
# DELAWARE 2016

## BEHAVIORAL RISK FACTOR SURVEY

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## Part 1

# INTRODUCTION

The Behavioral Risk Factor Surveillance System (BRFSS) is a nationwide principal system of telephone surveys that collects health-related data. The data include information on respondents' health-related risk behaviors, chronic health conditions, and use of preventive services. The system was first established in 1984 conducting surveys in 15 U.S. states. Currently, all 50 states, the District of Columbia and three U.S. territories participate in the survey. BRFSS continuously collects data at the state and local level, which has made it "a powerful tool for targeting and building health promotion activities" (Centers for Disease Control and Prevention, 2014).

BRFSS surveys noninstitutionalized adults aged 18 years and older who reside in the U.S. In 2016, household landline telephone and cellular telephone interviews were conducted to collect data for BRFSS in all 50 states, the District of Columbia, Guam, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands (Centers for Disease Control and Prevention, 2017a).

The 2016 BRFSS interviewed 486,303 adults by landline and cellular telephone (Centers for Disease Control and Prevention, 2019a). BRFSS's objective is to collect "uniform state-specific data on health risk behaviors, chronic diseases and conditions, access to health care, and use of preventive health services related to the leading causes of death and disability in the United States" (Centers for Disease Control and Prevention, 2017b). These publicly available data are a valuable source of information for analysis, decision making, and governmental budget allocations. At the moment, the BRFSS survey is sponsored by numerous agencies, including the CDC National Center for Chronic Disease Prevention and Health Promotion, other CDC centers, and federal agencies, such as the Health Resources and Services Administration, Administration on Aging, Department of Veterans Affairs, and Substance Abuse and Mental Health Services Administration (Centers for Disease Control and Prevention, 2014). Behavioral risk factors are defined as any particular behavior or behavior patterns which strongly affects one's health in an adverse manner, i.e., increase the likelihood that an individual may develop a disorder, disease, or syndrome (American Psychological Association, 2022). Examples of these factors include tobacco use, alcohol consumption, obesity, and physical and sexual activity (Sam, 2013).

The Delaware Division of Public Health (DPH) receives funds from a cooperative agreement with the CDC to operate the state-based Behavioral Risk Factor Survey (BRFS) as part of BRFSS (Delaware BRFS, n.d./a). BRFS is a survey of Delaware's adult population conducted annually. It considers behaviors connected with an increased risk of disease, premature death, and disability (Delaware BRFS, n.d./b).

BRFS has been collecting behavioral risk factor data in Delaware continuously since 1990. It is a random-sample telephone interview survey that is conducted every month of every year with the data being analyzed on a calendar-year basis. The usual annual sample in Delaware includes about 4,000 adults aged 18 and older. BRFS partners with CDC, which provides funding and basic data analysis, as well as with the Delaware Division of Public Health (DPH) (Delaware BRFS, n.d./c).

In 2011, BRFS became a multi-mode survey, that is, it started conducting interviews using both cell phones and landline phones. This was done to obtain a more representative sample of Delaware's adult population since the number of households in which cell phones were primary or only telephone service had increased rapidly over the past decade (Delaware BRFS, n.d./d). The National Center for Health Statistics estimated in its National Health Interview Survey that in July-December 2016, 50.5 percent of all adults in the U.S. lived in households that were wireless-only (National Center for Health Statistics, 2017). The use of the dual-frame survey that includes both landline and cell phones, helps improve the validity, data quality, and representativeness of the survey data (Centers for Disease Control and Prevention, 2017b).

BRFSS is designed in order to obtain sample information on the adult U.S. population in different states. To make sample data more representative of the population from which they were collected, data weighting is used. The weighting methodology of BRFSS consists of design factors or design weight and demographic adjustment of the population. The first weight is used to account for the probability of selection and to adjust for nonresponse bias and non-coverage errors. To adjust for demographic differences between sampled individuals and the population they represent, BRFSS uses iterative proportional fitting, or raking. Raking is performed by "adjusting one or a combination of demographic categories at a time in an iterative process until a convergence of a set value is reached" (Centers for Disease Control and Prevention, 2017b). The final weight assigned to each respondent by BRFSS is _LLCPWT.

The data analyzed in the given report were weighted with _LLCPWT designed for the combined land line and cell phone dataset (Centers for Disease Control and Prevention, 2017b). The objective of the report was to present the BRFSS survey results and provide statistical analysis of the Delawareans' health and their health behavior patterns. The 2016 BRFSS combined landline and cell phone weighted response rate for Delaware was 4,213, including 1,746 landline interviews and 2,467 cell phone interviews, which corresponded to 70.8 percent of the weighted American Association for Public Opinion Research (AAPOR) cooperation rate and 43.0 percent of the weighted AAPOR response rate (Centers for Disease Control and Prevention, 2017c). Cooperation rate is generally defined as "the ratio of all cases interviewed out of all eligible units ever contacted," while a response rate refers to "the ratio of all cases interviewed out of all eligible sample units in the study, not just those contacted" (Basson, 2008).

This report is structured as follows: Part 1 is an Introduction, and Part 2 provides the data and methodology for the 2016 BRFSS. Part 3 covers the results of the *Core Sections* analysis. The *Core Sections* include questions about health conditions, healthcare access, and other health related questions asked in the survey. Part 4 analyzes the *Optional Modules*, i.e., questions on specific topics (e.g., pre-diabetes, cognitive decline, sexual orientation, and gender identity, etc.) that the State of Delaware elected to use on its questionnaire in 2016. Even though the modules were optional, CDC standards required they were used without any modifications (Centers for Disease Control and Prevention, 2022a). Part 5 examines the Delaware State-Added Module called *Tobacco Products*, and Part 6 summarizes the above analysis.

## Part 2

# DATA AND METHODOLOGY

## 2.1 Data sources

This report analyzes the 2016 BRFSS data, using raw survey data that records the actual responses of each respondent before any adjustment is made. The raw dataset is downloaded from the CDC website. Other supplemental documents used in this study to help provide a more comprehensive analysis included the 2016 Questionnaire, 2016 BRFSS Overview CDC, 2016 BRFSS Codebook CDC, Calculated Variables and Data Files CDC, BRFSS Combined Landline and Cell Phone Weighted Response Rates by State, 2016, BRFSS Modules Used by State & Weight, Summary Matrix of Calculated Variables (CV) in the 2016 Data File, and 2016 Weighting Formula CDC.

## 2.2 Questionnaire structure

The BRFSS questionnaire consists of three parts: (1) the core component (the fixed core, rotating core, and emerging core), (2) optional modules, and (3) state-added questions. The fixed core is a standard set of questions that all states use without modification in wording every year. This practice allows states to establish long-term datasets and compare their data with other states' survey results. The fixed core includes questions regarding demographic characteristics and health behaviors, such as tobacco use and seatbelt use. The rotating core has two distinct sets of questions, each asked in alternating years by all states. In the year that rotating core questions are not used, they are supported as optional modules. The emerging core is a set of up to five questions that typically focus on "late breaking" issues and are evaluated after a year to decide whether they should be used in future surveys (Centers for Disease Control and Prevention, 2022a). CDC designs several optional modules that contain questions on specific topics (e.g., Sugar Sweetened Beverages) and offers a list of topics to the states to choose from (Ibid.). Individual states can

select optional modules that meet the state's interests or needs. For example, the 2016 Questionnaire had 25 optional modules, and Delaware selected 6 modules from the list.

If space is available, states can design and add local questions to meet state-specific needs. These types of questions are not analyzed by CDC, therefore, in Delaware, any Delaware Division of Public Health (DPH) program that requests the introduction of local questions into the questionnaire, must provide funds for field testing and data analysis. The Delaware BRFS has defined procedures and criteria for selecting state-added questions and/or modules in a given year. The BRFS program has also established an advisory committee for the purpose of reviewing requests (Delaware BRFS, n.d./a).

Table 1 lists the core sections and modules used in Delaware in 2016. As indicated above, questions in the core sections were designed by CDC, and all the states and territories participating in BRFSS that year asked the same core component questions. Six optional modules were selected for the 2016 BRFS, including pre-diabetes, diabetes, health care access, cognitive decline, sugar sweetened beverages, and sexual orientation and gender identity. In 2016, Delaware also added one module of its own: tobacco products.

**Table 1: Delaware 2016 Questionnaire Structure**

| **Core Sections** | |
|---|---|
| Section 1 | Health Status |
| Section 2 | Healthy Days |
| Section 3 | Health Care Access |
| Section 4 | Exercise |
| Section 5 | Inadequate Sleep |
| Section 6 | Chronic Health Conditions |
| Section 7 | Oral Health |
| Section 8 | Demographics |
| Section 9 | Tobacco Use |
| Section 10 | E-Cigarettes |
| Section 11 | Alcohol Consumption |
| Section 12 | Immunization |
| Section 13 | Falls |
| Section 14 | Seat Belt Use |
| Section 15 | Drinking and Driving |
| Section 16 | Breast and Cervical Cancer Screening |
| Section 17 | Prostate Cancer Screening |
| Section 18 | Colorectal Cancer Screening |
| Section 19 | H.I.V./AIDS |
| **Optional Modules** | |
| Module 1 | Pre-Diabetes |
| Module 2 | Diabetes |
| Module 4 | Health Care Access |
| Module 7 | Cognitive Decline |
| Module 8 | Sugar Sweetened Beverages |
| Module 21 | Sexual Orientation and Gender Identity |
| DE State-Added | Tobacco Products |

Source: Centers for Disease Control and Prevention, 2015; Centers for Disease Control and Prevention, 2017d.

## 2.3 Data analysis

This study generalizes the prevalence rates from a sample (n = 4,057) to the population using the weighting variable "_LLCPWT". Data weighting is necessary to avoid counting each record the same as any other record and make sample data more representative of the population from which they were collected (Centers for Disease Control and Prevention, 2020a; Centers for Disease Control and Prevention, 2017b). The CDC uses weighting methodology comprised of design weight and raking. Design weight adjusts the unequal probability of sample selection, and raking, or iterative proportional fitting, adjusts demographic differences between those persons who are sampled and the population they represent (Centers for Disease Control and Prevention, 2019b). Thus, weighted BRFSS data represent results that have been adjusted to compensate for variation in the respondents' probability of selection, disproportionate selection of population subgroups relative to the state's population distribution, or nonresponse (Centers for Disease Control and Prevention, 2017a). BRFSS produces the _LLCPWT final weight which is assigned to each respondent (Centers for Disease Control and Prevention, 2017b). Table 2 summarizes the 2021 survey sample size and the percentage distribution among various demographic groups, as well as the weighted percentage and estimated population.

| Table 2: 2016 Survey Summary | | | | |
|---|---|---|---|---|
| | Sample | | Weighted Estimated Population | |
| | % | Sample Size | Wt. % | Est. Pop. |
| **Total** | 100% | 4,057 | 100% | 752,801 |
| **AGE** | | | | |
| 18-24 | 6.5 | 262 | 12.0 | 90,343 |
| 25-34 | 11.2 | 455 | 16.7 | 125,672 |
| 35-44 | 10.5 | 426 | 15.0 | 112,928 |
| 45-54 | 16.4 | 664 | 16.6 | 125,317 |
| 55-64 | 21.5 | 873 | 17.3 | 130,590 |
| 65 or older | 33.9 | 1,377 | 22.3 | 167,951 |
| **GENDER** | | | | |
| Male | 44.6 | 1,809 | 47.8 | 359,487 |
| Female | 55.4 | 2,248 | 52.2 | 393,314 |
| **RACE-ETHNICITY** | | | | |
| White only, non-Hispanic | 69.5 | 2,821 | 64.2 | 483,564 |
| Black only, non-Hispanic | 14.1 | 574 | 20.0 | 150,824 |
| Other race only, non-Hispanic | 3.3 | 133 | 3.9 | 29,688 |
| Multiracial, non-Hispanic | 1.7 | 67 | 1.8 | 13,753 |
| Hispanic | 8.8 | 358 | 7.7 | 58,095 |
| **EDUCATION** | | | | |
| Did not graduate from high school | 9.9 | 401 | 12.3 | 92,813 |
| Graduated high school | 30.8 | 1,250 | 30.9 | 232,721 |
| Attended college or technical school | 24.4 | 990 | 29.1 | 219,147 |
| Graduated from college or tech school | 34.5 | 1,400 | 27.2 | 205,064 |
| **HOUSEHOLD INCOME** | | | | |
| Less than $15,000 | 7.8 | 315 | 7.0 | 52,737 |
| $15,000-$24,999 | 14.9 | 603 | 13.4 | 100,884 |
| $25,000-$34,999 | 9.4 | 382 | 8.4 | 63,442 |
| $35,000-$49,999 | 12.5 | 507 | 12.0 | 90,224 |
| $50,000 or more | 37.6 | 1,525 | 42.0 | 316,217 |

This report presents a confidence interval (C.I.), which is the range of estimates within which the actual prevalence can be found, for each prevalence rate estimate. The Delaware Division of Public Health (DPH) defines prevalence as "the percentage of a population that is affected with a particular disease, condition or behavior at a given time, in this case a calendar year" (Delaware BRFS, n.d./e). Prevalence indicates how widely the disease or condition is spread in a population. The C.I. reflects the range of variation in the estimation. The 95 percent C.I. means that if a survey were to be conducted 100 times, 95 of the surveys would have responses within that C.I. range. Conducting a survey at the 95 percent confidence level implies a very high level of confidence that the results are valid (Ibid.). A wide confidence interval reflects a large amount of variability or imprecision. A narrow confidence interval reflects little variability and high precision. Thus, the narrower the confidence interval, the greater the precision (Centers for Disease Control and Prevention, 2013a). Additionally, if the C.I. between two estimates does not overlap, this indicates a statistically significant difference, meaning the likelihood that a relationship between two prevalence variables is caused by something other than chance (Delaware BRFS, n.d./e). For example, Table 3 shows the percentage of good or better health conditions among males and females. The difference between males and females is not statistically significant because the C.I. overlaps.

**Table 3: Subjective Evaluations of General Health as Good or Better**

| | Wt.% | 95% C.I. | Est. Pop. |
|---|---|---|---|
| Male | 84.4 | [82.0, 86.5] | 303,317 |
| Female | 82.7 | [80.5, 84.6] | 325,131 |

## Part 3

## CORE SECTIONS

### Section 1: Health Status

The objective of BRFSS is "to collect uniform state-specific data on health risk, behaviors, chronic diseases and conditions, access to health care, and use of preventive health services related to the leading causes of death and disability in the United States" (Centers for Disease Control and Prevention, 2017b). In 2016, the BRFSS assessed a number of factors beginning with the health status. Respondents were asked to assess their general health status choosing among the following options: excellent, very good, good, fair, and poor.

Adults in Delaware perceived their health status similarly to respondents across the nation. In the United States 18.7 percent of respondents assessed their health as "excellent", 31.6 percent – as "very good", and another 31.6 percent – as "good". In Delaware the results were as follows: 19.1 percent – "excellent", 33.8 percent – "very good", and 30.6 percent – "good". In the U.S., 17.9 percent of respondents assessed their health as "fair" or "poor", whereas in Delaware there was 16.4 percent of such respondents (Table 4).

**Table 4: Health Status in Delaware and the U.S.**

| | Delaware<br>Wt. % | U. S.<br>Wt. % |
|---|---|---|
| Excellent | 19.1 | 18.7 |
| Very good | 33.8 | 31.6 |
| Good | 30.6 | 31.6 |
| Fair | 11.8 | 13.2 |
| Poor | 4.6 | 4.7 |
| Don't know/Not sure | 0.1 | 0.1 |
| Refused | 0.0 | 0.1 |

Although positive subjective evaluation of general health naturally declines with age, nevertheless over 79 percent of respondents in Delaware aged 65 or older still assessed their health as "good" or "better" (Table 5). The number even slightly exceeded the percentage of respondents who assessed their health as "good" or "better" in the preceding age group of respondents aged 55-64 (77.8 percent). The highest rate of "good" or "better" health was in the age group of 18- to 24-year-olds, i.e., in the group of the youngest Delawareans who participated in the survey. Exactly 93 percent of them assessed their health as "good" or "better". Respondents in the age group of 35–44-year-olds assessed their general health slightly better than respondents in the age group of 25–34-year-olds and almost five percentage points better than respondents in the age group of 45–54-year-olds.

Males and females had very similar perceptions of their general health, with the difference comprising less than two percentage points. On the contrary, the difference between White/non-Hispanic and Hispanic respondents was almost 12 percentage points and was statistically significant (see the C.I. for these groups in Table 5). The difference in assessment between White/non-Hispanic and Black/non-Hispanic respondents was only 0.4 percentage points.

Levels of education and income correlated with perception of one's general health as "good" or "better", i.e., individuals with higher levels of education and those with higher levels of income tended to perceive their general health as "good" or "better" more often than respondents with lower levels of education and income. For example, 92.8 percent of those who graduated from college or technical school assessed their general health as "good" or "better" vs. just 59.0 percent of those who did not graduate from high school. This difference was also statistically significant. A similar situation was observed with respect to income: 93.7 percent of respondents in the highest income group perceived their health as "good" or "better" as opposed to 63.6 percent of respondents with an annual income of less than $15,000. The difference was again statistically significant.

| Table 5: Subjective Evaluations of General Health | | | | | | |
|---|---|---|---|---|---|---|
| | "Good" or "Better" health | | | "Poor" or "Fair" health | | |
| | Wt. % | 95% C.I. | Est. Pop. | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 83.5 | [81.9, 84.9] | 628,448 | 16.4 | [14.9, 18.0] | 123,434 |
| **AGE** | | | | | | |
| 18-24 | 93.0 | [88.2, 96.0] | 84,048 | 7.0 | [4.0, 11.8] | 6,294 |
| 25-34 | 85.6 | [80.3, 89.6] | 107,545 | 14.1 | [10.1, 19.4] | 17,713 |
| 35-44 | 87.3 | [83.2, 90.5] | 98,570 | 12.7 | [9.5, 16.8] | 14,357 |
| 45-54 | 82.5 | [78.4, 86.0] | 103,445 | 17.4 | [13.9, 21.6] | 21,796 |
| 55-64 | 77.8 | [74.2, 81.1] | 101,660 | 21.9 | [18.7, 25.5] | 28,599 |
| 65 or older | 79.3 | [76.5, 81.9] | 133,177 | 20.6 | [18.1, 23.5] | 34,673 |
| **GENDER** | | | | | | |
| Male | 84.4 | [82.0, 86.5] | 303,317 | 15.4 | [13.3, 17.8] | 55,491 |
| Female | 82.7 | [80.5, 84.6] | 325,131 | 17.3 | [15.3, 19.4] | 67,942 |
| **RACE-ETHNICITY** | | | | | | |
| White/Non-Hispanic | 84.7 | [82.8, 86.5] | 409,742 | 15.1 | [13.4, 17.0] | 73,179 |
| Black/Non-Hispanic | 84.3 | [80.6, 87.4] | 127,209 | 15.6 | [12.5, 19.3] | 23,476 |
| Other race/Non-Hispanic | 88.9 | [80.0, 94.1] | 26,388 | 11.1 | [5.9, 20.0] | 3,298 |
| Multiracial/Non-Hispanic | 79.1 | [62.3, 89.6] | 10,876 | 20.9 | [10.4, 37.7] | 2,876 |
| Hispanic | 72.8 | [66.6, 78.2] | 42,300 | 27.2 | [21.8, 33.4] | 15,793 |
| **EDUCATION** | | | | | | |
| Did not graduate from High Sch | 59.0 | [52.1, 65.5] | 54,733 | 41.0 | [34.5, 47.9] | 38,079 |
| Graduated from High School | 83.5 | [80.9, 85.9] | 194,417 | 16.4 | [14.1, 19.1] | 38,195 |
| Attended College or Tech Sch | 85.2 | [82.3, 87.6] | 186,664 | 14.6 | [12.1, 17.4] | 31,972 |
| Graduated College or Tech Sch | 92.8 | [91.1, 94.2] | 190,351 | 7.0 | [5.6, 8.8] | 14,440 |
| **HOUSEHOLD INCOME** | | | | | | |
| Less than $15,000 | 63.6 | [56.1, 70.5] | 33,528 | 36.3 | [29.4, 43.8] | 19,144 |
| $15,000-$24,999 | 67.9 | [62.7, 72.7] | 68,527 | 31.7 | [27.0, 36.9] | 31,989 |
| $25,000-$34,999 | 78.2 | [72.1, 83.2] | 49,591 | 21.8 | [16.8, 27.9] | 13,849 |
| $35,000-$49,999 | 83.5 | [79.0, 87.2] | 75,358 | 16.5 | [12.8, 21.0] | 14,865 |
| $50,000-$99,999 | 93.7 | [91.9, 95.1] | 296,301 | 6.2 | [4.8, 8.0] | 19,707 |

## Section 2: Healthy Days – Health-Related Quality of Life

In addition to the general health status, respondents were asked questions about their physical and mental health. They were asked for how many days in the past 30 days their physical and mental health was not good. Physical health included illness and injury, while mental health included stress, depression, and problems with emotions. Tables 6 and 7 provide the results. As it follows from the tables, a majority of adults in Delaware reported not having any days when their physical or mental health was not good within the past 30 days at the time of the interview (65.5 percent and 69.3 percent respectively). At the same time, over 10 percent of respondents indicated that their physical health was not good for at least 14 days within the past 30 days at the time of the interview, and 11 percent of respondents said the same about their mental health. The numbers in Delaware were similar to those across the U.S.

**Table 6: Physical Health Status**

| | Delaware Wt. % | U.S. Wt. % |
|---|---|---|
| Zero days when physical health not good | 65.5 | 63.6 |
| 1-13 days when physical health not good | 22.0 | 22.6 |
| 14+ days when physical health not good | 10.3 | 11.9 |

**Table 7: Mental Health Status**

| | Delaware Wt. % | U.S. Wt. % |
|---|---|---|
| Zero days when mental health not good | 69.3 | 64.7 |
| 1-13 days when mental health not good | 18.3 | 22.2 |
| 14+ days when mental health not good | 11.0 | 11.5 |

Table 8 presents the results of respondents' answers to the question about the number of days they felt physically or mentally not well according to their socio-demographic characteristics.

| Table 8: Physical and Mental Health Status | | | | | | |
|---|---|---|---|---|---|---|
| | Zero days when physical health was not good | | | Zero days when mental health was not good | | |
| | Wt. % | 95% C.I. | Est. Pop. | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 65.5 | [63.4, 67.5] | 493,108 | 69.3 | [67.3, 71.3] | 521,999 |
| **AGE** | | | | | | |
| 18-24 | 61.8 | [53.5, 69.5] | 55,863 | 60.3 | [52.1, 67.9] | 54,446 |
| 25-34 | 69.8 | [63.6, 75.3] | 87,705 | 65.8 | [59.6, 71.4] | 82,635 |
| 35-44 | 67.3 | [61.5, 72.7] | 76,044 | 62.6 | [56.7, 68.3] | 70,733 |
| 45-54 | 64.8 | [59.8, 69.5] | 81,208 | 67.9 | [63.1, 72.4] | 85,130 |
| 55-64 | 65.6 | [61.4, 69.5] | 85,650 | 73.2 | [69.3, 76.8] | 95,617 |
| 65 or older | 63.5 | [60.2, 66.6] | 106,635 | 79.5 | [76.7, 82.0] | 133,437 |
| **GENDER** | | | | | | |
| Male | 66.9 | [63.7, 69.8] | 240,373 | 73.6 | [70.6, 76.4] | 264,607 |
| Female | 64.3 | [61.4, 67.0] | 252,734 | 65.4 | [62.6, 68.2] | 257,392 |
| **RACE-ETHNICITY** | | | | | | |
| White/Non-Hispanic | 64.9 | [62.3, 67.3] | 313,660 | 68.4 | [65.9, 70.8] | 330,813 |
| Black/Non-Hispanic | 65.5 | [60.0, 70.6] | 98,783 | 74.1 | [69.1, 78.6] | 111,795 |
| Other race/Non-Hispanic | 65.2 | [54.2, 74.8] | 19,358 | 64.5 | [53.3, 74.4] | 19,160 |
| Multiracial/Non-Hispanic | 58.2 | [42.1, 72.7] | 8,006 | 68.5 | [50.7, 82.2] | 9,423 |
| Hispanic | 72.9 | [66.7, 78.4] | 42,366 | 66.5 | [59.5, 72.8] | 38,617 |
| **EDUCATION** | | | | | | |
| Did not graduate from High Sch | 56.1 | [49.1, 62.9] | 52,069 | 61.8 | [54.8, 68.4] | 57,367 |
| Graduated High School | 65.9 | [62.2, 69.4] | 153,340 | 73.8 | [70.3, 77.0] | 171,718 |
| Attended College or Tech Sch | 63.3 | [59.0, 67.4] | 138,803 | 65.8 | [61.5, 69.8] | 144,141 |
| Graduated College or Tech Sch | 72.1 | [68.9, 75.1] | 147,868 | 72.1 | [68.9, 75.2] | 147,951 |
| **HOUSEHOLD INCOME** | | | | | | |
| Less than $15,000 | 53.7 | [45.5, 61.6] | 28,298 | 58.8 | [50.8, 66.3] | 30,991 |
| $15,000-$24,999 | 55.5 | [50.1, 60.7] | 55,961 | 60.1 | [54.7, 65.3] | 60,641 |
| $25,000-$34,999 | 65.8 | [58.7, 72.3] | 41,745 | 68.7 | [61.5, 75.1] | 43,608 |
| $35,000-$49,999 | 64.9 | [59.2, 70.2] | 58,558 | 70.2 | [64.8, 75.1] | 63,333 |
| $50,000-$99,999 | 71.7 | [68.5, 74.8] | 226,846 | 72.6 | [69.3, 75.7] | 229,578 |

## Section 3: Health Care Access

The 2016 BRFSS survey collected information about Delaware adults' health care coverage, including health insurance, prepaid plans such as HMOs, government plans such as Medicare, or Indian Health Service. This section reviews how many Delawareans aged 18 and above and 18 to 64 had any form of health insurance in 2016.

Ninety one percent of Delaware adults aged 18 and above reported having some form of health insurance in 2016, which was over three percentage points higher than across the U.S (Table 9). However, if one took into account only adults in the age group between 18 and 64, it became obvious that the extent of health care coverage was considerably lower: 68.3 percent in Delaware and 67.3 percent in the U.S. A significant number of respondents aged 18 to 64, both in Delaware and the U.S., did not know or refused to answer the question whether they had any health care coverage: 23.4 percent and 21.7 percent respectively.

**Table 9: Health Care Coverage in Delaware and the U.S.**

| | Age 18 and above | | Age 18 to 64 | |
|---|---|---|---|---|
| | Delaware Wt. % | U.S. Wt. % | Delaware Wt. % | U.S. Wt. % |
| Have some form of insurance | 91.0 | 87.9 | 68.3 | 67.3 |
| Do not have insurance | 8.5 | 11.5 | 8.4 | 11.0 |
| Don't know/not sure | 0.4 | 0.4 | 23.4 | 21.7 |

Table 10 provides information on health care coverage for respondents aged 18 and above across various demographic characteristics. In Delaware, in 2016, close to 100 percent of respondents (99.3 percent) aged 65 and over had health insurance. In the three younger age groups over 80 percent of respondents had coverage, whereas in the three older age groups – more than 90 percent did. The rates of coverage for males and females was almost the same: 90.3 percent vs. 91.6 percent, respectively.

Respondents who identified as Other race/non-Hispanic had the highest rate of coverage among all other race-ethnic groups at 96.5 percent followed by Multiracial/non-Hispanic group (94.9 percent) and White/non-Hispanic group (94.1 percent). Hispanic respondents had the lowest level of coverage at 62.8 percent. The rates of coverage correlated with the levels of education and

income. The least educated respondents had 72.5 percent of individuals among them with health care coverage, while their most educated peers had 97.9 percent of such individuals among them. The same applied to the income levels. Respondents who were making less than $15,000 a year had 82.3 percent of individuals with health insurance among them, while the rate of coverage among respondents in the highest income group was 97.0 percent.

Numbers for respondents aged 18 to 64 are shown in Table 11. When the group of respondents aged 65 and over was excluded from the analysis, the rates of access to health care dropped considerably from 91 percent to 68.3 percent. Still from 82.5 to 94.0 percent of respondents in different age groups reported having health care coverage in 2016. The rates of coverage for males and females was close again: 69.5 percent vs. 67.2 percent. Respondents who identified as Other race/non-Hispanic still had the largest percentage of individuals among them who had health insurance (87.6 percent), whereas Hispanic respondents again had the lowest number of their peers covered (58.0 percent). The levels of education turned out to correlate with health care access, while the levels of income did not. Nevertheless, respondents with the highest level of income were covered at the highest rate of 78.7 percent.

| Table 10: Health Care Access (Age 18 and above) | | | |
|---|---|---|---|
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 91.0 | [89.5, 92.3] | 684,957 |
| **AGE** | | | |
| 18-24 | 82.5 | [74.8, 88.2] | 74,520 |
| 25-34 | 84.3 | [79.4, 88.1] | 105,884 |
| 35-44 | 85.7 | [81.2, 89.2] | 96,728 |
| 45-54 | 93.1 | [89.8, 95.3] | 116,609 |
| 55-64 | 95.3 | [93.3, 96.7] | 124,475 |
| 65 and over | 99.3 | [22.8, 26.0] | 166,739 |
| **GENDER** | | | |
| Male | 90.3 | [88.1, 92.1] | 324,569 |
| Female | 91.6 | [89.5, 93.3] | 360,387 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 94.1 | [92.6, 95.3] | 455,018 |
| Black/Non-Hispanic | 90.2 | [85.1, 93.7] | 136,078 |
| Other race/Non-Hispanic | 96.5 | [92.3, 98.4] | 28,637 |
| Multiracial/Non-Hispanic | 94.9 | [83.2, 98.6] | 13,053 |
| Hispanic | 62.8 | [56.0, 69.2] | 36,500 |
| **EDUCATION** | | | |
| Did not graduate from High School | 72.5 | [65.9, 78.2] | 67,260 |
| Graduated High School | 90.7 | [88.0, 92.8] | 210,970 |
| Attended College or Technical School | 93.0 | [89.9, 95.2] | 203,805 |
| Graduated College or Technical School | 97.9 | [96.9, 98.6] | 200,765 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 82.3 | [73.3, 88.8] | 43,414 |
| $15,000-$24,999 | 80.5 | [75.9, 84.5] | 81,228 |
| $25,000-$34,999 | 90.2 | [85.2, 93.7] | 57,230 |
| $35,000-$49,999 | 90.4 | [86.3, 93.3] | 81,548 |
| $50,000-$99,999 | 97.0 | [95.3, 98.1] | 306,753 |

| Table 11: Health Care Access (Age 18 to 64) | | | |
|---|---|---|---|
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 68.3 | [66.4, 70.1] | 513,902 |
| **AGE** | | | |
| 18-24 | 82.5 | [74.8, 88.2] | 74,520 |
| 25-34 | 84.1 | [79.3, 87.9] | 105,645 |
| 35-44 | 85.4 | [81.0, 89.0] | 96,481 |
| 45-54 | 91.4 | [88.0, 93.8] | 114,489 |
| 55-64 | 94.0 | [91.8, 95.6] | 122,766 |
| 65 and over | -- | [--] | -- |
| **GENDER** | | | |
| Male | 69.5 | [66.7, 72.1] | 249,747 |
| Female | 67.2 | [64.5, 69.7] | 264,155 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 66.7 | [64.4, 68.8] | 322,326 |
| Black/Non-Hispanic | 73.3 | [68.0, 78.0] | 110,543 |
| Other race/Non-Hispanic | 87.6 | [81.1, 92.1] | 26,011 |
| Multiracial/Non-Hispanic | 76.5 | [62.1, 86.6] | 10,525 |
| Hispanic | 58.0 | [51.2, 64.6] | 33,715 |
| **EDUCATION** | | | |
| Did not graduate from High School | 51.1 | [44.2, 57.9] | 47,381 |
| Graduated High School | 67.5 | [64.2, 70.7] | 157,168 |
| Attended College or Technical School | 69.3 | [65.5, 72.9] | 151,931 |
| Graduated College or Technical School | 76.2 | [73.7, 78.5] | 156,276 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 66.1 | [57.6, 73.7] | 34,873 |
| $15,000-$24,999 | 57.3 | [52.1, 62.4] | 57,839 |
| $25,000-$34,999 | 61.8 | [54.6, 68.5] | 39,213 |
| $35,000-$49,999 | 61.6 | [56.2, 66.7] | 55,582 |
| $50,000-$99,999 | 78.7 | [76.2, 81.0] | 248,964 |

## Section 4: Exercise

The following Core Section presents respondents' answers to the question whether in the past month they participated in any physical activity or exercises including running, calisthenics, golf, gardening, or walking for exercise. The physical activity was not supposed to include respondents' regular job. The results are presented in Table 12.

As it follows from the table, a considerable number of Delaware adults had some physical activity in the past month: 73.3 percent. The youngest Delawareans aged 18-24 exercised the most. Among them 82.5 percent reported participation in physical activity. The rates of participation in physical exercise declined with age but still were close to 70 percent even in the oldest age group of 65–year-olds and over when 67.8 percent reported having physical activity or exercising in the past month.

Males exercised at a higher rate than females: 77.6 percent vs. 69.4 percent. Other race/Non-Hispanic respondents had the largest percentage of their peers who stated they had participated in physical activity (77.0 percent), while Multiracial/non-Hispanic respondents exercised the least (69.4 percent) closely followed by Hispanic respondents (69.7 percent).

The rates of participating in physical activity or exercise correlated with the levels of education and income: the better educated and the more affluent respondents were, the more of them reported participation in physical activity other than their regular job. The difference between respondent with the highest and lowest levels of education and income was statistically significant.

| Table 12: Exercise (physical activity) | | | |
|---|---|---|---|
| | Had physical activity or exercise during the past month other than their regular job | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 73.3 | [71.4, 75.1] | 552,067 |
| **AGE** | | | |
| 18-24 | 82.5 | [76.0, 87.5] | 74,538 |
| 25-34 | 77.6 | [71.7, 82.5] | 97,512 |
| 35-44 | 76.3 | [71.0, 80.9] | 86,171 |
| 45-54 | 72.0 | [67.3, 76.2] | 90,213 |
| 55-64 | 68.7 | [64.7, 72.5] | 89,743 |
| 65 and over | 67.8 | [64.6, 70.9] | 113,888 |
| **GENDER** | | | |
| Male | 77.6 | [74.9, 80.1] | 279,065 |
| Female | 69.4 | [66.7, 72.0] | 273,001 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 75.0 | [72.7, 77.1] | 362,687 |
| Black/Non-Hispanic | 69.7 | [64.6, 74.3] | 105,135 |
| Other race/Non-Hispanic | 77.0 | [67.2, 84.6] | 22,862 |
| Multiracial/Non-Hispanic | 69.4 | [53.8, 81.6] | 9,548 |
| Hispanic | 69.7 | [63.1, 75.6] | 40,518 |
| **EDUCATION** | | | |
| Did not graduate from High School | 55.4 | [48.5, 62.2] | 51,456 |
| Graduated High School | 67.2 | [63.7, 70.5] | 156,350 |
| Attended College or Technical School | 76.5 | [73.0, 79.7] | 167,694 |
| Graduated College or Technical School | 85.3 | [82.8, 87.5] | 174,949 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 53.7 | [45.5, 61.7] | 28,317 |
| $15,000-$24,999 | 60.6 | [55.3, 65.7] | 61,164 |
| $25,000-$34,999 | 65.3 | [58.2, 71.9] | 41,457 |
| $35,000-$49,999 | 68.2 | [62.8, 73.2] | 61,531 |
| $50,000-$99,999 | 84.5 | [82.0, 86.8] | 267,324 |

## Section 5: Inadequate Sleep

Regardless of age, getting enough sleep is important to stay healthy. People often forego sleep because they need more time to work, or due to family commitments, or when they simply want to watch a late-night show on TV. However, even one night of inadequate sleep may lead to sleepiness, bad mood, decreased work productivity, and increased probability of getting into a car crash (Centers for Disease Control and Prevention, 2022b). The amount of sleep a person needs varies with their age. Children aged 6-12 years need between 9-12 hours of sleep per 24 hours, whereas adults aged 18-60 years need 7 or more hours of sleep per night (Paruthi, et al., 2016; Watson et al., 2015). Despite these recommendations, a third of adult Americans do not get enough sleep (Centers for Disease Control and Prevention, 2021a).

A regular lack of sleep may increase the risk of obesity, type 2 diabetes, high blood pressure, heart disease and stroke, as well as poor mental health and even early death (Centers for Disease Control and Prevention, 2022b). To get a better night sleep, CDC recommends going to bed and getting up at the same time each day of the week; keeping the bedroom quiet and dark, and at a comfortable temperature; removing electronic devices from the bedroom; avoiding large meals, caffeine, and alcohol before bedtime, and being active during the day, which may help to fall asleep at night (Centers for Disease Control and Prevention, 2021).

The 2016 BRFSS surveyed respondents about how many hours of sleep they got, on average, in a 24-hour period. Table 13 presents respondents' answers to the question. According to the table, 36.3 percent of Delaware adults did not get enough sleep, i.e., on average, they slept less than seven hours in a 24-hour period.

**Table 13: Sleep Hours in a 24-hour Period**

| Hour | Frequency | Wt. % | Cumulative % |
|---|---|---|---|
| 1 | 3,497 | 0.5 | 0.5 |
| 2 | 2,263 | 0.3 | 0.8 |
| 3 | 7,695 | 1.0 | 1.8 |
| 4 | 24,613 | 3.3 | 5.1 |
| 5 | 52,969 | 7.0 | 12.1 |
| 6 | 182,512 | 24.2 | 36.3 |
| 7 | 217,430 | 28.9 | 65.2 |
| 8 | 204,854 | 27.2 | 92.4 |
| 9 | 23,280 | 3.1 | 95.5 |
| 10 | 17,028 | 2.3 | 97.8 |
| 11 | 921 | 0.1 | 97.9 |
| 12 | 3,380 | 0.4 | 98.4 |
| 14 | 390 | 0.1 | 98.4 |
| 15 | 652 | 0.1 | 98.5 |
| 16 | 556 | 0.1 | 98.6 |
| 18 | 1,090 | 0.1 | 98.7 |
| Don’t know/Not sure | 8,043 | 1.1 | 99.8 |
| Refused | 1,275 | 0.2 | 100.0 |
| Total | 752,801 | 100.0 | |

## Section 6: Chronic Health Conditions

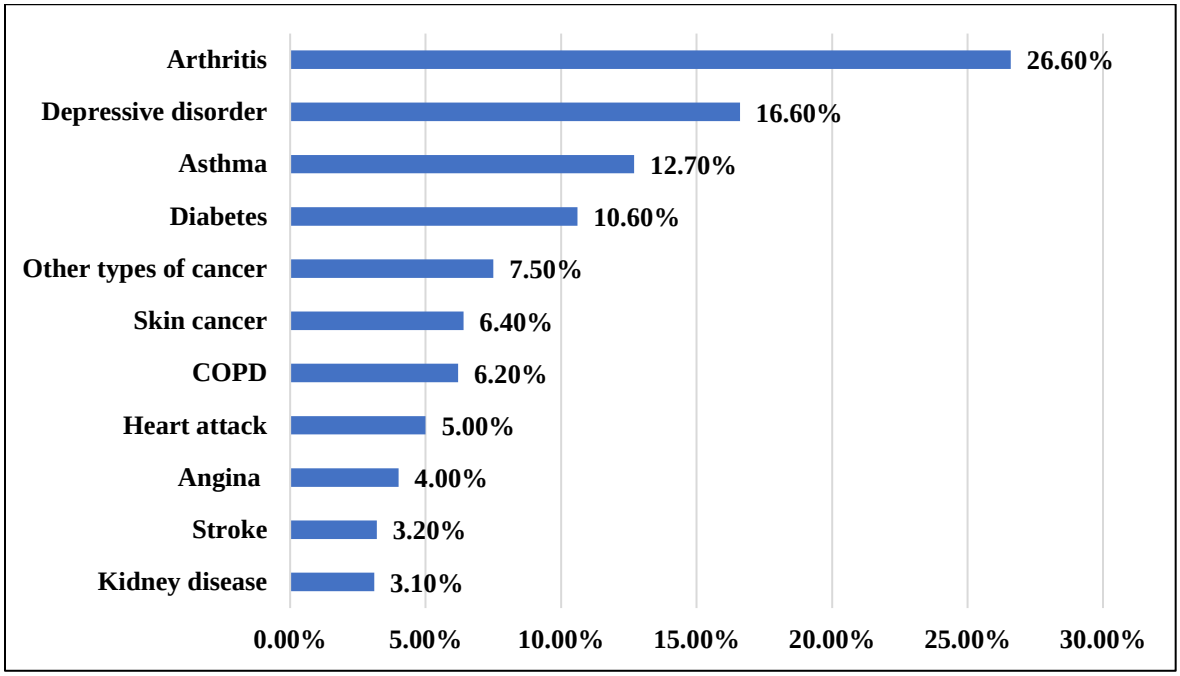
According to CDC, chronic diseases can be broadly defined as "conditions that last 1 year or more and require ongoing medical attention or limit activities of daily living or both" (Centers for Disease Control and Prevention, 2022c). Chronic diseases like heart disease, stroke, cancer, or diabetes are the leading causes of death and disability in America affecting six out of ten Americans (Centers for Disease Control and Prevention, 2022d). Additionally, chronic diseases take an economic toll. Research finds that in the United States, 90 percent of the total annual $4.1 trillion health care expenditures go to people with chronic and mental health conditions (Buttorff et al., 2017; CMS.gov, 2022).

One-third of all deaths falls on heart disease and stroke killing more than 877,500 Americans each year and costing the American health care system $216 billion annually with additional $147 billion in lost productivity on the job (Benjamin et al., 2018). The second leading cause of death in this country is cancer. More than 1.7 million people in this country are diagnosed with cancer each year, and about 600,000 die from it. The cost of cancer care keeps rising and is estimated to be over $240 billion by 2030 (Mariotto et al., 2020). Over 37 million people in the United States have diabetes and 96 million of adults have prediabetes, a condition that puts them at risk for developing Type 2 diabetes. The total cost of diabetes in medical costs and lost productivity was estimated to be $327 billion in 2017 (American Diabetes Association, 2018).

Other chronic health conditions that affect millions of Americans and cost the health care system billions of dollars annually include obesity, arthritis, Alzheimer's disease, epilepsy, and tooth decay (Centers for Disease Control and Prevention, 2022e). The chronic health condition section is a core component of BRFSS, and some types of chronic diseases are surveyed every year, while others are included in the questionnaire every other year. In 2016, eleven types of chronic diseases were surveyed in Delaware: heart attack, angina, stroke, asthma, skin cancer, other types of cancer, chronic obstructive pulmonary disease (COPD), arthritis, depressive disorder, kidney disease, and diabetes. Figure 1 presents the chronic disease prevalence rates among Delaware adults in 2016. Arthritis turned out to be the most prevalent disease in Delaware with a rate of 26.6 percent.

**Figure 1**

**BRFSS 2016 Chronic Disease Prevalence in Delaware**




Source: Centers for Disease Control and Prevention, 2015a.

Table 14 lists the prevalence rates and the estimated populations with chronic conditions in Delaware based on the 2016 BRFSS. The chronic diseases prevalence in Delaware was similar to that of the United States with respect to all types of chronic conditions. Arthritis, depressive disorder, and asthma were the three most widely prevalent chronic diseases in Delaware, as well as across the nation in 2016. In particular, the arthritis rate was 26.6 percent in Delaware and 25.2 percent in the U.S.; the rates for depressive disorder were 16.6 percent and 16.5 percent, respectively, whereas for asthma they were 12.7 percent and 13.6 percent, respectively.

| Table 14: Chronic Disease Prevalence | | | | |
|---|---|---|---|---|
| | Wt. % | Delaware 95% C.I. | Est. Pop. | U.S. Wt. % |
| Heart attack (myocardial infraction) | 5.0 | [4.2, 5.9] | 37,686 | 4.3 |
| Angina or coronary heart disease | 4.0 | [3.4, 4.6] | 29,806 | 4.3 |
| Stroke | 3.2 | [2.7, 3.8] | 24,062 | 3.2 |
| Asthma | 12.7 | [11.4, 14.2] | 95,851 | 13.6 |
| Skin cancer | 6.4 | [5.6, 7.2] | 48,148 | 5.9 |
| Other types of cancer | 7.5 | [6.6, 8.5] | 56,640 | 6.5 |
| Arthritis (rheumatoid arthritis, gout, lupus, or fibromyalgia) | 26.6 | [24.9, 28.4] | 200,148 | 25.2 |
| C.O.P.D. (chronic obstructive pulmonary disease), emphysema or chronic bronchitis | 6.2 | [5.4, 7.2] | 46,982 | 6.4 |
| Depressive disorder (including depression, major depression, dysthymia, or minor depression) | 16.6 | [15.0, 18.3] | 124,856 | 16.5 |
| Kidney disease | 3.1 | [2.5, 3.7] | 23,147 | 2.9 |
| Diabetes | 10.6 | [9.5, 11.8] | 79,817 | 10.8 |

## Arthritis

Arthritis is a general term that is used to describe more than 100 types of conditions affecting joints and tissues around joints. Most types of arthritis are characterized by pain and stiffness in and around affected joints. Some types of arthritis can also affect the immune system and some internal organs. The most common types of arthritis include osteoarthritis, rheumatoid arthritis, gout, and fibromyalgia. In the U.S., arthritis affects 58.5 million adults, i.e., approximately 1 in 4 adults. According to CDC, arthritis is a leading cause of work disability, one of the most common chronic conditions, and a common cause of chronic pain (Centers for Disease Control and Prevention, 2022e). Children can also develop this type of condition (Centers for Disease Control and Prevention, 2021b).

In 2016, over 26 percent of adults in Delaware were diagnosed with some form of arthritis: rheumatoid arthritis, gout, lupus, or fibromyalgia. Many more adults aged 65 and over had arthritis than adults in the youngest age-group of 18–24-year-olds: 51.4 percent vs. 2.1 percent. More women had arthritis than men (30.5 percent vs. 22.3 percent). Among race/ethnic groups, the highest ratio of people with arthritis was among White/non-Hispanic respondents (29.9 percent). The level of education seemed to be correlated with arthritis in reverse. That is, the better educated respondents were, the fewer of them had ever been told they had some form of arthritis. The level of household income did not correlate with how many respondents were diagnosed with the disease. However, respondents in the group with the highest income had the lowest number of individuals among them who had arthritis, while respondents with the lowest level had the highest number of such individuals (21.3 percent vs. 35.6 percent), and the difference was statistically significant.

| Table 15: Arthritis | | | |
|---|---|---|---|
| | Ever told had some form of arthritis | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 26.6 | [24.9, 28.4] | 200,148 |
| **AGE** | | | |
| 18-24 | 2.1 | [0.8, 5.7] | 1,895 |
| 25-34 | 9.9 | [6.2, 15.3] | 12,389 |
| 35-44 | 13.9 | [10.3, 18.5] | 15,670 |
| 45-54 | 26.9 | [22.8, 31.5] | 33,731 |
| 55-64 | 38.4 | [34.4, 42.6] | 50,130 |
| 65 and over | 51.4 | [48.1, 54.7] | 86,330 |
| **GENDER** | | | |
| Male | 22.3 | [19.9, 24.9] | 80,228 |
| Female | 30.5 | [28.1, 33.0] | 119,920 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 29.9 | [27.7, 32.2] | 144,525 |
| Black/Non-Hispanic | 25.3 | [21.1, 30.0] | 38,154 |
| Other race/Non-Hispanic | 14.6 | [8.6, 23.7] | 4,330 |
| Multiracial/Non-Hispanic | 26.2 | [14.6, 42.4] | 3,603 |
| Hispanic | 10.9 | [7.7, 15.2] | 6,320 |
| **EDUCATION** | | | |
| Did not graduate from High School | 34.6 | [28.3, 41.5] | 32,110 |
| Graduated High School | 29.0 | [26.0, 32.2] | 67,531 |
| Attended College or Technical School | 26.9 | [23.7, 30.5] | 59,040 |
| Graduated College or Technical School | 19.7 | [17.4, 22.2] | 40,349 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 35.6 | [28.8, 43.0] | 18,752 |
| $15,000-$24,999 | 31.4 | [26.8, 36.4] | 31,696 |
| $25,000-$34,999 | 34.2 | [27.7, 41.3] | 21,679 |
| $35,000-$49,999 | 27.7 | [23.1, 32.8] | 24,981 |
| $50,000-$99,999 | 21.3 | [18.9, 24.0] | 67,453 |

**Depressive Disorder**

Depressive disorder is a chronic disease surveyed by BRFSS every year. In the 2016 BRFSS, depressive disorder included depression, major depression, dysthymia, and minor depression. CDC maintains that depression is not just feeling down or having a bad day. Individuals whose sad mood is long-lasting and interferes with their usual everyday functioning may be suffering from depression (Centers for Disease Control and Prevention, 2022f). The American Psychiatric Association (2013) provides the following depression symptoms:

- Feeling sad or anxious often or all the time
- Not wanting to do activities that used to be fun
- Feeling irritable, easily frustrated, or restless
- Having trouble falling asleep or staying asleep
- Waking up too early or sleeping too much
- Eating more or less than usual or having no appetite
- Experiencing aches, pains, headaches, or stomach problems that do not improve with treatment
- Having trouble concentrating, remembering details, or making decisions
- Feeling tired, even after sleeping well
- Feeling guilty, worthless, or helpless
- Thinking about suicide or hurting yourself

As follows from Table 16, in 2016, in Delaware, most respondents suffering from depression were in the age group of 55–64-year-olds (20.3 percent). Many more women were prone to depression than men. The difference was 8.4 percentage points, and it was statistically significant. At 24.1 percent, Multiracial/non-Hispanic respondents had the largest ratio of depressed people among them. As for the level of education and income, the most depressed people were in the group of respondents who had not graduated from high school (23.5 percent) and in the group with the lowest annual income of less than $15,000 (27.3 percent). The lowest number of individuals with depression was among those who had the highest level of education, i.e., those who had graduated from college or technical school (12.8 percent) and those with the highest annual income ranging from $50,000 to $99,999 (12.3 percent).

| Table 16: Depressive Disorder | | | |
|---|---|---|---|
| | Ever told had depressive disorder | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 16.6 | [15.0, 18.3] | 124,856 |
| **AGE** | | | |
| 18-24 | 16.6 | [11.3, 23.7] | 14,983 |
| 25-34 | 16.5 | [12.0, 22.2] | 20,674 |
| 35-44 | 15.6 | [11.7, 20.5] | 17,573 |
| 45-54 | 18.1 | [14.4, 22.4] | 22,641 |
| 55-64 | 20.3 | [17.1, 23.9] | 26,487 |
| 65 and over | 13.4 | [11.4, 15.7] | 22,496 |
| **GENDER** | | | |
| Male | 12.2 | [10.1, 14.7] | 43,958 |
| Female | 20.6 | [18.3, 23.0] | 80,897 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 18.1 | [16.1, 20.3] | 87,716 |
| Black/Non-Hispanic | 12.0 | [9.1, 15.8] | 18,137 |
| Other race/Non-Hispanic | 14.9 | [8.3, 25.2] | 4,423 |
| Multiracial/Non-Hispanic | 24.1 | [11.7, 43.3] | 3,315 |
| Hispanic | 13.8 | [9.3, 20.1] | 8,026 |
| **EDUCATION** | | | |
| Did not graduate from High School | 23.5 | [17.7, 30.6] | 21,855 |
| Graduated High School | 14.5 | [12.1, 17.2] | 33,682 |
| Attended College or Technical School | 18.9 | [15.7, 22.6] | 41,418 |
| Graduated College or Technical School | 12.8 | [10.7, 15.2] | 26,172 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 27.3 | [21.1, 34.5] | 14,408 |
| $15,000-$24,999 | 24.2 | [19.7, 29.4] | 24,432 |
| $25,000-$34,999 | 21.6 | [16.2, 28.2] | 13,704 |
| $35,000-$49,999 | 15.6 | [11.8, 20.3] | 14,041 |
| $50,000-$99,999 | 12.3 | [10.2, 14.9] | 38,951 |

## Asthma

Asthma is a disease that affects a person's lungs. People with asthma may experience "repeated episodes of wheezing, breathlessness, chest tightness, and nighttime or early morning coughing" (Centers for Disease Control and Prevention, 2022g). Pate et al. (2021) report that between 2006 and 2018, the asthma rates were higher among boys younger than 18, among women of 18 years of age and older, and among non-Hispanic Black, non-Hispanic multiple-race, and Puerto Rican persons. In addition, asthma deaths rates were found to be higher among adults, females, and Black persons, and all pertinent asthma outcomes were more prevalent among persons with low family incomes. The researchers concluded that in spite of certain improvements in asthma outcomes, disparities in asthma indicators still persisted along demographic characteristics, poverty levels, as well as geographic location.

Table 17 presents the survey results for Delaware adults with asthma. The results indicate similar patterns as mentioned by Pate et al. (2021). More women than men had asthma in Delaware in 2016; more Multiracial/non-Hispanic and Black/non-Hispanic respondents had asthma than representatives of other races or ethnic groups; and respondents with the lowest levels of education and income had the largest ratios of persons with asthma among them.

| Table 17: Asthma | | | |
|---|---|---|---|
| | Ever told had asthma | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 12.7 | [11.4, 14.2] | 95,851 |
| **AGE** | | | |
| 18-24 | 18.6 | [13.4, 25.3] | 16,816 |
| 25-34 | 12.7 | [9.3, 17.0] | 15,926 |
| 35-44 | 14.2 | [10.6, 18.7] | 15, 989 |
| 45-54 | 12.9 | [9.7, 16.9] | 16,115 |
| 55-64 | 11.6 | [9.3, 14.5] | 15,202 |
| 65 and over | 9.4 | [7.7, 11.5] | 15,802 |
| **GENDER** | | | |
| Male | 10.8 | [8.9, 12.9] | 38, 654 |
| Female | 14.5 | [12.6, 16.7] | 57,197 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 11.4 | [9.9, 13.1] | 55,203 |
| Black/Non-Hispanic | 16.7 | [13.0, 21.3] | 25,221 |
| Other race/Non-Hispanic | 13.4 | [7.3, 23.2] | 3,978 |
| Multiracial/Non-Hispanic | 19.3 | [9.9, 34.3] | 2,659 |
| Hispanic | 10.8 | [7.4, 15.4] | 6,246 |
| **EDUCATION** | | | |
| Did not graduate from High School | 16.5 | [12.1, 22.1] | 15,294 |
| Graduated High School | 12.8 | [10.5, 15.5] | 29,787 |
| Attended College or Technical School | 12.5 | [10.1, 15.4] | 27,403 |
| Graduated College or Technical School | 10.8 | [8.7, 13.5] | 22,240 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 22.1 | [16.4, 29.1] | 11,657 |
| $15,000-$24,999 | 16.5 | [12.8, 20.8] | 16,598 |
| $25,000-$34,999 | 13.8 | [9.7, 19.3] | 8,784 |
| $35,000-$49,999 | 13.3 | [9.8, 17.9] | 12,028 |
| $50,000-$99,999 | 10.2 | [8.3, 12.5] | 32,247 |

## Section 7: Oral Health

CDC states that oral health is essential to general health and well-being. Oral disease may result in pain and infection and engender problems with eating, speaking, and learning. It may also impact social interaction and adversely affect potential employment (U.S. Department of Health and Human Services, 2000). According to the World Health Organization, overall health and quality of life are most affected by the following three oral conditions: cavities, severe gum disease, and severe tooth loss (World Health Organization, 2022). Currently, a quarter of adults in the U.S. aged 20 to 64 have cavities (Centers for Disease Control and Prevention, 2021c). Naavaal and Kelekar (2018), find that the number of school hours that are lost each year due to unplanned (emergency) dental care equals 34 million. In addition, the U.S. loses $45 billion every year in productivity because of untreated dental disease (Righolt et al., 2018).

CDC reports that the baby boomer generation is the first where the majority of people will keep their natural teeth over their entire lifetime thanks to the benefits of water fluoridation and fluoride toothpaste (Centers for Disease Control and Prevention, 2020b). This being said, many adults still need treatment for dental problems, and many still have difficulty accessing dental treatment since they do not have dental insurance (Ibid.).

Table 18 presents the outcomes of respondents' answers to the question concerning whether they had visited a dentist, dental clinic, or dental specialists (e.g., orthodontists) within the past year. As it follows from the table, the highest ratio of adults who had visited a dentist turned out to be in the youngest age group of Delawareans aged 18-24 (73.3 percent). The number dropped to 57.4 percent in the age group of 25–34-year-olds, but steadily increased in all the subsequent age groups. More females than males saw a dentist in 2016 (67.4 percent vs. 63.1 percent). Hispanic respondents had the smallest number of individuals among them who had visited a dentist (49.4 percent), while White/non-Hispanic respondents had the highest ratio of such individuals (69.9 percent). Dentist's visits correlated with the level of education, and, to an extent, with the level of income. For example, 29.2 percent of respondents who had not graduated from high school visited a dentist in 2016 as compared to 81.5 percent of those who had graduated from college or technical school. Less than 37 percent of respondents who were making between

$15,000 and $24,999 a year saw a dentist, while among respondents with the annual income ranging from $50,000 to $99,999, 81.2 percent visited a dentist.

**Table 18: Oral Health**

| | Adults who have visited a dentist, dental clinic, or dental specialists (e.g., orthodontists) within the past year | | |
|---|---|---|---|
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 65.3 | [63.3, 67.4] | 491,940 |
| **AGE** | | | |
| 18-24 | 73.3 | [65.9, 79.5] | 66,176 |
| 25-34 | 57.4 | [51.3, 63.3] | 72,179 |
| 35-44 | 61.6 | [55.6, 67.2] | 69,534 |
| 45-54 | 62.9 | [57.8, 67.7] | 78,805 |
| 55-64 | 68.5 | [64.4, 72.3] | 89,482 |
| 65 and over | 68.9 | [65.6, 72.1] | 115,761 |
| **GENDER** | | | |
| Male | 63.1 | [60.0, 66.1] | 226,871 |
| Female | 67.4 | [64.6, 70.1] | 265,068 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 69.9 | [67.5, 72.2] | 337,981 |
| Black/Non-Hispanic | 58.9 | [53.4, 64.2] | 88,899 |
| Other race/Non-Hispanic | 61.7 | [50.8, 71.6] | 18,320 |
| Multiracial/Non-Hispanic | 59.0 | [42.7, 73.4] | 8,107 |
| Hispanic | 49.4 | [42.5, 56.3] | 28,706 |
| **EDUCATION** | | | |
| Did not graduate from High School | 29.2 | [23.4, 35.8] | 27,138 |
| Graduated High School | 60.3 | [56.6, 63.9] | 140,309 |
| Attended College or Technical School | 71.3 | [67.3, 75.0] | 156,243 |
| Graduated College or Technical School | 81.5 | [78.8, 84.0] | 167,200 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 41.4 | [33.4, 50.0] | 21,852 |
| $15,000-$24,999 | 36.7 | [31.9, 41.8] | 37,013 |
| $25,000-$34,999 | 58.4 | [50.9, 65.6] | 37,064 |
| $35,000-$49,999 | 62.6 | [56.8, 68.0] | 56,481 |
| $50,000-$99,999 | 81.2 | [78.3, 83.7] | 256,702 |

Table 19 presents percentages of adults who had between 1 and 5 of their permanent teeth removed because of tooth decay or gum disease. The number of people who had their permanent

teeth removed increased with age, however, there were slightly more of such people in the age groups of 45–54- and 55–64-year-olds than in the group of 65 and over. Slightly more females than males had their teeth removed. Hispanic respondents had the largest percentage of adults with permanent teeth removed among all other race/ethnic groups. The ratio among Hispanic respondents was 39.1 percent followed by Black/non-Hispanic respondents at 30.5 percent and Multiracial/non-Hispanic respondents at 25.8 percent. The levels of education and income did not correlate with the percentages of adults whose permanent teeth were removed.

**Table 19: Oral Health (cont.)**

| | Adults who had 1 to 5 of their permanent teeth removed because of tooth decay or gum disease | | |
|---|---|---|---|
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 27.0 | [25.3, 28.9] | 203,562 |
| **AGE** | | | |
| 18-24 | 9.1 | [5.3, 15.0] | 8,182 |
| 25-34 | 19.4 | [15.5, 24.1] | 24,235 |
| 35-44 | 27.5 | [22.9, 32.7] | 31,104 |
| 45-54 | 33.2 | [28.5, 38.3] | 41,612 |
| 55-64 | 33.4 | [29.5, 37.6] | 43,615 |
| 65 and over | 32.5 | [29.4, 35.8] | 54,611 |
| **GENDER** | | | |
| Male | 26.3 | [23.7, 29.1] | 94,544 |
| Female | 27.7 | [25.3, 30.3] | 109,018 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 25.3 | [23.2, 27.4] | 122,153 |
| Black/Non-Hispanic | 30.5 | [25.9, 35.6] | 46,073 |
| Other race/Non-Hispanic | 16.0 | [9.4, 26.0] | 4,760 |
| Multiracial/Non-Hispanic | 25.8 | [14.6, 41.2] | 3,542 |
| Hispanic | 39.1 | [32.7, 45.9] | 22,712 |
| **EDUCATION** | | | |
| Did not graduate from High School | 26.8 | [21.6, 32.7] | 24,895 |
| Graduated High School | 27.5 | [24.5, 30.8] | 64,056 |
| Attended College or Technical School | 30.6 | [26.8, 34.6] | 66,975 |
| Graduated College or Technical School | 22.5 | [19.9, 25.3] | 46,171 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 26.9 | [20.8, 34.0] | 14,197 |
| $15,000-$24,999 | 29.2 | [24.7, 34.2] | 29,482 |
| $25,000-$34,999 | 29.5 | [23.6, 36.3] | 18,733 |
| $35,000-$49,999 | 31.8 | [26.9, 37.2] | 28,702 |
| $50,000-$99,999 | 25.7 | [22.9, 28.7] | 81,200 |

### Section 8: Demographics

The demographics section of the survey concerned itself with various questions regarding respondents' demographic characteristics. The characteristics included, for example, respondents' sex, origin, marital status, the highest grade, or year of school they completed, whether they owned or rented their home, the number of children younger than 18 years of age who lived in their household, whether they had ever served on active duty in the United States Armed Forces, and the like. The demographic characteristics were not analyzed separately in the given report.

### Section 9: Tobacco Use

CDC states that cigarettes smoke contains more than 7,000 chemicals and chemical compounds (Centers for Disease Control and Prevention, 2021d). Smoking can have an adverse effect on almost every organ of a person's body and often leads to diseases and disability. Smokers in general are much less healthy than nonsmokers (Ibid.). Smoking may cause cancer, stroke, heart and lung diseases, diabetes, chronic obstructive pulmonary disease (COPD), including emphysema and chronic bronchitis, as well as erectile dysfunction in males. Additionally, smoking increases the risk of developing tuberculosis, some eye diseases, and problems of the immune system (Centers for Disease Control and Prevention, 2021e). In the U.S., over 480,000 people die every year due to cigarette smoking, which is about 1,300 deaths per day (Ibid.). Smokers also tend to live on average 10 years less than nonsmokers (Jha et. al., 2013).

In Delaware, in 2016, 44.2 percent of adults reported having smoked at least 100 cigarettes in their entire life (Table 20). Male adults tended to smoke more than female adults (48.3 percent vs. 40.4 percent). This difference was statistically significant. More Multiracial/non-Hispanic respondents had smoked at least 100 cigarettes in their life than White/non-Hispanic or Black/non-Hispanic respondents (55.0 percent, 50.1 percent, and 35.1 percent, respectively). Education attainment and, to a degree, the level of income seemed to be correlated with smoking: the better educated and the more affluent respondents were, the fewer of them had smoked at least 100 cigarettes in their life.

| Table 20: Tobacco Use | | | |
|---|---|---|---|
| | Have smoked at least 100 cigarettes in entire life | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 44.2 | [42.0, 46.3] | 321,375 |
| **AGE** | | | |
| 18-24 | 19.0 | [13.5, 26.0] | 16,524 |
| 25-34 | 39.3 | [33.3, 45.7] | 47,142 |
| 35-44 | 43.7 | [37.8, 49.8] | 47,672 |
| 45-54 | 45.5 | [40.4, 50.7] | 54,957 |
| 55-64 | 53.5 | [49.2, 57.7] | 67,390 |
| 65 and over | 53.2 | [49.8, 56.5] | 87,689 |
| **GENDER** | | | |
| Male | 48.3 | [45.1, 51.5] | 167,481 |
| Female | 40.4 | [37.5, 43.3] | 153,894 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 50.1 | [47.5, 52.8] | 236,897 |
| Black/Non-Hispanic | 35.1 | [29.2, 39.4] | 48,604 |
| Other race/Non-Hispanic | 25.7 | [16.8, 37.3] | 7,206 |
| Multiracial/Non-Hispanic | 55.0 | [38.5, 70.4] | 7,178 |
| Hispanic | 25.7 | [20.3, 31.9] | 14,345 |
| **EDUCATION** | | | |
| Did not graduate from High School | 58.0 | [51.1, 64.6] | 51,761 |
| Graduated High School | 48.5 | [44.6, 52.3] | 107,940 |
| Attended College or Technical School | 44.7 | [40.4, 49.1] | 95,054 |
| Graduated College or Technical School | 32.7 | [29.5, 36.0] | 65,331 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 58.0 | [49.4, 66.1] | 29,528 |
| $15,000-$24,999 | 51.7 | [46.3, 57.0] | 50,817 |
| $25,000-$34,999 | 48.3 | [40.4, 56.3] | 29,881 |
| $35,000-$49,999 | 48.6 | [42.9, 54.3] | 43,044 |
| $50,000-$99,999 | 39.6 | [36.3, 42.9] | 123,191 |

In 2016, over a quarter of Delaware adults (27.9 percent) smoked cigarettes every day (Table 21). At 43.1 percent, the group of Delawareans aged 25-34 had the largest share of respondents who smoked every day. More females smoked than males in 2016: 30.2 percent vs. 25.8 percent. The race/ethnic group that had most smokers among them was the group of Black/non-Hispanic respondents (37.1 percent). The level of education seemed to have a reverse correlation with the smoking rates: the more educated the respondents were, the fewer of them smoked. For example, 34.6 percent of respondents who did not graduate from high school smoked.

At the same time, only 15.2 percent of respondents who graduated from college or technical school smoked. As for the income levels, there was no clear correlation between how much money respondents were making and how many of them smoked. At the same time, the largest number of smokers turned out to be in the group with the lowest annual income of less than $15,000 (43.9 percent), and the lowest number of smokers was in the group with the annual income between $50,000 and $99,999 (23.2 percent).

**Table 21: Tobacco Use (cont.)**

| | Smoke cigarettes every day now | | |
|---|---|---|---|
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 27.9 | [25.0, 31.0] | 89,627 |
| **AGE** | | | |
| 18-24 | 28.8 | [15.7, 46.7] | 4,752 |
| 25-34 | 43.1 | [33.0, 53.8] | 20,331 |
| 35-44 | 30.5 | [22.9, 39.2] | 14,510 |
| 45-54 | 36.2 | [29.2, 43.8] | 19,883 |
| 55-64 | 28.6 | [23.4, 34.4] | 19,219 |
| 65 and over | 12.5 | [9.6, 16.0] | 10,929 |
| **GENDER** | | | |
| Male | 25.8 | [21.7, 30.3] | 43,151 |
| Female | 30.2 | [26.3, 34.5] | 46,475 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 26.4 | [23.2, 29.8] | 62,455 |
| Black/Non-Hispanic | 37.1 | [28.9, 46.2] | 18,003 |
| Other race/Non-Hispanic | 13.8 | [5.5, 30.9] | 997 |
| Multiracial/Non-Hispanic | 31.9 | [15.2, 55.1] | 2,278 |
| Hispanic | 18.9 | [11.5, 29.5] | 2,710 |
| **EDUCATION** | | | |
| Did not graduate from High School | 34.6 | [25.7, 44.6] | 17,900 |
| Graduated High School | 31.9 | [27.3, 37.0] | 34,473 |
| Attended College or Technical School | 28.7 | [23.5, 34.6] | 27,263 |
| Graduated College or Technical School | 15.2 | [11.3, 20.1] | 9,927 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 43.9 | [33.8, 54.4] | 12,956 |
| $15,000-$24,999 | 29.9 | [23.6, 37.1] | 15,208 |
| $25,000-$34,999 | 31.1 | [22.9, 40.7] | 9,297 |
| $35,000-$49,999 | 29.8 | [22.8, 37.9] | 12,817 |
| $50,000-$99,999 | 23.2 | [18.8, 28.2] | 28,566 |

## Section 10: E-Cigarettes

E-cigarettes, also known as "e-cigs", "e-hookahs", "mods", "vape pens", "vapes", "tank systems", and "electronic nicotine delivery systems (ENDS)" usually have a battery, a heating element, and a place to hold a liquid. Using e-cigarettes is sometimes called "vaping". E-cigarettes produce an aerosol, whish users inhale into their lungs, and bystanders can breathe in when users exhale it into the air. E-cigarettes can also be used to deliver marijuana and other drugs (Centers for Disease Control and Prevention, 2022h).

CDC states that e-cigarettes have the potential to benefit adults who smoke if they are used to substitute regular cigarettes and other smoked tobacco products; however, they are unsafe for youth, young adults, pregnant women, and those who do not use tobacco products. As of now, it is not clear whether e-cigarettes are actually effective in helping adults quit smoking (Ibid.).

Even though e-cigarettes are less harmful than regular ones, it does not mean they are completely safe. Aerosol produced by e-cigarettes contains harmful and potentially harmful substances such as nicotine, heavy metals like lead, volatile organic compounds, and cancer-causing agents (U.S. Department of Health and Human Services, 2016). Some chemicals contained in e-cigarette aerosol are harmful to the lungs.

As mentioned above, most e-cigarettes contain nicotine, which is an addictive drug (Centers for Disease Control and Prevention, 2022i). Using nicotine in adolescence can harm the developing brain of young people, harm the parts of the brain that control attention, learning, mood, and impulse control, and increase the risk for addiction to other drugs (Taylor et al., 2014).

In the 2016 BRFSS, respondents were asked two questions about e-cigarettes. First, they were asked if they had ever used an e-cigarette or other electronic "vaping" product in their entire life, and then they were asked whether they currently used e-cigarettes or other "vaping" products on a daily basis, some days, or not at all.

Table 22 presents respondents' answers to the first question. It follows from the table that age turned out to be correlated with the use of e-cigarettes. That is, the younger the age group was, the more individuals in it reported ever using e-cigarettes or other electronic "vaping" products. For example, almost 43 percent of 18–24-year-old respondents reported ever using e-cigarettes,

while in the group of 65 and over only 6.0 percent said they did it. More males admitted ever using e-cigarettes than females: 21.3 percent vs. 16.9 percent. More respondents who identified as Multiracial/non-Hispanic (32.4 percent) said they had ever used e-cigarettes than respondents in any other race/ethnic group. The levels of education and income were not found to be correlated with the rates of using e-cigarette.

**Table 22: E-Cigarettes**

| | Ever used an e-cigarette or other electronic "vaping" product | | |
|---|---|---|---|
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 19.0 | [17.2, 21.0] | 137,759 |
| **AGE** | | | |
| 18-24 | 42.8 | [34.5, 51.5] | 37,091 |
| 25-34 | 30.9 | [25.5, 36.9] | 36,773 |
| 35-44 | 17.5 | [13.5, 22.2] | 19,019 |
| 45-54 | 16.4 | [12.8, 20.8] | 19,723 |
| 55-64 | 12.1 | [9.7, 15.0] | 15,226 |
| 65 and over | 6.0 | [4.7, 7.7] | 9,925 |
| **GENDER** | | | |
| Male | 21.3 | [18.7, 24.2] | 73,560 |
| Female | 16.9 | [14.4, 19.7] | 64,198 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 19.9 | [17.6, 22.4] | 93,742 |
| Black/Non-Hispanic | 15.8 | [12.1, 20.4] | 22,487 |
| Other race/Non-Hispanic | 20.3 | [12.6, 31.0] | 5,555 |
| Multiracial/Non-Hispanic | 32.4 | [19.4, 49.0] | 4,223 |
| Hispanic | 12.5 | [8.1, 18.7] | 6,942 |
| **EDUCATION** | | | |
| Did not graduate from High School | 19.7 | [14.9, 25.6] | 17,607 |
| Graduated High School | 22.3 | [19.0, 25.8] | 49,427 |
| Attended College or Technical School | 23.3 | [19.3, 27.9] | 49,304 |
| Graduated College or Technical School | 10.2 | [8.2, 12.7] | 20,370 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 24.8 | [18.6, 32.3] | 12,630 |
| $15,000-$24,999 | 21.6 | [17.5, 26.4] | 21,204 |
| $25,000-$34,999 | 31.3 | [22.8, 41.2] | 19,333 |
| $35,000-$49,999 | 19.1 | [14.7, 24.3] | 16,745 |
| $50,000-$99,999 | 14.9 | [12.4, 17.8] | 46,398 |

Table 23 provides information about how many respondents used e-cigarettes or other electronic “vaping” products daily according to their demographic characteristics. Even though respondents in the youngest age-group had the highest ratio of individuals who had ever used e-cigarettes (see Table 23), they were not the ones who used e-cigarettes or other electronic “vaping” products daily more than representatives of other age groups. The most daily users were revealed in the age group of 35–44-year-olds (12.3 percent) followed by 45–54-year-olds (10.3 percent). The difference between males and females who used e-cigarettes daily was considerable equaling 6.9 percentage points in favor of males. Multiracial/non-Hispanic respondents still ranked first among all other race/ethnic groups (13.7 percent). There was now a reverse correlation between the level of education and smoking rates: the better educated respondents were, the fewer of them used e-cigarettes on a daily basis. The level of income did not reveal any correlation with the rates of using e-cigarettes, however.

| Table 23: E-Cigarettes (cont.) | | | |
|---|---|---|---|
| | Use e-cigarettes or other electronic "vaping" products every day now | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 9.0 | [6.2, 12.9] | 12,437 |
| **AGE** | | | |
| 18-24 | 9.3 | [3.7, 21.8] | 3,462 |
| 25-34 | 7.9 | [3.6, 16.6] | 2,911 |
| 35-44 | 12.3 | [6.0, 23.7] | 2,337 |
| 45-54 | 10.3 | [4.7, 21.1] | 2,025 |
| 55-64 | 8.7 | [4.1, 17.7] | 1,339 |
| 65 and over | 3.4 | [1.2, 9.7] | 360 |
| **GENDER** | | | |
| Male | 12.2 | [8.0, 18.3] | 9,032 |
| Female | 5.3 | [2.5, 10.9] | 3,405 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 10.8 | [7.1, 16.2] | 10,240 |
| Black/Non-Hispanic | 2.4 | [0.5, 11.8] | 547 |
| Other race/Non-Hispanic | 1.1 | [0.1, 7.7] | 60 |
| Multiracial/Non-Hispanic | 13.7 | [4.6, 34.2] | 577 |
| Hispanic | 5.2 | [0.7, 29.0] | 357 |
| **EDUCATION** | | | |
| Did not graduate from High School | 15.4 | [7.9, 27.9] | 2,742 |
| Graduated High School | 9.2 | [4.5, 18.0] | 4,577 |
| Attended College or Technical School | 8.9 | [4.8, 16.1] | 4,418 |
| Graduated College or Technical School | 3.4 | [1.6, 6.9] | 699 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 6.1 | [2.4, 14.7] | 773 |
| $15,000-$24,999 | 5.9 | [2.9, 11.4] | 1,250 |
| $25,000-$34,999 | 8.2 | [2.4, 24.7] | 1,583 |
| $35,000-$49,999 | 2.1 | [0.5, 7.5] | 350 |
| $50,000-$99,999 | 8.1 | [4.1, 15.4] | 3,766 |

## Section 11: Alcohol Consumption

A person's health may be adversely affected if he or she drinks too much either on a single occasion or over a lengthy period of time. Possible risks can be short- or long-term and might be caused by injuries, sexual assault, and alcohol poisoning. Drinking also poses risks of various diseases, learning and memory problems, and mental health and social problems (Centers for Disease Control and Prevention, 2022j). The National Institute of Alcohol Abuse and Alcoholism states that alcohol can produce a negative impact on a person's brain, heart, liver, pancreas, and the immune system (National Institute of Alcohol Abuse and Alcoholism, n.d.). The impact of alcohol on the brain may cause changes in mood and behavior; as for the heart, it may cause cardiomyopathy, arrhythmias, stroke and high blood pressure; the liver may develop steatosis, or fatty liver, alcoholic hepatitis, fibrosis or cirrhosis; in the pancreas, alcohol causes the production of toxic substances leading to pancreatitis – a dangerous condition that prevents proper digestion; finally, alcohol can weaken a person's immune system making him or her more susceptible to pneumonia and tuberculosis, for example (Ibid.).

According to the National Cancer Institute, there exists a strong scientific consensus that alcohol consumption may lead to certain types of cancer (National Cancer Institute, 2021). The following types of cancer are strongly correlated with alcohol drinking: head and neck cancer (oral cavity, pharynx (throat), and larynx (voice box)), esophageal cancer (esophageal squamous cell carcinoma), liver cancer (hepatocellular carcinoma and intrahepatic cholangiocarcinoma), breast cancer, and colorectal cancer.

Drinking can be divided into moderate and excessive (Centers for Disease Control and Prevention, 2022j). Moderate drinking means that adults of legal drinking age can choose not to drink at all, or to drink in moderate quantities. Drinking in moderation means limiting the amount of consumed alcohol to 2 drinks or less in a day for men or 1 drink of less in a day for women. According to CDC, a standard drink contains 0.6 ounces (14.0 grams or 1.2 tablespoons) of pure alcohol, which corresponds, for example, to 12-ounces of beer (5% alcohol content), or 8-ounces of malt liquor (7% alcohol content), or 5-ounces of wine (12% alcohol content).

Excessive drinking includes binge and heavy drinking and also refers to any drinking by pregnant women or people younger than age 21. Binge drinking is defined as consuming 4 or more

drinks on a single occasion for women, and 5 or more drinks on a single occasion for men. Heavy drinking refers to consuming 8 or more drinks per week for women, and 15 or more drinks per week for men. Some people who should not drink alcohol at all, according to CDC, include those who are:

- Younger than age 21.
- Pregnant or may be pregnant.
- Driving, planning to drive, or participating in other activities requiring skill, coordination, and alertness.
- Taking certain prescriptions or over-the-counter medications that can interact with alcohol.
- Suffering from certain medical conditions.
- Recovering from alcoholism or are unable to control the amount they drink (Centers for Disease Control and Prevention, 2022j).

Table 24 provides data on heavy drinking and binge drinking among different demographic groups of Delawareans in 2016. The data for the table were retrieved from the CDC page *BRFSS Prevalence & Trends Data* for the *Alcohol Consumption* topic (Centers for Disease Control and Prevention, 2015b). Data for some socio-demographic groups, e.g., for several race-ethnic groups or for the groups with the lowest level of education and household income were missing. It follows from the table, that the youngest Delawareans aged 18-24 had the most binge drinkers among them (30.9 percent), and the lowest number of binge drinkers was found among the oldest respondents in the group of 65 and older (6.3 percent). More males than females reported being binge drinkers (20.7 percent vs. 13.7 percent). Among the race/ethnic groups for which the data were available, most binge drinkers were among White/non-Hispanic respondents followed by Hispanic and Black/non-Hispanic respondents: 18.5 percent, 13.8 percent, and 12.9 percent, respectively. No obvious correlation was revealed between the prevalence rates of binge drinkers and respondents' level of education or income.

As for heavy drinking, it correlated with age: the older respondents were, the fewer of them reported being heavy drinkers. The difference between the youngest adults aged 18-24 and the oldest aged 65 and older was 5.2 percentage points (9.2 percent vs. 4.0 percent). The numbers of heavy drinkers among males and females were very close (6.7 percent vs. 6.1 percent). No

correlation was observed between the levels of education and household income and the rates of heavy drinking. Since a lot of information with respect to race-ethnic groups was missing, it was impossible to draw any meaningful conclusions about the prevalence rates of heavy drinkers among those respondents.

**Table 24: Alcohol Consumption**

| | *Heavy drinking | | | ^Binge drinking | | |
|---|---|---|---|---|---|---|
| | % | 95% C.I. | N | % | 95% C.I. | N |
| **AGE** | | | | | | |
| 18-24 | 9.2 | [3.9, 14.5] | 17 | 30.9 | [22.2, 39.6] | 68 |
| 25-34 | 7.7 | [4.2, 11.3] | 30 | 28.1 | [22.5, 33.8] | 108 |
| 35-44 | 7.2 | [3.6, 10.8] | 22 | 16.9 | [12.0, 21.9] | 58 |
| 45-54 | 6.8 | [4.1, 9.5] | 41 | 16.5 | [12.6, 20.3] | 97 |
| 55-64 | 5.4 | [3.6, 7.1] | 50 | 11.3 | [8.4, 14.3] | 83 |
| 65 and over | 4.0 | [2.8, 5.1] | 63 | 6.3 | [4.5, 8.1] | 75 |
| **GENDER** | | | | | | |
| Male | 6.7 | [4.9, 8.5] | 105 | 20.7 | [17.9, 23.4] | 281 |
| Female | 6.1 | [4.6, 7.7] | 118 | 13.7 | [11.1, 16.3] | 208 |
| **RACE-ETHNICITY** | | | | | | |
| White/Non-Hispanic | 7.7 | [6.2, 9.2] | 194 | 18.5 | [16.1, 20.9] | 363 |
| Black/Non-Hispanic | N/A | [N/A] | N/A | 12.9 | [9.0, 16.9] | 59 |
| Other race/Non-Hispanic | N/A | [N/A] | N/A | N/A | [N/A] | N/A |
| Multiracial/Non-Hispanic | N/A | [N/A] | N/A | N/A | [N/A] | N/A |
| Hispanic | 10.0 | [4.6, 15.3] | 15 | 13.8 | [8.9, 18.6] | 40 |
| **EDUCATION** | | | | | | |
| Did not graduate from HS | N/A | [N/A] | N/A | 8.5 | [4.7, 12.3] | 27 |
| Graduated High School | 5.9 | [3.9, 7.8] | 67 | 15.7 | [12.6, 18.8] | 144 |
| Attended College or Tech Sch | 7.9 | [5.1, 10.6] | 58 | 23.0 | [18.5, 27.5] | 143 |
| Graduated College or Tech Sch | 7.7 | [5.6, 9.8] | 93 | 16.0 | [13.3, 18.8] | 175 |
| **HOUSEHOLD INCOME** | | | | | | |
| Less than $15,000 | N/A | [N/A] | N/A | N/A | [N/A] | N/A |
| $15,000-$24,999 | 5.7 | [3.0, 8.4] | 31 | 11.4 | [7.7, 15.1] | 52 |
| $25,000-$34,999 | 2.7 | [1.2, 4.3] | 17 | 16.5 | [6.9, 26.1] | 41 |
| $35,000-$49,999 | 4.7 | [2.7, 6.8] | 27 | 18.6 | [13.9, 23.3] | 73 |
| $50,000-$99,999 | 9.5 | [7.2, 11.9] | 119 | 21.7 | [18.6, 24.8] | 246 |

Source: Centers for Disease Control and Prevention, 2015b.

Data type: Crude Prevalence

*Heavy drinking: heavy drinkers – adult men having more than 14 drinks per week and adult women having more than 7 drinks per week (variable calculated from one or more BRFSS questions).

^Binge drinking: binge drinkers – males having five or more drinks on one occasion, females having four or more drinks on one occasion (variable calculated from one or more BRFSS questions).

One drink is equivalent to a 12-ounce beer, a 5-ounce glass of wine, or a drink with one shot of liquor (BRFSS. (2015). *2016 BRFSS Questionnaire - Delaware*, (p. 26))

## Section 12: Immunization

According to the U.S. Department of Health & Human Services, vaccines play a major role in keeping everyone healthy. They help save lives by protecting people from such serious diseases as COVID-19, measles, whooping cough, etc. (HHS.gov, n.d.). In the 2016 BRFSS, respondents were asked whether in the past 12 months they had had either a flu vaccine that had been sprayed in their nose, or a flu shot that had been injected into their arm, whether they had ever had a pneumonia shot also known as a pneumococcal vaccine, and whether they had had a tetanus shot since 2005.

Influenza or flu is a contagious respiratory illness. It is caused by influenza viruses infecting the nose, throat, and lungs. Some people, such as those 65 years of age and older, young children, people with asthma, heart disease, stroke, diabetes, chronic kidney disease, and pregnant women are at higher risk of developing serious flu complications if they become sick with flu. Seasonal flu epidemics happen each year due to two main types of influenza viruses (A and B) that are regularly spread in people. CDC states that getting vaccinated is the best way to reduce the risk of flu and possible serious complications (Centers for Disease Control and Prevention, 2022k).

Pneumococcal disease commonly occurs in young children, but it is older adults who run the greatest risks of becoming seriously ill and dying because of it. There are two kinds of vaccines available in the U.S. that help prevent pneumococcal disease: pneumococcal conjugate vaccines (PCV13, PCV15, and PCV20) and pneumococcal polysaccharide vaccine (PPSV23). It is recommended that the vaccines be administered to all children who are younger than 5 years old and all adults who are 65 years old and older (Centers for Disease Control and Prevention, 2022l).

Tetanus is an infection which is caused by *Clostridium tetani* bacteria. In the body, these bacteria produce a toxin that engenders painful muscle contraction. Tetanus is also called “lockjaw” since it causes locking of a person’s neck and jaw muscles and makes it difficult to open the mouth and swallow (Centers for Disease Control and Prevention, 2022m). Spores of tetanus bacteria can be found everywhere, including in soil, dust, and manure. They develop into bacteria once they enter the body through broken skin, usually injuries. Tetanus bacteria are more likely to infect the following breaks in the skin:

- Wounds contaminated with dirt, feces (poop), or saliva (spit)
- Puncture wounds (wounds caused by an object, like a nail or needle, breaking the skin)
- Burns
- Crush injuries (injury to a body part due to pressure from another object or being squeezed between two heavy objects)
- Injuries with dead tissue (Centers for Disease Control and Prevention, 2022n).

Other ways for tetanus bacteria to get into the body are through:

- Clean superficial wounds (when only the topmost layer of skin is scraped off)
- Surgical procedures
- Insect bites
- Dental infections
- Compound fractures (an exposed broken bone)
- Chronic sores and infections
- Intravenous (IV) drug use
- Intramuscular injections (shots given in a muscle) (Ibid.).

Tetanus infection can be prevented by means of vaccination and good wound care. The best tool to prevent the infection is to be up to date with tetanus vaccination. CDC recommends tetanus vaccines for people of all ages and booster shots throughout life (Centers for Disease Control and Prevention, 2022o). Vaccines currently used in the United States against diphtheria and tetanus (i.e., DT, Td) sometimes also include protection against whooping cough or pertussis (i.e., DTaP, Tdap). CDC recommends vaccination against diphtheria, tetanus, and whooping cough (pertussis) for everyone (Centers for Disease Control and Prevention, 2022p). In the 2016 BRFSS, respondents were asked if they had had a tetanus shot since 2005, and whether it had been Tdap, i.e., the tetanus shot that also had pertussis or whooping cough vaccine.

Table 25 indicates that in 2016, in Delaware, more adults received flu shots and pneumonia shots than in general in the United States. Slightly over 40 percent of adult Delawareans (41.4 percent) received flu shots during the past 12 months vs. 37.7 percent nationwide. As for the pneumococcal vaccine, 33.2 percent of Delaware adults ever had it administered to them, whereas nationwide the number was 30.3 percent. However, more respondents nationwide had been

vaccinated against tetanus and pertussis/whooping cough since 2005 until 2016 than in Delaware (20.9 percent vs. 18.9 percent).

**Table 25: Immunization in Delaware and the U.S.**

| | Delaware Wt. % | U. S. Wt. % |
|---|---|---|
| Flu shot/spray during the past 12 months | 41.4 | 37.7 |
| Pneumococcal vaccine ever | 33.2 | 30.3 |
| Tdap shot (tetanus and pertussis/whooping cough) since 2005 | 18.9 | 20.9 |

Tables 26, 27, and 28 show the numbers of Delawareans vaccinated against the diseases according to their socio-demographic characteristics. Many more Delawareans aged 65 and older were vaccinated against flu than adults in the youngest age group of 18–24-year-olds: 61.5 percent vs. 31.3 (Table 26). More females than males were vaccinated against this types of disease (44.2 percent vs. 38.4 percent). White/non-Hispanic respondents had the largest ratio of people among them who had received vaccines for flu: 45.7 percent. Black/non-Hispanic respondents had the lowest number of vaccinated people: 29.6 percent. The level of education correlated with the rates of flu vaccination: the better educated respondents were, the more of them were vaccinated. However, no correlation was detected with respect to the level of household income.

| Table 26: Immunization | | | |
|---|---|---|---|
| | Flu shot/spray in past 12 months | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 41.4 | [39.3, 43.6] | 297,471 |
| **AGE** | | | |
| 18-24 | 31.3 | [23.3, 40.1] | 26,908 |
| 25-34 | 32.4 | [26.9, 38.5] | 37,727 |
| 35-44 | 31.6 | [26.3, 37.5] | 34,294 |
| 45-54 | 32.7 | [28.0, 37.7] | 38,953 |
| 55-64 | 47.7 | [43.4, 52.1] | 59,105 |
| 65 and over | 61.5 | [58.1, 64.9] | 100,481 |
| **GENDER** | | | |
| Male | 38.4 | [35.4, 41.5] | 130,894 |
| Female | 44.2 | [41.2, 47.2] | 166,577 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 45.7 | [43.1, 48.4] | 212,859 |
| Black/Non-Hispanic | 29.6 | [24.8, 34.9] | 41,890 |
| Other race/Non-Hispanic | 43.9 | [33.2, 55.2] | 12,051 |
| Multiracial/Non-Hispanic | 30.7 | [18.4, 46.4] | 3,965 |
| Hispanic | 37.7 | [31.3, 44.5] | 20,448 |
| **EDUCATION** | | | |
| Did not graduate from High School | 33.6 | [27.7, 40.0] | 29,417 |
| Graduated High School | 38.8 | [35.1, 42.5] | 85,087 |
| Attended College or Technical School | 38.9 | [34.6, 43.4] | 81,938 |
| Graduated College or Technical School | 50.8 | [47.2, 54.3] | 100,104 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 34.0 | [27.0, 41.9] | 17.006 |
| $15,000-$24,999 | 36.6 | [31.7, 41.8] | 35,452 |
| $25,000-$34,999 | 47.2 | [39.0, 55.5] | 28,901 |
| $35,000-$49,999 | 38.5 | [33.2, 44.0] | 33,520 |
| $50,000-$99,999 | 41.6 | [38.3, 45.0] | 128,394 |

The rates of vaccination against pneumonia looked slightly different for some socio-demographic groups (Table 27). Again, many more older Delawareans aged 65 and older had ever had a pneumonia shot than adults in the youngest age group of 18–24-year-olds: 73.2 percent vs. 26.2 percent. More females than males were vaccinated against pneumonia, however, the difference was less than with respect to flu vaccination (34.0 percent vs. 32.3 percent). Multiracial/non-Hispanic respondents had the largest ratio of individuals among them who had received vaccines for pneumonia closely followed by White/non-Hispanic respondents: 36.4 percent and 36.3 percent. Black/non-Hispanic respondents ranked third at 31.0 percent, and Hispanic respondents had the lowest number of vaccinated people: 14.9 percent. The level of education again correlated with the rates of pneumonia vaccination, while the level of household income did not.

| Table 27: Immunization (cont.) | | | |
|---|---|---|---|
| | Ever had pneumonia shot | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 33.2 | [31.2, 35.2] | 237,634 |
| **AGE** | | | |
| 18-24 | 26.2 | [19.5, 34.3] | 22,585 |
| 25-34 | 17.0 | [12.5, 22.7] | 19,795 |
| 35-44 | 13.6 | [9.9, 18.4] | 14,761 |
| 45-54 | 19.6 | [15.8, 24.1] | 23,378 |
| 55-64 | 30.5 | [26.6, 34.8] | 37,774 |
| 65 and over | 73.2 | [70.1, 76.1] | 119,339 |
| **GENDER** | | | |
| Male | 32.3 | [29.4, 35.3] | 109,622 |
| Female | 34.0 | [31.3, 36.7] | 128,012 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 36.3 | [33.9, 38.8] | 168,710 |
| Black/Non-Hispanic | 31.0 | [26.0, 36.5] | 43,872 |
| Other race/Non-Hispanic | 27.7 | [18.7, 38.9] | 7,585 |
| Multiracial/Non-Hispanic | 36.4 | [22.7, 52.7] | 4,708 |
| Hispanic | 14.9 | [11.0, 20.0] | 8,087 |
| **EDUCATION** | | | |
| Did not graduate from High School | 32.3 | [25.8, 39.6] | 28,264 |
| Graduated High School | 33.3 | [29.9, 36.8] | 73,029 |
| Attended College or Technical School | 35.7 | [31.7, 40.0] | 74,904 |
| Graduated College or Technical School | 30.4 | [27.5, 33.5] | 59,885 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 39.3 | [31.4, 47.8] | 19,650 |
| $15,000-$24,999 | 35.1 | [30.3, 40.2] | 33,970 |
| $25,000-$34,999 | 37.7 | [30.7, 45.1] | 23,084 |
| $35,000-$49,999 | 39.7 | [34.3, 45.3] | 34,521 |
| $50,000-$99,999 | 27.8 | [25.0, 30.8] | 85,804 |

Numbers for vaccination against tetanus and pertussis/whooping cough turned out to be very different from the numbers for the other two diseases (Table 28). In general, less than 19 percent of adult Delawareans had had a Tdap shot since 2005 until 2016. With respect to age groups, the vaccination numbers with Tdap were reverse, i.e., the younger the age group was, the more respondents in that age group had received a Tdap shot. For example, only 12.8 percent of respondents in the oldest age group of 65 and older had received the vaccine since 2005, while in the youngest age group of 18–24-year-olds, 34.9 percent of respondents said they had. Many more women had been vaccinated against tetanus and pertussis/whooping cough than men (21.4 percent vs. 16.2 percent). Among all race/ethnic groups, the most vaccinated individuals were in the group of Multiracial/non-Hispanic respondents (26.4 percent), followed by White/non-Hispanic respondents (21.1 percent) and Other race/non-Hispanics (20.0 percent). Black/non-Hispanic respondents had the lowest rates of vaccinated individuals among them (12.5 percent). Educational attainments and levels of household income correlated with the vaccination rates against tetanus and pertussis/whooping cough: the higher the level of education or income was, the more respondents in the respective group reported having been vaccinated against the diseases since 2005.

| Table 28: Immunization (cont.) | | | |
|---|---|---|---|
| | Tdap shot (tetanus and pertussis/whooping cough) since 2005 | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 18.9 | [17.1, 20.9] | 135,519 |
| **AGE** | | | |
| 18-24 | 34.9 | [26.6, 44.1] | 30,010 |
| 25-34 | 25.2 | [20.0, 31.3] | 29,326 |
| 35-44 | 20.6 | [16.2, 25.9] | 22,311 |
| 45-54 | 14.2 | [11.2, 17.8] | 16,942 |
| 55-64 | 13.1 | [10.6, 16.0] | 16,140 |
| 65 and over | 12.8 | [10.8, 15.0] | 20,788 |
| **GENDER** | | | |
| Male | 16.2 | [13.8, 18.8] | 54,773 |
| Female | 21.4 | [18.8, 24.4] | 80,745 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 21.1 | [18.8, 23.8] | 98,143 |
| Black/Non-Hispanic | 12.5 | [9.3, 16.5] | 17,660 |
| Other race/Non-Hispanic | 20.0 | [12.5, 30.4] | 5,460 |
| Multiracial/Non-Hispanic | 26.4 | [13.7, 44.9] | 3,420 |
| Hispanic | 18.2 | [13.3, 24.4] | 9,857 |
| **EDUCATION** | | | |
| Did not graduate from High School | 11.7 | [8.1, 16.7] | 10,248 |
| Graduated High School | 16.7 | [13.8, 20.1] | 36,656 |
| Attended College or Technical School | 20.6 | [16.6, 25.4] | 43,243 |
| Graduated College or Technical School | 22.8 | [19.9, 25.9] | 44,796 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 16.2 | [10.6, 24.0] | 8,111 |
| $15,000-$24,999 | 18.0 | [14.1, 22.6] | 17,402 |
| $25,000-$34,999 | 18.4 | [10.7, 29.8] | 11,254 |
| $35,000-$49,999 | 19.1 | [14.8, 24.2] | 16,587 |
| $50,000-$99,999 | 20.8 | [17.9, 23.9] | 63,871 |

## Section 13: Falls

Millions of people aged 65 and older fall every year. Even though more than a quarter of older people fall each year, less than 50 percent tell their doctor about it. However, falls can have very serious consequences. Falls may cause such serious injuries as broken bones, head injuries, and hip fractures (Centers for Disease Control and Prevention, 2021f). According to Florence et al. (2018), in 2015, the total medical costs for falls totaled more than $50 billion, and 75 percent of those costs were covered by Medicare and Medicaid.

Many conditions have been identified that contribute to falling. They are referred to as risk factors, and most falls are caused by a combination of different risk factors (Centers for Disease Control and Prevention, 2021f). Many of these risk factors can be modified in order to prevent falls. The conditions include:

- Lower body weakness
- Vitamin D deficiency (that is, not enough vitamin D in your system)
- Difficulties with walking and balance
- Use of medicines, such as tranquilizers, sedatives, or antidepressants. Even some over-the-counter medicines can affect balance and how steady you are on your feet.
- Vision problems
- Foot pain or poor footwear
- Home hazards or dangers such as:
    - broken or uneven steps, and
    - throw rugs or clutter that can be tripped over.

In 2016, in Delaware, 12.1 percent of respondents reported that they had fallen at least once in the past 12 months, and 27.5 percent said that one fall had caused an injury (Table 27). An injury meant that the fall caused respondents to limit their regular activities for at least a day or to go see a doctor.

| Table 29: Falls and Injuries Due to Falls | | |
|---|---|---|
| | Delaware | |
| | Wt. % | Est. Pop. |
| Fell at least once in the past 12 months | 12.1 | 48,970 |
| One fall caused an injury | 27.5 | 28,000 |

### Section 14: Seat Belt Use

According to CDC, in the U.S., the leading cause of death among individuals aged 1-54 is motor vehicle crashes (Centers for Disease Control and Prevention, 2021g). Seat belts have been found to be one of the most effective ways to save lives and reduce injuries in crashes for adults and older children who are big enough to properly wear seat belts (U.S. Department of Transportation, 2019). Still millions of people disregard buckling up (Shults & Beck, 2012).

In 2018, 22,697 people died in motor crashes vehicles. More than half of teens (13-19 years) and adults (20-44 years) who died in crashes that year were not buckled up at the time of the accident (U.S. Department of Transportation, 2020). In 2017, non-fatal crash injuries equaled $62 billion in lifetime medical and work loss (Centers for Disease Control and Prevention, 2021g).

In 2016, in Delaware, over 90 percent of adults stated they always used seatbelts while driving or riding a car (Table 28). The older respondents were, the more individuals among them reported always using seatbelts, but even in the youngest age group of 18–24-year-olds, 86.1 percent reported always using seatbelts when driving or riding a car. More females always used seatbelts than males. Over 90 percent of respondents in each race/ethnic group said they always used seatbelts. Using seatbelts correlated with the level of education: the higher the respondents' level of education was, the more individuals among them always used seatbelts. However, the use of seatbelts was not correlated with income.

| Table 30: Seat Belt Use | | | |
|---|---|---|---|
| | Always use seatbelts when driving or riding a car | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 91.3 | [89.8, 92.5] | 650,896 |
| **AGE** | | | |
| 18-24 | 86.1 | [79.4, 90.9] | 74,106 |
| 25-34 | 85.5 | [79.9, 89.7] | 98,951 |
| 35-44 | 89.6 | [85.4, 92.7] | 96,407 |
| 45-54 | 93.4 | [90.6, 95.4] | 110,281 |
| 55-64 | 94.5 | [92.1, 96.2] | 116,250 |
| 65 and over | 95.2 | [93.7, 96.4] | 154,898 |
| **GENDER** | | | |
| Male | 87.5 | [85.0, 89.7] | 296,481 |
| Female | 94.6 | [93.1, 95.9] | 354,415 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 91.5 | [89.8, 93.0] | 424,172 |
| Black/Non-Hispanic | 90.1 | [85.8, 93.2] | 126,391 |
| Other race/Non-Hispanic | 92.0 | [84.4, 96.0] | 24,973 |
| Multiracial/Non-Hispanic | 93.6 | [72.7, 98.8] | 12,114 |
| Hispanic | 90.4 | [83.9, 94.4] | 48,412 |
| **EDUCATION** | | | |
| Did not graduate from High School | 88.3 | [81.8, 92.7] | 76,429 |
| Graduated High School | 90.3 | [87.6, 92.4] | 197,566 |
| Attended College or Technical School | 91.7 | [88.7, 93.9] | 190,998 |
| Graduated College or Technical School | 93.4 | [91.2, 95.0] | 183,616 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 90.4 | [80.9, 95.4] | 45,030 |
| $15,000-$24,999 | 90.7 | [87.2, 93.3] | 86,736 |
| $25,000-$34,999 | 88.8 | [81.8, 93.3] | 54,313 |
| $35,000-$49,999 | 87.1 | [82.3, 90.8] | 75,680 |
| $50,000-$99,999 | 92.6 | [90.4, 94.3] | 283,969 |

## Section 15: Drinking and Driving

People who drink and drive put in danger everyone on the road. Some people are more likely to drink and drive. These groups include men in general, young men aged 21-34, and people who engage in binge drinking. In 2010, for example, males aged 8-22 were responsible for 88 percent of all drinking and driving episodes, males aged 25-34 – for 84 percent, and males aged 55 and older – for the same number of drinking and driving episodes (84 percent) (Centers for Disease Control and Prevention, 2013b).

CDC identifies some ways to prevent people form drinking and driving, such as stopping drivers by the police at sobriety checkpoints to check if they are driving under the influence of alcohol, keeping, and enforcing 21 as the minimum legal drinking age, and using ignition interlocks that prevent drivers who were convicted of alcohol-impaired driving from operating their vehicles in case they have been drinking (Ibid.).

In 2016, only 2 percent of adults in Delaware acknowledged they had driven at least once after too much drinking, and over 95 percent reported they had never driven after too much drinking (Table 29).

**Table 31: Drinking and Driving within the Past 30 Days**

| | Delaware | |
|---|---|---|
| | Wt. % | Est. Pop. |
| Have driven once when had too much to drink | 2.0 | 7,983 |
| Have never driven when had too much to drink | 95.6 | 386,481 |

## Section 16: Breast and Cervical Cancer Screening

Breast cancer is the second most common cancer in women in the United States after skin cancer. The risk of developing breast cancer increases with age, with most cases diagnosed among women aged 50 and above (Centers for Disease Control and Prevention, 2022gg). In 2018, for example, 254,744 women were diagnosed with breast cancer and 42,465 women died of the disease (Kean, 2021). In order to catch breast cancer early, since 2009, the US Preventive Services Task Force (USPSTF) has recommended that women aged 50 to 74 should get their mammogram every 2 years, while women aged 40 to 49 should discuss with their doctor when to start getting mammograms and how often to have them done (Centers for Disease Control and Prevention, 2021h). These guidelines, however, run counter to what other major medical organizations (e.g., the American Cancer Society) recommend, which is that women should begin getting routine mammograms at the age of 40 and repeat them every year, which was also USPSTF's position until 2009 (Zamosky, 2011). Federal government used the task force's 2002 recommendations stating that women should begin mammography at age 40 and continue getting mammograms on an annual basis and wrote them into law making mammogram one of preventive services and mandating insurance plans to cover the test without cost-sharing (Ibid.).

In 2016, 67.4 percent of Delaware women stated that they had had a mammogram (Table 30). The number of women getting mammograms increased with age, the difference between the youngest and oldest age groups being more than 90 percentage points. More White/non-Hispanic women reported ever having a mammogram than women in any other race-ethnic group (71.8 percent). The lowest number of women who had had the preventive service was revealed among Hispanic women (40.0 percent). The levels of education and income did not correlate with the rates at which women had had a mammogram.

| Table 32: Breast Cancer Screening | | | |
|---|---|---|---|
| | Have you ever had a mammogram? | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 67.4 | [64.2, 70.5] | 251,814 |
| **AGE** | | | |
| 18-24 | 6.1 | [2.6, 13.5] | 2,532 |
| 25-34 | 29.8 | [22.1, 38.7] | 17,539 |
| 35-44 | 51.8 | [43.4, 60.2] | 28,454 |
| 45-54 | 88.0 | [81.7, 92.3] | 55,311 |
| 55-64 | 94.0 | [90.4, 96.3] | 60,736 |
| 65 and over | 96.4 | [94.5, 97.6] | 87,239 |
| **GENDER** | | | |
| Male | NA | [NA] | NA |
| Female | 67.4 | [64.2, 70.5] | 251,814 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 71.8 | [67.7, 75.6] | 176,301 |
| Black/Non-Hispanic | 66.9 | [59.2, 73.8] | 50,339 |
| Other race/Non-Hispanic | 40.9 | [24.6, 59.4] | 3,882 |
| Multiracial/Non-Hispanic | 63.6 | [37.8, 83.4] | 4,965 |
| Hispanic | 40.4 | [31.2, 50.2] | 11,805 |
| **EDUCATION** | | | |
| Less than H.S. | 65.4 | [56.2, 73.5] | 28,976 |
| H.S. or G.E.D. | 71.3 | [65.9, 76.2] | 76,577 |
| Some Post-H.S. | 62.5 | [55.5, 69.0] | 72,291 |
| College Graduate | 70.5 | [65.3, 75.2] | 73,491 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 71.0 | [61.3, 79.0] | 23,358 |
| $15,000-$24,999 | 65.8 | [58.4, 72.5] | 34,369 |
| $25,000-$34,999 | 59.9 | [47.6, 71.2] | 22,892 |
| $35,000-$49,999 | 63.2 | [54.8, 70.9] | 28,639 |
| $50,000 or more | 69.3 | [63.8, 74.2] | 99,762 |

Cervical cancer is the type of cancer that starts in the cervix. The cervix connects the vagina, or birth canal, to the upper part of the uterus, or womb, where a baby grows when a woman is pregnant. According to CDC, all women are at risk of cervical cancer, but it occurs more often in women who are older than 30 (Centers for Disease Control and Prevention, 2022q). Screening tests can help prevent cervical cancer. Women are recommended to start regular screening tests at the age of 21. One of the screening tests that can either help prevent cervical cancer or find it early is the Pap test, also called Pap smear, that detects precancers, or cell changes on the cervix that

might develop into cervical cancer if not treated in an appropriate way (Centers for Disease Control and Prevention, 2022r).

In Delaware, in 2016, 87.4 percent of women reported ever having a Pap test. The lowest percentage of women who had ever had the test was in the youngest age group of 18–24-year-olds (39.1 percent) (Table 31). However, beginning with the next age group and up to the oldest one, over 90 percent of women in each age group said they had had a Pap test. Again, more White/non-Hispanic women than women in any other race-ethnic group reported ever having a Pap test (89.8 percent). Respondents with the highest level of education and the highest level of income had the largest numbers of individuals among them who had ever had a Pap test.

| Table 33: Cervical Cancer Screening | | | |
|---|---|---|---|
| | Have you ever had a Pap test? | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 87.4 | [84.6, 89.8] | 326,377 |
| **AGE** | | | |
| 18-24 | 39.1 | [27.4, 52.1] | 16,205 |
| 25-34 | 91.5 | [85.9, 95.0] | 53,923 |
| 35-44 | 94.3 | [88.5, 97.3] | 51,798 |
| 45-54 | 95.7 | [92.3, 97.7] | 60,201 |
| 55-64 | 94.5 | [91.1, 96.7] | 61,050 |
| 65 and over | 91.9 | [89.2, 94.0] | 83,197 |
| **GENDER** | | | |
| Male | NA | [NA] | NA |
| Female | 87.4 | [84.6, 89.8] | 326,377 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 89.8 | [86.0, 92.6] | 220,293 |
| Black/Non-Hispanic | 84.3 | [77.1, 89.5] | 63,423 |
| Other race/Non-Hispanic | 81.3 | [62.4, 91.9] | 7,723 |
| Multiracial/Non-Hispanic | 65.2 | [38.8, 84.7] | 5,094 |
| Hispanic | 83.5 | [74.4, 89.8] | 24,438 |
| **EDUCATION** | | | |
| Less than H.S. | 86.7 | [78.7, 92.0] | 38,407 |
| H.S. or G.E.D. | 86.6 | [82.5, 89.8] | 93,012 |
| Some Post-H.S. | 82.8 | [75.1, 88.5] | 95,815 |
| College Graduate | 94.2 | [91.3, 96.2] | 98,190 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 86.5 | [77.9, 92.1] | 28,465 |
| $15,000-$24,999 | 86.5 | [80.0, 91.1] | 45,178 |
| $25,000-$34,999 | 79.3 | [62.2, 90.0] | 30,301 |
| $35,000-$49,999 | 88.3 | [81.8, 92.7] | 40,023 |
| $50,000 or more | 91.9 | [87.8, 94.7] | 132,418 |

## Section 17: Prostate Cancer Screening

Prostate cancer is the type of cancer that starts in the prostate, which is a part of the male reproductive system. Prostate cancer is the most common cancer in American men after skin cancer. All men are at risk of getting prostate cancer, and age is the most common risk factor. Some men with prostate cancer do not have any symptoms at all, and 96 percent of men who are diagnosed with this type of cancer are still alive even five years after the diagnosis (Centers for Disease Control and Prevention, 2022s).

Screening for cancer means looking for it before it causes symptoms. Even though there is no standard test to screen for prostate cancer, there are two tests that are commonly used for the purpose: a prostate specific antigen (PSA) test and digital rectal examination (DRE), although USPSTF does not recommend the latter as a screening test due to the lack of evidence on the benefits (Centers for Disease Control and Prevention, 2022t).

The 2016 BRFSS asked respondents a number of questions about a PSA test. This report presents respondents' answers to two questions: first, whether they were ever recommended a PSA test by a health professional, and second whether they ever had a PSA test. Since age is the most common risk factor for prostate cancer, not surprisingly respondents in the youngest age groups of 18–24- and 25–34-year-olds were not recommended to have a PSA test by a health professional and never had a PSA test (Table 32 and Table 33). After the age of 34, however, the number of respondents who were recommended to have a test and had a test increased with each consecutive age group. More Black/Non-Hispanic respondents were recommended to have a test than respondents in any other race-ethnic group (Table 32), but more White/non-Hispanic respondents ever had a test performed. More college graduates and respondents with the highest level of income were recommended to have a PSA test than in any other education or income level group (Table 32). The same applied to the numbers of those who had ever had a test done: most of such respondents turned out to be in the groups of the best educated and most affluent individuals (Table 33).

| Table 34: Prostate Cancer Screening (PSA – prostate-specific antigen test) | | | |
|---|---|---|---|
| | A health professional ever recommended you have a PSA test | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 53.0 | [49.4, 56.6] | 110,612 |
| **AGE** | | | |
| 18-24 | NA | [NA] | NA |
| 25-34 | NA | [NA] | NA |
| 35-44 | 12.2 | [6.0, 23.4] | 3,002 |
| 45-54 | 41.6 | [34.0, 49.7] | 22,972 |
| 55-64 | 58.1 | [51.4, 64.4] | 33,279 |
| 65 and over | 71.8 | [66.7, 76.3] | 51,357 |
| **GENDER** | | | |
| Male | 53.0 | [49.4, 56.6] | 110,612 |
| Female | NA | [NA] | NA |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 54.1 | [50.1, 58.2] | 79,377 |
| Black/Non-Hispanic | 56.7 | [46.0, 66.8] | 21,467 |
| Other race/Non-Hispanic | 48.8 | [29.3, 68.8] | 3,803 |
| Multiracial/Non-Hispanic | 22.7 | [8.8, 47.3] | 440 |
| Hispanic | 34.7 | [22.3, 49.5] | 3,105 |
| **EDUCATION** | | | |
| Less than H.S. | 43.1 | [32.1, 54.9] | 10,150 |
| H.S. or G.E.D. | 47.6 | [41.1, 54.2] | 31,490 |
| Some Post-H.S. | 57.0 | [49.4, 64.3] | 30,791 |
| College Graduate | 58.5 | [52.6, 64.3] | 37,491 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 38.2 | [25.5, 52.7] | 3,370 |
| $15,000-$24,999 | 50.6 | [41.2, 59.9] | 14,444 |
| $25,000-$34,999 | 46.9 | [34.1, 60.1] | 6,759 |
| $35,000-$49,999 | 48.8 | [39.4, 58.3] | 13,256 |
| $50,000 or more | 58.3 | [52.8, 63.7] | 59,628 |

| Table 35: Prostate Cancer Screening (PSA – prostate-specific antigen test) (cont.) | | | |
|---|---|---|---|
| | Ever had a PSA test | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 54.0 | [50.3, 57.6] | 112,591 |
| **AGE** | | | |
| 18-24 | NA | [NA] | NA |
| 25-34 | NA | [NA] | NA |
| 35-44 | 10.9 | [5.5, 20.6] | 2,686 |
| 45-54 | 35.7 | [28.4, 43.7] | 19,694 |
| 55-64 | 62.2 | [55.6, 68.4] | 35,655 |
| 65 and over | 76.2 | [71.2, 80.6] | 54,554 |
| **GENDER** | | | |
| Male | 54.0 | [50.3, 57.6] | 112,591 |
| Female | NA | [NA] | NA |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 57.4 | [53.2, 61.4] | 84,111 |
| Black/Non-Hispanic | 53.2 | [42.5, 63.6] | 20,118 |
| Other race/Non-Hispanic | 39.6 | [21.9, 60.6] | 3,086 |
| Multiracial/Non-Hispanic | 37.3 | [17.2, 63.1] | 724 |
| Hispanic | 31.2 | [19.5, 45.8] | 2,789 |
| **EDUCATION** | | | |
| Less than H.S. | 38.3 | [27.7, 50.1] | 9,015 |
| H.S. or G.E.D. | 46.9 | [40.4, 53.5] | 31,035 |
| Some Post-H.S. | 58.6 | [50.8, 66.0] | 31,659 |
| College Graduate | 62.7 | [56.7, 68.4] | 40,191 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 30.3 | [19.2, 44.4] | 2,674 |
| $15,000-$24,999 | 47.6 | [38.4, 57.1] | 13,606 |
| $25,000-$34,999 | 43.0 | [31.0, 55.9] | 6,201 |
| $35,000-$49,999 | 58.2 | [48.4, 67.3] | 15,799 |
| $50,000 or more | 60.5 | [54.9, 65.9] | 61,854 |

## Section 18: Colorectal Cancer Screening

Colorectal cancer or colon cancer, for short, is a type of cancer when cells in the colon or rectum grow out of control. Abnormal growths (polyps) sometimes form in the colon or rectum and over time may turn into cancer (Centers for Disease Control and Prevention, 2022u). According to United States Cancer Statistics (USCS) published by CDC, in 2016, 141,270 new colorectal cancer cases were diagnosed in the United States, and 52,286 deaths from colorectal cancer were reported (Centers for Disease Control and Prevention, 2020v). Colorectal cancer affects all people regardless of gender or race and is most often found in people who are 50 years of age and older. Colorectal cancer screening can find polyps so that they can be removed before they turn into cancer or to detect colorectal cancer at an early stage when a person might not even have any symptoms and when it can still be effectively treated (Centers for Disease Control and Prevention, 2022u).

Even though regular colorectal cancer screening is currently recommended by the U.S. Preventive Services Task Force to begin at the age of 45 (Centers for Disease Control and Prevention, 2022v), millions of adults in the U.S. aged 50 to 75 are not being screened for this type of cancer (Centers for Disease Control and Prevention, 2020v).

The 2016 BRFSS surveyed adults aged 50 and older with respect to their colorectal screening experience. Respondents were asked if they had had a blood stool test to determine whether their stool contained blood, or whether they had had either sigmoidoscopy or colonoscopy exams. The exams include inserting a tube in the rectum to view the colon for signs of cancer or other problems. Table 34 presents the results of respondents' answers to the question about sigmoidoscopy and colonoscopy exams. The percentage of people who had either sigmoidoscopy or colonoscopy exams increased with age: 57.2 percent in the group of 45–54-year-olds, 73.1 percent in the group of 55–64-year-olds, and 84.2 percent in the group of 65–year-olds and older. Males and females had approximately the same rates of having the exams: 74.4 percent vs. 75.8 percent. White/non-Hispanic respondents had the largest ratio of individuals who had either of the exams among all race/ethnic groups (78.0 percent). The rates of having the exams were correlated with the level of education and household income, i.e., the better educated respondents were and

the higher annual income they had, the more people in their respective education/income group reported ever having either sigmoidoscopy or colonoscopy exams.

| **Table 36: Colorectal Cancer Screening** | | | |
|---|---|---|---|
| | Ever had sigmoidoscopy or colonoscopy exam | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 75.2 | [72.8, 77.4] | 262,337 |
| **AGE** | | | |
| 18-24 | | [] | |
| 25-34 | | [] | |
| 35-44 | | [] | |
| 45-54 | 57.2 | [50.3, 63.9] | 37,921 |
| 55-64 | 73.1 | [68.9, 77.0] | 88,520 |
| 65 and over | 84.2 | [81.6, 86.6] | 135,895 |
| **GENDER** | | | |
| Male | 74.4 | [70.8, 77.8] | 119,273 |
| Female | 75.8 | [72.7, 78.7] | 143,063 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 78.0 | [75.5, 80.2] | 197,958 |
| Black/Non-Hispanic | 66.5 | [59.0, 73.2] | 43,408 |
| Other race/Non-Hispanic | 70.6 | [53.3, 83.5] | 4,438 |
| Multiracial/Non-Hispanic | 67.0 | [43.6, 84.3] | 4,109 |
| Hispanic | 67.6 | [55.1, 78.0] | 6,193 |
| **EDUCATION** | | | |
| Less than H.S. | 58.6 | [49.0, 67.6] | 22,019 |
| H.S. or G.E.D. | 73.0 | [69.0, 76.7] | 80,777 |
| Some Post-H.S. | 77.9 | [73.3, 82.0] | 78,786 |
| College Graduate | 81.7 | [78.0, 84.8] | 80,427 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 63.3 | [52.4, 73.0] | 14,765 |
| $15,000-$24,999 | 67.1 | [60.4, 73.2] | 33,062 |
| $25,000-$34,999 | 72.6 | [65.1, 79.1] | 22,021 |
| $35,000-$49,999 | 76.8 | [70.3, 82.2] | 35,274 |
| $50,000 or more | 80.8 | [77.0, 84.1] | 117,656 |

## Section 19: H.I.V./AIDS

HIV stands for human immunodeficiency virus. This virus affects the body's immune system and can lead to AIDS (acquired immunodeficiency syndrome) if not treated. At the moment, the virus cannot be effectively cured, but with proper medical care it can be kept under control (Centers for Disease Control and Prevention, 2022x).

The first symptoms that most people develop within 2 to 4 weeks after infection are similar to the symptoms of flu, but some people do not have any symptoms at all. Therefore, getting tested is the only way to know for sure if someone has HIV. There are three stages through which people with untreated HIV usually progress: acute HIV infection when there is a large amount of HIV in one's blood, and the person is very contagious (Stage 1), chronic HIV infection (Stage 2), and AIDS – the most severe stage of IHV infection (Stage 3) (Centers for Disease Control and Prevention, 2022w).

According to CDC's HIV Surveillance Report for the year of 2017, in 2016, 39,585 people aged from under 13 to 65 and over were diagnosed with HIV infection in the United States (Centers for Disease Control and Prevention, 2020c). Most of the individuals who were diagnosed were Black/non-Hispanic (17,269), followed by White/non-Hispanic (10,117), and Hispanic (9,831). The most numerous transmission category was male-to-male sexual contact (26,159) (Ibid.)

People with HIV who know they are infected can get proper treatment and remain healthy for many years. Therefore, CDC recommends getting tested for HIV at least once as part of routine health care to everyone between the ages of 13 and 64. CDC also advises routine HIV screening for adults, adolescents, and pregnant women in the U.S. health care settings and calls for reducing barriers for HIV testing (Centers for Disease Control and Prevention, 2022x).

In addition, CDC recommends getting tested at least once a year to some groups of people with certain risk factors. These groups include the following:

- Males who have had sex with other males.
- People who have had anal or vaginal sex with someone who has HIV.
- People who have had more than one sex partner since their last HIV test.

- People who have shared needles, syringes, or other drug injection equipment (for example, cookers).
- People who have exchanged sex for drugs or money.
- People who have been diagnosed with or treated for another sexually transmitted disease.
- People who have been diagnosed with or treated for hepatitis or tuberculosis (TB).
- People who have had sex with someone who has done anything listed above or with someone whose sexual history they don't know (Centers for Disease Control and Prevention, 2022y).

In 2016, in Delaware, almost 42 percent of adults reported having been tested for HIV (Table 37). Most respondents who were tested found themselves in the middle-age groups: from 25 to 54 years old. The lowest number of respondents who were tested for HIV was in the oldest age group of 65 and over: 15.9 percent; whereas, for example, in the age group of 25–34-year-olds, 63.4 percent of respondents were tested. The number of males and females who were tested was close: 40.3 percent vs. 43.1 percent. The highest number of respondents who ever got tested was in the Black/non-Hispanic group at 57.7 percent. White/non-Hispanic and Other race/non-Hispanic respondents had the lowest number of people among them who were tested – 36.3 percent for both groups. The levels of respondents' education or income did not reveal any correlation with the rates of HIV testing.

| Table 37: HIV Testing | | | |
|---|---|---|---|
| | Ever been tested for H.I.V. Do not count tests as part of a blood donation | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 41.8 | [39.5, 44.1] | 294,336 |
| **AGE** | | | |
| 18-24 | 36.0 | [27.8, 45.2] | 30,791 |
| 25-34 | 63.4 | [57.0, 69.3] | 72,026 |
| 35-44 | 61.9 | [55.8, 67.6] | 66,129 |
| 45-54 | 50.8 | [45.5, 56.0] | 59,301 |
| 55-64 | 33.5 | [29.4, 37.9] | 40,455 |
| 65 and over | 15.9 | [13.6, 18.6] | 25,632 |
| **GENDER** | | | |
| Male | 40.3 | [37.1, 43.6] | 134,850 |
| Female | 43.1 | [40.0, 46.2] | 159,486 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 36.3 | [33.7, 39.1] | 166,789 |
| Black/Non-Hispanic | 57.7 | [51.9, 63.2] | 79,901 |
| Other race/Non-Hispanic | 36.3 | [25.9, 48.2] | 9,502 |
| Multiracial/Non-Hispanic | 57.1 | [39.9, 72.8] | 6,872 |
| Hispanic | 49.5 | [42.3, 56.6] | 26,279 |
| **EDUCATION** | | | |
| Less than H.S. | 47.6 | [40.4, 54.9] | 40,779 |
| H.S. or G.E.D. | 40.4 | [36.5, 44.3] | 86,955 |
| Some Post-H.S. | 42.4 | [37.9, 47.1] | 87,437 |
| College Graduate | 40.5 | [36.9, 44.1] | 78,687 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 51.0 | [42.5, 59.4] | 25,295 |
| $15,000-$24,999 | 49.4 | [43.9, 54.8] | 46,944 |
| $25,000-$34,999 | 46.8 | [38.5, 55.2] | 28,590 |
| $35,000-$49,999 | 39.1 | [33.4, 45.0] | 33,404 |
| $50,000 or more | 42.1 | [38.6, 45.6] | 127,524 |

## Part 4

## OPTIONAL MODULES

### Module 1: Pre-Diabetes

Pre-diabetes is a serious health condition which is characterized by higher-than-normal blood sugar levels. However, the blood sugar levels are not high enough yet for a person to be diagnosed with type 2 diabetes. More than 1 in 3 adults (about 96 million people) have this condition in this country, and four-fifths of them do not know they have it. Pre-diabetes may develop into type 2 diabetes and also cause heart disease and stroke (Centers for Disease Control and Prevention, 2021i).

It is important to have one's blood sugar tested, since pre-diabetes may go for years without any clear symptoms. CDC especially recommends the test to those who have any of the following risk factors:

- Being overweight
- Being 45 years or older
- Having a parent, brother, or sister with type 2 diabetes
- Being physically active less than 3 times a week
- Ever having gestational diabetes (diabetes during pregnancy) or giving birth to a baby who weighed more than 9 pounds
- Having polycystic ovary syndrome

CDC additionally recommends that African Americans, Hispanic/Latino Americans, American Indians, Pacific Islanders, and some Asian Americans should have their blood sugar tested as representatives of these groups are at a higher risk of having pre-diabetes (Centers for Disease Control and Prevention, 2021i).

It is possible to prevent or delay prediabetes from turning into type 2 diabetes. Some of the tips to decrease the risk of developing the disease include a loss of even a modest amount of weight

and getting regular physical activity. For example, the loss of 5 percent to 7 percent of weight, which equals to 10 to 14 pounds for a 200-pound person, may already decrease the risk of prediabetes developing into diabetes. A brisk 30-minutes' daily walk may be as beneficial for one's health (Centers for Disease Control and Prevention, 2022z).

In the 2016 BRFSS, respondents were asked two questions about pre-diabetes. They were asked whether they had had a test for high blood sugar or diabetes in the past three years, and if they had ever been told by a doctor or other health professional that they had pre-diabetes or borderline diabetes. Table 38 shows that in 2016, slightly over 59 percent of adults in Delaware and almost 56 percent of adults in the USA, indicated that they had had a test for high blood sugar or diabetes within the past three years. Only 13.1 percent of respondents in Delaware and 9.8 percent of respondents nationwide were ever told by a doctor or other health professional that they had pre-diabetes or borderline diabetes (Table 39).

**Table 38: Had a Test for High Blood Sugar or Diabetes in the Past Three Years**

| | Delaware Wt. % | U.S. Wt. % |
|---|---|---|
| Yes | 59.2 | 55.8 |
| No | 37.3 | 41.1 |
| Don't know/ Not sure | 3.5 | 3.1 |
| Refused | 0.0 | 0.1 |

**Table 39: Ever Been Told by a Doctor or Other Health Professional That You Have Pre-Diabetes or Borderline Diabetes**

| | Delaware Wt. % | U.S. Wt. % |
|---|---|---|
| Yes | 13.1 | 9.8 |
| Yes, during pregnancy | 1.4 | 1.3 |
| No | 85.1 | 88.5 |
| Don't know/ Not sure | 0.4 | 0.3 |
| Refused | 0.1 | 0.1 |

Table 40 presents the outcomes of respondents answering the question about whether they have ever been told they had pre-diabetes or borderline diabetes according to their socio-demographic characteristics. As it follows from Table 40, the older the respondents were, the more

of them had prediabetes. For example, in the group of 18–24-year-olds, 6.4 percent of individuals were ever told they had diabetes or borderline diabetes. However, for 35–44-year-olds the number was already 11 percent, and for 45–54-year-olds – the age group in which the risk of getting pre-diabetes begins to increase – 14.5. In the group of the oldest respondents aged 65 and older, the rate was already 22.2 percent. Males and females had close rates of pre-diabetes or borderline diabetes diagnoses: 12.2 percent vs. 13.8 percent.

However, even though CDC avers that Hispanic/Latino Americans are among the race/ethnic groups that are at a higher risk of having pre-diabetes, in Delaware, in 2016, Hispanic respondents had the smallest number of people among them who had pre-diabetes or borderline diabetes: 7.6 percent. Black/non-Hispanic and White/non-Hispanic Delawareans ranked first and second with respect to the ratio of people among them with either pre-diabetes or borderline diabetes followed by Multiracial/non-Hispanic respondents (16.9 percent, 12.7 percent, and 10.7 percent, respectively). No clear pattern was detected between the numbers of respondents with pre-diabetes and borderline diabetes and their level of education or household income.

| Table 40: Pre-Diabetes | | | |
|---|---|---|---|
| | Ever been told you have pre-diabetes or borderline diabetes | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 13.1 | [11.6, 14.7] | 84,892 |
| **AGE** | | | |
| 18-24 | 6.4 | [3.2, 12.6] | 5,306 |
| 25-34 | 4.5 | [2.7, 7.6] | 5,352 |
| 35-44 | 11.0 | [7.7, 15.5] | 11,505 |
| 45-54 | 14.5 | [10.9, 19.0] | 15,858 |
| 55-64 | 17.2 | [13.8, 21.3] | 18,264 |
| 65 and over | 22.2 | [19.0, 25.9] | 28,604 |
| **GENDER** | | | |
| Male | 12.2 | [10.1, 14.6] | 37,594 |
| Female | 13.8 | [11.9, 16.1] | 47,298 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 12.7 | [11.1, 14.6] | 53,222 |
| Black/Non-Hispanic | 16.9 | [12.9, 21.9] | 21,433 |
| Other race/Non-Hispanic | 9.6 | [4.0, 21.2] | 2,356 |
| Multiracial/Non-Hispanic | 10.7 | [4.5, 23.3] | 1,306 |
| Hispanic | 7.6 | [4.7, 12.0] | 3,985 |
| **EDUCATION** | | | |
| Less than H.S. | 15.2 | [10.8, 20.9] | 11,708 |
| H.S. or G.E.D. | 12.2 | [9.7, 15.2] | 24,260 |
| Some Post-H.S. | 14.0 | [11.2, 17.5] | 26,754 |
| College Graduate | 12.1 | [9.9, 14.6] | 21,818 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 19.5 | [13.3, 27.6] | 8,048 |
| $15,000-$24,999 | 11.6 | [8.5, 15.5] | 9,559 |
| $25,000-$34,999 | 14.1 | [9.6, 20.3] | 7,604 |
| $35,000-$49,999 | 13.9 | [9.9, 19.1] | 10,674 |
| $50,000 or more | 13.3 | [11.0, 16.0] | 37,549 |

**Module 2: Diabetes**

Diabetes, or hyperglycemia, is a chronic health condition affecting how a person's body turns food into energy. Most of the food people consume is broken down into sugar (glucose) and then released into the bloodstream. When the level of blood sugar in the bloodstream becomes elevated, the pancreas releases insulin. Insulin is necessary to help blood sugar get into the body cells where it will be used as energy. People who have diabetes cannot produce enough insulin or use it in a proper way. When there is not enough insulin, the bloodstream receives excessive amounts of blood sugar which remain in it. With time, the extra blood sugar in the person's bloodstream may cause heart disease, vision loss, and kidney disease (Centers for Disease Control and Prevention, 2022aa).

There are three types of diabetes. Type 1 diabetes that includes only about 5 to 10 percent of all cases, is the type where the pancreas does not produce insulin. Type 2 diabetes (about 90 to 95 percent of all cases) is where not enough insulin is produced by the pancreas. A third type of diabetes called gestational diabetes occurs in pregnant women between the 24$^{th}$ and 28$^{th}$ weeks of pregnancy and usually resolves after delivery. However, about 50 percent of women who were diagnosed with gestational diabetes are likely to develop Type 2 diabetes later on (Delaware.gov, n.d./a).

According to CDC's *Diabetes Fast Facts* page, in the United States over 37 million people have diabetes; however, 1 in 5 of them don't know about it. Diabetes is the 7$^{th}$ leading cause of death in this country. In the last two decades, the number of adults diagnosed with diabetes has increased more than two times. Some of the reasons for the increase are the aging of the American population and the upsurge in the rates of overweight and obesity (Centers for Disease Control and Prevention, 2022bb).

Table 41 shows the prevalence of diabetes among Delaware adults in 2016 according to their demographic characteristics. Many more respondents aged 65 and over had diabetes than respondents aged 18-24 (22.4 percent vs. 1.7 percent). Slightly more men suffered from diabetes than women (11.1 percent vs.10.1 percent), and the ratio of persons with diabetes was the highest among Black/Non-Hispanic respondents (13.0 percent). Finally, respondents with the lowest level of education and income had the highest incidence of diabetes among them: 15.4 percent in the

groups of respondents with the education level less than high school and 18.9 percent in the group of respondents with the annual household income of less than $15,000.

| **Table 41: Diabetes** | | | |
|---|---|---|---|
| | Have you ever been told you have diabetes? | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 10.6 | [9.5, 11.8] | 79,817 |
| **AGE** | | | |
| 18-24 | 1.7 | [0.4, 7.6] | 1,575 |
| 25-34 | 0.9 | [0.4, 2.2] | 1,148 |
| 35-44 | 4.2 | [2.3, 7.5] | 4,722 |
| 45-54 | 10.0 | [7.3, 13.3] | 12,473 |
| 55-64 | 17.1 | [14.0, 20.7] | 22,314 |
| 65 and over | 22.4 | [19.7, 25.3] | 37,583 |
| **GENDER** | | | |
| Male | 11.1 | [9.5, 13.0] | 39,938 |
| Female | 10.1 | [8.7, 11.8] | 39,879 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 10.5 | [9.3, 11.9] | 50,843 |
| Black/Non-Hispanic | 13.0 | [9.8, 17.0] | 19,570 |
| Other race/Non-Hispanic | 7.9 | [3.7, 16.0] | 2,336 |
| Multiracial/Non-Hispanic | 11.0 | [5.6, 20.3] | 1,510 |
| Hispanic | 7.5 | [5.2, 10.5] | 4,331 |
| **EDUCATION** | | | |
| Less than H.S. | 15.4 | [11.1, 21.0] | 14,267 |
| H.S. or G.E.D. | 11.6 | [9.7, 13.9] | 27,028 |
| Some Post-H.S. | 10.7 | [8.7, 13.0] | 23,349 |
| College Graduate | 7.4 | [6.0, 9.0] | 15,076 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 18.9 | [13.2, 26.3] | 9,947 |
| $15,000-$24,999 | 15.6 | [12.2, 19.9] | 15,778 |
| $25,000-$34,999 | 13.6 | [9.8, 18.5] | 8,620 |
| $35,000-$49,999 | 11.9 | [9.1, 15.4] | 10,754 |
| $50,000 or more | 7.4 | [5.9, 9.2] | 23,391 |

Table 42 demonstrates how the adult diabetes prevalence changed in the state and nationwide within the last six years. Between 2011 and 2016, the fluctuation was not considerable. A slight growth of one percentage point occurred between 2011 and 2016 nationwide: from 9.8 percent to 10.8 percent. In Delaware, some growth occurred between 2011 and 2015, with a slight decrease of less than one percentage point from 2015 to 2016.

**Table 42: Adult Diabetes Prevalence in Delaware and the U.S.**

| | Delaware Wt. % | U.S. Wt. % |
|---|---|---|
| 2011 | 9.7 | 9.8 |
| 2012 | 9.6 | 10.2 |
| 2013 | 11.1 | 10.3 |
| 2014 | 11.1 | 10.5 |
| 2015 | 11.5 | 10.5 |
| 2016 | 10.6 | 10.8 |

Source: Chen, 2021.

The 2016 BRFSS also surveyed respondents on questions concerning receiving recommended care. According to Table 43, approximately the same numbers of respondents aged 18 and older diagnosed with diabetes in Delaware and nationwide were taking insulin, told that their eyes had been affected by diabetes, or had taken a class in diabetes management.

**Table 43: Percentage of Delaware Adults Aged 18 or Older with Diagnosed Diabetes who Reported Receiving Recommended Care**

| | Delaware Wt. % | U.S. Wt. % |
|---|---|---|
| 1. Now taking insulin | 29.4 | 32.4 |
| 2. Have ever been told diabetes has affected eyes | 17.3 | 20.7 |
| 3. Have ever taken a course or class in managing diabetes | 47.1 | 48.2 |

## Module 4: Health Care Access

Health care access in Delaware was considered in detail in *Section 3: Health Care Access*. The following tables demonstrate outcomes of respondents' answers to additional questions concerning their health care coverage.

Table 44 presents the ratios of respondents according to their socio-demographic characteristics who reported that at some point in the past 12 months they had not had any health coverage. The largest number of such respondents turned out to be in the age group of 25–34-year-olds (14.5 percent), and the smallest number in the age group of 65 and over (1.1 percent). Slightly more women reported not having any health insurance at some point within the last 12 months than men. At 14.5 percent, Hispanic respondents had the highest rate of individuals among them with no coverage among all other race/ethnic groups. The least educated respondents and those with the lowest annual income also had the largest numbers of persons among them without health coverage at some point in the past 12 months: 9.7 percent and 11.1 percent, respectively.

| Table 44: Health Care Coverage in the Past 12 Months | | | |
|---|---|---|---|
| | ANY time with NO health coverage in the past 12 months | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 6.1 | [5.1, 7.3] | 40,230 |
| **AGE** | | | |
| 18-24 | 9.7 | [6.0, 15.5] | 6,674 |
| 25-34 | 14.5 | [10.4, 19.9] | 14,392 |
| 35-44 | 6.2 | [3.9, 9.6] | 5,698 |
| 45-54 | 6.1 | [4.0, 9.2] | 6,923 |
| 55-64 | 3.9 | [2.5, 6.0] | 4,750 |
| 65 and over | 1.1 | [0.6, 2.0] | 1,790 |
| **GENDER** | | | |
| Male | 5.6 | [4.2, 7.4] | 17,420 |
| Female | 6.5 | [5.1, 8.3] | 22,810 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 4.6 | [3.6, 6.0] | 20,407 |
| Black/Non-Hispanic | 7.9 | [5.5, 11.4] | 10,407 |
| Other race/Non-Hispanic | 7.1 | [2.9, 16.3] | 1,827 |
| Multiracial/Non-Hispanic | 12.1 | [4.0, 31.2] | 1,584 |
| Hispanic | 14.5 | [9.6, 21.2] | 5,148 |
| **EDUCATION** | | | |
| Less than H.S. | 9.7 | [5.9, 15.6] | 6,344 |
| H.S. or G.E.D. | 6.3 | [4.5, 8.7] | 12,850 |
| Some Post-H.S. | 6.4 | [4.6, 8.9] | 12,763 |
| College Graduate | 4.2 | [2.9, 6.0] | 7,973 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 11.1 | [6.8, 17.7] | 4,672 |
| $15,000-$24,999 | 10.9 | [7.5, 15.5] | 8,495 |
| $25,000-$34,999 | 5.9 | [3.4, 10.0] | 3,312 |
| $35,000-$49,999 | 5.9 | [3.6, 9.6] | 4,687 |
| $50,000 or more | 4.4 | [3.1, 6.3] | 13,084 |

Table 45 provides information on how long respondents in Delaware and the U.S. have not had health care coverage. In Delaware, respondents who reported never having health care coverage comprised the largest group at 23.7 percent. They were followed by over 21 percent of individuals who stated they had not had any health insurance for 6 months or less, and those who had not had any coverage for more than three years (16.3 percent) rounded out the top three. Nationwide, 28.8 percent of respondents said they had not had health care coverage for more than three years, which turned out to be the highest ratio, followed by those who had not had it for more

than 1 year, but no more than 3 years ago or had never had coverage at 17.4 percent each, and those who had not had insurance for 6 months or less at 16.2 percent.

**Table 45: Time since You Last Had Health Care Coverage?**

| | Delaware Wt. % | U.S. Wt. % |
|---|---|---|
| 6 months or less | 21.4 | 16.2 |
| More than 6 months, but no more than 1 year ago | 13.5 | 10.7 |
| More than 1 year, but no more than 3 years ago | 15.7 | 17.4 |
| More than 3 years | 16.3 | 28.8 |
| Never | 23.7 | 17.4 |

Table 46 presents the numbers of respondents in different socio-demographic groups who answered "Yes" to the following question: Not including over the counter (OTC) medications, was there a time in the past 12 months when you did not take your medication as prescribed because of cost? It follows from the table that more respondents in the age group of 25–34-year-olds than in any other age group were unable to afford prescribed medication in the past 12 months (17.8 percent). More females than males encountered this problem: 12.0 percent vs. 10.5 percent. Hispanic and Multiracial/non-Hispanic respondents had the highest rates of individuals among them who had not taken their prescribed medication due to costs: 25.0 percent and 23.0 percent, respectively. Only 8.4 percent of White/non-Hispanic respondents reported having this issue, which was the lowest number among all race/ethnic groups. Not being able to afford prescribed medication correlated with education: most respondents who struggled with purchasing the necessary medications were also the least educated ones (24.5 percent). However, no obvious correlation between the ability to purchase prescribed medications and the level of household income was detected.

| Table 46: Any Time in the Past 12 Months When Respondents Did Not Take Their Medication as Prescribed Because of Cost (not including over-the-counter (OTC) medication) | | | |
|---|---|---|---|
| | Any time in the past 12 months when did not take medication due to costs | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 11.3 | [9.9, 12.9] | 85,041 |
| **AGE** | | | |
| 18-24 | 12.8 | [8.2, 19.6] | 11,593 |
| 25-34 | 17.8 | [13.7, 22.8] | 22,365 |
| 35-44 | 11.2 | [8.1, 15.4] | 12,663 |
| 45-54 | 15.0 | [11.2, 19.9] | 18,847 |
| 55-64 | 9.6 | [7.2, 12.8] | 12,561 |
| 65 and over | 4.2 | [3.1, 5.7] | 7,008 |
| **GENDER** | | | |
| Male | 10.5 | [8.6, 12.8] | 37,809 |
| Female | 12.0 | [10.1, 14.2] | 47,232 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 8.4 | [6.9, 10.2] | 40,616 |
| Black/Non-Hispanic | 13.1 | [9.6, 17.8] | 19,820 |
| Other race/Non-Hispanic | 12.3 | [6.9, 12.1] | 3,653 |
| Multiracial/Non-Hispanic | 23.0 | [11.6, 40.6] | 3,163 |
| Hispanic | 25.0 | [19.4, 31.6] | 14,531 |
| **EDUCATION** | | | |
| Less than H.S. | 24.5 | [19.0, 31.0] | 22,749 |
| H.S. or G.E.D. | 12.2 | [9.7, 15.2] | 28,381 |
| Some Post-H.S. | 9.9 | [7.4, 13.2] | 21,736 |
| College Graduate | 5.9 | [4.5, 7.6] | 12,083 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 19.7 | [13.9, 27.1] | 10,380 |
| $15,000-$24,999 | 21.3 | [17.1, 26.3] | 21,517 |
| $25,000-$34,999 | 13.4 | [9.0, 19.4] | 8,476 |
| $35,000-$49,999 | 12.8 | [9.1, 17.6] | 11,529 |
| $50,000 or more | 6.2 | [4.4, 8.7] | 19,663 |

Finally, Table 47 shows how many respondents had health care bills that were being paid over time. The largest number of such respondents was in the age group of 45–54-year-olds (25.1 percent). Many more females had outstanding medical bills than males, the difference being almost six percentage points and statistically significant. Black/non-Hispanic respondents had 20.1 percent of individuals among them who had health care bills to be paid – the largest number among all other race/ethnic groups. No direct correlation was revealed between the levels of education

and household income and the number of people with outstanding medical bills. However, there were more respondents with medical bills to be paid in the groups with the middle levels of education and income, than in the groups with the lowest and highest educational attainment levels and annual household incomes.

| **Table 47: Currently Have Any Health Care Bills That Are Being Paid Over Time** | | | |
|---|---|---|---|
| | Medical bills being paid off | | |
| | Wt. % | 95% C.I. | Est. Pop. |
| **Total** | 19.1 | [17.3, 20.9] | 138,781 |
| **AGE** | | | |
| 18-24 | 18.8 | [12.9, 26.4] | 15,763 |
| 25-34 | 20.6 | [15.9, 26.1] | 24,498 |
| 35-44 | 22.6 | [17.8, 28.2] | 24,561 |
| 45-54 | 25.1 | [20.5, 30.2] | 30,566 |
| 55-64 | 18.8 | [15.5, 22.5] | 24,020 |
| 65 and over | 11.7 | [9.5, 14.2] | 19,370 |
| **GENDER** | | | |
| Male | 16.0 | [13.6, 18.6] | 55,422 |
| Female | 21.9 | [19.4, 24.6] | 83,359 |
| **RACE-ETHNICITY** | | | |
| White/Non-Hispanic | 18.9 | [16.8, 21.2] | 88,608 |
| Black/Non-Hispanic | 20.1 | [16.0, 25.0] | 29,311 |
| Other race/Non-Hispanic | 19.6 | [11.8, 30.7] | 5,259 |
| Multiracial/Non-Hispanic | 12.8 | [6.9, 22.7] | 1,7866 |
| Hispanic | 17.5 | [12.3, 24.1] | 9,927 |
| **EDUCATION** | | | |
| Less than H.S. | 16.0 | [11.8, 21.2] | 14,471 |
| H.S. or G.E.D. | 20.8 | [17.7, 24.4] | 46,998 |
| Some Post-H.S. | 22.7 | [19.1, 26.8] | 48,478 |
| College Graduate | 14.5 | [12.1, 17.4] | 28,412 |
| **HOUSEHOLD INCOME** | | | |
| Less than $15,000 | 18.3 | [13.4, 24.6] | 9,411 |
| $15,000-$24,999 | 20.3 | [16.4, 24.7] | 19,778 |
| $25,000-$34,999 | 23.7 | [17.9, 30.7] | 14,822 |
| $35,000-$49,999 | 24.0 | [19.1, 29.8] | 21,061 |
| $50,000 or more | 18.7 | [15.8, 22.0] | 57,055 |

## Module 7: Cognitive Decline

Cognition refers to various processes in the brain including the ability to learn, remember, and make judgements (Centers for Disease Control and Prevention, 2019c). Impaired cognition may greatly impact one's overall health and well-being. Cognitive decline ranges from mild cognitive impairment to dementia when a person's abilities can decline quite severely so as to interfere with his/her daily life. The most common form of dementia is Alzheimer's disease (Ibid.).

Even though some cognitive decline is natural for aging adults, constantly forgetting how to perform routine tasks is not normal. Cognitive decline may affect one's ability to care for oneself. For example, aging adults may become unable to prepare their meals, manage their finances, medical appointments, or medication regimens. The latter in its turn may result in poor health outcomes, especially for individuals with multiple chronic diseases, or comorbidities, which are typical in older adults (Centers for Disease Control and Prevention, 2019c). It is important, therefore, to educate people about modifiable risk factors and promote early assessment and intervention in order to be able to improve the health and well-being of older adults (Jessen et al., 2014).

The 2016 BRFSS asked adults aged 45 and older a number of questions pertaining to cognitive decline (Table 46). In Delaware and in the United States as a whole, the results turned out to be quite similar. First, respondents were asked if they had experienced confusion or memory loss in the past 12 months. In Delaware 8.7 percent of respondents said "yes", while in the U.S. the percentage was 10.6. More than 45 percent of respondents in Delaware and over 46 percent of respondents in the U.S. reported having discussed confusion or memory loss with a health care professional. Slightly over 34 percent of respondents in Delaware and 41.3 percent of respondents nationwide said they had always been able to get help with day-to-day activities, such as cooking, cleaning, taking medication, driving, or paying bills, when they needed it.

| Table 48: Cognitive Decline | | |
|---|---|---|
| | Delaware Wt. % | U.S. Wt. % |
| Have experienced confusion or memory loss during the past 12 months | 8.7 | 10.6 |
| Have discussed confusion or memory loss with a health care professional | 45.6 | 46.2 |
| As a result of confusion or memory loss *always* gave up day-to-day household activities or chores during the past 12 months | 4.9 | 6.5 |
| As a result of confusion or memory loss *always* needed assistance with these day-to-day activities during the past 12 months | 6.1 | 5.9 |
| *Always* got the help when needed | 34.1 | 41.3 |
| Confusion or memory loss *always* interfered with social activities outside home during the past 12 months | 6.5 | 10.4 |

**Module 8: Sugar Sweetened Beverages**

Sugar-sweetened beverages (SSBs) are any liquids sweetened with added sugars including, but not limited to, brown sugar, corn syrup, fructose, maltose, and raw sugar. SSBs refer to regular not sugar-free soda, fruit drinks, energy drinks, and the like. SSBs are the primary sources of added sugars in the USA (Centers for Disease Control and Prevention, 2022dd). Added sugars contribute to such health problems as weight gain, obesity, type 2 diabetes, and heart disease (Centers for Disease Control and Prevention, 2021j). Consumption of SSB is associated with other types of less healthy behaviors. Research finds that those adults and teenagers who smoke, do not sleep or exercise enough, or consume fast food regularly are also more likely to consume SSBs frequently. In addition, adolescents who often drink SSBs tend to have more screen time on TV, cell phones, computers, and video games (Centers for Disease Control and Prevention, 2022cc). CDC suggests that limiting SSBs intake can contribute to maintaining a healthy weight and having healthy dietary patterns (Ibid.).

Tables 47 and 48 provide information about how many adults drank SSBs in Delaware and in the U.S. once a day/week/month in 2016. As it follows from Table 47, fewer respondents in Delaware than nationwide drank regular soda or pop that contained sugar during the past 30 days at the time of the interview. Slightly over 8 percent of respondents in Delaware reported doing so

once a day as opposed to 8.6 percent in the U.S. The ratio of those who drank soda once a week was 4.6 percent vs. 7.9 percent, and once a month – 6.5 percent vs. 6.9 percent. As for other sugar-sweetened drinks, again more respondents nationwide than in Delaware reported consuming sugar-sweetened fruit drinks, sweet tea, and sports or energy drinks once a day, once a week, or once a month (Table 48).

**Table 49: Sugar Sweetened Beverages**

Drank regular soda or pop that contained sugar during the past 30 days

| | Delaware Wt. % | U.S. Wt. % |
|---|---|---|
| Once a day | 8.1 | 8.5 |
| Once a week | 4.6 | 7.9 |
| Once a month | 6.5 | 6.9 |

**Table 50: Sugar Sweetened Beverages (cont.)**

Drank sugar-sweetened fruit drinks, sweet tea, and sports or energy drinks during the past 30 days

| | Delaware Wt. % | U.S. Wt. % |
|---|---|---|
| Once a day | 6.6 | 7.6 |
| Once a week | 3.5 | 6.7 |
| Once a month | 3.4 | 4.3 |

## Module 21: Sexual Orientation and Gender Identity

CDC states that it is important to address the health needs of people who are lesbian, gay, bisexual, or transgender (LGBT) in order to be able to effectively prevent HIV, Viral Hepatitis, STD, and TB (Centers for Disease Control and Prevention, 2022dd). However, to be able to address the health needs of the LGBT community properly, it is necessary to collect data on sexual orientation and gender identity (SO/GI) from patients at health care facilities (Centers for Disease Control and Prevention, 2022ee). Otherwise, it is impossible to identify the specific health care needs of LGBT patients, address the health disparities experienced by them, and deliver important health care services. Collecting this type of data has been recommended by the National Academy of Medicine and the Joint Commission to learn about LGBT populations and assess the quality of care provided to them (Ibid.).

The 2016 BRFSS asked respondents two questions about their sexual orientation and gender identity. The first question asked them if they considered themselves to be straight, lesbian, or gay, or bisexual. The second question asked them if they considered themselves to be transgender. The outcomes of respondents' answers to these questions are presented in Tables 49 and 50. According to the data in the tables, an overwhelming majority of people in Delaware and nationwide identified as straight (92.7 percent and 91.9 percent) and did not consider themselves to be transgender (97.7 percent and 98.3 percent). The number of people who identified as lesbian or gay, or bisexual in Delaware and the U.S. was between 1.5 and 2.2 percent. Much fewer people identified as transgender: from 0.1 to 0.2 percent.

**Table 51: Sexual Orientation and Gender Identity**

| Do you consider yourself to be: | | |
|---|---|---|
| | Delaware<br>Wt. % | U.S.<br>Wt. % |
| Straight | 92.7 | 91.9 |
| Lesbian or gay | 1.5 | 1.7 |
| Bisexual | 1.9 | 2.2 |
| Other | 0.3 | 0.5 |

| **Table 52: Sexual Orientation and Gender Identity (cont.)** | | |
|---|---|---|
| Do you consider yourself to be transgender? | | |
| | Delaware<br>Wt. % | U.S.<br>Wt. % |
| Yes, Transgender, male-to-female | 0.1 | 0.2 |
| Yes, Transgender, female-to-male | 0.1 | 0.1 |
| Yes, Transgender, gender non-conforming | 0.1 | 0.1 |
| No | 97.7 | 98.3 |

## Part 5

## DELAWARE STATE-ADDED MODULE: TOBACCO PRODUCTS

As mentioned above, if space is available, states can design and add local questions to meet state-specific needs. In Delaware, funds for field testing and data analysis of additional local questions introduced into the questionnaire must be provided by any Delaware Division of Public Health (DPH) program that makes a request about the introduction of such questions. In 2016, the state-added module in the Delaware BRFS concerned tobacco products.

Cigarette smoking and tobacco use that includes, apart from regular cigarettes, e-cigarettes, pipes, cigars, little cigars, smokeless products, hookahs, etc. are considered to be among the behavioral risk factors. Respondents' answers to some questions concerning tobacco use and e-cigarettes were analyzed in Sections 9 and 10 of this report. The given part provides some additional information about behavioral risk factors that affect adult Delawareans' health. Table 53 shows how many adults in Delaware in 2016 identified as smokers and reported using other tobacco products by county. Most smokers and individuals using various tobacco products were identified in Sussex County: 19 percent and 25.2 percent, respectively. The numbers of smokers and tobacco products users in the other two counties and statewide were quite close.

**Table 53: Adult Behavioral Risk Factor Prevalence, 2016 (statewide and by county)**

| | State | New Castle County | Kent County | Sussex County |
|---|---|---|---|---|
| Behavioral Risk Factors | % [95% CI] | % [95% CI] | % [95% CI] | % [95% CI] |
| Current Cigarette Smoker | 17.7% [16.0, 19.] | 17.3 % [14.7, 19.9] | 17% [14.4, 19.7] | 19% [16.2, 21.7] |
| Total Tobacco Use | 24.2 % [22.2, 26.2] | 24.3% [21.2, 27.3] | 22.7% [19.7, 25.7] | 25.2% [22.1, 28.3] |

Source: Delaware.gov., n.d./b.

What follows is based on the materials contained in the *Summary of Data from the 2016 Behavioral Risk Factor Survey (BRFS) of Adult Delaware Residents* analyzing adult tobacco use in Delaware (Delaeware.gov., n.d./c).

Table 54 reveals the numbers of adult Delawareans who reported being either every-day or some-day smokers, and those who either quit smoking or never smoked. Over 55 percent of adults in Delaware never smoked, and almost 27 percent stated they were former smokers. Over 12 percent reported being every-day smokers, and slightly over 5 percent – some-day smokers.

| **Table 54: Cigarette Smoking Among Delaware Adults, 2016** | |
|---|---|
| Every-day smokers | 12.4 % |
| Some-days smokers | 5.2 % |
| Former smokers | 26.8 % |
| Never smoked | 55.5 % |

More men than women reported smoking (19 percent vs. 16.4 percent). As for age groups, the largest percentage of smokers was in the group of 25–34-year-olds (23.3 percent), followed by 45–64-year-olds (23%) and the youngest adults aged 18-24 (11.8 %). Among Delawareans who currently smoke every day, 76 percent said they first tried smoking before the age of 18, 20.5 percent – after they turned 18 but before the age of 21, and only 3.5 percent tried smoking for the first time after the age of 21.

Some categories of adults were found to be more at risk of smoking than others. For example, among adults who reported having a significant number of days per month when their mental health was bad, 35.6 percent were also smokers as compared to 15.5 percent of smokers with good mental health. Among those with depressive disorders, 33.1 percent reported smoking cigarettes vs. 14.5 percent of respondents without depression, and approximately 39 percent of adults with depression stated they were using some form of tobacco as compared to 21.2 percent of adults without depression. Finally, 28 percent of adults with disabilities were smokers as opposed to 14.8 percent of respondents without disabilities.

No statistically significant difference was discovered in adult cigarette smoking prevalence by race or ethnicity in Delaware. The highest smoking prevalence was revealed among respondents

with the lowest income of less than $15,000 a year: 33.3 percent. Among respondents with a college education only 8.5 percent of adults turned out to be smokers, whereas among those who did not graduate from high school, 29.0 percent of individuals smoked.

Slightly over 8 percent of adult Delawareans reported using other tobacco products, including cigars, little cigars, hookahs, pipes, bidis, orbs, or strips. Almost 13 percent of adult men used these products, and 22.6 percent of the youngest adults aged 18-24 stated doing the same. While 17.7 percent of Delaware adults reported being current smokers, 22.5 indicated using other tobacco products, and the total tobacco use prevalence in the state turned out to be 24.2 percent.

## Part 6

# CONCLUSION

The 2016 Behavioral Risk Factor Surveillance System (BRFSS) collected information from 4,213 Delaware adults aged 18 and older via a random-sample telephone survey. The CDC-provided weighting variable was utilized in this study to generalize the prevalence rates of health issues, health care access, chronic diseases, and some behavioral risk factors in the population. The following are the key findings from the 2016 BRFSS analysis.

### [1] Health Status

- In 2016, in Delaware, 83.5 percent of respondents reported that they evaluated their general health as "good" or "better", while 16.4 percent evaluated their general health as "fair" or "poor".

- Over 65 percent of individuals in Delaware reported they had had zero days when their physical health status was not good for the past 30 days at the time of the interview, and almost 70 percent stated the same about their mental health.

- Slightly over 90 percent of respondents aged 18 and above had health care coverage in Delaware in 2016, while 8.5 percent did not have any insurance. At the same time, if one took into consideration only respondents aged 18 to 64, the ratio of individuals with health care coverage would drop 22.7 percentage points to 68.3 percent.

- Hispanic respondents had the largest ratio of individuals among them who evaluated their general health as "fair" or "poor" (27.2 percent). The lowest ratio of respondents with "fair" or "poor" health was among Other race/non-Hispanic respondents (11.1 percent) followed by White/non-Hispanic and Black/non-Hispanic respondents (15.1 percent and 15.6 percent, respectively). Hispanic respondents also had the lowest rate of health care

coverage among all race/ethnic groups at 62.8 percent. For comparison, in all other race/ethnic groups the rates of health care coverage proved to be over 90 percent.

**[2] Chronic Health Conditions**

- In 2016, eleven types of chronic health diseases were surveyed in Delaware. The three most prevalent chronic diseases were arthritis, depressive disorder, and asthma. The prevalence of arthritis among Delaware adults was 26.6 percent, of depressive disorder – 16.6 percent, and of asthma – 12.7 percent.

**[3] Behavioral Risk Factors**

- Below are some highlights of the risk factors that the 2016 BRFSS inquired about:

  - *Exercise*: 73.3 percent of respondents in Delaware participated in some physical activity or exercise in the past month. The rates of participation correlated with the levels of education and income, i.e., the better educated respondents were or the more affluent they were, the higher was the ratio of individuals who participated in physical activity or exercise. More males participated than females, the difference equaling 8.2 percentage points. Hispanic, Black/non-Hispanic, and Multiracial/non-Hispanic respondents had very close rates of participation: 69.7 percent, 69.7 percent, and 69.4 percent, respectively. The highest level of participation was among Other race/non-Hispanic respondents (77.0 percent) followed by White/non-Hispanic respondents at 75.0 percent.

  - *Inadequate sleep*: CDC recommends that adults aged 18-60 years should get 7 or more hours of sleep per night. However, in 2016, 36.3 percent of Delaware adults did not get enough sleep, which means that on average they slept less than 7 hours in a 24-hour period.

  - *Tobacco use*: When respondents were asked whether they had smoked at least 100 cigarettes in their entire life, the difference between the youngest and the oldest respondents was slightly over 34 percentage points (19.0 percent vs. 53.2 percent).

However, when asked if they currently smoked every day, 28.8 percent of 18–24-year-olds said "yes", while only 12.5 percent of those 65 and over reported daily smoking. The more educated respondents were, the fewer individuals among them were daily smokers. The level of income, on the contrary, did not seem to correlate with smoking, even though the difference in the rates of smoking between the most affluent respondents and those with the lowest household income was 20.7 percentage points. At the same time, in 2016, 55.5 percent of Delaware adults reported they had never smoked, and 26.8 percent said they had quit smoking.

- *Alcohol consumption*: Heavy drinking turned out to be much less prevalent among all socio-demographic groups than binge drinking. The largest share of binge drinkers was found in the group of the youngest Delawareans aged 18-24 (30.9 percent), while the group of respondents aged 65 and older had the smallest number of binge drinkers among them (6.3 percent). More males engaged in binge drinking than females (20.7 percent vs. 13.7 percent), and the difference was statistically significant. No obvious correlation was detected between the prevalence rates of binge drinkers and respondents' level of education. However, some correlation was revealed with respect to respondents' annual income.

- *Immunization*: Over 41 percent of adult Delawareans had a flu shot or spray during the past 12 months, while slightly over 33 percent ever received a pneumococcal vaccine. In addition, 18.9 percent of Delaware adults reported having had a Tdap shot (tetanus and pertussis/whooping cough) between 2005 and 2016.

- *Seat belt use:* More than 91 percent of adult Delawareans stated they always used seatbelts when driving or riding a car. The percentage of individuals always using seatbelts increased with age. More females reported using seatbelts than males. Black/non-Hispanic respondents had the lowest number of individuals among them who always used seatbelts. The use of seatbelts correlated with the level of education but did not correlate with the level of household income.

- *Drinking and driving:* Very few Delawareans admitted they had driven at least once after they had had too much to drink (2.0 percent). Over 95.6 percent stated they had never done that.

- *Cancer screening:* More than 67% percent of women reported ever having a mammogram – a test used to detect breast cancer. The percentage of women who had a mammogram considerably increased in the age group of 45–54-year-olds as compared to the preceding age groups and continued growing in the subsequent age groups. The ratio of women who ever had a Pap test used to screen for cervical cancer was 87.4%. The rates significantly increased beginning with the second youngest age group of 25–34-year-olds and older. The ratios did not correlate either with the level of education or household income.

  Only 53 percent of adult males aged 35 and older were ever recommended to have a PSA (prostate-specific antigen test) for prostate cancer screening, and 54 percent reported they had ever had a PSA test. Slightly over 75 percent of Delaware adults aged 45 and older had sigmoidoscopy or colonoscopy exam used to find polyps in the colon in order to remove them before they turn into cancer or detect colorectal cancer at an early stage. The ratio of respondents who had the exam increased with age.

- *HIV/AIDS*: Almost 42 percent of Delawareans were tested for HIV. Most people who had been tested were in the middle age groups: 25-34, 35-44, and 45–54-year-olds. Among race/ethnic groups, Black/non-Hispanic respondents had the largest share of individuals who had been tested for HIV.

## REFERENCES


American Diabetes Association. (2018). Economic Costs of Diabetes in the U.S. in 2017. *Diabetes Care, 41(5),* pp. 917-928. DOI: 10.2337/dci18-0007

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. Arlington, VA: American Psychiatric Publishing. DOI: https://doi.org/10.1176/appi.books.9780890425596

American Psychological Association. (2022). *APA Dictionary of Psychology*. Retrieved from https://dictionary.apa.org/behavioral-risk-factor

Basson, D. (2008). Cooperation Rate. In *Encyclopedia of Survey Research Methods* (Lavrakas, P.J. (ed.)). SAGE Publications, Inc. DOI: https://dx.doi.org/10.4135/9781412963947

Benjamin, E.J., Virani, S.S., Callaway, C.W., et al. (2018). Heart disease and stroke statistics – 2018 update: a report from the American Heart Association. *Circulation*, *137,* pp. e67-e492. DOI: https://doi.org/10.1161/CIR.0000000000000558

Buttorff, C., Ruder, T., and Bauman, M. (2017). *Multiple Chronic Conditions in the United States.* Santa Monica, CA: Rand Corporation. Retrieved from https://www.rand.org/content/dam/rand/pubs/tools/TL200/TL221/RAND_TL221.pdf

Centers for Disease Control and Prevention. (2013a). *Analyzing and Interpreting Large Datasets.* Retrieved from https://www.cdc.gov/globalhealth/healthprotection/fetp/training_modules/11/large-data-sets_pw_final_09252013.pdf

Centers for Disease Control and Prevention. (2013b). *Vital Signs. Drinking and Driving. A Threat to Everyone.* Retrieved from https://www.cdc.gov/vitalsigns/drinkinganddriving/

Centers for Disease Control and Prevention. (2014). *Behavioral Risk Factor Surveillance System. About BRFSS.* Retrieved from https://www.cdc.gov/brfss/about/index.htm

Centers for Disease Control and Prevention. (2015a). 2016 Behavioral Risk factor Surveillance System Questionnaire. Retrieved from https://www.cdc.gov/brfss/questionnaires/pdf-ques/2016_BRFSS_Questionnaire_FINAL.pdf

Centers for Disease Control and Prevention. (2015b). *BRFSS Prevalence & Trends Data [online]*. Retrieved from https://nccd.cdc.gov/BRFSSPrevalence/rdPage.aspx?rdReport=DPH_BRFSS.ExploreByTopic&irbLocationType=StatesAndMMSA&islClass=CLASS01&islTopic=TOPIC03&islYear=2021&rdRnd=86003

Centers for Disease Control and Prevention. (2017a). *Behavioral Risk Factor Surveillance System. Comparability of Data BRFSS 2016.* Retrieved from https://www.cdc.gov/brfss/annual_data/2016/pdf/compare_2016.pdf

Centers for Disease Control and Prevention. (2017b). *Behavioral Risk Factor Surveillance System. Overview: BRFSS 2016.* Retrieved from https://www.cdc.gov/brfss/annual_data/2016/pdf/overview_2016.pdf

Centers for Disease Control and Prevention. (2017c). *BRFSS Combined Landline and Cell Phone Weighted Response Rates by State, 2016.* Retrieved from https://www.cdc.gov/brfss/annual_data/2016/pdf/2016_ResponseRates_Table.pdf

Centers for Disease Control and Prevention. (2017d). *2016 Modules by State by Data Set & Weight.* Retrieved from https://www.cdc.gov/brfss/questionnaires/modules/state2016.htm

Centers for Disease Control and Prevention. (2019a). *Behavioral Risk Factor Surveillance System. 2016 BRFSS Survey Data and Documentation*. Retrieved from https://www.cdc.gov/brfss/annual_data/annual_2016.html

Centers for Disease Control and Prevention. (2019b). *Behavioral Risk Factor Surveillance System. 2016 BRFSS Survey Data and Documentation. 2016 Weighting Formula.* Retrieved from https://www.cdc.gov/brfss/annual_data/annual_2016.html

Centers for Disease Control and Prevention. (2019c*). Alzheimer's Disease and Healthy Aging. Subjective Cognitive Decline – A Public Health Issue.* Retrieved from https://www.cdc.gov/aging/data/subjective-cognitive-decline-brief.html

Centers for Disease Control and Prevention. (2020a). *Weighting the BRFSS Data.* Retrieved from Weighting the BRFSS Data (cdc.gov)

Centers for Disease Control and Prevention. (2020b). *Oral Health. Adult Oral Health.* Retrieved from https://www.cdc.gov/oralhealth/basics/adult-oral-health/

Centers for Disease Control and Prevention. (2020c). *HIV. Reports Archive. 2017 Edition, Volume 29. Diagnosis of HIV Infection in the United States and Dependent Areas, 2017.* Retrieved from https://www.cdc.gov/hiv/library/reports/hiv-surveillance-archive.html#2016-2010-Reports

Centers for Disease Control and Prevention. (2021a). *National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). Do You Get Enough Sleep?* Retrieved from https://www.cdc.gov/chronicdisease/resources/infographic/sleep.htm

Centers for Disease Control and Prevention. (2021b). *Arthritis. FAQs about Arthritis*. Retrieved from https://www.cdc.gov/arthritis/basics/faqs.htm#WhatIs

Centers for Disease Control and Prevention. (2021c). *Oral Health. Oral Health Surveillance Report, 2019.* Retrieved from https://www.cdc.gov/oralhealth/publications/OHSR-2019-index.html

Centers for Disease Control and Prevention. (2021d). *CDC Home. 2014 Surgeon General's Report: The Health Consequences of Smoking – 50 Years of Progress. Smoking and Overall Health.* Retrieved from https://www.cdc.gov/tobacco/sgr/50th-anniversary/pdfs/fs_smoking_overall_health_508.pdf

Centers for Disease Control and Prevention. (2021e). *2014 Surgeon General's Report: The Health Consequences of Smoking – 50 Years of Progress.* Retrieved from https://www.cdc.gov/tobacco/sgr/50th-anniversary/index.htm

Centers for Disease Control and Prevention. (2021f). *Older Adult Fall Prevention. Facts about Falls.* Retrieved from https://www.cdc.gov/falls/facts.html

Centers for Disease Control and Prevention. (2021g). *Injury Prevention & Control. WISQARS – Injury Data. Web-based Injury Statistics Query and Reporting System.* Retrieved from https://www.cdc.gov/injury/wisqars/index.html

Centers for Disease Control and Prevention. (2021h). *National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). Power of Prevention. The Health and Economic Benefits of Preventing Chronic Diseases.* Retrieved from https://www.cdc.gov/chronicdisease/programs-impact/pop/breast-cancer.htm

Centers for Disease Control and Prevention. (2021i). *Diabetes. Prediabetes – Your Chance to Prevent Type 2 Diabetes.* Retrieved from https://www.cdc.gov/diabetes/basics/prediabetes.html

Centers for Disease Control and Prevention. (2021j). *Nutrition. Get the Facts: Added Sugar.* Retrieved from https://www.cdc.gov/nutrition/data-statistics/added-sugars.html

Centers for Disease Control and Prevention. (2022a). *Behavioral Risk Factor Surveillance System. BRFSS Questionnaires.* Retrieved from https://www.cdc.gov/brfss/questionnaires/index.htm

Centers for Disease Control and Prevention. (2022b). *Sleep and Sleep Disorders. Are You Getting Enough Sleep?* Retrieved from https://www.cdc.gov/sleep/features/getting-enough-sleep.html

Centers for Disease Control and Prevention. (2022c). *National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). About Chronic Diseases.* Retrieved from https://www.cdc.gov/chronicdisease/about/index.htm

Centers for Disease Control and Prevention. (2022d). *National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP).* Retrieved from https://www.cdc.gov/chronicdisease/index.htm

Centers for Disease Control and Prevention. (2022e). *National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). Health and Economic Costs of Chronic Diseases.* Retrieved from https://www.cdc.gov/chronicdisease/about/costs/index.htm

Centers for Disease Control and Prevention. (2022f). *Tips from Former Smokers. Mental Health Conditions: Depression and Anxiety.* Retrieved from https://www.cdc.gov/tobacco/campaign/tips/diseases/depression-anxiety.html

Centers for Disease Control and Prevention. (2022g). *Asthma.* Retrieved from https://www.cdc.gov/asthma/

Centers for Disease Control and Prevention. (2022h). *Smoking & Tobacco Use. About Electronic Cigarettes (E-Cigarettes).* Retrieved from https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html

Centers for Disease Control and Prevention. (2022i). *Smoking & Tobacco Use. Quick Facts on the Risks of E-Cigarettes for Kids, Teens, and Young Adults.* Retrieved from https://www.cdc.gov/tobacco/basic_information/e-cigarettes/Quick-Facts-on-the-Risks-of-E-cigarettes-for-Kids-Teens-and-Young-Adults.html

Centers for Disease Control and Prevention. (2022j). *Alcohol and Public Health. Alcohol Use and Your Health.* Retrieved from https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm

Centers for Disease Control and Prevention. (2022k). *Influenza (Flu). About Flu.* Retrieved from https://www.cdc.gov/flu/about/index.html

Centers for Disease Control and Prevention. (2022l). *Vaccines and Preventable Diseases. Pneumococcal Vaccination: What Everyone Should Know.* Retrieved from https://www.cdc.gov/vaccines/vpd/pneumo/public/

Centers for Disease Control and Prevention. (2022m). *Tetanus.* Retrieved from https://www.cdc.gov/tetanus/index.html

Centers for Disease Control and Prevention. (2022n). *Tetanus. Causes and How It Spreads.* Retrieved from https://www.cdc.gov/tetanus/about/causes-transmission.html

Centers for Disease Control and Prevention. (2022o). *Tetanus. Prevention.* Retrieved from https://www.cdc.gov/tetanus/about/prevention.html

Centers for Disease Control and Prevention. (2022p). *Vaccines and Preventable Diseases. Diphtheria, Tetanus, and Whooping Cough Vaccination.* Retrieved from https://www.cdc.gov/vaccines/vpd/dtap-tdap-td/public/index.html

Centers for Disease Control and Prevention. (2022q). *Cervical Cancer. Basic Information about Cervical Cancer.* Retrieved from https://www.cdc.gov/cancer/cervical/basic_info/

Centers for Disease Control and Prevention. (2022r). *Cervical Cancer. What Can I Do to Reduce My Risk of Cervical Cancer.* Retrieved from https://www.cdc.gov/cancer/cervical/basic_info/prevention.htm

Centers for Disease Control and Prevention. (2022s). *Prostate Cancer. Basic Information about Prostate Cancer.* Retrieved from https://www.cdc.gov/cancer/prostate/basic_info/

Centers for Disease Control and Prevention. (2022t). *Prostate Cancer. What is Screening for Prostate Cancer.*
Retrieved from https://www.cdc.gov/cancer/prostate/basic_info/screening.htm

Centers for Disease Control and Prevention. (2022u). *Colorectal (Colon) Cancer. What is Colorectal Cancer?*
Retrieved from https://www.cdc.gov/cancer/colorectal/basic_info/what-is-colorectal-cancer.htm

Centers for Disease Control and Prevention. (2020v). *United States Cancer Statistics (USCS). Colorectal Cancer, United States – 2007-2016.* Retrieved from https://www.cdc.gov/cancer/uscs/about/data-briefs/no16-colorectal-cancer-2007-2016.htm

Centers for Disease Control and Prevention. (2022w). *Colorectal (Colon) Cancer. What Should I Know about Screening?*
Retrieved from https://www.cdc.gov/cancer/colorectal/basic_info/screening/

Centers for Disease Control and Prevention. (2022x). *HIV. About HIV.* Retrieved from https://www.cdc.gov/hiv/basics/whatishiv.html

Centers for Disease Control and Prevention. (2022y). *HIV. HIV Testing.* Retrieved from https://www.cdc.gov/hiv/testing/index.html

Centers for Disease Control and Prevention. (2022z). *HIV. Getting Tested.* Retrieved from https://www.cdc.gov/hiv/basics/hiv-testing/getting-tested.html

Centers for Disease Control and Prevention. (2022aa). *Diabetes. The Surprising Truth about Prediabetes.* Retrieved from https://www.cdc.gov/diabetes/library/features/truth-about-prediabetes.html

Centers for Disease Control and Prevention. (2022bb). *Diabetes. What is Diabetes?* Retrieved from https://www.cdc.gov/diabetes/basics/diabetes.html

Centers for Disease Control and Prevention. (2022cc). *Diabetes. Diabetes Fast Facts.* Retrieved from https://www.cdc.gov/diabetes/basics/quick-facts.html

Centers for Disease Control and Prevention. (2022dd). *Nutrition. Get the Facts: Sugar-Sweetened Beverages and Consumption.* Retrieved from https://www.cdc.gov/nutrition/data-statistics/sugar-sweetened-beverages-intake.html

Centers for Disease Control and Prevention. (2022ee). *National Center for HIV, Viral Hepatitis, STD, and TB Prevention. Sexual Orientation and Gender Identity.* Retrieved from https://www.cdc.gov/nchhstp/sexual-id-orientation.htm

Centers for Disease Control and Prevention. (2022ff). *HIV. Collecting Sexual Orientation and Gender Identity Information.* Retrieved from https://www.cdc.gov/hiv/clinicians/transforming-health/health-care-providers/collecting-sexual-orientation.html

Centers for Disease Control and Prevention. (2022gg). *Breast Cancer. What Are the Risk Factors for Breast Cancer?* Retrieved from What Are the Risk Factors for Breast Cancer? | CDC

Chen, W-M. (2021). *Delaware 2020. Behavioral Risk Factor Survey.* Center for Applied Demography & Survey Research, University of Delaware. Retrieved from https://udspace.udel.edu/handle/19716/31889

CMS.gov. (2022). *Centers for Medicare & Medicaid Services. National Health Expenditure Data: Historical.* Retrieved from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical

Delaware BRFS – Delaware Behavioral Risk Factor Survey. (n.d. a). *How Data Items Are Added to the Delaware BRFS.* Retrieved from https://dhss.delaware.gov/dhss/dph/dpc/addpolicy.html

Delaware BRFS – Delaware Behavioral Risk Factor Survey. (n.d. b). *Measuring Behaviors that Affect Health.* Retrieved from https://dhss.delaware.gov/dhss/dph/dpc/brfsurveys.html

Delaware BRFS – Delaware Behavioral Risk Factor Survey. (n.d. c). *Behavioral Data are Essential for Improving the Public's Health.* Retrieved from https://dhss.delaware.gov/dhss/dph/dpc/aboutbrfss.html

Delaware BRFS – Delaware Behavioral Risk Factor Survey. (n.d. d). *Delaware BRFS: Changing to Meet New Challenges.* Retrieved from https://dhss.delaware.gov/dhss/dph/dpc/brfs_changes2011.html

Delaware BRFS – Delaware Behavioral Risk Factor Survey. (n.d. e). *What is the Meaning of "Statistical Significance"?*
Retrieved from https://dhss.delaware.gov/dhss/dph/dpc/significance_layreader.html

Delaware.gov. (n. d. a). *Diabetes.*
Retrieved from https://myhealthycommunity.dhss.delaware.gov/locations/state/chronic-disease/diabetes

Delaware.gov. (n. d. b). *Delaware Behavioral Risk Factor Survey. 2016 County Data Table – Table of Key Variables by State and County.* Retrieved from https://dhss.delaware.gov/dhss/dph/dpc/files/de2016countytable.pdf

Delaeware.gov. (n. d. c). *Delaware Behavioral Risk Factor Survey. PowerPoint PDF Presentation about Adult Tobacco Use in Delaware, with 2016 BRFS Data.* Retrieved from https://dhss.delaware.gov/dhss/dph/dpc/files/2016tobaccoslides.pdf

Florence, C. S., Bergen, G., Atherly, A., Burns, E. R., Stevens, J. A., Drake, C. (2018). Medical Costs of Fatal and Nonfatal Falls in Older Adults. *Journal of the American Geriatrics Society, 66(4),* pp. 693-698. DOI:10.1111/jgs.15304

HHS.gov (n.d.). *Immunization Information for You and Your loved Ones.* Retrieved from https://www.hhs.gov/immunization/index.html

Jessen, F., Amarigliod, R. E., et al. (2014). A Conceptual Framework for Research on Subjective Cognitive Decline in Preclinical Alzheimer's Disease. *Alzheimers & Dementia, 10(6), pp. 844-852.* DOI: 10.1016/j.jalz.2014.01.001.

Jha, P., Ramasundarahettige, C., Landsman, V., et al. (2013). 21st-Century Hazards of Smoking and Benefits of Cessation in the United States. *New England Journal of Medicine, 368,* pp. 341-350. DOI: 10.1056/NEJMsa1211128

Kean, N. (2021). *Breast Cancer Awareness.* Clinical Advisor. Retrieved from Breast Cancer Awareness - Clinical Advisor

Mariotto, A.B., Enewold, L., Zhao, J., Zeruto, C.A., Yabroff, K.R. (2020). Medical Care Costs Associated with Cancer Survivorship in the United States. *Cancer Epidemiology, Biomarkers & Prevention, 29 (7),* pp. 1304–1312. DOI: https://doi.org/10.1158/1055-9965.EPI-19-1534

Naavaal, S., and Kelekar, U. (2018). School Hours Lost Due to Acute/Unplanned Dental Care. *Health Behavior and Policy Review, 5(2),* pp. 66–73. DOI: https://doi.org/10.14485/HBPR.5.2.7

National Cancer Institute. (2021). *Alcohol and Cancer Risk.* Retrieved from https://www.cancer.gov/about-cancer/causes-prevention/risk/alcohol/alcohol-fact-sheet

National Center for Health Statistics. (2017). *Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December 2016.* Retrieved from https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201705.pdf

National Institute of Alcohol Abuse and Alcoholism. (n.d.). *Alcohol's Effects on the Body.* Retrieved from https://www.niaaa.nih.gov/alcohols-effects-health/alcohols-effects-body

Paruthi, S., Brooks, L. J., D'Ambrosion, C., Hall, W. A., Kotagal, S., Lloyd, R. M., et. al. (2016). Recommended Amount of Sleep for Pediatric Populations: A Consensus Statement of the American Academy of Sleep Medicine. *Journal of Clinical Sleep Medicine, 12(6),* pp. 785-786. DOI: http://dx.doi.org/10.5664/jcsm.5866

Pate, C.A., Zahran, H.S., Qin, X., Johnson, C., Hummelman, E., and Malilay, J. (2021). Asthma Surveillance – United States, 2006-2018. *Morbidity and Mortality Weekly Report, 70(5),* pp. 1-32. Retrieved from https://www.cdc.gov/mmwr/volumes/70/ss/pdfs/ss7005a1-H.pdf

Righolt, A. J., Jevdjevic, M., Marcenes, W., and Listl, S. (2018). Global-, regional-, and country-level economic impacts of dental diseases in 2015. *Journal of Dental Research, 97(5),* pp. 501–507. DOI: 10.1177/0022034517750572

Sam, N. (2013). Behavioral Risk Factors. *PsychologyDictionary.org*. Retrieved from https://psychologydictionary.org/behavioral-risk-factor/

Shults, R. A., Beck, L. F. (2012). Self-Reported Seat Belt Use, United States, 2002-2010: Does Prevalence Vary by State and Type of Seat Belt Law? *Journal of Safety Research*, 43 (5-6), pp. 417-20. DOI: 10.1016/j.jsr.2012.10.010

Taylor, G., McNeill, A., Girling, A., Farley, A., Lindson-Hawley, N., and Aveyard, P. (2014). Change in Mental Health after Smoking Cessation: Systematic Review and Mata-Analysis. *British Medical Journal, 348.* DOI: https://doi.org/10.1136/bmj.g1151

U.S. Department of Health and Human Services. (2000). *Oral Health in America: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institute of Health.

U.S. Department of Health and Human Services. (2016). *E-Cigarettes Use among Youth and Young Adults. A Report of the Surgeon General.* Retrieved from https://www.cdc.gov/tobacco/data_statistics/sgr/e-cigarettes/pdfs/2016_sgr_entire_report_508.pdf

U.S. Department of Transportation. (2019). *Traffic Safety Facts. Crash. Stats. Lives Saved in 2017 by Restraint Use and Minimum-Drinking-Age Laws.* Retrieved from https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812683

U.S. Department of Transportation. (2020). *National Highway Traffic Safety Administration. Traffic Safety Facts: 2018 Data: Occupant Protection in Passenger Vehicles.* Retrieved from https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812967

Watson, N. F., Badr, M. S., Belenky, G., Bliwise, D. L., Buxton, O. M., Buysse, D., et al. (2015). Recommended Amount of Sleep for a Healthy Adult: A Joint Consensus Statement of the American Academy of Sleep Medicine and Sleep Research Society. *Journal of Clinical Sleep Medicine, 38(6),* pp. 843-844. DOI: http://dx.doi.org/10.5664/jcsm.4758

World Health Organization. (2022*). Oral Health.* Retrieved from https://www.who.int/news-room/fact-sheets/detail/oral-health

Zamosky, L. (2011). *When to Get a Screening Mammogram. How Often and When to Start Routine Mammograms Is a Matter of Debate.* WebMD. Retrieved from Mammogram Guidelines and Recommendations: Deciding When to Start Mammography Screening (webmd.com)