CHAPTER 4:

Chronic Diseases

INTRODUCTION

Six in ten adults in the United States (US) have a chronic disease, and four in ten adults have two or more. This means in a household of two adults or more, at least one of you will have a chronic disease. Chronic diseases such as asthma, obesity, high blood pressure, diabetes, cardiovascular disease, and cancer are the leading causes of death and disability in the US and Connecticut. Chronic diseases are the leading drivers of the nation's $3.5 trillion in annual healthcare costs.[1;2]

Early detection through cholesterol, high blood pressure, diabetes/prediabetes, and cancer screenings could prevent, delay or even halt the progression of chronic disease. Most chronic diseases have risk factors in common: tobacco use and exposure to secondhand smoke, poor nutrition, lack of physical activity, and excessive alcohol use. Over 90% of Connecticut adults have at least one of the following risk factors: smoking, being overweight or obese, eating less than five servings of fruits and vegetables per day, and not meeting physical activity recommendations.[3] Addressing these modifiable risk factors is critical in reducing the likelihood of getting a chronic disease and improving quality of life.

As a public health agency, Connecticut Department of Public Health (CT DPH) has placed a great deal of emphasis on addressing these modifiable risk factors over the past 5 years. We have seen a reduction in cigarette use, but the emergent use of vaping products (e.g., e-cigarettes) among youth is alarming. We are still seeing an increase in obesity rate, but the rate of increase has slowed. We have not seen significant improvement in our fruit and vegetable consumption and physical activity. For our early detection through screening efforts, we have seen an increase in cholesterol screening and colorectal cancer screening. However, we are not able to determine changes to our breast and cervical cancer screenings and diabetes/prediabetes screening. For our populations that are living with at least one chronic disease, we are helping them to manage their disease better. Our death rates for breast, cervical, lung, colorectal, and oropharyngeal cancers have gone down. However, liver cancer death rate has been on the rise. Our cardiovascular disease death rate and asthma emergency department visit rate have decreased, while our high blood pressure rate and diabetes hospitalization rate remain unchanged.

Generally, Connecticut residents are healthier than the US population. We smoke less, eat heathier, have heathier teeth and are less obese than the US as a whole. We do better with our early detection through screening efforts, and we have lower death rates and utilize fewer healthcare resources to manage our chronic diseases. One notable exception is asthma, where we have a higher prevalence of asthma as compared to the US and consequently higher healthcare utilization for asthma.

We know that not all populations within Connecticut enjoy the same level of health. Chronic diseases disproportionately affect vulnerable population groups based on race, ethnicity, age, gender, socioeconomic position, immigrant status, sexual minority status, language, disability, homelessness, mental illness, and geographic area of residence. For example, adults earning less than $25,000 per year are more likely to have diabetes and high blood pressure, be obese and physically inactive, and smoke when compared to their higher income counterparts.[3] People of lower socioeconomic status (e.g., lower income and less educated) are less

likely to engage in prevention efforts and experience higher levels of chronic disease morbidity and mortality. Residents who are non-Hispanic Black, Hispanic or living in the large cities are also disproportionally affected by chronic disease. We have made progress in reducing health disparities for cancer and cardiovascular disease deaths and oral health outcomes. Unfortunately, health disparities remain unchanged for most of the prevention efforts with screenings and reducing risk factors, and the disparity gap has widened for asthma emergency department visits.

The health disparities experienced by Connecticut residents cannot be merely attributed to poor health decision making. Our choices are influenced by how and where we live. Making the healthy choice may not be the easy choice for all. The strategies and interventions intended to prevent and control chronic diseases seek to influence the social determinants of health, and fall into three broad categories: 1) environmental approaches (such as sidewalks) that promote health and support and reinforce healthful behaviors; 2) health system interventions to improve the delivery and use of clinical preventive services; and, 3) strategies to improve linkages between community resources and clinical settings. Ultimately, to prevent and control chronic diseases in our state, wellness must be promoted in all aspects of people's lives to ensure that all residents have equal access to healthy food, safe places for physical activity, quality clinical and other health services, and community and clinical organizations to support prevention, self-management, and control of chronic diseases.

For the chronic disease chapter, we will provide an overview on the trends and/or health disparities for each chronic disease topic area. In the narratives that discuss differences in trends and health disparities, unless noted otherwise, we will highlight only those that reached statistical significance (i.e., with a 95% certainty that the differences are real). We will also discuss some of the actions CT DPH is taking to address the diseases, risk factors and social determinants of health. First, we will look at the status of healthy eating and active living among Connecticut residents with respect to our fruit and vegetable consumption, sugar-sweetened beverage consumption, and meeting aerobic and strengthening physical activity recommendations. Second, we will examine the use of tobacco products, including cigarettes and vaping products, and the exposure to secondhand smoke. Next, we will examine the prevalence of obesity and high blood pressure and take a closer look at the impact of diabetes, asthma and oral health. Subsequently, we will discuss cardiovascular disease as the leading cause of death in Connecticut and the importance of having our cholesterol checked regularly. Finally, we will discuss the recommendation of cancer screenings and the status of cancer incidence and mortality among Connecticut residents.

HEALTHY EATING AND ACTIVE LIVING

A healthy lifestyle includes healthy eating and active living (i.e., regular physical activity through intentional exercise or by integrating physical activity into daily routines). Poor nutrition and sedentary behaviors are precursors to many chronic diseases, including obesity, cardiovascular disease, and diabetes. Connecticut has a variety of state and local coalitions, wellness committees, and councils that bring partners together to collaborate on obesity prevention initiatives, leverage funding, and work towards a shared vision.

Fruit and Vegetable Consumption

Healthy eating specifically means balancing the number of calories consumed with the number of calories the body needs, reducing the intake of saturated fats, salt, and added sugars, and increasing the consumption of fruits, vegetables, and whole grains. To promote healthy eating and ultimately advance equitable health outcomes among populations, it is essential that healthy food and beverages are easily available, accessible, and affordable in communities, schools, workplaces, and other places that people frequent.

Our state has a variety of state policies that support healthier eating among residents. Examples include the Connecticut Nutrition Standards to improve food and beverages sold in schools, and statutes and regulations for child care programs that include nutrition standards for foods served.

Programmatically:

- Connecticut's State Chronic Disease Action Team works with statewide partners to promote healthy food donations to food pantries, complementing other state and local initiatives that address food insecurity and the lack of healthy food access.
- The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides supplemental foods, healthcare referrals, nutrition education, and breastfeeding promotion and support to low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to age five who are found to be at nutritional risk.
- CT DPH's Supplemental Nutrition Assistance Program Education (SNAP-Ed): provides nutrition education to Supplemental Nutrition Assistance Program (SNAP)-eligible adults and preschool children and their families; provides training and technical assistance on breastfeeding promotion, healthy eating, and physical activity to staff in early care and education centers that serve SNAP-eligible families; and, collaborates with state and local anti-hunger organizations to promote and support healthy food pantry initiatives. The SNAP-Ed program is administered by the Department of Social Services and implemented by CT DPH, University of Connecticut, and Hispanic Health Council. It provides nutrition education and implements policies, systems, and environmental change strategies throughout Connecticut for SNAP-eligible populations.

> "I do believe that people who do want to eat healthy, [...] awareness and education can shift behavior because it can change behavior. So we have to educate them."
>
> **— STATE HEALTH ASSESSMENT FOCUS GROUP,** AFRICAN AMERICAN WOMEN

PROGRAM SPOTLIGHT: STATE PHYSICAL ACTIVITY AND NUTRITION PROGRAM

In September 2018, CT DPH was awarded funding from the Centers for Disease Control and Prevention to implement the State Physical Activity and Nutrition Program to improve the nutrition and physical activity status of Connecticut residents:

- Collaborating with partners to connect sidewalks, paths, bicycle routes, and public transit with every day places by implementing master plans and land use interventions.
- Implementing food service guidelines in worksites and community settings to increase the availability of healthy foods.
- Collaborating with partners to create and provide tools and trainings that increase access to breastfeeding-friendly environments in settings such as hospitals and worksites.
- Promoting physical activity and nutrition standards at early care and education centers.

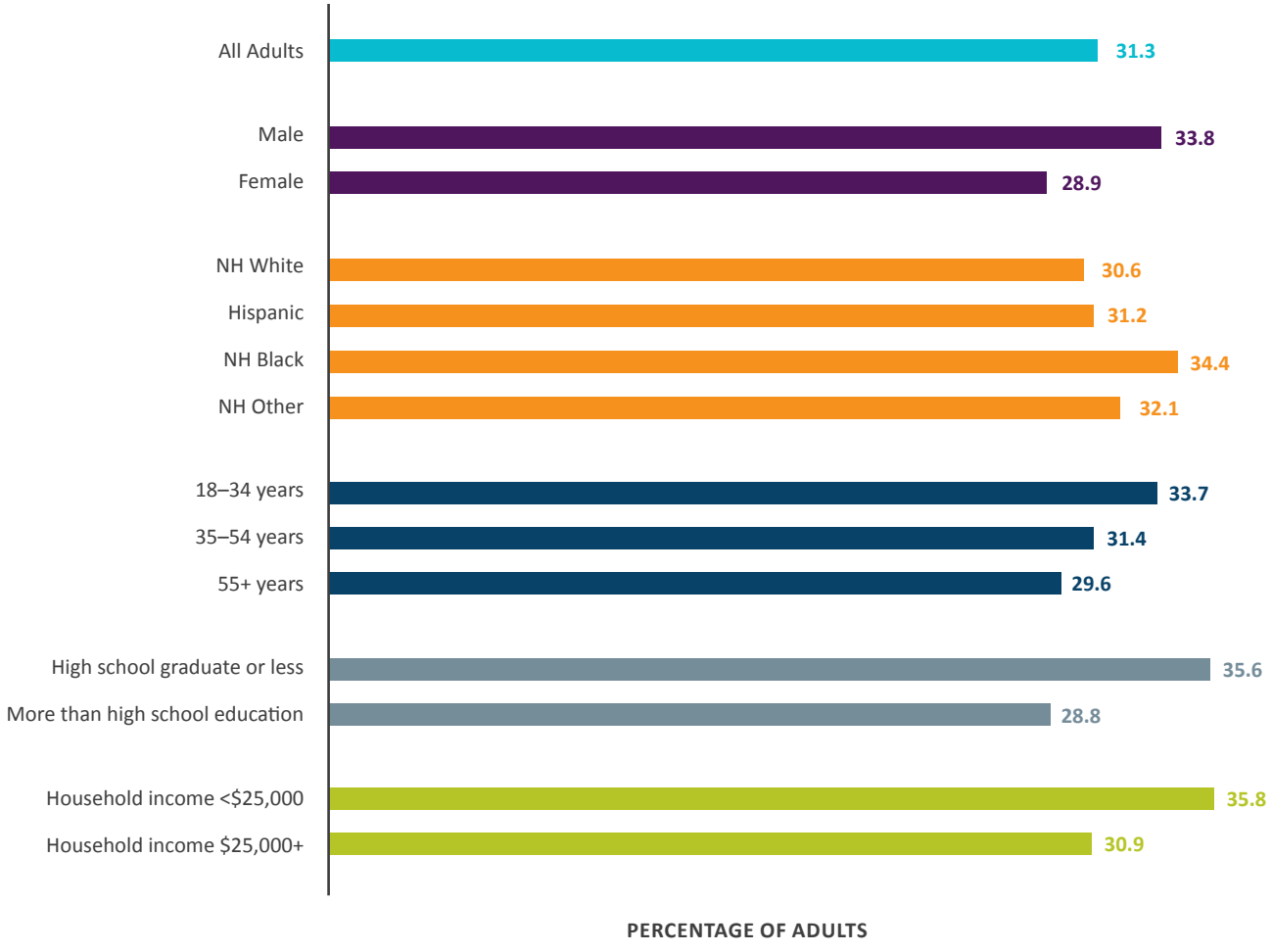
ADULTS

Connecticut adults consume more fruits and vegetables than the US adults, but nearly one third of Connecticut adults still consume fruit less than one time per day and approximately one sixth of adults consume vegetables less than one time per day (**Figure 4.1, Figure 4.2**). Lower vegetable and fruit consumption were more prevalent among males, younger adults, non-Hispanic Black and Hispanic adults, and among those with lower educational attainment levels and lower annual household incomes.

YOUTH

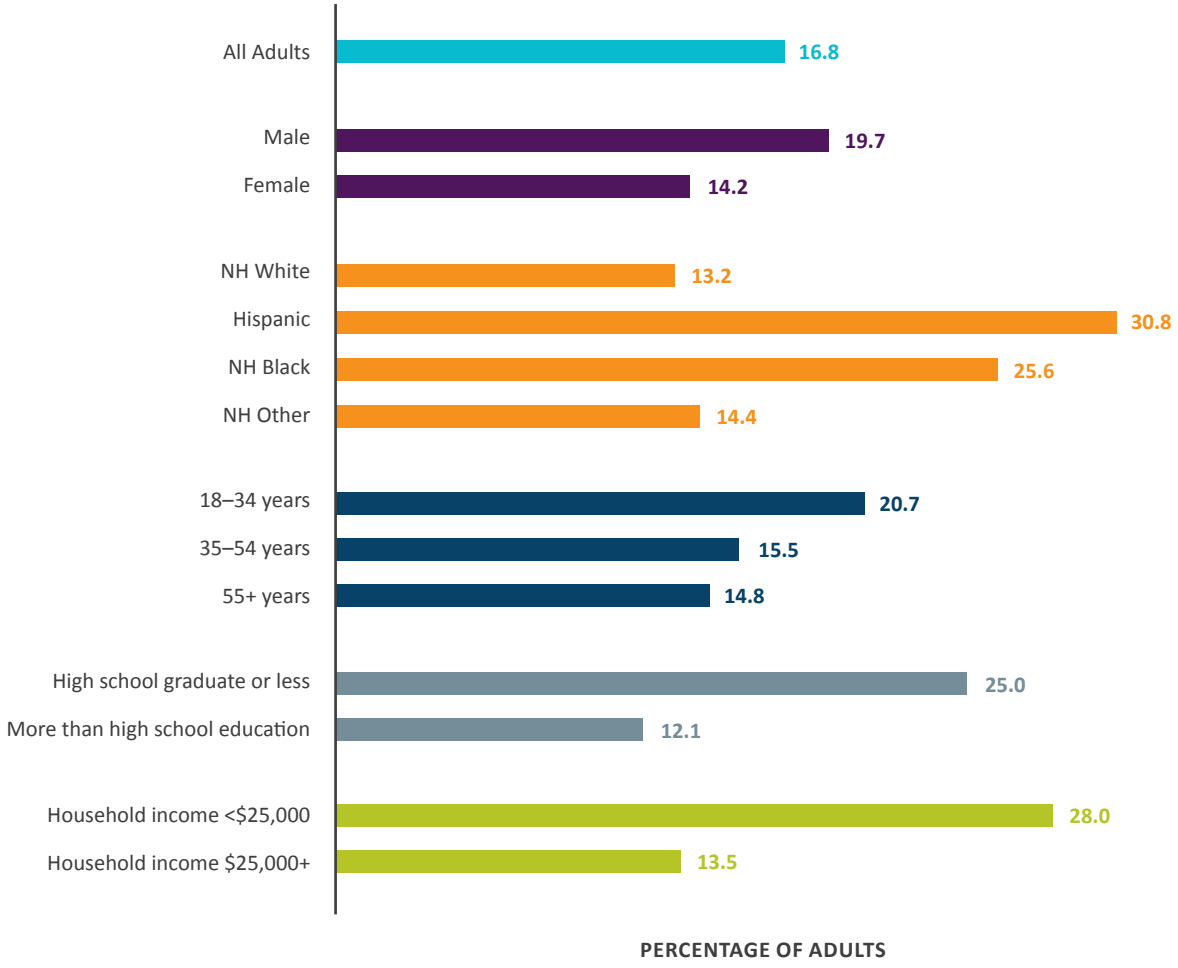
In our state, nearly two in five high school students (grades 9–12) consumed fruit or 100% fruit juice less than one time per day within the past seven days (**Figure 4.3**). A similar proportion of high school students also reported consuming vegetables less than once per day within the past seven days (**Figure 4.4**). Non-Hispanic Black students had a lower consumption of vegetables when compared to non-Hispanic White and Hispanic students.

FIGURE 4.1: Percentage of adults (18+) who consumed fruit less than one time per day by sex, race/ethnicity, age, educational attainment and household income, CT, 2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

FIGURE 4.2: Percentage of adults (18+) who consumed vegetables less than one time per day by sex, race/ethnicity, age, educational attainment and household income, CT, 2017

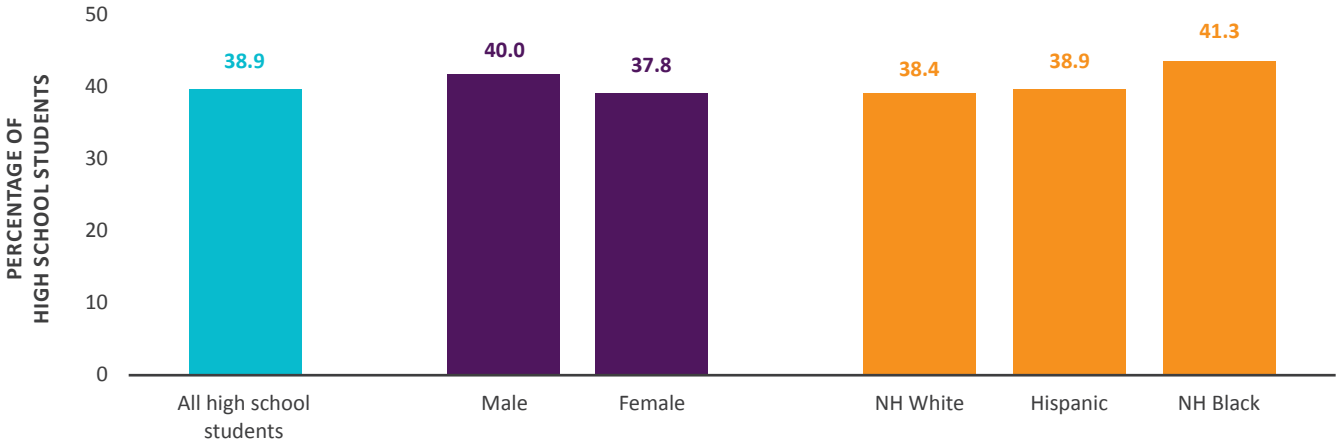


Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

"We have so many unhealthy and fast food restaurants around here in the city and who are the people that mostly buy these foods? Young kids that don't have knowledge so it would help if they developed something for the youth to see the consequences. Sometimes parents don't have the time to cook."

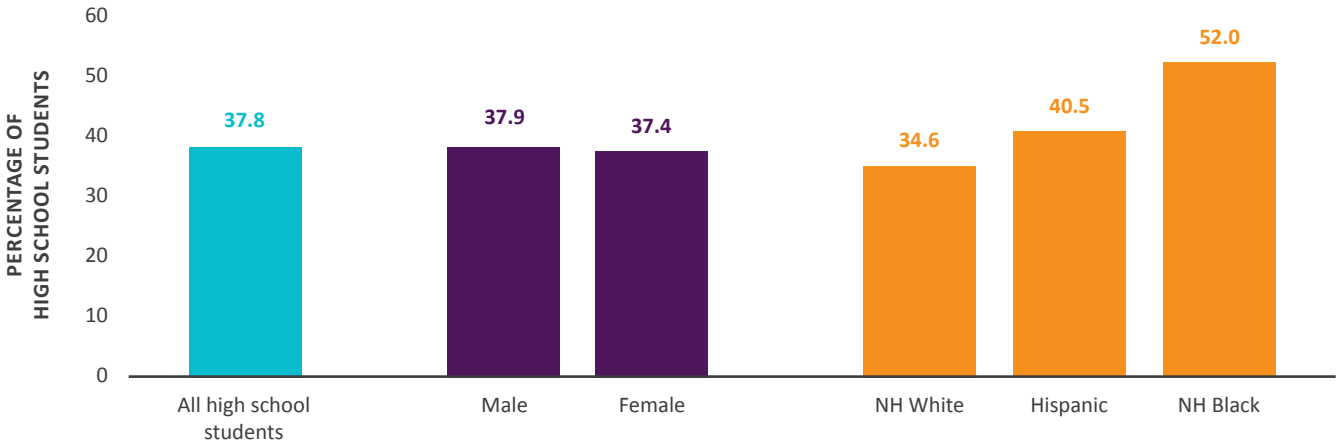
— STATE HEALTH ASSESSMENT FOCUS GROUP,
HISPANIC COMMUNITY

FIGURE 4.3: Percentage of high school students who consumed fruit or 100% fruit juice less than one time per day in the past 7 days by sex and race/ethnicity, CT, 2017



Source: CT DPH Chronic Disease Epidemiology Unit, Connecticut Youth Risk Behavior Survey. Data analyzed October 31, 2019.

FIGURE 4.4: Percentage of high school students who consumed vegetables less than one time per day in the past 7 days by sex and race/ethnicity, CT, 2017



Source: CT DPH Chronic Disease Epidemiology Unit, Connecticut Youth Risk Behavior Survey. Data analyzed October 31, 2019.

Soda and Sugar-Sweetened Beverage Consumption

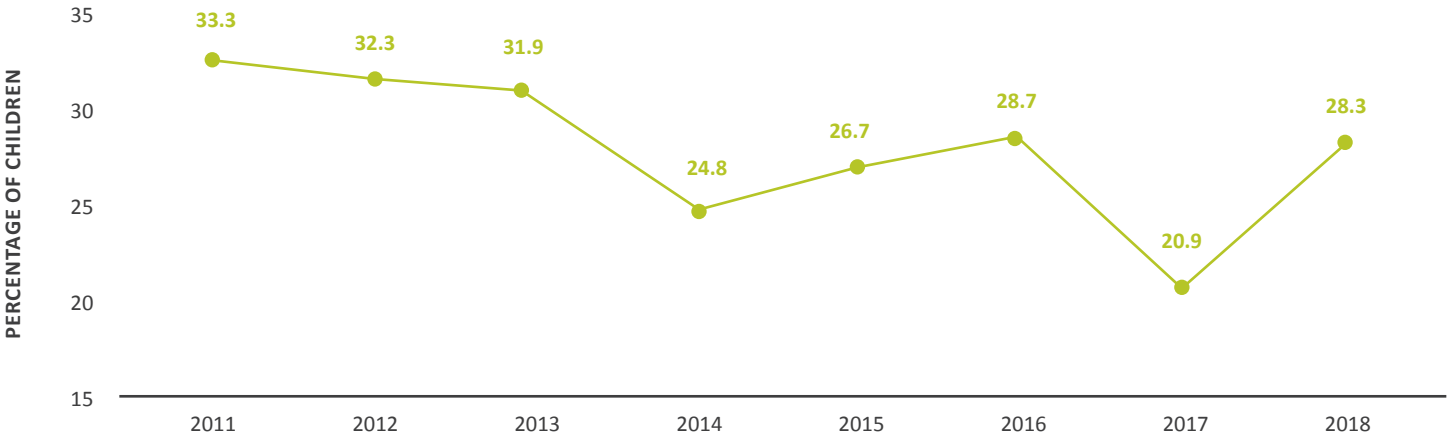
Sugar-sweetened beverages (SSBs) are drinks that are sweetened with one or more added sugars. Added sugar goes by many names including raw sugar, honey, brown sugar, fruit juice concentrate, corn syrup, high-fructose corn syrup, malt syrup, molasses, dextrose, fructose, glucose, lactose, maltose, and sucrose. Drinks that contain added sugars include regular soda (not the diet variety), fruit drinks such as lemonade and fruit punch (not 100% juice), sports drinks, energy drinks, sweetened water drinks, and coffee and tea beverages with added sugars. You can tell if your beverage has added sugars by reading the ingredient list located on the product's label.

SSBs are major sources of added sugars in the American diet. The calories provided by SSBs are "empty" meaning they have little to no nutritional value. Added sugars only add calories to a person's diet and should be limited as much as possible to prevent weight gain. Making the switch to drinks with no added sugars, especially water, is a good way to achieve a healthy body weight.

> "...we should ask our legislation to put those warnings on [sugar sweetened beverages] to say it causes diabetes, it causes this and that."
>
> **— STATE HEALTH ASSESSMENT FOCUS GROUP,** AFRICAN AMERICAN WOMEN

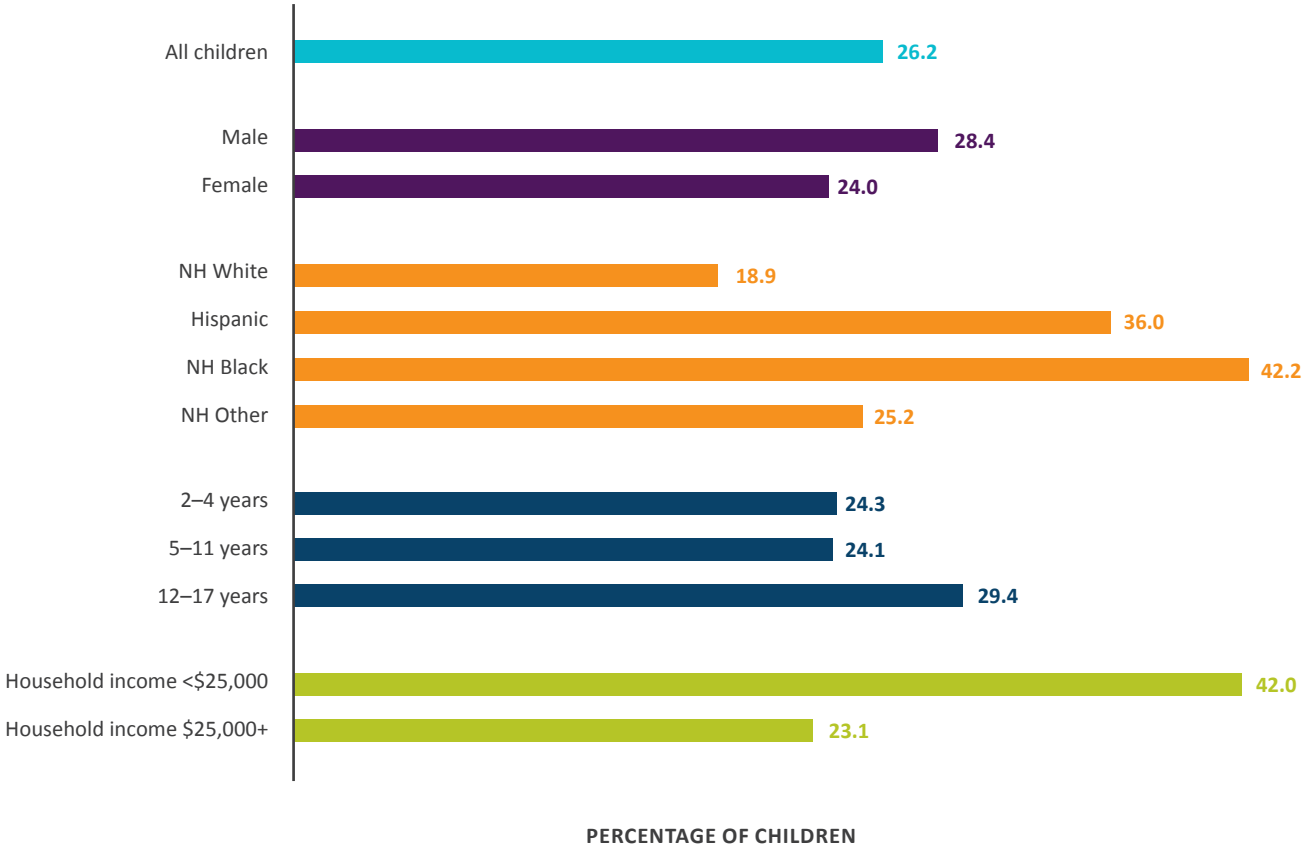
Approximately, one fourth of Connecticut children (2–17 years old) drink at least one 12-ounce (oz.) soda or SSB per day, and the consumption has decreased from 2011 to 2018 (**Figure 4.5**). The prevalence of consuming one SSB a day is significantly higher among males when compared to females. Non-Hispanic Black and Hispanic children are more likely to drink at least one SSB per day. Older children and those living in households with an annual income of less than $25,000 are also more likely to drink at least one SSB per day (**Figure 4.6**).

FIGURE 4.5: Percentage of children (2–17 years old) who drank at least one 12 oz. soda or sugar-sweetened beverage per day by year, CT, 2011–2018



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

FIGURE 4.6: Percentage of children (2–17 years old) who drank at least one 12 oz. soda or sugar-sweetened beverage per day by sex, race/ethnicity, age and household income, CT, 2016–2018



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

Physical Activity

Increasing physical activity helps control weight; reduces risks for heart disease, type 2 diabetes and some cancers; strengthens bones and muscles; improves mental health; and, prevents falls among older adults. Yet, our environments and our contexts (namely, our backgrounds, experiences, and resources) can influence our ability to engage in physical activity. To address this, Connecticut has a variety of state policies which support increased physical activity among residents. Examples include the Connecticut statutes and regulations for childcare programs, which include physical activity standards, and an act improving bicycle and pedestrian access, passed in 2009.

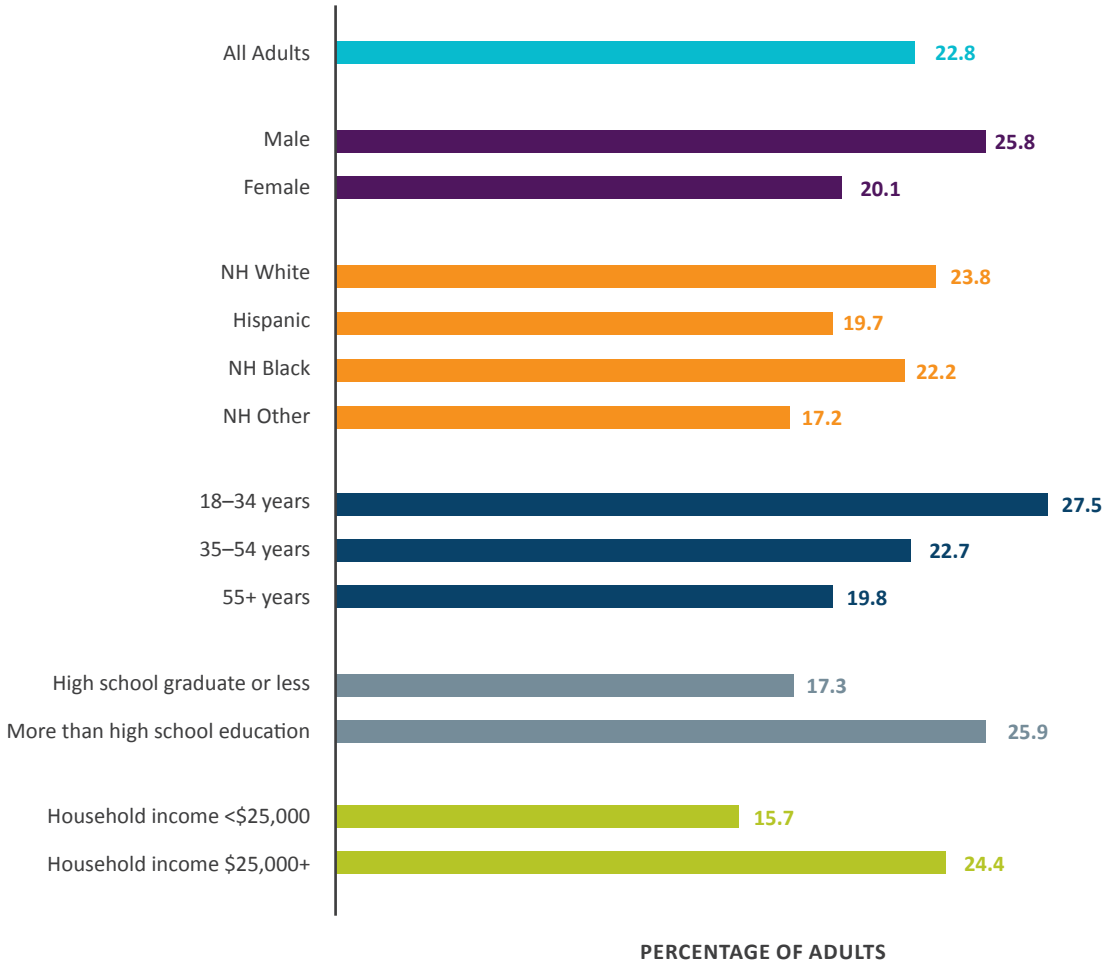
Programmatically, to promote increased availability of safe and accessible areas to be active in the state, statewide partners including CT DPH particpate in the following:

- Connecticut Bicycle and Pedestrian Advisory Board;
- Connecticut Department of Transportation (DOT) Strategic Highway Safety Plan, Non-Motorized Emphasis Area Committee; and,
- Connecticut Department of Energy and Environmental Protection's (DEEP) Greenways Council.

- DEEP promotes, develops, and maintains trails and greenways statewide that not only positively impact individuals by encouraging physical fitness and healthy lifestyles, but also provide transportation opportunities and have influence on economic and community development.
- DOT launched the Active Transportation Plan in January 2019 to support the vision of the agency to encourage, promote, and improve walking, biking, and other forms of active transportation among all people.
- Connecticut towns and local health departments are promoting physical activity by developing or improving existing walking or biking trails.

> "...there is a limited access to recreation. For example if I want to go to a pool I have to go far away. This impacts people with diabetes in our community because they need to do exercise not just take their medication and that's it. The youth in [one part of town] have no access to recreation [...] I'm wondering why we don't have that near here and we have to go so far, we don't have anything in this area. Some places require a membership or it depends on income."
>
> **— STATE HEALTH ASSESSMENT FOCUS GROUP,** HISPANIC COMMUNITY

FIGURE 4.7: Percentage of adults (18+) who met aerobic and strengthening physical activity recommendations by sex, race/ethnicity, age, educational attainment and household income, CT, 2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

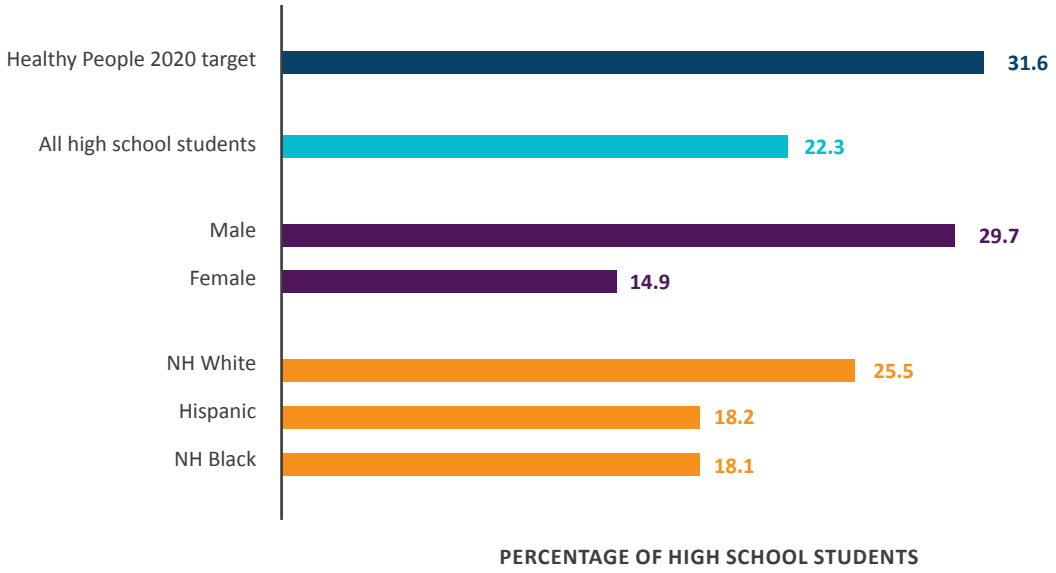
ADULTS

For adults, regular physical activity means engaging in moderate activity (e.g., brisk walking) for at least 30 minutes, five or more times per week, and muscle-strengthening activities, two or more days per week. Fewer than one in four Connecticut adults meet these aerobic and muscle strengthening physical activity recommendations, with females and older adults less likely to meet these recommendations when compared to males and younger adults (**Figure 4.7**). The prevalence of meeting the physical activity recommendations decreases as age increases. Conversely, the prevalence of meeting the recommendations increases as household income and educational attainment increases. Those identified as Hispanic or non-Hispanic Other were also less likely to meet the physical activity recommendations when compared to their non-Hispanic White counterparts.

YOUTH

Children and adolescents ages 6 through 17 years should engage in 60 minutes (1 hour) or more of moderate-to-vigorous physical activity daily.[4] Similar to adults, fewer than one in four high school students meet the recommended physical activity guidelines, falling below the Healthy People 2020 target of 31.6% (**Figure 4.8**). Non-Hispanic White students were more likely than non-Hispanic Black or Hispanic students to meet the Healthy People 2020 guideline, though the prevalence still fell below the Healthy People 2020 target by six percentage points. High school males were twice as likely as females to have met the physical activity guidelines.

FIGURE 4.8: Percentage of high school students who met physical activity guidelines by sex and race/ethnicity, CT, 2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Youth Risk Behavior Survey. Data analyzed October 31, 2019.*

TOBACCO USE

Tobacco use is the leading cause of preventable disease, disability, and death in the United States.[5] In Connecticut, approximately 485,000 adults use tobacco and more than 350,000 still smoke cigarettes.[3] About 31,000 Connecticut high school students use at least one tobacco product, including e-cigarettes, which are the most common type of tobacco products used by high school students in our state.[6] Every year in Connecticut, more than 1,000 youth younger than 18 years of age become new daily smokers, and each year, nearly 5,000 Connecticut residents die prematurely due to smoking or exposure to secondhand smoke. It is estimated that about 56,000 children now under 18 years of age and who live in Connecticut will ultimately die prematurely from tobacco use.[7] Annually, Connecticut spends more than $2 billion on medical care to treat smoking-related diseases in adults and more than $520 million in Medicaid costs from smoking-related care.[8]

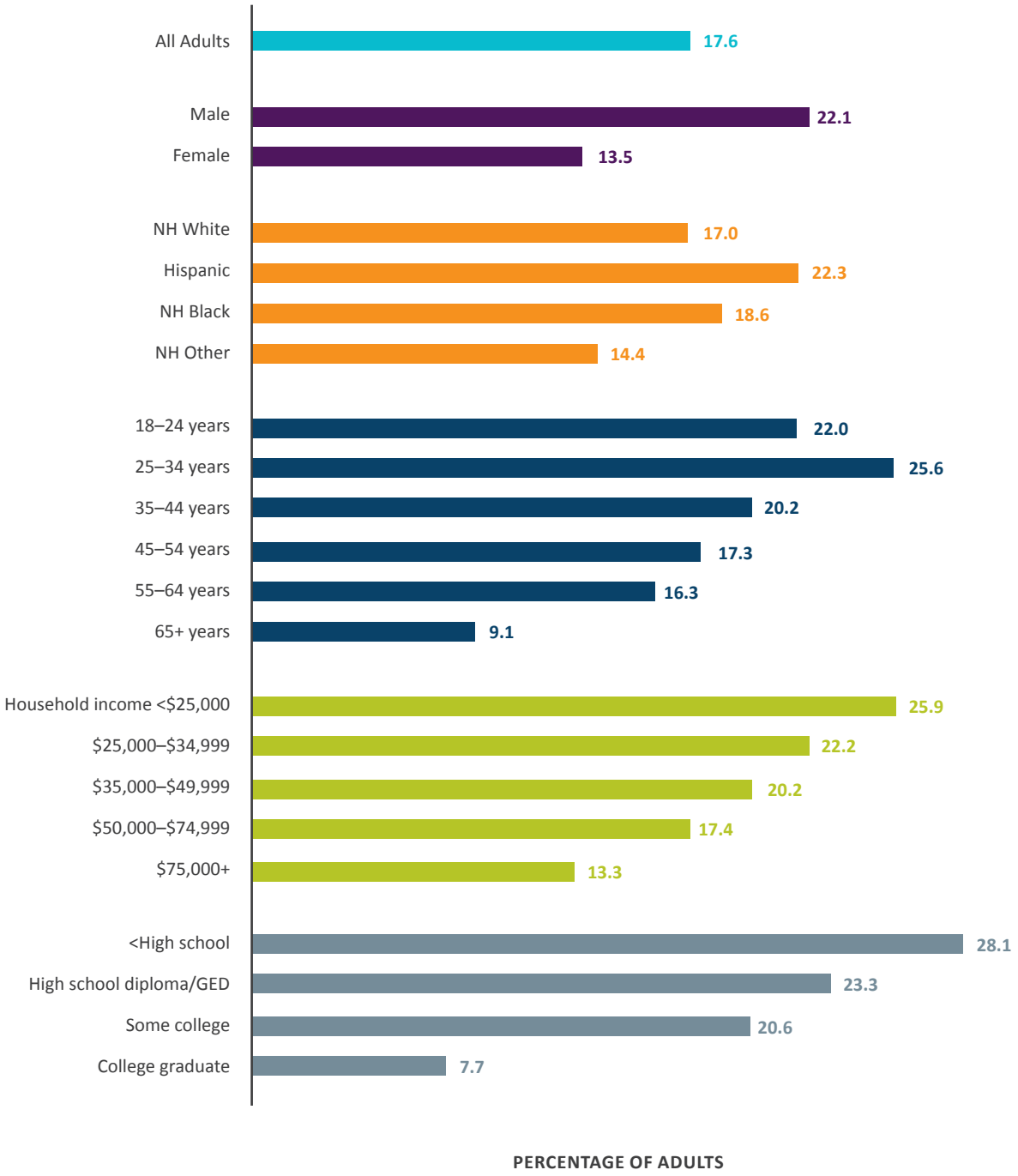
Health equity in tobacco prevention and control is the opportunity for all people to live a healthy, tobacco-free life, regardless of one's background or environmental, social, or cultural context. Yet, tobacco-related disparities are present across socially determined circumstances and characteristics such as age, disability, education, income, occupation, geographic location, race, ethnicity, sex, sexual orientation, gender identity, mental health status, substance abuse, and military status. Many groups have a higher prevalence of tobacco use, lower cessation rates (i.e., rates of quitting smoking and staying quit), and poorer health outcomes. Tobacco-related disparities have also been reported among people who are homeless and those who are incarcerated.[9] To further reduce overall tobacco use and secondhand smoke exposure, tobacco use must be reduced in population groups with the greatest burden of tobacco use and secondhand smoke exposure.

Comprehensive tobacco control programs are a coordinated effort to establish smoke-free policies and social norms, promote and assist tobacco users to quit, and prevent initiation of tobacco use. Programs can work to achieve health equity in tobacco control by providing targeted and appropriate services that reach the residents who are most likely to use tobacco (**Figure 4.9**, **Figure 4.10**). With most tobacco control policies taking a population-based approach, however, tobacco control efforts without thoughtful design and implementation could widen disparities. Best practice population-based policies include point-of-sale initiatives that work to reduce youth access to tobacco products (e.g., reducing the availability of flavored tobacco products) and smoke-free environment policies that reduce exposure to secondhand smoke and aerosol. Coupled with these policies are program initiatives that provide education about the benefits of adopting good tobacco control policy.

The following evidence-based strategies have not yet been adopted in our state but are encouraged by the Centers for Disease Control and Prevention (CDC) to reduce tobacco initiation and use, especially among youth. These include:

- Increasing the price of all tobacco products, corresponding with the taxes on combustible cigarettes. Youth are especially sensitive to price, so this policy could help prevent youth from purchasing these products and likely result in decreased initiation and use, especially of electronic vape products.
- Restricting the sale of flavored tobacco products;
- Passing additional smoke-free laws, especially for workplaces, schools, and public places to reduce exposure to secondhand smoke;
- Restricting the use of all tobacco products in movies; and,
- Restricting the advertising of all tobacco products. Although there are restrictions on combustible cigarettes, they do not apply to electronic vape products. This is especially important as nearly one in two high school students report being exposed to these types of ads.[6]

FIGURE 4.9: Percentage of adults who currently used some form of tobacco by sex, race/ethnicity, age, household income and educational attainment, CT, 2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed August 27, 2019.*

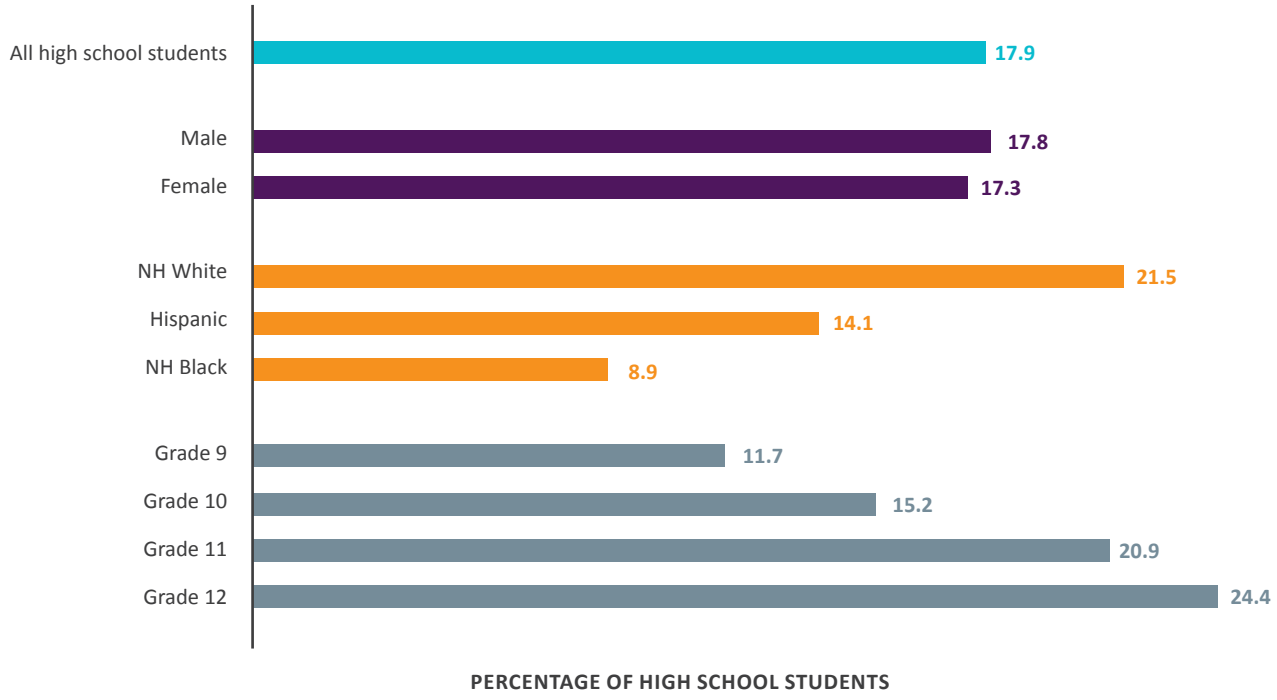
Adults

In 2017, more than one in six Connecticut adults used some form of tobacco, which includes cigarettes, cigars, chewing tobacco, snuff, dip, snus, hookahs, and e-cigarettes during the past 30 days. This represents nearly half a million people (**Figure 4.9**). Males, Hispanic adults, and younger adults (18–34 years) have the highest prevalence of tobacco use. After 34 years of age, as age increases, current tobacco use decreases. In addition, as household income and educational attainment increase, current tobacco use among adults decreases.

Youth

Similar to adults, on one or more of the past 30 days, over one in six high school students reported using some form of tobacco, which includes cigarettes, cigars, chewing tobacco, snuff, dip, pipes (other than water pipes), hookahs, and e-cigarettes (**Figure 4.10**). Non-Hispanic White youth followed by Hispanic youth had the highest prevalence of current tobacco use compared to non-Hispanic Black youth. Also, as grade level increased, current tobacco use increased.

FIGURE 4.10: Percentage of high school students who currently used some form of tobacco by sex, race/ethnicity and grade, CT, 2017



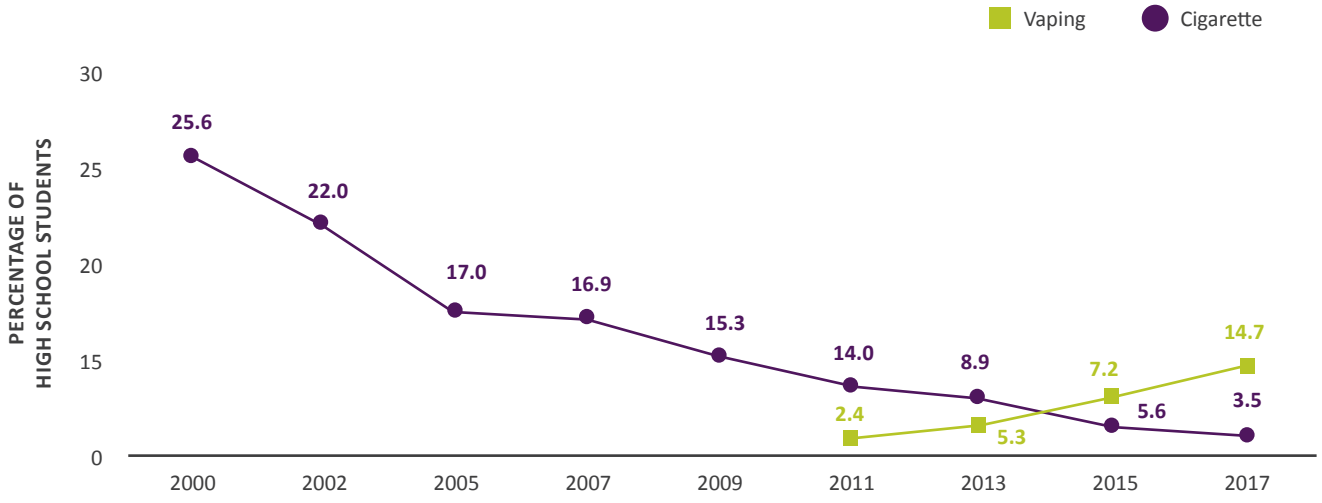
Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Youth Tobacco Survey. Data analyzed August 27, 2019.*

VAPING INCREASES AMONG YOUTH AND ADULTS

Quitting tobacco use is difficult, and adults have been misled to believe that transitioning to e-cigarettes is 'safe'. Although these products appear to be safer than traditional, combustible cigarettes, many are finding that it does not meet their needs and now use both products. Quitters contacting the tobacco use cessation telephone Quitline are now looking for assistance with quitting both products.

Also, vaping has been marketed to youth as a safer alternative to cigarettes and other tobacco products. As a result, while cigarette smoking among Connecticut high school students decreased from 25.6% in 2000 to 3.5% in 2017, the use of vaping products, such as e-cigarettes, doubled from 7.2% in 2015 to 14.7% in 2017 (**Figure 4.11**).

FIGURE 4.11: Percentage of high school students who currently used cigarettes or e-cigarettes (vaping) by year, CT, 2000–2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Youth Tobacco Survey. Data analyzed August 27, 2019.*

Vaping-Associated Lung Injury

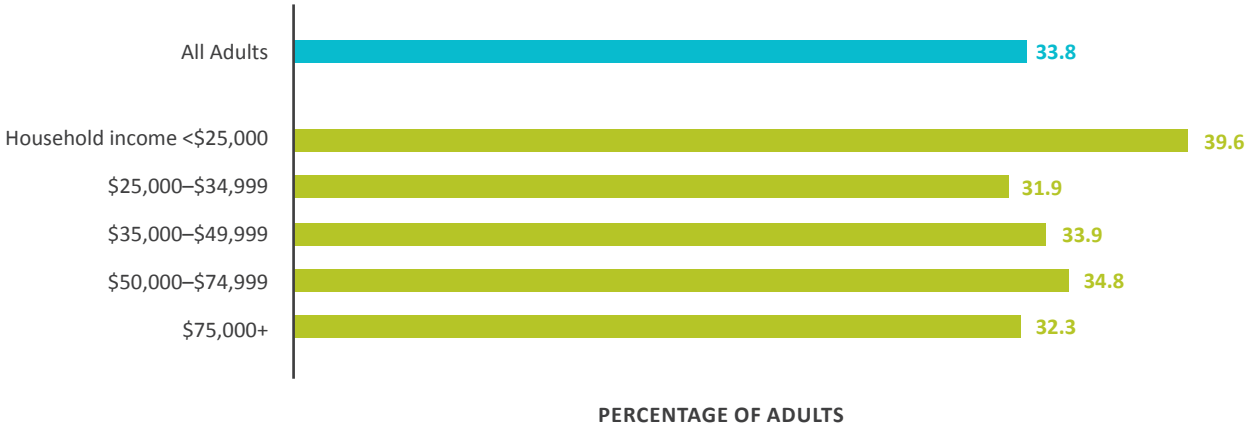
As this document goes to press, the CT DPH is part of the national effort to report and investigate vaping-associated lung injury. These vaping-associated lung injuries are a national public health crisis. As of December 16, 2019 a total of 46 patients have been hospitalized in Connecticut with lung injuries associated with using e-cigarettes or vaping since August 2019; and one person has died.[10] As Commissioner Renée Coleman-Mitchell has stated "Over 150 products containing [Tetrahydrocannabinol (THC)] have been reported by the patients who have been treated for these lung injuries [nationwide]. I am recommending that Connecticut residents consider refraining their use of e-cigarette or vaping products with THC until a definitive source for these serious injuries are identified."[10] THC is the psychoactive ingredient in cannabis, and even though CDC has identified that Vitamin E acetate is likely associated with these injuries, other chemicals may also be contributing, and many different substances and product sources remain under investigation. For more updates on vaping-associated lung injury, please visit the CT DPH website on vaping.[11]

Secondhand Tobacco Smoke Exposure in Public Places

Secondhand tobacco smoke exposure in public places affects our outdoor air quality and has detrimental effects on our health. Exposure to secondhand smoke has been causally linked to cancer, respiratory diseases, and cardiovascular diseases like stroke and coronary heart disease. It contributes to approximately 41,000 deaths among nonsmoking adults and 400 deaths in infants each year in the US. Secondhand smoke also has adverse effects on the health of infants and children, where children who are exposed to secondhand smoke are at increased risk for sudden infant death syndrome, acute respiratory infections, middle ear disease, more severe asthma, respiratory symptoms, and slowed lung growth.[12] There is no safe level of exposure to secondhand smoke.

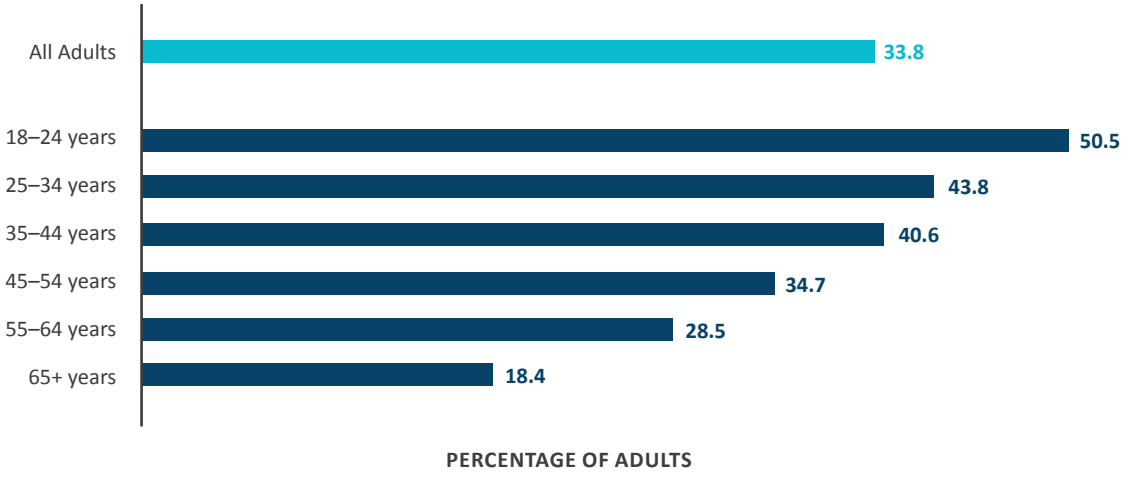
CT DPH provides education and promotes the adoption of voluntary policies that help to address exposure to secondhand smoke. Specific efforts include tobacco-free college campuses, smoke-free parks and recreational areas, and smoke-free multi-unit housing.

FIGURE 4.12: Percentage of adults who were exposed to secondhand tobacco smoke in a public place in the past 7 days by household income, CT, 2016



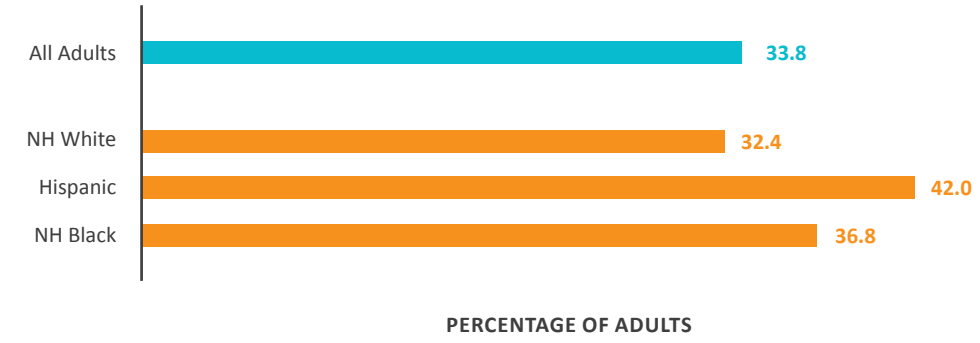
Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed August 27, 2019.*

FIGURE 4.13: Percentage of adults who were exposed to secondhand tobacco smoke in a public place in the past 7 days by age, CT, 2016



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed August 27, 2019.*

FIGURE 4.14: Percentage of adults who were exposed to secondhand tobacco smoke in a public place in the past 7 days by race/ethnicity, CT, 2016



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed August 27, 2019.*

ADULT EXPOSURE TO SECONDHAND SMOKE IN PUBLIC PLACES

In 2016, on one or more of the past seven days, about one-third of Connecticut adults (33.8%) had breathed the smoke from someone who was smoking a tobacco product in a public place (i.e., recent secondhand smoke exposure in a public place) (**Figure 4.12**). This represents approximately 930,000 adults.

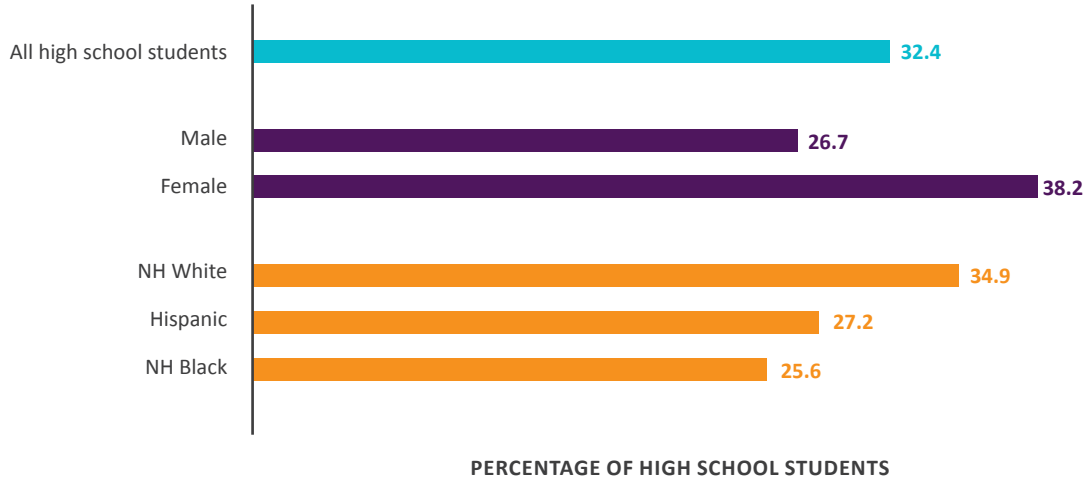
When we look at our population by annual household income, we see that those with incomes of less than $25,000 were more likely to be exposed to secondhand smoke, when compared to all other income categories (**Figure 4.12**). However, the difference between <$25,000 and $35,000 to $74,999 was not statistically significant.

When we look at age categories, one in two adults ages 18–24 years were recently exposed to secondhand smoke in a public place (**Figure 4.13**). This age group was the most likely to have such exposure when compared to all other age categories; as age increased, the likelihood of secondhand smoke exposure in a public place decreased. Hispanic adults were more likely than non-Hispanic White adults to have had recent secondhand smoke exposure in a public place (**Figure 4.14**).

YOUTH EXPOSURE TO SECONDHAND SMOKE IN PUBLIC PLACES

Almost one in three high school students (approximately 55,400) have recently breathed secondhand smoke from someone smoking in a public place. High school females were more likely than their male counterparts to be exposed to recent secondhand smoke exposure in a public place. Non-Hispanic White students were the most likely racial/ethnic group to have had recent second-hand smoke exposure in a public place (**Figure 4.15**).

FIGURE 4.15: Percentage of high school students who were exposed to secondhand tobacco smoke in a public place in the past 7 days by sex and race/ethnicity, CT, 2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Youth Tobacco Survey. Data analyzed August 27, 2019.*

OBESITY

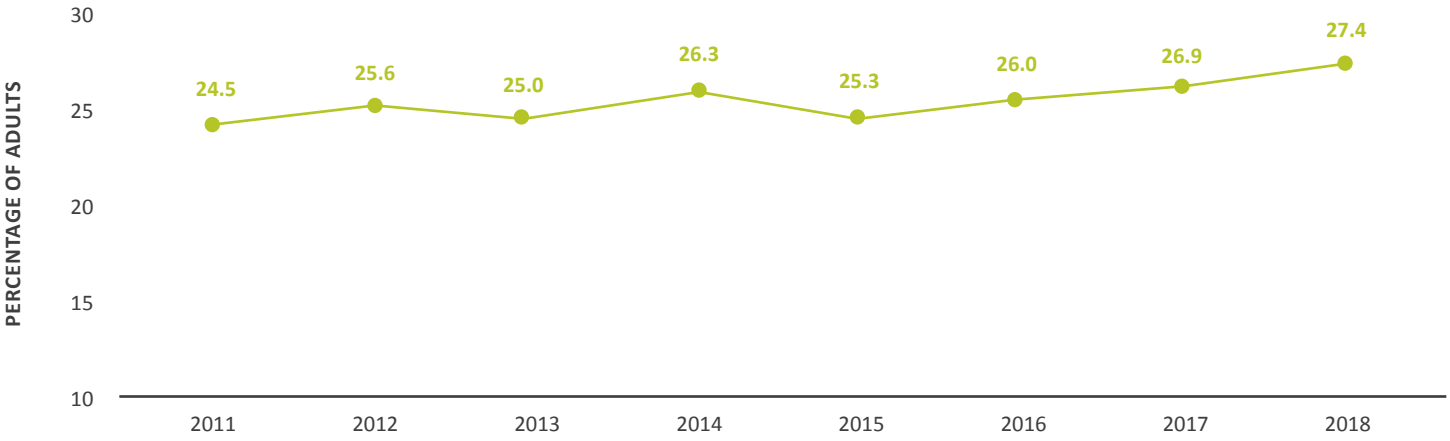
Healthcare experts use height and weight to calculate one's body mass index (BMI). BMI is a person's weight in kilograms (kg) divided by the square of height in meters (m). BMI represents an easy, inexpensive, and reliable method to screen for overweight or obesity. Excess weight may lead to health problems such as an increased risk for heart disease, high blood pressure, stroke, type 2 diabetes, arthritis-related disability, and cancer. Maintaining a healthy weight involves choosing healthy foods, regular physical activity, and consuming about the same number of calories as your body needs.[2] Many of our state's efforts to reduce obesity center on policies, systems, and environmental change strategies to increase access to healthier foods and safe places to be physically active.

Adults

Adults with BMI at or above 30 kg/m^2 are considered as being obese. Adults with BMI at or above 25 kg/m^2 and less than 30 kg/m^2 are considered as being overweight. Connecticut adults are less likely to be obese when compared to US adults. The prevalence of obesity among Connecticut adults increased consistently for the past 20 years, but recent data from 2011 to 2018 showed signs of slowing increase in the obesity rate (**Figure 4.16**). Approximately 27% of adults are obese and 37% are overweight.[13] Non-Hispanic Black residents, residents over 35 years of age, and those with lower educational attainment are disproportionately affected by obesity (**Figure 4.17**).

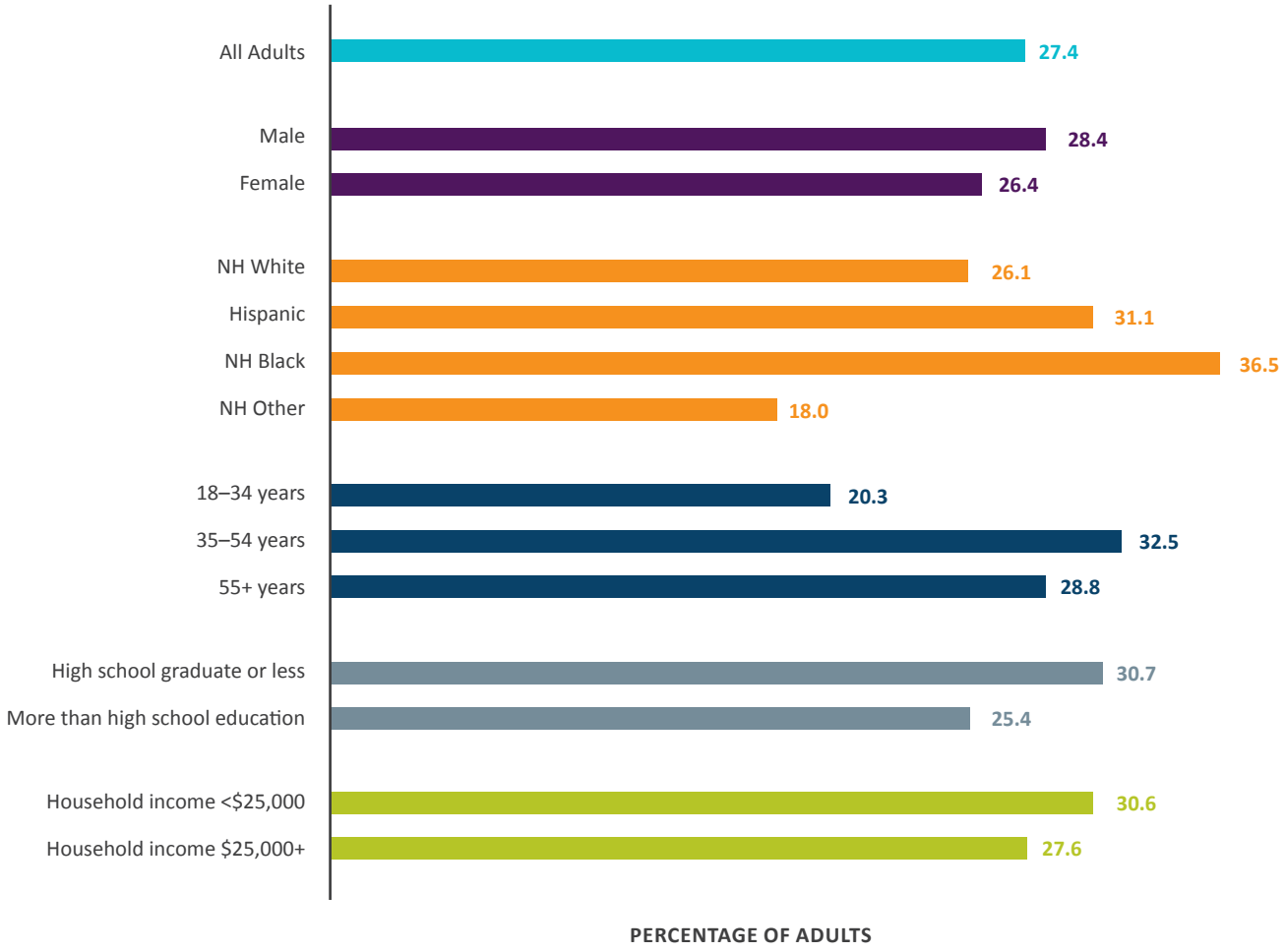
> "[...] the people around my area we have trouble trying to make affordable, healthy — healthy meals."
>
> **— STATE HEALTH ASSESSMENT FOCUS GROUP,**
> LGBTQ YOUNGER ADULTS

FIGURE 4.16: Percentage of adults (18+) who were obese by year, CT, 2011–2018



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

FIGURE 4.17: Percentage of adults (18+) who were obese by sex, race/ethnicity, age, educational attainment and household income, CT, 2018



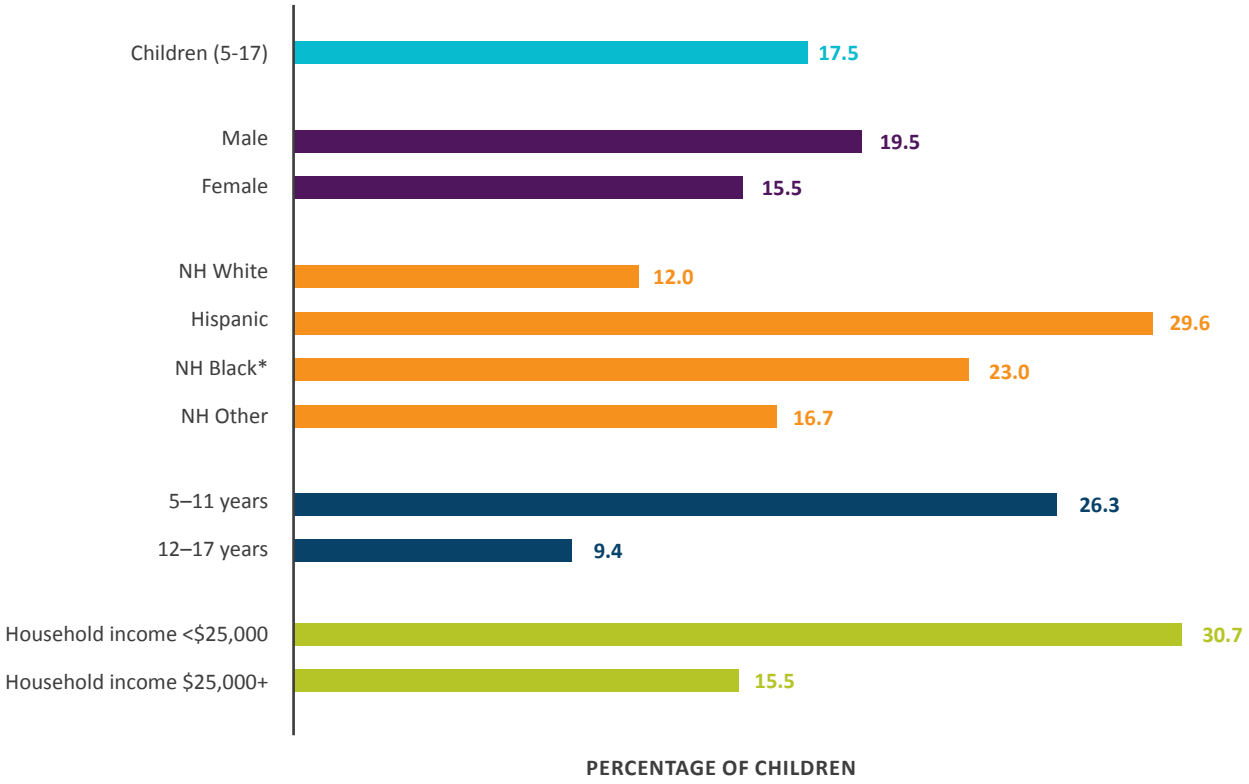
Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

Youth

Obesity among children and teens is defined as a BMI at or above the 95th percentile for children and teens of the same age and sex. Overweight is defined as a BMI at or above the 85th percentile and below the 95th percentile for children and teens of the same age and sex. Approximately 17.4% of children aged 5 to 17 years old are obese and 14.7% are overweight.[14]

Disparities exist in the prevalence of obesity among children. The prevalence of obesity is higher among males, younger children, and children from low-income households (**Figure 4.18**). Also, Hispanic and non-Hispanic Black children have obesity prevalence rates that are 2.5 and 1.9 times higher, respectively, than non-Hispanic White children.

FIGURE 4.18: Percentage of children (5-17 years old) who were obese by sex, race/ethnicity, age and household income, CT, 2016–2018



**Estimate may be of limited validity due to a coefficient of variation (CV) between 15% and 20%, inclusive.*

Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

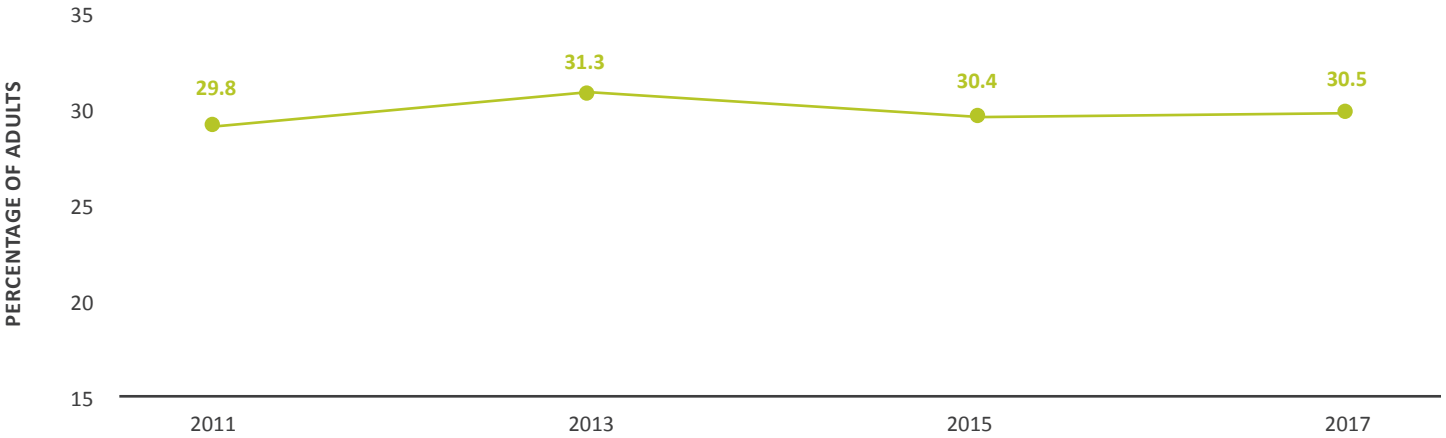
HIGH BLOOD PRESSURE

High blood pressure (HBP) may cause arteries to harden, become blocked, or even rupture resulting in heart failure, heart attack, stroke, or chronic kidney disease. Approximately 30% — or about 860,000 — Connecticut adults have been told by a health professional that they have diagnosed HBP. In addition to adults with diagnosed HBP, national data indicate that nearly 16% of adults with HBP are not aware that they have it (undiagnosed HBP). Approximately 46% of adults with diagnosed HBP do not have their blood pressure under control.

The percent of Connecticut adults diagnosed with HBP changed little from 2011 to 2017 (**Figure 4.19**). Reducing HBP is challenging because of the persistence of and difficulty in changing modifiable risk factors, such as dietary intake of sodium, inadequate potassium, and consumption of alcohol, as well as physical inactivity and obesity. Also, many adults with HBP are undiagnosed and untreated because HBP rarely has symptoms. Healthcare providers can take steps to identify patients with potentially undiagnosed HBP, such as searching electronic health records data to identify undiagnosed patients.[15]

Those groups more likely to have been diagnosed with HBP include: males, non-Hispanic Black and non-Hispanic White adults, older adults, and adults with lower educational attainment and lower annual household incomes (**Figure 4.20**).

FIGURE 4.19: Percentage of adults (18+) ever told by a doctor, nurse, or other health professional that they have high blood pressure by year, CT, 2011-2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

PROGRAM SPOTLIGHT: IMPROVE THE HEALTH OF AMERICANS THROUGH PREVENTION AND MANAGEMENT OF DIABETES, HEART DISEASE, AND STROKE

In September 2018, the CT DPH was awarded the CDC18–1815 grant — Improving the Health of Americans through Prevention and Management of Diabetes and Heart Disease and Stroke. The five-year funding supports activities such as:

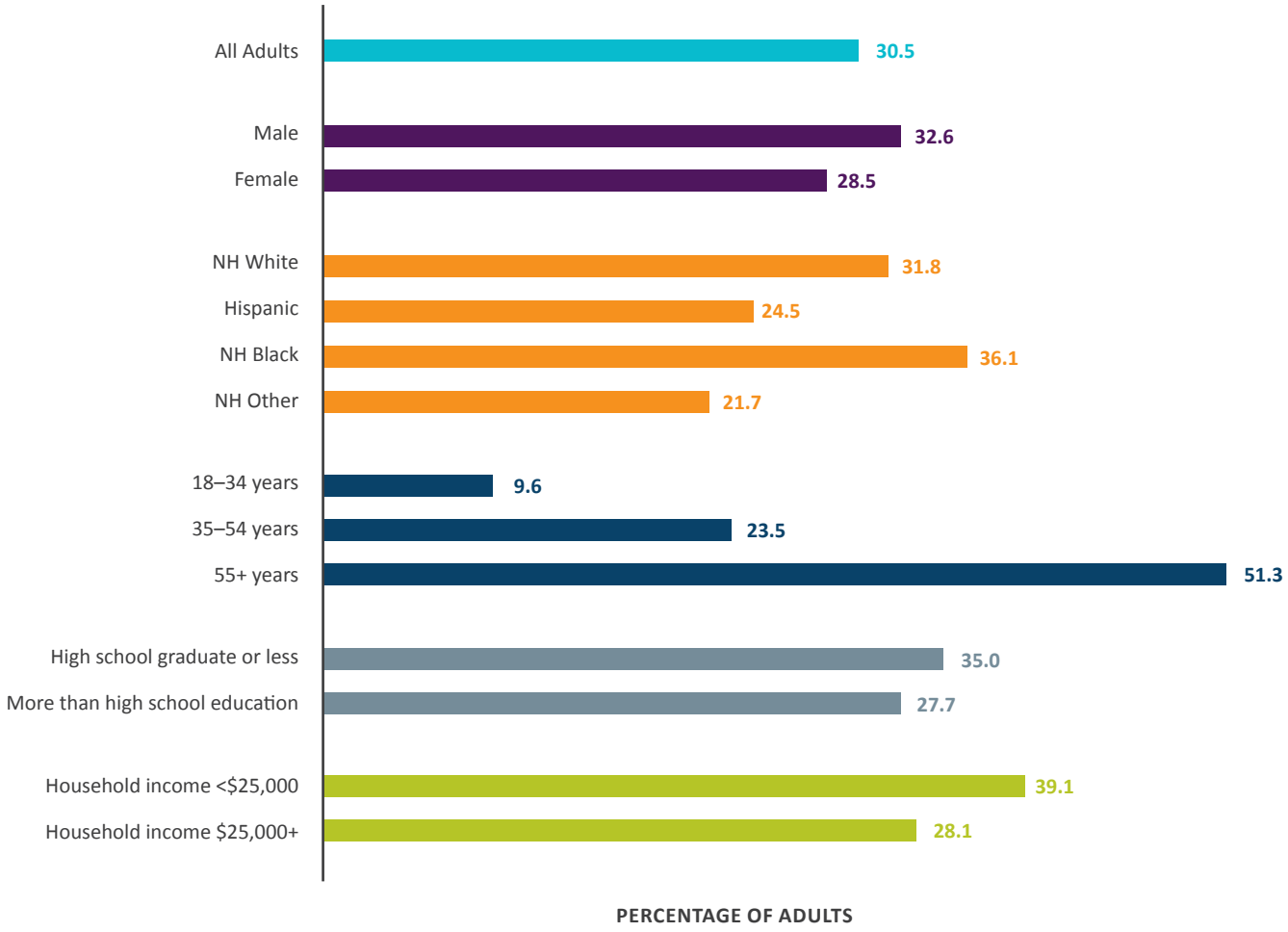
- Using electronic health records to report, monitor, and track clinical data for improved identification, management, and treatment of patients with high blood pressure;
- Promoting the use of medication therapy management (MTM), wherein trained pharmacists work directly with patients to address medication appropriateness, safety, effectiveness, and enhance patient adherence to treatment plans;
- Self-measured blood pressure (SMBP), or the regular measurement of blood pressure by the patient outside the clinical setting. Patient use a home blood pressure measurement device to measure blood pressure at different points in time. Patients share blood pressure readings with their healthcare providers to better guide treatment planning to improve blood pressure control; and,
- Team-based care within healthcare organizations that uses multidisciplinary teams to improve the quality of care for patients with HBP.

PROGRAM SPOTLIGHT: 6|18 INITIATIVE

Through the 6|18 Initiative, the Centers for Disease Control and Prevention is partnering with healthcare purchasers, payers, and providers to improve health and control healthcare costs. The particular focus in Connecticut is improving blood pressure control. CT DPH is partnering with the Department of Social Services to increase utilization of home blood pressure monitors for Medicaid recipients with high blood pressure and reimburse for the clinical support services required for self-measured blood pressure monitoring. A web-based training is being planned for providers, pharmacists and Medicaid members to increase awareness of this benefit and improve utilization.

For more information, see:
www.cdc.gov/sixeighteen/index.html

FIGURE 4.20: Percentage of adults (18+) ever told by a doctor, nurse, or other health professional that they have high blood pressure by sex, race/ethnicity, age, educational attainment and household income, CT, 2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

DIABETES

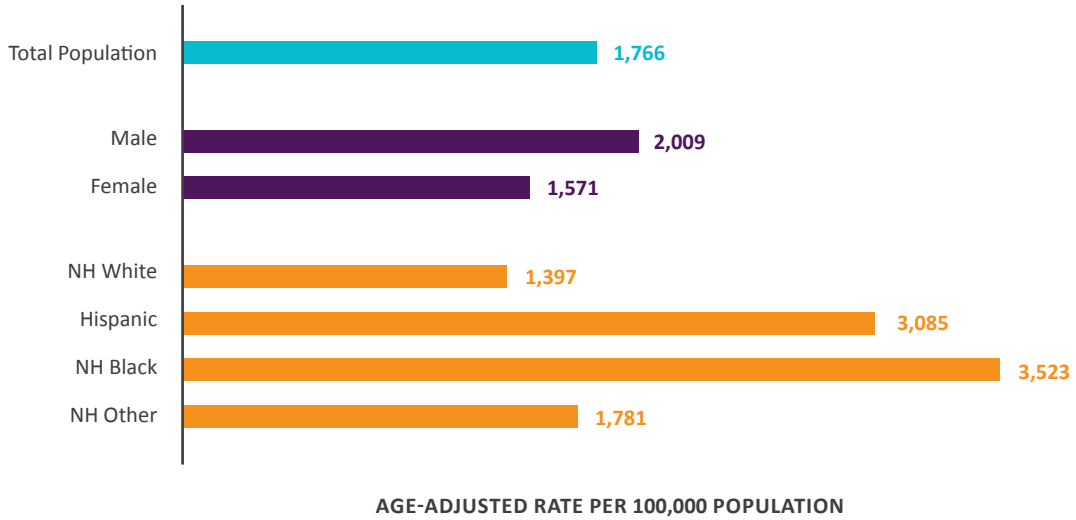
Diabetes is a group of diseases characterized by abnormal metabolism of glucose, a type of sugar. Diabetes is the leading cause of kidney failure, lower-limb amputations, and adult blindness, and can also lead to serious health issues such as stroke and heart disease. Medical expenses for people with diabetes are more than twice as much as expenses for people without diabetes. In the last 20 years, the number of adults diagnosed with diabetes has more than doubled.[16]

While there is no cure for diabetes, it can be treated and managed. For example, diabetes self-management education and support (DSMES) is the ongoing process of facilitating the knowledge, skills and abilities necessary for diabetes self-care and providing the support needed to maintain self-management on an ongoing basis. DSMES benefits include improved hemoglobin A1C, decreased depression, improved quality of life, and reduced onset or advancement of diabetes complications. DSMES has also been shown to reduce hospital admissions and readmissions. Because DSMES lowers the risk of diabetes complications and hospitalizations, DSMES is also associated with decreased healthcare costs.[17]

Yet, barriers to participating in DSMES exist:

- Patient psychosocial and behavioral factors, such as stress, denial, and loneliness;
- Logistical issues, such as lack of transportation;
- Lack of referral by a healthcare provider to DSMES; and,
- Gaps in health insurance coverage of DSMES, including high copays and/or deductibles.

FIGURE 4.21: Age-adjusted hospitalization rate with diabetes as any listed diagnosis by sex and race/ethnicity, CT, 2018



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Inpatient Hospitalization and Emergency Department Visit Dataset. Data analyzed September 5, 2019.*

Offering DSMES to patients at little or no cost has been shown to increase participation, improve health, and result in insurer cost savings; therefore, it is recommended that private and public insurers should reduce or eliminate patient cost-sharing for DSMES. Another recommendation is that policymakers seek out and encourage entities within their state to apply for funding opportunities that support diabetes initiatives. Policymakers may also support legislation and policies that reduce cost-sharing and increase health insurance coverage of DSMES by public and private insurers.[18]

In our state for 2017, diabetes is the seventh leading cause of death.[19] Males have 1.3 times more diabetes-related hospitalizations compared with females. Non-Hispanic Black residents in Connecticut have 2.5 times more diabetes-related hospitalizations compared with non-Hispanic White residents (**Figure 4.21**). Also, Hispanic or Latino residents have 2.2 times more diabetes-related hospitalizations compared with non-Hispanic White residents.

Diabetes/Prediabetes Screening

Type 2 diabetes symptoms often develop over several years and may go unnoticed.[20] Similarly, more than one out of three American adults have prediabetes, which is a risk factor for diabetes; yet, 90% of people with prediabetes are not aware that they have the condition.[21]

Testing for prediabetes and risk for future diabetes in asymptomatic people should be considered in adults of any age who are overweight or obese and who have one or more additional risk factors for diabetes. Testing for all people should begin at 45 years of age. If tests are normal, repeat testing can be done every three years.[22]

Figure 4.22 highlights groups of Connecticut residents that are recommended for diabetes or prediabetes testing. Many of these groups have received diabetes testing in the past three years. However, other at-risk residents are not being tested for diabetes as recommended. Specifically, more targeted screening efforts may be needed to encourage people of color who are also overweight or obese and inactive adults who are overweight or obese to be routinely screened. Barriers to screening may include the lack of awareness and diagnosis of prediabetes or diabetes by both the patient and healthcare provider. Healthcare systems may also lack systems to identify patients with prediabetes to support providers in referring patients to lifestyle change programs.

Following a diagnosis of prediabetes and diabetes, appropriate and effective avenues of care include:

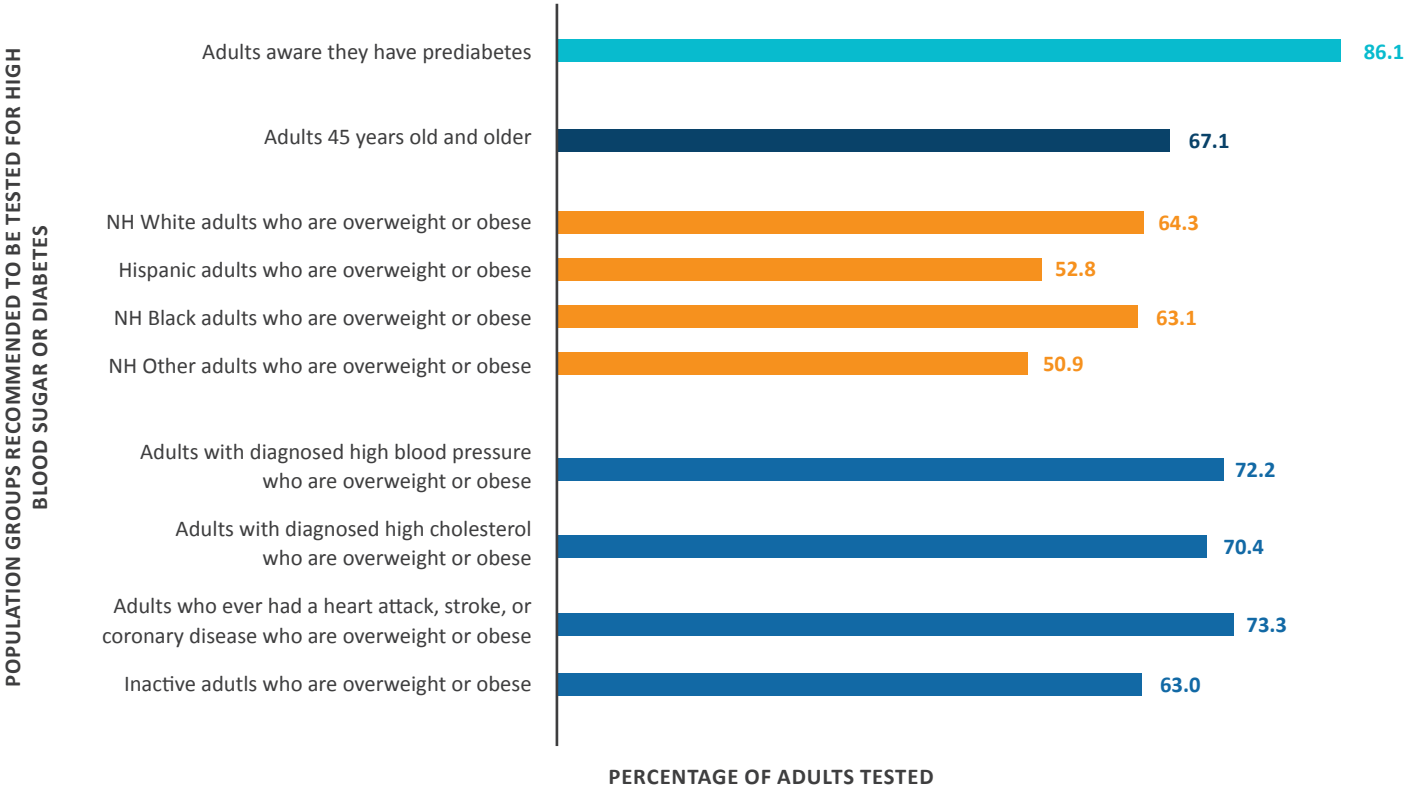
- Lifestyle change programs such as those offered through the CDC-led National Diabetes Prevention Program. This program aims to help people at risk for type 2 diabetes to lose 5% to 7% of their body weight and increase physical activity; and,
- Diabetes self-management education and support (DSMES).[23]

PROGRAM SPOTLIGHT: IMPROVE THE HEALTH OF AMERICANS THROUGH PREVENTION AND MANAGEMENT OF DIABETES, HEART DISEASE, AND STROKE

This program, described in the previous section on high blood pressure, also has diabetes-focused strategies:

- Assisting healthcare organizations in implementing systems to identify people with prediabetes and refer them to CDC-recognized lifestyle change programs for type 2 diabetes prevention; and,
- Improving access to and participation in American Diabetes Association-recognized/ American Association of Diabetes Educators-accredited DSMES programs in underserved areas.

FIGURE 4.22: Percentage of adults tested for high blood sugar or diabetes within the past three years by population groups recommended to be tested for high blood sugar or diabetes, CT, 2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

PROGRAM SPOTLIGHT: 6|18 INITIATIVE

Through the 6|18 Initiative, CDC also focuses on the prevention of type 2 diabetes. CDC provides partners with rigorous evidence about high-burden health conditions and associated interventions to inform their decisions to have the greatest health and cost impact. This initiative aligns evidence-based preventive practices with emerging value-based payment and delivery models.

For more information, see: www.cdc.gov/sixeighteen/index.html

ASTHMA

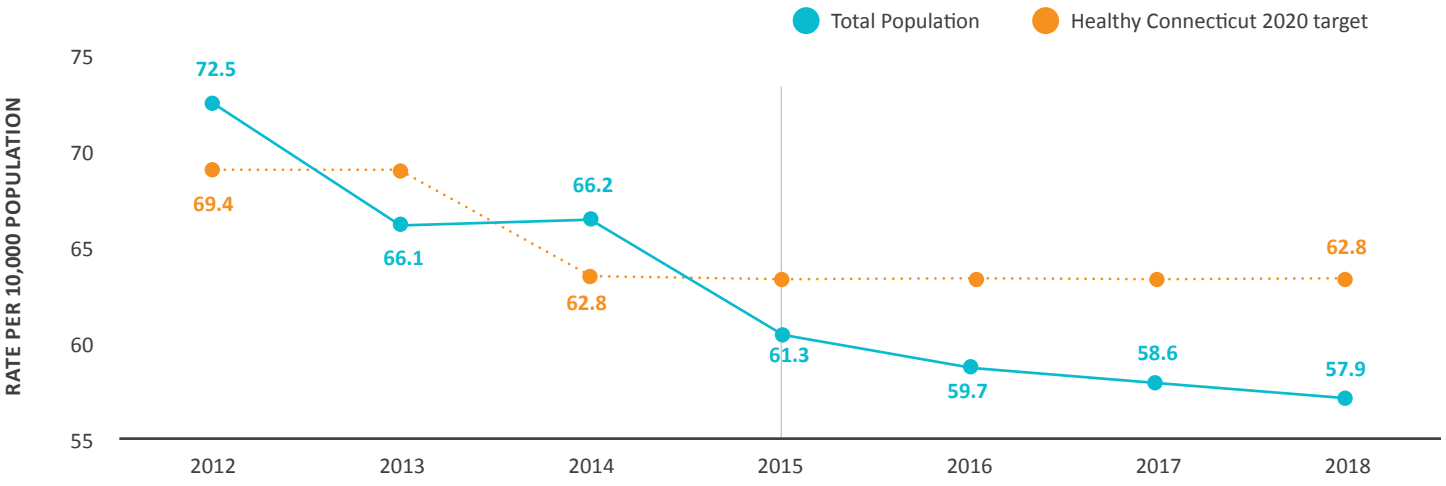
Asthma is a chronic, respiratory disease of the lungs that can cause repeated episodes of wheezing, breathlessness, chest tightness, and nighttime or early morning coughing.[24] Asthma is manageable through medication and the avoidance or removal of environmental triggers such as smoke, dust, and pollen. In our state, 10.3% of adults in 2018 suffer from asthma, which is higher than the US's prevalence of 9.1% in 2017.[25] Consequently, Connecticut experiences a higher rate of healthcare utilization for asthma.

Multiple social determinants of health contribute to asthma outcomes, including low household income, environmental inequities (e.g., outdoor air pollution, substandard housing conditions, etc.), and exposure to pests, mold, air pollution, and secondhand smoke. Barriers to healthcare access can include a lack of health insurance coverage, long wait times and overwhelmed clinics, shortages of culturally and linguistically competent providers, and low health literacy.[26]

Poorly controlled asthma accounts for the most common causes of avoidable hospitalizations and emergency department (ED) visits, high healthcare costs, absenteeism in school and work, and poor quality of life. Connecticut population subgroups are disproportionately affected by asthma resulting in greater health disparities and healthcare utilization. Individuals who have uncontrolled asthma often use ED services to control an acute exacerbation of an asthma episode. Thus, asthma ED visits can be looked at as an indicator for the burden and management of asthma.

Asthma ED visit rates decreased between 2012 and 2014, dropping below the Connecticut Healthy People 2020 benchmark set at that time and prompted a lowering of the benchmark in 2014 (**Figure 4.23**). In October 1, 2015, ICD-10 reclassified asthma differently; thus, the 2015 rate reflects the mixture of codes used during that year. From 2016 onwards, asthma was coded using the ICD-10 coding system and are not directly comparable to rates before 2015. The asthma ED visit rate decreased slightly from 2016 to 2018, falling below the revised Connecticut Healthy People 2020 target once again.

FIGURE 4.23: Age-adjusted asthma emergency department (ED) visit rate by year, CT, 2012-2018



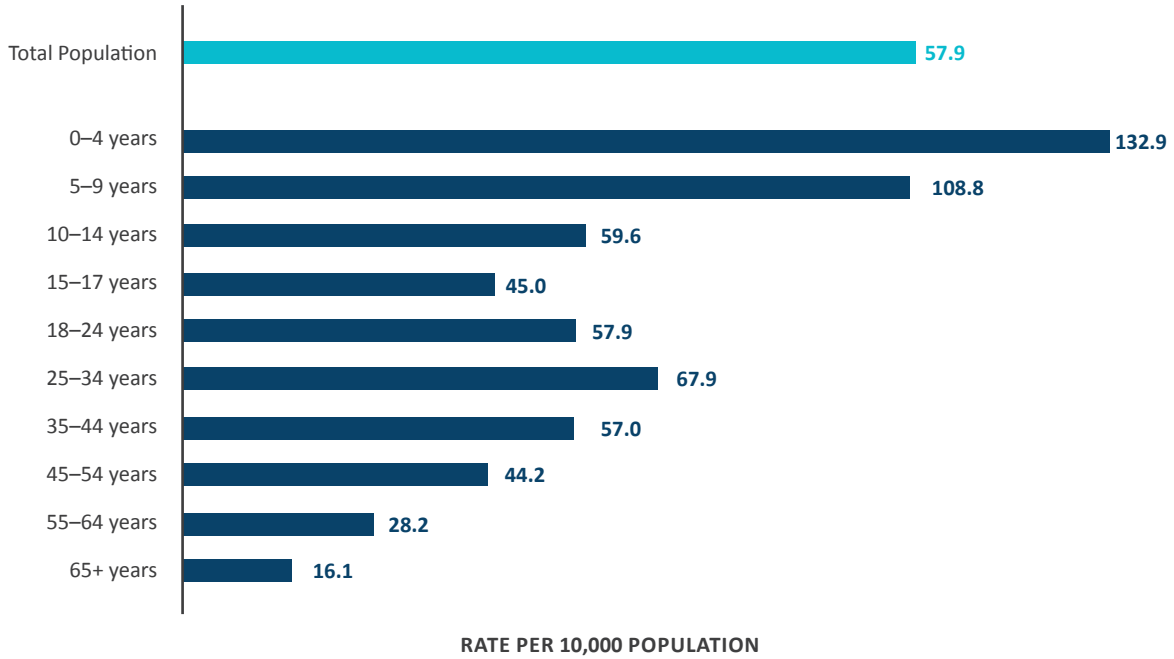
**Diagnosis code followed the ICD-9 classification though September 2015. ICD-10 classification implemented in October 2015.*

Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Inpatient Hospitalization and Emergency Department Visit Dataset. Data analyzed September 3, 2019.*

Approximately 58 Connecticut residents per 10,000 are admitted to the ED with a primary diagnosis of asthma (**Figure 4.24**). Poorly controlled asthma affects our state's youngest residents. The asthma ED visit rate for children under five is more than twice the rate of the population, overall. The rate of asthma ED visits among children decreases as age increases. The rate then increases among adults, peaking at age 25–34 years old and then decreases as age increases.

For the total population, females have a slightly higher asthma-related ED visit rate than males (**Figure 4.25**), but among children males are more likely than females to have an asthma ED visit. In addition, asthma ED visit rates for non-Hispanic Black and Hispanic residents are nearly 5 times higher than their non-Hispanic White counterparts. This health disparity has increased since 2012, when non-Hispanic Black and Hispanic residents' asthma ED visit rates were nearly 4 times higher than non-Hispanic White residents.

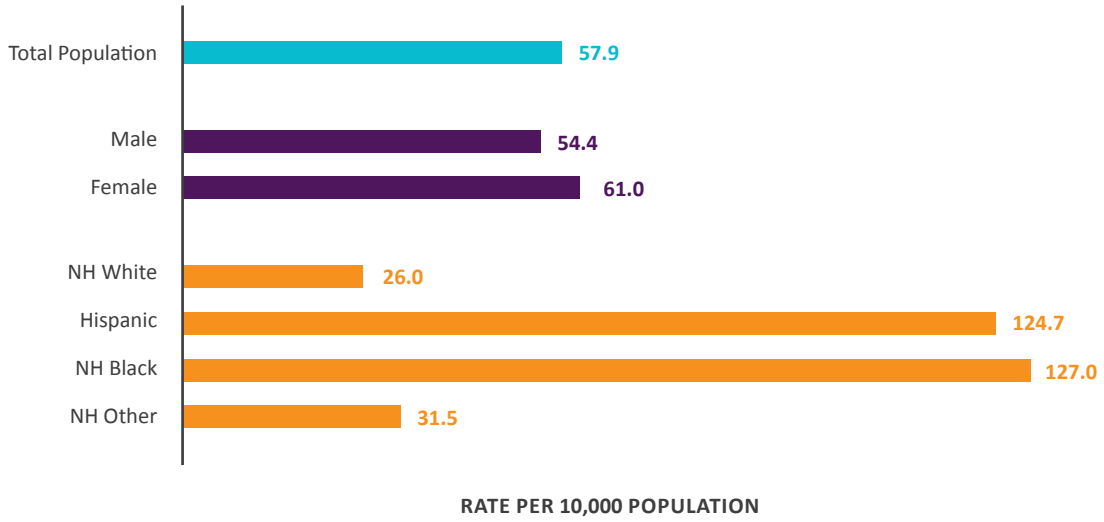
FIGURE 4.24: Asthma emergency department (ED) visit rate by age, CT, 2018



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Inpatient Hospitalization and Emergency Department Visit Dataset. Data analyzed September 3, 2019.*

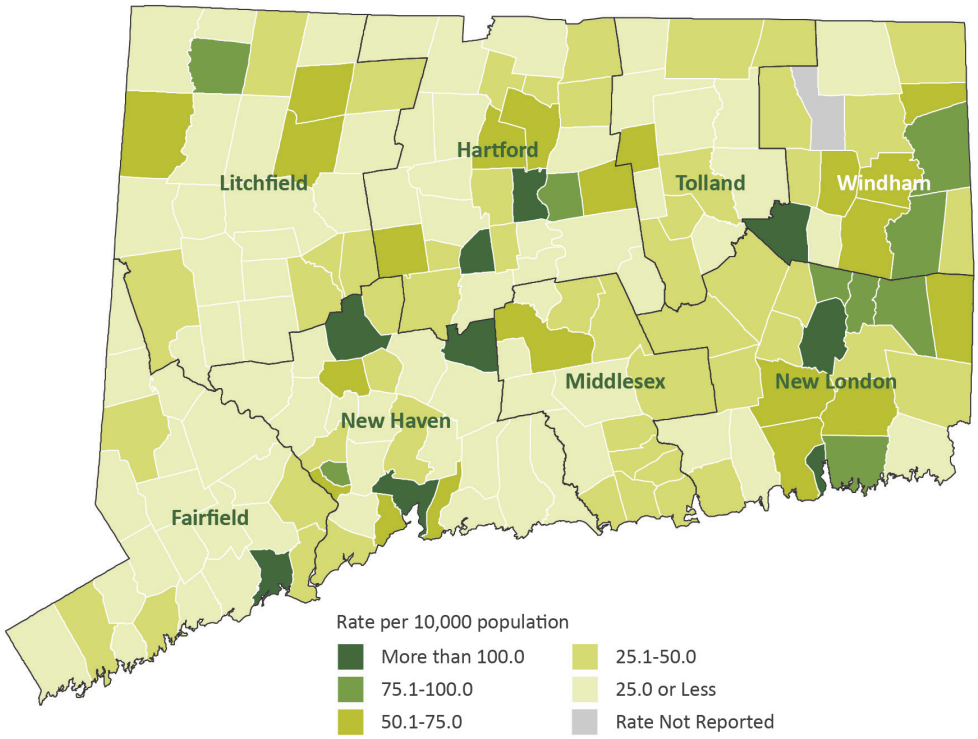
Residents of the large cities are disproportionately affected by asthma. Towns with age-adjusted asthma ED visit rate of more than 100 per 10,000 populations are Hartford, New London, New Britain, Waterbury, Norwich, New Haven, Bridgeport, Meriden, and Windham (**Figure 4.26**).

FIGURE 4.25: Age-adjusted asthma emergency department (ED) visit rate by gender and race/ethnicity, CT, 2018



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Inpatient Hospitalization and Emergency Department Visit Dataset. Data analyzed September 3, 2019.*

FIGURE 4.26: Age-adjusted asthma emergency department (ED) visit rate by town, CT, 2013–2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Inpatient Hospitalization and Emergency Department Visit Dataset. Data analyzed April 23, 2019.*

PROGRAM SPOTLIGHT: PUTTING ON AIRS

Putting on AIRS (POA), funded by CDC, is a statewide in-home asthma program that provides asthma home self-management education, home environmental assessments, and coordination of asthma trigger remediation.

The program targets children and adults with poorly controlled asthma. Almost 80% of POA participants are renters, and over 70% live in multi-unit housing.

POA visits focus on:

- Asthma medication education;
- Adherence to the Asthma Action Plan;
- Identification of barriers to asthma management;
- Assessment of exposure to environmental triggers; and,
- Reduction/elimination of triggers.

Services are provided by an Asthma Education Specialist (Respiratory Therapist, Registered Nurse, or Certified Asthma Educator) and the Environmental Specialist (Sanitarian, House Inspector, or Certified *Healthy Homes* Staff). One local health department piloted the integration of a Community Health Worker as a part of POA staff with great success. Partnerships are developed with healthcare providers and local community resources to facilitate the exchange of information and ultimately improve asthma outcomes, control, and management.

Services are provided in the participant's preferred language, using a variety of educational materials. Recommendations are made to each program participants and provisions of supplies are provided.

Results:
Among patients who completed the program, there was a 60% decrease in asthma-related ED visits over a two-year period.

ORAL HEALTH

Dental decay is preventable; yet, it is still a pervasive chronic condition among children and adults alike. Left untreated, dental decay among children and adults often have serious consequences and affect overall quality of life, including needless pain and suffering, poor self-esteem, difficulty chewing, speaking and sleeping, as well as lost days in school and work. In more extreme cases, having all permanent teeth extracted and poorly fitting dentures may cause individuals to forgo nutritious food choices due to an inability to chew properly, making it more difficult to meet dietary recommendations.[27;28]

Barriers to maintaining good oral health include a lack of access to affordable and comprehensive dental care for low-income children and older adults living on a fixed income. Older adults are often at risk of limited access to oral health care because of a lack of transportation, economic challenges, complex medical conditions, social isolation, and other individual and social factors. Furthermore, retirement often means losing dental insurance, and many older adults are not aware that most dental procedures are not covered under Medicare. Finally, residents of long-term care facilities often have difficulty accessing treatment services within the nursing home or in the community.

Racial/ethnic and socioeconomic disparities in oral health outcomes persist among both children and adults. Possible explanations for these disparities include unequal access to quality oral health care that exists among specific population groups in Connecticut.[29] Population groups such as the Hispanic and non-Hispanic Asian children who experience higher levels of dental decay and lack treatment are among the vulnerable populations considered by CT DPH as "priority" populations.[30]

To promote better oral health and advance health equity, state initiatives exist to:

- Educate the public on the importance of oral health and its contribution to overall health and well-being.
- Promote culturally and linguistically appropriate dental care for all.
- Instill the concept of a dental home for comprehensive, accessible, and coordinated care starting before the age of one.
- Increase access and utilization of dental services in school-based, public health, and private settings.
- Preserve the updated community water fluoridation statute, ensure the delivery of optimally fluoridated water, and educate all stakeholders in the safety and benefits of water fluoridation for our state.
- Expand the SEAL CT! School-based Dental/Dental Sealant Program to enhance the acceptance and use of sealants through school-based programs.
- Educate the public in decreasing consumption of sugar-sweetened beverages.
- Promote increased communication between medical and dental providers including physicians who care for geriatric patients, to improve the health management of older adults.
- Implementing an oral health surveillance system to identify and detect disease, to inform policy, and to plan and evaluate programs.

Dental Decay in Children

Dental decay remains the most common chronic disease affecting children. In 2017, over one in three (36.8%) Connecticut children in kindergarten or third grade had dental decay experience in their primary or permanent teeth (**Figure 4.27**). This is a slight increase from the prevalence of dental decay a decade ago, which was at 34.1% in 2007.

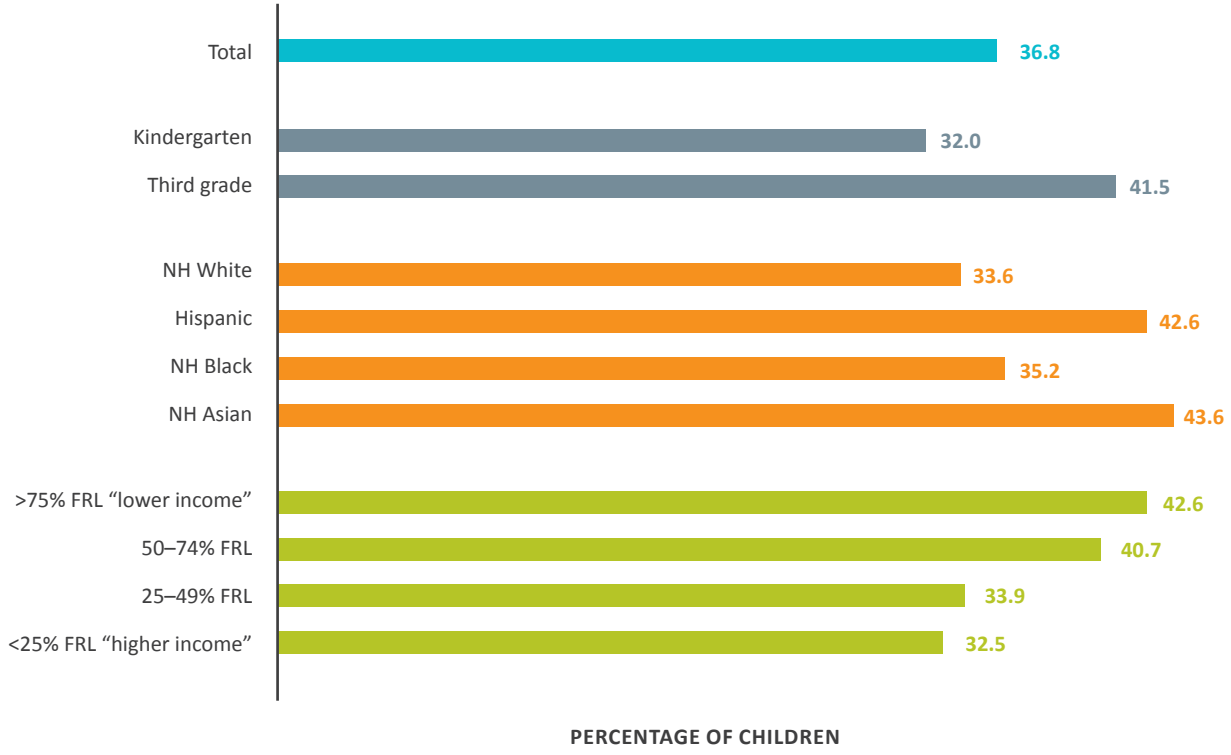
One out of three (32.0%) children in kindergarten and two out of five (41.5%) children in third grade had dental decay experience. When compared to non-Hispanic White and non-Hispanic Black children, Hispanic and non-Hispanic Asian children were 25% more likely to have dental decay experience. Back in 2007, dental decay experience among Hispanic,

non-Hispanic Asian and non-Hispanic Black children were all significantly higher than among non-Hispanic White children. Since then, the health disparity gaps have decreased across all racial/ethnic groups. In addition, using the National School Lunch Program as a proxy indicator of overall socioeconomic status, we see that lower income schools had children with higher free and reduced lunch (FRL) eligibility also had higher levels of dental decay experience.

Dental Decay among Older Adults

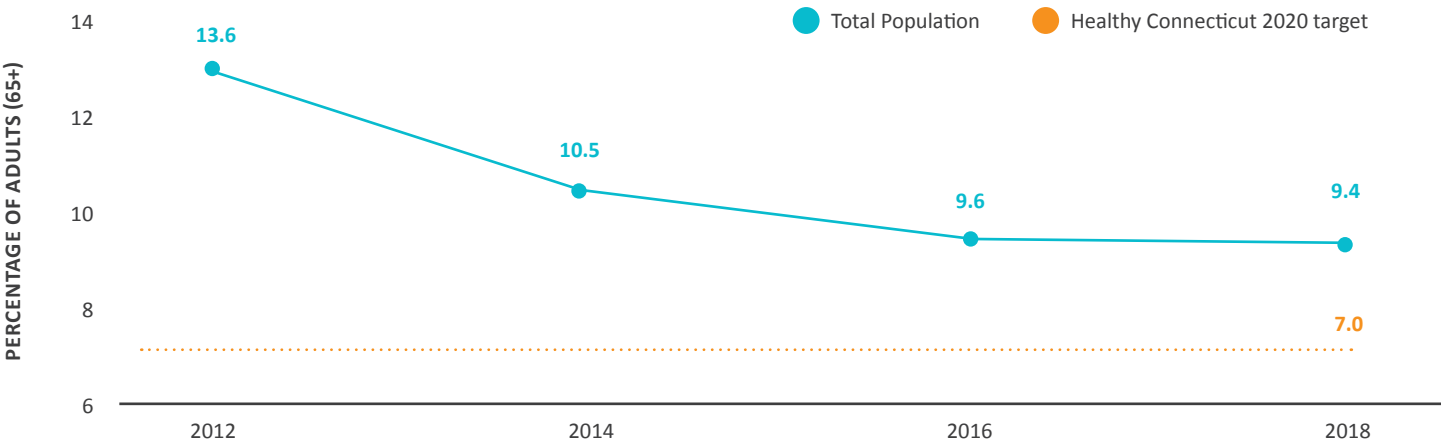
The percent of Connecticut adults 65 years old and over who have had all their natural teeth extracted has steadily decreased from 13.6% in 2012 to 9.4% in 2018 (**Figure 4.28**). While this progress is encouraging, it is still above the Health Connecticut 2020 target of 7%. In comparison to the US, Connecticut older adults have a lower prevalence of having all their natural teeth extracted.

FIGURE 4.27: Percentage of children (kindergarten and third grade) who had dental decay experience in their primary or permanent teeth by grade level, race/ethnicity, and percentage of children in school eligible for free and reduced lunch (FRL), CT, 2017



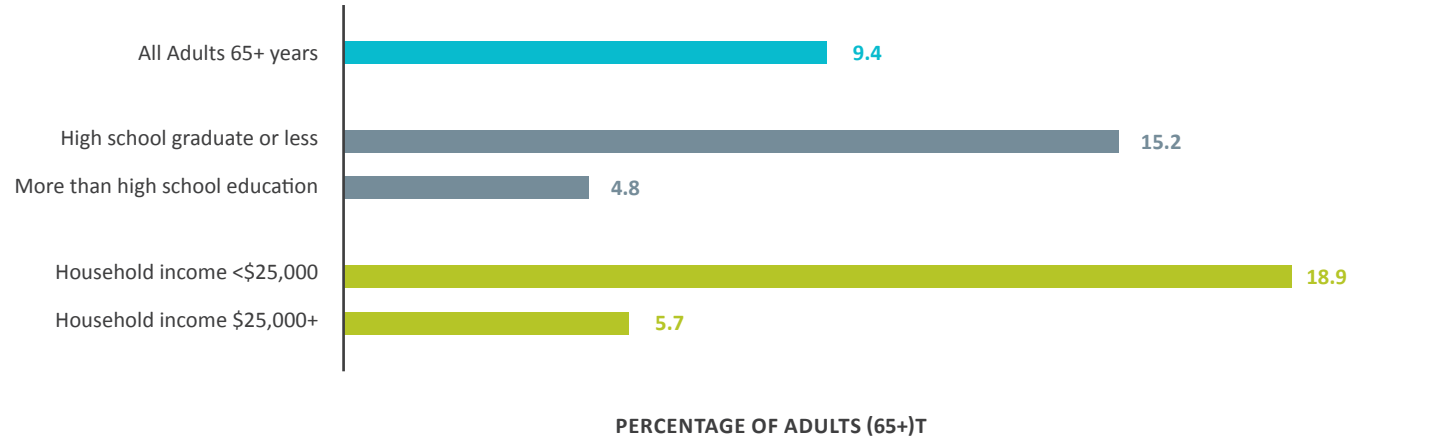
Source: *CT DPH. (2017). Every Smile Counts: The Oral Health of Connecticut's Children. Retrieved from https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/oral_health/PDF/Every-Smile-Counts-2017-REV-August-2018.pdf?la=en*

FIGURE 4.28: Percentage of adults (65+) who have had all their natural teeth extracted by year, CT, 2012–2018



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

FIGURE 4.29: Percentage of adults (65+) who have had all their natural teeth extracted by educational attainment and household income, CT, 2018



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

In 2018, approximately one out of every eleven Connecticut adults 65 years old and over has had all their natural teeth extracted. Older adults with lower educational attainment were 3.2 times more likely to have had all their natural teeth extracted when compared to those with more than a high school degree. Older adults from lower income households were 3.3 times more likely to have had all their natural teeth extracted when compared to those with higher annual household incomes (**Figure 4.29**).

Oral Health Promotion

Maintaining a healthy mouth is critical to maintain overall health, as poor oral health is linked to many chronic diseases such as diabetes, cardiovascular disease, respiratory disease, and stroke.[31] Dental decay remains one of the most common chronic diseases affecting children and adults; yet, it is preventable through proper home care (i.e., regular brushing and flossing), consumption of fluoridated water, and regular dental visits.

Like many other chronic diseases or health conditions, tooth decay is directly related to low socioeconomic status. Therefore, to address health equity, we need to implement public policies aimed at reducing racial, ethnic, and socioeconomic disparities in oral health. In our state, our oral health promotion strategies include:

- Fluoridating drinking water, which provides equal access to one of the most well-known public health practices to prevent dental decay; and,
- Increasing access and utilization of preventive dental care.

FLUORIDATION

Community water fluoridation, considered one of the top ten great public health achievements of the twentieth century, has greatly contributed to the decline of tooth decay over the past 70 years.[32] In February 1965, Connecticut was the first state to pass a state statute requiring water fluoridation in public water systems that serve 20,000 residents or more. The CT DPH Drinking Water Section (DWS) regulates these systems and ensures that drinking water fluoride concentrations are maintained within the optimal range. Water fluoridation safely and inexpensively benefits all populations by effectively preventing tooth decay, regardless of socioeconomic status or access to care. In 2015, the DWS determined that the annual fluoridation cost per person in our state was approximately $1.01.[33]

Today, almost 2.5 million residents, or 90% of Connecticut's population using the public water systems consume fluoridated water (**Figure 4.30**).

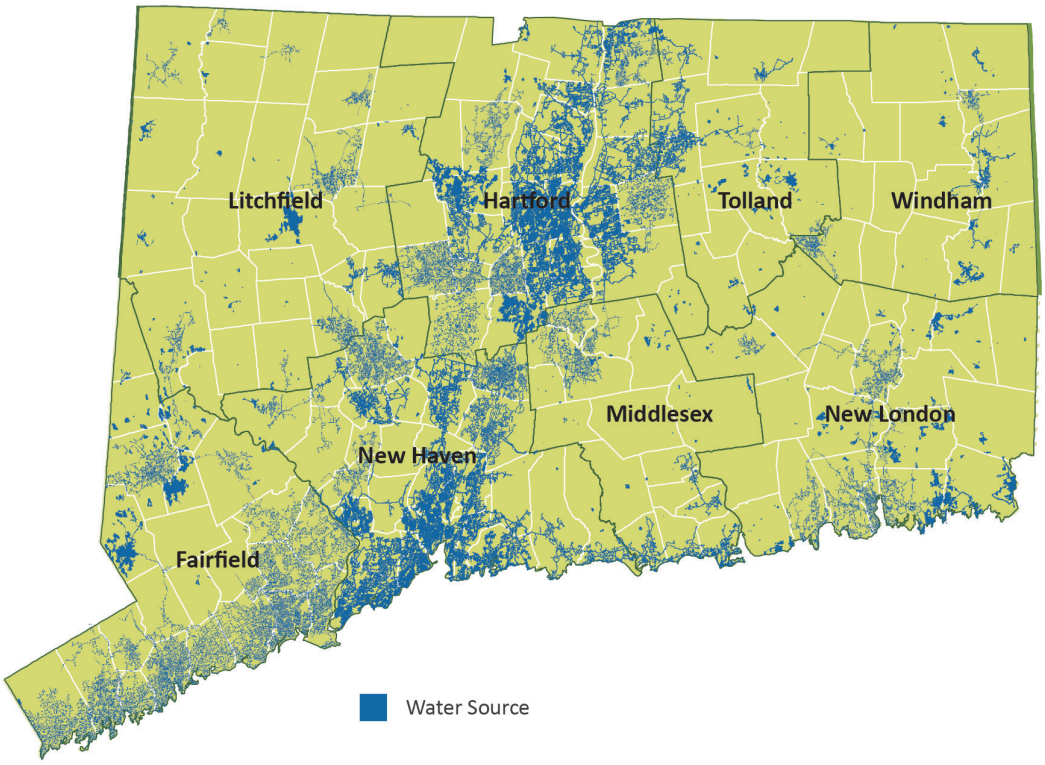
Access to Dental Care

All children, adolescents and adults are recommended to seek preventive dental care at least once annually. Limited and infrequent access to dental care contributes to poor oral health, and postponed oral health care can often lead to more difficult dental and systemic health problems, as well as higher costs for performing and paying for services. Barriers to care include lack of access to affordable and comprehensive dental care, lack of dental insurance and the integration of oral health into medical practices, lack of transportation to get to dental care visits, cultural competency of providers, and perceptions that oral health care is a less essential aspect of overall health.

To address dental care access gaps and support oral health promotion among populations disparately affected by lack of access to oral health care, our state is:

- Ensuring that a competent workforce, including dentists, hygienists, and non-dental providers, meet the oral health needs of Connecticut residents;
- Identifying and supporting policies to ensure a strong and sustainable oral health workforce to anticipate and meet the oral health needs of Connecticut residents;
- Raising awareness and educating the public and decision makers regarding the science and efficacy of policies to improve the oral health of Connecticut residents and implement or enforce existing policies; and
- Increasing oral health literacy and promoting the value of good oral health for all residents.

FIGURE 4.30: Map of fluoridated public water systems, CT, 2019



Source: *CT DPH Drinking Water Section, Fluoridated Public Water System. Data analyzed August 1, 2019.*

POLICY SPOTLIGHT: PROVIDER REIMBURSEMENT AND ADMINISTRATION

In 2008, there was a significant increase in provider reimbursement rates and a decrease in administrative burden for dental providers. As a result, Connecticut experienced a significant increase in dental provider participation and an increase in access and dental utilization among children covered by the HUSKY health program (Medicaid and Children's Health Insurance Program).

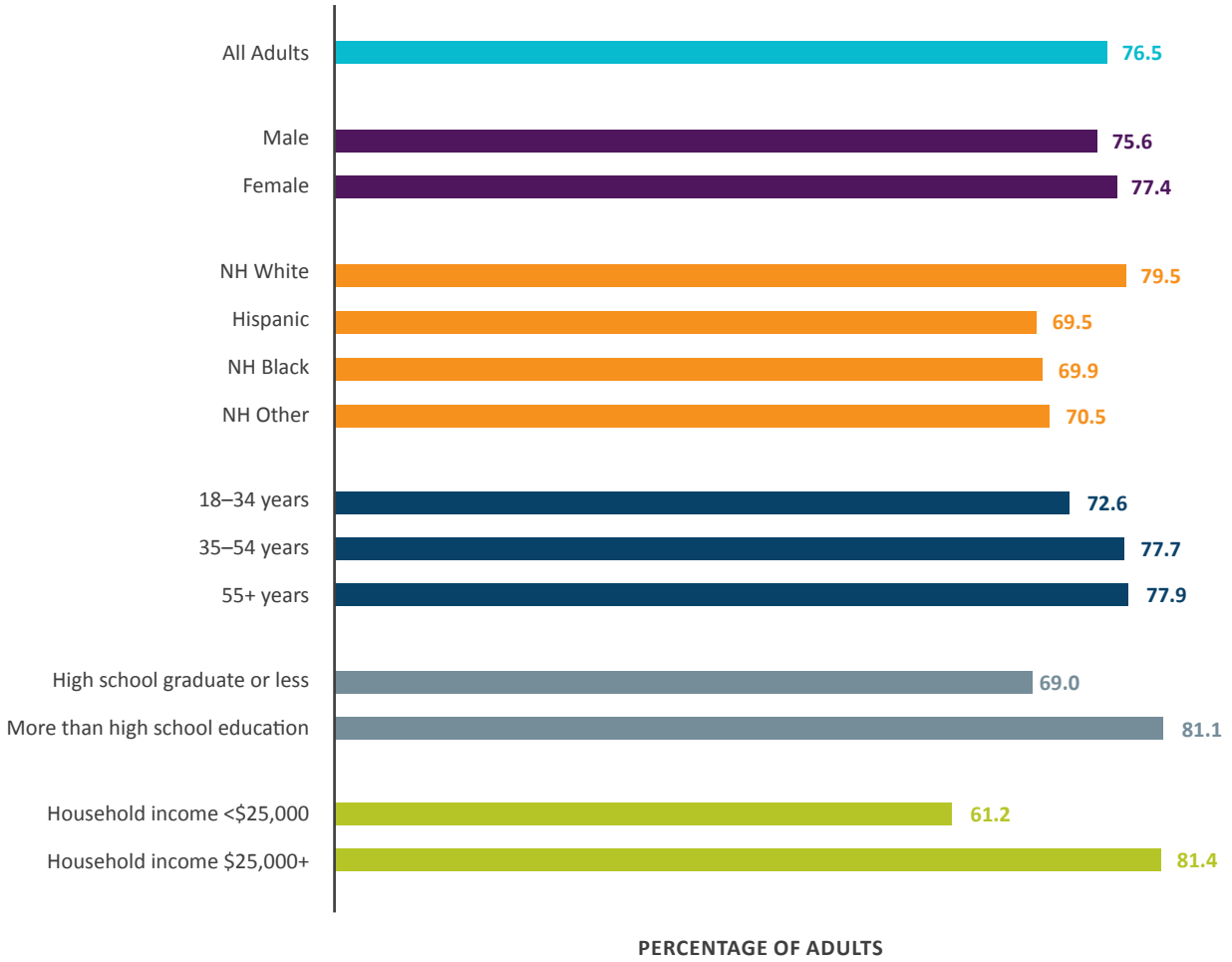
ADULTS

Just over three quarters of Connecticut adults reported visiting a dentist or dental clinic in the past year (**Figure 4.31**), and this rate has remained consistent over the years and is higher than the national rate. Adults 18–34 years old, with a high school education or less, and from low income households were the least likely to have visited a dentist or dental clinic in the last year. Hispanic, non-Hispanic Black and non-Hispanic Other adults are less likely to have visited a dentist or dental clinic in the last year when compared to non-Hispanic White adults.

CHILDREN (AGES 1–17)

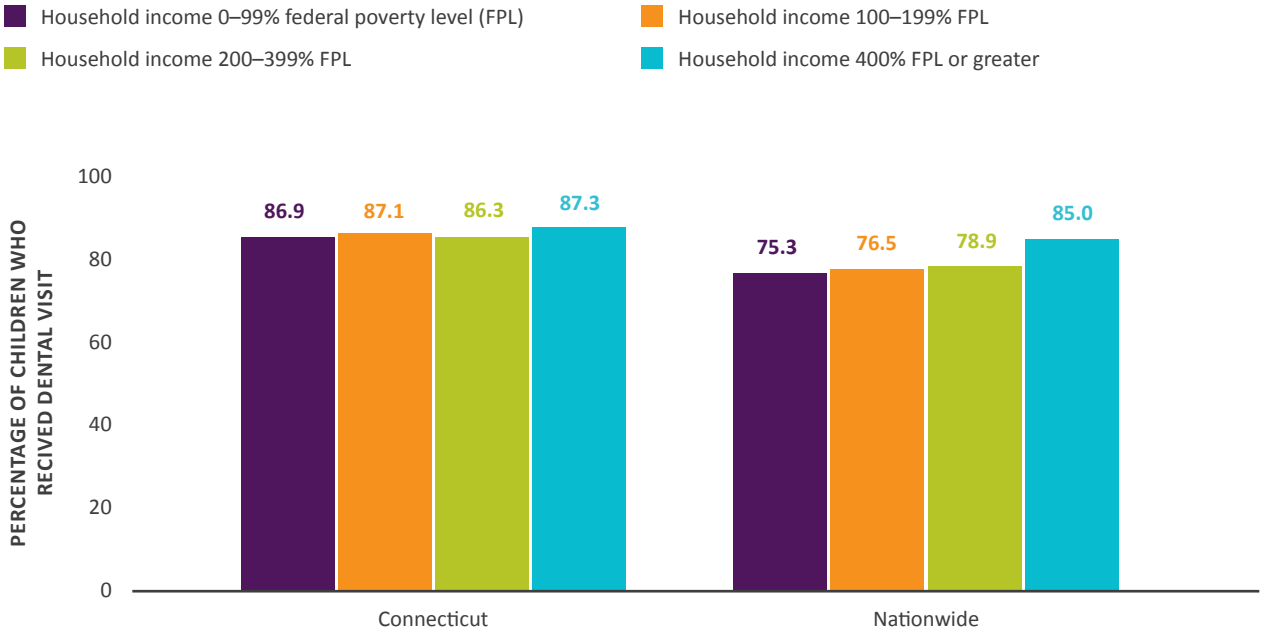
In Connecticut, 86.9% of children ages 1–17 had a preventive dental visit during the past 12 months, exceeding the national rate of 79.5%. When broken out by household income as defined by percent of federal poverty level, there is no health disparity between the different income levels in our state; however, nationally children from lower income households are less likely to have had a preventive dental visit than their higher income counterparts (**Figure 4.32**). Connecticut children also experience no health disparity by different gender or race/ethnicity groups.

FIGURE 4.31: Percentage of adults (18+) who have visited a dentist or dental clinic in the past year by gender, age, race/ethnicity, educational attainment and household income, CT, 2018



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

FIGURE 4.32: Percentage of children, ages 1 through 17, who received a preventative dental visit during the past 12 months by household income, CT and US, 2016–2017

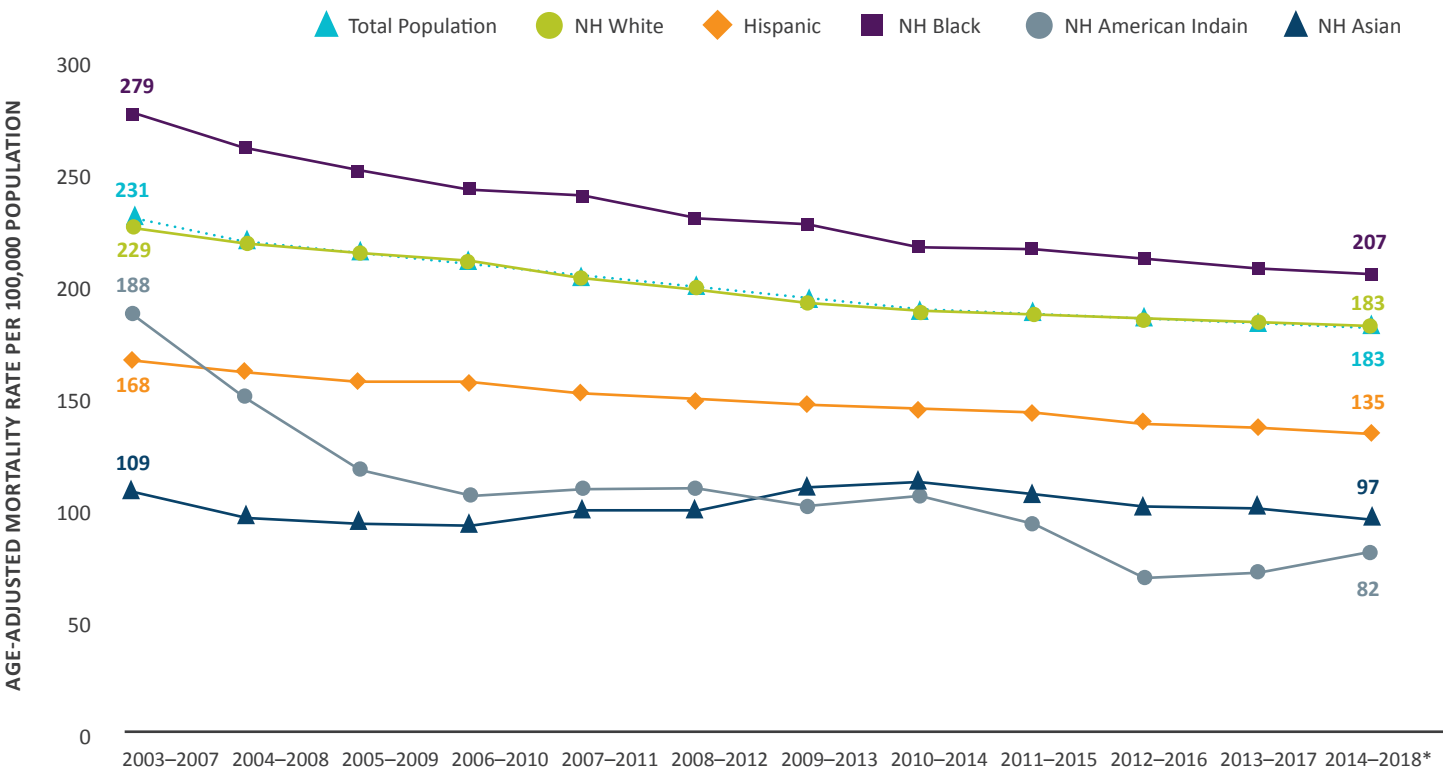


Source: *Health Resources and Services Administration Maternal and Child Health Bureau, National Survey of Children's Health. Data analyzed September 5, 2019. Retrieved from www.childhealthdata.org/browse/survey*

CARDIOVASCULAR DISEASE

Cardiovascular disease (CVD) deaths include deaths with heart disease and stroke as the principal diagnosis. CVD is the leading cause of death in our state, accounting for approximately 29% of all deaths.[19] **Figure 4.33** shows the age-adjusted mortality rates (AAMR) as five-year rolling averages, and CVD AAMR declined from 2003–2007 to 2014–2018 overall and for all racial/ethnic groups. However, disparities persist among the different racial/ethnic groups. Non-Hispanic Black residents continue to have the highest CVD AAMRs, followed by non-Hispanic White residents. Connecticut CVD AAMR is also lower than the national CVD AAMR.

FIGURE 4.33: Age-adjusted mortality rate with cardiovascular disease as a primary diagnosis by race/ethnicity and year, CT, 2003–2018 (five-year rolling averages)



**2014–2018 data is provisional*

Source: *CT DPH Statistics Analysis and Reporting Unit, Five-year Age-adjusted Mortality Rates for Connecticut, 2003–2017 & provisional 2018. Data analyzed September 12, 2019.*

Cholesterol Screening

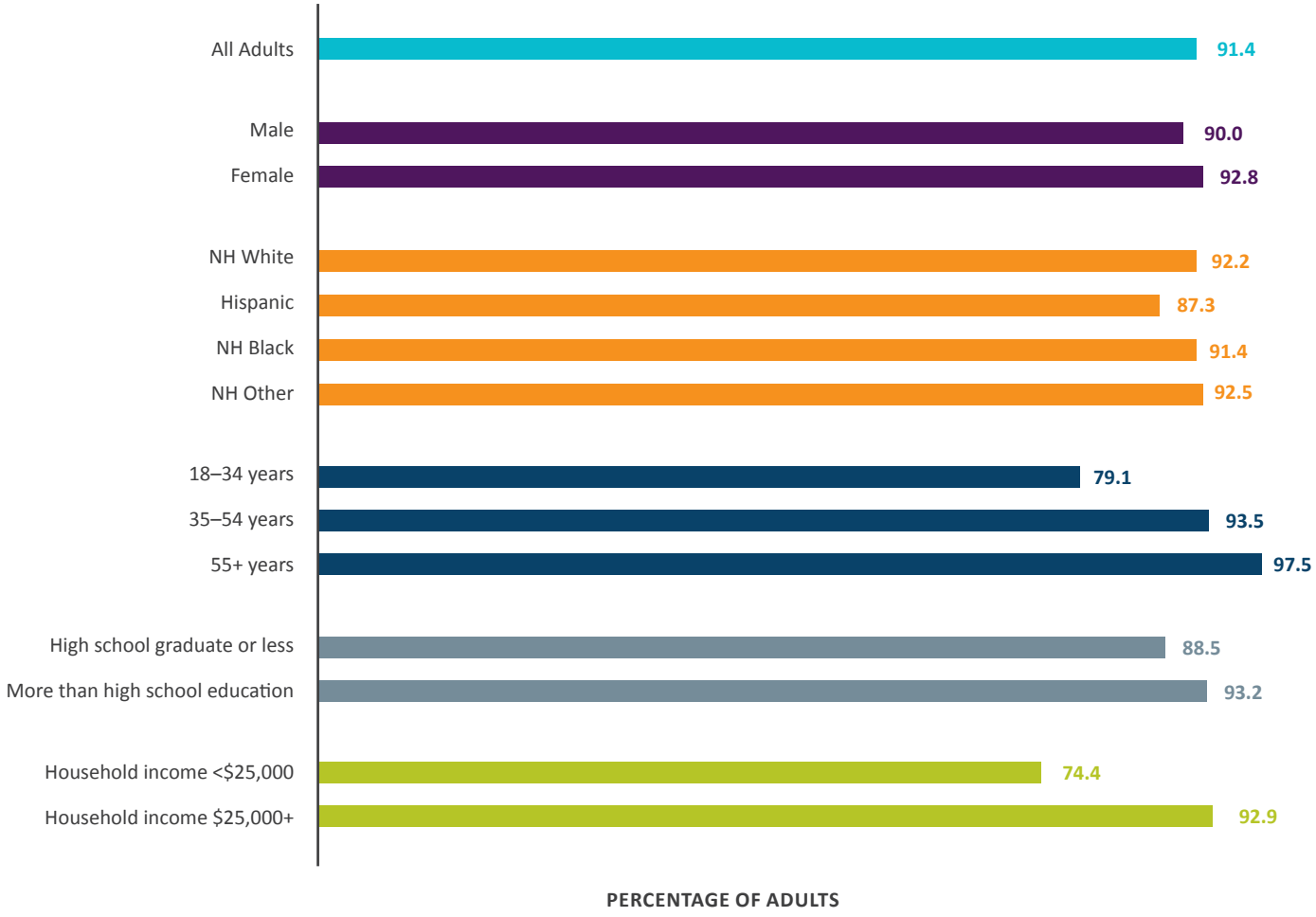
Heart disease, diabetes, cancer and other chronic diseases account for seven of every ten deaths among Americans annually, accounting for 75% of the nation's health spending.[34] These chronic diseases are preventable and can be managed or treated more easily when detected early through appropriate screenings.[35]

High cholesterol, which is linked to chronic diseases like diabetes and heart disease, usually has no symptoms; therefore, it is important to have cholesterol levels tested. Eating healthy, increasing physical activity, quitting smoking, and losing weight can prevent or manage high cholesterol. Medications are also available to lower cholesterol levels.

The American Heart Association recommends that all adults 20 or older have their cholesterol and other traditional risk factors checked every four to six years. After age 40, the healthcare provider will also want to calculate a 10-year risk of experiencing cardiovascular disease or stroke. Those with cardiovascular disease, and those at elevated risk, may need their cholesterol and other risk factors assessed more often.

In Connecticut, nine out of ten adults (18+) reported having their blood cholesterol checked in the past five years (**Figure 4.34**). Non-Hispanic White and non-Hispanic Black residents are more likely to have had their cholesterol tested in the past five years when compared to Hispanic or Latino adults. Older adults, adults with higher educational attainment, and adults with healthcare coverage are more likely to have had their cholesterol tested

FIGURE 4.34: Percentage of adults (18+) who have had their blood cholesterol checked in the past five years by sex, race/ethnicity, age, educational attainment and healthcare coverage, CT, 2017



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

in the past five years as well. When compared to US adults, Connecticut adults are more likely to have had their cholesterol checked in the past five years.

Preventing or managing high cholesterol and its risk factors such as unhealthy eating, sedentary living, and lack of access to quality health services are influenced by social determinants of health such as where people live or work. Therefore, screening should be followed with appropriate, evidence-based treatment recommendations that account for an individual's environment and access to resources.

PROGRAM SPOTLIGHT: IMPROVE THE HEALTH OF AMERICANS THROUGH PREVENTION AND MANAGEMENT OF DIABETES, HEART DISEASE, AND STROKE

This program, described in the previous sections on high blood pressure and diabetes, also has cholesterol-focused strategies. These include controlling high cholesterol by promoting the use of team-based care and medication therapy management (MTM), a process where trained pharmacists work directly with patients to address medication appropriateness, effectiveness, safety, and patient adherence.

CANCER

One in two men and one in three women will be diagnosed with cancer at some time in their life. It is estimated that more than 40% of cancers diagnosed are due to preventable causes (**Figure 4.35**).[36] In Connecticut, more than 8,500 cancers could have been prevented in 2016 by behavioral and lifestyle changes: tobacco use; what we eat and drink; how overweight we are; how we exercise; infections we are exposed to; and, measures we take to reduce exposure to harmful ultraviolet (UV) radiation.

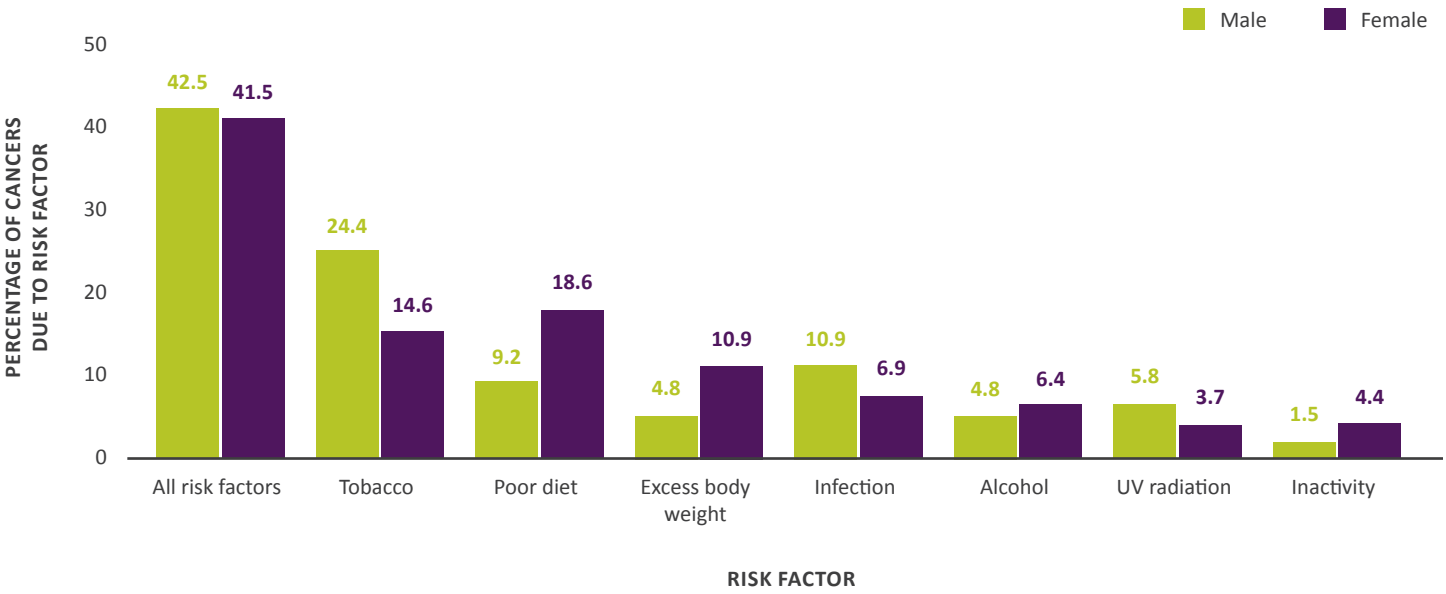
After heart disease, cancer is the second leading cause of death in Connecticut and the nation. The four most common cancers diagnosed are breast, prostate, lung, and colorectal cancers, and the four cancers that account for the majority of cancer-attributable deaths are breast, lung, colorectal, and pancreatic.[37]

As a state, we engage in comprehensive cancer control, defined as an "integrated and coordinated approach to reducing cancer incidence, morbidity, and mortality through prevention, early detection, treatment, rehabilitation, and palliation."[38] In Connecticut, collaborative partners form the Connecticut Cancer Partnership (Partnership) which is a broad and diverse coalition of more than 150 key stakeholders representing all aspects of cancer prevention and control in Connecticut. The Partnership is responsible for coordinating a statewide comprehensive approach to cancer prevention and control through the development and implementation of the Connecticut Comprehensive Cancer Control Plan.

Cancer Screening

Preventive cancer screening is an important strategy to minimize the impact of, if not prevent the occurrence of, certain cancers — most notably, breast, cervical and colorectal cancers.

FIGURE 4.35: Percentage of cancers due to preventable causes, CT, 2016



Source: *CT DPH Connecticut Tumor Registry, Connecticut Tumor Registry Data with methodology based on Islami et al. (2018).[36] Data analyzed September 18, 2019.*

SCREENING RECOMMENDATIONS

Breast Cancer Screening

Women ages 50 to 74 years should be screened for breast cancer at least every 2 years using mammography.[39]

Cervical Cancer Screening

The following are the new 2018 cervical cancer screening recommendations:[40]

- Women ages 21–29 should be screened every three years using the Papanicolaou (Pap) test alone.
- Women ages 30–65 should be screened every three years using the Pap test alone, or every 5 years using a high-risk human papillomavirus (hrHPV) test alone, or every 5 years using the Pap test in combination with a hrHPV test.

Colorectal Cancer Screening

Men and women ages 50–75 should be screened for colorectal cancer based on clinical considerations and an assessment of risk. The following screening stategies are recommended for this age group. Stool Based Tests: guaiac-based fecal occult blood test or fecal immunochemical test (FIT) every year; or multi-targeted stool DNA test every 1 or 3 years. Direct Visualization Tests: colonoscopy every 10 years; or CT colonography/flexible sigmoidoscopy every 5 years; or flexible sigmoidiscopy every 10 years plus FIT every year.[41]

SCREENING PREVALENCE

Healthy People 2020 set national objectives of 81.1% for breast and 93.0% for cervical cancer screening. Connecticut participated in the National Colorectal Cancer Roundtable's *80% by 2018 Campaign*; Connecticut's benchmark was therefore set at 80.0% for colorectal cancer screening. Using data from the National Cancer Institute's State Cancer Profiles, a comparison of screening rates shows that Connecticut ranks high among all states; Connecticut ranks second for breast cancer screening, sixth for colorectal cancer screening, and seventh for cervical cancer screening.[42] Connecticut cancer screening rates are consistently higher than the national rates; yet these higher rates of screening are not shared equally among all Connecticut residents.

Breast cancer screening prevalence is measured by percentage of women 50–74 years old who had a mammogram in the past two years. Cervical cancer screening prevalence is measured by percentage of women 21–65 years old who had a Pap test in the last three years. Colorectal cancer screening prevalence is measured by percentage of adults 50–75 years old who met United States Preventive Services Task Force (USPSTF) recommendations for colorectal cancer.

Figure 4.36 shows differences in screening prevalence across racial/ethnic groups. Interestingly, consistent differences between groups are not apparent. There are no significant differences among the different racial/ethnic groups for breast and cervical cancer screening. Hispanic residents have lower colorectal screening rates when compared to non-Hispanic White and non-Hispanic Black residents.

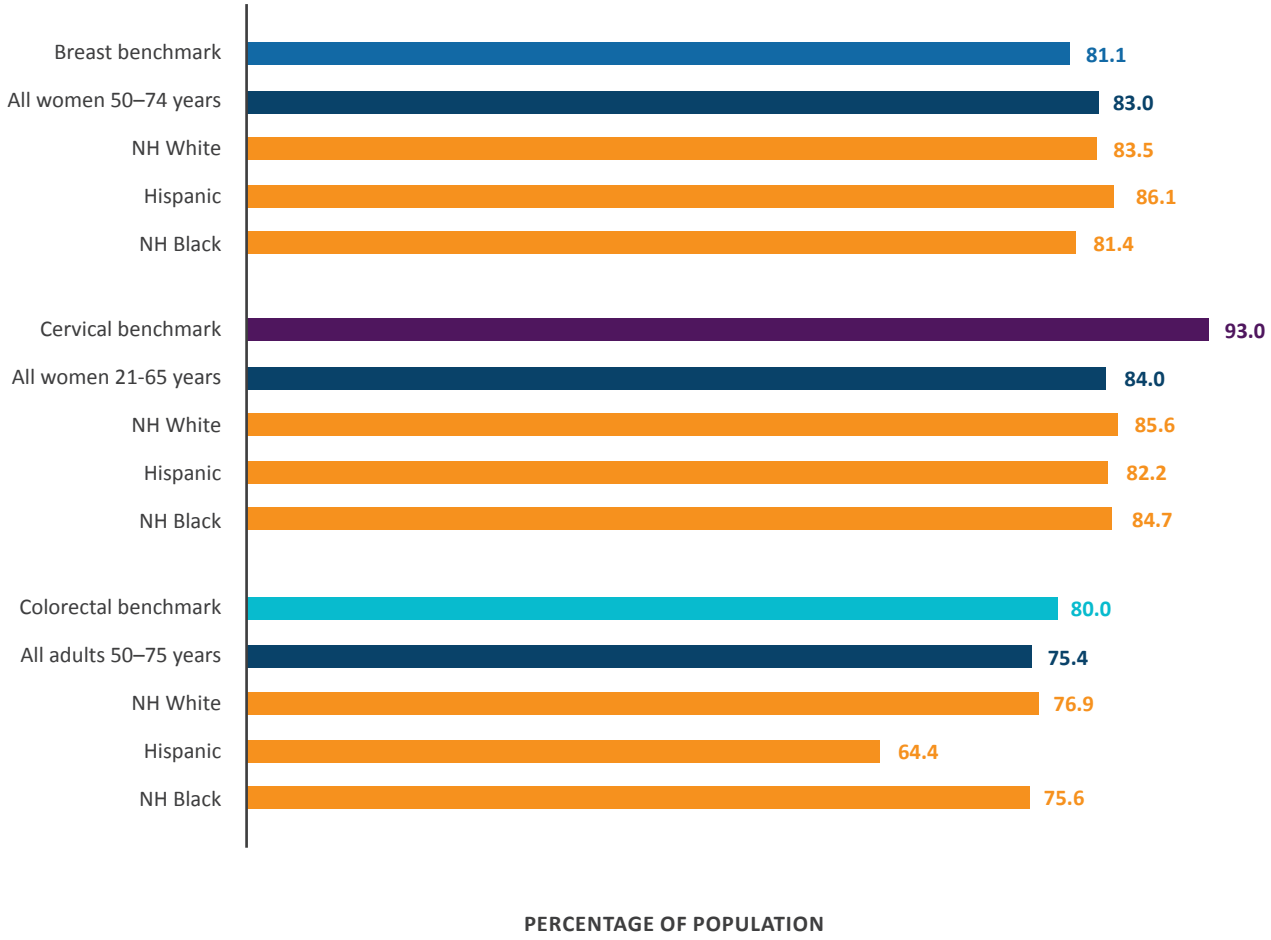
By contrast, when we look at screening prevalence by annual household income, we see that as income increases, the likelihood of screening across all three cancer types increases as well (**Figure 4.37**).

From the aforementioned graphs, we see that income is a predictor of screening behavior, more so than race/ethnicity. Therefore, connecting more low-income populations to cancer screening resources is important to reduce cancer screening disparities.

Addressing disparities in screening behaviors is critical. Populations who are less likely to be screened and thus discover cancer at later stages are more likely to be diagnosed with and die from one of these cancers or incur the need for extensive treatment that can cause substantial side effects and long-term health issues. While income is typically not a category collected with cancer incidence and cancer mortality data, it may be an important link to better understand the connection between cancer screening behaviors and cancer morbidity, mortality, and survival. Collecting income data in connection with cancer outcomes moving forward may be critical to advance health equity in cancer outcomes.

> "[…] I think lots of people die early because […] they have self-neglect, that they don't feel positive about themselves and so they just feel like oh well I should be sick and it's ok and I'm not gonna go to the doctor, and they end up getting cancer or whatever kind of disease and end up passing away."
>
> **— STATE HEALTH ASSESSMENT FOCUS GROUP,**
> LGBTQ AGING ADULTS

FIGURE 4.36: Prevalence of cancer screening (breast, cervical and colorectal) by race/ethnicity, CT, 2018



Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

BREAST CANCER INCIDENCE AND MORTALITY

Breast cancer is the most commonly diagnosed cancer in women in Connecticut, accounting for one in three of all new cancer diagnoses. It is also the second leading cause of cancer death among women in our state, accounting for almost one in seven of all cancer deaths.

Risk factors for developing breast cancer include: getting older; being of white race; having a personal or family history of breast cancer; drinking alcohol; being overweight/obese after menopause; hormonal factors (early menarche and/or late menopause, not having children/having children after age 30, not breastfeeding, postmenopausal hormone therapy); and, having inherited gene mutations (especially BRCA1 and BRCA2).

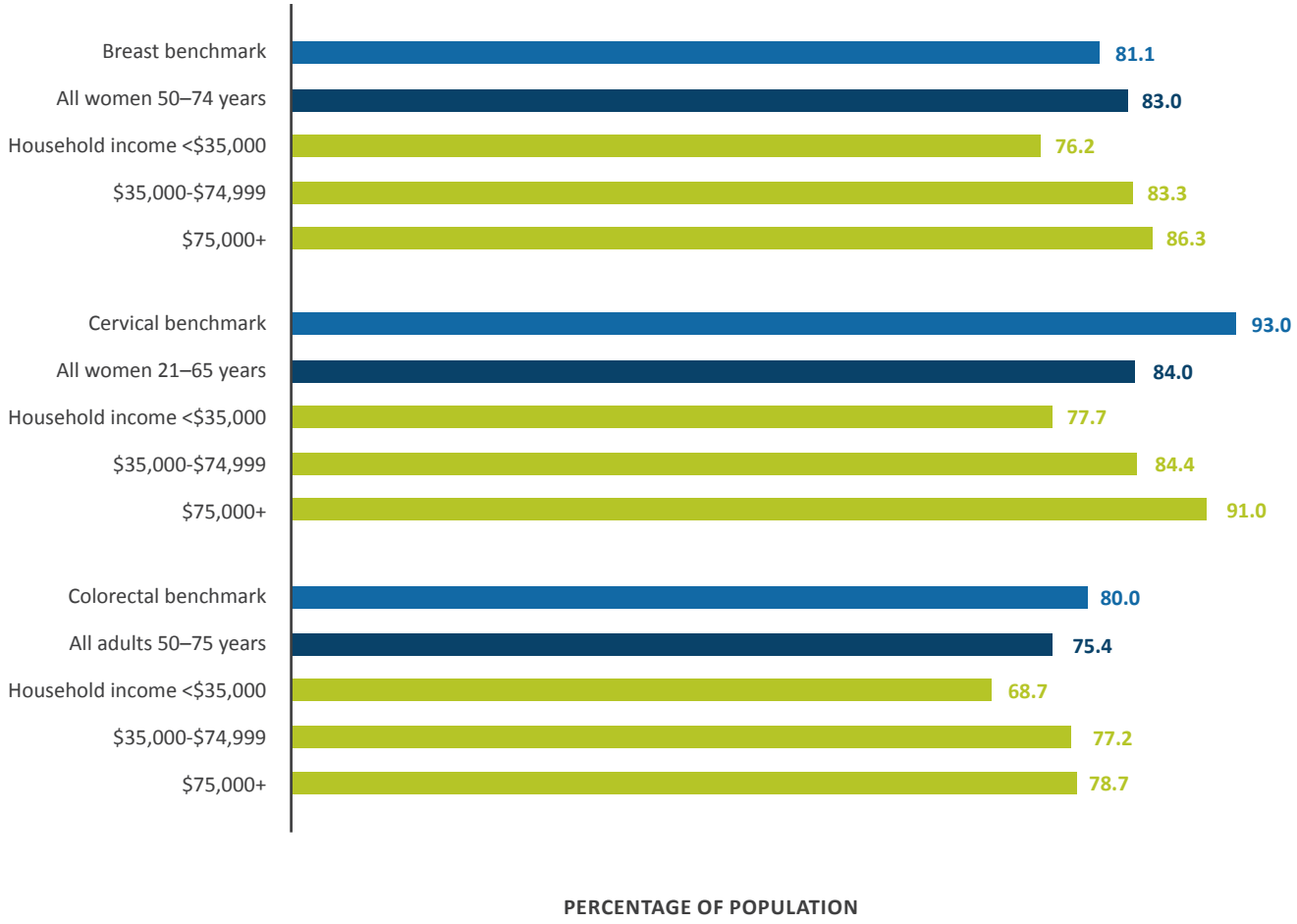
Breast cancer can be detected early by mammography screening, when cancer treatment is more effective. In order to reduce breast cancer-related mortality, it is imperative to reduce barriers that prevent access to mammographic screening and high-quality cancer diagnostic and treatment services, while also increasing women's awareness of modifiable factors that increase the risk of developing or dying from breast cancer (e.g., drinking alcohol, not being physically active, etc.).

PROGRAM SPOTLIGHT: CONNECTICUT EARLY DETECTION AND PREVENTION PROGRAM (CEDPP)

This program integrates the Connecticut Breast and Cervical Cancer program and WISEWOMAN program to provide a comprehensive screening program available throughout Connecticut for medically underserved women. The primary objective of the program is to significantly increase the number of women who receive cardiovascular, breast and cervical cancer screenings, and diagnostic and treatment referral services. All services are offered free of charge through CT DPH's contracted healthcare providers located statewide.

The WISEWOMAN program incorporates cardiovascular disease screening and intervention services into the healthcare delivery system of the current CT DPH Breast and Cervical Cancer Early Detection Program contracted healthcare provider sites. Using a network of navigators and community health workers, CEDPP is able to reach and provide service to rarely or never screened women where they live, learn, work and play. Additionally, CEDPP supports health system changes by implementing evidence-based interventions to increase quality screening and monitoring clinic screening rates for heart diseases, breast and cervical cancers.

FIGURE 4.37: Prevalence of cancer screening (breast, cervical, and colorectal) by household income, CT, 2018



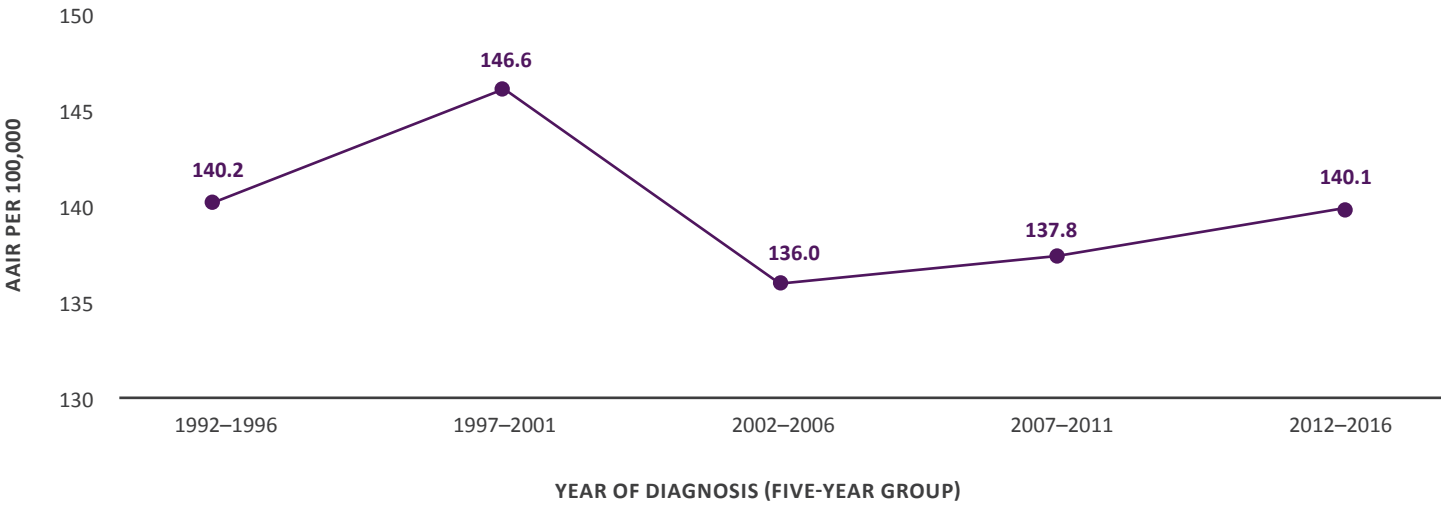
Source: *CT DPH Chronic Disease Epidemiology Unit, Connecticut Behavioral Risk Factor Surveillance System. Data analyzed November 12, 2019.*

Breast Cancer Incidence

Female breast cancer incidence rates have fluctuated over the past 20 years, increasing in the 1990s, falling during the early 2000s, and gradually increasing from the mid-2000s with an average annual increase of 0.3% over the most recent five years (**Figure 4.38**). In 2016, there were 3,260 new breast cancers diagnosed in women, with 139 breast cancer cases reported for every 100,000 women. More than two out of three breast cancers were diagnosed at a localized stage, where the cancer has not spread beyond the site of origin. These rates are impacted by the distribution of underlying risk factors and the use of mammography screening.

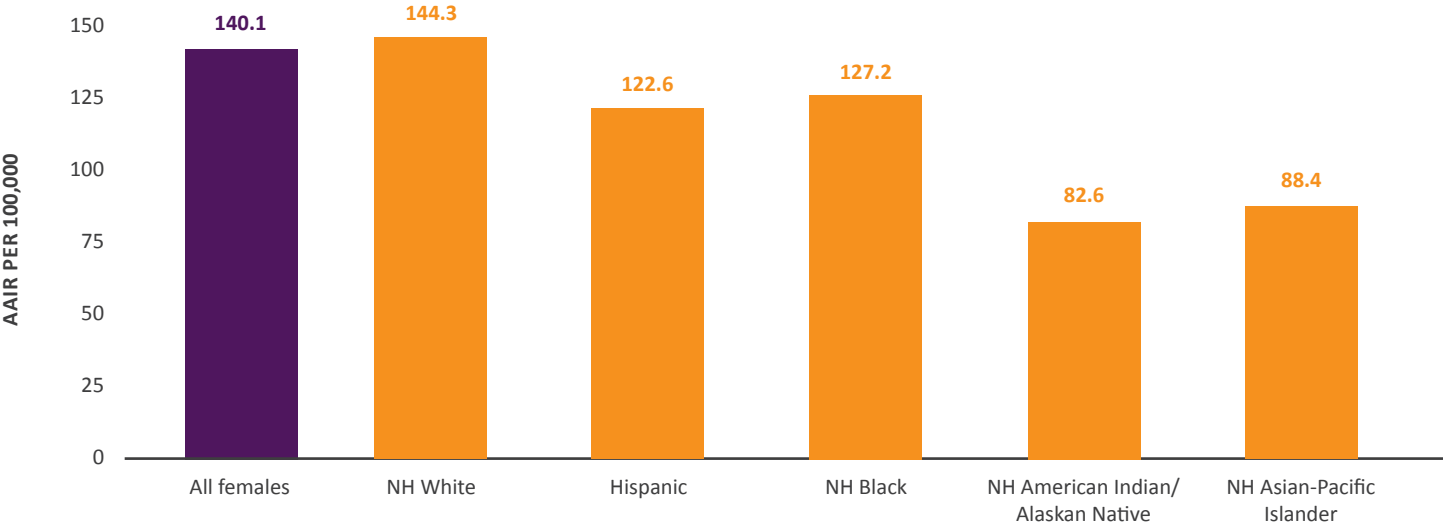
Breast cancer incidence rates vary between women of different races and ethnicities. The incidence rate of breast cancer is higher in non-Hispanic White women than in any other racial/ethnic group (**Figure 4.39**).

FIGURE 4.38: Female breast cancer age-adjusted incidence rates (AAIR) by year of diagnosis, CT, 1992–2016



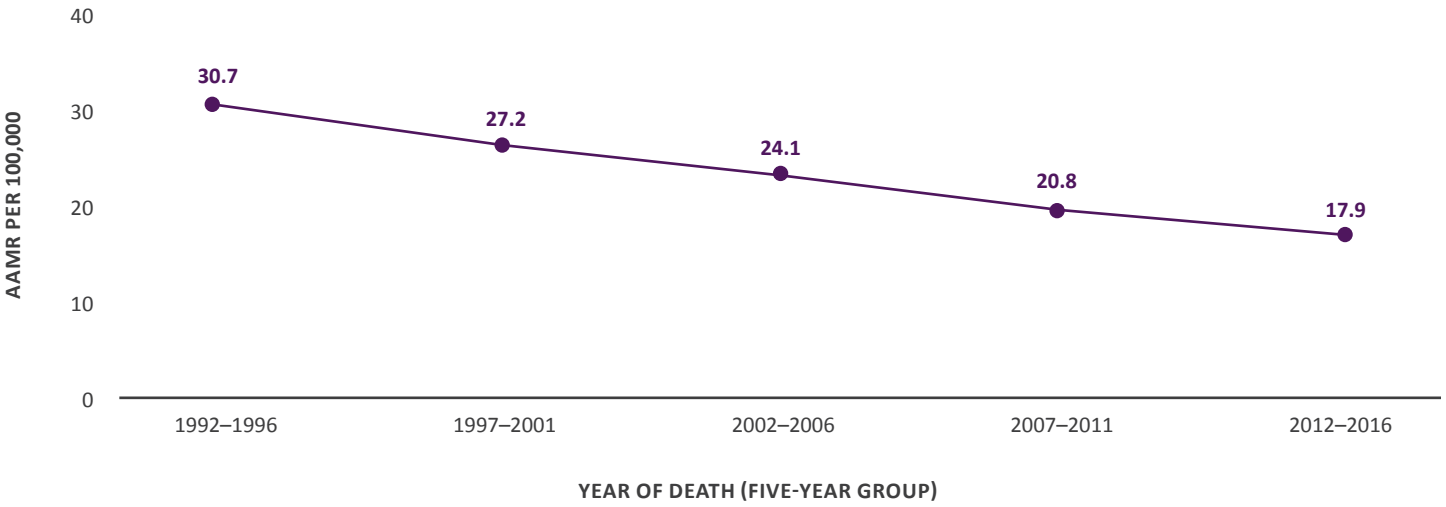
Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.39: Female breast cancer age-adjusted incidence rates (AAIR) by race/ethnicity, CT, 2012–2016



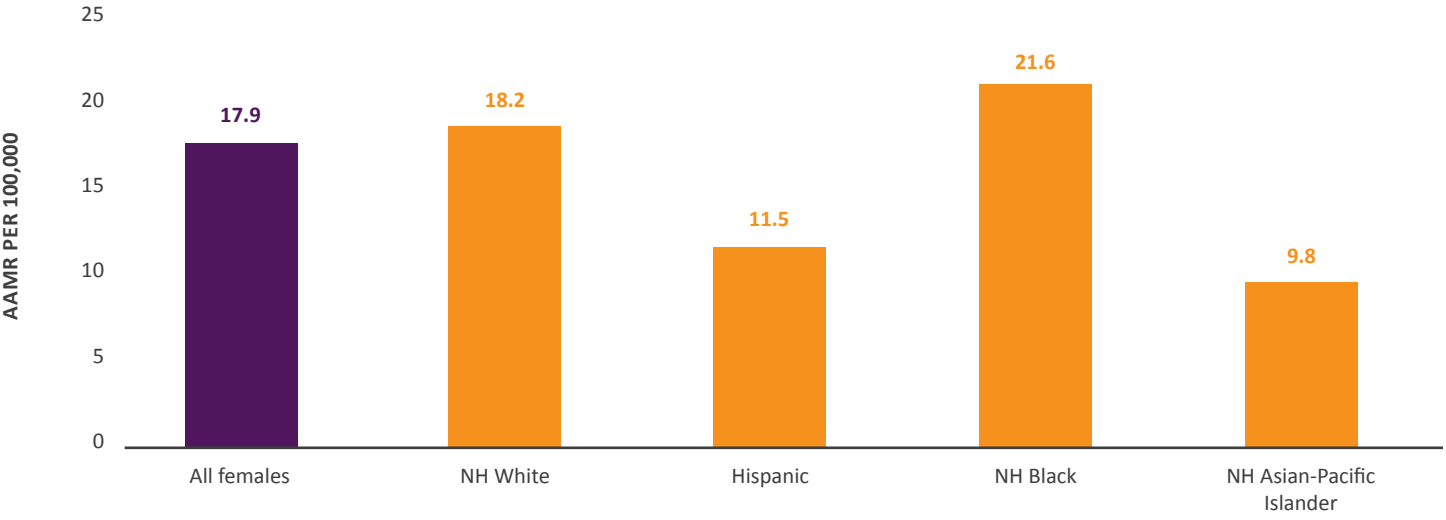
*Source: National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.40: Female breast cancer age-adjusted mortality rates (AAMR) by year of death, CT, 1992–2016



Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.41: Female breast cancer age-adjusted mortality rates (AAMR) by race/ethnicity, CT, 2012–2016



*Source: National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

Breast Cancer Mortality

Female breast cancer mortality rates have fallen steadily over the past twenty years, with an average annual decrease in rate of 3% per year over the most recent five years (**Figure 4.40**). The decrease is due in large part to improvements in breast cancer treatment and to screening mammography. There were 465 breast cancer deaths in women in Connecticut in 2016; for every 100,000 women, 18 breast cancer deaths were reported.

As with breast cancer incidence, breast cancer mortality rates vary between women of different races and ethnicities. The breast cancer mortality rate is higher in non-Hispanic Black and non-Hispanic White women than in Hispanic or non-Hispanic Asian/Pacific Islander women (**Figure 4.41**). Disparities in breast cancer incidence and mortality arise due to a number of clinical and non-clinical factors including: lack of or unequal access to health insurance and/or high-quality medical care; more advanced stage at diagnosis in minority women; more aggressive tumor biology in minority women; and, differences in socioeconomic status.

CERVICAL CANCER INCIDENCE AND MORTALITY

Cervical cancer is the 15th most commonly diagnosed cancer and the 17th leading cause of cancer death in women in Connecticut, accounting for around one in ninety of all new cancer diagnoses and one in one hundred of all cancer deaths.

Risk factors for developing cervical cancer include: infection by human papillomavirus (HPV); in utero exposure to diethylstilbestrol (DES); giving birth to many children; long-term oral contraceptive use; smoking cigarettes; having a weakened immune system (e.g., due to HIV); and, having several sexual partners.

More than 90% of cervical cancers are attributable to HPV infection. Vaccination against HPV will prevent these cancers from developing. The Connecticut Vaccine Program (CVP), which is state and federally funded, was expanded in November 2017 to include the HPV vaccine free of charge for all children 11 and 12 years of age in Connecticut. Also, CT DPH is working with the Connecticut Emerging Infections Program at Yale University to participate in the CDC-funded HPV Impact Study, which aims to monitor the impact of HPV vaccination in the state through population-based tracking of high-grade cervical lesions, which are pre-invasive precursors to cervical cancer.

Cervical cancer can be detected early, when cancer treatment is more effective, by screening with the Pap test (Pap smear). As with breast cancer, it is imperative to reduce barriers that prevent access to cervical cancer screening and to high quality cancer diagnostic treatment services; improve women's awareness of modifiable factors that increase the risk of developing or dying from cervical cancer including HPV infection, long-term oral contraceptive use, smoking cigarettes, and having several sexual partners; and, improve awareness of the importance of HPV vaccination and reducing access barriers.

Yet, disparities in cervical cancer incidence and mortality arise due to a number of clinical and non-clinical factors including: lack of or unequal access to health insurance and/or high-quality medical care; more advanced stage at diagnosis in minority women; and, differences in socioeconomic status. Also, disparities in HPV vaccination rates adversely affect the prevention of HPV-related cancers such as cervical cancers.

Cervical Cancer Incidence

Cervical cancer incidence rates have fallen over the past 20 years, with an average annual decrease per year of almost 2% over the most recent five-year period (**Figure 4.42**). These rates are impacted by the distribution of underlying risk factors as well as the use of cervical cancer screening. There were 115 new cervical cancers diagnosed in women in Connecticut in 2016; for every 100,000 women, 6 cervical cancer cases were reported. Around half of all cervical cancers were diagnosed at a localized stage, where the cancer has not spread beyond the site of origin.

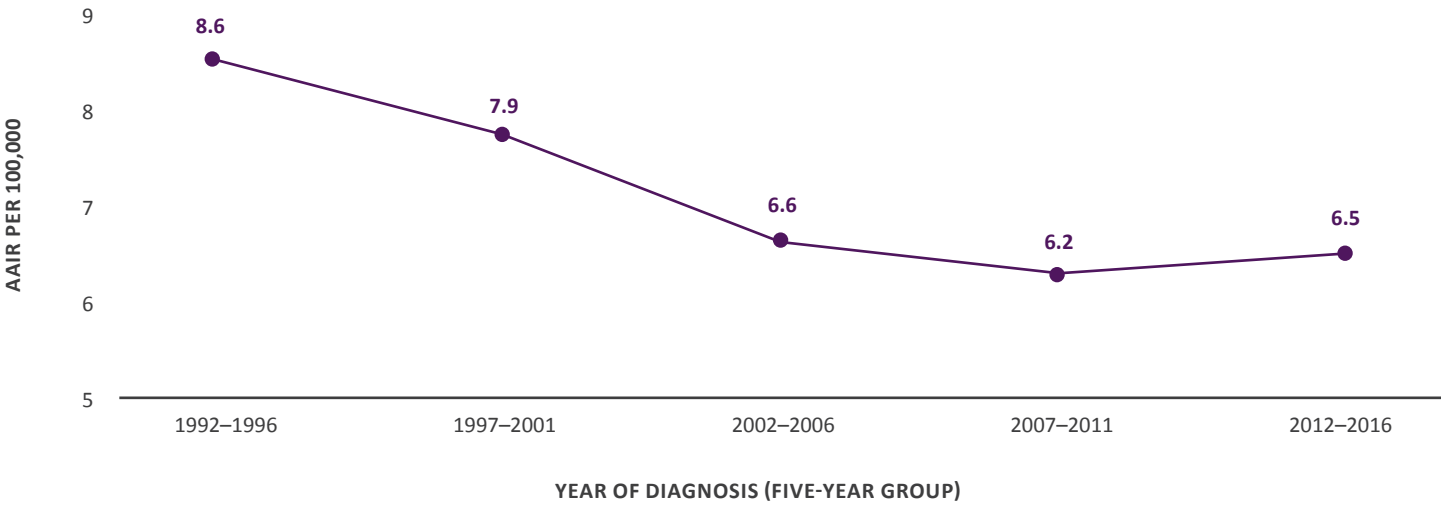
Cervical cancer incidence rates vary between women of different races and ethnicities. The incidence rate of cervical cancer is higher in Hispanic women than in non-Hispanic White and non-Hispanic Asian/Pacific Islander women (**Figure 4.43**).

Cervical Cancer Mortality

Cervical cancer mortality rates have fallen steadily over the past twenty years with an average annual decrease per year of 2% over the most recent five-year period (**Figure 4.44**). The decrease is due in large part to cervical cancer screening and to improvements in cervical cancer treatment. There were 34 cervical cancer deaths in women in Connecticut in 2016; for every 100,000 women, 1 cervical cancer death was reported.

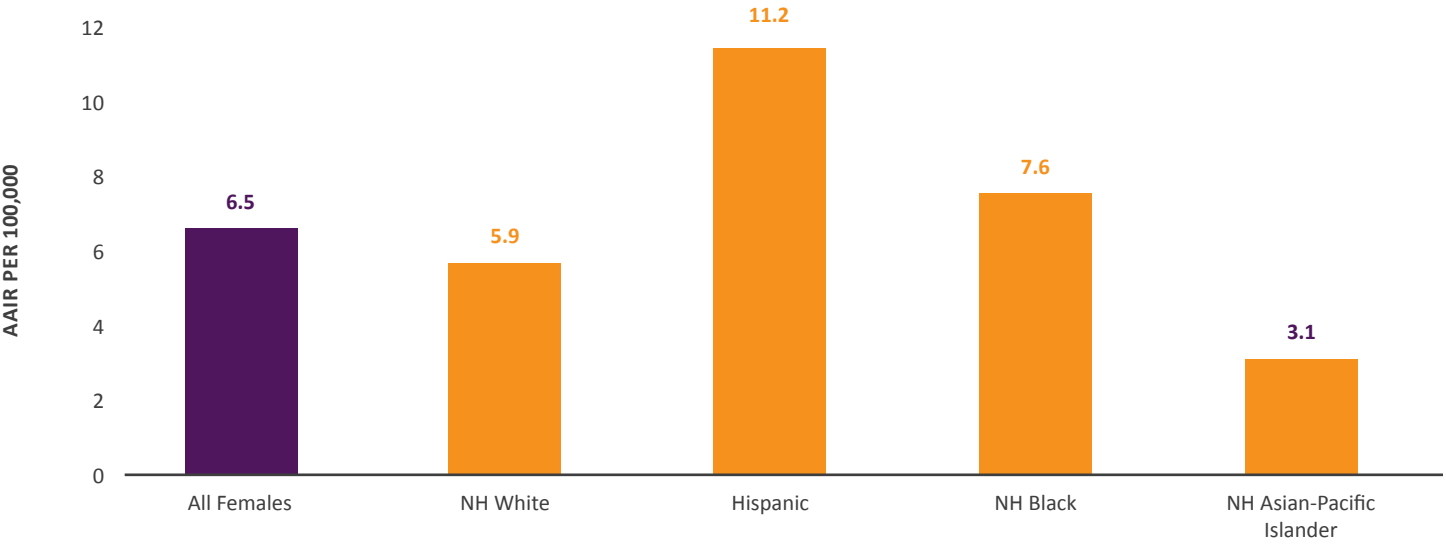
Cervical cancer mortality rates vary between women of different races and ethnicities (**Figure 4.45**). However, these differences are not significantly different at the 95% confidence level.

FIGURE 4.42: Cervical cancer age-adjusted incidence rates (AAIR) by year of diagnosis, CT, 1992–2016



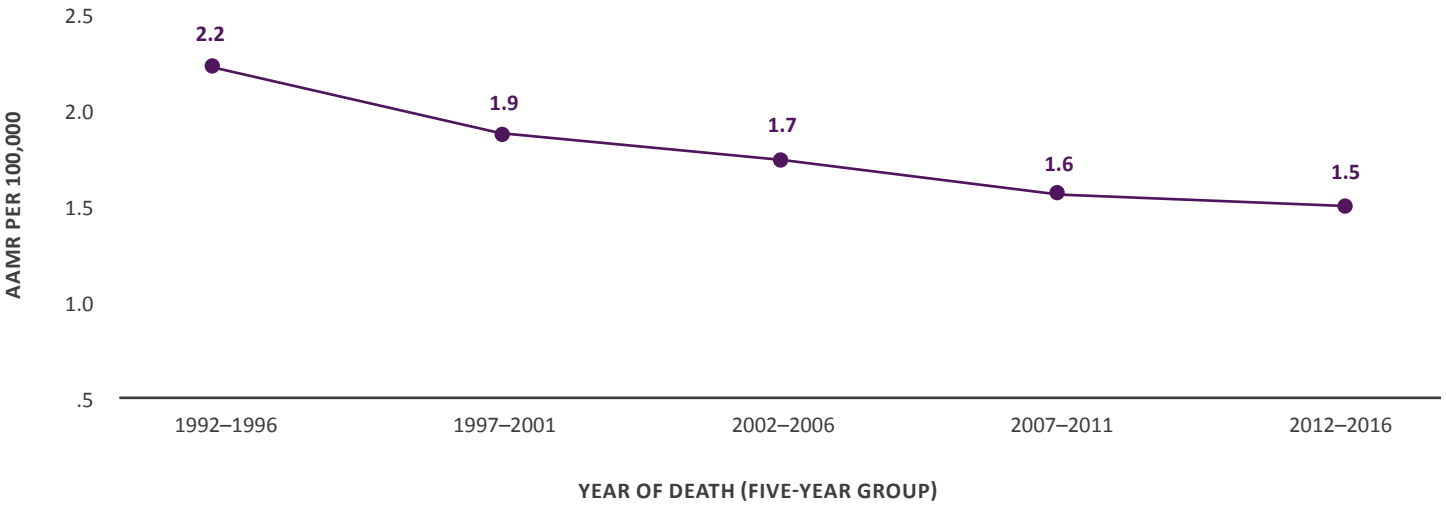
Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.43: Cervical cancer age-adjusted incidence rates (AAIR) by race/ethnicity, CT, 2012–2016



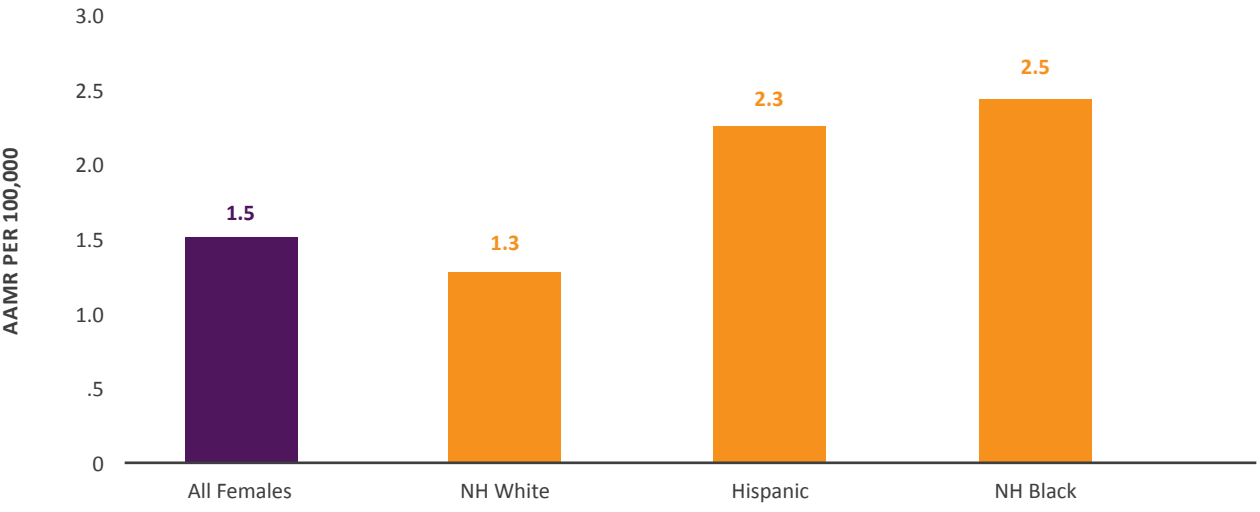
*Source: National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.44: Cervical cancer age-adjusted mortality rates (AAMR) by year of death, CT, 1992–2016



Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.45: Cervical cancer age-adjusted mortality rates (AAMR) by race/ethnicity, CT, 2012–2016



*Source: National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

LUNG CANCER INCIDENCE AND MORTALITY

Lung cancer is the second most commonly diagnosed cancer in men and women in Connecticut, accounting for almost one in eight of all new cancer diagnoses. It is also the leading cause of cancer death in men and women in Connecticut, accounting for over one fourth of all cancer deaths.

Risk factors for developing lung cancer include: tobacco use; exposure to secondhand smoke; exposure to radon; having a personal or family history of lung cancer; and workplace exposures to asbestos and other cancer-causing agents (arsenic, chromium, nickel, beryllium, cadmium and radioactive uranium).

Lung cancer screening can detect lung cancer early in certain high-risk individuals, when cancer treatment is more effective. Screening by low-dose spiral computed tomography (CT) scan has been shown to reduce lung cancer mortality in heavy smokers (current or former smokers aged 55 to 80 years with a 30 or more pack per year history of smoking).

Disparities in lung cancer incidence and mortality arise due to a number of clinical and non-clinical factors including: lack of or unequal access to health insurance and/or high-quality medical care; unequal access to tobacco cessation services; more advanced stage at diagnosis in minority men and women; and, differences in socioeconomic status. Lung cancer incidence and mortality rates closely reflect historic patterns of tobacco use.

To reduce disparities, it is essential to remove barriers that prevent access to tobacco cessation services and to high quality cancer diagnostic and treatment services and improve men and women's awareness of factors that increase the risk of developing or dying from lung cancer including: using tobacco; secondhand smoke exposure; exposure to radon; and, workplace exposures to asbestos and other lung cancer-causing agents.

Lung Cancer Incidence

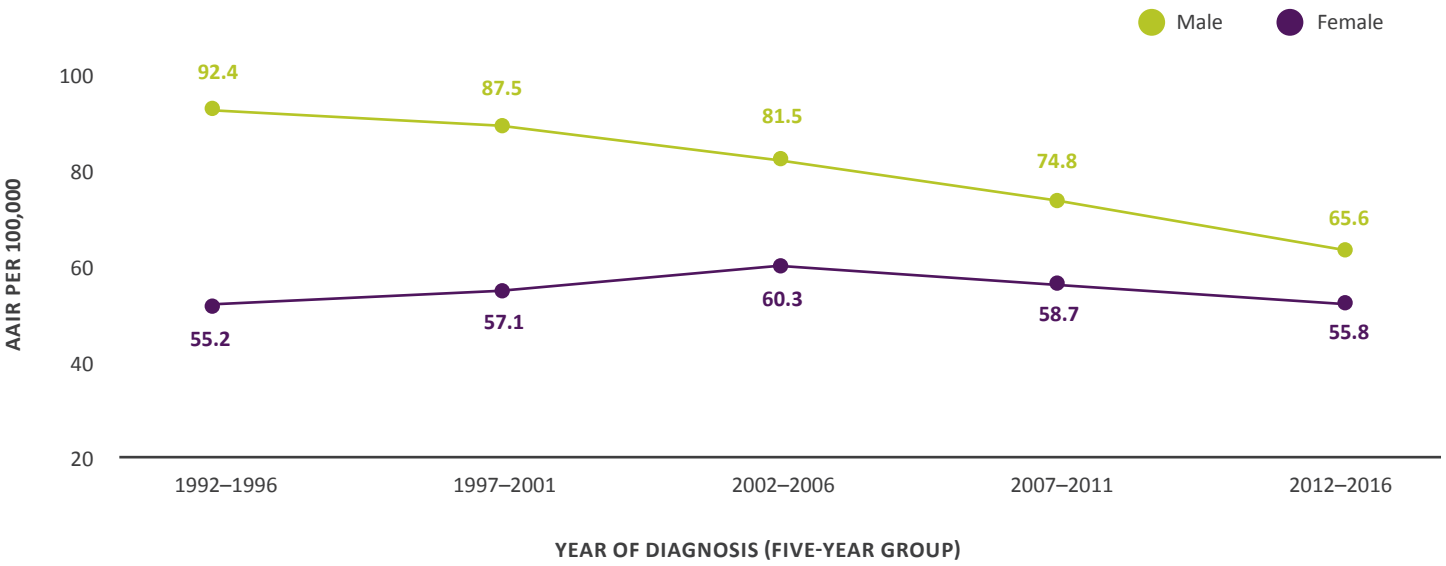
Lung cancer incidence rates have fallen over the past 20 years in men in Connecticut, with an average annual decrease per year of 2% over the most recent five years. In women, incidence rates were increasing until the mid-2000s and have subsequently been falling, with an average annual decrease per year of 1% over the most recent five years (**Figure 4.46**). These rates reflect historical patterns of tobacco use and cessation.

There were 1,411 new lung cancers diagnosed in women in Connecticut in 2016; for every 100,000 women, 55 lung cancer cases were reported. For men, there were 1,313 new lung cancers diagnosed in Connecticut in 2016; for every 100,000 men, 64 lung cancer cases were reported. Only one in four lung cancers were diagnosed at a localized stage, where the cancer has not spread beyond the site of origin.

PROGRAM SPOTLIGHT: CT DPH TOBACCO CONTROL PROGRAM

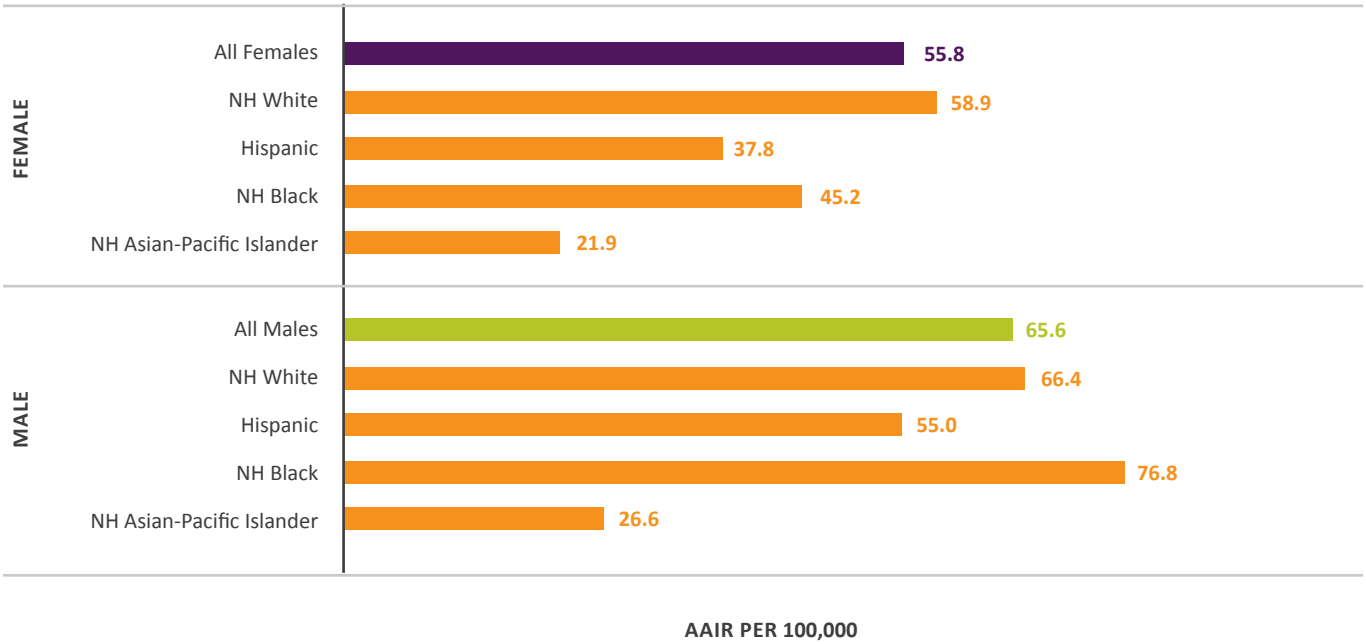
This program coordinates and assists state and local efforts to prevent people from starting to use tobacco, help current tobacco users quit and stay quit, and reduce nonsmokers' exposure to second- and third-hand smoke and aerosol.

FIGURE 4.46: Lung and bronchus cancer age-adjusted incidence rates (AAIR) by sex and year of diagnosis, CT, 1992–2016



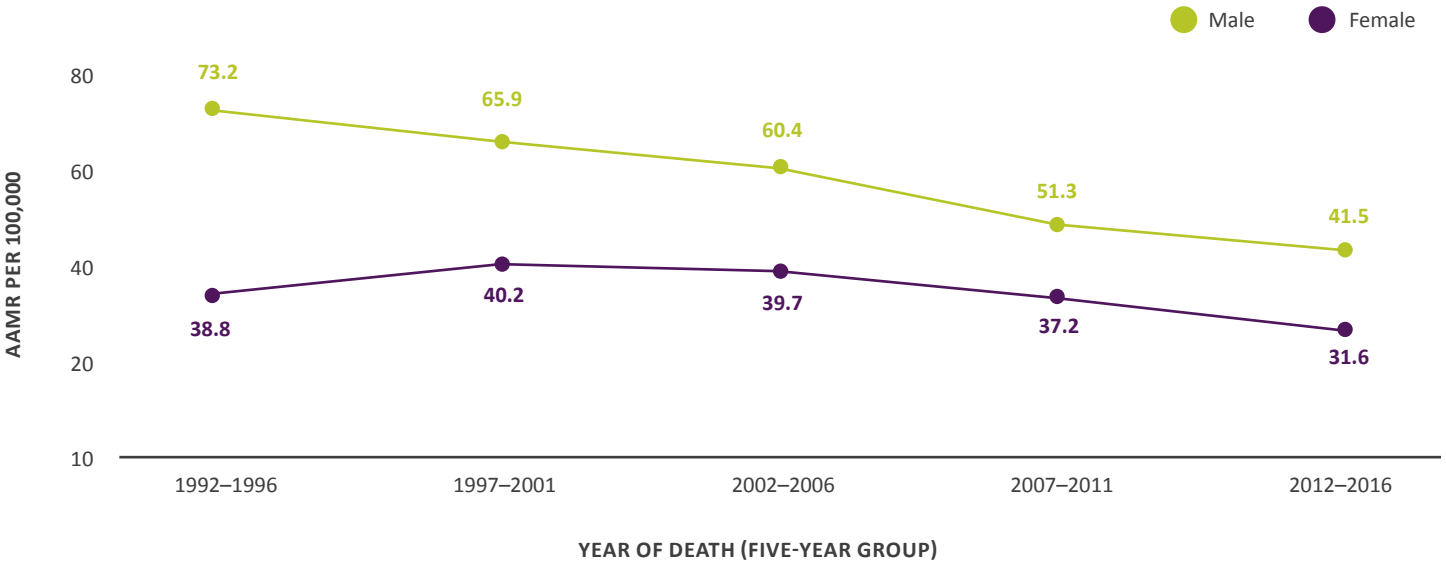
Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.47: Lung and bronchus cancer age-adjusted incidence rates (AAIR) by sex and race/ethnicity, CT, 2012–2016



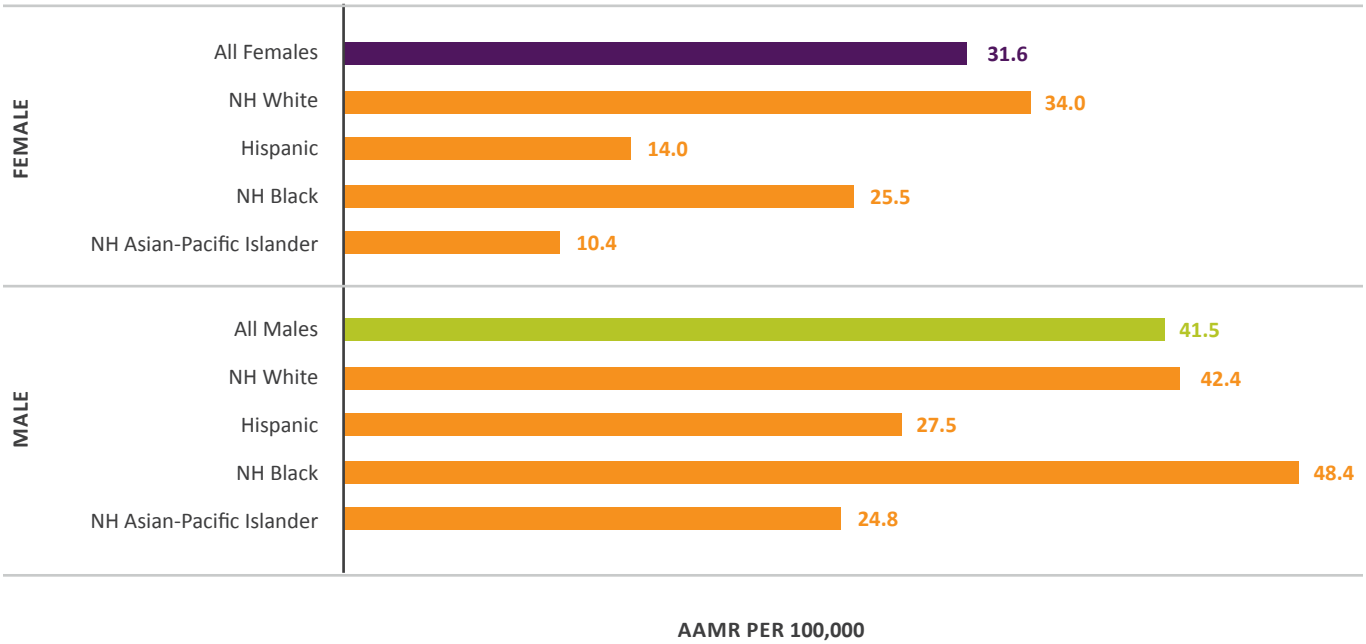
Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.48: Lung and bronchus cancer age-adjusted mortality rates (AAMR) by year of death, CT, 1992–2016



Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.49: Lung and bronchus cancer age-adjusted mortality rates (AAMR) by sex and race/ethnicity, CT, 2012–2016



Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

Lung cancer incidence rates vary between women and men of different races and ethnicities (**Figure 4.47**). Among women, the incidence rate of lung cancer is higher in non-Hispanic White women than in other racial/ethnic groups and is lower in non-Hispanic Asian/Pacific Islander women than in other racial/ethnic groups. Among men, the incidence rate of lung cancer is higher in non-Hispanic Black men than in other racial/ethnic groups and is lower in non-Hispanic Asian/Pacific Islander men than in other racial/ethnic groups.

Lung Cancer Mortality

Lung cancer mortality rates have fallen steadily over the past twenty years in Connecticut men, with an average annual decrease in rate per year of 4% over the most recent five years (**Figure 4.48**). In women, mortality rates were steady from the 1990s through the mid-2000s and have been falling since, with an average annual decrease in rate of 3% for the most recent five years. The decrease is due in large part to changes in patterns of tobacco use and cessation, and to improvements in lung cancer treatment.

There were 786 lung cancer deaths in women in Connecticut in 2016; for every 100,000 women, 30 lung cancer deaths were reported. Similarly, there were 786 lung cancer deaths in men in Connecticut in 2016; for every 100,000 men, 39 lung cancer deaths were reported.

Lung cancer mortality rates vary between women and men of different races and ethnicities (**Figure 4.49**). In women, the lung cancer mortality rate is higher in non-Hispanic White women than in any other racial/ethnic group and is higher in non-Hispanic Black women than in Hispanic women and Asian/Pacific Islander women. Among men, the mortality rate of lung cancer is higher in non-Hispanic Black men and non-Hispanic White men than in Asian/Pacific Islander men or Hispanic men.

COLORECTAL CANCER INCIDENCE AND MORTALITY

Colorectal cancer is the fourth most commonly diagnosed cancer in men and women in Connecticut, accounting for almost one in thirteen of all new cancer diagnoses. It is also the third leading cause of cancer death in men and women in Connecticut, accounting for more than one in thirteen of all cancer deaths.

Risk factors for developing colorectal cancer include: getting older; being of African American race; having a personal or family history of colorectal cancer; drinking alcohol; smoking tobacco; being overweight/obese; being physically inactive; having a diet high in red or processed meats and/or low in fiber; and, having certain genetic syndromes — familial adenomatous polyposis (FAP) or hereditary non-polyposis colorectal cancer (Lynch syndrome).

Colorectal cancer screening can detect colorectal cancer early, when cancer treatment is more effective. In addition, certain screening methods can prevent colorectal cancer from developing through the detection and removal of pre-cancerous polyps. Screening methods include stool tests (fecal immunochemical tests FIT and FIT-DNA, and fecal occult blood test), flexible sigmoidoscopy, colonoscopy and CT colonography.

Disparities in colorectal cancer incidence and mortality arise due to a number of clinical and non-clinical factors including: lack of or unequal access to health insurance and/or high-quality medical care; more advanced stage at diagnosis in minority men and women; variation in anatomic subsite of origin; and, differences in socioeconomic status. To address these disparities, it is essential to reduce barriers that prevent access to high quality cancer diagnostic and treatment services and improve men and women's awareness of factors that increase the risk of developing or dying from colorectal cancer including: drinking alcohol; using tobacco; having a diet high in red or processed meats and low in fiber; not being physically active; and, being overweight or obese.

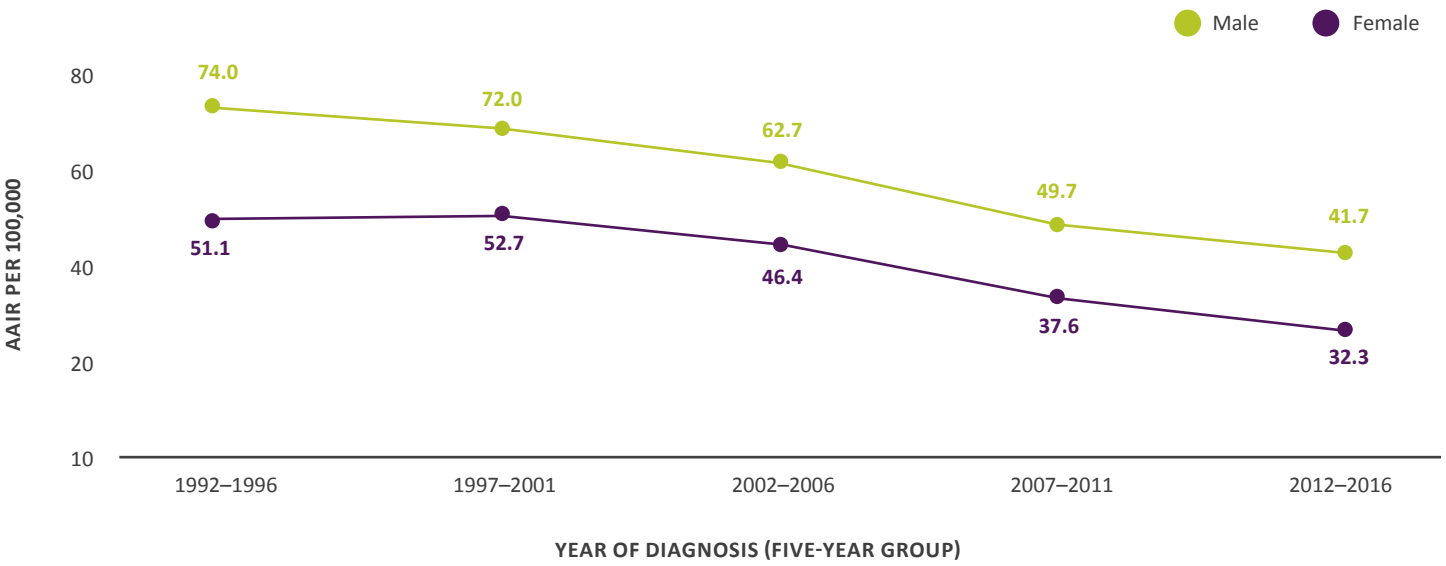
Colorectal Cancer Incidence

Colorectal cancer incidence rates have fallen over the past 20 years in both men and women in Connecticut, with an average annual decrease per year of 4% in women and men over the most recent five years (**Figure 4.50**). These rates are impacted by the distribution of underlying risk factors as well as the use of colorectal cancer screening.

There were 750 new colorectal cancers diagnosed in women in Connecticut in 2016; for every 100,000 women, 30 colorectal cancer cases were reported. Also, there were 845 new colorectal cancers diagnosed in men in Connecticut in 2016; for every 100,000 men, 42 colorectal cancer cases were reported. More than two out of five colorectal cancers were diagnosed at a localized stage, where the cancer has not spread beyond the site of origin.

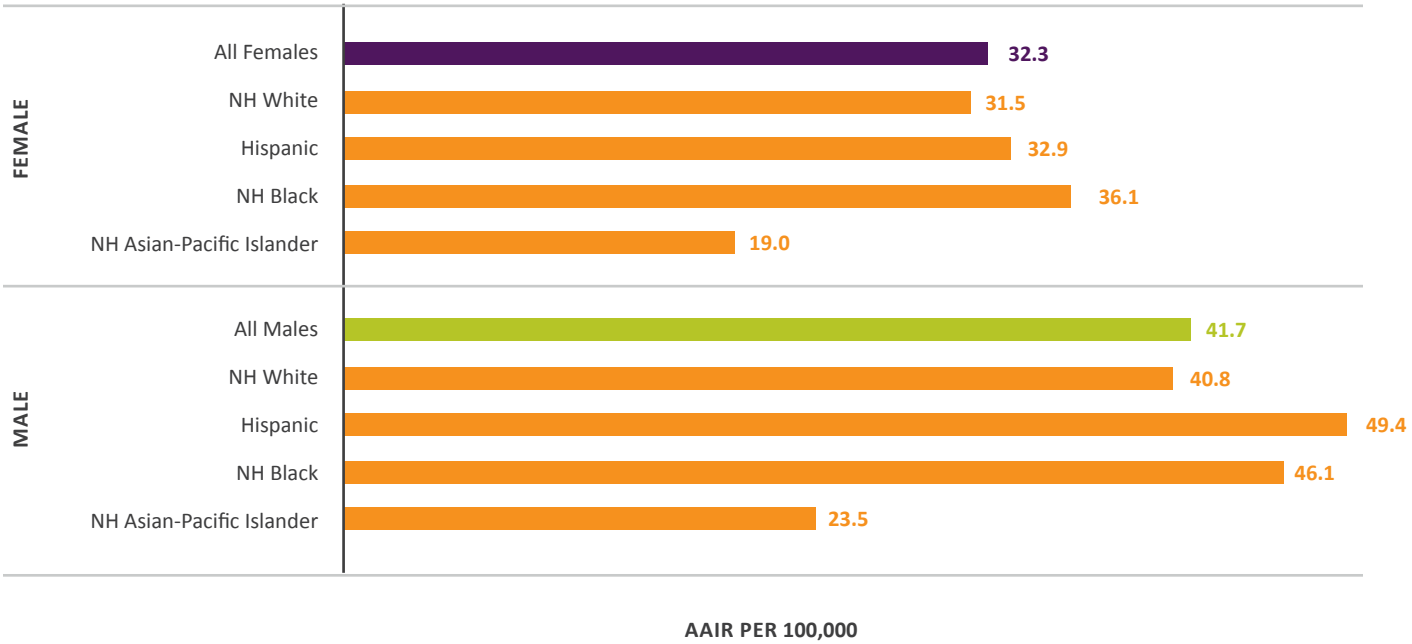
Colorectal cancer incidence rates vary between women and men of different races and ethnicities (**Figure 4.51**). In both women and men, the incidence rate of colorectal cancer is lower in non-Hispanic Asian/Pacific Islander individuals than in any other racial/ethnic group.

FIGURE 4.50: Colon and rectum cancer age-adjusted incidence rates (AAIR) by sex and year of diagnosis, CT, 1992–2016



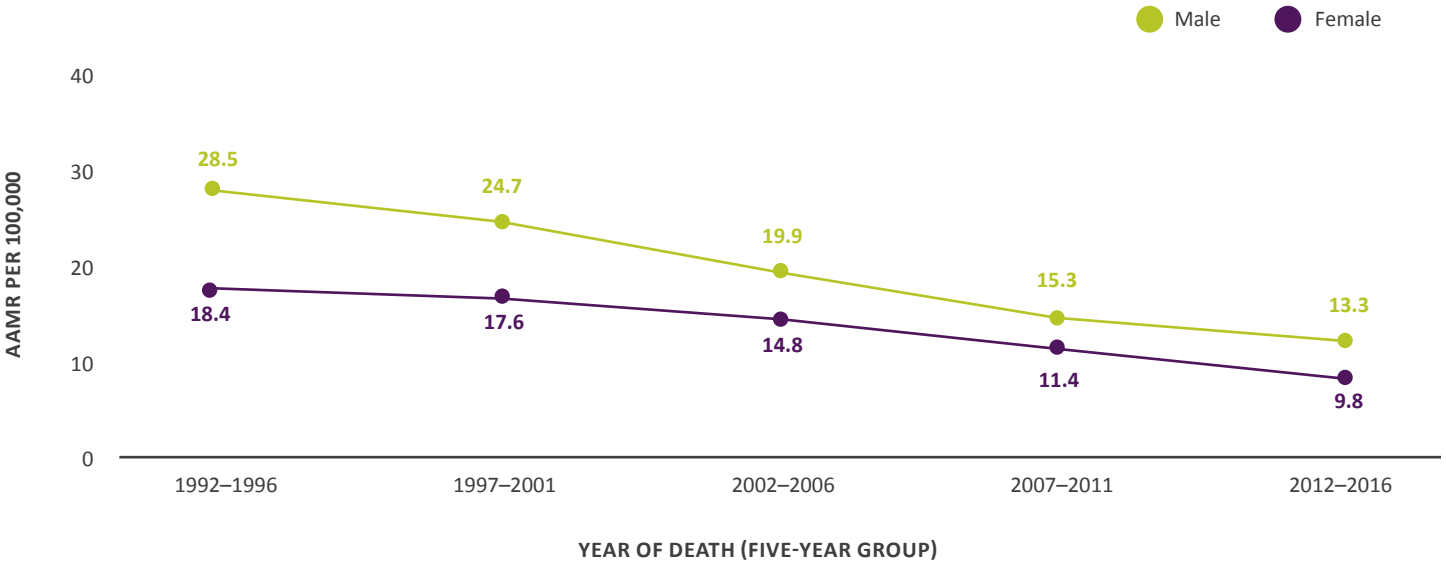
Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.51: Colon & rectum cancer age-adjusted incidence rates (AAIR) by sex and race/ethnicity, CT, 2012–2016



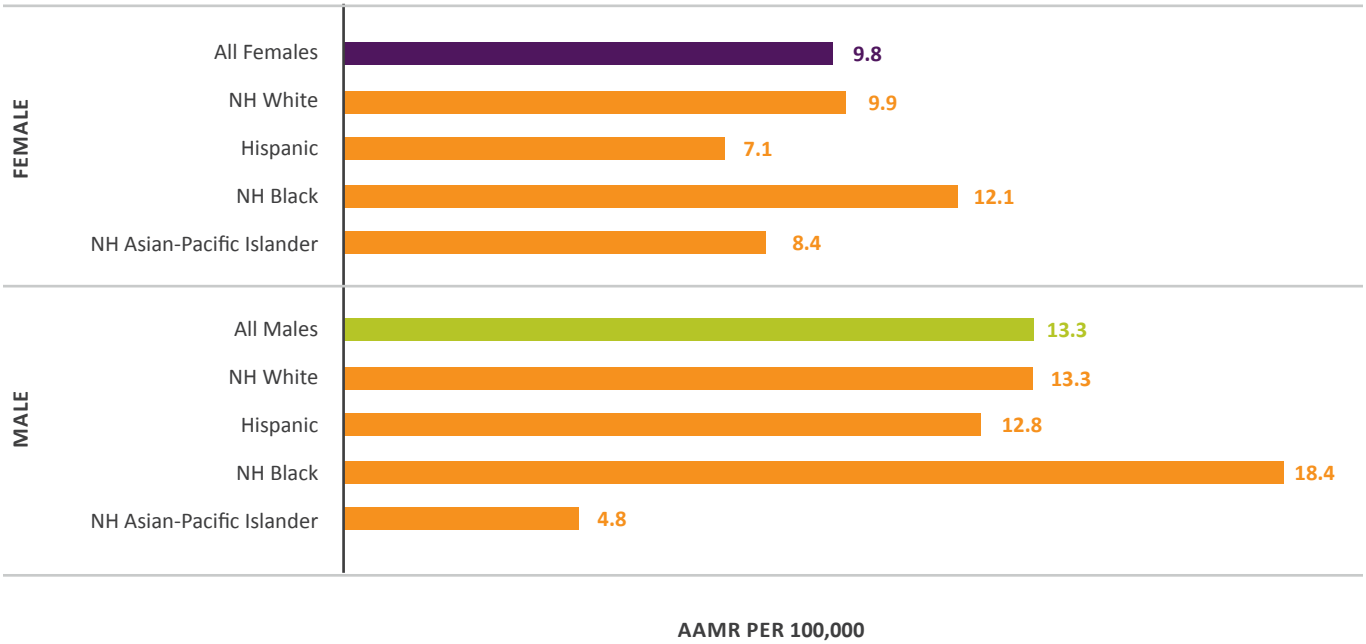
Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.52: Colon and rectum cancer age-adjusted mortality rates (AAMR) by sex and year of death, CT, 1992–2016



Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.53: Colon and rectum cancer age-adjusted mortality rates (AAMR) by sex and race/ethnicity, CT, 2012–2016



Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

Colorectal Cancer Mortality

Colorectal cancer mortality rates have fallen steadily over the past twenty years, with an average annual decrease in rate per year of 4% in women and men over the most recent five years (**Figure 4.52**). The decrease is due in large part to colorectal cancer screening and to improvements in colorectal cancer treatment.

There were 238 colorectal cancer deaths in women in Connecticut in 2016; for every 100,000 women, 9 colorectal cancer deaths were reported. Among men, there were 264 colorectal cancer deaths in Connecticut in 2016; for every 100,000 men, 13 colorectal cancer deaths were reported.

Colorectal cancer mortality rates vary between women of different races and ethnicities (**Figure 4.53**). The colorectal cancer mortality rate is higher in non-Hispanic Black women than in Hispanic women. For men, the mortality rate of colorectal cancer is higher in non-Hispanic Black men than in non-Hispanic White or Asian/Pacific Islander men and is lower in non-Hispanic Asian/Pacific Islander men than in all other racial/ethnic groups.

LIVER CANCER INCIDENCE AND MORTALITY

Liver cancer is the sixteenth most commonly diagnosed cancer in men and women in Connecticut, accounting for one in sixty-four of all new cancer diagnoses. It is also the eighth leading cause of cancer death in men and women in Connecticut, accounting for almost one in thirty of all cancer deaths.

Risk factors for developing liver cancer include: chronic infection with hepatitis B or hepatitis C virus; cirrhosis; heavy alcohol use; eating foods containing aflatoxin B1; nonalcoholic steatohepatitis syndrome; and, smoking cigarettes. There is currently no standard or routine screening test for liver cancer.

Disparities in liver cancer incidence and mortality arise due to a number of clinical and non-clinical factors including: lack of or unequal access to health insurance and/or high-quality medical care; more advanced stage at diagnosis in minority men and women; disparities in the prevalence of risk factors such as chronic viral hepatitis; and, differences in socioeconomic status. To reduce disparities and advance more equitable outcomes, it is imperative to reduce barriers that prevent access to high quality cancer diagnostic and treatment services and improve men and women's awareness of factors that increase the risk of developing or dying from liver cancer.

Liver Cancer Incidence

Liver cancer incidence rates have risen over the past 20 years in both men and women in Connecticut, with an average annual increase per year of 3% in women and men over the most recent five years (**Figure 4.54**). The incidence rate for men consistently has been at least three times as high as the incidence rate for women. These rates are impacted by the distribution of underlying risk factors.

There were 88 new liver cancers diagnosed in women in Connecticut in 2016; for every 100,000 women, 3 liver cancer cases were reported. By contrast, there were 257 new liver cancers diagnosed in men in Connecticut in 2016; for every 100,000 men, 11 liver cancer cases were reported. More than two out of five liver cancers were diagnosed at a localized stage, where the cancer has not spread beyond the site of origin.

Liver cancer incidence rates vary between women and men of different races and ethnicities (**Figure 4.55**). In both women and men, the liver cancer incidence rate is lower in non-Hispanic White individuals than in any other racial/ethnic group.

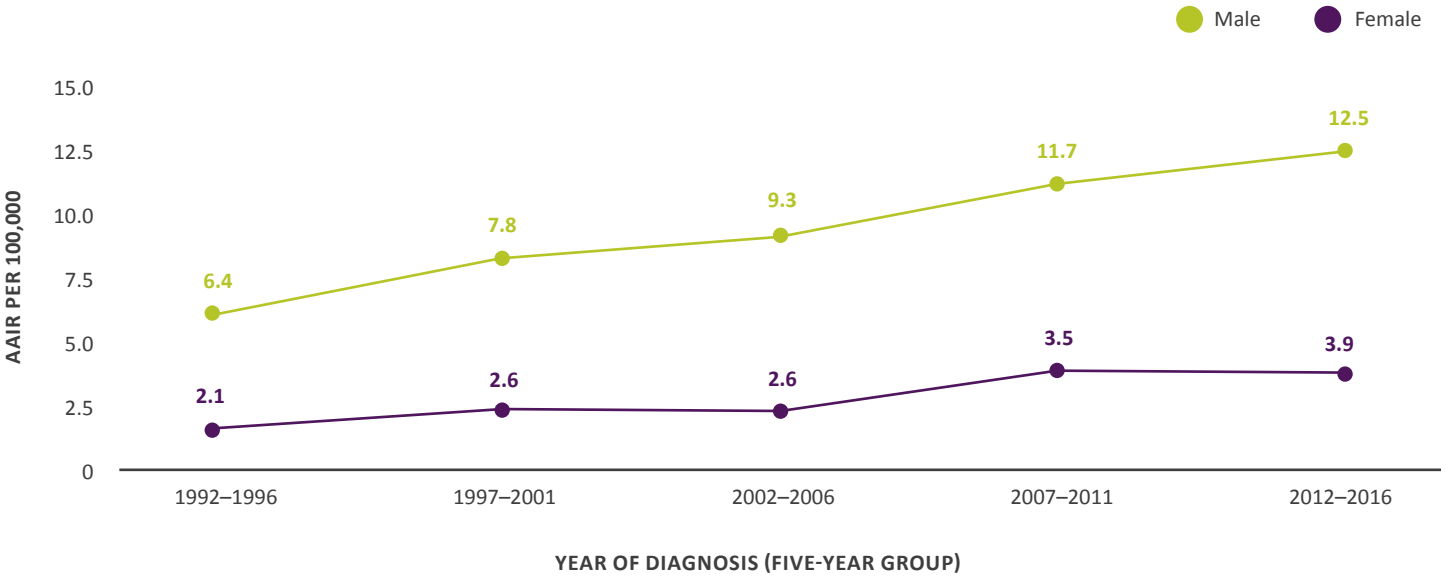
Liver Cancer Mortality

Liver cancer mortality rates have risen over the past twenty years, with an average annual increase in rate per year of 2% in both women and men over the most recent five years. The increase is due in part to changes in the prevalence of underlying risk factors in the population over time. As with the incidence rate, liver cancer mortality rates among men are 2.5 to three times higher than the rate for women (**Figure 4.56**).

There were 84 liver cancer deaths in women in Connecticut in 2016; for every 100,000 women, 3 liver cancer deaths were reported. In contrast, there were 166 liver cancer deaths in men in Connecticut in 2016; for every 100,000 men, 7 liver cancer deaths were reported.

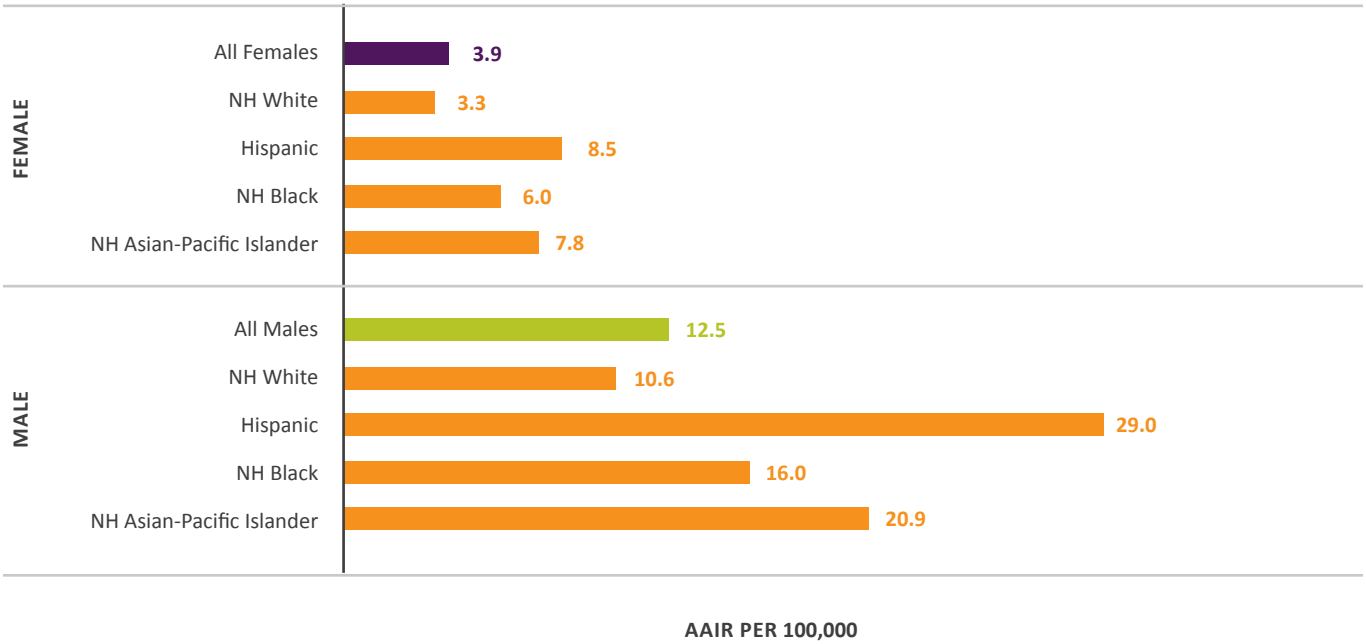
Liver cancer mortality rates vary between women and men of different races and ethnicities (**Figure 4.57**). In women, the liver cancer mortality rate is higher in non-Hispanic Black women than in non-Hispanic White women. Among men, the mortality rate of liver cancer is lower in non-Hispanic White men than in any other racial/ethnic group.

FIGURE 4.54: Liver and intrahepatic bile duct cancer age-adjusted incidence rates (AAIR) by sex and year of diagnosis, CT, 1992–2016



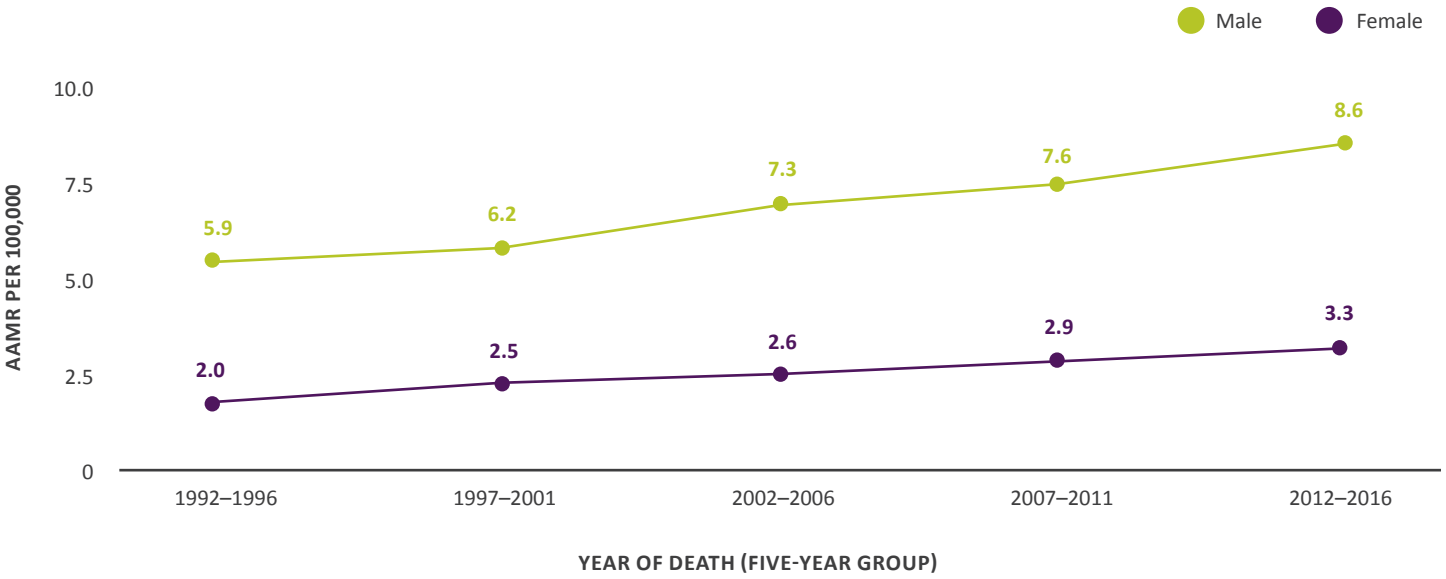
Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.55: Liver and intrahepatic bile duct cancer age-adjusted incidence rates (AAIR) by sex and race/ethnicity, CT, 2012–2016



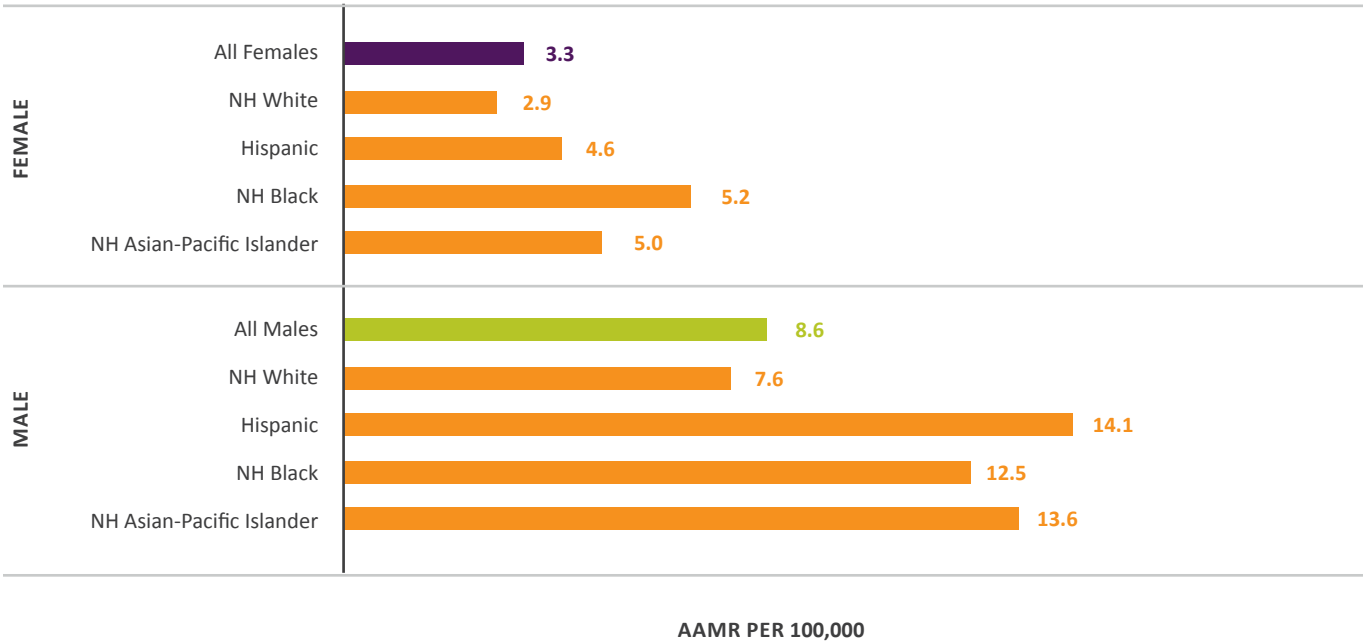
Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.56: Liver and intrahepatic bile duct cancer age-adjusted mortality rates (AAMR) by sex and year of death, CT, 1992–2016



Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.57: Liver and intrahepatic bile duct cancer age-adjusted mortality rates (AAMR) by sex and race/ethnicity, CT, 2012–2016



Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

OROPHARYNGEAL CANCER INCIDENCE AND MORTALITY

Oropharyngeal cancer, cancer of the middle part of the pharynx (throat) is the seventeenth most commonly diagnosed cancer in men and women in Connecticut, accounting for more than one in ninety of all new cancer diagnoses. It is the eighteenth leading cause of cancer death in men and women in Connecticut, accounting for almost one in ninety of all cancer deaths. The incidence of oropharyngeal cancers is rising in both men and women in Connecticut.

Risk factors for developing oropharyngeal cancer include: smoking cigarettes, cigars and pipes; smokeless tobacco use (chewing tobacco/betel quid or using snuff); drinking alcohol (particularly in addition to using tobacco); personal history of oropharyngeal cancer; and, infection with human papilloma virus (HPV). Around 70% of these cancers are estimated to be attributable to HPV infection; thus, vaccination against HPV in both boys and girls is an important prevention measure of these cancers. In addition, to reduce the burden of oropharyngeal cancer in our state, we must reduce barriers that prevent access to high quality cancer diagnostic and treatment services and improve men and women's awareness of factors that increase the risk of developing or dying from oropharyngeal cancer. There is currently no standard or routine screening test for oropharyngeal cancer.

Oropharyngeal Cancer Incidence

After decades of steady decline, the incidence rates of oropharyngeal cancer in Connecticut men have risen since the early 2000s, with an average annual increase per year of 3% over the most recent five years. In women, incidence rates were falling until the mid-2000s when they started to rise slightly in recent years (although this rise is not statistically significant). The incidence rate for men is consistently three to five times higher than the rate for women (**Figure 4.58**). These rates are impacted by the distribution of underlying risk factors.

There were 43 new oropharyngeal cancers diagnosed in women in Connecticut in 2016; for every 100,000 women, 2 oropharyngeal cancer cases were reported. For men, there were 192 new oropharyngeal cancers diagnosed in Connecticut in 2016; for every 100,000 men, 9 oropharyngeal cancer cases were reported. Fewer than one out of six oropharyngeal cancers were diagnosed at a localized stage, where the cancer has not spread beyond the site of origin.

While there was variation in oropharyngeal cancer incidence rates in different racial and ethnic groups in Connecticut men and women, these differences were not statistically significant (**Figure 4.59**).

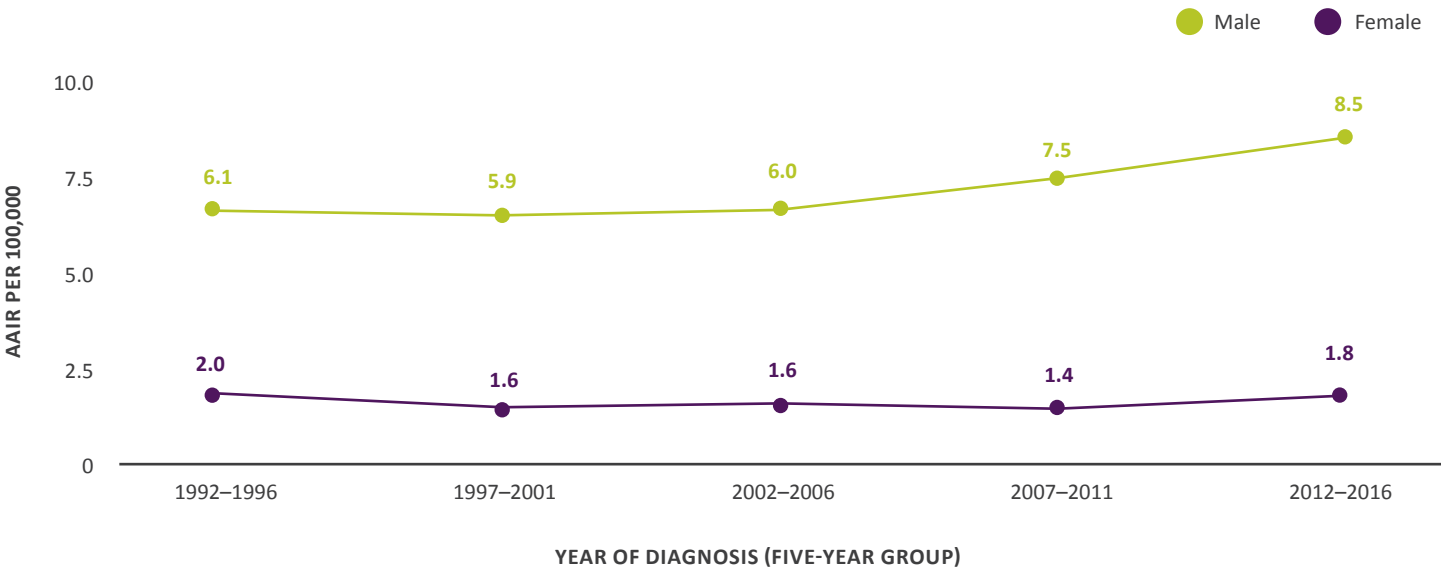
Oropharyngeal Cancer Mortality

Oropharyngeal cancer mortality rates in men and women in Connecticut have fallen over the past twenty years, with an average annual decrease in rate per year of 3% in both women and men over the most recent five years (**Figure 4.60**). This decrease is due in part to changes in the prevalence of underlying risk factors in the population over time as well as improvements in cancer treatment. The mortality trends in men in Connecticut contrast with national trends where mortality rates have been rising since the late 2000s.

There were 17 oropharyngeal cancer deaths in women in Connecticut in 2016; for every 100,000 women, 1 oropharyngeal cancer death was reported. There were 61 oropharyngeal cancer deaths in men in Connecticut in 2016; for every 100,000 men, 3 oropharyngeal cancer deaths were reported.

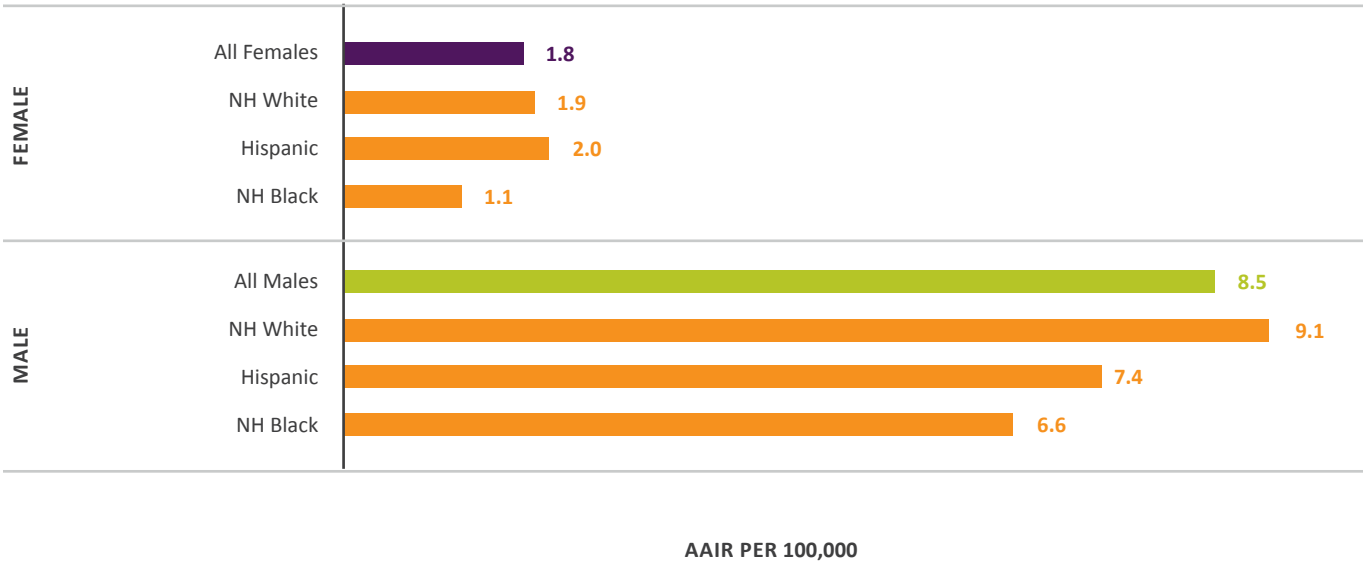
Due to the insufficient number of oropharyngeal cancer mortality cases among women in different racial/ethnic groups, it was not possible to estimate mortality rates. For men, while there was variation in oropharyngeal cancer mortality rates in different racial and ethnic groups, these differences were not statistically significant (**Figure 4.61**).

FIGURE 4.58: Oropharynx cancer age-adjusted incidence rates (AAIR) by sex and year of diagnosis, CT, 1992–2016



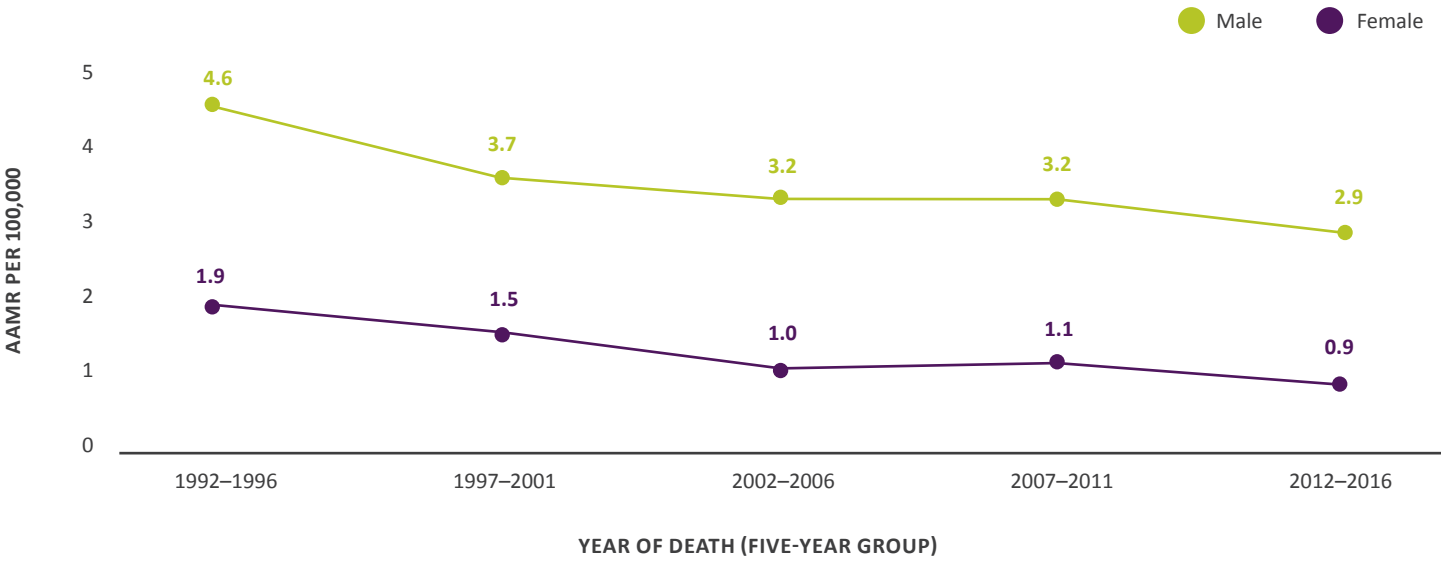
Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.59: Oropharynx cancer age-adjusted incidence rates (AAIR) by sex and race/ethnicity, CT, 2012–2016



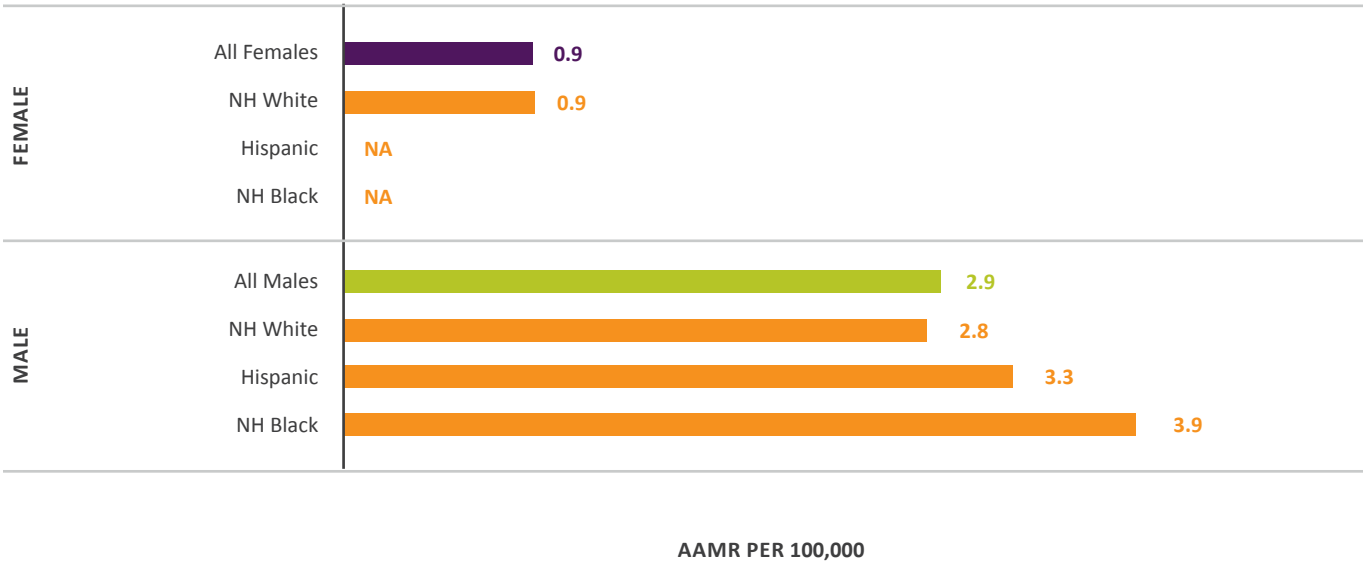
Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.60: Oropharynx cancer age-adjusted mortality rates (AAMR) by sex and year of death, CT, 1992–2016



Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

FIGURE 4.61: Oropharynx cancer age-adjusted mortality rates (AAMR) by sex and race/ethnicity, CT, 2012–2016



Source: *National Cancer Institute, SEER*Stat Database. Data analyzed May 28, 2019.*

REFERENCES

[1] Centers for Disease Control and Prevention. (2019). About Chronic Diseases. Retrieved from www.cdc.gov/chronicdisease/about/index.htm.

[2] Connecticut Department of Public Health. (2014). *Live Healthy Connecticut: A Coordinated Chronic Disease Plan*. Retrieved from http://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/hems/chronic_dis/ConnecticutChronicDiseasePlanApril2014pdf.pdf?la=en.

[3] Connecticut Department of Public Health. (2019). Connecticut Behavioral Risk Factor Surveillance System 2017 data. Hartford, CT: Chronic Disease Epidemiology Unit.

[4] U.S. Department of Health and Human Services. (2018). *Physical Activity Guidelines for Americans, 2nd Edition*. Retrieved from http://health.gov/paguidelines/second-edition/pdf/PAG_ExecutiveSummary.pdf.

[5] U.S. Department of Health and Human Services. (2014). *The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General*. Retrieved from www.cdc.gov/tobacco/data_statistics/sgr/50th-anniversary/index.htm.

[6] Connecticut Department of Public Health. (2017). *Connecticut Youth Tobacco Survey Results: 2017 Surveillance Report*. Retrieved from http://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/hems/tobacco/PDF/2017-CT-Youth-Tobacco-Survey-Results.pdf?la=en.

[7] Campaign for Tobacco Free Kids. (2019). The Toll of Tobacco in Connecticut. Retrieved from www.tobaccofreekids.org/problem/toll-us/connecticut.

[8] Centers for Disease Control and Prevention. (2019). State Tobacco Activities Tracking and Evaluation System. Retrieved from www.cdc.gov/statesystem.

[9] Centers for Disease Control and Prevention. (2015). *Best Practices User Guide: Health Equity in Tobacco Prevention and Control*. Retrieved from www.cdc.gov/tobacco/stateandcommunity/best-practices-health-equity/pdfs/bp-health-equity.pdf.

[10] Connecticut Department of Public Health. (2019). *Press Releases: DPH Reporting a Total of 46 Cases of Vaping-Associated Lung Injury*. (December 18, 2019). Retrieved from http://portal.ct.gov/DPH/Press-Room/Press-Releases---2019/DPH-Reporting-a-Total-of-46-Cases-of-Vaping-Associated-Lung-Injury.

[11] Connecticut Department of Public Health. (2019). Vaping. Retrieved from http://portal.ct.gov/DPH/Health-Education-Management--Surveillance/Tobacco/Vaping.

[12] U.S. Department of Health and Human Services. (2006). *The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General*. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. Retrieved from www.ncbi.nlm.nih.gov/books/NBK44324/.

[13] Connecticut Department of Public Health. (2019). Connecticut Behavioral Risk Factor Surveillance System 2018 data. Hartford, CT: Chronic Disease Epidemiology Unit.

[14] Connecticut Department of Public Health. (2019). Connecticut Behavioral Risk Factor Surveillance System 2016–2018 data. Hartford, CT: Chronic Disease Epidemiology Unit.

[15] Centers for Disease Control and Prevention. (2016). Undiagnosed Hypertension. Retrieved from www.cdc.gov/features/undiagnosed-hypertension/index.html.

[16] Centers for Disease Control and Prevention. (2019). About Diabetes. Retrieved from www.cdc.gov/diabetes/basics/diabetes.html.

[17] Powers, M. A., Bardsley, J., Cypress, M., Duker, P., Funnell, M. M., Fischl, A. H., . . . Vivian, E. (2017). Diabetes self-management education and support in type 2 diabetes: a joint position statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics. *The Diabetes Educator, 43*(1), 40–53.

[18] The Center for Health Law and Policy Innovation of Harvard Law School. (2015). Reconsidering Cost-Sharing for Diabetes Self-Management Education: Recommendation for Policy Reform. Retrieved from www.diabetespolicy.org/wp-content/uploads/2014/06/6.11.15-Reconsidering-Cost-Sharing-for-DSME.pdf

[19] Backus, K., & Mueller, L. (2019). *Single-year Age-Adjusted Mortality Rates for Connecticut 2005–2017*. Hartford, CT: Connecticut Department of Public Health. Retrieved from http://portal.ct.gov/DPH/Health-Information-Systems--Reporting/Mortality/Mortality-Tables.

[20] Centers for Disease Control and Prevention. (2019). Diabetes Home: Symptoms. Retrieved from www.cdc.gov/diabetes/basics/symptoms.html.

[21] Centers for Disease Control and Prevention. (2018). *CDC's 6|18 Initiative: Accelerating Evidence into Action*. Retrieved from www.cdc.gov/sixeighteen/docs/6-18-factsheet.pdf.

[22] American Diabetes Association. (2019). Standards of Medical Care in Diabetes — 2019. *The Journal of Clinical and Applied Research and Education: Diabetes Care, 42*(Supplement 1). Retrieved from http://care.diabetesjournals.org/content/diacare/suppl/2018/12/17/42.Supplement_1.DC1/DC_42_S1_2019_UPDATED.pdf

[23] American Diabetes Association. (2018). Standards of Medical Care in Diabetes — 2018. *The Journal of Clinical and Applied Research and Education: Diabetes Care, 41*(Supplement 1). Retrieved from http://care.diabetesjournals.org/content/diacare/suppl/2017/12/08/41.Supplement_1.DC1/DC_41_S1_Combined.pdf

[24] Centers for Disease Control and Prevention. (2019). Asthma Home Page. Retrieved from www.cdc.gov/asthma/default.htm.

[25] Connecticut Department of Public Health. (2019). Asthma Program Home Page. Retrieved from http://portal.ct.gov/DPH/Health-Education-Management--Surveillance/Asthma/Asthma-Program#50324.

[26] Woods, E. R., Bhaumik, U., Sommer, S. J., Chan, E., Tsopelas, L., Fleegler, E. W., . . . Dulin, R. (2016). Community asthma initiative to improve health outcomes and reduce disparities among children with asthma. *MMWR Supplements, 65*. doi: http://dx.doi.org/10.15585/mmwr.su6501a4

[27] Nowjack-Raymer, R., & Sheiham, A. (2003). Association of edentulism

and diet and nutrition in US adults. *Journal of Dental Research, 82*(2), 123–126.

[28] Walls, A. W., Steele, J. G., Sheiham, A., Marcenes, W., & Moynihan, P. J. (2000). Oral health and nutrition in older people. *Journal of Public Health Dentistry, 60*(4), 304–307.

[29] Connecticut Department of Public Health. (2019). Health Equity Toolkit for Local Health Departments and Other Partners. Retrieved from http://portal.ct.gov/DPH/Workforce--Professional-Development/Office-of-Health-Equity/Health-Equity-Toolkit-LHD.

[30] Connecticut Department of Public Health. (2017). *Every Smile Counts: The Oral Health of Connecticut's Children*. Retrieved from http://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/oral_health/PDF/Every-Smile-Counts-2017-REV-August-2018.pdf?la=en.

[31] Griffin, S. O., Jones, J. A., Brunson, D., Griffin, P. M., & Bailey, W. D. (2012). Burden of oral disease among older adults and implications for public health priorities. *American Journal of Public Health, 102*(3), 411–418.

[32] Centers for Disease Control and Prevention. (2019). Community Water Fluoridation. Retrieved from www.cdc.gov/fluoridation/index.html.

[33] Connecticut Department of Public Health. (2018). Welcome to the Drinking Water Section. Retrieved from http://portal.ct.gov/dph/Drinking-Water/DWS/Drinking-Water-Section.

[34] Norbeck, T. B. (2013). Drivers of Health Care Costs: A Physicians Foundation white Paper-Second of a Three-Part Series. *Missouri Medicine, 110*(2), 113.

[35] Centers for Disease Control and Prevention. (2019). Screening Tests. Retrieved from www.cdc.gov/cancer/dcpc/prevention/screening.htm.

[36] Islami, F., Goding Sauer, A., Miller, K. D., Siegel, R. L., Fedewa, S. A., Jacobs, E. J., . . . Soerjomataram, I. (2018). Proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors in the United States. CA: *A Cancer Journal for Clinicians, 68*(1), 31–54.

[37] Swett, K., Gonsalves, L., & Mueller, L. (2019). *Cancer in Connecticut*. Hartford, CT: Connecticut Department of Public Health. Health and Surveillance Section, Connecticut Tumor Registry. Retrieved from http://portal.ct.gov/-/media/Departments-and-Agencies/DPH/Tumor-Registry/pdf/CancerInConnecticut2019.pdf?la=en.

[38] Connecticut Department of Public Health. (2019). Comprehensive Cancer Control Program (CCCP). Retrieved from http://portal.ct.gov/DPH/Comprehensive-Cancer/Comprehensive-Cancer/Comprehensive-Cancer-Control-Program-CCCP.

[39] U.S. Preventive Services Task Force. (2016). *Final Recommendation Statement. Breast Cancer: Screening*. Retrieved from www.uspreventive servicestaskforce.org/Page/Document/RecommendationStatement Final/breast-cancer-screening1.

[40] U.S. Preventive Services Task Force. (2018). *Final Recommendation Statement. Cervical Cancer: Screening*. Retrieved from www.uspreventive servicestaskforce.org/Page/Document/RecommendationStatement Final/cervical-cancer-screening2.

[41] U.S. Preventive Services Task Force. (2017). *Final Recommendation Statement. Colorectal Cancer: Screening*. Retrieved from www.us preventiveservicestaskforce.org/Page/Document/Recommendation StatementFinal/colorectal-cancer-screening2.

[42] National Cancer Institute. (2019). State Cancer Profiles. Retrieved October 18, 2019 http://statecancerprofiles.cancer.gov/risk/index.php