



Coronary Heart Disease, Myocardial Infarction, and Stroke — A Public Health Issue

Adults are living longer, and diseases of the heart and circulatory vessels are prevalent in this growing population of older adults.¹ Comorbid conditions along with cognition, sleep, physical balance and strength are factors that affect a person's ability to function well and make disease management for people with coronary heart disease more challenging.^{1,2} Maintaining functional abilities is critical for older adults from the perspective of overall health status, heart health, and chronic disease management.^{1,2} Physical activity is key to preserving functional capacity and reducing frailty, which occurs more frequently in people with heart disease.^{1,2} High blood pressure is an under-recognized contributing factor to premature disability and institutionalization and also key to preserving functional capacity.³

Physical activity is important for maintaining heart muscle, vessel elasticity, reducing blood pressure levels

and improving physical balance and strength.¹ It is foundational to chronic disease management programs and cardiac or stroke rehabilitation plans for improved mobility, flexibility and muscle strengthening.^{1,2}

High blood pressure is a risk factor for coronary heart disease, myocardial infarction and stroke and is very common in older adults.³ It is a leading cause of preventable illness and death.³ Controlling high blood pressure is shown to reduce the risk of fatal myocardial infarctions and strokes.³

Lowering blood pressure can be done safely with an established, monitored medication regime, physical activity and reduced sodium/salt intake.³ Treating high blood pressure in older adults is a challenge due to other comorbid conditions, frailty, cognitive impairment and multiple medication use.³

Coronary heart disease develops when major blood vessels supplying the heart with blood, oxygen and nutrients become damaged or blocked due to plaque build-up that limits blood flow.⁴ Angina, a symptom of coronary heart disease, is chest pain or discomfort that occurs if an area of heart muscle is starved of oxygen-rich blood.⁴ A heart attack occurs when the flow of oxygen-rich blood to a section of heart muscle suddenly becomes blocked and the heart can't get oxygen and may damage heart muscle.⁴ A stroke leads to death of brain cells due to lack of oxygen, caused by blockage of blood flow or rupture of a vessel to the brain.⁴



NATIONAL ASSOCIATION OF
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Data for Public Health Action

As the older adult population continues to live longer, and diseases of the heart and circulatory vessels continue to increase, public health professionals are challenged to assist middle-aged and older adults in maintaining their functional capacity. Promoting chronic disease self-management through high blood pressure control, maintaining physical activity and a medication regime management is critical to older adult quality of life.

This brief examines the following questions:

- What percentage of adults report having coronary heart disease (CHD), including myocardial infarction and angina?
- What percentage of adults report having a stroke?
- What percentage of adults report being diagnosed with CHD, or a stroke, or both?
- What is the health status of adults who report being diagnosed with CHD, or a stroke, or both?
 - What percentage of adults report being diagnosed with CHD, or a stroke, or both were taking high blood pressure medications?
 - What percentage of adults report being diagnosed with CHD, or a stroke, or both were physically inactive, or had not exercised in the past month?
- What percentage of adults report being diagnosed with CHD, or a stroke, or both report good to excellent health or experienced 14 or more unhealthy days?
- What percentage of adults report being diagnosed with CHD, or a stroke, or both report having health care coverage and annual check-up?
- What percentage of adults report being diagnosed with CHD, or a stroke, or both report having two or more chronic diseases?
- What percentage of middle-aged and older adults report being diagnosed with CHD, or a stroke, or both self-report having subjective cognitive decline?
- What percentage of adults diagnosed with CHD, or a stroke, or both report being a caregiver by providing care or assistance to a friend or family member in the past 30 days or for two years or more?

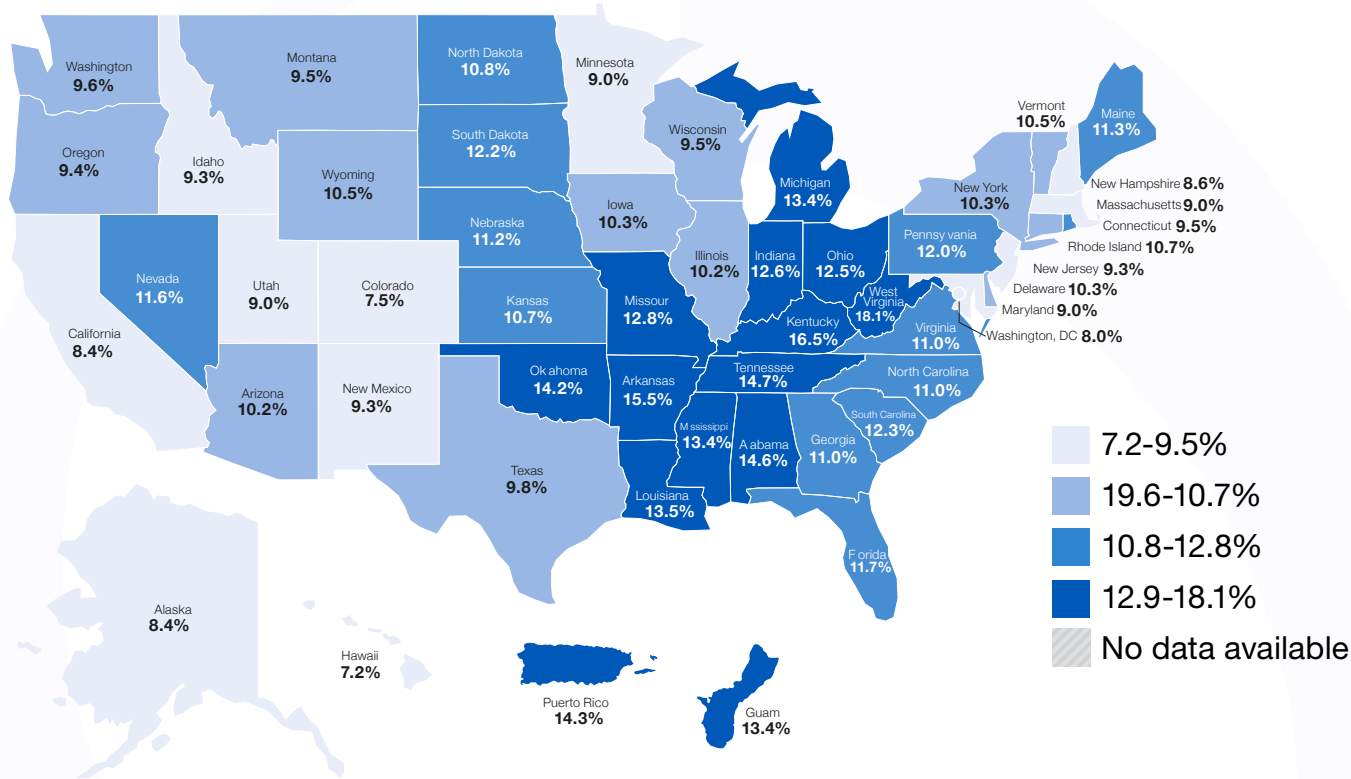
The coronary heart disease and stroke data presented in this brief were collected from community-dwelling adults 45 years of age and older in 2015-2017 through the Behavioral Risk Factor Surveillance System (BRFSS).⁵ Questions related to coronary heart disease and stroke were administered in 50 states, the District of Columbia and two territories—Puerto Rico and Guam. Additional data reports can be generated and viewed through the [CDC Healthy Aging Data Portal](#).

These data were examined in two age groups, adults 45-64 years and aged 65 years and older, as well as by sex, race and ethnicity, chronic disease status, and other demographic characteristics.



Characteristics of Middle-Aged and Older Adults with Coronary Heart Disease^a

Figure 1: Adults Aged 45 years and Older Who Reported Having Coronary Heart Disease



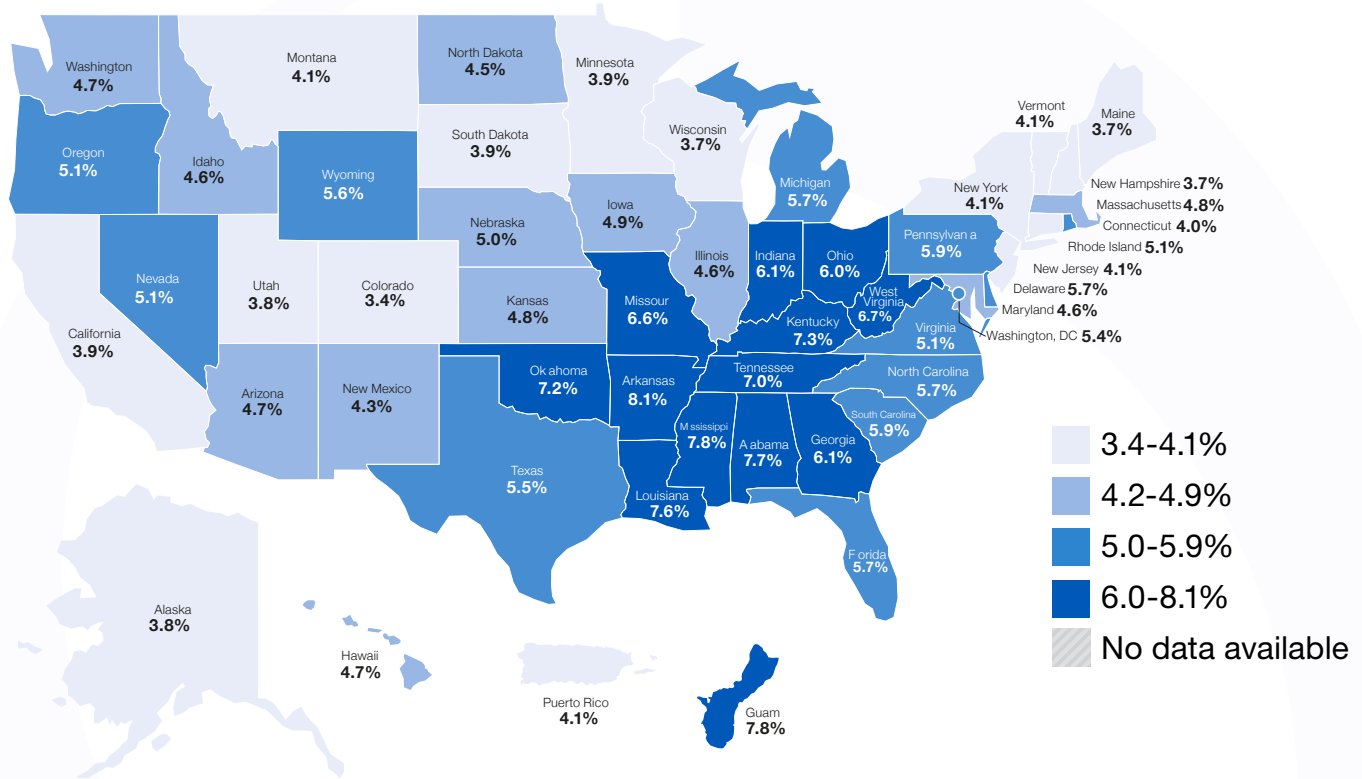
Has a doctor, nurse, or other health professional ever told you that you had any of the following: Ever told you had a heart attack, also called a myocardial infarction? Ever told you had angina or coronary heart disease?

- 10.9% of adults aged 45 years and older reported having coronary heart disease (CHD).^a
 - 7.1% adults aged 45 to 64 years reported having CHD compared with 17.0% of adults aged 65 years and older.
- 13.6% of men reported having CHD compared with 8.4% of women.
- The prevalence of CHD varied among racial/ethnic groups: 11.4% of whites, 10.0% of blacks/African Americans, 8.8% of Hispanics, and 6.3% of Asians and Pacific Islanders.
- Prevalence of CHD was lower in adults with more years of formal education (10.9% with post high school education) compared with adults with few years of formal education (16.5% with less than a high school diploma).

^a Respondents were classified as having coronary heart disease (CHD) if they reported having been told by a provider they had CHD. Respondents were also classified as having CHD if they reported having been told they had a heart attack (i.e., myocardial infarction) or angina.

Characteristics of Middle-Aged and Older Adults with a Stroke^b

Figure 2: Adults Aged 45 years and Older Who Reported Having Had a Stroke



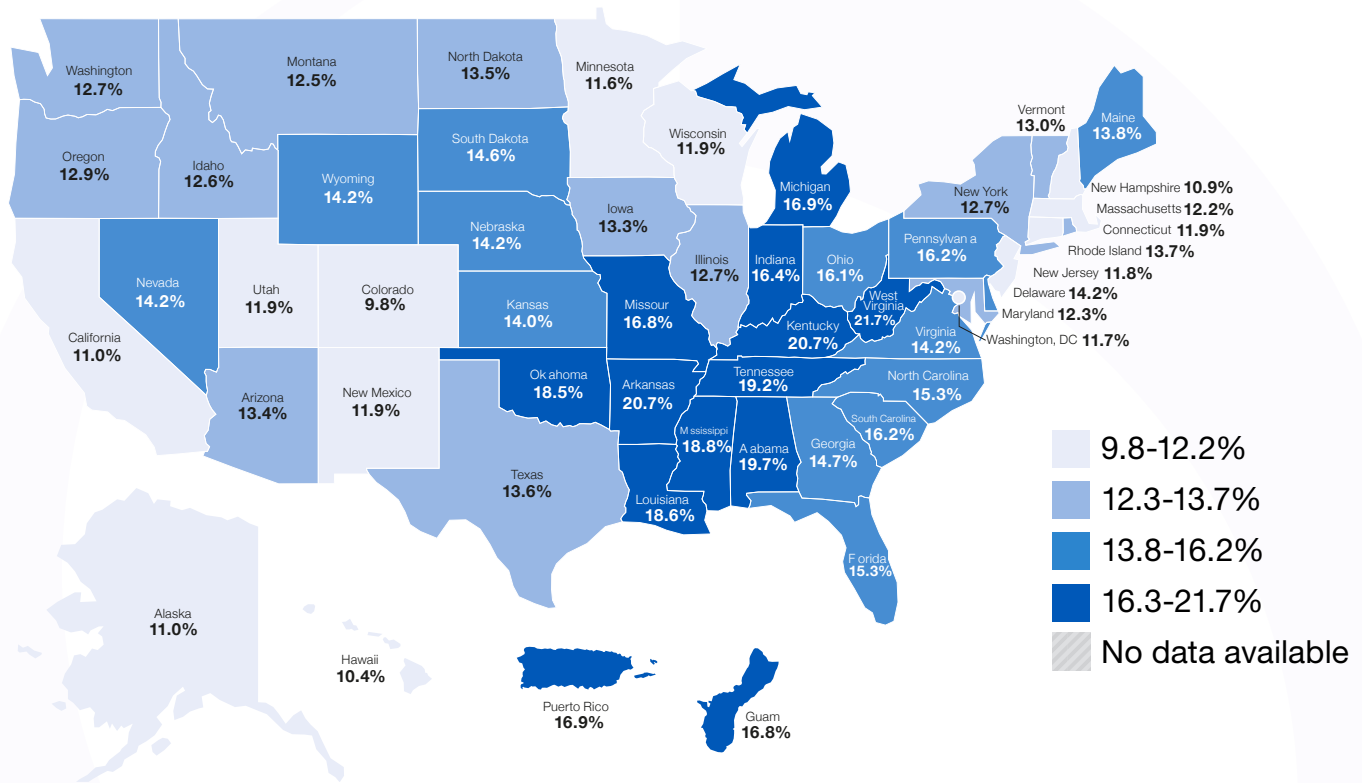
Has a doctor, nurse, or other health professional ever told you that you had a stroke?

- 5.2% of adults aged 45 years and older reported having been told that they had a stroke.
 - 3.7% adults aged 45 to 64 years reported having been told that they had a stroke compared with 7.6% of adults aged 65 years and older.
- 5.3% of men reported having been told that they had a stroke compared with 5.0% of women.
- The prevalence of stroke varied among racial/ethnic groups: 5.1% of whites, 7.5% of blacks/African Americans, 3.7% of Hispanics, and 2.9% of Asians and Pacific Islanders.
- Prevalence of stroke was lower in adults with more years of formal education (5.1% with post high school education) compared with adults with few years of formal education (8.0% with less than a high school diploma).

^b Respondents may also have been told they have CHD (not mutually exclusive).

Characteristics of Middle-Aged and Older Adults with Coronary Heart Disease,^a or a Stroke, or Both

Figure 3: Adults Aged 45 years and Older Who Reported Having Had Coronary Heart Disease, or a Stroke, or Both



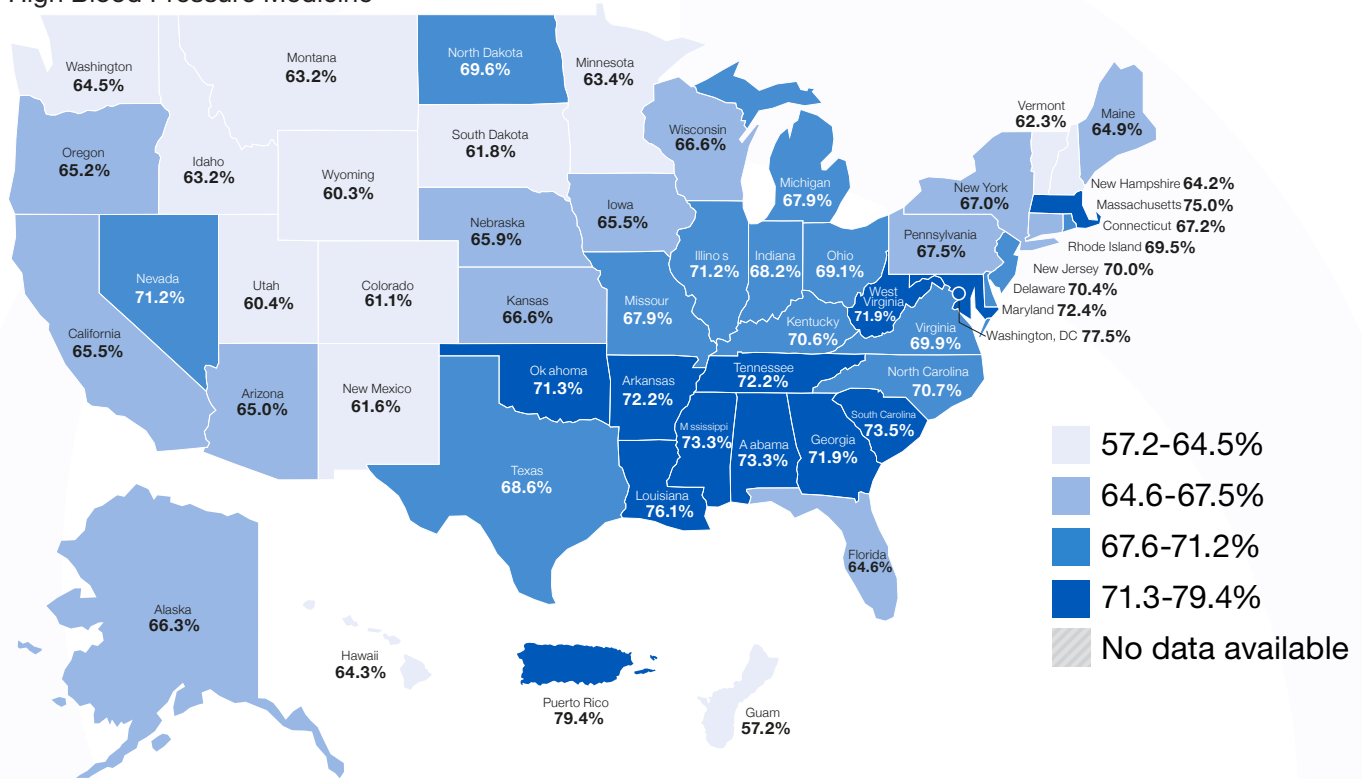
Has a doctor, nurse, or other health professional ever told you that you had any of the following: Ever told you had a heart attack, also called a myocardial infarction? Ever told you had angina or coronary heart disease? Ever told you had a stroke?

- 14.2% of adults aged 45 years and older reported having coronary heart disease (CHD),^a or a stroke, or both.
 - 9.6% adults aged 45 to 64 years reported being diagnosed with CHD, or a stroke, or both compared with 21.7% of adults aged 65 years and older.
- 16.8% of men reported having CHD, or a stroke, or both compared with 11.8% of women.
- The prevalence of CHD, or a stroke, or both varied among racial/ethnic groups: 14.8% of whites, 14.9% of blacks/African Americans, 11.2% of Hispanics, and 8.2% of Asians and Pacific Islanders.
- Prevalence of CHD, or a stroke, or both was lower in adults with more years of formal education (11.7% of adults with post high school education) compared with adults with few years of formal education (21.2% of adults with less than a high school education).
- 30.5% of adults with CHD or a stroke, or both report living alone.

^a Respondents were classified as having coronary heart disease (CHD) if they reported having been told by a provider they had CHD. Respondents were also classified as having CHD if they reported having been told they had a heart attack (i.e., myocardial infarction) or angina.

Health Status: Taking Medications for High Blood Pressure Among Adults with CHD or a Stroke, or Both

Figure 4: Adults Aged 45 years and Older with CHD, or a Stroke, or Both and Reported Taking High Blood Pressure Medicine

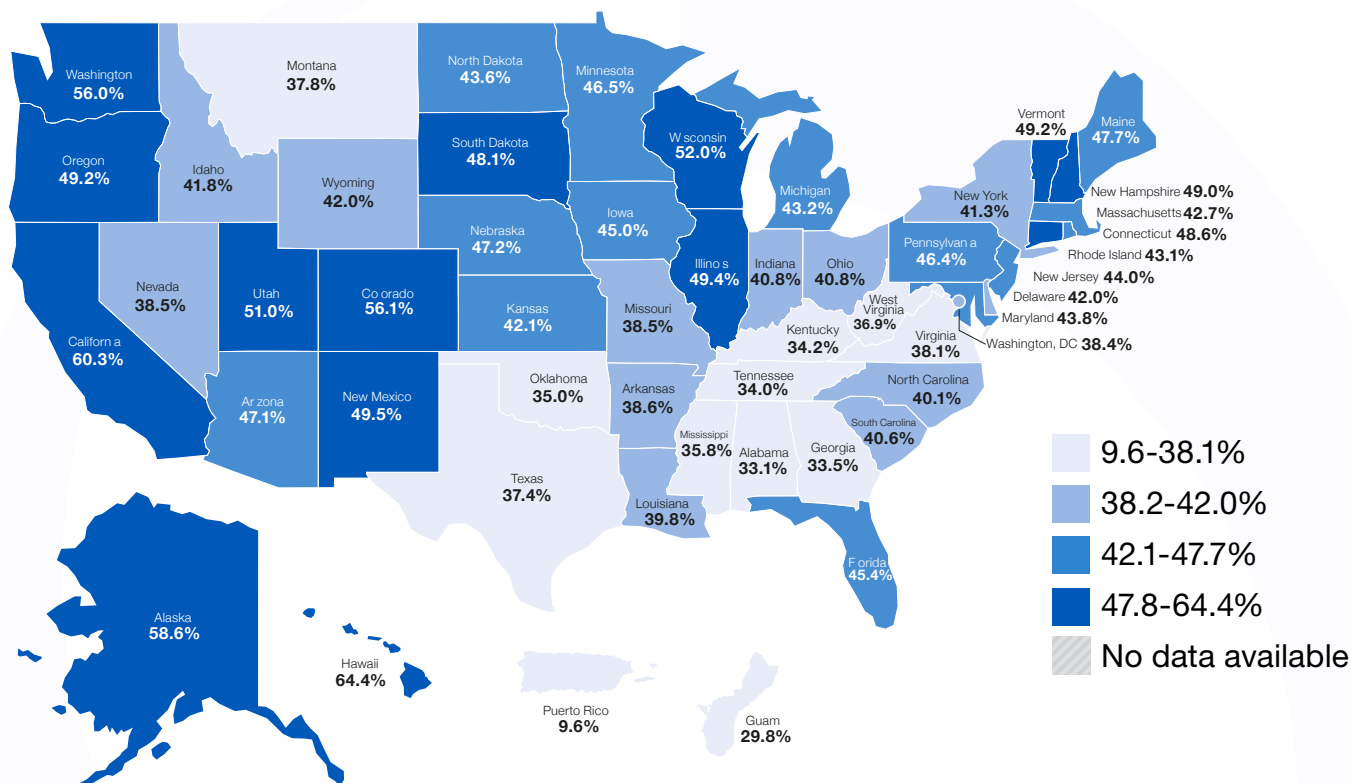


Has a doctor, nurse or other health professional ever told you that you have CHD, or a stroke, and or both and have high blood pressure? Are you currently taking medicine for your high blood pressure?

- 68.5% of adults diagnosed with CHD, or a stroke, or both reported taking high blood pressure medications for their high blood pressure.
 - 64.2% of adults aged 45 to 64 years diagnosed with CHD, or a stroke, or both reported taking high blood pressure medicine compared with 71.6% of adults aged 65 years and older.
- 68.4% of men with CHD, or a stroke, or both reported taking medications for high blood pressure compared with 68.6% of women with CHD, or a stroke, or both.
- The prevalence of CHD, or a stroke, or both and taking high blood pressure medications varied among racial/ethnic groups: 66.8% of whites, 79.9% of blacks/ African Americans, 66.0% of Hispanics, and 75.0% of Asians and Pacific Islanders.
- Prevalence of adults with CHD, or a stroke or both and taking high blood pressure medicines was lower in adults with more than high school education (66.7%) compared with adults with less than a high school education (71.1%).

Health Status: Physical Activity

Figure 5: Adults Aged 45 years and Older Diagnosed with Coronary Heart Disease, or a Stroke, or Both Who Reported Participating in Physical Activity for 150 Minutes or More per Week in the Past Month



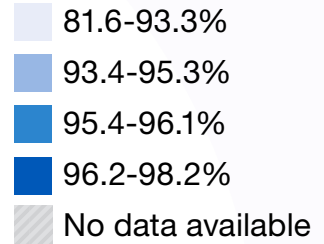
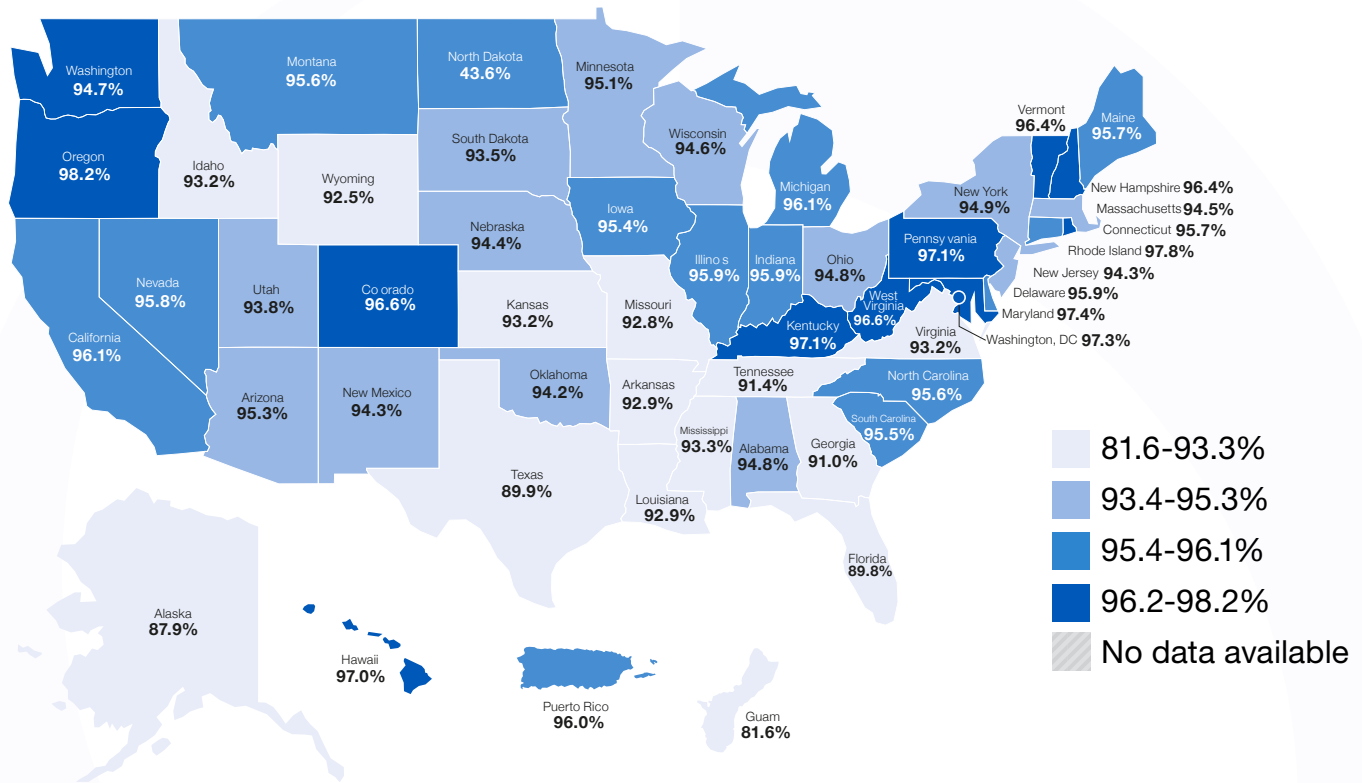
Being physically inactive can be a risk factor for increased complications for people diagnosed with coronary heart disease, or a stroke or both. Low and moderate levels of physical activity significantly reduce long-term risks for coronary heart disease deaths and assist with lowering high blood pressure.⁶ The optimal amount of physical activity is moderate intensity aerobic exercise at least 150 minutes per week or 75 minutes per week of vigorous-intensity aerobic activity, for adults aged 45 years and older.⁶

The physical activity measure identifies adults who participated in 150+ minutes (or vigorous equivalent minutes) of physical activity per week in past 30 days.

- 43.3% of adults diagnosed with CHD, or a stroke, or both reported participating in 150 minutes or more of physical activity (or vigorous equivalent minutes) per week in past 30 days.
 - 39.2% of adults aged 45-64 years diagnosed with CHD, or a stroke, or both reported participating in 150 minutes or more of physical activity per week compared with 46.3% of adults 65 years of age and older.
- 37.5% of women diagnosed with CHD, or a stroke, or both reported participating in 150 minutes or more of physical activity per week compared with 48.0% of men.
- The prevalence of adults participating in physical activity among adults diagnosed with CHD, or a stroke or both varied among racial/ethnic groups: 45.9% of whites, 32.9% of blacks/African Americans, 35.7% of Hispanics, and 50.7% of Asians and Pacific Islanders.
- Prevalence of physical activity among adults diagnosed with CHD, or a stroke, or both was higher in adults with post high school education (50.8%) compared with adults with less than a high school education (32.7%).

Health Status: Health Care Coverage and Annual Check-ups

Figure 6: Adults Aged 45 years and Older Diagnosed with Coronary Heart Disease, or a Stroke, or Both, Who Had Health Insurance



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?

- 94.3% of adults diagnosed with CHD, or a stroke, or both reported having some form of health care coverage.
 - 98.2% of adults aged 65 years and older diagnosed with CHD, or a stroke, or both reported having health care coverage compared with 88.9% of adults aged 45-64 years.
 - The prevalence of having some form of health care coverage among persons having CHD or a stroke or both varied among racial/ethnic groups: 95.9% of whites, 90.8% of blacks/African Americans, 87.8% of Hispanics, and 89.8% of Asians and Pacific Islanders.

About how long has it been since you last visited a doctor for a routine check-up? Within the past year versus >12 months or never?

- 87.4% of adults diagnosed with CHD, or a stroke, or both reported having a routine check-up within the past year.
- 91.0% of adults aged 65 years and older diagnosed with CHD, or a stroke, or both reported having a routine check-up compared with 82.4% of adults aged 45-64 years.

Health Status: Excellent to Good Health and Unhealthy Days

Persons who have experienced coronary heart disease, or a stroke, or both may experience physical or mental limitations associated with their condition.



Would you say your health is Excellent, Very Good, Good, Fair or Poor? (Good to Excellent Health are data captured)

- 50.4% of adults diagnosed with CHD, or a stroke, or both reported their health as good to excellent.
- 55.3% of adults diagnosed with CHD, or a stroke, or both aged 65 years and older reported their health as good to excellent compared with 43.6% of adults aged 45-64 years.
- Prevalence of adults with CHD, or a stroke, or both who reported their health as good to excellent was higher in adults with post high school education (59.3%) compared with adults with less than a high school education (33.6%).

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?

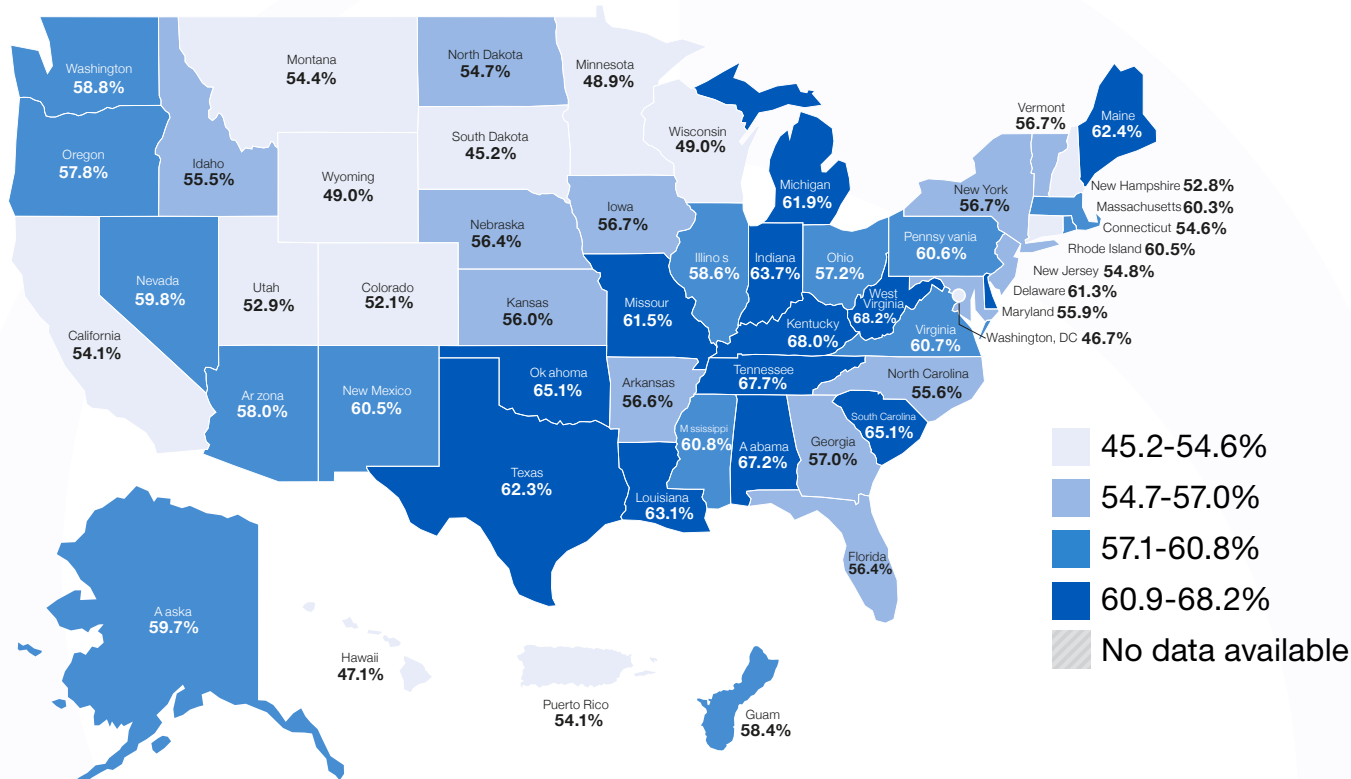
- 18.4% of adults diagnosed with CHD, or a stroke, or both experienced 14 or more mentally unhealthy days in the past month.
- 11.6% of adults diagnosed with CHD, or a stroke or both aged 65 years and older reported 14 or more mentally unhealthy days in the past month compared with 27.8% of adults aged 45-64 years.
- Prevalence of adults with CHD, or a stroke, or both experiencing 14 or more mentally unhealthy days was lower in adults with post high school education (14.7%) compared with adults with less than a high school education (25.7%).

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?

- 33.1% of adults diagnosed with CHD, or a stroke, or both experienced 14 or more physically unhealthy days in the past month.
- 28.7% of adults diagnosed with CHD, or a stroke, or both aged 65 years and older reported 14 or more physically unhealthy days in the past month compared with 39.2% of adults aged 45-64 years.

Health Status: Chronic Diseases

Figure 7: Adults Aged 45 years and older with Coronary Heart Disease, or a Stroke, or Both Who Reported Having Two or More Chronic Health Conditions



Has a doctor, nurse or other health professional ever told you that you had one of the following: a heart attack, angina or coronary heart disease, stroke, asthma (still have), cancer (skin, other types of cancer), COPD, arthritis, depressive disorder, kidney disease, diabetes?

Multiple chronic diseases (two or more) have been found to be associated with increased potential for functional difficulties.¹ As the number of chronic diseases increases, the management of these diseases becomes increasingly complex, which may lead to a greater need for assistance.²

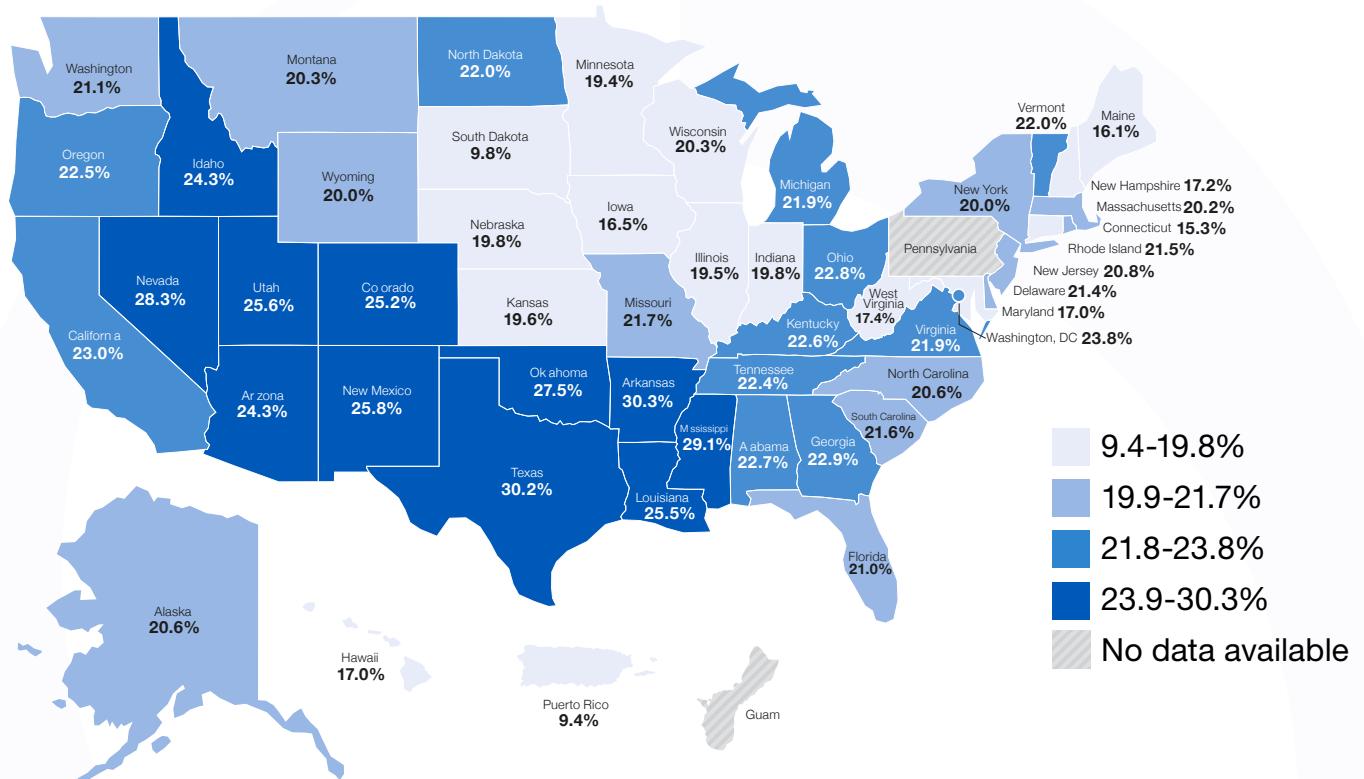
- 58.7% of adults diagnosed with CHD, or a stroke, or both reported having two or more other chronic diseases other than CHD or stroke.
 - 57.3% adults aged 45 to 64 years diagnosed with CHD, or a stroke, or both report having at least two or more other chronic diseases compared with 59.7% of adults aged 65 years and older.
- 52.5% of men diagnosed with CHD, or a stroke, or both reported having at least two or more other chronic diseases compared to 66.4% of women.
- The prevalence of having at least two other chronic diseases among adults diagnosed CHD, or a stroke or both varied among racial/ethnic groups: 59.1% of whites, 57.2% of blacks/African Americans, 50.7% of Hispanics, and 47.2% of Asians and Pacific Islanders.
- Prevalence of having at least two other chronic diseases among adults diagnosed with CHD, or a stroke, or both was lower in adults with post high school education (56.5%) compared with adults with less than a high school education (63.3%).

1. Forman DE, Arena R, Boxer R, et al. Prioritizing functional capacity as a principal end point for therapies oriented to older adults with cardiovascular disease: a scientific statement for healthcare professionals from the American Heart Association. *Circulation*. 2017;135:e894-e918. doi: 10.1161/CIR.0000000000000483

2. Kleipool EE, Hoogendijk EO, Trappenburg MC, et al. frailty in older adults with cardiovascular disease: cause, effect or both?. *Aging Dis*. 2018;9(3):489-497. doi:10.14336/AD.2017.1125.

Health Status: Subjective Cognitive Decline

Figure 8: Percentage of Adults Aged 45 Years and Older with Coronary Heart Disease, or a Stroke, or Both Who had Subjective Cognitive Decline



Coronary heart disease can lead to decreased cognitive function.⁸ Subjective cognitive decline is the self-reported experience of worsening or more frequent confusion or memory loss within the past year.⁷ Intensive blood pressure control may reduce the risk for cognitive decline.¹⁰ Cognitive decline can impact effective chronic disease self-management and successful activities of daily living.⁸⁻¹⁰

During the past 12 months, have you experienced confusion or memory loss that is happening more often or is getting worse?

- 22.2% of adults diagnosed with CHD, or a stroke, or both experience subjective cognitive decline.
 - 27.1% of adults aged 45-64 years diagnosed with CHD, or a stroke, or both reported subjective cognitive decline compared with 18.7% of adults 65 years of age and older.
- The prevalence of subjective cognitive decline among middle aged and older adults diagnosed with CHD, or a stroke, or both varied among racial/ethnic groups: 21.5% of whites, 23.1% of blacks/African Americans, 25.1% of Hispanics, and 7.1% of Asians and Pacific Islanders.
- Prevalence of subjective cognitive decline among adults diagnosed with CHD, or a stroke, or both was lower in adults with post high school education (20.5%) compared with adults with less than a high school education (25.7%).

7. Taylor CA, Bouldin ED, McGuire LC. Subjective cognitive decline among adults aged ≥45 years — United States, 2015–2016. *MMWR Morb Mortal Wkly Rep.* 2018;67:753–757. doi:10.15585/mmwr.mm6727a1

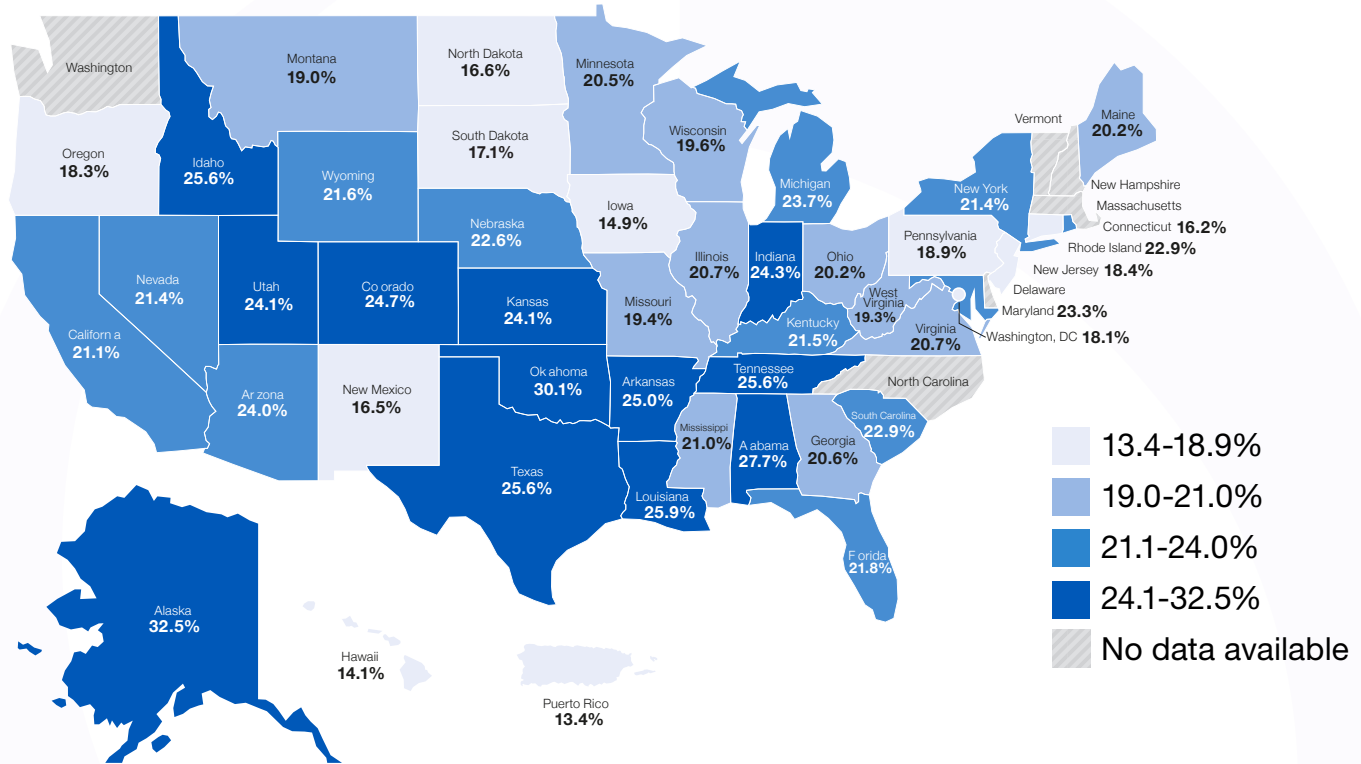
8. Haring B, Leng X, Robinson J, et al. Cardiovascular disease and cognitive decline in postmenopausal women: results from the Women's Health Initiative Memory Study. *J Am Heart Assoc.* 2013;2(6):e000369. Published 2013 Dec 19. doi:10.1161/JAHA.113.000369

9. Lutski M, Weinstein G, Goldbourt U, Tanne D. Cardiovascular health and cognitive decline 2 decades later in men with preexisting coronary artery disease. *Am J Cardiol.* 2018;121(4):410–415. doi:10.1016/j.amjcard.2017.11.003

10. The SPRINT MIND Investigators for the SPRINT Research Group. Effect of intensive vs standard blood pressure control on probable dementia: a randomized clinical trial. *JAMA.* 2019;321(6):553–561. doi:10.1001/jama.2018.21442

Prevalence of Coronary Heart Disease, or a Stroke, or Both Among Adult Caregivers

Figure 9: Adults Aged 45 years and Older with Coronary Heart Disease, or a Stroke, or Both Who Reported Being a Caregiver to Someone in the Past Month



Persons who have experienced a heart attack or a stroke, or who have coronary heart disease (angina) may also be a caregiver for a friend or family member. Limitations associated with their own chronic health conditions can cause their caregiver role to become more challenging.^{1, 2, 8-10}

During the past 30 days, did you provide regular care or assistance to a friend or family member who has a health problem or disability?

- 21.8% of adults diagnosed with CHD, or a stroke, or both reported providing care or assistance to friend or family member within the past 30 days.
- 36.9% of adult caregivers diagnosed with CHD, or a stroke, or both provided care for a friend or family member within the past 30 days for 20 or more hours per week.

For how long have you provided care for that person?

- 56.1% of adults diagnosed with CHD, or a stroke, or both reported providing care or assistance to friend or family member during the past two years.

Call to Action

Public health professionals can use existing data, such as that presented in this brief, to form action steps to assist the growing older population in maintaining heart health and functional capacity by collaborating with partners engaged in heart health, brain health, physical activity, healthy aging, and chronic disease self-management programs at the national, tribal, state, and local levels.

Key Strategies to improve heart, body, and brain health and reduce functional difficulties include:

1. Collaborate with programs and organizations which are engaged in achieving heart health and stroke prevention through initiatives that include but are not limited to the following:
 - *The Million Hearts Program*—a national initiative with a network of partners focused on preventing 1 million heart attacks, strokes and other cardiovascular events by 2022.⁵
 - Engage middle aged and older adults diagnosed with coronary heart disease, myocardial infarction, or a stroke to engage in heart healthy behaviors to reduce and prevent hospitalizations or disability.
 - *Step it Up*—a national initiative of the US Surgeon General’s Call to Action to Promote Walking and Walkable Communities.¹¹
 - Increase messaging that emphasizes both the important role of caregivers and the importance of maintaining caregivers’ health and well-being.
 - *State Heart Disease and Stroke Prevention Programs*—The State Public Health Actions to Prevent and Control Diabetes, Heart Disease and Stroke, a multifaceted initiative to improve heart and stroke health.⁵
 - *American College of Preventive Medicine’s Educating Physicians on Benefits of BP Management to Reduce Cognitive Decline*—a continuing education program for physicians.
2. Educate health care professionals on the benefits of blood pressure management as a potential mechanism to reduce the future risk of cognitive decline and dementia.
3. Encourage caregivers to get regular check-ups, use preventive services, and engage in self-care to maintain health.
4. Ensure that persons, including caregivers, with a disability or chronic health conditions have access to self-management programs to maintain their health.

Technical Information

The Behavioral Risk Factor Surveillance System (BRFSS) is the nation's premier system of health-related telephone surveys that collect state data about U.S. residents regarding their health-related risk behaviors, chronic diseases, and use of preventive services. Established in 1984 with 15 states, BRFSS now collects data in all 50 states as well as the District of Columbia and three U.S. territories. BRFSS completes more than 450,000 adult interviews each year, making it the largest and longest continuously conducted health survey system in the world.

The crucial information gathered through this state-based telephone surveillance system is used by national, state, and local public health agencies to identify populations that might be most at risk and to monitor the need for and the effectiveness of various public health interventions.

Although the BRFSS is a useful tool for assessing coronary heart disease and stroke in adult populations, it has some limitations: it excludes people who do not have telephones or are in institutions such as nursing homes; it may under represent people who are severely impaired because of the functional capacity required to participate in the survey; and responses to BRFSS are self-reported and therefore have not been confirmed by a healthcare provider. Despite these limitations, the BRFSS is a uniquely powerful tool to provide the prevalence of coronary heart disease and stroke and related issues among older community-dwelling U.S. adults, due to its large sample size and proven reliability and validity.

The BRFSS is administered and supported by the Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, CDC. For more information, please visit <http://www.cdc.gov/brfss>.