

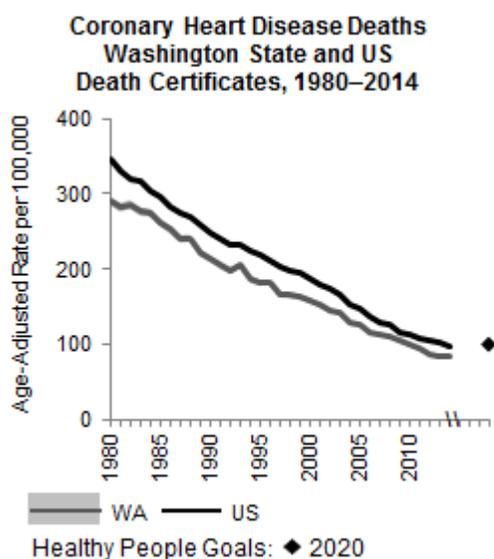
Coronary Heart Disease

Definition: Coronary heart disease is usually caused by atherosclerosis which can result in decreased blood flow through the vessel. This results in decreased oxygen supply to the heart muscle and can cause reduced heart muscle function and destruction of heart muscle cells (myocardial infarction or "heart attack"). ICD-9 codes 410-414, 429.2. ICD-10 codes I20-I25.

This is a data update of the *Health of Washington State* chapter on [Coronary Heart Disease](#) published in 2013.

Time Trends

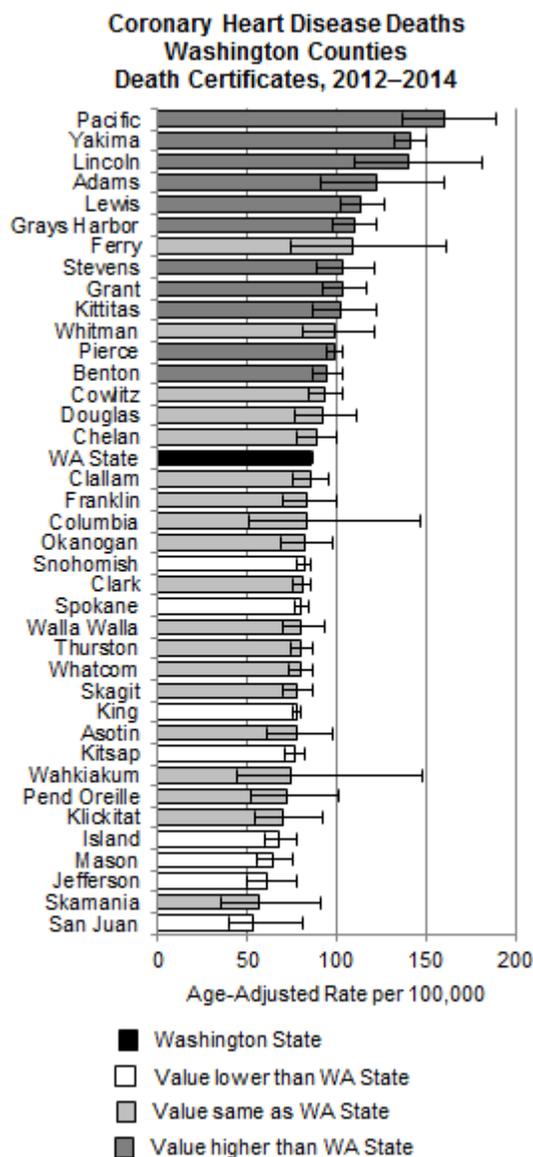
Coronary heart disease death rates have steadily declined in both Washington and the United States. Between 1980 and 2014, the [age-adjusted](#) death rate declined from 291 to 86 deaths per 100,000 people in Washington. In the United States, the age-adjusted rate declined from 345 to 99 deaths per 100,000 people between 1980 and 2014. Since 1980, the age-adjusted rate of death has been lower in Washington than the United States. This difference has been decreasing since around 2000. Washington has already met the *Healthy People 2020* goal, and will likely continue to meet it.



Multiple factors have likely contributed to the decline in coronary heart disease deaths.^{1,2} This includes greater control of risk factors, specifically reductions in total cholesterol, systolic blood pressure, smoking and physical inactivity, resulting in declining incidence of

coronary heart disease. Improved medical and surgical treatments have also contributed to the decline in deaths.

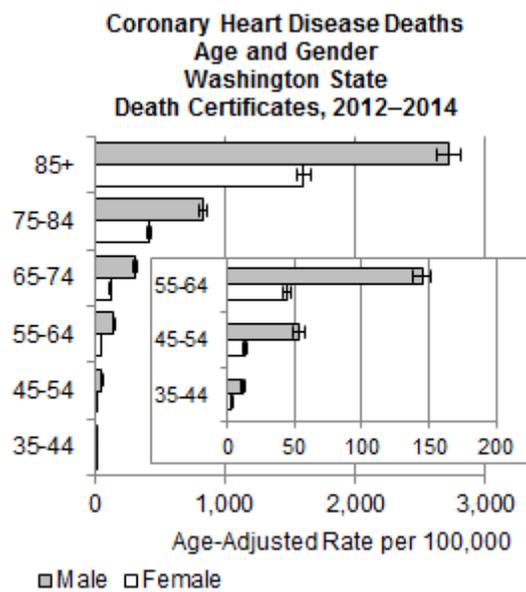
Geographic Variation



Washington's age-adjusted coronary heart disease death rate during 2012–2014 was 86 deaths per 100,000 people. Age-adjusted rates ranged from 54 deaths per 100,000 people in San Juan County to 161 deaths per 100,000 people in Pacific County. Eleven counties had age-adjusted death rates that were higher than the state rate: Pacific, Yakima, Lincoln, Adams, Lewis, Grays Harbor, Stevens, Grant, Kittitas, Pierce and Benton counties. Eight counties had age-adjusted death rates that were lower than the state rate: Snohomish, Spokane, King, Kitsap, Island, Mason, Jefferson and San Juan counties. The rate of death from coronary heart disease in Garfield County was not included in the chart because there were too few deaths, less than 15 in the three-year period, to report a reliable rate.

Age and Gender

The numbers and rates of coronary heart disease deaths in Washington increase with age. In each age group, men have higher rates than women. Twenty percent of deaths occur among people less than 65 years of age. This is similar to national patterns.

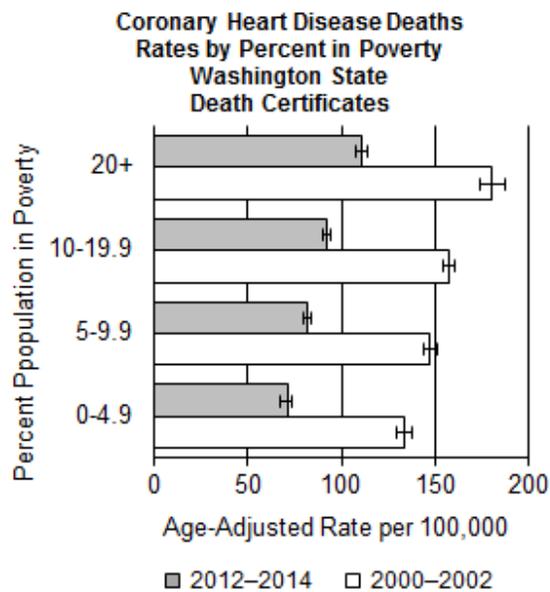


Economic Factors and Education

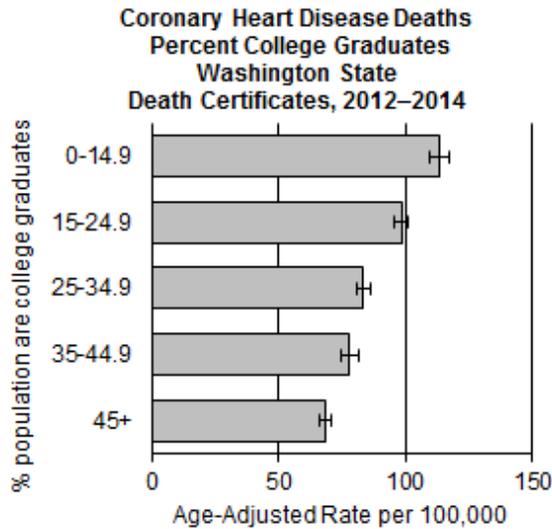
Individuals in lower socioeconomic groups experience higher rates of coronary heart disease deaths than those in higher groups.^{3,4,5} Studies also suggest that increased risk of coronary heart disease death occurs in people living in lower socioeconomic neighborhoods, regardless of individual factors.^{6,7} Differences in

hypertension, high blood cholesterol, unhealthy behaviors such as smoking and inactivity, past cardiovascular events, behavior after a heart attack, psychosocial stressors, and access to care may account for the relationship between socioeconomic position and coronary heart disease deaths.^{8,9}

One measure of neighborhood socioeconomic characteristics is the percent of the population living in poverty. Using this measure, during 2012–2014 combined, age-adjusted coronary heart disease death rates were 1.6 times higher for Washington residents in census tracts with 20% or more of the population living below the federal poverty level compared to rates in census tracts where less than 5% of the population lived in poverty. Since early 2000, rates for all groups have been decreasing; however, the relative difference between the lowest and highest groups has increased. Compared to the highest poverty level, rates in the lowest level were 35% higher in 2000–2002 and 56% higher in 2012–2014.

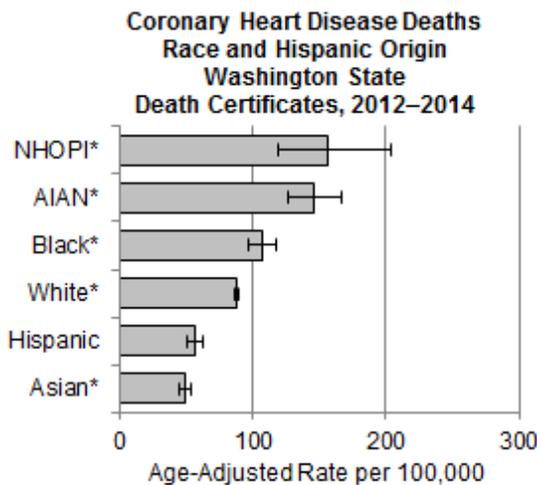


Neighborhood educational level can be measured as the percent of the population ages 25 and older with a college education or more. During 2012–2014 combined, age-adjusted coronary heart disease death rates were 1.7 times higher for Washington residents in census tracts where less than 15% of the population were college graduates compared to rates in census tracts where 45% or more of the population were college graduates.



Race and Hispanic Origin

Washington’s age-adjusted coronary heart disease death rate during 2012–2014 was highest among Native Hawaiians and other Pacific Islanders (156 deaths per 100,000 people) and American Indians and Alaska Natives (145 deaths per 100,000 people).



* Non-Hispanic
AIAN: American Indian/Alaska Native
NHOPI: Native Hawaiian/Other Pacific Islander

American Indians and Alaska Natives in Washington had a higher age-adjusted coronary heart disease death rate than the United States (100 deaths per 100,000 people). Age-adjusted rates for blacks, whites and Hispanics were all lower than the national rate. Comparable national rates were not available for Asians or Native Hawaiians and other Pacific Islanders.

Data Sources (For additional detail, see [Appendix B.](#))

Washington State Death Certificate Data: Washington State Department of Health, Vital Registration System Annual Statistical Files, Deaths 1980–2014, released October 2015; data prepared by Washington State Department of Health, Center for Health Statistics.

Centers for Disease Control and Prevention, National Center for Health Statistics. Compressed Mortality File 1999-2014 on CDC WONDER Online Database, released December 2015. Data are from the Compressed Mortality File 1999-2014 Series 20 No. 2T, 2015, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/cmfi-icd10.html>.

Washington State population counts: 2000 and 2010 U.S. Census and 2001–2009 intercensal and 2011–2014 post-censal estimates, Washington State Office of Financial Management, Forecasting Division (OFM), released January, 2015; 1990 U.S. Census and 1991–1999 OFM intercensal estimates, Vista Partnership and Krupski Consulting, released October 2007; 1980 U.S. Census and 1981–1989 OFM intercensal estimates.

Technical Notes

In January 1999, the United States began using the International Classification of Diseases, Tenth Revision (ICD-10) to classify causes of death reported on death certificates. Counts and rates for years coded with ICD-9 are multiplied by the age-specific comparability ratios (only apply to underlying causes of death). The standard errors and confidence intervals incorporate the variance of the age-specific comparability ratios. For more information on the change from ICD-9 to ICD10, see the department’s Center for Health Statistics ICD-10 Information Page at <http://www.doh.wa.gov/DataandStatisticalReports/VitalStatisticsData/DeathData/ICD10.aspx>.

For More Information

Washington State Department of Health, Heart Disease, Stroke, and Diabetes Prevention Program: (360) 236-3770.

Healthy People 2020, Heart Disease and Stroke: <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=21>.

Million Hearts Initiative: <http://millionhearts.hhs.gov/index.html>.

Acknowledgments

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Endnotes

¹ Wijeyesundera HC, Machado M, Farahati F, et al. Association of temporal trends in risk factors and treatment uptake with coronary heart disease mortality, 1994–2005. *JAMA*. 2010;303(18):1841-1847.

² Ford ES, Ajani UA, Croft JB, et al. Explaining the decrease in U.S. deaths from coronary disease, 1980-2000. *N Engl J Med*. 2007;356(23):2388-2398.

³ Keil JE, Sutherland SE, Knapp RG, Tyroler HA. Does equal socioeconomic status in black and white men mean equal risk of mortality? *Am J Public Health*. 1992;82(8):1133-1136.

⁴ Kucharska-Newton AM, Harald K, Rosamond WD, Rose KM, Rea TD, Salomaa V. Socioeconomic indicators and the risk of acute coronary heart disease events: comparison of population-based data from the United States and Finland. *Ann Epidemiol*. 2011;21(8):572-579.

⁵ Pollitt RA, Rose KM, Kaufman JS. Evaluating the evidence for models of lifecourse socioeconomic factors and cardiovascular outcomes: a systematic review. *BMC Public Health*. 2005;5:1-13.

⁶ Steenland K, Henley J, Calle E, Thun M. Individual- and area-level socioeconomic status variables as predictors of mortality in a cohort of 179,383 persons. *Am J Epidemiol*. 2004;159(11):1047-1056.

⁷ Foraker RE, Rose KM, Kucharska-Newton AM, Ni H, Suchindran CM, Whitsel EA. Variation in rates of fatal coronary heart disease by neighborhood socioeconomic status: the atherosclerosis risk in communities surveillance (1992–2002). *Ann Epidemiol*. 2011;21(8):580-588.

⁸ Alter DA, Chong A, Austin PC, et al. Socioeconomic status and mortality after acute myocardial infarction. *Ann Intern Med*. 2006;144(2):82-93.

⁹ Lang T, Lepage B, Schieber AC, Lamy S, Kelly-Irving M. Social determinants of cardiovascular diseases. *Public Health Rev*. 2012;33:601-622.