CHRONIC DISEASE IN DELAWARE:

FACTS AND FIGURES

November 2019

DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health
Health Promotion and Disease Prevention

DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

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Executive Summary

The *Chronic Disease in Delaware: Facts and Figures* brief summarizes the current state of chronic disease in Delaware. This brief was created by the Health Promotion and Disease Prevention (HPDP) Section of the Division of Public Health (DPH), located within the Delaware Department of Health and Social Services. Following the inaugural 2018 issue, HPDP provides annual updates to the brief as a vehicle for disseminating newest health information among our residents, partners, and policy-makers. The brief also serves as an important tool to direct coordinated, statewide public health and policy efforts focused on reducing Delaware's chronic disease burden. The *Chronic Disease in Delaware: Facts and Figures* brief is aligned with Delaware's State Health Improvement Plan and collectively builds capacity to foster optimal health for all Delawareans.

Chronic diseases account for four of the top five leading causes of death among Delawareans. In 2017, at least 5,989 Delawareans died from chronic diseases. Cardiovascular diseases and cancers accounted for 51% of all deaths statewide. Although Delaware's cancer incidence and death rates have been historically higher than the U.S. rates, the gap has narrowed over the last decade. Declining cancer incidence and death rates among African American males earned Delaware national recognition for its public health achievements in eliminating racial health disparities. For 2011-2015, Delaware's cancer incidence and death rates ranked 2nd and 18th highest among all states, respectively. Lung cancer continues to account for an enormous share of the statewide cancer burden: from 2011-2015, lung cancer accounted for 15% of all new cancer cases and 29% of all cancer deaths in Delaware.

Improvements in death rates from cardiovascular diseases, a complex group of diseases which includes heart diseases, vascular diseases, and cerebrovascular diseases (stroke), are also noteworthy. From 2001-2005 to 2013-2017, death rates decreased 32% for heart diseases, 14% for cerebrovascular diseases, 33% for high blood pressure and hypertensive renal disease, and 50% for aortic dissection. Despite these decreases, African American Delawareans continue to have higher death rates from these cardiovascular diseases compared to Caucasians. In 2017, 61% of Delawareans age 65 or older reported having high blood pressure, a vascular disease that is a leading risk factor for the development of other related cardiovascular diseases.

Other leading chronic diseases among Delawareans include chronic lower respiratory disease and diabetes. In 2018, 7% percent of adult males and 8% of adult females reported that they had been diagnosed with some type of chronic lower respiratory disease. In 2018, 12% of adult Delawareans reported having been diagnosed with diabetes; another 12% of Delaware adults have been diagnosed with pre-diabetes. People with pre-diabetes are at risk for developing type 2 diabetes but can reduce that risk through increased physical activity and eating a healthier diet.

Overall, incidence and prevalence data suggest that Delaware is in the middle of U.S. states for many chronic diseases and their associated risk factors. DPH and its health partners have done much work to reduce the statewide chronic disease burden, yet more work remains. Population aging, advances in medical care, and growing rates of health-damaging behaviors make it likely that in the future, the number of Delawareans living with chronic disease will dramatically increase. Through HPDP programming, the State remains dedicated to addressing persistent and growing inequities that contribute to sub-optimal health outcomes for some groups of Delawareans.

Delaware's overall health care reform strategy aims to achieve improved quality of care, better health outcomes, and reduced health care costs and spending. *Chronic Disease in Delaware: Facts and Figures* supports Delaware's health care reform strategy by identifying populations at high risk for chronic disease development and opportunities to achieve cost savings through disease prevention and management.

Chronic Disease in Delaware

Chronic diseases are diseases that progress slowly and persist for a long time. Examples include Alzheimer's disease, cancer, cardiovascular disease (including heart disease, stroke, and other vascular diseases), chronic lower respiratory disease, and diabetes.

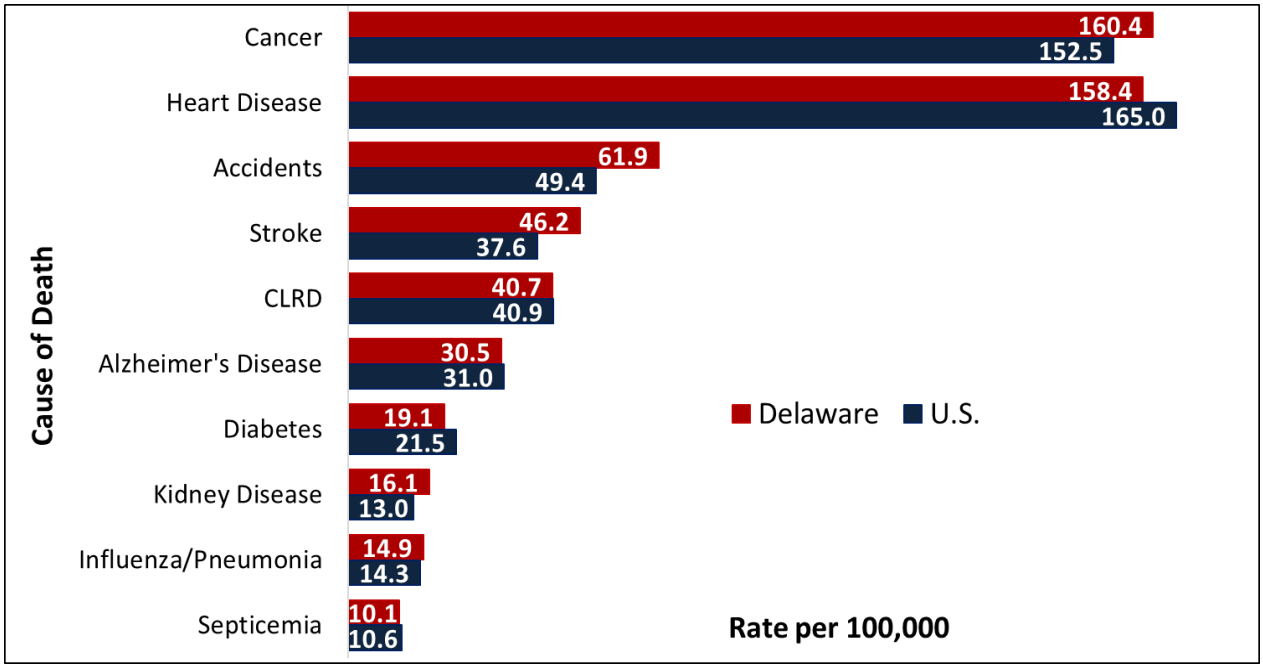
Vaccines cannot prevent chronic diseases, nor can medication completely cure them. They require ongoing monitoring and treatment. Without intervention, chronic diseases typically worsen over time, often leading to the need for specialized medical care.

Sixty percent of all U.S. adults have at least one chronic disease; nearly one-half (42%) of U.S. adults have more than one chronic condition. Twelve percent (12%) of all U.S. adults have five or more chronic conditions. [1]

In Delaware, four of the top five leading causes of death are chronic diseases. In 2017, at least 5,989 Delawareans died from chronic disease, with cardiovascular diseases and cancer accounting for 51% of all deaths statewide (Figure 1). [2]

An aging population, advances in medical care, and growing rates of health-damaging behaviors (such as obesity and reduced physical activity) make it likely that the number of Delawareans living with, and dying from, chronic diseases will increase in the future.

Figure 1: Age-Adjusted Death Rates for Leading Causes of Death: Delaware vs. U.S., 2017.



Note: CLRD: Chronic Lower Respiratory Diseases. Source: Centers for Disease Control and Prevention, Stats of the State of Delaware, Delaware Leading Causes of Death, 2017.

Cancer

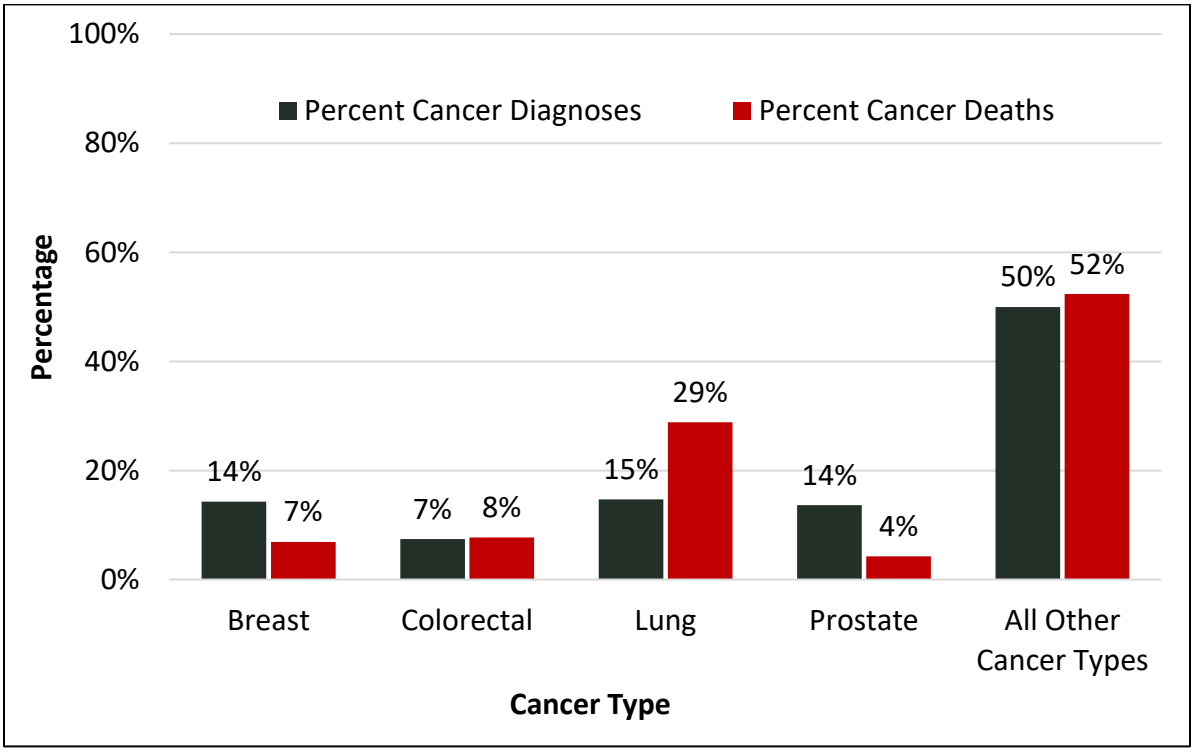
- Cancer is the leading cause of death in Delaware, accounting for 23% of all deaths in 2017. [2] On average, each year from 2011-2015, 5,605 Delawareans were diagnosed with cancer. During the same period, an average of 1,944 Delawareans died each year from cancer. [3]

- Delaware's 2011-2015 cancer incidence rate (a measure of how many people in a population are diagnosed with cancer during a specific period) ranked 2nd highest among all states. For the same period, Delaware's cancer death rate ranked 18th highest among all states. [3]

- Although Delaware's cancer incidence and death rates have been historically higher than the U.S. rate, the gap has narrowed over the last decade.

- Just four cancer types (breast, colorectal, lung, and prostate) account for 50% of all cancer diagnoses and 48% of all cancer deaths in Delaware (Figure 2). [3]

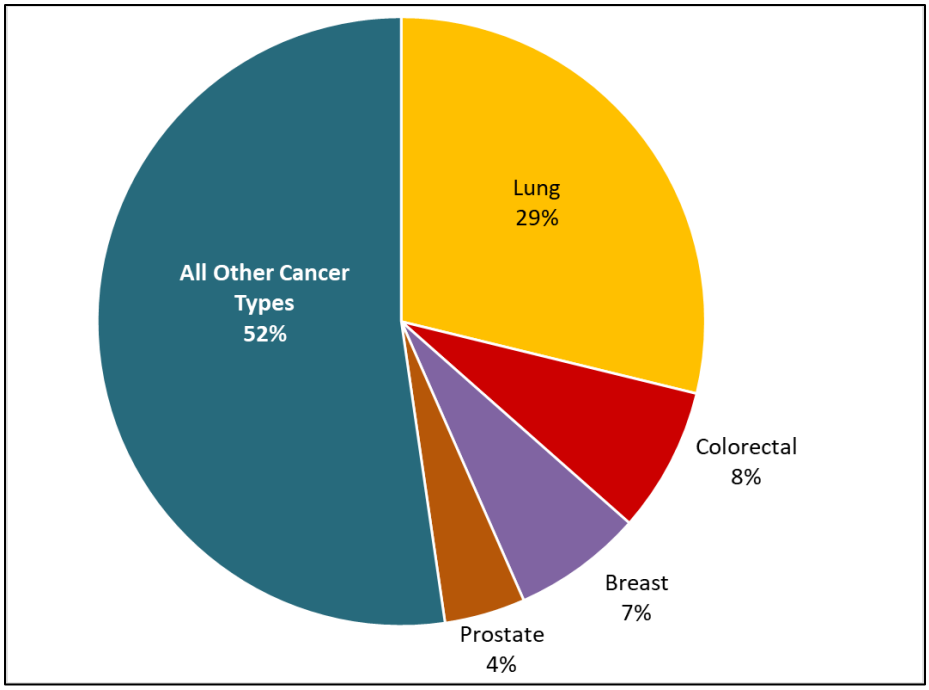
Figure 2: "Big 4" Cancers as a Percentage of Total Delaware Cancer Diagnoses and Deaths, 2011-2015.



Source: Delaware Department of Health and Social Services, Division of Public Health, Cancer Incidence and Mortality in Delaware, 2011-2015.

- In Delaware and the U.S., these four cancers are collectively referred to as the "Big 4" (Figure 3). Of the "Big 4" cancers, lung cancer is the deadliest. Lung cancer accounts for 29% of all cancer deaths in Delaware. [3]

Figure 3: Percentage of Delaware Cancer Deaths due to the "Big 4" Cancer Types, 2011-2015.



Source: Delaware Department of Health and Social Services, Division of Public Health, Cancer Incidence and Mortality in Delaware, 2011-2015.

In Delaware, declining cancer rates are especially noteworthy among African Americans. Between 2001-2005 and 2011-2015, the Delaware Department of Health and Social Services (DHSS), Division of Public Health (DPH) observed the following cancer trends:

- Cancer Incidence Rates: [3]
  - Decreased 15% among African American males
  - Did not change among African American females
  - Decreased 7% among Caucasian males
  - Increased 5% among Caucasian females
  - Decreased 9% in Hispanic males
  - Increased 2% in Hispanic females

- Cancer Death Rates: [3]
  - Decreased 30% among African American males
  - Decreased 14% among African American females
  - Decreased 19% among Caucasian males
  - Decreased 13% among Caucasian females
  - Decreased 7% among Hispanic males
  - Decreased 4% among Hispanic females

Early Detection Saves Lives!

Delaware is committed to preventing, detecting, and treating cancer. DPH recommends that Delawareans talk with their doctors about their personal cancer risk, follow nationally-recommended cancer screening guidelines, and spread the word to family and friends about Delaware's cancer programs and services:

Delaware's **Screening for Life Program** (SFL) is a cooperative effort by DPH and the U.S. Centers for Disease Control and Prevention (CDC). The SFL Program pays for cancer screening tests for qualified Delaware adults. Call 302-744-1040 to apply.

Delaware's **Cancer Treatment Program** covers the cost of cancer treatment for up to two years for eligible Delaware residents. Call 1-800-996-9969 to apply.

Lung Cancer

- Lung cancer is the deadliest cancer in both men and women in Delaware. While lung cancer accounts for 15% of all newly diagnosed cancer cases in the state, it accounts for 29% of all cancer deaths in Delaware. [3]

- From 2011-2015, 4,117 cases of lung cancer were diagnosed among Delawareans and 2,802 Delawareans died from the disease. [3] For the same period, Delaware ranked 9th in the U.S. for lung cancer incidence and 14th in the U.S for lung cancer deaths. [3]

- Historically, Delaware's lung cancer incidence and death rates were much higher than those of the U.S. Encouragingly, due in large part to statewide reductions in tobacco use, the gap between U.S. and Delaware lung cancer rates has narrowed.

- However, more work remains in Delaware's fight to reduce its lung cancer burden. Delaware's lung cancer incidence and death rates for 2011-2015 remained significantly higher than the U.S.

Table 1: Lung Cancer Incidence and Death Rates, Delaware vs. U.S., 2011-2015.

	Lung Cancer Incidence Rate (2011-2015)	Lung Cancer Death Rate (2011-2015)
Delaware	71.3 per 100,000	50.0 per 100,000
U.S.	54.6 per 100,000	43.4 per 100,000

Source: Delaware Department of Health and Social Services, Division of Public Health, Cancer Incidence and Mortality in Delaware, 2011-2015.

- Lung cancer risk factors fall into one of three categories: (a) lifestyle; (b) occupational, environmental, and medical; and (c) non-modifiable (Table 2).

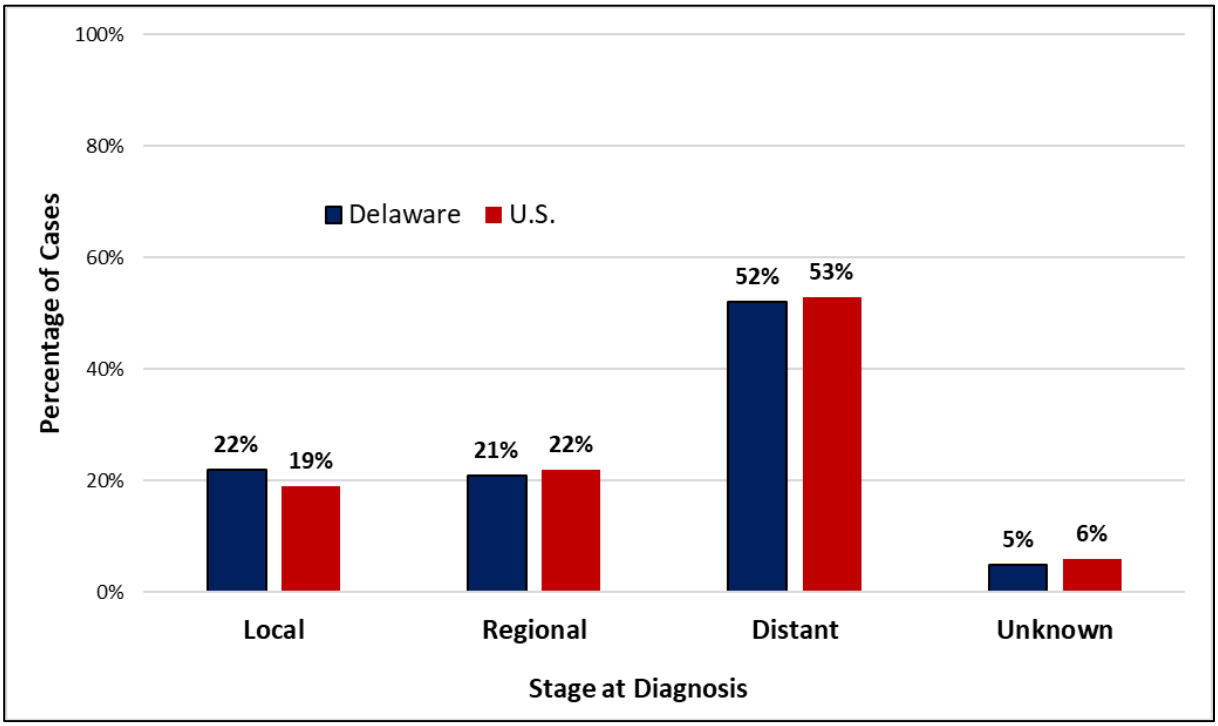
Table 2: Established Lung Cancer Risk Factors by Risk Factor Category.

Category	Lung Cancer Risk Factor
Lifestyle Risk Factors	Tobacco Use
	Exposure to Secondhand Smoke
Occupational / Environmental / Medical Risk Factors	Occupational exposure to asbestos, mustard gas, radioactive ores, metals, certain organic chemicals, paint
	Environmental exposure to radon gas released from soil or burning materials, asbestos, air pollution, high levels of arsenic in drinking water
	Radiation therapy to the chest
Non-Modifiable Risk Factors	Family history of lung cancer
	Personal history of tuberculosis

Source: Delaware Department of Health and Social Services, Division of Public Health, Cancer Incidence and Mortality in Delaware, 2011-2015.

- Lung cancer is so deadly because most cases are diagnosed in the distant stage, when the cancer has spread from the lungs to distant tissues, organs, or lymph nodes. In Delaware and the U.S., over half all lung cancer diagnoses from 2011-2015 were diagnosed in the distant stage (Figure 4). [3]

Figure 4: Percentage Distribution of Lung Cancer Cases by Stage at Diagnosis, Delaware vs. U.S., 2011-2015.



Source: Delaware Department of Health and Social Services, Division of Public Health, Cancer Incidence and Mortality in Delaware, 2011-2015.

- Lung cancer screenings can help detect lung cancer earlier, in its more treatable stages. Based on the National Comprehensive Cancer Network (NCCN) guidelines, the Delaware Cancer Consortium recommends annual lung cancer screening for the following groups of individuals:[1]

  - Adults between the ages of 55 and 80 with at least a 30 pack-year history of smoking *AND* who are current smokers or have quit within the past 15 years *or*

  - Adults age 50 and older with at least a 20 pack-year history *AND* one additional lung cancer risk factor other than second-hand smoke.

- Delaware's SFL Program covers lung cancer screenings for qualified Delawareans. Call 1-302-744-1040 to apply.

[1] One pack-year is calculated by multiplying the number of packs of cigarettes smoked per day by the number of years the person has smoked. For example: 1 pack year is equal to smoking 1 pack of cigarettes per day for 1 year or 2 packs per day for half a year. [33]

Cardiovascular Disease

- Cardiovascular disease (CVD) is a broad group of diseases that includes heart disease, vascular disease, and cerebrovascular diseases (stroke).
    - The two main heart disease conditions are coronary artery disease and heart attack. Other heart disease conditions include acute coronary syndrome, angina, arrhythmias, cardiomyopathy, congenital heart defects, heart failure, and rheumatic heart disease.
    - Vascular disease refers to a group of diseases affecting the arteries and veins. These conditions include atherosclerosis, aortic aneurysm, peripheral artery disease, and high blood pressure.
    - Cerebrovascular diseases are commonly known as stroke. A stroke happens when blood flow is restricted to an area of the brain, causing that part of the brain to die. It is important to note that "mini stroke" is not included in this definition as it is a temporary event and does not cause any permanent damage.
- Combined, cardiovascular diseases accounted for 29% of deaths in Delaware in 2017 (2,637 deaths). [2] In 2017, 1,979 Delawareans died from heart diseases, representing 22% of all deaths statewide. [2] Another 569 Delawareans died from cerebrovascular diseases, representing 6% of all deaths statewide. [2] An additional 89 Delawareans died from selected vascular diseases (high blood pressure and hypertensive renal disease, and aortic dissection), representing 1% of deaths statewide. [2]
- In 2018, 8% of adult Delaware males and 5% of adult Delaware females reported ever having had coronary heart disease or heart attack. [4]
- High cholesterol is a major risk factor for many cardiovascular diseases. In 2017, 35% of Delaware adults reported having high cholesterol. [5]
- High blood pressure, also known as hypertension, is often called a "silent killer" because many people do not have recognizable symptoms. Left untreated, high blood pressure can damage the heart, brain, and kidneys. Regular blood pressure screening is the best way to determine if an individual has hypertension.
- In 2017, 35% of Delaware adults reported having high blood pressure. [5]
- High blood pressure is more common in older adults. In 2017, 15% of Delawareans age 25-34 reported having high blood pressure, compared to 61% of Delawareans age 65 or older. [5]

Chronic Lower Respiratory Disease

- Chronic lower respiratory disease is the fifth leading cause of death in Delaware. [2] In 2017, 524 Delawareans died from chronic lower respiratory disease, representing 6% of all deaths statewide. [2]
- The most common forms of chronic lower respiratory disease are chronic obstructive pulmonary disease (COPD), asthma, emphysema, and chronic bronchitis.
- Chronic lower respiratory diseases interfere with oxygen flow within the body, resulting in shortness of breath.
- In 2018, 7% of adult Delaware males and 8% of adult Delaware females reported ever having been diagnosed with chronic lower respiratory disease (COPD, emphysema, or chronic bronchitis). [6]
- In 2018, 14% of Delaware adults reported ever having been diagnosed with asthma. [4]
- Tobacco use is the primary risk factor for COPD. Up to 80% of all U.S. COPD deaths are attributed to tobacco use. [7] When smoke from tobacco products is inhaled into the lungs, harmful components within the smoke are deposited into and absorbed by the lungs. Over time, this negatively affects lung function. [7] The longer an individual smokes, and the more packs of cigarettes smoked, the greater the risk of developing COPD. Pipe smokers and cigar smokers are also at risk for COPD.
- Other COPD risk factors include genetic predispositions, exposure to secondhand smoke, indoor and outdoor air pollution, and certain dusts, chemicals, and fumes that people may contact as part of their job.

Diabetes

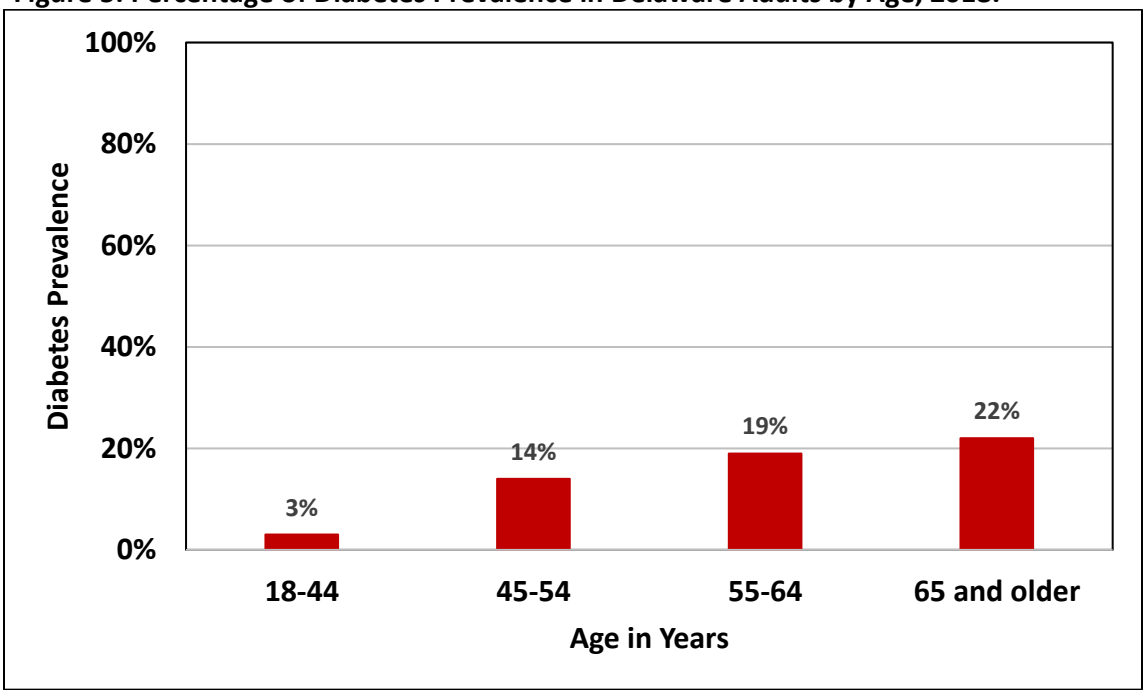
- Diabetes is the eighth leading cause of death in Delaware; 245 Delawareans died from diabetes in 2017. [2] However, the impact of diabetes on the number of deaths statewide is likely underestimated because diabetes is also a contributing risk factor to other leading causes of death, such as heart disease and stroke.

- In 2018, 12% of adult Delawareans reported having been diagnosed with diabetes. [8] In 2017, 12% of adults who did not have diabetes reported being told that they had pre-diabetes. People with pre-diabetes are at risk for developing type 2 diabetes but can reduce that risk through increased physical activity and eating a healthier diet.

- From 1990 to 2018, Delaware's adult diabetes prevalence doubled, rising from 6% to 12%. [5] At the current pace, Delaware is projected to have over 121,000 residents living with diabetes by 2030. [9]

- In 2018, 15% of African American adults and 12% of Caucasian adults in Delaware reported having been diagnosed with diabetes. [6] While this difference was not statistically significant, it is important to note, nationally and historically in Delaware, that diabetes is more common among African American adults than Caucasian adults. The 2018 diabetes prevalence rate for Hispanic Delawareans (7%) was significantly lower than for African American and Caucasian Delawareans. [6]

Figure 5: Percentage of Diabetes Prevalence in Delaware Adults by Age, 2018.



Source: Delaware Department of Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2018.

- Diabetes also becomes more prevalent with age. Only 3% of 18-44-year-olds have diabetes, but the prevalence rises to 14% among adults age 45-54; 19% among adults age 55-64; and 22% among those 65 and older. There is no statistically significant difference between men (13.2%) and women (10.8%) in the 2018 survey results. [8]

- Visit the American Diabetes Association (ADA) website to learn about national diabetes treatment guidelines and get tips for self-care: www.diabetes.org

- Visit the Delaware Diabetes and Heart Disease Prevention and Control Program website, https://www.dhss.delaware.gov/dhss/dph/dpc/diabetes.html, for local resources and ways to access diabetes health services within the state. [10]

Chronic Disease Risk Factors

- A chronic disease risk factor is defined as any factor that makes a person more likely to develop a chronic disease. Non-modifiable, or unchangeable, risk factors are age, race, and personal health history. Modifiable, or changeable, risk factors are health-damaging behaviors like tobacco use, alcohol and other drug abuse, poor diet, lack of physical activity, and overweight/obesity.

- Improving health behaviors at any age can reduce an individual's chronic disease risk, even if they are small to moderate improvements. Modifying chronic disease risk factors greatly improves health. For example:

    - Poor diet and physical inactivity are responsible for 15% of all U.S. deaths. [11]

    - As many as 80% of heart disease, stroke, and type 2 diabetes cases are preventable through healthy dietary intake, daily physical activity, and smoking cessation. [12]

    - An estimated 42% of all cancer diagnoses and 45% of all cancer deaths in the U.S. are attributable to modifiable risk factors. [13]

        - Cigarette smoking accounted for 19% of all cancer cases and 29% of all cancer deaths in 2014. Following tobacco use, excess body weight and alcohol intake have the greatest impact on cancer risk. Excess body weight accounts for 8% of all cancer cases and 7% of all cancer deaths. Alcohol intake accounts for 6% of all cancer cases and 4% of all cancer deaths. [13]

    - The risk of developing diabetes is 30-40% greater for smokers than for non-smokers. [7]

Nutrition and Physical Activity

- A healthy diet and physical activity reduce one's risk of developing a chronic disease. For example, physical activity reduces colon cancer risk by as much as 24%, breast cancer risk by 12%, and endometrial cancer risk by 20%. [14]

- Healthy eating includes plenty of fruits, vegetables, whole grains, low-fat dairy products, lean meats, poultry, fish, beans, eggs, and nuts. Sodium, processed sugars, and trans fats (unsaturated fatty acids or trans fatty acids) should be minimized. [15]

- Across the U.S., fruit and vegetable intake falls far short of the nationally recommended five to nine servings per day. In 2017, 35% of Delaware adults reported eating fewer than one serving of fruit per day; 17% of Delaware adults reported eating fewer than one serving of vegetables per day. [5]

- Sugar-sweetened beverages (SSBs) are liquids sweetened with added sugars such as glucose and high-fructose corn syrups. SSBs include regular soda, sports and energy drinks, sweetened waters, and coffee and tea beverages with added sugars. Frequently drinking SSBs is associated with weight gain/obesity, type 2 diabetes, heart disease, and other chronic diseases. [16]

    - In 2017, 13% of Delaware adults reported drinking regular soda one to five times per day; 12% of Delaware adults reported drinking sugar-sweetened fruit drinks one to five times per day. [17]

    - In 2017, 50% of Delaware high school students reported drinking regular soda one to six times per day during the past seven days; 53% of Delaware high school students reported drinking SSBs including sports drinks, energy drinks, lemonade, and sweetened tea or coffee drinks one to six times per day during the past seven days. [18]

- In 2018, 27% of Delaware adults reported having no leisure time physical activity during the past 30 days. [4] The CDC recommends at least 150 minutes of moderate aerobic activity or 75 minutes of vigorous aerobic activity per week. In addition to aerobic exercise, the CDC also recommends including muscle-strengthening activities twice or more per week.

- In 2018, Delaware's adult obesity prevalence of 34% was slightly higher than the national median of 31%. [5]

Obesity

- In 2018, 34% of Delaware adults were overweight and another 34% were obese. Thirty-one percent of Delaware adults were at a normal weight in 2018. [6] In addition:

  - African American males and females have the highest obesity prevalence in Delaware. In 2018, 41% of African Americans were obese compared to 32% of Caucasians. This difference in obesity prevalence was statistically significant. [4]
  - Among Delaware adults, obesity is most common among those age 45-54 (40%), followed closely by adults age 55-64 (38%) and adults age 35-44 (38%). [4]

- Researchers now know that overweight/obesity is a risk factor for at least 13 types of cancer, including breast, colorectal, liver, gallbladder, pancreatic, kidney, and ovarian cancer. [19]
- As body mass index and waist-to-hip ratio increases, so does the risk of sudden cardiac death. [20]

Tobacco Use

- Tobacco use is an underlying factor in 18% of all U.S. deaths. [11] Cigarette smoking is the primary cause for at least 30% of all cancer deaths and 80% of all COPD deaths. [7]
- In 2018, 18% of Delaware males and 15% of Delaware females were current smokers (defined as smoking cigarettes every day or some days during the week). [21]

- In Delaware, cigarette use is highest among 25-34-year-old and 35-44-year-old Delawareans; in 2018, 22% of adults in both age groups were current smokers. In comparison, 11% of Delawareans age 18-24 and 9% of Delawareans age 65 and older were current smokers. [4]

- Quitting smoking is one of the best health decisions an individual can make! The health benefits of quitting smoking begin immediately: [22]

    - 20 minutes after quitting, the heart rate drops to a normal level.
    - 12 hours after quitting, carbon monoxide levels in the blood drop to normal.
    - Two weeks to three months after quitting, heart disease risk drops, and lung function improves.
    - One year after quitting, the added risk of coronary heart disease is half of a smoker's.
    - 10 years after quitting, the risk of dying from lung cancer is about half of a smoker's.

In 2018, 56% of Delaware smokers reported having tried to quit smoking within the past year. [6] The Delaware Quitline is a free program for Delaware residents age 18 and older who want to quit smoking. Quitline services include telephone-based motivational support from trained Quitline specialists, follow-up support, and a quit-smoking guidebook. Eligible callers may qualify for vouchers to purchase stop-smoking aids such as nicotine patches or gum. Call 1-866-409-1858 to access the Delaware Quitline or go to https://www.dhss.delaware.gov/dph/dpc/quitline.html.

- Current or former heavy smokers may qualify for a potentially life-saving lung cancer screening. Based on the NCCN guidelines, the Delaware Cancer Consortium recommends annual lung cancer screening for the following groups of individuals:[2]

    - Adults between the ages of 55 and 80 with at least a 30 pack-year history of smoking *AND* who are current smokers or have quit within the past 15 years *or*

    - Adults age 50 and older with at least a 20 pack-year history *AND* one additional lung cancer risk factor other than second-hand smoke.

Talk to your health care provider about your screening options.

E-Cigarette Use

- Electronic cigarettes – or e-cigarettes – are also known as "e-cigs," "vapes," "vape pens," "e-hookahs," and "electronic nicotine delivery systems". When a person vapes or uses an e-cigarette product, liquid inside the product is heated to form an aerosol that the user inhales into their lungs.

[2] One pack-year is calculated by multiplying the number of packs of cigarettes smoked per day by the number of years the person has smoked. For example: 1 pack year is equal to smoking 1 pack of cigarettes per day for 1 year or 2 packs per day for half a year. [33]

- Although e-cigarette aerosol generally contains fewer toxic chemicals than smoke from traditional cigarettes, the aerosol is not harmless. E-cigarette aerosol usually contains nicotine, the addictive drug in regular cigarettes and other tobacco products. E-cigarette aerosol can also contain heavy metals and other substances, additives, and drugs. [23]

- Scientists are still learning about the long-term effects of e-cigarette products. These products are not approved by the U.S. Food and Drug Administration as quit smoking aids. Studies are mixed on e-cigarette products' effectiveness at helping people quit smoking. [23]

- In 2018, 4% of Delaware adults currently used e-cigarettes. [8]

- E-cigarette use is highest among young people. In 2018, 9% of adults age 18-34 currently used e-cigarettes. Current e-cigarette use prevalence dropped to 4% among adults age 35-54 and 2% among adults age 55 and older. [8]

- E-cigarettes are the most commonly used tobacco product among youth. In 2017, 14% of Delaware high school students had used e-cigarettes within the past month while 6% had smoked cigarettes in the past month. [18]

- E-cigarettes are not safe for youth, young adults, pregnant women, or adults who do not currently use tobacco products. If you've never smoked or used other tobacco products or e-cigarettes, don't start.

Health Disparities

- Health disparities develop when socially disadvantaged groups have poorer health outcomes and fewer opportunities to achieve optimal health compared to socially advantaged groups. Health disparities can exist between people of different ages, races, education level, income level, and county of residence. They are often preventable and correctable.

- Social determinants of health are the conditions in which people born, grow, live, work, and age. Factors like education, inadequate housing, poor access to healthy foods, lack of health care, and geographic isolation contribute to health disparities.

    - For some social determinants of health, Delaware fares better than the U.S. For example, in 2016-2017, Delaware ranked 11th among states in the percentage of the population that is uninsured; 5.6% of Delawareans are uninsured compared to 8.7% of the U.S. population. In 2017, Delaware ranked 6th among states for childhood immunizations; 77.1% of Delaware children ages 19-35 months have received recommended doses of appropriate vaccines, compared to 70.4% of U.S. children. [24]

- For other social determinants of health, Delaware fares worse than many other states. In 2017, Delaware ranked 38th among states for violent crime (453 offenses per 100,000 population) and unemployment (4.8% of the civilian workforce), and 30th among states in child poverty (18.5% of youth under the age of 18). From 2015-2017, Delaware ranked 41st among states for air pollution (8.6 micrograms of fine particles per cubic meter). [24]

- A recent study by Prosperity Now and JPMorgan Chase & Co. measured racial economic inequality in Wilmington, Delaware. Economic inequality has a profound impact on many health outcomes. In Wilmington, African American and Latino residents make up 57% and 12% of the population, respectively. However, Wilmington residents of color have lower rates of educational attainment and income. African American and Latino households in Wilmington earn a median income roughly half of that of Caucasian households (African American: $30,034; Latino: $32,976; Caucasian: $60,772). [25]

- Delaware has reduced several health disparities, especially in terms of closing the gap between African American and Caucasian cancer death rates. [3] However, health disparities still exist in Delaware and affect our communities, including these:

  - The 2012-2016 age-adjusted heart disease death rate for African American women in Delaware was 34% greater than the rate for Caucasian women (156.5 per 100,000 vs. 116.5 per 100,000, respectively). [26]

  - In 2018, 29% of Delawareans with less than a high school diploma were current smokers compared to 8% of Delawareans who graduated college. [4]

  - In 2017, 44% of Delawareans with a household income of less than $15,000 had high blood pressure compared to 29% of Delawareans with household income of $50,000 or more. [4]

- Identifying, reducing, and eliminating preventable health disparities is necessary to prevent chronic disease deaths in Delaware.

Chronic Disease Costs

- The U.S. spends more on health care than any other county. In 2016, the U.S. spent 18% of its gross domestic product (GDP) on health care. In comparison, the GDP spending level among 10 other high-income countries ranged from 9.6% (Australia) to 12.4% (Switzerland). [27]

- Despite spending nearly twice as much on medical care than other high-income countries, the U.S. performed poorer on many key health outcomes. Life expectancy in the U.S. (78.8 years) was the lowest of all high-income countries considered (range: 80.7-83.9 years). U.S. infant mortality (5.8 infant deaths per 1,000 live births) was the highest among all compared high-income countries (3.6 infant deaths per 1,000 live births for all 11 high-income countries combined). [27]

- The long-term costs associated with identifying, treating, and monitoring chronic diseases are enormous and growing rapidly. Preventing chronic disease, as well as managing chronic diseases that have already developed, yields major health care cost savings.

- On average, a privately insured person with one or two chronic conditions generates $4,241 in health care costs per year, while a privately insured person with five or more chronic conditions generates $18,351 in annual health care costs annually. [1]

- Per capital health care spending in Delaware is higher than the national average. In 2014, Delaware's per capita health care spending ranked 4th highest in the nation ($10,254). [28]

    - Our state's population is older than the national average and aging rapidly. From 2015 to 2050, Delaware's 65 and older population is expected to increase 65%. [29] Prevalence rates of many chronic diseases increase with age, suggesting that without intervention, chronic disease rates in Delaware will continue to rise.

    - The ADA estimates that diabetes and prediabetes, alone, cost $1.1 billion in Delaware each year, reflecting $818 million in direct medical expenses and $293 million in indirect costs. [30]

    - Hospital care accounts for 39% of health care spending in Delaware and 38% of health care spending in the U.S. [28] Delaware ranks 23rd among states in potentially avoidable emergency department visits among adults ages 18-64. [31]

- Delaware is making strides to reduce its overall health care spending. In November 2018, Governor John Carney established health care spending and quality benchmarks for Delaware. Spending benchmarks define the target annual per capita growth rate for Delaware's total health care spending. For 2019, Delaware's total health care spending growth target is 3.8%; by 2023, the spending benchmark decreases to 3.0%.

Adolescent Health

- Adolescents (ages 10-17) make up 10% of Delaware's total population. [29] Health behaviors adopted during this very important developmental period often carry into adulthood.

- Studying adolescent health patterns help us to measure future chronic disease risk. Delaware's Youth Risk Behavior Survey System (YRBS) measures six categories of health-related behaviors that contribute to the leading causes of death and disability among youth and adults.

- The YRBS is conducted among public school students in Delaware and other states in odd-numbered years. In 2017, the YRBS was completed by 2,974 middle school students and 2,906 high school students in Delaware.

    - Tobacco and alcohol use have fallen substantially among Delaware high school students over the past two decades. From 1999 to 2017, current cigarette use among high school students decreased from 32% to 6%. Over the same time period, current alcohol use fell from 47% to 29%. [18]

    - From 1999 to 2017, the percentage of Delaware high school students who are overweight increased 17%. The percentage of Delaware high school students who are obese increased 51%. [18]

    - In 2017, 38% of Delaware high school students reported ever trying an electronic vapor product (including e-cigarettes, e-cigars, e-pipes, vape pipes, vaping pens, e-hookahs, and hookah pens). Fourteen percent of high school students currently used electronic vapor products. [18]

    - In 2017, 44% of Delaware high school students participated in regular physical activity (defined as 60 minutes of physical activity on at least five of the past seven days). [18]

- Analyzing youth health behaviors helps DPH monitor emerging health trends and predict future health outcomes (Table 3).

Table 3: Prevalence Rates for Selected Health Indicators, among Delaware High School Students, Grades 9-12, 1999-2017.

	1999	2001	2003	2005	2007	2009	2011	2013	2015	2017
• Percentage students who currently smoke (smoked 1 or more days in the past 30 days)	32.2	24.2	23.5	21.2	20.2	19.0	18.3	14.2	9.9	6.2
• Percentage students who regularly smoke (smoked 20 or more days in the past 30 days)	17.7	12.8	12.1	9.6	8.5	7.8	7.6	4.9	4.0	1.7
• Percentage students who ever used an electronic vapor product (including e-cigarettes, e-cigars, e-pipes, vape pipes, vaping pens, e-hookahs, and hookah pens (such as blu, NJOY, Vuse))									40.5	37.9
• Percentage students who currently use an electronic vapor product (on 1 or more days in the past 30 days)									23.5	13.6
• Percentage students who currently drink alcohol (at least one drink of alcohol on 1 or more days in the past 30 days)	46.9	46.4	45.4	43.1	45.2	43.7	40.4	36.3	31.4	28.7
• Percentage students who were overweight *(>=85th percentile for BMI)*	14.2	14.8	16.5	14.9	17.3	15.6	16.9	16.3	15.8	16.6
• Percentage students who were obese *(>= 95th percentile for BMI)*	10.0	10.7	13.3	14.0	13.2	13.5	12.2	14.2	15.8	15.1
• Percentage students who were physically active at least 60 minutes per day on 5 or more days during the past 7 days							43.5	41.4	43.3	43.5
• Percentage students who did not participate in at least 60 minutes of physical activity on at least 1 day during the past 7 days							18.0	19.1	18.5	17.0

Source: Delaware Department of Health and Social Services, Division of Public Health, High School Youth Risk Behavior Survey (YRBS), 2017.

Chronic Disease Scorecards

DPH monitors chronic disease trends across Delaware using uses the Behavioral Risk Factor Survey, YRBS, and Vital Statistics data. Additionally, DPH keeps a close watch on how Delaware's chronic disease rates compare to other states. To monitor Delaware's rates in comparison to other states, DPH also considers health data released by national independent research organizations. Three organizations publish annual reports that rank U.S. states in terms of chronic disease burden and access to care:

1. The United Health Foundation is a not-for-profit, private foundation focused on improving health and health care. Each year, the United Health Foundation releases its annual *America's Health Rankings* report. *America's Health Rankings* is the longest-running annual state-by-state assessment of the current state of Americans' health. The latest report ranks Delaware 31st among all states for overall health (Table 4). [24]

Table 4: Rate and Ranking of Selected Chronic Disease Indicators, U.S and Delaware, 2018.

Chronic Disease Indicator	U.S. Rate	DE Rate	DE State Rank
• Overall Health			***31st***
• Adults who are obese	31%	32%	28th
• Physically inactive adults	26%	31%	41st
• Adults who smoke	17%	17%	24th
• Adults with diabetes	10%	11%	36th
• Cancer deaths	189.8 per 100,000	200.8 per 100,000	36th
• Cardiovascular deaths	256.8 per 100,000	253.9 per 100,000	28th

Source: United Health Foundation, America's Health Rankings: Annual Report 2018.

2. The Commonwealth Fund is a private foundation whose mission is to improve access to health care and achieve better health outcomes, particularly among vulnerable populations. The 2019 Commonwealth Fund *Scorecard on State Health System Performance* ranked Delaware on key chronic disease indicators (Table 5). [31]

Table 5: Rate and Ranking of Selected Chronic Disease Indicators, U.S and Delaware, 2018.

Chronic Disease Indicator	U.S. Rate	DE Rate	DE State Rank
• Overall Health			***27th***
• Adults who report fair or poor health	17%	17%	27th
• Adults without a dental visit in the past year	16%	14%	13th
• Adults without all age- and gender-appropriate cancer screenings	32%	28%	7th
• Diabetic adults without an annual hemoglobin A1c test	12%	15%	41st
• Children (10-17) who are overweight or obese	31%	29%	22nd

Source: Radley, Collins, & Hayes. (2019). 2019 Scorecard on State Health System Performance. The Commonwealth Fund: New York.

3. The Robert Wood Johnson Foundation (RWJF) publishes the annual *County Health Rankings Report* that explores health trends at the county-level. Delaware's three counties (New Castle, Kent, and Sussex) often differ in prevalence of chronic diseases and risk factors (Table 6). [32]

Table 6: Selected Chronic Disease Indicators from the Robert Wood Johnson Foundation, Delaware by County, 2019.

Chronic Disease Indicator	New Castle County	Kent County	Sussex County
• Adult who are obese	29%	34%	32%
• Adults with diabetes	10%	13%	13%
• Adults who smoke	17%	18%	18%
• Physically *in*active adults	23%	30%	28%
• Adults with adequate access to locations for physical activity	97%	60%	73%

Source: Robert Wood Johnson Foundation, 2019 County Health Rankings Report, "Delaware 2019."

Data from these national health research organizations suggest that Delaware falls in the middle of U.S. states for many chronic disease indicators. There are plenty of opportunities for Delawareans to improve their overall health by adopting healthy behaviors and reducing or quitting unhealthy behaviors. DPH encourages Delawareans to take steps to reduce their chronic disease risk.

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