Mortality and Life Expectancy

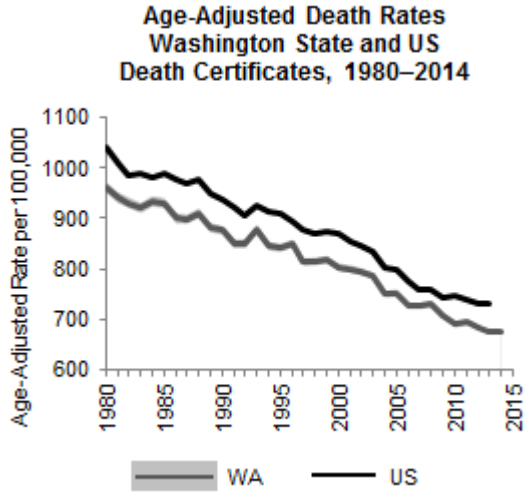
Definitions: **Mortality** includes deaths from all causes in a given year. **Life Expectancy** is the number of years a newborn can be expected to live if the current age-specific death rates continue. Death rates and life expectancy are complementary measures of overall health. As death rates increase, life expectancy decreases.

This is a data update of the *Health of Washington State* chapter on Mortality and Life Expectancy published in 2013.

Time Trends

Washington's age-adjusted death rate fell from 962 per 100,000 people in 1980 to 679 per 100,000 in 2014—an overall decrease of 29%. During that period, two distinct trends were identified: one from 1980 to 2001, when the rates fell by less than 1% a year, and another from 2001 to 2014, when the rates fell by 1.5% a year.

From 1980 to 2002, women's age-adjusted mortality rates fell by 0.5% a year; however, in 2002, the mortality rate for women began to fall by 1.3% per year and continued declining at that pace through 2014. Overall, from 1980 to 2014, the age-adjusted rates for women fell from 767 per 100,000 in 1980 to 581 per 100,000 in 2014, a total decline of 24%.



From 1980 to 1996, the age-adjusted death rates among men decreased by 1% per year and from 1996 to 2014 the rate decreased by 1.8% per year. Overall, rates among men fell 35%, from a high of 1,227 per 100,000 in 1980 to 798 per 100,000 in 2014.

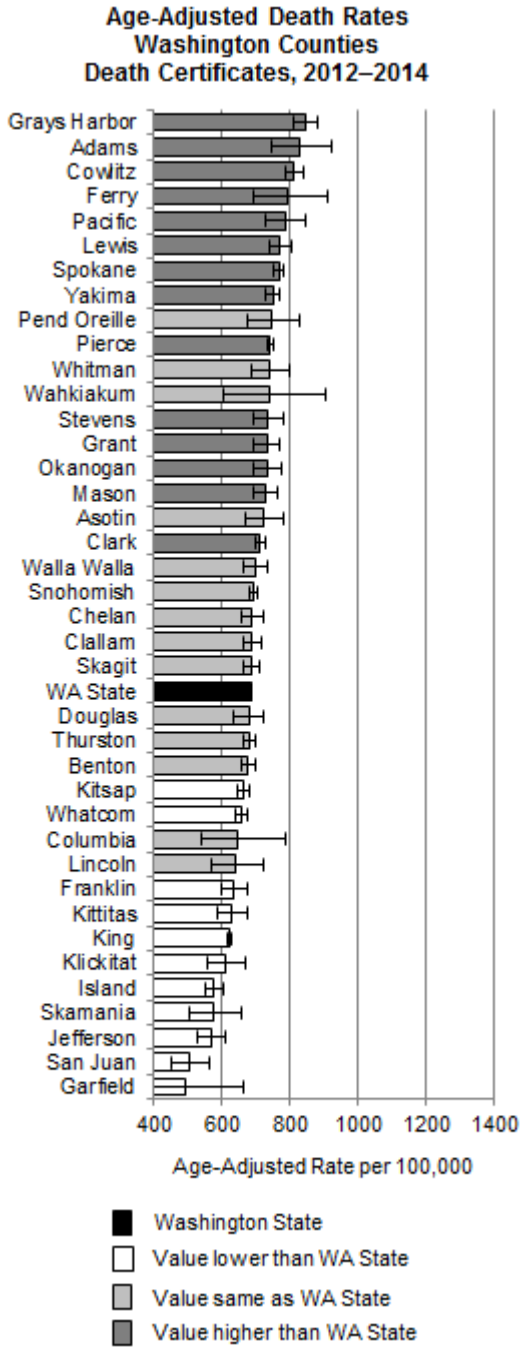
The overall state decline might mask trends for some groups. A 2013 study found that female mortality rates may be increasing in some parts of Washington. The authors examined all-cause, age-adjusted mortality rates by gender for county residents aged 75 or younger for 1992–1996 and 2002–2006. Fourteen Washington counties showed increased female mortality rates between the two time periods. In contrast, no Washington county had increased mortality rates for males.[1]

Geographic Variation

Age-adjusted death rates vary widely across Washington counties. During 2012–2014 combined, Grays Harbor County had the highest death rate (847 per 100,000 people); Garfield County had the lowest death rate (490 per 100,000 people).

Age-adjusted death rates for 2012–2014 combined were lower than the state rate in Kitsap, Whatcom, Franklin, Kittitas, King, Klickitat, Island, Skamania, Jefferson, San Juan, and Garfield counties, while 14 counties had age-adjusted death rates that were higher than the state rate beyond what might be expected from annual random variation.

Nationally, higher county-level mortality rates have been associated with lower county-level income, education and population density and higher adult smoking rates.[1,2]



Leading Causes

Leading causes of death are classified and ranked according to the *List of 113 Selected Causes of Death* and guidelines published by the National Center for Health Statistics.[3]

During 2012–2014 combined Washington's 10 leading causes of death were: cancer, heart disease, Alzheimer's disease, chronic lower respiratory disease, unintentional injury, cerebrovascular disease, diabetes, suicide, chronic liver disease, and influenza and pneumonia.

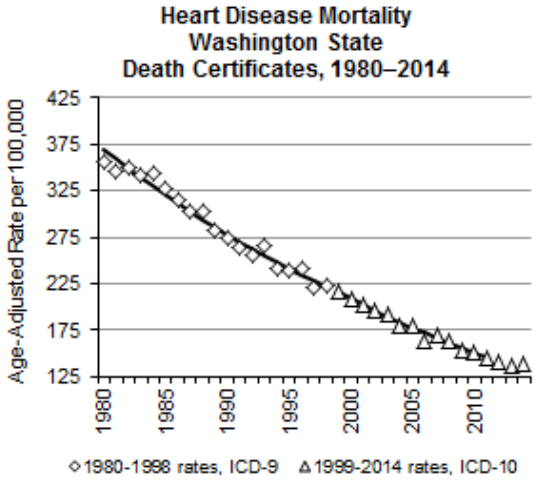
Leading Causes of Mortality
Washington State
Death Certificates, 2012–2014

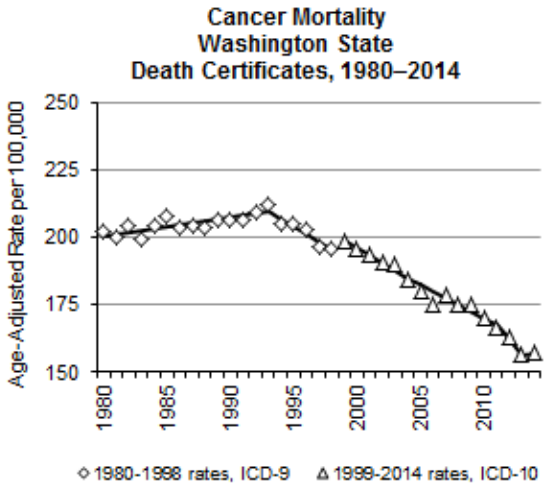
Cause	Number of Deaths	Percent of Deaths	Age-Adjusted Rate per 100,000 Population
Cancer	35,933	23	159
Heart disease	31,356	20	139
Alzheimer's Disease	9,827	6	44
Chronic lower respiratory disease	8,767	6	40
Unintentional Injury	8,441	6	39
Cerebrovascular Disease	7,767	5	35
Diabetes	4,917	3	22
Suicide	3,155	2	15
Liver disease	2,719	2	11
Influenza and pneumonia	2,212	1	10

Leading causes of death, however, vary with age. For example, in Washington, stroke, heart disease, chronic lower respiratory disease and cancer cause proportionately more deaths among the elderly, while unintentional injuries cause more deaths among the young.

While heart disease and cancer accounted for almost half of all deaths in Washington, age-adjusted mortality rates for these diseases have been declining over time.

This trend is particularly pronounced for heart disease, for which the death rate in 2014 was 61 percent lower than in 1980. Most of the decline in heart disease is due to large declines in coronary heart disease mortality which are attributable to improved treatment, greater control of blood pressure and cholesterol, reductions in smoking, and increased physical activity.[4,5] (See Coronary Heart Disease.)



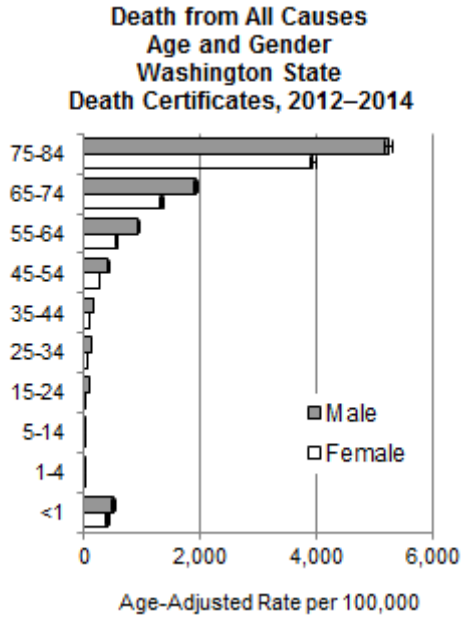


For all cancers combined, age-adjusted mortality rates increased from 1980 to 1993. Since 1993, the trend has been downward. Improvements in cancer treatments, early detection, and the decline in tobacco use have likely contributed to the overall decline.[6] For men, the decline parallels a decline in incidence of cancer. For women, incidence has been stable since 1998.[7] Cancer is many different diseases, each of which might have its own causes, risk factors, treatments and preventive measures.

Age and Gender

Children ages 1–4 and 5–14 have the lowest mortality rates, with no gender differences. In each of the remaining age groups, however, male death rates are higher than female death rates, including among those aged 85 or older who are not shown below. During 2012–2014 combined, age-adjusted mortality rates for Washington residents aged 85 or older were about 13,000 per 100,000 women and 15,500 per 100,000 men. During 2012–2014 on average, the rates for males were 1.5 times higher than the rates for females. But among youth and young adults ages 15–24, the rate for males was more than 2.5 times higher than the rate for females. Similarly, the rate for males ages 25–34 was more than twice the female rate.

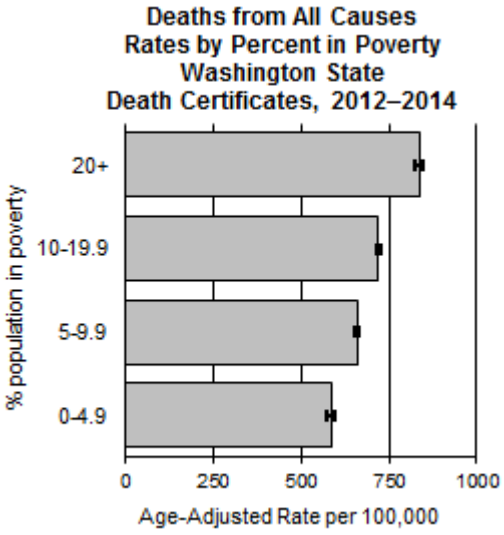
Overall, 31% of all male deaths occurred among those younger than age 65; in contrast, only 20% of all female deaths occurred in that age group.



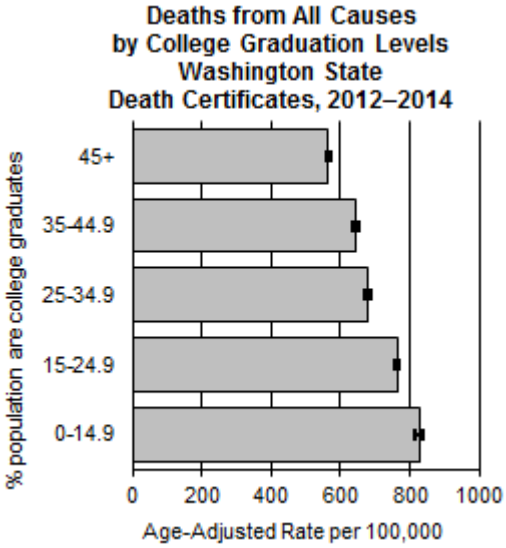
Economic Factors and Education

Individuals with higher education or income generally experience better health outcomes than people with lower levels of education or income.[8] However, people's health and mortality risk may also be affected by the education and income level of the community in which they live.[1]

During 2012-2014 combined, census tract death rates increased as the proportion of people living in poverty in those census tracts increased. The age-adjusted death rate for people who lived in census tracts where 20% or more of the population lived in poverty was about 45% higher than the rate in census tracts where less than 5% of the population lived in poverty.

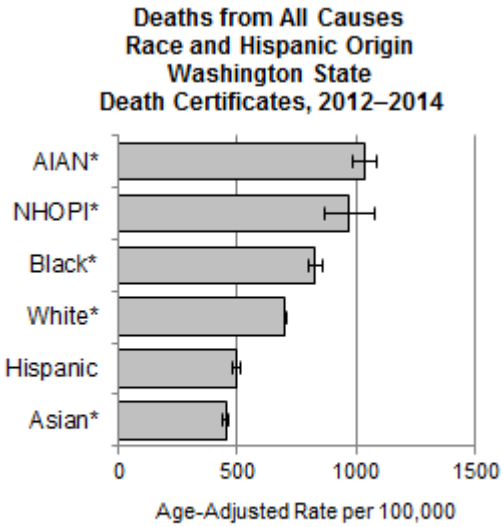


During 2012–2014, the age-adjusted death rates for people living in census tracts with the lowest percent of residents completing college was about 45% higher than the death rate in census tracts with the highest percent of residents ages 25 and older having completed college.

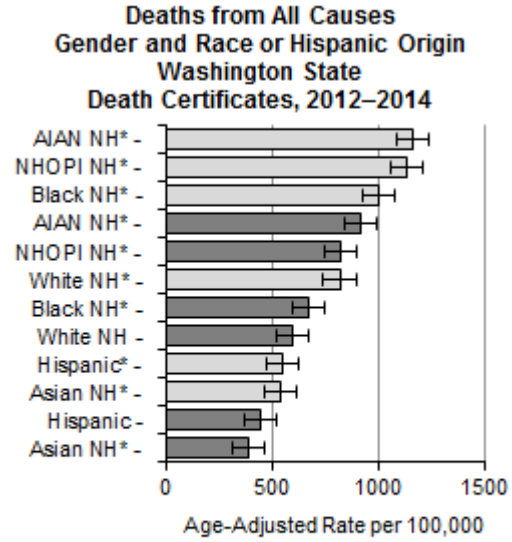


Race and Hispanic Origin

During 2012–2014 combined, American Indians and Alaska Natives had the highest age-adjusted death rates—significantly higher than whites, blacks, Hispanics or Asians. Asians had the lowest mortality rates. The death data may underreport American Indians and Alaska Natives because the recording of race on the death certificate by coroners, funeral directors or medical examiners can be based on decedent's appearance rather than asking next-of-kin for the information; consequently the mortality rates for that population may be even higher than shown here.[9]



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



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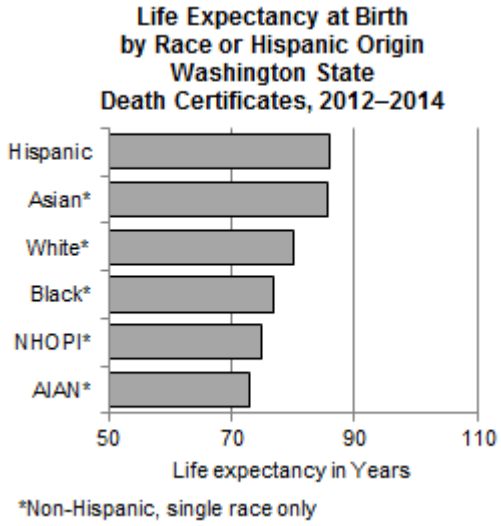
Pronounced differences were also identified when rates were computed by both gender and race and Hispanic ethnicity. American Indian and Alaska Native males had the highest age-adjusted death rate of 1,162 per 100,000. This rate was higher than the rates for all other groups, and was more than 2.9 times higher than the age-adjusted death rate for Asian females (392 per 100,000), the group with the lowest rate.

Social and economic conditions likely underlie these differences among racial and ethnic groups and include such factors as poverty or other early life stressors, limited or culturally acquired lifestyles, lack of access to medical care and unsafe environments. These factors are discussed in detail in the *Health of Washington State* chapter on Social and Economic Determinants of Health**.**

Life Expectancy at Birth

Trends in life expectancy show that Washingtonians are living longer: the average life expectancy for those born in 2014 is 80 years, about five years longer than for those born in 1980. Life expectancy differs by gender. Life expectancy for females born in 2014 is 83 years, compared to males born in 2014 who have a life expectancy of 78 years. However, some counties in Washington have shown a decline in life expectancy, particularly in the female population.[1]



Patterns in life expectancy data by race indicate that American Indian and Alaska Native, and Native Hawaiian and Other Pacific Islanders have the shortest life expectancy: 73 and 75 years, respectively. Hispanics and Asians have the longest life expectancy: 86 years.

Data Sources

Washington State Death Certificate data: Washington State Department of Health, Vital Registration System Annual Statistical Files, Deaths 1980–2014, released September 2015.

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 May, 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; 2009-2013 American Community Survey summary file, released December 2014.

For More Information

Washington State Center for Health Statistics, state vital statistics 2014, September 2015, Olympia, WA. See also http://www.doh.wa.gov/DataandStatisticalReports/VitalStatisticsData.aspx

National Center for Health Statistics http://www.cdc.gov/nchs/

Technical Notes

Leading Cause of Death Definitions

Cause	ICD-10 Coding Definition
Alzheimer's Disease	G30
Cancer	C00-C97
Chronic lower respiratory disease	J40-J47
Diabetes	E10-E14
Heart disease	I00-I09, I11, I13, I20-I51
Influenza and pneumonia	J10-J18
Liver disease	K70, K73-K74
Stroke	I60-I69
Suicide	X60-X84, X87.0
Unintentional injury	V01-X59, Y85-Y86

Acknowledgments

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Endnotes

[1] Kindig DA, Cheng ER. Even as mortality fell in most US counties, female mortality nonetheless rose in 42.8 percent of counties from 1992 to 2006. *Health Aff.* 2013;32(3):451-458.

[2] Cheng ER, Kindig DA. Disparities in premature mortality between high- and low-income US counties. *Prev Chronic Dis.* 2012;9. http://dx.doi.org/10.5888/pcd9.110120. Accessed May 1, 2013.

[3] U.S. Department of Health and Human Services. *Instruction Manual Part 9: ICD-10 Cause-of-Death Lists for Tabulating Mortality Statistics (Updated March 2009 to include WHO updates to ICD-10 for data year 2009)*. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics; 2009.

http://www.cdc.gov/nchs/data/dvs/Part9InstructionManual2009.pdf. Accessed December 2012.

[4] 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.

[5] Wijeysundera 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.

[6] Jemal A, Ward E, Thun M. Declining death rates reflect progress against cancer. *PLoS One.* 2010:5(3).

[7] Washington State Cancer Registry. *Cancer By Site.* Olympia, WA: Washington State Department of Health; July 2013. https://fortress.wa.gov/doh/wscr/WSCR/PDF/10Report/CancerBySite10.pdf. Accessed August 9, 2013.

[8] Robert Wood Johnson Foundation. *Exploring the Social Determinants of Health: Race and Socioeconomic Factors Affect Opportunities for Better Health*. Issue Brief 6; 2011. http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2011/rwjf70446. Accessed December 2012.

[9] Stehr-Green P, Bettles J, Robertson LD. Effect of Racial/Ethnic Misclassification of American Indians and Alaskan Natives on Washington State Death Certificates, 1989–1997. *Am J Public Health.* 2011;9:443-444.