## Arizona

 Behavioral Risk Factor Surveillance System Survey 2016

Health and Wellness for all Arizonans


# Douglas A. Ducey, Governor State of Arizona 

Cara M. Christ, MD, MS, Director<br>Arizona Department of Health Services

Authors:<br>Judy Bass<br>Arizona BRFSS Program Manager and Coordinator<br>Robert Bailey<br>Bureau Chief of Public Health Statistics<br>Sarah Gieszl, MHS<br>Senior Epidemiologist<br>BRFSS<br>ACKNOWLEDGMENTS<br>ICF International Inc.<br>BRFSS Contractor<br>Completed in cooperation with:<br>Population Health Surveillance Branch Division of Population Health<br>National Center for Chronic Disease Prevention and Health Promotion<br>Centers for Disease Control and Prevention<br>Gloria Coclough, Project Officer<br>Machell Town, PhD., MS, Mathematical Statistician, Chief<br>Carol Pierannunzi, PhD. Senior Survey Methodologist<br>William Garvin, Computer Scientist

Centers for disease Control Cooperative Agreement No. 1U58DAP006018-01

A special thank you to Arizona residents for participating in the survey and cooperating with the interviewers.

## Notice

The Arizona Department of Health Services does not discriminate on the basis of disability in the administration of its programs and services as prescribed by Title II of the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973.

If you need this publication in an alternative format, please contact the ADHS Bureau of Public Health Statistics at
(602) 542-7333 or E-mail: Judy.Bass@azdhs.gov

Arizona BRFSS Website: http://azdhs.gov/preparedness/public-health-statistics/behavioral-risk-factor-surveillance/index.php
Permission to quote from or reproduce this publication is granted when due acknowledgment is made.

## TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... 1
INTRODUCTION ..... 3
WEIGHTING METHODOLOGY ..... 4
ARIZONA BRFSS 2016 STRATA MAP BY REGION CODES ..... 5
BRFSS SURVEY IN COMPARISON TO OTHER SURVEYS ..... 6
ADHS MISSION \& STRATEGIC MAP 2012-2015 .....  .7
HEALTH-RELATED QUALITY OF LIFE ..... 8
SELF-REPORTED HEALTH STATUS ..... 9
FREQUENT MENTAL DISTRESS ..... 11
FREQUENT PHYSICAL DISTRESS ..... 13
BARRIERS TO SOCIALIZATION ..... 15
PREVENTIVE HEALTH PRACTICES ..... 17
ROUTINE MEDICAL EXAMINATIONS ..... 18
INFLUENZA VACCINATIONS ..... 20
COLORECTAL CANCER SCREENING: FECAL OCCULT BLOOD TEST ..... 23
COLORECTAL CANCER SCREENING: SIGMOIDOSCOPY \& COLONOSCOPY ..... 26
PRECONCEPTION HEALTH. ..... 29
WOMEN'S HEALTH: MAMMOGRAPHY ..... 31
WOMEN'S HEALTH: CERVICAL CANCER SCREENING ..... 34
MEN'S HEALTH: PROSTATE SPECIFIC ANTIGEN TEST WITH COUNSELING ..... 36
BARRIERS TO HEALTH CARE ..... 39
POVERTY ..... 40
NO HEALTH INSURANCE ..... 43
COULD NOT AFFORD NEEDED CARE ..... 45
USUAL SOURCE OF HEALTH CARE ..... 47
HEALTH RISK BEHAVIORS ..... 49
SEAT BELT USE ..... 50
CIGARETTE SMOKING ..... 52
ALCOHOL ABUSE: HEAVY DRINKING ..... 54
ALCOHOL ABUSE: BINGE DRINKING ..... 56
BENEFICIAL HEALTH PRACTICES ..... 58
PHYSICAL ACTIVITY ..... 59
FRUIT AND VEGETABLE CONSUMPTION ..... 61
FOLIC ACID USE AND AWARENESS ..... 63
HEALTH CONDITIONS AND LIMITATIONS ..... 66
OBESITY ..... 67
DIABETES ..... 70
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) ..... 72
ASTHMA ..... 74
CARDIOVASCULAR: ANGINA ..... 76
CARDIOVASCULAR: HEART ATTACK ..... 78
STROKE ..... 80
ARIZONA BRFSS RESPONDENTS 2016 PROFILE ..... 82
APPENDICES ..... 83
A: HEALTHCARE COST \& UTILIZATION ..... 84
B: BRFSS RESOURCES \& ASSOCIATED DOCUMENTATION ..... 94
ARIZONA BRFSS 2016 QUESTIONNAIRE ..... 94
ARIZONA BRFSS 2016 LANDLINE \& CELL PHONE CODEBOOK ..... 94
ARIZONA BRFSS 2016 CALCULATED VARIABLE DATA COMPARISON REPORT ..... 94
ARIZONA BRFSS 2016 CORE VARIABLE REPORT ..... 94
ARIZONA BRFSS 2016 MODULE QUESTIONS DATA REPORT ..... 94
C: RISK FACTORS/CHRONIC DISEASE GLOSSARY OF TERMS ..... 98
D. BRFSS METHODS ..... 99
E. DISCLAIMER FOR 2016 ..... 100

## Executive Summary

The Arizona Behavioral Risk Factor Surveillance System (BRFSS) survey is an annual, state-wide survey of adults aged 18 years and older. The Arizona survey is a collaborative effort between the Population Health Surveillance Branch (PHSB) of the Centers for Disease Control and Prevention (CDC) 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, and the Arizona Department of Health Services (ADHS). The landline telephone sample design is a random digit dialed methodology with a disproportionate stratification based on phone bank density and whether or not the phone numbers were directory listed. The sample of cell phone numbers was randomly selected from dedicated cellular telephone banks sorted on the basis of area code and exchange. This report summarizes data on healthrelated quality of life, preventive practices, barriers to healthcare, health risk behaviors, beneficial health practices, and health conditions and limitations as reported by Arizonans. Arizona response variables should be understood to be the weightadjusted percentage of survey participants who are asked the questions and provided an informative response (excluding nonrespondents, those who refused to respond, and those who indicated that they did not know how to respond). Because of this, results for the Arizona BRFSS survey in this report will differ slightly from the CDC-provided Arizona response tables in the appendix, which include some of these response categories. Additionally, the variable names used by Arizona could vary between CDC and Arizona data results. Any inference drawn from these results about the Arizona general population should be made in consideration of the confidence intervals provided within the report. In 2016, Arizona Sample design consisted of 10 regions with 10,952 combined cell phone and landline (complete and partial) interviews. The BRFSS survey provides a rich source of state-level public health data. This data has become integral to health promotion, disease prevention and intervention planning throughout Arizona. Highlights from the 2016 BRFSS are presented in Table 1 below.

| Risk Factors | Arizona | National* |
| :--- | :---: | :---: |
| Seatbelt Use | 86.9 | 85.1 |
| Health Status (Good, Very Good, Excellent) | 81.4 | 83.3 |
| Usual Source of Healthcare (at least one provider) | 73.3 | 78.2 |
| Pap Smear (women, ages 21+ had test in last 3 years) | 69.5 | 73.6 |
| Colonoscopy \& Sigmoidoscopy (ages 50+ ever had test) | 67.6 | 69.8 |
| Routine Medical Examination (past year) | 67.4 | 70.8 |
| Mammogram (women, ages 40+ had test past year) | 54.9 | 59.1 |
| Folic Acid Awareness** | 54.2 | Not Asked |
| Influenza Vaccinations (65 years and older) | 53.4 | 58.2 |
| Preconception Health** | 41.7 | Not Asked |
| Prostate Specific Antigen Test (Men tested \& counseled) | 38.1 | 40.8 |
| Influenza Vaccinations (18 years and older) | 35.2 | 38.8 |
| Fecal Occult Blood Test (men, 50+ ages ever had test) | 34.7 | 30.4 |
| Folic Acid Use* | 32.8 | Not Asked |
| Physical Activity (Met both Guidelines) |  |  |
| Obesity (B.M.I. $\geq$ 30) | 29.3 | Not Asked |
| Substance Abuse | 29.0 | 30.1 |
| Barriers to Socialization | 22.0 | Not Asked |
| Alcohol Abuse: Binge Drinking | 17.2 | 15.3 |
| Cigarette Smoking (current smoker) | 15.6 | 16.9 |
| Asthma | 14.7 | 17.0 |
| Diabetes | 14.6 | 14.0 |
| Fruit \& Vegetable Consumption (2 \& 3 servings a day) |  |  |
| Chronic Obstructive Pulmonary Disease (COPD) | 10.8 | 10.5 |
| Alcohol Abuse: Heavy Drinking | 10.5 | Not Asked |
| Cardiovascular Disease: Heart Attack | 6.8 | 6.2 |
| Cardiovascular Disease: Angina | 6.2 | 6.5 |
| Stroke | 4.4 | 4.4 |
| Poverty (<133\% FPL) | 3.4 | 4.1 |
|  | 3.1 | 3.0 |

Table 1: Arizona and National Behavioral Risk Factor Surveillance System (BRFSS) 2016 Survey Highlights. Weighted to population characteristics. "The BRFSS 2016 "National" estimates included in the "BRFSS Executive Summary" chart are median values. ** Arizona's BRFSS specific modules and state-added questions.

# Arizona and National BRFSS 2016 Highlights Risk Factors and Chronic Diseases 



The BRFSS 2016 "National" estimates included in the "Risk Factor \& Chronic Disease Highlights" Executive Summary chart are median values not means. CDC does not generate a "National" estimate by using the mean because the survey is a combination of separate state surveys. *Question Not Asked. **Denotes Arizona State-Added questions.

## Introduction

## Background

The Arizona BRFSS 2016 collected 10,952 combined landlines and cell phones. In 2016, the cost per questions was $\$ 6,100$. In 2016, the Arizona length of BRFSS questionnaire survey was within 24.4 minutes. In 2016, the Arizona BRFSS used a split survey design to remain within the 25 minute survey limit. The split survey allowed Arizona BRFSS to include more questions requested by health programs which expanded survey funding. This also allowed substantially more completed interviews to be conducted.

Certain activities or behaviors increase the risk of mortality and morbidity. Promotion of cessation programs, awareness, and policy changes will help reduce the impact of these behaviors. Many programs and policies have been enacted to reduce the burdens associated with participating in these risky behaviors. Continued monitoring of these behaviors will provide Arizona with a tool to assess the impact of these programs and policies.

The BRFSS is comprised of CDC's Core, Modules, and State-added questions.

## Core component consists of three areas:

The fixed core is made up of standard questions that are asked by every state.
The rotating core is a set of biennial questions.
The emerging core questions are experimental questions (up to 5 a year) that are asked to determine their potential use.

## Modules included in the 2016 survey:

Diabetes

Optional CDC modules are sets of questions that focus on specific topics such as:
Caregiver
Childhood Asthma Prevalence
Random Child Selection

State added questions are generated by stakeholders and ADHS Programs:
Adverse Childhood Experience
Asthma Call-Back Permission Script
Folic Acid
Fruits and Vegetables
Food Assistance/Security
Medical Tourism
Nearest Intersection
Preconception Health/Family Planning
Prescription Drug Abuse
Substance Abuse
Use of Cigarettes
Valley Fever

State added questions must be validated and approved by CDC's and Arizona's Human Subjects Review Board.

## Methodology

In 2011, CDC implemented a methodological change in how BRFSS data are weighted; specifically, the weighting method changed from post-stratification to iterative proportional fitting (refer to the 2011 Annual Arizona BRFSS Report for more details). The iterative proportional fitting (or "raking,") replacement was needed in order to include analysis for imperfections in the sample that might lead to bias. In addition, this method included the selection of units with unequal probabilities, noncoverage of the population, and non-response. The "raking" adjusts the data so that groups which are underrepresented in the sample can be more accurately represented in the final dataset. The raking incorporates additional demographic characteristics and it accurately matches sample distributions to known demographics. Furthermore, the use of raking reduces non-response bias and has been shown to reduce within-error estimates. BRFSS raking integrates a multitude of categories such as age by gender, marital status, education attainment, employment status, income, age groups, race and ethnicity, telephone source, and renter/owner status. Thus, BRFSS 2013 annual report included the respondents contacted by landline and cellular phones. In 2015, according to the Pew Research Center’s Internet and American Life Project, "92\% of American adults have cell phones. Cell phone-only households are especially prevalent among younger families and among certain racial/ethnic groups. Moreover, it was evident that people were using their cell phones." ${ }^{11}$ One anticipated change to Arizona's BRFSS' sample design is to increase the number of cell phone participants by changing the screening process. BRFSS would be unable to fully capture disease and prevalence trends by continuing to rely solely upon landlines.

In another change from 2011, if a cell phone respondent received a call from a BRFSS interviewer, and they had a landline, they were excluded from the survey. This eliminated a large number of willing cell phone respondents. Therefore, beginning with the 2012 survey, the CDC applied a fully overlapping sample. Under this approach, some of the counties will not be able to achieve the minimum of 50 participants. This might affect the ability to analyze the data for those counties with the required minimum number of participants. In 2016, the analyses will have to be done within each of the ten different strata. CDC contracts with Marketing System Group (MSG) who developed a methodology for constructing cellular sampling frames using rate centers. A rate center delineates the local call boundaries set by service providers for billing purposes. MSG can identify subsets of cellular blocks for all wireless service providers that correspond to the area of interest. Geographic stratification is available for the cell phone sample for 2016. To make the best use of this method, geo-strata should consist of contiguous counties. Weights will be produced for the combined landline and cell phone data. The Arizona BRFSS previously followed CDC's guidelines regarding the rule of not reporting or interpreting percentages based upon a denominator of fewer than 50 respondents, as well as regions with adult populations less than or equal to 500 residents. Confidence interval limits for Arizona measure as upper and lower brackets connected by a single line at the top of each table column. In 2016, Arizona's sample size consisted of 10,952 complete and partial interviews.

## Changes to the 2016 AZ BRFSS Annual Report

The 2016 BRFSS Annual Report has a layout that provides the reader information that corresponds to core and state-added questions covering a number of health risks and chronic diseases. At the beginning of each section, a description of the data elements is presented, including variable names. Each subsection includes, in most instances, 5-year trend data, national, regional and county information data (presented as maps), and a table of respondent demographics comparing Arizona to National respondents. The demographics table contains the N , percent, and associated confidence interval. The appendix contains additional information to provide the reader with information regarding death, birth, and number of patients discharged from the hospital. Tables and charts presented in the Hospital Discharge Data (HDD) Section (Appendix A) are presented in the same order as information in the core BRFSS 2016 report. Information presented in Appendix A utilized the International Classification of Diseases (ICD-10) which is the World Health Organization's $10^{\text {th }}$ revision and represents data from January 1, 2016 - December 31, 2016. Information for some questions may not contain national comparisons due to the questions being state-added.

[^0]Arizona Behavioral Risk Factor Surveillance 2016 Survey Arizona Strata by Region


## BRFSS Survey in Comparisons

The BRFSS is the largest telephone survey conducted in the United States and its territories. As the BRFSS grows and improves its methodology, the number of requests for localized health analysis increases. In response to the growing demand, CDC analyzes BRFSS data for metropolitan and micropolitan statistical areas (MMSA). The analysis of Arizona MMSAs includes Nogales, Phoenix-Mesa-Scottsdale, Sierra Vista-Douglas, Tucson, and Yuma. Any further analysis will require combining BRFSS data across multiple years, and/or harmonizing across surveys. There are many other surveys currently sponsored by the U.S. government and its agencies, many of which have questions that overlap with the BRFSS. The structure of the questions found within commonly merged datasets is displayed in Table 2 (below).

| Comparison of Surveys |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Census | BRFSS | NHANES | HINTS |
| Participant Selection | All U.S. households are required to participate | Random telephone survey of non-institutionalized adults ages 18-99 residing in US, District of Columbia, the Commonwealth of Puerto Rico, and Guam. | Participants are selected based off Census information | Stratified sample of addresses were selected from the Marketing Systems Group. |
| Data <br> Collection <br> Techniques | Questionnaire sent in the mail and direct interviews from Census workers | Telephone survey, with Computer Assisted Telephone Interviewing (CATI) system, and dedicated cellular telephone banks. | Anthropometric measurements, blood and urine samples are gathered by health professionals. Interviews are done in person at the participant's home. | Random digit dials and address-based sampling |
| Data <br> Gathered | - Number of people living in a housing unit <br> - Housing unit type <br> - Telephone number <br> - Name <br> - Gender <br> - Date of birth <br> - Race and ethnicity <br> - Other residences | Demographic data asked annually: <br> - Race and ethnicity <br> - Gender <br> - Income <br> - Martial status <br> - Educational achievement <br> - Working status <br> - Household size <br> Only source of populationbased estimates of the prevalence of various health behaviors, medical conditions, and preventive health practices. <br> Other Health Indicator Questions are developed by the CDC. Each state has the ability to generate questions to assess its specific needs. | - Anemia <br> - Cardiovascular disease <br> - Diabetes <br> - Environmental exposures <br> - Eye diseases <br> - Hearing loss <br> - Infectious diseases <br> - Kidney disease <br> - Nutrition <br> - Obesity <br> - Oral health <br> - Osteoporosis <br> - Physical fitness and physical functioning <br> - Reproductive history and sexual behavior <br> - Respiratory disease (asthma, chronic bronchitis, emphysema) <br> - Sexually transmitted diseases <br> - Vision <br> - Anthropometrics | - Breast cancer <br> - Cancer communication <br> - Cancer perceptions and knowledge <br> - Cervical cancer <br> - Colon cancer <br> - Demographics <br> - Food and medical <br> - Products information <br> - Health communication <br> - Health services <br> - Health status <br> - Internet use <br> - Lung cancer <br> - Medical research <br> - Medical records <br> - Numeracy <br> - Nutrition and physical activity <br> - Patient-provider communication <br> - Prostate Cancer <br> - Risk Perceptions <br> - Skin Cancer <br> - Skin Protection <br> - Social Networks <br> - Tobacco Use |
| Sample Size | Current U.S. housing <br> Units = 132,312,404 | 2016 National Cell \& Landline combined = 486,303 <br> 2016 Arizona $=10,952$ | 2009-2010 Survey=9,338 | $\begin{aligned} & 2008 \text { Survey=7,674 } \\ & 2011-2012 \text { Survey }=3,959 \\ & 2012-2013 \text { Survey }=3,630 \\ & 2013 \text { Survey }=3,185 \end{aligned}$ |
| Collection Interval | Every 10 years | Annual | Starting in 1999 NHANES began gathering data annually. <br> However, data are only presented in 2-yr. intervals. | The HINTS includes five data collection cycles over the course of 3 years: from October 2011 through November of 2014. |

Table 2. Survey Comparison

## ARIZONA DEPARTMENT

 OF HEALTH SERVICES
## STRATEGIC MAP: 2015-2020

Strengthen Arizona's
Public Health System Through
Alignment and Coordination


## Health-Related Quality of Life

Health-related quality of life (HRQoL) has a broad definition. HRQoL research potentially can incorporate physical activity, amount of time spent at work, physical health, mental health, emotional health, and personality questions. ${ }^{2}$ The CDC has created a manual on using the BRFSS data to assess HRQoL. The methodology utilizes self-reported health status, mental health, physical health, and inhibited socialization due to poor health. The assessment of HRQoL using BRFSS data is as follows ${ }^{3}$ :

- Self-reported health status (variable - GENHLTH) - Convert into a binary variable where good to excellent health is a positive outcome; poor and fair health is a negative outcome.
- Frequent Mental Distress (variable - MENTHLTH) - Generate a binary variable where reporting 14 or more days of poor mental health are a negative outcome.
- Frequent Physical Distress (variable - PHYSHLTH) - Generate a binary variable where reporting 14 or more days of poor physical health are a negative outcome.
- Barriers to Socialization (variable - POORHLTH) - Generate a binary variable where reporting 14 or more days of poor physical or mental health prevented daily activities are a negative outcome.


## Number of Unhealthy Days

The majority of Arizonans report zero unhealthy days. However, the second largest category is reporting 30 unhealthy days (see Figure 1) Unhealthy days are an estimate of the overall number of days during the previous 30 days when the respondent felt that his or her physical or mental health was not good. To obtain an estimate of a person's overall unhealthy days, respondents are asked, "Now, thinking about your physical health, which includes physical illness and how many days during the past 30 days was your physical health not good? And, now thinking about your mental health, which includes stress, depression and emotions, for how many days during the past 30 days was your mental health not good?" These are added together with a logical maximum of 30 unhealthy days.


Figure 1: Arizonans who reported unhealthy days in the BRFSS 2016 survey.

## How is the Summary Index of Unhealthy Days Calculated?

Unhealthy days are an estimate of the overall number of days during the previous 30 days when the respondent felt that his or her physical or mental health was not good. To obtain this estimate, responses to questions regarding Physical and Mental health are combined to calculate a summary index of overall unhealthy days, with a logical maximum of 30 unhealthy days. For example, a person who reports four physically unhealthy days and two mentally unhealthy days is assigned a value of six unhealthy days, and someone who reports 30 physically unhealthy days and 30 mentally unhealthy days is assigned the maximum of 30 unhealthy days. Healthy days are the positive complementary form of unhealthy days. A healthy day estimates the number of recent days when a person's physical and mental health was good (or better) and is calculated by subtracting the number of unhealthy days from 30 days.

[^1]
## Health Related Quality of Life: Self-Reported Health Status

Survey Question: Would you say that in general your health is: Excellent, Very Good, Good, Fair, Poor, Don't Know/Not Sure?

Self-reported health status is one of the most frequently assessed health perceptions in epidemiological research. ${ }^{4}$ As a health-related quality of life indicator, it is a multi-dimensional concept that is related to physical, mental, emotional and social health. ${ }^{5}$ It has proven to be a more dominant predictor of mortality and morbidity than many objective measures of health. ${ }^{6}$ Self-rated health status also has been shown to be a significant predictor for the onset of coronary heart disease, diabetes, stroke, lung disease, and arthritis. ${ }^{7}$ Self-assessed health status has been validated as a useful indicator of health among different populations and allows for broad comparisons across a variety of health conditions. ${ }^{8}$


Figure A: Arizona and National BRFSS 2012-2016 Survey respondents who reported that their health status was excellent, good or very good.

In the 2016 BRFSS Survey, 81.4\% of Arizonans reported that they had good, very good or excellent health, very close to the national figure of $83.3 \%$ (see Figure A).

[^2]When looking at the other states in the nation, Arizona falls in the second-highest category (79.3-82.4\%) for the percent of respondents reporting good, very good or excellent health (see Figure B).


Figure B: BRFSS respondents' who reported: Good, Very Good, or Excellent Health Status by State 2016 (natural breaks).

The distribution of surveyed Arizonans' self-reported health status was similar to the nation median across all categories (see Figure C).


Figure C: Arizona and National BRFSS 2016 Survey Self-Reported Health Status.

Figure D displays that the percentage of men and women in Arizona was broadly similar in 2016 in all health status categories.

General Health Status by Gender, BRFSS 2016


Figure D: Arizona BRFSS 2016 respondents who self-reported health status stratified by gender.

| Arizonans Who Reported Good to Excellent Health |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper <br> Mean |
| National | 83.3\% | 54 |  |  |
| Arizona | 81.4\% | 8783 | 80.2\% | 82.7\% |
| Male | 82.2\% | 3674 | 80.3\% | 84.1\% |
| Female | 80.7\% | 5109 | 79.0\% | 82.4\% |
| 18-24 | 89.3\% | 338 | 85.0\% | 93.5\% |
| 25-34 | 88.1\% | 590 | 84.8\% | 91.5\% |
| 35-44 | 85.5\% | 852 | 82.0\% | 89.0\% |
| 45-54 | 78.6\% | 1147 | 75.3\% | 81.9\% |
| 55-64 | 72.4\% | 1803 | 69.5\% | 75.3\% |
| 65+ | 76.9\% | 4053 | 75.1\% | 78.6\% |
| Married | 84.1\% | 4744 | 82.5\% | 85.7\% |
| Divorced | 73.3\% | 1191 | 69.4\% | 77.2\% |
| Widowed | 73.0\% | 1293 | 69.6\% | 76.5\% |
| Separated | 68.4\% | 125 | 56.3\% | 80.5\% |
| Never Married | 83.8\% | 1108 | 80.9\% | 86.7\% |
| Unmarried Couple | 81.5\% | 258 | 73.8\% | 89.3\% |
| Less than highschool | 57.4\% | 391 | 51.8\% | 63.1\% |
| High School/GED | 80.6\% | 1895 | 78.4\% | 82.9\% |
| Some College/Technical School | 84.6\% | 2657 | 82.9\% | 86.4\% |
| College/Technical School Grad | 92.0\% | 3813 | 90.9\% | 93.1\% |
| Employed for Wages | 89.5\% | 3074 | 87.6\% | 91.3\% |
| Self Employed | 87.3\% | 676 | 82.6\% | 91.9\% |
| Out of Work | 74.2\% | 307 | 67.8\% | 80.7\% |
| Homemaker | 81.5\% | 573 | 76.6\% | 86.4\% |
| Student | 92.4\% | 197 | 87.7\% | 97.1\% |
| Retired | 78.3\% | 3641 | 76.5\% | 80.1\% |
| Unable to Work | 27.8\% | 238 | 23.2\% | 32.5\% |
| Less than \$10,000 | 53.5\% | 233 | 45.5\% | 61.5\% |
| \$10,000 to \$14,999 | 55.3\% | 256 | 47.7\% | 62.8\% |
| \$15,000 to \$19,999 | 72.3\% | 424 | 66.5\% | 78.1\% |
| \$20,000 to \$24,999 | 75.2\% | 601 | 69.8\% | 80.6\% |
| \$25,000 to \$34,999 | 78.4\% | 755 | 73.4\% | 83.4\% |
| \$35,000 to \$49,999 | 85.6\% | 1186 | 82.7\% | 88.5\% |
| \$50,000 to \$74,999 | 90.0\% | 1302 | 87.4\% | 92.6\% |
| Above \$75,000 | 93.9\% | 2417 | 92.7\% | 95.2\% |
| White Non-Hispanic | 84.3\% | 6941 | 83.2\% | 85.5\% |
| Black/African American | 79.7\% | 186 | 72.8\% | 86.5\% |
| Hispanic | 75.6\% | 962 | 72.0\% | 79.2\% |
| Asian/Pacific Islander | 97.1\% | 122 | 94.6\% | 99.7\% |
| American Indian NonHispanic | 64.3\% | 360 | 56.8\% | 71.9\% |
| Other | 83.5\% | 212 | 76.7\% | 90.3\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted. National $N$ is $53=$ all 50 states, DC and Territories.

## Health Related Quality of Life: Self-Reported Health Status

The table to the left displays proportions of Arizonans who responded in 2016 that their health status was good, very good or excellent. Results are shown by sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Related Quality of Life: Frequent Mental Distress

Survey Question: Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?

By 2020, depression is projected to be the second leading cause of the global disease burden. Research has shown that depression and other mental health conditions are associated with an increased prevalence of chronic diseases. The association is a complex, self-propagating interrelationship between chronic disease and mental illness. ${ }^{9}$ For example, an individual may initially suffer from a chronic disease and then develop a mental health condition (i.e., depression), which exacerbates the initial condition. Another individual could suffer from a mental illness which could precipitate a chronic disease and fall into an exacerbated cycle of chronic and mental health diseases. The BRFSS survey includes depression and anxiety questions within the core section. Researchers have developed and accepted an alternative method of evaluating mental illness called 'Frequent Mental Distress' (FMD). FMD is defined as 14 days or more of poor mental health within the past 30 days. ${ }^{10}$ Since 2012, Arizonans surveyed report FMD at similar levels to the national median (see Figure A).


Figure A: Arizona and National 2012-2016 BRFSS prevalence of reporting frequent mental distress ( $\geq 14$ days in past 30 -days).

In 2016, 11.7\% of Arizonans surveyed reported that they suffered from FMD; the same as the national median. When looking at the other states in the nation, Arizona falls in the second-highest class for the percent of respondents reporting FMD (See Figure B).

[^3]

Figure B: Arizona and National 2016 BRFSS respondents reporting Frequent Mental Distress ( $\mathbf{1 4}$ days in past $\mathbf{3 0}$-days) by state (natural breaks).

Among Arizonans surveyed, FMD is reported more frequently in current smokers than nonsmokers or former smokers (see Figure C ).

Frequent Mental Distress by Smoking Status


Figure D. Arizona 2012-2016 BRFSS over five years of individuals reporting Frequent Mental Distress ( $\geq 14$ days in past 30 -days) by income.
Since 2012, FMD has been reported more frequently by Arizonans surveyed as household income declines (see Figure D).

Frequent Mental Distress by Income


Figure D. Arizona 2012-2016 BRFSS respondents reporting Frequent Mental Distress ( $\geq 14$ days in past $\mathbf{3 0}$ days) stratified by income.

| Arizonans Who Reported $\geq 14$ days of Frequent Mental Distress |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower Mean | Upper Mean |
| National | 11.7\% | 54 |  |  |
| Arizona | 11.7\% | 1114 | 10.6\% | 12.8\% |
| Male | 10.4\% | 386 | 8.8\% | 11.9\% |
| Female | 13.0\% | 728 | 11.5\% | 14.6\% |
| 18-24 | 12.8\% | 48 | 8.7\% | 16.9\% |
| 25-34 | 14.5\% | 97 | 11.0\% | 18.0\% |
| 35-44 | 11.3\% | 114 | 8.4\% | 14.2\% |
| 45-54 | 12.2\% | 184 | 9.7\% | 14.6\% |
| 55-64 | 12.2\% | 289 | 10.1\% | 14.3\% |
| 65+ | 8.4\% | 382 | 7.2\% | 9.7\% |
| Married | 8.6\% | 422 | 7.3\% | 9.8\% |
| Divorced | 16.5\% | 224 | 12.9\% | 20.1\% |
| Widowed | 11.6\% | 169 | 9.0\% | 14.3\% |
| Separated | 23.9\% | 48 | 13.9\% | 33.8\% |
| Never Married | 14.3\% | 206 | 11.6\% | 17.1\% |
| Unmarried Couple | 13.7\% | 35 | 6.9\% | 20.5\% |
| Less than highschool | 16.0\% | 120 | 11.6\% | 20.3\% |
| High School/GED | 14.3\% | 317 | 12.0\% | 16.7\% |
| Some College/Technical School | 11.6\% | 366 | 9.9\% | 13.3\% |
| College/Technical School Grad | 6.8\% | 306 | 5.7\% | 7.9\% |
| Employed for Wages | 9.2\% | 270 | 7.6\% | 10.8\% |
| Self Employed | 8.9\% | 49 | 4.8\% | 13.1\% |
| Out of Work | 24.3\% | 96 | 18.0\% | 30.7\% |
| Homemaker | 7.7\% | 60 | 4.6\% | 10.8\% |
| Student | 10.6\% | 28 | 5.5\% | 15.7\% |
| Retired | 8.7\% | 326 | 7.3\% | 10.2\% |
| Unable to Work | 34.7\% | 276 | 29.0\% | 40.3\% |
| Less than \$10,000 | 26.0\% | 120 | 19.0\% | 33.1\% |
| \$10,000 to \$14,999 | 21.3\% | 95 | 15.1\% | 27.6\% |
| \$15,000 to \$19,999 | 17.4\% | 117 | 12.3\% | 22.5\% |
| \$20,000 to \$24,999 | 13.4\% | 115 | 9.2\% | 17.6\% |
| \$25,000 to \$34,999 | 11.8\% | 105 | 8.2\% | 15.4\% |
| \$35,000 to \$49,999 | 10.8\% | 133 | 8.2\% | 13.5\% |
| \$50,000 to \$74,999 | 7.0\% | 108 | 4.8\% | 9.3\% |
| Above \$75,000 | 7.1\% | 128 | 5.3\% | 8.8\% |
| White Non-Hispanic | 11.8\% | 819 | 10.6\% | 13.0\% |
| Black/African Ameri | 11.3\% | 21 | 5.1\% | 17.4\% |
| Hispanic | 11.0\% | 156 | 8.4\% | 13.7\% |
| Asian/Pacific Islan | 7.8\% | 8 | 0.6\% | 15.1\% |
| American Indian Non | 16.0\% | 72 | 10.6\% | 21.4\% |
| Other | 17.3\% | 38 | 9.5\% | 25.1\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted. National $N$ is $53=$ all 50 states, DC and Territories.

## Health Related Quality of Life: Frequent Mental Distress

The table to the left displays the proportions of Arizonans surveyed in 2016 who responded that they suffered more than 14 days of poor mental health, in the 30 days prior. Results are also shown by sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Related Quality of Life: Frequent Physical Distress

Survey Question: Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

Frequent physical distress (FPD) is defined as suffering 14 or more physically unhealthy days in the past 30 days. FPD has been associated with both being underweight and with obesity. Obesity increases the risk of morbidity and mortality. Additionally, obesity increases the risk of having heart disease, hypertension, diabetes, arthritis, and some cancers. ${ }^{11}$ Furthermore, FPD has been associated with increased risky behaviors, such as drinking and smoking in women of childbearing age. ${ }^{12}$ Arizonans surveyed from 2012 through 2016 reported FPD more frequently than the national median (see Figure A).


Figure A: Arizona and national 2012-2016 BRFSS prevalence of Frequent Physical Distress (FPD) suffering $\geq 14$ physically unhealthy days (in the $\mathbf{3 0}$ days prior).

Arizona falls in the second-highest class among all states for the percent of respondents reporting FPD (see Figure B).


Figure B. BRFSS 2016 respondents reporting Frequent Physical Distress (FPD) by state (natural breaks).

[^4]Arizona 2016 BRFSS results generally concur with the current literature on FPD among women of child-bearing age (see Figure C). Arizona women surveyed who are current or former cigarette smokers report FPD more frequently than Arizona women surveyed who had never smoked.

Arizona Women Ages 18 to 45 Who Reported FPD* by Smoking Status, BRFSS 2016


Figure C: Arizona 2016 BRFSS data assessing frequent physical distress and risky behaviors such as cigarette smoking in women 18 to 45 years of age. ${ }^{*}$ FPD: Frequent Physical Distress (suffering $\geq 14$ physically unhealthy days in the $\mathbf{3 0}$ days prior).

Among Arizonans surveyed who reported having certain chronic conditions like heart disease, diabetes, hypertension, and obesity were more likely to report FPD than those without chronic conditions, and the occurrence of each of these conditions increased the likelihood of reporting FPD above the Arizona average of $13.2 \%$ in 2016 (see Figure A).


Figure D: Arizona 2016 BRFSS data assessing frequent physical distress, body mass index category, and conditions associated with being overweight/obese, or having diabetes, a heart attack or hypertension.
FPD: Frequent Physical Distress (suffering $\geq 14$ physically unhealthy days in the $\mathbf{3 0}$ days prior).

| Arizonans Who Reported $\geq 14$ days of Frequent Physical Distress |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower Mean | Upper Mean |
| National | 11.7\% | 54 |  |  |
| Arizona | 13.2\% | 1693 | 12.2\% | 14.2\% |
| Male | 11.7\% | 657 | 10.3\% | 13.1\% |
| Female | 14.7\% | 1036 | 13.2\% | 16.2\% |
| 18-24 | 4.9\% | 18 | 2.1\% | 7.7\% |
| 25-34 | 7.0\% | 52 | 4.7\% | 9.3\% |
| 35-44 | 11.3\% | 110 | 8.3\% | 14.3\% |
| 45-54 | 15.8\% | 214 | 13.0\% | 18.5\% |
| 55-64 | 21.4\% | 443 | 18.7\% | 24.1\% |
| 65+ | 16.8\% | 856 | 15.4\% | 18.3\% |
| Married | 11.2\% | 691 | 10.0\% | 12.5\% |
| Divorced | 22.6\% | 375 | 18.9\% | 26.3\% |
| Widowed | 20.1\% | 314 | 17.0\% | 23.2\% |
| Separated | 27.1\% | 51 | 16.6\% | 37.6\% |
| Never Married | 10.6\% | 204 | 8.3\% | 12.9\% |
| Unmarried Couple | 7.4\% | 38 | 3.1\% | 11.7\% |
| Less than highschool | 21.7\% | 189 | 17.2\% | 26.2\% |
| High School/GED | 13.9\% | 451 | 12.0\% | 15.9\% |
| Some College/Technical School | 13.4\% | 591 | 11.8\% | 15.0\% |
| College/Technical School Grad | 7.4\% | 453 | 6.4\% | 8.5\% |
| Employed for Wages | 6.5\% | 222 | 5.2\% | 7.8\% |
| Self Employed | 6.2\% | 44 | 3.8\% | 8.7\% |
| Out of Work | 22.6\% | 106 | 16.5\% | 28.7\% |
| Homemaker | 10.2\% | 89 | 7.0\% | 13.3\% |
| Student | 5.1\% | 15 | 1.5\% | 8.7\% |
| Retired | 15.6\% | 740 | 14.1\% | 17.1\% |
| Unable to Work | 62.2\% | 468 | 56.7\% | 67.6\% |
| Less than \$10,000 | 28.7\% | 164 | 22.1\% | 35.3\% |
| \$10,000 to \$14,999 | 37.3\% | 167 | 29.7\% | 44.8\% |
| \$15,000 to \$19,999 | 16.0\% | 165 | 11.9\% | 20.2\% |
| \$20,000 to \$24,999 | 14.2\% | 179 | 10.5\% | 17.9\% |
| \$25,000 to \$34,999 | 14.2\% | 186 | 11.0\% | 17.4\% |
| \$35,000 to \$49,999 | 11.7\% | 188 | 9.0\% | 14.3\% |
| \$50,000 to \$74,999 | 7.9\% | 152 | 5.9\% | 9.8\% |
| Above \$75,000 | 6.1\% | 163 | 4.7\% | 7.5\% |
| White Non-Hispanic | 13.1\% | 1293 | 12.1\% | 14.2\% |
| Black/African American | 13.8\% | 38 | 8.3\% | 19.2\% |
| Hispanic | 13.2\% | 210 | 10.6\% | 15.9\% |
| Asian/Pacific Islander | 5.3\% | 9 | 0.6\% | 10.1\% |
| American Indian NonHispanic | 19.2\% | 88 | 13.2\% | 25.2\% |
| Other | 16.1\% | 55 | 8.4\% | 23.8\% |

Use caution in interpreting cell sizes less than 50. $\mathrm{N}^{*}$ is unweighted. National N is $53=$ all 50 states, DC and Territories.

## Health Related Quality of Life: Frequent Physical Distress

The table to the left displays the proportions of the prevalence of Arizona adults who responded that they suffered 14 or more days of poor physical health in the 30 days prior. The data are reported by sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Related Quality of Life: Barriers to Socialization

Survey Question: During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

Socialization plays a significant role in public health. Research has shown that individuals who have the fewest social ties have an increased risk of mortality. Furthermore, the number of social relationships is inversely related to all-cause mortality. ${ }^{13}$ The BRFSS survey asked if a person's activities were inhibited due to poor physical or mental health. To assess socialization, respondents were classified as inhibited socially if they reported 14 or more days of limited activities due to health, within the 30 days prior. Arizonans surveyed reported a higher frequency of inhibited socialization when compared to the national median (see Figure A).


Figure A: Arizona and National 2012-2016 BRFSS prevalence of reporting inhibited socialization $\geq 14$ days within the past 30-days.

When looking at all the states in the nation in 2016, Arizona falls in the second-lowest class for the percent of respondents reporting inhibited socialization (see Figure B).


Figure B. BRFSS 2016 respondents reporting inhibited socialization ( $\geq 14$ days in past 30-days) by state (natural breaks).

[^5]Arizona 2016 BRFSS results generally concur with the current literature on FPD among women of child-bearing age (see Figure C). Arizona women surveyed who are current or former cigarette smokers report FPD more frequently than Arizona women surveyed who had never smoked. There were some differences in frequent inhibited socialization reported by Arizona survey respondents who also engaged in various other types of social activities such as smoking, binge drinking, heavy drinking, and marital status (see Figure C).

Frequent Inhibited Socialization by Social Activity, BRFSS 2016


Figure C: Arizona 2016 BRFSS data assessing frequent inhibited socialization by social activity.

There are differences in Arizonans surveyed who reported frequent inhibited socialization who also reported certain medical conditions (see Figure D). While the occurrence of chronic conditions is higher among those that reported frequently inhibited socialization, not all respondents with these chronic diseases reported that they are socially inhibited.


Figure D: Arizona 2016 BRFSS respondents reporting frequent inhibited socialization ( $\geq 14$ days within the past 30-days) by chronic disease. *COPD - Chronic Obstructive Pulmonary Disease;**GALF Gout, Arthritis, Lupus, and Fibromyalgia.

| Arizonans Reporting Frequent Inability to Socialize ( $\geq 14$ days) Due to Poor Health |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper Mean |
| National | 15.3\% | 54 |  |  |
| Arizona | 17.2\% | 1108 | 15.6\% | 18.8\% |
| Male | 17.0\% | 443 | 14.7\% | 19.4\% |
| Female | 17.3\% | 665 | 15.1\% | 19.5\% |
| 18-24 | 7.5\% | 16 | 2.9\% | 12.2\% |
| 25-34 | 8.4\% | 38 | 5.1\% | 11.6\% |
| 35-44 | 16.0\% | 79 | 11.0\% | 20.9\% |
| 45-54 | 25.1\% | 167 | 20.6\% | 29.6\% |
| 55-64 | 24.9\% | 295 | 21.3\% | 28.5\% |
| 65+ | 21.3\% | 513 | 19.0\% | 23.7\% |
| Married | 14.4\% | 433 | 12.5\% | 16.3\% |
| Divorced | 27.8\% | 256 | 22.5\% | 33.2\% |
| Widowed | 25.0\% | 196 | 20.3\% | 29.7\% |
| Separated | 19.8\% | 27 | 10.1\% | 29.5\% |
| Never Married | 14.4\% | 154 | 10.9\% | 18.0\% |
| Unmarried Couple | 14.6\% | 29 | 6.4\% | 22.9\% |
| Less than highschool | 22.2\% | 107 | 15.9\% | 28.6\% |
| High School/GED | 19.1\% | 307 | 16.0\% | 22.2\% |
| Some College/Technical School | 18.0\% | 392 | 15.4\% | 20.6\% |
| College/Technical School Grad | 10.2\% | 296 | 8.5\% | 11.9\% |
| Employed for Wages | 6.5\% | 108 | 4.8\% | 8.3\% |
| Self Employed | 7.2\% | 27 | 2.6\% | 11.8\% |
| Out of Work | 28.6\% | 85 | 20.2\% | 37.0\% |
| Homemaker | 10.5\% | 43 | 5.9\% | 15.1\% |
| Student | 5.6\% | 7 | 0.2\% | 10.9\% |
| Retired | 20.1\% | 425 | 17.4\% | 22.7\% |
| Unable to Work | 62.6\% | 405 | 56.7\% | 68.4\% |
| Less than \$10,000 | 31.2\% | 121 | 23.3\% | 39.1\% |
| \$10,000 to \$14,999 | 33.9\% | 118 | 26.0\% | 41.8\% |
| \$15,000 to \$19,999 | 14.3\% | 116 | 10.2\% | 18.4\% |
| \$20,000 to \$24,999 | 20.1\% | 112 | 13.5\% | 26.7\% |
| \$25,000 to \$34,999 | 16.6\% | 109 | 11.7\% | 21.5\% |
| \$35,000 to \$49,999 | 17.2\% | 135 | 12.9\% | 21.6\% |
| \$50,000 to \$74,999 | 9.7\% | 98 | 6.6\% | 12.8\% |
| Above \$75,000 | 9.3\% | 101 | 6.7\% | 12.0\% |
| White Non-Hispanic | 18.4\% | 868 | 16.7\% | 20.2\% |
| Black/African American | 21.0\% | 21 | 10.3\% | 31.7\% |
| Hispanic | 13.1\% | 116 | 9.3\% | 16.9\% |
| Asian/Pacific Islander | 4.9\% | 4 | 0.0\% | 11.7\% |
| American Indian NonHispanic | 23.0\% | 59 | 14.4\% | 31.6\% |
| Other | 23.2\% | 40 | 11.3\% | 35.0\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National $N$ is $53=$ all 50 states, DC and Territories.

## Health Related Quality of Life:

 Barriers to SocializationThe table to the left proportion of Arizonans surveyed who indicated that they suffered 14 or more days of poor physical or mental health inhibiting daily function in the 30 days prior. The data are also reported by sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Preventive Health Practices

Prevention is grouped into three levels: primary, secondary, and tertiary. Primary prevention consists of practices aimed at preventing diseases from ever occurring. Vaccination is an example of primary prevention. Secondary prevention is used after the person develops a disease but before they exhibit symptoms. Cancer screening is considered secondary prevention. Lastly, tertiary prevention is targeted at individuals who already have symptoms of a disease. Administration of antibiotics is an example of tertiary prevention. This section of the 2016 BRFSS Annual Report focuses on primary and secondary prevention, including an analysis of the following:

- Routine Medical Examination (variable CHECKUP1) - A medical examination within a year is considered a positive outcome, and medical examination over a year ago is considered a negative outcome. [A routine checkup is a general physical exam, not an exam for a specific injury, illness, or condition.]
- Annual Influenza Vaccine (variables '_FLSHOT6' \& 'FLUSHOT6')—Individuals 65 and older with influenza vaccinations within the last 12 months is considered a positive outcome. Individuals exceeding 12 months are considered a negative outcome.
- Colorectal Cancer Screening The guidelines set by the United States Preventive Services Task Force recommend a secondary preventive regiment using annual fecal occult blood testing, sigmoidoscopy every five years, and a colonoscopy every ten years. The BRFSS has two questions that can be used to assess colorectal cancer screening.
- Fecal Occult Blood Test (variable 'BLDSTOOL') Individuals 50 and older ever having a fecal occult blood test is considered a positive outcome, and never having a fecal occult blood test is considered a negative outcome.
o Sigmoidoscopy and Colonoscopy (variable 'HADSIGM3') Individuals 50 and older ever having a sigmoidoscopy or colonoscopy is considered a positive outcome, and never having a sigmoidoscopy or colonoscopy is considered a negative outcome.
- Women's Health: Preconception Health - Women of reproductive age should receive preconception care to improve their health, and improve their pregnancy outcomes.
- Preconception Health-(variable 'AZ1_1' through 'AZ1_7') Women (childbearing age) who talk to a health care professional about ways to prepare for a healthy baby is considered to be a positive outcome.
- Women's Health: Mammography (variable 'HOWLONG')—Binary outcome where women 40 years of age and older with a mammogram in the past year is considered a positive outcome, and having a mammogram more than one year ago is considered a negative outcome.
- Women's Health, Cervical Cancer Screening: Pap smear Test (variable LASTPAP2)—Women respondents ages 18+ who had a Pap smear in the last three years.
- Men's Health: Prostate Specific Antigen Test (PSA) (calculated from variables PCPSAAD2, PCPSADI1, PCPSARE1, PSATESTS1, PSATIME, and PCPSARS1) - Examines physician communication about PSA testing where the respondent
had a PSA Test. 'PCPSAAD2'= PSAtest (yes, no): did doc ever talk to you about advantages of PSA test? 'PCPSADI1' = PSAdoc (yes, no): did doc ever talk to you about disadvantages of PSA test? 'PCPSARE1' = PSArec (yes, no): did doctor recommend you get a PSA test. 'PSATEST1' = PSAhad (yes, no): ever had a PSA test? 'PSATIME' = PSAtime2 (past year, within 2 years, within 3 years, within 5 years, $5+$ years) $=$ When was your last PSA test? 'PCPSARS1' = PSAwhy (routine exam, prostate problem, family history, told had prostate cancer, other reason) = Why did you get a PSA test?


## Preventive Health Practices:

## Routine Medical Examinations

Survey Question: About how long has it been since you last visited a doctor for a routine checkup?

Regular medical exams are a valuable tool in preventive care. Routine examinations can find problems early, when treatment is more effective. ${ }^{14}$ However, there is a growing discussion on what tests to include and how often an examination is necessary. Depending on age and gender, the recommended frequency ranges from 1-5 years for healthy individuals. ${ }^{15}$ If a person suffers from a serious medical condition, it is advised that he/she see a medical professional regularly. ${ }^{16}$ To assess the utilization of health services, the shortest interval recommended for a routine medical examination (1 year) was used. Arizonans surveyed from 2012 through 2016 reported having a routine medical exam in the past year less frequently than the U.S. median (see Figure A).


Figure A: Arizona and national BRFSS 2016 respondents who have had a routine medical exam within a 12-month period.

In 2016, 67.4\% of Arizonans surveyed reported they had a routine medical examination in the past year. The national prevalence is $70.8 \%$. When looking at all the states in the nation, Arizona falls in the second lowest class (see Figure B).


Figure B: BRFSS 2016 survey respondents who reported having had a routine medical exam in the past year by state, (natural breaks).

The lack of health insurance acts as a barrier to accessing health care. Uninsured people are more likely to report that they were unable to receive medical care, and are more likely to have poor health status. ${ }^{17}$ Arizonans surveyed who reported having no health insurance were significantly less likely to have had a check-up in the past year when compared to those respondents with health insurance (see Figure C).


Figure C: Arizona BRFSS 2016 respondents who have had a routine medical exam within 12 -months stratified by insurance status.

Arizonans who reported having a checkup within the prior year ranges from $77.4 \%$ to $85.9 \%$, depending on the Chronic Condition (CC). These are all higher than the percentage among all Arizonans surveyed, at $67.4 \%$ (see Figure D). Routine medical examinations prevent the exacerbation of CCs and reduce future costs of care. The yellow dashed line is the overall percent of Arizonans who have had a routine medical exam in the last 12 months, BRFSS 2016 (see Figure D).

Arizonans Who Reported Living with a Chronic Condition, BRFSS 2016


Figure D: Arizona BRFSS 2016 respondents living with chronic conditions. Percent of Arizonans who've seen a medical professional in the past year (yellow dashed line). *GALF: Gout, Arthritis, Lupus, and Fibromyalgia.

[^6][^7]| Arizonans Who Reported Having A Routine |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| Medical Examinations (within past | 12-months) |  |  |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted. National $N$ is $53=$ all 50 states, DC and Territories.

## Preventive Health Practices:

## Routine Medical Examinations

The table to the left displays the proportions of Arizona adults who have had a routine medical examination in the past 12 months by: sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Preventive Health Practices: Influenza Vaccination

Survey Question: During the past 12 months, have you had either a flu shot or a flu vaccine that was sprayed in your nose?

Since 1918, there have been four influenza (flu) pandemics; the most recent was the 2009-2010 H1N1 pandemic. The CDC estimated that between 43 million and 89 million people contracted H1N1 during the 2009/2010 pandemic. ${ }^{18}$ An analysis comparing the cost effectiveness of vaccination versus antiviral treatment of the flu found that antiviral treatment was the most consistently cost-effective treatment for working adults. However, the analysis did not take into consideration flu pandemics, herd immunity, or the possibility of drug resistant strains of the flu. ${ }^{19}$ When H1N1 was discovered, it was resistant to two of the four available antivirals; at the end of the pandemic, "evolved strains were found that were resistant to three antivirals. ${ }^{20}$ For this reason, the CDC recommends annual flu vaccinations.

The 2015-2016 flu season started a little later than the previous three flu seasons. H3N2 viruses predominated early in the season, while H1N1 viruses were the most common later in the season and predominated for the entire season. While there were reports of severe flu illnesses and deaths, the season overall was milder than the three prior seasons. ${ }^{21}$ In 2016, 35.2\% of Arizonans surveyed reported having a flu vaccine in the last year, which was lower than the national

Arizonans Who Received A Flu Shot (past 12-mos)


Figure A: Arizona and National BRFSS 2016 data results from respondents who reported having a flu vaccine in the past 12 months.

[^8]Due to the potential co-occurrence of the flu and pneumonia, infection in high-risk populations is of greater concern. Monitoring vaccination prevalence of individuals who are over the age of 6 months and those who are 65 and older is recommended. In 2016, more than one half (53.4\%) of Arizonans over the age of 65 years surveyed in 2016 BRFSS reported having a flu vaccine within the past year, levels similar to the national median (see Figure B).

Arizonans 65 years and Older Having a Flu Vaccination (past 12-mos)


Figure B: Percentage of Arizona and National BRFSS 2012-2016 Respondents who received a flu vaccine within past 12-months.

When compared to the other states in the nation, Arizona fell into the lowest category (49.5-54.9\%) for the percent of individuals 65 years of age and older reporting a flu shot in the last 12 months (see Figure C).


Figure C: Arizona and National 2016 BRFSS respondents ( $\geq 65$ years) who had an influenza vaccination in the past 12-months by state

(natural breaks).

Figure D:
Arizona 2016 BRFSS respondents 65 years and older who had an influenza vaccination in the past 12months by county.

| Arizonans 65 Years and Older Who Had a Flu Shot in the Past 12-Months |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower Mean | Upper Mean |
| National | 58.2\% | 54 |  |  |
| Arizona | 53.4\% | 2651 | 51.4\% | 55.4\% |
| Male | 54.8\% | 1075 | 51.6\% | 57.9\% |
| Female | 52.2\% | 1576 | 49.6\% | 54.8\% |
| 65+ | 53.4\% | 2651 | 51.4\% | 55.4\% |
| Married | 56.5\% | 1357 | 53.9\% | 59.1\% |
| Divorced | 43.9\% | 362 | 38.7\% | 49.1\% |
| Widowed | 51.0\% | 740 | 46.9\% | 55.0\% |
| Separated | 66.1\% | 20 | 48.2\% | 84.1\% |
| Never Married | 51.6\% | 122 | 39.0\% | 64.3\% |
| Unmarried Couple | 66.3\% | 39 | 50.6\% | 82.0\% |
| Less than highschool | 48.4\% | 148 | 41.1\% | 55.7\% |
| High School/GED | 48.4\% | 537 | 44.4\% | 52.4\% |
| Some College/Technical School | 52.1\% | 748 | 48.8\% | 55.4\% |
| College/Technical School Grad | 61.9\% | 1213 | 59.2\% | 64.6\% |
| Employed for Wages | 54.6\% | 210 | 47.2\% | 62.0\% |
| Self Employed | 39.5\% | 89 | 29.8\% | 49.1\% |
| Out of Work | 31.4\% | 24 | 17.6\% | 45.1\% |
| Homemaker | 49.1\% | 121 | 40.0\% | 58.3\% |
| Student | 16.7\% | 1 |  |  |
| Retired | 54.9\% | 2115 | 52.7\% | 57.2\% |
| Unable to Work | 54.2\% | 82 | 42.9\% | 65.5\% |
| Less than \$10,000 | 31.8\% | 43 | 18.5\% | 45.2\% |
| \$10,000 to \$14,999 | 56.1\% | 106 | 46.3\% | 65.9\% |
| \$15,000 to \$19,999 | 47.0\% | 134 | 37.7\% | 56.3\% |
| \$20,000 to \$24,999 | 53.8\% | 229 | 46.7\% | 60.9\% |
| \$25,000 to \$34,999 | 51.2\% | 272 | 45.1\% | 57.3\% |
| \$35,000 to \$49,999 | 53.6\% | 400 | 48.7\% | 58.5\% |
| \$50,000 to \$74,999 | 56.3\% | 392 | 51.2\% | 61.4\% |
| Above \$75,000 | 58.8\% | 524 | 54.5\% | 63.1\% |
| White Non-Hispanic | 54.5\% | 2356 | 52.5\% | 56.6\% |
| Black/African American | 33.6\% | 28 | 21.5\% | 45.7\% |
| Hispanic | 46.8\% | 156 | 39.2\% | 54.3\% |
| Asian/Pacific Islander | 73.5\% | 22 | 56.5\% | 90.5\% |
| American Indian NonHispanic | 69.5\% | 46 | 57.9\% | 81.1\% |
| Other | 39.5\% | 43 | 25.1\% | 53.9\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted. National N is 53 = all 50 states, DC and Territories.

## Preventive Health Practices: Influenza Vaccination

The table to the left displays the proportion of the 2016 Arizona BRFSS respondents of 65 years and older who reported that they had a flu vaccination in the past 12 months. Responses are also represented by sex, age categories, marital status, educational attainment, employment status, income and race/ ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

| Arizonans ( $\geq 18$ years) Who Received a Flu Shot in the Last 12-Months |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper <br> Mean |
| National | 38.8\% | 54 |  |  |
| Arizona | 35.2\% | 4650 | 33.7\% | 36.7\% |
| Male | 32.4\% | 1887 | 30.3\% | 34.6\% |
| Female | 37.8\% | 2763 | 35.7\% | 39.9\% |
| 18-24 | 24.2\% | 94 | 18.9\% | 29.4\% |
| 25-34 | 23.7\% | 165 | 19.5\% | 27.8\% |
| 35-44 | 30.0\% | 286 | 25.9\% | 34.2\% |
| 45-54 | 30.5\% | 466 | 27.2\% | 33.9\% |
| 55-64 | 41.6\% | 952 | 38.6\% | 44.6\% |
| 65+ | 53.1\% | 2687 | 51.1\% | 55.1\% |
| Married | 38.8\% | 2488 | 36.8\% | 40.8\% |
| Divorced | 38.9\% | 678 | 34.6\% | 43.1\% |
| Widowed | 46.7\% | 834 | 42.8\% | 50.5\% |
| Separated | 29.9\% | 68 | 18.2\% | 41.6\% |
| Never Married | 25.2\% | 446 | 21.7\% | 28.7\% |
| Unmarried Couple | 24.4\% | 106 | 17.4\% | 31.4\% |
| Less than highschool | 29.7\% | 260 | 24.8\% | 34.6\% |
| High School/GED | 31.3\% | 918 | 28.3\% | 34.2\% |
| Some College/Technical School | 34.2\% | 1309 | 31.6\% | 36.7\% |
| College/Technical School Grad | 43.7\% | 2149 | 41.4\% | 46.0\% |
| Employed for Wages | 31.9\% | 1271 | 29.5\% | 34.2\% |
| Self Employed | 19.5\% | 200 | 15.3\% | 23.7\% |
| Out of Work | 23.1\% | 124 | 17.5\% | 28.6\% |
| Homemaker | 30.1\% | 243 | 24.3\% | 35.8\% |
| Student | 26.9\% | 59 | 19.3\% | 34.4\% |
| Retired | 52.5\% | 2393 | 50.4\% | 54.6\% |
| Unable to Work | 46.2\% | 342 | 40.4\% | 52.0\% |
| Less than \$10,000 | 35.7\% | 167 | 27.9\% | 43.4\% |
| \$10,000 to \$14,999 | 37.6\% | 178 | 30.4\% | 44.7\% |
| \$15,000 to \$19,999 | 27.7\% | 234 | 21.9\% | 33.4\% |
| \$20,000 to \$24,999 | 32.1\% | 347 | 26.4\% | 37.7\% |
| \$25,000 to \$34,999 | 34.0\% | 418 | 29.0\% | 39.0\% |
| \$35,000 to \$49,999 | 36.3\% | 622 | 32.1\% | 40.4\% |
| \$50,000 to \$74,999 | 33.7\% | 635 | 29.8\% | 37.7\% |
| Above \$75,000 | 38.2\% | 1227 | 35.4\% | 41.0\% |
| White Non-Hispanic | 38.5\% | 3770 | 36.8\% | 40.1\% |
| Black/African American | 28.0\% | 80 | 20.3\% | 35.6\% |
| Hispanic | 29.6\% | 437 | 25.9\% | 33.3\% |
| Asian/Pacific Islander | 35.5\% | 59 | 26.2\% | 44.9\% |
| American Indian NonHispanic | 32.3\% | 208 | 25.9\% | 38.7\% |
| Other | 26.8\% | 96 | 19.1\% | 34.6\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted. National $N$ is $53=$ all 50 states, DC and Territories.

## Preventive Health Practices: Influenza Vaccination

The table to the left displays the proportion of the 2016 Arizona BRFSS respondents (above age 18) who reported that they had a flu vaccination in the past 12 -months. The data are reported by sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Preventive Health Practices: Fecal Occult Blood Test

Survey Question: A blood stool test is a test that may use a special kit at home to determine whether the stool contains blood. Have you ever had this test using a home kit?

Colorectal cancer is the third-most common type of non-skin cancer in both men and women. Patients who have early stages of colorectal cancer typically do not exhibit symptoms. Therefore, regular screening is the best prevention. ${ }^{22}$ Three types of tests are recommended by the United States Preventive Services Task Force (USPSTF) to screen for colon cancer: sigmoidoscopy, colonoscopy, and fecal occult blood testing (FOBT). The FOBT is a lab test that is used to check stool samples for hidden (occult) blood. It's considered a noninvasive and cost-effective way to screen for colorectal cancer. The test is completed at home and then submitted to a lab for analysis. The optimal use of the FOBT is part of a programmatic screening, as suggested by the USPSTF. A positive FOBT may indicate colon cancer or polyps in the colon. ${ }^{23}$ The USPSTF currently recommends that individuals 50 to 75 , who do not have a first-degree relative diagnosed with colorectal cancer, have an annual FOBT. ${ }^{24}$ Over one third (36.5\%) of Arizonans over the age of 50 who were surveyed in 2014 reported they had a FOBT, slightly higher to the national median (see Figure A).

## Arizonans 50 years + of Age Reported Having Fecal Occult Blood Test (FOBT)



Figure A: Arizona and National BRFSS 2012-2016 respondents over the age of 50 who reported every having a fecal occult blood test.

Arizona had fewer BRFSS respondents reporting having had an FOBT, compared to the other states in the nation. Arizona fell into the third-highest class for FOBT (see Figure B).

[^9]

Figure B: BRFSS 2016 survey respondents over the age of 50 who reported ever having a fecal occult blood test, (natural breaks).

The largest proportion of Arizona BRFSS respondents who reported an FOBT had received it five years or more ago, at $31.5 \%$, lower than the national levels at $36.6 \%$ (see Figure C).


Figure C: Arizona and National BRFSS 2016 respondents reported last year having an FOBT.

Colorectal cancer is associated with lifestyle factors such as being overweight or obese, alcohol consumption, low fruit and vegetable intake, and tobacco use. ${ }^{25}$ Arizona residents who eat less than five servings of fruit and vegetables a day, who were former or current smokers, who are overweight or obese, and who drink heavily are less likely to report having an FOBT (see Figure D). Medical advances have only offered slightly improved survival rates for patients who present with advanced colon cancer. Therefore, prevention, screening, and education should be the primary focus of colorectal cancer treatment (see Figure D).

[^10]Arizonans Who Reported Having FOBT by Colorectal Cancer Risk-Factors, BRFSS 2016


Figure D: Arizona BRFSS 2016 respondents who reported having FOBT by colorectal cancer risk factors.

| Arizonans 50 Years of Age \& Older Reported Having a Fecal Occult Blood Test (FOBT) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower Mean | Upper <br> Mean |
| National | 30.4\% | 54 |  |  |
| Arizona | 34.7\% | 3062 | 33.2\% | 36.3\% |
| Male | 33.9\% | 1196 | 31.6\% | 36.3\% |
| Female | 35.4\% | 1866 | 33.4\% | 37.5\% |
| 45-54 | 18.3\% | 134 | 14.5\% | 22.1\% |
| 55-64 | 28.4\% | 667 | 25.8\% | 31.1\% |
| 65+ | 46.1\% | 2261 | 44.2\% | 48.1\% |
| Married | 36.1\% | 1624 | 34.1\% | 38.2\% |
| Divorced | 31.1\% | 482 | 27.2\% | 35.0\% |
| Widowed | 40.2\% | 671 | 36.4\% | 44.1\% |
| Separated | 17.6\% | 28 | 7.9\% | 27.4\% |
| Never Married | 30.2\% | 190 | 24.0\% | 36.5\% |
| Unmarried Couple | 28.0\% | 50 | 17.3\% | 38.7\% |
| Less than highschool | 26.7\% | 141 | 21.5\% | 31.9\% |
| High School/GED | 31.7\% | 613 | 28.8\% | 34.7\% |
| Some College/Technical School | 37.0\% | 927 | 34.3\% | 39.6\% |
| College/Technical School Grad | 38.7\% | 1371 | 36.4\% | 41.0\% |
| Employed for Wages | 23.3\% | 471 | 20.5\% | 26.1\% |
| Self Employed | 28.7\% | 163 | 22.9\% | 34.5\% |
| Out of Work | 27.5\% | 76 | 19.7\% | 35.3\% |
| Homemaker | 36.4\% | 157 | 28.8\% | 44.0\% |
| Student | 60.0\% | 4 | 0.0\% | $\begin{gathered} 100.0 \\ \% \end{gathered}$ |
| Retired | 44.8\% | 1982 | 42.7\% | 46.9\% |
| Unable to Work | 30.2\% | 198 | 24.9\% | 35.5\% |
| Less than \$10,000 | 22.2\% | 82 | 14.8\% | 29.5\% |
| \$10,000 to \$14,999 | 38.1\% | 147 | 29.8\% | 46.3\% |
| \$15,000 to \$19,999 | 33.9\% | 162 | 26.8\% | 41.0\% |
| \$20,000 to \$24,999 | 31.9\% | 216 | 26.1\% | 37.6\% |
| \$25,000 to \$34,999 | 35.2\% | 284 | 30.3\% | 40.1\% |
| \$35,000 to \$49,999 | 38.0\% | 447 | 33.9\% | 42.0\% |
| \$50,000 to \$74,999 | 36.4\% | 464 | 32.4\% | 40.4\% |
| Above \$75,000 | 33.1\% | 675 | 30.2\% | 36.1\% |
| White Non-Hispanic | 37.0\% | 2665 | 35.4\% | 38.6\% |
| Black/African American | 35.4\% | 59 | 26.1\% | 44.8\% |
| Hispanic | 24.6\% | 184 | 20.0\% | 29.3\% |
| Asian/Pacific Islander | 40.6\% | 24 | 26.1\% | 55.1\% |
| American Indian NonHispanic | 25.7\% | 63 | 16.7\% | 34.7\% |
| Other | 38.2\% | 67 | 27.5\% | 49.0\% |

Use caution in interpreting cell sizes less than 50. $\mathrm{N}^{*}$ is unweighted. National N is $53=$ all 50 states, DC and Territories.

## Preventive Health Practices: Fecal Occult Blood Test

The table to the left reflects surveyed Arizona adults aged 50 and over who indicated they have ever had a FOBT. Results are also presented by sex, age, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Preventive Health Practices:

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

Colorectal cancer (CRC) is the third-most common type of nonskin cancer in both men and women. Patients who have early stages of colorectal cancer typically do not exhibit symptoms. Therefore, regular screening is the best prevention. Three types of tests are recommended by the United States Preventive Services Task Force (USPSTF) to screen for colon cancer: sigmoidoscopy, colonoscopy and fecal occult blood testing (FOBT). To reduce mortality associated with CRC, programmatic screening that utilizes fecal occult blood tests, flexible sigmoidoscopy, and colonoscopy are recommended by the (USPSTF) ${ }^{26}$. Research has shown that colonoscopies can reduce mortality related to CRC by 29\%; sigmoidoscopy has been shown to reduce CRC-related mortality by $26 \%$. ${ }^{27,28}$ In the 2016 BRFSS, over $67.6 \%$ of Arizonans over the age of 50 reported having had a colonoscopy or sigmoidoscopy, slightly lower than the national median (see Figure A).

## Respondents 50+ Years of Age Reported Having Had a Sigmoidoscopy or Colonoscopy



Figure A: Arizona and national BRFSS 2012-2016 respondents over the age of 50 who reported every having a sigmoidoscopy or colonoscopy.

When compared to the other states in the nation, Arizona fell into the second lowest class for its residents having had a colonoscopy or sigmoidoscopy (see Figure B).

[^11]

Figure B: BRFSS 2016 survey respondents over the age of 50 who reported having had a sigmoidoscopy or colonoscopy, (natural breaks).

Arizonans surveyed in 2016 who reported having a known risk for CRC (eating less than five servings of fruit and vegetables daily, being a former or current smoker, being overweight, obese, or drinking heavily) also more frequently reported having had a colonoscopy or sigmoidoscopy (see


Figure C: Arizona and National BRFSS 2016 respondents reported last having a sigmoidoscopy or colonoscopy.

BRFSS 2016 survey results indicate that 20.9\% of Arizonans over the age of 50 reported they had either a sigmoidoscopy or colonoscopy within the last 5 years. The national median was at 21.4\% (see Figure D, on page 27).

Arizonans 50 years + of Age Who had a
Sigmoidoscopy or Colonscopy by Colorectal Cancer Risk Factors


Figure D: Arizona BRFSS 2016 respondents who reported having had a sigmoidoscopy or colonoscopy by colorectal cancer risk factors

Arizonans 50 + Years of age Reported Having had a Sigmoidoscopy or Colonoscopy

| Characteristic | Percent | N* | Confidence Interval |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | Lower <br> Mean | Upper Mean |
| National | 69.8\% | 54 |  |  |
| Arizona | 67.6\% | 5657 | 65.8\% | 69.3\% |
| Male | 67.2\% | 2271 | 64.4\% | 69.9\% |
| Female | 67.9\% | 3386 | 65.7\% | 70.1\% |
| 35-44 | 28.0\% | 1 |  |  |
| 45-54 | 43.5\% | 347 | 38.6\% | 48.3\% |
| 55-64 | 66.2\% | 1489 | 63.1\% | 69.4\% |
| 65+ | 78.6\% | 3820 | 76.8\% | 80.4\% |
| Married | 71.5\% | 3097 | 69.3\% | 73.7\% |
| Divorced | 65.1\% | 906 | 60.7\% | 69.4\% |
| Widowed | 67.1\% | 1122 | 62.9\% | 71.3\% |
| Separated | 49.9\% | 56 | 32.5\% | 67.3\% |
| Never Married | 50.2\% | 352 | 43.3\% | 57.2\% |
| Unmarried Couple | 59.4\% | 86 | 47.1\% | 71.6\% |
| Less than highschool | 47.2\% | 256 | 40.9\% | 53.5\% |
| High School/GED | 66.4\% | 1141 | 63.1\% | 69.6\% |
| Some College/Technical School | 70.2\% | 1726 | 67.5\% | 72.8\% |
| College/Technical School Grad | 76.6\% | 2520 | 74.3\% | 78.9\% |
| Employed for Wages | 59.7\% | 1097 | 56.0\% | 63.4\% |
| Self Employed | 54.0\% | 319 | 47.1\% | 60.9\% |
| Out of Work | 49.0\% | 143 | 39.5\% | 58.5\% |
| Homemaker | 57.7\% | 245 | 49.8\% | 65.5\% |
| Student | 72.7\% | 6 | 0.0\% | 100.0\% |
| Retired | 79.5\% | 3445 | 77.7\% | 81.3\% |
| Unable to Work | 63.0\% | 369 | 56.5\% | 69.5\% |
| Less than \$10,000 | 41.9\% | 142 | 32.3\% | 51.6\% |
| \$10,000 to \$14,999 | 51.6\% | 217 | 42.6\% | 60.7\% |
| \$15,000 to \$19,999 | 56.4\% | 268 | 48.5\% | 64.4\% |
| \$20,000 to \$24,999 | 59.6\% | 399 | 52.5\% | 66.6\% |
| \$25,000 to \$34,999 | 73.7\% | 534 | 68.4\% | 79.0\% |
| \$35,000 to \$49,999 | 76.2\% | 811 | 72.5\% | 79.8\% |
| \$50,000 to \$74,999 | 74.2\% | 836 | 70.2\% | 78.1\% |
| Above \$75,000 | 73.6\% | 1402 | 70.4\% | 76.9\% |
| White Non-Hispanic | 72.0\% | 4882 | 70.3\% | 73.6\% |
| Black/African American | 67.6\% | 111 | 57.6\% | 77.6\% |
| Hispanic | 55.1\% | 411 | 49.2\% | 61.0\% |
| Asian/Pacific Islander | 50.6\% | 39 | 36.6\% | 64.7\% |
| American Indian NonHispanic | 37.6\% | 106 | 27.5\% | 47.6\% |
| Other | 57.0\% | 108 | 45.8\% | 68.3\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted. National N is 53 = all 50 states, DC and Territories.

## Preventive Health Practices: Sigmoidoscopy \& Colonoscopy

The table to the left reflects surveyed Arizona adults aged 50 and over who indicated they have ever had a sigmoidoscopy or colonoscopy. Results are also presented by sex, age, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Preventive Health Practices: Preconception Health

Survey Question: Has a doctor, nurse, or other health care worker ever talked with you about ways to prepare for a healthy pregnancy and baby?

Preconception health refers to the health of women and men before and between pregnancies. Preconception Health focuses on improving health before becoming pregnant to help improve pregnancy health and birth outcomes, resulting in healthier infants and children. ${ }^{29}$ Preconception health is about getting and staying healthy throughout the lifespan. All women and men can benefit from improving their health, regardless of whether or not they plan to have a baby. Preconception health encompasses multiple areas of health, including reproductive health, nutrition, physical activity, tobacco use, substance abuse and learning to manage chronic conditions. ${ }^{30}$ Preconception health also leads to healthier communities as a whole.

Unplanned pregnancy happens frequently. About half of all pregnancies in the United States are unintended. ${ }^{31}$ Preconception health is an important opportunity to safeguard babies' future health. In 2016, the BRFSS survey asked respondents if a doctor, nurse, or other health care worker had ever talked with them about ways to prepare for a healthy pregnancy and baby. 41.7\% of Arizonans surveyed indicated they had been asked about preconception health.(see Figure A).

Figure A: Arizonans Preconception Health Status, 2012-2016


Figure A: Arizona BRFSS 2012-2016 female respondents ages 18 to 45 who reported a doctor, nurse, or other health care worker ever having talked with them about ways to prepare for a healthy pregnancy and baby.

[^12]Recognizing the importance of preconception health, since 2006, the Centers for Disease Control and Prevention have recommended that preconception health and care be incorporated into routine primary care visits. ${ }^{32}$ While all women and men of reproductive age should receive preconception care, it is particularly important for women with chronic diseases. ${ }^{33}$ Chronic diseases before and during pregnancy, such as diabetes, hypertension, high cholesterol, and mental health conditions, have been associated with increased risk of adverse birth outcomes such as pre-term birth, low birth weight, birth defects, and even infant mortality. ${ }^{34}$ During preconception health counseling, women can discuss with their health professionals ways to better manage their conditions, increase compliance with treatment and alter treatment plans if necessary (see Figure B).


Figure B: Arizona women who reported a health care professional ever having talked with them about ways to prepare for a healthy pregnancy and baby by chronic conditions, BRFSS 2016.


Figure C: Arizona women who reported a health care professional talked with them about ways to prepare for a healthy pregnancy and baby by county, BRFSS 2016.

[^13]| Arizona Females Ages $\geq 18$ and $\leq 45$ Who Reported a Healthcare Professional Ever Talked to Them About Ways to Prepare for a Healthy Pregnancy and Baby |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper Mean |
| Female | 41.7\% | 173 | 35.3\% | 48.2\% |
| 18-24 | 24.7\% | 14 | 11.2\% | 38.2\% |
| 25-34 | 46.7\% | 63 | 35.7\% | 57.7\% |
| 35-44 | 50.1\% | 96 | 40.6\% | 59.5\% |
| Married | 48.9\% | 110 | 39.9\% | 57.9\% |
| Divorced | 42.1\% | 13 | 18.1\% | 66.1\% |
| Separated | 54.4\% | 8 | 17.5\% | 91.3\% |
| Never Married | 28.0\% | 29 | 16.5\% | 39.4\% |
| Unmarried Couple | 61.1\% | 13 | 35.2\% | 86.9\% |
| Less than highschool | 59.9\% | 19 | 41.1\% | 78.8\% |
| High School/GED | 41.8\% | 44 | 29.5\% | 54.1\% |
| Some College/Technical School | 39.3\% | 52 | 28.1\% | 50.5\% |
| College/Technical School Grad | 34.5\% | 58 | 24.4\% | 44.6\% |
| Employed for Wages | 39.4\% | 83 | 30.6\% | 48.2\% |
| Self Employed | 35.5\% | 11 | 9.3\% | 61.6\% |
| Out of Work | 45.6\% | 9 | 7.2\% | 83.9\% |
| Homemaker | 65.9\% | 48 | 51.8\% | 79.9\% |
| Student | 18.6\% | 7 | 0.8\% | 36.3\% |
| Unable to Work | 47.7\% | 13 | 19.0\% | 76.5\% |
| Less than \$10,000 | 51.7\% | 14 | 16.6\% | 86.9\% |
| \$10,000 to \$14,999 | 53.3\% | 5 | 19.5\% | 87.2\% |
| \$15,000 to \$19,999 | 78.1\% | 17 | 66.5\% | 89.8\% |
| \$20,000 to \$24,999 | 54.9\% | 18 | 33.9\% | 75.9\% |
| \$25,000 to \$34,999 | 28.4\% | 12 | 7.9\% | 48.9\% |
| \$35,000 to \$49,999 | 29.9\% | 16 | 11.1\% | 48.7\% |
| \$50,000 to \$74,999 | 38.1\% | 20 | 21.0\% | 55.2\% |
| Above \$75,000 | 40.5\% | 52 | 28.4\% | 52.6\% |
| White Non-Hispanic | 38.7\% | 91 | 29.9\% | 47.4\% |
| Black/African American | 16.4\% | 1 | 13.7\% | 19.0\% |
| Hispanic | 52.6\% | 61 | 41.4\% | 63.7\% |
| Asian/Pacific Islander | 8.4\% | 2 | 0.0\% | 21.0\% |
| American Indian NonHispanic | 38.3\% | 16 | 24.1\% | 52.6\% |
| Other | 27.3\% | 2 | 0.0\% | 89.9\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.

## Preventive Health Practices: Preconception Health

The table to the left displays the characteristics of Arizona women of childbearing age (between the ages of 18 and 45) who reported a health care professional ever having talked to them about ways to prepare for a healthy pregnancy and baby. The data are reported by age categories, marital status, educational attainment, employment status, income, and race/ethnicity.

## Preventive Health Practices: Mammography

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

In 2009, the U.S. Preventative Services Task Force (USPSTF) changed its mammogram recommendation. The change was twofold. First the age women should begin seeking mammograms was raised from 40 to 50. Second, they recommended that women have a mammogram once every two years instead of annually. Other agencies, such as the American Cancer Society (ACS), continued to support annual mammograms for women 40 years and older. ${ }^{35,36}$ The new USPSTF recommendation has faced much controversy. Many organizations state that the guidelines set by the USPSTF would cause a substantial degree of under-diagnosis. ${ }^{37}$ The current USPSTF guidelines are less stringent than those set in the past, however, compliance has not reached $100 \%$. The BRFSS 2016 survey reported that $18.1 \%$ of Arizona women over the age of 55 had a mammogram within a two-year period, $17.9 \%$ nationallv (see Figure A).

## Respondents According to the U.S. Preventive

 Services Task Force Guidelines for Mammograms

Figure A: Arizona and National 2016 BRFSS female respondents aged 40+, time since most recent mammogram.

When looking across all states in the U.S., Arizona is in the second- lowest class category for female respondents over 40 reporting that they had a mammogram within the past year since 2012. (See Figure B).

[^14]

Figure B: U.S. map of BRFSS 2016 female respondents, 40 + years of age, reported having a mammogram in past year (natural breaks).

According to the BRFSS, there has not been a statistically significant change in the percent of women, between the ages of 40 and 50 , reporting an annual mammogram (see Figure C).


Figure C: Arizona and National 2012-2016 BRFSS female respondents between ages 40-60 had a mammogram in past year.

Each woman's risk of breast cancer is different. Family history, high penetrance genes, obesity, and exposure to radiation are risk factors that increase the odds of having breast cancer. To ensure that each woman is treated and tested appropriately, the USPSTF and other breast cancer awareness organizations promotes an open dialog between women and their health care providers ${ }^{38}$. The BRFSS does not collect information on breast cancer awareness counseling. Until the module is revised, the more stringent guideline will be assessed.

[^15]

Figure D: Arizona map of BRFSS 2016, 40 + years of age, reported having had a mammogram in past year.

| Arizonan Women 40+ Years of Age Reported Having Had a Mammogram |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper Mean |
| National | 59.1\% | 54 |  |  |
| Arizona | 54.9\% | 2890 | 52.6\% | 57.1\% |
| Female | 54.9\% | 2890 | 52.6\% | 57.1\% |
| 18-24 | 54.3\% | 9 | 22.6\% | 85.9\% |
| 25-34 | 47.2\% | 20 | 28.1\% | 66.2\% |
| 35-44 | 50.8\% | 140 | 42.7\% | 58.8\% |
| 45-54 | 50.6\% | 369 | 45.5\% | 55.8\% |
| 55-64 | 59.9\% | 732 | 55.9\% | 63.8\% |
| 65+ | 56.4\% | 1620 | 53.8\% | 58.9\% |
| Married | 58.2\% | 1462 | 55.2\% | 61.2\% |
| Divorced | 54.5\% | 511 | 49.5\% | 59.5\% |
| Widowed | 49.3\% | 585 | 44.9\% | 53.7\% |
| Separated | 46.2\% | 37 | 30.3\% | 62.2\% |
| Never Married | 44.3\% | 206 | 34.8\% | 53.8\% |
| Unmarried Couple | 65.5\% | 61 | 52.0\% | 79.0\% |
| Less than highschool | 45.6\% | 149 | 37.5\% | 53.7\% |
| High School/GED | 56.8\% | 660 | 52.5\% | 61.1\% |
| Some College/Technical School | 52.7\% | 862 | 49.0\% | 56.4\% |
| College/Technical School Grad | 61.7\% | 1211 | 58.4\% | 65.0\% |
| Employed for Wages | 58.6\% | 751 | 54.4\% | 62.8\% |
| Self Employed | 53.6\% | 153 | 44.3\% | 62.9\% |
| Out of Work | 34.4\% | 83 | 23.5\% | 45.2\% |
| Homemaker | 49.1\% | 249 | 41.9\% | 56.4\% |
| Student | 42.2\% | 9 | 2.2\% | 82.2\% |
| Retired | 58.1\% | 1421 | 55.4\% | 60.8\% |
| Unable to Work | 51.8\% | 211 | 44.1\% | 59.5\% |
| Less than \$10,000 | 51.8\% | 89 | 40.2\% | 63.3\% |
| \$10,000 to \$14,999 | 47.7\% | 114 | 37.4\% | 58.1\% |
| \$15,000 to \$19,999 | 55.9\% | 162 | 45.2\% | 66.7\% |
| \$20,000 to \$24,999 | 47.5\% | 209 | 38.6\% | 56.5\% |
| \$25,000 to \$34,999 | 51.1\% | 245 | 43.4\% | 58.8\% |
| \$35,000 to \$49,999 | 57.0\% | 406 | 51.2\% | 62.8\% |
| \$50,000 to \$74,999 | 54.9\% | 376 | 48.6\% | 61.2\% |
| Above \$ 75,000 | 61.6\% | 698 | 57.5\% | 65.8\% |
| White Non-Hispanic | 54.6\% | 2341 | 52.3\% | 56.9\% |
| Black/African American | 56.0\% | 63 | 42.8\% | 69.2\% |
| Hispanic | 53.8\% | 300 | 47.1\% | 60.6\% |
| Asian/Pacific Islander | 59.1\% | 28 | 41.8\% | 76.4\% |
| American Indian NonHispanic | 61.9\% | 107 | 50.2\% | 73.6\% |
| Other | 58.3\% | 51 | 43.6\% | 73.0\% |

Use caution in interpreting cell sizes less than 50. $\mathrm{N}^{*}$ is unweighted. National N is $53=$ all 50 states, DC and Territories.

## Preventive Health Practices:

Mammography

The table to the left displays the proportions of Arizonan women 40+ years of age who reported having had a mammogram in the past 12 months by sex, age categories, marital status, educational attainment, employment status, income and race/ ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Preventive Health Practices: Cervical Cancer Screening

## Survey Question: How long has it been since you had your last

 Pap test?Cervical cancer used to be the leading cause of cancer death for women in the United States. However, in the past 40 years, the number of cases of cervical cancer and the number of deaths from cervical cancer have decreased significantly. This decline largely is the result of many women getting regular Pap tests, which can find pre-cancerous cells before they turn into cancer. Cervical cancer is the first cancer with a proposed necessary cause, the human papillomavirus (HPV), in cancer epidemiology. ${ }^{39}$ The term necessary cause implies that cervical cancer will not develop or progress without persistent HPV infection. Cervical cancer is highly preventable in most Western countries because screening tests and a vaccine to prevent human papillomavirus (HPV) infections are available. When cervical cancer is found early, it is highly treatable and associated with long survival and good quality of life. All women are at risk for cervical cancer. It occurs most often in women over age 30. Each year, about 12,000 women in the United States get cervical cancer and about 4,000 women die from it. Human papillomavirus (HPV) is the main cause of cervical cancer. ${ }^{40}$ These guidelines state that women, between 21 and 65 years old, should get a pap smear once every three years and once every five years if they receive HPV testing (see Figure A).


Figure A: Arizona and National BRFSS 2016 women respondents ages 21 to 65 who reported when their last pap test screening occurred.

Although vaccines for HPV exist, they are only recommended for women under 26; therefore, Pap smears must be part of a woman's preventive health routine. In 2012, the United States Preventative Services Task Force (USPSTF) and the American Cancer Society (ACS) released new cervical cancer screening

[^16]guidelines. These guidelines state that women between 21 and 65 should get a pap smear once every three years and once every five years if they receive HPV testing. ${ }^{41}$ The BRFSS data indicates that the percent of women, between the ages of 21 and 65, who had a pap smear within 3 years has been decreasing. In 2016, the national prevalence was $\sim 4.1 \%$ higher than Arizona, at $73.6 \%$ (see Figure B).

|  | Women respondents, ages 21 to 65, reported having had a Pap test within the past 3 years |  |  |
| :---: | :---: | :---: | :---: |
|  |  |  |  |
| $\begin{aligned} & 80 \% \\ & 70 \% \end{aligned}$ | I |  |  |
| 70\% |  |  |  |
| 60\% |  |  |  |
| $50 \%$ |  |  |  |
| $40 \%$ |  |  |  |
|  |  |  |  |
| $\begin{aligned} & 30 \% \\ & 70 \% \end{aligned}$ |  |  |  |
| 20\% |  |  |  |
| $10 \%$$0 \%$ |  |  |  |
|  | 2012 | 2014 | 2016 |
| -_ Arizona | 74.0\% | 69.5\% | 69.5\% |
| - National | 78.4\% | 73.6\% | 73.6\% |

Figure B: Arizona respondents who have had a routine medical exam within 12-months stratified by insurance status, BRFSS 2016.
When compared across all the states, Arizona falls in the second lowest class category for following the USPSTF guidelines for cervical cancer screening (see Figure C).


Women who smoke should be especially diligent in their cervical cancer screening routine. Smoking has been established as an HPV cofactor for the development of cervical cancer. Women who smoke are at a higher risk of developing cervical cancer. However, women who currently smoke were the least likely to have a Pap smear within three years (see Figure D).


Figure D: Percent of 2016 BRFSS respondents, women age 21 to 65, who reported having a Pap smear within three years by smoking status.

[^17]Arizonan Women ages 21 to 65 who reported having had a Pap test within the past 3 years

| Characteristic | Percent | N* | Confidence Interval |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | Lower <br> Mean | Upper Mean |
| National | 73.6\% | 54 |  |  |
| Arizona | 69.5\% | 3121 | 67.7\% | 71.4\% |
| Female | 69.5\% | 3121 | 67.7\% | 71.4\% |
| 18-24 | 96.7\% | 74 | 92.5\% | $\begin{gathered} 100.0 \\ \% \end{gathered}$ |
| 25-34 | 90.0\% | 254 | 85.6\% | 94.4\% |
| 35-44 | 83.6\% | 399 | 79.3\% | 87.9\% |
| 45-54 | 70.4\% | 542 | 65.8\% | 75.1\% |
| 55-64 | 68.1\% | 833 | 64.4\% | 71.8\% |
| 65+ | 38.9\% | 1019 | 36.3\% | 41.5\% |
| Married | 70.8\% | 1663 | 68.2\% | 73.3\% |
| Divorced | 64.3\% | 528 | 59.4\% | 69.3\% |
| Widowed | 41.8\% | 383 | 37.0\% | 46.6\% |
| Separated | 73.5\% | 56 | 60.9\% | 86.1\% |
| Never Married | 82.8\% | 357 | 78.2\% | 87.5\% |
| Unmarried Couple | 87.9\% | 108 | 81.9\% | 94.0\% |
| Less than highschool | 71.0\% | 178 | 64.6\% | 77.5\% |
| High School/GED | 65.7\% | 639 | 61.8\% | 69.6\% |
| Some College/Technical School | 66.1\% | 935 | 62.9\% | 69.3\% |
| College/Technical School Grad | 76.8\% | 1364 | 74.3\% | 79.2\% |
| Employed for Wages | 80.9\% | 1164 | 78.2\% | 83.6\% |
| Self Employed | 68.5\% | 207 | 60.5\% | 76.4\% |
| Out of Work | 66.4\% | 129 | 56.1\% | 76.6\% |
| Homemaker | 76.3\% | 359 | 71.3\% | 81.3\% |
| Student | 94.8\% | 57 | 87.9\% | $\begin{gathered} 100.0 \\ \% \end{gathered}$ |
| Retired | 44.4\% | 948 | 41.5\% | 47.2\% |
| Unable to Work | 64.5\% | 238 | 57.5\% | 71.5\% |
| Less than \$10,000 | 60.0\% | 124 | 48.7\% | 71.3\% |
| \$10,000 to \$14,999 | 60.0\% | 122 | 51.1\% | 69.0\% |
| \$15,000 to \$19,999 | 75.9\% | 169 | 69.2\% | 82.5\% |
| \$20,000 to \$24,999 | 68.7\% | 237 | 62.4\% | 75.1\% |
| \$25,000 to \$34,999 | 70.1\% | 249 | 64.1\% | 76.1\% |
| \$35,000 to \$49,999 | 66.6\% | 404 | 61.3\% | 71.9\% |
| \$50,000 to \$74,999 | 71.5\% | 435 | 66.8\% | 76.2\% |
| Above \$75,000 | 76.9\% | 872 | 73.5\% | 80.2\% |
| White Non-Hispanic | 63.6\% | 2337 | 61.5\% | 65.8\% |
| Black/African American | 75.3\% | 65 | 66.2\% | 84.5\% |
| Hispanic | 83.0\% | 439 | 79.3\% | 86.7\% |
| Asian/Pacific Islander | 64.0\% | 31 | 49.0\% | 78.9\% |
| American Indian NonHispanic | 81.3\% | 175 | 71.9\% | 90.7\% |
| Other | 71.3\% | 74 | 59.1\% | 83.4\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National N is $53=$ all 50 states, DC and Territories.

## Preventive Health Practices:

## Routine Medical Examinations

The table to the left displays the proportions of Arizonan women, ages 21 to 65, who reported having had a Pap test within the past 3 years by: sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Preventive Health Practices:

## PSA Test

Survey Question: A Prostate-Specific Antigen test, also called a PSA test, is a blood test used to check men for prostate cancer.

Currently, there are two methods to test for prostate cancer: the digital rectal exam and the Prostate-Specific Antigen (PSA) Test. The U.S. Preventative Services Task Force (USPSTF) recommends against the use of the PSA ${ }^{42}$. While other organizations such as the American Urological Association (AUA) recommends that men, between the ages of 55 to 69, consider PSA screening, after talking to their physician about the risk and benefits of the procedure. ${ }^{43}$ This disconnect has emerged due to the large number of false positives, which leads to needless biopsies for tumors that are benign or extremely slow growing. The risks associated with biopsies are infection, blood in semen, difficulty urinating, and bleeding at the site. ${ }^{44}$ According to the 2016 BRFSS survey, the percent of men, over age of 40 , who received a PSA test and were counseled on the advantage and disadvantages, was 91.3\%. Arizona men who received the PSA test but did not receive counseling was 61\% (see Figure A).

Arizona Men Respondents, age 40+, who had a PSA test, stratified by the counseling given on the advantages \& disadvantages of a PSA test


Figure A: Arizona Men age 40 years and older responded to the 2016 BRFSS prostate cancer screening module (PSA test (yes) + PSAdoc (yes) + PSAhad (yes)*PSAcounsel. Respondent was talked to about the advantages and disadvantages of a PSA test and has had a PSA test.

[^18]When looking across all states in the U.S., Arizona is in the second-highest category for having had a PSA test and received counseling on both the benefits and risks of a PSA Test (see Figure B).


Figure B: U.S. map of BRFSS 2016 male respondents who had reported they had a PSA test and received counseling on both the benefits and risks of the PSA Test (natural breaks).

A major risk associated with prostate biopsies is infection, which then leads to acute prostatitis. In men over the age of 50, acute prostatitis is associated with having a benign prostatic hyperplasia, commonly referred to as an enlarged prostate. As men get older, it is common for their prostate to continue growing. More than half of the men over the age of 60 will experience complications due to an enlarged prostate, and approximately $6.4 \%$ of men over the age of 40 will experience complications. Furthermore, men with enlarged prostates will have elevated levels of PSA in blood. As men get older their blood PSA levels will increase for numerous reasons that are unrelated to prostate cancer, resulting in more false positive PSA tests. ${ }^{31}$ According to the 2016 BRFSS, $70.5 \%$ of Arizona men over the age of 40 had a PSA during a routine examination. When looking at PSA screening, 70.5\% reported having one during routine examination in Arizona and 71.7\% nationally (see Figure C).


Figure C: Arizona and National BRFSS 2016 male respondents that had a PSA Test and why they had the PSA test.


Figure D: Arizona map of BRFSS 2016, 40 + years of age, reported having had a mammogram in past year.

| Arizonan Men Who Reported Having a PSA and Had a Medical Professional Tell them About its Benefits and Risks |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper Mean |
| National | 40.8\% | 54 |  |  |
| Arizona | 38.1\% | 843 | 35.1\% | 41.0\% |
| Male | 38.1\% | 843 | 35.1\% | 41.0\% |
| 35-44 | 30.6\% | 15 | 16.2\% | 44.9\% |
| 45-54 | 45.1\% | 93 | 36.0\% | 54.3\% |
| 55-64 | 41.3\% | 220 | 35.4\% | 47.2\% |
| 65+ | 34.3\% | 515 | 31.0\% | 37.5\% |
| Married | 40.2\% | 609 | 36.9\% | 43.6\% |
| Divorced | 30.9\% | 99 | 22.3\% | 39.6\% |
| Widowed | 29.6\% | 72 | 21.6\% | 37.6\% |
| Separated | 30.8\% | 9 | 0.0\% | 71.4\% |
| Never Married | 40.6\% | 46 | 26.0\% | 55.2\% |
| Unmarried Couple | 24.1\% | 6 | 1.0\% | 47.1\% |
| Less than highschool | 44.4\% | 28 | 29.0\% | 59.8\% |
| High School/GED | 36.3\% | 118 | 29.3\% | 43.3\% |
| Some College/Technical School | 37.6\% | 207 | 32.2\% | 42.9\% |
| College/Technical School Grad | 38.3\% | 490 | 34.7\% | 42.0\% |
| Employed for Wages | 42.2\% | 213 | 36.2\% | 48.1\% |
| Self Employed | 35.9\% | 72 | 26.1\% | 45.7\% |
| Out of Work | 50.2\% | 24 | 29.7\% | 70.7\% |
| Homemaker | 43.2\% | 3 | 8.6\% | 77.7\% |
| Student | 37.6\% | 1 | 0.0\% | 100.0\% |
| Retired | 35.9\% | 487 | 32.3\% | 39.4\% |
| Unable to Work | 34.4\% | 40 | 22.6\% | 46.2\% |
| Less than \$10,000 | 41.3\% | 16 | 17.9\% | 64.8\% |
| \$10,000 to \$14,999 | 47.2\% | 31 | 29.3\% | 65.1\% |
| \$15,000 to \$19,999 | 22.0\% | 24 | 6.5\% | 37.5\% |
| \$20,000 to \$24,999 | 38.4\% | 25 | 23.2\% | 53.6\% |
| \$25,000 to \$34,999 | 33.5\% | 64 | 23.8\% | 43.2\% |
| \$35,000 to \$49,999 | 38.1\% | 116 | 30.2\% | 46.0\% |
| \$50,000 to \$74,999 | 31.5\% | 134 | 25.0\% | 38.1\% |
| Above \$ 75,000 | 42.4\% | 321 | 37.6\% | 47.2\% |
| White Non-Hispanic | 37.3\% | 721 | 34.2\% | 40.3\% |
| Black/African American | 46.3\% | 18 | 29.7\% | 62.9\% |
| Hispanic | 40.3\% | 65 | 30.5\% | 50.0\% |
| Asian/Pacific Islander | 37.7\% | 6 | 8.6\% | 66.8\% |
| American Indian NonHispanic | 45.6\% | 14 | 38.4\% | 52.9\% |
| Other | 35.7\% | 19 | 9.1\% | 62.4\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National N is 53 = all 50 states, DC and Territories.

## Preventive Health Practices: PSA Test

The table to the left displays the proportions of Arizonan men who reported having had a PSA Test and a medical professional tell them about the advantages (benefits) and disadvantages (risks) of the PSA test, by: age categories, marital status, educational attainment, employment status, income and race/ ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Barriers to Health Care

In 2014, the United States entered a new healthcare model with the implementation of the Patient Protection and Affordable Care Act (ACA). Under the ACA, Medicaid coverage was expanded to include individuals/households with incomes less than the $133 \%$ of the federal poverty level. Furthermore, refundable tax credits will be available to all Americans with incomes between $100 \%$ and $400 \%$ of the federal poverty level. Continued monitoring of barriers to healthcare will provide the feedback needed to assess Arizona's efforts to provide services and care to its population. On March 23, 2010, President Obama signed the Affordable Care Act and set into place an effort that will help ensure Americans have secure, stable, and affordable health insurance. As part of the law, the Centers for Consumer Information \& Insurance Oversight (CCIO), within the division of the Centers for Medicare \& Medicaid Services (CMS), and part of the Department of Health \& Human Services (DHHS), provide national leadership in setting and enforcing standards for health insurance that promote fair and reasonable practices to ensure that affordable, quality health coverage is available to all Americans. People with low and middle incomes are eligible for tax subsidies that will help them buy coverage from state health insurance exchanges. The Affordable Care Act also broadens Medicaid eligibility in many states, including Arizona, to generally include individuals with income below $133 \%$ of the Federal poverty level ( $\$ 15,654$ for an individual and $\$ 32,252$ for a family of four), including single adults without children who were previously not generally eligible for Medicaid. Persons living with human immunodeficiency virus (HIV), who meet this income threshold, no longer have to wait for an AIDS diagnosis in order to become eligible for Medicaid. The ACA also helps people with public or private coverage have access to the information they need to get the best quality care. This section of the 2016 BRFSS Annual Report will include analysis of the following:

- Poverty (variable calculated from INCOME2, NUMMEN, NUMWOMEN, and CHILDREN) - binary variable where household size and income are used to calculate $133 \%$ of the federal poverty level.
- Healthcare Insurance status (variable calculated from HLTHPLN1) - binary variable where having insurance is considered a positive outcome and not having insurance is considered a negative outcome.
- Cannot Afford Needed Healthcare (variable MEDCOST) - binary variable where being able to afford needed healthcare is a positive outcome and being able to not afford needed health care is considered a negative outcome.
- Usual Source of Healthcare (variable calculated from PERSDOC2) - binary variable in which having a usual health care provider is considered a positive outcome and not having a usual health care provider is considered a negative outcome.


## Barriers to Healthcare:

Poverty

Globally, there are approximately 1.2 billion people living in extreme poverty (less than a dollar a day). ${ }^{46}$ It is very rare to find extreme poverty in the U.S.; however, poverty does exist. Poverty in the U.S. is based on income and the size of the household. Research has shown that individuals who live in poverty have worse health outcomes. The U.S. Census Bureau sets the federal poverty level (FPL) using annual household income data and household size. ${ }^{47}$ According to the 2016 BRFSS, 3.1\% of Arizonans surveyed reported they lived with household incomes below $133 \%$ of FPL, $0.9 \%$ above the national 2016 BRFSS median. Survey respondents indicating they are in poverty (at or below $133 \%$ of the FPL) have gradually declined since 2012 (see Figure A).


Figure A: Arizona and National BRFSS 2012-2016 survey respondents who reported living in poverty.

When looking across all states in the nation, Arizona is in the highest category for percent of impoverished respondents (see Figure B).


Figure B: U.S. Map of BRFSS 2016 respondents who reported living in poverty by state (natural breaks).

All categories of poverty were exhibited across Arizona with Gila County and Western Region in the highest category (9.8-12.7\%) (See Figure C).


Figure C: Arizona BRFSS 2016 respondents who reported living in poverty by county or region.

The prevalence of poverty is broadly similar among Arizonans surveyed in 2016 when different chronic conditions are taken into consideration. Those reporting diabetes, stroke, COPD or GALF diagnoses also reported being in poverty slightly more frequently than those with other conditions (see Figure D).

Percentage of Respondents Who Were Living In Poverty With A Chronic Condition, BRFSS 2016


Figure D. Arizona BRFSS 2016 respondents who reported poverty status and a chronic condition. *GALF: Gout, Arthritis, Lupus, and Fibromyalgia.

[^19]In 2016, Arizona BRFSS respondents reported living below 133\% of FPL and were uninsured at $5.4 \%$, see Figure D (yellow). Respondents whose earned income was above $133 \%$ of FPL and having no insurance at $94.6 \%$ see Figure D (red).

Arizona Respondents Poverty \& Insurance Status


Figure D: Arizonans who reported poverty status with or without insurance, BRFSS 2012-2016.

| Arizonans Who Reported Living in Poverty (<133\% FPL) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper Mean |
| National | 2.2\% | 54 |  |  |
| Arizona | 3.1\% | 293 | 2.6\% | 3.7\% |
| Male | 2.3\% | 86 | 1.6\% | 3.0\% |
| Female | 4.0\% | 207 | 3.2\% | 4.8\% |
| 18-24 | 3.0\% | 15 | 1.2\% | 4.8\% |
| 25-34 | 3.4\% | 50 | 2.1\% | 4.6\% |
| 35-44 | 6.6\% | 86 | 4.9\% | 8.3\% |
| 45-54 | 3.2\% | 54 | 2.0\% | 4.5\% |
| 55-64 | 2.4\% | 53 | 1.5\% | 3.3\% |
| 65+ | 0.9\% | 35 | 0.5\% | 1.4\% |
| Married | 3.2\% | 135 | 2.5\% | 3.9\% |
| Divorced | 3.2\% | 50 | 2.0\% | 4.5\% |
| Widowed | 2.6\% | 30 | 1.5\% | 3.7\% |
| Separated | 5.5\% | 13 | 1.0\% | 10.0\% |
| Never Married | 3.0\% | 53 | 1.8\% | 4.3\% |
| Unmarried Couple | 3.1\% | 11 | 0.6\% | 5.5\% |
| Less than highschool | 8.3\% | 66 | 6.0\% | 10.7\% |
| High School/GED | 3.7\% | 96 | 2.5\% | 4.8\% |
| Some College/Technical School | 2.1\% | 84 | 1.6\% | 2.7\% |
| College/Technical School Grad | 0.9\% | 46 | 0.6\% | 1.2\% |
| Employed for Wages | 2.7\% | 106 | 2.0\% | 3.4\% |
| Self Employed | 4.6\% | 30 | 2.2\% | 6.9\% |
| Out of Work | 6.4\% | 37 | 3.9\% | 8.8\% |
| Homemaker | 5.5\% | 36 | 2.9\% | 8.1\% |
| Student | 4.1\% | 11 | 1.0\% | 7.2\% |
| Retired | 1.0\% | 29 | 0.5\% | 1.5\% |
| Unable to Work | 5.3\% | 41 | 3.0\% | 7.6\% |
| Less than \$10,000 | 7.6\% | 46 | 4.0\% | 11.1\% |
| \$10,000 to \$14,999 | 12.0\% | 37 | 7.1\% | 16.8\% |
| \$15,000 to \$19,999 | 8.2\% | 61 | 5.3\% | 11.2\% |
| \$20,000 to \$24,999 | 9.8\% | 73 | 6.8\% | 12.8\% |
| \$25,000 to \$34,999 | 6.6\% | 53 | 4.3\% | 9.0\% |
| \$35,000 to \$49,999 | 1.7\% | 22 | 0.8\% | 2.6\% |
| \$50,000 to \$74,999 | 0.1\% | 1 | 0.0\% | 0.2\% |
| White Non-Hispanic | 1.5\% | 116 | 1.1\% | 1.8\% |
| Black/African American | 3.0\% | 7 | 0.6\% | 5.5\% |
| Hispanic | 6.9\% | 106 | 5.3\% | 8.5\% |
| American Indian NonHispanic | 7.5\% | 57 | 5.0\% | 10.0\% |
| Other | 1.0\% | 7 | 0.0\% | 2.1\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted. National N is $53=$ all 50 states, DC and Territories.

## Barriers to Healthcare:

## Poverty

The table to the left displays the proportions of Arizona adults living in poverty (defined as earning less than $133 \%$ of the federal poverty level (FPL) by sex, age categories, marital status, educational attainment, employment status, income and race/ ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Barriers to Healthcare: No Health Insurance

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

On May 23, 2010, the Patient Protection and Affordable Care Act (ACA) was passed by Congress and signed into law by the President. A number of lawsuits followed, each challenging the constitutionality of parts of the ACA. The U.S. Supreme Court combined several of these cases into one. On June 28, 2012, the Supreme Court did two major things. One, upheld requires all citizens to obtain health insurance or pay a penalty on taxable income. And two, struck down as unconstitutional the part that "penalized" states with loss of federal funding for Medicaid programs for not participating in the ACA, but approved the federal government providing states a choice to accept a federal grant and comply with accompanying conditions, or not participate. ${ }^{48}$

One of the key functions of the law is to expand the scope of Medicaid and the number of individuals the state must cover. In the past, Medicaid was designed to provide assistance in obtaining medical care to pregnant women, children, needy families, the blind, the elderly, and the disabled. Under the ACA, Medicaid will provide coverage to adults with an income up to $133 \%$ of the FPL. ${ }^{49}$
12.1\% Arizonans surveyed in 2016 reported not having health insurance, higher then national median, 10.2\%. After the implementation of the ACA, data collected from 2014 through 2016 showed Arizona and National BRFSS respondents with no insurance on a gradual decline (see Figure A).


Figure A: Arizona and National 2012-2016 BRFSS respondents who reported having no health insurance.
When compared to other states across the nation, Arizona is in the second-highest category (9.6-12.1\%) for respondents who reported that they do not have health insurance (see Figure B).

[^20]

Figure B: U.S. Map of 2016 BRFSS respondents who reported not having health insurance (natural breaks).

When assessing insurance status, it is necessary to exclude the elderly from the analysis as individuals 65 and older qualify for Medicare. Hispanics were 31.0\% of Arizona's total population (2016); ${ }^{50}$ however, they comprised $26.2 \%$ of the Arizonans surveyed (2016) who reported not having health insurance. Thus, Hispanic BRFSS respondents are disproportionately represented among all surveyed without health insurance (see Figure D).


Figure C. Arizona 2012-2016 BRFSS fiver year rolling averages of individuals reporting no insurance by race/ethnicity.

-Hispanic

- American Indian Non-Hispanic © Other

Figure D: Distribution of uninsured Arizonans reported from BRFSS 2016 by race/ ethnicity (weighted percent).

| Arizonans Who Reported Being Uninsured |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Confidence <br> Interval |  |  |
|  |  |  | Lower | Upper |  |
| Characteristic |  | Percent | $\mathbf{N}^{*}$ | Mean |  |
| Mean |  |  |  |  |  |

Use caution in interpreting cell sizes less than 50. N* is unweighted. National N is $53=$ all 50 states, DC and Territories.

## Barriers to Healthcare:

## No Health Insurance

The table to the left displays the proportion of the 2016 Arizona BRFSS respondents who reported having no health insurance represented by sex, age categories, marital status, educational attainment, employment status, income and race/ ethnicity.

The "Nationwide" estimates shown are median values across all states, not means. "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Barriers to Health Care:

 Cost of CareSurvey Question: Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?

When people lack health insurance or sufficient coverage, or their financial situation deteriorates, they may often forgo needed medical tests and therapies. Electing to decline needed medical care has many ethical and clinical implications. Often, symptoms of one disease overlap and tests are necessary to determine if a treatment is appropriate. Barriers to care associated with cost imposes ethical dilemmas on healthcare professionals: do they treat the patient's symptoms, treat at minimal or substandard care levels, or deny them care outright due to the inability to afford costs? Patients will often request that their providers treat at minimal or substandard care because it is more affordable. By treating patients in this way, underlying disease(s) may remain untreated, resulting in a more serious condition later. ${ }^{51}$ The inability to seek or receive appropriate medical care creates a strain on the medical system for both patients and providers. $13.6 \%$ of Arizonans surveyed reported they could not afford needed medical care (see Figure A).


Figure A: Arizona and National 2012-2016 BRFSS respondents who reported that they could not afford needed medical care.

When compared to the other states, Arizona is in the secondhighest category (12.2-14.6\%) of respondents reporting that they could not afford needed medical care (see Figure B).


Figure B: BRFSS 2016 Survey respondents who reported they could not afford needed health care by state (natural breaks).

[^21]Research has shown that families are more likely to be unable to pay their medical bills. Families are defined as a group of two or more related individuals living in the same housing unit. Analysis of family units is important due to the shared impact of taking on financial risks. ${ }^{52}$ Nationally, in general, as household size increases, the inability to afford needed health care also increases. Data comparing Arizona family size to national medians since 2012 are shown in (Figure C).

## Median Respondents Who Could Not Afford Needed Health Care by Household Size, BRFSS 2016



Figure C: Arizona and National 2016 BRFSS respondents who reported that they were unable to afford needed medical care by the number of children in the household.

Household composition can also play a significant role in one's ability to afford needed medical care. BRFSS data only provides information on the gender of the guardian; therefore it is not possible to differentiate familial relationships. However, information on family composition can still offer insight on potential disparities. Nationally, single individuals and traditional families were the least likely to report being unable to afford medical care. Families with a single female guardian and nontraditional structures (families units that are made up of combinations male or female adults ( $\geq 18$ years) with or without children) were more likely to report being unable to afford medical care (Figure D).


Figure D: BRFSS 2016 Arizona respondents who reported that they were unable to afford needed medical care by household composition.

[^22]Arizona Respondents Who Could Not Afford Care

| Characteristic | Percent | N* | Confidence Interval |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | Lower <br> Mean | Upper Mean |
| National | 12.1\% | 54 |  |  |
| Arizona | 13.6\% | 1031 | 12.3\% | 14.8\% |
| Male | 11.3\% | 380 | 9.6\% | 12.9\% |
| Female | 15.8\% | 651 | 14.0\% | 17.6\% |
| 18-24 | 14.9\% | 57 | 10.5\% | 19.3\% |
| 25-34 | 18.4\% | 102 | 14.2\% | 22.5\% |
| 35-44 | 16.0\% | 134 | 12.7\% | 19.3\% |
| 45-54 | 16.1\% | 202 | 13.2\% | 19.1\% |
| 55-64 | 13.9\% | 282 | 11.5\% | 16.2\% |
| 65+ | 5.1\% | 254 | 4.3\% | 6.0\% |
| Married | 11.4\% | 443 | 9.9\% | 13.0\% |
| Divorced | 15.9\% | 195 | 12.8\% | 19.1\% |
| Widowed | 6.6\% | 103 | 4.7\% | 8.6\% |
| Separated | 24.2\% | 30 | 12.5\% | 36.0\% |
| Never Married | 16.6\% | 204 | 13.6\% | 19.7\% |
| Unmarried Couple | 19.4\% | 47 | 11.9\% | 26.9\% |
| Less than highschool | 22.6\% | 124 | 17.6\% | 27.5\% |
| High School/GED | 13.5\% | 267 | 11.2\% | 15.8\% |
| Some College/Technical School | 13.7\% | 346 | 11.7\% | 15.7\% |
| College/Technical School Grad | 8.1\% | 286 | 6.8\% | 9.5\% |
| Employed for Wages | 13.1\% | 348 | 11.2\% | 15.1\% |
| Self Employed | 14.1\% | 76 | 9.1\% | 19.0\% |
| Out of Work | 25.6\% | 84 | 18.9\% | 32.3\% |
| Homemaker | 20.3\% | 85 | 14.9\% | 25.7\% |
| Student | 13.9\% | 33 | 7.9\% | 19.9\% |
| Retired | 5.4\% | 218 | 4.4\% | 6.4\% |
| Unable to Work | 23.0\% | 179 | 18.4\% | 27.6\% |
| Less than \$10,000 | 23.0\% | 85 | 15.6\% | 30.5\% |
| \$10,000 to \$14,999 | 22.8\% | 76 | 15.5\% | 30.1\% |
| \$15,000 to \$19,999 | 26.8\% | 120 | 20.1\% | 33.5\% |
| \$20,000 to \$24,999 | 15.1\% | 112 | 10.8\% | 19.4\% |
| \$25,000 to \$34,999 | 19.5\% | 115 | 14.4\% | 24.7\% |
| \$35,000 to \$49,999 | 12.8\% | 133 | 9.8\% | 15.9\% |
| \$50,000 to \$74,999 | 8.5\% | 95 | 5.9\% | 11.1\% |
| Above \$75,000 | 5.9\% | 104 | 4.3\% | 7.4\% |
| White Non-Hispanic | 10.8\% | 672 | 9.6\% | 12.0\% |
| Black/African American | 17.2\% | 28 | 9.4\% | 25.1\% |
| Hispanic | 19.6\% | 211 | 16.3\% | 22.9\% |
| Asian/Pacific Islander | 3.5\% | 7 | 0.0\% | 7.0\% |
| American Indian NonHispanic | 18.1\% | 75 | 11.9\% | 24.3\% |
| Other | 17.7\% | 38 | 9.5\% | 26.0\% |

Use caution in interpreting cell sizes less than 50. $\mathrm{N}^{*}$ is unweighted.
National N is 53 = all 50 states, DC and Territories.

## Barriers to Health Care:

 Cost of CareThe table to the left displays proportions of Arizona adults who reported that they could not afford needed medical care by sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Barriers to Health Care:

 Usual Source of Health CareThe Committee on Quality of Health Care in America and the Institute of Medicine recommended that health care organizations offer customization of care based on patient needs and become better able to anticipate the needs of the patient rather than reacting to medical events. ${ }^{53}$ To do this, health care professionals and patients must build a long term and trusting relationship, ideally with a primary care provider (PCP). A PCP is an individual's main health care practitioner that offers nonemergency care. PCPs can be doctors, physician assistants, or nurse practitioners. PCPs provide preventive care, teach and promote healthy lifestyle choices, and identify and treat common medical conditions. ${ }^{54}$ Since 2012, Arizonans BRFSS respondents were less likely to report having a usual source of health care than the national median. In 2016, just 74.2\% of Arizonans surveyed reported having a usual source of healthcare, higher than the national median of $73.3 \%$ (see Figure A).


Figure A: Arizona and National 2012-2016 BRFSS respondents who reported that they had a source of health care.

When compared nationally, Arizona is in the lowest ranked category for percent of respondents reporting that they had a usual source of health care (see Figure B).


Figure B:
BRFSS 2016
respondents who reported having a usual source of health care (natural breaks).

[^23]The services physicians provide are not identical. There are many different specialties in medicine and an individual may need to see more than one physician. More than $67.5 \%$ of Arizonans surveyed said they had at least one provider, below the national median of $70.8 \%$ (see Figure C).


Figure C: Distribution of the number of providers respondents see as a usual source of health care in the Arizona and National BRFSS 2016.

Arizona respondents that reported not having a usual source of health care were found more frequently among respondents who were Hispanic, uninsured and less frequently among respondents who were White non-Hispanics, insured, and not in poverty (see Figure D).


Figure D: Arizona and National 2016 BRFSS respondents having a usual source of health care.

| Arizona Respondents Who Reported Having a Usual Source of Care |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper Mean |
| National | 78.2\% | 54 |  |  |
| Arizona | 73.3\% | 9241 | 71.7\% | 74.9\% |
| Male | 67.5\% | 3684 | 65.0\% | 70.0\% |
| Female | 78.9\% | 5557 | 77.0\% | 80.9\% |
| 18-24 | 56.8\% | 208 | 50.7\% | 62.9\% |
| 25-34 | 55.5\% | 377 | 50.6\% | 60.4\% |
| 35-44 | 66.3\% | 705 | 61.9\% | 70.7\% |
| 45-54 | 77.7\% | 1143 | 74.4\% | 81.0\% |
| 55-64 | 82.6\% | 1998 | 80.0\% | 85.3\% |
| 65+ | 92.7\% | 4810 | 91.7\% | 93.8\% |
| Married | 77.7\% | 4889 | 75.7\% | 79.8\% |
| Divorced | 79.9\% | 1385 | 76.3\% | 83.6\% |
| Widowed | 88.0\% | 1559 | 84.6\% | 91.3\% |
| Separated | 74.6\% | 140 | 63.5\% | 85.6\% |
| Never Married | 61.0\% | 977 | 57.0\% | 65.0\% |
| Unmarried Couple | 53.1\% | 216 | 44.1\% | 62.0\% |
| Less than highschool | 62.3\% | 534 | 56.6\% | 68.1\% |
| High School/GED | 69.6\% | 2034 | 66.5\% | 72.8\% |
| Some College/Technical School | 75.7\% | 2829 | 73.1\% | 78.3\% |
| College/Technical School Grad | 80.4\% | 3811 | 78.3\% | 82.6\% |
| Employed for Wages | 66.1\% | 2594 | 63.5\% | 68.8\% |
| Self Employed | 73.8\% | 605 | 67.9\% | 79.7\% |
| Out of Work | 62.6\% | 301 | 55.3\% | 70.0\% |
| Homemaker | 73.6\% | 580 | 67.6\% | 79.6\% |
| Student | 63.8\% | 138 | 55.4\% | 72.3\% |
| Retired | 91.3\% | 4260 | 90.0\% | 92.6\% |
| Unable to Work | 85.0\% | 692 | 80.9\% | 89.2\% |
| Less than \$10,000 | 65.9\% | 338 | 57.8\% | 73.9\% |
| \$10,000 to \$14,999 | 74.4\% | 396 | 66.7\% | 82.0\% |
| \$15,000 to \$19,999 | 60.4\% | 502 | 53.5\% | 67.4\% |
| \$20,000 to \$24,999 | 69.8\% | 687 | 63.6\% | 76.0\% |
| \$25,000 to \$34,999 | 67.1\% | 803 | 61.0\% | 73.1\% |
| \$35,000 to \$49,999 | 74.6\% | 1216 | 70.2\% | 78.9\% |
| \$50,000 to \$74,999 | 71.9\% | 1262 | 67.5\% | 76.3\% |
| Above \$ 75,000 | 82.5\% | 2301 | 79.9\% | 85.0\% |
| White Non-Hispanic | 78.6\% | 7387 | 77.0\% | 80.3\% |
| Black/African American | 69.9\% | 204 | 60.8\% | 78.9\% |
| Hispanic | 65.9\% | 1002 | 61.9\% | 70.0\% |
| Asian/Pacific Islander | 68.1\% | 100 | 57.0\% | 79.2\% |
| American Indian NonHispanic | 52.8\% | 322 | 45.4\% | 60.1\% |
| Other | 65.9\% | 226 | 56.5\% | 75.3\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National N is $53=$ all 50 states, DC and Territories.

## Barriers to Health Care: <br> Usual Source of Care

The table to the left displays the proportions of Arizona adults who reported that they had a usual source of health care by sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Risks \& Behaviors

Certain activities or behaviors increase the risk of mortality and morbidity. Promotion of cessation programs, awareness, and policy changes will help reduce the impact of these risky behaviors. Many programs and policies have been enacted to reduce the burdens associated with participating in these risky behaviors. Continued monitoring of these behaviors will provide Arizona with a tool to assess the impact of these enacted programs and policies. The Health Risks and Behaviors Section of this annual report include an analysis of the following:

- Seat Belt Use (variable SEATBELT) - Always wearing a seat belt is considered a positive outcome and less frequent use is considered a negative outcome.
- Cigarette Smoking (variable _SMOKER3) - Formerly or never smoking are considered a positive outcome and currently smoking is considered a negative outcome.
- Alcohol Abuse: Heavy Drinking (variable _RFDRHV5) - Adult men who have more than two drinks a day, and women who have more than one drink per day are considered a negative outcome and less frequent drinking, including no drinking, is considered a positive outcome.
- Alcohol Abuse: Binge Drinking (variable _RFBING5) - A person that has more than five drinks on at least one occasion in the past 30 days is considered a negative outcome and not engaging in this behavior is considered a positive outcome.


## Health Risks \& Behaviors:

 Seat Belt UseSurvey Question: How often do you use seat belts when you drive or ride in a car?

Motor vehicle crashes are the leading cause of death for people between the ages of 5 and 34 . It is estimated that seat belt use can reduce the number of deaths and serious injuries by $50 \%$. ${ }^{55}$ Biennially since 2006, the BRFSS survey contained a seat belt use question. In 2016, the majority (86.9\%) of Arizonans reported that they always wear their seat belts when they drive or ride in a car. Arizona is slightly above the national median for 2016, 85.1\% (see Figure A).

Respondents Who Reported They Always Wear A Seat Belt


Figure A: Arizona and National 2012-2016 BRFSS respondents who reported that they always wore a seat belt when they drove or rode in a car.

Seat belt use may be impacted by a state's laws. States with primary seat belts laws allow police officers to stop vehicles solely for seat belt violations. In states with secondary seat belt laws, such as Arizona, an officer must have another reason to stop the vehicle (see Figure B). ${ }^{56}$


Figure B: U.S. Map highlighting Seatbelt Laws by State, 2016.

[^24]Arizonans' reported always wearing a seat belt at a rate of $86.9 \%$, similar to the national rate of $85.1 \%$. Arizona fell into the second highest category for percent of respondents reporting that they always wear a seat belt when compared to all other states (see Figure C).


Figure C: Figure B: BRFSS 2016 respondents who reported that they always wore a seat belt when they drove or rode in a car by county (natural breaks) .


Figure D: Arizona BRFSS 2016 Respondents who reported that they always wore a seat belt when they drove or rode in a car by county.

| Arizonans Who Reported They    <br> Always Wore a Seatbelt   |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
|  |  |  | $\begin{array}{c}\text { Confidence } \\ \text { Interval }\end{array}$ |  |
|  |  |  | Lower |  |
| Mean |  |  |  |  | \(\left.\begin{array}{l}Upper <br>

Mean\end{array}\right]\)

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National $N$ is $53=$ all 50 states, DC and Territories.

## Health Risks \& Behaviors:

## Seat Belt Use

The table to the left displays the proportion of Arizonans who reported that they "always" wear a seat belt when driving or riding in a car. Data are also presented by sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Risks \& Behaviors: Alcohol Abuse - Heavy Drinking

## Survey Question(s):

1) During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage such as beer, wine, a malt beverage or liquor?
2) During the past 30 days, on the days when you drank, about how many drinks did you drink on the average?

In adults, alcohol use can be beneficial or detrimental to health. Research has shown that moderate daily consumption of alcohol in middle-aged and older adults reduces the likelihood of cardiovascular events, all-cause mortality, and helps keep cognitive function intact as a person ages. However, moderate alcohol consumption has been associated with increased risk of breast cancer, violence, drowning, and injuries from falls and motor vehicle crashes. Exceeding moderate alcohol consumption (heavy drinking) provides no health benefit and has been associated with increased body mass index, impaired cognitive functioning (both long term and short term), liver disease, hypertension, stroke, type 2 diabetes, injury, and violence. To reduce the risk of alcohol-related harms, the 20152020 U.S. Dietary Guidelines for Americans recommends that if alcohol is consumed, it should be consumed in moderation-up to one drink per day for women and two drinks per day (not an average over time) for men-and only by adults of legal drinking age. ${ }^{59}$

Heavy drinking is defined as having more than two drinks a day for men and more than one serving a day for women. ${ }^{60}$ In 2016, BRFSS respondents surveyed who reported being a heavy drinker (6.2\%) is lower than the national median, $6.5 \%$ (see Figure $A$ ).


Figure A: Arizona and National 2012-2016 BRFSS respondents who were classified as heavy drinkers.

[^25]In BRFSS 2016, 6.4\% of males reported were classified as heavy drinkers and $6.1 \%$ of females based on CDC classification (see Figure B).

Arizonas Who Reported Heavy Drinking by Gender, BRFSS 2016


Figure B: Arizona 2016 BRFSS respondents who were classified as heavy drinkers by gender.

Comparing Arizona across the nation, Arizona is in the secondlowest category (4.9-5.4\%) for reported heavy drinking (see Figure C).


Figure C: U.S. Map of BRFSS 2016 respondents who were classified as heavy drinkers (natural breaks).


Figure D: Map of Arizona BRFSS 2016 respondents classified as heavy drinkers.

| Arizonans Who Reported Drinking Classified as Heavy Drinkers |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower Mean | Upper <br> Mean |
| National | 6.5\% | 54 |  |  |
| Arizona | 6.2\% | 605 | 5.5\% | 7.0\% |
| Male | 6.4\% | 256 | 5.3\% | 7.6\% |
| Female | 6.1\% | 349 | 5.1\% | 7.0\% |
| 18-24 | 6.8\% | 26 | 4.0\% | 9.7\% |
| 25-34 | 7.1\% | 48 | 4.8\% | 9.4\% |
| 35-44 | 4.8\% | 55 | 3.3\% | 6.4\% |
| 45-54 | 7.8\% | 89 | 5.7\% | 9.8\% |
| 55-64 | 6.4\% | 129 | 4.9\% | 7.9\% |
| 65+ | 5.1\% | 258 | 4.2\% | 5.9\% |
| Married | 5.1\% | 287 | 4.3\% | 5.9\% |
| Divorced | 8.0\% | 98 | 5.5\% | 10.4\% |
| Widowed | 4.1\% | 83 | 2.7\% | 5.5\% |
| Separated | 6.6\% | 14 | 1.8\% | 11.4\% |
| Never Married | 8.6\% | 93 | 6.5\% | 10.8\% |
| Unmarried Couple | 5.2\% | 24 | 2.4\% | 8.0\% |
| Less than highschool | 3.7\% | 25 | 1.9\% | 5.6\% |
| High School/GED | 7.2\% | 139 | 5.5\% | 8.9\% |
| Some College/Technical School | 6.1\% | 175 | 4.8\% | 7.4\% |
| College/Technical School Grad | 6.9\% | 264 | 5.7\% | 8.2\% |
| Employed for Wages | 6.3\% | 199 | 5.1\% | 7.6\% |
| Self Employed | 8.1\% | 49 | 5.0\% | 11.3\% |
| Out of Work | 11.3\% | 29 | 6.4\% | 16.1\% |
| Homemaker | 3.2\% | 25 | 1.7\% | 4.6\% |
| Student | 6.5\% | 16 | 2.8\% | 10.3\% |
| Retired | 6.0\% | 254 | 5.0\% | 7.0\% |
| Unable to Work | 3.9\% | 28 | 1.9\% | 5.9\% |
| Less than \$10,000 | 5.8\% | 20 | 2.1\% | 9.4\% |
| \$10,000 to \$14,999 | 5.8\% | 19 | 2.1\% | 9.5\% |
| \$15,000 to \$19,999 | 5.8\% | 29 | 2.6\% | 9.1\% |
| \$20,000 to \$24,999 | 4.7\% | 38 | 2.5\% | 6.8\% |
| \$25,000 to \$34,999 | 4.8\% | 52 | 2.8\% | 6.8\% |
| \$35,000 to \$49,999 | 7.7\% | 88 | 5.4\% | 10.1\% |
| \$50,000 to \$74,999 | 7.6\% | 104 | 5.4\% | 9.9\% |
| Above \$ 75,000 | 6.9\% | 187 | 5.5\% | 8.4\% |
| White Non-Hispanic | 7.6\% | 517 | 6.6\% | 8.6\% |
| Black/African American | 5.5\% | 14 | 2.1\% | 8.9\% |
| Hispanic | 3.1\% | 36 | 1.8\% | 4.3\% |
| Asian/Pacific Islander | 4.4\% | 5 | 0.0\% | 9.7\% |
| American Indian NonHispanic | 7.5\% | 16 | 2.9\% | 12.2\% |
| Other | 8.6\% | 17 | 3.4\% | 13.9\% |

Use caution in interpreting cell sizes less than 50. $\mathrm{N}^{*}$ is unweighted. National $N$ is $53=$ all 50 states, DC and Territories.

## Health Risks \& Behaviors:

## Alcohol Abuse - Heavy Drinkers

The table to the left displays the proportions of Arizonans who are heavy drinkers by sex, age categories, marital status, educational attainment, employment status, income and race/ ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Risks \＆Behaviors：

## Alcohol Abuse－Binge Drinking

For men，binge drinking is defined as having five or more drinks on one occasion；for women，binge drinking is defined as having four or more drinks on one occasion．It is the most common form of drinking in the U．S．It is estimated that 1 in 7 adults binge drink about three to four times a month．Furthermore，it is a common risk behavior among all stages of life．${ }^{61}$ Since 2012，Arizonans who reported any binge drinking has been lower than the national median．In 2016，15．6\％of Arizonans reported binge drinking（see Figure A）．


Figure A：Arizona and National 2012－2016 BRFSS respondents who responded that they participate in binge drinking as per CDC Guidelines．

When looking across all states in the U．S．，Arizona is in the second－lowest category for reported binge drinking among survey respondents（see Figure B）．


Figure B：U．S．map of BRFSS 2016 respondents who reported on average，consumption of four or more（females）and five or more （males）drinks（natural breaks）．

In 2016，Men were more likely to engage in binge drinking than women．Both nationally and in Arizona，men binge drink more frequently than women．In 2016，Arizona male respondents reported binge drinking less frequently than the national median for men（see Figure C）．

| Median Number of Binge Drinking Days Stratified by Gender |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $14.00$ |  |  |  |  |  |
| $12.00$ |  |  |  |  |  |
| 10.00 |  |  |  |  |  |
|  |  |  |  |  |  |
| $\underset{\substack{n}}{n}$ |  |  |  |  |  |
|  |  |  |  |  |  |
| 0.00 |  |  |  |  |  |
|  |  |  |  |  |  |
| $2.00 \pm$ 土 |  |  |  |  |  |
|  |  |  |  |  |  |
| 0.00 |  |  |  |  |  |
| 0.00 | 2012 | 2013 | 2014 | 2015 | 2016 |
| －ーー－National Women | 3.36 | 3.34 | 3.30 | 3.47 | 3.47 |
| －Arizona Women | 2.90 | 2.53 | 3.51 | 3.18 | 4.19 |
| －－－－－National Men | 4.77 | 4.90 | 4.78 | 4.98 | 4.98 |
| $\longrightarrow$ Arizona Men | 4.14 | 7.45 | 4.70 | 5.00 | 4.58 |

Figure C：Arizona and National BRFSS 2012－2016 respondents who are binge drinkers and the average number of binge drinking days．


Figure D：Arizona map of BRFSS 2016 respondents who reported on average，consumption of four or more（females）and five or more （males）drinks．

[^26]| Arizonans Who Reported Drinking Classified as Binge Drinkers |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper Mean |
| National | 16.9\% | 54 |  |  |
| Arizona | 15.6\% | 971 | 14.3\% | 16.9\% |
| Male | 21.3\% | 579 | 19.1\% | 23.5\% |
| Female | 10.1\% | 392 | 8.7\% | 11.5\% |
| 18-24 | 21.8\% | 84 | 16.9\% | 26.7\% |
| 25-34 | 24.2\% | 151 | 19.9\% | 28.5\% |
| 35-44 | 21.2\% | 166 | 17.4\% | 25.0\% |
| 45-54 | 14.7\% | 166 | 12.0\% | 17.5\% |
| 55-64 | 11.5\% | 219 | 9.4\% | 13.5\% |
| 65+ | 4.4\% | 185 | 3.5\% | 5.2\% |
| Married | 12.8\% | 452 | 11.2\% | 14.3\% |
| Divorced | 14.8\% | 144 | 11.3\% | 18.2\% |
| Widowed | 5.6\% | 66 | 3.8\% | 7.5\% |
| Separated | 16.0\% | 20 | 6.2\% | 25.8\% |
| Never Married | 23.8\% | 233 | 20.2\% | 27.3\% |
| Unmarried Couple | 20.6\% | 51 | 12.8\% | 28.5\% |
| Less than highschool | 12.5\% | 58 | 8.3\% | 16.7\% |
| High School/GED | 16.0\% | 229 | 13.2\% | 18.7\% |
| Some College/Technical School | 15.6\% | 293 | 13.4\% | 17.8\% |
| College/Technical School Grad | 17.0\% | 391 | 15.0\% | 19.0\% |
| Employed for Wages | 21.5\% | 486 | 19.2\% | 23.8\% |
| Self Employed | 18.1\% | 90 | 13.0\% | 23.2\% |
| Out of Work | 18.7\% | 58 | 13.3\% | 24.2\% |
| Homemaker | 9.8\% | 53 | 5.8\% | 13.7\% |
| Student | 14.4\% | 34 | 9.0\% | 19.8\% |
| Retired | 5.6\% | 187 | 4.5\% | 6.7\% |
| Unable to Work | 9.0\% | 55 | 5.8\% | 12.2\% |
| Less than \$10,000 | 18.5\% | 56 | 11.6\% | 25.3\% |
| \$10,000 to \$14,999 | 12.0\% | 32 | 6.8\% | 17.2\% |
| \$15,000 to \$19,999 | 15.4\% | 54 | 9.9\% | 21.0\% |
| \$20,000 to \$24,999 | 13.1\% | 67 | 8.4\% | 17.9\% |
| \$25,000 to \$34,999 | 12.7\% | 81 | 9.2\% | 16.3\% |
| \$35,000 to \$49,999 | 17.6\% | 128 | 13.7\% | 21.5\% |
| \$50,000 to \$74,999 | 20.4\% | 150 | 16.3\% | 24.5\% |
| Above \$75,000 | 18.9\% | 316 | 16.3\% | 21.4\% |
| White Non-Hispanic | 15.5\% | 722 | 14.0\% | 17.0\% |
| Black/African American | 14.6\% | 28 | 8.4\% | 20.9\% |
| Hispanic | 16.1\% | 144 | 12.9\% | 19.3\% |
| Asian/Pacific Islander | 4.4\% | 3 | 0.0\% | 9.7\% |
| American Indian NonHispanic | 21.3\% | 49 | 13.9\% | 28.8\% |
| Other | 19.6\% | 25 | 11.1\% | 28.2\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted. National N is 53 = all 50 states, DC and Territories.

## Health Risks \& Behaviors:

## Alcohol Abuse - Binge Drinkers

The table to the left displays the proportions of Arizonans who are heavy drinkers by sex, age categories, marital status, educational attainment, employment status, income and race/ ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Beneficial Health Practices

Certain health practices decrease the risk of morbidity and mortality. Programs promoting awareness and policy changes will benefit the community as a whole. Continued monitoring of these practices will provide Arizona with a tool to assess the impact of these programs and policies. The Beneficial Health Practices Section of the 2016 Arizona BRFSS section includes an analysis of the following:

- Physical Activity (variables EXERANY2, _TOTINDA, and AZ5_1 through AZ5_7) - coded variable measuring a person's level of participation in moderate or vigorous activities according to established guidelines.
- Fruit and Vegetable Consumption (variables AZ3_1, AZ3_2, AZ3_3, AZ3_4, AZ3_5, and AZ3_6) - binary outcome where the variables are summed together. If their daily total is five or greater than they are considered a positive outcome. If their daily total is less than five, they are considered a negative outcome.
- Folic Acid Use (Variable AZ2_1) - binary outcome where women who take a supplement or multivitamin with folic acid are considered a positive outcome and women who do not take a supplement or multivitamin with folic acid are considered a negative outcome.
- Folic Acid Awareness (Variable AZ2_3) - binary outcome where women who state that folic acid prevents birth defects are considered a positive outcome and women who state that folic acid prevents anything other than birth defects are considered a negative outcome.


## Beneficial Health Practices: Physical Activity

In the past, the BRFSS physical activity questions focused on the amount of time a person participated in moderate or vigorous activities. The new physical activity questions remove ambiguity in these categories and they ask if the interviewee participates in specific physical activities.

According to the American College of Sports Medicine's Fitness Advisory Board, Arizona (data are based upon Maricopa and Pinal Counties) is ranked $32^{\text {nd }}$ in the nation in terms of promoting physical fitness. Some areas where Arizona did well included: having a high percentage of state land designated as parkland, higher park-related expenditures per capita, and having lower smoking and heart disease mortality. ${ }^{62}$

To further improve the health of Arizonans it is the goal of ADHS to increase physical activity throughout the state. Physical activity decreases the risk of heart attack, colon cancer, diabetes and high blood pressure, and may decrease the risk of stroke. It also helps with weight control, contributes to healthy bones, muscles and joints; reduces the incidence of falls among the elderly; helps to relieve the pain of arthritis; decreases symptoms of anxiety and depression; and can decrease the need for hospitalizations, physician visits and medications. Moreover, physical activity does not need to be strenuous to be beneficial. ${ }^{63}$ Regular exercise also can contribute to the functional independence of the elderly and improve the quality of life for people of all ages. ${ }^{64}$


Figure A: Arizona and National 2012-2016 BRFSS respondents who reported that they met at least one physical activity guideline. *state-added only question.

[^27]In 2016, Arizonans were more likely to meet the aerobic physical activity guideline (53.8\%) than the strength physical activity guideline (31.5\%) (see Figure B \& C).


Figure B: Arizona and National 2012-2016 BRFSS respondents who reported meeting aerobic physical activity guideline. *state-added only question.

Met Strength Physical Activity Guideline


Figure C: Arizona and National 2016 BRFSS respondents who reported meeting strength physical activity guideline. *state-added only question.
in 2016, 18.1\% of Arizonans reported not meeting either the physical activity or strength guideline and $29.3 \%$ Arizona of survey respondents reported meeting both aerobic and muscle strengthening guidelines (see Figure D).

Met Physical Activity Guidelines, BRFSS 2016


Figure D: Arizona 2016 BRFSS respondents reported meeting physical activity guidelines.

| Arizona Respondents Who Met One or More |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| Physical Activity Requirements |  |  |  |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National N is $53=$ all 50 states, DC and Territories.

## Barriers to Health Care: Physical Activity

The table to the left displays the proportions of Arizonans who met one or more physical activity requirements by sex, age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

Beneficial Health Practices:

## Fruit \& Vegetable Consumption

The 2015-2020 Dietary Guidelines for Americans, 8th edition, reflects the large body of evidence which shows that healthy eating patterns and regular physical activity can help people achieve and maintain good health and reduce the risk of chronic diseases like cardiovascular disease, type 2 diabetes, and overweight and obesity. Previous editions of the Dietary Guidelines focused on individual dietary components. The current guidelines reflect the growing body of research that examines the relationship between overall eating patterns, health, and risk of chronic disease. The guidelines advise that a healthy eating pattern is not a rigid prescription but an adaptable framework that provides individual the choices to enjoy foods to meet their personal, cultural, and traditional preferences, as well as, fit within their budget. One of the key recommendations from the dietary Guidelines is to "Consume a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level." Specific recommendations regarding vegetables and fruits in a healthy eating pattern include:

- A variety of vegetables from all subgroups - dark green, red and orange, legumes (beans and peas), starches, and others
- Fruits, especially whole fruits

Overall, adults throughout the United States do not meet intake recommendations for vegetables or fruits. For most adults, 2 1/2 to 3 cups of vegetables, with a wide variety chosen from the vegetable subgroups, is recommended and 2 cups of fruit, preferably whole fruits, is recommended. In 2016, 10.5\% of Arizona BRFSS respondents consumed vegetables at least three time and fruits twice daily (see Figure A).

Adults Eating Vegetables At Least Three Times \& Fruits Twice Daily


Figure A: Arizona and National BRFSS 2012-2016 respondents who reported consuming vegetables at least three times and fruits twice per day. *Stateadded question.

The mean serving of fruits and vegetables consumed by Arizonans in 2016 were 1.4 and 2.2, respectively (see figure B).

Arizona Adult Fruit \& Vegetable Consumption, BRFSS 2016


Figure B: Arizona BRFSS 2012-2016 Respondents Fruit \& Vegetable Consumption.
One of the most noteworthy items for the Arizona 2016 BRFSS is the large proportion of the population who reported not consuming vegetables or fruits $63.0 \%$ (see Figure C).

Arizona Adult Fruit \& Vegetable Consumption, BRFSS 2016


Figure C: Arizona and National BRFSS 2016 reported fruit and vegetable consumption.

In 2016, Pinal County had the highest proportion of respondents consuming vegetables three times and fruits twice daily, $16.0 \%$. Gila County had the lowest, $6.8 \%$ (see Figure D).


Figure D: Arizona Map of BRFSS 2016 respondents who reported consuming vegetables at least three times and fruits two times per day.

| Arizona Respondents Who Consume At Least Two |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| Servings of Fruits and Three Vegetables Per Day |  |  |  |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National N is $53=$ all 50 states, DC and Territories.

## Beneficial Health Practices:

 Fruit \& Vegetable ConsumptionThe table to the left displays the proportions of Arizonans who at least consume two fruits and three vegetables each day. The data are reported by age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Beneficial Health Practices: Folic Acid Use \& Awareness

Neural tube defects (NTD) are among the most serious birth defects that contribute to infant mortality and morbidity. Nationally, NTDs including anencephaly, spina bifida, and encephalocele are estimated to account for 2,660 infants born with a birth defect annually. ${ }^{65}$ Research has shown that $50 \%$ to $70 \%$ of these NTDs can be prevented if women consume 0.4 mg of folic acid daily before and during pregnancy. The United States Preventive Services Task Force (USPSTF) recommends that all women who are planning to or can potentially become pregnant take a daily supplement containing folic acid. In 2014, $35.9 \%$ of surveyed Arizona women of child-bearing age reported taking a supplement containing folic acid (See Figure A).


Figure A: Arizona 2012-2016 BRFSS female respondents of child-bearing age who reported taking a supplement containing Folic Acid
The USPSTF recommends daily supplementation due to the fact that approximately $50 \%$ of all U.S. pregnancies are unplanned. ${ }^{66}$ Less than half ( $35.9 \%$ ) of women of childbearing age knew that folic acid prevents birth defects. However, only 16.9\% of women follow the USPSTF guideline of daily supplementation (See Figure B).


Figure B: Arizona 2012-2016 BRFSS female respondents of child-bearing age who reported taking a Supplement containing Folic Acid daily \& understood it prevents birth defects

[^28]In 1996, the Food and Drug Administration (FDA) began requiring that specific flours, breads, and other grain be fortified with folic acid. The FDA expanded its mandate in 1998 to include other products that use enriched flour and corn flour. Breakfast cereal aside, the foods fortified with folic acid do not provide sufficient folic acid to meet the .4 mg recommended; breakfast cereal contains 0.4 mg of folic acid, but the other fortified foods only contain 0.1 mg per serving. Furthermore, imported corn meal and corn flour products are not required to follow FDA guidelines. Research has shown that Hispanic women are less likely to consume breakfast cereals and are more likely to purchase imported corn flour products. ${ }^{67}$ The data indicates that there is a racial disparity when assessing folic acid awareness and supplementation. In 2016, lower percentages of Arizona Hispanic, Black and American Indian women surveyed reported taking a folic acid supplement than White Non-Hispanics (See Figure C).


Figure C: Arizona 2012-2016 BRFSS female respondents of child-bearing age who reported taking a supplement containing Folic Acid daily \& understood it prevents birth defects by race

Since 2012, the percent of women surveyed who take a folic acid supplement is higher when they are aware of its benefits than when they are unaware (see Figure D).

## Arizona Women of Child-Bearing Age Who Take a Folic Acid Supplement, Stratified by Awareness of Folic Acid's Use



Figure D: Arizona 2012-2016 BRFSS female respondents of child-bearing age who reported taking a Supplement containing Folic Acid stratified by awareness status

[^29]Arizona Women Respondents of Child-Bearing Age
Who Take a Supplement Containing Folic Acid

| Characteristic | Percent | N* | Confidence Interval |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | Lower <br> Mean | Upper <br> Mean |
| Female | 32.8\% | 126 | 26.3\% | 39.3\% |
| 18-24 | 19.0\% | 9 | 5.7\% | 32.4\% |
| 25-34 | 34.1\% | 41 | 22.7\% | 45.4\% |
| 35-44 | 41.4\% | 76 | 31.8\% | 50.9\% |
| Married | 40.4\% | 78 | 31.2\% | 49.6\% |
| Divorced | 24.2\% | 8 | 4.1\% | 44.3\% |
| Widowed | 46.9\% | 1 | 0.0\% | 0.0\% |
| Separated | 50.7\% | 8 | 6.5\% | 94.8\% |
| Never Married | 22.4\% | 23 | 11.1\% | 33.6\% |
| Unmarried Couple | 29.3\% | 8 | 2.2\% | 56.5\% |
| Less than highschool | 15.9\% | 5 | 0.0\% | 33.7\% |
| High School/GED | 31.0\% | 24 | 17.4\% | 44.6\% |
| Some College/Technical School | 35.1\% | 43 | 23.7\% | 46.6\% |
| College/Technical School Grad | 39.6\% | 53 | 28.5\% | 50.8\% |
| Employed for Wages | 32.4\% | 68 | 23.8\% | 41.1\% |
| Self Employed | 30.0\% | 10 | 6.7\% | 53.2\% |
| Out of Work | 11.5\% | 1 | 0.0\% | 41.2\% |
| Homemaker | 52.6\% | 29 | 36.6\% | 68.6\% |
| Student | 15.1\% | 6 | 0.0\% | 32.5\% |
| Unable to Work | 45.4\% | 10 | 8.5\% | 82.4\% |
| Less than \$10,000 | 15.7\% | 3 | 0.0\% | 43.6\% |
| \$10,000 to \$14,999 | 13.3\% | 3 | 0.0\% | 42.7\% |
| \$15,000 to \$19,999 | 19.2\% | 8 | 2.3\% | 36.2\% |
| \$20,000 to \$24,999 | 40.8\% | 15 | 17.6\% | 63.9\% |
| \$25,000 to \$34,999 | 49.4\% | 12 | 22.0\% | 76.7\% |
| \$35,000 to \$49,999 | 34.8\% | 16 | 13.5\% | 56.2\% |
| \$50,000 to \$74,999 | 32.2\% | 21 | 16.5\% | 47.8\% |
| Above \$75,000 | 41.1\% | 36 | 27.7\% | 54.5\% |
| White Non-Hispanic | 37.5\% | 75 | 28.4\% | 46.6\% |
| Black/African American | 28.8\% | 3 | 0.0\% | 100.0\% |
| Hispanic | 30.8\% | 35 | 19.8\% | 41.8\% |
| Asian/Pacific Islander | 17.3\% | 3 | 5.1\% | 29.6\% |
| American Indian NonHispanic | 27.2\% | 9 | 8.7\% | 45.6\% |
| Other | 2.7\% | 1 | 1.7\% | 3.6\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted. National N is $53=$ all 50 states, DC and Territories.

## Beneficial Health Practices: Folic Acid Use

The table to the left displays the proportions of Arizonans women of child-bearing age who take a supplement that contains folic acid by: age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

Arizona Women Respondents of Child-Bearing Age
Who Reported that Folic Acid Prevents Birth Defects

| Characteristic | Percent | N* | Confidence Interval |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | Lower Mean | Upper Mean |
| Female | 54.2\% | 165 | 46.8\% | 61.7\% |
| 18-24 | 36.5\% | 13 | 17.5\% | 55.5\% |
| 25-34 | 55.4\% | 51 | 43.3\% | 67.6\% |
| 35-44 | 63.1\% | 101 | 53.3\% | 72.9\% |
| Married | 66.5\% | 103 | 57.0\% | 75.9\% |
| Divorced | 77.6\% | 16 | 61.7\% | 93.6\% |
| Widowed | 100.0\% | 2 | 0.0\% | 0.0\% |
| Separated | 33.8\% | 4 | 0.0\% | 96.4\% |
| Never Married | 33.0\% | 28 | 19.3\% | 46.6\% |
| Unmarried Couple | 43.3\% | 12 | 11.0\% | 75.5\% |
| Less than highschool | 10.5\% | 4 | 0.0\% | 22.4\% |
| High School/GED | 38.6\% | 20 | 22.6\% | 54.7\% |
| Some College/Technical School | 52.7\% | 47 | 39.6\% | 65.8\% |
| College/Technical School Grad | 79.5\% | 93 | 71.7\% | 87.2\% |
| Employed for Wages | 57.8\% | 96 | 48.1\% | 67.5\% |
| Self Employed | 78.4\% | 16 | 46.7\% | 100.0\% |
| Out of Work | 72.7\% | 5 | 0.0\% | 100.0\% |
| Homemaker | 53.0\% | 34 | 36.0\% | 70.0\% |
| Student | 37.6\% | 8 | 9.7\% | 65.5\% |
| Unable to Work | 32.5\% | 4 | 0.0\% | 71.7\% |
| Less than \$10,000 | 9.6\% | 2 | 6.9\% | 12.4\% |
| \$10,000 to \$14,999 | 95.5\% | 8 | 85.0\% | 100.0\% |
| \$15,000 to \$19,999 | 29.3\% | 9 | 16.6\% | 41.9\% |
| \$20,000 to \$24,999 | 28.9\% | 5 | 0.0\% | 59.8\% |
| \$25,000 to \$34,999 | 43.1\% | 16 | 20.4\% | 65.9\% |
| \$35,000 to \$49,999 | 66.1\% | 20 | 46.1\% | 86.2\% |
| \$50,000 to \$74,999 | 66.6\% | 32 | 49.9\% | 83.3\% |
| Above \$75,000 | 73.5\% | 61 | 61.8\% | 85.3\% |
| White Non-Hispanic | 56.3\% | 98 | 46.1\% | 66.4\% |
| Black/African American | 36.7\% | 2 | 0.0\% | 100.0\% |
| Hispanic | 57.0\% | 45 | 43.7\% | 70.3\% |
| Asian/Pacific Islander | 81.0\% | 8 | 69.1\% | 93.0\% |
| American Indian NonHispanic | 23.2\% | 9 | 16.5\% | 29.8\% |
| Other | 43.2\% | 3 | 0.0\% | 100.0\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National N is $53=$ all 50 states, DC and Territories.

## Beneficial Health Practices: Folic Acid Awareness

The table to the left displays the proportions of Arizonans women of child-bearing age who responded that folic acid prevents birth defects by: age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Conditions \& Limitations

Chronic health conditions contribute to morbidity and mortality. Furthermore, these conditions reduce an individual's quality of life. The benefits of programs and policies targeting these conditions will be difficult to quantify as data collection on the community's quality of life is not feasible. However, monitoring the prevalence of these diseases will provide Arizona with a tool to assess the impact of these programs and policies. The Health Conditions and Limitations Section include an analysis of the following:

- Obesity (variable _BMI5CAT) - Not being obese is considered a positive outcome, and being obese is considereda negativeoutcome.
- Diabetes (variable DIABETE3) - Never receiving a diagnosis of diabetes is considered a positive outcome, and receiving a diagnosis of diabetes is considered a negative outcome.
- Chronic Obstructive Pulmonary Disease (COPD) (variable CHCCOPD1) - Never receiving a diagnosis of having COPD, emphysema or chronic bronchitis is considered a positive outcome, and receiving a diagnosis of having COPD, emphysema or chronic bronchitis is considered a negative outcome.
- Asthma (variable _LTASTH1) - Never receiving a diagnosis of asthma is considered a positive outcome, and receiving a diagnosis of asthma is considered a negative outcome
- Cardiovascular Disease: Angina (variable CVDCRHD4) - Never receiving a diagnosis of angina is considered a positive outcome, and receiving a diagnosis of angina is considered a negative outcome.
- Cardiovascular Disease: Heart Attack (variable CVDINFR4) - Never receiving a diagnosis of a heart attack is considered a positive outcome, and receiving a diagnosis of a heart attack is considered a negative outcome.
- Stroke (variable CVDSTRK3) - Never receiving a diagnosis of a stroke is considered a positive outcome, and receiving a diagnosis of a stroke is considered a negative outcome.


## Health Conditions \& Limitations:

 Obesity
## Survey Question(s):

1) About how much do you weigh without shoes?
2) About how tall are you without shoes?

More than one-third of U.S. adults are obese. Obesity-related conditions include type 2 diabetes, heart disease, stroke and arthritis-related disabilities. ${ }^{68}$ Furthermore, one in three cancerrelated deaths can also be attributed to obesity. ${ }^{69}$ Obesity has attained epidemic proportions in the United States more than doubling in the past two decades. ${ }^{70}$ To assess obesity, the BRFSS collects data on self-reported height and weight; the formula for body mass index (BMI) is bodyweight in kilograms divided by height in meters squared. BMI Categories are defined as follows:

- Underweight (BMI 12.0-18.4)
- Overweight (BMI 25.0-29.9)
- Normal (BMI 18.5-24.9)
- Obese (BMI 30.0-99.8)
29.0\% of Arizonans surveyed in 2016 were obese, slightly below the national median (30.1\%) since 2012 (see Figure A).


Figure A: Arizona and National 2012-2016 BRFSS respondents who were obese based on self-reported height and weight.

Research has shown that low-income households are less likely to live in communities that support healthy eating, and that stores in low-income communities are more likely to stock foods that are of lower quality but are more filling. Furthermore, individuals from low-income households have expressed that fresh fruits and vegetables are desirable but impractical due to cost. ${ }^{71}$ The effects of the unavailability of

[^30]healthy foods can be seen in the rise of obesity in low income households. BRFSS data from 2000-2010 showed that respondents in low-income households were the most likely to report being obese. Recent data since 2012 show similar patterns with highest obesity levels reported by the respondents in the lowest income groups (less than $\$ 20,000)$, and the lowest levels reported in the highest income group (above $\$ 75,000$ ) (see Figure B).


Figure B: Arizona 2012-2016 BRFSS Respondents Categorized as Obese Stratified by Income.

Although the disease burden associated with obesity is far reaching, being overweight and underweight can also have detrimental effects on health. In 2016, 32.6\% of Arizonans reported being in the normal BMI range, while only $36.9 \%$ reported being in the overweight category (see Figure C).


Figure C: BRFSS 2016 Respondent Comparison of Arizona and National BMI Categories.

When compared to other states, Arizona is in the secondlowest category (26.1-29.6\%) for percent of respondents who reported they are obese (see Figure D).


Figure D: United States Map of BRFSS 2016 Comparison of Arizona and National Obese BMI Category.

When compared to other counties in Arizona, respondents from Gila county responded more frequently (39.0\%) that they were obese (the highest-category possible) (see Figure E).


Figure E: Arizona BRFSS 2016 map of respondents who reported being the in the obese BMI category by county.

| Arizona Respondents Who Were Obese (BMI $\geq$ 30) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower Mean | Upper <br> Mean |
| National | 30.1\% | 54 |  |  |
| Arizona | 29.0\% | 2731 | 27.5\% | 30.5\% |
| Male | 30.2\% | 1269 | 27.9\% | 32.4\% |
| Female | 27.8\% | 1462 | 25.8\% | 29.9\% |
| 18-24 | 14.4\% | 54 | 9.9\% | 18.9\% |
| 25-34 | 28.5\% | 174 | 23.7\% | 33.2\% |
| 35-44 | 34.5\% | 283 | 30.1\% | 38.8\% |
| 45-54 | 36.4\% | 451 | 32.6\% | 40.2\% |
| 55-64 | 33.8\% | 664 | 30.8\% | 36.8\% |
| 65+ | 25.9\% | 1105 | 24.1\% | 27.7\% |
| Married | 31.4\% | 1446 | 29.3\% | 33.4\% |
| Divorced | 30.6\% | 407 | 26.3\% | 35.0\% |
| Widowed | 28.1\% | 359 | 24.2\% | 32.0\% |
| Separated | 36.7\% | 61 | 24.9\% | 48.5\% |
| Never Married | 21.9\% | 361 | 18.6\% | 25.3\% |
| Unmarried Couple | 33.0\% | 88 | 23.9\% | 42.1\% |
| Less than highschool | 35.8\% | 226 | 29.9\% | 41.7\% |
| High School/GED | 30.5\% | 688 | 27.4\% | 33.5\% |
| Some College/Technical School | 30.2\% | 926 | 27.6\% | 32.8\% |
| College/Technical School Grad | 22.2\% | 888 | 20.2\% | 24.2\% |
| Employed for Wages | 28.8\% | 903 | 26.4\% | 31.3\% |
| Self Employed | 31.5\% | 169 | 25.4\% | 37.7\% |
| Out of Work | 36.9\% | 139 | 29.0\% | 44.8\% |
| Homemaker | 33.4\% | 161 | 27.0\% | 39.8\% |
| Student | 12.4\% | 31 | 6.9\% | 17.9\% |
| Retired | 25.5\% | 1008 | 23.6\% | 27.4\% |
| Unable to Work | 45.3\% | 311 | 39.3\% | 51.3\% |
| Less than \$10,000 | 32.8\% | 141 | 25.1\% | 40.5\% |
| \$10,000 to \$14,999 | 32.7\% | 131 | 25.6\% | 39.8\% |
| \$15,000 to \$19,999 | 36.4\% | 200 | 29.5\% | 43.3\% |
| \$20,000 to \$24,999 | 36.1\% | 245 | 29.8\% | 42.3\% |
| \$25,000 to \$34,999 | 26.5\% | 261 | 21.5\% | 31.5\% |
| \$35,000 to \$49,999 | 31.2\% | 390 | 26.8\% | 35.5\% |
| \$50,000 to \$74,999 | 28.1\% | 377 | 24.1\% | 32.1\% |
| Above \$75,000 | 25.8\% | 622 | 23.2\% | 28.4\% |
| White Non-Hispanic | 26.2\% | 1962 | 24.7\% | 27.8\% |
| Black/African American | 31.3\% | 81 | 23.2\% | 39.5\% |
| Hispanic | 35.1\% | 408 | 31.0\% | 39.3\% |
| Asian/Pacific Islander | 12.7\% | 14 | 4.2\% | 21.3\% |
| American Indian NonHispanic | 42.0\% | 184 | 34.5\% | 49.4\% |
| Other | 33.5\% | 82 | 23.6\% | 43.5\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National N is $53=$ all 50 states, DC and Territories.

## Health Conditions \& Limitations: Obesity

The table to the left displays the proportions of Arizona BRFSS survey respondents who were categorized as being obese (based on calculated BMI) by sex, age, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Conditions \& Limitations:

 DiabetesSurvey Question: Has a doctor, nurse, or other healthcare professional EVER told you that you have diabetes?

More than 29.1 million Americans have diabetes, and 86 million have prediabetes, a serious health condition that increases the risk of type II diabetes and other chronic diseases. ${ }^{72}$ The 2011 national mortality data (the most current available) shows that diabetes mellitus is the seventh leading cause of death in the U.S. Nationally, in 2014 there were 76,488 deaths associated with diabetes. ${ }^{73}$ Diabetes can cause heart disease, stroke, blindness, kidney failure, amputations, pregnancy complications, and death. Particularly at risk are the 1 out of 3 Americans unaware that they have prediabetes.

The hormones which appear during pregnancy can cause glucose intolerance. This is known as gestational diabetes. It typically goes away after childbirth. ${ }^{74}$ Therefore, individuals who were diagnosed with gestational diabetes are not categorized as diabetics in this summary. In 2016, 10.8\% Arizonans surveyed reported they had a health professional Reported Diabetes


Figure A: Arizona and National 2012-2016 BRFSS respondents who reported that they were diagnosed with diabetes.

In BRFSS 2016, Arizona is in the second-highest category of those surveyed who reported a diabetes diagnosis when compared to the other states across the U.S. (see Figure B).

[^31]

Figure B: US MAP of BRFSS 2016 respondents who reported having Diabetes. (natural breaks)

Research has shown that smoking decreases insulin sensitivity, which in turn results in disorders of glucose metabolism. Furthermore, it has been shown that smoking worsens metabolic control when compared to non-smokers. Additionally, nicotine has been shown to increase apoptosis of islet $\beta$-cells, which synthesize and secrete insulin. ${ }^{75,76}$ Survey data indicates that current smokers and never smokers have a similar prevalence of diabetes, while former smokers have higher diabetes prevalence, at $15.5 \%$ (see Figure C).

Diabetes by Smoking Status


Figure C: Arizona 2012-2016 survey respondents who reported having Diabetes by smoking status (current smoker, former smoker, never smoker).

When compared to other counties in Arizona, respondents from Gila County responded more frequently that they were told by a healthcare professional that they had Diabetes (19.3\%), placing the county in the highest-category possible. (see Figure D).


Figure D: Arizona BRFSS 2016 respondents who reported they were told they had diabetes by a health care professional.

[^32]Arizonans Who Reported Ever Having Diabetes

|  |  |  | Confidence <br> Interval |
| :--- | :--- | :--- | :--- |


|  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
|  |  | Lower | Upper |  |
| Characteristic | Percent | N* $^{*}$ | Mean | Mean |


| National | $\mathbf{1 0 . 5 \%}$ | $\mathbf{5 4}$ |  |  |
| :--- | :---: | :---: | :---: | :---: |
| Arizona | $\mathbf{1 0 . 8 \%}$ | $\mathbf{1 6 0 0}$ | $\mathbf{1 0 . 0 \%}$ | $\mathbf{1 1 . 6 \%}$ |
| Male | $12.2 \%$ | 790 | $10.9 \%$ | $13.5 \%$ |
| Female | $9.5 \%$ | 810 | $8.5 \%$ | $10.4 \%$ |


| $18-24$ | $0.5 \%$ | 3 | $0.0 \%$ | $1.1 \%$ |
| :--- | :---: | :---: | :---: | :---: |
| $25-34$ | $2.7 \%$ | 17 | $1.1 \%$ | $4.3 \%$ |
| $35-44$ | $4.4 \%$ | 61 | $3.1 \%$ | $5.6 \%$ |


55-6

| $65+$ | $20.8 \%$ | 963 | $19.2 \%$ | $22.4 \%$ |
| :--- | :---: | :---: | :---: | :---: |
| Married | $12.4 \%$ | 818 | $11.2 \%$ | $13.7 \%$ |
| Divorced | $15.1 \%$ | 259 | $12.3 \%$ | $18.0 \%$ |
|  | $17.3 \%$ | 297 | 14.6 |  |


| Widowed | $17.3 \%$ | 297 | $14.6 \%$ | $20.0 \%$ |
| :--- | :---: | :---: | :---: | :---: |
| Separated | $10.4 \%$ | 33 | $5.1 \%$ | $15.8 \%$ |


| Never Married | $5.4 \%$ | 157 | $4.0 \%$ | $6.8 \%$ |
| :--- | :---: | :---: | :---: | :---: |
| Unmarried Couple | $2.5 \%$ | 25 | $1.2 \%$ | $3.9 \%$ |


| Less than highschool | $16.6 \%$ | 164 | $13.1 \%$ | $20.2 \%$ |
| :--- | :---: | :---: | :---: | :---: |
| High School/GED | $11.2 \%$ | 415 | $9.6 \%$ | $12.8 \%$ |
| Some College/Technical | $10.6 \%$ | 534 | $9.4 \%$ | $11.9 \%$ |

School
College/Technical School
Grad

| Employed for Wages | $6.5 \%$ | 296 | $5.3 \%$ | $7.6 \%$ |
| :--- | :---: | :---: | :---: | :---: |
| Self Employed | $4.7 \%$ | 52 | $2.9 \%$ | $6.6 \%$ |
| Out of Work | $10.0 \%$ | 58 | $6.5 \%$ | $13.5 \%$ |
| Homemaker | $10.3 \%$ | 99 | $7.3 \%$ | $13.3 \%$ |
| Student | $2.2 \%$ | 8 | $0.0 \%$ | $4.6 \%$ |
| Retired | $19.9 \%$ | 851 | $18.3 \%$ | $21.6 \%$ |
| Unable to Work | $28.3 \%$ | 229 | $23.5 \%$ | $33.1 \%$ |
| Less than \$10,000 | $16.4 \%$ | 104 | $12.0 \%$ | $20.9 \%$ |
| $\$ 10,000$ to \$14,999 | $21.2 \%$ | 98 | $15.0 \%$ | $27.3 \%$ |
| $\$ 15,000$ to \$19,999 | $13.6 \%$ | 138 | $9.4 \%$ | $17.7 \%$ |
| $\$ 20,000$ to \$24,999 | $11.9 \%$ | 135 | $8.8 \%$ | $15.1 \%$ |
| $\$ 25,000$ to \$34,999 | $9.4 \%$ | 171 | $7.4 \%$ | $11.5 \%$ |
| $\$ 35,000$ to \$49,999 | $10.7 \%$ | 206 | $8.6 \%$ | $12.8 \%$ |
| $\$ 50,000$ to \$74,999 | $9.0 \%$ | 207 | $7.1 \%$ | $11.0 \%$ |
| Above \$75,000 | $8.0 \%$ | 256 | $6.7 \%$ | $9.3 \%$ |
| White Non-Hispanic | $10.2 \%$ | 1123 | $9.4 \%$ | $11.1 \%$ |
| Black/African American | $13.8 \%$ | 52 | $9.2 \%$ | $18.3 \%$ |
| Hispanic | $11.5 \%$ | 248 | $9.4 \%$ | $13.6 \%$ |
| Asian/Pacific Islander | $3.1 \%$ | 8 | $0.5 \%$ | $5.7 \%$ |
| American Indian Non- | $19.4 \%$ | 118 | $14.2 \%$ | $24.5 \%$ |
| Hispanic |  |  |  |  |
| Other | $10.5 \%$ | 51 | $6.1 \%$ | $15.0 \%$ |

Use caution in interpreting cell sizes less than 50. N* is unweighted.
National N is 53 = all 50 states, DC and Territories.

## Health Conditions \& Limitations: Diabetes

The table to the left displays the proportion of Arizonans who were diagnosed with diabetes by age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Conditions \& Limitations:

Chronic Obstructive Pulmonary Disease (COPD), Emphysema, or Chronic Bronchitis

Survey Question: Has a doctor, nurse, or other health professional EVER told you that you have Chronic Obstructive Pulmonary Disease or COPD, emphysema or chronic bronchitis?

Chronic Obstructive Pulmonary Disease (COPD) is not one disease; it is an umbrella term that describes chronic lung conditions that cause pathological changes in the lungs. These changes occur in the large (central) airways, the peripheral bronchioles, and the lung parenchyma. These changes essentially block airflow as the individual exhales, making it increasingly difficult to breathe. These changes are progressive, not fully reversible, and cannot be treated with inhaled steroids/corticosteroids (used to treat asthma). The primary treatment is the use of a bronchodilator; however, steroid inhalers can reduce COPD exacerbations and increase quality of life. ${ }^{77}$ COPD is predominantly associated with smoking. ${ }^{78}$

In 2016, 6.8 \% of Arizona respondents reported that they had been told by a healthcare professional that they had COPD, emphysema, or chronic bronchitis (See Figure A).


Figure A: Arizona and National 2012-2016 BRFSS respondents who reported that they have been diagnosed with COPD, Emphysema, or Chronic Bronchitis.

According to the 2016 BRFSS, Arizonans are more likely to report that they have been diagnosed with COPD when compared to the nation as a whole. However, Arizona is the second-lowest (5.5-7.5) category for COPD, Emphysema or Chronic Bronchitis when compared to the Nation (see Figure B).

[^33]

Figure B: BRFSS 2016 survey respondents who reported that they were diagnosed with COPD, Emphysema, or Chronic Bronchitis (natural breaks).

Figure C (below) shows lower levels of COPD among Arizona males, for 2016, when stratified by gender.


Figure C: Arizona 2012-2016 BRFSS respondents who reported a health care professional told them they had COPD, Emphysema, or Chronic Bronchitis stratified by Gender.

When compared to other counties in Arizona, respondents from Navajo, Gila, and Pinal counties responded more frequently than they were diagnosed with COPD, Emphysea, or Bronchitis, placing the counties in the highest-category possible (10.6-11.7\%). (see Figure D)


Figure D: Arizona BRFSS 2016 map of respondents who reported a health care professional told them they had COPD,
Emphysema, or Chronic Bronchitis by county.

| Arizonans Who Reported Ever Having Had COPD, Emphysema or Chronic Bronchitis |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper Mean |
| National | 6.2\% | 54 |  |  |
| Arizona | 6.8\% | 1017 | 6.1\% | 7.5\% |
| Male | 6.1\% | 404 | 5.1\% | 7.1\% |
| Female | 7.4\% | 613 | 6.4\% | 8.4\% |
| 18-24 | 2.6\% | 8 | 0.4\% | 4.7\% |
| 25-34 | 3.7\% | 18 | 1.6\% | 5.9\% |
| 35-44 | 2.6\% | 30 | 1.4\% | 3.7\% |
| 45-54 | 7.0\% | 97 | 5.1\% | 8.9\% |
| 55-64 | 9.9\% | 226 | 8.0\% | 11.8\% |
| 65+ | 12.4\% | 638 | 11.1\% | 13.6\% |
| Married | 5.7\% | 399 | 4.9\% | 6.6\% |
| Divorced | 11.5\% | 229 | 9.1\% | 13.9\% |
| Widowed | 15.0\% | 243 | 12.4\% | 17.5\% |
| Separated | 7.5\% | 20 | 1.8\% | 13.2\% |
| Never Married | 4.7\% | 99 | 3.1\% | 6.4\% |
| Unmarried Couple | 5.1\% | 19 | 0.3\% | 9.8\% |
| Less than highschool | 9.6\% | 107 | 6.5\% | 12.6\% |
| High School/GED | 7.6\% | 280 | 6.1\% | 9.0\% |
| Some College/Technical School | 6.9\% | 349 | 5.8\% | 8.0\% |
| College/Technical School Grad | 4.1\% | 277 | 3.4\% | 4.8\% |
| Employed for Wages | 3.1\% | 144 | 2.4\% | 3.9\% |
| Self Employed | 5.0\% | 35 | 1.3\% | 8.7\% |
| Out of Work | 7.4\% | 40 | 4.1\% | 10.7\% |
| Homemaker | 4.7\% | 42 | 2.4\% | 7.0\% |
| Student | 4.2\% | 7 | 0.0\% | 8.4\% |
| Retired | 11.2\% | 546 | 10.0\% | 12.4\% |
| Unable to Work | 23.8\% | 195 | 19.2\% | 28.5\% |
| Less than \$10,000 | 10.9\% | 61 | 5.6\% | 16.3\% |
| \$10,000 to \$14,999 | 14.0\% | 84 | 9.6\% | 18.5\% |
| \$15,000 to \$19,999 | 9.6\% | 109 | 6.5\% | 12.7\% |
| \$20,000 to \$24,999 | 8.0\% | 105 | 5.6\% | 10.4\% |
| \$25,000 to \$34,999 | 7.3\% | 121 | 5.1\% | 9.4\% |
| \$35,000 to \$49,999 | 6.3\% | 128 | 4.8\% | 7.8\% |
| \$50,000 to \$74,999 | 5.0\% | 107 | 3.5\% | 6.5\% |
| Above \$ 75,000 | 2.9\% | 97 | 2.1\% | 3.7\% |
| White Non-Hispanic | 8.4\% | 869 | 7.6\% | 9.3\% |
| Black/African American | 5.5\% | 19 | 2.0\% | 8.9\% |
| Hispanic | 3.9\% | 72 | 2.4\% | 5.5\% |
| Asian/Pacific Islander | 3.6\% | 3 | 0.0\% | 10.0\% |
| American Indian NonHispanic | 3.5\% | 19 | 1.1\% | 5.9\% |
| Other | 8.6\% | 35 | 3.4\% | 13.8\% |

[^34]
## Health Conditions \& Limitations:

Chronic Obstructive Pulmonary Disease (COPD), Emphysema, or Chronic Bronchitis

The table to the left displays the proportions of Arizonans who reported that someone in the health profession told them that they had COPD. The data are reported by sex, age, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Conditions \& Limitations: Asthma

Survey Question: Has a doctor, nurse, or other health professional EVER told you that you had asthma?

Asthma is a chronic respiratory disease characterized by episodes or attacks of impaired breathing. Symptoms are caused by inflammation and narrowing of small airways and may include shortness of breath, coughing, wheezing, and chest pain. Disease severity ranges from mild with occasional signs to severe with persistent symptoms that impact quality of life. However, even people with mild disease may suffer severe attacks. Common attack triggers include airway irritants (e.g. tobacco smoke and air pollution), allergens, respiratory infections, stress, and exercise. ${ }^{79}$ Therefore, continued monitoring of asthma prevalence is of great importance. In 2016, 15.7\% of Arizonans surveyed reported being diagnosed with asthma, higher than the national, 14.3\% (see Figure A).


Figure A: Arizona and National 2012-2016 BRFSS respondents who reported that they have been told they have Asthma.

Although, Arizona had a higher prevalence of asthma when compared to the nation, it was not the state with the highest prevalence. When comparing Arizona to all the states in the U.S. the data shows that Arizona falls into the second highest class for individuals reporting that a health care professional had told them they had asthma (see Figure B ).


[^35]On May 31, 2012, the U.S. President's Task Force on Environmental Health Risk and Safety Risks to Children released the Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities. The document outlines the racial and socioeconomic disparities that exist in the U.S. regarding asthma burden. The disparities listed by the Task Force show that minority children and children from impoverished families are disproportionately affected by asthma. Furthermore, minority children are less likely to be prescribed or receive the appropriate treatment. ${ }^{80}$ As a follow-up to this initial work, the Asthma Disparities Workgroup released a series for recommendations to track racial disparities in childhood asthma. In the Arizona BRFSS 2016 survey, reported asthma among survey respondents was significantly lower among Asian and Pacific Islanders when compared to the state. Other race/ethnicity groups and risk factor groups such as poverty were not significantly different from the state mean, $14.6 \%$ (see Figure C).

Respondents Ever Having Had Asthma Stratified by Race \& Poverty Status, BRFSS 2016


Figure C: Arizona 2016 BRFSS respondents who reported that they have been diagnosed with asthma stratified by race and poverty status.


Figure D: Arizona BRFSS 2016 map of respondents who reported that they had ever been diagnosed with asthma by county.

[^36]| Arizonans Who Reported Ever Having Had Asthma |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper <br> Mean |
| National | 14.0\% | 54 |  |  |
| Arizona | 14.6\% | 1620 | 13.5\% | 15.7\% |
| Male | 13.3\% | 575 | 11.7\% | 15.0\% |
| Female | 15.8\% | 1045 | 14.3\% | 17.4\% |
| 18-24 | 13.4\% | 57 | 9.5\% | 17.3\% |
| 25-34 | 15.0\% | 109 | 11.7\% | 18.4\% |
| 35-44 | 14.9\% | 141 | 11.5\% | 18.3\% |
| 45-54 | 16.3\% | 238 | 13.6\% | 19.0\% |
| 55-64 | 15.7\% | 397 | 13.6\% | 17.9\% |
| 65+ | 12.7\% | 678 | 11.4\% | 13.9\% |
| Married | 14.0\% | 798 | 12.6\% | 15.5\% |
| Divorced | 17.0\% | 280 | 13.6\% | 20.5\% |
| Widowed | 14.3\% | 215 | 11.6\% | 17.1\% |
| Separated | 10.6\% | 22 | 4.2\% | 16.9\% |
| Never Married | 15.7\% | 246 | 13.0\% | 18.5\% |
| Unmarried Couple | 12.3\% | 45 | 6.6\% | 18.0\% |
| Less than highschool | 14.9\% | 118 | 10.8\% | 19.1\% |
| High School/GED | 14.3\% | 350 | 12.2\% | 16.5\% |
| Some College/Technical School | 15.0\% | 504 | 13.1\% | 17.0\% |
| College/Technical School Grad | 14.2\% | 645 | 12.7\% | 15.8\% |
| Employed for Wages | 13.9\% | 481 | 12.1\% | 15.7\% |
| Self Employed | 10.5\% | 102 | 7.5\% | 13.4\% |
| Out of Work | 23.0\% | 86 | 16.7\% | 29.2\% |
| Homemaker | 11.9\% | 77 | 8.1\% | 15.7\% |
| Student | 9.9\% | 29 | 5.2\% | 14.6\% |
| Retired | 12.9\% | 618 | 11.6\% | 14.3\% |
| Unable to Work | 28.6\% | 217 | 23.1\% | 34.1\% |
| Less than \$10,000 | 19.3\% | 105 | 13.3\% | 25.4\% |
| \$10,000 to \$14,999 | 14.7\% | 78 | 10.4\% | 19.1\% |
| \$15,000 to \$19,999 | 14.6\% | 113 | 10.2\% | 18.9\% |
| \$20,000 to \$24,999 | 11.3\% | 123 | 8.0\% | 14.5\% |
| \$25,000 to \$34,999 | 14.2\% | 138 | 9.9\% | 18.4\% |
| \$35,000 to \$49,999 | 14.4\% | 199 | 11.4\% | 17.4\% |
| \$50,000 to \$74,999 | 13.9\% | 203 | 10.8\% | 17.1\% |
| Above \$75,000 | 14.3\% | 358 | 12.3\% | 16.4\% |
| White Non-Hispanic | 15.7\% | 1247 | 14.4\% | 17.0\% |
| Black/African American | 14.7\% | 41 | 9.1\% | 20.2\% |
| Hispanic | 11.7\% | 173 | 9.0\% | 14.3\% |
| Asian/Pacific Islander | 7.5\% | 13 | 2.7\% | 12.3\% |
| American Indian NonHispanic | 22.7\% | 93 | 16.2\% | 29.2\% |
| Other | 16.8\% | 53 | 9.3\% | 24.3\% |

[^37]National $N$ is $53=$ all 50 states, DC and Territories.

## Health Conditions \& Limitations: Cardiovascular - Asthma

The table to the left displays the proportions of Arizonans who reported that they were diagnosed with asthma by age categories, marital status, educational attainment, employment status, income and race.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Conditions \& Limitations:

 Cardiovascular - AnginaSurvey Question: Has a doctor, nurse, or other health professional EVER told you that you had angina or coronary heart disease?

Angina usually causes uncomfortable pressure, fullness, squeezig, nor pain in the center of the chest. Pain can also be felt in your shoulders, arms, neck, jaw, back, or it may feel like indigestion. ${ }^{81}$ Angina is not a disease, but rather a symptom of an underlying heart problem, which is usually coronary heart disease (CHD). CHD is a disease where plaque, a buildup of cholesterol and white blood cells, narrows and stiffens the arteries. This makes it much more likely that blood clots will form in a coronary artery and restrict blood flow to the heart muscle. The reduction in oxygen-rich blood to the muscle results in angina and worst case, a heart attack. Depending on the angina type, there are many factors that can trigger angina pain and the different ways it presents. Major types of angina include: ${ }^{82,83}$

- Stable Angina/Angina Pectoris: Most common and follows a regular pattern. Pain occurs when the heart works harder than usual due to it not receiving enough blood flow.
- Unstable Angina: Unexpected chest pain, usually while resting. Typically results from atherosclerotic rupture causing a blood clot that blocks the flow of blood.
- Variant (Prinzmetal) Angina: Rarely occurs. Often happens while at rest and results from a spasm in a coronary artery.
- Microvascular Angina: Results from vascular spasms in the smallest coronary arteries.


Figure A: Difference between a normal artery and an artery exhibiting atherosclerosis.

Angina is the result of a progressive disease and CHD is a form of atherosclerosis that affects the coronary arteries. Over time fat and cholesterol build up on the artery walls, forming a plaque (see Figure A). Plaque buildup can begin as early as infancy, and it continues throughout life, although complications from plaque formation

[^38]tend to develop later in life. Heart attacks and strokes are the most severe complication. Atherosclerosis has been shown to develop in healthy individuals; however, risk factors such as eating foods high in unhealthy cholesterol, having high blood pressure, having Type I or Type II diabetes, being overweight or obese, and eating an unhealthy diet will accelerate its' progression. ${ }^{84}$ In 2016, 4.4\% of Arizonans were diagnosed with angina, which was slightly higher than the national, 4.1\% (see Figure B).

## Respondents Who Reported Being Diagnosed with Angina



Figure B: Arizona and National 2012-2016 BRFSS respondents who reported a health care professional told them they had angina.

When compared to other states across the nation, Arizona respondents are in the second lowest class (4.3-5.4\%) for individuals reporting being told by a health professional that they ever had angina or CHD. Arizona Counties Gila and Pinal had the highest rates of reported angina at $7.2 \%$ and $7.9 \%$, respectively (Figure C).


Figure C: Arizona BRFSS 2016 map of respondents who reported a health care professional told them they had angina.

[^39]| Arizonans Who Reported A Healthcare Professional Told Them They Had Angina |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper <br> Mean |
| National | 4.1\% | 54 |  |  |
| Arizona | 4.4\% | 774 | 3.8\% | 5.0\% |
| Male | 5.4\% | 441 | 4.5\% | 6.3\% |
| Female | 3.4\% | 333 | 2.6\% | 4.1\% |
| 25-34 | 0.2\% | 4 | 0.0\% | 0.5\% |
| 35-44 | 2.8\% | 12 | 0.3\% | 5.3\% |
| 45-54 | 2.0\% | 29 | 1.1\% | 2.9\% |
| 55-64 | 6.4\% | 133 | 4.7\% | 8.1\% |
| 65+ | 11.9\% | 596 | 10.7\% | 13.0\% |
| Married | 5.2\% | 416 | 4.3\% | 6.1\% |
| Divorced | 6.0\% | 109 | 3.3\% | 8.7\% |
| Widowed | 10.2\% | 182 | 8.3\% | 12.2\% |
| Separated | 3.4\% | 10 | 0.4\% | 6.5\% |
| Never Married | 0.8\% | 38 | 0.4\% | 1.2\% |
| Unmarried Couple | 2.2\% | 12 | 0.2\% | 4.1\% |
| Less than highschool | 5.9\% | 59 | 2.9\% | 9.0\% |
| High School/GED | 4.3\% | 182 | 3.5\% | 5.2\% |
| Some College/Technical School | 4.2\% | 256 | 3.5\% | 4.9\% |
| College/Technical School Grad | 3.8\% | 275 | 3.2\% | 4.4\% |
| Employed for Wages | 1.8\% | 88 | 1.0\% | 2.6\% |
| Self Employed | 2.6\% | 29 | 1.3\% | 3.9\% |
| Out of Work | 2.4\% | 19 | 0.9\% | 3.9\% |
| Homemaker | 2.5\% | 32 | 1.2\% | 3.9\% |
| Retired | 11.2\% | 518 | 9.9\% | 12.4\% |
| Unable to Work | 11.3\% | 86 | 6.5\% | 16.1\% |
| Less than \$10,000 | 3.5\% | 28 | 1.5\% | 5.6\% |
| \$10,000 to \$14,999 | 6.3\% | 39 | 3.4\% | 9.3\% |
| \$15,000 to \$19,999 | 4.5\% | 59 | 2.7\% | 6.3\% |
| \$20,000 to \$24,999 | 5.2\% | 77 | 3.2\% | 7.1\% |
| \$25,000 to \$34,999 | 6.2\% | 86 | 3.1\% | 9.2\% |
| \$35,000 to \$49,999 | 3.8\% | 103 | 2.7\% | 4.9\% |
| \$50,000 to \$74,999 | 3.5\% | 93 | 2.5\% | 4.4\% |
| Above \$ 75,000 | 3.1\% | 141 | 2.4\% | 3.7\% |
| White Non-Hispanic | 5.3\% | 668 | 4.7\% | 5.8\% |
| Black/African American | 3.1\% | 15 | 0.9\% | 5.3\% |
| Hispanic | 3.3\% | 53 | 1.6\% | 5.0\% |
| Asian/Pacific Islander | 1.4\% | 5 | 0.1\% | 2.6\% |
| American Indian NonHispanic | 1.6\% | 16 | 0.6\% | 2.6\% |
| Other | 4.1\% | 17 | 0.9\% | 7.3\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National N is $53=$ all 50 states, DC and Territories.

## Health Conditions \& Limitations: Cardiovascular - Angina

The table to the left displays the proportions of Arizonans who reported that a health professional told them that they suffered from angina. The data are reported by age categories, marital status, educational attainment, employment status, income, and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Conditions \& Limitations: Cardiovascular - Heart Attack

Survey Question: Has a doctor, nurse, or other health professional EVER told you that you had a heart attack, also called a myocardial infarction? Possible Responses: Yes, No, or Not sure.

Cardiovascular disease remains the leading cause of death in the United States. The 2014 national vital statistics mortality data (the most current available) shows that heart disease is the leading cause of death in the U.S. There were 614,348 (23.4\%) deaths related to heart disease nationwide. It is estimated that 167.0 deaths per 100,000 were attributed to heart disease, after adjusting for age. Acute myocardial infarctions, also known as heart attacks, contributed to 114,019 deaths nationwide. ${ }^{85}$ In 2016, 4.5\% percent of Arizonans surveyed reported that a health professional told them they had a heart attack, and that was above the national median, 4.4\% (see Figure A).


Figure A: Arizona and National 2012-2016 BRFSS respondents who reported that a health care professional told them they had a heart attack.

Arizona is in the second lowest category (3.8-4.6\%) for survey respondents reporting they had a heart attack when compared to other states across the nation (see Figure B).


Figure B: BRFSS 2016 survey respondents who reported that a health care professional told them they had suffered from a heart attack (natural breaks).

[^40]In 2016, Arizona male BRFSS respondents
(5.9\%) reported having a heart attack more frequently than females (3.1\%) (See Figure C).

Respondents Who Had a Heart Attack by Gender, BRFSS 2016


Figure C: Arizona 2016 BRFSS respondents who reported that a health care professional told them they had a heart attack by Gender.

Arizona Counties, including: Yavapai, Western Region (Mohave, La Paz, and Yuma) had the highest rates of reported heart (Figure D).


Figure D: Arizona BRFSS 2016 respondents who reported that a health care professional told them they had a heart attack.

| Arizonans Who Reported a Healthcare Professional Told Them They Had a Heart Attack |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper <br> Mean |
| National | 4.4\% | 54 |  |  |
| Arizona | 4.5\% | 772 | 3.9\% | 5.1\% |
| Male | 5.9\% | 470 | 5.0\% | 6.8\% |
| Female | 3.1\% | 302 | 2.4\% | 3.9\% |
| 18-24 | 0.3\% | 1 | 0.0\% | 0.8\% |
| 25-34 | 0.3\% | 4 | 0.0\% | 0.6\% |
| 35-44 | 2.1\% | 16 | 0.2\% | 3.9\% |
| 45-54 | 3.8\% | 42 | 2.0\% | 5.7\% |
| 55-64 | 6.3\% | 144 | 4.7\% | 7.9\% |
| 65+ | 11.4\% | 565 | 10.2\% | 12.6\% |
| Married | 4.6\% | 381 | 3.9\% | 5.4\% |
| Divorced | 7.4\% | 132 | 4.7\% | 10.2\% |
| Widowed | 10.5\% | 179 | 8.3\% | 12.8\% |
| Separated | 6.2\% | 14 | 1.1\% | 11.4\% |
| Never Married | 1.6\% | 50 | 0.8\% | 2.3\% |
| Unmarried Couple | 1.6\% | 13 | 0.5\% | 2.8\% |
| Less than highschool | 7.0\% | 70 | 4.0\% | 10.0\% |
| High School/GED | 5.0\% | 210 | 4.0\% | 6.0\% |
| Some College/Technical School | 3.9\% | 255 | 3.2\% | 4.5\% |
| College/Technical School Grad | 3.4\% | 237 | 2.8\% | 4.0\% |
| Employed for Wages | 2.0\% | 98 | 1.3\% | 2.7\% |
| Self Employed | 2.2\% | 29 | 1.0\% | 3.4\% |
| Out of Work | 2.5\% | 20 | 1.1\% | 3.8\% |
| Homemaker | 1.3\% | 23 | 0.6\% | 2.0\% |
| Student | 0.7\% | 2 | 0.0\% | 1.7\% |
| Retired | 11.1\% | 494 | 9.8\% | 12.5\% |
| Unable to Work | 12.5\% | 103 | 7.6\% | 17.5\% |
| Less than \$10,000 | 5.0\% | 40 | 2.8\% | 7.2\% |
| \$10,000 to \$14,999 | 7.8\% | 56 | 4.8\% | 10.9\% |
| \$15,000 to \$19,999 | 5.4\% | 65 | 2.2\% | 8.7\% |
| \$20,000 to \$24,999 | 4.1\% | 74 | 2.6\% | 5.6\% |
| \$25,000 to \$34,999 | 5.1\% | 80 | 3.4\% | 6.7\% |
| \$35,000 to \$49,999 | 5.5\% | 114 | 3.9\% | 7.0\% |
| \$50,000 to \$74,999 | 3.3\% | 88 | 2.4\% | 4.2\% |
| Above \$ 75,000 | 2.7\% | 121 | 2.0\% | 3.3\% |
| White Non-Hispanic | 5.2\% | 647 | 4.6\% | 5.8\% |
| Black/African American | 3.8\% | 15 | 1.3\% | 6.4\% |
| Hispanic | 3.4\% | 61 | 1.8\% | 5.0\% |
| Asian/Pacific Islander | 0.9\% | 3 | 0.0\% | 2.0\% |
| American Indian NonHispanic | 3.0\% | 23 | 1.4\% | 4.7\% |
| Other | 6.9\% | 23 | 0.9\% | 12.9\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted. National $N$ is $53=$ all 50 states, DC and Territories.

## Health Conditions \& Limitations: Cardiovascular - Heart Attack

The table to the left displays the proportions of Arizonans who reported that a health professional told them that they suffered from a heart attack. The data are reported by age categories, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

## Health Conditions \& Limitations: Stroke

Survey Question: Has a doctor, nurse, or other health professional EVER told you that you had a stroke?

Strokes are medical emergencies that result when "something blocks blood supply to part of the brain or when a blood vessel in the brain bursts. In either case, parts of the brain become damaged or die. A stroke can cause lasting brain damage, longterm disability or even death." ${ }^{86}$ Strokes are the fifth leading cause of death in the U.S. in adults. ${ }^{87}$ The three main types of stroke are:

- Ischemic Stroke: an artery that supplies blood to the brain is blocked; $87 \%$ of all strokes are ischemic. ${ }^{88}$
- Hemorrhagic Stroke: an artery in the brain leaks or ruptures (breaks open), and the leaked blood puts too much pressure on brain cells, which damages them.
- Transient Ischemic Attack (TIA) ( a warning or "ministroke"): blood flow to the brain is blocked for a short period of time (< 5 minutes). ${ }^{89}$
In BRFSS 2016, 3.4\% of Arizonans surveyed reported they had suffered from a stroke, which was slightly more than the national median 3.0\% (see Figure A).


Figure A: Arizona and National 2012-2016 BRFSS respondents who reported having suffered from a stroke.

When compared to other states across the nation, Arizona (3.4\%) fell into the second highest class (3.4-4.0\%) of respondents reporting a healthcare professional had told them they had a stroke (see Figure B).

[^41]

Figure B: U.S Map of 2016 BRFSS respondents who reported a health care professional told them they had angina.

In 2016, Arizona male BRFSS respondents (3.0\%) reported having a stroke slightly more frequently than females (2.8\%) (see Figure C).


Figure C: Arizona 2016 BRFSS respondents who reported a health care professional told them they had a stroke by gender.

Arizona Counties, including: Coconino, Gila, Pinal had the highest rates of reported stroke at 5.5\%, 5.7\%, and $6.0 \%$, respectively (Figure D)


Figure D: Arizona BRFSS 2016 respondents who reported a health care professional told them they had a stroke by county.

| Arizonans Who Reported A Healthcare Professional Told Them They Had A Stroke |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Characteristic | Percent | N* | Confidence Interval |  |
|  |  |  | Lower <br> Mean | Upper <br> Mean |
| National | 3.0\% | 54 |  |  |
| Arizona | 3.4\% | 539 | 2.8\% | 3.9\% |
| Male | 3.5\% | 228 | 2.7\% | 4.3\% |
| Female | 3.3\% | 311 | 2.6\% | 4.0\% |
| 25-34 | 1.5\% | 8 | 0.0\% | 3.1\% |
| 35-44 | 2.4\% | 12 | 0.3\% | 4.5\% |
| 45-54 | 2.4\% | 42 | 1.4\% | 3.4\% |
| 55-64 | 4.4\% | 97 | 3.2\% | 5.5\% |
| 65+ | 7.6\% | 380 | 6.6\% | 8.6\% |
| Married | 3.3\% | 249 | 2.7\% | 3.9\% |
| Divorced | 5.0\% | 91 | 2.4\% | 7.6\% |
| Widowed | 6.9\% | 128 | 5.3\% | 8.5\% |
| Separated | 5.7\% | 12 | 1.6\% | 9.8\% |
| Never Married | 1.5\% | 44 | 0.8\% | 2.2\% |
| Unmarried Couple | 3.2\% | 10 | 0.0\% | 7.7\% |
| Less than highschool | 6.0\% | 52 | 3.0\% | 9.0\% |
| High School/GED | 3.2\% | 141 | 2.4\% | 3.9\% |
| Some College/Technical School | 3.3\% | 188 | 2.6\% | 4.0\% |
| College/Technical School Grad | 2.2\% | 158 | 1.7\% | 2.7\% |
| Employed for Wages | 1.3\% | 47 | 0.7\% | 1.9\% |
| Self Employed | 3.5\% | 18 | 0.0\% | 7.1\% |
| Out of Work | 2.3\% | 19 | 1.0\% | 3.6\% |
| Homemaker | 1.0\% | 17 | 0.4\% | 1.6\% |
| Retired | 7.2\% | 342 | 6.2\% | 8.2\% |
| Unable to Work | 11.8\% | 91 | 7.3\% | 16.3\% |
| Less than \$10,000 | 6.2\% | 30 | 1.3\% | 11.0\% |
| \$10,000 to \$14,999 | 5.4\% | 45 | 3.2\% | 7.7\% |
| \$15,000 to \$19,999 | 2.7\% | 44 | 1.6\% | 3.9\% |
| \$20,000 to \$24,999 | 2.9\% | 48 | 1.7\% | 4.0\% |
| \$25,000 to \$34,999 | 2.8\% | 50 | 1.8\% | 3.9\% |
| \$35,000 to \$49,999 | 5.3\% | 81 | 3.6\% | 7.1\% |
| \$50,000 to \$74,999 | 2.1\% | 63 | 1.5\% | 2.7\% |
| Above \$75,000 | 1.9\% | 54 | 1.0\% | 2.8\% |
| White Non-Hispanic | 3.8\% | 430 | 3.2\% | 4.4\% |
| Black/African American | 3.8\% | 16 | 1.5\% | 6.1\% |
| Hispanic | 2.6\% | 48 | 1.1\% | 4.2\% |
| Asian/Pacific Islander | 0.6\% | 2 | 0.0\% | 1.6\% |
| American Indian NonHispanic | 3.0\% | 14 | 0.8\% | 5.2\% |
| Other | 5.0\% | 29 | 2.4\% | 7.7\% |

Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
National N is $53=$ all 50 states, DC and Territories.

## Health Conditions \& Limitations: Stroke

The table to the left displays the proportions of Arizonans who reported that a health professional told them that they suffered from a stroke. The data are reported by sex, age, marital status, educational attainment, employment status, income and race/ethnicity.

The "Nationwide" estimates are median values across all states, not means. The "National" level estimates reported here use medians because no national stratum was defined in the 2016 BRFSS survey. Survey results at the national level were not adjusted or weighted to produce a national mean result.

Arizona BRFSS 2016 Respondent Profile

| ARIZONA 2016 RESPONDENT PROFILE |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| GROUPS | PERCENT** | N* | GROUPS | PERCENT** | N* |
| TOTAL | 100 | 10952 | EMPLOYMENT |  |  |
| SEX |  |  | Employed for wages | 44.4 | 3380 |
| Male | 49.3 | 4569 | Self-employed | 7.2 | 753 |
| Female | 50.7 | 6383 | Out of work | 5.8 | 430 |
| AGE |  |  | Homemaker | 7.6 | 692 |
| 18-24 | 13.0 | 373 | Student | 6.6 | 212 |
| 25-34 | 17.4 | 665 | Retired | 20.5 | 4614 |
| 35-44 | 16.3 | 977 | Unable to work | 7.0 | 782 |
| 45-54 | 15.9 | 1427 | INCOME |  |  |
| 55-64 | 15.6 | 2340 | <\$25,000 | 25.3 | 2420 |
| 65+ | 21.8 | 5170 | \$25,000-\$34,999 | 9.6 | 977 |
| MARITALSTATUS |  |  | \$35,000-\$49,999 | 11.7 | 1416 |
| Married | 49.6 | 5637 | \$50,000-\$74,999 | 13.0 | 1486 |
| Divorced | 11.6 | 1623 | \$75,000 or more | 23.1 | 2605 |
| Widowed | 6.9 | 1710 | RACE/ETHNICITY |  |  |
| Separated | 2.5 | 181 | White, Non-Hispanic | 60.3 | 8467 |
| Never married | 23.4 | 1398 | Black | 4.2 | 249 |
| Unmarried couple | 5.4 | 310 | Asian/ Pacific Islander | 3.1 | 130 |
| EDUCATION |  |  | American Indian | 3.7 | 508 |
| Less than High School | 14.7 | 723 | Hispanic | 26.7 | 1314 |
| High School Graduate/GED | 25.3 | 2520 | Other | 1.8 | 284 |
| Some College/Tech School | 35.1 | 3348 |  |  |  |
| College Grad | 24.4 | 4320 |  |  |  |

## Appendices

## APPENDIX A

## Healthcare Cost and Utilization

The tables and figures in Appendix A are generated from the Arizona Hospital Discharge Database. The International Classification of Diseases (ICD), published by the World Health Organization, is the standard diagnostic tool for epidemiology, health management and clinical purposes. The International Classification of Diseases Clinical Modification (ICD-CM) is the United States' clinical modification of the World Health Organization's ICD. The term clinical is used to emphasize the modification's intent: to serve as a useful tool in the area of classification of morbidity data for indexing medical records, medical care review, and ambulatory and other medical care programs, as well as the basic health statistics. ICDCM is the official system of assigning codes to diagnoses and procedures associated with hospital utilization in the United States. In this 2016 BRFSS annual report, the version used was the ICD-10-CM, $10^{\text {th }}$ revision, for which character classifications expanded to include health-related conditions and provide greater specificity. The ICD-10-CM codes refer to the time frame of January 1, 2016, through December 31, 2016, and expanded to the $6^{\text {th }}$ and $t^{h}$ character level. The estimated costs column in the tables is calculated with the Healthcare Cost and Utilization Project's dataset for 2016. The Healthcare Cost and Utilization Project (HCUP) is a family of databases, software tools and related products developed through a Federal-State-Industry partnership and sponsored by Agency for Healthcare Research and Quality (AHRQ). ${ }^{91}$ HCUP databases are derived from administrative data and contain encounter-level, clinical and nonclinical information including all-listed diagnoses and procedures, discharge status, patient demographics, and charges for all patients, regardless of payer (e.g., Medicare, Medicaid, private insurance, uninsured).

[^42]| 2016 Arizona Disease BurdenInpatient \& Emergency Department Hospital <br> Discharges |  |
| :--- | :--- |
| Disease | Estimated Costs |
| Coronary Heart Disease | $\$ 1,249,432,652$ |
| Diabetes | $\$ 1,483,405,555$ |
| Lung Disease | $\$ 921,817,249$ |
| Stroke | $\$ 450,433,544$ |
|  |  |

Table A1: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Coronary Heart Disease: I20.0, I20.8-I20.9, I25-I25.9; Diabetes: E10-E11.9; Lung Disease: J20-J21.9, J40-J44.9; Stroke: G45-G45.9, I60-I69.

| 2016 Arizona Inpatient \& Emergency Department Hospital Discharges |  |  |  |
| :--- | :---: | :---: | :---: |
| Payer Type |  | Number of Discharges | Estimated Costs | \(\left.\begin{array}{c}Average Length of Stay <br>

(Days)\end{array}\right]\)

Table A3: The 2016 hospital encounters, both inpatient and emergency department, by Payer-type.

2016 Arizona Influenza with Pneumonia Related Inpatient \& Emergency Department Hospital Discharges

| Age | Number of Discharges | Estimated Costs | Average Length of Stay <br> (Days) |
| :--- | :---: | :---: | :---: |
| $<18$ | 384 | $\$ 4,569,263$ | 4.3 |
| $18-24$ | 74 | $\$ 634,562$ | 2.5 |
| $25-39$ | 184 | $\$ 2,315,688$ | 5.5 |
| $40-54$ | 278 | $\$ 3,604,081$ | 4.3 |
| $55+$ | 2,020 | $\$ 22,117,671$ | 4.9 |
|  |  |  |  |

Table A2: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Influenza (and Influenza with Pneumonia): J09-J11.89.


Figure A1: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Influenza (and Influenza with Pneumonia): J09-J11.89.

# 2016 Arizona Trachea, Bronchus and Lung Cancer Related Inpatient \& Emergency Department Hospital Discharges 

| Payer Type | Number of <br> Discharges | Died | Estimated Costs | Average Length of <br> Stay (Days) |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Charity | 4 | 1 | $\$ 47,723$ | 2.5 |  |  |  |  |  |
| Medicaid | 520 | 30 | $\$ 8,606,583$ | 6.0 |  |  |  |  |  |
| Medicare | 4,910 | 274 | $\$ 78,357,090$ | 5.9 |  |  |  |  |  |
| Other | 188 | 26 | $\$ 2,809,338$ | 5.3 |  |  |  |  |  |
| Private Insurance | 1,753 | 129 | $\$ 29,792,159$ | 5.3 |  |  |  |  |  |
| Self-Pay $\quad$ Total | 74 | 7 | $\$ 1,254,931$ | 6.9 |  |  |  |  |  |
| $\mathbf{l}$ |  |  |  |  |  | $\mathbf{7 4 4 9}$ | $\mathbf{4 6 7}$ | $\mathbf{\$ 1 2 0 , 8 6 7 , 8 2 4}$ |  |

Table A4: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Trachea, Bronchus and Lung Cancer: C33-C34.9, C46.5-C46.52, and C78C78.2.

2016 Arizona Asthma-Related Inpatient \& Emergency Department Hospital Discharges

| Age | Number of Discharges | Estimated Costs | Average Length of Stay <br> (Days) |
| :--- | :---: | :---: | :---: |
| $<18$ | 2,943 | $\$ 18,776,059$ | 4.3 |
| $18-24$ | 2,570 | $\$ 20,037,729$ | 4.6 |
| $25-39$ | 6,524 | $\$ 59,515,982$ | 4.7 |
| $40-54$ | 6,984 | $\$ 86,829,626$ | 4.9 |
| $55+$ | 20,213 | $\$ 286,018,207$ | 4.8 |
|  | $\mathbf{3 9 , 2 3 4}$ | $\$ 471, \mathbf{1 7 7}, 602$ |  |

Table A12: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Asthma: J45 (all)

2016 Arizona Motor Vehicle Accidents Resulting in Injury Inpatient \& Emergency Department Hospital Discharges

| Age | Number of <br> Discharges | Died | Estimated Costs | Average Length of <br> Stay (Days) |
| :--- | :--- | :--- | :--- | :--- |
| $<18$ | 210 | 5 | $\$ 3,834,487$ | 4.1 |
| $18-24$ | 636 | 10 | $\$ 14,266,317$ | 5.0 |
| $25-39$ | 1,020 | 20 | $\$ 24,214,919$ | 5.8 |
| $40-54$ | 1,036 | 15 | $\$ 23,898,774$ | 6.2 |
| $55+$ | 2,195 | 77 | $\$ 49,444,247$ | 6.6 |
|  | $\mathbf{T o t a l}$ | $\mathbf{5 , 0 9 7}$ | $\mathbf{1 2 7}$ |  |

Table A5: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Motor Vehicle Accidents that resulted in injury: V00-V99.

## 2016 Arizona Distribution of Injured Persons in Types of Motor Vehicle Related Hospitalizations



Figure A2: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Motor Vehicle Accidents that resulted in injury: V00-V99.

## 2016 Arizona Alcohol \& Dependency-Related Inpatient \& Emergency Department Hospital Discharges

| Age | Number of <br> Discharges | Crash Related | Died | Estimated <br> Costs | Average <br> Length of Stay <br> (Days) |
| :--- | :---: | :---: | :---: | :---: | :--- |
| $<18$ | 569 | 22 | 1 | $\$ 3,989,752$ | 15.7 |
| $18-24$ | 1,137 | 101 | 11 | $\$ 9,925,892$ | 5.5 |
| $25-39$ | 4,465 | 260 | 54 | $\$ 45,087,019$ | 5.8 |
| $40-54$ | 7,011 | 266 | 147 | $\$ 83,489,870$ | 5.7 |
| $55+$ | 11,755 | 325 | 351 | $\$ 169,154,762$ | 6.0 |
|  | Total | $\mathbf{2 4 , 9 3 7}$ | $\mathbf{9 7 4}$ | $\mathbf{5 6 4}$ | $\$ 311,647,296$ |

Table A6: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Alcohol and Dependency: F10-F10.229 and F10.10.

| 2016 Arizona Alcohol-Related Inpatient \& Emergency Department Hospital Discharges |  |  |  |
| :---: | :---: | :---: | :---: |
| Condition | Number of Discharges | Estimated Costs | Average Length of Stay (Days) |
| Fetal Alcohol Syndrome | 55 | \$818,008 | 14.3 |
| Alcohol Poisoning | 33 | \$325,173 | 4.2 |
| Alcoholic Cardiomyopathy | 322 | \$6,552,090 | 6.9 |
| Alcoholic Polyneuropathy | 181 | \$2,360,161 | 6.2 |
| Alcohol Induced Liver Damage | 4,183 | \$61,319,812 | 5.8 |
| Total | 4,774 | \$71,375,245 |  |

Table A7: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Fetal Alcohol Syndrome: Q86.0; Alcohol Poisoning: T51.91XA, T51.92XA, T51.93XA, T51.94XA; Alcoholic Cardiomyopathy: I42.6; Alcoholic Polyneuropathy: G62.1; Alcohol Induced Liver Damage: K70.0, K70.10, K70.30, K70.9.

# 2016 Arizona Alcohol Induced Psychoses Related Hospitalizations 



Figure A3: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Alcohol Induced Psychoses: F10-F10.229 and F10.10.

2016 Arizona Diabetes Related Inpatient \& Emergency Department Hospital Discharges

| Payer Type | Number of Discharges | Estimated Costs | Average Length of Stay <br> (Days) |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Charity | 118 | $\$ 1,754,403$ | 6.8 |  |  |  |  |
| Medicaid | 23,246 | $\$ 328,916,536$ | 5.6 |  |  |  |  |
| Medicare | 124,292 | $\$ 1,947,035,088$ | 5.6 |  |  |  |  |
| Other | 4,994 | $\$ 87,580,067$ | 5.3 |  |  |  |  |
| Private Insurance | 35,384 | $\$ 561,049,135$ | 5.1 |  |  |  |  |
| Self-Pay | 3,976 | $\$ 42,040,185$ | 6.0 |  |  |  |  |
| Total |  |  |  |  | $\mathbf{1 9 2 , 0 1 0}$ | $\mathbf{\$ 2 , 9 6 8 , 3 7 5 , 4 1 4}$ |  |

Table A8: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Diabetes: E10-E10.9 and E11-E11.9.


Figure A4: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Diabetes Type I: E10-E10.9; Diabetes Type II: E11-E11.9.

2016 Arizona Heart Attack Related Inpatient \& Emergency Department Hospital Discharges

| Payer Type | Number of Discharges | Died | Estimated Costs | Average Length of Stay (Days) |
| :---: | :---: | :---: | :---: | :---: |
| Charity | 14 | 2 | \$329,918 | 4.1 |
| Medicaid | 963 | 62 | \$24,865,222 | 5.6 |
| Medicare | 8,823 | 781 | \$206,514,169 | 6.0 |
| Other | 369 | 34 | \$10,480,391 | 6.1 |
| Private Insurance | 2,665 | 139 | \$68,130,135 | 4.8 |
| Self-Pay | 267 | 32 | \$5,718,104 | 3.8 |
| Total | 13,101 | 1,050 | \$316,037,939 |  |

Table A9: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Heart Attack: I21-I21.4, I22-I22.9, I23-I23.8.

## 2016 Arizona Heart Attack Hospitalizations by Episode Type



Figure A5: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Heart Attack Episode type. For Initial Episode: I21.0, I21.01, I21.02, I21.09, I21.1, I21.11, I21.19, I21.2, I21.21, I21.29, I21.3; Subsequent Episode: I21.4, I22, I22.0, I22.1, I22.2, I22.8, I22.9; Unspecified Episode: I23.0, I23.1, I23.2, I23.3, I23.4, I23.5, I23.6, I23.7, I23.8.

2016 Arizona Angina Related Inpatient \& Emergency Department Hospital Discharges

| Payer Type | Number of Discharges | Estimated Costs | Average Length of Stay <br> (Days) |
| :--- | :---: | :---: | :---: |
| Charity | 1 | $\$ 6,387$ | 3.0 |
| Medicaid | 62 | $\$ 625,027$ | 4.2 |
| Medicare | 320 | $\$ 4,867,052$ | 4.5 |
| Other | 12 | $\$ 134,968$ | 2.5 |
| Private Insurance | 137 | $\$ 2,040,185$ | 3.4 |
| Self-Pay | 19 | $\$ 122,886$ | 3.1 |
| Total |  |  |  |

Table A11: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Angina: I20-I20.9.


Figure A6: In 2016 the hospital encounters, both inpatient and emergency department, contained the following ICD-10 codes for Stroke. For Ischemic Stroke: I63.22, I63.019, I63.119, I63.219, I63.59, I63.20, I63.30, I63.40, I63.50; For Hemorrhage Stroke: I60.9, I61.9, I62.1, I62.00, I62.9.

## Appendix B: BRFSS Resources \& Associated Documentation

All documents for the 2016 BRFSS Survey listed below can be located on the Arizona Department of Health Services Website here: http://azdhs.gov/preparedness/public-health-statistics/behavioral-risk-factorsurveillance/index.php. Information for past years is also available.

- Arizona BRFSS Questionnaire, 2016
- Arizona BRFSS Landline and Cell Phone Codebook Report, 2016
- Arizona BRFSS Calculated Variable Data Comparison Report, 2016
- Arizona BRFSS Core Variable Report, 2016
- Arizona BRFSS Module Questions Data Report, 2016
- Arizona BRFSS Data Set, 2016


## Appendix C: Risk Factors/Chronic Disease Glossary

## Arthritis Burden

## Alcohol Consumption

All-Cause Mortality

Asthma

Binge Drinking

## Cardiovascular Disease

## Cancer

## Cancer

While the word arthritis is used by clinicians to specifically mean joint inflammation, it is used in public health to refer more generally to more than 100 rheumatic diseases and conditions that affect joints, the tissues which surround the joint, and other connective tissue. The pattern, severity, and location of symptoms can vary. http://www.cdc.gov/arthritis/basics/general.htm

According to the Dietary Guidelines for Americans, moderate alcohol consumption is defined as having up to one drink per day for women and up to two drinks per day for men. This definition is referring to the amount consumed on any single day and is not intended as an average over several days. http://www.cdc.gov/alcohol/faqs.htm\#whatAlcohol

All-cause mortality is a term used by epidemiologists, or disease-tracking scientists, to refer to death from any cause.

The National Heart, Lung, and Blood Institute defines asthma as "...a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role, in particular, mast cells, eosinophil, T lymphocytes, airway macrophages, neutrophils, and epithelial cells. In susceptible individuals, this inflammation causes recurrent episodes of wheezing, breathlessness, chest tightness and coughing, particularly at night or in the early morning. These episodes are usually associated with widespread but variable airflow obstruction that is often reversible, either spontaneously or with treatment. The inflammation also causes an associated increase in the existing bronchial hyper-responsiveness to a variety of stimuli" (NHLBI 2003). http://www.atsdr.cdc.gov/csem/astham/docs/asthma.pdf

Respondents who reported having five or more drinks on an occasion, one or more times in the past month.

Respondents who reported a doctor told them they had a heart attack, angina or stroke. Coronary artery disease can cause a heart attack. If you have a heart attack, you are more likely to survive if you know the signs and symptoms, call 9-1-1 right away, and get to a hospital quickly. People who have had a heart attack can also reduce the risk of future heart attacks or strokes by making lifestyle changes and taking medication. http://www.cdc.gov/heartdisease/

Respondents who reported having been told by a doctor, nurse, or other health care professional that they had cancer. In addition, cancer survivors reported on the type of cancer they had and if they were in clinical trials. For more than 30 years, excess weight, lack of physical activity, and an unhealthy diet have been considered second only to tobacco use as preventable causes of disease and death in the United States. Since the 1960s, tobacco use has decreased by a third while obesity rates have doubled.
http://www.cdc.gov/Features/dsCancerAnnualReport/
The special feature section explains how being overweight and not getting enough physical activity increase cancer risk. The following six cancers are associated with being overweight or obese:

- Breast Cancer among postmenopausal women
- Colorectal Cancer
- Endometrial Cancer
- Esophageal Adenocarcinoma
- Kidney Cancer
- Pancreatic Cancer

| Chronic Obstructive Pulmonary <br> Disease (COPD) <br> time). | One of the most common lung diseases. There are two main forms of COPD—Chronic Bronchitis <br> (long-term cough with mucus), and emphysema (involves the destruction of the lungs over <br> Most people have a combination of the two forms. <br> http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001153/ |
| :---: | :---: |
| Current Smoking | Respondents who reported smoking at least 100 cigarettes during their lifetime and who smoke now (regularly or irregularly). |
| Diabetes | Respondents who reported a doctor them they had diabetes. Diabetes is a serious disease that affects almost every part of your body and can shorten your life. <br> Some complications with diabetes are kidney disease, heart disease, stroke, eye disease, and having to have a leg or foot amputated. If you already have diabetes, you can still do a lot to keep from getting complications from diabetes. http://www.cdc.gov/Features/LivingWithDiabetes/ |
| Disability | Is a secondary condition and can include pain, depression, and a greater risk for certain illnesses. To be healthy, people with disabilities require health care that meets their needs as a whole person not just as a person with a disability. <br> http://www.cdc.gov/ncbddd/disabilityandhealth/healthyliving.html |
| Influenza Vaccination | Respondents 65 years or older who reported not receiving a flu shot in the past 12 months. Influenza illness can include any or all of these symptoms: fever, muscle aches, headache, lack of energy, dry cough, sore throat, and possibly a runny nose. <br> http://www.cdc.gov/flu/professionals/diagnosis/labrolesprocedures.htm |
| Immunization | Immunizations work by stimulating the immune system, the natural disease fighting system of the body. |
| Folic Acid Awareness | Female respondents 18 to 44 years of age reported a reason other than preventing birth defects as the reason experts recommend that women take folic acid. Folic acid is a B vitamin. If a woman has enough folic acid in her body before and during pregnancy, it can help prevent major birth defects of the baby's brain and spine. Women need 400 micrograms ( mcg ) of folic acid every day. |
| Fruits/Vegetables | Respondents who reported that they consumed fewer than five servings of fruits and vegetables daily. To increase fruit and vegetable consumption of community members, it is important to improve access to, and increase the availability of high quality, affordable fruits and vegetables. A diet high in fruits and vegetables can reduce the risk for many leading causes of death and can play an important role in weight management. <br> http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5935a1.htm |
| HCUP | Healthcare Cost https://hcup-us.ahrq.gov |
| Heart Attack | The death of heart muscle due to the loss of blood supply. The loss of blood supply is usually caused by a complete blockage of a coronary artery, one of the arteries that supplies blood to the heart muscle. Death of the heart muscle, in turn, causes chest pain and electrical instability of the heart muscle tissue. http://www.medterms.com/script/main/art.asp?articlekey=3669 |
|  | Respondents who reported that they did not have health care coverage. |

## Hypertension Awareness

## Heavy Drinking

## HIV/AIDS

## Limited Activities

No Leisure-Time Activity

Pre-Diabetes

Pre-conception Health

## Respondent

## Seat belt Use

## Special needs population

## Stroke

Hypertension, also known as high blood pressure, affects one out of every three American adults. But more than half don't have their blood pressure under control. Left untreated, high blood pressure raises your risk for heart disease, stroke, kidney failure, and other conditions. Prevention is your best defense, but lifestyle changes and medications can help get your blood pressure numbers to a healthy level.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6040a1.htm

Adult men having more than two drinks per day and adult women having more than one drink per day. Excessive drinking, either in the form of heavy drinking or binge drinking, is associated with numerous health problems, including chronic diseases such as liver cirrhosis (damage to liver cells), pancreatitis (inflammation of the pancreas), various cancers, including liver, mouth, throat, larynx (the voice box), esophagus, high blood pressure, and psychological disorders. Heavy drinking can cause unintentional injuries, such as motor-vehicle traffic crashes, falls, drowning, burns, and firearm injuries. It also can cause violence, such as child maltreatment, homicide, and suicide.

HIV is the human immunodeficiency virus. It is the virus that can lead to acquired immune deficiency syndrome, or AIDS. http://www.cdc.gov/hiv/topics/basic/index.htm

Respondents who reported they were limited in any activities due to any impairment or health problems.

Respondents who reported that they did not participate in physical activity in the past month outside of normal work-related activities.

The condition of having a hereditary tendency or high probability for developing diabetes mellitus, although neither symptoms nor test results confirms the presence of the disease. http://dictionary.reference.com/browse/prediabetes?s=t

Pre-conception care and interventions are designed to reduce perinatal risk factors and, for optimal effectiveness, must be successfully implemented before the start of pregnancy. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1592248/

Arizona residents 18 years of age or older. In some cases various subset(s) of this group may be used.

Respondents who reported that they "sometimes" or "seldom" or "never" wear seat belts when driving or riding in a car.

Populations whose members may have additional needs before, during and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision and medical care. Individuals in need of additional response assistance may include those who have disabilities; who live in institutionalized settings; who are elderly; who are children; who are from diverse cultures; who have limited English proficiency or are non-English speaking; or who are transportation-disadvantaged.

Stoppage of blood flow to the brain due to a sudden blockage or rupture of a blood vessel in the brain resulting in the loss of consciousness, partial loss of movement, or loss of speech. http://www.bing.com/Dictionary/search?q=define+stroke\&qpvt=DEFINE+STRO KE\&FORM=DTPDIA

Smoking causes cancer, heart disease, stroke, and lung diseases (including emphysema, bronchitis and chronic airway obstruction). For every person who dies from a smoking-related disease, 20 more people suffer with at least one serious illness from smoking.

Centers for Disease Control and Prevention. Cigarette Smoking-Attributable Morbidity United States, 2000. Morbidity and Mortality Weekly Report 2003; 52 (35):842-4 [accessed 2012 Jun 7]

## Appendix D: Behavioral Risk Factor Surveillance System Methods

- Behavioral Risk Factor Surveillance System, OVERVIEW: BRFSS 2016
https://www.cdc.gov/brfss/annual data/2016/pdf/overview 2016.pdf
- Behavioral Risk Factor Surveillance System, Comparability of Data BRFSS 2016
https://www.cdc.gov/brfss/annual data/2016/pdf/compare 2016.pdf


## Appendix E: Disclaimer for 2016

Due to significant changes in the BRFSS methodology as described above, Arizona's BRFSS estimates for 2011, 2012, 2013, 2014, 2015, and 2016 data SHOULD NOT be compared to estimates provided from previous years. Thus, Arizona's 2011 through 2016 data present a new baseline for Arizona BRFSS survey results. The new methodology changes will cause breaks in the BRFSS trends, but going forward, it will also greatly improve the accuracy, coverage, validity, and repetitiveness of the Arizona BRFSS. Additional information regarding the new BRFSS METHODS is available at:
http://www.cdc.gov/brfss/annual data/2011/2011 weighting.htm


[^0]:    ${ }^{1}$ (Rainie, Lee, Pew Research Center’s Internet \& American Life Project) Washington, D.C., 2002-2016, Web accessed: 3/9/2017 http://www.pewinternet.org/chart/mobile-phone-ownership/

[^1]:    ${ }^{2}$ Ware, J.E., \& Sherbourne, C.D. (1992). "Medical Outcomes Study: 36-Item Short Form Survey Instrument." Conceptual Framework and Item Selection Medical Care, 30(6), 473-483. Retrieved Web. 12 Sept. 2013. http://www.jstor.org/stable/3765916
    ${ }^{3}$ Centers for Disease Control and Prevention. Measuring Healthy Days. Atlanta, Georgia: CDC, November 2000. (http://www.cdc.gov/hrgol/methods.htm)

[^2]:    ${ }^{4}$ Mossey JM, Shapiro E. Self-rated health: a predictor of mortality among the elderly. AM J Public Health 1982 Aug;72(8): 800-8. PMID: 7091475
    ${ }^{5}$ Estwing C., Ferrans. 2-Definitions and conceptual models of quality of life. In: Gotay C., et al. Outcomes Assessment in Cancer. Cambridge University Press; 2009: 14-30.
    ${ }^{6}$ DeSalvo KB, Bloser N, Reynolds K, He J, Muntner P. Mortality Prediction with a Single General Self-Rated Health Question: A Meta-Analysis. Journal of General Internal Medicine. 2006;21(3):267-275. doi:10.1111/j.1525-1497.2005.00291.x.
    ${ }^{7}$ Latham K., Peek CW. Self-rated health and morbidity onset among late midlife U.S. adults. J. Gerontol B Psychol Sci Soc Sci. 2013 Jan;68(1): 107-16: PMID: 23197340
    ${ }^{8}$ Idler E, Benyamini Y. Self-rated Health and Mortality: a Review of Twenty-Seven Community Studies. J Health Soc Behav. 1997; 38(1): 21-37.

[^3]:    ${ }^{9}$ Chapman DP, Perry GS, Strine TW. The vital link between chronic disease and depressive disorders. Prev Chronic Dis. 2005 Jan; 2(1):A14. Epub 2004 Dec 15.
    ${ }^{10}$ Al-Nsour M, Zindah M, Belbeisi et al. Frequent Mental Distress, Chronic Conditions, and Adverse Health Behaviors in the Behavioral Risk Factor Surveillance Survey, Jordan, 2007. Prev Chronic Dis 2013; 10:130030.

[^4]:    ${ }^{11}$ Ford ES, Moriarty DG, Zack MM, Mokdad AH, Chapman DP. Self-reported body mass index and health related quality of life: findings from the Behavioral Risk Factor Surveillance System. Obes Res. 2001 Jan;9(1):21-31.
    ${ }^{12}$ Ahluwalia IB, Mack KA, Mokdad A. Mental and physical distress and high-risk behaviors among reproductive-age women. Obstet Gynecol. 2004 Sep;104(3):477-83.

[^5]:    ${ }^{13}$ Umberson D, Montez JK. Social Relationships and Health: A Flashpoint for Health Policy. Journal of health and social behavior. 2010;51(Suppl):S54-S66. doi:10.1177/0022146510383501

[^6]:    ${ }^{17}$ Bodenheimer T. Willard-Grace R. Teamlets in Primary Care: Enhancing the Patient and Clinical Experience. J Am Board of Fam Med. 2006 Jan-Feb: 29(1): 135-138. doi: 10.3122/ jabfm . 2016.01.150176

[^7]:    ${ }^{14}$ "Regular Checks- Are Important." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, n.d. Web. 08 Oct. 2013. http://www.cdc.gov/family/checkup/.
    ${ }^{15}$ Physical Exam Frequency: MedlinePlus Medical Encyclopedia." U.S National Library of Medicine. U.S. National Library of Medicine, n.d. Web. 08 Oct. 2013.
    http://www.nlm.nih.gov/medlineplus/ency/article/002125.htm.
    ${ }^{16}$ Bodenheimer T. Willard-Grace R. Teamlets in Primary Care: Enhancing the Patient and Clinical Experience. J Am Board of Fam Med. 2006 Jan-Feb: 29(1): 135-138. doi: 10.3122/ jabfm . 2016.01.150176

[^8]:    ${ }^{18}$ Centers for Disease Control and Prevention. "Key Facts About Seasonal Flu Vaccine." CDC, 07 Nov. 2013. Web. 12 Feb. 2014. [http://www.cdc.gov/flu/protect/keyfacts.htm](http://www.cdc.gov/flu/protect/keyfacts.htm).
    ${ }^{19}$ Rothberg, MB and Rose, DN. Am J Med. 2005 Jan; 118(1):68-77. Accessed 15 March 2017
    [https://www.ncbi.nlm.nih.gov/pubmed/15639212](https://www.ncbi.nlm.nih.gov/pubmed/15639212).
    ${ }^{20}$ Nichol, K. The efficacy, effectiveness and cost-effectiveness of inactivated influenza virus vaccines. Vaccine 21 (2003) 1769-1775
    ${ }^{21}$ Centers for Disease Control and Prevention. "Summary of the 2015-2016 Influenza Season." CDC, 27 Sept. 2016. Web. 27 Mar. 2017. [https://www.cdc.gov/flu/about/season/flu-season-2015-2016.htm](https://www.cdc.gov/flu/about/season/flu-season-2015-2016.htm).

[^9]:    ${ }^{22}$ Haggar FA, Boushey RP. Colorectal Cancer Epidemiology: Incidence, Mortality, Survival, and Risk Factors. Clinics in Colon and Rectal Surgery. 2009;22(4):191-197. doi:10.1055/s-00291242458.
    ${ }^{23}$ Mayo Clinic. "Diseases and Conditions Colon Polyps." N.p., n.d. Web. 15 Jan. 2014.
    [http://www.mayoclinic.org/diseases-conditions/colon-polyps/basics/definition/con-20031957](http://www.mayoclinic.org/diseases-conditions/colon-polyps/basics/definition/con-20031957)
    ${ }^{24}$ U.S. Preventive Services Task Force. "Screening for Colorectal Cancer." : U.S. Preventive Services Task Force Recommendation Statement. N.p., n.d. Web. 17 Jan. 2014.
    [http://www.uspreventiveservicestaskforce.org/uspstf08/colocancer/colors.htm](http://www.uspreventiveservicestaskforce.org/uspstf08/colocancer/colors.htm).

[^10]:    ${ }^{25}$ Haggar FA, Boushey RP. Colorectal Cancer Epidemiology: Incidence, Mortality, Survival, and Risk Factors. Clinics in Colon and Rectal Surgery. Nutritional Practices, Physical Activity and Obesity, Cigarette Smoking, Heavy Alcohol Consumption 2009;22(4):191-197. doi:10.1055/s-0029-
    1242458.

[^11]:    ${ }^{26}$ U.S. Preventive Services Task Force. "Screening for Colorectal Cancer." : U.S. Preventive Services Task Force Recommendation Statement. N.p., n.d. Web. 17 Jan. 2014.
    [http://www.uspreventiveservicestaskforce.org/uspstf08/colocancer/colors.htm](http://www.uspreventiveservicestaskforce.org/uspstf08/colocancer/colors.htm).
    ${ }^{27}$ Singh H, et al. The reduction in colorectal cancer mortality after colonoscopy varies by site of the
    cancer. Gastroenterology. 2010 Oct;139(4):1128-37. doi: 10.1053/j.gastro.2010.06.052.
    ${ }^{28}$ Schoen RE, Pinsky PF, Weissfeld JL, et al. Colorectal-Cancer Incidence and Mortality with Screening Flexible Sigmoidoscopy. The New England journal of medicine. 2012;366(25):23452357. doi:10.1056/NEJMoa111 4635.

[^12]:    ${ }^{29}$ Web: 14 January 2014 (https://www.azdhs.gov/prevention/womens-childrens-health/womens-health/index.php\#preconception-home)
    ${ }^{30}$ Mumford SL, Michels KA, Salaria N, Valanzasca P, Belizán JM. Preconception care: it's never too early Reproductive Health. 2014;11:73. doi:10.1186/1742-4755-11-73.
    ${ }_{31}^{31}$ (Kathryn M. Curtis \& Curtis, PhD, 2013) Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion Center for Chronic Disease Prevention and Health Promotion;Finer LB, Zolna MR. Unintended pregnancy in the United States: incidence and disparities, 2006. Contraception 2011;84:478-85.

[^13]:    ${ }^{32}$ Bello JK et al. Trends in Contraceptive and Preconception Care in United States Ambulatory Practices. Fam Med. 2015;47(4):264-271.
    ${ }^{33}$ Steel A, Lucke J, Adams J. The prevalence and nature of the use of preconception services by women with chronic health conditions: an integrative review. BMC Women's Health. 2015;15:14. doi:10.1186/s12905-015-0165-6.
    ${ }^{34}$ Steel A, Lucke J, Adams J. The prevalence and nature of the use of preconception services by women with chronic health conditions: an integrative review. BMC Women's Health. 2015;15:14. doi:10.1186/s12905-015-0165-6.

[^14]:    ${ }^{35}$ Recommendations of the U.S. Preventive Services Task Force: Abstract (Guide to Clinical Preventive Services). September 2010. Agency for Healthcare Research and Quality, Rockville, MD.
    ${ }^{36}$ "American Cancer Society Guidelines for the Early Detection of Cancer." American Cancer Society Guidelines for the Early Detection of Cancer. N.p., n.d. Web. 07 Nov. 2013. <cancer. org>
    ${ }^{37}$ NCBI. U.S. National Library of Medicine, n.d. Web. 07 Nov. 2013.
    [http://www.ncbi.nlm.nih.gov/](http://www.ncbi.nlm.nih.gov/).

[^15]:    ${ }^{38}$ "State Cancer Profiles: Arizona." Quick Profiles: Arizona. National Cancer Institute, n.d. Web. 10 Dec. 2016. <https://statecancerprofiles.cancer.gov/quickprofiles/
    index.php?statename=arizona\#t=2>

[^16]:    ${ }^{39}$ Thomas E. Rohan and Keerti V. Shah, Cervical Cancer: From Etiology to Prevention (SpringerScience+Business Media, B.V., 2014), 212.
    ${ }^{40}$ U.S. Department of Health \& Human Services. Center for Disease Control and Prevention.
    "Gynecologic Cancers: Reduce my risk of cervical cancer". Nov 172016.

[^17]:    ${ }^{41}$ Final Update Summary: Cervical Cancer: Screening. U.S. Preventive Services Task Force September 2016.
    https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/cervicalcancerscreening

[^18]:    ${ }^{42}$ Recommendations of the U.S. Preventive Services Task Force: Abstract (Guide to Clinical Preventive Services). September 2010. Agency for Healthcare Research and Quality, Rockville, MD.
    ${ }^{43}$ "Detection of Prostate Cancer: American Urological Association." Detection of Prostate Cancer: American Urological Association. N.p., n.d. Web. 23 Oct. 2013. [http://www.auanet.org/](http://www.auanet.org/)
    ${ }^{44}$ Ehdaie B, Vertosick E, Spaliviero M, et al. The Impact of Repeat Biopsies on Infectious Complications in Men with Prostate Cancer on Active Surveillance. J Urol. 2013 Sep 6. pii: S0022-5347(13)

[^19]:    ${ }^{46}$ Wagstaff, Adam. (2002). Poverty and health sector inequalities. Bulletin of the World Health
    Organization, 80(2), 97-105. Retrieved March 29, 2016, from
    http://www.scielosp.org/scielo.php?script=sci arttext\&pid=S0042-
    96862002000200004\&Ing=en\&tIng=en.
    ${ }^{47}$ Federal Register, Vol. 78, No. 16, January 24, 2013, pp. 5182-5183. Web. Dec. 2013. "The poverty guidelines updated periodically in the Federal Register by the U.S. Department of Health and Human Services under the authority of 42 U.S.C. 9902(2)" http://aspe.hhs.gov/2013-povertyguidelines.html

[^20]:    ${ }^{48} \mathrm{Nat}^{\prime}$ I Fed'n of Indep. Bus. v. Sebelius, 567 U.S. 132 , S. Ct. 2566, 2608 (2012).
    ${ }^{49}$ Nat'I Fed'n of Indep. Bus. v. Sebelius, 567 U.S. 132 , S. Ct. 2566, 2608 (2012).

[^21]:    ${ }^{51}$ Weiner, S. (2001), "I Can't Afford That!". Journal of General Internal Medicine, 16: 412-418. doi: 10.1046/j.1525-1497.2001.016006412.x

[^22]:    ${ }^{52}$ Cohen, R., and Kirzinger, W. (2014, Jan.). Financial Burden of Medical Care: A Family Perspective. NCHS Data Brief No. 142. Washington: U.S. Department of Health and Human Services.

[^23]:    ${ }^{53}$ IOM (Institute of Medicine) Washington, D.C: National Academy Press; 2001. Crossing the Quality Chasm: A New Health System for the 21st Century.
    54 "Choosing a Primary Care Provider" Medline Plus. U.S. National Library of Medicine, 12 Aug. 2011. Web. 26 Feb. 2014. http://www.nlm.nih.gov/medlineplus/ency/article/001939.htm>

[^24]:    ${ }^{55}$ Centers for Disease Control. "Adult Seat Belt Use." CDC Vital Signs.CDC, 04 Jan. 2011. Web. 26 Feb. 2014. [http://www.cdc.gov/vitalsigns/SeatBeltUse/](http://www.cdc.gov/vitalsigns/SeatBeltUse/).

    56 "Governors Highway Safety Association. Seat Belt Laws.
    [http://www.ghsa.org/html/stateinfo/laws/seatbeltlaws.html](http://www.ghsa.org/html/stateinfo/laws/seatbeltlaws.html) Pub 2015. Accessed December 10, 2015.

[^25]:    ${ }^{59}$ U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015-2020 Dietary Guidelines for Americans. 8th Edition, Washington, DC; 2015.
    ${ }^{60}$ U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2010. 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010.

[^26]:    ${ }^{61}$ Bouchery EE，Harwood HJ，Sacks JJ，Simon CJ，Brewer RD．Economic costs of excessive alcohol
    consumption in the United States，2006．External Web Site Icon．Am J Prev Med 2011；41：516－24．

[^27]:    ${ }^{62}$ American College of Sports Medicine. Acsm American Fitness Index ${ }^{\text {TM }}$ Health and Community Fitness Status of the 50 Largest Metropolitan Areas 2011 Edition. Accessed 2/1/2013.
    ${ }_{63}$ http://www.americanfitnessindex.org/docs/reports/2011_afi_report_final.pdf
    ${ }^{63}$ U.S. Department of Health and Human Services. Center for Disease Control and Prevention, The Burden of Chronic Diseases and Their Risk Factors: National and State Perspectives. CDC.2004. ${ }^{64}$ Katz S. Branch LG, Branson MH., et al., Active Life Expectancy. N Engl J Med. 1983; 309: 1218-1224

[^28]:    ${ }^{65}$ Draft Update Summary: Folic Acid for the Prevention of Neural Tube Defects: Preventive Medication U.S. Preventive Services Task Force. October 2014.
    ${ }^{66}$ Division of Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention. Birth Defects. Data \& Statistics. http://www.cdc.gov/ncbddd/birthdefects/data.html

[^29]:    ${ }^{67}$ Decline in the Prevalence of Spina Bifida and Anencephaly by Race/Ethnicity: Laura J. Williams, Sonja A. Rasmussen, Alina Flores, Russell S. Kirby, Larry D. Edmonds. Pediatrics Sep 2005, 116(3)580-586; doi: 10.1542/peds.2005-0592.

[^30]:    ${ }^{68}$ Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of obesity among adults and youth: United States, 2011-2014. NCHS data brief, no 219. Hyattsville, MD: National Center for Health Statistics. 2015.
    ${ }^{69}$ Trust for America's Health. Reports, Fast in Fat: How Obesity Threatens America's Future 2012. Published Sep 2012. Accessed Sep 2013. http://healthyamericans.org/report/100/.
    ${ }^{70}$ CDC. State-specific prevalence of obesity among adults---United States, 2009. MMWR 2010;59(30);951-955
    ${ }^{71}$ Hendrickson D., Smith C., Eikenberry N. Fruit and vegetable access in four low-income food deserts communities in Minnesota. Agric. Hum. Values. 2006;23:371-383. doi:10.1007/s10460-006-9002-8.

[^31]:    ${ }^{72}$ Centers for Disease Control and Prevention. "At a Glance 2016: Diabetes" 2016. Accessed Mar 23,
    2017. [https://www.cdc.gov/chronicdisease/resources/publications/aag/pdf/2016/diabetes-aag.pdf](https://www.cdc.gov/chronicdisease/resources/publications/aag/pdf/2016/diabetes-aag.pdf)
    ${ }^{73}$ Kochanek KD, Murphy SL, Xu JQ,Tejada-Vera B. Deaths: Final data for 2014. National vital statistics reports; vol 65 no 4. Hyattsville, MD: National Center for Health Statistics. 2016.
    ${ }^{74}$ U.S. National Library of Medicine. Literature. Gestational Diabetes.
    http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001898/

[^32]:    ${ }^{75}$ Xie X, Liu Q, Wu J, Wakuie M. Impact of cigarette smoking in type 2 diabetes development. Acta Pharmacol Sin. 2009. doi: 10.1038/aps.2009.49
    ${ }^{76}$ Rohit N Kulkarni. The islet beta-cell. Int J Biochem Cell Biol. 2004 Mar;36(3):365-71. doi; 10.1016/j.biocel.2003.08.010.

[^33]:    ${ }^{77}$ Cayley WE Jr. Use of inhaled corticosteroids to treat stable COPD. Am Fam Physician. 2008 Jun 1;77(11):1532-3.
    ${ }^{78}$ National Clinic Guideline Centre (UK). Management of Chronic Obstructive Pulmonary Disease in Adults in Primary and Secondary Care. London: Royal College of Physicians (UK); 2010 Jun.

[^34]:    Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.
    National N is $53=$ all 50 states, DC and Territories.

[^35]:    ${ }^{79}$ National Asthma Education and Prevention Program, Third Expert Panel on the Diagnosis and Management of Asthma. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma. Bethesda (MD): National Heart, Lung, and Blood Institute (US); 2007Aug. Available from: http://www.ncbi.nlm.nih.gov/books/NBK7232/

[^36]:    ${ }^{80}$ EPA. President's Task Force on Environmental Health Risks and Safety Risks to Children: Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities. May 2012.
    https://www.epa.gov/sites/production/files/2014-
    08/documents/federal asthma disparities action plan.pdf

[^37]:    Use caution in interpreting cell sizes less than $50 . \mathrm{N}^{*}$ is unweighted.

[^38]:    ${ }^{81}$ National Institutes of Health. National Heart, Lung, and Blood Institute. Explore Coronary Heart Disease: What is Coronary Heart Disease? Updated Oct 23, 2015
    https://www.nhlbi.nih.gov/health/health-topics/topics/cad/
    ${ }^{82}$ National Institutes of Health. National Heart, Lung, and Blood Institute. Explore Coronary Heart Disease: What is Coronary Heart Disease? Updated Oct 23, 2015.
    https://www.nhlbi.nih.gov/health/health-topics/topics/cad/
    ${ }^{83}$ MayoClinic.org. Diseases and Conditions: Small vessel disease. Accessed Jan 20, 2013. http://www.mayoclinic.org/diseases-conditions/small-vessel-disease/home/ovc-20198376

[^39]:    ${ }^{84}$ National Institutes of Health. National Heart, Lung, and Blood Institute. Health Topics: What is Atherosclerosis? Updated Aug 22, 2015. https://www.nhlbi.nih.gov/health/health
    topics/topics/atherosclerosis/MayoClinic.org. Diseases and Conditions: Small vessel disease. Accessed Jan 20, 2013. http://www.mayoclinic.org/diseases-conditions/small-vessel-disease/home/ovc-20198376

[^40]:    ${ }^{85}$ Kochanek, KD, Murphy, SL, Xu, JQ. Tejada-Vera, B. Deaths: Final data for 2014. National Vital Statistics
    Reports; vol 65 no 4. Hyattsville, MD: National Center for Health Statistics. 2016.

[^41]:    ${ }^{86}$ National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention. CDC: Stroke. Updated Dec 28, 2016.http://www.cdc.gov/stroke/types_of_stroke.htm
    ${ }^{87}$ K ochanek, KD, Murphy, SL, Xu, JQ. Tejada-Vera, B. Deaths: Final data for 2014. National Vital Statistics Reports; vol 65 no 4. Hyattsville, MD: National Center for Health Statistics. 2016.
    ${ }^{88}$ Mozzafarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, et al., on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics-2016 update: a report from the American Heart Association. Circulation 2016;133(4):e38-360 ${ }^{89}$ National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and StrokePrevention. CDC: Stroke. Updated Jan 26, 2017. https://www.cdc.gov/stroke/types_of_stroke.htm\#ischemic

[^42]:    ${ }^{90}$ International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM).(2015) Retrieved August 18, 2017 from http://www.cdc.gov/nchs/icd/icd10cm.htm
    ${ }^{91}$ Hart, A. C. (2014). ICD-10-CM for hospitals and payers, volumes 1, 2, 3: 2016 expert: International classification of diseases, 10th revision; clinical modification, sixth edition. Eden Prairie, MN: OptumInsight.

