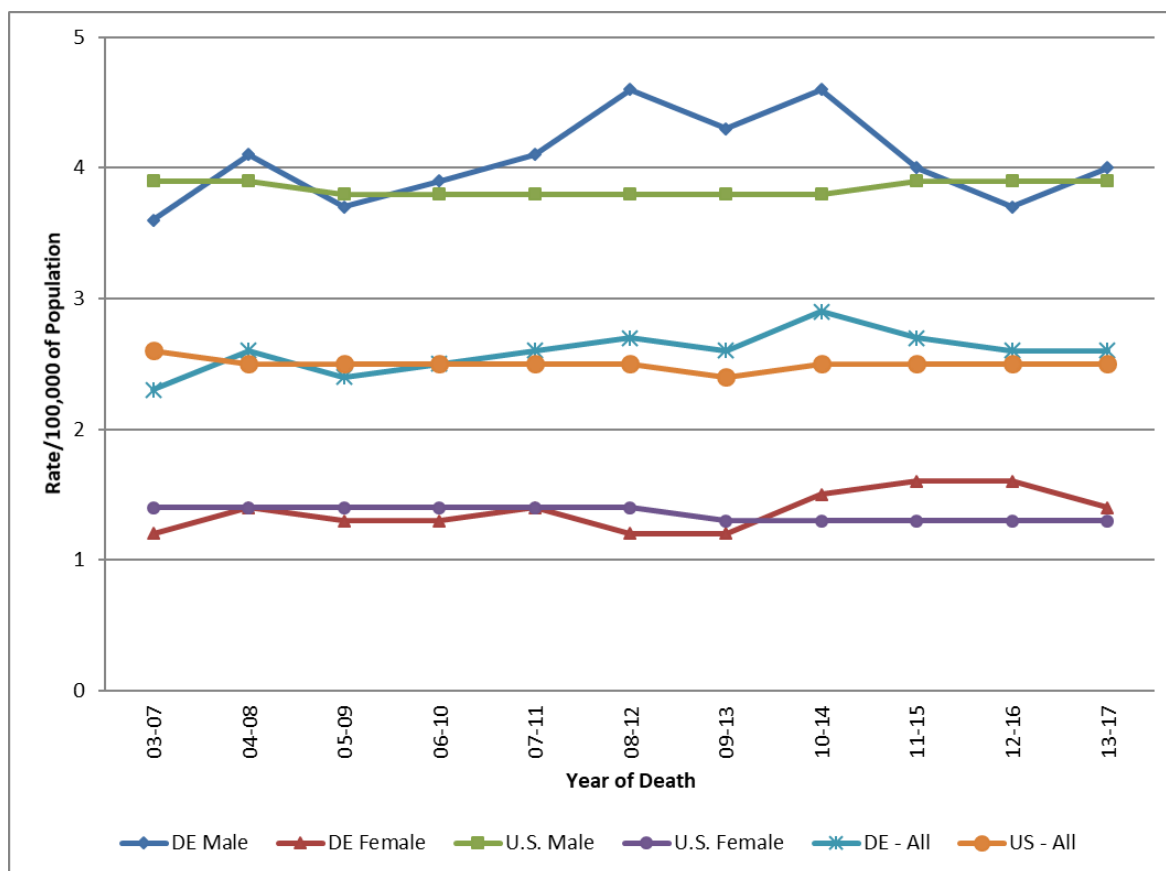


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

- In Delaware from 2013-2017
  - Males (4.0 per 100,000) had a statistically significantly higher oral cancer mortality rate compared to females (1.4 per 100,000).
  - The difference in oral cancer mortality rates between non-Hispanic Caucasians (2.5 per 100,000) and non-Hispanic African Americans (2.5 per 100,000) was not statistically significant.
  - Oral cancer mortality rates for Hispanics could not be calculated due to the small number of deaths.
  
- Comparing Delaware and the U.S. from 2013-2017
  - The difference in oral cancer mortality rates between Delaware (2.6 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 (4.0 per 100,000) and the U.S. (3.9 per 100,000) was not statistically significant.
  - The difference in oral cancer mortality rates between females in Delaware (1.4 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 (2.5 per 100,000) and the U.S. (2.6 per 100,000) was not statistically significant.
  - The difference in oral cancer mortality rates between non-Hispanic African Americans in Delaware (2.5 per 100,000) and the U.S. (2.7 per 100,000) was not statistically significant.

## TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 10-8: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER MORTALITY RATES BY SEX; U.S. AND DELAWARE, 2003-2007 TO 2013-2017**



Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.

Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.

Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population

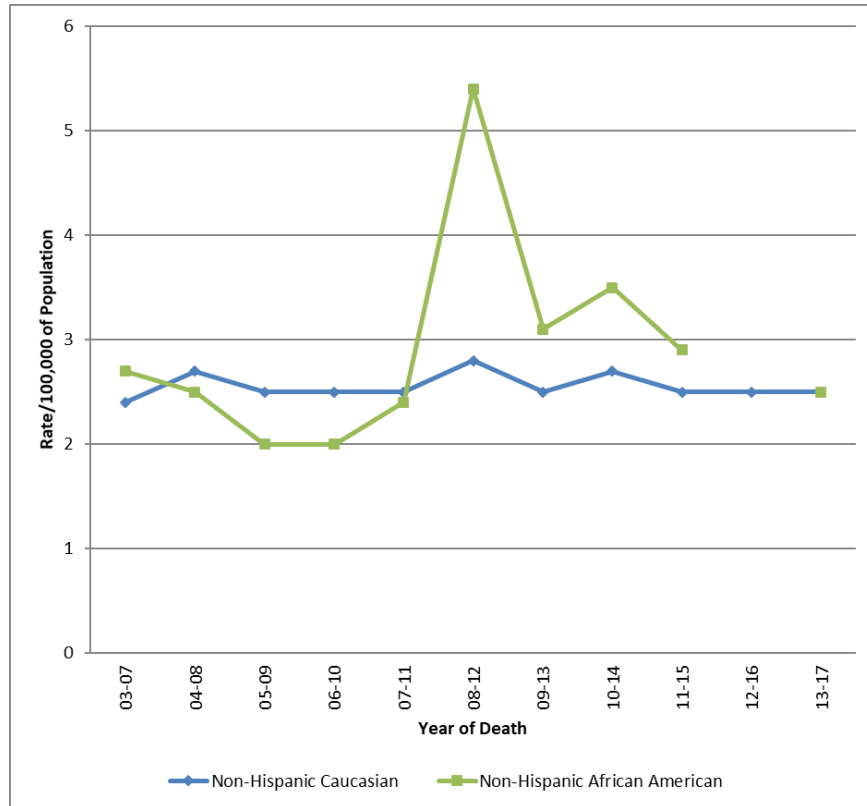
- From 2003-2007 to 2013-2017
  - Mortality rates for oral cancer increased 13% in Delaware (2003-2007 rate: 2.3 per 100,000; 2013-2017 rate: 2.6 per 100,000) and decreased 4% in the U.S. (2003-2007 rate: 2.6 per 100,000; 2013-2017 rate: 2.5 per 100,000).
  - Mortality rates for oral cancer increased 11% in Delaware males (2003-2007 rate: 3.6 per 100,000; 2013-2017 rate: 4.0 per 100,000) and did not change in U.S. males (2003-2007 rate: 3.9 per 100,000; 2013-2017 rate: 3.9 per 100,000).
  - Mortality rates for oral cancer increased 17% in Delaware females (2003-2007 rate: 1.2 per 100,000; 2013-2017 rate: 1.4 per 100,000) and decreased 7% in U.S. females (2003-2007 rate: 1.4 per 100,000; 2013-2017 rate: 1.3 per 100,000).

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## TRENDS OVER TIME - DELAWARE

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**FIGURE 10-9: FIVE-YEAR AVERAGE AGE-ADJUSTED ORAL CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population  
Note: Rates could not be calculated for non-Hispanic African Americans in 2011-2015 and 2012-2016 due to small numbers.

- Comparing Delaware periods 2003-2007 and 2013-2017
  - Mortality rates for oral cancer increased 4% in non-Hispanic Caucasians.
  - Mortality rates for oral cancer decreased 7% in non-Hispanic African Americans.

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## AGE-SPECIFIC MORTALITY RATES - DELAWARE

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- Due to small numbers, age-specific oral cancer mortality rates were not calculated.

## CHAPTER 11: PROSTATE CANCER

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### RISK FACTORS

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#### **Lifestyle risk factors for 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

#### **Environmental and medically-related causes of prostate cancer:**

- Employment involving following industries: welding, battery manufacturers, rubber (being a worker), and exposure to cadmium

#### **Non-modifiable risk factors (these cannot be changed) for 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

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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<sup>34</sup>.

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 starting 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.
- 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

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Data from the 2018 BRFSS provides information on the prevalence of prostate cancer screening among Delaware males:

- Thirty-eight percent 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 33%. Delaware ranked eighth in the nation.
- The prevalence of Delaware males who received a PSA test within the past two years increased with age: 37% of males 50-59 years of age were tested, compared to 56% 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 (40%) and non-Hispanic African American males (32%).
- As the level of education increased, the prevalence of Delaware males who had a PSA test within the past two years increased. Only 14% of Delaware males with less than high school education reported having a PSA test within the past two years, compared to 45% of Delaware males who graduated from college. This difference was statistically significant.
- According to the 2018 BRFSS report, 44% of Delaware males reported making the decision together with their health care provider to have the PSA test done. Another 26% of Delaware males made the decision with one or more other person. Only 16% of Delaware males made the decision to have the PSA test done alone.

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<sup>34</sup> American Cancer Society; Prostate Cancer: Early Detection.

<http://www.cancer.org/cancer/prostatecancer/moreinformation/prostatecancerearlydetection/prostate-cancer-early-detection-acs-recommendations>

## INCIDENCE

For 2013-2017, Delaware ranked 7<sup>th</sup> in the U.S. for prostate cancer incidence (3<sup>rd</sup> in 2012-2016).<sup>35</sup>

### 2013-2017 DATA

**TABLE 11-1: NUMBER OF PROSTATE CANCER CASES, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>Delaware</b>	3,768	2,607	981	103
<b>Kent</b>	779	471	277	19
<b>New Castle</b>	1,970	1,273	578	72
<b>Sussex</b>	1,019	863	126	12

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
---Counts less than 11 are not shown to protect patient privacy.

- Prostate cancer is the most commonly diagnosed cancer among males in the U.S. and Delaware.
- In 2013-2017, 3,768 prostate cancer cases (26% of all male cancer cases) were diagnosed in Delaware.
- Non-Hispanic Caucasian males accounted for 69% of prostate cancer cases.

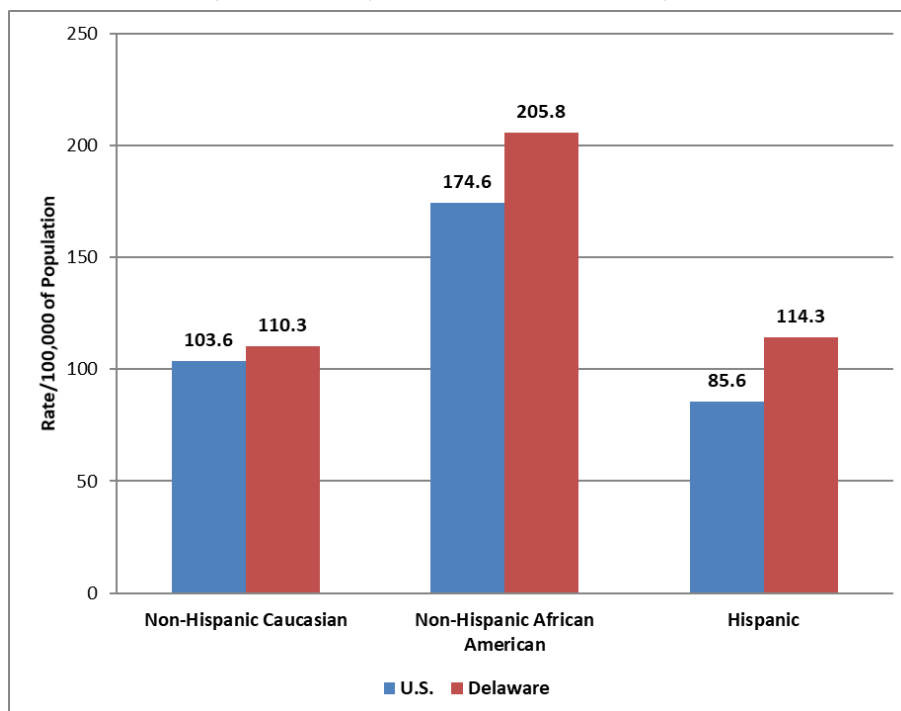
**TABLE 11-2: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>U.S.</b>	107.0	103.6	174.6	85.6
<b>Delaware</b>	125.5	110.3	205.8	114.3
<b>Kent</b>	152.8	123.1	268.8	---
<b>New Castle</b>	127.8	113.6	191.4	123.4
<b>Sussex</b>	107.6	100.2	179.3	---

Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
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.

<sup>35</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 11-1: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

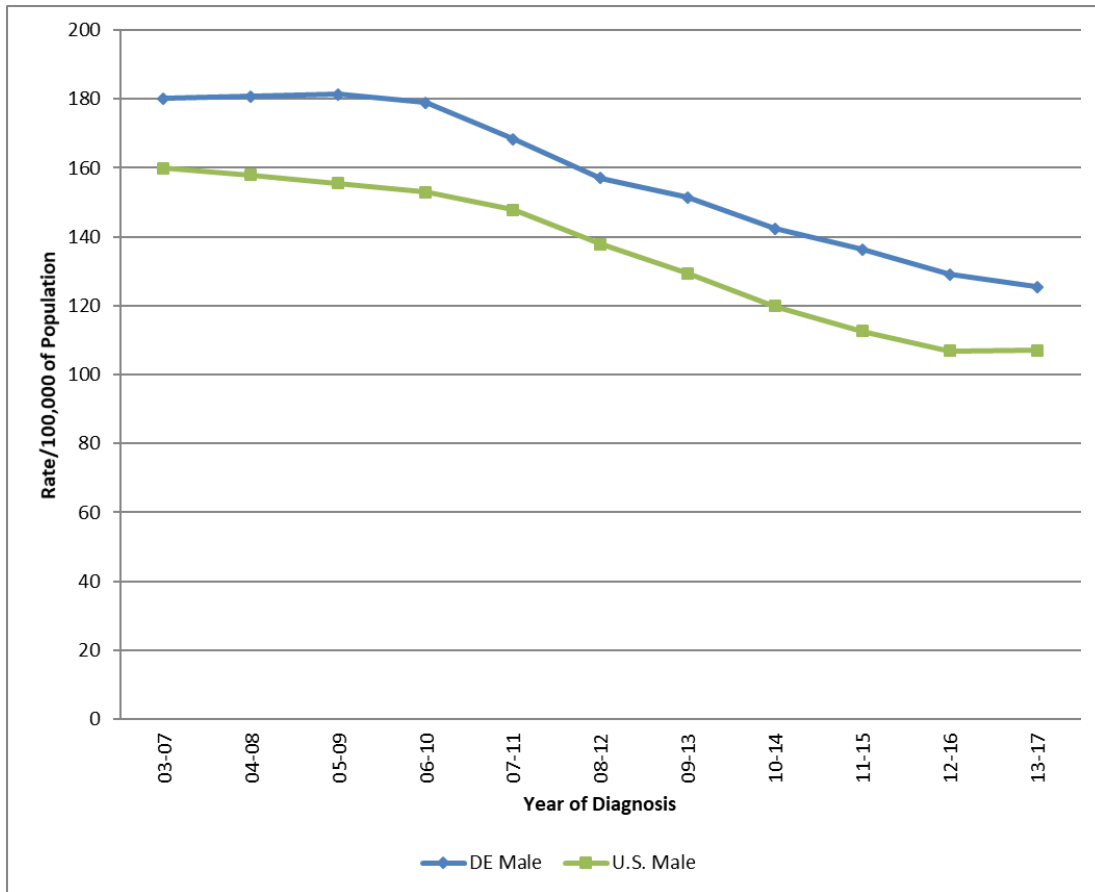


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
 Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - Non-Hispanic African American males (205.8 per 100,000) had a statistically significantly higher prostate cancer incidence rate compared to both non-Hispanic Caucasian (110.3 per 100,000) and Hispanic (114.3 per 100,000) males.
  - The difference in prostate cancer incidence rates between non-Hispanic Caucasian and Hispanic males was not statistically significant.
- Comparing Delaware and the U.S. from 2013-2017
  - Delaware (125.5 per 100,000) had a statistically significantly higher prostate cancer incidence rate compared to the U.S. (107.0 per 100,000).
  - Non-Hispanic Caucasian males in Delaware (110.3 per 100,000) had a statistically significantly higher prostate cancer incidence rate compared to non-Hispanic Caucasian males in the U.S. (103.6 per 100,000).
  - Non-Hispanic African American males in Delaware (205.8 per 100,000) had a statistically significantly higher prostate cancer incidence rate compared to non-Hispanic African American males in the U.S. (174.6 per 100,000).
  - Hispanic males in Delaware (114.3 per 100,000) had a statistically significantly higher prostate cancer incidence rate compared to Hispanic males in the U.S. (85.6 per 100,000).

## TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 11-2: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER INCIDENCE RATES; U.S. AND DELAWARE, 2003-2007 TO 2013-2017**



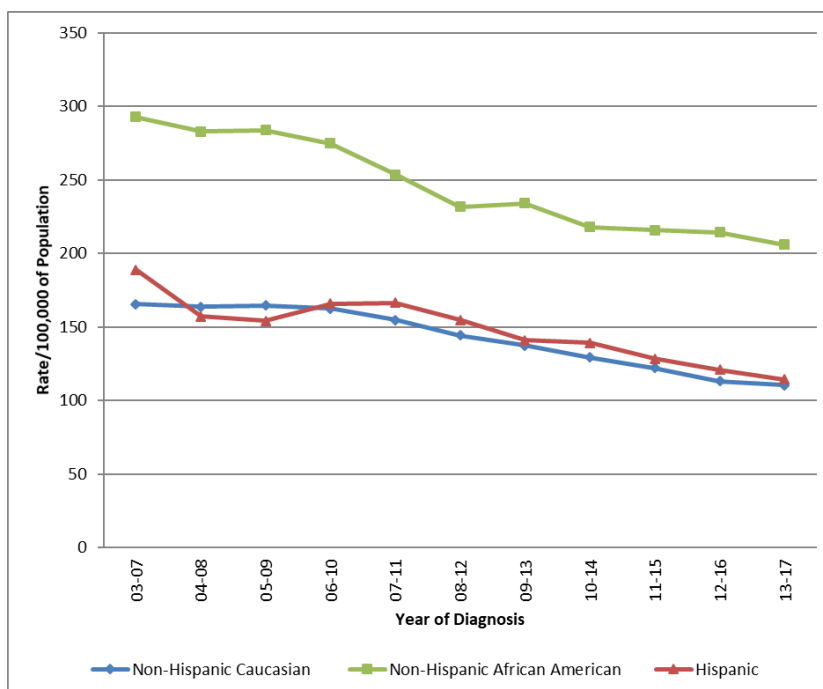
Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.  
Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Incidence rates for prostate cancer decreased 30% in Delaware (2003-2007 rate: 180.2 per 100,000; 2013-2017 rate: 125.5 per 100,000) and decreased 33% in the U.S. (2003-2007 rate: 159.9 per 100,000; 2013-2017 rate: 107.0 per 100,000).



## TRENDS OVER TIME - DELAWARE

**FIGURE 11-3: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**

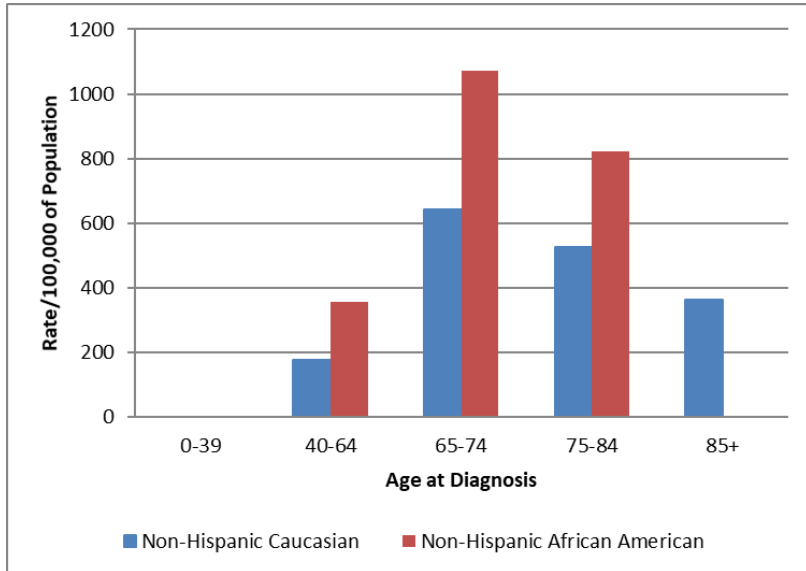


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Incidence rates for prostate cancer decreased 33% in non-Hispanic Caucasian males (2003-2007 rate: 165.6 per 100,000; 2013-2017 rate: 110.3 per 100,000).
  - Incidence rates for prostate cancer decreased 30% in non-Hispanic African American males (2003-2007 rate: 292.8 per 100,000; 2013-2017 rate: 205.8 per 100,000).
  - Incidence rates for prostate cancer decreased 39% in Hispanic males (2003-2007 rate: 188.7 per 100,000; 2013-2017 rate: 114.3 per 100,000).

**AGE-SPECIFIC INCIDENCE RATES - DELAWARE**

**FIGURE 11-4: AGE-SPECIFIC PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- The incidence rate for prostate cancer was highest for both non-Hispanic Caucasian and non-Hispanic African American males 65-74 years of age. Due to small numbers, incidence rates could not be calculated by race for the 0-39 age group or for non-Hispanic African American and Hispanic males for certain age groups.

**TABLE 11-3: AGE-SPECIFIC PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY; DELAWARE, 2013-2017**

Age at Diagnosis	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---
40-64	204.9	176.8	358.1	100.2
65-74	701.1	643.9	1070.3	657.1
75-84	566.7	526.5	822.2	---
85+	366.5	363.0	---	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020. 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.

## STAGE OF DIAGNOSIS - DELAWARE

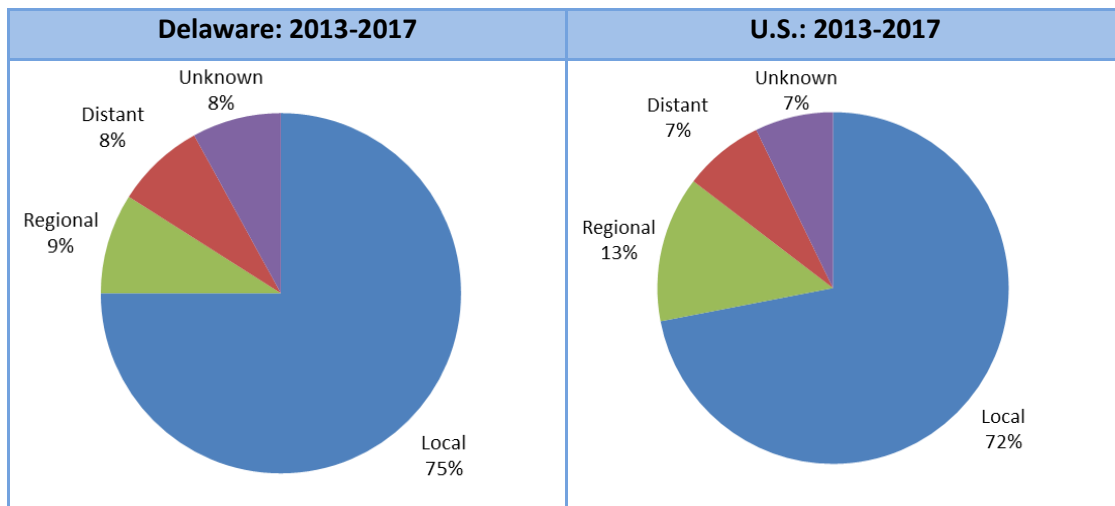
**TABLE 11-4: NUMBER AND PERCENTAGE OF PROSTATE CANCER CASES BY STAGE AT DIAGNOSIS BY RACE/ETHNICITY, DELAWARE, 2013-2017**

Stage at Diagnosis	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>Local</b>	2,822 (75%)	1,950 (75%)	743 (76%)	71 (69%)
<b>Regional</b>	354 (9%)	254 (10%)	79 (8%)	13 (13%)
<b>Distant</b>	285 (8%)	195 (8%)	79 (8%)	---
<b>Unknown</b>	307 (8%)	208 (8%)	80 (8%)	---
<b>Total</b>	<b>3,768</b>	<b>2,607</b>	<b>981</b>	<b>103</b>

*Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*  
 ---Counts less than 11 are not shown to protect patient privacy

- In 2013-2017, there were 2,822 (75%) prostate cancers diagnosed at local stage; 354 (9%) at regional stage; 285 (8%) at distant stage; and 307 (8%) with an unknown stage.
- Non-Hispanic African American males (76%) had about the same proportion of prostate cancers diagnosed at local stage compared to non-Hispanic Caucasian males (75%), which was a higher proportion compared to Hispanic males (69%).

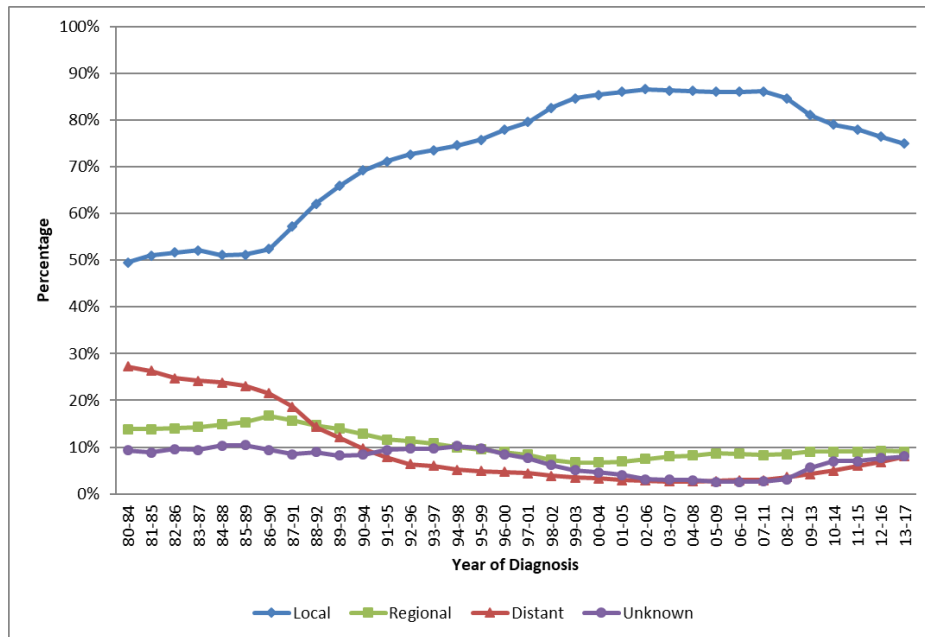
**FIGURE 11-5: PERCENTAGE OF PROSTATE CANCER CASES BY STAGE AT DIAGNOSIS, U.S. AND DELAWARE, 2013-2017**



*Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.*  
*Source (U.S.): Surveillance, Epidemiology and End Results Program (SEER 18), National Cancer Institute, Nov 2019 sub.*

- In comparing U.S. and Delaware prostate cancer data, the proportion of prostate cancer diagnosed at local stage is higher in Delaware (75%) compared to the U.S. (72%).

**FIGURE 11-6: FIVE-YEAR PERCENTAGE OF STAGE OF DIAGNOSIS FOR PROSTATE CANCER CASES, DELAWARE, 1980-1984 TO 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2020.

- From 1980-1984 to 2013-2017 in Delaware
  - The percentage of prostate cancer cases diagnosed at local stage increased from 50% to 75%.
  - Cases diagnosed at regional stage decreased from 14% to 9%.
  - Cases diagnosed at distant stage decreased from 27% to 8%.

## MORTALITY

For 2013-2017, Delaware ranked 49<sup>th</sup> in the U.S. for prostate cancer mortality (46<sup>rd</sup> in 2012-2016).<sup>36</sup>

### 2013-2017 DATA

**TABLE 11-5: NUMBER OF PROSTATE CANCER DEATHS, BY RACE/ETHNICITY; DELAWARE AND COUNTIES, 2013-2017**

	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>Delaware</b>	418	290	111	12
<b>Kent</b>	74	43	27	---
<b>New Castle</b>	226	141	73	---
<b>Sussex</b>	118	106	11	---

*Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*  
 ---Counts less than 11 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 2013-2017, there were 418 male deaths (8% of all male cancer deaths) from prostate cancer in Delaware.
- Non-Hispanic Caucasian males accounted for 69% of prostate cancer deaths.

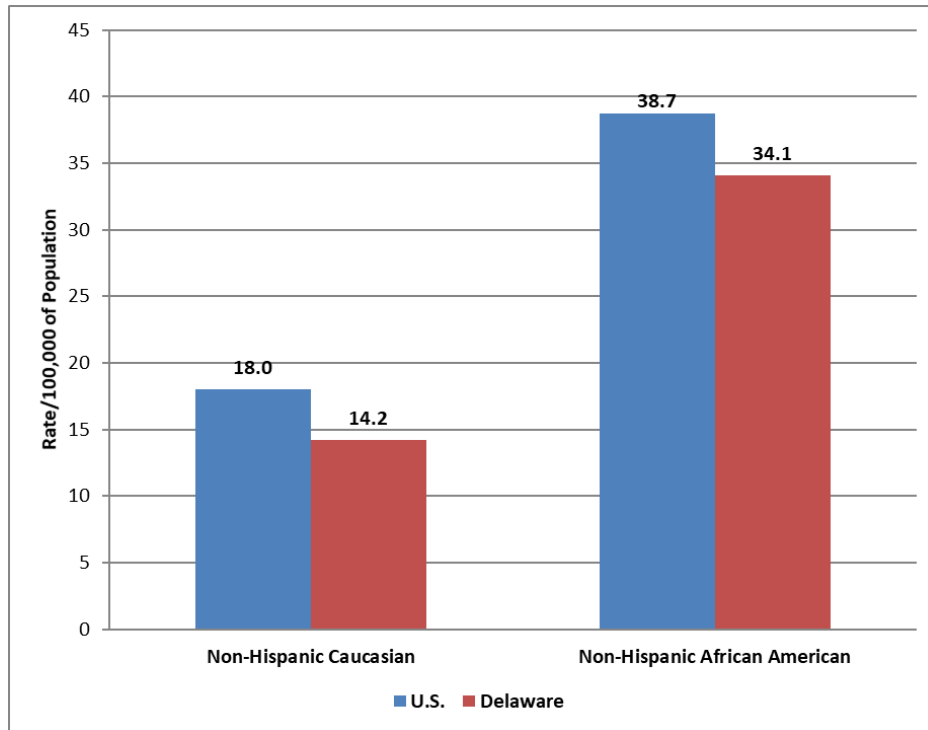
**TABLE 11-6: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S., DELAWARE, AND COUNTIES, 2013-2017**

	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
<b>U.S.</b>	19.1	18.0	38.7	15.8
<b>Delaware</b>	16.9	14.2	34.1	---
<b>Kent</b>	18.1	13.7	36.6	---
<b>New Castle</b>	18.3	14.2	36.6	---
<b>Sussex</b>	14.3	14.1	---	---

*Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.*  
*Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.*  
 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.

<sup>36</sup> U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2019 submission data (1999-2017); U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz), June 2020.

**FIGURE 11-7: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER MORTALITY RATES BY RACE/ETHNICITY; U.S. AND DELAWARE, 2013-2017**

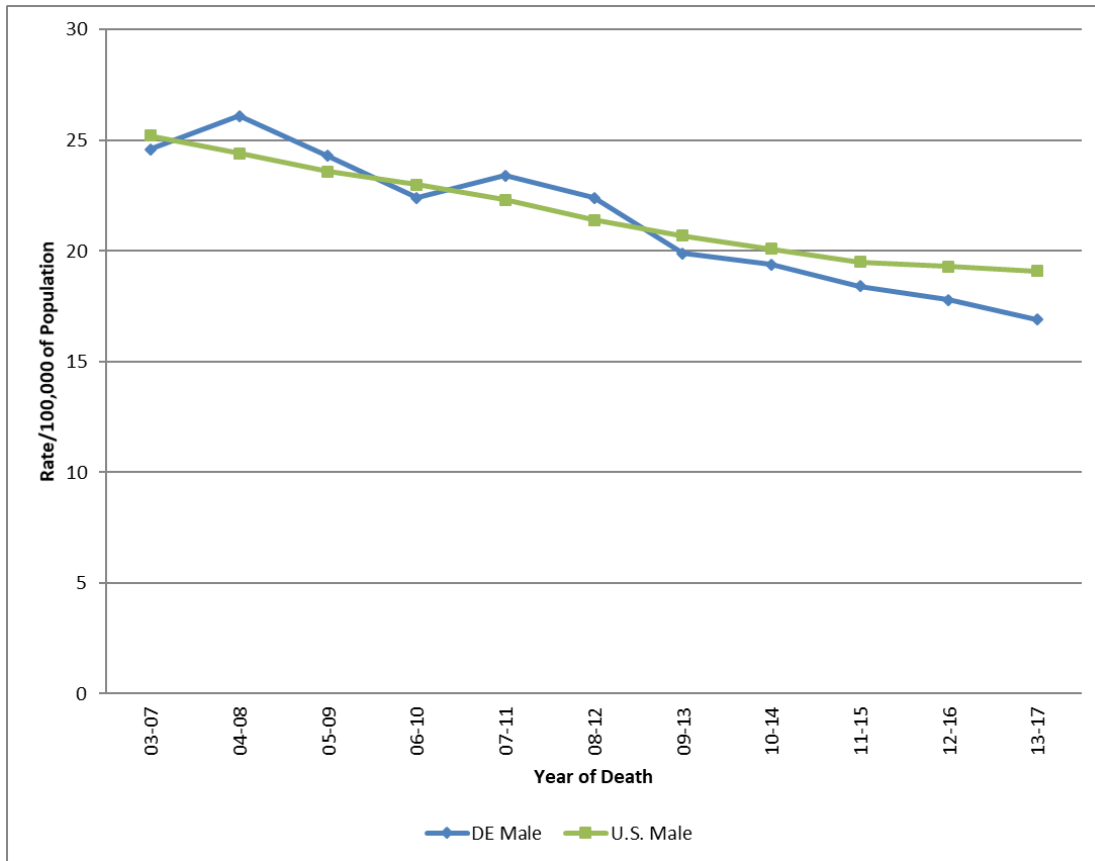


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020.  
 Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
 Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- In Delaware from 2013-2017
  - Non-Hispanic African American males (34.1 per 100,000) had a statistically significantly higher prostate cancer mortality rate compared to non-Hispanic Caucasian males (14.2 per 100,000).
  - Prostate cancer mortality rates for Hispanic males could not be calculated due to the small number of deaths.
  
- Comparing Delaware and the U.S. from 2013-2017
  - Delaware (16.9 per 100,000) had a statistically significantly lower prostate cancer mortality rate compared to the U.S (19.1 per 100,000).
  - Non-Hispanic Caucasian males in Delaware (14.2 per 100,000) had a statistically significantly lower prostate cancer mortality rate compared to non-Hispanic Caucasian males in the U.S (18.0 per 100,000).
  - The difference in prostate cancer mortality rates between non-Hispanic African American males in Delaware (34.1 per 100,000) and non-Hispanic African American males in the U.S (38.7 per 100,000) was not statistically significant.

## TRENDS OVER TIME - DELAWARE AND U.S.

**FIGURE 11-8: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER MORTALITY RATES; U.S. AND DELAWARE, 2003-2007 TO 2013-2017**

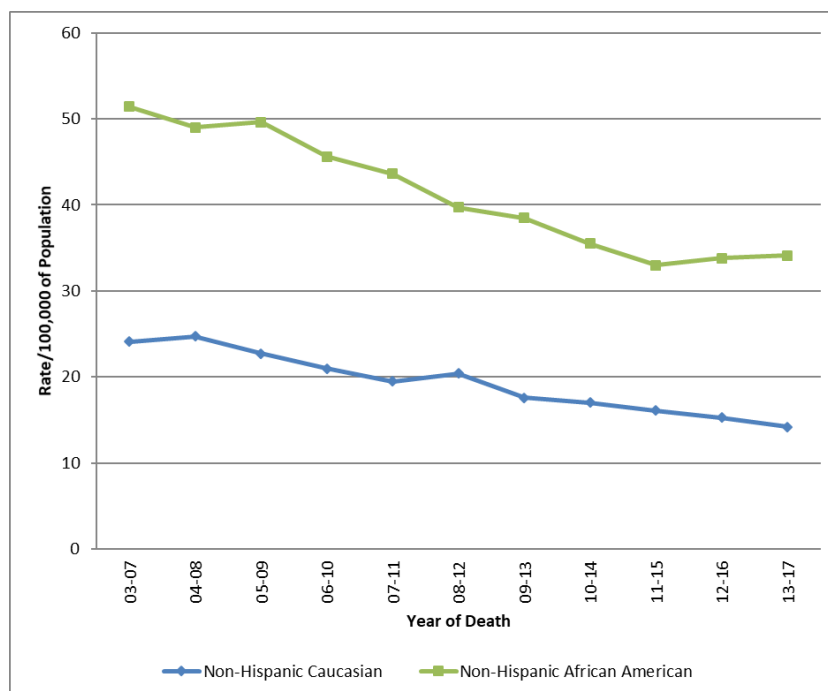


Source (Delaware): Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020  
Source (U.S.): National Center for Health Statistics; SEER\*Stat Database: Mortality-All COD, released May 2020.  
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Mortality rates for prostate cancer decreased 31% in Delaware (2003-2007 rate: 24.6 per 100,000; 2013-2017 rate: 16.9 per 100,000) and decreased 24% in the U.S. (2003-2007 rate: 25.2 per 100,000; 2013-2017 rate: 19.1 per 100,000).

## TRENDS OVER TIME - DELAWARE

**FIGURE 11-9: FIVE-YEAR AVERAGE AGE-ADJUSTED PROSTATE CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2003-2007 TO 2013-2017**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020. Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population.

- From 2003-2007 to 2013-2017
  - Mortality rates for prostate cancer decreased 41% in non-Hispanic Caucasian males (2003-2007 rate: 24.1 per 100,000; 2013-2017 rate: 14.2 per 100,000).
  - Mortality rates for prostate cancer decreased 34% in non-Hispanic African American males (2003-2007 rate: 51.4 per 100,000; 2013-2017 rate: 34.1 per 100,000).
  - Mortality rates for prostate cancer in Hispanic males could not be calculated due to the small number of deaths.

## AGE-SPECIFIC MORTALITY RATES - DELAWARE

**TABLE 11-7: AGE-SPECIFIC PROSTATE CANCER MORTALITY RATES BY RACE/ETHNICITY; DELAWARE, 2013-2017**

Age at Death	All Males	Non-Hispanic Caucasian	Non-Hispanic African American	Hispanic
0-39	---	---	---	---
40-64	6.6	5.9	---	---
65-74	50.1	36.9	124.0	---
75-84	144.1	115.8	303.3	---
85+	363.4	338.1	---	---

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2020. 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 mortality rate for prostate cancer was highest in males 85 years of age and older. Due to small numbers, prostate cancer mortality rates were not calculated by age group for Hispanic and for non-Hispanic African American males with the exception of the 65-74 and 75-84 age groups.

## CHAPTER 12: SPECIAL SECTION - BREAST CANCER AND DELAWARE INITIATIVES

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Over the last 10 years in Delaware, breast cancer incidence increased and breast cancer mortality decreased. From 2003-2007 to 2013-2017, Delaware's breast cancer incidence rate increased by 8% compared to a 3% increase in the U.S. During that decade, Delaware's breast cancer incidence rate increased by 3% among non-Hispanic African American females and by 10% among non-Hispanic Caucasian females, while decreasing by 17% among Hispanic females. During the same time period, the state's breast cancer mortality rate decreased 2%. Delaware's breast cancer mortality rate was ranked 17<sup>th</sup> nationally in 2013-2017 compared to 20<sup>th</sup> nationally in 2012-2016.

It is highly likely that improvements in early detection contributed to Delaware's progress in reduced breast cancer mortality. 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 68% in 2013-2017. Data from the 2018 Behavioral Risk Factor Survey (BRFS) showed that Delaware females ranked third highest nationally in the prevalence of females 40 years of age and older who reported having a mammogram within the past two years (79%).

To address breast cancer, Delaware implemented several evidence-based interventions designed to increase breast cancer screenings among priority populations, including these six:

### 1. Reduction of Out-of-Pocket Expenses for Underserved Communities

- The Division of Public Health's (DPH) Screening for Life (SFL) Program provides preventative breast cancer screenings and/or diagnostic procedures at no cost to eligible enrolled women. Clients have no out-of-pocket expenses. Eligibility is determined by risk factors and guides on recommended ages and timeframes for preventative breast cancer screenings, income eligibility, and insurance status. Individuals with insurance are eligible for SFL benefits if their insurance does not cover the needed preventative screening, and if their deductible is 15% more than their income. In cases where SFL applications self-report that cost is a barrier to care, clients are directed to additional resources.

### 2. Patient Navigation

- An ongoing SFL initiative is patient navigation specific to breast cancer and has been funded since 2017. Patient navigation was implemented to assist clients to navigate along with the cancer screening and diagnostic continuum of care, with the intent of reducing barriers that may prevent individuals from obtaining preventative cancer screenings.
- Using epidemiological profiles in conjunction with the *Delaware Cancer Incidence and Mortality Report, 2012-2016*, African American women and Caucasian women were identified as having higher rates of breast cancer mortality. Patient Navigators throughout the state receive geographically based demographic data to ensure that women who live there receive preventative breast cancer screenings. Patient Navigators assist with insurance barriers; economic hardships specific to affordable preventative screenings; SFL and Health Care Connections enrollment (when applicable); and, when diagnosed with cancer, referrals to the Delaware Cancer Treatment Program.

### 3. Provider and Patient Reminders

- Providers have successfully used patient reminders. In addition to ensuring provider usage of electronic health records to remind patients of upcoming medical appointments, monthly breast cancer screening reminder cards are mailed to patients. Age-appropriate screening reminder cards are mailed to women aged 40+ who are included in preventative breast cancer screenings. Patient outreach is done in targeted ZIP codes with high cancer incidence rates, and there is also outreach geared towards promoting preventative breast cancer screenings in high-risk demographics including African American and Caucasian women. Provider reminders are conducted through advertising flyers and mailers, and there is provider education on the racial and ethnic disparities specific to individuals that are highly impacted by breast cancer mortality.

#### 4. Provider Education

- The DCC's Healthy Delaware website ([www.healthylouisiana.com](http://www.healthylouisiana.com)) has provider education specific to breast cancer screenings, risk factors for breast cancer mortality, and data specific to ethnic and racial disparities on breast cancer mortality. Providers can navigate the website and view SFL training that outlines evidence-based interventions specific to increasing preventative breast cancer screenings, client retention, and targeted demographics that are disproportionately impacted by a breast cancer diagnosis and mortality.

#### 5. Community Outreach

- DPH has representation at community outreach events and partners with mobile health services to provide targeted outreach promoting preventative breast screening services, including SFL services. An informational presentation is available that community-based organizations can distribute to their members and clients.

#### 6. Marketing campaign

- A campaign that models the nationally recognized and evidence-based *Sister to Sister* campaign was conducted to provide information on the importance of breast cancer screening. Tactics included:
  - Partnerships and screening events at churches statewide that involve community members in preventative cancer screening messaging. Activities include partnering with mobile health vans and educating individuals about breast cancer risk factors.
  - Partnerships with hair salons
    - Hair salons in targeted ZIP codes who are receptive to receiving SFL preventative cancer screening materials can share them with their patrons. This holistic approach meets individuals in a non-clinical setting. The hair salons have diverse audiences consisting of African American and Caucasian women.
  - Digital Ads
    - Digital preventative breast screening ads and commercials virtually educate and engage individuals.
  - Partnership with the Delaware Breast Cancer Coalition (DBCC)
    - The DBCC and SFL partnership helps tailor marketing campaigns to targeted demographics that are highly impacted by breast cancer diagnosis and mortality.
  - Information and small media for providers to distribute
    - Brochure, flyers, and social media posts about preventative breast cancer screening services were shared with provider offices and was housed on the Healthy Delaware website.

## APPENDIX A: DATA SOURCES AND METHODOLOGY

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### CANCER INCIDENCE DATA

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#### DELAWARE CANCER REGISTRY

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This report covers data on cancer cases diagnosed among Delawareans from January 1, 2013 to December 31, 2017 and that were reported to the Delaware Cancer Registry (DCR) by November 2019. Trends in incidence rates are based on cancers diagnosed from January 1, 1980 to December 31, 2017.

During 2013-2017, there were 28,938 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)<sup>37</sup>. 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 the CDC's publication of the *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

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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 (known as SEER-9) were Connecticut, Iowa, New Mexico, Utah, and Hawaii; and the metropolitan areas of Detroit, Michigan; San Francisco-Oakland, California; Atlanta, Georgia; and Seattle-Puget Sound, Washington. They began providing data to SEER beginning in 1974 and 1975. 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.<sup>38</sup> The current U.S. analysis used data from SEER-18 that includes available cases diagnosed from 2000 through the current year and is representative of the demographics of the entire U.S. population. The following nine registry areas were added to create 18 population-based registries (SEER-18): Alaska Native, Rural Georgia, Greater Georgia, San Jose-Monterey, Greater California, Kentucky, Los Angeles, Louisiana, and New Jersey.

Historically, Delaware's cancer incidence rates were compared to cancer incidence rates calculated using data from the SEER-9 registries. In 2009, the Division of Public Health (DPH) and the Delaware Cancer Consortium (DCC) began using cancer incidence rates based on 18 population-based registries as a comparison for Delaware's cancer incidence rates. The primary benefit of using U.S. comparison rates derived from SEER-18 is that they represent 28% of the U.S. population, a larger representative sub-sample. 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 U.S. population-based registries.

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<sup>37</sup> 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.

<sup>38</sup> Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute. <http://seer.cancer.gov/about/>

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## CANCER MORTALITY DATA

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### DELAWARE HEALTH STATISTICS CENTER

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Mortality data are provided by the Delaware Health Statistics Center (DHSC) for all death certificates filed in Delaware from 2013 through 2017. Five-year average annual age-adjusted cancer mortality rates are based on deaths that occurred in the five-year period from January 1, 2013 to December 31, 2017. Trends in cancer mortality are presented for deaths that occurred from 1980 through 2017.

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.

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### NATIONAL CENTER FOR HEALTH STATISTICS

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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 2017. 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<sup>39</sup>.

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### POPULATION ESTIMATES, 2013-2017

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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.

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### RISK FACTORS AND EARLY DETECTION

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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) American Cancer Society ([www.cancer.org](http://www.cancer.org)); and (2) NCI ([www.cancer.gov](http://www.cancer.gov)).

The Behavioral Risk Factor Survey (BRFS) provides estimates of the prevalence of risk factors across Delaware and nationally. The most recently available risk factor data from BRFS are from 2019. 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.

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### STATISTICAL METHODOLOGY AND TECHNICAL TERMS

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#### AGE-ADJUSTMENT OF INCIDENCE AND MORTALITY RATES

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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

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<sup>39</sup> Surveillance, Epidemiology, and End Results (SEER) Program ([www.seer.cancer.gov](http://www.seer.cancer.gov)) SEER\*Stat Database: Mortality - All COD, Aggregated Total U.S. (1990-2018) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, released May 2020. Underlying mortality data provided by NCHS ([www.cdc.gov/nchs](http://www.cdc.gov/nchs)).

point in time or one population at two or more points in time<sup>40</sup>. 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)<sup>41</sup>. 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: U.S. Census 2000, accessed from SEER, <http://seer.cancer.gov/stdpopulations/19ages.proportions.html>.

The formula for an age-adjusted rate can be presented as follows:

$$\text{Age-Adjusted Rate} = \sum (w_i \times ((c_i/n_i) \times 100,000))$$

- $c_i$  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.

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## RACE/ETHNICITY- AND SEX-SPECIFIC INCIDENCE AND MORTALITY RATES

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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.

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## CONFIDENCE INTERVALS

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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.

<sup>40</sup> Anderson RN, Rosenberg HM. Report of the second workshop on age adjustment. National Center for Health Statistics. Vital Health Stat 4(30). 1998.

<sup>41</sup> 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<sup>42</sup> by methodology shown here:<sup>43</sup>

$$\text{Lower Confidence Limit} = \text{AA Rate} - 1.96 \left[ \frac{\text{AA Rate}}{\sqrt{\# \text{ Cases}}} \right]$$

$$\text{Upper Confidence Limit} = \text{AA Rate} + 1.96 \left[ \frac{\text{AA Rate}}{\sqrt{\# \text{ Cases}}} \right]$$

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<sup>44</sup>.

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## STAGE AT DIAGNOSIS

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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 through 2015, SEER Summary Stage 2000, derived using the Collaborative Staging schema, is used. The Collaborative Staging schema captures information such as tumor size, extension, lymph nodes, and metastasis at time of diagnosis, and is an alternative method of staging cancer. For 2016-2017, the directly coded SEER Summary Stage 2000 variable 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.

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## DATA RELEASE STANDARDS

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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<sup>45,46</sup>. Furthermore, a cancer rate based on a very small number of cases is inherently unstable and cannot be reliably interpreted.

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<sup>42</sup> Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute. SEER\*Stat Software, Version 8.3.5, <http://seer.cancer.gov/seerstat/index.html>

<sup>43</sup> Tiwari RC, Clegg LX, Zou Z. Efficient interval estimation for age-adjusted cancer rates. *Stat Methods Med Res* 2006;15(6):547-69.

<sup>44</sup> 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.

<sup>45</sup> Coughlin SS, Clutter GG, Hutton M. Ethics in Cancer Registries. *Journal of Cancer Registry Management*, 2: 5-10, 1999.

<sup>46</sup> McLaughlin CC. Confidentiality protection in publicly released central registry data. *Journal of Cancer Registry Management*, 2: 84-88, 2002.

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## DEFINITION OF RACE/ETHNICITY

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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)
<b>All malignant cancers</b>	C000–C809	
<b>Female Breast</b>	C500–C509	excluding 9050–9055, 9140 and 9590–9992
<b>Colon and Rectum</b>	C180–C189, C260, C199, C209	excluding 9050–9055, 9140 and 9590–9992
<b>Lung and Bronchus</b>	C340–C349	excluding 9050–9055, 9140 and 9590–9992
<b>Prostate</b>	C619	excluding 9050-9055, 9140, 9590-9992
<b>Kidney and Renal Pelvis</b>	C649, C659	excluding 9050-9055, 9140, 9590-9992
<b>Cervix Uteri</b>	C530-C539	excluding 9050-9055, 9140, 9590-9992
<b>Oral Cavity and Pharynx</b>		
Lip	C000-C009	excluding 9050-9055, 9140, 9590-9992
Tongue	C019-C029	
Salivary Gland	C079-C089	
Floor of Mouth	C040-C049	
Gum and Other Mouth	C030-C039, C050-C059, C060-C069	
Nasopharynx	C110-C119	
Tonsil	C090-C099	
Oropharynx	C100-C109	
Hypopharynx	C129, C130-C139	
Other Oral Cavity and Pharynx	C140, C142, C148	
<b>Leukemia</b>		
Lymphocytic Leukemia		
<i>Acute Lymphocytic Leukemia</i>		9826, 9835-9836
	C420, C421, C424	9811-9818, 9837
<i>Chronic Lymphocytic Leukemia</i>	C420, C421, C424	9823
<i>Other Lymphocytic Leukemia</i>		9820, 9832-9834, 9940
Myeloid and Monocytic Leukemia		
<i>Acute Myeloid Leukemia</i>		9840, 9861, 9865-9867, 9869, 9871-9874, 9895-9897, 9898, 9910-9911, 9920
<i>Acute Monocytic Leukemia</i>		9891
<i>Chronic Myeloid Leukemia</i>		9863, 9875-9876, 9945-9946
<i>Other Myeloid/Monocytic Leukemia</i>		9860, 9930
Other Leukemia		
<i>Other Acute Leukemia</i>		9801, 9805-9809, 9931
<i>Aleukemic, subleukemic and NOS</i>		9733, 9742, 9800, 9831, 9870, 9948, 9963-9964
	C420, C421, C424	9827

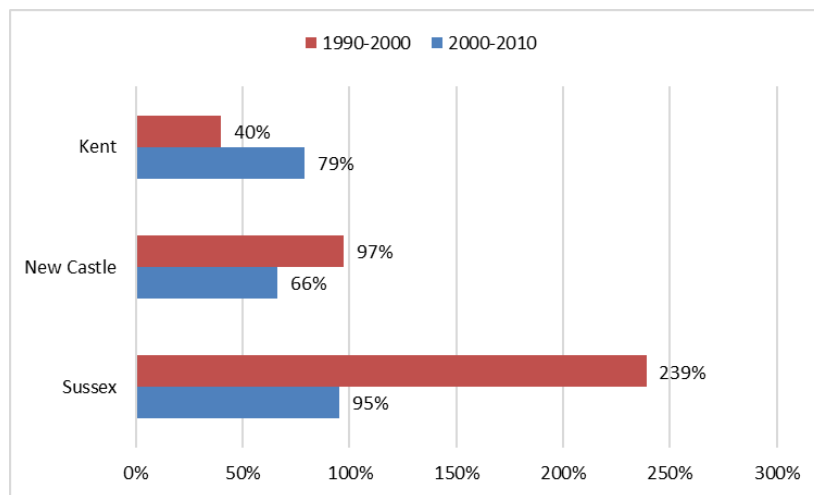
Source: Site Recode ICD-O-3/WHO 2008 Definition [http://seer.cancer.gov/siterecode/icdo3\\_dwhohome/index.html](http://seer.cancer.gov/siterecode/icdo3_dwhohome/index.html).

## APPENDIX C: HISPANIC ETHNICITY

The U.S. 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."<sup>47</sup> 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 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: PERCENTAGE OF CHANGES IN HISPANIC POPULATION BY COUNTY AND DECADE, DELAWARE, 1990-2000 AND 2000-2010**



Source: U.S. Census Bureau 2010, <https://data.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

<sup>47</sup> Grieco, EM, Cassidy RC. (2001-03). "[Overview of Race and Hispanic Origin: Census 2000 Brief](#)" U.S. Census Bureau. Accessed May 26, 2011.

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.

- **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

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The BRFSS 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 BRFSS includes a core set of questions developed by the CDC and is administered to adults 18 years of age and older. Delaware's BRFSS is a collaborative effort between DPH and the CDC. BRFSS 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<sup>48</sup>.

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 BRFSS survey was administered by a random-digit-dial telephone survey. Starting with reporting 2011 data, the BRFSS 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 BRFSS uses a new method for weighting data, called "raking," which more accurately reflects the actual population of each state<sup>49</sup>.

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<sup>50</sup>.

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### OVERWEIGHT/OBESITY

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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<sup>51</sup>. The following data are specific to the 2019 Delaware BRFSS:

- In Delaware, 69% of adults 18 years of age and older were overweight or obese in 2019, compared to the national median of 67%.
- In 2019, the prevalence of being overweight in Delaware differed significantly by sex: 40% of males and 30% of females were overweight.

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<sup>48</sup> Behavioral Risk Factor Surveillance System, <http://www.cdc.gov/BRFS/>

<sup>49</sup> Behavioral Risk Factor Surveillance System (BRFS) Fact Sheet: Raking— Changing Weighting Methodology, [http://www.dhss.delaware.gov/dph/dpc/files/rakingweights\\_info.pdf](http://www.dhss.delaware.gov/dph/dpc/files/rakingweights_info.pdf)

<sup>50</sup> Delaware Behavioral Risk Factor Survey – Measuring Behaviors that Affect Health, <http://www.dhss.delaware.gov/dph/dpc/brfsurveys.html>

<sup>51</sup> About BMI for Adults, [http://www.cdc.gov/healthyweight/assessing/bmi/adult\\_bmi/index.html](http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html)

- The prevalence of obesity among adult Delawareans did not differ by sex: 34% of males and 33% of females were obese in 2019.
- In 2019, the prevalence of being overweight did not differ significantly between non-Hispanic Caucasians (34%) and non-Hispanic African American (35%) Delawareans.
- In Delaware, non-Hispanic African Americans (38%) had a higher prevalence of obesity non-Hispanic Caucasians (34%) in 2019. This difference was not statistically significant.
- In 2019, the prevalence of being overweight was highest among Delaware high school graduates (37%).
- In 2019, as education increases, the prevalence of obesity decreases. However, there were no statistically significant differences among educational attainment groups.
- In 2019, there were no significant differences in obesity among those with different annual household incomes; adults with annual incomes less than \$15,000 had the highest obesity prevalence (42%).
- Among Delawareans in 2019, the prevalence of obesity was highest among those 45-64 years of age (40%).

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## PHYSICAL ACTIVITY

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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 includes reduced risk for chronic diseases including coronary heart disease, stroke, and type 2 diabetes; and improved well-being.

Respondents in the 2019 Delaware BRFSS answered a series of questions to determine what percentage of respondents met aerobic guidelines, strengthening guidelines, both, or neither<sup>52</sup>. These questions are asked every other year. The most recent year asked was 2019.

The following data are from the 2019 Delaware BRFSS:

- In Delaware, 37% of adults 18 years of age and older did not meet either aerobic or strengthening guidelines, similar to the national median of 37%.
- In Delaware, the prevalence of adults who reported they did not meet aerobic or strengthening guidelines was statistically significantly higher among females (40%) than males (33%).
- More Hispanic (46%) and African American Delawareans (43%) did not meet aerobic or strengthening guidelines than Caucasians (33%). This difference was statistically significant.
- Delawareans 45-54 years of age (41%) had the highest prevalence of not meeting aerobic or strengthening guidelines.
- Delawareans in lower income categories reported a statistically significantly higher prevalence of prevalence of not meeting aerobic or strengthening guidelines (39% of those earning less than \$15,000 did not meet the guidelines; 43% of those earning \$15,000 to \$24,999 did not meet the guidelines). This compares to Delawareans in the highest income category, where 33% of those earning \$50,000 or more per year did not meet the guidelines.
- Delawareans in lower education levels reported a statistically significantly higher prevalence of not meeting the physical activity guidelines. In Delaware, 49% of adults with less than a high school diploma and 41% of adults with a high school education or GED did not meet the physical activity guidelines, compared to 34% of adults with some post high school education, or 31% of adults who were college graduates.

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<sup>52</sup>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/>

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## DIETARY FRUITS AND VEGETABLES

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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. These questions are asked every other year. The most recent year asked was 2019.

The following data are from the 2019 Delaware BRFSS:

- In Delaware, 14% of adults consumed five or more servings of fruits and/or vegetables a day, compared to the national median of 13% of adults.
- Fewer Delaware males (12%) consumed five or more servings of fruits and vegetables daily than females (16%). This difference was not statistically significant.
- In Delaware, 13% of non-Hispanic Caucasians, 14% of non-Hispanic African Americans, and 14% of Hispanics consumed five or more servings of fruits and vegetables daily. This difference was not statistically significant.