What is Coronary Heart Disease?

Coronary heart disease (CHD), also called coronary artery disease (CAD), is the most common type of heart disease. It occurs as a result of atherosclerosis – when the coronary arteries that supply blood to the heart harden and narrow due to plaque buildup.[1] CHD can impede blood flow to the heart and cause damage to the heart muscle. When this occurs, it is called a heart attack or myocardial infarction.[2]

CHD is a leading cause of cardiovascular death in the United States and accounted for 360,900 deaths in 2019.[3] Approximately 805,000 people in the United States suffer a heart attack each year, with 605,000 being the first heart attack and 200,000 being a recurrent heart attack.[3]

Having other health conditions including high blood pressure, unhealthy blood cholesterol levels, diabetes, and obesity increases the risk of heart disease. Poor diet, physical inactivity, heavy alcohol consumption, and tobacco use also increase the risk of heart disease.[4]

Risk Factors for Coronary Heart Disease

Demographic Risk Factors

- *Race/ethnicity*
  - CHD is the leading cause of death for most racial/ethnic groups in the United States.[4]
- *Genetics or family history*
  - Having a family history of early heart disease increases risk of CHD.[5]
- *Age*
  - People age 65 and older are more likely to develop coronary heart disease than younger people.[6]
- *Sex*
  - Men are clinically diagnosed with CHD at an earlier age than women.
  - The risk for CHD among men increases around age 45 while the risk among women increases around age 55.[5]

Social and Behavioral Risk Factors

- *Tobacco use*
  - Smoking can damage heart and blood vessels and increase blood pressure.[4]
- *Alcohol abuse*
  - Heavy alcohol consumption can increase the risk of heart disease by raising blood pressure and triglyceride levels.[4]
- *Environment and occupation*
  - Long exposure to toxins, radiation, secondhand smoke, or other hazards, sitting for long periods, and working long shifts or night shifts increases the risk of coronary heart disease.[5]
- *Lack of physical activity*
  - Physical inactivity contributes to CHD and to other CHD risk factors such as obesity, high blood pressure, high cholesterol, and type 2 diabetes.[5]

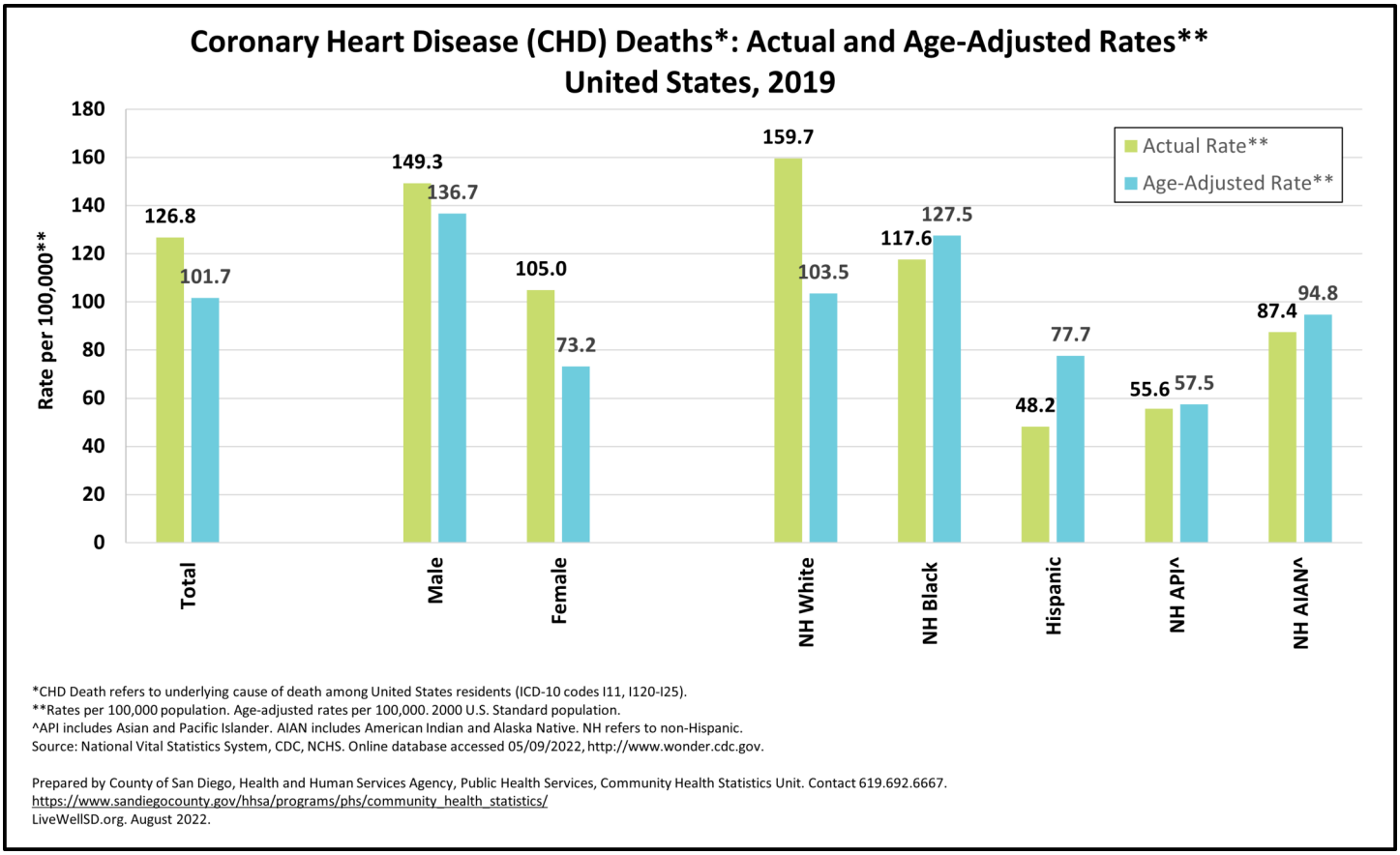
- *Poor diet*[5]
- *Poor quality sleep*[5]
- *Stress*[5]

Intermediate Outcomes

- *High blood pressure (BP ≥ 140 mm Hg/90 mm Hg)*
  - 1 in 3 American adults aren't aware of their high blood pressure and are not being treated to control their blood pressure.[7]
- *High blood cholesterol*
  - According to BRFSS 2019 data, 33.1% of American adults were told that they had high cholesterol.[8]
- *Angina pectoris*
  - About 9 million Americans have symptoms of angina pectoris (chest pain or discomfort due to reduced blood supply to the heart).[9]
- *Diabetes*
  - People with diabetes are more likely to have conditions (high blood pressure, high cholesterol) that increases the risk of heart disease.[10]
  - Diabetics are also more likely to suffer from heart failure.[10]

National Statistics and Disparities

- Each year, more than 805,000 Americans have a heart attack. Of these, about 1 in 5 are silent heart attacks.[3]
- Approximately 20.1 million Americans aged 20 and older had CHD from 2015 to 2018.[3]
- CHD is the most common type of heart disease, killing 360,900 people in 2019.[3]
- Heart disease is the leading cause of death for people of most racial/ethnic groups in the United States.[4]
- In 2019, 1 in every 4 male deaths were due to heart disease.[11]
- Heart disease is the leading cause of death for men of most racial/ethnic groups.[11]
- The leading cause of death for African American and White women in the United States is heart disease.[12]



*CHD Death refers to underlying cause of death among United States residents (ICD-10 codes I11, I120-I25).
**Rates per 100,000 population. Age-adjusted rates per 100,000. 2000 U.S. Standard population.
^API includes Asian and Pacific Islander. AIAN includes American Indian and Alaska Native. NH refers to non-Hispanic.
Source: National Vital Statistics System, CDC, NCHS. Online database accessed 05/09/2022, http://www.wonder.cdc.gov.

Prepared by County of San Diego, Health and Human Services Agency, Public Health Services, Community Health Statistics Unit. Contact 619.692.6667.
https://www.sandiegocounty.gov/hhsa/programs/phs/community_health_statistics/
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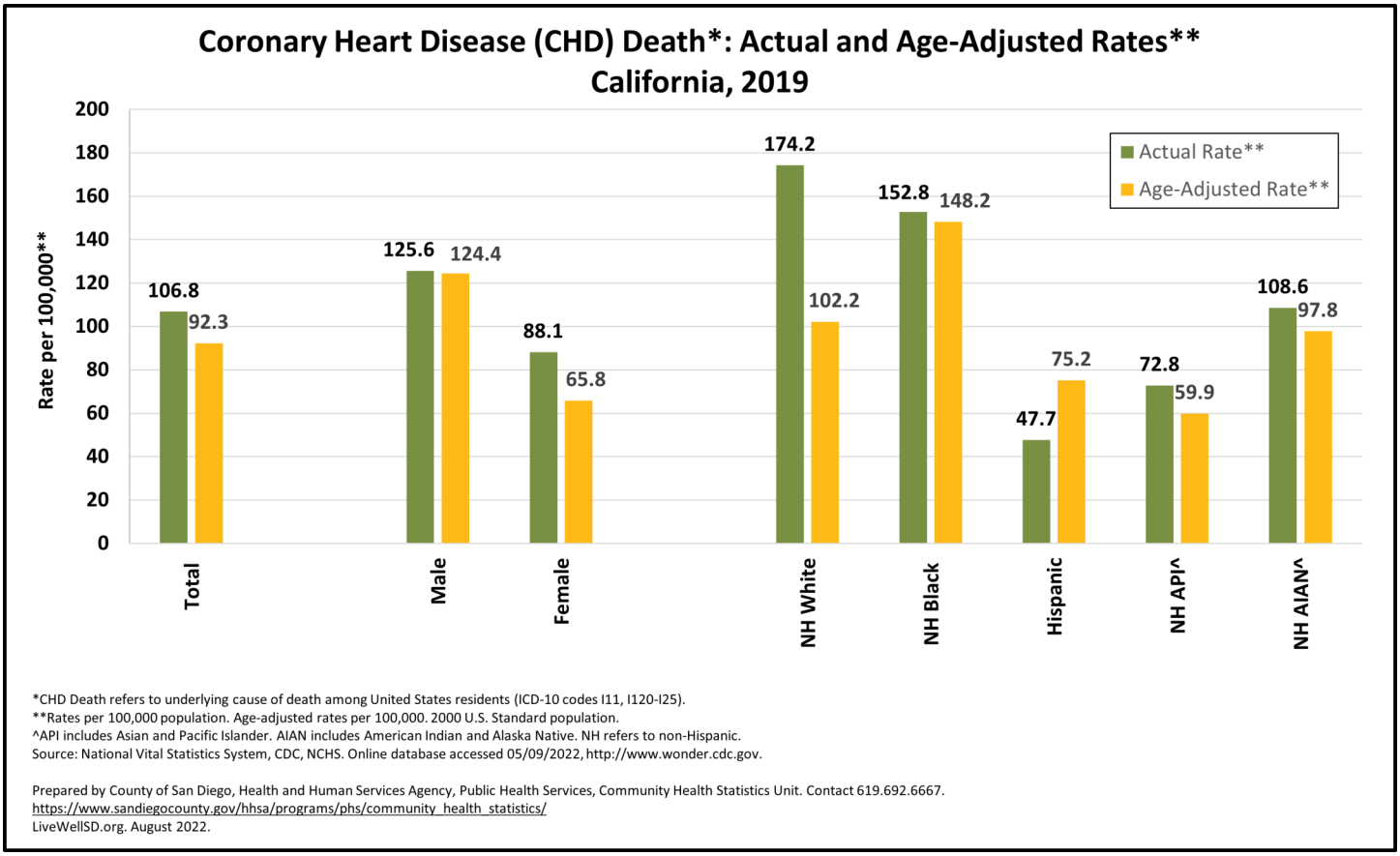
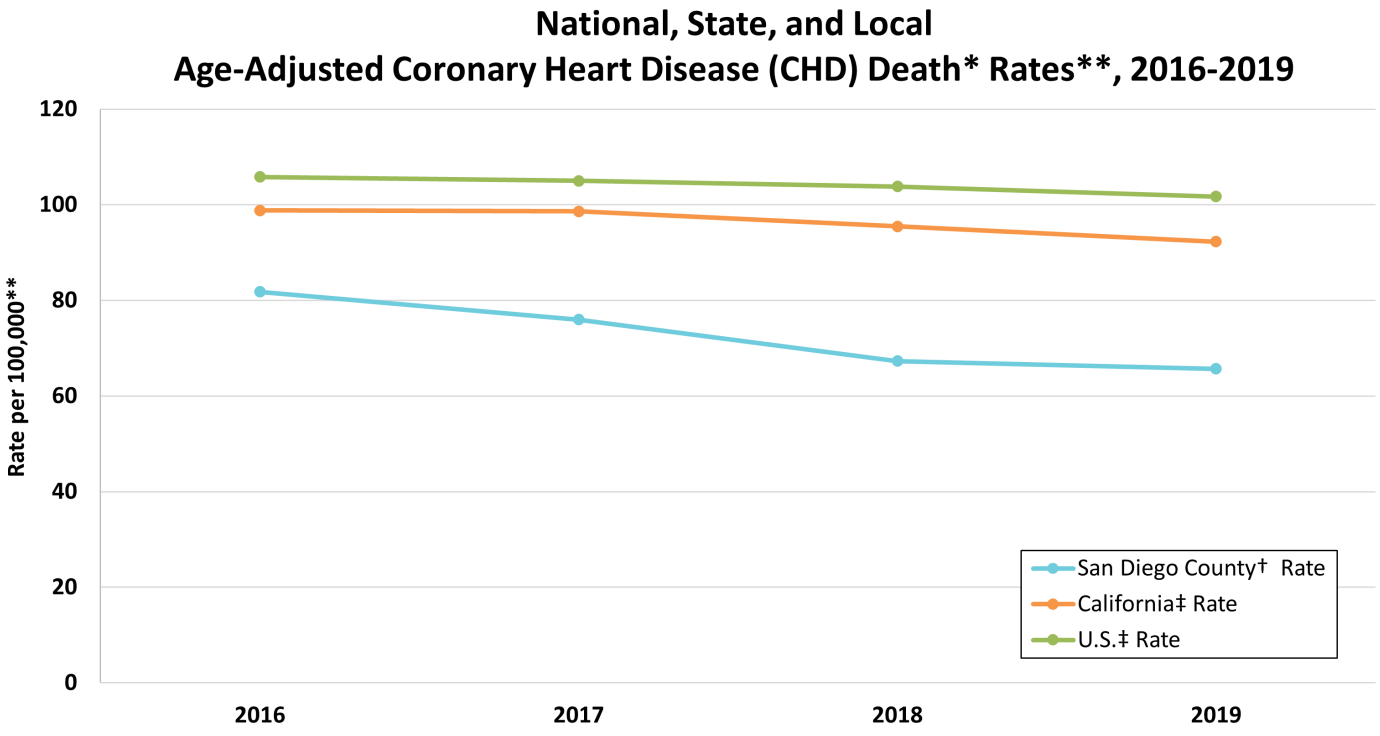
- The total age-adjusted CHD death rate in the United States in 2019 was 101.7 per 100,000 residents.[13]
- In 2019, the age-adjusted CHD death rate among males was nearly 1.9 times greater than the age-adjusted CHD death rate among females (136.7 per 100,000 residents versus 73.2 per 100,000 residents).[13]
- Non-Hispanic Blacks had the highest age-adjusted CHD death rate compared to other race/ethnicities.[13]

State Statistics and Disparities



- In 2019, the total age-adjusted CHD death rate among California residents was 92.3 per 100,000 residents.[13]
- Male residents in California had higher actual and age-adjusted death rates due to CHD (125.6 per 100,000 residents and 124.4 per 100,000 residents, respectively) than female residents (88.1 per 100,000 residents and 65.8 per 100,000 residents, respectively).[13]
- Non-Hispanic Black residents in California had the highest age-adjusted CHD death rate (148.2 per 100,000 residents) followed by non-Hispanic White residents (102.2 per 100,000 residents).[13]

Local Statistics and Disparities



*CHD Death refers to underlying cause of death among San Diego County residents (ICD-10 codes I11, I120-I25).
**Age-adjusted rates are per 100,000. 2000 U.S. Standard population.
†Sources: California Department of Public Health, Center for Health Statistic, Office of Health Information and Research, Vital Records Business Intelligence System (VRBIS), 2019. Population estimates San Diego Association of Governments (SANDAG), 2019 v5/2020.
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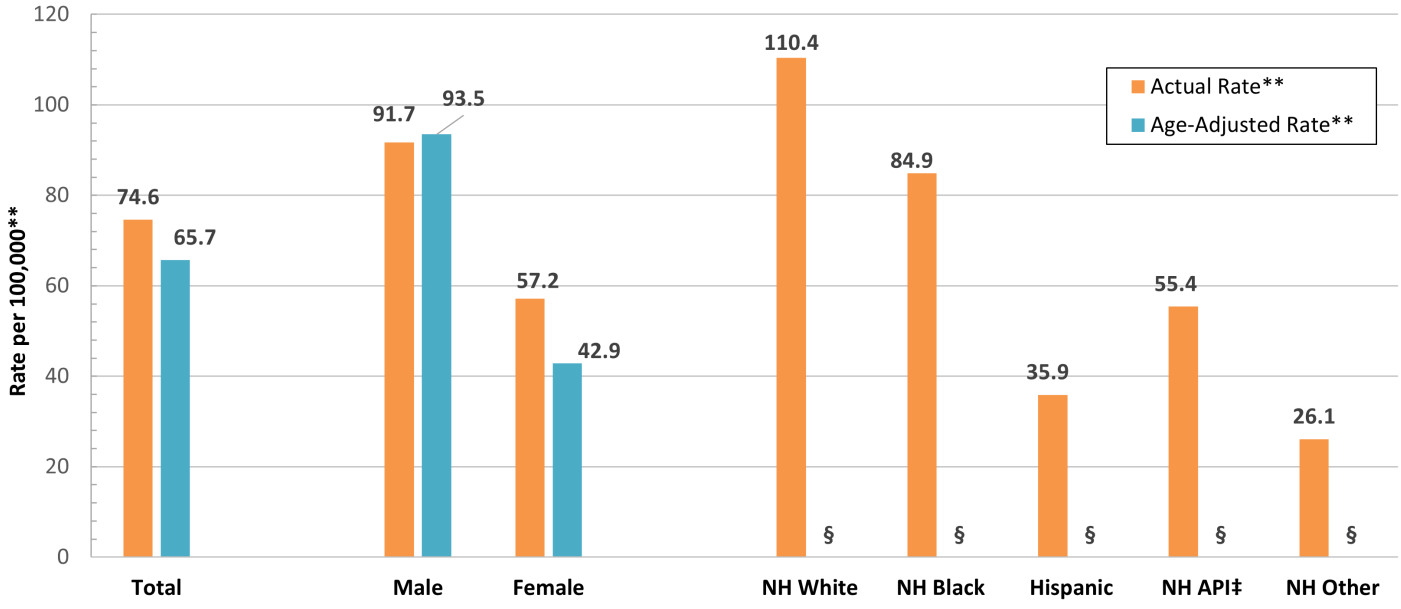
- CHD death rates gradually declined from 2016 to 2019 at the national, state, and local levels.[13,14]
- From 2016 to 2019, age-adjusted CHD death rates in San Diego County remained lower than state and national rates.[13,14]



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**Rates calculated per 100,000 residents.
§ Rates not calculated for < 5 cases.
‡ API includes Asian and Pacific Islander. NH refers to non-Hispanic.
Sources: California Department of Public Health, Center for Health Statistic, Office of Health Information and Research, Vital Records Business Intelligence System (VRBIS), 2019. Population estimates San Diego Association of Governments (SANDAG), 2019 v5/2020.

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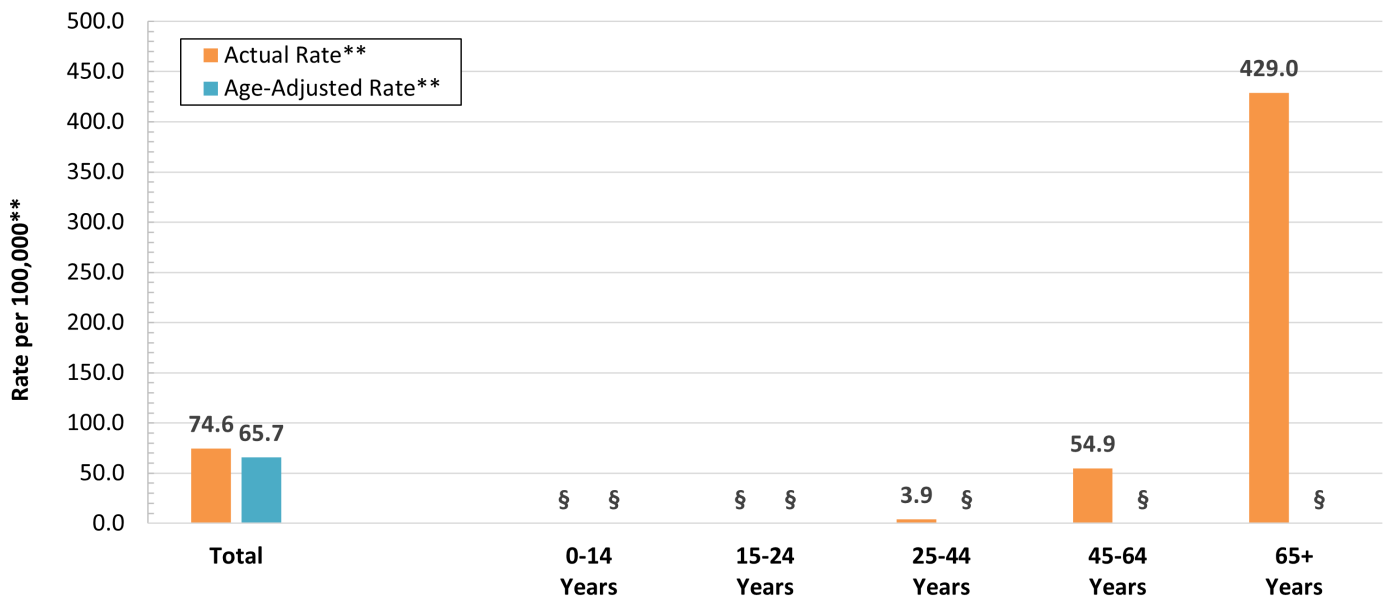
- The actual CHD death rate among residents of San Diego County was 74.6 per 100,000 residents in 2019.[14]
- In San Diego County, men had higher actual and age-adjusted CHD death rates compared to women.[14]
- Non-Hispanic White residents had the highest actual CHD death rate in San Diego County (110.4 per 100,000 residents) followed by non-Hispanic Black residents (84.9 per 100,000 residents).[14]



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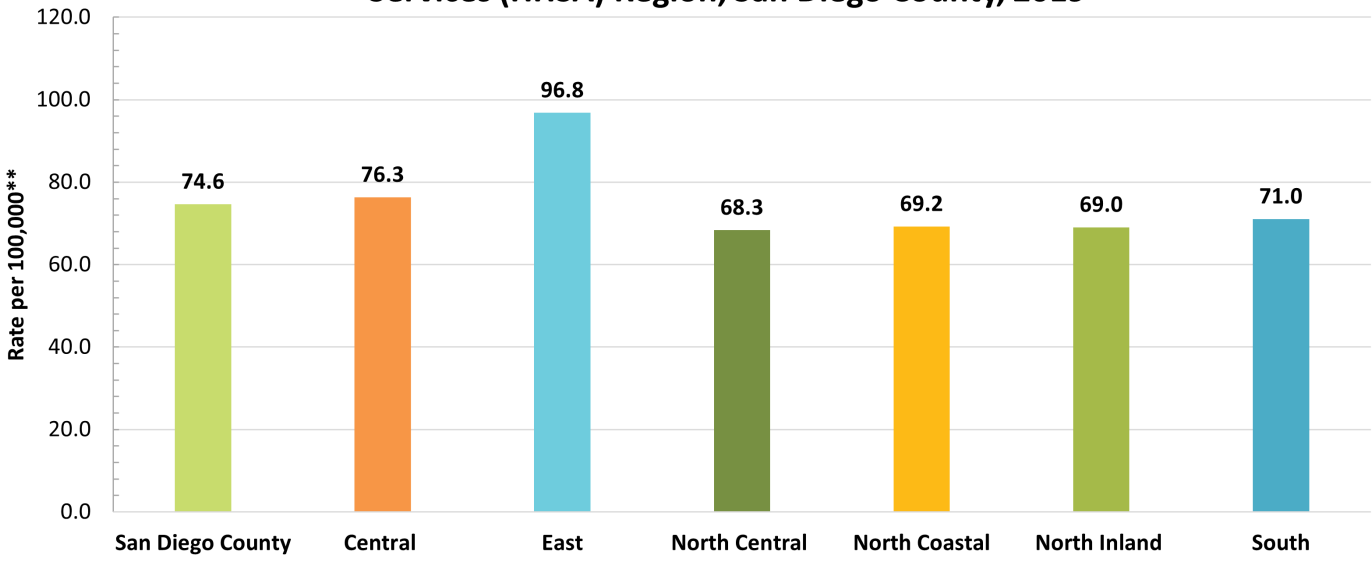
- In 2019, the CHD death rate among San Diego County residents aged 65+ was approximately 6 times higher than the total San Diego County CHD death rate (429.0 per 100,000 residents versus 74.6 per 100,000 residents).[14]



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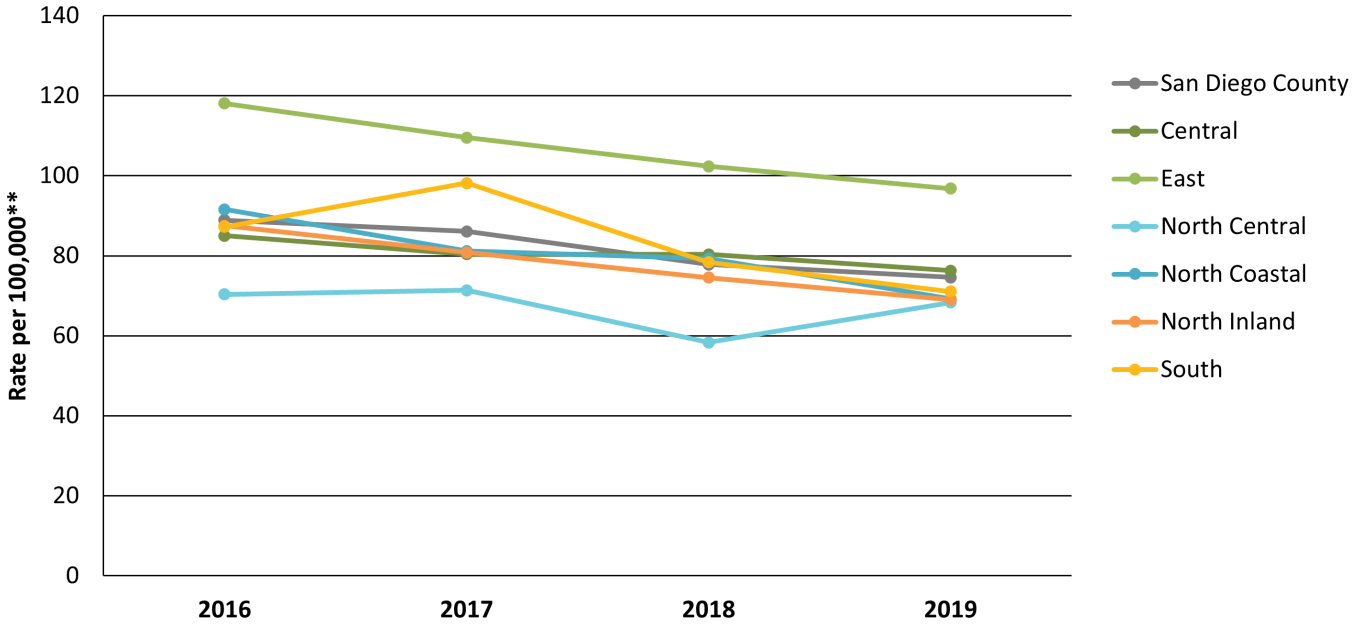
- In 2019, East Region of San Diego County had the highest CHD death rate (96.8 per 100,000 residents), while North Central Region had the lowest (68.3 per 100,000 residents).[14]
- East Region and Central Region had CHD death rates (96.8 per 100,000 residents and 76.3 per 100,000 residents, respectively) that were higher than the county CHD death rate (74.6 per 100,000).[14]

Coronary Heart Disease (CHD) Death* Rates** by Health and Human Services (HHSA) Region, San Diego County, 2016-2019



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- From 2016 to 2019, East Region of San Diego County had the highest CHD death rates while North Central Region had the lowest CHD death rates.[14]

CHD and Its Complications: Prevention for Individuals[15]

- *Quit smoking or avoid smoking*
- *Be physically active*
  - Exercise can help you maintain a healthy weight and lower your blood pressure, cholesterol, and blood sugar levels.
- *Eat healthy foods*
  - Consuming food high in saturated fat and trans fat can increase risk of heart disease.
  - Eat foods that are high in fiber and low in saturated fats, trans fat and cholesterol.
  - Limit salt and sugar consumption.
- *Maintain a healthy weight*
  - Obesity is a major risk factor for CHD.
- *Avoid excessive alcohol consumption*
  - Drinking too much alcohol can raise blood pressure.
- *Have regular doctor checkups*
  - Major risk factors such as smoking, elevated cholesterol or blood pressure, excess weight, and diabetes need to be identified and monitored by a physician.
- *Control cholesterol levels*
  - Blood cholesterol level can be controlled through diet, exercise, weight loss, and/or drug therapy.
  - Blood cholesterol levels should be checked once every 4-6 years.
- *Monitor blood pressure*
  - Blood pressure should be checked at least every two years or even more often if there is a history of high blood pressure.
- *Control diabetes*
- *Know and Recognize the Major Symptoms of a Heart Attack[16]:*
  - Pain or discomfort in the jaw, neck, or back
  - Feeling weak, light-headed, or faint
  - Chest pain or discomfort
  - Pain or discomfort in arms or shoulder
  - Shortness of breath
  - Women are more likely than men to experience common symptoms, but may also experience the following symptoms[17]:
    - Uncomfortable pressure and pain in the center of the chest
    - Pain or discomfort in one or both arms, back, neck, jaw or stomach
    - Shortness of breath with or without chest discomfort
    - Breaking out in cold sweat
    - Nausea or vomiting
    - Lightheadedness
  - If symptoms appear, **call 9-1-1 immediately.**

Prevention Tools for Public Health Professionals: CHD Critical Pathway

There are many opportunities for public health professionals in the community to help reduce the risk of CHD and to improve the health outcomes of individuals who already have the disease. To assist in community health efforts, a *CHD Critical Pathway* was developed.

The *CHD Critical Pathway* is a tool to be used in health promotion and disease prevention efforts. Its purpose is to identify populations at greater risk for CHD, and to identify prevention and early intervention opportunities. The *CHD Critical Pathway* displays a diagram of the major risk factors and intermediate outcomes or related diseases that have an impact on, or result from, CHD. Risk factors are marked as non-modifiable (black striped bars) such as race/ethnicity or sex and modifiable (solid-colored bars) such as physical activity or high blood pressure.

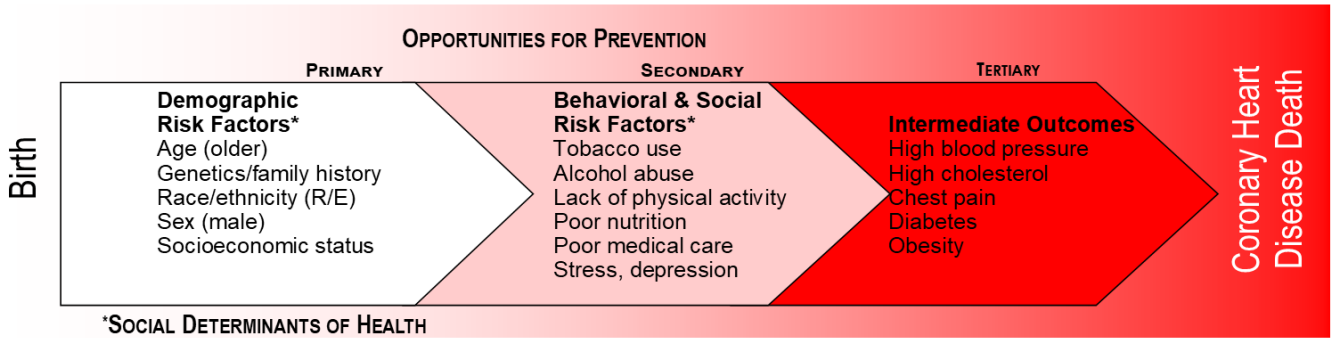
Beneath the risk factors diagram is a data grid describing the San Diego resident population in relation to selected elements of the pathway. The data grid is designed to assist in quick identification of opportunities for interventions that might have a high impact on a particular disease. The data represent all San Diegans, not only those with a particular disease. The left axis (bar) indicates the percent of the population with a known risk factor or intermediate outcome. The right axis (diamond) indicates the rate of a particular medical encounter within the population that is specified. The data are described fully in the complete version of the *Critical Pathways*.[18]

In addition, the Community Health Statistics Unit website (www.SDHealthStatistics.com) provides detailed demographic, health and facility data including maps of geographically formatted health data. Also available are links to other County data sources and state and national sites of interest. For further assistance with data or interpretation, please contact the Community Health Statistics Unit.

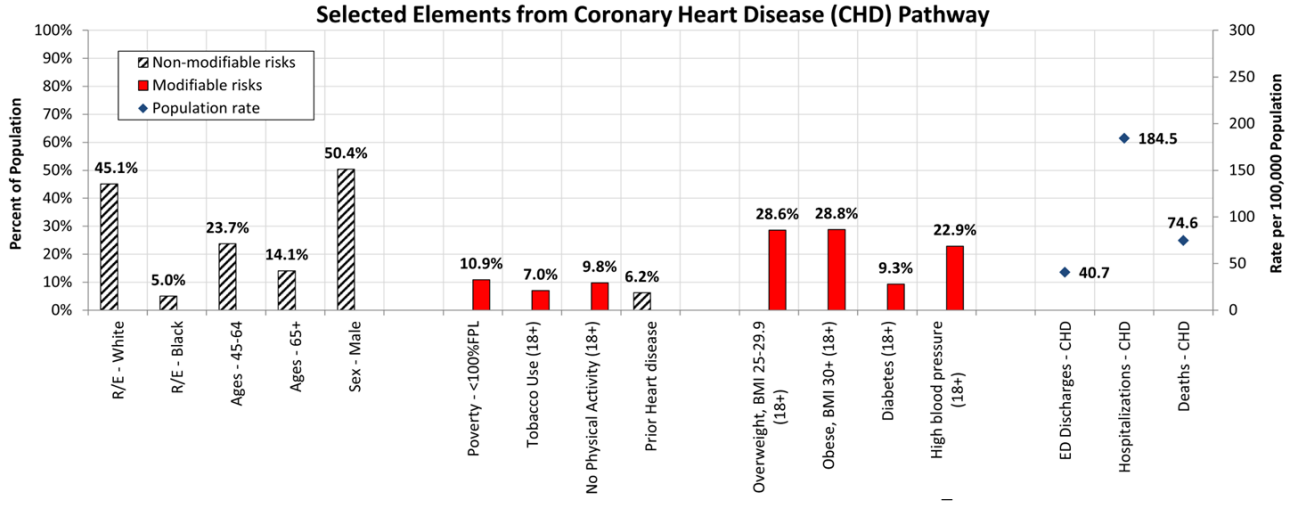
CHD Critical Pathway to Disease

Critical Pathway

Coronary Heart Disease (CHD)



Characteristics of Residents, San Diego County
Selected Elements from Coronary Heart Disease (CHD) Pathway



County of San Diego ■ Health and Human Services Agency ■ Public Health Services ■ Community Health Statistics Unit ■ www.SDHeathStatistics.com ■ (619)692-8667 08/2022

Data Sources

[1] Centers for Disease Control and Prevention. (2021). *Coronary Artery Disease*. https://www.cdc.gov/heartdisease/coronary_ad.htm.
[2] Centers for Disease Control and Prevention. (2022). Heart Attack Symptoms, Risk and Recovery. https://www.cdc.gov/heartdisease/heart_attack.htm.
[3] Tsao, C. W., Aday, A. W., Almarzooq, Z. I., Alonso, A., Beaton, A. Z., Bittencourt, M.S., Boehme, A. K., Buxton, A.E., Carson, A. P., Commodore-Mensah, Y., Elkind, M. S.V., Evenson, K. R., Eze-Nliam, C., Ferguson, J. F., Generoso, G., Ho, J. E., Kalani, R., Khan, S. S., Kissela, B. M., & Knutson, K. L. (2022). Heart Disease and Stroke Statistics—2022 Update: A Report from the American Heart Association. *Circulation*, *145*(8). https://doi.org/10.1161/cir.0000000000001052.
[4] Centers for Disease Control and Prevention. (2019). *Heart Disease: Know Your Risk for Heart Disease*. https://www.cdc.gov/heartdisease/risk_factors.htm.
[5] National Heart, Lung, and Blood Institute. (2022). *Coronary Heart Disease: Causes and Risk Factor*. https://www.nhlbi.nih.gov/health/coronary-heart-disease/causes.
[6] National Institute on Aging. (2018). *Heart Health and Aging*. https://www.nia.nih.gov/health/heart-health-and-aging.
[7] National Heart, Lung, and Blood Institute. (2022). *What is High Blood Pressure (Hypertension)*. https://www.nhlbi.nih.gov/health/high-blood-pressure.
[8] Centers for Disease Control and Prevention and National Center for Chronic Disease Prevention and Health Promotion. Behavioral Risk Factor Surveillance System (BRFSS): BRFSS Prevalence & Trends Data. https://www.cdc.gov/brfss/brfssprevalence/
[9] Hermiz, C., & Sedhai, Y. R. (2022). *Angina*. PubMed; StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK557672/?msclkid=71531257d0ed11ecb64d7f140c4cfb80.
[10] Centers for Disease Control and Prevention. (2021). *Diabetes and Your Heart*. https://www.cdc.gov/diabetes/library/features/diabetes-and-heart.html.
[11] Centers for Disease Control and Prevention. (2021). *Men and Heart Disease*. https://www.cdc.gov/heartdisease/men.htm.
[12] Centers for Disease Control and Prevention. (2020). *Women and Heart Disease*. https://www.cdc.gov/heartdisease/women.htm.
[13] National Vital Statistics System, CDC, NCHS. Online database accessed 05/09/2022, http://www.wonder.cdc.gov.
[14] California Department of Public Health, Center for Health Statistic, Office of Health Information and Research, Vital Records Business Intelligence System (VRBIS), 2019.
[15] Centers for Disease Control and Prevention. (2020). *Prevent Heart Disease*. https://www.cdc.gov/heartdisease/prevention.htm.
[16] American Heart Association. *Warning Signs of a Heart Attack*. https://www.heart.org/en/health-topics/heart-attack/warning-signs-of-a-heart-attack.
[17] American Heart Association. *Heart Attack Symptoms in Women*. https://www.heart.org/en/health-topics/heart-attack/warning-signs-of-a-heart-attack/heart-attack-symptoms-in-women.
[18] County of San Diego Health and Human Services Agency, Public Health Services. Community Health Statistics Unit. (2022). Critical Pathways: CHD. August 2022.