

# 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.

## Summary

In 2005, 46,015 Washington State residents died. More than a fourth of those deaths were among people younger than 65. [Cancer](#) was the leading cause of death overall followed by heart disease.

The 2005 [age-adjusted](#) death rate for Washington was 746 per 100,000, one of the lowest in the past 25 years. Washington's [death](#) rates have been consistently lower than the U.S. rates.

Death rates differed by gender, race, education level, and county of residence. Additionally, cluster analyses identified a large region in western Washington and smaller ones in central Washington as having higher than expected death rates.

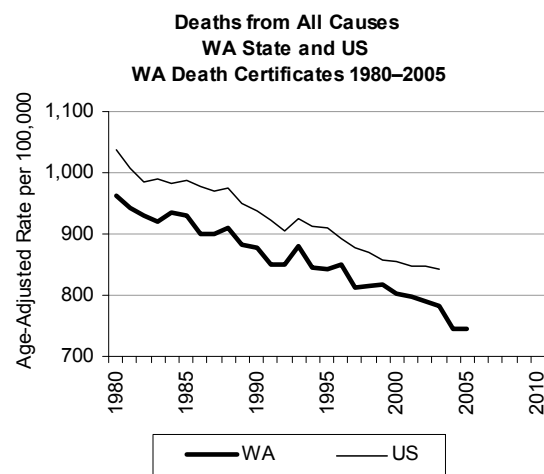
Washingtonians are living longer: the average life expectancy for those born in 2005 is 79.3 years, about four years longer than for those born in 1980. American Indian and Alaska Native males, black males, and American Indian and Alaska Native females have the shortest life expectancy. Asian and Pacific Islander, Hispanic-origin, and white females have the longest.

## Time Trends

Washington's age-adjusted death rate fell from 962 per 100,000 in 1980 to 746 per 100,000 in 2005—an overall decrease of 22%. During that period, two distinct trend lines were identified: one from 1980 to 2002, when the rates fell by 1% a year, and another from 2002 to 2005, when the rates fell by 2% a year.

From 1980 to 2002, women's rates fell by 0.5% a year; however, in 2002, the rate for women began to fall by 2% per year and continued declining at that pace until 2005. Overall, from 1980 to 2005, the age-adjusted rates for women

fell from 767 per 100,000 in 1980 to 638 per 100,000 in 2005, a total decline of 17%.



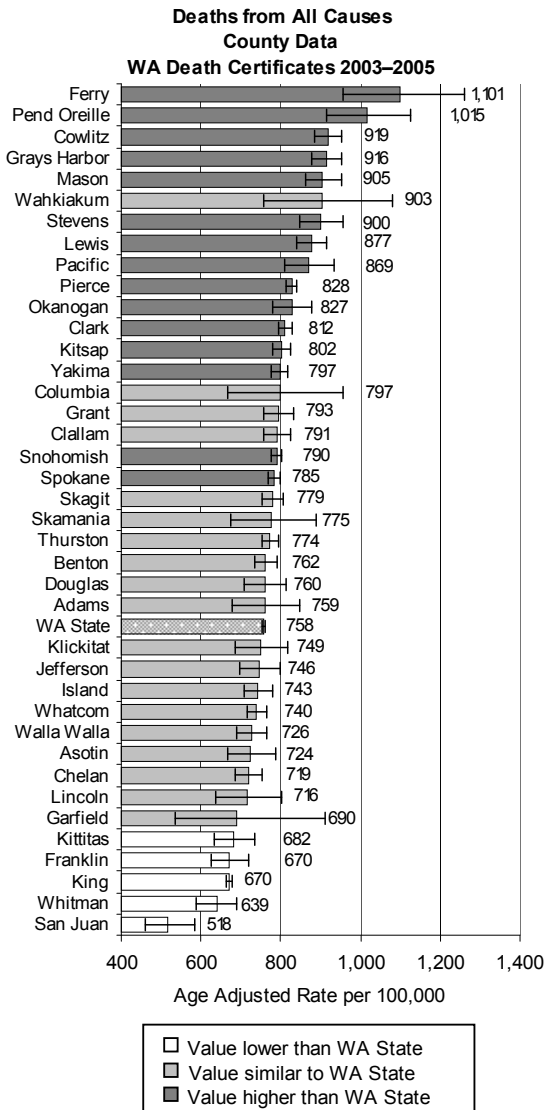
On average, death rates among men decreased by 1% a year from 1980 to 2005. No shift in their trend line occurred as had been seen among women. Overall, rates among men fell 28%, from a high of 1,227 in 1980 to 883 in 2005.

## Year 2010 Goals

*Healthy People 2010* does not have a goal for total death rates.

## Geographic Variation

Age-adjusted death rates vary widely across Washington counties. In 2003–2005, Ferry County had the highest death rate (1,101 per 100,000); San Juan County had the lowest death rate (518 per 100,000). The rates in Ferry and San Juan counties both differed significantly from the overall statewide rate of 758 per 100,000 for this period.



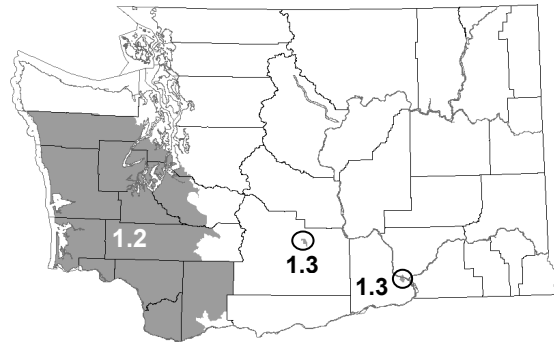
In fact, 15 counties had age-adjusted death rates that were significantly higher than the state rate. These were Ferry, Pend Oreille, Cowlitz, Grays Harbor, Mason, Stevens, Lewis, Pacific, Pierce, Okanogan, Clark, Kitsap, Yakima, Snohomish, and Spokane counties. Five counties had death rates significantly lower than the state rate. These were San Juan, Kittitas, Franklin, King, and Whitman counties.

Those with higher rates included some of the more populous counties such as Pierce, Spokane, Clark, and Snohomish counties. On the other hand, King County, the most populous county in the state, was among those with a significantly lower rate.

Because counties' populations vary in size, county-level comparisons do not always yield a true picture of disparities. For instance, data for

high-population counties can mask disparities among sub-populations or regions within them. A more uniform unit of analysis, census tracts, was used to assess mortality through SaTScan.<sup>1</sup> These analyses identified three regions with significantly higher than expected death rates, as shown in the map.

**High Relative Risk Regions for All Deaths  
WA Death Certificates 2001–2005**



A large west-southwest region had higher than expected deaths for each year assessed, as did portions of Yakima, Benton, and Franklin counties. For 2001–2005 combined, the west-southwest region had a relative risk of 1.2, equaling 20% more deaths than expected or 1,372 excess deaths per year. A smaller region in Yakima County had 30% more deaths than expected or about 100 excess deaths per year, while another smaller section of the Benton-Franklin region had 27% more deaths than expected or about 60 excess deaths per year.

### 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.<sup>2</sup>

For 2003–2005 combined, Washington's 10 leading causes of death were, in rank order: cancer, heart disease, stroke, chronic lower respiratory disease, unintentional injury, Alzheimer's disease, diabetes, influenza and pneumonia, suicide, and liver disease.

**Leading Causes of Mortality  
WA Death Certificates 2003-2005**

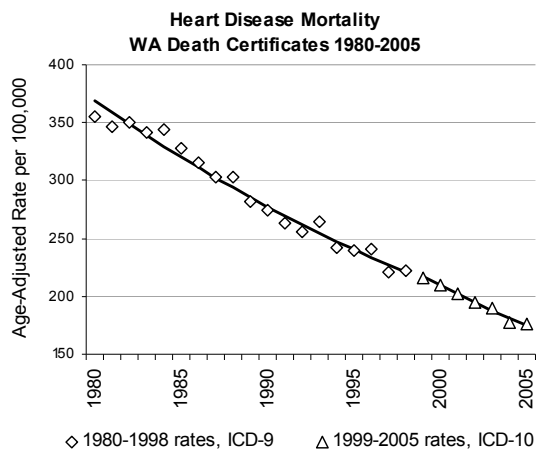
Cause	Number of Deaths	Percent of Deaths	Age-Adjusted Rate per 100,000 Population
Cancer	33,029	24	185
Heart disease	32,693	24	181
Stroke	9,709	7	54
Chronic lower respiratory disease	7,883	6	45
Unintentional injury	7,056	5	38
Alzheimer's disease	6,922	5	38
Diabetes	4,564	3	26
Influenza and pneumonia	2,745	2	15
Suicide	2,438	2	13
Liver Disease	1,684	1	9

Among males, the five leading causes of death for 2003–2005 were heart disease, followed by cancer, unintentional injury, stroke, and chronic lower respiratory disease.

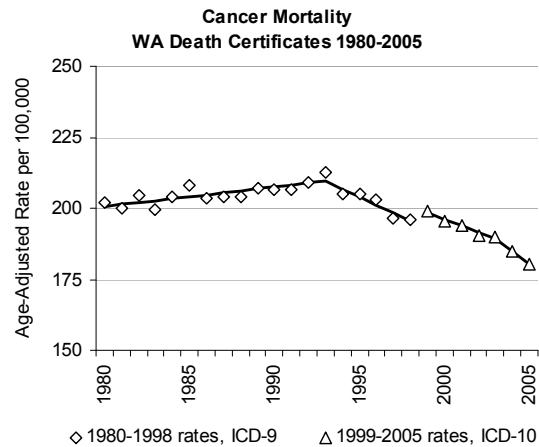
Among females, the leading causes of death were cancer, followed by heart disease, stroke, Alzheimer's disease, and chronic lower respiratory disease.

While heart disease and cancer accounted for half of all deaths in Washington, mortality rates for these diseases are declining over time.

This trend is particularly pronounced for heart disease, for which the 2005 death rate was half that of 1980.



For all cancers combined, rates increased from 1980 to 1993. Since 1993, the trend has been downward.



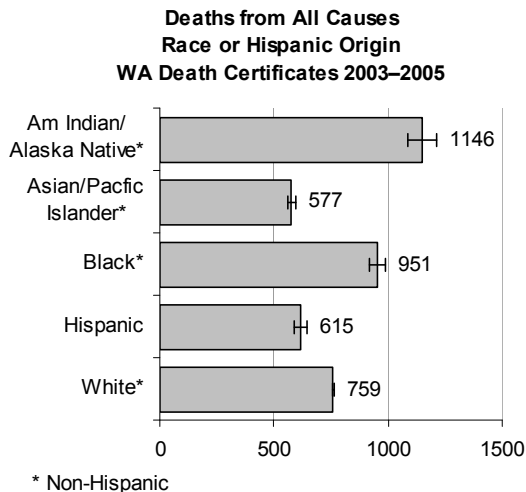
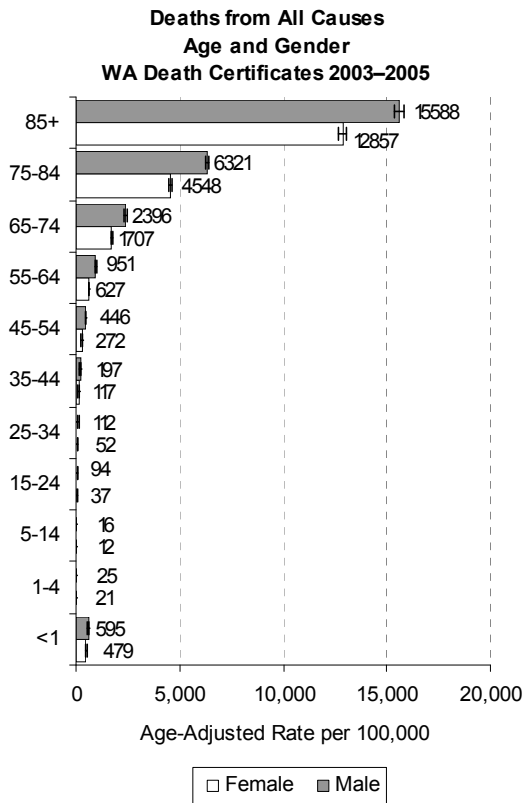
Each of these conditions has its own causes, risk factors, treatments, and preventive measures. Leading causes of death vary with the age distribution of the population. Stroke, heart disease, chronic lower respiratory disease, and cancer cause proportionately more deaths among the elderly, while unintentional injuries cause more deaths among the young.

It is important to recognize the *actual* causes of death, which are amenable to public health interventions. Chief among these are tobacco use, poor diet and physical inactivity, and alcohol consumption.<sup>3</sup> Underlying factors for disease and mortality are discussed more fully in the chapter on [Social and Economic Determinants of Health](#).

### Age and Gender

Children ages 1–4 and 5–14 have the lowest mortality rates, with no gender differences. In each of the remaining eight age groups, however, male death rates are significantly higher than female rates. During 2003–2005 on average, the rates for males were 1.5 times the rates for females. But among youth ages 15–24, the rate for males was more than 2.5 times the rate for females. Similarly, the rate for males ages 25–34 was more than twice the female rate.

Overall, 32% of all male deaths occurred among those younger than age 65; in contrast, only 19% of the female deaths occurred in that age group.



### Race and Hispanic Origin

In 2003–2005, American Indians and Alaska Natives had a significantly higher death rate than any other race or Hispanic-origin group. Blacks had the second-highest rate, which was also significantly higher than rates for any of the remaining groups. Hispanics and Asian and Pacific Islanders had the lowest mortality rates. It is important to note that many of the sub-populations within the Asian and Pacific Islander category likely have higher mortality rates than does the group as a whole; however, we are currently unable to adequately identify those groups within the death data.<sup>4</sup> Similarly, the death data likely underreport American Indians and Alaska Natives because the ascertainment of race is often based upon subjective observation rather than inquiry or formal reporting; consequently the mortality rates for that population may be even higher than shown here.<sup>5</sup>

Pronounced differences were identified when rates were computed by both gender and race or Hispanic ethnicity. American Indian and Alaska Native males ranked the highest, with an age-adjusted death rate of 1,287. Their rate was significantly higher than any other group's rate.

The second highest group included black males (1,127) and American Indian and Alaska Native females (1,025). Their rates did not differ significantly from each other but were significantly higher than any of the remaining groups.

White males (902) came in third in a ranking of high to low. Their rate was significantly higher than any of the remaining groups.

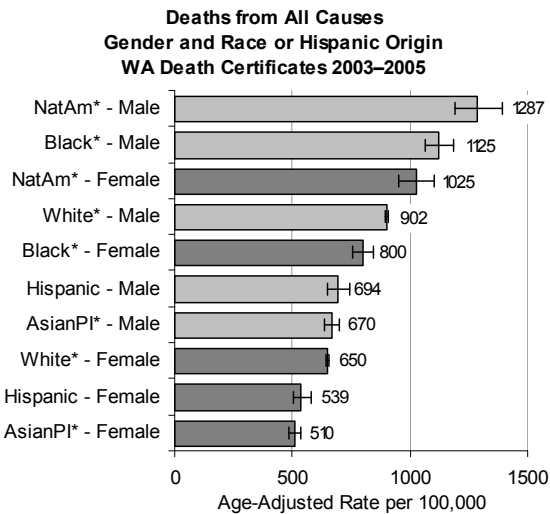
Black females (800) were fourth, and again, had a rate significantly higher than the remaining groups.

Hispanic males (694), Asian and Pacific Islander males (670), and white females (650) made up the next group. Their rates did not differ significantly from each other but were significantly higher than the remaining two population groups, Hispanic females (539) and Asian and Pacific Islander females (510). The difference between Hispanic females and Asian and Pacific Islander females was not significant.

Overall, those with the highest rate, American Indian and Alaska Native males, had a rate that was more than 2.5 times greater than those with the lowest rate, Asian and Pacific Islander females.

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 lifestyle choices, lack of access to medical care, and unsafe environments. These factors are discussed in detail

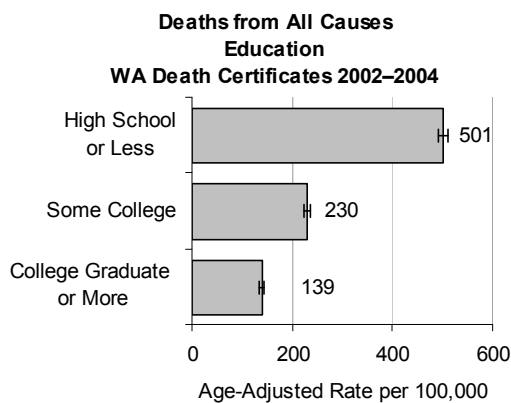
in the chapter on Social and Economic Determinants of Health.



## Income and Education

Death rates by income level are not available.

Death rates by educational attainment are available, and they reveal marked differences by level. People with a high school education or less had an age-adjusted death rate of 501; those with at least a college degree had a rate of 139—a more than 3.5-fold difference.



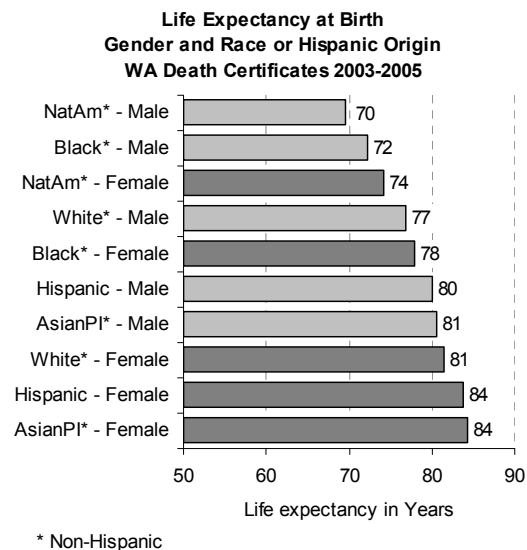
## Life Expectancy at Birth

Trends in life expectancy show that Washingtonians are living longer: the average life expectancy for those born in 2005 is 79.3 years, about four years longer than for those born in 1980.

Patterns in life expectancy data by race indicate that American Indian and Alaska Native males, black males, and American Indian and Alaska Native females have the shortest life expectancy: 69.5, 72.2, and 74.2 years, respectively. Asian and Pacific Islander, Hispanic-origin, and white females have the longest: 84.4, 83.7, and 81.4 years.

Among the remaining groups, white males have a life expectancy of 76.8 years, black females, 77.9 years, males of Hispanic origin, 80.1 years, and Asian and Pacific Islander males, 80.6 years.

On average, Asian and Pacific Islander females can expect to live 15 years longer than American Indian and Alaska Native males, 12 years longer than black males, and 10 years longer than American Indian and Alaska Native females born during the same period.



## Intervention Strategies

Washington's American Indian and Alaska Native and black populations—males and females alike—experience the highest mortality rates and the shortest life expectancy of nearly all other race and gender groups. Males, in general, also appear to be an at-risk population.

Mortality rates and life expectancy can be improved by reducing specific causes of diseases and eliminating disparities, as discussed in other chapters of this report.

**See Related Chapters** in the sections on [Chronic Disease](#), [Injury and Violence](#), and [The Context of Health](#).

## Data Sources

Washington State Death Certificate data: Washington State Department of Health, Vital Registration System Annual Statistical Files, Deaths 1980–2005, released December 2006

Washington State Population counts: U.S. Census provided through Washington State Office of Financial Management (OFM); OFM intercensal and postcensal estimates, Krupski Consulting

## For More Information

Washington State Center for Health Statistics, state vital statistics 2005, July 2007, Olympia, WA. See also [http://www.doh.wa.gov/ehsphl/chs/chs-data/death/dea\\_VD.htm](http://www.doh.wa.gov/ehsphl/chs/chs-data/death/dea_VD.htm).

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

## Technical Notes

### Leading Cause of Death Definitions

Cause	ICD-10 Coding Definition
Cancer	C00-C97
Heart disease	I00-I09, I11, I13, I20-I51
Stroke	I60-I69
Chronic lower respiratory disease	J40-J47
Unintentional injury	V01-X59, Y85-Y86
Alzheimer's disease	G30
Diabetes	E10-E14
Influenza and pneumonia	J10-J18
Suicide	X60-X84, Y87.0
Liver disease	K70, K73-K74

## Endnotes

<sup>1</sup> Kulldorff, M. and Information Management Services, Inc. SaTScanTM v6.0: Software for the spatial and space-time scan statistics. <http://www.satscan.org/>, 2005. SaTScanTM is a trademark of Martin Kulldorff. The SaTScanTM software was developed under the joint auspices of Martin Kulldorff of the National Cancer Institute and Farzad Mostashari of the New York City Department of Health and Mental Hygiene.

<sup>2</sup> National Center for Health Statistics. (2007). *Cause-of-Death Ranking*. Retrieved January 2, 2008 from <http://www.cdc.gov/nchs/dataawh/nchsdefs/codrank.htm>.

<sup>3</sup> Mokdad, A. H., Marks, J. S., Stroup, D. F., & Gerberding, J.L. (2004). Actual causes of death in the United States. *Journal of the American Medical Association*, 291, 1238-1245.

<sup>4</sup> Mays, V. M., Cochran, S. D., & Ponce, N. A. (2004). Thinking about race and ethnicity in population-based studies of health. In B. Beech & M. Goodman (Eds.), *Race and research: perspectives*

*on minority participation in health studies* (pp. 79-100). American Public Health Association.

<sup>5</sup> Stehr-Green, P., Bettles, J., & Robertson, L. D. (2002). Effect of Racial/Ethnic Misclassification of American Indians and Alaskan Natives on Washington State Death Certificates, 1989–1997. *American Journal of Public Health*, 92, 443-444.