



JUNE 3, 2024

Cardiovascular Disease

INDICATOR DEFINITIONS | PAGE 5 OF 21 | ALL PAGES \downarrow

WHAT TO KNOW

- Heart disease is the number one cause of death and disability in the United States.
- Cardiovascular disease not only includes heart disease, but also stroke, heart failure, and atrial fibrillation.
- Common behaviors and health conditions put people at risk, like smoking, unhealthy diet, inactivity, excessive alcohol, high blood pressure, high cholesterol, and obesity.
- We can prevent cardiovascular disease and reduce related death and disability with lifestyle changes, control of risk factors, and timely, effective treatment.

More information

- About Cholesterol
- About Heart Disease
- About High Blood Pressure
- About Stroke

Definition details

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High blood pressure among adults		+
Population	All adults.	
Numerator	Adults who report ever having been told by a doctor, nurse, or other health professional that they have high blood pressure. Women who were told high blood pressure only during pregnancy and those who were told they had borderline hypertension are not included.	
Denominator	Adults.	
Measure	Prevalence (crude and age-adjusted).	
Time Period of Case Definition	Lifetime.	
Summary	According to the American College of Cardiology/American Heart Association (ACC/AHA) 2017 hypertension guideline, hypertension is defined as a blood pressure ≥130/≥80 mmHg. ¹ An estimated 116 million American adults (47.3%) have hypertension—nearly 1 in 2 adults 18 years of age and older. ² Of those with hypertension, an estimated 62.0% are aware the have hypertension. ³ The financial costs are significant with an estimated \$52.2 billion dollars annually in 2018-2019. ³ High	

	blood pressure is the number one modifiable risk factor for stroke. In addition to stroke, high blood pressure also contributes to heart attacks, heart failure, kidney failure, and atherosclerosis. Evidence-based interventions can be implemented, adapted, and expanded in diverse settings across the United States to avert the negative health effects of high blood pressure. ⁴
Notes	Indicator does not measure the proportion of adults who currently have undiagnosed high blood pressure and thus likely results in an underestimate of the prevalence of high blood pressure. Indicator is based on having been told that one has high blood pressure and is subject to recall and actually having been told. Additionally, reports are not validated against actual blood pressure measurements or medical records. Survey questions are part of the BRFSS Rotating Core (odd years).
Data Source	Behavioral Risk Factor Surveillance System (BRFSS).
Related Objectives or Recommendations	Healthy People 2030 objective: HDS-04. Reduce the proportion of adults with high blood pressure.
Related CDI Topic Area	None.
Reference 1	Whelton PK, Carey RM, Aronow WS, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: executive summary: a report of the American College of Cardiology/American Heart Association Task Force on clinical practice guidelines. Hypertension. 2018;71(6):1269–1324. doi:10.1161/HYP.0000000000000066
Reference 2	Division for Heart Disease and Stroke Prevention. Estimated Hypertension Prevalence, Treatment, and Control Among U.S. Adults. Centers for Disease Control and Prevention; Accessed February 24, 2022. https://millionhearts.hhs.gov/data-reports/hypertension-prevalence.html
Reference 3	US Dept of Health and Human Services. The Surgeon General's Call to Action to Control Hypertension. US Dept of Health and Human Services, Office of the Surgeon General; 2020. https://www.cdc.gov/bloodpressure/docs/SG-CTA-HTN-Control-Report-508.pdf

Taking medicine to control high blood pressure among adults with high blood pressure

Population	Adults with high blood pressure
Numerator	Adults who reported currently taking medicine for high blood pressure.
Denominator	Adults who reported they had ever been told by a doctor, nurse, or other health professional that they have high blood pressure.
Measure	Prevalence (crude and age-adjusted).
Time Period of Case Definition	Current.

Summary	According to the American College of Cardiology/American Heart Association (ACC/AHA) 2017 hypertension guideline, hypertension is defined as a blood pressure ≥130/≥80 mmHg.¹ An estimated 116 million American adults (47.3%) have hypertension—nearly 1 in 2 adults 18 years of age and older.2 An estimated 1 in 5 adults with hypertension are recommended lifestyle modification only—approximately 24.3 million US adults.² The rest, 4 out of 5 of adults with hypertension, are recommended prescription medication with lifestyle modification—approximately 91.7 million US adults.² However, only about half (49.6%) of all those with hypertension were on antihypertensive medication (based on 2015-2018 NHANES data) and only 20.6% had a controlled blood pressure.2 Many adults who are recommended to take medication may need it to be prescribed and/or start taking it—includes 34.1 million US adults, of whom, two-thirds (23.2 million) have a blood pressure of 140/90 mm Hg or higher.² Additionally, many adults already treated with medication may need the treatment modified to achieve control—33.6 million US adults using medication have a blood pressure of 130/80 mm Hg or higher, of whom, over half (3 in 5) (20.0 million) have a blood pressure of 140/90 mm Hg or higher.² On average, a 5 mm Hg reduction of systolic blood pressure reduced the risk of a major cardiovascular event by about 10%; the corresponding proportional risk reductions for stroke, heart failure, ischemic heart disease, and cardiovascular death were 13%, 13%, 8%, and 5%, respectively.³
Notes	Indicator does not include people with hypertension who have their blood pressure successfully controlled through lifestyle changes and without medication. Indicator only measures those who recall being told they have high blood pressure and not those who have not been told they have hypertension. Additionally, reports are not validated against actual blood pressure measurements or medical records. Survey questions are part of the BRFSS Rotating Core (odd years).
Data Source	Behavioral Risk Factor Surveillance System (BRFSS).
Related Objectives or Recommendations	Healthy People 2030 objective: HDS-05. Increase control of high blood pressure in adults.
Related CDI Topic Area	None.
Reference 1	Lloyd-Jones DM, Hong Y, Labarthe D, et al. Defining and setting national goals for cardiovascular health promotion and disease reduction: the American Heart Association's strategic impact goal through 2020 and beyond. Circulation. 2010;121(4):586–613. doi:10.1161/circulationaha.109.192703
Reference 2	Division for Heart Disease and Stroke Prevention. Estimated Hypertension Prevalence, Treatment, and Control Among U.S. Adults. Centers for Disease Control and Prevention; Accessed February 24, 2022. https://millionhearts.hhs.gov/data-reports/hypertension-prevalence.html
Reference 3	The Blood Pressure Lowering Treatment Trialists' Collaboration. Pharmacological blood pressure lowering for primary and secondary prevention of cardiovascular disease across different levels of blood pressure: an individual participant-level data meta-analysis. Lancet. 2021;397(10285):1625–1636. doi:10.1016/s0140-6736(21)00590-0

Population	All adults.
Numerator	Adults who report having ever been told by a doctor, nurse or other health professional that they had high cholesterol.
Denominator	Adults who report having their cholesterol ever checked.
Measure	Prevalence (crude and age-adjusted).
Time Period of Case Definition	Lifetime.
Summary	In 2017–2020, about 10% of adults ages 20 and older had total cholesterol above 240 mg/dL, and about 17% had high-density lipoprotein (HDL, or "good") cholesterol levels below 40 mg/dL. Slightly more than half of U.S. adults (54.5%, or 47 million people) who could benefit from cholesterol medicine are currently taking it. High cholesterol commonly has no symptoms, so many people don't know that their cholesterol is too high. Having high blood cholesterol raises the risk for heart disease, the leading cause of death, and for stroke, the fifth leading cause of death in 2021. Lifestyle changes and medications can reduce cholesterol and prevent heart disease among people with elevated serum cholesterol. ³
Notes	Indicator does not include people with high cholesterol who have not had their blood cholesterol checked. Survey questions are part of the BRFSS Rotating Core (odd years).
Data Source	Behavioral Risk Factor Surveillance System (BRFSS).
Related Objectives or Recommendations	Healthy People 2030 objective: HDS-06. Reduce cholesterol in adults.
Related CDI Topic Area	None.
Reference 1	Tsao CW, Aday AW, Almarzooq ZI, et al. Heart disease and stroke statistics—2023 update: a report from the American Heart Association. Circulation. 2023;147(8):e93–e621. doi:10.1161/CIR.000000000001123
Reference 2	Wall HK, Ritchey MD, Gillespie C, Omura JD, Jamal A, George MG. Vital Signs: Prevalence of key cardiovascular disease risk factors for Million Hearts 2022—United States, 2011–2016. MMWR Morb Mortal Wkly Rep. 2018;67(35):983–991.
Reference 3	Grundy SM, Stone NJ, Bailey AL, et al. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/I guideline on the management of blood cholesterol: a report of the American College of Cardiology/American Heart Association Task Force on clinical practice guidelines. Circulation. 2019;139(25):e1082–e1143. doi:10.1161/cir.00000000000000625

Population	Adults who have high blood cholesterol.
Numerator	Adults who reported currently taking medicine prescribed by a doctor or other health professional for their cholesterol.
Denominator	Adults who reported ever having their cholesterol checked and having ever been told by a doctor, nurse or other health professional that their blood cholesterol was high.
Measure	Prevalence (crude and age-adjusted).
Time Period of Case Definition	Current.
Summary	High blood cholesterol is one of the major risk factors for heart disease. Lowering cholesterol levels lessens the risk for developing heart disease and reduces the chance of having a heart attack or stroke. Lowering high cholesterol levels is important for people of all ages, both men and women. Optimal total cholesterol levels are about 150 mg/dL, which corresponds to an LDL-C level of about 100 mg/dL. In 2017–2020, 16.9% of adults (41.3 million) aged 20 years or older had high density lipoprotein (HDL) cholesterol < 40 mg/dL and 25.5% (63.1 million) had low-density lipoprotein (LDL) cholesterol \geq 130 mg/dL. In 2017–2020 (NHLBI tabulation using NHANES), the mean level of LDL-C for American adults \geq 20 years of age was 110.1 mg/dL. By living a healthy lifestyle, adults can keep their cholesterol in a healthy range and lower risk of heart disease and stroke. 1
Notes	Indicator does not include people with high cholesterol who have not had their blood cholesterol checked. Also, the indicator does not include people with high cholesterol who are controlled or attempting to control through lifestyle changes and without medication. Survey questions are part of the BRFSS Rotating Core (odd years).
Data Source	Behavioral Risk Factor Surveillance System (BRFSS).
Related Objectives or Recommendations	Healthy People 2030 objective: HDS-07. Increase cholesterol treatment in adults.
Related CDI Topic Area	None
Reference 1	Grundy SM, Stone NJ, Bailey AL, et al. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/N guideline on the management of blood cholesterol: a report of the American College of Cardiology/American Heart Association Task Force on clinical practice guidelines. Circulation. 2019;139(25):e1082–e1143. doi:10.1161/cir.00000000000000625

Reference 2	Tsao CW, Aday AW, Almarzooq ZI, et al. Heart disease and stroke statistics—2023 update: a report from the American Heart Association. Circulation. 2023;147(8):e93–e621. doi:10.1161/CIR.000000000001123

Pregnancy related hypertension among women with a recent live birth

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Population	Women who have had a recent live birth.
Numerator	Women who reported that a healthcare provider told them during their most recent pregnancy that they had high blood pressure (that started during their most recent pregnancy), preeclampsia, or eclampsia.
Denominator	Women who reported they did or did not have a healthcare provider who told them during their most recent pregnancy that they had high blood pressure (that started during their most recent pregnancy), pre-eclampsia, or eclampsia.
Measure	Prevalence (crude).
Time Period of Case Definition	During the pregnancy resulting in the most recent live birth.
Summary	Hypertensive disorders of pregnancy are a common pregnancy complication in the United States ¹ and are strongly associated with severe maternal complications ² such as stroke and pregnancy-related death. ³ Hypertensive disorders of pregnancy are also an important risk factor for future cardiovascular disease and cardiovascular mortality. ^{4,5} Counseling related to future pregnancies and cardiovascular disease risk factor reduction beyond the postpartum period, ⁶ including lifestyle interventions, ⁷ can reduce cardiovascular risk. ⁶
Notes	The numerator above reflects the question to be asked beginning with 2023 births (PRAMS Phase 9). Data from PRAMS Phase 8 (2016-2022 births) results from a slightly different question. The numerator for Phase 8 data is "Number or respondents who reported that during their most recent pregnancy they had high blood pressure (that started during their most recent pregnancy), pre-eclampsia, or eclampsia".
Data Source	Pregnancy Risk Assessment Monitoring System (PRAMS).
Related Objectives or Recommendations	Healthy People 2030 objective: MICH-06. Reduce maternal illness and complications due to pregnancy (complications during hospitalized labor and delivery).
Related CDI Topic Area	Maternal health.
Reference 1	Ford ND, Cox S, Ko JY, et al. Hypertensive disorders in pregnancy and mortality at delivery hospitalization — United States, 2017–2019. MMWR Morb Mortal Wkly Rep. 2022;71(17):585–591. doi:10.15585/MMWR.MM7117A1
Reference 2	Hitti J, Sienas L, Walker S, Benedetti TJ, Easterling T. Contribution of hypertension to severe maternal morbidity. Am J

	Obstet Gynecol. 2018;219(4):405.E1–405.E7. doi:10.1016/J.AJOG.2018.07.002
Reference 3	Trost SL, Beauregard J, Njie F, et al. Pregnancy-Related Deaths: Data from Maternal Mortality Review Committees in 36 US States, 2017-2019. Centers for Disease Control and Prevention, US Department of Health and Human Services; 2022. Accessed April 3, 2023. https://www.cdc.gov/reproductivehealth/maternal-mortality/docs/pdf/Pregnancy-Related-Deaths-Data-MMRCs-2017-2019-H.pdf
Reference 4	Parikh NI, Gonzalez JM, Anderson CA, et al. Adverse pregnancy outcomes and cardiovascular disease risk: unique opportunities for cardiovascular disease prevention in women: a scientific statement from the American Heart Association. Circulation. 2021;143(18):e902–e916. doi:10.1161/CIR.000000000000000000
Reference 5	Arnott C, Nelson M, Ramirez MA, et al. Maternal cardiovascular risk after hypertensive disorder of pregnancy. Heart. 2020;106(24). doi:10.1136/HEARTJNL-2020-316541
Reference 6	American College of Obstetricians and Gynecologists' Committee on Practice Bulletins—Obstetrics in collaboration with the Presidential Task Force on Pregnancy and Heart Disease. ACOG practice bulletin no. 212: pregnancy and heart disease. Obstet Gynecol. 2019;133(5):e320—e356. doi:10.1097/AOG.0000000000003243
Reference 7	Berks D, Hoedjes M, Raat H, Duvekot J, Steegers E, Habbema J. Risk of cardiovascular disease after pre-eclampsia and the effect of lifestyle interventions: a literature-based study. BJOG. 2013;120(8):924–931. doi:10.1111/1471-0528.12191

Hospitalization for heart failure as principal diagnosis, Medicare-beneficiaries aged 65 years and older

Population	Medicare beneficiaries aged 65 years and older.
Numerator	Hospitalizations with principal diagnosis of International Classification of Diseases (ICD)-10-CM code I50 among Medicare-eligible resident people aged 65 years and older.
Denominator	Residents 65 years and older who were eligible for Medicare Part A benefits on July 1 of the calendar year, excluding members of health maintenance organizations.
Measure	Number of hospitalizations and hospitalization rates (crude and age-adjusted).
Time Period of Case Definition	Calendar year.
Summary	Heart failure happens when the heart cannot pump enough blood and oxygen to support other organs in your body. Heart failure is a serious condition, but it does not mean that the heart has stopped beating. Nearly 6.7 million (2.3%) Americans ages ≥20 years have heart failure (NHANES 2017–2020) and it occurs more often in males (2.7%) than females (1.9%).¹ Heart failure was the primary cause of 85,037 of the 695,547 heart disease deaths in 2020.² Additionally, the death rate for heart

	failure has increased from 18.7/100,000 population in 2011 to 25.6/100,000 in 2021.2 Early diagnosis and treatment can improve quality and length of life for people who have heart failure. ³
Notes	Because heart failure is a chronic disease that can have a long preclinical phase, years might pass before changes in behavior or clinical practice affect population morbidity and mortality. Additionally, data reflects hospitalizations only and may underestimate burden of disease particularly as heart failure is increasingly treated in an outpatient setting.
Data Source	Centers for Medicare and Medicaid Services (CMS) Part A claims data.
Related Objectives or Recommendations	Healthy People 2030 objective: HDS-09. Reduce heart failure hospitalizations in adults.
Related CDI Topic Area	Older Adults.
Reference 1	Tsao CW, Aday AW, Almarzooq ZI, et al. Heart disease and stroke statistics—2023 update: a report from the American Heart Association. Circulation. 2023;147(8):e93–e621. doi:10.1161/CIR.000000000001123
Reference 2	National Center for Health Statistics. Underlying Cause of Death. CDC WONDER, Centers for Disease Control and Prevention, US Dept of Health and Human services; Accessed January 13, 2022 and February 21, 2022. https://wonder.cdc.gov/Deaths-by-Underlying-Cause.html
Reference 3	National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention. Heart Failure. Centers for Disease Control and Prevention, US Dept of Health and Human services; Accessed December 9, 2022. https://www.cdc.gov/heartdisease/heart_failure.htm

Cerebrovascluar disease (stroke) mortality among all people, underlying cause

Population	All people.
Numerator	Number of deaths with cerebrovascular diseases as the underlying cause (ICD-10 codes: I60-I69) among all people.
Denominator	Midyear resident population for the same calendar year.
Measure	Mortality rate (crude and age-adjusted); number [cases per 100,000].
Time Period of Case Definition	Calendar year.
Summary	Ischemic stroke occurs when a blood vessel leading to the brain is blocked by a clot. Hemorrhagic stroke occurs when a blood vessel within the brain ruptures. Based on data from 1999, approximately 9.4 million American adults have had a stroke (3.3%) (NHANES 2017–2020). Approximately 795,000 people or 1 person on average every 40 seconds has a stroke each year in the United States. On average, 1 American dies from a stroke

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	every 3 minutes 14 seconds. ² Stroke was the fifth leading cause of death in the United States in 2021. ² Timely, effective treatment for strokes can reduce the risk for long-term disability and death. ³
Notes	This indicator reports a composite of the two primary types of strokes whose distribution vary by race/ethnicity and age. Further, the data source is death certificate data based on the underlying cause of death field and thus may underestimate the burden of deaths where stroke was not considered an underlying cause of death as it would not be included.
Data Source	National Vital Statistics System (NVSS).
Related Objectives or Recommendations	Healthy People 2030 objective: HDS-03. Reduce stroke deaths.
Related CDI Topic Area	None.
Reference 1	Tsao CW, Aday AW, Almarzooq ZI, et al. Heart disease and stroke statistics—2023 update: a report from the American Heart Association. Circulation. 2023;147(8):e93–e621. doi:10.1161/CIR.000000000001123
Reference 2	National Center for Health Statistics. Underlying Cause of Death, 2018-2021 CDC WONDER, Centers for Disease Control and Prevention, US Dept of Health and Human services; Accessed January 13, 2022 and February 21, 2022. https://wonder.cdc.gov/ucd-icd10-expanded.html
Reference 3	National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention. About Stroke. Centers for Disease Control and Prevention, US Dept of Health and Human services; Accessed December 9, 2022. https://www.cdc.gov/stroke/about.htm

Coronary heart disease mortality among all people, underlying cause

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Population	All people.
Numerator	Number of deaths with coronary heart disease as the underlying cause (ICD-10 codes: I20-I25) among all people.
Denominator	Midyear resident population.
Measure	Mortality rate (crude and age-adjusted); number [cases per 100,000].
Time Period of Case Definition	Calendar year.
Summary	Coronary heart disease (also called ischemic heart disease) is caused by plaque buildup on the arteries. These blockages can limit the amount blood and oxygen the heart receives causing cause chest pain or angina. Coronary heart disease may present as an acute myocardial infarction which happens when the blood flow to a part of the heart is blocked by plaque. Approximately 20.5 million adults aged ≥20 years have CHD (about 7.1%) (NHANES 2017–2020) with men (8.7%) more commonly affected than women (5.8%).¹ CHD is the largest category of

	heart disease mortality with 375,476 people killed in 2021. ² The estimated direct and indirect cost of heart disease in 2018 to 2019 (average annual) was \$239.9 billion. ¹ Timely, effective treatment for heart attacks can reduce the risk for long-term disability and death. ³
Notes	The data source is death certificate data based on underlying cause of death field and thus may underestimate the burden of deaths where coronary heart disease was not considered an underlying cause of death as it would not be included.
Data Source	National Vital Statistics System (NVSS).
Related Objectives or Recommendations	Healthy People 2030 objective: HDS-02. Reduce coronary heart disease deaths.
Related CDI Topic Area	None.
Reference 1	Tsao CW, Aday AW, Almarzooq ZI, et al. Heart disease and stroke statistics—2023 update: a report from the American Heart Association. Circulation. 2023;147(8):e93–e621. doi:10.1161/CIR.000000000001123
Reference 2	National Center for Health Statistics. Underlying Cause of Death, 2018-2021. CDC WONDER, Centers for Disease Control and Prevention, US Dept of Health and Human services; https://wonder.cdc.gov/ucd-icd10-expanded.html
Reference 3	Division for Heart Disease and Stroke Prevention. Coronary Artery Disease (CAD). Centers for Disease Control and Prevention. Accessed December 9, 2022. https://www.cdc.gov/heartdisease/coronary_ad.htm

Diseases of the heart mortality among all people, underlying cause

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Population	All people.
Numerator	Number of deaths with heart disease as the underlying cause (ICD-10 codes: I00–I09, I11, I13, I20–I51) among adults all people.
Denominator	Midyear resident population.
Measure	Mortality rate (crude and age-adjusted); number [cases per 100,000].
Time Period of Case Definition	Calendar year.
Summary	Heart disease refers to several types of heart conditions ¹ and is the leading cause of death for men, women, and people of most races and Hispanic-origin groups. ² About 696,000 people in the United States (or about 1 in 5) died from heart disease in 2021. ^{2,3} The most common type of heart disease in the US is coronary artery disease. Heart disease can be prevented though living a healthy lifestyle and controlling blood pressure, cholesterol, and blood sugar levels. ⁴ Timely, effective treatment for cardiovascular disease, e.g., heart disease, can reduce the risk for long-term disability and death. ⁵

Notes	Heart disease is not a single disease and trends or patterns in mortality from heart disease can differ by specific types of heart disease. Further, the data source is death certificate data based on underlying cause of death field and thus may underestimate the burden of deaths where any heart disease was not considered an underlying cause of death as it would not be included.
Data Source	National Vital Statistics System (NVSS).
Related Objectives or Recommendations	Healthy People 2030 objective: HDS-02. Reduce coronary heart disease deaths.
Related CDI Topic Area	None.
Reference 1	Division for Heart Disease and Stroke Prevention. Heart Disease. Centers for Disease Control and Prevention. Accessed December 9, 2022. www.cdc.gov/heartdisease/index.htm
Reference 2	National Center for Health Statistics. Underlying Cause of Death, 2018-2021. CDC WONDER, Centers for Disease Control and Prevention, US Dept of Health and Human services; https://wonder.cdc.gov/ucd-icd10-expanded.html
Reference 3	Tsao CW, Aday AW, Almarzooq ZI, et al. Heart disease and stroke statistics—2023 update: a report from the American Heart Association. Circulation. 2023;147(8):e93–e621. doi:doi:10.1161/CIR.000000000001123
Reference 4	Division for Heart Disease and Stroke Prevention. Prevent Heart Disease. Centers for Disease Control and Prevention. Accessed December 9, 2022. https://www.cdc.gov/heartdisease/prevention.htm
Reference 5	Healthy People 2030. Heart Disease and Stroke. US Dept of Health and Human Services; Accessed December 9, 2022. https://health.gov/healthypeople/objectives-and-data/browse-objectives/heart-disease-and-stroke

Additional Data Sources

Heart Disease and Stroke Maps and Data

Data & Reports | Million Hearts® (hhs.gov) ☐

Interactive Atlas of Heart Disease and Stroke

PLACES: Local Data for Better Health

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• Chronic Obstructive Pulmonary Disease

SOURCES

CONTENT SOURCE:

National Center for Chronic Disease Prevention and Health Promotion

SOURCES

- Heart Disease Facts
- Heart Disease Communications Toolkit