

Heart Disease and Stroke in Oregon: Update – 2010



Together heart disease and stroke are the leading cause of death in Oregon, as well as major contributors to costly hospitalizations and disabilities. Oregon's Heart Disease and Stroke Prevention (HDSP) Program focuses on building capacity for implementing population-based interventions that prevent heart disease and stroke and assist heart disease and stroke patients to manage their conditions.

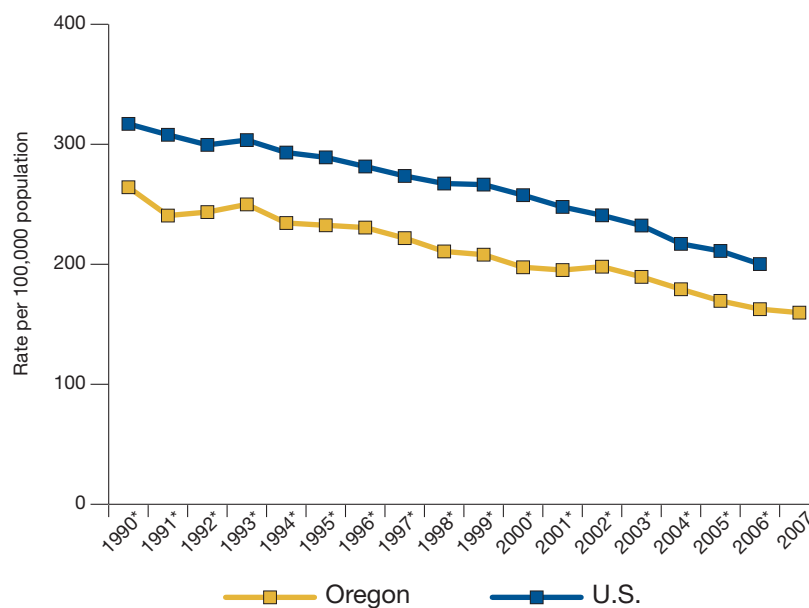
Some important facts about heart disease and stroke in Oregon are:

- ❖ The heart disease death rate is lower in Oregon than in the U.S. In Oregon, the death rate for heart disease is higher in rural areas than urban areas. Approximately 5.3% of Oregon adults have coronary heart disease.
- ❖ The stroke death rate is higher in Oregon than in the U.S. In Oregon, the death rate for stroke is not significantly different between urban and rural areas in recent years. Approximately 3.0% of Oregon adults are stroke survivors.
- ❖ Diabetes, tobacco use, inadequate physical activity and inadequate fruit and vegetable intake are all risk factors for heart disease and stroke.

Mortality

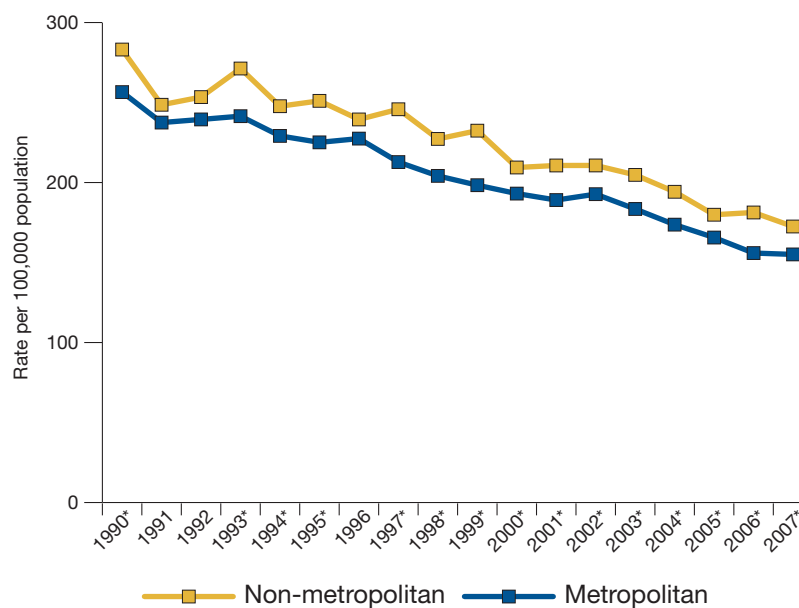
Heart disease death rates have been declining in Oregon as well as nationally. In 2007, more than 6,600 Oregonians died from heart disease, representing 21% of all Oregon deaths.

Heart disease death rates, Oregon and the United States: 1990–2007



Except for three years (1991, 1992, 1996), heart disease death rates in Oregon have been statistically higher in rural areas than in urban areas.

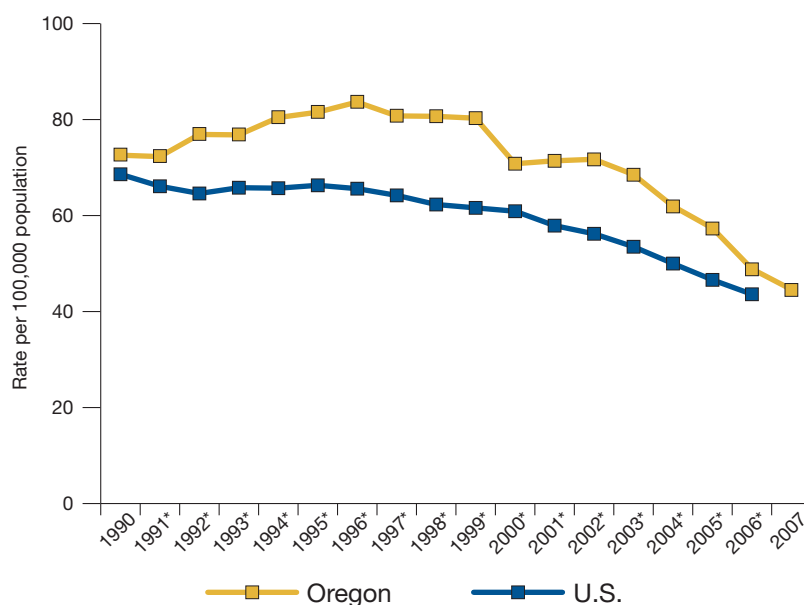
Heart disease death rates, Oregon: 1990–2007



Note: *denotes statistically significant difference. All data are age-adjusted to the 2000 U.S. standard population. For classification of metropolitan and non-metropolitan counties, please refer to www.ohsu.edu/ohsuedu/outreach/oregonruralhealth/data/upload/Office-of-Management-and-Budget.pdf. Also see Table I – III for listing of metropolitan and non-metropolitan counties. Data Source: Oregon Resident Death Certificates; CDC WONDER.

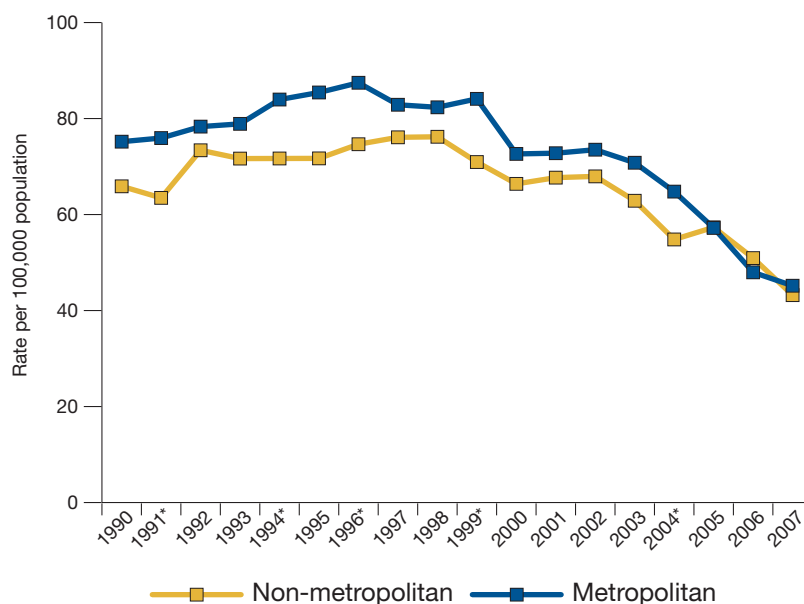
Stroke death rates have also been declining in Oregon and nationally, although Oregon stroke death rates consistently have been higher than the national average. In 2007, more than 1,800 Oregonians died from stroke, representing 6% of all deaths in the state.

Stroke death rates, Oregon and the United States: 1990–2007



Stroke death rates in Oregon are decreasing in both urban and rural areas. The gap between urban and rural stroke death rates has decreased in recent years.

Stroke death rates, Oregon: 1990–2007



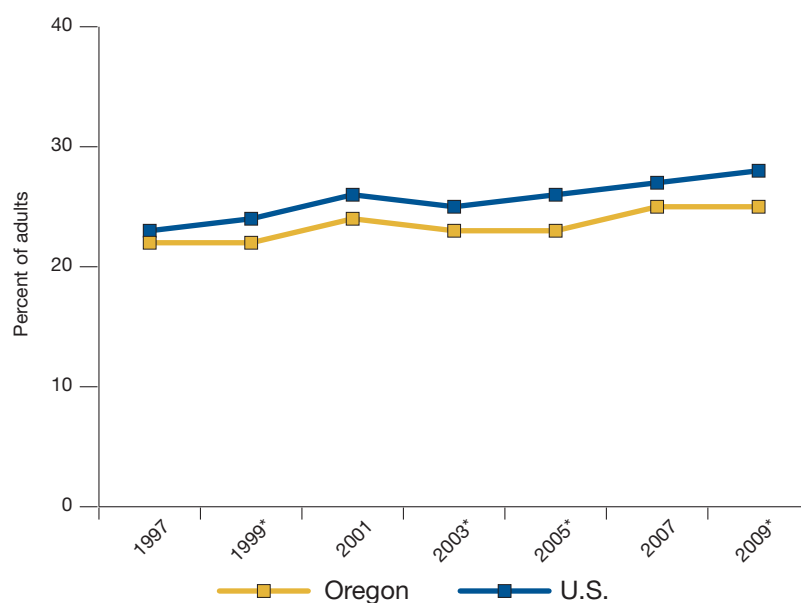
Note: *denotes statistically significant difference. All data are age-adjusted to the 2000 U.S. standard population. For classification of metropolitan and non-metropolitan counties, please refer to www.ohsu.edu/ohsuedu/outreach/oregonruralhealth/data/upload/Office-of-Management-and-Budget.pdf. Also see Table I – III for listing of metropolitan and non-metropolitan counties. Data Source: Oregon Resident Death Certificates; CDC WONDER.

Disease and risk factor prevalence

In 2009, 5.3% of Oregon adults (more than 168,000 people) had heart attack or angina/coronary heart disease (CHD) and 3.0% of adults (more than 95,000 people) were stroke survivors. Nationally, it is estimated that 5.7% of adults have heart attack or angina/CHD and 2.4% adults are stroke survivors. High blood pressure (hypertension) and high cholesterol (hypercholesterolemia) are significant risk factors for heart disease and stroke.

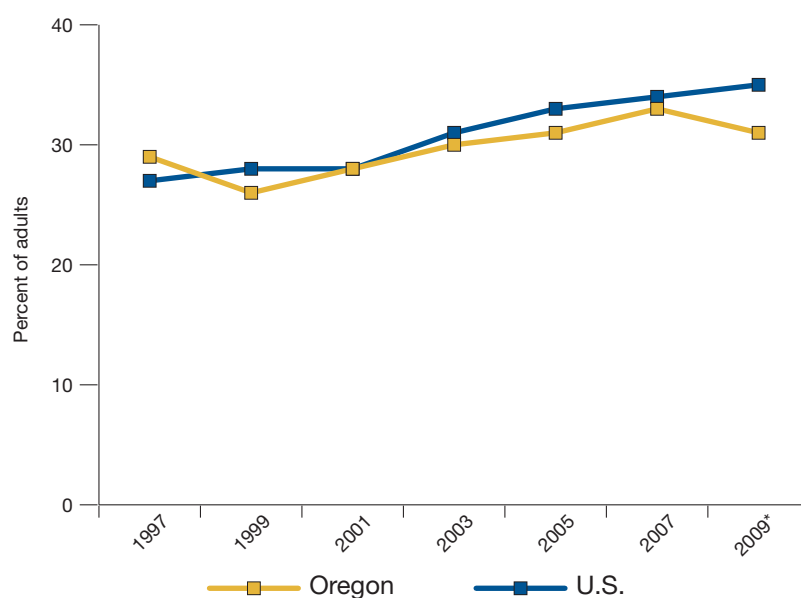
Over the past 10 years, high blood pressure prevalence among Oregonians did not change significantly. However, in 1999, 2003, 2005 and 2009, it was significantly lower than the national average.

High blood pressure prevalence, Oregon and the United States: 1997–2009



Similarly, high cholesterol prevalence in Oregon did not change significantly, but it was significantly lower than the national average in 2009.

High cholesterol prevalence, Oregon and the United States: 1997–2009

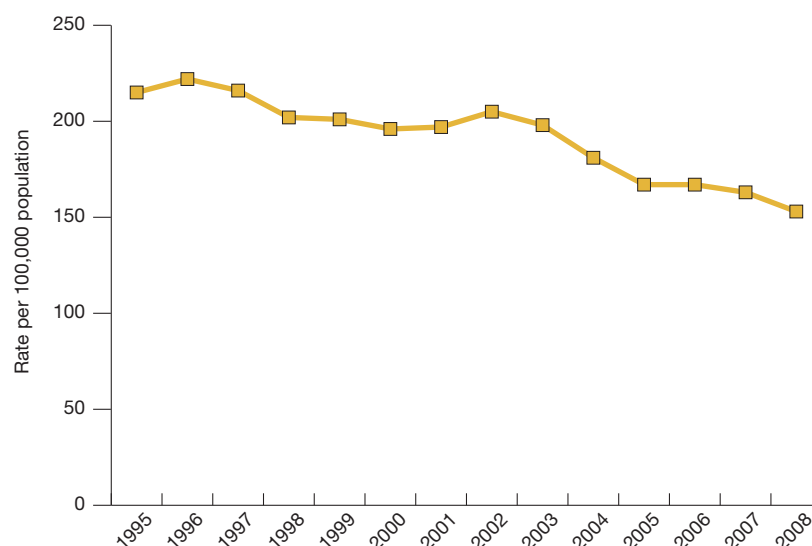


Note: *denotes statistically significant difference. All data are age-adjusted to the 2000 U.S. standard population.
Data Source: Oregon Behavioral Risk Factor Surveillance System; CDC Behavioral Risk Factor Surveillance System.

Morbidity and cost

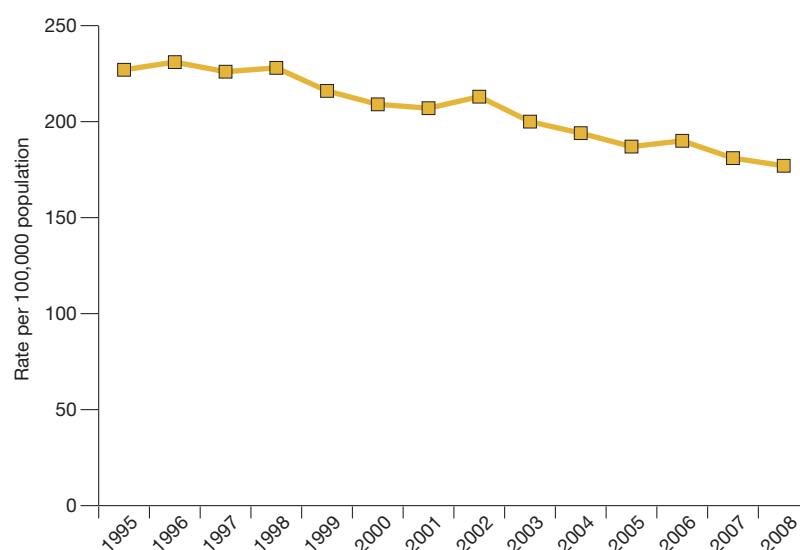
The heart attack hospitalization rate has decreased over the years. In 2008 there were 6,321 hospitalizations due to heart attack in Oregon. The hospitalization charges for heart attack averaged about \$40,000 per hospitalization, totaling more than \$246 million in 2008.

Heart attack hospitalization rates, Oregon: 1995–2008



The stroke hospitalization rate has decreased as well. In 2008 there were 7,225 hospitalizations due to stroke in Oregon. The hospitalization charges for stroke averaged over \$26,000 per stay, totaling more than \$193 million in 2008.

Stroke hospitalization rates, Oregon: 1995–2008



Similarly, national heart attack hospitalization rates declined slightly from 1996 to 2005 (*Am J Med* 123(3): 259-66) and national stroke hospitalization rates declined from 1997 to 2004 (*Neuroepidemiology* 29(3-4): 243-9).

Note: All data are age-adjusted to the 2000 U.S. standard population.
Data Source: Oregon Hospital Discharge Index.

Health factors and lifestyle behavior factors by county, 2006–2009

Table I. Heart disease and stroke prevalence by county, 2006–2009

	Heart attack		Angina		Stroke		Heart attack or angina		Heart attack, angina or stroke	
	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted
OREGON		3.3%		3.4%		2.3%		5.0%		6.5%
Metropolitan counties										
Benton	3.0%	3.3%	2.8%	3.0%	1.5%	1.6%	4.3%	4.7%	5.3%	5.8%
Clackamas	2.6%	2.5%	3.1%	2.9%	2.8%	2.6%	4.5%	4.3%	6.4%	6.0%
Columbia	4.4%†	4.1%†	2.5%†	2.1%†	3.1%†	2.8%†	5.9%	5.3%	8.5%	7.8%
Deschutes	3.0%	2.7%	2.8%	2.4%	1.4%	1.2%**	4.5%	4.0%	5.4%	4.7%**
Jackson	3.5%	2.9%	3.5%	2.9%	2.6%	2.2%	5.1%	4.3%	6.7%	5.5%
Lane	3.4%	3.1%	3.8%	3.5%	2.4%	2.2%	5.5%	5.1%	7.0%	6.5%
Marion	4.1%	4.0%	3.9%	3.8%	2.4%	2.3%	5.8%	5.7%	7.2%	7.1%
Multnomah	2.8%	2.9%	2.9%	3.0%	1.8%	1.8%	4.5%	4.6%	5.7%	5.8%
Polk	5.3%	5.2%	4.7%	4.4%	2.5%	2.2%	7.7%	7.3%	9.4%	8.8%
Washington	2.4%	2.5%	2.9%	3.1%	1.8%	1.9%	3.9%	4.2%	5.1%	5.4%
Yamhill	3.2%	3.1%	3.2%	3.2%	2.2%	2.2%	4.6%	4.5%	6.2%	6.1%
Non-metropolitan counties										
Baker	3.5%†	2.7%†	6.2%†	4.9%	3.1%†	2.4%†	6.7%	5.2%	8.8%	6.9%
Clatsop	4.8%	3.9%	4.0%	3.1%	3.6%	2.8%	6.5%	5.2%	8.0%	6.4%
Coos	7.7%†	7.3%†	8.2%	7.7%†	5.4%†	5.7%†	10.5%	9.4%†	12.9%	11.6%
Crook	–	2.0%†	–	–	–	–	3.3%†	2.5%†	9.8%†	8.4%†
Curry	8.4%	4.4%	10.1%	6.0%**	2.9%†	1.5%†	12.2%	7.1%	12.7%	7.4%
Douglas	5.7%	4.4%	5.2%	4.0%	4.5%	3.8%**	8.3%	6.4%	11.5%	9.3%**
Grant	4.2%†	2.9%†	3.6%†	2.5%†	3.5%†	2.4%†	5.9%†	4.0%†	7.4%†	5.1%
Harney	7.5%†	6.0%†	–	–	–	–	8.7%†	6.9%†	8.7%†	6.9%†
Hood River	6.2%†	5.8%†	3.9%†	3.6%†	–	–	7.0%†	6.5%†	8.2%†	7.6%
Jefferson	3.7%†	3.0%†	3.5%†	2.8%†	2.3%†	1.9%†	6.8%†	5.5%	7.6%	6.1%
Josephine	4.9%	3.4%	5.7%	4.0%	3.9%	3.3%	7.9%	5.7%	9.9%	7.5%
Klamath	6.9%	6.0%**	4.7%	3.7%	2.5%†	2.3%†	9.1%	7.9%**	11.0%	9.7%**
Lake	–	–	–	–	–	–	–	–	–	–
Lincoln	5.6%	3.9%	3.4%	2.5%†	3.4%†	2.8%†	7.2%	5.0%	10.2%	7.5%
Linn	5.4%	4.5%	5.0%	4.2%	4.0%	3.7%	7.6%	6.4%	10.6%	9.3%**
Malheur	3.7%†	3.4%†	2.0%†	1.7%†	2.7%†	2.6%†	4.9%	4.5%	7.6%	7.1%
Morrow	–	–	–	6.5%†	–	–	7.1%†	7.2%†	7.1%†	7.2%†
Tillamook	5.8%†	4.8%†	4.8%†	3.9%†	2.8%†	2.0%†	7.4%	5.9%†	8.9%	7.1%
Umatilla	3.4%	3.0%	3.7%	3.4%	2.9%	2.7%	5.3%	4.8%	7.5%	7.0%

Table I. Heart disease and stroke prevalence by county, 2006–2009 (continued)

	Heart attack		Angina		Stroke		Heart attack or angina		Heart attack, angina or stroke	
	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted
Union	4.3%†	4.0%†	6.2%	5.3%	4.4%†	3.9%†	8.1%	7.3%	9.9%	8.8%
Wallowa	–	–	8.7%†	5.4%†	–	–	8.7%†	5.4%†	10.5%†	6.4%
Gilliam/Wheeler	–	6.3%†	–	–	–	–	23.5%†	–	23.5%†	–
Sherman/Wasco	6.0%	4.6%	6.0%	4.9%†	2.7%†	1.9%†	8.5%	6.7%	10.7%	8.3%

Note: ** Denotes statistically significant difference compared to Oregon.

† This number may be statistically unreliable and should be interpreted with caution.

– This number is suppressed because it is statistically unreliable.

Age-adjusted estimates are adjusted to the 2000 Standard Population using 3 age groups (18–34, 35–54, and 55+).

Data Source: Oregon Behavioral Risk Factor Surveillance System 2006–2009

High blood pressure and high cholesterol are two major risk factors for heart disease and stroke. Lifestyle behavior factors including unhealthy weight, physical inactivity, poor nutrition, tobacco use and diabetes also increase the risk for heart disease and stroke.

Table II. Health factors of heart disease and stroke by county, 2006–2009

	High blood pressure		High blood cholesterol		Diabetes	
	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted
OREGON		25.8%		33.0%		6.8%
Metropolitan counties						
Benton	20.3%	22.9%	28.4%	25.8%	5.5%	6.3%
Clackamas	26.8%	25.6%	37.6%	33.1%	7.0%	6.6%
Columbia	34.0%	31.0%	41.6%	30.4%	7.3%	6.6%
Deschutes	23.6%	20.6%**	36.0%	32.1%	5.6%	5.0%
Jackson	29.2%	26.8%	41.5%	35.5%	7.2%	6.4%
Lane	28.7%	27.3%	39.2%	33.6%	6.5%	6.3%
Marion	28.1%	27.9%	32.1%	29.1%	8.3%	8.3%
Multnomah	22.8%	23.0%	36.4%	33.7%	6.0%	6.2%
Polk	25.9%	24.4%	34.7%	31.0%	6.6%	6.0%
Washington	21.8%	22.9%	32.5%	30.2%	5.6%	5.9%
Yamhill	27.2%	26.8%	36.1%	34.9%	7.5%	7.5%
Non-metropolitan counties						
Baker	39.0%	31.3%	56.2%	59.9%**	12.8%	11.4%**
Clatsop	36.9%	33.9%	40.6%	28.3%	8.5%	7.1%
Coos	34.1%	28.5%	45.5%	41.8%	12.6%	11.0%
Crook	48.0%	46.2%**	44.1%	41.8%	9.9%	9.0%
Curry	40.3%	25.8%	46.9%	32.6%	8.2%	6.1%†
Douglas	35.0%	31.4%	40.2%	35.1%	11.4%	10.1%**

Table II. Health factors of heart disease and stroke by county, 2006–2009 (continued)

	High blood pressure		High blood cholesterol		Diabetes	
	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted
Grant	33.4%	21.7%	49.2%	42.1%†	9.3%†	6.7%
Harney	28.8%	22.2%	48.1%	37.3%	9.5%†	8.1%†
Hood River	25.5%	23.2%	17.7%†	13.4%†	4.9%†	4.4%†
Jefferson	20.5%	16.9%**	29.4%	20.2%†	7.3%	6.5%
Josephine	38.0%	34.3%	45.5%	43.7%	8.2%	5.8%
Klamath	32.0%	29.4%	38.9%	34.3%	7.9%	7.3%
Lake	39.6%	30.2%	58.6%	45.1%	–	–
Lincoln	39.8%	36.2%	54.7%	41.0%	11.3%	8.9%
Linn	29.7%	27.7%	34.4%	29.6%	9.0%	7.9%
Malheur	30.2%	27.8%	41.2%	37.5%	8.0%	7.6%
Morrow	19.9%†	16.1%	33.8%†	23.1%†	7.1%†	6.8%†
Tillamook	35.9%	32.2%	40.9%	29.6%	10.0%	8.3%
Umatilla	32.1%	30.9%	46.1%	39.7%	9.6%	9.3%
Union	25.5%	22.6%	41.6%	36.1%	6.5%	6.5%
Wallowa	30.3%	18.8%	44.4%	32.4%	4.0%†	2.4%†
Gilliam/Wheeler	–	–	–	–	15.6%†	12.4%†
Sherman/Wasco	31.4%	27.8%	34.0%	26.8%	6.0%	5.3%

Note: ** Denotes statistically significant difference compared to Oregon.

† This number may be statistically unreliable and should be interpreted with caution.

– This number is suppressed because it is statistically unreliable.

Age-adjusted estimates are usually adjusted to the 2000 Standard Population using 3 age groups (18-34, 35-54, and 55+).

Age-adjusted Grant, Jefferson and Morrow high blood cholesterol estimates were based on collapsed age groups (18-54 and 55+) due to small numbers.

Data Source: Oregon Behavioral Risk Factor Surveillance System 2006-2009

Table III. Lifestyle Behaviors of Heart Disease and Stroke by County, 2006–2009

	% classified as overweight		% classified as obese		% of adults who met CDC recommendations for physical activity		% of adults who consumed at least 5 serving of fruits and vegetables per day		% of adults who currently smoke cigarettes	
	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted
OREGON		36.1%		24.5%		55.8%		27.0%		17.1%
Metropolitan counties										
Benton	35.4%	35.4%	21.3%	20.8%	64.9%	64.2%	31.4%	31.6%	11.9%	10.8%**
Clackamas	36.0%	35.7%	23.7%	23.6%	55.6%	55.6%	24.9%	24.7%	15.1%	15.4%
Columbia	40.0%	40.1%	28.5%	27.4%	50.1%	49.6%	21.2%	20.7%	16.6%	17.1%
Deschutes	41.0%	41.0%**	15.9%	15.7%**	61.0%	61.1%	26.6%	26.1%	13.6%	14.1%
Jackson	38.6%	38.2%	20.9%	21.0%**	57.0%	57.5%	33.2%	33.2%	20.6%	21.9%**

Table III. Lifestyle Behaviors of Heart Disease and Stroke by County, 2006–2009 (continued)

	% classified as overweight		% classified as obese		% of adults who met CDC recommendations for physical activity		% of adults who consumed at least 5 serving of fruits and vegetables per day		% of adults who currently smoke cigarettes	
	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted	unadjusted	age-adjusted
Lane	35.0%	35.1%	24.9%	25.0%	59.4%	59.5%	26.9%	26.7%	18.0%	18.4%
Marion	36.2%	36.5%	28.4%	28.6%**	53.2%	53.0%	29.1%	29.1%	15.3%	15.5%
Multnomah	33.6%	33.8%**	21.7%	21.8%**	55.2%	55.1%	30.0%	30.0%	15.4%	15.3%
Polk	36.5%	37.1%	28.9%	29.1%	52.7%	52.0%	26.7%	26.0%	13.5%	14.3%
Washington	36.7%	36.9%	23.2%	23.2%	53.8%	53.8%	24.7%	24.9%	13.0%	12.9%**
Yamhill	36.1%	36.6%	28.4%	28.4%	50.0%	49.9%	21.1%	21.5%	18.8%	18.5%
Non-metropolitan counties										
Baker	36.4%	35.8%	23.8%	22.3%	42.0%	42.3%	27.3%	32.7%	19.5%	20.0%
Clatsop	38.9%	39.0%	25.5%	25.3%	53.4%	53.1%	24.9%	26.6%	20.9%	21.5%
Coos	36.3%	36.8%	28.6%	27.3%	60.2%	61.5%	28.9%	29.4%	25.0%	28.1%**
Crook	38.4%	39.1%	31.5%	31.5%	66.3%	69.4%	15.3%†	14.0%†	22.1%	23.3%
Curry	34.7%	30.4%	27.1%	29.8%	43.6%	49.4%	30.2%	37.4%	17.2%	18.4%
Douglas	34.6%	33.3%	30.1%	30.6%**	58.9%	59.7%	28.2%	28.8%	24.8%	27.1%**
Grant	35.1%	34.1%	29.7%	27.9%	56.6%	57.4%	29.8%†	25.1%†	22.7%	24.4%
Harney	38.2%	37.4%	23.6%	22.8%	51.6%	54.0%	21.8%†	21.9%†	14.8%	14.3%
Hood River	38.7%	38.8%	26.5%	26.5%	33.1%†	33.7%**	28.8%†	28.5%†	8.5%	8.6%**
Jefferson	41.3%	41.9%	25.3%	25.3%	52.2%	51.4%	31.6%†	32.5%†	15.1%	15.9%
Josephine	36.6%	35.6%	22.6%	22.3%	57.0%	59.3%	22.4%	22.7%	22.3%	25.0%**
Klamath	35.2%	34.6%	25.8%	26.0%	57.8%	58.7%	27.5%	28.3%	21.2%	22.0%**
Lake	42.8%	41.3%	17.7%	18.8%	58.8%	60.0%	35.7%†	35.0%†	18.7%	19.9%
Lincoln	38.6%	37.2%	26.8%	26.2%	54.4%	55.7%	27.0%	25.6%	24.1%	26.9%**
Linn	38.6%	38.4%	29.6%	29.6%**	50.0%	51.6%	17.0%	15.8%**	20.0%	21.0%**
Malheur	38.5%	37.6%	33.1%	33.3%**	56.0%	56.9%	19.3%†	19.5%†	16.5%	16.8%
Morrow	29.6%	29.9%	36.2%	36.0%	53.3%	52.3%	–	–	20.1%	18.2%
Tillamook	42.4%	42.3%	27.0%	26.7%	63.0%	67.7%	25.1%	24.2%	19.1%	21.6%
Umatilla	34.8%	34.4%	35.7%	36.0%**	59.5%	59.8%	25.0%	25.1%	23.7%	24.2%**
Union	42.9%	42.8%	23.0%	23.4%	50.9%	50.4%	27.6%	27.5%	13.2%	13.8%
Wallowa	39.5%	36.4%	20.8%	19.5%	55.7%	44.0%	39.3%†	55.2%**	15.6%	17.9%
Gilliam/ Wheeler	66.4%	68.5%**	16.7%†	16.2%†	–	–	–	–	22.2%†	29.6%†
Sherman/ Wasco	33.9%	33.7%	32.3%	31.6%	57.2%	59.4%	36.1%	38.3%**	20.0%	22.1%

Note: ** Denotes statistically significant difference compared to Oregon.

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Age-adjusted estimates are adjusted to the 2000 Standard Population using 3 age groups (18-34, 35-54, and 55+).

Data Source: Oregon Behavioral Risk Factor Surveillance System 2006-2009

For more health disparities data please refer to “The Burden of Heart Disease and Stroke in Oregon, 2007” (on website at: www.oregon.gov/DHS/ph/hdsp/pubs.shtml).



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