DISPARITIES IN CANCER INCIDENCE AND MORTALITY AMONG DELAWARE RESIDENTS, 2009-2013

DELAWARE HEALTH AND SOCIAL SERVICES
DIVISION OF PUBLIC HEALTH
2017

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.

This report was prepared by the Delaware Department of Health and Social Services, Division of Public Health, Comprehensive Cancer Control Program.

For more information, please contact:
Delaware Comprehensive Cancer Program
Division of Public Health
Thomas Collins Building, Suite 11
540 S. DuPont Highway
Dover, DE 19901
Phone: 302-744-1040
Fax: 302-739-2545
http://www.dhss.delaware.gov/dhss/dph/dpc/cancer.html

TABLE OF CONTENTS

CHAPTER 1: EXECUTIVE SUMMARY

This report presents disparities in cancer incidence and mortality (for 2009-2013) and behavioral cancer risk factors and screening usage (2008-2014) for Delaware. This report is published in conjunction with the Delaware Cancer Consortium (DCC) as a source of information for Delawareans on cancer disparities in the state. It is also used by the Division of Public Health (DPH) and other stakeholders to inform decisions on outreach and program strategies to combat cancer disparities in Delaware.

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

This report includes cancer statistics for all cancer sites combined (all-site cancer), as well as female breast, colorectal, lung, and prostate cancer. These cancer statistics reflect incidence and mortality data for 2009-2013. Cancer stage at diagnosis along with incidence and mortality trends are also included in this report.

This is the second report addressing disparities in cancer. The first report was released in 2007. This report is published on a periodic basis and not on a defined timeline. The report is used as a source of information for Delawareans to understand disparities related to cancer in the State. The report is useful to residents, the Division of Public Health, the Delaware Cancer Consortium, and other stakeholders interested in cancer risk factors, incidence, and mortality.

Hispanics had statistically significantly lower incidence and mortality rates for all-site, breast, colorectal, and lung cancer compared to Caucasians and African Americans. African American males had significantly higher incidence and mortality rates for prostate cancer compared to Caucasian males.

When stratified by sex, Hispanics had statistically significantly lower incidence and mortality rates for all-site cancer compared to Caucasians and African Americans. Hispanics had significantly lower incidence rates for lung cancer compared to Caucasians and African Americans. African Americans had statistically significantly higher incidence rates for all-site cancer compared to Caucasians. African American females had statistically significantly lower incidence and mortality rates for lung cancer compared to Caucasians.

When stratified by age, Hispanics had statistically significantly lower incidence and mortality rates for all-site cancer compared to Caucasians and African Americans. African American males had statistically significantly higher incidence and mortality rates for prostate cancer compared to Caucasian males. There were no statistically significant differences between Caucasians and African Americans for breast or colorectal cancer.

When stratified by county, Hispanics had statistically significantly lower incidence and mortality rates compared to Caucasians and African Americans in all three counties. African American males had

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

statistically significantly higher incidence for prostate cancer compared to Caucasian males in all three Delaware counties.

Access to health care is an important factor in cancer screening. Adults who have health care coverage are more likely to have a personal doctor and to have received a check-up within the past year.

Hispanic and African American females had statistically significantly higher proportions of advanced stage breast cancer compared to Caucasians in all three counties; Hispanic females younger than 40 years of age had statistically significantly higher proportions of advanced stage breast cancer compared to Caucasians and African Americans. African American females had statistically significantly higher proportions of advanced stage breast cancer compared to Caucasians.

For breast cancer screening, females ages 50-64 were more likely to have received a mammogram within the past two years compared to females ages 40-49. Females who received a check-up within the past year were also more likely to have received a mammogram within the past two years, compared to females who had not received a check-up within the past year. **The prevalence of having a mammogram among Delaware females age 40 and older has remained stable, from 82.3 percent in 2008 to 80.1 percent in 2014.**

No differences were seen in colorectal cancer advanced stage disease diagnoses. In terms of colorectal cancer screening, adults age 65 and older were more likely to receive a sigmoidoscopy or colonoscopy compared to adults ages 50-64. Adults who had a personal doctor were more likely to have received a sigmoidoscopy or colonoscopy, compared to adults who did not have a personal doctor. Adults who received a check-up within the past year were more likely to have a sigmoidoscopy or colonoscopy, compared to adults whose last check-up was a year or more ago. Married adults were more likely to receive a sigmoidoscopy or colonoscopy compared to single or never married adults; and non-smokers were more likely to have a sigmoidoscopy or colonoscopy compared to smokers. **The prevalence of ever having a colonoscopy/sigmoidoscopy among Delaware adults age 50 and older has remained stable, from 74.3 percent in 2008 to 76.6 percent in 2014.**

No differences were seen in lung cancer advanced stage disease diagnoses. Currently, the Behavioral Risk Factor Survey (BRFS) does not ask questions related to lung cancer screening.

No differences were seen in prostate cancer advanced stage disease diagnoses. In terms of prostate cancer screening, males ages 40-49 were more likely to ***NOT*** have received a PSA test within the past two years, compared to males age 65 and older. Males whose last check-up was more than one year ago were more likely to ***NOT*** have received a PSA test, compared to males whose last check-up was within the past year. **The prevalence of *NOT* receiving a PSA test in the past two years among Delaware adult males age 40 and older increased from 42.9 percent in 2008 to 54.9 percent in 2014. This change is statistically significant.**

Modifiable cancer risk factors known were included in the analysis. The prevalence of ***NOT*** meeting recommended fruit and vegetable consumption guidelines among Delaware adults increased from 75 percent in 2009 to 87 percent in 2015. **This increase was statistically significant.** Delaware males, those having less than a high school education and those with a high school education, widowed adults, or heterosexuals were likely to report **NOT** meeting recommended fruit and vegetable consumption

guidelines. The prevalence of being physically active or exercising within the past 30 days among Delaware adults has remained stable, from 75.9 percent in 2008 to 75.1 percent in 2014.

Delaware adults most likely to report being physically active in the past 30 days younger adults, Caucasians, college graduates, those with annual incomes of $50,000 or more, those who had a check-up one or two years ago; married, coupled, single, and widowed; employed or retired, or not having a disability.

The prevalence of being overweight among Delaware adults has remained stable, from 36.0 percent in 2008 to 36.8 percent in 2014. Delaware adult females, married, or those with a disability were more likely to be overweight. The prevalence of obesity among Delaware adults increased from 27.8 percent in 2008 to 30.7 percent in 2014. **This increase was statistically significant.** Delaware adult African Americans, high school graduates and those with some college education, or those who have a disability are more likely to be obese.

The prevalence of heavy drinking among Delaware adults has remained stable, from 5.7 percent in 2008 to 5.8 percent in 2014. African Americans, retirees, and/or heterosexuals were more likely **NOT** to be heavy drinkers.

The prevalence of ever smoking has remained largely unchanged over the past six years. Delaware males, those increasing in age, adults with either less than high school or a high school diploma, adults with an annual household income of $35,000 - $49,999, or adults who are either separated, divorced, or single, and/or adults who have a disability were more likely to be current smokers.

CHAPTER 2: INTRODUCTION

Cancer is a major public health burden in the United States. In Delaware, as in other states, this burden is not distributed equally along demographic lines. Variations in cancer incidence and mortality exist by race/ethnicity, sex, age, and socioeconomic status. While increased attention is being given to describing cancer-related disparities, the factors that give rise to these disparities, and how they are interrelated, is poorly understood.

This report presents Delaware cancer incidence and mortality rates by race/ethnicity, sex, age, and county, and includes variations in the stage of disease at cancer diagnosis. Population-based risk factors and cancer screening measures are also presented to help explain disparities which may be observed for incidence or mortality.

DELAWARE CANCER STATISTICS

In 2013, it is estimated that 24 percent of all deaths in Delaware were caused by cancer[3]. The average annual age-adjusted cancer mortality rate for 2009-2013 was 176.1 per 100,000 persons. In 2009-2013, there were 27,194 new cases of cancer diagnosed and 9,427 deaths from cancer. The most commonly diagnosed cancers for 2009-2013 were lung (14 percent), breast (29 percent of female cancers), prostate (28 percent of male cancers), and colorectal cancer (8 percent). These four cancers are also among the leading causes of cancer deaths in the state.

DISPARITIES IN CANCER BURDEN IN THE U.S.

Research conducted across the United States has observed that the burden of cancer varies by race/ethnicity and socioeconomic status[4-8]. According to the most recently released United States data from 2009-2013 for all cancer sites combined, African American men are 12 percent more likely to be diagnosed with cancer than Caucasian men, while African American women are 6 percent less likely to be diagnosed with cancer than Caucasian women[9]. African American men are 70 percent more likely to be diagnosed with prostate cancer, 18 percent more likely to be diagnosed with lung cancer, and 27 percent more likely to be diagnosed with colorectal cancer than Caucasian men[9]. Among women, African American women are 22 percent more likely to be diagnosed with colorectal cancer, 13 percent less likely to be diagnosed with lung cancer, and 3 percent less likely to be diagnosed with breast cancer than Caucasian women[9].

There is further evidence of disparity by race/ethnicity in mortality rates. Examining overall data from the United States, African American men are 33 percent more likely to die of cancer than Caucasian men, and African American women are 17 percent more likely to die of cancer than Caucasian women[2]. The largest disparity is observed in prostate cancer mortality rates, which are 2.4 times higher for

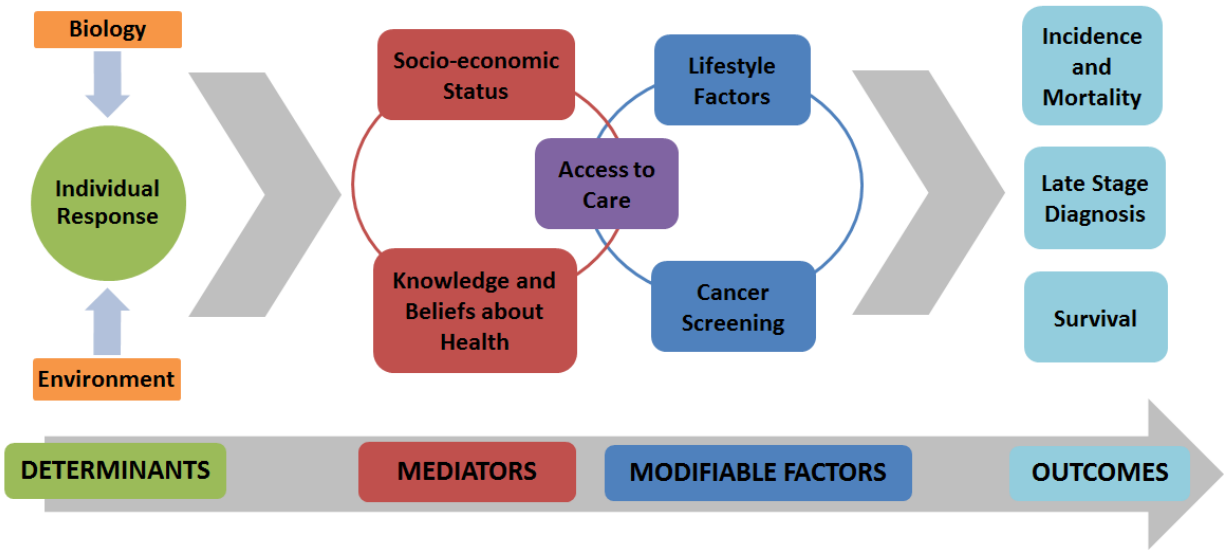
[3] Delaware Health Statistics Center. *Delaware Vital Statistics Annual Report, 2013*. Delaware Department of Health and Social Services, Division of Public Health: 2016.
[4] American Cancer Society. *Cancer Facts & Figures for African Americans 1998-1999*. Atlanta: American Cancer Society, 1998.
[5] American Cancer Society. *American Cancer Society Cancer Facts and Figures 2005*. Atlanta: American Cancer Society, 2005.
[6] Wingo P, Ries L, Giovino G, et al. 1999. *Annual report to the nation on the status of cancer, 1973–1996, with a special section on lung cancer and tobacco smoking*. J. Natl. Cancer Inst., 91, 675–690.
[7] Ward E, Jemal A, Cokkinides V, et al. 2004. *Cancer disparities by race/ethnicity and socioeconomic status*. CA Cancer J Clin, Mar–Apr:54(2), 78–93.
[8] Singh GK, Miller BA, Hankey BF, Edwards BK. *Area socio-economic variations in US cancer incidence, mortality, stage, treatment, and survival 1975–1999*. 4. 2003. Bethesda, MD, National Cancer Institute. NIH Publication No. 03-5417. NCI Cancer Surveillance Monograph Series.
[9] American Cancer Society. *Cancer Facts & Figures for African Americans 2016-2018.* Atlanta: American Cancer Society, 2016.

African American men than Caucasian men[2]. Increased mortality in African Americans is also observed for colorectal and breast cancer; five-year survival rates are higher for Caucasians than for African Americans[9].

FACTORS THAT CONTRIBUTE TO DISPARITIES

There are a myriad of factors that contribute to cancer disparities. While there are non-modifiable and difficult to modify risk factors which affect individuals (environment, genetics, etc.), there are also modifiable risk factors which can be addressed to improve cancer outcomes. A conceptual framework for cancer outcomes (Figure 2-1) was developed to address these factors in Delaware using a previously available cancer prevention and screening framework by researchers at the University of Saskatchewan[10]. Determinants that are biological and environmental in nature are hard to modify, so to address disparities in cancer incidence and mortality, it is important to look at mediators and modifiable risk factors, which can lead to better outcomes.

FIGURE 2-1: A CONCEPTUAL FRAMEWORK FOR CANCER OUTCOMES



Source: Comprehensive Cancer Control Program, Delaware Division of Public Health, 2017

Socioeconomic status is a measure that is used to define combined income and social status and includes several common measures (education, income, occupation)[11]. Socioeconomic status has been linked to cancer incidence and mortality in many studies[12,13,14,15]. According to the U.S. Department of Health and Human Services, "poor adults are more likely to be in poor health, to be uninsured, and to

[10] Ahmed S, Shahid RK, Episkenew JA. Disparity in cancer prevention and screening in aboriginal populations: recommendations for action. *Current Oncology*. 2015;22(6):417-426.
[11] Baker EH. Socioeconomic Status, Definition. *The Wiley Encyclopedia of Health, Illness, Behavior, and Society*. 2014
[12] Hastert TA, Ruterbusch JJ, Beresford SAA, Sheppard L, White E. Contribution of health behaviors to the association between area-level socioeconomic status and cancer mortality. *Social science & medicine (1982)*. 2016; 148:52-58.
[13] Siegel R, DeSantis C and Jemal A. Colorectal cancer statistics, 2014. CA A Cancer Journal for Clinicians, 64: 104–117.
[14] Praise, CA, Caggiano V. Disparities in race/ethnicity and socioeconomic status: risk of mortality of breast cancer patients in the California Cancer Registry, 2000–2010. *BMC Cancer*, 2013.
[15] Rundle A, Neckerman KM, Sheehan D, et al. A Prospective Study of Socioeconomic Status, Prostate Cancer Screening and Incidence Among Men at High Risk for Prostate Cancer. *Cancer causes & control : CCC*. 2013; 24(2):297-303.

die at a younger age than non-poor adults"[16]. Nationally, as of 2010, 23 percent of African American adults and 22 percent of Hispanic adults lived below the poverty level, compared to 9 percent of non-Hispanic Caucasian adults and 11 percent of Asian adults[16]. In 2010, the prevalence of cigarette smoking, which is a risk factor for many cancers, was 3.4 times higher in adults with a high school diploma or less compared to those with a Bachelor's degree or higher[16]. The prevalence for colorectal cancer screening was 34 percent lower for those without a high school education compared to those with a Bachelor's degree[16]. Use of screening tests is strongly associated with health insurance and a reliable source of care[17].

National data suggest that there is evidence of disparities in behavioral risk factors. Research has examined the degree to which socioeconomic status affects disparities in cancer incidence and mortality rates among racial/ethnic groups. Studies that examined cancer diagnosis and mortality have found that socioeconomic status is a stronger predictor of disparities than race and/or ethnicity[7].

OBJECTIVES

Specific objectives of this report include:

- Describing differences in incidence and mortality rates for all-site and site-specific cancers and all cancer sites combined among racial/ethnic , age, sex (where applicable), county of residence, and stage of disease (incidence only).
- Examining trends in cancer incidence and mortality in Delaware over time by race/ethnicity and sex.
- Exploring whether there are disparities in access to health care, modifiable behavioral risk factors, or use of screening tests.

[16] Centers for Disease Control and Prevention. Health, United States 2011.
[17] DeVoe JE, Fryer GE, Phillips R, Green L. 2003. *Receipt of preventive care among adults: Insurance status and usual source of care*. Am J Public Health, 93(5), 786–791.

CHAPTER 3: METHODS

The methods section is divided by objective. Within each objective, the data sources are described, created variables are explained, and the analytic methods are outlined. This structure was chosen because each data source had a different subset of information available, and the objective drove the choice of data source and variables.

INCIDENCE AND MORTALITY DATA

DATA SOURCES

Delaware Cancer Registry

Delaware cancer incidence data were obtained from the Delaware Cancer Registry (DCR), the state's central cancer information center and part of the Division of Public Health. Delaware is one of 45 states supported by the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention (CDC).

DCR is population-based, collecting data on all cancer patients who are residents of Delaware at the time of diagnosis. DCR collects information on newly diagnosed cancer cases, cancer treatments received, and cancer deaths, as well as follow-up data. As stated in the Delaware Cancer Control Act of 1980, the purpose of the registry is to "ensure an accurate and continuing source of data concerning cancer and certain specified tumors of a benign nature." The confidentiality of patient information in the registry database is a requirement of this law[18].

In 1997, the North American Association of Central Cancer Registries (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[19]. Gold or Silver Standard certifications are awarded following an evaluation of data quality, completeness, and timeliness of reporting. The DCR received Gold Standard certification for diagnosis years 1999, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012 and 2013 (most recent year for which complete data are currently available). The DCR received Silver Standard certification in 1998 and 2002.

Delaware Health Statistics Center

Mortality data are provided by the Delaware Health Statistics Center (DHSC) for all death certificates filed in Delaware from 2009 through 2013. Five-year average annual age-adjusted cancer mortality rates are based on deaths that occurred in the five-year time period from January 1, 2009 to December 31, 2013.

Census Data

Population estimates by race/ethnicity, sex, and age for Delaware and its three counties (Kent, New Castle, and Sussex) were obtained from the National Cancer Institute's (NCI) datasets based on data supplied by the U.S. Census Bureau for 2009-2013[20] as is required by the Surveillance, Epidemiology, and End Results (SEER) Program to calculate age-adjusted cancer incidence and mortality rates. All rates were age-adjusted to the U.S. population using the 2000 census standard distribution.

[18] 62 Del. Laws c.334 §1; 70 Del. Laws c391 §1. Delaware Cancer Control Act. 1980.
[19] http://www.naaccr.org/Certification/Criteria.aspx
[20] U.S. Population Data. http://www.seer.cancer.gov/popdata/download.html. December 13, 2004.

VARIABLE DEFINITIONS

Cancer incidence and mortality statistics are provided for all cancer sites combined and individually for breast, colorectal, lung, and prostate cancer. For each cancer site, statistics are provided by race/ethnicity, age, sex, and county of residence. The category of all cancer sites was defined by:

- Restricting to cases with valid data for age, sex, race/ethnicity, and year of diagnosis
- Restricting to malignant cancers, except for urinary bladder cancer where in situ is included
- Excluding non-melanoma skin cancer

Individual cancers were defined using ICD for Oncology, Third Edition (ICD-O-3) codes for malignant cancers[21]. Primary cancer site definitions are presented below in table 3-1.

TABLE 3-1: PRIMARY CANCER SITE DEFINITIONS

Cancer Site Group	ICD-O-3 Site (Topography)	ICD-O-3 Histology (Morphology)
Female Breast	C500–C509	excludes 9050–9055, 9140 and 9590–9992
Colon and Rectum	C180–C189, C260, C199, C209	excludes 9050–9055, 9140 and 9590–9992
Lung and Bronchus	C340–C349	excludes 9050–9055, 9140 and 9590–9992
Prostate	C619	excludes 9050–9055, 9140 and 9590–9992

Source: Site Recode ICD-O-3/WHO 2008 Definition http://seer.cancer.gov/siterecode/icdo3_dwhoheme/index.html

There was minimal impact from restricting analyses to individuals with valid demographic data. Race/ethnicity was categorized as non-Hispanic Caucasian, non-Hispanic African American, Hispanic, and Other. Individuals of any race with a Hispanic ethnicity were categorized as Hispanic. Trend data has race categorized into Caucasian and African American. Age was grouped as follows: 0–39 years, 40–64 years, 65–74 years, 75–84 years, and 85 or older.

ANALYTIC METHODS

Direct Standardization

Five-year average age-adjusted incidence and mortality rates in Delaware and its counties were computed using data from DCR and DHSC. To measure whether there are disparities in cancer incidence and mortality among racial and ethnic minorities, incidence and mortality rates were compiled for all cancer sites combined and four site-specific cancers (breast, colorectal, lung, and prostate cancer). These cancer sites were chosen because they contribute 50 percent of new cancer cases and 51 percent of cancer deaths and were therefore the most likely candidates to provide a sufficient sample size to address our report objectives.

Incidence and mortality rates (per 100,000 of population) were calculated as the number of new cancer cases or cancer deaths, respectively, divided by the population counts for subgroups categorized by

[21] SEER ICD-O-3 Coding Materials. http://www.seer.cancer.gov/icd-o-3/. 2005.

race/ethnicity, sex, age, and county of residence. Data were combined to compute five-year averages because incidence and mortality case counts for any given year are very small for some subgroups. All rates for state- and county-level analyses were age-standardized by the direct method to the year 2000 standard U.S. population using SEER*Stat[21]. A 95-percent confidence interval was calculated around each rate that was computed.

Disparities in Incidence and Mortality

Disparities in cancer rates were measured by comparing age-, sex-, and county-specific rates for the different racial/ethnic groups. In order to estimate excess risk, rate ratios were calculated using Caucasians as the reference category. The rate ratio was computed in SEER*Stat (it is computed by dividing the age-adjusted incidence or mortality rate for any single minority group by the rate for the reference category). When the rate ratio was equal to one, there was no disparity in the rates being compared. If the rate ratio was greater than one, then cancer incidence or mortality was greater in the minority group than among Caucasians. If the rate ratio was less than one, then cancer incidence or mortality was greater among Caucasians than in the minority group. If the confidence intervals for the two rate ratios did not overlap, the ratios were said to be significantly different from each other.

Trends in Cancer Incidence and Mortality

To examine trends in cancer incidence and mortality from 1980 to 2013, graphs were created with a data point representing the five-year average rate for every five-year increment between 1980 and 2013. Trends were plotted for all cancer sites combined and individually for breast, colorectal, lung, and prostate cancer using data from 1980 to 2013. Data are presented only for Caucasians and African Americans because other racial and ethnic groups did not have sufficient sample sizes to be included. Hispanic ethnicity was not accounted for when racial groups were categorized. Trends were examined for both incidence and mortality. Trends were stratified by sex and the graphs were examined to determine whether rates were increasing or decreasing over time and whether the differences between rates in African Americans and Caucasians were increasing or decreasing over time.

DATA REPORTING RULES

To maintain the confidentiality of Delaware residents diagnosed with cancer, when frequency data are presented, cells with five or fewer people are not displayed. In addition, rates that are based on 25 or fewer people in the numerator are considered unstable and are not presented.

CANCER STAGE AT DIAGNOSIS

DATA SOURCES

The association between stage at diagnosis and variables related to disparities was examined using DCR data. Data were aggregated from 2009 to 2013, the five most recent years of available data.

VARIABLE DEFINITIONS

Stage of cancer was categorized using the SEER summary stage, a scale that categorizes cancers as in situ, local, regional, distant, or unstaged, using the following definitions:

- In situ—Presence of malignant cells within the cell group from which they arose
- Local—Invasive neoplasm confined entirely to the site of origin
- Regional—Tumors that have extended beyond the limits of the site of origin

- Distant—Tumors that have spread to parts of the body remote from the primary site of origin
- Unstaged—Tumors with insufficient information to assign a stage

SEER summary stage does not account for tumor size or other pathological features, as does the American Joint Committee on Cancer's tumor, node, and metastasis classification system. However, SEER summary stage is the most routinely collected and allows for comparison with SEER data.

In situ tumors were excluded, but all other stages were examined.

ANALYTIC METHODS

Data analyses were conducted using SAS software version 9.3 of the SAS System for Windows[22]. Disparities in the stage at diagnosis were examined by race/ethnicity, age, sex, and county of residence. Race/ethnicity data were categorized as Caucasian, African American, Hispanic, and Other. "Hispanic" included individuals of all races. Differences in proportions were calculated and significance testing was performed using the chi-square test.

BEHAVIORAL CANCER RISK FACTORS AND SCREENING USAGE

DATA SOURCES

The Behavior Risk Factor Survey (BRFS) was created to survey personal health behaviors and accompanying risk factors that influence premature morbidity and mortality at the state and national levels among individuals age 18 or older. For this analysis, relevant elements from the BRFS were selected to assess potential risk factors and screening measures for identified cancer incidence and mortality rate discrepancies in Delaware. Indicators included mammography screening (breast cancer), tobacco use (lung cancer), prostate-specific antigen (prostate cancer), sigmoidoscopy and/or colonoscopy (colorectal cancer), and various health risk behavior indicators such as health status, diet, exercise, and obesity status, which are associated with most forms of cancer. The wording of the BRFS questions used is included in table B1 of Appendix B.

VARIABLE DEFINITIONS

For this analysis, BRFS data collected from 2008 through 2014 were used to obtain prevalence estimates of cancer screening tests and access to health care indicators. To identify current trends for modifiable risk factors which include tobacco use (smoking), alcohol consumption, exercise, diet, and obesity, 2014 BRFS data were used. For each of the five modifiable risk factors, we categorized respondents based on whether they were at risk. Individuals were considered to be at risk if they 1) were current or former smokers, 2) reported no occupational or leisure-time physical activity, 3) ate fewer than five servings of fruits and/or vegetables per day, or 4) had a body mass index (BMI), a ratio between an individual's height and weight, of 25 to 29.9 (overweight) or 30 and above (obese).

The prevalence of colorectal and prostate cancer screening was estimated among respondents age 50 years or older. Colorectal cancer screening included all males age 50 years or older who had ever received a sigmoidoscopy or colonoscopy. Prostate cancer screening was estimated for men who reported having had a prostate-specific antigen (PSA) test within the past two years.

Prevalence estimates of mammography screening during the past two years were reported for women age 40 years or older; the prevalence of receiving clinical breast exams in the past two years was

[22] SAS Institute Inc., Version 9.3, Cary, NC: SAS Institute Inc., 2017.

reported for all women. It should be noted, for all the screening tests, the BRFS does not distinguish between tests performed for screening purposes and tests performed for diagnostic purposes.

Race/ethnicity was defined as Caucasian, African American, or Hispanic. Other racial categories could not be reported due to small sample size. Individuals of any race who have a Hispanic ethnicity are included in the Hispanic category, not their race category. For behavioral factors, age was a continuous variable. Education was categorized as less than high school education, a high school graduate with no further education, a high school graduate with one to three years of college, and college graduates. Income referred to the annual household income from all sources and was categorized as less than $15,000, $15,000 - 24,999, $25,000 - $34,999, $35,000 - $49,999, and $50,000 or more. Health care access was measured by having any type of health insurance coverage and a doctor that the individual considered to be his or her personal doctor.

ANALYTIC METHODS

Data analyses were conducted using SAS software version 9.3 of the SAS System for Windows[23]. The prevalence of behavioral risk factors for cancer, access to health care, and screening was calculated for Delaware residents. Data were presented only for groups of 50 people or more.

All prevalence estimates for modifiable risk factors were calculated for race, age, sex, county of residence, education, and income. Estimates were weighted to reflect Delaware's population distribution. For screening test prevalence estimates, health care coverage status and personal doctor status were also included. A chi-square test was calculated for all demographic variables. Multivariate logistic regression models were used to predict access to health care, behavioral risk factors, and screening tests. Demographic variables were only included in multivariate analysis if shown to be significant in bivariate analysis. Therefore, each model was adjusted for included demographic independent variables. All analysis accounted for weighting and sampling.

DATA INTERPRETATION

Data in this report are presented as rates, rate ratios, and adjusted odds ratios, each with a corresponding 95-percent confidence interval. In addition, percentages and percentage differences are displayed. There are a number of ways that the data can be interpreted. From a clinical or public health standpoint, the definition of an important result is a difference that exceeds what is considered clinically acceptable or what we have the knowledge and resources to address. Statistically significant results are defined as rate ratios and odds ratios where the confidence interval does not overlap one. In situations where there is a comparison of two rates, rate ratios, statistically significant results are situations where the confidence intervals do not overlap. To give readers the ability to identify statistically significant results, two measures are indicated as being different only if they are statistically significantly different. Results that are potentially important but not statistically significant are noted; however, in these cases it is stated that the data suggest there may be an effect.

[23] SAS Institute Inc., Version 9.3, Cary, NC: SAS Institute Inc., 2017.

CHAPTER 4: CANCER INCIDENCE, MORTALITY, AND SCREENING

CANCER BURDEN IN DELAWARE

Incidence

- In 2009-2013, there were 27,194 new cancers diagnosed in Delaware.
- There were 21,601 (79 percent) cancers diagnosed in Caucasians; 4,417 (16 percent) diagnosed in African Americans; and 691 (3 percent) diagnosed in Hispanics.

Mortality

- In 2009-2013, there were 9,427 deaths from cancer in Delaware.
- There were 7,571 (80 percent) deaths in Caucasians; 1,559 (17 percent) deaths in African Americans; and 157 (2 percent) deaths in Hispanics.

Table 4-1 presents the incidence and mortality frequencies for cancer sites by race/ethnicity.

TABLE 4-1: NUMBER OF NEW CANCERS AND DEATHS FROM CANCER FOR CANCER SITES BY RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Incidence				Mortality			
	Caucasian	African American	Hispanic	Other	Caucasian	African American	Hispanic	Other
All-site	21,601	4,417	691	485	7,571	1,559	157	140
Breast	2,877	657	98	84	491	126	11	9
Colorectal	1,622	345	42	34	598	121	16	13
Lung	3,210	555	56	50	2,347	402	30	33
Prostate	2,869	931	96	65	312	102	---	---

---: counts under 6 not reported to protect patient confidentiality
Source (Incidence): Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017
Source (Mortality): Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017

DISPARITIES IN CANCER INCIDENCE AND MORTALITY

The Delaware age-adjusted incidence and mortality rates for 2009-2013 for all cancer sites combined and by site for breast, colorectal, lung, and prostate cancer are presented in this section.

Disparities by Race/Ethnicity

TABLE 4-2: AGE-ADJUSTED INCIDENCE RATES AND 95% CONFIDENCE INTERVALS FOR CANCER SITES BY RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian	African American	Hispanic
All-Site	519.5 (512.4, 526.7)	505.3 (489.9, 521.0)	405.8 (372.2, 441.3)*
Breast	131.6 (126.7, 136.8)	129.1 (119.1, 139.6)	105.0 (83.1, 130.4)*
Colorectal	38.7 (36.8, 40.7)	40.9 (36.5, 45.6)	26.0 (18.1, 35.9)*
Lung	74.0 (71.4, 76.7)	68.0 (62.2, 74.1)	40.9 (30.2, 53.8)*
Prostate	137.4 (132.4, 142.7)	233.9 (218.3, 250.4)*	141.0 (111.7, 174.7)

*p-value <0.05 for comparison with Caucasians
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

- Hispanics have significantly lower all-site incidence rates compared to both Caucasians and African Americans.
- When compared to Caucasians, Hispanics have significantly lower incidence rates: 22 percent lower for all-site cancer, 20 percent lower for breast cancer, 33 percent lower for colorectal cancer, and 45 percent lower for lung cancer.
- African Americans had a significantly higher (70 percent) incidence for prostate cancer compared to Caucasians.
- The all-site cancer incidence rates between Caucasians and African Americans do not show a statistically significant difference.

TABLE 4-3: AGE-ADJUSTED MORTALITY RATES AND 95% CONFIDENCE INTERVALS FOR CANCER SITES BY RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian	African American	Hispanic
All Site	176.4 (172.4, 180.5)	193.9 (184.0, 204.2)*	110.7 (92.3, 131.2)*
Breast	21.3 (19.4, 23.4)	25.4 (21.1, 30.4)	---
Colorectal	14.0 (12.98, 15.2)	15.3 (12.6, 18.4)	---
Lung	53.9 (51.7, 56.1)	49.0 (44.2, 54.3)	21.8 (14.3, 31.4)*
Prostate	17.6 (15.7, 19.7)	38.5 (31.0, 47.0)*	---

*p-value <0.05 for comparison with Caucasians
---: rates based on less than 25 cases are not shown
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017

- Hispanics have significantly lower all-site and lung cancer mortality rates than both Caucasians and African Americans.
- Compared to Caucasians, Hispanics have significantly lower mortality rates for all-site cancer (37 percent lower) and lung cancer (60 percent lower).
- African Americans have significantly higher all-site cancer (10 percent higher) and prostate cancer (119 percent higher) mortality rates, compared to Caucasians.

Disparities by Sex

TABLE 4-4: AGE-ADJUSTED INCIDENCE RATES AND 95% CONFIDENCE INTERVALS FOR CANCER SITES BY SEX AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian	African American	Hispanic
All Site			
Male	589.0 (578.0, 600.3)	625.6 (598.6, 653.4)*	441.1 (388.8, 497.7)*
Female	468.4 (458.9, 478.0)	422.6 (404.1, 441.6)*	381.6 (338.2, 428.4)*
Colorectal			
Male	44.7 (41.6, 47.9)	48.8 (41.2, 57.3)	33.0 (20.2, 50.1)
Female	33.7 (31.3, 36.3)	35.8 (30.6, 41.6)	---
Lung			
Male	85.7 (81.5, 90.0)	83.6 (73.7, 94.4)	36.4 (22.5, 55.0)*
Female	65.4 (62.1, 68.9)	56.6 (49.7, 64.1)*	44.7 (29.4, 64.1)*

*p-value <0.05 for comparison with Caucasians
---: rates based on less than 25 cases are not shown
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

- African American males had significantly higher (6 percent higher) all-site cancer incidence rates than Caucasian males.
- African American females had significantly lower (10 percent lower) all-site cancer incidence rates than Caucasian females.
- Hispanic males and females had significantly lower all-site cancer incidence rates (25 percent and 19 percent lower, respectively) than Caucasian males and females.
- Hispanics had significantly lower lung cancer incidence rates than their Caucasian counterparts: African American females were 13 percent lower, Hispanic males were 57 percent lower, and Hispanic females were 32 percent lower.

TABLE 4-5: AGE-ADJUSTED MORTALITY RATES AND 95% CONFIDENCE INTERVALS FOR CANCER SITES BY SEX AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian	African American	Hispanic
All Site			
Male	210.9 (204.3, 217.7)	241.7 (223.9, 260.5)*	134.4 (104.4, 169.2)*
Female	151.6 (146.5, 156.8)	162.8 (151.1, 175.1)	90.7 (68.6, 116.7)*
Colorectal			
Male	17.8 (15.8, 19.8)	18.8 (14.2, 24.5)	---
Female	10.9 (9.5, 16.5)	12.7 (9.5, 16.5)	---
Lung			
Male	65.8 (62.2, 69.6)	66.9 (57.8, 76.8)	---
Female	44.9 (42.2, 47.7)	36.9 (31.5, 43.0)*	---

*p-value <0.05 for comparison with Caucasians
---: rates based on less than 25 cases are not shown
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017

- African American males had significantly higher (15 percent higher) mortality of all-site cancer when compared to Caucasian males.
- Hispanic males and females had significantly lower all-site cancer mortality (36 percent and 40 percent lower, respectively) than Caucasian males and females.
- African American females had significantly lower (18 percent lower) mortality of lung cancer when compared to Caucasian females.
- Mortality rates for lung and colorectal cancer for Hispanic males and females could not be calculated because of low sample size.

Disparities by Age

TABLE 4-6: AGE-ADJUSTED INCIDENCE RATES AND 95% CONFIDENCE INTERVALS FOR CANCER SITES BY AGE AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian	African American	Hispanic
All Sites			
0-39	62.7 (58.4, 67.1)	45.4 (39.7, 51.6)*	39.0 (31.8, 47.3)*
40-64	637.6 (623.3, 652.2)	686.2 (658.2, 715.0)*	470.3 (420.5, 524.3)*
65-74	2,047.1 (1,996.7, 2,098.5)	2,007.1 (1,888.9, 2,130.8)	1,728.9 (1,458.9, 2,034.1)*
75-84	2,578.2 (2,503.7, 2,654.2)	2,306.9 (2,124.7, 2,500.5)*	2,233.0 (2,124.7, 2,761.2)
85+	2,529.2 (2,413.0, 2,649.5)	2,249.6 (1,946.4, 2,586.7)	---
Breast			
0-39	13.5 (10.8, 16.8)	14.6 (10.2, 20.0)	---
40-64	213.3 (201.5, 225.5)	226.8 (205.2, 250.2)	150.4 (112.6, 196.7)*
65-74	473.4 (440.6, 508.0)	423.0 (352.6, 503.4)	---
75-84	476.0 (433.6, 521.3)	423.8 (327.8, 539.2)	---
85+	420.0 (363.4, 482.9)	---	---
Colorectal			
0-39	2.2 (1.4, 3.2)	---	---
40-64	45.4 (41.6, 49.4)	51.1 (43.7, 59.4)	---
65-74	137.4 (124.5, 151.3)	144.9 (114.6, 180.7)	---
75-84	222.3 (200.9, 245.3)	227.0 (172.3, 293.4)	---
85+	295.7 (256.9, 338.7)	---	---
Lung			
0-39	---	---	---
40-64	69.0 (64.5, 73.7)	69.8 (61.2, 79.3)	---
65-74	356.7 (335.8, 378..6)	293.2 (248.7, 343.3)*	---
75-84	509.3 (476.5, 543.7)	479.4 (398.4, 572.0)	---
85+	402.3 (356.8, 452.0)	296.9 (193.9, 435.0)	---
Prostate			
0-39	---	---	---
40-64	165.2 (155.5, 175.4)	353.7 (324.4, 384.9)*	154.6 (114.5, 203.6)
65-74	807.5 (761.8, 855.2)	1,173.1 (1,039.5, 1,319.0)*	730.8 (488.2, 1,052.0)
75-84	605.1 (551.5, 662.4)	869.4 (697.8, 1,071.0)*	---
85+	431.1 (351.1, 523.8)	---	---

*p-value <0.05 for comparison with Caucasians
---: rates based on less than 25 cases are not shown
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

- There was no significant difference in age at diagnosis between African Americans and Caucasians for breast and colorectal cancer.
- Compared to Caucasians, African Americans had significantly higher incidence of prostate cancer for ages 40-64 (114 percent higher), 65-74 (45 percent higher), and 75-84 (44 percent higher).
- The differences in incidence rates were mixed among the age groups for all-site and lung cancer.
- Hispanics had consistently lower all-site incidence rates for ages 0-39 (38 percent lower), 40-64 (26 percent lower), and 65-74 (16 percent lower) compared to Caucasians.

- Age-adjusted incidence rates could not be calculated for many Hispanic categories due to insufficient numbers.

TABLE 4-7: AGE-ADJUSTED MORTALITY RATES AND 95% CONFIDENCE INTERVALS FOR CANCER SITES BY AGE AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian	African American	Hispanic
All Sites			
0-39	6.5 (5.2, 8.1)	7.6 (5.4, 10.4)	---
40-64	153.7 (146.9, 160.8)	193.8 (179.2, 209.3)*	95.4 (73.6, 121.5)*
65-74	670.1 (641.2, 699.9)	716.1 (646.1, 791.7)	385.5 (264.6, 542.7)*
75-84	1,215.7 (1.164.9, 1,268.1)	1.311.1 (1,174.4, 1,459.3)	892.9 (618.4, 1,247.8)
85+	1,754.4 (1,657.8, 1,855.0)	1,587.3 (1,334.4, 1,874.2)	---
Breast			
0-39	---	---	---
40-64	26.3 (22.4, 30.7)	40.8 (32.0, 51.4)*	---
65-74	69.4 (57.3, 83.4)	---	---
75-84	114.9 (94.7, 138.3)	---	---
85+	168.4 (133.3, 209.9)	---	---
Colorectal			
0-39	---	---	---
40-64	12.9 (11.0, 15.2)	14.7 (10.9, 19.4)	---
65-74	45.0 (37.7, 53.3)	57.2 (38.5, 81.8)	---
75-84	88.5 (75.2, 103.4)	102.3 (66.8, 149.9)	---
85+	191.9 (160.9, 227.2)	---	---
Lung			
0-39	---	---	---
40-64	44.0 (40.5, 47.8)	52.6 (45.2, 61.0)*	---
65-74	245.3 (228.0, 263.6)	197.9 (162.0, 239.4)*	---
75-84	404.2 (375.2, 434.8)	347.6 (279.2, 427.8)	---
85+	385.3 (340.8, 434.0)	---	---
Prostate			
0-39	---	---	---
40-64	4.6 (3.1, 6.6)	---	---
65-74	50.5 (39.3, 63.7)	117.6 (77.2, 171.5)*	---
75-84	130.8 (106.7, 158.6)	430.8 (310.1, 582.7)*	---
85+	448.1 (366.5, 542.5)	---	---

*p-value <0.05 for comparison with Caucasians
---: rates based on less than 25 cases are not shown
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017

- No particular pattern emerged when looking at mortality rate differences by age.
- African Americans had significantly higher mortality from lung cancer at ages 40-64 (20 percent higher) but lower mortality from lung cancer at ages 65-74 (19 percent lower) compared to Caucasians.
- African Americans had a 55 percent higher mortality from breast cancer at ages 40-64 than Caucasians.

- Hispanics had lower all-site mortality at ages 40-64 (38 percent lower) and ages 65-74 (42 percent lower), compared to Caucasians.
- Due to low numbers, rates for most Hispanic age groups could not be calculated.

Disparities by County of Residence

TABLE 4-8: AGE-ADJUSTED INCIDENCE RATES AND 95% CONFIDENCE INTERVALS FOR CANCER SITES BY COUNTY OF RESIDENCE AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian	African American	Hispanic
All Sites			
Kent	558.5 (540.6, 576.9)	518.1 (484.4, 553.5)*	464.6 (380.7, 560.0)
New Castle	508.8 (499.0, 518.7)	498.9 (479.8, 518.5)	390.5 (349.8, 434.1)*
Sussex	516.5 (503.3, 530.0)	518.6 (478.2, 561.4)	390.3 (315.9, 475.0)*
Breast			
Kent	130.6 (118.8, 143.2)	133.3 (111.5, 158.1)	---
New Castle	135.6 (128.7, 142.8)	132.4 (120.1, 145.7)	81.8 (59.0, 109.8)*
Sussex	124.7 (115.6, 134.5)	110.5 (86.3, 139.4)	163.7 (100.5, 247.7)
Colorectal			
Kent	41.5 (36.8, 46.8)	42.9 (33.3, 54.2)	---
New Castle	37.8 (35.2, 40.6)	40.8 (35.4, 46.8)	29.7 (19.4, 43.1)
Sussex	38.7 (35.3, 42.4)	39.1 (28.6, 52.2)	---
Lung			
Kent	83.9 (77.2, 91.1)	67.2 (55.1, 81.1)*	---
New Castle	70.4 (66.9, 74.1)	66.7 (59.5, 74.4)	38.6 (25.6, 55.0)*
Sussex	75.2 (70.6, 80.0)	75.6 (60.2, 93.6)	---
Prostate			
Kent	144.8 (132.1, 158.4)	273.5 (238.1, 312.8)*	---
New Castle	139.5 (132.3, 147.1)	226.6 (207.2, 247.2)*	134.0 (98.7, 176.3)
Sussex	130.0 (121.4, 139.1)	210.3 (173.5, 252.6)*	---

*p-value <0.05 for comparison with Caucasians
--: rates based on less than 25 cases are not shown
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

- African Americans had a significantly higher incidence of prostate cancer than Caucasians in all three counties: 89 percent higher in Kent County and 62 percent higher in Sussex and New Castle counties.
- Lung cancer was 20 percent lower in African Americans in Kent County compared with Caucasians.
- All-site cancer incidence rates were 23 percent lower for Hispanics in New Castle County and 24 percent lower for Hispanics in Sussex County, compared to Caucasians.

TABLE 4-9: AGE-ADJUSTED MORTALITY RATES AND 95% CONFIDENCE INTERVALS FOR CANCER SITES BY COUNTY OF RESIDENCE AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian	African American	Hispanics
All Sites			
Kent	194.5 (184.1, 205.3)	180.2 (159.8, 202.5)	116.8 (76.5, 168.7)*
New Castle	177.9 (172.3, 183.7)	195.4 (182.9, 208.5)*	121.2 (96.9, 149.0)*
Sussex	165.6 (158.6, 172.9)	206.8 (181.1, 235.0)*	---
Breast			
Kent	23.4 (18.6, 29.1)	31.7 (21.3, 45.2)	---
New Castle	20.5 (18.0, 23.3)	23.2 (18.1, 29.2)	---
Sussex	21.3 (17.8, 25.5)	---	---
Colorectal			
Kent	14.8 (12.1, 18.1)	14.8 (9.5, 21.9)	---
New Castle	14.5 (12.9, 16.2)	15.9 (12.4, 20.0)	---
Sussex	13.0 (11.1, 15.2)	---	---
Lung			
Kent	60.0 (54.3, 66.1)	47.4 (37.3, 59.2)	---
New Castle	52.6 (49.5, 55.8)	48.5 (42.4, 55.2)	---
Sussex	53.1 (49.3, 57.2)	54.6 (42.0, 69.8)	---
Prostate			
Kent	13.6 (9.6, 18.7)	---	---
New Castle	17.9 (15.3, 21.0)	36.8 (27.7, 47.5)*	---
Sussex	19.4 (15.8, 23.6)	---	---

*p-value <0.05 for comparison with Caucasians
---: rates based on less than 25 cases are not shown
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017

- African Americans had significantly higher all-site cancer mortality in New Castle County (10 percent higher) and Sussex County (25 percent higher), compared to Caucasians.
- African Americans had significantly higher mortality from prostate cancer in New Castle County (105 percent higher) when compared with Caucasians.
- Hispanics had significantly lower all-site cancer mortality rates in Kent County (40 percent lower) and New Castle County (32 percent lower), compared to Caucasians.
- Age-adjusted mortality rates could not be calculated for many Hispanic categories due to insufficient numbers.

STAGE AT DIAGNOSIS AND SCREENING

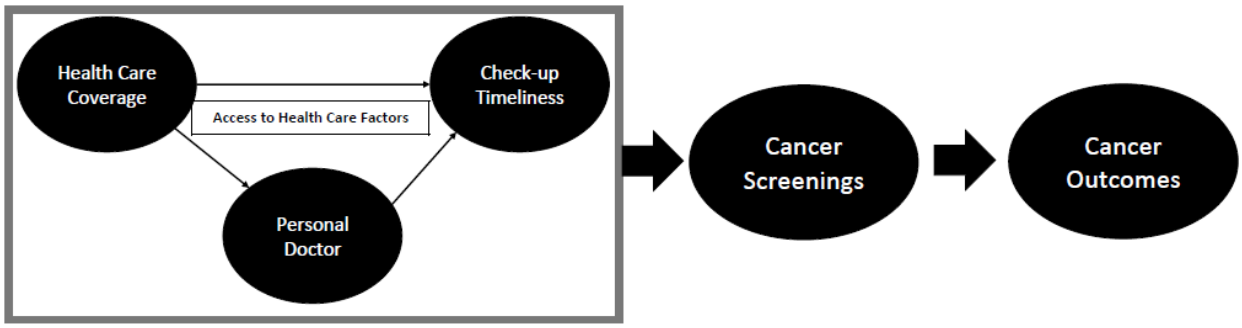
Stage of disease at site-specific cancer diagnosis was evaluated for the different racial and ethnic groups in Delaware by examining the proportion of individuals who were diagnosed at each cancer stage. The variations in stage at diagnosis for breast, colorectal, lung, and prostate cancer were examined by county and age at diagnosis. Stage is classified as local, regional, or distant; regional and distant were combined to form the category of advanced stage presented in the graphs.

Cancer screenings help to detect cancer early. Early detection can lead to better cancer outcomes by reducing late stage incidence rates and reducing mortality. The BRFS asks questions about clinical breast

exams, mammography, sigmoidoscopy and colonoscopy, and prostate-specific antigen. For that reason, health care access, health care coverage, and cancer screenings are covered in this section.

Access to health care is an important factor in cancer screening. The BRFS asked three separate questions regarding access to health care from 2008-2014. The questions asked include health care coverage status, personal doctor status, and check-up timeliness. Figure 4-1 shows the flow of association from access to health care to cancer screening to cancer outcomes.

FIGURE 4-1: FLOW OF ASSOCIATION FROM ACCESS TO HEALTH CARE VARIABLES TO CANCER SCREENINGS AND CANCER OUTCOMES IN DELAWARE



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

Those who do not have access or have poor access are less likely to receive a timely cancer screening, which in turn can lead to increased risk of negative cancer outcomes from a later stage at diagnosis.

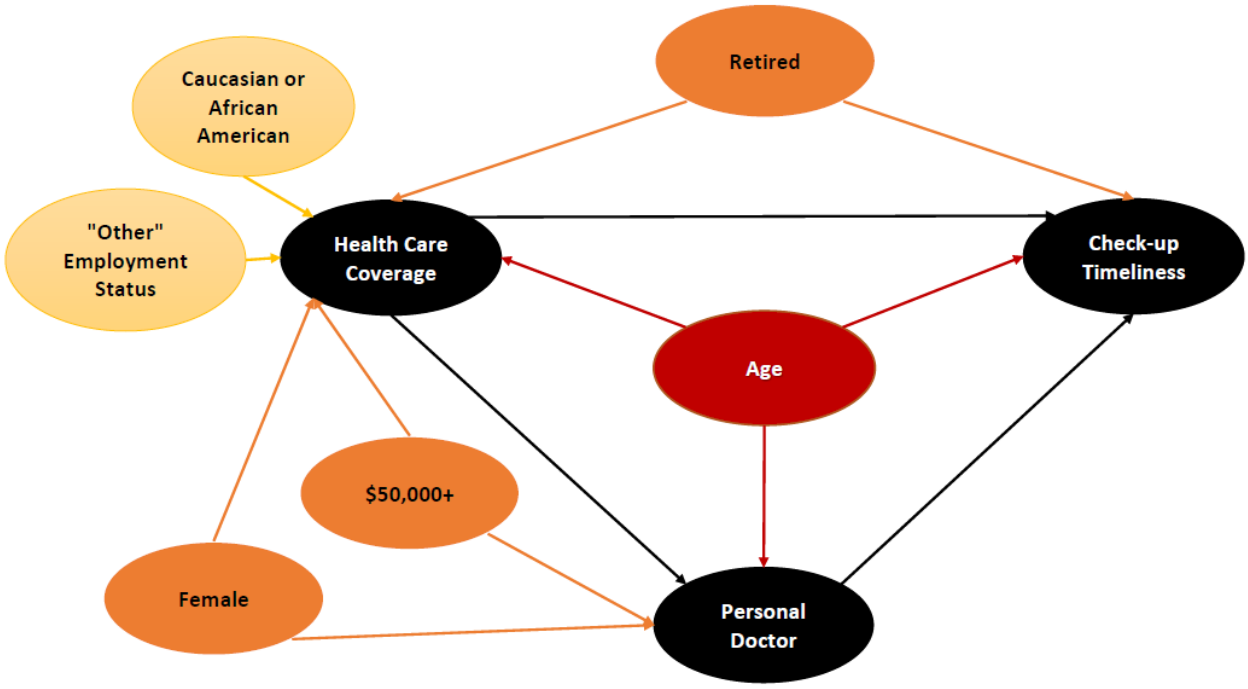
Each individual variable for access to health care is important. Therefore, individual analysis was conducted. The analysis results for each individual access to health care variable were combined into a comprehensive diagram to show the relationship among the variables. Diagrams were developed for the years prior to and after the Affordable Care Act health insurance exchanges were implemented. Enrollment in the health insurance exchanges began on October 1, 2013.

Other demographic variables may have an association for a single year. Associations present in a single survey year are likely due to sample size or sampling methodology. Associations persisting over time are likely to be true associations, with fluctuations in magnitude changing due to sample size or sampling methodology.

Adults who have health care coverage are more likely to have a personal doctor and to have received a check-up within the past year.

Health care coverage and the relationship to other factors consistently associated with access to health care is illustrated in Figures 4-2 and 4-3. Variables associated with one access to health care factor are in yellow bubbles, variables associated with two access to health care factors are in orange bubbles, and variables associated with all three access to health care variables are in red bubbles.

FIGURE 4-2: COMPREHENSIVE DIAGRAM ILLUSTRATING THE RELATIONSHIP AMONG DEMOGRAPHIC CHARACTERISTICS CONSISTENTLY ASSOCIATED WITH ACCESS TO HEALTH CARE VARIABLES IN DELAWARE, 2008-2013 (BEFORE HEALTH INSURANCE EXCHANGES)

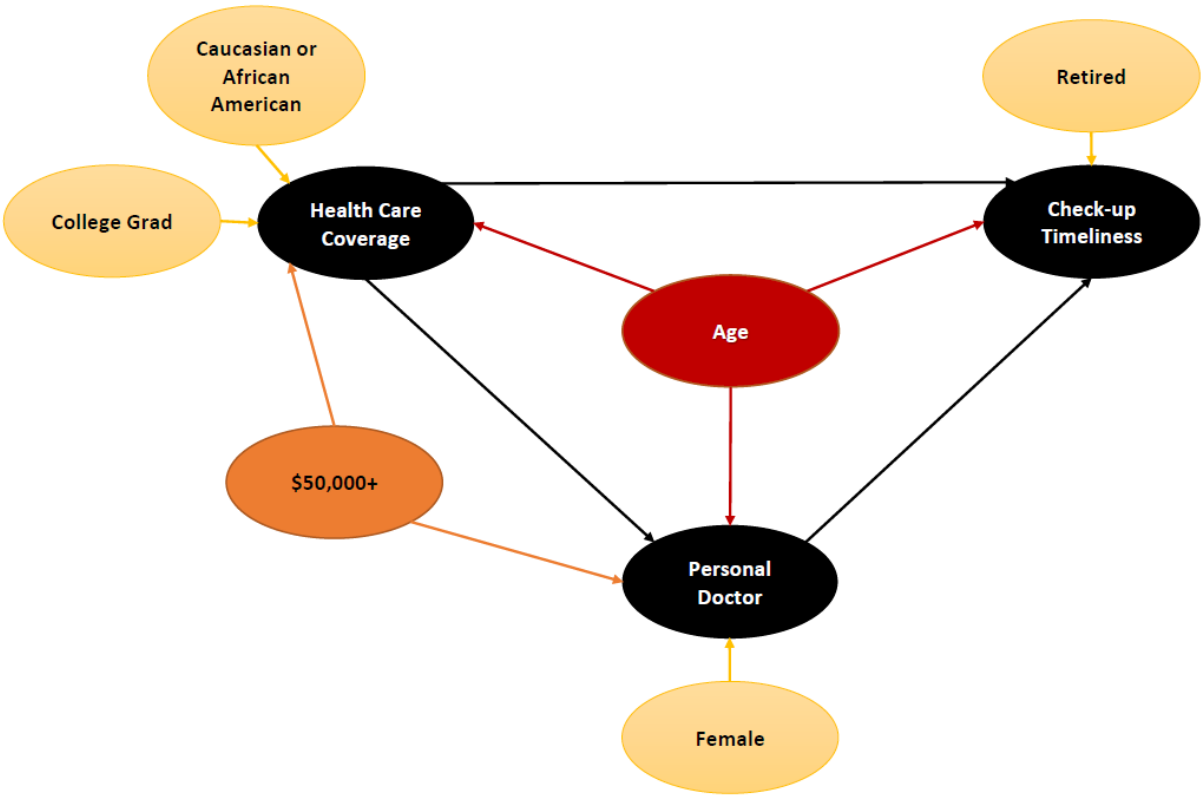


Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2013

Factors associated with health care coverage before the health insurance exchanges commenced operation:

- As age increases, so does the likelihood of having health care coverage.
- African Americans were more likely to report having health care coverage compared to Hispanics.
- Caucasians were more likely to report having health care coverage compared to Hispanics.
- No differences in health care coverage status between African Americans and Caucasians were observed.
- Females were more likely to report having health care coverage compared to males.
- Adults with an annual household income of $50,000 or more were more likely to report having health care coverage, compared to adults with an annual income of less than $15,000.
- Adults with an "other" employment status were more likely to report having health care coverage, compared to out-of-work adults.
- Retirees were more likely to report having health care coverage compared to out-of-work adults.

FIGURE 4-3: COMPREHENSIVE DIAGRAM ILLUSTRATING THE RELATIONSHIP AMONG DEMOGRAPHIC CHARACTERISTICS CONSISTENTLY ASSOCIATED WITH ACCESS TO HEALTH CARE VARIABLES IN DELAWARE, 2014-2015 (AFTER HEALTH INSURANCE EXCHANGES)



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2014-2015

Factors associated with health care coverage after the health insurance exchanges commenced operation:

- Age continues to be positively associated with health care coverage.
- Both Caucasians and African Americans continued to be more likely to report having health care coverage compared to Hispanics. However, the magnitude of association for these two years was noticeable. Additional years of data are needed to determine if the change in magnitude was due to survey year differences or due to a true change in association. No differences between Caucasians and African Americans were observed.
- No differences were observed between males and females during this time period.
- College graduates were more likely to report having health care coverage than those with less than a high school education.
- Adults with an annual household income of $50,000 or more continued to be more likely to report having health care coverage, compared to adults with an annual income of less than $15,000.

<u>For personal doctor status it was found that:</u>

- As age increases, so does the likelihood of having a personal doctor.
- Females were more likely to report having a personal doctor compared to males.
- Adults with an annual household income of $50,000 or more were more likely to report having a personal doctor, compared to adults with an annual household income of less than $15,000.
- Adults with health care coverage are more likely to have a personal doctor, compared to adults without health care coverage.

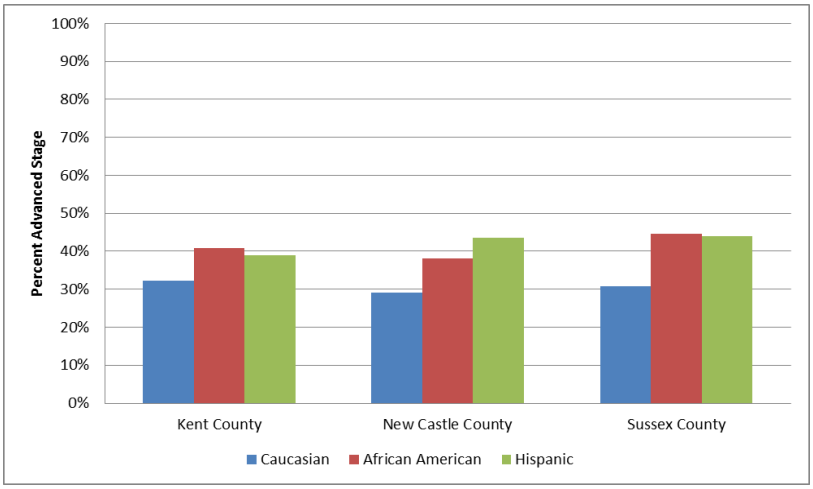
For check-up timelines it was found that:

- As age increases, so does the likelihood of having a check-up within the past year.
- Retirees were more likely to have a check-up within the past year, compared to out-of-work adults.

BREAST CANCER

Graphs for advanced stage at diagnosis by race/ethnicity for breast cancer by county (Figure 4-4) and age (Figure 4-5) are presented below.

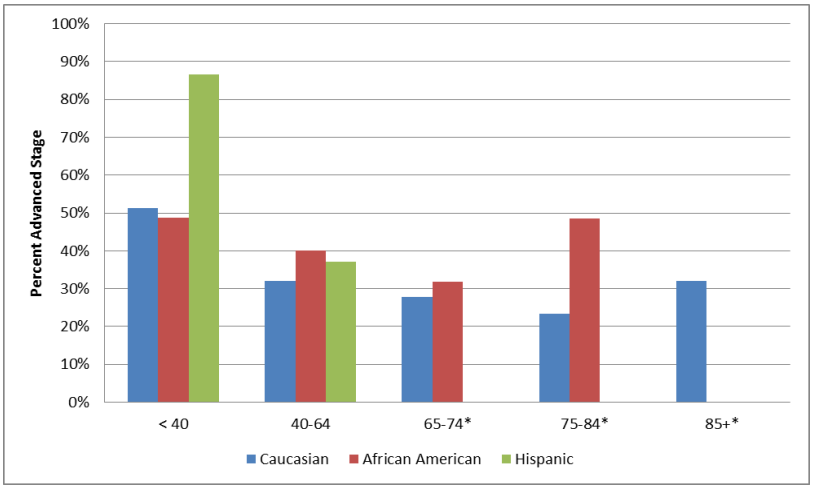
FIGURE 4-4: PERCENT OF BREAST CANCER CASES AT ADVANCED STAGE BY COUNTY AND RACE/ETHNICITY IN DELAWARE, 2009-2013



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

- African American females had significantly higher proportions of breast cancers diagnosed at advanced stage in all three Delaware counties, compared to Caucasian females.
- Hispanic females had significantly higher proportions of breast cancers diagnosed at the advanced stage in all three Delaware counties, compared to Caucasian females.

FIGURE 4-5: PERCENT OF BREAST CANCER CASES AT ADVANCED STAGE BY AGE AND RACE/ETHNICITY IN DELAWARE, 2009-2013



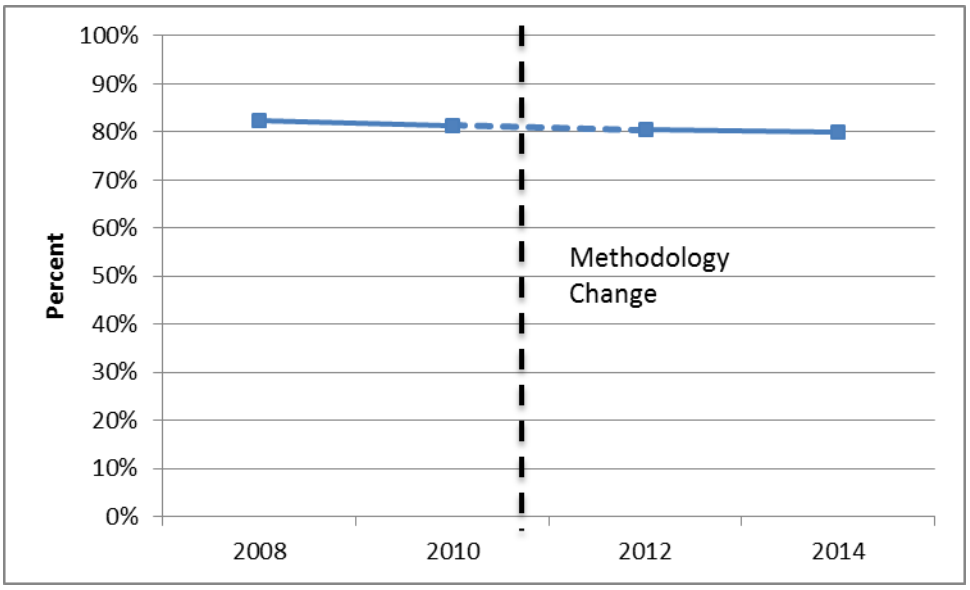
*Percentages for counts less than 6 are not shown
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

- For those younger than 40 years of age, Hispanic females had a significantly higher proportion of breast cancers diagnosed at an advanced stage, compared to Caucasian and African American females of the same age group.
- Caucasian females ages 40-64 had a significantly lower proportion of breast cancers diagnosed at an advanced stage than Hispanic and African American females.
- African American females ages 75-84 had significantly higher advanced stages of breast cancer, compared to Caucasian females.

The Delaware Cancer Consortium recommends that all females age 40 and older receive an annual mammogram or as recommended by their doctor or health professional.

Figure 4-6 presents the percent of females who have had a mammography in the past two years.

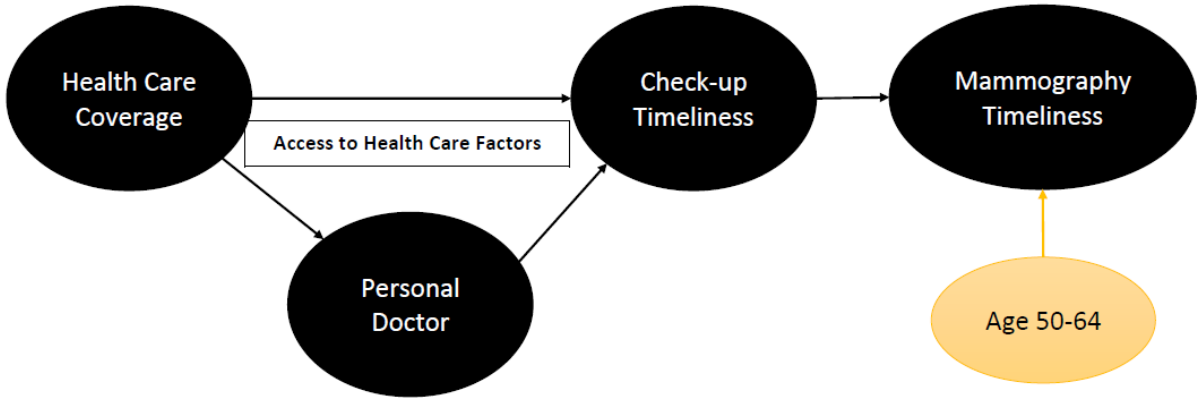
FIGURE 4-6: PERCENT OF FEMALES AGE 40 YEARS AND OLDER WHO HAVE RECEIVED A MAMMOGRAM WITHIN THE PAST TWO YEARS IN DELAWARE, 2008-2014



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014.

- The prevalence of having received a mammogram among Delaware females age 40 and older has remained stable, from 82.3 percent in 2008 to 80.1 percent in 2014.

FIGURE 4-7: VARIABLES ASSOCIATED WITH HAVING RECEIVED A MAMMOGRAM WITHIN THE PAST TWO YEARS IN DELAWARE, 2008-2014

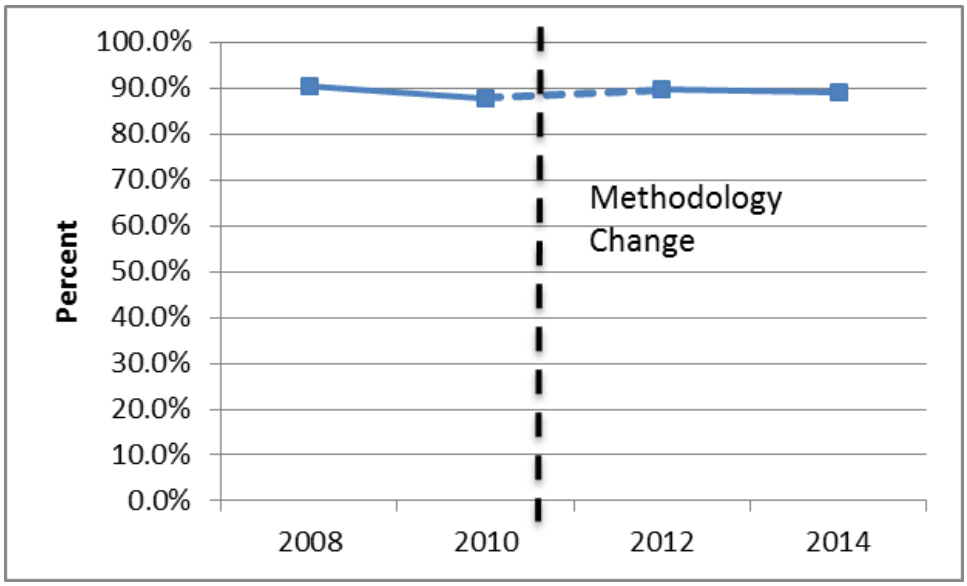


Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

- Females ages 50-64 were more likely to have received a mammogram within the past two years, compared to females ages 40-49.
- Females who had received a check-up within the past year were more likely to have received a mammogram within the past two years, compared to females who had not received a check-up within the past year.

A clinical breast exam is performed by a doctor or nurse who manually examines breast tissue for lumps or other changes.

FIGURE 4-8: PERCENT OF FEMALES WHO HAVE EVER RECEIVED A CLINICAL BREAST EXAM IN DELAWARE, 2008-2014

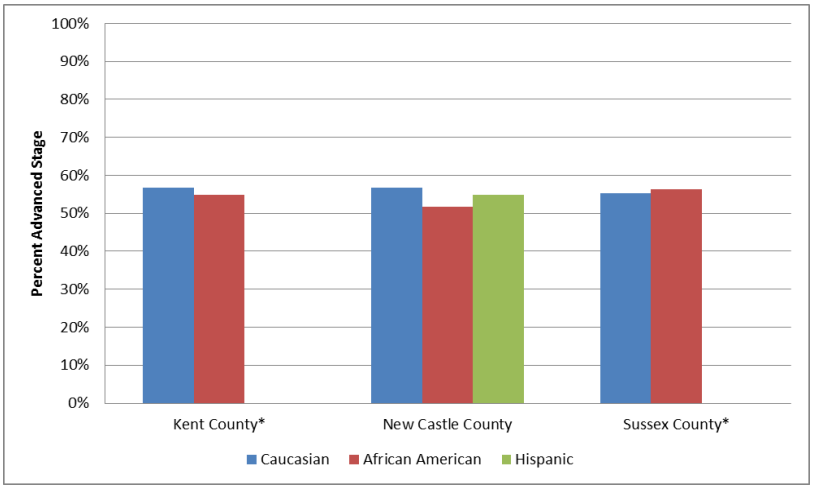


Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014.

- The prevalence of ever having a clinical breast exam among Delaware females age 40 and older has remained stable, from 90.5 percent to 89.1 percent in 2014.
- No demographic or access to health care variables were consistently associated with having received a clinical breast exam.

Graphs for advanced stage at diagnosis by race/ethnicity for colorectal cancer by county (Figure 4-9) and age (Figure 4-10) are presented below.

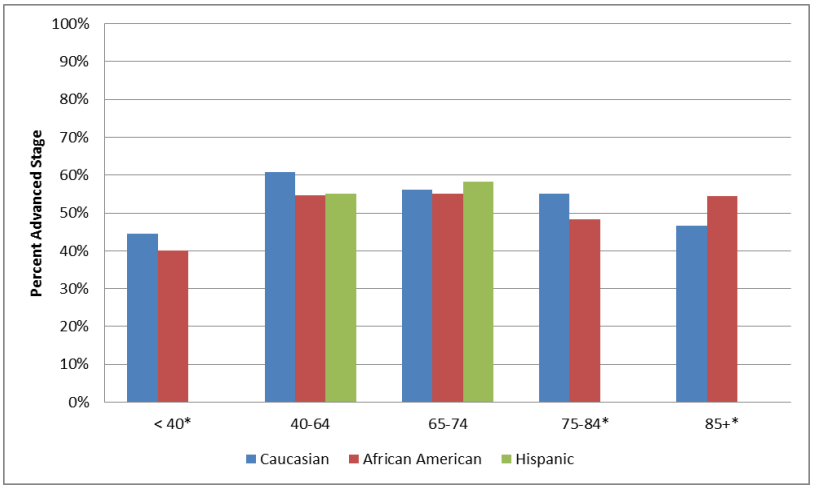
FIGURE 4-9: PERCENT OF COLORECTAL CANCER CASES AT ADVANCED STAGE BY COUNTY AND RACE/ETHNICITY IN DELAWARE, 2009-2013



*Percentages for counts less than 6 are not shown
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

- There was no statistical difference between the proportions of advanced stage of disease for colorectal cancer in Delaware counties by race/ethnicity.

FIGURE 4-10: PERCENT OF COLORECTAL CANCER CASES AT ADVANCED STAGE BY AGE AND RACE/ETHNICITY IN DELAWARE, 2009-2013



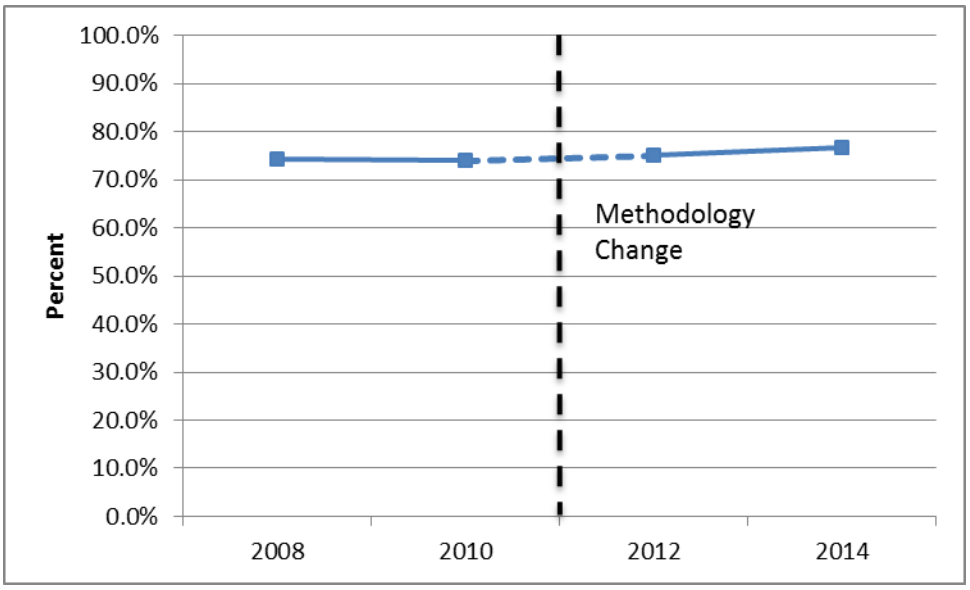
*Percentages for counts less than 6 are not shown
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

- There was no statistical difference between the proportions of advanced stage of disease for colorectal cancer for age group by race/ethnicity.

The Delaware Cancer Consortium recommends that all adults age 50 and older receive a colonoscopy every 10 years or as recommended by their doctor or health professional.

Figure 4-11 presents the percent of adults who ever have had a sigmoidoscopy or colonoscopy.

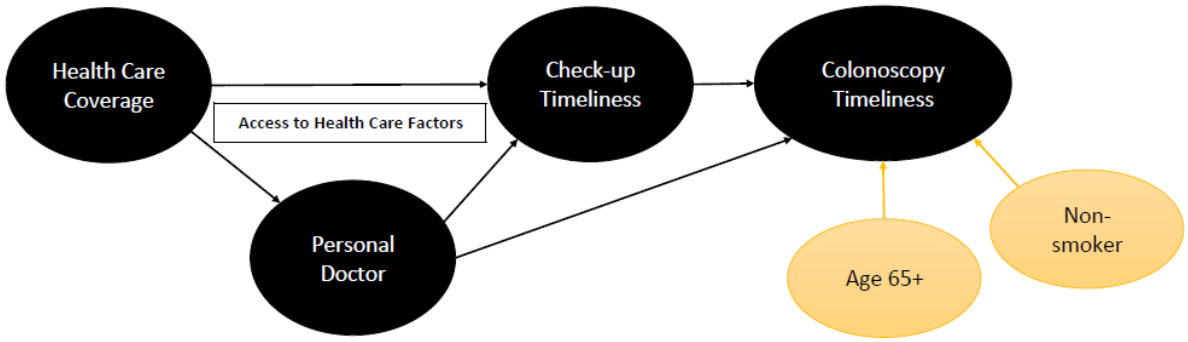
FIGURE 4-11: PERCENT OF ADULTS WHO HAVE EVER RECEIVED A SIGMOIDOSCOPY OR COLONOSCOPY IN DELAWARE, 2008-2014



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014.

- The prevalence of ever having a colonoscopy/sigmoidoscopy among Delaware adults age 50 and older has remained stable, from 74.3 percent in 2008 to 76.6 percent in 2014.

FIGURE 4-12: VARIABLES ASSOCIATED WITH HAVING RECEIVED A SIGMOIDOSCOPY OR COLONOSCOPY WITHIN THE PAST TWO YEARS IN DELAWARE, 2008-2014



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

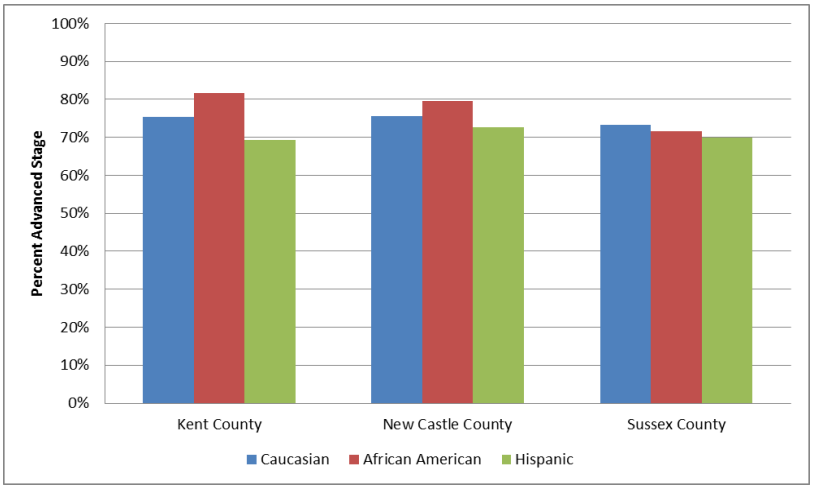
- Adults age 65 and older were more likely to ever have received a sigmoidoscopy or colonoscopy compared to adults age 50-64.
- Adults who had a personal doctor were more likely to have received a sigmoidoscopy or colonoscopy, compared to adults who did not have a personal doctor.
- Adults who received a check-up within the past year were more likely to have a sigmoidoscopy or colonoscopy, compared to adults whose last check-up was a year or more ago.

- Married adults were more likely to receive a sigmoidoscopy or colonoscopy compared to single or never married adults.
- Non-smokers were more likely to have a sigmoidoscopy or colonoscopy compared to smokers.

LUNG CANCER

Graphs for advanced stage at diagnosis by race/ethnicity for lung cancer by county (Figure 4-13) and age (Figure 4-14) are presented below.

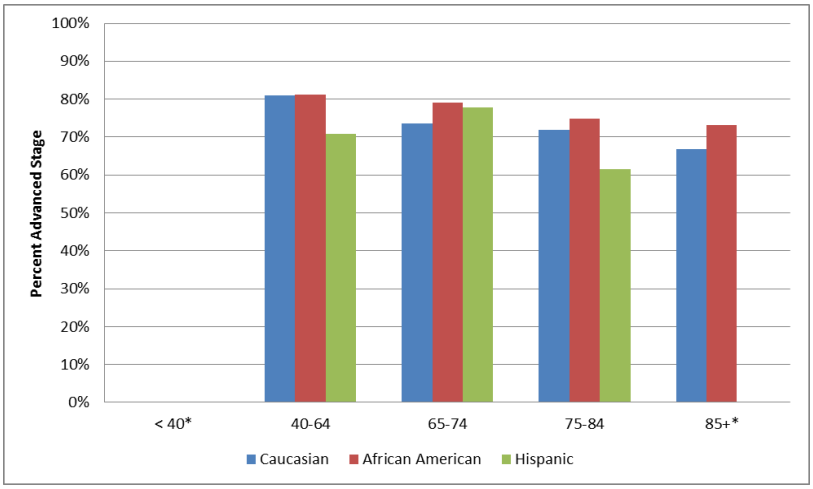
FIGURE 4-13: PERCENT OF LUNG CANCER CASES AT ADVANCED STAGE BY COUNTY AND RACE/ETHNICITY IN DELAWARE, 2009-2013



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

- There was no statistical difference between the proportions of advanced stage of disease for lung cancer in Delaware counties by race/ethnicity.

FIGURE 4-14: PERCENT OF LUNG CANCER CASES AT ADVANCED STAGE BY AGE AND RACE/ETHNICITY IN DELAWARE, 2009-2013



*Percentages for counts less than 6 are not shown

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

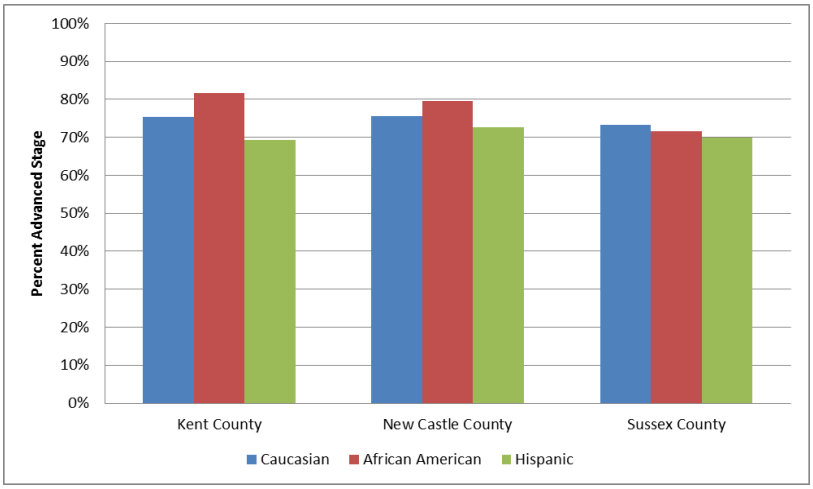
- There was no statistical difference between the proportions of advanced stage of disease for lung cancer for age group by race/ethnicity.

No screening data were available. The BRFS does not yet ask questions related to lung cancer screening.

PROSTATE CANCER

Graphs for advanced stage at diagnosis by race/ethnicity for prostate cancer by county (Figure 4-15) and age (Figure 4-16) are presented below.

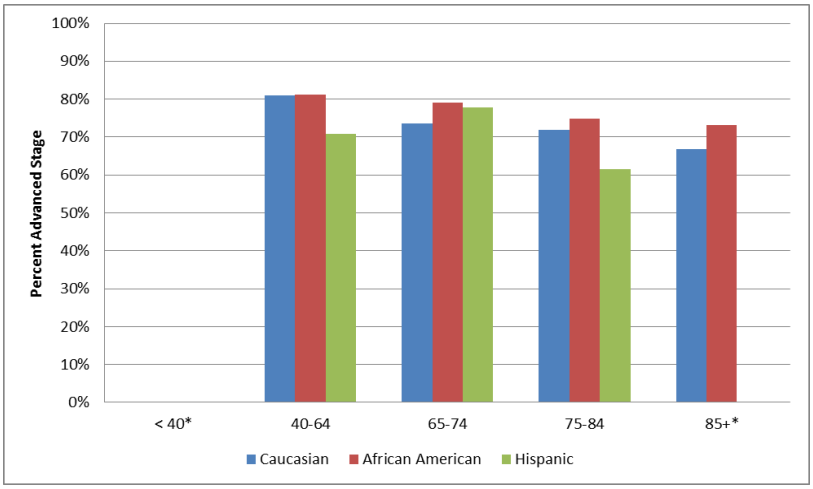
FIGURE 4-15: PERCENT OF PROSTATE CANCER CASES AT ADVANCED STAGE BY COUNTY AND RACE/ETHNICITY IN DELAWARE, 2009-2013



*Percentages for counts less than 6 are not shown
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

- There was no statistical difference between the proportions of advanced stage of disease for prostate cancer in Delaware counties by race/ethnicity.

FIGURE 4-16: PERCENT OF PROSTATE CANCER CASES AT ADVANCED STAGE BY AGE AND RACE/ETHNICITY IN DELAWARE, 2009-2013



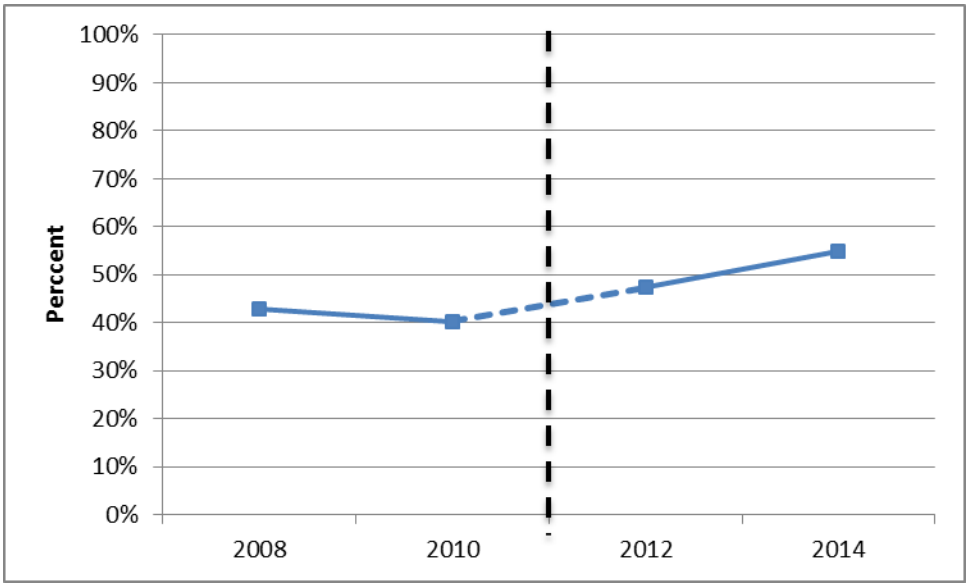
*Percentages for counts less than 6 are not shown
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

- There was no statistical difference between the proportions of advanced stage of disease for prostate cancer for age group by race/ethnicity.

The Delaware Cancer Consortium recommends that African American men age 40 and older and Caucasian men age 50 and older discuss prostate cancer screening with their doctor or health professional.

Figure 4-17 shows the percent of males who have received a PSA test.

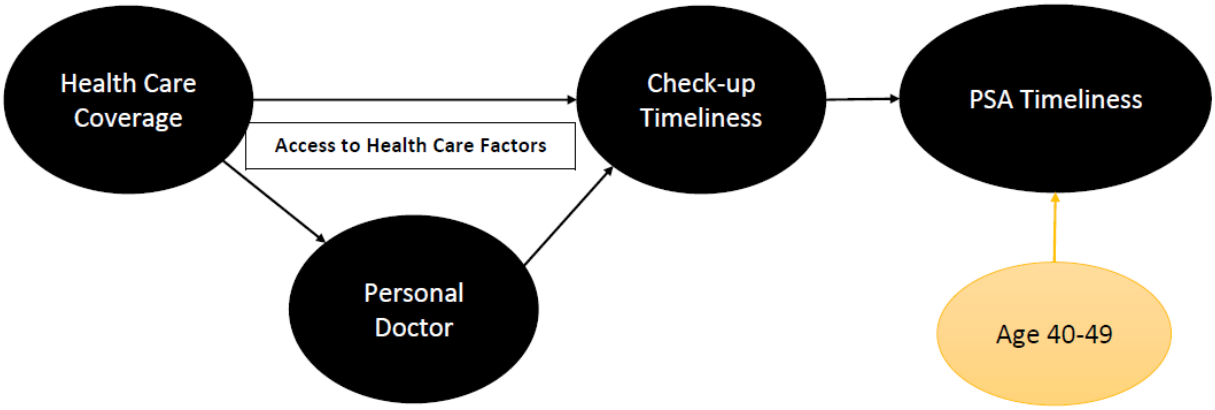
FIGURE 4-17: PERCENT OF MALES WHO HAVE *NOT* RECEIVED A PSA TEST IN DELAWARE, 2008-2014



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

- The prevalence of ***NOT*** receiving a PSA test in the past two years among Delaware adult males age 40 and older increased from 42.9 percent in 2008 to 54.9 percent in 2014. **This change is statistically significant.**

FIGURE 4-18: VARIABLES ASSOCIATED WITH *NOT* HAVING RECEIVED A PSA TEST WITHIN THE PAST TWO YEARS IN DELAWARE, 2008-2014



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

- Males ages 40-49 were more likely to ***NOT*** have received a PSA test within the past two years, compared to males age 65 and older.
- Males whose last check-up was more than one year ago were more likely to ***NOT*** have received a PSA test, compared to males whose last check-up was within the past year.

CHAPTER 5: TRENDS IN CANCER INCIDENCE AND MORTALITY

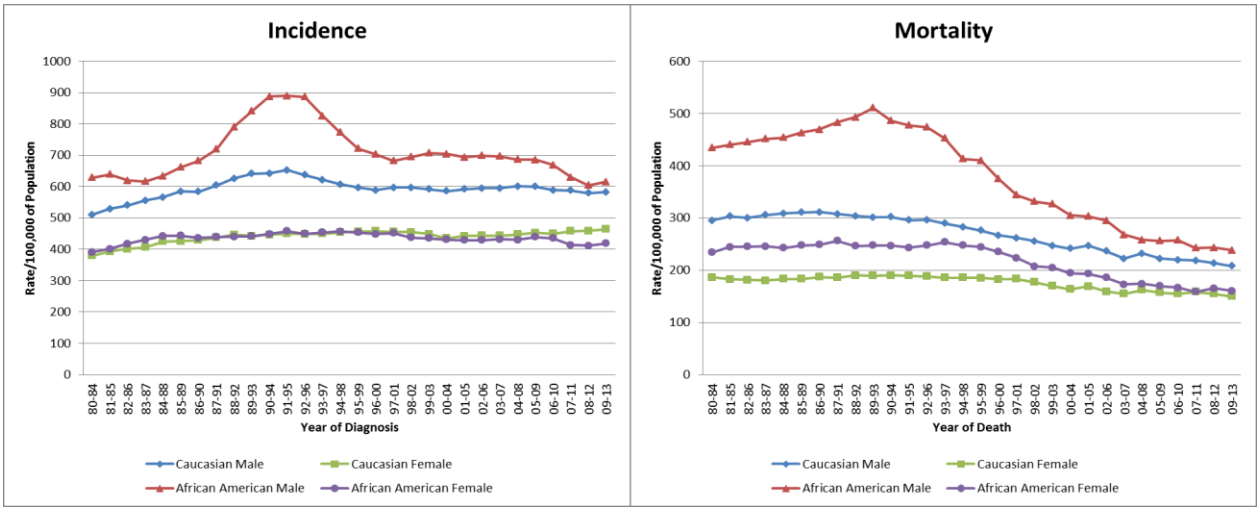
In this section, Delaware incidence and mortality rates from 1980 to 2013 are presented for all-site and the four major cancer sites. The analysis was restricted to African Americans and Caucasians because of insufficient data for the other races. Hispanic ethnicity was not separated in this analysis. Results for all-site, colorectal, and lung cancer are presented by sex, since this was an important determinant of the trend.

Since the annual number for some cancers and subgroups of interest were small, the five-year average incidence and mortality rates were plotted for each five-year increment from 1980-1984 through 2009-2013.

CANCER INCIDENCE AND MORTALITY IN DELAWARE, 1980-2013

All Cancer Sites Combined

FIGURE 5-1: ALL-SITE CANCER INCIDENCE AND MORTALITY TRENDS IN DELAWARE, 1980-2013



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

For incidence rates from 1999-2003 to 2009-2013

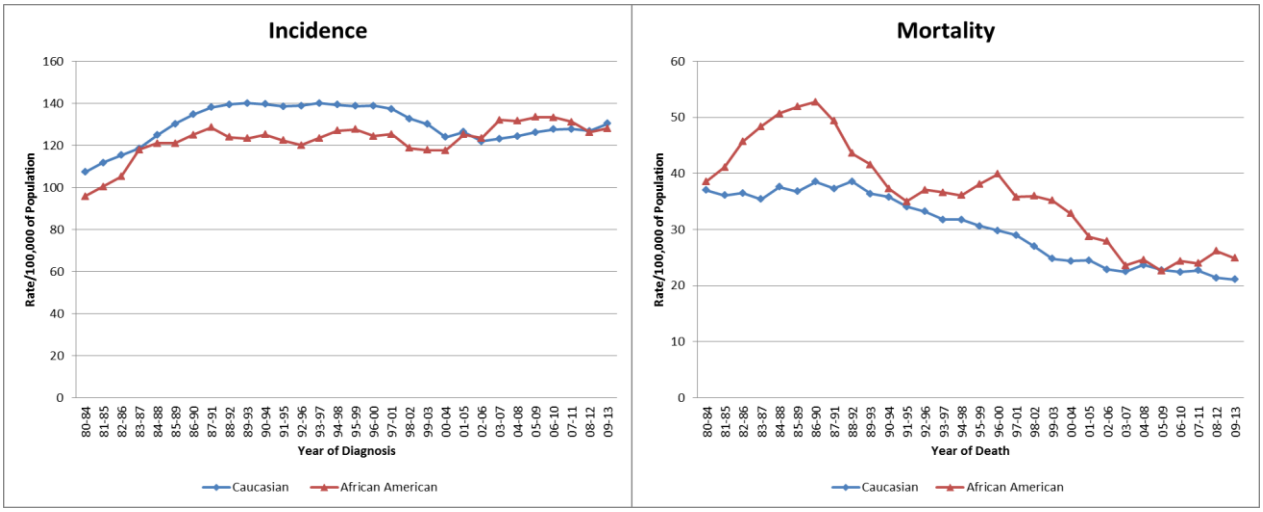
- African American males saw a 13 percent decline in the all-site cancer incidence rate.
- African American females saw a 4 percent decline in the all-site cancer incidence rate.
- Caucasian males saw a 2 percent decline in the all-site cancer incidence rate.
- Caucasian females saw a 3 percent increase in the all-site cancer incidence rate.

For mortality rates from 1999-2003 to 2009-2013

- African American males saw a 27 percent decline in the all-site cancer mortality rate.
- African American females saw a 22 percent decline in the all-site cancer mortality rate.
- Caucasian males saw a 16 percent decline in the all-site cancer mortality rate.
- Caucasian females saw a 12 percent decline in the all-site cancer mortality rate.

Breast Cancer

FIGURE 5-2: BREAST CANCER INCIDENCE AND MORTALITY TRENDS, DELAWARE 1980-2013



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

For incidence rates from 1999-2003 to 2009-2013

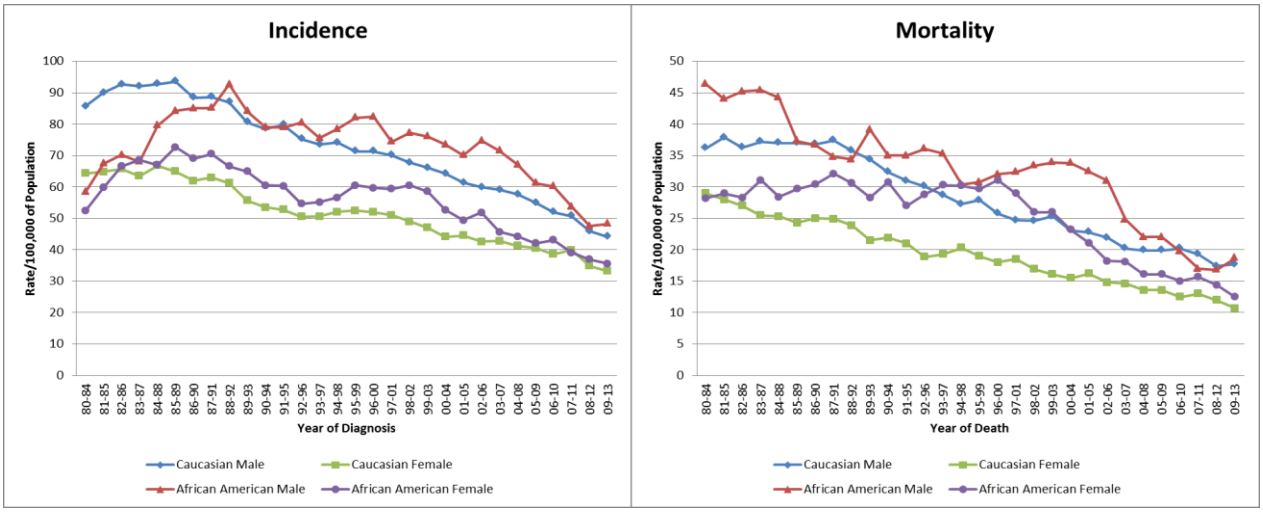
- African American females saw a 9 percent increase in the breast cancer incidence rate.
- Caucasian females saw no change in the breast cancer incidence rate.

For mortality rates from 1999-2003 to 2009-2013

- African American females saw a 29 percent decline in the breast cancer mortality rate.
- Caucasian females saw a 15 percent decline in the breast cancer mortality rate.

Colorectal Cancer

FIGURE 5-3: COLORECTAL CANCER INCIDENCE AND MORTALITY TRENDS DELAWARE 1980-2013



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

For incidence rates from 1999-2003 to 2009-2013

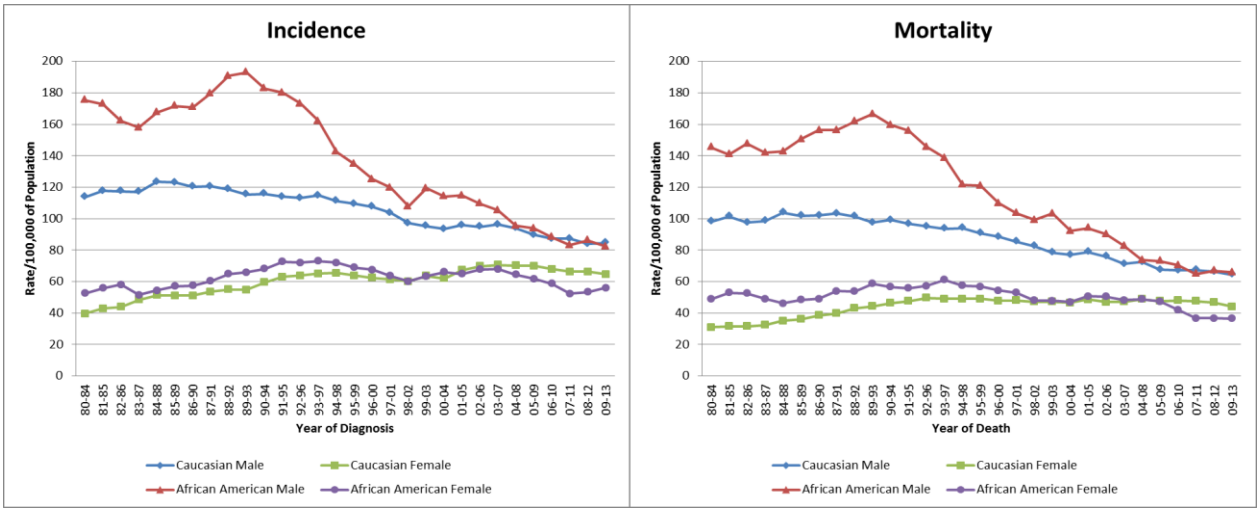
- African American males saw a 37 percent decline in the colorectal cancer incidence rate.
- African American females saw a 39 percent decline in the colorectal cancer incidence rate.
- Caucasian males saw a 33 percent decline in the colorectal cancer incidence rate.
- Caucasian females saw a 29 percent decline in the colorectal cancer incidence rate.

For mortality rates from 1999-2003 to 2009-2013

- African American males saw a 45 percent decline in the colorectal cancer mortality rate.
- African American females saw a 52 percent decline in the colorectal cancer mortality rate.
- Caucasian males saw a 30 percent decline in the colorectal cancer mortality rate.
- Caucasian females saw a 34 percent decline in the colorectal cancer mortality rate.

Lung Cancer

FIGURE 5-4: LUNG CANCER INCIDENCE AND MORTALITY TRENDS, DELAWARE 1980-2013



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

For incidence rates from 1999-2003 to 2009-2013

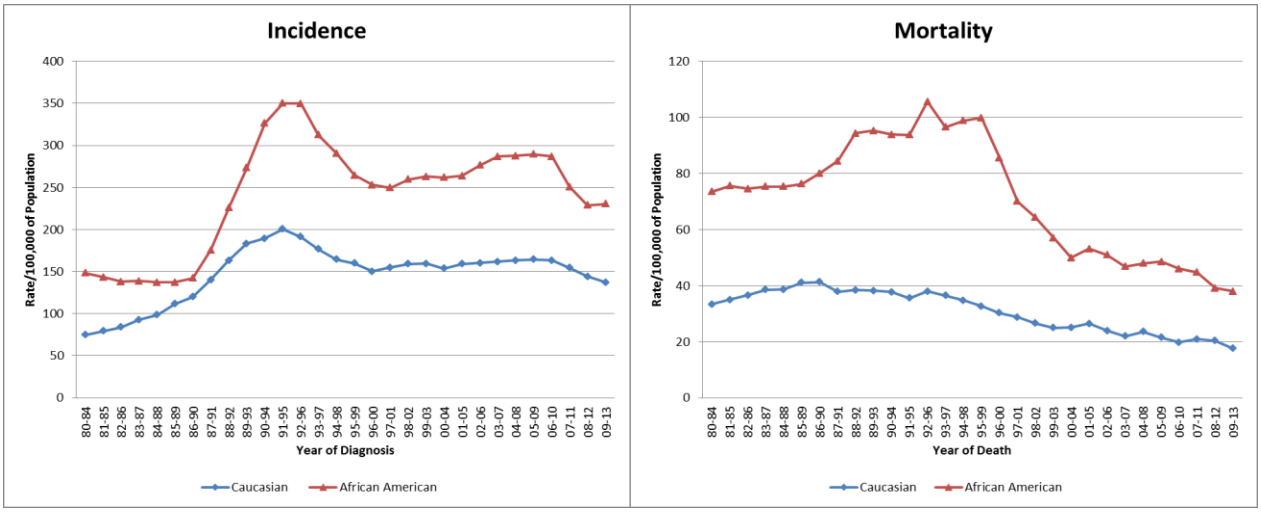
- African American males saw a 31 percent decline in the lung cancer incidence rate.
- African American females saw a 12 percent decline in the lung cancer incidence rate.
- Caucasian males saw an 11 percent decline in the lung cancer incidence rate.
- Caucasian females saw a 2 percent decline in the lung cancer incidence rate.

For mortality rates from 1999-2003 to 2009-2013

- African American males saw a 36 percent decline in the lung cancer mortality rate.
- African American females saw a 23 percent decline in the lung cancer mortality rate.
- Caucasian males saw an 18 percent decline in the lung cancer mortality rate.
- Caucasian females saw a 6 percent decline in the lung cancer mortality rate.

Prostate Cancer

FIGURE 5-5: PROSTATE CANCER INCIDENCE AND MORTALITY TRENDS, DELAWARE 1980-2013



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

For incidence rates from 1999-2003 to 2009-2013

- African American males saw a 12 percent decline in the prostate cancer incidence rate.
- Caucasian males saw a 14 percent decline in the prostate cancer incidence rate.

For mortality rates from 1999-2003 to 2009-2013

- African American males saw a 34 percent decline in the prostate cancer mortality rate.
- Caucasians males saw a 30 percent decline in the prostate cancer mortality rate.

CHAPTER 6: OTHER MODIFIABLE RISK FACTORS

Delaware's BRFS collects data about modifiable lifestyle risk factors. Modifiable lifestyle risk factors include heavy daily alcohol consumption, overweight/obesity, poor diet, sedentary lifestyle, and tobacco use. Heavy daily alcohol consumption, overweight/obesity status, poor diet, and tobacco use are modifiable risk factors for all four major cancers. In addition, sedentary lifestyle is a modifiable lifestyle risk factor for breast and colorectal cancer. A full list of all risk factors can be found in Appendix C.

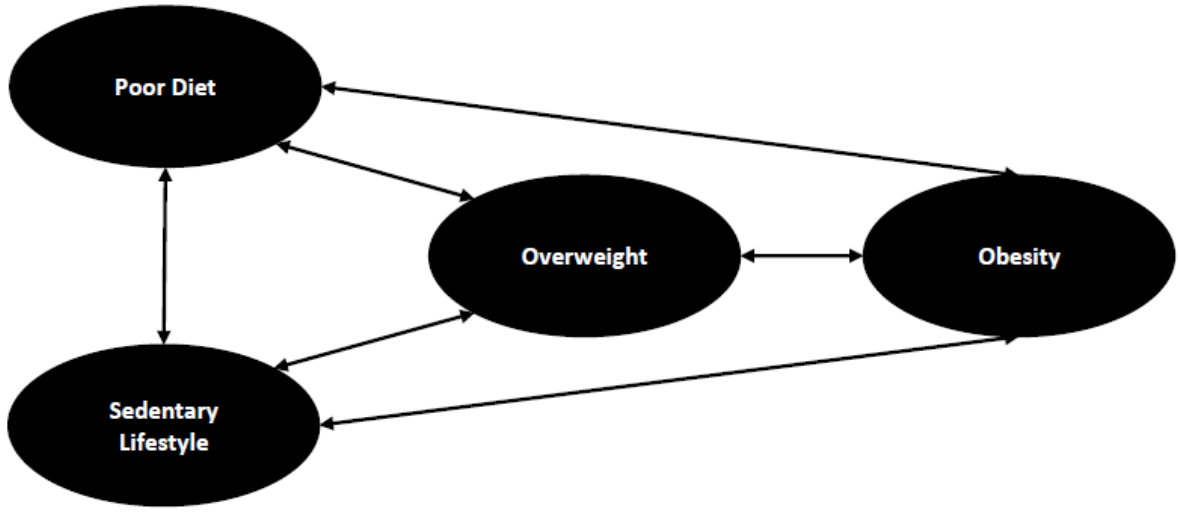
Analysis was performed to determine the influencing factors in Delaware for each of these risk factors. All analyses used 2014 BRFS data, except poor diet. Fruit and vegetable consumption questions were not asked in 2014, and the most recent year for these data is 2015. For modifiable cancer risk factors, prevalence by variables of interest was calculated with corresponding modified Rao-Scott Chi Square to determine statistically significant differences.

Variables of interest include age or age group, race/ethnicity, sex, education, income, county of residence, health care coverage, personal doctor status, check-up timeliness, marital status, employment status, disability status, and sexual orientation. Variables of interest meeting the significance level of a p-value less than 0.05 were included in the multivariate logistic regression. Separate models were developed for each modifiable risk factor.

NUTRITION, PHYSICAL ACTIVITY, AND OBESITY

Nutrition, physical activity, overweight, and obesity are all interrelated risk factors and conditions. Figure 6-1 illustrates this relationship. Poor diet and a sedentary lifestyle can lead to weight gain. Increased weight is a risk factor for many chronic diseases, including several cancers. Individuals can move from one weight category to another by changes in diet and activity level.

FIGURE 6-1: DIAGRAM OF THE RELATIONSHIPS AMONG POOR DIET, SEDENTARY LIFESTYLE, AND INCREASED BODY WEIGHT CATEGORY IN DELAWARE



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2014

Figure 6-1 shows how individuals can move from one weight category to another by changes in diet and activity level. Poor diet can lead to overweight and obesity. Likewise, a sedentary lifestyle can lead to

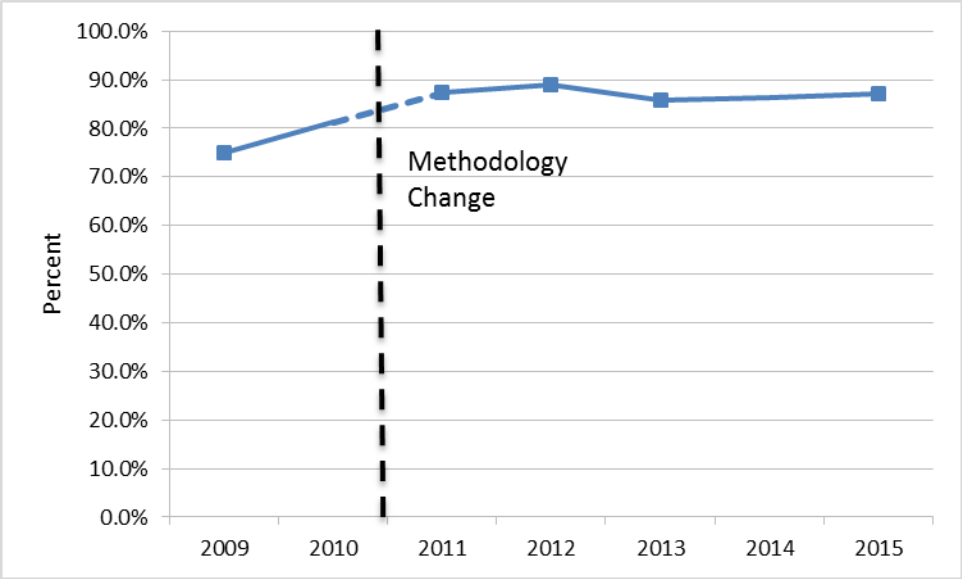
overweight and obesity. In addition, poor diet and a sedentary lifestyle can impact each other because decision making can be made both independently and in tandem.

Because weight is on a linear scale, most individuals will flow through lower categories to higher categories with poor lifestyle choices, and flow from higher categories to lower categories with healthier lifestyle choices.

FRUIT AND VEGETABLE CONSUMPTION

All adults should meet fruit and vegetable guidelines. For the purposes of this analysis, an algorithm was used to calculate the percentage of adults who reported eating at least five fruit and/or vegetable servings per day. This approach is consistent with Delaware's 5-2-1 Almost None campaign.

FIGURE 6-2: PREVALENCE OF NOT MEETING RECOMMENDED FRUIT AND VEGETABLE CONSUMPTION GUIDELINES FOR DELAWARE ADULTS, 2009-2015



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2009-2015

- The prevalence of ***NOT*** meeting recommended fruit and vegetable consumption guidelines among Delaware adults increased from 75 percent in 2009 to 87 percent in 2015. **This increase was statistically significant.**

<u>When controlling for age, sex, education, personal doctor status, marital status, and sexual orientation:</u>

- Sex, education, marital status, and sexual orientation were significant.
- Of Delaware adults:
  - Males were 1.5 times more likely to report **NOT** meeting recommended fruit and vegetable consumption guidelines compared to females.
  - Those with less than a high school diploma were 3.7 times more likely to report **NOT** meeting recommended fruit and vegetable consumption guidelines, compared to college graduates.
  - High school graduates were 2.0 times more likely to report **NOT** meeting recommended fruit and vegetable consumption guidelines, compared to college graduates.
  - Widowed adults were 1.9 times more likely to report **NOT** meeting recommended fruit and vegetable consumption guidelines, compared to married adults.

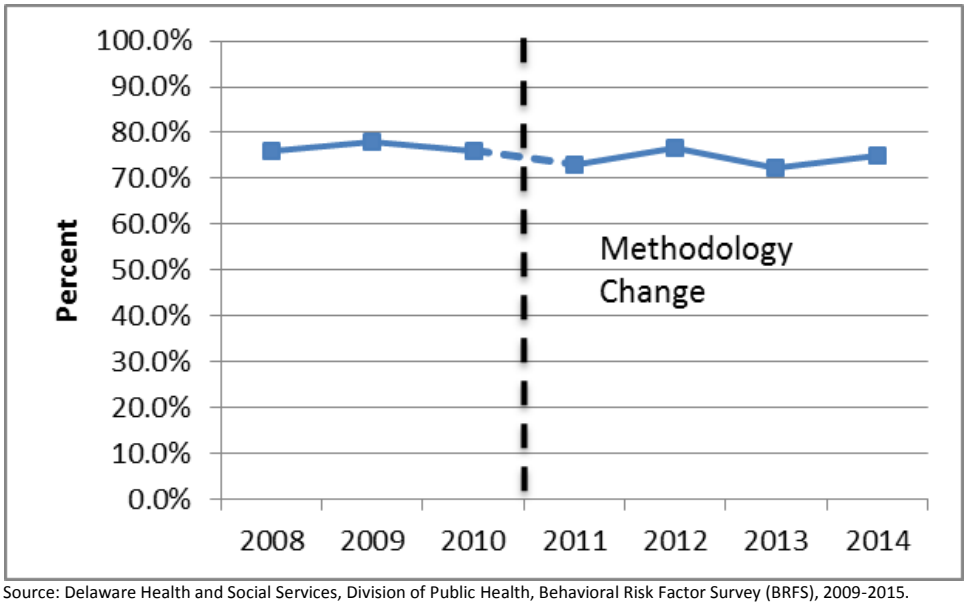
- Heterosexuals were 2.0 times more likely to report **NOT** meeting recommended fruit and vegetable consumption guidelines, compared to lesbian, gay, bisexual, and transgender (LGBT) adults.

Delaware-specific data analysis shows males, adults with a high school diploma or less, widows and widowers, and heterosexuals are less likely to report meeting recommended fruit and vegetable guidelines. Therefore, increased fruit and vegetable consumption messaging should target these groups.

SEDENTARY LIFESTYLE

The Dietary Guidelines for Americans 2015-2020, Eighth Edition includes guidelines for physical activity for Americans by age group. All adult groups are recommended to avoid physical inactivity.

FIGURE 6-3: PREVALENCE OF BEING PHYSICALLY ACTIVE OR EXERCISING WITHIN THE PAST 30 DAYS FOR DELAWARE ADULTS, 2008-2014



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2009-2015.

- The prevalence of being physically active or exercising within the past 30 days among Delaware adults has remained stable, from 75.9 percent in 2008 to 75.1 percent in 2014.

<u>When controlling for age, sex, race/ethnicity, education, annual household income, county of residence, health care coverage, check-up timeliness, marital status, employment status, and disability status:</u>

- Age, race/ethnicity, education, annual household income, check-up timeliness, marital status, employment status, and disability status were significant.
- Of Delaware adults:
  - As age increases, the likelihood of reporting being physically active or exercising within the past 30 days decreases.
  - Caucasians were 1.5 times more likely to report being physically active or exercising within the past 30 days, compared to African Americans.
  - College graduates were 2.8 times more likely to report being physically active or exercising within the past 30 days, compared to those with less than a high school diploma.

- Adults with an annual household income of $50,000 or more were 1.9 times more likely to report being physically active or exercising within the past 30 days, compared to those with an annual household income of less than $15,000.
- Adults who had a check-up one to two years ago were 2.3 times more likely to report being physically active or exercising within the past 30 days, compared adults who had a check-up two or more years ago or never had a check-up.
- Married adults or adults part of an unmarried couple were 1.9 times more likely to report being physically active or exercising within the past 30 days, compared to separated or divorced adults.
- Single or never married adults were 2.0 times more likely to report being physically active or exercising within the past 30 days, compared to separated or divorced adults.
- Widowed adults were 2.1 times more likely to report being physically active or exercising within the past 30 days, compared to separated or divorced adults.
- Employed adults were 1.5 times more likely to report being physically active or exercising within the past 30 days, compared to those with an "other" employment status.
- Retired adults were 1.8 times more likely to report being physically active or exercising within the past 30 days, compared those with an "other" employment status.
- Adults without a disability were 1.8 times more likely to report being physically active or exercising within the past 30 days, compared to adults with a disability.

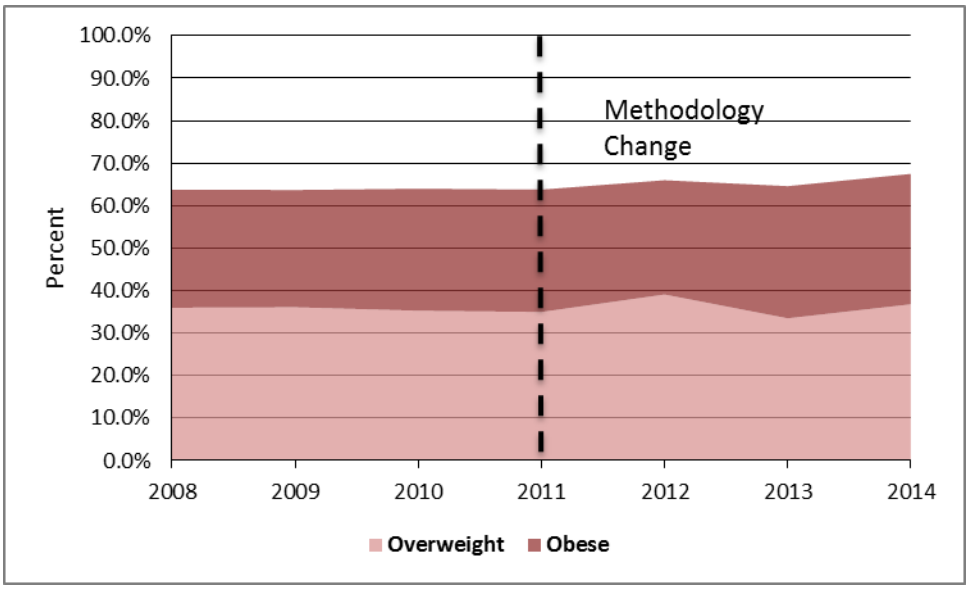
Delaware-specific data analysis shows older adults, African Americans, adults with less than a high school diploma or an annual income of less than $15,000, had a check-up two or more years ago, separated or divorced adults, adults with an "other" employment status, and adults with a disability were more likely to live sedentary lifestyles. Therefore, targeted messages about the health benefits of physical activity should be targeted to these groups.

INCREASED WEIGHT

According the National Cancer Institute, there is consistent evidence that increased body fat is associated with increased risk for cancers[24]. However, the exact mechanisms are not clear. Research supports avoiding weight gain in adulthood to minimize specific cancer risks[25]. While the relationship, if any, between weight loss and decreased cancer risk is unclear, evidence exists that those with a decreased BMI have better cancer survivorship and reduced complications from cancer treatment.

[24] Renehan AG, Tyson M, Egger M, et al. Body-mass index and incidence of cancer: a systematic review and meta-analysis of prospective observational studies. *Lancet.* 2008; 371 (9612): 569-578.
[25] Renehan AG, Flood A, Adams KF, et.al. Body Mass Index at Different Adult Ages, Weight Change, and Colorectal Cancer Risk in the National Institutes of Health-AARP Cohort. AM J EPIDEMIOL 2012; 176 (12): 1130-1140. doi: 10.1093/aje/kws192

FIGURE 6-4: PREVALENCE OF BEING OVERWEIGHT OR OBESE FOR DELAWARE ADULTS, 2008-2014

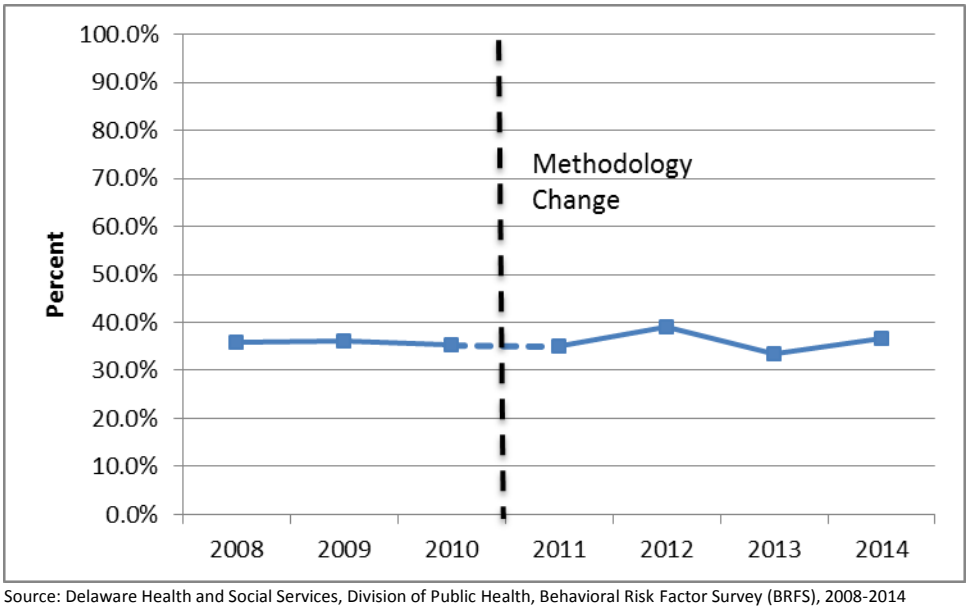


Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

Overweight

Those with a Body Mass Index (BMI) of 25-29.9 are considered overweight. Being overweight can increase the risk of some cancers (as previously noted). The exact mechanisms behind the increased risk are still unknown. While it is unclear if reducing an individual's BMI may not provide decreased risk from some cancers, decreasing unhealthy lifestyles such as poor diet and sedentary lifestyle for weight loss may provide an added benefit of decreased cancer risk.

FIGURE 6-5: PREVALENCE OF BEING OVERWEIGHT FOR DELAWARE ADULTS, 2008-2014



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

- The prevalence of being overweight among Delaware adults has remained stable, from 36.0 percent in 2008 to 36.8 percent in 2014.

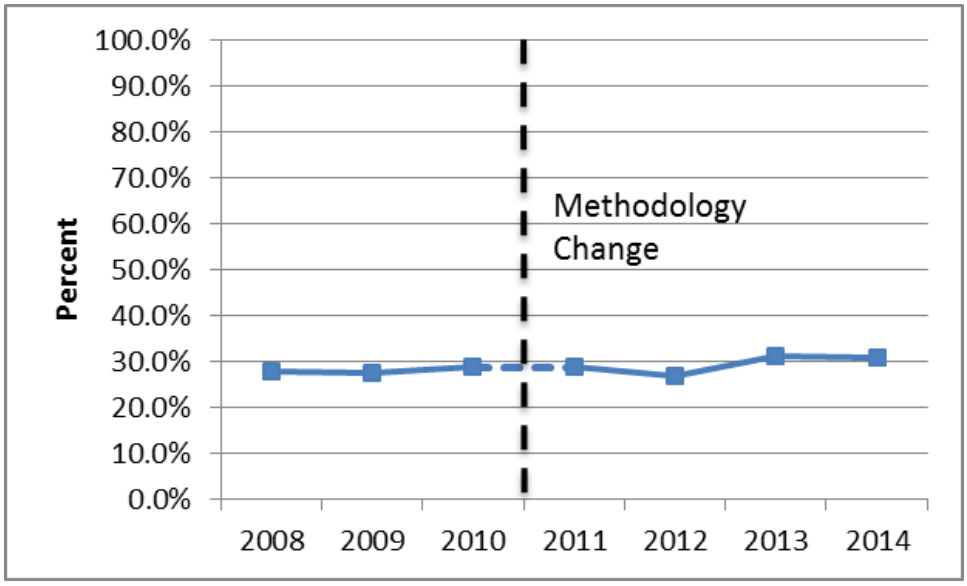
When controlling for age, sex, annual household income, marital status, employment status, and disability status:

- Sex, marital status, and disability status were significant.
- Of Delaware adults:
  - Females were 1.5 times more likely to be overweight compared to males.
  - Married adults were 1.5 times more likely to be overweight, compared to single or never married adults.
  - Adults with a disability were 1.6 times more likely to be overweight, compared to adults without a disability.

Obesity

Those with a Body Mass Index (BMI) of 30 or higher are considered obese. Those who are obese are at increased risk for a variety of health problems, including some cancers (as previously noted). Delaware-specific data show there are disparities in obesity in race/ethnicity, education, and disability status. Therefore, anti-obesity campaigns should target African Americans, Hispanics, those without a college degree, and adults with disabilities.

FIGURE 6-6: PREVALENCE OF OBESITY FOR DELAWARE ADULTS, 2008-2014



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

- The prevalence of obesity among Delaware adults increased from 27.8 percent in 2008 to 30.7 percent in 2014. **This increase was statistically significant.**

When controlling for age, race/ethnicity, education, personal doctor status, marital status, and disability status:

- Race/ethnicity, education, and disability status were significant.
- Of Delaware adults:
  - African Americans were 1.4 times more likely to be obese compared to Caucasians.

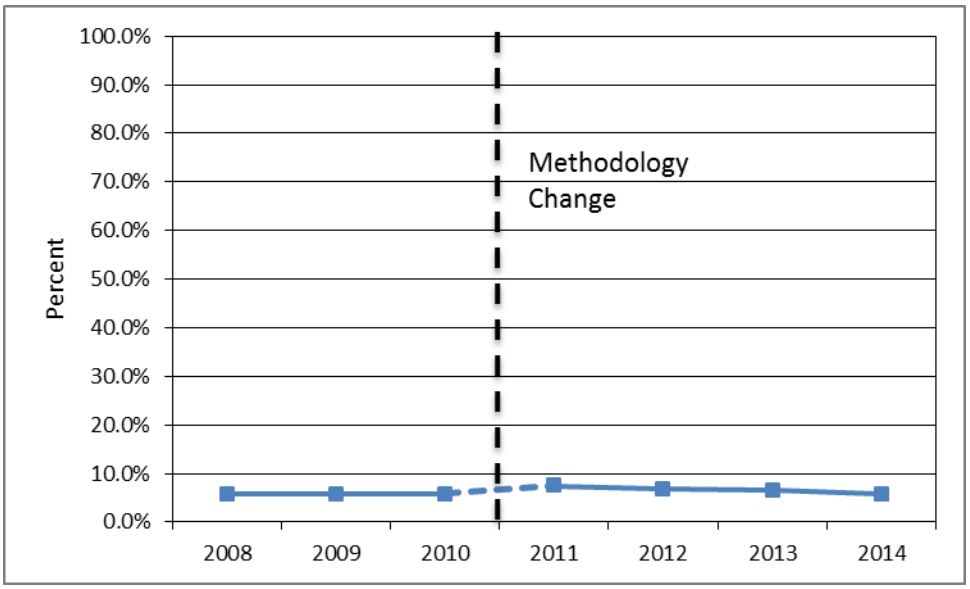
- Hispanics were 1.3 times more likely to be obese compared to Caucasians.
- High school graduates were 1.4 times more likely to be obese compared to college graduates.
- Those with some college were 1.4 times more likely to be obese compared to college graduates.
- Adults with a disability were 2.0 times more likely to be obese compared to adults without a disability.

HEAVY DAILY ALCOHOL CONSUMPTION

All individuals should limit alcohol consumption. The Dietary Guidelines of 2015-2020 provides guidance on alcohol consumption. According to the Dietary Guidelines of 2015-2020, alcohol consumption should be consumed in moderation and included in healthy eating patterns. It is not recommended for those who do not drink alcohol, to start consuming alcohol.

According to the National Cancer Institute, research shows there is an association between alcohol consumption and several types of cancers. There are multiple avenues alcohol may increase cancer risk. Alcohol can be metabolized into acetaldehyde, a known carcinogen. Alcohol may generate reactive oxygen species causing oxidation. Alcohol may impair the metabolism and absorption of nutrients. Alcohol can increase estrogen in the blood.

FIGURE 6-7: PREVALENCE OF HEAVY DRINKING FOR DELAWARE ADULTS, 2008-2014



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

- The prevalence of heavy drinking among Delaware adults has remained stable, from 5.7 percent in 2008 to 5.8 percent in 2014.

<u>When controlling for race/ethnicity, employment status, and sexual orientation:</u>

- Race/ethnicity, employment status, and sexual orientation were significant.
- Of Delaware adults:
  - African Americans were 3.4 times more likely **NOT** to be heavy drinkers compared to Caucasians.
  - Retirees were 1.6 times more likely **NOT** to be heavy drinkers compared to employed adults.
  - Heterosexuals were 2.4 times more likely **NOT** to be heavy drinkers compared to LGBT adults.

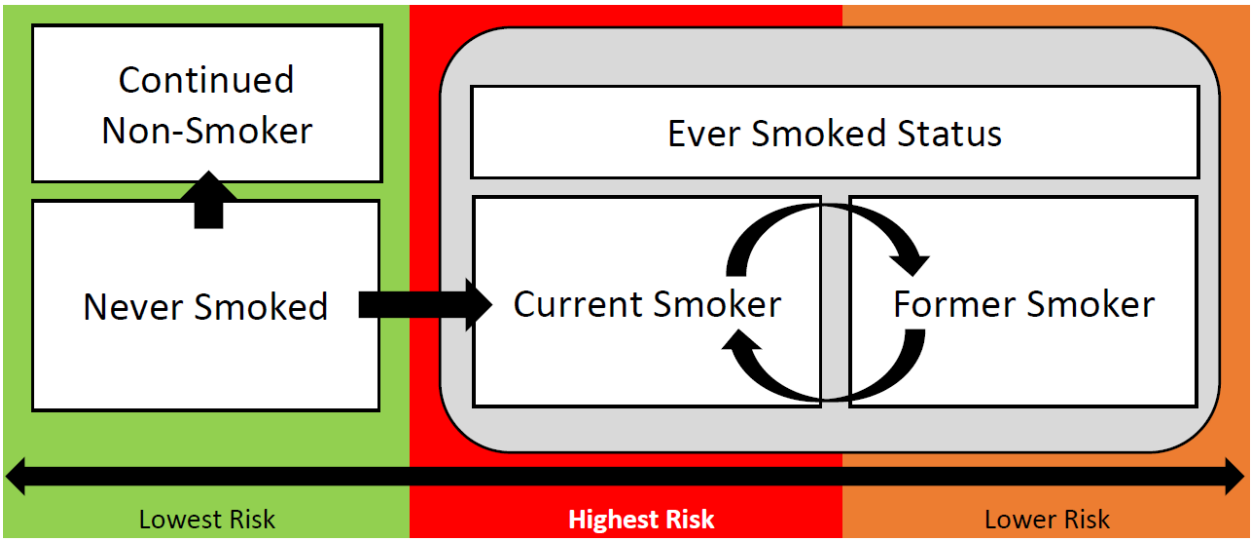
Delaware-specific data show a disparity in race, employment status, and sexual orientation. Therefore, reduced alcohol consumption messaging should be marketed specifically to Caucasians, the employed, and LGBT adults.

SMOKING

Current smokers and former smokers are at increased risk for a variety of chronic diseases. It is well documented that smoking causes cancer, heart disease, stroke, lung diseases, diabetes, and chronic obstructive pulmonary disease (COPD). However, the risk of developing these diseases is dependent on smoking status (current or former smoker). Current smokers are at higher risk for cancer than former smokers, but both are at a higher risk than a nonsmoker[26].

Current and former smokers comprise two distinctly different, mutually exclusive populations. However, individuals can flow between current and former smoking statuses. Figure 6-8 illustrates the flow of individuals among these populations.

FIGURE 6-8: DIAGRAM OF SMOKING STATUSES IN DELAWARE

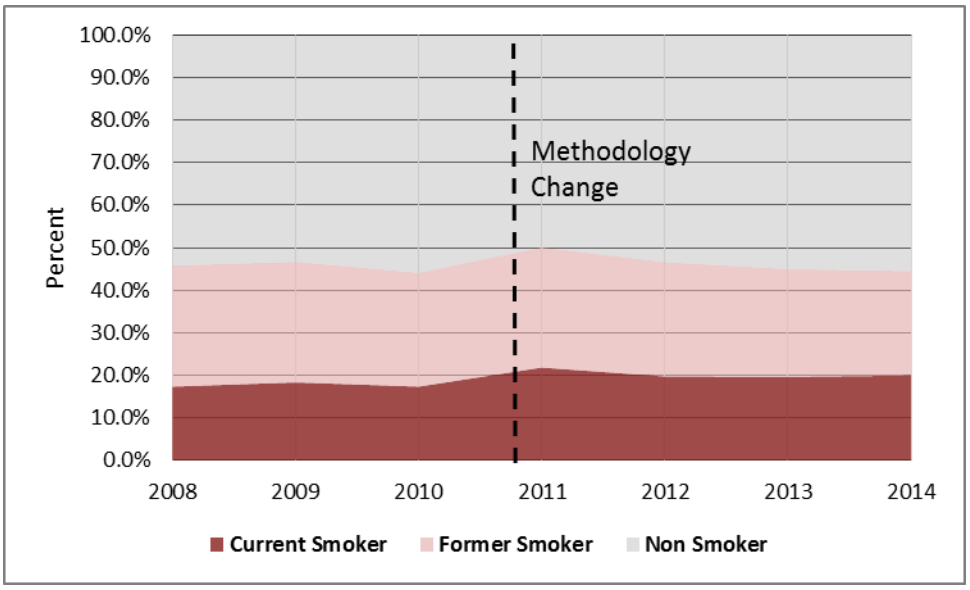


Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

Nearly 20 percent of Delaware adults currently smoke and 24.6 percent of Delaware adults are former smokers. That means almost half (44.5 percent) of Delaware adults are at increased risk for cancer from smoking.

[26] Johns Hopkins Medicine. Former Smokers: What's Your Risk for Lung Cancer? http://www.hopkinsmedicine.org/health/articles-and-answers/wellbeing/former-smokers-whats-your-risk-for-lung-cancer (Retrieved on April 19, 2017)

FIGURE 6-9: PREVALENCE OF SMOKING FOR DELAWARE ADULTS, BY STATUS, 2008-2014



Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014.

The prevalence of ever smoking has remained largely unchanged over the past six years. In 2011, BRFS underwent a methodology change and incorporated a cell phone sample. The inclusion of cell phones increased the proportion of younger adults and minorities who no longer used landlines. As a result, there was an uptick in overall prevalence of current smokers. Since 2011, there has been a slight decrease of ever smoking. Years prior to 2011 should be interpreted with caution.

Current Smokers

Current smokers are defined as any adult who has ever smoked at least 100 cigarettes in their lifetime and currently smokes every day or some days.

<u>When controlling for age, sex, education, annual household income, health care coverage status, personal doctor status, check-up timeliness, marital status, employment status, and disability status:</u>

- Age, sex, education, annual household income, marital status, and disability status were significant.
- Of Delaware adults:
  - As age increases, the likelihood of currently smoking decreases.
  - Males were 1.4 times more likely to currently smoke than females.
  - Those with less than a high school diploma were 4.4 times more likely to currently smoke than college graduates.
  - High school graduates were 2.2 times more likely to currently smoke than college graduates.
  - Those with an annual household income between $35,000 and $49,999 were 1.6 times more likely to report currently smoking, compared to those with an annual household income of $50,000 or more.
  - Separated or divorced adults were 1.9 times more likely to currently smoke, compared to married adults or those who were part of an unmarried couple.
  - Single or never married adults were 2.1 times more likely to currently smoke, compared to married adults or those who were part of an unmarried couple.

- Adults with a disability were 1.8 times more likely to currently smoke, compared to those who did not have a disability.

Current smokers are at highest risk for developing cancer. Delaware-specific data show disparities in age, sex, education, annual household income, marital status, and disability status.

Former Smokers

Former smokers are defined as any adult who has ever smoked at least 100 cigarettes and currently does not smoke any cigarettes. Essentially, former smokers were current smokers who quit smoking. Because of the disparities in sex, education, annual household income, marital status, and disability status among those who currently smoke, it will affect the demographic composition of the total population of former smokers.

Education, annual household income, and health care coverage status are important demographic factors when exploring the relationship between current and former smokers:

- As educational attainment increases, the prevalence of being a current smoker decreases, and the prevalence of being a former smoker increases.
- As annual household income increases, the prevalence of being a current smoker decreases, and the prevalence of being a former smoker increases.
- Adults without health care coverage have a higher prevalence of being current smokers and a lower prevalence of being former smokers.

A former smoker's risk of developing cancer depends on the time from which they have had their last cigarette. The risk of cancer and other chronic diseases is reduced within a few years of quitting.

CHAPTER 7: CONCLUSION

The data presented in this report come from two sources: the Delaware Cancer Registry (Chapter 4) and the Delaware Behavioral Risk Factor Survey (Chapter 5). These chapters not only describe cancer incidence and mortality in Delaware, but also factors that contribute to cancer screening, access to health care, and other behavioral risk factors.

Different studies have examined disparities in cancer incidence, mortality, and screening using several different data sources[27,28,29,30]. Analysis of incidence and mortality data showed that while there were disparities by race, there was no set pattern in the disparities when stratified by different demographic factors. The Delaware analysis of cancer screening and other behavioral risk factors showed that there are several socioeconomic and demographic factors which may contribute to cancer screening disparities and thus cancer incidence and mortality.

CANCER INCIDENCE AND MORTALITY

Delaware's all-site cancer incidence and mortality rates continue to be significantly higher than the U.S. all-site cancer incidence and mortality rates. However, trend data shows that the all-site incidence and mortality rates in Delaware declined from 1999-2003 to 2009-2013.

Cancer incidence data show that Hispanics have significantly lower incidence rates for all-site, breast, colorectal, lung, and prostate cancer, compared to Caucasians. The same data show that African Americans have significantly higher incidence rates for prostate cancer.

Stratification of incidence rates by sex showed that:

- African American males had a significantly higher all-site cancer incidence rate compared to Caucasian males while African American females had a significantly lower all-site cancer incidence rate compared to Caucasian females.
- Hispanic males and females had significantly lower all-site cancer incidence rates compared to Caucasian males and females.
- No significant differences were seen for colorectal cancer incidence.
- African American females had a significantly lower lung cancer incidence rate compared to Caucasian females. No significant differences were seen comparing African American males to Caucasian males for lung cancer incidence.
- Hispanic males and females had significantly lower lung cancer incidence rates compared to Caucasian males and females.

Stratification of incidence rates by age showed that:

- The only consistent pattern which emerged was for age groups 40-64, 65-74, and 75-84 for prostate cancer incidence, which were significantly higher in African Americans than Caucasians.

[27] Doubeni CA, Laiyemo AO, Reed G, Field TS, Fletcher RH. Socioeconomic and Racial Patterns of Colorectal Cancer Screening among Medicare Enrollees in 2000 to 2005. Cancer Epidemiol Biomarkers Prev August 1 2009 (18) (8) 2170-2175
[28] White A, Vernon SW, Franzini L, Du XL. Racial and Ethnic Disparities in Colorectal Cancer Screening Persisted Despite Expansion of Medicare's Screening Reimbursement. Cancer Epidemiol Biomarkers Prev May 1 2011 (20) (5) 811-817
[29] Laiyemo A, Doubeni C, Berg C, et al. Race and colorectal cancer disparities: health-care utilization vs different cancer susceptibilities. Journal Of The National Cancer Institute [serial online]. April 21, 2010;102(8):538-546
[30] Miranda P, Tarraf W, González H. Breast cancer screening and ethnicity in the United States: implications for health disparities research. Breast Cancer Research And Treatment [serial online]. July 2011;128(2):535-542

Stratification of incidence rates by county of residence showed that:

- The only consistent pattern which emerged was that African Americans in all three counties had significantly higher incidence rates for prostate cancer compared to Caucasians.

Cancer mortality data show that Hispanics have significantly lower mortality rates for all-site and lung cancer (mortality rates for breast, colorectal, and prostate cancer could not be calculated because of low numbers) compared to Caucasians. African Americans had significantly higher mortality rates for all-site and prostate cancer compared to Caucasians.

Stratification of mortality rates by sex showed that:

- African American males had significantly higher all-site cancer mortality rates compared to Caucasian males. No significant differences in mortality rates were seen comparing African American females to Caucasian females.
- Hispanic males and females had significantly lower all-site cancer mortality rates compared to Caucasian males and females.
- No significant differences were seen for colorectal cancer mortality.
- African American females had a significantly lower lung cancer mortality rate compared to Caucasian females. No significant differences were seen comparing African American males to Caucasian males for lung cancer mortality.
- Differences in lung cancer mortality rates for Hispanic males and females compared to Caucasian males and females could not be calculated.

Stratification of mortality rates by age showed that:

- The only consistent pattern which emerged was for age groups 65-74 and 75-84 for prostate cancer mortality, which were significantly higher in African Americans than Caucasians.

Stratification of mortality rates by county of residence showed that:

- There was no consistent pattern in mortality rates for African Americans or Hispanics by county of residence.

Stage of disease at diagnosis was also analyzed to determine if any group was disproportionately diagnosed at early or late stage of disease. While there was some variation in the proportions, most of the differences were not found to be statistically significant. Trend data from 1999-2003 and 2009-2013 showed that generally, incidence and mortality rates among African American and Caucasian males and females have been on a downward decline in Delaware. The only outliers were small increases in the incidence rates for all-site cancer in Caucasian females and the breast cancer incidence rate in African American females.

BEHAVIORAL RISK FACTORS

The Behavioral Risk Factor Survey data examined a wide range of factors which contribute to cancer incidence, cancer mortality, and cancer screening. The prevalence of each of these risk factors was examined by different socio-demographic characteristics to understand reasons why there are disparities in cancer screening, access to health care, and other behavioral risk factors.

Analysis of cancer screening factors showed that:

- For breast cancer screening (mammography for females age 40 and older), those who were more likely to be screened for breast cancer were older (50-64) and had a check-up within the past year.

- For colorectal cancer screening (colonoscopy/sigmoidoscopy), those who were more likely to be screened were older (65 years and older), have a personal doctor, have received a check-up within the last year, be married, and be a non-smoker.
- For prostate cancer (PSA test in males), those who were **LESS** likely to be screened were younger (age 40-49) and received a check-up more than one year ago.

Analysis of other modifiable risk factors showed these variables of interest:

- Delaware males, those having less than a high school education and those with a high school education, widowed adults, or heterosexuals were likely to report **NOT** meeting recommended fruit and vegetable consumption guidelines.
- Delaware adults increasing in age, Caucasians, college graduates, those with annual incomes of $50,000 or more, having a check-up one or two years ago, being married, coupled, single, and widowed; being employed and retired, or not having a disability were more likely to report **NOT** being physically active in the past 30 days.
- Delaware adult females, married, or those with a disability were more likely to be overweight.
- Delaware adult African Americans, high school graduates and those with some college education, or have a disability more likely to be obese.
- African Americans, retirees, and/or heterosexuals were more likely **NOT** to be heavy drinkers.
- Delaware males, those increasing in age, adults with either less than high school or a high school diploma, adults with an annual household income of $35,000 - $49,999, or adults who are either separated, divorced, or single, and/or adults who have a disability were more likely to be current smokers.

APPENDIX A: SUPPLEMENTAL INCIDENCE AND MORTALITY DATA

TABLE A-1: COMPARISON OF STAGE OF DIAGNOSIS BY RACE/ETHNICITY IN DELAWARE 2009-2013

Cancer Site	Caucasian	African American	Hispanic
Breast			
Local	1,976 (69)	388 (59)	56 (57)
Regional	718 (25)	218 (33)	39 (40)
Distant	147 (5)	41 (6)	---
Unknown	36 (1)	10 (2)	---
Colorectal			
Local	625 (39)	141 (41)	15 (36)
Regional	572 (35)	108 (31)	15 (36)
Distant	341 (21)	75 (22)	---
Unknown	84 (5)	21 (6)	---
Lung			
Local	651 (20)	94 (17)	13 (23)
Regional	694 (22)	123 (22)	---
Distant	1,703 (53)	314 (57)	27 (48)
Unknown	162 (5)	24 (4)	---
Prostate			
Local	2,337 (82)	751 (81)	73 (76)
Regional	255 (9)	86 (9)	10 (10)
Distant	122 (4)	36 (4)	---
Unknown	155 (5)	58 (6)	---

---: counts under 6 not reported to protect patient confidentiality

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

TABLE A-2: NUMBER OF NEW CANCER CASES, AGE-ADJUSTED INCIDENCE RATES, AND 95% CONFIDENCE INTERVALS BY RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian		African American		Hispanic	
	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.
All Site	519.5 (512.4, 526.7)	21,601	505.3 (489.9, 521.0)	4,417	405.8 (372.2, 441.3)	691
Breast	131.6 (126.7, 136.8)	2,877	129.1 (119.1, 139.6)	657	105.0 (83.1, 130.4)	98
Colorectal	38.7 (36.8, 40.7)	1,622	40.9 (36.5, 45.6)	345	26.0 (18.1, 35.9)	42
Lung	74.0 (71.4, 76.7)	3,210	68.0 (62.2, 74.1)	555	40.9 (30.2, 53.8)	56
Prostate	137.4 (132.4, 142.7)	2,869	233.9 (218.3, 250.4)	931	141.0 (111.7, 174.7)	96

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

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

TABLE A-3: INCIDENCE RATE RATIOS AND 95% CONFIDENCE INTERVALS COMPARING AFRICAN AMERICANS AND HISPANICS WITH CAUCASIANS IN DELAWARE, 2009-2013

Cancer Site	African American		Hispanic	
	Rate Ratio (95% CI)	p-value	Rate Ratio (95% CI)	p-value
All-Site	0.97 (0.94, 1.01)	0.1065	0.78 (0.72, 0.85)	0.0000*
Breast	0.98 (0.90, 1.07)	0.6732	0.80 (0.63, 0.99)	0.0442*
Colorectal	1.06 (0.93, 1.19)	0.3836	0.67 (0.47, 0.93)	0.0156*
Lung	0.92 (0.83, 1.00)	0.0750	0.55 (0.41, 0.73)	0.0000*
Prostate	1.70 (1.57, 1.84)	0.0000*	1.03 (0.81, 1.28)	0.8559

*p-value <0.05 for comparison with Caucasians
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

TABLE A-4: NUMBER OF CANCER DEATHS, AGE-ADJUSTED MORTALITY RATES, AND 95% CONFIDENCE INTERVALS BY RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian		African American		Hispanic	
	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.
All Site	176.4 (172.4, 180.5)	7,571	193.9 (184.0, 204.2)	1,559	110.7 (92.3, 131.2)	157
Breast	21.3 (19.4, 23.4)	491	25.4 (21.1, 30.4)	126	---	---
Colorectal	14.0 (12.98, 15.2)	598	15.3 (12.6, 18.4)	121	---	---
Lung	53.9 (51.7, 56.1)	2,347	49.0 (44.2, 54.3)	402	21.8 (14.3, 31.4)	30
Prostate	17.6 (15.7, 19.7)	312	38.5 (31.0, 47.0)	102	---	---

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

TABLE A-5: MORTALITY RATE RATIOS AND 95% CONFIDENCE INTERVALS COMPARING AFRICAN AMERICANS AND HISPANICS WITH CAUCASIANS IN DELAWARE, 2009-2013

Cancer Site	African American		Hispanic	
	Rate Ratio (95% CI)	p-value	Rate Ratio (95% CI)	p-value
All-Site	1.10 (1.04, 1.16)	0.0012*	0.63 (0.52, 0.75)	0.0000*
Breast	1.19 (0.96, 1.46)	0.1055	---	---
Colorectal	1.09 (0.88, 1.34)	0.4280	---	---
Lung	0.91 (0.81, 1.02)	0.0972	0.41 (0.27, 0.59)	0.0000*
Prostate	2.18 (1.71, 2.75)	0.0000*	---	---

*p-value <0.05 for comparison with Caucasians
---: calculations based on less than 25 cases are not shown
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017

TABLE A-6: NUMBER OF NEW CANCER CASES, AGE-ADJUSTED INCIDENCE RATES, AND 95% CONFIDENCE INTERVALS BY SEX AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian		African American		Hispanic	
	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.
All Site						
Male	589.0 (578.0, 600.3)	11,365	625.6 (598.6, 653.4)	2,329	441.1 (388.8, 497.7)	338
Female	468.4 (458.9, 478.0)	10,236	422.6 (404.1, 441.6)	2,088	381.6 (338.2, 428.4)	353
Colorectal						
Male	44.7 (41.6, 47.9)	847	48.8 (41.2, 57.3)	169	33.0 (20.2, 50.1)	26
Female	33.7 (31.3, 36.3)	775	35.8 (30.6, 41.6)	176	---	---
Lung						
Male	85.7 (81.5, 90.0)	1,669	83.6 (73.7, 94.4)	295	36.4 (22.5, 55.0)	26
Female	65.4 (62.1, 68.9)	1,541	56.6 (49.7, 64.1)	260	44.7 (29.4, 64.1)	30

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

TABLE A-7: INCIDENCE RATE RATIOS AND 95% CONFIDENCE INTERVALS COMPARING AFRICAN AMERICANS AND HISPANICS WITH CAUCASIANS FOR CANCER SITES BY SEX IN DELAWARE, 2009-2013

Cancer Site	African American		Hispanic	
	Rate Ratio (95% CI)	p-value	Rate Ratio (95% CI)	p-value
All-Site				
Male	1.06 (1.01, 1.11)	0.0140*	0.75 (0.66, 0.85)	0.0000*
Female	0.90 (0.86, 0.95)	0.0000*	0.81 (0.72, 0.92)	0.0005*
Colorectal				
Male	1.09 (0.91, 1.30)	0.3532	0.74 (0.45, 1.13)	0.1755
Female	1.06 (0.89, 1.26)	0.5159	---	---
Lung				
Male	0.98 (0.85, 1.11)	0.7345	0.43 (0.26, 0.64)	0.0000*
Female	0.87 (0.75, 0.99)	0.0357*	0.68 (0.45, 0.98)	0.0394*

*p-value <0.05 for comparison with Caucasians
---: calculations based on less than 25 cases are not shown
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017

TABLE A-8: NUMBER OF CANCER DEATHS, AGE-ADJUSTED MORTALITY RATES, AND 95% CONFIDENCE INTERVALS BY SEX AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian		African American		Hispanic	
	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.
All Site						
Male	210.9 (204.3, 217.7)	3,970	241.7 (223.9, 260.5)	797	134.4 (104.4, 169.2)	88
Female	151.6 (146.5, 156.8)	3,601	162.8 (151.1, 175.1)	762	90.7 (68.6, 116.7)	69
Colorectal						
Male	17.8 (15.8, 19.8)	329	18.8 (14.2, 24.5)	63	---	---
Female	10.9 (9.5, 16.5)	269	12.7 (9.5, 16.5)	58	---	---
Lung						
Male	65.8 (62.2, 69.6)	1,271	66.9 (57.8, 76.8)	229	---	---
Female	44.9 (42.2, 47.7)	1,076	36.9 (31.5, 43.0)	173	---	---

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

TABLE A-9: MORTALITY RATE RATIOS AND 95% CONFIDENCE INTERVALS COMPARING AFRICAN AMERICANS AND HISPANICS WITH CAUCASIANS FOR CANCER SITES BY SEX IN DELAWARE, 2009-2013

Cancer Site	African American		Hispanic	
	Rate Ratio (95% CI)	p-value	Rate Ratio (95% CI)	p-value
All-Site				
Male	1.15 (1.05, 1.24)	0.0013*	0.64 (0.49, 0.80)	0.0001*
Female	1.07 (0.99, 1.16)	0.0879	0.60 (0.45, 0.77)	0.0000*
Colorectal				
Male	1.06 (0.77, 1.41)	0.7347	---	---
Female	1.16 (0.85, 1.56)	0.3621	---	---
Lung				
Male	1.02 (0.87, 1.18)	0.8619	---	---
Female	0.82 (0.69, 0.97)	0.0199*	---	---

*p-value <0.05 for comparison with Caucasians
---: calculations based on less than 25 cases are not shown
Rates are per 100,000 of population age-adjusted to the 2000 U.S. standard population
Source: Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017

TABLE A-10: NUMBER OF NEW CANCER CASES, AGE-ADJUSTED INCIDENCE RATES, AND 95% CONFIDENCE INTERVALS BY AGE AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian		African American		Hispanic	
	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.
All-Site						
0-39	62.7 (58.4, 67.1)	812	45.4 (39.7, 51.6)	239	39.0 (31.8, 47.3)	105
40-64	637.6 (623.3, 652.2)	8,121	686.2 (658.2, 715.0)	2,293	470.3 (420.5, 524.3)	331
65-74	2,047.1 (1,996.7, 2,098.5)	6,325	2,007.1 (1,888.9, 2,130.8)	1,096	1,728.9 (1,458.9, 2,034.1)	147
75-84	2,578.2 (2,503.7, 2,654.2)	4,564	2,306.9 (2,124.7, 2,500.5)	592	2,233.0 (2,124.7, 2,761.2)	85
85+	2,529.2 (2,413.0, 2,649.5)	1,779	2,249.6 (1,946.4, 2,586.7)	197	---	---
Breast						
0-39	13.5 (10.8, 16.8)	84	14.6 (10.2, 20.0)	37	---	---
40-64	213.3 (201.5, 225.5)	1,349	226.8 (205.2, 250.2)	406	150.4 (112.6, 196.7)	54
65-74	473.4 (440.6, 508.0)	780	423.0 (352.6, 503.4)	129	---	---
75-84	476.0 (433.6, 521.3)	467	423.8 (327.8, 539.2)	66	---	---
85+	420.0 (363.4, 482.9)	197	---	---	---	---
Colorectal						
0-39	2.2 (1.4, 3.2)	27	---	---	---	---
40-64	45.4 (41.6, 49.4)	570	51.1 (43.7, 59.4)	170	---	---
65-74	137.4 (124.5, 151.3)	421	144.9 (114.6, 180.7)	80	---	---
75-84	222.3 (200.9, 245.3)	396	227.0 (172.3, 293.4)	58	---	---
85+	295.7 (256.9, 338.7)	208	---	---	---	---
Lung						
0-39	---	---	---	---	---	---
40-64	69.0 (64.5, 73.7)	923	69.8 (61.2, 79.3)	238	---	---
65-74	356.7 (335.8, 378..6)	1,094	293.2 (248.7, 343.3)	157	---	---
75-84	509.3 (476.5, 543.7)	901	479.4 (398.4, 572.0)	123	---	---
85+	402.3 (356.8, 452.0)	283	296.9 (193.9, 435.0)	26	---	---
Prostate						
0-39	---	---	---	---	---	---
40-64	165.2 (155.5, 175.4)	1,116	353.7 (324.4, 384.9)	539	154.6 (114.5, 203.6)	50
65-74	807.5 (761.8, 855.2)	1,182	1,173.1 (1,039.5, 1,319.0)	285	730.8 (488.2, 1,052.0)	29
75-84	605.1 (551.5, 662.4)	469	869.4 (697.8, 1,071.0)	89	---	---
85+	431.1 (351.1, 523.8)	101	---	---	---	---

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

TABLE A-11: INCIDENCE RATE RATIOS AND 95% CONFIDENCE INTERVALS COMPARING AFRICAN AMERICANS AND HISPANICS WITH CAUCASIANS, BY AGE IN DELAWARE, 2009-2013

Cancer Site	African American		Hispanic	
	Rate Ratio (95% CI)	p-value	Rate Ratio (95% CI)	p-value
All-Site				
0-39	0.72 (0.62, 0.84)	0.0000*	0.62 (0.50, 0.77)	0.0000*
40-64	1.08 (1.03, 1.13)	0.0024*	0.74 (0.66, 0.82)	0.0000*
65-74	0.98 (0.92, 1.05)	0.5626	0.84 (0.71, 1.00)	0.0440*
75-84	0.89 (0.82, 0.98)	0.0107*	0.87 (0.69, 1.07)	0.2028
85+	0.89 (0.76, 1.03)	0.1240	---	---
Breast				
0-39	1.08 (0.71, 1.60)	0.7784	---	---
40-64	1.06 (0.95, 1.19)	0.2965	0.71 (0.53, 0.93)	0.0110*
65-74	0.89 (0.73, 1.08)	0.2580	---	---
75-84	0.89 (0.68, 1.15)	0.4151	---	---
85+	---	---	---	---
Colorectal				
0-39	---	---	---	---
40-64	1.13 (0.94, 1.34)	0.2000	---	---
65-74	1.05 (0.82, 1.35)	0.7038	---	---
75-84	1.02 (0.76, 1.35)	0.9244	---	---
85+	---	---	---	---
Lung				
0-39	---	---	---	---
40-64	1.01 (0.87, 1.17)	0.9021	---	---
65-74	0.82 (0.69, 0.97)	0.0224*	---	---
75-84	0.94 (0.77, 1.14)	0.5656	---	---
85+	0.74 (0.47, 1.10)	0.1544	---	---
Prostate				
0-39	---	---	---	---
40-64	2.14 (1.93, 2.38)	0.0000*	0.94 (0.69, 1.24)	0.6974
65-74	1.45 (1.27, 1.66)	0.0000*	0.91 (0.60, 1.31)	0.6793
75-84	1.44 (1.13, 1.81)	0.0031*	---	---
85+	---	---	---	---

*p-value <0.05 for comparison with Caucasians

---: calculations based on less than 25 cases are not shown

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

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

TABLE A-12: NUMBER OF CANCER DEATHS, AGE-ADJUSTED MORTALITY RATES, AND 95% CONFIDENCE INTERVALS BY AGE AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian		African American		Hispanic	
	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.
All-Site						
0-39	6.5 (5.2, 8.1)	84	7.6 (5.4, 10.4)	40	---	---
40-64	153.7 (146.9, 160.8)	2,031	193.8 (179.2, 209.3)	656	95.4 (73.6, 121.5)	66
65-74	670.1 (641.2, 699.9)	2,054	716.1 (646.1, 791.7)	389	385.5 (264.6, 542.7)	33
75-84	1,215.7 (1.164.9, 1,268.1)	2,168	1.311.1 (1,174.4, 1,459.3)	335	892.9 (618.4, 1,247.8)	34
85+	1,754.4 (1,657.8, 1,855.0)	1,234	1,587.3 (1,334.4, 1,874.2)	139	---	---
Breast						
0-39	---	---	---	---	---	---
40-64	26.3 (22.4, 30.7)	172	40.8 (32.0, 51.4)	73	---	---
65-74	69.4 (57.3, 83.4)	116	---	---	---	---
75-84	114.9 (94.7, 138.3)	113	---	---	---	---
85+	168.4 (133.3, 209.9)	79	---	---	---	---
Colorectal						
0-39	---	---	---	---	---	---
40-64	12.9 (11.0, 15.2)	165	14.7 (10.9, 19.4)	50	---	---
65-74	45.0 (37.7, 53.3)	136	57.2 (38.5, 81.8)	30	---	---
75-84	88.5 (75.2, 103.4)	158	102.3 (66.8, 149.9)	26	---	---
85+	191.9 (160.9, 227.2)	135	---	---	---	---
Lung						
0-39	---	---	---	---	---	---
40-64	44.0 (40.5, 47.8)	598	52.6 (45.2, 61.0)	179	---	---
65-74	245.3 (228.0, 263.6)	752	197.9 (162.0, 239.4)	108	---	---
75-84	404.2 (375.2, 434.8)	722	347.6 (279.2, 427.8)	89	---	---
85+	385.3 (340.8, 434.0)	271	---	---	---	---
Prostate						
0-39	---	---	---	---	---	---
40-64	4.6 (3.1, 6.6)	32	---	---	---	---
65-74	50.5 (39.3, 63.7)	71	117.6 (77.2, 171.5)	27	---	---
75-84	130.8 (106.7, 158.6)	103	430.8 (310.1, 582.7)	42	---	---
85+	448.1 (366.5, 542.5)	105	---	---	---	---

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

TABLE A-13: MORTALITY RATE RATIOS AND 95% CONFIDENCE INTERVALS COMPARING AFRICAN AMERICANS AND HISPANICS WITH CAUCASIANS BY AGE IN DELAWARE, 2009-2013

Cancer Site	African American		Hispanic	
	Rate Ratio (95% CI)	p-value	Rate Ratio (95% CI)	p-value
All-Site				
0-39	1.17 (0.78, 1.73)	0.4624	---	---
40-64	1.26 (1.15, 1.38)	0.0000*	0.62 (0.48, 0.79)	0.0001*
65-74	1.07 (0.96, 1.19)	0.2456	0.58 (0.39, 0.81)	0.0009*
75-84	1.08 (0.96, 1.21)	0.2103	0.73 (0.51, 1.03)	0.0765
85+	0.90 (0.75, 1.08)	0.2810	---	---
Breast				
0-39	---	---	---	---
40-64	1.55 (1.16, 2.06)	0.0033*	---	---
65-74	---	---	---	---
75-84	---	---	---	---
85+	---	---	---	---
Colorectal				
0-39	---	---	---	---
40-64	1.13 (0.81, 1.57)	0.4888	---	---
65-74	1.27 (0.83, 1.90)	0.2833	---	---
75-84	1.16 (0.73, 1.76)	0.5533	---	---
85+	---	---	---	---
Lung				
0-39	---	---	---	---
40-64	1.20 (1.00, 1.42)	0.0451*	---	---
65-74	0.81 (0.65, 0.99)	0.0390*	---	---
75-84	0.86 (0.68, 1.07)	0.1934	---	---
85+	---	---	---	---
Prostate				
0-39	---	---	---	---
40-64	---	---	---	---
65-74	2.33 (1.43, 3.69)	0.0008*	---	---
75-84	3.29 (2.24, 4.76)	0.0000*	---	---
85+	---	---	---	---

*p-value <0.05 for comparison with Caucasians

---: calculations based on less than 25 cases are not shown

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

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

TABLE A-14: NUMBER OF NEW CANCER CASES, AGE-ADJUSTED INCIDENCE RATES, AND 95% CONFIDENCE INTERVALS BY COUNTY AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian		African American		Hispanic	
	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.
All Sites						
Kent	558.5 (540.6, 576.9)	3,840	518.1 (484.4, 553.5)	933	464.6 (380.7, 560.0)	121
New Castle	508.8 (499.0, 518.7)	10,872	498.9 (479.8, 518.5)	2,841	390.5 (349.8, 434.1)	442
Sussex	516.5 (503.3, 530.0)	6,889	518.6 (478.2, 561.4)	643	390.3 (315.9, 475.0)	128
Breast						
Kent	130.6 (118.8, 143.2)	478	133.3 (111.5, 158.1)	137	---	---
New Castle	135.6 (128.7, 142.8)	1,544	132.4 (120.1, 145.7)	446	81.8 (59.0, 109.8)	55
Sussex	124.7 (115.6, 134.5)	855	110.5 (86.3, 139.4)	74	163.7 (100.5, 247.7)	25
Colorectal						
Kent	41.5 (36.8, 46.8)	284	42.9 (33.3, 54.2)	73	---	---
New Castle	37.8 (35.2, 40.6)	813	40.8 (35.4, 46.8)	224	29.7 (19.4, 43.1)	31
Sussex	38.7 (35.3, 42.4)	525	39.1 (28.6, 52.2)	48	---	---
Lung						
Kent	83.9 (77.2, 91.1)	595	67.2 (55.1, 81.1)	114	---	---
New Castle	70.4 (66.9, 74.1)	1,530	66.7 (59.5, 74.4)	353	38.6 (25.6, 55.0)	33
Sussex	75.2 (70.6, 80.0)	1,085	75.6 (60.2, 93.6)	88	---	---
Prostate						
Kent	144.8 (132.1, 158.4)	497	273.5 (238.1, 312.8)	231	---	---
New Castle	139.5 (132.3, 147.1)	1,446	226.6 (207.2, 247.2)	576	134.0 (98.7, 176.3)	58
Sussex	130.0 (121.4, 139.1)	926	210.3 (173.5, 252.6)	124	---	---

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

TABLE A-15: INCIDENCE RATE RATIOS AND 95% CONFIDENCE INTERVALS COMPARING AFRICAN AMERICANS AND HISPANICS WITH CAUCASIANS BY COUNTY IN DELAWARE, 2009-2013

Cancer Site	African American		Hispanic	
	Rate Ratio (95% CI)	p-value	Rate Ratio (95% CI)	p-value
All-Site				
Kent	0.93 (0.86, 1.00)	0.0460*	0.83 (0.68, 1.01)	0.0576
New Castle	0.98 (0.94, 1.02)	0.3772	0.77 (0.69, 0.85)	0.0000*
Sussex	1.00 (0.92, 1.09)	0.9393	0.76 (0.61, 0.92)	0.0048*
Breast				
Kent	1.02 (0.83, 1.24)	0.8713	---	---
New Castle	0.98 (0.87, 1.09)	0.6980	0.60 (0.43, 0.81)	0.0005*
Sussex	0.89 (0.68, 1.13)	0.3613	1.31 (0.80, 2.00)	0.2813
Colorectal				
Kent	1.03 (0.79, 1.35)	0.8642	---	---
New Castle	1.08 (0.92, 1.26)	0.3585	0.79 (0.51, 1.15)	0.2331
Sussex	1.01 (0.73, 1.37)	0.9916	---	---
Lung				
Kent	0.80 (0.64, 0.98)	0.0342*	---	---
New Castle	0.95 (0.84, 1.07)	0.3914	0.55 (0.36, 0.78)	0.0006*
Sussex	1.01 (0.79, 1.26)	0.9983	---	---
Prostate				
Kent	1.89 (1.60, 2.22)	0.0000*	---	---
New Castle	1.62 (1.46, 1.80)	0.0000*	0.96 (0.70, 1.27)	0.8070
Sussex	1.62 (1.32, 1.97)	0.0000*	---	---

*p-value <0.05 for comparison with Caucasians

---: calculations based on less than 25 cases are not shown

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

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

TABLE A-16: NUMBER OF CANCER DEATHS, AGE-ADJUSTED MORTALITY RATES, AND 95% CONFIDENCE INTERVALS BY COUNTY AND RACE/ETHNICITY IN DELAWARE, 2009-2013

Cancer Site	Caucasian		African American		Hispanic	
	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.	Age-Adjusted Rate (95% CI)	No.
All Sites						
Kent	194.5 (184.1, 205.3)	1,354	180.2 (159.8, 202.5)	302	116.8 (76.5, 168.7)	30
New Castle	177.9 (172.3, 183.7)	3,911	195.4 (182.9, 208.5)	1,011	121.2 (96.9, 149.0)	107
Sussex	165.6 (158.6, 172.9)	2,306	206.8 (181.1, 235.0)	246	---	---
Breast						
Kent	23.4 (18.6, 29.1)	86	31.7 (21.3, 45.2)	31	---	---
New Castle	20.5 (18.0, 23.3)	251	23.2 (18.1, 29.2)	76	---	---
Sussex	21.3 (17.8, 25.5)	154	---	---	---	---
Colorectal						
Kent	14.8 (12.1, 18.1)	102	14.8 (9.5, 21.9)	26	---	---
New Castle	14.5 (12.9, 16.2)	321	15.9 (12.4, 20.0)	80	---	---
Sussex	13.0 (11.1, 15.2)	175	---	---	---	---
Lung						
Kent	60.0 (54.3, 66.1)	421	47.4 (37.3, 59.2)	82	---	---
New Castle	52.6 (49.5, 55.8)	1,156	48.5 (42.4, 55.2)	253	---	---
Sussex	53.1 (49.3, 57.2)	770	54.6 (42.0, 69.8)	67	---	---
Prostate						
Kent	13.6 (9.6, 18.7)	40	---	---	---	---
New Castle	17.9 (15.3, 21.0)	162	36.8 (27.7, 47.5)	63	---	---
Sussex	19.4 (15.8, 23.6)	110	---	---	---	---

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

TABLE A-17: MORTALITY RATE RATIOS AND 95% CONFIDENCE INTERVALS COMPARING AFRICAN AMERICANS AND HISPANICS WITH CAUCASIANS BY COUNTY IN DELAWARE, 2009-2013

Cancer Site	African American		Hispanic	
	Rate Ratio (95% CI)	p-value	Rate Ratio (95% CI)	p-value
All-Site				
Kent	0.93 (0.81, 1.05)	0.2559	0.60 (0.39, 0.87)	0.0056*
New Castle	1.10 (1.02, 1.18)	0.0125*	0.68 (0.54, 0.84)	0.0002*
Sussex	1.25 (1.09, 1.43)	0.0020*	---	---
Breast				
Kent	1.35 (0.86, 2.08)	0.2017	---	---
New Castle	1.13 (0.85, 1.48)	0.4098	---	---
Sussex	---	---	---	---
Colorectal				
Kent	1.00 (0.61, 1.56)	1.0000	---	---
New Castle	1.10 (0.84, 1.42)	0.5241	---	---
Sussex	---	---	---	---
Lung				
Kent	0.79 (0.61, 1.01)	0.0593	---	---
New Castle	0.92 (0.80, 1.06)	0.2818	---	---
Sussex	1.03 (0.78, 1.33)	0.8733	---	---
Prostate				
Kent	---	---	---	---
New Castle	2.05 (1.48, 2.78)	0.0000*	---	---
Sussex	---	---	---	---

*p-value <0.05 for comparison with Caucasians

---: calculations based on less than 25 cases are not shown

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

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

APPENDIX B: SUPPLEMENTAL BEHAVIORAL RISK FACTOR SURVEY INFORMATION

WORDING OF THE BRFS QUESTIONS FOR EACH OF THE VARIABLES USED IN THIS ANALYSIS

Demographic Variables

What is your age?

_ _ Code age in years
0 7 Don't know / Not sure
0 9 Refused

Are you Hispanic or Latino?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Which one or more of the following would you say is your race?

(Check all that apply)
Please read:
1 White
2 Black or African American
3 Asian
4 Native Hawaiian or Other Pacific Islander
5 American Indian or Alaska Native
Or
6 Other [specify]_____ **Do not read:**
8 No additional choices
7 Don't know / Not sure
9 Refused

Which one of these groups would you say best represents your race?

Please read:
1 White
2 Black or African American
3 Asian
4 Native Hawaiian or Other Pacific Islander
5 American Indian or Alaska Native
Or
6 Other [specify]_____
Do not read:
7 Don't know / Not sure
9 Refused

What is the highest grade or year of school you completed?

Read only if necessary:

1 Never attended school or only attended kindergarten
2 Grades 1 through 8 (Elementary)
3 Grades 9 through 11 (Some high school)
4 Grade 12 or GED (High school graduate)
5 College 1 year to 3 years (Some college or technical school)
6 College 4 years or more (College graduate)

Do not read:

9 Refused

Is your annual household income from all sources—

If respondent refuses at ANY income level, code '99' (Refused)

Read only if necessary:

4 Less than $25,000 **If "no," ask 05; if "yes," ask 03**
($20,000 to less than $25,000)
3 Less than $20,000 **If "no," code 04; if "yes," ask 02**
($15,000 to less than $20,000)
2 Less than $15,000 **If "no," code 03; if "yes," ask 01**
($10,000 to less than $15,000)
1 Less than $10,000 **If "no," code 02**
5 Less than $35,000 **If "no," ask 06**
($25,000 to less than $35,000)
6 Less than $50,000 **If "no," ask 07**
($35,000 to less than $50,000)
0 7 Less than $75,000 **If "no," code 08**
($50,000 to less than $75,000)
0 8 $75,000 or more

Do not read:

7 7 Don't know / Not sure
9 9 Refused

About how much do you weigh without shoes?

_ _ _ _ Weight
(pounds/kilograms)
7 7 7 7 Don't know / Not sure
9 9 9 9 Refused

About how tall are you without shoes?

_ _ / _ _ Height
(f t / inches/meters/centimeters)
7 7/ 7 7 Don't know / Not sure
9 9/ 9 9 Refused

What county do you live in?

_ _ _ (American National Standards Institute) ANSI County Code (formerly Federal Information Processing Standards [FIPS] county code)

7 7 7 Don't know / Not sure

9 9 9 Refused

Indicate sex of respondent. **Ask only if necessary.**

1 Male

2 Female

Are you…? Please read:

1 Married

2 Divorced

3 Widowed

4 Separated

5 Never married Or

6 A member of an unmarried couple

Do not read: 9 Refused

Are you currently…? Please read:

1 Employed for wages

2 Self-employed

3 Out of work for 1 year or more

4 Out of work for less than 1 year

5 A Homemaker

6 A Student

7 Retired Or

8 Unable to work

Do not read: 9 Refused

Are you limited in any way in any activities because of physical, mental, or emotional problems?

1 Yes

2 No

7 Don't know / Not Sure

9 Refused

Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone? NOTE: Include occasional use or use in certain circumstances.

1 Yes

2 No

7 Don't know / Not Sure

9 Refused

Are you blind or do you have serious difficulty seeing, even when wearing glasses?

1 Yes
2 No
7 Don't know / Not Sure
9 Refused

Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Do you have serious difficulty walking or climbing stairs?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Do you have difficulty dressing or bathing?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone such as visiting a doctor's office or shopping?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Do you consider yourself to be: Please read:

1 Straight
2 Lesbian or gay
3 Bisexual

Do not read:
4 Other
7 Don't know/Not sure
9 Refused

Access to Health Care

Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, government plans such as Medicare, or Indian Health Service?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Do you have one person you think of as your personal doctor or health care provider?

1 Yes, only one
2 More than one
3 No
7 Don't know / Not sure
9 Refused

About how long has it been since you last visited a doctor for a routine checkup? A routine checkup is a general physical exam, not an exam for a specific injury, illness, or condition.

1 Within the past year (anytime less than 12 months ago)
2 Within the past 2 years (1 year but less than 2 years ago)
3 Within the past 5 years (2 years but less than 5 years ago)
4 5 or more years ago
7 Don't know / Not sure
8 Never
9 Refused

Behavior Risk Factors

During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Have you smoked at least 100 cigarettes in your entire life?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Do you now smoke cigarettes every day, some days, or not at all?

1 Every day
2 Some days
3 Not at all
7 Don't know / Not sure
9 Refused

During the past 12 months, have you stopped smoking for one day or longer because you were trying to quit smoking?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

How long has it been since you last smoked a cigarette, even one or two puffs?

0 1 Within the past month (less than 1 month ago)
0 2 Within the past 3 months (1 month but less than 3 months ago)
0 3 Within the past 6 months (3 months but less than 6 months ago)
0 4 Within the past year (6 months but less than 1 year ago)
0 5 Within the past 5 years (1 year but less than 5 years ago)
0 6 Within the past 10 years (5 years but less than 10 years ago)
0 7 10 years or more
7 7 Don't know / Not sure
9 9 Refused

These next questions are about the fruits and vegetables **you** ate or drank during the past 30 days. Please think about all forms of fruits and vegetables including cooked or raw, fresh, frozen, or canned. Please think about all meals, snacks, and food consumed at home and away from home. I will be asking how often **you** ate or drank each one: for example, once a day, twice a week, three times a month, and so forth.

During the past month, how many times per day, week, or month did you drink 100% PURE fruit juices? Do not include fruit-flavored drinks with added sugar or fruit juice you made at home and added sugar to. Only include 100% juice.

1 _ _ Per day
2 _ _ Per week
3 _ _ Per month
5 5 5 Never
7 7 7 Don't know / Not sure
9 9 9 Refused

During the past month, not counting juice, how many times per day, week, or month did you eat fruit? Count fresh, frozen, or canned fruit

1 _ _ Per day
2 _ _ Per week
3 _ _ Per month
5 5 5 Never
7 7 7 Don't know / Not sure
9 9 9 Refused

During the past month, how many times per day, week, or month did you eat cooked or canned beans, such as refried, baked, black, garbanzo beans, beans in soup, soybeans, edamame, tofu, or lentils? Do NOT include long green beans.

1 _ _ Per day
2 _ _ Per week
3 _ _ Per month
5 5 5 Never
7 7 7 Don't know / Not sure
9 9 9 Refused

During the past month, how many times per day, week, or month did you eat dark green vegetables for example broccoli or dark leafy greens including romaine, chard, collard greens or spinach?

1 _ _ Per day
2 _ _ Per week
3 _ _ Per month
5 5 5 Never
7 7 7 Don't know / Not sure
9 9 9 Refused

During the past month, how many times per day, week, or month did you eat orange-colored vegetables such as sweet potatoes, pumpkin, winter squash, or carrots?

1 _ _ Per day
2 _ _ Per week
3 _ _ Per month
5 5 5 Never
7 7 7 Don't know / Not sure
9 9 9 Refused

Not counting what you just told me about, during the past month, about how many times per day, week, or month did you eat OTHER vegetables? Examples of other vegetables include tomatoes, tomato juice or V-8 juice, corn, eggplant, peas, lettuce, cabbage, and white potatoes that are not fried, such as baked or mashed potatoes.

1 _ _ Per day
2 _ _ Per week
3 _ _ Per month
5 5 5 Never
7 7 7 Don't know / Not sure
9 9 9 Refused

During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage such as beer, wine, a malt beverage, or liquor?

1 _ _ Days per week
2 _ _ Days in past 30 days
8 8 8 No drinks in past 30 days
7 7 7 Don't know / Not sure
9 9 9 Refused

One drink is equivalent to a 12-ounce beer, a 5-ounce glass of wine, or a drink with one shot of liquor. During the past 30 days, on the days when you drank, about how many drinks did you drink on the average? NOTE: A 40 ounce beer would count as 3 drinks, or a cocktail drink with 2 shots would count as 2 drinks.

_ _ Number of drinks
7 7 Don't know / Not sure
9 9 Refused

Cancer Screening

Sigmoidoscopy and colonoscopy are exams in which a tube is inserted in the rectum to view the colon for signs of cancer or other health problems. Have you ever had either of these exams?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

For a SIGMOIDOSCOPY, a flexible tube is inserted into the rectum to look for problems.
A COLONOSCOPY is similar, but uses a longer tube, and you are usually given medication through a needle in your arm to make you sleepy and told to have someone else drive you home after the test.
Was your MOST RECENT exam a sigmoidoscopy or a colonoscopy?

1 Sigmoidoscopy
2 Colonoscopy
7 Don't know / Not sure
9 Refused

A Prostate-Specific Antigen test, also called a PSA test, is a blood test used to check men for prostate cancer. Has a doctor, nurse, or other health professional EVER talked with you about the advantages of the PSA test?

1 Yes
2 No
7 Don't Know / Not sure
9 Refused

A mammogram is an x-ray of each breast to look for breast cancer. Have you ever had a mammogram?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

How long has it been since you had your last mammogram?

Read only if necessary:

1 Within the past year (anytime less than 12 months ago)
2 Within the past 2 years (1 year but less than 2 years ago)
3 Within the past 3 years (2 years but less than 3 years ago)
4 Within the past 5 years (3 years but less than 5 years ago)
5 5 or more years ago

Do not read:

7 Don't know / Not sure
9 Refused

A clinical breast exam is when a doctor, nurse, or other health professional feels the breasts for lumps. Have you ever had a clinical breast exam?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

How long has it been since your last breast exam?

Read only if necessary:

1 Within the past year (anytime less than 12 months ago)
2 Within the past 2 years (1 year but less than 2 years ago)
3 Within the past 3 years (2 years but less than 3 years ago)
4 Within the past 5 years (3 years but less than 5 years ago)
5 5 or more years ago

Do not read:

7 Don't know / Not sure
9 Refused

APPENDIX C: COMPREHENSIVE LIST OF RISK FACTORS FOR SELECTED CANCERS

BREAST CANCER

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

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

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

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

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

- 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; two-thirds of invasive cancers are in females 55 and older.
- Family history – Having one first degree relative (mother, sister, or daughter) with breast cancer doubles a woman's risk of developing breast cancer; having two first degree relatives triples the risk.
- Gene defects or mutations – Five to 10 percent of breast cancer cases may result from gene defects or mutations inherited from a parent; the most common inherited mutation is the BRCA1 or BRCA2 gene found mostly in Jewish females of eastern European origin.
- Personal history of breast cancer – This triples the risk of developing a new cancer in another part of the body, another part of the previously affected breast, or the other breast.
- Race – Caucasian females age 45 and over are more likely to develop breast cancer than African American females. African American females are more likely to be diagnosed at a younger age and more likely to die from breast cancer than 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 age 12) and/or later age at menopause (after age 55)

COLORECTAL CANCER

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

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

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

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

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

- Age (risk increases after age 50)
- Race (African Americans are at greater risk than 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 percent of colorectal cancers.
- Family history of colorectal cancer or adenomatous polyps in one or more first degree relatives

LUNG CANCER

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

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

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

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

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

- Family history of lung cancer
- Personal history of tuberculosis

PROSTATE CANCER

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

- A diet high in red meat and/or high-fat dairy products
- A diet low in fruits and vegetables
- Obesity
- Tobacco and heavy alcohol use

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

- Employment involving following industries: welders, battery manufacturers, rubber workers, and workers exposed to cadmium

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

- Age (risk increases after age 50)
- Race (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

APPENDIX D: SUMMARY TABLES FOR INCIDENCE, MORTALITY, STAGE AT DIAGNOSIS, AND SCREENING

TABLE D-1: DIFFERENCES AMONG DEMOGRAPHIC GROUPS AND SCREENING PREVALENCE, INCIDENCE, LATE STATE DIAGNOSIS, AND MORTALITY IN DELAWARE– BREAST CANCER

		Screening Prevalence*	Incidence Rate	Percent of Late Stage at Diagnosis	Mortality Rate
RACE					
	Caucasian	----	----	----	----
	African American	----	----	Significantly Higher	----
	Hispanic	----	----	Significantly Higher	----
AGE					
0-39	Caucasian	N/A	----	Significantly Lower	Fewer than 25 cases
	African American	N/A	----	----	Fewer than 25 cases
	Hispanic	N/A	Fewer than 25 cases	Significantly Higher	Fewer than 25 cases
40-64	Caucasian	----	----	----	----
	African American	----	----	----	Significantly Higher
	Hispanic	----	Significantly Lower	----	Fewer than 25 cases
65-74	Caucasian	Significantly Higher	----	----	----
	African American	Significantly Higher	----	----	Fewer than 25 cases
	Hispanic	Sample Too Small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
75-84	Caucasian	----	----	----	----
	African American	----	----	Significantly Higher	Fewer than 25 cases
	Hispanic	Sample Too Small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
85+	Caucasian	Significantly Lower	----	----	----
	African American	Sample Too Small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
	Hispanic	Sample Too Small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases

		Screening Prevalence*	Incidence Rate	Percent of Late Stage at Diagnosis	Mortality Rate
COUNTY					
Kent	Caucasian	----	----		----
	African American	----	----	Significantly Higher	----
	Hispanic	Sample Too Small	Fewer than 25 cases	Significantly Higher	Fewer than 25 cases
New Castle	Caucasian	----	----	----	----
	African American	Significantly Higher	----	Significantly Higher	----
	Hispanic	Sample Too Small	Significantly Lower	Significantly Higher	Fewer than 25 cases
Sussex	Caucasian	----	----	----	----
	African American	----	----	Significantly Higher	Fewer than 25 cases
	Hispanic	Sample Too Small	----	Significantly Higher	Fewer than 25 cases
*BRFS 2008, 2010, and 2012 aggregated prevalence.					

Source (Incidence Data for 2009-2013): Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017
Source (Mortality Data for 2009-2013): Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017
Source (BRFS Data for 2008-2014): Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

TABLE D-2: DIFFERENCES AMONG DEMOGRAPHIC GROUPS AND SCREENING PREVALENCE, INCIDENCE, LATE STATE DIAGNOSIS, AND MORTALITY IN DELAWARE – COLORECTAL CANCER

		Screening Prevalence*	Incidence Rate	Percent of Late Stage at Diagnosis	Mortality Rate
RACE					
	Caucasian	----	----	----	----
	African American	----	----	----	----
	Hispanic	----	Significantly Lower	----	----
AGE					
0-39	Caucasian	N/A	----	----	Fewer than 25 cases
	African American	N/A	Fewer than 25 cases	----	Fewer than 25 cases
	Hispanic	N/A	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
40-64†	Caucasian	----	----	----	----
	African American	----	----	----	----
	Hispanic	----	Fewer than 25 cases	----	Fewer than 25 cases
65-74	Caucasian	----	----	----	----
	African American	----	----	----	----
	Hispanic	Sample Too Small	Fewer than 25 cases	----	Fewer than 25 cases
75-84	Caucasian	----	----	----	----
	African American	----	----	----	----
	Hispanic	Sample Too Small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
85+	Caucasian	----	----	----	----
	African American	Sample Too Small	Fewer than 25 cases	----	Fewer than 25 cases
	Hispanic	Sample Too Small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases

		Screening Prevalence*	Incidence Rate	Percent of Late Stage at Diagnosis	Mortality Rate
SEX					
Male	Caucasian	----	----	----	----
	African American	----	----	----	----
	Hispanic	Sample Too Small	----	----	Fewer than 25 cases
Female	Caucasian	----	----	----	----
	African American	----	----	----	----
	Hispanic	----	Fewer than 25 cases	----	Fewer than 25 cases
COUNTY					
Kent	Caucasian	----	----	----	----
	African American	----	----	----	----
	Hispanic	Sample Too Small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
New Castle	Caucasian	----	----	----	----
	African American	----	----	----	----
	Hispanic	Sample Too Small	----	----	Fewer than 25 cases
Sussex	Caucasian	----	----	----	----
	African American	Significantly Lower	----	----	Fewer than 25 cases
	Hispanic	Sample Too Small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases

*BRFS 2008, 2010, and 2012 aggregated prevalence.
†Screening age group restricted to 50-64 due to screening recommendations

Source (Incidence Data for 2009-2013): Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017
Source (Mortality Data for 2009-2013): Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017
Source (BRFS Data for 2008-2014): Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

TABLE D-3: DIFFERENCES AMONG DEMOGRAPHIC GROUPS AND SCREENING PREVALENCE, INCIDENCE, LATE STATE DIAGNOSIS, AND MORTALITY IN DELAWARE – LUNG CANCER

		Ever Smoked Prevalence*	Incidence Rate	Percent of Late Stage at Diagnosis	Mortality Rate
RACE					
	Caucasian	Significantly Higher	----	----	----
	African American	Significantly Lower	----	----	----
	Hispanic	----	Significantly Lower	----	Significantly Lower
AGE					
0-39	Caucasian	----	----	Sample Too Small	----
	African American	Significantly Lower	----	Sample Too Small	Significantly Higher
	Hispanic	----	----	Sample Too Small	----
40-64	Caucasian	Significantly Higher	----	----	----
	African American	----	----	----	Significantly Higher
	Hispanic	----	----	----	----
65-74	Caucasian	Significantly Higher	----	----	----
	African American	----	Significantly Lower	----	Significantly Higher
	Hispanic	Sample Too Small	----	----	----
75-84	Caucasian	Significantly Higher	----	----	----
	African American	----	----	----	Significantly Higher
	Hispanic	Sample Too Small	----	----	----
85+	Caucasian	Significantly Higher	----	----	----
	African American	----	----	----	Significantly Higher
	Hispanic	Sample Too Small	----	Sample Too Small	----

		Ever Smoked Prevalence*	Incidence Rate	Percent of Late Stage at Diagnosis	Mortality Rate
SEX					
Male	Caucasian	Significantly Higher	----	----	----
	African American	----	----	----	----
	Hispanic	----	----	----	----
Female	Caucasian	----	----	----	----
	African American	Significantly Lower	Significantly Lower	----	Significantly Lower
	Hispanic	Significantly Lower	Significantly Lower	----	----
COUNTY					
Kent	Caucasian	----	----	----	----
	African American	Significantly Lower	Significantly Higher	----	----
	Hispanic	----	----	----	----
New Castle	Caucasian	----	----	----	----
	African American	Significantly Lower	----	----	----
	Hispanic	----	Significantly Lower	----	----
Sussex	Caucasian	----	----	----	----
	African American	----	----	----	----
	Hispanic	Sample Too Small	----	----	----
*BRFS 2008-2010 aggregated prevalence.					

Source (Incidence Data for 2009-2013): Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017
Source (Mortality Data for 2009-2013): Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017
Source (BRFS Data for 2008-2014): Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014

TABLE D-4: DIFFERENCES AMONG DEMOGRAPHIC GROUPS AND SCREENING PREVALENCE, INCIDENCE, LATE STATE DIAGNOSIS, AND MORTALITY IN DELAWARE – PROSTATE CANCER

		Screening Prevalence*	Incidence Rate	Percent of Late Stage at Diagnosis	Mortality Rate
RACE					
	Caucasian	----	----	----	----
	African American	----	Significantly Higher	----	Significantly Higher
	Hispanic	Sample too small	----	----	Fewer than 25 cases
AGE					
0-39	Caucasian	N/A	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
	African American	N/A	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
	Hispanic	N/A	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
40-64	Caucasian	----	----	----	----
	African American	----	Significantly Higher	----	Fewer than 25 cases
	Hispanic	Sample too small	----	----	Fewer than 25 cases
65-74	Caucasian	----	----	----	----
	African American	----	Significantly Higher	----	Significantly Higher
	Hispanic	Sample too small	----	Sample Too Small	Fewer than 25 cases
75-84	Caucasian	----	----	----	----
	African American	Sample too small	Significantly Higher	----	Significantly Higher
	Hispanic	Sample too small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
85+	Caucasian	----	----	----	----
	African American	Sample too small	Fewer than 25 cases	----	Fewer than 25 cases
	Hispanic	Sample too small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases

		Screening Prevalence*	Incidence Rate	Percent of Late Stage at Diagnosis	Mortality Rate
COUNTY					
Kent	Caucasian	----	----	----	----
	African American	----	Significantly Higher	----	Fewer than 25 cases
	Hispanic	Sample too small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
New Castle	Caucasian	----	----	----	----
	African American	----	Significantly Higher	----	Significantly Higher
	Hispanic	Sample too small	----	----	Fewer than 25 cases
Sussex	Caucasian	----	----	----	----
	African American	Sample too small	Significantly Higher	----	Fewer than 25 cases
	Hispanic	Sample too small	Fewer than 25 cases	Sample Too Small	Fewer than 25 cases
*BRFS 2008, 2010, and 2012 aggregated prevalence.					

Source (Incidence Data for 2009-2013): Delaware Health and Social Services, Division of Public Health, Delaware Cancer Registry, 2017
Source (Mortality Data for 2009-2013): Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2017
Source (BRFS Data for 2008-2014): Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2008-2014